ACO Water Management

Combined SuDS solutions drives efficient Highways drainage

ACO KerbDrain and SuDS Swale inlets used in A12 bypass installation

In 2014, Norfolk County Council (NCC), in partnership with Great Yarmouth Borough Council (GYBC), proposed the creation of a new bypass road on the outskirts of the town and called upon ACO Water Management to provide the accompanying sustainable highway drainage.

The road would address the chronic congestion at the gateway to Great Yarmouth and would facilitate a much-needed extension to the existing development at Bradwell, leading to the potential creation of 850 new homes, as well as new opportunities for local businesses.

The proposed mile-long bypass would connect the A12 Trunk Road south of James Paget Hospital to the A143, via the Beacon Business Park.

The project engineers, Mott MacDonald, proposed a design which would see the highway surface water drain into parallel swales on either side of the carriageway and ACO KerbDrain and ACO SuDS Swale Inlets were the ideal solution.

"These two products offer multiple benefits to installers," commented Jon Williamson, Business Development Manager at ACO for the region. *"ACO KerbDrain offers kerbing to the road as well as an efficient surface water management solution.*

Project:
A12 bypass Great Yarmouth, Norfolk.

Objective:
Sustainable highways drainage solution.

Solution:
KerbDrain linked with ACO SuDS Swale Inlets to collect surface water and controlled the release into the roadside swales .

ACO SuDS Swale Inlets can be linked off the back of KerbDrain, and the surface finish and flared outlet of the swale inlets encourages water dispersion and reduces excessive flow velocities. This protects the surrounding environment from erosion as well as meeting the flow rate guidance in CIRIA C697."

FLOOD RISK ASSESSMENT

The specification decision originated with a Flood Risk Assessment (FRA) undertaken in line with National Framework Planning Policy guidelines (NFPP) to assess the potential flood risk to and from the proposed link road. As a part of this process, under April 2015 changes, Local Authorities are required to consider the use of sustainable drainage systems (SuDS) where applicable.

The area studied was found to be located within a low-risk flood zone and the overall risk of surface water flooding was identified as being 'low'. The site did not affect any major watercourses, open water or floodplains, as it was 150m from the nearest pond, and approximately 800m from the nearest watercourse. This made it easier for a sustainable drainage system including Swale inlets to be considered by Mott MacDonald, as part of an effective water management strategy to accompany the new road.

WATER MANAGEMENT STRATEGY

The water management strategy needed to ensure the carriageway drained quickly during periods of rainfall, to mitigate against vehicle aquaplaning and provide effective flood relief in the event of above-average rainfall.

Working closely with NCC and Mott MacDonald to devise the most appropriate specification for the link road, ACO brought in two products that combined to address the demands for efficient collection of surface water and controlled release of the water into the swales at the sides of the roads. The shallow, broad and vegetated swales on the side of the A12 were a landscaped solution that facilitated the storage and conveyance of run-off without having to install costly pipe drainage solutions. The swales were designed with exceedance in mind and had the capacity to cope with a 1 in 30 year rainfall event, in order to satisfy the National Framework Planning Policy guidelines (NFPP) outlined as part of the Flood Risk Assessment for the project.

ACO KERBDRAIN & SUDS SWALE INLETS

ACO KerbDrain units, a combined kerb and drainage system, were used to collect surface water along the A12. The units were then connected to a series of ACO SuDS Swale Inlets, which have been

designed to link proprietary conveyance drainage systems, such as KerbDrain, to vegetated infiltration features. The ACO SuDS Swale Inlets had outfalls at 10m centres along the A12, to discharge the surface water via infiltration into the subsoils of the Swales.

ACO KerbDrain has been specifically designed and developed to form an integral part of any modern, sustainable highways surface water management solution. It is the first system of its kind to use recycled materials, and is available in a number of hydraulic capacities, as well as in battered and half battered designs. ACO KerbDrain is also independently certified and Kitemarked to BS EN 1433: 2002 Load Class D 400.

In contrast to traditional concrete headwalls and in-situ structures, the ACO SuDS Swale Inlet offers a more discrete aesthetic solution that blends in with the environment. The ACO SuDS Swale Inlet also reduces the velocity and distributes the flow across a footprint up to six times that of a traditionally constructed pipe outfall.

Following completion of all construction works, the road – named Beaufort Way – was opened to the public on 4th December 2015 with ACO KerbDrain and ACO SuDS Swale Inlets lining the way as a sustainable highways drainage solution.

For more information on ACO's range of water management solutions for the highways industry and SuDS, please visit **www.aco.co.uk**

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