



## Reinforced Earth® Retaining Walls and Bridge Bearings Borders Railway

**FREYSSINET**  
SUSTAINABLE TECHNOLOGY

Client  
Network Rail  
Contractor  
BAM Nuttall  
Engineer  
URS, Atkins, Donaldson  
Works Commenced  
December 2013  
Works Completed  
September 2014

The Scottish Borders have been without a railway since Lord Beeching's cuts and, after closure in 1969, some of the track alignment was built on. Consequently, the new Borders Railway incorporates a number of structures to get across new roads or as part of a revised track alignment. The £294M project requires 31 miles of track and seven stations, 42 new bridges and 95 refurbished bridges. It is the longest new UK domestic railway for over 100 years and runs from Newcraighall, 5 miles SE of Edinburgh to Tweedbank near Galashiels.

The longest new bridge was the Hardengreen Bridge, a 72m long, two-span structure which crosses a roundabout on the A7. Here, the approach embankments have been built using Reinforced Earth with precast panel walls. The walls on this structure reached 10.5m high. In total 26 structures benefitted from Reinforced Earth walls with approximately 11,000 square metres being supplied. The system used was the Terraquad square panel facing (nominally 1.5 m sq panels) with either high adherence galvanised steel reinforcing strap in the rail structures or Geostrap polymeric reinforcement in the highway structures. The steel straps produce a stiffer reinforced fill which resists the high dynamic loads from the trains better. Backfill was 6i/6j granular material with a minimum phi of 36 degrees. This system was designed and supplied by Reinforced Earth Company (RECo), a Freysinet-owned business.

Freysinet also supplied bridge bearings to seven of the Border Railways structures. Of the 107 bearings supplied, 52 were elastomeric, 46 were mechanical pot bearings and 9 were guide, pin or rocker bearings.

Main construction started in April 2013 and is due to be completed in summer 2015.



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