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Mr L Galtress
Miller Homes
Peel Avenue
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Wakefield
West Yorkshire
WF2 7UA

Date: 31st March 2026
Our Ref: C10281A/JF/11185

Dear Lewis

GROUND GAS STRATEGY & VERIFICATION PLAN – HERMITAGE PARK, LEPTON

INTRODUCTION

Further to our previous discussions we are pleased to present our proposed Ground Gas Strategy and Ground Gas Protection Verification Plan for your site at land off Hermitage Park, Lepton.

It is understood that the proposed development consists of a total of 80 no. low rise residential properties with private gardens, plus associated access roads, parking and landscaped open space areas as shown in JRP Associates Site Layout Drawing No. 22:5611:01/C last dated November 2024 and included in Attachment A.

This Ground Gas Strategy and Ground Gas Protection Verification Plan has been formulated based on the information which has been provided to Sirius Geotechnical Ltd (SGL) by Miller Homes (Miller), at the time of writing.

The site has been subject to several investigations and assessments by Betts Geo Environmental (Betts), FWS Consultants (FWS) and SGL between 2020 and 2025, which include the following reports:

- Phase I – Desk Study Report for Land off Rowley Lane, Lepton, compiled by Betts (Ref. 20FRT010/DS, dated October 2020).
- Phase II – Ground Investigation for Residential Development on Land at Rowley Lane, compiled by RWS (Ref. 3959OR01Rev03, dated January 2024).
- Phase II – Supplementary Geoenvironmental Appraisal Report, Land off Hermitage Park, Lepton, compiled by SGL (Ref. C10281, dated December 2024).



- Gas Risk Assessment Letter Report, Hermitage Park, Lepton, compiled by SGL (Ref. C10281/GLH/10855, dated 11th April 2025).
- Earthworks Specification for Land off Hermitage Park, Lepton, compiled by SRL (Ref. C10281/ES, dated May 2025).

This Ground Gas Strategy and Ground Gas Protection Verification Plan should be read in conjunction with the above listed reports which present in detail the conceptual ground model for the site and an assessment of the risk posed by hazardous ground gases to the proposed development.

Based upon the gas monitoring completed by FWS and SGL the site was classified as “Characteristic Situation 1 – CS1”, which “no special precautions” are required. However the CL: AIRE (2021) guidance for sites affected by mine gas, such as this, states that the empirical methods of calculating gas risks from recorded gas concentrations and flow rates given in BS8485 are intended for gas migration through soils, and not for mines gas migration through discontinuities and artificial pathways (e.g., mine entries, faults, fissures and unsealed boreholes) in rock. Figure 13.1 from the above guidance identifies the site as a ‘High Risk Zone’ when regarding mine gas.

On the basis of the findings within the FWS and SGL investigations, as well as the CL:AIRE guidance on mine gas risk, SGL concluded that the ground gas regime at the site be classified as “**Characteristic Situation 2 – CS2**”, which require “**special precautions**”, as defined within BS8485:2015+A1:2019 “*Code of Practice for the Design of Protective Measures for Methane and Carbon Dioxide Ground Gases for New Buildings*” (hereafter, “BS8485”).

Radon protection measures are not required by current guidance for the proposed development on this site.

This letter presents design details of the components of the proposed ground gas protection measures to be installed at the site (as provided by Miller) along with details of how the installation of these measures will be verified in order to ensure a sufficient level of protection is afforded against ingress of ground gases, commensurate with **CS2 conditions**.

SITE SPECIFIC REQUIREMENTS

In preparing the following recommendations for verification of the successful implementation of the gas protection measures, reference has been made where appropriate to CIRIA report C735, “*Good practice on the testing and verification of protection systems for buildings against hazardous ground gases*” (August 2014), YALPAG document “*Verification requirements for gas protection systems*”, Version 1.1 (December 2016) and the NHBC documents “*Technical Extra*” Issue 20 (April 2016) and “*NF94 Hazardous Ground Gas – An Essential Guide for Housebuilders*” (April 2023).

In summary, the factors relevant to establishing an appropriate Ground Gas Strategy and Ground Gas Protection Verification Plan are considered to be:

- The site is located is a “High Risk Zone” with regard to mine gas, as outlined in CL:AIRE (2021).
- The overall hazard potential related to hazardous ground gas at the site is considered to be “Low”, as described in BS8485 for **CS2 conditions**.
- The primary risk driver has been identified as elevated concentrations of carbon dioxide and lower than atmospheric levels of oxygen, associated with possible shallow mine gas migrating via fractured bedrock to shallow depths.
- Radon protection measures are not required by current guidance for the proposed development on this site.

- The proposed development by Miller comprises 80 residential dwellings, as shown in JRP Associates Site Layout Drawing No. 22:5611:01/C last dated November 2024 and included in Attachment A.
- Buildings will comprise conventional residential detached, semi-detached and terrace (maximum of three) properties (consistent with Type A development as described in BS8485 Table 3).
- Miller has informed SGL that the plots will comprise a minimum 250mm ventilated sub-floor void and, beam and block floor (consistent with Situation B as referenced in C735 and YALPAG guidance).
- Internal plot layouts will be simple.
- The development includes integral/attached garages which form habitable parts of the dwellings and therefore require ground gas protection measures to be installed. Detached garages will not have gas protection measures installed.
- Plots are of masonry construction (i.e. not timber frame).
- Miller have instructed Omega Lining Solutions (Omega) to install the gas membranes. Omega hold the Gas Membrane Installer 2 NVQ Diploma and are therefore considered a specialist installer. A copy of the installer certificates is provided in Attachment D.

DESIGN OF THE GROUND GAS PROTECTION MEASURES

SGL understands that the gas protection system has been designed by Miller Homes as shown on their Drawings No. FF-GD-EN-JF002 rev D, FF-GD-EN-JF-004, FF-GD-EN-JF-005, FF-GD-EN-JF-007 rev B, FF-GD-EN-JF-010 rev C and FF-GD-EN-JF012 rev D included in Attachment A of this letter report. Measures to be employed to achieve the required **3.5 points** will consist of:

- A beam and block floor which achieves **0 points**.
- Provision of passive sub-floor void achieving at least 'very good performance' in general accordance with Appendix B.6 of BS8485 which achieves **2.5 points**.
- Installation of suitable gas resistant membrane above the beam and block floor slab, in accordance with Table 7 of BS8485 which achieves **2 points**.

Together therefore, these elements would achieve a protection score of **4.5 points, which is above the required 3.5 points**.

SUB-FLOOR VENTILATION

Miller have indicated that all dwellings are to be constructed on strip/trench fill foundations, with suspended block and beam floor slab and passively vented sub-floor void as follows:

- A 250mm deep open void.
- The ventilation layout plans provided by Miller state that the void will be vented via Rytons periscopic underfloor ventilators to air bricks which should provide (the greater of) either 1500mm² of free area per metre run of external wall or 500mm² free area of floor area. Ventilators are shown to be positioned on two opposing sides on all house types.
- Sleeper walls will be cross-vented via 100mm pipe on required plots.
- All air bricks (providing 7,750mm² vent area as per the Rytons product description enclosed in Attachment B) to terminate a minimum of 250mm above finished external ground levels.

Ventilation layout drawings as provided by Miller are included in Attachment A. These show the location of the air bricks for each house type, along with the location of any sleeper wall (pipe) ventilators.

An independent verifier (to be confirmed) will inspect the depth of the sub-floor void (with scale ruler), sleeper wall ventilators and telescopic vents/air bricks, either by direct inspection or inspection of a clear photographic record provided by Miller or their chosen contractor.

GAS RESISTANT MEMBRANE SELECTION

The gas resistant membrane will be constructed on top of the beam and block floor slab, which will be swept in advance to ensure removal of any loose debris, which may lead to the membrane becoming punctured if not removed. Any open voids should be filled and smoothed before installation of gas resistant membrane.

The gas resistant membrane will be continuous across the full extent of the floor slab, and seal all internal, external and party walls, as well as being sealed around all service entries, corners and door/garage thresholds.

It is understood that the membrane to be installed on site will be the JUTA GP1 and associate ancillary products, including Self Adhesive Membrane (SAM).

Membrane joints are to be lapped and heat welded, with corners, edge details and service penetrations completed using an ancillary Self Adhesive Membrane (SAM) applied using heat and pressure to ensure a good seal as necessary.

Following verification of the gas protection measures i.e. sub floor void and membrane (see Verification Programme below) the gas resistant membrane will be protected from damage from follow on trades. The protection will comprise of insulation prior to pouring of the screed, to be placed promptly after verification (i.e. within the 24hrs), as shown on the Miller detail drawings enclosed in Attachment A.

In integral garages/attached garages where the screed will be placed directly over the gas resistant membrane consideration should be given to the protection of the membrane via a fleece or that any defects, specifically the exposure of aluminium foil from heat welding, is repaired using the SAM product to ensure that there is no risk from corrosion from direct contact with the screed.

The specification for these products is provided in Attachment B and adhere to the requirements outlined Table 7 in BS8485.

If an alternative membrane and/or ancillary products to the above is intended to be used, details of the specific alternative membrane and/or ancillary products intended to be used shall be provided to the verifier, by the installer, in advance of any use of the product. The independent verifier shall satisfy themselves that the alternative product(s) are suitable and are in line with the requirements of Table 7 BS8485 and shall confirm or otherwise to the installer before the product is used.

The independent verifier will complete independent verifications of the membrane installation at the required frequency (see Verification Programme below), which will include a photographic record and "sign off" sheets. Those plots not independently inspected by the verifier will be inspected by site manager with CQA sheets and photographic evidence provided of the installed gas membrane (including service entries, corners, seams, and joints) for each plot and supplied to the independent verifier.

SERVICE PENETRATIONS

Where membrane penetrations are formed using oversized formers or ducts (typically used where fresh water supply enters the property), then additional sealing of the internal void space ('annulus') between the duct and supply pipe must be carried out to ensure an airtight seal, using a pre-approved sealing system. *This element of the installation is not usually provided by the membrane installer and the party responsible for this element will need to be agreed and confirmed prior to verification works commencing.*

Published guidance on managing this penetration of the membrane is limited, although CIRIA C665 recommends the use of expanding foam or similar product be used to seal these penetrations.

Miller have confirmed that the internal void space around the water annulus will be sealed with a DuctSeal/FiloSeal, fitted by the contractor when the services have been installed. These products are considered suitable for their intended use.

This element of the construction is critical to the functioning of the gas protection system and a record of its completion, preferably a photographic record, will be required to be provided by Miller for every plot in addition to independent inspections at the same frequency as required for installed membranes and as detailed below.

INSTALLATION DETAILS

It is understood that Miller intends to use a non-specialist, although experienced, subcontract workforce for the construction of the substructure to the properties, including preparation of the minimum 250mm sub-floor void with beam and block floor slab and provision of periscopic air vents and the installation of ventilators to sleeper walls.

Miller have instructed Omega to install the gas membrane. Omega do hold the Gas Membrane Installer 2 NVQ Diploma and are therefore considered a specialist installer. The certificates of the installer qualifications are provided in Attachment D of this letter report.

Notwithstanding the qualifications of the workforce, the 250mm sub-floor void with beam and block floor slab and gas resistant membrane, all system components shall be installed / sealed in accordance with the appended drawings and with the manufacturers' Agrément Certificate(s). If there are any changes to the design, installer and/or materials being used this will be stated within any future documentation/reporting.

It is understood from Miller Homes detail drawings that the plots will be of masonry construction. However, in the event a timber frame construction is adopted for plots within the site, there is a requirement to seal beneath the soleplate of the timber frame system with double sided self-sealing bitumen tape in order to maintain the integrity of the ground gas protection system, by creating a gasket sealant detail. This element of the works would also need to be verified as part of the ground gas protection system.

Any repairs to damage caused to the membrane during or post installation shall also be carried out in accordance with these documents and be appropriately recorded, including photographs.

VERIFICATION PROGRAMME

On the basis of the preceding site characterisation and installation details known to date, it is considered that the following verification strategy is appropriate for installation of the proposed gas protection measures:

- Details of proposed materials and construction method shall be submitted to and agreed with the independent verifier and Local Authority prior to construction (this document), and warranty provider if required.
- A pre-construction briefing shall be given by the independent verifier to Miller and **ALL** of their appointed contractors having any involvement in the construction of the gas protection measures (including the sub-floor void with beam and block floor slab, and the personnel installing the DuctSeal/FiloSeal to the water annulus) detailing the requirements and purpose of the gas protection system and verification strategy. This shall include confirmation that the contractor(s) are familiar with the gas membrane materials and the appropriate uses of the various products.
- All site personnel will be made aware by Miller of the presence of the membrane and the importance of preventing damage post installation, particularly in the instance of any follow-on trades that may come into contact with the membrane. The independent verifier shall discuss strategies with Miller and their appointed installer to ensure prevention of damage subsequent to installation. Details will be communicated by Miller to any site personnel not present at the pre-construction briefing as a toolbox talk by the site manager as and when required during construction. This is in order to reduce the potential for accidental damage to the installed membrane by follow-on trades.
- Copies of delivery notes and packaging of the proposed materials shall be retained on site by the site manager for review by the independent verifier, and inclusion in the verification report where possible.
- Visual and 'pick test' inspection of gas protection measures, to be conducted as follows:
Experienced & Qualified NVQ 2 installer: The verifier will conduct independent inspections of the gas protection measures on the first batch of plots (minimum of 5) and subsequent inspections at a frequency of 1 in every 10 plots.
 All other installed membranes (not independently inspected) will be inspected by the site manager with "sign off" sheets and photographic evidence provided of the installed gas protection measures (including sub floor void, service entries, corners, seams, joints and water annulus) for each plot and supplied to the independent verifier.
 The inspections should incorporate a range of different plot types i.e. detached houses, semi-detached houses and terraces. Furthermore, the verification process will also need to include both plots with and without integral/attached garages.
 This frequency is to be increased at the discretion of the independent verifier if the verifier has any concern regarding the quality and efficacy of installation or where there are consistent failures to meet the required standard of installation. In particular, where the verifier is not satisfied with the first or any subsequent installations or is not confident that the installer fully understands the installation method, then verification will immediately revert to inspection of every plot until the independent verifier is satisfied with the installation methodology.
 In addition, should there be changes to the overall build programme, materials used or membrane installer etc., the verifier would propose to increase the independent verification frequency. In addition, any changes in the design/materials etc. should be confirmed and information provided to the verifier prior to further works commencing on site, to confirm their suitability for use on site.
 The inspections **MUST** include the sub-floor void with beam and block floor slab, the installed membrane, and the installation of the DuctSeal/FiloSeal around the water annulus.
- The site manager is responsible for contacting the independent verifier in order to make arrangements for such inspections in good time. To this effect, a chain of communication between the site manager, installation contractor and the independent verifier shall be agreed during the pre-construction briefing. Inspections are to be completed in **three stages**:

- **Stage 1** - Following completion of sub-floor void and before the placement of the gas membrane and other ancillary products, where applicable.
 - **Stage 2** - Following installation of the gas membrane and before placement of overlying materials and pouring of concrete.
 - **Stage 3** - Following sealing of internal service penetrations, whilst such penetrations are still accessible for inspection i.e. before the kitchen is fitted.
- The inspection by the independent verifier shall include confirmation of the use of the specified products; verification of the presence of unobstructed airbricks connected to the sub-floor void by use of periscopic vents, verification of the membrane installation including verification of the integrity of joints between membranes, integrity of the sealing of details, e.g. corners and external service entries; that the membrane fully extends to all external faces of the structure, along with verification of the installation of the DuctSeal/FiloSeal around the water annulus.
These elements (i.e. inspection of the sub-floor void, membrane and the installation of the DuctSeal/FiloSeal should be undertaken by either the independent verifier or the site manager or groundworks contractor, with photographic records maintained and provided to the verifier for inclusion within the Ground Gas Verification Reports, **for each and every plot.**
 - In the event of non-compliance, the defect shall be immediately reported to the site manager/ground works contractor (depending on responsibility) and membrane installer. All follow-on works shall cease immediately to enable action to be taken to rectify the situation. The independent verifier will explain the reason for non-compliance and offer outline advice on how this could be rectified (although it is ultimately the responsibility of the installer to achieve compliance).
 - Where defects are such that they cannot be immediately rectified, then a further site visit for re-inspection shall be agreed between the site manager and the independent verifier. The re-inspection and subsequent actions shall take the same form as the initial inspection. In some cases, it may be sufficient for the development site manager/or their appointed contractor to provide photographic evidence of the rectification of the defect.
 - In no circumstance shall any follow-on works take place until the independent verifier is satisfied that the installation is sufficiently robust and conforms to the requirements of this document and has confirmed their satisfaction to the site manager.
 - Preparation of a Ground Gas Protection Verification Report (an example can be seen in Attachment C), or series of reports will be prepared by the verifier, in accordance with YALPAG “Verification requirements for gas protection systems”, 2016 Appendix 3.
For those plots not independently verified by the independent verifier, Miller (or their appointed contractor) shall provide completed proformas/“sign off” sheets including photographs for all other plots (to include sub-floor void, overview of gas membrane, service entry detail(s), corner units detail(s), seams/ joints and the water annulus) to the independent verifier to include within their Completion Report.

Any defects within the installation of the gas protection measures are not the responsibility of the independent verifier where the independent verifier has not directly inspected the ground gas protection measures.

The independent verifier will make provision for its verification visits to be undertaken by a suitably trained and experienced Geoenvironmental Engineer.

Table 1 below provides a summary of the actions that need to be completed as part of the verification process and also to whom should be organising / completing these actions.

Table 1 – Summary of Ground Gas Verification Strategy

Action	To be enacted by	Frequency	Completion requirements
Pre Construction			
Materials and design agreed with Miller Homes independent verifier and Local Authority.	Miller Homes, the installer, the verifier and the Local Authority	Once (This document)	Prior to construction.
Pre-construction briefing.	Miller Homes, the designated groundworker contractor, the membrane installer and the independent verifier.	Once at start of project and to be repeated if necessary during construction due to change of personnel etc.	Prior to construction and subsequently as required.
During Construction			
Visual inspection of sub-floor void.	The verifier on instruction of Miller Homes or by site manager or their appointed groundworks contractor.	During or after construction (prior to laying of the membrane). Independent verifier: First batch of plots (min 5) + and then every 1 in 10 plots*#. Miller Homes site manager or groundworks contractor: All plots	Satisfactory verification required before further construction works to proceed.
Visual inspection and pick test of gas membrane installation.	The verifier on instruction of Miller Homes or by site manager or their appointed contractor.	Prior to concrete pours or laying of other materials including insulation. Independent verifier: <u>Specialist/NVQ Qualified Installer</u> - First batch of plots (min 5) + and then every 1 in 10 plots*#. Miller Homes site manager or groundworks contractor: All plots	Satisfactory verification required before further construction works to proceed
Visual inspection of the water annulus void being sealed.	The verifier on instruction of Miller Homes or by site manager or their appointed contractor.	Prior to the fitting of the kitchen, but once ducting has been cut to suitable level and water pipe is installed. Independent verifier: First batch of plots (min 5) + and then every 1 in 10 plots*#. Miller Homes site manager or groundworks contractor: All plots	Satisfactory verification required before further construction works to proceed
Post Construction			
Preparation of Gas Verification Report(s) / Completion Report.	Independent for ALL plots.	On complete installation and verification of all plots, batches of plots, or for individual plots if timescale for discharge of conditions requires.	Conforming to YALPAG guidance Appendix 3, submitted to and approved by regulators.

+This is based on the installation of all gas protection measures whether that be the sub-floor void, membrane or water annulus have been appropriately installed and that the independent verifier are satisfied that the frequency of the independent verifications can be reduced.

*The inspection visits should be routinely spaced throughout the build programme i.e. independent inspections should be instructed every circa fifth or tenth plots installed irrespective of the number of plots independently verified in any one visit.

#All other verification information **NOT** independently verified by the independent verifier shall be provided by the site management team (photographic records with plot identification) to the independent verifier.

This Ground Gas Strategy and Ground Gas Verification Plan does not take into consideration for the potential for a homeowner to construct an extension and therefore the requirement for gas protection measures. However, we would expect that any proposed extension would be covered under planning/building control regulations and as such would take into consideration the requirement for ground gas protection measures.

It is the responsibility of Miller Homes to ensure that sufficient and appropriate verification records are maintained for every plot in accordance with the requirements of this plan and that appropriate independent inspections are arranged. The independent verifier cannot provide verification for plots where appropriate records are not provided by Miller Homes.

The strategy and verification programme presented in this letter report are considered reasonable based on the information provided. However, these cannot be guaranteed to gain regulatory or other approvals and, therefore, the report should be passed by the client to the appropriate regulatory authorities and/or other appropriate organisations for their comment and approval prior to undertaking any development works at the site.

We trust that the information provided is adequate for your present requirements. However, please do not hesitate to contact us should you require any further information.

Yours sincerely,



Jenny Ford
Senior Engineer

For and on behalf of
Sirius Geotechnical Ltd

Encl.

- Attachment A – 1. JRP Associates Site Layout Drawing No. 22:5611:01/C
2. Miller Homes Drawings: FF-GD-EN-JF002 rev D, FF-GD-EN-JF-004, FF-GD-EN-JF-005, FF-GD-EN-JF-007 rev B, FF-GD-EN-JF-010 rev C and FF-GD-EN-JF012 rev D
3. Miller Marked up Foundation Composite and Air Brick Plan
- Attachment B – Gas Membrane, Ancillary Products and Air Brick Specifications
- Attachment C – Example Verification Report
- Attachment D – Installer Qualifications

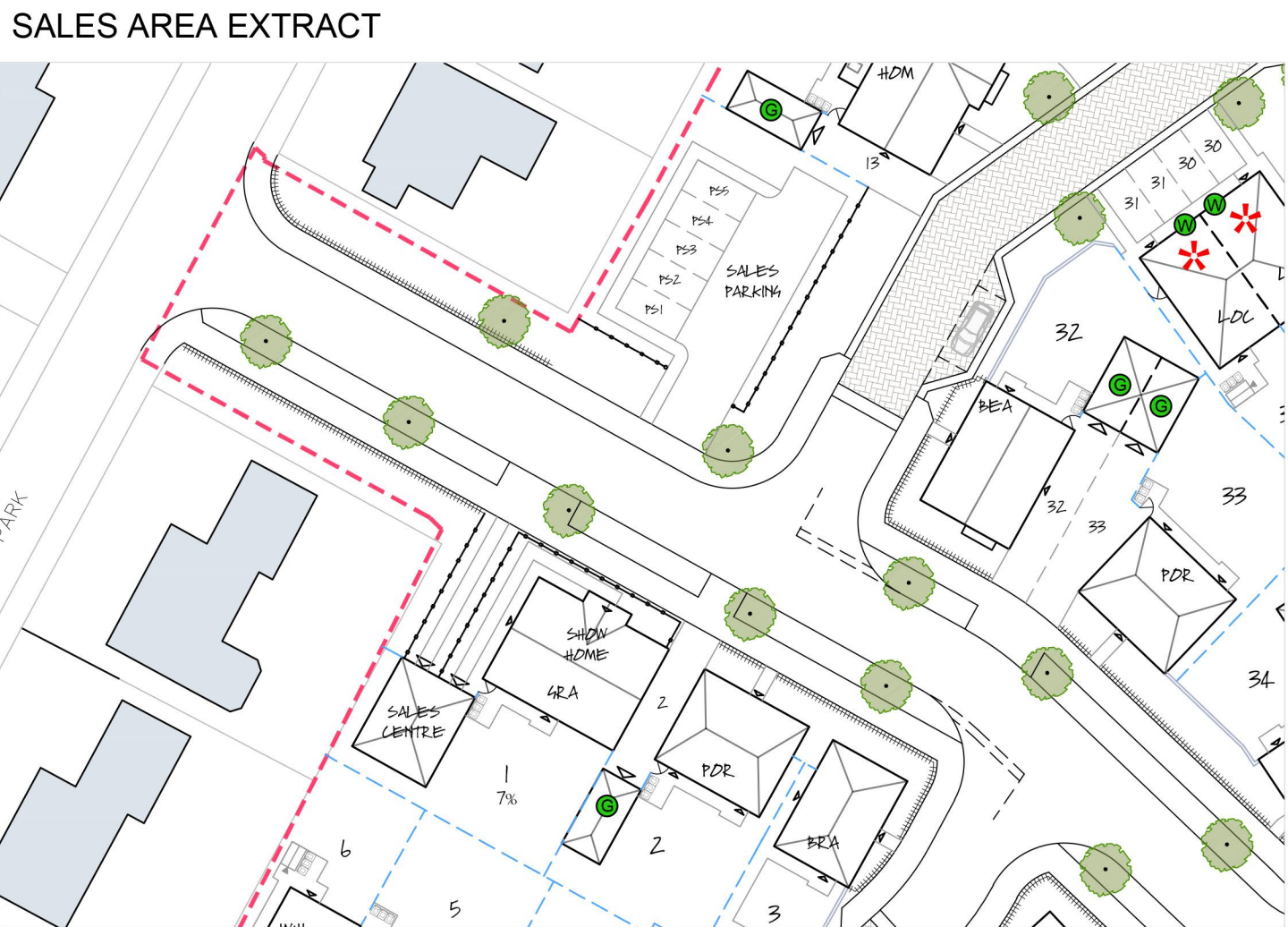


ATTACHMENT A

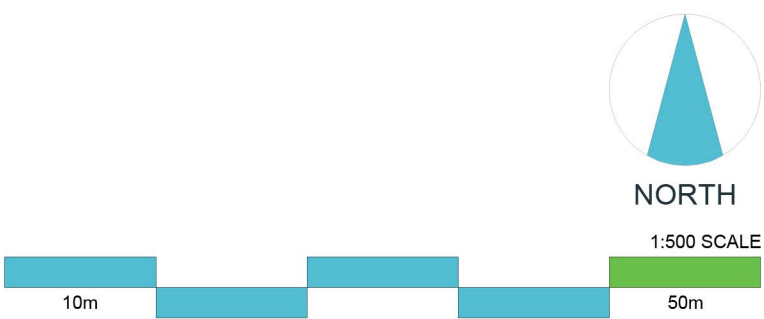
DRAWINGS



SCHEDULE OF ACCOMODATION										
AFFORDABLE										
Ref	Housetype	Type	Parking	Storey	Bed	Sq Ft	No	Total Sq Ft		
BAY	Baymont	Semi	PS	2	2	850	4	3400		
		End	PS	2	2	850	4	3400		
		Mid	PS	2	2	850	2	1700		
LOC	Lockton	Semi	PS	2		3	1001	6	6006	
						SUB TOTAL		16	14506	
OPEN MARKET										
WHI	Whitton	Det	PS	2	2	947	7	6629		
BRA	Braxton	Det	PS	2	2	996	8	7968		
POR	Portstone	Det	SG	2	3	1212	2	2424		
DEN	Denstone	Det	INT	2	3	1368	9	12312		
CHE	Cherrystone	Det	INT	2	3	1296	6	7776		
BEA	Beauwood	Det	SG	2	4	1379	6	8274		
SAN	Sandalwood	Det	SG	2	4	1422	2	2844		
HOM	Homesford	Det	DDG	2	5	1568	5	7840		
DEF	Denford	Det	INT	2	5	1640	12	19680		
GRA	Grayford	Det	SG	2	5	1780	6	10680		
		DDG	2	5	1780	1	1780			
							SUB TOTAL		64	88207
							TOTAL		80	102713



PLANNING LAYOUT LAYERS KEY	
	1800mm PIER AND PANEL WALL
	1800mm TIMBER FENCE
	2000mm ACOUSTIC FENCE
	1100mm METAL RAILINGS
	600mm KNEE HIGH RAIL
	1200mm POST & RAIL
	1500mm RAILING WITH HEDGE BEHIND
	EXISTING STONE WALL TO BE REPAIRED
	APPLICATION BOUNDARY
	LOCKABLE GATE
	AFFORDABLE / AFFORDABLE RENT
	AFFORDABLE / SHARED OWNERSHIP
	TREES
	VISIBILITY SPLAYS
	CARS (VISITOR PARKING)
	BIN COLLECTION POINT
	BINS
	CYCLE SHEDS
	BLOCK PAVING (SHARED SURFACES)
	BLOCK PAVING (RAISED TABLE)



Do not scale off this drawing - Only figured dimensions to be taken from this drawing. Drawings based on Ordnance Survey and/or existing record drawings - Design and Drawing content subject to Site Survey, Structural Survey, Site Investigations, Planning and Statutory Requirements and Approvals. Authorised reproduction from Ordnance Survey Map with permission of the Controller of Her Majesty's Stationary Office. Crown Copyright reserved.

C 13.11.24	Maintenance access gate moved in line with client request	JP	VS
B 11.11.24	Layout updated in response to pre-app comments	JP	VS
A 17.07.24	Affordable tenure updated in line with clients request	JP	VS

Rev	Date	Description	Drawn	Check
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CLIENT:	MILLER HOMES	DRAWING NUMBER:	22:561101 C
PROJECT:	HERMITAGE PARK, LEPTON	SCALE @ A0:	1:500
DRAWING:	SITE LAYOUT	DRAWN:	JP
		CHECKED:	VS
		DATE:	OCT 24
		DATE:	OCT 24

JRP Associates 14 Marine Court, Calder Park, Wakefield, WF4 3PL	T 01924 983292 E info@jrpassoc.co.uk W jrpassoc.co.uk
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REFER TO SEPARATE SITE SPECIFIC FOUNDATION SCHEDULE FOR EXACT PLOT FOUNDATION DEPTHS

GENERAL NOTE:
IN CERTAIN PARTS OF THE COUNTRY, SPECIAL PRECAUTIONS ARE NECESSARY TO REDUCE THE ENTRY OF RADON GAS. AREAS IN ENGLAND & WALES WHERE SPECIAL PRECAUTIONS ARE NECESSARY ARE DETAILED IN BRE REPORT 211-2007. REFERENCE SHOULD BE MADE TO MILLER HOMES STANDARD HOUSE TYPE SPECIFICATION SECTION 2.4 RADON GAS FOR BASIC AND FULL RADON PROTECTION SPECIFICATIONS.

NOTE: IN ACCORDANCE WITH NHBC GUIDANCE SECTION 6.1.17 TABLE 8 - WHERE GAS MEMBRANES BRIDGE THE CAVITY A CAVITY TRAY SHOULD BE PROVIDED. CAVITY TRAYS SHOULD BE SEALED TO THE GAS MEMBRANE IN ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS TO PREVENT CAPILLARY DAMP INGRESS AT THE JOINT.

100MM 3.6N/mm2 STANDARD AIRCRETE BLOCKWORK.

250MM CAVITY WALL TIES OF CORROSION RESISTANT METAL AT MAXIMUM 450 VERTICAL AND 900 HORIZONTAL CENTRES.

FULLY FILLED CAVITY. REFER TO CONSTRUCTION SPECIFICATION FOR INSULATION TYPE.

103MM FACING BRICKWORK.

WEEP HOLES TO BE INSTALLED EVERY 900mm IN ACCORDANCE WITH AD PART C SECTION 5: WALLS.

AIR BRICK TO BE LOCATED MINIMUM 75MM ABOVE GROUND LEVEL IN ACCORDANCE WITH NHBC TECHNICAL GUIDANCE 6.1.

25MM THICK POLYURETHANE BATT INSULATION WITH A MINIMUM THERMAL CONDUCTIVITY OF 0.023W/mK TIGHTLY BUTTED TO EXTERNAL LEAF.

MIN. 60MM THICK INSULATION BOARD BUILT IN BEHIND TELESCOPIC AIR VENT TO AVOID COLD BRIDGING.

140 X 100MM JETFLOOR Psi BLOCK LAID ON D.P.C.

MASONRY WALLS BELOW DPC DESIGNED & CONSTRUCTED AS DETAILED IN NHBC STANDARDS CHAPTER 6.1 'EXTERNAL MASONRY WALLS'.

RIGID EPS INSULATION WITH MINIMUM THERMAL CONDUCTIVITY OF 0.034W/mK INSTALLED BELOW D.P.C. LEVEL BETWEEN TELESCOPIC VENTS.

355mm THICK 3.6N/mm² FOUNDATION BLOCK. SUITABLE FOR USE IN SULPHATE SOIL CONDITIONS UP TO CLASS DS-2.

SEE WORKING DRAWING
103 SEE WD 100

CAVITY TRAY / D.P.C. WITH SLIGHT PROJECTION TO OUTER LEAF OVER PERISCOPE FLOOR VENTS WITH PROPRIETARY STOP ENDS.

12.5MM PLASTERBOARD ON 10MM DABS WITH A 2.5MM SKIM COAT.

MDF. SKIRTING. CHECK REGION FOR SIZE AND SPECIFICATION. FLEXIBLE SEALANT TO BE APPLIED TO THE TOP BACK EDGE/DRYLINING.

GYPROC FLEXIBLE SEALANT TO BE APPLIED BETWEEN SKIRTING BOARD AND FLOOR TO PROVIDE AIR BARRIER IN ACCORDANCE WITH 'ACCREDITED DETAIL NO. MCI-GF-02'.

CONCRETE SCREED TO FINISH LEVEL WITH D.P.C., STRUCTURAL CONCRETE TOPPING TO BE GRADE RC25/30 WITH MAX. 20MM AGGREGATE AND REINFORCED WITH POLYPROPYLENE FIBRES OR ONE LAYER OF A142 MESH TO BS 8666:2005 ALL IN ACCORDANCE WITH THE BBA CERT 88/2059

INSULATING TOP DECK. THICKNESS AND TYPE TO BE CONFIRMED WITH THE REGIONAL OFFICE AS 'U' VALUES MAY BE SITE SPECIFIC.

MIN. 1600 GAUGE 0.4mm THICK POLYETHYLENE DPM / GAS MEMBRANE DRESSED AS SHOWN AND LINKED WITH EXTERNAL WALL DPC. ENSURE ALL JOINTS IN THE MEMBRANE ARE SEALED TO MAKE THEM AS GAS-TIGHT AS POSSIBLE.

PROPRIETARY PRECAST CONCRETE 'T' BEAMS

EXPANDED POLYSTYRENE BLOCK FLOORS - REFER TO BEAM AND BLOCK FLOOR MANUFACTURERS DESIGNS FOR TYPES, SIZES AND LAYOUTS.

NOTE: DO NOT STAND ON EXPANDED POLYSTYRENE BLOCKS.

300MM VOID WHERE SOILS HAVE A HIGH SHRINKABILITY.

PROPRIETARY PERISCOPE FLOOR VENTS TO PROVIDE NOT LESS THAN 1500MM² VENTILATION PER METER RUN OF EXTERNAL WALL OR 500MM² PER SQUARE METER OF FLOOR AREA, WHICHEVER GIVES GREATER OPENING AREA AS DESCRIBED IN NHBC STANDARDS 5.2.10.

GENERAL NOTE:
PLASTERBOARD ON 10MM DABS WITH CONTINUOUS RIBBON OF ADHESIVE AROUND ALL OPENINGS, ALONG THE TOP AND BOTTOM OF THE WALL, AND AT INTERNAL AND EXTERNAL CORNERS. REFER TO ACCREDITED DRAWING - MCI-GF-02.

GENERAL NOTE:
DRAWING TO BE READ IN CONJUNCTION WITH LATEST COPY OF MILLER HOMES STANDARD HOUSE TYPE SPECIFICATION AND LATEST HOUSE TYPE WORKING DRAWINGS.

MODIFIED PLASTICITY INDEX	VOLUME CHANGE POTENTIAL	MINIMUM DEPTH FROM GL (m)
40% AND GREATER	HIGH	1.0
20% TO LESS THAN 40%	MEDIUM	0.9
10% TO LESS THAN 20%	LOW	0.75

Project Title
**GROUP TECHNICAL - STANDARD DETAILS 2020
FOUNDATION & FLOOR DETAILS
JETFLOOR SYSTEM**

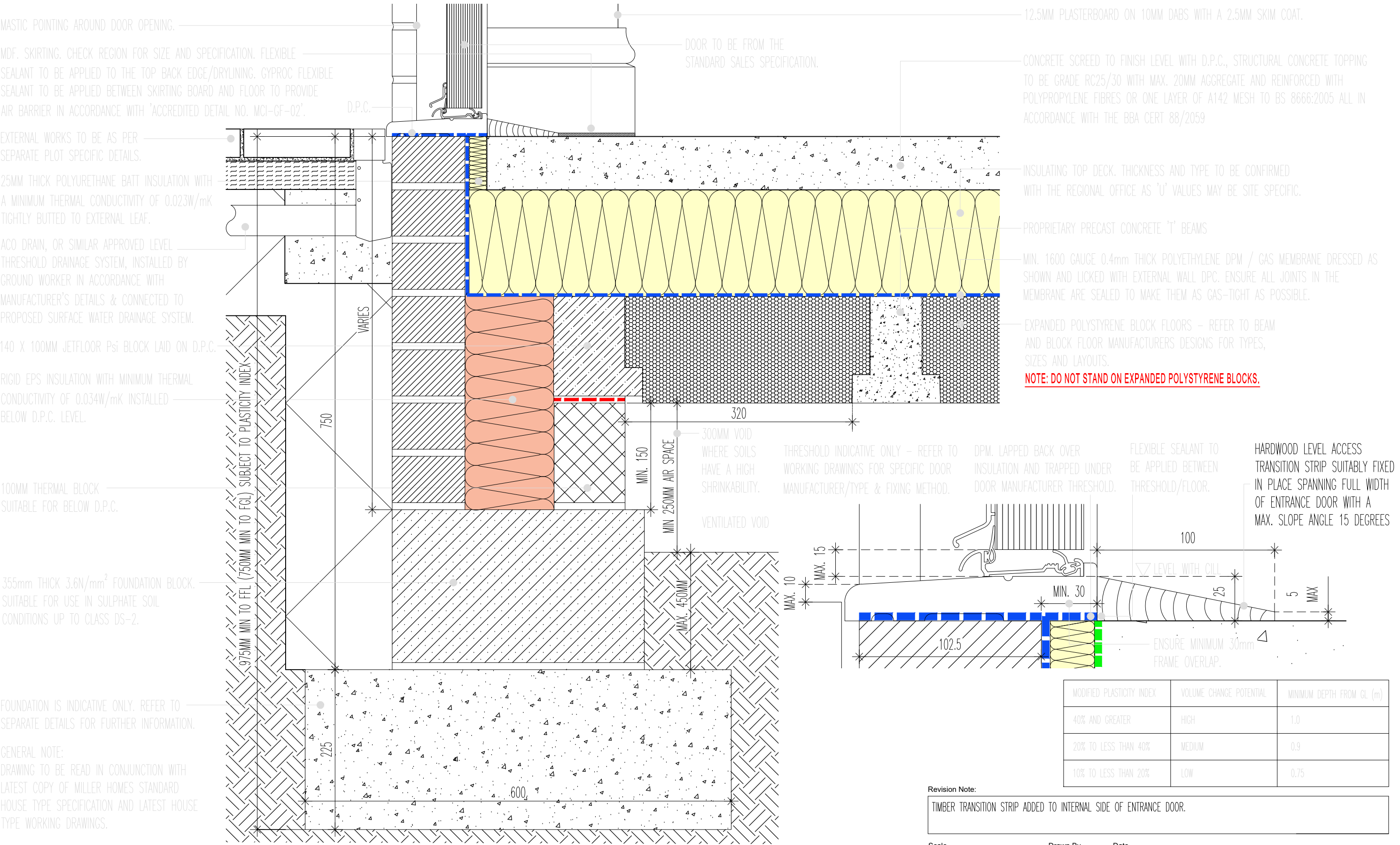
Drawing Title
**EXTERNAL CAVITY WALL
JETFLOOR SYSTEM
BASIC GAS PROTECTION**

Revision Note:
CAVITY TRAY / GAS MEMBRANE JUNCTION NOTE ADDED.

Scale	Drawn By	Date
1:5	G.T.	MAY 2020
Drawing No.	Revision	
FF-GD-EN-JF-002	D	

miller homes
Miller Homes Ltd
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REFER TO SEPARATE SITE SPECIFIC FOUNDATION SCHEDULE FOR EXACT PLOT FOUNDATION DEPTHS



Project Title

GROUP TECHNICAL - STANDARD DETAILS 2020

FOUNDATION & FLOOR DETAILS

JETFLOOR SYSTEM

Drawing Title

FRONT DOOR LEVEL THRESHOLD

JETFLOOR SYSTEM

BASIC GAS PROTECTION

Revision Note:

TIMBER TRANSITION STRIP ADDED TO INTERNAL SIDE OF ENTRANCE DOOR.

Scale	Drawn By	Date
1:5 & 1:2	G.T.	MAY 2020
Drawing No.	Revision	
-	-	

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REFER TO SEPARATE SITE SPECIFIC FOUNDATION SCHEDULE FOR EXACT PLOT FOUNDATION DEPTHS

MASTIC POINTING AROUND DOOR OPENING.

DOOR TO BE FROM THE STANDARD SALES SPECIFICATION.

HARDWOOD TIMBER QUADRANT, FIXED IN PLACE USING GRAB ADHESIVE.

DPC. TAKEN OVER BRICKWORK AND LAPPED INTO DPM.

THRESHOLD INDICATIVE ONLY - REFER TO WORKING DRAWINGS FOR SPECIFIC DOOR MANUFACTURER/TYPE & FIXING METHOD.

25MM THICK POLYURETHANE BATT INSULATION WITH A MINIMUM THERMAL CONDUCTIVITY OF 0.023W/mK TIGHTLY BUTTED TO EXTERNAL LEAF.

INSULATING TOP DECK. THICKNESS AND TYPE TO BE CONFIRMED WITH THE REGIONAL OFFICE AS 'U' VALUES MAY BE SITE SPECIFIC.

EXTERNAL WORKS TO BE AS PER SEPARATE PLOT SPECIFIC DETAILS.

140 X 100MM JETFLOOR Psi BLOCK LAID ON D.P.C.

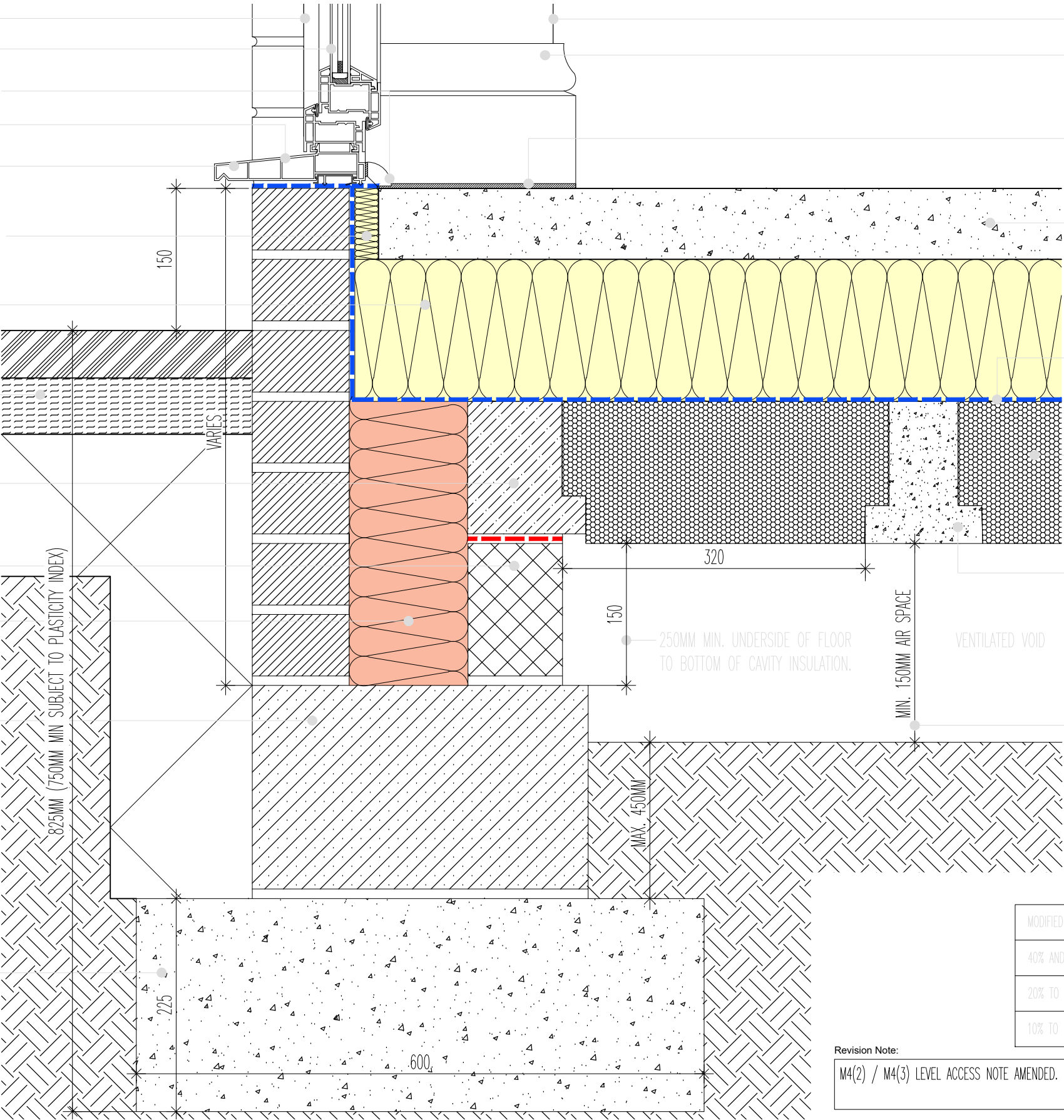
100MM THERMAL BLOCK SUITABLE FOR BELOW D.P.C.

RIGID EPS INSULATION WITH MINIMUM THERMAL CONDUCTIVITY OF 0.034W/mK INSTALLED BELOW D.P.C. LEVEL.

355mm THICK 3.6N/mm² FOUNDATION BLOCK. SUITABLE FOR USE IN SULPHATE SOIL CONDITIONS UP TO CLASS DS-2.

NOTE: M4 (2) / M4 (3) COMPLIANT ACCESS:
WHERE DWELLING IS TO BE M4(2) / M4(3) COMPLIANT, LEVEL ACCESSIBLE THRESHOLD STRIP TO EXTERNAL DOORS TO BE MAX. 15mm IN HEIGHT WITH CHAMFERED EDGES. REFER TO DETAIL FF-GD-EN-JF-004.

FOUNDATION IS INDICATIVE ONLY. REFER TO SEPARATE DETAILS FOR FURTHER INFORMATION.



12.5MM PLASTERBOARD ON 10MM DABS WITH A 2.5MM SKIM COAT.

MDF SKIRTING. CHECK REGION FOR SIZE AND SPECIFICATION. FLEXIBLE SEALANT TO BE APPLIED TO THE TOP BACK EDGE/DRYLINING.

GYPROC FLEXIBLE SEALANT TO BE APPLIED BETWEEN SKIRTING BOARD AND FLOOR TO PROVIDE AIR BARRIER IN ACCORDANCE WITH 'ACCREDITED DETAIL NO. MCI-GF-02'.

CONCRETE SCREED TO FINISH LEVEL WITH D.P.C., STRUCTURAL CONCRETE TOPPING TO BE GRADE RC25/30 WITH MAX. 20MM AGGREGATE AND REINFORCED WITH POLYPROPYLENE FIBRES OR ONE LAYER OF A142 MESH TO BS 8666:2005 ALL IN ACCORDANCE WITH THE BBA CERT 88/2059

MIN. 1600 GAUGE 0.4mm THICK POLYETHYLENE DPM / GAS MEMBRANE DRESSED AS SHOWN AND LICKED WITH EXTERNAL WALL DPC. ENSURE ALL JOINTS IN THE MEMBRANE ARE SEALED TO MAKE THEM AS GAS-TIGHT AS POSSIBLE.

EXPANDED POLYSTYRENE BLOCK FLOORS - REFER TO BEAM AND BLOCK FLOOR MANUFACTURERS DESIGNS FOR TYPES, SIZES AND LAYOUTS.

NOTE: DO NOT STAND ON EXPANDED POLYSTYRENE BLOCKS.

PROPRIETARY PRECAST CONCRETE 'T' BEAMS

300MM VOID WHERE SOILS HAVE A HIGH SHRINKABILITY.

GENERAL NOTE:
DRAWING TO BE READ IN CONJUNCTION WITH LATEST COPY OF MILLER HOMES STANDARD HOUSE TYPE SPECIFICATION AND LATEST HOUSE TYPE WORKING DRAWINGS.

MODIFIED PLASTICITY INDEX	VOLUME CHANGE POTENTIAL	MINIMUM DEPTH FROM GL (m)
40% AND GREATER	HIGH	1.0
20% TO LESS THAN 40%	MEDIUM	0.9
10% TO LESS THAN 20%	LOW	0.75

Revision Note:

M4(2) / M4(3) LEVEL ACCESS NOTE AMENDED.

Scale	Drawn By	Date
1:5	G.T.	MAY 2020
Drawing No.	Revision	
-	-	

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Project Title

GROUP TECHNICAL - STANDARD DETAILS 2020
FOUNDATION & FLOOR DETAILS
JETFLOOR SYSTEM

Drawing Title

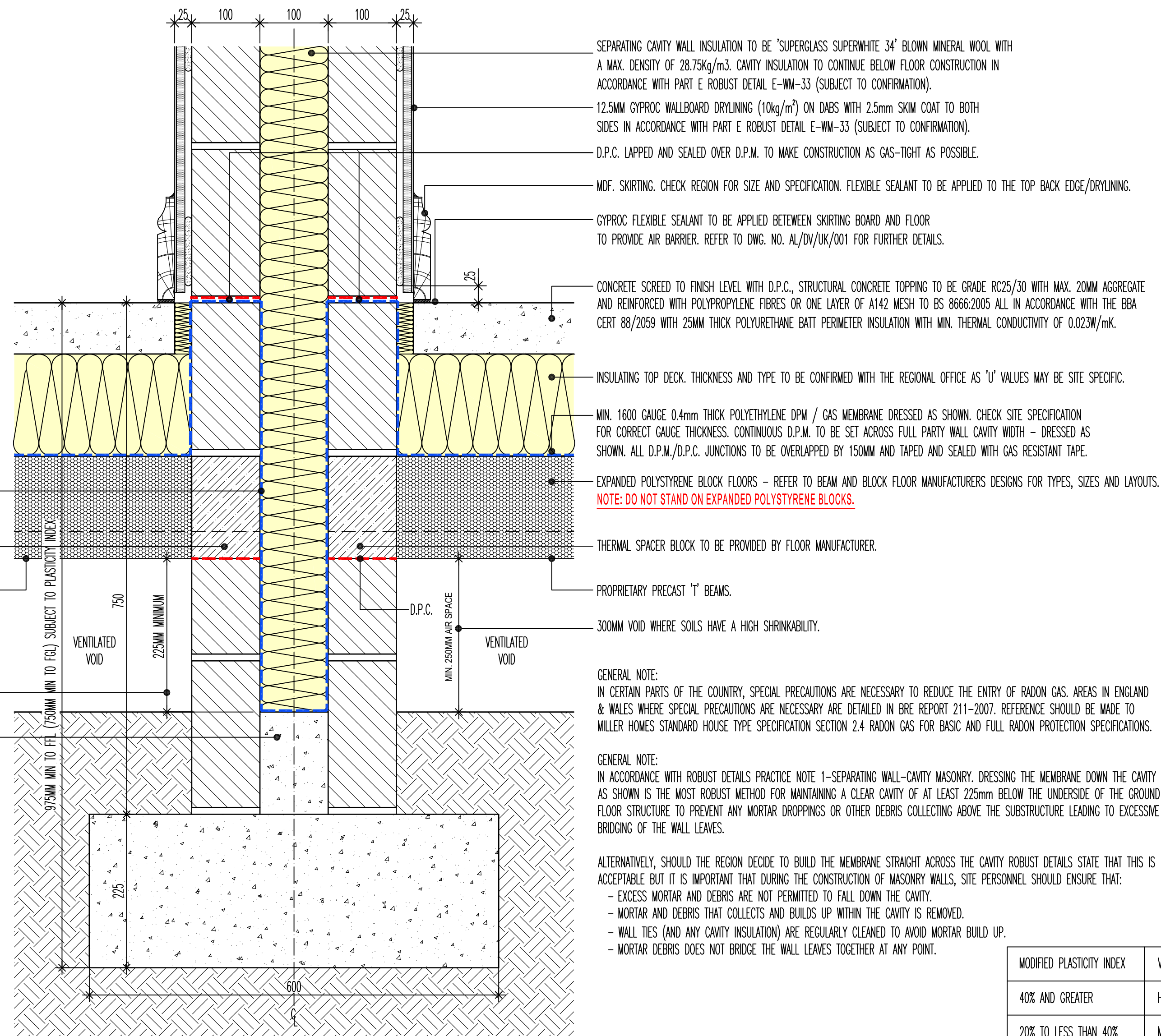
REAR/SIDE DOOR THRESHOLD
JETFLOOR SYSTEM
BASIC GAS PROTECTION

ORIGINAL SHEET SIZE A3 - DO NOT SCALE FROM THIS DRAWING - DRAWN IN AUTOCAD

REFER TO SEPARATE SITE SPECIFIC FOUNDATION SCHEDULE FOR EXACT PLOT FOUNDATION DEPTHS

NOTES

- CHECK THAT THE WALL AND FLOOR DAMP PROOF COURSE MEMBRANE FORMS AN ADEQUATE AIRTIGHT LAYER.
- SEAL ALL PENETRATIONS THROUGH THE AIR BARRIER USING A FLEXIBLE SEALANT.
- PLASTERBOARD ON DABS WITH CONTINUOUS RIBBON OF ADHESIVE AROUND ALL OPENINGS, ALONG THE TOP AND BOTTOM OF THE WALL, AND AT INTERNAL AND EXTERNAL CORNERS. REFER TO ACCREDITED DRAWING – MCI-GF-02.
- ENSURE THAT CAVITIES ARE KEPT CLEAN AND FREE FROM SNOTS.
- PARTY WALLS TO BE DESIGNED & CONSTRUCTED SO AS TO REDUCE AND RESTRICT THE AIR MOVEMENT WITHIN THE CAVITY BY FULLY FILLING & EDGE SEALING THE PARTY WALL TO ENSURE A PARTY WALL U-VALUE OF ZERO.



GENERAL NOTE:
IN CERTAIN PARTS OF THE COUNTRY, SPECIAL PRECAUTIONS ARE NECESSARY TO REDUCE THE ENTRY OF RADON GAS. AREAS IN ENGLAND & WALES WHERE SPECIAL PRECAUTIONS ARE NECESSARY ARE DETAILED IN BRE REPORT 211-2007. REFERENCE SHOULD BE MADE TO MILLER HOMES STANDARD HOUSE TYPE SPECIFICATION SECTION 2.4 RADON GAS FOR BASIC AND FULL RADON PROTECTION SPECIFICATIONS.

GENERAL NOTE:
IN ACCORDANCE WITH ROBUST DETAILS PRACTICE NOTE 1-SEPARATING WALL-CAVITY MASONRY, DRESSING THE MEMBRANE DOWN THE CAVITY AS SHOWN IS THE MOST ROBUST METHOD FOR MAINTAINING A CLEAR CAVITY OF AT LEAST 225mm BELOW THE UNDERSIDE OF THE GROUND FLOOR STRUCTURE TO PREVENT ANY MORTAR DROPPINGS OR OTHER DEBRIS COLLECTING ABOVE THE SUBSTRUCTURE LEADING TO EXCESSIVE BRIDGING OF THE WALL LEAVES.

ALTERNATIVELY, SHOULD THE REGION DECIDE TO BUILD THE MEMBRANE STRAIGHT ACROSS THE CAVITY ROBUST DETAILS STATE THAT THIS IS ACCEPTABLE BUT IT IS IMPORTANT THAT DURING THE CONSTRUCTION OF MASONRY WALLS, SITE PERSONNEL SHOULD ENSURE THAT:

- EXCESS MORTAR AND DEBRIS ARE NOT PERMITTED TO FALL DOWN THE CAVITY.
- MORTAR AND DEBRIS THAT COLLECTS AND BUILDS UP WITHIN THE CAVITY IS REMOVED.
- WALL TIES (AND ANY CAVITY INSULATION) ARE REGULARLY CLEANED TO AVOID MORTAR BUILD UP.
- MORTAR DEBRIS DOES NOT BRIDGE THE WALL LEAVES TOGETHER AT ANY POINT.

MODIFIED PLASTICITY INDEX	VOLUME CHANGE POTENTIAL	MINIMUM DEPTH FROM GL (m)
40% AND GREATER	HIGH	1.0
20% TO LESS THAN 40%	MEDIUM	0.9
10% TO LESS THAN 20%	LOW	0.75

Project Title	GROUP TECHNICAL - STANDARD DETAILS 2020 FOUNDATION AND FLOOR DETAILS JETFLOOR SYSTEM
---------------	--

Drawing Title

PARTY WALL JUNCTION
JETFLOOR SYSTEM BASIC GAS PROTECTION
PART E ROBUST DETAIL E-WM-33

Revision Note:
FLOOR CONSTRUCTION UPDATED IN LINE WITH CURRENT SUPPLIER SPECIFICATION.

Scale	Drawn By	Date
1:5	G.T.	MAY 2020
Drawing No.		Revision
FF-GD-EN-JF-010		C

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ORIGINAL SHEET SIZE A2 - DO NOT SCALE FROM THIS DRAWING

MODIFIED PLASTICITY INDEX	VOLUME CHANGE POTENTIAL	MINIMUM DEPTH FROM GL (m)
40% AND GREATER	HIGH	1.0
20% TO LESS THAN 40%	MEDIUM	0.9
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10% TO LESS THAN 20%	LOW	0.75

ORIGINAL SHEET SIZE A2 - DO NOT SCALE FROM THIS DRAWING

WALL LEGEND.

- DENOTES 328MM THICK CAVITY WALL :
- 102.5MM FACING BRICKWORK
- 125MM WIDE INSULATED CAVITY
- 100MM THICK 3.6NMMF STANDARD AIRCRETE BLOCKWORK
- DENOTES 300MM THICK PARTY WALL :
- 100MM THICK 3.6NMMF LIGHTWEIGHT AGGREGATE CONCRETE BLOCKWORK
- 100MM WIDE INSULATED CAVITY
- 100MM THICK 3.6NMMF LIGHTWEIGHT AGGREGATE CONCRETE BLOCKWORK

DASHED LINES INDICATE FOUNDATIONS TO EXTERNAL & INTERNAL WALLS.
REFER TO CONSULTING ENGINEER'S DRAWINGS FOR ACTUAL SIZE & TYPE.

GENERAL NOTE:
REFER TO DIMENSIONED G.F. PLANS FOR EXTERNAL & INTERNAL DOOR LOCATIONS AND CROSS REFER TO ASSOCIATED STANDARD DETAILS FOR DOOR THRESHOLD TREATMENT.

BEAM & BLOCK / EPS UNDERFLOOR VOID VENTILATION

VENTILATION SHOULD BE PROVIDED TO PRECAST SUSPENDED FLOORS IN ACCORDANCE WITH CHAPTER 5.2.10 OF LATEST NHBC TECHNICAL STANDARDS. (GENERALLY PROVIDED BY VENTILATORS ON AT LEAST TWO OPPOSITE EXTERNAL WALLS.

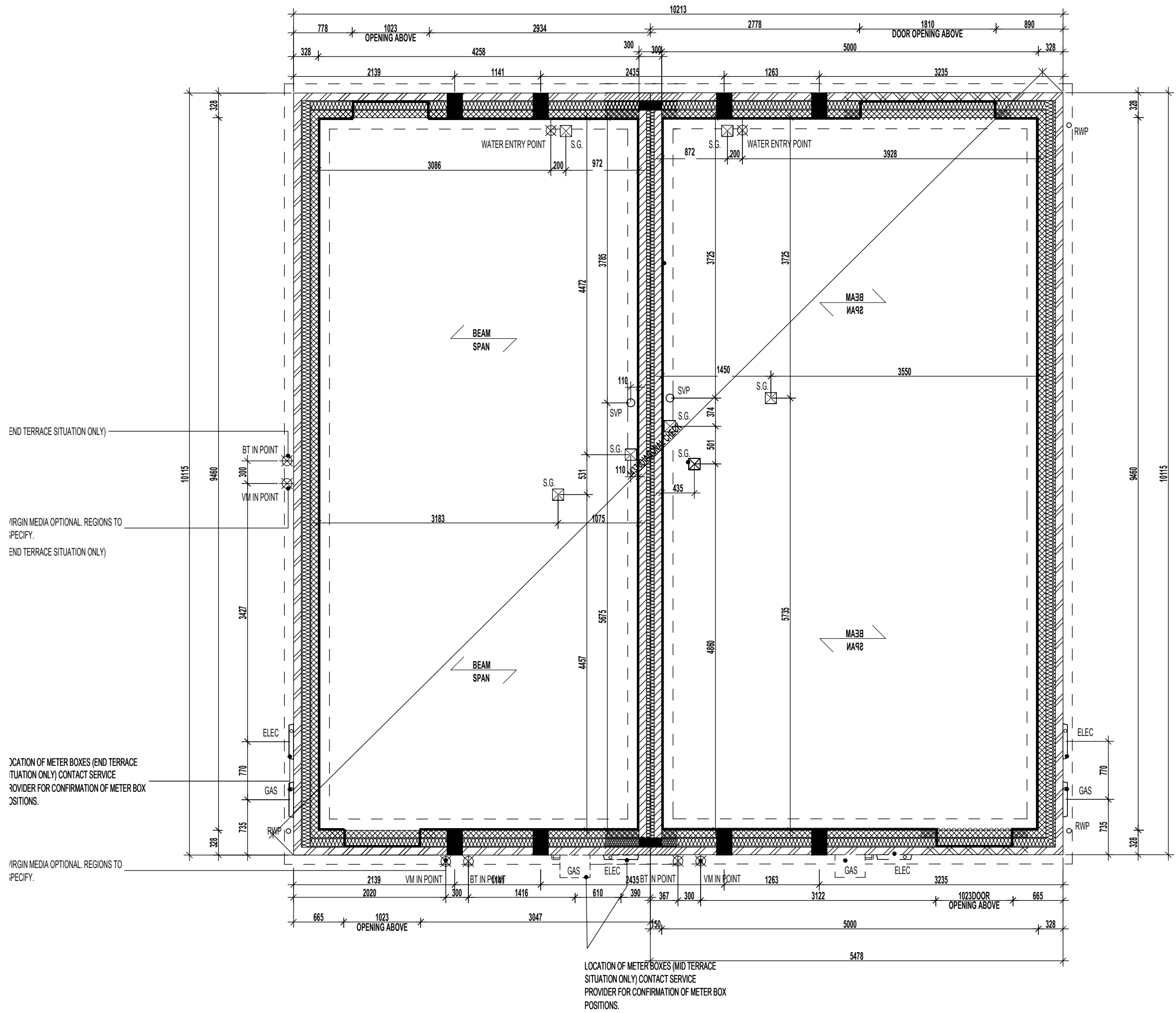
WHERE SLEEPER WALLS / PARTITIONS PROVIDED, THESE SHOULD BE CONSTRUCTED WITH SUFFICIENT OPENINGS TO ENSURE ADEQUATE THROUGH VENTILATION.

VOID VENTILATION SHOULD BE PROVIDED TO WHICHEVER GIVES THE GREATER OPENING AREA:

- 1500MM² PER METRE RUN OF EXTERNAL WALL
 - 500MM² PER M² OF FLOOR AREA.
- PUFV - Rytons Periscope® Underfloor Ventilator - 7,750mm² per unit (with Rytons Multitrix® Air Brick fitted)
- 100mm PIPE REQUIRED FOR CROSS VENTILATION

RAINWATER DOWNPIPE PROVISION - GENERAL NOTE:
WHERE DWELLING IS PLOTTED AS A MID-TERRACED OPTION, DOWNPIPE PROVISION TO BE RE-EVALUATED TO REFLECT THE EXTENT OF ADDITIONAL RAINWATER GUTTER REQUIRED.

IMPORTANT NOTE:-
WHERE DWELLING IS PLOTTED 'OPP' ENSURE RWP LOCATIONS REFLECT POLYPIPE RAINWATER SYSTEM DESIGN.



BAYMONT (AS)

LOCKTON (Opp)

Project Title
**BAYMONT - LOCKTON
2024 AFFORDABLE PORTFOLIO
2021 UPLIFT SPECIFICATION**

Drawing Title
**FOUNDATION COMPOSITE & AIR BRICK
PLAN**

Revision Note:
EXTERNAL LAUNDRY DOOR SETTING-OUT DIMENSIONS UPDATED

Scale	Drawn By	Date
1 : 50	G.T.	06.11.23
Drawing No.	Revision	
L463104	C2	

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ORIGINAL SHEET SIZE A2 - DO NOT SCALE FROM THIS DRAWING

WALL LEGEND.

- DENOTES 328MM THICK CAVITY WALL :
- 102.5MM FACING BRICKWORK
- 125MM WIDE INSULATED CAVITY
- 100MM THICK 3.6NMMF STANDARD AIRCRETE BLOCKWORK
- DENOTES 300MM THICK PARTY WALL :
- 100MM THICK 3.6NMMF LIGHTWEIGHT AGGREGATE CONCRETE BLOCKWORK
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- 100MM THICK 3.6NMMF LIGHTWEIGHT AGGREGATE CONCRETE BLOCKWORK

DASHED LINES INDICATE FOUNDATIONS TO EXTERNAL & INTERNAL WALLS.
REFER TO CONSULTING ENGINEER'S DRAWINGS FOR ACTUAL SIZE & TYPE.

GENERAL NOTE:
REFER TO DIMENSIONED G.F. PLANS FOR EXTERNAL & INTERNAL DOOR LOCATIONS AND CROSS REFER TO ASSOCIATED STANDARD DETAILS FOR DOOR THRESHOLD TREATMENT.

BEAM & BLOCK / EPS UNDERFLOOR VOID VENTILATION

VENTILATION SHOULD BE PROVIDED TO PRECAST SUSPENDED FLOORS IN ACCORDANCE WITH CHAPTER 5.2.10 OF LATEST NHBC TECHNICAL STANDARDS. (GENERALLY PROVIDED BY VENTILATORS ON AT LEAST TWO OPPOSITE EXTERNAL WALLS.

WHERE SLEEPER WALLS / PARTITIONS PROVIDED, THESE SHOULD BE CONSTRUCTED WITH SUFFICIENT OPENINGS TO ENSURE ADEQUATE THROUGH VENTILATION.

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- 500MM² PER M² OF FLOOR AREA.

PUFV - Ryltons Periscope® Underfloor Ventilator - 7,750mm² per unit (with Ryltons Multifix® Air Brick fitted)

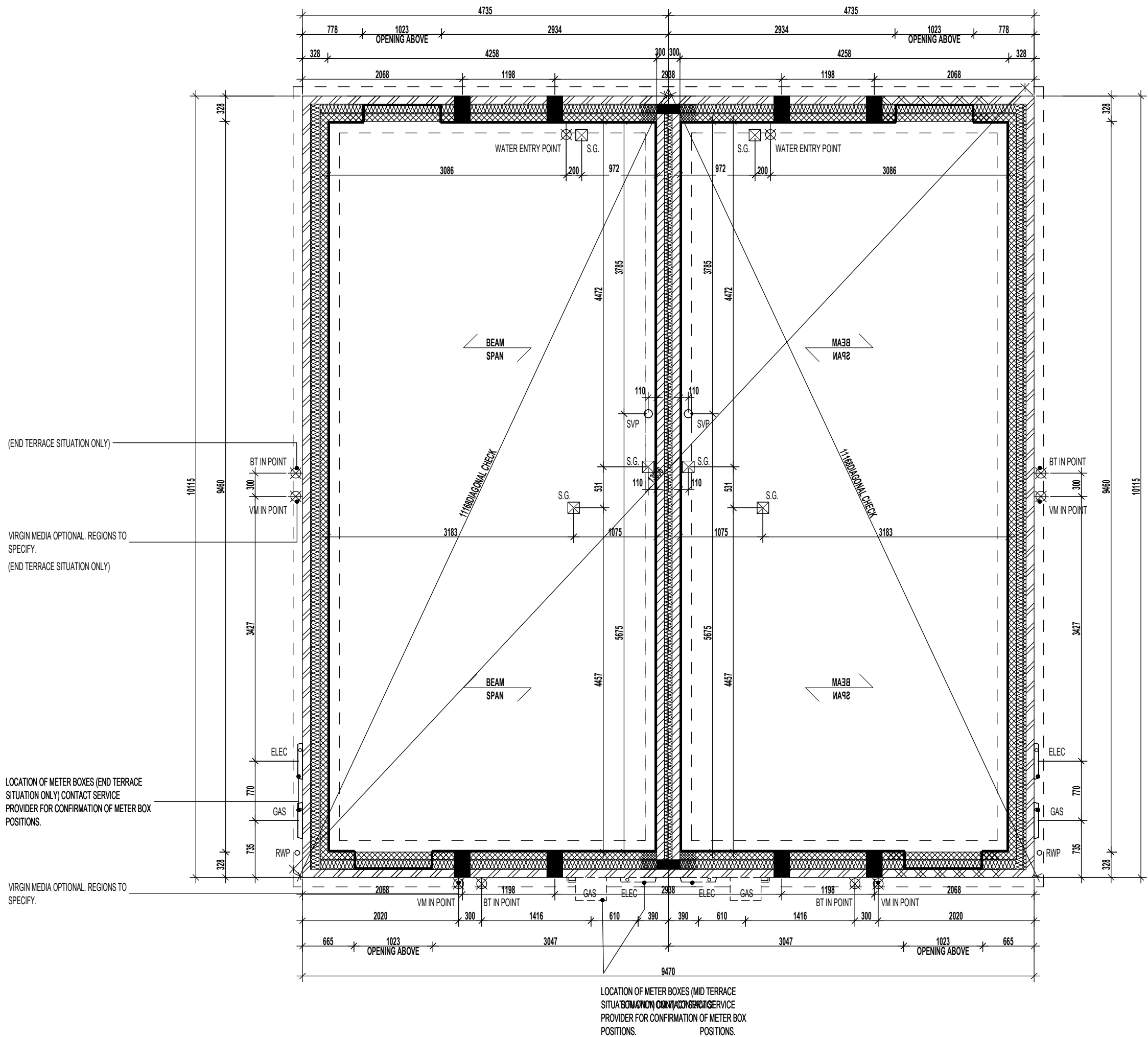
100mm PIPE REQUIRED FOR CROSS VENTILATION

RAINWATER DOWNPIPE PROVISION - GENERAL NOTE:

WHERE DWELLING IS PLOTTED AS A MID-TERRACED OPTION, DOWNPIPE PROVISION TO BE RE-EVALUATED TO REFLECT THE EXTENT OF ADDITIONAL RAINWATER GUTTER REQUIRED.

IMPORTANT NOTE:-

WHERE DWELLING IS PLOTTED 'OPP' ENSURE RWP LOCATIONS REFLECT POLYPIPE RAINWATER SYSTEM DESIGN.



BAYMONT (AS)

BAYMONT (Opp)

Revision Note:

EXTERNAL LAUNDRY DOOR SETTING-OUT DIMENSIONS UPDATED

Scale

1 : 50

Drawn By

G.T.

Date

06.11.23

Drawing No.

L463104

Revision

C2

Project Title

BAYMONT - LOCKTON
2024 AFFORDABLE PORTFOLIO
2021 UPLIFT SPECIFICATION

Drawing Title

FOUNDATION COMPOSITE & AIR BRICK
PLAN

CONTRACTORS MUST CHECK ALL DIMENSIONS ON SITE. ONLY FIGURED DIMENSIONS TO BE WORKED FROM. DISCREPANCIES MUST BE REPORTED TO THE DESIGN OFFICE BEFORE PROCEEDING

Miller Homes Ltd
2 Centro Place, Pride Park
Derby, DE24 8RF
Telephone 0870 336 4400 Fax 0870 336 4401
www.millerhomes.co.uk

ORIGINAL SHEET SIZE A2 - DO NOT SCALE FROM THIS DRAWING

WALL LEGEND.

- DENOTES 328MM THICK CAVITY WALL :
- 102.5MM FACING BRICKWORK
- 125MM WIDE INSULATED CAVITY
- 100MM THICK 3.6NMMF STANDARD AIRCRETE BLOCKWORK
- DENOTES 300MM THICK PARTY WALL :
- 100MM THICK 3.6NMMF LIGHTWEIGHT AGGREGATE CONCRETE BLOCKWORK
- 100MM WIDE INSULATED CAVITY
- 100MM THICK 3.6NMMF LIGHTWEIGHT AGGREGATE CONCRETE BLOCKWORK

DASHED LINES INDICATE FOUNDATIONS TO EXTERNAL & INTERNAL WALLS.
REFER TO CONSULTING ENGINEER'S DRAWINGS FOR ACTUAL SIZE & TYPE.

GENERAL NOTE:
REFER TO DIMENSIONED G.F. PLANS FOR EXTERNAL & INTERNAL DOOR LOCATIONS AND CROSS REFER TO ASSOCIATED STANDARD DETAILS FOR DOOR THRESHOLD TREATMENT.

BEAM & BLOCK / EPS UNDERFLOOR VOID VENTILATION

VENTILATION SHOULD BE PROVIDED TO PRECAST SUSPENDED FLOORS IN ACCORDANCE WITH CHAPTER 5.2.10 OF LATEST NHBC TECHNICAL STANDARDS. (GENERALLY PROVIDED BY VENTILATORS ON AT LEAST TWO OPPOSITE EXTERNAL WALLS.

WHERE SLEEPER WALLS / PARTITIONS PROVIDED, THESE SHOULD BE CONSTRUCTED WITH SUFFICIENT OPENINGS TO ENSURE ADEQUATE THROUGH VENTILATION.

VOID VENTILATION SHOULD BE PROVIDED TO WHICHEVER GIVES THE GREATER OPENING AREA:

- 1500MM² PER METRE RUN OF EXTERNAL WALL
- 500MM² PER M² OF FLOOR AREA.

PUFV - Ryltons Periscope® Underfloor Ventilator - 7,750mm² per unit (with Ryltons Multifix® Air Brick fitted)

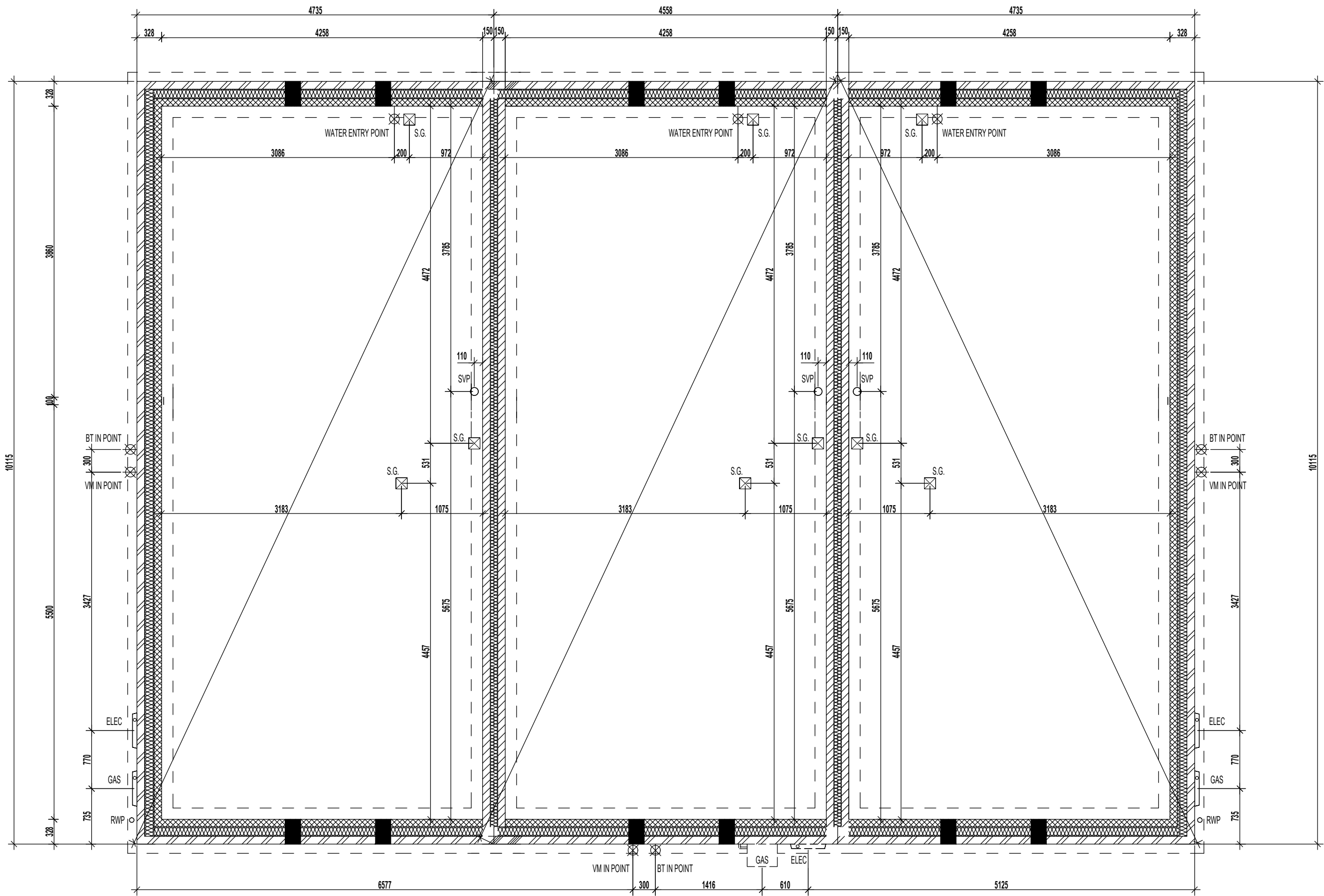
100mm PIPE REQUIRED FOR CROSS VENTILATION

RAINWATER DOWNPIPE PROVISION - GENERAL NOTE:

WHERE DWELLING IS PLOTTED AS A MID-TERRACED OPTION, DOWNPIPE PROVISION TO BE RE-EVALUATED TO REFLECT THE EXTENT OF ADDITIONAL RAINWATER GUTTER REQUIRED.

IMPORTANT NOTE:-

WHERE DWELLING IS PLOTTED 'OPP' ENSURE RWP LOCATIONS REFLECT POLYPIPE RAINWATER SYSTEM DESIGN.



BAYMONT (AS)

BAYMONT (AS)

BAYMONT (Opp)

Project Title
BAYMONT - LOCKTON
2024 AFFORDABLE PORTFOLIO
2021 UPLIFT SPECIFICATION

Drawing Title
FOUNDATION COMPOSITE & AIR BRICK
PLAN

Revision Note:
EXTERNAL LAUNDRY DOOR SETTING-OUT DIMENSIONS UPDATED

Scale
1 : 50

Drawn By
G.T.

Date
06.11.23

Drawing No.
L463104

Revision
C2

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Telephone 0870 336 4400 Fax 0870 336 4401
www.millerhomes.co.uk

ORIGINAL SHEET SIZE A2 - DO NOT SCALE FROM THIS DRAWING

WALL LEGEND.

DENOTES 328MM THICK CAVITY WALL :
- 102.5MM FACING BRICKWORK
- 125MM WIDE INSULATED CAVITY
- 100MM THICK 3.6NMMF STANDARD AIRCRETE BLOCKWORK

DENOTES 300MM THICK PARTY WALL :
- 100MM THICK 3.6NMMF LIGHTWEIGHT AGGREGATE CONCRETE BLOCKWORK
- 100MM WIDE INSULATED CAVITY
- 100MM THICK 3.6NMMF LIGHTWEIGHT AGGREGATE CONCRETE BLOCKWORK

DASHED LINES INDICATE FOUNDATIONS TO EXTERNAL & INTERNAL WALLS.
REFER TO CONSULTING ENGINEER'S DRAWINGS FOR ACTUAL SIZE & TYPE.

GENERAL NOTE:
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RAINWATER DOWNPIPE PROVISION - GENERAL NOTE:
WHERE DWELLING IS PLOTTED AS A MID-TERRACED OPTION, DOWNPIPE PROVISION TO BE RE-EVALUATED TO REFLECT THE EXTENT OF ADDITIONAL RAINWATER GUTTER REQUIRED.

IMPORTANT NOTE: -
WHERE DWELLING IS PLOTTED 'OPP' ENSURE RWP LOCATIONS REFLECT POLYPIPE RAINWATER SYSTEM DESIGN

BEAM & BLOCK / EPS UNDERFLOOR VOID VENTILATION

VENTILATION SHOULD BE PROVIDED TO PRECAST SUSPENDED FLOORS IN ACCORDANCE WITH CHAPTER 5.2.10 OF LATEST NHBC TECHNICAL STANDARDS. (GENERALLY PROVIDED BY VENTILATORS ON AT LEAST TWO OPPOSITE EXTERNAL WALLS.

WHERE SLEEPER WALLS / PARTITIONS PROVIDED, THESE SHOULD BE CONSTRUCTED WITH SUFFICIENT OPENINGS TO ENSURE ADEQUATE THROUGH VENTILATION.

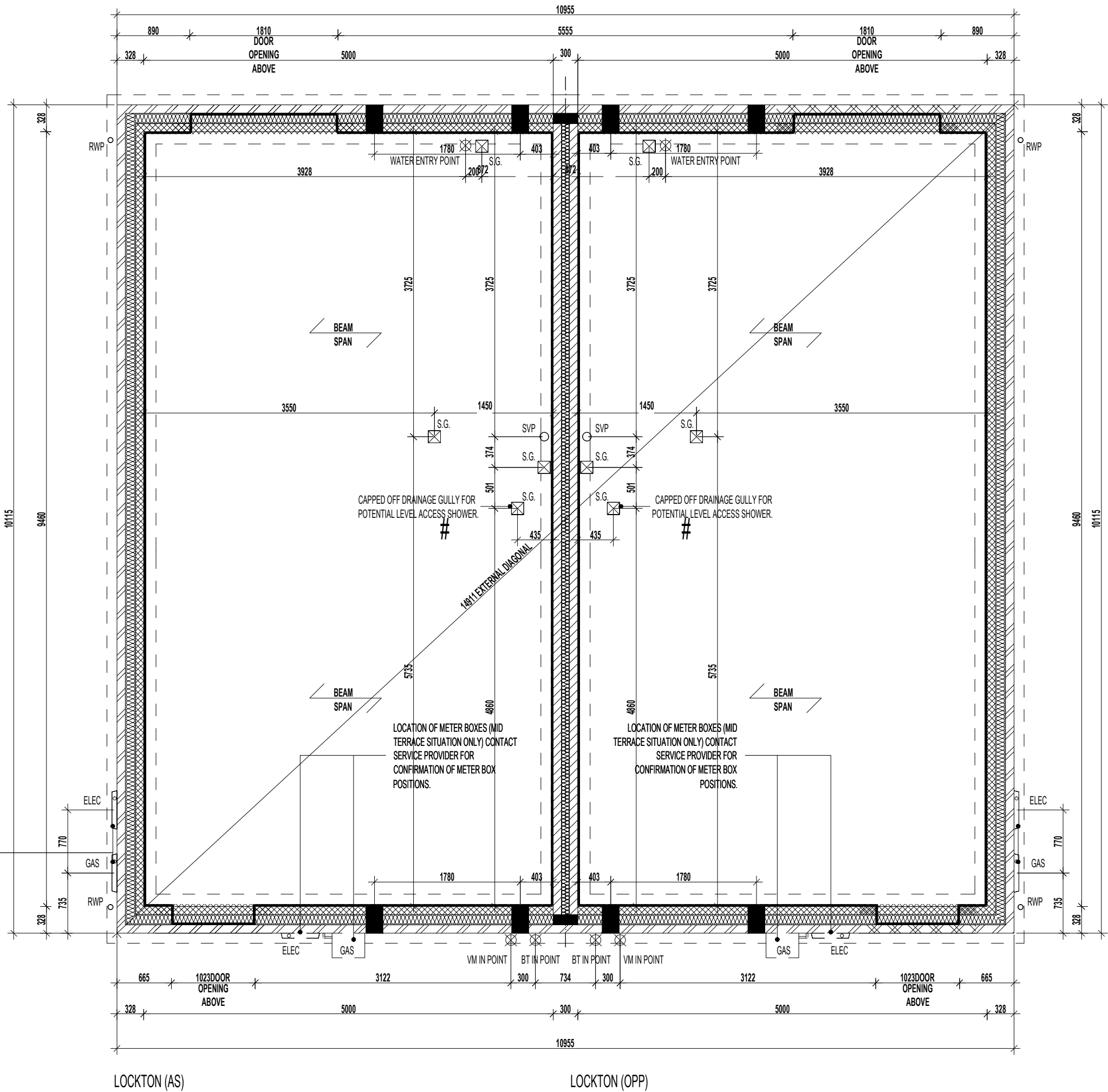
VOID VENTILATION SHOULD BE PROVIDED TO WHICHEVER GIVES THE GREATER OPENING AREA:

- 1500MM² PER METRE RUN OF EXTERNAL WALL
- 500MM² PER M² OF FLOOR AREA.

(ITEMS SPECIFIC TO M4(2) COMPLIANCE) - GENERAL NOTE: -
WHERE DWELLING IS TO BE M4(2) COMPLIANT, ITEMS DENOTED AS SUCH TO BE PROVIDED AS STANDARD, OTHERWISE LAYOUT SUBJECT TO APPROVED DOC. M4(1) CRITERIA.

PUFV – Ryttons Periscope® Underfloor Ventilator – 7,750mm² per unit (with Ryttons Multitix® Air Brick fitted)

LOCATION OF METER BOXES (END TERRACE SITUATION ONLY) CONTACT SERVICE PROVIDER FOR CONFIRMATION OF METER BOX POSITIONS.



NOTES:

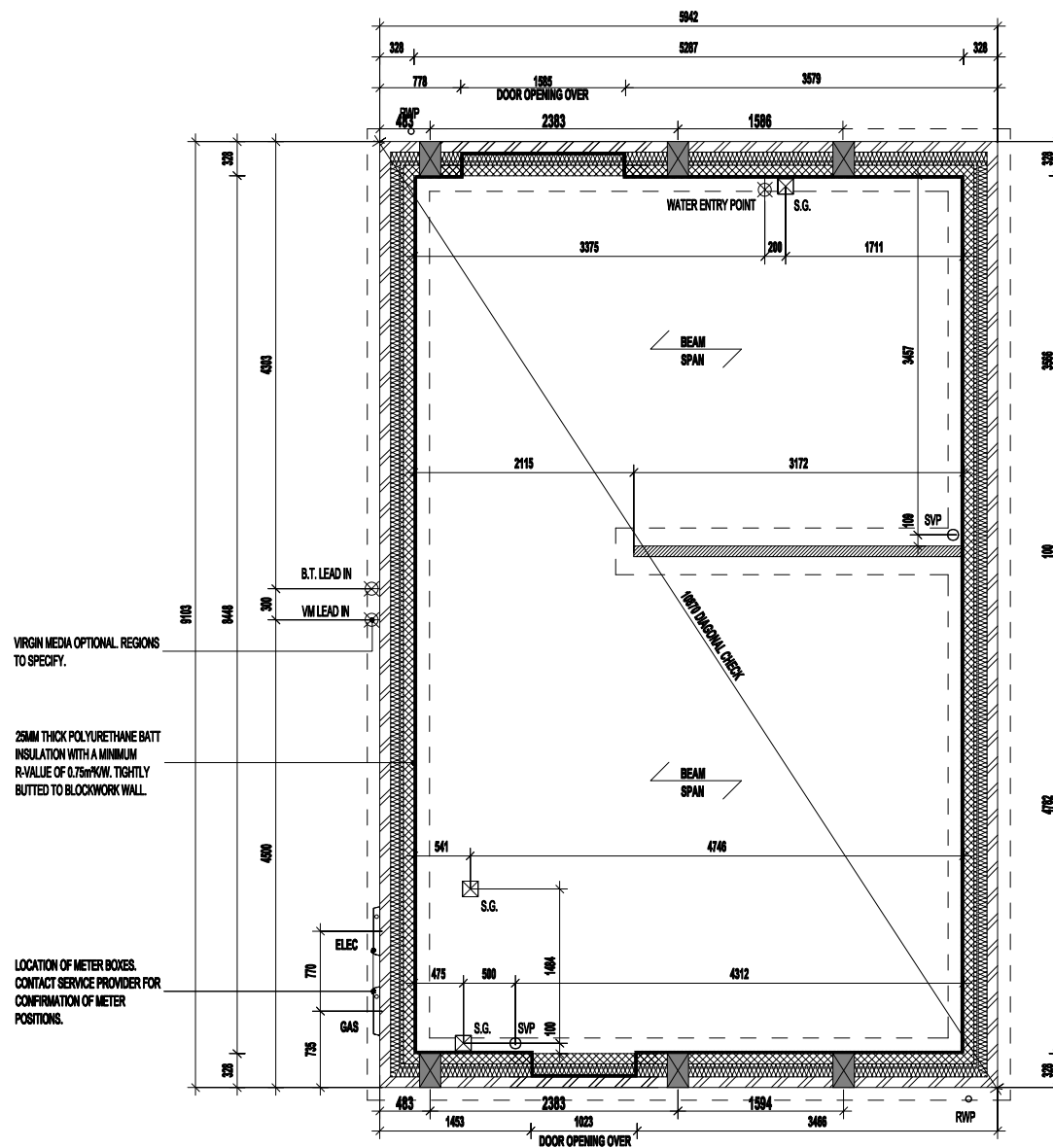
- ALL DIMENSIONS ARE IN MILLIMETRES, UNLESS STATED OTHERWISE.
- DO NOT SCALE FROM THIS DRAWING.
- ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE CONSTRUCTION COMMENCES.
- EXISTING SERVICE RUNS TO BE VERIFIED BY SITE INSPECTION.

Rev	Description	Date
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millerohomes

Client
Miller Homes
Project
Lepton

Title
Lockton Semi - Composite Foundation Plan
Draw No. 2519-CP-111-FA Rev. 1:50@A2 Scale AC Checked AK Date 04/25



WALL LEGEND.

-  DENOTES 328MM THICK CAVITY WALL :
- 102.5MM FACING BRICKWORK
- 125MM WIDE INSULATED CAVITY
- 100MM THICK 3.6N/MM² STANDARD AIRCRETE BLOCKWORK
-  DENOTES 100MM THICK LOAD BEARING PARTITION WALL :
- 100MM THICK 3.6N/MM² LIGHTWEIGHT AGGREGATE BLOCKWORK

DASHED LINES INDICATE FOUNDATIONS TO EXTERNAL & INTERNAL WALLS.
REFER TO CONSULTING ENGINEER'S DRAWINGS FOR ACTUAL SIZE & TYPE.

GENERAL NOTE:
REFER TO DIMENSIONED G.F. PLANS FOR EXTERNAL & INTERNAL DOOR LOCATIONS AND CROSS REFER TO ASSOCIATED STANDARD DETAILS FOR DOOR THRESHOLD TREATMENT.

BEAM & BLOCK / EPS UNDERFLOOR VOID VENTILATION

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 PUFV - Rytons Periscope® Underfloor Ventilator - 7,750mm² per unit (with Rytons Multi® Air Brick fitted)

REFER TO MANUFACTURERS DRAWINGS FOR FURTHER INFORMATION

Project Title
L358 - 3B / 5P / 947 - WHITTON
2024 NATIONAL PORTFOLIO
2021 UPLIFT SPECIFICATION

Drawing Title
FOUNDATION COMPOSITE & AIR BRICK
PLAN

Revision Note:

CONSTRUCTION ISSUE

Scale

1 : 50

Drawn By

G.T.

Date

08.12.23

Drawing No.

L358110

Revision

C1

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www.millerhomes.co.uk

ORIGINAL SHEET SIZE A3 - DO NOT SCALE FROM THIS DRAWING

CONTRACTORS MUST CHECK ALL DIMENSIONS ON SITE. ONLY FIGURED DIMENSIONS TO BE WORKED FROM. DISCREPANCIES MUST BE REPORTED TO THE DESIGN OFFICE BEFORE PROCEEDING

WALL LEGEND.

- DENOTES 328MM THICK CAVITY WALL BELOW DPC :
- 102.5MM FACING BRICKWORK
- 125MM WIDE INSULATED CAVITY
- 100MM THICK 3.6NMM² STANDARD AIRCRETE BLOCKWORK
- DENOTES 100MM THICK LOAD BEARING PARTITION WALL :
- 100MM THICK 3.6NMM² LIGHTWEIGHT AGGREGATE BLOCKWORK

DASHED LINES INDICATE FOUNDATIONS TO EXTERNAL & INTERNAL WALLS.
REFER TO CONSULTING ENGINEER'S DRAWINGS FOR ACTUAL SIZE & TYPE.

GENERAL NOTE:
REFER TO DIMENSIONED G.F. PLANS FOR EXTERNAL & INTERNAL DOOR LOCATIONS AND CROSS REFER TO ASSOCIATED STANDARD DETAILS FOR DOOR THRESHOLD TREATMENT.

BEAM & BLOCK / EPS UNDERFLOOR VOID VENTILATION

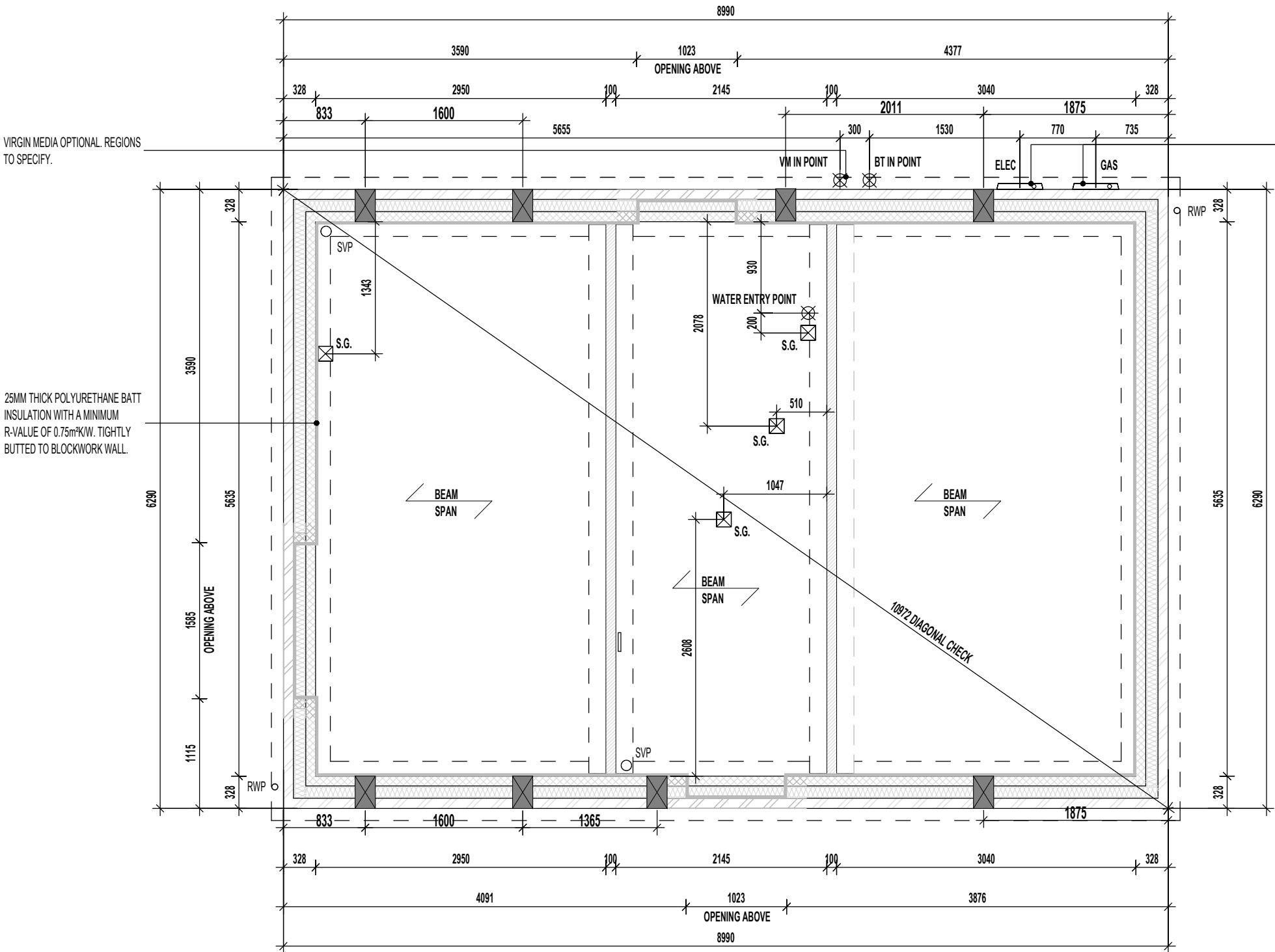
VENTILATION SHOULD BE PROVIDED TO PRECAST SUSPENDED FLOORS IN ACCORDANCE WITH CHAPTER 5.2.10 OF LATEST NHBC TECHNICAL STANDARDS .
(GENERALLY PROVIDED BY VENTILATORS ON AT LEAST TWO OPPOSITE EXTERNAL WALLS.

WHERE SLEEPER WALLS / PARTITIONS PROVIDED, THESE SHOULD BE CONSTRUCTED WITH SUFFICIENT OPENINGS TO ENSURE ADEQUATE THROUGH VENTILATION.

VOID VENTILATION SHOULD BE PROVIDED TO WHICHEVER GIVES THE GREATER OPENING AREA:

- 1500MM² PER METRE RUN OF EXTERNAL WALL
- 500MM² PER M² OF FLOOR AREA.

 PUFV – Rytons Periscope® Underfloor Ventilator – 7,750mm² per unit (with Rytons Multifix® Air Brick fitted)



LOCATION OF METER BOXES.
CONTACT SERVICE PROVIDER FOR
CONFIRMATION OF METER
POSITIONS.

VIRGIN MEDIA OPTIONAL. REGIONS
TO SPECIFY.

25MM THICK POLYURETHANE BATT
INSULATION WITH A MINIMUM
R-VALUE OF 0.75m²KW. TIGHTLY
BUTTED TO BLOCKWORK WALL.

REFER TO MANUFACTURERS DRAWINGS FOR FURTHER INFORMATION

Revision Note:

CONSTRUCTION ISSUE

Scale

1 : 50

Drawn By

G.T.

Date

06.11.23

Drawing No.

L361110

Revision

C1

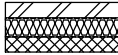
Project Title

L361 - 3B / 5P / 996 - BRAXTON
2024 NATIONAL PORTFOLIO
2021 UPLIFT SPECIFICATION

Drawing Title

FOUNDATION COMPOSITE & AIR BRICK
PLAN

WALL LEGEND.

-  DENOTES 328MM THICK CAVITY WALL :
- 102.5MM FACING BRICKWORK
- 125MM WIDE INSULATED CAVITY
- 100MM THICK 3.6N/MM² STANDARD AIRCRETE BLOCKWORK
-  DENOTES 100MM THICK LOAD BEARING PARTITION WALL :
- 100MM THICK 3.6N/MM² LIGHTWEIGHT AGGREGATE BLOCKWORK

DASHED LINES INDICATE FOUNDATIONS TO EXTERNAL & INTERNAL WALLS. REFER TO CONSULTING ENGINEER'S DRAWINGS FOR ACTUAL SIZE & TYPE.

GENERAL NOTE:
REFER TO DIMENSIONED G.F. PLANS FOR EXTERNAL & INTERNAL DOOR LOCATIONS AND CROSS REFER TO ASSOCIATED STANDARD DETAILS FOR DOOR THRESHOLD TREATMENT.

BEAM & BLOCK / EPS UNDERFLOOR VOID VENTILATION

VENTILATION SHOULD BE PROVIDED TO PRECAST SUSPENDED FLOORS IN ACCORDANCE WITH CHAPTER 5.2.10 OF LATEST NHBC TECHNICAL STANDARDS . (GENERALLY PROVIDED BY VENTILATORS ON AT LEAST TWO OPPOSITE EXTERNAL WALLS.

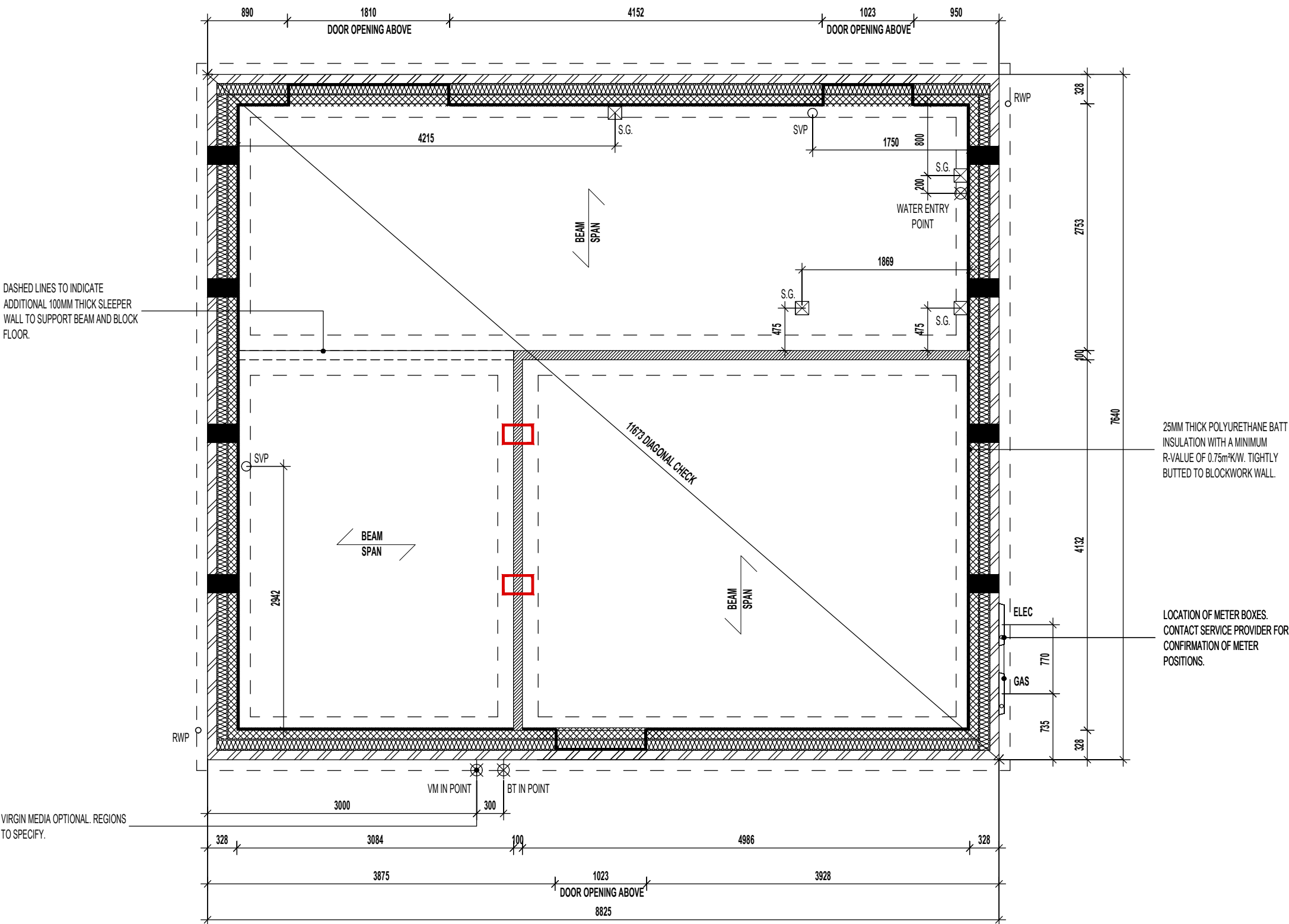
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- 500MM² PER M² OF FLOOR AREA.

 PUFV – Rytons Periscope® Underfloor Ventilator – 7,750mm² per unit (with Rytons Multifix® Air Brick fitted)

 100mm PIPE REQUIRED FOR CROSS VENTILATION



REFER TO MANUFACTURERS DRAWINGS FOR FURTHER INFORMATION

Project Title
L458 - 4B / 7P / 1212 - PORTSTONE
2024 NATIONAL PORTFOLIO
2021 UPLIFT SPECIFICATION

Drawing Title
FOUNDATION COMPOSITE & AIR BRICK
PLAN

Revision Note:

CONSTRUCTION ISSUE

Scale

1 : 50

Drawn By

G.T.

Date

06.11.23

Drawing No.

L458104

Revision

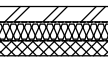
C1

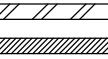
Miller Homes Ltd
2 Centro Place, Pride Park
Derby, DE24 8RF
Telephone 0870 336 4400 Fax 0870 336 4401
www.millerhomes.co.uk

ORIGINAL SHEET SIZE A3 - DO NOT SCALE FROM THIS DRAWING

CONTRACTORS MUST CHECK ALL DIMENSIONS ON SITE. ONLY FIGURED DIMENSIONS TO BE WORKED FROM DISCREPANCIES MUST BE REPORTED TO THE DESIGN OFFICE BEFORE PROCEEDING

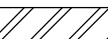
WALL LEGEND.

- 

DENOTES 328MM THICK CAVITY WALL :
- 102.5MM FACING BRICKWORK
- 125MM WIDE INSULATED CAVITY
- 100MM THICK 3.8NM/M² STANDARD AIRCRETE BLOCKWORK
- 

DENOTES 328MM THICK CAVITY WALL GARAGE :
- 102.5MM FACING BRICKWORK
- 125MM WIDE CAVITY
- 100MM THICK 3.8NM/M² STANDARD LIGHTWEIGHT AGGREGATE BLOCKWORK
- 

DENOTES 100MM THICK LOAD BEARING GARAGE SEPARATING WALL :
- 100MM THICK 3.8NM/M² STANDARD AIRCRETE BLOCKWORK
- 

DENOTES 100MM THICK LOAD BEARING PARTITION WALL :
- 100MM THICK 3.8NM/M² LIGHTWEIGHT AGGREGATE BLOCKWORK
- 

DENOTES 215MM SOLID BRICK WALL

DASHED LINES INDICATE FOUNDATIONS TO EXTERNAL & INTERNAL WALLS.
REFER TO CONSULTING ENGINEER'S DRAWINGS FOR ACTUAL SIZE & TYPE.

GENERAL NOTE:
REFER TO DIMENSIONED G.F. PLANS FOR EXTERNAL & INTERNAL DOOR LOCATIONS AND CROSS REFER TO ASSOCIATED STANDARD DETAILS FOR DOOR THRESHOLD TREATMENT.

BEAM & BLOCK / EPS UNDERFLOOR VOID VENTILATION

VENTILATION SHOULD BE PROVIDED TO PRECAST SUSPENDED FLOORS IN ACCORDANCE WITH CHAPTER 5.2.10 OF LATEST NHBC TECHNICAL STANDARDS. (GENERALLY PROVIDED BY VENTILATORS ON AT LEAST TWO OPPOSITE EXTERNAL WALLS.

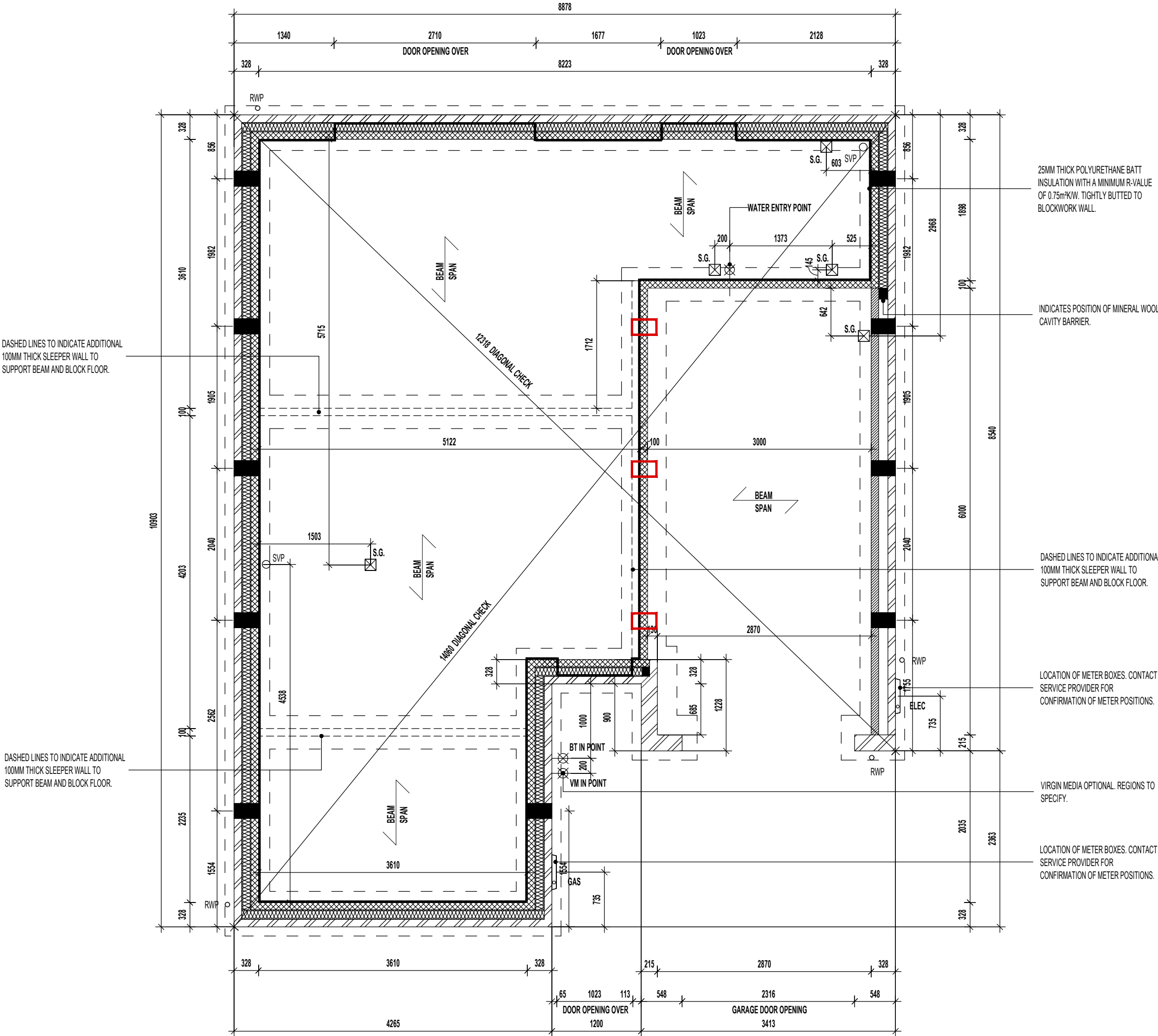
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- 1500MM² PER METRE RUN OF EXTERNAL WALL
- 500MM² PER M² OF FLOOR AREA.

PUFV – Rytons Periscope® Underfloor Ventilator – 7,750mm² per unit (with Rytons Multifix® Air Brick fitted)

100mm PIPE REQUIRED FOR CROSS VENTILATION



REFER TO MANUFACTURER'S DRAWINGS FOR FURTHER INFORMATION

Project Title
L463 - 4B / 8P / 1296 - CHERYSTONE
2024 NATIONAL PORTFOLIO
2021 UPLIFT SPECIFICATION

Drawing Title
FOUNDATION COMPOSITE & AIR BRICK
PLAN

Revision Note:
EXTERNAL LAUNDRY DOOR SETTING-OUT DIMENSIONS UPDATED

Scale
1 : 50

Drawn By
G.T.

Date
06.11.23

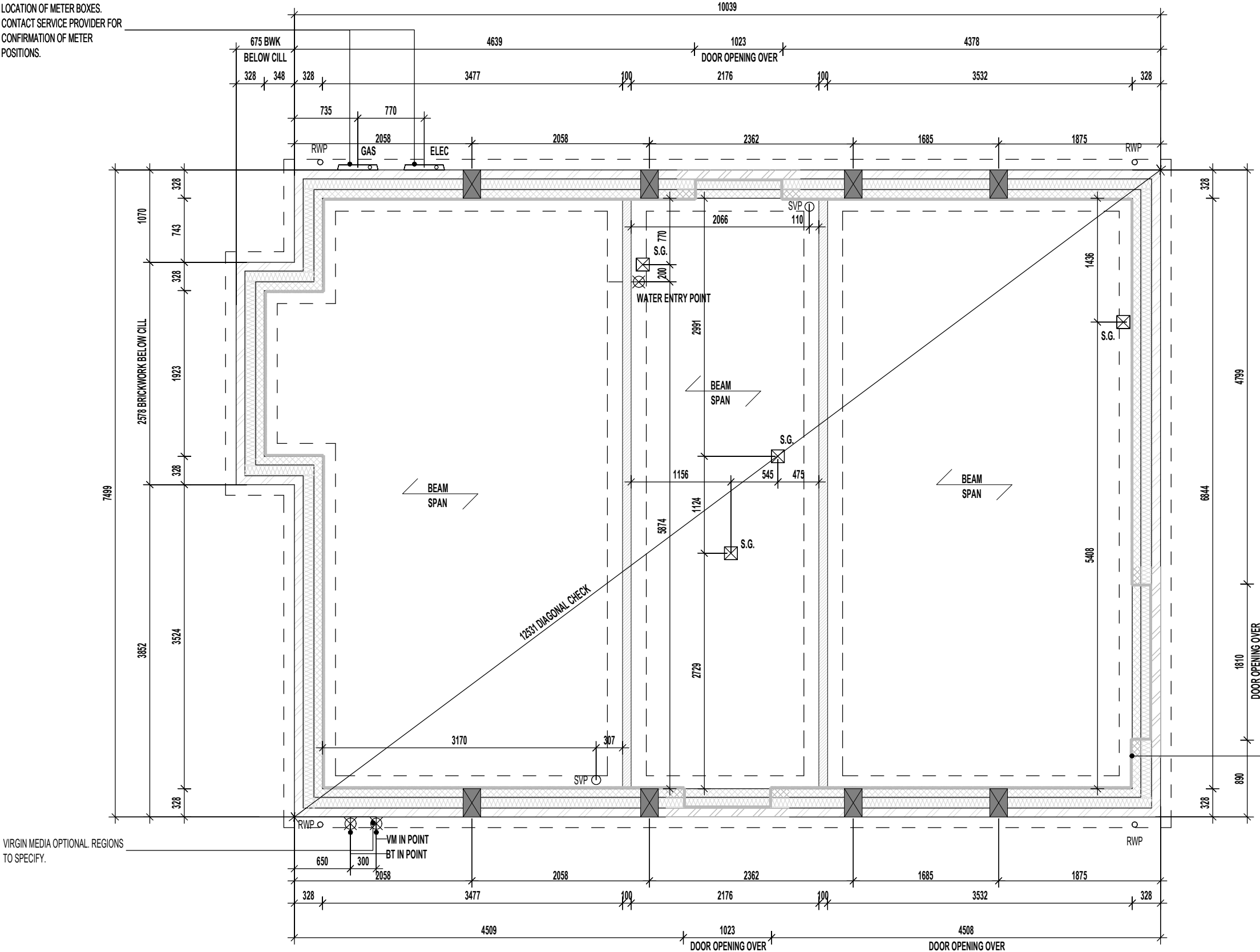
Drawing No.
L463104

Revision
C2

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www.millerhomes.co.uk

ORIGINAL SHEET SIZE A2 - DO NOT SCALE FROM THIS DRAWING

LOCATION OF METER BOXES.
CONTACT SERVICE PROVIDER FOR
CONFIRMATION OF METER
POSITIONS.



WALL LEGEND.

- DENOTES 328MM THICK CAVITY WALL :
 - 102.5MM FACING BRICKWORK
 - 125MM WIDE INSULATED CAVITY
 - 100MM THICK 3.6N/MM² STANDARD AIRCRETE BLOCKWORK
- DENOTES 100MM THICK LOAD BEARING PARTITION WALL :
 - 100MM THICK 3.6N/MM² LIGHTWEIGHT AGGREGATE BLOCKWORK

DASHED LINES INDICATE FOUNDATIONS TO EXTERNAL & INTERNAL WALLS.
REFER TO CONSULTING ENGINEER'S DRAWINGS FOR ACTUAL SIZE & TYPE.

GENERAL NOTE:
REFER TO DIMENSIONED G.F. PLANS FOR EXTERNAL & INTERNAL DOOR LOCATIONS AND CROSS REFER TO ASSOCIATED STANDARD DETAILS FOR DOOR THRESHOLD TREATMENT.

BEAM & BLOCK / EPS UNDERFLOOR VOID VENTILATION

VENTILATION SHOULD BE PROVIDED TO PRECAST SUSPENDED FLOORS IN ACCORDANCE WITH CHAPTER 5.2.10 OF LATEST NHBC TECHNICAL STANDARDS. (GENERALLY PROVIDED BY VENTILATORS ON AT LEAST TWO OPPOSITE EXTERNAL WALLS.

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- 500MM² PER M² OF FLOOR AREA.

PUFV - Rytons Periscope® Underfloor Ventilator - 7,750mm² per unit (with Rytons Multifix® Air Brick fitted)

25MM THICK POLYURETHANE BATT INSULATION WITH A MINIMUM R-VALUE OF 0.75m²/K/W. TIGHTLY BUTTED TO BLOCKWORK WALL.

REFER TO MANUFACTURERS DRAWINGS FOR FURTHER INFORMATION

Project Title
L467 - 4B / 8P / 1379 - BEAUWOOD
2024 NATIONAL PORTFOLIO
2021 UPLIFT SPECIFICATION

Drawing Title
FOUNDATION COMPOSITE AND AIR BRICKS

Revision Note:
CONSTRUCTION ISSUE

Scale
1 : 50

Drawn By
G.T.

Date
06.11.23

Drawing No.
L467110

Revision
C1

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Derby, DE24 8RF
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www.millerhomes.co.uk

WALL LEGEND.

- DENOTES 328MM THICK CAVITY WALL BELOW DPC :
- 102.5MM FACING BRICKWORK
- 125MM WIDE INSULATED CAVITY
- 100MM THICK 3.6N/MM² STANDARD AIRCRETE BLOCKWORK
- DENOTES 293MM THICK CAVITY WALL GARAGE :
- 102.5MM FACING BRICKWORK
- 90MM WIDE CAVITY
- 100MM THICK 3.6N/MM² STANDARD LIGHTWEIGHT AGGREGATE BLOCKWORK
- DENOTES 100MM THICK LOAD BEARING PARTITION WALL :
- 100MM THICK 3.6N/MM² LIGHTWEIGHT AGGREGATE BLOCKWORK
- DENOTES 100MM THICK LOAD BEARING GARAGE SEPARATING WALL :
- 100MM THICK 3.6N/MM² STANDARD AIRCRETE BLOCKWORK
- DENOTES 328MM THICK SOLID BRICK WALL

DASHED LINES INDICATE FOUNDATIONS TO EXTERNAL & INTERNAL WALLS.
REFER TO CONSULTING ENGINEER'S DRAWINGS FOR ACTUAL SIZE & TYPE.

GENERAL NOTE:
REFER TO DIMENSIONED G.F. PLANS FOR EXTERNAL & INTERNAL DOOR LOCATIONS AND CROSS REFER TO ASSOCIATED STANDARD DETAILS FOR DOOR THRESHOLD TREATMENT.

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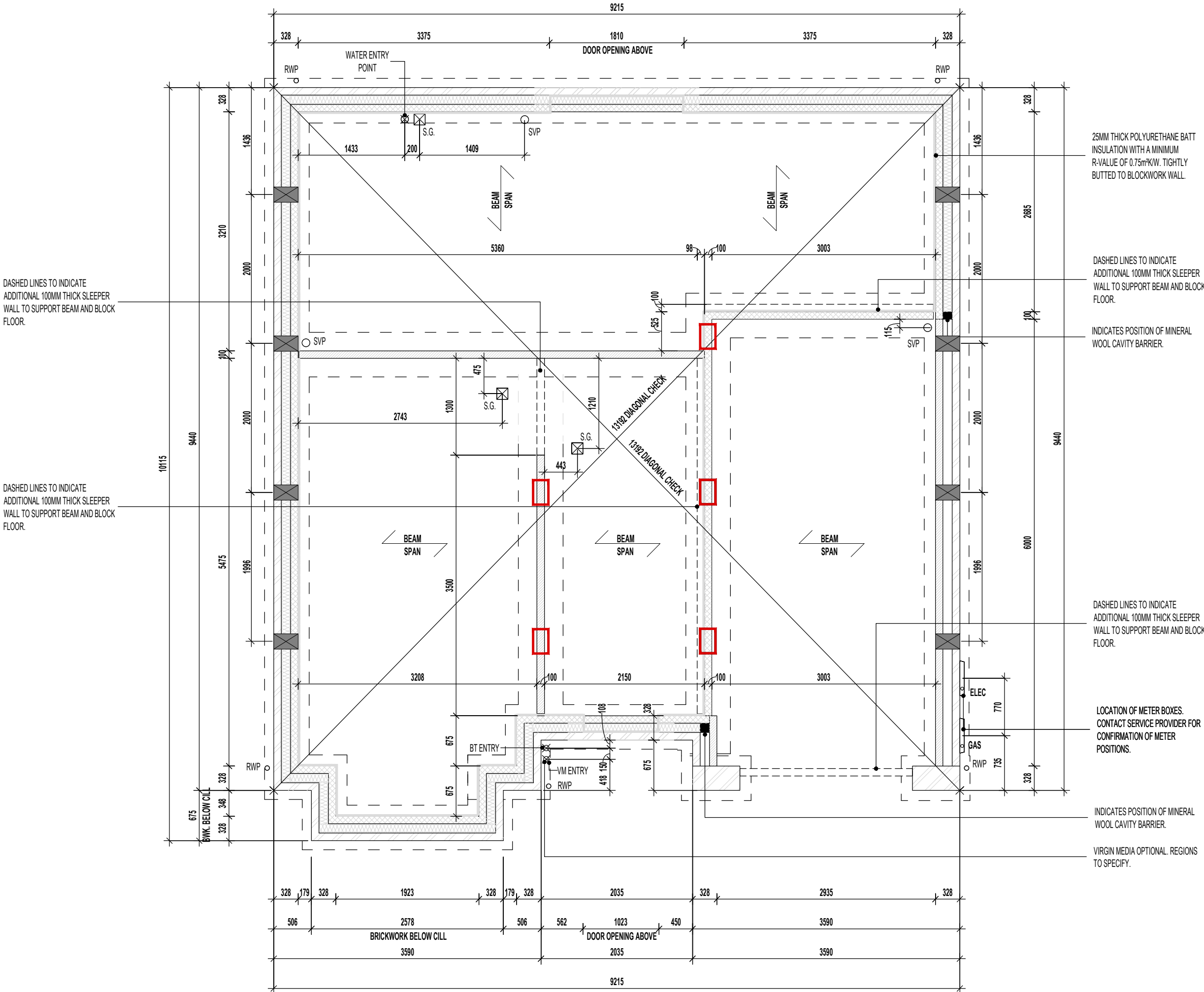
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- 500MM² PER M² OF FLOOR AREA.

 PUFV – Rytons Periscope® Underfloor Ventilator – 7,750mm² per unit (with Rytons Multifix® Air Brick fitted)

 100mm PIPE REQUIRED FOR CROSS VENTILATION



REFER TO MANUFACTURERS DRAWINGS FOR FURTHER INFORMATION

Project Title
L468 - 4B / 8P / 1368 - DENSTONE
2024 NATIONAL PORTFOLIO
2021 UPLIFT SPECIFICATION

Drawing Title
FOUNDATION COMPOSITE AND AIR BRICKS

Revision Note:

CONSTRUCTION ISSUE

Scale

1 : 50

Drawn By

G.T.

Date

06.11.23

Drawing No.

L468110

Revision

C1

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Derby, DE24 8RF
Telephone 0870 336 4400 Fax 0870 336 4401
www.millerhomes.co.uk

ORIGINAL SHEET SIZE A2 - DO NOT SCALE FROM THIS DRAWING

WALL LEGEND.

- DENOTES 328MM THICK CAVITY WALL :
- 102.5MM FACING BRICKWORK
- 125MM WIDE INSULATED CAVITY
- 100MM THICK 3.6NMM² STANDARD AIRCRETE BLOCKWORK
- DENOTES 100MM THICK LOAD BEARING PARTITION WALL :
- 100MM THICK 3.6NMM² LIGHTWEIGHT AGGREGATE BLOCKWORK

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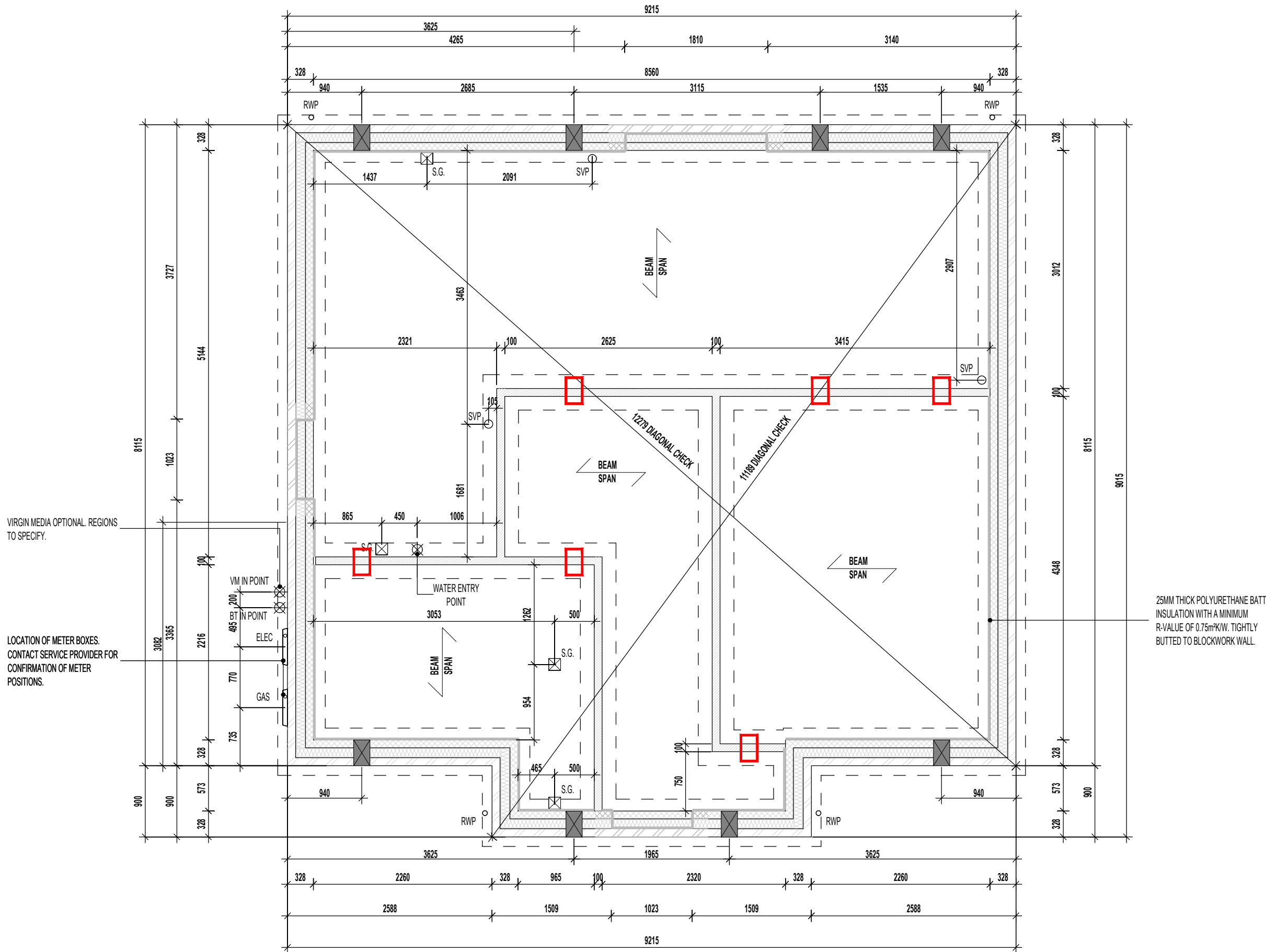
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100mm PIPE REQUIRED FOR CROSS VENTILATION



REFER TO MANUFACTURERS DRAWINGS FOR FURTHER INFORMATION

Project Title
**L469 - 4 / 8 / 1422 - SANDALWOOD
2024 NATIONAL PORTFOLIO
2018 SPECIFICATION**

Drawing Title
**FOUNDATION COMPOSITE & AIR
BRICKS**

Revision Note:

CONSTRUCTION ISSUE

Scale

1 : 50

Drawn By

G.T.

Date

06.11.23

Drawing No.

L469110

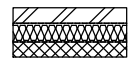
Revision

C1

Miller Homes Ltd
2 Centro Place, Pride Park
Derby, DE24 8RF
Telephone 0870 336 4400 Fax 0870 336 4401
www.millerhomes.co.uk

ORIGINAL SHEET SIZE A2 - DO NOT SCALE FROM THIS DRAWING

WALL LEGEND.



DENOTES 293MM THICK CAVITY WALL :

- 102.5MM FACING BRICKWORK
- 125MM WIDE INSULATED CAVITY
- 100MM THICK 3.6N/MM² STANDARD AIRCRETE BLOCKWORK



DENOTES 100MM THICK LOAD BEARING PARTITION WALL :
 - 100MM THICK 3.6N/MM² LIGHTWEIGHT AGGREGATE BLOCKWORK

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GENERAL NOTE:
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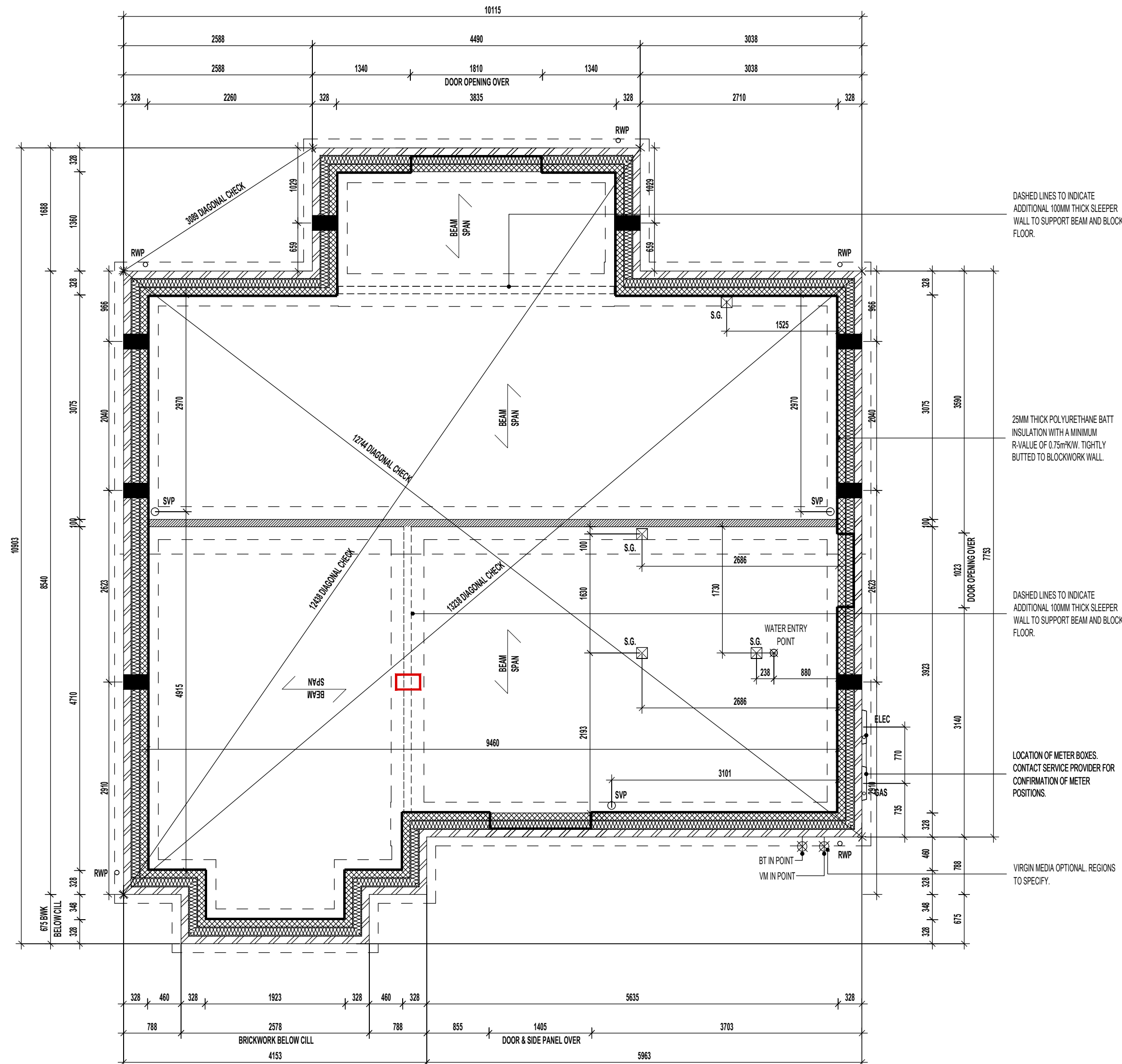
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- 500MM² PER M² OF FLOOR AREA.

PUFV – Rytons Periscope® Underfloor Ventilator – 7,750mm² per unit (with Ryton Multifix® Air Brick fitted)

100mm PIPE REQUIRED FOR CROSS VENTILATION



REFER TO MANUFACTURERS DRAWINGS FOR FURTHER INFORMATION

Project Title
L552 - 5B / 9P / 1568 - HOMESFORD 2024 NATIONAL PORTFOLIO 2021 UPLIFT SPECIFICATION

Drawing Title

FOUNDATION COMPOSITE & AIR BRICK
PLAN

Revision Note:

ENTRANCE DOOR & SIDE PANEL OPENING SETTING-OUT DIMENSIONS UPDATED

Scale

Drawn By

Date _____

Drawing No.

Revision

Miller Homes Ltd
2 Centro Place, Pride Park
Derby, DE24 8RF
Telephone 0870 336 4400 Fax 0870 336 4401
www.millerhomes.co.uk

ORIGINAL SHEET SIZE A2 - DO NOT SCALE FROM THIS DRAWING

	DENOTES 293MM THICK CAVITY WALL : - 102.5MM FACING BRICKWORK - 125MM WIDE INSULATED CAVITY - 100MM THICK 3.6N/M² STANDARD AIRCRETE BLOCKWORK
	DENOTES 293MM THICK CAVITY WALL GARAGE : - 102.5MM FACING BRICKWORK - 125MM WIDE CAVITY - 100MM THICK 3.6N/M² STANDARD LIGHTWEIGHT AGGREGATE BLOCKWORK
	DENOTES 100MM THICK LOAD BEARING GARAGE SEPARATING WALL : - 100MM THICK 3.6N/M² STANDARD AIRCRETE BLOCKWORK
	DENOTES 100MM THICK LOAD BEARING PARTITION WALL : - 100MM THICK 3.6N/M² LIGHTWEIGHT AGGREGATE BLOCKWORK
	DENOTES 215MM SOLID BRICK WALL

GENERAL NOTE:
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- 500MM² PER M² OF FLOOR AREA.

 PUFV – Rytons Periscope® Underfloor Ventilator – 7,750mm² per unit (with Rytons Multifix® Air Brick fitted)

100mm PIPE REQUIRED FOR CROSS VENTILATION



CONSTRUCTION ISSUE

Revision

Miller Homes Ltd
2 Centro Place, Pride Park
Derby, DE24 8RF
Telephone 0870 336 4400 Fax 0870 336 440
www.millerhomes.co.uk

ORIGINAL SHEET SIZE A2 - DO NOT SCALE FROM THIS DRAWING

WALL LEGEND.

- DENOTES 328MM THICK CAVITY WALL :
- 102.5MM FACING BRICKWORK
- 125MM WIDE INSULATED CAVITY
- 100MM THICK 3.6NMM² STANDARD AIRCRETE BLOCKWORK
- DENOTES 330MM THICK DOUBLE SKIN WALL :
- 102.5MM FACING BRICKWORK
- 125MM WIDE CAVITY
- 102.5MM FACING BRICKWORK
- DENOTES 100MM THICK LOAD BEARING PARTITION WALL :
- 100MM THICK 3.6NMM² LIGHTWEIGHT AGGREGATE BLOCKWORK

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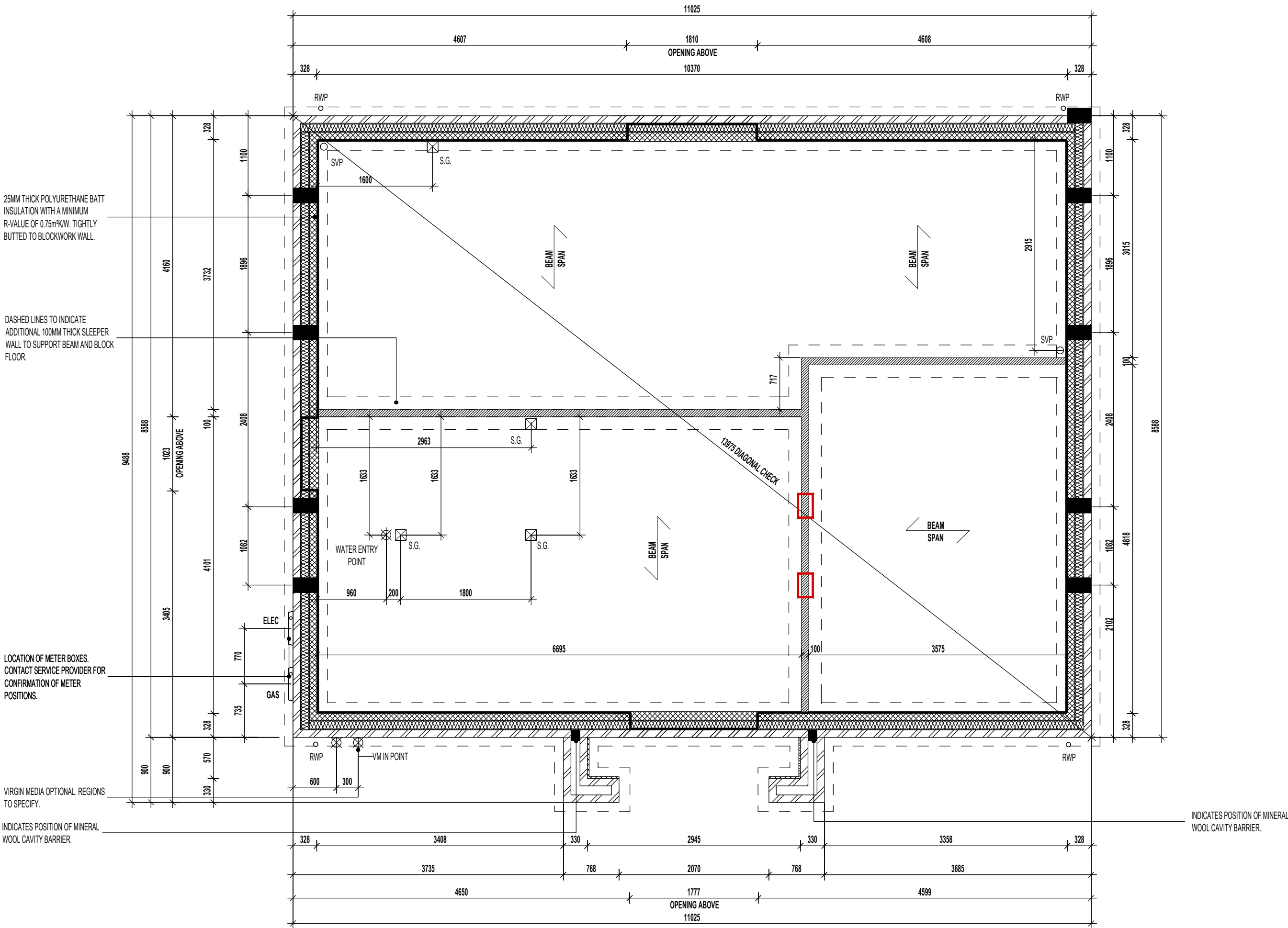
BEAM & BLOCK / EPS UNDERFLOOR VOID VENTILATION

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- PUFV - Rytons Periscope® Underfloor Ventilator - 7,750mm² per unit (with Rytons Multitix® Air Brick fitted)
- 100mm PIPE REQUIRED FOR CROSS VENTILATION



REFER TO MANUFACTURERS DRAWINGS FOR FURTHER INFORMATION

Project Title
L554 - 5B / 10P / 1780 - GRAYFORD
2024 NATIONAL PORTFOLIO
2021 UPLIFT SPECIFICATION

Drawing Title
FOUNDATION COMPOSITE & AIR BRICK
PLAN

Revision Note:

CONSTRUCTION ISSUE

Scale

1 : 50

Drawn By

G.T.

Date

06.11.23

Drawing No.

L554104

Revision

C1

Miller Homes Ltd
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ORIGINAL SHEET SIZE A2 - DO NOT SCALE FROM THIS DRAWING



ATTACHMENT B

GAS MEMBRANE DETAILS



GP[®]1



Installation Guidance

GP[®]1 is a high quality proprietary gas resistant damp proof membrane, manufactured from low density reinforced polyethylene (LDPE). This products is ideal for use on sites where ground gas contamination is present.

GP[®]1 incorporates an aluminium foil core, offering additional protection against Methane and Carbon Dioxide in addition to Radon and Bulk Ground gas. GP[®]1 can be used on any site where carbon dioxide, methane, bulk ground gas and/or radon is present up to and including BS8485:2015 + A1 2019 Characteristic situation (CS) 6. The barrier is sufficiently resistant to the ingress of harmful gases into a building. On more heavily contaminated sites, a passive or active venting system in addition to a gas barrier may be required to dilute the gases down to acceptable levels and specific design advice should be sought.

JUTA UK – radon, ground gas, vapour, air and moisture barrier characteristic properties:

- High Chemical Resistance
- High resistance to Ground Gasses
- Long Term Durability (Performance guaranteed for the lifetime of the building)
- Compatible with all building materials
- Manufactured to meet the most up to date British Standards and guidance.

Width	2 m
Length	50 m
Coverage	100 m ² / roll
Weight	40 kg



Additional Products & Accessories:

- **GP[®] SAM** Gas Resistant Self Adhesive variant of GP[®]1, is a bituminous gas proof and waterproof sheet, composed of self-adhesive SBS polymer modified bitumen in conjunction with an inner aluminium foil core and external HDPE carrier film. The lower surface finish of siliconized polypropylene release film is removed at the point of use. GP[®] SAM is used for the Gas/waterproofing of underground structures where harmful ground gasses are anticipated, or available in a 300 mm wide detailing strip to aid with corner sealing and penetration sealing with the GP[®]1 membrane system.
- **WP SAM** Waterproofing - Self Adhesive Membrane, is a bituminous water proof sheet, which provides resistance to Radon, composed of self-adhesive SBS polymer modified bitumen with an upper surface finish of cross laminated HDPE and a lower surface finish of paper release film. JUTA WP SAM is used for the Radon/waterproofing of underground structures where harmful ground gasses are anticipated, or as a detailing strip to aid with corner sealing and penetration sealing with the GP[®]2 and GP[®]4 membrane system.
- **GP[®] Tape** is a double sided thermoplastic sealant tape with high surface tack suitable for sealing membrane overlap joints. All seam joints should be rolled using a 40mm silicone seam roller to remove any trapped air and ensure adhesion between the membranes. Rolls sizes: 50mm x 10m.
- **GP[®] Lap Tape** is a single sided sealant tape with aluminium foil with high surface tack suitable for sealing membrane joints. All seam joints should be rolled using a 40mm silicone seam roller to remove any trapped air and ensure adhesion between the membranes. Rolls sizes: 75mm x 50m.
- **GP[®] DPC** is a gas resistant DPC which is used with Juta Gas Barriers depending on site requirements. Roll sizes: 1.3m x 20m.
- **GP[®] Primer** is a quick drying bitumen primer to give a key prior to applying GP[®] SAM. Juta GP[®] Primer can be used /on concrete, cementitious screeds and renders, steel and iron. It should be applied without thinning and should be scrubbed in by brush to ensure an even coverage. Coverage rate 6-10m² / litre depending on porosity of substrate, and drying time 3-4 hours depending on conditions. Supplied in 25 litre drums.
- **GP[®] Radon Sump** is a lightweight and easy installed HDPE unit. It can be converted to an active sump system if needed using activation of fans. All sumps must be linked by appropriate pipe work. Outlet positions for standard 110mm vent pipes for extraction and dispersion should be connected to the sump relative to site requirements.
- **GP[®] Void Vent** is a geocomposite void former composed of a cusped High Density Polyethylene (HDPE) Drainage core with a non-woven polypropylene (PP) geotextile separator/filter bonded to one side. The Void Vent is supplied in either 25mm or 40mm void depth. Material is joined by overlapping of the loose edge of geotextile for full coverage, or laid in strips as per the ventilation design. Roll sizes are 0.9m x 50m for the Void Vent 25, and 0.97m x 25m for the Void Vent 40.
- **GP[®] Protection Board** is a high density board which are supplied in 3.0mm x 1.2m x 2.4m sizes.
- **GP[®] Protection Fleece** is a 300g nonwoven geotextile and is supplied in 2m x 100m rolls.



General Precautions:

- It is recommended that JUTA Gas Barrier systems are installed in ambient air temperatures in excess of 5°C.
- Ingress of water into the installation area should be prohibited.
- In all cases, the surface onto which the barrier is to be laid should be smooth, dry, clean and free from debris or detritus material which may cause damage to the Barrier.
- In all cases it is recommended the installation of barrier geomembranes is completed by a suitably qualified and accredited installer (NVQ level 2/TWI/CSWIP or equivalent). JUTA UK can offer advice as to suitable/recommended installers.
- Appropriate PPE should be worn at all times during handling, placement and fixing of the Barrier.
- Vehicular traffic directly on top of the Barrier should be avoided.
- Foot traffic directly on top of the Barrier should be restricted.
- Where either Vehicular or Foot traffic is unavoidable, protective measures should be utilised to prevent damage to the Barrier. (Use of protection fleece and/or protection boards)
- GP[®] Membrane should not be left exposed for prolonged periods and should be covered as soon as practically possible, and within 1 month of installation. Where extended periods of exposure to UV are anticipated, protection measures should be employed to reduce exposure of the GP[®] membranes.
- Smoking, and naked flames are strictly prohibited.

Preparation:

- Prior to laying the GP[®] membrane ascertain that any sub floor gas venting or ventilation components are in their respective and appropriate positions. Individual components should be secured to avoid potential disruption or undue movement during the installation process.
- Where geo-composite void formers or graded stone venting layers are being deployed, sand, granite dust, etc., requires to be isolated to prevent fines from infiltrating ventilation voids. An appropriate separation layer / geotextile should be installed to prevent such occurrences.
- Masonry and other substructure elements within the membrane footprint should be checked for sharps and rough surfaces that may cause unintentional damage to overlying membrane(s).
- Warning signs should be displayed to discourage unwarranted foot traffic.
- All unnecessary vehicular access should be denied.



Substrate Preparation:

Substrates for installation of the GP[®] membrane systems need to have sufficient stability to avoid movement during the installation and subsequent construction works. The substrate preparation should include the following:

- A clean, dry, uniform, smooth surface free from debris and detritus, ponding water (damp or slightly wet is acceptable), oil and grease.
- Open Voids (> 12mm depth or width) must be filled before the installation of the membrane system.
- Where the substrate contains changes in elevation of >12mm, or particle protrusions from the substrate exceed 12mm, a protection fleece should be utilised to protect the membrane from damage from the substrate.
- Generally a sand blinding with a minimum thickness of 30mm, or a 300TT protection fleece would provide a suitable laying surface in lieu of concrete blinding.

We would encourage the use of a subgrade acceptance form prior to installation of the GP[®] membranes. Any issues of concern with the suitability of the subgrade can be highlighted and addressed prior to laying of the membrane.



Jointing and Sealing using Tapes:

Where design service life does not exceed 25 years:

- A 100mm overlap print line is provided on products to assist with overlapping, jointing and sealing.
- For taped joints, GP[®] Tape (50mm wide) can be utilised. The GP[®] Tape is double sided for ease of use.
- To joint using tapes, ensure the first panel of GP[®] Membrane Barrier is laid, and the surface is clean, dry, and free from dust. Begin by peeling one side of the protective coating from the tape, applying the tape within the 100 mm guide line area; such that the tape is within 100 mm line and the Barrier roll edge. Best practice recommends that the tape should be firmly adhered to the base membrane. This is best achieved by applying pressure with a silicone roller.

- Unroll the second layer of GP[®] Membrane Barrier ensuring a minimum 50 mm overlap (GP[®] Tape width) is present along the entire length of the lap. Slowly removing the upper layer of protective film from the Tape, and pressing firmly on the taped joint with a silicone roller will help to remove trapped air and ensure positive adhesion. (Note – taped joints have the highest failure rate when tested to ASTM D4437-08:2013 –therefore it is imperative that pressure sealing with silicone roller is implemented).
- Optional: Finish the joint by application of appropriate sealing tape over the joint to provide a smooth finish.(See below)

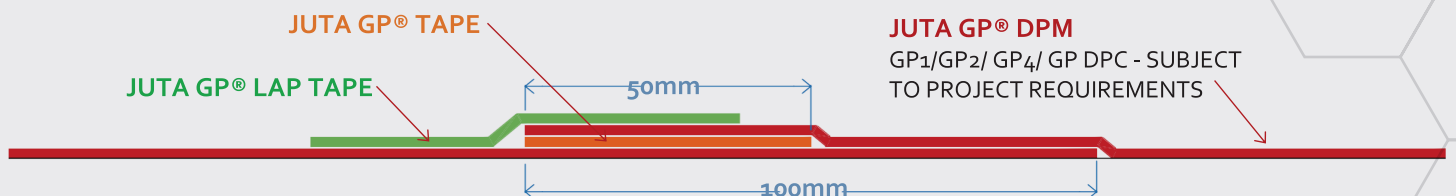
JUTA GP[®] LAP TAPE

JUTA GP[®] TAPE

JUTA GP[®] DPM
GP1/GP2/ GP4/ GP DPC -
SUBJECT TO PROJECT
REQUIREMENTS

JUTA GP[®] TAPE
JUTA GP[®] LAP TAPE

JUTA GP[®] DPM
GP1/GP2/ GP4/ GP DPC - SUBJECT
TO PROJECT REQUIREMENTS





Jointing and Sealing using welding:

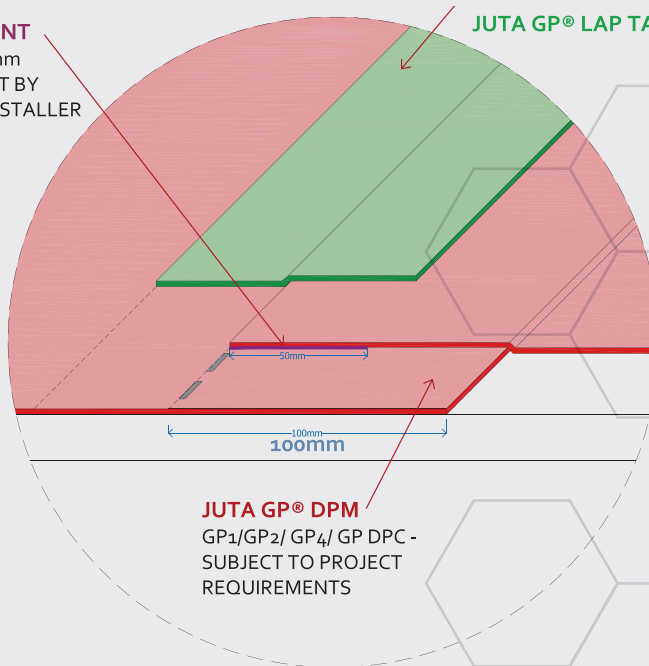
Where design service life is required to exceed 60 years:

- Prior to commencing welding work, trials must be completed to determine the operating window for the welding equipment and materials. It is widely acknowledged that ambient air temperature, power supply and the condition of welding equipment can affect the working window.
- Welding window for GP[®] gas barriers is 180-240°C at a suggested rate of 3.0 m/min on low air flow.
- JUTA UK recommends that any heat welding is carried out by a Construction Skills NVQ Level 2 qualified installer. (Or equivalent) The membranes should be overlapped by at least 100mm and care should be taken to ensure a seal between the joint.

- The printed 100mm overlap line should be used as a guide to ensure suitable jointing.
- A minimum welded overlap joint of 50mm wide should be achieved – it should be noted that the suitability of the welded joint is defined by the joint integrity, as tested in accordance with C735 (most commonly air lance – ASTM D4437-08:2013), if a welded joint passes integrity testing, it would be deemed acceptable.

WELDED JOINT
MINIMUM 50mm
WELDED JOINT BY
SPECIALIST INSTALLER

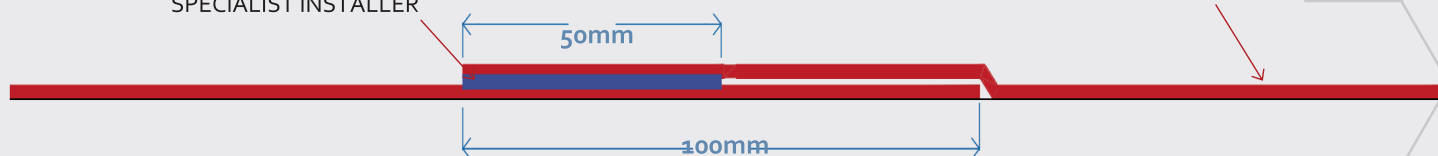
JUTA GP[®] LAP TAPE



JUTA GP[®] DPM
GP1/GP2/ GP4/ GP DPC -
SUBJECT TO PROJECT
REQUIREMENTS

WELDED JOINT
MINIMUM 50mm WELDED JOINT BY
SPECIALIST INSTALLER

JUTA GP[®] DPM
GP1/GP2/ GP4/ GP DPC - SUBJECT
TO PROJECT REQUIREMENTS





Pre-fabricated corner units:

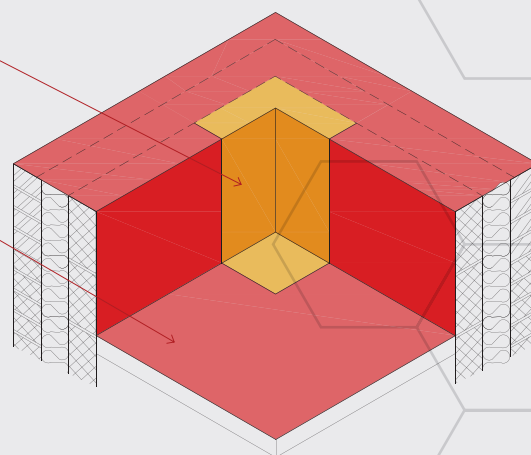
- Please refer to TD-JUTA.PFC.001 for Pre-Formed Corner Unit detail. Please contact JUTA UK for standard sizes or to request bespoke sizes.
- Build the masonry up to the height of the horizontal joint where the cavity tray is to be built in. Place the preformed upstand unit tight into the corner of the masonry wall.
- Remove the protective paper from the back of the GP[®] Tape and apply it to the upstand unit at a height that will ensure a good overlap when the downstand unit is in place. Remove the protective paper from the face of the tape.
- Place the preformed downstand unit tight into the corner with the horizontal element sitting on the masonry wall. Press the vertical leg of the downstand unit firmly against the upstand unit, starting at the internal corner and working outwards. Wherever possible, a silicone roller should be used to apply pressure and expel trapped air.
- Apply two lengths of double sided tape vertically across both upstand and downstand units, one on each return wall, ready to receive the lengths of cavity tray. When the cavity trays are sealed to the upstand units, join them to the floor membrane.
- If prefabricated units are sealed with thermal jointing – tapes are not required.

Sealing with Self-adhesive membrane:

- Sealing around corners, upstands and penetrations can be achieved with the compatible self-adhesive membrane variant; GP[®]1 SAM for GP[®]1 installation and WP SAM for GP[®]2 and GP[®]4 installation.
- In all cases, the surface onto which the Barrier is to be laid should be smooth, dry, clean and free from debris or detritus material which may cause damage to the Barrier.
- With the GP[®] membrane in place, self-adhesive membrane is cut and applied to the corners/upstands/penetrations to create a good seal extending a minimum 100mm up the vertical face then overlap and seal to the GP[®] Membrane providing a minimum horizontal 100mm lap.

JUTA SAM /
PRE FABRICATED CORNER UNIT
AS DESCRIBED ABOVE

JUTA GP[®] DPM
GP1/GP2/ GP4 DPM - SUBJECT
TO PROJECT REQUIREMENTS





Pre-fabricated top-hats:

- Cut a circular hole in the membrane as close as possible to the pipe, or pipe socket. Ensure that service penetrations do not occur at joints in the membrane.
- With the pipe in position, slide the Preformed Top hat Unit over the pipe (various diameters are available – 110 mm being the most common) mark the extent of the square, horizontal skirt over the membrane and also mark the line of the top of the top hat unit around the pipe.
- Raise the top hat unit and cut four lengths of Double Sided Jointing Tape, one for each side of the horizontal skirt allowing for an overlap at each corner. Cut one length to go round the pipe.
- Start to remove the protective paper from the double sided tape around the pipe and raise it up at an angle so that it will project above the top hat unit when it is stuck to the membrane.
- Release the protective paper from each of the four lengths of double sided tape. Lower the top hat unit, ensuring that the free end of the protective paper around the pipe is reachable, and seal the horizontal skirt to the membrane.
- Gradually remove the remainder of the protective paper from the double sided tape around the pipe.
- Seal the junction of the horizontal skirt and the membrane with the appropriate sealing tape and secure the top hat unit to the pipe with a jubilee clip.
- **If prefabricated top-hats are sealed with thermal jointing – tapes are not required for sealing to the base membrane.**

JUTA GP[®] TAPE
MANUFACTURED TO SUITE
PENETRATION SIZES AND
SPACING—CONTACT JUTA FOR
FURTHER INFORMATION.

JUTA GP[®] TAPE
DOUBLE SIDED TAPE CUT
AND POSITIONED TO ALLOW
PRE-FORMED COLLAR TO
SEAL TO GP DPM

JUTA GP[®] DPM
GP1/GP2/ GP4 DPM - SUBJECT TO
PROJECT REQUIREMENTS

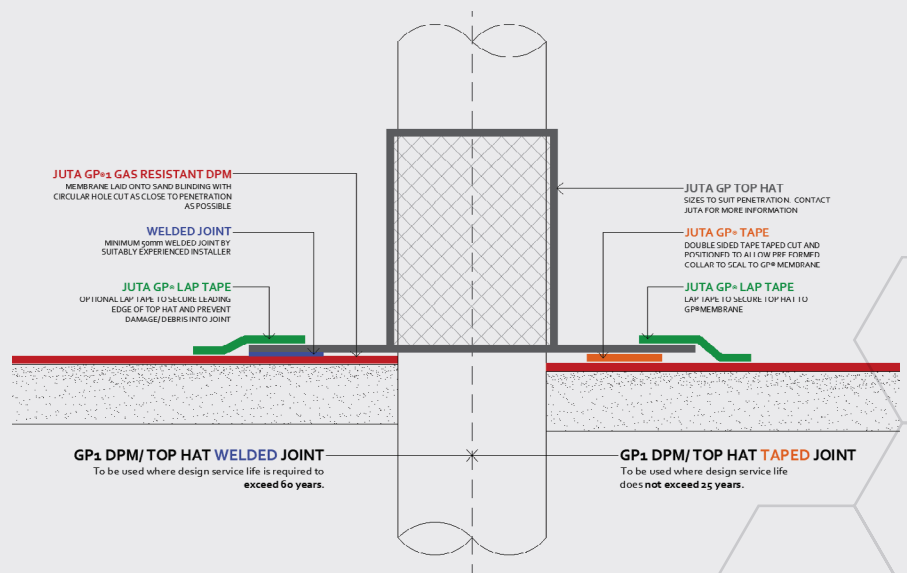


GP¹ SAM (Self-adhesive Membrane) detailing strip:

Corner detailing and pipe penetrations may be formed and sealed using the 300mm wide GP¹ SAM ensuring 150mm overlaps onto the horizontal surface.

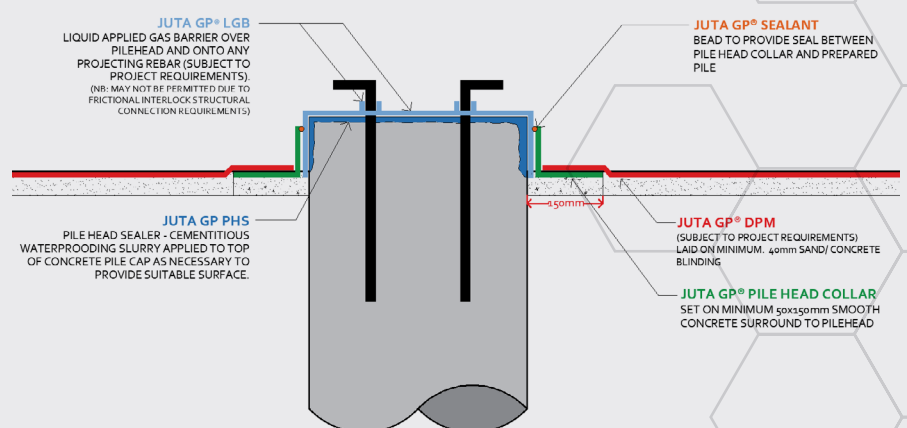
Top Hat Pipe Penetration Sealing Options:

Pre Formed Pipe collars can also be welded to membrane where required.



Pile Head/Rebar Penetrations:

Sealing around pile caps and concrete reinforcement is achieved by application of JUTA Liquid Gas Barrier, or a layer of JUTA GP¹ SAM. In hydrostatic applications, the use of JUTA Crystalline Active Barrier (CAB) may be required to seal the capillaries of the pile cap and to create a monolithic bonding surface prior to application of the gas barrier.



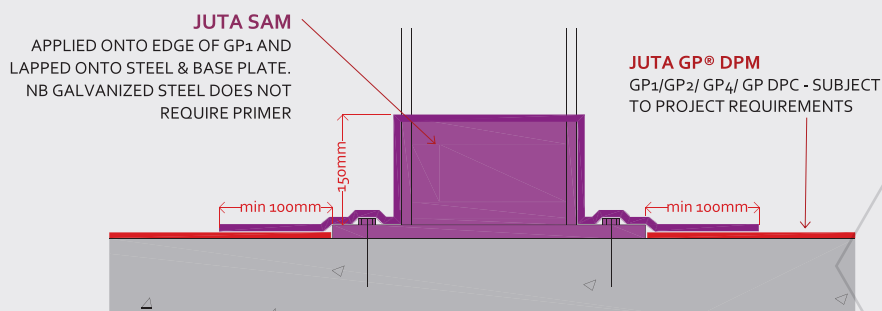


Sealing around stanchion details:

Sealing around stanchion details can be achieved with a couple of options:

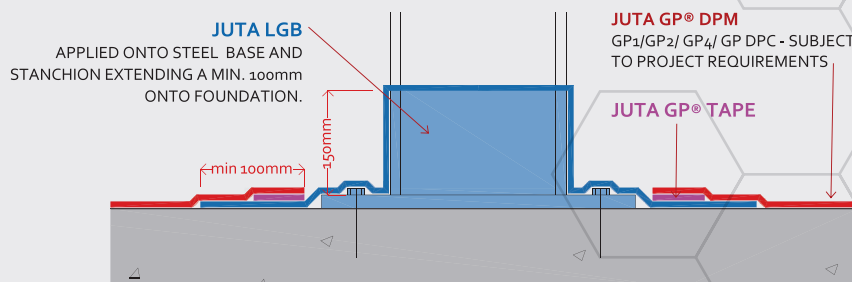
OPTION 1:

- Cut square or rectangle in the GP1[®] Membrane to suit the steel baseplate dimensions. Ensure that membrane is laid as tightly as possible around the baseplate.
- With the membrane in place, self-adhesive JUTA GP1[®] SAM is cut and applied to the steel around the flanges to create a good seal extending a minimum 150mm up the vertical face of the steel. The GP1 SAM should then overlap and seal to the GP1[®] Membrane providing a minimum horizontal 100 mm lap.



OPTION 2:

- Liquid Applied JUTA LGB is paint applied to the steel baseplate and extending a minimum 100mm onto the concrete foundation. LGB should also extend up the vertical face of the steel a minimum 150 mm.
- Cut square or rectangle in the GP1[®] Membrane to suit the steel baseplate dimensions. Ensure that the cut is tight as possible around the baseplate. Apply 4 lengths of double sided JUTA GP Tape around the perimeter of the baseplate and overlap GP1 membrane and seal using silicone roller.





Repairing Punctures:

Should tears, or punctures occur in the membrane, these can be patched using a piece of the same material, sized to overlap at least 150mm beyond the extent of the puncture/tear. Lap should be bonded with JUTA UK GP[®] tape, in accordance with the instructions above, or welded to provide a continuous sheet.

Note – Where this is not practical (IE – small punctures) isolated repairs may be completed in the same fashion without adhering to the 150mm guide value. It should be noted that the suitability of the repair is determined by its integrity, as tested in accordance with C735, if a repair passes integrity testing, it would be deemed acceptable.

Membrane Integrity / Protection Measures:

It is critical that gas protection membranes retain their physical properties before, during and after installation. In consideration of potential damage that may be caused as a result of foot traffic, during and immediately following installation, the area(s) concerned should be cordoned with access restricted only to authorised persons.

Consideration should be given to the following issues:

The underside of the membrane should be protected from puncture by sharps and /or uneven protrusions. A sand blinding or similar layer should be used. If this is not possible, or it is impractical then protection fleece or boards can be utilised to afford the appropriate level of protection.

Similarly the upper surface of the membrane also requires to be protected from punctures, cuts, hot particles, distortion / stretching, etc.

Damage is frequently caused by sharps carried on the soles of safety footwear, dropped tools, reinforcing steels, and localised pressure transmitted via spacer bars, “high chairs”, etc. Unintentional damage can occur from hot sparks generated during abrasive cutting of steels. In foil core membranes, this type of damage can melt through the upper polythene film exposing the aluminium to the onset of corrosion.

The form(s) of protective covering and physical capabilities should be considered in respect of the conditions on site and the nature of the installation.



GP¹

GP¹ proprietary gas resistant damp proof membrane (DPM) is a multi-layer, low density polyethylene membrane, reinforced with a polypropylene reinforcing grid with an integral aluminium foil for protection against methane, carbon dioxide, radon, ground gas, air & moisture.

Features and benefits:

- High quality reinforced membrane.
- Low permeability to hydrocarbon and VOC vapours, carbon dioxide, methane and radon.
- Complies with latest codes of practice as published by the BRE and CIRIA, and BS 8485.

Can be used on any site in accordance with BS8485:2015 and NHBC requirements where carbon dioxide, methane or radon is present up to and including CIRIA 665 SITUATION 6. The barrier is sufficiently resistant to the ingress of harmful gasses into a building. On more heavily contaminated sites a passive or active venting system may be required to dilute the gasses down to acceptable levels and specific design advice should be sought.

Accessory Products

- GP¹ SAM
- GP¹ DPC
- 300TT
- GP¹ Tape
- GP¹ Lap Tape

Physical Properties

Thickness	0.6 mm
Width	2 m
Length	50 m
Weight	370 g/m ²

Gas Permeability

Methane	< 0.09
Carbon Dioxide	< 0.09
Radon	8.0 x 10 ⁻¹⁵

Compliance and Certification

CE MARK - EN13967:2015
NHBC Standards Compliant
B58485:2015 + A1 2019 Accordant
BBA Certified - Certificate No. 20/5728 P1

Specification Clauses

Uniclass 2015 - PR_25_57_65_90
Plastic Sheets

CAWS - J40/145 Loose laid weldable polyethylene gas retardant damp proofing
J40/140 loose laid plastics or rubber sheet gas retardant damp proofing

D21/350 Gas retardant membrane



Please Scan

**UK
NI**

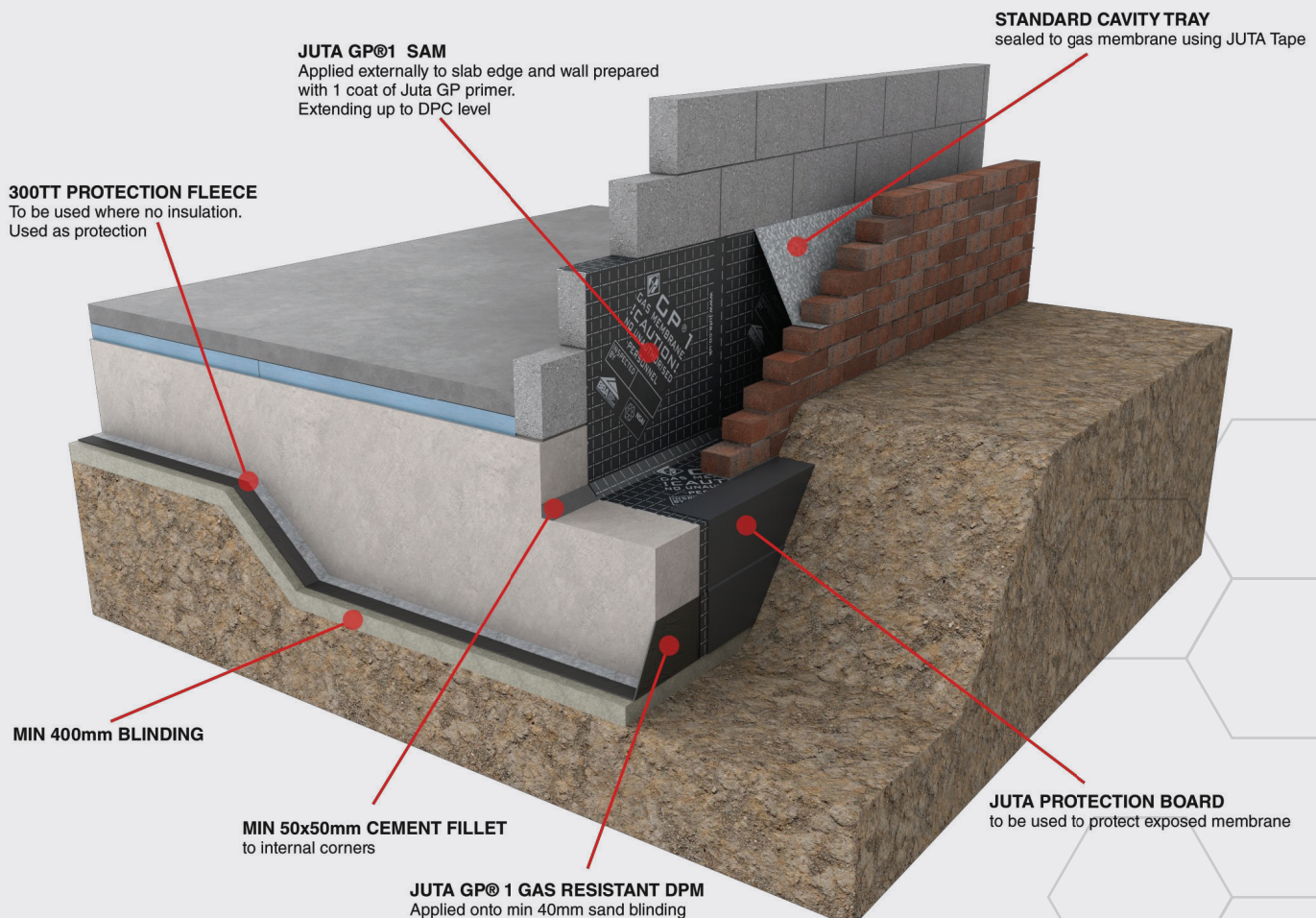


**UK
CA**



Standard Detail - Ground Bearing Raft Slab

NB- All DPC's & membranes interrupting masonry bed joints are required to be bedded above and below with mortar.



Various typical details available on request. Please contact **technical@juta.co.uk** for further information



Standard Detail - Ground Bearing Slab

NB- All DPC's & membranes interrupting masonry bed joints are required to be bedded above and below with mortar.

300TT PROTECTION FLEECE
To be used where no insulation.
Used as protection

STANDARD CAVITY TRAY
sealed to gas membrane using JUTA Tape

BLINDING

JUTA GP DPC
Juta GP1 can be used as the DPC providing there is no lateral shear as per BS8215:1991. If lateral shear is a design consideration then Juta GP DPC to be used

JUTA GP® TAPE
Taped joint or heat welded seam joint

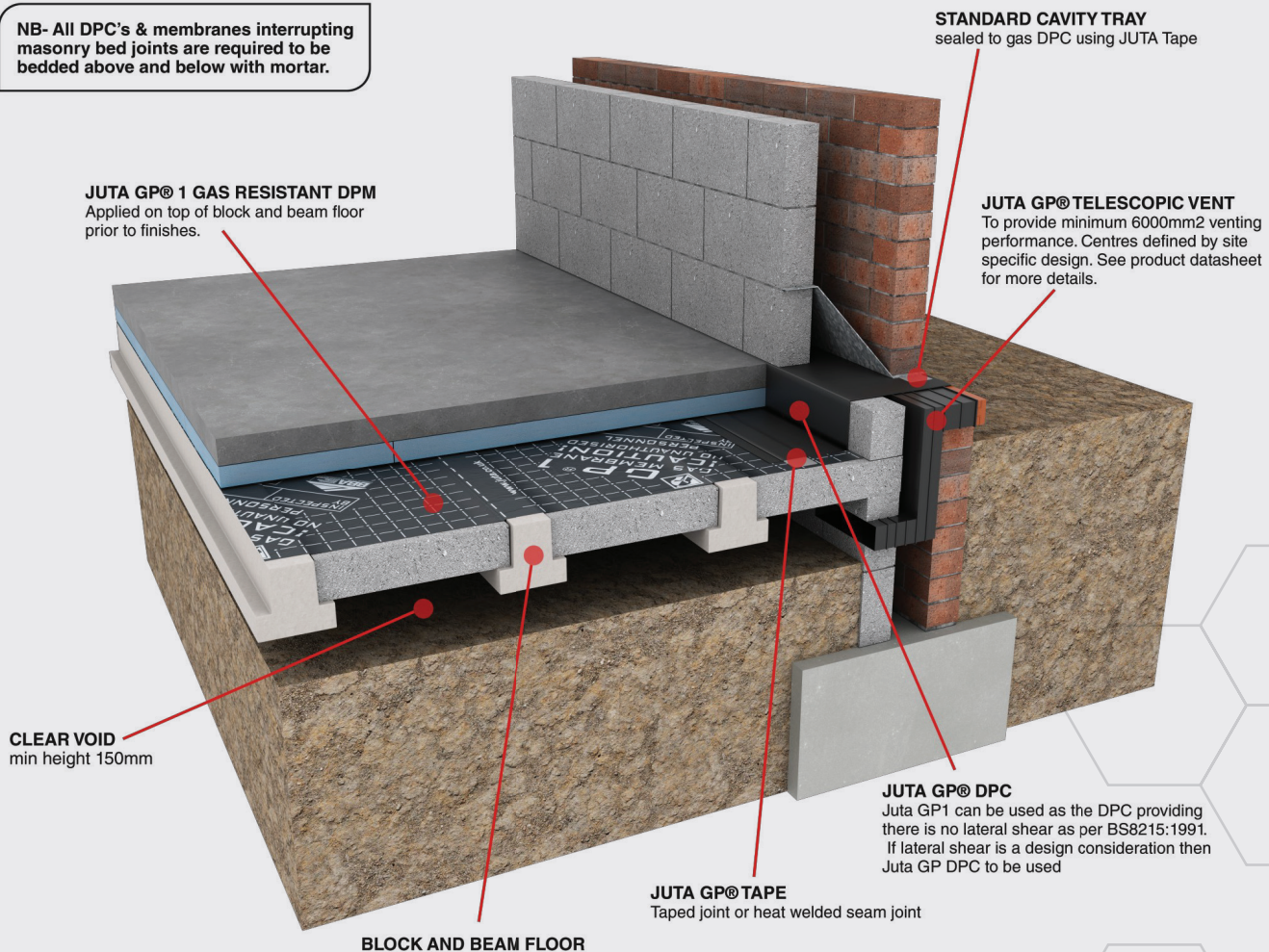
JUTA GP® 1 GAS RESISTANT DPM
Applied onto min 400mm sand blinding

Various typical details available on request. Please contact **technical@juta.co.uk** for further information



Standard Detail - Ground Block & Beam Flooring

NB- All DPC's & membranes interrupting masonry bed joints are required to be bedded above and below with mortar.



Various typical details available on request. Please contact **technical@juta.co.uk** for further information



GP[®]1



GP[®]1 proprietary gas resistant damp proof membrane (DPM) is a multi-layer, low density polyethylene membrane, reinforced with a polypropylene reinforcing grid with an integral aluminium foil. GP[®]1 is specifically designed and manufactured to perform as a methane, carbon dioxide, radon, ground gas, air & moisture protection system.

Thickness	0.6 mm
Width	Various m
Length	Various m
Weight	370 g/m ²

TITANTECH[®]

For developers of brownfield and contaminated sites the TITANTECH[®] family of products represent a major step forward in safeguarding projects against gaseous and chemical contamination.

Handling

Roll weights can be in excess of 20 kg and hence appropriate care and equipment is required for unloading and handling.

Storage

Rolls of GP[®]1 should be stored on stable/level ground and stacked not more than five rolls high, with no other material stacked on top. The rolls can be stored outdoors when packaged, but should be protected from exposure to UV.

Installation

GP[®]1 should be installed in accordance with the product installation guidelines, and in accordance with BS 8485:2015.





Feature	Characteristics	Test Method	GP [®] 1
Physical Properties	Thickness	EN 1849-2	0.6 mm
	Thickness - between Scrim	BS EN ISO 9863-1:2016	0.4 mm
	Width	EN 1849-2	Various m
	Length	EN 1849-2	Various m
	Weight	EN 1849-2	370 g/m ²
Hydraulic Press	Water Column	EN 20811	> 300
	Resistance to Water Penetration	EN 13967, EN 1928	Pass
	Water Tightness	EN 11296, EN 1367, EN 1928	Pass
Mechanical Properties	Resistance to Static Load	EN 12730-B	20 kg
	Tensile Strength (MD)	EN 12311-1	600 N/50mm
	Tensile Strength (CMD)	EN 12311-1	480 N/50mm
	Tensile Elongation (MD)	EN 12310-1	20%
	Tensile Elongation (CMD)	EN 12310-1	20%
	Puncture Resistance	EN 12236	1.25 kN
	Resistance to Tearing (Nail Shank) MD	EN 12310-1	330 N
	Resistance to Tearing (Nail Shank) CMD	EN 12310-1	400 N
Durability and Chemical Resistance	Transmission Rate of Volatile Liquids - Diesel	ISO 6179:2010 (B)	0.246 g/m ² /h
	Transmission Rate of Volatile Liquids - Xylene	ISO 6179:2010 (B)	0.571 g/m ² /h
	Transmission Rate of Volatile Liquids - Toluene	ISO 6179:2010 (B)	0.583 g/m ² /h
	Transmission Rate of Volatile Liquids - Petrol	ISO 6179:2010 (B)	0.135 g/m ² /h
Gas Permeability	Methane Permeability	BS EN ISO 15105-1	< 0.09 ml/m ² /day/atm
	Carbon Dioxide Permeability	BS EN ISO 15105-1	< 0.09 ml/m ² /day/atm
	Radon Permeability	K124/02/95	8.0 x 10 ⁻¹⁵ m ² /s
Compliance and Certification	CE Mark - EN13967:2012 (A1 2017)		
	NHBC Standards Compliant		
	Conforms to BS 8485:2015 + A1 2019		
	BBA Certified - Certificate No. 20/5728		

JUTA UK

Please contact JUTA UK Directly for more information on GP[®]1

Jointing and Sealing

It is recommended GP[®]1 be heat welded where possible, with welding carried out by competent personnel with suitable qualifications in accordance with best practice, and guidance contained within BS 8485:2015.

Accessory Products

- GP[®]1 Starter Band
- GP[®] Tape
- GP[®] Self Adhesive Membrane
- GP[®] Primer
- GP[®] Top Hats and Preformed Corners
- GP[®] Protection Fleece
- GP[®] Void Vent (24/40mm)

Juta GP[®] 1 - Gas Barrier is a multi-layer, low density polyethylene membrane, reinforced with a polypropylene reinforcing grid with an integral aluminium foil. GP[®] 1 is specifically designed and manufactured to perform as a Methane, Carbon Dioxide, Radon, Ground Gas, VOC /Hydrocarbon vapors, air & moisture protection system.

JUTA GP [®] 1			
Characteristics	Test Method	Unit	JUTA GP [®] 1
Physical Properties			
Thickness	EN 1849-2	mm	0.6
Thickness - Between Scrim	BS EN ISO 9863-1:2016	Mm	0.4
Width	EN 1849-2	m	Various
Length	EN 1849-2	m	Various
Weight	EN 1849-2	G/M2	370
Hydraulic Properties			
Thickness	EN 20811	-	>300
Resistance to Water Penetration	EN 13967, EN 1928	-	Pass
Water Tightness	EN 1296, EN 1367, EN 1928	-	Pass
Hydraulic Properties			
Resistance to Static Load	EN 12730-B	Kg	20
Tensile Strength (MD)	EN 12311-1	N/50mm	600
Tensile Strength (CMD)	EN 12311-1	N/50mm	480
Tensile Elongation (MD)	EN 12310-1	%	20
Tensile Elongation (CMD)	EN 12310-1	%	20
Puncture Resistance	EN 12236	kN	1.25
Resistance to Tearing (Nail Shank) MD	EN 12310-1	N	330
Resistance to Tearing (Nail Shank) CMD	EN 12310-1	N	400
Durability and Chemical Resistance			
Transmission Rate of Volatile Liquids - Diesel	ISO 6179:2010 (B)	g/m ² /h	0.246
Transmission Rate of Volatile Liquids - Xylene	ISO 6179:2010 (B)	g/m ² /h	0.571
Transmission Rate of Volatile Liquids - Toluene	ISO 6179:2010 (B)	g/m ² /h	0.583
Transmission Rate of Volatile Liquids - Petrol	ISO 6179:2010 (B)	g/m ² /h	0.135
Gas Permeability			
Methane Permeability	BS EN ISO 15105-1	ml/m ² /day/atm	<0.09
Carbon Dioxide Permeability	BS EN ISO 15105-1	ml/m ² /day/atm	<0.09
Radon Permeability	K124/02/95	m ² /s	8.0 x 10 ⁻¹⁵
Compliance and Certification			
CE Mark - EN13967:2012			
NHBC Standards Compliant			
BS 8485:2015 + A1 2019 Accordant			
BBA Certified - Certificate No. 12/4912			

Contact us to find out more information.
info@juta.co.uk | 01772 754177 | JUTA.CO.UK
Melton Grove Works, Church Road, Lytham, FY8 5PL

JUTA



riba
product
selector

Additional Information

HANDLING

Roll weights can be in excess of 20kg and hence appropriate care and equipment is required for unloading and handling.

STORAGE

Rolls of JUTA GP® 1 should be stored on stable/level ground and stacked not more than five rolls high, with no other material stacked on top. The rolls can be stored outdoors when packaged, but should be protected from exposure to UV.

INSTALLATION

JUTA GP® 1 should be installed in accordance with the product installation guidelines, and in accordance with BS 8485:2015.

JOINTING AND SEALING

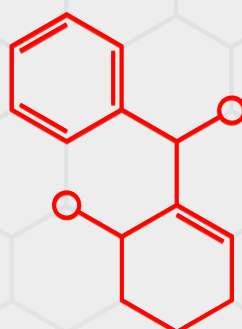
It is recommended JUTA GP® 1 be heat welded where possible, with welding carried out by competent personnel with suitable qualifications in accordance with best practice, and guidance contained within BS 8485:2015. JUTA GP® 1 should be overlapped by at least 100mm. If taping joints, only suitable tape must be used, ensuring application with a silicone roller to remove trapped air. JUTA pre-formed details, or Self Adhesive Gas Membrane are available for sealing around protuberances.

ACCESSORY PRODUCTS

-  JUTA GP® 1 Starter Band
-  JUTA GP® Tape
-  JUTA GP® Self Adhesive Membrane
-  JUTA GP® Primer
-  JUTA GP® Top Hats and Preformed Corners
-  JUTA GP® Protection Fleece
-  JUTA GP® Void Vent (25/40mm)

PLEASE CONTACT JUTA UK DIRECTLY FOR MORE INFORMATION ON JUTA GP® 1

Contact us to find out more information.
info@juta.co.uk | 01772 754177 | JUTA.CO.UK
Melton Grove Works, Church Road, Lytham, FY8 5PL

**JUTA**

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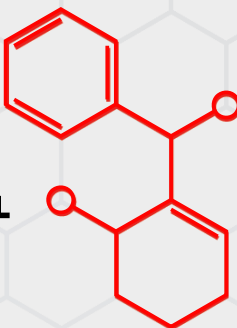


JUTA GP[®] SAM – Gas Protection – Self Adhesive Membrane, is a bituminous gas proof and water proof sheet, composed of self-adhesive SBS polymer modified bitumen incorporating an aluminium foil with an upper surface finish of white cross laminated HDPE, and a lower surface finish of siliconized paper release film. JUTA GP[®] SAM is used for the gas/waterproofing of underground structures where harmful ground gasses are anticipated.



JUTA GP [®] SAM			
Characteristic	Test Method	Unit	GP [®] SAM
Physical Properties			
Thickness	EN 1849-2	mm	1.00
Width	EN 1849-2	M	0.3 or 1
Length	EN 1849-2	M	20
Weight	EN 1849-2	g/m ²	1100
Hydraulic Properties			
Watertightness	EN 1928	-	PA55
Water Vapour Transmission	EN 1931	g/m ² /day	0.013
Mechanical Properties			
Tensile Strength (MD/CMD)	EN12311-2	N/mm ²	3
Elongation (MD/CMD)	EN 12311-2	%	>120
Resistance to Static Load	EN 12370	kg	20kg
Joint Strength	EN 12317-2	N	>30
Durability and Water tightness (ageing and chemicals)	EN 1847	-	PA55
Resistance to Nail Tear (MD/CMD)	EN 12310-1	N	>100
Reaction to Fire	EN 13501	Euro Class	F
Gas Permeability			
Methane Permeability	BS EN ISO 15105 - 1	ml/m ² /day/atm	< 0.53
Carbon Dioxide Permeability	BS EN ISO 15105 - 1	ml/m ² /day/atm	< 0.53
Radon Permeability	K124/02/95	m ² /s	5.0 x 10 ⁻¹⁴

JUTA GP[®] SAM complies with the latest codes of practice as published by BRE, CIRIA and BSI (BS 8485:2015).



Additional Information

HANDLING

Roll weights can be in excess of 20kg (approx. 33kg/roll) and hence appropriate care and equipment is required for unloading and handling. This product is non-toxic nor flammable.

STORAGE

Rolls of JUTA GP® SAM should be stored horizontally, and pallets should not be stacked on top of one another.

JUTA GP® SAM should be stored in a cool, dry place, and be protected from exposure to rain, sun, heat and cold temperatures prior to installation. Exposure to sunlight for extended period of time could cause difficulty with removal of the release film.

INSTALLATION

JUTA GP® SAM should be installed in accordance with the product installation guidelines, and in accordance with BS 8485:2015.

It is recommended that JUTA GP® SAM is not applied in temperatures below 10 °C, in colder weather the material can be warmed slightly to aid adhesion.

ACCESSORY PRODUCTS



JUTA GP® Primer



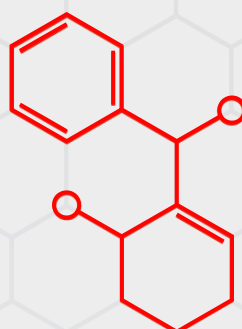
JUTA GP® Protection Board



JUTA GP® Protection Fleece

PLEASE CONTACT JUTA UK DIRECTLY FOR MORE INFORMATION ON JUTA GP® SAM

Contact us to find out more information.
info@juta.co.uk | 01772 754177 | JUTA.CO.UK
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e-mail: juta@juta.cz

website: www.juta.cz

**Agrément Certificate****12/4912**

Product Sheet 1

JUTA GAS-RESISTANT MEMBRANE**JUTA GP1 GAS BARRIER**

This Agrément Certificate Product Sheet⁽¹⁾ relates to Juta GP1 Gas Barrier, for use as a low-density polythene gas barrier and damp-proof membrane in concrete ground floors, above and below the slab 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 Second issue: 7 September 2016

John Albon – Head of Approvals
Construction Products

Claire Curtis-Thomas
Chief Executive

Originally certificated on 10 July 2012

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

British Board of Agrément

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www.bbacerts.co.uk

Regulations

In the opinion of the BBA, Juta GP1 Gas Barrier, 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) (iii)(b)(i)	Fitness of materials and workmanship	
Comment:		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 section: 1 *Description* (1.2) of this Certificate.

Additional Information

NHBC Standards 2016

NHBC accepts the use of Juta GP1 Gas Barrier, 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 Juta GP1 Gas Barrier is a multilayer, low-density polyethylene membrane, reinforced with a polypropylene reinforcing grid with an integral aluminium foil.

1.2 The membrane has the following nominal characteristics:

Thickness* (mm)	0.6 (overall)
Roll length* (m)	various
Roll width* (m)	various
Mass per unit area* ($\text{g}\cdot\text{m}^{-2}$)	350
Tensile strength* ($\text{N}\cdot 50\text{ mm}^{-1}$)	
MD	600
CD	480
Elongation*	
MD	20
CD	20
Nail tear resistance*	
MD	330
CD	400
Watertightness*	pass
Colour	
upper surface	various
lower surface	various.

1.3 Ancillary products for use with the membrane include:

- butyl or bitumen tape — for use for joints and laps
- Juta jointing tape — for securing laps and joints.

1.4 Ancillary products for use with the membrane but outside the scope of the Certificate include:

- Juta GP Top Hats — to seal around entry points to the membrane
- Juta Internal Corner Cloaks — prefabricated corner details
- Juta External Corner Cloaks — prefabricated corner details
- Juta GP Primer — used to provide adhesion for application of bitumen enhanced geomembranes
- Juta GP Void Vent 25 — cusped HDPE drainage core with a non-woven polypropylene geotextile separator/filter bonded to one side
- Juta GP Void Vent 40 — cusped HDPE drainage core with a non-woven polypropylene geotextile separator/filter bonded to one side
- Juta GP Protection Fleece — to form a protective layer to prevent damage to the membrane
- Juta GR-SAM — gas-resistant self-adhesive membrane.

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.

2.3 The management system of Juta a.s. has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2008 and BS EN ISO 14001 : 2004 by Quality Austria (Certificate 0032/0).

3 Delivery and site handling

3.1 Rolls are wrapped in polythene film. Each roll has a leaflet enclosed describing the product and installation details. The BBA logo and Certificate number are printed on the leaflet and pallet label.

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 Juta GP1 Gas Barrier.

Design Considerations

4 Use

4.1 Juta GP1 Gas Barrier 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 *Radon: 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 meet 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 Juta GP1

Gas	Method	Result
Methane	BS ISO 15105-1	$<0.09 \text{ ml}\cdot\text{m}^2\cdot\text{day}^{-1}\cdot\text{atm}^{-1}$
Carbon dioxide	BS ISO 15105-1	$<0.09 \text{ ml}\cdot\text{m}^2\cdot\text{day}^{-1}\cdot\text{atm}^{-1}$
Radon	K124/02/95	$8.0 \times 10^{-15} \text{ m}^2\cdot\text{s}^{-1}$

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. 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 16).

13 Durability



13.1 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.

Installation

14 General

14.1 Juta GP1 Gas Barrier must be installed and fixed in accordance with the Certificate holder's instructions, the relevant clauses of BR 211 : 2015 and following the guidance of BS 8485 :2015.

14.2 The membrane can be installed in all normal site conditions, provided that the air temperature is not below 4°C to prevent the risk of surface condensation.

15 Procedure

15.1 The product must only 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.

15.2 Concrete surfaces should be dense. Vertical surfaces of brickwork and blockwork must be dry and rendered to provide an even surface. Brickwork or blockwork not rendered must be flush pointed to give a smooth surface without sudden changes in level.

15.3 The membrane is rolled out with the coloured surface uppermost (white side down), ensuring that it is properly aligned. All end and side overlaps should be a minimum of 150 mm and prepared in accordance with the Certificate holder's instructions.

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

15.5 All surfaces must be dried thoroughly prior to joining. Roll edges can be welded, or taped. A strip of the tape is unrolled over the membrane with its nearest edge 50 mm from the membrane edge. The protective paper is removed from the butyl tape prior to rolling an adjacent run of the membrane, which must be carefully unrolled over the jointing tape, ensuring a 100 mm overlap.

15.6 All service penetrations and direction changes should be properly detailed in accordance with the Certificate holder's instructions. Service ducts should be vented to prevent the possibility of gas accumulating in confined spaces.

15.7 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.

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

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

16 Repair

Any damage to the product must be repaired using a patch of the membrane, and laps welded or sealed with double-sided tape and secured with the butyl tape. All patched areas 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 BS 8485 : 2015.

Technical Investigations

17 Tests

17.1 An assessment was made of data to EN 13967 : 2012 in relation to:

- tensile strength and elongation
- nail tear resistance
- watertightness
- resistance to static loading.

17.2 Tests were carried out to determine

- thickness, width, density and mass per unit area
- dimensional stability, low temperature flexibility and water vapour permeability
- tensile strength and elongation on controls and after 12 weeks heat ageing at 70°C, and after 100 hours UVB exposure
- watertightness on controls and after 12 weeks heat ageing at 70°C
- nail tear strength on controls and after 12 weeks heat ageing at 70°C
- resistance of joints to air pressure
- tensile strength of joints on controls and after 12 weeks heat ageing at 70°C

to assess:

- product characteristics
- durability of the product and joints.

18 Investigations

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

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

18.3 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.

Bibliography

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

BS 8485 : 2015 *Code of practice for the characterization and remediation from ground gas in affected areas*

BS EN ISO 9001 : 2008 *Quality management systems — Requirements*

BS EN ISO 14001 : 2004 *Environmental management systems — Requirements with guidance for use*

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*

Conditions of Certification

19 Conditions

19.1 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.

19.2 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.

19.3 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.

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

19.5 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.

19.6 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.



GP[®]1

GP[®]1 proprietary gas resistant damp proof membrane (DPM) is a multi-layer, low density polyethylene membrane, reinforced with a polypropylene reinforcing grid with an integral aluminium foil for protection against methane, carbon dioxide, radon, ground gas, air & moisture.

Features and benefits:

- High quality reinforced membrane.
- Low permeability to hydrocarbon and VOC vapours, carbon dioxide, methane and radon.
- Complies with latest codes of practice as published by the BRE and CIRIA, and BS 8485.

Can be used on any site in accordance with BS8485:2015 and NHBC requirements where carbon dioxide, methane or radon is present up to and including CIRIA 665 SITUATION 6. The barrier is sufficiently resistant to the ingress of harmful gasses into a building. On more heavily contaminated sites a passive or active venting system may be required to dilute the gasses down to acceptable levels and specific design advice should be sought.

Accessory Products

- GP[®]1 SAM
- GP[®] DPC
- 300TT
- GP[®] Tape
- GP[®] Lap Tape

Physical Properties

Thickness	0.6 mm
Width	2 m
Length	50 m
Weight	370 g/m ²

Gas Permeability

Methane	< 0.09
Carbon Dioxide	< 0.09
Radon	8.0 x 10 ⁻¹⁵

Compliance and Certification

CE MARK - EN13967:2015
NHBC Standards Compliant
B58485:2015 + A1 2019 Accordant
BBA Certified - Certificate No. 20/5728 P1

Specification Clauses

Uniclass 2015 - PR_25_57_65_90
Plastic Sheets

CAWS - J40/145 Loose laid weldable polyethylene gas retardant damp proofing
J40/140 loose laid plastics or rubber sheet gas retardant damp proofing

D21/350 Gas retardant membrane



Please Scan

**UK
NI**

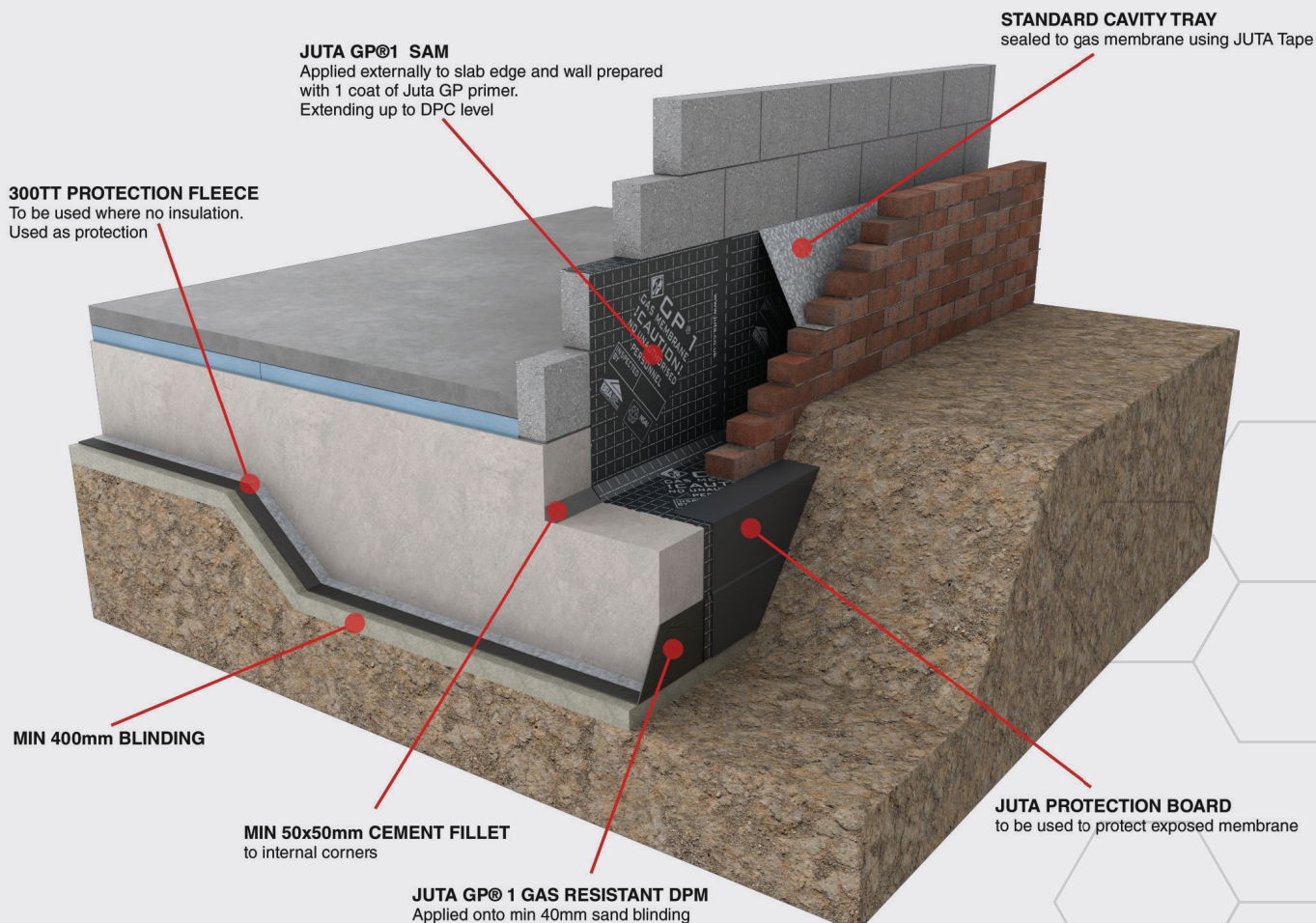


**UK
CA**



Standard Detail - Ground Bearing Raft Slab

NB- All DPC's & membranes interrupting masonry bed joints are required to be bedded above and below with mortar.



Various typical details available on request. Please contact **technical@juta.co.uk** for further information



Standard Detail - Ground Bearing Slab

NB- All DPC's & membranes interrupting masonry bed joints are required to be bedded above and below with mortar.

300TT PROTECTION FLEECE
To be used where no insulation.
Used as protection

STANDARD CAVITY TRAY
sealed to gas membrane using JUTA Tape

BLINDING

JUTA GP DPC
Juta GP1 can be used as the DPC providing there is no lateral shear as per BS8215:1991. If lateral shear is a design consideration then Juta GP DPC to be used

JUTA GP® TAPE
Taped joint or heat welded seam joint

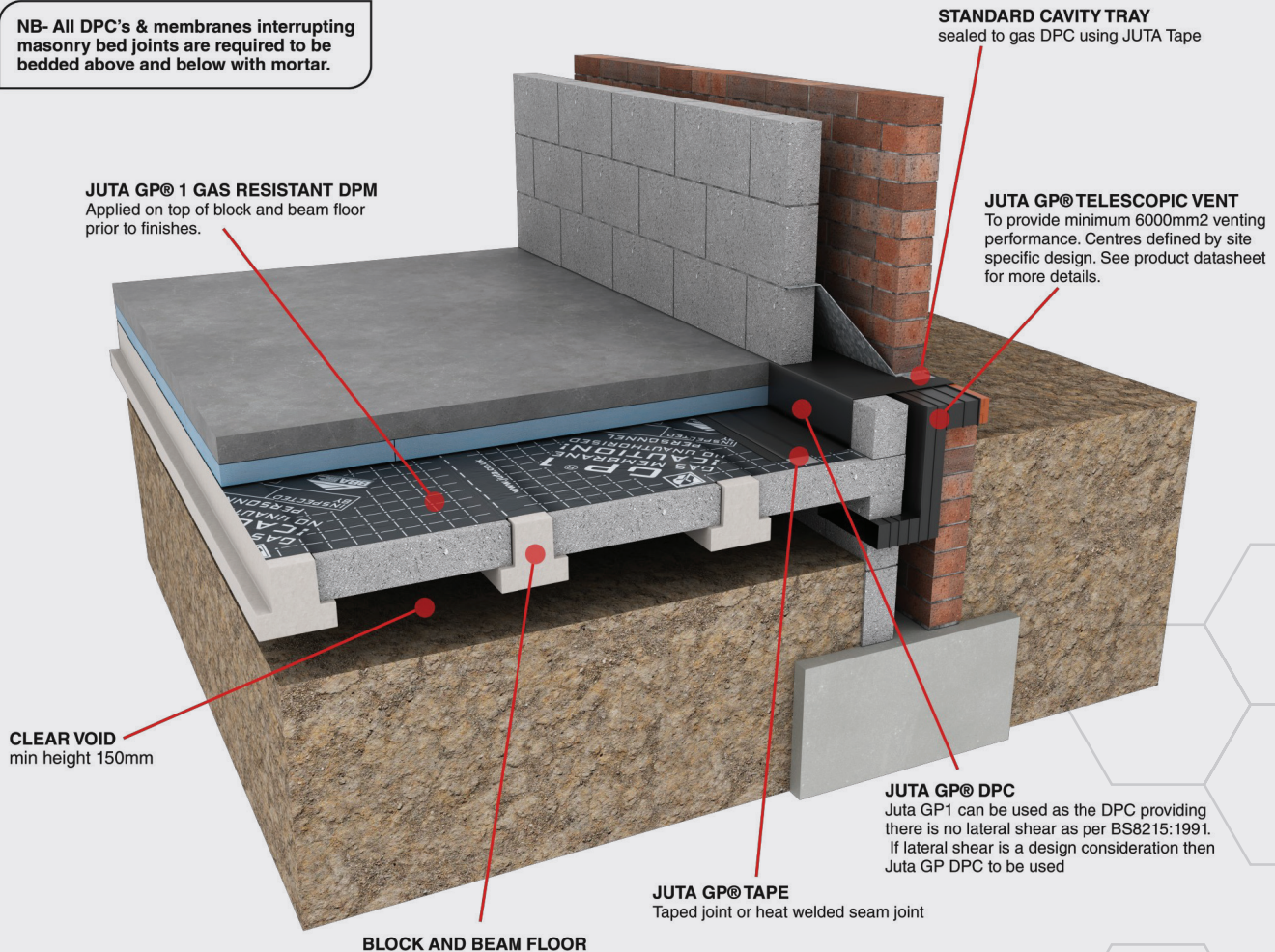
JUTA GP® 1 GAS RESISTANT DPM
Applied onto min 400mm sand blinding

Various typical details available on request. Please contact **technical@juta.co.uk** for further information



Standard Detail - Ground Block & Beam Flooring

NB- All DPC's & membranes interrupting masonry bed joints are required to be bedded above and below with mortar.



Various typical details available on request. Please contact **technical@juta.co.uk** for further information



GP[®]1



GP[®]1 proprietary gas resistant damp proof membrane (DPM) is a multi-layer, low density polyethylene membrane, reinforced with a polypropylene reinforcing grid with an integral aluminium foil. GP[®]1 is specifically designed and manufactured to perform as a methane, carbon dioxide, radon, ground gas, air & moisture protection system.

Thickness	0.6 mm
Width	Various m
Length	Various m
Weight	370 g/m ²

TITANTECH[®]

For developers of brownfield and contaminated sites the TITANTECH[®] family of products represent a major step forward in safeguarding projects against gaseous and chemical contamination.

Handling

Roll weights can be in excess of 20 kg and hence appropriate care and equipment is required for unloading and handling.

Storage

Rolls of GP[®]1 should be stored on stable/level ground and stacked not more than five rolls high, with no other material stacked on top. The rolls can be stored outdoors when packaged, but should be protected from exposure to UV.

Installation

GP[®]1 should be installed in accordance with the product installation guidelines, and in accordance with BS 8485:2015.





Feature	Characteristics	Test Method	GP [®] 1
Physical Properties	Thickness	EN 1849-2	0.6 mm
	Thickness - between Scrim	BS EN ISO 9863-1:2016	0.4 mm
	Width	EN 1849-2	Various m
	Length	EN 1849-2	Various m
	Weight	EN 1849-2	370 g/m ²
Hydraulic Press	Water Column	EN 20811	> 300
	Resistance to Water Penetration	EN 13967, EN 1928	Pass
	Water Tightness	EN 11296, EN 1367, EN 1928	Pass
Mechanical Properties	Resistance to Static Load	EN 12730-B	20 kg
	Tensile Strength (MD)	EN 12311-1	600 N/50mm
	Tensile Strength (CMD)	EN 12311-1	480 N/50mm
	Tensile Elongation (MD)	EN 12310-1	20%
	Tensile Elongation (CMD)	EN 12310-1	20%
	Puncture Resistance	EN 12236	1.25 kN
	Resistance to Tearing (Nail Shank) MD	EN 12310-1	330 N
	Resistance to Tearing (Nail Shank) CMD	EN 12310-1	400 N
Durability and Chemical Resistance	Transmission Rate of Volatile Liquids - Diesel	ISO 6179:2010 (B)	0.246 g/m ² /h
	Transmission Rate of Volatile Liquids - Xylene	ISO 6179:2010 (B)	0.571 g/m ² /h
	Transmission Rate of Volatile Liquids - Toluene	ISO 6179:2010 (B)	0.583 g/m ² /h
	Transmission Rate of Volatile Liquids - Petrol	ISO 6179:2010 (B)	0.135 g/m ² /h
Gas Permeability	Methane Permeability	BS EN ISO 15105-1	< 0.09 ml/m ² /day/atm
	Carbon Dioxide Permeability	BS EN ISO 15105-1	< 0.09 ml/m ² /day/atm
	Radon Permeability	K124/02/95	8.0 x 10 ⁻¹⁵ m ² /s
Compliance and Certification	CE Mark - EN13967:2012 (A1 2017)		
	NHBC Standards Compliant		
	Conforms to BS 8485:2015 + A1 2019		
	BBA Certified - Certificate No. 20/5728		

JUTA UK

Please contact JUTA UK Directly for more information on GP[®]1

Jointing and Sealing

It is recommended GP[®]1 be heat welded where possible, with welding carried out by competent personnel with suitable qualifications in accordance with best practice, and guidance contained within BS 8485:2015.

Accessory Products

- GP[®]1 Starter Band
- GP[®] Tape
- GP[®] Self Adhesive Membrane
- GP[®] Primer
- GP[®] Top Hats and Preformed Corners
- GP[®] Protection Fleece
- GP[®] Void Vent (24/40mm)

Home / Categories / Ventilation, air conditioning and space heating / Ventilation and ducting / Wall venting products / Ventilation ducts



☐ Compare

PUFV - Rytons Periscope® Underfloor Ventilator

Verified by manufacturer 5 months ago 

Plastic underfloor ventilator.

Jump to:
[Specification data](#)[Sustainability data](#)

 Add to spec

Request BIM



+44 (0)1536 511874

[Website](#) 

Contact manufacturer

Application

- Ventilation for block and beam and timber floors.
- As a plastic component this item is not suitable for use within the external walls of high-rise buildings requiring non-combustible materials. For a compliant alternative see Rytons A1[®] Fire-rated Periscope® Underfloor Ventilator.

Description

Plastic underfloor ventilator, compliant with BS 5250.

Features and benefits:

- Expands up to five brick courses.
- Prevents damage by condensation.
- Alleviates the build-up of dangerous gases.
- For use with Rytons Multifix® Air Brick (MFAB).
- Made in Britain.

General information

Color	Black
Material	Plastic Guidance for specification option: Polypropylene.
Length	218 mm
Width	250 mm
Height	368 mm
Uniclass	Pr_30_59_96_92 Ventilation ducts Primary

CAWS	F30/17 Ventilation ducts in external walling F30/171 Ventilation ducts in external walling
SKU Code	PUFV
Product range	Rytons Periscope® Underfloor Ventilator and Accessories

Specification data - Ventilation ducts

Classification data	
Material	Plastic. Guidance for specification option: Polypropylene.
Free area	7750 mm². Guidance for specification option: With Rytons Multifix® Air Brick fitted.
Accessories	Rytons Periscope® Vertical Extension (1m L). Guidance for specification option: PUFVEXT. Rytons Horizontal Adaptor (101mm Dia. Spigot). Guidance for specification option: HADAP100.

Sustainability data

Contains Red List materials	No
Country of product manufacture	United Kingdom
Recyclability	Recyclable

Similar products from Rytons Building Products Ltd

AAC125HP - Rytons Sup... ☐

AAC125HPCWL - Ryton... ☐

AAC125LP - Rytons Sup... ☐

AAC125LPCWL - Rytons... ☐



AC7HPCWL - Rytons Co...



AC7LP - Rytons Baffled ...



AC10LP - Rytons LookR...



AC7HP - Rytons Baffled ...

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0345 456 9594
info@theNBS.com
- Manufacturer enquiries:
0345 200 1056
salessupport@theNBS.com

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ATTACHMENT C

EXAMPLE SIRIUS GEOTECHNICAL LTD GROUND GAS PROTECTION VERIFICATION REPORT



Sirius Geotechnical Ltd
4245 Park Approach
Thorpe Park
Leeds
LS15 8GB

0113 264 9960
www.thesiriusgroup.com

Client Address

Date:

Ref:

Dear

**GROUND GAS VERIFICATIONS – SITE NAME
(PLOT REFERENCE)**

Sirius Geotechnical Ltd (Sirius) was appointed by CLIENT to undertake verification of the successful implementation of ground gas protection measures at their site at the SITE NAME.

This letter report considers plots 553 & 554 at the development, which comprises one semi-detached property (two houses – plots 553 & 554). At the time of inspection, construction had advanced to beam and block floor system level.

INTRODUCTION

The site has been subject to a number of investigations and assessments by Sirius between June 2021 and January 2022, which include the following reports:

- LIST OF REPORTS

Subsequent, to the submission of the above reports and specifically the ground gas risk assessments, Sirius have been in consultation with Leeds City Council (LCC) regarding their findings, which has resulted in the following correspondence:

- LIST OF CORRESPONDENCE

In summary, the above reports and subsequent discussions with LCC, concluded that the ground gas regime for the site fell into two distinct zones commensurate with the NHBC Traffic Light System “Green” and “Amber 2”. As such, “Amber 2” zones require gas protection measures to be installed in accordance with the level of gas risk present, whilst “Green” requires no special ground gas protection measures.

Table 1 below provides a summary of which plots relate to the respective NHBC Traffic Light System guidance.

Table 1 – Plot Numbers and NHBC Traffic Light System

Plot Numbers	Traffic Light System
Zones 2: 545-567	“Amber 2”
Zone 1: 502-544	“Green”

Lithos have designated the ground gas protection scores for each zone as follows:

- “Green” = 0 Points (no special precautions required)
- “Amber 2” = 4.5 Points (special precautions required)

Radon protection measures are not required by current guidance for the proposed development on this site.

This verification report has been prepared in general accordance with pertinent guidance documents pertaining to the verification of ground gas protective measures, which comprise: BS8485 (2019), CIRIA C735 (2014) “Good practice on the testing and verification of protection systems for buildings against hazardous ground gases” and ‘Yorkshire and Lincolnshire Pollution Advisory Group (YALPAG) “Technical Guidance for Developers, Landowners and Consultants” (V1.1, December 2016).

GROUND GAS PROTECTION MEASURES

Gas protection measures utilised at the site involve a ventilated void (c. 150mm in height), with a “beam and block” floor and a proprietary gas-resistant membrane.

In accordance with the current (2019) version of BS8485, for residential developments the plots fall within Amber 2 conditions requiring 4.5 protection points, which in this case would be achieved by the combination of the ventilated void, the verified membrane and where required i.e. integrity testing.

The membrane used was the “JUTA GP1” product, which is a reinforced membrane with an integral aluminium foil. It is understood that the membrane was installed by a qualified specialist company

(DMI Ltd who hold the NVQ Level 2 diploma). A copy of the JUTA GP1 datasheet is included within this letter (Attachment A).

SITE VERIFICATION REGIME

On the basis of the site characterisation and installation details, a verification regime comprising independent inspection of gas protection measures on the first five completed plots, and then on subsequent plots at a minimum frequency of 1 inspection per 5 plots has been specified.

The verification regime by Sirius has included, where possible; verification of the subfloor void, verification of the installation of periscopic vents on external walls, confirmation of the materials used in the construction of the gas membrane, and the integrity of the membrane and joints. Verification of the membrane integrity has included visual inspection of membrane and 'pick' testing of joints, in addition to the verification of seals around service pipes and within service entry ducts.

SIRIUS VERIFICATION REGIME

Site visits were undertaken by a Sirius Geoenvironmental Engineer, at the request of CLIENT, between June 2023 and February 2024, to inspect the gas protection measures installed, as summarised in Table 2, below:

Table 2 – Summary of Verification Gas Protection Measures

Plot No.	Date Inspected	Elements of Gas protection System Inspected (inspected by)	Passed Inspection	Gas Protection Verified as Complete
553 & 554	June 2023, 06/07/2023 & 20/02/2024	Voids (site team), membrane (Sirius) & service entry seal (Sirius)	Voids, membrane & service entry seal	Yes

The visual inspections carried out by Sirius have confirmed the presence (within the plots for which Sirius has data) of satisfactory venting via periscopic vents attached to air bricks in external wall faces and confirmed the gas resistant membrane to comprise JUTA GP1 which had been heat welded and the use of other ancillary products.

The inspections confirmed that all joints and service entries seen were lapped and sealed as appropriate. Seals around service penetrations and corner details were formed using appropriate adhesive detailing strip. Cuts and joints in the membrane were minimised.

Photographs of the key features of the plots verified are included in Attachment B, and a gas protection verification record for the plots is included as Attachment C.

INTERNAL SERVICE PENETRATIONS

The construction of the water supply to individual properties results in an annulus between the duct formed as a conduit for the water supply pipe and the water supply pipe itself. This duct requires sealing to ensure that it does not act as a pathway for migration of gas from the subfloor void into the property. It is arguably the most important element of a gas protection system if a membrane has

been installed.

Sirius has independently inspected the service entry seals within all plots specified above and is satisfied that these have been installed correctly.

INTEGRITY TESTING

As part of the verification works, integrity testing has been completed solely to Plot 595 by the installer to provide confidence that the membrane has been installed to satisfactory standard, owing to their location within the Amber 2 part of the site. Copies of the installers certificates can be seen in Attachment D and confirm they have “passed” the integrity testing.

CONCLUDING COMMENTS

In conclusion, it is considered that the required gas protection measures have been successfully installed at the plots considered herein, and are commensurate with the requirements of the Ground Gas Verification Plan.

We trust that you will forward this letter to the appropriate regulatory bodies and / or warranty provider, but if you require any other information, please do not hesitate to contact us directly.

Yours sincerely,

Jenny Ford
Senior Engineer

For and on behalf of
Sirius Geotechnical Ltd

Encl.

Attachments A - Powerbase Multigas 500 Datasheet and Foundation Detail
 B - Inspection Photographs
 C - Gas Protection Verification Record
 D - Integrity Test Report



ATTACHMENT A

JUTA GP1 MEMBRANE
DATASHEET

Juta GP® 1 - Gas Barrier is a multi-layer, low density polyethylene membrane, reinforced with a polypropylene reinforcing grid with an integral aluminium foil. GP® 1 is specifically designed and manufactured to perform as a Methane, Carbon Dioxide, Radon, Ground Gas, VOC/Hydrocarbon vapours, air & moisture protection system.

JUTA GP® 1			
Characteristics	Test Method	Unit	JUTA GP® 1
Physical Properties			
Thickness	EN 1849-2	mm	0.6
Thickness - Between Scrim	Micrometre	Mm	0.4
Width	EN 1849-2	m	Various
Length	EN 1849-2	m	Various
Weight	EN 1849-2	G/M²	370
Hydraulic Properties			
Water column	EN 20811	-	>300
Resistance to Water Penetration	EN 13967, EN 1928	-	Pass
Water Tightness	EN 1296, EN 1367, EN 1928	-	Pass
Hydraulic Properties			
Resistance to Static Load	EN 12730-B	Kg	20
Tensile Strength (MD)	EN 12311-1	N/50mm	600
Tensile Strength (CMD)	EN 12311-1	N/50mm	480
Tensile Elongation (MD)	EN 12310-1	%	20
Tensile Elongation (CMD)	EN 12310-1	%	20
Puncture Resistance	EN 12236	RN	1.25
Resistance to Tearing (Nail Shank) MD	EN 12310-1	N	330
Resistance to Tearing (Nail Shank) CMD	EN 12310-1	N	400
Durability and Chemical Resistance			
Transmission Rate of Volatile Liquids - Diesel	ISO 6179:2010 (B)	g/m²/h	0.246
Transmission Rate of Volatile Liquids - Xylene	ISO 6179:2010 (B)	g/m²/h	0.571
Transmission Rate of Volatile Liquids - Toluene	ISO 6179:2010 (B)	g/m²/h	0.583
Transmission Rate of Volatile Liquids - Petrol	ISO 6179:2010 (B)	g/m²/h	0.135
Gas Permeability			
Methane Permeability	B5 EN ISO 15105-1	ml/m²/day/atm	<0.09
Carbon Dioxide Permeability	B5 EN ISO 15105-1	ml/m²/day/atm	<0.09
Radon Permeability	K124/02/95	m²/s	8.0 x 10 ⁻¹⁵
Compliance and Certification			
CE Mark - EN13967:2012			
NHBC Standards Compliant			
BS 8485:2015 Compliant			
BBA Certified - Certificate No. 12/4912			

Additional Information

HANDLING

Roll weights can be in excess of 20kg and hence appropriate care and equipment is required for unloading and handling.

STORAGE

Rolls of JUTA GP® 1 should be stored on stable/level ground and stacked not more than five rolls high, with no other material stacked on top. The rolls can be stored outdoors when packaged, but should be protected from exposure to UV.

INSTALLATION

JUTA GP® 1 should be installed in accordance with the product installation guidelines, and in accordance with BS 8485:2015.

JOINTING AND SEALING

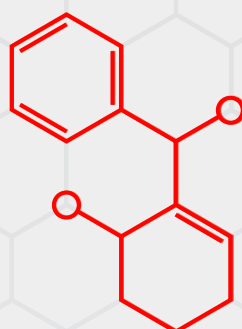
It is recommended JUTA GP® 1 be heat welded where possible, with welding carried out by competent personnel with suitable qualifications in accordance with best practice, and guidance contained within BS 8485:2015. JUTA GP® 1 should be overlapped by at least 100mm. If taping joints, only suitable tape must be used, ensuring application with a silicone roller to remove trapped air. JUTA pre-formed details, or Self Adhesive Gas Membrane are available for sealing around protuberances.

ACCESSORY PRODUCTS

-  JUTA GP® 1 Starter Band
-  JUTA GP® Tape
-  JUTA GP® Self Adhesive Membrane
-  JUTA GP® Primer
-  JUTA GP® Top Hats and Preformed Corners
-  JUTA GP® Protection Fleece
-  JUTA GP® Void Vent (25/40mm)

PLEASE CONTACT JUTA UK DIRECTLY FOR MORE INFORMATION ON JUTA GP® 1

Contact us to find out more information.
info@juta.co.uk | 01772 754177 | JUTA.CO.UK
Melton Grove Works, Church Road, Lytham, FY8 5PL

**JUTA****riba**
product
selector



ATTACHMENT B

VERIFICATION
PHOTOGRAPHS

GROUND GAS PROTECTION VERIFICATION PHOTOGRAPHS



Examples of voids – Plots 553-554



Example of Membrane across floor – Plots 553-554



Examples of telescopic vents – Plots 553-554



Examples of seams – Plots 553-554



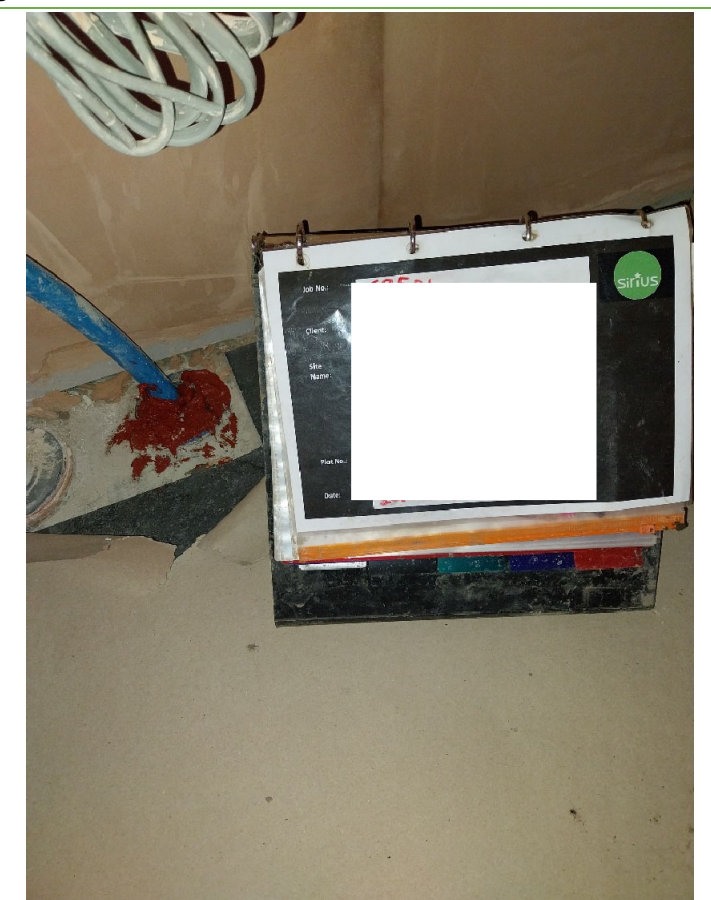
Examples of tophat covers – Plots 553-554



Examples of taped corners – Plots 553-554



Exampels of overlapping seams – Plots 549-554



Example of the closed cell foam placed around the water annulus – Plots 553-554



ATTACHMENT C

GAS PROTECTION VERIFICATION RECORD



Gas Protection Verification Record

Record sheet to be completed for plots inspected by a SUITABLY QUALIFIED independent consultant/engineer

Job number		Client		Building use:	Residential
Site name/location		Gas Regime Classification:	Amber 2	Radon Protection Required	No
Plot number/s	553 & 554	Building description:	One semi-detached property (two houses - plots 553 and 554)		
Compiled by:	JF 20/02/2024	Gas protection type:	Gas Membrane	Floor slab construction:	Suspended floor with ventilated void

Ventilated sub-floor (if present)	Inspection undertaken by/date:	Completed by site management team.	Photographs attached:	Yes
-----------------------------------	--------------------------------	------------------------------------	-----------------------	-----

Notes / recommendations

Void former type	None - open ventilated void.				
Height of void space	150mm				
Gravel type	NA - ventilated open void.				
Pipe size and spacing	NA - ventilated open void.				
External wall airbricks	"Swan-neck" ventilators identified - see photographs.				
Internal sleeper walls	Yes - Present and seen on site, with venting present.				
External vent trenches/ducts	NA - ventilated open void.				

Gas barrier	Inspection undertaken by/date:	CP - 06/07/2023	Photographs attached:	Yes
-------------	--------------------------------	-----------------	-----------------------	-----

Notes / recommendations

Membrane type	Manufacturer	Juta	Product	Juta GP1 Gas Membrane	Installer	DMI Ltd
Extent of coverage	Complete.					
Underside of membrane	Membrane laid on beam and block floor.					
Slab/membrane condition	Good, generally smooth.					
Laps and joints	Generally good. No repairs required.					
Damp-proof course	Present.					
Service entries and seals	Generally good - "tophats" used.					
Cavity inspection	Gas barrier crosses cavity and seals to DPM.					
Water Annulus	All water annulus infilled with closed cell foam to a satisfactory standard.					

These plots have **PASSED** inspection (following repairs noted above).

An additional inspection visit **IS NOT** required for these plots.

Qualified Engineer: Jenny Ford Position: Senior Engineer

Signed:



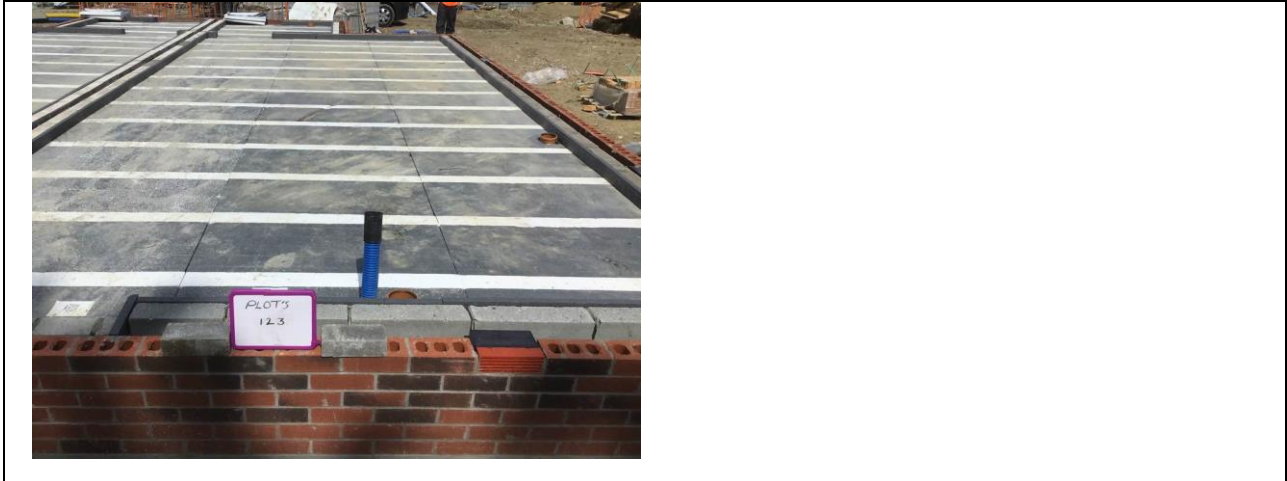
ATTACHMENT D

DMI LTD CQA SHEETS

Section 1	Site Details			
A. Site name				
B. Plot No/Area	553			
C. Date	05/07/2023			
Section 2	Supervisor Details			
A. Supervisors Name				
B. Qualifications of Supervisor	The Supervisor holds the NVQ Level 2 in Gas Membrane Installations and is suitably qualified and experienced.			
Section 3	Health & Safety			
A. CSCS Card	Do All Operatives Hold a Relevant Skills Card ☒ Yes ☐ No			
B. RA/MS	Have all operatives read and understand the risk assessment and method statements prior to starting work ☒ Yes ☐ No			
Section 4	Subgrade Acceptance			
A. Condition	☒ On arrival at site the subgrade had been well prepared and was suitable to carry out the gas membrane installation (See Photo Section) ☐ On arrival at site the subgrade was not suitable and remedial work was carried out to get the substrate to the required standard prior to laying the membrane (See Photo Section) ☐ On arrival at site the subgrade was not suitable and the installation of the membrane was not possible and the installation has been abandoned (See Photo Section)			
Section 5	Membrane Details			
A. Name of Membrane Installed	Juta GP1			
B. Type of Joint	Tape/Self Adhesive Joint ☐	Auto Weld ☒	Hand Weld ☒	Liquid/Chemical ☐
C. Jointing/CQA Detailing Testing	☒ Factory Welds Air Lance (ASTM D4437)		☒ On- Site Probe Test (ASTM D4437)	
D. Detailing Work	Number of Pipes Sealed	5 No		
	Number of Corners Sealed	12 No		
	Number of Acoustic Details Sealed	1 No		

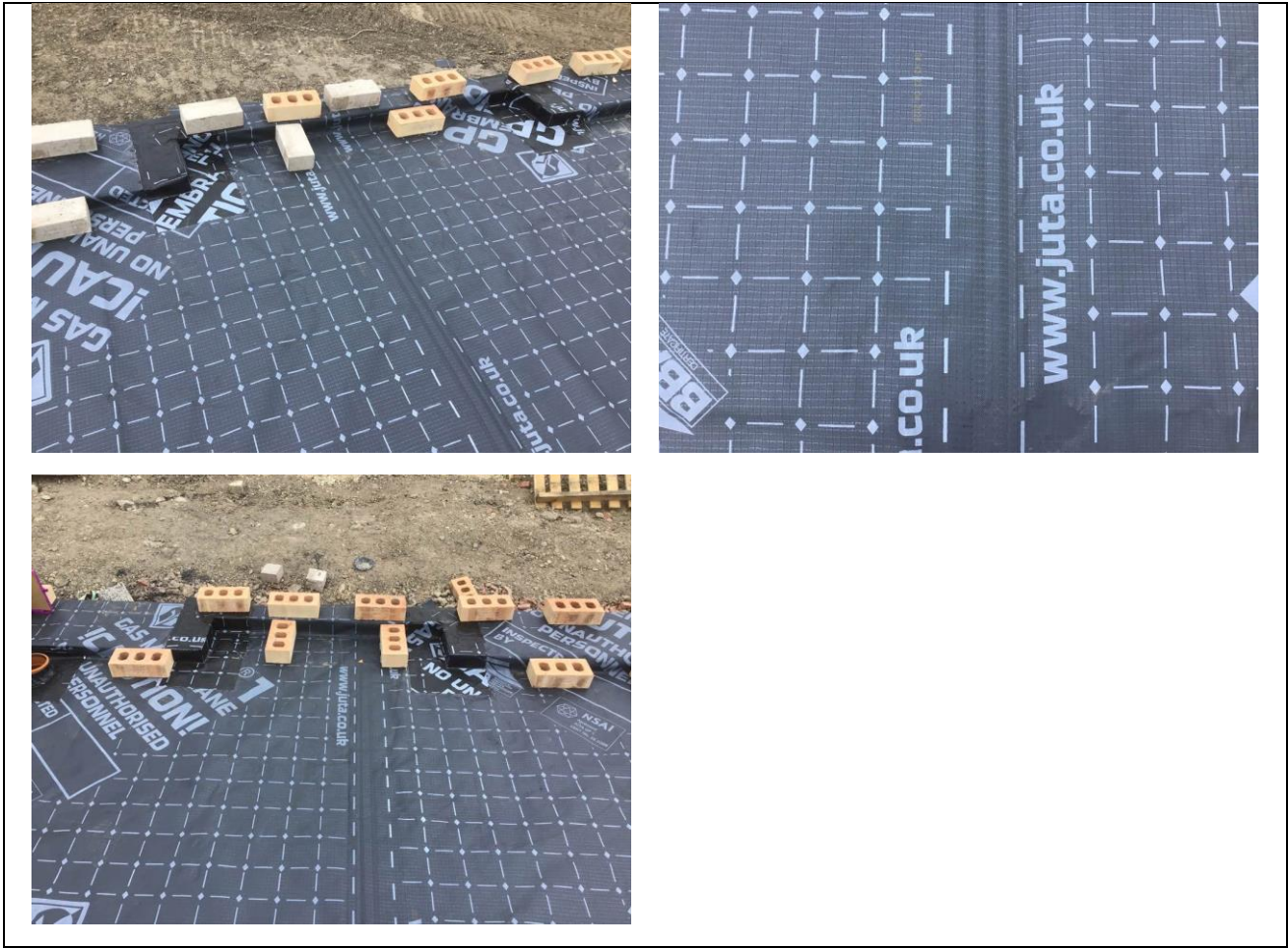
E. Other Detailing Work Carried out	N/A
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Sub Grade Photos



Detailing Photos





Area Overview Photos



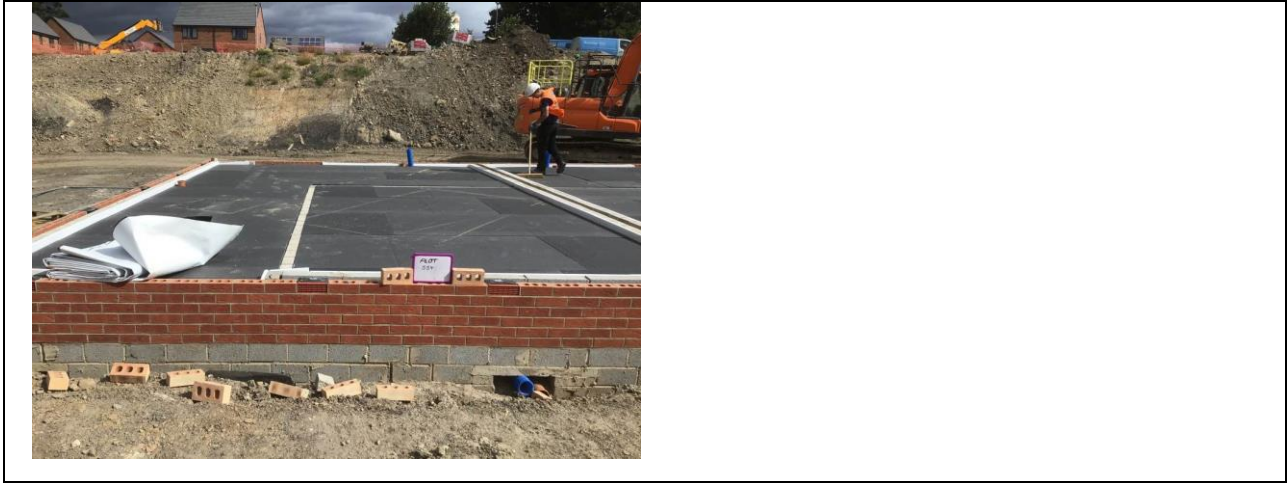
OFFICE ONLY

Date of Application for Payment :	
Invoice/Payment Ref :	
Payment Received ☐	Form to be filed ☐

Section 1	Site Details			
A. Site name				
B. Plot No/Area	554			
C. Date	05/07/2023			
Section 2	Supervisor Details			
A. Supervisors Name				
B. Qualifications of Supervisor	The Supervisor holds the NVQ Level 2 in Gas Membrane Installations and is suitably qualified and experienced.			
Section 3	Health & Safety			
A. CSCS Card	Do All Operatives Hold a Relevant Skills Card ☒ Yes ☐ No			
B. RA/MS	Have all operatives read and understand the risk assessment and method statements prior to starting work ☒ Yes ☐ No			
Section 4	Subgrade Acceptance			
A. Condition	☒ On arrival at site the subgrade had been well prepared and was suitable to carry out the gas membrane installation (See Photo Section) ☐ On arrival at site the subgrade was not suitable and remedial work was carried out to get the substrate to the required standard prior to laying the membrane (See Photo Section) ☐ On arrival at site the subgrade was not suitable and the installation of the membrane was not possible and the installation has been abandoned (See Photo Section)			
Section 5	Membrane Details			
A. Name of Membrane Installed	Juta GP1			
B. Type of Joint	Tape/Self Adhesive Joint ☐	Auto Weld ☒	Hand Weld ☒	Liquid/Chemical ☐
C. Jointing/CQA Detailing Testing	☒ Factory Welds Air Lance (ASTM D4437)		☒ On- Site Probe Test (ASTM D4437)	
D. Detailing Work	Number of Pipes Sealed	5 No		
	Number of Corners Sealed	12 No		
	Number of Acoustic Details Sealed	1 No		

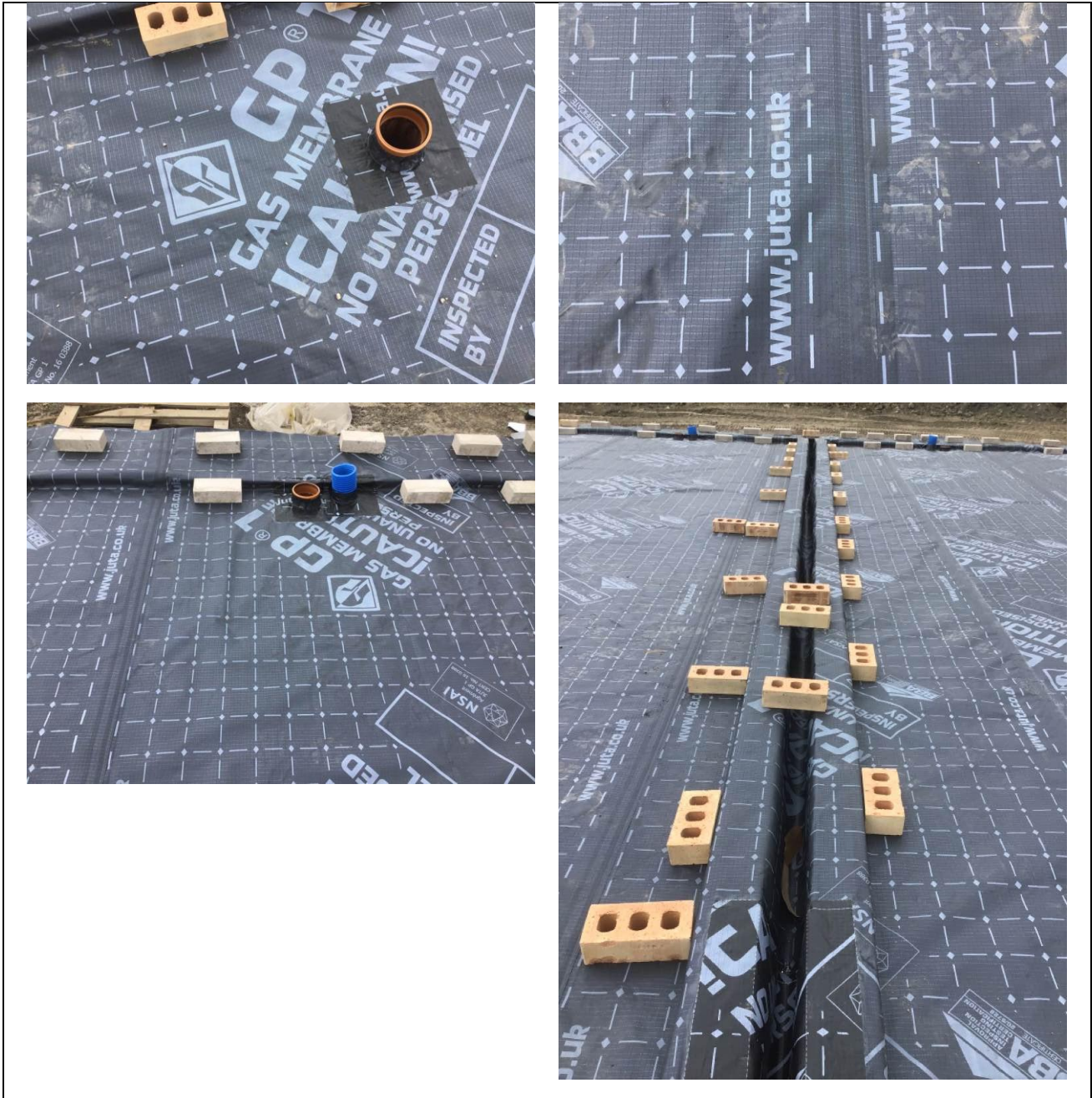
E. Other Detailing Work Carried out	N/A
-------------------------------------	-----

Sub Grade Photos



Detailing Photos





Area Overview Photos





OFFICE ONLY

Date of Application for Payment :	
Invoice/Payment Ref :	
Payment Received ☐	Form to be filed ☐



ATTACHMENT D

INSTALLER QUALIFICATIONS

Certificate of Attendance

Continuing Professional Development

This is to certify that

Mr Simon Goodchild

Has attended and passed the course
Verification of Gas Protection Systems

on

24th April 2018

at

Doncaster Membrane Installations Limited, Adwick
Park, Manvers, S63 5AB

Contact time: 6.5 hours

Trainers: Michael Corban & Gordon Cave:



Richard Froggatt, CL:AIRE Chairman

CL:AIRE

Registered address: 32 Bloomsbury Street, London, WC1B 3QJ

Telephone: +44 (0)2072 994250

Email: enquiries@claire.co.uk Website: www.claire.co.uk

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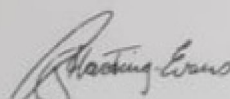
This is to certify that

Dominic Lombari

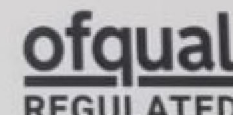
has achieved the following Qualification

**NOCN_Cskills Awards Level 2 NVQ Diploma
in Sub-structure Work Occupations
(Construction) - Installation of Gas
Membranes**

Qualification Approval No: 603/1279/8
ULN: 5277528678
Award Date: 25/03/2021
Certificate No: 47459055



Graham Hasting-Evans
Group Managing Director





PART OF **nocn**



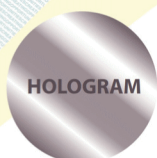
PART OF **nocn** GROUP

This is to certify that

Ian Greene

has achieved the following Qualification

**NOCN_Cskills Awards Level 2 NVQ Diploma
in Sub-structure Work Occupations
(Construction) - Installation of Gas
Membranes**



Qualification Approval No: 603/1279/8
ULN: 6034122332
Award Date: 28/03/2022
Certificate No: 47727750



Graham Hasting-Evans
Chief Executive Officer
NOCN Group



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PART OF **nocn**

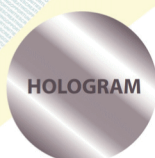


PART OF **nocn** GROUP

Ian Greene

Unit(s) Awarded

Unit Title	Unit Code	Credit(s)	Level
Conforming to General Health, Safety and Welfare in the Workplace	A/503/1170	2	L1
Moving, Handling and Storing Resources in the Workplace	F/503/1171	5	L2
Conforming to Productive Working Practices in the Workplace	J/503/1169	3	L2
Preparing to install gas membranes in the workplace	K/615/6045	15	L2
Installing gas membranes in the workplace	M/615/6046	19	L2



Qualification Approval No: 603/1279/8
ULN: 6034122332
Award Date: 28/03/2022
Certificate No: 47727750



Graham Hasting-Evans
Chief Executive Officer
NOCN Group



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