

## MB-9A TURNED DOWN CONCRETE MEDIAN BARRIER TERMINAL

For run-on treatment outside the clear zone with operating speeds of 40 mph or less and all run-off treatment, a concrete turned down terminal (MB-9A) can be used to terminate concrete barrier.

## IMPACT ATTENUATORS

During the preliminary design stages for new construction and for rehabilitation or reconstruction of existing highways, the need for and space requirements of impact attenuators to shield non-removable fixed objects should be considered. This will ensure compatibility with the final design and the impact attenuator that is to be installed. Since these devices are expensive to install and maintain, the hazard must be studied to determine if elimination is possible or its inherent hazard potential can be economically reduced to tolerable limits by less drastic safety treatments, such as guardrail, breakaway supports, set-back, safety shape, etc. Present procedure requires that the proposed site be selected by the roadway designer and reviewed by the [Standards/Special Design Section](#) for the type of impact attenuator to be used. When requesting the review and installation details from the [Standards/Special Design Section](#), submit a print of the plans with a transmittal slip giving the project number, UPC numbers, activity number, roadway design speed and advertisement date. In no case will attenuation devices be designed for placement behind curbed locations. For additional data, refer to the AASHTO's *Roadside Design Guide*.

Devices subjected to traffic speeds greater than 45 mph must meet Test Level 3 requirements per NCHRP 350 or AASHTO's MASH as appropriate.

Devices subjected to traffic speeds of 45 mph and less must meet Test Level 2 requirements per NCHRP 350 or AASHTO's MASH as appropriate.

For a list of approved devices see VDOT's NCHRP 350 Approved Products List at: <http://www.virginiadot.org/business/locdes/nchrp350-index.asp>

Fixed roadside hazards vary in size and shape, and in the degree of danger they present. The traffic passing by varies as well in volume, speed and density. For these reasons a selection from various types of crash cushions can be designed to meet the special requirements of a particular hazard site.

Figure I-3-3 suggests the area that should be made available for impact attenuator installation. Although it depicts a gore location, the same recommendations will generally apply to other types of fixed object hazards that require shielding. The unrestricted conditions represent the minimum dimensions for all locations except for those sites where it can be demonstrated that the increased costs for obtaining these dimensions (as opposed to those for restricted conditions) will be unreasonable. The preferred condition dimensions should be considered optimum. The space provided by these dimensions will seldom be fully used by an impact attenuator.