

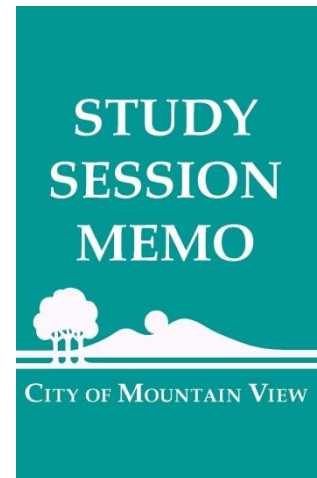
DATE: March 22, 2016

TO: Honorable Mayor and City Council

FROM: James Lightbody, Project Manager
Linda Forsberg, Transportation and Business
Manager
Michael A. Fuller, Public Works Director

VIA: Daniel H. Rich, City Manager

TITLE: **Mountain View Transit Center Master Plan**



PURPOSE

The purpose of this Study Session is to:

1. Present and discuss conceptual alternatives for the elimination of the at-grade crossing of Castro Street and the railroad tracks.
2. Obtain Council input regarding the grade-separation alternatives and the evaluation process (and specific measures) to be used to identify a preferred grade-separation alternative.

BACKGROUND

The 2013 Shoreline Regional Park Community Transportation Study and the North Bayshore Precise Plan and the Shoreline Boulevard Corridor Transportation Study (Corridor Study), both completed in 2014, identified transportation improvement strategies to respond to anticipated increases in employment and development in North Bayshore. A key element of each of these studies/plans is the expected increase in usage of the Mountain View Transit Center (Transit Center), including higher levels for Caltrain, light rail, and connecting shuttles. Other employment areas in the City identified in the 2030 General Plan also envision a greater reliance on, and demand for, transit services at the Transit Center.

One of the Corridor Study recommendations, approved by the Council in November 2014, called for the development of a comprehensive Master Plan for the Caltrain Station and Transit Center. A March 3, 2015 Study Session provided further discussion of the proposed planning study and additional direction was provided by the Council. Specifically, that the master planning effort be conducted in two phases, including:

1. Evaluation and recommendations regarding Castro Street and/or Central Expressway grade-separation options, including the possible closure of Castro Street to vehicular traffic at the rail tracks.
2. A preferred plan for improved transportation facilities, including platform expansion, bus and shuttle loading areas, pedestrian and bicycle access, bicycle storage, flexibility to accommodate new/emerging transportation technologies in the future, and other facilities.

This approach to the development of the Master Plan was discussed and confirmed by the City Council at its November 10, 2015 Regular Meeting when it approved the scope of work and a professional services agreement with Kimley-Horn and Associates to lead the Master Plan effort.

Phase I of the project began in December 2015, with a consulting team led by Kimley-Horn and Associates. Initial community outreach has been performed and the team has worked with City staff to develop a preliminary set of alternatives for City Council review and comment.

Based on Council direction received at this Study Session, the consulting team and City staff will continue to refine the grade-separation alternatives and will present a preferred alternative to the Council in June for approval. The Council-preferred grade-separation alternative will then be used as the foundation for the second phase of the project—the development of a plan for improved facilities at the Transit Center to be presented to the Council in early 2017.

DISCUSSION

Existing and Future Conditions

The Transit Center is a key local and regional inter-modal transportation facility serving nearly 4,300 boarding Caltrain riders, and an additional 1,300 Valley Transportation Authority (VTA) light rail riders each weekday. An additional 1,000 daily riders are served by other transportation services at the Transit Center, including: VTA buses, Caltrain shuttles, Transportation Management Association (TMA) MVgo shuttles,

private employer shuttles, and the Mountain View Community Shuttle. These usage figures far exceed the 1,000 riders expected during the three-hour morning peak period at the Transit Center when its final design was approved in 1997.

Traffic access into the downtown is well distributed, as shown in Figure 1. While Castro Street/Moffett Boulevard is an important access point into the downtown, it only accounts for about 20 percent of the incoming traffic. Frequent railroad gate blockages limit the flow of traffic through this access point.

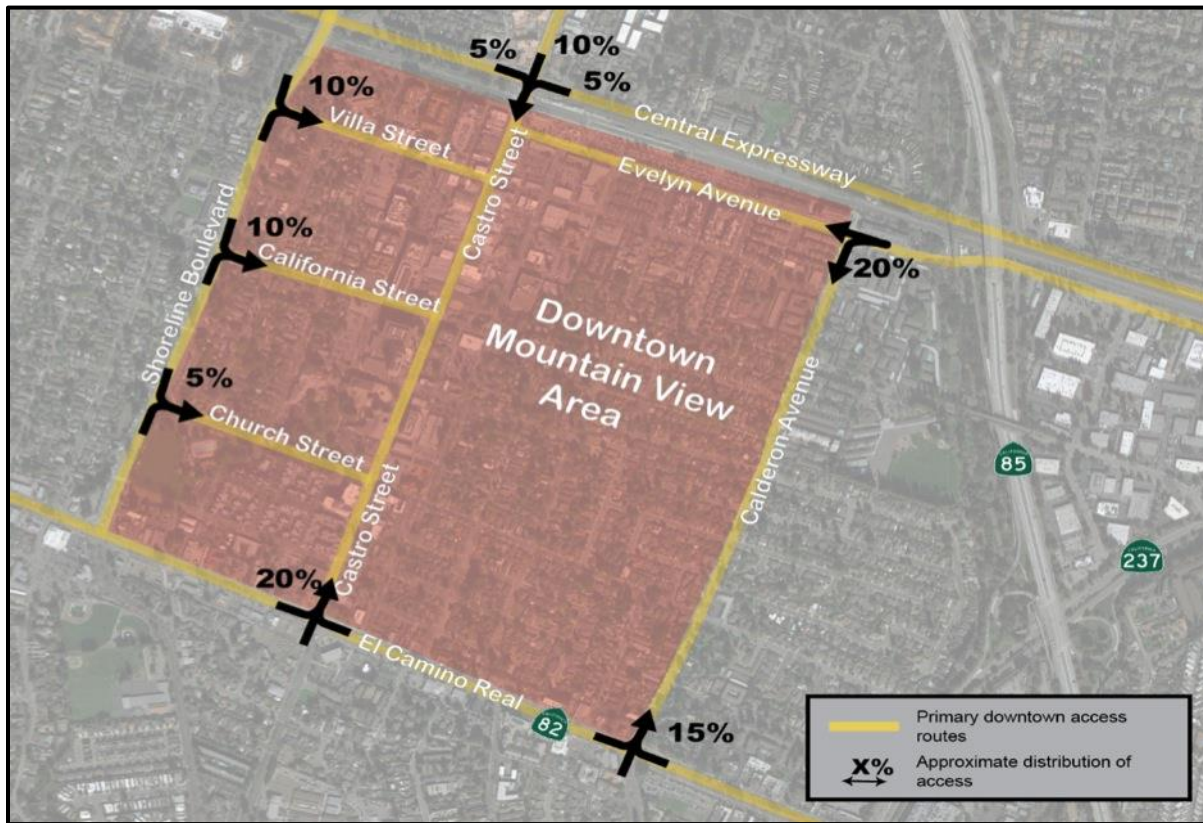


Figure 1 – Traffic Access into Downtown Mountain View

The need to develop a Master Plan for the Transit Center and Caltrain Station is particularly timely given a number of significant issues that will affect the operation of the Transit Center and Caltrain Station in the near future. These include the need to:

- Accommodate the expected growth in train service and station usage. It is expected that the number of trains and station usage will more than double over the next 10+ years due to expanded Caltrain, VTA Light Rail, and California High-Speed Rail Authority (CHSRA) service (see Table 1).

- Relieve delays at the railroad crossing on Castro Street. Railroad gate blockages in peak hours are expected to increase from every 6.5 minutes to every 3.5 minutes with expanded Caltrain and CHSRA service. During non-peak hours, gate blockages will increase from the current 10-minute interval to every 5 to 6 minutes.
- Improve safety and access for pedestrians and bicyclists. Pedestrian and bicycle activity is expected to be two to three times greater than today.
- Support the economic vitality and future growth of downtown Mountain View by maintaining adequate access for all customers and employees.
- Facilitate traffic circulation in and through the downtown by effectively utilizing the downtown street grid while protecting against traffic diversion into nearby neighborhoods.

Table 1 – Mountain View Transit Center and Caltrain Station

	Today		Future Estimate (including HSR)	
	3-Hour Peak	All Day	3-Hour Peak	All Day
More Trains (Both Directions)				
All Trains	27	92	50	150+
Trains Stopping	22	80	30+	100+
More Riders (Caltrain and Light Rail)				
Boarding Riders	2,200	5,750	5,000	14,000
Station Activity (Ons and Offs)	4,500	12,000	10,000	30,000
More Crossing Gate Delays				
Number of Gates Down Per Hour	9	6	17	10
Minutes Between Gate Closures	6.7	10	3.6	6
More Traffic				
Conditions at Castro Street and Central Expressway	Level of Service D		Level of Service F	

Community Outreach

This first phase of the Transit Center Master Plan project has included the following community outreach activities:

- Project Website – A project website (www.mountainviewtransitcenter.com) provides information and updates regarding the Master Plan project. More than

140 individuals are now signed up as stakeholders to receive news and event notifications from the project website. The City, through social media outlets, has disseminated additional information regarding the project.

- Business Outreach—To date, the Downtown Committee has received two presentations regarding the Transit Center Master Plan project (December 2015 and February 2016). A more targeted outreach meeting focusing on Castro Street businesses closest to the Transit Center was also held in mid-February with the support of the Central Business Association. Staff has also visited businesses along both Castro Street and Moffett Boulevard, providing them with information about the Master Plan project and how they can become involved in the project.
- Community Meeting—The first community meeting for the Transit Center Master Plan project was held on February 25. The goal of the meeting was to introduce the project to the community and solicit ideas and input regarding the project goals and objectives and the initial alternatives for modifying the current rail grade crossing at Castro Street. Approximately 50 to 60 people attended the event. A summary of the comments received at the meeting is provided in Attachment 1.
- Partner Agency Discussions—Two rounds of discussions have been held with other stakeholder agencies with current or planned future operations at/nearby the Transit Center, including: Caltrain, CHSRA, VTA, and the Santa Clara County Roads and Airports Department (which is responsible for Central Expressway).

Grade Separation Concepts/Alternatives

Described below are the alternatives currently being studied, along with key issues for discussion by the Council. Council input/direction is requested regarding the alternatives, as well as potential options within each of the alternatives. It is anticipated that each alternative would include high-quality pedestrian and bicycle connections that are not yet fully developed.

The project to date has focused on the identification of potential alternatives and key issues relating to those alternatives. A more detailed evaluation of the alternatives will occur over the next two months (see Evaluation of Alternatives Section later in this report).

It should be noted that all of the alternatives discussed in this report are intended to be located primarily within public right-of-way, limiting property acquisition needs/requirements. However, easements for adjacent properties will likely be needed during

construction. These needs/requirements will be more fully defined as the evaluation of alternatives continues.

Alternative 1: Lower Castro Street and Moffett Boulevard

Under this alternative (Figures 2, 3, and 4), rail remains at-grade and Castro Street is depressed, starting at Villa Street, under both the railroad and Central Expressway. There would be no direct traffic connection between Central Expressway and Castro Street. The alternative will maintain limited connections between Moffett Boulevard and Central Expressway with an at-grade frontage road. It would also improve east-west traffic flow by adding a new connection for Evelyn Avenue across Castro Street.

This alternative maintains vehicle access into downtown from Moffett Boulevard and provides some access from Central Expressway to businesses on Moffett Boulevard. Other current vehicle movements from Central Expressway would be routed to Shoreline Boulevard for the most part.

For businesses along the first block of Castro Street, this alternative would maintain at-grade sidewalks and outside dining areas in the final configuration. There would, however, be significant construction along that block and this alternative will require the closure of portions of Castro Street for varying periods of time during construction.

Key considerations for this alternative include:

- Diversion of traffic due to the loss of some traffic movements from Castro Street to and from Central Expressway.
- Improved traffic flow on Central Expressway.
- Some restrictions on parking and access for businesses on Moffett Boulevard.
- Depression of Castro Street and Moffett Boulevard below current street level.
- Downtown business and traffic flow impacts due to construction and temporary street closures.
- Improved east-west connectivity with expansion of Evelyn Avenue.

Additional information regarding Alternative 1 is provided in Attachment 2.

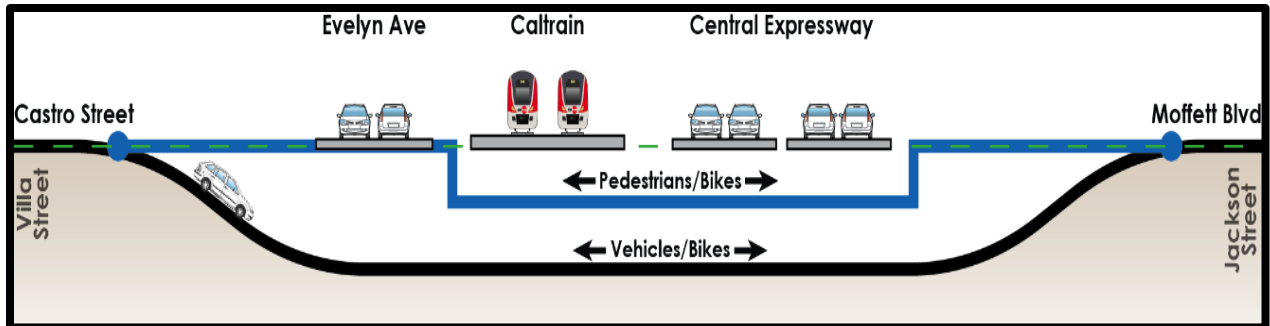


Figure 2 – Alternative 1: Lower Castro Street and Moffett Boulevard



**Figure 3 – Alternative 1: View of Castro Street/
Central Expressway Intersection**



Figure 4 – Alternative 1: View of Castro Street Looking North

Alternative 2: Lower Castro Street/Moffett Boulevard and Central Expressway

Under this alternative (Figures 5, 6, and 7), rail remains at-grade and Castro Street is depressed, starting at Villa Street, under the railroad and also lowers Central Expressway to create a depressed Castro Street/Moffett Boulevard intersection. As in Alternative 1, an at-grade frontage road on the east side of Moffett Boulevard is maintained business access.

Bicycles and pedestrians will cross under the tracks, as in the first alternative, but then would return to the current grade and cross above Central Expressway on a bridge. This alternative also includes two potential options:

- A pedestrian plaza at the north end of Castro Street rather than connecting the two segments of Evelyn Avenue.
- An architecturally distinctive plaza covering the Central Expressway/Moffett Boulevard/Castro Street intersection that could serve not only as an improved connection for pedestrian and bicycle traffic, but also as an inviting gateway into the downtown.

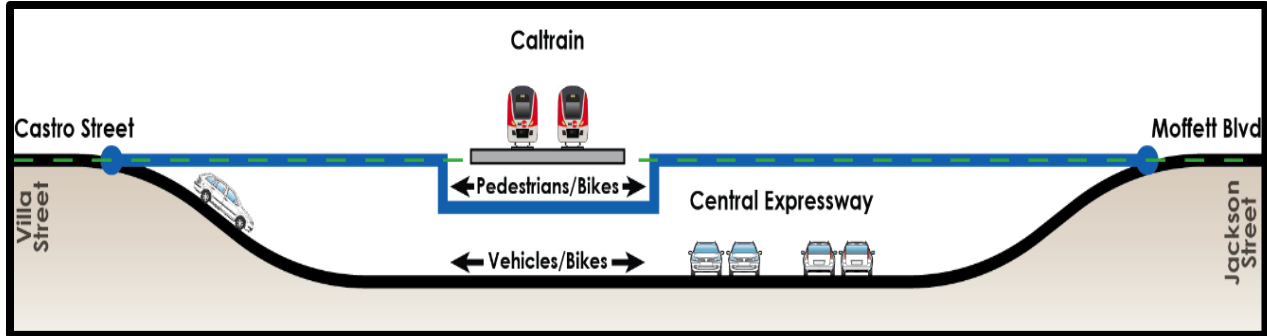
This alternative maintains full vehicle access into downtown from Central Expressway and Moffett Boulevard and provides some, but not full, access from Central Expressway to businesses on Moffett Boulevard.

For businesses along Castro Street, this alternative would be similar in design and construction impacts to Alternative 1, including maintaining existing sidewalk access and outside dining areas in the final condition. In addition to construction impacts to Castro Street and Moffett Boulevard, there would be different and potentially significant construction impacts as a result of the depression of Central Expressway.

Key considerations for this alternative include:

- Maintenance of traffic access between Castro Street, Moffett Boulevard, and Central Expressway; less potential improvement in traffic operations at that intersection.
- The need for greater coordination with Santa Clara County and the additional construction impacts associated with lowering Central Expressway.
- Possible impact to trees along Central Expressway.
- Some restrictions on parking and access for businesses on Moffett Boulevard.
- Depression of Castro Street and Moffett Boulevard below current street level.
- Downtown business and traffic flow impacts due to construction and temporary street closures.
- Provides new space for a pedestrian plaza, but restricts Evelyn Avenue access and connectivity.

Additional information regarding Alternative 2 is provided in Attachment 3.



**Figure 5 – Alternative 2: Lower Castro Street/
Moffett Boulevard and Central Expressway**



**Figure 6 – Alternative 2: View of Castro Street/
Central Expressway Intersection**



Figure 7 – Alternative 2: View of Castro Street Sidewalk Area Looking North

Alternative 3: Central Expressway Median Ramps

This alternative (Figures 8 and 9) is a variation of Alternative 1, adding median ramps on Central Expressway to provide additional turning movements to/from Central Expressway to Moffett Boulevard and Castro Street that were not included in Alternative 1. These ramps would require some widening of Central Expressway, primarily impacting landscaping and potentially encroaching on Willowgate Street. One downside of this alternative is that it would require an at-grade bicycle/pedestrian crossing of Central Expressway.

For businesses along Castro Street, this alternative would be similar in design and construction impacts to Alternative 1, including maintaining existing sidewalk access and outside dining areas in the final condition. The primary additional construction impacts will affect Central Expressway.

Other lower-cost options to maintain some of these turning movements, particularly to and from Moffett Boulevard, are also being explored. It may be preferred to carry this ramp option and other potential options as a sub-alternative to Alternative 1 rather than a separate option.

Key considerations for this alternative include:

- Maintenance of most traffic movements between Castro Street, Moffett Boulevard, and Central Expressway; less potential improvement in traffic operations at that intersection compared to Alternative 1.
- Additional construction impacts for Central Expressway ramps.
- Likely impact to trees along Central Expressway; possible impact to parking along Willowgate Street.
- Some restrictions on parking and access for businesses on Moffett Boulevard.
- Depression of Castro Street and Moffett Boulevard below current street level.
- Downtown business and traffic flow impacts due to construction and temporary street closures.
- Pedestrians required to cross Central Expressway via an at-grade crosswalk.

Additional information regarding Alternative 3 is provided in Attachment 4.

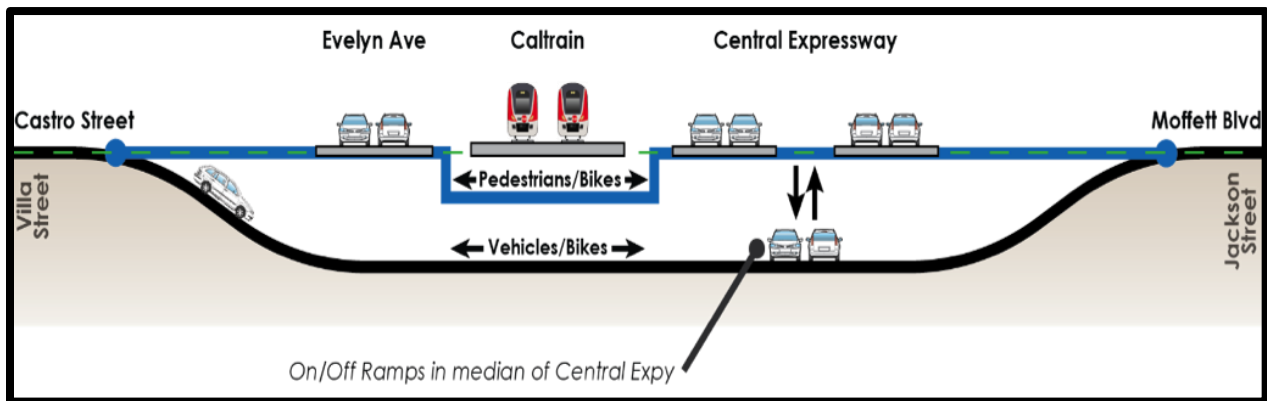


Figure 8 – Alternative 3: Central Expressway Median Ramps



**Figure 9 – Alternative 3: View of Castro Street/
Central Expressway Intersection**

Alternative 4: Close Castro Street at the Railroad Tracks

For this alternative (Figures 10 and 11), rail remains at-grade and Castro Street is closed at West Evelyn Avenue. Moffett Boulevard still would intersect with Central Expressway with all current movements, but no connection to Castro Street. Pedestrians and bicyclists would be provided a high-quality undercrossing or overcrossing of the railroad and Central Expressway.

The intersection of Castro Street and Evelyn Avenue would be reconfigured to provide all turning movements. To help accommodate diverted traffic, a new ramp would be constructed to connect Evelyn Avenue to Shoreline Boulevard (see Figure 12). This Shoreline Boulevard connection feature could also be included in other alternatives.

This alternative would have the least cost and fewer construction impacts to businesses on Castro Street and Moffett Boulevard. Existing sidewalks, dining areas, and access would not change. The potential impacts of traffic diversion will be considered in the evaluation of alternatives (discussed below).

Key considerations for this alternative include:

- Maintenance of full traffic connections between Moffett Boulevard and Central Expressway; improved traffic operations on Central Expressway.

- No traffic connection from Castro Street to Central Expressway and Moffett Boulevard; traffic diverted to Shoreline Boulevard and other routes.
- Possible increased congestion on Shoreline Boulevard.
- Benefit of new ramp connector to Shoreline Boulevard.
- Limited construction impacts to downtown businesses.
- No changes to current street and sidewalk configurations.

Additional information regarding Alternative 4 is provided in Attachment 5.

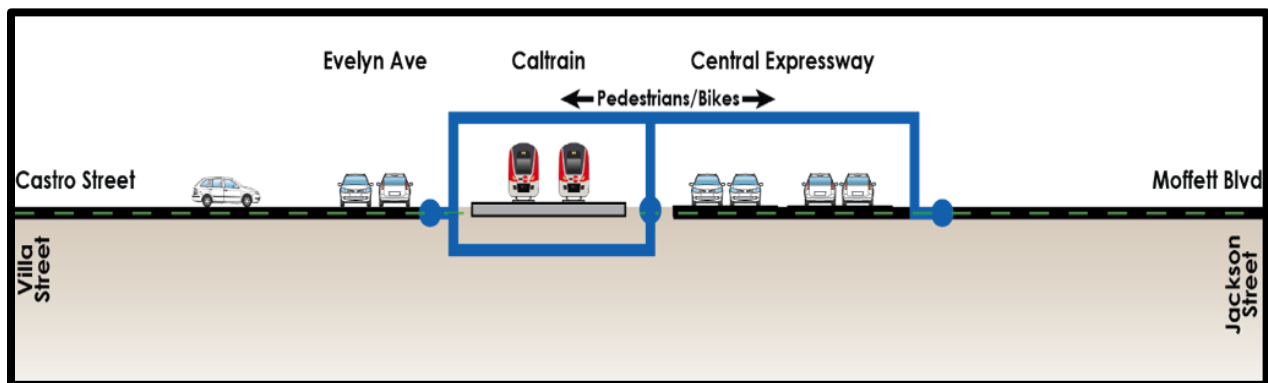


Figure 10 – Alternative 4: Close Castro Street at the Railroad Tracks



**Figure 11 – Alternative 4: View of Castro Street/
Central Expressway Intersection**

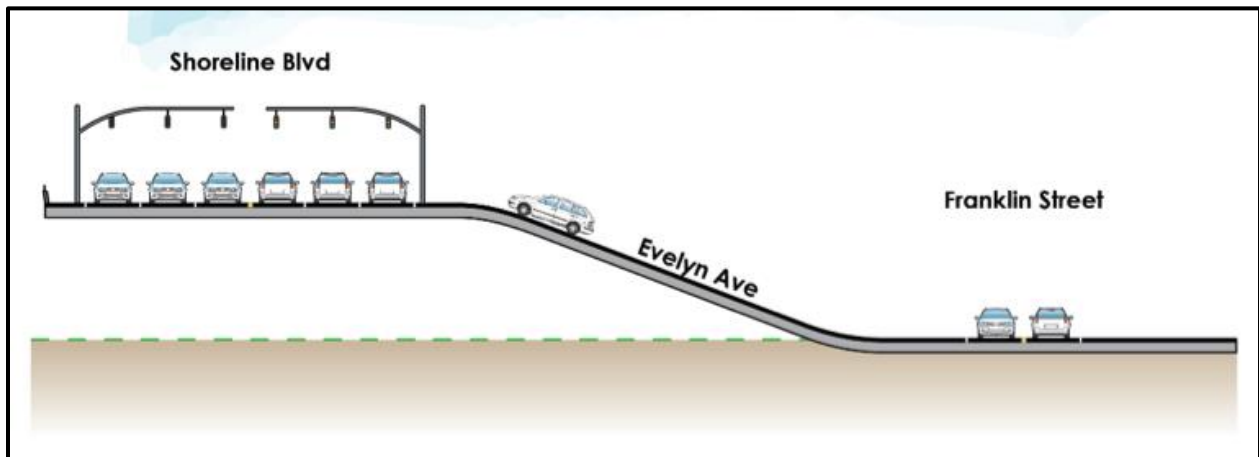


Figure 12 – Alternative 4: Shoreline Boulevard Ramp Connector

Other Alternatives

The consultant team has also investigated options for raising or lowering the rail tracks in order to reduce or eliminate the impacts to Castro Street and Moffett Boulevard inherent in the grade-separation alternatives discussed above. These options are constrained by the height or depth clearance requirements to avoid conflicts with the Shoreline Boulevard overcrossing to the west and Stevens Creek to the east, as well as

Caltrain requirements setting the maximum allowable change in track grade at 1 percent. While options for raising or lowering the rail tracks are still under study, preliminary impacts of these constraints are discussed below.

Raised Rail Tracks

Raising the rail tracks would allow the depression of Castro Street and Moffett Boulevard to be reduced and would greatly improve accessibility for pedestrians and bicycles. This approach (partially raised tracks and partially lowered street) has also been adopted by several other cities that have built or are planning similar projects (e.g., San Carlos, San Mateo, and Burlingame). However, in order to maintain adequate clearance under the Shoreline Boulevard overcrossing, it appears the tracks can only be raised a few feet (up to about 5.5'), which is not enough to prevent the business and construction impacts discussed previously with the other grade-separation alternatives. Therefore, this alternative should probably be considered only as a sub-option to each of the four alternatives, and would only be considered if there were positive construction benefits once more is known about the construction plan for the preferred alternative.

Lowered Rail Tracks

Lowering the tracks would place the railroad and station in a trench, which could be covered in some areas such as the downtown, to provide better use of the rail property and quieter operation. Because of the close proximity of Stevens Creek and the 1 percent allowable grade change constraint, the railroad trench would need to run under the Creek, extending its length substantially (over two miles or about 10,900'), ending to the east approximately at Bernardo Avenue or the Sunnyvale city limit (see Figure 13 and 14). To the west, the alignment would return to the surface beyond Shoreline Boulevard and would not affect the planned grade separation at Rengstorff Avenue (nor would any of the other alternatives).

An alternative approach was also investigated with the tracks crossing over Stevens Creek before entering the trench. However, this option would require Castro Street to be raised about 19', which would have very significant impacts on downtown businesses and traffic circulation.

A trench alternative has a number of advantages, but could result in substantially higher costs and operational challenges to maintain rail service during construction. A preliminary estimate suggests that the cost could be 3+ times greater than the other alternatives. A potential concern with this alternative is the possible need to reconstruct the footings for several bridges (Shoreline Boulevard, Routes 85 and 237, etc.) that the

trench will pass under. This alternative will also require more temporary tracks during construction that could encroach on the light rail line or the Transit Center.

Council direction is requested regarding whether the depressed railroad option should be further evaluated in detail along with the other alternatives discussed previously.

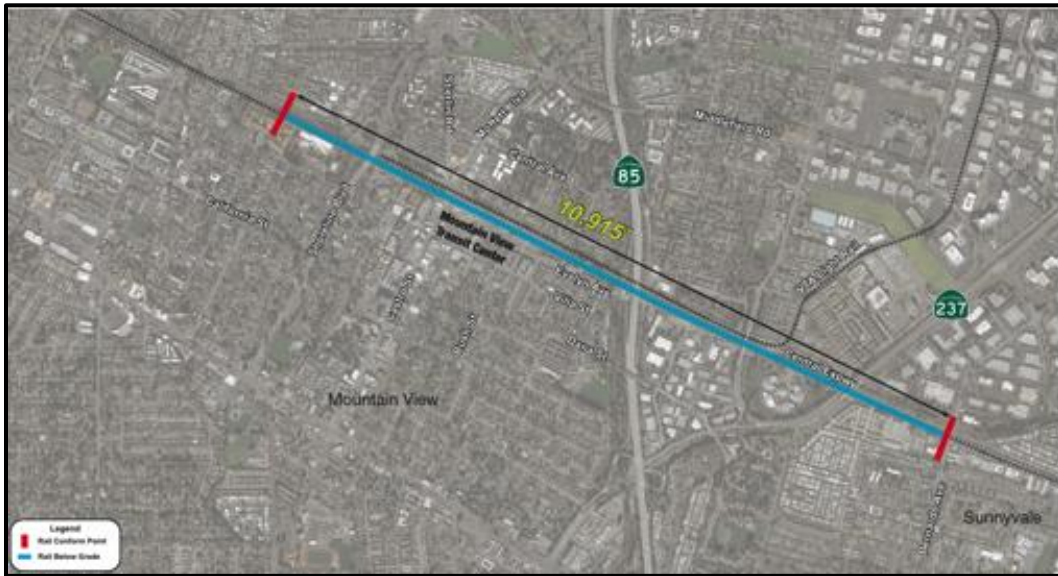


Figure 13 – Limits of Depressed Railroad

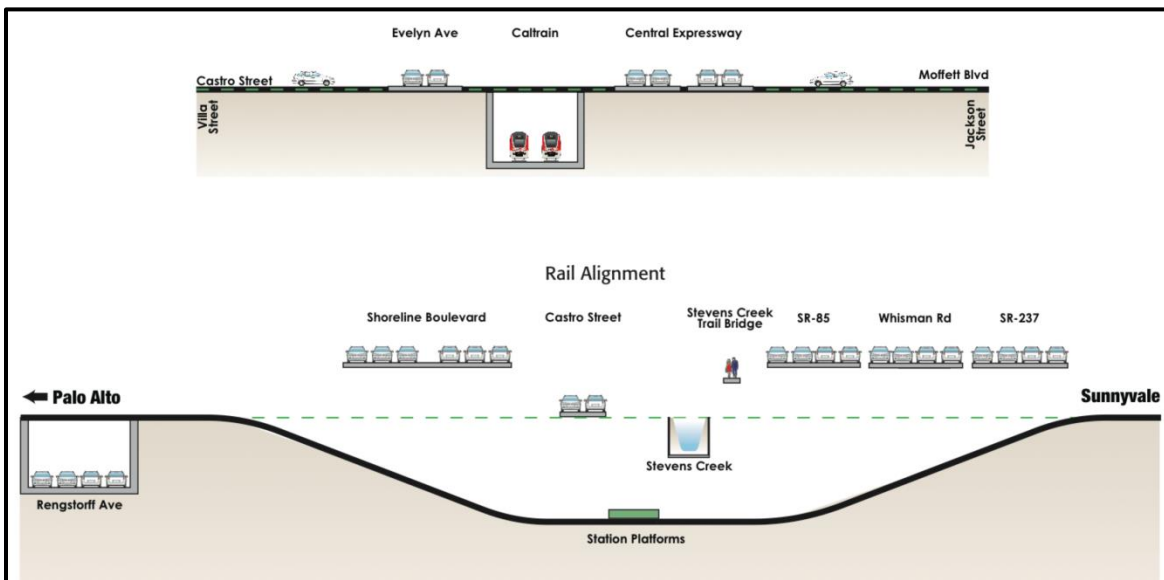


Figure 14 – Depressed Railroad Cross Section

Evaluation of Alternatives

The next phase of the project will be to evaluate the final conceptual grade-separation alternatives, as identified through direction provided at this Study Session. Traffic and construction impacts and the estimated costs are key measures that will be evaluated in detail. Other issues will be assessed at a more qualitative level. The following measures are currently envisioned to be part of the evaluation:

- Vehicle circulation and diversion of trips; level of congestion.
- Construction impacts in terms of nearby businesses, downtown auto circulation, pedestrian and bicycle access, transit and shuttle service, and general impact on the downtown.
- Estimated cost.
- Transit Center access and circulation.
- Transit service impacts (e.g., shifts in bus stops and routes).
- Railroad operations.
- Bicycle/pedestrian circulation (e.g., reduction in conflict points, directness, grade changes).
- Environmental considerations, including visual, noise, tree, and other impacts.
- Integration with downtown Mountain View.
- Business impacts.

Business impacts will be addressed, at a preliminary level, through a separate Economic Impact Study now under way. This study, being conducted by Strategic Economics, will identify potential economic impacts and mitigations, both permanent and during construction, through a review of similar projects and the general business conditions in the downtown. Case studies of several city projects will be developed. At this time, the analysis will be at a district level, but will provide a foundation for a more business-specific analysis in the future.

RECOMMENDATION

Staff seeks input and direction from the City Council regarding the conceptual grade-separation alternatives to be evaluated in the next phase of the project. Specific questions include:

- Are all three basic alternatives (Alternatives 1, 2, and 4, described above) appropriate for further evaluation? This question assumes that Alternative 3 would be better suited as an option to Alternative 1, as discussed above.
- Should the depressed railroad option be considered further as a full alternative?
- Is there any direction regarding potential options discussed, including:
 - A pedestrian plaza at the north end of Castro Street as opposed to connecting the two segments of Evelyn Avenue (Alternatives 2 and 3).
 - The direct connector ramp to Shoreline Boulevard (all alternatives).
 - A plaza over the Central Expressway/Castro Street/Moffett Boulevard intersection (Alternative 2).
 - Partially raised rail tracks to reduce the depth that streets would need to be lowered (Other Alternatives discussion).
- Are the evaluation measures complete and sufficient?

NEXT STEPS

Based on Council comments and direction, City staff and the consultant team will proceed with the full evaluation of the conceptual grade-separation alternatives. During this process, continuing discussions with our partner agencies (e.g., VTA, Caltrain, CHSRA, Santa Clara County) will be maintained.

Community outreach efforts will continue and be expanded. A second community meeting will be held in May and other, more focused meetings with downtown businesses will also be conducted. The project will also be discussed at the April Bicycle/Pedestrian Advisory Committee (B/PAC) and with the Downtown Committee again at a future meeting.

The results of the evaluation phase will be brought to the Council in June for the purpose of selecting a preferred grade-separation concept to serve as the foundation for developing a long-term Master Plan for improved transportation facilities at the Transit Center.

It should be noted that the selection of a grade-separation concept is just the first step in developing and constructing an actual project. Further design and environmental clearance will be needed (a two- to four-year effort), as well as the identification of a funding plan.

PUBLIC NOTICING

In addition to the City's standard agenda posting requirements, notices were distributed to the more than 100 persons who have signed up on the project website for updates and information, business and/or community meeting participants, the more than 200 property owners on Castro Street and Moffett Boulevard between Villa and Jackson Streets and on Evelyn Avenue between State Route 85 and Shoreline Boulevard, the Old Mountain View and other nearby City neighborhood associations, VTA, Caltrain, the TMA, Santa Clara County Roads and Airport Department, Central Business Association, Mountain View Chamber of Commerce, the B/PAC, and other interested parties.

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- Attachments:
1. Public Comment Summary – February 25, 2016 Community Meeting
 2. [Alternative 1 Details](#)
 3. [Alternative 2 Details](#)
 4. [Alternative 3 Details](#)
 5. [Alternative 4 Details](#)