

DRISI

CALTRANS DIVISION OF RESEARCH,
INNOVATION AND SYSTEM INFORMATION

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Research

Notes

Construction

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Project Title:
Orange Temporary Pavement
Delineation in Construction Zones

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Orange Temporary Pavement Delineation in Construction Zones

Evaluating the effectiveness of orange pavement delineation in construction zones by measuring driver lane position before and after installation

WHAT IS THE NEED?

Highway workers working in construction zones are injured and killed every year by errant drivers. Orange temporary pavement delineation has been used around the world as a method of increasing driver awareness and improving safety in construction zones. European countries, Canada, and New Zealand have implemented this striping with positive results. Testing in three U.S. states has indicated that it can reduce driver confusion and improve worker safety, but it has not been tested in California yet. It is anticipated that orange delineation will increase its visibility to motorists, their awareness of being in a work zone and the likelihood of them driving at reasonable speeds. This research will also provide an opportunity to test benefits of orange striping for Connected and Automated Vehicles (CAV). Caltrans sees this research as an opportunity to improve the safety along the state highway system for both drivers and workers.

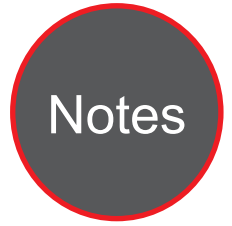
WHAT ARE WE DOING?

This project will assess the influence of orange pavement delineation in a work zone in Caltrans District 11 in the Interstate 5 (I-5) North Coast Corridor (NCC) Construction Project in San Diego County (about 14 miles one-way). Construction Units 1, 2, and 3 of the I-5 NCC Projects are using standard temporary white striping. For Unit 4, striping with orange contrast will be implemented from Palomar Airport Road to State Route 78 (about 4.1 miles in each direction, northbound and southbound). It is planned to have two alternative orange striping patterns for lane lines, right edge line, lane drop, and gores in the southbound direction and northbound direction. The different units allow the researchers to compare driver behavior and evaluate the effectiveness of the orange temporary delineation compared to standard temporary white striping.

Driver behavior will be observed by temporary installations of closed-circuit television (CCTV) cameras to measure vehicle speed, lateral position in lanes and number of lane departures.



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Visibility and durability of the orange delineation paint will be measured in terms of chromaticity and retro-reflectivity values when first installed and at approximately 2-month intervals afterwards over one year. The influence of the orange striping on the number and severity of traffic incidents will be observed according to available data from the California Highway Patrol (CHP) by comparing reports from Units 1, 2, or 3 (using white delineation) with Unit 4 (using orange delineation). Driver perception of, and preference for, orange versus white delineation will be measured by a website survey through a partnership with a Caltrans District 11 public relations consultant.

WHAT IS OUR GOAL?

Evaluate the effectiveness of orange temporary pavement delineation in a construction work zone by comparing driver behavior in zones with white and orange delineation. Measure the influence of orange delineation on motorists' lane position and speed. Quantitatively measure the visibility and durability of the orange delineation paint, and survey public opinion about orange delineation.

WHAT IS THE BENEFIT?

The results of this project will allow Caltrans to make an informed decision about whether to use orange striping for temporary work zone delineation. If proven effective, subsequent statewide implementation of orange work zone delineation could save the lives and property of road-side construction workers and the travelling public.

WHAT IS THE PROGRESS TO DATE?

The researchers traveled to District 11, the reference targets were painted at Cassidy overcrossing in NB and SB direction, Jefferson overcrossing in SB direction, Las Flores overcrossing in SB and NB direction, and Palmar Airport Rd overcrossing in SB direction. Also, the research downloaded the latest data from the CCTV cameras from all five sites. The mobile internet services for camera access were restarted and video data is being processed with regard to statistics of lane keeping behavior at different times and locations and robustness of the video analysis tool.

The researchers will start analyzing SWITRS and HERE data, in addition to PEMS data, for vehicle speed and flow. A second survey was planned.