

CEMEX

Elevating the pace of asphalt surfacing

Minimising disruption to traffic is a high priority for the Highways Agency and its contractors, so CEMEX's new time saving asphalt product is proving a winner.

Disruption to traffic from conventional full depth carriageway reconstruction is no longer an option on England's busiest motorways. More innovative solutions have been called for and CEMEX has responded to the challenge by developing Viadeck – a proprietary asphalt that dramatically reduces overall project surfacing time.

Full depth reconstruction previously involved planing out and replacing carriageway in up to three separate layers,

because conventional asphalt can be laid in layers typically no more than 100mm thick. It could take anything up to 48 hours for a short stretch of carriageway to be replaced, as each layer had to cool before the next could be laid on top.

Viadeck can be laid in a single layer up to 120mm thick and at temperatures up to 20°C lower than traditional asphalt. The two factors combine to make it possible to completely reconstruct a section of motorway during a single seven-hour overnight possession.

The product was initially developed in response to the needs of one of CEMEX's customers, Amey Mouchel, which is Managing Agent Contractor for the Highways Agency's Area 9 in the West Midlands. That contract includes sections of the M5, M6 and M42, where traffic flows regularly exceed 130,000 vehicles per day. Some sections of carriageway had deteriorated to such a degree that simple surface course replacement was no longer the answer. Deeper intervention was required, but closing entire lanes to daytime traffic was out of the question.

According to CEMEX, "a single layer was needed with all the attributes and properties that two or three conventional, high quality layers normally provide", such as resistance to rutting and skidding. Given that the material was to be laid up to 120mm thick, it may seem unusual that the company started the development process by looking at its existing range of thin surfacing products. However, the need for a material that avoids early life rutting and

the knowledge that thin surfacings are often laid up to 50mm thick, made this the starting point for what eventually became Viadeck.

Product development and testing took place at CEMEX's National Technical Centre in Warwickshire, with the company working very closely with its client to make sure the product not only worked physically but was also cost effective. The result is a dense stone mastic asphalt made with high PSV aggregate and polymer modified bitumen binder, which combines all the texture and rutting properties of a surface course with the structural properties of road base.

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Viadeck has now been used successfully on two carriageway reconstruction schemes: Bromford Viaduct on the M6 and the Ray Hall Viaduct elevated M5/M6 junction. In both projects, the entire existing carriageway construction had to be planed off, the bridge deck inspected and new waterproofing applied before the Viadeck could be laid. Then the white lines and road markings had to be reapplied before the road could reopen to traffic – all during one overnight possession.

On both occasions, the contractor was given access to the motorway at 10.00pm and the carriageway had to be completely

Ray Hall Viaduct on the M5/M6 junction was resurfaced and then reopened in one single overnight carriageway possession





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free of traffic management (TM) by 6.00am the next morning. From the start, after the TM measures had been put in place, the old asphalt planed off and the waterproofing done, there was just three hours for the paving process. It was essential that the material went down in just one layer and that it had cooled in time for the white lines to go on.

Before the work took place, CEMEX undertook full scale trials including checks for installation, permeability, rate of cooling

and texture, to ensure the material would meet all requirements and work with the waterproofing system and bond coat to be used on the concrete bridge decks.

On both viaducts, the waterproofing system applied was Stirling Lloyd's 'Eliminator' membrane, which was followed by the application of SA1030; a proprietary hot melt adhesive bond coat based on a polymer modified bitumen.

The SA1030 provides a bond between the waterproofing membrane and the road

construction, and is hand applied at a warm temperature then allowed to cool. The adhesive quality of SA1030 is activated by heat when the asphalt is laid on top, creating a firm bond with the waterproofing. When CEMEX developed its cooler Viadeck, it had to make sure that there would still be sufficient heat to create the adhesive bond that enables the two layers to act homogeneously – hence the full scale trials.

Viadeck has been designed to be just as applicable for carriageway replacement on non-elevated sections of road, where the support is provided by sub-base. It has obvious benefits on motorways and trunk roads, where daytime lane closures are now unacceptable, but CEMEX also believes there is a big market throughout the UK road network.

Local authorities, for example, might want to reconstruct a road by putting two or three layers of asphalt back, but on a busy A-road or city centre this would cause extreme disruption if carriageway had to be closed during the day. A short, night time closure to replace road construction in one quick hit makes commercial sense and makes life far easier for motorists.



Viadeck has been designed for carriageway replacement where daytime closures are unacceptable

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