



Caltrans Division of Research,  
Innovation and System Information

Research

Notes

Transportation  
Safety and  
Mobility

AUGUST 2014

Project Title:  
Statewide Managed Lanes  
(HOV/HOT) System Analysis Tools

Task Number: 2304

Start Date: January 2, 2015

Completion Date: December 30, 2016

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## Evaluating Alternative Design of Geometric Configuration for High-Occupancy Vehicle (HOV) Facilities in California

Improve the performance of HOV facilities in the state through innovative design of the facilities.

### WHAT IS THE NEED?

A recent study by the University of California, Riverside, has revealed that: a) buffer-separated HOV facilities are good at regulating traffic flows, which results in higher freeway throughput; while b) contiguous HOV facilities have potential to spread out lane changes, which allows traffic to maintain higher travel speed. This implies that an alternative design in geometric configuration of HOV facilities where continuous access is generally provided along a freeway to achieve higher travel speed while buffers are strategically placed on selected freeway segments (e.g., bottlenecks, ramp merges) to accommodate higher throughput on those segments may result in better operational performance than the existing designs.

### WHAT ARE WE DOING?

The research team will initially test the hypothesis in simulation environment using the readily available traffic micro-simulation network of the SR-91 freeway in Caltrans District 8. The HOV facilities in this network have been coded as continuous access and limited access. In this study, we will also code these HOV facilities as partially limited access where buffers will be placed at existing bottleneck locations. In addition to simulation, it is proposed to also test the hypothesis in real-world setting through field operational test. Caltrans District 8 has plans to convert more HOV facilities in the district from limited access to continuous access. By working closely with Caltrans District 8, the research team will identify buffer placement locations for the partially limited access configuration on the HOV facilities that will be converted. Upon successful validation of the superior performance of the partially limited access configuration, it is proposed to develop guidelines for designing HOV facilities with the proposed alternative design.



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### WHAT IS OUR GOAL?

The objective of this research is to evaluate the performance of HOV facilities with the partially limited access configuration in relative to those with the existing configurations.

### WHAT IS THE BENEFIT?

It is proposed to research the performance of HOV facilities with the so called “partially limited access” configuration (see Figure 1) in relative to those with the existing configurations. The results from this research could enable Caltrans to improve the performance of HOV facilities in the state through innovative design of the facilities.

### WHAT IS THE PROGRESS TO DATE?

New task (Task ID# 2304) has been set up in RPMD for this project (P343).

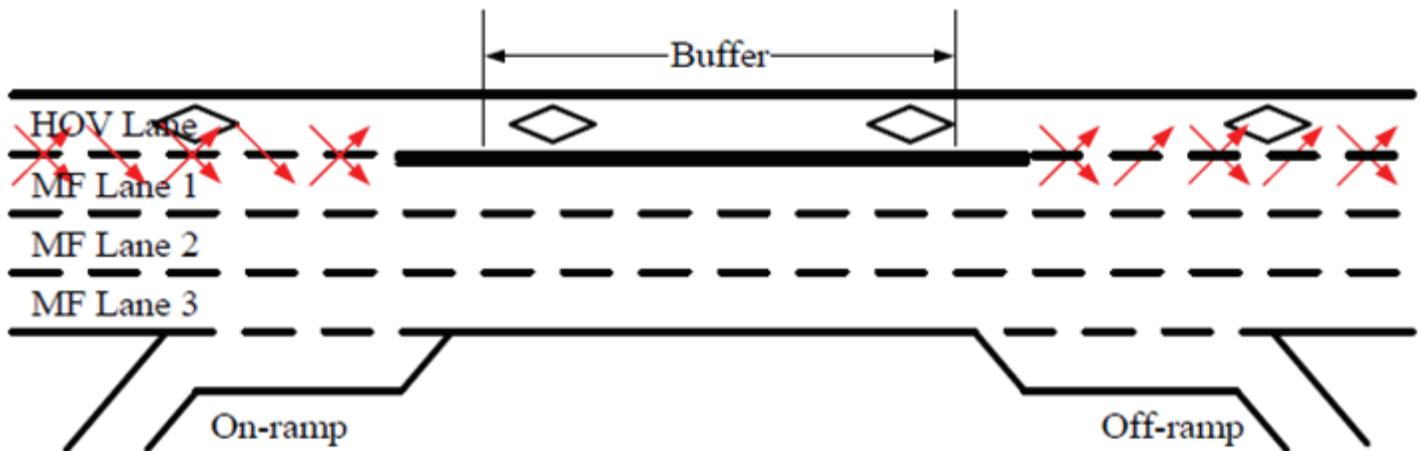


Figure 1. Partially limited access HOV facilities