



# Memorandum

**To:** File

**From:** Azalea Mitch, Public Works Director

**Date:** March 14, 2022

**Re:** Downtown San Mateo Grade Separations – Project Description

## Scope

Application for planning level grant for the development of a Project Study Report (PSR), preliminary engineering plans / and environmental documents (PE/ENV) for the Downtown San Mateo Grade Separations project (Project). The Project consists of grade separations at six (6) of the crossings in the City's downtown (1st, 2nd, East 3rd, East 4th, East 5th, and 9th Avenues).

Cost: \$8M (\$3M PSR, \$5M PE/ENV)

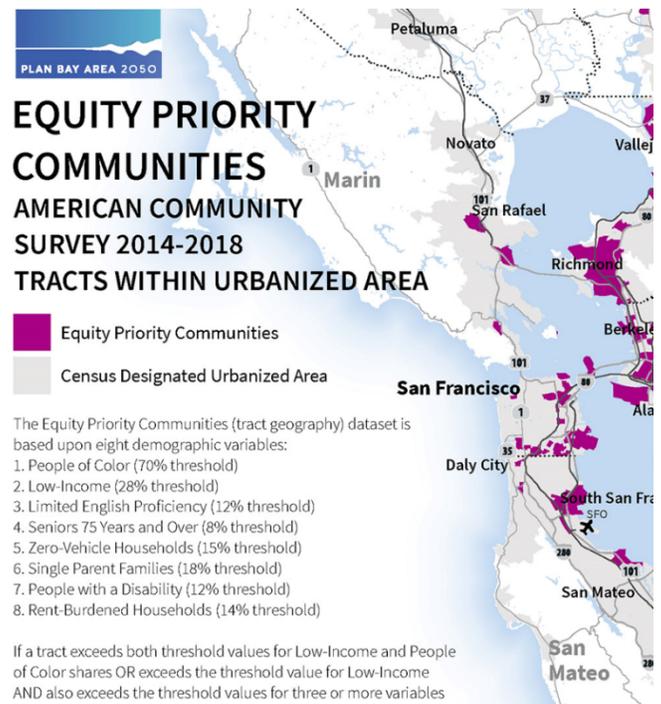
## City of San Mateo - Background

The City of San Mateo is in San Mateo County, on the Peninsula in the San Francisco Bay Area. It is bordered by Burlingame to the north, Foster City to the east, Belmont to the south, and Hillsborough to the west. The City is conveniently situated 19 miles south of San Francisco and 30 miles north of San Jose. It covers an area of 15.4 square miles, including 3.87 square miles of tidelands from the San Francisco Bay to the east and a range of coastal mountains to the west.

The City provides a full range of municipal services. These include police, planning, building, sewer, street maintenance, and general administrative services. Based on the California Department of Finance, the City's population as of 2021 was just over 103,000, which represents about 13.5 percent of the countywide population. Also based on the most recent U.S. Census data, per capita personal income for San Mateo residents was \$62,784, which is slightly above the amount for San Mateo County as a whole (\$61,545) and well above the value for the State of California (\$36,955). According to the preliminary April 2021 figures from the Employment Development Department, the City's unemployment rate is 4.2%, which is slightly below the County's unemployment rate at 4.8%.

## Equity Priority Areas

While income levels are above those of San Mateo County's, the City has a number of equity priority communities. The Metropolitan Transportation Commission (MTC) has identified these areas as those that have low per capital income and a



high concentration of people of color. The City's North Shoreview, South Shoreview, and North Central neighborhoods have been identified by the MTC as equity priority communities.

<https://mtc.ca.gov/planning/transportation/access-equity-mobility/equity-priority-communities>

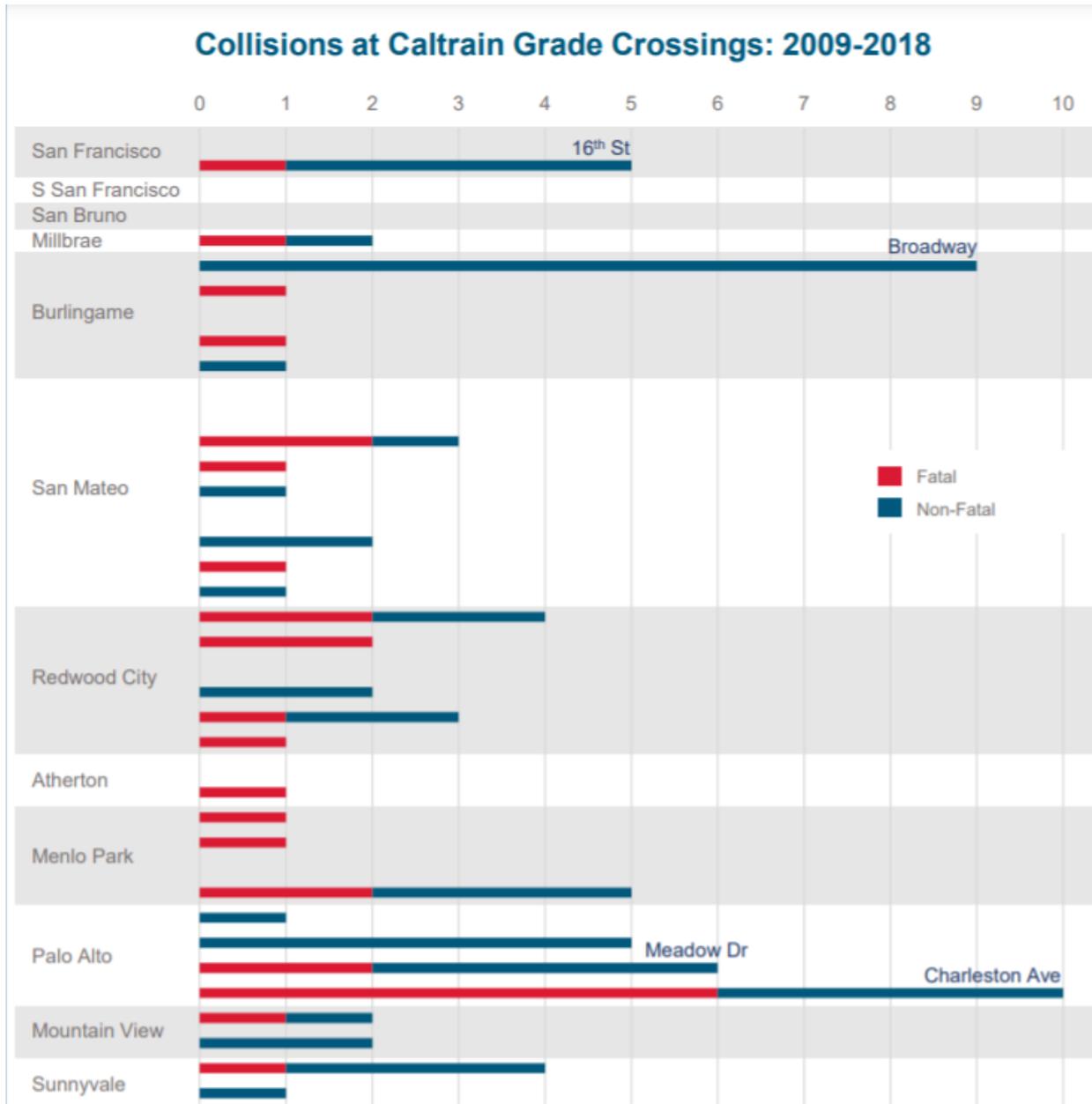
### **Caltrain Corridor**

The City is served by Caltrain, which provides commuter rail services from the City and County of San Francisco to the City of Gilroy. It consists of a 77-mile route and 32 stations. Forty at-grade street / railroad crossings (places where local streets cross the railroad tracks) exist along Caltrain's corridor from the City and County of San Francisco to the City of San Jose. Twenty-eight of these crossings are in San Mateo County, with eight (8) in the City of San Mateo (City) – the most of any other city. As the 7th largest commuter rail line in the nation, Caltrain connects thousands of Bay Area residents to their workplaces, homes, and businesses on a daily basis. While the rail line offers a critical transportation service to the Bay Area community, the at-grade crossings in the City pose serious safety impacts. The Federal Railroad Administration has recognized grade crossing incidents to be the second leading cause of death. In the City, the Caltrain crossings have resulted in number of collisions (Figure 1).

To address these concerns, the City has proposed plans to eliminate six (6) of the eight (8) existing at-grade street crossings. Currently, the City's eight (8) at-grade crossings include Villa Terrace, Bellevue, 1st, 2nd, 3rd, 4th, 5th, and 9<sup>th</sup> Avenues. Over 50,000 vehicles cross the at-grade locations in the City daily (Figure 2). These at-grade crossings were included as candidate grade separation projects in San Mateo County Transportation Authority's 2004 Expenditure Plan.

As part of its Business Plan, Caltrain has been working on electrifying the rail system. Currently, 92 Caltrain trains travel through the corridor on a weekday basis. Initially, this upgrade will increase Caltrain's capacity by over 30 percent, resulting in the travel of up to six (6) trains through the corridor during the peak hours in both directions. By 2040, it is expected that the trains will increase to 360 per day. The electrification project is scheduled to be completed by late 2024. The tracks are also used by Union Pacific freight trains during the night-hours when Caltrain is not in operation. The improved performance will lower greenhouse gas emissions and accommodate an increase in ridership. The tracks will also support the use of the State's high-speed rail system.

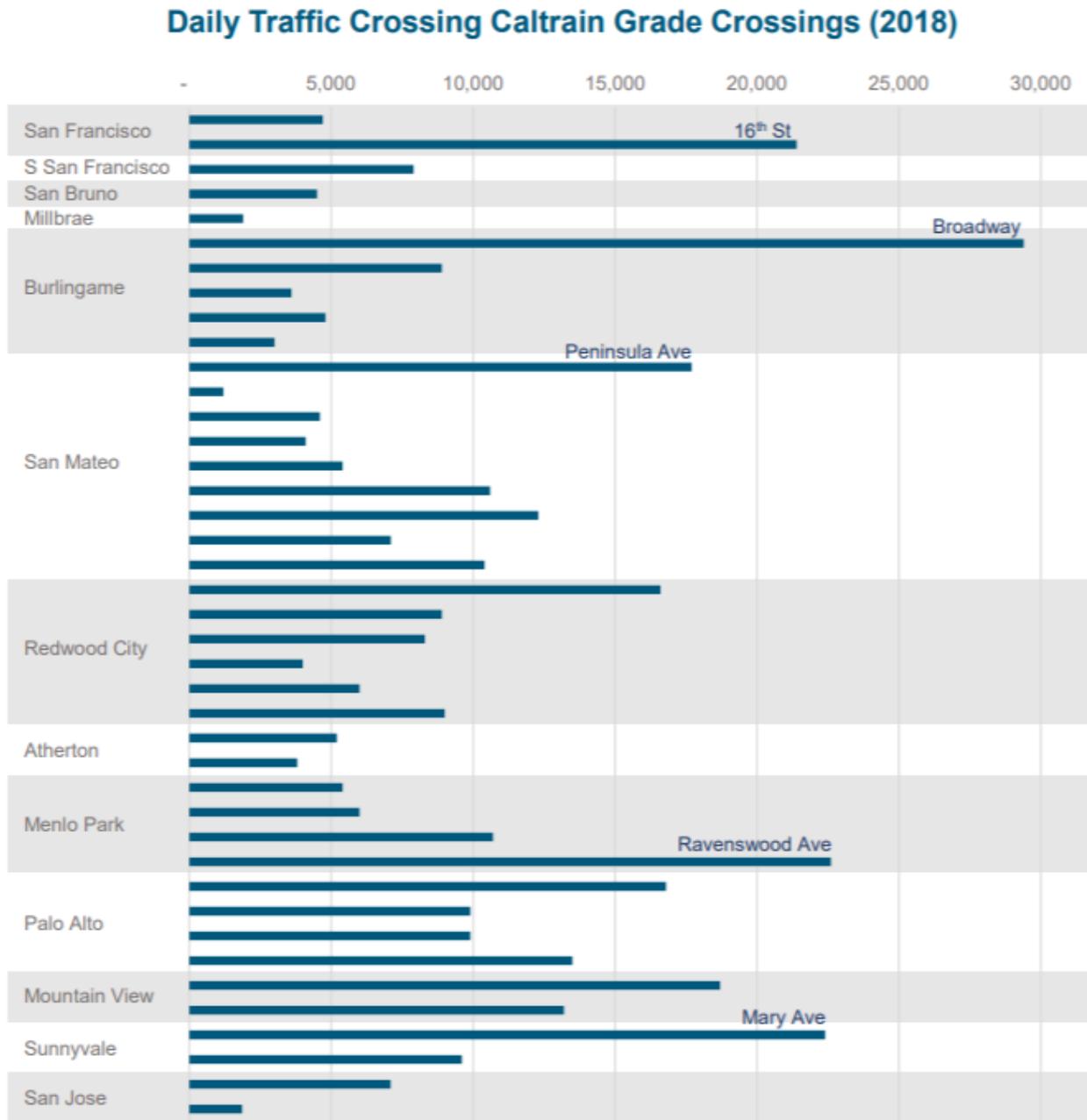
Figure 1 – Collisions at Caltrain Grade Crossings



Caltrain Grade Separations

<https://www.caltrain.com/Assets/1Background+on+Caltrain+Corridor+Grade+Crossings+!26+Seaprations.pdf>

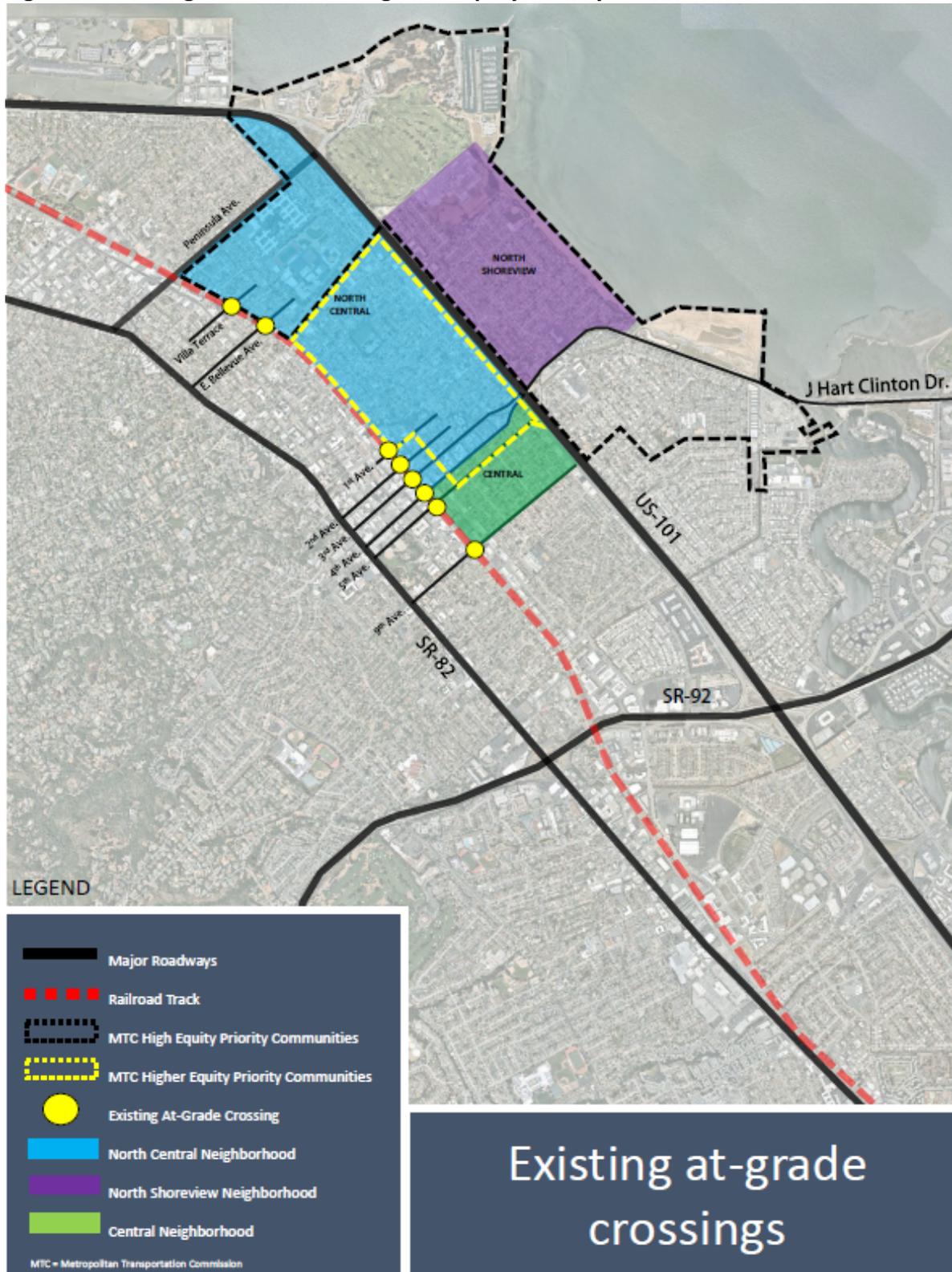
Figure 2 – Daily Traffic Crossings



**Caltrain 2040 Business Plan - Impacts**

While the Caltrain electrification improvements and 2040 Business Plan vision will have significant benefits to the Bay Area community, the higher train frequency will increase safety concerns associated with the existing at-grade crossings in the City. With the passing of the trains, the gates at the at-grade crossings will be down for 30 to 45 minutes during the peak hours. With the most crossings of any other city along the corridor, the impacts to the San Mateo community will be significant. The City’s downtown is a vibrant district with restaurants, office space, and a hospital – all surrounded by residential areas that have easy access to the businesses. Vehicles, pedestrians, and bicyclists travel to the City’s downtown daily. Communities east of the railroad tracks would be impacted, as their access westward to downtown would become increasingly more difficult. These neighborhoods are Equity Priority Communities and would experience significant impacts (Figure 3). Traffic from the west side of the railroad tracks would incur delays to Highway 101. The existing at-grade crossings result in delays to all modes of transportation, impeding east to west traffic flow, and exacerbating safety conditions. The Project proposes to re-connect the east and west communities along the rail corridor and improves safety by eliminating at-grade crossings.

**Figure 3 – Existing At-Grade Crossings and Equity Priority Areas**



**Project: Downtown Rail Corridor Grade Separations**

The downtown includes six (6) of the eight (8) crossings in the City (Figures 4 and 5). The proposed project involves the development of a Project Study Report (PSR), preliminary engineering plans / and environmental documents (PE/ENV) for options to separate the six (6) at-grade crossings in the City’s downtown (1st, 2nd, 3rd, 4th, 5th, and 9th Avenues). Due to their proximity and railroad slope requirements, the grade separations from 1st to 5th Avenues would have to be done concurrently. While the grade separation at 9th Avenue can be done separately as it is farther away from 5th Avenue, it is part of the downtown corridor and will likely be impacted by design for 1st through 5th Avenues.

The PSR would develop potential grade separation alternatives, identify environmental concerns, include a traffic analysis, and an estimate of the costs associated with each of the alternatives. Based on the options, a preferred alternative would be selected to develop the preliminary plans and environmental documents. The grade separations would have the following significant benefits to the City:

- Reconnecting of the east and west communities along Caltrain’s rail corridor.
- Improved gateway to downtown from neighboring disproportionately burdened communities.
- Improved safety for all modes of transportation – pedestrians, bicyclists, and vehicles;
- Improved Caltrain operations.
- Improved circulation / traffic operation – reduced queuing times for east-west connectivity.
- Safe and improved access to the downtown from surrounding neighborhoods and City at-large.
- Lower greenhouse gas emissions.
- Improved economic vitality and livability.

Estimated Cost: \$8M (3M PSR, \$5M PE/ENV)  
Project Duration: Two years

### **Potential Alternatives**

**1st through 5th Avenues Crossings:** Railroad design parameters have a 1% maximum slope for tracks. Due to their proximity, not enough horizontal distance exists between the crossings from 1<sup>st</sup> to 5<sup>th</sup> Avenue to elevate or lower the tracks and maintain the maximum allowable slope. Grade separation attempts at any of the crossings would therefore likely need to be done concurrently. Due to the number of businesses and driveways close to all the crossings, options include a completely elevated track system or a tunnel through the downtown – a split grade separation where the road is partially lowered and the rail is partially elevated will likely not be possible.

**9<sup>th</sup> Avenue Crossing:** There are two alternatives for the grade separation at this location, which include an underpass (lowering of the roadway) or a hybrid (combination of an elevated track and lowering of the roadway) (Figure 6). Under the underpass alternative, the rail tracks would remain at the existing elevation and 9th Avenue would be lowered approximately 22 feet below the existing elevation. The hybrid option would require a 10’ elevated track with a 6’ lowering of the roadway. The 6’ lowering of the roadway would affect ~85’ of roadway on 9th Avenue for each side of the tracks. Once implemented, this project would reduce the number of at-grade street / railroad crossing incidents, improving the safety conditions for school children, pedestrians, bicyclists, and drivers in the downtown area and City at-large.

**Figure 4 – At-grade Caltrain Crossings in Downtown**

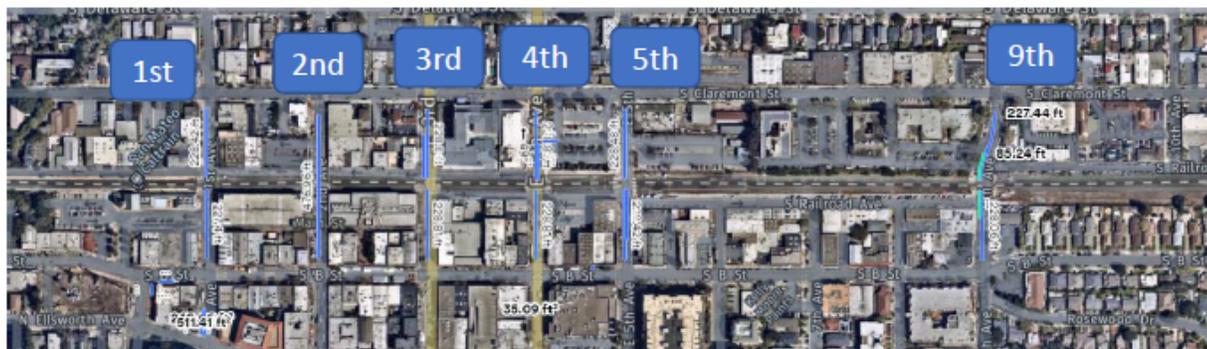
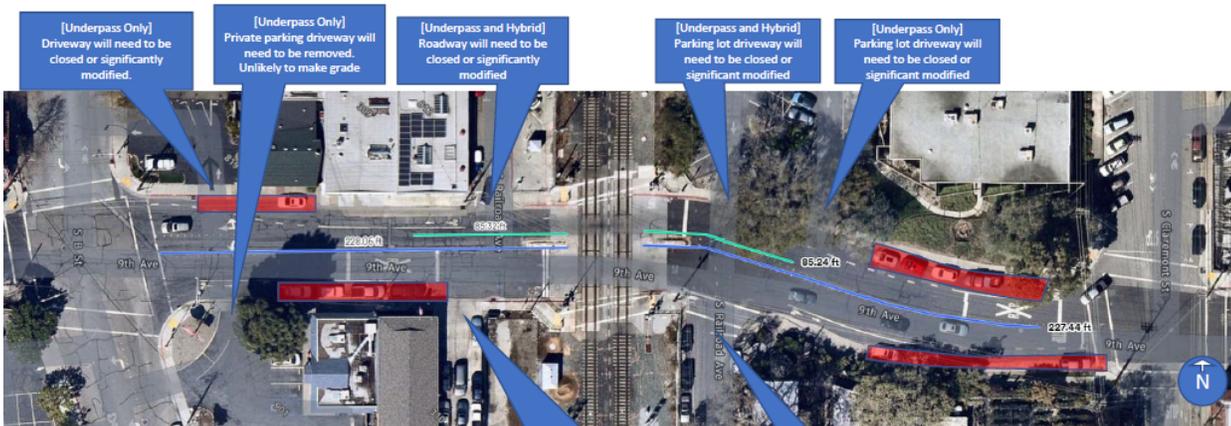


Figure 5 – 4<sup>th</sup> and 5<sup>th</sup> Avenue At-Grade Crossings



Figure 6 – 9<sup>th</sup> Avenue Grade Separation



**Individual Option:** Underpass or Hybrid

**Summary:** The feasibility of making 9<sup>th</sup> Ave. an individual project is plausible if choosing the hybrid option. The hybrid option will require a 10' elevated track with a 6' lowering of the roadway. The 6' lowering of the roadway will affect ~85' of roadway on 9<sup>th</sup> Avenue for each side of the tracks. A public parking driveway east of the track will need to be removed and S. Railroad will need to be regraded.

[Underpass] - Private parking driveway will need to be removed  
 [Hybrid] - May be able to regrade driveway  
 [Underpass and Hybrid] Roadway will need to be closed or significantly modified

LEGEND	
Parking Removal	<span style="color: red;">█</span>
Underpass Option Roadway Footprint	<span style="color: blue;">█</span>
Hybrid Option Roadway Footprint	<span style="color: green;">█</span>

- Assumptions**
- 7% maximum roadway slope (fed allowed for highway)
  - 16' assume clearance (include double deck bus)
  - Retaining wall for entire stretch of roadway/
  - Hybrid option assumption include a 10' elevated track and lowering of the roadway of 6'.

## REFERENCES

MTC Open Data – Equity Priority Communities

<https://opendata.mtc.ca.gov/maps/MTC::mtc-equity-priority-communities-in-2018-acr-2012-2016/explore?location=37.568625%2C-122.305267%2C13.46>

Caltrain Business Plan

<https://caltrain2040.org/about/>

Caltrain Electrification

<https://calmod.org/>