

First tunnel cross passages complete on HS2

August 22, 2022



The construction of HS2's longest tunnels stretching for 10 miles under the Chilterns has begun a new phase with the start of work on thirty-eight cross passages linking the northbound and southbound tunnels.

The Chiltern tunnels will carry high speed trains between London and the North at speeds of up to 200mph (320km/h). The trains will travel through two parallel tunnels linked by short passages for use in emergencies.

With the two giant tunnelling machines - named Florence and Cecilia - now almost four miles into their journeys, attention has turned to the first cross passages.

An expert team of miners used a remotely controlled excavator to break out of and excavate from one running tunnel to the adjacent tunnel. As the excavation is progressed the ground is supported using a sprayed concrete lining (SCL).

Delivered by HS2's main works contractor, Align - a joint venture formed of Bouygues Travaux Publics, Sir Robert McAlpine, and VolkerFitzpatrick - each passage is between 15 and 20 metres in length.

Once the team had completed the SCL lined tunnel, a water-proof membrane was installed followed by a secondary concrete lining constructed by placing concrete behind formwork installed in the cross passage.

Martyn Noak, HS2 Ltd's Head of Tunnel Engineering, said: "HS2 is making huge progress, with 25,000 jobs supported by the project, construction in full swing between London and Birmingham and now the start of this new phase of tunnelling work under the Chilterns.

"While invisible to the travelling public, the cross passages have a key role in providing a safe operational railway. In an emergency they allow the safe evacuation of passengers into a place of relative safety – the other tunnel. Constructing cross passages is different than using a tunnelling machine as the ground is excavated in short lengths with each advance being left unsupported for a short period of time until the sprayed concrete lining is installed. It is a different set of risks and a specific skilled workforce is needed.

"It's great to see the first one complete and I'd like to congratulate everyone involved in this important milestone, one down 37 to go."

Daniel Altier, Align Project Director said,

"The completion of this cross passage is a significant milestone for the team at Align JV, delivering the first mined cross passage on HS2 phase 1. I'm proud of the team, their hard work and collaboration to get us to this point.

"In partnership with our supply chain; KVJV responsible for the ground treatment, specialist contractor Euro Diamond Drilling and waterproofing specialist Rennesco, the sub-surface team at Align have already commenced preparation work on several other cross passages and are making good progress."

Once the passageway is complete, the safety doors can be installed at either end. These are being manufactured by Bolton-based Booth Industries who won the **contract to provide more than 300 units** for all the tunnels between London and Birmingham.

The win allowed Booth Industries to establish a new facility in the town and create up to 50 jobs over the next 10 years. The sliding doors have been subjected to rigorous fire and fatigue testing to take account of the train speeds, associated pressures and frequency of the trains.

Each running tunnel has an emergency walkway that allows passengers to safely evacuate the train and walk through the cross passages into the other tunnel where they can be rescued on a passenger train. Access for emergency services is from either the portal or one of the five ventilation/emergency access shafts.