

A Research Bulletin

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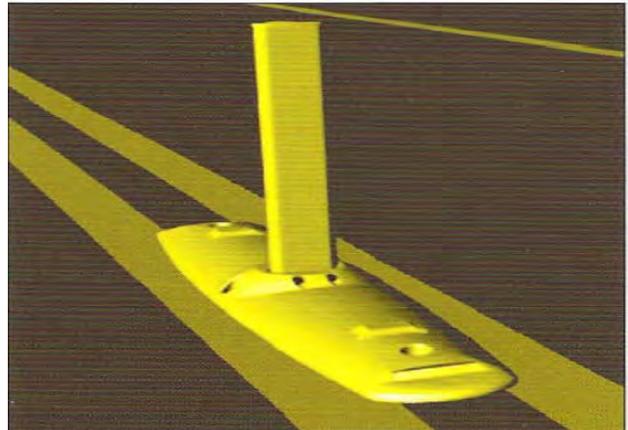
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Intelligent Work Zones

Locations: Work zones for Gasconade River Bridge project on I-44 in Laclede County and the Portland Cement Concrete Pavement (PCCP) unbonded overlay on Westbound I-44 in Pulaski County.

Background: In 2010, fifteen people were killed in work zones and 1,033 people were injured. A work zone on an interstate affects a large number of people every day. When MoDOT planned two busy work zones on I-44 in the summer of 2011, a lot of planning went into the work zone before an orange barrel was ever placed.

Summary: District Design Engineer, Mike Wake, district project manager Pete Berry, and former Rolla Resident Engineer Vicki Woods, used the latest technology to keep the I-44 work zones flowing smoothly. For both projects, Interstate traffic had to transition from a four lane divided highway to head-to-head single lane traffic. While signing and stripes may make the transition easy during the day, at night time or in rain it can be more difficult for drivers to see where they need to go. During the planning stages, Turnpike Grade Tubular Markers with progressive lighting were specified at both locations help guide traffic into the proper lane. The tubular markers are embedded into a 2-foot curb that visually appears to be a curbed wall to the driver. Progressive lighting leads the driver through the transition area.



During the construction project, there were issues with secondary accidents from traffic entering the highway at a nearby on-ramp. MoDOT worked with the Highway Patrol to devise a solution to warn oncoming vehicles. The solution “Intelligent Work Zone Equipment.” The Equipment included roadway sensors near the work zone that detected traffic speeds and changeable message boards at the on ramp warning of slow or stopped traffic ahead. The sensors measured the speed of traffic approaching the work zone and an applicable message was displayed downstream. Messages ranged from “Caution Work Zone Ahead” to “Stopped Traffic Ahead.” The message board also informed the public on what action to take to help prevent secondary accidents when incidents occurred upstream. In fact the intelligent work zone equipment worked so well, MoDOT later added the changeable message boards for interstate traffic as well.



Another added benefit of the intelligent work zones was that speed information was transmitted to the district office as it was being collected. District Customer Relations staff were responsible for reviewing the data

throughout the day. If the speed of the traffic changed quickly, the CR staff dispatched the local maintenance personal to determine what was slowing down traffic. The quick reaction of the MODOT staff helped keep small problems from becoming big problems.

Results: Advanced planning and the new technology paid off! Maximum delays on the interstate were in the 5 to 10 minute range, as opposed to hours that typical interstate construction can cause. Accidents were reduced significantly with the intelligent work zone technology, and numerous times, the maintenance personnel were dispatched within minutes of an incident.