



**Research  
Development  
and Technology  
Division**

Missouri  
Department  
of Transportation

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## Scrub Seal Treatment

### Description:

In 1996, the Missouri Department of Transportation (MoDOT) installed its first scrub seal product. The scrub seal is a process by which an anionic charged polymer modified asphalt agent is applied to an asphalt pavement surface. This asphalt agent rejuvenates the old asphalt surface and is scrubbed into the cracks and voids with a broom before a layer of small aggregate is applied over the asphalt. The aggregate and asphalt is again broomed forcing the mix into the cracks and voids to form a seal. The seal is then rolled with a pneumatic tire roller. Scrub seal is meant to be used as pavement preventive maintenance. Its primary purpose is to fill cracks and seal the asphalt pavement.

### Advantages/Disadvantages:

One advantage of scrub seal is the cost. Scrub seal is less expensive per mile than three other processes currently used in Missouri. The other three processes are 1" hot mix overlay, chip seal, and microsurfacing. Other advantages are that it arrests light deterioration, retards progressive failures, and reduces the need for routine maintenance service activities. Field comments concerning the seal are very positive. It's inexpensive, seals the cracks quickly, can be opened to traffic in about 2 hours and basically maintenance free except for some possible crack sealing. Even when the scrub seal becomes removed from the old pavement, it appears the old pavement cracks are still sealed with the scrub seal. The disadvantage of the scrub seal treatment is that it is limited to pavements in sound condition. This process is not intended to improve the structural condition of the pavement. Therefore, the seal should only be used on stable asphalt pavements that are dry, oxidized and cracked.

### Cost:

A cost analysis has been calculated for the scrub seal and compared to 1" hot mix overlay, chip seal and microsurfacing.

Type of Preventive Maintenance	Estimated Useful Life (Average)	Cost per s.y.	Annual per s.y.
1" hot mix overlay	4-10 (7)	1.36	0.19
chip seal	4-10 (7)	0.53	0.08
microsurfacing	4-10 (7)	1.40	0.20
scrub seal	4	0.43	0.11

These annual costs only consider the initial cost of the treatments. Initial cost includes material, equipment, labor and traffic control. Annual maintenance costs were not factored in, but will be on the final report.

**Conclusions:**

The condition of an asphalt pavement to become an ideal candidate for the scrub seal is dry, oxidized and cracked. The scrub seal is not intended to fill ruts or to have sufficient thickness to add stability to a pavement. Its prime purpose is to fill the cracks and seal the pavement. Although the scrub seal's purpose is not to improve friction of the pavement, friction values were good following the application. The only exception was the scrub seal in St. Louis where there was a high ADT and the scrub seal has worn extensively. It has been determined that the scrub seal should be limited to areas with an ADT of 7500 or less. At \$.34 per square yard, this is a good maintenance tool to be used as pavement preventive maintenance. This is a low cost seal and will allow the maintenance division to direct some of their budget toward other needs.

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## Want the Whole Story?

If you'd like a copy of the initial report, please contact Jim Radmacher at:

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Please refer to report number 96-004.