

Channel Tunnel Rail Link (HS1)

Kent 2001



Client	Union Rail
Contractor	Hochtief Norwest Holst JV
Consultant	Rail Link Engineering

Channel Tunnel Rail Link (CTRL) is a 67-mile long high-speed rail line running between London and the Channel Tunnel terminal near Folkestone. The £5.2bn link enables trains to run at 300km/hr between London St.Pancras and Gare du Nord in Paris.

As part of this contract, two cut and cover tunnels were required near to the villages of Hollingbourne and Sandway. The initial proposal was to construct the tunnels as in-situ reinforced concrete box structures. However, following a value engineering exercise involving RLE, Reinforced Earth Company and the contractor, an alternative solution using precast concrete arch segments was accepted.

A Reinforced Earth precast arch was used for both tunnels, the first of its kind over a high speed rail line. The longer tunnel at Hollingbourne covers a length of 360m, while Sandway tunnel measures 170m. Backfill cover to the crown ranges from 0.5m to 5.5m at the deepest section.

The tunnels were built in two phases to allow temporary road diversions to be constructed over the partially completed arches. Finite element analysis carried out by Reinforced Earth Company, produced a slender arch section 325mm thick.

The portals to the tunnels were formed from Reinforced Earth precast concrete headwalls and wingwalls.

Erection of the first 170m length phase of the Hollingbourne tunnel was completed on schedule in just four weeks. The rapid construction, together with the efficient use of materials has produced a cost effective solution for these two significant structures.