CASE STUDY:
**Technical Mortars**

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# River Humber Gas Pipeline Replacement

**Parex mortar specified for "world record" pipeline.**

A special low-alkali pumpable mortar from Parex is being used in the construction of a new £100 million gas pipeline tunnel under the River Humber.

The major joint venture project involved cutting a new segmented tunnel under the river close to the Humber crossing, then inserting a new pipeline comprising of 8 No. 624m sections, surpassing the previous total insertion distance by approx 500m on a similar project in Australia.

The project is a joint venture between Skanska, PORR Bau GmbH and A. Hak, on behalf of client National Grid to create a 5km long tunnel from Goxhill to Paull which will house a high pressure gas pipeline capable of carrying one fifth of the UK's gas requirement. It will replace a previous installation in a trench across the river bed which which is being exposed by tidal action.

More than 400 sections of the pipeline constructed from a specialist steel were first delivered from Germany to pipeline technology experts Shawcor in Leith, Edinburgh, where the majority were coated with a high density concrete coating and an epoxy layer for added protection before being shipped to an assembly area close to the construction site.

Here, the process of "stringing" the units to form longer sections is being carried out with specific attention to the joints, where Parex LA Concrete is used to "complete" the outer layer of the pipeline by forming a "collar" around the joints to create a continuous protective concrete coating along the length of the pipeline and provide the negative buoyancy requirement of the insertion process.

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Reinforcement of the joint

Completed joint

Shuttering

Steel reinforcement is first applied to each joint section, prior to the placement of temporary shuttering comprising aluminium sheeting curved to the profile of the pipeline to create a circular manifold around the pipe. Parex LA Repair concrete is then pumped into the section through a letterbox like opening in the top of the section and allowed to flow around the structure until filled.

Pumping in the LA Repair Concrete

After allowing sufficient time for curing, the shuttering is then removed to reveal a complete joint between the sections.

Parex LA Concrete was specified for its pumpability and its ability to create a complete void-free fill of the cavity within the shuttering. It also met the need for a quality-assured, low alkali micro concrete with self-compacting and non-shrink characteristics.

Once the stringing process is complete, the sections will be moved on rails to the tunnel opening where they will then be installed into the completed tunnel system during 2019 by propelling each section into position using powerful hydraulic rams. The sections will then be welded together in sequence until the pipeline is completed and ready for National Grid to begin commissioning work.

Following construction of the pipeline, the “stringing” field will then revert to use as farmland, leaving no trace of the major construction project that has taken place.

**Client:** National Grid.
**Construction Team:** Skanska.
PORR Bau GmbH
A.Hak Pipeline and Facilities Ltd, Huddersfield, West Yorkshire.
Shawcor/Bredero Shaw, Leith, Edinburgh.

## PAREX MATERIALS USED

Parex LA Concrete

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