THE BLACKTOPPER'S RAG

How Cracked Are You?

Index

Crack Sealing

The Big Problem - ***Water***: Like a leak in your roof, once rain gets through the roof all kinds of problems start to happen. Similarly, whenever the pavement "seal" is broken, problems soon develop and at an accelerated rate. Since a crack allows rain water to get into the main structure of the roadway (i.e. base) the road becomes softened, which causes the roadway to deteriorate into rutting, more cracking, and potholes are born, especially if the VPD (vehicles per day) flow rate is high, or has heavy truck traffic, or worse, both.

Remember, a pothole exists only because the original crack went unsealed, so … seal the cracks!

COOPER EQUIPMENT CO.

This Cooper Equipment publication is dedicated to informing you of the "latest and greatest" in road building equipment, materials, safety and methodologies.

210- 657-5151

Types of Cracks

Longitudinal Cracks: These cracks run long-wise (parallel) with the road.

Cause: Heavy loads and thermal stress. Often these are seen along the pavement joints.

Transverse Cracks: These cracks go across (perpendicular to) the roadway.

Cause: Usually thermal stress. Cold temperatures cause contraction, which creates tensile stress levels greater than the pavement strength at that crack points.

Alligator (Fatigue) Cracks: These are the odd semi-rectangular pattern of cracks.

Cause: Weak base. [It is normally too late to use crack sealing to repair this problem.]

Types of Cracks Continued...

Block Cracks: These are cracks that connect to one another and form large sections of blocks along the pavement.

Cause: Thermal stress. Contraction from cold temperatures, especially if the road is more brittle than it should, will form these cracks.

Reflection Cracks: Pavement overlays that are atop older cracks or loose joints will eventually form cracks, too.

Cause: Sub-layer cracks and joints. [The above is a crack along the old paving joint .]

Edge Cracks: Heavy cracking and usually rutting near or along the edge of the pavement.

Cause: Weak edge often due to water absorption from shoulder or inadequate base.

Slippage Cracks: The crescent-shaped cracks, often with wrinkles, normally seen near intersections.

Cause: Usually vehicle braking overloads the shearing strength of the bond between the top two layers. A weak tack or prime coat

Commercial Half-Page Interlude

Simple digital display temperature control system that is easily replaced due to its modular design. Air compressor units are available. Over 75 models to choose from.

Cooper Cimline Service School

Models: Magma 110/230/410
Date: February 2nd, 2011
Time: 8am to 5 pm
Place: Cooper Equipment Training Center
Cost: $ 100

Call for reservation; limited space available

Crack Sealing Info.:

Pre-sealing preparation: Cleaning the crack prior to sealing is very necessary to assure the proper bonding action takes place. Usually this is accomplished with a typical 100 psi air compressor and a simple blow wand. If the cracks are wet or moist then a heat lance can be used, which includes an air compressor and a propane system that can heat the blast air to 2,000 F, supposedly. This dries the crack allowing the proper bonding action to take place.

Routing the crack is sometimes used to provide superior performance of the seal. The crack walls are stronger since the original walls may have some deterioration and the crack will be wider allowing for the viscous crackseal material to fill more effectively. Of course, this requires a router, operator, fuel and time, which adds to the cost of the crackseal operation.

Crack Size for Sealing: If a router is not used, the cracks need to be about a quarter inch or more in width to allow the hot (or cold) crackseal material to flow into the crack, otherwise only the surface is sealed and road traffic will quickly wear through this seal leaving the original crack exposed, once again, to water intrusion.

For smaller crack sections of roadway, other sealing methods are available including: fog seal, micro-seal, slurry seal, scrub seal, chip seal, and a few others. [Fodder for another newsletter, no doubt.]

Material Selection:

Your material supplier can give you the best advice on which "flavor" is best, but there are two basic types in the hot application category: sticky and not-so-sticky. Polymers and other ingredients are added to the basic product to cause the hot material to set-up harder and remain less sticky, which is preferred in areas where people might be stepping on it and getting it on their shoes and elsewhere. The stickier choice, however, is the more common choice for roadways since it is much less expensive and rarely is much of a nuisance issue since there is such little .

Cold pour product require no expensive cracksealing equipment, whereas trailer units for hot pouring requiring up to 400F are often over $ 50,000. The hot pour method, however, has demonstrated superior performance, though I know of at least one customer that is pleased with cold pour.

Another alternative is to use direct-fire material that can be heated with equipment using conventional flame-powered flues without over-cooking it. This material, unfortunately, is more expensive as opposed to the normal material that is heated with a conventional double box design that uses heat transfer fluid as a thermal buffer layer to prevent material from over-cooking. This double tank heating process not only eliminates product deterioration but greatly reduces nozzle clogging and pump wear.]

Tip: Reheating: Many have asked me if it is a problem to reheat material already in the tank. As long as the same material is not reheated more than two or three times, it should not be a problem

Equipment Suppliers:

Cimline and Crafco are the two dominant manufacturers of hot pour crack sealers.

Crackseal Material: [The first two names are the better known, at least by me.]

Deery: http://www.deeryamerican.com/

Crafco: http://www.crafco.com/Sealant/Sealant.htm

W. R. Meadows: http://www.wrmeadows.com/wrmh0007.htm

Nuvo: http://www.nuvosealants.com/

Vance Brothers: http://www.vancebrothers.com/products-sealers-crack.html

Asphalt Kingdom: http://store.asphaltkingdom.com/Hot-Pour-Crack-Fill-p/akcf50.htm

Further Reading:

TEEX: http://www.teex.com/eu/documents/08_3-4.pdf

Cal Trans: http://www.dot.ca.gov/hq/maint/RPMTAGChapter4-JointResealingandCrackSealing.pdf

http://www.asphaltinstitute.org/public/engineering/Maintenance_Rehab/Distress_Summary.asp

Special thanks to Mike Little with Road Products in Atlanta, GA.