



DATE: May 15, 2018

CATEGORY: New Business

DEPT.: Public Works

TITLE: **Castro Street/Moffett Boulevard at Central Expressway Near-Term Improvements, CIP 16-40 – Approve Design Concept**

RECOMMENDATION

1. Provide direction regarding the removal of the two left-turn lanes from northbound Castro Street onto westbound Central Expressway for the Castro Street/Moffett Boulevard at Central Expressway Near-Term Improvements, CIP 16-40.
2. Approve the design elements for the southwest and northeast corners of the intersection and other striping/signage improvements to enhance pedestrian and bike safety for the Castro Street/Moffett Boulevard at Central Expressway Near-Term Improvements, CIP 16-40.

BACKGROUND

On November 25, 2014, the City Council adopted the Shoreline Boulevard Transportation Corridor Study (see full documents here [Council Report](#) and [Minutes](#) and in Attachment 1) that developed conceptual design for integrated transit, bicycle, and pedestrian facilities in the Shoreline Boulevard Corridor from the Downtown Transit Center to the North Bayshore Area. The approved conceptual design included near-term improvements to the Castro Street/Moffett Boulevard/Central Expressway intersection to enhance pedestrian and bicycle safety at the intersection until the Transit Center Master Plan grade separation project can be constructed.

The northbound Castro Street approach to Central Expressway, crossing the Caltrain tracks, consists of two left-turn lanes, one through lane, and one shared through/right-turn lane. “Pork chop” islands and free right-turn lanes exist on westbound and eastbound Central Expressway turning to Moffett Boulevard and Castro Street. Bicyclists may use the shoulder area along Central Expressway and a bicycle lane exists only on the southbound Moffett Boulevard approach (see Figure 1).

The proposed improvements include reconfiguration of northbound Castro Street by eliminating the two left-turn lanes onto westbound Central Expressway, installing a through bicycle lane, and providing a designated right-turn-only lane onto eastbound Central Expressway; closure of free right-turn lanes from Central Expressway to northbound Moffett Boulevard and to southbound Castro Street; traffic signal modifications; and signage and striping improvements to enhance bicycle and pedestrian safety at the intersection (see Figure 1).

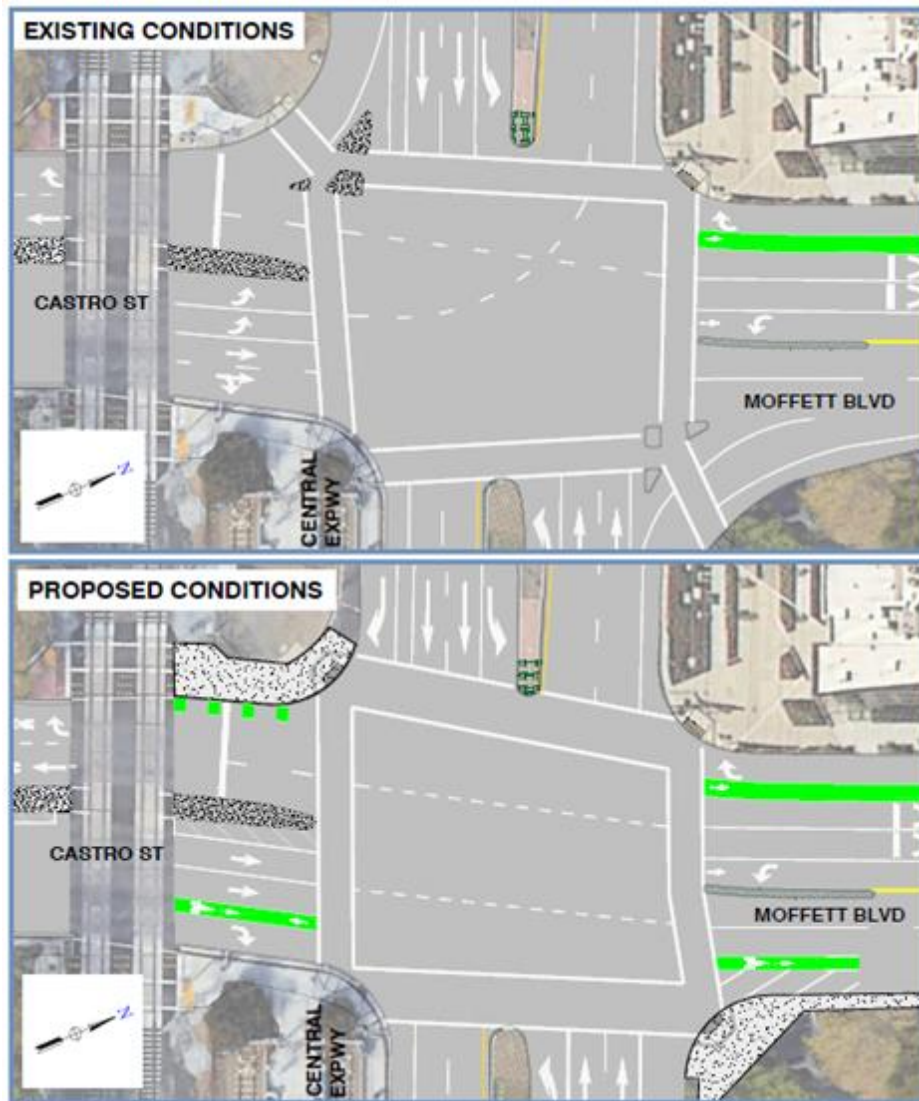


Figure 1 – Existing Conditions and Proposed Improvements at the Intersection

On April 4, 2017 and April 26, 2017, staff presented an overview of the proposed improvements to the Downtown Committee and the Bicycle/Pedestrian Advisory

Committee (B/PAC), respectively. Both committees expressed full support for the proposed improvements, including eliminating the two left-turn lanes to remove the vehicle-pedestrian conflict.

On June 12, 2017, staff presented the proposed improvements to the Council Transportation Committee (CTC). Members of the CTC did not fully support the project and advised staff to explore possible alternatives. On February 15, 2018, staff presented to the CTC the proposed improvements and potential alternatives. One Committee member showed support of the project while the other two Committee members did not support closing the two left-turn lanes and recommended keeping one left-turn lane while keeping all other improvements. Staff is seeking direction from the full Council on the improvements to be included in the project for final design and construction.

ANALYSIS

An analysis of the major project components is as follows:

Removing Northbound Left-Turn Lanes

When a train approaches the intersection, a railroad signal preemption phase is activated which immediately turns the signal at the tracks red for northbound and southbound directions and, as the rail gates come down, turns the left-turn and through movement signals at Central Expressway green for northbound Castro Street to make sure the tracks are cleared of any cars. If the pedestrian walk signal on the west side of the intersection crossing Central Expressway is on when the train preemption occurs, the pedestrian walk signal ends abruptly, which occasionally leaves pedestrians in the crosswalk stranded and in conflict with left-turning vehicles. During the a.m. peak hour, approximately 60 pedestrians cross the west-side crosswalk and are in potential conflict with 148 left-turning vehicles from Castro Street as 12 trains cross the intersection. The number of pedestrians crossing is expected to increase with the new development north of Central Expressway, and the number of train signal preemptions will increase with the electrification of Caltrain, which is scheduled to be implemented in 2022, increasing the frequency of the vehicle-pedestrian conflicts over time.

Removing the two existing left-turn lanes as shown in Figure 1 eliminates the conflict between the Castro Street northbound left-turn movement and pedestrians crossing Central Expressway on the west side as trains approach. While this improves pedestrian conditions, removing the left-turn lanes will cause traffic to divert to other routes. With limited alternate routes to access Central Expressway, the most logical alternate route would be to use Shoreline Boulevard. The grid street network south of

Central Expressway would allow drivers to take El Camino Real, Villa Street, Dana Street, or California Street to reach Shoreline Boulevard. No single street or intersection is expected to experience all of the diverted traffic.

Based on the most recent intersection counts, with an Average Daily Traffic (ADT) of 1,936 vehicles currently turning left from Castro Street onto westbound Central Expressway, there are 148, 143, and 145 vehicles during the a.m., midday, and p.m. peak hours, respectively, using the left-turn lanes. Thirteen percent (13%) of these left-turning vehicles from Castro Street onto Central Expressway continue their route onto Shoreline Boulevard using the ramp off of Central Expressway.

By removing the left-turn movement from northbound Castro Street, it is projected that traffic will be diverted to the aforementioned streets during the morning peak hour as shown in Tables 1 and 2.

Table 1 – Projected a.m. Peak-Hour Left-Turn Volume Distribution

Projected a.m. Peak-Hour Left-Turn Volume Distribution (After Removing Left-Turn Movement from Castro Street)		
Alternate Route	% Distribution	Added Volume
Villa Street (Castro Street to Shoreline Boulevard)	44%	65
Dana Street (Castro Street to Shoreline Boulevard)	13%	19
California Street (Castro Street to Shoreline Boulevard)	17%	26
El Camino Real to Shoreline Boulevard	13%	19
Continuing to Moffett Boulevard	13%	19
TOTAL	100%	148

Table 2 – Projected a.m. Peak-Hour Volume Increase

Projected a.m. Peak-Hour Volume Increase (After Removing Left-Turn Movement from Castro Street)				
<u>Street</u>	<u>Existing Volume</u>	<u>Projected Added Volume</u>	<u>Total Volume</u>	<u>Percent Increase</u>
Villa Street	153	65	218	42%
Dana Street	63	19	82	30%
California Street	132	26	158	20%

City staff, in consultation with County staff, reviewed other options to remove the vehicle-pedestrian conflicts without eliminating the two left-turn lanes and were unable to identify any workable options that provide the same benefit to pedestrians crossing the expressway.

Adding Northbound Right-Turn-Only Lane

Eliminating the two left-turn lanes from northbound Castro Street frees up some right-of-way to make additional improvements to the intersection. As shown in Figure 2, the project also proposes to install an exclusive right-turn-only lane to eastbound Central Expressway, install green bike lane treatments, and modify the existing traffic signal to accommodate changes to the lane configuration. Subject to California Public Utilities Commission (CPUC) approval, a right-turn on red movement may be allowed from Castro Street onto eastbound Central Expressway with the installation of a northbound right-turn-only lane. Adding an exclusive right-turn lane at this location frees up through traffic that often wait for right-turn traffic which, in turn, are waiting for pedestrians crossing Central Expressway at the east side.

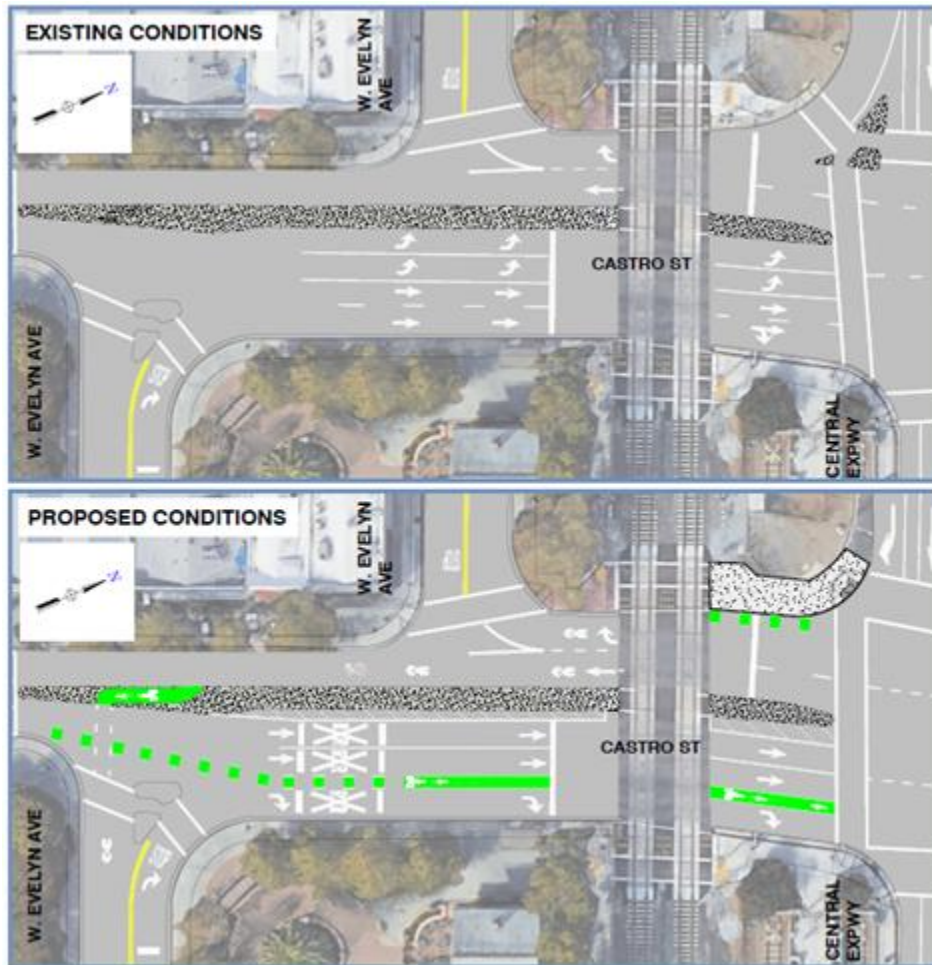


Figure 2 – Castro Street Northbound Approach Improvements

By creating an exclusive northbound right-turn lane, queueing for northbound Castro Street movement can be decreased. As a result, traffic signal efficiency will improve, and delays and conflicts at the intersection will also decrease. Furthermore, with the implementation of green bike lane treatments, bicyclists will experience increased visibility and comfort through a clearly delineated space.

Southwest and Northeast Corners Improvements

The southwest and northeast quadrants of the intersection also present areas where improvements can significantly enhance pedestrian safety and accessibility. To achieve this, the project proposes the removal of the “pork chop” islands, removal of the free right-turn lanes, installation of new ADA-compliant curb ramps, and installation of new, wider sidewalks and larger areas for pedestrians to congregate as shown in Figure

3 and Figure 4. These improvements can be pursued independent of a decision regarding removing the two left turns on Castro Street.

Tightening the turning radius at the two corners with the aforementioned improvements will result in shorter crossing distances for pedestrians and reduced speed of vehicles turning right from Central Expressway to Castro Street and Moffett Boulevard. With wider sidewalks, pedestrians and bicyclists will also experience enhanced safety, visibility, and comfort crossing the intersection from the southwest and northeast corners. Furthermore, the proposed wider sidewalk areas on the northeast corner will enhance bike access to Stevens Creek Trail via Santa Rosa Avenue and frontage of Willowgate Street.

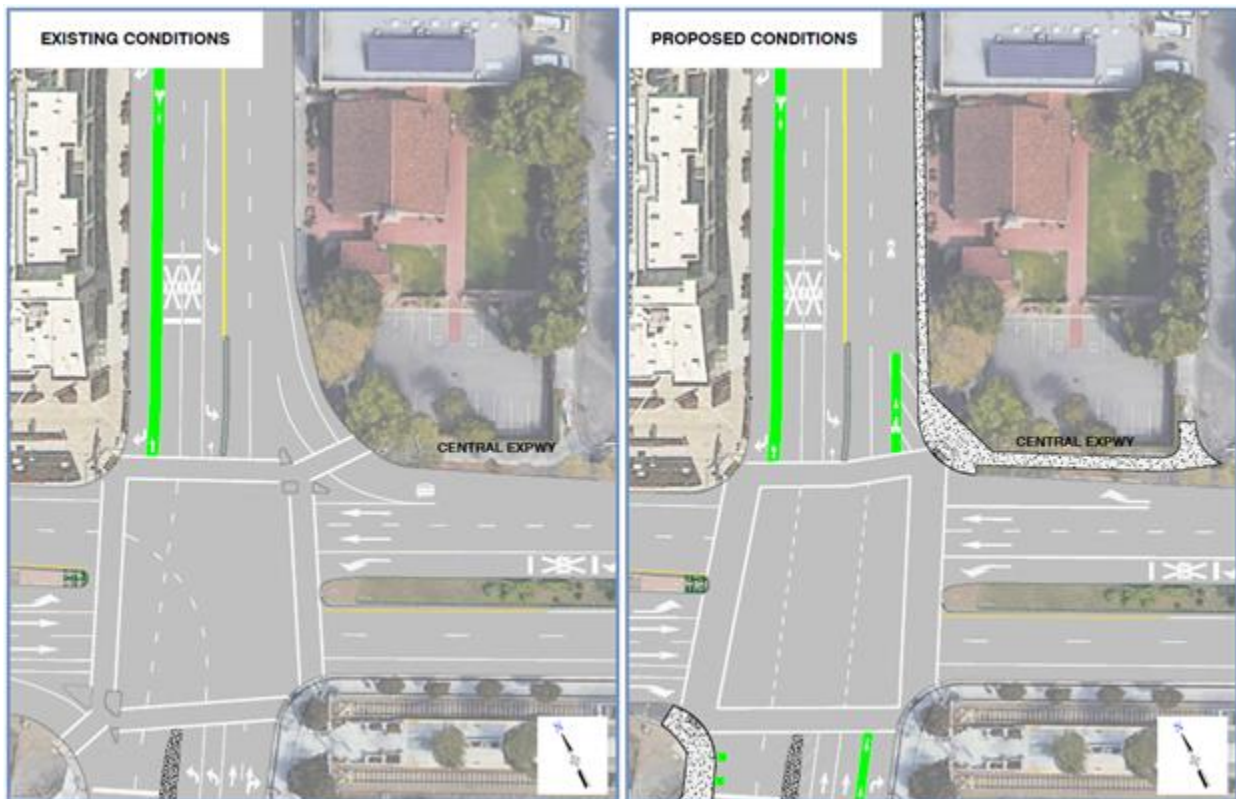


Figure 3 – Northeast Corner Improvements



Figure 4 – Southwest Corner Improvements

Additional Bicycle Improvements

To enhance bicycle accessibility and safety to and from downtown and the Transit Center, the project also proposes to implement striping and signage changes as shown in Figure 5. Per County's approval and guidelines, crosswalks crossing Central Expressway will be widened to allow more right-of-way for bicyclists and pedestrians. Bike crossing striping or markings across Central Expressway separating pedestrians and bicyclists are not recommended by the County Roads & Airports Department and, therefore, are not included at this time. To enhance southbound bicycle accessibility, a median opening exclusive for bicyclists to access Evelyn Avenue will be installed. With guidance through the proposed striping and signage improvements, bicyclists will have better accessibility to the Transit Center and areas east of downtown as well.

Similar to the northeast and southwest corner improvements, these additional bicycle improvements can be pursued independent of a decision regarding removing the two left turns on Castro Street.

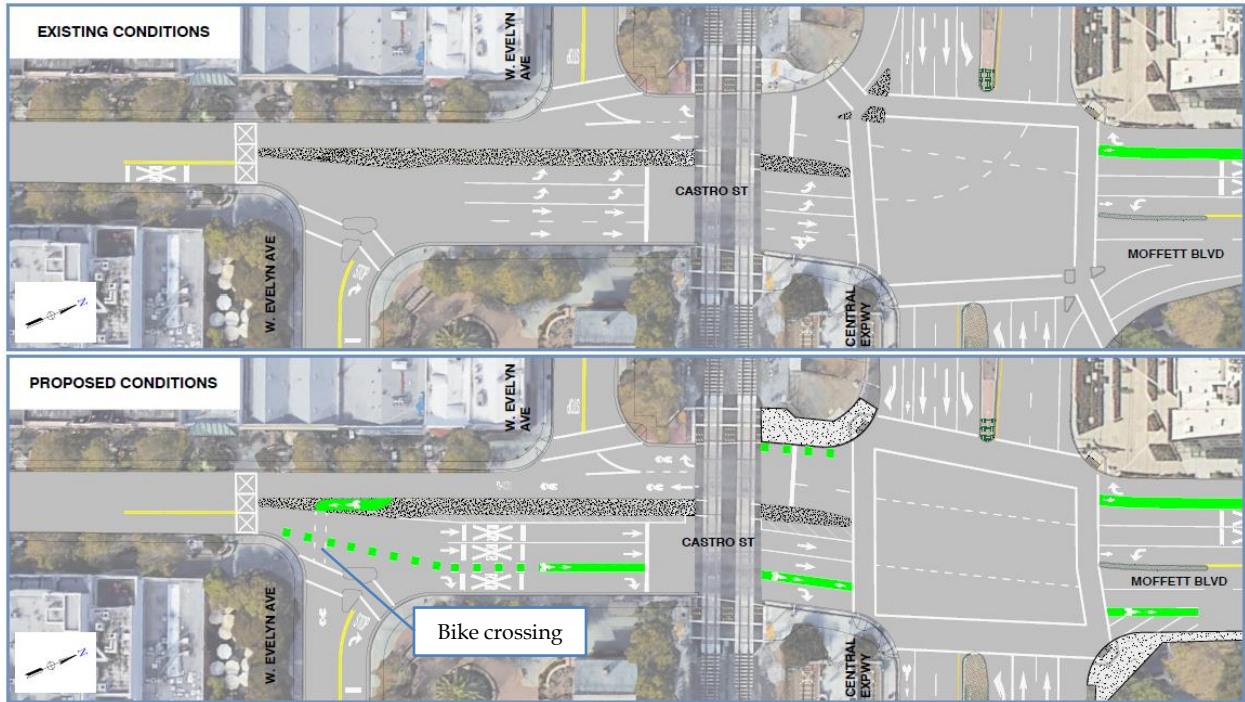


Figure 5 – Bike Improvements

Other Alternatives

Should Council not support eliminating the two left-turn lanes, there is an option of eliminating one of the left-turn lanes to create right-of-way for adding the right-turn-only lane. However, due to high through traffic volume (359 vehicles during the p.m. peak hour), it will be necessary to keep two through lanes on northbound Castro Street. By keeping one left-turn lane, two through lanes, and an exclusive right-turn-only lane, the addition of green bike lane on northbound Castro Street is not feasible. This option, as shown in Figure 6, will improve traffic flow but will not eliminate the conflict for pedestrians crossing the expressway.

Another alternative integrates the existing configuration for northbound Castro Street (two left-turn lanes, one through lane, and one shared through/right-turn lane) with all other improvements discussed in this report.

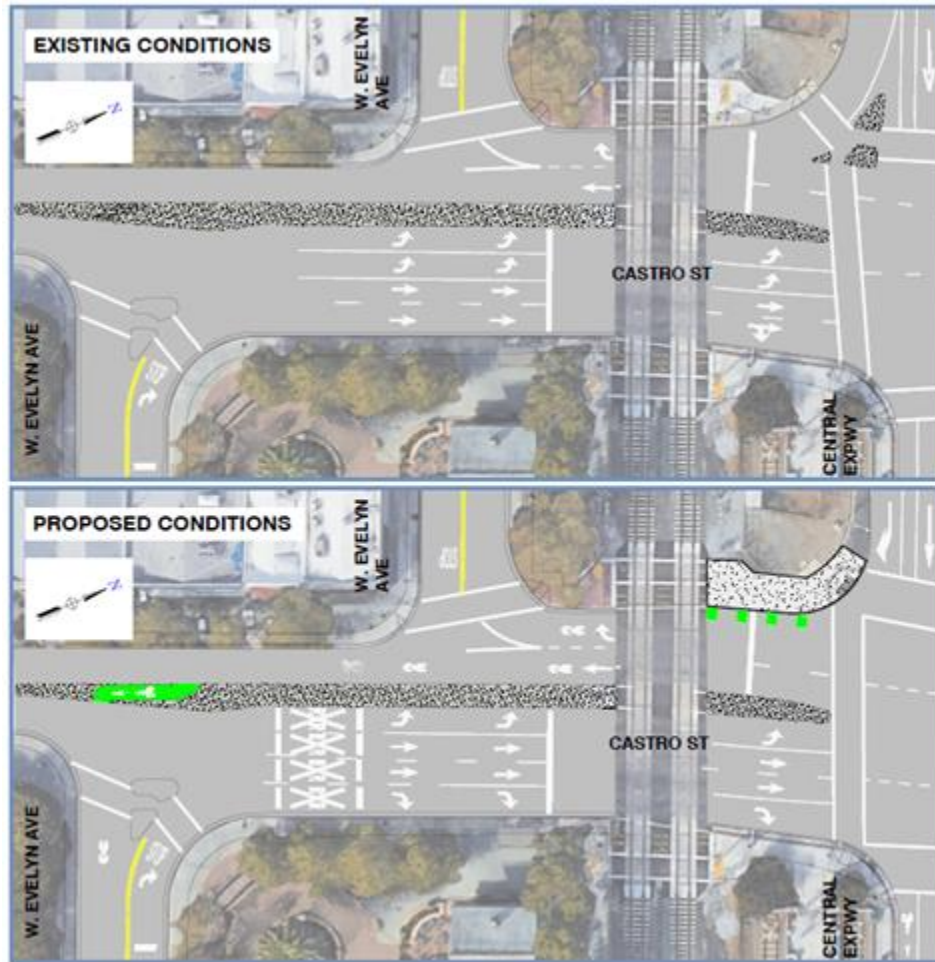


Figure 6 – Eliminating One Left-Turn Lane

FISCAL IMPACT

The project is funded with \$275,000 from the Construction/Conveyance Tax Fund, \$425,000 from the Shoreline Community Fund, and \$1,000,000 from the Merlone Geier community benefit funding for a total of \$1,700,000.

CONCLUSION

Staff seeks direction regarding removal of the two left-turn lanes from northbound Castro Street onto westbound Central Expressway as part of near-term improvements to the Castro Street/Moffett Boulevard/Central Expressway intersection to enhance pedestrian and bicycle safety. In addition, staff recommends approval of the design elements for the southwest and northeast corners of the intersection and other striping/signage improvements to enhance pedestrian and bike safety at the

intersection. The design concept, including the removal of the northbound Castro left-turn lanes, was previously approved by the City Council through adopting the Shoreline Boulevard Transportation Corridor Study on November 25, 2014.

ALTERNATIVES

1. Eliminate one left-turn lane, keep two through lanes, and install an exclusive right-turn lane for northbound Castro Street, and install other bike and pedestrian improvements.
2. Keep two left-turn lanes and install other bike and pedestrian improvements.
3. Provide other direction.

PUBLIC NOTICING

In addition to posting the agenda, notices of this City Council meeting were mailed on May 1, 2018 to the residents and property owners shown on the attached map (Attachment 2). Notices were also distributed to the persons who have signed up on the Transit Center project website for updates and information, previous business and/or community meeting participants, the Central Business Association, representatives of VTA, Caltrain, and Mountain View TMA, and other interested parties.

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- Attachment:
1. Shoreline Boulevard Transportation Corridor Study Council Report and Minutes, November 25, 2014
 2. Noticing Map (Castro Street/Moffett Boulevard/Central Expressway)