

Breakaway Features for Sign Supports, Utility Poles and Other Roadside Features

Breakaway devices are designed and constructed to break or yield when struck by a vehicle. The term “breakaway” refers to crash-tested devices that break or bend upon impact.

Why Use Breakaway Devices?

Roadside signs, utility poles, lighting structures, traffic signals, railroad warning devices, motorist-aid callboxes, mailboxes, and other rigid objects can become deadly roadside hazards if placed where run-off-the-road vehicles can strike them. While it is preferable to maintain obstacle-free roadside clear zones, this is not always a practical option. When rigid objects cannot be removed or relocated, potential crash impacts can be mitigated by specifying breakaway features, or by shielding the object with a longitudinal barrier or crash cushion.

Federal Requirements for Breakaway Sign Supports On All Public Roads

The *Manual on Uniform Traffic Control Devices* (MUTCD), which is the national standard used for all roads open for public travel, states:¹

“Ground-mounted sign supports **shall** (emphasis added) be breakaway, yielding, or shielded with a longitudinal barrier or crash cushion if within the clear zone.”

For roads with posted speed limits of 50 mph or higher, the 2003 edition of the MUTCD established a compliance target date of January 18, 2013.

There is no target compliance date for roads with posted speeds of less than 50 mph, but every highway agency should include a program to replace non-breakaway supports within the clear zone. A good place to start is to begin specifying breakaway supports when installing new signs or replacing damaged supports.

By coordinating the installation of breakaway supports with replacement of sign faces to comply with retroreflectivity maintenance requirements, highway agencies can minimize the cost of compliance with both requirements.

The rules are a little different for National Highway System (NHS) routes. FHWA policy requires the use of crashworthy hardware (including sign supports) within the clear zone of all NHS routes, regardless of the posted speed, the ownership of the roadway, or the source of project funding.

What is a Clear Zone?

The AASHTO Roadside Design Guide defines a **clear zone** as the total roadside border area, starting at the edge of the traveled way, available for safe use by errant vehicles.

Determining Clear Zone dimensions should be the responsibility of a trained professional experienced in roadside design issues. The FHWA believes that the most responsible method for determining Clear Zone width is based on a consistent design approach focused on safety, guided by past crash history and a cost-effectiveness analysis.



Source: FHWA

¹ Section 2A.19, 2000 *Manual on Uniform Traffic Control Devices*.

Which Sign Supports are Breakaway?

A comprehensive guide to breakaway sign supports titled *A Guide to Small Sign Support Hardware* was published by the AASHTO/AGC/ARTBA Task Force 13 and is available from AASHTO, as indicated below.

https://bookstore.transportation.org/item_details.aspx?ID=1148Pole

Utility Pole Guidance

FHWA policy is that utility facilities, including poles and above ground transformer boxes, should be located as close to the right-of-way lines as feasible – as far as practical behind the face of roadside curbs, behind sidewalks, and on the far side of the roadside drainage ditches away from the travelled way.

It is not always feasible to relocate all poles within project limits. Critical locations, such as those dictated by crash experience or in potential high crash locations, should be seriously considered for improvement. Where poles cannot be relocated from critical locations, mitigation such as breakaway or shielding should be considered as a high priority. A pole should not be in a location where it will become an obstacle for an errant vehicle (for example a roadside drainage ditch that would also disrupt the hydraulics). Locating a pole as far as feasible from the traveled way improves sight lines and visibility, providing a much safer roadside.



Source: Accessories Squared (with permission)

For More Information

A Guide to Small Sign Support Hardware, published by the AASHTO/AGC/ARTBA Task Force 13 may be purchased from the AASHTO web site bookstore, available at https://bookstore.transportation.org/item_details.aspx?ID=1148

The *Online Guide to Small Sign Support Hardware* is available at https://bookstore.transportation.org/item_details.aspx?ID=1148

The *AASHTO Roadside Design Guide* Chapter 4: Sign, Signal, and Luminaire Supports, Utility Poles, Trees, and Similar Roadside Features provides engineering guidance on specification of safer roadside features, and is available at https://bookstore.transportation.org/Item_details.aspx?id=148

The FHWA has been accepting breakaway hardware based on crash testing since at least 1986 and a full list of all acceptance letters written since that time is available on the FHWA website at http://safety.fhwa.dot.gov/roadway_dept/policy_guide/road_hardware/breakaway/

The AASHTO *Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, Fifth Edition*, establishes testing parameters and criteria for determining acceptable breakaway performance and is available from AASHTO at https://bookstore.transportation.org/item_details.aspx?ID=1319

Nicholas Artimovich
FHWA Office of Safety
Roadway Departure Team
(202) 366-1331
nick.artimovich@dot.gov
<http://safety.fhwa.dot.gov/index.cfm>



U.S. Department of Transportation
Federal Highway Administration