

Highways first speaks volumes

A414 upgrade in Harlow sees county's first installation of complete structural wall plastic attenuation system.



Polypipe Ridgistorm-XL large diameter pipe and chambers have been installed beneath a live carriageway, in an innovative design solution that saves space while providing the required surface water storage for a highway upgrade.

Targeted as an innovation project by main contractor, Morgan Sindall, the A414 upgrade to Edinburgh Way in Harlow, Essex, will be the county's first installation of a large diameter, structural wall plastic pipe attenuation system directly beneath a live carriageway.

Designed entirely around Polypipe's Ridgistorm-XL pipe and chambers, the adopted system has been value engineered to provide optimised storage, sediment removal and flow control of the increased levels of stormwater run-off generated by the dualling of the existing single-lane highway.

The improvement scheme is a key part of Essex County Council's £15 million strategic investment in the Harlow road network which will relieve congestion, improve road safety and support local economic growth. Under the stewardship of Essex Highways and retained technical consultants, Jacobs, the main construction phase began in January 2018 and is due for completion in April 2020.

"The original drainage and attenuation design was based around installing twin 900mm pipe runs on either side of the newly dualled carriageway," says Grant McConochie, Framework Manager at Morgan Sindall Infrastructure. "With limited verge space and complex below ground utility runs in the area, we saw an opportunity to re-engineer the scheme around an extended single run of 1500mm large diameter engineered plastic pipe with integrated water management chambers installed below the highway. This would greatly simplify installation, improve health and safety and ultimately provide a more cost-effective long-term solution."

CASE STUDY

Project

A414 carriageway upgrade, Edinburgh Way Harlow, Essex

Client

Morgan Sindall

Application

Highways surface water management and attenuation

Product

Ridgistorm-XL pipes and Chambers

In order to gain Approval in Principle (AIP) for the re-design, Morgan Sindall had to submit a detailed technical submission to Essex Highways as the use of any pipe over 900mm in this situation represented a departure from the standards defined within the Specification for Highways Works. Morgan Sindall Infrastructure's consulting engineers, White Young Green, had previously worked with Polypipe on similar innovation schemes and developed the new proposal around its Ridgistorm-XL large diameter pipe system.

In total, 126m of 1500mm Ridgistorm-XL has been installed with three catch-pit chambers providing sediment removal. Supplied with watertight push-fit seals, the run ties in to an existing 450mm Thames Water surface water drain at a bespoke RidgistormCheck vortex flow control chamber limiting discharge to a specified maximum 32l/s. As cover depths vary along the run, different stiffnesses of pipe have been supplied to optimise material usage.

The upper end of the run where the invert level is 4.5m, an SN4 pipe is used, the remaining pipe is supplied at SN2.8 with an invert of 2.9m.



“The versatility of the Ridgistorm-XL system has allowed us to streamline our on-site programme. No specialist moving or lifting equipment has been required to install a lighter in weight than a rigid material system, and with all the chambers being pre-fabricated off-site, we’ve achieved excellent levels of handling, speed and safety.”

**Grant McConochie, Framework Manager,
Morgan Sindall Infrastructure.**



Grant McConochie, Framework Manager at Morgan Sindall Infrastructure said:

“From the outset, Polypipe worked alongside our team, providing all the required geotechnical and material performance data required for the AIP application.

With this being a first for Essex Highways, the level of detail needed was understandably high. Here the support of the experienced team at Polypipe proved invaluable in achieving a successful outcome.”