

Nypave FX 20 is a hard paving grade bitumen specially developed for use in high modulus asphalt for example EME Class 2; this binder complies with specification EN 13924 and the Nynas sales specifications.

SITE NAME:	A9 AT CARRBRIDGE, SCOTLAND
CLIENT:	Transport Scotland
AREA NETWORK MANAGER:	TransServe
SURFACING CONTRACTOR:	RJ McLeod
ASPHALT PRODUCER:	Bardon Scotland
DATE:	March - May 2009

Requirements

Environmentally sustainable techniques and long lasting materials were required for a road reconstruction contract on the A9 at Carrbridge near Inverness. The two lane single carriageway originally featured a lean mix concrete base. Work had to be carried out over a distance of 1800m and included the construction of a new third lane to allow overtaking.

Solution

A decision to opt for 'crack and seat' of the lean mix base was taken early on; effectively leaving the concrete in situ rather than breaking it up and disposing of it off site. This saved around 300t of CO₂ being emitted into the atmosphere. The now 'flexible' course was topped with an EME2 asphalt concrete base/binder of high durability and above that is a stone mastic asphalt thin surfacing of (for Britain) unusual density.

Details

The project's green credentials are substantial. Crack and seat means that no concrete is being removed from site: it is merely being re-used, in situ, in a different way. Planings from the original asphalt overlay are going into forestry roads nearby.

Crack and seat involves the careful use of a wheeled guillotine breaker which travels the slab to be treated, dropping a 5.5t weight at (say) 300mm intervals to induce micro cracking within



the concrete. The micro cracks subsequently act to take up thermal and traffic movement, allowing the concrete to become structurally part of a flexible composite pavement. The concrete is left, to become a useful contributor to the structure, instead of being wasted.

But it is the materials forming the new carriageway that should provide the best overall benefits in terms of sustainability. They are of high quality and are intended to provide long life with minimum interventions. They include the French developed Enrobé à Module Élevé. Described simply, EME2 technology relies on smaller nominal size aggregates and high volumes of very stiff bitumen to produce an homogeneous mix that is less likely to segregate, easily compacted and of low void content.

Nypave FX20

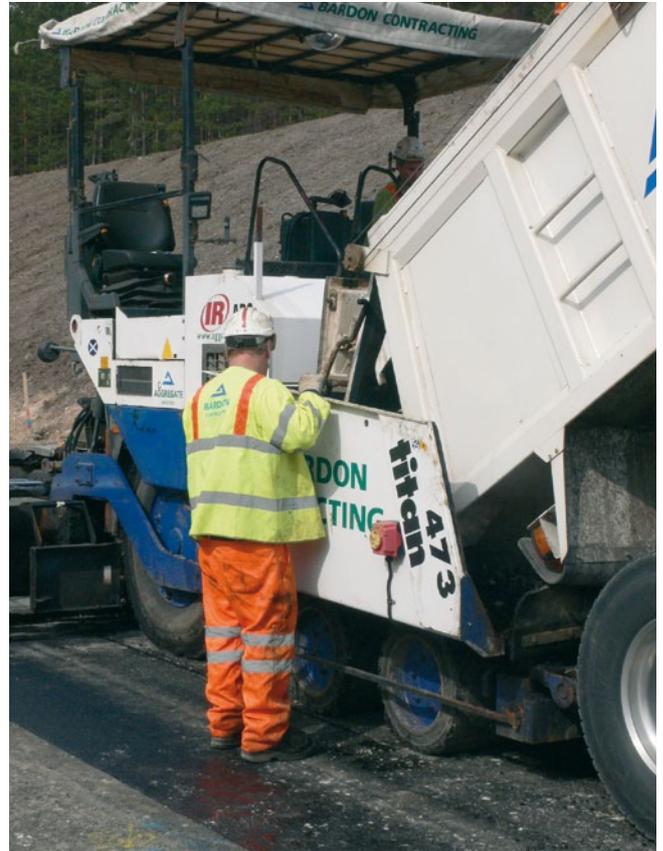
HOT MIX ASPHALT APPLICATIONS

EME2 has been used with success in Scotland. An important requirement of EME2 asphalt for a particular job is that its mix design has to relate to the aggregate actually being used: the design process is an onerous one involving exacting performance parameters. The upside is that all the effort results in a dense and durable material.

As with Carrbridge's stone mastic asphalt thin surfacing, supply of the binder for the EME2 is by Nynas UK which also provided technical assistance with mix design.

"The Carrbridge base/binder contains our Nypave FX20 which is purpose engineered for EME2 applications," says Nynas asphalt engineering support manager Jukka Laitinen. "We have good capacity to assist in the mix design of EME2 and confidence in the technology resulting in very long life pavements, provided it is laid on a good stable base."

The contract was valued at £2.7M. The road's new thin surfacing is 30mm thick, its EME2 base/binder is 140mm. The asphalt is laid on 200mm of original lean mix concrete which has been cracked and sealed to make it a structural part of the pavement.



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