

by Bill Foley

Shoulder-Grinding Saves Big Bucks

Missouri uses a grader attachment to avoid a high-cost shoulder replacement job.

Missouri's Department of Transportation saved hundreds of thousands of dollars in shoulder renovation last year by using the Maddock RotoGrader to repair more than 10 miles of hard shoulder that would otherwise have had to be replaced.

The problem was an 11.4-mile stretch of four-lane highway outside of Hannibal, Missouri. The shoulder was composed of a mix of cement, sand, and dirt originally used to stabilize the shoulder when the road was built in the 1970s. The composition was inconsistent. Over the years, it had eroded irregularly and been patched with materials ranging from gravel to cold patch to hot mix.

Worst of all, the shoulder had raised 2 to 3 inches above the highway surface, inhibiting drainage.

The shoulder had to be rehabilitated or replaced to restore drainage, both to enhance pavement life and to remove the potential for hydroplaning problems in wet weather.

Steven "Butch" Mundle, Maintenance Superintendent II for MO-DOT District 3, tried to blade the shoulder with a standard motor grader, but the material was too hard to work, even with a special serrated cutting edge. The crew also tried scarifying the shoulder, but the material came up in large chunks. Using traditional methods, the agency would have been forced to haul off the spoil, truck in new fill, then cover it with a 3-inch lift of hot-mix asphalt — an



Left, the recycled shoulder on State Highway 61 in Missouri.



Mounted on a MODOT motor grader, the RotoGrader grinds and pulverizes the old shoulder material on Route 61. Power for the attachment comes from the front-mounted diesel engine.

expensive proposition, with the hot-mix material alone costing about \$250,000.

Then, Mundle found out that the agency's statewide Roving Fleet had acquired a Maddock RotoGrader after a manager read about it in the March 2002 issue of *Better Roads (Grader As Grinder, page 28)*. The RotoGrader is a motor grader attachment designed to pulverize tightly consolidated material on gravel roads and perform light milling on asphalt surfaces. Mundle decided to try using the new attachment to grind the shoulder to the optimum grade, and forego reconstruction costs.

Dave Maddock, president of Maddock Industries and inventor of the RotoGrader, participated as an observer in the initial application.

The RotoGrader provided an

ideal solution for the MoDOT crew. The rotary cutter drum attaches to the existing moldboard of a motor grader without modification and is powered by its own 125-horsepower turbo-diesel power unit. The standard drum is 72-inches long and 18 inches in diam-

eter, and has 108 tungsten-carbide conical cutting teeth. The RotoGrader was able to grind and pulverize the varying-density material to a fairly uniform gradation and basically recycle it in place.

Explains Mundle, "Since we only had the unit for a short time, we used the RotoGrader to grind up the material and establish the initial profile. We had a second

grader follow behind and establish the finished profile and slope. The material was then compacted and fly-coated with a curing emulsion oil."

Almost all the material was recycled in place, according to Mundle. The only material hauled

The rotary cutter drum attaches to the existing moldboard of a motor grader without modification.

away was to facilitate mowing near some businesses that had established lawns up to the edge of the shoulder.

Mundle said his crews found the RotoGrader easy to use and he sees future applications for it, including bridge-deck seal removal, filling edge ruts, and milling high joints and butt joints. **BR**

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