

5. INTERSECTION-SPECIFIC RECOMMENDATIONS

This Plan recommends a consistent corridor-wide set of improvements in the study area, with high-priority locations for near term improvement. This chapter discusses the evaluation of those priority intersections for near-term improvements.

5.1 PERSIA TRIANGLE

The intersections of Mission Street / Ocean Avenue, Mission Street / Persia Avenue, and Ocean Avenue / Persia Avenue form the “Persia Triangle” on the western side of Mission Street. Each of the three streets that form the Persia Triangle plays a key role in the neighborhood transportation system. The Persia Triangle is the nexus of two of the most important neighborhood-oriented commercial streets in San Francisco – Mission Street and Ocean Avenue. Persia Avenue is the only through-street in the neighborhood and carries cross-town transit. In fact, the Persia Triangle was pointed out by members of the community as a special place and is home to the neighborhood’s annual Excelsior Festival. The Mission-Geneva Neighborhood Transportation Plan recommends a series of improvements to elevate the design of this intersection to better function as the pedestrian and transit focal point that it is.

5.1.1 Improvements

This section describes the specific improvements recommended for the Persia Triangle area. The results of the technical analysis, describing the benefits and impacts of these improvements, are discussed in the following section. Together, these improvements are intended to enhance the function of the Triangle as a pedestrian and transit hub, and introduce streetscape elements that improve the comfort and enjoyment of this area for pedestrians and transit riders. A summary of proposed improvements is shown on Figure 5.1.

Reverse Direction of San Juan Avenue

San Juan Avenue is a small residential street extending between Mission Street and San Jose Avenue. For a one-block segment, between Alemany Boulevard and Mission Street, San Juan Avenue is one-way, permitting only eastbound traffic. San Juan Avenue intersects Mission Street, approximately 20 feet north of the signalized intersection of Mission Street / Ocean Avenue. Only right turns from eastbound San Juan Avenue to southbound Mission Street are allowed; however, drivers occasionally attempt to make illegal lefts at this location.

The adjacent intersection of Mission Street / Ocean Avenue is not readily visible to traffic on San Juan Avenue, both because of the angle of Ocean Avenue as it intersects Mission Street and a building between San Juan Avenue and Ocean Avenue that blocks drivers’ line of sight. The result is that traffic turning right from the stop-sign controlled intersection at San Juan Avenue onto southbound Mission Street turns directly into a signalized intersection. Since drivers are often looking to the left to identify gaps in oncoming traffic, it is not always clear to drivers that they may be turning into a signalized intersection, potentially conflicting with traffic on Ocean Avenue and pedestrians crossing Mission Street.

Therefore, this plan recommends reversing the direction of this block of San Juan Avenue from eastbound to westbound to avoid depositing traffic directly into the signalized intersection of Mission Street / Ocean Avenue.



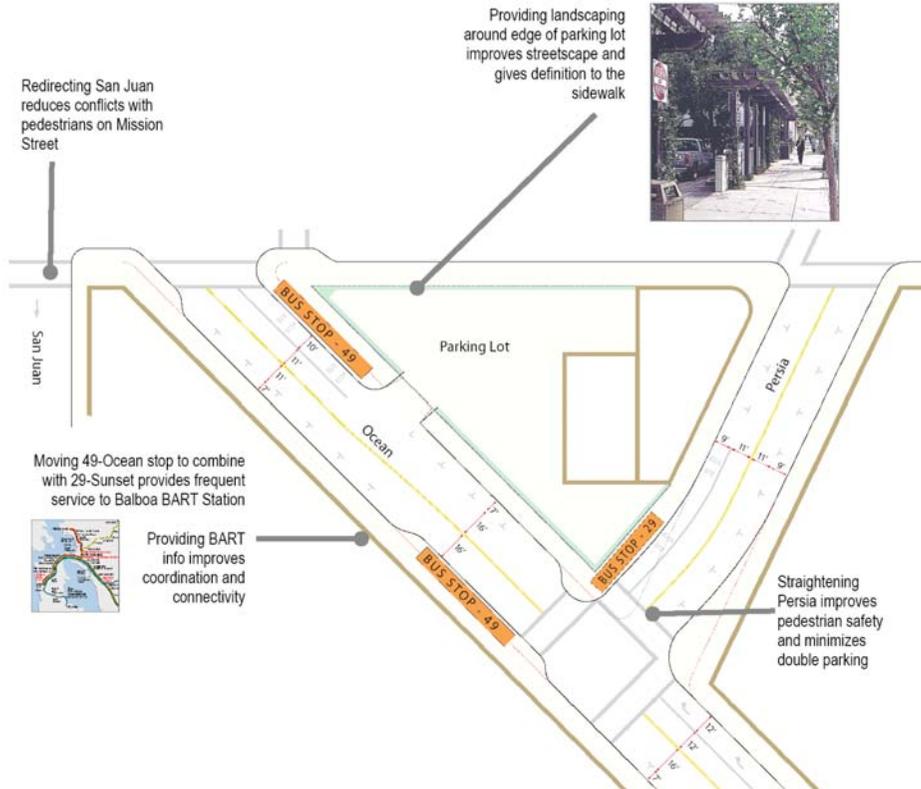


Figure 5.1 - Proposed Improvements to Persia Triangle

Buffer Pedestrians from Auto-Scaled Land Uses

Most of the existing land uses bordering the Persia Triangle are auto-oriented in nature, consisting of surface parking and the yard of an auto service shop. The long-term future for the area may be the redevelopment of the block into a more pedestrian-scale use. This can be accomplished by encouraging in-fill development on existing parking surface lots. Such development will increase the intensity of activities around sidewalks and create fine-grained urban form more suitable for a pedestrian-friendly environment. In the near term, however, the pedestrian experience can be improved by using landscaping to clearly define the pedestrian space and buffering the sidewalk from auto-scaled uses. This can be achieved by constructing a low wall (approximately 30 to 36 inches in height) combined with a wooden trellis structure and landscaping. Figure 5.2 shows a similar structure that has been successfully used for visual shielding of a municipal parking lot on California Street in San Francisco. On Ocean Avenue, the trellis structure should be installed with clearances necessary to facilitate safe ingress and egress movements.



Figure 5.2 – Example of Proposed Visual Screening/Landscaping Improvements to Persia Triangle

Because Mission Street sidewalks are narrow relative to demand, the wall-trellis structure and landscaping would ideally be accommodated in an easement located on private property right along the existing property line, rather than on the sidewalk. The proposed improvements could be accommodated within 3 feet of depth, but must be compatible with the planting of vines or other climbing plants right along the wall's edge.

Street Trees

A consistent street tree line provides a buffer between traffic and sidewalk activities, shade on hot days, a visually pleasing walking and shopping environment, and spatially frames the pedestrian realm. In addition to the wall-trellis structure, rows of street trees should be established along the sidewalks that surround the Persia Triangle where they are absent. The trees should be Small-Leaf Tristania, such as the ones along Mission Street and be planted at 25 feet on center. Along Ocean Avenue and Persia Avenue, the street trees should be accommodated within 10-foot wide sidewalks. Trees should be planted in 4-foot by 6-foot tree wells¹¹ that are covered with ADA compliant tree grates. Street tree planting along the Mission Street segment of the triangle should follow the planting pattern proposed for that street (see Chapter 6 of this Study Report) and include palm trees in the curb extensions located at crosswalks.

Street Furnishings

The new lighting fixtures proposed for Mission Street (see Chapter 6) should also be installed along all edges of the Persia Triangle. This would visually integrate the Persia Triangle into the overall streetscape environment and neighborhood character.

A series of decorative bollards, such as the series of options illustrated in Figure 5.3, could be considered along the edge of the curb extension that is created in front of the bank by the realignment of the Persia Avenue / Ocean Avenue intersection. This will reduce the illegal use of the space for parking by users of the nearby bank ATM.

Trash receptacles should be installed in conjunction with each of the bus stops illustrated in Figure 5.1.



Figure 5.3 - A variety of attractive bollards are available that would match the style of

¹¹This size tree well is preferable to 4-foot by 4-foot tree wells. 4 x 4 –foot wells would severely limit the viability of street trees as they fail to provide adequate soil volumes needed by the recommended trees.

Reroute Muni's 29-Sunset

Improving transit travel time and reliability was a key goal identified by the neighborhood. One proposed improvement would change the routing of Muni's 29-Sunset to increase its travel speed. The 29-Sunset is a cross-town route that travels between the Presidio and Candlestick Point. Within the study area, the 29-Sunset travels on Persia Avenue east of Mission Street, on Mission Street, between Persia Avenue and Geneva Avenue, and on Geneva Avenue between Mission Street and the Balboa Park BART station. From there it travels past City College towards the Sunset, west of the study area. To improve the travel time and reliability of the 29-Sunset, this Plan proposes that instead of traveling along Mission Street and Geneva Avenue, the 29-Sunset should travel along Ocean Avenue between Mission Street and the Balboa Park BART station, as shown in Figure 5.4, below. A stop could be located on Persia Avenue at Ocean Avenue. As figure 5.4 shows, the route shifts from Geneva to Ocean at San Jose, to bring the route "up the hill" to City College. The proposed routing would take advantage of a new Ocean Avenue entrance being designed by BART.

In addition, the existing stop for the 49-Ocean Avenue should be relocated from Ocean Avenue, near Mission Street, to be closer to Persia Avenue. Since both Routes 49 and 29 travel to the Balboa Park BART station, locating their stops adjacent to each other, at the intersection of Ocean Avenue / Persia Avenue, allows passengers to take advantage of the combined frequency of the two routes. To complement this rerouting, this Plan recommends that a real time information display board be installed at the Balboa BART station so that BART passengers exiting the station will have access to information showing the locations and arrival times of buses at the station. Providing this information and combining the stop location for these two routes will enable riders to take the next available bus to their destination.

The relocation of the 29-Sunset bus route, in addition to giving passengers the advantage of dual headways with the 49-Ocean Avenue, will also significantly reduce travel time of the 29-Sunset between the Balboa Park BART station and the Persia Triangle area. The proposed route is more direct (shorter), requires fewer turning movements, and avoids obstacles faced by buses on Mission St., as mentioned previously in section 3.2. The combination of the 29 and the 49 routes will create a mini-transit hub near the intersection with Mission St. Since the Persia Triangle has been identified as a central point of activity in the neighborhood, it would be appropriate to have this location be easier to access by transit from different directions in the city.

Additional community input is needed on the rerouting proposals to ensure that passengers are not negatively impacted by this proposed route change. In addition, signal timing issues at San Jose and Geneva need to be further explored to ensure that travel time savings are significant enough to justify this routing change.



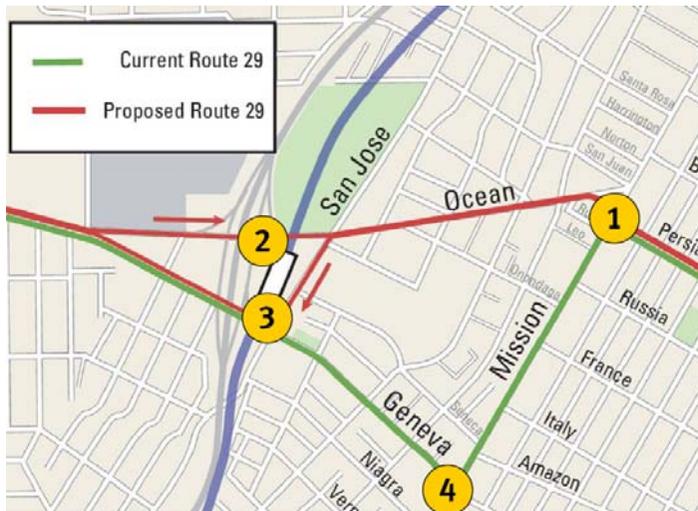


Figure 5.4 – Proposed New Route for Muni Route 29

Improve Transit Service Information

As a neighborhood transit hub, expanded transit service information should be prioritized for this location. Two types of improved transit information are recommended for bus stops in the Persia Triangle area: improved signage and wayfinding (including BART information) and NextBus real-time bus arrival data, in particular at stops for buses going to the BART station

Improved BART signage and wayfinding in this area will, at the most basic level, raise awareness that BART is within walking distance and/or a short bus ride away. This will help connect the Persia Triangle and the Outer Mission commercial corridor to the BART station. Possibilities for improved signage include Spanish and Chinese-language signage, signage showing or explaining connections to BART, and signage that explains that Muni's monthly pass can be used on BART for intra-San Francisco trips.

Similarly, real-time bus information at these stops, especially for buses going to the BART station, will improve transit connectivity between this area and the BART station. These signs should be, at a minimum, at the bus stop shelters at the 49-Ocean Avenue stop on Ocean near Persia and the 29-Sunset stop on Persia at Ocean. Each sign is capable of displaying the next arrival times of the next two buses for both routes so people can decide which bus stop to use. It would also allow people to decide whether they should wait for the bus at all – with real-time bus arrival times, people will be able to make an informed decision about whether or not to walk to the BART station.

Realign the Persia Avenue / Ocean Avenue Intersection

Persia Avenue currently intersects Ocean Avenue at a skewed angle. This allows drivers to make high-speed turns from eastbound Ocean Avenue to southbound Persia Avenue. This alignment also causes a wider

intersection, which creates longer pedestrian crossing distances and accommodates illegal parking on southbound Persia, in front of an existing ATM. Illegal-parking, in turn, occasionally blocks Muni vehicles attempting to turn from eastbound Ocean onto southbound Persia Avenue. To address this, the Plan calls for realignment of Persia Avenue to intersect Ocean Avenue at a right angle. This improvement should be designed with consideration for Muni vehicles that turn onto Persia Avenue from Ocean Avenue, but should still provide a benefit to pedestrian crossing distances, and discourage illegal parking². Reconfiguring the intersection would require acquiring a small corner of private property on the northwest corner of the Persia Triangle. There is currently no structure on the area of property to be acquired.

Provide Corner Curb Extensions and Bus Bulbs

Curb extensions should be constructed on either side of Ocean Avenue at Mission Street to shorten crossing distances for pedestrians traveling along the west side of Mission Street. In addition, bus bulbs should be constructed on Ocean Avenue at the eastbound and westbound stops for the 49-Ocean Avenue.

Public Input to Proposed Improvements

Proposed recommendations were presented to the community for the first time during the second of three publicly noticed workshops. At the second workshop, six break-out groups vetted all of the proposed recommendations and ranked their top choices after a facilitated discussion. The Persia Triangle was the top priority project chosen for implementation when compared against proposed improvements for the Geneva-Mission intersection. Changes include redirecting San Juan in the opposite direction to ease pedestrian and automotive congestion at the intersection of San Juan and Mission Streets. Straightening out Persia Avenue by extending curbs and adding bus bulbs at Ocean Avenue, adding landscaping, and moving bus stops were also well-received proposals.

5.1.2 Technical Analysis Results

The following technical evaluation provides site-specific analysis of the likely pedestrian safety, transit service, and streetscape benefits, as well as potential traffic and cost impacts.

5.1.2.1 Transit Performance and Rider Experience

The transit rider experience will be improved with the proposed treatments that increase the visibility and improve the functioning of the Persia Triangle as a mini transit hub. In particular, the Persia Triangle will better serve the transit route transfers that take place here. Specifically:

- **Rerouting the 29-Sunset offers improved transit travel time and reliability.** Rerouting the 29 onto Ocean Avenue will increase the net frequency of Muni service on Ocean Avenue to the Balboa Park BART station. The increase is substantial: in the peak period the frequency would increase from one bus every 8 minutes currently to one bus every 5.5 minutes (assuming current Muni peak period frequencies for Routes 29 and 49 are retained). This will significantly decrease the expected wait time for Muni service to and from the BART station, improving the usefulness of this service and connection of these adjacent but, from a pedestrian's perspective, somewhat distant (~0.7 miles) locations. In addition, the travel time savings to passengers already on the 29-Sunset has been estimated to be approximately five minutes, a substantial travel time reduction.

Removing the 29-Sunset from Mission Street and Geneva Avenue will reduce somewhat the net Muni service frequency on that street; however, the 14-Mission bus service operates every 6 to 8 minutes for most of the day. By moving Route 29 to Ocean Avenue, both Ocean Avenue *and* Mission Street can enjoy high service frequency. For a relatively small number of passengers boarding on Geneva headed beyond the BART station to the Sunset, frequencies on Geneva will be reduced. However, these passengers may choose to walk to Ocean or to transfer at Balboa Park station to access the Sunset.

- **Adding bus bulbs offers improved transit reliability and passenger waiting/boarding experience.**
 - The waiting area around bus stops is much more spacious, especially if there is a bus shelter.
 - Bus reliability improves and delays are reduced because the bus does not have to pull in and out of stops; reducing lateral side-to-side motions also improves passenger comfort once on the bus.
 - Boarding and alighting the bus from bus bulbs is easier, faster, and more convenient because it is easier for bus operators to pull up to stops flush to the curb. Passengers rarely have to step up into or down out of a bus into the street or gutter, reducing the distance they must climb or descend to get on or off the bus.
 - Bus bulbs are typically located at corners, and serve dual purposes as corner curb extensions that make crossing intersections easier and safer for pedestrians; because all bus riders must walk to and from the bus; this is an indirect but significant benefit for transit riders.
- **Enhanced wayfinding, particularly with BART information, will improve the passenger waiting experience.** With so many transit routes converging near the Persia Triangle, this change will provide passengers with the information necessary to identify the best route to reach their destination.

Public Input to Proposed Transit Improvements

Adding curb extensions and bus bulbs to Ocean and Persia Avenues. were popular amongst community members. Overall feedback was extremely positive given that transit service is a top priority for a majority of Excelsior/Outer Mission residents.

Combining bus stops on Ocean Ave. was also supported and viewed as another strategy to minimize car backups at the intersection of Mission and Ocean Ave.

Rerouting the 29-Sunset bus-line was met with mixed results depending on where workshop participants resided and their individual movements. Those who relied on the 29-Sunset to travel to Geneva Ave. were less likely to support rerouting the 29 line and eliminating a direct connection to Geneva Ave. Those relying on transit to reach BART from Persia Ave. were more likely to support having an additional option to the 49-Ocean for connecting to BART. More study will need to be done to assess transit rider impacts for rerouting the 29-Sunset bus line.

The community is concerned with any potential for negative construction impacts.

5.1.2.2 Pedestrian and Bicycle Safety and Access

The pedestrian safety benefits of the Persia Triangle improvements are derived from:

- **Improved (shorter) crossing distances** - Curb extensions at the Mission Street / Ocean Avenue and Persia Avenue / Ocean Avenue intersections will shorten pedestrian crossing distances and improve pedestrian visibility to drivers. Figure 5.5 illustrates the benefits of curb extensions with respect to pedestrian visibility.



- **Increased driver awareness and pedestrian visibility** – Switching the direction of San Juan Avenue will reduce pedestrian-vehicle conflicts near the Mission Street / Ocean Avenue intersection. Realigning Persia Avenue at Ocean Avenue will slow traffic turning from Ocean Avenue to southbound Persia Avenue.
- **Improved pedestrian circulation** - Bus bulbs for the 49-Ocean Avenue will improve pedestrian circulation by providing additional sidewalk waiting area for bus patrons, reducing the interaction between transit passengers waiting for buses and pedestrians traveling along the sidewalk.

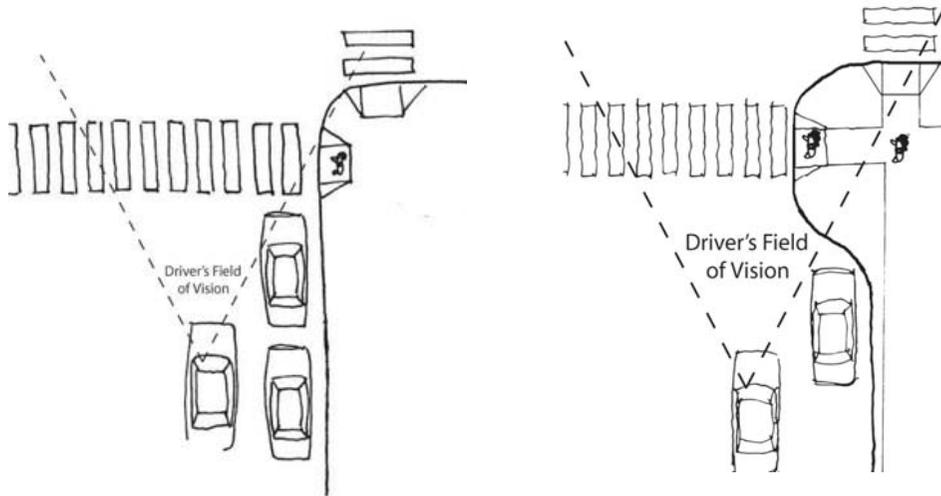


Figure 5.5 – This sketch demonstrates the improved ability of drivers and pedestrians to see each other at corners with curb extensions.

Public Input to Proposed Pedestrian Improvements

Pedestrian safety improvements were enthusiastically received at the second community workshop, and at subsequent mobile workshops. Redirecting San Juan Ave., a one-way street leading onto the busy intersection at Mission and Ocean Ave. in the opposite direction addressed pedestrian and motorists' frustrations with traffic backups and safety issues. All six groups unanimously agreed that this was a good proposal.

Curb extensions along Ocean Avenue and on Persia Avenue. were also well received, given problems with speeding cars on Persia and the dangerous conditions this intersection creates for pedestrians. Several pedestrian-auto collisions were cited at the workshops making improvements here a priority by both residents and the merchant community surrounding the area.

Curb extensions to straighten out Persia Ave.. at Ocean Ave. received the most vocal support as they were viewed as a valuable traffic calming tool, as well as minimizing double parking and traffic backups as a result of motorists utilizing an ATM at this corner, again, a very dangerous pedestrian intersection.

5.1.2.3 Streetscape Environment (Neighborhood Character)

The proposed streetscape improvements in the Persia Triangle area are intended to establish a more pedestrian-scale sidewalk with pedestrian and transit rider amenities. The proposed improvements will support the use of the area for community activities. Extending the Mission Street streetscape design treatments around the edges of the Persia Triangle fully integrates the Triangle into the corridor and provides a center of pedestrian activity generated by a cluster of bus stops and a multitude of uses around the triangle.

Specific benefits include:

- Street trees buffer pedestrians from traffic and visually define the edges of the Persia Triangle;
- Trellis-wall structures provide a buffer between the pedestrian realm and auto-scale uses; and
- The overall streetscape image created by the improvement “announces” the arrival to the Mission Street corridor and Excelsior Neighborhood for those traveling east on Ocean Avenue.

The proposed streetscape improvements complement the pedestrian safety improvements discussed above (realignment of Persia Avenue/Ocean Avenue intersection, construction of curb extensions, improved pedestrian safety and circulation) and together with these may create an incentive for future redevelopment in the Persia Triangle area.

Public Input to Proposed Streetscape Improvements

Overall, there was overwhelming support for greening and adding trees and other visual interest to the Persia Triangle, particularly since this intersection is a priority location for improvements and is viewed as the central location for business activity along the commercial corridor- the “heart” of the district. A trellis or some other visually interesting structure to further break up the streetscape and concrete was also suggested. One participant was concerned about who would actually maintain the street trees once they were installed.

5.1.2.4 Traffic and Parking

The primary traffic impacts associated with the proposed changes for the Persia Triangle are related to the reversed direction of San Juan Avenue. Traffic counts show that approximately 150 vehicles during the evening peak hour use this street to access Mission Street. With this movement no longer permitted, vehicles would disperse to other roadways, possibly including Ocean Avenue, Leo Street, or Onondaga Avenue. This level of traffic shift is not expected to contribute noticeably to traffic on other streets in the area. In addition, some traffic would likely shift from other streets onto San Juan Avenue when its direction is reversed, making the net change in traffic volumes on each street negligible.

The proposed improvements would result in a net loss of an estimated three to seven parking spaces, depending on potential bus stop consolidations. The parking loss is primarily due to the construction of bus bulbouts at locations where parking is now allowed at bus stops.

5.1.2.5 Costs

Based on unit costs provided by the Department of Public Works, these improvements are expected to cost approximately \$800,000 (not including property acquisition).



Construction Impacts

Construction impacts associated with the proposed Persia Triangle improvements would likely be limited to the area around the Persia Avenue / Ocean Avenue intersection. The realignment of this intersection could likely be accomplished while maintaining existing traffic circulation, but may result in minor delays to traffic and Muni. Measures should also be taken to promote access to the adjacent businesses during construction and to schedule construction to mitigate impact on business activity.

5.2 MISSION STREET/GENEVA AVENUE INTERSECTION

The intersection between Mission St. and Geneva Ave. was targeted as an important intersection to improve the transit, pedestrian, and streetscape environments by stakeholders in the neighborhood.

Both Mission Street and Geneva Avenue carry relatively high volumes of transit passengers. As such this intersection forms a key transit transfer point, particularly for passengers traveling between the Balboa Park BART station and other destinations on the Mission Street corridor. Existing transit passenger waiting areas are congested; the interaction between buses and vehicles exacerbates traffic congestion; and the angle of the intersection creates relatively long pedestrian crossing distances. There are many opportunities to improve the conditions at the intersection for pedestrian safety and comfort as well as transit operations and rider experience.

5.2.1 Improvements

Specific recommended intersection improvements are described below.

Construct Bus Bulbs and Relocate Eastbound Bus Stop on Geneva Avenue



Figure 5.6 – Current Muni Stop on eastbound Geneva at Mission

Mission (see Figure 5.6), and this possibility was discussed at community meetings. On the other hand, moving this stop from its current nearside location to the far side of the intersection would improve bus operations by potentially reducing the amount of delay that buses experience at the traffic signal. The other benefit of stop relocation is that a bulbed farside location would not interfere with eastbound drivers on Geneva turning south on

All of the stops at this intersection are heavily used by both riders and Muni buses. By itself, this high level of activity justifies the expense of adding bus bulbs to facilitate loading and unloading. The numerous benefits of bus bulbs are listed in the discussion of the technical analysis for the corridor-wide improvements, but for the Mission-Geneva intersection, improving waiting conditions is particularly important. At present, the stops and their shelters are located on relatively narrow sidewalks that at times make it difficult for pedestrians to pass and uncomfortable for those waiting for Muni. The extra area provided by bus bulbs will improve waiting and pedestrian conditions at these busy bus stops and sidewalks.

Bus bulbs at the northeast corner of Mission and Geneva would reduce crowding at this important pair of stops, transferring the heaviest transfer movement between westbound Geneva and northbound Mission. A bus bulb has also been considered to expand the bus stop size at the eastbound stop on Geneva at

Mission. A nearside bus bulb would potentially increase the likelihood of conflicts between motorists and Muni. The Authority and SFMTA Service Planning should perform additional analysis before making a final recommendation for the location of this stop.

Regardless of location, adding a bulb to each of these busy stops will allow for larger bus shelters that can accommodate more people. The current shelters are too small for the larger numbers of people waiting to board Muni buses. Larger shelters are especially important at this intersection that, as the community reports, can be very windy and unpleasant while waiting.

Eliminate Large-Radius Southbound Free-Right-Turn Lane

There is currently a large-radius free-right turn lane from southbound Mission Street to westbound Geneva Avenue. This dedicated turn lane was constructed to facilitate easier transit movements for the 29-Sunset. While perhaps a necessary feature to accommodate efficient transit service, there are several negative consequences of this turn lane to pedestrians. First, the large radius allows cars to execute the turn comfortably at higher speeds. Also, pedestrians crossing from this corner must cross the turn lane and wait on a raised island with traffic on both sides before continuing across either Mission Street or Geneva Avenue.

As noted earlier, this Plan calls for rerouting the 29-Sunset so that it no longer uses this intersection. Since no other transit route makes this turn, the separate turn lane can be eliminated. This would shorten pedestrian crossing distances and discourage traffic from making this turn at high speeds. The radius shown in the Figure 5.7 is conceptual and the ultimate design should ensure that large trucks and buses can continue to make the turn

Provide Northbound and Southbound Left-Turn Lanes on Mission Street

The Excelsior traffic calming study, currently underway, identified the need for left-turn pockets at this location. Facilitating easier left turns from Mission Street onto Geneva Avenue has several benefits. First, as identified in the Existing Conditions and Needs Report, left-turning vehicles are a notable source of delay to traffic and transit on Mission as they wait in queues for breaks in oncoming traffic. Second, the Excelsior traffic calming study documented the community's concern that drivers have difficulty turning left from Mission onto Geneva, and to avoid the intersection turn onto non-arterial streets to access Geneva. Left-turn lanes would increase the intersection's capacity to handle left-turn movements.



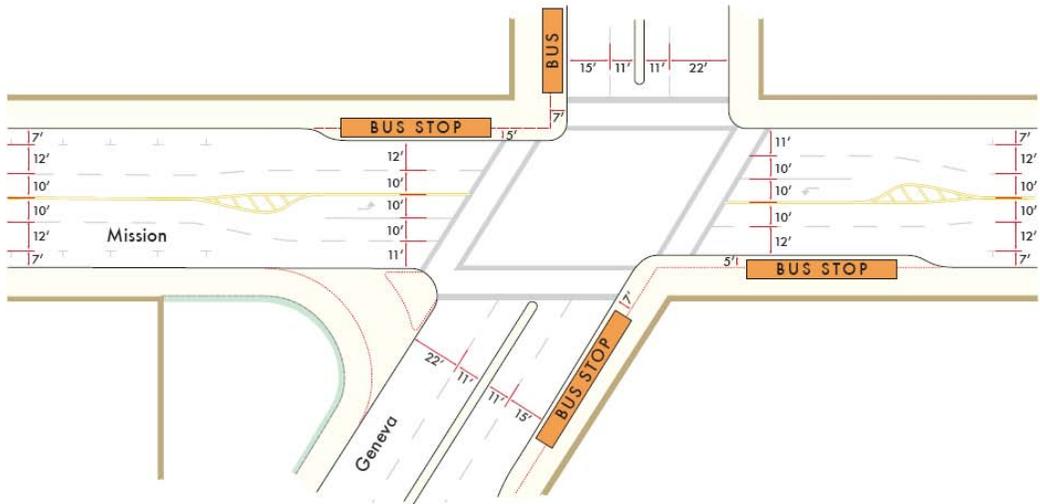


Figure 5.7 – Conceptual redesign of Mission Street / Geneva Avenue intersection.

Provide Landscape Buffer between Sidewalk and Gas Station on Northwest Corner

A gas station is located on the northwest corner of the Mission Street / Geneva Avenue intersection. Unlike the other corners of this important intersection, which are characterized by multi-story buildings and street-fronting retail, the only structure on the gas station is located at the rear of the site, with ample paved circulation space around the gas pumps. As is the case with many gas stations, the circulation space for automobiles directly abuts the adjacent sidewalks along the edges of the gas station. The pedestrian space is not delineated from the auto circulation area, and creates uncertainty for pedestrians and drivers about which space is for them. It also produces a visually and spatially auto-scaled environment. The spatial openness of the gas station in this particular location is inconsistent with the sense of enclosure and human scale provided by buildings along the majority of the remaining Mission Street corridor.

In order to improve the current conditions, a landscape buffer is recommended between the gas station and the sidewalk, similar to that shown in Figure 5.8. This would accomplish two goals: a clear distinction between the gas station circulation area and the adjacent sidewalks, as well



Figure 5.8 – Landscaping can provide a visual buffer between the roadway and adjacent pavement.

as a better spatial definition of this corner of the Mission Street /Geneva Avenue intersection. The latter will be best achieved through the use of trees within the landscape buffer (see Figure 5.8) and can be further enhanced by integrating a low wall (about 30 inches tall) at the backside of the buffer. If a wall is used it should be designed so as to not invite sitting in order to avoid conflicts with cars circulating in the gas station and to reduce damage of the landscaping within the landscape buffer³. Overall, the creation of a landscape buffer will visually separate the gas station from the intersection and provide a more pleasant pedestrian environment.

Particular attention should be given to the design of the landscape buffer along its western end on Geneva Avenue. This is the location of a busy Muni bus stop and currently bus riders wait scattered around near a particularly uninviting portion of the gas station. Here a wall/trellis design similar to that proposed for the edges of the Persia Triangle could be used west of the gas station driveway to help delineate pedestrian circulation space and the bus stop area from auto circulation space. As with the gas station access driveway on Mission Street, the one on Geneva Avenue adjacent to the bus stop should be reduced to a minimum width required for safe ingress and egress of cars (not wider than 28 feet).

At driveway locations, the landscaping should be clearly delineated by curbs to avoid damage by moving vehicles and to create an entry/exit that is clearly "legible" for drivers and pedestrians alike. The number of driveways into the gas station should also be reduced to a minimum. Narrowing and reducing the number of driveways will significantly reduce the potential conflict points between vehicles and pedestrians.

5.2.2 Technical Analysis Results

The following is a technical evaluation discussion about the proposed improvements at the Mission / Geneva intersection.

5.2.2.1 Transit Performance and Rider Experience

The proposed changes to the transit stops at the intersection include using the bus bulbs as upgraded bus stops in their current locations. There is also a proposal to move the eastbound Geneva Ave. stop to the far side of the intersection. The potential effects of these proposals are as follows:

- **Adding bus bulbs offers improved transit reliability and passenger waiting/boarding experience.**
 - The waiting area around bus stops is much more spacious, especially if there is a bus shelter.
 - Bus reliability improves and delays are reduced because the bus does not have to pull in and out of stops; reducing lateral side-to-side motions also improves passenger comfort once on the bus.
 - Boarding and alighting the bus from bus bulbs is easier, faster, and more convenient because it is easier for bus operators to pull up to stops flush to the curb. Passengers rarely have to step up into or down out of a bus into the street or gutter, reducing the distance they must climb or descend to get on or off the bus.
 - Bus bulbs are typically located at corners, and serve dual purposes as corner curb extensions that make crossing intersections easier and safer for pedestrians; because all bus riders must walk to and from the bus; this is an indirect but significant benefit for transit riders.

³ The top of the wall can be beveled to discourage sitting. The application of spikes or other hostile looking elements add-ons to the top of the wall is not recommended.

- **Moving the Eastbound Bus to the far side of the intersection will eliminate a conflict between Muni buses stopped for passengers and right-turning traffic onto Mission St.** It might also lower delay a bus might experience after picking up passengers and stopped at the stop light. A far side bus stop allows the bus driver to fully take advantage of any green time allocated to Geneva Ave. The likelihood of the driver losing out on green time because of delay at the bus stop is not known and may have to be studied further. On the other hand, keeping the bus stop in its current location allows for efficient passenger transfers between eastbound and southbound routes. The likelihood of a passenger missing a quick transfer would be lower with this configuration.
- **Enhanced wayfinding, particularly with BART information, will improve the passenger waiting experience.** Real time arrival information would also improve passenger experience.

Public Input to Proposed Transit Improvements

Bus bulbs to speed transit service were a clear priority amongst workshop participants and in the surveys collected from various follow up events. Bus stop amenities such as larger bus shelters and nicer waiting areas with benches and/or shade were also welcomed. Next Bus technology, given the many transit options at this key intersection would assist transit riders to utilize their time better and make quick decisions to catch a bus or walk to their destinations.

More frequent connections to BART, especially by the local 52-Excelsior bus line were also proposed improvements forwarded by workshop and focus group participants. At the mobile workshops, we heard from various neighborhood groups and their members the desire to terminate the 52-Excelsior at the Balboa BART station rather than on Geneva Ave.- or to run a shuttle from Geneva and Mission to BART.

Rerouting the 29-Sunset was met with mixed results, depending on the final destinations of transit riders; additionally, some participants voiced concerns for San Francisco State University and City College Students who connect to campus from Geneva and Mission.

5.2.2.2 Pedestrian Improvements

The construction of bus bulbs and the filling in of the right turn lane will have many immediate benefits to pedestrians navigating the intersection.

- **Eliminating the right turn lane of southbound Mission Street traffic will eliminate a conflict with pedestrians crossing Geneva Ave. or Mission St.** Pedestrians will no longer need to compete with automobiles for this space. Additionally, drivers will be more likely to exhibit caution when they need to slow down to execute a sharper right turn. The landscaped delineation between the gas station lot and the sidewalk will also eliminate conflicts between autos on the lot and pedestrians occupying the sidewalk area.

A sidewalk bulb in place of the right turn lane would increase pedestrian visibility to drivers. As drivers approach the intersection, pedestrians crossing the street would be more visible as they would have more protected space to inhabit closer to the driver's field of vision. Additionally, having a sidewalk barrier moved close to the travel lane would cause drivers to slow down and execute more caution when driving near intersections.

- **Shorter Crossing Distances** - Pedestrians will effectively have a shorter distance to cross the street with sidewalk bulbs at the intersection.
- **Improved Pedestrian Circulation** - The increased pedestrian realm will also provide ample space for efficient pedestrian circulation, particularly at bus stops.



Public Input to Proposed Pedestrian Improvements

Proposed improvements to the Mission/Geneva intersection were overwhelmingly supported by workshop participants and the residents surveyed. Mostly seniors and youth are concerned about fast-moving and a heavy flow of cars at this busy intersection, and identified pedestrian safety as a top priority for any improvements, followed closely by transit efficiency. The proposed left-turn pocket lane from Mission St. onto Geneva was also met with enthusiasm and was seen as a great way to divert traffic off of the residential streets from northbound motorists on Mission St. attempting to get onto Geneva Avenue westbound. Shortening the intersections by adding curb extensions were also supported, given the high demand for safer crossings.

5.2.2.3 Streetscape Improvements

The following are the potential effects of the proposed improvements in regards to the streetscape environment.

Landscaping between the Gas Station and the Sidewalk – The landscaping treatments will provide a clear distinction between pedestrian space and auto circulation areas, and provide a buffer between auto movement and the adjacent sidewalks and bus stops. Visually, landscaping will also help define this corner of the Mission Street /Geneva Avenue intersection. The addition of the landscaping buffer between the gas station lot and the sidewalk would improve the sustainability aspects of the neighborhood in relation to storm water management. It is an opportunity to open up a permeable surface in the middle of a relatively large area of impermeable pavement covering. Diverse vegetation may be planted in this buffer area and increase green space in the neighborhood.

The type of landscaping planted in this buffer should be selected carefully to ensure that the planting improves pedestrian safety and comfort. Low-lying bushes or grasses would distinguish the pedestrian from the auto circulation space, improving pedestrian comfort and safety. The species planted in the area, if consistent with other plantings in the corridor, would unify the look and appearance of the neighborhood. In most scenarios a buffer would likely provide an improved experience and sense of safety from auto uses for pedestrians and transit patrons.

Public Input to Proposed Streetscape Improvements

Landscaping, especially in front of the gas station, was largely supported. Shade provided by trees was also met favorably by transit riders. Greening projects are largely supported by Outer Mission/Excelsior residents who feel that too many tree wells sit empty and that existing trees are mismatched and poorly maintained. Concerns about maintenance are a recurring issue and a maintenance plan would need to be incorporated into any funding and/or implementation plan.

5.2.2.4 Traffic flow and Parking

The addition of left turn bays and bus bulbs would have the following effects:

Improved Left Turns – Left turn bays eliminate conflicts between through traffic and vehicles waiting to turn left, reducing delays for traffic and transit vehicles that must wait behind existing queues of vehicles waiting to turn left. Traffic and transit would operate more smoothly and efficiently through the intersection.

Potential Delay Due to Bus Loading – Bus loading would take place in the general stream of traffic, potentially delaying auto traffic when there is a bus stopped at an intersection. However, the traffic analysis completed for this study suggests that the delays to traffic would be negligible. These delays may be partially offset by the efficiency improvements gained by adding left turn bays.



Marginal Reduction in Parking Supply – Some parking may be lost due to the construction of bus bulbs. However, parking loss can be minimized depending on the final design of the bulb. Bulbs would occupy the street space currently allocated to bus stops, which is restricted to parking.

5.2.2.5 Costs

The cost for the improvements to the Mission/Geneva intersection, as described above are estimated to be around \$800,000.

5.3 ADDITIONAL INTERSECTIONS ON MISSION STREET (SILVER AVENUE, SANTA ROSA AVENUE, AND ONONDAGA AVENUE)

This Plan recommends a consistent street treatment for the entire study portion of Mission Street and Geneva Avenue. However, there are certain locations along Mission Street that have been identified as having the highest need for these improvements. Therefore, if the improvements recommended for the entire corridor are not constructed simultaneously, the intersections of Mission Street with Silver Avenue, Santa Rosa Avenue, and Onondaga Avenue should receive the first priority for transportation investment, along with the Persia Triangle and Mission Street / Geneva Avenue intersection improvements discussed above. These intersections were selected based on the volumes of pedestrians crossing, the incidence of collisions, and other existing conditions that make them more complex. A summary of the improvements that could be completed at these intersections follows. Figure 5.9 shows a typical intersection improved as described in this section.

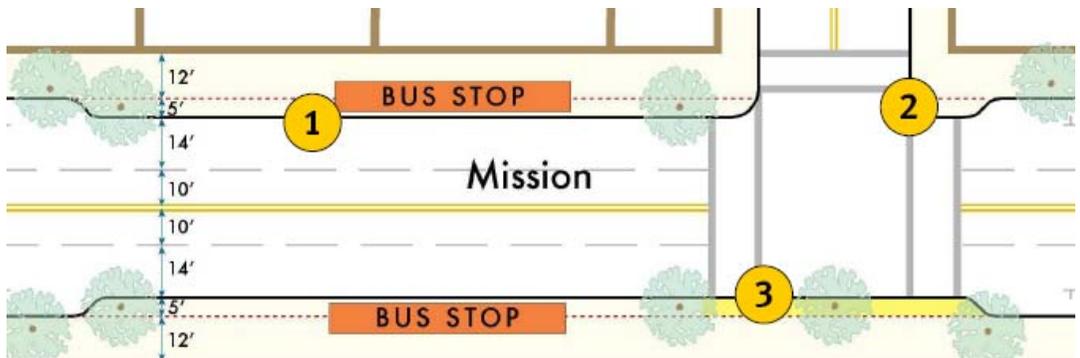


Figure 5.9 – Typical improvements recommended for Mission Street intersections with Silver Avenue, Santa Rosa Avenue, and Onondaga Avenue.

5.3.1 Improvements

(1) Construct Bus Bulbs

Bus bulbs would offer expanded waiting area and would speed up the boarding process for transit, improving transit reliability and travel time. Note that under the ultimate plan for Mission Street, while wider sidewalks at bus stops may still be accommodated, space would need to remain for bus turnouts. Construction of bus bulbouts at these key intersections should consider the long-term recommendation for Mission Street.

(2) Construct Corner Curb Extensions

Corner curb extensions should be constructed at these key intersections to shorten pedestrian crossing distances and improve pedestrian visibility.

(3) Widen Sidewalks and Provide Trees at "T" Intersections

Mission Street is the intersection of offset street grids, and as a result, relatively few streets cross Mission Street. Instead, many streets terminate at Mission Street, at so-called "T" intersections. This reduces the visual cues to drivers that they are approaching intersections and must yield to pedestrians. Extending the sidewalks into the street, similar to a curb extension along the "dead end" side of the street, would provide a visual cue to drivers. The cue could be enhanced by installing a unique tree, such as a Mexican Fan Palm or other distinct tree consistent with goal of being easily distinguished from the small leaf tristanias from a distance, to visually narrow the roadway at these locations and provide an additional signal to drivers to watch for crosswalks.

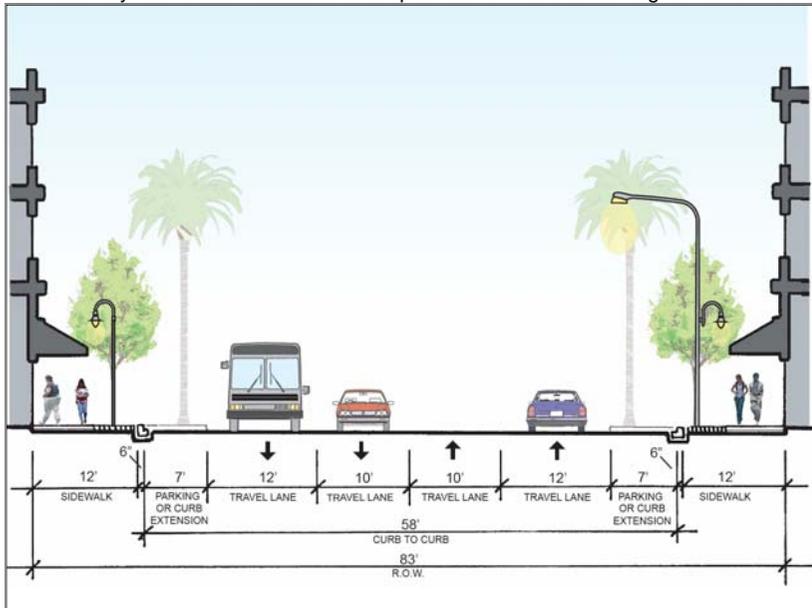


Figure 5.10 – Planting two types of trees would have the effect of narrowing the street.

Curb extensions, especially at “T” intersections, would improve safety by increasing visibility of pedestrians and drivers’ awareness of the intersection. Placing trees on these curb extensions further reinforces this effect.

5.3.2 Technical Analysis Results

The improvements listed above for specific high-priority intersections along Mission Street are consistent with the ultimate recommendations for the entire Mission Street corridor. Therefore, the technical analysis for the Mission Street corridor included these intersections as part of the overall analysis, similar to the Persia Triangle technical analysis. The discussion below is a qualitative assessment of the potential benefits and impacts of the recommended intersection improvements.

5.3.2.1 Transit Performance and Rider Experience

Bus bulbs are recommended to both improve transit performance and enhance rider experience. Bus bulbs have significant benefits to both transit riders and pedestrians in general because they widen the useable sidewalk space and provide a waiting area for bus passengers outside of the pedestrian flow. In addition, bus bulbs improve transit reliability and passenger comfort by eliminating the need to weave in and out of the traffic lane. Boarding and alighting the bus from bus bulbs is easier, faster, and more convenient because it is much easier for bus operators to pull up to stops flush to the curb. Bus bulbs can accommodate additional stop amenities such as larger shelters and real-time information

5.3.2.2 Pedestrian and Bicycle Safety and Access

Two primary features of the recommended treatments for these key intersections significantly improve pedestrian conditions. First, corner curbs shorten pedestrian crossing distances, increase pedestrian visibility to drivers, and generally slow traffic speeds, particularly for turning vehicles. Second, the proposed treatment at the end of T-intersections provides visual cues to drivers that a crosswalk exists.

5.3.2.3 Streetscape Environment (Neighborhood Character)

As described above, the most critical streetscape element at the described key intersections is the introduction of visually distinct street trees (i.e., palms) where crosswalks occur across Mission Street (including T-intersections). If consistently applied and successfully combined with other measures recommended in this study, this concept would further enhance pedestrian safety in the corridor while simultaneously strengthening the neighborhood character through a stronger sense of identity. The identity building characteristic of this streetscape treatment is associated with the rhythm introduced into the tree planting pattern along Mission Street by the occurrence of the “special” trees.

Public Input to Proposed Streetscape Improvements

As stand-alone improvements or in conjunction with the Option B cross section for Mission Street, the community expressed support for redesigning these “T” intersections as described above. The most common feedback included support for the curb extensions, the shorter crosswalks, and the increased lighting and landscaping.

5.3.2.4 Traffic and Parking

Bus bulbs would allow buses to stop in the curb lane for passenger loading and unloading. While this would block the curb lane for through traffic, it may not represent a substantial degradation to traffic circulation compared to existing conditions. Even today, the curb lane does not have 100% of its capacity for traffic flow since transit vehicles operate in that lane, and often do not pull fully out of the roadway when approaching bus stops. As a



result, the curb-side travel lane is frequently blocked by buses making stops and provision of a bus bulb would not likely exacerbate this situation.

Parking loss at these high-priority intersections would be minimal, and corner curb extensions could be designed so as to minimize the parking loss. Bus bulbs would shorten the required lengths for bus stops because the transition distance to pull into and out of stops would no longer be required. This would free more curb space for parking.

However, parking would be removed from the middle of existing T-intersections to accommodate wider sidewalks and special trees. The net result is a minor parking loss at these intersections dependent upon the intersection.

5.3.2.5 Costs

Cost estimates for the four key intersections discussed above are as follows:

- Mission Street / Onondaga Avenue - \$400,000
- Mission Street / Santa Rosa Avenue - \$250,000
- Mission Street / Silver Avenue - \$500,000

Note: These costs are planning-level cost estimates and are subject to change pending detailed design and field investigation.

5.3.2.6 Construction Impacts

Construction of bus bulbs, corner curb extensions, and wider sidewalks at key intersections would not likely contribute to substantial disruption to traffic flow on Mission Street. Pedestrians and transit patrons may be inconvenienced as these improvements are proposed to take place at locations where pedestrians cross and bus passengers load and unload. However, the long-term benefits to pedestrians outweigh the short-term construction impacts.



6. MISSION STREET CORRIDOR

Mission Street is one of the most important streets in San Francisco. It serves as a key transit corridor, a major commercial area, and, in the study area, functions as the heart of the Excelsior District. Within the study area, Mission Street is a relatively chaotic environment, which contributes to unreliable transit, a reduced sense of pedestrian safety, and a general lack of a unified streetscape.

The proposed improvements for the Mission Street corridor include a series of basic improvements that can be implemented all along the corridor and three alternative roadway configurations to improve the operations of the roadway. The basic improvements are described in the next section, followed by a discussion of the three corridor options considered.

6.1 BASIC IMPROVEMENTS

Several basic improvements should be provided throughout this portion of Mission Street. These amenities are described below.



Figure 6.1 – New pedestrian-scale fixtures (left) and retrofitted existing fixtures (right).

bulbouts at each crossing. This would give further functional and visual emphasis to the improved crossing locations. Finally, the combination of public safety and aesthetic aspects of a coherent system of well-designed pedestrian-scale light fixtures can provide future benefits for revitalization efforts in the area.

In the short term, lighting conditions can be improved by replacing the high pressure sodium (HPS) lamps of the existing cobra-head fixtures with metal halide (MH) or similar lamps and conversion kit parts. Metal halide lamps have a significantly better color rendition than HPS because they give off a white light that is more similar to daylight. If the right wattage is used, these lights can create a more natural and brightly lit environment.

Provide Pedestrian-Scale Lighting

Currently, Mission Street is lit by “cobra-head” light fixtures fitted with high-pressure sodium lamps. The fixtures are spaced 80 to 100 feet apart, depending on driveway locations and other conditions that may affect fixture placement. This type of fixture is designed primarily to provide light for vehicular traffic and only to a lesser degree to light sidewalks used by pedestrians.

One of the critical needs identified by the larger Excelsior community and local stakeholders was for improved pedestrian-scale lighting along Mission Street. Pedestrian-scale light fixtures along the street can significantly improve both safety and comfort of the pedestrian experience on this corridor and introduce a civic streetscape element that upgrades visual character of the street and furthers the development of neighborhood identity. Also, the envisioned crosswalk improvements on Mission Street can effectively be combined with new pedestrian-scale lights provided within the

Ideally, pedestrian scale lighting improvement would involve the replacement or retrofit of all existing light fixtures with pedestrian-scale (12 to 14 feet tall) light fixtures, that are oriented toward the sidewalk and whose light source is located about 12 to 14 feet above the sidewalk surface. A modern-looking pendant type fixture, compatible with the look of the existing cobra-heads, should be used (this type of fixture is most suitable as a retrofit fixture with the existing cobra-head posts). Additional pedestrian-scale fixtures of the same design (left example in Figure 6.1) could be added between the retrofitted cobra-heads to reduce distance between lights. The overall spacing of retrofitted cobra-heads and additional pedestrian scale fixtures should approximately 30 to 40 feet between fixture locations (or about two pedestrian scale light fixtures between each modified cobra-head fixture). Existing light fixtures should be painted to match the color of the new pedestrian light fixtures for aesthetic unity, and in fact, new signal posts could be painted in the same color as the new light fixtures to further unify the visual appearance of the most prominent vertical elements in the corridor.

The City's Better Streets Master Plan effort, currently underway, will establish the most cost-effective approach to providing expanded pedestrian-scale lighting in neighborhoods. The BSP will answer questions about retrofitting versus replacing existing street light fixtures and what type of bulb to use in what application.

Provide Consistent Street Tree Plantings

Street trees help establish a comfortable pedestrian environment by providing a buffer between traffic and sidewalk activities, shade on hot days, and a visually pleasing walking and shopping environment. They also spatially frame the pedestrian realm and, for drivers, visually narrow the width of the street, an effect that contributes to speed management. Street trees can also provide a strong sense of identity and a unifying character to the overall streetscape. Providing continuous and consistent planting at the scale of the entire corridor can improve the character of an area by making it look well cared for and contributing to the desired unified local identity that is partially achieved by the use of pedestrian light fixtures of a consistent design along the corridor (see discussion above). The existing complement of street trees can be improved by reinforcing use of the dominant existing tree: the small-leaf Tristiana.

Existing small-leaf Tristantias should be preserved if they are in good condition, and replaced where they are failing. Many of the inconsistent trees, such as the intermittent Windmill Palms, should be removed and replaced with small-leaf Tristantias. New small-leaf Tristantias should also be planted where there are any gaps in the street tree line.

Mexican Fan Palms or a similarly distinct tree should be planted in bulb-outs at all crosswalk locations. Trees may also be planted at bus stops if consistent with SFMTA's recently adopted policy. This would provide visual cues to pedestrians and drivers regarding the location of intersections and crosswalks, improving both aesthetics and safety at crossing locations. Mexican Fan Palms are recommended as they have a tall and narrow trunk, which makes them visually stand out in the streetscape without blocking sight lines between pedestrians and drivers.

Consider Displaying Community Art on Traffic Signal and Utility Boxes

Traffic signal and utility boxes can provide an opportunity for local public involvement in implementing streetscape improvements and enhancing neighborhood character. Rather than seeing them as a blight or unavoidable functional object, many cities view these facilities as an opportunity to add small-scale public art projects to the streetscape. Local artists and community members can participate in the neighborhood and corridor improvements by painting the exterior faces of utility boxes, both beautifying their community and taking more ownership of the public realm in their neighborhood. This effort should be



Figure 6.2 – Community art display on utility box

coordinated with SFMTA/DPT, PG&E, and other appropriate authorities, as necessary.

Provide New Trash Receptacles

Additional trash receptacles would decrease the amount of litter on the street and contribute to a cared-for appearance. Many other neighborhood improvement programs in San Francisco, such as in the Castro district, have selected trash receptacles with an updated look to reinforce a unique aesthetic character for the neighborhood.



Figure 6.3 – An updated look for trash receptacles will add to the streetscape character and encourage people to use them.

high-visibility crosswalk that could be installed at locations other than near school zones, such as high priority transit stops and transfer points. The City will develop a design standard for visible crosswalks as part of the Better Streets Master Plan, currently underway. Such a treatment should be considered along this corridor.

Provide Real-Time Transit Information (i.e., NextBus)

As recommended for other locations in the study area (i.e., the Persia Triangle and the Balboa Park BART Station), NextBus real time arrival information should be installed along transit routes on Mission Street between Silver Avenue and Geneva Avenue, with the

Provide Pedestrian Countdown Signals

Pedestrian countdown signals are pedestrian signals that display the amount of time remaining until the light turns red. While most intersections along the Mission Street corridor currently have these devices, some do not, such as Mission Street / Excelsior Avenue. All crossings at all intersections should be outfitted with pedestrian countdown signals. A planned Safe Routes to School project, led by the SFMTA, will upgrade this signal.

Provide Advance Limit Lines at Crosswalks

Advance limit lines are white lines painted across the road in advance of crosswalks. These limit lines have been shown to cause drivers to allow more room between their stopped car and the crosswalk. This provides additional buffer between pedestrians and vehicles.

Enhance Crosswalk Visibility

The City of San Francisco currently has a policy of designing only basic crosswalks at all locations, except within one-quarter mile of a school. Within this distance, the City will allow a “yellow ladder” type crosswalk. This Plan recommends that the City adopt a new design standard for a



Figure 6.4 – Example of traffic signal mast arms and pedestrian countdown signals

highest-volume bus stops prioritized.

Implement Transit Signal Priority

SFMTA has installed transit signal priority (TSP) equipment on its buses and at some Mission Street intersections. This technology extends the green light phase of a traffic signal to enable an approaching bus to make it through the intersection. At present, several intersections have TSP equipment on this segment of Mission Street: Silver (outbound), Brazil (outbound), Persia, and Italy (inbound). SFMTA could also install this equipment at the following intersections: Silver (inbound), Excelsior, Ocean, Brazil, Onondaga, and Geneva.

Provide More 14L-Mission Service

The community spoke clearly about its desire to see the hours and frequency of the 14-Limited be expanded. At present, the 14-Limited is scheduled to operate every 20 minutes from approximately 9am to 4pm Monday through Friday and every 15 minutes from 9am to 5pm on Saturday. At this frequency its utility for area residents is limited because it does not operate frequently enough to provide a real choice for riders; few people wait for the 14-Limited because the likely wait time (compounded by the lack of real-time bus arrival information) often negates any travel time benefit.

As part of ongoing Transit Effectiveness Project (TEP), Muni will evaluate (in Spring 2007) its current service plan and allocation of service hours. The community's input from this project is going to be taken into account by the TEP but final TEP recommendations will not be available until winter 2007.

Reconsider Community Request to Reinstate Routes 52-Excelsior and 54-Felton

Recently, two community bus routes serving the Mission-Geneva corridor experienced service cuts. The 52-Excelsior's route was truncated to terminate at Luther Burbank School, and its mid-day headway increased from 20 to 30 minutes. The 54-Felton was rerouted to cover the discontinued 52 service. Corridor residents were negatively affected by these changes because of reduced capacity and increased headway to and from the Balboa Park and Glen Park BART stations. In 2005, the Excelsior District Improvement association recommended that Muni extend the 52-Excelsior along Geneva Avenue to Balboa Park and City College, restore the 54-Felton to its route along Persia and Ocean Avenues, and permanently release the 52-line layover area at Amazon and Mission.

Consider Bus Stop Consolidation

One of the most effective and inexpensive ways to improve transit speed and reliability – two of the key issues for transit service on Mission Street – is to optimize the spacing and location of its stops.

For northbound Mission Street between Silver Avenue and Geneva Avenue, Muni should consider consolidating the current stops at Persia Avenue and Brazil Avenue (resulting in a net loss of one stop in this travel direction) to a new midblock location between Persia Avenue and Brazil Avenue. This would make stop spacing more consistent with Muni's standards of 800 to 1,000 feet between transit stops (stops about two generic city blocks apart), helping the 14-Mission strike a more consistent balance between transit speed, reliability, and walk access distances. Apart from this stop consolidation, the other stop relocation that is recommended for the northbound travel direction is to move the current nearside stop at Russia Street to the farside of the intersection.

In the southbound direction, Muni should eliminate the current low usage stop at Ruth Street. In addition to this stop elimination, one stop relocation has been considered and will be evaluated in more detail: moving the current stop between Norton Street and San Juan Avenue to the Persia Triangle between Ocean Avenue and Persia Avenue. Both potential stop locations have tradeoffs: the Persia Triangle location offers more possibilities for a



pleasant waiting area and its farside location has the potential to slightly improve Muni's speed and reliability, but these benefits come at the expense of requiring transit riders to cross Ocean Avenue to get to/from this stop (because most people who use this stop appear to come from the commercial core slightly to the north of Persia Triangle). Keeping the stop at its current location is viable, if the stop is bulbed to relieve overcrowding.

Address Bus Stop Delays Through Bus Bulbs

As mentioned in chapter 5.6.2 in the *Existing Conditions and Needs Assessment Report*, Muni busses experience variable and significant delays at a number of locations on Mission Street. Bus bulbs can address these delays by giving passengers waiting to board separate space from nearby pedestrians and thereby eliminating conflicts. It can also bring the passenger boarding area closer to a bus's line of travel. Often busses cannot turn close enough to a curb to allow for direct boarding from the sidewalk, forcing passengers to step down into the street then climb the stairs into a bus, adding discomfort and delay. Bulbs can address this problem. The table below shows the proposed locations for bus bulbs.

| Proposed Bus Bulb Locations (Mission Street) | | |
|--|----|----|
| Cross Street | SB | NB |
| Silver | X | X |
| Francis | X | |
| Excelsior | | X |
| Brazil | | X |
| Norton | X | |
| Ruth | X | |
| Persia | | X |
| Russia | | X |
| Onondaga | X | |
| Italy | X | X |
| Geneva | X | X |

Improve East-West Transit Service

Cross-town, or east-west serving transit, does not function for the community as well as north-south service. The main area to improve, through combinations of transit priority treatment, is reliability. The recommendations of the SFMTA's TEP study, currently underway, will provide a guide for improving the performance of these routes. Circuitousness in the route of the 29 will be addressed through a recommendation elsewhere in this Report.

Consider Expanding Use of Muni Fast Pass on BART

At present, full price Muni Fast Passes (i.e., Muni's monthly unlimited use transit pass) are valid on intra-San Francisco BART trips, but discounted youth and senior passes are not. This reflects the financial arrangement between BART and Muni and the rate at which Muni must reimburse BART for carrying "Muni" passengers. This Study recommends that the SFMTA and BART renegotiate the current arrangement to allow all Fast Passes to be valid on BART, ideally with a neutral financial impact for Muni. There is also community interest in extending the use of Fast Passes to the Daly City and Colma BART stations.

Reduce Double-Parking Through Design and Increased Enforcement

Regardless of the ultimate design adopted for Mission Street, reduction in double parking through design treatments and through increased or more effective enforcement would improve both auto and transit circulation in the area. This Plan calls for an SFMTA review of loading zones and a review of the current PCO beat structure in conjunction with local merchants to identify whether more or relocation of existing commercial loading spaces would be beneficial.

Support Creative Strategies for Parking Management

One way to increase the efficiency of the parking supply and provide more short-term parking for shoppers along the Mission Street corridor is to work with private parking facilities, such as churches, where parking is only used during certain time periods. During times when these facilities are not in use, opening them up to public parking



Figure 6.7
 frequent c



may alleviate parking problems in the area and generate revenue for the parking facility owners. As part of its Parking Management Study, the Authority is developing a toolkit for approaches such as shared parking and other creative ways to more effectively manage the City's parking supply.

Public Input into Proposed Improvements

The consensus amongst participants via surveys, workshops and focus groups is that there is a need for significant capital investment in the appearance and function of the commercial corridor along Mission Street. Therefore, community feedback on basic improvements to Mission Street was overwhelmingly positive. Transit improvements called for more frequent bus service and increased hours of operation for the 14-Limited. Overall, transit riders favored faster travel times over more frequent bus stops, although some seniors expressed concern about eliminating specific bus stops. We heard loud and clear from almost all participants that they would not advocate for increased MUNI fares.

Pedestrian improvements that received the most support included countdown signals and increased pedestrian level lighting. Some changes suggested at the workshops included making sidewalk repairs and the overall poor condition of the sidewalks, tree wells, and crosswalk striping.

Streetscape improvements received quite a bit of excitement and support from workshop and focus group attendees. Overall, pedestrian scale lighting was the community's top priority. Many participants also expressed interest in street trees and art such as murals on utility boxes.

6.2 CORRIDOR OPTIONS

In addition to the basic improvements described above, three alternative cross section configurations were developed and evaluated for improving Mission Street operations. These alternatives are generally intended to address the highest priority transportation needs – transit reliability, pedestrian safety, and streetscape conditions – through corridor-wide thematic changes with the potential to transform the feel of the Mission Street corridor into a more vibrant, pedestrian-friendly atmosphere, and to improve Muni service along Mission Street. The options are summarized below.

Option A – Add Bus Bulbs and Curb Extensions, While Maintaining Existing Four Lanes

In addition to the general recommendations described in Section 6.1, Option A would involve constructing bus bulbs and curb extensions at corners along the entire Mission Street corridor between Geneva Avenue and Silver Avenue. Mission Street's many "T" intersections would also be upgraded with widened sidewalks and additional landscaping in Option A, so that drivers would receive visual cues that they are approaching intersections and must yield to pedestrians. Unique trees, such as Mexican Fan Palms, could enhance the visual narrowing of the roadway at intersections.

Because this option is the most similar to the current roadway layout, it would require a greater reliance on increased enforcement against double parking, which was identified as a significant contributor to transit delay along the study corridor. Option A is illustrated in Figure 6.8.

Option A:

- Provides a number of pedestrian benefits without making major changes to the roadway operations and traffic circulation;
- Improves transit travel time and reliability through bus bulbs;



- Can be constructed in phases. Improvements would generally occur at intersections, which means higher-priority locations could receive improvements first, as funding is available, with the other intersections receiving improvements later. Constructing in phases would also reduce construction impacts that affect traffic flow, pedestrian circulation, and adjacent businesses.

One drawback to Option A is that it relies on enforcement rather than engineering design to reduce double parking. Because of this, transit performance would still be affected by double parking in the corridor and may not benefit as much as in Options B and C.

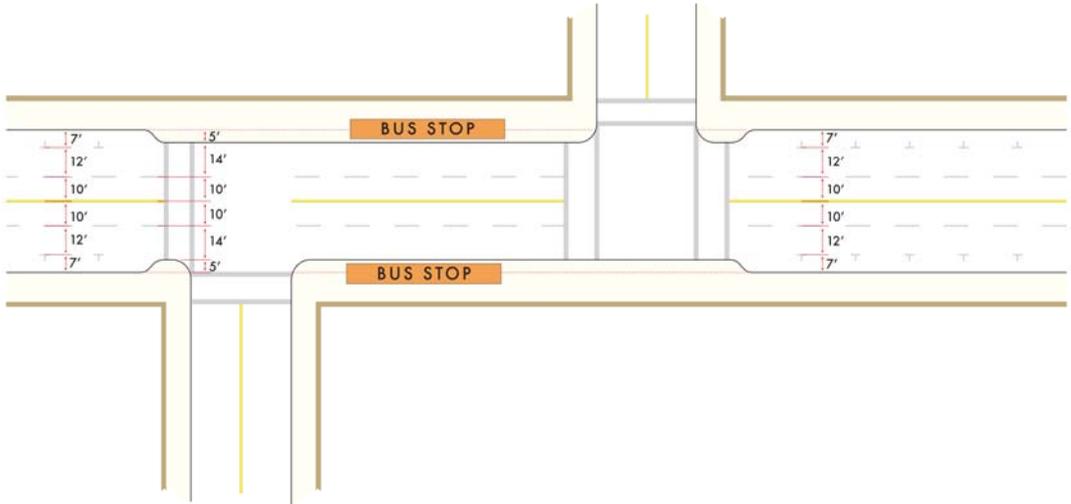


Figure 6.8 – Option A calls for providing bus bulbs, corner curb extensions, and increased enforcement against double-parking

Option B – Convert Mission Street to Three-Lane Street with Left Turn Lanes and Landscaped Median

Option B would likely be the most transformative option to the Mission-Geneva area. Option B calls for converting the roadway from four travel lanes to two. The remaining space would allow for an 8-foot raised, landscaped median, left-turn lanes at intersections, and a 6-foot “flex space” between the travel lane and on-street parking. Bus bulbs and corner curb extensions could still be constructed at key locations, but would not be as prevalent as in Option A.

The primary concept behind Option B is that there are a number of obstacles to efficient through-movement of vehicles and transit along Mission Street. Traffic in the right lane is regularly blocked by double-parked vehicles. Traffic in the left lane is frequently blocked by cars trying to make left-turns, waiting for a gap in oncoming traffic. The result is that during peak periods, through-traffic (including, most importantly, Muni buses) must constantly weave from the right lane to the left lane and back to avoid these frequent, recurring obstacles. Thus, although two lanes are provided in each direction, due to the constant blockages, Mission Street functions very similar to a

street with one lane in each direction. The traffic volumes on Mission Street bear this fact out, as they are similar to other two-lane streets and much lower than other similar four-lane streets in San Francisco.

Option B:

- Benefits pedestrians by providing a median refuge;
- Smooths traffic operations with left turn pockets and
- Provides a design treatment for reducing conflicts between through traffic and double parkers.

One of the largest challenges to Option B is that transit vehicles may have difficulty pulling back into traffic after making a stop.

Despite the challenges and questions that remain, Option B is recommended as the best long-term improvement to the study area (pending the results of further analysis) with widespread community support. Option B is illustrated in Figure 6.9.

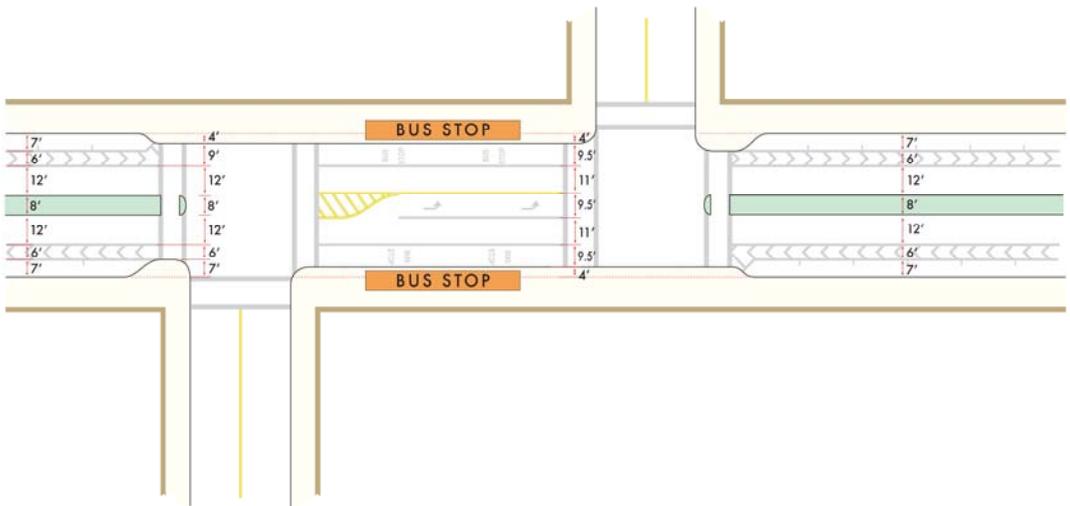


Figure 6.9 – Option B calls for reducing the number of travel lanes from four to two, providing a raised, landscaped median, and a “flex space” between the travel lane and the on-street parking.

Option C – Operate Buses in Center Lanes by Shifting Bus Stops to Center Boarding Islands

The third option developed for Mission Street calls for shifting the transit operations from the curb lane to the center lane and constructing center loading platforms, similar to Church Street. While corner curb extensions would not be feasible within the available right of way at locations with transit platforms, they could still be

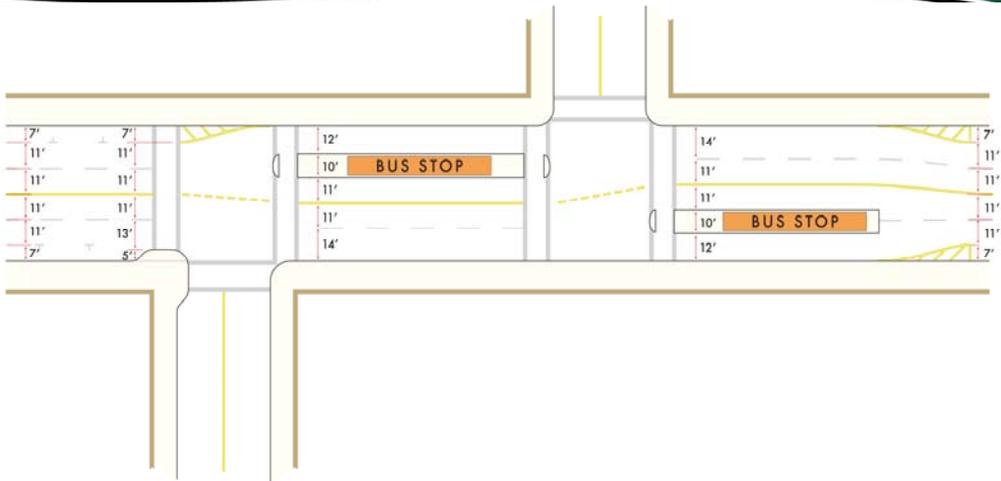


Figure 6.10 – Option C calls moving transit operations to the center lane and constructing center loading platforms.

installed, similar to Option A, at other intersections. This option, much like the other options, would require increased enforcement against double-parked vehicles.

Option C:

- Reduces conflicts between transit vehicles and double-parking and right-turning vehicles, so that transit reliability and travel times would be significantly improved;
- Benefits transit reliability with loading platforms that offer benefits similar to bus bulbs, in that transit vehicles would not have to pull in and out of traffic to load and unload.
- Reduces sidewalk overcrowding near popular transit stops because transit patrons would wait on the center loading platforms.
- Provides a crossing island for pedestrians via the center loading platforms.

Despite the numerous benefits associated with Option C, it has trade-offs as well. One such trade-off is that waiting on relatively narrow center median transit islands may be uncomfortable for transit passengers, although the medians would be wider than those currently existing on Church and Market Streets. A second trade-off is that some left-turn movements would be prohibited, primarily near bus stops, so that left-turning vehicles do not inhibit transit vehicles' ability to access the loading platforms. If bus platforms are staggered as shown in Figure 6.10, parking loss can be minimized. Option C is illustrated in Figure 6.10.

Public Input to Proposed Corridor Improvements

Workshop participants felt that all three improvement options adequately addressed the three transportation priorities identified at the beginning of the study through our first community workshop, multi-lingual focus groups, and community surveys.

Given overall community feedback for significant capital investments, it is not surprising that the most popular options for improvements were the most transformative proposals, and include landscaped medians, curb extensions and improved transit service.

Community feedback on the three options for improvements was fairly uniform across workshop participants. Option B for Mission Street and for Geneva Avenue received the most support from all break-out groups except for one (out of 6) Option A was attractive to some participants due to its perceived speed for implementation as well as lower cost, as one participant commented, "Option A can be implemented fairly quickly and serve as a starting point to eventually get to Option B".

Option C was not preferred. Participants expressed concern about the potential for jaywalking between the sidewalk and the transit platforms, creating new pedestrian safety problems. The community emphasized that the platforms must be of a comfortable width to ensure that the transit waiting experience does not degrade. Finally, the potential for parking loss was a concern expressed during outreach on Option C.

For Mission Street, Option B makes the most dramatic changes and addresses the need to manage double parking- a priority for transit users- as well as add street trees and slow traffic. Some concerns at the workshops amongst both merchants and residents included projected costs, construction impacts and the reduction of automobile capacity. More study would be needed to understand potential traffic diversions onto Alemany Blvd, which would cause concern amongst Alemany Blvd. residents.

During the mobile workshops, wherein ENCoRe staff presented those results to various neighborhood organizations and associations, older residents- predominantly from the Outer Mission Residents Association (OMRA) were not as enthusiastic about any improvements. In particular, there was concern over converting Mission Street from a 4-lane to a 3-lane street; mostly around the cost and reduced traffic capacity. Many felt this would create traffic flow problems and more education and analysis would be needed to assuage those concerns. However, since many of the members of this neighborhood association were not present at the workshops, they were encouraged by their president to attend the final workshop, ask questions and provide feedback. Post workshop comments from OMRA members were much more supportive, especially since at this workshop there was more opportunity for discussion of specific improvements at key intersections and along Mission St. and Geneva Ave, as well as an opportunity to view the study findings.

6.3 TECHNICAL ANALYSIS RESULTS

This section provides a summary of the results of the technical evaluation conducted for Options A, B, and C. A more detailed discussion of the evaluation results is presented in the Appendix.

Transit Performance and Rider Experience

All three options benefit transit reliability and travel time. Option C would provide the greatest improvements to transit reliability, because the bus would be traveling in the center lane and would avoid parking movements and double parked vehicles, as well as turning vehicles. Options A and B enhance the passenger waiting and boarding experience by providing bus bulbs and improved waiting areas. Option C would provide center loading platforms, which would provide a dedicated place for passengers to wait, but would force passengers to wait in the middle of the street, which may be less comfortable. For this reason, Option C was considered to have no net change to the passenger boarding experience.



| | Transit Operations & Passenger Experience | | | |
|----------|---|---------------------|------------------|-------------|
| | Transit Reliability | Transit Travel Time | Waiting/Boarding | Way-finding |
| Option A | + | ++ | ++ | + |
| Option B | + | ++ | ++ | + |
| Option C | ++ | ++ | No Change | + |

| | Pedestrian & Bicycle Safety and Access | | |
|----------|--|---------------------|----------------|
| | Crossing Experience | Sidewalk Conditions | Bicycle Access |
| Option A | + | + | No Change |
| Option B | +++ | + | + |
| Option C | ++ | + | No Change |

Pedestrian Safety and Access

Option B has the greatest benefit to pedestrian and bicycle safety and access given the raised, landscaped median, which would provide a pedestrian crossing refuge and would allow for striping of additional crosswalks at

unsignalized intersections. However, all options improve the quality of the sidewalk and offer some enhanced crossing experience.

Streetscape Environment (Neighborhood Character)

Option B provides transformative streetscape change to the corridor by introducing a thematic median landscape feature, unique to the neighborhood. In addition to the numerous transportation-related benefits of this option, the landscaped median would provide a memorable image that announces to people that they are in the Excelsior neighborhood. Option A would also significantly improve the streetscape character. Providing trees on the sidewalk and on the bulb outs visually narrows the street and creates a stronger identity, as well as increased opportunities for landscaping and more permeable surfaces. Option C provided the fewest improvements, but would still represent a positive change over current conditions.

| | Streetscape Environment (Neighborhood Character) | | | |
|----------|--|----------------------|-------------|------------------------------|
| | Street Identity | Land Use Integration | Landscaping | Sustainable Storm Water Mgmt |
| Option A | ++ | ++ | ++ | ++ |
| Option B | +++ | +++ | +++ | +++ |
| Option C | + | No Change | + | + |

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Traffic and Parking

All three options have modest but similar parking impacts, although Option C would have higher impact. Bus bulbs and

| | Traffic & Parking Impacts | |
|----------|---------------------------|------------------|
| | Traffic Circulation | Parking Capacity |
| Option A | No Change | - |
| Option B | No Change | - |
| Option C | - | - |



corner curb extensions may eliminate a few spaces at intersections. This small reduction could be offset by adding new parking spaces where existing Muni stops are consolidated, and by instituting creative parking management strategies. Option C would require removing more parking spaces than Options A and B because the parking on both sides of the bus stop would need to be removed to allow sufficient space for the center island.

Options A and B would have negligible impacts to traffic circulation. The potential impact to traffic associated with the lane reduction in Option B would likely be offset by the separation of left-turning traffic from through traffic. As noted earlier, these are preliminary evaluations and more detailed study of Option B is recommended. Option C would result in a slight degradation to traffic circulation because some left turns would be restricted at center median bus stops.

Construction Costs

The planning-level cost estimates developed for these alternatives show that Option B would be the most costly. This is primarily due to unknown factors associated with median construction, which may involve the relocation of underground utilities.

| | Construction Impacts (Relative Comparison) | | |
|----------|---|-----------|--------------------|
| | Duration | Intensity | Timing and Staging |
| Option A | - | - | - |
| Option B | -- | --- | -- |
| Option C | -- | -- | -- |

Construction Impacts

Options B and C would have the greatest construction impacts, mainly because they cannot be easily phased.

Improvements associated with Option A could be constructed on an intersection-by-intersection basis. Options B and C require simultaneous construction.

| | Cost (Relative Comparison) | |
|----------|-------------------------------|---------------------------|
| | Capital | Operating/ Maintenance |
| Option A | \$ | \$ |
| Option B | \$\$\$ | \$\$\$ |
| Option C | \$\$ | \$\$ |

