ABOUT

The Parcel 2 of the Pinhal Interior Motorway is located in the Central West region of Portugal, stretching along 16.1 km between the localities Condeixa and Avelar Norte.

In this project, GEG was responsible for the geological and geotechnical studies and structural and foundations detailed design of five viaducts, a total extension of 2.235 m.

In order to obtain sufficient data to evaluate the rock mass conditions for the foundation, a geological site investigation for each structure was defined. Then, all data were compiled, evaluated and a geological model was made, with the different ground type definition.

Structural solution

The five viaducts have a total length between 336 m and 756 m, with current spans between 26 and 35 m.

Two solutions were adopted for the viaducts’ decks. The first consisted of prestressed precast beams (I and U sections). These beams support a cast in-situ slab over precast thin slabs. The total slabs thickness is constant along the width of the decks and equal to 25 or 30 cm.

The other one consisted of a cast in-situ deck with double beams (TT) and a variable depth slab. For this solution, a movable scaffolding system was applied.

Depending on the viaduct height, different solutions were adopted for the columns. For the higher viaducts,
rectangular hollow sections were considered. For the lower viaducts, a circular solid section with a diameter of 1,20 m was adopted.

The foundations’ solutions range between deep foundations materialised by piles of 1,20 m of diameter and shallow foundations materialised by footings in every columns’ alignment, depending on the terrain resistance.