SAFER HIGHWAYS AND WORK ZONES

NEW COUNTERMEASURES REDUCE WRONG-WAY DRIVING CRASHES IN FLORIDA AND TEXAS

Wrong-way crashes are a major challenge for transportation agencies and are usually caused by drug- or alcohol-impaired drivers mistakenly entering the highway via exit ramps. Two agencies recently conducted research to evaluate the causes of wrong-way crashes and test the effectiveness of countermeasures for preventing them.

Florida DOT research recommended and validated an enhanced system of wrong-way driving countermeasures. Driving simulators showed a reduction of wrong-way movements among study participants—from 3.3 percent with standard countermeasures down to 0 percent with enhanced countermeasures. Florida also field-tested wrong-way signs bordered with red flashing LED lights triggered by a wrong-way vehicle; these had a 96 percent success rate at 17 exit ramps in southern Florida. In a related project, Florida installed a system that detects a wrong-way driver, activates red rectangular flashing beacons, and notifies the Traffic Management Center to take action.

A Texas DOT project used data on crashes and countermeasures to evaluate the causes of wrong-way driving and develop wrong-way warning messages for dynamic message signs. Researchers also installed radar and illuminated wrong-way warning signs on the US 281 corridor and in construction zones. As a result, San Antonio has seen a 30 percent reduction in wrong-way driving incidents, and the number of wrong-way driving 911 calls decreased from 330 to 280 over three years. Texas DOT personnel estimate that 40 lives have been saved due to monitoring high-incidence corridors and implementing wrong-way warning devices.

A recent pilot study by Virginia DOT collected continuous pavement friction data for a single district of 650,000 residents, to see whether it could improve roadway crash rate predictions. By analyzing friction data in combination with crash records, Virginia DOT significantly improved the predictive power of its safety performance models. The improved models predict that using a conventional plant-mix overlay to improve friction would lead to 761 fewer crashes in this district, with more than $300 million in savings every three years. Research results improve the ability of engineers to match user demands and other deterioration related to long-term aging.

In San Antonio, annual wrong-way driving 911 calls decreased from 330 to 280 over three years.
MARYLAND IMPROVES MEDIUM LANDSCAPE AND DRAINAGE
Maryland State Highway Administration explored new practices to lessen compacted soil in medians and other roadside areas to support healthy vegetation, stormwater infiltration, and tree growth. Researchers evaluated test plots using a technique called suburban subsoling, which combines deep soil ripping and the addition of compost. A before-and-after study of vegetation and soil characteristics showed this to be an effective treatment. After rehabilitation, soil density decreased nearly 30 percent, the mass of organic matter almost doubled, and the soil structure went from being effectively impermeable to having an infiltration rate of 8.4 inches of water per hour. Forage radishes planted as a means of “bio-drilling” were also effective in loosening the compacted soil. Maryland aims to use this land development technique to reduce costs for maintaining medians and roadways and to foster long-term landscape sustainability.

SPECIES-TARGETED HIGHWAY CROSSINGS REDUCE COLLISIONS IN WYOMING
Wyoming research keyed in on employing the right highway crossing solutions for the right species. Wyoming DOT installed six underpasses and two overpasses along a state highway and undertook a three-year study to track movement of two large species with different movement patterns: mule deer and pronghorns. Researchers found 79 percent of mule deer moving from one side of the highway to the other used the underpass, and 93 percent of pronghorns used the overpass. In this study, the combination of overpass and underpass construction, together with continuous fencing, reduced wildlife-vehicle collisions of all species by approximately 81 percent and completely eliminated collisions with pronghorns. The findings highlight that species-specific preferences are an important consideration for highway crossing structures both to reduce wildlife collisions and mitigate the fragmentation of animal habitats.