GEOSHIELD Verification Report

OVERVIEW PHOTOGRAPHS

Overview of site

Image shows Visqueen GB and steel starting to be installed ready for concrete

GEOSHIELD Verification Report

OVERVIEW PHOTOGRAPHS

Overview of site

Image shows a previous slab pour and Visqueen GB meeting

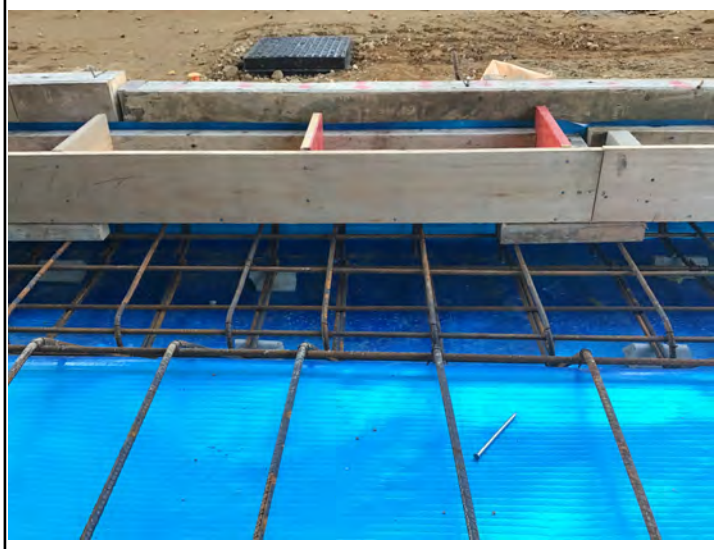
GEOSHIELD Verification Report

LIMITATIONS

SURVEY AREA: Perimeter

RESTRICTIONS AND LIMITATIONS: Steel work had started to be installed

This restricts our ability to verify the Visqueen GB under the installed steel



Images above show installed steel work and ply shuttering

These areas can still be visually inspected for punctures, however the seams

Cannot be exposed as easily

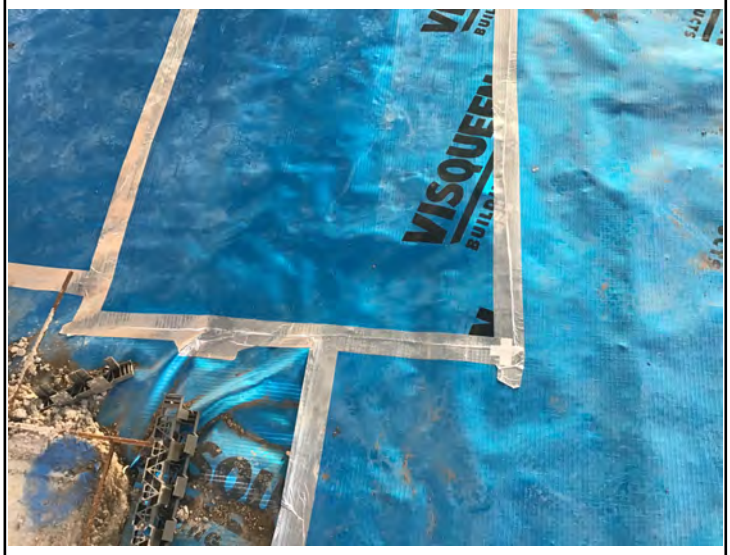
GEOSHIELD Verification Report

LIMITATIONS

SURVEY AREA: Whole site

RESTRICTIONS AND LIMITATIONS: Taped seams & material storage

The foil taped seams restrict the ability to verify the adherence of the butyl tape



Materials stored on top of the Visqueen GB membrane limit the available areas

For inspection

The steel has however been stored on top of insulation to protect the membrane

GEOSHIELD Verification Report

VERIFICATION ITEM ONE

LOCATION/GRID LINE: Whole site

NOTES: Butyl taped seams

As the seams had been protected using the foil tape various sections were exposed

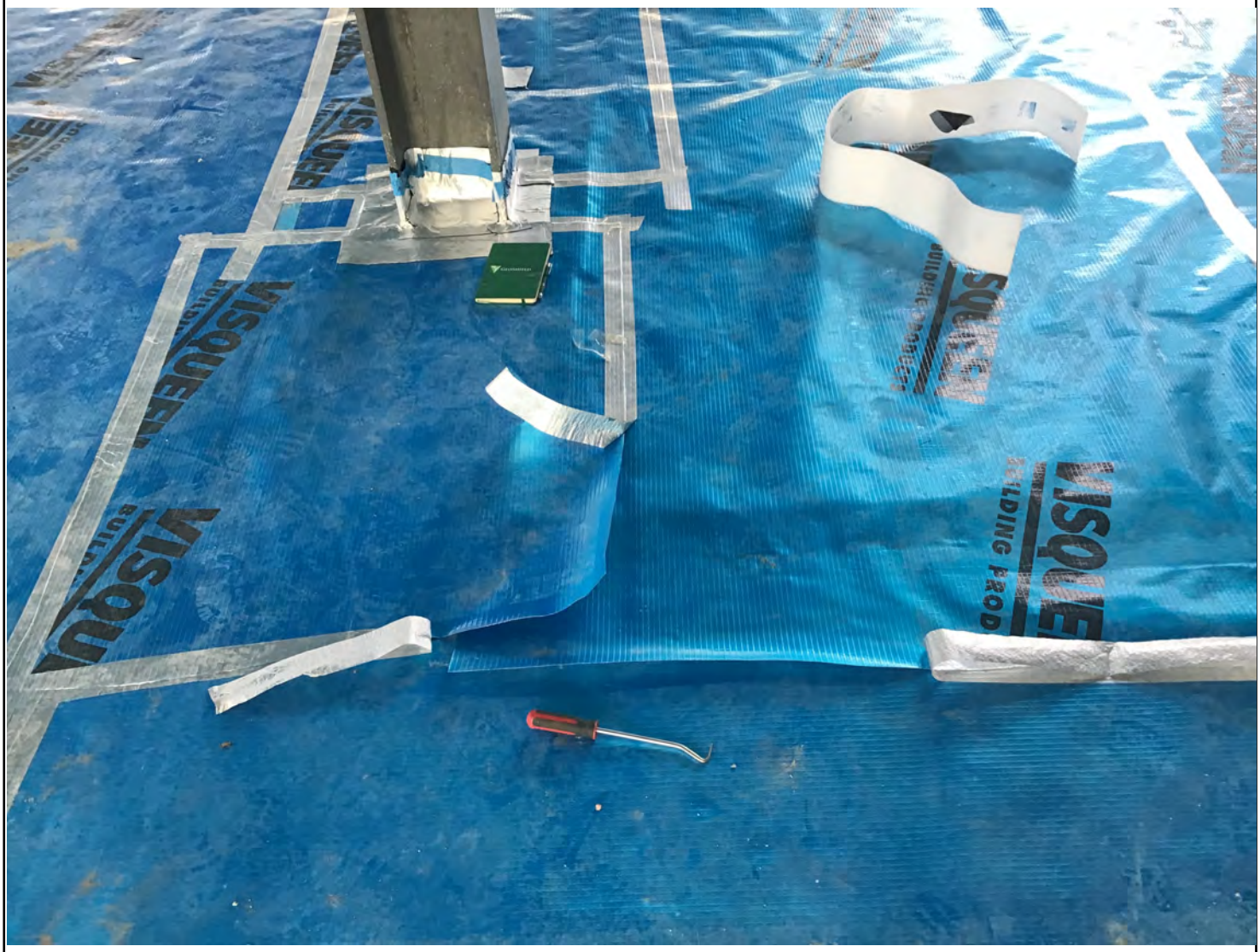
This was followed by a Mechanical Point Stress Test (MPST) to check that the Visqueen

Double sided Butyl tape had adhered correctly to form a bonded seam

The images above show two areas where the MPST had been undertaken.

GEOSHIELD Verification Report

VERIFICATION ITEM ONE



Another image of exposed seams to conduct an MPST

In total 9 seams were exposed for inspection with 6 of them requiring remediation

(See Additional photos)

Verification in accordance with CIRIA C735

GEOSHIELD Verification Report

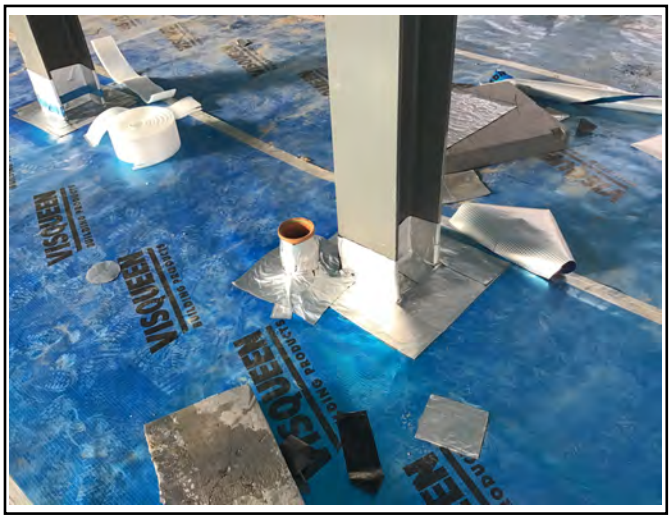
VERIFICATION ITEM TWO

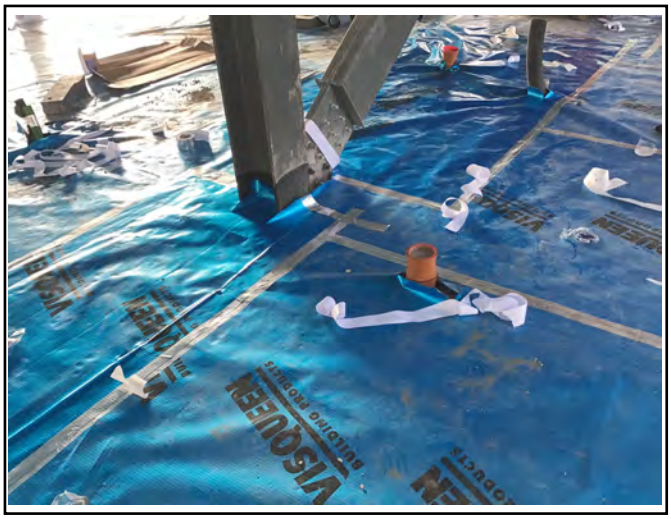
LOCATION/GRID LINE: Whole site

NOTES: Pipe and stanchion penetrations

Multiple pipe and stanchions required sealing with Visqueen Gas Resistand Self Adhesive Membrane

Not all of these had been completed when we visited





The images above show completed pipe/stanchion penetrations

The image on the left shows a completed example that was subject to an MPST

The image on the right shows an incomplete penetration detail

Incomplete penetration details limited the ability to verify the Visqueen GB membrane

GEOSHIELD Verification Report

VERIFICATION ITEM TWO

Overview of site with completed and incomplete Stanchion / pipe penetrations

The completed stanchion is circled in green while the incomplete penetration is

In red

Verification in accordance with CIRIA C735

GEOSHIELD Verification Report

VERIFICATION ITEM THREE

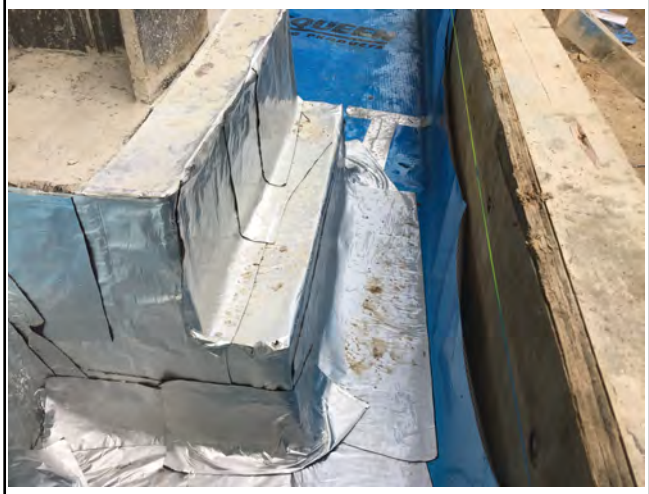
LOCATION/GRID LINE: Perimeter Stanchions

NOTES: Stanchion plinths

The stanchion bases verified in the previous report have now been poured and

Sealed with Visqueen GRSAM

The Visqueen GRSAM has been verified by way of visual inspection and



A MSPT, shown in the image above

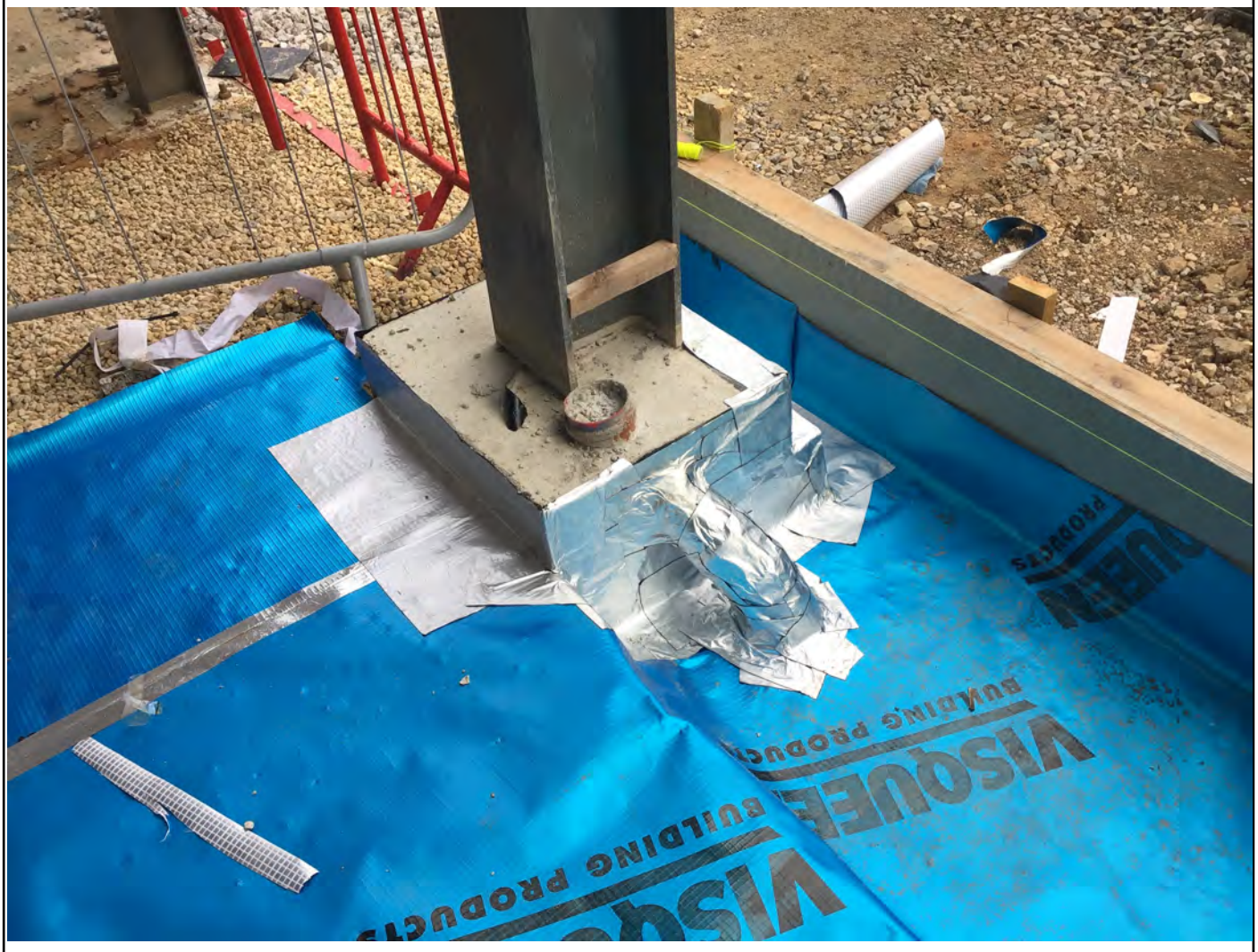
The above images show the detail of the stanchion bases and the

Pipes, all sealed with visqueen GRSAM

This is in accordance with manufacturers specification

GEOSHIELD Verification Report

VERIFICATION ITEM THREE



An overview of the sealed stanchion base.

These have been sealed according to the design detail

In accordance with BS8485:2019

Verified in accordance with CIRIA C735

GEOSHIELD Verification Report

REMEDIATION LOG

Date	Nr	Remediation Description	Y/N
20/07/2022	001	Some small pinholes found, remediated on site	✔
27/07/2022	002	Some small areas of damage to previous Liquid Gas Membrane	
		installation to Retaining Wall Kicker - remediated during visit.	✔
02/08/2022	003	One potential capillary leak via lap joint crease remediated during	
		verification visit.	✔
11/08/2022	004	Ten areas of slight damage identified and requires remediation.	✔
		Various edges of the Visqueen Gas Resistant Self-Adhesive	✔
		Evidence of insulation being used to protect the Gas Resistant	
		Self Adhesive Membrane to the retaining wall.	✔
12/08/2022	005	This was a CQA report and after viewing the photos provided by	
		Galliford Try, no faults were identified.	✔
19/08/2022	006	Substation - one area of GRSAM split near concrete toe but	
		remediated during verification visit.	✔
24/08/2022	007	No areas requiring remediation	✔

GEOSHIELD Verification Report

REMEDIATION LOG

Date	Nr	Remediation Description	Y/N
20/09/2022	009	Butyl tape- missing from seam x 2 remediated during visit	✔
		Unbounded butyl tape x4	
		Folded visqueen GB unbounded x1 Remediation complete	✔
		Pipes requiring GRSAM	
		Stanchions requiring GRSAM	
		Previously poured concrete seam (requires GRSAM) x2	

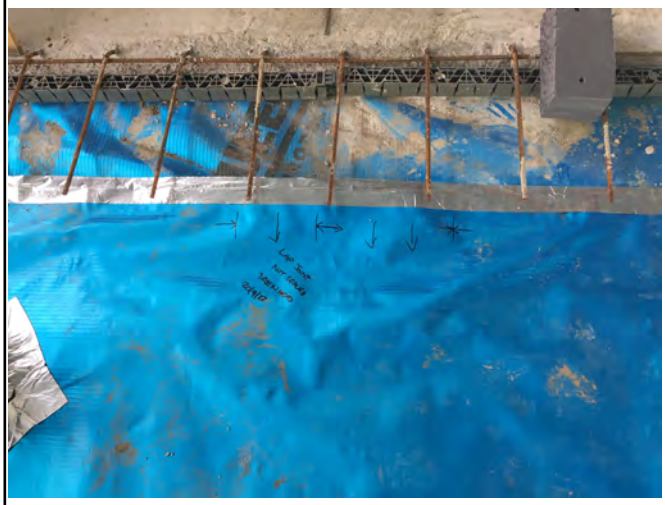
GEOSHIELD Verification Report

ADDITIONAL PHOTOGRAPHS

Previously poured concrete

Overview

Butyl tape unbonded



Butyl tape unbonded

Previously poured concrete

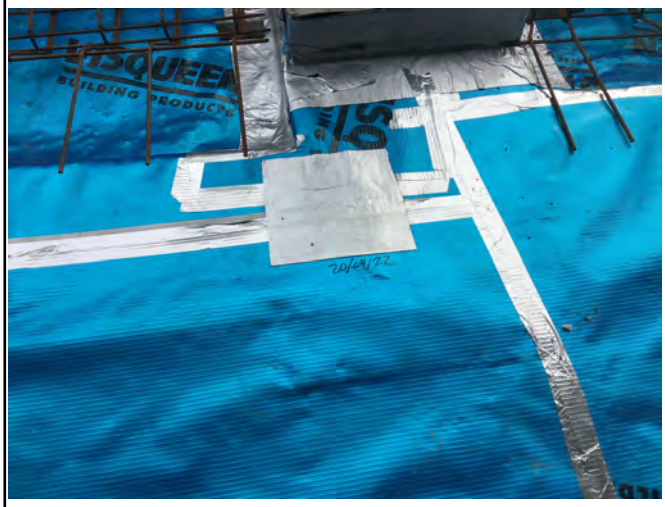
Overview

GEOSHIELD Verification Report

ADDITIONAL PHOTOGRAPHS

Remediation required

Missing membrane

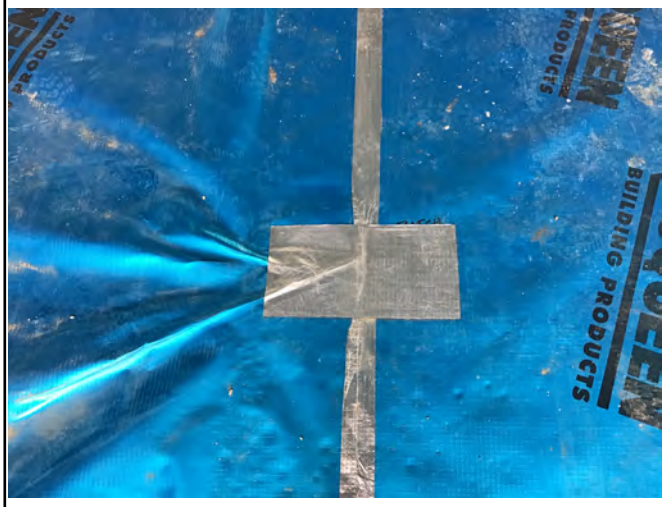


GRSAM patch

Remediation complete

Fold in membrane

Remediation required

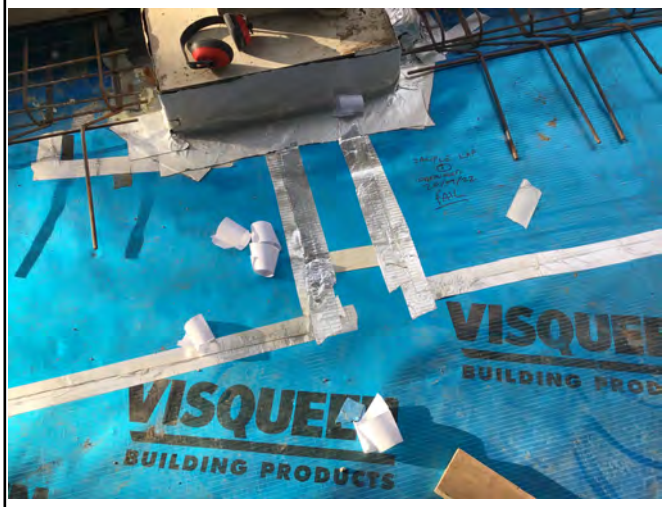


GRSAM patch

Remediation complete

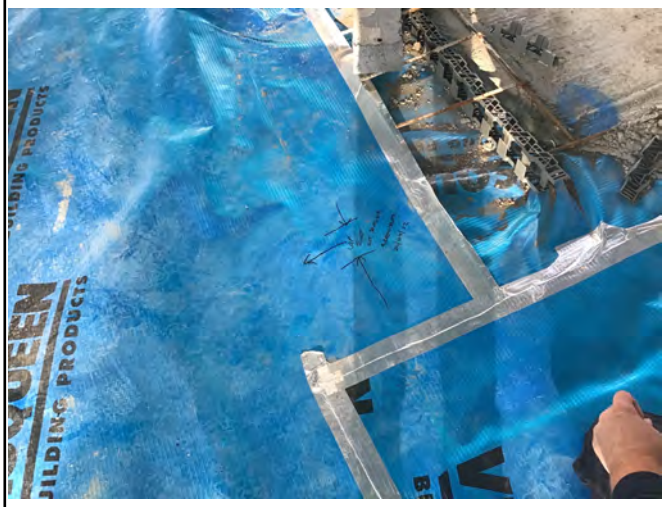
GEOSHIELD Verification Report

ADDITIONAL PHOTOGRAPHS



Seam missing butyl tape

Completed during visit



Seam with previously poured concrete

Remediation plan drawn up

Pipe penetrations unsealed under

Steel reinforcing bar

Perimeter detail missing

Butyl tape

GEOSHIELD Verification Report

GAS MEMBRANE TESTING

VISUAL:	YES	✔	NO		SMOKE TEST:	YES		NO	✔
COMPRESSED AIR:	YES		NO	✔	DILECTIC	YES	✔	NO	
DESTRUCTIVE:	YES		NO	✔	OTHER:	YES		NO	✔
Testing checklist attached:				YES		NO	✔		

Gridline/Plot Sign off

Gridline/Plot Sign off	Retaining Wall Kicker (highlighted area)	✔
Gridline/Plot Sign off	Retaining Wall Kicker (highlighted area)	✔
Gridline/Plot Sign off	Lift Pit Kicker	✔
Gridline/Plot Sign off	Underside of Stairwell Number Four	✔
Gridline/Plot Sign off	Lift Pit - external Wall to Ground Level	✔
Gridline/Plot Sign off	Lift Pit - internal base installation	✔
Gridline/Plot Sign off	Retaining Wall (Phase 1 - height 2.0 m only) B to H/1	✔
Gridline/Plot Sign off	Substation	✔
Gridline/Plot Sign off	Retaining Wall (Phase 1 - height 2.0m only) A to B/1	✔
Gridline/Plot Sign off	Retaining Wall (phase 2 Grid A 1 to G2	✔
Gridline/Plot Sign off	Liquid Gas Membrane to Perimeter stanchion bases	✔
Gridline/Plot Sign off	Stairwell number four	✔

GEOSHIELD Verification Report

GAS MEMBRANE TESTING

VISUAL:	YES	✔	NO		SMOKE TEST:	YES		NO	✔
COMPRESSED AIR:	YES		NO	✔	DILECTIC	YES	✔	NO	
DESTRUCTIVE:	YES		NO	✔	OTHER:	YES		NO	✔

Testing checklist attached: YES | | NO | ✔

Gridline/Plot Sign off

Gridline/Plot Sign off		
Gridline/Plot Sign off		
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Gridline/Plot Sign off		

GEOSHIELD Verification Report

VERIFICATION SUMMARY

This was the ninth visit to Greenhead college site accompanied by Gerry Gardiner

This visit was booked to verify the Visqueen Gas Barrier Membrane over the

Whole site. The membrane seams were sealed with Visqueen double sided butyl

Tape, and penetrations sealed with visqueen Gas resistant Self adhesive

Membrane. The penetrations had not been completed therefore another visit has

Had to be booked for 22/09/2022. Where exposed the butyl tape has formed varied

Successful bond requiring remediations, these will be inspected on the next visit

To site. A remediation plan has been agreed with Gerry.

Verification has been carried out in accordance with CIRIA C735

GEOSHIELD SIGNATURE:

DATE: 20/09/2022

GEOSHIELD Verification Report

PROJECT REFERENCE:	GEO102848		
REPORT NUMBER:	010	REPORT DATE:	22/09/2022
PROJECT:	Galiford Try Building		
PROJECT ADDRESS:	Greenhead College		

Huddersfield

HD1 4ES

MEMBRANE SPECIFICATION: Gas membrane to specification BS8485 2015

Verified in accordance with CIRIA 735.

Visqueen Standard Gas Barrier Visqueen Liquid Gas Barrier

Visqueen HP Primer

Visqueen Gas Resistant Self Adhesive Membrane

Visqueen Ultimate Geoseal

Visqueen Double Sided Butyl Tape

Visuqeen GR DPC

GEOSHIELD Verification Report

MEMBRANE SPECIFICATION:

DESIGN DETAILS:

NE8659-CDL-ZZ-XX-RP-GE-60200 Phase 2 Assessment Rev A (1)

NE8659-CDL-ZZ-XX-RP-GE-60200 Phase 2 Assessment Rev A (1)

NE8659-CDL-ZZ-XX-RP-GE-60200 Phase 2 Assessment Rev A (1)

NE8659-CDL-ZZ-XX-RP-GE-60200 Phase 2 Assessment Rev A (1)

NE8659-CCS-XX-XX-DR-S-30023 - RETAINING WALL

_External Envelope Section Detail - Typical Brickwork Base at Ground Bearing Slab

Edge Column Location_A5 Construction_C1_0

GB-26_concrete_slab_edge_gas_waterproofing

GB-51 service pipe top hat

GB-52_steel_column_sealing

NE8659-CCS-XX-ZZ-DR-S-86001

NE8659-RYD-01-00-DR-A-4005-S3-P1-External Envelope Plan Detail -

NE8659-RYD-01-00-DR-A-4012-S3-P1-External Envelope Plan Detail -

NE8659-RYD-01-00-DR-A-4104_External Envelope Section Detail - Typical

GEOSHIELD Verification Report

MEMBRANE SPECIFICATION:

DESIGN DETAILS:

NE8659-RYD-01-00-DR-A-4107-A-C2-External Envelope Section Detail - Lift Pit and Shaft Base Gr 1

NE8659-RYD-01-00-DR-A-4108_External Envelope Section Detail - Typical Pipe Pipe Penetration Through Ground Bearing Slab_A5 Construction_C1_0

NE8659-RYD-01-00-DR-A-4110-A-C1-External Envelope Section Detail - Typical Retaining Wall Base

NE8659-RYD-01-00-DR-A-4111-A-C1-External Envelope Section Detail - Typical Retaining Wall Head

NE8659-RYD-01-00-DR-A-4117 - Siphonic Details Main Build

GEOSHIELD Verification Report

VERIFICATION OFFICER: Sam Bolton

VERIFICATION COMPANY: GeoShield Limited

Icon Business Centre

4100 Park Approach

Thorpe Park

Leeds

CONTACT NUMBER: 07555 214679

EMAIL ADDRESS: Sbolton@geoshield.co.uk

ORDER NUMBER:

PER VISIT: YES: ☐ NO: ☐ PROJECT: YES: ☐ NO: ☐

GEOSHIELD Verification Report

CLIENT DETAILS

CLIENT CONTACT:	Jack Broomhead
CONTACTS ROLE:	Senior Project Manager
MOBILE PHONE:	07719 954 286
EMAIL ADDRESS:	Jack.broomhead@gallifordtry.co.uk

CLIENT CONTACT:	Will McKaig
CONTACTS ROLE:	Site Manager
MOBILE PHONE:	07536 167603
EMAIL ADDRESS	will.mckaig2@gallifordtry.co.uk
NOTES:	
NOTES:	
NOTES:	

GEOSHIELD Verification Report

APPLICATION TEAM LEADERS

APPLICATOR NAME:	Michael Carty
COMPANY:	Shanco Contracting
APPLICATOR TEL:	0800 024 8714
APPLICATOR EMAIL:	

APPLICATOR NAME:	Chad Tinkler
COMPANY:	Shanco Contracting
APPLICATOR TEL:	0800 024 8714
APPLICATOR EMAIL:	

NOTES:	Both Michael and Chad have had some experience with Gas Membrane
NOTES:	installation but don’t hold an NVQ L 2 in Gas Membrane Installation.
NOTES:	Gerry Gardiner - Site Manager Shanco - manages the team of installers.
NOTES:	

GEOSHIELD Verification Report

AREA SURVEYED:	Whole site

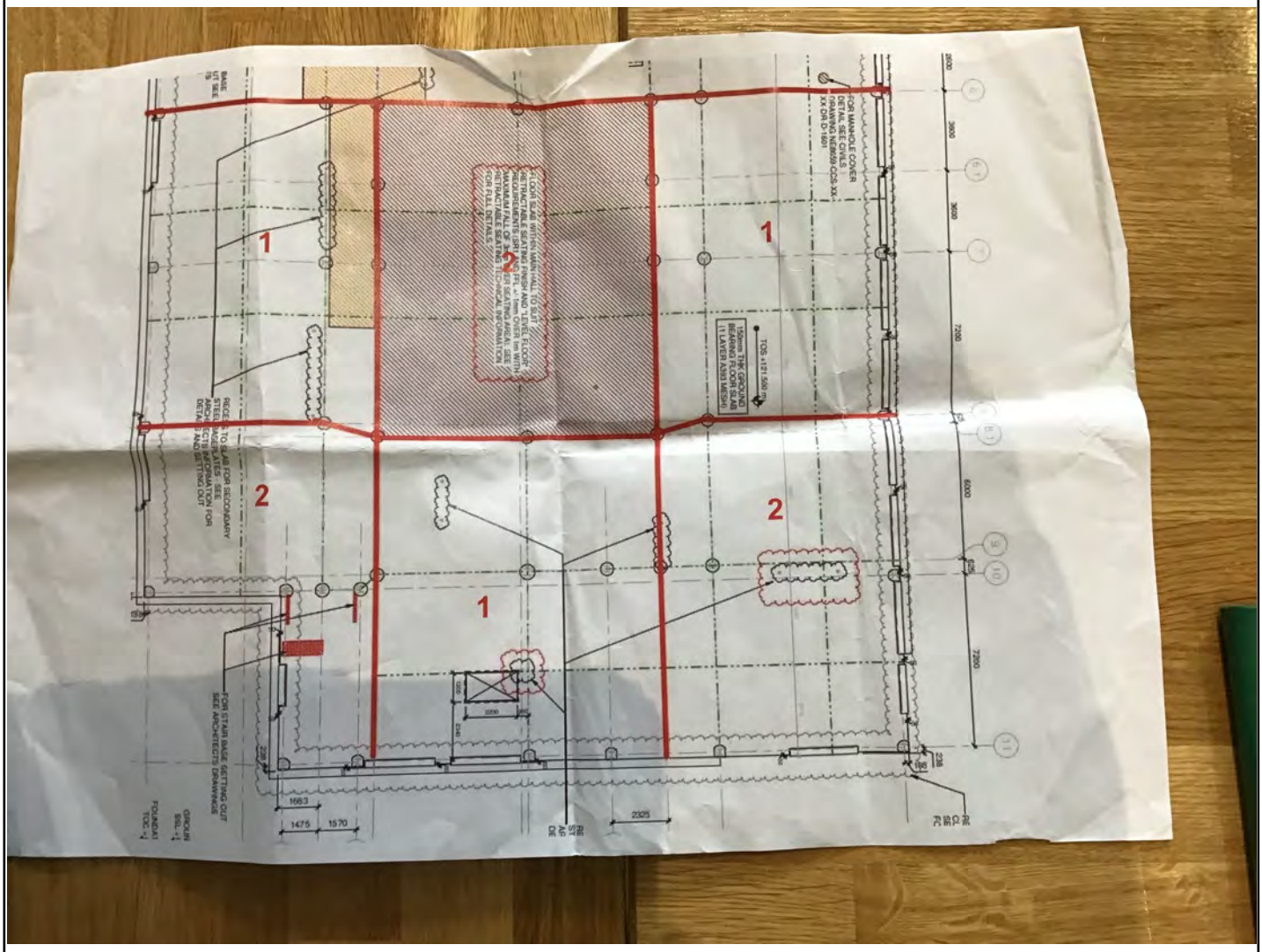
SITE CONDITIONS:

# WEATHER:	Overcast
# TEMPERATURE:	10
# MEMBRANE TEMPERATURE:	N/A
# RELATIVE HUMIDITY:	N/A

TIME:	1300 -1430	REPORT NUMBER:	010
DATE:	22/09/2022		
ACCOMPANIED	Gerry Gardiner		

GEOSHIELD Verification Report

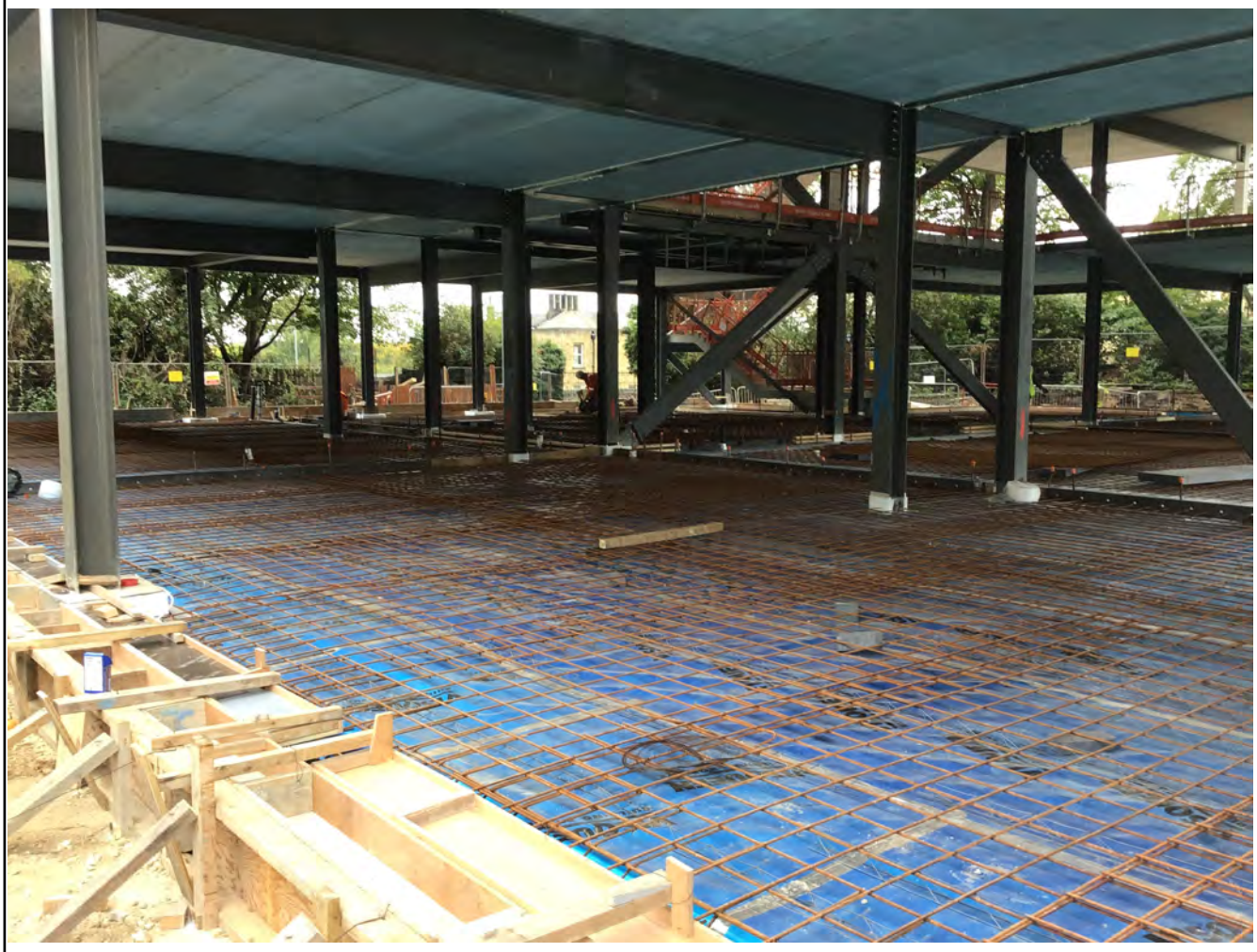
VERIFICATION LAYOUT



The above image shows the pour plan for the slab to be completed

GEOSHIELD Verification Report

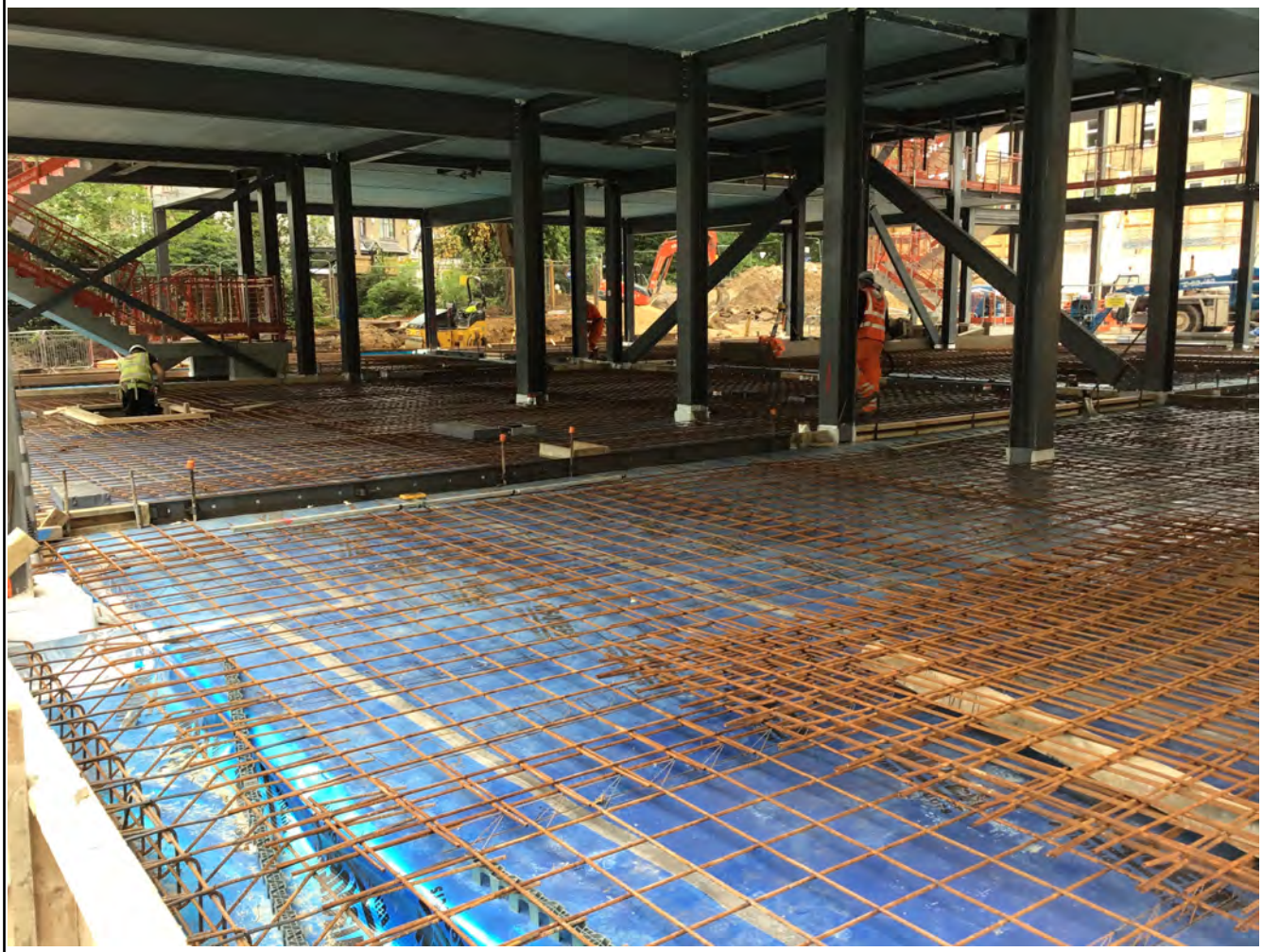
OVERVIEW PHOTOGRAPHS



Overview image of site with steel reinforcement in place

GEOSHIELD Verification Report

OVERVIEW PHOTOGRAPHS



Secondary overview image of site

GEOSHIELD Verification Report

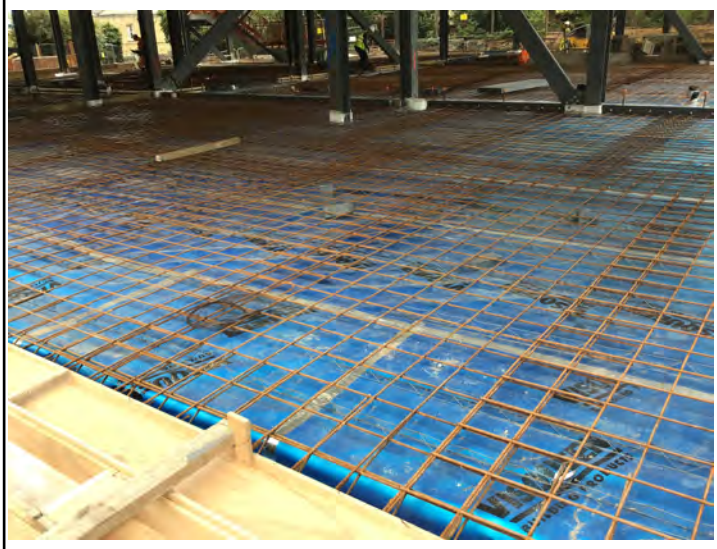
LIMITATIONS

SURVEY AREA: Whole inspection area

RESTRICTIONS AND LIMITATIONS: Steel reinforcing bar has been laid

Across the whole site in line with the inspection plan, however this limits the scope

Of testing in seams and penetrations.



The image on the right shows a pipe penetration shuttered and filled,

This limits the ability to check all the GRSAM has adhered correctly

There was only a small percentage of the pipes that had been covered in this

Way, allowing the inspection to go ahead.

GEOSHIELD Verification Report

VERIFICATION ITEM ONE

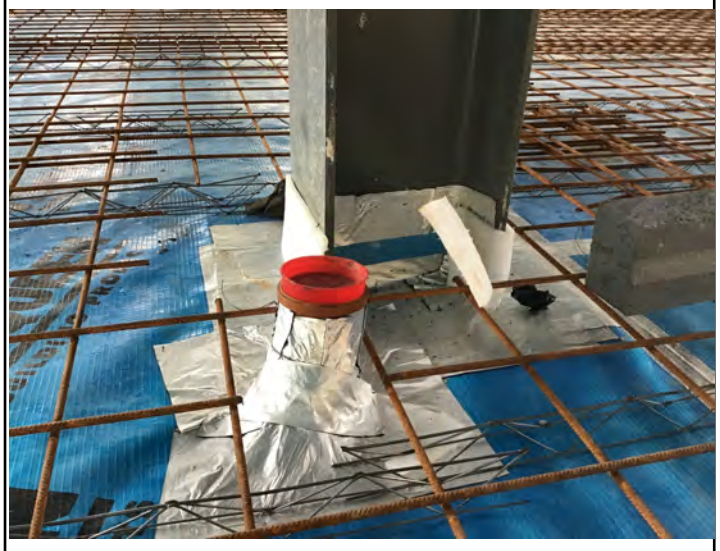
LOCATION/GRID LINE: Whole verification area

NOTES: Stanchion penetrations

In the previous visit the stanchions had not been sealed, this required remediation prior

To the concrete being poured. The stanchions have been sealed using visqueen Gas

Resistant self adhesive membrane (GRSAM)



The images above show the stanchion seal being subject to a mechanical point stress

Test (MPST) and a stanchion in close proximity to a pipe penetration

GEOSHIELD Verification Report

VERIFICATION ITEM ONE

The stanchions had been prepared for concrete pour using foam blocks and sheeting

The stanchion highlighted by the red circle has had the GRSAM exposed to check

Its presence to comply with BS8485:2019

Verification carried out in accordance with CIRIA C735

GEOSHIELD Verification Report

VERIFICATION ITEM TWO

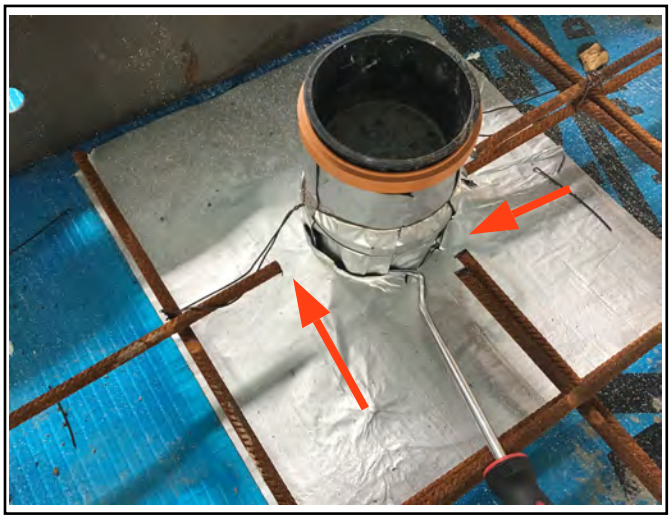
LOCATION/GRID LINE: Whole verification area

NOTES: Pipe penetrations

In the previous visit the pipes had not been sealed, this required remediation prior

To the concrete being poured. The pipes have been sealed using visqueen GRSAM

In accordance with BS8485:2019



The above images show pipe penetrations being subjected to a MPST,

The double pipe penetration is a good example of treating two close pipes seperateley

The red arrows display a good clearance left by steel fixers to prevent rubbing on

The GRSAM

GEOSHIELD Verification Report

VERIFICATION ITEM TWO

The above image shows the locations of multiple pipe penetrations (red circles)

All pipe penetrations were sealed correctly

Verification in accordance with CIRA C735

GEOSHIELD Verification Report

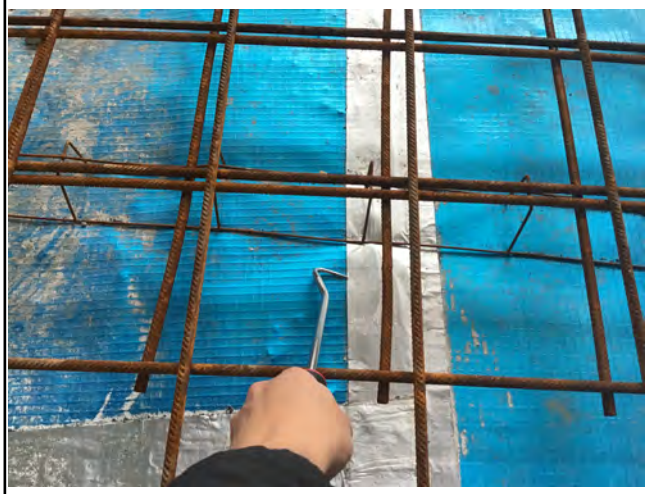
VERIFICATION ITEM THREE

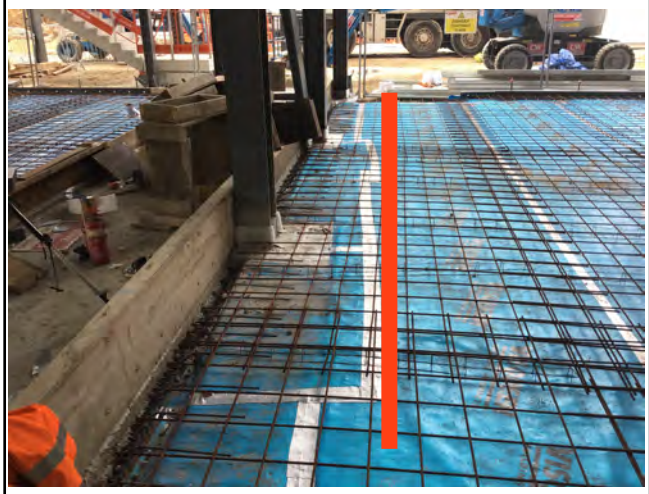
LOCATION/GRID LINE: Previously poured concrete

NOTES: In the previous report it was noted that there was an

Insufficient bond formed round the two previously poured concrete areas

It was agreed that GRSAM woul be used in these areas to complete the bond





The above right image show a MPST being carried out on the GRSAM

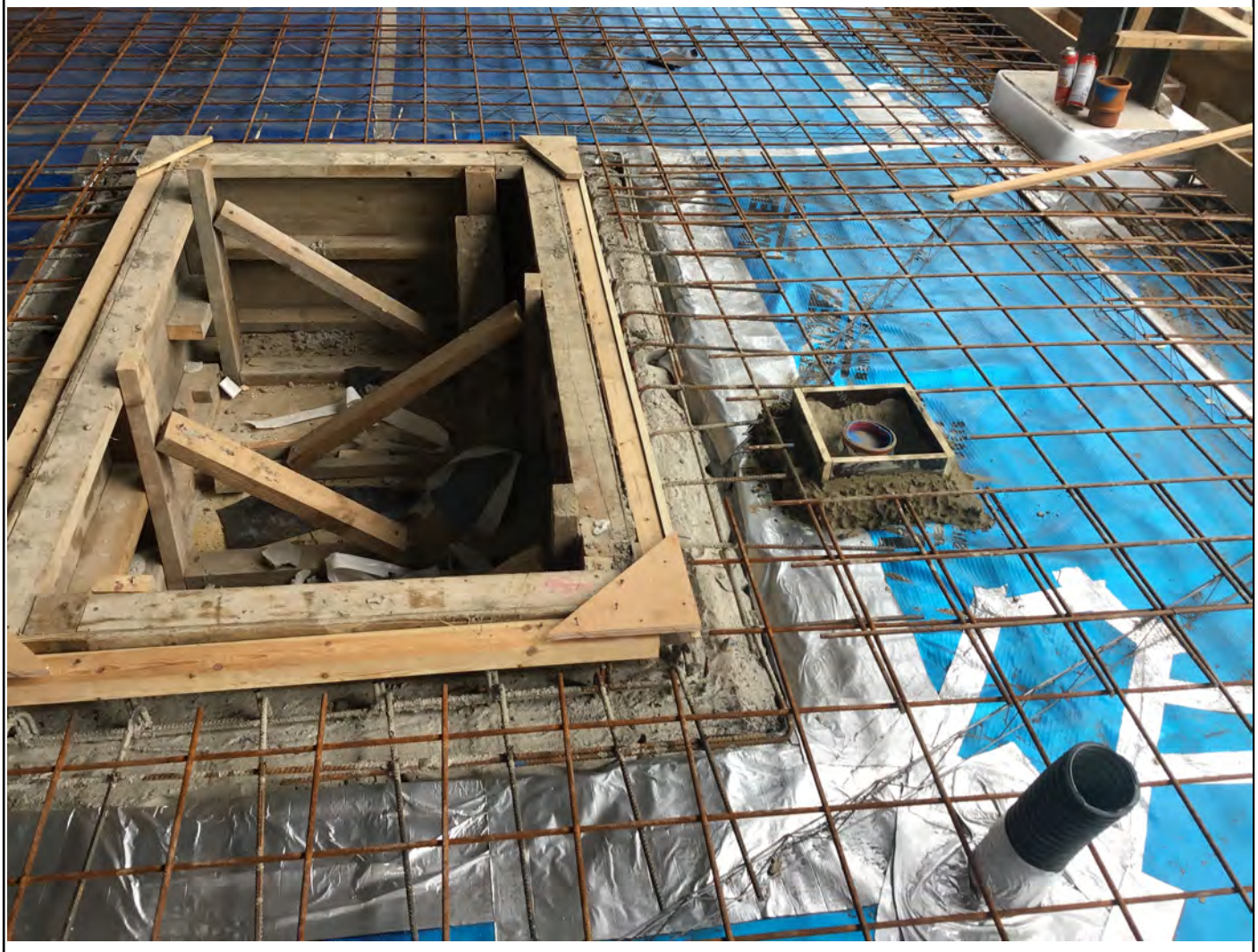
Bonded seam

The above left image shows the length of one side of the concrete slab that

Required remediation with GRSAM present (red line)

GEOSHIELD Verification Report

VERIFICATION ITEM THREE



The second concrete area requiring GRSAM

The above image shows a significant lap of GRSAM applied to the remediation

Area as agreed on the previous inspection

Verification in accordance with CIRIA C735

GEOSHIELD Verification Report

REMEDIATION LOG

Date	Nr	Remediation Description	Y/N
20/07/2022	001	Some small pinholes found, remediated on site	✔
27/07/2022	002	Some small areas of damage to previous Liquid Gas Membrane	
		installation to Retaining Wall Kicker - remediated during visit.	✔
02/08/2022	003	One potential capillary leak via lap joint crease remediated during	
		verification visit.	✔
11/08/2022	004	Ten areas of slight damage identified and requires remediation.	✔
		Various edges of the Visqueen Gas Resistant Self-Adhesive	✔
		Evidence of insulation being used to protect the Gas Resistant	
		Self Adhesive Membrane to the retaining wall.	✔
12/08/2022	005	This was a CQA report and after viewing the photos provided by	
		Galliford Try, no faults were identified.	✔
19/08/2022	006	Substation - one area of GRSAM split near concrete toe but	
		remediated during verification visit.	✔
24/08/2022	007	No areas requiring remediation	✔

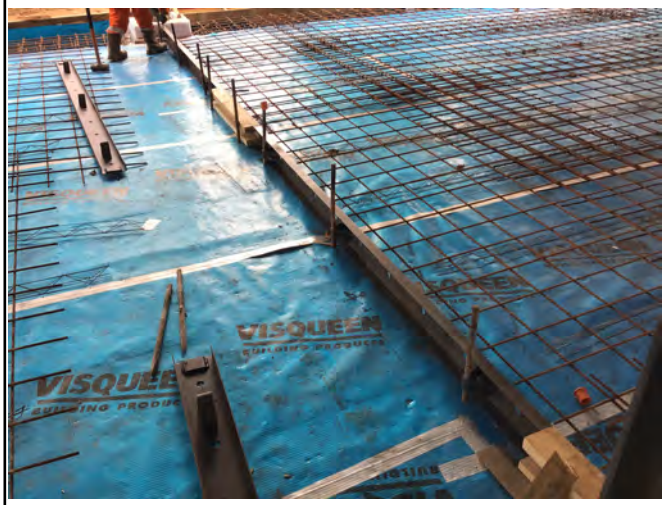
GEOSHIELD Verification Report

REMEDIATION LOG

Date	Nr	Remediation Description	Y/N
20/09/2022	009	Butyl tape- missing from seam x 2 remediated during visit	✔
		Unbounded butyl tape x4	✔
		Folded visqueen GB unbounded x1 Remediation complete	✔
		Pipes requiring GRSAM	✔
		Stanchions requiring GRSAM	✔
		Previously poured concrete seam (requires GRSAM) x2	✔

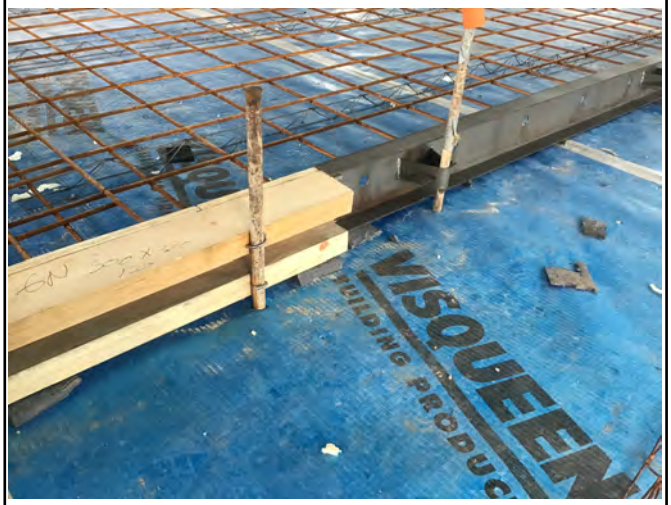
GEOSHIELD Verification Report

ADDITIONAL PHOTOGRAPHS



Shuttering pins will require

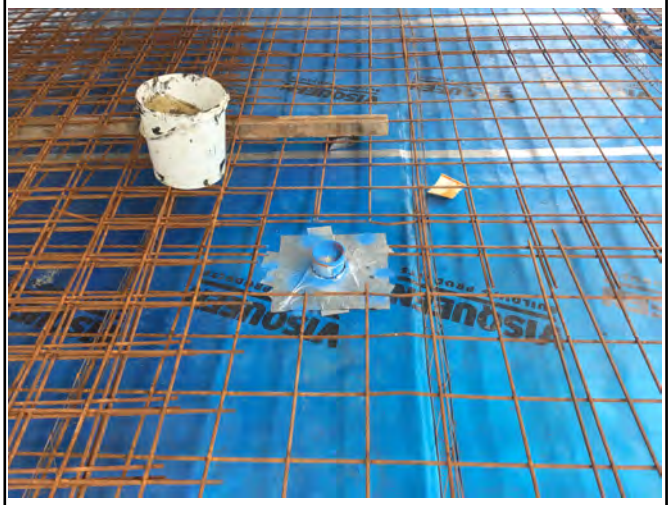
GRSAM patches



Closer view of shuttering pins

Pipes from previous report

Remediated



Pipe from previous report

Remediated

GEOSHIELD Verification Report

GAS MEMBRANE TESTING

VISUAL:	YES	✔	NO		SMOKE TEST:	YES		NO	✔
COMPRESSED AIR:	YES		NO	✔	DILECTIC	YES	✔	NO	
DESTRUCTIVE:	YES		NO	✔	OTHER:	YES		NO	✔
Testing checklist attached:				YES		NO	✔		

Gridline/Plot Sign off

Gridline/Plot Sign off	Retaining Wall Kicker (highlighted area)	✔
Gridline/Plot Sign off	Retaining Wall Kicker (highlighted area)	✔
Gridline/Plot Sign off	Lift Pit Kicker	✔
Gridline/Plot Sign off	Underside of Stairwell Number Four	✔
Gridline/Plot Sign off	Lift Pit - external Wall to Ground Level	✔
Gridline/Plot Sign off	Lift Pit - internal base installation	✔
Gridline/Plot Sign off	Retaining Wall (Phase 1 - height 2.0 m only) B to H/1	✔
Gridline/Plot Sign off	Substation	✔
Gridline/Plot Sign off	Retaining Wall (Phase 1 - height 2.0m only) A to B/1	✔
Gridline/Plot Sign off	Retaining Wall (phase 2 Grid A 1 to G2	✔
Gridline/Plot Sign off	Liquid Gas Membrane to Perimeter stanchion bases	✔
Gridline/Plot Sign off	Stairwell number four	✔

GEOSHIELD Verification Report

GAS MEMBRANE TESTING

VISUAL:	YES	✔	NO		SMOKE TEST:	YES		NO	✔
COMPRESSED AIR:	YES		NO	✔	DILECTIC	YES	✔	NO	
DESTRUCTIVE:	YES		NO	✔	OTHER:	YES		NO	✔
Testing checklist attached:						YES		NO	✔

Gridline/Plot Sign off

Gridline/Plot Sign off	1st phase concrete pour area	✔
Gridline/Plot Sign off		
Gridline/Plot Sign off		
Gridline/Plot Sign off		
Gridline/Plot Sign off		
Gridline/Plot Sign off		
Gridline/Plot Sign off		
Gridline/Plot Sign off		
Gridline/Plot Sign off		
Gridline/Plot Sign off		
Gridline/Plot Sign off		
Gridline/Plot Sign off		

GEOSHIELD Verification Report

VERIFICATION SUMMARY

This was the tenth visit to Greenhead college site, this visit was booked to

Verify the remediations highlighted in the previous report (09) and to inspect

The membrane as steel was being installed prior to concrete being poured

All the remediations from the previous report have been completed.

The steel has been layed with care taken over the integrity of the membrane

A visual inspection of the membrane found no punctures

Verification has been carried out in accordance with CIRIA C735

GEOSHIELD SIGNATURE:

DATE:	22/09/2022

GEOSHIELD Verification Report

PROJECT REFERENCE:	GEO102848		
REPORT NUMBER:	011	REPORT DATE:	27/10/2022
PROJECT:	Galiford Try Building		
PROJECT ADDRESS:	Greenhead College		

Huddersfield

HD1 4ES

MEMBRANE SPECIFICATION: Gas membrane to specification BS8485 2015

Verified in accordance with CIRIA 735.

Visqueen Standard Gas Barrier Visqueen Liquid Gas Barrier

Visqueen HP Primer

Visqueen Gas Resistant Self Adhesive Membrane

Visqueen Ultimate Geoseal

Visqueen Double Sided Butyl Tape

Visuqeen GR DPC

GEOSHIELD Verification Report

MEMBRANE SPECIFICATION:

DESIGN DETAILS:

NE8659-CDL-ZZ-XX-RP-GE-60200 Phase 2 Assessment Rev A (1)

NE8659-CDL-ZZ-XX-RP-GE-60200 Phase 2 Assessment Rev A (1)

NE8659-CDL-ZZ-XX-RP-GE-60200 Phase 2 Assessment Rev A (1)

NE8659-CDL-ZZ-XX-RP-GE-60200 Phase 2 Assessment Rev A (1)

NE8659-CCS-XX-XX-DR-S-30023 - RETAINING WALL

_External Envelope Section Detail - Typical Brickwork Base at Ground Bearing Slab

Edge Column Location_A5 Construction_C1_0

GB-26_concrete_slab_edge_gas_waterproofing

GB-51 service pipe top hat

GB-52_steel_column_sealing

NE8659-CCS-XX-ZZ-DR-S-86001

NE8659-RYD-01-00-DR-A-4005-S3-P1-External Envelope Plan Detail -

NE8659-RYD-01-00-DR-A-4012-S3-P1-External Envelope Plan Detail -

NE8659-RYD-01-00-DR-A-4104_External Envelope Section Detail - Typical

GEOSHIELD Verification Report

MEMBRANE SPECIFICATION:

DESIGN DETAILS:

NE8659-RYD-01-00-DR-A-4107-A-C2-External Envelope Section Detail - Lift Pit and Shaft Base Gr 1

NE8659-RYD-01-00-DR-A-4108_External Envelope Section Detail - Typical Pipe Pipe Penetration Through Ground Bearing Slab_A5 Construction_C1_0

NE8659-RYD-01-00-DR-A-4110-A-C1-External Envelope Section Detail - Typical Retaining Wall Base

NE8659-RYD-01-00-DR-A-4111-A-C1-External Envelope Section Detail - Typical Retaining Wall Head

NE8659-RYD-01-00-DR-A-4117 - Siphonic Details Main Build

GEOSHIELD Verification Report

VERIFICATION OFFICER: Dan Stanton

VERIFICATION COMPANY: GeoShield Limited

Icon Business Centre

4100 Park Approach

Thorpe Park

Leeds

CONTACT NUMBER: 07831376195

EMAIL ADDRESS: Dstanton@geoshield.co.uk

ORDER NUMBER:

PER VISIT: YES: ☐ NO: ☐ PROJECT: YES: ☐ NO: ☐

GEOSHIELD Verification Report

CLIENT DETAILS

CLIENT CONTACT:	Jack Broomhead
CONTACTS ROLE:	Senior Project Manager
MOBILE PHONE:	07719 954 286
EMAIL ADDRESS:	Jack.broomhead@gallifordtry.co.uk

CLIENT CONTACT:	Will McKaig
CONTACTS ROLE:	Site Manager
MOBILE PHONE:	07536 167603
EMAIL ADDRESS	will.mckaig2@gallifordtry.co.uk
NOTES:	
NOTES:	
NOTES:	

GEOSHIELD Verification Report

APPLICATION TEAM LEADERS

APPLICATOR NAME:	Michael Carty
COMPANY:	Shanco Contracting
APPLICATOR TEL:	0800 024 8714
APPLICATOR EMAIL:	

APPLICATOR NAME:	Chad Tinkler
COMPANY:	Shanco Contracting
APPLICATOR TEL:	0800 024 8714
APPLICATOR EMAIL:	

NOTES:	Both Michael and Chad have had some experience with Gas Membrane
NOTES:	installation but don’t hold an NVQ L 2 in Gas Membrane Installation.
NOTES:	Gerry Gardiner - Site Manager Shanco - manages the team of installers.
NOTES:	

GEOSHIELD Verification Report

AREA SURVEYED: Internal retaining wall, external perimeter wall and two stair cases (as marked on the site plan bellow).

SITE CONDITIONS:

WEATHER: Overcast

TEMPERATURE: 13c

MEMBRANE TEMPERATURE: N/A

RELATIVE HUMIDITY: N/A

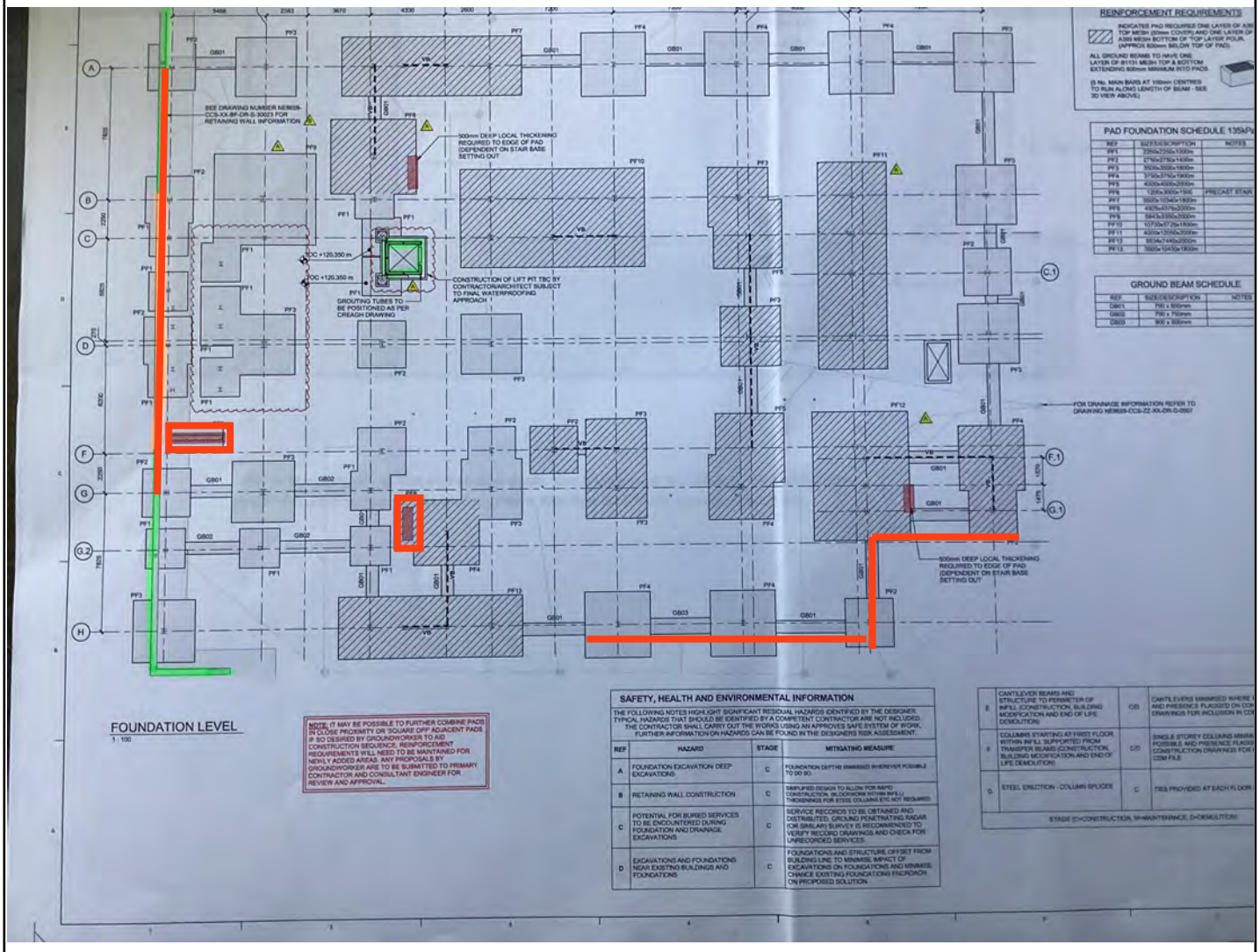
TIME: 8:30-10:15 REPORT NUMBER: 011

DATE: 27/10/2022

ACCOMPANIED Gerry Gardiner

GEOSHIELD Verification Report

VERIFICATION LAYOUT



The photograph above shows which sections were inspected upon this visit.

These have been highlighted I'm red. It shows the stairs inspected and also the

perimeter and internal walls.

GEOSHIELD Verification Report

OVERVIEW PHOTOGRAPHS

Overview photograph of the external perimeter wall where Visqueen GRSAM

has been applied.

GEOSHIELD Verification Report

OVERVIEW PHOTOGRAPHS

Another overview photograph showing the internal retaining wall which

was verified on this visit. The Visqueen HP tanking primer, Visqueen GRSAM and

the Visqueen gas barrier can be seen.

GEOSHIELD Verification Report

VERIFICATION ITEM ONE

LOCATION/GRID LINE: Can be found on the site plan.

NOTES: Installation of Visqueen gas barrier and GRSAM to the internal perimeter. The first photograph below shows where the installers have lapped the membrane by 150mm, achieving a strong seal. The membrane has been adhered to the load-bearing wall using the Visqueen GRSAM. The membrane has been sealed

using double sided butyl tape, as well as foil tape to achieve a secure seal. This can be seen on the second photograph above.

GEOSHIELD Verification Report

VERIFICATION ITEM ONE

The photograph above shows where a pick and probe test has been completed to the

Visqueen GRSAM. Some faults were found along the wall where the GRSAM was loose.

To rectify this the installers must apply more heat (using a hot air leister) to adhere the

GRSAM properly to the wall. This will be inspected and verified on the next visit.

GEOSHIELD Verification Report

VERIFICATION ITEM TWO

LOCATION/GRID LINE: Can be found on the site plan.

NOTES: Installation of GRSAM to perimeters and external walls.

The first photograph below shows an overview of where the Visqueen GRSAM has been applied to the perimeter, overlaying the Visqueen gas barrier to achieve a strong seal. The installers used a hot air leister and silicone roller to apply the GRSAM …

.. to adhere and seal the GRSAM properly. Also, the installers have applied Visqueen HP tanking primer before applying the GRSAM to ensure for a secure seal. The second photograph above shows where the installers have lapped the GRSAM by 150mm, this is highlighted by the red arrow.

Installed in accordance with BS 8485:2019.

GEOSHIELD Verification Report

VERIFICATION ITEM TWO

The photograph above shows a pick and probe test being completed to the perimeter details. The GRSAM has been installed with a strong and consistent seal, where few faults were found on the inspected areas.

Verified in accordance with CIRIA 735.

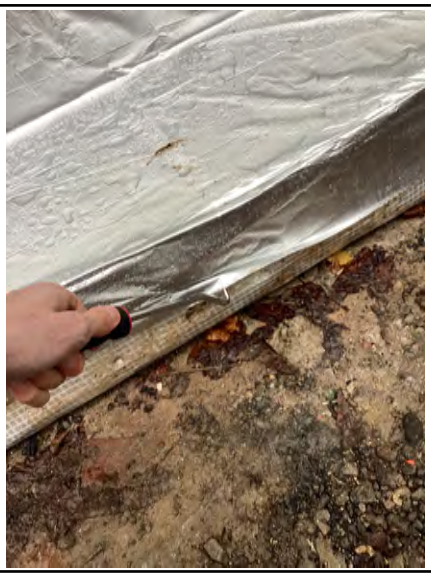
GEOSHIELD Verification Report

VERIFICATION ITEM THREE

LOCATION/GRID LINE: Can be found on the site plan.

NOTES: Faults and rectifications.

The first photograph bellow shows where a fault has been found on a perimeter detail of the installation. As illustrated by the pick, some of the GRSAM is loose and not correctly adhered. This needs to be rectified by applying more heat (using the hot …



… air leister) to achieve a seal. The second photograph above shows where the Visqueen GRSAM has been damaged. To rectify this fault another patch of the GRSAM must be applied to create a seal. The faults found on site were not rectified during the inspection, so they must be re-visited upon the next visit.

GEOSHIELD Verification Report

VERIFICATION ITEM THREE

The photograph above shows part of the Visqueen gas barrier that has been damaged. This was not an area which needed to be inspected and verified on this particular visit, but must be remediated before any further works to the membrane is completed (extending and lapping onto the next stage of installation).

GEOSHIELD Verification Report

ADDITIONAL PHOTOGRAPHS

Photograph showing a column that has been primed and ready for membrane.

An overview photograph of a staircase which was verified on the visit.

Photograph showing where primer has been applied.

Additional overview photograph of an inspected area.

GEOSHIELD Verification Report

ADDITIONAL PHOTOGRAPHS

Insulation installed over gas membrane from a previous visit.

Another photograph of a staircase verified on this visit.

Overview photograph of a primed area ready for GRSAM installation.

Additional overview photograph of an inspected area.

GEOSHIELD Verification Report

REMEDIATION LOG

Date	Nr	Remediation Description	Y/N
20/07/2022	001	Some small pinholes found, remediated on site	✔
27/07/2022	002	Some small areas of damage to previous Liquid Gas Membrane	
		installation to Retaining Wall Kicker - remediated during visit.	✔
02/08/2022	003	One potential capillary leak via lap joint crease remediated during	
		verification visit.	✔
11/08/2022	004	Ten areas of slight damage identified and requires remediation.	✔
		Various edges of the Visqueen Gas Resistant Self-Adhesive	✔
		Evidence of insulation being used to protect the Gas Resistant	
		Self Adhesive Membrane to the retaining wall.	✔
12/08/2022	005	This was a CQA report and after viewing the photos provided by	
		Galliford Try, no faults were identified.	✔
19/08/2022	006	Substation - one area of GRSAM split near concrete toe but	
		remediated during verification visit.	✔
24/08/2022	007	No areas requiring remediation	✔
09/09/2032	008	No faults identified during the verification visit.	✔

GEOSHIELD Verification Report

REMEDIATION LOG

Date	Nr	Remediation Description	Y/N
20/09/2022	009	Butyl tape- missing from seam x 2 remediated during visit	✔
		Unbounded butyl tape x4	✔
		Folded visqueen GB unbounded x1 Remediation complete	✔
		Pipes requiring GRSAM	✔
		Stanchions requiring GRSAM	✔
		Previously poured concrete seam (requires GRSAM) x2	✔
22/09/2022	010	All remediations identified in Report 009 have been completed.	✔
		Several holes through the Visqueen Gas Barrier caused by steel	✔
		pins supporting formwork will require remediation.	✔
27/10/2022	011	Parts of GRSAM on internal walls need to be correctly adhered.	
		Hole on the external perimeter needs to be patched.	
		Parts of GRSAM on external perimeter need to be correctly…	
		… adhered.	
		Hole on Visqueen gas barrier must be rectified.	

GEOSHIELD Verification Report

GAS MEMBRANE TESTING

VISUAL:	YES	✔	NO		SMOKE TEST:	YES		NO	✔
COMPRESSED AIR:	YES		NO	✔	DILECTIC	YES		NO	✔
DESTRUCTIVE:	YES		NO	✔	OTHER:	YES	✔	NO	
Testing checklist attached:				YES	✔	NO			

Gridline/Plot Sign off

Gridline/Plot Sign off	Retaining Wall Kicker (highlighted area)	✔
Gridline/Plot Sign off	Retaining Wall Kicker (highlighted area)	✔
Gridline/Plot Sign off	Lift Pit Kicker	✔
Gridline/Plot Sign off	Underside of Stairwell Number Four	✔
Gridline/Plot Sign off	Lift Pit - external Wall to Ground Level	✔
Gridline/Plot Sign off	Lift Pit - internal base installation	✔
Gridline/Plot Sign off	Retaining Wall (Phase 1 - height 2.0 m only) B to H/1	✔
Gridline/Plot Sign off	Substation	✔
Gridline/Plot Sign off	Retaining Wall (Phase 1 - height 2.0m only) A to B/1	✔
Gridline/Plot Sign off	Retaining Wall (phase 2 Grid A 1 to G2	✔
Gridline/Plot Sign off	Liquid Gas Membrane to Perimeter stanchion bases	✔
Gridline/Plot Sign off	Stairwell number four	✔

GEOSHIELD Verification Report

GAS MEMBRANE TESTING

VISUAL:	YES	✔	NO		SMOKE TEST:	YES		NO	✔
COMPRESSED AIR:	YES		NO	✔	DILECTIC	YES		NO	
DESTRUCTIVE:	YES		NO	✔	OTHER:	YES	✔	NO	

Testing checklist attached: YES ✔ NO

Gridline/Plot Sign off

Gridline/Plot Sign off	1st phase concrete pour area	✔
Gridline/Plot Sign off	Retaining wall and external perimeters (as marked on site …	
Gridline/Plot Sign off	… plan)	
Gridline/Plot Sign off	Two staircases (as marked on site plan).	✔
Gridline/Plot Sign off		
Gridline/Plot Sign off		
Gridline/Plot Sign off		
Gridline/Plot Sign off		
Gridline/Plot Sign off		
Gridline/Plot Sign off		
Gridline/Plot Sign off		
Gridline/Plot Sign off		

GEOSHIELD Verification Report

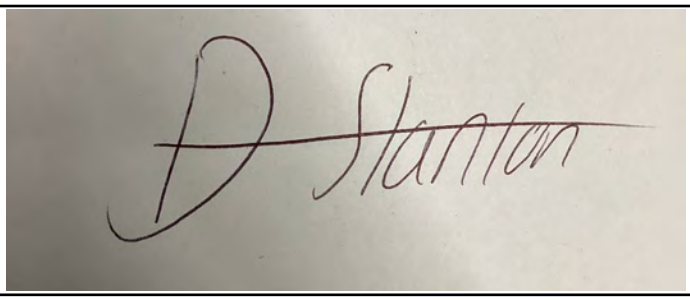
VERIFICATION SUMMARY

The purpose of this visit was to inspect and verify the installation made to the external and internal perimeters, along with two stair cases. The perimeters have been sealed using the Visqueen GRSAM which has been installed using a hot air leister and silicone roller. Visqueen HP tanking primer had been applied to the walls prior to the GRSAM being installed. The two stair cases have been sealed in the same fashion. The staircases have been signed off on this visit with no faults located, but the internal and external walls require remediation which will need to be inspected and verified on the next visit to site.

Installed in accordance with BS 8485:2019.

Verified in accordance with CIRIA 735.

GEOSHIELD SIGNATURE:



DATE:	27/10/2022

GEOSHIELD Verification Report

PROJECT REFERENCE:	GEO102848		
REPORT NUMBER:	012	REPORT DATE:	31/10/2022
PROJECT:	Galiford Try Building		
PROJECT ADDRESS:	Greenhead College		

Huddersfield

HD1 4ES

MEMBRANE SPECIFICATION: Gas membrane to specification BS8485 2015

Verified in accordance with CIRIA 735.

Visqueen Standard Gas Barrier Visqueen Liquid Gas Barrier

Visqueen HP Primer

Visqueen Gas Resistant Self Adhesive Membrane

Visqueen Ultimate Geoseal

Visqueen Double Sided Butyl Tape

Visuqeen GR DPC

GEOSHIELD Verification Report

MEMBRANE SPECIFICATION:

DESIGN DETAILS:

NE8659-CDL-ZZ-XX-RP-GE-60200 Phase 2 Assessment Rev A (1)

NE8659-CDL-ZZ-XX-RP-GE-60200 Phase 2 Assessment Rev A (1)

NE8659-CDL-ZZ-XX-RP-GE-60200 Phase 2 Assessment Rev A (1)

NE8659-CDL-ZZ-XX-RP-GE-60200 Phase 2 Assessment Rev A (1)

NE8659-CCS-XX-XX-DR-S-30023 - RETAINING WALL

_External Envelope Section Detail - Typical Brickwork Base at Ground Bearing Slab

Edge Column Location_A5 Construction_C1_0

GB-26_concrete_slab_edge_gas_waterproofing

GB-51 service pipe top hat

GB-52_steel_column_sealing

NE8659-CCS-XX-ZZ-DR-S-86001

NE8659-RYD-01-00-DR-A-4005-S3-P1-External Envelope Plan Detail -

NE8659-RYD-01-00-DR-A-4012-S3-P1-External Envelope Plan Detail -

NE8659-RYD-01-00-DR-A-4104_External Envelope Section Detail - Typical

GEOSHIELD Verification Report

MEMBRANE SPECIFICATION:

DESIGN DETAILS:

NE8659-RYD-01-00-DR-A-4107-A-C2-External Envelope Section Detail - Lift Pit and Shaft Base Gr 1

NE8659-RYD-01-00-DR-A-4108_External Envelope Section Detail - Typical Pipe Pipe Penetration Through Ground Bearing Slab_A5 Construction_C1_0

NE8659-RYD-01-00-DR-A-4110-A-C1-External Envelope Section Detail - Typical Retaining Wall Base

NE8659-RYD-01-00-DR-A-4111-A-C1-External Envelope Section Detail - Typical Retaining Wall Head

NE8659-RYD-01-00-DR-A-4117 - Siphonic Details Main Build

GEOSHIELD Verification Report

VERIFICATION OFFICER: Michael Dodd

VERIFICATION COMPANY: GeoShield Limited

Icon Business Centre

4100 Park Approach

Thorpe Park

Leeds

CONTACT NUMBER: 07555 214679

EMAIL ADDRESS: mdodd@geoshield.co.uk

ORDER NUMBER:

PER VISIT: YES: ☐ NO: ☐ PROJECT: YES: ☐ NO: ☐

GEOSHIELD Verification Report

CLIENT DETAILS

CLIENT CONTACT:	Jack Broomhead
CONTACTS ROLE:	Senior Project Manager
MOBILE PHONE:	07719 954 286
EMAIL ADDRESS:	Jack.broomhead@gallifordtry.co.uk

CLIENT CONTACT:	Will McKaig
CONTACTS ROLE:	Site Manager
MOBILE PHONE:	07536 167603
EMAIL ADDRESS	will.mckaig2@gallifordtry.co.uk
NOTES:	
NOTES:	
NOTES:	

GEOSHIELD Verification Report

APPLICATION TEAM LEADERS

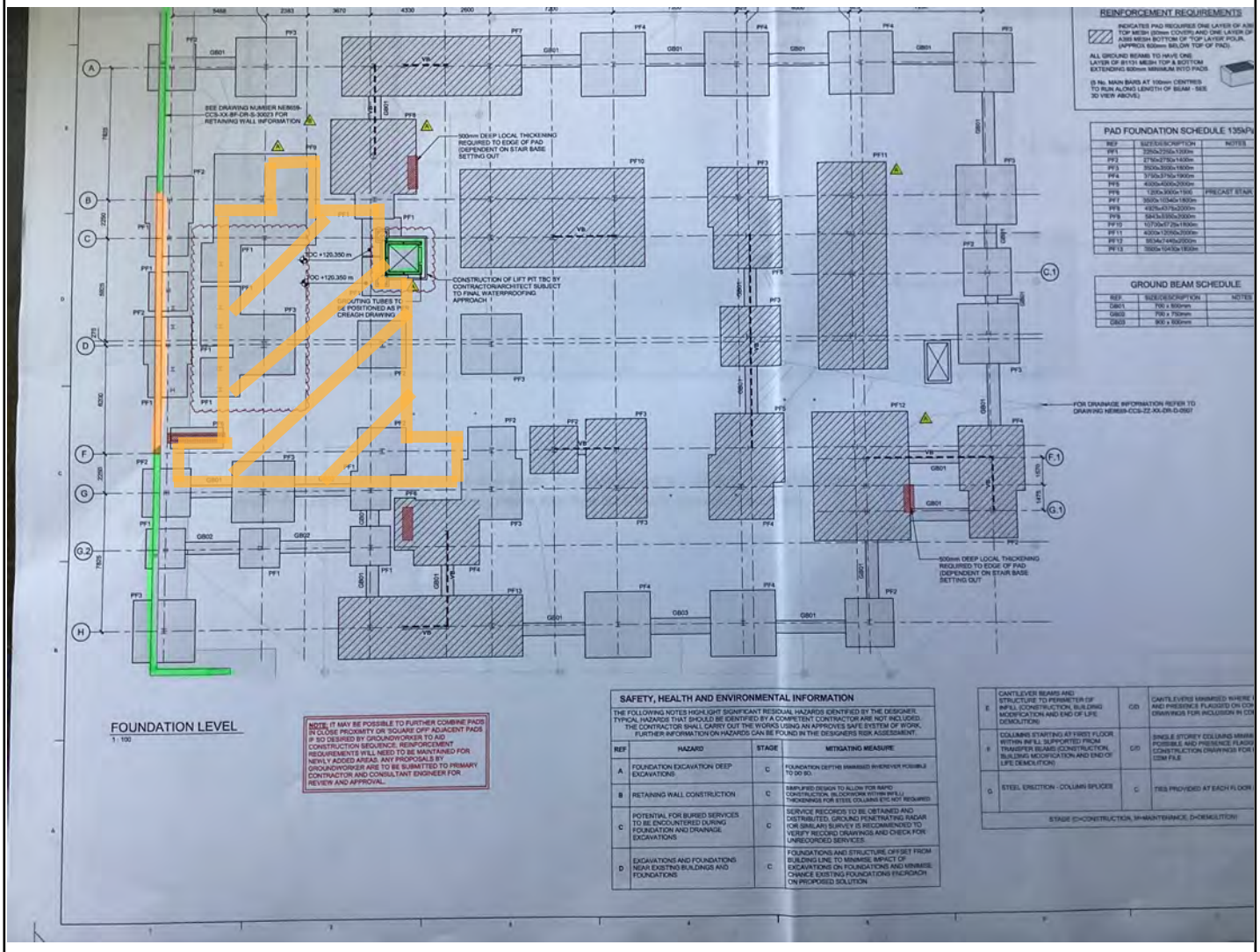
APPLICATOR NAME:	Michael Carty
COMPANY:	Shanco Contracting
APPLICATOR TEL:	0800 024 8714
APPLICATOR EMAIL:	

APPLICATOR NAME:	Chad Tinkler
COMPANY:	Shanco Contracting
APPLICATOR TEL:	0800 024 8714
APPLICATOR EMAIL:	

NOTES:	Both Michael and Chad have had some experience with Gas Membrane
NOTES:	installation but don’t hold an NVQ L 2 in Gas Membrane Installation.
NOTES:	Gerry Gardiner - Site Manager Shanco - manages the team of installers.
NOTES:	

GEOSHIELD Verification Report

VERIFICATION LAYOUT



Overview of the site layout

Verification Area outlined in yellow.

Main Slab - Lower Pour

GEOSHIELD Verification Report

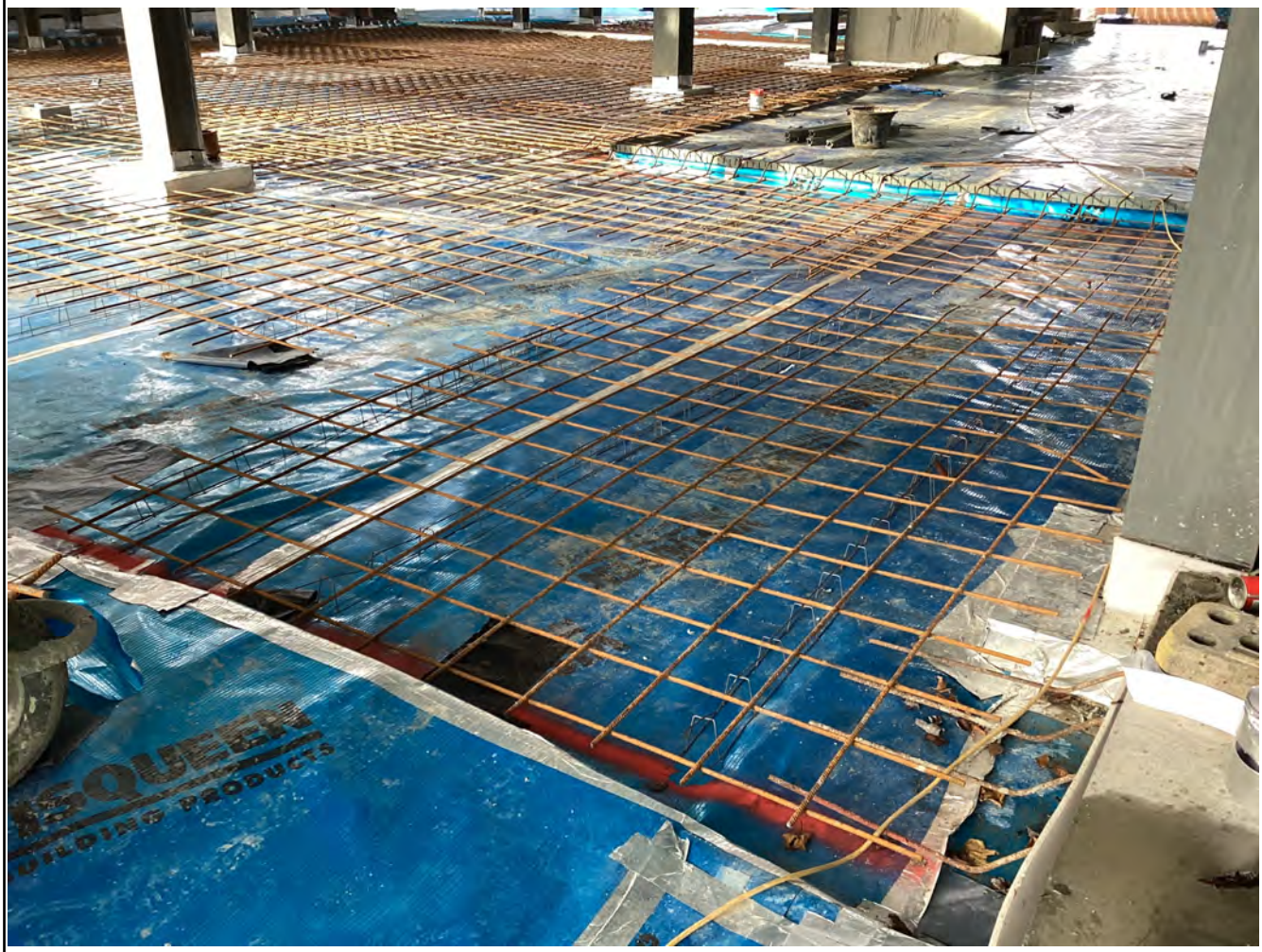
OVERVIEW PHOTOGRAPHS

Overview of the verification area.

Area - Lower Slab Pour

GEOSHIELD Verification Report

OVERVIEW PHOTOGRAPHS



Alternative overview of verification area.

Area - Lower Slab Pour

GEOSHIELD Verification Report

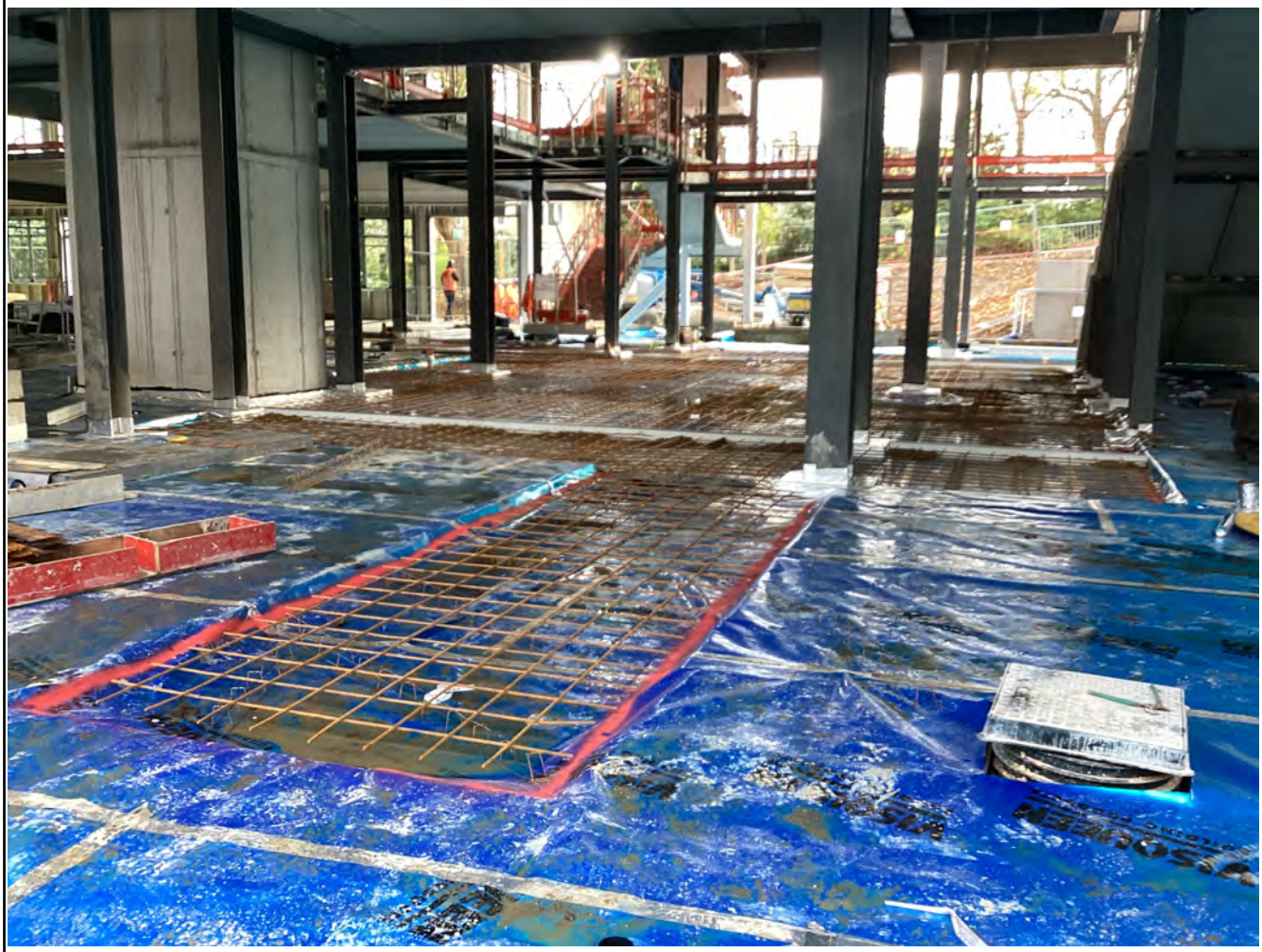
OVERVIEW PHOTOGRAPHS

Alternative overview of verification area.

Area - Lower Slab Pour

GEOSHIELD Verification Report

OVERVIEW PHOTOGRAPHS



Alternative overview of verification area.

Area - Lower Slab Pour

GEOSHIELD Verification Report

AREA SURVEYED: Area - Lower Slab Pour

SITE CONDITIONS:

WEATHER: Overcast

TEMPERATURE: 16.9C

MEMBRANE TEMPERATURE: N/A

RELATIVE HUMIDITY: N/A

TIME: 13:30 to 14:30 REPORT NUMBER: 012

DATE: 31/10/2022

ACCOMPANIED Gerry Gardiner

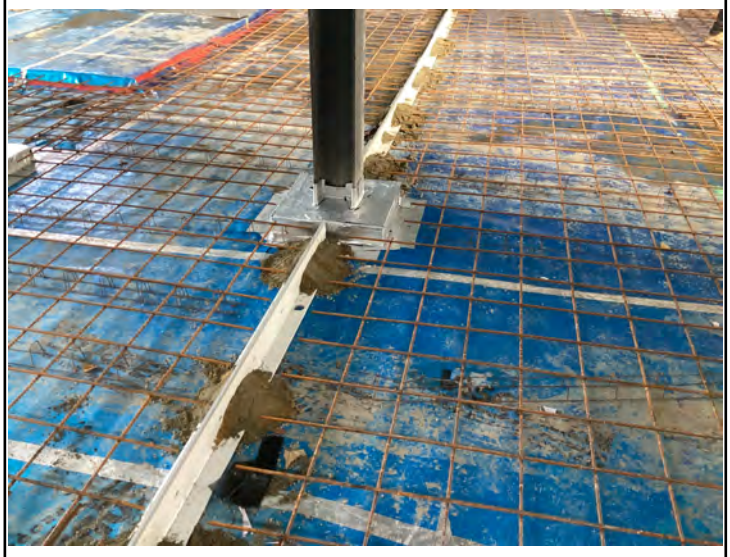
GEOSHIELD Verification Report

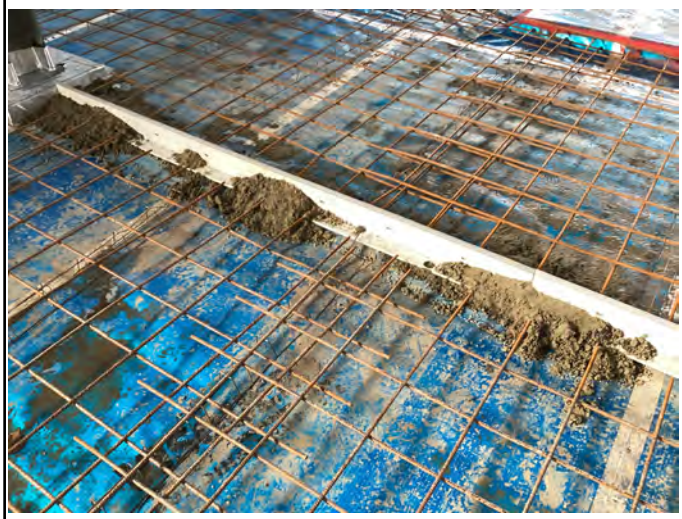
LIMITATIONS

SURVEY AREA: Main Floor Slab - Lower Pour

RESTRICTIONS AND LIMITATIONS: Screed Rails

The images show one of two screed rails which been secured on top of the Visqueen Gas Barrier with a weak concrete mix. This limited the verification of the Visqueen Gas Membrane as there were areas where both the concrete had been placed plus the actual screed rail.





The image shows the extent of one of the two screed rails.

The image on the right shows a close up of both the screed rail and the supporting weak concrete.

GEOSHIELD Verification Report

VERIFICATION ITEM ONE

LOCATION/GRID LINE: Main Slab - Lower Pour

NOTES: Visqueen Gas Barrier Installation- Lap Joints

The Visqueen Gas Barrier has been installed upon a layer of insulation (substrate) which provides an ideal bearing from any potential damage from underneath. The Visqueen Gas Barrier lap joints have been sealed using a combination of both Visqueen Double Sided Butyl Tape and Visqueen Foil Lap Tape. The images show one of four sampled lap joints checking visually and confirmed by undertaking Mechanical Point Stress Test.

GEOSHIELD Verification Report

VERIFICATION ITEM ONE

The overview image is showing where two of the four sampled Visqueen Gas Barrier lap joints. The four sampled lap joints proved to have been correctly sealed using a strip of Visqueen Double Sided Butyl Tape. The Mechanical Point Stress Test confirmed a securely bonded seal in all four sampled lap joints.

GEOSHIELD Verification Report

VERIFICATION ITEM TWO

LOCATION/GRID LINE: Main Slab - Lower Pour

NOTES: Stanchion Detailing

The various stanchions have all been sealed using strips of Visqueen Gas Resistant Self Adhesive Membrane. The image on the left shows the Mechanical Point Stress Test being undertaken along the edges of the Visqueen GRSAM and throughout the

test, the Visqueen GRSAM had been fully sealed to the stanchion.

The image on the right shows the Mechanical Point Stress Test being undertaken along the edges of the Visqueen GRSAM so as to ensure there was a complete seal with the Visqueen Gas Barrier. There were no issues identified throughout the verification and noted that the application of heat helped improve adhesion.

GEOSHIELD Verification Report

VERIFICATION ITEM TWO

The overview image shows some of the stanchions which were subjected to

the Mechanical Point Stress Test.

In addition, both visual and physical checks were completed too where all

Stanchions had been fully sealed and no issues were identified.

GEOSHIELD Verification Report

VERIFICATION ITEM THREE

LOCATION/GRID LINE: Gridline: D

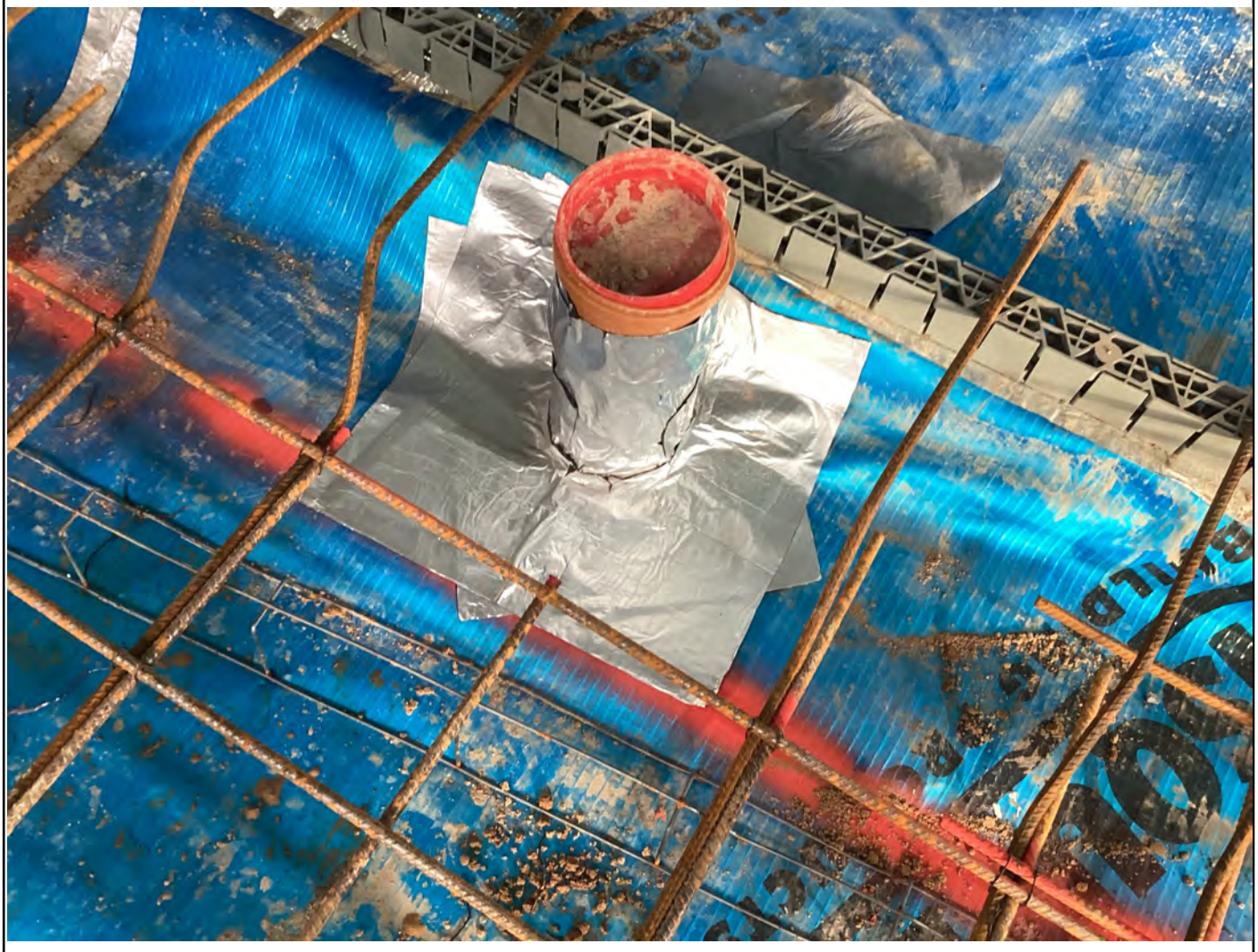
NOTES: Pipe Penetration

The pipe penetration had been fully sealed using strips of Visqueen Gas Resistant Self Adhesive Membrane. The installation was aided by the introduction of heat which had been applied whilst installing the various strips of Visqueen GRSAM.

The images show the Mechanical Point Stress Test being undertaken along the edges of the Visqueen GRSAM . A full seal was achieved with both the pipe penetration but also the Visqueen Gas Barrier too.

GEOSHIELD Verification Report

VERIFICATION ITEM THREE



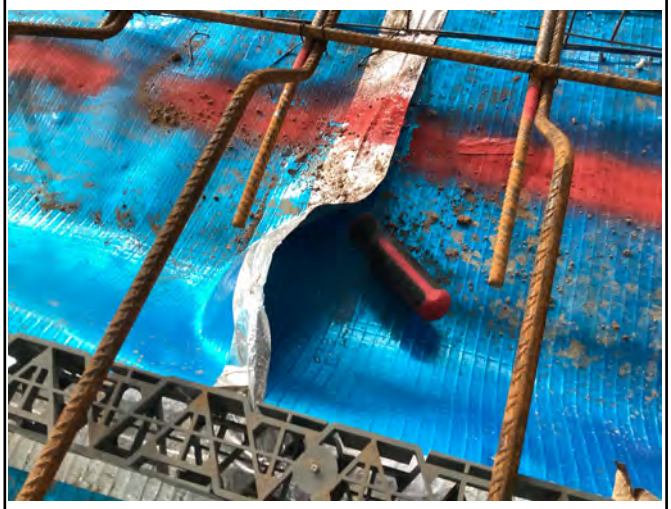
The image shows the pipe penetration which was subjected to verification.

The Mechanical Point Stress Test confirmed there were no issues although

a couple of small creases required attention as not fully bonded to the pipe.

GEOSHIELD Verification Report

ADDITIONAL PHOTOGRAPHS



View of third sampled Lap Joint

as per verification this report

Visual of Double Sided Butyl Tape

seen during third lap joint sample

View of steel reinforcement which

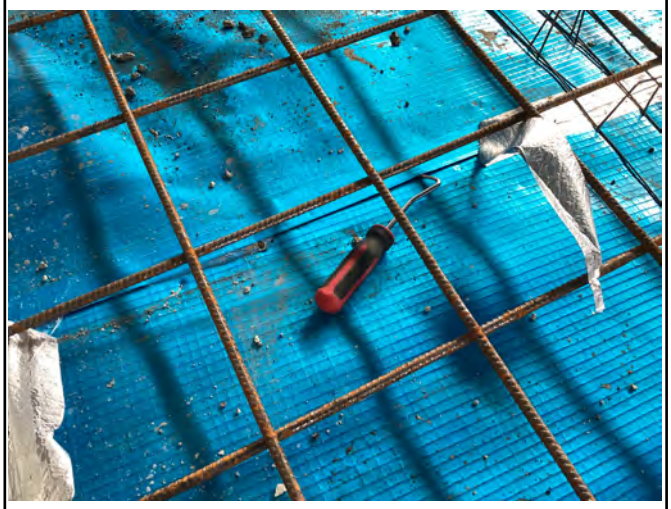
has been placed clear of GRSAM

Mechanical Point Stress Test to

GRSAM detail to lift pit detail

GEOSHIELD Verification Report

ADDITIONAL PHOTOGRAPHS



View of fourth sampled Lap Joint

as per verification this report

View of steel reinforcement which has

been placed clear of Gas Barrier

View of steel high chair where the end

is a potential puncture concern

View of steel high chair where the ends

have been bent away from Gas Barrier

GEOSHIELD Verification Report

REMEDIATION LOG

Date	Nr	Remediation Description	Y/N
20/07/2022	001	Some small pinholes found, remediated on site	✔
27/07/2022	002	Some small areas of damage to previous Liquid Gas Membrane	
		installation to Retaining Wall Kicker - remediated during visit.	✔
02/08/2022	003	One potential capillary leak via lap joint crease remediated during	
		verification visit.	✔
11/08/2022	004	Ten areas of slight damage identified and requires remediation.	✔
		Various edges of the Visqueen Gas Resistant Self-Adhesive	✔
		Evidence of insulation being used to protect the Gas Resistant	
		Self Adhesive Membrane to the retaining wall.	✔
12/08/2022	005	This was a CQA report and after viewing the photos provided by	
		Galliford Try, no faults were identified.	✔
19/08/2022	006	Substation - one area of GRSAM split near concrete toe but	
		remediated during verification visit.	✔
24/08/2022	007	No areas requiring remediation	✔
09/09/2032	008	No faults identified during the verification visit.	✔

GEOSHIELD Verification Report

REMEDIATION LOG

Date	Nr	Remediation Description	Y/N
20/09/2022	009	Butyl tape- missing from seam x 2 remediated during visit	✔
		Unbounded butyl tape x4	✔
		Folded visqueen GB unbounded x1 Remediation complete	✔
		Pipes requiring GRSAM	✔
		Stanchions requiring GRSAM	✔
		Previously poured concrete seam (requires GRSAM) x2	✔
22/09/2022	010	All remediations identified in Report 009 have been completed.	✔
		Several holes through the Visqueen Gas Barrier caused by steel	✔
		pins supporting formwork will require remediation.	✔
27/10/2022	011	Parts of GRSAM on internal walls need to be correctly adhered.	
		Hole on the external perimeter needs to be patched.	✔
		Parts of GRSAM on external perimeter need to be correctly…	
		… adhered.	✔
		Hole on Visqueen gas barrier must be rectified.	✔

GEOSHIELD Verification Report

REMEDIATION LOG

Date	Nr	Remediation Description	Y/N
31/10/2022	012	The end of a steel high chair a potential puncture risk. This was	
		remediated during the verification visit.	✔

GEOSHIELD Verification Report

GAS MEMBRANE TESTING

VISUAL:	YES	✔	NO		SMOKE TEST:	YES		NO	✔
COMPRESSED AIR:	YES		NO	✔	DILECTIC	YES		NO	✔
DESTRUCTIVE:	YES		NO	✔	OTHER:	YES	✔	NO	
Testing checklist attached:				YES	✔	NO			

Gridline/Plot Sign off

Gridline/Plot Sign off	Retaining Wall Kicker (highlighted area)	✔
Gridline/Plot Sign off	Retaining Wall Kicker (highlighted area)	✔
Gridline/Plot Sign off	Lift Pit Kicker	✔
Gridline/Plot Sign off	Underside of Stairwell Number Four	✔
Gridline/Plot Sign off	Lift Pit - external Wall to Ground Level	✔
Gridline/Plot Sign off	Lift Pit - internal base installation	✔
Gridline/Plot Sign off	Retaining Wall (Phase 1 - height 2.0 m only) B to H/1	✔
Gridline/Plot Sign off	Substation	✔
Gridline/Plot Sign off	Retaining Wall (Phase 1 - height 2.0m only) A to B/1	✔
Gridline/Plot Sign off	Retaining Wall (phase 2 Grid A 1 to G2	✔
Gridline/Plot Sign off	Liquid Gas Membrane to Perimeter stanchion bases	✔
Gridline/Plot Sign off	Stairwell number four	✔

GEOSHIELD Verification Report

GAS MEMBRANE TESTING

VISUAL:	YES	✔	NO		SMOKE TEST:	YES		NO	✔
COMPRESSED AIR:	YES		NO	✔	DILECTIC	YES		NO	
DESTRUCTIVE:	YES		NO	✔	OTHER:	YES	✔	NO	

Testing checklist attached: YES ✔ NO

Gridline/Plot Sign off

Gridline/Plot Sign off	1st phase concrete pour area	✔
Gridline/Plot Sign off	Retaining wall and external perimeters (as marked on site …	
Gridline/Plot Sign off	… plan)	✔
Gridline/Plot Sign off	Two staircases (as marked on site plan) - Stairwells 1 & 2	✔
Gridline/Plot Sign off	Main Slab - Lower Pour (outlined in yellow - this report)	✔
Gridline/Plot Sign off		
Gridline/Plot Sign off		
Gridline/Plot Sign off		
Gridline/Plot Sign off		
Gridline/Plot Sign off		
Gridline/Plot Sign off		
Gridline/Plot Sign off		

GEOSHIELD Verification Report

VERIFICATION SUMMARY

This was the twelfth visit where I was accompanied by Gerry of Shanco where the

Main Slab (Lower Pour) required verification as follows:-

>. Mechanical Point Stress Test to all completed stanchion detailing.

>. Four Visqueen Gas Barrier lap joints were sampled - no issues identified.

>. Mechanical Point Stress to pipe penetration - no issues identified"

>. Visual inspection of the whole verification area - only one potential issue with

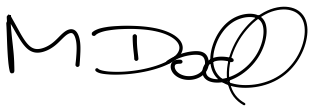
the end of ‘Steel High Chair’ - remediated during verification visit.

All remediations required following Report 011 were completed where required

and remediation log amended.

Installed in accordance with BS 8485:2019. Verified in accordance with CIRIA 735.

GEOSHIELD SIGNATURE:



DATE:	31/10/2022

GEOSHIELD Verification Report

PROJECT REFERENCE:	GEO102848		
REPORT NUMBER:	013	REPORT DATE:	04/11/2022
PROJECT:	Galiford Try Building		
PROJECT ADDRESS:	Greenhead College		

Huddersfield

HD1 4ES

MEMBRANE SPECIFICATION: Gas membrane to specification BS8485 2015

Verified in accordance with CIRIA 735.

Visqueen Standard Gas Barrier Visqueen Liquid Gas Barrier

Visqueen HP Primer

Visqueen Gas Resistant Self Adhesive Membrane

Visqueen Ultimate Geoseal

Visqueen Double Sided Butyl Tape

Visuqeen GR DPC

GEOSHIELD Verification Report

MEMBRANE SPECIFICATION:

DESIGN DETAILS:

NE8659-CDL-ZZ-XX-RP-GE-60200 Phase 2 Assessment Rev A (1)

NE8659-CDL-ZZ-XX-RP-GE-60200 Phase 2 Assessment Rev A (1)

NE8659-CDL-ZZ-XX-RP-GE-60200 Phase 2 Assessment Rev A (1)

NE8659-CDL-ZZ-XX-RP-GE-60200 Phase 2 Assessment Rev A (1)

NE8659-CCS-XX-XX-DR-S-30023 - RETAINING WALL

_External Envelope Section Detail - Typical Brickwork Base at Ground Bearing Slab

Edge Column Location_A5 Construction_C1_0

GB-26_concrete_slab_edge_gas_waterproofing

GB-51 service pipe top hat

GB-52_steel_column_sealing

NE8659-CCS-XX-ZZ-DR-S-86001

NE8659-RYD-01-00-DR-A-4005-S3-P1-External Envelope Plan Detail -

NE8659-RYD-01-00-DR-A-4012-S3-P1-External Envelope Plan Detail -

NE8659-RYD-01-00-DR-A-4104_External Envelope Section Detail - Typical

GEOSHIELD Verification Report

MEMBRANE SPECIFICATION:

DESIGN DETAILS:

NE8659-RYD-01-00-DR-A-4107-A-C2-External Envelope Section Detail - Lift Pit and Shaft Base Gr 1

NE8659-RYD-01-00-DR-A-4108_External Envelope Section Detail - Typical Pipe Pipe Penetration Through Ground Bearing Slab_A5 Construction_C1_0

NE8659-RYD-01-00-DR-A-4110-A-C1-External Envelope Section Detail - Typical Retaining Wall Base

NE8659-RYD-01-00-DR-A-4111-A-C1-External Envelope Section Detail - Typical Retaining Wall Head

NE8659-RYD-01-00-DR-A-4117 - Siphonic Details Main Build

GEOSHIELD Verification Report

VERIFICATION OFFICER: Michael Dodd

VERIFICATION COMPANY: GeoShield Limited

Icon Business Centre

4100 Park Approach

Thorpe Park

Leeds

CONTACT NUMBER: 07555 214679

EMAIL ADDRESS: mdodd@geoshield.co.uk

ORDER NUMBER:

PER VISIT: YES: ☐ NO: ☐ PROJECT: YES: ☐ NO: ☐

GEOSHIELD Verification Report

CLIENT DETAILS

CLIENT CONTACT:	Jack Broomhead
CONTACTS ROLE:	Senior Project Manager
MOBILE PHONE:	07719 954 286
EMAIL ADDRESS:	Jack.broomhead@gallifordtry.co.uk

CLIENT CONTACT:	Will McKaig
CONTACTS ROLE:	Site Manager
MOBILE PHONE:	07536 167603
EMAIL ADDRESS	will.mckaig2@gallifordtry.co.uk
NOTES:	
NOTES:	
NOTES:	

GEOSHIELD Verification Report

APPLICATION TEAM LEADERS

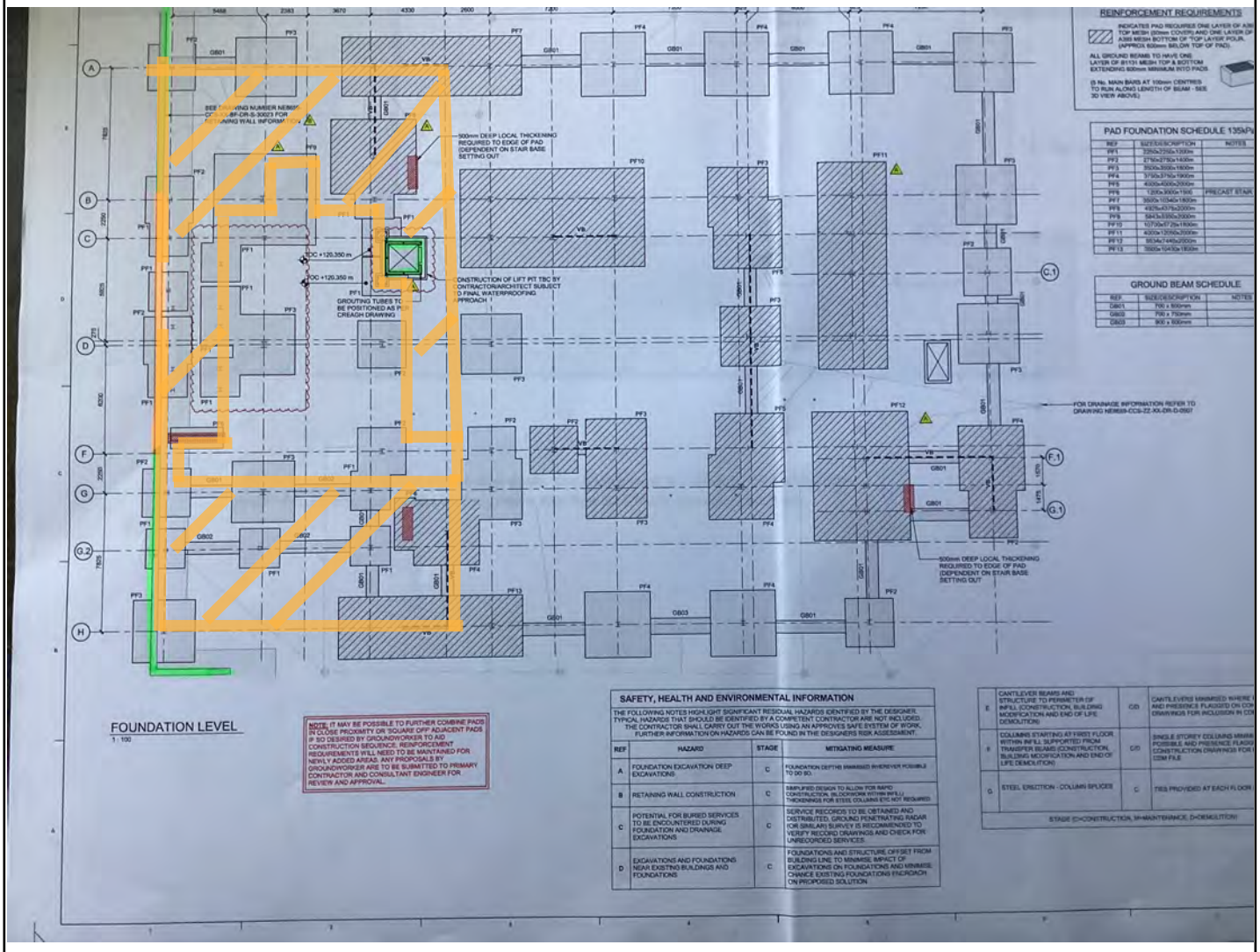
APPLICATOR NAME:	Michael Carty
COMPANY:	Shanco Contracting
APPLICATOR TEL:	0800 024 8714
APPLICATOR EMAIL:	

APPLICATOR NAME:	Chad Tinkler
COMPANY:	Shanco Contracting
APPLICATOR TEL:	0800 024 8714
APPLICATOR EMAIL:	

NOTES:	Both Michael and Chad have had some experience with Gas Membrane
NOTES:	installation but don’t hold an NVQ L 2 in Gas Membrane Installation.
NOTES:	Gerry Gardiner - Site Manager Shanco - manages the team of installers.
NOTES:	

GEOSHIELD Verification Report

VERIFICATION LAYOUT



Overview of the site layout

Verification Area outlined in yellow hatch.

Main Slab - Final Pour

GEOSHIELD Verification Report

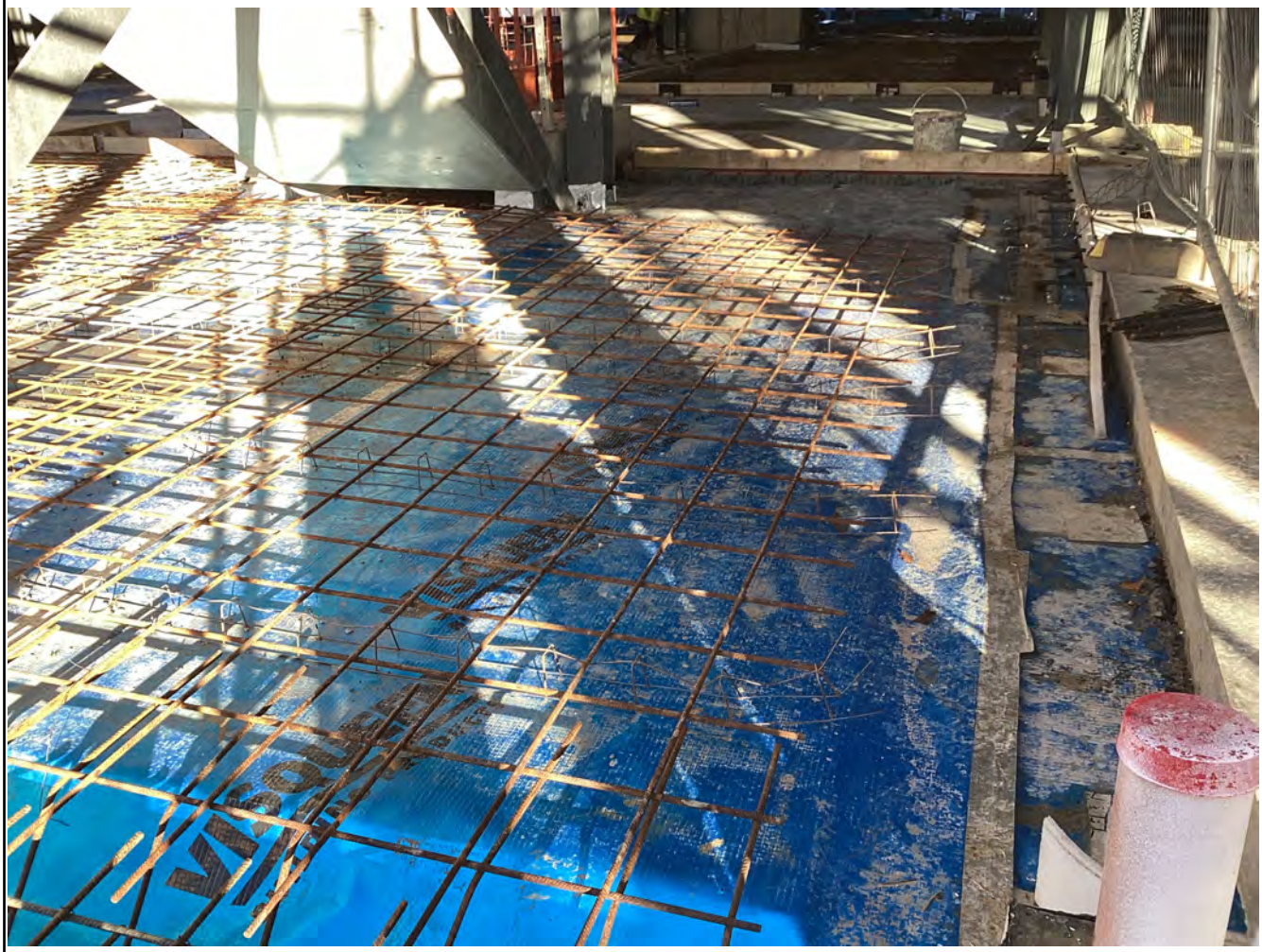
OVERVIEW PHOTOGRAPHS

Overview of the verification area.

Area - Main Slab - Final Pour

GEOSHIELD Verification Report

OVERVIEW PHOTOGRAPHS

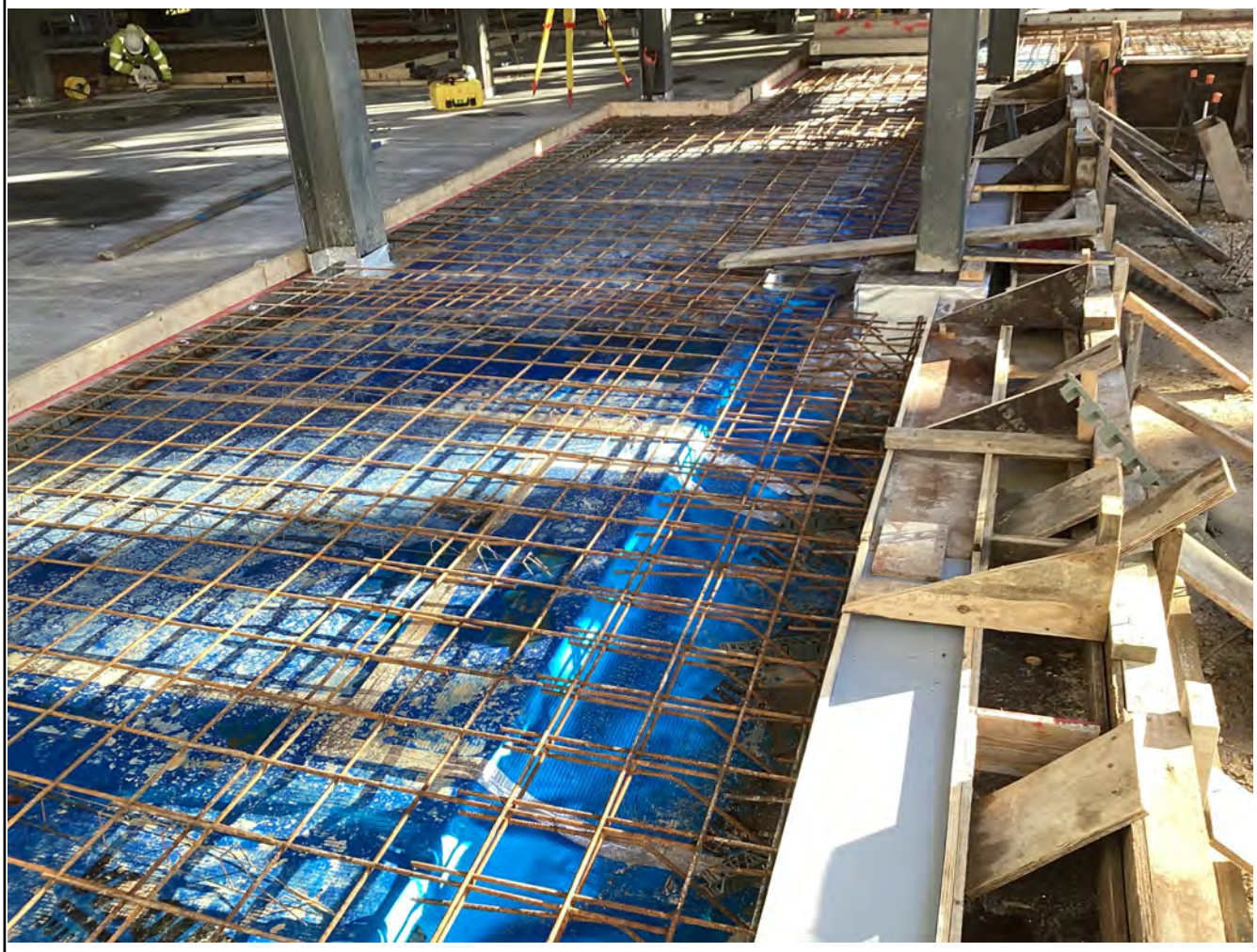


Alternative overview of verification area.

Area - Main Slab - Final Pour

GEOSHIELD Verification Report

OVERVIEW PHOTOGRAPHS

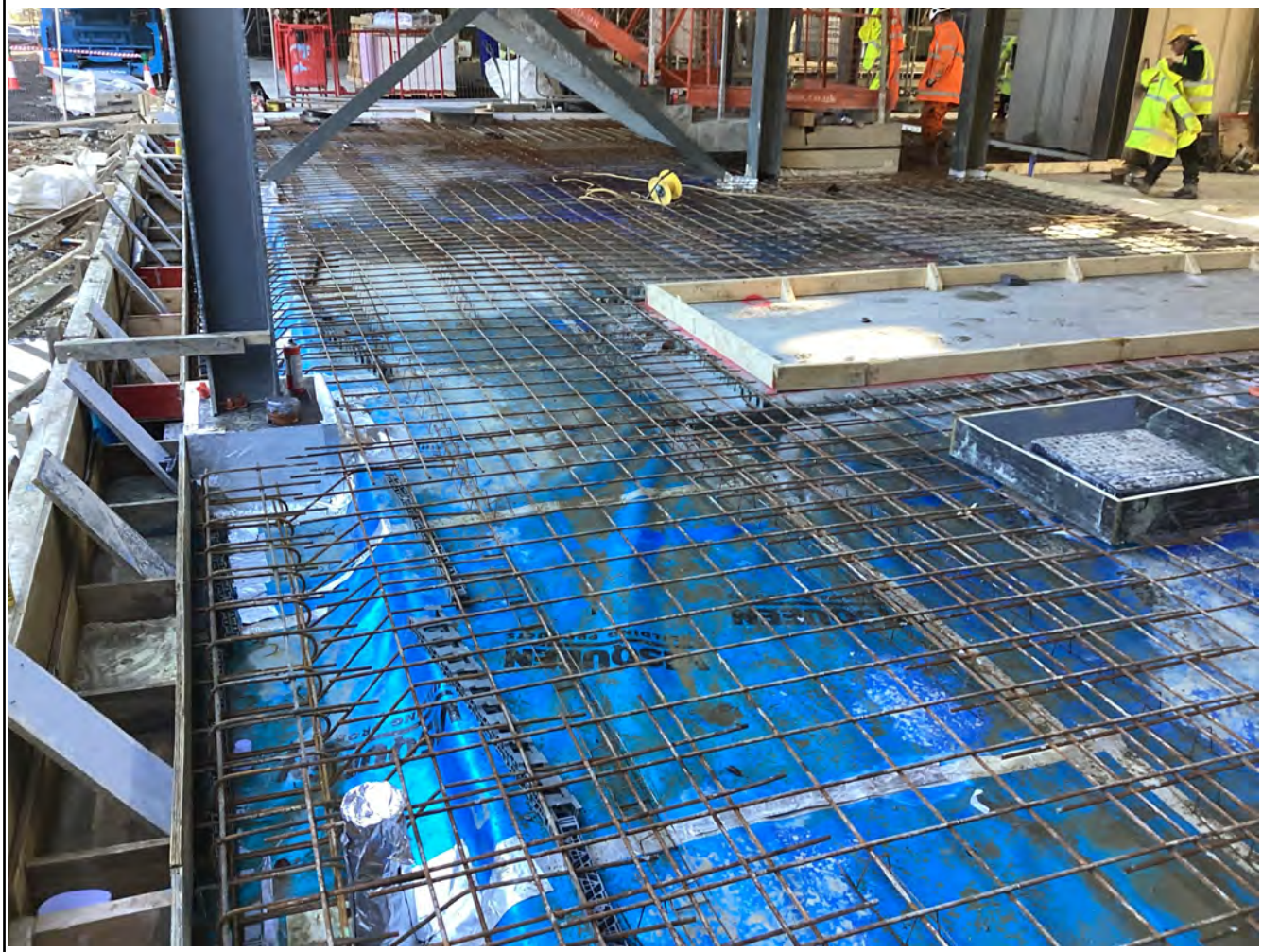


Alternative overview of verification area.

Area - Main Slab - Final Pour

GEOSHIELD Verification Report

OVERVIEW PHOTOGRAPHS



Alternative overview of verification area.

Area - Main Slab - Final Pour

GEOSHIELD Verification Report

OVERVIEW PHOTOGRAPHS

Alternative overview of verification area.

Area - Main Slab - Final Pour

GEOSHIELD Verification Report

OVERVIEW PHOTOGRAPHS

Alternative overview of verification area.

Area - Main Slab - Final Pour

GEOSHIELD Verification Report

AREA SURVEYED: Area: Main Slab - Final Pour

SITE CONDITIONS:

WEATHER: Sunny

TEMPERATURE: 9.2C

MEMBRANE TEMPERATURE: N/A

RELATIVE HUMIDITY: N/A

TIME: 09:00 to 10:00 REPORT NUMBER: 013

DATE: 04/11/2022

ACCOMPANIED Gerry Gardiner

GEOSHIELD Verification Report

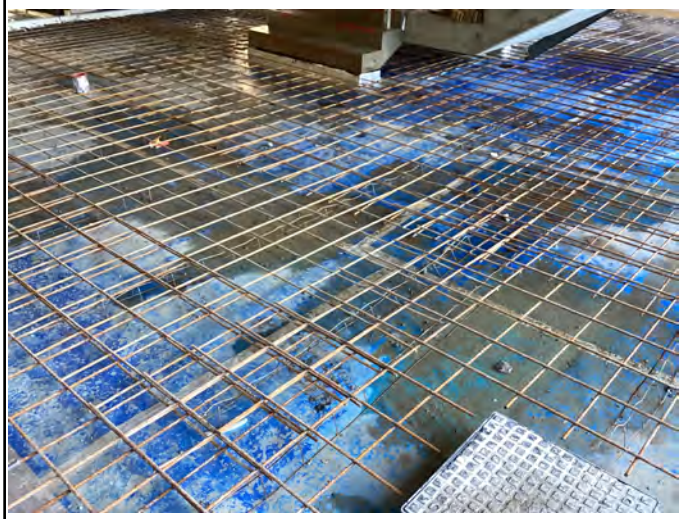
LIMITATIONS

SURVEY AREA: Main Slab-Final Pour-Perimeter Edge

RESTRICTIONS AND LIMITATIONS: Reinforcement and/or Formwork

The image on the left shows a typical section of the perimeter where a combination of both formwork and steel reinforcement had been placed ready to receive the concrete.

The perimeter areas restricted verification as there was no access to the installed Visqueen Gas Barrier and associated lap joints.



The image on the right shows a typical area within the verification area where a layer of steel reinforcement had already been placed upon the installed Visqueen Gas Barrier limiting access to lap joints and potential punctures.

GEOSHIELD Verification Report

VERIFICATION ITEM ONE

LOCATION/GRID LINE: Area: Main Slab - Final Pour

NOTES: Visqueen Gas Barrier Installation-Punctures

The Visqueen Gas Barrier has been installed upon a layer of insulation (substrate) which provides an ideal bearing from any potential damage from underneath. The area was however visually. The images show (red circles) punctures which are likely to have been

caused during the placement of steel reinforcement. These punctures were remediated during the verification visit and recorded in 'additional photos section' this report.

GEOSHIELD Verification Report

VERIFICATION ITEM ONE

Overview image showing a typical area where a thorough although limited inspection was undertaken. There was particular attention to areas where the steel ‘high chairs’ we’re supporting the steel reinforcement and also the edges of the reinforcement when near pipe penetrations and stanchion detailing - see additional photos referencing issue.

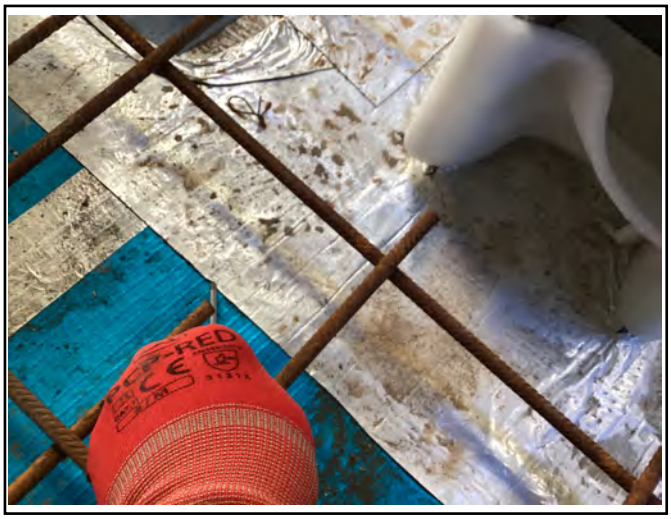
GEOSHIELD Verification Report

VERIFICATION ITEM TWO

LOCATION/GRID LINE: Area: Main Slab - Final Pour

NOTES: Stanchion Detailing

The stanchions had all been detailed using strips of Visqueen Gas Resistant Self Adhesive Membrane after being initially primed using Visqueen HP Tanking Primer to aid adhesion. The image on the left shows the Mechanical Point Stress Test being



undertaken once the 'miothene expansion strip' was carefully removed exposing the detailing and checking that a full bond had been completed with the stanchion.

The image on the right shows the Mechanical Point Stress Test being undertaken along the edges of the Visqueen GRSAM ensuring a full bond with the Visqueen Gas Barrier. A full bond was achieved along all detailing verified.

GEOSHIELD Verification Report

VERIFICATION ITEM TWO

The overview image shows some of the stanchions which were subjected to

the Mechanical Point Stress Test.

In addition, both visual and physical checks were completed too where all

Stanchions had been fully sealed and no issues were identified.

GEOSHIELD Verification Report

VERIFICATION ITEM THREE

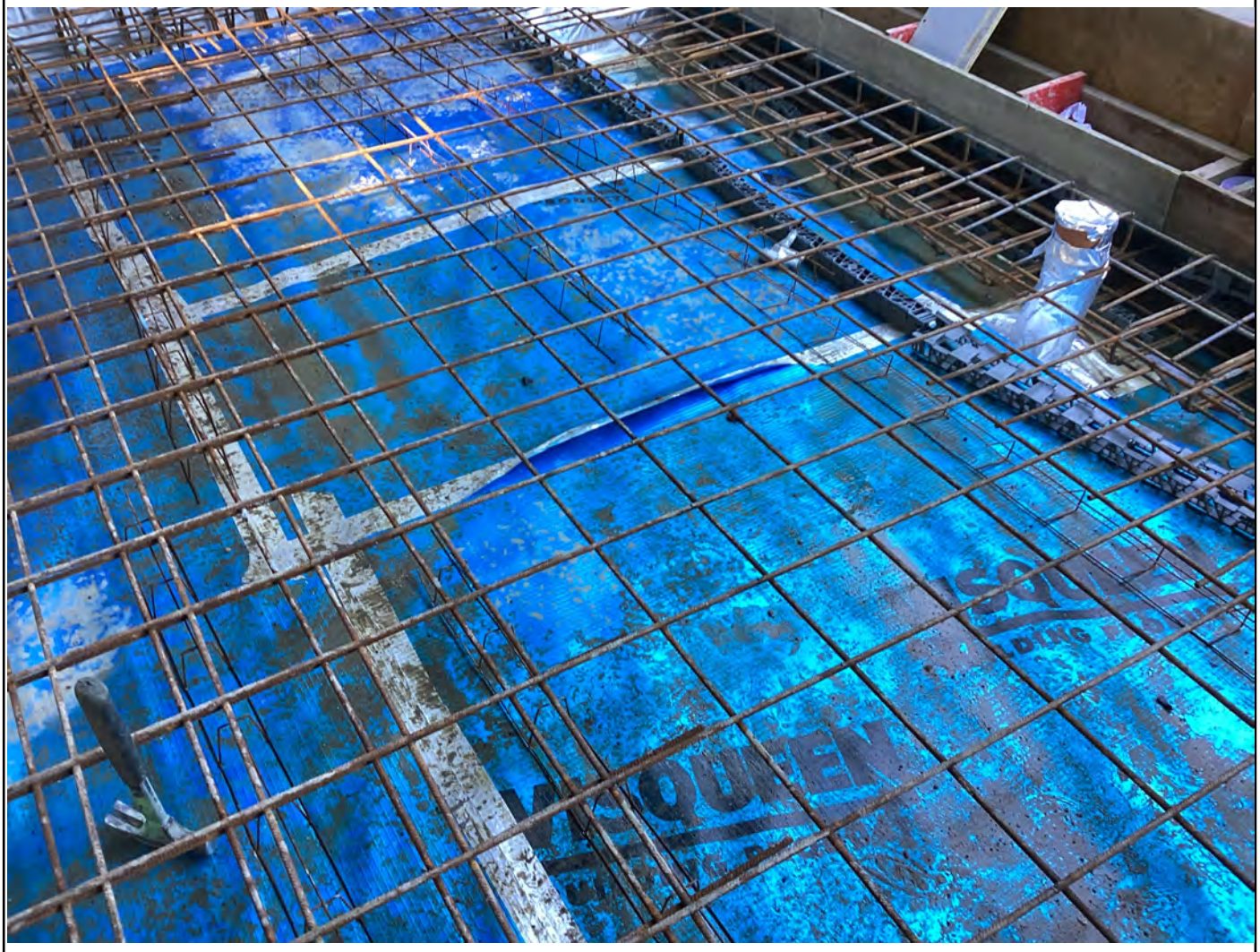
LOCATION/GRID LINE: Area: Main Slab - Final Pour

NOTES: Visqueen Gas Barrier Installation-Lap Joints

The Visqueen Gas Barrier had been installed upon a layer of insulation and effectively providing a suitable substrate. The lap joints were dual sealed combining the Visqueen Double Sided Butyl Tape (main seal) and the Visqueen Foil Lap Tape which protects the lap. A Visqueen lap joint was sampled where as seen in the first image, the Visqueen Foil Lap Tape was peeled back before completing the Mechanical Point Stress Test checking the seal which proved to be in tact. The image on the right shows the Visqueen Double Sided Butyl Tape in place forming the seal.

GEOSHIELD Verification Report

VERIFICATION ITEM THREE

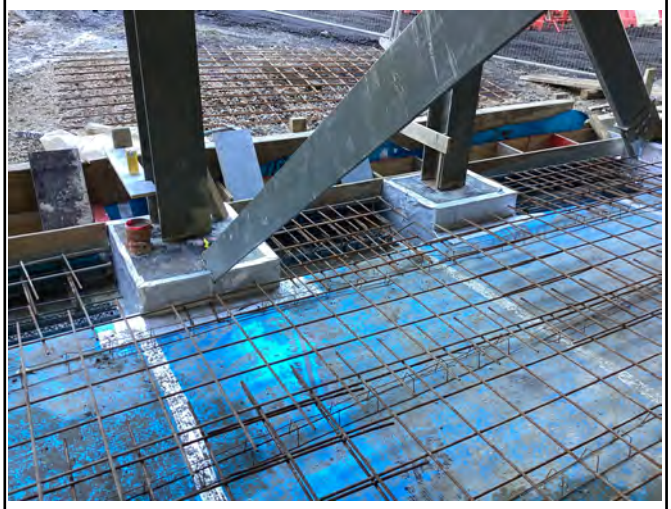


The overview image shows where the sampled Visqueen Gas Barrier lap joint had been undertaken.

GEOSHIELD Verification Report

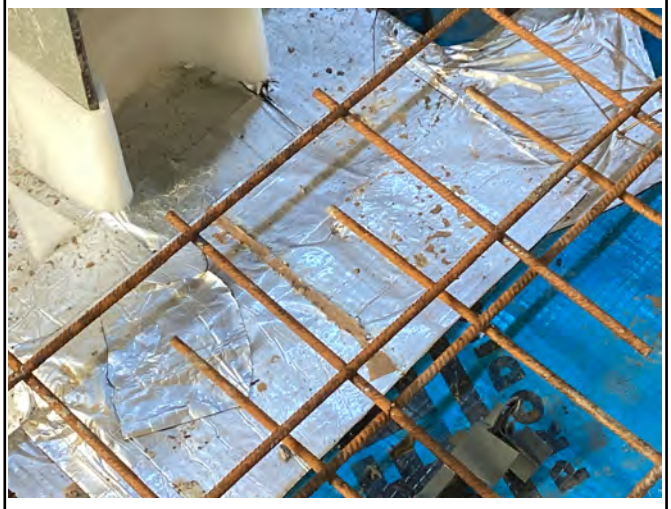
ADDITIONAL PHOTOGRAPHS

View of a typical stanchion base which has been sealed using GRSAM



View of a typical stanchion bases has been sealed using GRSAM

Puncture to Visqueen Gas Barrier identified as Verification Item Two



Potential damage to GRSAM was evaded by supporting reinforcement

GEOSHIELD Verification Report

ADDITIONAL PHOTOGRAPHS

Puncture to Visqueen Gas Barrier

identified as Verification Item Two

Puncture to Visqueen Gas Barrier

identified as Verification Item Two

View of incomplete steel bracing

requiring remediation

Remediation to steel cross bracing

completed observed by Geoshield

GEOSHIELD Verification Report

REMEDIATION LOG

Date	Nr	Remediation Description	Y/N
20/07/2022	001	Some small pinholes found, remediated on site	✔
27/07/2022	002	Some small areas of damage to previous Liquid Gas Membrane	
		installation to Retaining Wall Kicker - remediated during visit.	✔
02/08/2022	003	One potential capillary leak via lap joint crease remediated during	
		verification visit.	✔
11/08/2022	004	Ten areas of slight damage identified and requires remediation.	✔
		Various edges of the Visqueen Gas Resistant Self-Adhesive	✔
		Evidence of insulation being used to protect the Gas Resistant	
		Self Adhesive Membrane to the retaining wall.	✔
12/08/2022	005	This was a CQA report and after viewing the photos provided by	
		Galliford Try, no faults were identified.	✔
19/08/2022	006	Substation - one area of GRSAM split near concrete toe but	
		remediated during verification visit.	✔
24/08/2022	007	No areas requiring remediation	✔
09/09/2032	008	No faults identified during the verification visit.	✔

GEOSHIELD Verification Report

REMEDIATION LOG

Date	Nr	Remediation Description	Y/N
20/09/2022	009	Butyl tape- missing from seam x 2 remediated during visit	✔
		Unbounded butyl tape x4	✔
		Folded visqueen GB unbounded x1 Remediation complete	✔
		Pipes requiring GRSAM	✔
		Stanchions requiring GRSAM	✔
		Previously poured concrete seam (requires GRSAM) x2	✔
22/09/2022	010	All remediations identified in Report 009 have been completed.	✔
		Several holes through the Visqueen Gas Barrier caused by steel	✔
		pins supporting formwork will require remediation.	✔
27/10/2022	011	Parts of GRSAM on internal walls need to be correctly adhered.	
		Hole on the external perimeter needs to be patched.	✔
		Parts of GRSAM on external perimeter need to be correctly…	
		… adhered.	✔
		Hole on Visqueen gas barrier must be rectified.	✔

GEOSHIELD Verification Report

REMEDIATION LOG

Date	Nr	Remediation Description	Y/N
31/10/2022	012	The end of a steel high chair a potential puncture risk. This was	
		remediated during the verification visit.	✔
04/11/2022	013	Seven punctures to Visqueen Gas Barrier remediated during the	
		verification.	✔
		One steel cross bracing had not been fully sealed and remediated	
		during the verification.	✔

GEOSHIELD Verification Report

GAS MEMBRANE TESTING

VISUAL:	YES	✔	NO		SMOKE TEST:	YES		NO	✔
COMPRESSED AIR:	YES		NO	✔	DILECTIC	YES		NO	✔
DESTRUCTIVE:	YES		NO	✔	OTHER:	YES	✔	NO	
Testing checklist attached:				YES	✔	NO			

Gridline/Plot Sign off

Gridline/Plot Sign off	Retaining Wall Kicker (highlighted area)	✔
Gridline/Plot Sign off	Retaining Wall Kicker (highlighted area)	✔
Gridline/Plot Sign off	Lift Pit Kicker	✔
Gridline/Plot Sign off	Underside of Stairwell Number Four	✔
Gridline/Plot Sign off	Lift Pit - external Wall to Ground Level	✔
Gridline/Plot Sign off	Lift Pit - internal base installation	✔
Gridline/Plot Sign off	Retaining Wall (Phase 1 - height 2.0 m only) B to H/1	✔
Gridline/Plot Sign off	Substation	✔
Gridline/Plot Sign off	Retaining Wall (Phase 1 - height 2.0m only) A to B/1	✔
Gridline/Plot Sign off	Retaining Wall (phase 2 Grid A 1 to G2	✔
Gridline/Plot Sign off	Liquid Gas Membrane to Perimeter stanchion bases	✔
Gridline/Plot Sign off	Stairwell number four	✔

GEOSHIELD Verification Report

GAS MEMBRANE TESTING

VISUAL:	YES	✔	NO		SMOKE TEST:	YES		NO	✔
COMPRESSED AIR:	YES		NO	✔	DILECTIC	YES		NO	
DESTRUCTIVE:	YES		NO	✔	OTHER:	YES	✔	NO	

Testing checklist attached: YES ✔ NO

Gridline/Plot Sign off

Gridline/Plot Sign off	1st phase concrete pour area	✔
Gridline/Plot Sign off	Retaining wall and external perimeters (as marked on site …	
Gridline/Plot Sign off	… plan)	✔
Gridline/Plot Sign off	Two staircases (as marked on site plan) - Stairwells 1 & 2	✔
Gridline/Plot Sign off	Main Slab - Lower Pour (outlined in yellow - this report)	✔
Gridline/Plot Sign off	Area: Main Slab - Final Pour	✔
Gridline/Plot Sign off		
Gridline/Plot Sign off		
Gridline/Plot Sign off		
Gridline/Plot Sign off		
Gridline/Plot Sign off		
Gridline/Plot Sign off		

GEOSHIELD Verification Report

VERIFICATION SUMMARY

This was the thirteenth visit where I was accompanied by Gerry of Shanco where

the Main Slab (Lower Pour) required verification as follows:-

>. Mechanical Point Stress Test to all completed stanchion detailing - see

remediation log.

>. Four Visqueen Gas Barrier lap joints were sampled - no issues identified.

>. Mechanical Point Stress to pipe penetration - no issues identified"

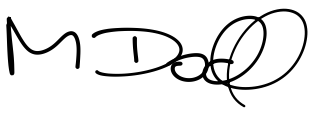
>. Visual inspection of the whole verification area - seven punctures identified -see

remediation log.

A final visit will be required once the perimeter GRSAM has been completed.

Installed in accordance with BS 8485:2019. Verified in accordance with CIRIA 735.

GEOSHIELD SIGNATURE:



DATE:	04/11/2022