



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
(Left- and Right-Turn Sharrow Markings)**

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 using a modified left- and right-turning shared lane marking ("SLM" or "sharrow") that is not currently approved for use in the State of California. The purpose of the experiment will be to determine the effectiveness of a modified sharrow to 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,

A handwritten signature in black ink, appearing to read "Jay Dinkins", with a long horizontal flourish extending to the right.

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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 a modified application of shared lane markings, or sharrows, to designate a space for cyclists, and to bring attention to the cyclist from the motorist's perspective. The purpose of this modified application will be to better direct bicyclists to intersecting bike facilities, and to alert motorists to the presence of bicycles preparing to turn off of a street.

3. Proposed Changes



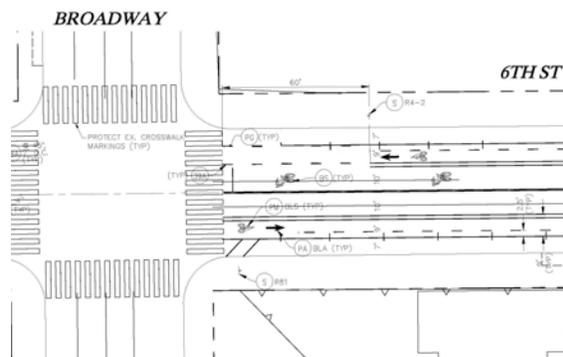
The shared lane marking (SLM), or sharrow, is often placed in the travel lane to indicate that a bicyclist may use the full lane and to suggest where in that travel lane to position his/herself. In the City of Santa Monica the suggested location is typically based on where to best avoid parked car door conflicts and where to direct

bicyclists to command possession of the full lane. The City requests testing a modified sharrow marking with the two chevrons above the bike symbol pointing left or right. This modified sharrow indicates the recommended location in the vehicle lane where a cyclist should position his/herself to make the legal and safe turn. These markings are only to be installed where a left-turn pocket is not present, and where a designated bikeway intersects with another designated bikeway. A designated bikeway is defined as a street that has a Class II bicycle facility and is a strategic bike connection through the city with high bicycle traffic volumes. This marking will, in turn, act as advance guidance for cyclists that he/she is approaching an intersecting bikeway.

Proposed Locations

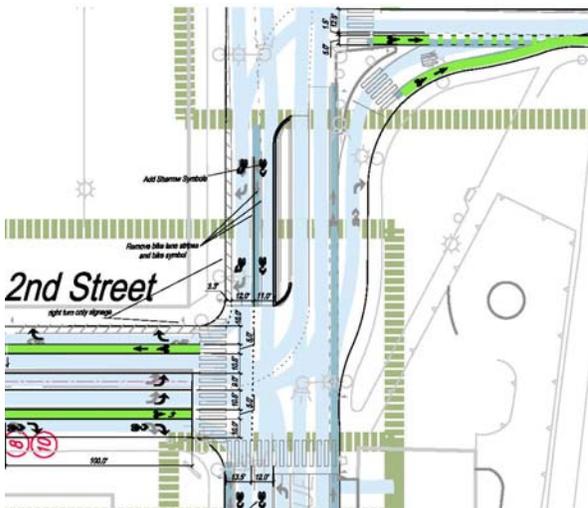
Various intersections along 6th Street

The left turn sharrows will be installed on 6th Street at the intersections of Broadway and Arizona Avenue. Broadway is the most heavily traveled east-west bicycle facility in the City. Arizona Avenue is another east-west street similar in bicycle popularity two blocks north and parallel to Broadway. Sixth Street is a two-lane roadway which features newly installed bike lanes that connect Colorado Avenue to Wilshire Boulevard, making it the main Class II bike facility in Downtown Santa Monica. With the lack of left-turn pockets on 6th Street, cyclists must wait in the only travel lane to turn left onto the bike lane on Broadway or Arizona Avenue. The left-turn sharrow will suggest where the cyclist should position themselves to safely and legally execute the turn. The left-turn sharrow will also remind motorists that bicycles may be present in the vehicle lane at this location, and may be waiting to make left-turns.



Colorado Avenue at Main Street/2nd Street

Second Street and Main Street form an important bikeway through Santa Monica. The 2.5-mile bikeway stretches from the southern City Limit to the north end of the city, connecting Venice Beach via Main Street, downtown Santa Monica and Montana Avenue on the north end of 2nd Street. The connection at Colorado Avenue where the existing Class II bike lane jogs from Main Street to



2nd Street is a challenging offset intersection with high volumes of vehicles and bicycles. In addition to the existing activity, a new Bike Center opened a year ago at the intersection of Colorado Avenue at 2nd Street and has proven to be a regular destination for locals and tourists alike. The Bike Center includes bike rentals, repair and secure bike parking with changing facilities and lockers. The intersection geometry as well as the volume of cyclists using this bikeway highlights the need for innovative

improvements like a right-turn sharrow. The right-turn sharrow will provide an opportunity to suggest where a cyclist should appropriately position his/herself to make the right turn from Colorado Avenue onto 2nd Street.

4. Evaluation Plan

The objective of this experiment is to evaluate the effectiveness of the above-mentioned modified sharrows. 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 Manual of Uniform Traffic Control Devices 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:

- Conflicts between cyclists and motorists
- Cyclist’s position on the modified sharrow

- Cyclist's path as they approach the left turn sharrow
- 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 modified sharrow. 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 modified sharrow 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.

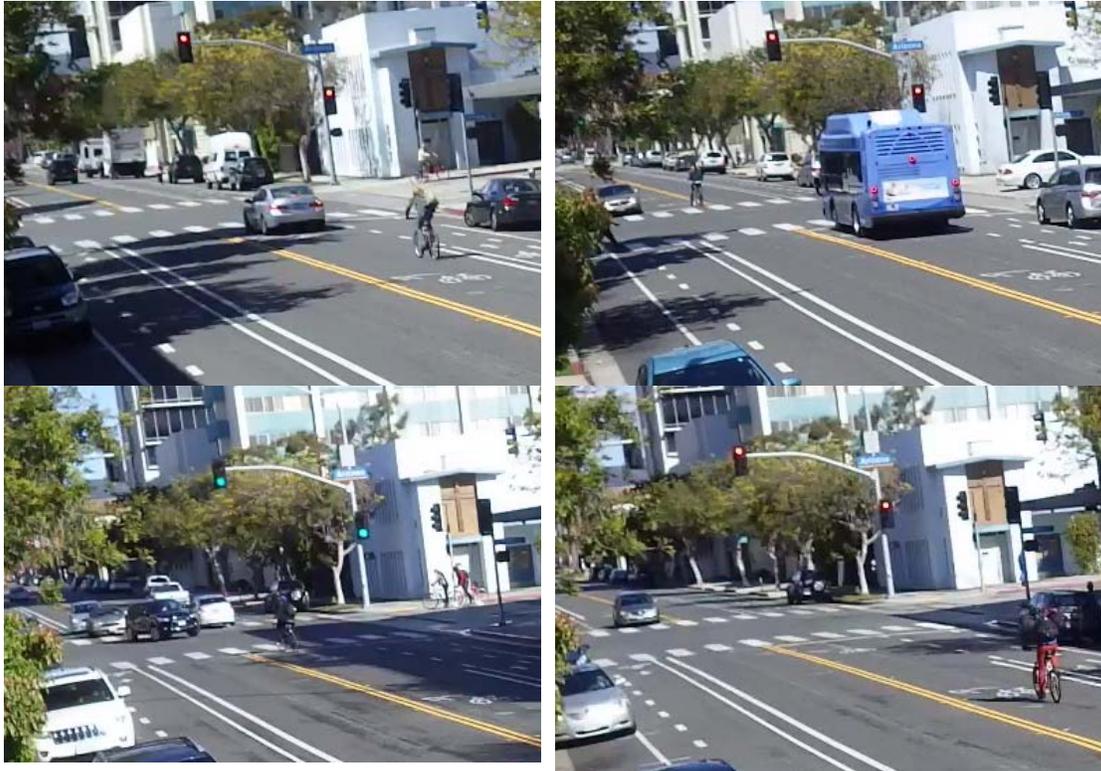
5. Experiment Schedule

The following schedule for experimentation is proposed:

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

6. Current Status

As of April 2014, the City of Santa Monica has installed the modified sharrow markings at various locations along 6th St as specified, and evaluations have begun. The City installed a camera set to take a photo every few seconds to provide a more comprehensive data set to track compliance. The data set reveals overall compliance with bicyclists entering the vehicle lane to properly position themselves for the legal left turn as illustrated in the photos below.



Vehicles yield to cyclists that are correctly positioned in the middle of the vehicle lane to execute the left turn. As of April 2014, the City has received no feedback from local bicycle groups, and no accidents have been reported.

The City is in the process of installing the modified sharrow markings on Colorado Avenue. This installation is being coordinated with the City's annual roadway resurfacing project and will be completed in the Summer of 2014. The City will continue to add to the photo data set and monitor bicycle and vehicle compliance and the effectiveness of the turning sharrows.