

Managing Run-off-Road Collisions: Engineering Treatments with AMFs

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Abstract

Run-off-road collisions occur when a vehicle leaves the roadway and the driver is unable to safely recover the travel lane.

There are three key objectives for roadway and roadside design that can be addressed to reduce the number of run-off-road collisions. The first objective of roadway design is to keep the vehicle in the travel lane. The second engineering objective is to assist drivers that encroach onto the roadside to regain control of the vehicle, and return safely to the correct travel lane without hitting a roadside object or feature, or overturning. In addition, the vehicle's recovery must be controlled, so that the driver does not over-correct and cross into the opposing travel lane or median of a divided highway. The third engineering objective is to reduce the severity of run-off-road collisions if the first two objectives were not met.

A variety of treatments can be considered to address these three objectives. In deciding which treatment(s) to implement, the expected safety benefit can be estimated using Accident Modification Factors.

This paper expands on the objectives to manage run-off-road collisions, and focuses on six engineering treatments that can be implemented to reduce the frequency and severity of run-off-road collisions; specifically: flatten horizontal curves, improve curve superelevation, add shoulder rumble strips, add centreline rumble strips, change shoulder width and/or type, and install/upgrade guiderail. Each of these treatments is accompanied by the best estimate of Accident Modification Factor(s) available to date based on work currently underway to develop a Highway Safety Manual for the Transportation Research Board.