



City of Sunnyvale

Agenda Item

22-0628

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REPORT TO BICYCLE AND PEDESTRIAN COMMISSION

SUBJECT

Recommend to City Council the Selection of the Mary Avenue Underpass with Jughandle Option and the Sunnyvale Avenue Underpass Tunnel Option to be Defined as the Proposed Projects for the Grade Separation of Crossings of the Caltrain Railroad Tracks for the Environmental Review

REPORT IN BRIEF

Sunnyvale currently has two at-grade railroad crossings, one each at Mary Avenue and Sunnyvale Avenue. These at-grade crossings create many concerns for the community including safety, traffic congestion and noise. Caltrain Electrification and California High Speed Rail projects will increase the frequency and volume of trains in the future, which will increase the concerns. By separating the local roadways from the railroads through a grade separation, these concerns will be greatly alleviated, especially safety. The City has been performing a Feasibility Study to determine the preferred grade separation options for each crossing location, which began in 2017. The Study is nearly complete and City Council will be selecting preferred options for both crossing locations on August 30, 2022.

The Study narrowed down the various grade separation options to two at Mary Avenue and two at Sunnyvale Avenue. The study evaluated various criteria including:

- Safety
- Noise
- Vehicular circulation
- Bicycle and pedestrian circulation
- Potential private property impacts
- Construction impacts
- Construction cost estimates

At Mary Avenue, the two options currently under consideration are Mary Avenue Underpass and Mary Avenue Underpass with Jughandle:

1. Mary Avenue Underpass (Attachment 3)
 - Mary Avenue goes underneath the Caltrain tracks.
 - Evelyn Avenue is lowered to maintain its intersection with Mary Avenue.
 - Caltrain tracks stay at the existing elevation.
2. Mary Avenue Underpass with Jughandle (Attachment 4)
 - Mary Avenue goes underneath the Caltrain tracks.
 - A “jughandle” road segment is built to connect Mary Avenue and Evelyn Avenue.
 - Caltrain tracks and Evelyn Avenue stay at their existing elevations.

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At Sunnyvale Avenue, the two options currently under consideration are Sunnyvale Avenue Underpass Tunnel and Sunnyvale Avenue Bicycle and Pedestrian Only Underpass Tunnel:

1. Sunnyvale Avenue Underpass Tunnel (Attachment 11)
 - Sunnyvale Avenue goes underneath Evelyn Avenue, Caltrain tracks and Hendy Avenue.
 - Evelyn Avenue, Caltrain tracks and Hendy Avenue stay at their existing elevations.
2. Sunnyvale Avenue Bicycle and Pedestrian Only Underpass Tunnel (Attachment 12)
 - Sunnyvale Avenue access for vehicles is removed between Evelyn Avenue and Hendy Avenue.
 - A bicycle and pedestrian only tunnel is built underneath the Caltrain tracks.
 - Evelyn Avenue, Caltrain tracks and Hendy Avenue stay at existing their elevations.

Staff recommends that the Bicycle and Pedestrian Advisory Commission make a recommendation to the City Council to select the Mary Avenue Underpass with Jughandle option and the Sunnyvale Avenue Underpass Tunnel option as the preferred options for the crossings of the Caltrain railroad tracks.

At the Mary Avenue crossing, the Underpass with Jughandle option has the following benefits:

- Improves safety by removing the railroad conflict with local traffic modes;
- Decreases noise from rail gates, bells and sounding of train horns;
- Reduces the volumes of vehicle traffic through each jughandle intersection compared to the full Mary-Evelyn avenues intersection;
- Reduces the overall average vehicular delay compared to both the “no build” and the Underpass options;
- Improves or maintains vehicular travel times for Mary Avenue compared to both the “no build” and the Underpass options;
- Decreases the number of points that bicyclists and pedestrians would need to cross vehicle lanes compared to the “no build” and Underpass options;
- Decreases the quantity and severity of private property impacts compared to the Underpass option;
- Decreases the number of private driveway modifications required compared to the Underpass option;
- Decreases the quantity and length of utility relocations required compared to the Underpass option;
- Has a lower anticipated construction duration compared to the Underpass option which would be less disruptive to the local community; and
- Has a lower construction cost compared to the Underpass option.

At the Sunnyvale Avenue crossing, the Underpass Tunnel option has the following benefits:

- Improves safety by removing the railroad conflict with local traffic modes;
- Decreases noise from rail gates, bells and sounding of train horns;
- Reduces or maintains the overall average vehicular delays on the study intersections compared to both the “no build” and the Bicycle and Pedestrian Only options;
- Greatly improves vehicular travel times for Sunnyvale Avenue compared to both the “no build”

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and the Bicycle and Pedestrian Only options;

- Improves vehicular travel times for Mathilda Avenue compared to the Bicycle and Pedestrian Only option and maintains the vehicular travel times compared to the “no build” option;
- Greatly improves or maintains vehicular travel times for Fair Oaks Avenue compared to the Bicycle and Pedestrian Only option and generally maintains vehicular travel times compared to the “no build” option;
- Preserves the vehicular connection for Sunnyvale Avenue at Evelyn Avenue and Sunnyvale Avenue at Hendy Avenue;
- Provides separate bicycle and pedestrian facility to cross the Caltrain railroad tracks with direct connections to Evelyn and Hendy avenues; and
- Facilitates VTA bus service for students attending Fremont High School;
- Maintains VTA bus service for historically underserved areas with less severe rerouting compared to the Bicycle and Pedestrian Only option;
- Requires less severe rerouting and less travel time impacts to maintain Downtown access and Caltrain Station connectivity;
- Better integrates and connects east side of Sunnyvale Avenue to historic Downtown area; and
- Could potentially increase parking in historic Downtown area parking lot, depending upon final design.

Selecting a project to be the Proposed Project for the environmental review under CEQA for both crossings will move the project forward as it will allow the environmental review to be completed. The project ultimately selected for grade separation construction by the City Council as part of environmental study approval may be different than the preferred alternative selected now for starting environmental review.

BACKGROUND

Sunnyvale currently has two at-grade railroad crossings: Mary Avenue and Sunnyvale Avenue. An at-grade crossing is the intersection of a local roadway and a railroad at the same elevation or grade. These crossings typically are controlled by railroad gate arms that come down to prevent local traffic from crossing the tracks during a train crossing. The Mary Avenue crossing experiences the higher vehicular traffic volumes and congestion of the two locations. The Mary Avenue location is immediately adjacent to the intersection of Mary Avenue and Evelyn Avenue. Many local and regional commuters use these roadways and cross the railroad tracks regularly. The Sunnyvale Avenue crossing is immediately adjacent to the Sunnyvale Caltrain station and Downtown Sunnyvale and has substantial pedestrian and bicycle traffic. The Sunnyvale Avenue location is also within walking distance to many employment and retail centers including historic Murphy Avenue. Additionally, many residents use Sunnyvale Avenue to travel between their homes, jobs, schools, shopping and recreational uses.

Caltrain is currently the main user and owning agency of the railroad tracks along this corridor. Other rail agencies also use these tracks for freight trains, typically during off peak night hours. There are currently 104 Caltrain trains and six freight trains traveling through these crossings every weekday.

Caltrain’s construction of an electrified rail system between San Jose’s Tamien Station and San Francisco’s 4th and King Station is currently underway. The primary purpose of the Caltrain electrification project is to improve the Caltrain system performance and curtail long-term environmental impacts by reducing noise, improving air quality and lowering greenhouse gas

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emissions. The electrified system will also allow increased service and improve travel times of the Caltrain commuter rail system. Once completed, the electrified Caltrain system will have the ability to run more frequent and faster trains to provide better service to Caltrain riders. Caltrain's electrified system is expected to be completed in late 2024.

In 2018, Caltrain began preparation of the Caltrain Business Plan. The Caltrain Business Plan aims to help Caltrain support the changing and growing region and meet future demands on the system. The plan evaluated three growth service visions: Baseline Growth, Moderate Growth and High Growth. In October 2019, the Caltrain Board approved a resolution to approve the Caltrain Long Range Service Vision that "directs the railroad to continue its planning for a potential 'higher' growth level of service as well as potential new regional and mega-regional connections." (Source: The Caltrain 2040 Long Range Service Vision.) The current proposed range of service vision would increase the number of Caltrain trains traveling between San Francisco and San Jose's Diridon station from the current 104 to between 174 and 348 trains per weekday by 2040.

California High Speed Rail Authority is currently completing the Environmental Impact Report for the San Jose-San Francisco segment. The High Speed Rail trains are proposed to travel along the Caltrain tracks for this segment. It is projected that an additional 130 High Speed Rail trains would travel along this segment every weekday.

A grade separation is the disconnecting in elevation between the local roadway and railroad tracks by constructing a tunnel and/or a bridge. Grade separations improve the safety of pedestrians, cyclists and motorists by eliminating the physical crossing of the railroad tracks. By removing the potential conflict with trains, the safety and comfort of active transportation modes is increased, encouraging more people to use modes other than vehicles. Grade separations also help reduce existing congestion and queuing that happens when a train crosses and the gates come down, also known as gate downtime. Furthermore, grade separations enable various transit services, including buses, shuttles and commuter trains, to operate more efficiently and reliably, encouraging their use over single occupancy vehicles.

At-grade crossings have a high potential for conflicts and are therefore a safety concern. The safety concerns and potential for increased injury and fatality collisions between local traffic modes and trains grow with the anticipated increases in frequency and volumes of Caltrain and High Speed Rail trains.

In 2016, Council approved a Study Issue to evaluate grade separations at these locations (DPW 14-13), as well as a Budget Supplement to provide project funding.

On January 31, 2017, City Council awarded a contract for the Feasibility Study to BKF Engineers. The feasibility study scope included an analysis, development and evaluation of potential grade separation options at both Mary Avenue and Sunnyvale Avenue (including over, under or hybrid of roadways and train tracks). The study scope also included assessment of right-of-way/property requirements, roadway operations, construction cost estimates and other potential issues. It also included public outreach, stakeholder outreach and coordination with Caltrain and the California High Speed Rail Authority.

In 2017-2018, the project team completed an initial evaluation of the range of grade separation types and presented them at a series of public and stakeholder outreach meetings. The team held a

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working session with the City of Sunnyvale Bicycle and Pedestrian Advisory Commission (BPAC) on August 17, 2017 (RTC No. 17-0811). The project team gave a presentation at a joint City Council and BPAC meeting on October 17, 2017 (RTC No. 17-0578). The City Council received a report on January 23, 2018, and provided staff with direction on narrowing down the options to two at each location that are currently under consideration (RTC No. 17-1161).

The California Public Utilities Commission (CPUC) recently completed an investigation (I-21.06.018) to establish a priority list of existing at-grade crossings in need of separation for fiscal years 2022/23 and 2023/24. This list is updated every two fiscal years. The goal of the CPUC Grade Separation Program is to develop the Priority List by identifying dangerous crossings and prioritizing them as projects for funding purposes, with the aim of eliminating unsafe conditions. Both Mary and Sunnyvale avenues are included in the priority list. Specifically, Mary Avenue ranked #9 and Sunnyvale Avenue ranked #26 out of 38 crossing locations prioritized statewide. The official decision by the CPUC was issued on June 27, 2022 (Decision 22-06-030).

Santa Clara Valley Transportation Authority (VTA) 2016 Measure B program has funds specifically allocated for Caltrain grade separation projects. The City has been in close coordination with VTA staff to plan for the usage of these funds to move both crossing projects forward into environmental studies and final design, once the feasibility study is complete.

Other funding sources are continually being considered and applications submitted when appropriate. These include county, state and federal annual budgets and grant programs.

The City Council is scheduled to consider this item on August 30, 2022.

EXISTING POLICY

General Plan, Chapter 3, Land Use and Transportation Element

The 2017 Land Use and Transportation Element (LUTE) of the Sunnyvale General Plan lists goals and policies that emphasize the need to provide an effective multimodal transportation system and providing options for healthy living.

Complete Streets Policy

The Complete Streets Policy was adopted by City Council on December 6, 2016, through Resolution No. 793-16 (RTC No. 16-0972) and amended on August 28, 2018, through Resolution No. 896-18 (RTC No. 18-0642). Through this policy, the City commits to creating and maintaining Complete Streets that provide safe, sustainable, integrated, efficient and convenient transportation systems that serve all categories of users and maintain sensitivity to local conditions.

Active Transportation Plan

The 2020 Sunnyvale Active Transportation Plan (ATP) includes the addition of bicycle facilities along these segments of Mary, Sunnyvale and Evelyn avenues as a recommendation within the Bicycle Plan.

Vision Zero Plan

Sunnyvale's Vision Zero Plan calls to reduce fatalities and serious injuries by 50 percent by 2029 and to continue improving traffic safety towards zero fatal and serious injury collisions in the ten years that follow. The plan is also a call to action to make Sunnyvale's streets safer, especially for people

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biking and walking.

Climate Action Plan

City Council adopted the Climate Action Plan (CAP) on May 20, 2014, which includes various strategies to reduce greenhouse gas (GHG) emissions. This plan was updated in August 2019 as the Climate Action Playbook and includes six strategies (with related plays and moves) for accelerating the reduction of greenhouse gas emissions.

ENVIRONMENTAL REVIEW

Section 15004(b) of the CEQA Guidelines provides that CEQA compliance should be prepared “as early as feasible in the planning process to enable environmental considerations to influence project program and design and yet late enough to provide meaningful information for environmental assessment.” The action being considered merely defines the proposed Project for each Caltrain crossing location so that staff can proceed with the environmental review for the grade crossing separations. This action does not approve construction of the grade separations or any particular option, including the “No Project” alternative. Therefore, the present action is not itself a project that requires separate environmental review (CEQA Guidelines Section 15061(b)(3).)

DISCUSSION

The Feasibility Study evaluated various types of grade separations for both Mary and Sunnyvale avenues. Through public outreach and direction from Council, the options were narrowed down to the two most feasible options for each location. The feedback received through the public outreach process informed the project team which criteria were of importance to the community.

The Feasibility Study evaluated various criteria including:

- Safety
- Noise
- Vehicular circulation
- Bicycle and pedestrian circulation
- Potential private property impacts
- Construction impacts
- Construction cost estimates

Each location was evaluated separately as it is anticipated that the local impacts of each would be mutually independent of the other Caltrain railroad crossing location.

Vehicular circulation was evaluated as part of the traffic study for both locations. The Sunnyvale Grade Separations Feasibility Study - Traffic and Circulation Memorandum is included as Attachment 2 to this report. The traffic study looked at the AM and PM peak hours for the 2035 projected vehicular traffic volumes.

Mary Avenue Crossing

At Mary Avenue, the two options currently under consideration are the Mary Avenue Underpass and the Mary Avenue Underpass with Jughandle.

The Mary Avenue Underpass (Attachment 3) involves the following:

- Mary Avenue goes underneath the Caltrain tracks.

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- Evelyn Avenue is lowered to maintain its intersection with Mary Avenue.
- Caltrain tracks stay at the existing elevation.

The Mary Avenue Underpass with Jughandle (Attachment 4) involves the following:

- Mary Avenue goes underneath the Caltrain tracks.
- A “jughandle” road segment is built to connect Mary Avenue and Evelyn Avenue.
- Caltrain tracks and Evelyn Avenue stay at their existing elevations.

The project team also evaluated adjustments to the jughandle option to help improve some of the turning movements between Mary and Evelyn avenues. (See Attachment 5.) The adjustments added a direct ramp connecting the right turn movement from westbound Evelyn Avenue onto northbound Mary Avenue. The adjustments also added another direct ramp connecting the right turn movement from southbound Mary Avenue to westbound Evelyn Avenue. The project team performed a qualitative evaluation and reduced the number of lanes and length of turning pockets on some segments, since some vehicular traffic volumes would be removed from the jughandle intersections with these adjustments. The evaluation of this “jughandle with ramps” option determined that the traffic impacts improved very slightly. However, the disadvantages to the bicycle and pedestrian circulation, the increased private property impacts along Evelyn Avenue and the potential increase in construction costs had greater negative impacts. The project team determined not to move this “jughandle with ramps” option forward.

The Mary Avenue crossing traffic impacts were analyzed for the following intersections and the numbers correspond to the figure in Attachment 6 to this report:

1. Mary Avenue and Central Expressway
2. Mary Avenue and California Avenue
3. Mary Avenue and Evelyn Avenue
4. Mary Avenue and Washington Avenue

Attachment 6 to this report shows the locations of all study intersections for both crossing locations.

Mary Avenue Underpass Option

Under this option, safety would be increased since the railroad tracks would no longer cross the local street.

Noise would be reduced since the grade separation would allow the Caltrain gates and bells to be removed and the trains would no longer need to sound their horn while traveling through this crossing. The lowering of the intersection may also decrease vehicle noise directly adjacent to the intersection since the vehicles would be at a lower elevation but the noise reduction would be minimal as vehicles would be transitioning back to normal grade immediately after crossing the lowered intersection.

All turning movements for all travel modes in this option would remain the same as existing, since the Mary Avenue and Evelyn Avenue intersection geometry and layout remains the same as existing. The main differences are that the local streets would no longer interact with the Caltrain railroad tracks, the Caltrain signal and gates would be removed and the intersection of Mary and Evelyn avenues would be at a lower elevation than existing. Turning movements and distribution of traffic for all four study intersections would also not change.

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Vehicle delays at all study intersections under projected 2035 volumes would have less average delay than if no project was built, the “no-build” option. The one exception is the Evelyn Avenue through traffic, which gets additional green time during a Caltrain train crossing. This is due to the gates coming down and preventing all other movements. Under this option, the removal of the Caltrain signal and gates would allow that green time to be redistributed amongst all movements, reducing the other movements’ delays. Levels of Service (LOS) for all movements and overall intersections for all options are included in Attachment 7 to this report. This option is shown under the “2035 Build (Tunnel)” columns. Compared to the “no build” option, the overall delay at the Mary and Evelyn avenues intersection has less delay in both AM and PM peak periods. Compared to the individual intersections of the Jughandle option, this option has greater delay overall.

Travel times along Mary Avenue between Washington and California avenues are shown in Attachment 8 to this report. This option is shown under the “2035 Build (Tunnel)” columns. In the AM peak period, the travel time for this option is generally similar to the Jughandle option and is 226 seconds less than in the “no build” option. In the PM peak period, the travel time for this option is projected to be 48 seconds longer than in the Jughandle option and 41 seconds less than in the “no build” option.

The traffic analysis included an evaluation of projected queue lengths for the two Mary Avenue crossing options. For the Underpass option, the vehicle queue lengths are expected to be lower than the “no build” option.

Bicycle and pedestrian circulation patterns would remain the same since the Mary and Evelyn avenues intersection layout remains the same. One potential challenge for bicycles and pedestrians would be the lowered elevation of the intersection. This would require more effort for active transportation mode users to travel through the intersection, since they would need to go down in elevation then come back up. Bicyclists desiring to turn left at the intersection would need to potentially cross multiple lanes of downhill traffic. Under this option, there would be 14 bicycle-vehicle conflict points, as shown in Attachment 9 to this report, which is the same as the “no build” option. This is greater than the 12 conflict points with the Jughandle option. Pedestrians crossing at the intersections would cross a total of 26 vehicular lanes compared to 16 in the Jughandle option and would have a total of eight conflicts with right turning vehicles during the “walk” indication which is the same as in the Jughandle option.

The decrease in elevation of this option would impact more private properties than the Jughandle option, potentially three full parcel impacts, one partial or “sliver” parcel impact and five driveway modifications. This is due to the elevation changes necessary along both Mary and Evelyn avenues. The properties would remain at existing elevations and at some locations, the difference between the existing elevation and the new elevation of the roadway would be too great to accommodate. The properties and businesses closest to the Mary Avenue and Evelyn Avenue intersection would have the most noteworthy impacts, with more properties impacted along Evelyn Avenue. For those with a lesser elevation difference farther from the intersection, the project could modify their driveways and/or walkway accesses to continue access from Mary or Evelyn avenues.

The construction impacts of this option include an estimated five reconstructed driveways, four relocated utility corridors, installation of a railroad maintenance road to enable Caltrain to continue to get vehicles and equipment onto their right-of-way from Mary Avenue, greater construction time than the Jughandle option and a greater amount of roadway reconstruction than the Jughandle option.

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Greater construction time and roadway reconstruction would create more severe and longer time duration of disruption to the local property owners, business owners and customers, as well as to the traveling public.

The construction cost estimate (2022 dollars) of this option is in the range of \$375-\$425 million.

Mary Avenue Underpass with Jughandle Option

Under this option, safety would also increase since the railroad tracks would no longer cross the local street. The interactions of some of the local travel modes would be altered since some movements would be required to travel through the jughandle intersections. The through movements on both Mary and Evelyn avenues would be similar to or improved over existing, since they would only travel through one smaller signalized intersection than existing and the Underpass option. All turning movements of all travel modes would need to travel through the jughandle intersections

Noise would be reduced since the grade separation would allow the Caltrain gates and bells to be removed and the trains would no longer need to sound their horn while traveling through this crossing. The lowering of Mary Avenue could also decrease some vehicle noise in the nearby community since the vehicles would be at a lower elevation. Vehicles on Evelyn Avenue would continue to travel at existing elevations, so the vehicle noise would be similar to existing levels.

For this option, all turning movements are redistributed through the jughandle. Some movements have improvements through reduction in vehicular delay, while others have greater delays. The through movements on both Mary and Evelyn avenues would have fewer delays since they would travel through one signalized intersection with less traffic volumes. All turning movements would need to travel through both jughandle intersections.

Vehicle delays at all study intersections under projected 2035 volumes would have less average delay than if no project was built, the “no-build” option. The two jughandle intersections individually have less average vehicular delay than the Underpass option. Motorists desiring to turn onto the other street will need to learn new movements through the jughandle. Levels of Service (LOS) for all movements and overall intersections for all options are included in Attachment 7 to this report. This option is shown under the “2035 Build (Jughandle)” columns. Compared to the “no build” option, the overall delay at both of the jughandle intersections have much less delay in both AM and PM peak periods. Compared to the Underpass option, this option has less delay overall.

Travel times along Mary Avenue between Washington and California avenues are shown in Attachment 8 to this report. This option is shown under the “2035 Build (Jughandle)” columns. In the AM peak period, the travel time for this option is generally similar to the Underpass option and 231 seconds less than in the “no build” option. In the PM peak period, the travel time for this option is projected to be 48 seconds less than in the Underpass option and 89 seconds less than in the “no build” option.

The traffic analysis included an evaluation of projected queue lengths for the two Mary Avenue crossing options. For the Jughandle option, there would be no queue spillback within the jughandle roadway during both peak hours. This option has lower queue lengths compared to the “no build” option. The one movement that’s expected to have a long queue is the northbound right turn from Mary Avenue onto the jughandle. This queue length is projected to be 675 feet. This is likely a product of the long queues for the northbound through movement, which would block access into the

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right turn lane.

Similar to the vehicular movements, some bicycle and pedestrian travelers would see a decrease in delays, for example those going straight along Mary or Evelyn avenues. The bicyclist and pedestrian travelers that are making a turning movement would need to travel through the jughandle. Under this option, there are a total of 12 bicycle-vehicle conflict points, compared to 14 in the Underpass option, as shown in Attachment 9. Pedestrians crossing at the intersections would have a total of eight pedestrian-vehicle conflict points with right turning vehicles during the “walk” indication and would cross a total of 16 vehicular lanes, compared to eight conflict points and 26 lanes to cross in the Underpass option. Active transportation modes also have less tolerance for indirect travel routes since they are human powered as opposed to motorized.

The private property impacts of the jughandle option are less than with the Underpass option because Evelyn Avenue elevation remains the same as existing, resulting in less properties being severely impacted. The properties along Mary Avenue would have the same minor impacts in both options with driveways and walkways needing to be adjusted to the lowering roadway. The businesses located within the City owned parcels where the jughandle would be located and potentially the business at the corner between Mary Avenue, Evelyn Avenue and the jughandle would have noteworthy impacts with this option.

The construction impacts of this option include an estimated three reconstructed driveways, three relocated utility corridors, installation of a railroad maintenance road to enable Caltrain to continue to get vehicles and equipment onto their right-of-way from Mary Avenue, less construction time than the Underpass option and less amount of roadway reconstruction than the Underpass option. Less construction time and roadway reconstruction would create less severe and shorter time duration disruption to the local property owners, business owners and customers, as well as to the traveling public.

The construction cost estimate (2022 dollars) of this option is in the range of \$280-\$320 million.

Attachment 10 to this report shows an alternative comparison between these two options.

Sunnyvale Avenue Crossing

At Sunnyvale Avenue, the two options currently under consideration are the Sunnyvale Avenue Underpass Tunnel and the Sunnyvale Avenue Bicycle and Pedestrian Only Underpass Tunnel.

Sunnyvale Avenue Underpass Tunnel (Attachment 11) involves the following:

- Sunnyvale Avenue goes underneath Evelyn Avenue, Caltrain tracks and Hendy Avenue.
- Evelyn Avenue, Caltrain tracks and Hendy Avenue stay at their existing elevations.

Sunnyvale Avenue Bicycle and Pedestrian Only Underpass Tunnel (Attachment 12) involves the following:

- Sunnyvale Avenue access for vehicles is removed between Evelyn Avenue and Hendy Avenue.
- A bicycle and pedestrian only tunnel is built underneath the Caltrain tracks.
- Evelyn Avenue, Caltrain tracks and Hendy Avenue stay at their existing elevations.

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The Sunnyvale Avenue crossing traffic impacts were analyzed for the following intersections and the numbers correspond to the figure in Attachment 6 to this report:

5. Mathilda Avenue and California Avenue
6. Mathilda Avenue southbound off-ramp and Evelyn Avenue
7. Mathilda Avenue northbound off-ramp and Evelyn Avenue
8. Mathilda Avenue and Washington Avenue
9. Evelyn Avenue and Frances Street
10. Washington Avenue and Frances Street
11. Evelyn Avenue and Murphy Avenue
12. Sunnyvale Avenue and California Avenue
13. Sunnyvale Avenue and Hendy Avenue
14. Sunnyvale Avenue and Evelyn Avenue
15. Sunnyvale Avenue and Washington Avenue
16. Fair Oaks Avenue and California Avenue
17. Fair Oaks Avenue and Kifer Road
18. Fair Oaks Avenue and Evelyn Avenue

Attachment 6 to this report shows the locations of all study intersections for both crossing locations.

Sunnyvale Avenue Underpass Tunnel Option

Under this option, safety would increase since the railroad tracks would no longer cross the local street. In this option, all turning movements between Sunnyvale and Evelyn avenues and most turning movements between Sunnyvale and Hendy avenues would be disconnected. Vehicles that make turn movements would need to reroute using nearby streets. The reduction in conflict points at these intersections could increase safety at these intersections. Conversely, the addition of traffic and movements at other intersections could impact safety at those locations.

Noise would be reduced since the grade separation would allow the Caltrain gates and bells to be removed at the roadway crossing of Sunnyvale Avenue. The trains would no longer need to sound their horn while traveling through this crossing. However, the trains would still be required to sound their horn while approaching and traveling through the adjacent Sunnyvale Caltrain Station if it is bypassing the station, but the time duration of the horn noise would decrease. Any gates and bells within the Sunnyvale Caltrain Station would not change from current operations. The lowering of Sunnyvale Avenue may also decrease vehicle noise in the direct vicinity of Downtown area since the vehicles would be traveling within a tunnel.

Vehicular circulation would be altered from existing in this option since Sunnyvale Avenue would no longer connect to Evelyn and Hendy avenues. In order to lower Sunnyvale Avenue to get underneath the Caltrain tracks, connections at Evelyn and Hendy avenues are no longer possible due to their close distance to the tracks. All turning movements between Sunnyvale and Evelyn avenues would need to use other routes. Most turning movements between Sunnyvale and Hendy avenues would also need to use other routes. Two right turn movements could potentially be preserved, the right turn from westbound Hendy Avenue to northbound Sunnyvale Avenue and the right turn from southbound Sunnyvale Avenue to westbound Hendy Avenue. These right turn ramps would require additional property to install.

Vehicular delays for those traveling straight on Sunnyvale Avenue between Washington and California avenues would be eliminated. Under this option, the three existing intersection signals at

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Evelyn Avenue, Caltrain tracks and Hendy Avenue would be removed. Travel times for those who make turning movements between Sunnyvale Avenue and Evelyn and/or Hendy avenues under existing conditions would increase. Average delays at adjacent intersections would increase due to the vehicles being rerouted.

Levels of Service (LOS) for all study intersections for all options are included in Attachment 13 to this report. This option is listed in the rows labeled "Tunnel." For the two Mathilda Avenue ramp intersections, this option has much lower delays in both AM and PM peak periods compared to the "no build" option. This option would also have lower or similar delays in both AM and PM peaks compared to the Bicycle and Pedestrian Only option. Under this option, vehicles that use Sunnyvale Avenue to connect to/from Evelyn Avenue would be rerouted to Washington or California avenues, decreasing the demand on the Mathilda Avenue ramp intersections compared to both "no build" and the Bicycle and Pedestrian Only options. For the intersections of Mathilda Avenue and Washington and California avenues, the delays would be similar to or less than "no build" with no increases in delay. Since this option maintains vehicular travel on Sunnyvale Avenue, Mathilda Avenue will not see a significant change in volumes and delays compared to the "no build" option. Compared to the Bicycle and Pedestrian Only option, this option has lower or similar delays at the Mathilda Avenue intersections with Washington and California avenues.

For those vehicles using Sunnyvale Avenue to connect to Evelyn and/or Hendy avenues, under this option they will need to use the Sunnyvale and Washington avenues intersection to get to Fair Oaks Avenue on the south and Sunnyvale and California avenues intersection to get to Fair Oaks Avenue on the north. Compared to the "no build" option, this increases the delays at the intersections of Sunnyvale and Washington avenues and Sunnyvale and California avenues. This decreases the delay at the intersection of Fair Oaks Avenue and Kifer Road, since vehicles would likely use the intersection at Fair Oaks and California avenues instead. Delays at the intersection of Fair Oaks and California avenues is similar to the "no build" option. For the downtown intersections, this option generally has much less delay. This is due to vehicles using routes farther away from the downtown core to get to Sunnyvale and Evelyn avenues. Compared to the Bicycle and Pedestrian Only option, this option generally has less delay at all study intersections.

Travel times along Mathilda, Fair Oaks and Sunnyvale avenues within the study area are shown in Attachment 14 to this report. This option is shown under the "2035 Build (Tunnel)" columns. In both peak periods, the travel times on Mathilda and Fair Oaks avenues for this option are generally similar to the "no build" option. Compared to the Bicycle and Pedestrian Only option, this option generally has shorter travel times along Mathilda and Fair Oaks avenues.

Santa Clara Valley Transportation Authority (VTA) runs bus Routes 20, 21 and 55 through the intersection of Sunnyvale Avenue and Evelyn Avenue. Route 21 is minimally affected by this alternative as this bus line does not make any turns at the intersection and can still travel along Evelyn Avenue from the Sunnyvale Downtown Transit Station with no changes to the route map. Route 20 makes a left turn from westbound Evelyn Avenue to southbound Sunnyvale Avenue, so VTA would have to make modifications to the existing route to reach the transit center on Frances Street. Route 55 currently travels along Sunnyvale Avenue across the Caltrain tracks and turns to/from Evelyn Avenue, southbound Sunnyvale Avenue to westbound Evelyn Avenue in the southbound direction and eastbound Evelyn Avenue to northbound Sunnyvale Avenue in the northbound direction. Route 55 is the only route that connects Lakewood Village, and the SNAIL neighborhood with Fremont High School. This route would also require some minor rerouting through

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downtown streets to maintain access to the transit center on Frances Street. Coordination with VTA and their transit routing plans would be required to maintain these routes and minimize their travel times. It is anticipated that this option would have less severe rerouting and less travel time impacts than the Bicycle and Pedestrian Only option.

Bicycles and pedestrians traveling straight on Sunnyvale Avenue would no longer have to cross at Evelyn Avenue, Caltrain tracks, or Hendy Avenue. Those wanting to turn at Evelyn or Hendy avenues would have accessible ramps available at both intersections. A separate bicycle and pedestrian path with a barrier would be created within the tunnel along the west side of the vehicle lanes. A ramp would be installed on the northwest corner of Sunnyvale and Evelyn avenues and another on the southwest corner of Sunnyvale and Hendy avenues to allow bicycle and pedestrian access to the separate path in the tunnel. In Attachment 11 to this report, the ramps are labeled and the yellow highlighted area within the tunnel shows the separate bicycle and pedestrian path.

The lowering of the Sunnyvale Avenue in this option would impact more private properties than the Bicycle and Pedestrian Tunnel option. The depth required to have a full vehicular tunnel underneath the Caltrain railroad tracks requires a longer segment of Sunnyvale Avenue to be lowered. Additionally, in order to install the right turn ramps between Sunnyvale and Hendy avenues, properties on N. Sunnyvale Avenue would have sliver impacts to their frontages. It is anticipated that all private property impacts would allow for modifications to continue their access to Sunnyvale Avenue with two exceptions. One access removal would be at a City owned parking lot between 110-122 S. Sunnyvale Avenue and for a private property at 130 S. Sunnyvale Avenue. Vehicular access to this parking lot driveway would be disconnected from Sunnyvale Avenue, but pedestrian access from Sunnyvale Avenue would remain and vehicular access from Carroll Street would remain. The other access removal would be at the parcel at 110 N. Sunnyvale, which is on the corner of Hendy and N. Sunnyvale avenues. Due to the decreased elevation along both Sunnyvale and Hendy avenues, access to this property as it exists could not be maintained. To maintain access to the City-owned parking lot on the west side of S. Sunnyvale, behind the Murphy Street businesses and to the private parking lot in front of 110-122 S. Sunnyvale Avenue, a cul-de-sac could be created above the tunnel on Evelyn Avenue.

With this option, the existing elevation of Sunnyvale Avenue between Evelyn Avenue and the Caltrain railroad tracks would no longer be needed for roadway purposes since the traffic would be within the tunnel, so this option would enable this space to be used for community purposes. This space could become a parklet or other type of open community space which would better integrate and connect the community on the east side of Sunnyvale Avenue with the Downtown area. The area adjacent to the cul-de-sac would also improve connectivity by allowing bicycle and pedestrian crossings outside of the Evelyn Avenue intersection with Sunnyvale Avenue. Additionally, with the removal of the northernmost driveway into the Downtown area parking lot on Sunnyvale Avenue, that space could be converted into additional parking stalls in that lot. This parking lot provides access to trash/recycling trucks, supply delivery vehicles and other services utilized by the businesses along Murphy Avenue. The configuration of this lot and the circulation for all vehicles would remain as existing, allowing these large vehicles to make the same maneuvers they currently make.

The construction impacts of this option include an estimated six reconstructed driveways, two relocated utility corridors, greater construction time than the Bicycle and Pedestrian Tunnel option and a greater amount of roadway reconstruction than the Bicycle and Pedestrian Tunnel option. Greater construction time and roadway reconstruction would create more severe and longer time

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duration of disruption to the local property owners, business owners and customers, as well as to the traveling public.

The construction cost estimate of this option (2022 dollars) is in the range of \$225-\$275 million.

Sunnyvale Avenue Bicycle and Pedestrian Only Underpass Tunnel Option

Under this option, safety would increase since the railroad tracks would no longer cross the local street. In this option, all vehicles traveling along Sunnyvale Avenue would no longer be able to travel between Evelyn and Hendy avenues. A bicycle and pedestrian only tunnel would be built between Evelyn and Hendy avenues underneath the Caltrain tracks. Vehicles that wish to travel between North and South Sunnyvale Avenue would need to reroute using parallel roads with Caltrain crossings, such as Fair Oaks and Mathilda avenues. Two T-intersections would be created: one at Evelyn Avenue and one at Hendy Avenue, preserving the connections between those streets and Sunnyvale Avenue. This option would reduce the number of conflict points between vehicular traffic and active transportation modes such as bicycles and pedestrians. The reduction in conflict points at the two T-intersections could also increase safety at these intersections. Conversely, the addition of traffic along other parallel roads could impact safety at those locations.

Noise would be reduced since the grade separation would allow the Caltrain gates and bells at the roadway crossing of Sunnyvale Avenue. The trains would no longer need to sound the horn while traveling through this crossing. However, the trains would still be required to sound the horn while approaching and traveling through the adjacent Sunnyvale Caltrain Station if it is bypassing the station, but the time duration of the horn sounds would decrease. Any gates and bells within the Sunnyvale Caltrain Station would not change from current operations. The removal of vehicles along this segment of Sunnyvale Avenue could also decrease vehicle noise in the direct vicinity of downtown.

Vehicular circulation would be altered from existing in this option since North and South Sunnyvale Avenue would no longer connect between Evelyn and Hendy avenues. All other movements between Sunnyvale and Evelyn avenues and Sunnyvale and Hendy avenues would remain. Vehicles that wish to travel between North and South Sunnyvale Avenue would need to reroute using parallel roads with Caltrain crossings, such as Fair Oaks and Mathilda avenues. Two T-intersections would be created at Evelyn and Hendy avenues, preserving the connections between those streets and Sunnyvale Avenue.

Sunnyvale Avenue is a residential collector street. The average traffic volume on Sunnyvale Avenue prior to the COVID-19 pandemic was about 10,000 vehicles per weekday; approximately 6,037 vehicles per weekday in 2021; and currently about 9,088 vehicles per weekday in 2022. This is roughly average daily vehicular traffic (ADT) for a residential collector in Sunnyvale. For comparison, similar collectors in Sunnyvale and their 2021 and 2022 ADTs include:

| Collector Street | 2021 ADT | 2022 ADT |
|-------------------|----------|----------|
| Hollenbeck Avenue | 6,249 | 9,636 |
| Bernardo Avenue | 4,066 | 5,725 |
| Remington Avenue | 8,715 | 13,472 |
| Reed Avenue | 7,906 | 11,376 |

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| | | |
|--------------|-------|-------|
| Duane Avenue | 4,696 | 8,660 |
|--------------|-------|-------|

The closest parallel roadways with a Caltrain crossing are Mathilda and Fair Oaks avenues; both arterial streets intended to carry higher volumes of vehicular traffic than a collector. Mathilda Avenue's ADT in 2021 was 23,711 and in 2022 was 36,778. Fair Oaks Avenue's ADT in 2021 was 14,493 and in 2022 was 18,283. Both also have existing grade separations from the Caltrain tracks. Mathilda and Fair Oaks avenues are the assumed alternative routes under this option.

Levels of Service (LOS) for all study intersections for all options are included in Attachment 13 to this report. This option is listed in the rows labeled "Bike/Ped UC". For the two Mathilda Avenue ramp intersections, this option has much lower delays in both AM and PM peak periods compared to the "no build" option. This option would have similar or longer delays in both AM and PM peaks compared to the Underpass option, however all remain at acceptable levels. Under this option, vehicles that currently travel along Sunnyvale Avenue to cross the Caltrain tracks would be rerouted to Washington or California avenues, decreasing the demand on the Mathilda Avenue ramp intersections compared to the "no build" option. More vehicular volumes would be rerouted compared to the Underpass option, which is reflected in the longer delays. For the intersection of Mathilda and California avenues, the delays would be 77.5 seconds less than "no build" in the AM peak period and similar in the PM peak period. For the intersection of Mathilda Avenue and Washington Avenue, the delays would be 134.3 seconds less than "no build" in the AM peak period and similar in the PM peak period. Compared to the Underpass option, this option has higher or similar delays at the Mathilda Avenue intersections with Washington and California avenues. This is due to more vehicles being routed to Mathilda and Fair Oaks avenues with the vehicular closure of this segment of Sunnyvale Avenue.

Under this Bicycle and Pedestrian Only option, those vehicles using Sunnyvale Avenue to connect to Evelyn and/or Hendy avenues will still be able to make those connections at T-intersections. The connection from Evelyn Avenue to North Sunnyvale Avenue and the connection from Hendy Avenue to South Sunnyvale Avenue will be rerouted to Mathilda and Fair Oaks avenues. Compared to the "no build" option, the T-intersections will have significantly less delays in the PM peak period. At Hendy Avenue, there will be significantly less delays in the AM peak period also. At Evelyn Avenue, the AM peak period delays will increase compared to the "no build" option. This is due to the high demand of the Sunnyvale Caltrain Station for the morning commute. More vehicles would use Evelyn Avenue to access the station in the AM peak period, creating more delays at this intersection.

Along Fair Oaks Avenue, the delays for both AM and PM peak periods at all project study intersections compared to both "no build" and the Underpass options are much higher, ranging between 13 seconds and 203.9 seconds of delay increase at each study intersection.

Vehicular travel times for those traveling between North and South Sunnyvale Avenue with this option would generally increase and be higher when compared to the "no-build" and the Underpass options. This is due to the need to use Fair Oaks or Mathilda avenues to cross the Caltrain tracks. This creates a longer travel route. Travel times along Mathilda, Fair Oaks and Sunnyvale avenues within the study area are shown in Attachment 14 to this report. This option is shown under the "2035 Build (Bicycle/Ped UC)" columns. During both peak periods in both directions, the travel times on Mathilda Avenue are generally similar to both "no build" and the Underpass options, with the exception being southbound in the PM peak, which is 56 seconds longer (565 seconds in "no build" versus 622

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seconds with this option). On Fair Oaks Avenue, travel times in both directions in both peak periods are higher than the “no build” and the Underpass options. The largest increase in travel time is northbound in the AM peak period with an increase of 235 seconds over “no build” and 193 over Underpass (389 seconds in “no build” and 431 seconds in Underpass option versus 624 seconds with this option) and southbound in the PM peak period with an increase of 194 over “no build” and 232 over Underpass (466 seconds in “no build” and 428 seconds in Underpass option versus 660 seconds with this option). This is likely due to the directional commute patterns in this area (northbound in the AM peak and southbound in the PM peak) and the higher-density residential communities the connect close to Fair Oaks Avenue.

Santa Clara Valley Transportation Authority (VTA) runs bus Routes 20, 21 and 55 through the intersection of Sunnyvale Avenue and Evelyn Avenue. Route 21 is minimally affected by this alternative as this bus line does not make any turns at the intersection and can still travel along Evelyn Avenue from the Sunnyvale Downtown Transit Station with no changes to the route map. Route 20 makes a left turn from westbound Evelyn Avenue to southbound Sunnyvale Avenue, so VTA would have to make modifications to the existing route to reach the transit center on Frances Street. Route 55 currently travels along Sunnyvale Avenue across the Caltrain tracks and turns to/from Evelyn Avenue, southbound Sunnyvale Avenue to westbound Evelyn Avenue in the southbound direction and eastbound Evelyn Avenue to northbound Sunnyvale Avenue in the northbound direction. Route 55 is the only route that connects Lakewood Village and the SNAIL neighborhood with Fremont High School. This route would require more severe rerouting than the Underpass option to maintain access to the transit center on Frances Street. The route modifications would require the buses to travel along Mathilda Avenue or Fair Oaks Avenue to cross the Caltrain tracks, then route along downtown streets to continue to reach the transit center on Frances Street. Coordination with VTA and their transit routing plans would be required to maintain these routes and minimize their travel times. This option would likely have more severe transit travel time impacts than the Underpass option.

Bicycles and pedestrians traveling straight on Sunnyvale Avenue would have a dedicated bicycle and pedestrian only tunnel. Ramps would be made available at both sides of the Caltrain tracks, directly connecting to Evelyn and Hendy avenues.

This option has fewer private property impacts compared to the Tunnel option. One impact is to the emergency vehicle access to Villa del Sol apartment and townhome complex located on the northeast corner of Sunnyvale Avenue and Evelyn Avenue. The existing emergency access driveway located on Sunnyvale Avenue adjacent to the Caltrain tracks would need to be modified to allow emergency vehicle access from Evelyn Avenue. Some slivers of property on the north side of Hendy Avenue at Sunnyvale Avenue may need to be acquired in order to shift the roadway north to build the bicycle and pedestrian ramps. No other private property impacts are anticipated with this option.

With this option, the existing elevation of Sunnyvale Avenue between Evelyn Avenue and the Caltrain railroad tracks would be needed for the ramps and stairways to access the bicycle and pedestrian only tunnel. Additional landscaping and aesthetic elements could be incorporated into the ramps and associated walls. Due to the space needed for the ramps, this space could not be used for community purposes as may be the case with the Underpass. The parking lots on both sides of South Sunnyvale Avenue and their existing driveway locations would remain as existing and the existing parking counts would remain as existing.

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The construction impacts of this option include an estimated one reconstructed driveway, one relocated utility corridor, less construction time than the Tunnel option and a smaller amount of roadway reconstruction than the Tunnel option. Less construction time and roadway reconstruction would create less severe and shorter time duration of disruption to the local property owners, business owners and customers, as well as to the traveling public.

The construction cost estimate of this option (2022 dollars) is in the range of \$90-\$120 million.

Attachment 15 shows an alternative comparison between these two options.

FISCAL IMPACT

The current feasibility study phase is fully funded and the selection of preferred options will conclude this phase of work. Future phases of work will be partially funded through VTA 2016 Measure B Grade Separation Program funds. Local match funds will be required for the 2016 Measure B funding and additional funding will be required to complete the Environmental Review, Final Design and Construction phases. The selection of preferred options will inform the amount of funding required for those phases.

PUBLIC CONTACT

Public contact was made by posting the Council agenda on the City's official-notice bulletin board outside City Hall, at the Sunnyvale Public Library, Senior Center, Community Center and in the Department of Public Safety Lobby. In addition, the agenda and report are available at the Sunnyvale Public Library, Office of the City Clerk and on the City's website.

Additional public outreach has been performed through the following methods to inform the public of the project and of the community meetings:

- City Manager's Update on May 13, 2022
- Multiple email blasts to project subscriber list
- Placement of portable changeable electronic message boards to announce Community Meetings
- Informational booth at Art & Wine Festival 2022
- NextDoor posts
- Summer 2022 Horizon centerfold article
- Direct emails and letters to potentially impacted property and business owners
- Direct emails to local business groups, including the Chamber of Commerce, the Downtown Business Association and the Moffett Park Business Group
- Direct emails to local public and private schools near the crossings
- Direct emails to local Home Owners Associations
- Direct emails to neighborhood groups such as SNAIL Neighborhood Association, Washington Park Neighborhood Association and Sunnyvale West Neighborhood Association
- Direct emails to community interest groups such as Friends of Caltrain, Silicon Valley Bicycle Coalition and Bike Sunnyvale
- Direct emails to local places of worship near the crossings
- Meetings with potentially impacted developers, property owners and business owners who wished to meet
- Meetings with Sunnyvale Downtown Association Board and Chamber of Commerce

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ALTERNATIVES

1. Recommend to City Council the selection of the Mary Avenue Underpass option to be defined as the Proposed Project for the grade separation of the Mary Avenue crossing of the Caltrain railroad tracks for the Environmental Review
2. Recommend to City Council the selection of the Mary Avenue Underpass with Jughandle option to be defined as the Proposed Project for the grade separation of the Mary Avenue crossing of the Caltrain railroad tracks for the Environmental Review
3. Recommend to City Council the selection of the Sunnyvale Avenue Underpass Tunnel option to be defined as the Proposed Project for the grade separation of the Sunnyvale Avenue crossing of the Caltrain railroad tracks for the Environmental Review
4. Recommend to City Council the selection of the Sunnyvale Avenue Bicycle and Pedestrian Only Underpass Tunnel option to be defined as the Proposed Project for the grade separation of the Sunnyvale Avenue crossing of the Caltrain railroad tracks for the Environmental Review

RECOMMENDATION

Alternative 2: Recommend to City Council the selection of the Mary Avenue Underpass with Jughandle option to be defined as the Proposed Project for the grade separation of the Mary Avenue crossing of the Caltrain railroad tracks for the Environmental Review

Alternative 3: Recommend to City Council the selection of the Sunnyvale Avenue Underpass Tunnel option to be defined as the Proposed Project for the grade separation of the Sunnyvale Avenue crossing of the Caltrain railroad tracks for the Environmental Review

Staff recommends that the Bicycle and Pedestrian Advisory Commission make a recommendation to the City Council that they select Alternative 2: the Mary Avenue Underpass with Jughandle option and Alternative 3: the Sunnyvale Avenue Underpass Tunnel option to be defined as the Proposed Projects for the grade separation of crossings of the Caltrain railroad tracks for the environmental review.

At the Mary Avenue crossing, the Underpass with Jughandle option has the following benefits:

- Improves safety by removing the railroad conflict with local traffic modes;
- Decreases noise from rail gates, bells and sounding of train horns;
- Reduces the volumes of vehicle traffic through each jughandle intersection compared to the full Mary-Evelyn avenues intersection;
- Reduces the overall average vehicular delay compared to both the “no build” and the Underpass options;
- Improves or maintains vehicular travel times for Mary Avenue compared to both the “no build” and the Underpass options;
- Decreases the number of points that bicyclists and pedestrians would need to cross vehicle lanes compared to the “no build” and Underpass options;
- Decreases the quantity and severity of private property impacts compared to the Underpass option;
- Decreases the number of private driveway modifications required compared to the Underpass option;
- Decreases the quantity and length of utility relocations required compared to the Underpass

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option;

- Has a lower anticipated construction duration compared to the Underpass option which would be less disruptive to the local community; and
- Has a lower construction cost compared to the Underpass option.

At the Sunnyvale Avenue crossing, the Underpass Tunnel option has the following benefits:

- Improves safety by removing the railroad conflict with local traffic modes;
- Decreases noise from rail gates, bells and sounding of train horns;
- Reduces or maintains the overall average vehicular delays on the study intersections compared to both the “no build” and the Bicycle and Pedestrian Only options;
- Greatly improves vehicular travel times for Sunnyvale Avenue compared to both the “no build” and the Bicycle and Pedestrian Only options;
- Improves vehicular travel times for Mathilda Avenue compared to the Bicycle and Pedestrian Only option and maintains the vehicular travel times compared to the “no build” option;
- Greatly improves or maintains vehicular travel times for Fair Oaks Avenue compared to the Bicycle and Pedestrian Only option and generally maintains vehicular travel times compared to the “no build” option;
- Preserves the vehicular connection for Sunnyvale Avenue at Evelyn Avenue and Sunnyvale Avenue at Hendy Avenue;
- Provides separate bicycle and pedestrian facility to cross the Caltrain railroad tracks with direct connections to Evelyn and Hendy avenues; and
- Facilitates VTA bus service for students attending Fremont High School;
- Maintains VTA bus service for historically underserved areas with less rerouting compared to the Bicycle and Pedestrian Only option;
- Requires less severe rerouting and less travel time impacts to maintain Downtown access and Caltrain Station connectivity;
- Better integrates and connects east side of Sunnyvale Avenue to historic Downtown area; and
- Could potentially increase parking in historic Downtown area parking lot, depending upon final design.

Selecting a project to be the Proposed Project for the environmental review under CEQA for both crossings will move the project forward as it will allow the environmental review to be completed. The project ultimately selected for grade separation construction by the City Council as part of environmental study approval may be different than the preferred alternative selected now for starting environmental review.

Prepared by: Angela Obeso, Principal Transportation Engineer
Reviewed by: Dennis Ng, Traffic and Transportation Manager
Reviewed by: Chip Taylor, Director of Public Works
Reviewed by: Teri Silva, Assistant City Manager
Approved by: Kent Steffens, City Manager

ATTACHMENTS

1. Reserved for Report to Council
2. Sunnyvale Grade Separations Feasibility Study - Traffic and Circulation Memorandum, dated July 13, 2022

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3. Mary Avenue Underpass Figure
4. Mary Avenue Underpass with Jughandle Figure
5. Mary Avenue Underpass with Jughandle and Ramps Figure
6. Study Intersections Map
7. Mary Avenue Level of Service and Delays Table
8. Mary Avenue Travel Times Table
9. Mary Avenue Bicycle-Vehicle and Pedestrian-Vehicle Conflict Points
10. Mary Avenue Crossing Alternative Comparison
11. Sunnyvale Avenue Underpass Tunnel Figure
12. Sunnyvale Avenue Bicycle and Pedestrian Only Underpass Tunnel Figure
13. Sunnyvale Avenue Level of Service and Delays Table
14. Sunnyvale Avenue Travel Times Table
15. Sunnyvale Avenue Crossing Alternative Comparison