

Safety Edge Implementation Frequently Asked Questions (FAQ)

Background

According to figures prepared by the US DOT, run off road crashes account for 58 % of highway fatalities. Research that has examined the role that pavement edges play in run off road collisions has documented that crashes caused by pavement drop-offs resulted in fatalities more often than other types of crashes. The chain of events that results in a simple roadway departure becoming a fatal collision begins with a vehicle that has departed the travelled portion of the roadway due to driver inattention, drowsiness or incapacitation. The driver recovers upon beginning the departure from the paved surface and when they attempt to return to the roadway they have difficulty mounting the vertical edge of pavement which over time has become exposed due to the wearing away of the shoulder backing material adjacent to the pavement. Field tests have determined that without a reduction in speed by the driver, the return of the vehicle to the roadway can be exacerbated by over steering to the left with possible loss of control. The vehicle may veer into the adjacent lane, where it could collide with, or sideswipe oncoming cars, overturn or run off the opposite side of the road and crash.

One low cost solution to this edge drop condition that has proven effective through field testing has been the application of a beveled 30-35 degree asphalt wedge or “Safety Edge” that has been applied at the right roadway edge as a part of new paving or resurfacing projects. Caltrans has applied similar treatments in the past using the “Notch Wedge” treatment to apply a beveled edge that could be more easily traversed between areas where there is a new pavement surface within a lane to an adjacent unpaved lane or correspondingly from an unpaved lane onto an adjacent paved surface. It should be noted that the Safety Edge is simply a pavement edge treatment; the application should be applied based upon a rational evaluation of safety history and the benefits that might be attained through application of various treatments relative to their costs. The application of safety edge within a roadway section would not change the safety performance of a well maintained roadway with shoulder backing in place where safety edge has not been installed.

Frequently Asked Questions

For a project with limited right of way is there a hierarchy for determining which is more important; adding shoulder width including rumble strips or safety edge?

From a cost effectiveness standpoint only, the hierarchy would be as follows: rumble strips would have the highest value as they alert a driver who is departing their lane and in many instances prevent a lane departure; a safety edge will provide a second line of defense and allow a vehicle to return to the travelled way with greater ease; a shoulder widening, which could require the purchase of additional right of way, would also provide incremental improvements in safety for each foot of additional shoulder width. Since shoulder widths already have standards that need to be evaluated (Design Exceptions in the Highway Design Manual), both rumble strips and safety edge should be considered on all appropriate projects. Each of these features has an expected safety benefit that would allow for their evaluation individually or in combination using Highway Safety Manual to determine the net improvement in safety.

Is there a greater benefit for the safety edge on rural two lane highways?

Rural two lane highways which have a disproportionate share of runoff road collisions would benefit from the implementation of the safety edge.

Why will a safety edge not be included on pavement projects that add less than 0.15' of pavement?

According to information provided by the Caltrans Pavement Program, safety edge installations accompanying AC lifts of less than 2" (0.15') have not performed well from a structural standpoint.

Will the implementation of the safety edge drive environmental considerations (e.g. footprint of impervious area, potential disturbed soil area impacts)?

The environmental concerns and the costs of mitigating them along with any costs related to addressing run off road collisions at a treatment location where run off road collisions may be a concern should be evaluated and compared with the net expected safety benefits that can be attained from the use of safety edge and other related treatments (shoulder widening, rumble strips etc). The environmental concerns and expected safety benefits will vary by location, roadway type and traffic volumes so these questions should be evaluated on a case by case basis as a part of the safety review.

Does the term "safety" edge imply that in those cases where it is not used the pavement edge is not safe?

Safety edge should be considered a pavement edge treatment only, it in itself is not going to make a road safer or less safe, it may in combination with the circumstances surrounding a particular run off road collision provide the ease of return to the roadway that makes one less collision occur. The driver's behavior and the vehicles performance also weigh heavily on this outcome. It should be installed based upon engineering judgment, but sections without it should by no means be considered less safe.