



Parchow Groundworks Ltd

31A North St, Emsworth, PO10 7DA

Ground Gas Protection Validation Report

Prepared: 15th May 2023

Ref: G221101-004VR

Client Name: Parchow Groundworks Ltd

Reference: G221101

Issue: FINAL

Date: 22nd May 2023

Approval Status: PASS In FULL

Prepared By: S.A.Carter

Checked By: Ray Carter

Position: Managing Director



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This 3rd party ground gas/waterproofing mitigation, testing & validation report has been prepared by CPL with all reasonable skill, care & diligence within the terms of the contract with the client.

We disclaim any responsibility to the client & others in respect of any matters outside the scope of the above.

This 3rd party ground gas/waterproofing mitigation, testing & validation report is confidential to our client & we accept no responsibility of whatsoever nature to third parties to whom this report, or any thereof, is made known. Any such party relies on this report at its own risk.

1. Introduction

1.1 Purpose

Parchow Groundworks Ltd have installed a ground gas protection system to a new housing development - 31A North Street, Emsworth.

During installation at agreed stages Parchow Groundworks Ltd appointed CPL as a validator to carry out an independent validation of the installation of the gas membrane throughout the build.

The independent validation was due to reports from RSK Environmental Ltd

Preliminary Risk Assessment Dated: July 2018, Ref: 305019 R01 (00) &

Geo-environmental Site Assessment Dated: Sept 2018, Ref: 305019 R02 (00)

The preliminary report identified the site to have a requirement for ground gas protection as per CIRIA C665 Characteristic Situation 1 (Methane Concentration 0.5%v/v & Carbon Dioxide 2.0%v/v with 0.5l/hr maximum gas flow rate).

However, the second report did highlight a risk to health due to the made ground containing waste soils which could form hydrocarbon contamination (volatile organic compounds).

Bluebay/Solco designed the gas protection system in accordance with BS8485:2015, which identifies that the measures used to protect a building, by using a barrier system (DPM & DPC) to prevent the pathway of contamination into the building. This barrier system will be designed to remain effective for the whole life of the building. Additionally using a passive ventilation system by forming a void beneath the floor build up, and creating a cross air-flow to allow gases to escape & dissipate.

1.2 Limitations

CPL has prepared this report in accordance with the instructions of Parchow Groundworks Ltd under the terms of its appointment for the gas protection system validations/inspections and report.

This report is limited to the verification that the gas protection measures are correctly installed. CPL has not carried out any design work in respect of gas protection measures prescribed for this site and therefore no professional liability is extended in respect of the gas protection system design.

The design for gas protection systems being by Bluebay/Solco.

This report has been prepared in accordance with the best available practice and the relevant guidance documents.

This report and its contents should not be used for any purposes other than that for which it was prepared and provided. Should the client require to pass copies of the report to other parties for information, the whole of the report should be copied.

1.3 Frequency and Type of Inspection

Inspections were carried out at stages through-out the forming of foundations and for the entire slab installation in accordance with guidance given in CIRIA Report C735.

The foundations consisted of mass fill concrete with concrete block perimeter & party walls. A floor build-up of block & beam floor, topped with insulation & screed, leaving a 250mm void beneath to allow passive ventilation.

Photographic evidence was provided to demonstrate the forming of foundation & void space.

Repairs were made as inspection progressed & concrete was placed soon after inspection to ensure risk of further damage was eliminated.

1.4 Method

The Validation consultant visually inspected 100% of the surface area of the membrane to identify condition of installation, 3D detailing (corners, etc.), pipe penetrations and joints.

1.5 Equipment

Seam Pick, Tape Measure, Stanley Knife, Ipad and PPE.

1.6 Identification

All seams and non-seam areas of gas membrane were inspected/tested as per 1.4 by the Validation Consultant for identification of defects, protruding and penetrating objects, lack of substrate support, overheating, holes, blisters, undispersed raw materials, scratches and gouges, and any sign of contamination by foreign matter.

Any portion of the gas membrane exhibiting a flaw, or failing a visual inspection/testing was repaired. Several procedures exist for the repair of these areas. The final decision as to the appropriate repair procedure was agreed upon between the Validation Consultant and the installer present at the time of the repair and is noted in the survey notes.

Each repair was visually inspected/tested, repairs passing the inspection/testing were considered acceptable. The Validation Consultant carried out all visual inspections/testing of repairs and recorded the type and result of the repair on the survey report, prior to taking sample photos which are presented in section

1.7 Validator Experience

Ray Carter has been specifying, designing and inspecting membrane installations for over 25 years.

He has been employed by a number of the leading UK manufacturers (Ruberoid, RIW & CETCO), during this time has developed a full understanding in the issues and risks involved with installation on both residential and large industrial sites.

He has completed the NVQ4 – Verification of Ground Gas Protection Systems, and provides gas protection guidance in accordance with BS8485:2015+A1:2019 taking into account CIRIA 735.

Ray Carter is also a Certified Surveyor in Structural Waterproofing (CSSW) and a member of the Institute for Concrete Technology.

Holds membership of the British Verification Council.

For Continued Professional Development he can access both CLAIRE and the Property Care Association (PCA) membership.

1.8 Protection membrane (hydrocarbon/gas) System Installed:

Parchow Groundworks have installed a passive vented sub void, with a Solco under floor venting system was installed providing a cross air-flow. A continuous barrier included Solco Hydrocarbon Barrier & Hydrocarbon DPC system to protect floor & cavity walls.

Installation was based on details & drawings supplied by Bluebay/Solco. The system was installed with a combination of taped seams, joints & corners, pipe penetrations using pre-formed top hats & foil tape.

Certificate of Achievement

(Full Award)

This is to certify that

Ray Carter

has been assessed as meeting the required level of competence for all
the units necessary to achieve the full award

**ABBE Level 4 NVQ Diploma in Verification of Ground Gas Protection
Systems**

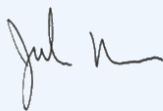
603/3266/9

Units achieved:

Mandatory Units

K/617/0687, M/617/0688, K/617/0690, M/617/0691,
A/617/0693, F/617/0694, J/617/0695

Signed :



Professor Julian Beer, Chair of ABBE Board

Date:

13/10/2022

Candidate Registration No : 0000039210

Certificate Issue No : 152765

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REGULATED
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! CDM 2015 - RESIDUAL RISKS !

In preparing the designs illustrated by this drawing we have fulfilled our duties in the role of Designer as defined in the Construction Design and Management Regulations 2015. We have undertaken a full Hazard Identification and Risk Analysis and have designed out any special risks associated with the work, so that as far as possible there are no residual risks.

NOTE: Residual risks are defined as those risks arising from identified hazards which cannot be designed-out, and which a competent and experienced building contractor is unlikely to encounter during normal construction activities. Ordinary risks arising from normal construction operations have not been included.

Where hazards have been identified, the risks from which it has not been possible to eliminate during the design process, these are indicated on the drawing. It will be the responsibility of the Principal Contractor to develop Safe Systems of Work and/or Method Statements to minimise any risks associated with such hazards.

NOTES

1. Foundation drawing is to be read in conjunction with all Architects drawings and specifications.

2. All dimensions are in millimetres unless noted otherwise.

3. The Contractor is responsible for setting out and for checking dimensions.

4. All concrete shall be to BS EN 206-1 or BS 8500-1 and is to be resistant to sulphates Class DS-4 and Aggressive Chemical Environment for Concrete (ACEC) Class of AC-S3. Blinding and normal concrete fill: Designated mix to suit above Sulphate and ACEC Class.

5. Foundation design has been based on nett bearing capacity of 90 kN/m2 into London clay below any made ground. All soft spots are to be dug out and filled with mass concrete.

6. Excavations are to be kept clear of water at all times.

7. All foundation excavations are to be approved by the Building Inspector prior to concreting.

8. The position of all construction joints are to be agreed with the Engineer. Construction joints in trench fill or strip foundations shall be formed with expanded metal lath.

9. In accordance with The Construction (Design and Management) Regulations 2015 (CDM 2015) the Principal Designer and Contractor are to:
-Notify HSE of works.
-Comply with the requirements of Health and Safety Plan (if applicable)
-Provide risk assessments and method statements for all potential hazards relevant to this project.

10. The drawings has been prepared from drawings supplied by the Client, therefore, the contractor must take accurate dimensions on site and be satisfied by all dimensions prior to setting out.

KEY

Direction of beam and block ground floor. Allow the following loads:

= Dead load = 2.0 kN/m2 (Excl. Self wt.)

= Partitions, Allow = 0.5 kN/m2 (timber stud partitions)

= Live load = 1.5 kN/m2

Extent of 600mm wide trench fill foundations, central to walls (UNO) minimum depth 1.0m below E.G.L. into Clay.

= Load Bearing Wall

PLOT 4, 5 & 6 FOUNDATION PLAN
SHOWING SUBSTRUCTURE WALLS
1:50

PLOT 1, 2 & 3 FOUNDATION PLAN
SHOWING SUBSTRUCTURE WALLS
1:50

Date

By

Revision

QA'd

Chk'd

Ref

PRELIMINARY

Cowan Consultancy
3 Turberville House
4400 Parkway
Whiteley
Foreham
Hampshire
PO15 7FJ

Also at:
Languard Manor Road
Langward Road
Langward
Isle of Wight
PO37 7AB

Tel: 01489 577488
Fax: 01489 579873
consultants@cowanconsult.co.uk
www.cowanconsult.co.uk

Client

Parchow Groundworks

Project

31A North Street Emsworth

Title

FOUNDATION GA & DETAILS

Date

Mar 2022

Scale

AS SHOWN @ A1

Dr. No.

435334/301P1

Drawn

CMW

Chk'd

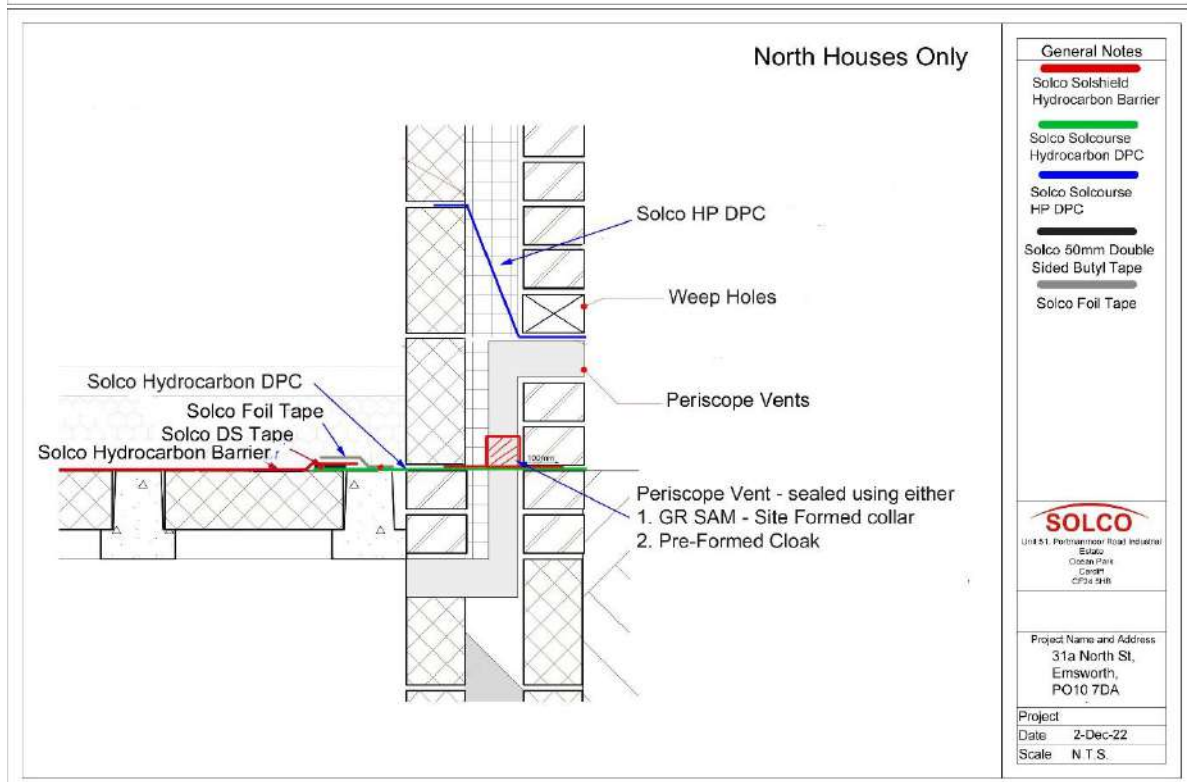
EG

QA'd

EG

1.9 Installation was carried out in accordance with details from Bluebay/Solco

Note: The East Houses required remedial repairs to amend previously used design.



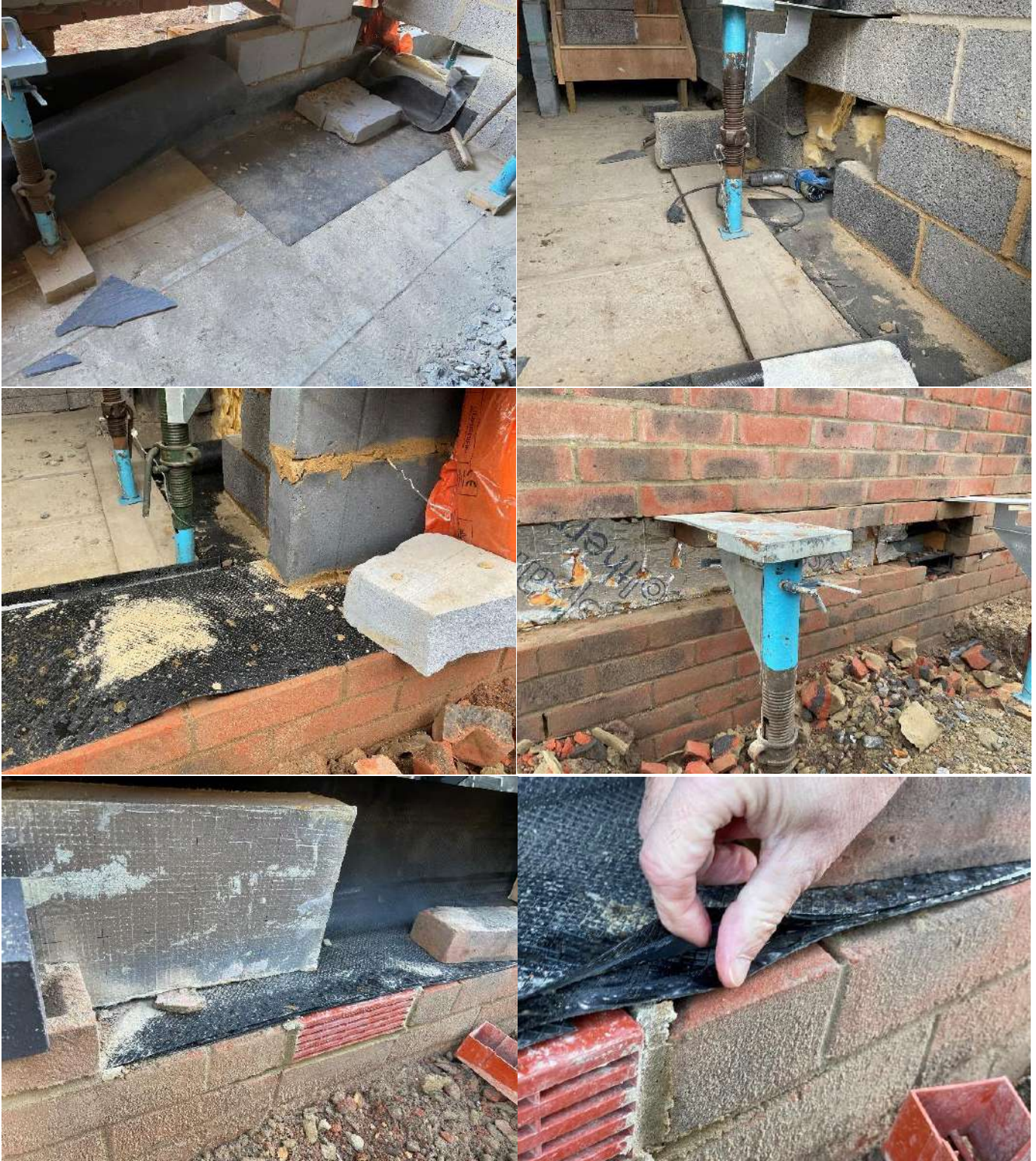
2.0 Photographic Evidence

Foundation



Hydrocarbon DPC Installation

East Houses (This building was a remedial repair to the hydrocarbon barrier system).



North Houses



Slab Installation

East Houses



North Houses



Independent Inspection & Validation Certificate of Conformance

Project Ref: G221101.001	Date: 23rd November 2022
Name / Location: 31A, North St, Emsworth	
Customer: Parchow Groundworks	
Area / Installation Inspected: East Houses – Middle of Three Town Houses -South Facing Elevation	

Inspection & Validation details:

Substrate

Installation of Solco Solcourse HC DPC – Benchmark

Inspection via CPL Site Attendance, accompanied by A.Howe-Parchow.

Laps were sealed using Solco DS tape to Bluebay Detail.

Therefore, based on the evidence of install CPL can offer sign off on this installation.

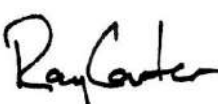
Photographic evidence included in final sign off report.

CPL do hereby confirm that the elements of the project detailed above have been inspected & validated by a suitably qualified independent consultant in accordance with industry requirements, with the test result noted below:

CONCLUSION: (PASS/FAIL/IN PROGRESS) - Pass(In accordance with design/details).

Where the conclusion above indicates a Pass, the construction activities may proceed subject to suitable protection measures of the membrane being applied in accordance with the manufacturer's recommendations. For Fail see further comments/actions attached:

Signed for on behalf of CPL:

Name: 

Date: 23-11-2022

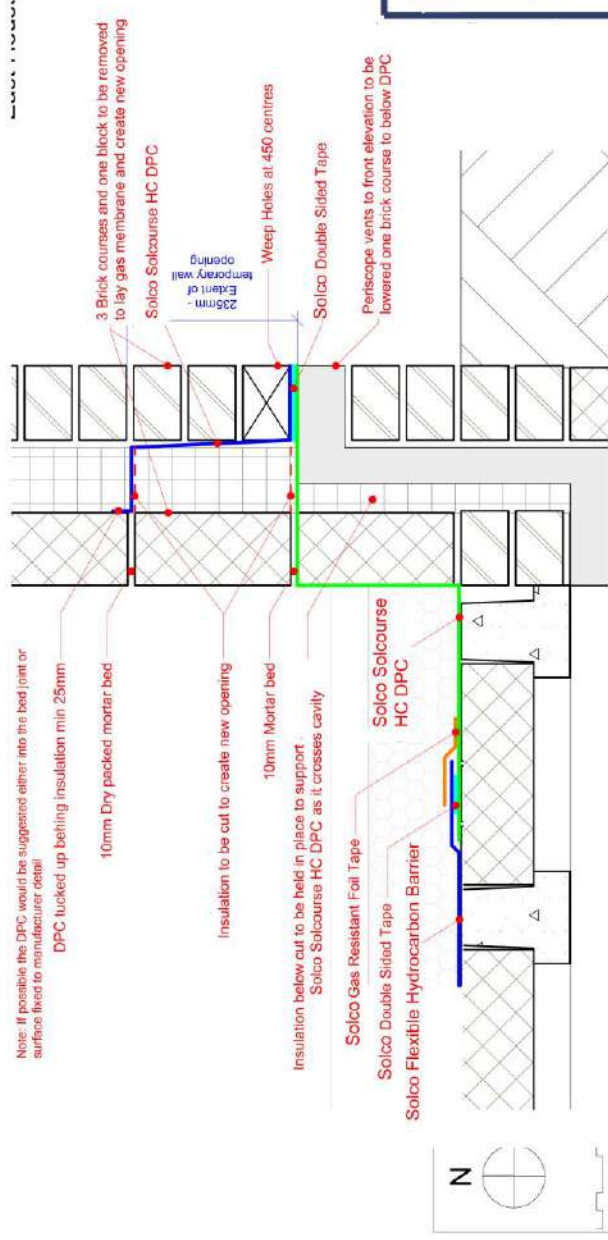
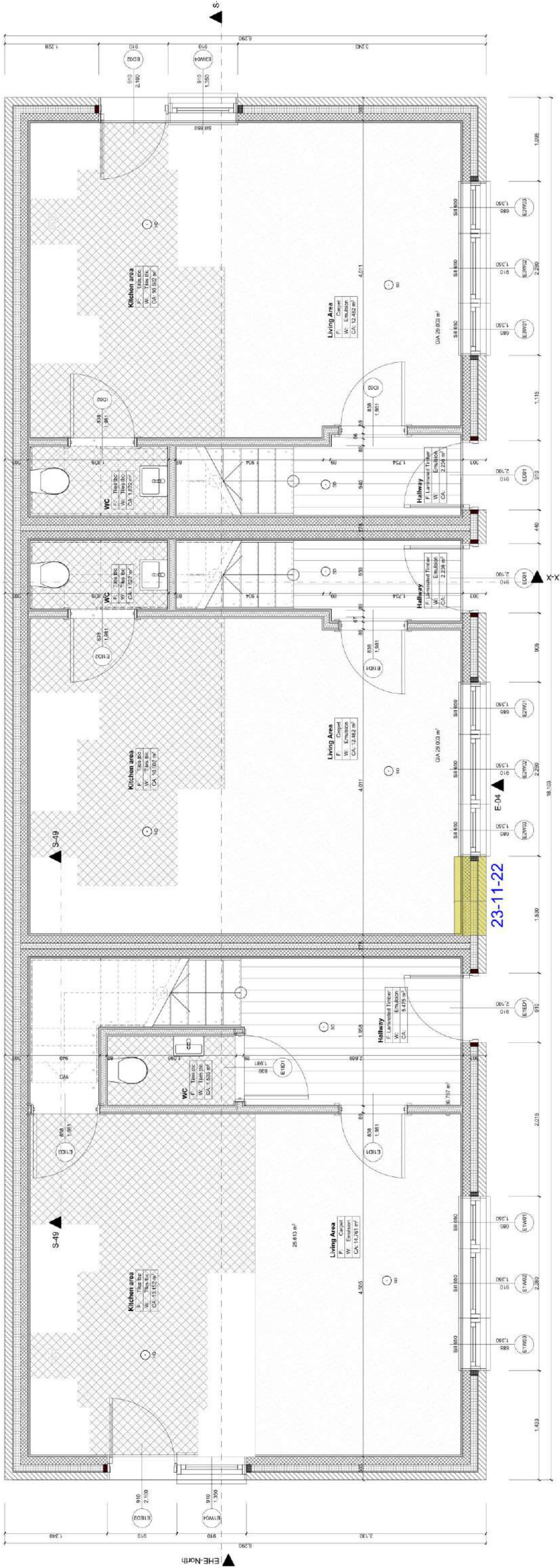
Signed for on behalf of The Client:

Name: Andy Howe – Parchow Groundworks Ltd.

Date: 23-11-2022

X-X

18.103



Note: If possible the DPC would be suggested either into the bed joint or surface fixed to manufacturer detail

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CARTER PARTNERSHIP LIMITED
Independent Gas Verification
& Validation Services

Validation Status

Installation needs to be rectified

Awaiting additional Installation

Installation in accordance with design

& Date Validated

Project:

North Street
31A North Street
Emsworth Hampshire

Site address:

01 South Street, Emsworth, Hampshire, PO9 1BZ

Building name:

CHS Homes

Project description:

Residential Development Houses

Project status:

Planning

pwp

architects

t: 023 0248 1152
e: design@pwp-architects.com
w: www.pwp-architects.com

Project No:

5770

Drawing No:

1131

Rev:

Information Taken From

Independent Inspection & Validation Certificate of Conformance

Project Ref: G221101.002	Date: 1st December 2022
Name / Location: 31A, North St, Emsworth	
Customer: Parchow Groundworks	

Area / Installation Inspected: East Houses – Middle of Three Town Houses -South Facing Elevation - Installation of HC DPC to perimeter & internal walls

Inspection & Validation details:

Substrate

Installation of Solco Solcourse HC DPC

Inspection via Photographic Evidence provided by A.Howe-Parchow.

Laps were sealed using Solco DS tape to Bluebay Detail.

Therefore, based on the evidence of install CPL can offer sign off on this installation.

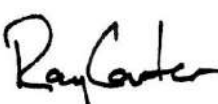
Photographic evidence included in final sign off report.

CPL do hereby confirm that the elements of the project detailed above have been inspected & validated by a suitably qualified independent consultant in accordance with industry requirements, with the test result noted below:

CONCLUSION: (PASS/FAIL/IN PROGRESS) - Pass(In accordance with design/details).

Where the conclusion above indicates a Pass, the construction activities may proceed subject to suitable protection measures of the membrane being applied in accordance with the manufacturer's recommendations. For Fail see further comments/actions attached:

Signed for on behalf of CPL:

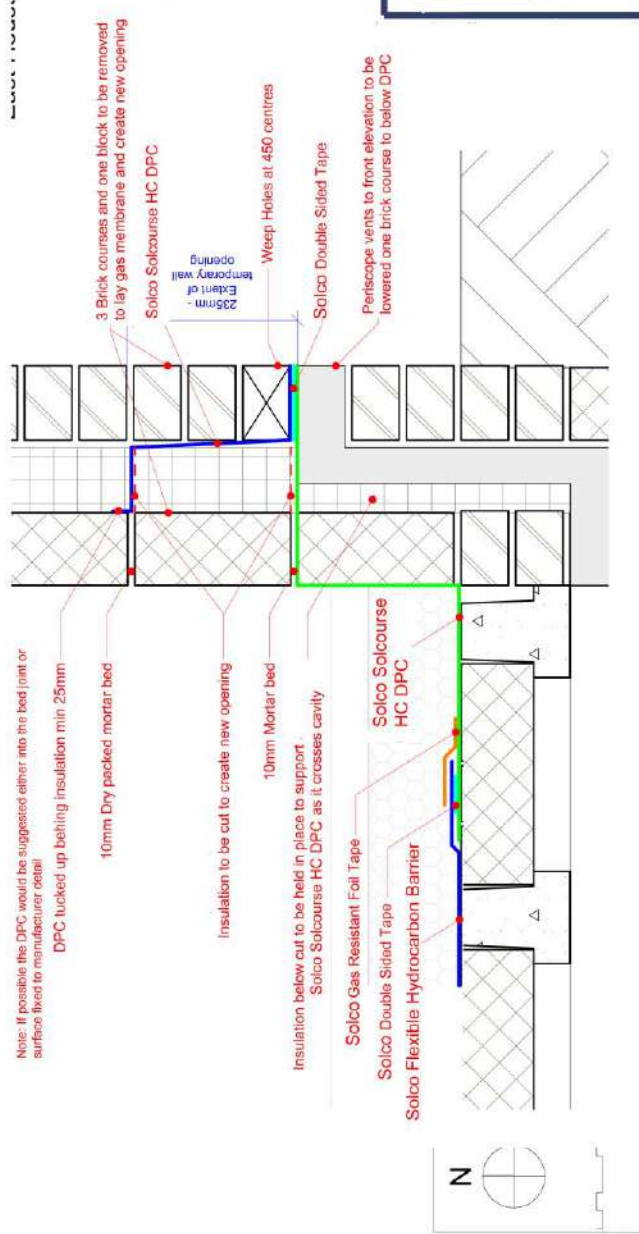
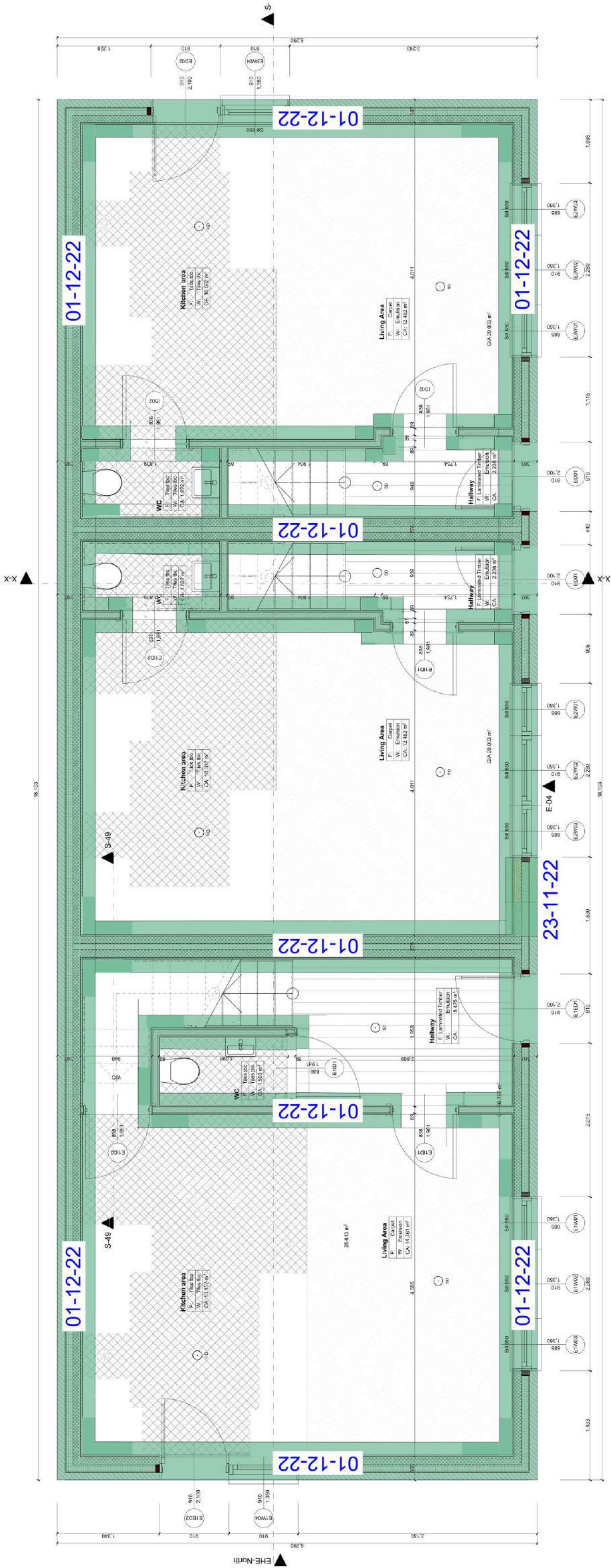
Name: 

Date: 01-12-2022

Signed for on behalf of The Client:

Name: Andy Howe – Parchow Groundworks Ltd.

Date: 01-12-2022



Note: If possible the DPC would be suggested either into the bed joint or surface fixed to manufacturer detail

DPC tucked up behind insulation min 25mm

10mm Dry packed mortar bed

Insulation to be cut to create new opening

10mm Mortar bed

Insulation below cut to be held in place to support Solco Solcourse HC DPC as it crosses cavity

Solco Gas Resistant Foil Tape

Solco Double Sided Tape

Solco Flexible Hydrocarbon Barrier

Solco Solcourse HC DPC

Installation /Date
Solco HC DPC: 01-12-22
Solco HC DPM

EHE-West

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CARTER PARTNERSHIP LIMITED
Independent Gas Verification
& Validation Services

Validation Status

Installation needs to be rectified

Awaiting additional Installation

Installation in accordance with design

& Date Validated

Project:

Project name: North Street
Site address: 31A North Street
Building name: Ensworth Hampshire
Client: CHS Homes

Project description: Residential Development Houses
Project status: Planning

pwparchitects

01 South Street, Havant, Hampshire PO9 1BZ
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5770

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Independent Inspection & Validation Certificate of Conformance

Project Ref: G221101.003	Date: 7th December 2022
Name / Location: 31A, North St, Emsworth	
Customer: Parchow Groundworks	

Area / Installation Inspected: East Houses – Middle of Three Town Houses -South Facing Elevation Installation of HC DPM to all ground slabs
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Inspection & Validation details:

Substrate
Installation of Solco HP DPM
Inspection via CPL Site Attendance.
Laps were sealed using Solco tape to Bluebay Detail.

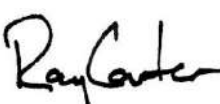
Therefore, based on the evidence of install CPL can offer sign off on this installation.
Photographic evidence included in final sign off report.

CPL do hereby confirm that the elements of the project detailed above have been inspected & validated by a suitably qualified independent consultant in accordance with industry requirements, with the test result noted below:

CONCLUSION: (PASS/FAIL/IN PROGRESS) - Pass(In accordance with design/details).

Where the conclusion above indicates a Pass, the construction activities may proceed subject to suitable protection measures of the membrane being applied in accordance with the manufacturer's recommendations. For Fail see further comments/actions attached:

Signed for on behalf of CPL:

Name: 

Date: 07-12-2022

Signed for on behalf of The Client:

Name: Andy Howe – Parchow Groundworks Ltd.

Date: 07-12-2022

Independent Inspection & Validation Certificate of Conformance

Project Ref: G221101.004	Date: 26th January 2023
Name / Location: 31A, North St, Emsworth	
Customer: Parchow Groundworks	

Area / Installation Inspected: North Houses – Installation of HC DPC to all perimeter and party walls, & periscope vents

Inspection & Validation details:

Substrate

Installation of Solco Hydrocarbon DPC

Inspection via Photographic Evidence by Parchow Groundworks Ltd.

Laps were sealed using Solco tape to Bluebay Detail.

Therefore, based on the evidence of install CPL can offer sign off on this installation.

Photographic evidence included in final sign off report.

CPL do hereby confirm that the elements of the project detailed above have been inspected & validated by a suitably qualified independent consultant in accordance with industry requirements, with the test result noted below:

CONCLUSION: (PASS/FAIL/IN PROGRESS) - Pass(In accordance with design/details).

Where the conclusion above indicates a Pass, the construction activities may proceed subject to suitable protection measures of the membrane being applied in accordance with the manufacturer's recommendations. For Fail see further comments/actions attached:

Signed for on behalf of CPL:

Name: 

Date: 26-01-2023

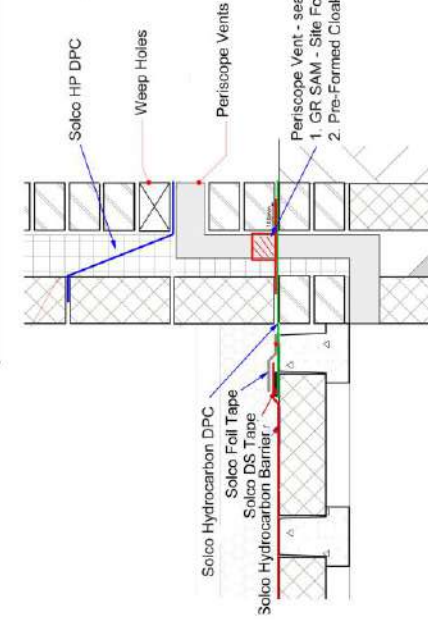
Signed for on behalf of The Client:

Name: Andy Howe – Parchow Groundworks Ltd.

Date: 26-01-2023



Diagram illustrating the experimental setup for the periscope vent. The setup includes a window with a periscope vent installed. The vent is sealed using either Solico Hydrocarbon DPC, Solico DS Tape, or Solico Hydrocarbon Barrier. The diagram also shows the Periscope Vents and the Solico Felt Tape.



C P L
CARTER PARTNERSHIP LIMITED
Independent Gas Verification
& Validation Services

& Date Validated

pwp architects
61 South Street, Haver, Hampshire PO9 1BZ
t: 023 248 2494
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t: 023 248 1152
w: www.pwp-architects.com

Project No. 5770 drawing No. 1127

Information Taken From

Independent Inspection & Validation Certificate of Conformance

Project Ref: G221101.005	Date: 25th April 2023
Name / Location: 31A, North St, Emsworth	
Customer: Parchow Groundworks	

Area / Installation Inspected: North Houses – Installation of HC DPM to all ground floor slabs lapped to Colco HC DPC

Inspection & Validation details:

Substrate
Installation of Solco Hydrocarbon DPM
Inspection via site attendance by CPL.
Laps were sealed using Solco tape to Bluebay Detail.

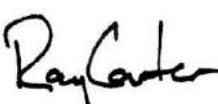
Therefore, based on the evidence of install CPL can offer sign off on this installation.
Photographic evidence included in final sign off report.

CPL do hereby confirm that the elements of the project detailed above have been inspected & validated by a suitably qualified independent consultant in accordance with industry requirements, with the test result noted below:

CONCLUSION: (PASS/FAIL/IN PROGRESS) - Pass(In accordance with design/details).

Where the conclusion above indicates a Pass, the construction activities may proceed subject to suitable protection measures of the membrane being applied in accordance with the manufacturer's recommendations. For Fail see further comments/actions attached:

Signed for on behalf of CPL:

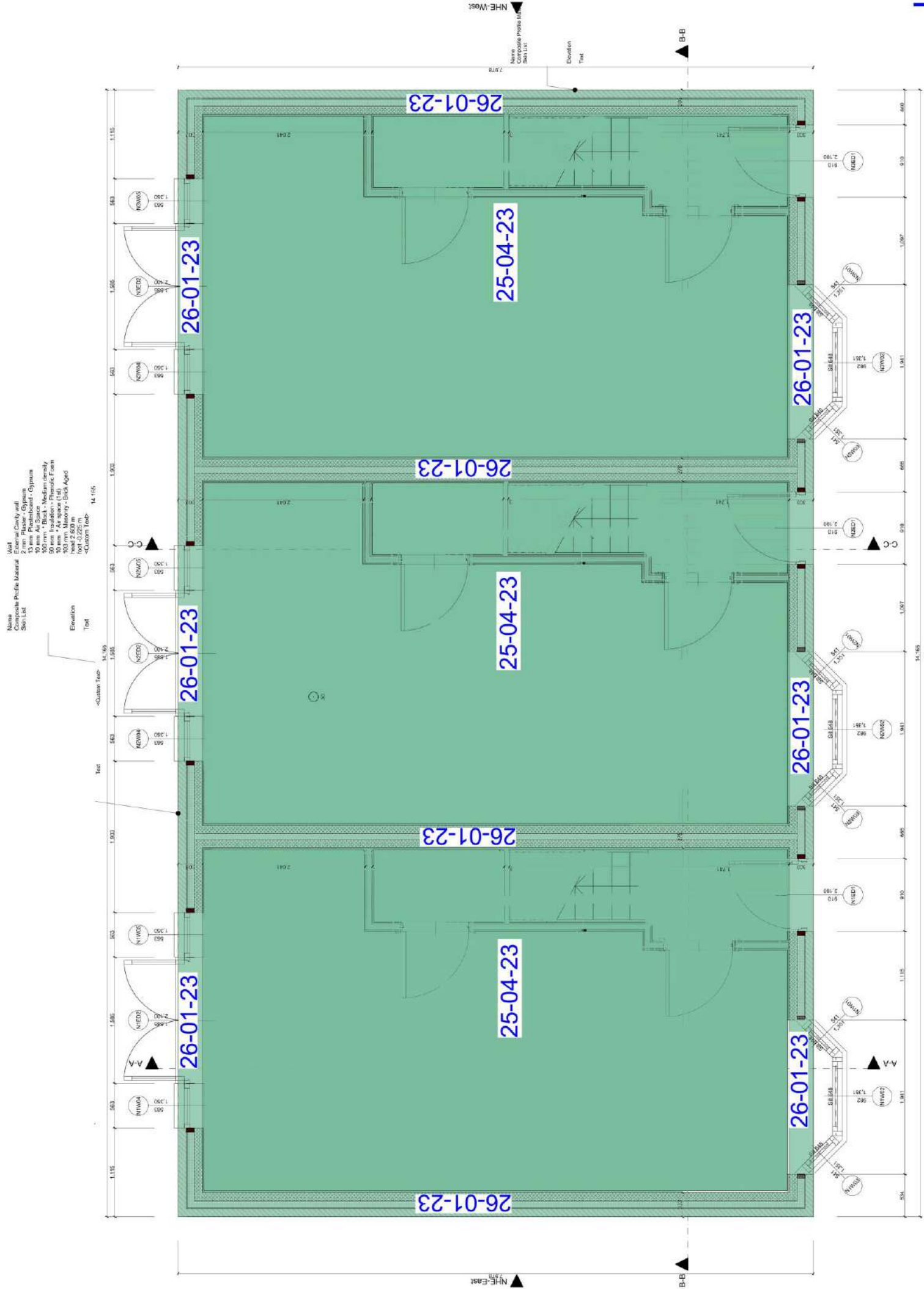
Name: 

Date: 25-04-2023

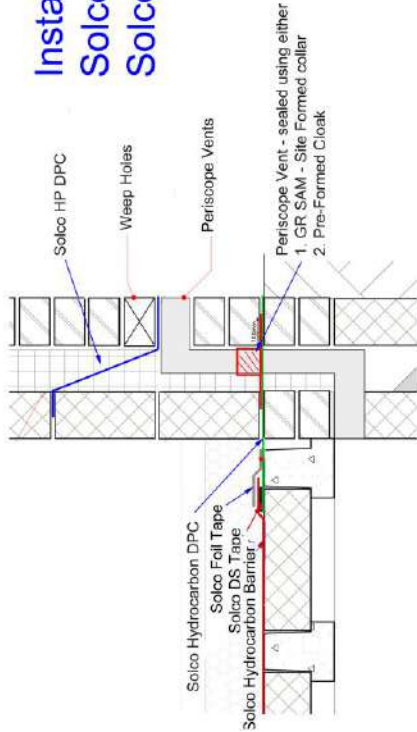
Signed for on behalf of The Client:

Name: Andy Howe – Parchow Groundworks Ltd.

Date: 25-04-2023



Installation /Date
Solco HC DPC: 26-01-23
Solco HC DPM: 25-04-23



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CARTER PARTNERSHIP LIMITED
Independent Gas Verification
& Validation Services

Validation Status

Installation needs to be rectified

Awaiting additional Installation

Installation in accordance with design

& Date Validated

Information Taken From

Drawing name: North Houses Ground Floor

Status: 30/01/23

Date: 30/01/23

Scale: 1:25

Drawn: SAG

N

Project name: North Street

Site address: 31A North Street

Building name: Ensworth Hampshire

Client: CHS Homes

Project description: Residential Development Houses

Project status: Planning

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Project No: 5770

drawing No: 1127

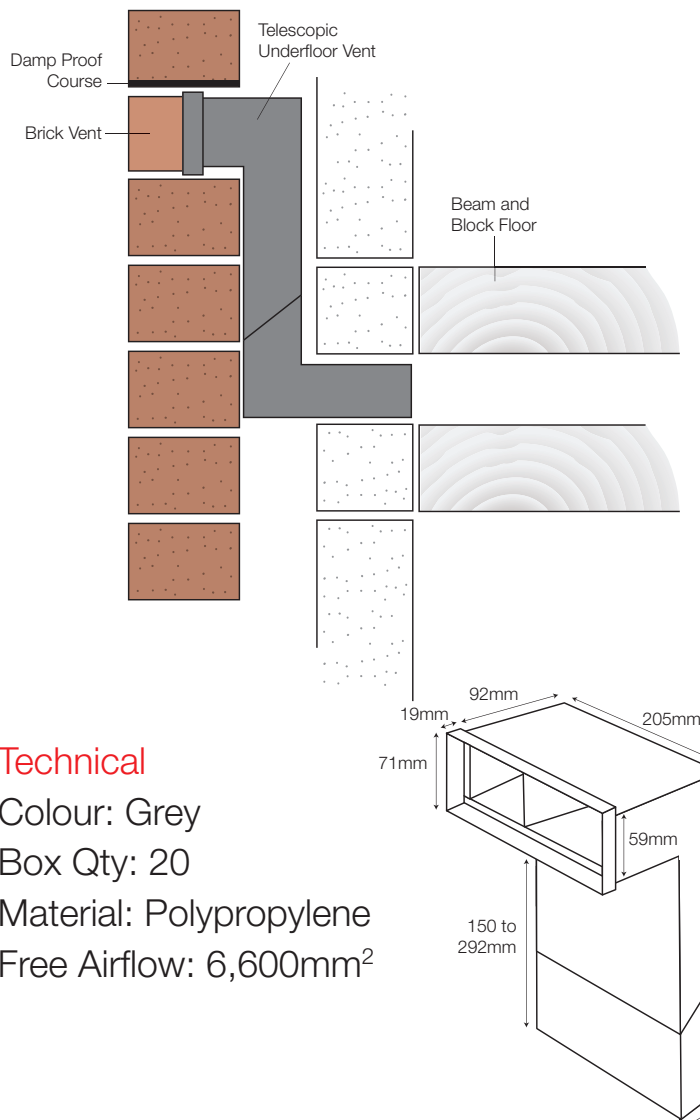
Telescopic Underfloor Vent

Description

Telescopic Underfloor Vents facilitate a flow of air from beneath suspended timber block and beam floors through the cavity. The units are adjustable vertically to extend through a number of brick courses. The front of the vent is designed to fit a Brick Vent or, where horizontal extension is required, and Cavity Sleeve can be used. The rear of the vent features a grill panel designed to prevent the entry of insects, rodents or debris so as to avoid airflow blockages.

Installation

NHBC requirements are for spacing of 2m maximum centres with positioning no more than 450mm from the ends of the wall and down two adjoining building sides to create a cross-airflow. The Telescopic Vent should be installed during the normal course of brick laying above the external ground level. Vertical Extension sleeve and Cavity Sleeve are available for use where an extension to accommodate a longer than average course step or cavity width is required.



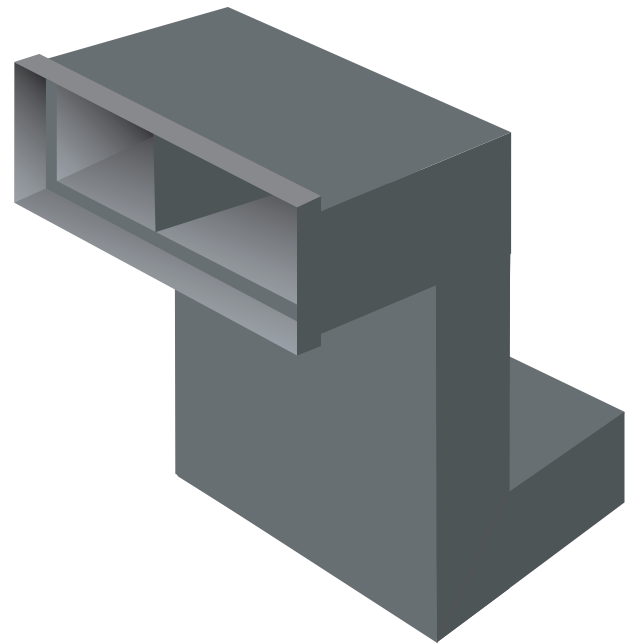
Technical

Colour: Grey

Box Qty: 20

Material: Polypropylene

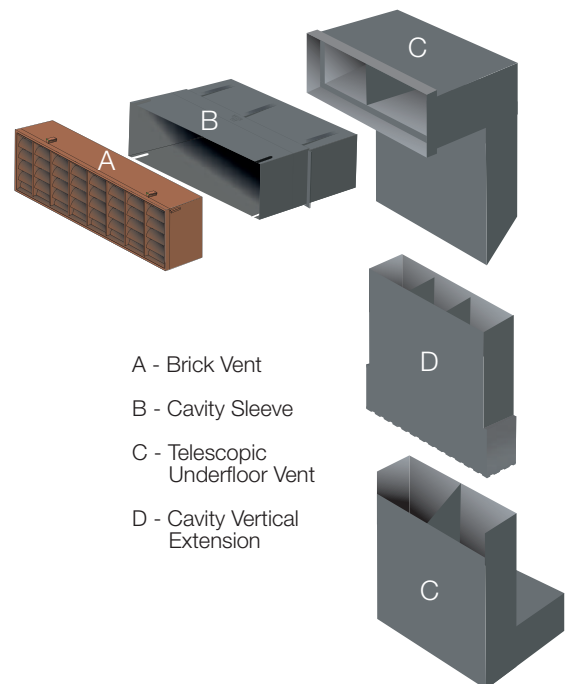
Free Airflow: 6,600mm²



Product Code
SOLCO/TELE/UVENT

Description
Telescopic Underfloor Vent

Box Qty
20



A - Brick Vent

B - Cavity Sleeve

C - Telescopic Underfloor Vent

D - Cavity Vertical Extension

This product should be used in conjunction with other products from the brick ventilation range to provide a complete through wall ventilation system.

Solcourse HC DPC

Description:

Solcourse Hydrocarbon DPC is a flexible sheet comprising a mixture of thermoplastic polymers and other additives, extruded into a sheet form with an embossed surface to assist mortar adhesion. Solcourse HC DPC provides protection against the ingress of Hydrocarbons, Methane, Carbon Dioxide, Radon as well as water vapour. Solcourse HC DPC is fully compliant to BS 8485:2015+A1:2019 and ISO 15105-1 test standard.

As part of the extensive testing Solcourse HC DPC has undergone, it was subjected to accelerated life immersion tests. These tests, EN 14414 and EN 14415, require the membrane to be subjected to a range of challenging chemicals at 50°C and then retested to establish any effects these chemicals have had on the integrity of the membrane.

General:

Particular care should be taken to ensure that the product is incorporated into the building as part of a complete system to prevent the ingress or build-up of contaminants; this may require the use of additional methods such as sumps and ventilation.

As with all flexible damp-proof courses, care should be taken to avoid impact damage from sharp objects (eg. chisels) during installation.

For external walls, the DPC should be applied 150mm above the adjoining surface and should be linked to a damp-proof membrane or gas barrier in solid floors. Solcourse DPC should be applied to a fresh bed of mortar, completely free of projections that may puncture the material or impede the DPC from lying flat.



- Complies to BS 8485:2015+A1:2019.
- CE Marked.
- Outstanding water vapour resistance.
- Gas Resistant to VOC, Rn, CO₂, and CH₄ gases.
- Very high strength, puncture and tear resistance.
- Flexible at low temperatures and good mortar resistance.
- Suitable for site welding.
- Suitable for use on NHBC Amber 1 and 2 sites.

Roll Sizes

100mm to 1200mm x 20m



Technical Data:

Property	Test Method	Value
Gas Permeability		
Radon Permeability		9.5 x 10 ⁻¹² m ² /s
Methane Permeability	ISO 15105-1	28 ml/m ² /day/atm
Diesel Permeability	ISO 6179	0.096 g/m ² h
Petrol Permeability	ISO 6179	5.172 g/m ² h
Xylene Permeability	ISO 6179	4.845 g/m ² h
Toluene Permeability	ISO 6179	6.695 g/m ² h

Technical Data (Cont.):

Property	Test Method	Value
Mechanical Properties		
Thickness	EN 1849-2	1.00 mm
Width	EN 1849-2	100-1200 mm
Length	EN 1849-2	20 m
Mass	EN 1849-2	921 g/m ²
Hydraulic Properties		
Water Vapour Permeability	EN 1932	0.08 g/m ² /day
Watertightness (At 2 kPa)	EN 1928	Pass
Mechanical Properties		
Tensile Strength (MD)	EN 12311	24 N/mm ²
Tensile Strength (CMD)	EN 12311	22 Nmm ²
Tensile Elongation (MD)	EN 12310	398%
Tensile Elongation (CMD)	EN 12310	446%
Joint Strength	EN12317-2	520 N
Resistance to Tearing (MD) Resistance	EN 12310 - 1	700 N
to Tearing (CMD) Resistance to Static	EN 12310 - 1	750 N
Load	EN 12730	20 kg
Resistance to Impact	EN 12691	660mm
Resistance to Low Temperature	EN 495-5	Pass at -40°C
Durability and Chemical Resistance		
Durability (Heat Ageing)	EN 1926	Pass
Durability (Chemical Resistance)	EN 1847	Pass
Chemical Resistance (Acidic)	EN 14414-A	Pass
Chemical Resistance (Basic)	EN 14414-B	Pass
Chemical Resistance (Solvents)	EN 14414-C	Pass
Chemical Resistance (Synthetic Leachates)	EN 14414-D	Pass
Resistance to Leeching (Hot Water)	EN 14415-A	Pass
Resistance to Leeching (Aqueous Alkaline)	EN 14415-B	Pass
Resistance to Leeching (Organic Alcohol)	EN 14415-C	Pass

Application:

Installation of Solcourse HC DPC must follow normal good practice for the detailing of a DPC, as set out in PD 6697:2010, and must be in accordance with the relevant clauses of BS 8000-0:2014, BS 8000-3:2001, BS8000-4:1989, BS 8215:1991, and BRE Digest 380.

Buildings in areas of risk from underground gases should be designed and constructed in accordance with BRE Report BR 211 and BS 8485 : 2015.

Care should be taken to avoid impact damage from sharp objects during installation.

Procedure:

- The product must be laid on a wet, even bed of mortar and extend through the full thickness of the wall or wall leaf, including pointing, applied rendering or other facing material.
- Perforations in adjacent courses of brickwork must be completely filled with mortar.
- All lap joints in the DPC must have a minimum 150 mm overlap, be completely sealed with Solco 50mm Double-sided Tape and Solco Foil Tape.
- All surfaces to be joined must be clean and dry.
- Where doubt exists over the suitability of the butyl tape, the product can be welded using hot air or wedge welding equipment. All laps and junctions must be overlapped by 150 mm. The weld width must be a minimum of 40 mm.
- Certain details are difficult to form with the DPC, particularly when bending the material through two angles at the same time. In such cases, care must be taken to achieve a satisfactory seal and, where necessary, Solco HC DPC Preformed Cloaks can be used.
- When using the product with boot lintels or similar constructions, it is installed to follow the lintel profile wherever possible.

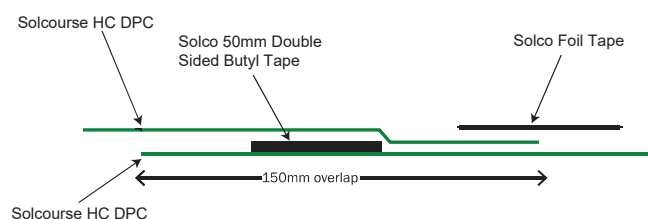
In Block & Beam flooring, the product may be laid on a brick or block wall, provided the following conditions are satisfied:

- The minimum bearing of the beams recommended by the flooring system's manufacturer is achieved.
- The dead and applied loads upon the DPC via the beam do not exceed 2.5 N/mm².
- The surface of the wall onto which the DPC and beam are to be installed is clean, smooth, and free from projections and perforations. Failure to comply with this requirement could lead to the perforation of the DPC. If this requirement cannot be satisfied, the DPC should be laid on an even bed of mortar.
- Any loose aggregate is swept from the wall prior to installation of the DPC and from the DPC prior to the installation of the beam.

Cleaning Cavities:

As with other DPC materials, damage can occur during the cleaning of mortar droppings from the DPC unless care is taken. The following recommendations minimise damage occurring:

- Cavity battens should be used to prevent excessive amounts of mortar droppings from reaching the DPC.
- Mortar droppings should be removed before they have had time to harden.
- Implements such as steel rods should never be used for cleaning.
- The DPC should be examined for damage as work proceeds.



Storage & Handling on Site:

Solcourse HC DPC is classified as non-hazardous (code of practice CP102 1973). The product is chemically inert and any acids or alkalis present in the subsoil will not affect the product. It is not recommended for use when exposed to sunlight and general outdoor weather conditions for long periods of time, and weathering will not occur when installed. Rolls should be stored on end and under cover and on a flat, level surface. Contact with organic solvents must be avoided.

The product is handled and cut using the same techniques as traditional DPCs. It retains sufficient flexibility when used at the lowest temperatures at which walls are normally built and does not become tacky in warm, ambient weather conditions. However, if stored at low temperatures, Solcourse HC DPC should be left in a warm place before use to improve handling.

Difficulties may occur when forming certain details, particularly when bending the product through two angles at the same time. In such cases, care must be taken to achieve a satisfactory seal, and, where necessary, preformed cloaks should be used. Care should be taken at temperatures below 5°C to avoid the risk of condensation on jointed surfaces, which may affect the efficiency of the self-adhesive tapes.

Solcourse HC DPC System Accessories

Solco Top Hats	Form an effective seal where a pipe, duct, or service penetrates Solco membranes.	Units
Solco Double Sided Butyl Tape	A double-sided synthetic butyl mastic tape, used for securing joints and laps in DPC's, Cavity trays & pre-formed Cloaks.	Rolls
Solco Foil Tape	A single-sided tape for securing laps & joints.	Rolls
Solco Venting Accessories	Allows the effective venting of gas from beneath a building.	Units
Solco Int / Ext Corners	Preformed units that ensure protection at corners.	Units
Solco DPC Fixing Strips	Used to surface fix Solcourse DPC cavity trays and preformed cloak units to the inner leaf.	Packs
Solco DPC Fixing Strips (Masonry)	Used for surface fixing Solcourse high performance DPC systems to any solid internal substrate such as brick, stone, and concrete.	Packs
Solco DPC Fixing Strips (Insulation)	Used for surface fixing to the rigid insulation of composite inner skins.	Packs
Solco HP Insulation Fixing	For applications requiring high pull out resistance, or for fixing to poor quality base materials.	Packs
Solco Insulation Panel Fixing	Recommended for securing rigid insulation, EPS, High-Density Rockwool and Composites, to solid base materials.	Packs
Solco Insulation Retaining Washers	Used in conjunction with screws to secure insulation to timber, sheet steel, and other non-standard base materials.	Packs
Solco DPC Blanking Plug	Offers a solution to the problem of sealing holes drilled in bricks and mortar for the installation of DPC Chemicals.	Packs
Solco Soft Washer Fixing	For securing Solco drainage & waterproof applications to concrete etc by hand nailing or shot-firing.	Packs
Solco Membrane Fixing Plugs	Used in damp proofing applications to secure the specialist membranes to the base material - usually brickwork and concrete.	Packs
Solco DPC Joint Support System	Polypropylene Support Boards used in conjunction with Solco Butyl DPC Jointing Tape.	System

Solshield Flexible Hydrocarbon Barrier

Description:

Solshield Flexible Hydrocarbon Gas Barrier is a specially engineered tri-polymer membrane that provides a highly effective barrier against Radon, Methane, Carbon Dioxide, and Hydrocarbon gases. The Membrane is produced from a uniquely formulated blend of polymers to produce outstanding chemical resistance, mechanical properties, dimensional stability, and thermal aging characteristics. The membrane is ideally suited for sites formerly used as coalfield, landfill, or industrial sites that previously contained volatile liquids such as petrol stations.

Solshield Flexible Hydrocarbon Gas Barrier is a very effective gas barrier for protecting buildings and occupiers from the ingress of gas and moisture. Building regulations require that proper precautions be taken to prevent danger to health and safety when building on gas contaminated land. Solshield Flexible Hydrocarbon Gas Barrier is an advanced high performance flexible membrane suitable for both damp proofing and tanking applications. The membrane has a textured face on one side designed to aid adhesion to cast concrete.

The membrane can be used in applications such as:

- Tanking below ground structures.
- Heavy duty reinforced concrete slabs.
- Permanent shutter work.
- Lift pits.
- Slab edges.

Solshield Flexible Hydrocarbon Gas Barrier is classified as non-hazardous (code of practice CP101 1973). The membrane is chemically inert and will not react with any acidic or alkaline environment it is laid in.

Solshield Flexible Hydrocarbon Barrier has been subjected to accelerated life immersion tests. These tests, EN 14414 & EN 14415, require the membrane to be subjected to a range of challenge chemicals at 50°C and are tested to establish the effect they have on the membrane.



- Complies with relevant codes of practice such as current BRE and CIRIA.
- Excellent resistance to chemical and hydrocarbon gases typically found in contaminated industrial sites.
- High-quality robust flexible Tri-Polymer Membrane.
- Suitable for hot welding.
- Very high puncture & tear resistance.
- Tested to ISO 15105-1.
- Complies to BS 8485:2015+A1:2019.

Technical Data:

Property	Test Method	Value
Gas Permeability		
Radon Permeability		9.5 x 10 ⁻¹² m ² /s
Methane Permeability	ISO 15105-1	28 ml/m ² /day/atm
Diesel Permeability	ISO 6179	0.096 g/m ² h
Petrol Permeability	ISO 6179	5.172 g/m ² h
Xylene Permeability	ISO 6179	4.845 g/m ² h
Toluene Permeability	ISO 6179	6.695 g/m ² h

Solco, Unit 51, Portmanmoor Road Industrial Estate, Ocean Park, Cardiff, CF24 5HB

Technical Data (Cont.):

Property	Test Method	Value
Mechanical Properties		
Thickness	EN 1849-2	1.00mm
Width	EN 1849-2	1.3m
Length	EN 1849-2	20m
Mass	EN 1849-2	921 g/m ²
Hydraulic Properties		
Water Vapour Permeability	EN 1932	0.08 g/m ² /day
Watertightness (At 2 kPa)	EN 1928	Pass
Mechanical Properties		
Tensile Strength (MD)	EN 12311	24 N/mm ²
Tensile Strength (CMD)	EN 12311	22 Nmm ²
Tensile Elongation (MD)	EN 12310	398%
Tensile Elongation (CMD)	EN 12310	446%
Joint Strength	EN12317-2	520 N
Resistance to Tearing (MD)	EN 12310 - 1	700 N
Resistance to Tearing (CMD)	EN 12310 - 1	750 N
Resistance to Static Load	EN 12730	20 kg
Resistance to Impact	EN 12691	660mm
Resistance to Low Temperature	EN 495-5	Pass at -40°C
Durability and Chemical Resistance		
Durability (Heat Ageing)	EN 1926	Pass
Durability (Chemical Resistance)	EN 1847	Pass
Chemical Resistance (Acidic)	EN 14414-A	MD - 376 CD - 488
Chemical Resistance (Basic)	EN 14414-B	MD - 388 CD - 487
Chemical Resistance (Solvents)	EN 14414-C	MD - 388 CD - 518
Resistance to Leeching (Hot Water)	EN 14415-A	MD - 377 CD - 404
Resistance to Leeching (Aqueous Alkaline)	EN 14415-B	MD - 361 CD - 428
Resistance to Leeching (Organic Alcohol)	EN 14415-C	MD - 388 CD - 449
Reaction to Fire	EN 13501-1	Class F

Installation:

Solshield Flexible Hydrocarbon Gas Barrier must be installed in accordance with the guidelines laid out in Building Research establishment BRE No.414 "Protective measures for housing on gas contaminated land", CIRIA C665 "Assessing risks posed by Hazardous ground gases to buildings", NHBC guidelines, and CIRIA C682 the VOC Handbook.

Solshield Flexible Hydrocarbon Gas Barrier can be used in most common floor constructions and is installed in a similar manner to DPMs but with greater attention to joint sealing and under wall sealing. Where there is a risk of hydrostatic pressure, the membrane can be used so long as the jointing is made using a hot weld process and not taped. The membrane should be laid on a smooth surface or sand blinding to prevent puncture.

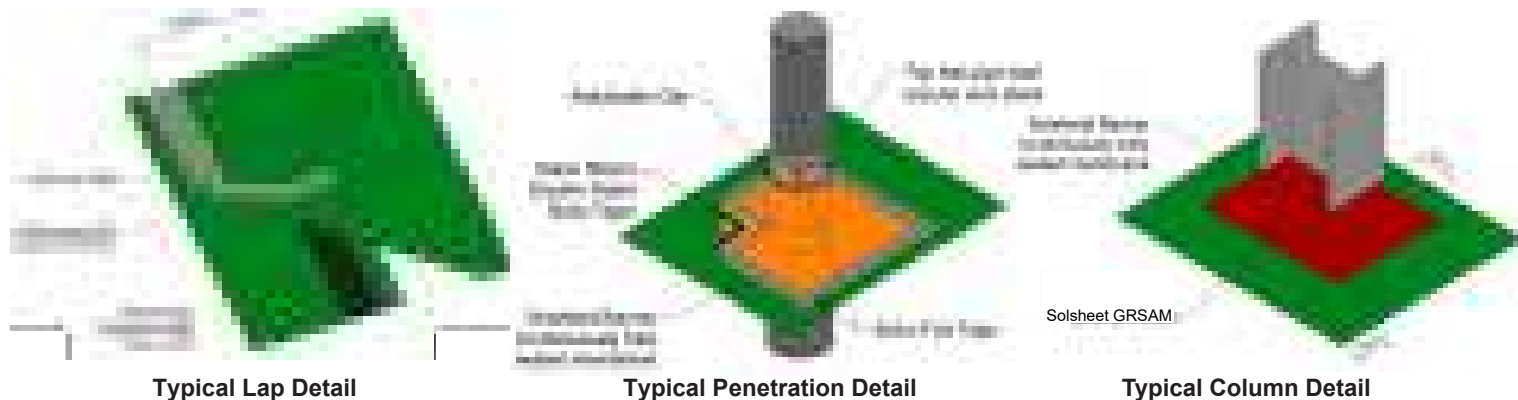
Solshield Flexible Hydrocarbon Gas Barrier has excellent welding properties, we would recommend that particularly in situations where site investigation demonstrates chemicals or harmful gases are present in significant concentrations all of our gas barriers are heat welded as opposed to being tape jointed, this ensures the integrity of the membrane at the joint location. Seam welding provides maximum performance integrity and enables installers to complete installations quickly and efficiently.

1. The membrane must only be applied to surfaces that have a smooth finish - free from voids, projections, and mortar deposits. Surfaces should be dry and free from dust and frost. In order to provide a continuous barrier across the cavity, Solshield Reinforced should be taken through the blockwork and incorporated below the damp proof course cavity tray in the outer leaf.
2. Concrete surfaces should be dense. Vertical surfaces of brickwork and blockwork must be dry and rendered to provide an even surface. Brickwork or blockwork not rendered must be flush pointed to give a smooth surface without sudden changes in level.
3. Solshield Reinforced is rolled out with the coloured side up, ensuring that it is properly aligned. All end and side overlaps should be a minimum of 150mm and prepared.
4. When the membrane is laid below the concrete slab, it should be loose-laid to accommodate any small movements.
5. All surfaces must be dried thoroughly prior to joining. Roll edges can be welded or taped.
6. The continuity of the damp proofing must extend over the footprint of the building, and the membrane must be sealed to a damp-proof course where required.
7. The membrane should be covered by a screed or other protective layer, such as Solco Protection Fleece, as soon as possible after installation. If blockwork protection is used, care must be taken to avoid damage to the membrane during construction. Care should be taken when handling building materials over the exposed surface.

Jointing Detail Using Tapes:

1. Apply Solco Double Sided Butyl Tape around 50mm from the membrane edge, leaving the backing paper on.
2. Lay the next membrane, overlapping the first by 150mm.
3. Remove the backing paper from the double sided butyl tape and join the top sheet to the bottom sheet, by applying pressure with a hand roller.
4. Where the membranes overlap, apply Solco Single Sided Foil Tape, equidistant on both membranes (see detail). All service entry points must have airtight seals. Top hats and corner pre-forms must be sealed using double sided butyl tape.

Typical Jointing Details for Solshield Flexible Hydrocarbon Barrier (Using Tapes)



Note:

All service entry points must have airtight seals. Top hats and corner pre-forms must be sealed using double-sided butyl tape.



Solshield Hydrocarbon Barrier System Accessories

Solco Top Hats	Form an effective seal where a pipe, duct, or service penetrates Solsheet membranes.	Units
Solco Double Sided Butyl Tape	A double-sided synthetic butyl mastic tape, used for securing joints and laps in DPC's, Cavity trays & pre-formed Cloaks.	Rolls
Solco Foil Tape	A single-sided tape for securing laps & joints.	Rolls
Solco Venting Accessories	Allows the effective venting of gas from beneath a building.	Units
Solco Int / Ext Corners	Preformed units that ensure protection at corners.	Units
Solco GR DPC	A gas resistant tri-polymer damp proof course.	Rolls
Solco P30 Protection Fleece	Forms a protective layer to prevent damage to the membrane.	Rolls
Solsheet GR Self-Adhesive Membrane	A gas resistant self-adhesive membrane.	Rolls
Solseal HP Primer	Used to provide adhesion to bitumen enhanced geomembranes.	Tins
Solshield Venting Mat	Cusped (HDPE) drainage mat for providing a drainage / venting channel.	Rolls
Solseal Liquid Gas Barrier	A gas resistant liquid applied membrane	Tins

Storage and Handling on Site:

- Solshield Ultra is classified as non-hazardous (code of practice CP102 1973).
- Rolls should be stored on a flat surface, kept under cover, and protected from sunlight and mechanical damage. The product is chemically inert and any acids or alkalis present in the subsoil will not affect the membrane.
- Do not use when exposed to sunlight and general outdoor weather conditions for long periods of time.
- Quality control during the laying of the membrane is extremely important.
- The membrane should be protected either through the use of temporary protection over its whole area or the immediate laying of the concrete slab. Care should be taken when handling building materials over the exposed surface.

Venting:

- Solshield Flexible Hydrocarbon Barrier can be used on site where passive or active ventilation is required.
- Solshield Geocomposite Drainage & Venting Mat should be used in conjunction with the relative vent connectors where required. These types of systems are designed on a bespoke site specific nature.
- Please contact us for our design advice.

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