

▶ Improving the performance of concrete structures

A9 motorway – Ile d'Épine, Les Sablons - Switzerland

Eleven roadway water treatment structures for the A9 motorway upstream of the infiltration basin were not providing complete satisfaction, in particular concerning the protection of the water in the vicinity. Saint Dizier Environnement was therefore mandated in 2010 by the client to audit the structures in place in order to compile a technical proposal for improving the purification performance.



APPRAISAL

The Ile d'Épine and Sablons basins respectively treat motorway surfaces of 1.5 ha and 4.5 ha. Because of the poor performance of concrete settlers, some of the infiltration basins became clogged, causing flooding on nearby road surfaces. The reductions under consideration for suspended matter are 60% for particles <math>< 50 \mu\text{m}</math> and 95% on TSS <math>< 100 \mu\text{m}</math>.

In order to achieve these objectives, a falling speed $\leq 3 \text{ m/h}$ was retained for the dimensioning of the lamellar equipment of the basins.

DESIGN

Advantages of this solution :

- Complete accessibility above the strips via duckboard.
- Effectiveness of the settling: counter-current lamellar settling on honeycomb strips.
- The tailored design made it possible to adapt to the reduction objectives and to the dimension constraints of existing basins as well as to the various flow rates of the collection basins.
- Hydraulic control thanks to our pressurised chutes that guarantee the operation of the settler with downstream loading
- Draining of the sludge every 1 to 2 years..

BUILDING

Characteristics :

- H2O lamellar cells made of polypropylene
- Water recovery chutes made of PVC
- Falling speed for Ile d'Épine basins: 2.1 m/h,

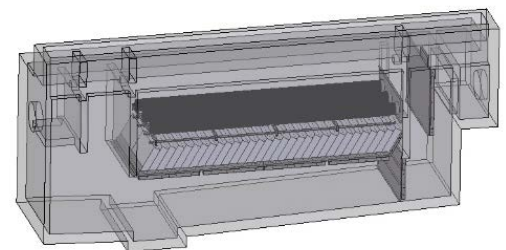
Particular points with this project :

- Audit then dimensioning and tailored design, creation.
- In addition to these 2 concrete basins, 1 other concrete basin and 8 steel structures were rehabilitated.

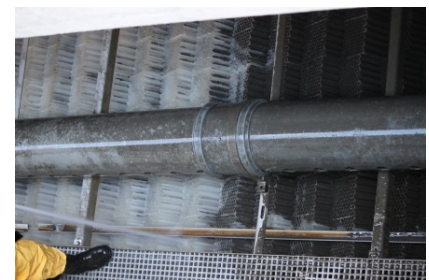
FOLLOW-UP

After 2 years of operation, Saint Dizier Environnement visited the site in order to take sludge samples in several basins. The analyses showed good settling effectiveness. Indeed, 50% of the particles retained have a diameter less than $20 \mu\text{m}$ and 90% of the particles have a diameter less than $100 \mu\text{m}$.

Improvement date	2012
Client	DTEE
Contractor	DTEE
Companie	CanPlast / Saint Dizier environnement



3D plan of the basin with improvement



Cleaning of the strips



Sludge under the strips