



U.S. Department  
of Transportation  
Federal Highway  
Administration

# Memorandum

Subject: **ACTION:** Median Barriers on Divided  
Highways Regardless of Access Type

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In Reply Refer To:  
HSST

To: Division Administrators  
Safety Field  
Federal Lands Division Engineers

## Purpose

The purpose of this memo is to address a recommendation from the National Transportation Safety Board (NTSB) regarding median barriers on divided highways with less than full control of access. We are requesting that you share this memo with your respective state DOT to implement NTSB's recommendation.

## Background

A NTSB Safety Recommendation to the Federal Highway Administration (FHWA) states:

H-06-12 - Work with the American Association of State Highway and Transportation Officials (AASHTO) to establish evaluative criteria for determining when to install median barriers on high-volume, high-speed roadways, regardless of access type.

The AASHTO Roadside Design Guide (RDG) Figure 6-1 (See Attachment 1) provides guidelines for placing barriers in the medians of high speed, fully controlled access highways based on median width and traffic volumes. The following general, qualitative guidance is provided in the RDG Section 6.2 for installing median barriers on partially-controlled or un-controlled access divided highways:

*Median barriers are sometimes used on high-volume facilities, which do not have fully controlled access. As indicated in Figure 6.1 ["Suggested guidelines for median barriers on high-speed roadways"], these median barrier guidelines were developed for use on high-speed, fully controlled-access roadways. Utilizing these guidelines on*

*roadways that do not have full access control requires the need for engineering analyses*

*and judgment, taking into consideration such items as, right-of-way constraints, property access needs, number of intersections and driveway openings, adjacent commercial development, sight distance at intersections, barrier end termination, etc.*

*Therefore, trying to apply these guidelines to roadways that do not have full access control can be rather complex in many locations.*

We discussed with NTSB staff the challenge of developing objective, evaluative criteria that would be applicable nationwide. They agreed that a review of design practices could provide useful guidance to supplement the RDG.

### **Division Office Survey and State Practices**

To better understand State practices used for addressing divided highways, we surveyed our Division Offices to determine what factors the state DOTs are using when assessing the need for a median barrier.

Seventy-five percent of those states that responded indicated they do install median barriers on highways with partial control of access, while fifty percent responded they do install barriers on divided highways with no access control. Because of the significant number of factors that need to be considered on these facilities, many states do not have published guidance beyond that in the RDG; rather they only consider median barriers on a case-by-case basis.

The primary factors that states have recognized to consider for determining when to install median barriers on high-volume, high-speed divided highways that lack full access control include:

- Traffic volume, design speed, and vehicle mix
- Highway alignment
- Median width and terrain features
- Crash history, focusing on severe and fatal cross-median crashes
- Right-of-way constraints, property access needs, number of intersections and driveway openings, and adjacent commercial development
- Traffic operations including truck turning at intersections

Other specific considerations that states have in their published guidance include:

- Will the number of intersections and other median crossings hamper the effectiveness of a median barrier?
- Will sight distance at median crossings be a problem if a barrier is installed?
- If most of the route warrants a barrier [i.e., meeting a state's specified warranting condition], should it be extended through all portions of the route that do not meet

the warrant?

- A crash cushion or barrier terminal will likely be needed for both ends of the barrier when it is interrupted for a median crossing.
- Median bridge piers, culvert headwalls, non-traversable ditches, trees, and other fixed-object hazards in medians should be removed, redesigned, or shielded with barrier just like hazardous elements on any roadside. When barriers are placed to shield these features, the potential for impact from vehicles coming from the opposite side of the highway should be considered.

Attachment #2 is a list of the design practices that we drew from the States' published guidance.

### **Action**

Please share this information with your State and suggest they have written guidance on factors to consider when evaluating the need for median barriers on high-speed divided highways regardless of access control.

Attachments

Attachment #1

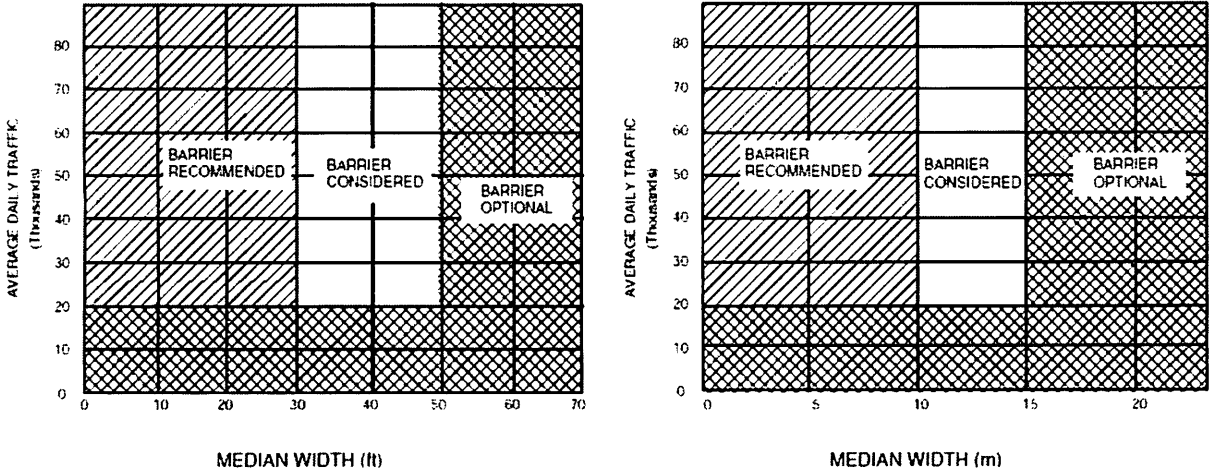
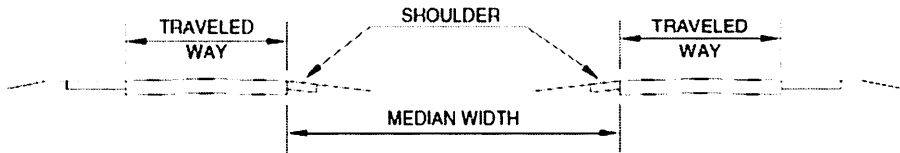


Figure 6-1. Guidelines for Median Barriers on High-speed, Fully Controlled-Access Roadways

Source: AASHTO Roadside Design Guide, 4<sup>th</sup> edition, 2011

## Attachment #2

Examples of state practices as derived from their published guidance relative to median barriers on high-volume, high-speed roadways, regardless of access type:

**Arizona:** Barrier breaks for necessary crossings or turn lanes must be restricted to areas with acceptable sight distances for both mainline and side roads.

**California:** Access openings on expressways, multilane conventional highways and two-lane and three-lane conventional highway facilities present sight distance issues with respect to installation of a median barrier. All access openings must be studied to maintain both corner sight distance at approach intersections and stopping sight distance on the specific facility types themselves.

**Maryland:** Median barrier may be required on divided highways that lack full access control as justified by accident experience or other special circumstances. Where a section of highway is less than one mile in length that does not meet the requirement for median barrier is bordered on each end by a section where median barrier is required, the barrier should be extended through the subject section if the ADT for the subject section meets three quarters of the ADT criteria (i.e., the width of the median in the subject section is less than 50' and the ADT is 30,000 or greater; the width of the median in the subject section is less than 75' and the ADT is 60,000 or greater). Openings in the median barriers may be provided when necessary for authorized vehicle crossovers and routine maintenance operations, in which case proper end treatment is required.

**Minnesota:** The terminal points in barrier systems are generally critical elements in the performance of the system. An unprotected median barrier terminal is essentially a fixed-object hazard to a motorist. For this reason, the use of median barriers is generally restricted to full access-controlled facilities where there are no median crossings requiring discontinuities in the barrier. Special designs may be required where at-grade crossings are permitted and median barrier is used.

**Missouri:** Analysis of crashes on a candidate corridor should focus on cross-median crashes on that route and, even more so, on those crashes resulting in fatalities and disabling injuries. It is important this data analysis is robust, particularly on expressways. Due to at-grade intersection crashes on these routes, a simple query of cross-median crashes may include unwanted events and exclude necessary ones. Accuracy of these data is vital in decision-making.

**New Jersey:** Careful consideration should be given to the installation of median barriers on land service highways ( i.e., highways with less than full control of access) or other highways with partial control of access. Problems are created at each intersection or median crossover because the median barrier must be terminated at these points.

An evaluation of the number of crossovers, crash history, alignment, sight distance, design speed, traffic volume and median width should be made before installation of median barriers on land service highways. Each location should be looked at on a case-by-case basis.

**Pennsylvania:** Utilizing the Roadside Design Guide's median barrier guidelines on roadways that do not have full access control requires the need for engineering analysis and judgment, taking into consideration such items as, right-of-way constraints, property access needs, number of intersections and driveway openings, adjacent commercial development, sight distance at intersections, barrier end termination, etc.