

GAS MEMBRANE VALIDATION – BELLE VUE

Project Name: Belle Bue Stadium
Project Number: 12-123
Client: Countryside Properties
Date: 27-04-2023
Project Manager; S. Ellis – FGS, CEnv
E3P Engineer: P. Lavelle
Gas Membrane Installers Chandos Civils
Ground Gas Risk Assessment: Amber 1
Plots: 220-222

OVERVIEW

The membrane comprised a Visqueen low permeability gas membrane (Yellow) resistant to radon, carbon dioxide and low methane levels. E3P can confirm there were no holes or rips at the inspection time. Upon being laid, the membrane is to be covered with a Celotex (closed Cell) floor insulation material which is considered to provide a high degree of protection.

E3P inspected all external joints, and E3P can confirm that the membrane was overlapped and double-taped. The membrane was taped using double-sided jointing tape. All the overlaps were then additionally taped using foil-backed girth tape.

Each unit has a service duct located at the front and outer edge of the property. E3P inspected each one and can confirm that the top hats have been adequately sealed against the membrane.

Based on the information provided within this report, the site inspections and validation checklists, E3P can confirm that plots 220-222 have been installed with gas protection measures following C Amber 1 to an acceptable level of workmanship.

A list of plots requiring validation and their associated validation letters is presented in Table 1.



Geo-Environmental



Acoustics



Remediation and
Enabling Earthworks
Design



Arboriculture



Compliance
& Due Diligence



Ecology



Industrial Permitting



Geotechnical

MEMBRANE SPECIFICATION: VISQUEEN GAS MEMBRANE (YELLOW)

Technical Datasheet - Product Overview

VISQUEEN
LOW PERMEABILITY
GAS MEMBRANE

Technical support: +44 (0) 333 202 6800
Date Published: 18/10/2021

Visqueen Low Permeability Gas Membrane

Features and benefits

- BBA certified - third party accreditation
- Complies with NHBC Amber 1 - suitable for low gas risk NHBC housing sites
- Flexible - easy to detail and install on site
- Supplied centre folded - reduces the risk of cracks in screed and limits creases
- 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 Low Permeability Gas Membrane is a robust co-polymer thermoplastic gas membrane, 0.5mm thick, yellow in colour and supplied 4m x 12.5m in a center folded roll.

Approvals and standards

- Third party accreditation (BBA 13/5069)
- Conforms to the specification requirements of NHBC Amber 1 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 45001:2018
- Environmental Management System ISO 14001:2015

Usage

Visqueen Low Permeability Gas Membrane is suitable to prevent the ingress of harmful levels of ground gases for housing applications where NHBC are the warranty provider and the site has been classified as Amber 1. In this application, the membrane is used above a precast suspended segmental ground floor system, for example a beam and block floor.

The membrane can also be used as a high performance radon membrane and/or damp proof membrane positioned within the ground floor construction either above or below the structural floor.

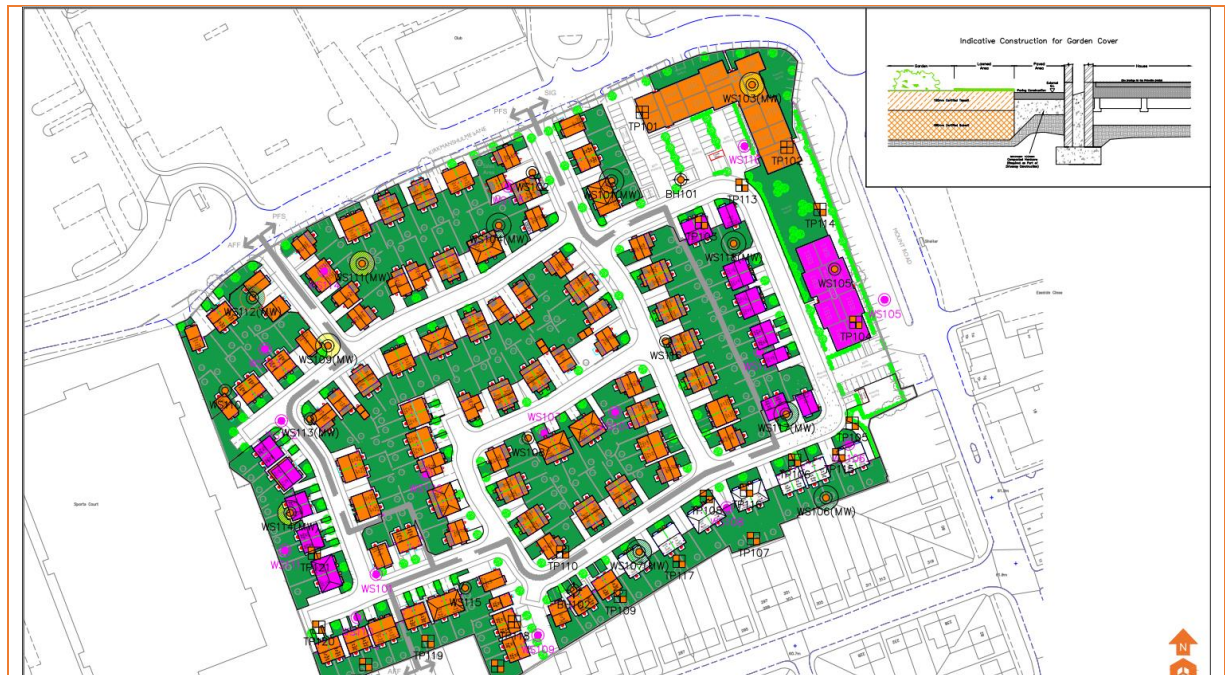
The product is not intended for use where there is a risk of hydrostatic pressure.

System components

- VisqueenPro Double Sided Jointing Tape, 50mm x 10m
- Visqueen Gas Resistant Foil Lap Tape, 75mm x 50m
- Visqueen Top Hat Units

STRUCTURE ENGINEER'S SUBSTRUCTURE DESIGN

GAS MITIGATION MEASURES PLAN



The gas membrane validation photographs are enclosed within this letter. For information, Table 1 includes references and validation dates of previously validated plots.

TABLE 1 – VALIDATION LETTER REFERENCE

PLOT NUMBER	DATE	REPORT NUMBER
1	3 rd March 2022	V4
2	3 rd March 2022	V4
3	3 rd March 2022	V4
4	29 th March 2022	V5
5	29 th March 2022	V5
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85		
86	27 th May 2022	V9
87	27 th May 2022	V9
88	27 th May 2022	V9
89	25 th May 2022	V8

90	25 th May 2022	V8
91	25 th May 2022	V8
92	8 th June 2022	V12
93	8 th June 2022	V12
94	28 th June 2022	V15
95	28 th June 2022	V15
96		
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98		
99	30 th May 2022	V10
100	31 st May 2022	V11
101	31 st May 2022	V11
102	15 th June 2022	V13
103	15 th June 2022	V13
104	22 nd June 2022	V14
105	22 nd June 2022	V14
106		
107		
108	4 th July 2022	V15
109	4 th July 2022	V15
110	19 th July 2022	V18
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125	8 th September 2022	V23
126	8 th September 2022	V23
127	8 th September 2022	V23
128	8 th September 2022	V23
129	8 th September 2022	V23
130	23 rd August 2022	V20
131	23 rd August 2022	V20
132	23 rd August 2022	V20
133	23 rd August 2022	V20
134	5 th September 2022	V21
135	15 th September 2022	V25

136	23 rd August 2022	V20
137	23 rd August 2022	V20
138	23 rd August 2022	V20
139	23 rd August 2022	V20
140	4 th August 2022	V19
141	15 th July 2022	V17
142	15 th July 2022	V17
143	11 th July 2022	V16
144	11 th July 2022	V16
145	11 th July 2022	V16
146	9 th May 2022	V6
147	9 th May 2022	V6
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149	9 th May 2022	V6
150	13 th May 2022	V7
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163	7 th February 2023	V40
164	7 th February 2023	V40
165	7 th February 2023	V40
166	7 th February 2023	V40
167	4 th November 2022	V31
168	24 th September 2022	V26
168	24 th September 2022	V26
169		
170	5 th October 2022	V27
171	21 st November 2022	V33
172	21 st November 2022	V33
173	23 rd November 2022	V34
174	12 th December 2022	V35
175	12 th December 2022	V35
176	15 th December 2022	V36
177	15 th December 2022	V36
178	4 th November 2022 10 th November 2022	V31 V32
179	4 th November 2022	V31
180	4 th November 2022	V31

181	27 th October 2022	V30
182	27 th October 2022	V30
183	27 th October 2022	V30
184	24 th October 2022	V29
185	24 th October 2022	V29
186	24 th October 2022	V29
187	24 th October 2022	V29
188		
189	21 st November 2022	V33
190	21 st November 2022	V33
191	1 st September 2022	V22
192	1 st September 2022	V22
193	1 st September 2022	V22
194	22 nd September 2022	V24
195	22 nd September 2022	V24
196	24 th September 2022	V26
197	24 th September 2022	V26
198	12 th October 2022	V28
199	12 th October 2022	V28
200	24 th October 2022	V29
201	24 th October 2022	V29
202	24 th October 2022	V29
203	24 th October 2022	V29

204	23 rd February 2023	V40
205	23 rd February 2023	V40
206	23 rd February 2023	V40
207	23 rd February 2023	V40
208	1 st March 2023	V41
209	1 st March 2023	V41
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220	27 th April 2023	V42
221	27 th April 2023	V42
222	27 th April 2023	V42
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236	24 th Jan 2022	V1
237	24 th Jan 2022	V1
238	24 th Jan 2022	V1
239	24 th Jan 2022	V1
240		
241		
242	15 th February 2022	V3
243	15 th February 2022	V3
244		
245		
246	24 th January 2022	V2
247	24 th January 2022	V2
248		
249		

250		
Apartment Block 1	15 th September 2022 5 th October 2022	V25 V27
Apartment Block 1 Stairwell	19 th January 2023 20 th January 2023	V38 V39
Apartment Block 2	23 rd August 2022	V20

GAS MEMBRANE VALIDATION

Complete

Site Name	Belle vue
Location	180–182 Kirkmanshulme Lane, Longsight Manchester England M18 United Kingdom (53.46124894876787, - 2.1845740163556497)
Project Manager	Stu Ellis
Project number	12123
Developer	countryside
Site representative Signature	Tom had field 27 Apr 2023 3:35 PM BST
Conducted on	27 Apr 2023 3:21 PM BST
Prepared by	Patrick Lavelle

Inspection Gas Membrane

Plot Inspection

Plot Inspection 1

Plot Number

220

Type of Development: Other add note

House



Photo 1

Foundation Type: Other add note

Suspended Floor

Gas Membrane Type: Manufacturer, gauge, and colour.

Yellow visqueen

Gas Membrane Condition: Open punctures, tears, rips, stretching, Presence of debris, Repairs, Signs of weakness such as raised or sunken indentations, Protection plan in place to restrict access to lain gas membrane? IF FAIL DESCRIPTION IN ACTIONS AND PHOTOS REQUIRED

Pass

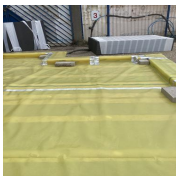


Photo 2



Photo 3

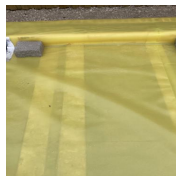


Photo 4



Photo 5



Photo 6

Laps, welds, and joints seals: Joints lapped and sealed in accordance with manufacturer's requirements/ specification? Minimum overlap insured? Sections taped twice? Are welds complete? Appropriate joining/double-sided tape used, Folds running in line with joints? (no joints cutting across folds)

Pass



Photo 7

Photo 8

Service entries seals: Top hats seal arrangements fixed around service entries? Use of Jubilee clips?

Yes

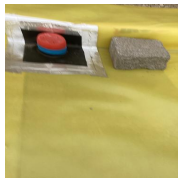


Photo 9



Photo 10

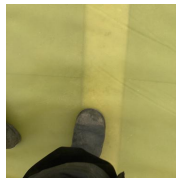


Photo 11

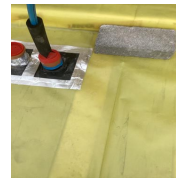


Photo 12

Type of joints/ Lapping

Taped



Photo 13

Photo 14

Corners / Internal joints: Check all corners are correctly formed or contractor has used preformed corners.

Pass



Photo 15



Photo 16



Photo 17



Photo 18



Photo 19



Photo 20



Photo 21



Photo 22



Photo 23

Extent of Coverage: Is the membrane covering the entire plot? Does membrane span over outside walls?

Yes

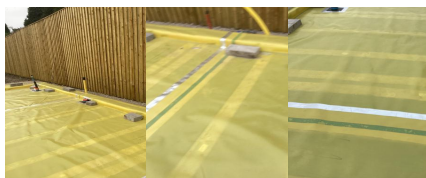


Photo 24

Photo 25

Photo 26

Condition of sub-grade and underside of gas membrane: Check that the subgrade 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.

Pass



Photo 27

Slab / membrane condition (is membrane clear of debris or insulation): Can membrane be fully seen and photographed – ask contractor to remove an debris so membrane can be fully seen and inspected – this is a requirement of NHBC and local authorities.

Pass



Photo 28

External Wall Air bricks: Numbers, size. positions as design drawing? (Minimum of 3 walls)

Pass

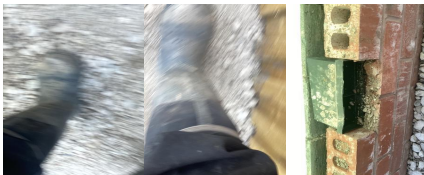


Photo 29

Photo 30

Photo 31

Plot Inspection 2

Plot Number

221

Type of Development: Other add note

House



Photo 32

Foundation Type: Other add note

Suspended Floor

Gas Membrane Type: Manufacturer, gauge, and colour.

Yellow visqueen

Gas Membrane Condition: Open punctures, tears, rips, stretching, Presence of debris, Repairs, Signs of weakness such as raised or sunken indentations, Protection plan in place to restrict access to lain gas membrane? IF FAIL DESCRIPTION IN ACTIONS AND PHOTOS REQUIRED

Pass



Photo 33



Photo 34

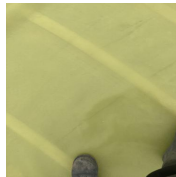


Photo 35

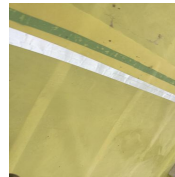


Photo 36



Photo 37

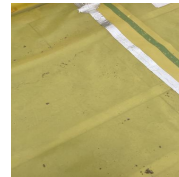


Photo 38

Laps, welds, and joints seals: Joints lapped and sealed in accordance with manufacturer's requirements/ specification? Minimum overlap insured? Sections taped twice? Are welds complete? Appropriate joining/double-sided tape used, Folds running in line with joints? (no joints cutting across folds)

Pass



Photo 39

Photo 40

Service entries seals: Top hats seal arrangements fixed around service entries? Use of Jubilee clips?

Yes

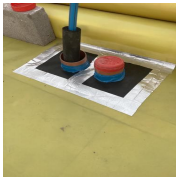


Photo 41

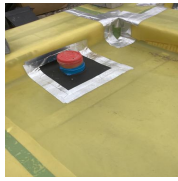


Photo 42

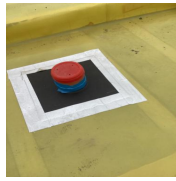


Photo 43



Photo 44

Type of joints/ Lapping

Taped

Corners / Internal joints: Check all corners are correctly formed or contractor has used preformed corners.

Pass



Photo 45



Photo 46



Photo 47



Photo 48

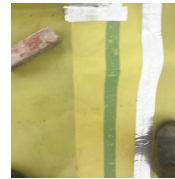


Photo 49



Photo 50



Photo 51



Photo 52

Extent of Coverage: Is the membrane covering the entire plot? Does membrane span over outside walls?

Yes

Condition of sub-grade and underside of gas membrane: Check that the subgrade 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.

Pass



Photo 53

Slab / membrane condition (is membrane clear of debris or insulation): Can membrane be fully seen and photographed – ask contractor to remove an debris so membrane can be fully seen an inspected – this is a requirement of NHBC and local authorities.

Pass



Photo 54

External Wall Air bricks: Numbers, size. positions as design drawing? (Minimum of 3 walls)

Pass



Photo 55

Photo 56

Photo 57

Plot Inspection 3

Plot Number

222

Type of Development: Other add note

House



Photo 58

Foundation Type: Other add note

Suspended Floor

Gas Membrane Type: Manufacturer, gauge, and colour.

Yellow visqueen

Gas Membrane Condition: Open punctures, tears, rips, stretching, Presence of debris, Repairs, Signs of weakness such as raised or sunken indentations, Protection plan in place to restrict access to lain gas membrane? IF FAIL DESCRIPTION IN ACTIONS AND PHOTOS REQUIRED

Pass



Photo 59

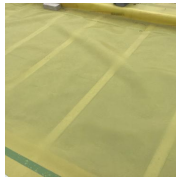


Photo 60



Photo 61

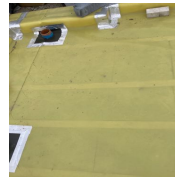


Photo 62

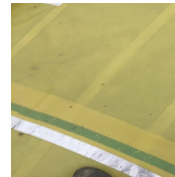


Photo 63



Photo 64

Laps, welds, and joints seals: Joints lapped and sealed in accordance with manufacturer's requirements/ specification? Minimum overlap insured? Sections taped twice? Are welds complete? Appropriate joining/double-sided tape used, Folds running in line with joints? (no joints cutting across folds)

Pass

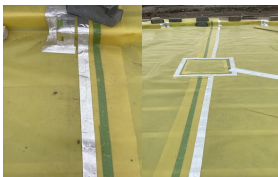


Photo 65

Photo 66

Service entries seals: Top hats seal arrangements fixed around service entries? Use of Jubilee clips?

Yes

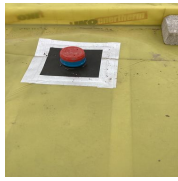


Photo 67

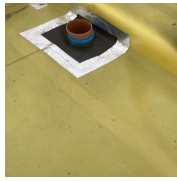


Photo 68



Photo 69

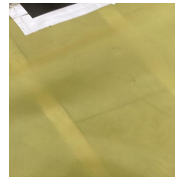


Photo 70

Type of joints/ Lapping

Taped

Corners / Internal joints: Check all corners are correctly formed or contractor has used preformed corners.

Pass



Photo 71

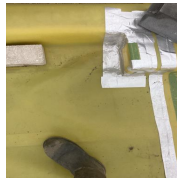


Photo 72



Photo 73



Photo 74



Photo 75



Photo 76



Photo 77



Photo 78

Extent of Coverage: Is the membrane covering the entire plot? Does membrane span over outside walls?

Yes



Photo 79

Photo 80

Condition of sub-grade and underside of gas membrane: Check that the subgrade 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.

Pass



Photo 81

Slab / membrane condition (is membrane clear of debris or insulation): Can membrane be fully seen and photographed – ask contractor to remove an debris so membrane can be fully seen and inspected – this is a requirement of NHBC and local authorities.

Pass

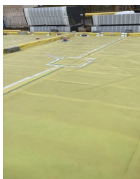


Photo 82

External Wall Air bricks: Numbers, size. positions as design drawing? (Minimum of 3 walls)

Pass

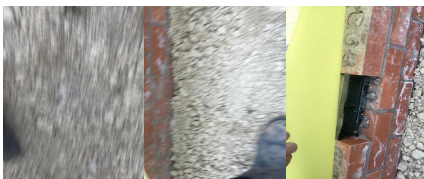


Photo 83

Photo 84

Photo 85

Passive Venting

Sub-floor Void: Is a check possible on future plots (insert Plot number or NO in text box)

No

Media summary



Photo 1



Photo 2



Photo 3



Photo 4



Photo 5



Photo 6

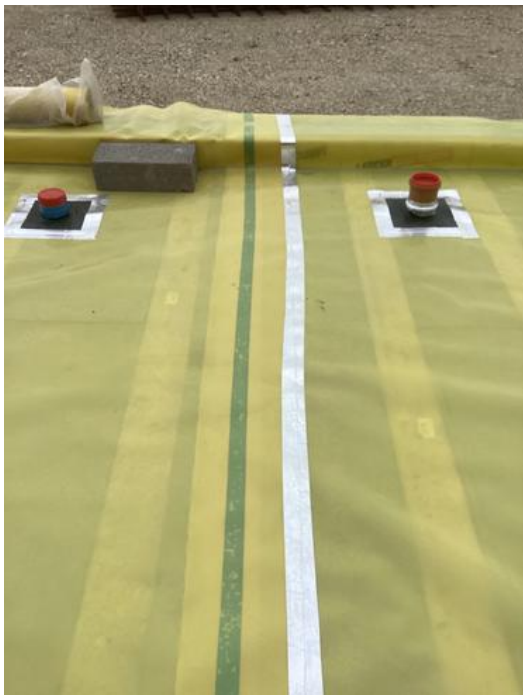


Photo 7

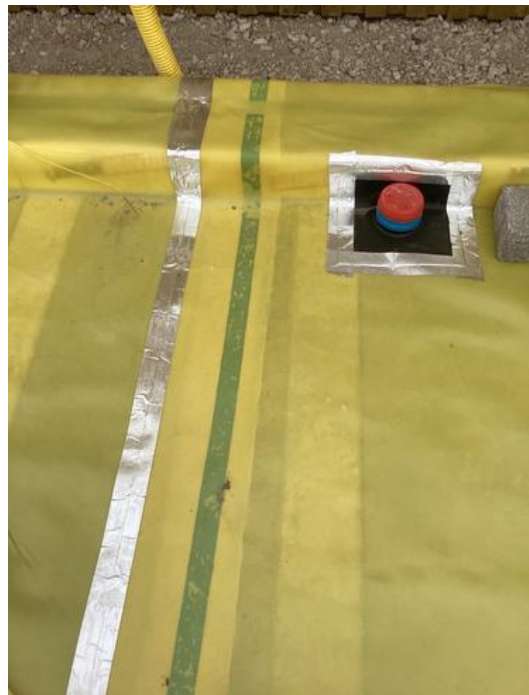


Photo 8



Photo 9



Photo 10



Photo 11

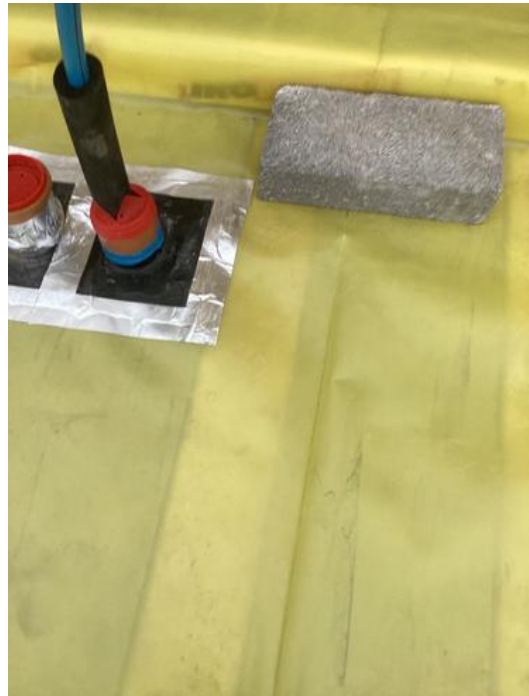


Photo 12



Photo 13

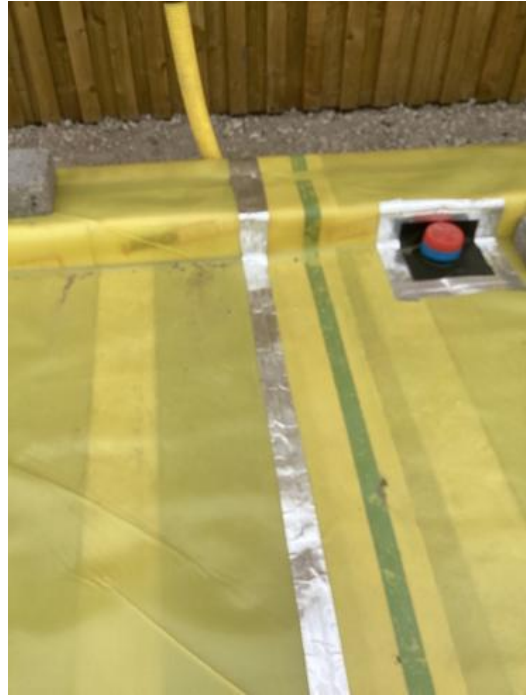


Photo 14



Photo 15



Photo 16



Photo 17



Photo 18



Photo 19



Photo 20



Photo 21



Photo 22

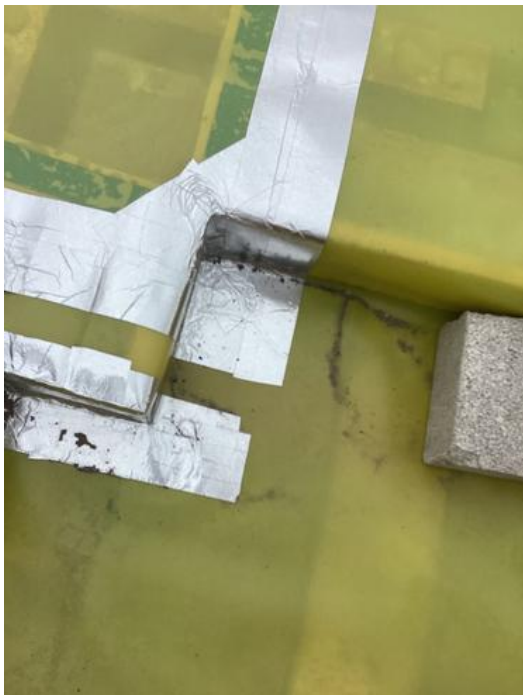


Photo 23



Photo 24

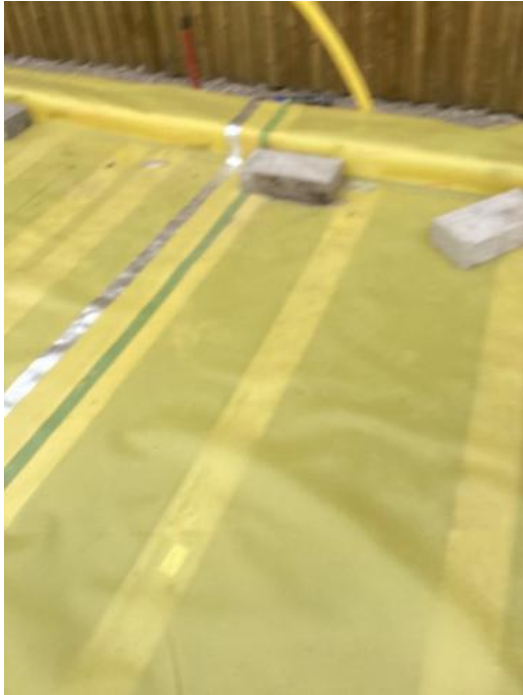


Photo 25



Photo 26



Photo 27



Photo 28

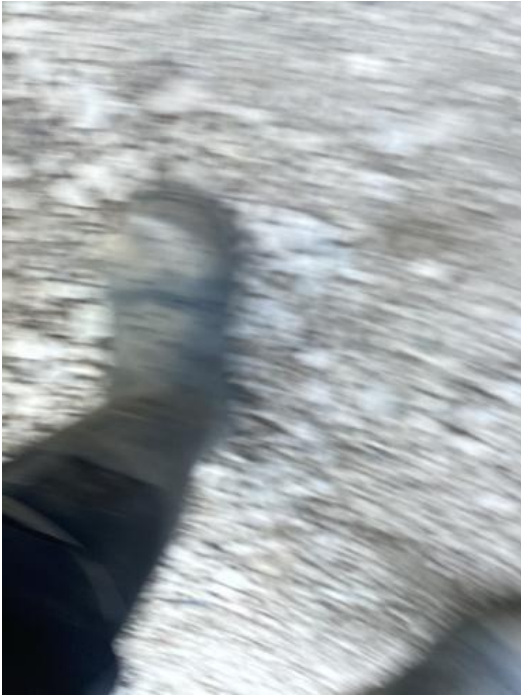


Photo 29



Photo 30



Photo 31



Photo 32



Photo 33



Photo 34

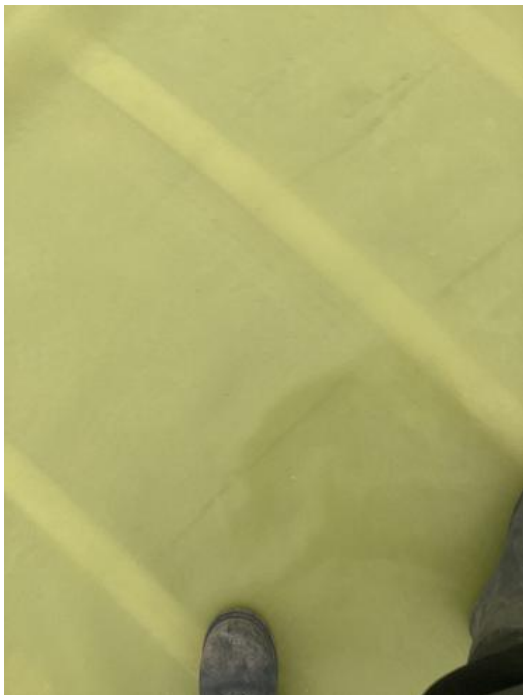


Photo 35



Photo 36



Photo 37



Photo 38

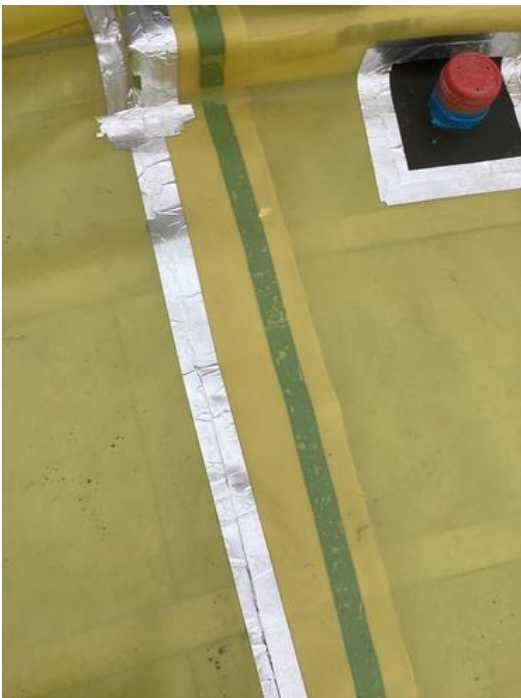


Photo 39



Photo 40

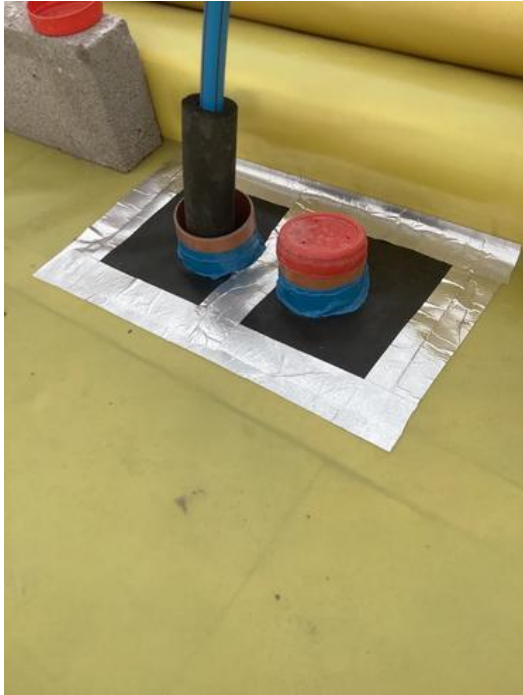


Photo 41

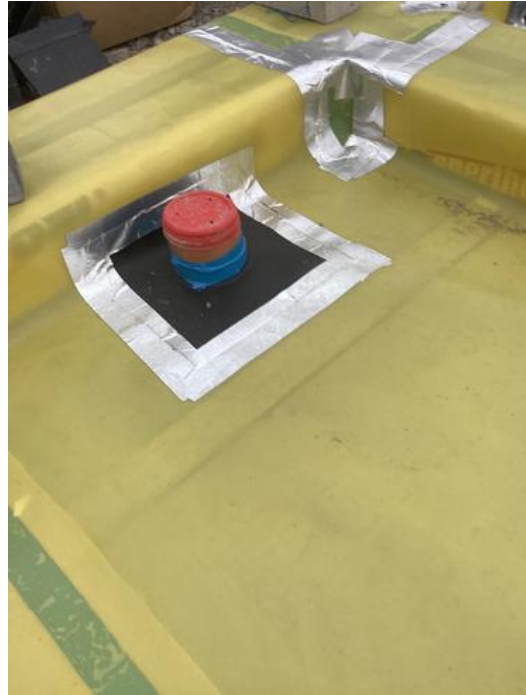


Photo 42

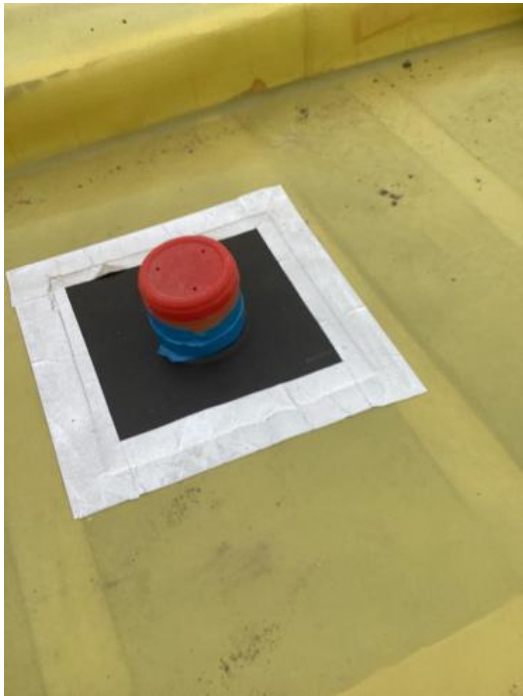


Photo 43



Photo 44



Photo 45



Photo 46



Photo 47



Photo 48



Photo 49



Photo 50



Photo 51

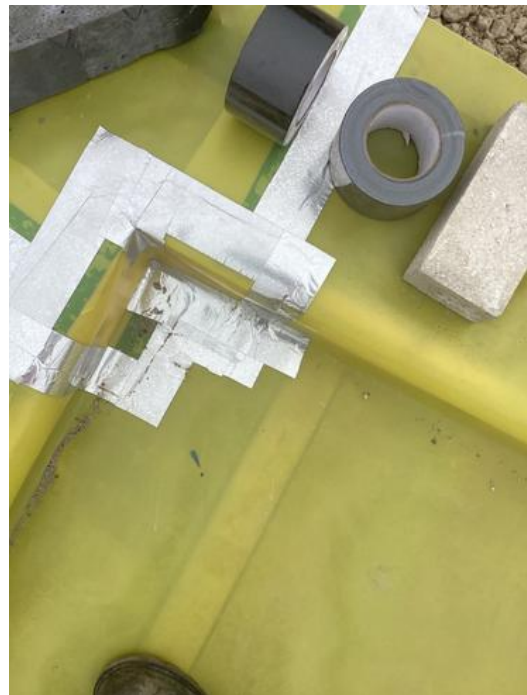


Photo 52



Photo 53



Photo 54



Photo 55



Photo 56



Photo 57



Photo 58



Photo 59



Photo 60



Photo 61



Photo 62



Photo 63



Photo 64



Photo 65

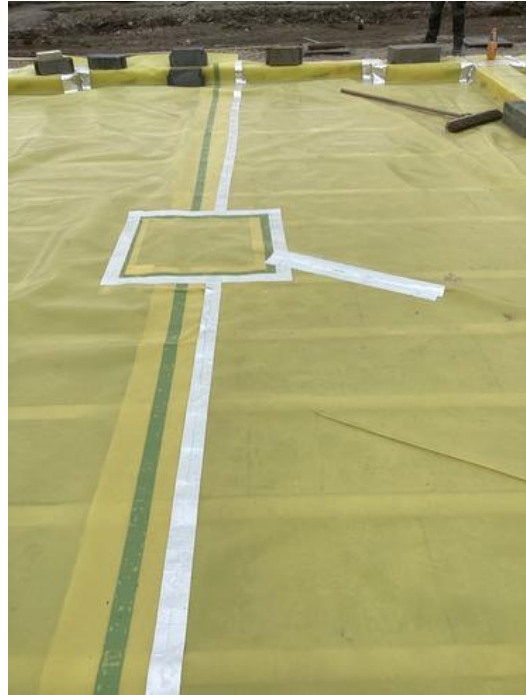


Photo 66

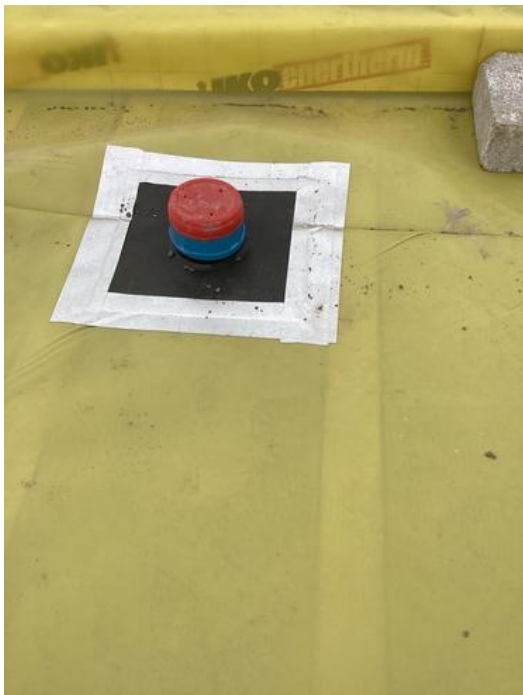


Photo 67



Photo 68

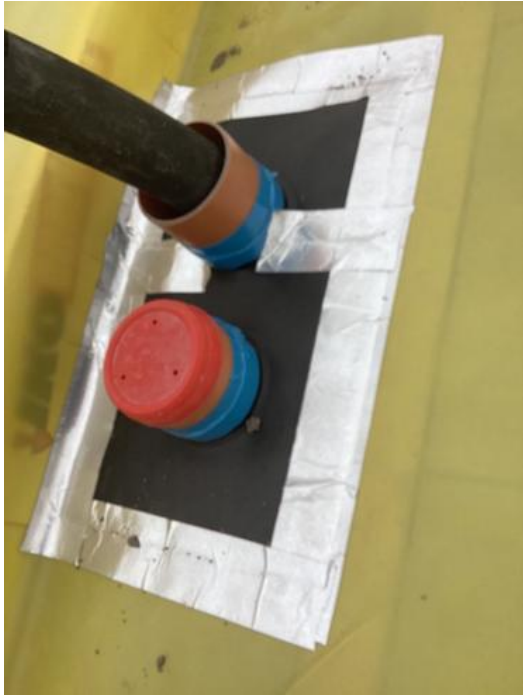


Photo 69



Photo 70



Photo 71



Photo 72



Photo 73



Photo 74



Photo 75



Photo 76



Photo 77



Photo 78



Photo 79



Photo 80



Photo 81

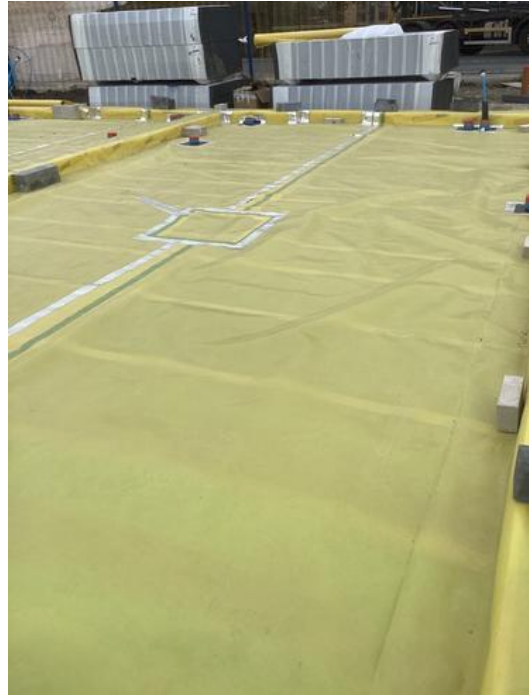


Photo 82



Photo 83

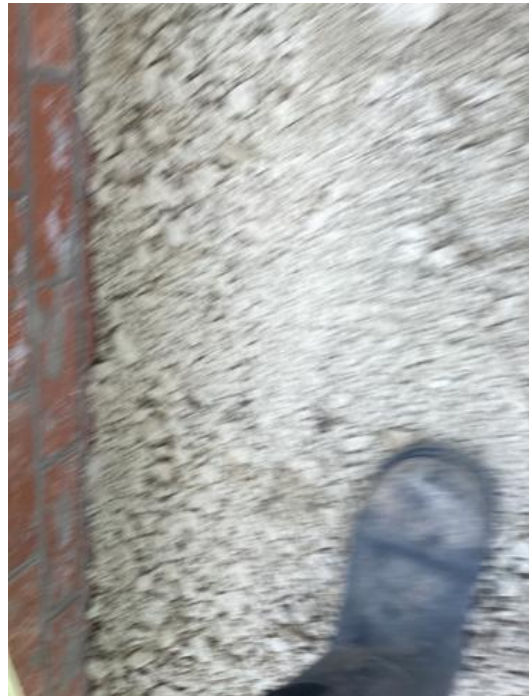


Photo 84



Photo 85