

FHWA SELECT DORMAN VARITEXT VATCS TO FEATURE ON NATIONAL TRAFFIC SAFETY STUDY OF DYNAMIC CURVE WARNING VEHICLE ACTIVATED SIGNS

By Jerry Britton

The FHWA together with transportation university center research partners CTRE Iowa and TTI Texas have commenced a long term national study to evaluate the effectiveness of vehicle activated sign technology on traffic speed and hazard awareness on horizontal curves in rural roadway applications.

The purpose of the trial is to undertake a national field test of vehicle activated sign technology as a speed management technique undertaken in a coordinated effort to manage speeds on horizontal curves in rural roadways.

The study which commenced in the last half of 2008 is to be conducted for a minimum two year period across installations in Iowa, Texas, Florida, Arizona, Oregon, Ohio and Washington to capture long term accident and speed data observations. The results are expected to be published during 2010 and if successful new policy guidelines will be produced to assist in future deployment. The first installs went live in Q4 2008 in WA, IA and AZ and Q1 2009 in FL.

Two types of sign have been selected for the study, a radar speed feedback sign which provides the targeted driver with notification of vehicle speed together with slow down message and the Dorman Varitext curve warning VATCS which provides the targeted driver with an advance MUTCD curve warning pictogram together with slow down message and dynamic flashing beacons in each corner of the sign face.

Both sign types utilize microwave Doppler radar to detect vehicle approach speeds and are configured to become active when approach speeds exceeding the advisory speed for the curve are detected.



Washington State DOT VATCS Install Olympic Region



Florida state DOT VATCS install District 3 Tallahassee

Speeding continues to be one of the most significant contributing factors to fatal crashes in the USA. One of the major issues for speed related crashes is the impact of horizontal curves, especially in rural roadways. As described in A Guide for Reducing Collisions on Horizontal Curves (NCHRP report 500, Volume 7), about 75 percent of all fatal crashes occur in rural areas, and more than 70 percent are on two-lane secondary highways, many of which are local roads.

In addition the average crash rate for horizontal curves is about three times that of other highway segments and, 76 percent of the curve related fatal crashes involve single vehicles leaving the roadway and striking various fixed-roadside objects or overturning. Another 11 percent are head-on collisions where vehicles drifted into the opposing lane because drivers were trying to cut the curve or re-direct the vehicle after having run onto the shoulder. Finally it has been reported that 56 percent of all run – off the road fatal crashes on horizontal curves are speed related.

Uniquely and a first for this type of national vehicle activated study in North America the dynamic curve warning VATCS employed are hazard specific and do not inform drivers of their speed but rather target excessive speed detection with an advance slow down warning message which incorporates a hazard specific MUTCD pictogram, immediately allowing the driver to connect the request for an adjustment in their driving speed and behaviour and to allow them to safely maneuver the approaching curve.

The Dorman Varitext dynamic curve warning VATCS hazard specific models are available for the following horizontal curves depicted in the MUTCD , W1-1, W1-2, W1-3, W1-4 and W1-5 in both 24 x 24" and 30 x 30" diagram sizes to suit both conventional and highway road speeds respectively.

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The curve warning VATCS were introduced to North America by Dorman Varitext in 2006 after being independently trialed in the United Kingdom on a similar large scale independent 3 year study which was published in 2002.

The UK TRL548 study report provided a strong endorsement for the vehicle activated sign technology approach with the following summary results:

- 1/3rd reduction in accidents recorded over the 3 year period
- A 7 MPH reduction in the average speed at curve hazards

This subsequently led to the signs being incorporated into the UK Highways Agency MUTCD.

The FHWA study will use a combination of speed data logging distribution collection features standard on both sign types, pneumatic tubes and accident data to analyze performance of the technologies. Initial short term results to date have proved very positive and it is hoped that the study reinforces and builds upon the UK findings in the joint global objective of deploying proven IT technology to reduce road traffic fatalities.