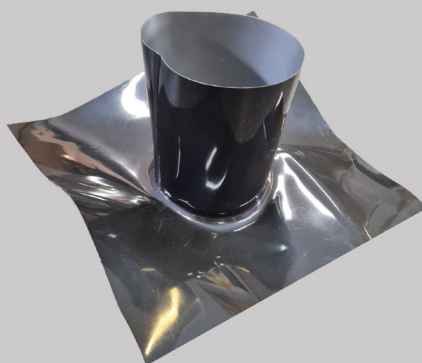


GROUND GAS  
MEMBRANES

## Ancillary Brochure



# CONTENTS

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# OVERVIEW

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The Ground Gas Membrane (GGM) protection range provides a comprehensive spectrum of gas protection products and ancillaries to protect buildings and structures from ground gases such as Radon, Methane Carbon Dioxide and VOC's conforming to the requirements of BS 8485:2015+A1:20019, for both above and below ground applications.

Toxic, asphyxiating or explosive gases can leak from the ground and accumulate in buildings, posing risk to health.

Our Ground Gas Membranes offer solutions to properties, construction sites and land which is affected by contamination. Our ground gas protection ventilation products are suitable for a variety of construction methods. Gas venting systems such as the Pro Void Vent 25 range will safely release harmful ground gases from beneath structures to the external atmosphere.

Design considerations to producing a robust ground gas protection system should incorporate the point scoring systems from BS8485:2015+A1:2019.

We endeavour to offer you everything you need to complete a safe and robust installation.

As every project is unique in terms of size, construction type and ground gas protection system. It is recommended that every design team incorporate a Ground Gas Protection System Design Specialist at the earliest phase of the project in order that an integrated solution is created.

Some below ground construction projects require protection from both water ingress and gas contamination. With innovations of new products, it's now possible to produce a waterproofing design which incorporates both a waterproof and gas proof protection system, however these types of projects require a different strategy and methodology to what would be classed as a typical waterproofing design.

Please consult our technical team for further information. A full range of data sheets and installation guides are available on all our products.



## BENEFITS OF THE VOID VENT

- Controls ground gases
- Tough, durable design
- Quick & easy application
- Exceptional chemical resistance
- Lightweight, flexible membrane
- High gas flow capacity
- Creates a de-pressurisation zone for collection of ground gases

# GROUND GAS MITIGATION

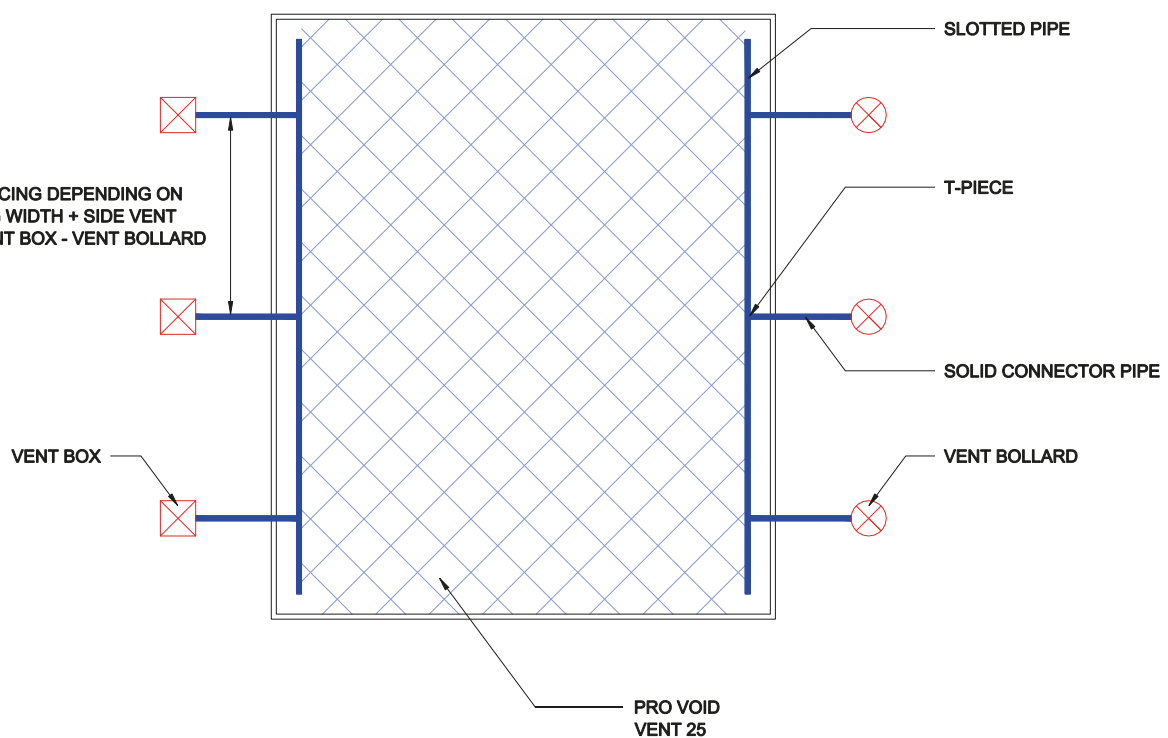
Gas protection is a technical solution to prevent or to control gas penetration into properties. The control of gas migration is normally achieved by blocking the pathway or removing the source of gas generation.

A passive ventilation system when connected to air inlets and outlets allows for passive venting solution to facilitate safe dilution and dispersal of dangerous ground gases allowing for maximum flexibility to design.

A Ground Gas Protection System Design Specialist will be able to interpret the requirements of BS8485:2015+A1:2019 to produce a design which incorporates a suitable gas protection system.

GGM Pro Void Vent 25 systems can be designed, supplied and installed by our highly skilled Registered Installers.

## Typical Void Vent Matt Layout - Option 1



# GROUND GAS MITIGATION

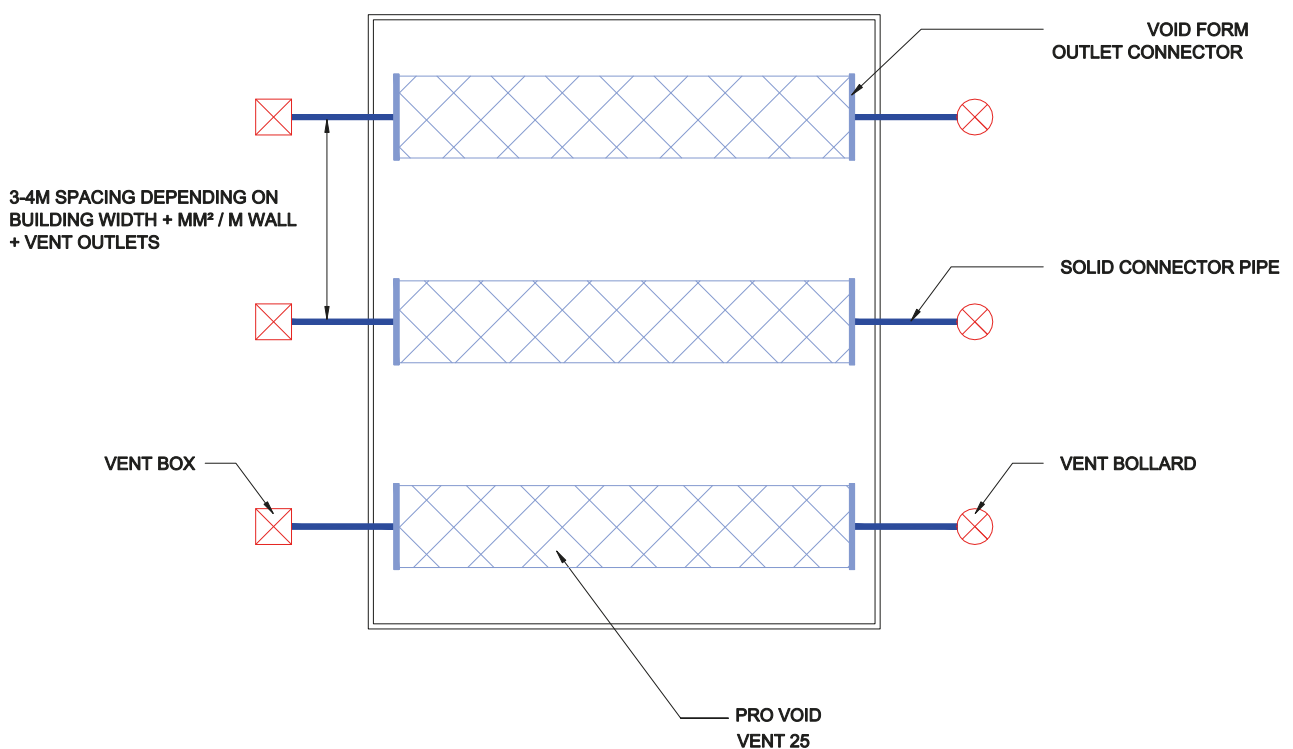
GGM Pro Void Vent 25 complies with the latest codes of practice (BRE, CIRIA and NHBC). Current guidance emphasises the importance of under slab ventilation systems to safely dilute and disperse dangerous ground gases.

If a site has been identified with a gas contamination it will have been given a Characteristic Situation Score. The Characteristic Situation Score is defined according to how severe the gas flow from the ground is.

All sites which have been characterised with a gas situation score will require a gas protection system and where identified an additional waterproof protection barrier.

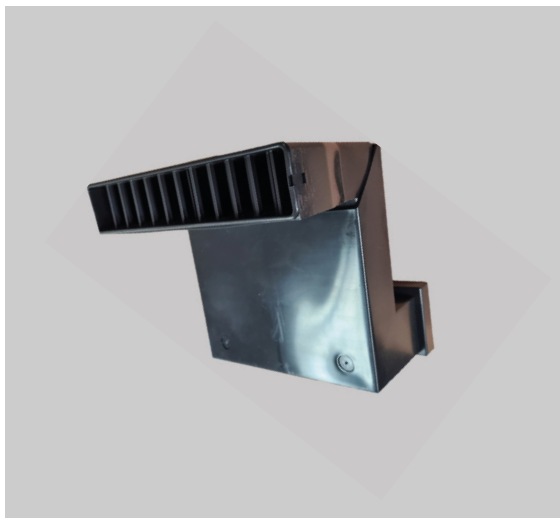
Ground gas protection systems can be installed standalone or combined with a waterproofing system when a twin system is required, this rapid cost-effective installation is compatible with all types of construction.

## Typical Void Vent Layout - Option 2



# SYSTEM COMPONENTS

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## ADJUSTABLE PERISCOPE VENT

Product Code: DMS432

Ground Gas Membrane's Adjustable Periscope Vent is designed to provide a clear airflow passage to a void beneath block and beam and timber floors. The adjustable periscope vent allows for adjustment between brick courses.

Periscope vent when used as part of a ventilation system prevents the build-up of dangerous gasses and condensation below a structure. 9 x 3 inches airbrick attached to vent equates ventilation space of approx 6,000 mm<sup>2</sup>.

A typical detail showing how the Adjustable Periscope Vent fits to the Void Vent 25 mat and external venting system can be found on page 12.

## RECTANGULAR VENT UNIT

Product Code: DMS421

Ground Gas Membrane's Rectangular Vent is a strong, robust vent suitable for use with gas ventilation systems. This multipurpose vent allows gas and unwanted odours to be released into the external atmosphere.

A typical detail showing how the Rectangular Vent Box fits to the Void Vent 25 mat and external venting system can be found on page 13.



## VENT MAT TEE CONNECTOR

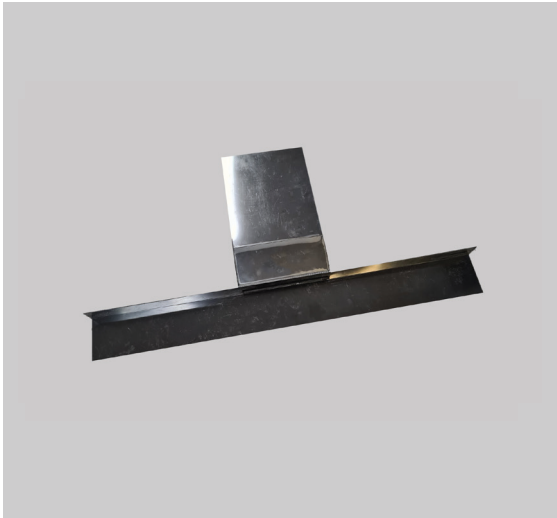
Product Code: DMS430

Ground Gas Membrane's Vent Mat Tee Connector, also known as a T Fitting, enables connection of Void Vent 25 mat to ventilation ducting. This Mat Tee Connector has a characteristic 'T' shape with outputs at 90 degree angles.



# SYSTEM COMPONENTS

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## VENT MAT CONNECTOR

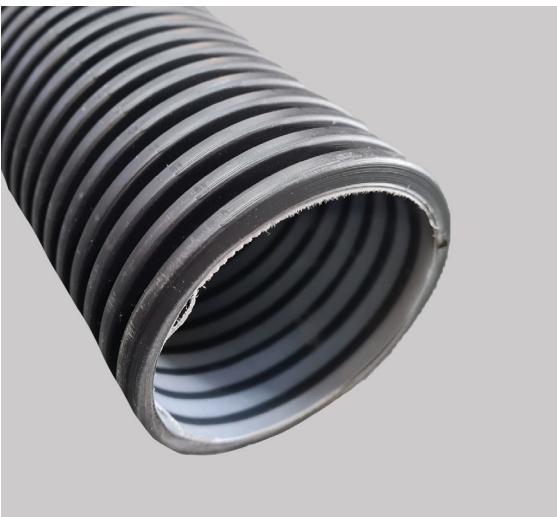
Product Code: DMS428

The Vent Mat Connector is specifically designed to be used to connect the Pro Void Vent mat with the Adjustable Periscope Vent.

## GAS VENT MAT CONNECTOR

Product Code: DMS431

The Gas Vent Mat Connector is specifically designed to be used to connect the Pro Void Vent mat with the 100mm circular outlet enabling connection via 100mm solid pipe to vent box, vent bollard and/or vent gully.



## SOLID PIPE CONNECTOR

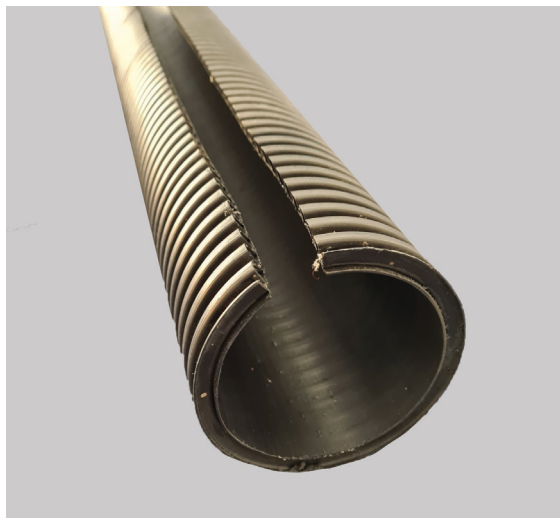
Product Code: DMS436

Solid Pipe Connector is a strong, robust pipe, with a ribbed outer layer. The ribbed outer layer highly increases the Solid Pipes strength, enabling the pipe to withstand larger forces.

A typical detail showing how the Solid Pipe Connector fits to the Void Vent 25 mat and external venting system can be found on page 12 & 13.

# SYSTEM COMPONENTS

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## SLOTTED CARRIER PIPE

Product Code: DMS427

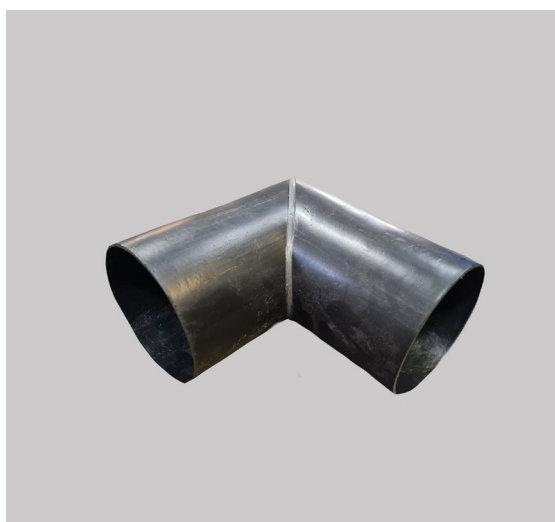
The 100mm Slotted Carrier Pipe has a 25mm slot cut along its length to accommodate the Void Vent Mat. The Void Vent Mat can easily be fitted into the slot which allows the Void Vent Mat to cover the entire footprint of the structure. Collecting the ground gas from the vent mat enabling simple connection via 100mm solid pipe to external vent bollard/box/gully.

A typical detail showing how the Slotted Carrier Pipe Connector fits to the Void Vent 25 mat and external venting system can be found on page 4.

## 90 DEGREE BEND

Product Code: DMS424

The 90-degree bend enables two sections of 100mm solid pipe where changes of direction are required. This 90-degree bend is suitable to fit on both internal and external corner sections.



## END CAP

Product Code: DMS426

The End Cap can be fitted to the end of a Solid 100mm Pipe, the 100mm Slotted Pipe and also the 100mm Vent Mat Tee Connector. The End Cap creates a dead end for the flow of ground gas.





# SYSTEM COMPONENTS

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## PIPE COUPLING

Product Code: DMS425

The Pipe Coupling enables simple connection of varying lengths of 100mm pipe.

A typical detail showing how the Pipe Coupling works with the venting system can be found on page 12 & 13.

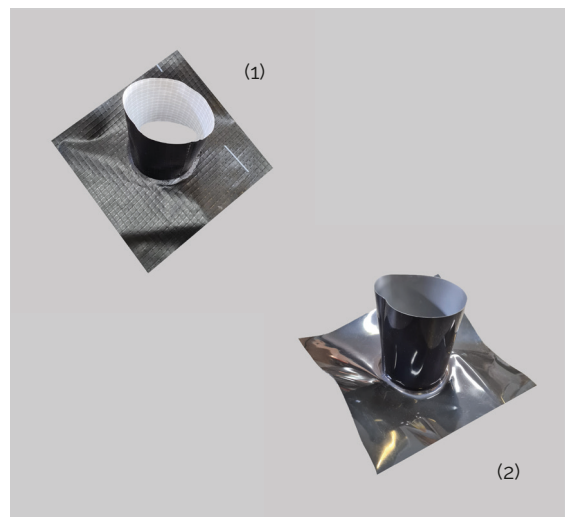
## 110MM PIPE SLEEVE

Product Code: DMS444

The pre-formed Pipe Sleeve 110mm is commonly known as a 'top hat' and are designed to offer a professional gas resistant solution for sealing ground gas membranes around service penetrations.

Images show M1 membrane (1) and Tital VOC (2) which are suitable to varying ground gas requirements.

Available in alternative sizes to suit. Please contact Delta on 01992 523 523.



## CIRCULAR VENT - ALLOY GRILL

Product Code: DMS422

The Circular Vent - Alloy Grill is an alternative to the Rectangular Vent.

Ground Gas Membrane's Circular Vent - Alloy Grill is a strong, robust vent suitable for use with gas ventilation systems. This multipurpose vent allows gas and unwanted odours to be released into the external atmosphere.

A typical detail showing how the Circular Vent fits to the Void Vent 25 mat and external venting system can be found on page 13.

# SYSTEM COMPONENTS

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## VENT BOLLARD

Product Code: DMS435

Ground Gas Membrane's Vent Bollard offers an alternative method of ground gas venting to the Vent Box/Circular Vent Gully.

The Vent Bollard provides an efficient and economical method for venting ground gases from Vent Mat Systems. For projects where alternative venting methods are required or if there is a higher level of free air flow required.

A typical detail showing how the Rectangular Vent Box fits to the Void Vent 25 mat and external venting system can be found on page 4, 5 & 13.

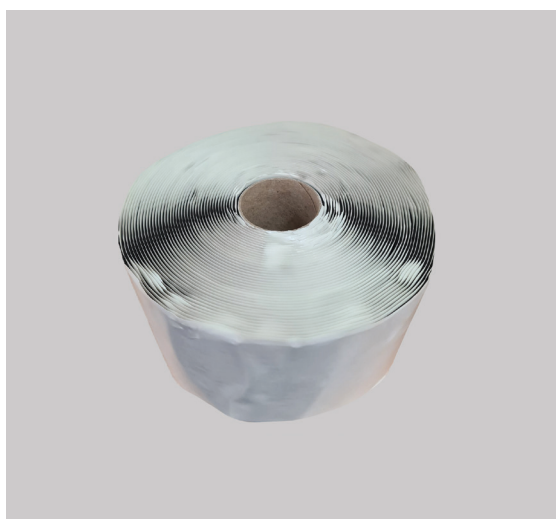
## PRO TITAN TAPE 100MM X 15M

Product Code: DMS439

A highly flexible, double sided butyl tape, produced for jointing Pro Titan Barriers.

Pro Titan Tape is designed with a layer of release film on both sides to assist ease during installation. This multipurpose tape prevents water, water vapor, air and gas when used in conjunction with gas barrier, vapor control layers and damp proof membranes.

The tapes flexible composition enables installation on irregular surfaces accurately with little to no waste. Pro Titan Tape has the capability to adhere to all our gas barriers and an extensive variety of substrates.



## GAS OVER TAPE 150 150MM X 30M

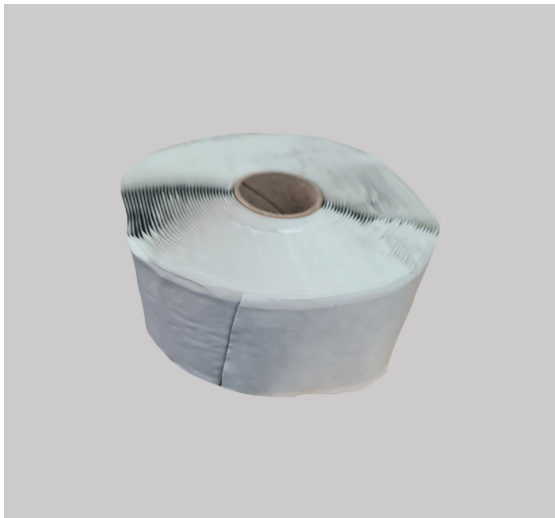
Product Code: DMS412

Gas Over Tape 150 is a durable butyl single sided tape. Gas Over Tape is designed with an aluminium foil backing. This unique foil provides a secondary seal to Ground Gas Membrane joints and for detailing around service penetrations.



# SYSTEM COMPONENTS

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## GAS TAPE 50 50MM X 10M

Product Code: DMS411

Gas Tape 50 is a specialist butyl double sided sealing tape. This strong and durable tape is ideal for sealing between over lapping sheets of gas membrane.

## DETAILING STRIP 300MM X 20M

Product Code: DMS413

Detailing Strip is a superior 300mm wide, self-adhesive gas membrane designed specifically to aid detailing and sealing around pipe penetrations and internal and external corners. Detailing Strip can also be used for repairing tears and other damage to ground gas membranes.



## RADON ACCESSORIES

Product Code:

Radon Sump: DMS045

Radon Mitigation Fan: DMS700/DMS701

(1) **Radon Sump:** Radon (incl. Rn-222, Rn-220, RnD) is a naturally occurring radioactive gas which enters buildings from the underlying soil. The provision of a suitable protection system, designed and installed by competent personnel will substantially reduce the risk of a building having radon activity above a safe level.

(2) **Radon Mitigation Fan:** Specifically designed for radon mitigation. RPi Series Fans provide superb performance, run ultra-quiet and are attractive. They are ideal for most sub-slab radon mitigation systems. DMS700 - RP145i, DMS701 - RP265i.

# VOID FORM CONNECTORS

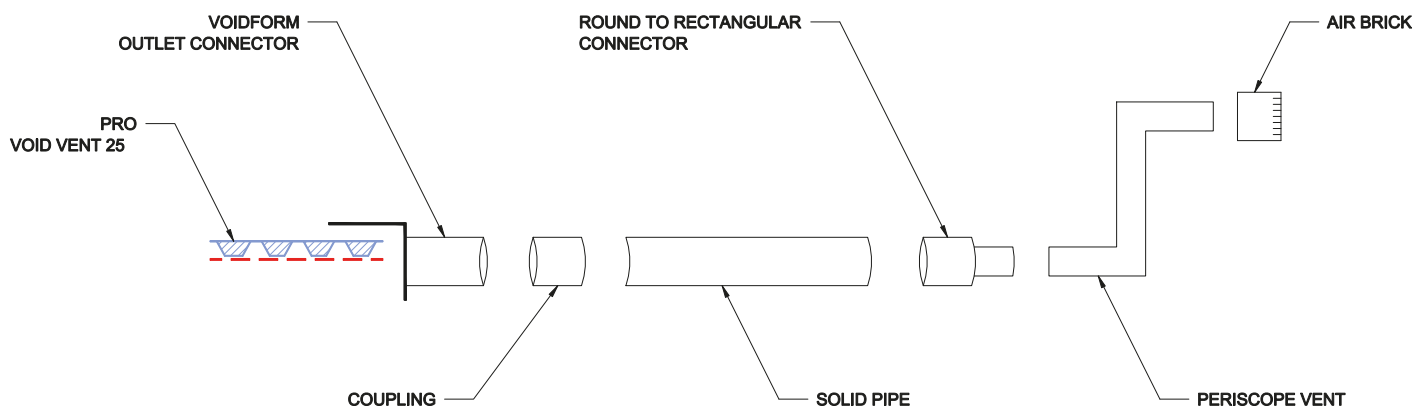
GGM Voidform Outlet Connectors are a strong, secure connectors for the Pro Void Vent system. Void Form Connectors are designed to connect the Pro Void Vent 25 membrane to outlets such as bollards or vents.

The function of a venting system is to carry harmful ground gases efficiently, safely and quickly from beneath a structure and dispersal of these gases into the atmosphere.

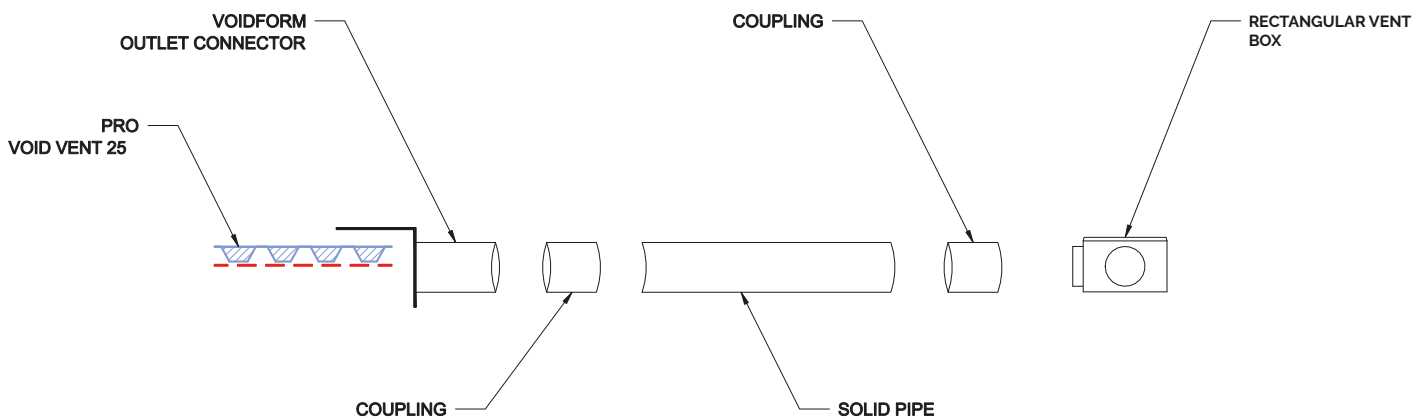
Void Vent outlet connectors are an integral part of any ventilation system. The type of venting outlet and fittings to disperse gases is dependent on the structure type and the level of gas flow found at the site.

Pro Void Vent 25 is engineered for the geotextile filter side to connect with the ground. Pro Void Vent is laid on a sand or concrete blinding layer under the ground floor slab below the gas barrier membrane to provide passive ventilation in accordance with BS8485:2015+A1:2019. Pro Void Vent can be laid in strips at 6m centres or across the entire footprint of the building depending on CS classification and dimensions of the building to provide the appropriate level of ventilation in accordance with BS8485:2015+A1:2019.

## Ground Gas Sub Floor Ventilation - Option 1



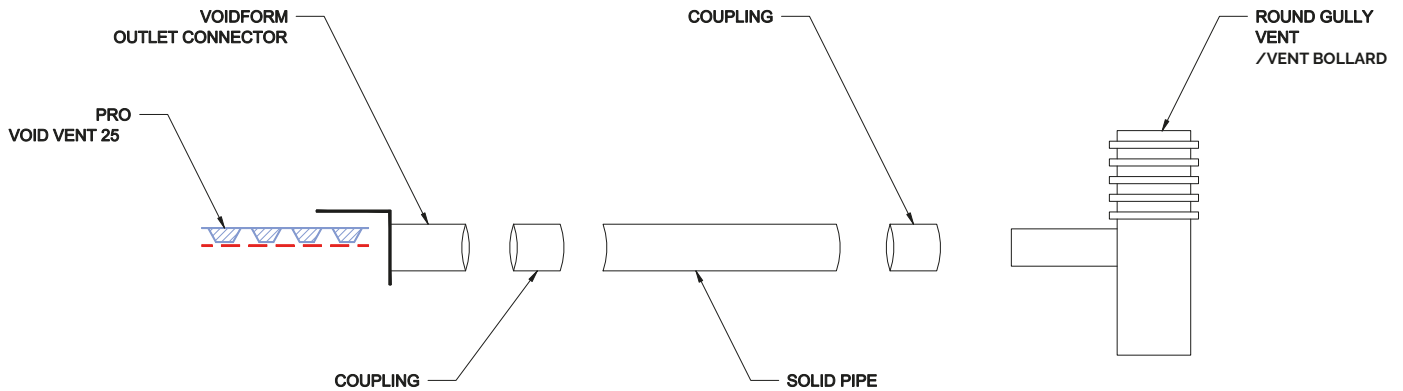
## Ground Gas Sub Floor Ventilation - Option 2



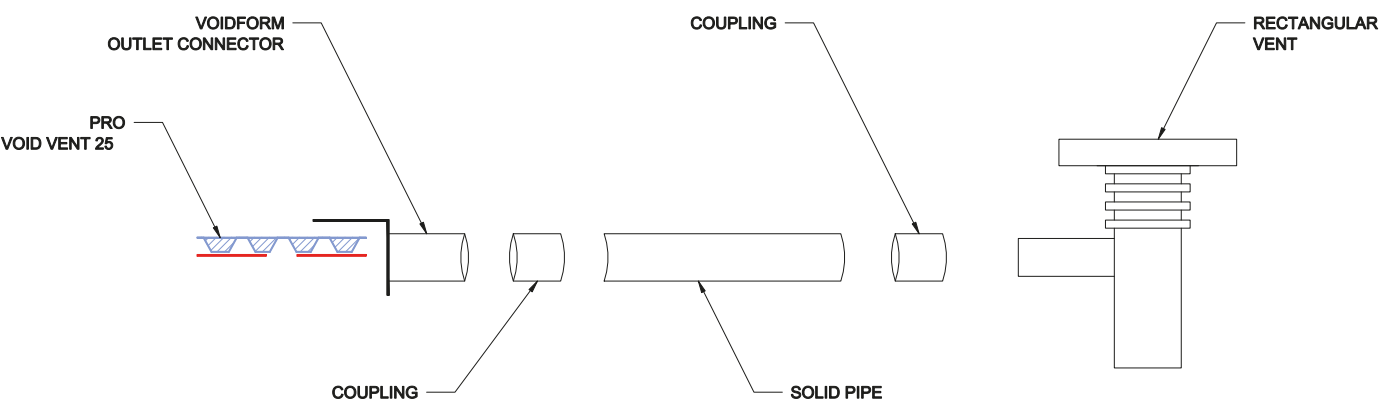
# VOID FORM CONNECTORS

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## Ground Gas Sub Floor Ventilation - Option 3

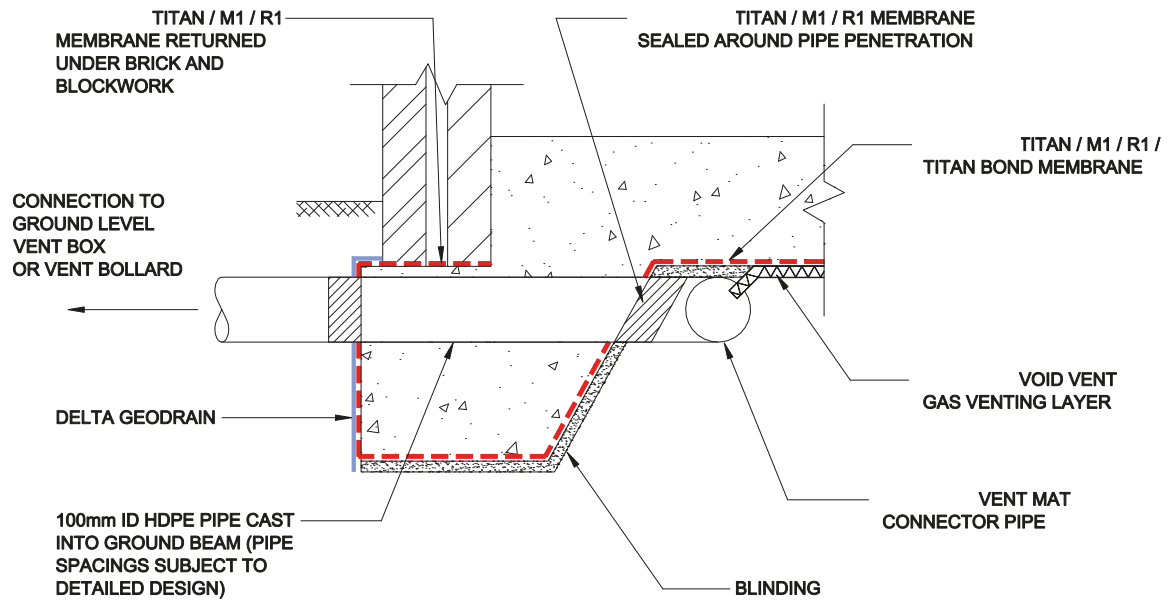


## Ground Gas Sub Floor Ventilation - Option 4

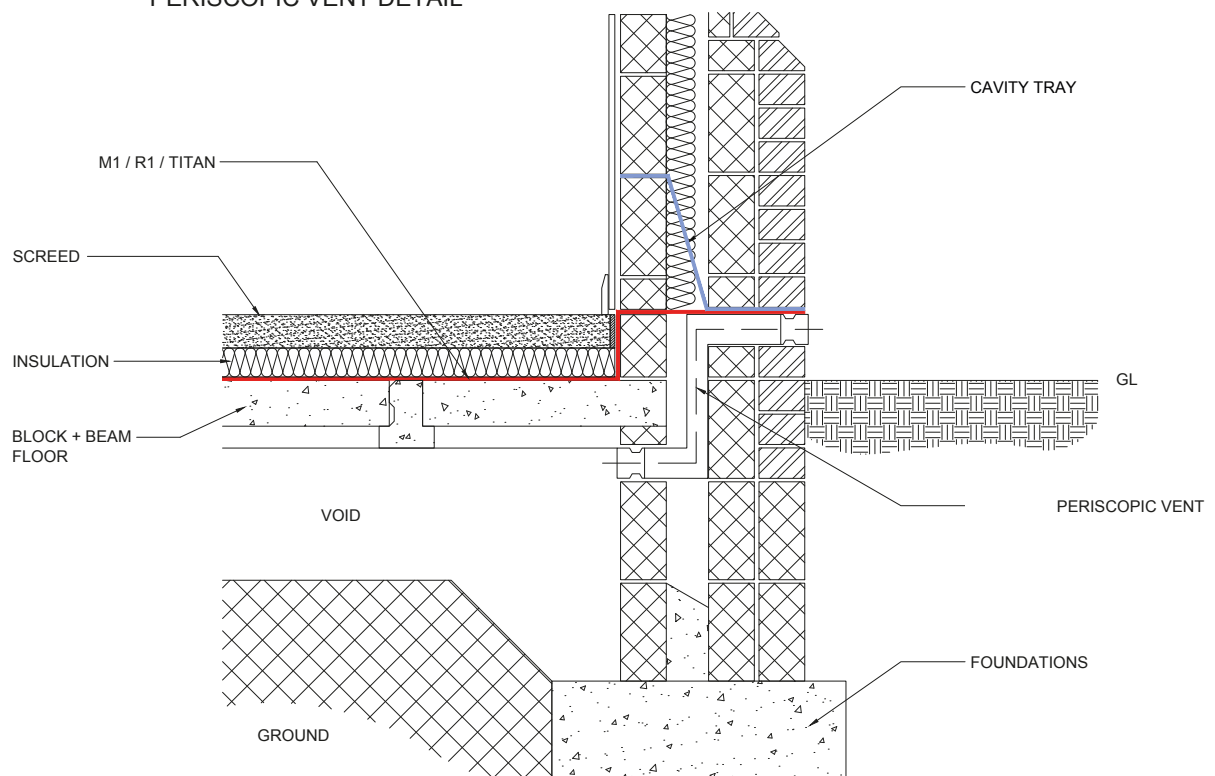


# TECHNICAL DRAWINGS

## TYPICAL PERIMETER SECTION 2

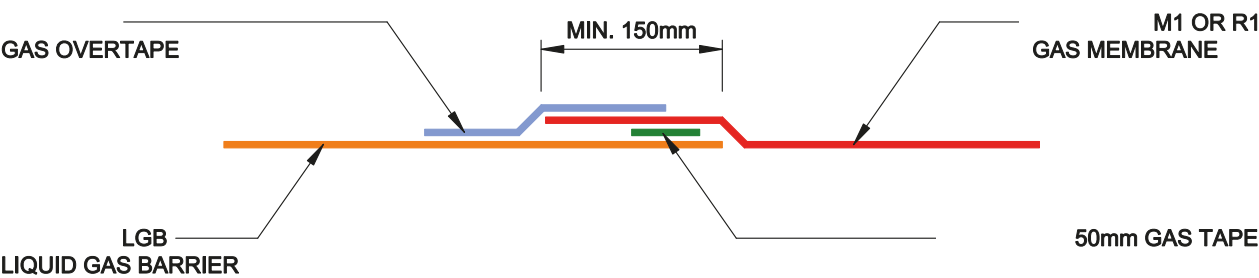
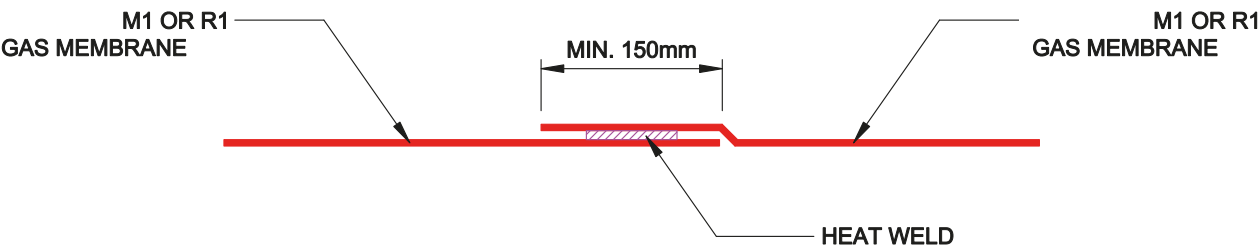
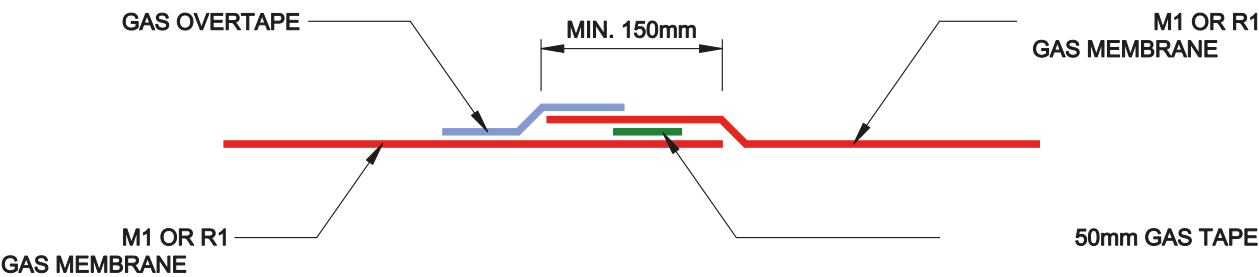


## PERISCOPIC VENT DETAIL



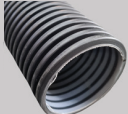

# TECHNICAL DRAWINGS

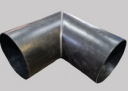


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# PRODUCT IMAGES

Mat Connectors	
	Adjustable Periscope Vent
	DMS432
	Rectangular Vent Unit - Stainless Steel Grill
	DMS421
	Vent Mat Tee Connector - Smooth Pipe
	DMS430
	Vent Mat Connector to Periscope Vent
	DMS428
	Gas Vent Mat Connector to Pipe
	DMS431

Pipes	
	Solid Connector Pipe
	DMS436
	Slotted Carrier Pipe
	DMS427

Couplings	
	90 Degree Bend
	DMS424
	End Cap
	DMS426
	Pipe Coupling
	DMS425

110mm Sleeves	
	VOC Pipe Sleeve 110mm
	DMS444
	110mm Pipe Sleeve - Top Hat
	DMS444

Vent Boxes	
	Circular Vent - Alloy Grill
	DMS422
	Vent Bollard
	DMS435

Tapes	
	Pro Titan Tape 100mm x 15m
	DMS439
	Gas Over Tape 150 150mm x 30m
	DMS412
	Gas Tape 50 50mm x 10m
	DMS411
	Detailing Strip - Tape 300mm x 20m
	DMS413

Radon Accessories	
	Radon Sump
	DMS045
	Radon Fan
	DMS700 & DMS701



# GROUND GASES EXPLAINED



## HYDROCARBONS

Hydrocarbons derive from the petrol chemistry industry and are highly toxic. The majority of Hydrocarbons have the potential to cause cancer.

## METHANE

An odourless flammable gas that is explosive when released into the atmosphere at levels as low as 5% and exposed to a source of ignition. Methane is formed where there is below ground degradation of organic substances e.g. landfill sites, sewage treatment areas, mining operations and peat bogs.

## CARBON DIOXIDE

Carbon Dioxide is a odourless and colourless toxic gas. In high concentrations can result in asphyxiation. The gas is formed by the oxidation of carbon compounds such as those which occur in landfill sites. When Carbon Dioxide levels reach a concentration of 3%, symptoms of headaches and shortness of breath will occur, becoming severe at 5% between 7-10% will cause suffocation.

## RADON

Radon occurs naturally in the environment, this radioactive gas is, colourless, odourless and tasteless. Radon can migrate into any building that is built over a source. If it accumulates in a building, it increases the risk of lung cancer for occupants. Radon is the cause of 15% of lung cancers worldwide (World Health Organisation 'WHO' 2009).

## VOLATILE ORGANIC COMPOUNDS (VOCs)

Volatile Organic Compounds (VOCs) are organic compounds that easily volatilise under normal atmospheric conditions/environments to become vapours or gases. Along with carbon, they contain elements such as hydrogen, oxygen, fluorine, chlorine, bromine, sulphur or nitrogen. Typical VOCs encountered on brownfield and industrial sites include: Petroleum, benzene, toluene, butylbenzenes, chlorinated ethenes, Nitrogen, sulphur and tetrahydrofuran. VOCs in the air react with oxides of nitrogen in the presence of sunlight to form ozone.