

Stabilisation transforms former power station site



This large distribution centre was successfully completed to a tight programme (The area to the left is another plot yet to be treated)

Introduction

Sainsbury's has built a reputation for its supermarkets that are always well stocked. To keep their shelves freshly stacked is a massive logistics exercise, requiring vast warehouses such as the Hams Hall complex at Coleshill near Birmingham.

Hams Hall was a classic example of a brownfield site, having originally been a coal-fired power station covering a vast area. Although the ground had been remediated with regard to the old foundations and ground contamination, the site itself as made up of pulverised fuel ash – a waste product from the power station's coal burning days.

Design

The conventional solution would have been disposal of the pfa and the importation of bulk fill and stone. Faced with the prohibitively high cost of this, the construction team investigated more economical approaches.

Geofirma was able to show how substantial savings could be made through soil

stabilisation, without compromising the quality of results. This specialist company was able to draw on previous experience and its own laboratories.

Construction

Time was a major issue and the stabilisation works had to be completed within a tight 12 weeks programme. Geofirma was able to meet this by deploying three complete crews to work on the site simultaneously.

The aim was to treat the pfa on site to provide a stable platform for the large, heavy piling rigs and to mitigate the effects of bad weather.

Geofirma used soil improvement techniques to produce a structural fill material by mixing cement into the pfa. The resulting 90,000 m³ of bulkfill was used mainly under the warehouse building itself. In addition 140,000 m² of the top layer was further treated using a cement stabilised subbase to greatly reduce the need for Type 1 stone for the building slab and external works. This saved approximately 80,000 tonnes of Type 1 and some 4,000 truck movements.





Incorporating the cement into the pulverised fuel ash



Arial view of the site showing stabilisation in progress

After stabilisation the building was piled because of the poor ground conditions underlying the stabilised fill. The stabilised subbase provided a stable platform for the large, heavy piling rigs.

Testing was undertaken throughout the works to ensure that the moisture content, compaction and strength of the treated material complied with the specification. Plate bearing tests were used to determine whether adequate early strength had been achieved to support the piling rigs.

Benefits

The project benefited from:

- Completion of the groundworks within a tight 12 week timetable
- Cost-effective reuse of a brownfield site
- Avoiding the need for importing 80,000 tonnes of Type 1 stone and the associated 4,000 lorry movements
- No delays to piling programme during adverse weather encountered.

The benefits of stabilisation

LOWER COSTS

- Significant savings compared with conventional treatments
- Less expenditure on imported materials
- Reduced disposal costs

ECO-FRIENDLY

- Recycling existing soils conserves natural resources
- Fewer lorry movements save fuel and reduce emissions and impact on the local community
- Re-use of on-site soils reduces disposal to landfill

REDUCED CONTRACT TIME

- Significantly quicker than other site preparation operations
- Stabilisation brings your project back on schedule

For more information visit

www.soilstabilisation.org.uk



The British In-situ Concrete Paving Association

Ref: DS/SS/002

Published 2005

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Britpave acknowledges financial support from The Concrete Centre in the production of this publication.

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Project details

Client:	Sainsbury's
Project duration:	Stabilisation 12 weeks
Main contractor:	Careys Civil Engineering
Soil stabilisation contractor:	Geofirma Soils Engineering
Area stabilised:	140,000 m ²
Soil type:	Power station pulverised fuel ash
Blend:	Portland cement
Specialist plant:	Wirtgen 2500 stabiliser