

Polypipe drives major highway project in Coventry

Polypipe has supplied innovative drainage and cable protection solutions as part of a multimillion pound project to keep one of England's busiest motorway junctions moving.



Polypipe's innovative solutions deliver for large-scale highways project



Highways England selected Polypipe to supply a fully engineered water management solution and cable protection system, for the construction of a new underpass and additional vehicle lanes at the A45/A46 Tollbar End Junction. Working on the large-scale infrastructure development alongside main contractor, Galliford Try, Polypipe was able to provide a fully engineered water attenuation solution consisting of Polystorm-R and Polystorm Inspect, Ridgidrain surface water drainage system, Ridgistorm-XL large diameter piping system and Ridgiduct cable protection. The final designs met the criteria set by Highways England whilst ensuring quicker, safer and easier installation for Hillstreet Construction Ltd, the ground workers on-site.

To channel the stormwater run-off away from the roadway and towards the Polystorm attenuation tank, Polypipe's Ridgidrain in sizes 100-600mm and its Ridgistorm-XL large diameter piping system in diameters of 750mm and 900mm were installed. This geocellular solution upgraded the water drainage capabilities of the busy highway.

To alleviate health and safety risks during installation and post-installation, Polypipe worked with Galliford Try and their designer Arcadis to redesign the original solution. The new design removed the specified gabion baskets, which were originally to be constructed by hand into a rectangular trough.

Up to 94% lighter in weight than traditional products, Polypipe's solutions provided easier and safer installation at the busy highway, by eliminating the need for heavy plant machinery. This reduced the overall installation time and kept associated costs to a minimum.

CASE STUDY

Project

Tollbar End Junction

Client

Highways England

Application

Water attenuation and cable protection

Product

Polystorm, Polystorm-R, Polystorm Inspect, Ridgidrain, Ridgistorm-XL, Ridgiduct cable protection, RIDGISTORMSeparate

“The professional and experienced team at Polypipe ensured that a sustainable water management solution was engineered and delivered to site within the tight timescales we had to adhere to – an important factor within a highways project, to ensure limited disruption and cost.”

Jarrold Parkin, Project Director, Galliford Try.

Polypipe produced a safer alternative, which included a 900mm RIDGISTORM Separate modular manifold linked into the Polystorm-R attenuation tank, to include seven sumps for siltration. The manifold system was connected to the tank at various points, allowing for better hydraulic distribution of stormwater into the system. Polystorm Inspect was also installed along the full length of the tank to allow for inspection and maintenance activities, accessible via the RIDGISTORM Separate chambers within the manifold.

The Polystorm-R geocellular tank, manufactured from recycled material, was designed in accordance with CIRIA C680



guidelines, meeting the Specification for Highway Works criteria, and capable of attenuating 3,138m³ of stormwater. Installed by Keytec Geomembranes Ltd, the tank was wrapped in geomembrane to ensure the tank remained watertight. This was achieved through Keytec’s ability to manufacture large membrane panels, allowing for a quicker installation and reduced on-site welds.

The project had generated large volumes of surplus earthworks material from other works across the scheme which could have imposed costly removal charges to Galliford Try. However, Polypipe was able to help meet this challenge by confirming that a large proportion of this excess soil could be loaded on top of the Polystorm-R tank, without affecting its structural



integrity. The use of a tank design further assisted in reducing the land-take footprint. Ridgistorm-XL large diameter pipe lengths were engineered to the exact stiffness classes to meet the ground conditions at Tollbar End Junction. The pipe profiles were manufactured to support structural calculations to BS EN 1295, allowing pipes to withstand external loading during the installation process and work with the existing site conditions.

Finally, Polypipe supplied its Ridgiduct structured twinwall cable protection system to provide durable, high strength protection for the necessary networks of communication and electric cables.

“We’ve seen an increase in the specification of plastic piping systems as an alternative to traditional materials, especially in highways applications. From design to manufacture, our team ensures a fully engineered and sustainable solution for the contractor and end users alike.”

Andy Cullum, Water Management Solutions General Manager, Polypipe Civils