

Soil stabilisation speeds bypass for Cumbrian village with SSSI



A66, Temple Sowerby, the finished bypass in use

Introduction

The A66 trunk road runs through the village of Temple Sowerby in Cumbria, where they had been waiting 24 years for a bypass. Work began in 2006, and the main contractor, Skanska, brought in Britpave members, Beach Soil Stabilisation as the specialist stabilisation contractor.

Stabilisation was chosen because the 'host' soils had low strengths, and the technique would reduce to a minimum the movement of soils from part of the site on the west of the Eden River to the east end of the site. It also reduced the necessity to take soils off site.

The 5 km route takes the bypass through a Site of Special Scientific Interest (SSSI) and a European Special Area of Conservation (SAC) specifically related to the flood plain of the River Eden, and extreme care was required to minimise the chance of lime and cement contaminating the river.

Design

The stabilisation was planned in two stages. Firstly the existing 'host' soils required conditioning/improving with lime in order

to make them suitable for the embankments for the main line, connectors and slip roads. Then the capping layer was to be strengthened by the addition of cement to the soil already improved by the lime.

The soils on site consisted mainly of sandy gravelly clay, with some Penrith Sand. They had an MCV below 7.5; pre-contract testing established that a minimum of 7.5 was required.

Construction

The excavated soils were placed as required to make the embankments in layers of 300 mm and treated in-situ by the addition of quicklime. This was spread to the specified percentage using a Terragator Spreader, and was mixed into the soil using a Wirtgen WR2500. Wind speed and direction was continuously monitored to avoid lime blowing onto adjacent land.

The target MCV of 8 – 12 was achieved by using 2% lime. Tests before, during and after treatment of each layer confirmed that the required value had been achieved. In addition, Nuclear Density Tests were carried out after compaction of each layer to ensure 95% MDD was reached.

