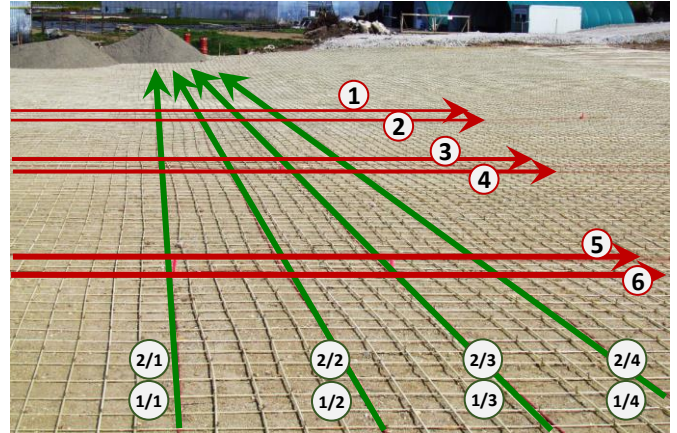


Strains in composite reinforcement at the base of a road embankment



EpsilonRebar: Case Study

In the present case study the base of road embankment was reinforced by composite rebars in two directions. This solution is favourable in the context of durability due to the high resistance of composites to corrosion. Some of the bars were replaced with **EpsilonRebars**, which now have a double function in the structure: both sensing and reinforcing. Two measurement layers allowed also for calculation vertical displacement profiles.



Benefits of application

- Measurements of **strains, displacements and temperatures** at the same time
- Full **deformation control at the base** of earth embankment
- Thermal compensation to distinguish **only mechanical effects**
- Knowledge on **structural performance** of new reinforcement technology

Example results



 **61 800** measurement points

 **618 m** of sensing path

 **14 x** EpsilonRebar

 during **construction**

 project **partner:**



The measurement sessions were planned during construction process as well as during embankment operation. The figure below shows example strain profiles obtained from transverse **EpsilonRebar** during subsequent load steps (during construction of new embankment layers). Data interpretation is performed taking into account the initial topology of the substrate, as well as temperature distributions obtained thanks to Raman measurements. What is more, vertical displacements at the base of this earth structure were calculated as well based on measured strains and known spacing between two measurement layers.

