

Pre-Stressing



Upper Forth Crossing, Kincardine

Sustainable Technology

Client: Scottish Executive
Principal Contractor: Morgan Vinci JV
Pre-Stressing Contractor: Freyssinet Ltd
Structural Engineer: Jacobs Babbie
Contract value: £1,015,000
Contract Duration: 55 weeks
Works Completed: May 2008

The Upper Forth Crossing at Kincardine was constructed to link two major routes north and south of the River Forth, Scotland for the purpose of reducing periodic traffic congestion in the town of Kincardine. The crossing is the second longest incrementally launched bridge in the world.

The 1.2km long structure has 26 spans installed by incremental launching and weighs more than 22,000 tonnes. The construction of each 45m span was typically completed in 8 days instead of the original 10 days expected in planning, with the final span being launched in February 2008

Freyssinet installed the launching nose using Freyssibar to connect it to the leading edge of the bridge. 48 bars of 50mm diameter were used.

The post tensioning system consists of replaceable external 19C15 and 37C15 tendons. Stressing started in January 2007 with the application of the 94m long launching tendons. Following completion of the launching the continuity cables were threaded and stressed. These were up to 131m long.

All tendons were injected with cementitious grout for corrosion protection.

The launching cables had no profile and were grouted using Freyssinet's high speed grouting technique where the grout is injected to maintain a minimum flow of 20m per minute. This was verified by undertaking a full scale grout trial on the job.



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