

POLICY  
For The Use Of  
SAFETY SHOULDER RUMBLE STRIPS (SAFE-STRIPS)  
New York State Department of Transportation  
Office of Engineering

GENERAL POLICY:

It is the policy of the New York State Department of Transportation to install Safety Shoulder Rumble Strips (SAFE-STRIPS), to reduce the number and severity of driver inattention/fatigue/sleep drift-off-road crashes, as a standard design practice on appropriate State Highways under its jurisdiction, according to the Site Selection Criteria below. Details of SAFE-STRIP installation shall be in accordance with the engineering guidance provided below. Because of their proven benefits (refer to NCHRP Synthesis Report #191), a site specific benefit-cost analysis is not necessary.

SAFE-STRIPS DESCRIPTION AND DETAILS:

- SAFE-STRIPS are patterns of grooves or depressions (see figures in Attachment A) made in highway shoulders to produce an audible and vibratory warning intended to alert drivers that their vehicles have drifted out of the travel lanes.
  
- SAFE-STRIPS are appropriate for use on either asphalt or concrete shoulders. They can be milled (the preferred method) into existing or new asphalt or existing concrete shoulders (Milled-In Audible Roadway Delineators - MIARDs), rolled into new asphalt shoulders (Rolled-In Audible Roadway Delineators - RIARDs), or formed into new concrete shoulders (Formed-In Narrow Audible Roadway Delineators - FINARDs; and Formed-In Corrugated Audible Roadway Delineators - FICARDs). See Attachment A for complete descriptions and

specifications.

- SAFE-STRIPS Specifications and Typical Details have been developed and refined by the New York State Department of Transportation. These Specifications and Typical Details are included as Attachment A.
- Although four types of SAFE-STRIPS are detailed in Attachment A, the milled-in shape (MIARDs and FINARDs) is the most effective and is therefore the preferred method of installation. Use of the RIARDs should be limited to built-up residential areas where the louder, more effective milled-in shape could potentially produce objectionable noise levels. Experience has shown that RIARDS are more difficult to construct uniformly. Refer to Item J) below for further guidance regarding noise concerns.

SITE-SELECTION CRITERIA FOR INSTALLATION  
OF SAFETY SHOULDER RUMBLE STRIPS (SAFE-STRIPS):

General:

- SAFE-STRIPS are typically appropriate for installation on higher speed facilities, where driver inattention, monotony or fatigue are most likely to develop, and on any highway or road with a history or pattern of inattention/sleep/fatigue drift-off-road crashes (Caution: Sleep/fatigue crashes are known to be substantially under-reported nationwide).
- "Higher speed facilities" are defined and prioritized for this purpose as:
  - 1) rural full access-control highways (including rural full access-control parkways);

- 2) suburban/urban full access-control highways (including suburban/urban full access-control parkways); and,
- 3) rural partial access-control multi-lane highways (including rural partial access-control parkways).

Specific Criteria:

- A) **SAFE-STRIPS shall be installed on new, reconstructed and resurfaced shoulders of all rural full access-control highways (including rural full access-control parkways), regardless of accident history, and on sections of any highway with a history or pattern of inattention/sleep/fatigue drift-off-road crashes. Also, even if no other shoulder work is to be done, SAFE-STRIPS shall generally be installed on suitable asphalt shoulders whenever 3R projects are done on rural full access-control highways and parkways.** Some exceptions may apply; refer to items F), G), H), I) and J) below.
- B) **SAFE-STRIPS should be considered for installation on new, reconstructed and resurfaced shoulders of suburban/urban full access-control highways and rural partial access-control multi-lane highways (including suburban/urban full access-control and rural partial access-control multi-lane parkways).** Some exceptions may apply; refer to items F), G), H), I) and J) below. They should also be considered on any highway or road with a history or pattern of inattention/sleep/ fatigue drift-off-road crashes.
- C) On qualifying highways, SAFE-STRIPS should be installed either in conjunction with a construction project, or as a retrofit on existing shoulders via a separate contract exclusively for this purpose.

- D) SAFE-STRIPS should be installed along both shoulders (right and left), but individual conditions/circumstances (e.g. shoulder condition, width, etc.) may dictate use on only one shoulder.
- E) SAFE-STRIPS should also be considered for use at certain critical locations such as on shoulders of approaches to narrow bridges, in gore areas, in advance of impact attenuators, on shoulders adjacent to concrete median barrier, in areas with narrow clear zones, and other critical locations.
- F) SAFE-STRIPS should only be installed on shoulders in reasonably good condition and, in the case of asphalt shoulders, having a minimum thickness of 2 ½" (60 mm). They should not be milled into existing shoulders that are rated as either deformed or having moderate to high degrees of deformation and/or cracking distress as defined by the Pavement Rehabilitation Manual. They should also not be installed on Type 1 Optional Flexible Shoulders or other asphalt shoulders with less than 1" (25 mm) of top course. Note that for operation of the current machines used to mill-in SAFE-STRIPS, at least 34" (0.85 m) lateral clearance is required between the outside edge of the depression and any obstruction (guide rail, curb, etc.).
- G) SAFE-STRIPS installation should generally be deferred when strong consideration is being given to using the shoulders as peak-hour travel lanes or where scheduled construction activities will require diversion of traffic onto the shoulders for a substantial period of time.
- H) SAFE-STRIPS should generally not be installed on existing shoulders with less than three years of useful life remaining.

- I) On highways designated as bicycle routes or having substantial volumes of bicycle traffic, SAFE-STRIPS should generally not be installed on the right shoulder, unless the shoulder is wide enough to accommodate the rumble strips and still provide a width of 3' (0.9m) for bicyclists. (Note: In this case the strips can act as a safety buffer zone between bicyclists and motorized vehicles). Gaps in the SAFE-STRIP installation should be provided in advance of intersections where bicyclists are likely to make left turns, to permit bicyclists to merge with and cross traffic.
  
- J) In built-up residential areas where noise to residents could potentially be objectionable, SAFE-STRIPS may not be appropriate. However, where the use of SAFE-STRIPS in such areas appears to be warranted based on crash history or potential, consideration should be given to placing SAFE-STRIPS farther from the travel lane than shown in the specifications, to reduce noise frequency while still affording some degree of warning to drifting drivers. Use of RIARDS, instead of the preferred milled-in shape (MIARDS and FINARDS), in noise sensitive areas could also be considered. However, RIARDS are more prone to constructibility problems.

ATTACHMENT A  
SPECIFICATIONS AND TYPICAL DETAILS  
FOR  
SAFETY SHOULDER RUMBLE STRIPS  
(SAFE-STRIPS)