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CASE STUDY

BREAKING NEW GROUND IN CREATION OF ECOLOGICAL MARKET TOWN

- **Ambitious modern development has seen large diameter plastic pipes successfully used for vital sewerage system components**

Current trends in the construction industry towards offsite build and modular construction are enabling large diameter high density polyethylene (HDPE) structured wall products to lead the way in designing and delivering best value solutions. These products are helping solve complex design issues that might otherwise cause additional costs or programme delays and ultimately affect the ability to deliver major projects within budget and on time.

The new town of Sherford in the South Hams, Devon, has 5,500 homes, four schools and over 80,000m² of employment and retail space, and is located 28 miles to the east of Plymouth, equidistant between Dartmoor and the south Devon coast. Construction of the new town began in September 2014 following a prolonged 15-year planning phase, with 700 homes completed and habitable by September 2016. The first residents moved in during May 2017.

The project was delivered by Red Tree, the project founder and a consortium of housebuilders including Taylor Wimpey, Linden Homes and Bovis Homes. It is the aspiration of Red Tree that Sherford will be viewed in years to come as one of the West Country's most admired market towns; one that has the feeling of being centuries in the making, but developed with responsible 21st century practices in mind, including affordable housing and the implementation of renewable energy.

And green practices are very much a focus for developers, Red Tree, who have claimed that Sherford will be the most green and sustainable new town in the country, conceived with a minimised carbon footprint in mind. All the houses are designed to be energy-efficient, and much of the energy will be provided by two wind turbines on site.

Ecologically sound

Additionally ecologically friendly good practice has been extended to the procurement processes on site, with many of the suppliers chosen committed to the green agenda. The overall green ethos is exemplified by the fact that the production and installation of the large diameter plastic pipes for the project has been proven to have a significantly reduced carbon footprint than other alternatives on the market, including concrete.

One of the fundamental considerations of any new development is the management of the site's foul water. Using the standard Sewers for Adoption discharge figure of 4,000 litres per dwelling day for 5,500 dwellings gives a typical discharge rate of 254 litres per second. And so in order to efficiently manage the vast quantities of foul water flowing through the site once the development is populated, Fred Champion Groundworks commissioned a back-up storage tank for Sherford's foul water pumping station. The vast 3.5-metre diameter, 30-metre long, multi-leg attenuation tank utilises 170 metres of plastic pipes, and holds approximately 1,500m³ of foul water.

The tank is much larger than its more standard sized counterparts, which usually hold around 200m³, and it connects directly to the town's foul water pumping station. The tank was designed and made to the specific requirements of Fred Champion Groundworks, who were responsible for developing infrastructure for the site's sewerage needs.

The tank was designed and supplied with an integral dry weather flow channel to meet the requirements set by South West Water. The dry weather flow channel is uniquely designed to improve the hydraulic efficiency of the tank in low flow conditions, helping to avoid silting. The offline attenuation tank was prefabricated, and transported to the site in Devon in one piece prior to installation, vastly cutting down on the amount of time spent positioning the tank in situ; a huge bonus to the contractors who observed stringent scheduling.

Full accreditation

The system was also fully accredited to European standard BS EN 13476 - Plastics piping systems for non-pressure underground drainage and sewerage – structured wall piping systems of unplasticised poly(vinyl chloride) (PVC-U), polypropylene (PP) and polyethylene (PE).

Darren Williams, Technical Sales Engineer at BPF Pipes Group member Asset International, said: “A site with the scope and scale of Sherford requires significant water management infrastructure, incorporating everything a new town could potentially need, from extensive sewage management structures, to anti-flooding measures.

“The ambition of the developers is admirable and we were only too happy to lend our engineering expertise and top notch product knowledge into developing a foul water storage solution, to aid the water management needs of this expansive project.”

The foul backup storage tank was delivered to the Sherford site in March 2016.

In summary, using large diameter structured wall products gives designers, developers and end users the satisfaction and peace of mind that their unique solution has been designed using clear instructions and assurances that only pipes which fully comply with national standards can provide.

ENDS

Contacts

Media information:

Bridget Summers, Footprint PR, 01723 447424, bridget@footprintpr.org.uk

BPF Pipes Group:

Caroline Ayres, BPF Pipes Group, 01932 343409, carolinea@plasticpipesgroup.com

About the BPF Pipes Group

Part of the British Plastics Federation, the BPF Pipes Group is a trade association representing manufacturers and material suppliers of plastic piping systems across the UK. Committed to sustainable construction, its aims are to provide a forum for the exchange of technical expertise between member companies and to promote the importance of plastic as a pipework material, for the full spectrum of above and below ground, pressure and non-pressure applications. It also plays a key role in initiating and disseminating research and informing and influencing the standards bodies pertaining to plastic pipe systems. It works closely with the BPF and TEPPFA, the European Plastic Pipes and Fittings Association.