

SIKA ROOFING TECHNICAL SPECIFICATION



**WE
ANSWER**



Currie Brown - Exeter

PROJECT: St Mary's Airport - Pitch Roof Upgrade
PROJECT REF: PW-0289158
DATE: 28 January 2022

BUILDING TRUST



INTRODUCTION

Sika Limited · Watchmead · Welwyn Garden City · AL7 1BQ · United Kingdom

BUILDING TRUST



Currie Brown
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Woodwater Park, Pynes Hill, Rydon Lane
EX25TY Exeter

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Area Technical Manager - Sika LIMITED
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28 January 2022
Reference: PW-0289158

Dear Thomas Howard

Please find enclosed the proposed specification for the roofing works at the above named project. Contained within the specification you will find comprehensive information regarding the proposed roof build up(s), detailing, general conditions, guarantees, workmanship and maintenance.

Design - The proposed specification includes details of the design against wind uplift, which is covered by Sika Limited's design insurance. A drainage design calculation can be provided based on the use of Sarnafil rainwater outlets, if you would like us to provide this service, please do not hesitate to contact us to request a drainage evaluation pack.

BRE Accredited Detailing - The detailing recommendations utilise Sarnafil Accredited Standard Details, modelled by the Building Research Establishment (BRE) in order to provide calculated values for heat loss and condensation risk, as well as reduce air permeability. The calculated heat loss (Psi value) figures can also be entered into the SBEM (Simplified Building Energy Model) building modelling tool without incurring the penalties outlined in Part L for non-calculated designs. These details can be downloaded via our website or sent on a USB device. As with the wind uplift calculations, the details are covered by Sika Limited's design insurance.

BIM - As the first single ply roofing brand to become Building Information Modelling (BIM) ready on the NBS National BIM Library, Sika Sarnafil have over 20 BIM objects available for our typical Sarnafil flat roofing systems. We now also have a range of Sarnafil Accessories such as rainwater outlets available as BIM objects, all available for download at www.nationalbimlibrary.com/sika-sarnafil.

Spray Technology - Sika's range of spray applied adhesives & primers, allows faster, cleaner and a more even application of the products. More ergonomic application reduces stress on the operatives, long life tooling and less waste are just a number of other benefits.

Sustainability - Environmental responsibility is a key consideration for Sika and is reflected in our achievement of the internationally recognised ISO 14001 standard and the continual development of our



Environmental Management System. As such we strive to develop high quality, long life products, ensuring that whole life performance is maximised. Our independently verified durability statements included in our BBA Certification is testament to this.

Sika Limited are able to produce project specific "**BREEAM Packs**", containing all relevant information relating to the Sarnafil single ply system, including ISO certification, BRE Green Guide Data, EPD's and Life Cycle Assessments (LCA).

To provide a project specific LCA, Sika utilises GaBi 6.0 software to demonstrate the impact of the system on a 30 year life cycle, for GWP, POCP & CED, using CML 2001 - Nov 2010 impact assessment method.

Factory Mutual (FM) - Sarnafil systems have comprehensive Factory Mutual (FM) listings in the Approvals Guide and on the RoofNav web tool, which means that the systems have been tested and verified as having high wind uplift resistance and excellent fire performance.

Insulation Cover - Another area we would also draw your attention to is the insulation specification. If Sikatherm® has been specified this will ensure the insulation is covered under the Sarnafil guarantee and the cover matches that for the Sarnafil membrane. Where Sikatherm® is not used the insulation is not covered and in the event of an insulation failure the insulation manufacturer's terms and conditions may differ and may not cover the replacement cost of the Sarnafil membrane.

Sika Solutions – Have you considered any other Sika products for this project? From the basement to the roof, Sika provides an entire range of solutions;

[Waterproofing](#) | [Flooring](#) | [Concrete](#) | [Concrete Repair](#) | [Coatings](#) | [Facades](#) | [Passive Fire Protection](#) | [Joint Sealing](#) | [Structural Strengthening](#)

We trust this is of assistance to you. If we can be of further help on this, or any other project, please contact me on +44 07817937484.

Kind regards

Phil Wheeler

Area Technical Manager

Kevin Murray

Technical Services Advisor

CONTACT SHEET

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Date: 28 January 2022

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1 TECHNICAL SPECIFICATION - NEW PITCHED ROOF

1.1 SYSTEM SCHEDULE

AREA	MATERIAL
Air & Vapour Control Layer	Sarnavap®-500 E
Insulation Attachment	Mechanically Fastened (Insulation)
Insulation Type	Sikatherm® PIR AL
Waterproofing Attachment	Mechanically Fastened (Sarnafast)
Waterproofing Membrane	Sarnafil® S 327-18 EL

1.2 SPECIFICATION DETAILS

Specification Details: Pitched Roof Upgrade	
Roof size (m2):	220
Roof height (m):	8
Degree of Roof Pitch (°):	16
Profile of Roof:	Duopitch Ridge
Hipped:	no
Longest Building Length (m):	20
Type of eaves:	Drip Edge
Building use:	AIRPORT
Humidity class:	3
U Value:	0.18
The criteria above must be checked by the Specifier. Sika Limited should be notified of any discrepancy.	

1.3 WIND LOADING

Wind Loading Calculations - Wind load and perimeter zone width calculations have been carried out in general accordance with BS EN 1991-1-4, UK National Annex Method, using the criteria stated within the Sika project specification.

Grid Reference/Postcode:	TA21 0NG
Basic Wind Speed V_b (m/s 10min):	22.8
Altitude Factor C_{alt} :	1.136
Orography Factor C_o :	1.000
Exposure Factor C_e (sqrt):	1.480
Direction Factor C_{dir} :	1.000
Peak velocity pressure qp (kPa)* :	0.898

*External/internal pressure coefficients (C_{pe}/C_{pi}) and partial safety factors (γ_q) have been applied to the calculated peak velocity pressure generating maximum wind loads (kN/m²) for the applicable roof zones.

The above is based on information stated within the Sika project specification. For further information please contact Sika Limited.

The criteria above must be checked by the Specifier. Sika Limited should be notified of any discrepancy.

1.4 APPLICATION SUMMARY

Fixing Summary	
Hand Welding:	Hand welding is allowable .
Central Zone	
Insulation:	8no fixings per board (2400x1200)
Membrane:	2m wide sheets fixed @ 150mm
Perimeter Zone	
Insulation:	11no fixings per board (2400x1200)
Membrane:	2m wide sheets fixed @ 150mm Intermediate rows fixed @ 150mm
Perimeter Zone*	Minimum width: 2000 (mm)
*Any additional fastening requirements for the perimeter zone should be installed to the zone width stated above. This may result in additional fastening beyond this dimension, to ensure the full extent of the perimeter zone is covered.	
No allowance has been made for any shadow zones caused by other separate buildings.	
NB: For the detailed specification, including fastener information see below.	

1.5 CDM REGULATIONS

CDM Regulations (Refurbishment Works) – The Construction (Design and Management) Regulations (CDM) are about the management of health and safety and apply to everyone associated with construction projects including the client. Regulations 4 and 5 state that it is the client's duty to make suitable arrangements for managing a project and maintaining and reviewing them for its duration so that it is carried out in a way that manages the health and safety risks involved. For projects involving more than one contractor, these regulations require the client to appoint a Principal Designer and Principal Contractor and to make sure that they carry out their duties. It is also the client's responsibility to engage a competent team that can include Contractors, Designers and Sub-Contractors and to provide all duty holders the appropriate information at the appropriate time.

For further information on the requirements of the CDM Regulations visit <http://www.hse.gov.uk/pubns/books/l153.htm> for free guidance.

All construction projects will have to comply with the CDM Regulations, however Regulation 6 states that the HSE or other relevant enforcing authority, do not need to be notified about all of them. Notifiable projects are projects that:

- Last longer than 30 working days and have more than 20 workers working simultaneously at any point in the project; or;
- Exceed 500 person days.

The easiest way to notify any project to the HSE or other relevant enforcing authority is to use the online notification form F10 on the HSE's website. Further information on how to notify construction work can be found at:

www.hse.gov.uk/construction/cdm/faq/notification.htm.

Clients, Designers and Contractors still have responsibilities for those projects that the HSE does not require notification on.

Sika Limited does not fulfil the role of the Principal Designer and therefore preparation for the proposed specification and subsequent works should only commence when all parties involved with the design and execution of the works are satisfied the appropriate CDM regulations have been fulfilled.

1.6 EXISTING BUILD-UP & PREPARATION

Existing Roof Build-up - The existing roof build up is believed to be as shown below. However should this be found not to be the case, Sika Limited should be consulted as this is likely to effect the specification.

Existing Pitched roofing system with concrete tiles

Existing Roof Preparation – Remove all finishes and the existing deck back to the underlying structure. Only remove as much as can be subsequently made watertight in the same day. Carefully check the

structure and repair or replace as instructed by the Supervising Officer.

Existing Services - The client or client's representative should ensure that the necessary checks are carried out prior to commencement of any works, to ensure that there are no existing services, electrical cables, pipes etc, secured to, or installed directly beneath the existing structural deck. Should this be found to be the case, the Roofing Contractor and Sika Sarnafil should be notified immediately as this may require an alteration to the proposed specification.

1.7 NEW SUBSTRATE

Plywood Deck - Install a plywood deck to suit the loads and span of the joists.

The plywood is to be a minimum 18mm thick and certificated to conform with BS EN 1995-1-1: Eurocode 5 – 'Design of timber structures. General. Common rules and rules for buildings' and the appropriate grade according to BS EN 636: Plywood Specifications. A minimum Service Class 2 "plywood for use in humid conditions" should be used, however higher Service Class plywood may be required, depending on climatic conditions, and should therefore be defined by the specifier.

The deck is to be securely fastened to the substructure using screw fasteners or galvanised annular ring shanked nails (as appropriate) to suit the specific application and climatic conditions. Heads of nails or screws to be punched or countersunk flush with the surface of the deck. Please note that if the Sarnafil membrane is applied directly to the plywood deck, then the board joints should be level with no step and galvanised annular ring shanked nails would not be acceptable.

Should this plywood be part of a SIPS panel it is the responsibility of the specifier to ensure that the proposed SIPS panel is suitable for use in flat roofing applications and that all the necessary condensation risk calculations have been carried out.

Where a bituminous vapour control layer is to be used, tape all board joints in accordance with BS 8217: Code of Practice for Built Up Reinforced Bitumen Membrane for Roofing.

1.8 HUMIDITY CLASSIFICATION

Humidity Classification - In accordance with BS 5250:2021 Management of Moisture in Buildings - Code of Practice (Table 12) the suitability of the air & vapour control layer specified below is based on **Humidity Class 3**.

Should the specifier require a different Humidity Class to be used for this design, then Sika Limited should be notified. A change of Humidity Class may require a change to the air & vapour control layer specified.

1.9 AIR & VAPOUR CONTROL LAYER

Sarnavap 500E - Over the structural deck loosely lay a Sarnavap 500E flame retarded, polyethylene air & vapour control layer. **All side and end laps to be a minimum of 100mm and continuously sealed with Sarnavap jointing tape. To provide continuity of the air & vapour control layer the Sarnavap should**

have fully supported laps and is to be sealed to the abutment at the perimeter of the roof and around all penetrations. The surface of the abutment should be smooth to allow an adequate airtight seal of the Sarnavap.

For the Sarnafil guarantee to include the air & vapour control layer, the appropriate Sarnavap must be used.

1.10 INSULATION

U-value - Install Sikatherm® insulation in accordance with the Sika project specification and Product Data Sheet to achieve the required U-value of **0.18Wm²K**.

Sikatherm® PIR AL/GT Insulation - Install Sikatherm® PIR AL/GT CFC and HCFC free polyisocyanurate insulation providing zero Ozone Depletion Potential (ODP) and low Global Warming Potential (GWP). The insulation is to be in accordance with BS EN 13165 and the SPRA Design Guide.

Sikatherm® insulation is to be laid in a staggered bond pattern with lightly butted joints and fastened with telescopic tube fasteners.

For **1200 x 2400mm** board size there should be a minimum of **8no.** fasteners per board in the **centre** of the roof and a minimum of **11no.** fasteners per board in the **perimeter** of the roof.

All fixings and washers must be in an even pattern (see Sarnafil “Typical Fastener Layouts for PIR Insulation” drawing for further information) and located >50mm and <150mm from the edges and corners of the board and not overlap board joints.

To extend the Sarnafil guarantee to include the insulation, Sikatherm® insulation must be used, fastened using Sarnafil fasteners (installed with the appropriate tooling) and all in accordance with the recommendations for Sarnafil systems.

Sika Limited strongly recommends that the specifier and/or the client should confirm the suitability of the thermal insulation suggested in this specification with the insurer(s) of the building and its contents prior to adopting this proposal. Sika Limited will assume that the specification is deemed suitable if it is then used as the basis for tendering purposes to procure the works. The specifier should also establish that the thermal insulation to be used complies with all relevant regulatory requirements, including fire.

1.11 MEMBRANE

Sarnafil Mechanically Fastened (Sarnafast) Membrane - Loosely lay Sarnafil S327-18EL Lead Grey polyester reinforced roofing membrane and hot air weld all end laps.

Sarnafil reinforced membranes are manufactured by extrusion coating at a state of the art manufacturing plant in Switzerland to ISO 9001 & 14001. Manufactured with a dirt repellent lacquered top coat and treated with fire retardants, it provides a self-extinguishing, dimensionally stable and vapour permeable waterproofing membrane certified by the BBA as having a ‘life expectancy in excess of 40 years - see BBA for details.

Mechanically fasten **2m wide** Sarnafil membrane with **Sarnafil SFT thermally broken tubes & SBF-T25 fasteners** along the edge of the membrane, as indicated by the ink dot line, at a maximum spacing of **150mm, 6.66no./linear metre**.

The fastener must penetrate and project below a metal (minimum 20mm if the deck has a stiffening rib) or timber deck by a minimum of 15mm or have a minimum embedment of 25mm into a concrete deck.

The fastener rows to be at 1880mm maximum centres. The fastener density for the roof is **3.54/m²**, this may vary if the fastener type is changed from the type specified above.

Overlap subsequent sheets by a minimum of 120mm to cover fasteners and washers and heat weld the lap using hand welding. Prior to commencement of welding, install self-adhesive aluminium tape to the membrane sheet as a guide to ensure a constant, straight pre-weld, prior to a 40mm final weld.

Sarnafil thermally broken fasteners must be installed with the appropriate tooling and the membrane must be pre-punched with the Sarnafil SMP tool.

For metal decks the membrane should be fastened at 90° to the deck corrugations.

A Sarnabar and G/S welding cord or an alternative approved perimeter fixing method is to be installed at the perimeter of the roof and around all penetrations.

NB: Should an independent freestanding handrail system be fitted on the roof surface it may be necessary to fit a Sarnabar around the counterweights to isolate the dynamic loads on the membrane, depending on the anticipated wind uplift. Consult the Sika Roofing Technical Services Department.

Intermediate Fastener Rows - In the perimeter zone use 1m wide Sarnafil S327-18EL Lead Grey membrane rolls or alternatively install intermediate rows of **Sarnafil SFT thermally broken tubes & SBF-T25 fasteners** along the centre of 2m wide Sarnafil membrane rolls, fasten at the same centres as the central zone and weather with a 200mm wide Sarnafil S327-18EL coverstrip hot air welded on either side of the row of fasteners.

Intermediate rows of fasteners in the perimeter zone only should be terminated with a SBT Row Termination Washer or Bar End Washer where appropriate.

The fastener rows in the perimeter zone will be at 940mm or 880mm centres depending on whether a 1m wide sheet is used.

The fastener density for the perimeter zone of the roof is **7.08/m²**, this may vary if the fastener type is changed from the type specified above.

When using Sarnafil G/S membranes >1.5mm thick or all Sarnafil TG/TS membranes, prior to welding, it is essential to chamfer the leading edge of all transverse/cross joints in accordance with the recommendations for Sarnafil systems.

Detailing Membrane - All detail work flashings are to be carried out using Sarnafil G410-15EL Lead Grey and/or S327-15EL Lead Grey membrane.

Fastener Guidance - Due to the Guarantee specified on this project, for fixing into new decks or upstands where Sarnafil thermally broken SBT tube fasteners cannot be used, Sarnafil stainless steel fasteners will be required.

1.12 GENERAL DETAILING

Detail work generally is to be in accordance with the appropriate Sarnafil standard details including published Sarnafil technical advice/recommendations and the Specifier's project drawings.

The following items should be considered.

Health & Safety/Access – The **SarnaTred** walkway tiles are recommended for known access routes across the roof and the **Sarnafil Constant Force Post** fall arrest and/or **Sarnafil Versirail** freestanding guardrail system should also be considered for rooftop safety.

Drainage – Sarnafil rigid rainwater outlets should be considered to ensure a fully compatible & weldable seal to the drainage outlet. Sika Limited can provide bespoke drainage calculations to determine the size and quantity of **SarnaDrain** rainwater outlets required.

Lightning Protection – Lightning conductor tape should be attached to the Sarnafil membrane using the appropriate **Sarnafil Heat Weldable Lightning Conductor Clips**. These are to be fixed in accordance with the Sarnafil installation guidelines and fitted to the layout designed by the Lightning Conductor Specialist.

Rooflights – SikaRoof® Light SS are a comprehensive range of rooflights, which are standard or specifically designed, to meet the requirements of the project. The range encompasses continuous or singular rooflights with various glazing options.

A detailed SikaRoof® Light SS specification is available on request.

Solar PV – Where there is a requirement for PV solar on a Sarnafil roof (up to a maximum 10° slope), Sika Limited strongly advise **Sika SolarRoof®**, which utilises a non-penetrative mounting system, the Sika SolarMount-1, welded to the Sarnafil membrane.

Alternatively, Sika Limited in conjunction with Latchways plc has developed the **Sarnafil Solar Panel Support** post. The Sarnafil Solar Panel Support post is simply mechanically attached onto the finished roof, waterproofed with Sarnafil flashings and hot air welded to the existing membrane.

Liquid Detailing System – The **Sarnafil Liquid Detailing System** can be considered for very difficult detailing situations and where considered should be installed in strict accordance with the Sarnafil Liquid Detailing Method Statement and all relevant Product Data Sheets.

Stairwells & Access Walkways – **Sikalastic Rapid** is a quick curing liquid applied system, developed to be used in situations where access may be restricted and a fast application is desirable. Providing a long term protective wearing solution, Sikalastic Rapid is suitable for areas such as stairwells and access walkways.

A detailed **Sikalastic Rapid** specification is available upon request.

1.13 DISCLAIMER

The information, and, in particular, the recommendations relating to the application and end-use of Sika products, are given in good faith based on Sika Limited's current knowledge and experience of the products when properly stored, handled and applied under normal conditions. In practice, the differences in materials, substrates and actual site conditions are such that no warranty in respect of merchantability or of fitness for a particular purpose, nor any liability arising out of any legal relationship whatsoever, can be inferred either from this information, unless from any written recommendations, or from any other advice offered by Sika Limited. The proprietary rights of third parties must be observed. All orders are accepted subject to our current terms of sale and delivery. Users must always refer to the most recent issue of the Product Data Sheet for the product concerned, copies of which will be supplied on request.

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1 TECHNICAL SPECIFICATION - WINDCATCHERS APETURE REPAIRS

1.1 SYSTEM SCHEDULE

AREA	MATERIAL
Fleece Layer	S-Felt T-300
Waterproofing Attachment	Mechanically Fastened (Sarnafast)
Waterproofing Membrane	Sarnafil® S 327-12 EL

1.2 SPECIFICATION DETAILS

Specification Details: Windcatchers Aperture Repairs	
Roof size (m2):	10
Roof height (m):	7
Degree of Roof Pitch (°):	<5
Profile of Roof:	Flat
Hipped:	no
Longest Building Length (m):	
Type of eaves:	Drip Edge
Building use:	AIRPORT
Humidity class:	2
U Value:	0.18
The criteria above must be checked by the Specifier. Sika Limited should be notified of any discrepancy.	

1.3 WIND LOADING

Wind Loading Calculations - Wind load and perimeter zone width calculations have been carried out in general accordance with BS EN 1991-1-4, UK National Annex Method, using the criteria stated within the Sika project specification.

Grid Reference/Postcode:	TA21 0NG
Basic Wind Speed V_b (m/s 10min):	22.8
Altitude Factor C_{alt} :	1.136
Orography Factor C_o :	1.000
Exposure Factor C_e (sqrt):	1.452
Direction Factor C_{dir} :	1.000
Peak velocity pressure qp (kPa)* :	0.865

*External/internal pressure coefficients (C_{pe}/C_{pi}) and partial safety factors (γ_q) have been applied to the calculated peak velocity pressure generating maximum wind loads (kN/m²) for the applicable roof zones.

The above is based on information stated within the Sika project specification. For further information please contact Sika Limited.

The criteria above must be checked by the Specifier. Sika Limited should be notified of any discrepancy.

1.4 APPLICATION SUMMARY

Fixing Summary	
Hand Welding:	Hand welding is allowable .
Central Zone	
Membrane:	2m wide sheets fixed @ 300mm
Perimeter Zone	
Membrane:	2m wide sheets fixed @ 150mm
Perimeter Zone*	Minimum width: 2000 (mm)
*Any additional fastening requirements for the perimeter zone should be installed to the zone width stated above. This may result in additional fastening beyond this dimension, to ensure the full extent of the perimeter zone is covered.	
No allowance has been made for any shadow zones caused by other separate buildings.	
NB: For the detailed specification, including fastener information see below.	

1.5 CDM REGULATIONS

CDM Regulations (Refurbishment Works) – The Construction (Design and Management) Regulations (CDM) are about the management of health and safety and apply to everyone associated with construction projects including the client. Regulations 4 and 5 state that it is the client's duty to make suitable arrangements for managing a project and maintaining and reviewing them for its duration so that it is carried out in a way that manages the health and safety risks involved. For projects involving more than one contractor, these regulations require the client to appoint a Principal Designer and Principal Contractor and to make sure that they carry out their duties. It is also the client's responsibility to engage a competent team that can include Contractors, Designers and Sub-Contractors and to provide all duty holders the appropriate information at the appropriate time.

For further information on the requirements of the CDM Regulations visit <http://www.hse.gov.uk/pubns/books/l153.htm> for free guidance.

All construction projects will have to comply with the CDM Regulations, however Regulation 6 states that the HSE or other relevant enforcing authority, do not need to be notified about all of them. Notifiable projects are projects that:

- Last longer than 30 working days and have more than 20 workers working simultaneously at any point in the project; or;
- Exceed 500 person days.

The easiest way to notify any project to the HSE or other relevant enforcing authority is to use the online notification form F10 on the HSE's website. Further information on how to notify construction work can be found at:

www.hse.gov.uk/construction/cdm/faq/notification.htm.

Clients, Designers and Contractors still have responsibilities for those projects that the HSE does not require notification on.

Sika Limited does not fulfil the role of the Principal Designer and therefore preparation for the proposed specification and subsequent works should only commence when all parties involved with the design and execution of the works are satisfied the appropriate CDM regulations have been fulfilled.

1.6 EXISTING BUILD-UP & PREPARATION

Existing Roof Build-up - The existing roof build up is believed to be as shown below. However should this be found not to be the case, Sika Limited should be consulted as this is likely to effect the specification.

Existing plywood deck with a BUR waterproofing layer

Existing Roof Preparation – Remove all finishes back to the existing structural deck and carefully check its condition. Only strip as much as can subsequently be made watertight in the same day. Repair or

replace the structural deck as instructed by the Supervising Officer.

Existing Services - The client or client's representative should ensure that the necessary checks are carried out prior to commencement of any works, to ensure that there are no existing services, electrical cables, pipes etc, secured to, or installed directly beneath the existing structural deck. Should this be found to be the case, the Roofing Contractor and Sika Sarnafil should be notified immediately as this may require an alteration to the proposed specification.

Pullout Testing - The number and type of Sarnafil approved mechanical fasteners suggested in this specification are based on anticipated average pullout values. Pullout tests must be carried out by SFS intec Ltd and results provided to the Sika Roofing Technical Services Department before commencement of work.

Pullout testing is not a survey of the existing roof condition and should not be used as such. The condition of the existing deck and its suitability to accommodate the mechanical fasteners suggested in this specification is the responsibility of the roofing contractor.

NB: The results of these tests may require amendment to the suggested fastener layout.

Failure to provide satisfactory pullout test data and to establish the existing deck is suitable may mean that the new roof system is not fastened sufficiently and the Sarnafil Guarantee may not be issued.

1.7 HUMIDITY CLASSIFICATION

Humidity Classification - In accordance with BS 5250:2021 Management of Moisture in Buildings - Code of Practice (Table 12) the suitability of the roof build up specified within this specification is based on **Humidity Class 2**.

Should the specifier require a different Humidity Class to be used for this design, then Sika Limited should be notified as this will probably require a change to the specification.

Cold Roof Ventilation - A cold roof or cold deck construction has the principal thermal insulation installed below the structural deck, generally at ceiling level. It is essential that there is an air space left above the insulation and below the deck to allow free circulation of air, which will require venting through either eaves trickle vents or mushroom shaped vents fitted through the deck. Airflow should be induced for successful ventilation and dead spaces avoided.

In modern construction with higher insulation levels being required this form of construction may be best avoided due to the higher risks of condensation. It is the responsibility of the specifier to ensure that the level of suitable insulation & the ventilation requirements are sufficient to comply with Building Regulations and to negate a risk of condensation. The insulation and ventilated void should be inspected regularly in order to ensure that they are performing correctly.

Any failure to the roof construction that is deemed to be caused by condensation will not be covered by the Sika Guarantee.

1.8 FLEECE LAYER

Sarnafil S-Felt Type T Fleece Layer - Loosely lay with minimum 100mm laps S-Felt T 300gms/m², all purpose, polyester fleece barrier/cushion layer.

1.9 MEMBRANE

Sarnafil Mechanically Fastened (Sarnafast) Membrane - Loosely lay Sarnafil S327-12EL Lead Grey polyester reinforced roofing membrane and hot air weld all end laps.

Sarnafil reinforced membranes are manufactured by extrusion coating at a state of the art manufacturing plant in Switzerland to ISO 9001 & 14001. Manufactured with a dirt repellent lacquered top coat and treated with fire retardants, it provides a self-extinguishing, dimensionally stable and vapour permeable waterproofing membrane certified by the BBA as having a 'life expectancy in excess of 40 years - see BBA for details.

Mechanically fasten **2m wide** Sarnafil membrane with **IF/IG-C 82x40 membrane plates and SBF-T25 fasteners** along the edge of the membrane, as indicated by the ink dot line, at a maximum spacing of **300mm, 3.33no./linear metre** in the **central zone** of the roof and at maximum spacing of **150mm, 6.66no./linear metre** in the **perimeter zone**.

The fastener must penetrate and project below a metal (minimum 20mm if the deck has a stiffening rib) or timber deck by a minimum of 15mm or have a minimum embedment of 25mm into a concrete deck.

The fastener rows to be at 1880mm maximum centres. The fastener density in the central zone is **1.77/m²**, and in the perimeter zone is **3.54/m²**, this may vary if the fastener type is changed from the type specified above.

Sarnafil thermally broken fasteners must be installed with the appropriate tooling and the membrane must be pre-punched with the Sarnafil SMP tool.

Overlap subsequent sheets by a minimum of 120mm to cover fasteners and washers and heat weld the lap using **an automatic welding machine or hand welding**.

For metal decks the membrane should be fastened at 90° to the deck corrugations.

A Sarnabar and G/S welding cord or an alternative approved perimeter fixing method is to be installed at the perimeter of the roof and around all penetrations.

NB: Should an independent freestanding handrail system be fitted on the roof surface it may be necessary to fit a Sarnabar around the counterweights to isolate the dynamic loads on the membrane, depending on the anticipated wind uplift. Consult the Sika Roofing Technical Services Department.

Detailing Membrane - All detail work flashings are to be carried out using Sarnafil G410-12EL Lead Grey and/or S327-12EL Lead Grey membrane.

1.10 GENERAL DETAILING

Detail work generally is to be in accordance with the appropriate Sarnafil standard details including published Sarnafil technical advice/recommendations and the Specifier's project drawings.

The following items should be considered.

Health & Safety/Access – The **SarnaTred** walkway tiles are recommended for known access routes across the roof and the **Sarnafil Constant Force Post** fall arrest and/or **Sarnafil Versirail** freestanding guardrail system should also be considered for rooftop safety.

Drainage – Sarnafil rigid rainwater outlets should be considered to ensure a fully compatible & weldable seal to the drainage outlet. Sika Limited can provide bespoke drainage calculations to determine the size and quantity of **SarnaDrain** rainwater outlets required.

Lightning Protection – Lightning conductor tape should be attached to the Sarnafil membrane using the appropriate **Sarnafil Heat Weldable Lightning Conductor Clips**. These are to be fixed in accordance with the Sarnafil installation guidelines and fitted to the layout designed by the Lightning Conductor Specialist.

Rooflights – SikaRoof® Light SS are a comprehensive range of rooflights, which are standard or specifically designed, to meet the requirements of the project. The range encompasses continuous or singular rooflights with various glazing options.

A detailed SikaRoof® Light SS specification is available on request.

Solar PV – Where there is a requirement for PV solar on a Sarnafil roof (up to a maximum 10° slope), Sika Limited strongly advise **Sika SolaRoof®**, which utilises a non-penetrative mounting system, the Sika SolarMount-1, welded to the Sarnafil membrane.

Alternatively, Sika Limited in conjunction with Latchways plc has developed the **Sarnafil Solar Panel Support** post. The Sarnafil Solar Panel Support post is simply mechanically attached onto the finished roof, waterproofed with Sarnafil flashings and hot air welded to the existing membrane.

Liquid Detailing System – The **Sarnafil Liquid Detailing System** can be considered for very difficult detailing situations and where considered should be installed in strict accordance with the Sarnafil Liquid Detailing Method Statement and all relevant Product Data Sheets.

Stairwells & Access Walkways – **Sikalastic Rapid** is a quick curing liquid applied system, developed to be used in situations where access may be restricted and a fast application is desirable. Providing a long term protective wearing solution, Sikalastic Rapid is suitable for areas such as stairwells and access walkways.

A detailed **Sikalastic Rapid** specification is available upon request.

1.11 DISCLAIMER

The information, and, in particular, the recommendations relating to the application and end-use of Sika products, are given in good faith based on Sika Limited's current knowledge and experience of the products when properly stored, handled and applied under normal conditions. In practice, the differences in materials, substrates and actual site conditions are such that no warranty in respect of

merchantability or of fitness for a particular purpose, nor any liability arising out of any legal relationship whatsoever, can be inferred either from this information, unless from any written recommendations, or from any other advice offered by Sika Limited. The proprietary rights of third parties must be observed. All orders are accepted subject to our current terms of sale and delivery. Users must always refer to the most recent issue of the Product Data Sheet for the product concerned, copies of which will be supplied on request.