

Pedralba – Campobecerros High-Speed Track Installation

The Pedralba – Campobecerros stretch of the Madrid – North / North-western section of the Spanish high-speed rail network uses the **first use of precast slab track** system in Spain. Delivering a more **sustainable** design and delivery to the **300km/h** route. Reducing journey times from Galicia to Madrid and wider high-speed rail network, connecting the final corner of Spain to the high-speed rail network.



ADIF



£27m



2019
- 2020



Build

The construction of the high-speed rail track from Pedralba – Campobecceros was just over 81km consisting of three construction methods; 63km through slab track, concreted in situ, 19km ballast track with mono-block sleepers, and 2km pre-cast slab track. This is due to the geographically complex area which meant 61km of the track was located in 10 tunnels and on 4km of viaducts.

We conducted surveys using the latest technological systems; laser tracking, point cloud survey, and, GPS, producing data giving confidence the track was within the exact precision and tolerances. Prior to track laying within the tunnel two plinths were slipformed either side of the track bed increasing production rate and reduced the programme by 30%, these supported the specialized patented mobile gantry.

To complete the programme on time works needed to be conducted simultaneously between the different contractors delivering the scheme. To manage the areas safely we developed a partial track deliveries and track appliances procedure in conjunction with the other suppliers. This enabled for each scope of work to be delivered within the same footprint in order to achieve the completion date. This collaboration between suppliers was key to the timely completion.



ADDED VALUE

- Construction methodologies to reduce elements of the programme by 30%
- We designed, setup, operated and maintained a construction railhead with a total area of 61,000m², including 4,000m² for storing and delivery of 108m LWR/S&Cs and other materials required.
- Developed 11 independent pieces of machinery for the installation of sleepers, formwork, concrete and final adjustment. By adopting a heavily mechanised process we were able to accomplish a reliable production rate (215lm/day), a safe work environment and a consistent high quality, right first time.
 - Patented mobile gantry
 - Lifting beam, increasing safety of installation
 - Short rails, enable quicker verification of precision
 - Patented rail pulling machinery
 - Digitisation of torque values



Overcoming logistical challenges

We conducted periodical reviews before mobilisation to site and identified that the civil works contractor would not meet our mobilisation date. We put in place mitigation plans including an assessment of the available land and environmental impact. We then designed, setup, operated and maintained a compound for storing materials and worked with the client and wider systems contractors to optimise the use of shared facilities. The use of the 20 access points and three storage facilities along the trace along with the consolidation center, 80km away enabled the works to start on time and ultimate be delivered on time.



2km

Precast slab track

10

Work teams working concurrently

61km

In-situ slab track

22

Switches and crossing installed

7

Rail Expansion Devices

1st

Precast slab track system in Spain