



Planning & Community Development Department
Transportation Engineering and Management Division
1685 Main Street, Room 115
Santa Monica, CA 90401

April 9, 2014

Mr. Devinder Singh, Executive Secretary
California Traffic Control Devices Committee – MS36
P.O. Box 942874
Sacramento, CA 94274-0001

**SUBJECT: Update to Experiment 12-25 – Various Bicycle Treatments
(Buffered Bike Lanes)**

Dear Mr. Singh / CTCDC Committee:

In December 2012, the City of Santa Monica was granted permission to conduct an experiment through our “Request for Permission to Experiment – Various Bicycle Treatments”. Per the request of the CTCDC, the City has separated each bicycle treatment into a standalone experiment. This update discusses buffered bicycle lanes that are not expressly approved for use in the State of California. The purpose of the experiment is to determine the effectiveness of buffered bicycle lanes to encourage bicycling, increase driver awareness, increase bicyclists’ comfort level, and increase yield compliance from cyclists and motorists.

Should you have any questions or require any additional information, please contact me directly.

Respectfully,

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1. Background

As documented in the 2010 General Plan Land Use and Circulation Element (LUCE), Santa Monica aspires to make this City a place in which 14-35% of all trips are made by bicycle. The City is currently implementing its adopted 2011 Bicycle Action Plan to achieve that result. The Bike Action Plan presents a program of specific practical actions that will encourage people to switch to bicycling, not only because it is environmentally friendly, but also because they will want to enjoy its safety, comfort, and convenience. The City's Open Space Element identifies walking on streets as residents' number one recreational activity. With a successfully implemented Bike Action Plan, bicycling will be a close second, and increases in the number of people who choose to commute by bicycle will surely increase.

Although this is a local plan developed in response to this community's needs and desires, it is also prepared within a national, state, and regional context that, more and more, seeks to encourage and support local communities in their efforts to become less car-focused, more energy efficient and less polluting. In addition to implementing Santa Monica's LUCE, the Bike Action Plan implements components of state and regional plans, including California Bicycle Transportation Account requirements and Metro's Strategic Bicycle Transportation Plan. Because of its leadership in implementing these State and regional goals, the City anticipates continuing funding support from national, State and regional levels of government.

2. Problem Statement

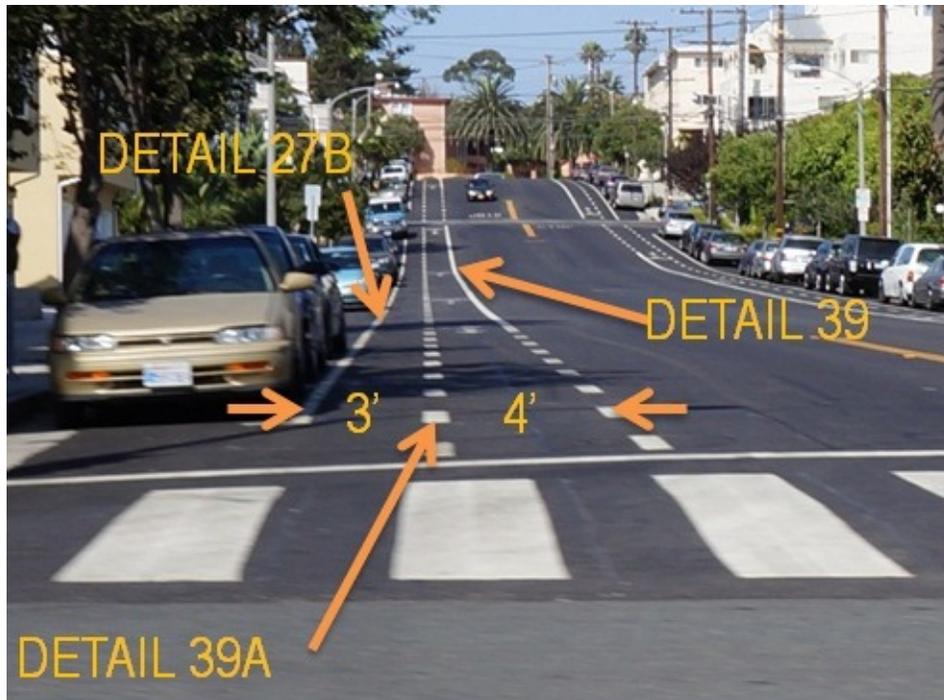
Like many jurisdictions throughout the State and nation, Santa Monica is concerned with compliance and ensuring that motorists and cyclists yield right-of-way to each other at signal controlled intersections. To address cyclist and motorist compliance, the City has pursued modified applications of a buffered bike lane to designate a space for cyclists, and to bring attention to the cyclist from the motorist's perspective.

3. Proposed Changes

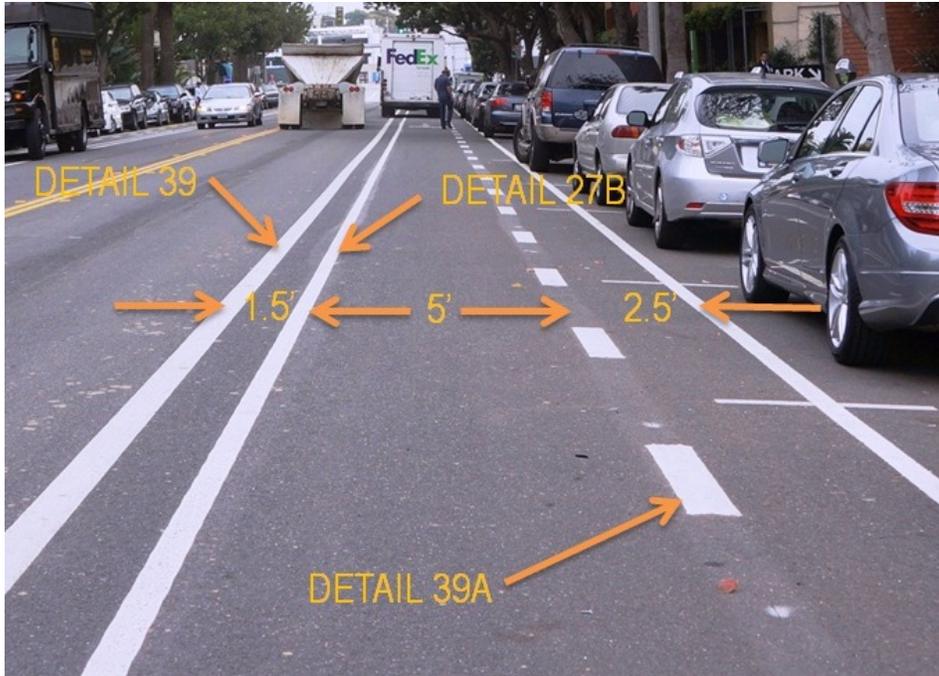
Buffered bike lanes are conventional Class II bicycle lanes paired with a designated buffer space separating the bicycle lane from the adjacent vehicle travel lane and/or parking lane. All parking lanes are 7 ft. wide, and travel lanes are at least 10 ft. wide. Bike lanes and buffers vary as described below. None of following bike lanes is designed for side-by-side riding, although this behavior will be monitored during the experiment. All bike lanes will extend to the crosswalks of signalized intersections with a 5 ft. or 6 ft. bike lane.

The City would like to experiment by installing buffered bike lanes on various streets with the following varying buffer types and widths:

- **Parking lane buffer.** For this type of buffered bike lanes, a minimum 2.5-foot buffer will be installed between the parking lane and the bike lane using Caltrans Detail 39A (6 in. white dashed bike lane line). The 6 in. solid white outside line dividing the bike lane from the traffic lane will become a 6 in. dashed white line approximately 50 feet in advance of each intersection. The 6 in. white dashed parking buffer will continue to the intersection stop bar. The parking buffer will be installed on new bike lanes where space permits. Given the high parking turnover rate of many of the busy commercial streets throughout the City, the parking buffer will be a high priority. Project segments include Montana Avenue between Ocean Avenue and 17th Street (16 blocks, approximately 6,500 feet), Bicknell Avenue between 4th Street and Main Street (3 blocks, approximately 900 feet), and Main Street between Pico Boulevard and Marine Street (12 blocks, approximately 4,800 feet). The diagram below illustrates the cross section of this buffered bike lane.



- **Traffic lane buffer.** Where space permits, a 1.5-foot traffic lane buffer will be installed along with the parking lane buffer. The traffic lane buffer will be installed on streets with higher vehicle speeds and where the bike lane is so wide that it might be mistaken for a travel lane or a parking lane. The striping for the traffic lane buffer will be a combination of Caltrans Detail 39 (6 in. solid white bike lane line) on the traffic side and Caltrans Detail 27B (4 in. solid white edge line on the bike lane side). The traffic side buffer will transition to the 6 in. white dashed parking buffer which will continue to the intersection stop bar. The traffic side buffer will contain transverse markings and occasional breaks at driveways. Project locations include 6th Street between Colorado Avenue and Wilshire Boulevard (4 blocks, approximately 2,700 feet) and 14th Street between Pico Boulevard and Washington Avenue (9 blocks, approximately 6,900 feet). The diagram below illustrates the cross section of this bike lane.



4. Evaluation Plan

The objective of this experiment is to evaluate the effectiveness of the buffered bike lane treatments. The evaluation process will include a “before” and “after” study of both motorist and cyclist behavior and reactions to the experimental treatments. Experimentation requirements outlined in the MUTCD will be used to guide this process. These “before” and “after” studies will be conducted via random observations by City staff at various times of day, interviews with cyclists, and by soliciting direct feedback from Santa Monica’s various bicycle advocacy groups and other regular bicycle riders.

Observations that will be documented include:

- Wrong way riding
- Bicycle lane use (including bicyclists' adherence to the buffer zones, bicycle travel in the traffic buffer for and extended distances, and how pairs of bicyclist travel in/out of the buffered lane)
- Motorists' adherence to the bike lanes and buffer zones (including if motorists will misinterpret the traffic buffer markings to mean that crossing the traffic buffer is prohibited)
- Conflicts between cyclists and motorists
- Bicycle volumes
- Feedback from facility users
- Crash data at affected intersections

The evaluation plan will consist of the following elements:

- Evaluate Existing Setting – Existing traffic facilities and conditions at the locations of all new bicycle facilities under the experiment will be documented. This evaluation has already been completed by the City.
- Pre-Installation Evaluation – Driver behavior and reactions to bicycles will be observed and documented with existing traffic facilities. If appropriate, average numbers of bicycles using the existing facilities will be estimated based on observations. Note that much of this evaluation has already been completed by the City.
- Post-Installation Evaluation – Driver behavior and reactions to bicycles will be observed and documented with the new buffered bike lanes. Feedback from local bicycle groups will be solicited, and any accident records will be reviewed and analyzed. If appropriate, average numbers of bicycles using the new buffered bike lanes will be estimated based on observations.
- Reporting to CTCDC – Regular reports documenting the City's observations will be prepared and submitted to CTCDC at least twice during the one (1) year evaluation period.

5. Experiment Schedule

The following schedule for experimentation is proposed:

Pre-Installation Evaluation	Fall 2012
Bicycle Treatments Installation	Spring/Summer 2013 to Fall/Winter 2013
Bicycle Treatments Experiment Period	Spring/Summer 2014 to Fall/Winter 2014
Evaluation	Spring/Summer 2014 to Fall/Winter 2014

6. Current Status

In the Spring of 2014, the City installed a camera on 6th Street set to take a photo every few seconds to provide a more comprehensive data set to track compliance. The data set revealed overall compliance with bicyclists properly positioning themselves between the traffic-side buffer and the parking-side buffer as illustrated in the photos below.



There were, however, a few non-compliant bicyclists captured in the data set. The most common behavior was bicyclists riding in the parking-buffer area. Non-compliant bicyclists are illustrated below.



Regarding the traffic-side buffer: As of April 2014, the City of Santa Monica is in the process of modifying the various buffered bike lane treatments at the locations specified per December 2012 CTCDC direction. Some of the buffered bike lane treatments were installed in late 2012 and are currently being modified to conform to the proposed experiment. The modification consists of converting the Detail 27B solid 4" white line to a dashed pattern matching the adjacent Detail 39A as shown in the picture below. As of April 2014, all of 14th Street had been modified as discussed above. The modification of existing 6th Street traffic-side buffer and installation of new buffered bike lane treatments is being coordinated with the City's annual roadway resurfacing project and with the City's internal traffic painting maintenance staff. The modifications will be completed according to the experiment schedule described above and/or when the City identifies funding to complete the modifications.



Regarding the parking-side buffer: The data set revealed overall compliance. Some cyclists still choose to ride in the door zone, but only a small percentage. The City is considering adding more bike lane legends to reinforce the cyclists' position in the bike lane.

The City will continue to add to the photo data set and monitor bicycle and vehicle compliance and the effectiveness of the parking-side and traffic-side buffers.