

Aggregate Industries

Interest grows in sustainable pavements

Use of Aggregate Industries' Sustainable Drainage Systems is increasing as developers grasp the importance of managing risks of flooding and pollution.

New buildings and pavements mean more rainfall collected and at times of heavy rain, considerable extra pressure on drainage networks. Unless the additional water is controlled that is. Aggregate Industries has comprehensive answers in its Sustainable Drainage Systems (SUDS) and more and more developers are using them to reduce flooding and pollution risks.

Such has been the interest shown in Aggregate Industries' SUDS pavements, the company has appointed a dedicated SUDS manager, Phil Tomlinson. Interest in SUDS products is growing, as is their use and the variety of pavements designed and built from them.

"Inquiries are up with increased awareness of the benefits of sustainable drainage systems and there has been a corresponding growth in the number of SUDS pavements we are building," Tomlinson says. "There is now a community of pavement and environmental specialists advocating use of SUDS systems.

"Developers are looking for SUDS pavements for applications such as car parks; often asking for asphalt surfaces on top of a granular medium as the water quality management benefits are becoming apparent to them," Tomlinson adds.

The SUDS philosophy is all about more sustainable ways of handling and cleaning extra surface water run off. It is central to Government policy on prevention of pollution and flooding, and use of SUDS systems is being encouraged through local planning guidance. Research reports for the Scottish Environmental Protection Agency, the Environment Agency and others, talk of adopting the 'Management Train' principle whereby a heavy flow of water is dealt with at various stages – as it collects on the ground or roofs, within a site boundary in ponds, or regionally in reservoirs.

"Management Train is a hierarchy of techniques. It is sensible to develop SUDS at each stage of drainage infrastructure when opportunity arises, although further into a drainage system, water handling and cleaning

methods tend to be more complex and expensive," says Aggregate Industries' Research Manager Bob Allen.

"The primary SUDS technique is source control, which involves dealing with heavy flows of water as it collects and runs off roofs, roads and car parks. As a leading pavement supplier, we have an important role to play in SUDS. Our systems can provide developers and authorities with a suitable source control SUDS pavement for virtually any situation."

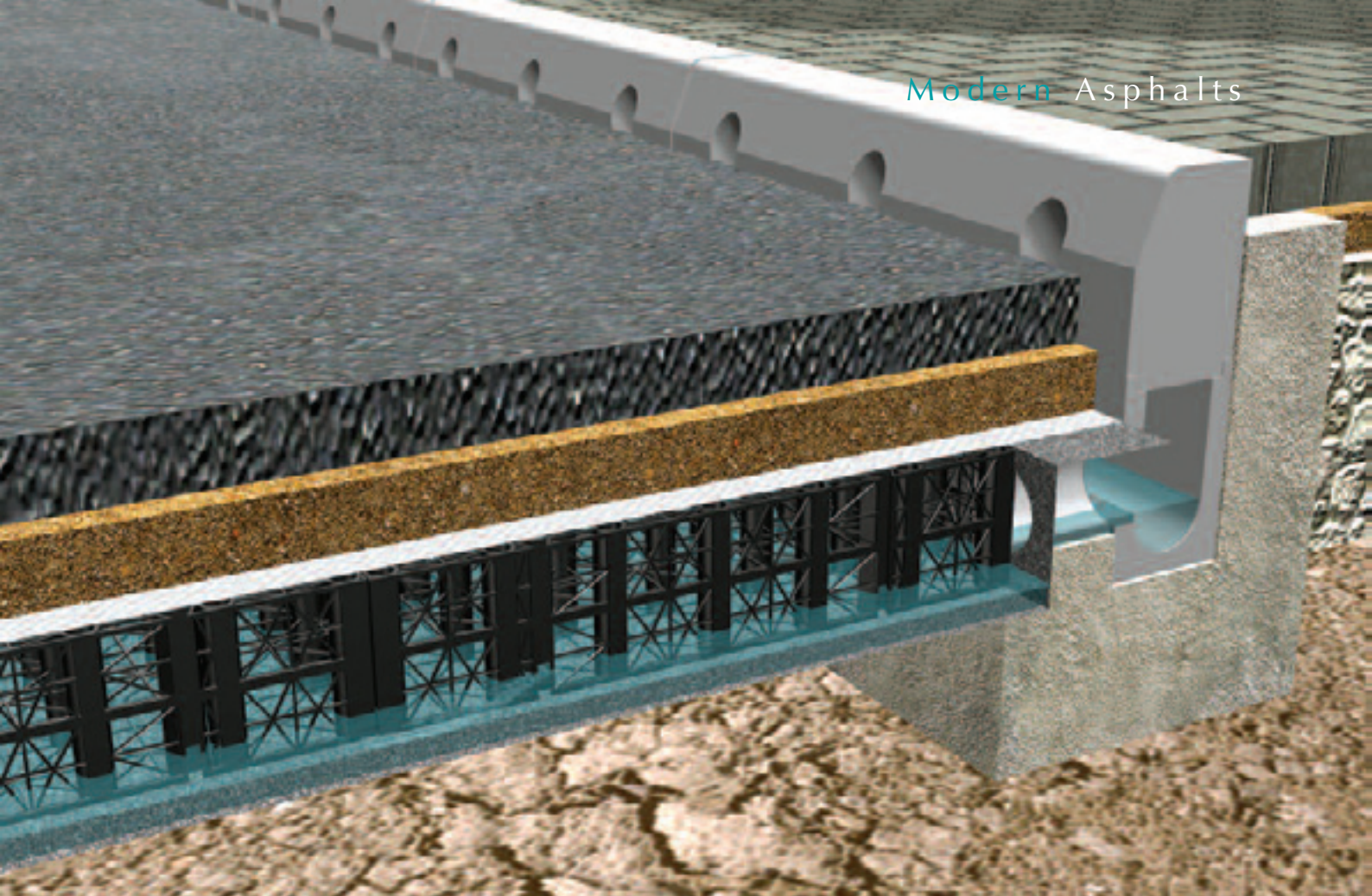
"As a leading pavement supplier, we have an important role to play in SUDS." Bob Allen

Aggregate Industries has developed Attenuation and Infiltration source control SUDS, both of which mitigate flooding by providing water storage capacity within the pavement itself. The Attenuation option holds and then directs the water into conventional pipework in a controlled manner as the rainfall subsides, whereas Infiltration SUDS disperse the water by allowing it to gradually seep into the ground.

Both options have been developed as modular SUDS pavements, using different methods and combinations of products from various Aggregate Industries companies, such as Bardon Aggregates and Charcon, to collect, hold and clean the water. One of the most innovative products is Charcon Permavoid, which is essentially a rigid plastic cellular box. Any number of Charcon Permavoid boxes can be linked together to form the crucial water

A balanced Attenuation and Infiltration Sustainable Drainage System (SUDS) has been built at Salford Sports Village



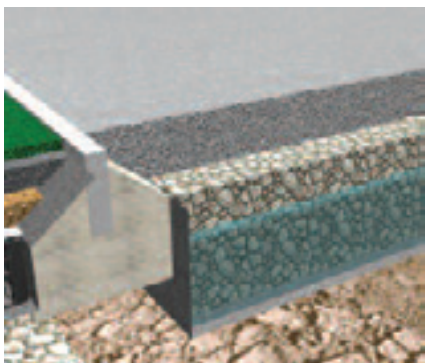


Different products developed by Aggregate Industries companies including Charcon's Permavoid can be combined to create SUDS pavements

retaining layer, or reservoir, within a SUDS pavement.

"Charcon Permavoid boxes are 150mm deep and have been designed to fit within the sub base layer of a conventional pavement. Granular material can be used as the reservoir, but a layer of compacted stone typically has to be three times as thick to hold the same quantity of water, so use of Charcon Permavoid represents considerable savings in pavement thickness." Allen says.

Aggregate Industries' modular SUDS can also have permeable or impermeable asphalt, concrete or block paved surfaces. Bardon Aggregates' porous Drinaspalt allows water to permeate straight through the pavement layers into the Charcon Permavoid or granular water storage layer. Or impermeable asphalt can be used and the water run into Charcon's



SUDS can have a granular storage layer beneath an asphalt, concrete or block paved surface

Permakerb or Charcon Permachannel concrete products, which then collect and treat the water prior to discharge.

At the Salford Sports Village on the outskirts of Manchester for example, an Aggregate Industries SUDS pavement has helped project manager Urban Vision work towards targets of sustainable development.

Urban Vision is a partnership between Salford City Council, consultant Capita Symonds and contractor Morrisons. Project engineer for Urban Vision, Mark Boardman says: "Salford City Council is looking towards delivering sustainable development within the city and the sports village seemed like an ideal scheme in which to incorporate this.

"One of the considerations during the design was the incorporation and use of a sustainable drainage system within the car park area, surfaced with an impermeable asphalt. The engineering design section had not undertaken SUDS pavement design before, so Charcon was contacted with a view to assisting with specification of materials and designing a sustainable drainage system."

A balanced Infiltration and Attenuation SUDS pavement was designed and built at Salford. It is capable of handling a one in 100 year storm event and has petrol interception incorporated into the design of the infiltration systems to minimise contamination. Charcon Permavoid was used as the basis for the

design, mostly as a single 150mm deep layer although additional units were used to create a local 300mm deep layer for draining runoff from the roof of the nearby amenity building. Seddon Construction was the main contractor on the Salford Sports Village project.

The Charcon Permavoid units were wrapped with heavy duty geotextile fleece over the full surface area to protect against ingress of silts while providing required permeability and oil retention properties, and further petrol interception was provided with Charcon's Permachannel system

Other Aggregate Industries SUDS products include Charcon Geotextiles for preventing cross contamination of granular materials and Charcon Geomembrane for keeping Attenuation pavements watertight. Charcon Permaceptor – a cellular oil interceptor – can also be incorporated into the Charcon Permavoid layer. "Water treatment is an important issue when designing SUDS," Allen adds. "Studies have shown that the natural bacteria in SUDS pavements will break down hydrocarbons and clean the water as it soaks through. If risk of oil or fuel spillage is relatively high, such as at a vehicle service station or lay-by, Charcon Permaceptor can be used to intercept the pollutants as an alternative to normally specified Class 1 interceptors."