

DATE: January 25, 2023

TO: Bicycle/Pedestrian Advisory Committee

FROM: Brandon Whyte, Active Transportation Planner
Ria Hutabarat Lo, Transportation Manager

SUBJECT: **Castro Street Bikeway Feasibility Study**

RECOMMENDATION

Receive information on the Castro Street Bikeway Feasibility Study concept drawings and provide recommendations to the City Council via the Council Transportation Committee.

BACKGROUND

The Castro Street Bikeway Feasibility Study (Study) was identified as a project under the City Council’s Major Goal to “develop and implement comprehensive and innovative transportation strategies to achieve mobility, connectivity, and safety for people of all ages.” The Study aims to assess options for improving bicycle accommodations along Castro Street, between El Camino Real and California Street.

The draft report with three concept alternatives was presented to the Bicycle/Pedestrian Advisory Committee (BPAC) on August 26, 2020 and the Downtown Committee on October 12, 2020. The three concept alternatives previously presented include:

- Alternative 1: Class II bike lanes;
- Alternative 2: Class III sharrows; and
- Alternative 3: Hybrid option with Class II bike lanes between El Camino Real and Yosemite Avenue-High School Way and Class III sharrows between Yosemite Avenue-High School Way and California Street.

Both the BPAC and Downtown Committee supported Alternative 1 (Class II bike lanes) and did not support Alternative 2 (Class III sharrows). If Alternative 1 (Class II bike lanes) was considered infeasible for the whole Study segment, then the members would endorse the principle of Alternative 3 (hybrid option). However, for Alternative 3, members indicated that the length of the bike lane should be longer to support a Safe Routes to School (SRTS) Program. They also

suggested extending bike lanes further north toward California Street. Members requested investigation of intersection improvements at the Castro Street/El Camino Real intersection.

The Castro Street Bikeway Feasibility Study was presented to the BPAC on April 28, 2021, with alternatives as listed above presented. BPAC members supported bike lanes throughout (rather than shared-lane markings (sharrows)), 10' travel lanes, pedestrian refuge islands, protected bikeways with flex posts, parallel motor vehicle parking, a pedestrian scramble phase, and removal of the protected left turn at the Castro Street/Church Street intersection.

On April 28, 2021, the BPAC made three motions:

- Staff should make a second editorial pass, and the report should represent changes made to the plan as a result of BPAC and Downtown Committee feedback. (Fenwick/Shankari—5-0—Passed)
- Support Alternative 1 (bike lanes) instead of Alternative 3 (hybrid) and address concerns at Castro Street/Church Street by considering options such as a pedestrian scramble phase to address pedestrian conflicts or eliminating vehicle left-turn movements (to provide space for bike lanes). (Shankari/Kuszmaul—5-0—Passed)
- Evaluate removal of angled parking or conversion to parallel parking in order to provide space for bike lanes and reduce conflicts between bicycles and parking vehicles. (Kuszmaul/Fenwick—5-0—Passed)

ANALYSIS

Staff has revised the Study alternatives. To address and achieve the requests of BPAC, staff has analyzed what can be done from a short to medium time frame of two to seven years and a longer time frame of eight to 20 years. A longer term is required to fund, plan, and design the significant changes needed to provide for bike lanes throughout the project area. Short- and long-term alternatives are provided for reference and review in Attachments 1 and 2 and include the following:

- Short-Term Improvements (Three Years).
 - From El Camino Real to Yosemite Avenue: Protected intersection improvements at Castro Street and El Camino Real and bike lanes to Yosemite Avenue (Attachment 1, Short-Term Alternatives). These improvements are proposed to be designed and constructed within the next three years after the Caltrans improvements planned for 2023 are completed. Funding is expected to be available from the El Camino Real Pedestrian and Bicycle Improvements project for this improvement. All the

alternatives listed include these proposed improvements for the El Camino Real to Yosemite Avenue segment.

- Roundabout at the Castro Street/California Street Intersection: A roundabout for this intersection is proposed to be delivered as part of the Castro Street Interim Pedestrian Mall with a timeline for design and construction within the next three years.
- Short- to Medium-Term Alternatives.
 - Alternative 1: Some bike lanes with angled parking.
 - Alternative 2: Some bike lanes with parallel parking.
 - Alternative 3: More bike lanes with angled parking.
 - Alternative 4: More bike lanes with parallel parking.
- Long-Term Alternatives.
 - Alternative 1: Bike lanes and protected bikeways with angled parking (long-term).
 - Alternative 2: Bike lanes and protected bikeways with angled parking (long-term).

Please note that trees in the current parking areas are not affected by long- or short-term alternatives.

Short- to Medium-Term Alternatives (Three to Seven Years)

As listed above, there are four short-term alternatives that aim to provide bike lanes in the short-to-medium term. Alternatives 1 and 2 provide bike lanes (Class II) where possible and do not change the current alignment of the Castro Street and Church Street intersection. Alternatives 3 and 4 are similar to Alternatives 1 and 2, except that they consider removing the eight-phase signal at the Castro Street and Church Street intersection to facilitate continuous bike lanes through the intersection. Alternatives 1 and 3 maintain the existing angled on-street parking, while Alternatives 2 and 4 convert angled parking to parallel parking.

Common Features

Alternatives 1 through 4 would build on the short-term improvements proposed for the segment between El Camino Real and Yosemite Avenue. The concept plan shown in this segment assumes Fairmont Avenue is closed and vacated as part of a redevelopment project in the future, consistent with the Downtown Precise Plan. If Fairmont Avenue is not vacated, then a reduction

in motorist parking would be required (approximately five spaces) for the Fairmont Avenue access beyond the parking reductions noted for Alternatives 1 to 4.

None of the short- to medium-term alternatives exclusively use sharrows. However, sharrows are proposed where the total curb-to-curb width is less than 16'. The minimum lane width required for VTA buses is 11', and the minimum width for a bike lane is 5'. Castro Street, between California Street and the Kaiser Permanente driveway in the southbound direction, is 15' and cannot accommodate a bike lane as well as VTA bus operations. In Alternatives 1 through 4, the northbound lane in this area is proposed to have a protected bikeway utilizing Tuff Curbs® (a durable, high-visibility traffic separator curb; see Figure 1) or a similar treatment with no flexible vertical posts. Flexible posts are not utilized in order to comply with the City Fire Code regarding the provision of an unobstructed travel way 20' wide ([MVCC § 14.10.14](#)).



Figure 1: Tuff Curb®

Assessment of Short- to Medium-Term Alternatives













Alternatives 1 through 4 attempt to maximize bike lanes along Castro Street, including the short-term improvement to provide protected bikeway facilities on the approach to El Camino Real.

Alternatives 3 and 4 are expected to affect traffic operations at the Castro Street and Church Street intersection, including the removal of left-turn lanes and signal modifications. The Castro Street and Church Street intersection was recently converted from four phases to eight phases, including a protected left-turn phasing to eliminate conflicts between pedestrian crossings and vehicle left-turn movements. Adding bike lanes in this segment would result in reconstructing the improvements and reintroducing possible pedestrian-vehicle conflict points. For this reason, City staff does not support Alternatives 3 and 4 in the short-to-medium term. Under Alternatives 1 and 2, effort has been made to minimize the use of sharrows as much as possible by bringing the bike lanes closer to the intersection.

Parallel parking decreases the crash risk for all roadway users compared to angled parking. This crash reduction also lowers crash severity for cyclists. Alternatives 2 and 4 provide parallel parking and allow for the space behind the trees to be utilized for other purposes, such as plants, art, or bike parking. Staff suggests the provision of bike parking to help offset the reduction in motor vehicle parking (five spaces) caused by the conversion from angled to parallel.

Cost estimates will be generated later, but a rough relative cost is provided in Table 1.

Table 1: Comparison of Short- to Medium-Term Alternatives for Castro Street Bikeway

Short-term Bikeway Alternatives for Casto Street					
	Major Feature	Parking Alignment	Parking Change	Relative Cost	Automotive Level of Service
Alt 1	Some Bike Lanes	Angled Parking 	 -7  +40	\$	No Change
Alt 2	Some Bike Lanes Bike Racks/Art	Parallel Parking 	 -12  +94	\$\$	No Change
Alt 3	Bikes Lanes Throughout (including Church and Castro)*	Angled Parking 	 -7  +40	\$\$\$	No Change
Alt 4	Bikes Lanes Throughout (including Church and Castro) Bike Racks/Art*	Parallel Parking 	 -12  +94	\$\$\$	No Change

* Except where current curb-to-curb widths prohibit.

Note: Seven automobile parking spaces are being removed in all scenarios in the northbound direction between Mercy and California Streets to comply with fire code.

Staff Recommendation for Short- to Medium-Term Alternatives

Based on the above assessment, staff recommends short-term Alternative 2 as it maintains the pedestrian improvements at the Castro Street and Church Street intersection while also increasing the provision of bicycle lanes. Further, converting angled to parallel parking lowers crash risk and increases the pedestrian space for art, plantings, bike parking, or other uses.

Long-Term Alternatives (Seven to 20 Years)

Two long-term alternatives were developed to address competing interests of pedestrian and bicycle improvements at the Castro Street and Church Street intersection and provide Class II bike lanes throughout the project corridor. Long-Term Alternative 1 maintains the existing angled parking, while Long-Term Alternative 2 converts angled parking to parallel. These alternatives begin at Yosemite Avenue and move north to California Street since Alternatives 1 through 4 already provide protected treatments between El Camino Real and Yosemite Avenue.

Common Features

Both long-term alternatives, Alternatives 1 and 2, provide bike lanes (Class II) from Yosemite Avenue north to the Kaiser Permanente driveway. To provide a bike lane through the Castro Street and Church Street intersection, features such as a roundabout or pedestrian scramble (where all signals are held red to allow pedestrians to cross all at once) would be considered as part of the concept design.

Both long-term alternatives provide protected bikeways north of the Kaiser Permanente driveway for the northbound travel lane and buffered bike lanes for the southbound travel lane. The protected bikeways in the northbound lane are suggested to have a low mountable concrete curb or raised bikeway with a mountable curb. The buffer space provided for southbound travel is placed near vehicle parking rather than the motor vehicle travel lane to decrease crash risk created by opening car doors in this high-turnover parking area.

Both long-term alternatives also provide raised midblock crossings to improve the pedestrian experience.

To provide a bike lane in the southbound direction between California Street and the Kaiser Permanente driveway, a portion of the landscaped median must be removed to provide roadway space. Additional space must also be converted from the median to provide the 20' clearance needed to comply with the City Fire Code. This would impact the trees in the median in southbound in their current location; however, there is room to potentially transplant them a small distance toward the center of the median.

Assessment of Long-Term Alternatives

Further analysis is needed at the intersections of Castro Street/Church Street and Castro Street/Mercy Street. This Study recommends further consideration regarding the feasibility of the following types of intersection improvements should the long-term alternatives be pursued:

- **Pedestrian Scramble:** A pedestrian scramble is where all vehicle signals are held on a red signal while pedestrians have a white walk symbol to cross in any direction at the







intersection. A pedestrian scramble would increase travel times for all users, which could increase unauthorized pedestrian crossings, but would decrease conflict points between motorists and pedestrians. A pedestrian scramble may require infrastructure changes.

- **Roundabout:** A roundabout would lower travel times for all users while providing bike lanes up to the intersection. The provision of a roundabout at either location will not require additional right-of-way or impact existing buildings. However, some sidewalk space may be required. Overall, a roundabout would be a significant capital improvement, and further consideration of feasibility would be required.

Parallel parking decreases the crash risk for all roadway users compared to angled parking. This crash reduction also lowers crash severity for cyclists. Parking and other implications of the alternatives are shown in Table 2. Long-Term Alternative 2, with parallel parking, also allows for the space behind the trees to be utilized for other things, such as plants, art, or bike parking.

Cost estimates will be generated at a later date; however, a rough relative cost is provided in Table 2.

Table 2: Comparison of Long-Term Alternatives for Castro Street Bikeway

Long-term Bikeway Alternatives for Casto Street					
	Major Feature	Parking Alignment	Parking Change	Relative Cost	Automotive Level of Service
Alt 1	Class II/IV Bike Lanes	Angled Parking 	 -10  +10	\$	No Change*
Alt 2	Class II/IV Bike Lanes Bike Racks/Art	Parallel Parking 	 -12  +94	\$\$	No Change*

* Where Roundabouts are used LOS Improves

Note: Seven automobile parking spaces are being removed in all scenarios in the northbound direction between Mercy and California Streets to comply with fire code.

Staff Recommendation for Long-Term Alternatives

In the long term, staff recommends Long-Term Alternative 2 as it increases the provision of bicycle lanes and converts angled parking to parallel parking, lowering crash risk while increasing the pedestrian space for art, plantings, bike parking, or other uses. In conjunction with Long-

Term Alternative 2, staff suggests the provision of bike parking to help offset the reductions in motor vehicle parking caused by the conversion from angled to parallel parking.

If a long-term alternative is supported by Council, staff recommends transplanting the cork oak trees along the edge of the median of Castro Street a small distance toward the center of the median in the short-term while the trees are less mature and more able to survive a transplant. According to Forestry staff, waiting to shift the trees for more than a couple of years will jeopardize their survival.

DISCUSSION

Staff is seeking BPAC recommendations to Council on the following items:

- Staff recommends Short- to Medium-Term Alternative 2; does BPAC support this recommendation?
- Staff recommends Long-Term Alternative 2; does BPAC support this recommendation?
- Does BPAC have any other comments?

NEXT STEPS

Staff will update the draft document to reflect stakeholder input, alternatives refinement, and incorporate any additional feedback from the BPAC.

Additionally, staff will conduct outreach to the downtown businesses, present to the Downtown Committee and the Council Transportation Committee, and seek approval of a draft final report.

With Council approval, implementation would be as follows:

- Intersection improvements at the Castro Street and El Camino Real intersection and from El Camino Real to Yosemite Avenue to be pursued in the short term after the Caltrans improvements planned for 2023 are completed (18 months).
- Implementation of the roundabout at the Castro Street and California Street intersection would be designed and constructed as part of the Interim Castro Pedestrian Mall.
- Other short-to-medium-term improvements approved by Council north of Yosemite Avenue will be addressed as opportunities arise and funding is available.
- Long-term improvements will need further vetting through the Downtown Committee with additional outreach to downtown businesses. If Council approves pursuing the long-term

options, additional study and design would be added to the Five-Year Capital Improvement Program when funding is available.

BW-RHL/6/PWK
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- Attachments:
1. Short-Term Alternatives
 2. Long-Term Alternatives