

Timely Detection of Wrong Way Drivers

Primary Author: Lynne Randolph, Southwest Research Institute

Secondary Author: None Listed

Timely detection of wrong way drivers

Background A Wrong Way Driver Task Force was developed in San Antonio to determine methods of addressing the problem of drivers entering the highway through exit ramps and proceeding on the highway against the direction of traffic. During 2011, more than 180 wrong way driver occurrences were reported. And in 2012, the number of reports grew to over 270. Many of these led to collisions on the highway, which included 7 fatalities from 4 accidents in 2011 and 7 fatalities from 5 accidents in 2012. A test corridor was selected based upon a heat map of wrong way incidents, and various mitigations were determined for installation on the selected interchanges. As a part of the testing on this corridor, software modifications to the Texas Lonestar™ software were completed to assist in the early detection of wrong way drivers, signs were installed on ramps, and messages were displayed to warn other drivers. The software is used in conjunction with standard devices such as detectors and message signs to provide notifications of wrong way driver events. The results from changes in place on this test corridor in 2012 showed a decrease of wrong way occurrences in areas where equipment was deployed.

Potential mitigations Various ideas to address the wrong way driver problem were discussed by the task force. Studies and research previously performed were reviewed for any pertinent information or possible use. Some of these were not feasible for various reasons.

- **Spike strips in exit ramps:** These are designed for low speed situations such as parking lots and garages. Destructive devices of this type would require exit ramp speeds to be lowered to 5 miles per hour. Destructive devices of this nature cannot be placed on the roads because of the risk to drivers and vehicles traveling in the correct direction.
- **Interchange designs:** A 1989 Caltrans study reviewed various interchange designs for the preventing of wrong way drivers entering the highway. A full cloverleaf was indicated as the most desirable while combination interchanges were the most problematic. In addition, short sight distance was cited as contributing because of the lack of visual cues such as highlights of oncoming vehicles. However, redoing the interchanges in San Antonio would not be a viable option. **Test Project** The US 281 corridor from IH 35 in downtown San Antonio northward to Stone Oak Parkway was selected as the Wrong Way Driver Countermeasure Operational Test Corridor. The section of road is approximately 15 miles in length and includes the locations of 25% of all wrong way driver reports in 2011. Countermeasures identified Several counter measures were determined to assist in addressing the wrong way driver issue and were implemented on the test corridor.
- **Enhanced static signing—**prior research has shown that increased visibility of “WRONG WAY” and “DO NOT ENTER” signs can reduce the instances of wrong way driving. Using a checklist developed by the Texas Transportation Institute, field surveys of several ramps were conducted. Additional signs were installed and in some cases standard sized signs replaced with larger versions.
- **Wrong way driver detection devices—**the faster a wrong way vehicle is detected and the appropriate personnel notified, the faster the vehicle can be removed from the highway. The statewide traffic management software, Lonestar, was modified to provide notifications when the devices trigger a wrong way detection. Two types of devices were tested:
 - o Wavetronix radar devices were modified to report not only speeds on vehicles traveling the correct direction, but to report negative speeds for wrong way detections.
 - o Tapco radar units which are used solely for wrong way detection. The device reports speeds only when devices are detected going the wrong way.
- **Active/Illuminated signing—**signs are embedded with lights or pixels to improve visibility. Two types of signs will be installed in mainlane locations on the test corridor.
 - o LED “WRONG WAY” signs

which have a border of LED pixels around a standard sign. oBlank out signs which when activated, display in red lights "WRONG WAY". Results Information on the results will be provided in the final paper.