



Design and Specification Guide





IKO Permapark is a specially formulated mastic asphalt waterproofing and surfacing system for elevated vehicle decks, using advanced polymer technology to give the ideal combination of long term durability, increased fatigue resistance, improved temperature stability and ease of installation.

Applied by traditional mastic asphalt techniques, IKO Permapark is the result of extensive research and development, and the careful selection of polymers to provide improved performance in vehicle deck specifications. IKO Permapark is suitable for a wide range of applications from pedestrian walkways, car parks, HGV service decks and access ramps.



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Development of IKO Permapark



History

IKO Permapark was developed as one of the first polymer modified mastic asphalt waterproof paving systems in the United Kingdom. It was extensively tested by the Building Research Establishment, certified by the British Board of Agrément in 1992, and has been used on a wide variety of applications ever since.

Present

The current IKO Permapark System and advanced polymer formulation offers enhanced low temperature flexibility (resistance to cracking) and high temperature stability (resistance to deformation) with a design life that exceeds standard mastic asphalt deck systems and other thin proprietary car park coating systems.

Future

As part of IKO's development programme we are constantly striving to improve on all our products and systems, IKO Permapark is no exception. At our Central Laboratory in Grangemill, we are currently looking at further product developments to offer enhanced low temperature flexibility characteristics and high temperature stability. We work closely with the UK's leading bitumen suppliers with the goal of developing products with lower operating and installation temperatures, offering improved cost savings to our customers.

CarbonZero

In January 2008, UK mastic asphalt became the first industry in the world to achieve the CarbonZero standard.

Over 100 independent contractors, hauliers, installers and manufacturers are now 100% committed to reducing climate change by cutting the carbon footprint of any building, anywhere.

As an IKO PLC initiative, this means anyone choosing an advanced mastic asphalt system to waterproof their project will get a totally CO₂ neutral solution – ideal for eco friendly developments.

www.co2balance.com



The IKO Permapark Difference

The IKO Permapark Premier Service

IKO Permapark has a highly developed project design and specification service. Working with our experienced Registered Contractor partners, we have the capability to deliver projects on time, on budget and right first time. High performance materials, together with high standards of workmanship and project supervision, provide guaranteed car park options across the widest specialist product range in the industry.

Orders are handled quickly and accurately, and deliveries to site are arranged according to the contractor's work schedule, minimising delays on site.

Our specialist knowledge is combined with our strength in structural waterproofing design, ensuring a totally watertight building envelope.

Unrivalled Technical Support from IKO

- Assistance with new-build design
- Survey and design service for refurbishment works
- Comprehensive proposals, including full written reports specifications (NBS format available)
- Detail design and CAD drawings
- Technical advice and calculation facilities
- Budget costing
- Nationwide network of Registered Contractors
- Contract monitoring (work in progress)
- Final inspection and guarantee sign-off inspection
- Full 25 year guarantees available

Premier Guarantees

Comprehensive IKO Guarantees covering materials and workmanship are available for up to 25 years.

Registered Contractors

To ensure high industry standards are maintained, IKO Permapark Systems are only installed by IKO Registered Contractors.



Design Considerations & Sitework

Structural Base

Decks can be either in situ concrete, in situ concrete with sand/cement screed, lytag grade 20 concrete or precast concrete with structural topping.

In situ concrete for roof decks shall be specified and produced in accordance with BS EN 206:2015 and installed in accordance with BS 13670:2009 and the National Structural Concrete Specification.

Decks to receive IKO Permapark must be true, plane and even, free from ridges, hollows and indentations, and should provide a fall of 1 in 60 to ensure good drainage to outlets. The most suitable surface is provided by a skip float or power float finish.

To reduce the risk of coarse aggregate settlement it is important to provide sufficient thermal mass directly below IKO Permapark allowing for rapid heat dissipation during laying. It therefore follows that “insulating” screeds should be avoided.

Temporary drainage holes should be provided through the structural base to allow downward drying of residual construction moisture or entrapped rainwater.

Decks to receive IKO Permapark must be capable of supporting all static and imposed loads without undue deflection. The weights given in table 1 may be used as a guide for assessing the load imposed by the specification.

Component	Thickness (mm)	Nom. Weight (kg/ m²)
IKO Permapark Waterproofing	10	24
IKO Permapark Waterproofing	20	49
IKO Permapark Paving	25	61
IKO Permapark Paving	30	73
IKO Permapark Paving	40	98
IKO Permascreed H	35-60	86-146
Lytag Sand Concrete	75	133
Lytag Sand Concrete	100	177



Delivery to Site

IKO Permapark is delivered ready for use in bulk transporters thereby extending factory quality control to site. Coarse aggregate additions are accurately batched to suit the nominated paving specification.

Block material for site remelt is available for detail work and small horizontal areas but care must be taken to ensure correct coarse aggregate addition to the paving asphalt. Please contact IKO Technical Services for further guidance.

Installation

IKO Permapark must be installed by an IKO Registered Contractor experienced in the techniques of car park surfacing with sufficient resources to lay the relatively high volumes of material associated with this type of work. Works should be carried out in accordance with BS 8218:1998 and IKO recommendations.

IKO can provide a list of contractors for specific projects.

Bay Jointing

Splayed steel gauges must be used to ensure correct thickness of IKO Permapark Paving according to the selected specification and to provide an increased bonding edge between adjacent bays of IKO Permapark Paving. Normal bay jointing techniques of warming and cleaning the edge of the previously laid area must be carried out to ensure fusion between the bays.

Margin Infill to Abutments

The IKO Permapark Paving should terminate approximately 100mm from abutments and the margin infilled with IKO Permapark Waterproofing. An angle fillet is then formed at the base of the skirting roof (see page 11) to complete the detail.

Surface Finish

The IKO Permapark Paving layer should be well rubbed with clean, sharp sand during final floating of the hot asphalt.

In addition, a dimpled surface may be achieved by the use of a crimping roller.

Pre-coated chippings must be rolled into the surface where the anticipated gross vehicle weight exceeds 7.5 tonnes, to improve resistance to indentation, and in this case IKO Permapark Paving would not be sand rubbed. However an uneven scatter of chippings must be accepted making this finish less attractive than the alternatives.

For normal car park usage IKO Permapark does not require protection against minor oil, petrol or grease contamination but prolonged contact may cause localised softening of the binder.

Proprietary coatings are available for high risk areas or where a coloured finish is required.

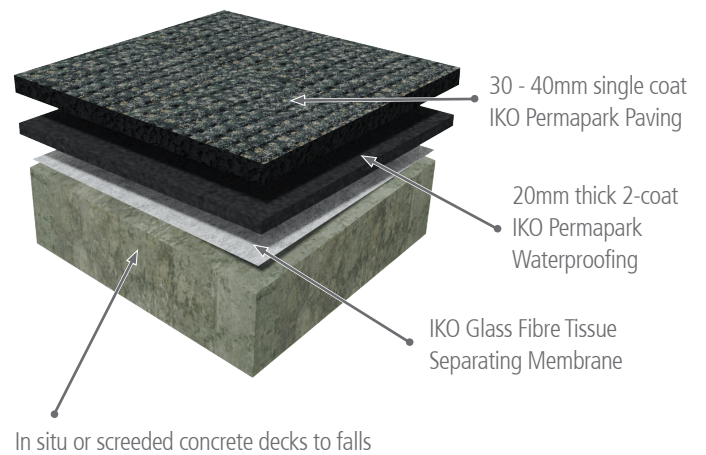
Deck Specification Options

Cars & Light Commercial Vehicles

Premier Specification PA1

(Maximum gross vehicle weight 3.5 tonnes)

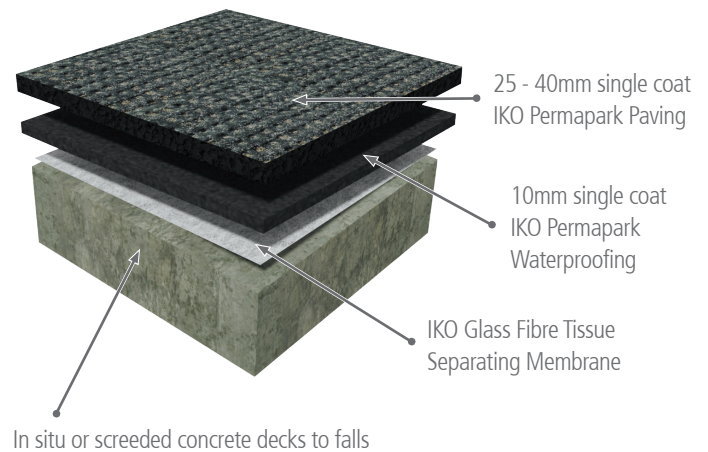
IKO Permapark PA1 comprising nominal 30mm - 40mm thick single coat IKO Permapark Paving on nominal 20mm thick 2-coat IKO Permapark Waterproofing on IKO Glass Fibre Tissue Separating Membrane loose laid with minimum 50mm side and end laps.



Standard Specification PA2

(Maximum gross vehicle weight 3.5 tonnes)

IKO Permapark PA2 comprising nominal 25mm - 40mm thick single coat IKO Permapark Paving on nominal 10mm single coat IKO Permapark Waterproofing on IKO Glass Fibre Tissue separating membrane loose laid with minimum 50mm side and end laps.

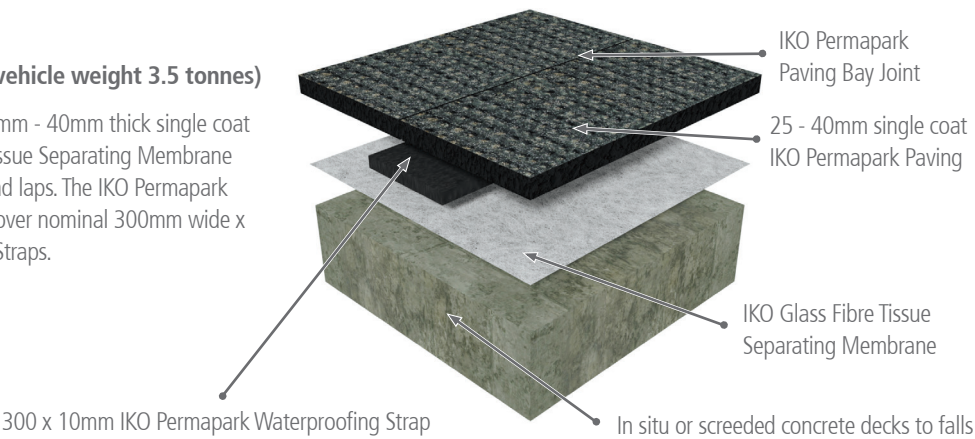


Deck Specification Options

Cars & Light Commercial Vehicles

Economy specification PA3 (Internal levels only. Maximum gross vehicle weight 3.5 tonnes)

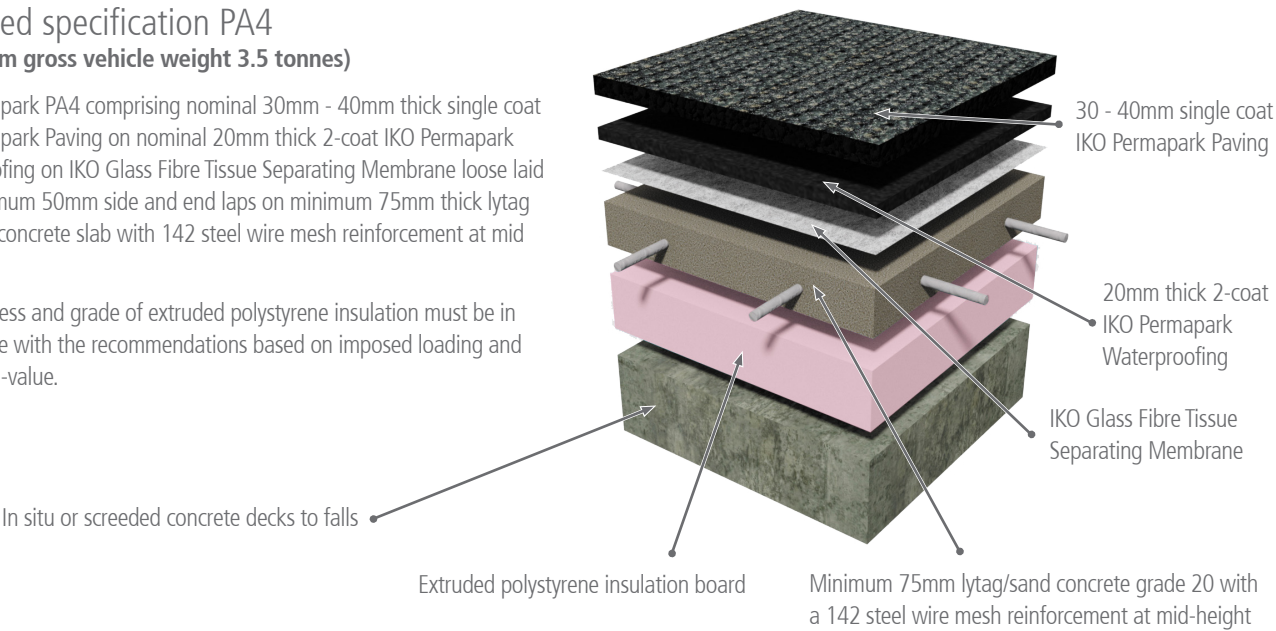
IKO Permapark PA3 comprising nominal 25mm - 40mm thick single coat IKO Permapark Paving on IKO Glass Fibre Tissue Separating Membrane loose laid with minimum 50mm side and end laps. The IKO Permapark Paving bay joints to be positioned centrally over nominal 300mm wide x 10mm thick IKO Permapark Waterproofing Straps.



Insulated specification PA4 (Maximum gross vehicle weight 3.5 tonnes)

IKO Permapark PA4 comprising nominal 30mm - 40mm thick single coat IKO Permapark Paving on nominal 20mm thick 2-coat IKO Permapark Waterproofing on IKO Glass Fibre Tissue Separating Membrane loose laid with minimum 50mm side and end laps on minimum 75mm thick lytag Grade 20 concrete slab with 142 steel wire mesh reinforcement at mid height.

The thickness and grade of extruded polystyrene insulation must be in accordance with the recommendations based on imposed loading and required U-value.



Deck Specification Options

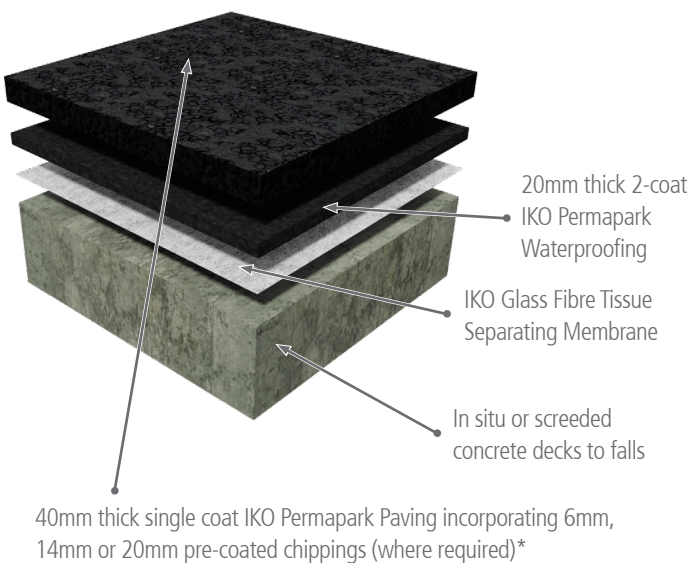
Heavy Goods Vehicles

Uninsulated service desk specification PA5 (Maximum gross vehicle weight 44.0 tonnes and maximum individual axle loading 11.5 tonnes)

IKO Permapark PA5 comprising nominal 40mm thick single coat IKO Permapark Paving on nominal 20mm thick 2-coat IKO Permapark Waterproofing on IKO Glass Fibre Tissue Separating Membrane loose laid with minimum 50mm side and end laps.

If the anticipated gross vehicle weights are likely to exceed 7.5 tonnes, 6mm, 14mm or 20mm pre-coated chippings must be rolled into the surface to improve indentation resistance. However it should be noted that the uneven scatter of chippings will reduce the aesthetic appearance of the paving. The paving surface should not be sand rubbed when pre-coated chippings are used.

Pre-coated chippings spread rate	
Thickness (mm)	Nom. Weight (kg/m²)
6	6.5 - 7.5
14	7.5 - 10
20	10 - 13

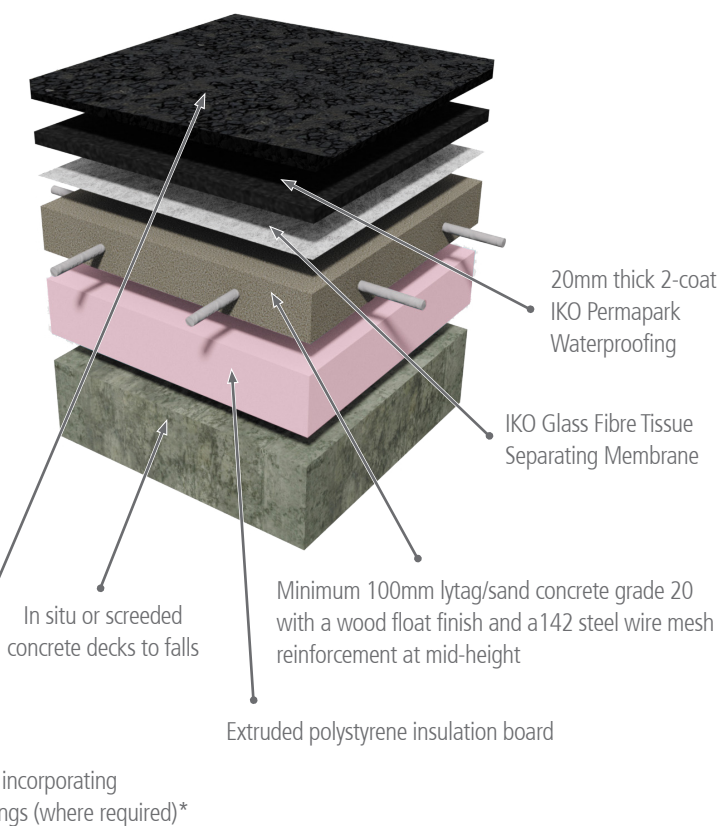


Insulated service desk specification PA6 (with pre-coated chippings) (Maximum gross vehicle weight 44.0 tonnes and maximum individual axle loading 11.5 tonnes)

IKO Permapark PA6 comprising nominal 40mm thick single coat IKO Permapark Paving on nominal 20mm thick 2-coat IKO Permapark Waterproofing on IKO Glass Fibre Tissue Separating Membrane loose laid with minimum 50mm side and end laps on minimum 100mm thick lytag/sand concrete Grade 20 with a wood float finish and reinforced with 142 steel wire mesh at mid height.

If the anticipated gross vehicle weights are likely to exceed 7.5 tonnes, 6mm, 14mm or 20mm pre-coated chippings must be rolled into the surface to improve indentation resistance. However it should be noted that the uneven scatter of chippings will reduce the aesthetic appearance of the paving. The paving surface should not be sand rubbed when pre-coated chippings are used.

The thickness and grade of extruded polystyrene insulation must be in accordance with the recommendations based on imposed loading and required U-value.



* Pre-coated chippings may be omitted where the gross vehicle weight will not exceed 7.5 tonnes.

Ramps & Expansion Joints

Cars & Light Commercial Vehicle Ramp

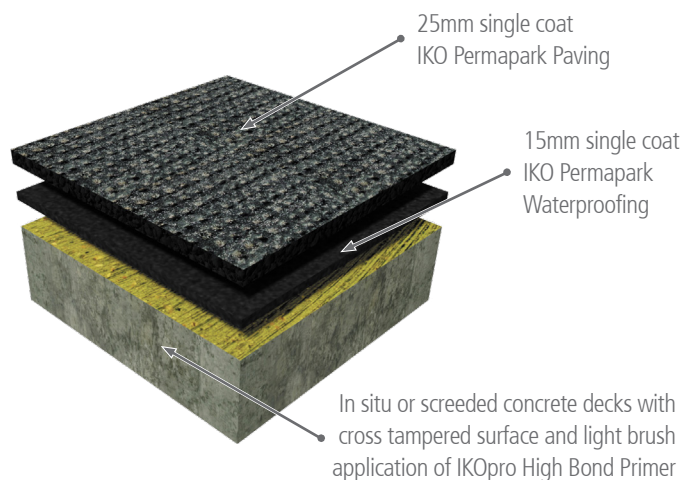
Ramps should be cross tamped and lightly primed with IKOpro High Bond Primer.

To prevent undue thinning of the IKO Permapark Waterproofing, tamps should not exceed 5mm in height.

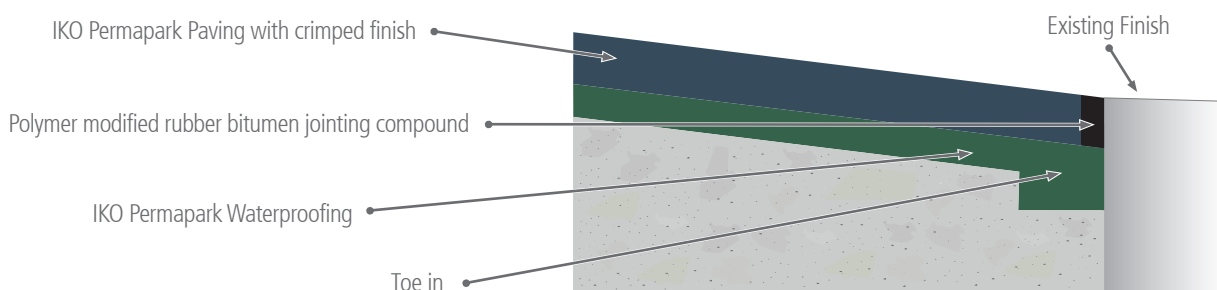
Nominal 25mm thick single coat IKO Permapark Paving with crimped finish on nominal 15mm thick single coat IKO Permapark Waterproofing.

Where ramps are subject to HGV traffic, the thickness of the IKO Permapark Paving should be increased to 40mm with a crimped finish.

In situations where warming elements are required, these should be embedded in a sand/cement screed beneath the IKO Permapark. IKO Technical Services should be contacted for design approval.



Typical Ramp Termination

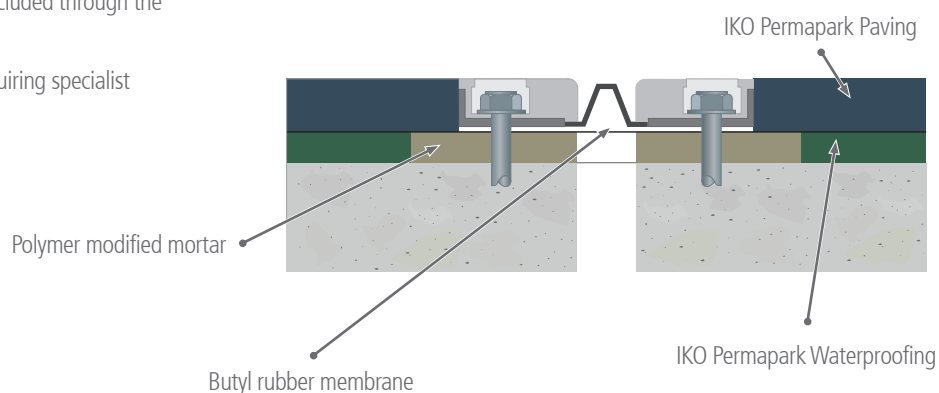


Expansion Joints

Where the design calls for a controlled gap in the structural slab a proprietary expansion jointing system must be included through the finishings.

The work should be billed as a separate item requiring specialist design and installation.

Proprietary Expansion Joint System



Detailing

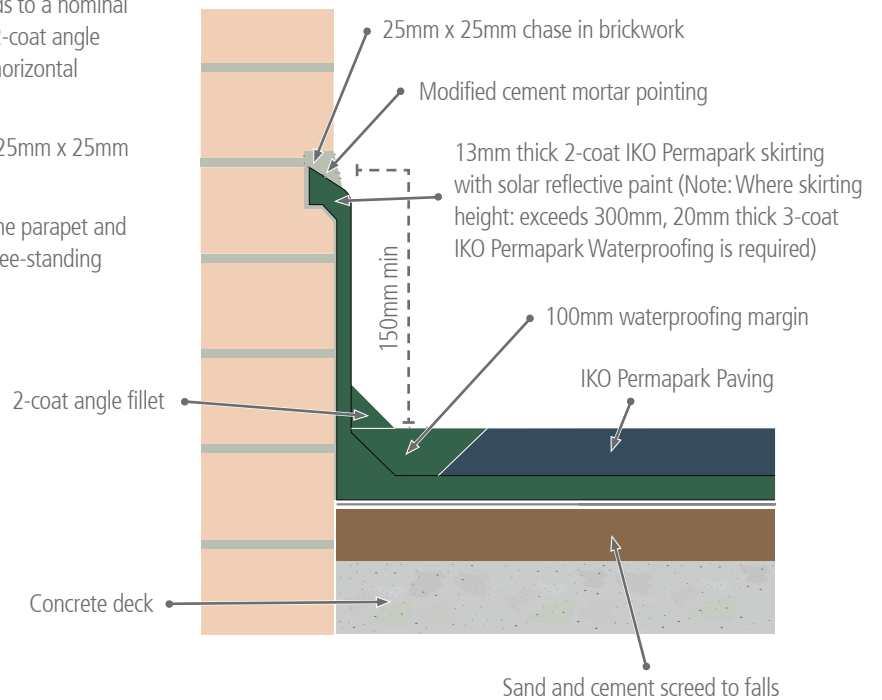
Detailing

In the case of concrete, brickwork and similar substrates a 2-coat IKO Permapark Waterproofing Skirting is applied to all upstands to a nominal thickness of 13mm and a minimum height of 150mm. A 2-coat angle fillet should be formed at the junction of the vertical and horizontal waterproofing.

The top of the skirting is splayed and turned into a chase 25mm x 25mm unless the waterproofing continues horizontally.

In certain circumstances differential movement between the parapet and structural deck must be catered for by the provision of a free-standing upstand and cover flashing.

Edge Detail to Brick Upstand

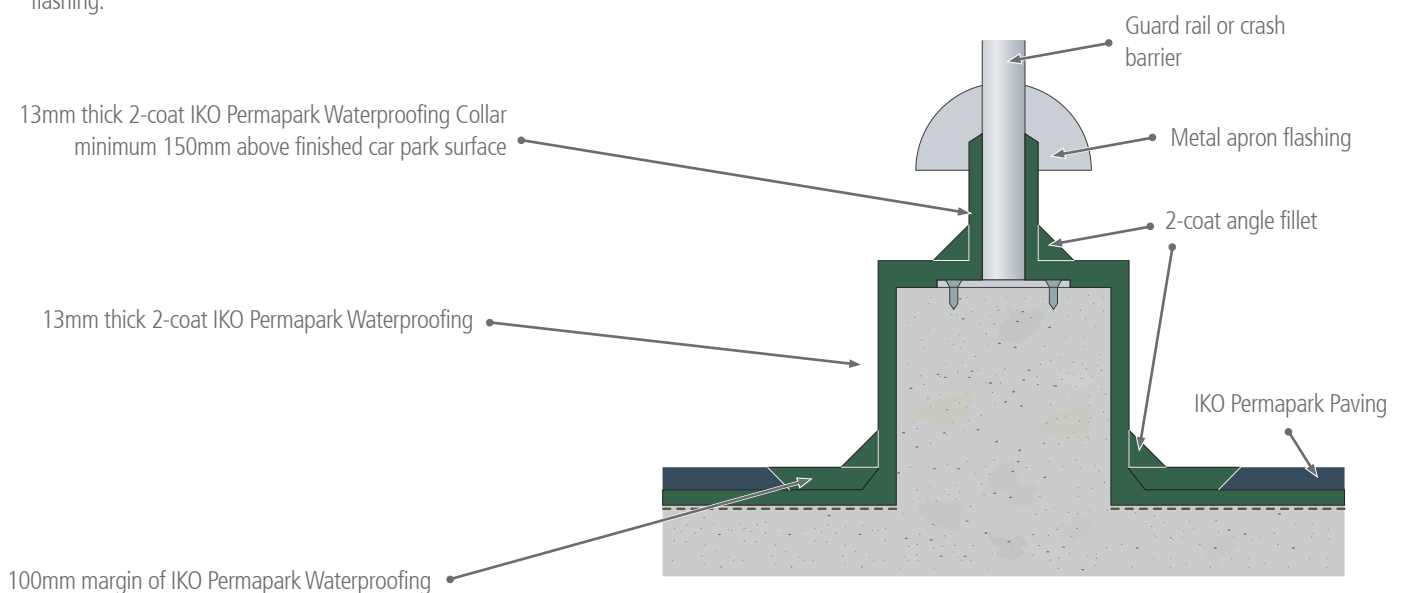


Protrusions

Concrete plinths should be cast off the structural slab to accommodate crash barriers and handrail stanchions etc.

The detail should be at least 150mm high and be weathered with IKO Permapark Waterproofing and protected with a metal apron flashing.

Concrete Plinth

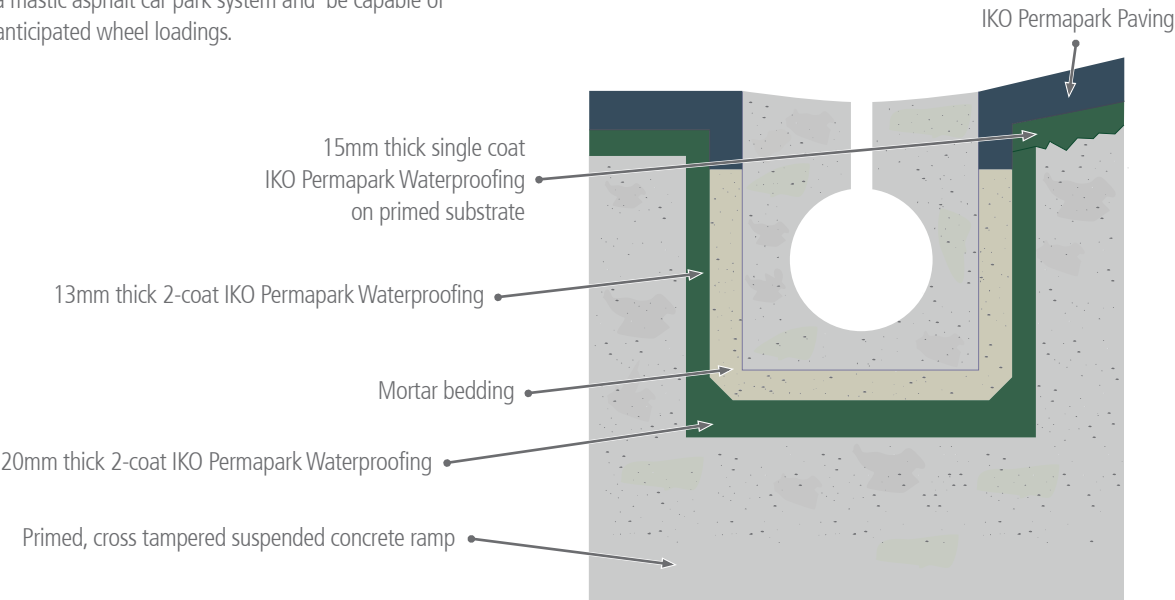


Drainage

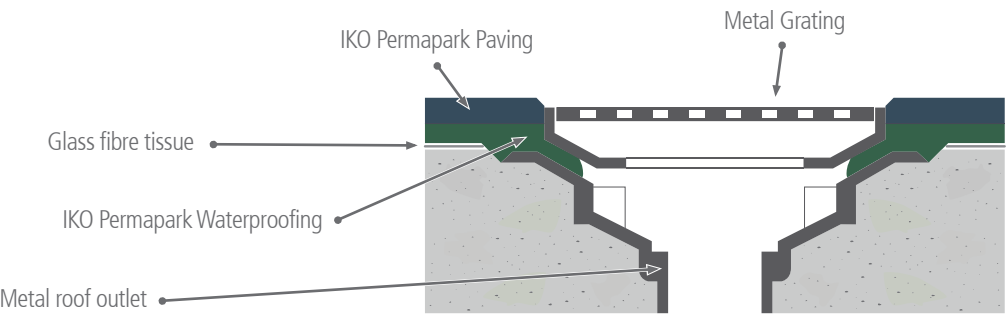
Rainwater Outlets and Drainage Channels

All rainwater outlets and drainage channels must be designed specifically for use with a mastic asphalt car park system and be capable of accepting all anticipated wheel loadings.

Heavy Duty Drainage Channel to Suspended Ramp



Proprietary Rainwater Outlet



Permascreed

IKO Permascreed is a mastic asphalt screed which offers a speedy way to create drainage falls and a stable base for flat roof waterproofing systems and mastic asphalt vehicle decks. Unlike wet screeds, which require curing time, installation of the waterproofing can commence as soon as the IKO Permascreed has cooled to ambient temperature.

Made from bitumens, limestone filler and aggregates, IKO Permascreed is supplied directly to site in purpose-build hot-charge transporters and can be applied at a wide range of thicknesses and falls, usually on in situ and pre-cast concrete bases. The screed is suitable for refurbishment and new build, does not require compaction or a separate vapour control layer and provides a temporary waterproofing until subsequent waterproofing layers are installed.

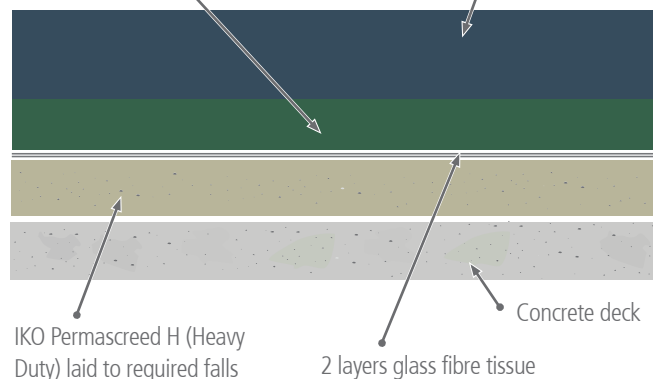
NOTE: For use with IKO Permapark Systems, IKO Permascreed H must be used.

IKO Permascreed Features and Benefits

- Fast application
- Avoids the extended curing time associated with wet cement screeds
- Can be covered or trafficked as soon as it has cooled to ambient temperature
- Can be specified as temporary waterproofing
- Long term durability
- Traditional application - simple solution to create falls
- Manufactured in the UK under BS EN ISO 9001 Quality Assurance Scheme
- Unaffected by low ambient temperatures
- Moisture free

IKO Permapark Waterproofing either 10mm or 20mm thick as per specification

IKO Permapark Paving 25mm - 40mm thick as per specification



Further information on IKO Permascreed can be found at:

www.ikogroup.co.uk/product-systems/roofing/mastic-asphalt/iko-permascreed/

IKO Technical Services Department is available to give specific project design advice on **01257 256 888**

Maintenance & Repair

General

A IKO Permapark System will be expected to provide many years of trouble-free service. However, general vehicle deck maintenance is essential to obtain the maximum performance and ensure the longest life expectancy for the IKO Permapark Waterproof Surfacing System. It is also an integral part of our guarantee offer for the project. Any deficiencies should be reported immediately to IKO or the installing Registered Contractor.

Protection

During routine maintenance to plant or the building fabric, the IKO Permapark System must be protected against damage caused by high point loadings, spillage of solvents, oil, fuels etc. Where it is necessary to temporarily place heavy plant or equipment directly on the IKO Permapark surfacing, we would recommend the use of minimum 18mm plywood as protection.

Note: The vehicle deck must not be used as a storage area.

Accidental Damage

In the event of accidental damage occurring to the IKO Permapark System, the installing contractor and/or IKO should be notified immediately in order that a practical solution to the problem can be agreed and any remedial actions taken. Failure to make contact with the installing Registered Contractor and/or IKO could invalidate any guarantee offered.

IKO Permapark Repairs

IKO Permapark vehicle decks which are under guarantee by IKO should only be repaired by the installing Registered Contractor, with full design reference to IKO Technical Services.

Routine Inspections

The IKO Permapark System should be inspected twice yearly, preferably in the spring and autumn, and/or after extreme weather conditions. Inspections should be carried out generally in accordance with BS 6229, with particular attention to the following items:

- It is important to check that rainwater outlets are functioning and that gratings are not blocked. Remove debris from the outlets but do not flush silt or dead leaves down outlets.
- Note the general condition of the exposed IKO Permapark System and report any signs of stressing, creasing/ruckling or damaged areas immediately. Being a thermoplastic material, IKO Permapark Paving may be liable to surface marking under vehicle loading during periods of high ambient temperatures, especially in the early stages of its serviceable life. This should not be regarded as a defect and will not affect the long term waterproofing and wearing properties of the system.
- Check perimeter details and upstands, ensuring that any metal cappings, flashings, edge trims and mortar pointing to chase details are secure. Check the condition of the IKO Permapark Paving Wearing Course Bay Joints. The Open Bay Joints will not normally affect the integrity of the underlying IKO Permapark Waterproofing. However, it is recommended that any open joints are effectively repaired as part of the vehicle deck maintenance programme.
- Check upstand flashings to plant support legs/upstands.
- Check upstands and flashings to pipe penetrations.
- Examine all mastic seals and repair/replace as necessary.
- Check the condition of any solar reflective paint or proprietary coating. It should be noted that a re-coating programme will be required in accordance with the manufacturer's instructions.
- Check nosings to expansion joints ensuring all fixings are secure

IKO Permapark Product Data

Life Expectancy

IKO Permapark's life expectancy is in excess of 25 years.

Waterproofing Characteristics

IKO Permapark will adequately resist the passage of water and water vapour to the inside of the building. It is completely impervious to water.

Skid Resistance

Sand Rubbed Finish	Crimped Finish
TRRL Rubber (dry 84)	TRRL Rubber (dry 87)
TRRL Rubber (wet 55)	TRRL Rubber (wet 74)

Wheel Tracking

Less than 1mm/hour @45°C.

Frost

IKO Permapark is unaffected by frost and de-icing salts.

Chemical resistance

IKO Permapark has good chemical resistance to hydraulic fluids and aqueous solutions of acids and alkalis.

It is also unaffected by contact with an alkaline substrate and has good short term resistance to minor spillages of oil, petrol and grease contamination.

Fire resistance

When applied to a suitable substrate, mastic asphalt achieves the highest rating (FAA) when tested as described in BS476: Part 3, 'notional' BROOF (t4) classification to BS EN 13501-5: 2005.

The reaction to Fire Classification for IKO Permapark Paving is B_{FL}-s1.

Colour fast

IKO Permapark tones down slightly due to surface oxidation, giving a slightly lighter appearance in service.

Accreditations

IKO Permapark is manufactured under ISO 9001 Quality Management Scheme in a facility accredited to ISO 14001 Environmental Management and BES 6001 Responsible Sourcing standard.



IKO Permapark Service

Drawing on the experience and specialist technical knowledge available from the worldwide IKO Group of companies, IKO PLC is the UK market leader in the design, manufacture and installation of proven mastic asphalt systems for roofing, flooring, paving, car parks and HGV service decks.

The comprehensive product range is fully supported by a highly developed project design and specification service that continually sets industry standards. Architects, specifiers, installing contractors and building owners alike have come to rely on the proven technical expertise provided by IKO, for both new build and refurbishment projects nationwide.

Nobody offers a higher level of technical expertise across all waterproofing disciplines.



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