

California Roadway Departure Noteworthy Practices

California Roadway Departure Safety Implementation Plan (RwDSIP)

Background

California's State Highway System (SHS) has approximately 15,100 center line miles. The California Department of Transportation (Caltrans) manages more than 50,000 lane miles of highways and freeways and is comprised of 12 districts. In 2012, the Federal Highway Administration (FHWA) developed the *California Roadway Departure Safety Implementation Plan* (RwDSIP) for Caltrans. The RwDSIP identified a total of 7,198 candidate locations for countermeasures using two different approaches: 1) a systematic approach and 2) a comprehensive approach. The systematic approach identified crash types that specific countermeasures were designed to impact and selected clusters of locations where the targeted crashes exceeded the designated threshold, which varied for each countermeasure. Roadway characteristics and traffic volumes also were considered in candidate location selection.

The comprehensive approach combined low-cost countermeasures with education and enforcement and was targeted to reduce severe roadway departure crashes on corridors and within municipalities that had a severe roadway departure crash history. These locations were on corridors with high concentrations of roadway departure crashes involving speeding or alcohol use. The designated thresholds varied based on the facility type (i.e., rural vs. urban, interstate vs. non-interstate).

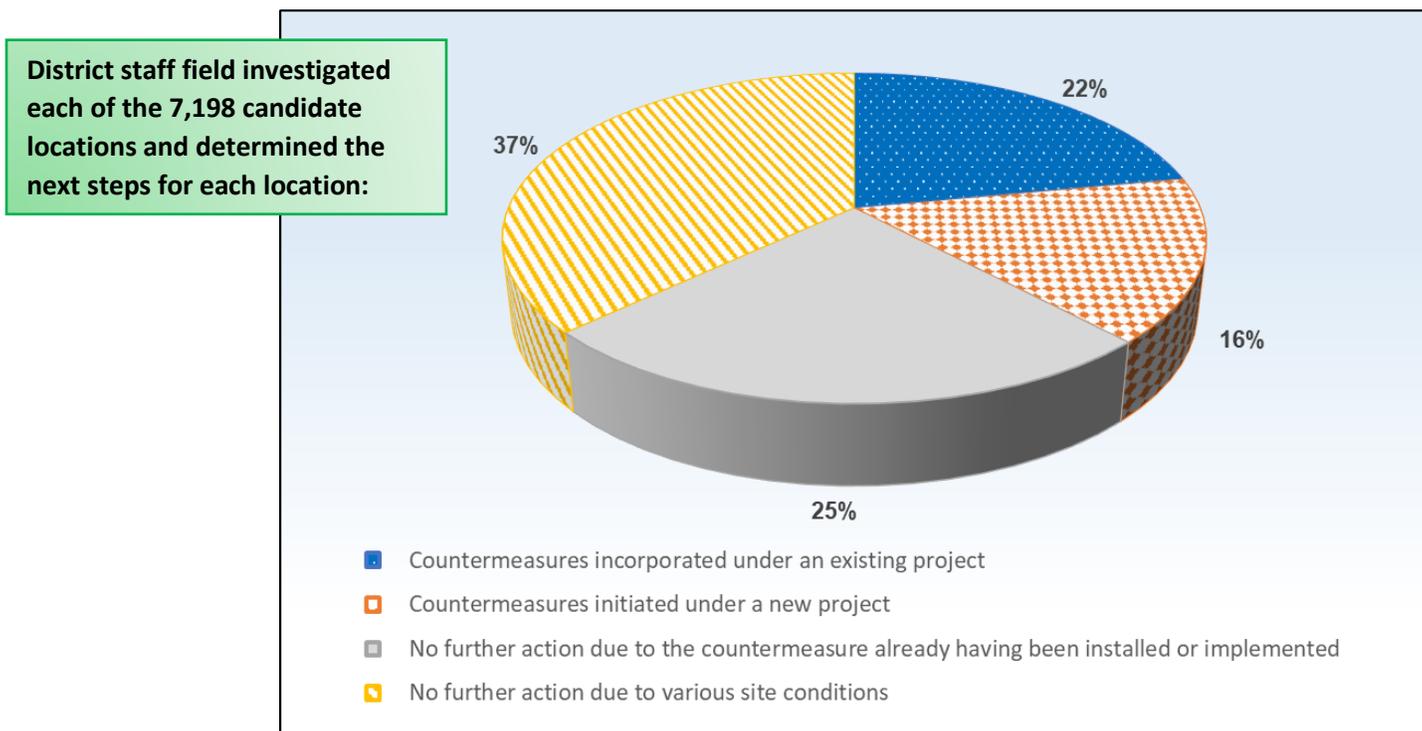


Figure 1: Implementation Summary of Identified Candidate Locations in the California RwDSIP



Challenges

It should be noted that the RwDSIP analysis did not include local roadway departure crashes since Caltrans only manages the SHS. Given that 61% of roadway departure crashes in California occur on local roadways outside of the SHS, the local agencies responsible would need to complete a separate analysis in order to address their local roadway departure crashes. A certain portion of California's Highway Safety Improvement Program (HSIP) funds are used for projects on locally owned roads per Chapter 639, Section 182.85 of the California Streets and Highways Code. In addition, it should be noted that curve data was limited, so it was difficult to identify curve crashes and countermeasures specific to those types of crashes.

Caltrans noted several challenges with some of the recommended countermeasures. Utility pole relocation and tree removal were the two treatments with the greatest challenges. These countermeasure treatments were problematic for many Districts due to resistance from the public and the extra time needed to negotiate with the utility companies and to coordinate with other external agencies while managing other logistics such as right of way issues. In many cases, the Districts chose to shield the fixed object with guardrail. Tree removal was also problematic due to both removal challenges and the volume of trees.

Behavioral treatments (such as enforcement) were another challenge to implement due to the amount of interagency collaboration that was necessary. Therefore, Caltrans did not directly track this strategy as part of the RwDSIP and left it as an option to the Districts. The Districts became part of a task force to seek grant funding to implement speed and alcohol enforcement. However, this has been handled as a separate process, which limits the direct control of enforcement or education outreach activities.

High friction surface treatments (HFST) were already in use throughout California on roadway segments other than freeways. At the time, however, the countermeasure was still relatively new, so a lack of institutional knowledge became a challenge for site selection. Some candidate locations on freeway segments received pushback because the Division of Maintenance did not feel it was necessary across all travel lanes. Instead, Caltrans considered HFST for the outside lane where lane change maneuvers were more frequent. Additionally on freeways, the Districts did not want to implement HFST for short (i.e., one-half mile) sections and considered alternative treatments.

A procedural challenge was the ability to track countermeasure deployments. The large number of locations made it very difficult to utilize existing Caltrans tracking tools. Many Districts mitigated this obstacle by using standalone spreadsheets.

Lessons Learned

There were several lessons learned through the RwDSIP process that should be considered in developing noteworthy practices. There was an initial challenge of getting the Districts to "accept" the RwDSIP findings and recommendations and not feel the need to reevaluate or validate the findings. To combat this challenge, Caltrans directed the Districts to confirm whether the countermeasures could be implemented rather than spend time reviewing/validating the RwDSIP findings.

In addition, many Districts were initially concerned about the limited staff resources available to perform mandatory field investigations. The Districts indicated that they relied on institutional knowledge to more effectively address the number of candidate locations in a timely manner. The Districts logged every candidate location from the RwDSIP into a database or spreadsheet tool, treated the investigation as a workload assignment, and tracked it as a status item at least every six months.

After the District investigations, Caltrans deemed more than 60% of the candidate locations from the RwDSIP as "No Action." A candidate location was deemed as "No Action" if the treatment had already been installed or implemented, if the countermeasure was not considered cost effective (e.g., fixed object removal), or due to other site conditions such as traversing through a town or noise-sensitive area (e.g., for rumble strips). It should be noted that only observed crashes were used as the basis for the RwDSIP development. This analytical approach reflected the widely accepted "hot spot" methodology that was common at that time.

In general, the Districts did not apply rumble strips on corridors with heavy bicycle traffic unless there was sufficiently wide shoulder. The Districts received some pushback from the bicycle communities, further emphasizing the need to be sensitive to the community when recommending and implementing countermeasures.



