



TM/C4788/10487

14th October 2021

Bradbury Consulting
59 Wilmslow Road
Handforth
SK9 3EN

For the attention of Mike Briggs

Dear Mike

Re: Mount Carmel RC Primary School, Hunt Street, Blackley, M9 8BL – Verification of Ground Gas Protection Measures, New Ground Floor Extension

We write to report on the verification of ground gas protection measures for the new extension at the above site.

Background

The proposed development will comprise a ground floor extension to the existing school buildings.

Brownfield Solutions Ltd have previously produced a Phase I Desk Study Assessment for the site, reference SJE/C2436/4136, issued November 2013, which should be read in conjunction with this Verification Report.

The Desk Study Assessment identified a historic landfill site located to the west and north-west of the site, also encroaching into the south-western corner of the site. Historical cess pits abutting and possibly extending on to the south-eastern boundary of the site were also identified as a potential sources of ground gases. The preliminary Conceptual Site Model assigned a high level of risk associated with the potential sources of ground gases.

BSL is not aware of any intrusive investigation, ground gas monitoring or further detailed assessment having taken place with respect to ground gases. However, we understand a 'belt and braces' ground gas protection system has been agreed with the Local Authority.

Visqueen have provided a series of product datasheet and drawings outlining the design specification, presented in Appendix A, which are assumed to have been accepted as a suitable protection system by the Local Authority. A Verification Plan for Ground Gas Protection Measures has not been made available to BSL.

Methodology and Inspection Records

Following the installation of the recommended protective measures, independent verification has been carried out in line with the requirements of BS 8485:2015+A1:2019 and CIRIA 735 (2014). The verification was undertaken by engineers who are experienced in the verification of gas mitigation measures and have undertaken third party training in Verification of Gas Protection Systems course. Details on the competency of BSL verifiers are presented in Appendix B.

BSL attended site on two occasions between 21st September and 28th September 2021 to verify the installation of protection measures as per the design drawings, including a thorough visual inspection of

membrane coverage, joints, laps, seals and service entries across the entire footprint of the new ground floor extension.

The membrane utilised was the Visqueen Gas Barrier is typically considered suitable for use for protection against typical landfill gases such as carbon dioxide and methane. As well as the installation and verification of the Visqueen Gas Barrier, protection measures included a correctly installed and verified membrane, in addition to a passive ventilation system utilising a 25mm thick Visqueen Gas Vent Mat, telescopic vents and air bricks to external walls. The data sheets for the Visqueen products used within the protection system are presented in Appendix A.

The membrane and gas protection measures were visually inspected, and all laps and seals were mechanically pick tested in accordance with ASTM standards. Copies of the gas membrane visual inspection records are presented in Appendix C and photographs are presented in Appendix D.

All laps and seals were also independently tested with an air lance in accordance with ASTM standards. The certificates are provided in Appendix E.

Where defects were observed these were immediately rectified by site staff and subsequently re-inspected by BSL verifiers during the same visit.

A summary of the inspections is presented in the table below:

Element	Date (s) Inspected	Pass/Fail
Passive Ventilation Measures	21/09/21	Pass
Membrane Installation	28/09/21	Pass

Summary

Based on the inspections and testing undertaken, Brownfield Solutions Ltd confirm the installed ground gas protection measures comply with the Visqueen standard detail and site specific design and specification drawings.

This verification report should be presented to the Local Authority and any warranty providers. We trust that this is sufficient to discharge planning conditions relating to the installation of ground gas protection measures at the proposed development.

Should any future construction or repair works be undertaken, the integrity of gas protection measures should be maintained and where any damage is caused suitable repairs are carried out. Where any new service entries or features will penetrate the slab and gas protection system, then appropriate protection should be included.

Limitations

Brownfield Solutions Ltd (BSL) has prepared this report in accordance with the best available practice and the relevant guidance documents available at the time of issuing this report.

This report is limited to the verification that the gas protection measures are correctly installed at the time site inspection visits were carried out. Efforts should be made to ensure follow on works do not comprises the integrity of the installed ground gas protection measures and any damage should be suitably repaired. BSL have not carried out any design work in respect of the gas protection measures prescribed for this site and therefore no professional liability is extended in respect of the gas protection design.

We trust the above meets requirements, however, if you have any queries please do not hesitate to contact the undersigned.

Yours sincerely

For Brownfield Solutions Ltd

Checked and approved by



**Tim Mayall MGeol (Hons) FGS
Project Engineer**

t.mayall@brownfieldsolutions.co.uk

**Lisa Cookson BSc Ind (Hons) FGS MEnvSc
Senior Project Engineer**

l.cookson@brownfieldsolutions.co.uk

Enc Appendix A - Gas Membrane Datasheets
 Appendix B - Competencies of BSL Verifiers
 Appendix C - Gas Protection Measures Inspection Records
 Appendix D - Photographs
 Appendix E - Air Lance Testing Certificate



DRAWINGS

KEY :-	
	Visqueen Gas Vent Mat (25mm).
TV 	Telescopic Vent.

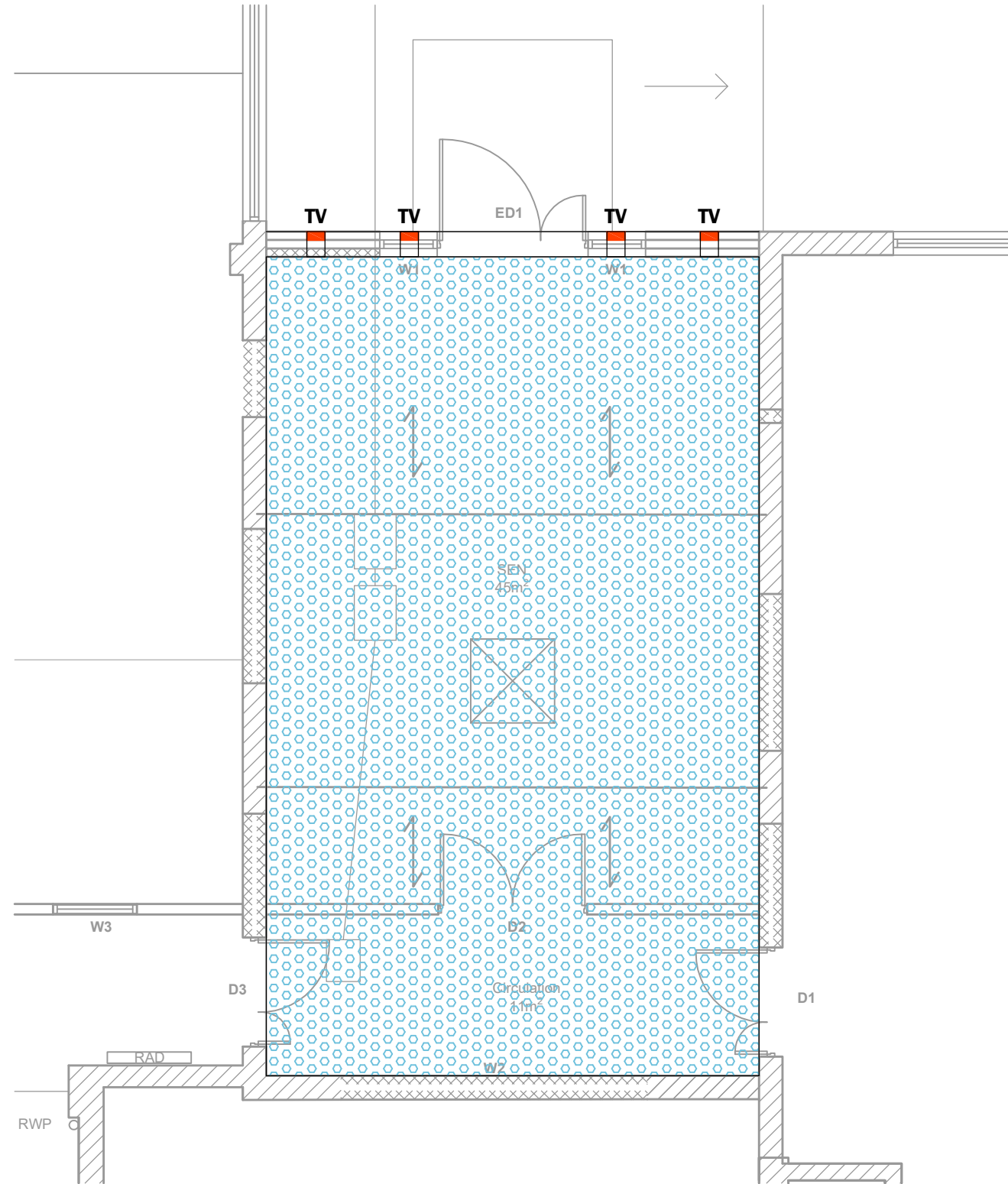
All quantities shown are for guidance purposes only & must be verified by the contractor prior to placing of any order.

Telescopic vent positions are indicative only.
Final positions to be agreed with the architect/ engineer.

Where required, continuous flow paths must be maintained through any sub-structure walls using 100mm Ø connector pipes @ 2.0m centres.

BS8485:2015+A1:2019 7.2.3 paragraph 6 recommends as a bare minimum pressure relief should be included on all gas protection designs.

Details to be circulated to all stakeholders for comment / approval prior to implementing on site. Site construction sequencing should also be assessed by all stakeholders to ensure there are no construction conflicts.



NB ; DO NOT SCALE - USE FIGURED DIMENSIONS ONLY.



Visqueen
Contact Technical Support :
t : 0333 202 6800
f : 0333 202 6886
e : enquiries@visqueen.com
www.visqueen.com

Project : MOUNT CARMEL RC PRIMARY - VENTING LAYOUT.

Drg No : 4518-VL-01	Date : 25.04.21	Scale : nts	TSM : CVD	 COPYRIGHT RESERVED
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Visqueen Venting Components :-		Quantity :-
VT M1	Visqueen Gas Vent Mat (25mm).	2 no.rolls.
VT014	Visqueen Adjustable Z Vent.	4 no.
VT024	Visqueen Airbrick (colour tbc by architect).	4 no.
VT015	Visqueen Extension Sleeve (if required).	TBA.
VT010	Visqueen Gas Vent Mat Connector.	4 no.

Wall & floor construction to architect's details

Visqueen Zedex CPT DPC cavity tray

Visqueen 50mm Double Sided Tape

VT014 Adjustable Z Vent + VT024 Airbrick

GL

Moisture resistant rigid insulation by others

Visqueen 50mm Double Sided Tape (blue) & Visqueen GR Foil Tape (brown)

Visqueen GR DPC

Visqueen Vapour Barrier

Visqueen Gas Barrier with fully sealed joints

FFL

Slab to engineer's details

VT M1 Gas Vent Mat (25mm)

VT010 Gas Vent Mat Connector

Smooth well compacted blinding layer & sub-base to engineer's details

Detail issued for guidance only.
Designer's approval required.

Site construction sequencing should be assessed before the appropriate Visqueen Standard Detail is selected & approved by the designer.

All Visqueen materials must be installed in strict accordance with the manufacturer's instructions. Refer to the current Visqueen datasheets.

DPCs and DPC cavity trays to be installed in accordance with BS8215:1991, PD6697:2019 and BS8000-3:2020.

Do not scale, use figured dimensions only. All figured dimensions are in mm.



Visqueen
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e : enquiries@visqueen.com
www.visqueen.com

Project : MOUNT CARMEL RC PRIMARY - TYPICAL EDGE DETAIL.

Drg No : 4518-ED-01

Date : 25.04.21

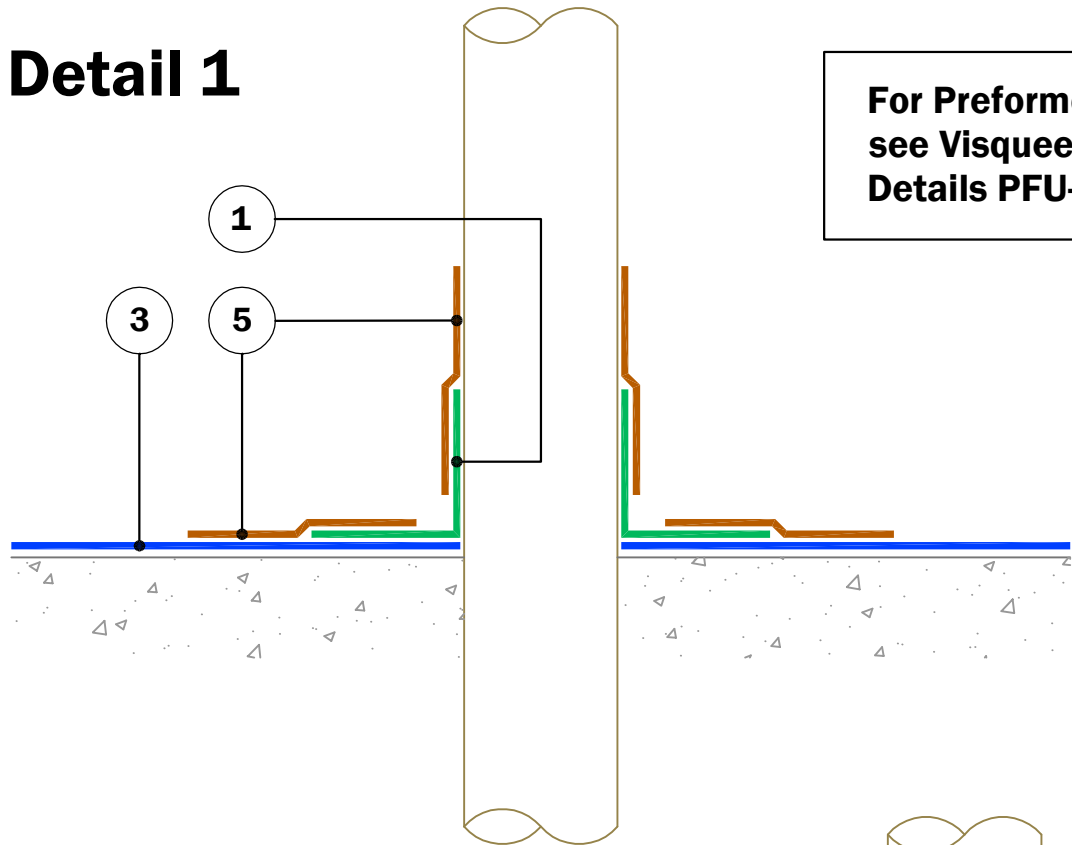
Scale : nts

TSM : CVD

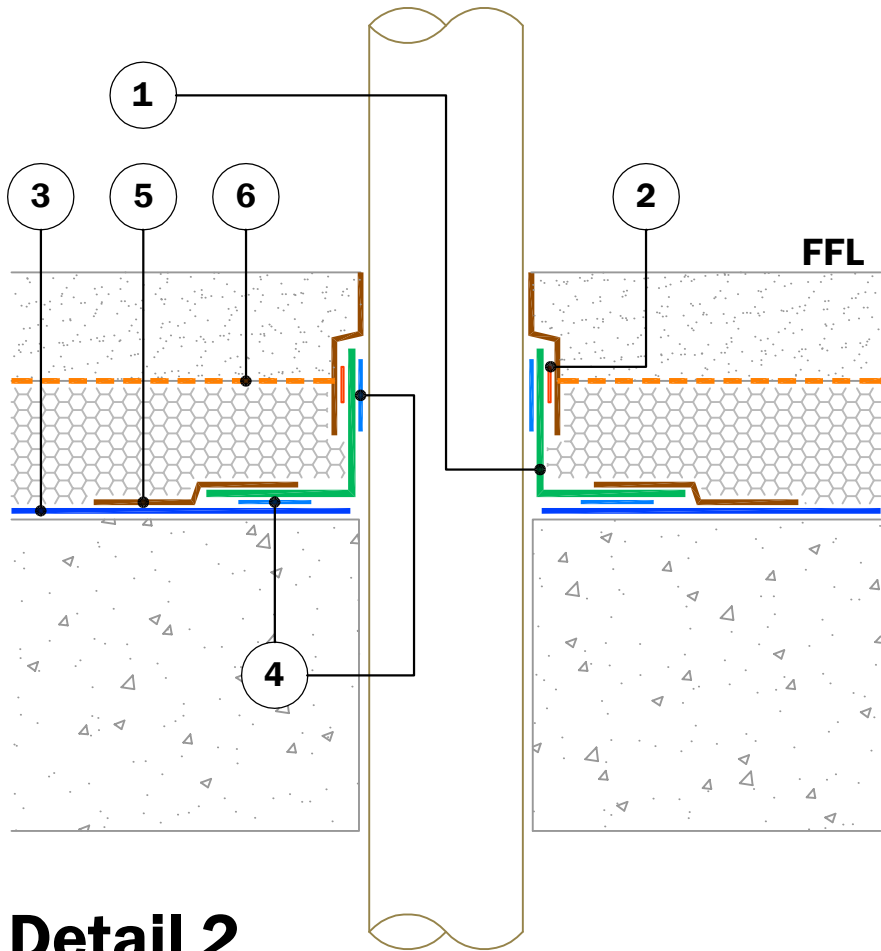
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KEY TO MATERIALS :-	
1	Visqueen Ultimate Preformed Top Hat.
2	Jubilee clip.
3	Visqueen Gas Barrier.
4	Visqueen Double Sided Tape (10m x 50mm).
5	Visqueen Gas Resistant Foil Tape.
6	Visqueen Vapour Barrier or HP Vapour Barrier.
7	Visqueen TreadGUARD 1500.

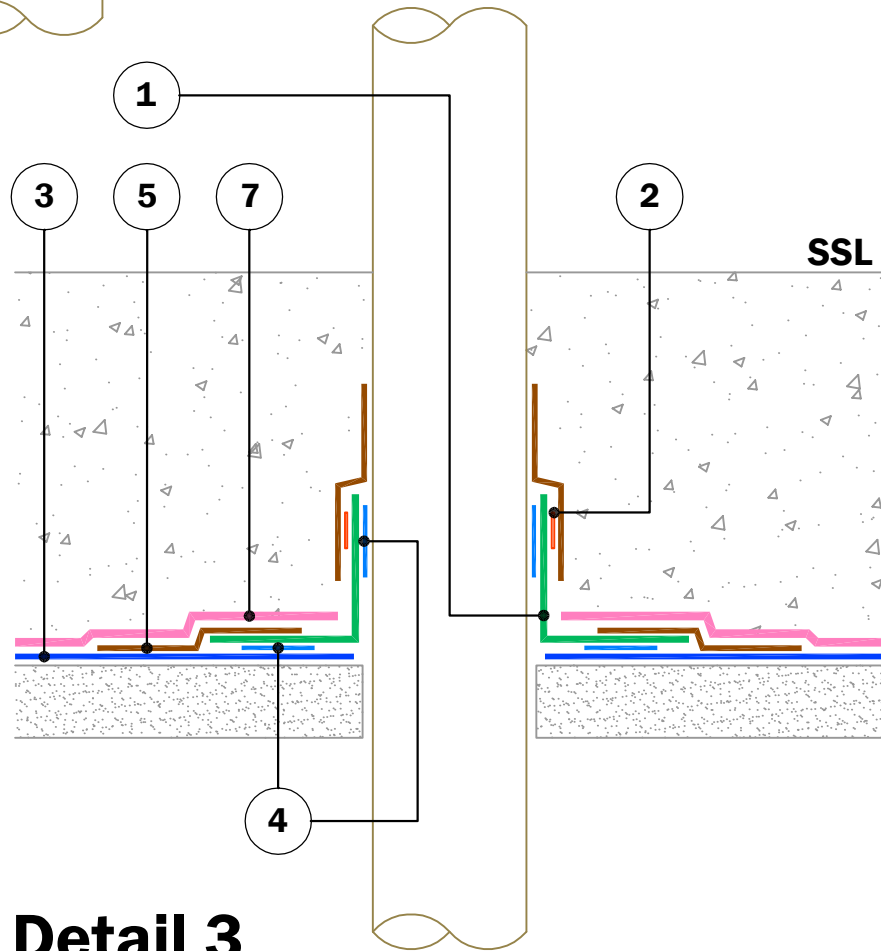
Detail 1



For Preformed Top Hats
see Visqueen Standard
Details PFU-203 & 204



Detail 2



Detail 3

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Detail issued for Guidance Only.
Designer's Approval Required.

Site construction sequencing should be assessed before the appropriate Visqueen Standard Detail is selected & approved by the Designer.

In order to develop a robust design for protecting a structure against groundwater, a Risk Assessment must be carried out in line with the guidance given in BS8102:2009.

The Designer may need to specify one or a combination of waterproofing measures.

All Visqueen materials must be installed in strict accordance with the manufacturer's instructions. Refer to the current Visqueen datasheets.

Do Not Scale - Use Figured Dimensions Only.

Standard Detail



www.visqueen.com

Scale : NTS

Date : Dec.2018

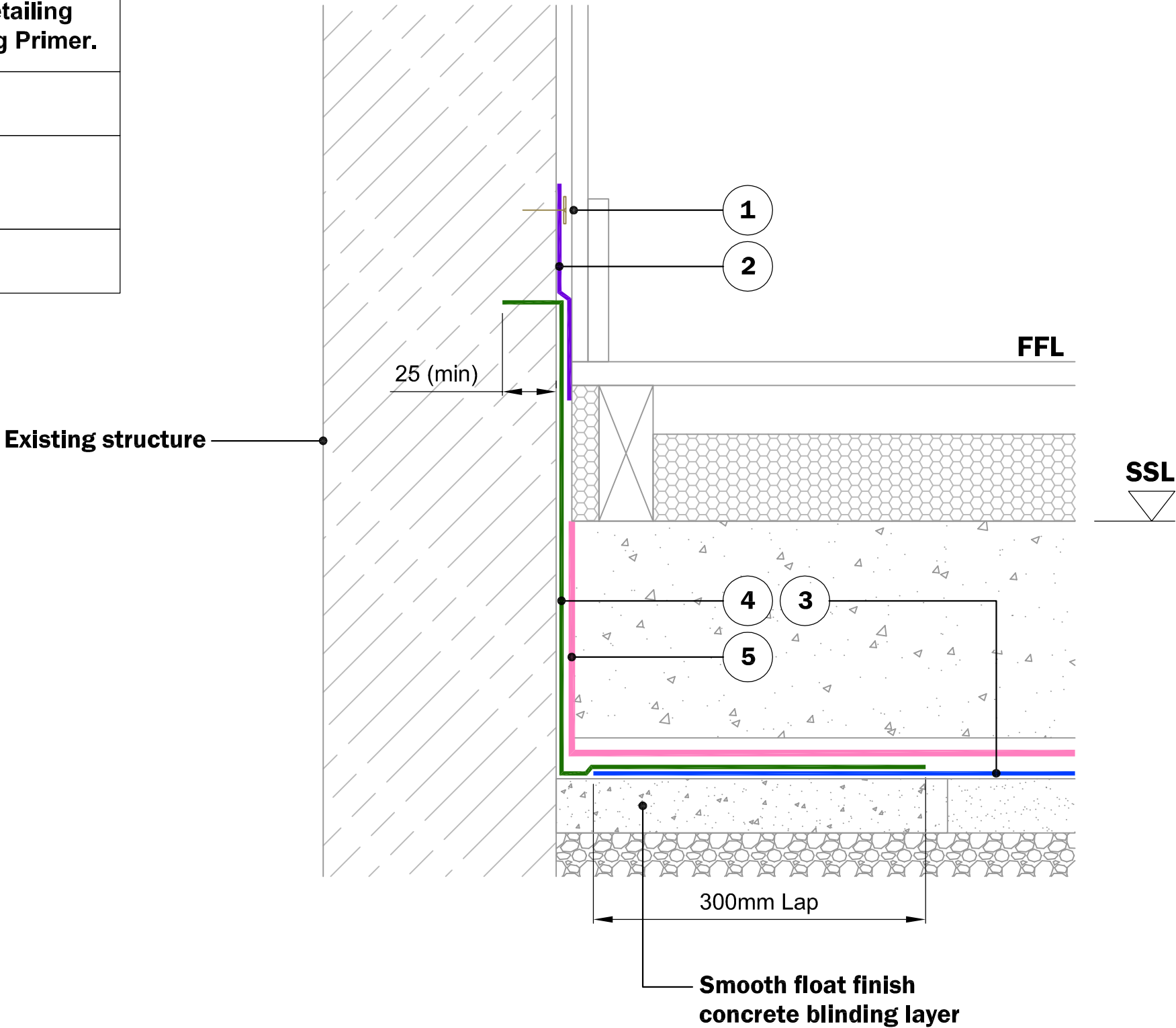
Drawing No : GB-51



Typical Pipe Sleeve Details (Top Hat).

VISQUEEN
0333 202 6800
www.visqueen.com
enquiries@visqueen.com

KEY TO MATERIALS :-	
1	Visqueen Fixing Strip System with suitable fixings.
2	Visqueen 300mm / 500mm Detailing Strip on Visqueen HP Tanking Primer.
3	Visqueen Gas Barrier.
4	Visqueen GR SAM on Visqueen HP Tanking Primer.
5	Visqueen TreadGUARD 1500.



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Detail issued for Guidance Only. Designer's Approval Required.

Site construction sequencing should be assessed before the appropriate Visqueen Standard Detail is selected & approved by the Designer.

In order to develop a robust design for protecting a structure against groundwater, a Risk Assessment must be carried out in line with the guidance given in BS8102:2009.

The Designer may need to specify one or a combination of waterproofing measures.

All Visqueen materials must be installed in strict accordance with the manufacturer's instructions. Refer to the current Visqueen datasheets.

Do Not Scale - Use Figured Dimensions Only.

Standard Detail



www.visqueen.com

Scale : NTS

Date : Dec.2018

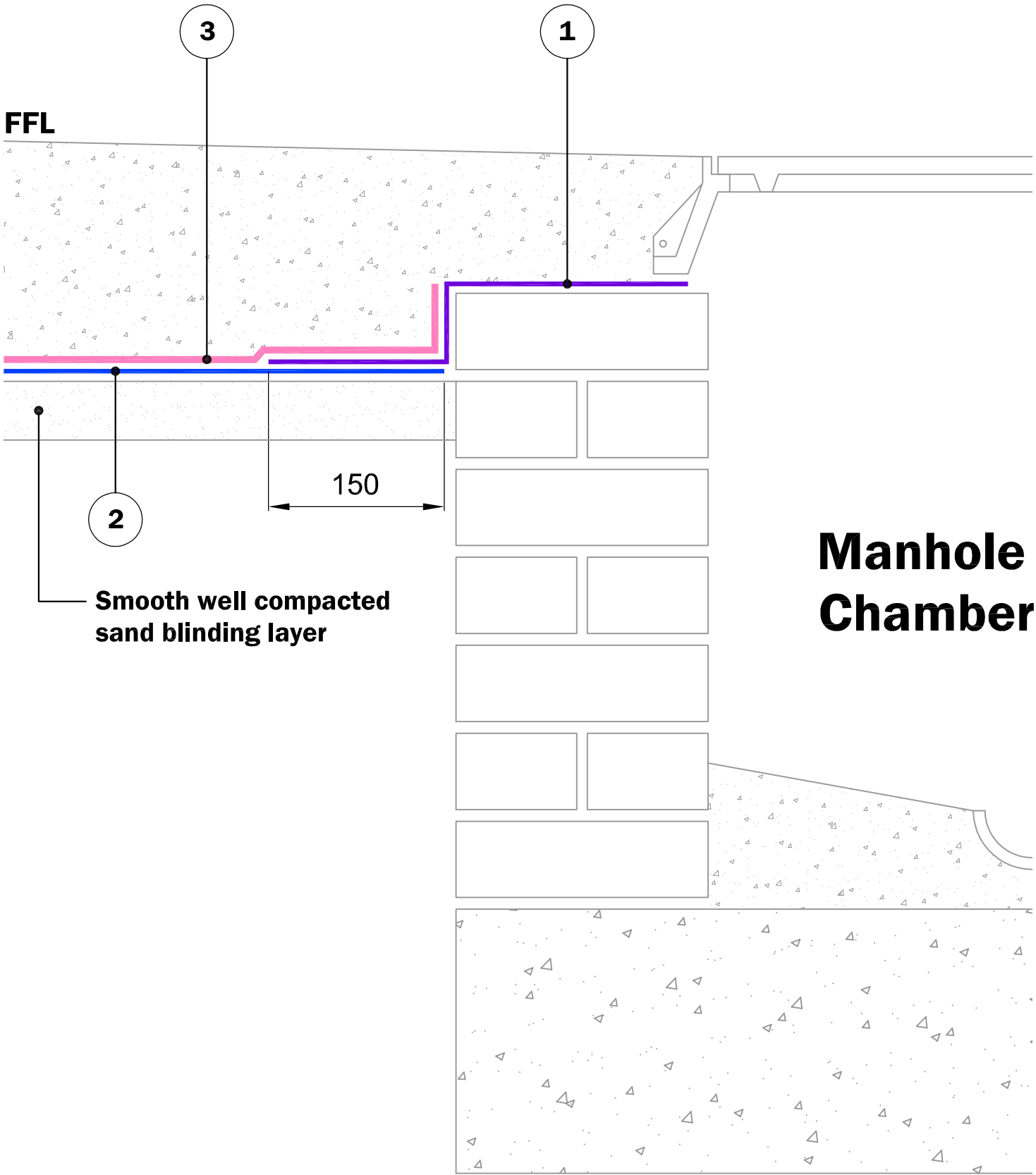
Drawing No : GB-53



Typical Abutment Detail to Existing Wall.

VISQUEEN
0333 202 6800
www.visqueen.com
enquiries@visqueen.com

KEY TO MATERIALS :-	
1	Visqueen 300mm / 500mm Detailing Strip on Visqueen HP Tanking Primer.
2	Visqueen Gas Barrier.
3	Visqueen TreadGUARD 1500.



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Detail issued for Guidance Only.
Designer's Approval Required.

Site construction sequencing should be assessed before the appropriate Visqueen Standard Detail is selected & approved by the Designer.

In order to develop a robust design for protecting a structure against groundwater, a Risk Assessment must be carried out in line with the guidance given in BS8102:2009.

The Designer may need to specify one or a combination of waterproofing measures.

All Visqueen materials must be installed in strict accordance with the manufacturer's instructions. Refer to the current Visqueen datasheets.

Do Not Scale - Use Figured Dimensions Only.

Standard Detail



www.visqueen.com

Scale : NTS

Date : Dec.2018

Drawing No : GB-55



Typical Internal Manhole Detail.

VISQUEEN
0333 202 6800
www.visqueen.com
enquiries@visqueen.com



APPENDIX A

Gas Membrane Data Sheets

VisqueenPro Detailing Strip, 300mm x 10m, 500mm x 10m

Features and benefits

- Utilises Visqueen's Advanced Adhesion Technology - twice the adhesion in cold weather
- Complete system - use with Visqueen HP Tanking Primer to obtain best performance
- Flexible - can be cut and shaped to various applications
- Multi-use - ideal for complex junctions, stanchions, patchwork and terminations
- Aluminium core - gas resistant in accordance with BS8485:2015+A1:2019

Product description

VisqueenPro Detailing Strip is a composite of PET/aluminium and a high performance cold weather butyl compound. It is available in roll format, 300mm x 10m and 500mm x 10m.

Approvals and standards

- Third party accreditation - BBA certification
- Conforms to the specification requirements of BS 8485:2015 + A1:2019
- Suitable for all Characteristic Gas Situation (CS) ground gas regimes
- Conforms to the specification requirements of NHBC Amber 1 and Amber 2 applications
- Conforms to the specification requirements of BR 211:2015
- Quality Management System ISO 9001:2015
- Occupational Health and Safety System ISO 18001:2007
- Environmental Management System ISO 14001:2015

Usage

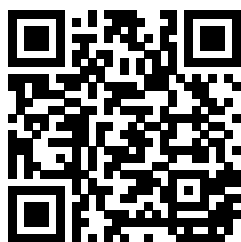
Visqueen ProDetailing Strip can be used for gas protection systems, waterproofing system, and damp proofing systems for use on concrete, blockwork, brickwork, particle boards, steel work, steel stanchions and wooden structures for both vertical and horizontal application.

VisqueenPro Detailing Strip is post applied against the structure, steel stanchions and forms complex detailing. It forms a 2-part system with the Visqueen HP Tanking Primer. The Visqueen HP Tanking Primer is a single component primer, for use see separate datasheet.

System components

- Visqueen HP Tanking Primer, 5L

Find your local stockist



VisqueenPro Detailing Strip, 300mm x 10m, 500mm x 10m

Storage and handling

Store in warm (above 5°C), dry and clean environment in its current packaging. The product must be stored upright.

Preparation

Surfaces must be smooth and free from sharp protrusions, ensure the surface and working area is not water logged and is frost free. When applying to blockwork or brickwork the joints must be flush pointed, in demanding applications the masonry face must be rendered prior to applying the Visqueen Pro Detailing Strip. Prior to applications the surface should be sealed using Visqueen HP Tanking Primer and allowed to dry thoroughly. The Visqueen HP Tanking Primer must not be used on Insulation or ICF systems, please contact Visqueen Technical Department.

Installation

All lap joints should be a minimum of 150mm and must be pressed and rolled to form a continuous bond to ensure gas and water tightness.

For complex detailing the detailing strip can easily be cut, shaped and formed around the area.

For patch work - when membranes are punctured, VisqueenPro Detailing Strip can be lapped at least 150mm beyond the extents of the puncture.

Usable temperature range

It is recommended that Visqueen membranes and system components should be used above 5°C

Additional information

When applying to blockwork or brickwork the joints must be flush pointed, in demanding applications the masonry face must be rendered prior to applying the Visqueen Pro detailing Strip. The Visqueen HP Tanking Primer must not be used on Insulation or ICF systems, please contact Visqueen Technical Department.

VisqueenPro Detailing Strip, 300mm x 10m, 500mm x 10m

Property	Value
Width	300mm and 500mm
Length	10m
Application temperature range	-5°C to 40°C
Peel Adhesion EN12316, Steel ASTM D1000, in N/cm @ 5°C	
Polyethylene	20.7
Polyethylene with no static charge	21.2
Steel	26.9
Concrete	28.8
Mean water vapour resistance factor , EN1931, u	3960000
Mean water vapour diffusion equivalent air layer thickness EN1931, (Sd) in m	4752
Mean water vapour resistance, EN1931, MNs/g	23760
Mean water vapour permeability, EN1931, g/m2/day	0.03

Health and safety information

Please refer to material safety datasheet

VisqueenPro Detailing Strip, 300mm x 10m, 500mm x 10m

About Visqueen

The Visqueen name has long been recognised as one of the leading manufacturers of high quality advanced membrane technologies and design based solutions by specifiers, distributors, builders merchants and contractors throughout the UK and Europe.

For further guidance on the Visqueen services shown below, please refer to the relevant section of the Visqueen website (www.visqueen.com) or contact Visqueen Technical Services on +44 (0) 333 202 6800 or enquiries@visqueen.com

Complete Range, Complete Solution



Structural
Waterproofing



Gas
Protection



Damp Proof
Membrane



Tapes



Damp Proof
Course



Stormwater



Vapour
Control

Visqueen Technical Support

Visqueen combine an extensive product portfolio with industry leading levels of service and support which includes guidance over the phone, bespoke CAD drawings to help with complex detailing, electronic NBS specifications and access to a dedicated team of highly knowledgeable and experienced field based Technical Support Managers.

Visqueen Technical Support is available to all our customers including architects, specifiers, distributors, builders merchants, contractors and end users. All of our technical team have been awarded the industry recognised qualification Certificated Surveyor in Structural Waterproofing (CSSW).

Visqueen CPD Seminars

The Visqueen Continuing Professional Development (CPD) Seminars provide up-to-date information on changes within Building Regulations/Building Standards and nationally recognised industry guidance affecting damp proofing, water vapour control, hazardous ground gas protection and below ground structural waterproofing.

The one hour seminars have been produced for design specialists within the construction sector and are delivered by our team of Technical Support Managers.

Visqueen PI designs and special projects

From initial design to the completed project, Visqueen are with you every step of the way. Whether it be hazardous ground gas protection and/or below ground waterproofing protection employing barrier, structurally integral or drained systems, Visqueen can offer professional indemnity (PI) insurance for bespoke Visqueen design solutions.

Visqueen Technical Support Managers work with all stakeholders to provide cost effective Visqueen solutions offering complete peace of mind throughout the construction phase and beyond.

Visqueen Training Academy

Based at our manufacturing facility in Derbyshire, the Visqueen Training Academy is available to support Visqueen customers throughout the UK by providing a wide range of both theory and practical skills related training.

Courses include one day product awareness training for our distributors and builders merchants to help them in their day-to-day jobs, through to intensive three day courses giving detailed hands-on training in the practical skills required for safe and robust product installation.

Visqueen TreadGUARD 300, 2m x 75m

Features and benefits

- Good impact strength - protects construction membranes from damage in light duty applications
- Non woven structure - protection against rebars and following trades
- Large format roll - rapidly covers large areas

Product description

Visqueen TreadGUARD 300 is a white non woven polypropylene geotextile protection fleece supplied in single wound rolls 2m x 75m.

Approvals and standards

- Quality Management System ISO 9001:2015

Usage

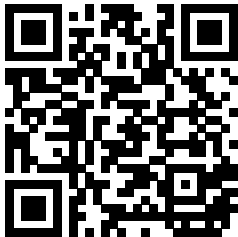
Visqueen TreadGUARD 300 is used to protect construction membranes in light duty applications.

It is suitable In horizontal applications for the protection of damp proof membranes and gas membranes from rebars and following trades.

In heavy duty applications use Visqueen TreadGUARD 1500.

System components

Find your local stockist





Visqueen TreadGUARD 300, 2m x 75m

Storage and handling

Visqueen TreadGUARD 300 should be stored under cover in its original packaging.

Care should be taken when handling the product in line with current manual handling regulations.

Preparation

Prior to installation, ensure the membrane to be protected is free from surface debris that may cause puncture.

Visqueen TreadGUARD 300 can be cut with a sharp retractable safety knife or robust scissors.

Installation

Apply Visqueen TreadGUARD 300 by unrolling across the laid construction membrane and overlap by a minimum 100mm.

Ensure that the protection layer is suitably weighted down during windy weather conditions.

The finishing layer e.g. backfill, concrete slab, etc should be applied within 30 days.

Usable temperature range

Although there are no limitations to the usable temperature range for Visqueen TreadGUARD 300, it is recommended that the Visqueen products associated with this system component should not be installed below 5°C.

Additional information

In the event that Visqueen TreadGUARD 300 lap joints require sealing, use Visqueen Pro Detailing Strip.

Visqueen TreadGUARD 300, 2m x 75m

Property	Value
Dimensions	2m x 75m
CBR Static Puncture	2000N
Tensile Strength MD	10 kN/m
Tensile Strength TD	10 kN/m
Elongation at break MD	80%
Elongation at break TD	80%

Health and safety information

Refer to the Visqueen TreadGUARD 300 material safety datasheets (MSDS).

Visqueen TreadGUARD 300, 2m x 75m

About Visqueen

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For further guidance on the Visqueen services shown below, please refer to the relevant section of the Visqueen website (www.visqueen.com) or contact Visqueen Technical Services on +44 (0) 333 202 6800 or enquiries@visqueen.com

Complete Range, Complete Solution



Structural
Waterproofing



Gas
Protection



Damp Proof
Membrane



Tapes



Damp Proof
Course



Stormwater



Vapour
Control

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Courses include one day product awareness training for our distributors and builders merchants to help them in their day-to-day jobs, through to intensive three day courses giving detailed hands-on training in the practical skills required for safe and robust product installation.



Visqueen Gas Vent Mat

Features and benefits

- Large format rolls - rapid installation
- Cost effective - less contaminated soil to be removed compared to pipe and gravel systems
- Complies with BS8485:2015 + A1:2019 - system achieves between 0.5 and 1.5 points
- Full range of system components - provides various methods of exhausting gases to atmosphere

Product description

Visqueen Gas Vent Mat is a geocomposite void former comprising a cuspated high density polyethylene (HDPE) core bonded to a nonwoven polypropylene geotextile filter membrane. Visqueen Gas Vent Mat is 25mm thick and supplied in rolls 900mm x 50m.

Approvals and standards

- Quality Management System ISO 9001:2015

Usage

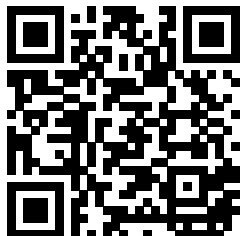
Visqueen Gas Vent Mat is designed to create a 25mm deep void beneath reinforced concrete ground floor slabs. Hazardous ground gases or volatile organic compounds (VOCs) are collected within the void and dispersed to atmosphere via a designed arrangement of Visqueen connectors and venting components, collectively managing and effectively diluting the collected gases.

Where high gas concentrations have been recorded the vent mat can be laid in a blanket format with the individual mats being butted together. Where the gas concentrations are low or where pressure relief is required the vent mat can be laid in a strip format with the mat being laid at predetermined spacings.

System components

- Visqueen Venting Pipework and Connectors
- VisqueenPro Detailing Strip, 300mm x 10m, 500mm x 10m

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Available to order from the 19th April

VISQUEEN To discover the Visqueen difference visit www.visqueen.com or call us on +44 (0) 333 202 6800

VISQUEEN ZEDEX
NON-COMBUSTIBLE DPC

Visqueen Zedex Non-Combustible Damp Proof Course
A2 - s1, d0 to BS EN 13501-1:2018



Visqueen Gas Vent Mat

Storage and handling

Visqueen Gas Vent Mat should be stored on end, under cover in the original packaging.

Care should be taken when handling the product in line with current manual handling regulations.

Preparation

Visqueen Gas Vent Mat should be installed on a compacted layer, free from voids or protrusions.

To prevent wind uplift when working on exposed sites, it is advisable to consider loading the vent mat with sandbags or other ballast as installation progresses.

The vent mat can be cut with a sharp retractable safety knife.

Installation

Unroll Visqueen Gas Vent Mat in position. Turn over so that the geotextile filter membrane layer faces downwards i.e. towards the substrate.

When laid in a blanket format, all joints should be butted with the overlap strip of geotextile filter membrane extending beneath the adjacent vent mat.

When laid in strip format, end laps should be butted with the overlap strip of geotextile filter membrane, when present, extending beneath the adjacent vent mat.

Where necessary the vent mat can be cut around columns, pipes and other such penetrations.

For effective gas dispersal, the vent mat should be connected to a means of exhausting the collected gases to atmosphere e.g. Visqueen Adjustable Z Vents and Airbricks, Visqueen Pro Gas Vent Boxes or Visqueen Gas Vent Bollards.

Usable temperature range

There are no temperature range restrictions for installing Visqueen Gas Vent Mat and associated system components.

Additional information

When designing the venting or pressure relief system careful consideration should be given to the substructure elements such as positioning of foundation pads and ground beams so as to avoid over complex detailing

For assistance with gas venting or gas pressure relief design and detailing, contact Visqueen Technical Services +44 (0) 333 202 6800



Visqueen Gas Vent Mat

Property	Test method	Units	Value
Width		mm	900
Length		m	50
Thickness	EN ISO 9863-1	mm	25
Compressive strength	EN ISO 25619-2	kN/m ²	300
Roll weight		kg	74
Roll diameter		m	1.3
In-plane air flow capacity with soft/hard platens @ 20mm and 100kPa	BE EN ISO 12958	l/m/s	155
Shear Strength	BE EN ISO 13426-2	kN	1

Health and safety information

Refer to the Visqueen Gas Vent Mat material safety datasheet (MSDS).

Visqueen Gas Vent Mat

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From initial design to the completed project, Visqueen are with you every step of the way. Whether it be hazardous ground gas protection and/or below ground waterproofing protection employing barrier, structurally integral or drained systems, Visqueen can offer professional indemnity (PI) insurance for bespoke Visqueen design solutions.

Visqueen Technical Support Managers work with all stakeholders to provide cost effective Visqueen solutions offering complete peace of mind throughout the construction phase and beyond.

Visqueen Training Academy

Based at our manufacturing facility in Derbyshire, the Visqueen Training Academy is available to support Visqueen customers throughout the UK by providing a wide range of both theory and practical skills related training.

Courses include one day product awareness training for our distributors and builders merchants to help them in their day-to-day jobs, through to intensive three day courses giving detailed hands-on training in the practical skills required for safe and robust product installation.

Visqueen Adjustable Z Vent and Airbrick

Features and benefits

- Easy to install - functional solution for exhausting ground gases from underfloor voids
- Integral grille - prevents movement of vermin through vent
- Robust material - resistant to decay
- Purpose made system components - no airflow restriction through vent

Product description

Visqueen Airbricks are manufactured from UV stabilized polypropylene and are available in Terracotta and Black. The airbrick replaces an external masonry brick. It incorporates a front mounted louvered grill to permit airflow while blocking out wind driven rain and prohibiting large insects from gaining access.

Visqueen Adjustable Z Vents are manufactured from black polypropylene and are designed to provide a clear airflow passage to the underfloor void.

Visqueen Extension Sleeves are manufactured from black polypropylene and are designed to extend the vents both vertically and horizontally.

The airbrick, vent and extension sleeve are sold separately.

When combined with the vent (with or without the extension sleeve), each airbrick provides a free air flow capacity of 6450mm².

Approvals and standards

- Quality Management System ISO 9001:2015

Usage

Visqueen Adjustable Z Vent and Airbrick system is used within external masonry cavity wall constructions to provide a clear airflow passage to the void beneath precast suspended segmental ground floors e.g. beam and block. The system is used to achieve a passive subfloor ventilation system in accordance with BS8485:2015 + A1:2019, effectively diluting any hazardous ground gases accumulating in the underfloor void.

The telescopic feature enables the vent to adjust vertically within the cavity to between three and five brick courses (225mm and 375mm).

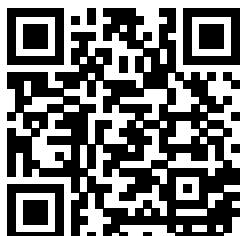
The airbrick replaces individual masonry bricks in the external leaf.

The system includes a Visqueen Extension Sleeve which increases the adjustment of the vertical portion of the vent by a further two brick courses (150mm). Additional sleeves can be used to extend the coursing indefinitely. The extension sleeves can also be used to extend the horizontal portion of the vent e.g. for wider cavity applications.

System components

- Visqueen Venting Pipework and Connectors

Find your local stockist



We're rolling out something big

Available to order from the 19th April

VISQUEEN To discover the Visqueen difference visit www.visqueen.com or call us on +44 (0) 333 202 6800

VISQUEEN ZEDEX
NON-COMBUSTIBLE DPC

Visqueen Zedex Non-Combustible Damp Proof Course
A2 - s1, d0 to BS EN 13501-1:2018



Visqueen Adjustable Z Vent and Airbrick

Storage and handling

Visqueen Adjustable Z Vents and Airbricks should be stored horizontally, under cover in the original packaging.

Care should be taken when handling the product in line with current manual handling regulations.

Preparation

Visqueen Adjustable Z Vent and Airbrick fit within a 50mm wide cavity, but also suits wider cavities that are filled with insulation leaving only a 50mm gap. A Visqueen Extension Sleeve is necessary to extend the vent horizontally where cavities are in excess of 200mm.

Installation

Visqueen Adjustable Z Vents and Airbricks should be installed during the normal course of bricklaying. A Visqueen Zedex CPT High Performance DPC cavity tray should be fitted above the vent.

Vents and airbricks should be fitted in at least two opposing walls to create a through flow of air. The vents and airbricks should be placed at centers as stipulated in BS8485:2015 + A1:2019 and within 450mm of each end of the wall. Bricklaying should then be completed as normal although care should be taken to keep the air flow passage clear from mortar droppings.

Where the vents require extending, Visqueen Extension Sleeves should be used.

Usable temperature range

There are no temperature range restrictions for installing Visqueen Adjustable Z Vents, Airbricks and Extension Sleeves.

Additional information

The system can also be used with a Visqueen Gas Vent Mat dispersal layer. For guidance on this or the required number of units to achieve a passive subfloor ventilation system in accordance with BS8485:2015 + A1:2019, contact Visqueen Technical Services +44 (0) 333 202 6800



Visqueen Adjustable Z Vent and Airbrick

Health and safety information

Refer to the Visqueen Adjustable Z Vent and Airbrick material safety datasheet (MSDS).

Visqueen Adjustable Z Vent and Airbrick

About Visqueen

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For further guidance on the Visqueen services shown below, please refer to the relevant section of the Visqueen website (www.visqueen.com) or contact Visqueen Technical Services on +44 (0) 333 202 6800 or enquiries@visqueen.com

Complete Range, Complete Solution



Structural
Waterproofing



Gas
Protection



Damp Proof
Membrane



Tapes



Damp Proof
Course



Stormwater



Vapour
Control

Visqueen Technical Support

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Visqueen CPD Seminars

The Visqueen Continuing Professional Development (CPD) Seminars provide up-to-date information on changes within Building Regulations/Building Standards and nationally recognised industry guidance affecting damp proofing, water vapour control, hazardous ground gas protection and below ground structural waterproofing.

The one hour seminars have been produced for design specialists within the construction sector and are delivered by our team of Technical Support Managers.

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Visqueen Gas Barrier

Features and benefits

- BBA certified - third party accreditation
- Complies with BS 8485:2015 + A1:2019 - industry standard for methane and carbon dioxide protection
- Flexible - easy to detail and install on site
- Multi functional - also acts as a radon and damp proof membrane
- Dual jointing methods - lap joints can be taped or heat welded

Product description

Visqueen Gas Barrier is a multi-layer reinforced polyethylene gas barrier with a 20 micron aluminium foil. The barrier is coloured blue on the upper surface and silver on the reverse. The product is supplied in single wound rolls (not folded), 2m x 50m.

Approvals and standards

- Third party accreditation (BBA 13/5069)
- Conforms to the specification requirements of BS 8485:2015 + A1:2019
- Suitable for all Characteristic Gas Situation (CS) ground gas regimes
- Conforms to the specification requirements of NHBC Amber 1 and Amber 2 applications
- Conforms to the specification requirements of BR 211:2015
- CE Mark EN 13967:2017
- Quality Management System ISO 9001:2015
- Occupational Health and Safety System ISO 18001:2007
- Environmental Management System ISO 14001:2015

Usage

Visqueen Gas Barrier is suitable for use in all types of buildings to prevent the ingress of harmful levels of ground gases e.g.methane, carbon dioxide and radon.

The barrier can be positioned above or below a solid concrete ground floor slab or above a precast suspended segmental ground floor system, e.g. beam and block floor.

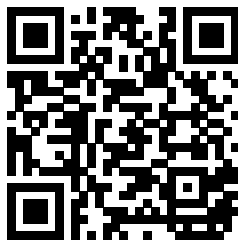
The barrier can also be used as a high performance radon membrane and/or damp proof membrane.

The product is not intended for use where there is a risk of hydrostatic pressure.

System components

- VisqueenPro Double Sided Jointing Tape, 50mm x 10m
- Visqueen Gas Resistant Foil Lap Tape, 75mm x 50m
- Visqueen Ultimate GR Lap Tape, 150mm x 10m
- Visqueen Ultimate Top Hat Units
- Visqueen Preformed Units
- VisqueenPro Detailing Strip, 300mm x 10m, 500mm x 10m
- Visqueen TreadGUARD 300, 2m x 75m
- Visqueen TreadGUARD 1500, 1m x 2m

Find your local stockist





Visqueen Gas Barrier

Storage and handling

Visqueen Gas Barrier should be stored horizontally, under cover in its original packaging.

Care should be taken when handling the product in line with current manual handling regulations.

Preparation

Visqueen Gas Barrier should be installed on a smooth continuous surface e.g. grouted beam and block floor, a compacted blinding layer e.g. 50mm thick sand blinding, or smooth concrete blinding. The substrate should be free from irregularities such as voids or protrusions.

The barrier can be cut with a sharp retractable safety knife or robust scissors.

Installation

Visqueen Gas Barrier should be loose laid on the substrate with the blue side up so as to avoid sunlight glare.

The barrier should be clean and dry at the time of jointing. It should be overlapped by at least 150mm, bonded with Visqueen Pro Double Sided Jointing Tape and sealed with Visqueen Foil Lap Tape. In demanding site conditions seal lap joints with Visqueen Ultimate GR Lap Tape.

Alternatively lap joints can be heat welded to achieve an effective seal. Welded lap joints can be less than 150mm provided the joint integrity is not compromised.

Airtight seals should be formed around all service entry points. Visqueen Preformed Top Hat Units should be used for sealing service entry pipes. The base of the top hat and the upstand should be bonded using Visqueen Pro Double Sided Jointing Tape and sealed with Visqueen Foil Lap Tape. The upstand should be secured with the supplied jubilee clip.

Forming an effective barrier to gases may give rise to complex three-dimensional detailing where, it is recommended Visqueen Preformed Units are used e.g. corners. Alternatively Visqueen Pro Detailing Strip can be used to seal awkward junctions.

If the barrier is punctured or perforated a patch of the same material should be lapped at least 150mm beyond the limits of the puncture and bonded with Visqueen Pro Double Sided Jointing Tape and sealed with Visqueen Foil Lap Tape. Alternatively a patch can be formed using Visqueen Pro Detailing Strip and lapped at least 150mm beyond the extents of the puncture.

The barrier should be covered by a protective layer as soon as possible after installation to prevent damage e.g. from following trades. Care should be taken to ensure that the membrane is not punctured, stretched or displaced when applying a screed or final floor covering. A minimum thickness of 50mm screed is recommended. When reinforced concrete is to be laid over the barrier the wire reinforcements and spacers must be prevented from puncturing the barrier. Where there is a high risk of potential damage, the barrier should be covered with Visqueen TreadGuard protection, screed, or other approved protection material before positioning the reinforcement.

Usable temperature range

It is recommended that Visqueen Gas Barrier and all associated system components should not be installed below 5°C.

Additional information

When used in accordance BS8485:2015 + A1:2019 a subfloor ventilation system or pressure relief maybe required
Where hydrocarbon or VOC contamination is present use Visqueen Ultimate VOC or HC Blok gas protection systems
To assist build sequencing, Visqueen GR DPC is available for gas protection through the wall constructions
For suspended beam and block floor detailing see GB-01
Visqueen Preformed Top Hat Units should be used at service pipe penetrations see GB-51
For internal and external corners Visqueen Ultimate Preformed Units should be used see PFU-553
To seal around steel columns use Visqueen Pro Detailing Strip see GB-52
For additional detailing information, contact Visqueen Technical Services +44 (0) 333 202 6800

Visqueen Gas Barrier

Property	Test method	Units	Compliance criteria	Result
Dimensions	EN 1848-2	m		2 x 50
Overall thickness including scrim mesh	EN 1849-2	mm		0.66
Effective thickness in between scrim mesh	EN 9863-1	mm		0.4
Mass	EN 1849-2	g/m ²	-0%/+5%	400
Tensile strength - MD	EN 12311	N	MLV	350
Tensile strength - CD	EN 12311	N	MLV	350
Tensile elongation - MD	EN 12311	%	MLV	20
Tensile elongation - CD	EN 12311	%	MLV	21
Joint strength	EN 12317-2	N	MLV	332
Watertightness 2kPa	EN 1928	-	Pass/Fail	Pass
Resistance to impact	EN 12691	mm	MLV	200
Dart impact	BS 2782	g	MDV	731
Low temperature flexibility	EN 495-5	°C	MDV	-40
Durability against ageing	EN 1296 and EN 1928	-	Pass/Fail	Pass
Durability chemical resistance	EN 1847	-	Pass/Fail	Pass
Resistance to tearing (nail shank) CD	EN 12310-1	N	MDV	358
Resistance to tearing (nail shank) MD	EN 12310-1	N	MDV	368
Resistance to static loading	EN 12730	kg	MLV	20
Water vapour transmission - resistance	EN 1931	MNs/g	MDV	7000
Water vapour transmission - permeability	EN 1931	g/m ² /d	MDV	0.03
Visible defects	EN 1850 -2	-	Pass/Fail	Pass
Reaction to fire	EN 13501-1	Class	MDV	F
BS 8485:2015 + A1:2019 testing requirements				
Mass	EN 1849-2	g/m ²	Average >370	400
Methane permeability	ISO 15105-1	mls/m ² /d/atm	Pass/Fail	<0.15
Puncture CBR	BS EN ISO 12236	N	MDV	1114
Impact resistance	EN 12691	mm	MDV	1000
Tensiles yield strength MD	ASTM D4885-01	kN/m	MDV	12.5
Tensiles yield strength CD	ASTM D4885-02	kN/m	MDV	7.3
Resistance to static loading	EN 12730	kg	>MLV	20
Yield elongation CD	ASTM D4885-04	%	MDV	19
Tear resistance - trouser method A - MD	BS ISO 34-1	kN/m	MDV	48.2
Tear resistance - trouser method A - CD	BS ISO 34-1	kN/m	MDV	44.8
Tear resistance - angle method B - MD	BS ISO 34-1	N	MDV	53.5
Tear resistance - angle method B - CD	BS ISO 34-1	N	MDV	60.6

Health and safety information

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Visqueen Gas Barrier

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APPENDIX B

Competencies of BSL Verifiers

Experience and Qualifications of Verifiers of Ground Gas Protection Systems (Northwich Office)

Brownfield Solutions Ltd are registered members of the CHAS Health and Safety accreditation scheme and are registered and validated by Achilles.

Aaron Stokoe

Qualifications:

BSc (Hons) (Geology) CSci MEnvSc FGS
Chartered Scientist (2018)

Professional Bodies:

Member of the Institute of Environmental Science (IES)
Fellow of the Geological Society (FGS)

Relevant CPD Training and Experience Summary:

Valid and in date CSCS Card held (scan available on request)
GGs Two Day A-Z of Ground Gas Protection June 2016
CL:AIRE Webinar "An Introduction to the Verification of Ground Gas Protection Measures"
Visqueen CPD Seminar 1: Gas Protection - Protecting against gas on contaminated land 28 March 2019
LQM Technical Briefing Webinar (Ground Gases) "Correct Application of BS8485 to Characterise Gas Risk" 3 May 2019
Proctor Group Webinar "Protection of Buildings on Brownfield Sites" 18 February 2020
Environmental Analyst Webinar "Mine Gas Risk Assessment: Best Practice" 2 April 2020
Property Care Association (PCA) Webinar "Verification of Ground Gas Protection Systems" 23 July 2020.
Property Care Association (PCA) Webinar "Controlling Ground Gases & Water – How to get Synergy" watched 12 January 2021.
Atlas Copco Compressors "Introduction to Compressed Air" 8 January 2021 (compressor for air lance)
British Compressed Air Society "Working Safely with Compressed Air" January 2021 (compressor for air lance)

Chartered Scientist with 10 years' experience in ground investigation, characterisation of ground gas regimes, recommendations for ground gas protection systems and verification of installed systems.

Dan Gates

Qualifications:

MGeoscience (Geology) FGS

Professional Bodies:

Fellow of the Geological Society (FGS)

Relevant CPD Training and Experience Summary:

Valid and in date CSCS Card held (scan available on request)
GGs Two Day A-Z of Ground Gas Protection 18 October 2017
Visqueen CPD Seminar 1: Gas Protection - Protecting against gas on contaminated land 28 March 2019
Atlas Copco Compressors "Introduction to Compressed Air" 8 January 2021 (compressor for air lance)
British Compressed Air Society "Working Safely with Compressed Air" January 2021 (compressor for air lance)

Senior project engineer with over 8 years' experience in ground investigation, characterisation of ground gas regimes, recommendations for ground gas protection systems and verification of installed systems.

Jack Mather

Qualifications:

BSc (Hons) FGS (Geology)

Professional Bodies:

Fellow of the Geological Society (FGS)

Relevant CPD Training and Experience Summary:

Valid and in date CSCS Card held (scan available on request)

Visqueen CPD Seminar 1: Gas Protection - Protecting against gas on contaminated land 28 March 2019

Neil Salvidge TD&A Ltd "Ground Gas Protection installation covering basic membrane installation methods of heat fusing, detailing, and implementation of Verification in accordance with CIRIA C735" 29 January 2020 (Full day Course)

Proctor Group CPD Webinar: Ground Gas Protection 16 October 2020

CL:AIRE CPD Webinar: Verification of Gas Protection Systems 16 October 2020

Property Care Association CPD Webinar: Verification of Ground Gas Protection Systems 16 October 2020

Project engineer with over 3 years' experience in ground investigation, characterisation of ground gas regimes, recommendations for ground gas protection systems and verification of installed systems.

Matty Shore

Qualifications:

BSc (Hons) (Environmental Science) AMIEnvSc

Professional Bodies:

Associate member of the Institute of Environmental Science (IES)

Relevant CPD Training and Experience Summary:

Valid and in date CSCS Card held (scan available on request)

Visqueen CPD Seminar 1: Gas Protection - Protecting against gas on contaminated land 28 March 2019

Neil Salvidge TD&A Ltd "Ground Gas Protection installation covering basic membrane installation methods of heat fusing, detailing, and implementation of Verification in accordance with CIRIA C735" 29 January 2020 (Full day)

Project engineer with over 3 years' experience in ground investigation, characterisation of ground gas regimes, recommendations for ground gas protection systems and verification of installed systems.

Tim Mayall

Qualifications:

MGeol (Hons) (Geology) FGS

Professional Bodies:

Fellow of the Geological Society (FGS)

Relevant CPD Training and Experience Summary:

Valid and in date CSCS Card held (scan available on request)

Visqueen CPD Seminar 1: Gas Protection - Protecting against gas on contaminated land 28 March 2019
Neil Salvidge TD&A Ltd "Ground Gas Protection installation covering basic membrane installation methods of heat fusing, detailing, and implementation of Verification in accordance with CIRIA C735" 29 January 2020 (Full day)

Environmental Analyst Webinar "Mine Gas Risk Assessment: Best Practice" 2 April 2020

Atlas Copco Compressors "Introduction to Compressed Air" 8 January 2021 (compressor for air lance)

British Compressed Air Society "Working Safely with Compressed Air" January 2021 (compressor for air lance)

Project engineer with over 3 years' experience in ground investigation, characterisation of ground gas regimes, recommendations for ground gas protection systems and verification of installed systems.

Nicola Swallow

Qualifications:

BSc (Hons) (Environmental Science) MSc MEnvSc

Professional Bodies:

Member of the Institute of Environmental Science (IES)

Relevant CPD Training and Experience Summary:

Valid and in date CSCS Card held (scan available on request)

Visqueen CPD Seminar 1: Gas Protection - Protecting against gas on contaminated land 28 March 2019

Senior Project engineer with over 8 years' experience in ground investigation, characterisation of ground gas regimes, recommendations for ground gas protection systems and verification of installed systems.

Phillip Griffiths

Qualifications:

BSc (Hons) MSc

Professional Bodies:

Fellow of the Geological Society (FGS)

Relevant CPD Training and Experience Summary:

Valid and in date CSCS Card held (scan available on request)

Graduate Project engineer with over 2 years' experience in ground investigation, characterisation of ground gas regimes, recommendations for ground gas protection systems and verification of installed systems.



APPENDIX C

Gas Protection Measures Inspection Records



Gas Protection Measures Inspection Checklist

Sub-floor void	Is a check possible? Void former? Gravel (type/specification)? Height of void space? Is it clear?
External wall airbricks	Numbers, size, positions as design drawing?
Internal sleeper walls	Ventilation holes (honeycomb brickwork/pipe crossings?) – size, spacing, location in accordance with design?
External vent trenches/ducts	Located and constructed in accordance with design drawings? If open-topped gravel – gravel type/presence of fines? If pipe or other vent, check position and construction for functionality and absence of blockages. Ability of void former to withstand bearing of the structure?
Underside of gas membrane	Check that the sub grade does not contain rough/uneven surfaces, is appropriately clean and that there are no hard/sharp objects. That protective sand blinding or geotextile (if specified) is present and meets the design criteria.
Gas membrane type	Manufacturer and product specification, gauge, colour, brand/name, material batch/roll numbers, storage arrangements (protected from dirt/damage?)
Gas membrane condition	Open punctures, tears, rips, stretching? Excessive footprints/evidence of traffic? Presence of debris? Repairs? Signs of weakness such as raised or sunken indentations? Protection plan in place to restrict access to gas membrane?
Joining tape product	Product type, brand, thickness, material, width, colour? Use of double sided tape?
Lapping design	Joints lapped and sealed in accordance with manufacturer's requirements/ specification? Minimum overlap? Sections taped twice?
Laps and joints sealed	Welds complete? Appropriate joining/double sided tape used?
Service entries sealed	Top hats seal arrangements fixed around service entries? Use of Jubilee clips?
Cavity Inspection	Confirm that the cavity is not blocked with debris, check that there are no rips in the membrane across the cavity and the jointing detail (if present) is fully sealed.

Verification of Ground Gas Protection Systems



**BROWNFIELD
SOLUTIONS LTD**

Job No: C4788
Client: Bradbury Consulting
Site Name: Mount Carmel, Hunt Street
Plot/Area Number (s): New Extension
Weather: Dry
Verifier/Inspector (s): PG

Drawing Refs: Visqueen: 4518-ED-01, 4518-VL-01, GB-51, GB-53, GB-55
Structure Type: Commercial
Floor Slab Type: Ground Bearing - Lightly reinforced concrete slab
Gas protection Type: Passive
Installer and competency (e.g. NVQ): General Groundworker

Passive Venting Measures	✓ / *	Inspection Date (s)	Photos:
Void Former	✓	21/09/2021	✓ Visqueen Gas Vent Mat correctly installed as per design drawings across 100% of floor area, successfully connected to telescopic vents.
Void Height	✓	21/09/2021	✓ Void height 25mm formed by Visqueen Vent Mat as per design drawings.
Gravel Type		N/A	
External Wall Air Bricks	✓	21/09/2021	✓ Air bricks not arrived to site so not yet installed, but space has been left and telescopic "Z" vents are correctly installed and spaced according to the design drawings.
Internal Sleeper Wall Vents		N/A	
External Vent Trench/Duct		N/A	

Gas Barrier/Membrane	✓ / *	Inspection Date (s)	Photo
Underside of membrane	✓	21/09/2021	✓ Vent mat free of debris
Membrane Type			Membrane not yet delivered to site at time of inspection.
Extent of Coverage			
Slab/membrane condition			
Joining tape product			
Laps, joints, welds and seals			
Damp-proof course	✓	21/09/2021	✓ Visqueen Gas Resistant Self Adhesive Membrane (GRSAM) in use onto Visqueen HP Tanking Primer to allow adhesion onto existing brickwork, in place of a DPC, as per design drawings.
Service entries and seals			
Cavity inspection			

This plot/area

REQUIRES FURTHER INSPECTION

Where the above inspection indicates a Pass, construction works for that plot/area may proceed, subject to suitable protection measures of the membrane being applied in accordance with the manufacturer's recommendations.

Compiled by:

Tim Mayall

Checked By:

Insert Signature here

Print Name (overwrite here)

Verification of Ground Gas Protection Systems



Job No: C4788
Client: Bradbury Consulting
Site Name: Mount Carmel, Hunt Street
Plot/Area Number (s): New Extension
Weather: Rain
Verifier/Inspector (s): TM/MS

Drawing Refs: Visqueen: 4518-ED-01, 4518-VL-01, GB-51, GB-53, GB-55
Structure Type: Commercial
Floor Slab Type: Ground Bearing - Lightly reinforced concrete slab
Gas protection Type: Passive
Installer and competency (e.g. NVQ): General Groundworker

Passive Venting Measures	✓/✗	Inspection Date (s)	Photos:
Void Former	✓	21/09/2021	✓ Visqueen Gas Vent Mat correctly installed as per design drawings across 100% of floor area, successfully connected to telescopic vents.
Void Height	✓	21/09/2021	✓ Void height 25mm formed by Visqueen Vent Mat as per design drawings.
Gravel Type		N/A	
External Wall Air Bricks	✓	21/09/2021	✓ Air bricks not arrived to site so not yet installed, but space has been left and telescopic "Z" vents are correctly installed and spaced according to the design drawings.
Internal Sleeper Wall Vents		N/A	
External Vent Trench/Duct		N/A	

Gas Barrier/Membrane	✓/✗	Inspection Date (s)	Photo
Underside of membrane	✓	21/09/2021	✓ Vent mat free of debris
Membrane Type	✓	28/09/2021	✓ Visqueen Gas Barrier across main floor area
Extent of Coverage	✓	28/09/2021	✓ 100% membrane coverage at time of inspection
Slab/membrane condition	✓	28/09/2021	✓ Membrane in very good condition, no evidence of punctures, minimal foot traffic across membrane.
Jointing tape product	✓	28/09/2021	✓ Visqueen double sided DPM Jointing Tape in use to join membrane sheets and membrane to GRSAM around perimeter of existing walls.
Laps, joints, welds and seals	✓	28/09/2021	✓ Laps all >150mm as per design drawings. Seals generally very good. Some minor repairs required to taped seals due to wet weather, all repaired and re-inspected by BSL during the same visit.
Damp-proof course	✓	21/09/2021	✓ Visqueen Gas Resistant Self Adhesive Membrane (GRSAM) in use onto Visqueen HP Tanking Primer to allow adhesion onto existing brickwork, in place of a DPC, as per design drawings.
Service entries and seals	✓	28/09/2021	✓ Service entries too large for pre-formed tophat products, Visqueen GRSAM used instead and heat welded to service entries, good seal achieved.
Cavity inspection		N/A	

This plot/area **PASSED INSPECTION**

Where the above inspection indicates a Pass, construction works for that plot/area may proceed, subject to suitable protection measures of the membrane being applied in accordance with the manufacturer's recommendations.

Compiled by:  Tim Mayall

Checked By: Insert Signature here Print Name (overwrite here)



APPENDIX D

Photographs

Photo Descriptions				
PHOTO NO.	DETAILS			
1	Visqueen double sided DPM jointing tape in use.			
2	Visqueen Gas Resistant Self Adhesive Membrane in use.			
3	Visqueen HP Tanking Primer in use.			
4	Vent mat and telescopic vents installed, vents passing to external wall.			
REV	DATE	DESCRIPTION	BY	CKD
 BROWNFIELD SOLUTIONS LTD Build - Protect - Restore - Remediate - Refurbish CLIENT BRADBURY CONSULTING PROJECT TITLE MOUNT CARMEL RC SCHOOL, HUNT STREET, BLACKLEY TITLE VERIFICATION OF GROUND GAS PROTECTION SYSTEM Associated Document Ref No. TM/C4788/10487 PAGE 1 of 6 COMPILED BY TM CHECKED BY LC				



PHOTO 2



PHOTO 4



PHOTO 1



PHOTO 3

Photo Descriptions	
PHOTO NO.	DETAILS
5	Telescopic air vents installed.
6	Visqueen gas vent mat installation across 100% floor area.
7	Visqueen HP tanking primer applied to existing brickwork.
8	Void height 25mm formed by visqueen vent mat

REV	DATE	DESCRIPTION	BY	CKD



BROWNFIELD SOLUTIONS LTD
ENVIRONMENTAL. INDUSTRIAL. COMMERCIAL.

CLIENT	BRADBURY CONSULTING
PROJECT TITLE	MOUNT CARMEL RC SCHOOL, HUNT STREET, BLACKLEY
TITLE	VERIFICATION OF GROUND GAS PROTECTION SYSTEM
Associated Document Ref No.	PAGE
TM/C4788/10487	2 of 6
COMPILED BY	CHECKED BY
TM	LC



PHOTO 6



PHOTO 8



PHOTO 5



PHOTO 7

Photo Descriptions	
PHOTO NO.	DETAILS
9	Membrane installation across floor area, visual inspections taking place
10	Membrane installation across floor area, visual inspections and repairs taking place
11	Air lance integrity testing is carried out.
12	Air lance testing carried out with compressed air at 50 psi
REV DATE DESCRIPTION BY CKD  BROWNFIELD SOLUTIONS LTD SPECIALIST IN THE DESIGN, INSTALLATION AND MAINTENANCE OF WATERPROOFING MEMBRANES FOR BUILDINGS AND INFRASTRUCTURE CLIENT BRADBURY CONSULTING PROJECT TITLE MOUNT CARMEL RC SCHOOL, HUNT STREET, BLACKLEY TITLE VERIFICATION OF GROUND GAS PROTECTION SYSTEM Associated Document Ref No. TM/C4788/10487 PAGE 3 of 6 COMPILED BY TM CHECKED BY LC	



PHOTO 10



PHOTO 12



PHOTO 9



PHOTO 11

Photo Descriptions				
PHOTO NO.	DETAILS			
13	Minor defect identified in taped seam, marked up for repair.			
14	Repair being completed by installers.			
15	Mechanical point stressing being completed along membrane seals.			
16	Mechanical point stressing being completed around service entries – very good seal achieved with the GRSAM.			
REV	DATE	DESCRIPTION	BY	CKD
 BROWNFIELD SOLUTIONS LTD CONSTRUCTION • CIVIL ENGINEERING • FOUNDATIONS • ROADS				
CLIENT BRADBURY CONSULTING				
PROJECT TITLE MOUNT CARMEL RC SCHOOL, HUNT STREET, BLACKLEY				
TITLE VERIFICATION OF GROUND GAS PROTECTION SYSTEM				
Associated Document Ref No.			PAGE	
TM/C4788/10487			4 of 6	
COMPILED BY TM		CHECKED BY LC		



PHOTO 2



PHOTO 4



PHOTO 1



PHOTO 3

Photo Descriptions	
PHOTO NO.	DETAILS
17	Typical corner detail – sealed using GRSAM onto primed surface.
18	Very good seal achieved surrounding service entry.
19	Minor damage noted to GRSAM.
20	Repair to GRSAM completed.



PHOTO 18



PHOTO 20



PHOTO 17



PHOTO 19



**BROWNFIELD
SOLUTIONS LTD**
CONSTRUCTION • REMEDIATION • INVESTIGATION

CLIENT	BRADBURY CONSULTING
PROJECT TITLE	MOUNT CARMEL RC SCHOOL, HUNT STREET, BLACKLEY
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TM	LC

REV	DATE	DESCRIPTION	BY	CKD

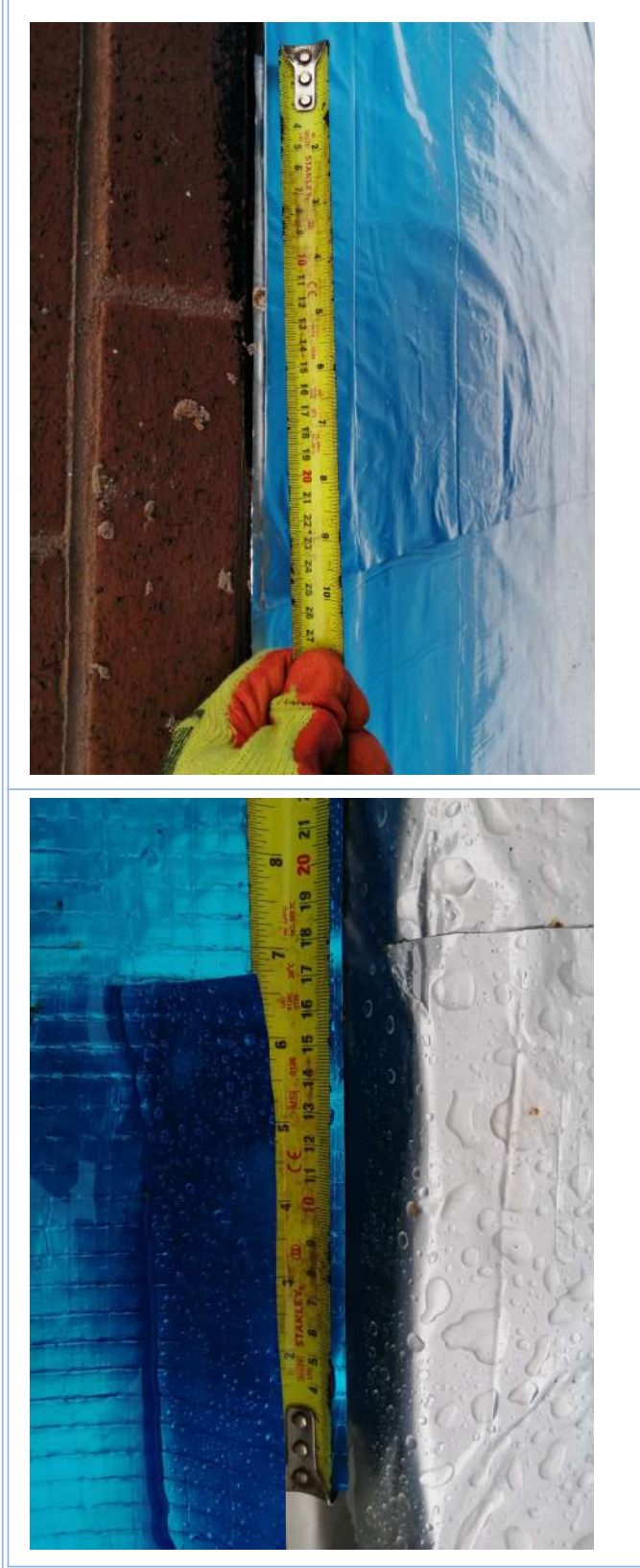


PHOTO 21

PHOTO 22



PHOTO 23

PHOTO 24

Photo Descriptions	
PHOTO NO.	DETAILS
21	Minimum overlap of 150mm between sheets exceeded.
22	Minimum overlap of 150mm between GRSAM sheets exceeded.
23	Typical corner detail against existing brick wall.
24	Very good seal evident between GRSAM sheets and primed brick wall.

REV	DATE	DESCRIPTION	BY	CHKD



CLIENT	BRADBURY CONSULTING
PROJECT TITLE	MOUNT CARMEL RC SCHOOL, HUNT STREET, BLACKLEY
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COMPILED BY	CHECKED BY
TM	LC



APPENDIX E

Air Lancing Test Certificate

Air Lance Integrity Testing Certificate (ATSM D 4437)



**BROWNFIELD
SOLUTIONS LTD**

Job No:	C4788	Drawing Refs:	Visqueen: 4518-ED-01, 4518-VL-01, GB-51, GB-53, GB-55
Client:	Bradbury Consulting	Structure Type:	Commercial
Site Name:	Mount Carmel, Hunt Street	Floor Slab Type:	Ground Bearing - Lightly reinforced concrete slab
Plot/Area Tested (s):	New Extension	Gas protection Type:	Passive
Weather:	Rain	Installer and competency (e.g. NVQ)	General Groundworker
Integrity Tester (s):	TM/MS		

Integrity Testing Record	
Inspection Date	Comments
28/09/2021	Membrane fully installed and ready for inspection at time of visit. Air lance integrity testing completed on 100% of taped seams with 3 No. minor defects identified. All defects repairs by installers and re-verified by BSL on the same visit.

Concluding Statement
Air Lancing was completed in accordance with ATSM D 4437 at a pressure of 50 PSI no further than 50mm away from any given seam. Integrity testing by air lancing has been completed across 100% of the overall floor area and along the membrane - DPC seal around the perimeter of the building. The integrity testing has demonstrated that the ground gas protection system shows very good performance, with minor defects repaired immediately and re-tested, passing inspection.

This plot/area has **PASSED** integrity testing by Air Lancing in accordance with CIRIA C735

Where the above testing indicates a Pass, construction works for that plot/area may proceed, subject to suitable protection measures of the membrane being applied in accordance with the manufacturer's recommendations. BSL cannot be held responsible for damage caused after inspection not brought to our attention.

Compiled by:		Tim Mayall
Checked By:	Insert signature	Print Name (overwrite)