

Tarmac

Launched: porous asphalt to protect against floods

Tarmac has launched a porous asphalt surfacing solution for clients keen to protect new developments from flooding – TarmacDry.

Unseasonably heavy rainfall during summer 2007 led to widespread flooding across England and renewed concern that conventional drainage systems could not cope with large volumes of surface water. In his report on the events, senior civil servant Sir Michael Pitt called for an “urgent and fundamental” review of the way flood risk is managed in this country. The Government’s response last December said local authorities should install Sustainable Drainage Systems (SuDS) on highways and in the public realm to help to alleviate risk of flooding.

At around the same time, Tarmac had just finished developing its new SuDS system: a patented porous asphalt based SuDS solution known as TarmacDry. The company’s system – launched last September – can handle 5000mm of rain in one hour. To put this figure into context, a one in 100 year storm event generates around 100mm of rain an hour.

Tarmac’s Head of Product Development Dr Howard Robinson says that well maintained

conventional drainage systems usually work well under normal rainfall conditions. But, he adds: “The problem is they have a finite capacity and in heavy weather are not able to carry all of the surface water away from buildings.”

TarmacDry is designed to remove water from the surface quickly, but in a manner that does not overwhelm saturated ground or existing drainage channels. Water passes through a porous asphalt layer into a granular reservoir layer which is lined either with a permeable geotextile or an impermeable geomembrane, or a combination of both.

The former is specified when water is allowed to pass slowly into the ground (a process known as infiltration) and the latter is chosen to allow controlled discharge into drainage channels or for reuse as grey water (an attenuation method). In most cases, a TarmacDry installation is designed as either an infiltration or attenuation system, but occasionally can incorporate elements of both infiltration and attenuation.

“The beauty of our system lies in its simplicity,” says Robinson. “TarmacDry is built in a similar way to a conventional asphalt surfacing and looks the same when laid. But it uses specially chosen aggregates and a highly engineered polymer modified binder to enhance durability.”

He adds that the system is not only suitable for alleviating the risk of flooding, but can be specified by property developers who cannot gain planning permission to release surface water into existing drains.

Rainwater passing through the porous asphalt system is treated at source to prevent solid particulates, heavy metals and organics from contaminating ground water supplies. TarmacDry is designed so that silt and debris from the road are captured in the top 25mm of the surface course, to allow easy removal if needed by specialist road sweepers that blast the detritus clear using water.

Clogging of the surface, however, should not be a concern to the client as the system’s hydraulic conductivity is purposefully over



TarmacDry features carefully chosen aggregates over an impermeable membrane plus surfacing with porous asphalt to handle very high volumes of water



Tarmac's sustainable drainage system TarmacDry can be installed up to 10 times quicker than permeable block paving

designed to cope with heavy rain, even when 95% of voids in the surface course are filled.

Specifying TarmacDry offers a series of benefits over permeable block paving. These include speed of installation (said to be up to 10 times as fast) and a reduced construction thickness of around 100mm, helping to cut costs associated with the excavation and disposal of earthworks.

Because TarmacDry leaves no standing water on the surface, spray from vehicle wheels is all but eliminated in wet weather and ice is deterred from forming. A further advantage when specifying TarmacDry for a new car park, for instance, is there is no need to reserve land at the periphery for construction of conventional SuDS drainage installations such as swales, soakaways and catchment ponds.

Tarmac has invested over 10 years of research and development into its patented porous asphalt SuDS system, which has been thoroughly tested by TRL. It is available exclusively through Tarmac's National Contracting business and TarmacDry is offered as a design and build service, supported by a package of maintenance to suit the client's needs.

The system is currently being specified mainly for 'off highway' applications, such as local roads and residential estates. Each installation is tailored to suit an individual site's

requirements. Further development is expected in future to allow TarmacDry to be specified for use on heavily trafficked sites.

TarmacDry has already been specified for use on school playgrounds, retail parks and car parks. Recent case studies include installation of porous hardstandings at a school in Bristol, at an industrial park in High Wycombe and at a newly extended park and ride facility beside Lostock railway station in Greater Manchester.

"One of the biggest challenges facing those involved in developing new techniques is getting across to potential clients the benefits of sustainable drainage." Dr Howard Robinson

According to Howard Robinson, enquiries received by Tarmac about the availability of porous asphalt products have increased markedly in recent months, from landowners to main contractors, design engineers and environmental consultants. But widespread recognition of the role which porous surfacings can play in reducing flood risk is some way off.

"There is still a huge lack of awareness within the construction and highways sectors

of the techniques on offer," he says. "I was invited to take part in an influential panel discussion last November on the role of SuDS at an Environmental Futures Conference. Everyone agreed that one of the biggest challenges facing those involved in developing new techniques is getting across to potential clients the benefits of sustainable drainage."

Fortunes could be about to change. TarmacDry recently came through a three year programme of assessment by the British Board of Agrément and is expected to get approval through the Highway Authorities Product Approval Scheme (HAPAS) this spring. Achieving the HAPAS standard could mean more potential clients will recognise the system and its benefits.

Despite the success of TarmacDry and the interest it is attracting from clients, Howard Robinson maintains a "fairly conservative view" of the extent to which the current version of TarmacDry could be specified and is cautious about promoting its use beyond pedestrianised and lightly trafficked areas in the short to medium term. But the company is involved in ongoing research with the Highways Agency over whether such systems could one day be used or modified for use on trunk roads.

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