Montana Department of Transportation
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Memorandum

To: Ivan B. Ulberg, P.E., Traffic Design Engineer
Danielle C. Bolan, P.E., Traffic Operations Engineer
Kraig McLeod, P.E., Traffic Safety Engineer

From: Roy A. Peterson, P.E., Traffic and Safety Engineer initialed RAP

Date: January 11, 2013

Subject: Horizontal Alignment Sign Selection
2009 MUTCD, Table 2C-5

"**STANDARD: In advance of horizontal curves on freeways, on expressways, and on roadways with more than 1,000 AADT that are functionally classified as arterials or collectors, horizontal alignment warning signs shall be used in accordance with Table 2C-5 based on the speed differential between the roadway's posted or statutory speed limit or 85th-percential speed, whichever is higher, or the prevailing speed on the approach to the curve, and the horizontal curve's advisory speed limit." (2009 MUTCD, PAGE 110)**

Table 2C-5 of the 2009 MUTCD is used to determine when to install Horizontal Alignment Signs (chevrons, curve signs, advisory speed plaques, etc.) based on the difference between the speed limit and the advisory speed (which is determined via ball-bank, design graphs, or other proven methods) for the feature in question.

Table 2C-5. Horizontal Alignment Sign Selection

Type of Horizontal Alignment Sign	Difference Between Speed Limit and Advisory Speed				
	5 mph	10 mph	15 mph	20 mph	25 mph or more
Turn (W1-1), Curve (W1-2), Reverse Turn (W1-3), Reverse Curve (W1-4), Winding Road (W1-5), and Combination Horizontal Alignment/Intersection (W10-1) (see Section 2C.07 to determine which sign to use)	Recommended	Required	Required	Required	Required
Advisory Speed Plaque (W13-1P)	Recommended	Required	Required	Required	Required
Chevrons (W1-8) and/or One Direction Large Arrow (W1-6)	Optional	Recommended	Required	Required	Required
Exit Speed (W13-2) and Ramp Speed (W13-3) on exit ramp	Optional	Optional	Recommended	Required	Required

Note: Required means that the sign and/or plaque shall be used, recommended means that the sign and/or plaque should be used, and optional means that the sign and/or plaque may be used.

See Section 2C.06 for roadways with less than 1,000 ADT.

For the purposes of design, MDT's standard of practice shall be to install horizontal alignment signs where REQUIRED in the table, regardless of AADT or functional classification. The roadway's POSTED speed will be used for the speed limit.

Curves identified as crash cluster areas will be evaluated on a case-by-case basis. Generally, these curves will fall under the RECOMMENDED portion of the table for determining the type

of signing to be used; however, engineering judgment can be used to recommend additional signage depending on the site specific circumstances.

copies: Dwane Kailey, P.E., Acting Chief Engineer
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