

# Typical Detail – Flat Timber Roof – Insulated Permaphalt Fixing

## NOTES:

1. **18mm Exterior Grade Plywood sheathing:** Laying plywood underlay: Laying: Parallel with perimeter edges. Stagger cross joints. Provide 0.5 to 1 mm gap between boards/sheets. Fixing: Centres: Fix at 300 mm grid centres over the area of each sheet and at 150 mm centres along edges, set in 10 mm from perimeter edges, and in pairs across joints. Nail heads: Set flush or just below the surface. Joining: Contractor's choice.

2. **Vapour Control Layer:** Installing vapour control layers: Product: Sarnobat 500E SA (or equivalent) loose-laid. Installing over Plywood Deck: Plywood decks should be clean, dry, without large projections, steps or gaps, and should be graded to allow correct falls to all rainwater outlets. Continuity: No breaks: Mistle joints: Penetration and abutments: Tape to vapour control membrane. Joints and edges: Overlap joints: 150 mm and seal with vapour resistant adhesive tape. Perimeter edges sealed. Prime substrates to achieve full bond. Sheet repairs and punctures: Fix and seal lapped patch of vapour control membrane with continuous band of tape on edges.

3. **Roof Insulation:** Material: Polystyrene (PIR) foam board type D. Fasteners: Contractor's design. System accessories: Contractor's design. To BS / I.S. EN 13166: 2012 + A2: 2016 (Thermal insulation products for buildings. Factory made rigid polystyrene foam (PIR) products. Specification. Double layer of 60mm Kingspan Thermaroc TR27 board on both sides with a coats of glass tissue, autoclave bonded to the insulation core during manufacture. Compressive strength over 150 kPa at 10% compression, when tested to BS / I.S. EN 826: 2012, resistivity greater than 200 MN/m, when tested in accordance with BS / I.S. EN 12088: 2013. Thermal conductivity: 0.024 W/mK (at 120 mm), Euroclass E. Core: High performance rigid thermoset polyisocyanurate (PIR) Insulate mini slatted with a blowing agent that has zero Ozone Depletion Potential (ODP) and low Global Warming Potential (GWP). Board size: 1.2 x 0.6 metres, 1.2 x 1.2 metres, 1.2 x 2.4 metres. Weight: Approx 4.94 kg/m<sup>2</sup> as a thickness of 100 mm. Installing over Plywood Deck: Plywood decks should be clean, dry, without large projections, steps or gaps, and should be graded to allow correct falls to all rainwater outlets. The insulation boards are to be mechanically fixed to the vapour control layer should be loose-laid. Where one run of the specified vapour control layer laps another, there should be minimum 150 mm side and end overlaps, which should be adequately sealed. Turn up the vapour control layer at the edge of the roof to a height appropriate to the specified waterproofing membrane. The insulation boards should be secured to the deck using mechanical fixings e.g. telescopic tube fasteners (see 'Mechanical Fixings'). Insulation boards should always be laid brick-laid, either with their long edges at right angles to the edge of, or diagonally across the roof, and with joints tightly butted. There should be no gaps at abutments. Joints between insulation boards should not coincide with those between the plywood sheets. For roofs without parapets, a timber edging board of the same height as the insulation is to be used to fix the fascia board to the gutter system. Fixing: A minimum of 4 fixings are required to secure 1.2 x 0.6 m boards to the deck. A minimum of 5 fixings are required to secure 1.2 x 1.2 m boards to the deck. The requirement for additional fixings should be assessed in accordance with BS 6399-2: 1997 (Loadings for buildings. Code of practice for wind loads) or BS / I.S. EN 1901-1-4: 2005 + A1: 2010 (National Annex to Eurocode 1. Actions on structures. General Actions. Wind Actions). Mechanical fixings must be arranged in an even pattern. Fasteners at insulation board edges must be located > 50 and < 150 mm from edges and corners of the board and not overlap board joints. Each fixing should incorporate a square or circular plate washer (min. 50 x 50 mm or 60 mm diameter). Two layers of insulation are to be installed, the base layer should be mechanically fixed with minimum 1 No. fixing in the centre of the insulation board before fixing the top layer as above. The layers should be horizontally offset relative to each other, so far as possible, the board joints in the two adjacent layers do not coincide with each other. The waterproofing membrane is installed in accordance with the membrane manufacturer's instructions, over the whole insulated area including any insulation upstands, as soon as possible after laying the insulation boards.

4. Sarnat@ G 410-18 EL Felt, PVC, multi-layer, fully adhered, lacquered matt finish, wearable sheet membrane with a glass fibre reinforcing inlay and polyester fleece backing for roof waterproofing. Contains ultraviolet light stabilizers and flame retardants to provide a colour stable, low maintenance and durable membrane. Thickness: 1.8 mm black sheathing felt. Laying roofing felt: lay entirely loose with lap joints of 50mm. Fix over standing litch galvanneal expanded metal lathing over black sheathing felt fixed by nailing with extra large head galvanneal felt nails or with galvanneal staples at maximum 150mm centres.

5. Eave details: Form: Standing seam eaves termination with folded down ends. Fixing: Zinc clips. Large Zings: Form: Standing seam verge termination. Upright zinc: Zinc traditional sheet – standard temper alloy. Fixing: Top edge: Battens nail clips (under battens). Bottom edge: Zinc clips. Joints: Single lock water. Metalwork generally: Fixing: Support fully. Install to resist wind uplift and to accommodate thermal movement, without distortion or stress. Fix adequately to provide a secure, free draining and completely weathertight installation. Folding: To give straight, regular and tight bends, leaving panels free from ripples, kinks, buckling and cracks. Prefinishing: Measure, mark, out and form metal to be fire assembly wherever possible. Burs and sharp edges: Fold under or remove as work proceeds.

6. Complete the design of the roof covering system. Standards: In accordance with CP 143-5. Structural performance – wind actions: Requirement: Calculate appropriate to location, exposure, height, building shape and size, taking account of existing and towers future adjacent structures: IK0 Permaphalt membrane to BS EN 150 001, overall mass 2.2kg/m<sup>2</sup> per mm of thickness, available sheet thickness: 1.0/1.3/1.6/2.0/2.5/3.0mm. The vapour resistance not less than 1000 000 Mt/m<sup>2</sup>g/m. For condensation control calculations a factor of 20 000Mt/m<sup>2</sup> (g/m) may be taken (i.e. the rate of the vapour resistivity of the material to that of air). Resistance to water: Impervious to water, water-proof and rot-proof: external resistance required for a roof covering: P60 to BS 476: Part 3. The coefficient of cubic expansion 15 x 10<sup>-6</sup>/°C, non-toxic and suitable for use in contact with potable water, odourless after laying. Installing IK0 Permaphalt: Apply a light brush coat of IK0pro High Bond Primer and allow to dry thoroughly before applying Permaphalt. Where excessive blowing is experienced the fixing of burmen coated expanded metal lathing over black sheathing felt may be required.

Lay Permaphalt in two coats, breaking joint, to nominal thickness of 20mm on an underlay of black sheathing felt laid loose with 50mm lapped joints. Also coat angle fillet should be formed at the junction of the vertical and the flat and free standing upstand feet to the deck must retain a minimum 10mm clear of walls and abutments. The top of the slaking is applied and tamped into a chase 25mm x 25mm. For verge details form three-coat angle fillet as shown. For gutter eaves form asphalt gully with an undercut drip as shown. The finished Permaphalt must be sand rubbed to reduce the incidence of crazing. Where thermal insulation is laid beneath the waterproofing, it is recommended that the roof pitch does not exceed 4°. Where Permaphalt is laid onto insulation in a warm roof construction, a protective surface should be applied to all flat areas using a suitable solar reflective paint such as Solaflex. Exposed asphalt skirtings and vertical areas will require an approved reflective paint to provide adequate protection for Permaphalt. Periodic repainting will be required.

Flashing embedded into mortar joint

WBS Dashing Aggregates

WBS DASH RECEIVER WHITE; K.REND  
Silicone Dash (White)

WBS SCRIM ADHESIVE; K.REND HP12 Base Coat  
reinforced with WBS Scrim fibre glass mesh

WBS phenolic foam: 90mm KINGSPAN Kooltherm  
K5 External Wall Board

WETHERBY WBS Insulation Bedding Adhesive  
RAWPLUC Metal Pin Masonry Versatile Fixing  
TFIX 8S 135

Existing substrate

SOCOTEC Spit HIT M 6-5/32P

WBS bellcast bead fixed at 300mm  
centres through existing flashing

Metal flashing to be dressed behind  
bellcast bead  
New Flashing as per spec: 45-75-35/330

Flashing to overlap Roof covering

Permaphalt skirting

Expanded metal lathing

Permaphalt two-coat angle fillet

Black sheathing felt

Expanded  
metal lathing

New  
Flashing/Capping

New Roof  
Insulation

New Roof covering  
system Permaphalt  
with solar reflective  
finish, two-coat sheet  
20mm thick in total,  
mass 44kg/m<sup>2</sup>

Typical External gravity  
rainwater drainage  
system

Existing flat roof structure

uPVC Barge board and Fascia

uPVC Soffit and Barge board

