



Triton Systems

Ground Gas Barrier Systems



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Triton Ground Gas Barrier Systems

Triton supplies a range of ground gas barrier systems to protect buildings from the ingress of Radon, Methane, Carbon Dioxide, Hydrocarbon gases and VOCs. Their installation will help specifiers and installers conform to the requirements of BS 8485:2015 – the Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings.

Certain products in Triton's range of ground gas barrier systems also perform as Type A waterproofing systems as defined in BS 8102:2009 – the Code of practice for the protection of below ground structures from water from the ground.

Further guidance on the use and installation of ground gas barrier systems can be found in the appropriate CIRIA reports and BRE guidance sheets, available for download at www.tritonsystems.co.uk/prodi1.php#p9





Triton TGS-GM500

Triton TGS-GM500 is a sheet membrane designed to prevent the ingress of CO₂ and Radon gas when used in the construction of buildings and dwellings.

Typical areas where the membrane may be used are coalfields, contaminated industrial sites, landfill and brown field sites.

Key benefits

- Prevents the ingress of CO₂ and Radon Gas
- High quality very robust Co-polymer, Mono Layer Membrane
- Supplied in 2m widths making it easy to install.
- Complies with NHBC recommendations as a gas barrier

Triton TGS-GM500 is a very effective gas barrier and protects buildings and occupiers from the ingress of gas and moisture. Building regulations require that proper precautions be taken to prevent danger to health when building on gas contaminated land. When installed in accordance with the BRE report 414 "Protective measures for housing on gas contaminated land" Triton TGS-GM500 is an effective solution to the problem and can be laid with confidence. Its distinctive orange colour and printed traceability code on the film ensures that material can easily be identified.

Storage on Site

Triton TGS-GM500 is classified as non-hazardous. (As defined in Code of Practice CP102 1973).

The product is chemically inert and any acids or alkalis present in the subsoil will not affect the membrane.

Triton TGS-GM500 is not recommended for use when exposed to sunlight and general outdoor weather conditions for long periods of time. Weathering will not occur when installed with Code of Practice CP102 1973.

Rolls should be stored undercover and on a flat level surface.

Handling on Site

Quality control during the laying of the membrane is extremely important. The membrane should be protected either through the use of temporary boarding over its whole area or the immediate laying of a floor screed.

Installation

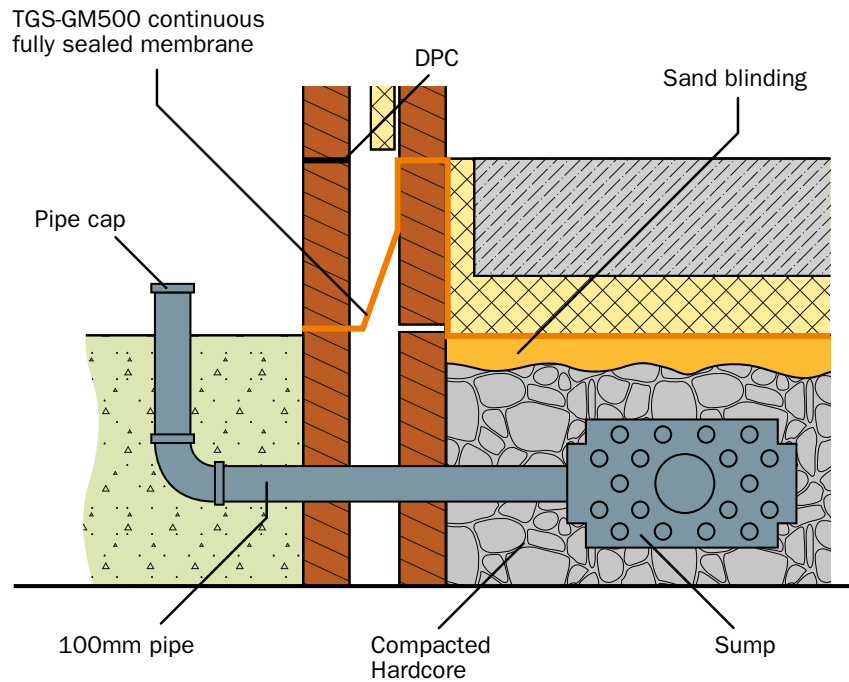
Triton TGS-GM500 membrane system must be laid in accordance with the Building Research establishment BRE No. 414. "Protective measures for housing on gas contaminated land". Triton TGS-GM500 can be used in most common floor constructions. Triton TGS-GM500 membrane is installed in a similar way to damp proof membranes, but with much greater attention to joint sealing of the gas resisting membrane, under wall sealing and workmanship. The membrane will also perform the same function as a damp proof membrane. Where there is a risk of hydrostatic pressure this product is not intended for use. Triton TGS-GM500 membrane should be laid on a smooth surface or sand blinding to prevent the membrane from puncture. The membrane must be free from grease and dirt.

Protecting the Membrane after Installation

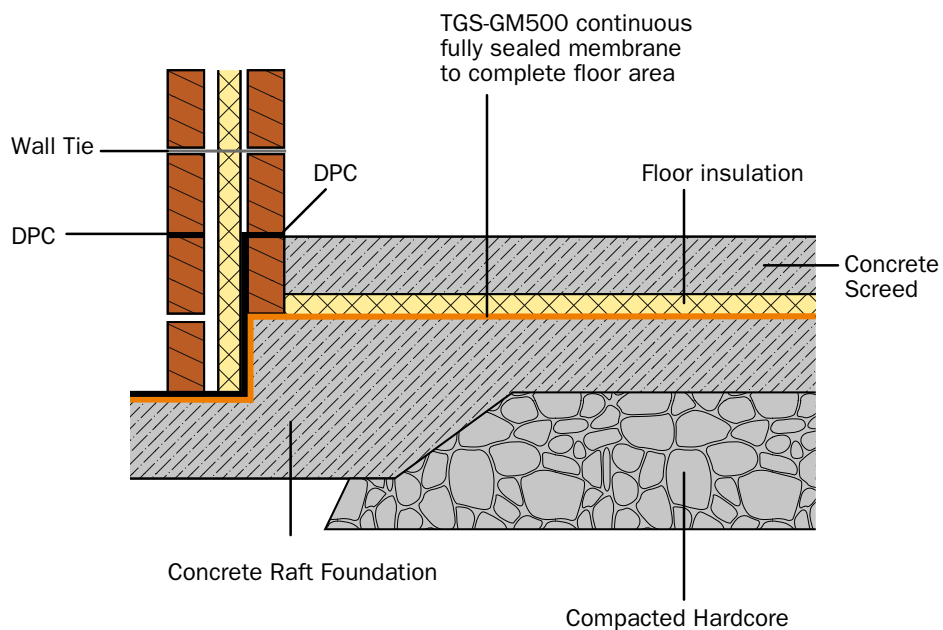
Triton TGS-GM500 should be protected as soon as possible once installed.

A minimum thickness of 50mm screed is recommended. Care should be taken when the screed is applied not to cause stretching, puncture or displacement of the membrane.

CAVITY WALL / FLOATING SLAB APPLICATION



RAFT FOUNDATION

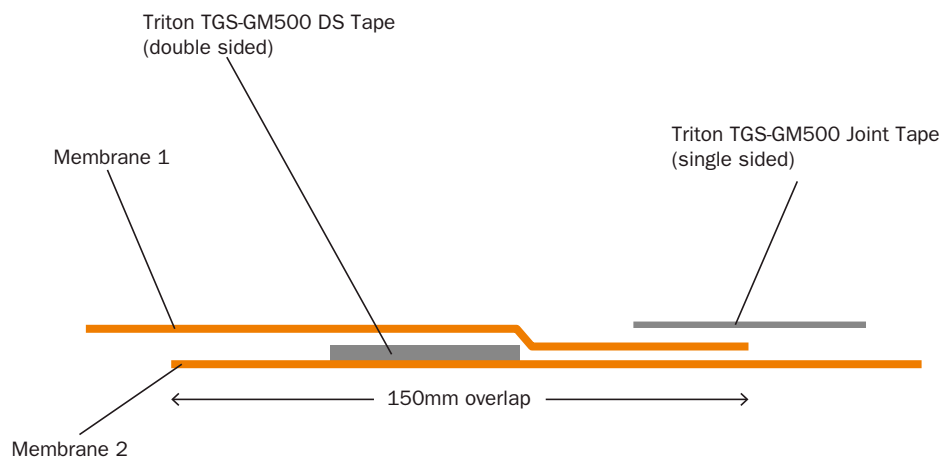


Jointing Triton TGS-GM500

Sheets must be clean and free from dirt and grease before application of TGS-GM500 DS Tape, and in view of the difficulty of achieving gas tight seals under wet or dirty conditions it is recommended that special care is taken with this aspect of the installation. Unroll one width of the membrane after determining the most effective method of covering the area. Apply the TGS-GM500 DS Tape about 50mm from the edge, leaving the backing paper on. Lay the next width of membrane overlapping the first by 150mm. Remove the backing paper from the tape and join the top sheet to the bottom sheet by applying pressure with a hand roller. Where the membranes overlap apply the 75mm Triton TGS-GM500 Joint Tape (single sided tape), equidistant on both membranes. (See Figure 1).

All service entry points must have airtight seals. TGS Top Hat units and corner pre-forms must be sealed using Triton TGS-GM500 DS Tape as in Figure 1.

FIGURE 1

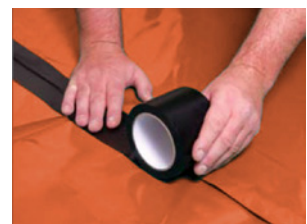
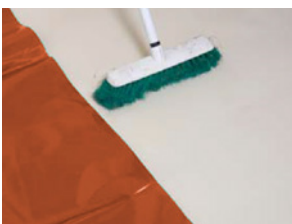


1) Unroll the first membrane, ensure the surface is dry and free from dust or grease. Inspect the membrane to ensure there are no indentations or protrusions. If there are remove and apply sand blinding.

2) Apply Triton TGS-GM500 DS Tape to the membrane, 50mm from the edge. It is very important that the membrane is dry and free from dust and dirt.

3) The second membrane must be unrolled overlapping the first membrane by 150mm. Remove the protective paper from the tape and apply pressure to the membrane while joining the two membranes together.

4) Seal the two membranes by installing Triton TGS-GM500 Joint Tape to the edge. (Ensure that the membrane is completely dry, free from dust and dirt).



Technical Data

Technical Data:	
Thickness	500microns
Width (m)	2metres -0 + 2.5% / 4 metres -0 + 2.5%
Length (m)	25metres -0 + 10%
Roll Weight	23Kg
Elongation:	
BS 2782 1976 (1996) Method 320A	Unaged: Long 400% Trans 500%
Radon GAS (m-222) Tested on 360 micron material (SP Swedish National Testing and Research Institute)	
Radon Permeability (10^{-12} m ² /s)	8±15%
Radon Transmittance (10^{-9} m/s ⁻¹)	22±15%
Gas (CO ₂) (Rapra tested)	
Permeability test in accordance with ISO 2782:1995	Permeability Value: 2.055×10^{-17} (m ² * sec ⁻¹ *Pa ⁻¹)
Permeability test in accordance with ISO 2782:1995	Gas Trans. Rate: 4.357×10^{-9} (m*sec ⁻¹)
Technical Performance N.B. # Tested on 1600 Gauge material	
BS 3177 1959 (1995)	Water Vapour Trans Rate g/m ² /day 0.15
Density	0.92g/cm ³
BS EN ISO 536 (1997)	Mass/Unit area 460g/m ²

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Declaration of Performance

Date: 14/08/2015 version 1

Triton TGS-GM500

Type A in accordance with EN 13967:2012
AVCP System 2+

Triton TGS-GM500 is a sheet membrane designed to prevent the ingress of CO₂ and radon gas when used in the construction of buildings and dwellings.

Essential characteristics	Test standard	Unit	Criteria	Value or Statement
Visible defects	EN 1850-2	–	Pass/Fail	Pass
Length	EN 1848-2	m	-0%/10%	25
Width	EN 1848-2	m	-2.5%/+2.5%	2
Straightness	EN 1848-2	–	Pass/Fail	Pass
Thickness	EN 1849-2	mm	-12.5%/+12.5%	0.5
Mass	EN 1849-2	g/m ²	-12.5%/+12.5%	460
Tensile strength CD	EN EN12311	Nmm ⁻²	>MLV	21
Tensile strength MD	EN 12311	Nmm ⁻²	>MLV	21.2
Elongation CD	EN EN12411	%	>MLV	695
Elongation MD	EN EN12311	%	>MLV	632
Joint strength	EN 12317-2	N	>MLV	281
Resistance to impact	EN 12691	mm	Pass/Fail	Pass at 250mm
Durability (artificial ageing)	EN 1296 and EN 1928	–	Pass/Fail	Pass
Durability (chemical resistance)	EN 1847	–	Pass/Fail	Pass
Watertightness	EN 1928	–	Pass/Fail	Pass
Resistance to tearing (nailshank CD)	EN 12310-1	N	MDV	346
Resistance to tearing (nailshank MD)	EN12310-1	N	MDV	339
Resistance to static loading (soft)	EN 12730	Kg	>MDV	Pass at 5Kg
Resistance to static loading (hard)	EN 12730	Kg	>MDV	Pass at 20Kg
Radon permeability	RN-222 (SP test)	10 ⁻¹² m ² /s	>MDV	8(+15%-15%)
Radon transmittance	RN-222 (SP test)	10 ⁻⁹ m/s ⁻¹	>MDV	22(+15%-15%)
CO ₂ permeability	Rapra tested	m ² *sec ⁻¹ *pa ⁻¹	>MDV	2.055*10 ⁻¹⁷
CO ₂ transmittance	Rapra tested	m*sec ⁻¹	>MDV	4.357*10 ⁻⁹
Reaction to fire	EN 13501-1	–	Type	F

The performance of the product identified is in conformity with the declared performance above. This declaration of performance is issued under the sole responsibility of the manufacturer. Signed for an on behalf of the manufacturer by:

Name and function	Place and date of issue	Signature
Mr Roger Parker Factory Manager	Crayford, UK 17/08/2015	

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Triton TGS-GM500, Triton TGS-HCM1000 and system components

General installation guidelines

1. Clean all surfaces and make sure they are clean, dry, free of grease, mortar and any other debris.
2. The jointing of all top hats, DPC, cavity trays and membranes should be done in warm ambient temperatures. Do not attempt to joint below 5°C. Warming may be required if jointing below 10°C.
3. Apply as much pressure as possible to the area being jointed with double sided tape. A standard wallpaper roller makes a great tool for this job.
4. Ensure membrane is protected with a screed or protection board if the installation is to be topped with steel reinforcement.
5. Avoid all traffic on unprotected membrane. Only install the membrane just before the laying of any screed – reducing the amount of unnecessary traffic on the unprotected membrane.
6. Ensure sufficient screed is laid to protect the membrane. Screed should be laid at 55mm thick across all areas of the membrane.

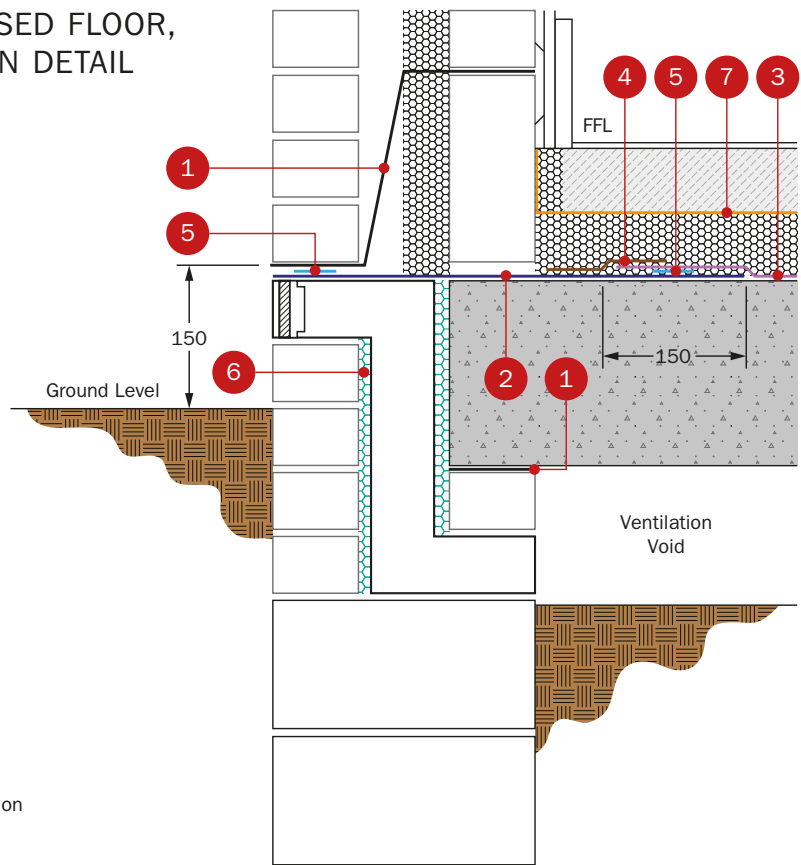
Installation of Triton TGS-HCM1000

Triton TGS-HCM1000 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.

Triton TGS-HCM1000 can be used in most common floor constructions and is installed in a similar manner to damp-proof membrane but with greater attention to joint sealing and under wall sealing. Where there is risk of hydrostatic pressure it can be used so long as the jointing is made using the hot weld process and not taped. The membrane should be laid on smooth surface or sand blinding to prevent puncture.

Please refer to drawings overleaf.

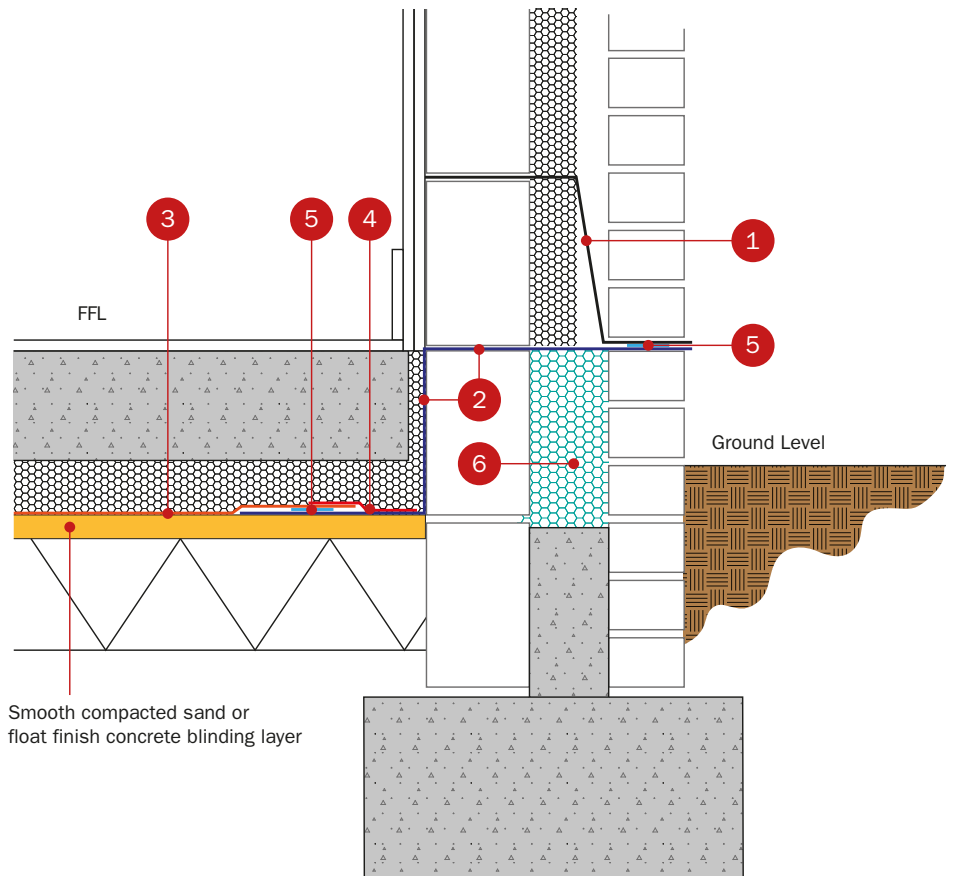
SUSPENDED SLAB – RAISED FLOOR, TYPICAL GAS PROTECTION DETAIL



KEY TO MATERIALS

- 1 Triton TGS-HP DPC
- 2 Triton TGS-GR DPC
- 3 Triton TGS-HCM1000
- 4 Triton TGS-HCM1000 Joint Tape
- 5 Triton TGS-HCM1000 DS Tape
- 6 Triton TT Vapour Membrane Insulation
- 7 Insulation

GROUND BEARING SLAB TYPICAL EDGE DETAIL



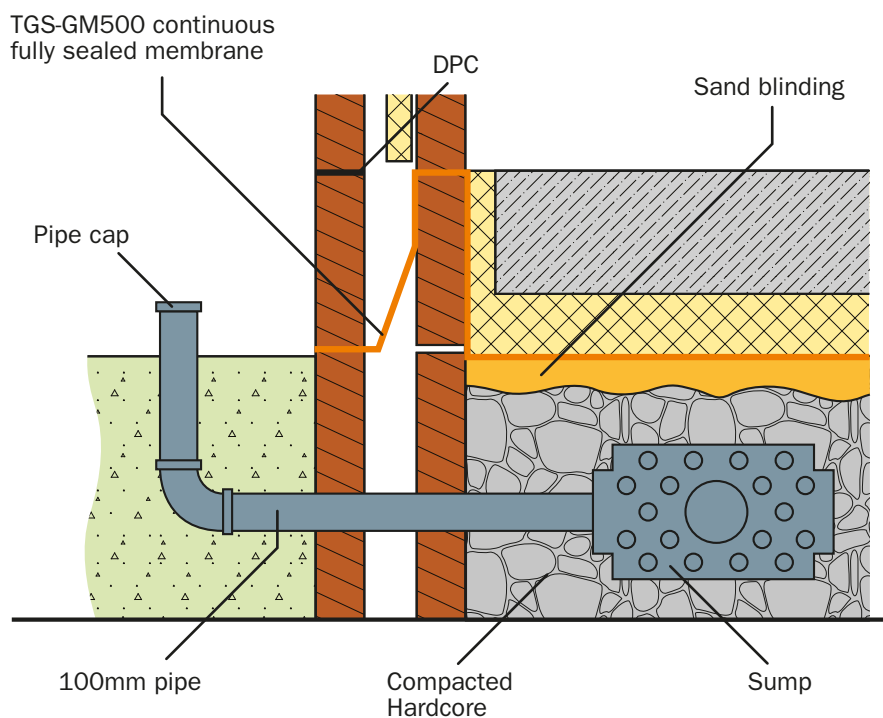
KEY TO MATERIALS

- 1 Triton TGS-HP DPC
- 2 Triton TGS-GR DPC
- 3 Triton TGS-HCM1000
- 4 Triton TGS-HCM1000 Joint Tape
- 5 Triton TGS-HCM1000 DS Tape
- 6 Insulation

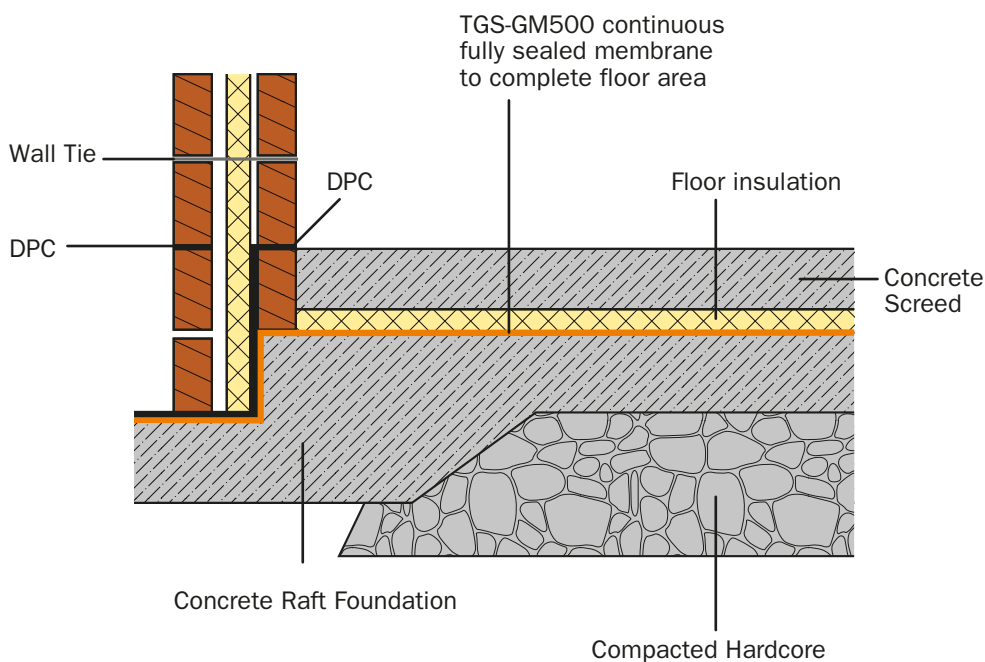
Installation of Triton TGS-GM500

Triton TGS-GM500 membrane system must be laid in accordance with the Building Research establishment BRE No. 414. "Protective measures for housing on gas contaminated land". Triton TGS-GM500 can be used in most common floor constructions. Triton TGS-GM500 membrane is installed in a similar way to damp proof membranes, but with much greater attention to joint sealing of the gas resisting membrane, under wall sealing and workmanship. The membrane will also perform the same function as a damp proof membrane. Where there is a risk of hydrostatic pressure this product is not intended for use. Triton TGS-GM500 membrane should be laid on a smooth surface or sand blinding to prevent the membrane from puncture. The membrane must be free from grease and dirt.

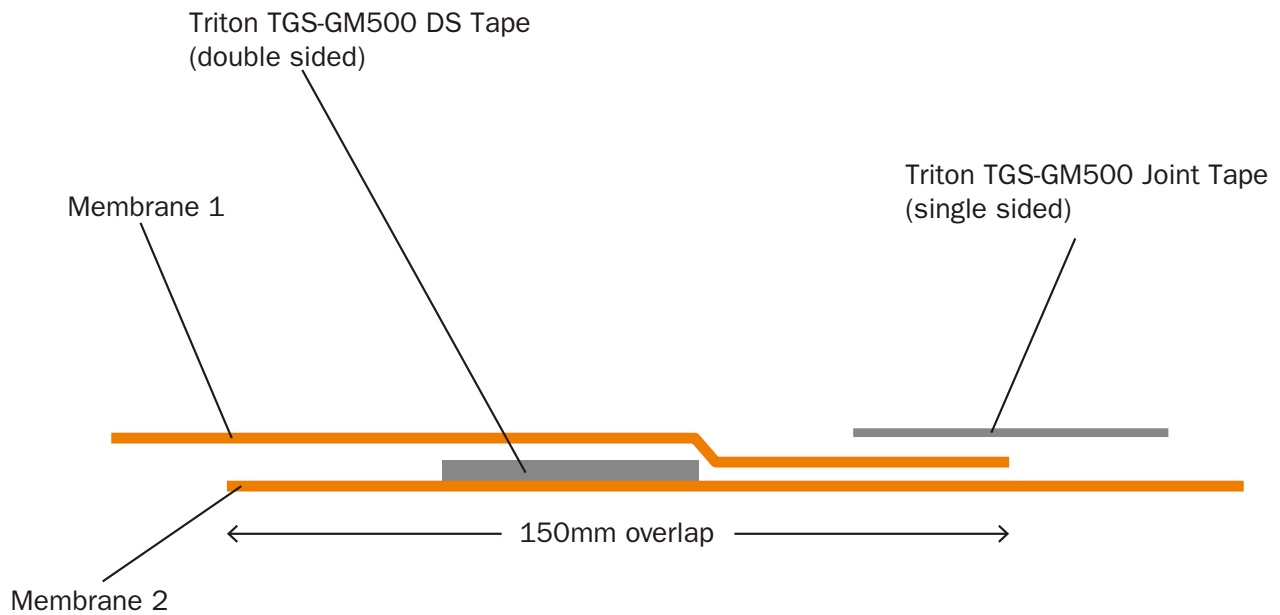
CAVITY WALL / FLOATING SLAB APPLICATION



RAFT FOUNDATION



JOINTING DETAIL



Jointing of membrane

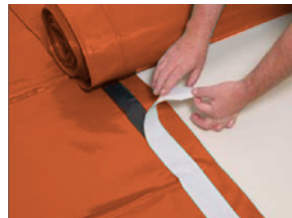
1) Unroll the first membrane, ensure the surface is dry and free from dust or grease. Inspect the membrane to ensure there are no indentations or protrusions. If there are remove and apply sand blinding.



2) Apply double sided tape to the membrane, 50mm from the edge. It is very important that the membrane is dry and free from dust and dirt.



3) The second membrane must be unrolled overlapping the first membrane by 150mm. Remove the protective paper from the tape and apply pressure to the membrane while joining the two membranes together.

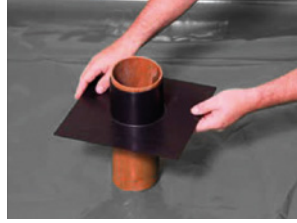


4) Seal the two membranes by installing joint tape to the edge. (Ensure that the membrane is completely dry, free from dust and dirt.)

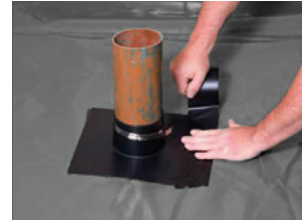
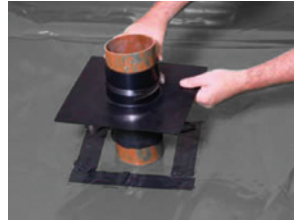


Making gas-tight seals in waste pipe openings

- 1) Cut a hole in the membrane to expose the pipe, ensure the hole fits the pipe as close as possible.
- 2) When the membrane and pipe is in position, place the top hat over the pipe.
- 3) When the top hat is in place, mark the membrane around the top of the pipe and around the horizontal skirt of the top hat unit.
- 4) Remove the top hat unit and apply 4 lengths of double sided tape to the area marked on the membrane. Ensuring the tape overlaps on the corners.



- 5) Below the point marked on the pipe. Apply one length of the tape around the pipe.
- 6) Remove the protective paper from the double sided tape.
- 7) Replace the top hat unit over the pipe. Ensure that the base of the top hat is free from any dust, dirt or grease. Apply pressure to the top hat and seal the horizontal skirt to the membrane.
- 8) When the top hat unit is in place, using the single sided joint tape, seal the edge of the horizontal skirt to the membrane. Then secure the top hat to the pipe using the jubilee Clip.



Protecting membranes

Protection boards should be used if the installation of membrane is to be topped by reinforcement of steels. Boards should be loose laid. They can simply be butt jointed where a good straight joint can be achieved. If necessary the joints can be sealed with joint tape. The tape should be applied evenly down the length of the joint. Ensure all joints are dry, clean, grease and debris free before application of tapes.

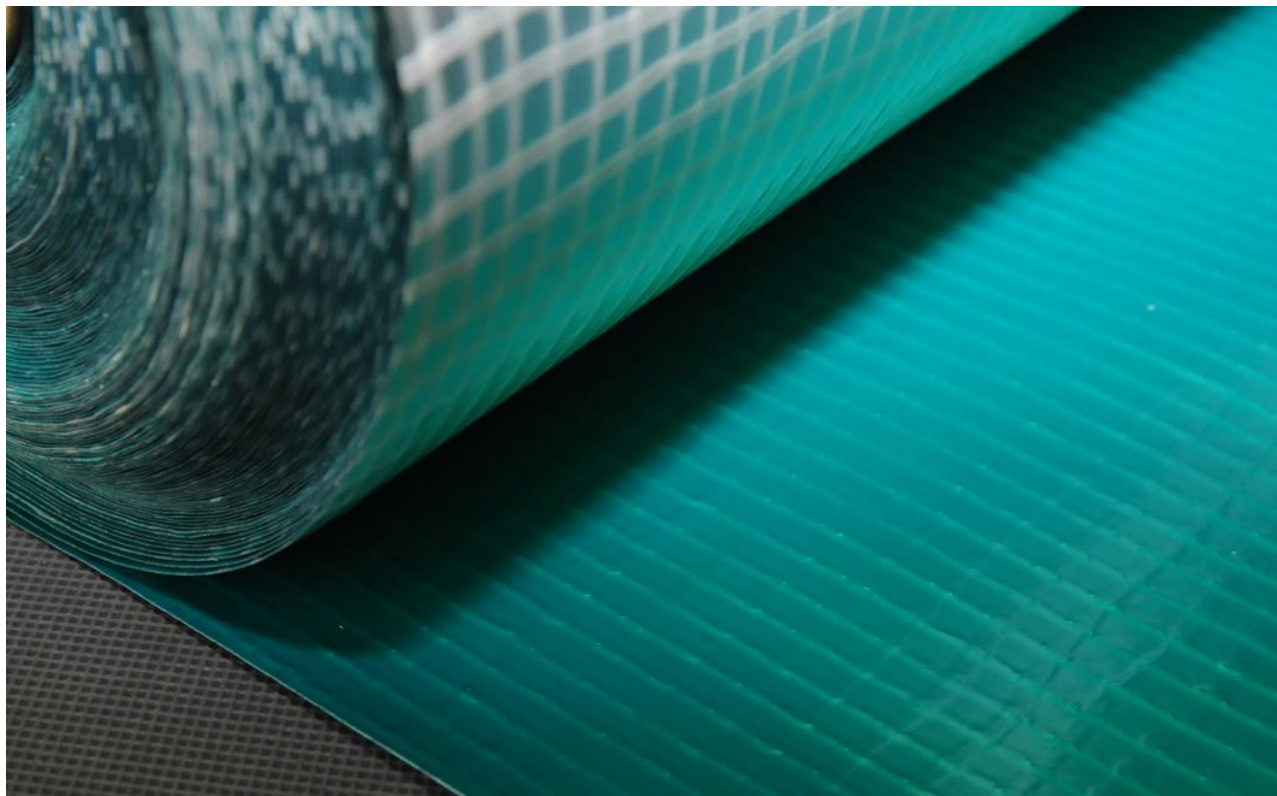
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Triton TGS – HP750



DESCRIPTION

Triton TGS – HP750 is a high performance proprietary reinforced gas barrier, that incorporates a 12 micron aluminium foil layer, for maximum protection against ground-borne gases. **Triton TGS – HP750** can be used to protect against Hydrocarbon Vapours when not in direct contact with the ground i.e., above block and beam floor design. This has been specifically designed to conform with the latest guidance documents. Due to its unique composition, the membrane is extremely robust and flexible and therefore, easy to install on site. The membrane also provides protection from damp when placed below the slab and therefore, there is no need to install a separate DPM.

REGULATIONS COMPATIBILITY TABLE

	CIRIA 665 CHARACTERISTIC SITUATION 2	CIRIA 665 CHARACTERISTIC SITUATION 3-6	BS8485 CHARACTERISTIC SITUATION 2	BS8485 CHARACTERISTIC SITUATION 3-6	BRE 211 RADON	NHBC AMBER 1	NHBC AMBER 2 & RED
METHANE	✓	✓	✓	✓	N/A	✓	✓
CARBON DIOXIDE	✓	✓	✓	✓	N/A	✓	✓
RADON	N/A	N/A	N/A	N/A	✓	N/A	N/A

SPECIFICATION

Ciria 665, BS8485 & Local Authority Ground Gas Handbook recommended that gas membranes are specified on the basis of the 'need to survive' construction, i.e. use one that is puncture and tear resistant.

Thickness should not be the main determinant of the suitability of a membrane for a particular site, although it can indirectly influence some key performance parameters.



In practice, because of the nature of construction sites, the durability, survivability and robustness of membranes are equally important than purely permeability to gas.

Triton TGS – HP750 incorporates a reinforced grid to ensure that maximum protection is achieved when installed to manufacturers' instructions.

The need for high quality workmanship during installation should not be under-estimated. The health and safety of the occupants of the building is dependent on its satisfactory performance. If installed incorrectly or damaged during the construction process, the membrane is rendered ineffective and will fail to provide adequate protection against the ingress of ground gas or vapours

Typical Properties

- | | |
|--|---------------------------|
| • Roll Length: | 50m |
| • Width: | 2m |
| • Weight: | 0.37kg/m ² |
| • Thickness: | 0.4mm |
| • Colour: | Green / Silver |
| • Methane Permeability (K _g) (m/s) | 7.799 x 10 ⁻¹² |

Required Accessories

- TGS – HP750 Starter Band (1m x 50m)
- TGS – HP750 Tape
- TGS – HP750 Tophats
- TGS – HP750 (Self Adhesive Gas Membrane)
- TGS – HP750 Flashing Strip
- TGS – HP750 Corner Units
- TGS – HP750 Primer
- TGS – HP750 3mm Protection Board
- TGS – HP750 Protection Fleece

Venting

We can provide design advice for both passive and active venting systems to suit individual site requirements.

For further information please contact:

Triton Chemical Manufacturing Co Ltd T/a Triton Systems

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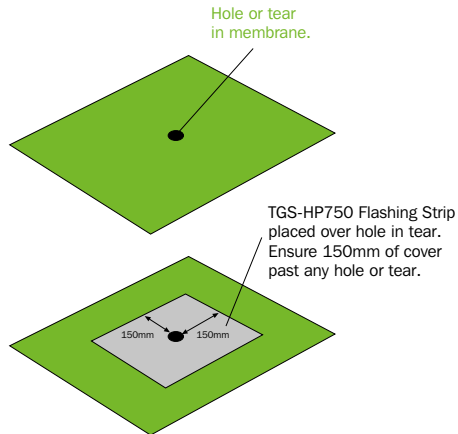
Email: info@tritonsystems.co.uk

www.tritonsystems.co.uk

Ref: Triton TGS – HP750 09/16

Triton TGS-HP750 Installation Sheet

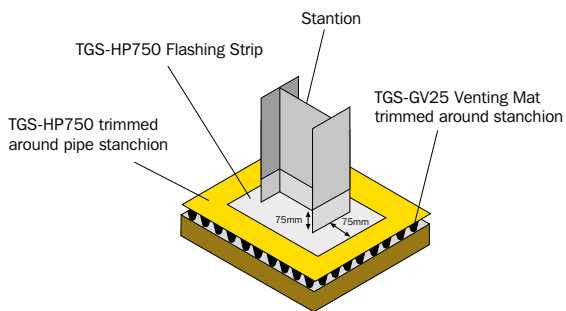
Patch Detail



Method

1. Clean membrane with a damp cloth and wipe dry.
2. Cut strip of TGS-HP750 Flashing Strip minimum 150mm x 150mm, remove release paper and place over the hole or tear.
3. On larger holes, use several pieces of 150mm x 150mm TGS-HP750 Flashing Strip, ensuring that strips are overlapped a minimum of 25mm with adjoining strip.

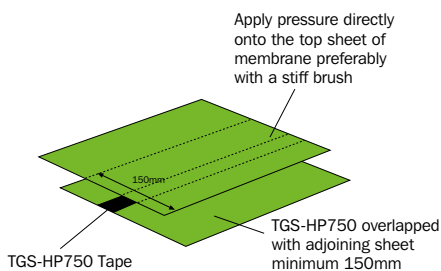
Stanchion Detail



Method

1. Trim TGS-HP750 around stanchion.
2. Apply two coats of Triton TT Vapour Membrane to area of stanchion to be covered by TGS-HP750 Flashing Strip.
3. Cut lengths of flashing strip and fold in half and apply to TGS-HP750 membrane and stanchion.
4. Repeat the process around the entire stanchion until a gas tight seal is achieved.

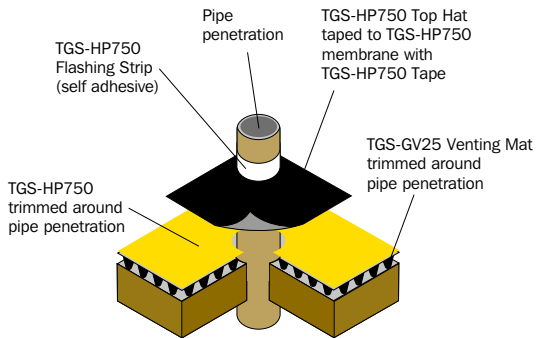
Tape Joint Detail



Method

1. Lay roll of TGS-HP750 membrane on prepared sub-base or TGS-GV25 Venting Mat ensuring that all creases are removed and sheet is laid flat.
2. Roll TGS-HP750 Tape 50mm in from edge of membrane.
3. Roll out next sheet of membrane ensuring a minimum 150mm overlap with adjoining sheet.
4. Remove the release paper from the tape and apply pressure to the top sheet of membrane (this can be done with a long handled roller.)
5. Ensure that the two sheets of TGS-HP750 membrane are securely sealed.

Tophat Detail

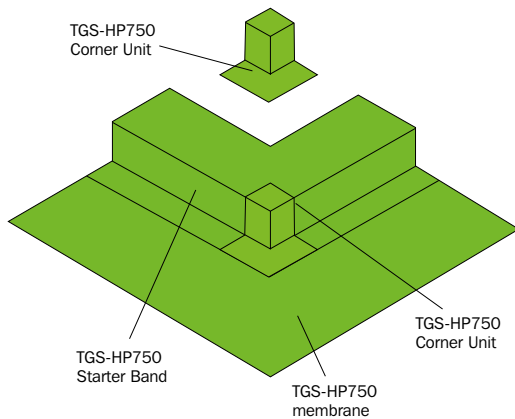


Method

1. Trim TGS-HP750 membrane around pipe penetration.
2. Fix TGS-HP750 Tape to underside of TGS-HP750 Top Hat flange 20mm from edge, ensuring that there are no gaps between the strips of tape at each corner.
3. Remove the release paper from the tape and slide the Top Hat over the pipe and push down on to the membrane.
4. Ensure the Top Hat is adhered to the membrane.
5. Cut a strip of TGS-HP750 Flashing Strip and stick to top of pipe penetration and Top Hat ensuring a 75mm overlap on to pipe and Top Hat.

TGS-HP750 Top Hats are available in all popular pipe sizes including standard 110mm, 130mm and 160mm and also bespoke sizes when required.

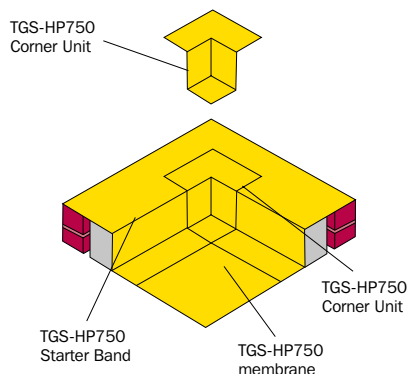
External Corner Detail



Method

1. Cut, trim and dress TGS-HP750 Starter Band over masonry and tape to TGS-HP750 membrane using TGS-HP750 Tape.
2. Remove release paper from tape from rear of pre-taped TGS-HP750 External/Internal Corner Unit.
3. Position Corner Unit and press firmly in to position ensuring that it is adhered to TGS-HP750 Starter Band.
4. Please note that an architectural cavity tray, in most instances, will need to be placed above the corner detail.

Internal Corner Detail



BS 8215, Design and Installation of DPCs, recommends that '3-dimensional shapes in DPC should be pre-fabricated' avoiding site fabrication. Triton Systems Ltd recommends the use of preformed corner units to achieve a gas tight seal. Preformed corner units are a technically better solution for gas proofing and are also cost effective, due to the added time it takes to create similar details in situ.

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Test Report No. 1.1 / 24606 / 0226.0.4-2016e

General

Issued : 28 November 2016

Order by : **Triton Systems Ltd.**
3-5 Crayford Commercial Centre, Greyhound Way
Crayford, DA1 4HF, UNITED KINGDOM

Material : Gas and moisture barrier (green/silver)
Triton TGS-HP750
(declaration by customer)

Order date : 07 March 2016

Samples delivered : 04 March 2016

Tests	Standard	Issue	Results as Enclosure No.
1. Determination of gas transmission rate (Test gas: Methane, test temperatur: 23 °C)	ISO 15105-1	10.2007	

The results apply exclusively to the specimens submitted.
The date of testing is reported on the enclosed enclosure/-es.
Results are reported to the accuracy given in the standards. In statistical evaluation, the measured accuracy is taken.

This test report contains 2 pages.
It may not be published in parts.

Test Report No. 1.1/24606/0226.0.4-2016e page 2

Summary of results


Date / Ref. : 28 November 2016 / cs

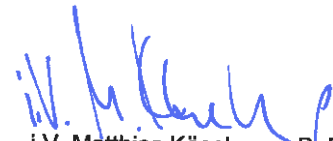
Order by : Triton Systems Ltd., 3-5 Crayford Commercial Centre, Greyhound Way
Crayford, DA1 4HF, UNITED KINGDOM

Material : Gas and moisture barrier (green/silver)
Triton TGS-HP750
(declaration by customer)

Test	Standard	Unit	Result
Determination of gas transmission rate* Test gas: Methane (CH ₄) Thickness* Gas permeability at 23 °C / 0 % r.H.	ISO 15105-1 10.2007	mm ml/(m ² ·d·atm)	0,32 ≤ 0,1

* The test was performed in an external laboratory.


i.V. Dipl.-Ing. (FH) Christoph Staubermann
(Head of test laboratory)


i.V. Matthias Käsekamp, B. Eng.
(Deputy head of test laboratory)

Triton Chemical Manufacturing Co Ltd

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Agrément Certificate

16/5384

Product Sheet 1

TRITON GAS RESISTANT MEMBRANES

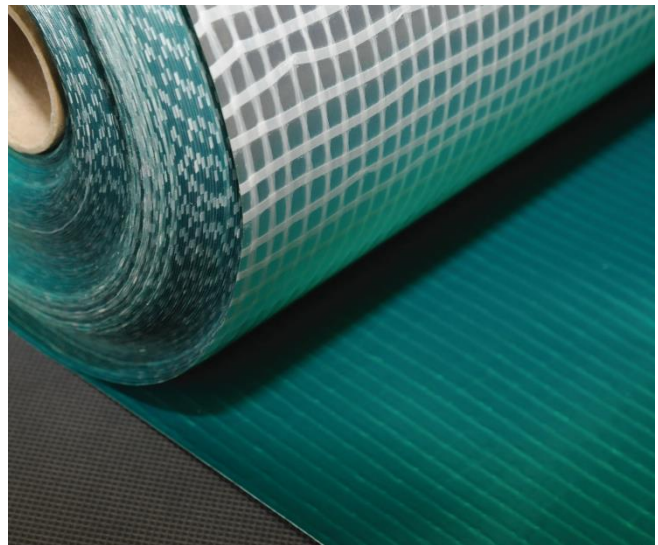
TRITON TGS-HP750

This Agrément Certificate Product Sheet⁽¹⁾ relates to Triton TGS-HP750, a low-density polyethylene gas barrier and damp-proof membrane for use in concrete ground floors above and below slabs not subject to hydrostatic pressure, to protect the building against moisture, radon, methane and carbon dioxide from the ground.

(1) Hereinafter referred to as 'Certificate'.

CERTIFICATION INCLUDES:

- factors relating to compliance with Building Regulations where applicable
- factors relating to additional non-regulatory information where applicable
- independently verified technical specification
- assessment criteria and technical investigations
- design considerations
- installation guidance
- regular surveillance of production
- formal three-yearly review.



KEY FACTORS ASSESSED

Resistance to water and water vapour — the membrane provides an effective barrier to the passage of liquid water and water vapour from the ground (see section 6).

Resistance to underground gases — the membrane is capable of restricting the ingress of radon, methane and carbon dioxide gases into the building (see section 7).

Resistance to puncture — the membrane has a high resistance to puncture and on a smooth or blinded surface will not be damaged by foot or site traffic (see section 8).

Durability — under normal service conditions the membrane will remain effective against the ingress of water and water vapour, and will restrict the ingress of radon, methane and carbon dioxide during the lifetime of the flooring construction in which it is installed (see section 13).



The BBA has awarded this Certificate to the company named above for the product described herein. This product has been assessed by the BBA as being fit for its intended use provided it is installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Date of First issue: 6 February 2017

John Albon – Head of Approvals
Construction Products

Claire Curtis-Thomas
Chief Executive

The BBA is a UKAS accredited certification body – Number 113.

The schedule of the current scope of accreditation for product certification is available in pdf format via the UKAS link on the BBA website at www.bbacerts.co.uk
Readers are advised to check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA direct.

British Board of Agrément

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Regulations

In the opinion of the BBA, Triton TGS-HP750, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements of the following Building Regulations (the presence of a UK map indicates that the subject is related to the Building Regulations in the region or regions of the UK depicted):



The Building Regulations 2010 (England and Wales) (as amended)

Requirement:	C1(2)	Site preparation and resistance to contaminants
Comment:	The product can contribute to a structure satisfying this Requirement. See section 7.1 of this Certificate.	
Requirement:	C2(a)	Resistance to moisture
Comment:	When properly installed in a correctly-designed structure, the product forms an effective barrier to the movement of water within the ground floor slab, enabling compliance with this Requirement. See sections 6.1 and 6.2 of this Certificate.	
Regulation:	7	Materials and workmanship
Comment:	The product is of an acceptable material. See section 13.1 and the <i>Installation</i> part of this Certificate.	



The Building (Scotland) Regulations 2004 (as amended)

Regulation:	8(1)	Durability, workmanship and fitness of materials
Comment:	The product can contribute to a construction satisfying this Regulation. See section 13.1 and the <i>Installation</i> part of this Certificate.	
Regulation:	9	Building standards applicable to construction
Standard:	3.1	Site preparation — harmful and dangerous substances
Standard:	3.2	Site preparation — protection from radon gas
Comment:	The product will enable a floor to satisfy the requirements of these Standards, with reference to clauses 3.1.2 ⁽¹⁾⁽²⁾ , 3.1.6 ⁽¹⁾⁽²⁾ , 3.1.7 ⁽¹⁾⁽²⁾ , 3.1.8 ⁽¹⁾⁽²⁾ , 3.2.1 ⁽²⁾ and 3.2.2 ⁽¹⁾⁽²⁾ . See section 7.1 of this Certificate.	
Standard:	3.4	Moisture from the ground
Comment:	When properly installed in a correctly-designed structure, the product forms an effective barrier to the movement of water within the ground floor slab, enabling compliance with this Standard, with reference to clauses 3.4.2 ⁽¹⁾⁽²⁾ , 3.4.4 ⁽¹⁾⁽²⁾ and 3.4.6 ⁽¹⁾⁽²⁾ . See sections 6.1 and 6.2 of this Certificate.	
Standard:	7.1(a)	Statement of sustainability
Comment:	The product can contribute to meeting the relevant requirements of Regulation 9, Standards 1 to 6 and therefore will contribute to a construction meeting a bronze level of sustainability as defined in this Standard.	
Regulation:	12	Building standards applicable to conversions
Comment:	Comments in relation to the product under Regulation 9, Standards 1 to 6 also apply to this Regulation, with reference to clause 0.12.1 ⁽¹⁾⁽²⁾ and Schedule 6 ⁽¹⁾⁽²⁾ .	

(1) Technical Handbook (Domestic).

(2) Technical Handbook (Non-Domestic).



The Building Regulations (Northern Ireland) 2012 (as amended)

Regulation:	23(a)(i)	Fitness of materials and workmanship
Comment:	(iii)(b)(i)	The product is acceptable. See section 13.1 and the <i>Installation</i> part of this Certificate.

Regulation:	26	Site preparation and resistance to contaminants
Comment:		The product can contribute to a structure satisfying the requirements of this Regulation. See section 7.1 of this Certificate.
Regulation:	28	Resistance to moisture and weather
Comment:		When properly installed in a correctly-designed structure, the product forms an effective barrier to the movement of water within the ground floor slab, enabling compliance with this Regulation. See sections 6.1 and 6.2 of this Certificate.

Construction (Design and Management) Regulations 2015

Construction (Design and Management) Regulations (Northern Ireland) 2016

Information in this Certificate may assist the client, designer (including Principal Designer) and contractor (including Principal Contractor) to address their obligations under these Regulations.

See sections: 1 *Description* (1.2) and 3 *Delivery and site handling* (3.1) of this Certificate.

Additional Information

NHBC Standards 2017

NHBC accepts the use of Triton TGS-HP750, provided it is installed, used and maintained in accordance with this Certificate, in relation to *NHBC Standards*, Chapters 4.1 *Land quality — managing ground conditions* and 5.1 *Substructure and ground bearing floors*.

CE marking

The Certificate holder has taken the responsibility of CE marking the product in accordance with harmonised European Standard EN 13967 : 2012. An asterisk (*) appearing in this Certificate indicates that data shown are given in the manufacturer's Declaration of Performance.

Technical Specification

1 Description

1.1 Triton TGS-HP750 is a multi-layer polyethylene membrane reinforced with an integral aluminium foil and reinforcing grid. The top surface of the membrane is green, and the reverse is silver.

1.2 The membrane has the following nominal characteristics:

Thickness* (mm)	0.4 (effective thickness)
Roll length* (m)	50
Roll width* (m)	2
Mass per unit area* ($\text{g}\cdot\text{m}^{-2}$)	370
Tensile strength* (N·50 mm)	
MD	452
CD	380
Nail tear resistance* (N)	
MD	315
CD	331
Watertightness* (2 kPa)	pass
Durability (artificial ageing)*	pass
Durability against chemical ageing	pass.

1.3 Ancillary products for use with the membrane include:

- TGS-HP750 Tape — a cross-linked butyl sealing and bonding strip
- TGS-HP750 Flashing Strip — a foil tape used for sealing around column penetrations and for repairs/patching of membranes damaged during installation.

1.4 Ancillary products available for use with the membrane but outside the scope of this Certificate are:

- TGS-HP750 3 mm Protection Board — a board for protecting the membrane from mechanical damage and puncture from backfilling
- TGS-HP750 Protection Fleece — a fleece for protecting the membrane from mechanical damage and puncture from backfilling
- TGS-HP750 Detailing Strip — perimeter edging strip
- TGS-HP750 Tophats — preformed top hat sections for sealing round pipe penetrations in the gas membrane
- TWS-EX100GM (Self Adhesive Gas Membrane) — aluminium/polyethylene laminate with a modified bitumen adhesive backing, used to maintain gas membrane continuity on vertical surfaces and around complex penetrations and foundations
- TGS-HP750 Corner Units — preformed internal and external sections for detailing of the membrane at perimeter corners, in accordance with BS 8215 : 1991.

2 Manufacture

2.1 The product is manufactured by an extrusion/coating process.

2.2 As part of the assessment and ongoing surveillance of product quality, the BBA has:

- agreed with the manufacturer the quality control procedures and product testing to be undertaken
- assessed and agreed the quality control operated over batches of incoming materials
- monitored the production process and verified that it is in accordance with the documented process
- evaluated the process for management of nonconformities
- checked that equipment has been properly tested and calibrated
- undertaken to carry out the above measures on a regular basis through a surveillance process, to verify that the specifications and quality control being operated by the manufacturer are being maintained.

3 Delivery and site handling

3.1 Rolls are wrapped in polythene film, marked with a label indicating the product grade and with a warning that the load exceeds 15 kg. The rolls must be stored on their side.

3.2 The rolls must be stacked on a flat surface, kept under cover and protected from sunlight and mechanical damage.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Triton TGS-HP750.

Design Considerations

4 Use

4.1 Triton TGS-HP750 is satisfactory for use as a gas-resistant barrier to restrict the ingress of radon, methane and carbon dioxide gases into buildings from landfill and naturally-occurring sources.

4.2 Buildings in areas of risk should be constructed in accordance with the recommendations of BRE Report BR 211 : 2015 *Guidance on protective measures for new buildings* and following the guidance set out in BS 8485 : 2015.

4.3 The product is also satisfactory for use as a damp-proof membrane in accordance with CP 102 : 1973, Section 2 and BS 8000-4 : 1989.

5 Practicability of installation

The membrane is designed to be installed by a competent general builder, or a contractor, experienced with this type of product.

6 Resistance to water and water vapour



6.1 The membrane, including joints, provides an effective barrier to the passage of liquid moisture from the ground.

6.2 When installed in accordance with the following documents, the membrane will comply with the minimum sheet thickness detailed in the national Building Regulations:

England and Wales — Approved document C, Requirement C2(a), section 4.6

Scotland — Mandatory Standard 3.4, clauses 3.4.2, 3.4.4 and 3.4.6

Northern Ireland — Regulation 28(a).

6.3 The membrane is impervious to water and provides a waterproof layer capable of accepting minor structural movements without damage.

7 Resistance to underground gases



7.1 The product will restrict the ingress of radon, methane and carbon dioxide gases into buildings from landfill and naturally-occurring sources and meets the performance criteria for a gas-resistant membrane as defined in BS 8485 : 2015.

7.2 Measured gas permeability/diffusion values on unjointed membrane are given in Table 1.

Table 1 Gas permeability of Triton TGS-HP750

Gas	Method	Result
Methane	BS ISO 15105-1 : 2007	$\leq 0.1 \text{ ml} \cdot \text{m}^2 \cdot \text{day}^{-1} \cdot \text{atm}^{-1}$

7.3 BRE Report BR 211 : 2015 recommends a 300 μm thick polyethylene sheet as the minimum required thickness for a radon gas resistant membrane. It is generally accepted that other materials with comparable or higher gas resistance are suitable, provided they can withstand the construction process. In the opinion of the BBA, the product meets these criteria.

8 Resistance to puncture

8.1 The membrane can be punctured by sharp objects and care should be taken when handling building materials over the exposed surface.

8.2 Provided there are no sharp objects present on the membrane's surface prior to and during installation of the protective layer, the product will not be damaged by normal foot traffic.

9 Compatibility with other materials

The membrane contains an aluminium foil interplay which may be subject to corrosion by alkaline conditions if damage to the membrane and exposure occurs. However, under normal circumstances, the polyethylene faces of the membrane are compatible with other materials and products typically used in the same areas, with the exception of those containing pitch.

10 Underfloor heating

There will be no adverse effect on the membrane from underfloor heating under normal service conditions. However, in other circumstances the Certificate holder's advice should be sought.

11 Effects of temperature

When the membrane is loose-laid and the joints are taped, the installation temperature should not be below 5°C.

12 Maintenance

As the product is confined under concrete and has suitable durability (see section 13), maintenance is not required. However, any damage occurring before enclosure must be repaired (see section 17).

13 Durability



13.1 Results of artificial ageing tests confirm that a satisfactory retention of physical properties is achieved. The membrane will, in normal circumstances, remain effective against the ingress of water and water vapour, and will restrict the ingress of radon, methane and carbon dioxide during the lifetime of the building.

13.2 Long periods of exposure to ultraviolet light will reduce the effectiveness of the membrane.

14 Reuse and recyclability

The product comprises polyethylene, which can be recycled.

Installation

15 General

15.1 Triton TGS-HP750 must be installed and fixed in accordance with the Certificate holder's instructions and the relevant clauses of BRE Report BR 211 : 2015, and following the guidance of BS 8485 : 2015.

15.2 The membrane can be installed in all normal site conditions, provided the air temperature is not below 5°C, to prevent the risk of surface condensation.

15.3 Unless the base is smooth, a surface blinding of soft sand (or similar material) should be used to prevent puncturing during installation or when concrete screed is being placed.

15.4 If the membrane is installed below a steel-reinforced floor or concrete slab, it should be covered with a screed or TGS-HP750 3 mm Protection Board or TGS-HP750 Protection Fleece prior to the positioning of the reinforcement.

15.5 If the membrane is above the slab, its installation should be delayed until just before laying the screed or flooring, to avoid damage from site traffic.

16 Procedure

16.1 The product should be applied to surfaces that have a smooth finish, ie they should be free from voids, projections and mortar deposits. Surfaces should be dry, and free from dust and frost.

16.2 Concrete surfaces should be dense. Vertical surfaces of brickwork and blockwork should be dry and rendered to provide an even surface. Brickwork or unrendered blockwork must be flush pointed to give a smooth surface without sudden changes in level.

16.3 The membrane is rolled out with the green side uppermost, ensuring that it is properly aligned. All end and side laps should be a minimum of 150 mm and prepared in accordance with the Certificate holder's instructions.

16.4 Joints are bonded with TGS-HP750 Tape and should be pressed down with a long-handled roller to ensure that the tape is well adhered (see Figure 1). Alternatively, joints can be hot-air welded.

16.5 The surface of the membrane to be lapped must be dry and dust-free.

16.6 All service penetrations and direction changes must be properly detailed. TGS-HP750 Tophats are available for sealing around pipe entries. Service ducts must be vented to prevent the possibility of gas accumulating in confined spaces.

16.7 When the membrane is to be laid below the concrete slab, it should be loose-laid to accommodate any small movement.

16.8 The continuity of the gas protection must extend over the footprint of the building and the gas membrane must be sealed to a gas-resistant damp-proof course.

16.9 The membrane is covered by either a screed or other protective layer as soon as possible after installation. If blockwork is the protection used, care must be taken to avoid damage to the membrane during construction.

16.10 The membrane installation should be subject to third-party independent validation in accordance with BS 8485 : 2015.

17 Repair

Before permanent protection is placed, the membrane area must be inspected for defects. Damage to the product must be repaired using TGS-HP750 Flashing Strip or, if a larger repair is required, using a patch of the membrane, and the laps sealed with TGS-HP750 Tape. All patches must extend a minimum of 150 mm from the damaged area. If required by the local authority, repair work should be confirmed by an independent validation report, as all gas membrane installation should be subject to third-party validation in accordance with the recommendations of BS 8485 : 2015.

Technical Investigations

18 Tests

18.1 An assessment was made of test data on the membrane in relation to:

- dimensions
- mass per unit area
- tensile strength and elongation
- nail tear resistance
- water vapour permeability
- water vapour resistance
- watertightness
- resistance to static loading
- resistance to impact
- heat ageing (70°C for 84 days) followed by tensile strength and elongation, nail tear resistance and watertightness
- short term UV ageing, followed by tensile strength and elongation.

18.2 An assessment was made of test data on joints in relation to:

- tensile strength
- heat ageing (70°C for 84 days) followed by tensile strength.

19 Investigations

19.1 An evaluation was made of the results of the test data regarding permeability of radon, methane and carbon dioxide.

19.2 The manufacturing process was evaluated, including the methods adopted for quality control, and details were obtained of the quality and composition of the materials used.

19.3 A site visit was conducted to assess practicability of installation.

Bibliography

BS 8000-4 : 1989 *Workmanship on building sites — Code of practice for waterproofing*

BS 8215 : 1991 *Code of practice for design and installation of damp-proof courses in masonry construction*

BS 8485 : 2015 *Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings*

BS ISO 15105-1 : 2007 *Plastics — Film and sheeting — Determination of gas-transmission rate — Differential-pressure methods*

CP 102 : 1973 *Code of practice for protection of buildings against water from the ground*

EN 13967 : 2012 *Flexible sheets for waterproofing — Plastic and rubber damp proof sheets including plastic and Rubber basement tanking sheet — Definitions and characteristics*

20 Conditions

20.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is issued only to the company, firm, organisation or person named on the front page – no other company, firm, organisation or person may hold claim that this Certificate has been issued to them
- is valid only within the UK
- has to be read, considered and used as a whole document – it may be misleading and will be incomplete to be selective
- is copyright of the BBA
- is subject to English Law.

20.2 Publications, documents, specifications, legislation, regulations, standards and the like referenced in this Certificate are those that were current and/or deemed relevant by the BBA at the date of issue or reissue of this Certificate.

20.3 This Certificate will remain valid for an unlimited period provided that the product/system and its manufacture and/or fabrication, including all related and relevant parts and processes thereof:

- are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA
- continue to be checked as and when deemed appropriate by the BBA under arrangements that it will determine
- are reviewed by the BBA as and when it considers appropriate.

20.4 The BBA has used due skill, care and diligence in preparing this Certificate, but no warranty is provided.

20.5 In issuing this Certificate the BBA is not responsible and is excluded from any liability to any company, firm, organisation or person, for any matters arising directly or indirectly from:

- the presence or absence of any patent, intellectual property or similar rights subsisting in the product/system or any other product/system
- the right of the Certificate holder to manufacture, supply, install, maintain or market the product/system
- actual installations of the product/system, including their nature, design, methods, performance, workmanship and maintenance
- any works and constructions in which the product/system is installed, including their nature, design, methods, performance, workmanship and maintenance
- any loss or damage, including personal injury, howsoever caused by the product/system, including its manufacture, supply, installation, use, maintenance and removal
- any claims by the manufacturer relating to CE marking.

20.6 Any information relating to the manufacture, supply, installation, use, maintenance and removal of this product/system which is contained or referred to in this Certificate is the minimum required to be met when the product/system is manufactured, supplied, installed, used, maintained and removed. It does not purport in any way to restate the requirements of the Health and Safety at Work etc. Act 1974, or of any other statutory, common law or other duty which may exist at the date of issue or reissue of this Certificate; nor is conformity with such information to be taken as satisfying the requirements of the 1974 Act or of any statutory, common law or other duty of care.



Triton TGS-HCM1000

Description and use

Triton TGS-HCM1000 is a specially engineered tri-polymer construction that provides a highly effective barrier against Radon, Methane, Carbon Dioxide and Hydrocarbon gases. Hydrocarbon gases are formed as a by-product of decomposing organic matter and a build-up of these colourless gases are explosive which could have devastating consequences. The membrane is produced from a uniquely formulated blend of polymers to produce outstanding chemical resistance, mechanical properties, dimensional stability and thermal ageing characteristics. The membrane is ideally suited for sites formerly used as coalfields, landfill sites or industrial sites that previously contained volatile liquids – petrol stations for example.

Physical Properties

Thickness: 1000 Micron
Density: 0.925 g/cm²
Colour: Black
Length: 20M
Width: 1.3M

Features and benefits

- Excellent resistance to chemical and hydrocarbon gases
- Suitable for hot welding
- Very high puncture and tear resistance
- Compatible with vented systems
- Full range of accessories available

Storage and handling

Triton TGS-HCM1000 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. It is not recommended that the membrane is exposed to sunlight for long periods of time. Weathering will not occur when installed according to Code of Practice CP102 1973. If being stored for a lengthy period, the rolls should be stored undercover, out of direct sunlight on a flat level surface.

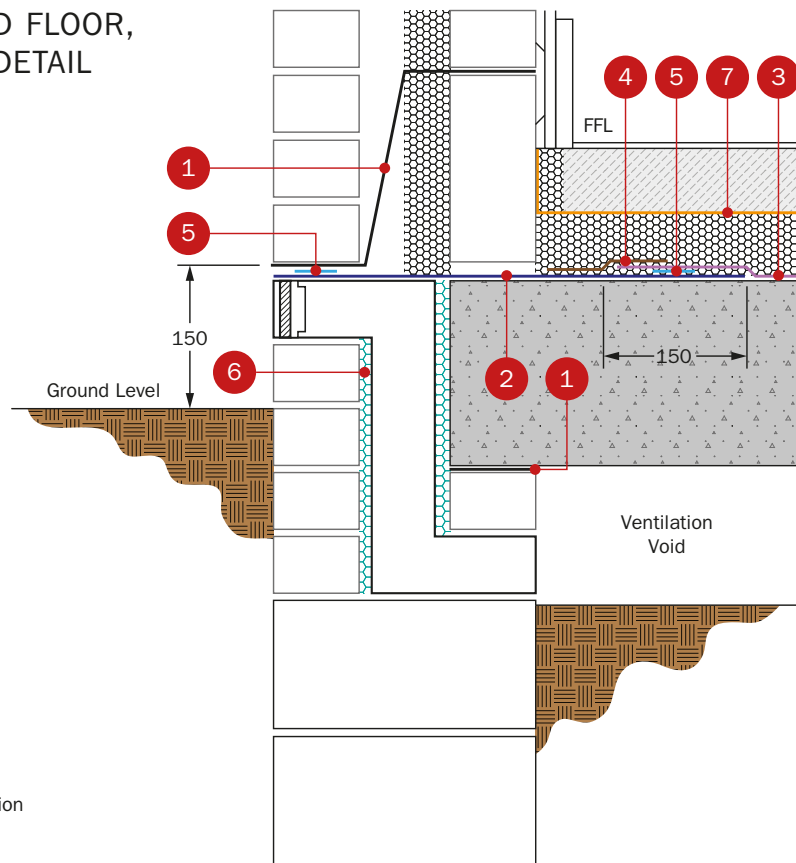
Quality control while laying the membrane is extremely important. The membrane should be protected through the use of temporary boards over the whole area or the immediate laying of the screed. A minimum of 50mm screed is recommended and care should be taken when laying the screed not to stretch, puncture or displace the membrane.

Installation

Triton TGS-HCM1000 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.

Triton TGS-HCM1000 can be used in most common floor constructions and is installed in a similar manner to damp-proof membrane but with greater attention to joint sealing and under wall sealing. Where there is risk of hydrostatic pressure it can be used so long as the jointing is made using the hot weld process and not taped. The membrane should be laid on a smooth surface or sand blinding to prevent puncture.

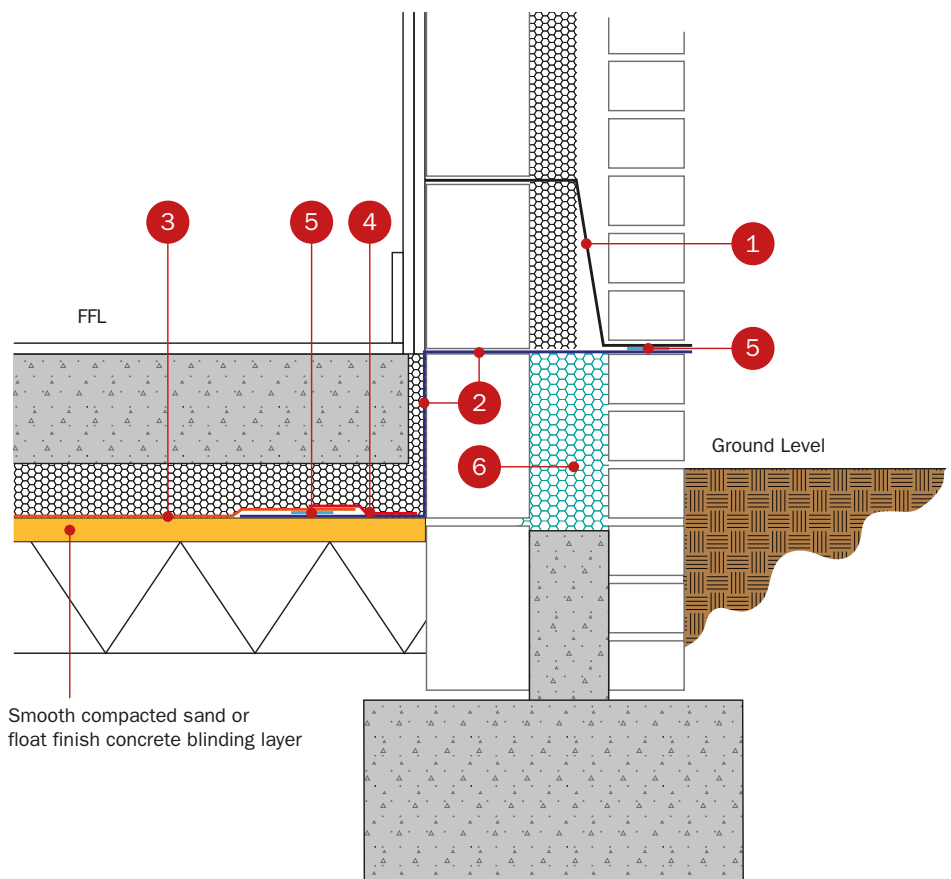
SUSPENDED SLAB – RAISED FLOOR, TYPICAL GAS PROTECTION DETAIL



KEY TO MATERIALS

- 1 Triton TGS-HP DPC
- 2 Triton TGS-GR DPC
- 3 Triton TGS-HCM1000
- 4 Triton TGS-HCM1000 Joint Tape
- 5 Triton TGS-HCM1000 DS Tape
- 6 Triton TT Vapour Membrane Insulation
- 7 Insulation

GROUND BEARING SLAB TYPICAL EDGE DETAIL



KEY TO MATERIALS

- 1 Triton TGS-HP DPC
- 2 Triton TGS-GR DPC
- 3 Triton TGS-HCM1000
- 4 Triton TGS-HCM1000 Joint Tape
- 5 Triton TGS-HCM1000 DS Tape
- 6 Insulation

Jointing the Membrane

1

Unroll the first membrane, ensure the surface is dry and free from dust or grease. Inspect the membrane to ensure there are no indentations or protrusions. If there are remove and apply sand blinding.



2

Apply Triton TGS-HCM1000 DS Tape to the membrane, 50mm from the edge. It is very important that the membrane is dry and free from dust and dirt.



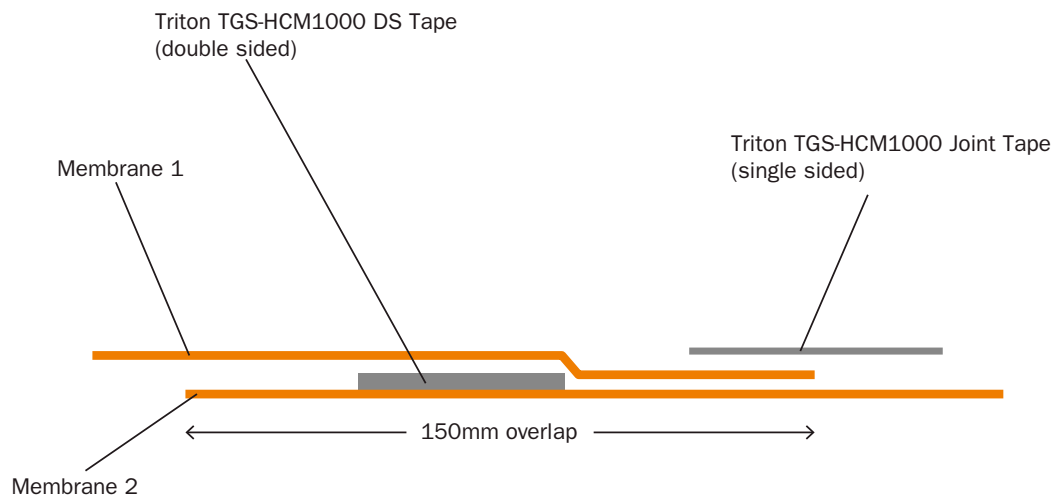
3

The second membrane must be unrolled overlapping the first membrane by 150mm. Remove the protective paper from the tape and apply pressure to the membrane while joining the two membranes together.



4

Seal the two membranes by installing Triton HCM Joint Tape to the edge. (Ensure that the membrane is completely dry, free from dust and dirt).



All service entry points must have airtight seals. Top hats and corner pre-forms must be sealed Triton TGS-HCM1000 DS Tape.

Triton Contact Details:

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www.tritonsystems.co.uk



Declaration of Performance

Date: 01/10/2015 version 1

Triton TGS-HCM1000

Type A in accordance with EN 13967:2012
AVCP System 2+

Triton TGS-HCM1000 is a 4000 Gauge Virgin Grade Hydrocarbon Membrane, presented as 1.3m x 20m single wound sheeting, designed to be used as barrier protection against ground gases in the construction of buildings and dwellings.

Essential characteristics	Technical performance	Bottom tolerance	Top tolerance	Unit	Test standard
Length	20	20	22	m	EN1848-2
Width	1.3	1.26	1.34	m	EN1848-2
Mass per unit area (weight)	921	903	939	g/m ²	EN1849-2
Tensile MD	>165	–	–	N/50mm ⁻¹	EN12311-2
Tensile CD	>143	–	–	N/50mm ⁻¹	EN12311-2
Resistance to tearing MD	>700	–	–	N	EN12310-1
Resistance to tearing CD	>750	–	–	N	EN12310-1
Resistance to impact	>660	–	–	mm	EN12691
Watertightness 2k Pa	Pass	–	–	Pass/Fail	EN1928:2000

The performance of the product identified is in conformity with the declared performance above. This declaration of performance is issued under the sole responsibility of the manufacturer. Signed for and on behalf of the manufacturer by:

Name and function	Place and date of issue	Signature
Mr Roger Parker Factory Manager	Crayford, UK 01/10/2015	

Triton Contact Details:

Triton Systems Ltd.
Units 3 – 5 Crayford Commercial Centre, Greyhound Way, Crayford, Kent DA1 4HF

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Triton TWS-EX100GM

Triton TWS-EX100GM is a tough, durable self-adhesive membrane specially developed to protect against the ingress of Methane and Radon gases and other ground gases and contaminants. This is achieved by using aluminium as the primary barrier and reinforcing and protecting this by laminating a tough, biaxially oriented HDPE film to one side and a robust bitumen rubber compound to the other. To facilitate easier lap seals, the membrane has a selvedge of bitumen rubber.

Triton TWS-EX100GM is used to provide an effective barrier to water, water vapour, Radon, Methane and Carbon Dioxide in all forms of construction. When installed and applied correctly it will provide an effective barrier to ground gases in accordance with BS 8485: 2015 and provide Type A barrier protection in accordance with BS 8102: 2009 - Table 1 and provides levels of protection for grades 1, 2 and 3 in accordance with BS 8102: 2009 – Table 2.

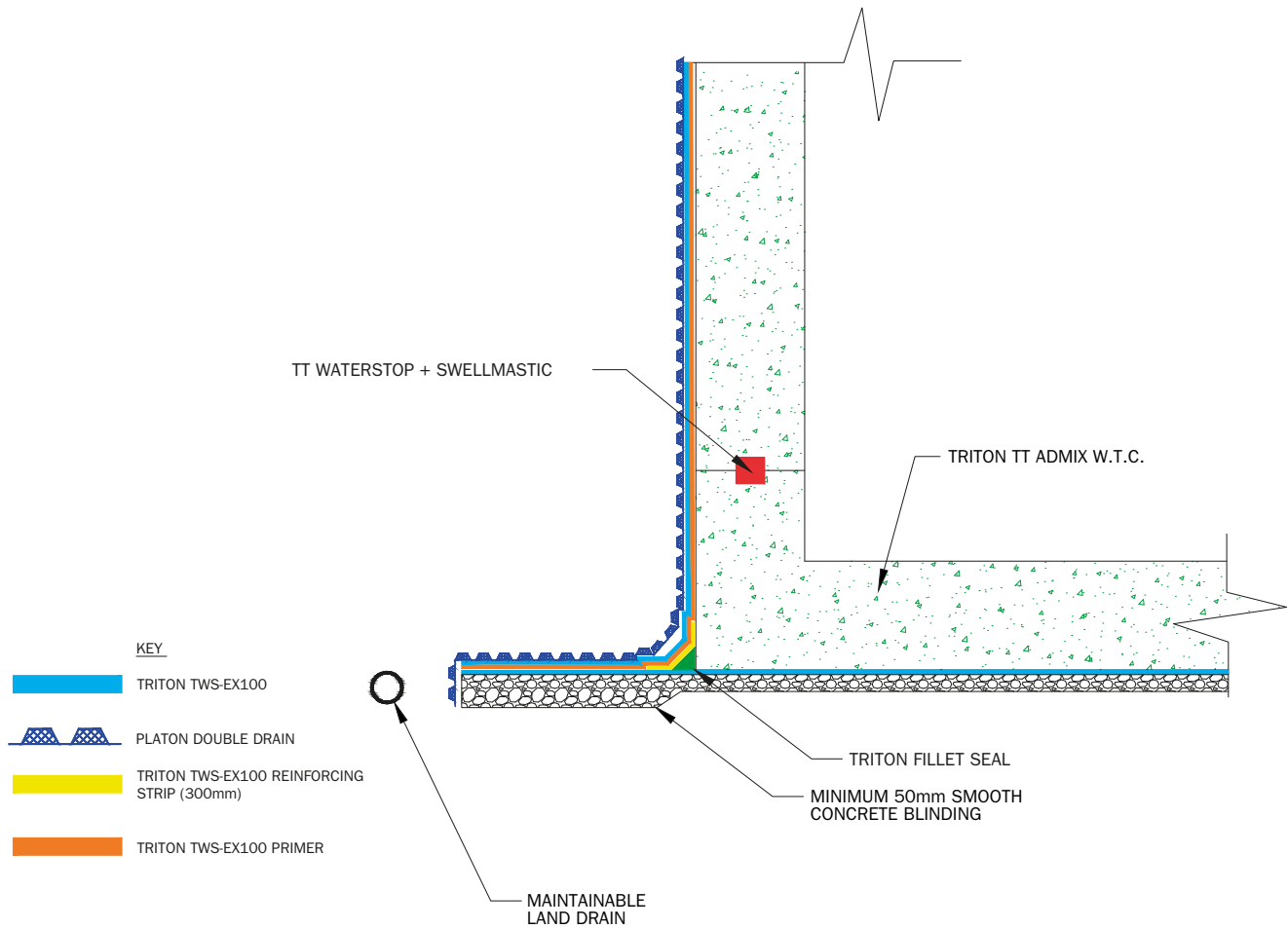
Under normal conditions of use TWS-EX100GM will provide an effective barrier to water, water vapour, Radon, Methane and Carbon Dioxide for the life of the building.

Key features

- Methane gas permeability less than 0.03ml/m²/24 hrs
- Impervious to Radon gas
- High puncture resistant film
- Highly efficient waterproof membrane
- Multi-layer laminate to optimize long term protection
- Adhesive selvedge to aid effective joint sealing
- Self-adhesive
- Cold applied
- Factory controlled thickness

Specification: J40 – Flexible sheet tanking / damp proofing in accordance with NBS Clause 190.

TYPICAL TWS-EX100 EXTERNAL WATER PROOFING DETAIL



For installation advice please refer to application guidelines available separately from Triton Systems

Technical data

Property	Test method	Units	Data
Dimensions:			
Backing thickness	–	mm	0.1
Backing type	–	–	Aluminium Polythene laminate
Adhesive thickness	–	mm	0.90
Total thickness	–	mm	1.00
Width	–	mm	1050
Length	–	m	19.05
Area	–	m ²	30
Weight	–	kg/m ²	1.1
Carton weight	–	kg	33
Mechanical properties:			
Membrane strength	ASTM D1000	N/mm	3.0
Elongation	ASTM D1000	%	40
Puncture resistance	ASTM E154	N	250
Adhesion (180° peel)	ASTM D1000	N/mm	2.0
Functional data:			
Water vapour transmission	ASTM E96	g/m ² /24h	<0.1
Methane gas permeability	–	ml/m ² /24h	<0.03
Radon diffusion	–	m ² /s	5.0 x 10 ⁻¹⁴
Dimensional stability	MOAT 27 5.1.6 80°C	%	Longitudinal: 0.0 Lateral: 0.0

Triton Contact Details:

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Fax: 01322 524 017
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www.tritonsystems.co.uk



Declaration of Performance

Date: 26/10/2015 version 1

Triton TWS-EX100GM

Type T in accordance with EN 13967:2012
AVCP System 2+

Triton TWS-EX100GM is a self-adhesive sheet membrane designed as a waterproofing membrane that will also prevent the ingress of CO₂, methane and radon gas when used in the construction of buildings and dwellings.

Essential characteristics	Performance
Reaction to fire	F
Watertightness	Pass
Durability:	
Watertightness after artificial ageing	Pass
Watertightness after exposure to chemicals	Pass
Dangerous substances	NPD

The performance of the product identified is in conformity with the declared performance above. This declaration of performance is issued under the sole responsibility of the manufacturer. Signed for and on behalf of the manufacturer by:

Name and function	Place and date of issue	Signature
Mr Roger Parker Factory Manager	Crayford, UK 26/10/2015	

Triton Contact Details:

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Triton Systems

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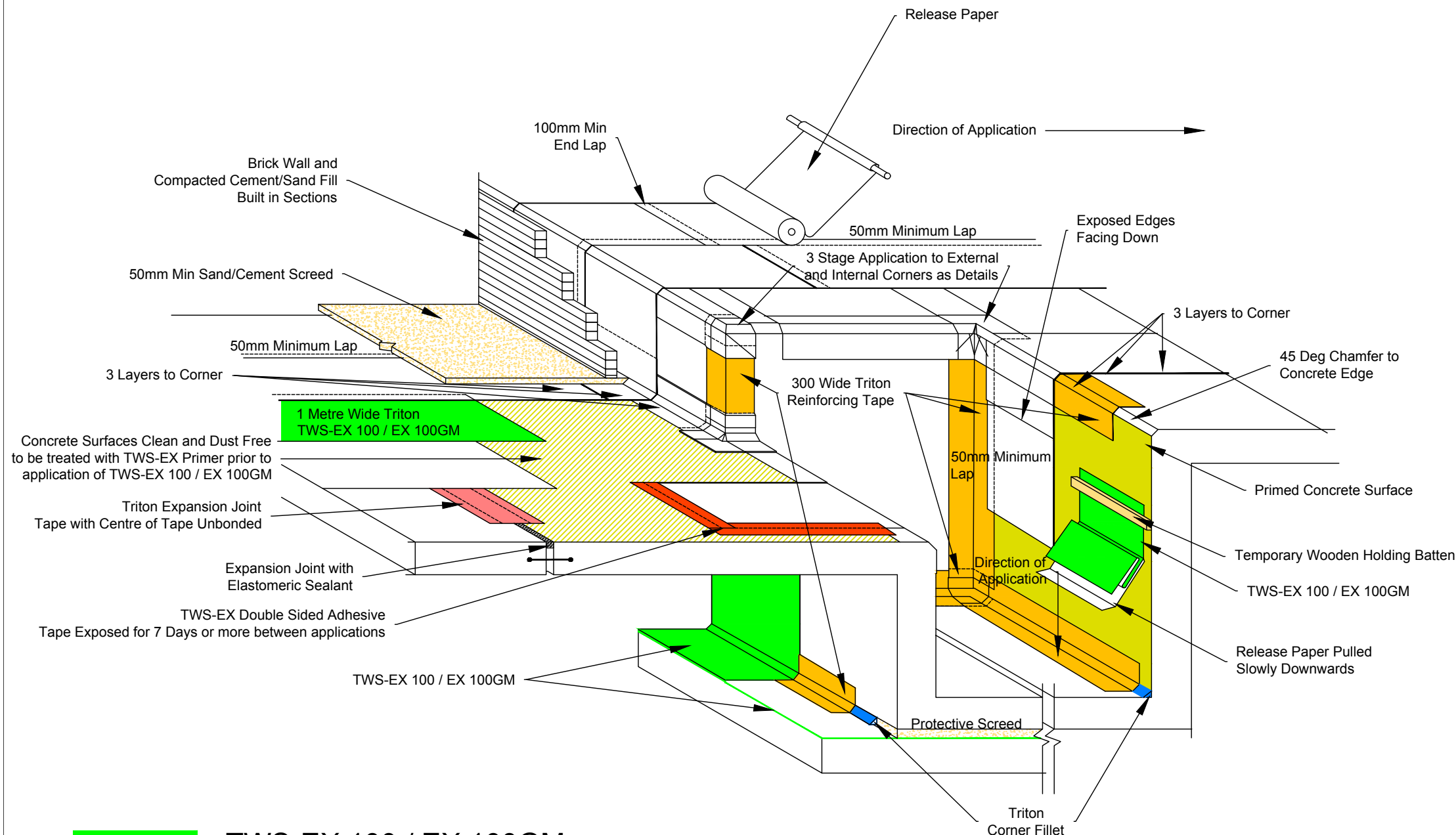
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NOTE

ALL INSTALLATION TO BE CARRIED OUT IN STRICT ACCORDANCE WITH
MANUFACTURERS INSTALLATION INSTRUCTIONS. FOR FURTHER
ASSISTANCE CONTACT **TRITON TECHNICAL** ON THE TELEPHONE
NUMBER ABOVE.



-  TWS-EX 100 / EX 100GM
-  TWS-EX Reinforcing Tape 300mm
-  Triton Fillet Seal
-  TWS-EX Expansion Joint Tape
-  TWS-EX Primer
-  TWS-EX Double Sided Adhesive Tape

REV.	MOD. BY	DATE	CHK. BY	APP. BY
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Alterations

TITLE:

GENERAL APPLICATION
DIAGRAM

DRG. No.

GAD.001

REV
1

DRAWN	TGL	System Files: GAD001.pdf GAD001.dwg
DATE	04th November 2015	
SCALE (A3)	Not To Scale	
CHECKED		
APPROVED		



TWS-EX100 and TWS-EX100GM waterproofing membranes

1. GENERAL PRINCIPLES

- 1.1 PLEASE ENSURE THAT ALL PERSONS INVOLVED WITH THE APPLICATION OF THE MEMBRANES HAVE STUDIED THE PRODUCT DATA SHEETS PRIOR TO THE INSTALLATION.
- 1.2 The substrate should be sound, smooth, clean, dry and free from sharp edges. Uneven surfaces MUST be made good, remove all loose material, dust and any other contaminants and make good any surface damage with Triton Fillet Seal or Triton Repair Mortar to provide a smooth, even surface prior to the application of TWS-EX Primer/ TWS-EX Primer LT and TWS-EX100/TWS-EX100GM.
- 1.3 Application should not be carried out under wet conditions or on to damp substrates. Note that condensation can occur on a cold substrate even in dry conditions. Ensure all previously applied coatings are compatible and are fully cured. Certain coatings may not require priming, contact Triton's technical team if in any doubt.
- 1.4 When bonding the membrane to the surface, care should be taken to avoid forming air pockets beneath the membrane. This can be achieved by applying pressure from the centre towards the edges.
- 1.5 Overlaps between roll sides and ends should be at least according to the minimum specification.
- 1.6 All overlap joints must be secure and fully bonded. A useful tool to assist this operation is a hand-held roller for vertical application and a foot roller for horizontal application.
- 1.7 End of roll overlaps of adjacent lengths should be staggered to avoid them being side by side on adjoining rolls, causing a four fold overlap.

2. SITE PREPARATION

- 2.1 Prime after general cleaning. Priming will bind any remaining surface dust and will help stabilise a friable and powdery surface.
- 2.2 All vertical and steeply sloping surfaces must be primed using TWS Primer. On horizontal surfaces, where the membrane is beneath a slab, priming is not essential, but the adhesion to the substrate will be improved if the substrate is primed. Primer should not be applied on to the membrane and it is not necessary for overlap jointing. Only prime an area that can be covered with the membrane during the working day. Application of the membrane should commence as soon as the primer is dry.
- 2.3 Fillets should be installed when taking the membrane through acute internal angles to avoid the membrane bridging the surfaces and forming voids beneath the membrane. See typical detail drawings overleaf.

3. MEMBRANE APPLICATION

Horizontal Surfaces

- 3.1 Application of the membrane should be carried out by two applicators. Mark a straight line on the substrate using a chalk line to mark the position of the first roll.
- 3.2 Align the roll alongside this line at the chosen starting position and unroll 1.5 metres of the membrane.
- 3.3 Lift the end of the membrane and peel back about 500mm of the release paper. Fold this underneath the roll.
- 3.4 Apply the membrane to the surface by aligning it with the chalk line and bond the exposed self adhesive compound to the substrate using firm pressure, applied to the centre and smoothing towards the edges.
- 3.5 Push the roll back to rewind it until the loose end of the release paper can be pulled away from underneath.
- 3.6 Take up the release paper, preferably winding this onto a wooden rod, until it is at a comfortable angle for the applicator.

- 3.7 Walk slowly backwards, applying an even strain to the release paper, which should now be wound up onto the wooden rod. Ensure that membrane is aligned along the line as the application proceeds.
- 3.8 Apply firm pressure on to the surface of the membrane to ensure good adhesion to the substrate and to avoid trapping air underneath. Use a broom to smooth the membrane down, working from the centre outwards. Avoid puncturing the membrane, the use of soft soled footwear is recommended.
- 3.9 Once the first roll has been applied, the next roll should then be positioned. Overlap this as specified, with the end of the first roll to form an endlap joint and bond about 500mm to the substrate. It is important to ensure that the endlap dimensions are in accordance with those specified and that the ends of the rolls are staggered.
- 3.10 Once the first width of membrane has been applied commence working on the width alongside this.
- 3.11 The application of this roll is similar to that previously described, except that this roll is positioned alongside the first roll to give the minimum overlap for side laps.
- 3.12 In addition to making a good bond with the substrate, ensure a watertight joint across and along the whole of the sidelap by pressing down on the overlap joint using a hand-held roller or foot roller. Large horizontal areas should be pressed firmly down with a suitably cushioned water filled roller.

4. MEMBRANE APPLICATION

Vertical Surfaces

- 4.1 Start by securing the end of the membrane at the top of the vertical surface. The precise method will depend on site conditions, including the height of the surface, accessibility and the construction detail. The top of the vertical membrane should be linked to any other waterproofing which may exist or to be installed.
- 4.2 It may be necessary to mechanically fix the membrane at the top by either “chasing” the top edge into the substrate or by nailing a wooden batten across its width.
- 4.3 Position the roll at the top of the vertical surface and unwind about one metre.
- 4.4 Peel back the first 500mm of the release paper, fold it down and then press the exposed self-adhesive compound onto the previously primed surface to achieve a strong bond.
- 4.5 Unwind and lower the roll of membrane towards the ground until the sheet is hanging vertically against the surface.
- 4.6 Take hold of the release paper and slowly but firmly pull it downwards. As the release paper is peeled away the membrane should be pressed against the surface, working from the centre outwards to remove any trapped air.
- 4.7 Once the first sheet of membrane has been applied the next sheet can be applied taking care to detail the vertical joints as specified.
- 4.8 On completion, the membrane needs to be protected from damage. Protection boards can be used on vertical surfaces to prevent damage from backfilling. Horizontal surfaces can be protected by insulation laid over or a floor screed.

5. ANCILLARIES

TWS-EX Primer: Applied to the prepared substrate to ensure a complete bond for TWS-EX100 or TWS-EX100GM waterproofing membranes.

TWS-EX Primer LT (low temperature): A fast drying primer which can be applied to damp or slightly green concrete.

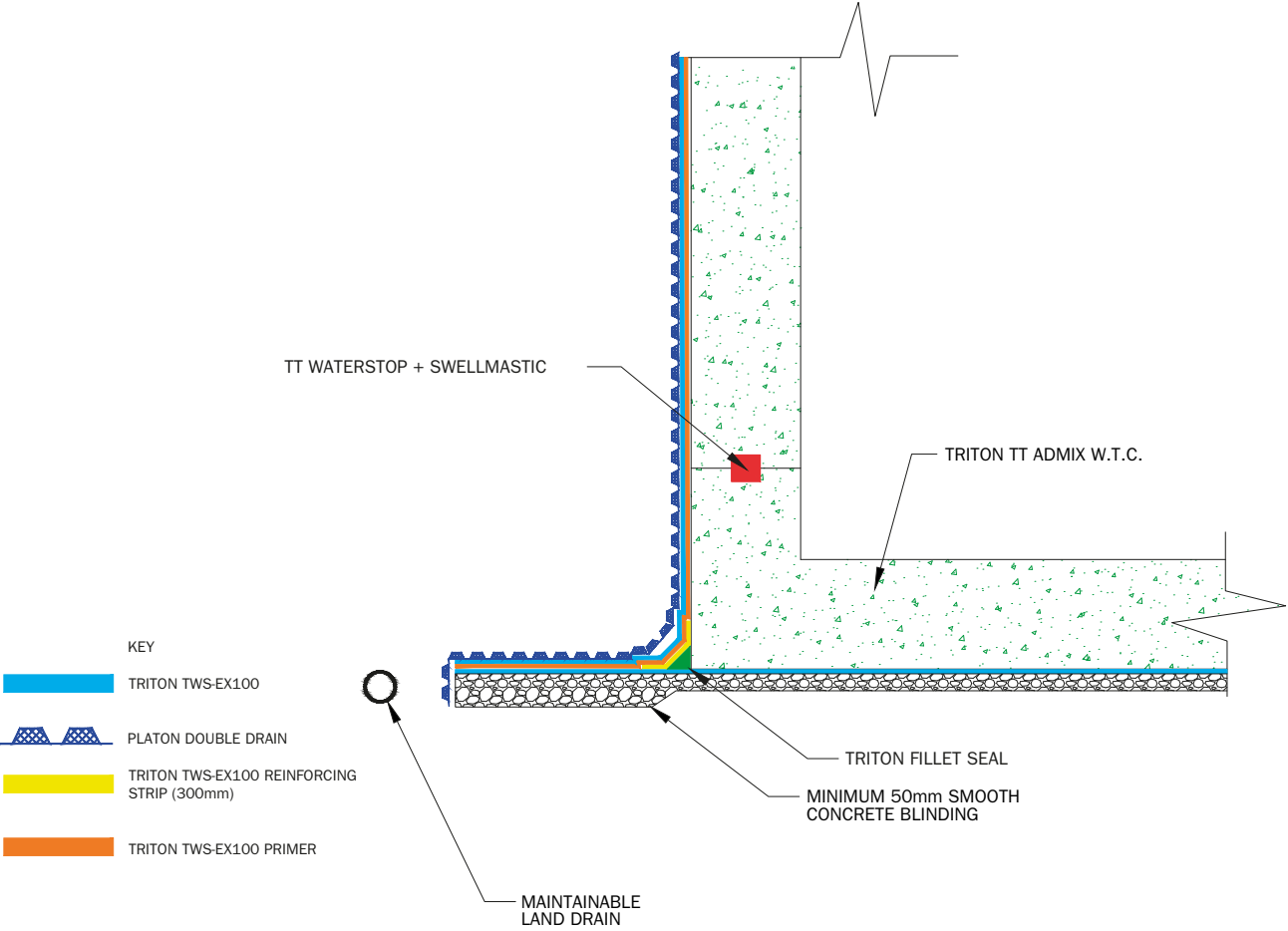
TWS-EX Reinforcing Tape: Strong tape used to provide reinforcement for TWS-EX100 or TWS-EX100GM membranes at edge and corner details.

Triton Fillet Seal: A cement based, polymer modified product for use when installing corner fillet joints.

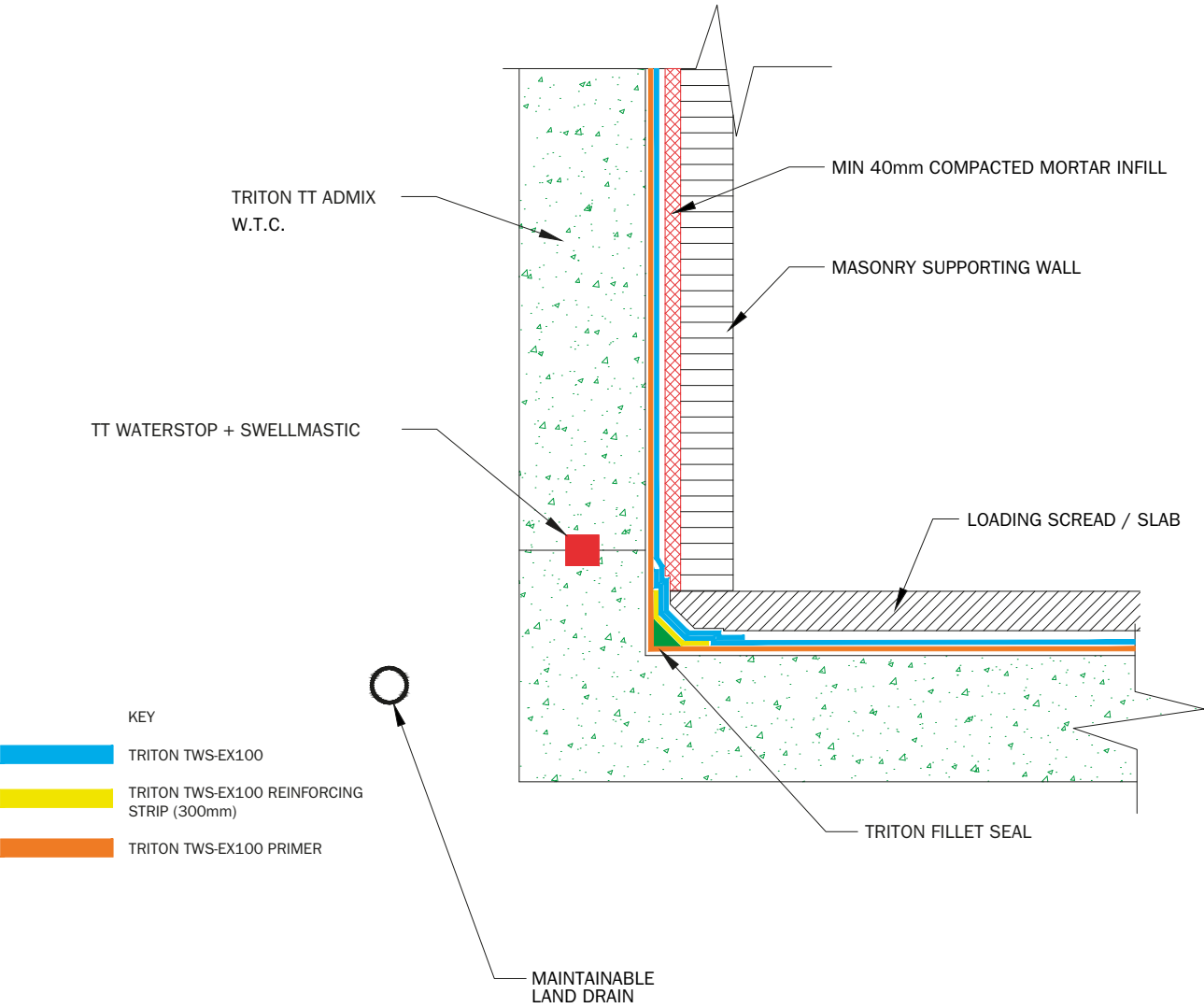
Triton Repair Mortar: A modified cement based repair mortar for concrete, render and screeds for use to provide an even, smooth substrate surface prior to the application of TWS-EX100 or TWS-EX100GM membranes.

6. TYPICAL DRAWINGS

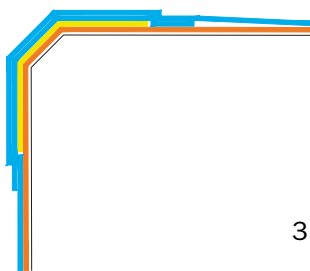
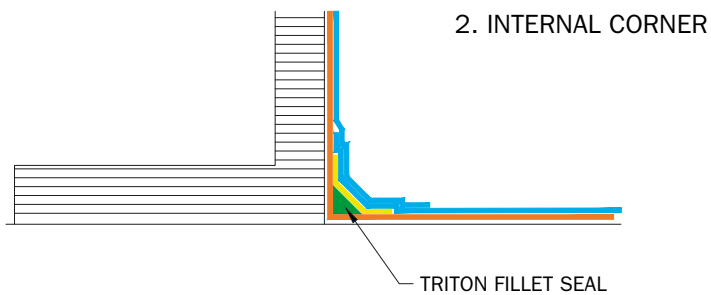
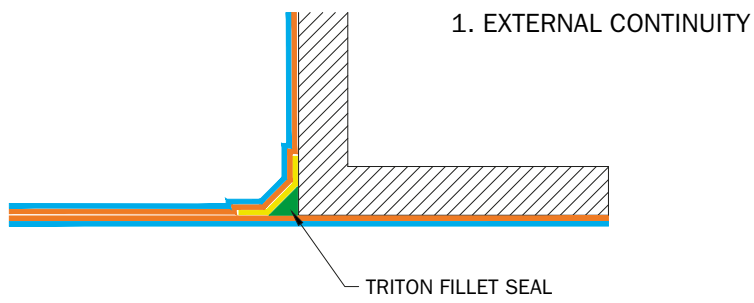
TYPICAL TWS-EX100 EXTERNAL
WATER PROOFING DETAIL






TRITON TWS-EX100 TYPICAL INTERNAL
WATERPROOFING DETAIL



TYPICAL TWS-EX100 CORNER DETAILING



3. EXTERNAL CORNER

KEY	
	TRITON TWS-EX100
	TRITON TWS-EX100 REINFORCING STRIP
	TRITON TWS-EX100 PRIMER

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Triton TGS – GV25



DESCRIPTION

Triton TGS – GV25 is a 25mm thick single-sided geocomposite that provides a void beneath floor slabs which, when connected to air inlets and outlets, allows sufficient air changes to dilute gases to safe concentrations when designed correctly.

Triton TGS - GV25 can be laid in strips at predetermined centres or in a blanket as required and being only 25mm thick, means there is a reduced dig when compared to 200mm or 150mm blanket of stone. It is also extremely strong and flexible with a crush resistance of 250kpa and is supplied in rolls of 45m²; therefore large areas can be covered very quickly.

Triton TGS – GV25 is flexible and can be laid horizontally and vertically to deal with awkward foundation arrangements. Because of its flexibility, it will cope easily with settlement under the slab without compromising the system.

REGULATIONS COMPATIBILITY TABLE

	CIRIA 665 CHARACTERISTIC SITUATION 2	CIRIA 665 CHARACTERISTIC SITUATION 3-6	BS8485 CHARACTERISTIC SITUATION 2	BS8485 CHARACTERISTIC SITUATION 3-6	BRE 211 RADON	NHBC AMBER 1	NHBC AMBER 2 & RED
METHANE	✓	✓	✓	✓	N/A	✓	✓
CARBON DIOXIDE	✓	✓	✓	✓	N/A	✓	✓
RADON	N/A	N/A	N/A	N/A	✓	N/A	N/A
HYDROCARBON VAPOURS & LIQUID	✓	✓	✓	✓	N/A	✓	✓

SPECIFICATION

Triton Systems can provide a design service from plans and site investigation reports. Please contact our technical department for further information.

Typical Properties

- Roll Length: 50m
- Width: 450mm / 900mm
- Thickness: 25mm
- Creep Resistance 200Kpa for 100hrs: 5% Max
- Intrinsic Permeability (k): $<1.2 \times 10^{-5} \text{ m}^2$
- Foreheimer Term: $<24.0 \text{ sm}^{-1}$
- Ultimate compressive strength at yield: 225kN/m²

Accessories

Venting System Components
6,000mm² ventilation area



1. Ground Level Gully Vent Box*
2. Connector T-Piece
3. Triton TGS-GV25

*Gully Vent Boxes need to be set in 150mm surround of no fines concrete. No vehicular trafficking should be driven over Gully Vents.



Technical Services

- Consideration of Site Investigation Reports and Gas Monitoring Results so that advice can be supplied on the gas characteristics and protection needed on site
- A comprehensive range of membraned and venting systems to protect against Methane, Carbon Dioxide, Radon, Hydrocarbons and VOC contaminants. BBA Certification available on our standard membranes.
- As part of the design service we are able to offer a take-off service for the components required to install the project on-site.
- Full Design available on gas contaminated sites in accordance with BS8485, CIRIA 665, NHBC and Local Authority Ground Gas Handbook.
- Liaison between main contractors/sub-contractors/building control/consultants and design teams to ensure correct specification and installation of the gas protection system.
- Recommendations available for independent validation and integrity testing service consultants.
- Recommendations available for SUDS and Storm water drainage system design (at risk). Value engineered designs available, for further information please contact our full drainage layouts available and installations by specialist contractors.

Triton Chemical Manufacturing Co Ltd T/a Triton Systems

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www.tritonsystems.co.uk

Ref: Triton TGS – GV25



Triton TT VAPOUR MEMBRANE

Description

Triton TT VAPOUR MEMBRANE is a single component acrylic modified coating that once cured, provides a liquid applied waterproof, damp proof, radon, methane and carbon dioxide barrier. Independent 3rd party test certificate / data available.

Typical Applications

- As a retro applied waterproof and gas proof membrane to concrete, masonry and brick substrates.
- Can be applied by airless spray, roller or brush to walls, floors or soffits.
- As an alternative to sheet membranes in new construction.

Characteristics

- A 0.7mm thick (dry film) coating provides an effective methane barrier when applied to most clay or cementitious-base construction materials.
- Also an effective waterproof membrane.
- Excellent adhesion, bonds to porous and non-porous substrates.
- Flexible
- Non-toxic.
- Will withstand temporary light trafficking.
- Cannot be punctured as fully bonded.
- Easily repaired by locally over-coating.
- Can be painted, plastered or screeded over.
- Repaired drying, in good conditions two coats can be applied in the same day.
- Can be applied by brush, roller or airless spray.
- Can be applied to damp and 'green' substrates.

Technical Data

Components	1
Form	Thixotropic Liquid
Specific Gravity	1.40 (approx)
Application Temp	Plus 4 °C
Toxicity	Non – toxic
Cured Properties	
Adhesion to concrete	1.1N/mm ²
Elongation ASTM D2370 %	>100%
Tensile Strength ASTM D2370	11 N/mm ²

Chemical Resistance

Triton TT VAPOUR MEMBRANE has good chemical resistance to gasoline, sodium hydroxide, calcium chloride, de-icing salts and effluent.



Performance Criteria

The performance of **Triton TT VAPOUR MEMBRANE** is illustrated in the following table with the accepted criteria for diffusivity (test work done at 0.2 bar).

Accepted Criteria	Triton TT VAPOUR MEMBRANE
R>50m	357.5m

Where R = air diffusion equivalent for carbon dioxide in metres.

Gas (methane) permeability : $8.5 \times 10^{-16} \text{ml/m}^2/\text{s}^{**}$

******This is an independent 3rd party UKAS accredited test - test certificate No. 12811

Application Guidelines

- Surfaces must be clean, free from dust and loose material, oil, paint, fungal growth, etc.
- Non-structural cracks > 0.5mm wide must be filled.
- Structural cracks must first be repaired and filled.
- The substrate must be sound and ideally present a smooth face.
- Old repairs must be inspected and re-paired if necessary.
- Newly laid concrete should have a clean textured surface; **Triton TT VAPOUR MEMBRANE** can be applied to concrete or mortar within 24 hours of laying.
- Apply 45° fillets onto angles formed of **Triton FILLET SEAL** where practicable.

Mixing

Triton TT VAPOUR MEMBRANE is supplied ready blended in a pail. The product requires agitation using a slow speed paddle mixer. Mix carefully for 5 minutes before use. If containers are stored for more than 2 hours after opening, re-agitate.

Do not add water.

Surface Application

- Pre-dampen (not wet) the substrate before applying the first coat.

Interface with other media

- For expansion joints ensure that **Triton TT VAPOUR MEMBRANE** is applied well into the rebate before the expansion media is applied.
- Other gas membranes must be exposed and lapped with **Triton TT VAPOUR MEMBRANE** where present.

Dealing with cracks

- Cracks must be stabilized and filled. Apply the first coat of **Triton TT VAPOUR MEMBRANE** and apply plasterers polyurethane scrim along the line of the crack, apply a further coat of **Triton TT VAPOUR MEMBRANE** to fully cover the scrim; apply the final coat as stated below.

Application of the main coating system

- The product can be applied by stiff brush, roller or airless spray with a minimum 17 thousands of an inch nozzle. The spray method is especially suitable for less accessible locations and uneven substrates.
- The first primer application is applied at the rate of >0.5lt/m for waterproofing and >0.3lt/m for an effective gas proof membrane. Ensure that the coating is even; use a circular action when spraying.
- Allow the primer coat to dry before applying the second coat.
- Apply the second coat at the rate of >0.7lt/m for waterproofing and >0.5lt/m for gas proof applications; for brush application, apply at right angles to the first coat. Again use a circular action when spraying. Application rate will depend on substrate surface.
- Do not apply over bitumen.
- The total application thickness must not exceed 4mm if splitting or cracking is to be avoided.
- Protect from frost and rain.
- Only apply when temperature is 5°C and rising.



Specification

NBS: Clause J30 10,130 – Liquid applied Damp Proofing

Type A Barrier Protection in Accordance with BS8102 (2009).

Packaging

Triton TT VAPOUR MEMBRANE is supplied in a 20ltr Pail.

Colour

Mid Grey

Storage

Triton TT VAPOUR MEMBRANE must be stored at temperatures above 5°C and below 35°C in dry conditions, off the ground and away from direct sunlight.

The shelf life is 12 months in original unopened packaging when stored correctly.

Health & Safety

- Protect hands with rubber gloves.
- Avoid contact with skin and eyes. Should this occur flush with plenty of clean water.
- If irritation persists, seek professional medical advice.
- For full information consult the relevant Material Safety Data Sheet.

For further information please contact:

Triton Systems Ltd

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Ref: Triton TT Vapour Membrane 06/11



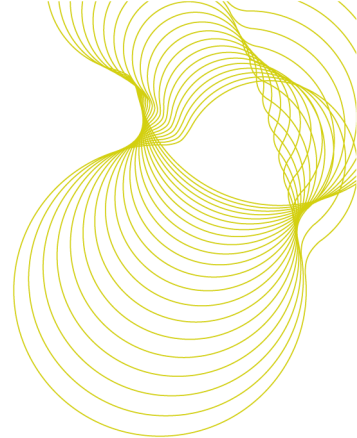
bre

**Carbon Dioxide
Permeability Testing of
TT Vapour Membrane**

Prepared for:
Triton Systems
Units 3-5 Crayford Commercial
Centre
Greyhound Way
Crayford
Kent
DA1 4HF

28 March 2014

Test report number 294853/R1



Prepared by

Name Dr Martyn Webb
Position Principal Consultant, Building Technology Group, BRE
Date 28/03/14

Signature

Approved on behalf of BRE

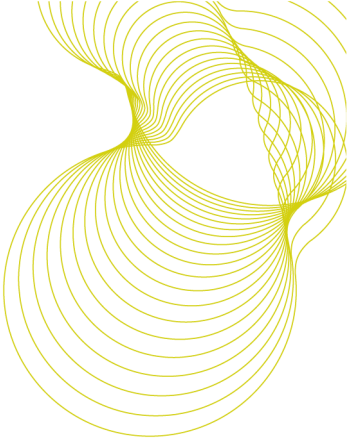
Name David Gall
Position Associate Director, Building Technology Group, BRE
Date 28/03/14

Signature

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WD25 9XX
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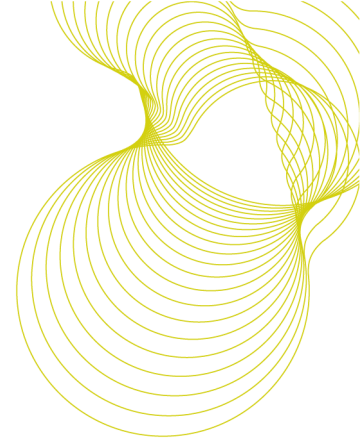
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2	Details of tests carried out	5
3	Test results	6
4	References	7



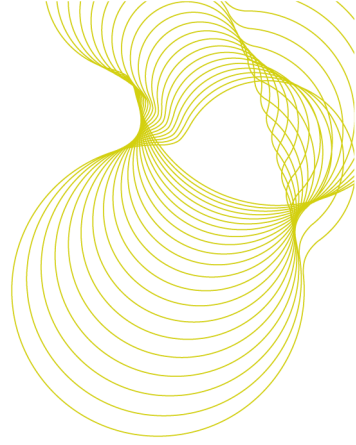
1 Introduction

At the request of Triton Systems, BRE have undertaken a carbon dioxide permeability test on the product described as TT Vapour Membrane.

Testing was carried out following the methodology described in BS EN 1062-6: 2002 – Paints and varnishes — Coating materials and coating systems for exterior masonry and concrete, determination of carbon dioxide permeability. Test method A (gravimetric) was used for the test.

Circular unglazed ceramic tiles of known permeability and 3.75 mm in thickness were supplied to the client for application and subsequent initial curing of the test product. These were then returned to BRE for carbon dioxide permeability testing.

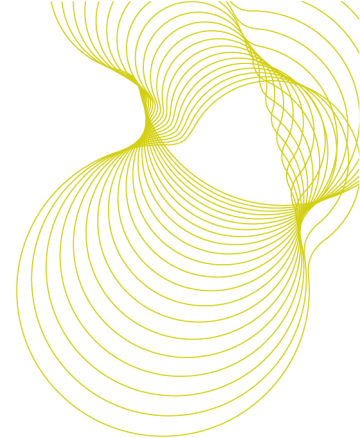
This report contains a factual report of the testing undertaken.



2 Details of tests carried out

The testing followed the methodology described in BS EN 1062-6: 2002, using test method A. This is a gravimetric method utilising a carbon dioxide absorbant in the test cups with the coated face of the test specimens exposed to the test gas – 10 % carbon dioxide in air. The carbon dioxide permeability is calculated from the increase of mass over time until a steady state is reached.

Test specimens were nominally 90 mm in diameter and the product thickness was measured as between 0.34 and 0.50 mm. Testing was carried out between December 2013 and February 2014.



3 Test results

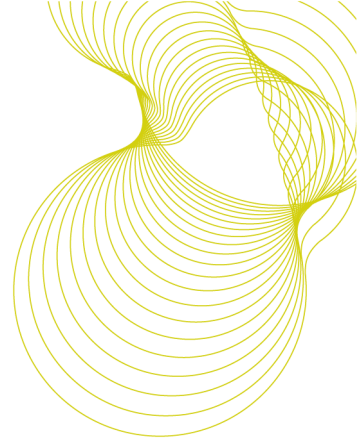
The test results are presented in Table 1 below:

BRE specimen number	291426/3	291426/4	291426/5	291426/6	Mean
Specimen thickness in mm:	0.34	0.50	0.48	0.49	0.45
Carbon dioxide permeability in $\text{g/m}^2/\text{day}$	0.60	0.58	0.56	0.57	0.58
Diffusion-equivalent air layer thickness (S_D) in m:	417	430	443	430	431
Diffusion resistance number (μ) $\times 10^6$	1.23	0.86	0.92	0.89	0.97

Table 1. Summary of test results for TT Vapour Membrane

Specimen thickness (mm)	0.45
Carbon dioxide permeability ($\text{g/m}^2/\text{day}$)	0.58
Diffusion-equivalent air layer thickness (S_D) in metres	431
Diffusion resistance number (μ) $\times 10^6$	0.97

In relation to carbon dioxide permeability, Table 5 of BS EN 1504-2: 2004 requires the S_D value to be > 50 metres. On the basis of this test result, the product TT Vapour Membrane satisfies this requirement.



4 References

BS EN 1062-6: 2002 – Paints and varnishes — Coating materials and coating systems for exterior masonry and concrete; Determination of carbon dioxide permeability.

BS EN 1504-2: 2004 – Products and systems for the protection and repair of concrete structures; Definitions, requirements, quality control and evaluation of conformity — Part 2: Surface protection systems for concrete.

=====REPORT ENDS=====

Certificate of Test

Page 1 of 2

**Title: Determination of Methane
Permeability of Triton TT Vapour
Membrane**

Certificate of Test Number: 12811RevB

Client's Name & Address:

Triton Chemical Manufacturing Co. Ltd
129 Felixstowe Road
Abbey Wood
London
SE2 9SG

Our Ref: N950/T591

TC Job No: 3LK6 – 1.281.07

Your Ref: KD/1209-TTVM/TEST

Date: 21 March 2012

Date sample(s) received: 27 November 2009

Sample(s) received from: Triton Chemicals


Sample No: 145554

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This Certificate and the results shown are based upon the information drawings samples and tests referred to herein

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Written by: 
D Thompson (position: Engineer)

Authorised by: 
N McDonald (position: Principal Engineer)

Technology Centre

Stanbridge Road, Leighton Buzzard, Bedfordshire, LU7 4QH

Tel No. 01525 859111
Registered Office, Watford

Fax No. 01525 859001
Registered No. 2295904 England

**TECHNOLOGY
CENTRE** 

1. INTRODUCTION

This certificate of test describes methane permeability testing carried out on Triton TT Vapour Membrane at the request of Triton Chemical Manufacturing Co. Ltd. on 16 December 2009 at Technology Centre (TC), Leighton Buzzard.

2. SAMPLE DESCRIPTION

Technology Centre received one 1ltr tin of Triton TT Vapour Membrane (TC Ref 145554). The coating was given unique TC sample numbers for reference purposes only.

3. TEST METHOD

3.1 Coating Application

The coating system was brush applied to four unglazed ceramic tiles approximately 100x75mm using a weighing procedure to achieve the coverage rate required. One coat of Triton TT Vapour Membrane was applied at a rate of 300g/m² and allowed to air dry for 24 hours. A second coat of Triton TT Vapour Membrane was then applied at a rate of 700g/m². Each coat was applied at 90° to the previous.

The coated sample was allowed to cure for 24 hours in the laboratory and then conditioned at 23±2°C and 60±5% relative humidity for a minimum period of 7 days prior to testing.

3.2 Test Procedure

The test was carried out in general accordance with accordance with "Rilem Report 12, Performance Criteria for Concrete Durability, E & FN Spon, London, UK pp 226-230".

Methane (100%) at 23cm mercury (30700Pa) above atmospheric was pressurised on the coated specimen. The gas flow rate through the sample was determined at atmospheric pressure approximately 2 hours after initial pressurisation. The unglazed ceramic tile offers no measurable resistance to pressurised gas and was ignored in the calculation of the methane gas permeability (K_{gas}). Calculation of gas permeability (K_{gas}) was determined in accordance with equation 2.7 in "Rilem Report 12, Performance Criteria for Concrete Durability, E & FN Spon, London, UK pp 7-8".

4. TEST RESULTS

The results for the testing are contained in Table 2 below

METHANE GAS PERMEABILITY

Table 2

Client Reference	TC Ref	Specimen Thickness (m)	Exposed Area (m ²)	Methane Gas Permeability (K_{gas}) (m/s)	Methane Gas Permeability (K_{gas}) (ml/m ² /s)
Triton TT Vapour Membrane	145554C	0.000727	0.005064	8.527 x10 ⁻¹⁵	8.527 x10 ⁻⁹

Date of test: 16.12.2009

Note: The methane gas permeability values gained by this method can also be used for radon gas permeability values.

5. SPECIFICATION

The permeability specifications for non-geological barriers as taken from Council Directive 193/31/EC dated April 1999 has for inert waste: $K_{gas} = <1.00 \times 10^{-7}$ m/s.



DECLARATION OF PERFORMANCE

D07/CPR/03062013

1. Product Type: Unique identification code of the product type	TRITON TT VAPOUR MEMBRANE
2. Type: batch or serial number or any other element allowing identification of the construction product as required under article 11(4) of the CPR	TTVM – 130430-3
3. Intended Use or uses of the construction product, in accordance with the applicable harmonised technical specification, as foreseen by the manufacturer:	BE EN 1504-2:2004 SURFACE PROTECTION SYSTEM FOR CONCRETE – INGRESS PROTECTION AND MOISTURE CONTROL
4. Name, registered trade name or registered trade mark and contact address of the manufacturer as required under Article 11(5)	TRITON TT VAPOUR MEMBRANE Triton Systems Units 3 – 5 Crayford Commercial Centre Greyhound Way Crayford, Kent DA1 4HF
5. Contact address: Where applicable, name and contact address of the authorizes representative whose mandate covers the tasks specified in Article 12(2)	Not relevant (see 4)
6. AVCP: System or systems of assessment and verification of constancy of performance of the construction product as set out in CPR, Annex V:	SYSTEM 4
7. Notified Body (hEN): In case of the declaration of performance (DoP) concerning a construction product covered by a harmonised standard	NOT APPLICABLE
8. Notified body (ETA): In case of the declaration of performance concerning a construction product for which a European Technical Assessment (ETA) has been issued:	NOT RELEVANT (SEE 7)

Triton Systems
Units 3-5 Crayford Commercial Centre
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Crayford, Kent
DA1 4HF

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Fax: 01322 524017
www.tritonsystems.co.uk
info@tritonsystems.co.uk

9. Declared Performance

Essential Characteristics	Performance	Test Standard	Harmonised technical specification
PERMEABILITY TO CO ₂	NPD	EN 1062-6	BS EN 1504-2:2004
PERMEABILITY TO WATER VAPOUR	S _D = 0.22m (Class 3)	EN ISO 7783	
CAPILLARY ABSORPTION AND PERMEABILITY TO WATER	0.007 kg/m ² .h ^{0.5}	EN 1062-3	
ADHESION	1.4 MPa	EN 1542	
DANGEROUS SUBSTANCES	COMPLIES WITH 5.4		
REACTION TO FIRE	NPD		
RESISTANCE TO SEVERE CHEMICAL ATTACK	NPD	EN 13529	

10. Declaration

The performance of the product identified in points 1 and 2 is in conformity with the declared performance in point 9. This declaration of performance is issued under the sole responsibility of the manufacturer identified in point 4. Signed for and on behalf of the manufacturer:



Roger Parker
Production Manager

TRITON ECO ROOF FAN



Roof fan for Radon Gas Extraction

Triton Eco Roof Fans:

- Energy efficient roof fan with EC Motor
- For the ventilation of homes, offices, commercial premises, public buildings – wherever fresh air is required.
- Provides low level continuous ventilation to control condensation and pollutants
- Will extract radon gas or ventilate an ecological toilet
- Motor speed controlled by potentiometer
- Low running costs
- Compliant with Building Regulations Parts L1 2010 and F2010



GENERAL FEATURES

- Energy efficient roof fans with EC motor
- Can be used in homes to extract from bathrooms and kitchens (will exhaust **Radon Gas**).
- Can also be used to remove polluted and humid air from offices, commercial premises, workshops, public buildings
- Is ideal for ventilation in lift shafts
- Will help basement areas, garages and store-rooms to stay dry and pollutant free
- Continuous air movement ensures that any condensation quickly evaporates
- Runs continuously and energy efficiently
- Speed is controlled by a potentiometer located in link box in cowl of fan
- The **Triton ECO Roof 190** model can be used with a 0-10v motor controller
- **Extremely low running costs**
- Low carbon footprint

TECHNICAL FEATURES

- Corrosion, weather and impact resistant, solid coloured polypropylene
- UV protected
- Chemically neutral – does not harm the environment
- Available in: Black, Green, Grey, Red, Brick Red or Light Grey

COMPLIES WITH

- Part L1 2010 of Building Regulations for enhanced energy saving capability
- Part F 2010 of Building Regulations for reliable, efficient ventilation
- IEC 60335-2-80, BT 2006/95/CE and EMC 2004/108/CE European Directive against radio interference and electro-magnetic compatibility
- CE marked
- ErP Directive 2015 Compliant

MODELS AVAILABLE

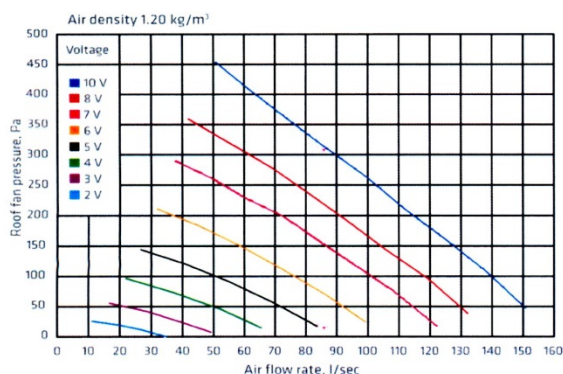
- **TRITON Eco Roof 110P** – for installing on a roof
- **TRITON Eco Roof 110S** – for installing on a flat surface (either directly or with optional 250 x 250mm installation kit)
- **TRITON Eco Roof 110C** – cone model for installation inside a sheet steel cone
- **TRITON Eco Roof 190P** – for installing on a roof. Incorporates 50mm insulation which absorbs sound (inner pipe for galvanised, perforated sheet metal with lip seal)
- **TRITON Eco Roof 190S** – for installing on a flat surface (either directly or with optional 300 x 300mm installation kit)



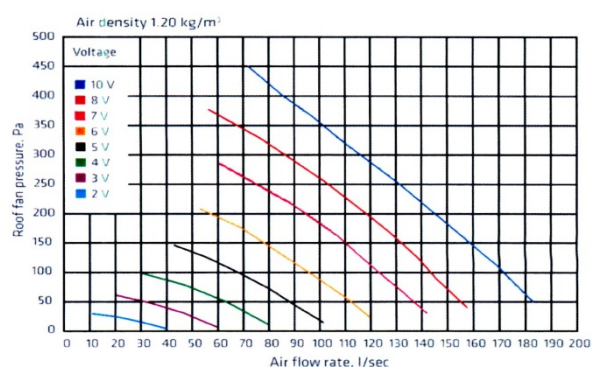
Product Data Sheet

Model	Power	Current	Volts	R.P.M	Speed Control
TRITON Eco 110	83W	0.75 A	230V / 50Hz	3200	Potentiometer
TRITON Eco 190	83W	0.75 A	230V/50Hz	3200	0-10V signal or PWM

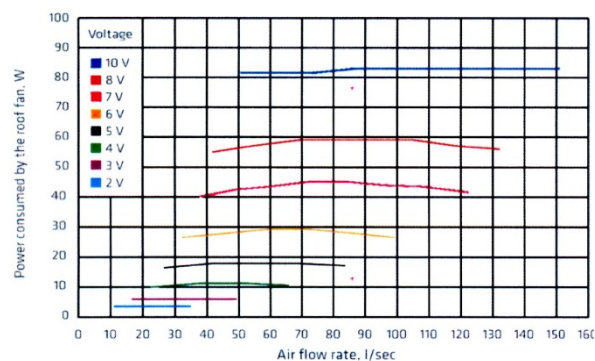
Performance – Triton Eco Roof 110



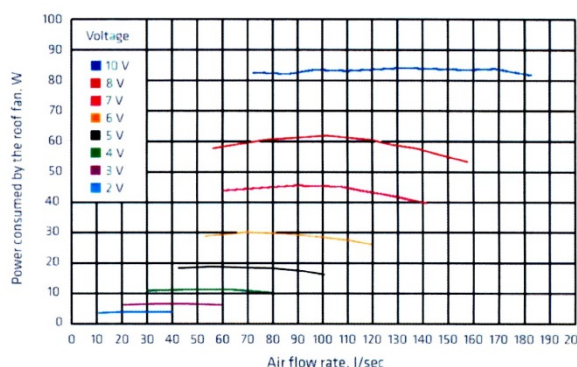
Performance – Triton Eco Roof 190



Power – Triton Eco Roof 110



Power – Triton Eco Roof 190



Flow and Sound – Triton Eco Roof 110

U	V	2	3	4	5	6	7	8	10
qv	l/s	10.9	28.6	36.9	54.7	59.2	72.7	80.6	99.8
pF	Pa	26.3	40.8	74.3	91.9	14	198	239	263
Pe	W	3.9	6.5	11	17.9	28.5	44.4	58.7	83.9
N	1/min	772	1099	1452	1771	2113	2477	2731	3049
LW63	dB	55.6	591	63.8	66.1	57.5	69.4	71	72.9
LW125	dB	54.9	59.2	63.7	66.4	70.5	73.7	74.1	76.8
LW250	dB	52.6	58.2	62	66.3	73	72.9	77.2	76.8
LW500	dB	44.3	51.2	57.3	60.8	64.4	67.5	70.1	73.8
LW1000	dB	38.6	47.4	54.5	58.2	62	65.4	67.4	69.5
LW2000	dB	26.9	38.3	45.6	50.7	54.7	58.5	60.6	62.9
LW4000	dB	*	21.8	32.7	39.7	45.5	50.2	53.1	56.3
LW8000	dB	*	*	21.6	31	38.7	44.5	48.	51.5
LW	dB	59.5	64	68.6	71.7	76.2	77.9	80.3	81.8
LWA	dB(A)	47.2	53.7	59.3	63	67.9	70.2	73.4	74.7

Flow and Sound – Triton Eco Roof 190

U	V	2	3	4	5	6	7	8	10
qv	l/s	10.8	20.5	46.8	67.6	84	707	20	132
pF	Pa	30.6	61.2	79.7	102	135	164	196	251
Pe	W	4	6.6	11.6	19	29.6	45	60.6	84.2
N	1/min	807	1155	1474	1818	2161	2536	2810	3122
LW63	dB	*	55.5	54.6	58.6	61.6	63.9	78.9	67
LW125	dB	40.5	53.5	53.5	58.1	62.1	65.9	67.1	68.4
LW250	dB	37.2	43.5	48.1	57	59.5	64.7	65.3	66.9
LW500	dB	21.4	30.8	37.5	44.8	50	54.4	56.7	59.8
LW1000	dB	*	16.9	24.4	33.8	41.7	41.1	49.7	52.4
LW2000	dB	*	*	13.9	25.5	33.5	41.6	44.9	49.5
LW4000	dB	*	*	*	15	27.7	36.6	40.3	44.2
LW8000	dB	*	*	*	*	21	28.9	33.8	38
LW	dB	42.2	57.8	57.6	62.8	66.1	69.8	79.4	72.6
LWA	dB(A)	29.6	39	42.1	49.2	53.2	58.9	60.1	61.7

For further information please contact:

Triton Systems Ltd

Units 3 – 5 Crayford Commercial Centre, Greyhound Way, Crayford, Kent DA1 4HF

Tel: 01322 318830 **Fax:** 01322 524017

Email: info@tritonsystems.co.uk

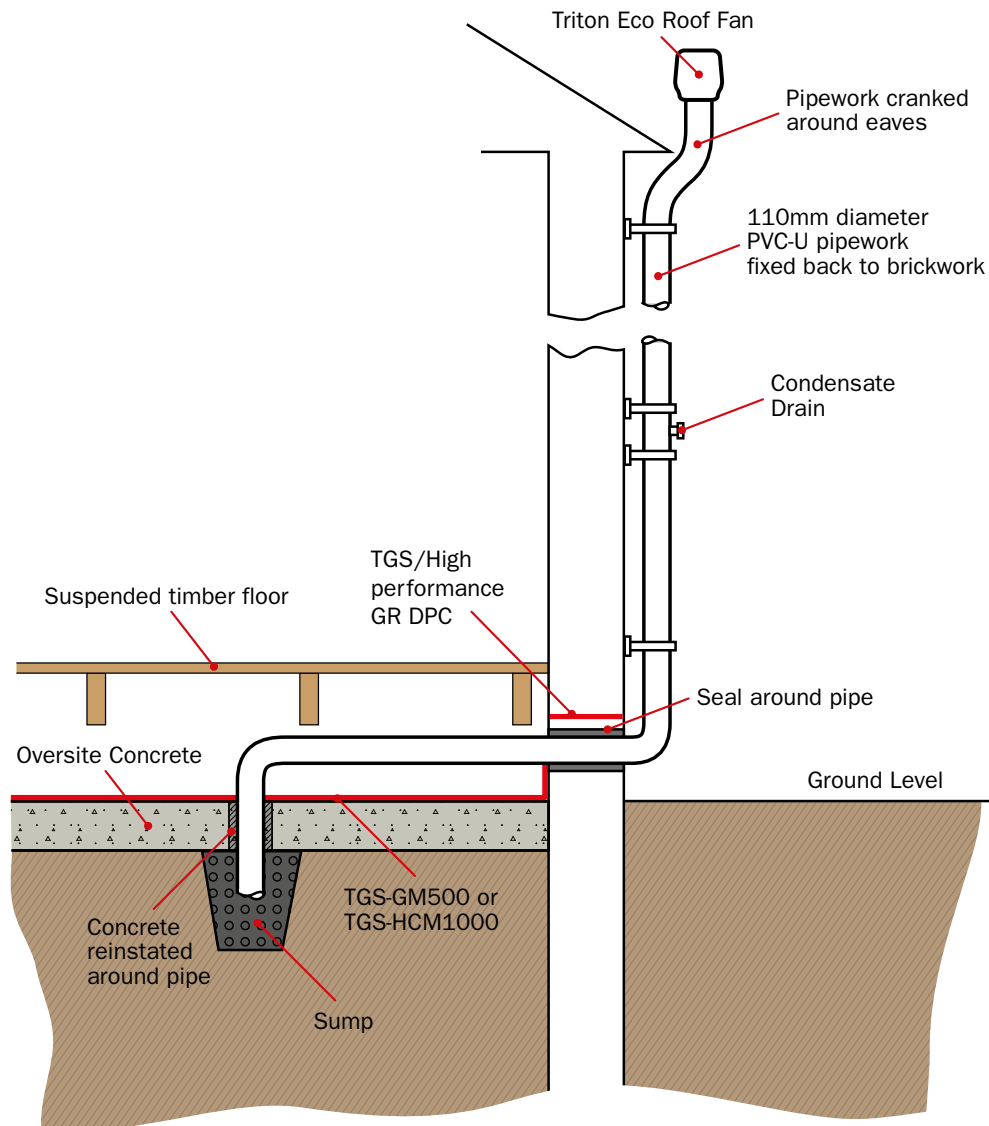
www.tritonsystems.co.uk

Ref: Triton ECO Roof Fan – 10/14



Triton Ground Gas Barriers

Triton Eco Roof Fan – Installation Diagram



Triton Contact Details:

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www.tritonsystems.co.uk

Triton Radon Sump



Description

A perforated sump to allow for the accumulation of gas prior to venting externally via the Triton Eco Roof Fan. Installation of the sump reduces pressure on the installed gas proof membrane and venting outlet.

The black polyethylene preformed chamber is designed to be located in the ground or basement floor, finishing flush with the surrounding floor level. It is supplied with a structural polyethylene lid, which is removable and can accept foot traffic.

Dimensions

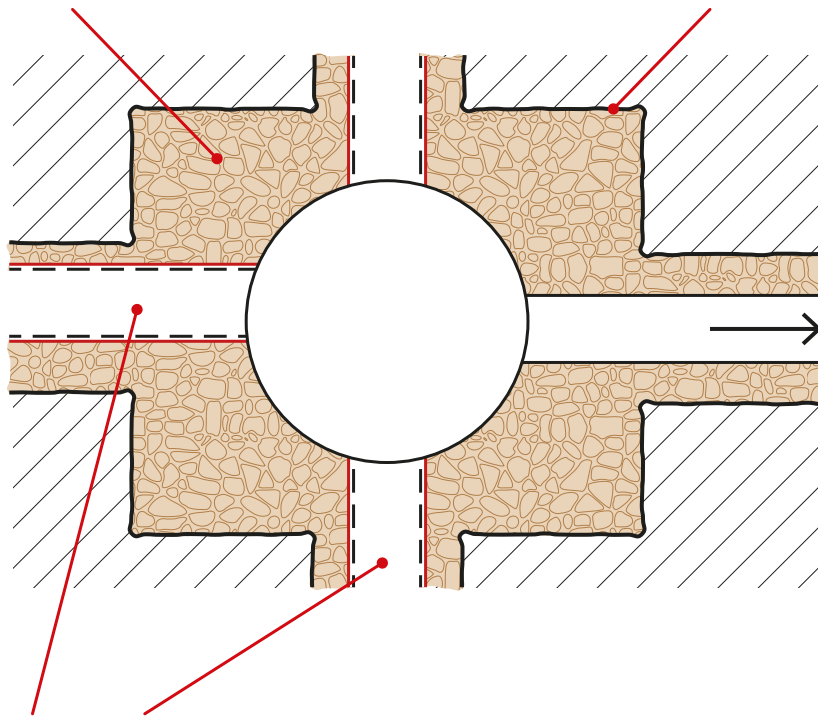
560mm high x 540mm diameter (at top) x 460mm diameter (at base).

Installation and positioning

The sump should be located under the ground or basement floor close to the centre of the dwelling. In a typical dwelling a single sump is likely to have an influence over an area of approximately 250m² or for a distance of approximately 5m from the sump.

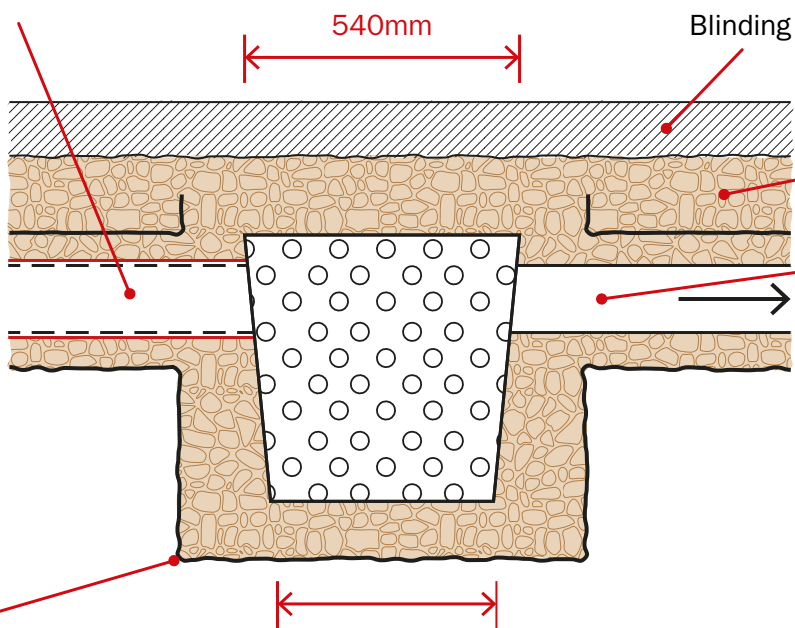
Hardcore/single size aggregate

Geotextile filter membrane



110mm pipe
to extraction
beyond building

100mm perforated pipe
wrapped in Geotextile



Hardcore

110mm pipe
to extraction
beyond building

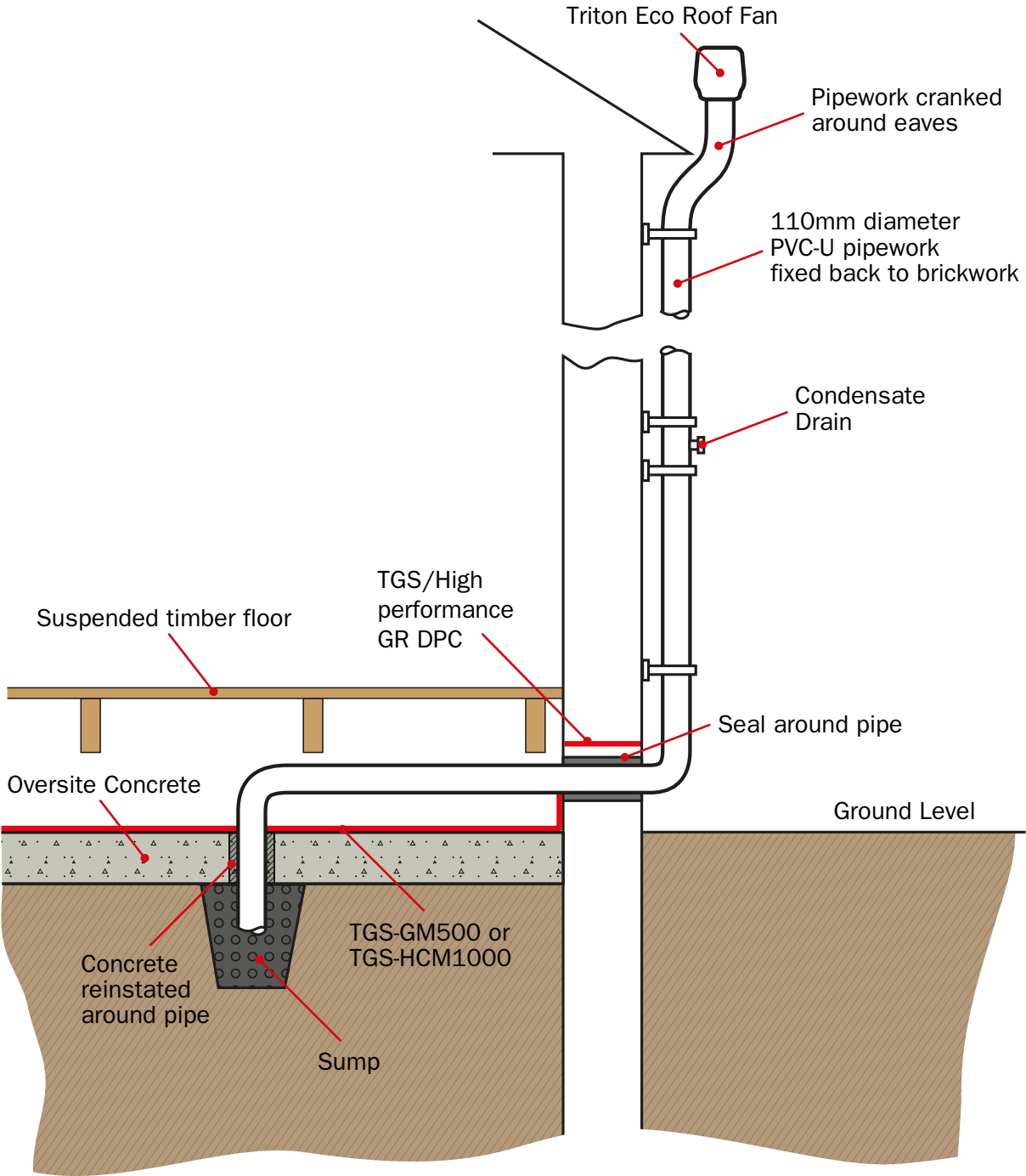
600mm

150mm
Compacted
Hardcore

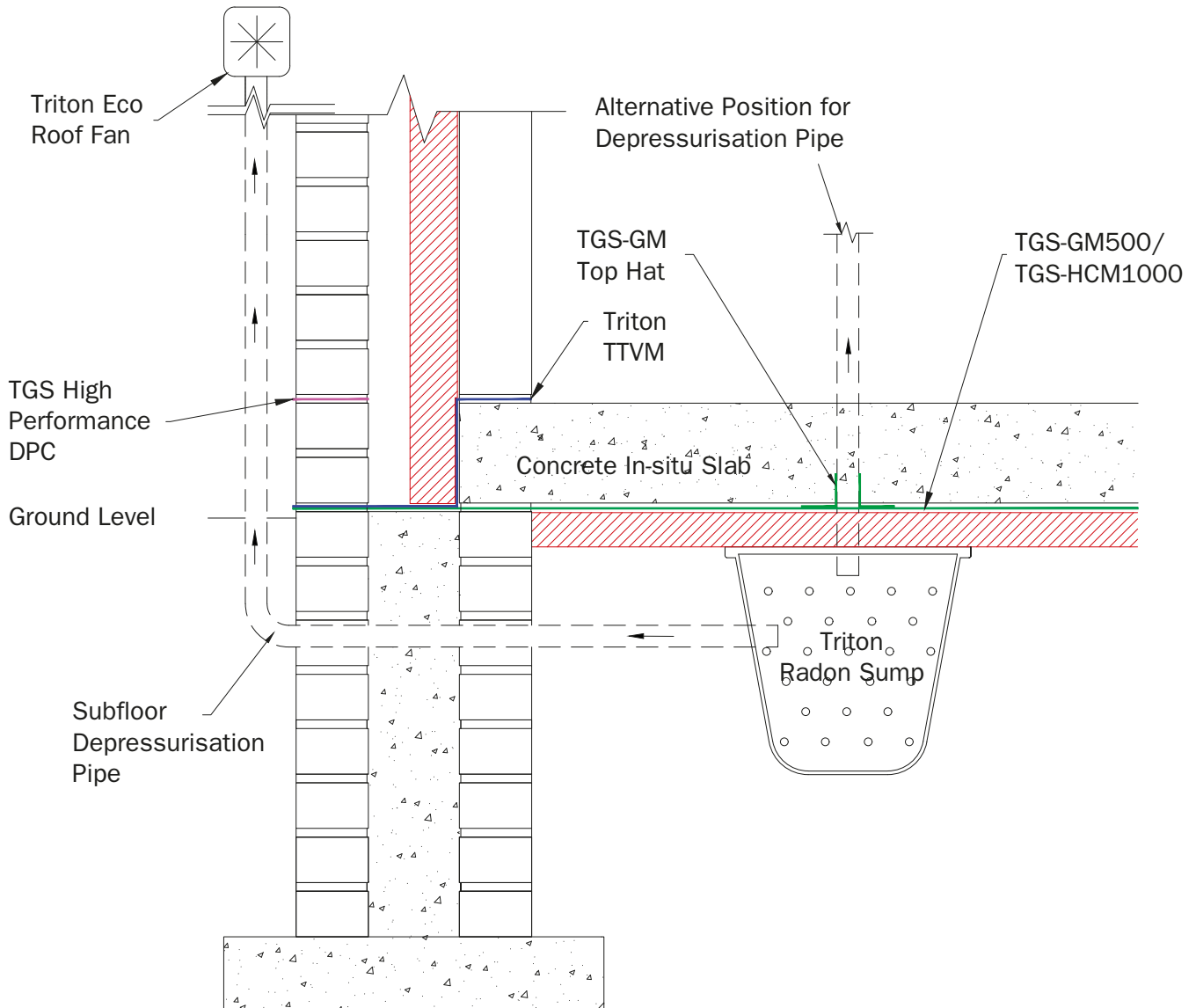
Geotextile filter membrane

450mm

SUMP INSTALLATION BENEATH SUSPENDED TIMBER FLOOR



TRITON RADON SUMP / TGS GAS MEMBRANES & ECO ROOF FAN DETAIL



Triton Contact Details:

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www.tritonsystems.co.uk



TRITON FLEECE BAND

SYNTHETIC REINFORCEMENT BAND

TRITON FLEECE BAND is a synthetic textile reinforcing band which is indispensable for use in details, joints, corners and exceptional situations in liquid waterproofing system.

PROPERTIES

- Great absorption and compatibility with liquid waterproofing systems based on polyurethanes and acrylics.
- Easy applications and adaptable on any surface
- Increases cohesion in Triton TT Vapour Membrane & Triton RC liquid systems.
- Resistant to alkalis in Cement
- Excellent elasticity, which enhances the overall performance of liquid waterproofing systems.
- Complements liquid waterproofing systems as a reinforcement.

PRECAUTIONS

- Do not use Triton FLEECE BAND as a puncture resistant reinforcement where liquid membrane waterproofing is applied. When the liquid membrane system is to be covered with concrete screed, a protective layer such as Platon Double Drain must be placed on the liquid membrane to protect it from puncture.

PACKING

- Bands of 0.3 x 100m (30m²)
- Rolls 1m x 100m (100m²)

APPLICATIONS

- **Triton FLEECE BAND:** Reinforcement for liquid membranes in unique areas such as corners, edges, junctions, bases of roof top equipments, chimneys, etc.
- **Triton FLEECE BAND:** Treatment of cracks in conjunction with the liquid membrane.

TECHNICAL DATA

Composition	Thermal bonded polyester reinforcement fabric /nonwoven
Weight	70 g/m ² UNE – EN ISO 9864
Thickness	0.65 mm UNE – EN ISO 9863 – 1
Tensile Strength	1.8 KN/m (Long) 4.2 KN/m (Transv.) UNE – EN ISO 10319
Elongation	Long: 93%, Transv: 94%
Static indentation	500 N (0.5 KN) CBR UNE – EN ISO 12236

For further information contact:

Triton Chemical Manufacturing Co. Ltd. T/a Triton Systems

Units 3 –5 Crayford Commercial Centre
Greyhound Way, Crayford, Kent DA1 4HF
Tel: 01322 318830 Fax: 01322 524017

www.tritonsystems.co.uk
info@tritonsystems.co.uk

Ref: Triton FLEECE BAND – 03/12



Triton LPA / PRIMER

Description

Triton LPA / PRIMER (LIQUID POLYMER ADDITIVE) is a ready to use emulsion which will improve the adhesion, water resistance, salt resistance, integral strength and surface durability, increase chemical resistance of **Triton FLOOR LEVELLING COMPOUND** and **Triton REPAIR MORTAR**.

It also improves the workability and durability of cement mixes such as renders and screeds.

It is suitable for use as a priming solution for walls prior to plastering / rendering, and as a gauging solution for **Triton REPAIR MORTAR**, **TT55** and **FILLET SEAL**.

Directions for Use:

Surfaces to be rendered, screeded or where **Triton FLOOR LEVELLING COMPOUND** is to be used must be free from all loose and friable material, dust, dirt, plaster, bitumen, grease, etc....

1. **Priming Coat:** The application of a priming coat is normally recommended to obtain maximum adhesion to the substrate. **Triton LPA / PRIMER** should be thoroughly worked into the prepared surface by brush or broom. The topping (plasters, screeds, renders, etc.) to be applied when the **Triton LPA / PRIMER** is still tacky. Where substrates are particularly porous then **Triton NEOPRENE PRIMER** should be used.
2. **Gauging Solution:** For **Triton FLOOR LEVELLING COMPOUND** and **TT55** add the **Triton LPA / PRIMER** to the mixing vessel and slowly add the powder components whilst stirring with a mechanical whisk. Add one 5 litre pack of **Triton LPA / PRIMER** to one bag **TT55** or **FLOOR LEVELLING COMPOUND** however, extra water up to 1 litre may be required to achieve correct consistency.

Uses

- As primer to walls, floors and roofs
- As surface primer for **Triton REPAIR MORTAR**, **FLOOR LEVELLING COMPOUND**, **TTVM**, **HR** and **RC**.
- As gauging water for **Triton TT55**, **FILLET SEAL**, **FLOOR LEVELLING COMPOUND** and **REPAIR MORTAR**.
- To add flexural strength to screeds and renders.

Safety Precautions

- Wear gloves and eye protection
- Avoid skin and eye contact
- Wash hands and exposed skin after use.
- Store in original container in a safe place.

Packaging

Available ready to use in 5 litre containers.

Health & Safety

For full information consult the relevant material safety data sheet.

For other details and technical information please contact your Triton Systems representative.

For further information please contact:

Triton Chemical Manufacturing Co Ltd T/a Triton Systems

Units 3 – 5 Crayford Commercial Centre, Greyhound Way, Crayford, Kent DA1 4HF

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Fax: 01322 524017

Email: info@tritonsystems.co.uk

www.tritonsystems.co.uk



Triton Ground Gas Barriers

Ancillaries

TGS-GM500 DS Tape

A double-sided jointing tape for use when installing TGS-GM500 gas barrier. The 50mm x 10m butyl tape has a very low vapour transmission rate and outstanding elongation properties. Should be laid in conjunction with TGS-GM500 Joint Tape. Excellent adhesion qualities.

TGS-GM500 Joint Tape

A single-sided overlap tape for use when installing TGS-GM500 gas barrier. Should be used in conjunction with TGS-GM500 Double Sided tape to create a secondary seal when jointing the membrane. Excellent adhesive properties.

TGS-HCM1000 DS Tape

A double-sided jointing tape for use when installing TGS-HCM1000 gas barrier. Should be laid in conjunction with TGS-HCM1000 Joint Tape. Excellent adhesion qualities.

TGS-HCM1000 Joint Tape

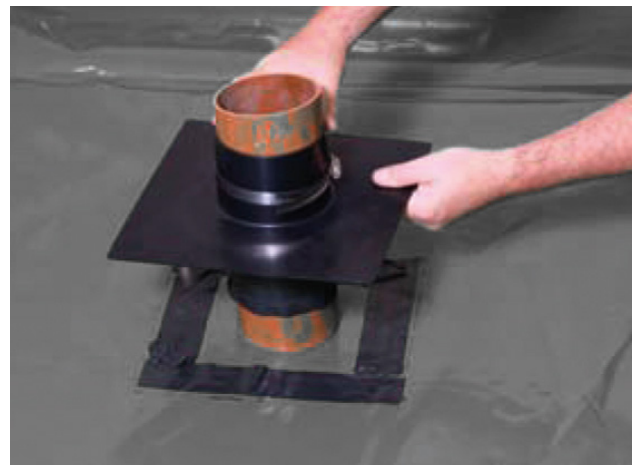
A single-sided overlap tape for use when installing TGS-HCM1000 gas barrier. Should be used in conjunction with TGS-HCM1000 Double Sided Tape to create a secondary seal when jointing the membrane. Excellent adhesive properties.

TGS Top Hats

TGS Top Hats provide an effective seal where a 110mm pipe penetrates a membrane. Easy to install. Made from quality materials. Hose clip included. Base of Top Hat: 280 x 280mm.



TGS Tapes – Alison, are you able to supply the image for this please. I wouldn't know where to begin looking for it or what it would be called.



TGS Top Hats

Triton Contact Details:

Triton Systems Ltd.
Units 3 – 5 Crayford Commercial Centre, Greyhound Way, Crayford, Kent DA1 4HF

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Email: info@tritonsystems.co.uk

www.tritonsystems.co.uk

TRITON SYSTEMS:

Tel: 01322 318830

F30 GAS RESISTANT DPC's/CAVITY TRAYS

- Manufacturer: Triton Systems, 3-5 Crayford Commercial Centre, Greyhound Way, Crayford. DA1 4HF.
- Product reference: Triton TGS-GM500.

J40 FLEXIBLE SHEET TANKING / DAMP PROOFING

To be read in conjunction with preliminaries / General conditions.

TYPES OF TANKING / DAMP PROOFING

140 LOOSE LAID POLYETHYLENE GAS RETARDANT/DAMP PROOFING

- Substrate:.....
- Concrete blinded hardcore.
- Primer: Required to vertical or inclined surfaces.
- Manufacturer: Triton Systems, 3-5 Crayford Commercial Centre, Greyhound Way, Crayford. DA1 4HF.
- Tel: 01322 318830. Fax: 01322 524017.
- Email: info@tritonsystems.co.uk. Web: www.tritonsystems.co.uk.
- Product reference: Triton TGS-EXGM500.
- Number of layers: One
- Thickness: 1mm
- Roll size: 2m x 25m.
- Joints: Triton GM500 Double Sided Tape.
- Surfaces to be joined: Clean and dry beyond full width of joint.
- Laps: (minimum) 150mm. Triton GM500 Silver Joint Tape (single sided) to lap.
- Sealing: Roll to fully adhere.

WORKMANSHIP

310 WORKMANSHIP GENERALLY

- Condition of substrate:
- Clean and even textured, free from voids and sharp protrusions.
- Moisture content: compatible with damp proofing / tanking.
- Air and surface temperature: Do not apply sheets if below minimum recommended by sheet manufacturer.
- Condition of membrane at completion:
- Neat, smooth and fully supported, dressed well into abutments and around intrusions.
- Completely impervious and continuous.
- Undamaged. Prevent puncturing during following work.
- Permanent overlying construction: Cover membrane as soon as possible.

320 INSPECTION

- Give notice: Before covering any part of membrane with overlying construction.

335 PRIMERS

- Manufacturer: Triton Systems, 3-5 Crayford Commercial Centre, Crayford, Kent. DA1 4HF.
- Tel: 01322 318830. Fax: 01322 524017
- E-mail: info@tritonsystems.co.uk Web: www.tritonsystems.co.uk
- Product reference: TWS-EX Primer, 5lt and 25lt.
- Coverage per coat (minimum): 8m²/lt.
- Curing: Allow to dry thoroughly before covering.

305A ANGLES IN BONDED DAMP PROOF MEMBRANE/TANKING

- Fit internal angles with a sand/cement fillet, not less than 40mm x 40mm, unless noted otherwise.
- Reinforcing strip to all angles:
- Material: As damp proofing/tanking.
- Width (minimum): 300mm.
- Timing: Apply before main sheeting.
- Dressing of main sheeting onto adjacent surfaces (minimum): 100mm.

360 JUNCTIONS WITH PROJECTING DPC's / CAVITY TRAYS

- Adjoining surfaces: Clean and dry.
- Dpc's / cavity trays: Lap and fully bond/seal with sheeting.
- Laps (minimum): 75mm.
- Bonding/Sealing: Triton GM500 Double Sided Tape/Triton GM500 Silver Joint Tape.

370A PIPES, DUCTS, CABLES, ETC

- Where these pass through sheeting, make junctions completely impervious using Triton GM500 Silver Joint Tape.
-

TRITON SYSTEMS:

Tel: 01322 318830

F30 GAS RESISTANT DPC's/CAVITY TRAYS

- Manufacturer: Triton Systems, 3-5 Crayford Commercial Centre, Greyhound Way, Crayford. DA1 4HF.
- Product reference: Triton TGS-GM500.

J40 FLEXIBLE SHEET TANKING / DAMP PROOFING

To be read in conjunction with preliminaries / General conditions.

TYPES OF TANKING / DAMP PROOFING

140 LOOSE LAID POLYETHYLENE GAS RETARDANT/HYDROCARBON/DAMP PROOFING

- Substrate:.....
- Concrete blinded hardcore.
- Primer: Required to vertical or inclined surfaces.
- Manufacturer: Triton Systems, 3-5 Crayford Commercial Centre, Greyhound Way, Crayford. DA1 4HF.
- Tel: 01322 318830. Fax: 01322 524017.
- Email: info@tritonsystems.co.uk. Web: www.tritonsystems.co.uk.
- Product reference: Triton TGS-HCM1000.
- Number of layers: One
- Thickness: 1mm
- Roll size: 1.3m x 20m.
- Joints: Triton TGS-HCM1000 DS Tape. (double sided sealing tape), 50mm x 10m roll.
- Surfaces to be joined: Clean and dry beyond full width of joint.
- Laps: (minimum) 150mm. Triton TGS-HCM Joint Tape 75mm x 50m roll.
- Sealing: Roll to fully adhere.

WORKMANSHIP

310 WORKMANSHIP GENERALLY

- Condition of substrate:
- Clean and even textured, free from voids and sharp protrusions.
- Moisture content: compatible with damp proofing / tanking.
- Air and surface temperature: Do not apply sheets if below minimum recommended by sheet manufacturer.
- Condition of membrane at completion:
- Neat, smooth and fully supported, dressed well into abutments and around intrusions.
- Completely impervious and continuous.
- Undamaged. Prevent puncturing during following work.
- Permanent overlying construction: Cover membrane as soon as possible.

320 INSPECTION

- Give notice: Before covering any part of membrane with overlying construction.

305A ANGLES IN BONDED DAMP PROOF MEMBRANE/TANKING

- Fit internal angles with a sand/cement fillet, not less than 40mm x 40mm, unless noted otherwise.
- Reinforcing strip to all angles:
- Material: As damp proofing/tanking.
- Width (minimum): 300mm.
- Timing: Apply before main sheeting.
- Dressing of main sheeting onto adjacent surfaces (minimum): 100mm.

360 JUNCTIONS WITH PROJECTING DPC's / CAVITY TRAYS

- Adjoining surfaces: Clean and dry.
- Dpc's / cavity trays: Lap and fully bond/seal with sheeting.
- Laps (minimum): 75mm.
- Bonding/Sealing: Triton TGS-HCM1000 Double Sided Tape/Triton TGS-HCM1000 Joint Tape.

370A PIPES, DUCTS, CABLES, ETC

- Where these pass through sheeting, make junctions completely impervious using Triton TGS-HCM1000 Joint Tape.
-

TRITON SYSTEMS:

Tel: 01322 318830

J40 FLEXIBLE SHEET TANKING / DAMP PROOFING

To be read in conjunction with preliminaries / General conditions.

TYPES OF TANKING / DAMP PROOFING

190 SELF ADHESIVE BITUMEN GAS RETARDANT DAMP PROOFING/TANKING

- Substrate:
- Concrete blinded hardcore.
- Primer: Required to vertical or inclined surfaces – As Clause 335.
- Manufacturer: Triton Systems, 3-5 Crayford Commercial Centre, Greyhound Way, Crayford. DA1 4HF.
- Tel: 01322 318830. Fax: 01322 524017.
- Email: info@tritonsystems.co.uk. Web: www.tritonsystems.co.uk.
-
- Product reference: Triton TWS-EX100GM.
- Number of layers: One
- Thickness: 1.5mm
- Bonding: Full. Smooth out to exclude air.
- Joints:
- Surfaces to be joined: Clean and dry beyond full width of joint.
- Laps: (minimum) 50mm, roll has selvedge for sealing joints.
- Sealing: Roll to fully adhere.
- Accessories: None required.

WORKMANSHIP

310 WORKMANSHIP GENERALLY

- Condition of substrate:
- Clean and even textured, free from voids and sharp protrusions.
- Moisture content: compatible with damp proofing / tanking.
- Air and surface temperature: Do not apply sheets if below minimum recommended by sheet manufacturer.
- Condition of membrane at completion:
- Neat, smooth and fully supported, dressed well into abutments and around intrusions.
- Completely impervious and continuous.
- Undamaged. Prevent puncturing during following work.
- Permanent overlying construction: Cover membrane as soon as possible.

320 INSPECTION

- Give notice: Before covering any part of membrane with overlying construction.

335 PRIMERS

- Manufacturer: Triton Systems, 3-5 Crayford Commercial Centre, Crayford, Kent. DA1 4HF.
- Tel: 01322 318830. Fax: 01322 524017
- E-mail: info@tritonsystems.co.uk Web: www.tritonsystems.co.uk
- Product reference: TWS-EX Primer, 5lt and 25lt.
- Coverage per coat (minimum): 8m²/lt.
- Curing: Allow to dry thoroughly before covering.

305A ANGLES IN BONDED DAMP PROOF MEMBRANE/TANKING

- Fit internal angles with a sand/cement fillet, not less than 40mm x 40mm, unless noted otherwise.
- Reinforcing strip to all angles:
- Material: As damp proofing/tanking.
- Width (minimum): 300mm.
- Timing: Apply before main sheeting.
- Dressing of main sheeting onto adjacent surfaces (minimum): 100mm.

360 JUNCTIONS WITH PROJECTING DPC's / CAVITY TRAYS

- Adjoining surfaces: Clean and dry.
- Dpc's / cavity trays: Lap and fully bond/seal with sheeting.
- Laps (minimum): 75mm.
- Bonding/Sealing: Triton TWS-EX100 x 150mm wide.

370A PIPES, DUCTS, CABLES, ETC

- Where these pass through sheeting, make junctions completely impervious using Triton TWS-EX100 in accordance with the data sheet for the product.

380 PROTECTION BOARDS FOR DAMP PROOFING / TANKING

- Manufacturer: Triton Systems, 3-5 Crayford Commercial Centre, Crayford, Kent. DA1 4HF.
- Tel: 01322 318830. Fax: 01322 524017.
- E-mail: info@tritonsystems.co.uk Web: www.tritonsystems.co.uk
- Product reference: Platon Double Drain.
- Thickness: 7mm.
- Application: Membrane surface clean and free from contaminants.
- Fixing: Platon Cramps at top edge, 250mm centres.
- Joints: Overlap vertical joints by 500mm.
- Contact with membrane: Secure, full and continuous.



Triton TT Vapour Membrane – Liquid Waterproofing / Gas Barrier

SPECIFICATION CLAUSES

Referenced in clauses J30 10 130

J30 LIQUID APPLIED TANKING / DAMP PROOFING

To be read with Preliminaries/General conditions

TYPES OF TANKING/DAMP PROOFING

110A COLD APPLIED TANKING & GAS

PROOFING x Substrate

Existing brickwork and concrete

In situ concrete walls and slab

Smooth rendered masonry x

Primer

Not required

x Coating

Styrene butadiene co-polymer

x Manufacturer

Triton Systems, 3-5 Crayford Commercial Centre, Greyhound Way, Crayford.
DA1 4HF.

Tel: 01322 318830 Fax : 01322 524017

E-mail: technical@tritonsystems.co.uk

x Product reference

Triton TT Vapour Membrane (in conjunction with product data sheet)

x Application

First coat at □.5lt/m for waterproofing and □3lt/m gas barrier membrane

Second coat □lt/m for waterproofing and □5lt/m gas barrier membrane x

Reinforcement

Triton Fleeceband to be applied at wall/floor junctions and construction joints.

x Blinding

Not required

x Protection of coatings

Application to floors must be protected with screeds or protection boards

Application to walls to be protected by, render internally, Platon Double Drain externally.

EXECUTION

205A SUITABILITY OF SUBSTRATE

x Substrates generally:

Smooth, even textured, clean, dry and frost free.
within tolerances for level and surface regularity.

Vertical and horizontal surfaces: Correctly prepared and free from irregularities.

x Moisture content and stability of substrate: Must not impair integrity of finished tanking /damp proofing.

x Preliminary work: Complete including:

- Chases.
- External angles.
- Formation of upstands and kerbs.
- Movement joints.
- Penetrations / Outlets.

210 COATING APPLICATION x Adjacent surfaces exposed to view in finished work: Protect.

x Coatings:

Apply in dry atmospheric conditions.

Uniform, continuous coverage. Do not allow to pool in hollows.

Firmly adhered to substrate and free from imperfections.

Prevent damage to finished coatings.

x Penetrations: Impervious.

x Final covering: Apply as soon as possible after coating has hardened.

220 COLD APPLIED COATINGS x Thinning: Not permitted unless recommended by manufacturer.

x Successive coats:

- Allow to dry before applying next.
- Apply at right angles to previous coat.

230A ELASTOMERIC LIQUID RUBBER COATING

x Dry surfaces: Lightly dampen.

x Air and surface temperatures (minimum): 5°C

x Weather conditions: Do not apply if there is a risk of rain during application and drying, unless effective temporary cover is provided over working area.

- Unavoidable wetting of construction or coating: Minimize and make good damage.

240 REINFORCEMENT x Placing into first coat of Triton TT Vapour Membrane, apply two further coats. x Edge overlap (minimum); 150mm either side of joints.

x Finish: Smooth and free from imperfections.

COMPLETION

330 PROTECTION OF COATINGS x Coated surface:

Clean and free from contaminants x Board manufacturer:

Triton Systems. 3-5 Crayford Commercial Centre, Greyhound Way, Crayford. DA1 4HF.

Tel: 01322 318830. Fax: 01322 524017.

E-mail: technical@tritonsystems.co.uk Web: www.tritonsystems.co.uk

- Product reference: Platon Double Drain.

- Thickness: 8mm.

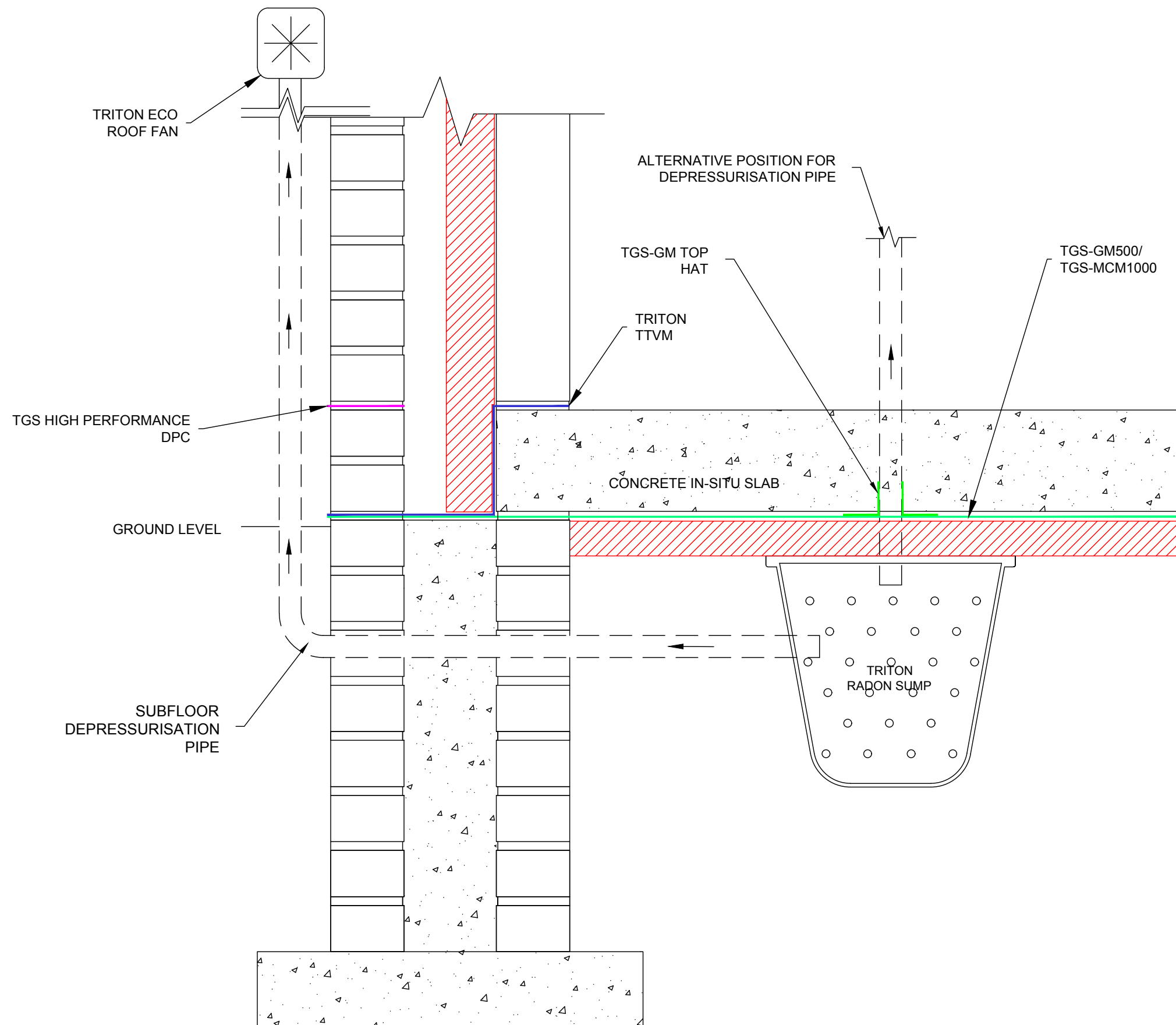
x Placement: Fixings to top lip, bond vertical joints with Platon Sealing Bead and Platon Sealing Tape.

OR

x Apply a cement screed or floor covering over the finished floor application.

340 Backfilling

x Timing: Carry out as soon as possible after membrane and protection are complete.



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Email: info@tritonsystems.co.uk

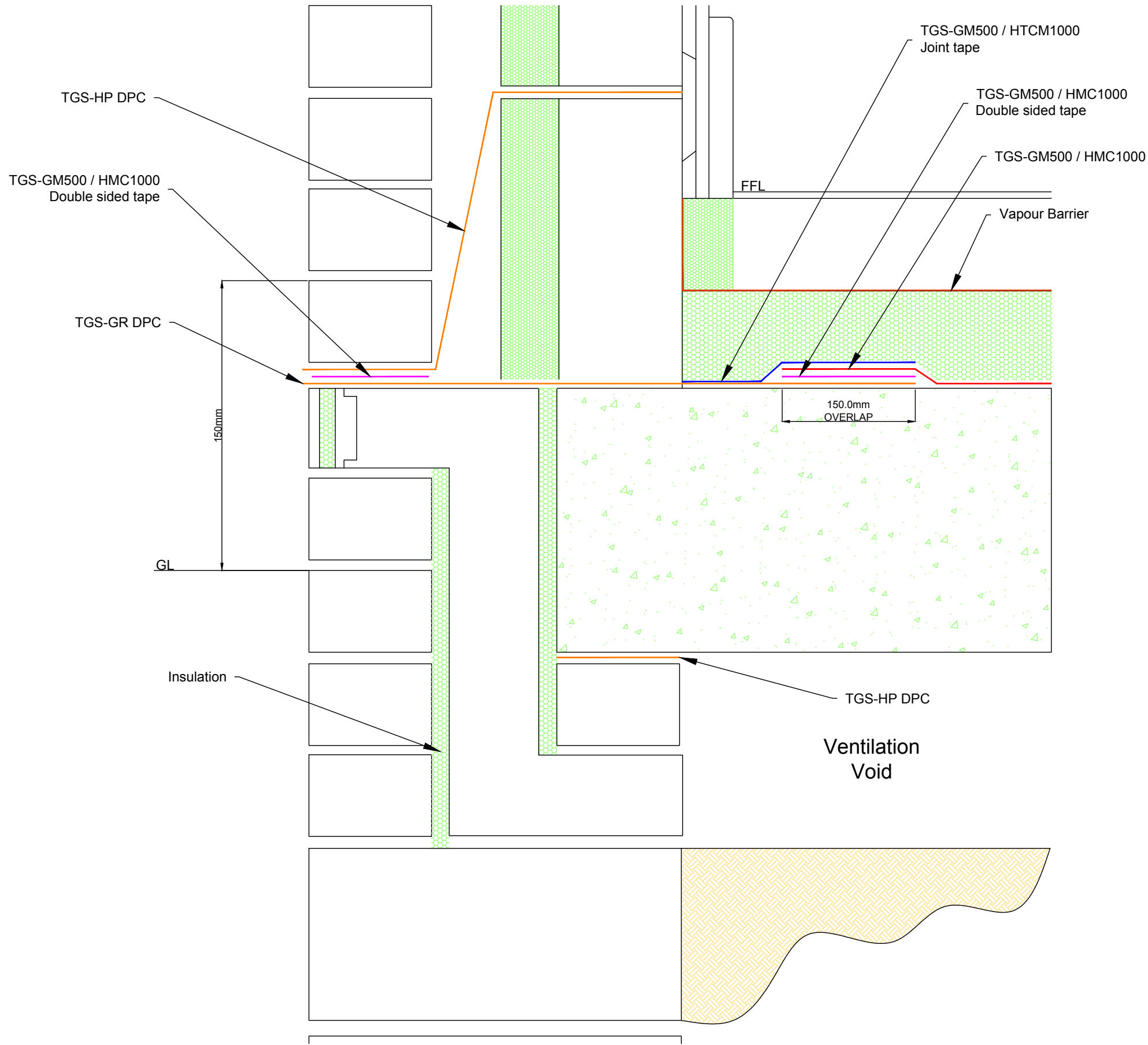
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ASSISTANCE CONTACT **TRITON TECHNICAL** ON THE TELEPHONE
NUMBER ABOVE.

REV.	MOD. BY	DATE	CHK. BY	APP. BY
Alterations				
TITLE: TRITON RADON SUMP / TGS GAS MEMBRANES + ECO ROOF FAN DETAIL				
DRG. No. TGS-001.1				REV 1
DRAWN	TGL	System Files: TGS-001.1.pdf TGS-001.1.dwg		
DATE	21st October 2015			
SCALE (A3)	Not To Scale			
CHECKED				
APPROVED				



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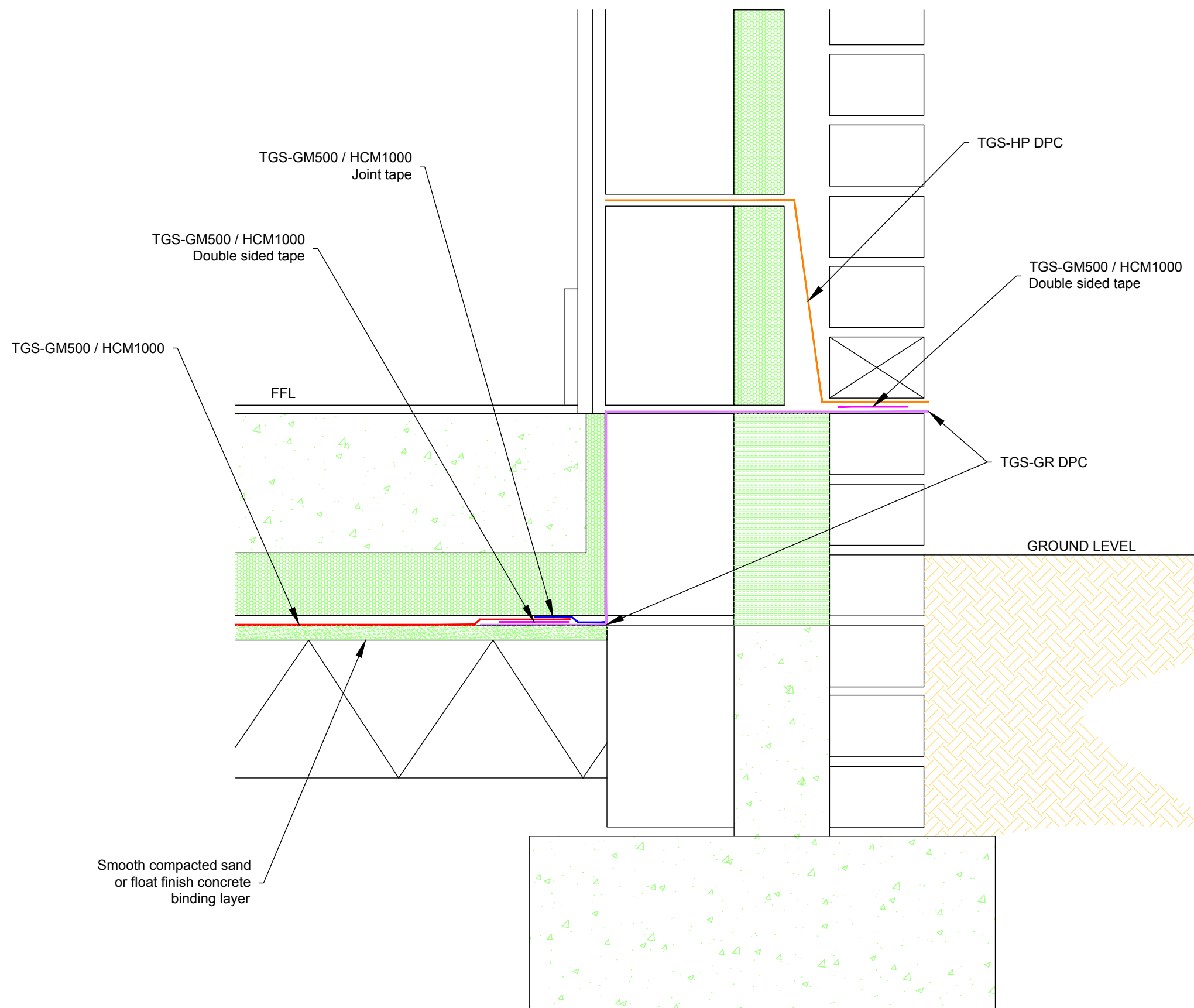
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REV.	MOD. BY	DATE	CHK. BY	APP. BY
Alterations				
TITLE: SUSPENDED SLAB - RAISED FLOOR, TYPICAL GAS PROTECTION DETAIL				
DRG. No. TGS-002.1				REV 1
DRAWN	TGL	System Files: TGS-002.1.pdf TGS-002.1.dwg		
DATE	23rd October 2015			
SCALE (A3)	Not To Scale			
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APPROVED				



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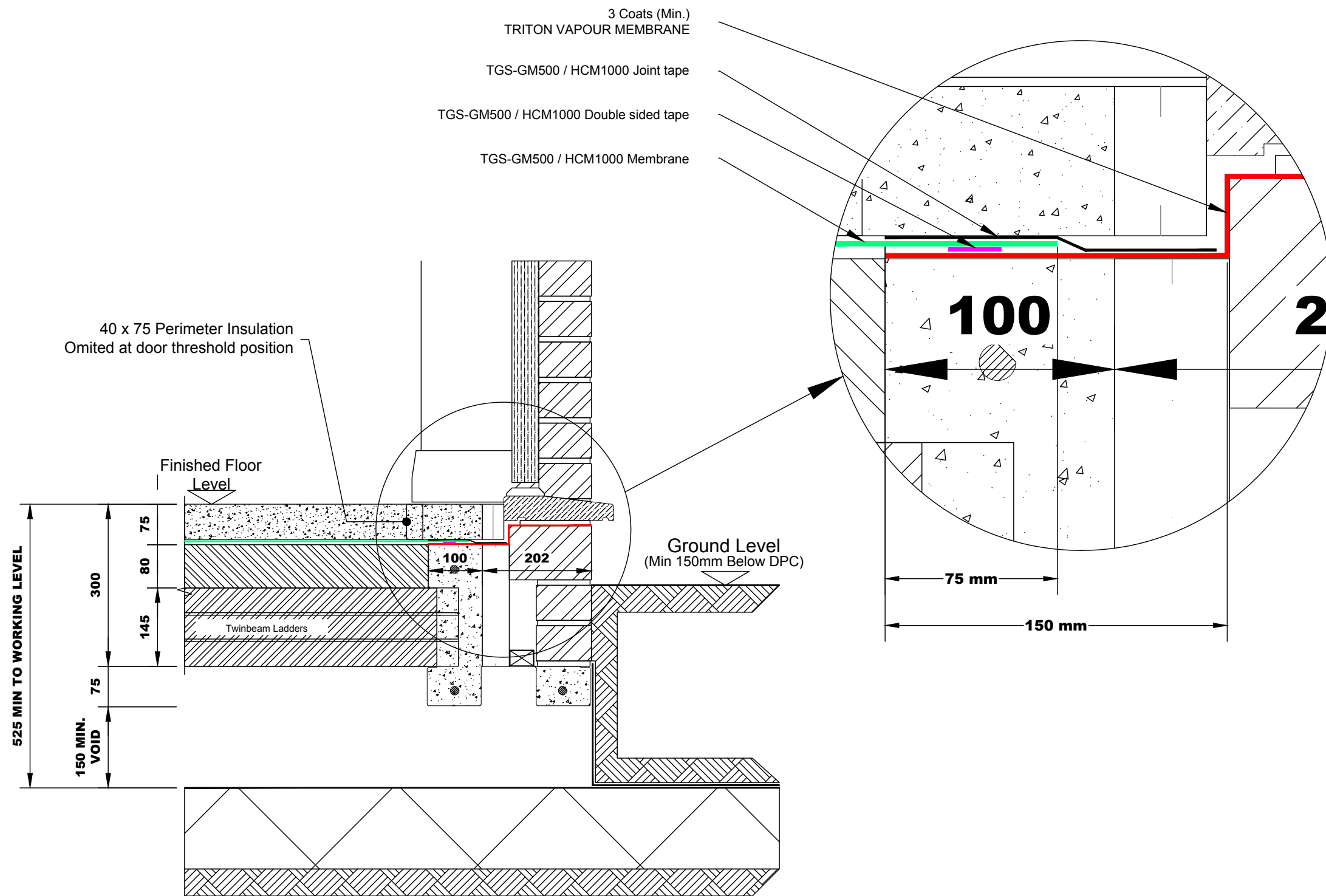
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NUMBER ABOVE.

REV.	MOD. BY	DATE	CHK. BY	APP. BY
Alterations				
TITLE: GROUND BEARING SLAB TYPICAL EDGE DETAIL				
DRG. No. TGS-003.1				REV 1
DRAWN	TGL	System Files: TGS-003.1.pdf TGS-003.1.dwg		
DATE	23rd October 2015			
SCALE (A3)	Not To Scale			
CHECKED				
APPROVED				



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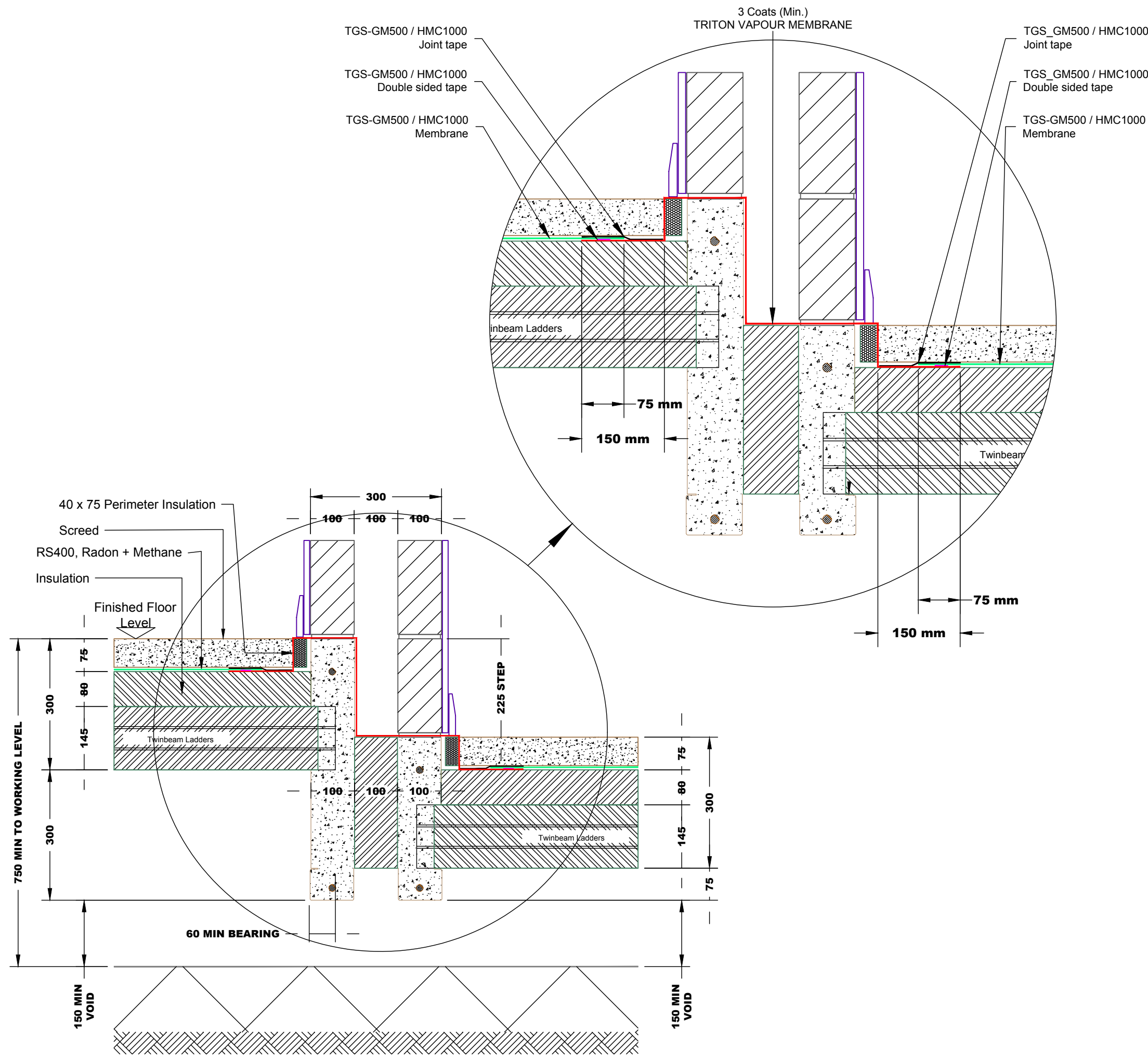
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NUMBER ABOVE.

REV.	MOD. BY	DATE	CHK. BY	APP. BY
Alterations				
TITLE: EXTERNALL WALL THRESHOLD DETAIL				
DRG. No. TGS004-1				REV 1
DRAWN	TGL	System Files: TGS004-1.pdf TGS004-1.dwg		
DATE	21st October 2015			
SCALE (A3)	Not To Scale			
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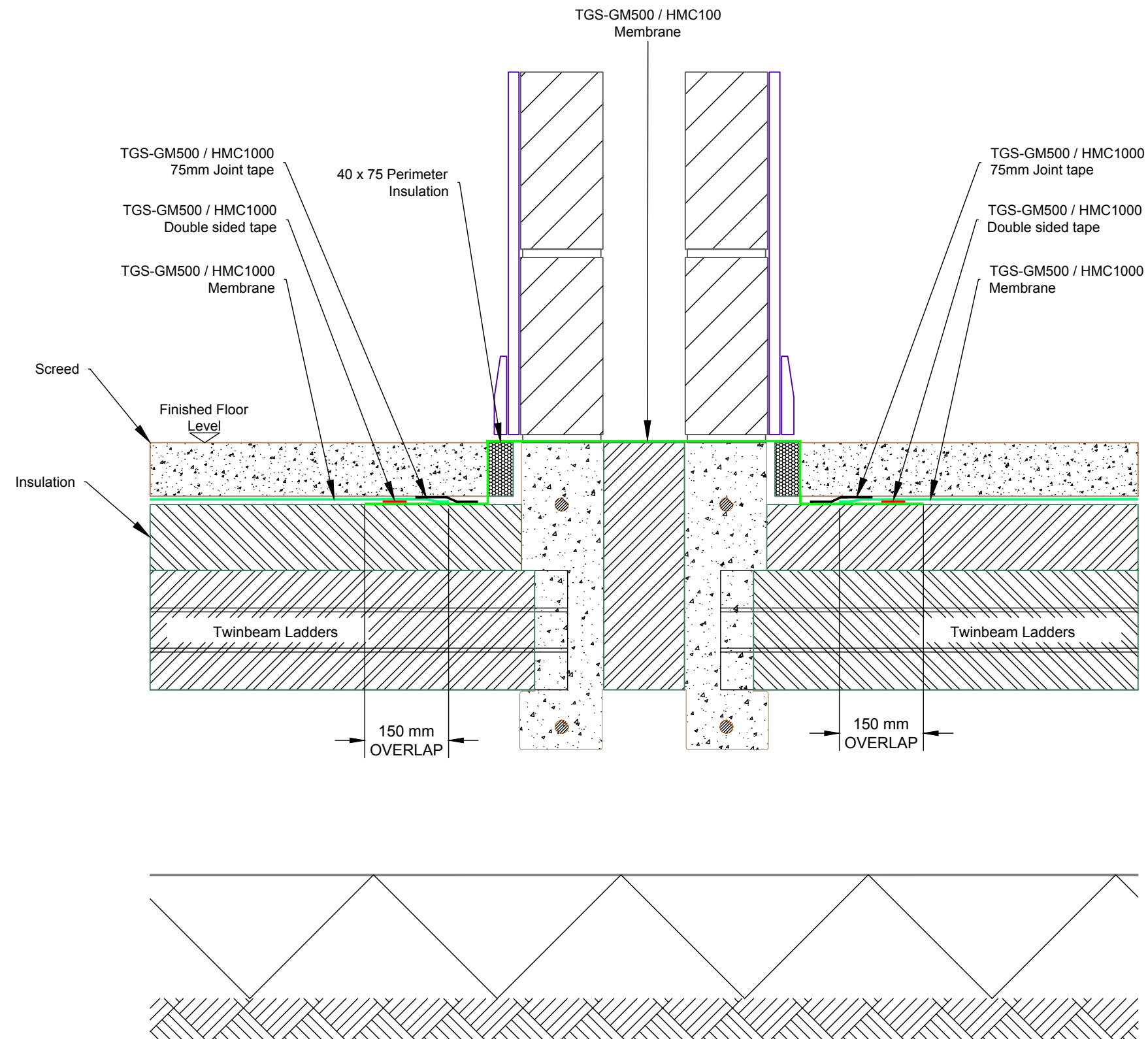
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REV.	MOD. BY	DATE	CHK. BY	APP. BY
Alterations				
TITLE: STEPPED PARTY WALL DETAIL				
DRG. No. TGS005-1				REV 2
DRAWN	TGL	System Files: TGS005-1.pdf TGS005-1.dwg		
DATE	21st October 2015			
SCALE (A3)	Not To Scale			
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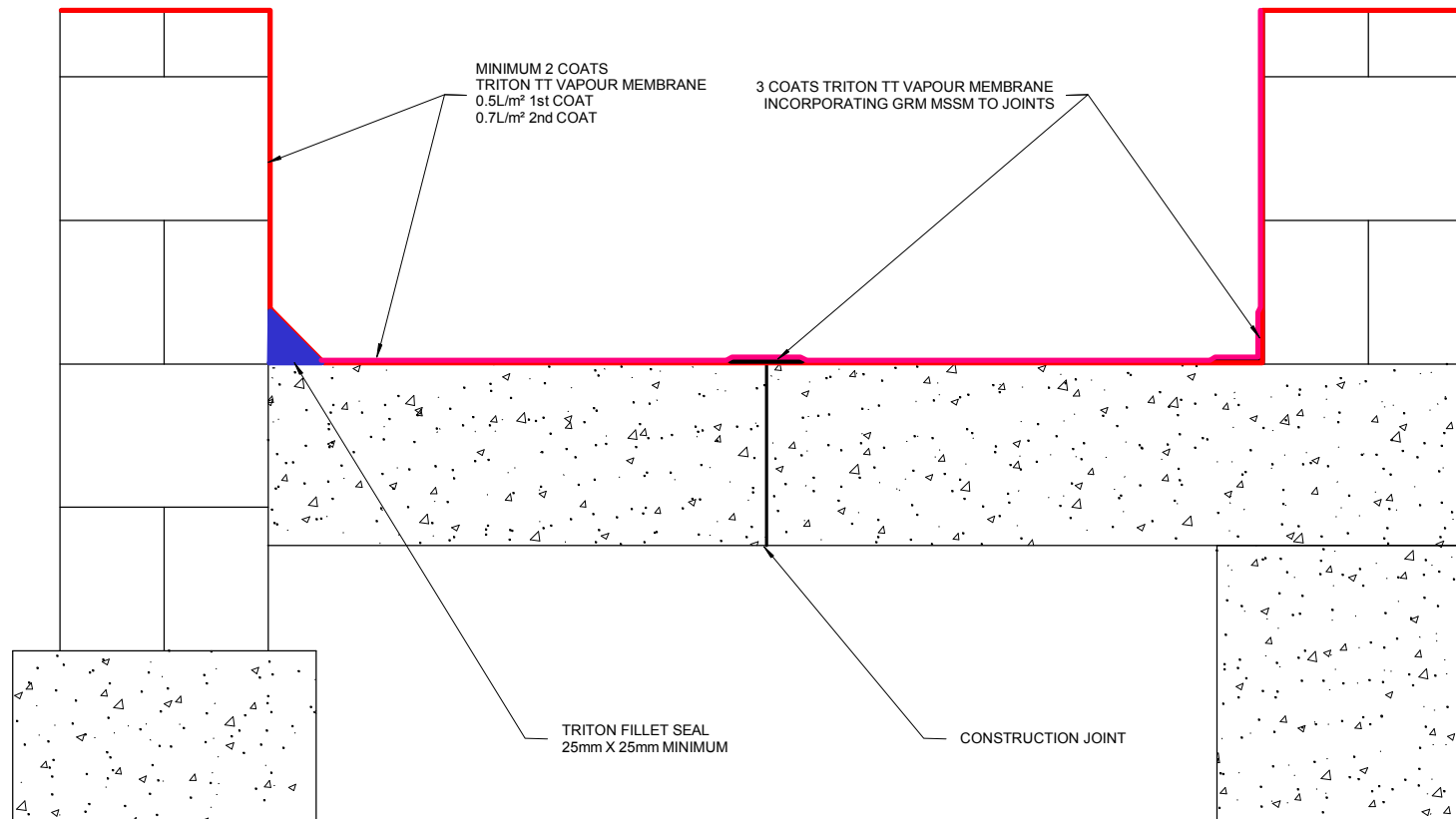
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NUMBER ABOVE.

REV.	MOD. BY	DATE	CHK. BY	APP. BY
Alterations				
TITLE: PARTY WALL DETAIL				
DRG. No. TGS006.1				REV 1
DRAWN	TGL	System Files: TGS006-1.pdf TGS006-1.dwg		
DATE	21st October 2015			
SCALE (A3)	Not To Scale			
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NUMBER ABOVE.

REV.	MOD. BY	DATE	CHK. BY	APP. BY
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Alterations

TITLE:

Typical Triton TT Vapour Membrane
Gas Barrier
(CO₂, Methane & Radon)

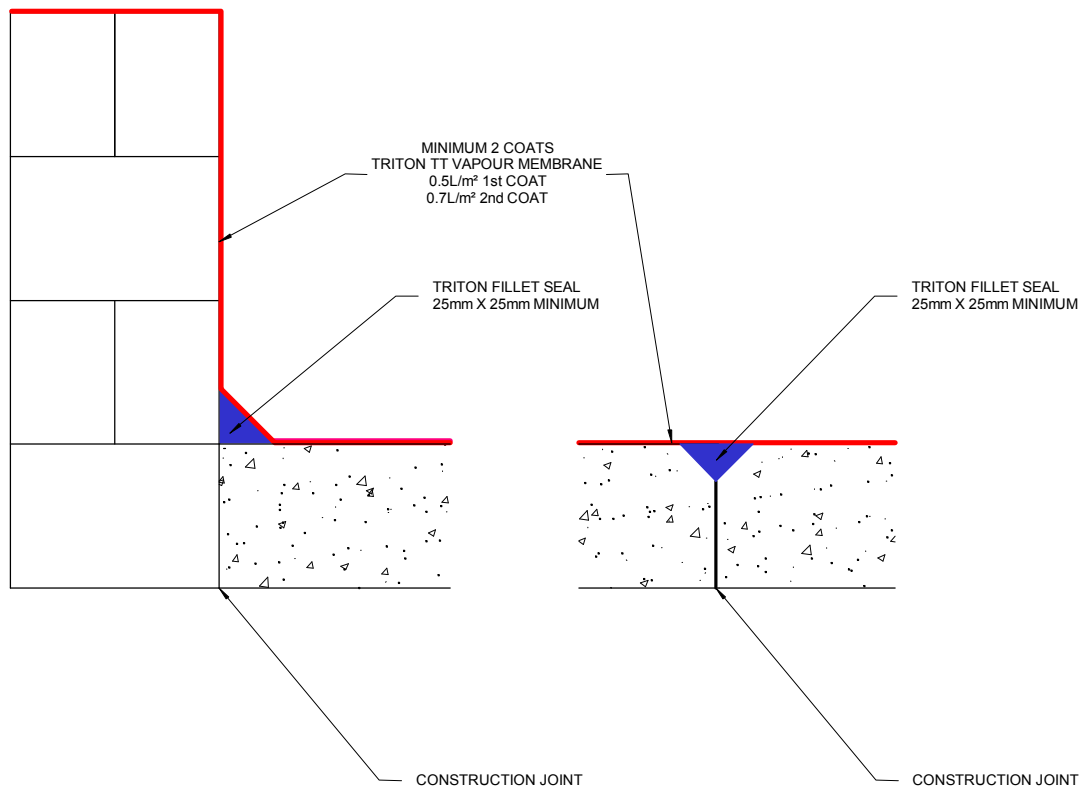
DRG. No.

GB 001.1

REV

2

DRAWN	JDF, CBS	System Files: GB001-1(2).pdf GB001-1(2).dwg
DATE	28th May 2009	
SCALE (A3)	Not To Scale	
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REV.	MOD. BY	DATE	CHK. BY	APP. BY
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Alterations

TITLE:

Triton TT Vapour Membrane Gas Barrier
Construction Joint Detail
(CO₂, Methane & Radon)

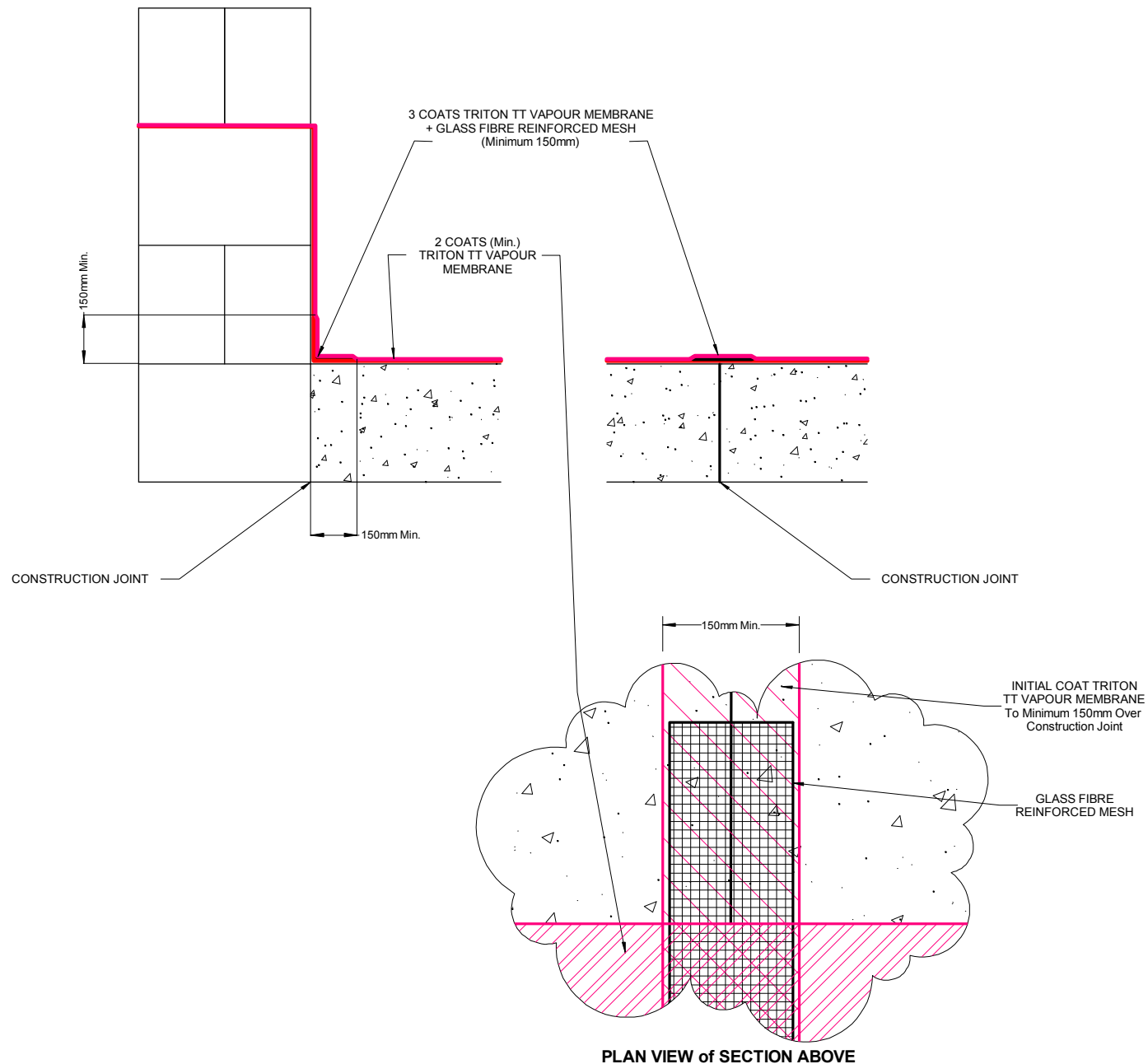
DRG. No.

GB 002.1

REV

2

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DATE	28th May 2009	
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REV.	MOD. BY	DATE	CHK. BY	APP. BY
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Alterations

TITLE:

Triton TT Vapour Membrane Gas Barrier
Construction Joint Detail 2
(CO₂, Methane & Radon)

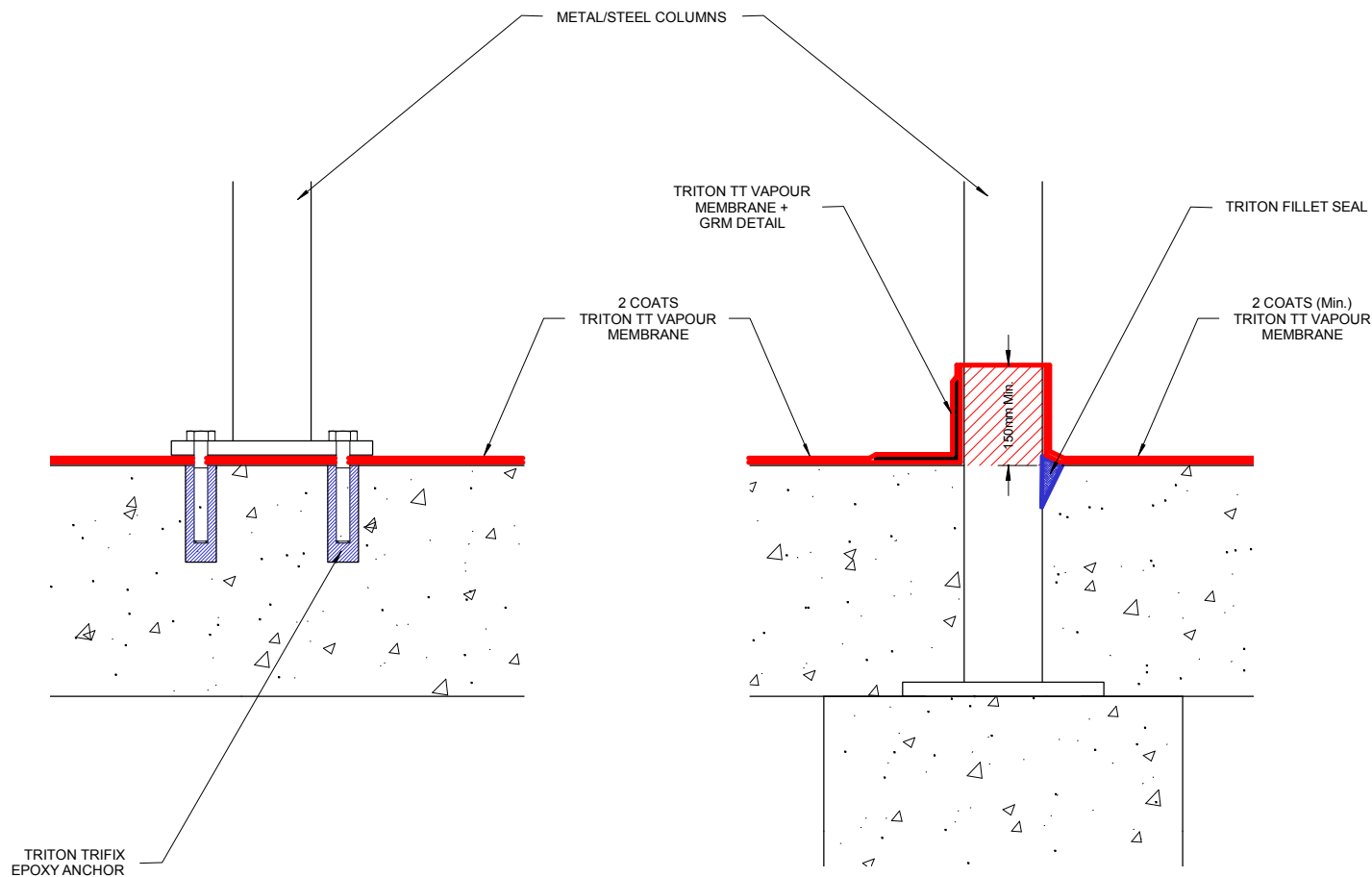
DRG. No.

GB 002.2

REV

2

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DATE	28th May 2009	
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NUMBER ABOVE.

REV.	MOD. BY	DATE	CHK. BY	APP. BY
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Alterations

TITLE:

Triton TT Vapour Membrane Gas Barrier
Penetrations/Column Details
(CO₂, Methane & Radon)

DRG. No.

GB 003.1

REV

2

DRAWN	JDF, CBS	System Files: GB003-1(2).pdf GB003-1(2).dwg
DATE	28th May 2009	
SCALE (A3)	Not To Scale	
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APPROVED		



Case Study

Triton supplied:

Triton TT Vapour Membrane, Triton Ground Gas Fan, Triton Fillet Seal, Triton Injection Mortar



The almshouses are situated just metres from a landfill site

TRITON GROUND GAS BARRIER SYSTEMS PROTECT ALMSHOUSES FROM LANDFILL GAS

Triton products, including liquid applied TT Vapour Membrane, were specified to form a ground gas barrier system in the redevelopment of listed almshouses, situated in close proximity to a landfill site. Externally, two coats of TT Vapour Membrane were applied to the entire wall area extending below internal floor level to the base of the wall/foundation level. Internally, two coats were applied to the new floor slab.

A perforated sub floor drain linked to Triton's Ground Gas Fan under the new slab (see diagram on next page).



Triton TT Vapour Membrane to external walls



Case Study

Triton Injection Mortar was used to provide a new damp proof course, as well as improving the impermeability of the wall to ground gas migration. (The mortar is designed to be a pore blocking damp proof course – unlike traditional Silicone resin systems which are pore lining types.) Triton Fillet Seal was installed to all wall floor junctions, prior to two coats of Triton TT Vapour membrane being applied to the entire floor area, returning up the walls to beyond the new damp proof course.

Triton TT Vapour Membrane is a ready blended coating that acts as a waterproof barrier against Radon, Methane and Carbon Dioxide. It can be retro-applied to concrete, masonry and brick substrates by airless spray, roller or brush to walls.

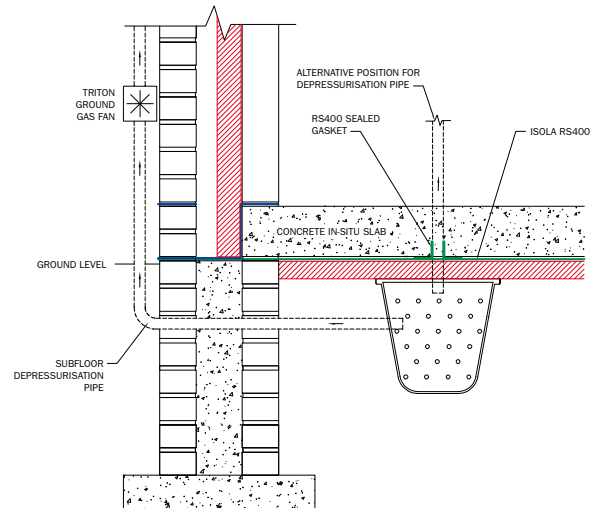
Read more about Triton's barrier systems for ground gases such as Radon and other contaminants at tritonsystems.co.uk

Triton approved contractor:

R. Liddiard, R Nicholas, Herefordshire

Telephone: 01981 250636

TYPICAL TRITON RADON SUMP/GROUND GAS FAN + RADON STOP 400 (RS400) DETAILING NEW BUILD



Triton Domestic Ground Gas Fan in situ

Triton Systems

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Crayford, Kent DA1 4HF

Tel: 01322 318830

Fax: 01322 524017

Email: info@tritonsystems.co.uk

www.tritonsystems.co.uk



Case Study

Triton supplied:

Triton TGS-GV25 Gas Venting Mat with Ground Level Gully Vent Boxes and Connectors, TGS-HP750 gas membrane and liquid applied Triton TT Vapour Membrane

GROUND GAS PROTECTION SYSTEM TO NEW BUILD PRIMARY SCHOOL

Triton Systems designed and supplied a ground gas protection system for a new build primary school site in Somerset, on instruction from engineers, Stride Treglown.

Certus Construction Ltd installed the system to protect the site from ground gasses on the contaminated, brown field site in accordance with BS8485, CIRIA 665, NHBC and the Local Authority Ground Gas Handbook.

The system comprised Triton's TGS-GV25, a 25mm thick, single sided geo-composite that provides a void beneath the floor slab and, when connected to the air venting system, allows sufficient air changes to dilute any gases present. The TGS-GV25 was installed in strips at 6 metre centres across the site and linked to ground level vent boxes before the installation of insulation and Triton's TGS-HP750 membrane as a gas and waterproofing barrier.

BBA approved TGS-HP750 is a high performance reinforced gas barrier, that incorporates a 12 micron aluminium foil layer, for maximum protection against ground gases. Due to its unique composition, the membrane is extremely robust and flexible and easy to install on site. As it also provides protection from damp when placed below the slab, there is no need to install a separate DPM.

The steel intense ring beam was treated with Triton's liquid applied TT Vapour Membrane, which is easily applied around awkward details, before the TGS-HP750 was sealed to it to create a fully sealed gas-proof and waterproof system.

Main Contractor:

Certus Construction Ltd
www.certusconstruction.co.uk

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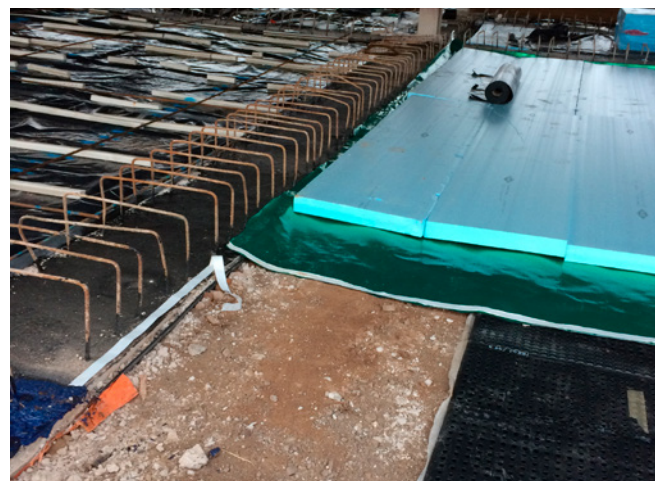
www.tritonsystems.co.uk



TGS-GV25 provides a void beneath floor slabs which, when connected to air inlets and outlets, allows sufficient air changes to dilute gases to safe concentrations



The steel intense ring beam was treated with Triton TT Vapour Membrane which easily copes around difficult details before the TGS-HP750 was sealed to it to create a fully sealed system



TGS-GV25 was installed at 6m centres across the site and linked to Ground Level Vent Boxes before insulation and then Triton TGS-HP750 as a gas and waterproofing membrane