

RMC

Development of an innovative edge repair system is RMC's response to a major carriageway maintenance problem made all the more acute for highway authorities by recent heavy rain and flooding.

Sustainable solution for winter highway headache

Highway authorities keen to increase the durability of carriageway edge repairs are being offered a new product developed exactly for the purpose by RMC. This latest innovative asphalt material is RMC's answer to a problem that has reached a critical point in the wake of Britain's wettest winter since records began in 1766.

The difficulty facing authorities is how to make lasting repairs to edges of rural and minor roads. The haunches of such roads are commonly unprotected. They are vulnerable to being weakened and undermined by surface water run off, ponding or flowing beyond the road edge. Conventional repair methods are proving inadequate in many cases, particularly following incidents of flooding and subsequent freezing.

RMC's new haunch repair material has been designed to provide the solution; a sustainable and durable technique for maintaining road edges.

"Failure of minor roads is a chronic problem that has been made worse in many areas by recent flood

events," says RMC Divisional Technical Manager Gordon Lemon. "We are now faced with a general deterioration of the rural minor road network caused by the softening of road foundations, and in particular, the erosion of road edges."

Lemon says haunches of minor roads fail mainly because heavy traffic often leaves the paved surface to allow vehicles to pass in a restricted carriageway width. Rain run off collected in the resulting rut causes softening of the vulnerable sub base and road foundation.

"The material has also been designed to perform as a sub base, road base and binder course replacement layer and can therefore be placed in one layer in the excavated road edge."

Gordon Lemon

"General minor road reconstruction can of course be carried out using traditional methods and with the use of carriageway material recycling (see box), which comes into its own for these conditions. However, a great deal of maintenance on minor roads is dealt with by repairing the edges coupled with patching and surface treatment of the remainder."

The traditional method of edge replacement involves constructing a trench filled with carefully compacted layers to make up a repair consisting of conventional road construction materials.

"This has worked well in some instances, but erosion still occurs on the unrestrained road edge allowing water inundation to damage the conventional road construction. Failure following these conditions is often inevitable and flooding amplifies the problem," says Lemon.

RMC's solution is a bespoke asphalt mix designed to provide the exact properties of compactibility, impermeability and abrasion resistance. All these properties are of crucial importance.

A high state of compaction is needed to achieve durability and necessary load bearing capacity. Consideration of the permeability of the haunch repair is equally important for preventing both the formation of a water stop within the road construction and the migration of water from the



RMC's new mobile cold mix asphalt plant allows asphalt to be recycled on site using foamed bitumen technology.

ANOTHER new development from RMC allows on-site production of 100% recycled asphalt using foamed bitumen technology. This is now possible using RMC's new mobile cold mix asphalt plant.

Environmental, technical and economical benefits of recycling asphalt for road maintenance purposes are becoming more apparent and demand for capacity to process these materials is increasing. RMC's new cold mix plant has been designed to provide a highly flexible and cost effective means of processing road planings for reuse.

The resulting end products can be used as sub base, road base and base course material in a range of applications and stored for up to six weeks.

"The whole unit consists of the mixing plant, a bitumen tanker, wheeled loader and a forklift truck. It is completely self contained and supported and can be on site and operational in a matter of hours," says RMC Special Projects Manager Martin Hills.

"To provide a complete road recycling solution, the cold mix plant can be used in conjunction with RMC's mobile asphalt crushing plant. This has been designed specifically for crushing used and waste asphalt and preparing the necessary feed stock for the cold mix plant if required.

"Both units can operate independently, but when used in tandem, they present a highly flexible and innovative approach to asphalt recycling."

1. Edges of minor rural roads are vulnerable to being damaged by surface water run off, ponding or flowing in ruts beyond the road edge.



2. Conventional repair methods often prove inadequate due to erosion and softening of the material used.

3. RMC's new haunch repair material has been designed to provide a sustainable and durable technique for maintaining road edges.



existing formation into the new edge material.

Abrasion resistance, says Lemon, is essential for ensuring the unrestrained road edge does not break up under the abrasive action of heavy vehicles running beyond the full width of the carriageway.

"The newly formulated material fulfills all of these criteria through the adoption of a gap graded mastic bound mixture with a high bitumen content in relation to coarse aggregate content. A conventional

penetration grade bitumen is used, but by employing a unique mixing sequence, a durable aggregate matrix is produced," Lemon says.

"The material has also been designed to perform as a sub base, road base and binder course replacement layer and can therefore be placed in one layer in the excavated road edge. Required compaction can then be achieved with around three passes of a vibrating plate or small roller, depending

on the width of the excavation and haunch repair."

RMC's new road edge maintenance solution is completed with application of a wearing course layer. According to Lemon, RMC is providing road engineers with an additional and sustainable road maintenance technique developed specifically to solve what has become a continuous maintenance problem.

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