

ASPHALT PAVEMENT PRESERVATION & DIAMOND GRINDING



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Diamond Grinding of Asphalt on US 412, Missouri

>>> DIAMOND GRINDING SAVES MONEY, PROLONGS ASPHALT PAVEMENT LIFE

WHEN THE ASPHALT SURFACE of Missouri U.S. 412, located in the southern part of the state, required pavement preservation to repair cracking and increasing roughness, the Missouri Department of Transportation (MoDOT) scoped diamond grinding as the primary preservation treatment.

Asphalt diamond grinding has been used in the state on new asphalt pavement to mitigate flushing (bleeding) and loss of texture. Diamond grinding is also a strategy regularly used at the time of construction to meet MoDOT's smoothness-specification—a maximum average International Roughness Index (IRI) of 80 inches per mile. But the use of grinding on U.S. 412's rehabilitation once again substantiated the technique's viability as a cost-saving alternative to thin overlays.

Asphalt pavements that are appropriate candi-

dates for diamond grinding are those in structurally sound condition with primarily surface defects—slight to moderate rutting, shallow top-down cracking (up to ¼-inch deep) or oxidation. In addition to grinding, grooving—cutting narrow, discrete grooves into the pavement surface—is an asphalt pavement preservation method used throughout the state. Grooving is performed in areas where the texture on an aging asphalt pavement has become worn and polished, and there is concern that water on the roadway cannot be evacuated quickly enough.

Prior to commencing the diamond grinding operation on U.S. 412, potholes were patched and repaired. The road's wheel paths were rutted, so the middle hump—½ to ¾ inch—was removed using grinding to improve the ride and drainage characteristics. The result was an asphalt road with improved friction and a smoother ride.

TEAM MEMBERS

- Missouri Department of Transportation (MoDOT) (Owner)
- Chester Bross Construction (Diamond grinding contractor)

John Donahue, P.E., construction and materials liaison engineer for MoDOT, expects the texture to last for several years. “Based on what I have seen so far, you can get up to five to seven years. At that point, you are close to the life span of a thin [overlay] treatment, so grinding asphalt can give you a comparable performance life to some thin asphalt treatments for less money.” Donahue has also tabulated before and after IRI numbers collected on interstate projects that specified grinding and found that roughness decreased an average of 40 inches per mile. In the end, the taxpayers benefit from a smoother, safer and less expensive driving experience.