

RMC

Careful aggregate selection plus rigorous quality assurance are crucial for thin surfacing systems, says RMC Aggregates' Divisional Technical Manager Gordon Lemon in the second part of his thin layer review.*

"The benefits of pursuing a thorough design and approval procedure, from aggregate source to finished product, are significant."

Gordon Lemon

particularly the case in London and the home counties.

Demand for premium aggregate for thin surfacing materials has increased substantially because the complete layer is largely composed of stone. It is interesting to note the location of quarries being used to source these high quality aggregates for different areas of usage (see map).

For instance, London, East Anglia and the South East are commonly supplied by road, rail and sea from quarries in Scotland, Shetland, South Wales, France, Northern Ireland and Eire. Premium aggregates for the North West are primarily sourced from north Lancashire, Cumbria, South Wales and Eire, and the North East draws its materials principally from Cumbria, north Lancashire, the East Midlands and Scotland.

Generally, there is an increasing need for more premium aggregate, often supplied by necessity from great distances.

Aggregate for thin surfacing has to be both robust and of high PSV. These two attributes are not always compatible because high PSV aggregates tend to be gritstones, which are argillaceous (composed of fine grains) and so do not always exhibit the durability we would like.

However, if the aggregate meets the general requirement of having a soundness of greater than 80%, absorption of less than 2%, and abrasion index of less than 10% and reasonably low flakiness, then the required high performance can be assured.

Accurate knowledge of the aggregate's relative density is essential to enable examination of volumetrics during the asphalt mix design. Aggregate grading is also very important, for achieving the texture depth required on the UK road network.

Gap grading is needed, so thin surfacing mixtures contain a high proportion of one nominal size aggregate. For example, 14mm nominal size Viatex contains some 48% of single sized coarse aggregate.

Particular attention has to be paid to aggregate packing and this can only be done by considering volumes of the various sizes of aggregates and

Quality the key to thin surfacings

"I am frequently asked about thin surfacing design and which factors influence the decision making process with regard to aggregate selection, grading, and texture achievement and retention. How thin surfacings differ from conventional asphalts is also a common query.

Last time out in Modern Asphalts I stated that Viatex was the only thin surfacing system that I could describe with first hand knowledge. This is still the case, so I will continue my review of thin surfacing design in the context of Viatex.

Aggregate demand, supply and selection has changed considerably with the widespread uptake of thin surfacing. There are about 360 coating plants in the UK and I estimate that around half of them produce a thin surfacing of one type or another.

When these plants previously manufactured rolled asphalt wearing course, a high proportion of the coarse aggregate and certainly most, if not all, of the fine aggregate was often obtained locally. This was

confirming their suitability for the surfacing mixture.

In practice, we achieve this by preparing a laboratory roller compacted Viatex slab. A successful slab will display the necessary texture, compaction and designed air voids content of less than 4%.

Texture retention and performance parameters are assessed using UK wheel tracking test equipment. These assessment measures may appear excessive for a relatively simple three component mixture. But in our opinion, this test is entirely necessary as it enables comparison between predicted and measured performance.

Wheel tracking testing also aids best possible use of aggregate sources available, thus ensuring that criteria described on the Viatex HAPAS (Highways Authorities Product Approval Scheme) certificate is constantly achieved.

For any product lacking a track record of in-service performance, a different approach has to be taken to ensure the best possible chance of long life. This has been achieved through the adoption of a fully prescribed Quality Assurance (QA) system for the manufacture and laying of Viatex.

The QA system includes the ISO 9000 Sector 14 Scheme for the manufacture of asphalt, but with additional specific requirements for production of the Viatex product. It is particularly important that the supply, laying and compaction processes are covered by a similar QA scheme, and to achieve this, a system of surfacing contractor and laying gang approvals has been introduced.


Typical assessment of a laying operation involves the issuing of a method statement and detailed installation manual, and training and tool box talks for operators and supervisors as well as examination of operational sites. This may seem over elaborate, but it is extremely gratifying to witness how enthusiastically laying operators have responded to such reviews of their operations.


The benefits of pursuing a thorough design and approval procedure, from aggregate source to finished product, are significant. Quality and performance of the thin surfacing is assured and consequent levels of confidence provide a source of comfort for supplier and customer.

In developing this procedure, RMC has built an improved understanding of high PSV aggregate sources and their contribution to the sustained level of performance that Viatex offers as a thin surfacing

* Part 1 of Gordon Lemon's thin layer review appeared in Modern Asphalts, issue 9.


email hotline: info@modernasphalts.com






1

4: RMC Divisional Technical Manager Gordon Lemon



2



3



4

2: Most areas of Britain are being supplied by more than one source of premium aggregate.

3: High performance can be assured if aggregate selection meets general quality criteria.

4: Greater demand for high quality aggregate has led to long distance distribution using all methods of transport.