




U.S. Department  
of Transportation  
Federal Highway  
Administration

# Memorandum

Subject: INFORMATION: 2(09)-17 (I) – Determination  
of Speed Differential for Exit Ramps

Date: **SEP 22 2011**

From: Mark R. Kehrl   
Director, Office of Transportation Operations

In Reply Refer To:  
HOTO-1

To: Mr. Derrell E. Turner  
Division Administrator (HDA-MN)  
Saint Paul, MN

We have reviewed the e-mail dated September 2 from Mr. Will Stein of your office requesting an official interpretation regarding the applicability of Table 2C-5 in the 2009 MUTCD to exit ramps where a parallel deceleration lane is available to exiting drivers.

It is our official interpretation of Paragraph 2 of Section 2C.06 that highway agencies have the flexibility to use, based on engineering judgment, the approach speed in the parallel deceleration lane as it approaches the exit ramp curve, rather than the speed of the mainline freeway lanes, when applying Table 2C-5. Our reasoning for this interpretation is as follows.

Table 2C-5 (Horizontal Alignment Sign Selection) requires and recommends various types of horizontal alignment signing based upon the difference between the speed limit and the advisory speed. On June 2, 2010, the FHWA issued Official Ruling 2(09)-2 (I) that was based on the text of Paragraph 2 of Section 2C.06. In that interpretation, we established that the column heading in Table 2C-5 of "Difference Between Speed Limit and Advisory Speed" means the difference between the speed (posted or statutory speed limit, 85th-percentile speed, or prevailing speed) on the tangent approach to the curve and the advisory speed for the curve. Furthermore, we also stated that highway agencies have the flexibility to determine, based on engineering judgment, which speed value to use for the tangent approach to a horizontal curve (posted or statutory speed limit, 85th-percentile speed, or prevailing speed) when applying Table 2C-5 to a particular horizontal curve.

We recognize that there is a difference in driver expectation between a horizontal curve on a section of roadway and a horizontal curve on an exit ramp just beyond the theoretical gore when a parallel deceleration lane is present. A driver might be surprised to encounter a horizontal curve on an otherwise straight section of roadway and therefore might need additional warning in advance of the curve and within the curve, especially if the advisory speed for the horizontal curve is significantly lower than the prevailing speed on the tangent approach to the curve. On the other hand, a driver exiting a freeway or expressway onto an exit ramp via a parallel deceleration lane expects that a change in speed and alignment will be necessary and is usually

prepared to make those adjustments. Highway agencies can also install Exit Speed (W13-2) and Ramp Speed (W13-3) signs, even where not required or recommended in Table 2C-5, to give exiting drivers additional information about the severity of the exit ramp curvature.

Additionally, the purpose of a parallel deceleration lane is to provide exiting drivers with an opportunity to slow down to a more reasonable speed for the ramp prior to reaching the theoretical gore. The AASHTO design criteria for determining the length of a parallel deceleration lane are based on the need to decelerate from the highway design speed to the design speed of the ramp. Therefore, it might not be appropriate to use the posted speed limit on the mainline roadway from which the driver is exiting when applying Table 2C-5 to horizontal curves on exit ramps that are just beyond the exit gore.

Highway agencies should evaluate the design of the deceleration lane and the severity of the ramp curve to make an engineering judgment regarding the speed of vehicles in the deceleration lane as they approach the ramp curve, and use the differential between that speed and the advisory speed of the ramp curve in applying Table 2C-5. It may also be feasible to conduct a spot speed study to determine actual deceleration lane speeds at the theoretical gore. In either case, the basis for determining the deceleration lane speed on the approach to the ramp curve should be documented.

For recordkeeping purposes, we have assigned this official interpretation the following number and title: "2(09)-17 (I) – Determination of Speed Differential for Exit Ramps." Please refer to this number and title in any future correspondence regarding this topic. If you have further questions, please contact Mr. Eric Ferron at 720-963-3206 or at [eric.ferron@dot.gov](mailto:eric.ferron@dot.gov).