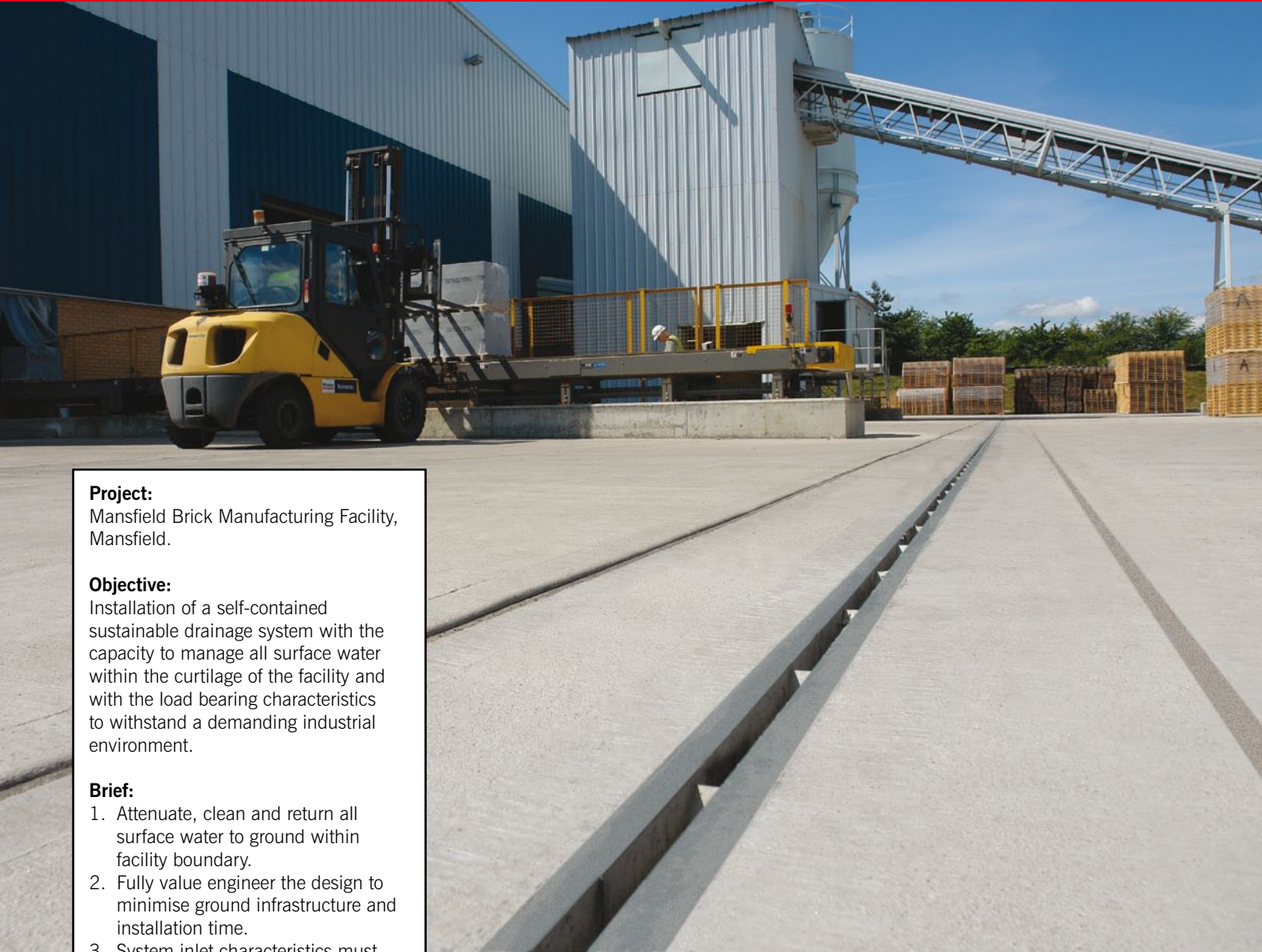


New SUDS on the block

ACO water management systems play key SUDS role at new brick works.



Project:

Mansfield Brick Manufacturing Facility, Mansfield.

Objective:

Installation of a self-contained sustainable drainage system with the capacity to manage all surface water within the curtilage of the facility and with the load bearing characteristics to withstand a demanding industrial environment.

Brief:

1. Attenuate, clean and return all surface water to ground within facility boundary.
2. Fully value engineer the design to minimise ground infrastructure and installation time.
3. System inlet characteristics must minimise fall required across pavement to ensure block stacks are as close to vertical as possible.

Solution:

A fully integrated network of ACO Qmax, ACO KerbDrain, ACO S Range, ACO RoadDrain and ACO ParkDrain provides optimal run-off collection for discrete Load Class environments across the facility. The high capacity of ACO Qmax reduces the number of runs, allowing the very shallow fall pavement to be cast. All surface water passes through a series of oil and debris separators before entering a perimeter filter drain.

Mansfield Brick's new £10million manufacturing facility in Nottinghamshire has used a wide range of ACO Water Management products to complete a self-contained SUDS system that imposes no additional load on the main sewer network. Designed to withstand heavy plant and vehicle traffic as well as potentially high levels of debris carried in the surface water run-off, the system provides sufficient attenuation capacity to retain all stormwater flows generated from the site's hardstanding, allowing it to be safely discharged to a filter drain running around the perimeter of the site when local groundwater conditions permit.

Located adjacent to a former colliery, the ten acre plot has eight acres of new hardstanding which accommodates the manufacturing facility and holding yards. The remaining two acres have been used to create the filter drain that surrounds the site and a safe, protective boundary for a colony

of common lizards which had been discovered during initial environmental surveys. Running at full capacity, the state-of-the-art facility is capable of producing 1.6 million concrete and ash blocks per month.

The design task facing architects, consulting engineers and project managers at Newark-based MHI Fellows Hallatt was further complicated by the need to keep the pavement in the stocking yard as level as possible. This is a health and safety measure that ensures that the finished block stacks remain as close to vertical as possible so maximising stability.

“Initially we considered a design based on conventional gullies,” says Roger Gascoigne, Director of Engineering at MHI. “This approach would, though, have required additional excavations and extensive below ground infrastructure. To ensure that we could meet the tight ten month build schedule for the entire project, we worked with ACO’s Design Services team to assess the feasibility of a SUDS solution based on high capacity drainage channels.

“The subsequent value-engineering exercise proved that within the operating parameters of the facility - which could tolerate short spells of standing water under extreme storm conditions – the channel system would meet all the performance requirements. The final design minimised installation time, simplified the structure and layout of the concrete and tarmac pavements and would greatly reduce the ongoing operational and maintenance costs.”

At the heart of the installed network is ACO’s award-winning high capacity slot drainage system, Qmax. Twenty interlinked runs totalling over 1000 metres of Qmax 225, 350 and 600, which are all fitted with a heavy duty edge rail, receive run-off from across all the handling and stock areas. The runs direct stormwater to a series of catch-pits that firstly capture any solid debris. It then passes through an interceptor to remove any contaminants before discharging to the perimeter filter drain.

Capturing surface water at the site entrance is a run of ACO’s heavy duty monocast drainage channel, ACO RoadDrain. Two further monocast systems are used on the site: ACO KerbDrain within the manufacturing plant car park and ACO ParkDrain in the administration block parking area. Each run, as with the Qmax, links into an adjacent catch-pit and interceptor before discharging into the perimeter filter drain.

Within the vehicle wash-down area ACO’s high strength S Range grated channels have been installed as they are ideally suited to this environment which is subject to high, repeat loadings and has to cope with run-off carrying excessive concentrations of debris washed from vehicles. Rated at Load Class F900 the S Range is highly resistant to chemical attack and its integral cast iron edge rails provide maximum protection for the channel body.



ACO’s heavy duty S-Range grated channel system has been installed in the highly trafficked vehicle wash-down area.



The staff car park is edged using the award winning ACO KerbDrain combined kerb drainage system.



Heavy duty edge rails fitted to the ACO Qmax runs securely anchor the inlet to the surrounding pavement, helping give the system Load Class F900 performance.

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