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RSN 98-02

## STUDDED TIRE DAMAGE REPAIR: THE FIRST YEAR

Large ruts in the roadway made travel difficult for archaeologist Roy C. Andrews on his 1929 expedition to the Gobi Desert. Studded wheels used on the Chinese ox carts caused the ruts.. In 1985, The Pennsylvania Bureau of Streets and Bridges overlaid a section of road with steel slag asphalt. The carbide tipped horseshoes, used by the Oemish, had caused the severe rutting.

The Oregon Department of Transportation has monitored rutting caused by studded tires since 1974. In the past decade, the damage has increased rapidly. In the fall of 1996, a badly rutted section of I-5, north of Woodburn, Oregon was overlaid with Asphalt. This continuously-reinforced concrete section was constructed in 1974. By 1996 ruts in the center lane exceeded 15

mm. Spacing between the ruts, suggests smaller front-wheel drive cars as indicated by figure 1.

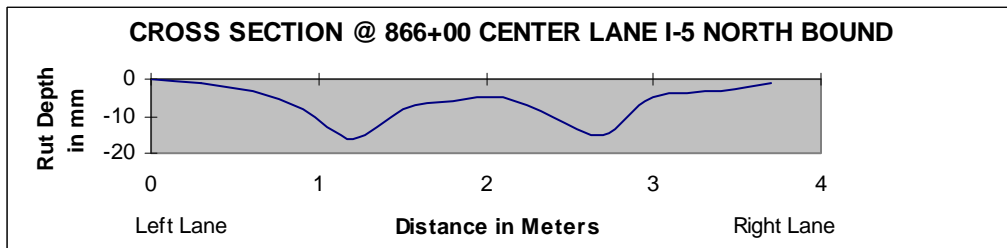


Figure 1.

The overlay was divided into four sections. Each section received a different type of thin asphalt lift. The depth of the overlay and type are shown in table 1. The F-mix is an open-graded mix that ODOT has used successfully on other interstate sections. The addition of fibers was to limit draindown or keep the asphalt in contact with the aggregates on long hauls. The Stone Mastic Mixtures (SMA) have been used in Europe successfully for several years. The SMA is lower cost than the F-Mix but does not have the spray resistance. The thicker F-Mix has resisted rutting

## SUMMARIES OF CURRENT TRANSPORTATION RESEARCH

better than the SMA according to a January 31, 1998 survey taken with The North Dakota Profolometer. The Odot Pavements Engineer stated he would use the F-Mix to overlay the remainder of the Salem to Portland section of I-5.

Table 1.

TYPE OF MIXTURE	DEPTH	LENGTH	BEGINING MILEPOST	Remarks	RUT (1/31/98)
F-MIX	51	3,600	275.84	Low spary	1.4
F-MIX/W FIB	51	3,800	276.52	Low bleeding	1.1
SMA, COURSE	38	3,700	277.24	Low cost	2.4
SMA, FINE	25	2,000	277.94	Lowest cost	3.5

\* Ruts are computed by averaging the left and right wheel paths and then multiplied by 1.06.

For a copy of the construction Report “ REPAIR OF STUDED TIRE DAMAGE” or additional information contact:

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