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HIGHWAYS

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Most engineers express surprise when advised that skid resistance has fallen below investigatory level on a 1-2 year old wearing course containing high psv chippings. But there is a cost effective remedy

Recycling the investment

Research shows that potential life in terms of skidding resistance of wearing courses may be as low as one year at high stress sites. Added expenditure needs to be committed to rectify this problem but there is an alternative.

Such problem sites are generally under high stress. High volumes of vehicles, particularly hgvs, induce polishing by braking and/or manoeuvring. Corrective measures need to be implemented quickly and, even worse in these "budget-stretched" times, funded.

Roadworks at such high stress sites generally cause severe disruption. They usually involve high profile traffic management, possibly difficult diversions, with enforced night-time or very restricted daytime working. The net effect is a dramatic increase in traffic management costs and in overall unit rates.

A Klarwe K190 retexturing machine in action

Observations

The Transport Research Laboratory (TRL) suggests that potential life in terms of skidding resistance, even with the highest psv premium hardstone aggregates, may be as low as 1 year at high stress sites.

With growing traffic volumes and vehicle weights, resurfacing with similarly specified aggregates will at best give a similar result.

Hot rolled asphalt (Hra) has stood the test of time well. Competitive pricing and quality surfacing is almost guaranteed. Most UK engineers "feel comfortable" with Hra.

They do not have to rely on specialist contractors offering resin/bauxite high friction dressings with secret-recipe resins, uncertain life expectancy and short term warranties.

But the majority of sites exhibiting low skid resistance and requiring treatment demand cost-effective alternative solutions particularly where hfd funding is unlikely.

Considerations

Consider a new hra wearing course, with 68 psv pre-coated chippings, on a heavily trafficked road with sound construction and adequate residual life.

If the site ends at traffic lights on a major junction, high traffic volumes and severe braking then create severe stress, making the use of surface dressing inadvisable.

The wearing course should achieve its

Each K190 Retexturing Machine:

- Produces a consistent surface finish, even where deformation is at the limit of acceptable safety
- Treats between 30cms and 1.9m wide
- Gives forward speeds of 4-12m per minute
- Accommodates surface changes and adjusts for width and/or profile changes instantly
- Complete control ensures minimal material removal facilitating repeat treatments

designed life, but the skidding resistance of the wearing course may fail sooner.

The degree of stress and the specific qualities of the aggregate determine the rapidity of the polishing.

The distance from the traffic lights to the braking/manoeuvring zone determines the length of the polished area.

The time it takes newly laid aggregates to polish to investigatory level (the polishing interval), is a fixed function of that particular aggregate, under those particular site stresses.

Any new aggregates with the same qualities will polish within the same polishing interval at that particular site.

As traffic volumes and vehicle weights grow, the polishing interval will reduce proportionally.

A solution?

Planing and replacing the wearing course at such sites will solve the problem, but skidding resistance will probably be worse than on the original wearing course for some 3-6 months, until the bitumen film has worn from the new "pre-coats". If the only problem was SCRIM identifying polished aggregates – why replace a sound wearing course in the first place?

Recycling the aggregates

A single pass with a Klaruw K190 Anti-Skid Retexturing Machine is claimed to instantly restore the optimum skidding resistance for that particular aggregate.

Texture depth is also improved.

Successive re-treatments will achieve similar results and the integrity of the wearing course should remain virtually unaffected.

In an effective pavement management system scenario, several retexturing treatments should be achievable on well supported aggregates. This will postpone the inevitable application of new materials.

Skidding resistance can therefore be maintained above investigatory level to ensure safety, reduce accidents and optimise the original investment in the wearing course until that wearing course fails due to other reasons.

Even with a polishing interval of just one year, some five years of sustained skidding resistance should be achievable. ●

Case Study

Perth and Kinross Council – Roads, Transport and Architectural Services.

In light of severe economic restraints it is important that councils target their limited resources to the best effect. To this end, Perth and Kinross Council has been carrying out surveys to assess the condition of its road network. One aspect of this is skid resistance.

Skid resistance treatments have in the past been primarily targeted at accident problem sites. However, the council has recognised the desirability to be able to economically determine skid resistance and treat long sections of its road network where skid resistance values fall below investigatory levels. The council appreciates the economic benefits that would accrue from treated sections that are maintained at or above investigatory levels for a guaranteed length of time.

Klaruw's Test, Treat and Maintain package appears to meet the above desirable features and offers a cost-effective method of determining and maintaining the skid resistance of the road network. Past experience of the Klaruw retexturing treatment convinced the council to trial the package.

Jim Irons, director of roads, transport and architectural services, said: "Retexturing has demonstrated clear benefits in terms of economy and is environmentally friendly compared to alternative processes. It also has the distinct advantage of not being as weather dependent as other processes which is a considerable advantage with the Scottish climate.

"This project illustrates the council's commitment to carry out road maintenance in both a cost-effective and environmentally friendly manner."

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