An Official Publication of the Rubber Pavements Association

Asphalt-Rubber Safety

A safer surface for you and your family to drive on.

As the road infrastructure ages, many concrete pavements are still very serviceable, but exhibit very poor ride quality and unsafe driving conditions. Asphalt-rubber surfaces are selected more frequently as the best choice to offer the driver better traction or skid resistance, better visibility in wet weather, reduced hydroplaning and most of all, less traffic accidents that result in injury.

WHICH SURFACE DO YOU WANT YOUR FAMILY DRIVING ON?

Asphalt-rubber mixes provide a stronger bond to old concrete pavements and provide greater water drainage from the driving surface during wet weather. These mixes are often called "open graded" (OGFC) or "permeable" (PFC) friction courses.

The photo above: I-35 in San Antonio, A-R on left and old concrete on right. The photo below shows an open surface in the far left lane where the water is not present at the tire pavement contact compared to a dense mix used in the rest of the lanes during a highway widening and resurfacing project.

Open mixes remove the water from the surface. Adding granulated tire rubber to these open mixes provides better skid resistance and durability. The increased visibility and skid resistance, reduced splash and spray and better ride can lessen the occurrence of accidents.

Consider a case study from Texas.

Reduced Accidents - In 2002, an aged concrete pavement on IH 35 in San Antonio, Texas needed to be rehabilitated. Grinding the surface was not an option because the limestone aggregate was prone to polishing and would become slick again in a very short time. Asphalt-rubber was selected because of its proven durability in thin applications over concrete. The weather conditions and traffic accident data were analyzed in a twelve-month period just before and after the Asphalt-Rubber Permeable Friction Course overlay. The text boxes below summarize the results, **less accidents**:

Before Rubber Overlay
July 2001-June 2002
Total Precipitation: 31.78 inches
Major Accidents: 85
Major Accidents on Days with Precipitation: 39

After Rubber Overlay
Nov 2002-Oct 2003
Total Precipitation: 32.63 inches
Major Accidents: 48
Major Accidents on Days with Precipitation: 19

Traffic Accident data provided by the San Antonio Police Department (SAPD). Climate data obtained from National Oceanographic and Atmospheric Administration.

IT'S GOOD TO STOP SHORT

Traffic engineers regularly measure the ability of vehicles to stop without skidding on the pavements they manage within their system. One of the measuring devices used to measure friction is called a "Mu Meter". This device is a small trailer that has an extra wheel attached that can be braked while the rest of the wheels on the trailer are not. Sensors on the braked wheel measure the friction provided by

the road surface underneath. The higher the friction value the better the road. The US Air Force provides a simple rating scale for the Mu Meter:

Good	Fair	Poor
50 and Above	35-50	34 and Below
US Air Force Pavement Engineering Assessment Standards April, 2004		

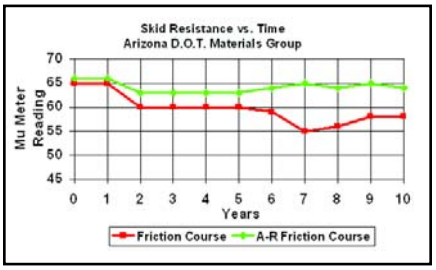
Good Skid Resistance Measured on similar projects even after ten years or more! The Arizona Department of Transportation (ADOT) has been using rubber in friction courses since the late 1980s. Many of the old rubber surfaces are still performing today. The table below provides a look at some of the oldest rubber projects on top of concrete and shows the excellent skid resistance even after 10 to 14 years, all are rated Good.

Project location and Year Rubber Resurfacing Was Completed	Mu Meter Before Overlay	Mu Meter After Overlay
Flagstaff, I-40 (1990)	38	65 (10 Years)
Phoenix, I-17 (1990)	43	57 (12 years)
Tucson, I-19 (1988)	38	64 (14 Years)

*"Rehabilitation of PCCP with thin AR OGFC", Carlson DD ASU 2002

Go From a Slick Surface to a "Stick" Surface with Asphalt-Rubber!

ADOT has compared the performance of asphalt-rubber friction courses to the performance of friction courses without rubber and provided system wide averages. As can be seen in the chart to the left, new friction courses, regardless of the material will have good skid numbers at about 65 right after construction. The asphalt-rubber friction courses stay "good" for longer whereas the regular materials wear out dropping below 60 after six years.



G. Way, "OGFC Meets CRM: Where the Rubber Meets the Rubber 15 Years of Durable Success", AR2003, Brasilia, Brazil, Dec. 2003.

A dense graded surface is seen in the background during a light rain, the rubber is in the foreground, photo courtesy of Tenn. DOT.

It's true; asphalt-rubber can provide a safer surface for the driving public. Ask if asphalt-rubber is used in your community. If not, ask why.

Reduce hydroplaning, splash and spray, increase visibility and striping contrast, and reduce accidents by using asphalt-rubber surfaces!

Which surface would you rather drive on?

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