
Pavement Edge Drop-Offs



Solution to drop-off from reconstruction or resurfacing projects: Install a 30- to 35-degree safety edge (wedge) during resurfacing, as in photo (courtesy of FHWA).

Edge Drop-Offs are Hazardous!

Each year, an estimated 11,000 drivers are injured and 160 die in the US in crashes related to pavement edges. Tort liability claims resulting from pavement edge drop-offs cost highway agencies millions each year.

What are Edge Drop-Offs? How do they Develop?

A drop-off occurs when there is a difference in height between a roadway's paved surface and the adjacent shoulder or ground. The pavement edge is unsafe when the angle is nearly a 90-degree and the drop-off is more than 2 to 5 inches. Drop-offs occur due to

- aging of the road,
- changing subgrade conditions,
- traffic volume,
- poor drainage,
- lack of maintenance, and,
- recent construction or resurfacing projects.

When tires slip off a paved surface onto an unimproved or deteriorated shoulder, drivers will attempt to steer back onto the roadway and may lose control of their vehicles. The pavement edge "scrubs" the tires so drivers over-steer. Over-steering results in drivers re-entering the roadway at a

sharp angle and losing control of their vehicle. Their right rear tire may catch the pavement edge and swing the car around or sideways causing the car to veer into the adjacent lane. This may result in a collision with oncoming cars or running off the road and striking a fixed object.

The solutions to repair severe edge drop-offs are simple:

- Perform routine maintenance of shoulders.
- Resurface or rebuild the shoulders when reconstructing or resurfacing of pavement.
- Add a safety edge as part of a contract specification. The edge descends from the new pavement edge at a 30 to 35-degree angle to the adjacent shoulder. *(Note: this is a temporary, but important, solution until shoulders are backed up).*

What's A Safety Edge?

A safety edge is installed at the edge of the road in reconstruction and resurfacing projects. It is a simple and cost-effective way to create a safer road edge. The edge creates a small "ramp" from the shoulder to the new pavement allowing errant vehicles to "climb" back onto the pavement in a controlled way. Asphalt pavement contractors use a special edging device to install a safety edge while resurfacing.

The safety edge also creates a strong tie between roadway and shoulder by locking the old shoulder into the resurfaced road. If time and money prevent immediate resurfacing or rebuilding of shoulders, crews can restore the shoulders at a later time when the edge is used. If plans exist to rebuild the shoulders immediately the safety edge is still a good idea. If the rebuilt shoulder washes out, the safety edge will remain to assist errant vehicles back to the pavement.

Kistic, Joseph, Remedy of Pavement Edge Drop-Offs from Resurfacing Projects, The Pennsylvania Local Roads Program, LTAP Technical Information Sheet #123, Fall 2005

The Safety Edge, Federal Highway Administration, Washington, D.C., FHWA-SA-05-003, accessed August 11, 2005, at http://safety.fhwa.dot.gov/roadway_depUdocs/sa05003.pdf

Upgrading NH Public Works Software

A new initiative of the UNH Technology Transfer center is to create and distribute a Geographical Information System (GIS) to assist municipalities with asset management and GASB34.

The GIS tool will be used to collect infrastructure data. The data will be collected and managed using an internet-based Web server. This will allow for quick and efficient use of the data.

The system will update and integrate the Road Surface Management System (RSMS), Sign Inventory Management System (SIMS), and Drainage Inventory Management System (DIMS) into a GIS platform to create an improved New Hampshire Public Works Software Management package. The data will include infrastructure inventory information and condition.

The UNH T² Center is working with the New Hampshire Department of Transportation (NHDOT), New Hampshire Geographically Referenced Analysis Information Transfer (GRANIT), and other partners to develop a seamless state wide parcel map.

The NHDOT is incorporating its fly-overs with their straight-line diagrams for integration with municipal parcel maps for distribution via a Web server. Local agencies will be able to use this map as well as enter data and upload their information to it.



Distance from Edge of Travel Lane	Dropoff Height			
	2 inches	> 2 inches to ≤ 4 inches	> 4 inches to ≤ 2 feet	> 2 feet
≤ 4 feet	No channelizing devices required.	Install 1:1 or flatter safety edge. ^{(1), (2), (3)}	<ul style="list-style-type: none"> Place suitable material to grade and compact to non-movement. Install a 1:3 (3:1) slope with suitable material and compact to non-movement. ^{(1), (2), (3)} Install temporary barrier. 	<ul style="list-style-type: none"> Install temporary barrier Place suitable material to grade and compact to non-movement. Install a 1:3 (3:1) slope with suitable material and compact to non-movement. ^{(1), (2), (3)}
> 4 feet to ≤ 12 feet	No channelizing devices required.	Install 1:1 or flatter safety edge. ⁽²⁾	<ul style="list-style-type: none"> Place suitable material to grade and compact to non-movement. Install a 1:3 (3:1) slope with suitable material and compact to non-movement. ^{(2), (3)} 	<ul style="list-style-type: none"> Install temporary barrier Place suitable material to grade and compact to non-movement. Install a 1:3 (3:1) slope with suitable material and compact to non-movement. ^{(2), (3)}
> 12 feet to ≤ 15 feet	No channelizing devices required.	Use channelizing devices throughout dropoff condition. ⁽³⁾	Use channelizing devices throughout dropoff condition. ⁽³⁾	Use channelizing devices throughout dropoff condition. ⁽³⁾

Footnotes:

- (1) Install low shoulder signs at intervals not to exceed ½ mile throughout the dropoff condition.
- (2) Use channelizing devices throughout dropoff condition.
- (3) No channelizing devices are needed if the dropoff is:

- outside the right-of-way: OR
- behind the guiderail, barrier, or curb: OR
- greater than 15 feet from the edge of roadway.