



# INSTOP

Su especialista en Senceive

INGEOLAC

## CASE STUDY



# R<sup>t</sup>GM The tool for Real-time Grouting Monitoring GEO3TEC N-320 Road – Talamanca de Jarama (Spain)

CLIENT: INGEOLAC

### THE CHALLENGE

Beneath the N-320 Road, as it winds its way through the municipality of Talamanca de Jarama (Madrid), there is a buried water pipeline crossing the infrastructure. A lack of fill material has been detected in the embankment, which could lead to damage.

Geo3Tec is to remediate this incident by grouting cement to consolidate the embankment without interfering with the road service.

The monitoring system to control ground response to grouting volumes and pressure must provide real-time data.

In addition, the monitoring data are to be presented on a user-friendly display for quick and easy analysis and decision making in a matter of minutes.

The monitoring system must ensure the safety of road users and the integrity of the infrastructure itself, both during and after the grouting operation.

### THE SOLUTION

R<sup>t</sup>GM is the operator tool that supports grouting processes in real time. It uses Senceive's unique FlatMesh communication feature, allowing all sensors to be measured simultaneously and in real time.

Triaxial tilt meters and distance meters are installed directly on the asphalt in the areas to be monitored.

Data are transmitted wirelessly to a Gateway. This sends the information via 4G to a server for displaying on the CivilNova's CivilWorks web platform.

CivilWorks platform is accessed via a Tablet, and data managed and viewed on site, in real time.

There are a number of ways to present the data: longitudinal profiles, two-dimensional deformation vectors, heatmaps and even daily, weekly and monthly reports, fully automatic.

Additionally, CivilWorks also includes management of displacement and deformation thresholds, producing warning messages automatically when reaching defined tolerances.

### THE OUTCOME

Senceive wireless and remote monitoring system together with CivilNova's CivilWorks web-based platform provide the contractor with accurate, real-time, on-site monitoring of deformation caused by grouting.

To ensure that deformation values are kept within the specified limits without affecting the infrastructure and road users, as well as optimising the time and cost of project execution.



Data visualisation on CivilWorks.



InGeoLAC

Sierra de Guadarrama 37-D, 28830 San Fernando de Henares (Madrid, Spain) | t +34 91 676 05 62 | m +34 639 620 052 | [instrumentacion@ingeolac.com](mailto:instrumentacion@ingeolac.com) | [www.ingeolac.com](http://www.ingeolac.com)