



Updated Curve Warning Signs

General Information

Increased curve warning signage has been shown to aid in a driver's ability to perceive a change in the horizontal alignment. This awareness allows drivers to respond to these changes appropriately. The ability to correctly respond to these differences greatly improves safety. This countermeasure not only includes the placement of the signs but it also includes the field work of determining the proper advisory speeds for the curves.

Depending on the characteristics of the curve in question additional countermeasures may be needed. The first step of updating/placing the curve warning and speed rider signs is a low-cost yet effective countermeasure. Curve warning signs and speed riders need to follow the guidance of the current MUTCD.

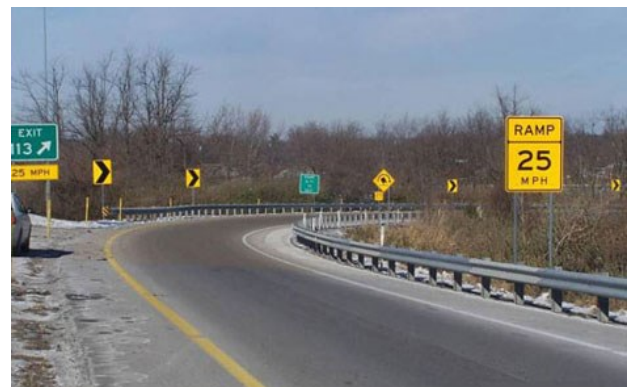
By the Numbers

According to the *Highway Safety Manual*, the Crash Modification Clearinghouse, and FHWA Report FHWA-SA-07-015 properly placed curve warning signs are proven to reduce crashes. The cost of the warning signs is dependant on the type of sign installed. Below are price breakdowns of the most commonly placed curve warning signs. These price breakdowns assume signs are installed on a wood post. Signs installed on a slip base breakaway sign support would cost significantly more.

- ✓ Curve Warning Signs w/ Speed Rider - \$500-\$700 per sign.
- ✓ Oversized Curve Warning Signs (not including speed riders) - \$500-\$600 per sign.
- ✓ Chevrons - \$300-\$500 per sign

Chevrons are to be placed at intervals throughout the curve in compliance with the 2009 MUTCD. The speed rider attached to a curve warning sign, must also be in conformance with the 2009 MUTCD. Listed are the crash reductions associated with addition of curve warning signs. These reductions are compared to curves with no curve warning signs.

- ✓ Curve Warning Signs w/ Speed Rider: 13% reduction in all fatal and injury causing crashes.
- ✓ Oversized Curve Warning Signs: 18% reduction in all fatal and injury causing crashes.
- ✓ Chevrons: 20%-35% reduction in fatal and injury causing crashes.
- ✓ New fluorescent curve signs or upgrading existing curve signs to fluorescent sheeting: up to 25% reduction in non-intersection fatal and injury crashes.



Credit: FHWA Proven Safety Countermeasures

Helpful Resources

- ✓ *Manual on Uniform Traffic Control Devices*, 2009
- ✓ *Highway Safety Manual*, 2010
- ✓ Crash Modification Factor Clearinghouse
<http://www.cmfclearinghouse.org/>
- ✓ FHWA Report FHWA-SA-07-015: Desktop Reference for Crash Reduction Factors
http://safety.fhwa.dot.gov/speedmgt/ref_mats/fhwasa09028/resources/CRF%20Desktop%20Reference.pdf
- ✓ FHWA Safety Website
<http://safety.fhwa.dot.gov/>