



City of Emeryville

CALIFORNIA

MEMORANDUM

DATE: November 7, 2017
TO: Carolyn Lehr, City Manager
FROM: Andrew Clough, Acting Public Works Director
SUBJECT: Consideration Of The Installation Of Flexible Bollards On Horton Street As Pilot Project

Resolution Of The City Council Of Emeryville To Install Flexible Bollards On Horton Street From 53rd Street To 59th Street

Resolution Of The City Council Of Emeryville To Install Flexible Bollards On Horton Street From Powell Street Bridge To 59th Street;

RECOMMENDATION

Staff requests that City Council take one of the following actions:

1. Adopt Resolution Of The City Council Of Emeryville To Install Flexible Bollards On Horton Street From 53rd Street To 59th Street; or
2. Adopt Resolution Of The City Council Of Emeryville To Install Flexible Bollards On Horton Street From Powell Street Bridge To 59th Street; or
3. Refer this item to Transportation Committee for further discussion and review of other potential pilot project locations; or
4. Take no action.

Staff recommends Option #2: a pilot project to install flexible bollards on Horton Street from Powell Street Bridge to 59th Street. As part of the pilot project designation, the project would be evaluated before implementation per FHWA and Caltrans guidelines and then re-evaluated after a one-year period.

If the City Council does not wish to designate a pilot project at this time, staff recommends that the item be brought to the Transportation Committee for further discussion and review of other potential locations. Staff can collect data based on best practices, and bring the quality data to the Transportation Committee to make a quantitative case for or against project locations.

BACKGROUND

Bicycle facilities are a vital part of the transportation infrastructure that is used by many to travel to and from work, or to take trips to other nearby destinations. Class IV Bikeways, also referred to as separated bikeways, may minimize interactions with other modes of travel and provide bicyclists with a greater sense of comfort and usability. The development of a well-conceived bikeway network that includes separated bikeways can have a positive effect on bicyclist usage, motorist behavior, and the community's comfort level on the bikeway network.

In December of 2015, the Caltrans' Office of Standards and Procedures released Design Information Bulletin (DIB) Number 89 – Class IV Bikeway Guidance. This document was based on FHWA guidance on the same subject in a document titled, "Separated Bike Lane Planning and Design Guide." Both documents were prepared to provide design criteria and other general guidance on best practices related to separated bikeways, and to establish uniform guidance for the use of owners of these type of facilities. The design criteria and guidance were written to allow engineers to exercise their professional judgement based on the guidelines and the particulars of the project location.

Crossing points offer unique challenges to the design and operation of a separated bikeway. The usability and safety of the separated facility depends heavily on the manner in which intersections, including the pedestrian facilities, interact with and connect to the separated bikeway and bikeway network. It is critical that careful thought and planning go into the design of all intersections located along a bikeway. Intersection design should strive to minimize conflict points between the separated bikeway user and the crossing motorized traffic and pedestrians.

Separated bikeways require routine maintenance similar to other roadway facilities. However, because of their location near the edge of the roadway they are more likely to accumulate debris. Since bicyclists are inhibited from entering and exiting separated bikeways at their discretion, it is critical to maintain the bikeway surface and to remove debris in order to avoid unsafe conditions. Maintenance plans should address routine maintenance and long term maintenance needs, such as removing debris, maintaining landscaping, repairing and replacing the separation vertical elements, maintaining the pavement and traffic control devices. Narrow street sweeping vehicles or manual sweeping may be needed depending on the separated bikeway width and buffer used.

DISCUSSION

Best Practices for Separated Bikeway Implementation

In 2015, the Federal Highway Administration (FHWA) released guidance on this topic, in a document titled "Separated Bike Lane Planning and Design Guide." The guidance states while planning separated bike facilities, practitioners should evaluate projects in a holistic fashion, considering all street users and using evaluation criteria beyond just mobility and safety. The guidance contains a detailed project evaluation checklist (Exhibit B attached) and a data collection information checklist (Exhibit C attached).

The project evaluation process should attempt to measure various effects of separated bike lanes on different groups such as pedestrians, cyclists, transit users and motorists. It is crucial that any evaluation measures the before and after changes in bicycle volumes and bicycle crash and injury data. The collection of high-quality volume and crash data is also important for future research efforts on the mobility and safety effects of separated bike lanes.

Before planning and designing a separated bike lane, it is critical to formalize data collection procedures in order to provide for effective project evaluation. This is important because only with quality data will the City be able to make a quantitative case for the safety, mobility, and economic benefits of separated bike lanes. It is recommended by staff that any potential separated bikeway project in the City of Emeryville be evaluated before implementation based on FHWA and Caltrans guidelines, and then be re-evaluated after a one-year period if the project is constructed.

Existing Conditions on Horton Street

Horton Street is designated as a Bicycle Boulevard per the City of Emeryville Bicycle and Pedestrian Plan adopted in 2012. Horton Street from 40th Street to 53rd Street is the epitome of a Bicycle Boulevard, and utilizes Bike Boulevard pavement markings in conjunction with traffic calming measures to provide a safe, continuous access through route for bicyclists. The General Plan under Section 3.2 Circulation System, Bicycle Boulevards are defined as follows:

“These are through-routes for bicycles providing continuous access and connections to the local and regional bicycle route network. Through-motor vehicle traffic is discouraged. High volumes of motor vehicle traffic are also discouraged, but may be allowed in localized areas where necessary to accommodate adjacent land uses. Local automobile, truck, and transit traffic are accommodated in the roadway, but if there are conflicts, **bicycles have priority**. Traffic calming techniques to slow and discourage through-automobile and truck traffic may be appropriate.”

The project section that has been proposed for a separated bikeway is the section of Horton Street between 53rd Street and 59th Street. This section is also defined as a Bicycle Boulevard, but utilizes Class II bike lanes with a general cross-section that uses 10-foot or 11-foot travel lanes and 6-foot bike lanes.

Existing Problems on Horton Street between 53rd Street and 59th Street

This area generally has signed “No Parking Anytime” restrictions or red curb markings, except for the section between Stanford Street and the Powell Street Bridge where a 9-foot parking lane exists. There are frequent encroachments by motorists in the bike lanes on all sections of Horton Street, but particularly between Powell Street Bridge and 59th Street. These encroachments are often done by delivery trucks that illegally park at a red curb and block the bike lane. On the section between 53rd Street and Haruff Street, there are less encroachments by motorists into the bike lane except for when motorists enter/exit driveways or the 9-foot parking lane.

With multiple conflict points at driveways, parking lanes, and intersecting streets, there have been general complaints from bicycle users on Horton Street that they do not feel entirely comfortable riding on this roadway.

Preliminary reviews of the collision history on Horton Street (Exhibit D attached) shows that there is little to no history to suggest that this street warrants separation of the bike lanes. The five-year collision history shows only one reported incident with a bicycle at the Horton Street and Haruff Street intersection. As this occurred in an intersection, this collision would not have been prevented by an installation of a separated bikeway.

The flexible bollards proposed will not prevent a speeding driver, nor a very determined driver from entering the bike lane. What a separated bikeway would do is help in preventing casual motorists from encroaching into the bike lane, and help in promoting safe path of travel for bicyclists of all skill types. The proposed pilot project would increase the community's comfort level on this section of the bikeway network, and could be used as a case example for other potential project locations.

Potential Solutions on Horton Street

Ideally, flexible bollards or other vertical separation elements would be installed using the design guidelines set forth by FHWA and Caltrans for separated bikeways. Unfortunately, the narrow cross-sections on Horton Street would not allow for the recommended configurations listed in the guidelines. Caltrans' DIB 89 guidelines specify that the minimum width of the bike lane shall be 5 feet with a recommended width of 7 feet. The guidelines further specify that a buffer shall be used in conjunction with the bollards with a minimum width of 2 feet and a recommended width of 3 feet. The buffer is used to further help drivers from encroaching into the bike lane, while also preventing the bollards from being hit frequently. The buffer is also used to widen the gap separating vehicles from bicyclists, and helps bicyclists from getting caught up in the bollards with their handlebars.

There are sections of Horton Street where the minimum separated bikeway dimensions can fit with 5-foot bike lanes, 2-foot buffers, and 10-foot travel lanes. The problem is that there are many sections where the minimum dimensions will not fit. These narrow cross-sections are mainly located on the sections between Haruff Street and the crosswalk north of 53rd Street. In these areas, the bollards would have to be installed without a buffer where they would be more at risk of getting struck by vehicles or bicyclists.

The 9-foot parking lane on Horton Street between Stanford Avenue and the Powell Street Bridge poses another issue. Cars will need to enter/exit through bollards if bollards were to be installed there. The parking lane at this location cannot be reconfigured to swap places with the bike lane due to the cross-section widths and curb geometry. The parking lane is located in front of local businesses that use the parking for employees, clients, and deliveries. It is recommended by staff to not install flexible bollards at this location with the parking lanes.

The longitudinal spacing of the bollards would be 10 feet based on design guidelines and the need to limit the ability of cars encroaching into the bike lane area. From past experiences with other flexible bollard installations in the City, including on Horton Street to the south, motorists will eventually crash into and damage the flexible bollards. The existing bollards near the speed humps on Horton Street have an average of 1-2 bollards needing to be replaced every month.

The flexible bollards will have to be continually monitored and replaced as they are damaged. Bicycle forward-thinking cities such as Portland, Oregon and Long Beach, California have installed vertical separation elements at pilot project locations and then later had to remove bollards due to various issues including continual replacement of bollards and increased maintenance costs. The separated bikeway installations that are still in use in these cities are typically where large buffers and wide bike lanes were provided.

Other Factors to Consider

An issue with installing flexible bollards on narrow bike lanes such as the ones on Horton Street is that debris will start to accumulate inside the bike lane. Bicycles will need to occasionally navigate quickly out of the bike lanes to avoid debris, which poses dangerous situations where drivers are not expecting a bicycle to enter into their lane. Standard street sweepers are not made narrow enough to navigate into 6' bike lanes, and vendors require a minimum of 8 feet to bring in modified parking lot sweepers which come at considerable cost.

The standard street sweepers used throughout the City would not be able to fit into the proposed bike lane configurations. Any narrow non-standard sweeper is quoted from vendors as being at least double the normal cost due to the sparse usage the narrow sweeper would have in the City, and for the fact that the narrow sweeper would have to be brought in just for this purpose. Another way to clean debris from the separated bike lanes is to manually sweep or blow debris into the regular travel lane using City maintenance staff prior to the standard street sweepers coming through town. This task is no small order, and would require a couple of employees to clean, sweep, or blow debris every two weeks for a few hours on 0.75' miles of new separated bike lanes (measuring up and down Horton Street from 53rd Street to 59th Street). The additional maintenance costs are estimated to be \$5,000 - \$10,000 per year.

FISCAL IMPACT

The estimated cost to install the flexible bollards is estimated to be in the amount of \$17,500 for the limits between 53rd Street and 59th Street (Option #1). The estimated cost to install the flexible bollards is estimated to be in the amount of \$8,000 for the limits between Powell Street Bridge and 59th Street (Option #2).

Actual maintenance costs cannot be fully determined until after a one-year evaluation period. The existing street sweeping contract can be modified to include narrow sweepers, or maintenance staff can be directed to manually sweep the bike lane areas. Additional maintenance costs will come from replacement of the flexible bollards as they

are damaged over time. Maintenance activities will total an estimated \$5,000 - \$10,000 per year.

At this time, there are no identified funding sources for this project. One funding option would be to utilize funds allocated for CIP Project Number 15240017 Bicycle and Pedestrian Plan Implementation Projects. The description of this fund account is to pay for minor cost bicycle and pedestrian improvements recommended in the Bicycle and Pedestrian Plan, or as recommended by the Bicycle Pedestrian Advisory Committee and City Council on a case by case basis.

STAFF COMMUNICATION WITH THE PUBLIC

City Staff has discussed this issue at these times:

1. Future agenda discussion at the Bicycle and Pedestrian Advisory Committee on September 11, 2017.
2. Discussion with Council Members Ally Medina and John Bauters on September 13, 2017.
3. Future agenda discussion at the Public Works Committee and Transportation Committee on September 21, 2017.

CONCLUSION

The flexible bollards proposed will not prevent a speeding driver, nor a very determined driver from entering the bike lane. What a separated bikeway would do is help in preventing casual motorists from encroaching into the bike lane, and help in promoting safe path of travel for bicyclists of all skill types. The proposed pilot project would increase the community's comfort level on this section of the bikeway network, and could be used as a case example for other potential project locations.

However, the existing cross-section on Horton Street makes it difficult to implement a proper separated bikeway per FHWA and Caltrans Guidance. Additionally, the 5-year crash history on this roadway indicates that travel is safe for all roadway users in the existing configuration. Council should consider whether Horton Street is the best location to install a separated bikeway in the City.

Staff recommends that if flexible bollards are installed on Horton Street, that they should be installed between the Powell Street Bridge and 59th Street. Other factors to be considered in the decision to install bollards on the roadway are maintenance costs from replacing damaged bollards and costs to sweep the bike lanes. Continual monitoring of the bike lanes will be required to keep bicyclists safe from debris accumulation.

It is recommended by staff that any potential separated bikeway project in the City of Emeryville be evaluated before implementation based on FHWA and Caltrans guidelines, and then be re-evaluated after a one-year period if the project is constructed. Staff concludes that it is in the public's interest for City Council to take one of the above stated actions.

PREPARED BY: Ryan O'Connell, Senior Civil Engineer, Public Works

**APPROVED AND FORWARDED TO THE
CITY COUNCIL OF THE CITY OF EMERYVILLE:**



Carolyn Lehr, City Manager

ATTACHMENTS

1. Resolution
2. Exhibit A – Typical Cross Sections of Class IV Separated Bikeway
3. Exhibit B – Detailed Project Evaluation Checklist
4. Exhibit C – Data Collection Information Checklist
5. Exhibit D – 5-year Collision History Report