



APPENDIX 6 - Gas Membrane Installation/Validation Information



GEOSHIELD

Verification Certificate

Date: 5 December 2024

JB Construction1

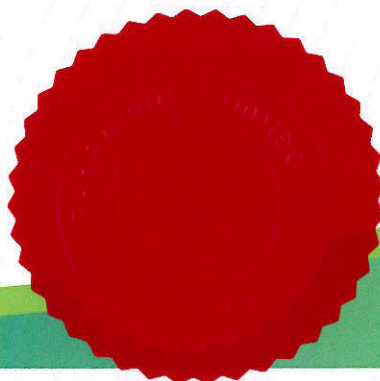
New Aldi
Fleet Street
Holbeach
South Holland
PE12 7AG

The documentation in this handover package shows that the installation of the Gas Membrane and ancillaries was installed to specification.

Verified in accordance with BS 8485:2015+A1:2019 and CIRIA 735.

All areas were verified, and remediation issues corrected.

Paul Colbeck
Director of Site Services





Gas Protection Verification Declaration

Site

Site Name	New Aldi
Site Address	New Aldi Fleet Street Holbeach South Holland PE12 7AG

GPVS Declaration Reference	0824-J0799
----------------------------	------------

Brief Description of Site

The construction of a new Aldi supermarket that required ground gas protection measures verification.

Site Type	CommercialRetail
Building Unit	Aldi

Document

Verification Report Title	GEO104785_JB Construction1_New Aldi, Fleet Street, Holbeach R03 Flat
Verification Report Identifier	N/A
Named Client	JB Construction1

Accredited Person Details

SGPV Name	Paul Colbeck
SGPV Registration No.	SGPV0005
Telephone	N/A
Email	pcolbeck@geoshield.co.uk
Organisation	Geoshield Limited
Address	

Declaration

I, Paul Colbeck, confirm that I am the person described in the Accredited Person details section and hold a current valid registration as a SGPV, Accreditation No. SGPV0005 under the Gas Protection Verification Accreditation Scheme.

I have reviewed the verification report described in the Document Details section and I am satisfied that:

1. The work has been carried out to an acceptable standard.
2. The work has been verified by suitably experienced and qualified personnel.
3. The level of verification is proportionate to the level of risk Identified in the site investigation report/Gas risk assessment.
4. The interpretations and conclusions are reasonable.
5. The verification strategy is in line with industry guidance.
6. I am competent to sign this Declaration and that
 - a. I am fully aware and comply with the Scheme's Code of Conduct
 - b. The work of this review and Declaration are within the limits of my knowledge, competence and professional capacity.

Note: The document that has been reviewed was prepared by the organisation named for the benefit of the named Client who has reliance upon it. Any professional liability arising from any proven negligent act or omission by the Company carrying out the work and publishing the document rests with that Company and not with the SGPV Accredited Person or the GPVS.

Signed:



Date: 25/09/2024

Name: Paul Colbeck
[Block capitals]



0824-J0799



GeoShield Verification Report 3



PROJECT REFERENCE: GEO104785

PROJECT: New Aldi

PROJECT ADDRESS: New Aldi, Fleet Street

Holbeach, Spalding

PE12 7AG

SPECIFICATION: Verified in accordance with CIRIA 735.

Design in accordance with BS8485 2015 + 2019 for Methane and Carbon Dioxide.

Substrate prepared in accordance with manufacturer's instructions.

JUTA GP5+ Gas Barrier



GeoShield Verification Report



NAME OF SURVEYOR:

Harry Martin

VERIFICATION COMPANY:

GeoShield Limited

Icon Business Centre

4100 Park Approach

Thorpe Park

Leeds

CONTACT NUMBER:

07391 524918

EMAIL ADDRESS:

hmartin@geoshield.co.uk

ORDER NUMBER:

To be confirmed

PER VISIT:

YES:



NO:



PROJECT:

YES:



NO:





GeoShield Verification Report



CLIENT DETAILS

CLIENT CONTACT:	Gareth Hawkins
CONTACTS ROLE:	JB Construction
MOBILE PHONE:	07399 294616
EMAIL ADDRESS:	

CLIENT CONTACT:	
CONTACTS ROLE:	
MOBILE PHONE:	
EMAIL ADDRESS	
NOTES:	



GeoShield Verification Report



APPLICATOR'S DETAILS

APPLICATOR NAME: Wayne

COMPANY: DD Lining Services

APPLICATOR TEL: 07939 816877

APPLICATOR EMAIL:

APPLICATOR NAME:

COMPANY: DD Lining Services

APPLICATOR TEL:

APPLICATOR EMAIL:

NOTES: At least one member of each team group will have a NVQ Level 2 qualification in the gas membrane installation.

All installers are competent and skilled to complete gas membrane installation.



GeoShield Verification Report



AREA SURVEYED:

Gridlines E/6

SITE CONDITIONS:

WEATHER:

Sunny

TEMPERATURE:

16°c

RELATIVE HUMIDITY:

N/A

MEMBRANE TEMPERATURE:

N/A

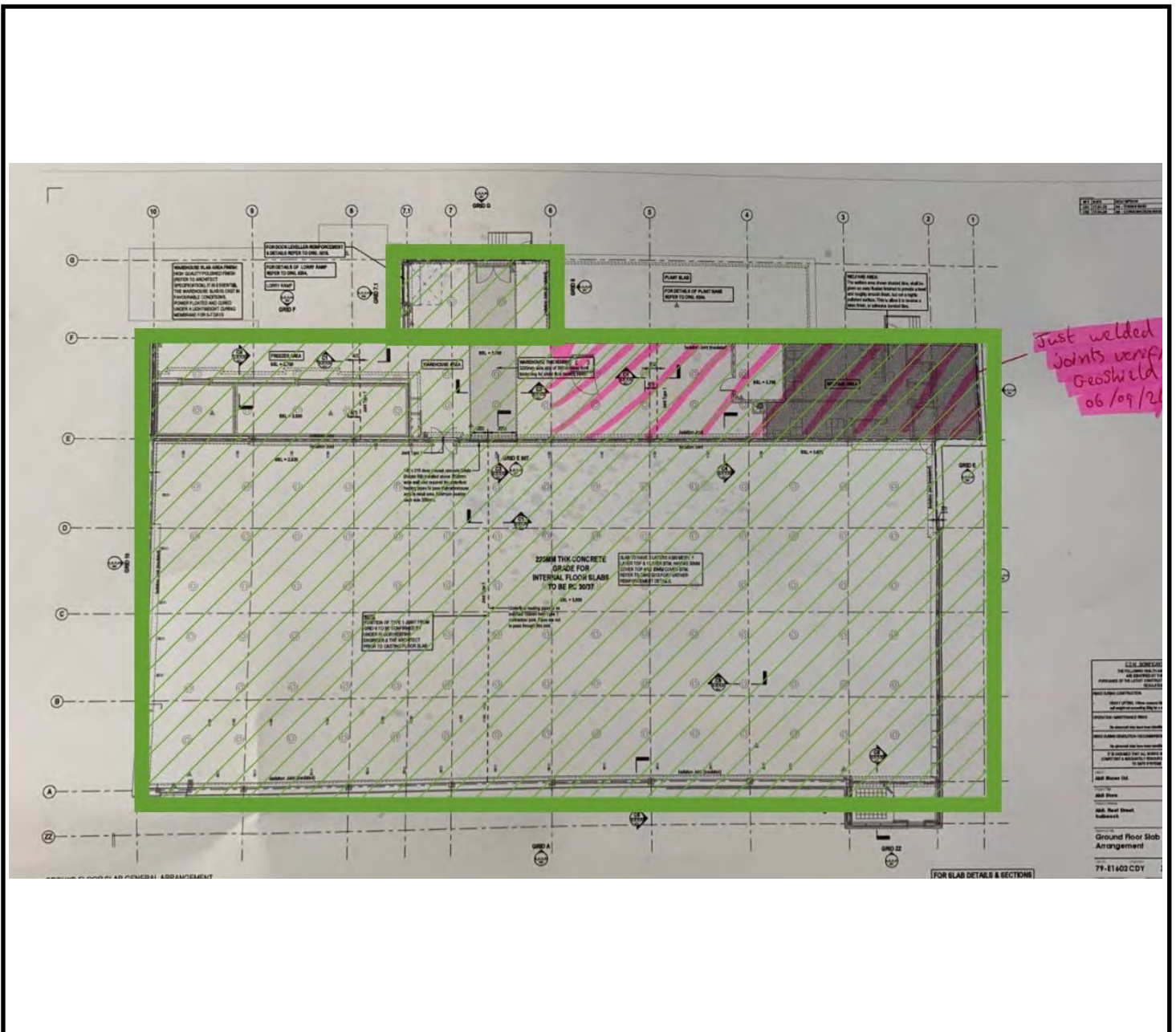
TIME: 09:00 - 11:30

DATE: 17.09.2024

REPORT NUMBER: 003

ACCOMPANIED BY:

Verification Layout



The photograph above shows a plan layout of the site. The area highlighted in green shows where the verification inspection took place on site today.

OVERVIEW



The photograph above displays an overview of the area where today's verification inspection took place on site.

OVERVIEW



The photograph above displays an overview of the area where today's verification inspection took place on site.



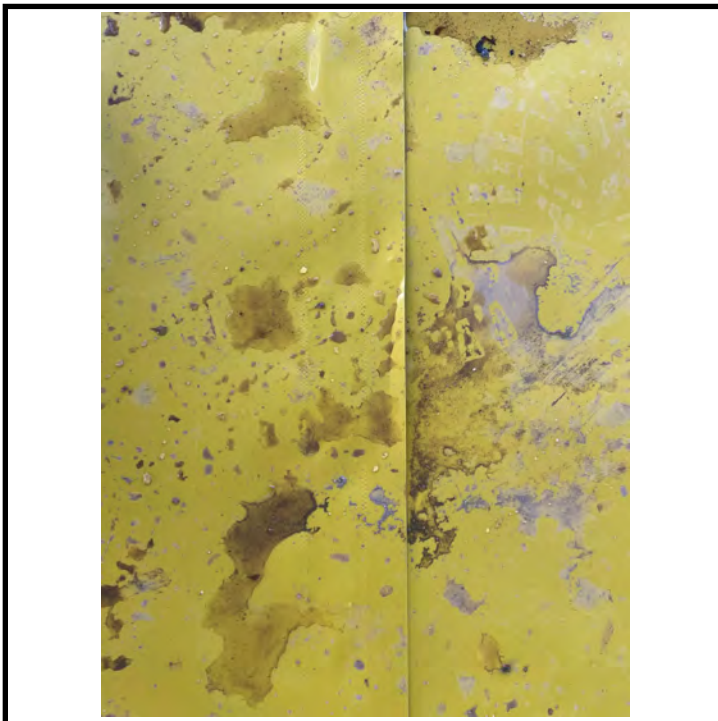
GeoShield Verification Report



VERIFICATION ITEM ONE

LOCATION/GRID LINE: Gridlines E/6

Installation of Juta GP5+ Gas Barrier



NOTES:

JUTA GP5+ Gas Barrier has been installed across the footprint of the area Gridlines E/ 6. The JUTA GP5+ Gas Barrier has been lined out across the entirety of the area, ensuring a sufficient overhang has been left around the perimeter to enable further works to be carried out at a later date. A liquid gas



NOTES:

barrier has been applied to areas where steel rebar has been placed, shown in the photograph above, with the JUTA GP5+ Gas Barrier being terminated using double sided butyl tape. All lap joints between the adjacent sheets of JUTA GP5+ Gas Barrier have been overlapped a minimum of 100mm, conforming to

GeoShield Verification Report

VERIFICATION ITEM ONE



design details. All overlaps have been welded using a hot air leister and silicone roller with adequate pressure applied to ensure a continuous seal is achieved. Alternatively, the overlaps have been welded using a Twinny Wedge Welder creating dual welded lap joints. All aspects of the installation were subjected to mechanical point stress testing. No faults were identified during these testing procedures.



VERIFICATION ITEM TWO

REMEDIATIONS:

Faults and Remediations



NOTES:

The above photograph displays a probe demonstrating a fault identified where there hadn't been enough Juta Titan Tank installed to create a gas tight seal, this was brought to the attention of the installers. The installers opted to heat weld



NOTES:

a further strip of Juta Titan Tank with a hot air leister and adequate pressure was applied with a silicone roller to ensure a gas tight seal was achieved. A further pick and probe test was conducted which confirmed no further faults.

GeoShield Verification Report



VERIFICATION ITEM THREE

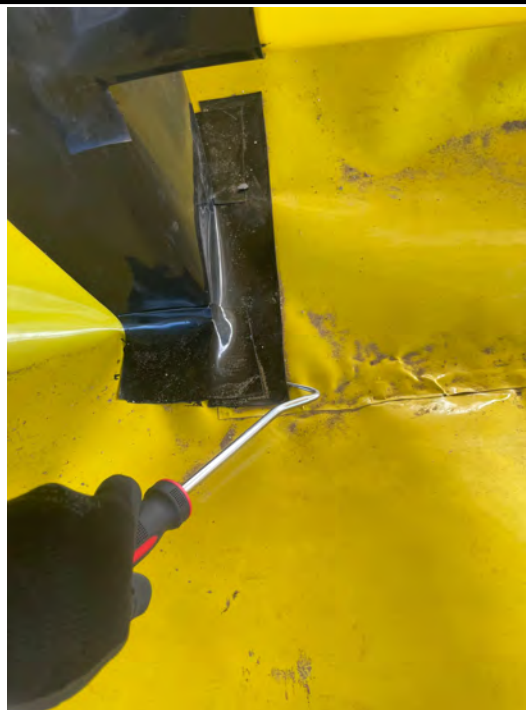
LOCATION/GRID LINE: Gridlines E/6

Sealed Details (Corners)



NOTES:

A number of corners throughout the referenced area have also been sealed as per manufacturer's specifications. This has been achieved using JUTA Titan Tank. Where the JUTA GP5+ Gas Barrier has been cut to minimise voided areas and gaps across the footprint of the area, each corner junction has been reinforced by



NOTES:

heating strips of JUTA Titan Tank and placing into position around each corner, onto the JUTA GP5+ Gas Barrier. Heat and firm rolled pressure is applied to aid in the adhesion ensuring the JUTA Titan Tank has fully bonded. Visual inspections, supported by a mechanical point stress test identified several corners not sealed.



GeoShield Verification Report



VERIFICATION ITEM THREE

LOCATION/GRID LINE: Gridlines E/6

Pipe Penetrations



NOTES:

Throughout the installation of the Juta GP5+ Gas Barrier to the referenced area, there were a number of pipe penetrations that have been sealed in accordance with manufacturer's specifications and design guidelines. This has been achieved using Juta TitanTank which is a self adhesive membrane. The installers have first



NOTES:

cut the Juta GP5+ Gas Barrier tight around the base of each pipe penetration to minimise voided areas. Next, strips of Juta Titan Tank are placed intricately in a top hat formation around the pipe penetration and onto the Juta GP5+ Gas Barrier. Heat and rolled pressure is applied to activate the bitumen backing.



A sealed detail.



A probe demonstrating a fault identified.



Sealed pipe penetrations.



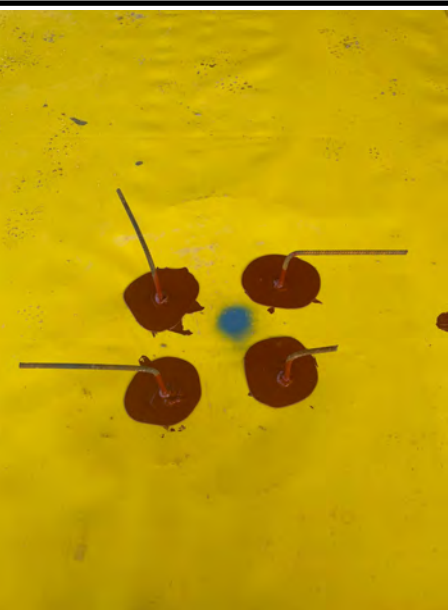
A pick and probe test being conducted upon a pipe penetration.



Details sealed with Juta Titan Tank.



A pick and probe test being conducted upon the edge of a piece of Juta Titan Tank.



Steel Rebar has been sealed using a liquid gas membrane.



Steel Rebars sealed using Juta Titan Tank.



GEOSHIELD Verification Report



REMEDIATION LOG

Date	Nr	Remediation Description	Y/N
06/09/2024	001	1. All welded overlaps inspected and verified during the visit today.	✓
		(gridlines F-E/1-6)	✓
		2. All steel stanchions, pipe penetrations and corners to be sealed	✓
		and verified (gridlines F-E/1-6).	✓
12/09/2024	002	1. All welded overlaps have been remediated on site in the	✓
		presence of GeoShield.	✓
		2. All steel stanchions, pipe penetrations, corners and steel rebars	✓
		require sealing and are to be verified at a future visit (gridlines	✓
		A-E/1-10).	✓
17/09/2024	003	1. All welded overlaps inspected and verified during the visit today.	✓
		2. A patch repair was remediated on site.	✓
		3. More heat was required on the steel stanchions, this was	✓
		remediating on site.	✓



GeoShield Verification Report



VERIFICATION SUMMARY

This was the 3rd visit to the site where verification was required for the complete line out installation of the JUTA GP5+ Gas Barrier to gridlines Gridlines E/6, carried out by DD Lining Services.

All overlaps between the adjacent sheets of JUTA GP5+ Gas Barrier have been successfully welded using a hot air leister and silicone roller, or alternatively, a Twinny Wedge Welder, creating dual welded overlaps.

Thorough visual inspections, supported by mechanical point stress testing conducted upon all welded overlaps identified a number of miswelded lap joints. All miswelded lap joints were successfully remediated on site in the presence of GeoShield.

All details throughout the installation, such as pipe penetrations, sealed corner details have been successfully sealed using Juta TitanTank, heated down to aid in the adherence.

Thorough mechanical point stress testing, as well as visual inspections were conducted throughout the visit today.

A number of faults were identified, all of which were successfully remediated on site in the presence of GeoShield.

This was passed and verified in accordance with CIRIA 735 and installed to BS8485:2015+2019.

GEOSHIELD SIGNATURE:

DATE: 17-Sep-2024



GeoShield Verification Report 2



PROJECT REFERENCE: GEO104785

PROJECT: New Aldi

PROJECT ADDRESS: New Aldi, Fleet Street

Holbeach, Spalding

PE12 7AG

SPECIFICATION: Verified in accordance with CIRIA 735.

Design in accordance with BS8485 2015 + 2019 for Methane and Carbon Dioxide.

Substrate prepared in accordance with manufacturer's instructions.

JUTA GP5+ Gas Barrier



GeoShield Verification Report



NAME OF SURVEYOR:

Harry Martin

VERIFICATION COMPANY:

GeoShield Limited

Icon Business Centre

4100 Park Approach

Thorpe Park

Leeds

CONTACT NUMBER:

07391 524918

EMAIL ADDRESS:

hmartin@geoshield.co.uk

ORDER NUMBER:

To be confirmed

PER VISIT:

YES:



NO:



PROJECT:

YES:



NO:





GeoShield Verification Report



CLIENT DETAILS

CLIENT CONTACT:	Gareth Hawkins
CONTACTS ROLE:	JB Construction
MOBILE PHONE:	07399 294616
EMAIL ADDRESS:	



CLIENT CONTACT:	
CONTACTS ROLE:	
MOBILE PHONE:	
EMAIL ADDRESS	
NOTES:	



GeoShield Verification Report



APPLICATOR'S DETAILS

APPLICATOR NAME: Wayne

COMPANY: DD Lining Services

APPLICATOR TEL: 07939 816877

APPLICATOR EMAIL:

APPLICATOR NAME:

COMPANY: DD Lining Services

APPLICATOR TEL:

APPLICATOR EMAIL:

NOTES: At least one member of each team group will have a NVQ Level 2 qualification in the gas membrane installation.

All installers are competent and skilled to complete gas membrane installation.



GeoShield Verification Report



AREA SURVEYED:

Gridlines A-E/1-10 - Complete Line Out

SITE CONDITIONS:

WEATHER:

Sunny

TEMPERATURE:

13°C

RELATIVE HUMIDITY:

N/A

MEMBRANE TEMPERATURE:

N/A

TIME:

09:00 - 12:00

DATE:

12.09.2024

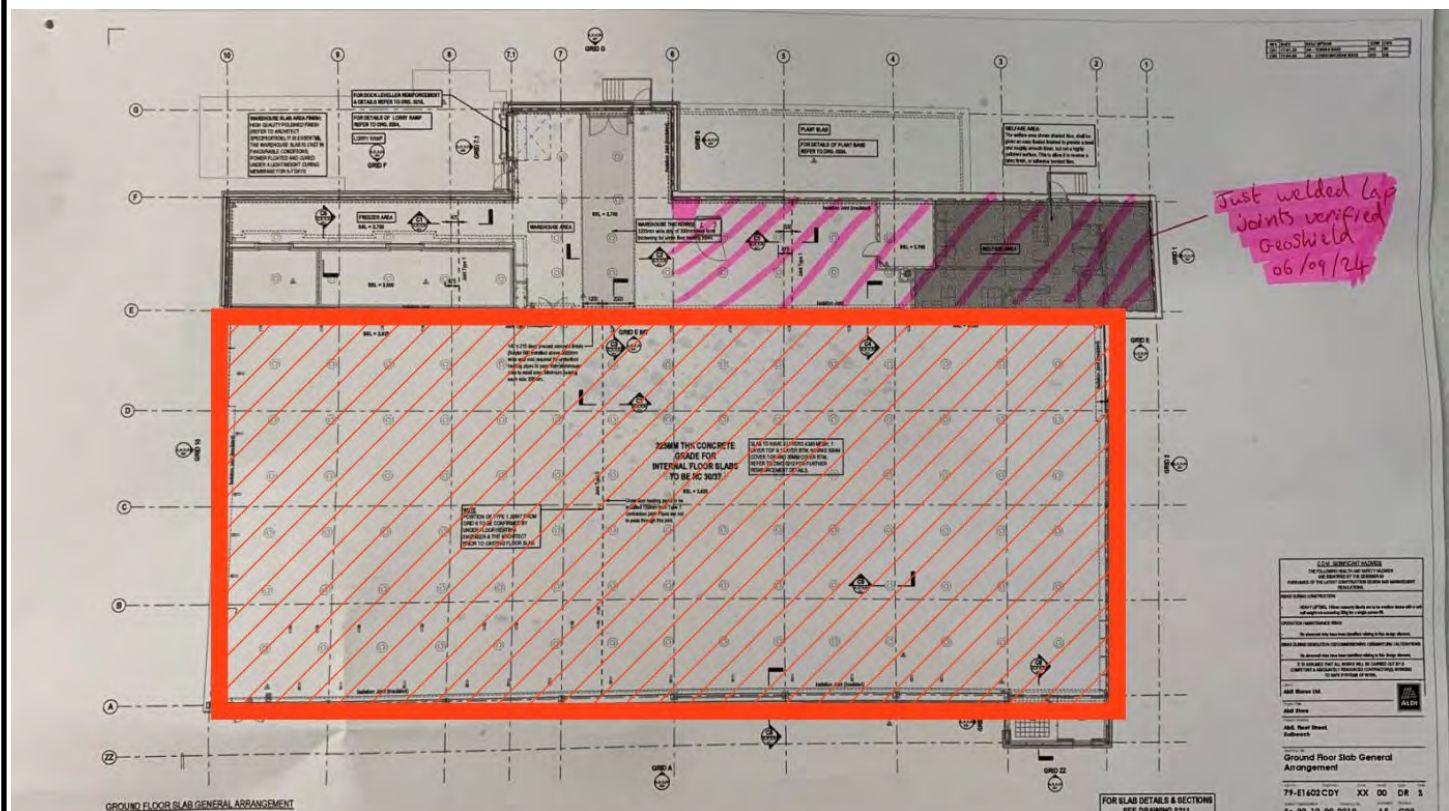
REPORT NUMBER:

002

ACCOMPANIED BY:

Wayne - DD Lining Services

Verification Layout



The photograph above shows a plan layout of the site. The area highlighted in red shows where the verification inspection took place on site today.

OVERVIEW



The photograph above displays an overview of the area where today's verification inspection took place on site.

OVERVIEW



The photograph above displays an overview of the area where today's verification inspection took place on site.

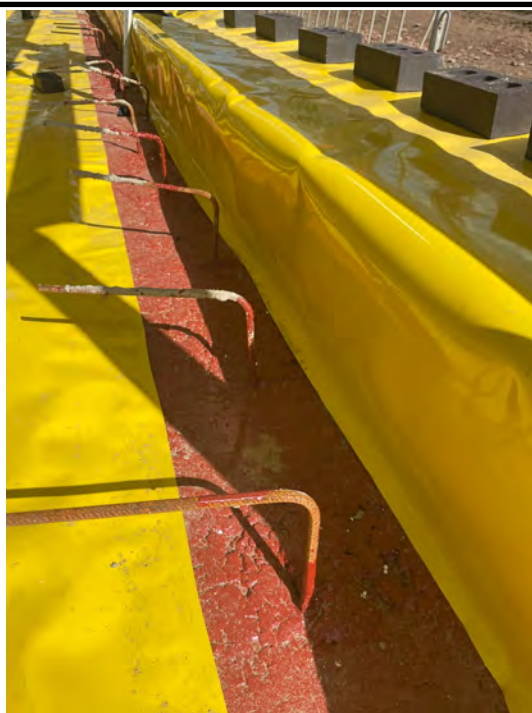
GeoShield Verification Report



VERIFICATION ITEM ONE

LOCATION/GRID LINE: Gridlines A-E/1-10 - Complete Line Out

Installation of JUTA GP5+ Gas Barrier



NOTES:

JUTA GP5+ Gas Barrier has been installed across the footprint of the area referenced, gridlines A-E/1-10. The JUTA GP5+ Gas Barrier has been lined out across the entirety of the area, ensuring a sufficient overhang has been left around the perimeter to enable further works to be carried out at a later date. A liquid gas



NOTES:

barrier has been applied to areas where steel rebar has been placed, shown in the first photograph above, with the JUTA GP5+ Gas Barrier being terminated using double sided butyl tape. All lap joints between the adjacent sheets of JUTA GP5+ Gas Barrier have been overlapped a minimum of 100mm, conforming to

GeoShield Verification Report

VERIFICATION ITEM ONE



design details. All overlaps have been welded using a hot air leister and silicone roller with adequate pressure applied to ensure a continuous seal is achieved. Alternatively, the overlaps have been welded using a Twinny Wedge Welder creating dual welded lap joints. All aspects of the installation were subjected to mechanical point stress testing and non destructive air lance integrity testing, a number of faults were identified.

GeoShield Verification Report



VERIFICATION ITEM TWO

LOCATION/GRID LINE: Gridlines A-E/1-10 - Complete Line Out

Sealed Details (Pipe Penetrations & Steel Stanchions)



NOTES:

Throughout the installation of the JUTA GP5+ Gas Barrier to the referenced area, there were a number of details, such as pipe penetrations and steel stanchions that have been sealed. The installers cut the JUTA GP5+ Gas Barrier tight around each detail to minimise voided areas. Next, patches of JUTA Titan Tank are placed



NOTES:

intricately in a petal formation around the details, onto the JUTA GP5+ Gas Barrier, with a 300mm square of JUTA Titan Tank placed over the top to form a top hat detail. Heat and pressure are applied to aid in the adhesion. Thorough visual inspections, supported by mechanical point stress testing identified several details not sealed.



GeoShield Verification Report



VERIFICATION ITEM TWO

LOCATION/GRID LINE: Gridlines A-E/1-10 - Complete Line Out

Sealed Details (Corners)



NOTES:

A number of corners throughout the referenced area have also been sealed as per manufacturer's specifications. This has been achieved using JUTA Titan Tank. Where the JUTA GP5+ Gas Barrier has been cut to minimise voided areas and gaps across the footprint of the area, each corner junction has been reinforced by



NOTES:

heating strips of JUTA Titan Tank and placing into position around each corner, onto the JUTA GP5+ Gas Barrier. Heat and firm rolled pressure is applied to aid in the adhesion ensuring the JUTA Titan Tank has fully bonded. Visual inspections, supported by a mechanical point stress test identified several corners not sealed.

GeoShield Verification Report



VERIFICATION ITEM THREE

LOCATION/GRID LINE: Gridlines A-E/1-10 - Complete Line Out

Outstanding Remedations



NOTES:

As mentioned within this report, visual inspections, mechanical point stress testing and non destructive air lance integrity testing conducted upon all aspects of the installation, identified a large number of areas that have not been sealed. Several steel rebars penetrating the membrane have not received a



NOTES:

coverage of liquid gas barrier. A large number of pipe penetrations, corners and steel stanchions have not been sealed with JUTA Titan Tank.
All miswelded overlaps identified, have been remediated on site in the presence of GeoShield.

GeoShield Verification Report

VERIFICATION ITEM THREE



All areas were brought to the attention of the installers from DD Lining Services. Due to the large number of areas identified that have not been sealed, these could not be remediated on site in the presence of GeoShield. All areas will need to be sealed and inspected during a future visit. The referenced area could therefore, not be signed off during the visit today.



Steel fixings penetrating the membrane that have not been sealed.



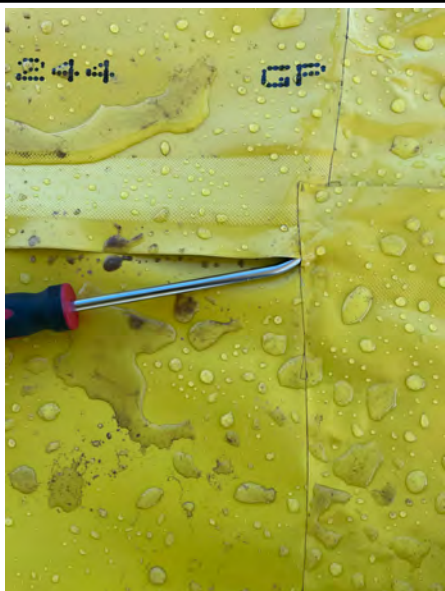
A dual welded overlap of the JUTA GP5+ Gas Barrier.



The JUTA GP5+ Gas Barrier being installed.



Evidence of the JUTA Titan Tank used to seal details.



A miswelded lap joint identified, highlighted with the pick and probe tool.



Firm rolled pressure being applied to remediate a lap joint.



The installers welding overlaps of the JUTA GP5+ Gas Barrier.



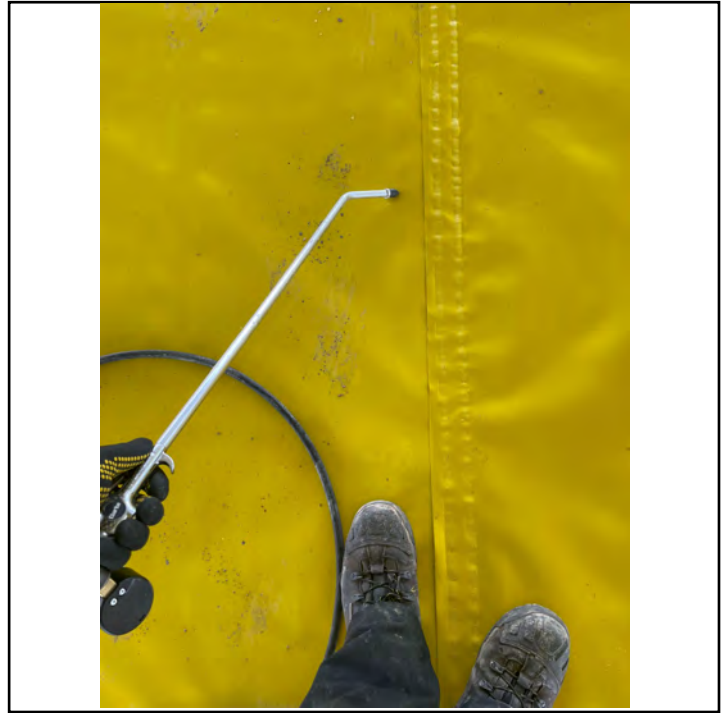
The JUTA GP5+ Gas Barrier installed tightly to the perimeter wall.

AIR LANCE INTEGRITY TESTING

AIR LANCE TEST: ASTM D4437-08:2013 Inspects all seams for unbonded areas using a 4.8mm air nozzle held not more than 51mm away from the seam. 50 Psi is the minimum requirement. The air nozzle is directed on the upper edge seam, ripples indicate a unbonded seam. Each seam is numbered and failure marked with a F/1 F/2 classification and a description given



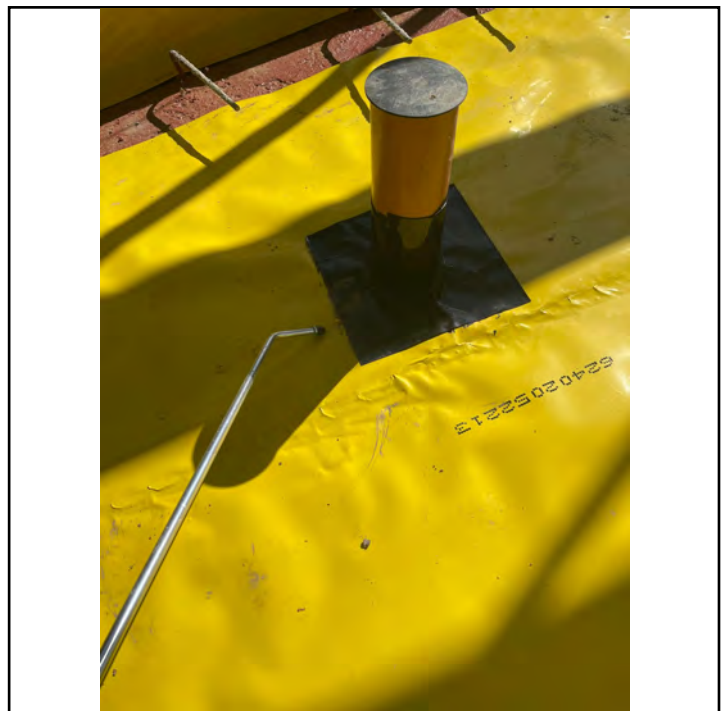
Air lance testing equipment.



Air lance test on a dual welded lap joint.



Air lance test on a corner.



Air lance test on a pipe penetration.



GeoShield Verification Report



VERIFICATION SUMMARY

This was the 2nd visit to the site where verification was required for the complete line out installation of the JUTA GP5+ Gas Barrier to gridlines A-E/1-10, carried out by DD Lining Services.

All overlaps between the adjacent sheets of JUTA GP5+ Gas Barrier have been successfully welded using a hot air leister and silicone roller, or alternatively, a Twinny Wedge Welder, creating dual welded overlaps. Thorough visual inspections, supported by mechanical point stress testing conducted upon all welded overlaps identified a number of miswelded lap joints. All miswelded lap joint were successfully remediated on site in the presence of GeoShield.

Outstanding Remediations:- All details, such as pipe penetrations, steel stanchions, steel rebars and corners throughout the referenced area require sealing and therefore, have not been inspected and verified during the visit today. These will be inspected and verified once the works have been completed prior to full sign off of the referenced area being achieved.

This was passed and verified in accordance with CIRIA 735 and installed to BS8485:2015+2019.

GEOSHIELD SIGNATURE:

DATE:

12-Sep-2024



GeoShield Verification Report 1



PROJECT REFERENCE: GEO104785

PROJECT: New Aldi

PROJECT ADDRESS: New Aldi, Fleet Street

Holbeach, Spalding

PE12 7AG

SPECIFICATION: Verified in accordance with CIRIA 735.

Design in accordance with BS8485 2015 + 2019 for Methane and Carbon Dioxide.

Substrate prepared in accordance with manufacturer's instructions.

JUTA GP5+ Gas Barrier



GeoShield Verification Report



NAME OF SURVEYOR:

Lee Adams

VERIFICATION COMPANY:

GeoShield Limited

Icon Business Centre

4100 Park Approach

Thorpe Park

Leeds

CONTACT NUMBER:

07795 994117

EMAIL ADDRESS:

ladams@geoshield.co.uk

ORDER NUMBER:

To be confirmed

PER VISIT:

YES:



NO:



PROJECT:

YES:



NO:





GeoShield Verification Report



CLIENT DETAILS

CLIENT CONTACT:	Gareth Hawkins
CONTACTS ROLE:	JB Construction
MOBILE PHONE:	07399 294616
EMAIL ADDRESS:	

CLIENT CONTACT:	
CONTACTS ROLE:	
MOBILE PHONE:	
EMAIL ADDRESS	
NOTES:	



GeoShield Verification Report



APPLICATOR'S DETAILS

APPLICATOR NAME:

COMPANY:

APPLICATOR TEL:

APPLICATOR EMAIL:

APPLICATOR NAME:

COMPANY:

APPLICATOR TEL:

APPLICATOR EMAIL:

NOTES:



GeoShield Verification Report



AREA SURVEYED:

Welded Lap Joints - Gridlines F-E/1-6

SITE CONDITIONS:

WEATHER:

Sunny

TEMPERATURE:

24°C

RELATIVE HUMIDITY:

N/A

MEMBRANE TEMPERATURE:

N/A

TIME: 11:00 - 12:00

DATE: 06.09.2024

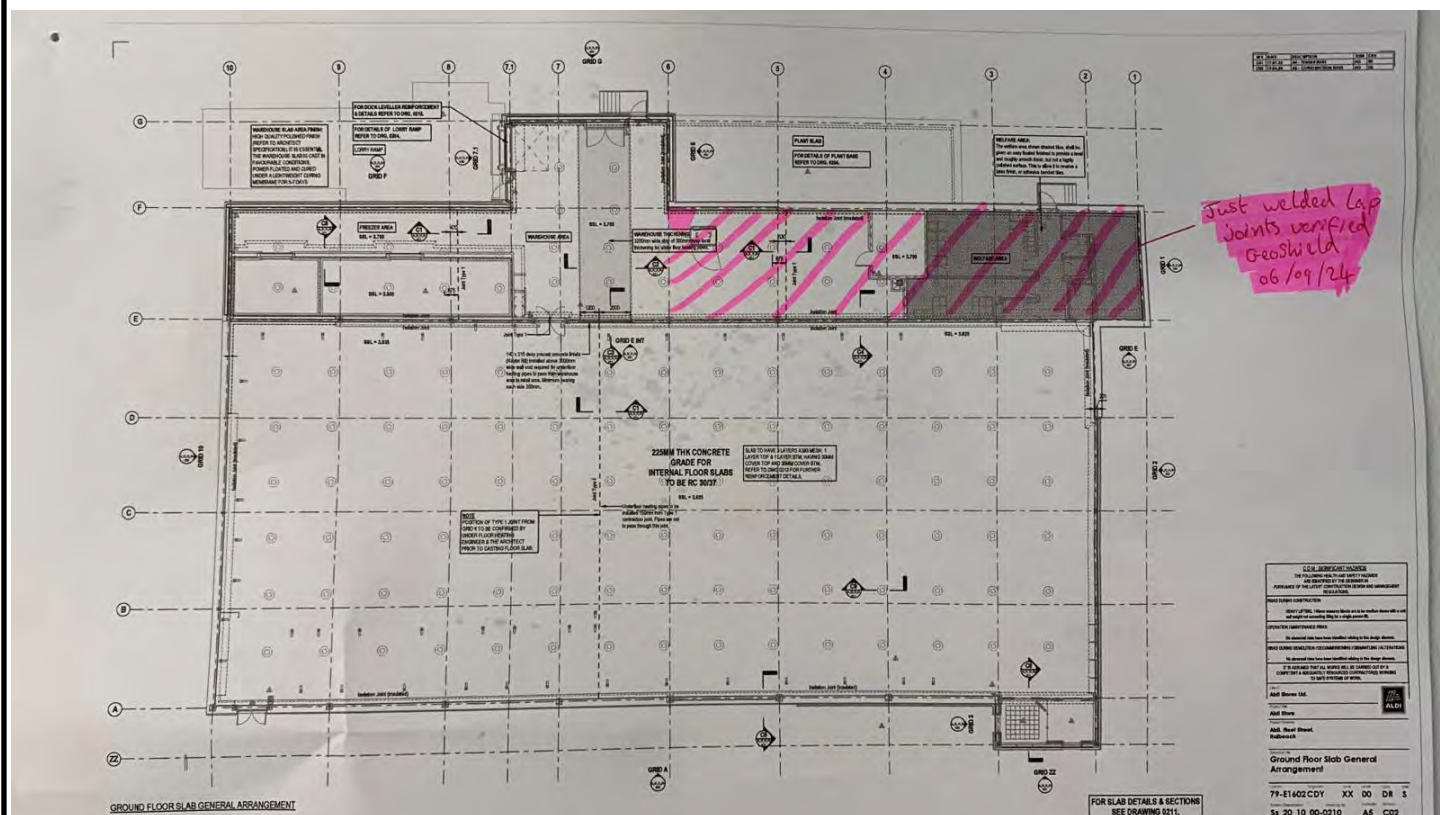
REPORT NUMBER: 001

ACCOMPANIED BY:

DD Lining Services



Verification Layout



The photograph above shows a plan layout of the site. The area highlighted in pink shows where the verification inspection took place on site today.

OVERVIEW



The photograph above displays an overview of the area where today's verification inspection took place on site.



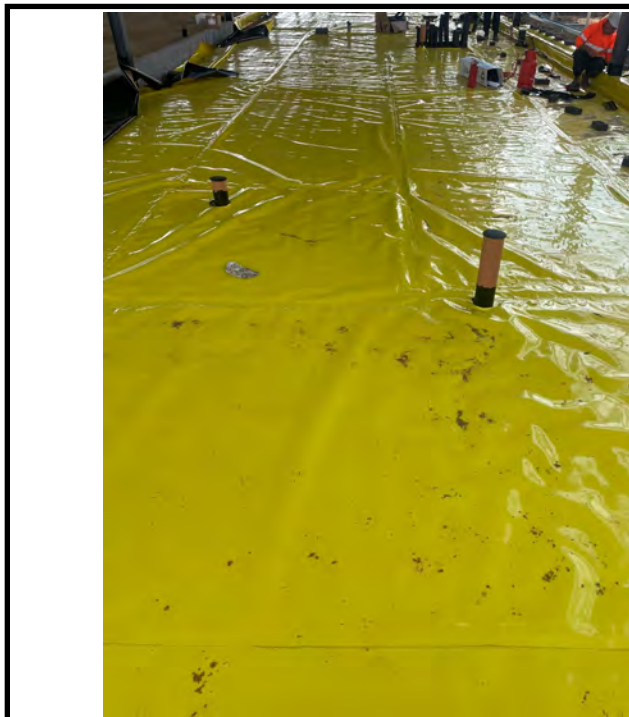
GeoShield Verification Report



VERIFICATION ITEM ONE

LOCATION/GRID LINE: Welded Lap Joints - Gridlines F-E/1-6

Installation of JUTA GP5+ Gas Barrier



NOTES:

JUTA GP5+ Gas Barrier has been installed across the footprint of the area referenced, gridlines F-E/1-6. The JUTA GP5+ Gas Barrier has been lined out across the entirety of the area ensuring a sufficient overhang has been left around the perimeter to enable further works to be carried out at a later date.



NOTES:

All lap joints between the adjacent sheets of JUTA GP5+ Gas Barrier have been overlapped a sufficient amount, conforming to manufacturer's specifications. All overlaps have been welded using a hot air leister and silicone roller with adequate pressure applied to ensure a continuous seal is achieved,

GeoShield Verification Report

VERIFICATION ITEM ONE



the overlaps have been welded using a Twinny Leister Machine creating dual welded lap joints. All details throughout the referenced area, such as pipe penetrations, corners and steel stanchions have not been sealed. These will be sealed and inspected at a later date prior to sign off of the area being achieved.

GeoShield Verification Report



VERIFICATION ITEM TWO

LOCATION/GRID LINE: Welded Lap Joints - Gridlines F-E/1-6

Testing Procedures



NOTES:

During this verification visit, thorough visual inspections, supported by mechanical point stress testing, also known as pick and probe testing, were conducted across all lap joints. The mechanical point stress testing tool was run along all overlaps of the dual welded and hand welded JUTA



NOTES:

GP5+ Gas Barrier to ensure a complete adhesion had been achieved.

One miswelded lap joint was identified, which was remediated on site in the presence of GeoShield.



GeoShield Verification Report



VERIFICATION ITEM THREE

LOCATION/GRID LINE: Welded Lap Joints - Gridlines F-E/1-6

Fault Identified & Remediated



NOTES:

As mentioned within this report, during the visual inspections and mechanical point stress testing conducted upon the welded overlaps of the JUTA GP5+ Gas Barrier, one miswelded area was identified. The fault was brought to the attention of the installers from DD Lining Services in order that preparation could be made



NOTES:

to conduct remedial action in the presence of GeoShield. The dedicated applicators opted to apply a patch of JUTA Titan Tank over the miswelded overlap, with heat applied to re-activate the bitumen adhesive backing of the material.

GeoShield Verification Report

VERIFICATION ITEM THREE



Firm rolled pressure applied with a silicone roller ensured the JUTA Titan Tank had fully bonded. Thorough visual inspections, supported by mechanical point stress testing were conducted upon the remediated area, where no further faults were found.

Tested and verified in accordance with CIRIA 735.



GeoShield Verification Report



VERIFICATION ITEM FOUR

LOCATION/GRID LINE: Welded Lap Joints - Gridlines F-E/1-6

Outstanding Remediations



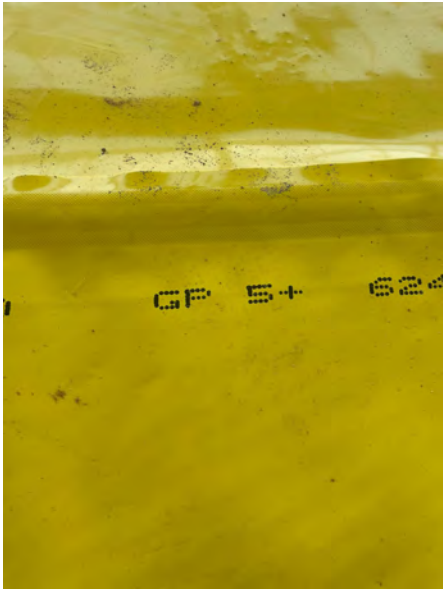
NOTES:

As mentioned, all details such as pipe penetrations, steel stanchions and corners throughout the referenced area have not been verified during the visit today.



NOTES:

Several areas have yet to be sealed, as shown in the photographs above. These areas will be sealed and inspected at a future visit prior to sign off of the referenced area being achieved.



Evidence of the JUTA GP5+ Gas Barrier used for the installation.



A dual welded overlap of the JUTA GP5+ Gas Barrier.



A hand welded overlap of the JUTA GP5+ Gas Barrier.



A pick and probe test being conducted upon a hand welded overlap.



GeoShield Verification Report



VERIFICATION SUMMARY

This was the first visit to the site where verification was required for the complete line out installation of the JUTA GP5+ Gas Barrier to gridlines F-E/1-6, carried out by DD Lining Services.

All overlaps between the adjacent sheets of JUTA GP5+ Gas Barrier have been successfully welded using a hot air leister and silicone roller, or alternatively, a Twinny Leister Machine, creating dual welded overlaps.

Thorough visual inspections, supported by mechanical point stress testing conducted upon all welded overlaps identified one miswelded lap joint. This was successfully remediated on site in the presence of GeoShield using a patch of JUTA Titan Tank.

Outstanding Remediations:- All details, such as pipe penetrations, steel stanchions and corners throughout the referenced area require sealing and therefore, have not been inspected and verified during the visit today. These will be inspected and verified once the works have been completed prior to full sign off of the referenced area being achieved.

This was passed and verified in accordance with CIRIA 735 and installed to BS8485:2015+2019.

GEOSHIELD SIGNATURE:

DATE:

06-Sep-2024



GeoShield Verification Plan



PROJECT DESCRIPTION

GEO104785
JB Construction Ltd
New Aldi,
Fleet Street,
Holbeach,
Spalding,
PE12

The proposed development for which gas protection measures are required involves the construction of a new Aldi Store.

In accordance with BS8485:2015 + A1 2019, the Type C buildings must conform to a Characteristic Specification (CS) rating of 3, so mitigation will need to be 3.0 points.

This pre-verification plan reviews the design to ensure it is compliant with the developer and planning authority requirements and in conjunction with the relevant investigation report in accordance with BS8485:2015 +A1 2019 and CIRIA 748.

In summary, the design does achieve a required level of attention to detail with its robust specific gas membrane design and cast in situ reinforced slab substrate.

The pre-verification plan confirms how the installation will be tested in accordance with CIRIA735. The verification visits will be documented in verification reports during the project that are suitable for submission to the local planning authority in order to satisfy and discharge planning consent.

All faults identified during inspection and the verification site visit of the ground gas system will be itemised as remediations which will need to be signed off in the remediation log for the proposed building.



GeoShield Verification Plan



PROJECT DESCRIPTION

Pre-Verification Plan

GeoShield are appointed by the Client to carry out independent validation, verification and integrity testing of the ground gas protection system on site. The Pre-Verification plan sets out the requirements and procedures that GeoShield will adopt to ensure that the installation is in line with the proposed design, relevant UK standards and guidance.

GeoShield take no responsibility for any warranties to third parties for the design of the system or the installation.

Limitations

The Pre-Verification plan prepared by GeoShield Limited is limited to the proposed ground gas protection measures installed. The Pre-Verification plan has been prepared in line with the relevance UK Standards and Guidance (BS8485:2015+A1:2019 & CIRIA 735) alongside the information made available to GeoShield by the Client. The conclusions made in the report are considered to be correct at the time of writing, but additional information provided/discovered may require amendments to the Plan. GeoShield recognises that changes to relevant standard and guidance may occur at any time which may cause the conclusions made to be incorrect - GeoShield do not accept any responsibility or liability for the implications of such changes.

The Pre-Verification plan does not in itself constitute verification that the membrane has been installed in accordance with this document. Validation and verification of the installed membrane will be covered in separate verification reports following physical inspection of the gas barrier and will include photographic evidence of the installation.

Waterproofing elements (where applicable) do not fall into the remit of this Pre-Verification plan or future inspections. GeoShield will provide the opinion on membrane's suitability for ground gas protection purposes – no liability is offered or implied for the waterproofing element which should be checked by others.



GeoShield Verification Plan



CONTENTS

Section 1	Project description
Section 2	Project material specification
Section 3	Project information
Section 4	GeoShield surveyor information
Section 5	Project information: Drawings, S.I, MSDS
Section 6	Client Details
Section 7	Application team leaders
Section 8	Health and safety
Section 9	Applicator competence
Section 10	Gas regime
Section 11	Testing
Section 12	Risk assessment
Section 13	GeoShield competence
Section 14	Method Statement
Section 15	Project technical assessments
Section 16	Pre-Contract Meeting Checklist
Section 17	Pre-Contract Meeting Summary



GeoShield Verification Plan



PROJECT REFERENCE:

GEO104785

PROJECT:

New Aldi

PROJECT ADDRESS:

New Aldi, Fleet Street

Holbeach, Spalding

PE12

SPECIFICATION:

Verified in accordance with CIRIA 735.

Design in accordance with BS8485 2015 + 2019 for Methane and Carbon Dioxide.

Substrate prepared in accordance with manufacturer's instructions.

JUTA GP5+ Gas Barrier

JUTA Titantank



GeoShield Verification Plan



NAME OF SURVEYOR:

Paul Colbeck

VERIFICATION COMPANY:

GeoShield Limited

Icon Business Centre

4100 Park Approach

Thorpe Park

Leeds

CONTACT NUMBER:

07462 546 926

EMAIL ADDRESS:

pcolbeck@geoshield.co.uk

ORDER NUMBER:

To be confirmed

PER VISIT:

YES:

☐

NO:

☐

PROJECT:

YES:

☐

NO:

☐



GeoShield Verification Plan



INFORMATION INCLUDED

Geo-Environmental Appraisal

Engineers drawings

Material specification data sheets

Information presented to at the pre-verification stage assumed correct

Any change client will let GeoShield know or this Pre-verification Plan will be void.



GeoShield Verification Plan



SPECIFICATION



Title Reference & Description:

Geo-Environmental Appraisal

Front page

SPECIFICATION

GROUNDTECH



High methane concentrations have been recorded across the development area and may be associated with the natural organic Tidal Flat Deposits encountered across the site or the infilled pond/landfill or drain feature or sewage works.

Characteristic Situation 2 or 3

The proposed development is classified as a Building Type C in accordance with BS 8485 and the site falls in CS2 or 3 in accordance with Table 2 of the above guidance. On completion of the gas monitoring, the requirement for remedial work will be undertaken, particularly in relation to the former drain feature, 1 to 2 points of gas protection measures will be required.

Gas precautions outlined in CIRIA C665 are summarised below:

Structural barrier / Floor slabs

- Cast in situ monolithic reinforced ground bearing raft or reinforced cast in situ suspended floor slab with minimal penetrations – 1.5 points.

Ventilation protection measures

- Pressure relief pathway (usually formed of low fines gravel or with a thin geocomposite blanket or strips terminating in a gravel trench external to the building) – 0.5 points
- or
- Passive sub floor dispersal layer of either good or very good performance – 1.5 to 2.5 points

Gas resistant membrane

- Gas resistant membrane (including methane) meeting the criteria outlined in Table 7 of BS 8485:2015 – 2 points.

The recommendations will be confirmed or otherwise on completion of the monitoring.

The site is in an area not requiring radon precautions.

9.4 Revised Pollution Linkage Assessment

The CSM has been revised to inform the following pollution linkage assessment based on the Ground Investigation and laboratory testing. Using Source-Pathway-Receptor assessment criteria that is applicable in the UK, the risk assessment has been revised to determine if a plausible pollution linkage exists between the identified contaminants and receptors. The risk classification has been estimated in accordance with the CIRIA C552 assessment criteria and an illustrative Revised CSM is presented on Groundtech Consulting Plan GRO-21400-P07.

Title Reference & Description:

Geo-Environmental Appraisal

No radon protection measures are required



SPECIFICATION

Soils

Stockpiles identified on the site require removing to a suitably licensed waste disposal facility.

Vapours

Ground Gas

In addition, radon precautions are not needed.

Groundwater

Watching Brief and Regulatory Compliance

Regulatory compliance should be obtained pre-commencement to avoid delays during the construction phase which will have cost implications.

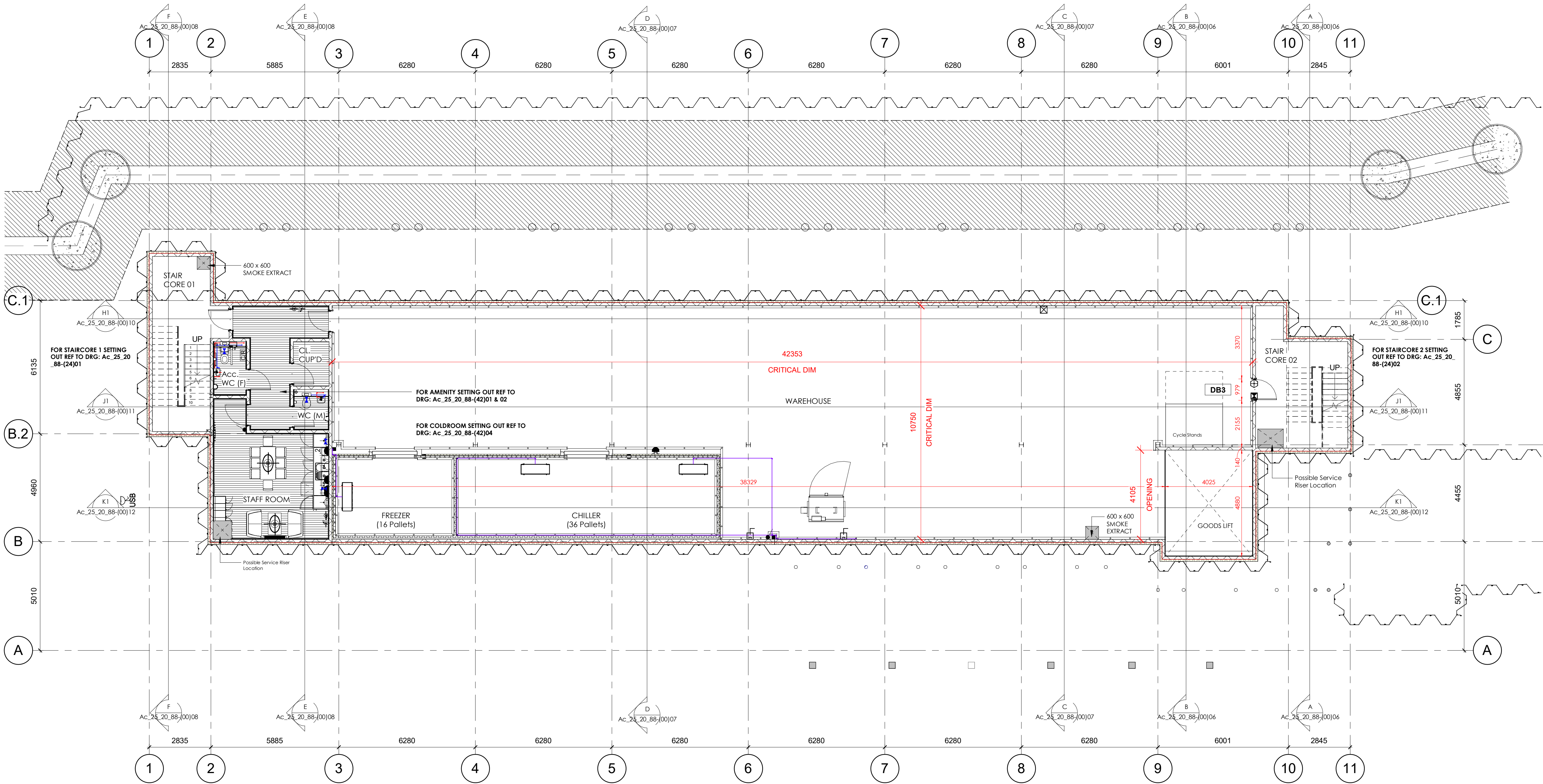
9.6 Asbestos in Soils

GEO-ENVIRONNEMENT ET DÉVELOPPEMENT
D'UN CÔTE D'EAU

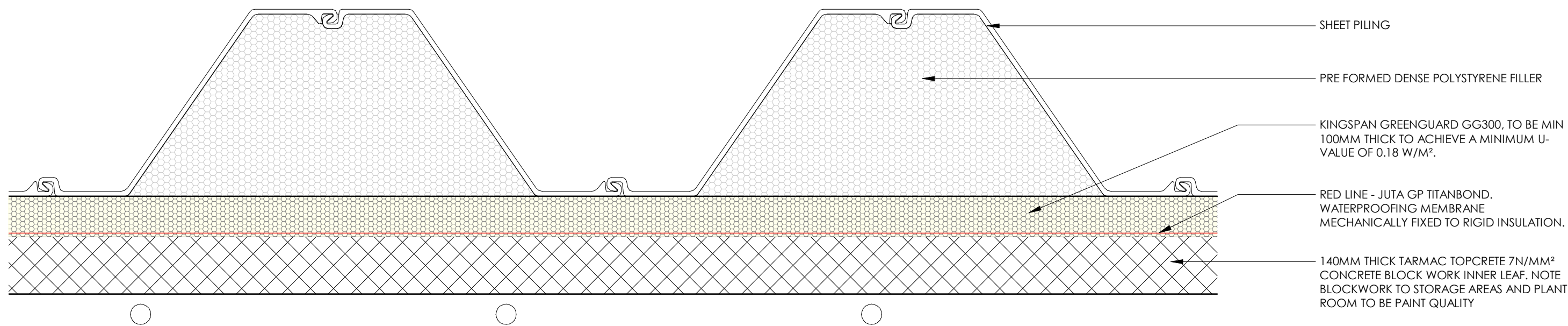
Title Reference & Description:

Geo-Environmental Appraisal

Ground Gas - CS3 with Hydrocarbons/VOC's present



B1-Basement FFL
1: 100



B1-Basement Wall Detailing
1: 10

**CONTRACT
DRAWING**

Signed by Contractor

Date:
Signed by Employer

**CONTRACT
DRAWING**

THE HARRIS GROUP LTD DOES NOT
ACCEPT LIABILITY FOR ANY
DEVIATION FROM OUR DRAWINGS
OR SPECIFICATION.

FOR STRUCTURAL DETAILS REFER TO
THE CONSULTING STRUCTURAL &
CIVIL ENGINEERING DETAILED
DESIGN DRAWINGS &
SPECIFICATIONS.

THE HARRIS GROUP LTD DOES NOT
ACCEPT LIABILITY FOR ANY
COMPOSITE, INSULATION OR
DECORATIVE PANELS.

FOR M+E INFORMATION, REFER TO
THE M+E ENGINEERS AND SUB
CONTRACTORS DESIGN DRAWINGS
& SPECIFICATIONS.

Client
ALDI - Aldi Stores Ltd.



Project Title
Proposed ALDI Foodstore

Project Address
**Farnborough Way
Orpington
BR6 7DH**

Drawing Title
Proposed Basement GA Plan

Job No.	Originator	Zone	Level	Type	Rate
2145	THP	XX	B1	DR	A
System Classification: Drawing No. Subtitle Revision					
Ac 25 20 88-(00)01 D2 C01					

Drawn	Checked	Date	Scale	Size
PAW	IC	08/12/2023	As Indicated	A1

THE HARRIS PARTNERSHIP WAKEFIELD
2 St. John's North, Wakefield, WF1 3QA
t. 01924 291 800 f. 01924 290 072

THE HARRIS PARTNERSHIP MANCHESTER
2nd Floor, Carvers Warehouse,
77 Dale Street, Manchester, M1 2HG
t. 0161 238 8555 f. 0161 244 5809

THE HARRIS PARTNERSHIP MILTON KEYNES
The Old Rectory, 79 High Street
Newport Pagnell, MK16 8AB
t. 01908 211 577 f. 01908 211 722

THE HARRIS PARTNERSHIP READING
101 London Road, Reading, RG1 1BT
t. 0118 950 7700 f. 0118 956 8642

THE HARRIS PARTNERSHIP LONDON
10 GEE'S COURT, LONDON, W1U 1JJ
t. 020 7409 1215



FOR PLANS, ELEVATIONS AND DETAILS OF THE FOLLOWING WELFARE ROOMS REFER TO THE DRAWINGS AS LISTED BELOW:	
ROOM NAME	DRAWING REF.
STAFF ROOM	
WCs	
LOBBY	
MANAGERS OFFICE	
PLANT ROOM	
MEETING ROOM	
CLEANERS ROOM	
SALES AREA	
WAREHOUSE	

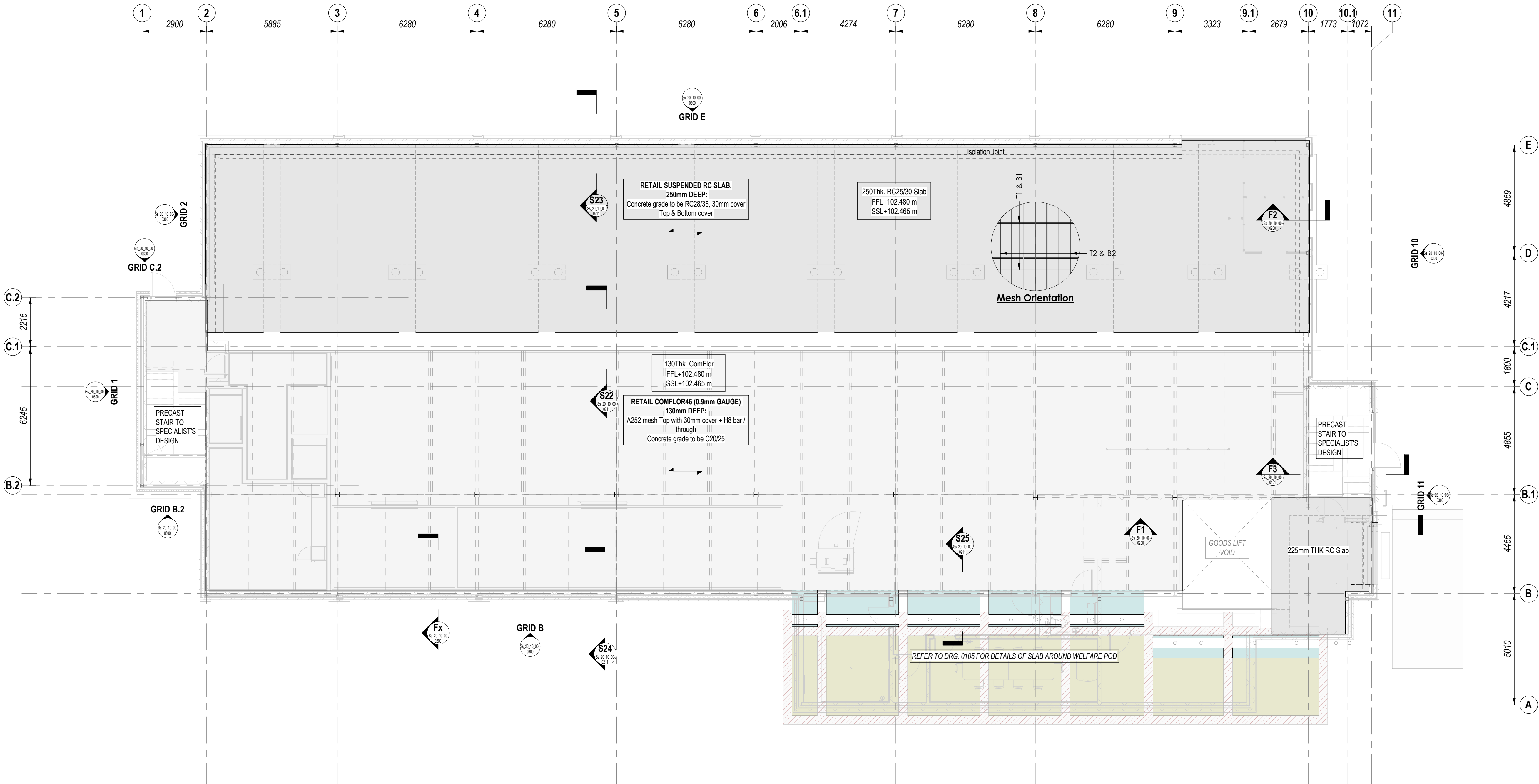
NOTE:
ALL STORES TO BE REVIEWED ON A SITE SPECIFIC BASIS IN TERMS OF THE GEOLOGICAL & BUILDING ORIENTATION IN COORDINATION WITH THE M&E CONSULTANT. AMENDMENTS TO BE MADE AS NECESSARY TO ENSURE THAT REQUIREMENTS SET OUT IN PART L OF THE APPROVED DOCUMENTS IS FULLY MET. FULL THERMAL MODELLING TO BE COMPLETED TO DETERMINE INSULATION REQUIREMENTS.

CONDENSATE KEY	
■	CAPPED CONDENSATE
■	UNCAPPED CONDENSATE

ALL CONDENSATE GULLIES THAT ARE NOT DIRECTLY UNDER CHILLER CABINETS ARE TO BE CAPPED AND TILED OVER. TILES TO BE MARKED FOR FUTURE IDENTIFICATION.

NOTE:
PLAN SHOWS A SECTION AT 1500mm ABOVE 00 BASE LEVEL WITH VISIBILITY OF ITEMS UP TO 2300mm.

ALL FIRE BARRIERS/CAVITY BARRIERS AND FILLERS ARE TO BE INSTALLED AS PER REGIONAL REQUIREMENTS, IN ACCORDANCE TO BUILDING REGULATIONS AND STANDARDS.



GROUND FLOOR SLAB GENERAL ARRANGEMENT

Scale 1 : 100

NOTE:
Joint types must be formed in strict accordance with this drawing.

For slab details & sections, refer to Craddys drawing 0211.

Mesh Flying Ends - stagger flying ends location top vs btm reinforcement.

All Slabs UNO:
180 deep: top & bottom mesh A393 with flying ends. 35mm cover btm. 30mm cover top. Min 450mm laps. Concrete grade RC30/37

SLAB FINISH:
Warehouse - Power float
Freezer - Power float
Retail - Screed
Welfare - Power float to suit Architect's finishes

REINFORCEMENT SPACERS AND CHAIRS:
Adequate reinforcement spacers, chairs and stools of a type approved by Craddys to be installed by the Contractor at a maximum 500mm centres in both directions to ensure that the reinforcement remains in the correct position during construction. Spacer, chairs and stools are not to cause damage to any membrane etc. below the slab.

LEGEND
- - - - - Joint type 1 - Formed movement joint
- - - - - Joint type 2 - Sawn restraint movement joint

REINFORCEMENT ESTIMATE:	
ELEMENT:	REINFORCEMENT RATE:
RETAIL 250mm SLAB	65 kg/m ³
130mm SLAB OVER BASEMENT	6.5 kg/m ²
225mm SLAB - LOADING BAY	65 kg/m ³
SLAB INFILLS - EXISTING	65 kg/m ³

LEGEND
Denotes area of new slab infill - tied into new and existing capping beam
Denotes area of existing slab to remain
Denotes existing foundations to remain

Refer to Drawings 0105 and 0106 for enabling works sequencing and details

THIS DRAWING MUST NOT BE SCALED AND ALL DIMENSIONS ARE TO BE CHECKED ON SITE BEFORE WORK IS COMMENCED. THE DESIGN AND DRAWING ARE THE COPYRIGHT OF THE CONSULTANTS AND MUST NOT BE USED OR REPRODUCED WITHOUT THEIR PERMISSION. ANY DISCREPANCIES ARE TO BE REPORTED IMMEDIATELY TO THE CONSULTANTS. ALL INFORMATION SHOWN ON THE DRAWING IS SUBJECT TO OBTAINING THE NECESSARY STATUTORY CONSENTS.

GROUND FLOOR GENERAL NOTES:

1. GAS REGIME:

1.1. GEO-ENVIRONMENTAL ASSESSMENT REPORT TMIM3686/9141 Rev C (FEBRUARY 2023) CLASSIFIED THIS SITE AS CHARACTERISTIC SITUATION 2 (CS2). THEREFORE GAS PROTECTION MEASURES ARE REQUIRED.

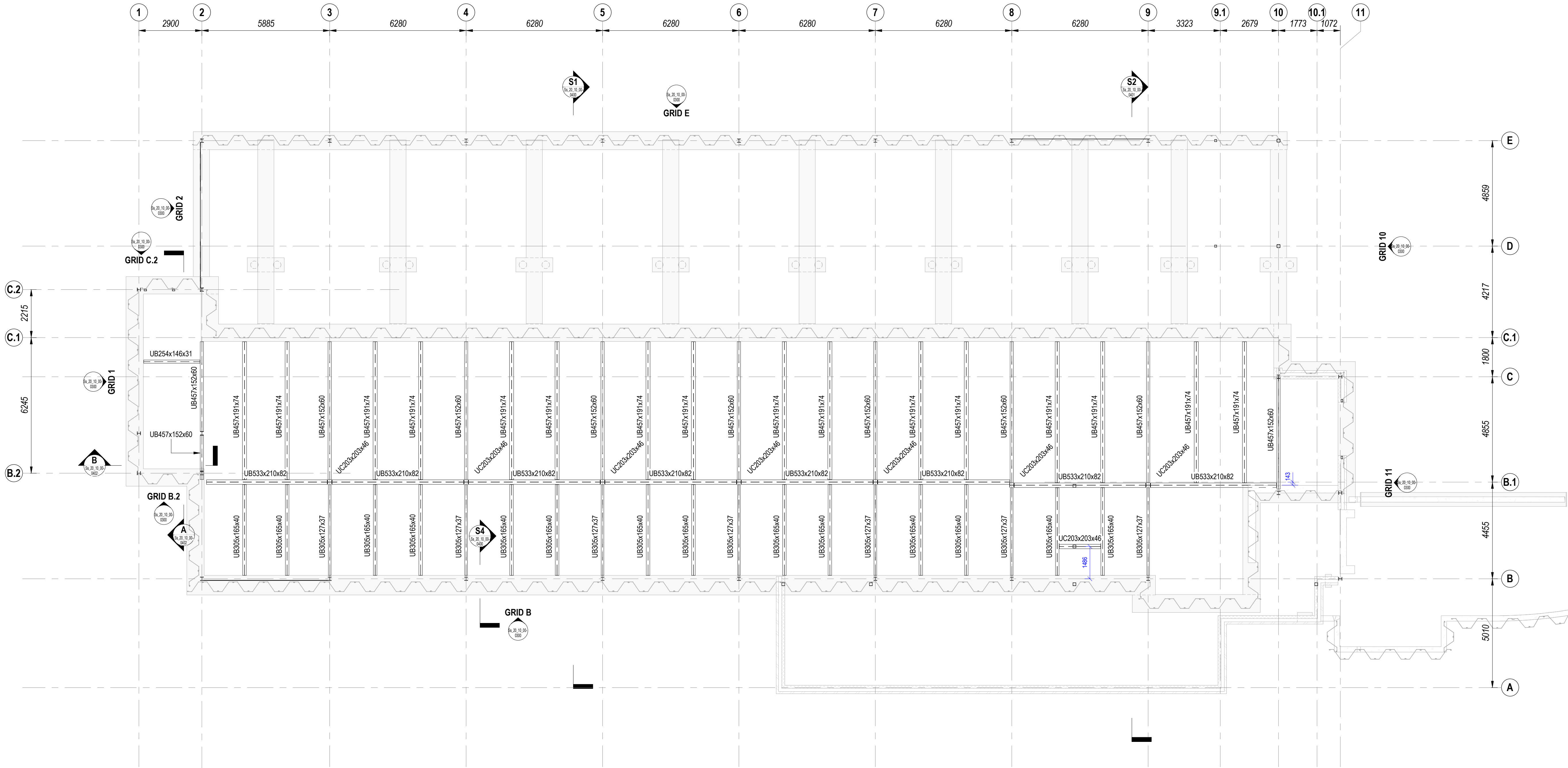
1.2. PRELIMINARY DETAILS INVOLVE APPLICATION OF GAS PROOF MEMBRANE. FINAL DETAILS TO BE PROVIDED BY SPECIALIST AND COORDINATED WITH BASEMENT AND GROUND FLOOR STRUCTURE

C.D.M. SIGNIFICANT HAZARDS	
THE FOLLOWING HEALTH AND SAFETY HAZARDS ARE IDENTIFIED BY THE DESIGNER IN PURSUANCE OF THE LATEST CONSTRUCTION DESIGN AND MANAGEMENT REGULATIONS.	
RISKS DURING CONSTRUCTION:	
• No abnormal risks have been identified relating to this design element.	
OPERATION / MAINTENANCE RISKS:	
• No abnormal risks have been identified relating to this design element.	
RISKS DURING DEMOLITION / DECOMMISSIONING / DISMANTLING / ALTERATIONS:	
• No abnormal risks have been identified relating to this design element.	
IT IS ASSUMED THAT ALL WORKS WILL BE CARRIED OUT BY A COMPETENT & ADEQUATELY RESOURCED CONTRACTOR(S) WORKING TO SAFE SYSTEMS OF WORK.	
Client	Aldi Stores Ltd.
Project Title	Aldi Store
Project Address	Farnborough Way Orpington BR6 7DH
Drawing Title	GROUND FLOOR SLAB LAYOUT

Job No.	Originator	Zone	Level	Type	Rev
60021	CDY	XX	00	DR	S
System Classification		Drawing No.	Suitability	Revision	
Ss_20_10_00-0103		A4	C01		
Drawn	Checked	Date	Scale	Size	
MB	PA	15/03/2024	As indicated	A1	

Approved	Craddys Job	IF YOU HAVE A QUERY CALL US	
RAG	60021	SCALING FROM THIS DRAWING OR OBTAINING DIMENSIONS ELECTRONICALLY MAY NOT PROVIDE ACCURATE INFORMATION AND SHOULD BE AVOIDED. WORK ONLY FROM FIGURED DIMENSIONS.	

CRADDYS
Consulting Civil and Structural Engineers
www.craddys.co.uk



GROUND FLOOR STEELWORK GENERAL ARRANGEMENT

Scale 1 : 100

C D M : SIGNIFICANT HAZARDS
THE FOLLOWING HEALTH AND SAFETY HAZARDS
ARE IDENTIFIED BY THE DESIGNER IN
PURSUANCE OF THE LATEST CONSTRUCTION DESIGN AND MANAGEMENT
REGULATIONS.

RISKS DURING CONSTRUCTION:

- No abnormal risks have been identified relating to this design element.

OPERATION / MAINTENANCE RISKS:

- No abnormal risks have been identified relating to this design element.

RISKS DURING DEMOLITION / DECOMMISSIONING / DISMANTLING / ALTERATIONS:

- No abnormal risks have been identified relating to this design element.

IT IS ASSUMED THAT ALL WORKS WILL BE CARRIED OUT BY A
COMPETENT & ADEQUATELY RESOURCED CONTRACTOR(S) WORKING
TO SAFE SYSTEMS OF WORK.

Client
Aldi Stores Ltd.

Project Title
Aldi Store

Project Address
**Farnborough Way
Orpington
BR6 7DH**

Drawing Title
**GROUND FLOOR STEELWORK
GENERAL ARRANGEMENT**

Job No.	Originator	Zone	Level	Type	Role
60021	CDY	XX	00	DR	S
System Classification		Drawing No.		Suitability	Revision
Ss_20_10_00-0209		A4		C01	
Drawn	Checked	Date	Scale	Size	
MBr	PA	15/03/2024	As indicated	A1	

Approved	Craddys Job	IF YOU HAVE A QUERY CALL US SCALING FROM THIS DRAWING OR OBTAINING DIMENSIONS ELECTRONICALLY MAY NOT PROVIDE ACCURATE INFORMATION AND SHOULD BE AVOIDED. WORK ONLY FROM FIGURED DIMENSIONS.
RAG	60021	

THIS DRAWING MUST NOT BE SCALED AND ALL DIMENSIONS ARE TO BE CHECKED ON SITE BEFORE WORK IS COMMENCED. THE DESIGN AND DRAWING ARE THE COPYRIGHT OF THE CONSULTANTS AND MUST NOT BE USED OR REPRODUCED WITHOUT THEIR PERMISSION. ANY DISCREPANCIES ARE TO BE REPORTED IMMEDIATELY TO THE CONSULTANTS. ALL INFORMATION SHOWN ON THE DRAWING IS SUBJECT TO OBTAINING THE NECESSARY STATUTORY CONSENTS.

CRADDYS

Consulting Civil and Structural Engineers

www.craddys.co.uk



GP®5+

GP®5+ gas barrier is a multi-layer composite of virgin polyethylene (PE) giving exceptional resistance to the passage of ground gas and organic vapours. It also acts as a high performance DPM.

Thickness	0.5 mm
Width	Various m
Length	Various m
Weight	500 g/m ²

TITANTECH®

For developers of brownfield and contaminated sites the TITANTECH® family of products represent a major step forward in safeguarding projects against gaseous and chemical contamination.

GP®5+ is suitable for the following applications:

- Carbon dioxide and methane affected sites in accordance with BS 8485:2015 + A1:2019 & NHBC
- Radon affected sites in accordance with BRE211:2015
- Damp protection in accordance with Building Regulations Part C
- Low level VOC contaminated sites (site specific assessment required)
- Suitable for use on CS2-CS6 sites, and as a class A/B/C membrane to NF94

Installation

GP®5+ should be installed in accordance with the product installation guidelines, and in accordance with BS 8485:2015.

Certifications



Please
Scan



Rev 2024



Feature	Characteristics	Test Method	GP®5+
Physical Properties	Thickness	EN 1849-2	0.5 mm
	Width	EN 1849-2	Various m
	Length	EN 1849-2	Various m
	Weight	EN 1849-2	500 g/m ²
Hydraulic Press	Resistance to Water Penetration	EN 1928 (A)	Pass
Mechanical Properties	Resistance to Static Load	EN 12730	> 20 kg
	Tensile Strength (MD)	EN 12311-2 (A)	> 300 N/50mm
	Tensile Strength (CMD)	EN 12311-2 (A)	> 300 N/50mm
	Resistance to Tearing (Nail Shank) MD	EN 12310-1	> 230 N
	Resistance to Tearing (Nail Shank) CMD	EN 12310-1	> 230 N
	Impact Resistance	EN 12691-B	500 mm
	Puncture Resistance	ASTM D 4833	> 160 N
	Puncture Resistance	EN 12236	1.60 kN
	Reaction to Fire	EN 13501-1	E
Vapour Permeability	Methane Permeability	BS EN ISO 15105-1	0.12 ml/m ² /day/atm
	Carbon Dioxide Permeability	BS EN ISO 15105-1	1.53 ml/m ² /day/atm
	Hydrogen Permeability	BS EN ISO 15105-1	68.7 ml/m ² /day/atm
	Benzene Permeability	BS EN ISO 15105-2	0.41 ml/m ² /day
	Oxygen Permeability	BS EN ISO 15105-2	<3 ml/m ² /day
	Radon Permeability	K124/02/95	1.0 x 10 ⁻¹² m ² /s
	Hydrogen Sulphide Permeability	BS EN ISO 15105-1	<0.16 ml/m ² /day/atm
Fuel Vapour Permeability	Petrol	BS EN ISO 15105-2	(ave.) 3.4 x 10 ⁻¹³ /mol/(m ² .s.Pa)
	Diesel	BS EN ISO 15105-2	(ave.) 3.4 x 10 ⁻¹³ /mol/(m ² .s.Pa)
Durability	Durability Watertightness After Artificial Ageing	EN 1928	Pass
	Durability Watertightness Against Chemicals	EN 1928	Pass
Compliance and Certification	CE Mark - EN 13967:2012		
	NHBC Standards Compliant		
	BS 8485:2015 + A1 2019 Accordant		

JUTA UK

Please contact JUTA
UK Directly for more
information on GP®5+

Handling

Roll weights can be in excess of 20kg and hence appropriate care and equipment is required for unloading and handling.

Storage

Rolls of GP®5+ should be stored on stable/level ground and stacked not more than five rolls high, with no other material stacked on top. The rolls can be stored outdoors when packaged, but should be protected from exposure to UV.



JUTA UK

Please contact JUTA
UK Directly for more
information on GP®5+

Jointing and Sealing

It is recommended GP®5+ can be heat welded where possible, with welding carried out by competent personnel with suitable qualifications in accordance with best practice, and guidance contained within BS 8485:2015. GP®5+ should be overlapped by at least 100mm. If taping joints, only suitable tape must be used, ensuring application with a silicone roller to remove trapped air. JUTA pre-formed details, or self adhesive gas membrane are available for sealing around protuberances.

Accessory Products

- GP® DPC
- GP® Tape
- GP® Self Adhesive Membrane (SAM)
- GP® Primer
- GP® Top Hats and Preformed Corners
- GP® Protection Fleece
- GP® Void Vent (24/40mm)



GP® TITANTANK®

GP® TITANTANK® is a self adhesive version of the GP® TITANFLEX®; composed of self-adhesive with an upper surface finish of GP® TITANFLEX®, and a lower surface finish of siliconized polypropylene release film. TITANTANK® is used for the gas /waterproofing/ tanking of underground structures where harmful ground gases are anticipated, as a post applied fully bonded membrane.

TITANTECH®

For developers of brownfield and contaminated sites the TITANTECH® family of products represent a major step forward in safeguarding projects against gaseous and chemical contamination.

Handling

Roll weights can be in excess of 20kg and hence appropriate care and equipment is required for unloading and handling.

Storage

Rolls of GP® TITANTANK® should be stored on stable/level ground and stacked not more than five rolls high, with no other material stacked on top. The rolls can be stored outdoors when packaged, but should be protected from exposure to UV.

Installation

GP® TITANTANK® should be installed in accordance with the product installation guidelines, and in accordance with best practice.

Thickness	1.2 mm
Width	0.9 m or 0.3 m
Length	20 m
Weight	1350 g/m ²

Certifications



Please
Scan



Rev 2024



Feature	Characteristics	Test Method	GP® TITANTANK®
Physical Properties	Thickness	EN 1849-2	1.2 mm
	Width	EN 1849-2	0.9 or 0.3 m
	Length	EN 1849-2	20 m
	Weight	EN 1849-2	1350 g/m²
Hydraulic Press	Water Vapour Transmission Rate	EN 1931	0.11 - 0.18 g/m²/day
	Water Tightness (60 kPa)	EN 1928	Pass
	Water Tightness (196 kPa - 20 m Water Head) (Basement Application)	EN 1928	Pass
Mechanical Properties	Resistance to Static Load	EN 12730-B	≥ 20 kg
	Puncture Resistance	EN 12236	≥ 2.0 kN
	Tensile Strength (MD)	EN 12311-1	> 550 N/50mm
	Tensile Strength (CMD)	EN 12311-1	> 400 N/50mm
	Tensile Elongation (MD/CMD)	EN 12310-1	> 550 %
	Tear Resistance (MD/CMD)	EN 12310-1	> 300 N
	Resistance to Impact	EN 12691-B	650 mm
	Reaction to Fire	EN 13501-1	E Class
	Resistance to Artificial Ageing	EN 1296/EN 1928	Pass
	Resistance to Chemicals	EN 1296/EN 1928	Pass
Compliance and Certification	CE Mark - EN13967:2012		
	NHBC Standards Compliant		
	CIRIA C748 Compliant (VOC Barrier)		
	BS 8485:2015 Compliant (Methane and Carbon Dioxide Barrier)		
	BS 8102:2009 Compliant (Type A Waterproofing)		
Vapour Permeability 100% Concentration	Transmission Rate of Benzene	EN ISO 15105-2	< 3.6 mg/m²/day
	Transmission Rate of Toluene	EN ISO 15105-2	< 13.8 mg/m²/day
	Transmission Rate of Ethyl Benzene	EN ISO 15105-2	< 2.7 mg/m²/day
	Transmission Rate of Xylenes (M,P,O)	EN ISO 15105-2	< 7.7 mg/m²/day
	Transmission Rate of Hexane	EN ISO 15105-2	< 0.6 mg/m²/day
	Transmission Rate of Vinyl Chloride	EN ISO 15105-2	< 0.05 mg/m²/day
	Transmission Rate of Trichloroethene (TCE)	EN ISO 15105-2	< 54.7 mg/m²/day
	Transmission Rate of Tetrachloroethene (PCE)	EN ISO 15105-2	< 26.2 mg/m²/day
	Transmission Rate of Naphthalene	EN ISO 15105-2	< 0.0006 mg/m²/day
	Transmission Rate of CIS-1,2-Dichloroethylene	EN ISO 15105-2	< 1.1 mg/m²/day
Gas Permeability	Methane Permeability	EN ISO 15105-1	0.13 ml/m²/day/atm
	Methane Permeability (Jointed)	EN ISO 15105-1	1.00 ml/m²/day/atm
	Carbon Dioxide Permeability	EN ISO 15105-1	3.01 ml/m²/day/atm
	Vinyl Chloride Gas Permeability	EN ISO 15105-1	0.04 ml/m²/day/atm
	Radon Permeability	K124/02/95	1.0 x 10 ⁻¹² m²/S
	Hydrogen Sulphide Permeability	EN ISO 15105-1	< 0.16 ml/m²/day/atm



Feature	Characteristics	Test Method	GP® TITANFLEX®
Durability and Chemical Resistance	Chemical Resistance - Sulfuric ACID (10% Solution of Sulfuric Acid (H ₂ SO ₄)) 50° For 56 Days	EN 14414-A	TENSILE STRENGTH RETAINED 100% RESULT - PASS
	Chemical Resistance - BASIC (Calcium Hydroxide Saturated Suspension) 50° For 56 Days	EN 14414-B	TENSILE STRENGTH RETAINED 100% RESULT - PASS
	Chemical Resistance - SOLVENTS (35% Diesel, 35% Paraffin, 30% Oil Hd30 (Vol)) 50° For 56 Days	EN 14414-C	TENSILE STRENGTH RETAINED >80% RESULT - PASS
	Chemical Resistance - SYNTHETIC LEACHATE (Mixture of 14 Acids, Chlorides, Sulphates & Phosphates) 50° For 56 Days	EN 14414-D	TENSILE STRENGTH RETAINED 100% RESULT - PASS
	Resistance to Leaching - HOT WATER (Deionised Water) 50° For 56 Days	EN 14415-A	TENSILE STRENGTH RETAINED 100% RESULT - PASS
	Resistance to leaching - AQUEOUS ALKALINE (Saturated Calcium Hydroxide) 50° For 56 Days	EN 14415-B	TENSILE STRENGTH RETAINED 100% RESULT - PASS
	Resistance to Leaching - ORGANIC ALCOHOL (30% Methanol, 30% Isopropanol, 40% Glycol) 50° For 56 Days	EN 14415-C	TENSILE STRENGTH RETAINED 100% RESULT - PASS
	Chemical Resistance - BENZENE - 100% Saturated Concentration	EN 14414-D (MOD)	TENSILE STRENGTH RETAINED 95% (MD), 102% (CMD) RESULT - PASS
	Chemical Resistance - TOLUENE - 100% Saturated Concentration	EN 14414-D (MOD)	TENSILE STRENGTH RETAINED 94% (MD), 91% (CMD) RESULT - PASS
	Chemical Resistance - ETHYL BENZENE - 100% Saturated Concentration	EN 14414-D (MOD)	TENSILE STRENGTH RETAINED 99% (MD), 97% (CMD) RESULT - PASS
	Chemical Resistance - XYLENES - 100% Saturated Concentration	EN 14414-D (MOD)	TENSILE STRENGTH RETAINED 91% (MD), 106% (CMD) RESULT - PASS
	Chemical Resistance - TCE - 100% Saturated Concentration	EN 14414-D (MOD)	TENSILE STRENGTH RETAINED 99% (MD), 93% (CMD) RESULT - PASS
	Chemical Resistance - PCE - 100% Saturated Concentration	EN 14414-D (MOD)	TENSILE STRENGTH RETAINED 93% (MD), 93% (CMD) RESULT - PASS
	Chemical Resistance - NAPHTHALENE - 100% Saturated Concentration	EN 14414-D (MOD)	TENSILE STRENGTH RETAINED 101% (MD), 93% (CMD) RESULT - PASS
	Chemical Resistance - HEXANE - 100% Saturated Concentration	EN 14414-D (MOD)	TENSILE STRENGTH RETAINED 99% (MD), 104% (CMD) RESULT - PASS



JUTA UK

Please contact JUTA
UK Directly for more
information on
GP® TITANTANK®

Jointing and Sealing

GP® TITANTANK® can be heat welded or taped, with jointing carried out by competent personnel with suitable qualifications in accordance with best practice. GP® TITANTANK® should be overlapped by at least 100mm. If taping joints, only suitable tape must be used, ensuring application with a silicone roller to remove trapped air. JUTA pre-formed details, or self adhesive gas membrane are available for sealing around protuberances.

Accessory Products

- GP® Primer
- GP® Protection Fleece
- GP® Protection Board
- PD1700



GeoShield Verification Report



CLIENT DETAILS

CLIENT CONTACT:	Gareth Hawkins
CONTACTS ROLE:	JB Construction
MOBILE PHONE:	07399 294616
EMAIL ADDRESS:	

CLIENT CONTACT:	
CONTACTS ROLE:	
MOBILE PHONE:	
EMAIL ADDRESS	
NOTES:	



GeoShield Verification Report



APPLICATOR'S DETAILS

APPLICATOR NAME:

COMPANY:

APPLICATOR TEL:

APPLICATOR EMAIL:

APPLICATOR NAME:

COMPANY:

APPLICATOR TEL:

APPLICATOR EMAIL:

NOTES:



GeoShield Verification Plan



HEALTH AND SAFETY

INDUCTION:

YES



NO:



INDUCTION TIME:

CSCS CARD:

YES



NO:



CSCS CARD NUMBER:

13466546

METHOD STATEMENT:

YES



NO:



RISK ASSESSMENT:

YES



NO:



COSHH:

YES



NO:



SITE SPECIFIC HAZARDS:

Materials falling from height

Slips, trips and falls

Excavations

Confined spaces

Plant



GeoShield Verification Plan



APPLICATOR'S DETAILS

TRAINING LEVEL:

SPECIALIST CONTRACTOR:	YES	☒	NO	☐
NVQ LEVEL 2:	YES	☒	NO	☐
COMPETENT APPLICATOR:	YES	☐	NO	☒
TOOLBOX BY GEOSHIELD:	YES	☒	NO	☐

REASON FOR VISIT:

DURING INSTALLATION:	☒	UNDERSLAB VENTILATION	☐
PRE - POUR:	☒	DPC MEMBRANE CONNECTION	☐
TESTING:	☒	OTHER (PLEASE SPECIFY):	☐

NOTIFICATION:

24 HOURS:	YES	☒	48 HOURS:	YES	☒
-----------	-----	-------------------------------------	-----------	-----	-------------------------------------

NOTES: It will deemed that these applicators are at an appropriate skill level for

the job of installing the ground gas protection measures.



GeoShield Verification Plan



In accordance with guidance from
CIRIA 735 & CIRIA C748.

Radon gas protection measures
specify to the guidance from the
BR 211 document:

VOC/Hydrocarbons



RADON BASIC

☐

RADON FULL

☐

Characteristic Specification (CS) Rating

CS3

Building Type:

C

POINTS REQUIRED UNDER BS8485:2019

3.0 points

POINTS GAINED FROM BS8485:2019

Score for Structural Barrier:

1.0 point

Grade 2 Basement:

N/A

Grade 3 Basement:

N/A

Score for Venting:

N/A

Car Park:

N/A

Score for Membrane:

2.0 points

POINTS ACHIEVED UNDER BS8485 2019:

3.0 points



GeoShield Verification Plan



TESTING PROCEDURES

VISUAL: PICK & PROBE/MECHANICAL POINT STRESS TEST:



NON-DESTRUCTIVE COMPRESSED AIR LANCE TEST:



NON-DESTRUCTIVE SMOKE TEST:



DESTRUCTIVE JOINT TESTING:



NON-DESTRUCTIVE TRACER GAS TESTING:



DIELECTRIC POROSITY TEST:



PUMP TEST FOR "Twinny" WELD



NOTES: From the risk assessment GeoShield will initially conduct a visual

NOTES: and pick and probe testing regime for this project.

NOTES: Air lance testing will be conducted to test the installed membrane in

NOTES: accordance with CIRIA 735.

NOTES:

NOTES: Only if the application falls below the accepted standard will other testing

NOTES: be used.

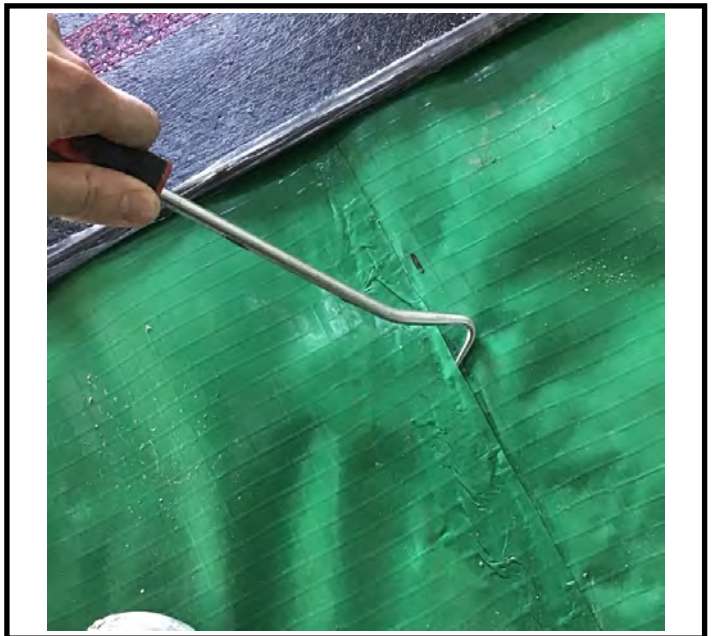
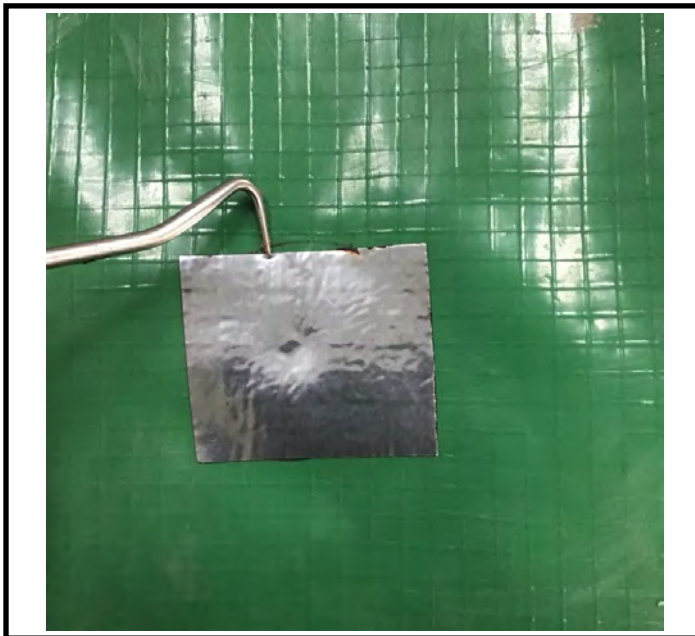


GeoShield Verification Plan



SPECIFICATION

Mechanical Point Stress/ 'Pick and Probe' Testing



CIRIA 735

4.3.2 - Mechanical point stress tests involve running a blunt instrument (e.g. a screwdriver) along the edge of a seam to identify any unbonded seams. This method is not as effective as air lancing but it can be especially useful in hard to reach areas where it is not possible to air lance.

The instrument used should not puncture the gas membrane. This method is less appropriate for materials that are easily punctured where an air lance test is more suitable (although if a gas membrane can be easily punctured its suitability as a membrane is open to question).

SPECIFICATION

Air Lance Testing



CIRIA 735

4.3.3 - Air lance testing identifies unbonded areas of seam by directing a high pressure jet of air at the seam. The air is at a minimum pressure of 345kPa via a 4.8mm nozzle and is located no more than 50mm from the seam being tested.

In order to achieve the requirements of ASTM D4437-08:2013 bespoke specialist equipment is required to maintain the required pressure.



GeoShield Verification Plan



RISK ASSESSMENT

SITE SPECIFIC CIRCUMSTANCES	1	2	3	4	5
Complexity of Design	1	✓ 2	3	4	5
Repetition of design	1	✓ 2	3	4	5
Experience of workforce	1	2	✓ 3	4	5
Gas regime	1	2	3	✓ 4	5
Project management experience	1	2	✓ 3	4	5
Installation conditions (exposed?)	1	✓ 2	3	4	5
Robust Project specific gas design	1	✓ 2	3	4	5

TYPE OF RISK	RANGE	RISK
High Risk	23 - 30	
Medium High Risk	19 - 22	
Medium Risk	15 - 18	18
Medium Low Risk	11 - 14	
Low Risk	0 - 10	

GeoShield have classed this project as a medium risk.

GeoShield will lay all parameters down for standards at the pre-verification meeting to assist both the installer and the main contractor.



GeoShield Verification Plan



VERIFICATION REPORT

These items will be included in the report

- NUMBER 1 GAS MEMBRANE SPECIFICATION
- NUMBER 2 ELEMENTS OF THE GAS MEMBRANE
- NUMBER 3 DATE, TIME and WEATHER CONDITIONS
- NUMBER 4 PLANS and DETAILS ISSUED
- NUMBER 5 INSTALLATION PHOTO's RELATING TO GRID LINES
- NUMBER 6 REPORTING DEFECTS AND LOGGING IN REMEDIATION LOG
- NUMBER 7 AREAS OF LIMITATION (areas unable to inspect)
- NUMBER 8 LOGGING AND REPORTING RESULTS OF TESTING

VERIFICATION REPORT ISSUE

HARD COPY: YES ☒ NO ☐

EMAIL: YES ☒ NO ☐

DROP BOX LINK: YES ☒ NO ☐

FLASH DRIVE: YES ☐ NO ☒



GeoShield Verification Plan



GEOSHIELD COMPETENCE

>GeoShield was founded in 2015

>GeoShield solely verifies, they are fully independent of installers, manufacturers and geotechnical companies.

>GeoShield follow guidance in CIRIA 735 (sufficient experience, membership of relevant professional organisations) GeoShield are members of the BVC, BGA, ERA The RADON Council, and UKRA

>Currently GeoShield hold the Chairmanship of the British Verification Council

>Two employees are NSAC Level 3 assessors for the NVQ 2 Gas Membrane install

>GeoShield were key in forming the NVQ 4 Verification qualification in which 2 Verification officers are undertaking this qualification

>GeoShield have the only qualified assessor for the NVQ 4 Verification qualification

>GeoShield Verification officers currently keep up to date CPD's

>All GeoShield Verification Officers have a full understanding of gas membrane install including 3 experienced (NVQ 2) installers in the GeoShield team

>GeoShield Verification Officers are all independent carrying their own air compressors. Other testing equipment GeoShield have access to are 2 x Buckley Dielectric Testing machines and also inert gas testing equipment



GeoShield Verification Plan



METHOD STATEMENT - Page 1

EXPECTED VISITS:- 5 site visits are expected in line with the proposed build

programme, additional visits may be considered (if required) to achieve sign off.

TESTING:- Mechanical Point Stress (Pick & Probe) testing on taped areas.

Air lance testing will be carried out (as per CIRIA C735 Annex 1, Table A3).

Only if the application falls below the accepted standard will other testing be used.

This project will NOT achieve sign off for gas membrane installation unless independent verification is carried out.

PURPOSE:- Geoshield are 3rd party gas membrane verifiers in accordance with CIRIA 735 and for this project to be compliant with BS8485:2019, the gas system must meet certain criteria from Tables 5, 6 & 7 to achieve mitigation of score for verification. The chosen membrane must be verified by Geoshield to ensure the materials have been installed in accordance with the manufacturer's specification.

REPORTING:- Each site visit will be accompanied with a written and electronic report.

Any remediations either completed on the visit or outstanding will be recorded and logged, sign off will not be achieved for each section area until all remediations have been completed. This will be fully recorded at all times.



GeoShield Verification Plan



METHOD STATEMENT - Page 2

GROUND GAS RISK:- From the Geo-Environmental Appraisal supplied by the client this project has been classified as CS3 with VOC/Hydrocarbons present on the Site so a VOC resistant gas barrier system must be installed based on CIRIA C748 guidance.

This will be achieved by 3rd party verification of the gas resistant membrane, where applicable to the site specific design.

A combination of which will achieve the necessary requirements.

GAS MEMBRANE PROTECTION:- It is advised that the substrate should be prepared by removal of loose stone and debris. Other forms of protection could be in the form of either a protection board, geotextile fleece and insulation. In addition labels will be issued by Geoshield to restrict access to the installed area by follow on trades and help raise awareness to encourage a better duty of care. This will help to reduce the risk of potential damage caused to the gas membrane system.

FINAL:- Geoshield will liaise with the projects site supervision and all relevant parties prior to the installation start. This plan will be presented and reviewed, all points made clear as previously stated. Any alterations will be listed at the end of this plan as an all party agreed way forward.



GeoShield Verification Plan



VERIFICATION PLAN

METHOD STATEMENT

VERIFICATION STRATEGY:

Percentage Strategy: 1st 10 Plots (100%), 11-50 Plots (1:5) & 51 or > (1:10) ☐

Percentage Strategy: 100% Verification for VOC/Hydrocarbons ☒

Verification Percentage on site: 100% Not Specified ☐

Remarks:

It is recommended that the installers are present at the time of testing so any

remediations can be rectified. If remediations are not rectified the nature of the fault

found will determine whether or not extra visits are required to test remediations.

Protection Type:- Protection Board ☐ Protection Fleece ☐

Insulation ☐ Remarks:

TESTING PROCEDURE

Method Statement - Pipe Penetrations and Service Entries Notice Signs



Geoshield Notice Signs -

During testing on site, notice signs will be tied to all pipe penetrations and a service entries which have not passed inspection.

Areas cannot be passed unless verification stickers have been applied to the Notice Signs, once remediations have been successfully carried out.



GeoShield Verification Plan



TESTING PROCEDURE

Method Statement - Membrane Sticker Notice Signs



Geoshield Notice Signs -

During testing on site, areas cannot be passed unless verification stickers have been applied, once remediations have been successfully carried out.



GeoShield Verification Plan



SUBSTRATE METHOD STATEMENT

SUBSTRATE TYPE:

Block and Beam Construction	Yes	☐	No	☒
-----------------------------	-----	--------------------------	----	-------------------------------------

Minimum Preparation	Swept Clear	Yes	☐	No	☒
---------------------	-------------	-----	--------------------------	----	-------------------------------------

Minimum Preparation	Vacuuming	Yes	☐	No	☒
---------------------	-----------	-----	--------------------------	----	-------------------------------------

Minimum Preparation	Compressed air to remove	Yes	☐	No	☒
---------------------	--------------------------	-----	--------------------------	----	-------------------------------------

Minimum Preparation	Remove Mortar Droppings	Yes	☐	No	☒
---------------------	-------------------------	-----	--------------------------	----	-------------------------------------

Stone Substrate	Yes	☒	No	☐
-----------------	-----	-------------------------------------	----	--------------------------

Minimum Preparation	Minimum 25mm Sand Blinding	Yes	☐	No	☒
---------------------	----------------------------	-----	--------------------------	----	-------------------------------------

Minimum Preparation	Limestone Dust	Yes	☐	No	☒
---------------------	----------------	-----	--------------------------	----	-------------------------------------

Minimum Preparation	Compacted Substrate	Yes	☒	No	☐
---------------------	---------------------	-----	-------------------------------------	----	--------------------------

Minimum Preparation	No large stones	Yes	☒	No	☐
---------------------	-----------------	-----	-------------------------------------	----	--------------------------

Concrete Substrate	Yes	☒	No	☐
--------------------	-----	-------------------------------------	----	--------------------------

Minimum Preparation	No Hollows	Yes	☒	No	☐
---------------------	------------	-----	-------------------------------------	----	--------------------------

Minimum Preparation	Troweled Surface	Yes	☒	No	☐
---------------------	------------------	-----	-------------------------------------	----	--------------------------

Remarks:	
----------	--

--

--



GeoShield Verification Plan



PRE-CONTRACT MEETING

Items for discussion at the Pre-Contract meeting

☐

>Induction Procedure

☐

>Identification of installation team and point of contact

☐

>Identification of Project management team

☐

>Identification of Sub-Contractors associated with membrane installation

☐

>Validation of Membrane and design specification

☐

>Verification procedure

☐

>Notifications for Verification

☐

>Preparation of substrate

☐

>Program of works

☐

>Utility entry

☐

>Protection of Membrane

☐

>Remediation Procedure

☐

>Testing Procedures

☐

>Sign off Procedure

☐

>Installer PI

☐

All information is assumed correct at time of issue.

DATE:



GeoShield Verification Plan



PRE-CONTRACT MEETING SUMMARY

As discussed in this Pre Verification Plan, the installation and verification of the Juta products. All details and drawings in the verification plan have been discussed so now the installers must run through how they will install the Juta products. The indented method and manufacturers specification have been discussed in relation to the details provided for the project. Methods for preparation before installation have been laid out so the workers are made aware of the standards required to gain consent from the local authorities in order to satisfy and discharge planning consent. In addition to this aftercare of the Juta products such as the Juta GP5+ gas Barrier during, after installation, and after verification.

Finally GeoShield have discussed the site visits that are required and what testing and verification will be carried out to the highest standard and verification principles associated with CIRIA 735 and BS8485:2015 +A1 2019.



GeoShield Verification Plan



PRE-CONTRACT MEETING SUMMARY

A pro-forma quality assurance document will be discussed during the Pre-Verification meeting and training undertaken with the management team for non verified areas.

The Pre-Verification meeting will be led by Geoshield and should include all relevant parties who have an impact on the installation and future protection. Geoshield will provide guidance and strategy for all parties.

The site specific checklist will be covered as well as the risk assessment.

CS3 with Hydrocarbons/VOC's identified on site.

Any design alterations will be discussed and included in a revised Pre-Verification Plan.

Any specification changes must also be included in a revised Pre-Verification Plan.

All items will be minuted by the Geoshield representative.

This Pre-Verification plan follows all current guidance and the aim is to make all parties aware of the ramifications of poor installation and their responsibilities if they damage the membrane.

