

**WET PAVEMENT CRASH STUDY  
OF LONGITUDINALLY AND TRANSVERSELY TINED  
PCC PAVEMENTS**

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Division of Transportation Infrastructure Development  
3502 Kinsman Boulevard  
Madison, Wisconsin 53704

Prepared By:

Alex Drakopoulos  
and  
David A. Kuemmel  
Department of Civil and Environmental Engineering  
Marquette University  
P.O. Box 1881  
Milwaukee, Wisconsin 53201-1881

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## ABSTRACT

This report provides crash statistics for Longitudinally Tined (LT) Portland Cement Concrete (PCC), Transversely Tined (TT) PCC and asphalt pavement surfaces. The statistics were compiled for urban and rural freeways, classified in two Average Daily Traffic (ADT) categories: pavements carrying less than 60,000 vehicles per day (VPD) and those carrying an ADT in excess of 60,000 VPD.

The absence of significant mileage of longitudinally tined PCC surfaces in Mid-Western states lead to the decision to analyze California pavements where longitudinal texture has been the standard during the past several decades on all PCC pavements, except on bridge decks.

Crash experience on California transversely tined PCC pavements was compared to that of Wisconsin transversely tined PCC pavements. Safety performance of wet pavements was the focus of the analysis. Rural freeways were considered to be ideal for this study, given the prevailing high speeds, absence of extraneous influences on safety (e.g., cross streets, on-street parking, pedestrians, traffic signals), and consistent design standards between the comparison states. Rainfall differences were accounted for with the use of hourly precipitation data, and terrain differences were taken into account by using level and rolling terrain California freeways (excluding mountainous terrain ones).

Statistics were based on eight years of crash and hourly weather data (1991-1998). A total of more than 3,000 Wisconsin and 21,000 California rural freeway crashes and more than 500,000 urban California freeway crashes were analyzed in the present report. Crash rates were computed based on hundred-million-vehicle-miles of travel--more than 72 HMVM for Wisconsin and more than 500 HMVM for California rural freeways and more than five hundred billion miles of travel for California urban freeways.

Thus, statistics are based on sufficiently large databases to provide confidence in the findings. The fundamental calculated statistic was the ratio of wet pavement crash rate to dry pavement crash rate within each state. Eight such ratios were computed for each state (one for each year) and the two sets of eight observations were compared for statistically significant differences.

No statistically significant differences in safety performance were found between rural longitudinally tined freeways (California) and rural transversely tined freeways (Wisconsin) with ADT less than 60,000 vpd.

It is recommended that safety comparisons between the two pavement textures be expanded to include winter pavement surface conditions when snow or ice are present on the roadway surface. If no significant safety performance differences are found under such conditions, longitudinally tined PCC pavements may be preferred over transversely tined ones, since they generate lower levels of tire-pavement noise.