Enka® Solutions

Case Study

Railway viaduct SEA High Speed railway

Poitiers, France

Project owner
COSEA

Product
EnkaDrain® TPL/1s

Function
Drainage and filtration

Contractor
Dodin-Campenon Bernard (Vinci group)

Volume
10,000 m2 (for viaduct and annex works)

The construction of the South Europe Atlantic (SEA) High Speed railway is one of the major railway infrastructure projects in Europe. This viaduct, located close to Poitiers, is one of the most significant civil engineering work where EnkaDrain TPL was used to ensure vertical drainage of abutments.

Challenge

Water can cause major disturbances in civil engineering works, both under construction and throughout its service life. Usually, the concrete structures are not designed to resist the water pressure, therefore, additional pressure can lead to collapse.
The drainage system has to fulfil the following requirements:

- provide the appropriate discharge capacity under the maximum earth pressure of the project
- resist the tensile load due to the compaction of the backfill

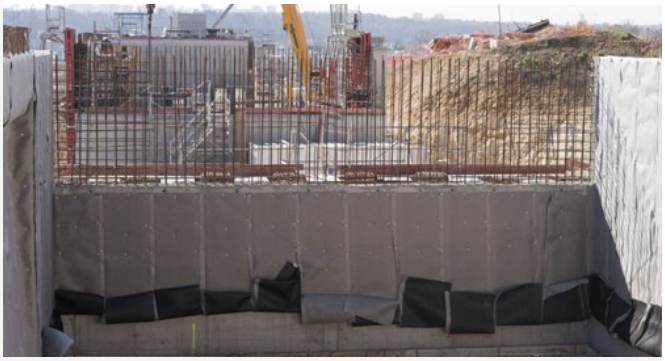
Solution

Replacing gravel, EnkaDrain TPL/1s, one of our premium product range for over 25 years, offers effective solutions in vertical drainage for bridges abutments, retaining walls, concrete foundations of buildings, tunnels etc...
The product is based on a three-dimensional geospacer combined with a filter geotextile. The geospacer is consisting of a PA6 monofilaments, offering 95% of void.
EnkaDrain TPL/1s is an authorized product for the French railway authorities (SNCF) and has technical agreement for vertical building applications approved by APAVE.

Benefits of the solution

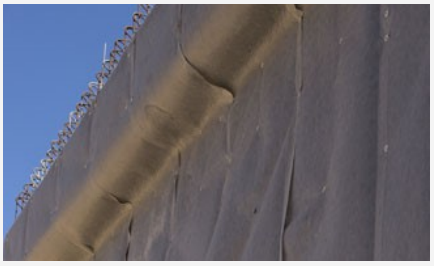
EnkaDrain TPL/1s is a lightweight, durable, flexible and quick to install product. It presents high level hydraulic performances, uniform in all directions including on a long-term perspective: the structure of its drainage core is not sensitive to the filter intrusion phenomenon, the space between contact points core/filter being very small compared to other types of drainage structures.
It creates an air layer between the construction and soil and therefore reduces the risk of humidity in the wall.

Overview of the abutment



No loss due to overlapping: EnkaDrain is provided with 10 cm overlap of fleeces

At the bottom, EnkaDrain is covering the pipe, no need of additional gravel material



EnkaDrain is a very flexible product for all conditions of use.

On top of the wall, EnkaDrain is folded up on itself, no need of special accessories.

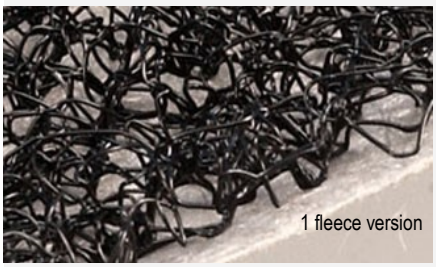
Installation benefits

EnkaDrain is easy to handle. Cutting can be managed with scissors or cutter. Due to its flexibility, it can be applied with precision even in corners or pinch points. EnkaDrain includes fleece overlaps to avoid loss of material. Connection is made by nailing or gluing with a speed ratio estimated from
25 to 30 m^2 per hour. No additional gravel material is needed, even for junction with the pipe.

Result

EnkaDrain TPL/1s ensures the vertical drainage to avoid any water pressure behind abutments of this highly sensitive structure. It is a complete drainage system from the bottom to the top of the wall.

Products used



EnkaDrain® TPL
Geocomposite with 3D
monofilament structure for drainage/filtration
(1 or 2 fleeces)

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