Targeted Overlay Pavement Solutions (TOPS)

Targeted overlays match treatments to high-priority, high-need locations.

U.S. Department of Transportation
Federal Highway Administration

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Crack Attenuating Mix

Crack attenuating mix (CAM) was originally designed by the Texas Department of Transportation (TxDOT) in 2007. CAM is a fine-graded mixture with a high-binder content that is placed as an interlayer between the existing pavement and a thin asphalt layer to reduce the reflective cracking without jeopardizing rutting resistance. Although CAM typically serves as an interlayer, it has also been placed as a 0.5 to 1-inch thick mat surface course. CAM design relies on the traditional volumetric approach and performance tests (Hamburg Wheel Tracking and Texas Overlay Test).

Even though CAM evolved from the rich bottom layer mixes and both mitigate reflective cracking, CAM is rut resistant, and therefore can be used as a final riding surface. As a surface course, CAM not only meets the structural specifications (resist cracking and rutting), it should also provide enough skid resistance (functional requirement), particularly on high-volume roads with high-speed limits. As such, the use of quality aggregate (high durability and friction) is suggested to alleviate the lack of surface macrotexture due to being fine-graded. Using quality aggregate, as well as around 7 percent polymer-modified binder results in an expensive mix; however, it costs less per square yard because CAM is applied in thin layers.

CAM has been used extensively in the Houston and Dallas districts on top of old concrete pavements. TxDOT reported having successfully used CAM on U.S., interstate, and State highways, as well as farm-to-market roadways, loops, and business highways as both a surface course and an interlayer. It was reported that rutting, in the form of shoving and shear failure, is the predominant distress for surface CAMs, particularly at intersections under the action of heavy stop-and-go traffic.

Crack attenuating mix on Houston's IH-69 project.
Source: Tom Scullion, Texas A&M Transportation Institute

There are several State DOTs including Arizona, California, Florida, Massachusetts, Nevada, Utah, Iowa, and Minnesota that specify the use of specialty mixtures, referred to as stress relief course, to mitigate reflective cracking in asphalt overlays. These mixtures are not necessarily rut-resistant and therefore, they are placed as interlayer mixtures. Cost analysis shows that even though such mixtures have a higher initial cost of materials, the agency and user life cycle costs per lane mile are lower and result in an average 20 percent cost savings.

Visit our website for more information on Targeted Overlay Pavement Solutions.

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