

Capping of the High-Speed Railroad Embankment in Spain

In high speed railroad lines, continued rainfall periods may cause problems due to the presence of soils sensitive to moisture changes. The ground can respond by shrinking (settlement) when it dries, or swelling (heave) when it becomes wet again. This may result with instability of excavation cuts. Railroad lines founded on embankments comprising sensitive soils require constant monitoring and, in some cases, may require periodic shutdowns and maintenance.



PROJECT DETAILS

Construction of a railroad line
Madrid to Zaragoza, Spain

LOCATION

Railroad section Alhama de Aragón,
Zaragoza, Spain

PRODUCTS USED

BENTOMAT® AS GCL

CHALLENGE:

The original design for the railroad embankment Madrid – Zaragoza did not call for a lining solution. After a rainy season it was observed that soils used to form railroad embankments responded with heave and instability hazards. It became apparent that an emergency lining solution will be required. The size of dubious embankment was 30,000 m², mainly with slopes inclined at 2H:1V. Length of each slope varied from 15 m to 30 m.

SOLUTION:

CETCO recommended to cutoff sensitive soils from potential rainfall by using a BENTOMAT® AS geosynthetic clay liner (GCL), covered with a geocell filled with soil, to prevent surface runoff or severe erosion problems. This solution was benchmarked against other lining systems and proved to be the most efficient liner for given application.

RESULT:

The swift installation of BENTOMAT AS GCL isolated the embankment from precipitation and allowed for further construction works to be continued on time.

cetco@mineralstech.com | cetco.com | 800.527.9948