References

Retention systems for the S3 expressway



Uponor involvement

- Task II: WehoTripla PP pipes SN10 DN200 – 6 km, Weholite PEHD pipes SN8 DN300-1400 – aprox. 15 km, eccentric manholes and battery of 6 HDPE tanks DN1200 SN8 V=185 m3. Task III: battery of 5 HDPE tanks DN/ID1800 SN8 V=310 m3, HDPE tank DN/ID2600 SN8 with a length of 165.6 m and V=877 m3, battery of 12 HDPE tanks DN/ID2600 SN8 V=3850 m3

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As part of the project "Construction of the second roadway of the S3 expressway along the Sulechów – Nowa Sól section – the second and third section" Uponor Infra provided pipes, sewer manholes and detention tanks.

The construction of the S3 expressway is one of the biggest and most important road investments of GDDKiA in the west of Poland. Due to its size (the planned length is 480.5 km), it was divided into several stages. As part of the project "Construction of the second roadway of the S3 expressway along the Sulechów – Nowa Sól section – the second and third section" Uponor Infra provided pipes, sewer manholes and detention tanks.

Project Facts:

Location
Sulechów – Nowa Sól, Poland

Completion
2016

Building Type
Transportation

Product systems
Storm water

Project Type
New building

Partners

Investor:
Generalna Dyrekcja Dróg Krajowych i
Autostrad

Contactor:
General Contractor - Consortium
Budimex S.A. and Ferrovial Agroman
S.A.,
Subcontractor – Firma Budowlana
"ZABAWA" RAFAŁ ZABAWA

The S3 expressway is part of the international route E65, located in a trans-European transport corridor. It will run longitudinally from the Szczecin-Świnoujście seaport complex in the north, along the western border of the country, to the border with the Czech Republic. Through ferry lines, it will provide the shortest direct connection of southern Scandinavia with the northern Czech Republic and Prague. Once completed, it will pass through three voivodeships: Zachodniopomorskie, Lubuskie and Dolnośląskie.

The longest, 184-metre section is located in the Lubuskie Voivodeship. In order to improve the process of preparation and implementation of the task, the whole road in this voivodeship was divided into implementation sections. One of the five sections is the road Sulechów-Nowa Sól with a length of 44 km, which was divided into 3 stages:

I. Sulechów - Zielona Góra North(13.4 km),

II. Zielona Góra North - Niedoradz (13.3 km),

III. Niedoradz - Nowa Sól South(17.3 km).

The general contractor of the second and third stages is the consortium of Budimex SA and Ferrovial Agroman SA, and the subcontractor – the construction company ZABAWA RAFAŁ ZABAWA. As part of the implementation of the second and third sections, the construction of storm water drainage and the modernisation of the existing drainage network was planned. The storm water drainage included PP SN10 kN/m2 pipes, PE-HD SN8 kN/m2 pipes with sewer manholes with diameters from DN1000 to DN3000, a system of DN500 gullies and pre-treatment installations, pumping stations, pressure pipe end chambers, intercepting chambers and receiving water outlets. Uponor Infra provided for this project about 6 km of PP WehoTripla SN10 DN 200 pipes, nearly 15 km of PE-HD Weholite SN8 DN300-1400 pipes, as well as eccentric manholes.

The modernisation of the existing drainage network involved the liquidation of most of the evaporation reservoirs and retention-infiltration reservoirs and parts of the existing storm water drains discharging wastewater to the liquidated reservoirs. In addition, four separate batteries of detention tanks were designed. Uponor Infra was responsible for the production, delivery and connection of these tanks. As part of the second task, Uponor Infra provided a battery of six underground tanks of DN/ID1200 Weholite PE-HD structural pipes with ring stiffness of SN 8 kN/m2, with a length of 27.17 m each and a total capacity of 185 m3. As part of the third task, it provided three sets of tanks:

- a battery of five Weholite PEHD DN/ID1800 SN 8 tanks with a length of L=24.4 m each and a total capacity of 310 m3;

- a Weholite PEHD DN/ID2600 SN 8 detention tank with a length of 165.6 m and a total capacity of 877 m3;

- a battery of 12 Weholite PEHD DN/ID2600 SN8 tanks with a length of 60.6 m each and a total capacity of 3,850 m3.

The tanks were transported in segments, and then connected at the construction site using extrusion welding which makes structures homogeneous and monolithic, guaranteeing 100% tightness and reliability. Then, they were connected with one another into batteries by means of PE-HD pipes with a diameter of 300 and 500 mm and stiffness of SN8. Welded joints were made by a professional and experienced service team from Uponor Infra, which additionally, to the order of the contractor, conducted leakage tests using forced air for all the installed tanks.

The tank installation work was performed very quickly from June to September 2016. Due to the limitations and intensity of the road work schedule, it lasted until late at night. The installation of the battery of six tanks from the second task with a leakage test lasted eight days, the battery of five tanks from the third task – seven days, and the longest tank – 15 days. The installation of the biggest battery of 12 tanks with a leakage test was carried out with the participation of three service teams from Uponor Infra and lasted 26 days. An additional challenge during the installation was difficult terrain conditions – a high level of groundwater. The contractor's opinion about cooperation with Uponor Infra was very positive. It especially praised the service team and the support of the sales department during the implementation of the project.

Uponor Infra solutions are systems of pipes, manholes and tanks, which flexibly cooperate with the ground. 100% corrosion resistance, high resistance to salts and other chemical compounds found in the soil, high resistance to difficult conditions and the ability to adjust the system elements to the situation which is often different from the situation planned at the construction site are a few of the many features appreciated by investors and contractors. The evidence of this is the use of Uponor Infra solutions for the construction of highways, expressways and local roads.

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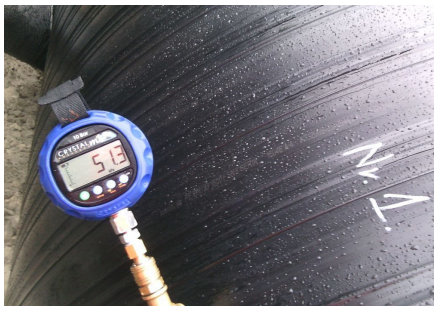

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