

Dolphingstone - Mine Treatment and Piling

Client :
Network Rail

Engineer :
Donaldson Associates

Main Contractor :
BAM Nuttall Ltd

Location :
Near Edinburgh

Date :
2002 - 2003



Network Rail commissioned BAM Ritchies to undertake a ground investigation in an area of old mine workings to 30m depth beneath the main East Coast Main Line on the Edinburgh side of Preston Pans station in Lothian. Early results indicated the presence of significant workings at very shallow depths. As a result, a temporary speed restriction was imposed and a BAM Nuttall/BAM Ritchies joint venture was asked to immediately undertake remedial work.

Working in alliance with Network Rail and our designer, Donaldson Associates, BAM Nuttall/BAM Ritchies undertook further ground investigation, mine treatment, piling, deck slab construction and finally diversion of the track.

Options investigated included drilling and grouting beneath the existing ECML, realigning the track on a temporary diversion or constructing a permanent diversion. The permanent diversion offered best value.

This solution also demanded considerable grouting beneath the route. The principle quantities of BAM Ritchies' work were:

- Meterage of grout hole drilling - 163,210m plus 10,287m in test holes
- Tonnage of grout used - 19,470t plus 216t in test holes

The piles were installed using Symmetrix, leaving the casing in place and with a single GEWI bar as additional reinforcement. The principle quantities of BAM Ritchies' work were:

- Number of piles - 1792
- Meterage of piling - 33,620m
- Pile casing diameter - 244mm
- Pile depths - between 6m and 35m

At the peak of the work, 22 drilling and piling rigs were employed, including rigs specially assembled by BAM Ritchies for the project. The work was progressed on a 24-hour basis. In spite of numerous difficulties, including bands of extremely hard rock (possibly ironstone) and the presence of unknown faults, the work was completed within programme, to a very tight schedule.

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