

SUDS at the services

ACO drainage channels form an extensive sustainable drainage system at refurbished M5 services.



At the refurbished Michaelwood Services on the M5, engineers have been able to combine the benefits of different high performance ACO Water Management drainage channels to complete an extensive sustainable drainage scheme that adds some striking visual features to the new parking areas. Installed at the services on both sides of the carriageway, the drainage systems use ACO products that provide optimum surface water removal for each individual trafficked area to collect run-off that supports a new series of landscaped retention ponds that are designed to ensure discharge volumes from the site are kept at a safe level.

Owned by Welcome Break and situated on the Gloucestershire stretch of the M5, Michaelwood Services was constructed in 1971 in a small strip of woodland spanning the motorway. Designed to sit within the limited space of the narrow site,

the car and lorry parking areas needed to be upgraded and extended to ease traffic movement, accommodate more vehicles and improve pedestrian access to the main service building.

Project:

M5 Michaelwood Services.

Objective:

Surface water run-off generated from the site's refurbished car parks to be managed within a sustainable drainage system that supports a series of visually striking landscaped retention ponds.

Brief:

1. Allow the car and lorry parking hardstanding to be extended with no increase in discharge to the existing stormwater sewer.
2. Improve pedestrian access to the main services building by eliminating the risk of any standing water.
3. Optimise and value-engineer the drainage solution to the traffic environment in each vehicle zone.

Solution:

Interlinked runs of ACO KerbDrain and ACO RoadDrain, which can be easily tied into the existing sewer connections, provide optimum removal of surface water from the access road and passenger vehicle parking areas. Balance with ACO Qmax runs fitted with appropriate gratings in the lorry parking and pedestrian pathways, the entire system keeps discharge at a safe level by using attenuation ponds to hold excess storm surges.

Consulting engineers, BWB, worked with main contractors, Buckingham Group Contracting Ltd, to develop the drainage scheme. "We looked to replace the existing point gully system with one based on a network of more effective, faster draining channels," says Tristan Tregatha, Senior Project Manager at Buckingham Group Contracting Ltd. "Having worked successfully with ACO on a number of previous sustainable schemes, we were confident that with the help of its Design Services team we could realise an integrated network that could deliver optimum performance in each of the load class environments across the project."

The scheme serving the southbound service area is virtually identical to that of the northbound. Surface water intercepted by the drainage channel network is diverted via oil separators and flow controllers to either one of three new attenuation ponds or to the existing stormwater sewer installed when the services were first constructed. Clean water held in the ponds can subsequently be released into the main stormwater sewer or into a local watercourse when it is safe to do so.

Three ACO products, each with unique performance and attenuation characteristics, have been utilised in discreet hardstanding zones. Serving the extended HGV parking areas are two sizes of the award-winning channel drainage system, ACO Qmax (ACO Qmax 225 and ACO Qmax 350). Its unique patented inlet allows an unbroken pavement to be cast around the channel which reduces the need for additional reinforcement and minimises installation time. All the runs of ACO Qmax at the site are fitted with ACO's pedestrian-safe, galvanised steel Heelguard Edge gratings.

Rapid removal of surface water

Within the larger car parking zones, ACO KerbDrain (the Queen's award-winning, one piece combined kerb and drainage system) and ACO RoadDrain (ACO's heavy duty monocast highway channel) have been used in combination to provide the most effective and rapid removal of surface water. Installed with minimal ground infrastructure, the solution has simplified the construction of the hardstanding and improved the integrity of the finished pavement.



Construction of the extended car park pavement has been greatly simplified with the use of ACO KerbDrain. As run-off can enter at any point along the installed run only a single fall is required.



ACO Qmax 350 fitted with a Heelsafe grating keeps the main entrance to the services building free of all standing water.

Both KerbDrain and RoadDrain product ranges are manufactured from Vienite™, ACO's unique high strength, sustainable material that meets the environmental and sustainability targets for construction products. Vienite's high durability characteristics make it four times stronger than traditional concrete. It also has a low rate of water absorption, is resistant to freeze-thaw attack and has excellent chemical resistance.

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