

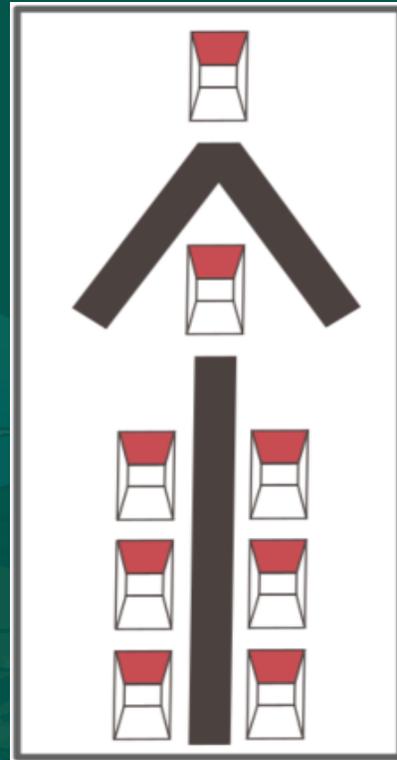
# WRONG WAY PILOT PROJECTS

**EVALUATED** - Red retro reflective pavement markings on ramps for wrong way driver incursion prevention.

**OBSERVED** - Red retro reflective markers placed on ramps in standard spaced configurations were 44% effective in reducing reported wrong way drivers, and a combination of standard and enhanced (a pattern of closer spaced red markers down the ramp) were effective in reducing 64% of reported wrong way drivers. Red markers were also placed with Type V arrows and across limit lines of exit ramps.

**APPROVED** - Use of red markers on ramps, and ramp lane lines and edge lines as well as all freeway and expressway lane lines. This also included placing red markers on the Type V arrows and across the limit lines on exit ramps.

**NEXT STEPS** - Develop Standard Plan Details for use of closer spaced pavement markings on ramps for use where wrong way drivers continue to enter on certain ramps.



**EVALUATED** - Advanced Detection and Notification Systems (ADN's) [TAPCO and TrafficCalm].

**OBSERVED** - Both systems can sense a wrong way driver, capture imagery of the wrong way vehicle, send imagery to predetermined locations or individuals and activate a secondary set of LED Wrong Way signs before a vehicle traverses the entire ramp to provide the driver and TMC notification.

The systems also detected false positives such as bicycles, motorcycles and pedestrians traversing the ramp the wrong way. Upgraded versions of these systems recently tested by other State DOT's (Florida and Arizona) using thermal imaging show significantly reduced false positive detection.

**APPROVED** - Systems such as TAPCO and TrafficCalm are already approved for use as they meet CA MUTCD requirements for placement.

**NEXT STEPS** - Establish business rules for use of these systems.

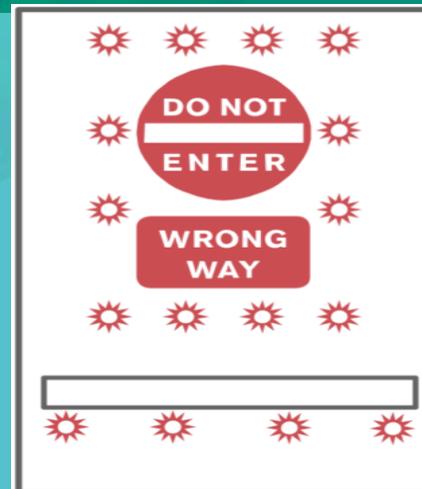


**EVALUATED** - LED illuminated signs and in-pavement LED illuminated flashing lights placed on dawn/dusk or 24-hour flash across limit lines.

**OBSERVED** - LED illuminated signs and in pavement red LED lights were 62% effective in reducing reported wrong way drivers at ramps were placed. Test locations were limited but other State DOT research with larger sample sets have concluded similar results using LED illuminated signs.

**APPROVED** - LED bordered Wrong Way signs and LED illuminated in pavement lights may be used per CA MUTCD without additional approval.

**NEXT STEPS** - Provide guidance to Districts on when placement may be considered as part of the Wrong Way Monitoring Program.



## Stay Informed:

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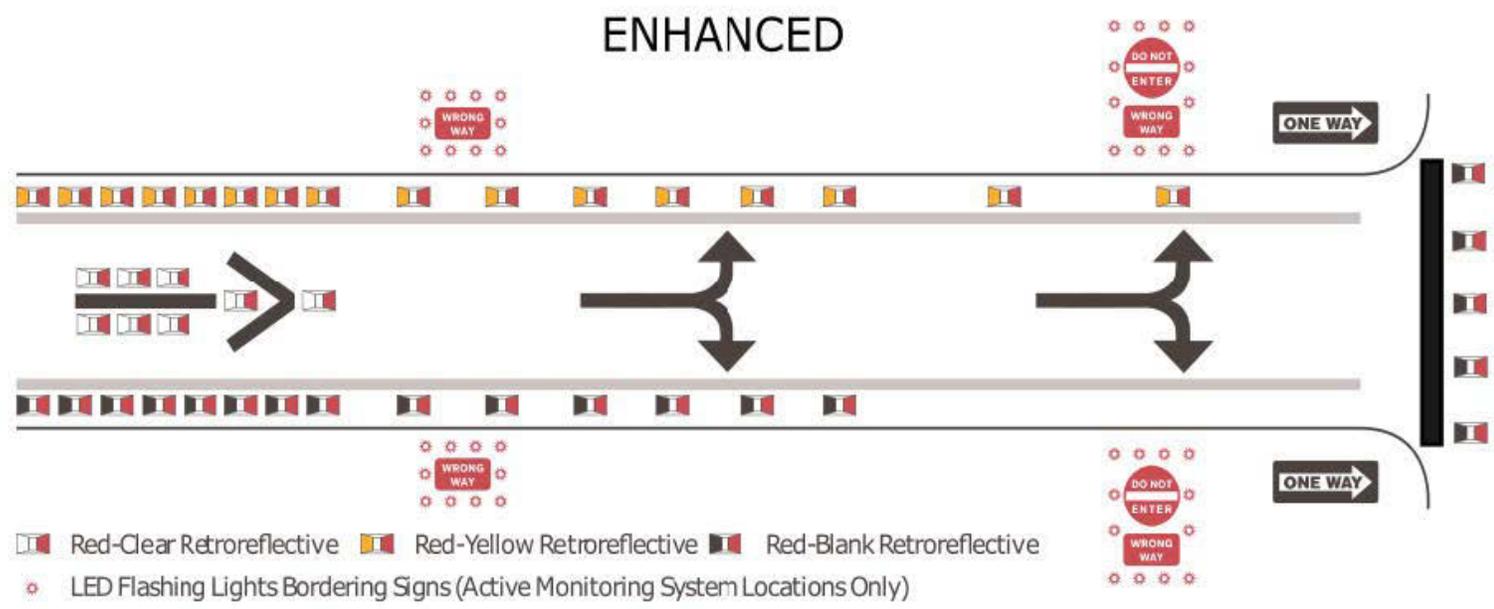


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July 1, 2020

# Conclusions from the Pilot Projects

- Red retroreflective pavement markings on ramp lane lines, freeway and expressway lane lines and Type V arrows on ramps have been implemented and are within the Standard Plans. APPROVED AND EFFECTIVE
- LED Illuminated signs and LED Illuminated Flashing In-Pavements systems require no further approvals and can be installed as needed or warranted. APPROVED AND EFFECTIVE
- Advanced Detection and Notification Systems require no additional approval to be used as the signs within the systems are already in the California Manual of Uniform Traffic Control Devices. Business rules and other policy measures should be put in place for use of these systems statewide to ensure they are used in an efficient manner as they are the costliest countermeasure of all that were tested, and they should not be installed on ramps that have not evaluated other lower cost countermeasures first. APPROVED AND EFFECTIVE – REQUIRE ADDITIONAL POLICY AND GUIDANCE



## What other sustainable and economical countermeasures are being looked at?

- Bidirectional pavement markings pilot projects will begin testing with installations in District 11 by mid-June of this fiscal year, and mid next fiscal year for District 3 locations. The markings are a new and emerging technology that may emerge as an effective new countermeasure for wrong way driver's on ramps.
- Use of Reported Wrong Way Driver data from CHP to develop a systemic wrong way program to address wrong way drivers and/or replace current wrong way monitoring program.
- Develop a robust wrong way training program for safety investigations staff with focused Wrong Way Countermeasure Implementation.



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