

Evaluation of Raised Pavement Markers for Reducing Incidences of Wrong-Way Driving

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In an attempt to stop drivers who enter an interchange ramp going the wrong way, a means of alerting them to their error is being sought. In view of the fact that wrong-way drivers must fail to see or properly interpret the directional signs, warning signs, and pavement markings placed in the intersection for their guidance, something beyond conventional devices is obviously needed. A concept that is believed to have merit involves the placement of raised pavement markers on off-ramps in such a configuration that the driver will be alerted as a result of viewing an unexpected phenomenon. Although such markers have been used for this purpose, they have been placed in the shape of an arrow, transverse line, or other configurations similar to markings normally seen by the motorist. The preliminary research reported in this paper was undertaken to determine the efficacy of random configurations of such markers.

The investigation was limited to one Interstate interchange, and only an off-ramp under night conditions was considered. Also only one type of raised pavement marker was considered for testing—a corner cube monodirectional red marker. The markers, which possess good reflective qualities, were placed to reflect only the light of a vehicle traveling in the wrong direction. Forty-five markers were randomly placed in a section 36.58 m (120 ft) long starting approximately 32.00 m (105 ft) from the end of the ramp and extending 3.05 m (10 ft) past pre-existing wrong-way signs. With this placement, the motorist could turn completely into the off-ramp before crossing the marked section. Also, it was felt that termination of the marked section in the vicinity of the wrong-way signs would help call attention to them.

The evaluation was a subjective one concerned primarily with the visibility characteristics, or attention-getting qualities, of the configuration. Each of 16 test subjects was shown the experimental installation from a vehicle (lights on high beam and low beam) that entered and proceeded onto the off-ramp only a short distance before backing out. Before viewing the markers, subjects were told only that their opinion of some experimental materials was desired and that they should not be alarmed if certain unexpected maneuvers were made. Note was made of the initial opinions and reactions of

each subject relative to the effectiveness of the marking system. Questions were then asked concerning their thoughts about the effectiveness of the system in preventing wrong-way entries together with any thoughts on the number of markers, the shape of the configuration, and the location of the configuration with respect to signs.

The results of the investigation showed that the raised pavement marking system was effective in alerting drivers because they viewed an unexpected phenomenon. Also, it was thought that the marking system did help to call attention to the wrong-way signs and that it would be effective in causing a wrong-way driver to realize his or her mistake and act accordingly. Based on the finding of this initial work, the system has been implemented at two sites for further study.

A degree of bias can be expected when testing subjects in the manner described; however, because this research was intended as a first step in determining the feasibility of using raised pavement markers to alert wrong-way drivers, such a subjective evaluation was deemed to be appropriate.

The effect of the marking system on intoxicated or drowsy drivers cannot be surmised from the results of this evaluation, nor can the reactions of passengers to the markings be inferred. However, if only a small number of subjects, all of whom thought the system was effective, would have been prevented from going the wrong way, implementation of the system should be seriously considered because of its simplicity and low cost.