

Verification Report

**Client: Stonedale
Construction Ltd**

Lidl, Birstall

Report No: 1080.08.01

February / 2026



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Issue No	Date	Prepared By	Technical Review	Authorised
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1. INTRODUCTION

Remada Ltd was appointed by Stonedale Construction Ltd the client' to prepare a Verification Report for the implementation of remediation works for a proposed Lidl retail store on land off Bankwood Way, Birstall WF17 9TB.

It should be noted that Stonedale Construction Ltd have been contracted to implement the scope of work specified in Remada's Combined Remediation Strategy Drilling & Grouting Plan ref: 1080.07.01 whereas the latest version of the document reference 1080.07.03 also specifies the Local Authority's requirement for post remediation ground gas monitoring and assessment for which Remada has been separately appointed by Lidl Great Britain Ltd.

1.1 Objectives

The objective of this assessment is to verify that the remediation works were implemented in general accordance with the approved Remediation Statement to discharge Conditions No 18, 19, 20 & 21 of Kirklees Council's planning application 2021/62/92528/E.

1.2 Scope of Work

The scope and layout of this document has been designed in mind of the Environment Agency's Land Contamination Risk Management guidance for land contamination reports.

The scope of remediation and/or enabling works implemented by the Principal Contractor, Stonedale Construction Ltd on behalf of Lidl Great Britain comprised:

- Preparation of ground levels in advance of store construction;
- Drill and grouting of shallow mine seams;
- Grub out any remaining obstructions under proposed buildings including any remaining drainage;
- Vibro ground improvement required for Lidl store and B&M store;
- CMC's
- Reuse stockpiled crushed concrete to form capping layer and piling mat;
- Import suitable topsoil.
- Disposal of wastes.

Remada was appointed to:

- Attend site up to six occasions during regrading/groundworks and mine cavity grouting.
- Liaise with the mine grouting sub-contractor regarding primary and secondary grid and depth for grouting.
- Make a photographic record of works in progress.
- Take 3 No samples of site won/imported capping materials for grading and asbestos analysis.
- Take 3 samples of granular gas blanket for grading.
- One day of CBR tests on formation level (using a hand held falling weight deflectometer).
- Take 3 samples of landscape soils for chemical analysis.

Remada was separately appointed by Lidl to carry gas monitoring and this report will be reissued on completion of the monitoring programme.

1.3 Proposed Development

The proposed development comprises the construction of a Lidl store in the south-east of the site area and Home Bargains store in the west. The remediation and enabling works comprised the remediation and enabling works comprised site clearance, formation of proposed site levels with a cut and fill exercise, installation of an attenuation tank, construction of a retaining wall and gabion wall, probe drilling for shallow mine workings ground improvement in for the form Controlled Modulus Columns beneath proposed building footprints.

The proposed layout is presented at **Appendix A**.

1.4 Planning Condition Requirements

18. Where site remediation is recommended in the Phase II Intrusive Site Investigation Report approved pursuant to condition 17, further groundworks shall not commence until a Remediation Strategy by a suitably competent person has been submitted to and approved in writing by the Local Planning Authority. The Remediation Strategy shall include a timetable for the implementation and completion of the approved remediation measures.

Reason: *To ensure the safe occupation of the site in accordance with Policy LP53 of the Kirklees Local Plan and guidance within the National Planning Policy Framework.*

19. Remediation of the site shall be carried out and completed in accordance with the Remediation Strategy approved pursuant to condition 18. In the event that remediation is unable to proceed in accordance with the approved Remediation Strategy or contamination not previously considered is identified or encountered on site, all groundworks in the affected area (except for site investigation works) shall cease immediately and the Local Planning Authority shall be notified in writing within two working days. Works shall not recommence until proposed revisions to the Remediation Strategy have been submitted to and approved in writing by the Local Planning Authority. Remediation of the site shall thereafter be carried out in accordance with the approved revised Remediation Strategy.

20. Following completion of any measures identified in the approved Remediation Strategy or any approved revised Remediation Strategy a Validation Report by a suitably competent person shall be submitted to the Local Planning Authority. No part of the site shall be brought into use until such time as the remediation measures have been completed for that part of the site in accordance with the approved Remediation Strategy and the approved revised Remediation Strategy and a Validation Report in respect of those remediation measures has been approved in writing by the Local Planning Authority. Where validation has been submitted and approved in stages for different areas of the whole site, a Final Validation Summary Report shall be submitted to and approved in writing by the Local Planning Authority.

21. None of the development hereby approved shall commence until:

- a scheme of further intrusive investigations has been carried out on site to establish any risks posed to the development by past coal mining activity; and*
- any remediation works and/or mitigation measures to address land instability arising from coal mining legacy, as may be necessary, have been implemented on site in full in order to ensure that the site is made safe and stable for the development proposed. The intrusive site investigations and remedial works shall be carried out in accordance with relevant UK guidance.*

Reason: *To address unacceptable risks to human health and the environment arising from the legacy of coal mining activity and ground contamination, to accord with Policy LP53 of the Kirklees Local Plan and guidance within the National Planning Policy Framework.*

22. Prior to the first occupation of the development, or it being brought into beneficial use, a signed statement or declaration prepared by a suitably competent person confirming that the site is, or has been made, safe and stable for the approved development shall be submitted to the Local Planning Authority for approval in writing. This document shall confirm the methods and findings of the intrusive site investigations and the completion of any remedial works and/or mitigation necessary to address the risks posed by past coal mining activity.

Reason: To address unacceptable risks to human health and the environment arising from the legacy of coal mining activity and ground contamination, to accord with Policy LP53 of the Kirklees Local Plan and guidance within the National Planning Policy Framework.

1.5 Previous Reports

A summary of the available reports is tabulated below:

2018	<i>Geo-Environmental Assessment, by Delta-Simons, issued in July 2018.</i>
2019	<i>Project Completion Document: Asbestos Removal, Soft Stripping, Demolition of Building to Slab Level, Removal and Crushing of Slabs and Foundations, by Professional Remediation, issued in March 2019</i>
2020	<i>Combined Phase 1 & 2 Ground Investigation Report, by Curtins, issued in December 2020.</i> <i>Supplementary Report, by G B Card & Partners, issued in December 2020</i>
2021	<i>CPT Report, by Lankelma, issued in January 2021.</i> <i>Detailed Coal Mining Risk Assessment, by Sirius (ref: C8781/GH/9715/Rev B), issued in October 2021.</i> <i>Coal Mining Risk Assessment, by G B Card & Partners (ref: GB/661), issued in October 2021.</i> <i>Ground Engineering & Contamination Mitigation Philosophy, by Beam Consulting (ref: 09-148-D0C003A), issued in October 2021.</i>
2022	<i>Supplementary Coal Mining Investigation, by Sirius (ref: C8781/AW/9824), issued in March 2022.</i> <i>Hazardous Ground Gas Risk Assessment, by Sirius (ref: C8781MB9853), issued in May 2022.</i> <i>Strategy for Remedial & Preparatory Works, by Sirius, issued in May 2022.</i> <i>Geotechnical Review, by SDS Design Engineers, issued in September 2022.</i> <i>Remediation Strategy, by Remada (ref: 1080.01.01/1080.01.02) issued in October 2022.</i> <i>Note: Appendices were revised in February 2023 (ref: 1080.01.03).</i> <i>Drill & Grout Specification, by Remada (ref: 1080.02.01) issued in October 2022 (superseded).</i> <i>Settlement Estimates Letter Report, by Remada (ref: 1080.04.01), issued in October 2022.</i>
2024	<i>Factual Ground Investigation Report, by Remada (ref: 1080.06.01) issued in February 2024.</i>
2025	<i>Remada Letter ref 1080.09.01 in response to Local Authority comments and regarding post remediation ground gas monitoring and risk assessment.</i> <i>Combined Remediation Strategy, Drilling and Grouting Plan Remada (ref: 1080.07.03).</i>

1.6 Review of Previous Reports

A review of previous reports pertaining to the study site has been previously undertaken by Remada and can be found in Section 2 of Remadas' *Combined Remediation Strategy, Drilling and Grouting Plan* Report of 2025.

1.7 Limitations

The comments given in this report and the opinions expressed are based on the information reviewed and observations during site work. However, there may be conditions pertaining to the site that have not been disclosed by this assessment and therefore could not be taken into account.

2. GENERAL SITE CHARACTERISTICS

2.1 Site Description

Prior to the commencement development, the site had lain vacant for over 12 months following the above ground demolition of the former Business Centre. Following demolition of the buildings, vegetation clearance and demolition crushing occurred. The photographs below recorded the site in September 2025 shortly after the comment of works by Stonedale Construction Ltd.



View across the site during site setup and topography survey



Excavated trees



Organic material stockpiled on site



Crushing/grinding excavated organic material



Stockpile of existing crushed concrete
to be graded



Graded crushed concrete

2.2 Remediation Strategy, Drilling and Grouting Plan Requirements

Environmental and geotechnical remediation requirements are summarised below:

Environmental Remediation Objectives

The principal environmental remediation objectives are to remove the identified environmental liabilities in order to discharge planning condition C3N by:

- Identify, manage and assess previously identified and unforeseen contamination;
- Assess the chemical suitability of on-site stockpiles for re-use in the proposed development;
- Provide clean cover of fill to the proposed landscaped areas; and
- Install ground gas protection measures protective of a CS4 classification.

Geotechnical Remediation Objectives

The principal geotechnical remediation objectives are to:

- Remove existing relic foundations and obstructions to 1.5m bgl across the site area, and in entirety underneath proposed buildings;
- Excavate, screen, classify and replace existing made ground material and existing demolition rubble as engineered fill across the site;
- Grout former mineworkings/voids underneath proposed buildings and adoptable roadways; and
- Enable foundation or ground improvement solutions for the proposed buildings and car park.

2.3 Pre-Remediation Conceptual Site Model

The pre-remediation Conceptual Site Model has been reproduced below:

Potential Source Areas	Potential Contaminant of Concern	Pathways	Potential Receptor	Exposure Route (Human unless otherwise stated)	Potential Identified Linkage (unmitigated)	Findings of Ground investigation	Risk (Un-mitigated)	Proposed Remediation (Mitigation) Measures	Residual Risk Estimation
On-site Sources Elevated concentrations of PAHs within landfill waste Unidentified contaminants within landfill waste Hazardous ground gases generated from landfill waste and, to a lesser extent, worked coal measures <u>Off-site Sources</u> Migrating contaminants and ground gases from numerous landfill sites and mine workings within 250m of the site	Asbestos / Metals As, Be, Cd, Cu, Cr (VI), Cr (III) Hg, Ni, Se, Va, Zn, Boron, TPH /PAH/PCBs. Methane & Carbon Dioxide.	Disturbance due to construction plant causing direct contact, dusts, vapours. Direct Contact with occupants of the proposed development (retail & off-site residential) Inhalation of fibres / vapours / gases by occupants of proposed development Permeation of water supply pipework Leachate	Occupants of the development / building fabric Ground workers during construction Adjacent residents during construction Secondary A Aquifer	Direct Soil Ingestion	Yes	PAH exceedances	Low	Hardstanding to cover retail site minimising direct contact.	Negligible
				Indoor Dust ingestion	Yes	As above	Low	As above	Negligible
				Skin Contact with Soils	Yes	As above	Low	As above	Negligible
				Skin Contact with Dust	Yes	As above	Low	As above	Negligible
				Inhalation of Outdoor Dust	Yes	As above	Low	As above	Negligible
				Inhalation of Outdoor Vapours	Yes	As above	Low	As above	Negligible
				Inhalation of Indoor Vapours	Yes	As above	Low	As above	Negligible
				Ingestion via permeated water supply pipework	Yes	As above	Low	As above	Negligible
				Inhalation of ground gas	Yes	CS4	Medium	Ground gas protection measures	Negligible
				Inhalation of radon gas	Yes	Lower Probability Radon Area	Negligible	None required	Negligible
				Leaching to Secondary A Aquifer in Bedrock	Yes	PAH exceedances	Low	Hardstanding to prevent precipitation infiltration and leaching	Negligible

Table 1: Pre-remediation Conceptual Site Model

3. REMEDIATION ACTIVITIES

3.1 Overview

Following site clearance and cut to fill exercise was implemented to form proposed site levels. On completion the shallow mine working were probed for cavities beneath proposed building footprints prior installation of ground improvement in the form of Controlled Modulus Columns. Other works included, installation of an attenuation tank and construction of perimeter retaining walls and gabion walls. The works were completed in early February 2026.

3.2 Site Clearance

The following photos of site clearance were taken in August 2025



Site won concrete rubble awaiting processing



Stockpile of remaining organic material to be removed from site

3.3 Re-use of Site Won Concrete

Crushed concrete / concrete rubble that was present on site was processed for use a capping layer/piling mat. In addition, crushed concrete was also imported to construct a piling mat/capping layer.



Above left: Crushing material



Above right: Material for filling site levels.

3.4 Site Levels

The proposed site levels necessitated a cut and fill exercise from existing ground levels to form the levelled site. Waste disposal of surplus soils is described in **Section 6** below.



Compaction of fill material



Bottom Right: Levelled site rolled and compacted.

On completion of the works, Stonedale carried Plate Bearing & CBR tests on the piling mat/capping layer.

3.5 Attenuation Tank

An attenuation tank was installed during October 2025 as per the photos below.



Excavation of attenuation tank in progress



Attenuation tank installation prior to backfill and surround

3.6 Drilling & Grouting

Probe drilling for shallow mine workings was undertaken by Soil Engineering Ltd between 23rd and 30th October 2025. The probe drilling commenced on a 6m by 6m grid to a depth of 30m as proposed in Remada's Remediation Strategy and extended over both building footprints.

Initial probe drilling focused on the extents of the building footprints to determine the presence, direction and dip of potential cavities in relation to the previously interpolated alignment of an outcrop within the underlying coal measures.

However, no cavities were identified and specific locations within the grid and beneath each building footprint were then targeted. Previous ground investigation borehole locations were also cross-referenced with the probing grid and targeted.

In total, 19 probeholes were drilled in the proposed Home Bargains store footprint and 23 probeholes were drilled in the proposed Lidl store footprint.

However, no cavities were identified were identified at any location. All probeholes were backfilled with cement.

Probehole locations are presented with Soil Engineering's Completion Report which is presented at **Appendix B**. As not all probe logs were compiled within Soil Engineering's Completion Report, Remada has presented all received logs as **Appendix C**.



Soil Engineering SM11 rig in progress



Soil Engineering SM11 rig in progress

3.7 Foundation Details

For the Lidl store, the floor slab is constructed as a 200mm thick concrete slab with thickened downstands as presented in the Structural Engineer's drawings at **Appendix D**, however the required bearing capacity for the purpose of ground improvement is not stated on the Structural Engineer's drawings,

Details of the proposed foundation design for the Home Bargains is not known.

3.8 Ground Improvement

The design and construction or installation of the Controlled Modulus Columns (CMC) Ground Improvement as was undertaken by Menard for both raft design for the Lidl store and the Home Bargains building footprint. Menard's CMC Design Report is presented at **Appendix E** and aims to 'control the settlements and provide a higher bearing capacity by creating a composite material [CMC+soil]'.

CMCs were installed between 10th November 2025 & 12th December 2025 beneath the slab of the proposed Lidl store Home bargains store and external concrete yard.

Menard state that the 'works were undertaken in a single phase and this validation report summarises the works undertaken, provides the required quality information and provides a validation statement on the success of the works. Not all columns were installed due to obstructions and columns being located within the batter on the Lidl Building.

Menard's Completion Report is presented at **Appendix F**.



Soil Engineering SM11 rig in progress



Soil Engineering SM11 rig in progress

3.9 Retaining Walls

Ground bearing retaining walls were constructed at the perimeters of the site as per the photos below:



Ground slab for construction of the retaining wall at the south of the site



Progress of gabion wall in the western corner



Retaining wall progress



Retaining wall progress

3.10 Unforeseen Contamination

There were no visible or olfactory indicators of unforeseen contamination during the works.

3.11 Gas Membrane

The Ground Investigation set out requirements for the installation of ground gas protection measures for occupants of the proposed store building to meet the requirements of Characteristic Situation 4, however, Remada installed three (3 No) gas and groundwater monitoring wells within the store footprint to the Lidl store, proposed for the south-east of the site in the area of the former landfill, and three wells within the Home Bargain, proposed for the west of the site in an area cut into natural ground.

As per the Combined Remediation Strategy, Drilling and Grouting Plan report by Remada and at the request of the local authority further gas monitoring was required.

So far, four monitoring visits have taken place with preliminary results indicating the Lidl store to be Characteristic Situation 2 (CS2) with gas protection measures required. The Home Bargains is preliminary CS1 with no gas protection measures required.

All ground gas protection measures to be installed as part of the main build.

3.12 Membrane Installation and Product

Membrane installation quality and product will be checked at the time of installation.

3.13 Unforeseen Contamination

There were no visible or olfactory indicators of unforeseen contamination during the works.

4. VERIFICATION SAMPLING & ANALYSES

4.1 Mine Drilling & Grouting

All probe hole information completed for the drill and grout exercise are presented within the Soil Engineering Completion Report at **Appendix B**.

4.2 Ground Improvement

All records for CMC installation including plate bearing tests and concrete cube results are presented within Menard's Validation Report at **Appendix F**.

4.3 Supplier's Test Results

The results of grading tests and chemical analyses of imported crushed concrete have been provided by the supplier and are presented at **Appendix G**.

4.4 CBR Tests

On completion of the CMC works and preparation of formation for the future development, four 4 No Plate Bearing / CBR tests were undertaken within each store footprint on 30th January 2026.

Within the Lidl footprint, the maximum settlement at 277 kPa = 1.41mm and minimum CBR = 39.2%.

Within the Home Bargains footprint, the maximum settlement at 277 kPa = 1.73mm and minimum CBR = 25.9%.

Plate Bearing/CBR results are presented at **Appendix I**.

4.5 Remada Sample Quality Assurance / Quality Control

Samples for chemical laboratory testing purposes were collected in amber glass jars, amber glass vials and plastic tubs and retained in a cool box for transport to the laboratory. All samples were submitted to an approved United Kingdom Accredited Laboratory (UKAS) and MCERTS laboratory under a completed chain of custody. The laboratory carried out its own QA/QC programme to ensure that the quality of the analytical data conformed to the appropriate test method protocols. Containers for volatile analysis were filled so that minimal (soil) air space remained prior to sealing the container.

Soil samples for chemical analysis were collected in plastic tubs and amber glass bottles. Groundwater samples were collected in 1 litre glass bottle and 30mm glass vials. All samples were retained in a cool box with a chain of custody for transport to the laboratory for subsequent environmental analysis.

4.6 Remada Verification Samples

Remada sampled site won and imported crushed concrete that had placed as the piling mat and/or capping layer. The results gradings and chemical analyses are not available at the time of writing.

4.7 Ground Gas

The results of the post remediation ground gas monitoring will be presented separately.

5. RISK ASSESSMENT

The upper limits for general fill produced from the excavation and processing of relict foundation and associated Made Ground were limited to the LQM/CIEH S4ULs for Commercial Land Use as presented in the Remediation Strategy and reproduced as Table 2 below.

5.1 Made Ground

The Phase 2 Ground Investigation, Remediation Strategy and Pre-Remediation Conceptual Model did not identify a need to remediate Made Ground.

5.2 Site Won Crushed Concrete

Recycled crushed concrete that was placed as either piling mat and/or capping layer did not contain asbestos and was compliant with a 6F5 grading.

5.3 Topsoil

No topsoil has been placed to date.

5.4 Ground Gas

A ground gas risk assessment will be presented separately together details for venting if appropriate and installation and verification of protective membrane.

CLEA Category	Commercial			Reference
Contaminant	mg/kg 1% SOM	mg/kg 2.5% SOM	mg/kg 5% SOM	
Antimony	7500	7500	7500	EQ/AGS/CLAIRE 2010
Arsenic	640	640	640	LQM/CIH S4UL
Barium	22000	22000	22000	EQ/AGS/CLAIRE 2010
Beryllium	12	12	12	LQM/CIH S4UL
Boron	240000	240000	240000	LQM/CIH S4UL
Cadmium	190	190	190	LQM/CIH S4UL
Chromium III	8600	8600	8600	LQM/CIH S4UL
Chromium VI	33	33	33	LQM/CIH S4UL
Copper	68000	68000	68000	LQM/CIH S4UL
Mercury (Elemental Hg 4)	58** (25.8)	58** (25.8)	58** (25.8)	LQM/CIH S4UL
Mercury (Inorganic Hg 2*)	1100	1100	1100	LQM/CIH S4UL
Mercury (Methyl 4*)	320	320	320	LQM/CIH S4UL
Molybdenum	18000	18000	18000	EQ/AGS/CLAIRE 2010
Nickel	980	980	980	LQM/CIH S4UL
Lead	NC	NC	2300	DEFRA C45L
Selenium	12000	12000	12000	LQM/CIH S4UL
Vanadium	9000	9000	9000	LQM/CIH S4UL
Zinc	730000	730000	730000	LQM/CIH S4UL
BTEX				
Benzene	27	47	90	LQM/CIH S4UL
Toluene	56000** (869)	110000** (1920)	180000** (4360)	LQM/CIH S4UL
Ethylbenzene	5700** (518)	13000** (1220)	27000** (2840)	LQM/CIH S4UL
O-Xylene	6600** (478)	15000** (1120)	33000** (2620)	LQM/CIH S4UL
M-Xylene	6200** (825)	14000** (1470)	31000** (3460)	LQM/CIH S4UL
P-Xylene	5800** (578)	14000** (1350)	30000** (3170)	LQM/CIH S4UL
TPH Aliphatics				
EC5-EC6	3200** (304)	5900** (558)	12000** (1150)	LQM/CIH S4UL
EC6-EC8	7800** (144)	17000** (322)	40000** (736)	LQM/CIH S4UL
EC8-EC10	2000** (78)	4800** (190)	11000** (451)	LQM/CIH S4UL
EC10-EC12	9700** (48)	23000** (118)	47000** (283)	LQM/CIH S4UL
EC12-EC16	59000** (24)	82000** (59)	90000** (142)	LQM/CIH S4UL
EC16-EC35	1600000	1700000	1800000	LQM/CIH S4UL
EC35-EC44	1600000	1700000	1800000	LQM/CIH S4UL
EC44-EC70 (all+aro)	28000	28000	28000	LQM/CIH S4UL
TPH Aromatics				
EC5-EC7 (Benzene)	26000** (1220)	46000** (2260)	86000** (4710)	LQM/CIH S4UL
EC7-EC8 (Toluene)	56000** (869)	110000** (1920)	180000** (4360)	LQM/CIH S4UL
EC8-EC10	3500** (613)	8100** (1500)	17000** (3580)	LQM/CIH S4UL
EC10-EC12	16000** (364)	28000** (899)	34000** (2150)	LQM/CIH S4UL
EC12-EC16	36000** (169)	37000	38000	LQM/CIH S4UL
EC16-EC21	28000	28000	28000	LQM/CIH S4UL
EC21-EC35	28000	28000	28000	LQM/CIH S4UL
EC35-EC44	28000	28000	28000	LQM/CIH S4UL
EC44-EC70 (all+aro)	28000	28000	28000	LQM/CIH S4UL
PAH				
Naphthalene	190** (76.4)	460** (183)	1100** (432)	LQM/CIH S4UL
Acenaphthylene	83000** (86.1)	97000** (212)	100000	LQM/CIH S4UL
Acenaphthene	84000** (37)	97000** (141)	100000	LQM/CIH S4UL
Fluorene	63000** (30.9)	68000	71000	LQM/CIH S4UL
Phenanthrene	22000	22000	23000	LQM/CIH S4UL
Anthracene	520000	540000	540000	LQM/CIH S4UL
Fluoranthene	23000	23000	23000	LQM/CIH S4UL
Pyrene	54000	54000	54000	LQM/CIH S4UL
Benzo(a)anthracene	170	170	180	LQM/CIH S4UL
Chrysene	350	350	350	LQM/CIH S4UL
Benzo(b)fluoranthene	44	45	45	LQM/CIH S4UL
Benzo(k)fluoranthene	1200	1200	1200	LQM/CIH S4UL
Benzo(a)pyrene ⁽¹⁾	35	35	36	LQM/CIH S4UL
Indeno(1,2,3-c,d)pyrene	500	510	510	LQM/CIH S4UL
Dibenzo(a,h)anthracene	3.5	3.6	3.6	LQM/CIH S4UL
Benzo(g,h,i)perylene	3900	4000	4000	LQM/CIH S4UL
Coal Tar ⁽¹⁾	15	15	15	LQM/CIH S4UL

NC: No published criteria

vap: Screening criteria presented exceed the vapour saturation limit, which is presented in brackets.

sol: Screening criteria presented exceed the solubility saturation limit, which is presented in brackets.

dir: Screening criteria based on threshold protective of direct skin contact (guideline in brackets based on health effects following long term exposure provided for illustration only).

(1): For assessment based on the use of the surrogate marker approach the GAC for Coal Tar must be used instead of benzo(a)pyrene.

Table 2: Generic Assessment Criteria

5.4 Post Remediation Conceptual Site Model

On completion of the site remediation, enabling works and separately the verification of gas protection measures and water supply pipework the following Post Remediation Conceptual Site Model is considered appropriate.

Potential Source Areas	Potential Contaminant of Concern	Pathways	Potential Receptor	Exposure Route (Human unless otherwise stated)	Potential Identified Linkage (unmitigated)	Findings of Ground investigation	Risk (Un-mitigated)	Proposed Remediation (Mitigation) Measures	Residual Risk Estimation
On-site Sources Elevated concentrations of PAHs within landfill waste Unidentified contaminants within landfill waste Hazardous ground gases generated from landfill waste and, to a lesser extent, worked coal measures Off-site Sources Migrating contaminants and ground gases from numerous landfill sites and mine workings within 250m of the site	Asbestos / Metals As, Be, Cd, Cu, Cr (VI), Cr (III) Hg, Ni, Se, Va, Zn, Boron, TPH /PAH/PCBs. Methane & Carbon Dioxide.	Disturbance due to construction plant causing direct contact, dusts, vapours. Direct Contact with occupants of the proposed development (retail & off-site residential) Inhalation of fibres / vapours / gases by occupants of proposed development Permeation of water supply pipework Leachate	Occupants of the development / building fabric Ground workers during construction Adjacent residents during construction	Direct Soil Ingestion	Yes	PAH exceedances	Low	Hardstanding to cover retail site minimising direct contact.	Negligible
				Indoor Dust ingestion	Yes	As above	Low	As above	Negligible
				Skin Contact with Soils	Yes	As above	Low	As above	Negligible
				Skin Contact with Dust	Yes	As above	Low	As above	Negligible
				Inhalation of Outdoor Dust	Yes	As above	Low	As above	Negligible
				Inhalation of Outdoor Vapours	Yes	As above	Low	As above	Negligible
				Inhalation of Indoor Vapours	Yes	As above	Low	As above	Negligible
				Ingestion via permeated water supply pipework	Yes	As above	Low	As above	Negligible
				Inhalation of ground gas	Yes	Supplementary gas monitoring on going	-	-	-
				Inhalation of radon gas	Yes	Lower Probability Radon Area	Negligible	None required	Negligible
			Secondary A Aquifer	Leaching to Secondary A Aquifer in Bedrock	Yes	PAH exceedances	Low	Hardstanding to prevent precipitation infiltration and leaching	Negligible

Table 3: Post Remediation Conceptual Site Model

6. WASTE DISPOSAL RECORDS

The following wastes were removed from site:

Approximately 25 loads of Green waste were removed from site by Yorkshire Grab Hire as per the example waste disposal note at Appendix H.

Approximately 44 loads of waste soil were removed from site Yorkshire Grab Hire as per the example waste disposal note at Appendix H.

Approximately 48 loads of recycled crushed concrete were delivered to site by Yorkshire Grab Hire as per the example waste delivery note at Appendix H.

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STUDY LIMITATIONS

IMPORTANT. This section should be read before reliance is placed on any of the information, opinions, advice, recommendations or conclusions contained in this report.

1. This report has been prepared by Remada, Ltd with all reasonable skill, care and diligence within the terms of the Appointment and with the resources and manpower agreed with (the 'Client'). Remada does not accept responsibility for any matters outside the agreed scope.

2. This report has been prepared for the sole benefit of the Client unless agreed otherwise in writing.

3. Unless stated otherwise, no consultations with authorities or funders or other interested third parties have been carried out. Remada is unable to give categorical assurance that the findings will be accepted by these third parties as such bodies may have published, more stringent objectives. Further work may be required by these parties.

4. All work carried out in preparing this report has used, and is based on, Remada's professional knowledge and understanding of current relevant legislation. Changes in legislation or regulatory guidance may cause the opinion or advice contained in this report to become inappropriate or incorrect. In giving opinions and advice pending changes in legislation, of which Remada is aware, have been considered. Following delivery of the report Remada has no obligation to advise the Client or any other party of such changes or their repercussions.

5. This report is only valid when used in its entirety. Any information or advice included in the report should not be relied upon until considered in the context of the whole report.

6. Whilst this report and the opinions made are to the best of Remada's belief, Remada cannot guarantee the accuracy or completeness of any information provided by third parties.

7. This report has been prepared based on the information reasonably available during the project programme. All information relevant to the scope may not have received

8. This report refers, within the limitations stated, to the condition of the site at the time of the inspections. No warranty is given as to the possibility of changes in the condition of the site since the time of the investigation.

9. The content of this report represents the professional opinion of experienced environmental consultants. Remada does not provide specialist legal or other professional advice. The advice of other professionals may be required.

10. Where intrusive investigation techniques have been employed they have been designed to provide a reasonable level of assurance on the conditions. Given the discrete nature of sampling, no investigation technique is capable of identifying all conditions present in all areas. In some cases the investigation is further limited by site operations, underground obstructions and above ground structures. Unless otherwise stated, areas beyond the boundary of the site have not been investigated.

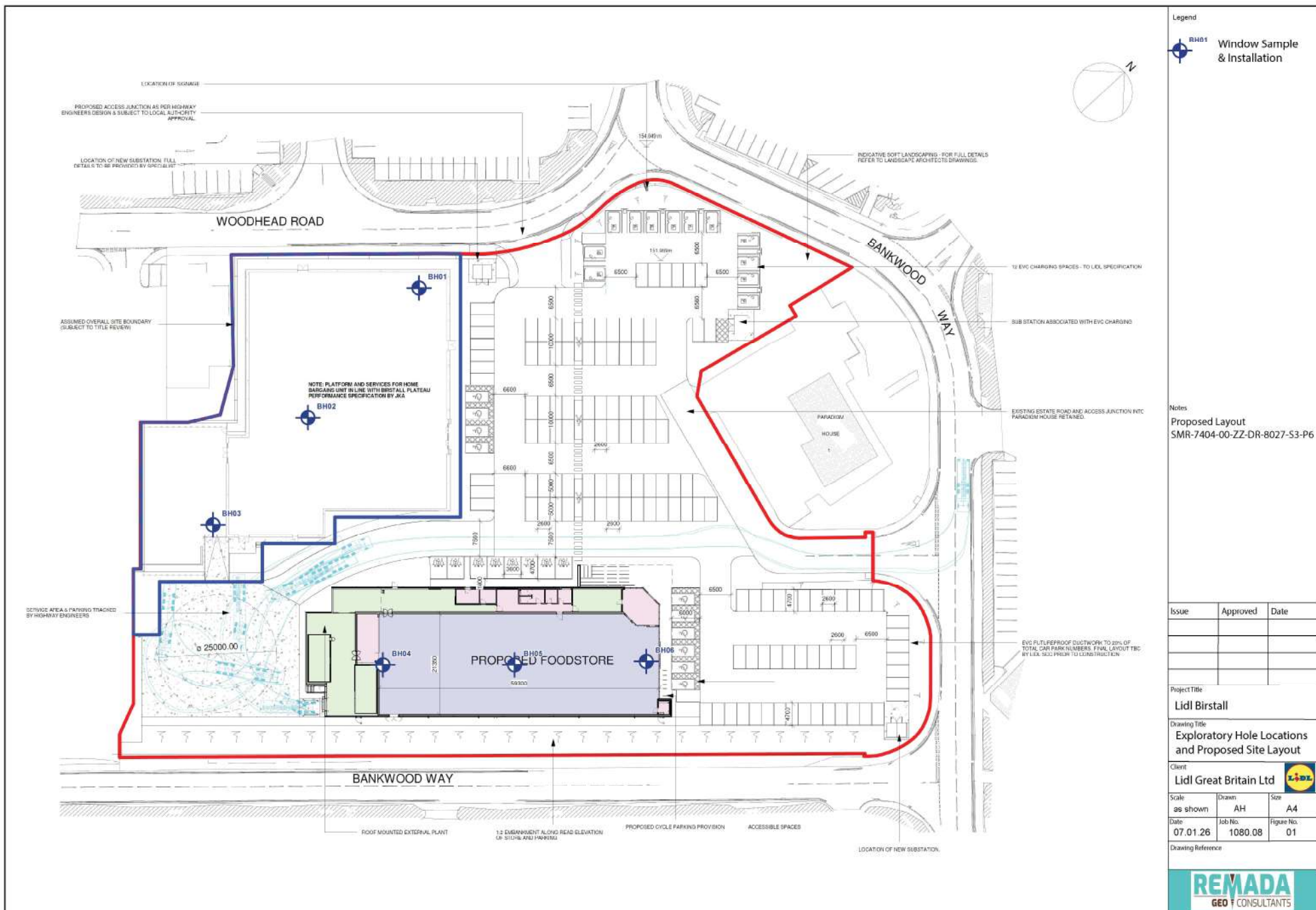
11. If below ground intrusive investigations have been conducted as part of the scope, service tracing for safe location of exploratory holes has been carried out. The location of underground services shown on any drawing in this report has been determined by visual observations and electromagnetic techniques. No guarantee can be given that all services have been identified. Additional services, structures or other below ground obstructions, not indicated on the drawing, may be present on site.

12. Unless otherwise stated the report provides no comment on the nature of building materials, operational integrity of the facility or on any regulatory compliance issues.

13. Unless otherwise stated, samples from the site (soil, groundwater, building fabric or other samples) have NOT been analysed or assessed for waste classification purposes.

APPENDIX A

SITE LAYOUT

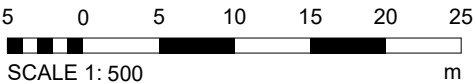
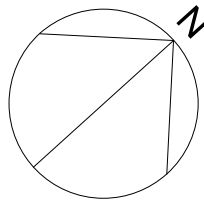


Do not scale this drawing.
Architects are to be notified of any discrepancies.
Contractors must check all dimensions on site.
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This drawing is to be used solely for the information as titled only.
For other information refer to the latest revision of any cross referenced drawings.
To be read in conjunction with relevant design standards/protocols

This is a colour drawing. In order to ensure any subsequent reproduction is viewed correctly it should be printed in full colour.

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- KEY:
- ±0.00 EXISTING LEVEL
 - +0.00 PROPOSED LEVEL
 - 0.0 PROPOSED GRADINET
 - RETAINING WALL
 - 1:3 EMBANKMENT

C1	TENDER ISSUE	02.08.24	MN	NP
Rev	Description	Date	Drm	Ckd

Status
TECHNICAL DESIGN

SMR

SMALLEY MARSEY RISPIN

ARCHITECTS

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01423 707 757 admin@smrarchitects.co.uk

Project

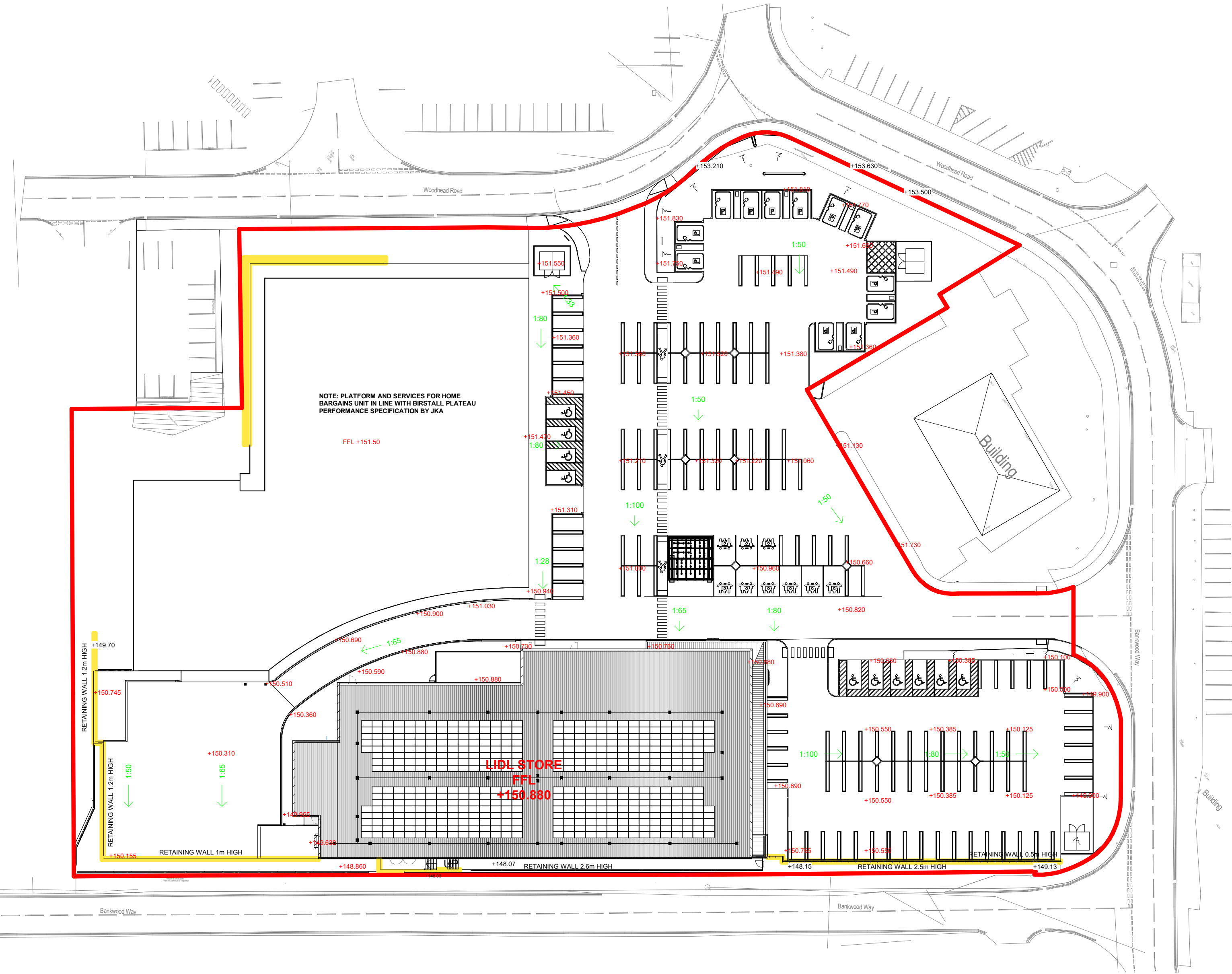
LIDL BIRSTALL, BANKWOOD WAY



Drawing Title

INDICATIVE LEVEL STRATEGY.

Proj Ref	Origin	Zone	Level	Type	Role	Num	Status	Rev
7404 - SMR	- 00	- ZZ	- DR	- A	- 3012	- A4	- C1	
SMR Job Ref	Sheet	Scale	Drawn					
7404-00-3012	A2	1 : 500	DM					



APPENDIX B

SOIL ENGINEERING REPORT



SOIL engineering





REPORT QUALITY ASSURANCE SHEET

TITLE: REPORT ON THE CONSOLIDATION OF MINE WORKINGS AT
NEW LIDL STORE, BIRSTALL

PROJECT NUMBER: TD8815

STATUS: Draft

ISSUE NUMBER: 01

ISSUE DATE: 19/11/2025

ISSUED BY: S. Wilson

CHECKED BY: R. J. McMillan

APPROVED BY: P. A. Rodger

VERSION HISTORY:

Issue Number	Issue Date	Reason for Issue
01	19/11/2025	Draft for comment

This report is not to be used for contractual or engineering purposes unless this sheet is signed by the approver, and the report is designated "Final" on this report quality assurance sheet. Opinions and interpretations expressed in the report are outside the scope of UKAS accreditation. This report has been prepared for the sole internal use and reliance of the named Employer. This report should not be relied upon or transferred to any other parties without the express written authorisation of Soil Engineering. If an unauthorised third party comes into possession of the report, they rely on it at their peril and Soil Engineering owes them no duty of care and skill.

Internal Form Information: Report No. SE-RRG-F-001 Issue/Revision Number 4.00 Issue Date 05/07/2021



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- Figure 2 – Consolidation Layout – Grouting

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- Daily Contract Records

SECTION D: GROUTING RECORDS

- Grouting Records

SECTION E: TEST RESULTS

- Grout Cube Test Certificates



1.0 INTRODUCTION

In October 2025 Soil Engineering Geoservices Ltd were instructed by Stonedale Construction (The Employer) to carry out ground stabilisation works at New Lidl Store, Birstall. It is proposed to construct a new Lidl store on the site. The stabilisation works were focused on the northwest building corner area of the site in which the Flockton Thin Seam was to be treated.

Soil Engineering was tasked with undertaking drilling and grouting consolidation works in order to consolidate any potential abandoned mine workings and prevent any associated subsidence of the ground below the proposed construction.

This report presents the results of the contract works and laboratory testing undertaken. The works commenced on 20th October 2025 and achieved practical completion on 31st October 2025. This report presents an account of the stabilisation works which were carried out in accordance with The Employer's requirements.



2.0 PURPOSE, SCOPE AND REPORT FORMAT

2.1 Purpose

The purpose of the works was to consolidate any potential abandoned mine workings present within the vicinity of the proposed construction in order to mitigate the risk of any associated subsidence of the ground and to ensure ground stability.

It should be noted that the drilling and grouting undertaken at Lidl, Birstall provides no improvement to the engineering characteristics of the superficial deposits and rock beneath any proposed future development. Conventional consolidation works, as undertaken here, are intended to stabilise the workings only.

2.2 Scope of Work

The scope of the works was as follows:

- To form treatment holes
- To consolidate any potential abandoned mine workings with a cementitious grout
- To undertake grout flowability and bleed tests during the works
- To perform grout acceptance testing on site
- To undertake grout cube testing to confirm grout strength at specified curing intervals

During the contract works, treatment holes were drilled vertically (90 degrees).

2.3 Limitations

This report has been prepared in accordance with the project specification and with industry standard guidance^{1,2,3} and best practice^{4,5,6}. Soil Engineering accepts no liability for any deficiencies in the report that arise from the specification's non-compliance with either European or British Standards. This particularly applies to exploratory hole spacings and depths, the scope of proof testing and to grouting works designed by others.

¹ BS 5930: 2015: Code of Practice for Site Investigation. British Standards Institution.

² BS EN 1997-2: 2007: Eurocode 7 – Geotechnical Design – Part 2: Ground Investigation and Testing.

³ BS EN 12715:2000: Execution of Special Technical Work – Grouting.

⁴ Abandoned Mineworking's Manual (C758D)

⁵ BRE Report 220192: 2006: Laboratory and Field Data for pfa Grouts.

⁶ BRE Special publication 509: 2009: Stabilising Mine Workings with pfa Grouts – Environmental Code of Practice: BRE Building Technology Group



2.4 Report Format

This report is presented in the following format:

- Written description of contract works and results.
- Section A: Drawings - including exploratory hole location plans
- Section B: Drilling Records – driller foreman daily record sheets
- Section C: Contract Records - including details of deliveries, drilling quantities and grout injection quantities
- Section D: Grouting Records - detailing injected grout quantities into each treatment hole
- Section E: Test Results – results of in situ and laboratory testing

The sources of information used in the compilation of this report are detailed in the footnotes at the base of the page upon which they are first referenced.

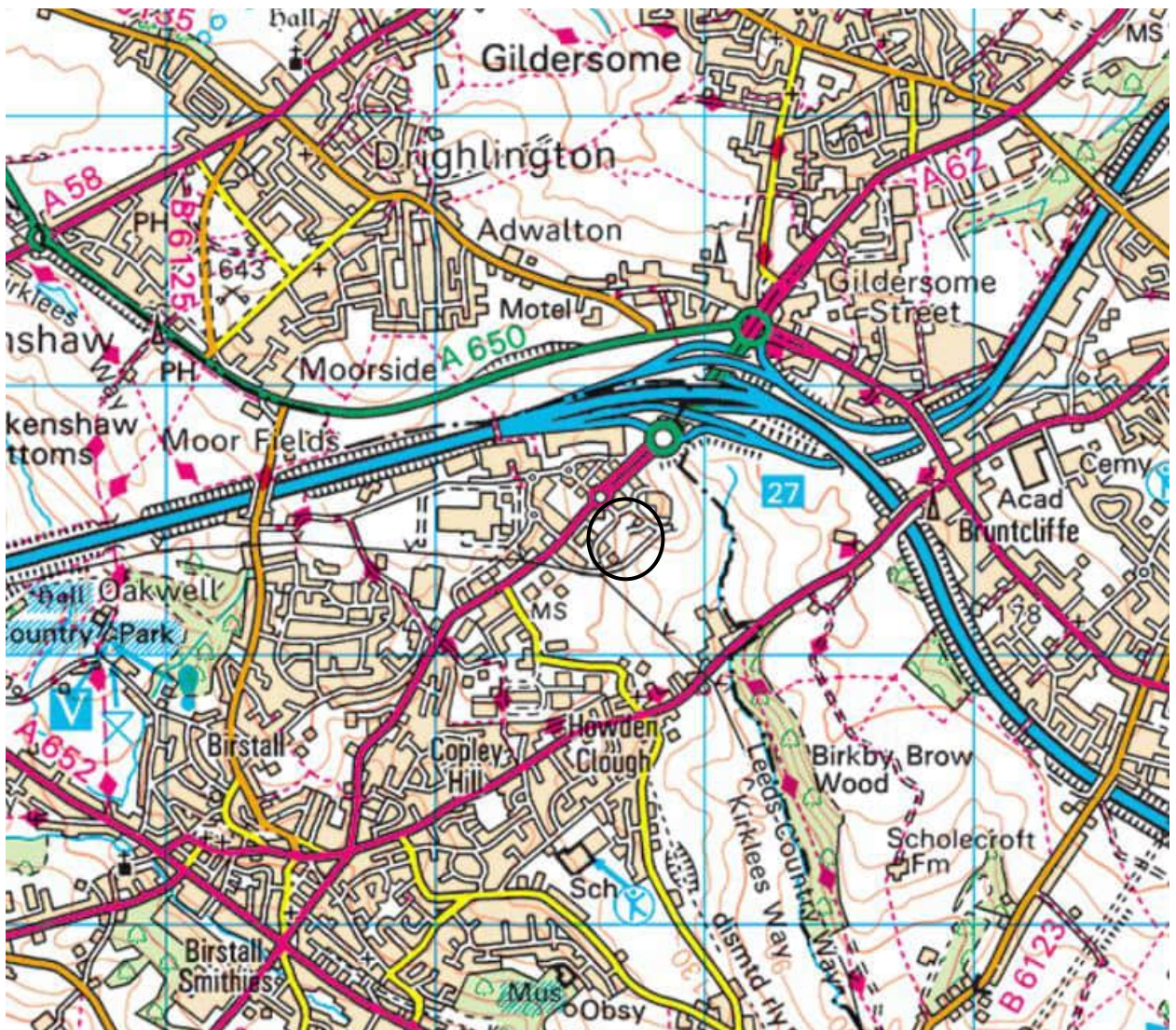


3.0 GENERAL SITE INFORMATION

3.1 Site Location and Description

The site comprises an area of flat land as illustrated in Figure 1 below. The proposed Lidl store shall be constructed on the south east side of the site with associated infrastructure constructed on the rest of the site.

FIGURE 1: SITE LOCATION PLAN



Reproduced from Ordnance Survey's 1:50,000 map number 104

© Crown copyright 2016 OS AC0000855340

**TABLE 1: SITE LOCATION DETAILS**

Postcode	WF17 9TD
Approximate National Grid Reference	SE 235 274
Northern Boundary	Bankwood Way / Retail units
Eastern Boundary	Retail Units / Wooded area
Southern Boundary	Wooded area
Western Boundary	Retail units

During the investigation, our engineer noted that the site was generally flat consisting a pad of demolition rubble.

3.2 Geology and Mining History

From the available information on the 1:50,000 scale Geological Survey map of the area⁷ the site is shown to be underlain by Pennine Lower Coal Measures Formation and in the northwestern parts of the site by Emley Rock. The Pennine Lower Coal Measures Formation is described as interbedded grey mudstone with sandstone and siltstone. The upper part of the formation is described as having thick coal seams whereas the lower part is described as having a marine fossil content. The Emley Rock is noted to be a fine grained sandstone mudstone partings.

Several coal seams are beneath the site at varying depths. The site is within a Development High Risk Area associated with the Flockton Thin Coal seam which is recorded as last being worked in the late 19th and early 20th century.

3.3 Previous Investigations

A previous ground investigation was undertaken by Curtins⁸ between 1st September 2020 and 10th September 2020. The works comprised twelve rotary boreholes, three cable percussive boreholes and nine trial pits and laboratory testing.

⁷ Sheet 348: 1990, Solid and Drift edition for Plymouth

⁸ Bankwood Wat, Birstall – Combined Phase 1 & Phase 2 Ground Investigation Report – Curtins Ref: 076893-CUR-00-XX-RP-GE-002-V01



4.0 CONTRACT WORKS

4.1 Scope of Contract Works

The scope of the contract works was specified by the Employer and was undertaken in general accordance with Eurocodes⁹ and, where there is no conflict, also with BS 5930¹⁰. The consolidation work was undertaken in accordance with the Employers requirements, the Abandoned Mineworking's Manual (C758D), and with industry best practice. The treatment hole locations were set out by the Employer on a grid system. Rotary percussive infill treatment holes were formed, together with in situ grout flowability and grout bleed testing. The exploratory hole locations are shown on the site plans presented in Section A of this report. Details of the works undertaken are summarised in Table 2 below.

TABLE 2: SUMMARY OF CONTRACT WORKS

Activity	No.	Drilled (m)	Grout take (t)	Cased (m)
Rotary percussive infill treatment holes	43	1290	3.67	452
Flowability tests	2			
Bleed tests	2			
Grout cubes	4			

The treatment holes were numbered using an alpha numeric sequence indicating their position on the grouting grid (A1, B5, C12 etc).

4.2 Drilling Works

Drilling works were carried out using a hydraulic powered rotary percussive top hammer coupled to T38 drilling rods and a 63mm button bit. 89mm diameter steel Hutte casing was used to prevent the collapse of superficial deposits and fill materials in the treatment holes so that grout could be injected to the desired depths in the treatment holes. The treatment holes were drilled to a minimum of 1.00m linear depth below the pavement of the target seam. Water flush was used for the drilling of all holes.

Overall, a total of forty-three rotary percussive infill treatment holes (1290 linear metres) were formed during the site works to facilitate the treatment. The encountered ground conditions were found to be generally in agreement with the published geology.

The treatment holes identified sequences of sandstones and mudstones, and conditions potentially indicative of historical mine workings, described as 'Coal'.

The locations of the treatment holes are presented on Figure 1 – Consolidation Layout – Drilling in Section A of this report.

Drilling Records were produced to record the encountered ground conditions and are included in Section B of this report. Daily Contract Records including details of deliveries, drilling quantities and grout injection quantities were produced as a record of each day's site activities and are

⁹ Eurocode 7 Part 2 (BS EN 1997-2: 2007)

¹⁰ BS 5930: 2015 + A1 2020: Code of Practice for Site Investigation. British Standards Institution



included in Section C of this report.

4.3 Grouting Works

All treatment holes were grouted to completion in accordance with the Employers requirements. Any potential abandoned mine workings were stabilised by pressure injection grouting with a cementitious grout designed to consolidate the workings fill and any residual voids present within the workings.

The grout used to stabilise potential abandoned mine workings beneath the collapse consisted of Sulphate Resistant Portland Cement (SRPC). Grout was mixed in an electric grout mixer before being delivered to the treatment holes by an electric grout pump.

Grout was injected via tremie pipe from the base of each treatment hole to the surface at which point the hole was deemed as being complete.

A total of 3.67 tonnes of grout was injected into the infill treatment holes to achieve stabilisation. The approximate volume of grout injected into each treatment hole is indicated on Figure 2 Consolidation Layout – Grouting, presented in Section A of this report.

Grouting records detailing injected grout quantities into each treatment hole are included in Section D of this report.



5.0 LABORATORY TESTING

A total of eight grout cubes were taken during the contract works. In accordance with the contract specification the cubes were tested at curing intervals of 7, 14 and 28 days. The results of the grout cube testing meet the specified minimum of 1.0NM/m² at 28 days.

Test results are presented in Section E of this report.



6.0 SUMMARY

Investigative drilling and consolidation grouting has been undertaken and completed to possible abandoned mine workings located at New Lidl Store, Birstall.

A total 3.67 tonnes of grout were injected under pressure to stabilise the potential abandoned mine workings via vertical treatment holes.

The works were undertaken in accordance with the specification and to the Employer's and Engineer's requirements.

For further information about the services provided by Soil Engineering Geoservices Limited, visit our website www.soil-engineering.co.uk

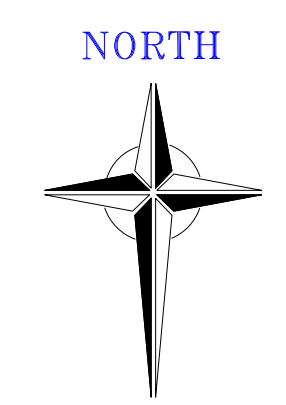


SOIL engineering

SUPPORTING FACTUAL DATA

SECTION A

DRAWINGS



WOODHEAD ROAD

AI

AG

AE

AC

AA

Y

W

U

S

Q

O

M

K

I

G

E

C

A

PC2

PC1

PC4

PC3

PB2

PB1

PB3

PA2

PA1

PA4

PA3

DRILLING KEY

- COAL
- SOFT
- BROKEN
- NON ENCOUNTERED
- VOID
- GROUT

0	As Built For Report	06.08.25
Rev	Description	Date

Title:
Consolidation Layout - Drilling

Project:
New Lidl Store, Birstall

Project No. TD8815

Client
Stonedale Construction

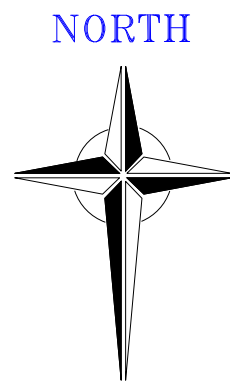
Consolidation of Mineworkings by


soil engineering

Soil Engineering Geoservices Ltd.
Parkside Lane, Dewsbury Road
Leeds LS11 5SX
Tel: 0113 2711111 Fax: 0113 2760472
email:enquiries@soil-engineering.co.uk
www.soil-engineering.co.uk

Drawn	SMc	Date	13.11.25
Checked	GM	Date	13.11.25
Approved	GM	Date	13.11.25

Scale	Size	Drawing No.	Rev.
1:250	A1	TD8815_Figure 1	0



WOODHEAD ROAD

DRILLING KEY

- 0 - 1.00 TONNE
- 1.01 - 5.00 TONNES
- 5.01 - 10.00 TONNES
- 10.01 - 15.00 TONNES
- 15.00 + TONNES

0	As Built For Report	06.08.25
Rev	Description	Date

Title:
Consolidation Layout - Grouting

Project:
New Lidl Store, Birstall

Project No. TD8815

Client
Stonedale Construction

Consolidation of Mineworkings by


soil engineering

Soil Engineering Geoservices Ltd.
Parkside Lane, Dewsbury Road
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Tel: 0113 2711111 Fax: 0113 2760472
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www.soil-engineering.co.uk

Drawn	SMc	Date	13.11.25
Checked	GM	Date	13.11.25
Approved	GM	Date	13.11.25
Scale	Size	Drawing No.	Rev.
1:250	A1	TD8815_Figure 2	0



SOIL engineering

SUPPORTING FACTUAL DATA

SECTION B

DRILLING RECORDS

Project Name New Lidl Store, Birstall						Rotary Percussive Log Sheet		Flush Type Water			
Project No. TD8815								Rig Type SM11			
Engineer								Rig Number R93			
Employer Stonedale Construction								Date 21/10/2025			
Start of shift 7:30		End of shift 17:30		Total hours 10:00		Hole Diameter (mm) 63		Casing Diameter (mm) 89		Casing Type Steel	
Hole ID	Launch Position	Inclination (°)	Top (m)	Base (m)	Strata	Flush Return	Casing Depth (m)	Remarks			
Q11		V	0.00	8.50	Overburden	F	9.00				
			8.50	9.00	Coal						
			9.00	30.00	Mudstone						
Q17		V	0.00	12.00	Overburden	F	13.00				
			12.00	30.00	Mudstone						
AE17		V	0.00	7.00	Overburden	F	7.00				
			7.00	7.50	Coal						
			7.50	30.00	Mudstone						
Breakdowns					Obstructions			Standing Time			
Underground Utilities					Gas Emissions			Inspection Pit Dimensions			
								Length	Width	Depth	m
Driller: C Shaw		Signature:			For Client:					 SOIL engineering Part of the Bachy Soletanche Group	
Assistant: S Forgie											
Form No. SE-GES-F-008		Issue No.Revision No. 2.05			Issue Date 03/05/2019						

Project Name New Lidl Store, Birstall						Rotary Percussive Log Sheet		Flush Type Water			
Project No. TD8815								Rig Type SM11			
Engineer								Rig Number R93			
Employer Stonedale Construction								Date 21/10/2025			
Start of shift 7:30		End of shift 17:30		Total hours 10:00		Hole Diameter (mm) 63		Casing Diameter (mm) 89		Casing Type Steel	
Hole ID	Launch Position	Inclination (°)	Top (m)	Base (m)	Strata	Flush Return	Casing Depth (m)	Remarks			
W17		V	0.00	12.00	Overburden	F	13.00				
			12.00	30.00	Mudstone						
O3		V	0.00	7.00	Overburden	F	8.00				
			7.00	7.50	Sandstone						
			7.50	8.00	Coal						
			8.00	30.00	Mudstone		F				
Breakdowns				Obstructions				Standing Time			
Underground Utilities				Gas Emissions				Inspection Pit Dimensions			
								Length	Width	Depth	m
Driller: C Shaw		Signature:		For Client:						 SOIL engineering Part of the Bachy Soletanche Group	
Assistant: S Forgie											
Form No. SE-GES-F-008		Issue No.Revision No. 2.05		Issue Date 03/05/2019							

Project Name New Lidl Store, Birstall						Rotary Percussive Log Sheet		Flush Type Water				
Project No. TD8815								Rig Type SM11				
Engineer								Rig Number R93				
Employer Stonedale Construction								Date 21/10/2025				
Start of shift 7:30		End of shift 17:30		Total hours 10:00		Hole Diameter (mm) 63		Casing Diameter (mm) 89		Casing Type Steel		
Hole ID	Launch Position	Inclination (°)	Top (m)	Base (m)	Strata	Flush Return	Casing Depth (m)	Remarks				
W5		V	0.00	1.50	Overburden		2.00					
			1.50	3.50	Sandstone							
			3.50	4.50	Coal							
			3.50	30.00	Mudstone	F						
W11		V	0.00	1.50	Overburden		2.00					
			1.50	3.50	Sandstone							
			3.50	4,5	Coal							
			4,5	30.00	Mudstone	F						
Breakdowns					Obstructions				Standing Time			
Underground Utilities					Gas Emissions				Inspection Pit Dimensions			
									Length	Width	Depth	m
Driller: C Shaw		Signature:			For Client:			 SOIL engineering Part of the Bachy Soletanche Group				
Assistant: S Forgie												
Form No. SE-GES-F-008		Issue No.Revision No. 2.05			Issue Date 03/05/2019							

Project Name New Lidl Store, Birstall						Rotary Percussive Log Sheet		Flush Type Water			
Project No. TD8815								Rig Type SM11			
Engineer								Rig Number R93			
Employer Stonedale Construction								Date 22/10/2025			
Start of shift 7:30		End of shift 17:30		Total hours 10:00		Hole Diameter (mm) 63		Casing Diameter (mm) 89		Casing Type Steel	
Hole ID	Launch Position	Inclination (°)	Top (m)	Base (m)	Strata		Flush Return	Casing Depth (m)	Remarks		
K15		V	0.00	13.00	Loose Fill		F	13.00			
			13.00	30.00	Mudstone						
E15		V	0.00	13.00	Loose Fill		F	13.00			
			13.00	30.00	Mudstone						
I19		V	0.00	12.50	Loose Fill		F	13.00			
			12.50	30.00	Mudstone						
K7		V	0.00	10.00	Loose Fill		F	10.00			
			10.00	30.00	Mudstone						
Breakdowns				Obstructions				Standing Time			
Underground Utilities				Gas Emissions				Inspection Pit Dimensions			
								Length	Width	Depth	m
Driller: C Shaw		Signature:		For Client:						 SOIL engineering Part of the Bachy Soletanche Group	
Assistant: S Forgie											
Form No. SE-GES-F-008		Issue No.Revision No. 2.05		Issue Date 03/05/2019							

Project Name New Lidl Store, Birstall						Rotary Percussive Log Sheet		Flush Type Water			
Project No. TD8815								Rig Type SM11			
Engineer								Rig Number R93			
Employer Stonedale Construction								Date 22/10/2025			
Start of shift 7:30		End of shift 17:30		Total hours 10:00		Hole Diameter (mm) 63		Casing Diameter (mm) 89		Casing Type Steel	
Hole ID	Launch Position	Inclination (°)	Top (m)	Base (m)	Strata	Flush Return	Casing Depth (m)	Remarks			
E7		V	0.00	13.00	Loose Fill		13.00				
			13.00	30.00	Mudstone	F					
I11		V	0.00	13.00	Loose Fill		13.00				
			13.00	30.00	Mudstone	F					
G7		V	0.00	12.00	Loose Fill		12.00				
			12.00	30.00	Mudstone	F					
						F					
						F					
Breakdowns				Obstructions				Standing Time			
Underground Utilities				Gas Emissions				Inspection Pit Dimensions			
								Length	Width	Depth	m
Driller: C Shaw		Signature:		For Client:					 SOIL engineering Part of the Bachy Soletanche Group		
Assistant: S Forgie											
Form No. SE-GES-F-008		Issue No.Revision No. 2.05		Issue Date 03/05/2019							

Project Name New Lidl Store, Birstall						Rotary Percussive Log Sheet		Flush Type Water			
Project No. TD8815								Rig Type SM11			
Engineer								Rig Number R93			
Employer Stonedale Construction								Date 23/10/2025			
Start of shift 7:30		End of shift 17:30		Total hours 10:00		Hole Diameter (mm) 63		Casing Diameter (mm) 89		Casing Type Steel	
Hole ID	Launch Position	Inclination (°)	Top (m)	Base (m)	Strata	Flush Return	Casing Depth (m)	Remarks			
K23		V	0.00	14.00	Fill		14.00				
			14.00	30.00	Sandstone/Mudstone	F					
E23		V	0.00	14.50	Fill		15.00				
			14.50	30.00	Sandstone/Mudstone	F					
AC11		V	0.00	7.00	Overburden		7.00				
			7.00	30.00	Sandstone/Mudstone	F					
AG13		V	0.00	7.00	Overburden		7.00				
			7.00	30.00	Sandstone/Mudstone	F					
Breakdowns					Obstructions			Standing Time			
Underground Utilities					Gas Emissions			Inspection Pit Dimensions			
								Length	Width	Depth	m
Driller: C Shaw		Signature:			For Client:					 SOIL engineering Part of the Bachy Soletanche Group	
Assistant: S Forgie											
Form No. SE-GES-F-008		Issue No.Revision No. 2.05			Issue Date 03/05/2019						

Project Name New Lidl Store, Birstall						Rotary Percussive Log Sheet		Flush Type Water			
Project No. TD8815								Rig Type SM11			
Engineer								Rig Number R93			
Employer Stonedale Construction								Date 23/10/2025			
Start of shift 7:30		End of shift 17:30		Total hours 10:00		Hole Diameter (mm) 63		Casing Diameter (mm) 89		Casing Type Steel	
Hole ID	Launch Position	Inclination (°)	Top (m)	Base (m)	Strata	Flush Return	Casing Depth (m)	Remarks			
W3		V	0.00	1.50	Overburden		2.00				
			1.50	3.50	Sandstone						
			3.50	4.50	Coal						
			4.50	30.00	Mudstone	F					
Q23		V	0.00	13.50	Overburden/Loose Fill		14.00				
			13.50	30.00	Sandstone/Mudstone	F					
Breakdowns				Obstructions				Standing Time			
16:00 to 18:00 Breakdown due to Oil Leak								2 Hours waiting for Holes to be set out			
Underground Utilities				Gas Emissions				Inspection Pit Dimensions			
								Length	Width	Depth	m
Driller: C Shaw		Signature:		For Client:					 SOIL engineering Part of the Bachy Soletanche Group		
Assistant: S Forgie											
Form No. SE-GES-F-008		Issue No.Revision No. 2.05		Issue Date 03/05/2019							

Project Name New Lidl Store, Birstall						Rotary Percussive Log Sheet		Flush Type Water			
Project No. TD8815								Rig Type SM11			
Engineer								Rig Number R93			
Employer Stonedale Construction								Date 24/10/2025			
Start of shift 7:30		End of shift 17:30		Total hours 10:00		Hole Diameter (mm) 63		Casing Diameter (mm) 89		Casing Type Steel	
Hole ID	Launch Position	Inclination (°)	Top (m)	Base (m)	Strata	Flush Return	Casing Depth (m)	Remarks			
AC5		V	0.00	7.00	Overburden		7.00				
			7.00	30.00	Mudstone	F					
AG3		V	0.00	7.00	Overburden		7.00				
			7.00	30.00	Mudstone	F					
Breakdowns				Obstructions				Standing Time			
Down most of day-hydraulic leak fro seals. One Seal replaced allowing one hole to be drilled. Head still leaking so replacement arranged for Monday											
Underground Utilities				Gas Emissions				Inspection Pit Dimensions			
								Length	Width	Depth	m
Driller: C Shaw		Signature:		For Client:					 SOIL engineering Part of the Bachy Soletanche Group		
Assistant: S Forgie											
Form No. SE-GES-F-008		Issue No.Revision No. 2.05		Issue Date 03/05/2019							

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SOIL engineering

SUPPORTING FACTUAL DATA

SECTION C

CONTRACT RECORDS

Project Name		New Lidl Store, Birstall		Daily Site Record		Date		20/10/2025	
Project No.		TD8815				Report No.		001	
Engineer						Seam/Location			
Client		Stonedale Construction				Site			

Infill						
	Drilling			Grouting		
	Cased (m)	Drilled (m)	Number of Holes	Tonnes	Number of Holes	Completed Holes
Today						
Previous						
To Date						

Infill						
	Drilling			Grouting		
	Cased (m)	Drilled (m)	Number of Holes	Tonnes	Number of Holes	Completed Holes
Today						
Previous						
To Date						

Materials Delivered (Tonnes)							
Cement		PFA/Pre-mix		Sand		Gravel	
Ticket No	Tonnage	Ticket No	Tonnage	Ticket No	Tonnage	Ticket No	Tonnage
Ex. SEGL Yard	4.00						
Today	4.00	Today		Today		Today	
Previous		Previous		Previous		Previous	
To Date	4.00	To Date		To Date		To Date	

Remarks	Site staff: 1x Drill and Grout Crew Mobilising 1 Nr. Drill Rigs and Grout Plant and equipment to site Rig R93
---------	---

Signed: G Miller	For SEGL	Signed:	For Client

Form No.	SE-GES-F-003	Revision No.	2.09	Issue Date	08/04/2022	

Project Name		New Lidl Store, Birstall		Daily Site Record		Date		21/10/2025	
Project No.		TD8815				Report No.		002	
Engineer						Seam/Location			
Client		Stonedale Construction				Site			
Infill									
		Drilling			Grouting				
		Cased (m)	Drilled (m)	Number of Holes	Tonnes	Number of Holes	Completed Holes		
Today		54.00	210.00	7					
Previous									
To Date		54.00	210.00	7					
		Drilling			Grouting				
		Cased (m)	Drilled (m)	Number of Holes	Tonnes	Number of Holes	Completed Holes		
Today									
Previous									
To Date									
Materials Delivered (Tonnes)									
Cement		PFA/Pre-mix		Sand		Gravel			
Ticket No	Tonnage	Ticket No	Tonnage	Ticket No	Tonnage	Ticket No	Tonnage	Ticket No	Tonnage
Today		Today		Today		Today		Today	
Previous	4.00	Previous		Previous		Previous		Previous	
To Date	4.00	To Date		To Date		To Date		To Date	
Remarks									
Site staff: 1x Drill and Grout Crew Drilling out probe holes as directed by Stonedale									
Signed: G Miller For SEGL Signed: For Client									
Form No.		SE-GES-F-003		Revision No.		2.09		Issue Date	
								08/04/2022	
 SOIL ENGINEERING									

Project Name	New Lidl Store, Birstall	Daily Site Record	Date 22/10/2025
Project No.	TD8815		Report No. 003
Engineer			Seam/Location
Client	Stonedale Construction		Site

Infill						
	Drilling			Grouting		
	Cased (m)	Drilled (m)	Number of Holes	Tonnes	Number of Holes	Completed Holes
Today	54.00	210.00	7			
Previous	87.00	210.00	7			
To Date	141.00	420.00	14			

	Drilling			Grouting		
	Cased (m)	Drilled (m)	Number of Holes	Tonnes	Number of Holes	Completed Holes
Today						
Previous						
To Date						

Materials Delivered (Tonnes)							
Cement		PFA/Pre-mix		Sand		Gravel	
Ticket No	Tonnage	Ticket No	Tonnage	Ticket No	Tonnage	Ticket No	Tonnage
Today		Today		Today		Today	
Previous	4.00	Previous		Previous		Previous	
To Date	4.00	To Date		To Date		To Date	

Remarks	Site staff: 1x Drill and Grout Crew Drilling out probe holes as directed by Stonedale
---------	--

Signed: G Miller	For SEGL	Signed:	For Client
Form No.	SE-GES-F-003	Revision No.	2.09
		Issue Date	08/04/2022



Project Name		New Lidl Store, Birstall		Daily Site Record		Date		23/10/2025	
Project No.		TD8815				Report No.		004	
Engineer						Seam/Location			
Client		Stonedale Construction				Site			
Infill									
		Drilling			Grouting				
		Cased (m)	Drilled (m)	Number of Holes	Tonnes	Number of Holes	Completed Holes		
Today		59.00	180.00	6					
Previous		141.00	420.00	14					
To Date		200.00	600.00	20					
		Drilling			Grouting				
		Cased (m)	Drilled (m)	Number of Holes	Tonnes	Number of Holes	Completed Holes		
Today									
Previous									
To Date									
Materials Delivered (Tonnes)									
Cement		PFA/Pre-mix		Sand		Gravel			
Ticket No	Tonnage	Ticket No	Tonnage	Ticket No	Tonnage	Ticket No	Tonnage	Ticket No	Tonnage
Today		Today		Today		Today		Today	
Previous	4.00	Previous		Previous		Previous		Previous	
To Date	4.00	To Date		To Date		To Date		To Date	
Remarks									
Site staff: 1x Drill and Grout Crew Drilling out probe holes as directed by Stonedale 2 hours waiting for holes to be set out Rig down 16:00 to 18:00 - Oil Leak									
Signed: G Miller		For SEGL		Signed:		For Client			
Form No.	SE-GES-F-003	Revision No.	2.09	Issue Date	08/04/2022				

Project Name		New Lidl Store, Birstall		Daily Site Record		Date		24/10/2025	
Project No.		TD8815				Report No.		005	
Engineer						Seam/Location			
Client		Stonedale Construction				Site			
Infill									
		Drilling			Grouting				
		Cased (m)	Drilled (m)	Number of Holes	Tonnes	Number of Holes	Completed Holes		
Today		14.00	60.00	2	2.20	22	22		
Previous		200.00	600.00	20					
To Date		214.00	660.00	22	2.20	22	22		
Materials Delivered (Tonnes)									
Cement		PFA/Pre-mix		Sand		Gravel			
Ticket No	Tonnage	Ticket No	Tonnage	Ticket No	Tonnage	Ticket No	Tonnage		
Today		Today		Today		Today			
Previous	4.00	Previous		Previous		Previous			
To Date	4.00	To Date		To Date		To Date			
Remarks Site staff: 1x Drill and Grout Crew Drilling out probe holes as directed by Stonedale Rig down most of day due to hydraulic Oil Leak. New Seal fitted in head allowed one hole to be drilled before the issue returned. Replacement Head arranged for Monday Holes Grouted with a neat cement grout. No ash order to avoid having large quantity left on site if we continue to encounter solid strata									
Signed: G Miller				For SEGL		Signed:		For Client	
Form No.		SE-GES-F-003		Revision No.		2.09		Issue Date	
								08/04/2022	
									

Project Name New Lidl Store, Birstall				Daily Site Record		Date 27/10/2025	
Project No. TD8815						Report No. 006	
Engineer						Seam/Location	
Client Stonedale Construction						Site	

Infill						
	Drilling			Grouting		
	Cased (m)	Drilled (m)	Number of Holes	Tonnes	Number of Holes	Completed Holes
Today						
Previous	214.00	690.00	22	2.20	22	22
To Date	214.00	690.00	22	2.20	22	22

Infill						
	Drilling			Grouting		
	Cased (m)	Drilled (m)	Number of Holes	Tonnes	Number of Holes	Completed Holes
Today						
Previous						
To Date						

Materials Delivered (Tonnes)							
Cement		PFA/Pre-mix		Sand		Gravel	
Ticket No	Tonnage	Ticket No	Tonnage	Ticket No	Tonnage	Ticket No	Tonnage
Today		Today		Today		Today	
Previous	4.00	Previous		Previous		Previous	
To Date	4.00	To Date		To Date		To Date	

Remarks	Site staff: 1x Drill and Grout Crew Drilling out probe holes as directed by Stonedale Rig down all day. New Hammer fitted but oil still leaking. Unable to drill. New motor will be fitted tomorrow.
---------	--

Signed: G Miller		For SEGL		Signed:		For Client	

Form No.	SE-GES-F-003	Revision No.	2.09	Issue Date	08/04/2022	

Project Name		New Lidl Store, Birstall		Daily Site Record		Date		28/10/2025	
Project No.		TD8815				Report No.		007	
Engineer						Seam/Location			
Client		Stonedale Construction				Site			
Infill									
		Drilling			Grouting				
		Cased (m)	Drilled (m)	Number of Holes	Tonnes	Number of Holes	Completed Holes		
Today		7.00	30.00	1					
Previous		214.00	690.00	22	2.20	22		22	
To Date		221.00	720.00	23	2.20	22		22	
		Drilling			Grouting				
		Cased (m)	Drilled (m)	Number of Holes	Tonnes	Number of Holes	Completed Holes		
Today									
Previous									
To Date									
Materials Delivered (Tonnes)									
Cement		PFA/Pre-mix		Sand		Gravel			
Ticket No	Tonnage	Ticket No	Tonnage	Ticket No	Tonnage	Ticket No	Tonnage		
Today		Today		Today		Today			
Previous	4.00	Previous		Previous		Previous			
To Date	4.00	To Date		To Date		To Date			
Remarks									
Site staff: 1x Drill and Grout Crew Drilling out probe holes as directed by Stonedale Rig most of day. New motor fitted. 1 hole drilled but leak started again. Rig will be swapped over tomorrow.									
Signed: G Miller For SEGL Signed: For Client									
Form No.		SE-GES-F-003		Revision No.		2.09		Issue Date	
								08/04/2022	
SOIL ENGINEERING									

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Project Name		New Lidl Store, Birstall	Daily Site Record			Date 30/10/2025	
Project No.		TD8815				Report No. 009	
Engineer						Seam/Location	
Client		Stonedale Construction				Site	
Infill							
	Drilling			Grouting			
	Cased (m)	Drilled (m)	Number of Holes	Tonnes	Number of Holes	Completed Holes	
Today	131.00	300.00	10				
Previous	305.00	870.00	29	2.20	22	22	
To Date	436.00	1170.00	39	2.20	22	22	
	Drilling			Grouting			
	Cased (m)	Drilled (m)	Number of Holes	Tonnes	Number of Holes	Completed Holes	
Today							
Previous							
To Date							
Materials Delivered (Tonnes)							
Cement		PFA/Pre-mix		Sand		Gravel	
Ticket No	Tonnage	Ticket No	Tonnage	Ticket No	Tonnage	Ticket No	Tonnage
Today		Today		Today		Today	
Previous	4.00	Previous		Previous		Previous	
To Date	4.00	To Date		To Date		To Date	
Remarks Site staff: 1x Drill and Grout Crew Drilling out probe holes as directed by Stonedale							
Signed: G Miller				For SEGL		Signed:	
						For Client	
							
Form No. SE-GES-F-003				Revision No. 2.09			

Project Name		New Lidl Store, Birstall		Daily Site Record		Date		31/10/2025			
Project No.		TD8815				Report No.		010			
Engineer						Seam/Location					
Client		Stonedale Construction				Site					
Infill											
		Drilling			Grouting						
		Cased (m)	Drilled (m)	Number of Holes	Tonnes	Number of Holes	Completed Holes				
Today		16.00	120.00	4	1.47	21	21				
Previous		436.00	1170.00	39	2.20	22	22				
To Date		452.00	1290.00	43	3.67	43	43				
		Drilling			Grouting						
		Cased (m)	Drilled (m)	Number of Holes	Tonnes	Number of Holes	Completed Holes				
Today											
Previous											
To Date											
Materials Delivered (Tonnes)											
Cement		PFA/Pre-mix		Sand		Gravel					
Ticket No	Tonnage	Ticket No	Tonnage	Ticket No	Tonnage	Ticket No	Tonnage				
Today		Today		Today		Today					
Previous	4.00	Previous		Previous		Previous					
To Date	4.00	To Date		To Date		To Date					
Remarks Site staff: 1x Drill and Grout Crew Drilling out probe holes as directed by Stonedale Drilling Complete and holes all grouted up Works Complete											
Signed: G Miller				For SEGL		Signed: _____ For Client					
						 SOIL ENGINEERING					
Form No.		SE-GES-F-003		Revision No.						2.09	



SOIL engineering

SUPPORTING FACTUAL DATA

SECTION D

GROUTING RECORDS

Project Name New Lidl Store, Birstall				Daily Grouting Record			Date 24/10/2025		
Project No. TD8815							Report No. 1		
Engineer							Seam/Location		
Client Stonedale Construction							Infill		
Start of Shift 07:30				End of Shift 17:30		Hours 10:00			
Hole ID	Depth (m)	Pressure (Bar)	Material (Tonne) Cement PFA Sand Total				Gravel (Tonne)	Remarks	Complete
E7			0.10			0.10			Yes
E15			0.10			0.10			Yes
E23			0.10			0.10			Yes
G7			0.10			0.10			Yes
I11			0.10			0.10			Yes
I19			0.10			0.10			Yes
K7			0.10			0.10			Yes
K15			0.10			0.10			Yes
K23			0.10			0.10			Yes
O3			0.10			0.10			Yes
Q11			0.10			0.10			Yes
Q17			0.10			0.10			Yes
Q23			0.10			0.10			Yes
W3			0.10			0.10			Yes
W5			0.10			0.10			Yes
W11			0.10			0.10			Yes
W17			0.10			0.10			Yes
AC5			0.10			0.10			Yes
AC11			0.10			0.10			Yes
AE11			0.10			0.10			Yes
AE17			0.10			0.10			Yes
AG3			0.10			0.10			Yes
AG13			0.10			0.10			Yes
Totals			2.30			2.30			
Signed		Checked			For Client			 SOIL engineering	
G. Miller									
Form No.	SE-GES-F-001	Revision No.	2.06	Issue Date	01/03/2019		Part of the Bachy Soletanche Group		

Project Name New Lidl Store, Birstall						Daily Grouting Record		Date 31/10/2025		
Project No. TD8815								Report No. 2		
Engineer								Seam/Location		
Client Stonedale Construction						Type: Infill		Infill		
Start of Shift							End of Shift		Hours	
Hole ID	Depth (m)	Pressure (Bar)	Material (Tonne) Cement PFA Sand Total				Gravel (Tonne)	Remarks	Complete	
A7			0.07			0.07			Yes	
A17			0.07			0.07			Yes	
A25			0.07			0.07			Yes	
A31			0.07			0.07			Yes	
E3			0.07			0.07			Yes	
G31			0.07			0.07			Yes	
I9			0.07			0.07			Yes	
K31			0.07			0.07			Yes	
M1			0.07			0.07			Yes	
Q1			0.07			0.07			Yes	
PA1			0.07			0.07			Yes	
PA2			0.07			0.07			Yes	
PA3			0.07			0.07			Yes	
PA4			0.07			0.07			Yes	
PB1			0.07			0.07			Yes	
PB2			0.07			0.07			Yes	
PB3			0.07			0.07			Yes	
PC1			0.07			0.07			Yes	
PC2			0.07			0.07			Yes	
PC3			0.07			0.07			Yes	
PC4			0.07			0.07			Yes	
Totals			1.47			1.47				
Signed		Checked			For Client			 SOIL engineering Part of the Bachy Soletanche Group		
Form No.	SE-GES-F-001		Revision No.	2.06		Issue Date	01/03/2019			



SOIL engineering

SUPPORTING FACTUAL DATA

SECTION E

TEST RESULTS

Soil Engineering Geoservices Ltd
 Parkside Lane
 Dewsbury Road
 Leeds
 LS11 5SX

10 Queenslie Point
 Queenslie Industrial Estate
 120 Stepps Road
 Glasgow
 G33 3NQ

Tel: 0141 774 4032
 Website: www.mattest.org

Certificate Number 2000 14101

**Determination of Compressive Strength and Density of Concrete Cube Specimens
 Tested in accordance with BS EN 12390 - 3 : 2019 and BS EN 12390 - 7 : 2019**

Customer: Soil Engineering Geoservices Ltd	Date Received: 03/11/2025	
Site Name: Lidl, Birstall	Concrete Supplier: Not Supplied	
Mix Type: Neat Cement	Ticket No: Not Supplied	
Slump: -	Slump mm:	
Location: Infill Probing		

Lab Reference	339050	339051	
Site Reference	14-01	14-02	
Date Cast	24/10/2025	24/10/2025	
Test Date	14/11/2025	14/11/2025	
Age at Test (Days)	21	21	
Nominal Size (mm)	93	92	
Condition at Test	Air Cured	Air Cured	
Dimensional Tolerance Met?	No	No	
Mass in Air (g)	1502.1	1483.3	
Density (kg/m3)	1740	1760	
Load at Failure (kN)	202.3	204.8	
Compressive Strength (N/mm2)	23.5	24.4	
Mode of Failure	Satisfactory	Satisfactory	
Remarks	3 10 4	3 10 4	

Remark Codes:

1. Sampled by MATtest Limited in accordance with BS EN 12350-1 2. Sampled by MATtest Site Services in accordance with BS EN 12350-1 3. Sampled by other, no guarantee can be made on the curing history prior to receipt. 4. Cube out of dimensional tolerances, tested to Annex B Tolerances 5. Damaged/missing corners 6. Exposed Aggregate	7. Poor Compaction 8. Tested in an 'as received' condition 9. Cube honeycombed 10. Cube air cured 11. Surface Air Voids 12. Site Cured
--	---

Curing at 20 +/- 2oC, compressive strength and density carried out in accordance with BS EN 12390 unless otherwise stated
 Density determined by water displacement in accordance with BS EN 12390-7 : 2019 + AC 2020
 All cubes are checked for compliance to BS EN 12390 - 1 : 2021 prior to test.
 Where fins are found they are removed using a carborundum stone.
 The results contained in this test certificate relate to the sample(s) as received
 Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
 This test certificate should not be reproduced without the written approval of the laboratory

Approved for Issue

M Timoney (Laboratory Manager)

Date: 18/11/2025



2643



Leeds

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Parkside Lane, Dewsbury Road, Leeds LS11 5SX
T: 0113 2711111
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E: scotland@soil-engineering.co.uk

APPENDIX C

ADDITIONAL PROBE LOGS

Project Name New Lidl, Birstall Lane					Rotary Percussive Log Sheet		Flush Type Water	
Project No. TD8815							Rig Type SM11	
Engineer							Rig Number R93	
Employer Stonedale Construction							Date 21/10/2025	
Start of shift		End of shift		Total hours	Hole Diameter (mm) 63	Casing Diameter (mm) 89	Casing Type Steel	
Hole ID	Launch Position	Inclination °	Top (m)	Base (m)	Strata	Flush Return	Casing Depth (m)	Remarks
Q11		V	0.00	8.50	Overburden		9.00	
			8.50	9.00	Coal			
			9.00	30.00	Mudstone	F		
Q17		V	0.00	12.00	Overburden		13.00	
			12.00	30.00	Mudstone	F		
AE17		V	0.00	7.00	Overburden		7.00	
			7.00	7.50	Coal			
			7.50	30.00	Mudstone	F		
Breakdowns				Obstructions			Standing Time	
Underground Utilities				Gas Emissions			Inspection Pit Dimensions	
							Length	Width Depth m
Driller: C Shaw		Signature:		For Client:				 SOIL engineering Part of the Bachy Soletanche Group
Assistant: S Forgie								
Form No. SE-GES-F-008		Issue No. Revision No. 2.05		Issue Date 03/05/2019				

Project Name New Lidl, Birstall Lane					Rotary Percussive Log Sheet		Flush Type Water				
Project No. TD8815							Rig Type SM11				
Engineer							Rig Number R93				
Employer Stonedale Construction							Date 21/10/2025				
Start of shift		End of shift		Total hours		Hole Diameter (mm) 63		Casing Diameter (mm) 89		Casing Type Steel	
Hole ID	Launch Position	Inclination (°)	Top (m)	Base (m)	Strata	Flush Return	Casing Depth (m)	Remarks			
W17		V	0.00	12.00	Overburden		13.00				
			12.00	30.00	Mudstone	F					
O3		V	0.00	7.00	Overburden		8.00				
			7.00	7.50	Sandstone	F					
			7.50	8.00	Coal						
			8.00	30.00	Mudstone	F					
Breakdowns					Obstructions			Standing Time			
Underground Utilities					Gas Emissions			Inspection Pit Dimensions			
								Length	Width	Depth	m
Driller: C Shaw		Signature:			For Client:			 SOIL engineering Part of the Bachy Soletanche Group			
Assistant: S Forgie											
Form No. SE-GES-F-008		Issue No.Revision No. 2.05			Issue Date 03/05/2019						

Project Name New Lidl, Birstall Lane					Rotary Percussive Log Sheet		Flush Type Water					
Project No. TD8815							Rig Type SM11					
Engineer							Rig Number R93					
Employer Stonedale Construction							Date 21/10/2025					
Start of shift		End of shift		Total hours		Hole Diameter (mm) 63		Casing Diameter (mm) 89		Casing Type Steel		
Hole ID	Launch Position	Inclination (°)	Top (m)	Base (m)	Strata	Flush Return	Casing Depth (m)	Remarks				
W5		V	0.00	1.50	Overburden		2.00					
			1.50	3.50	Sandstone							
			3.50	4.50	Coal							
			3.50	30.00	Mudstone	F						
W11		V	0.00	1.50	Overburden		2.00					
			1.50	3.50	Sandstone							
			3.50	4,5	Coal							
			4,5	30.00	Mudstone	F						
Breakdowns					Obstructions				Standing Time			
Underground Utilities					Gas Emissions				Inspection Pit Dimensions			
									Length	Width	Depth	m
Driller: C Shaw		Signature:			For Client:						 SOIL engineering Part of the Bachy Soletanche Group	
Assistant: S Forgie												
Form No. SE-GES-F-008		Issue No.Revision No. 2.05			Issue Date 03/05/2019							

Project Name New Lidl, Birstall Lane					Rotary Percussive Log Sheet		Flush Type Water				
Project No. TD8815							Rig Type SM11				
Engineer							Rig Number R93				
Employer Stonedale Construction							Date 22/10/2025				
Start of shift		End of shift		Total hours		Hole Diameter (mm) 63		Casing Diameter (mm) 89		Casing Type Steel	
Hole ID	Launch Position	Inclination (°)	Top (m)	Base (m)	Strata	Flush Return	Casing Depth (m)	Remarks			
K15		V	0.00	13.00	Loose Fill		13.00				
			13.00	30.00	Mudstone	F					
E15		V	0.00	13.00	Loose Fill		13.00				
			13.00	30.00	Mudstone	F					
I19		V	0.00	12.50	Loose Fill		13.00				
			12.50	30.00	Mudstone	F					
K7		V	0.00	10.00	Loose Fill		10.00				
			10.00	30.00	Mudstone	F					
Breakdowns					Obstructions			Standing Time			
Underground Utilities					Gas Emissions			Inspection Pit Dimensions			
								Length	Width	Depth	m
Driller: C Shaw		Signature:			For Client:						 SOIL ENGINEERING Part of the Bachy Soletanche Group
Assistant: S Forgie											
Form No. SE-GES-F-008		Issue No.Revision No. 2.05			Issue Date 03/05/2019						

Project Name New Lidl, Birstall Lane					Rotary Percussive Log Sheet		Flush Type Water				
Project No. TD8815							Rig Type SM11				
Engineer							Rig Number R93				
Employer Stonedale Construction							Date 21/10/2025				
Start of shift		End of shift		Total hours		Hole Diameter (mm) 63		Casing Diameter (mm) 89		Casing Type Steel	
Hole ID	Launch Position	Inclination (°)	Top (m)	Base (m)	Strata	Flush Return	Casing Depth (m)	Remarks			
E7		V	0.00	13.00	Loose Fill		13.00				
			13.00	30.00	Mudstone	F					
I11		V	0.00	13.00	Loose Fill		13.00				
			13.00	30.00	Mudstone	F					
G7		V	0.00	12.00	Loose Fill		12.00				
			12.00	30.00	Mudstone	F					
						F					
Breakdowns					Obstructions			Standing Time			
Underground Utilities					Gas Emissions			Inspection Pit Dimensions			
								Length	Width	Depth	m
Driller: C Shaw		Signature:			For Client:						 SOIL ENGINEERING Part of the Bachy Soletanche Group
Assistant: S Forgie											
Form No. SE-GES-F-008		Issue No.Revision No. 2.05			Issue Date 03/05/2019						

Project Name New Lidl, Birstall Lane					Rotary Percussive Log Sheet		Flush Type Water				
Project No. TD8815							Rig Type SM11				
Engineer							Rig Number R93				
Employer Stonedale Construction							Date 23/10/2025				
Start of shift		End of shift		Total hours		Hole Diameter (mm) 63		Casing Diameter (mm) 89		Casing Type Steel	
Hole ID	Launch Position	Inclination (°)	Top (m)	Base (m)	Strata	Flush Return	Casing Depth (m)	Remarks			
K23		V	0.00	14.00	Fill		14.00				
			14.00	30.00	Sandstone/Mudstone	F					
E23		V	0.00	14.50	Fill		15.00				
			14.50	30.00	Sandstone/Mudstone	F					
AC11		V	0.00	7.00	Overburden		7.00				
			7.00	30.00	Sandstone/Mudstone	F					
AG13		V	0.00	7.00	Overburden		7.00				
			7.00	30.00	Sandstone/Mudstone	F					
Breakdowns					Obstructions			Standing Time			
Underground Utilities					Gas Emissions			Inspection Pit Dimensions			
								Length	Width	Depth	m
Driller: C Shaw		Signature:			For Client:			 SOIL engineering Part of the Bachy Soletanche Group			
Assistant: S Forgie											
Form No. SE-GES-F-008		Issue No.Revision No. 2.05			Issue Date 03/05/2019						

Project Name New Lidl, Birstall Lane					Rotary Percussive Log Sheet		Flush Type Water				
Project No. TD8815							Rig Type SM11				
Engineer							Rig Number R93				
Employer Stonedale Construction							Date 23/10/2025				
Start of shift		End of shift		Total hours		Hole Diameter (mm) 63		Casing Diameter (mm) 89		Casing Type Steel	
Hole ID	Launch Position	Inclination (°)	Top (m)	Base (m)	Strata	Flush Return	Casing Depth (m)	Remarks			
W3		V	0.00	1.50	Overburden		2.00				
			1.50	3.50	Sandstone						
			3.50	4.50	Coal						
			4.50	30.00	Mudstone	F					
Q23		V	0.00	13.50	Overburden/Loose Fill		14.00				
			13.50	30.00	Sandstone/Mudstone	F					
Breakdowns					Obstructions			Standing Time			
16:00 to 18:00 Breakdown due to Oil Leak								2 Hours waiting for Holes to be set out			
Underground Utilities					Gas Emissions			Inspection Pit Dimensions			
								Length	Width	Depth	m
Driller: C Shaw		Signature:			For Client:						 SOIL ENGINEERING Part of the Bachy Soletanche Group
Assistant: S Forgie											
Form No. SE-GES-F-008		Issue No.Revision No. 2.05			Issue Date 03/05/2019						

Project Name New Lidl, Birstall Lane					Rotary Percussive Log Sheet		Flush Type Water	
Project No. TD8815							Rig Type SM11	
Engineer							Rig Number R93	
Employer Stonedale Construction							Date 24/10/2025	
Start of shift		End of shift		Total hours		Hole Diameter (mm) 63	Casing Diameter (mm) 89	Casing Type Steel
Hole ID	Launch Position	Inclination (°)	Top (m)	Base (m)	Strata	Flush Return	Casing Depth (m)	Remarks
AC5		V	0.00	7.00	Overburden		7.00	
			7.00	30.00	Mudstone	F		
Breakdowns				Obstructions			Standing Time	
Down most of day-hydraulic leak fro seals. One Seal replaced								
allowing one hole to be drilled. Head still leaking so								
replacement arranged for Monday								
Underground Utilities				Gas Emissions			Inspection Pit Dimensions	
							Length	Width Depth m
Driller: C Shaw		Signature:		For Client:		 SOIL ENGINEERING Part of the Bachy Soletanche Group		
Assistant: S Forgie								
Form No. SE-GES-F-008		Issue No.Revision No. 2.05		Issue Date 03/05/2019				

Project Name New Lidl, Birstall Lane					Rotary Percussive Log Sheet		Flush Type		Water
Project No. TD8815							Rig Type		SM11
Engineer							Rig Number		R93
Employer Stonedale Construction							Date		28/10/2025
Start of shift		End of shift		Total hours	Hole Diameter (mm) 63	Casing Diameter (mm) 89		Casing Type	Steel
Hole ID	Launch Position	Inclination (°)	Top (m)	Base (m)	Strata	Flush Return	Casing Depth (m)	Remarks	
Q1		V	0.00	7.00	Overburden		7.00		
			7.00	30.00	Mudstone	F			
Breakdowns				Obstructions			Standing Time		
Underground Utilities				Gas Emissions			Inspection Pit Dimensions		
							Length	Width	Depth m
Driller: C Shaw		Signature:		For Client:					 SOIL engineering Part of the Bachy Soletanche Group
Assistant: S Forgie									
Form No. SE-GES-F-008		Issue No.Revision No. 2.05		Issue Date 03/05/2019					

Project Name New Lidl, Birstall Lane						Rotary Percussive Log Sheet		Flush Type Water	
Project No. TD8815								Rig Type SM11	
Engineer								Rig Number R93	
Employer Stonedale Construction								Date 29/10/2025	
Start of shift		End of shift		Total hours		Hole Diameter (mm) 63		Casing Diameter (mm) 89	
Hole ID	Launch Position	Inclination (°)	Top (m)	Base (m)	Strata	Flush Return	Casing Depth (m)	Remarks	
M1		V	0.00	8.00	Overburden		8.00		
			8.00	30.00	Mudstone	F			
E3		V	0.00	13.00	Overburden-Loose Fill		13.00		
			13.00	30.00	Mudstone	F			
A7		V	0.00	13.50	Overburden-Loose Fill		14.00		
			13.50	30.00	Mudstone	F			
A17		V	0.00	15.00	Overburden-Loose Fill		15.00		
			15.00	30.00	Mudstone	F			
Breakdowns				Obstructions			Standing Time		
Underground Utilities				Gas Emissions			Inspection Pit Dimensions		
							Length	Width	Depth m
Driller: C Shaw		Signature:		For Client:					 SOIL engineering Part of the Bachy Soletanche Group
Assistant: S Forgie									
Form No. SE-GES-F-008		Issue No. Revision No. 2.05		Issue Date 03/05/2019					

Project Name New Lidl, Birstall Lane					Rotary Percussive Log Sheet		Flush Type Water								
Project No. TD8815							Rig Type SM11								
Engineer							Rig Number R93								
Employer Stonedale Construction							Date 29/10/2025								
Start of shift		End of shift		Total hours		Hole Diameter (mm) 63		Casing Diameter (mm) 89		Casing Type Steel					
Hole ID	Launch Position	Inclination (°)	Top (m)	Base (m)	Strata	Flush Return	Casing Depth (m)	Remarks							
A25		V	0.00	16.50	Overburden-Loose Fill		17.00								
			16.50	30.00	Mudstone	F									
A31		V	0.00	16.50	Overburden-Loose Fill		17.00								
			16.50	30.00	Mudstone	F									
Breakdowns					Obstructions			Standing Time							
Underground Utilities					Gas Emissions			Inspection Pit Dimensions							
								Length		Width		Depth		m	
Driller: C Shaw		Signature:			For Client:							 SOIL engineering Part of the Bachy Soletanche Group			
Assistant: S Forgie															
Form No. SE-GES-F-008		Issue No.Revision No. 2.05			Issue Date 03/05/2019										

Project Name New Lidl, Birstall Lane					Rotary Percussive Log Sheet		Flush Type Water				
Project No. TD8815							Rig Type SM11				
Engineer							Rig Number R93				
Employer Stonedale Construction							Date 30/10/2025				
Start of shift		End of shift		Total hours		Hole Diameter (mm) 63		Casing Diameter (mm) 89		Casing Type Steel	
Hole ID	Launch Position	Inclination (°)	Top (m)	Base (m)	Strata	Flush Return	Casing Depth (m)	Remarks			
G31		V	0.00	16.50	Overburden		17.00				
			16.50	30.00	Mudstone	F					
K31		V	0.00	16.50	Overburden-Loose Fill		17.00				
			16.50	30.00	Mudstone	F					
PA1		V	0.00	13.50	Overburden-Loose Fill		15.00				
			13.50	30.00	Mudstone	F					
Breakdowns					Obstructions			Standing Time			
Underground Utilities					Gas Emissions			Inspection Pit Dimensions			
								Length	Width	Depth	m
Driller: C Shaw		Signature:			For Client:			 SOIL ENGINEERING Part of the Bachy Soletanche Group			
Assistant: S Forgie											
Form No. SE-GES-F-008		Issue No.Revision No. 2.05			Issue Date 03/05/2019						

Project Name New Lidl, Birstall Lane					Rotary Percussive Log Sheet		Flush Type Water				
Project No. TD8815							Rig Type SM11				
Engineer							Rig Number R93				
Employer Stonedale Construction							Date 30/10/2025				
Start of shift		End of shift		Total hours		Hole Diameter (mm) 63		Casing Diameter (mm) 89		Casing Type Steel	
Hole ID	Launch Position	Inclination (°)	Top (m)	Base (m)	Strata	Flush Return	Casing Depth (m)	Remarks			
PA2		V	0.00	13.50	Overburden-Loose Fill		14.00				
			13.50	30.00	Mudstone	F					
PA3		V	0.00	13.50	Overburden-Loose Fill		14.00				
			13.50	30.00	Mudstone	F					
PA4		V	0.00	13.00	Overburden-Loose Fill		13.00				
			13.00	30.00	Mudstone	F					
PB1		V	0.00	8.50	Overburden		9.00				
			8.50	30.00	Mudstone	F					
Breakdowns					Obstructions			Standing Time			
Underground Utilities					Gas Emissions			Inspection Pit Dimensions			
								Length	Width	Depth	m
Driller: C Shaw		Signature:			For Client:						 SOIL ENGINEERING Part of the Bachy Soletanche Group
Assistant: S Forgie											
Form No. SE-GES-F-008		Issue No.Revision No. 2.05			Issue Date 03/05/2019						

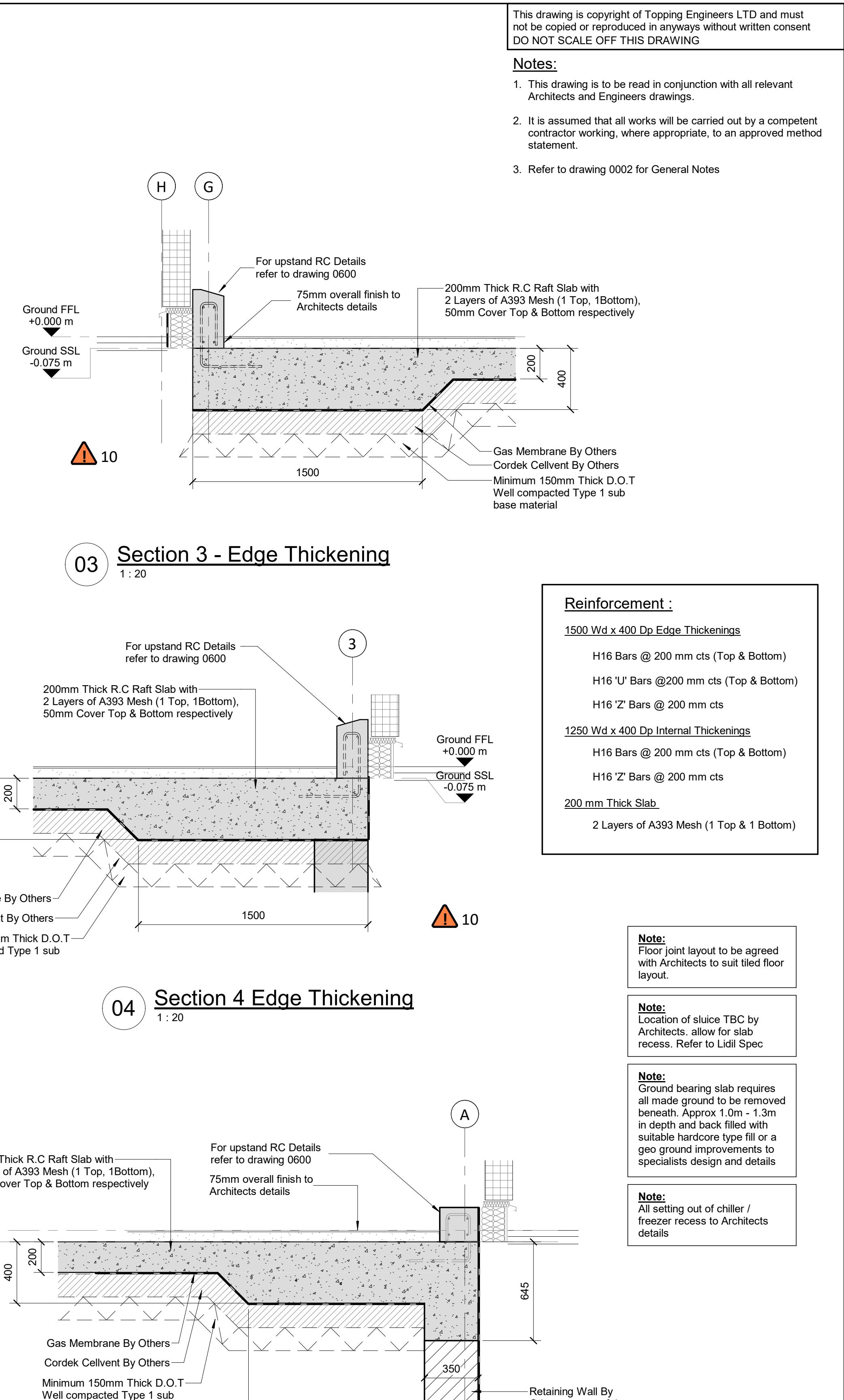
Project Name New Lidl, Birstall Lane					Rotary Percussive Log Sheet		Flush Type Water								
Project No. TD8815							Rig Type SM11								
Engineer							Rig Number R93								
Employer Stonedale Construction							Date 30/10/2025								
Start of shift		End of shift		Total hours		Hole Diameter (mm) 63		Casing Diameter (mm) 89		Casing Type Steel					
Hole ID	Launch Position	Inclination (°)	Top (m)	Base (m)	Strata	Flush Return	Casing Depth (m)	Remarks							
PB2		V	0.00	8.50	Overburden		9.00								
			8.50	30.00	Mudstone	F									
PB3		V	0.00	8.50	Overburden		9.00								
			8.50	30.00	Mudstone	F									
Breakdowns					Obstructions			Standing Time							
Underground Utilities					Gas Emissions			Inspection Pit Dimensions							
								Length		Width		Depth		m	
Driller: C Shaw		Signature:			For Client:								 SOIL ENGINEERING Part of the Bachy Soletanche Group		
Assistant: S Forgie															
Form No. SE-GES-F-008		Issue No.Revision No. 2.05			Issue Date 03/05/2019										

Project Name New Lidl, Birstall Lane					Rotary Percussive Log Sheet		Flush Type Water				
Project No. TD8815							Rig Type SM11				
Engineer							Rig Number R93				
Employer Stonedale Construction							Date 31/10/2025				
Start of shift		End of shift		Total hours		Hole Diameter (mm) 63		Casing Diameter (mm) 89		Casing Type Steel	
Hole ID	Launch Position	Inclination (°)	Top (m)	Base (m)	Strata	Flush Return	Casing Depth (m)	Remarks			
PC1		V	0.00	3.50	Overburden		4.00				
			3.50	4.50	Mudstone						
			4.50	5.00	Coal						
			5.00	30.00	Mudstone	F					
PC2		V	0.00	3.50	Overburden		4.00				
			3.50	4.50	Mudstone						
			4.50	5.00	Coal						
			5.00	30.00	Mudstone	F					
Breakdowns					Obstructions			Standing Time			
Underground Utilities					Gas Emissions			Inspection Pit Dimensions			
								Length	Width	Depth	m
Driller: C Shaw		Signature:			For Client:						 SOIL engineering Part of the Bachy Soletanche Group
Assistant: S Forgie											
Form No. SE-GES-F-008		Issue No.Revision No. 2.05			Issue Date 03/05/2019						

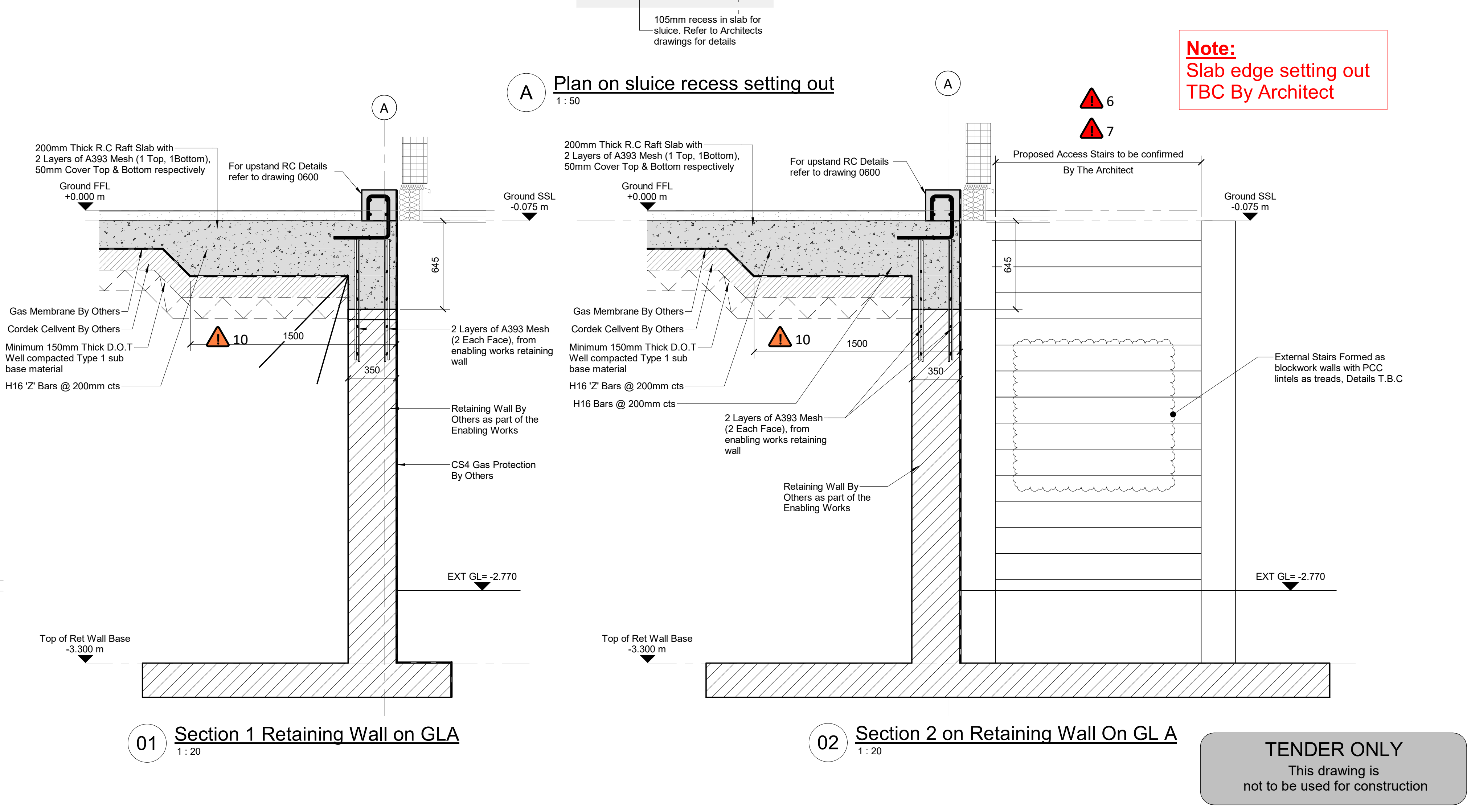
Project Name New Lidl, Birstall Lane					Rotary Percussive Log Sheet		Flush Type Water				
Project No. TD8815							Rig Type SM11				
Engineer							Rig Number R93				
Employer Stonedale Construction							Date 31/10/2025				
Start of shift		End of shift		Total hours		Hole Diameter (mm) 63		Casing Diameter (mm) 89		Casing Type Steel	
Hole ID	Launch Position	Inclination (°)	Top (m)	Base (m)	Strata	Flush Return	Casing Depth (m)	Remarks			
PC3		V	0.00	3.50	Overburden		4.00				
			3.50	4.50	Mudstone						
			4.50	5.00	Coal						
			5.00	30.00	Mudstone	F					
PC4		V	0.00	3.50	Overburden		4.00				
			3.50	4.50	Mudstone						
			4.50	5.00	Coal						
			5.00	30.00	Mudstone	F					
Breakdowns					Obstructions			Standing Time			
Underground Utilities					Gas Emissions			Inspection Pit Dimensions			
								Length	Width	Depth	m
Driller: C Shaw		Signature:			For Client:			 SOIL engineering Part of the Bachy Soletanche Group			
Assistant: S Forgie											
Form No. SE-GES-F-008		Issue No.Revision No. 2.05			Issue Date 03/05/2019						

APPENDIX D

RAFT FOUNDATION DRAWINGS



Note:
Slab edge setting out
TBC By Architect

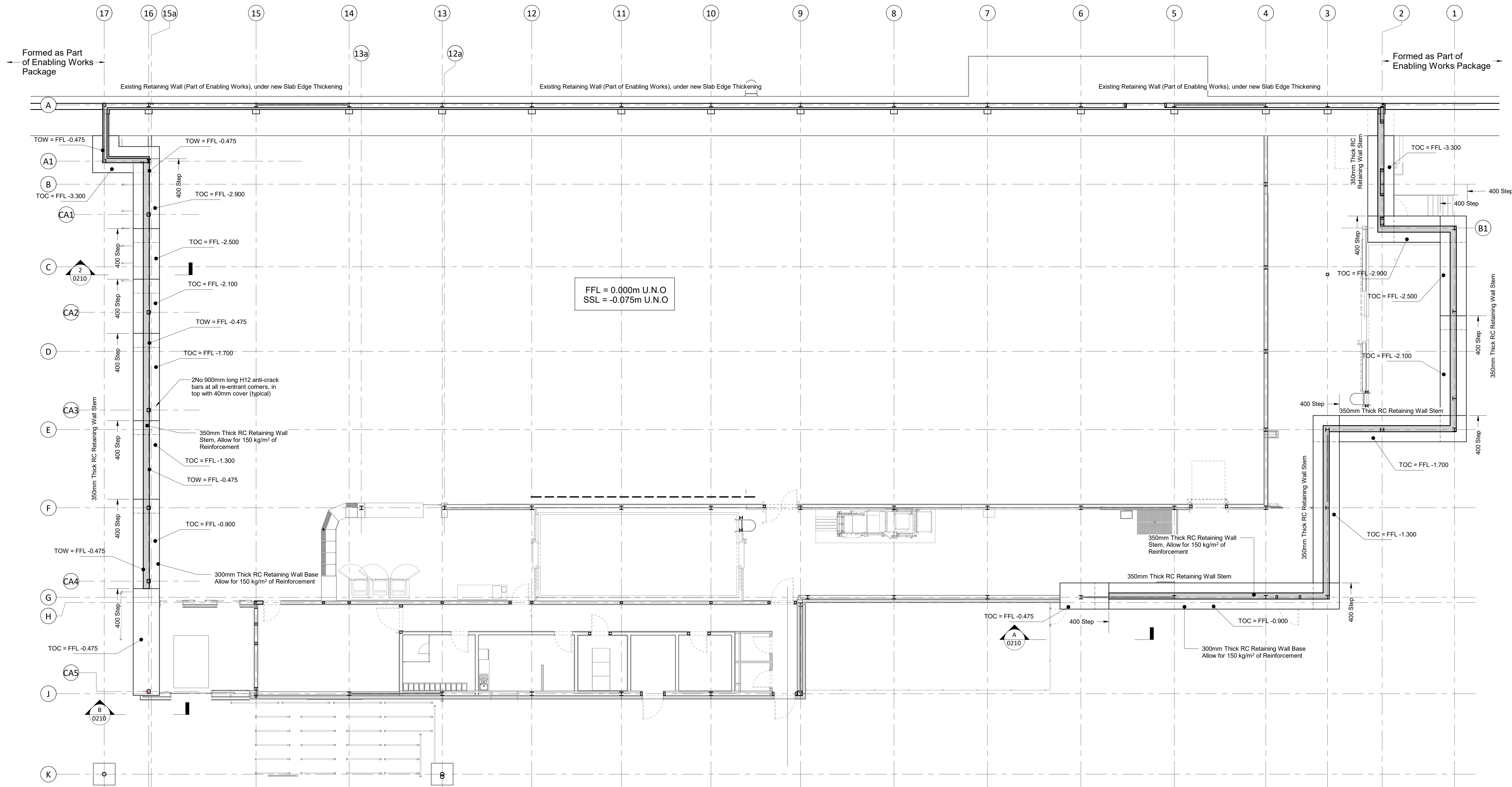


CDM HAZARDS		
It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement. In addition to the Hazards/Risks normally associated with the types of work detailed on this drawing, note the following:		
Ref:	Activity	Hazard
1	Excavations	Stability of Excavations
2	Existing Services	Contact with existing services
3	Demolition works	Danger of uncontrolled collapse, Experienced personnel only working to approved RAIRs.

P1	Tender Issue		20.07.25	CJA	AB
No.	Revision		Date	Drawn	Chk.
Status			Tender		
 TOPPING ENGINEERS STRUCTURAL ENGINEERS Aire House 12 Victoria Avenue Hemphill, HCU ED T: 01423 292 295 www.topping-engineers.com info@topping-engineers.com					
Client					
Project			Birstall, Leeds.		
Drawing title					
Raft Foundation Slab Ground Arrangement					
Sheet Size		Drawing No.		Revision	
A0		20152-DR-S-0200		P1	

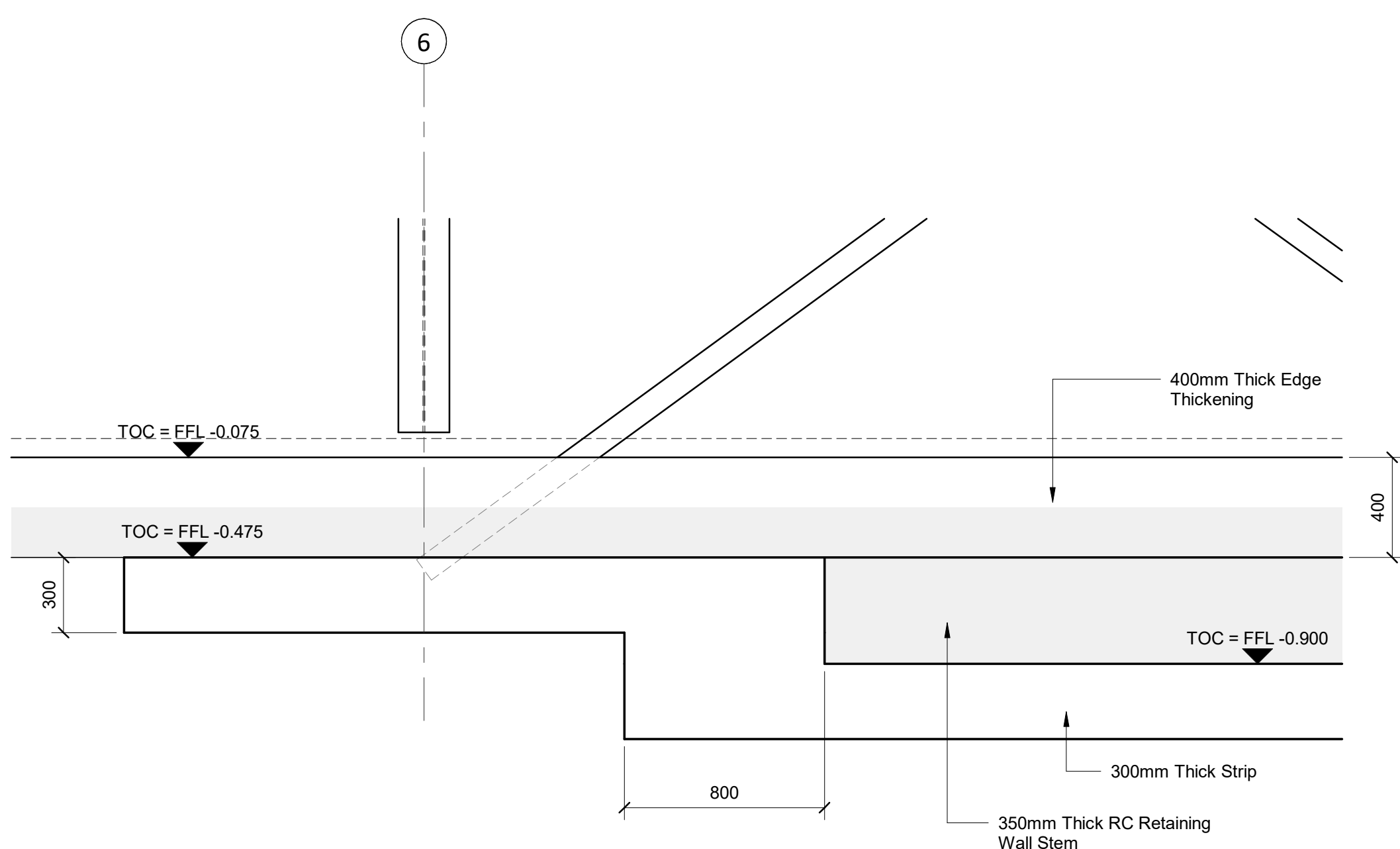
Notes:

- This drawing is to be read in conjunction with all relevant Architects and Engineers drawings.
- It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement.
- Refer to drawing 0002 for General Notes



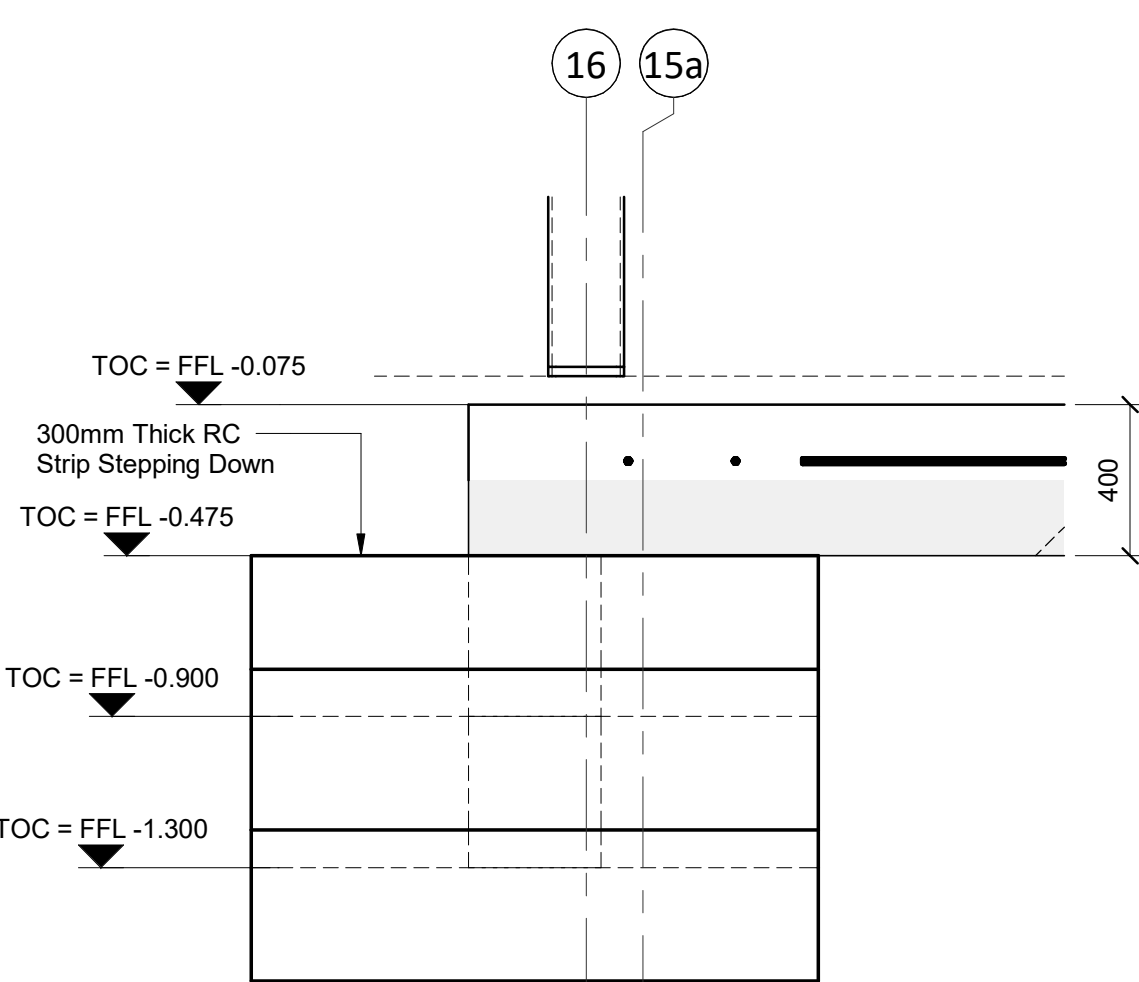
Plan on Retaining Walls

Scale 1 : 100



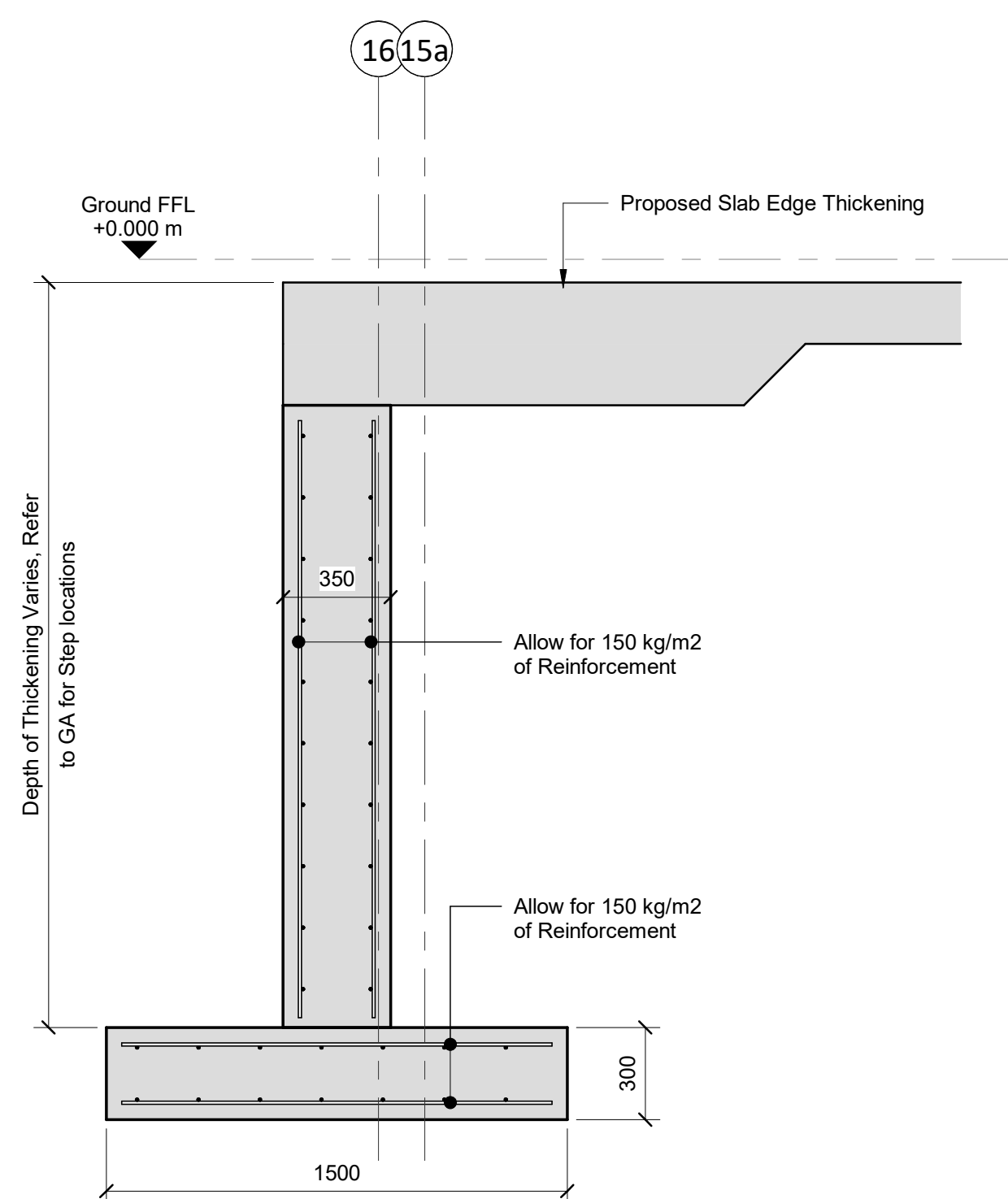
Part Elevation A - A

Scale 1 : 20



Part Elevation B - B

Scale 1 : 20



Proposed Thickening Detail

Scale 1 : 20

CDM HAZARDS		
It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement.		
In addition to the Hazards/Risks normally associated with the types of work detailed on this drawing, note the following:		
Ref.	Activity	Hazard
1	Excavations	Stability of Excavations
2	Existing Services	Contact with existing services
3	Demolition works	Danger of uncontrolled collapse. Experienced personnel only working to approved RAMS.

P1	Tender Issue	25.07.25	CJA	AB
No.	Revision	Date	Drawn	Chk
Tender				
 TOPPING ENGINEERS CONSULTING CIVIL & STRUCTURAL ENGINEERS Aire House, 12 Victoria Avenue Hemphel, WID 12D t: 01423 523 293 e: www.topping-engineers.com a: info@topping-engineers.com				
Client: LiDL GB Ltd 				
Project: Birstall, Leeds.				
Drawing title: Raft Slab Retaining Wall Plan and Details				
Sheet Size: A0	Drawing No: 25152-DR-S-0210	Revision	P1	

TENDER ONLY
This drawing is
not to be used for construction

APPENDIX E

CMC DESIGN REPORT

LIDL STORE

BIRSTALL

Ground improvement by Controlled Modulus Columns (CMC[®])



DESIGN REPORT

Reference	V28176	Pages	19
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Revision	Date	Prepared by	Checked by	Detail of modifications
A	07/11/2025	JJ	FB	First issue

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1. INTRODUCTION

It is proposed to construct a new commercial development in Birstall, comprising of a Lidl store, a Home Bargain store and the associated external areas including a Retaining wall. The proposed construction footprint runs over made ground with landfill material underlain by very soft alluvial clay above dense gravels and Merica mudstone.

Due to the presence of very compressible layers, a direct construction of any type of structure without soil improvement or replacement will lead to unacceptable post construction settlements and deformations.

The concerned structures are:

- **the pad/strip footings/slab thickenings and ground bearing slab of the buildings:**
 - o **Lidl store**, covering a floor area of **around 2,417 m²**,
 - o **Home Bargain**, covering a floor area of **around 2,172 m²**,
 - o **Retaining Wall**, covering a total length of **around 73.44 ml**,
- **the external areas:**
 - o **Concrete yard slabs**, covering a floor area of **around 1,260 m²**,

These structures are highlighted in the figure below (green for Lidl store, Red for Home Bargain store and purple for the concrete yard slab).

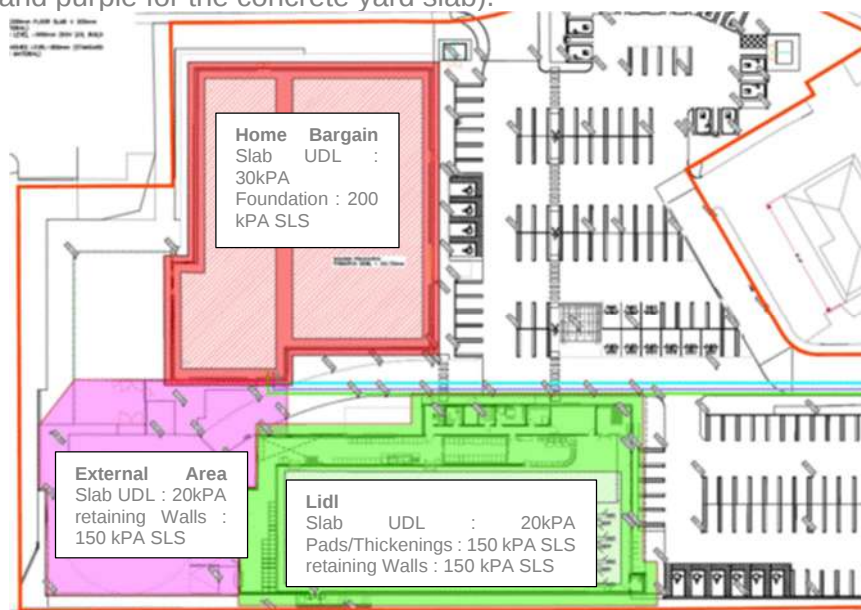


Figure 1 - Site layout with CMC treatment area in colour

The present document consists in a design report for ground improvement with **the Controlled Modulus Columns (CMC)** technique. The aim of the CMC solution is to control the settlements and provide a higher bearing capacity by creating a composite material [CMC+soil].

2. REFERENCES DOCUMENTS

This report has been established from the following documents:

- [1] Menard Technical and Financial Proposal referenced FB/V26472/CMC+BMC-B dated 30/05/2025
- [2] NA to BS EN 1990 2002 & 2005 (Eurocode 0)
- [3] Proposed Site Plan – Option 10 No 7404-SMR-00-ZZ-DR-A-8014-S3-P2 dated 30/09/2020
- [4] Proposed Site Levels No 09-148-401 Rev B dated 19/10/2020
- [5] Ground Improvement Draft Specifications No 09-148 dated October 2020
- [6] Combined Phase 1 & Phase 2 Ground Investigation Report No 076893-CUR-00-XX-RP-GE-002 Rev V01 from CURTINS dated 16/10/2020
- [7] CPT logs from Lankelma dated 23/12/2020
- [8] CPT Coordinated Setting Out, plan referenced 09-148-100 by Beam Consulting, dated 16/12/2020
- [9] Detailed Coal Mining Risk Assessment for Land, report referenced C8781/GH/9715 Rev B by SIRIUS, dated 28/10/2021
- [10] Site Layout – Formation Levels & Ground Improvement Plant No. 24062-SDS-00-SL-DR-C-3019 Rev T4 dated 01/08/2024
- [11] Home Bargains Site – Proposed Plan and Site Sections No. 22349-3012 Rev T2 dated 05/04/2024
- [12] Development Platform Specification from SDS Rev 7 dated 05/04/2024
- [13] Confirmation on the loadings per areas received from Stonedale by email on 02/10/2025
- [14] Lidl store Foundation plan general plan by SDS design engineers, drawing no. 25289-SDS-00-FP-DR-S-3400 revision CN1, dated 01/10/2025
- [15] Concrete yard plan by SDS design engineers, drawing no 25289-SDS-00-SL-DR-C-3060 revision CN1, dated 01/10/2025
- [16] Birstall ground model 2, drawing no 4115 S(50)01 by Stonedale, dated 15/10/2025
- [17] Confirmation on the Working platforms levels per areas received from Stonedale by email on 28/10/2025+5/11/2025
- [18] Retaining walls foundations drawing, referenced Retaining Wall Setting Out REV1 by Stonedale, dated 30/10/2025
- [19] Home Bargain store foundation drawings to be received

3. PROJECT INPUT DATA

3.1. Design specifications

The specifications to be achieved with regard to the soil improvement works are as follows:

- **Total allowable long-term settlements considering quasi-permanent service loads: 25 mm**
- **Total allowable differential settlements: 1/500 (1/300 for the externals)**
- **Equivalent SLS bearing capacity under foundations: up to 200kPa**

3.2. Topography

Natural Ground level sits at roughly +149.7mAOD when finished floor level is at +150.88mAOD for Lidl store, +151.5mAOD for home bargain store and roughly +150.31mAOD for the external yard slab, with the working platform level being at 500mm underneath each respective FFL : 150.38mAOD for the Lidl store, +151mAOD for the Home Bargain store, +147.3 for the retaining wall low level, +149 for the external yard area. [17]

3.3. Slab design

Slab geometry as per the slab designer documents **Error! Reference source not found., Error! Reference source not found. & Error! Reference source not found.**

- **Slab dimension**
 - o Thickness: ranging from 160 to 175mm
- **Load Cases:**
 - o Point Load: none
 - o Uniform Distribution Load: 20 or 30 kPa at SLS
 - o Line Load: none

4. TECHNICAL

4.1. Description of the ground improvement technique

The Controlled Modulus Columns ground improvement technique is intended to improve the soil globally and to reduce its deformability by the use of rigid concrete inclusions. It does not aim to bypass the compressive ground or to build piles that will directly support the entire load from the structure. The objective is to reduce global and differential settlement by relieving the soil from a part of the loads imposed by the structure.

These columns distribute the loads uniformly throughout the soil mass that thus behaves as a composite [concrete column + surrounding soil material]. The entire process is vibration free and operates in-the-dry without spoils, which allows for cleaner project sites.

Controlled Modulus Columns can be considered as a particular type of Rigid Inclusions that can be carried out with a various number of execution method (rotation, vibration, percussion...).

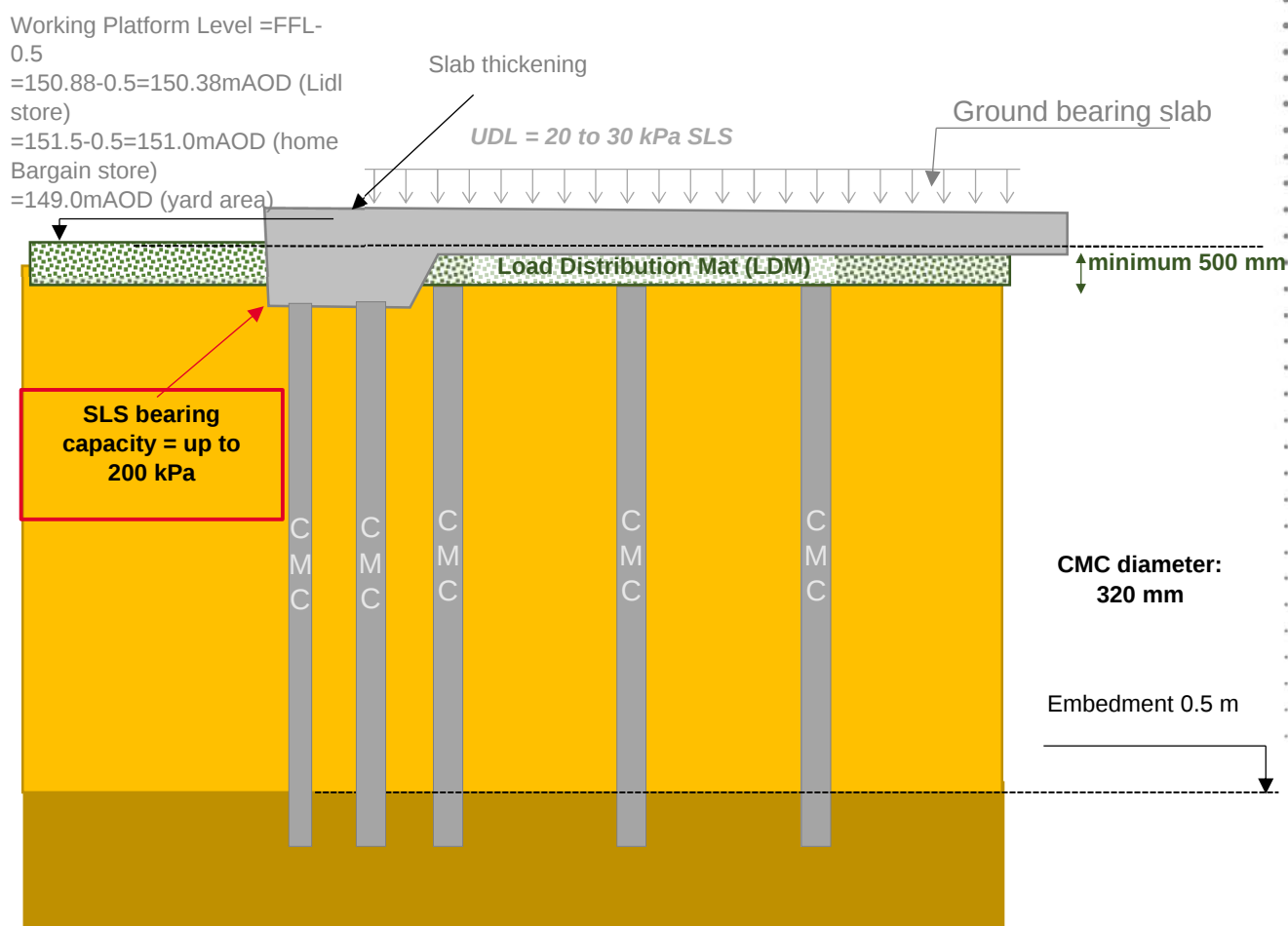


Figure 2 - Typical cross section of slab thickenings and ground bearing slab on CMC

4.2. Method of execution

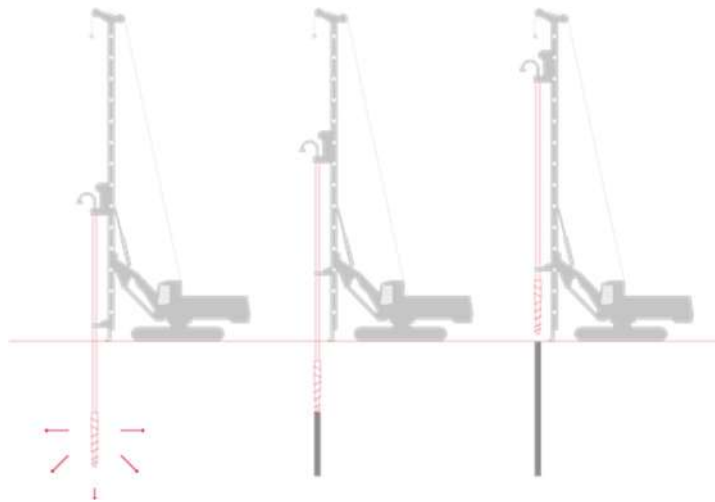


Figure 3 - CMC installation process

A specially designed auger, powered by equipment with large torque capacity and high static down thrust, displaces the soil laterally, with virtually no spoil or vibration. The displacement auger is pushed into the ground to the required depth resulting in a local increment of the density of the surrounding soils around the auger. In the case that one or several layers to drill are too compact, a regular CFA auger can be used.

During the auger extraction process, a column is developed by concreting under controlled limited pressure (less than 5 bars) through the stem of the displacement auger to achieve a predetermined stiffness ratio with the surrounding soil. The result is a composite soil/concrete ground improvement system. Current practice is to install columns with diameter varying between 280 and 450 mm.



Figure 4 - CMC setup on site

4.3. Adaptation to the project

4.3.1. Ground improvement principle

The foreseen ground reinforcement system consists in installing vertical concrete inclusions (CMC) in order to create a composite [soil + CMC] material. CMC will be installed under pad or strip footings, with the head of the CMC cut off at the base of the footing. Beneath the slab, it is required to place a compacted Load Distribution Mattress between the underside of the slab and the head of the CMC in order to homogenize the behaviour of the reinforced soil.

4.3.2. Characteristics of the CMC solution

The characteristics of the CMC for this project will be:

CMC diameter [m]	Concrete			
	Young's Modulus E_Y [MPa]	Characteristic compressive strength f_{ck28} [MPa]	Chemical Class	Slump
0.30	9,300	16	DC-2	S4

Table 1 - CMC characteristics

The design compressive strength of the concrete is given by:

$$f_{cd} = \min \left(\alpha_{cc} k_3 \frac{f_{ck}^*}{\gamma_C}; \alpha_{cc} \frac{f_{ck}}{\gamma_C}; \alpha_{cc} \frac{C_{max}}{\gamma_C} \right)$$

Where:

- $\alpha_{cc} = 0.8$ for unreinforced concrete
- $\gamma_C = 1.5$ (partial factor for the concrete)
- $k_3 = 1.2$ in Domain 1 (CMC required for bearing capacity) and 1.5 in Domain 2 (CMC for settlement control only)
- f_{ck}^* : characteristic compressive strength of the CMC concrete determined from the following formula:

$$f_{ck}^* = \inf \{ C_{max}; f_{ck} \} \frac{1}{k_1 k_2}$$

- f_{ck} : characteristic compressive strength of the concrete at 28 days (measured on cylinders)
- $C_{max} = 35$ for CMC with soil displacement

We have:

$$k_1 = 1.3 \text{ and } k_2 = 1.35 - d/2 = 1.2$$

Hence:

$$f_{ck}^* = \inf(f_{ck}; C_{max}) \frac{1}{k_1 k_2} = 10.3 \text{ MPa}$$

In SLS conditions, the average stress in the CMC is limited to:

$$f_{cd,av,SLS} = 0.3 k_3 f_{ck}^* = \begin{cases} 3.7 \text{ MPa} & \text{in Domain 1} \\ 4.6 \text{ MPa} & \text{in Domain 2} \end{cases}$$

In ULS conditions, the average stress in the CMC is limited to:

$$f_{cd,av,ULS} = \min(f_{cd}, 7 \text{ MPa}) = \begin{cases} 6.6 \text{ MPa} & \text{in Domain 1} \\ 7 \text{ MPa} & \text{in Domain 2} \end{cases}$$

5. GROUND CONDITIONS

Our design is based on the ground conditions described in the above site investigation reports [6],[7] and [9] The ground conditions are homogeneous over the site.

5.1. Lidl Store

The typical soil profile is the following:

- Reworked made ground (Silty mixtures)
- Landfill waste made ground (Silty mixtures)
- Pennine Lower Coal Measures (stiff silts)

Geotechnical models based on CPT 9-16. The calculations were carried out for the conservative soil profile detailed in the table below. All the values of the design parameters have been derived from correlations based on CPT.

	Top	Bottom	γ	q_c	E_m	α	p_l	E_y	ν
	(mAOD)	(mAOD)	(kN/m ³)	(MPa)	(MPa)	(-)	(MPa)	(MPa)	(-)
Working Platform (Fill class 6F)	150.38	148.88	18	-	12.5	1/4	1.2	50	0.3
Reworked Made ground - silty mixtures	148.88	140,00	18	2.5	7.5	1/2	0.7	15	0.3
Landfill waste Made ground -silty mixtures	140,00	137,00	18	2.5	7.5	1	0.7	7.5	0.3
Pennine Lower Coal Measures - Silts	137,00	132,00	18	5	15.0	1/2	1.5	30	0.3
CMC	Var	136.5	22	-	-	-	-	9,300	0.2
LDM	150.645-150.345	150.145-149.845	18	-	12.5	1/4	1.7	50	0.3

Table 2 - Soil profile and geotechnical parameters under the Lidl store

Notes:

- The Load Distribution Mat (LDM) needs to be minimum 500 mm thick and is only required under the concrete ground bearing slabs.
- CMC will be embedded 0.5 m into Pennine Lower Coal Measures layer
- To account for the presence of landfill waste, the modulus of this layer has been degraded.
- The symbols used in the table above are: γ = bulk unit weight, q_c = CPT cone resistance, E_m = Pressuremeter Modulus, α = rheological coefficient, E_y = Young's modulus, p_l = pressure limit, ν = Poisson's ratio.
- Ground water was encountered during the site investigations at roughly 3 m below ground level
- 2 working platforms have been provided, a higher one for the Lidl store, a lower one for the retaining wall, with their elevation being at respectively + 150.38m and +147.3m

6	Pennine Lower Coal Measures – dense sands	147	145.7	18	12	21	1/3	1.2	63	0.3
7	Pennine Lower Coal Measures – stiff Silts	145.7	144	18	5	15	1/2	1.5	30	0.3
8	Pennine Lower Coal Measures – dense sands	144	143	18	12	21	1/3	2.1	63	0.3
	CMC	Var	147.7	22	-	-	-	-	9,300	0.2
	LDM	151.1	150.6	18	-	12.5	1/4	1.2	50	0.3

Table 3 - Soil profile and geotechnical parameters under the Home Bargain store – Shallow model.

Notes:

- The Load Distribution Mat (LDM) needs to be minimum 500 mm thick and is only required under the concrete ground bearing slabs.
- CMC will be embedded 0.5 m into Pennine Lower Coal Measures – stiff Silts (layer 5)
- The symbols used in the table above are: γ = bulk unit weight, q_c = CPT cone resistance, E_m = Pressuremeter Modulus, α = rheological coefficient, E_y = Young's modulus, p_l = pressure limit, ν = Poisson's ratio.
- Ground water was encountered during the site investigations at roughly 3 m below ground level

5.2.2. Model 2 – Deep model

The typical soil profile is the following:

- deep reworked Made Ground (from sandy to silty to clayey)
- Pennine lower coal measures (stiff silts and dense sands)

Geotechnical models based on CPT 4&5. The calculations were carried out for the conservative soil profile detailed in the table below. All the values of the design parameters have been derived from correlations based on CPT.

		Top	Bottom	γ	q_c	E_m	α	p_l	E_y	ν
		(mAOD)	(mAOD)	(kN/m ³)	(MPa)	(MPa)	(-)	(MPa)	(MPa)	(-)
1	Remaining Working Platform (Fill class 6F)	150.6	150.5	18	-	12.5	1/4	1.2	50	0.3
2	Reworked Made ground - sandy	150.500	149.1	18	10	17.5	1/3	1.7	52.5	
3	Reworked Made ground - silty mixtures	149.1	146.9	18	1	3	1/2	0.3	6	0.3
4	Reworked Made ground – clayey mixtures	146.9	144.1	18	2.5	12.5	2/3	1.2	18.8	0.3

5	Pennine Lower Coal Measures – stiff Silts	144.1	143	18	5	15	1/2	1.5	30	0.3
	CMC	Var	143.6	22	-	-	-	-	9,300	0.2
	LDM	151.1	150.6	18	-	12.5	1/4	1.2	50	0.3

Table 4 - Soil profile and geotechnical parameters under the Home Bargain store – Deep model.

Notes:

- The Load Distribution Mat (LDM) needs to be minimum 500 mm thick and is only required under the concrete ground bearing slabs.
- CMC will be embedded 0.5 m into Pennine Lower Coal Measures – stiff Silts (layer 5)
- The symbols used in the table above are: γ = bulk unit weight, q_c = CPT cone resistance, E_m = Pressuremeter Modulus, α = rheological coefficient, E_v = Young's modulus, p_l = pressure limit, ν = Poisson's ratio.
- Ground water was encountered during the site investigations at roughly 3 m below ground level

5.3. External yard area

The typical soil profile is the following:

- Reworked made ground (Sandy to Silty mixtures)
- Landfill waste made ground (Silty mixtures)
- Pennine Lower Coal Measures (stiff silts)

Geotechnical models based on CPT 7&8. The calculations were carried out for the conservative soil profile detailed in the table below. All the values of the design parameters have been derived from correlations based on CPT.

	Top (mAOD)	Bottom (mAOD)	γ (kN/m ³)	q_c (MPa)	E_m (MPa)	α (-)	p_l (MPa)	E_v (MPa)	ν (-)
Additional Fill class 6F	149.625	149	18	-	12.5	1/4	1.2	50	0.3
Working Platform (Fill class 6F)	149	148.5	18	-	12.5	1/4	1.2	50	0.3
Reworked Made ground - sandy mixtures	149.625	148.125	10	17.5	1/3	1.7	52.5		10
Reworked Made ground - silty mixtures	148.125	146.9	18	3.5	10.5	1/2	1.0	21	0.3
Landfill waste Made ground -silty mixtures	146.9	144.6	18	2	6	1	0.6	6	0.3
Pennine Lower Coal Measures – stiff Silts	144.6	143	18	5	15.0	1/2	1.5	30	0.3
CMC	Var	144.1	22	-	-	-	-	9,300	0.2

LDM	150.135	149.625	18	-	12.5	1/4	1.7	50	0.3
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Table 5 - Soil profile and geotechnical parameters under the external yard area

Notes:

- The Load Distribution Mat (LDM) needs to be minimum 500 mm thick and is only required under the concrete ground bearing slabs.
- CMC will be embedded 0.5 m into Pennine Lower Coal Measures layer
- To account for the presence of landfill waste, the modulus of this layer has been degraded.
- The symbols used in the table above are: γ = bulk unit weight, q_c = CPT cone resistance, E_m = Pressuremeter Modulus, α = rheological coefficient, E_y = Young's modulus, p_l = pressure limit, ν = Poisson's ratio.
- Ground water was encountered during the site investigations at roughly 3 m below ground level
- Above the working platform, similar fill class 6F has been considered to reach the underside of the slab.
- 2 working platforms have been provided, a higher one for the external yard slab and a lower one for the retaining wall, with their elevation being at respectively + 149 and +147.3m

6. CALCULATIONS RESULTS

6.1. Footings/Slab thickenings

The calculations of the ground improvement beneath the footings/slab thickenings are carried out using the CMCLTP software, in which the deformations and the stresses are calculated by iterations according to the O. Combarieu method ("Fondations mixtes" [Mixed foundations], LCPC, 1988), taking into account the Frank and Zhao behaviour laws for the CMC-soil interactions.

The calculations are carried out for each footing type, considering the SLS bearing pressures of 150 kPa for the Lidl store foundations and retaining wall and 200 kPa for the Home Bargains foundation, as confirmed by Stonedale by email [13] The main results of the calculations are shown in the table below, and the details of the calculations are presented in Appendix 1 for some selected cases.

Building	Pad Type	Length	Width	SLS bearing pressure	SLS vertical load	No of CMC	Settlement	SLS Stress in the CMC
	(-)	(m)	(m)	(kPa)	(kN)	(-)	(mm)	(MPa)
Lidl	A3	1.5	1.5	150	337.5	2	<5	1.68
Home Bargain	Pending	Pending	Pending	Pending	Pending	Pending	Pending	Pending

Table 6 - Design results for pad footings

Building	Strip/Slab thickening Type	Width	SLS bearing pressure	SLS vertical load	No of CMC	Settlement	SLS Stress in the CMC
	(-)	(m)	(kPa)	(kN/m)	(-)	(mm)	(MPa)
Lidl	A9	1.95	150	292.5	1 every 1.0 m	<5	2.69
	A13	4.455	150	668.25	4 every 1.7m	8	3.33
	A14	2.25	150	337.5	2 every 1.7m	<5	3.11
	A22	1.50	150	225.0	1 every 1.3m	<5	2.61
External Yard	Retaining wall 1	1.0	150	150	1 every 2m	<5	2.83
	Retaining wall 2	1.4	150	210	1 every 1.4m	<5	2.97

Table 7 - Design results for slab thickenings and retaining wall strip footings

Conclusion: The settlements under the working loads remain acceptable (< 25 mm) and the stresses in the CMC are lower than the allowable value.

6.2. Ground bearing slab

Calculations of the ground improvement under the ground bearing slab are carried out using an axisymmetric model with the CMCAXI software.

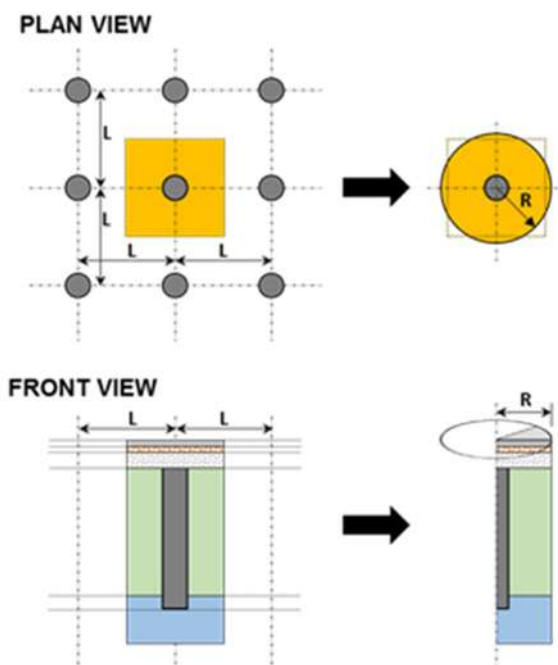


Figure 6 - Principle of axisymmetric modelling

The main results are presented below, the detailed calculations are presented in Appendix 2.

Zones	SLS UDL	CMC Grid	Settlements	SLS Stress in the CMC
(-)	(kPa)	(m x m)	(mm)	(MPa)
Lidl Store	20	3 x 3	8	1.9
External yard	20	3 x 3	6	1.6
Home Bargain	30			

Table 8 - Calculation results for ground bearing slab

Conclusion: The long-term settlements considering quasi-permanent service loads remain lower than 25 mm and the stresses in the CMC are acceptable.

7. QUALITY CONTROL

7.1. Monitoring and recording

- Layout drawing showing the location of each CMC will be produced by Menard.
- Calibration drilling(s) close to existing soil investigation borehole(s) to calibrate drilling parameters to each layer of the geotechnical profile and to define an “embedment” criteria will be done.
- The execution of each CMC is controlled by the operator and recorded by an on-board computer. The parameters controlled are: verticality of the mast, depth of treatment, concrete volume, continuity and integrity of each column. A special software enables the site technician to plot the profile of each CMC together with the data recorded during the drilling process.
- 1 of every 10 data recording is handed to the Engineer after the execution of the works.
- The work done is also recorded by a log of each CMC showing the CMC reference number, penetration length, concrete volume and a note of any unusual circumstances encountered during the installation (depth of predrilling, refusals, etc.). This log will be recorded on our standard Daily Record Sheet.
- 'As built' record drawings showing the execution numbers of each CMC will be provided.

7.2. Testing

- Concrete sampling for measurement of the compressive strength: 5 samples per day per rig, 2 of them are tested at 7 days, 2 of them at 28 days and 1 spare,
- Vertical load tests up to 1.5 times the nominal load of the CMC or to a maximum load of 40t whichever is the least. We have allowed for **5 plate load tests**. The load test comprises a 600 mm circular plate which is positioned centrally over a CMC on a layer of sand. The load is applied centrally to the plate by a hydraulic jack using the CMC rig as a “reaction block”. The procedure for those tests is as follows:

Load Stage	Load applied	Comparator reading times
1	20% Q_{max}	1 and 5 min
2	0% Q_{max}	1 and 5 min
3	20% Q_{max}	1, 2, 3, 4, 5, 10 and 15 min
4	40% Q_{max}	1, 2, 3, 4, 5, 10 and 15 min
5	60% Q_{max}	1, 2, 3, 4, 5, 10 and 15 min
6	80% Q_{max}	1, 2, 3, 4, 5, 10, 15, and 30 min
7	100% Q_{max}	1, 2, 3, 4, 5, 10, 15, 30 and 60 min
8	50% Q_{max}	1 and 5 min
9	0% Q_{max}	1 and 5 min

Table 9 - Loading procedure

Notes:

- The load stages are to be carried out for not less than the times specified above or until the settlement is equal or less than 0.02 mm per minute.
- The maximum stress in a CMC is 3.33 MPa corresponding to a maximum nominal load of 235 kN. As such, the maximum load applied during the load test will be $Q_{max} = 353\text{kN}$, for the Lidl store and external yard areas.

8. CONCLUSION

The design for CMC ground improvement below the concerned structures has been carried out using the O. Combarieu iterative method, taking into account the behaviour laws of Frank & Zhao. The calculation results show the good behaviour of the footings and ground bearing slabs in terms of settlements under working loads. They show also that the CMC structural integrity is ensured.

The CMC of diameter **300 mm** will be installed using a concrete with a minimum compressive strength of **16 MPa** and will be keyed **0.5 m into stiff silts (Pennine Lower Coal Measures)**. As such, their depth is expected to be around **3 m to 16.5m from the working platform level close to 150 mAOD**. Depending on the local characteristics of the soils, CMC could be shorter or longer.

The CMC beneath the ground bearing slab will be arranged in a square grid of **3 m x 3 m**. A Load Distribution Mattress (LDM) of minimum thickness **500 mm** is required between the head of the CMC and the underside of the slab. The compaction requirements are **95% MDD, CBR > 10% or subgrade reaction coefficient $K_v > 50 \text{ MPa/m}$** .

The slab designer can use a **subgrade reaction coefficient k_v of 50 MPa/m** for a TR34 ground bearing slab approach.

The number of CMC beneath the strip footings/slab thickening will vary **between 1 every 2m to 4 every 1.7m**, depending on the strip width. No LDM is required below the footings/slab thickenings.

The CMC configuration is summarized in the table below:

Controlled Modulus Columns (CMC)		
CMC	Diameter	300 mm
	Embedment	stiff silts (Pennine Lower Coal Measures)
	Concrete compressive strength	Min. $f_{ck} = 16 \text{ MPa}$
	Design chemical class	DC-2
Beneath slab	Load Case	UDL up to 30kPa (SLS quasi-permanent)
	Grid	3 m x 3 m
	Slab Geometry	160 mm thick (C30/C35)
	Load Distribution Mat / Subgrade	Minimum 500 mm thick, CBR > 10% / $k_v \geq 50 \text{ MPa/m}$
Beneath footings	Allowable bearing pressure	Up to 200 kPa SLS (Home Bargain)
	Spacing	2 CMC below pads footings 1 CMC every 2m to 4 every 1.7m below the slab thickenings
	Load Distribution Mat	None

Table 10 - Summary of CMC arrangement

APPENDIX 1: DETAILED CALCULATIONS FOR THE CMC BENEATH THE FOOTINGS

Project name :

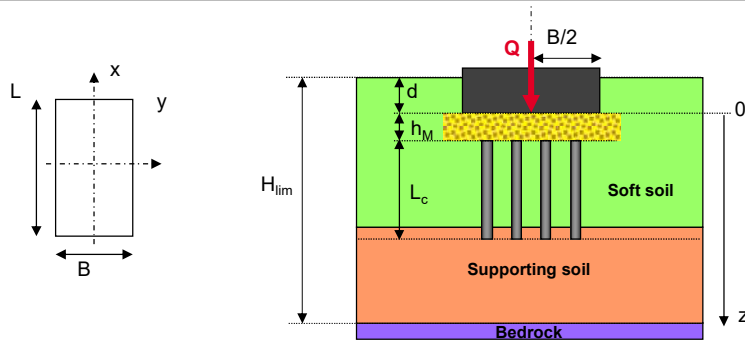
V26472-BIRSTALL-Lidl
Controlled Modulus Column (CMC®) - Strip A9
embedded of 0,16 m

Strip footing : 1,00 m x 1,95 m

loaded at 292,5 kN/ml

Calculation according to O.Combarieu method (Fondations mixtes. LCPC 1988)
Taking into account the Frank & Zhao method for the settlement calculation of CMC

Analysis model



Soil improvement definition

Dimensions

L_c	13,72 m	Columns length	H	13,72 m	Anchoring depth of CMC from the footing base
D_c	0,3 m	Columns diameter	R_c	0,15 m	Columns radius

Description of the columns material

E_c	9 300 000 kPa	Young modulus
f_{ck}	16,0 MPa	28-day unconfined compressive strength

Soil displ. :
ULS :

With
Fundamental

Type of control :
Presence of reinf. :

Load-bearing capacity
No

$f_{cd,avg,SLS}$	4,6 MPa	SLS average compressive stress allowable by the material
$f_{cd,avg,ULS}$	7,0 MPa	ULS average compressive stress allowable by the material

Description of bearing soil layer

q_b	1 900 kPa	Limit soil resistance at the column bottom
k_q	11,0	Frank & Zhao factor for the toe (extracted from the table below)
E_m	15 000 kPa	Pressuremeter modulus

k_q values (according to Frank & Zhao)

Fine-grained soils	11
Coarse-grained soils	4,8

Description of the footing

Type of footing : Strip

Dimensions of the strip footing :

L	1 m	Length of the typical area
B	1,95 m	Width of the footing

Number of CMC under the footing :

n	1	Number of CMC under typical area
---	---	----------------------------------

Description of natural soil surrounding the columns

q_{net}	514 kPa	Net soil resistance under the footing without reinforcement
-----------	---------	---

Spheric component :

λ_c	1,50
α_c	0,25

Deviatoric component :

λ_d	2,65
α_d	0,37

Terms λ are **automatically** extracted from the table below (as a function of L/B)
(Note : for a strip footing we consider $L/B = \infty$)

L/B : 20,00

L/B	Octaèdre	Carré	2	3	5	20
λ_s	1,00	1,10	1,20	1,30	1,40	1,50
λ_v	1,00	1,12	1,53	1,78	2,14	2,65

Description of the Load Transfer Platform

h_M	0,00 m	LTP thickness
-------	--------	---------------

Description of natural soil

H_w 2,84 m Depth of the groundwater table in relation to the footing underside

Layer n°	H (m)	E_m (kPa)	α (-)	q_s (kPa)	k_r (-)	γ (kN/m ³)	$Ktan\delta$ (-)	z (m)
1	1,34	12 500	0,25	103	0,8	18	1,00	1,34
2	8,88	7 500	0,50	62	2,0	18	0,20	10,22
3	3,00	7 500	1,00	62	2,0	18	0,20	13,22
4	0,50	15 000	0,50	89	2,0	18	0,30	13,72
5	4,50	15 000	0,50	89	2,0	18	0,30	18,22

Notations

H	Thickness of the layer	γ	Unit weight of the layer
E_m	Pressuremeter modulus of the layer	$Ktan\delta$	Empirical factor related to the type of inclusion and to soil nature
α	Structural coefficient		
q_s	Ultimate skin friction in the layer (NF P 94-262)		
K'	Frank & Zhao factor for the friction (according to the table below)		
z	Depth of the layer base		

Note : By convention, the bottom of CMC is at layer n° 4.

k_r values (according to Frank & Zhao)

Fine-grained soils	2
Coarse-grained soils	0,8

Results

SLS load applied on the footing :

$Q(-h_M)$ 293 kN/ml

Reinforced soil settlement :

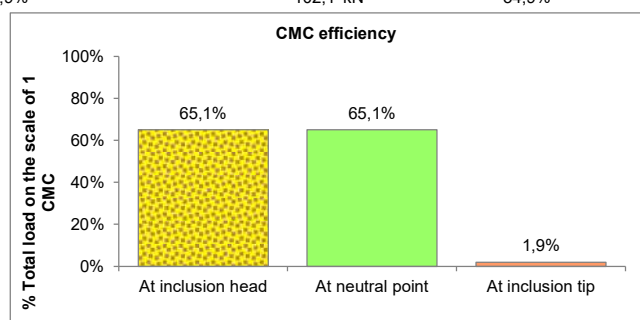
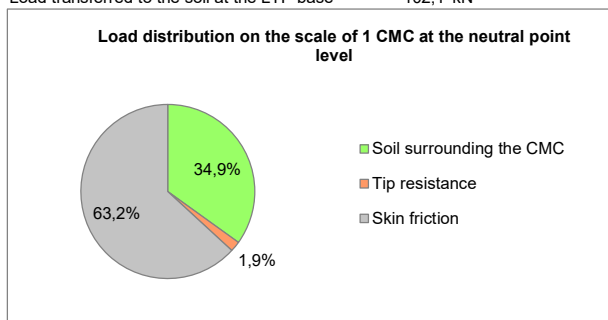
W 3 mm

Settlement distribution

Settlement of deep layers (below CMC)	1 mm
Punching at the inclusion tip	0 mm
Punching at the inclusion head	0 mm
Elastic shortening of the inclusion	2 mm

SLS load distribution

	per inclusion	% total load	on all	% total load
Load applied on the inclusion head	190,4 kN	65,1%	190,4 kN	65,1%
Negative skin friction along the inclusion	0,0 kN	0,0%	0,0 kN	0,0%
Max. load in inclusion	190,4 kN	65,1%	190,4 kN	65,1%
Positive skin friction	184,7 kN	63,2%	184,7 kN	63,2%
Load applied on the inclusion tip	5,6 kN	1,9%	5,6 kN	1,9%
Neutral point depth	0,00 m			
Stress in the soil at the LTP base	54,3 kPa			
Load transferred to the soil at the LTP base	102,1 kN	34,9%	102,1 kN	34,9%



$$N_{ED} \leq R_{v,d} = \frac{q_{net} \times S}{\gamma_{R;d,v} \times \gamma_{R;v}}$$



Domain : 2

STR verifications: compressive stresses in CMC

The material used allows an average compressive stress of
The average compressive stress in the columns is

SLS

4,62 MPa
2,69 MPa

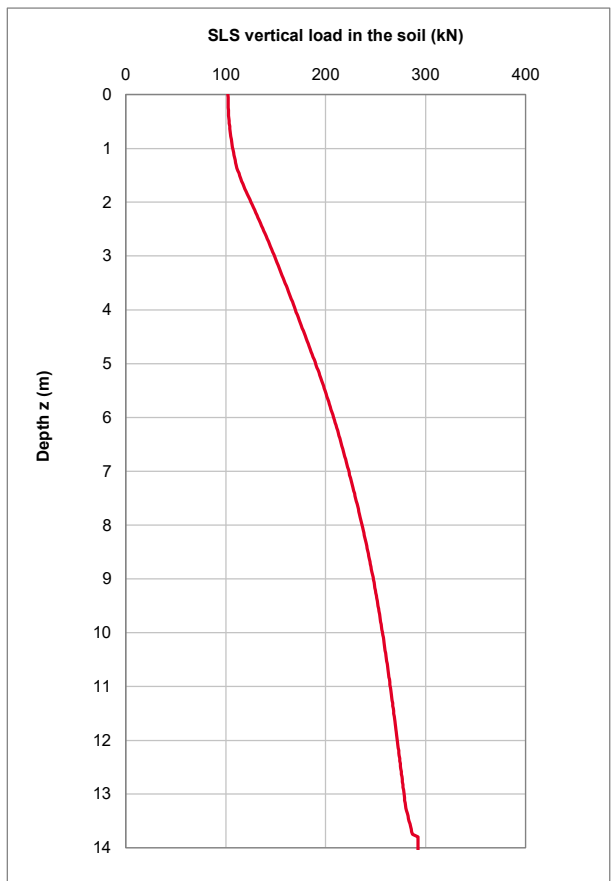
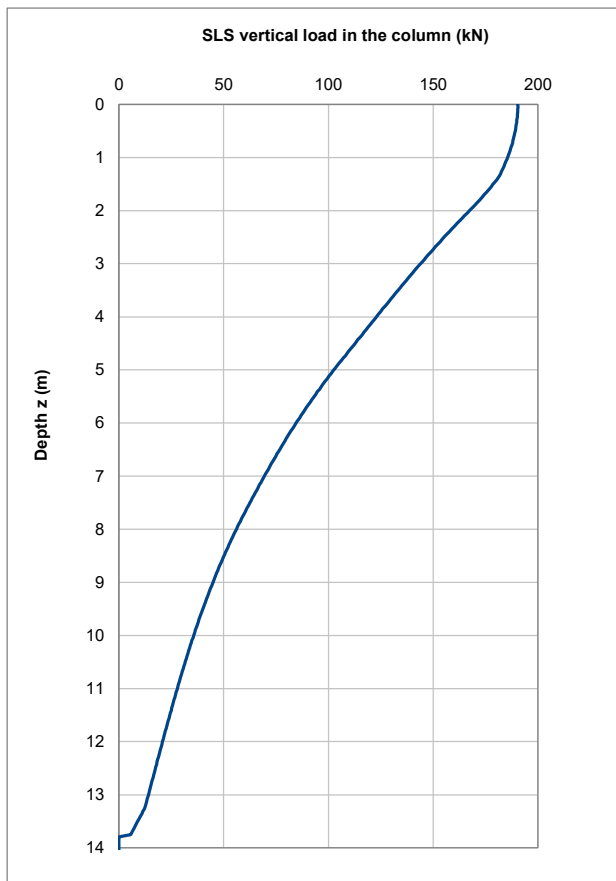
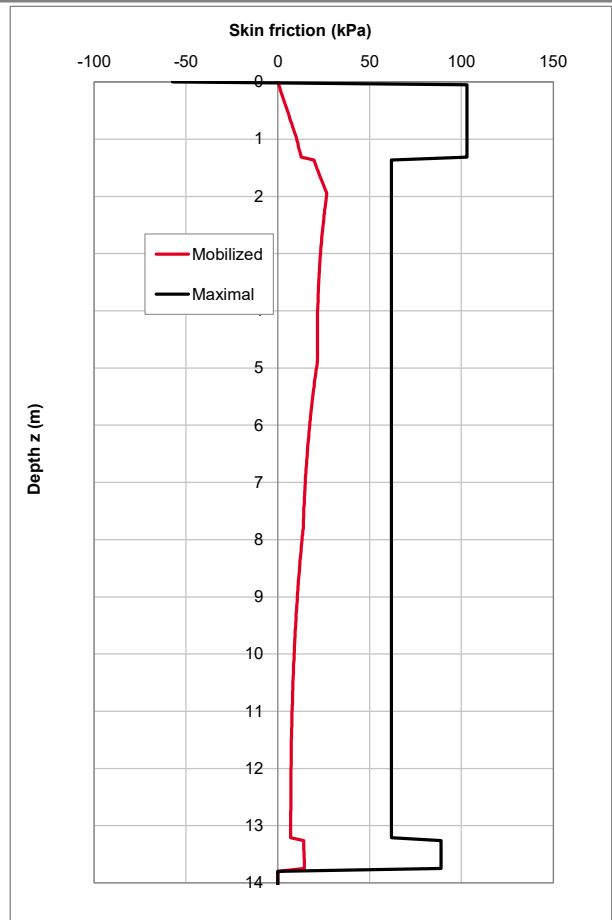
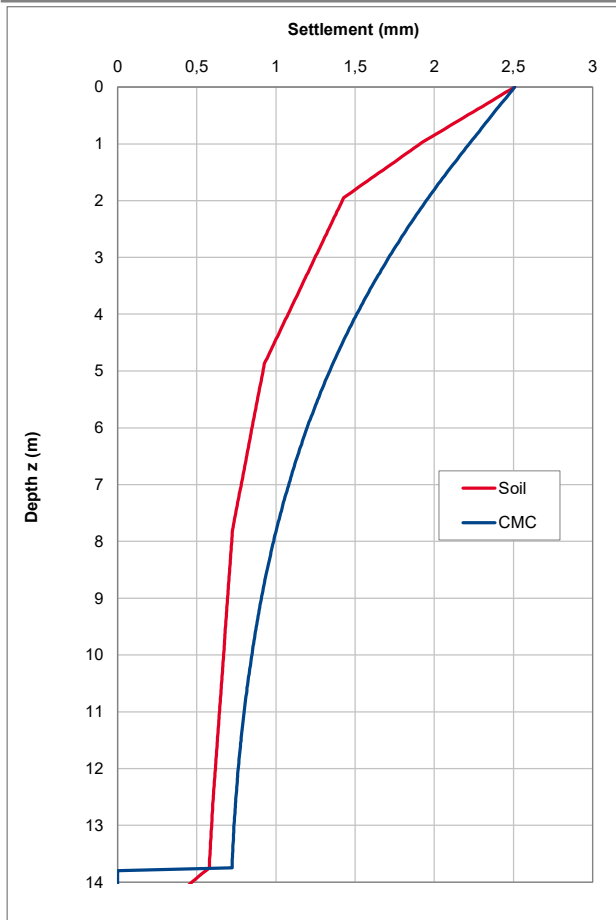
OK

ULS

7,00 MPa
4,04 MPa

OK

Graphic results



Project name :

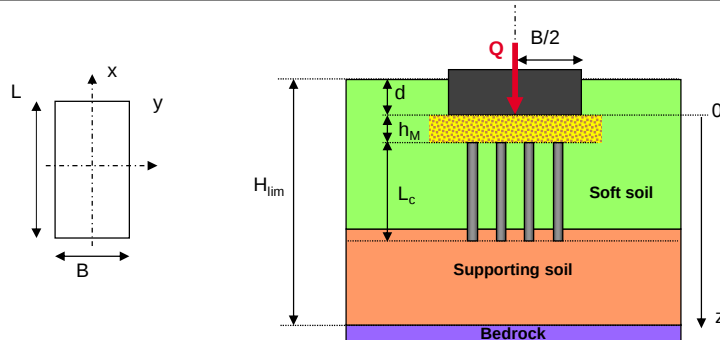
V26472-BIRSTALL-Lidl
Controlled Modulus Column (CMC®) - Strip A13
embedded of 0.00 m

Strip footing : 1.75 m x 4.46 m

loaded at 668.25 kN/ml

Calculation according to O.Combarieu method (Fondations mixtes. LCPC 1988)
Taking into account the Frank & Zhao method for the settlement calculation of CMC

Analysis model



Soil improvement definition

Dimensions

L_c	10.83 m	Columns length	H	10.83 m	Anchoring depth of CMC from the the footing base
D_c	0.3 m	Columns diameter	R_c	0.15 m	Columns radius

Description of the columns material

E_c	9,300,000 kPa	Young modulus
f_{ck}	16.0 MPa	28-day unconfined compressive strength

Soil displ. :

With
Fundamental

Type of control :

Load-bearing capacity
No

$f_{cd,avg,SLS}$	4.6 MPa	SLS average compressive stress allowable by the material
$f_{cd,avg,ULS}$	7.0 MPa	ULS average compressive stress allowable by the material

Description of bearing soil layer

q_b	1,900 kPa	Limit soil resistance at the column bottom
k_q	11.0	Frank & Zhao factor for the toe (extracted from the table below)
E_m	15,000 kPa	Pressuremeter modulus

k_q values (according to Frank & Zhao)

Fine-grained soils	11
Coarse-grained soils	4.8

Description of the footing

Type of footing : Strip

Dimensions of the strip footing :

L	1.75 m	Length of the typical area
B	4.455 m	Width of the footing

Number of CMC under the footing :

n	4	Number of CMC under typical area
---	---	----------------------------------

Description of natural soil surrounding the columns

q_{net}	625 kPa	Net soil resistance under the footing without reinforcement
-----------	---------	---

Spheric component :

λ_c	1.50
α_c	0.40

Deviatoric component :

λ_d	2.65
α_d	0.50

Terms λ are **automatically** extracted from the table below (as a function of L/B)

(Note : for a strip footing we consider $L/B = \infty$)

L/B : 20.00

L/B	Cercle	caillou	2	3	5	20
λ_s	1.00	1.10	1.20	1.30	1.40	1.50
λ_d	1.00	1.12	1.23	1.33	1.43	1.53

Description of the Load Transfer Platform

h_M	0.00 m	LTP thickness
-------	--------	---------------

Description of natural soil

H_w 0 m Depth of the groundwater table in relation to the footing underside

Layer n°	H (m)	E_m (kPa)	α (-)	q_s (kPa)	k_r (-)	γ (kN/m ³)	$K \tan \delta$ (-)	z (m)
1	0.50	12,500	0.25	62	0.8	20	1.00	0.50
2	6.83	7,500	0.50	62	2.0	18	0.20	7.33
3	3.00	7,500	1.00	62	2.0	18	0.20	10.33
4	0.50	15,000	0.50	89	2.0	18	0.30	10.83
5	4.50	15,000	0.50	89	2.0	18	0.30	15.33

Notations

H	Thickness of the layer	γ	Unit weight of the layer
E_m	Pressuremeter modulus of the layer	$K \tan \delta$	Empirical factor related to the type of inclusion and to soil nature
α	Structural coefficient		
q_s	Ultimate skin friction in the layer (NF P 94-262)		
K'	Frank & Zhao factor for the friction (according to the table below)		
z	Depth of the layer base		

Note : By convention, the bottom of CMC is at layer n° 4.

k_r values (according to Frank & Zhao)

Fine-grained soils	2
Coarse-grained soils	0.8

Results

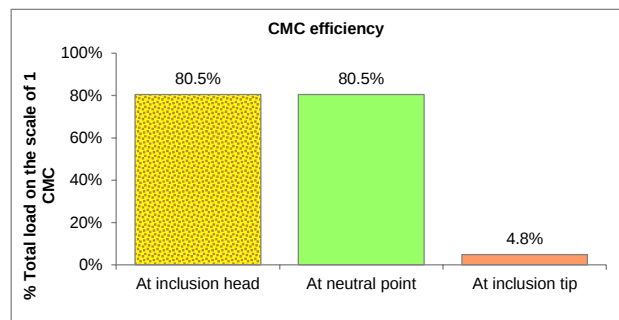
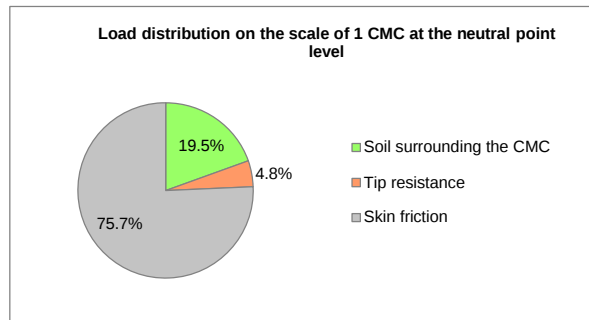
SLS load applied on the footing :
Q(-h_M) 668 kN/ml

Reinforced soil settlement :
W 8 mm

Settlement distribution

Settlement of deep layers (below CMC)	6 mm
Punching at the inclusion tip	0 mm
Punching at the inclusion head	0 mm
Elastic shortening of the inclusion	2 mm

SLS load distribution	per inclusion	% total load	on all	% total load
Load applied on the inclusion head	235.3 kN	20.1%	941.1 kN	80.5%
Negative skin friction along the inclusion	0.0 kN	0.0%	0.0 kN	0.0%
Max. load in inclusion	235.3 kN	20.1%	941.1 kN	80.5%
Positive skin friction	221.2 kN	18.9%	884.9 kN	75.7%
Load applied on the inclusion tip	14.0 kN	1.2%	56.1 kN	4.8%
Neutral point depth	0.00 m			
Stress in the soil at the LTP base	30.4 kPa			
Load transferred to the soil at the LTP base	57.1 kN	4.9%	228.4 kN	19.5%



$$N_{ED} \leq R_{v,d} = \frac{q_{net} \times S}{\gamma_{R;d,v} \times \gamma_{R;v}}$$

→ **Domain :** 2

STR verifications: compressive stresses in CMC

The material used allows an average compressive stress of
The average compressive stress in the columns is

SLS

4.62 MPa
3.33 MPa

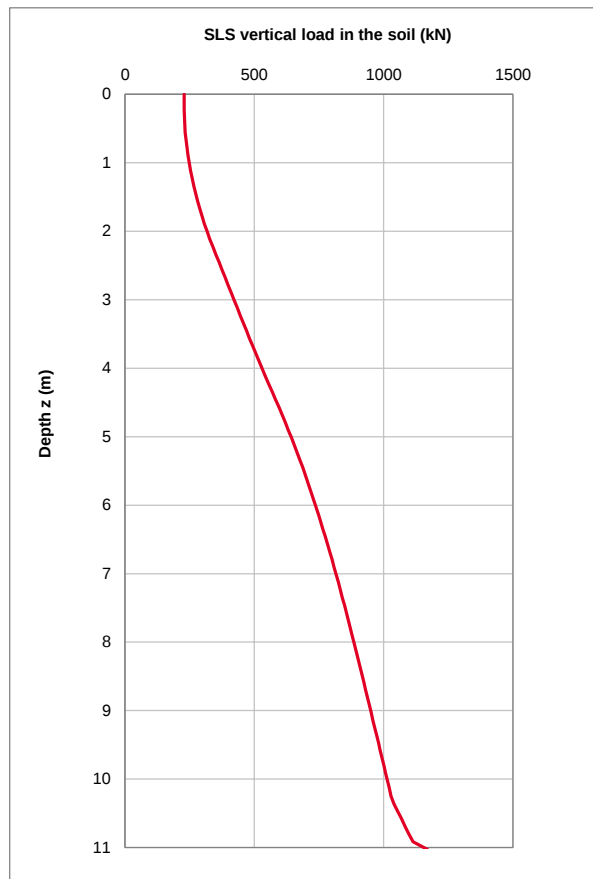
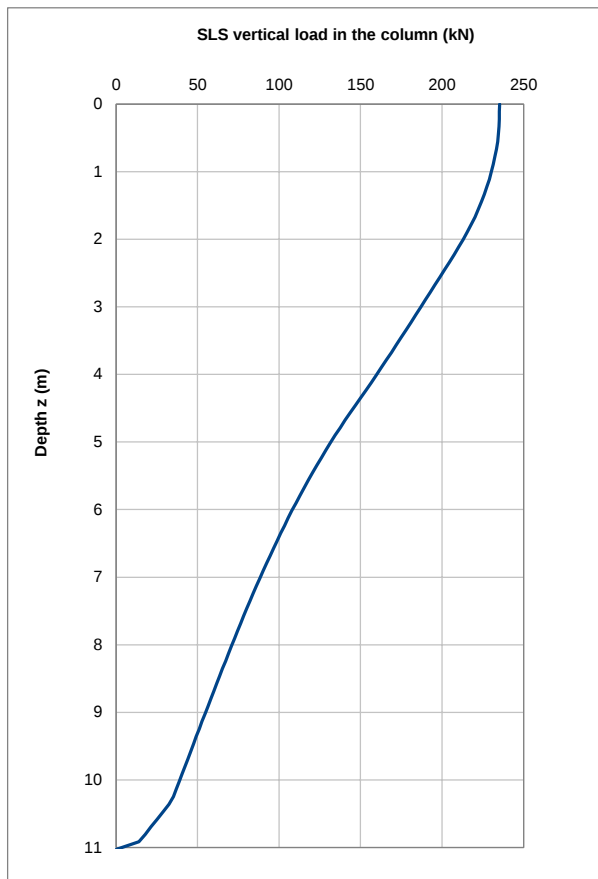
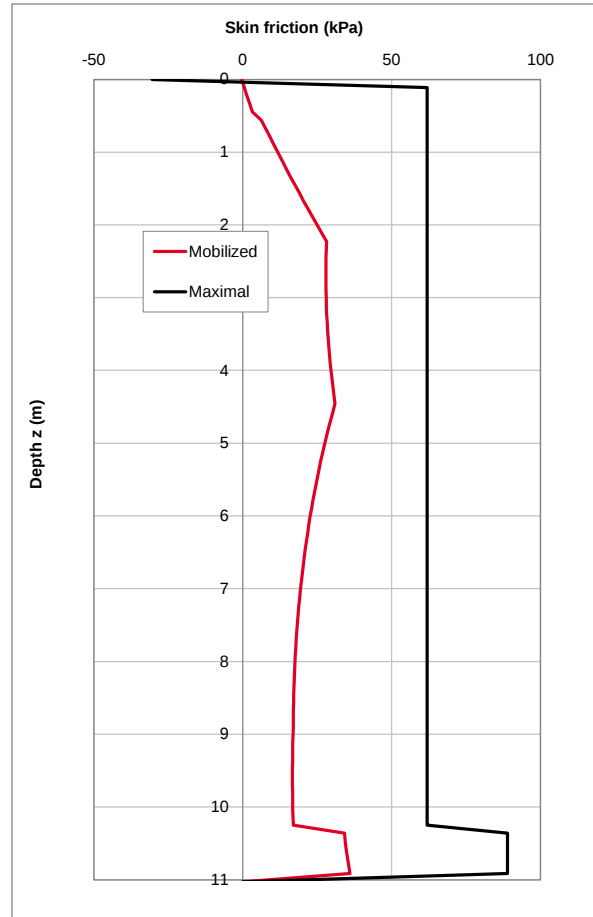
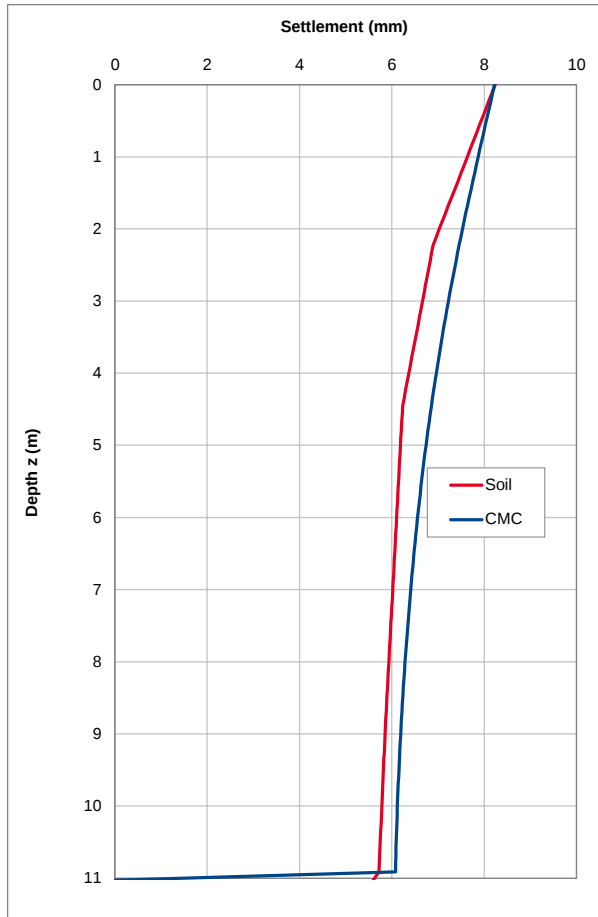
OK

ULS

7.00 MPa
4.99 MPa

OK

Graphic results



Project name :

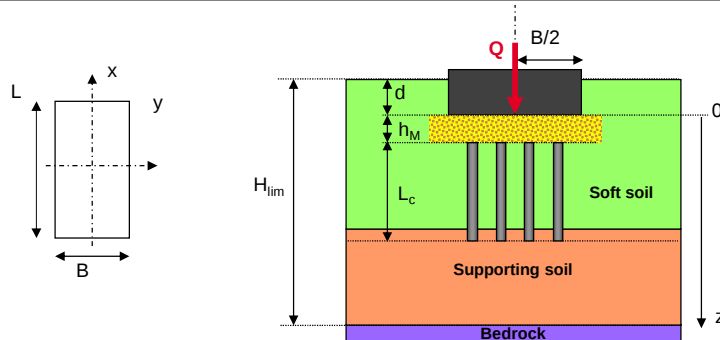
Strip footing : 1.75 m x 2.25 m

V26472-BIRSTALL-Lidl
Controlled Modulus Column (CMC®) - Strip A14
embedded of 0.00 m

loaded at 337.5 kN/ml

Calculation according to O.Combarieu method (Fondations mixtes. LCPC 1988)
Taking into account the Frank & Zhao method for the settlement calculation of CMC

Analysis model



Soil improvement definition

Dimensions

L_c	10.83 m	Columns length	H	10.83 m	Anchoring depth of CMC from the the footing base
D_c	0.3 m	Columns diameter	R_c	0.15 m	Columns radius

Description of the columns material

E_c	9,300,000 kPa	Young modulus
f_{ck}	16.0 MPa	28-day unconfined compressive strength

Soil displ. :

With
Fundamental

Type of control :

Load-bearing capacity

Presence of reinf. :

No

$f_{cd,avg,SLS}$	4.6 MPa	SLS average compressive stress allowable by the material
$f_{cd,avg,ULS}$	7.0 MPa	ULS average compressive stress allowable by the material

Description of bearing soil layer

q_b	1,900 kPa	Limit soil resistance at the column bottom
k_q	11.0	Frank & Zhao factor for the toe (extracted from the table below)
E_m	15,000 kPa	Pressuremeter modulus

k_q values (according to Frank & Zhao)

Fine-grained soils	11
Coarse-grained soils	4.8

Description of the footing

Type of footing : Strip

Dimensions of the strip footing :

L	1.75 m	Length of the typical area
B	2.25 m	Width of the footing

Number of CMC under the footing :

n	2	Number of CMC under typical area
---	---	----------------------------------

Description of natural soil surrounding the columns

q_{net}	625 kPa	Net soil resistance under the footing without reinforcement
-----------	---------	---

Spheric component :

λ_c	1.50
α_c	0.34

Deviatoric component :

λ_d	2.65
α_d	0.47

Terms λ are **automatically** extracted from the table below (as a function of L/B)

(Note : for a strip footing we consider $L/B = \infty$)

L/B : 20.00

L/B	Cercle	caillou	2	3	5	20
λ_c	1.00	1.10	1.23	1.30	1.40	1.50
λ_d	1.00	1.12	1.53	1.78	2.14	2.65

Description of the Load Transfer Platform

h_M	0.00 m	LTP thickness
-------	--------	---------------

Description of natural soil

H_w 0 m Depth of the groundwater table in relation to the footing underside

Layer n°	H (m)	E_m (kPa)	α (-)	q_s (kPa)	k_r (-)	γ (kN/m ³)	$K \tan \delta$ (-)	z (m)
1	0.50	12,500	0.25	62	0.8	20	1.00	0.50
2	6.83	7,500	0.50	62	2.0	18	0.20	7.33
3	3.00	7,500	1.00	62	2.0	18	0.20	10.33
4	0.50	15,000	0.50	89	2.0	18	0.30	10.83
5	4.50	15,000	0.50	89	2.0	18	0.30	15.33

Notations

H	Thickness of the layer	γ	Unit weight of the layer
E_m	Pressuremeter modulus of the layer	$K \tan \delta$	Empirical factor related to the type of inclusion and to soil nature
α	Structural coefficient		
q_s	Ultimate skin friction in the layer (NF P 94-262)		
K'	Frank & Zhao factor for the friction (according to the table below)		
z	Depth of the layer base		

Note : By convention, the bottom of CMC is at layer n° 4.

k_r values (according to Frank & Zhao)

Fine-grained soils	2
Coarse-grained soils	0.8

Results

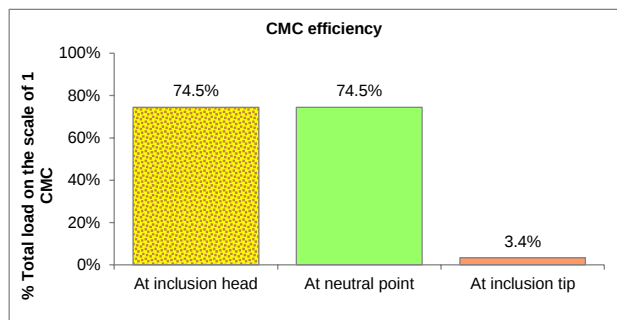
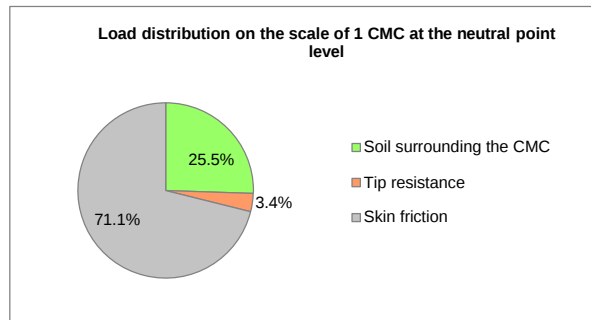
SLS load applied on the footing :
Q(-h_M) 338 kN/ml

Reinforced soil settlement :
W 4 mm

Settlement distribution

Settlement of deep layers (below CMC)	2 mm
Punching at the inclusion tip	0 mm
Punching at the inclusion head	0 mm
Elastic shortening of the inclusion	2 mm

SLS load distribution	per inclusion	% total load	on all	% total load
Load applied on the inclusion head	219.9 kN	37.2%	439.9 kN	74.5%
Negative skin friction along the inclusion	0.0 kN	0.0%	0.0 kN	0.0%
Max. load in inclusion	219.9 kN	37.2%	439.9 kN	74.5%
Positive skin friction	209.9 kN	35.5%	419.9 kN	71.1%
Load applied on the inclusion tip	10.0 kN	1.7%	20.0 kN	3.4%
Neutral point depth	0.00 m			
Stress in the soil at the LTP base	39.7 kPa			
Load transferred to the soil at the LTP base	75.4 kN	12.8%	150.7 kN	25.5%



$$N_{ED} \leq R_{v,d} = \frac{q_{net} \times S}{\gamma_{R;d,v} \times \gamma_{R;v}} \rightarrow \text{Domain : } 2$$

STR verifications: compressive stresses in CMC

The material used allows an average compressive stress of
The average compressive stress in the columns is

SLS

4.62 MPa
3.11 MPa

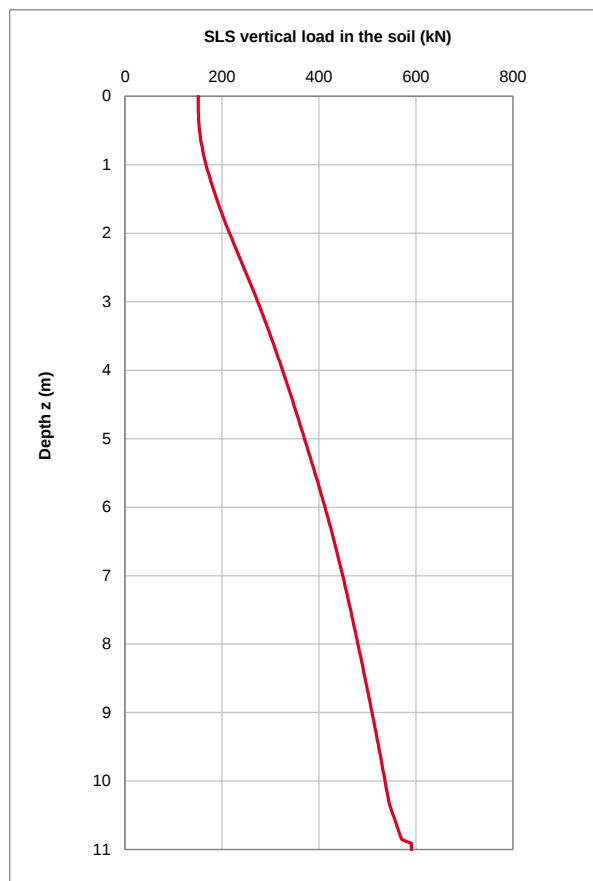
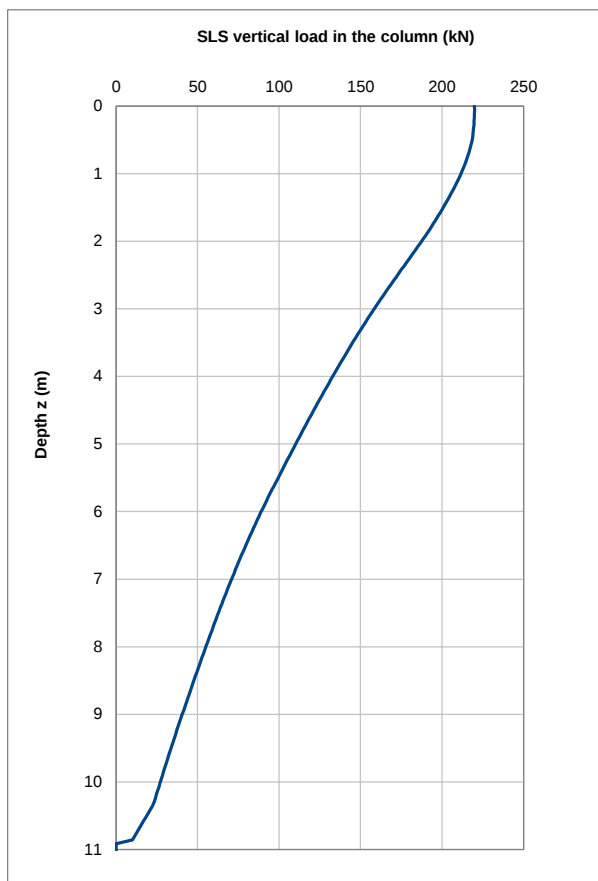
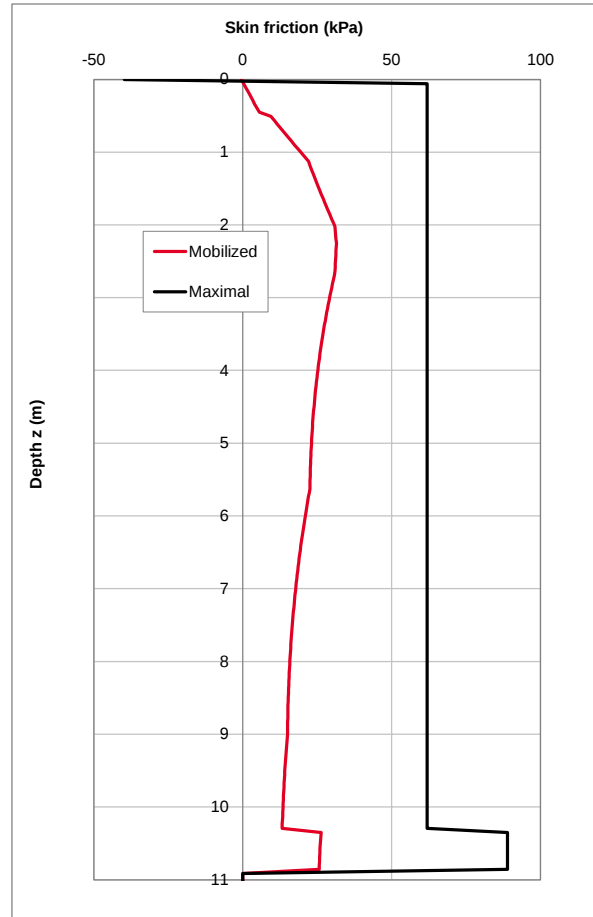
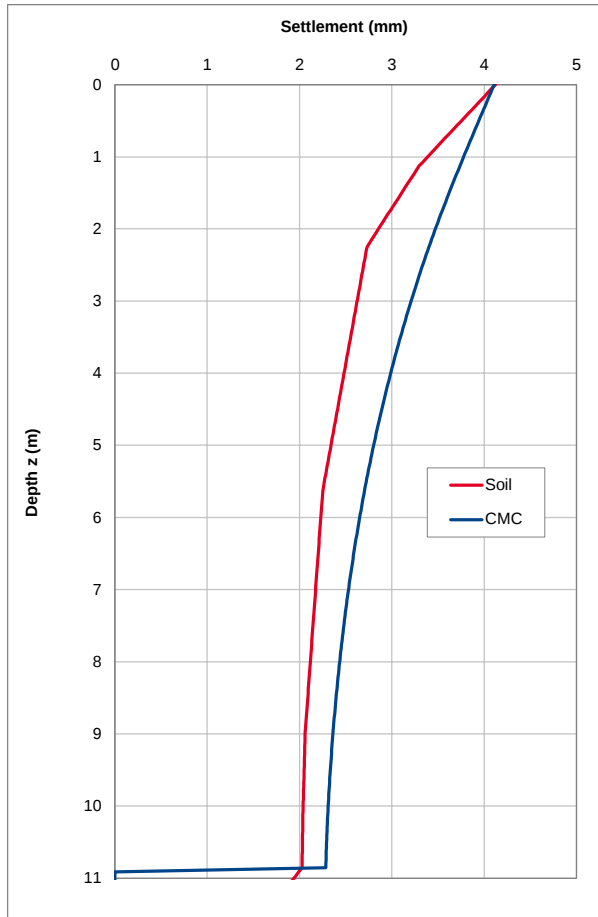
OK

ULS

7.00 MPa
4.67 MPa

OK

Graphic results



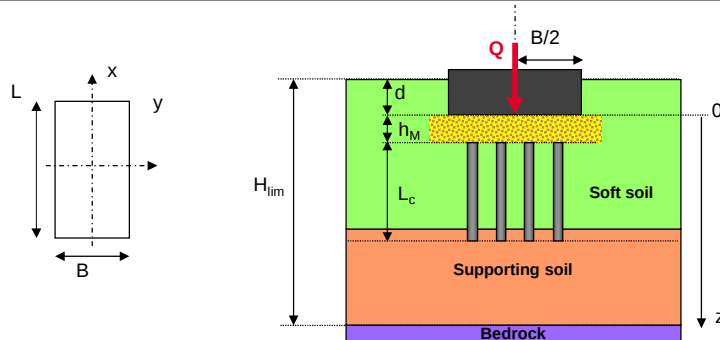
Project name :

V26472-BIRSTALL-External Yard
Controlled Modulus Column (CMC®) - Retaining Wall 1.4m wide
embedded of 0.25 m

Strip footing : 1.40 m x 1.40 m loaded at 210 kN/ml

Calculation according to O.Combarieu method (Fondations mixtes. LCPC 1988)
Taking into account the Frank & Zhao method for the settlement calculation of CMC

Analysis model



Soil improvement definition

Dimensions

L_c	13.63 m	Columns length	H	13.63 m	Anchoring depth of CMC from the footing base
D_c	0.3 m	Columns diameter	R_c	0.15 m	Columns radius

Description of the columns material

E_c	9,300,000 kPa	Young modulus
f_{ck}	16.0 MPa	28-day unconfined compressive strength

<u>Soil displ. :</u>	With	<u>Type of control :</u>	Load-bearing capacity
<u>ULS :</u>	Fundamental	<u>Presence of reinf. :</u>	No

$f_{cd,avg,SLS}$	4.6 MPa	SLS average compressive stress allowable by the material
$f_{cd,avg,ULS}$	7.0 MPa	ULS average compressive stress allowable by the material

Description of bearing soil layer

q_b	1,900 kPa	Limit soil resistance at the column bottom
k_q	11.0	Frank & Zhao factor for the toe (extracted from the table below)
E_m	15,000 kPa	Pressuremeter modulus

k_q values (according to Frank & Zhao)

Fine-grained soils	11
Coarse-grained soils	4.8

Description of the footing

Type of footing : Strip

Dimensions of the strip footing :

L	1.4 m	Length of the typical area
B	1.4 m	Width of the footing

Number of CMC under the footing :

n	1	Number of CMC under typical area
---	---	----------------------------------

Description of natural soil surrounding the columns

q_{net}	514 kPa	Net soil resistance under the footing without reinforcement
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Spheric component :

λ_c	1.50
α_c	0.36

Deviatoric component :

λ_d	2.65
α_d	0.51

Terms λ are **automatically** extracted from the table below (as a function of L/B)

(Note : for a strip footing we consider $L/B = \infty$)

L/B : 20.00

L/B	Cercle	castré	2	3	5	20
λ_s	1.00	1.10	1.23	1.30	1.40	1.50
λ_d	1.00	1.12	1.53	1.78	2.14	2.65

Description of the Load Transfer Platform

h_M	0.00 m	LTP thickness
-------	--------	---------------

Description of natural soil

H_w 2.75 m Depth of the groundwater table in relation to the footing underside

Layer n°	H (m)	E_m (kPa)	α (-)	q_s (kPa)	k_r (-)	γ (kN/m ³)	$K \tan \delta$ (-)	z (m)
1	0.25	12,500	0.25	103	0.8	18	1.00	0.25
2	0.17	17,500	0.50	125	0.8	18	1.00	0.42
3	1.43	10,500	0.50	75	2.0	18	0.30	1.85
4	2.30	6,000	1.00	55	2.0	18	0.20	4.15
5	9.48	15,000	0.50	90	2.0	18	0.30	13.63
6	-7.88	15,000	0.50	90	2.0	18	0.30	5.75

Notations

H	Thickness of the layer	γ	Unit weight of the layer
E_m	Pressuremeter modulus of the layer	$K \tan \delta$	Empirical factor related to the type of inclusion and to soil nature
α	Structural coefficient		
q_s	Ultimate skin friction in the layer (NF P 94-262)		
K'	Frank & Zhao factor for the friction (according to the table below)		
z	Depth of the layer base		

Note : By convention, the bottom of CMC is at layer n° 6.

k_r values (according to Frank & Zhao)

Fine-grained soils	2
Coarse-grained soils	0.8

Results

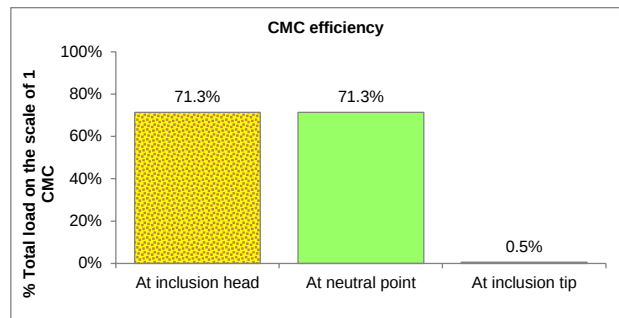
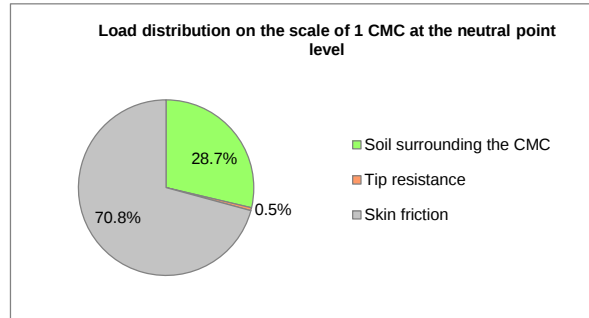
SLS load applied on the footing :
 $Q(-h_M)$ 210 kN/ml

Reinforced soil settlement :
 W 2 mm

Settlement distribution

Settlement of deep layers (below CMC)	0 mm
Punching at the inclusion tip	0 mm
Punching at the inclusion head	0 mm
Elastic shortening of the inclusion	2 mm

SLS load distribution	per inclusion	% total load	on all	% total load
Load applied on the inclusion head	209.7 kN	71.3%	209.7 kN	71.3%
Negative skin friction along the inclusion	0.0 kN	0.0%	0.0 kN	0.0%
Max. load in inclusion	209.7 kN	71.3%	209.7 kN	71.3%
Positive skin friction	208.2 kN	70.8%	208.2 kN	70.8%
Load applied on the inclusion tip	1.5 kN	0.5%	1.5 kN	0.5%
Neutral point depth	0.00 m			
Stress in the soil at the LTP base	44.6 kPa			
Load transferred to the soil at the LTP base	84.3 kN	28.7%	84.3 kN	28.7%



$$N_{ED} \leq R_{v,d} = \frac{q_{net} \times S}{\gamma_{R;d,v} \times \gamma_{R;v}} \rightarrow \text{Domain : } 2$$

STR verifications: compressive stresses in CMC

The material used allows an average compressive stress of
 The average compressive stress in the columns is

SLS

4.62 MPa
 2.97 MPa

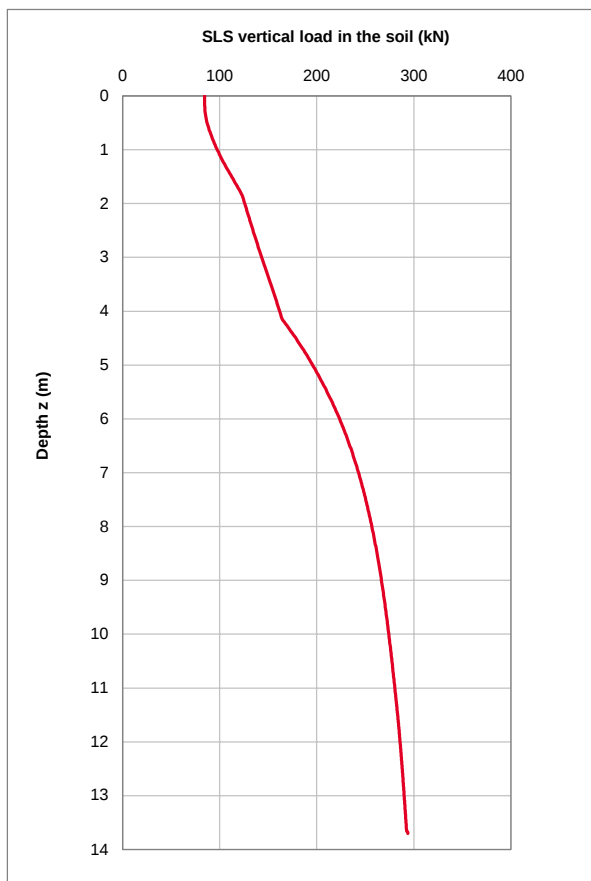
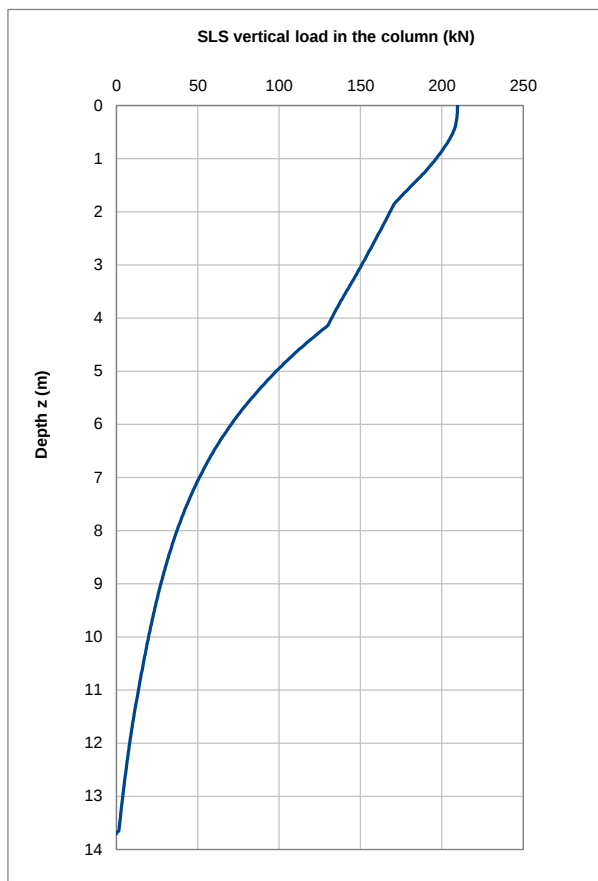
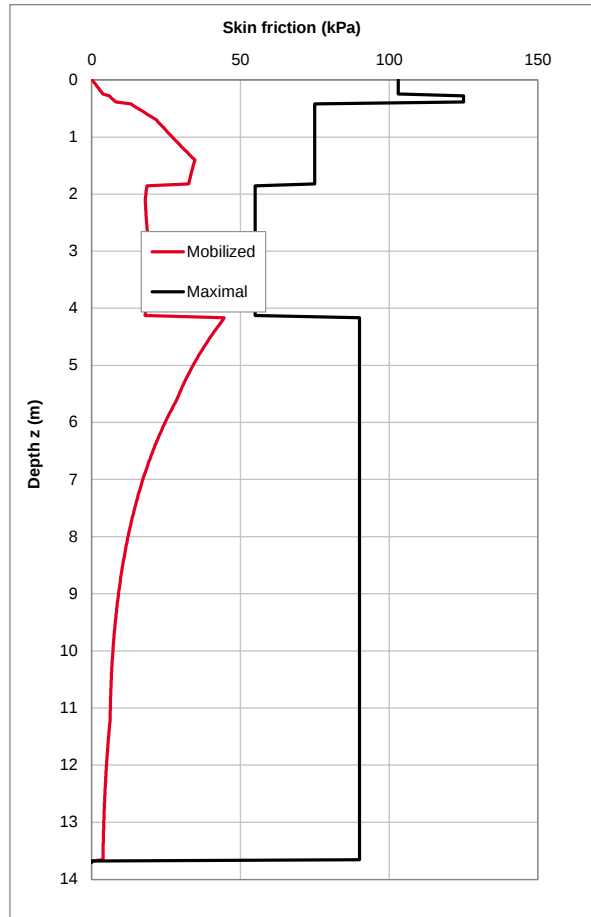
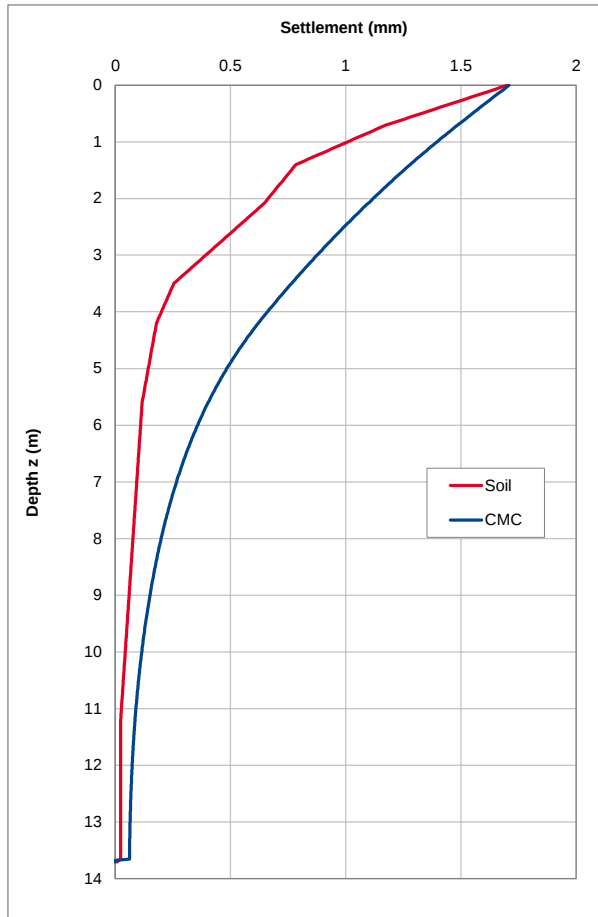
OK

ULS

7.00 MPa
 4.45 MPa

OK

Graphic results

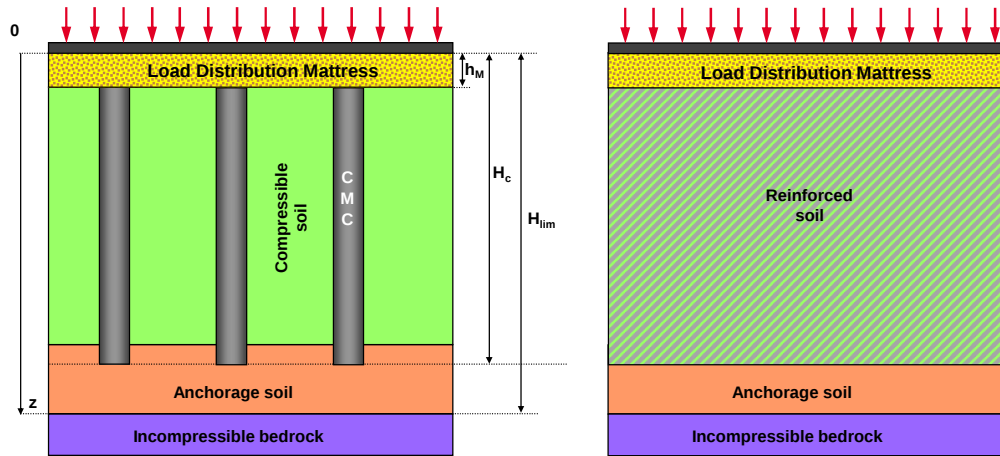


APPENDIX 2: DETAILED CALCULATIONS FOR THE CMC BENEATH GROUND BEARING SLABS

Project name:

 V26472-BIRSTALL-Lidl
 Controlled Modulus Column (CMC®) - Slab

Analysis model



Description of reinforced soil

Dimensions

H_c	14.15 m	CMC anchoring depth from LDM top
D_c	0.3 m	Columns diameter

Description of the the column material

Verifications STR based on: ASIRI

 f_{ck} 16 MPa 28-day unconfined compressive strength

Soil displ.: With Type of test: Load-bearing capacity Presence of steel: No ULS: Fundamental

Calculation of deformation modulus:

E_c	9,300,000 kPa	Concrete	Young's modulus
$f_{cd,avg,SLS}$	4.6 MPa		SLS average compressive stress allowable by the material
$f_{cd,avg,ULS}$	7.0 MPa		ULS average compressive stress allowable by the material

Description of column-soil interaction laws

Concerning the columns base and shaft, the load transfer curves are based on: Frank & Zhao (1982) / NF P 94-262 (2012)

Description of bearing soil layer:

q_b	1,900 kPa	Limit soil resistance at the column bottom	E_M	11.0 MPa	Pressuremeter modulus at column bottom
				Soil type: fine	

Description of natural soil surrounding the columns

q_{net}	675 kPa	Ultimate resistance of the soil surrounding the columns
-----------	---------	---

Grid dimensions according to:

A	9.00 m ²	Column spacing (equivalent square mesh)	Grid section area
S	3.00 m	Column spacing (equivalent square mesh)	

Description of the load transfer platform

h_M	0.5 m	Thickness of LDM	State: Existing
φ	38 °	Internal friction angle	
c'	0 kPa	Cohesion	

Soil profile

H_{lim}	18.645 m	Limit depth of model (geotechnical bedrock or seismic bedrock) from LDM top
H_w	3 m	Depth of the groundwater table from LDM top

N° Soil	Nature	z_{sup} (m)	z_{inf} (m)	Soil type	E_M (kPa)	α (-)	E_γ (kPa)	ν (-)	γ (kN/m ³)	q_s (kPa)	$K \tan \delta$ -
1	Load Distribution Mattress	0.00	0.50	coarse	12,500	0.25	50,000	0.30	18	103	1.00
2	remaining Workin Platform	0.50	1.77	coarse	12,500	0.25	50,000	0.30	18	62	1.00
3	MG silty mixtures	1.77	10.65	fine	7,500	0.50	15,000	0.30	18	62	0.20
4	MG silty mixtures - Landfill	10.65	13.65	fine	7,500	1.00	7,500	0.30	18	89	0.20
5	Penning Lower Coal measu	13.65	18.65	fine	15,000	0.50	30,000	0.30	18		0.30

Notations

z_{sup}	Depth of layer top	γ	Unit weight of the layer
z_{inf}	Depth of layer base	q_s	Limit skin friction for the layer
E_γ	Young's modulus in the layer	E_M	Pressuremeter modulus in the layer
ν	Poisson's coefficient	α	Structural coefficient

Remark

According to Frank and Zhao, the following parameters are used with either as fine-grained or as coarse-grained soil:

End-bearing: k_q values

Fine-grained soils	$11 E_M / D_c$
Coarse-grained soils	$4.8 E_M / D_c$

Skin friction: k_τ values

Fine-grained soils	$2 E_M / D_c$
Coarse-grained soils	$0.8 E_M / D_c$

Overview of the stresses applied in the axisymmetrical calculation

	Permanent (kPa)	Variable (kPa)	TOTAL (kPa)
Uniform stress	q_0	20	20
Uniform factored surcharge applied at the LTP base		q_0	20 kPa
Factored surcharge applied on the grid at the LTP base		Q	180 kN

Results

Settlement

W 8 mm

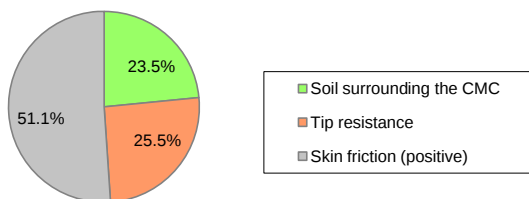
Settlement distribution

Settlement of deep layers (below CMC)	2 mm
Punching at the inclusion bottom	2 mm
Punching at the inclusion head	2 mm
Elastic shortening of the inclusion	2 mm
Settlement of LTP	0 mm

SLS load distribution

	per inclusion	% total load
Negative skin friction in LDM	7.3 kN	4.1%
Load applied on inclusion head	27.4 kN	15.2%
Negative skin friction along the inclusion	110.3 kN	61.3%
Max. load in inclusion	137.7 kN	76.5%
Positive skin friction	91.9 kN	51.1%
Load applied on inclusion bottom	45.8 kN	25.5%
Depth of neutral point	10.75 m	
Stress in soil at CMC top level	17.1 kPa	
Load transferred to the soil at CMC top level	152.6 kN	84.8%

Load distribution on the scale of 1 CMC at neutral point level



Equivalent homogenized soil profile

- load distribution mat

Thickness =	0.5	m
E_{oed} =	67.3	MPa

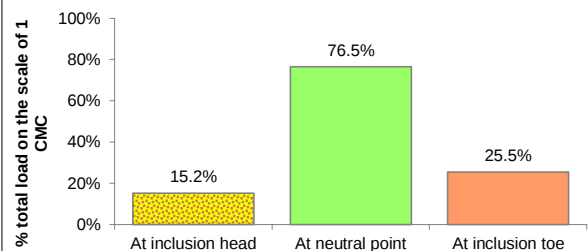
- reinforced soil

Thickness =	13.645	m
E_{oed} =	45.5	MPa

- soil underlying the reinforced soil

Thickness =	4.5	m
E_{oed} =	40.4	MPa

Efficiency of CMC



STR verifications: compressive stresses in CMC

The material used allows an average compressive stress of
The average compressive stress in the columns is

SLS

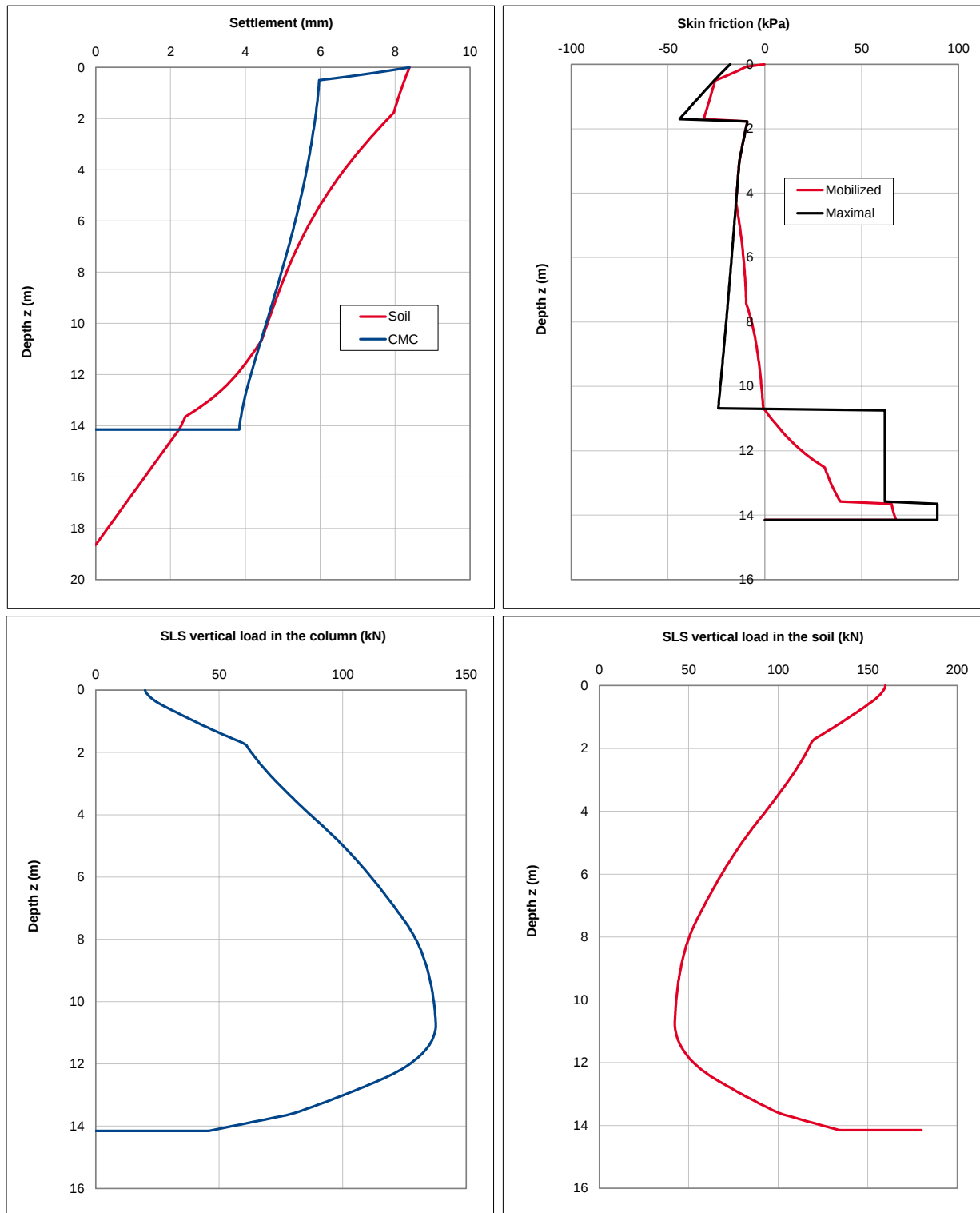
4.6 MPa
1.9 MPa

OK

ULS

7.0 MPa
2.9 MPa

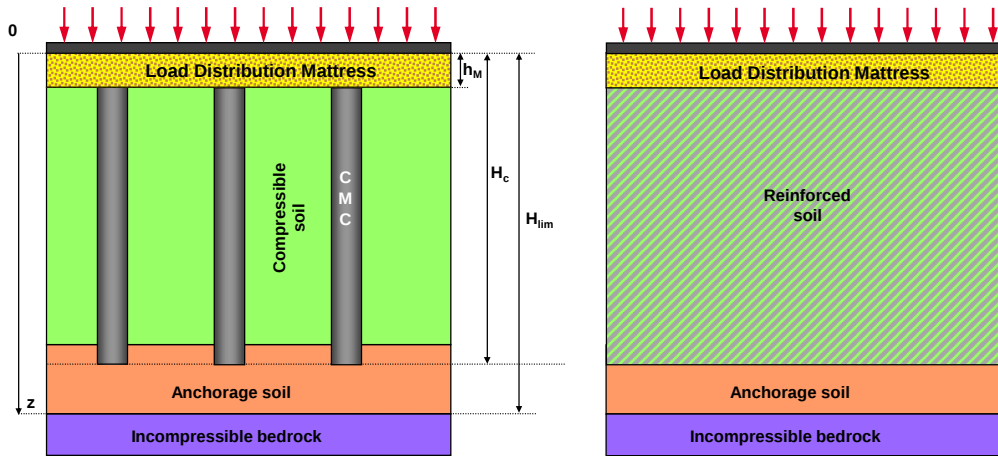
OK

Graphic results

Project name:

V26472-BIRSTALL-External yard area
Controlled Modulus Column (CMC®) - Slab

Analysis model



Description of reinforced soil

Dimensions

H_c	6.24 m	CMC anchoring depth from LDM top
D_c	0.3 m	Columns diameter

Description of the column material

Verifications STR based on: ASIRI

f_{ck} 16 MPa 28-day unconfined compressive strength

Soil displ.: With Type of test: Load-bearing capacity Presence of steel: No ULS: Fundamental

Calculation of deformation modulus:

E_c	9,300,000 kPa	Concrete	Young's modulus
$f_{cd,avg,SLS}$	4.8 MPa		SLS average compressive stress allowable by the material
$f_{cd,avg,ULS}$	7.0 MPa		ULS average compressive stress allowable by the material

Description of column-soil interaction laws

Concerning the columns base and shaft, the load transfer curves are based on: Frank & Zhao (1982) / NF P 94-262 (2012)

Description of bearing soil layer:

q_b	2,500 kPa	Limit soil resistance at the column bottom	E_M	11.0 MPa	Pressuremeter modulus at column bottom
				Soil type: fine	

Description of natural soil surrounding the columns

q_{net}	675 kPa	Ultimate resistance of the soil surrounding the columns
-----------	---------	---

Grid dimensions according to:

A	9.00 m ²	Column spacing (equivalent square mesh)	Grid section area
S	3.00 m	Column spacing (equivalent square mesh)	

Description of the load transfer platform

h_M	0.5 m	Thickness of LDM	State: Added
φ	38 °	Internal friction angle	
c'	0 kPa	Cohesion	

Soil profile

H_{lim}	7.335 m	Limit depth of model (geotechnical bedrock or seismic bedrock) from LDM top
H_w	3 m	Depth of the groundwater table from LDM top

N° Soil	Nature	z_{sup} (m)	z_{inf} (m)	Soil type	E_M (kPa)	α (-)	E_γ (kPa)	ν (-)	γ (kN/m ³)	q_s (kPa)	$K \tan \delta$ -
1	Load Distribution Mattress	0.00	0.50	coarse	12,500	0.25	50,000	0.30	18		1.00
2	remaining Workin Platform	0.50	1.84	coarse	12,500	0.25	50,000	0.30	18	103	1.00
3	MG sandy mixture	1.84	2.00	coarse	17,500	0.33	52,500	0.30	18	125	1.00
4	MG silty mixtures	2.00	3.44	fine	10,500	1.00	10,500	0.30	18	75	0.30
5	MG silty mixtures - Landfill	3.44	5.74	fine	6,000	0.50	12,000	0.30	18	55	0.20
6	Penning Lower Coal measu	5.74	7.34	fine	15,000	0.50	30,000	0.30	18	90	0.30

Notations

z_{sup}	Depth of layer top	γ	Unit weight of the layer
z_{inf}	Depth of layer base	q_s	Limit skin friction for the layer
E_γ	Young's modulus in the layer	E_M	Pressuremeter modulus in the layer
ν	Poisson's coefficient	α	Structural coefficient

Remark

According to Frank and Zhao, the following parameters are used with either as fine-grained or as coarse-grained soil:

End-bearing: k_a values

Fine-grained soils	$11 E_M / D_c$
Coarse-grained soils	$4.8 E_M / D_c$

Skin friction: k_r values

Fine-grained soils	$2 E_M / D_c$
Coarse-grained soils	$0.8 E_M / D_c$

Overview of the stresses applied in the axisymmetrical calculation

	Permanent (kPa)	Variable (kPa)	TOTAL (kPa)
Uniform stress	q_0	20	20
Uniform factored surcharge applied at the LTP base	q_0	29	kPa
Factored surcharge applied on the grid at the LTP base	Q	261	kN

Results

Settlement

W 6 mm

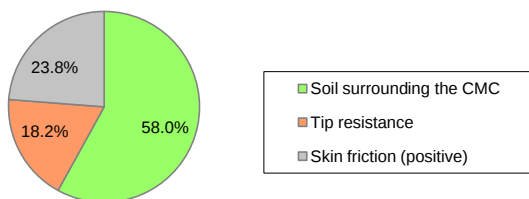
Settlement distribution

Settlement of deep layers (below CMC)	1 mm
Punching at the inclusion bottom	2 mm
Punching at the inclusion head	3 mm
Elastic shortening of the inclusion	1 mm
Settlement of LTP	0 mm

SLS load distribution

	per inclusion	% total load
Negative skin friction in LDM	8.6 kN	3.3%
Load applied on inclusion head	34.0 kN	13.0%
Negative skin friction along the inclusion	75.5 kN	28.9%
Max. load in inclusion	109.6 kN	42.0%
Positive skin friction	62.1 kN	23.8%
Load applied on inclusion bottom	47.4 kN	18.2%
Depth of neutral point	4.27 m	
Stress in soil at CMC top level	25.4 kPa	
Load transferred to the soil at CMC top level	227.0 kN	87.0%

Load distribution on the scale of 1 CMC at neutral point level



Equivalent homogenized soil profile

- load distribution mat

Thickness =	0.5	m
E_{oed} =	67.3	MPa

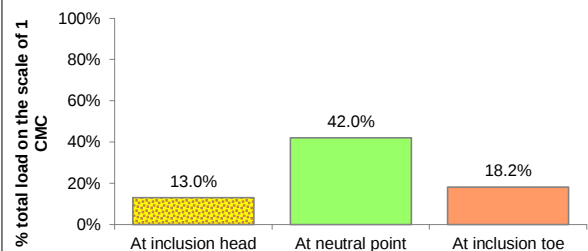
- reinforced soil

Thickness =	5.735	m
E_{oed} =	31.7	MPa

- soil underlying the reinforced soil

Thickness =	1.1	m
E_{oed} =	40.4	MPa

Efficiency of CMC



STR verifications: compressive stresses in CMC

The material used allows an average compressive stress of
The average compressive stress in the columns is

SLS

4.8 MPa
1.6 MPa

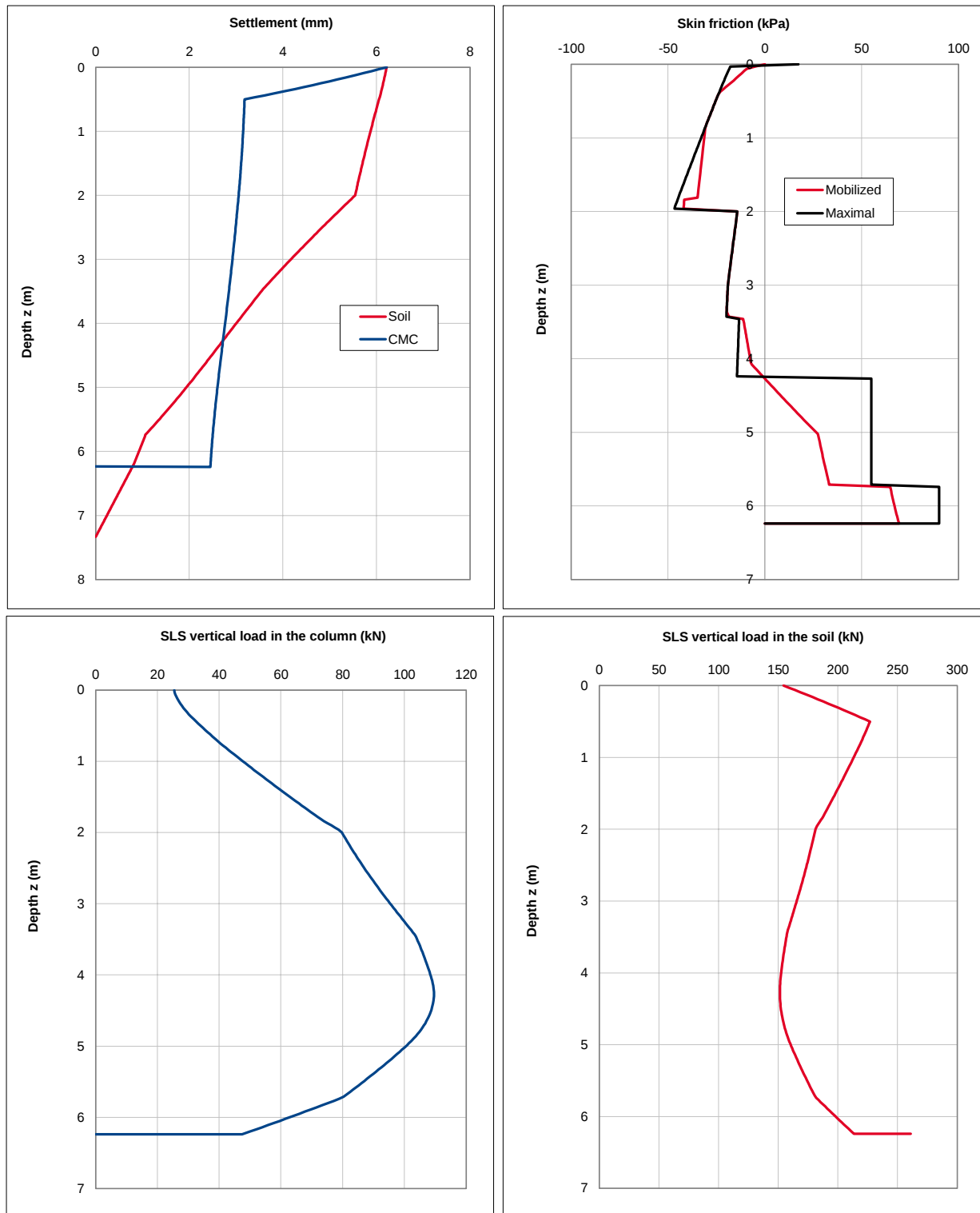
OK

ULS

7.0 MPa
2.3 MPa

OK

Graphic results



APPENDIX F

CMC COMPLETION REPORT

				Contract Number	6903
00	21/01/2026	AH	BK	First Issue	
Rev.	Date	Author	Checked by	Details of Amendments	
Validation Report GROUND IMPROVEMENT WORKS BY CONTROLLED MODULUS COLUMNS					
Birstall					
Contractor: Stonedale Construction  menARD Menard Ltd Henderson House Langley Place Higgins lane Burscough, L40 8JS Tel : +44 (0)1704 891 039 Fax: +44 (0)1704 895 581 Web: www.menard.co.uk www.menard-group.com					

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<u>TEST RESULTS</u>	<u>4</u>
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Scope of Works

Between the dates of 10/11/2025 & 12/12/2025 Menard attended site to install Controlled Modulus Columns (CMCs), beneath the slab of the proposed new Lidl, Home bargains and concrete yard in Birstall for Stonedale Construction. The purpose of this ground improvement solution is to limit total and differential settlements to within acceptable levels and to achieve the bearing capacities required for the structural design

The works were undertaken in a single phase and this validation report summarises the works undertaken, provides the required quality information and provides a validation statement on the success of the works. Not all columns were installed due to obstructions and columns being located within the batter on the Lidl Building.

As part of the quality control for the Controlled Modulus Column works (CMC's), Menard have undertaken 5 no. plate load tests over individual CMCs loaded to 36t for the Lidl and concrete yard and 38t for the Home Bargains.

Concrete cube testing was also undertaken at a rate of 5no. cube samples taken per rig per day with 2nr. tested at 7 days, 2nr. tested at 28 days and 1nr. spare.

References

- V26472-BIRSTALL-Lidl-CMC+BMC tender-STONEDALE_RevB
- CMC Layout drawings:
 - V26472-1A - Birstal - Lidl store - CMC layout - rev A
 - V26472-2A - Birstal - External yard area - CMC layout - rev A
 - V26472-3A - Birstal - Home Bargain store - CMC layout - rev A
- Design Report: V26472 - Birstall Lidl - CMC and BMC design report - rev B
- R00 - P-107631-1 - Lidl Great Britain Limited CPT Report

Summary of works

Total Number of CMCs Installed – 1080 CMC's
Total Lineal Meterage of CMCs – 8953.65 lm
Plate Load Tests – 5

CMCs have been installed beneath:

- Pad/ Strip footings
- Slab
- External areas

Testing Regime

Single CMC Load Tests

Vertical load tests have been undertaken on sacrificial positions. The load test comprises a 600mm circular plate which is positioned centrally over a CMC on a thin layer of sand. The load is applied centrally to the plate by a hydraulic jack using the CMC rig as a “reaction block”. The CMC load test was taken to Qmax 38t.

The loading procedure for Single CMC Load Tests is as follows:

Load Stage	Load applied	Comparator reading times
1	20% Qmax	1 and 5 min
2	0% Qmax	1 and 5 min
3	20% Qmax	1, 2, 3, 4, 5, 10 and 15 min
4	40% Qmax	1, 2, 3, 4, 5, 10 and 15 min
5	60% Qmax	1, 2, 3, 4, 5, 10 and 15 min
6	80% Qmax	1, 2, 3, 4, 5, 10, 15, and 30 min
7	100% Qmax	1, 2, 3, 4, 5, 10, 15, 30 and 60 min
8	50% Qmax	1 and 5 min
9	0% Qmax	1 and 5 min

The load stages are to be carried out for not less than the times specified above or until the settlement is equal or less than 0.02mm per minute.

Test Results

The maximum settlements achieved on tests undertaken to date are provided below along with corresponding installed CMC's and test dates;

Single Load Tests – CMC

Date	Test Number	Column number	Max deflection (mm)
26/11/2025	1	TC1	3.16
27/11/2025	2	TC2	2.44
10/12/2025	3	TC3	2.38
11/12/2025	4	TC4	2.10
11/12/2025	5	TC5	2.34

Conclusion

The ground improvement solution with Controlled Modulus columns has been successfully carried out on the columns beneath the External Yard, Lidl and Home Bargains footprint and Retaining wall.

All testing undertaken is deemed to be satisfactory and in line with Menards design, we can therefore confirm that the settlement criteria and bearing capacities will be ensured on this basis.

This document includes the following:

- Appendix 1 – Daily Quality Sheets
- Appendix 2 – Load test results
- Appendix 3 – Concrete cube test results
- Appendix 4 – As-built Drawings

As-installed drawings for the above scheme will be issued electronically.

Care & Maintenance

The loadings transmitted to the ground under the structural foundation elements (e.g. slabs, strip footings or foundation bases) must never exceed those stated in the specification.

All treated soils (at the surface or in excavations) must be protected from deterioration by trafficking, surface water, frost, acids, other pollutants, or any other cause.

Any construction works requiring dewatering / watering must be carried out in a manner so as not to disturb the improved ground.

The trimming of CMC's must be undertaken in accordance with Menard's guidance document VM/PROC/4028 'Guidance on the Trimming of CMC's.

Any excavation works carried out within or near to the soils improved by ground treatment must be carried out in a manner so as not to disturb the improved ground.

No excavation works should be carried out at all within the zone of influence of the foundations of a structure, founded upon the improved ground (see below diagram).

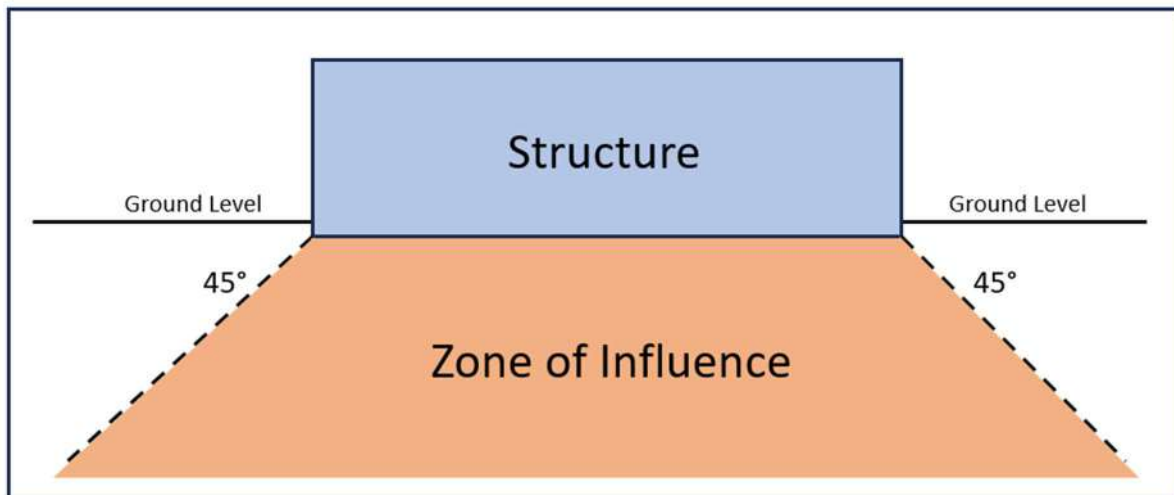


Figure 1 – Example of zone of influence beneath a basic structure.

APPENDIX 1 – DAILY QUALITY SHEETS

Project Name:		Birstall					Form	1
Project Engineer:		Adam Harrison					Contract No.	6903
Technique:		CMC					Date	11/11/2025
Site Supervisor:		Wayne Talbot					Plot/Unit	Concrete Yard
CMC	Tool Diameter	Depth	Material volume	Concrete delivery	Compliant	Comments		
Ref. No.	(mm)	(m)	(m³)					
349	320	5.06	0.49	Readymix	Yes			
120	320	4.93	0.46	Readymix	Yes			
830	320	5.02	0.46	Readymix	Yes			
778	320	5.44	0.46	Readymix	Yes			
789	320	5.14	0.46	Readymix	Yes			
769	320	5.00	0.46	Readymix	Yes			
780	320	4.97	0.46	Readymix	Yes			
790	320	5.01	0.46	Readymix	Yes			
782	320	5.00	0.46	Readymix	Yes			
762	320	5.06	0.46	Readymix	Yes			
771	320	5.06	0.46	Readymix	Yes			
756	320	4.97	0.49	Readymix	Yes			
773	320	4.69	0.49	Readymix	Yes			
763	320	5.00	0.46	Readymix	Yes			
751	320	5.01	0.49	Readymix	Yes			
765	320	5.00	0.46	Readymix	Yes			
757	320	5.01	0.49	Readymix	Yes			
747	320	5.02	0.46	Readymix	Yes			
758	320	5.01	0.46	Readymix	Yes			
752	320	5.01	0.49	Readymix	Yes			
743	320	5.01	0.46	Readymix	Yes			
746	320	4.99	0.46	Readymix	Yes			
753	320	5.00	0.49	Readymix	Yes			
748	320	5.00	0.46	Readymix	Yes			
742	320	5.04	0.42	Readymix	Yes			
749	320	5.00	0.49	Readymix	Yes			
744	320	5.02	0.46	Readymix	Yes			
741	320	4.59	0.46	Readymix	Yes			
745	320	5.01	0.46	Readymix	Yes			
TOTAL	29	145.07	13.54					
CUMUL	29	145.07	13.54					
		Engineer Further Comment:						
		Rig ID:		Pump ID.		Page:		1/1
		Enteco UK3		LP4		Quality Sheet		

Project Name:		Birstall					Form	1
Project Engineer:		Adam Harrison					Contract No.	6903
Technique:		CMC					Date	12/11/2025
Site Supervisor:		Wayne Talbot					Plot/Unit	Concrete Yard
CMC	Tool Diameter	Depth	Material volume	Concrete delivery	Compliant	Comments		
Ref. No.	(mm)	(m)	(m³)					
810	320	5.01	0.52	Readymix	Yes			
826	320	5.07	0.44	Readymix	Yes			
819	320	5.06	0.44	Readymix	Yes			
801	320	5.00	0.44	Readymix	Yes			
820	320	4.79	0.44	Readymix	Yes			
812	320	5.00	0.52	Readymix	Yes			
793	320	5.02	0.44	Readymix	Yes			
813	320	5.02	0.48	Readymix	Yes			
804	320	5.00	0.44	Readymix	Yes			
784	320	5.00	0.44	Readymix	Yes			
805	320	4.90	0.44	Readymix	Yes			
796	320	4.96	0.44	Readymix	Yes			
775	320	4.84	0.44	Readymix	Yes			
797	320	5.00	0.44	Readymix	Yes			
786	320	5.01	0.40	Readymix	Yes			
766	320	5.00	0.44	Readymix	Yes			
787	320	4.79	0.40	Readymix	Yes			
776	320	5.02	0.40	Readymix	Yes			
759	320	5.00	0.40	Readymix	Yes			
777	320	5.01	0.40	Readymix	Yes			
767	320	5.01	0.48	Readymix	Yes			
754	320	5.03	0.44	Readymix	Yes			
768	320	5.00	0.44	Readymix	Yes			
760	320	5.00	0.44	Readymix	Yes			
750	320	5.00	0.44	Readymix	Yes			
761	320	5.00	0.44	Readymix	Yes			
755	320	5.01	0.44	Readymix	Yes			
781	320	4.80	0.44	Readymix	Yes			
770	320	5.01	0.44	Readymix	Yes			
779	320	5.01	0.44	Readymix	Yes			
TOTAL	30	149.37	13.24					
CUMUL	30	149.37	13.24					
 menARD		Engineer Further Comment:						
		Rig ID:		Pump ID.		Page:		1/1
		Enteco UK3		LP4		Quality Sheet		

Project Name:		Birstall					Form	1
Project Engineer:		Adam Harrison					Contract No.	6903
Technique:		CMC					Date	18/11/2025
Site Supervisor:		Wayne Talbot					Plot/Unit	Lidl
CMC	Tool Diameter	Depth	Material volume	Concrete delivery	Compliant	Comments		
Ref. No.	(mm)	(m)	(m³)					
114	320	10.08	1.00	Readymix	Yes			
372	320	10.02	0.96	Readymix	Yes			
127	320	10.09	0.96	Readymix	Yes			
153	320	10.07	1.12	Readymix	Yes			
126	320	10.13	1.00	Readymix	Yes			
152	320	10.10	1.16	Readymix	Yes			
371	320	10.08	0.96	Readymix	Yes			
125	320	10.07	0.96	Readymix	Yes			
151	320	10.08	0.96	Readymix	Yes			
370	320	10.08	0.96	Readymix	Yes			
124	320	10.03	1.04	Readymix	Yes			
150	320	10.15	0.96	Readymix	Yes			
369	320	10.07	0.96	Readymix	Yes			
123	320	10.06	1.00	Readymix	Yes			
149	320	10.00	0.96	Readymix	Yes			
368	320	10.10	0.96	Readymix	Yes			
122	320	10.11	0.96	Readymix	Yes			
148	320	10.05	1.00	Readymix	Yes			
367	320	10.20	0.96	Readymix	Yes			
121	320	10.04	0.96	Readymix	Yes			
147	320	10.14	0.96	Readymix	Yes			
173	320	10.18	0.96	Readymix	Yes			
176	320	10.12	0.96	Readymix	Yes			
146	320	10.22	0.96	Readymix	Yes			
366	320	10.04	0.96	Readymix	Yes			
116a_M	320	8.19	0.80	Readymix	Yes			
401	320	10.33	0.96	Readymix	Yes			
381	320	10.39	0.96	Readymix	Yes			
400	320	12.05	1.16	Readymix	Yes			
380	320	10.51	1.00	Readymix	Yes			
TOTAL	30	303.78	28.52					
CUMUL	30	303.78	28.52					
		Engineer Further Comment:						
		Rig ID:		Pump ID.		Page:		1/2
		Enteco UK3		LP4		Quality Sheet		

Project Name:		Birstall				Form	2	
Project Engineer:		Adam Harrison				Contract No.	6903	
Technique:		CMC				Date	18/11/2025	
Site Supervisor:		Wayne Talbot				Plot/Unit	Lidl	
CMC	Tool Diameter	Depth	Material volume	Concrete delivery	Compliant	Comments		
Ref. No.	(mm)	(m)	(m³)					
399	320	13.04	1.24	Readymix	Yes			
379	320	10.05	0.96	Readymix	Yes			
398	320	14.12	1.32	Readymix	Yes			
378	320	10.08	0.96	Readymix	Yes			
397	320	14.06	1.32	Readymix	Yes			
377	320	10.04	0.96	Readymix	Yes			
396	320	13.46	1.28	Readymix	Yes			
376	320	9.92	0.96	Readymix	Yes			
179	320	12.06	1.16	Readymix	Yes			
188	320	11.82	1.16	Readymix	Yes			
195	320	12.33	1.20	Readymix	Yes			
423	320	12.04	1.16	Readymix	Yes			
422	320	13.70	1.36	Readymix	Yes			
444	320	12.55	1.28	Readymix	Yes			
421	320	12.17	1.16	Readymix	Yes			
443	320	12.05	1.16	Readymix	Yes			
465	320	14.25	1.44	Readymix	Yes			
TP2_M	320	14.61	1.44	Readymix	Yes			
464	320	13.63	1.32	Readymix	Yes			
442	320	11.35	1.12	Readymix	Yes			
420	320	12.12	1.16	Readymix	Yes			
419	320	14.30	1.40	Readymix	Yes			
463	320	11.66	1.12	Readymix	Yes			
TOTAL	23	285.41	26.20					
CUMUL	53	589.19	54.72					
 menARD		Engineer Further Comment:						
		Rig ID:		Pump ID.		Page:		2/2
		Enteco UK3		LP4		Quality Sheet		

Project Name:		Birstall				Form	1	
Project Engineer:		Adam Harrison				Contract No.	6903	
Technique:		CMC				Date	13/11/2025	
Site Supervisor:		Wayne Talbot				Plot/Unit	Concrete Yard	
CMC	Tool Diameter	Depth	Material volume	Concrete delivery	Compliant	Comments		
Ref. No.	(mm)	(m)	(m³)					
TP1_M	320	5.02	0.56	Readymix	Yes			
791	320	4.93	0.52	Readymix	Yes			
792	320	5.03	0.44	Readymix	Yes			
802	320	4.60	0.40	Readymix	Yes			
788	320	5.32	0.64	Readymix	Yes			
800	320	5.00	0.60	Readymix	Yes			
811	320	5.20	0.44	Readymix	Yes			
798	320	5.00	0.48	Readymix	Yes			
809	320	5.00	0.44	Readymix	Yes			
818	320	5.01	0.44	Readymix	Yes			
807	320	4.99	0.44	Readymix	Yes			
816	320	4.91	0.44	Readymix	Yes			
822	320	5.01	0.44	Readymix	Yes			
814	320	5.06	0.44	Readymix	Yes			
823	320	5.03	0.44	Readymix	Yes			
829	320	5.01	0.44	Readymix	Yes			
821	320	5.02	0.44	Readymix	Yes			
830/2	320	5.01	0.44	Readymix	Yes			
836	320	5.11	0.44	Readymix	Yes			
828	320	5.00	0.44	Readymix	Yes			
834	320	5.00	0.44	Readymix	Yes			
838	320	5.00	0.44	Readymix	Yes			
840	320	5.00	0.44	Readymix	Yes			
843	320	5.00	0.44	Readymix	Yes			
835	320	5.00	0.44	Readymix	Yes			
TOTAL	25	125.26	11.56					
CUMUL	25	125.26	11.56					
 menARD		Engineer Further Comment:						
		Rig ID:		Pump ID.		Page:		1/1
		Enteco UK3		LP4		Quality Sheet		

Project Name:		Birstall					Form	1
Project Engineer:		Adam Harrison					Contract No.	6903
Technique:		CMC					Date	17/11/2025
Site Supervisor:		Wayne Talbot					Plot/Unit	Concrete Yard
CMC	Tool Diameter	Depth	Material volume	Concrete delivery	Compliant	Comments		
Ref. No.	(mm)	(m)	(m³)					
107	320	11.31	1.24	Readymix	Yes			
90	320	10.06	0.96	Readymix	Yes			
106	320	10.03	0.96	Readymix	Yes			
89	320	10.07	0.96	Readymix	Yes			
105	320	10.03	0.96	Readymix	Yes			
88	320	10.09	0.96	Readymix	Yes			
104	320	10.12	0.96	Readymix	Yes			
87	320	10.11	0.96	Readymix	Yes			
103	320	10.06	0.96	Readymix	Yes			
86	320	10.11	0.96	Readymix	Yes			
102	320	10.02	1.00	Readymix	Yes			
85	320	10.12	0.96	Readymix	Yes			
101	320	10.04	0.96	Readymix	Yes			
84	320	10.04	1.04	Readymix	Yes			
100	320	10.02	1.00	Readymix	Yes			
83	320	10.59	1.04	Readymix	Yes			
99	320	9.24	0.92	Readymix	Yes			
82	320	10.08	0.96	Readymix	Yes			
98	320	10.25	0.96	Readymix	Yes			
97	320	10.08	0.96	Readymix	Yes			
81a_M	320	8.04	0.80	Readymix	Yes			
81	320	10.04	0.96	Readymix	Yes			
80	320	10.03	0.96	Readymix	Yes			
193	320	10.12	0.96	Readymix	Yes			
192	320	10.09	0.96	Readymix	Yes			
187	320	10.08	0.96	Readymix	Yes			
181	320	10.12	0.96	Readymix	Yes			
102/2	320	10.01	0.96	Readymix	Yes			
178	320	10.16	0.96	Readymix	Yes			
175	320	10.09	1.00	Readymix	Yes			
TOTAL	30	301.25	29.16					
CUMUL	30	301.25	29.16					
		Engineer Further Comment:						
		Rig ID:		Pump ID.		Page:		1/2
		Enteco UK3		LP4		Quality Sheet		

Project Name:		Birstall				Form	2
Project Engineer:		Adam Harrison				Contract No.	6903
Technique:		CMC				Date	17/11/2025
Site Supervisor:		Wayne Talbot				Plot/Unit	Concrete Yard
CMC	Tool Diameter	Depth	Material volume	Concrete delivery	Compliant	Comments	
Ref. No.	(mm)	(m)	(m³)				
172	320	10.02	0.96	Readymix	Yes		
145	320	10.05	0.96	Readymix	Yes		
118	320	10.10	0.96	Readymix	Yes		
116	320	10.07	0.96	Readymix	Yes		
TOTAL	4	40.24	3.84				
CUMUL	34	341.49	33.00				
		Engineer Further Comment:					
Rig ID:		Pump ID.		Page:		2/2	
Enteco UK3		LP4		Quality Sheet			

Project Name:		Birstall					Form	1
Project Engineer:		Adam Harrison					Contract No.	6903
Technique:		CMC					Date	19/11/2025
Site Supervisor:		Wayne Talbot					Plot/Unit	Retaining Wall
CMC	Tool Diameter	Depth	Material volume	Concrete delivery	Compliant	Comments		
Ref. No.	(mm)	(m)	(m³)					
320/2	320	14.34	1.32	Readymix	Yes			
276	320	13.38	1.36	Readymix	Yes			
275	320	11.98	1.16	Readymix	Yes			
319	320	11.92	1.16	Readymix	Yes			
274	320	11.93	1.16	Readymix	Yes			
318	320	11.90	1.16	Readymix	Yes			
273	320	12.02	1.16	Readymix	Yes			
317	320	12.17	1.16	Readymix	Yes			
272	320	11.84	1.12	Readymix	Yes			
316	320	10.99	1.04	Readymix	Yes			
271	320	11.94	1.16	Readymix	Yes			
315	320	10.63	1.08	Readymix	Yes			
314	320	11.95	1.20	Readymix	Yes			
270	320	10.89	1.04	Readymix	Yes			
313	320	12.04	1.16	Readymix	Yes			
269	320	11.11	1.12	Readymix	Yes			
326	320	11.62	1.12	Readymix	Yes			
282	320	11.71	1.12	Readymix	Yes			
325	320	11.89	1.16	Readymix	Yes			
281	320	12.66	1.24	Readymix	Yes			
280	320	11.29	1.08	Readymix	Yes			
324	320	14.77	1.44	Readymix	Yes			
279	320	11.71	1.12	Readymix	Yes			
323	320	12.74	1.24	Readymix	Yes			
278	320	11.75	1.16	Readymix	Yes			
322	320	13.96	1.32	Readymix	Yes			
277	320	11.87	1.20	Readymix	Yes			
321	320	15.48	1.56	Readymix	Yes			
268	320	11.79	1.16	Readymix	Yes			
312	320	10.99	1.12	Readymix	Yes			
TOTAL	30	365.26	35.60					
CUMUL	30	365.26	35.60					
		Engineer Further Comment:						
		Rig ID:		Pump ID.		Page:		1/2
		Enteco UK3		LP4		Quality Sheet		

Project Name:		Birstall				Form	2
Project Engineer:		Adam Harrison				Contract No.	6903
Technique:		CMC				Date	19/11/2025
Site Supervisor:		Wayne Talbot				Plot/Unit	Retaining Wall
CMC	Tool Diameter	Depth	Material volume	Concrete delivery	Compliant	Comments	
Ref. No.	(mm)	(m)	(m³)				
267	320	11.48	1.12	Readymix	Yes		
311	320	11.53	1.08	Readymix	Yes		
266	320	10.64	1.08	Readymix	Yes		
310	320	11.87	1.12	Readymix	Yes		
265	320	11.16	1.08	Readymix	Yes		
309	320	10.49	1.04	Readymix	Yes		
264	320	10.94	1.12	Readymix	Yes		
308	320	11.63	1.08	Readymix	Yes		
263	320	11.00	1.04	Readymix	Yes		
307	320	11.76	1.16	Readymix	Yes		
262	320	12.49	1.24	Readymix	Yes		
306	320	11.35	1.08	Readymix	Yes		
261	320	10.50	1.00	Readymix	Yes		
305	320	13.73	1.28	Readymix	Yes		
260	320	15.39	1.48	Readymix	Yes		
304	320	15.61	1.44	Readymix	Yes		
259	320	11.74	1.12	Readymix	Yes		
303	320	15.80	1.52	Readymix	Yes		
258	320	16.12	1.64	Readymix	Yes		
302	320	16.15	1.64	Readymix	Yes		
257	320	15.57	1.52	Readymix	Yes		
301	320	16.26	1.60	Readymix	Yes		
256	320	15.45	1.56	Readymix	Yes		
TOTAL	23	298.66	29.04				
CUMUL	53	663.92	64.64				
		Engineer Further Comment:					
Rig ID:		Pump ID.		Page:		2/2	
Enteco UK3		LP4		Quality Sheet			

Project Name:		Birstall				Form	1	
Project Engineer:		Adam Harrison				Contract No.	6903	
Technique:		CMC				Date	20/11/2025	
Site Supervisor:		Wayne Talbot				Plot/Unit	Retaining Wall	
CMC	Tool Diameter	Depth	Material volume	Concrete delivery	Compliant	Comments		
Ref. No.	(mm)	(m)	(m³)					
300	320	15.92	1.48	Readymix	Yes			
299	320	16.00	1.60	Readymix	Yes			
255	320	15.53	1.48	Readymix	Yes			
254	320	16.12	1.48	Readymix	Yes			
298	320	16.05	1.48	Readymix	Yes			
297	320	16.02	1.48	Readymix	Yes			
253	320	15.67	1.48	Readymix	Yes			
252	320	15.18	1.44	Readymix	Yes			
296	320	15.06	1.44	Readymix	Yes			
251	320	12.66	1.18	Readymix	Yes			
295	320	15.09	1.44	Readymix	Yes			
250	320	14.53	1.41	Readymix	Yes			
294	320	15.23	1.41	Readymix	Yes			
338	320	16.04	1.48	Readymix	Yes			
344	320	16.05	1.52	Readymix	Yes			
343	320	16.03	1.48	Readymix	Yes			
337	320	14.93	1.41	Readymix	Yes			
293	320	16.06	1.52	Readymix	Yes			
249	320	14.49	1.44	Readymix	Yes			
342	320	15.09	1.41	Readymix	Yes			
336	320	15.04	1.44	Readymix	Yes			
292	320	14.59	1.44	Readymix	Yes			
248	320	14.71	1.41	Readymix	Yes			
341	320	15.35	1.44	Readymix	Yes			
335	320	14.63	1.41	Readymix	Yes			
291	320	14.29	1.37	Readymix	Yes			
247	320	14.06	1.33	Readymix	Yes			
246	320	14.59	1.37	Readymix	Yes			
290	320	14.52	1.37	Readymix	Yes			
334	320	14.65	1.37	Readymix	Yes			
TOTAL	30	454.18	43.01					
CUMUL	30	454.18	43.01					
		Engineer Further Comment:						
		Rig ID:		Pump ID.		Page:		1/2
		Enteco UK3		LP4		Quality Sheet		

Project Name:		Birstall				Form	2
Project Engineer:		Adam Harrison				Contract No.	6903
Technique:		CMC				Date	20/11/2025
Site Supervisor:		Wayne Talbot				Plot/Unit	Retaining Wall
CMC	Tool Diameter	Depth	Material volume	Concrete delivery	Compliant	Comments	
Ref. No.	(mm)	(m)	(m³)				
340	320	14.54	1.37	Readymix	Yes		
339	320	14.68	1.37	Readymix	Yes		
333	320	14.53	1.37	Readymix	Yes		
289	320	14.36	1.33	Readymix	Yes		
245	320	13.74	1.33	Readymix	Yes		
332	320	14.32	1.29	Readymix	Yes		
288	320	14.35	1.33	Readymix	Yes		
287	320	13.81	1.29	Readymix	Yes		
331	320	14.22	1.29	Readymix	Yes		
286	320	13.73	1.25	Readymix	Yes		
330	320	13.74	1.29	Readymix	Yes		
329	320	13.04	1.22	Readymix	Yes		
285	320	13.76	1.29	Readymix	Yes		
TOTAL	13	182.82	17.02				
CUMUL	43	637.00	60.03				
		Engineer Further Comment:					
		Rig ID:		Pump ID.	Page:		2/2
		Enteco UK3		LP4		Quality Sheet	

Project Name:		Birstall				Form	1
Project Engineer:		Adam Harrison				Contract No.	6903
Technique:		CMC				Date	21/11/2025
Site Supervisor:		Wayne Talbot				Plot/Unit	Retaining Wall
CMC	Tool Diameter	Depth	Material volume	Concrete delivery	Compliant	Comments	
Ref. No.	(mm)	(m)	(m³)				
284	320	14.28	1.33	Readymix	Yes		
328	320	14.20	1.37	Readymix	Yes		
283	320	14.21	1.33	Readymix	Yes		
327	320	14.16	1.33	Readymix	Yes		
417	320	12.90	1.22	Readymix	Yes		
462	320	14.76	1.44	Readymix	Yes		
440	320	15.04	1.37	Readymix	Yes		
418/2	320	14.15	1.37	Readymix	Yes		
441	320	14.96	1.41	Readymix	Yes		
446	320	16.00	1.52	Readymix	Yes		
447	320	15.83	1.52	Readymix	Yes		
448	320	12.98	1.22	Readymix	Yes		
426	320	10.30	0.99	Readymix	Yes		
425	320	12.52	1.22	Readymix	Yes		
424	320	14.79	1.44	Readymix	Yes		
TOTAL	15	211.08	20.08				
CUMUL	15	211.08	20.08				
		Engineer Further Comment:					
		Rig ID:		Pump ID.	Page:		1/1
		Enteco UK3		LP4		Quality Sheet	

Project Name:		Birstall				Form	1
Project Engineer:		Adam Harrison				Contract No.	6903
Technique:		CMC				Date	24/11/2025
Site Supervisor:		Wayne Talbot				Plot/Unit	Lidl
CMC	Tool Diameter	Depth	Material volume	Concrete delivery	Compliant	Comments	
Ref. No.	(mm)	(m)	(m³)				
404	320	9.76	1.03	Readymix	Yes		
402	320	13.32	1.33	Readymix	Yes		
403	320	12.50	1.22	Readymix	Yes		
382	320	14.53	1.44	Readymix	Yes		
384	320	10.41	0.99	Readymix	Yes		
383	320	12.75	1.18	Readymix	Yes		
154	320	12.44	1.18	Readymix	Yes		
128	320	14.01	1.33	Readymix	Yes		
155	320	15.59	1.52	Readymix	Yes		
129	320	15.05	1.41	Readymix	Yes		
157	320	9.75	0.91	Readymix	Yes		
156	320	9.78	1.03	Readymix	Yes		
130	320	10.27	1.52	Readymix	Yes		
374	320	9.89	0.95	Readymix	Yes		
373	320	9.58	0.91	Readymix	Yes		
110	320	15.01	0.91	Readymix	Yes		
TOTAL	16	194.64	18.86				
CUMUL	16	194.64	18.86				
		Engineer Further Comment:					
		Rig ID:		Pump ID.	Page:		1/1
		Enteco UK3		LP4		Quality Sheet	

Project Name:		Birstall					Form	1
Project Engineer:		Adam Harrison					Contract No.	6903
Technique:		CMC					Date	25/11/2025
Site Supervisor:		Wayne Talbot					Plot/Unit	Lidl
CMC	Tool Diameter	Depth	Material volume	Concrete delivery	Compliant	Comments		
Ref. No.	(mm)	(m)	(m³)					
111	320	11.40	1.14	Readymix	Yes			
94	320	15.24	1.48	Readymix	Yes			
109	320	14.94	1.44	Readymix	Yes			
108	320	9.07	0.87	Readymix	Yes			
93	320	10.02	0.99	Readymix	Yes			
92/2	320	14.98	1.44	Readymix	Yes			
91	320	13.40	1.29	Readymix	Yes			
112	320	9.31	0.87	Readymix	Yes			
95	320	10.16	0.95	Readymix	Yes			
65	320	9.27	0.87	Readymix	Yes			
50	320	7.89	0.76	Readymix	Yes			
47	320	10.00	0.99	Readymix	Yes			
31	320	13.88	1.33	Readymix	Yes			
44	320	10.87	1.03	Readymix	Yes			
9	320	8.32	0.80	Readymix	Yes			
483/2	320	15.75	1.63	Readymix	Yes			
462/2	320	14.94	1.44	Readymix	Yes			
228	320	15.23	1.41	Readymix	Yes			
222	320	14.95	1.41	Readymix	Yes			
482	320	14.86	1.44	Readymix	Yes			
217	320	14.73	1.33	Readymix	Yes			
461	320	14.26	1.33	Readymix	Yes			
440/2	320	14.61	1.41	Readymix	Yes			
213	320	13.44	1.22	Readymix	Yes			
209	320	10.22	0.95	Readymix	Yes			
439	320	13.48	1.25	Readymix	Yes			
206	320	11.43	1.04	Readymix	Yes			
418/3	320	14.04	1.36	Readymix	Yes			
203	320	10.01	0.96	Readymix	Yes			
417/2	320	12.96	1.28	Readymix	Yes			
TOTAL	30	373.66	35.71					
CUMUL	30	373.66	35.71					
		Engineer Further Comment:						
		Rig ID:		Pump ID.		Page:		1/2
		Enteco UK3		LP4		Quality Sheet		

Project Name:		Birstall				Form	2
Project Engineer:		Adam Harrison				Contract No.	6903
Technique:		CMC				Date	25/11/2025
Site Supervisor:		Wayne Talbot				Plot/Unit	Lidl
CMC	Tool Diameter	Depth	Material volume	Concrete delivery	Compliant	Comments	
Ref. No.	(mm)	(m)	(m³)				
198	320	10.14	0.92	Readymix	Yes		
224	320	12.76	1.20	Readymix	Yes		
225	320	14.14	1.32	Readymix	Yes		
230	320	14.50	1.28	Readymix	Yes		
227	320	14.64	1.36	Readymix	Yes		
226/3	320	14.36	1.40	Readymix	Yes		
221	320	13.58	1.24	Readymix	Yes		
218	320	10.05	0.92	Readymix	Yes		
219	320	11.86	1.12	Readymix	Yes		
216	320	13.26	1.18	Readymix	Yes		
214	320	13.68	1.28	Readymix	Yes		
211	320	13.50	1.24	Readymix	Yes		
460	320	13.68	1.24	Readymix	Yes		
438	320	13.27	1.28	Readymix	Yes		
208	320	13.83	1.40	Readymix	Yes		
TOTAL	15	197.25	18.38				
CUMUL	45	570.91	54.09				
		Engineer Further Comment:					
Rig ID:		Pump ID.		Page:		2/2	
Enteco UK3		LP4		Quality Sheet			

Project Name:		Birstall					Form	1
Project Engineer:		Adam Harrison					Contract No.	6903
Technique:		CMC					Date	26/11/2025
Site Supervisor:		Wayne Talbot					Plot/Unit	Lidl
CMC	Tool Diameter	Depth	Material volume	Concrete delivery	Compliant	Comments		
Ref. No.	(mm)	(m)	(m³)					
205	320	13.81	1.30	Readymix	Yes			
202	320	13.64	1.30	Readymix	Yes			
200	320	13.25	1.22	Readymix	Yes			
197	320	13.01	1.22	Readymix	Yes			
416	320	13.23	1.26	Readymix	Yes			
183	320	9.42	0.87	Readymix	Yes			
194	320	9.90	0.91	Readymix	Yes			
190	320	12.79	1.26	Readymix	Yes			
191	320	12.57	1.22	Readymix	Yes			
186	320	12.14	1.19	Readymix	Yes			
185	320	12.43	1.19	Readymix	Yes			
184	320	12.71	1.22	Readymix	Yes			
449	320	12.52	1.22	Readymix	Yes			
450	320	9.96	0.95	Readymix	Yes			
451	320	10.20	0.95	Readymix	Yes			
429	320	10.30	0.95	Readymix	Yes			
428	320	9.73	0.95	Readymix	Yes			
427	320	9.39	0.87	Readymix	Yes			
405	320	16.06	1.54	Readymix	Yes			
406	320	11.10	1.03	Readymix	Yes			
407	320	10.60	0.95	Readymix	Yes			
387	320	9.10	0.87	Readymix	Yes			
386	320	8.73	0.91	Readymix	Yes			
385	320	8.21	0.79	Readymix	Yes			
161	320	9.21	0.87	Readymix	Yes			
134	320	9.89	0.91	Readymix	Yes			
160	320	9.46	0.91	Readymix	Yes			
133	320	10.02	0.91	Readymix	Yes			
357	320	9.78	0.91	Readymix	Yes			
159	320	8.62	0.79	Readymix	Yes			
TOTAL	30	331.78	31.44					
CUMUL	30	331.78	31.44					
		Engineer Further Comment:						
		Rig ID:		Pump ID.		Page:		1/2
		Enteco UK3		LP4		Quality Sheet		

Project Name:		Birstall				Form	2
Project Engineer:		Adam Harrison				Contract No.	6903
Technique:		CMC				Date	26/11/2025
Site Supervisor:		Wayne Talbot				Plot/Unit	Lidl
CMC	Tool Diameter	Depth	Material volume	Concrete delivery	Compliant	Comments	
Ref. No.	(mm)	(m)	(m³)				
158	320	7.79	0.75	Readymix	Yes		
131	320	7.41	0.71	Readymix	Yes		
132	320	8.27	0.75	Readymix	Yes		
355	320	9.78	0.91	Readymix	Yes		
356	320	9.52	0.91	Readymix	Yes		
375	320	9.15	0.95	Readymix	Yes		
68	320	9.58	0.91	Readymix	Yes		
71	320	9.83	0.91	Readymix	Yes		
56	320	9.48	0.87	Readymix	Yes		
70	320	9.29	0.83	Readymix	Yes		
55	320	8.96	0.83	Readymix	Yes		
69	320	9.60	0.91	Readymix	Yes		
454	320	9.70	0.91	Readymix	Yes		
453	320	9.99	0.95	Readymix	Yes		
452	320	10.19	0.99	Readymix	Yes		
430	320	10.92	1.03	Readymix	Yes		
431	320	11.03	1.03	Readymix	Yes		
432	320	9.95	0.95	Readymix	Yes		
410	320	16.70	1.82	Readymix	Yes		
409	320	13.16	1.74	Readymix	Yes		
TOTAL	20	200.30	19.66				
CUMUL	50	532.08	51.10				
		Engineer Further Comment:					
Rig ID:		Pump ID.		Page:		2/2	
Enteco UK3		LP4		Quality Sheet			

Project Name:		Birstall					Form	1
Project Engineer:		Adam Harrison					Contract No.	6903
Technique:		CMC					Date	27/11/2025
Site Supervisor:		Wayne Talbot					Plot/Unit	Lidl
CMC	Tool Diameter	Depth	Material volume	Concrete delivery	Compliant	Comments		
Ref. No.	(mm)	(m)	(m³)					
408	320	11.58	1.10	Readymix	Yes			
388	320	10.98	1.10	Readymix	Yes			
389	320	16.43	1.60	Readymix	Yes			
390	320	10.70	1.03	Readymix	Yes			
135	320	10.46	0.99	Readymix	Yes			
162	320	9.84	0.91	Readymix	Yes			
163	320	8.86	0.84	Readymix	Yes			
164	320	9.04	0.84	Readymix	Yes			
137	320	8.72	0.80	Readymix	Yes			
136	320	16.07	1.71	Readymix	Yes			
360	320	8.90	0.87	Readymix	Yes			
358	320	9.69	0.95	Readymix	Yes			
359	320	7.56	0.72	Readymix	Yes			
57	320	8.65	0.80	Readymix	Yes			
72	320	9.12	0.87	Readymix	Yes			
74	320	9.97	0.95	Readymix	Yes			
73	320	15.77	1.56	Readymix	Yes			
59	320	9.59	0.87	Readymix	Yes			
58	320	16.03	1.60	Readymix	Yes			
350	320	9.17	0.82	Readymix	Yes			
36	320	8.19	0.76	Readymix	Yes			
17	320	8.58	0.86	Readymix	Yes			
30	320	8.62	0.90	Readymix	Yes			
29	320	8.78	0.82	Readymix	Yes			
175	320	8.82	0.86	Readymix	Yes			
16	320	10.35	1.01	Readymix	Yes			
15	320	8.53	0.86	Readymix	Yes			
54	320	9.67	1.25	Readymix	Yes			
10	320	8.51	0.78	Readymix	Yes			
32	320	8.39	0.78	Readymix	Yes			
TOTAL	30	305.57	29.81					
CUMUL	30	305.57	29.81					
		Engineer Further Comment:						
		Rig ID:		Pump ID.		Page:		1/2
		Enteco UK3		LP4		Quality Sheet		

Project Name:		Birstall				Form	2
Project Engineer:		Adam Harrison				Contract No.	6903
Technique:		CMC				Date	27/11/2025
Site Supervisor:		Wayne Talbot				Plot/Unit	Lidl
CMC	Tool Diameter	Depth	Material volume	Concrete delivery	Compliant	Comments	
Ref. No.	(mm)	(m)	(m³)				
11	320	7.86	0.74	Readymix	Yes		
33	320	9.87	0.97	Readymix	Yes		
12	320	9.69	0.94	Readymix	Yes		
34	320	8.92	0.90	Readymix	Yes		
13	320	8.01	0.82	Readymix	Yes		
28	320	9.24	0.90	Readymix	Yes		
348	320	10.47	0.97	Readymix	Yes		
35	320	10.00	0.97	Readymix	Yes		
14	320	7.57	0.70	Readymix	Yes		
455	320	10.63	0.97	Readymix	Yes		
456	320	8.80	0.82	Readymix	Yes		
457	320	9.13	0.82	Readymix	Yes		
435	320	9.57	0.90	Readymix	Yes		
434	320	9.50	0.86	Readymix	Yes		
433	320	10.43	0.97	Readymix	Yes		
411	320	16.94	1.72	Readymix	Yes		
412	320	17.34	1.72	Readymix	Yes		
413	320	17.93	1.79	Readymix	Yes		
393	320	9.83	0.90	Readymix	Yes		
TOTAL	19	201.73	19.38				
CUMUL	49	507.30	49.19				
		Engineer Further Comment:					
Rig ID:		Pump ID.		Page:		2/2	
Enteco UK3		LP4		Quality Sheet			

Project Name:		Birstall				Form	1	
Project Engineer:		Adam Harrison				Contract No.	6903	
Technique:		CMC				Date	01/12/2025	
Site Supervisor:		Wayne Talbot				Plot/Unit	Lidl	
CMC	Tool Diameter	Depth	Material volume	Concrete delivery	Compliant	Comments		
Ref. No.	(mm)	(m)	(m³)					
391	320	16.44	1.68	Readymix	Yes			
392/2	320	16.27	1.72	Readymix	Yes			
138	320	9.89	0.90	Readymix	Yes			
165	320	11.36	1.05	Readymix	Yes			
141	320	9.01	0.94	Readymix	Yes			
167	320	9.88	0.90	Readymix	Yes			
166	320	11.42	1.09	Readymix	Yes			
139	320	12.81	1.25	Readymix	Yes			
140	320	9.82	0.90	Readymix	Yes			
363	320	9.41	0.90	Readymix	Yes			
361	320	11.71	1.09	Readymix	Yes			
362	320	9.65	0.90	Readymix	Yes			
60	320	10.27	0.94	Readymix	Yes			
75	320	9.65	0.90	Readymix	Yes			
76	320	8.56	0.78	Readymix	Yes			
77	320	8.60	0.78	Readymix	Yes			
63	320	8.13	0.78	Readymix	Yes			
62	320	8.58	0.78	Readymix	Yes			
61	320	10.66	1.01	Readymix	Yes			
351	320	9.81	0.94	Readymix	Yes			
352	320	8.70	0.78	Readymix	Yes			
353	320	8.64	0.90	Readymix	Yes			
18	320	9.92	0.90	Readymix	Yes			
37	320	8.85	0.82	Readymix	Yes			
19	320	8.63	0.82	Readymix	Yes			
38	320	9.07	0.82	Readymix	Yes			
20	320	8.75	0.82	Readymix	Yes			
39	320	9.12	0.82	Readymix	Yes			
40	320	8.32	0.78	Readymix	Yes			
3	320	8.25	0.78	Readymix	Yes			
TOTAL	30	300.18	28.47					
CUMUL	30	300.18	28.47					
		Engineer Further Comment:						
		Rig ID:		Pump ID.		Page:		1/2
		Enteco UK3		LP4		Quality Sheet		

Project Name:		Birstall				Form	2
Project Engineer:		Adam Harrison				Contract No.	6903
Technique:		CMC				Date	01/12/2025
Site Supervisor:		Wayne Talbot				Plot/Unit	Lidl
CMC	Tool Diameter	Depth	Material volume	Concrete delivery	Compliant	Comments	
Ref. No.	(mm)	(m)	(m³)				
1	320	8.75	0.82	Readymix	Yes		
212	320	9.83	0.92	Readymix	Yes		
210	320	8.06	0.77	Readymix	Yes		
459	320	9.56	0.85	Readymix	Yes		
458	320	9.70	0.96	Readymix	Yes		
207	320	9.37	0.85	Readymix	Yes		
204	320	8.61	0.81	Readymix	Yes		
201	320	7.45	0.70	Readymix	Yes		
199	320	8.54	0.81	Readymix	Yes		
436	320	9.61	0.90	Readymix	Yes		
437	320	8.57	0.77	Readymix	Yes		
196	320	17.49	1.77	Readymix	Yes		
189	320	9.95	0.92	Readymix	Yes		
182	320	8.28	0.77	Readymix	Yes		
415	320	17.48	1.81	Readymix	Yes		
414	320	18.46	1.73	Readymix	Yes		
180	320	10.82	1.23	Readymix	Yes		
394	320	11.55	1.16	Readymix	Yes		
395	320	10.65	1.31	Readymix	Yes		
177	320	10.53	1.04	Readymix	Yes		
174	320	10.90	1.08	Readymix	Yes		
171	320	10.65	1.08	Readymix	Yes		
144	320	8.51	0.85	Readymix	Yes		
119	320	10.17	0.96	Readymix	Yes		
117	320	10.24	1.00	Readymix	Yes		
170	320	10.46	1.00	Readymix	Yes		
168	320	10.12	1.00	Readymix	Yes		
142	320	10.22	1.27	Readymix	Yes		
TOTAL	28	294.53	29.14				
CUMUL	58	594.71	57.61				
		Engineer Further Comment:					
		Rig ID:		Pump ID.		Page:	
		Enteco UK3		LP4		2/2	
				Quality Sheet			

Project Name:		Birstall					Form	1
Project Engineer:		Adam Harrison					Contract No.	6903
Technique:		CMC					Date	02/12/2025
Site Supervisor:		Wayne Talbot					Plot/Unit	Lidl
CMC	Tool Diameter	Depth	Material volume	Concrete delivery	Compliant	Comments		
Ref. No.	(mm)	(m)	(m³)					
364	320	8.21	0.84	Readymix	Yes			
115	320	8.33	0.76	Readymix	Yes			
113	320	8.59	0.84	Readymix	Yes			
365	320	9.22	0.87	Readymix	Yes			
96	320	9.50	0.91	Readymix	Yes			
66	320	8.96	0.87	Readymix	Yes			
51	320	9.19	0.91	Readymix	Yes			
78	320	9.12	0.91	Readymix	Yes			
64	320	10.02	0.99	Readymix	Yes			
67	320	9.66	0.91	Readymix	Yes			
347	320	11.54	1.10	Readymix	Yes			
346	320	10.65	0.99	Readymix	Yes			
1044	320	6.27	0.65	Readymix	Yes			
1045	320	5.06	0.49	Readymix	Yes			
1168	320	4.92	0.57	Readymix	Yes			
1250	320	3.12	0.27	Readymix	Yes			
1034	320	3.08	0.27	Readymix	Yes			
1035	320	3.05	0.27	Readymix	Yes			
1038	320	3.08	0.27	Readymix	Yes			
1039	320	3.07	0.27	Readymix	Yes			
1040	320	3.12	0.27	Readymix	Yes			
1237	320	3.13	0.27	Readymix	Yes			
1251	320	3.05	0.27	Readymix	Yes			
1170	320	3.03	0.27	Readymix	Yes			
1050	320	3.09	0.27	Readymix	Yes			
1054	320	3.07	0.27	Readymix	Yes			
1264	320	3.13	0.27	Readymix	Yes			
1265	320	3.04	0.27	Readymix	Yes			
1052	320	3.04	0.27	Readymix	Yes			
1172	320	4.92	0.42	Readymix	Yes			
TOTAL	30	177.26	16.81					
CUMUL	30	177.26	16.81					
		Engineer Further Comment:						
		Rig ID:		Pump ID.		Page:		1/4
		Enteco UK3		LP4		Quality Sheet		

Project Name:		Birstall				Form	2	
Project Engineer:		Adam Harrison				Contract No.	6903	
Technique:		CMC				Date	02/12/2025	
Site Supervisor:		Wayne Talbot				Plot/Unit	Lidl	
CMC	Tool Diameter	Depth	Material volume	Concrete delivery	Compliant	Comments		
Ref. No.	(mm)	(m)	(m³)					
1276	320	6.04	0.72	Readymix	Yes			
1277	320	3.07	0.27	Readymix	Yes			
1291	320	3.24	0.30	Readymix	Yes			
1290	320	5.57	0.61	Readymix	Yes			
1174	320	3.10	0.27	Readymix	Yes			
1058	320	3.18	0.30	Readymix	Yes			
1060	320	3.25	0.30	Readymix	Yes			
1062	320	3.21	0.30	Readymix	Yes			
1176	320	6.08	0.53	Readymix	Yes			
1305	320	6.18	0.61	Readymix	Yes			
1304	320	6.62	0.61	Readymix	Yes			
1178	320	3.56	0.30	Readymix	Yes			
1066	320	5.78	0.49	Readymix	Yes			
1070	320	3.57	0.27	Readymix	Yes			
1068	320	3.34	0.30	Readymix	Yes			
1318	320	5.78	0.49	Readymix	Yes			
1319	320	7.30	0.80	Readymix	Yes			
1331	320	7.45	1.18	Readymix	Yes			
1330	320	3.19	0.49	Readymix	Yes			
1180	320	6.85	0.72	Readymix	Yes			
1182	320	3.30	0.30	Readymix	Yes			
1344	320	7.21	0.68	Readymix	Yes			
1345	320	3.42	0.30	Readymix	Yes			
1074	320	3.18	0.30	Readymix	Yes			
1078	320	6.97	0.61	Readymix	Yes			
1076	320	6.94	0.99	Readymix	Yes			
1185	320	6.89	0.76	Readymix	Yes			
1358	320	3.50	0.38	Readymix	Yes			
1359	320	3.60	0.34	Readymix	Yes			
1080	320	7.27	0.68	Readymix	Yes			
TOTAL	30	148.64	15.20					
CUMUL	60	325.90	32.01					
 menARD		Engineer Further Comment:						
		Rig ID:		Pump ID.		Page:		2/4
		Enteco UK3		LP4		Quality Sheet		

Project Name:		Birstall				Form	3
Project Engineer:		Adam Harrison				Contract No.	6903
Technique:		CMC				Date	02/12/2025
Site Supervisor:		Wayne Talbot				Plot/Unit	Lidl
CMC	Tool Diameter	Depth	Material volume	Concrete delivery	Compliant	Comments	
Ref. No.	(mm)	(m)	(m³)				
1082	320	7.30	1.06	Readymix	Yes		
1374	320	7.73	1.06	Readymix	Yes		
1373	320	7.46	0.82	Readymix	Yes		
1189	320	4.69	0.43	Readymix	Yes		
1087	320	3.66	0.31	Readymix	Yes		
1089	320	3.81	0.35	Readymix	Yes		
1091	320	3.72	0.35	Readymix	Yes		
1386	320	4.50	0.39	Readymix	Yes		
1387	320	4.54	0.39	Readymix	Yes		
1400	320	5.29	0.62	Readymix	Yes		
1399	320	4.57	0.39	Readymix	Yes		
1193	320	4.60	0.39	Readymix	Yes		
1099	320	5.89	0.51	Readymix	Yes		
1106	320	6.81	0.58	Readymix	Yes		
1101	320	6.70	0.62	Readymix	Yes		
1414	320	7.50	0.66	Readymix	Yes		
1415	320	5.37	0.47	Readymix	Yes		
1196	320	6.90	0.62	Readymix	Yes		
1199	320	7.46	0.66	Readymix	Yes		
1428/2	320	8.64	0.74	Readymix	Yes		
1429	320	5.29	0.47	Readymix	Yes		
1119	320	4.93	0.43	Readymix	Yes		
1125	320	4.90	0.43	Readymix	Yes		
1202	320	4.60	0.39	Readymix	Yes		
1201	320	5.02	0.43	Readymix	Yes		
1117	320	6.23	0.55	Readymix	Yes		
1127	320	7.92	0.70	Readymix	Yes		
1128	320	6.57	0.57	Readymix	Yes		
1128/2	320	8.56	0.78	Readymix	Yes		
1442	320	5.34	0.47	Readymix	Yes		
TOTAL	30	176.50	16.64				
CUMUL	90	502.40	48.65				
		Engineer Further Comment:					
		Rig ID:		Pump ID.		Page:	
		Enteco UK3		LP4		3/4	
		Quality Sheet					

Project Name:		Birstall				Form	4
Project Engineer:		Adam Harrison				Contract No.	6903
Technique:		CMC				Date	02/12/2025
Site Supervisor:		Wayne Talbot				Plot/Unit	Lidl
CMC	Tool Diameter	Depth	Material volume	Concrete delivery	Compliant	Comments	
Ref. No.	(mm)	(m)	(m³)				
1443	320	4.49	0.39	Readymix	Yes		
1445	320	4.54	0.39	Readymix	Yes		
1141	320	4.43	0.39	Readymix	Yes		
1144	320	4.53	0.39	Readymix	Yes		
1151	320	4.52	0.39	Readymix	Yes		
1152	320	4.51	0.39	Readymix	Yes		
1218	320	4.55	0.39	Readymix	Yes		
1219	320	4.69	0.43	Readymix	Yes		
1143	320	4.90	0.43	Readymix	Yes		
1140	320	5.11	0.43	Readymix	Yes		
1150	320	4.82	0.39	Readymix	Yes		
1149	320	5.11	0.43	Readymix	Yes		
5	320	11.01	1.01	Readymix	Yes		
45	320	7.69	0.78	Readymix	Yes		
48	320	7.10	0.70	Readymix	Yes		
27	320	7.63	0.74	Readymix	Yes		
8	320	8.32	0.82	Readymix	Yes		
52	320	9.78	0.97	Readymix	Yes		
345	320	8.29	0.78	Readymix	Yes		
26	320	7.93	0.78	Readymix	Yes		
7	320	7.49	0.70	Readymix	Yes		
25	320	6.96	0.66	Readymix	Yes		
43	320	9.15	1.11	Readymix	Yes		
TOTAL	23	147.55	13.89				
CUMUL	113	649.95	62.54				
		Engineer Further Comment:					
		Rig ID:		Pump ID.	Page:		4/4
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Project Name:		Birstall					Form	1
Project Engineer:		Adam Harrison					Contract No.	6903
Technique:		CMC					Date	03/12/2025
Site Supervisor:		Wayne Talbot					Plot/Unit	Lidl
CMC	Tool Diameter	Depth	Material volume	Concrete delivery	Compliant	Comments		
Ref. No.	(mm)	(m)	(m³)					
6	320	7.56	0.74	Readymix	Yes			
53	320	7.91	0.74	Readymix	Yes			
79	320	7.66	0.70	Readymix	Yes			
49	320	7.91	0.74	Readymix	Yes			
46	320	7.07	0.66	Readymix	Yes			
24	320	7.46	0.70	Readymix	Yes			
42	320	9.00	0.82	Readymix	Yes			
23	320	9.22	0.90	Readymix	Yes			
354	320	8.06	0.78	Readymix	Yes			
41	320	8.68	0.78	Readymix	Yes			
1239	320	3.99	0.43	Readymix	Yes			
1238	320	3.07	0.27	Readymix	Yes			
1240	320	3.09	0.27	Readymix	Yes			
1254	320	3.30	0.31	Readymix	Yes			
1253	320	3.24	0.51	Readymix	Yes			
1252	320	3.14	0.27	Readymix	Yes			
1266	320	3.14	0.27	Readymix	Yes			
1267	320	3.22	0.27	Readymix	Yes			
1280	320	4.35	0.58	Readymix	Yes			
1278	320	4.24	0.39	Readymix	Yes			
1279	320	4.67	0.51	Readymix	Yes			
1292	320	5.93	0.55	Readymix	Yes			
1294	320	4.03	0.55	Readymix	Yes			
1293	320	3.71	0.35	Readymix	Yes			
1306	320	4.74	0.43	Readymix	Yes			
1308	320	3.84	0.35	Readymix	Yes			
1307	320	3.70	0.35	Readymix	Yes			
1322	320	4.48	0.58	Readymix	Yes			
1320	320	3.66	0.31	Readymix	Yes			
1321	320	3.72	0.35	Readymix	Yes			
TOTAL	30	157.79	15.46					
CUMUL	30	157.79	15.46					
 menARD		Engineer Further Comment:						
		Rig ID:		Pump ID.		Page:		1/4
		Enteco UK3		LP4		Quality Sheet		

Project Name:		Birstall					Form	2
Project Engineer:		Adam Harrison					Contract No.	6903
Technique:		CMC					Date	03/12/2025
Site Supervisor:		Wayne Talbot					Plot/Unit	Lidl
CMC	Tool Diameter	Depth	Material volume	Concrete delivery	Compliant	Comments		
Ref. No.	(mm)	(m)	(m³)					
1334	320	4.45	0.39	Readymix	Yes			
1332	320	4.60	0.78	Readymix	No	Void found		
1333	320	3.99	0.35	Readymix	No	Void found		
1348	320	4.65	0.43	Readymix	Yes			
1346	320	3.99	0.35	Readymix	Yes			
1347	320	4.16	0.39	Readymix	Yes			
1360	320	4.09	0.35	Readymix	Yes			
1362	320	4.42	0.39	Readymix	Yes			
1361	320	4.55	0.39	Readymix	Yes			
1376	320	4.55	0.39	Readymix	Yes			
1372	320	4.55	0.39	Readymix	Yes			
1375	320	4.88	0.47	Readymix	Yes			
1385	320	4.75	0.43	Readymix	Yes			
1389	320	8.10	0.78	Readymix	Yes			
T4_M	320	5.30	0.47	Readymix	Yes			
1388	320	7.05	0.62	Readymix	Yes			
1402	320	4.67	0.51	Readymix	Yes			
1398	320	4.73	0.43	Readymix	Yes			
1401	320	4.73	0.43	Readymix	Yes			
1417	320	4.57	0.39	Readymix	Yes			
1416	320	4.71	0.43	Readymix	Yes			
1413	320	6.44	0.58	Readymix	Yes			
1221	320	4.75	0.43	Readymix	Yes			
1222	320	4.98	0.43	Readymix	Yes			
1146	320	5.12	0.47	Readymix	Yes			
1145	320	5.06	0.43	Readymix	Yes			
1217	320	4.87	0.39	Readymix	Yes			
1446	320	4.46	0.39	Readymix	Yes			
1215	320	4.82	0.39	Readymix	Yes			
1200	320	4.40	0.39	Readymix	Yes			
TOTAL	30	146.39	13.46					
CUMUL	60	304.18	28.92					
		Engineer Further Comment:						
		Rig ID:		Pump ID.		Page:		2/4
		Enteco UK3		LP4		Quality Sheet		

Project Name:		Birstall				Form	3
Project Engineer:		Adam Harrison				Contract No.	6903
Technique:		CMC				Date	03/12/2025
Site Supervisor:		Wayne Talbot				Plot/Unit	Lidl
CMC	Tool Diameter	Depth	Material volume	Concrete delivery	Compliant	Comments	
Ref. No.	(mm)	(m)	(m³)				
1120	320	4.48	0.39	Readymix	Yes		
1126	320	4.51	0.39	Readymix	Yes		
1203	320	4.70	0.43	Readymix	Yes		
1204	320	4.52	0.43	Readymix	Yes		
1430	320	4.69	0.43	Readymix	Yes		
1431	320	4.79	0.43	Readymix	Yes		
1432/2	320	4.92	0.43	Readymix	Yes		
1423	320	4.40	0.39	Readymix	Yes		
1422	320	4.32	0.39	Readymix	Yes		
1408	320	4.39	0.39	Readymix	Yes		
1394	320	4.98	0.43	Readymix	Yes		
1393/2	320	4.89	0.43	Readymix	Yes		
t5_M	320	4.47	0.39	Readymix	Yes		
1421	320	4.38	0.39	Readymix	Yes		
1407	320	3.87	0.35	Readymix	Yes		
1392	320	4.83	0.47	Readymix	Yes		
1391	320	4.74	0.43	Readymix	Yes		
1406	320	4.37	0.39	Readymix	Yes		
1420	320	4.46	0.39	Readymix	Yes		
1405	320	4.58	0.39	Readymix	Yes		
1419	320	4.28	0.39	Readymix	Yes		
1404/2	320	8.62	0.90	Readymix	Yes		
1418	320	4.93	0.43	Readymix	Yes		
1390	320	8.03	0.78	Readymix	Yes		
1390/2	320	8.92	0.82	Readymix	Yes		
1403	320	5.02	0.43	Readymix	Yes		
1135	320	4.80	0.47	Readymix	Yes		
1111	320	4.67	0.43	Readymix	Yes		
1122	320	4.62	0.43	Readymix	Yes		
1134	320	4.56	0.43	Readymix	Yes		
TOTAL	30	149.74	13.67				
CUMUL	90	453.92	42.59				
		Engineer Further Comment:					
		Rig ID:	Pump ID.	Page:	3/4		
		Enteco UK3	LP4	Quality Sheet			

Project Name:		Birstall				Form	4
Project Engineer:		Adam Harrison				Contract No.	6903
Technique:		CMC				Date	03/12/2025
Site Supervisor:		Wayne Talbot				Plot/Unit	Lidl
CMC	Tool Diameter	Depth	Material volume	Concrete delivery	Compliant	Comments	
Ref. No.	(mm)	(m)	(m³)				
1110	320	4.51	0.39	Readymix	Yes		
1438	320	4.45	0.39	Readymix	Yes		
1121	320	4.53	0.39	Readymix	Yes		
1133	320	4.65	0.43	Readymix	Yes		
1109	320	4.53	0.39	Readymix	Yes		
1214	320	4.24	0.35	Readymix	Yes		
1437	320	4.29	0.39	Readymix	Yes		
1211	320	4.30	0.39	Readymix	Yes		
1210	320	4.35	0.39	Readymix	Yes		
1436	320	4.21	0.39	Readymix	Yes		
1435	320	4.26	0.39	Readymix	Yes		
1208	320	4.59	0.39	Readymix	Yes		
1130	320	4.34	0.39	Readymix	Yes		
1129	320	4.28	0.39	Readymix	Yes		
1118	320	4.26	0.39	Readymix	Yes		
1434	320	4.31	0.39	Readymix	Yes		
1207	320	4.40	0.39	Readymix	Yes		
TOTAL	17	74.50	6.63				
CUMUL	107	528.42	49.22				
		Engineer Further Comment:					
		Rig ID:		Pump ID.	Page:		4/4
		Enteco UK3		LP4		Quality Sheet	

Project Name:		Birstall				Form	1	
Project Engineer:		Adam Harrison				Contract No.	6903	
Technique:		CMC				Date	04/12/2025	
Site Supervisor:		Wayne Talbot				Plot/Unit	Lidl	
CMC	Tool Diameter	Depth	Material volume	Concrete delivery	Compliant	Comments		
Ref. No.	(mm)	(m)	(m³)					
2	320	6.66	0.66	Readymix	Yes			
4	320	8.57	0.78	Readymix	Yes			
22	320	7.43	0.70	Readymix	Yes			
21	320	7.48	0.70	Readymix	Yes			
143	320	10.50	1.01	Readymix	Yes			
169	320	8.52	0.90	Readymix	Yes			
1331/2	320	7.34	0.74	Readymix	No	Void Found		
1332/2	320	7.55	0.66	Readymix	No	Void Found		
1243	320	8.01	0.74	Readymix	No	Void Found		
1242	320	4.45	0.62	Readymix	Yes			
1241	320	3.85	0.35	Readymix	Yes			
1255	320	7.92	0.82	Readymix	No	Void Found		
1257	320	5.04	0.43	Readymix	Yes			
1256	320	8.30	0.78	Readymix	No	Void Found		
1268	320	6.68	0.74	Readymix	Yes			
1269	320	4.72	0.74	Readymix	Yes			
1281	320	6.85	0.78	Readymix	Yes			
1289	320	5.04	0.43	Readymix	Yes			
1288	320	4.67	0.39	Readymix	Yes			
1295	320	4.54	0.39	Readymix	Yes			
1303/2	320	7.80	0.82	Readymix	Yes			
1302	320	4.90	0.51	Readymix	Yes			
1309	320	4.71	0.43	Readymix	Yes			
1317	320	4.64	0.43	Readymix	Yes			
1316	320	4.54	0.39	Readymix	Yes			
1323	320	4.74	0.66	Readymix	Yes			
1335	320	4.84	0.43	Readymix	Yes			
1343	320	4.64	0.43	Readymix	Yes			
1342	320	4.89	0.43	Readymix	Yes			
1349	320	4.55	0.39	Readymix	Yes			
TOTAL	30	184.37	18.28					
CUMUL	30	184.37	18.28					
 menARD		Engineer Further Comment:						
		Rig ID:		Pump ID.		Page:		1/3
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Project Name:		Birstall					Form	2
Project Engineer:		Adam Harrison					Contract No.	6903
Technique:		CMC					Date	04/12/2025
Site Supervisor:		Wayne Talbot					Plot/Unit	Lidl
CMC	Tool Diameter	Depth	Material volume	Concrete delivery	Compliant	Comments		
Ref. No.	(mm)	(m)	(m³)					
1357	320	4.61	0.39	Readymix	Yes			
1356	320	4.78	0.43	Readymix	Yes			
1363	320	4.74	0.43	Readymix	Yes			
1371	320	4.69	0.43	Readymix	Yes			
1370	320	4.76	0.43	Readymix	Yes			
1377	320	7.70	0.71	Readymix	Yes			
1433	320	4.59	0.39	Readymix	Yes			
1206	320	4.32	0.39	Readymix	Yes			
1205	320	4.36	0.39	Readymix	Yes			
1270	320	5.53	0.47	Readymix	Yes			
1272	320	5.27	0.47	Readymix	Yes			
1271	320	4.37	0.39	Readymix	Yes			
1284	320	4.51	0.39	Readymix	Yes			
1282	320	4.59	0.39	Readymix	Yes			
1283	320	4.54	0.39	Readymix	Yes			
1296	320	4.46	0.39	Readymix	Yes			
1298	320	4.79	0.39	Readymix	Yes			
1297	320	4.78	0.43	Readymix	Yes			
1312	320	6.67	0.58	Readymix	Yes			
1311	320	8.45	0.86	Readymix	Yes			
1310	320	4.69	0.58	Readymix	Yes			
1324	320	4.48	0.39	Readymix	Yes			
1326	320	4.91	0.43	Readymix	Yes			
1325	320	4.99	0.43	Readymix	Yes			
1336	320	4.34	0.39	Readymix	Yes			
1338	320	4.72	0.43	Readymix	Yes			
1337	320	4.48	0.39	Readymix	Yes			
1350	320	4.45	0.39	Readymix	Yes			
1352	320	4.49	0.43	Readymix	Yes			
1351	320	4.37	0.39	Readymix	Yes			
TOTAL	30	148.43	13.39					
CUMUL	60	332.80	31.67					
		Engineer Further Comment:						
		Rig ID:		Pump ID.		Page:		2/3
		Enteco UK3		LP4		Quality Sheet		

Project Name:		Birstall				Form	3
Project Engineer:		Adam Harrison				Contract No.	6903
Technique:		CMC				Date	04/12/2025
Site Supervisor:		Wayne Talbot				Plot/Unit	Lidl
CMC	Tool Diameter	Depth	Material volume	Concrete delivery	Compliant	Comments	
Ref. No.	(mm)	(m)	(m³)				
1364	320	4.44	0.39	Readymix	Yes		
1366	320	4.56	0.39	Readymix	Yes		
1365	320	7.41	0.74	Readymix	Yes		
1380	320	4.81	0.43	Readymix	Yes		
1379	320	4.76	0.43	Readymix	Yes		
1378	320	8.41	0.78	Readymix	Yes		
1263	320	4.47	0.39	Readymix	Yes		
1262	320	4.51	0.39	Readymix	Yes		
1261	320	4.91	0.43	Readymix	Yes		
1285	320	4.50	0.39	Readymix	Yes		
1287	320	4.74	0.51	Readymix	Yes		
1286	320	7.07	0.62	Readymix	Yes		
1301	320	5.06	0.43	Readymix	Yes		
1300	320	6.84	0.58	Readymix	Yes		
1299	320	4.64	0.43	Readymix	Yes		
1327	320	5.56	0.51	Readymix	Yes		
1328	320	5.04	0.43	Readymix	Yes		
1329	320	5.32	0.47	Readymix	Yes		
TOTAL	18	97.05	8.74				
CUMUL	78	429.85	40.41				
		Engineer Further Comment:					
Rig ID:		Pump ID.		Page:		3/3	
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Project Name:		Birstall				Form	1	
Project Engineer:		Adam Harrison				Contract No.	6903	
Technique:		CMC				Date	05/12/2025	
Site Supervisor:		Wayne Talbot				Plot/Unit	Lidl	
CMC	Tool Diameter	Depth	Material volume	Concrete delivery	Compliant	Comments		
Ref. No.	(mm)	(m)	(m³)					
1331/3	320	7.51	0.78	Readymix	Yes			
1332/3	320	6.19	0.55	Readymix	Yes			
1323/2	320	7.80	1.09	Readymix	Yes			
1311/2	320	8.36	1.05	Readymix	Yes			
1255/2	320	8.03	1.10	Readymix	Yes			
1256/2	320	8.35	1.41	Readymix	Yes			
1341	320	8.54	0.78	Readymix	No			
1339	320	6.21	0.55	Readymix	No			
1340	320	5.11	0.47	Readymix	No			
1355	320	4.39	0.39	Readymix	Yes			
1353	320	4.50	0.39	Readymix	Yes			
1354	320	4.60	0.39	Readymix	No			
1369	320	4.24	0.39	Readymix	Yes			
1367	320	4.28	0.39	Readymix	No			
1368	320	4.26	0.39	Readymix	Yes			
1383	320	4.65	0.43	Readymix	Yes			
1381	320	4.36	0.39	Readymix	Yes			
1382	320	4.21	0.39	Readymix	Yes			
1396	320	4.24	0.39	Readymix	Yes			
1395	320	4.23	0.39	Readymix	Yes			
1411	320	4.21	0.35	Readymix	Yes			
1409	320	4.26	0.39	Readymix	Yes			
1410	320	4.25	0.39	Readymix	Yes			
1425	320	4.16	0.39	Readymix	Yes			
1424	320	4.20	0.39	Readymix	Yes			
1439	320	4.20	0.39	Readymix	Yes			
1427	320	4.22	0.39	Readymix	Yes			
1440	320	4.16	0.39	Readymix	Yes			
TOTAL	28	147.72	15.19					
CUMUL	28	147.72	15.19					
 menARD		Engineer Further Comment:						
		Rig ID:		Pump ID.		Page:		1/1
		Enteco UK3		LP4		Quality Sheet		

Project Name:		Birstall					Form	1
Project Engineer:		Adam Harrison					Contract No.	6903
Technique:		CMC					Date	08/12/2025
Site Supervisor:		Wayne Talbot					Plot/Unit	Lidl
CMC	Tool Diameter	Depth	Material volume	Concrete delivery	Compliant	Comments		
Ref. No.	(mm)	(m)	(m³)					
1147	320	3.89	0.35	Readymix	Yes			
1139	320	3.93	0.35	Readymix	Yes			
1148	320	3.68	0.31	Readymix	Yes			
1142	320	3.73	0.35	Readymix	Yes			
1220	320	3.58	0.31	Readymix	Yes			
1216	320	4.68	0.43	Readymix	Yes			
1444	320	5.23	0.47	Readymix	Yes			
1131	320	7.08	0.62	Readymix	Yes			
1115	320	6.57	0.58	Readymix	Yes			
1132	320	7.02	0.62	Readymix	Yes			
1116	320	6.86	0.58	Readymix	Yes			
1441	320	5.25	0.47	Readymix	Yes			
1198	320	5.21	0.47	Readymix	Yes			
1195	320	4.58	0.39	Readymix	Yes			
1426	320	4.90	0.43	Readymix	Yes			
1105	320	4.38	0.39	Readymix	Yes			
1100	320	4.47	0.39	Readymix	Yes			
1194	320	4.37	0.39	Readymix	Yes			
1412	320	5.49	0.47	Readymix	Yes			
1096	320	4.41	0.39	Readymix	Yes			
1095	320	4.30	0.39	Readymix	Yes			
1397	320	4.32	0.39	Readymix	Yes			
1191	320	4.29	0.39	Readymix	Yes			
1084	320	4.28	0.39	Readymix	Yes			
1384	320	4.48	0.39	Readymix	Yes			
1083	320	6.49	0.58	Readymix	Yes			
1081	320	6.99	0.70	Readymix	Yes			
1186	320	7.24	0.70	Readymix	Yes			
1187	320	7.10	0.70	Readymix	Yes			
1104	320	4.60	0.39	Readymix	Yes			
TOTAL	30	153.40	13.78					
CUMUL	30	153.40	13.78					
		Engineer Further Comment:						
		Rig ID:	Pump ID.	Page:	1/4			
		Enteco UK3	LP4	Quality Sheet				

Project Name:		Birstall				Form	2
Project Engineer:		Adam Harrison				Contract No.	6903
Technique:		CMC				Date	08/12/2025
Site Supervisor:		Wayne Talbot				Plot/Unit	Lidl
CMC	Tool Diameter	Depth	Material volume	Concrete delivery	Compliant	Comments	
Ref. No.	(mm)	(m)	(m³)				
1108	320	4.34	0.39	Readymix	Yes		
1098	320	4.63	0.43	Readymix	No		
1107	320	4.62	0.39	Readymix	No		
1103	320	4.52	0.39	Readymix	Yes		
1102	320	4.54	0.43	Readymix	Yes		
1097	320	4.46	0.35	Readymix	Yes		
1197	320	4.57	0.39	Readymix	Yes		
1112	320	4.24	0.39	Readymix	Yes		
1123	320	4.22	0.39	Readymix	Yes		
1136	320	4.37	0.39	Readymix	Yes		
1113	320	4.22	0.39	Readymix	Yes		
1137	320	4.25	0.39	Readymix	Yes		
1124	320	4.21	0.39	Readymix	Yes		
1114	320	4.37	0.43	Readymix	Yes		
1138	320	4.83	0.39	Readymix	Yes		
1213	320	4.23	0.39	Readymix	Yes		
1212	320	4.24	0.39	Readymix	Yes		
1209	320	4.20	0.39	Readymix	Yes		
1192	320	4.27	0.39	Readymix	Yes		
1092	320	4.18	0.39	Readymix	Yes		
1088	320	4.12	0.35	Readymix	Yes		
1090	320	4.23	0.39	Readymix	Yes		
1190	320	4.21	0.39	Readymix	Yes		
1188	320	4.67	0.43	Readymix	Yes		
1184	320	4.21	0.39	Readymix	Yes		
1077	320	4.21	0.55	Readymix	Yes		
1079	320	4.21	0.39	Readymix	Yes		
1075	320	4.18	0.39	Readymix	Yes		
1183	320	4.19	0.39	Readymix	Yes		
1181	320	4.19	0.39	Readymix	Yes		
TOTAL	30	129.93	11.94				
CUMUL	60	283.33	25.72				
		Engineer Further Comment:					
		Rig ID:		Pump ID.		Page:	
		Enteco UK3		LP4		2/4	
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Project Name:		Birstall				Form	3
Project Engineer:		Adam Harrison				Contract No.	6903
Technique:		CMC				Date	08/12/2025
Site Supervisor:		Wayne Talbot				Plot/Unit	Lidl
CMC	Tool Diameter	Depth	Material volume	Concrete delivery	Compliant	Comments	
Ref. No.	(mm)	(m)	(m³)				
1071	320	4.35	0.39	Readymix	Yes		
1179	320	4.57	0.39	Readymix	Yes		
1177	320	5.56	0.51	Readymix	Yes		
1061	320	5.44	0.47	Readymix	Yes		
1063	320	4.92	0.43	Readymix	Yes		
1059	320	4.92	0.43	Readymix	Yes		
1033	320	4.10	0.35	Readymix	Yes		
1032	320	4.08	0.35	Readymix	Yes		
1021	320	4.05	0.39	Readymix	Yes		
1022	320	4.12	0.35	Readymix	Yes		
1023	320	4.16	0.39	Readymix	Yes		
1008	320	4.25	0.39	Readymix	Yes		
1007	320	4.15	0.35	Readymix	Yes		
1165	320	3.79	0.35	Readymix	Yes		
1164	320	4.06	0.35	Readymix	Yes		
1163	320	4.12	0.35	Readymix	Yes		
1233	320	4.08	0.35	Readymix	Yes		
1167	320	4.11	0.35	Readymix	Yes		
1236	320	4.70	0.39	Readymix	Yes		
1234	320	4.08	0.35	Readymix	Yes		
1047	320	4.18	0.39	Readymix	Yes		
1046	320	4.61	0.39	Readymix	Yes		
1043	320	4.46	0.39	Readymix	Yes		
1042	320	4.52	0.39	Readymix	Yes		
1041	320	4.67	0.39	Readymix	Yes		
1037	320	4.69	0.39	Readymix	Yes		
1036	320	4.71	0.43	Readymix	Yes		
1249	320	4.75	0.43	Readymix	Yes		
1169	320	4.86	0.55	Readymix	Yes		
1315	320	4.91	0.43	Readymix	Yes		
TOTAL	30	133.97	11.86				
CUMUL	90	417.30	37.58				
		Engineer Further Comment:					
		Rig ID:	Pump ID.	Page:	3/4		
		Enteco UK3	LP4	Quality Sheet			

[illegible]

Project Name:		Birstall					Form	1
Project Engineer:		Adam Harrison					Contract No.	6903
Technique:		CMC					Date	09/12/2025
Site Supervisor:		Wayne Talbot					Plot/Unit	Lidl
CMC	Tool Diameter	Depth	Material volume	Concrete delivery	Compliant	Comments		
Ref. No.	(mm)	(m)	(m³)					
502	320	9.10	0.90	Readymix	Yes			
501	320	9.42	0.94	Readymix	Yes			
500	320	9.83	0.94	Readymix	Yes			
481	320	9.32	0.94	Readymix	Yes			
480	320	10.56	0.97	Readymix	Yes			
479	320	9.80	0.94	Readymix	Yes			
499	320	9.70	0.94	Readymix	Yes			
497	320	8.90	0.86	Readymix	Yes			
498	320	9.12	0.86	Readymix	Yes			
476	320	10.80	1.21	Readymix	Yes			
478	320	9.52	0.90	Readymix	Yes			
477	320	9.53	1.13	Readymix	Yes			
495	320	10.57	1.09	Readymix	Yes			
496	320	10.94	1.09	Readymix	Yes			
474	320	9.73	0.94	Readymix	Yes			
475	320	9.76	0.94	Readymix	Yes			
494	320	10.65	1.01	Readymix	Yes			
493	320	10.70	1.09	Readymix	Yes			
492	320	17.79	1.87	Readymix	Yes			
473	320	10.49	1.01	Readymix	Yes			
472	320	11.65	1.09	Readymix	Yes			
471	320	11.82	1.13	Readymix	Yes			
491	320	17.78	1.75	Readymix	Yes			
490	320	17.22	1.75	Readymix	Yes			
489	320	16.68	1.75	Readymix	Yes			
470	320	15.94	1.44	Readymix	Yes			
469	320	16.26	1.60	Readymix	Yes			
468	320	16.18	1.60	Readymix	Yes			
487	320	16.37	1.75	Readymix	Yes			
488	320	16.11	1.72	Readymix	Yes			
TOTAL	30	362.24	36.15					
CUMUL	30	362.24	36.15					
		Engineer Further Comment:						
		Rig ID:		Pump ID.		Page:		1/3
		Enteco UK3		LP4		Quality Sheet		

Project Name:		Birstall				Form	2	
Project Engineer:		Adam Harrison				Contract No.	6903	
Technique:		CMC				Date	09/12/2025	
Site Supervisor:		Wayne Talbot				Plot/Unit	Lidl	
CMC	Tool Diameter	Depth	Material volume	Concrete delivery	Compliant	Comments		
Ref. No.	(mm)	(m)	(m³)					
466	320	12.39	1.17	Readymix	Yes			
467	320	16.06	1.48	Readymix	No			
445	320	12.61	1.17	Readymix	No			
486	320	16.01	1.72	Readymix	Yes			
485	320	12.57	1.25	Readymix	Yes			
484	320	12.18	1.17	Readymix	Yes			
1093	320	5.30	0.66	Readymix	Yes			
1094	320	4.87	0.43	Readymix	Yes			
1086	320	4.50	0.39	Readymix	Yes			
1085	320	4.74	0.43	Readymix	Yes			
1064	320	4.66	0.43	Readymix	Yes			
1072	320	4.59	0.39	Readymix	Yes			
1065	320	4.54	0.39	Readymix	Yes			
1073	320	4.74	0.43	Readymix	Yes			
1049	320	4.26	0.39	Readymix	Yes			
1048	320	4.21	0.39	Readymix	Yes			
1056	320	4.22	0.39	Readymix	Yes			
1057	320	4.22	0.39	Readymix	Yes			
1158	320	4.19	0.39	Readymix	Yes			
1009	320	4.16	0.35	Readymix	Yes			
1010	320	4.19	0.39	Readymix	Yes			
1025	320	4.02	0.39	Readymix	Yes			
1159	320	4.16	0.39	Readymix	Yes			
1160	320	4.12	0.35	Readymix	Yes			
1230	320	4.26	0.39	Readymix	Yes			
1229	320	4.21	0.35	Readymix	Yes			
1228	320	4.23	0.58	Readymix	Yes			
1244	320	4.28	0.39	Readymix	Yes			
1258	320	4.22	0.39	Readymix	Yes			
1161	320	4.24	0.39	Readymix	Yes			
TOTAL	30	186.95	17.82					
CUMUL	60	549.19	53.97					
		Engineer Further Comment:						
		Rig ID:		Pump ID.		Page:		2/3
		Enteco UK3		LP4		Quality Sheet		

Project Name:		Birstall				Form	3
Project Engineer:		Adam Harrison				Contract No.	6903
Technique:		CMC				Date	09/12/2025
Site Supervisor:		Wayne Talbot				Plot/Unit	Lidl
CMC	Tool Diameter	Depth	Material volume	Concrete delivery	Compliant	Comments	
Ref. No.	(mm)	(m)	(m³)				
1162	320	4.21	0.35	Readymix	Yes		
1031	320	4.14	0.35	Readymix	Yes		
1030	320	4.21	0.39	Readymix	Yes		
1018	320	3.73	0.35	Readymix	Yes		
1019	320	3.81	0.35	Readymix	Yes		
1005	320	3.97	0.35	Readymix	Yes		
1232	320	3.68	0.31	Readymix	Yes		
1231	320	3.83	0.35	Readymix	Yes		
1245	320	3.93	0.35	Readymix	Yes		
1006	320	3.75	0.35	Readymix	Yes		
1020	320	3.59	0.35	Readymix	Yes		
1261/2	320	4.69	0.70	Readymix	Yes		
1246	320	3.77	0.35	Readymix	Yes		
TOTAL	13	51.31	4.90				
CUMUL	73	600.50	58.87				
		Engineer Further Comment:					
		Rig ID:		Pump ID.	Page:		3/3
		Enteco UK3		LP4		Quality Sheet	

Project Name:		Birstall					Form	1
Project Engineer:		Adam Harrison					Contract No.	6903
Technique:		CMC					Date	10/12/2025
Site Supervisor:		Wayne Talbot					Plot/Unit	Lidl
CMC	Tool Diameter	Depth	Material volume	Concrete delivery	Compliant	Comments		
Ref. No.	(mm)	(m)	(m³)					
1162/2	320	4.27	0.39	Readymix	Yes			
1005/2	320	3.81	0.35	Readymix	Yes			
1248	320	3.78	0.31	Readymix	Yes			
1247	320	3.74	0.35	Readymix	Yes			
1260	320	3.86	0.35	Readymix	Yes			
1259	320	4.11	0.35	Readymix	Yes			
1274	320	8.05	0.78	Readymix	Yes			
1273	320	4.28	0.39	Readymix	Yes			
1175	320	4.44	0.39	Readymix	Yes			
1071/2	320	7.60	0.74	Readymix	Yes			
1069	320	7.24	0.74	Readymix	Yes			
1067	320	7.03	0.82	Readymix	Yes			
239	320	12.34	1.17	Readymix	Yes			
238	320	12.55	1.21	Readymix	Yes			
234	320	11.69	1.05	Readymix	Yes			
231	320	12.58	1.48	Readymix	Yes			
223	320	11.71	1.09	Readymix	Yes			
229	320	12.63	1.21	Readymix	Yes			
215	320	11.04	1.09	Readymix	Yes			
220	320	11.86	1.13	Readymix	Yes			
233	320	11.78	1.13	Readymix	Yes			
503	320	11.81	1.05	Readymix	Yes			
232	320	14.77	1.44	Readymix	Yes			
764	320	14.61	1.44	Readymix	Yes			
774	320	14.10	1.36	Readymix	Yes			
785	320	14.00	1.29	Readymix	Yes			
794	320	13.28	1.25	Readymix	Yes			
799	320	12.60	1.17	Readymix	Yes			
772/2	320	14.43	1.44	Readymix	Yes			
701	320	11.36	1.05	Readymix	Yes			
TOTAL	30	291.35	28.01					
CUMUL	30	291.35	28.01					
		Engineer Further Comment:						
		Rig ID:		Pump ID.		Page:		1/3
		Enteco UK3		LP4		Quality Sheet		

[illegible]

Project Name:		Birstall					Form	1
Project Engineer:		Adam Harrison					Contract No.	6903
Technique:		CMC					Date	11/12/2025
Site Supervisor:		Wayne Talbot					Plot/Unit	Lidl
CMC	Tool Diameter	Depth	Material volume	Concrete delivery	Compliant	Comments		
Ref. No.	(mm)	(m)	(m³)					
708	320	10.76	1.01	Readymix	Yes			
803	320	11.55	1.09	Readymix	Yes			
711	320	12.37	1.17	Readymix	Yes			
806	320	11.62	1.09	Readymix	Yes			
808	320	11.77	1.09	Readymix	Yes			
808/2	320	12.94	1.25	Readymix	Yes			
827	320	7.10	0.66	Readymix	Yes			
723	320	7.71	0.74	Readymix	Yes			
725	320	7.13	0.74	Readymix	Yes			
832	320	7.75	0.74	Readymix	Yes			
839	320	8.89	0.86	Readymix	Yes			
842	320	7.46	0.70	Readymix	Yes			
733	320	9.77	0.94	Readymix	Yes			
735	320	9.96	0.94	Readymix	Yes			
845	320	10.06	0.94	Readymix	Yes			
737	320	10.30	0.97	Readymix	Yes			
738	320	10.95	1.01	Readymix	Yes			
740	320	11.21	1.05	Readymix	Yes			
847	320	10.68	1.01	Readymix	Yes			
736	320	8.73	0.78	Readymix	Yes			
739	320	5.37	0.47	Readymix	Yes			
846	320	8.73	0.78	Readymix	Yes			
734	320	5.80	0.55	Readymix	Yes			
732	320	8.04	0.74	Readymix	Yes			
730	320	6.79	0.74	Readymix	Yes			
728	320	9.62	0.97	Readymix	Yes			
726	320	10.02	0.94	Readymix	Yes			
837	320	11.39	1.05	Readymix	Yes			
724	320	10.21	0.94	Readymix	Yes			
831	320	9.46	0.90	Readymix	Yes			
TOTAL	30	284.14	26.86					
CUMUL	30	284.14	26.86					
		Engineer Further Comment:						
		Rig ID:		Pump ID.		Page:		1/3
		Enteco UK3		LP4		Quality Sheet		

[illegible]

APPENDIX 2 – LOAD TEST RESULTS

STATIC PLATELOAD TEST ON ONE CMC



Project Number	6903	N° test (and/or n° CMC)	1 - TC 1
Project Name	Birtsall	Date	26/11/2025
Test type	Quality	Contract engineer	Adam Harrison
Load test Qtest	36.0 t	Person(s) during the test	Wayne Talbot
Jack type	RC 756	Benkelman Beam	yes
Jack section	0.01026 m²		

Jack pressure	Load Q	Q/Qtest	Time	Sensor	Settlement	Jack pressure	Load Q	Q/Qtest	Time	Sensor	Settlement
(bars)	(t)	(%)	(mn)	(mm)	(mm)	(bars)	(t)	(%)	(mn)	(mm)	(mm)
70	7.2	20%	1	0.71	0.54	281	28.8	80%	1	1.62	2.36
			5	0.72	0.56				2	1.62	2.36
									3	1.63	2.38
0	0.0	0%	1	0.44	0.00				4	1.63	2.38
			5	0.44	0.00				5	1.64	2.40
									10	1.65	2.42
70	7.2	20%	1	0.80	0.72				15	1.66	2.44
			2	0.80	0.72				30	1.66	2.44
			3	0.81	0.74						
			4	0.81	0.74	351	36.0	100%	1	1.93	2.98
			5	0.82	0.76				2	1.94	3.00
			10	0.83	0.78				3	1.95	3.02
			15	0.83	0.78				4	1.96	3.04
									5	1.96	3.04
140	14.4	40%	1	1.01	1.14				10	1.98	3.08
			2	1.02	1.16				15	1.99	3.10
			3	1.02	1.16				30	2.00	3.12
			4	1.03	1.18				60	2.02	3.16
			5	1.03	1.18						
			10	1.04	1.20						
			15	1.04	1.20	175	18.0	50%	1	1.69	2.50
									5	1.69	2.50
211	21.6	60%	1	1.32	1.76						
			2	1.33	1.78						
			3	1.33	1.78	0	0.0	0%	1	1.44	2.00
			4	1.34	1.80				5	1.44	2.00
			5	1.34	1.80						
			10	1.35	1.82						
			15	1.35	1.82						
						Comment					

Remark : Over the course of the loading stages, it is authorized to proceed to the next stage provided displacement remains less than 0.02 mm/min on at least two consecutive measurements, with a minimum 15-minute interval.

STATIC PLATELOAD TEST ON ONE CMC

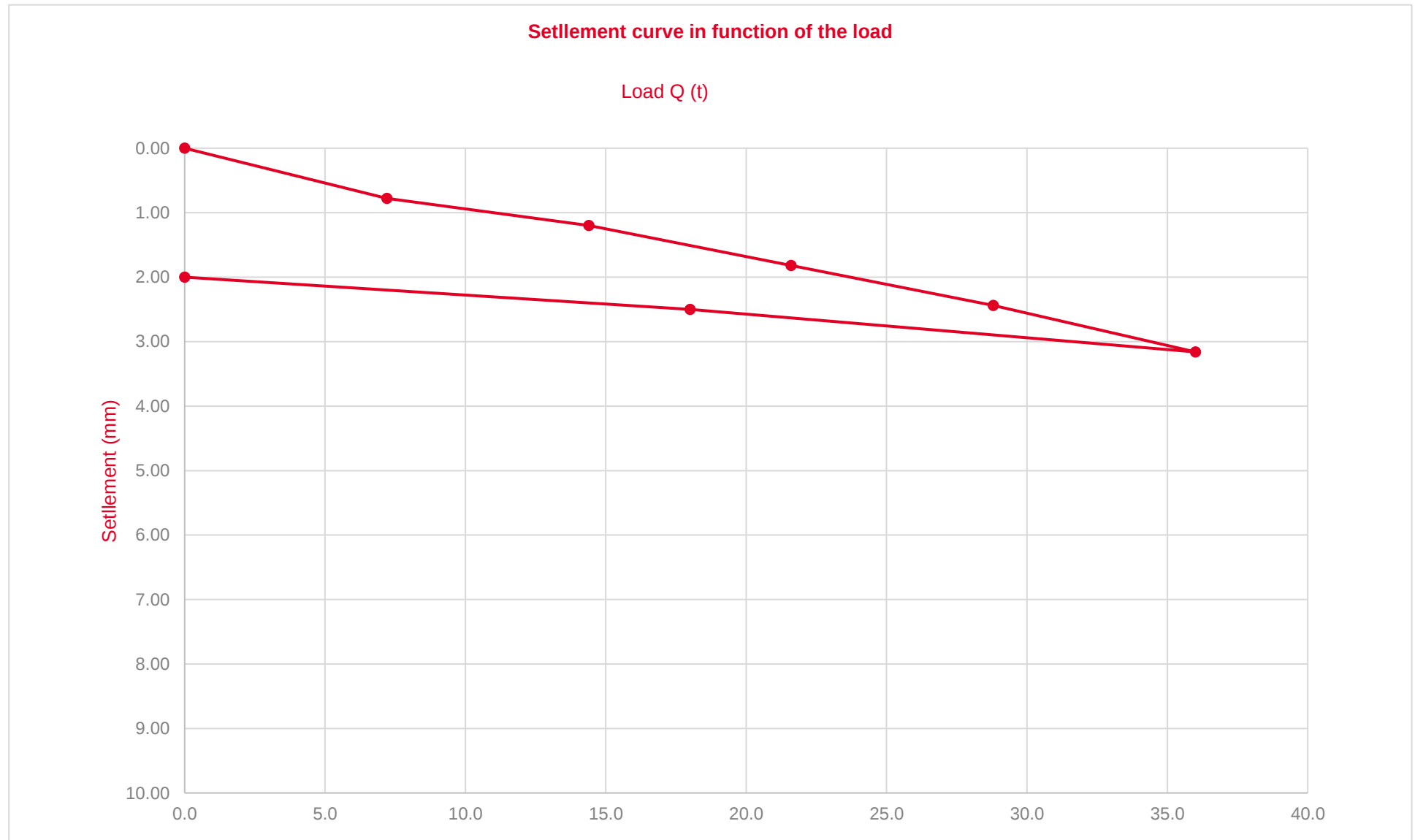


Project Number
Project Name

6903
Birtsall

N° test (and/or n° CMC)
Date

1 - TC 1
26/11/2025



STATIC PLATELOAD TEST ON ONE CMC



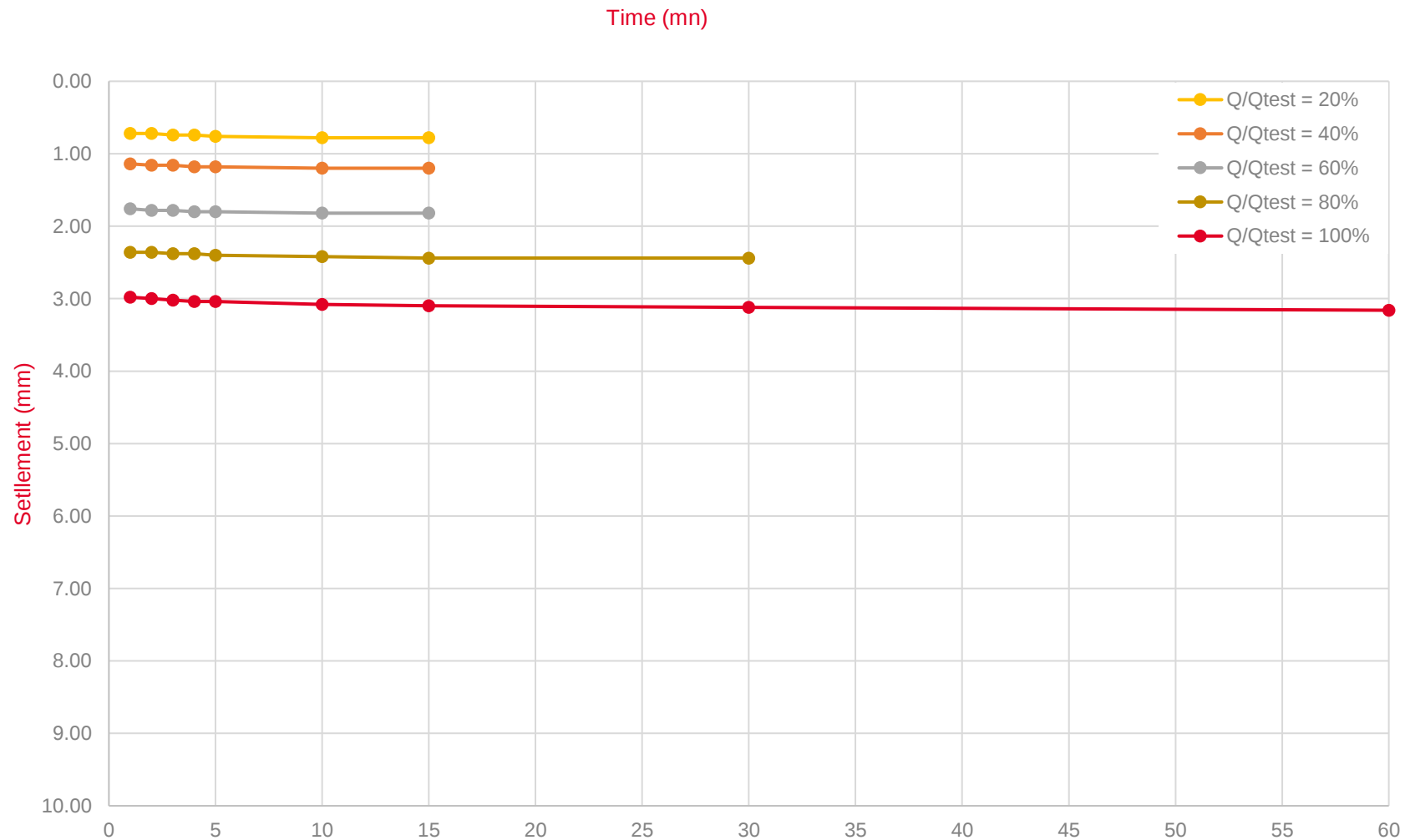
Project Number
Project Name

6903
Birtall

N° test (and/or n° CMC)
Date

1 - TC 1
26/11/2025

Settlement curve in function of the time



STATIC PLATELOAD TEST ON ONE CMC



Project Number	6903	N° test (and/or n° CMC)	2 - TC 2
Project Name	Birtsall	Date	27/11/2025
Test type	Quality	Contract engineer	Adam Harrison
Load test Qtest	36.0 t	Person(s) during the test	Wayne Talbot
Jack type	RC 756	Benkelman Beam	yes
Jack section	0.01026 m²		

Jack pressure	Load Q	Q/Qtest	Time	Sensor	Settlement	Jack pressure	Load Q	Q/Qtest	Time	Sensor	Settlement
(bars)	(t)	(%)	(mn)	(mm)	(mm)	(bars)	(t)	(%)	(mn)	(mm)	(mm)
70	7.2	20%	1	0.44	0.14	281	28.8	80%	1	1.31	1.88
			5	0.46	0.18				2	1.32	1.90
									3	1.32	1.90
0	0.0	0%	1	0.37	0.00				4	1.33	1.92
			5	0.37	0.00				5	1.33	1.92
									10	1.34	1.94
70	7.2	20%	1	0.52	0.30				15	1.34	1.94
			2	0.53	0.32				30	1.34	1.94
			3	0.54	0.34						
			4	0.54	0.34	351	36.0	100%	1	1.54	2.34
			5	0.55	0.36				2	1.55	2.36
			10	0.56	0.38				3	1.56	2.38
			15	0.57	0.40				4	1.57	2.40
									5	1.58	2.42
140	14.4	40%	1	0.79	0.84				10	1.59	2.44
			2	0.80	0.86				15	1.59	2.44
			3	0.82	0.90				30	1.59	2.44
			4	0.83	0.92				60	1.59	2.44
			5	0.83	0.92						
			10	0.84	0.94						
			15	0.84	0.94	175	18.0	50%	1	1.31	1.88
									5	1.31	1.88
211	21.6	60%	1	1.02	1.30						
			2	1.03	1.32						
			3	1.03	1.32	0	0.0	0%	1	1.16	1.58
			4	1.04	1.34				5	1.16	1.58
			5	1.04	1.34						
			10	1.04	1.34						
			15	1.04	1.34						
						Comment					

Remark : Over the course of the loading stages, it is authorized to proceed to the next stage provided displacement remains less than 0.02 mm/min on at least two consecutive measurements, with a minimum 15-minute interval.

STATIC PLATELOAD TEST ON ONE CMC

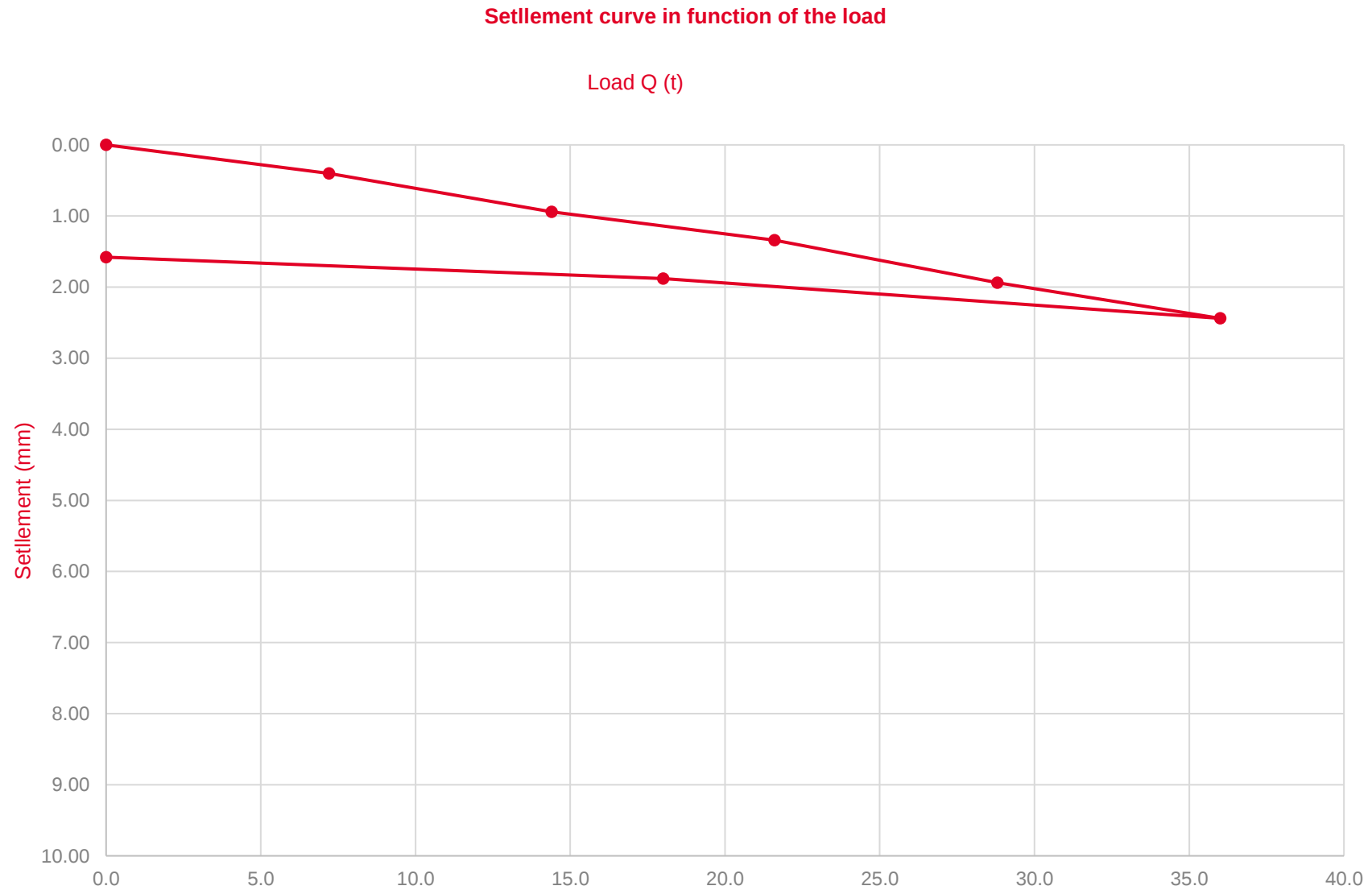


Project Number
Project Name

6903
Birtsall

N° test (and/or n° CMC)
Date

2 - TC 2
27/11/2025



STATIC PLATELOAD TEST ON ONE CMC



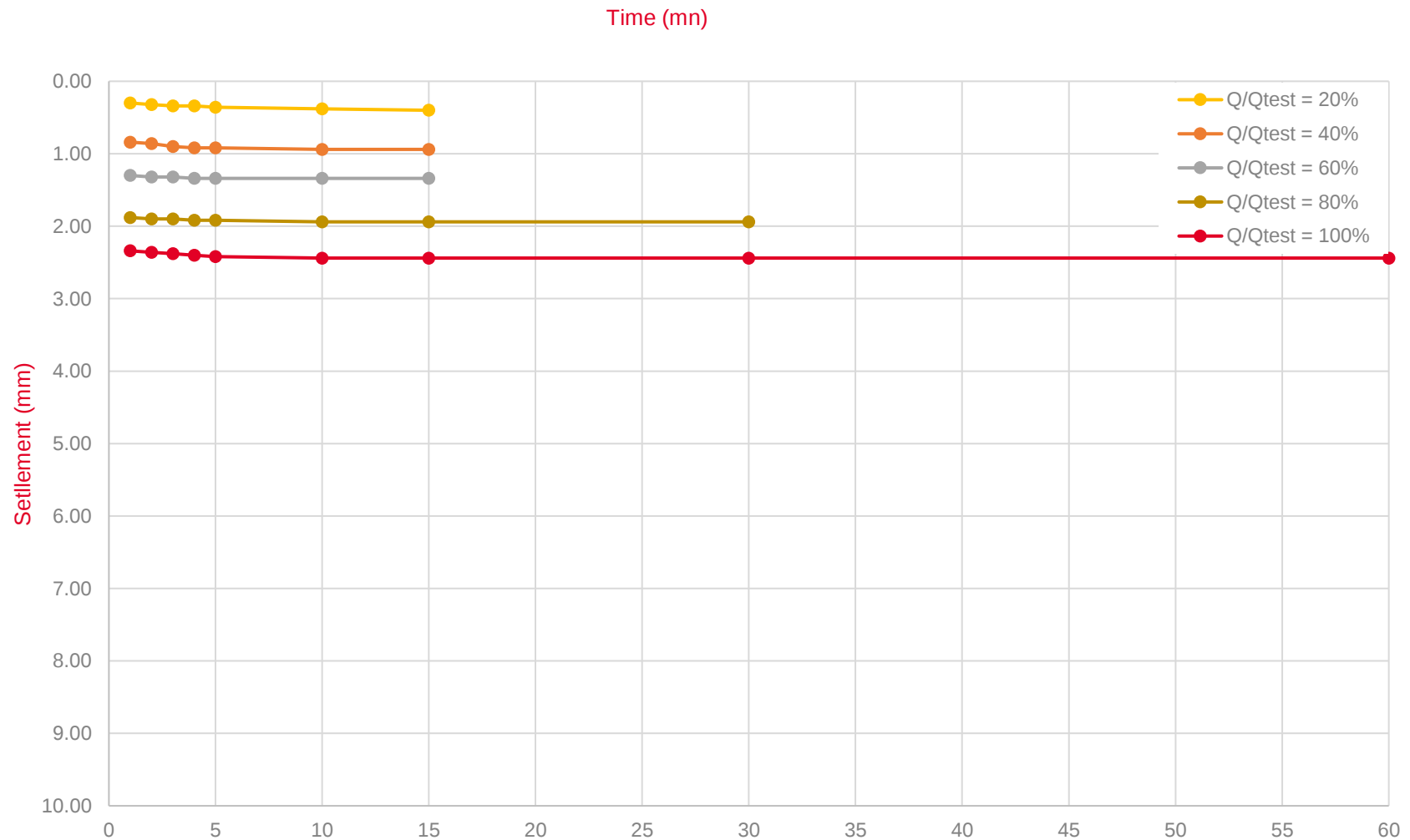
Project Number
Project Name

6903
Birtsaill

N° test (and/or n° CMC)
Date

2 - TC 2
27/11/2025

Settlement curve in function of the time



STATIC PLATELOAD TEST ON ONE CMC



Project Number	6903	N° test (and/or n° CMC)	3 - TC3
Project Name	Birtsall	Date	10/12/2025
Test type	Quality	Contract engineer	Adam Harrison
Load test Qtest	36.0 t	Person(s) during the test	Wayne Talbot
Jack type	RC 756	Benkelman Beam	yes
Jack section	0.01026 m²		

Jack pressure	Load Q	Q/Qtest	Time	Sensor	Settlement	Jack pressure	Load Q	Q/Qtest	Time	Sensor	Settlement
(bars)	(t)	(%)	(mn)	(mm)	(mm)	(bars)	(t)	(%)	(mn)	(mm)	(mm)
70	7.2	20%	1	0.46	0.48	281	28.8	80%	1	1.11	1.78
			5	0.47	0.50				2	1.11	1.78
									3	1.12	1.80
0	0.0	0%	1	0.22	0.00				4	1.13	1.82
			5	0.22	0.00				5	1.13	1.82
									10	1.14	1.84
70	7.2	20%	1	0.51	0.58				15	1.15	1.86
			2	0.51	0.58				30	1.15	1.86
			3	0.52	0.60						
			4	0.52	0.60	351	36.0	100%	1	1.31	2.18
			5	0.53	0.62				2	1.32	2.20
			10	0.54	0.64				3	1.33	2.22
			15	0.54	0.64				4	1.34	2.24
									5	1.36	2.28
140	14.4	40%	1	0.71	0.98				10	1.37	2.30
			2	0.71	0.98				15	1.39	2.34
			3	0.72	1.00				30	1.40	2.36
			4	0.73	1.02				60	1.41	2.38
			5	0.74	1.04						
			10	0.75	1.06						
			15	0.75	1.06	175	18.0	50%	1	1.16	1.88
									5	1.16	1.88
211	21.6	60%	1	0.93	1.42						
			2	0.93	1.42						
			3	0.94	1.44	0	0.0	0%	1	1.04	1.64
			4	0.94	1.44				5	1.04	1.64
			5	0.95	1.46						
			10	0.96	1.48						
			15	0.97	1.50						
						Comment					

Remark : Over the course of the loading stages, it is authorized to proceed to the next stage provided displacement remains less than 0.02 mm/min on at least two consecutive measurements, with a minimum 15-minute interval.

STATIC PLATELOAD TEST ON ONE CMC

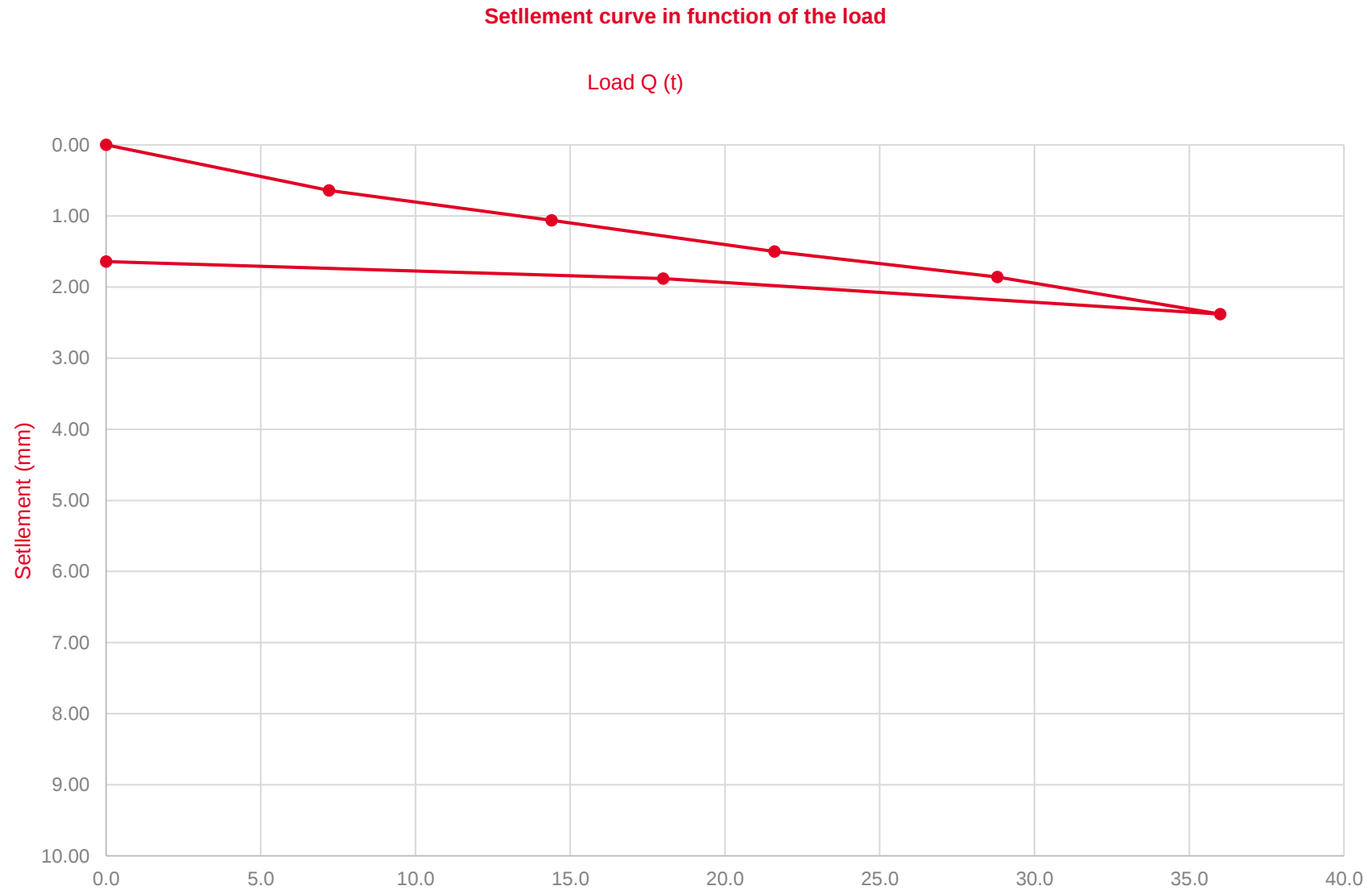


Project Number
Project Name

6903
Birtsall

N° test (and/or n° CMC)
Date

3 - TC3
10/12/2025



STATIC PLATELOAD TEST ON ONE CMC



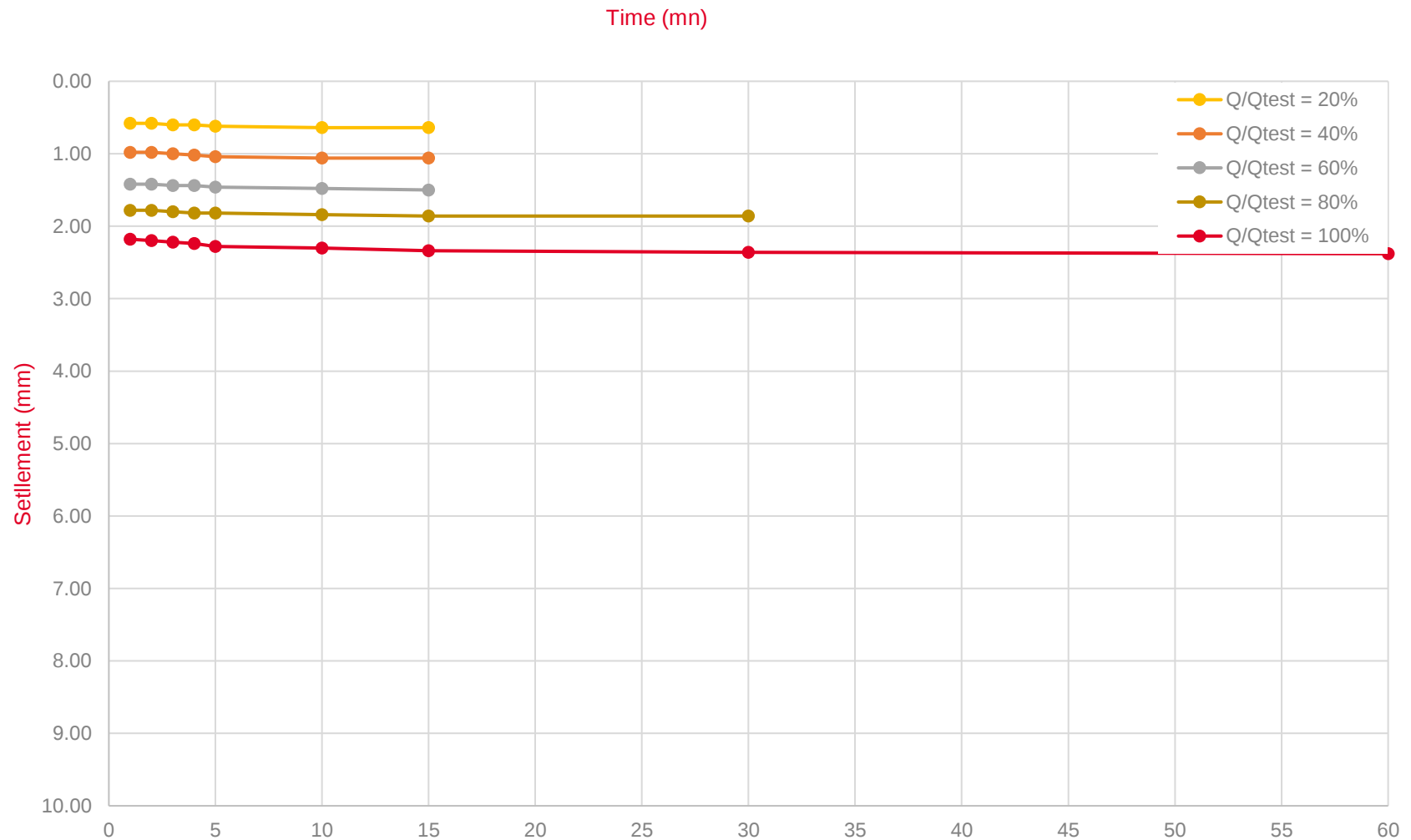
Project Number
Project Name

6903
Birtsall

N° test (and/or n° CMC)
Date

3 - TC3
10/12/2025

Settlement curve in function of the time



STATIC PLATELOAD TEST ON ONE CMC



Project Number	6903	N° test (and/or n° CMC)	4 - TC4
Project Name	Birtsall	Date	11/12/2025
Test type	Quality	Contract engineer	Adam Harrison
Load test Qtest	36.0 t	Person(s) during the test	Wayne Talbot
Jack type	RC 756	Benkelman Beam	yes
Jack section	0.01026 m²		

Jack pressure	Load Q	Q/Qtest	Time	Sensor	Settlement	Jack pressure	Load Q	Q/Qtest	Time	Sensor	Settlement
(bars)	(t)	(%)	(mn)	(mm)	(mm)	(bars)	(t)	(%)	(mn)	(mm)	(mm)
70	7.2	20%	1	0.21	0.24	281	28.8	80%	1	0.93	1.68
			5	0.22	0.26				2	0.93	1.68
									3	0.94	1.70
0	0.0	0%	1	0.09	0.00				4	0.94	1.70
			5	0.09	0.00				5	0.95	1.72
									10	0.95	1.72
70	7.2	20%	1	0.26	0.34				15	0.95	1.72
			2	0.27	0.36				30	0.95	1.72
			3	0.27	0.36						
			4	0.28	0.38	351	36.0	100%	1	1.07	1.96
			5	0.28	0.38				2	1.08	1.98
			10	0.028	-0.12				3	1.08	1.98
			15	0.28	0.38				4	1.09	2.00
									5	1.11	2.04
140	14.4	40%	1	0.56	0.94				10	1.12	2.06
			2	0.56	0.94				15	1.13	2.08
			3	0.57	0.96				30	1.14	2.10
			4	0.58	0.98				60	1.14	2.10
			5	0.59	1.00						
			10	0.60	1.02						
			15	0.60	1.02	175	18.0	50%	1	0.99	1.80
									5	0.99	1.80
211	21.6	60%	1	0.76	1.34						
			2	0.77	1.36						
			3	0.77	1.36	0	0.0	0%	1	0.76	1.34
			4	0.77	1.36				5	0.76	1.34
			5	0.78	1.38						
			10	0.79	1.40						
			15	0.79	1.40						
						Comment					

Remark : Over the course of the loading stages, it is authorized to proceed to the next stage provided displacement remains less than 0.02 mm/min on at least two consecutive measurements, with a minimum 15-minute interval.

STATIC PLATELOAD TEST ON ONE CMC

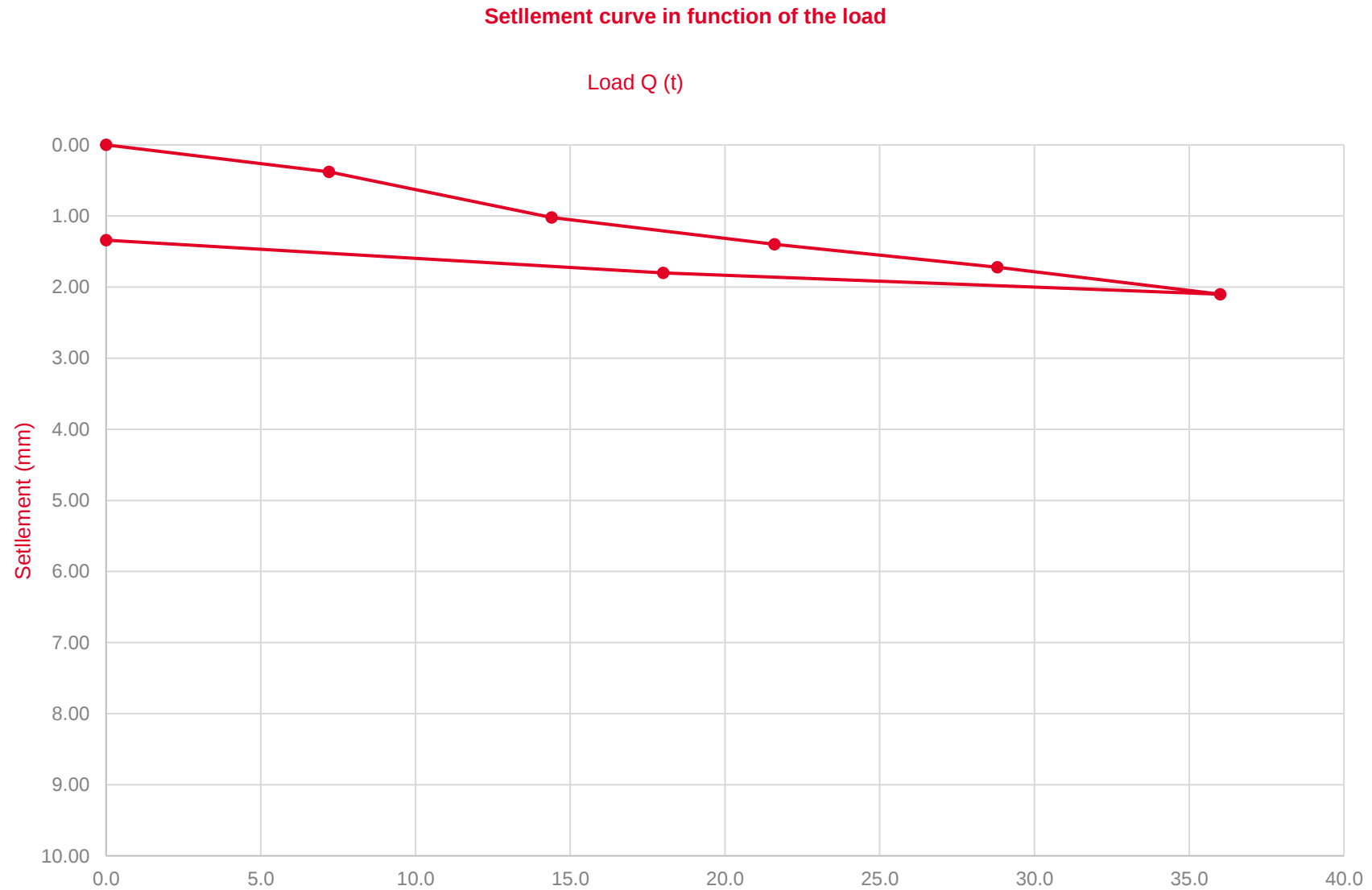


Project Number
Project Name

6903
Birtsall

N° test (and/or n° CMC)
Date

4 - TC4
11/12/2025



STATIC PLATELOAD TEST ON ONE CMC

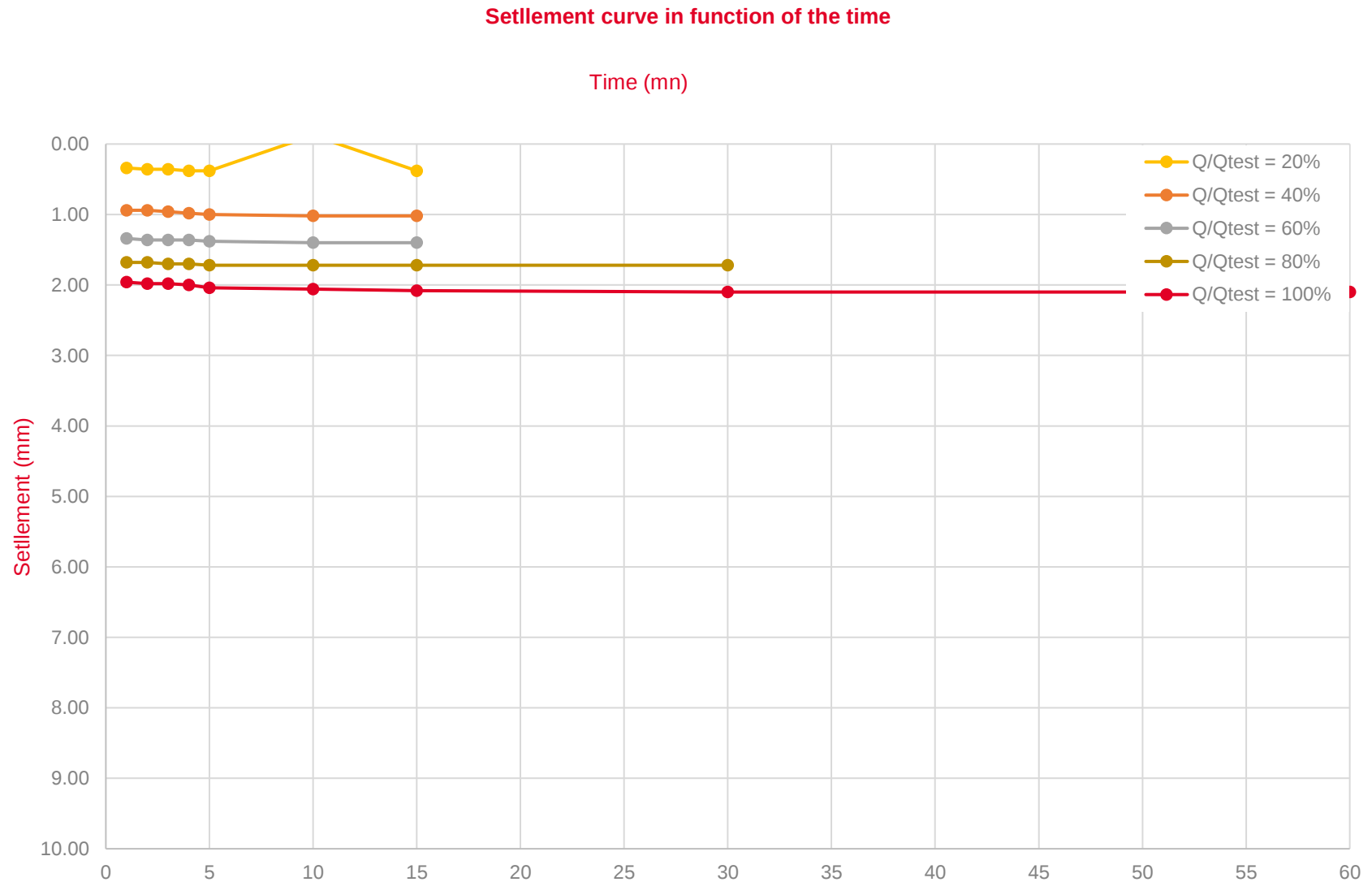


Project Number
Project Name

6903
Birtsall

N° test (and/or n° CMC)
Date

4 - TC4
11/12/2025



STATIC PLATELOAD TEST ON ONE CMC



Project Number	6903	N° test (and/or n° CMC)	5 - TC5
Project Name	Birtsall	Date	11/12/2025
Test type	Quality	Contract engineer	Adam Harrison
Load test Qtest	36.0 t	Person(s) during the test	Wayne Talbot
Jack type	RC 756	Benkelman Beam	yes
Jack section	0.01026 m²		

Jack pressure	Load Q	Q/Qtest	Time	Sensor	Settlement	Jack pressure	Load Q	Q/Qtest	Time	Sensor	Settlement
(bars)	(t)	(%)	(mn)	(mm)	(mm)	(bars)	(t)	(%)	(mn)	(mm)	(mm)
70	7.2	20%	1	0.51	0.40	281	28.8	80%	1	1.22	1.82
			5	0.53	0.44				2	1.22	1.82
									3	1.23	1.84
0	0.0	0%	1	0.31	0.00				4	1.23	1.84
			5	0.31	0.00				5	1.23	1.84
									10	1.24	1.86
70	7.2	20%	1	0.59	0.56				15	1.24	1.86
			2	0.61	0.60				30	1.24	1.86
			3	0.61	0.60						
			4	0.62	0.62	351	36.0	100%	1	1.44	2.26
			5	0.62	0.62				2	1.45	2.28
			10	0.63	0.64				3	1.46	2.30
			15	0.63	0.64				4	1.46	2.30
									5	1.46	2.30
140	14.4	40%	1	0.76	0.90				10	1.47	2.32
			2	0.77	0.92				15	1.47	2.32
			3	0.77	0.92				30	1.48	2.34
			4	0.78	0.94				60	1.48	2.34
			5	0.78	0.94						
			10	0.79	0.96						
			15	0.80	0.98	175	18.0	50%	1	1.15	1.68
									5	1.15	1.68
211	21.6	60%	1	1.06	1.50						
			2	1.06	1.50						
			3	1.07	1.52	0	0.0	0%	1	0.96	1.30
			4	1.07	1.52				5	0.96	1.30
			5	1.08	1.54						
			10	1.08	1.54						
			15	1.08	1.54						
						Comment					

Remark : Over the course of the loading stages, it is authorized to proceed to the next stage provided displacement remains less than 0.02 mm/min on at least two consecutive measurements, with a minimum 15-minute interval.

STATIC PLATELOAD TEST ON ONE CMC



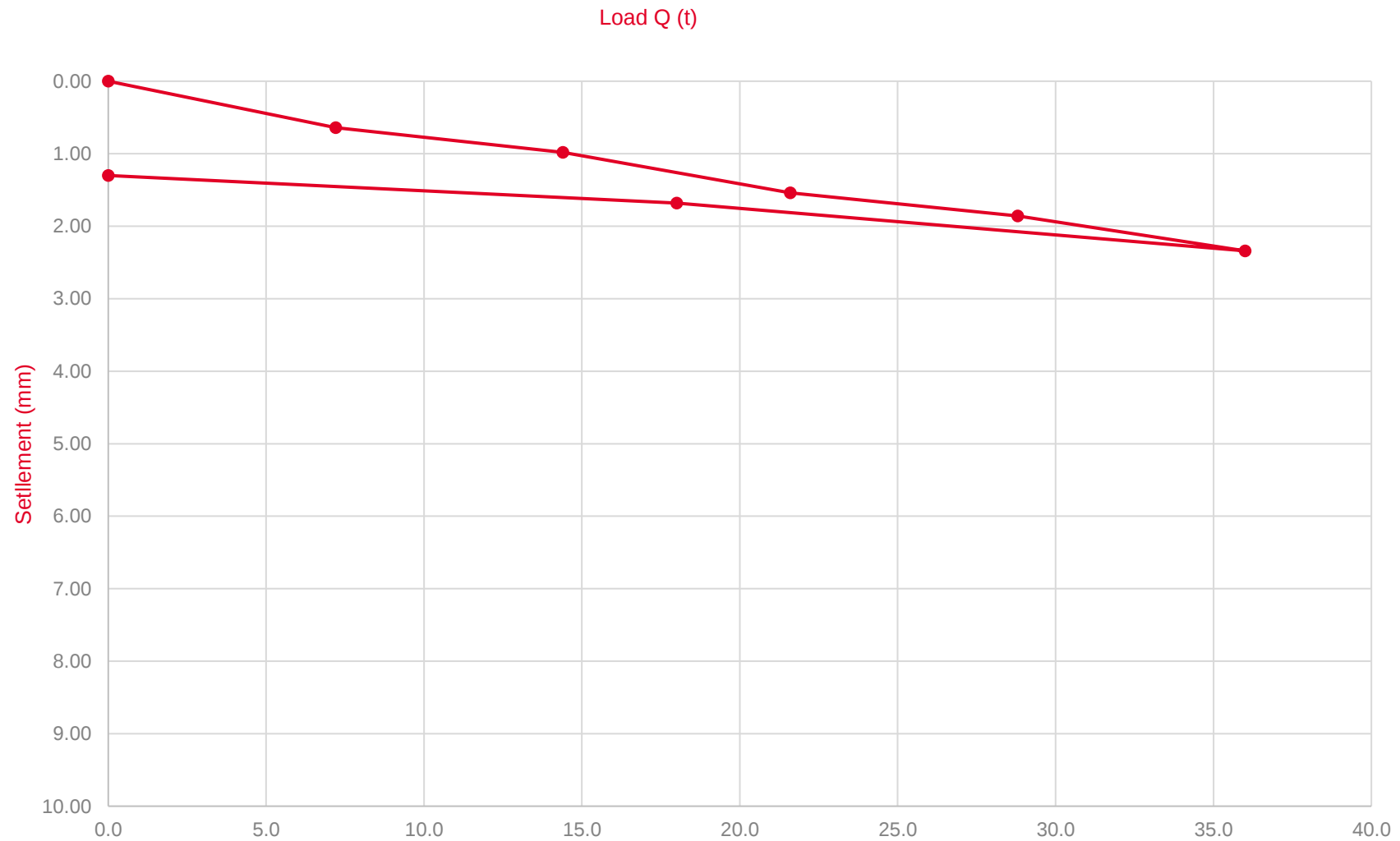
Project Number
Project Name

6903
Birtsall

N° test (and/or n° CMC)
Date

5 - TC5
11/12/2025

Settlement curve in function of the load



STATIC PLATELOAD TEST ON ONE CMC



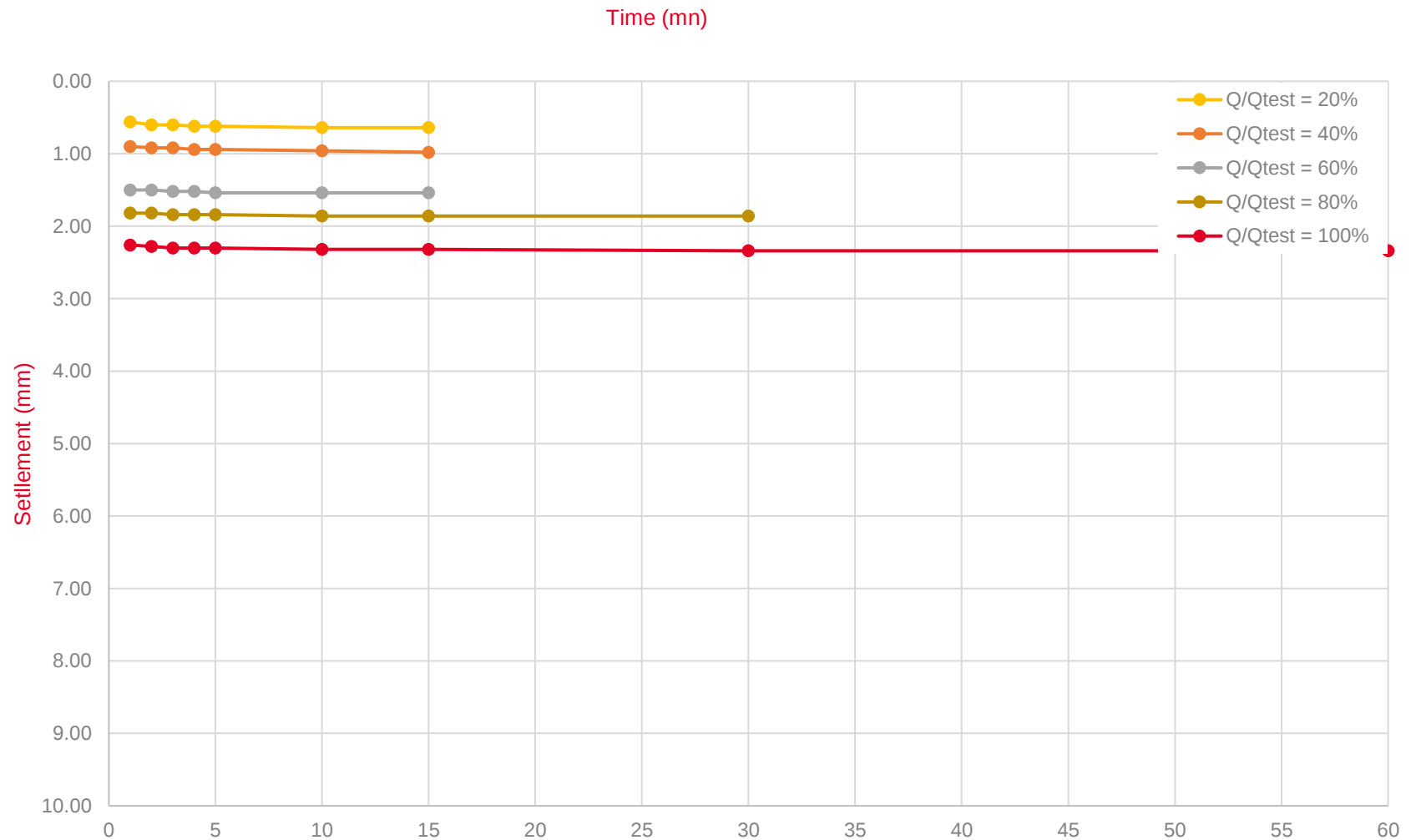
Project Number
Project Name

6903
Birtsall

N° test (and/or n° CMC)
Date

5 - TC5
11/12/2025

Settlement curve in function of the time



APPENDIX 3 – CONCRETE CUBE TEST RESULTS

Project Details		Report Details	
Client:	MENARD LTD	Report No.:	CONC:NOR25-12227-C0001
Client Address:	HENDERSON HOUSE LANGLEY PLACE BURSCOUGH LANCASHIRE L40 8JS	Report Date:	09/12/2025
		Issue No.:	3
		Recipients:	Adam Harrison Cube Test Results David Rickson
Project:	P255094 - BR - Lidl Bankwood Way, Birstall WF17 9TB		

Field Details and Results			
Location in Works:	YARD AREA	Mix:	C16/20 S4
Fresh Concrete Sampling performed by third party and not covered under this laboratory's accreditation			
Sample ID:	NOR25-12227-C0001	Client Sample ID:	NOR070671

Compressive Strength of test specimens (100 mm Cube)								
Making and initial curing of specimens for strength tests performed by third party and not covered under this laboratory's accreditation								
Date Made:		11/11/2025		Date and Time Received:			12/11/2025 16:17	
Laboratory Test Methods: BS EN 12390-7 - 2019, BS EN 12390-1 - 2021, BS EN 12390-3 - 2019								
Specimen ID	Client ID	Age at Test (Days)	Test Date	Width/Depth/Height (mm)	Density (kg/m³)	Failure Load (kN)	Compressive Strength (N/mm²)	Specified Strength (N/mm²)
016675\A	A	7	18/11/2025	100/100/100	2350	199.3	19.9	
016675\B	B	8	19/11/2025	100/100/100	2300	228.2	22.8	
016675\C	C	28	09/12/2025	100/100/100	2350	315.4	31.5	≥20
016675\D	D	28	09/12/2025	100/100/100	2330	320.3	32.0	≥20
016675\E	E	Spare/56	06/01/2026					

Notes	
The following apply unless otherwise stated in specimen notes: Laboratory curing tank temperature range (°C): 18 to 22. Specimen appearance as received satisfactory. Specimens transported within 16 hours of making are classified as deviating from the standard requirements.	
	BS EN 12390-7 - 2019 Hardened concrete density test carried out in saturated condition. Volume determined by measurement or designated size. Any fins removed by abrasive stone. BS EN 12390-3 - 2019 Specimen failure normal, specimen appearance normal.

Signed:	Paul Haddock - Project Manager For and on behalf of SOCOTEC UK Limited Certified that testing was carried out in accordance with the test methods identified herein. This test report may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.
Signed Date:	09/12/2025

Project Details		Report Details	
Client:	MENARD LTD	Report No.:	CONC:NOR25-12393-C0001
Client Address:	HENDERSON HOUSE LANGLEY PLACE BURSCOUGH LANCASHIRE L40 8JS	Report Date:	10/12/2025
		Issue No.:	2
		Recipients:	Adam Harrison Cube Test Results David Rickson
Project:	P255094 - BR - Lidl Bankwood Way, Birstall WF17 9TB		

Field Details and Results			
Location in Works:	YARD AREA	Mix:	C16/20
Fresh Concrete Sampling performed by third party and not covered under this laboratory's accreditation			
Sample ID:	NOR25-12393-C0001	Client Sample ID:	NOR070672

Compressive Strength of test specimens (100 mm Cube)								
Making and initial curing of specimens for strength tests performed by third party and not covered under this laboratory's accreditation								
Date Made:		12/11/2025		Date and Time Received:		17/11/2025 10:48		
Laboratory Test Methods: BS EN 12390-7 - 2019, BS EN 12390-1 - 2021, BS EN 12390-3 - 2019								
Specimen ID	Client ID	Age at Test (Days)	Test Date	Width/Depth/Height (mm)	Density (kg/m ³)	Failure Load (kN)	Compressive Strength (N/mm ²)	Specified Strength (N/mm ²)
016928\A	A	9	21/11/2025	100/100/100	2300	241.3	24.1	
016928\B	B	9	21/11/2025	100/100/100	2410	237.2	23.7	
016928\C	C	28	10/12/2025	100/100/100	2350	357.0	35.7	≥20
016928\D	D	28	10/12/2025	100/100/100	2400	377.6	37.8	≥20
016928\E	E	Spare/56	07/01/2026					

Notes	
The following apply unless otherwise stated in specimen notes: Laboratory curing tank temperature range (°C): 18 to 22. Specimen appearance as received satisfactory. Specimens transported within 16 hours of making are classified as deviating from the standard requirements.	
	BS EN 12390-7 - 2019 Hardened concrete density test carried out in saturated condition. Volume determined by measurement or designated size. Any fins removed by abrasive stone. BS EN 12390-3 - 2019 Specimen failure normal, specimen appearance normal.

Signed:	Paul Haddock - Project Manager For and on behalf of SOCOTEC UK Limited Certified that testing was carried out in accordance with the test methods identified herein. This test report may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.
Signed Date:	10/12/2025

Project Details		Report Details	
Client:	MENARD LTD	Report No.:	CONC:NOR25-12393-C0002
Client Address:	HENDERSON HOUSE LANGLEY PLACE BURSCOUGH LANCASHIRE L40 8JS	Report Date:	12/12/2025
		Issue No.:	2
		Recipients:	Adam Harrison Cube Test Results David Rickson
Project:	P255094 - BR - Lidl Bankwood Way, Birstall WF17 9TB		

Field Details and Results			
Location in Works:	YARD AREA	Mix:	C16/20
Fresh Concrete Sampling performed by third party and not covered under this laboratory's accreditation			
Sample ID:	NOR25-12393-C0002	Client Sample ID:	NOR070673

Compressive Strength of test specimens (100 mm Cube)								
Making and initial curing of specimens for strength tests performed by third party and not covered under this laboratory's accreditation								
Date Made:		13/11/2025		Date and Time Received:		17/11/2025 10:49		
Laboratory Test Methods: BS EN 12390-7 - 2019, BS EN 12390-1 - 2021, BS EN 12390-3 - 2019								
Specimen ID	Client ID	Age at Test (Days)	Test Date	Width/Depth/Height (mm)	Density (kg/m ³)	Failure Load (kN)	Compressive Strength (N/mm ²)	Specified Strength (N/mm ²)
016929\A	A	8	21/11/2025	100/100/100	2340	161.4	16.1	
016929\B	B	8	21/11/2025	100/100/100	2420	176.7	17.7	
016929\C	C	28	11/12/2025	100/100/100	2480	301.3	30.1	≥20
016929\D	D	28	11/12/2025	100/100/100	2370	294.5	29.4	≥20
016929\E	E	Spare/56	08/01/2026					

Notes	
The following apply unless otherwise stated in specimen notes: Laboratory curing tank temperature range (°C): 18 to 22. Specimen appearance as received satisfactory. Specimens transported within 16 hours of making are classified as deviating from the standard requirements.	
	BS EN 12390-7 - 2019 Hardened concrete density test carried out in saturated condition. Volume determined by measurement or designated size. Any fins removed by abrasive stone. BS EN 12390-3 - 2019 Specimen failure normal, specimen appearance normal.

Signed:	Paul Haddock - Project Manager For and on behalf of SOCOTEC UK Limited Certified that testing was carried out in accordance with the test methods identified herein. This test report may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.
Signed Date:	12/12/2025

Project Details		Report Details	
Client:	MENARD LTD	Report No.:	CONC:NOR25-12655-C0001
Client Address:	HENDERSON HOUSE LANGLEY PLACE BURSCOUGH LANCASHIRE L40 8JS	Report Date:	16/12/2025
		Issue No.:	2
		Recipients:	Adam Harrison Cube Test Results David Rickson
Project:	P255094 - BR - Lidl Bankwood Way, Birstall WF17 9TB		

Field Details and Results			
Location in Works:	P107	Mix:	C16/20 S4
Fresh Concrete Sampling performed by third party and not covered under this laboratory's accreditation			
Sample ID:	NOR25-12655-C0001	Client Sample ID:	NOR070674

Compressive Strength of test specimens (100 mm Cube)								
Making and initial curing of specimens for strength tests performed by third party and not covered under this laboratory's accreditation								
Date Made:		17/11/2025		Date and Time Received:			24/11/2025 12:17	
Laboratory Test Methods: BS EN 12390-7 - 2019, BS EN 12390-1 - 2021, BS EN 12390-3 - 2019								
Specimen ID	Client ID	Age at Test (Days)	Test Date	Width/Depth/Height (mm)	Density (kg/m ³)	Failure Load (kN)	Compressive Strength (N/mm ²)	Specified Strength (N/mm ²)
017246\A	A	10	27/11/2025	100/100/100	2320	279.6	28.0	
Mass Determination: As Received.								
017246\B	B	10	27/11/2025	100/100/100	2230	277.0	27.7	
Mass Determination: As Received.								
017246\C	C	28	15/12/2025	100/100/100	2460	343.7	34.4	≥20
017246\D	D	28	15/12/2025	100/100/100	2510	351.6	35.2	≥20
017246\E	E	Spare/56	12/01/2026					

Notes	
The following apply unless otherwise stated in specimen notes: Laboratory curing tank temperature range (°C): 18 to 22. Specimen appearance as received satisfactory. Specimens transported within 16 hours of making are classified as deviating from the standard requirements.	
	BS EN 12390-7 - 2019 Hardened concrete density test carried out in saturated condition. Volume determined by measurement or designated size. Any fins removed by abrasive stone. BS EN 12390-3 - 2019 Specimen failure normal, specimen appearance normal.

Signed:	Paul Haddock - Project Manager For and on behalf of SOCOTEC UK Limited Certified that testing was carried out in accordance with the test methods identified herein. This test report may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.
Signed Date: 16/12/2025	

Project Details		Report Details	
Client:	MENARD LTD	Report No.:	CONC:NOR25-12655-C0002
Client Address:	HENDERSON HOUSE LANGLEY PLACE BURSCOUGH LANCASHIRE L40 8JS	Report Date:	16/12/2025
		Issue No.:	2
		Recipients:	Adam Harrison Cube Test Results David Rickson
Project:	P255094 - BR - Lidl Bankwood Way, Birstall WF17 9TB		

Field Details and Results			
Location in Works:	P372	Mix:	C16/20 S4
Fresh Concrete Sampling performed by third party and not covered under this laboratory's accreditation			
Sample ID:	NOR25-12655-C0002	Client Sample ID:	NOR070675

Compressive Strength of test specimens (100 mm Cube)								
Making and initial curing of specimens for strength tests performed by third party and not covered under this laboratory's accreditation								
Date Made:		18/11/2025		Date and Time Received:		24/11/2025 12:17		
Laboratory Test Methods: BS EN 12390-7 - 2019, BS EN 12390-1 - 2021, BS EN 12390-3 - 2019								
Specimen ID	Client ID	Age at Test (Days)	Test Date	Width/Depth/Height (mm)	Density (kg/m³)	Failure Load (kN)	Compressive Strength (N/mm²)	Specified Strength (N/mm²)
017247\A	A	9	27/11/2025	100/100/100	2260	300.4	30.0	
Mass Determination: As Received.								
017247\B	B	9	27/11/2025	100/100/100	2280	288.1	28.8	
Mass Determination: As Received.								
017247\C	C	28	16/12/2025	100/100/100	2320	410.8	41.1	≥20
017247\D	D	28	16/12/2025	100/100/100	2270	393.1	39.3	≥20
017247\E	E	Spare/56	13/01/2026					

Notes	
The following apply unless otherwise stated in specimen notes: Laboratory curing tank temperature range (°C): 18 to 22. Specimen appearance as received satisfactory. Specimens transported within 16 hours of making are classified as deviating from the standard requirements.	
	BS EN 12390-7 - 2019 Hardened concrete density test carried out in saturated condition. Volume determined by measurement or designated size. Any fins removed by abrasive stone. BS EN 12390-3 - 2019 Specimen failure normal, specimen appearance normal.

Signed:	Paul Haddock - Project Manager For and on behalf of SOCOTEC UK Limited Certified that testing was carried out in accordance with the test methods identified herein. This test report may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.
Signed Date:	16/12/2025

Concrete Test Report

TEST REPORT



Project Details		Report Details	
Client:	MENARD LTD	Report No.:	CONC:NOR25-12655-C0003
Client Address:	HENDERSON HOUSE LANGLEY PLACE BURSCOUGH LANCASHIRE L40 8JS	Report Date:	17/12/2025
		Issue No.:	2
		Recipients:	Adam Harrison Cube Test Results David Rickson
Project:	P255094 - BR - Lidl Bankwood Way, Birstall WF17 9TB		

Field Details and Results			
Location in Works:	P320	Mix:	C16/20 S4
<i>Fresh Concrete Sampling performed by third party and not covered under this laboratory's accreditation</i>			
Sample ID:	NOR25-12655-C0003	Client Sample ID:	NOR070680

Compressive Strength of test specimens (100 mm Cube)								
Making and initial curing of specimens for strength tests performed by third party and not covered under this laboratory's accreditation								
Date Made:		19/11/2025		Date and Time Received:		24/11/2025 12:18		
Laboratory Test Methods:		BS EN 12390-7 - 2019, BS EN 12390-1 - 2021, BS EN 12390-3 - 2019						
Specimen ID	Client ID	Age at Test (Days)	Test Date	Width/Depth/Height (mm)	Density (kg/m³)	Failure Load (kN)	Compressive Strength (N/mm²)	Specified Strength (N/mm²)
017248\A	A	8	27/11/2025	100/100/100	2410	298.1	29.8	
Mass Determination: As Received.								
017248\B	B	8	27/11/2025	100/100/100	2400	274.3	27.4	
Mass Determination: As Received.								
017248\C	C	28	17/12/2025	100/100/100	2350	502.0	50.2	≥20
Failure Description: 2.								
017248\D	D	28	17/12/2025	100/100/100	2470	477.4	47.7	≥20
Failure Description: 1.								
017248\E	E	Spare/56	14/01/2026					

Notes	
The following apply unless otherwise stated in specimen notes: Laboratory curing tank temperature range (°C): 18 to 22. Specimen appearance as received satisfactory. Specimens transported within 16 hours of making are classified as deviating from the standard requirements.	
	BS EN 12390-7 - 2019 Hardened concrete density test carried out in saturated condition. Volume determined by measurement or designated size. Any fins removed by abrasive stone. BS EN 12390-3 - 2019 Specimen failure normal, specimen appearance normal.

Unsatisfactory cube specimen failure types per BS EN 12390-3:	
 1	 2
 3	 4
 5	 6
 7	 8
 9	

Signed:	Paul Haddock - Project Manager
	For and on behalf of SOCOTEC UK Limited Certified that testing was carried out in accordance with the test methods identified herein. This test report may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.
Signed Date:	17/12/2025

Project Details		Report Details	
Client:	MENARD LTD	Report No.:	CONC:NOR25-12830-C0001
Client Address:	HENDERSON HOUSE LANGLEY PLACE BURSCOUGH LANCASHIRE L40 8JS	Report Date:	19/12/2025
		Issue No.:	2
		Recipients:	Adam Harrison Cube Test Results David Rickson
Project:	P255094 - BR - Lidl Bankwood Way, Birstall WF17 9TB		

Field Details and Results			
Location in Works:	P283	Mix:	C16/20
Fresh Concrete Sampling performed by third party and not covered under this laboratory's accreditation			
Sample ID:	NOR25-12830-C0001	Client Sample ID:	NOR070682

Compressive Strength of test specimens (100 mm Cube)								
Making and initial curing of specimens for strength tests performed by third party and not covered under this laboratory's accreditation								
Date and Time Made:		21/11/2025 12:00		Date and Time Received:		26/11/2025 11:03		
Laboratory Test Methods: BS EN 12390-7 - 2019, BS EN 12390-1 - 2021, BS EN 12390-3 - 2019								
Specimen ID	Client ID	Age at Test (Days)	Test Date	Width/Depth/Height (mm)	Density (kg/m ³)	Failure Load (kN)	Compressive Strength (N/mm ²)	Specified Strength (N/mm ²)
017563\A	A	12	03/12/2025	100/100/100	2360	377.1	37.7	
Mass Determination: As Received.								
017563\B	B	12	03/12/2025	100/100/100	2350	388.4	38.8	
Mass Determination: As Received.								
017563\C	C	28	19/12/2025	100/100/100	2320	381.5	38.2	≥20
017563\D	D	28	19/12/2025	100/100/100	2310	467.8	46.8	≥20
017563\E	E	Spare/56	16/01/2026					

Notes	
The following apply unless otherwise stated in specimen notes: Laboratory curing tank temperature range (°C): 18 to 22. Specimen appearance as received satisfactory. Specimens transported within 16 hours of making are classified as deviating from the standard requirements.	
	BS EN 12390-7 - 2019 Hardened concrete density test carried out in saturated condition. Volume determined by measurement or designated size. Any fins removed by abrasive stone. BS EN 12390-3 - 2019 Specimen failure normal, specimen appearance normal.

Signed:	Paul Haddock - Project Manager For and on behalf of SOCOTEC UK Limited Certified that testing was carried out in accordance with the test methods identified herein. This test report may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.
Signed Date:	19/12/2025

Project Details		Report Details	
Client:	MENARD LTD	Report No.:	CONC:NOR25-12830-C0002
Client Address:	HENDERSON HOUSE LANGLEY PLACE BURSCOUGH LANCASHIRE L40 8JS	Report Date:	22/12/2025
		Issue No.:	2
		Recipients:	Adam Harrison Cube Test Results David Rickson
Project:	P255094 - BR - Lidl Bankwood Way, Birstall WF17 9TB		

Field Details and Results			
Location in Works:	P402	Mix:	C16/20
Fresh Concrete Sampling performed by third party and not covered under this laboratory's accreditation			
Sample ID:	NOR25-12830-C0002	Client Sample ID:	NOR070683

Compressive Strength of test specimens (100 mm Cube)								
Making and initial curing of specimens for strength tests performed by third party and not covered under this laboratory's accreditation								
Date and Time Made:			24/11/2025 14:00		Date and Time Received:		26/11/2025 11:04	
Laboratory Test Methods: BS EN 12390-7 - 2019, BS EN 12390-1 - 2021, BS EN 12390-3 - 2019								
Specimen ID	Client ID	Age at Test (Days)	Test Date	Width/Depth/Height (mm)	Density (kg/m ³)	Failure Load (kN)	Compressive Strength (N/mm ²)	Specified Strength (N/mm ²)
017564\A	A	9	03/12/2025	100/100/100	2350	248.6	24.9	
Mass Determination: As Received.								
017564\B	B	9	03/12/2025	100/100/100	2270	272.7	27.3	
Mass Determination: As Received.								
017564\C	C	28	22/12/2025	100/100/100	2360	348.6	34.9	≥20
017564\D	D	28	22/12/2025	100/100/100	2350	354.0	35.4	≥20
017564\E	E	Spare/56	19/01/2026					

Notes	
The following apply unless otherwise stated in specimen notes: Laboratory curing tank temperature range (°C): 18 to 22. Specimen appearance as received satisfactory. Specimens transported within 16 hours of making are classified as deviating from the standard requirements.	
	BS EN 12390-7 - 2019 Hardened concrete density test carried out in saturated condition. Volume determined by measurement or designated size. Any fins removed by abrasive stone. BS EN 12390-3 - 2019 Specimen failure normal, specimen appearance normal.

Signed:	Paul Haddock - Project Manager For and on behalf of SOCOTEC UK Limited Certified that testing was carried out in accordance with the test methods identified herein. This test report may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.
Signed Date:	22/12/2025

Project Details		Report Details	
Client:	MENARD LTD	Report No.:	CONC:NOR25-12830-C0003
Client Address:	HENDERSON HOUSE LANGLEY PLACE BURSCOUGH LANCASHIRE L40 8JS	Report Date:	23/12/2025
		Issue No.:	2
		Recipients:	Adam Harrison Cube Test Results David Rickson
Project:	P255094 - BR - Lidl Bankwood Way, Birstall WF17 9TB		

Field Details and Results			
Location in Works:	P112	Mix:	C16/20
Fresh Concrete Sampling performed by third party and not covered under this laboratory's accreditation			
Sample ID:	NOR25-12830-C0003	Client Sample ID:	NOR070684

Compressive Strength of test specimens (100 mm Cube)								
Making and initial curing of specimens for strength tests performed by third party and not covered under this laboratory's accreditation								
Date and Time Made:			25/11/2025 08:45		Date and Time Received:		26/11/2025 11:05	
Laboratory Test Methods: BS EN 12390-7 - 2019, BS EN 12390-1 - 2021, BS EN 12390-3 - 2019								
Specimen ID	Client ID	Age at Test (Days)	Test Date	Width/Depth/Height (mm)	Density (kg/m³)	Failure Load (kN)	Compressive Strength (N/mm²)	Specified Strength (N/mm²)
017565\A	A	8	03/12/2025	100/100/100	2310	256.4	25.6	
Mass Determination: As Received.								
017565\B	B	8	03/12/2025	100/100/100	2310	259.5	26.0	
Mass Determination: As Received.								
017565\C	C	28	23/12/2025	100/100/100	2310	350.4	35.0	≥20
017565\D	D	28	23/12/2025	100/100/100	2420	371.5	37.2	≥20
017565\E	E	Spare/56	20/01/2026					

Notes	
The following apply unless otherwise stated in specimen notes: Laboratory curing tank temperature range (°C): 18 to 22. Specimen appearance as received satisfactory. Specimens transported within 16 hours of making are classified as deviating from the standard requirements.	
	BS EN 12390-7 - 2019 Hardened concrete density test carried out in saturated condition. Volume determined by measurement or designated size. Any fins removed by abrasive stone. BS EN 12390-3 - 2019 Specimen failure normal, specimen appearance normal.

Signed:	Paul Haddock - Project Manager For and on behalf of SOCOTEC UK Limited Certified that testing was carried out in accordance with the test methods identified herein. This test report may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.
Signed Date:	23/12/2025

Project Details		Report Details	
Client:	MENARD LTD	Report No.:	CONC:NOR25-12932-C0001
Client Address:	HENDERSON HOUSE LANGLEY PLACE BURSCOUGH LANCASHIRE L40 8JS	Report Date:	24/12/2025
		Issue No.:	2
		Recipients:	Adam Harrison Cube Test Results David Rickson
Project:	P255094 - BR - Lidl Bankwood Way, Birstall WF17 9TB		

Field Details and Results			
Location in Works:	P205	Mix:	C16/20
Fresh Concrete Sampling performed by third party and not covered under this laboratory's accreditation			
Sample ID:	NOR25-12932-C0001	Client Sample ID:	NOR070685

Compressive Strength of test specimens (100 mm Cube)								
Making and initial curing of specimens for strength tests performed by third party and not covered under this laboratory's accreditation								
Date Made:		26/11/2025		Date and Time Received:		01/12/2025 16:00		
Laboratory Test Methods: BS EN 12390-7 - 2019, BS EN 12390-1 - 2021, BS EN 12390-3 - 2019								
Specimen ID	Client ID	Age at Test (Days)	Test Date	Width/Depth/Height (mm)	Density (kg/m³)	Failure Load (kN)	Compressive Strength (N/mm²)	Specified Strength (N/mm²)
017647\A	A	8	04/12/2025	100/100/100	2320	236.2	23.6	
017647\B	2	8	04/12/2025	100/100/100	2380	232.0	23.2	
017647\C	3	28	24/12/2025	100/100/100	2330	356.3	35.6	≥20
017647\D	4	28	24/12/2025	100/100/100	2350	364.4	36.4	≥20
017647\E	5	Spare/56	21/01/2026					

Notes	
The following apply unless otherwise stated in specimen notes: Laboratory curing tank temperature range (°C): 18 to 22. Specimen appearance as received satisfactory. Specimens transported within 16 hours of making are classified as deviating from the standard requirements.	
	BS EN 12390-7 - 2019 Hardened concrete density test carried out in saturated condition. Volume determined by measurement or designated size. Any fins removed by abrasive stone. BS EN 12390-3 - 2019 Specimen failure normal, specimen appearance normal.

Signed:	Paul Haddock - Project Manager For and on behalf of SOCOTEC UK Limited Certified that testing was carried out in accordance with the test methods identified herein. This test report may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.
Signed Date:	24/12/2025

Project Details		Report Details	
Client:	MENARD LTD	Report No.:	CONC:NOR25-12932-C0002
Client Address:	HENDERSON HOUSE LANGLEY PLACE BURSCOUGH LANCASHIRE L40 8JS	Report Date:	02/01/2026
		Issue No.:	2
		Recipients:	Adam Harrison Cube Test Results David Rickson
Project:	P255094 - BR - Lidl Bankwood Way, Birstall WF17 9TB		

Field Details and Results			
Location in Works:	P455	Mix:	C16/20
<i>Fresh Concrete Sampling performed by third party and not covered under this laboratory's accreditation</i>			
Sample ID:	NOR25-12932-C0002	Client Sample ID:	NOR070686

Compressive Strength of test specimens (100 mm Cube)								
Making and initial curing of specimens for strength tests performed by third party and not covered under this laboratory's accreditation								
Date Made:		27/11/2025		Date and Time Received:			01/12/2025 16:00	
Laboratory Test Methods: BS EN 12390-7 - 2019, BS EN 12390-1 - 2021, BS EN 12390-3 - 2019								
Specimen ID	Client ID	Age at Test (Days)	Test Date	Width/Depth/Height (mm)	Density (kg/m³)	Failure Load (kN)	Compressive Strength (N/mm²)	Specified Strength (N/mm²)
017648\A	A	7	04/12/2025	100/100/100	2330	253.2	25.3	
017648\B	B	7	04/12/2025	100/100/100	2410	250.1	25.0	
017648\C	C	34	31/12/2025	100/100/100	2380	402.7	40.3	≥20
017648\D	D	34	31/12/2025	100/100/100	2420	380.3	38.0	≥20
017648\E	E	Spare/56	22/01/2026					

Notes	
The following apply unless otherwise stated in specimen notes: Laboratory curing tank temperature range (°C): 18 to 22. Specimen appearance as received satisfactory. Specimens transported within 16 hours of making are classified as deviating from the standard requirements.	
	BS EN 12390-7 - 2019 Hardened concrete density test carried out in saturated condition. Volume determined by measurement or designated size. Any fins removed by abrasive stone. BS EN 12390-3 - 2019 Specimen failure normal, specimen appearance normal.

Signed:	Paul Haddock - Project Manager
	For and on behalf of SOCOTEC UK Limited
Signed Date: 02/01/2026	Certified that testing was carried out in accordance with the test methods identified herein. This test report may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

Project Details		Report Details	
Client:	MENARD LTD	Report No.:	CONC:NOR25-12974-C0001
Client Address:	HENDERSON HOUSE LANGLEY PLACE BURSCOUGH LANCASHIRE L40 8JS	Report Date:	31/12/2025
		Issue No.:	2
		Recipients:	Adam Harrison Cube Test Results David Rickson
Project:	P255094 - BR - Lidl Bankwood Way, Birstall WF17 9TB		

Field Details and Results			
Location in Works:	P391	Mix:	C16/20
Fresh Concrete Sampling performed by third party and not covered under this laboratory's accreditation			
Sample ID:	NOR25-12974-C0001	Client Sample ID:	NOR070687

Compressive Strength of test specimens (100 mm Cube)								
Making and initial curing of specimens for strength tests performed by third party and not covered under this laboratory's accreditation								
Date and Time Made:		01/12/2025 15:06		Date and Time Received:		03/12/2025 15:06		
Laboratory Test Methods: BS EN 12390-7 - 2019, BS EN 12390-1 - 2021, BS EN 12390-3 - 2019								
Specimen ID	Client ID	Age at Test (Days)	Test Date	Width/Depth/Height (mm)	Density (kg/m ³)	Failure Load (kN)	Compressive Strength (N/mm ²)	Specified Strength (N/mm ²)
017746\A	A	7	08/12/2025	100/100/100	2410	284.3	28.4	
017746\B	B	7	08/12/2025	100/100/100	2380	277.0	27.7	
017746\C	C	28	29/12/2025	100/100/100	2420	432.2	43.2	≥20
017746\D	D	28	29/12/2025	100/100/100	2440	398.4	39.8	≥20
017746\E	E	Spare/56	26/01/2026					

Notes	
The following apply unless otherwise stated in specimen notes: Laboratory curing tank temperature range (°C): 18 to 22. Specimen appearance as received satisfactory. Specimens transported within 16 hours of making are classified as deviating from the standard requirements.	
	BS EN 12390-7 - 2019 Hardened concrete density test carried out in saturated condition. Volume determined by measurement or designated size. Any fins removed by abrasive stone. BS EN 12390-3 - 2019 Specimen failure normal, specimen appearance normal.

Signed:	Paul Haddock - Project Manager For and on behalf of SOCOTEC UK Limited Certified that testing was carried out in accordance with the test methods identified herein. This test report may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.
Signed Date:	31/12/2025

Concrete Test Report

TEST REPORT



Project Details		Report Details	
Client:	MENARD LTD	Report No.:	CONC:NOR25-13202-C0001
Client Address:	HENDERSON HOUSE LANGLEY PLACE BURSCOUGH LANCASHIRE L40 8JS	Report Date:	02/01/2026
		Issue No.:	2
		Recipients:	Adam Harrison Cube Test Results David Rickson
Project:	P255094 - BR - Lidl Bankwood Way, Birstall WF17 9TB		

Field Details and Results			
Location in Works:	P96	Mix:	C16/20
<i>Fresh Concrete Sampling performed by third party and not covered under this laboratory's accreditation</i>			
Sample ID:	NOR25-13202-C0001	Client Sample ID:	NOR070688

Compressive Strength of test specimens (100 mm Cube)								
Making and initial curing of specimens for strength tests performed by third party and not covered under this laboratory's accreditation								
Date and Time Made:			02/12/2025 12:36		Date and Time Received:		08/12/2025 10:35	
Laboratory Test Methods: BS EN 12390-7 - 2019, BS EN 12390-1 - 2021, BS EN 12390-3 - 2019								
Specimen ID	Client ID	Age at Test (Days)	Test Date	Width/Depth/Height (mm)	Density (kg/m³)	Failure Load (kN)	Compressive Strength (N/mm²)	Specified Strength (N/mm²)
018023\A	A	12	14/12/2025	100/100/100	2330	241.7	24.2	
Mass Determination: As Received.								
018023\B	B	12	14/12/2025	100/100/100	2340	305.4	30.5	
Mass Determination: As Received.								
018023\C	C	28	30/12/2025	100/100/100	2360	357.0	35.7	≥20
018023\D	D	28	30/12/2025	—	—	—	—	≥20
018023\E	E	Spare/56	27/01/2026					

Notes	
The following apply unless otherwise stated in specimen notes: Laboratory curing tank temperature range (°C): 18 to 22. Specimen appearance as received satisfactory. Specimens transported within 16 hours of making are classified as deviating from the standard requirements.	
	BS EN 12390-7 - 2019 Hardened concrete density test carried out in saturated condition. Volume determined by measurement or designated size. Any fins removed by abrasive stone. BS EN 12390-3 - 2019 Specimen failure normal, specimen appearance normal.

Signed:	Paul Haddock - Project Manager
	For and on behalf of SOCOTEC UK Limited
Signed Date: 02/01/2026	Certified that testing was carried out in accordance with the test methods identified herein. This test report may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

Project Details		Report Details	
Client:	MENARD LTD	Report No.:	CONC:NOR25-13202-C0002
Client Address:	HENDERSON HOUSE LANGLEY PLACE BURSCOUGH LANCASHIRE L40 8JS	Report Date:	05/01/2026
		Issue No.:	2
		Recipients:	Adam Harrison Cube Test Results David Rickson
Project:	P255094 - BR - Lidl Bankwood Way, Birstall WF17 9TB		

Field Details and Results			
Location in Works:	P53	Mix:	C16/20
Fresh Concrete Sampling performed by third party and not covered under this laboratory's accreditation			
Sample ID:	NOR25-13202-C0002	Client Sample ID:	NOR070689

Compressive Strength of test specimens (100 mm Cube)								
Making and initial curing of specimens for strength tests performed by third party and not covered under this laboratory's accreditation								
Date and Time Made:		03/12/2025 12:36		Date and Time Received:		08/12/2025 10:36		
Laboratory Test Methods: BS EN 12390-7 - 2019, BS EN 12390-1 - 2021, BS EN 12390-3 - 2019								
Specimen ID	Client ID	Age at Test (Days)	Test Date	Width/Depth/Height (mm)	Density (kg/m ³)	Failure Load (kN)	Compressive Strength (N/mm ²)	Specified Strength (N/mm ²)
018024\A	A	11	14/12/2025	100/100/100	2400	430.8	43.1	
Mass Determination: As Received.								
018024\B	B	11	14/12/2025	100/100/100	2460	436.4	43.6	
Mass Determination: As Received.								
018024\C	C	33	05/01/2026	100/100/100	2420	516.0	51.6	≥20
018024\D	D	33	05/01/2026	100/100/100	2460	510.1	51.0	≥20
018024\E	E	Spare/56	28/01/2026					

Notes	
The following apply unless otherwise stated in specimen notes: Laboratory curing tank temperature range (°C): 18 to 22. Specimen appearance as received satisfactory. Specimens transported within 16 hours of making are classified as deviating from the standard requirements.	
	BS EN 12390-7 - 2019 Hardened concrete density test carried out in saturated condition. Volume determined by measurement or designated size. Any fins removed by abrasive stone. BS EN 12390-3 - 2019 Specimen failure normal, specimen appearance normal.

Signed:	Paul Haddock - Project Manager For and on behalf of SOCOTEC UK Limited Certified that testing was carried out in accordance with the test methods identified herein. This test report may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.
Signed Date:	05/01/2026

Project Details		Report Details	
Client:	MENARD LTD	Report No.:	CONC:NOR25-13202-C0003
Client Address:	HENDERSON HOUSE LANGLEY PLACE BURSCOUGH LANCASHIRE L40 8JS	Report Date:	16/12/2025
		Issue No.:	1
		Recipients:	Adam Harrison Cube Test Results David Rickson
Project:	P255094 - BR - Lidl Bankwood Way, Birstall WF17 9TB		

Field Details and Results			
Location in Works:	P4	Mix:	C16/20
Fresh Concrete Sampling performed by third party and not covered under this laboratory's accreditation			
Sample ID:	NOR25-13202-C0003	Client Sample ID:	NOR070690

Compressive Strength of test specimens (100 mm Cube)								
Making and initial curing of specimens for strength tests performed by third party and not covered under this laboratory's accreditation								
Date and Time Made:		04/12/2025 12:37		Date and Time Received:		08/12/2025 10:37		
Laboratory Test Methods: BS EN 12390-7 - 2019, BS EN 12390-1 - 2021, BS EN 12390-3 - 2019								
Specimen ID	Client ID	Age at Test (Days)	Test Date	Width/Depth/Height (mm)	Density (kg/m³)	Failure Load (kN)	Compressive Strength (N/mm²)	Specified Strength (N/mm²)
018025\A	A	11	15/12/2025	100/100/100	2410	337.7	33.8	
Mass Determination: As Received.								
018025\B	B	11	15/12/2025	100/100/100	2500	371.5	37.2	
Mass Determination: As Received.								
018025\C	C	28	01/01/2026	—	—	—	—	≥20
018025\D	D	28	01/01/2026	—	—	—	—	≥20
018025\E	E	Spare/56	29/01/2026					

Notes	
The following apply unless otherwise stated in specimen notes: Laboratory curing tank temperature range (°C): 18 to 22. Specimen appearance as received satisfactory. Specimens transported within 16 hours of making are classified as deviating from the standard requirements.	
	BS EN 12390-7 - 2019 Hardened concrete density test carried out in saturated condition. Volume determined by measurement or designated size. Any fins removed by abrasive stone. BS EN 12390-3 - 2019 Specimen failure normal, specimen appearance normal.

Signed:	Paul Haddock - Project Manager For and on behalf of SOCOTEC UK Limited Certified that testing was carried out in accordance with the test methods identified herein. This test report may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.
Signed Date:	16/12/2025

Project Details		Report Details	
Client:	MENARD LTD	Report No.:	CONC:NOR25-13202-C0004
Client Address:	HENDERSON HOUSE LANGLEY PLACE BURSCOUGH LANCASHIRE L40 8JS	Report Date:	05/01/2026
		Issue No.:	2
		Recipients:	Adam Harrison Cube Test Results David Rickson
Project:	P255094 - BR - Lidl Bankwood Way, Birstall WF17 9TB		

Field Details and Results			
Location in Works:	P1341	Mix:	C16/20
Fresh Concrete Sampling performed by third party and not covered under this laboratory's accreditation			
Sample ID:	NOR25-13202-C0004	Client Sample ID:	NOR070691

Compressive Strength of test specimens (100 mm Cube)								
Making and initial curing of specimens for strength tests performed by third party and not covered under this laboratory's accreditation								
Date and Time Made:			05/12/2025 12:38		Date and Time Received:		08/12/2025 10:38	
Laboratory Test Methods: BS EN 12390-7 - 2019, BS EN 12390-1 - 2021, BS EN 12390-3 - 2019								
Specimen ID	Client ID	Age at Test (Days)	Test Date	Width/Depth/Height (mm)	Density (kg/m³)	Failure Load (kN)	Compressive Strength (N/mm²)	Specified Strength (N/mm²)
018026\A	A	10	15/12/2025	100/100/100	2410	360.9	36.1	
Mass Determination: As Received.								
018026\B	B	10	15/12/2025	100/100/100	2470	350.8	35.1	
Mass Determination: As Received.								
018026\C	C	31	05/01/2026	100/100/100	2410	412.3	41.2	≥20
018026\D	D	31	05/01/2026	100/100/100	2420	455.3	45.5	≥20
018026\E	E	Spare/56	30/01/2026					

Notes	
The following apply unless otherwise stated in specimen notes: Laboratory curing tank temperature range (°C): 18 to 22. Specimen appearance as received satisfactory. Specimens transported within 16 hours of making are classified as deviating from the standard requirements.	
	BS EN 12390-7 - 2019 Hardened concrete density test carried out in saturated condition. Volume determined by measurement or designated size. Any fins removed by abrasive stone. BS EN 12390-3 - 2019 Specimen failure normal, specimen appearance normal.

Signed:	Paul Haddock - Project Manager For and on behalf of SOCOTEC UK Limited Certified that testing was carried out in accordance with the test methods identified herein. This test report may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.
Signed Date:	05/01/2026

Project Details		Report Details	
Client:	MENARD LTD	Report No.:	CONC:NOR25-13220-C0001
Client Address:	HENDERSON HOUSE LANGLEY PLACE BURSCOUGH LANCASHIRE L40 8JS	Report Date:	06/01/2026
		Issue No.:	2
		Recipients:	Adam Harrison Cube Test Results David Rickson
Project:	P255094 - BR - Lidl Bankwood Way, Birstall WF17 9TB		

Field Details and Results			
Location in Works:	P1275	Mix:	C16/20
Fresh Concrete Sampling performed by third party and not covered under this laboratory's accreditation			
Sample ID:	NOR25-13220-C0001	Client Sample ID:	NOR070692

Compressive Strength of test specimens (100 mm Cube)								
Making and initial curing of specimens for strength tests performed by third party and not covered under this laboratory's accreditation								
Date and Time Made:			08/12/2025 14:03		Date and Time Received:		10/12/2025 14:03	
Laboratory Test Methods: BS EN 12390-7 - 2019, BS EN 12390-1 - 2021, BS EN 12390-3 - 2019								
Specimen ID	Client ID	Age at Test (Days)	Test Date	Width/Depth/Height (mm)	Density (kg/m ³)	Failure Load (kN)	Compressive Strength (N/mm ²)	Specified Strength (N/mm ²)
018113\A	A	7	15/12/2025	100/100/100	2400	317.9	31.8	
Mass Determination: As Received.								
018113\B	B	7	15/12/2025	100/100/100	2410	313.4	31.3	
Mass Determination: As Received.								
018113\C	C	29	06/01/2026	100/100/100	2430	442.3	44.2	≥20
018113\D	D	29	06/01/2026	100/100/100	2410	339.8	34.0	≥20
018113\E	E	Spare/56	02/02/2026					

Notes	
The following apply unless otherwise stated in specimen notes: Laboratory curing tank temperature range (°C): 18 to 22. Specimen appearance as received satisfactory. Specimens transported within 16 hours of making are classified as deviating from the standard requirements.	
	BS EN 12390-7 - 2019 Hardened concrete density test carried out in saturated condition. Volume determined by measurement or designated size. Any fins removed by abrasive stone. BS EN 12390-3 - 2019 Specimen failure normal, specimen appearance normal.

Signed:	Paul Haddock - Project Manager For and on behalf of SOCOTEC UK Limited Certified that testing was carried out in accordance with the test methods identified herein. This test report may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.
Signed Date:	06/01/2026

Project Details		Report Details	
Client:	MENARD LTD	Report No.:	CONC:NOR25-13220-C0002
Client Address:	HENDERSON HOUSE LANGLEY PLACE BURSCOUGH LANCASHIRE L40 8JS	Report Date:	06/01/2026
		Issue No.:	2
		Recipients:	Adam Harrison Cube Test Results David Rickson
Project:	P255094 - BR - Lidl Bankwood Way, Birstall WF17 9TB		

Field Details and Results			
Location in Works:	P481	Mix:	C16/20
Fresh Concrete Sampling performed by third party and not covered under this laboratory's accreditation			
Sample ID:	NOR25-13220-C0002	Client Sample ID:	NOR070693

Compressive Strength of test specimens (100 mm Cube)								
Making and initial curing of specimens for strength tests performed by third party and not covered under this laboratory's accreditation								
Date and Time Made:			09/12/2025 14:04		Date and Time Received:		10/12/2025 14:04	
Laboratory Test Methods: BS EN 12390-7 - 2019, BS EN 12390-1 - 2021, BS EN 12390-3 - 2019								
Specimen ID	Client ID	Age at Test (Days)	Test Date	Width/Depth/Height (mm)	Density (kg/m³)	Failure Load (kN)	Compressive Strength (N/mm²)	Specified Strength (N/mm²)
018114\A	A	7	16/12/2025	100/100/100	2420	216.6	21.7	
Mass Determination: As Received.								
018114\B	B	7	16/12/2025	100/100/100	2370	233.2	23.3	
Mass Determination: As Received.								
018114\C	C	28	06/01/2026	100/100/100	2400	276.0	27.6	≥20
018114\D	D	28	06/01/2026	100/100/100	2450	335.3	33.5	≥20
018114\E	E	Spare/56	03/02/2026					

Notes	
The following apply unless otherwise stated in specimen notes: Laboratory curing tank temperature range (°C): 18 to 22. Specimen appearance as received satisfactory. Specimens transported within 16 hours of making are classified as deviating from the standard requirements.	
	BS EN 12390-7 - 2019 Hardened concrete density test carried out in saturated condition. Volume determined by measurement or designated size. Any fins removed by abrasive stone. BS EN 12390-3 - 2019 Specimen failure normal, specimen appearance normal.

Signed:	Paul Haddock - Project Manager For and on behalf of SOCOTEC UK Limited Certified that testing was carried out in accordance with the test methods identified herein. This test report may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.
Signed Date:	06/01/2026

APPENDIX 4 – AS-BUILT DRAWINGS

(Issued Electronically)

MENARD KEY

OUTLINE OF THE TOP OF
BATTER BETWEEN THE
HIGH AND LOW WORKING
PLATFORMS

A		07/11/25		FIRST ISSUE		JU		FB	
REV		DATE		DESCRIPTION		BY		APPROVED	
Drawings used to produce layout 25289-SIS-00-IP-DR-S-3400 rev 001, dated 01/10/25 Retaining Wall Setting Out rev2, dated 05/11/25				Total No. of Points Pad - 4 Strip - 340 Slab - 176 Other -		Bearing Pressures kN/m ² Pad - 150 Strip - 150 Slab - 20 Other -			
									
Henderson House, Langley Place, Burscough, Lancashire, L40 8JS Tel: +44(0)1704 891 039 Web: www.menard.co.uk									
Follow us on Linked in				Setting out of Centre Line of Foundations, Back Markers, Handing and Orientation Checked by: Signed: _____					
Drawn J. JIANG		Drawing Status Approval ☒		Construction ☐		As Installed ☐			
Approved FB		Scale 28:2000		Size A0		Date 07/11/2025		Total No. of Points 520	
Project Title NEW COMMERCIAL DEVELOPMENT, BIRSTALL, LIDL STORE		Drawing No. Y26472-1A		Tender Ref V30991					
Drawing Title Controlled Modulus Columns (CMC) LAYOUT									

RETAINING WALL 1.2m HIGH

LL-A

RETAINING WALL 1.2m HIGH

OUTLINE OF THE PROPOSED YARD SLAB

CONCRETE YARD - 175 mm RC SLAB
WITH A 193 MESH TOP AND BOTTOM.
CONCRETE REQUIRED TO BE PAV 2 - C35

Ø25000

OUTLINE OF THE PROPOSED YARD SLAB

RETAINING WALL 1m HIGH

LL-A

G

5400

MENARD KEY

OUTLINE OF THE TOP OF
BATTER BETWEEN THE
HIGH AND LOW WORKING
PLATFORMS

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Henderson House, Langley Place, Burscough, Lancashire, L40 8JS
Tel: +44(0)1704 891 039 Web: www.menard.co.uk

Follow us on Linked in		Setting out of Centre Line of Foundations, Back Markers, Handing and Orientation Checked by Signed: _____ For: _____			
Drawn	J JIANG	Drawing Status	Approved ☒	Construction	☐ As Installed ☐
Approved	FB	Scale	1:50	Size	A0
Project Title	NEW COMMERCIAL DEVELOPMENT, BIRSTALL, LIDL STORE, EXTERNAL CONCRETE YARD				Tender Ref
Drawing Title	Controlled Modulus Columns (CMC) LAYOUT				V26472-2A

APPENDIX G

IMPORTED MATERIAL SUPPLIER RESULTS

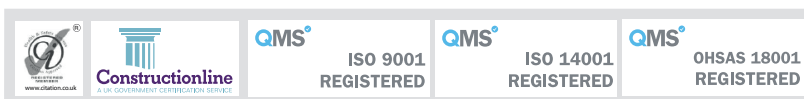
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Geotechnical
Specialists**



LABORATORY REPORT

job number	client ref
site address	client address
consultant	
date scheduled	date issued
issued by	job title

Rogers Geotechnical Services Ltd Telephone 01484 607 977
Email jude.norcliffe@rogersgeotech.co.uk www.rogersgeotech.co.uk
Unit 4, Barncliffe Business Park, Near Bank, Shelley,
Huddersfield, West Yorkshire HD8 8LU.



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8948

Schedule of UKAS Accredited Laboratory Tests



1. CLASSIFICATION OF SOIL	BS 1377-2:1990	BS EN 150 17892	Accredited (A)	Unaccredited (U)
1.1 Moisture / Water content determination				
i. Oven drying	Pt 2 : 3.2	Pt 1 : 2014 Pt 12 : 2018 : 5.3 / 5.5		U
ii. Saturation m/c of chalk	Pt 2 : 3.3			U
1.2 Index Properties				
i. Liquid limit – cone penetrometer	Pt 2 : 4.3			U
ii. Plastic limit	Pt 2 : 5.3			U
iii. Shrinkage limit	Pt 2 : 6.3			U
iv. Linear shrinkage	Pt 2 : 6.5			U
1.3 Particle Density				
i. Gas jar	Pt 2 : 8.2			U
ii. Large pycnometer	Pt 2 : 8.3			U
iii. Small pycnometer	Pt 2 : 8.4	Pt 3 : 2015 : 5.1		U
1.4 Density Tests				
i. Linear measurement	Pt 2 : 7.2	Pt 2 : 2014 : 5.1		U
ii. Immersion in water	Pt 2 : 7.3	Pt 2 : 2014 : 5.2		U
iii. Fluid / Water displacement	Pt 2 : 7.4	Pt 2 : 2014 : 5.3		U
iv. Sand replacement	Pt 9 : 2.1, 2.2			U
v. Core cutter	Pt 9 : 2.4			U
1.5 Particle Size Distribution				
i. Dry Sieve	Pt 2 : 9.2	Pt 4 : 2016 : 5.2		U
ii. Wet Sieve	Pt 2 : 9.3	Pt 4 : 2016 : 5.2		U
iii. Sedimentation by pipette	Pt 2 : 9.4	Pt 4 : 2016 : 5.3 / 5.4		U
iv. Sedimentation by hydrometer	Pt 2 : 9.5			U
2. CHEMICAL TESTS	BS 1377-3:2018			
ii. Mass loss on ignition	Pt 3 : 4			U
3. COMPACTION RELATED TESTS	BS 1377-4:1990			
3.1 Dry density/moisture relationship				
i. 2.5kg rammer – 1 litre mould	Pt 4 : 3			U
- CBR mould	Pt 4 : 3			U
ii. 4.5kg rammer – 1 litre mould	Pt 4 : 3			U
- CBR mould	Pt 4 : 3			U
3.2 Moisture Condition Value				
i. Single point test	Pt 4 : 5.4			U
ii. MCV/moisture content relationship	Pt 4 : 5.5			U
3.3 California Bearing Ratio				
i. Undisturbed sample	Pt 5 : 7			U
ii. Recompacted sample	Pt 5 : 7			U
iii. Soaked, inc measurement of swell	Pt 5 : 7			U
4. COMPRESSIBILITY OF SOIL	BS 1377-5:1990			
i. One dimensional consolidation	Pt 5 : 3			U
ii. Swelling pressure test	Pt 5 : 3			U
5. SHEAR STRENGTH OF SOIL	BS 1377-7:1990			
i. Hand shear vane	Makers instructions			U
ii. Shear box (100mm square sample)	BS 1377 : Pt 7 : 4			U
iii. Triaxial – quick undrained	BS 1377 : Pt 7 : 8, 9			U
6. PERMEABILITY				
i. Falling head	K. H. Head Vol 2			U
ii. Constant head	BS 1377 : Pt 6 : 6			U
iii Triaxial cell	BS 1377 : Pt 6 : 6			U
7. ROCK TESTS				
7.1 Classification Tests				
i. Natural moisture content	-			U
ii. Saturated moisture content	-			U
iii. Natural density	-			U
iv. Porosity	-			U
7.2 Strength Tests				
i. Point load index	ISRM '85			U
ii. Uniaxial compression test	ISRM '81			U

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Offices 1 & 2 Barncliffe Business Park, Near Bank, Shelley, Huddersfield, HD8 8LU
☎ 01484 604354 Company No. 5130864

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GEOTECHNICAL LAB RESULTS

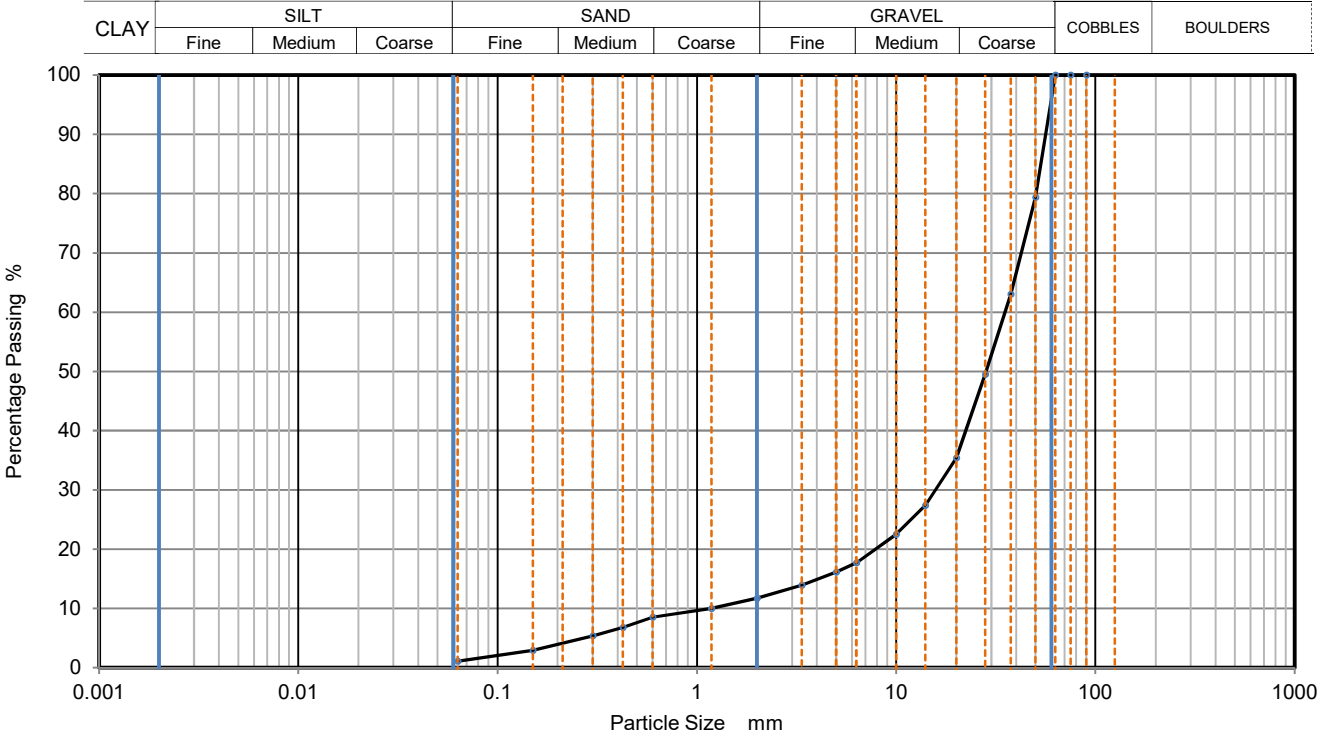
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	PARTICLE SIZE DISTRIBUTION			Job Ref	C/5507/25/L/8508
				Borehole/Pit No.	Stockpile 1
Site Name	Station Road			Sample No.	1
Soil Description	Greyish brown slightly sandy GRAVEL.			Depth, m	0.00
Specimen Reference	1	Specimen Depth	0 m	Sample Type	B
Test Method	ISO 17892 -4, by sieving on pre-dried or dry sample			KeyLAB ID	RGS_202509180

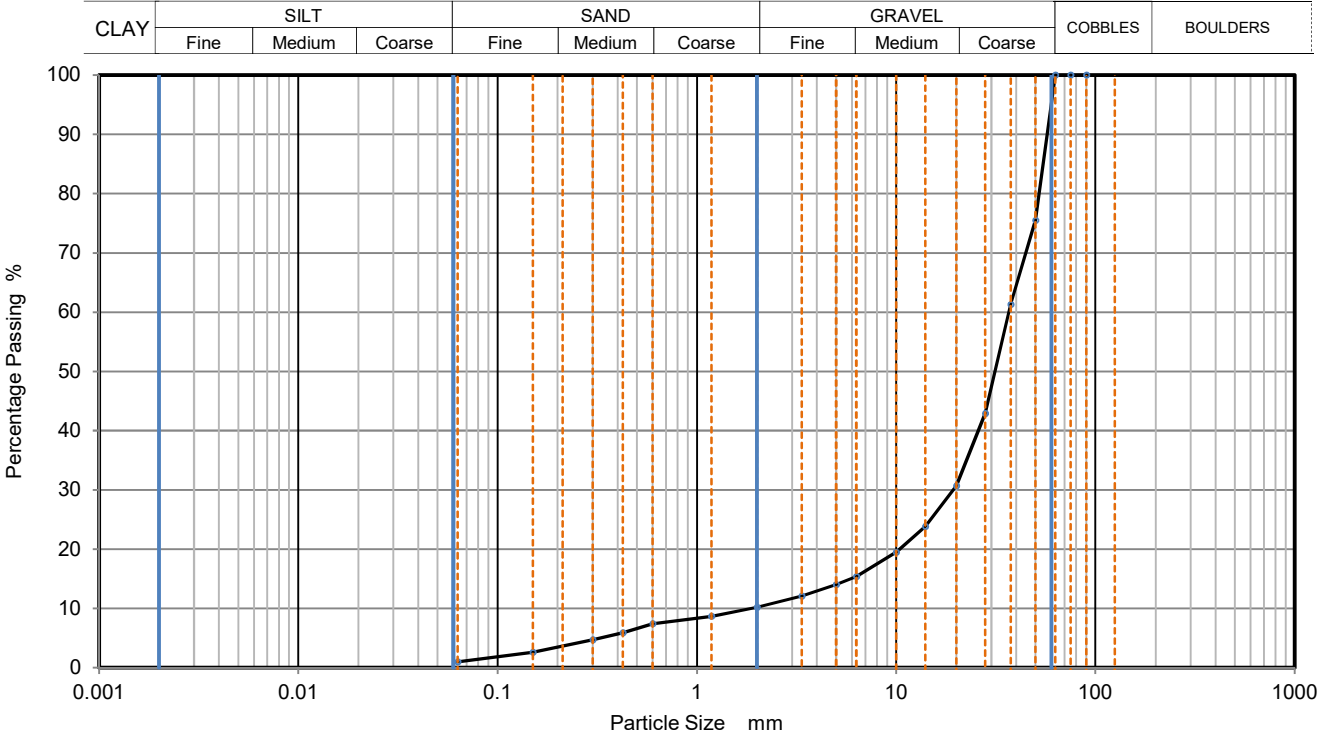


Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	79		
37.5	63		
28	50		
20	35		
14	27		
10	23		
6.3	18		
5	16		
3.35	14		
2	12		
1.18	10		
0.6	9		
0.425	7		
0.3	5		
0.15	3		
0.063	1		

Dry Mass of sample, g		13122
Sample Proportions		% dry mass
Very coarse		0
Gravel		88
Sand		11
Fines <0.063mm		1
Grading Analysis		
D100	mm	63
D60	mm	35.1
D30	mm	15.7
D10	mm	1.19
Remarks		
Preparation and testing in accordance with BS EN ISO 17892 - 4, unless noted below		
Test performance date: 26/09/2025		

Operator	Checked	Approved	Sheet printed	Fig 1 Sheet 1
HJL	Harry	Harry	26/09/2025	

	PARTICLE SIZE DISTRIBUTION			Job Ref	C/5507/25/L/8508
				Borehole/Pit No.	Stockpile 2
Site Name	Station Road			Sample No.	1
Soil Description	Greyish brown slightly sandy GRAVEL.			Depth, m	0.00
Specimen Reference	1	Specimen Depth	0 m	Sample Type	B
Test Method	ISO 17892 -4, by sieving on pre-dried or dry sample			KeyLAB ID	RGS_202509181



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	76		
37.5	61		
28	43		
20	31		
14	24		
10	20		
6.3	15		
5	14		
3.35	12		
2	10		
1.18	9		
0.6	7		
0.425	6		
0.3	5		
0.15	3		
0.063	1		

Dry Mass of sample, g	15122
Sample Proportions	% dry mass
Very coarse	0
Gravel	90
Sand	9
Fines <0.063mm	1
Grading Analysis	
D100 mm	63
D60 mm	36.7
D30 mm	19.3
D10 mm	1.89
Remarks	
Preparation and testing in accordance with BS EN ISO 17892 - 4, unless noted below	
Test performance date: 26/09/2025	

Operator	Checked	Approved	Sheet printed	Fig 1
HJL	Harry	Harry	26/09/2025	
				Sheet 2

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ENVIRONMENTAL LAB RESULTS

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Rogers Geotechnical Services Ltd
Offices 1&2 Barncliffe Business Pk
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t: 01484 604354

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i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404

f: 01923 237404

e: info-i2analytical@normecgroup.com

Analytical Report Number : 25-050380

Project / Site name:	Station Road	Samples received on:	18/09/2025
Your job number:	C5507 2025 L 8508	Samples instructed on/ Analysis started on:	18/09/2025
Your order number:	PO-3541	Analysis completed by:	23/09/2025
Report Issue Number:	1	Report issued on:	23/09/2025
Samples Analysed:	2 soil samples		

Signed:

Anna Goc
PL Head of Reporting Team
For & on behalf of i2 Analytical Ltd.

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

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

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

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting
air	- once the analysis is complete

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

Retention period for records and reports is minimum 6 years from the date of issue of the final report.
Some records may be kept for longer according to other legal/best practice requirements.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.



Analytical Report Number: 25-050380

Project / Site name: Station Road

Your Order No: PO-3541

Lab Sample Number				686377	686378
Sample Reference				STP01	STP02
Sample Number				None Supplied	None Supplied
Water Matrix				N/A	N/A
Depth (m)				0.00	0.00
Date Sampled				17/09/2025	17/09/2025
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	OGR	OGR
Analysis completed	N/A	N/A	N/A	23/09/2025	23/09/2025

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected



Analytical Report Number : 25-050380

Project / Site name: Station Road

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters Heating/Cooling (PrW) DI Process Water (DI PrW)

Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in Soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques	In-house method based on HSG 248, 2021	A001B	D	ISO 17025

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

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

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

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Quality control parameter failure associated with individual result applies to calculated sum of individuals.

The result for sum should be interpreted with caution

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End of Report

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Rogers Geotechnical Services Ltd
Office 1 & 2 Barncliffe Business Park,
Near Bank, Shelley, Huddersfield, HD8 8LU

Telephone 01484 607977
Company No: 5130864

APPENDIX H

EXAMPLE 6F2/5 DOCKETS & WASTE DISPOSAL NOTES



YORKSHIRE GRAB HIRE

EXCAVATIONS | AGGREGATES | TOPSOIL

No. 15597

Competent Asphalt Co. Ltd.

Registered Office: Harrison House, Station Road, Bradley, Huddersfield, HD2 1UW

Tel: 01924 480992 • Mobile: 0777 880 9295 • Email: info@yorkshiregrabhire.co.uk

DUTY OF CARE / CONTROLLED WASTE TRANSFER NOTE

Carrier's Licence No. CBDU146223 • Transfer Note

Customer STONEDALE		Site Address BIRTALL (TIPPED MAREFIELD)	
Spoil / Stones	17.05.04		
Grab Collection			
Date 13.10.25		Vehicle No. PN23 HHK	
Note 1 LOAD GREEN WASTE AWAY			
Customer:			
Print Name			
Representing		Representing Yorkshire Grab Hire	

NOTICE: IT IS THE CUSTOMER'S RESPONSIBILITY TO PROVIDE ADEQUATE ACCESS, NEITHER THE COMPANY NOR THE DRIVER CAN BE HELD RESPONSIBLE FOR DAMAGE WHILST UNDER INSTRUCTION FROM THE CUSTOMER.



YORKSHIRE GRAB HIRE

EXCAVATIONS | AGGREGATES | TOPSOIL

No. 15516

Competent Asphalt Co. Ltd.

Registered Office: Harrison House, Station Road, Bradley, Huddersfield, HD2 1UW

Tel: 01924 480992 • Mobile: 0777 880 9295 • Email: info@yorkshiregrabhire.co.uk

DUTY OF CARE / CONTROLLED WASTE TRANSFER NOTE

Carrier's Licence No. CBDU146223 • Transfer Note

Customer Stone Dale Construction		Site Address New Cidl Birstall	
Spoil / Stones	17.05.04		
Grab Collection			
Date	10.10.25	Vehicle No.	SB18 Dug
Note 1 Load 6ft in 1 green load out			
Customer Si			
Print Name			
Representing		Representing Yorkshire Grab Hire	

NOTICE: IT IS THE CUSTOMER'S RESPONSIBILITY TO PROVIDE ADEQUATE ACCESS, NEITHER THE COMPANY NOR THE DRIVER CAN BE HELD RESPONSIBLE FOR DAMAGE WHILST UNDER INSTRUCTION FROM THE CUSTOMER.

APPENDIX I

PLATE BEARING /CBR TEST RESULTS

GROUND TESTING SERVICES LTD

Test Report No: 02253

Date of Report: 30/01/26

Client: Stonedale Construction Ltd

Address: Woodhead Rd, Birstall, WF17 9TB

Contact: Ben Iveson 07398 409 258

Site: Woodhead Road

Test Required: 8 x Plate load bearing test (to determine CBR %)

Material: 6f2

Supplier/Source: Unknown

Location: CBR 1 – 4 (Pile Matt Area 1) CBR 5 – 8 (Pile Matt Area 2)

Depth/Level: Existing Ground Level

Plate Size: 450mm

Date Tested: 30/01/26

Weather Conditions: overcast

Operator: J Hall

Kentledge: 360 excavator

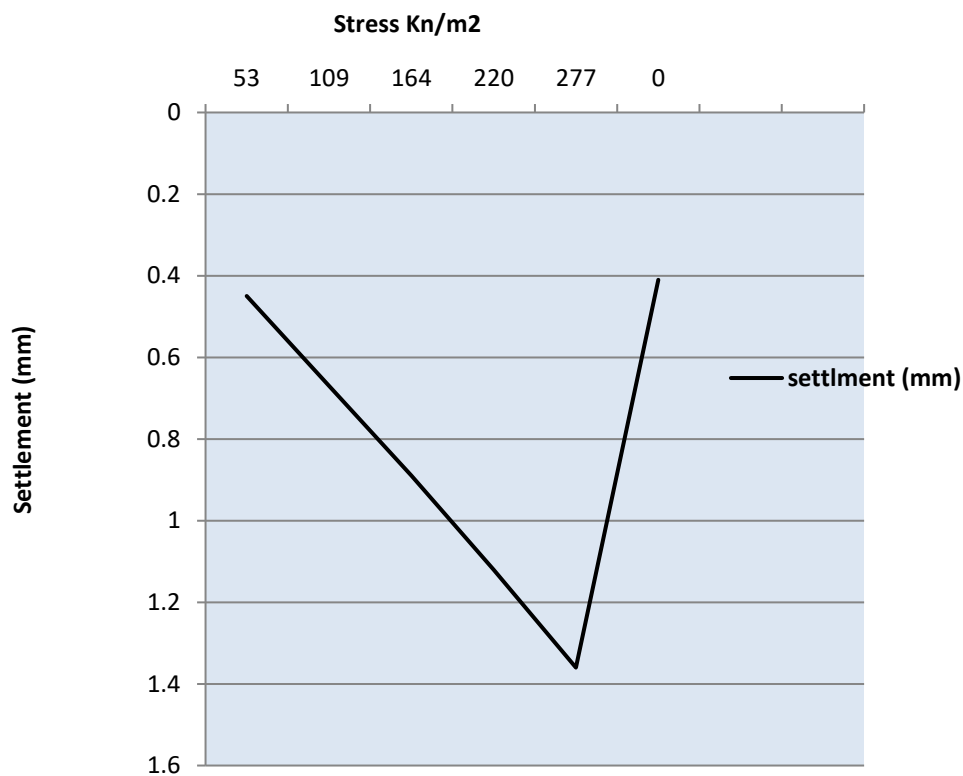
All testing is in accordance with BS EN 1996-2 / BS 1377-9

Report valid on (30/01/26)

Site readings.

Increment	stress kn/m2	settlment (mm)
1	53	0.45
2	109	0.67
3	164	0.89
4	220	1.12
5	277	1.36
6	0	0.41
7		
8		

Visual report.



CBR (1)

Max settlement: 1.36 mm

Estimated CBR Value: 42.5 %

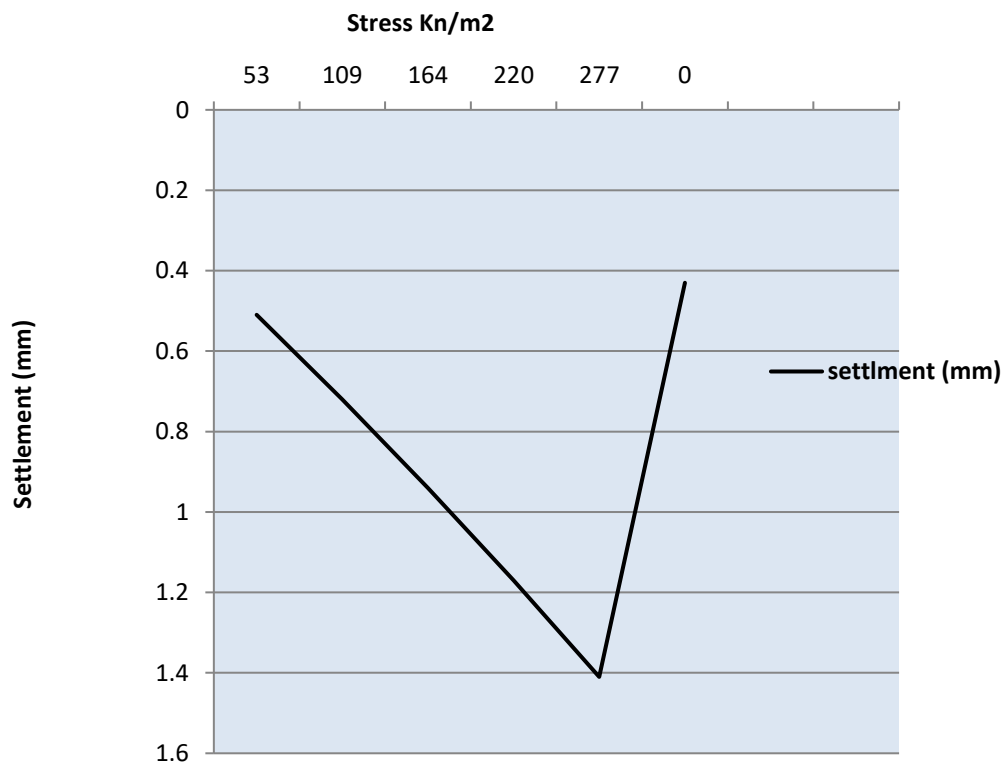
Signature:

Date: 30/01/26

Site readings.

Increment	stress kn/m2	settlment (mm)
1	53	0.51
2	109	0.72
3	164	0.94
4	220	1.17
5	277	1.41
6	0	0.43
7		
8		

Visual report.



CBR (2)

Max settlement: 1.41 mm

Estimated CBR Value: 39.2 %

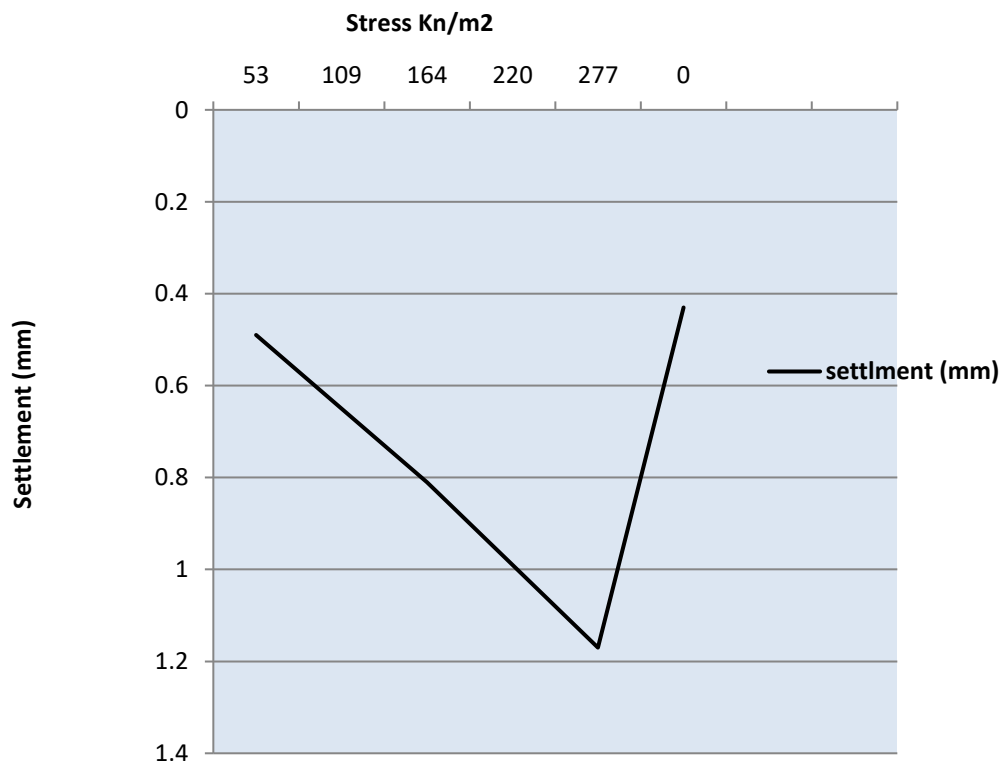
Signature:

Date: 30/01/26

Site readings.

Increment	stress kn/m2	settlment (mm)
1	53	0.49
2	109	0.65
3	164	0.81
4	220	0.99
5	277	1.17
6	0	0.43
7		
8		

Visual report.



CBR (3)

Max settlement: 1.17 mm

Estimated CBR Value: + 50 %

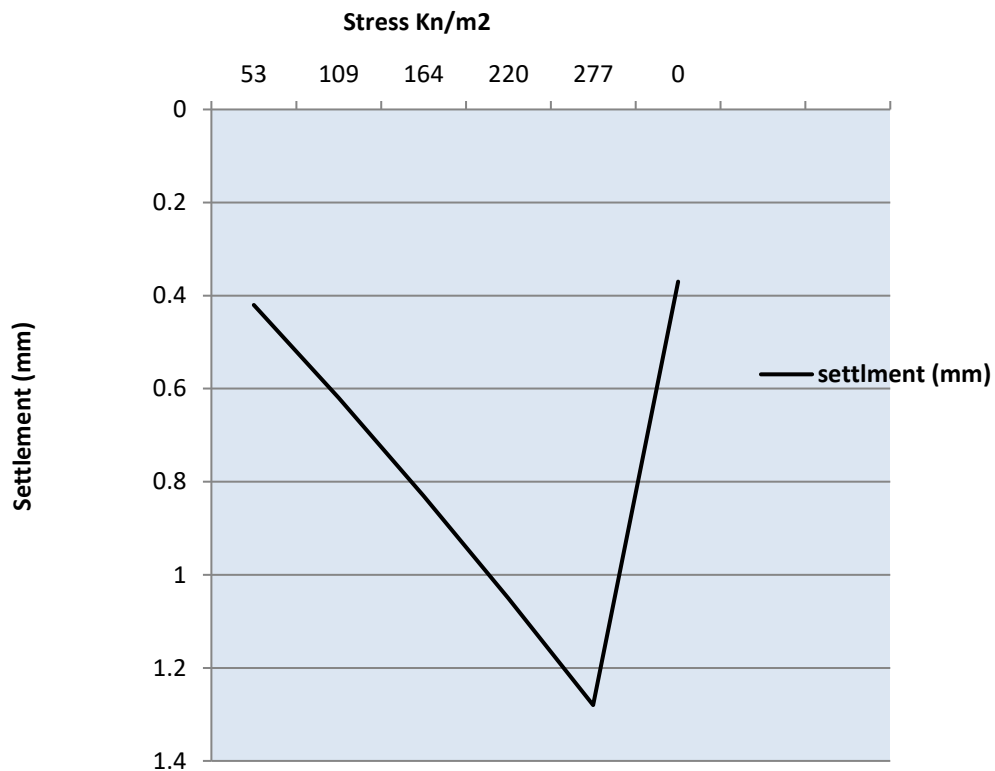
Signature:

Date: 30/01/26

Site readings.

Increment	stress kn/m2	settlment (mm)
1	53	0.42
2	109	0.62
3	164	0.83
4	220	1.05
5	277	1.28
6	0	0.37
7		
8		

Visual report.



CBR (4)

Max settlement: 1.28 mm

Estimated CBR Value: 47.9 %

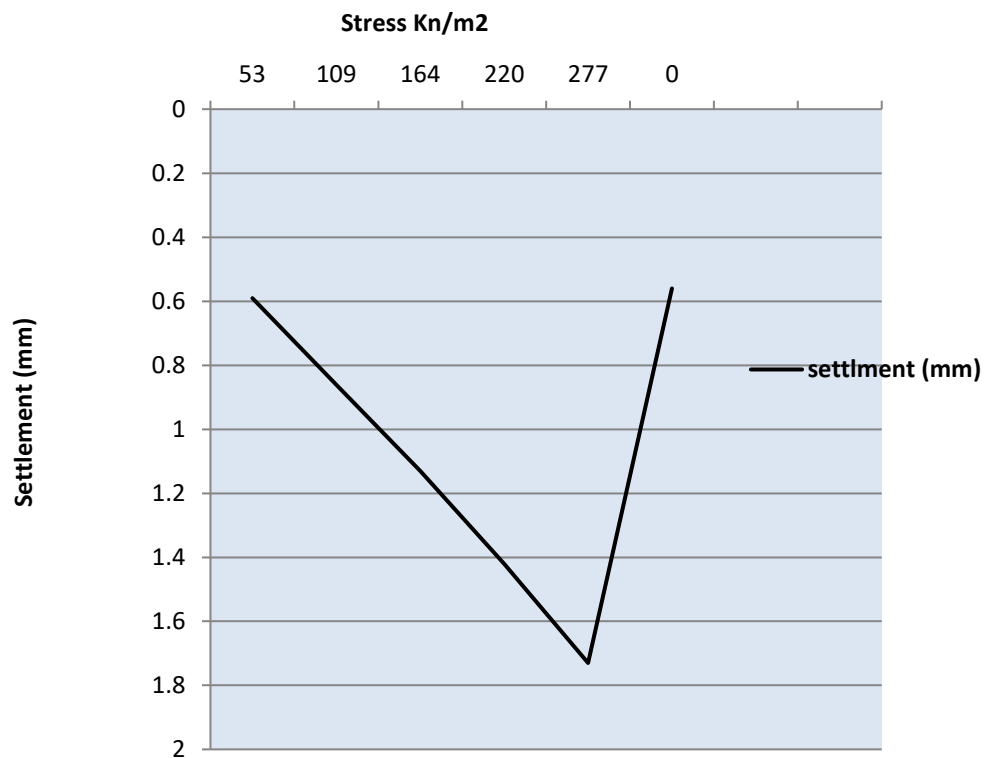
Signature:

Date: 30/01/26

Site readings.

Increment	stress kn/m2	settlment (mm)
1	53	0.59
2	109	0.86
3	164	1.13
4	220	1.42
5	277	1.73
6	0	0.56
7		
8		

Visual report.



CBR (5)

Max settlement: 1.73 mm

Estimated CBR Value: 25.9 %

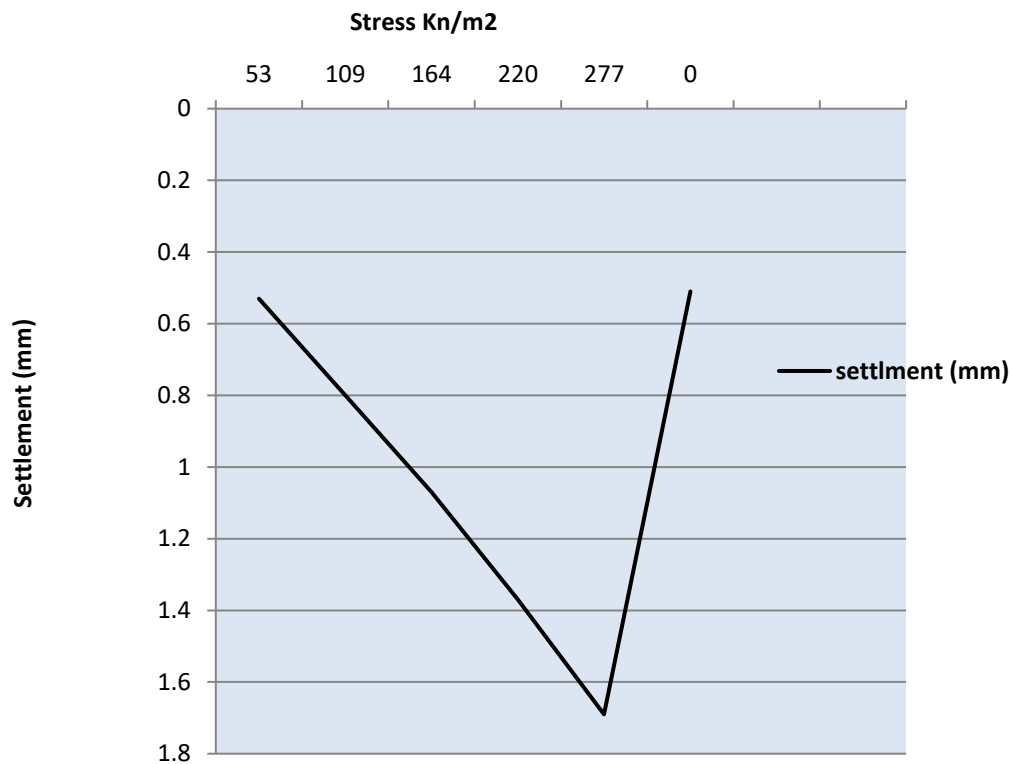
Signature:

Date: 30/01/26

Site readings.

Increment	stress kn/m2	settlment (mm)
1	53	0.53
2	109	0.8
3	164	1.07
4	220	1.37
5	277	1.69
6	0	0.51
7		
8		

Visual report.



CBR (6)

Max settlement: 1.69 mm

Estimated CBR Value: 28.4 %

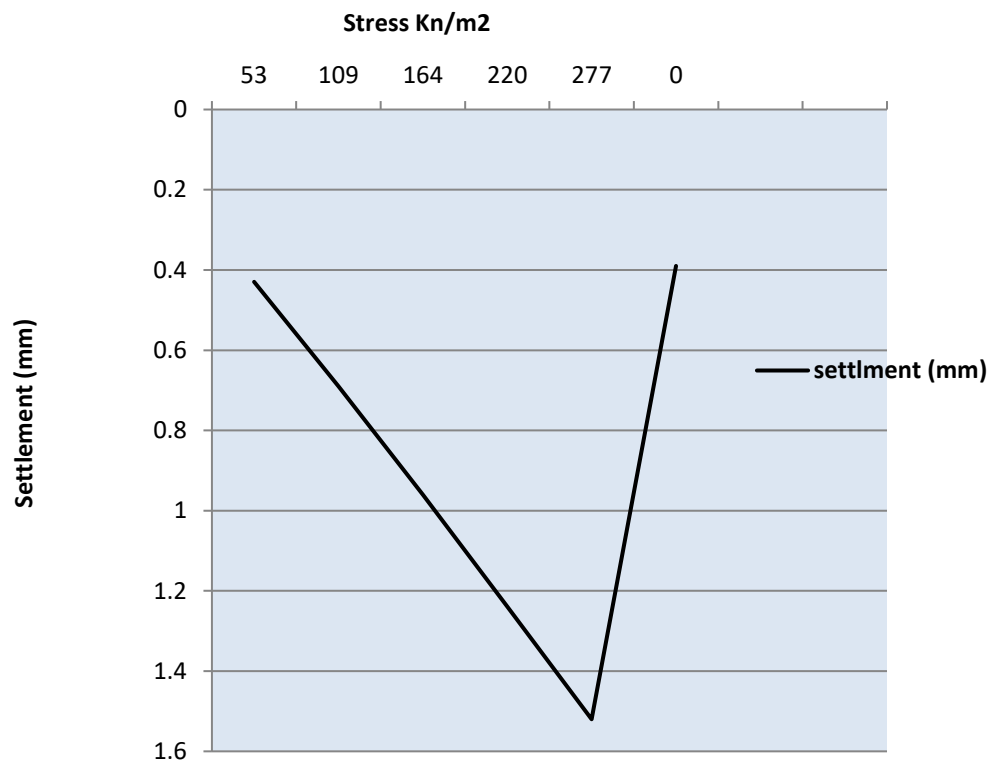
Signature:

Date: 30/01/26

Site readings.

Increment	stress kn/m2	settlment (mm)
1	53	0.43
2	109	0.69
3	164	0.96
4	220	1.24
5	277	1.52
6	0	0.39
7		
8		

Visual report.



CBR (7)

Max settlement: 1.52 mm

Estimated CBR Value: 34.1 %

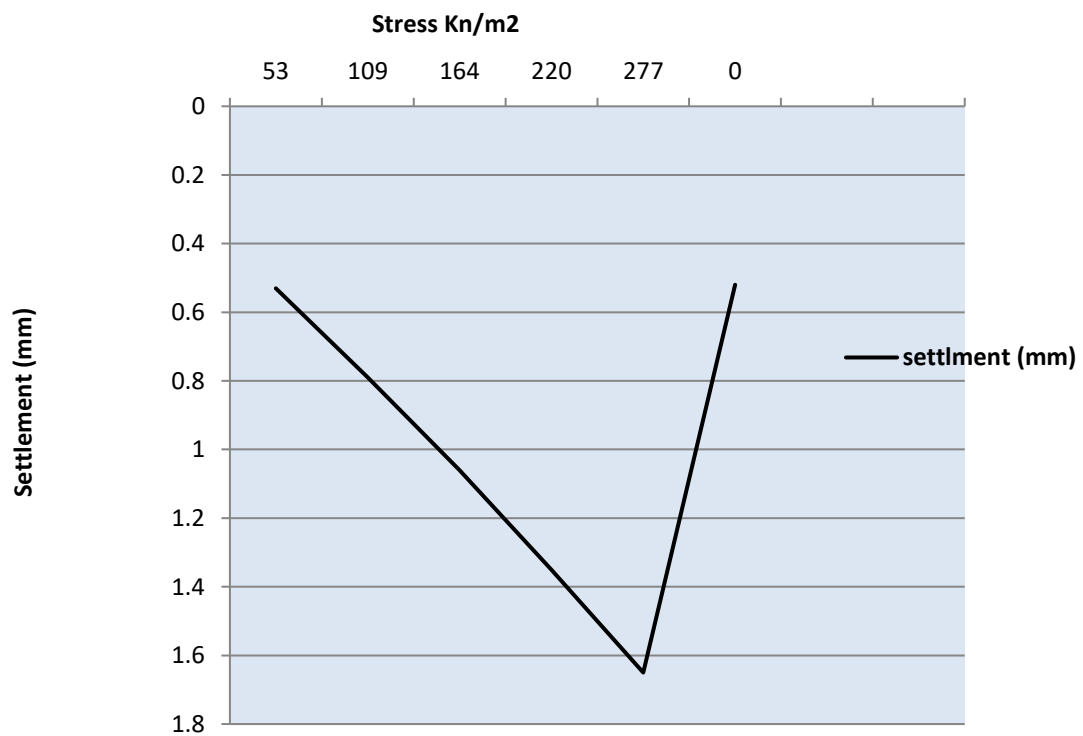
Signature:

Date: 30/01/26

Site readings.

Increment	stress kn/m2	settlment (mm)
1	53	0.53
2	109	0.79
3	164	1.06
4	220	1.35
5	277	1.65
6	0	0.52
7		
8		

Visual report.



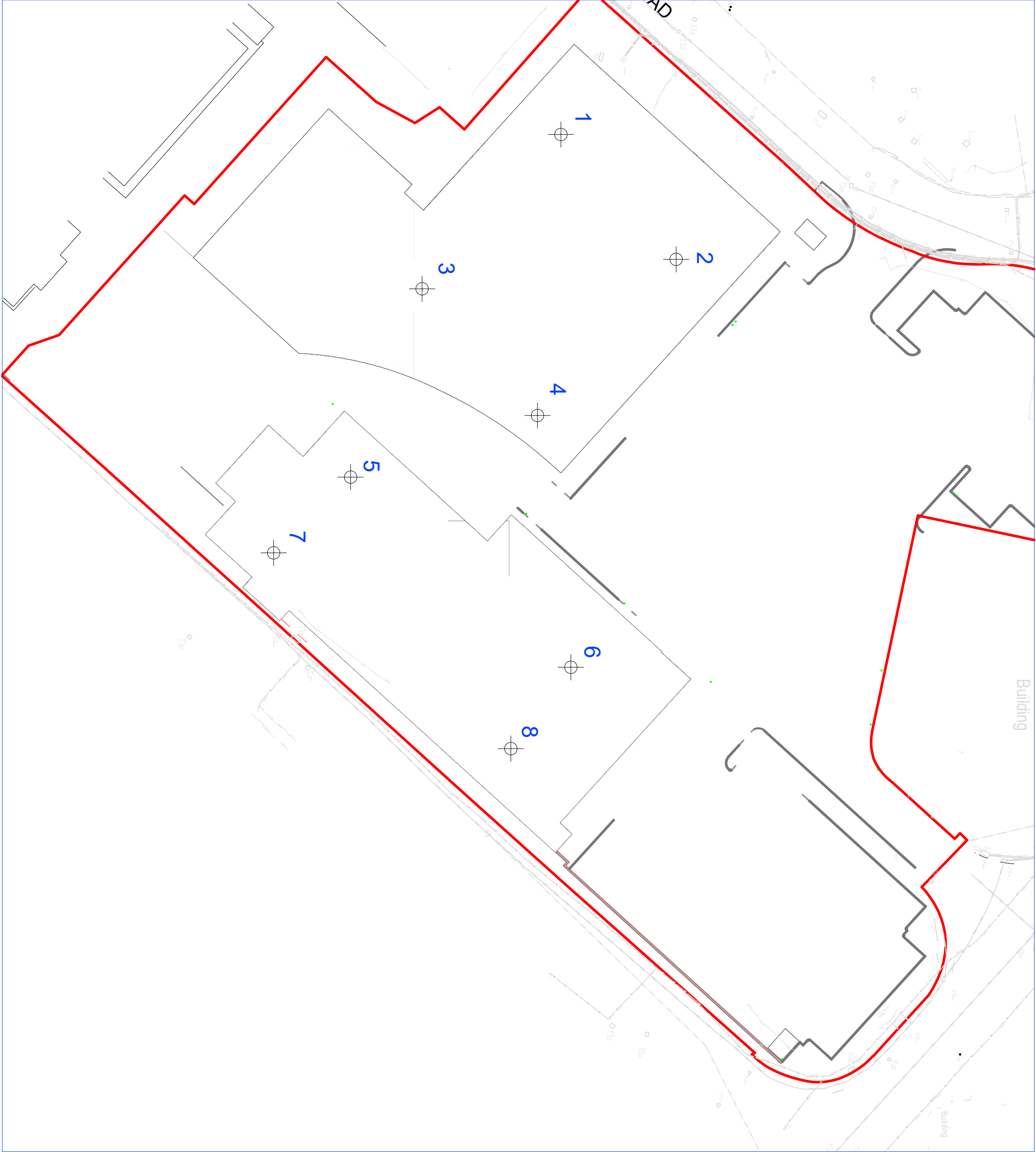
CBR (8)

Max settlement: 1.65 mm

Estimated CBR Value: 29.2 %

Signature:

Date: 30/01/26



JOB NAME
BIRSTALL LIDL

DRAWING TITLE
CBR TEST LOCATIONS

STATUS
INFORMATION

SCALE @ SIZE
DO NOT SCALE

DATE
JAN 26

SHEET BY
TG

CHECKED BY
BI

JOB NO. DRAWING NO.
314 CBR-01

REV
A

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