References

Sewage retention chanel



Uponor involvement

- PEHD pipes Weholite SN8 DN/ID 2400 mm of the length of 300 m

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The construction of an innovative retention sewage canal in Rzeszów in southern Poland was recently completed using Weholite piping and manholes.
The construction of an innovative retention sewage canal in Rzeszów in southern Poland was recently completed using Weholite piping and manholes. The award winning sewer design is the brainchild of Daniel Słyś PhD Eng. and Professor Józef Dziopak from the Department of Infrastructure and Sustainable Development at the Rzeszów University of Technology.

Project Facts:

Location
Rzeszów, Poland

Completion
2014

Vrsta objekta
Municipal

Product systems
Storm water, Tailor made constructions

Project Type
New building

Partners

Designer:
Biuro Projektów Budownictwa Komunalnego in Rzeszów with participation of the scientists from Rzeszów University of Technology:
Daniel Słyś Eng., PhD., Professor
Józef Dziopak, Eng/, PhD. from the Infrastructure and Ecodevelopment Desk
Contractor:
Skanska S.A.

The detention sewer devised by RUT researchers is a simple yet breakthrough solution for storm water disposal. What's unique about it is that the inside of the sewer is divided into chambers using baffles, which allows for maximum use of the sewer's internal capacity. Professor Dziopak explains: " Inside, the sewer is divided by baffles which translates into a linear series of hydraulically interconnected chambers. The sewer serves two functions in the general sewer network: basic function of transporting sewage and that of temporarily retaining excess storm water. "

Work on first such sewer began in 2015 in Krakowska-Południe, a fast developing housing district in Rzeszów. Daniel Słyś who acted as consultant for the installation comments: "The new sewer in Rzeszów was designed to regulate the volume of storm water transported from the new housing developments into the existing municipal wastewater network. Due to required retention capacity of the sewer and limited installation space the diameter of the pipe was set at 2,4 m."

The construction was carried out in two stages. The first stage finished in 2015 included the construction of a 140 m section of the sewer with collectors for draining sideroads and footpaths. The second stage realized in 2018 provided for the installation of a 160 m section of the wastewater channel along with auxiliary systems. The combined total length of the whole drainage system for the area is 1,5 km. The pipes used had nominal diameter of DN200 to DN 2400 mm and ring stiffness of SN 4÷12 kN/m² with storm water pre-treatment installations.

The retention sewage canal was built using structural double-walled Weholite pipes by Uponor Infra made of high-density polyethylene (PEHD) with the diameter of DN 2,400 mm and ring stiffness of SN 8 kN/m2. The outer wall of the sewer is black ensuring resistance to UV radiation. The channel frame features 8 inspection manholes with the diameter of DN 1,200 mm. To improve flow control the sewer was fitted with a series of baffles. The installation was carried out in difficult geotechnical conditions with high ground water levels presenting additional challenges. Obstacles, however, were tackled as the work progressed and the installation was successfully completed.

When asked about the reasons for choosing polyethylene piping for this project Daniel Słyś mentions several factors: tightness and homogeneity of joints, the possibility of installing the baffles, excellent static-strength parameters, resistance to abrasiveness and longevity of the pipeline as well as cost-effectiveness. The application of PE piping guaranteed that all of the above criteria would be met. As designers of the system [my colleagues and I] can attest to the highest quality of the piping provided for this project."

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