Hampshire County Council Partners in Innovation (PII)

Demonstration Project 6

North Popley Development

Background

This series of leaflets describes a number of projects demonstrating the technical, environmental and cost benefits that arise from the use of recycled and secondary aggregates in highway works in Hampshire. Working in partnership together, Hampshire County Council, Raynesway Construction Southern and Foster Yeoman adopted sustainable policies for highway maintenance works. A Partners in Innovation project, carried out by TRL and funded by the Department of Trade and Industry, enabled these practices to be captured in a number of demonstration projects. The material diverted from landfill as a result of the partnership is assisting Hampshire County Council with their Public Service Agreement (PSA) target to divert an additional 40,000 tonnes of material from landfill per annum by 2005.

Activity:	Access road for new school on greenfield site
Location:	North Popley, Basingstoke
Application:	Cement bound sub-base, cement bound trench backfill, general fill, cold recycled bitumen bound base
Material:	Chalk, recycled asphalt
Amount used:	1000 m^3 chalk; 300 m^3 asphalt
Date:	May to June 2005
Client:	Hampshire County Council Estate Practices
Contractor:	Mildren Construction Ltd (main contractor) Envirosoil Ltd (stabilisation) Bardon Aggregates (surfacing) Foster Yeoman Limited (cold recycled bitumen bound material)
Designer:	Hampshire County Council Engineering Consultancy
Specification:	Specification for Highway Works and TRL Report 611

Hampshire County Council

ENVIROSOIL (REMEDIATION) LIMITED

YEOMAN

dti engineering CONSULTANCY

BARDON AGGREGATES

TRL

Summary

North Popley is a new, mixed development site near Basingstoke, comprising residential units, a school and sports facilities. The site owners, Hampshire County Council, are carrying out preliminary infrastructure works to provide a spine road and services across the site. Contract 1 of the works entailed constructing 250m of 6.1m wide single carriageway access road and footways for a new secondary school.

The site is underlain by Chalk, and it was decided to stabilise this by the addition of 2% ordinary cement to form cement bound sub-base. The contractor, Envirosoil, treated a 225 mm thickness of Chalk in-situ using rotovating plant (picture on previous page). Cement stabilised Chalk was also used as sub-base for 200m of footway and as backfill in trenches for the drains, but in these instances the Chalk was excavated, treated ex-situ and compacted into place. The Chalk above sub-base level was excavated and reused as general fill. In all, over 1,000 m^3 of Chalk that would otherwise have been disposed to landfill and replaced with imported aggregates was retained on site.

The asphalt pavements for the access roads were constructed using a 250 mm layer of cold recycled bitumen bound material with foamed bitumen (Foamix®) (picture below). As Foamix® is laid cold, it results in energy savings compared with conventional hot asphalt. The recycled asphalt came from maintenance works on the A325 at Alice Holt. The Foamix® was overlain with a 55mm binder course and a 45 mm hot asphalt surface course. A total of 300 m^3 of Foamix® was used in the access road.

Technical Benefits

- The reuse of materials in-situ minimised transport and material costs
- The use of Foamix® reduced energy costs
- The recycled materials performed as well as primary materials

Environmental Benefits

- Reduction in use of primary aggregates.
- Reduction in waste being disposed to landfill within the county
- Surplus asphalt planings from another site were successfully recycled
- Reduction in lorry movements and energy

Benefits to Local Authorities

The use of recycled aggregates in this project had double benefits for Hampshire County Council. It contributed to targets for diversion of materials from landfill and also led to cost and energy savings compared to conventional methods. The use of in-situ stabilisation significantly reduced lorry movements and associated disruption on the narrow local access roads. Having been shown to be successful on this small preliminary contract, stabilisation and Foamix® can be used on a much larger scale on the spine road for the whole North Popley Development. Recycling had direct tangible benefits for the local authority as well as broader environmental and technical benefits.