

SIGNALIZED INTERSECTION SAFETY STRATEGIES



Provide Skid Resistance in Intersection and on Approaches

WHERE TO USE

Signalized intersection approaches where skidding is determined to be a problem, especially in wet conditions.



Photo by: Unknown

The surface friction of this intersection is being improved.

DETAILS

Slippery pavement should be addressed to reduce the potential for skidding. The coefficient of friction is most influenced by vehicle speed, vehicle tire condition, and pavement surface condition. Consideration should be given to improving the pavement condition to provide good skid resistance, especially during wet weather. This can be accomplished by:

- providing adequate drainage,
- grooving existing pavement, and
- overlaying existing pavement.

KEY TO SUCCESS

Monitoring the skid resistance of pavement requires incremental checks of pavement conditions. Evaluation must identify ruts and the occurrence of polishing. Recent research has suggested that the surface should be restored between 5 and 10 years in order to retain surface friction, but the life span is affected by site characteristics, such as traffic volume.

ISSUES

Skid resistance changes over time. This requires a dynamic program and strong commitment. It also requires good “targeting.” When selecting sites for skid resistance programs, it is important to somehow control for the amount of wet-pavement exposure. This will help decrease the identification of sites that have a high wet-accident proportion or that rate simply because of high wet-weather exposure with no real pavement-friction problems. Unfortunately, it is difficult or impossible for an agency to develop good wet-pavement crash rates per vehicle mile for all roadway sections due



to the lack of good wet-weather exposure data for all sites. In its Skid Accident Reduction Program (SKARP), the New York State Department of Transportation (DOT) uses a surrogate for such detailed data. The DOT compares the proportion of wet-weather crashes at each site with the proportion for similar roads in the same county.

TIME FRAME ●●○○

The time frame depends upon the treatment. Grooving can be done quickly, but overlays require more time. Nevertheless, all strategies being suggested should have short implementation periods.

COSTS ●●○○○

Costs are highly variable, depending upon the specific treatment. The New York State DOT estimates that its resurfacing/microsurfacing projects are approximately 0.5 miles long, with an average treatment cost of approximately \$20,000 per lane mile (1995 dollars).

EFFECTIVENESS

TRIED: The effectiveness of the countermeasure not only depends on the measure selected, but also varies with respect to location, traffic volume, rainfall propensity, road geometry, temperature, pavement structure, etc.

The New York State DOT has implemented a program that identifies sites statewide that have a low skid resistance and treats them with overlays or microsurfacing as part of the maintenance program. Between 1995 and 1997, 36 sites were treated on Long Island, resulting in a reduction of more than 800 annually recurring wet-road crashes. These results and others within the state support earlier findings that treatment of wet-road crash locations result in reductions of 50% for wet-road crashes and 20% for total crashes. While the reductions in run-off-road or head-on crashes cannot be extracted from the data at this time, it appears that reductions in these types would be at least the same as for total crashes.

While these results could be subject to some regression-to-the-mean bias, the New York staff has found that untreated sites continue to stay on the listing until treated in many cases—an indication that these reductions are clearly not totally due to regression.

COMPATIBILITY

Providing skid resistance is compatible with most other strategies to improve safety at signalized intersections.

SUPPLEMENTAL INFORMATION

Policy may be needed in order to determine the most appropriate pavement aggregate statewide and at special locations. Additionally, guidelines may be needed to highlight when pavement groove cuts should be considered. These countermeasures may also require cooperation within an agency, especially if these types of safety treatments are to be tied to routine maintenance.

For more details on this and other countermeasures: <http://safety.transportation.org>

For more information contact:

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