

Grundoram used on Hexham Flood Alleviation Scheme

Text and photos provided by TT UK Ltd., Bedford/Great Britain

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After several flooding occurrences over the last few years the most recent being December 2004, the Environmental Agency entered into a framework agreement with Volker Stevin Ltd for a £6million flood alleviation scheme. Most of the works were for the open cut installation of large concrete culvert sections with an enhancement of the upstream open section and eventual discharge into the River Tyne. Approximately 400 m from the River Tyne is the Newcastle to Carlisle double track railway which did not lend itself well to open cut!

During the initial planning stage Genseed Underground Services Ltd, who have carried out numerous railway crossings using Trenchless Technology, were invited to put forward suggestions to achieve the under-track crossing. The requirement was for a series of four pipes each of 914 mm OD with a 14.3 mm wall placed parallel to each other with 200 mm spacing between each pipe. The drive length of each pipe was 18 metres. The reason for a four-pipe configuration rather than one large pipe was dictated by the constraints of depth and cover. The 914mm pipes gave a depth of 2.5 metres below the railway track, achieving the desired invert.

Network Rail's engineers, Corus, were concerned with any heave or settlement that might occur using

any method of Trenchless installation, after many lengthy discussions the engineering solution that Genseed Underground Services Ltd proposed was insertion by pipe ramming, which could be achieved within the hours of a 'Saturday night possession' (or 4 No consecutive possessions) when no trains were running.

With a 36-week lead-in time for a possession and only 4 possessions booked it was absolutely critical that no unforeseen circumstances arose. Volker Stevin Ltd were able to excavate an open span close sheeted launch pit 23 metres long by 8 metres wide with a concrete base reflecting the gradient of the finished pipe. The reception pit was 8 metres by 8 metres. Mr Les Peck of Genseed Underground Services Ltd said that whilst the launch pit was very long it did enable an 18 metre length of pipe to be rammed continuously without the need to stop for any circular welds on site, which would have taken a full shift to complete. Genseed Underground Services Ltd, who own their own GRUNDORAM Koloss hammer, were confident that it was capable of an 18 metre push of 914mm pipe in the expected sandy ground conditions but could not take any chances of failure and so contacted TT UK Ltd to obtain a GRUNDORAM Goliath as a back-up.

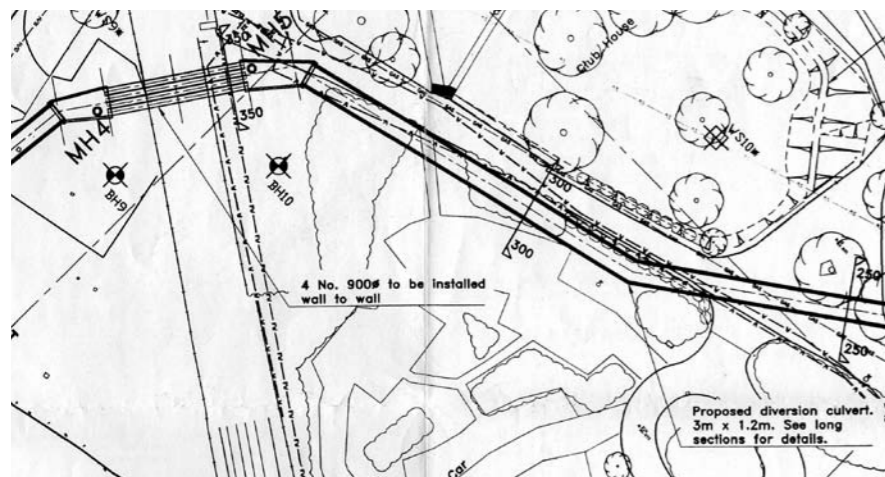
The first tube was installed in 21/4 hours using the GRUNDORAM Koloss on the night of Saturday 1 October. The remainder of the tubes were pushed in using the larger Goliath hammer in 45 to 60 minutes each



Pipe number 3 ready for ramming and awaiting nighttime possession.



Further preparation showing additional soundproofing and uninterrupted Carlisle bound train.



Sketch of rerouted watercourse beneath railway line.



The Newcastle to Carlisle railway is a classical railway route. The timetable above dates back to 1893.

Contractor:	Genseed Underground Services Ltd.
Project:	Hexham Flood Alleviation Scheme
Equipment:	GRUNDORAM Koloss and Goliath
New pipes:	4 x 914 mm OD, wall thickness 14.3 mm
Installation length:	18 m
Launch pit:	23 x 8 m
Cover depth:	2.5 m
Total installation time:	1 working day
Details:	In order to reroute the watercourse of the River Tyne beneath the Newcastle to Carlisle double track 4 pipes each of 914mm OD had to be placed parallel to each with 200mm spacing between each pipe over a length of 18 m.

thus reducing the noise exposure to local residents during the night. The latest working time on any one night was 02.30 hrs Sunday morning.

The works were completed within the stated line and gradient specification to the satisfaction of all parties. ●