

PORTAKABIN LTD, SOMERSET

Paving & Water Management



Project:

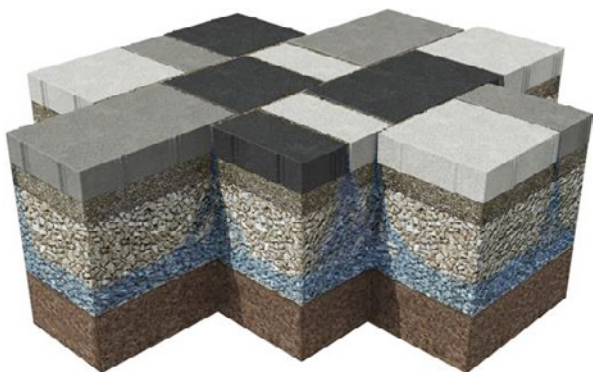
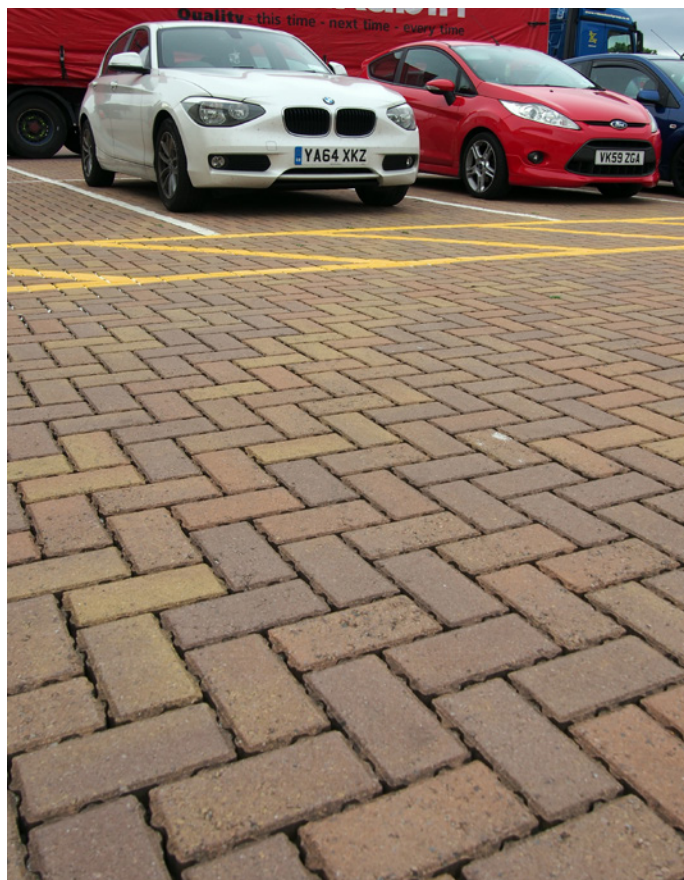
Portakabin Ltd, Hire & Visitor Centre,
Highbridge, Somerset

Engineer:

BWB Nottingham

Marshalls Products used:

6000m² of Piora



Background

In 2012, while planning a new hire depot site in Somerset, Portakabin were faced with some potentially difficult drainage requirements. In response to severe flooding issues encountered in the area, The Environment Agency insisted that rainwater that fell on the site was attenuated at source, with any runoff released at a restricted rate of just 5 litres per second.

Concrete and macadam were initially considered for the surfacing of the site. However, the EA preference was for a self-draining surface, so Portakabin contacted Marshalls to find out whether its Piora permeable paving system would be suitable.

Approach

The site could potentially be trafficked by Cranes of up to 200 Tonnes capacity, and concerns were initially raised over Piora's ability to withstand heavy loading. These were quickly eliminated as Marshalls' research with structural engineer Professor John Knapton in 2011 proved that Piora blocks provide a 40% stiffer surface than block paving, and would therefore be better able to withstand the required loads. A bespoke sub-base design was also created by Marshalls' engineers to ensure that the paved area would continue to perform with minimal maintenance for the duration of its design life.

The sub-base was also designed to store large volumes of water; flow control devices were specified to restrict the outflow rates. Marshalls' engineers then supplied the EA with a comprehensive design and calculations package to satisfy them that the design would perform both structurally and hydraulically.

Outcome

Four years on, the system is performing as planned. Despite regularly taking loads in excess of 150 tonnes, the surface shows no signs of fatigue and demonstrates no surface water flooding

Kevin Walker, Facilities Support Manager, Portakabin said, "Structurally, the pavement has held up well for the past four years and we haven't needed to perform any maintenance on it. The drainage still functions as designed, too – even when the Somerset Levels flooded in the winter of 2013, our site remained water free and fully operational."

Darryl Haigh, Marshalls Water Management Engineer, said, "This was a complex problem – we often come across tough hydraulic requirements or extreme loading applications, but rarely in the same job.

"We worked closely with the EA to ensure that our design satisfied their flood mitigation targets, and used the knowledge from Professor Knapton's research to make sure the system was structurally robust. It proves that Piora is ideal for heavy loading and frequent trafficking, quite apart from all the drainage benefits it offers."