

# South Linden Avenue & Scott Street Grade Separation Planning Study

South San Francisco City Council Meeting

September 26, 2018



# What is an “at-grade crossing”?

A location where a roadway crosses the railroad tracks at the same level (elevation).



Linden Avenue

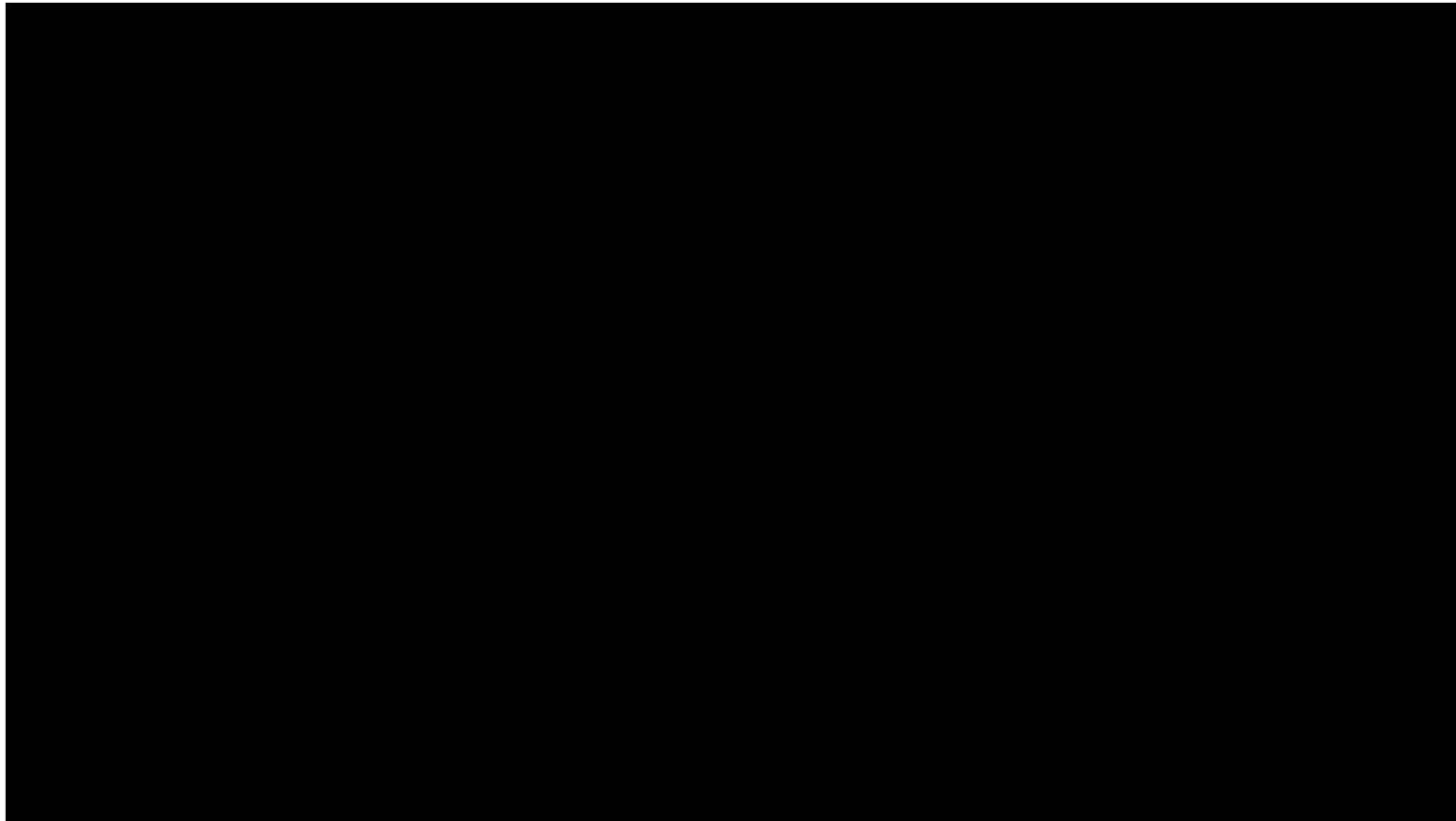


Scott Street

South Linden Avenue and Scott Street Grade Separation Planning Study



# Video at South Linden Avenue



South Linden Avenue and Scott Street Grade Separation Planning Study



# What is a “grade separation”?

A bridge that allows the public to travel under (or over) the railroad.



Jefferson Avenue  
Redwood City



San Antonio Road  
Mountain View

South Linden Avenue and Scott Street Grade Separation Planning Study



# Why is the Project Needed?

- Improve Traffic Circulation/Mobility
  - Reduce traffic delays caused by gate down times
  - Improve traffic flow across railroad crossing
- Increase Public Safety (vehicular, bicycle, and pedestrian)
  - Eliminates pedestrian, bicyclist and motor vehicle conflicts with the railroad... this eliminates the potential for accidents
  - Improve pedestrian and bicycle access

**Safer Facility + Less Congestion = *Higher Quality of Life***

South Linden Avenue and Scott Street Grade Separation Planning Study



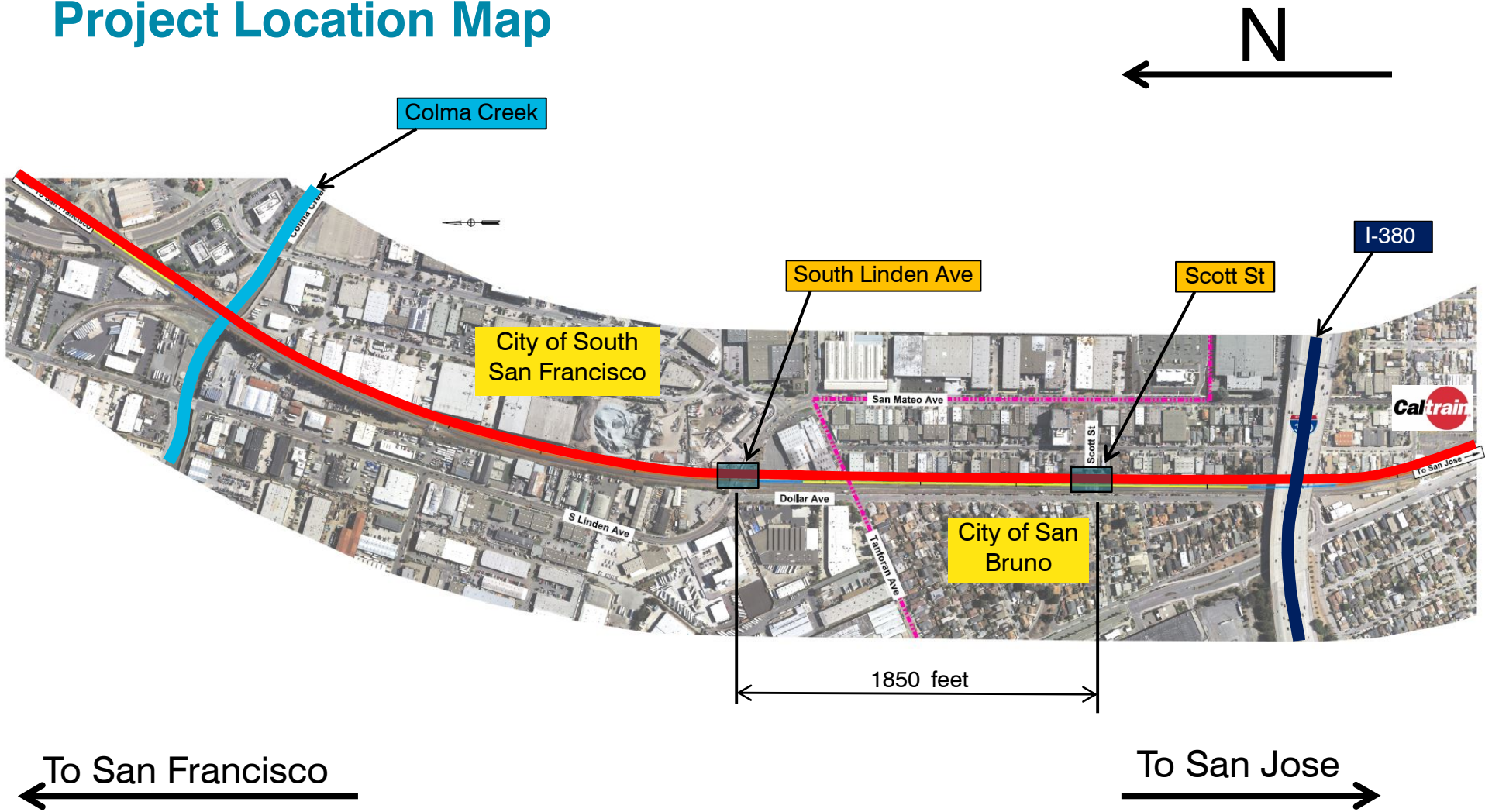
# Weekday Train Traffic

Total Number of Trains (per Weekday)			
	Northbound (NB)	Southbound (SB)	Total
Caltrain (2018)	AM: 20 PM: 26 <b>Total: 46</b>	AM: 20 PM: 26 <b>Total: 46</b>	AM: 40 PM: 52 <b>Total: 92</b>
Caltrain (2022 Projection #)	<b>57</b>	<b>57</b>	<b>114</b>
High Speed Rail (2029 Projection +)	128 trains per day to/from San Francisco with an additional 24 trains starting at San Jose		
Union Pacific	3	3	6
<p># 2022 Projected Values based on Completion of the Peninsula Corridor Electrification Project (from FEIR, December 2014) (Prototypical Schedule)</p> <p>+ 2029 Projected Values based on Blended Service and Completion of the High Speed Rail Project and 2014 CHSRA Business Plan</p>			

## South Linden Avenue and Scott Street Grade Separation Planning Study



# Project Location Map

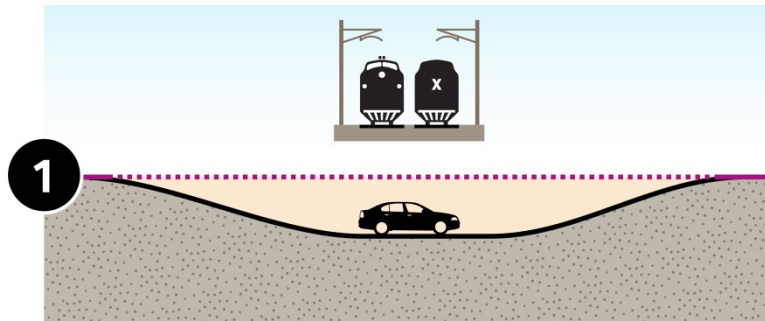


## South Linden Avenue and Scott Street Grade Separation Planning Study



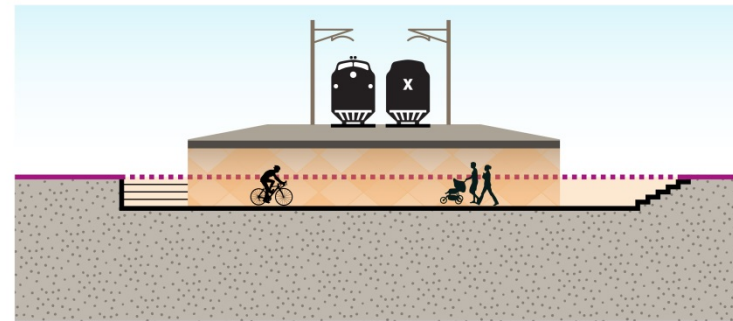
# Four Alternatives to Evaluate

## Alternative 1: Hybrid (Track Raised, Roadway Lowered)



**South Linden Avenue**

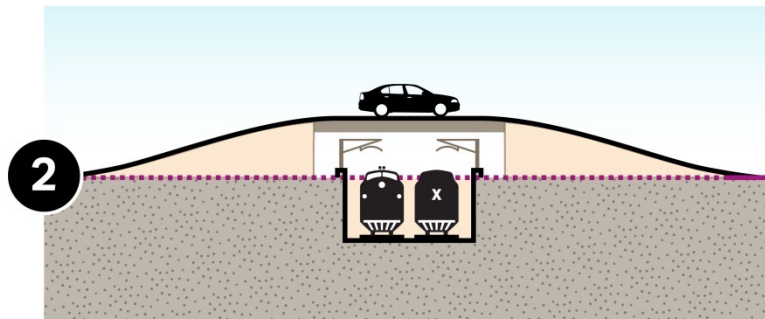
Rail Partially Elevated/Roadway Partially Lowered



**Scott Street**

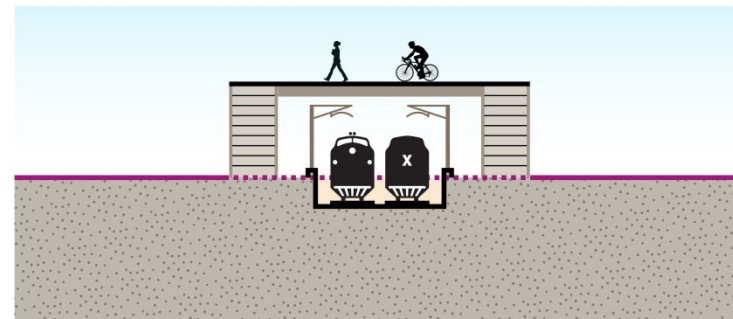
Rail Partially Elevated with a Pedestrian/Bike Underpass

## Alternative 2: Hybrid (Track Lowered, Roadway Raised)



**South Linden Avenue**

Rail Lowered, Roadway Elevated



**Scott Street**

Rail Lowered with a Ped/Bike Overpass or Underpass

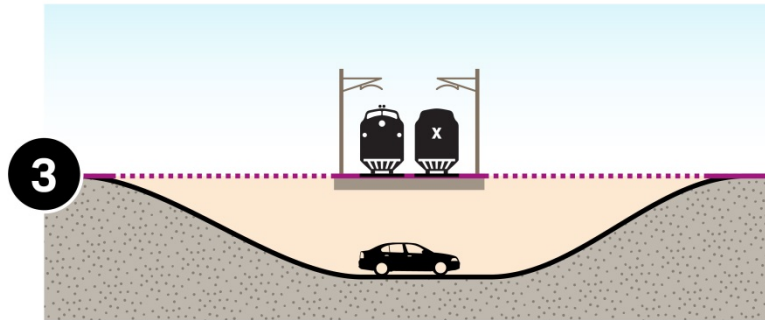
### South Linden Avenue and Scott Street Grade Separation Planning Study



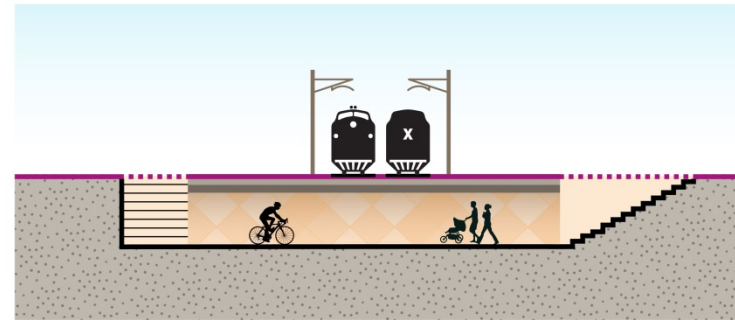


# Four Alternatives to Evaluate

## Alternative 3: Rail at grade with Roadway Underpass

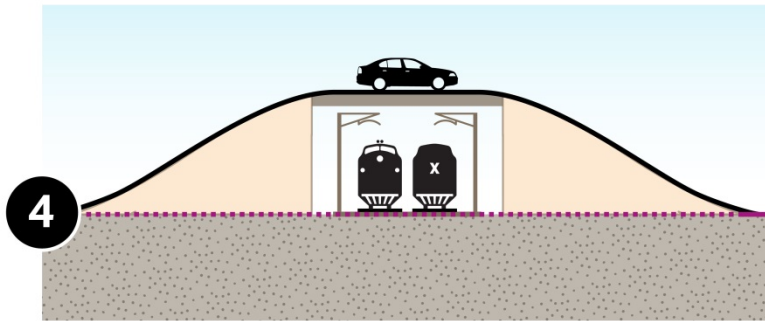


**South Linden Avenue**  
Rail at-grade, Roadway Lowered

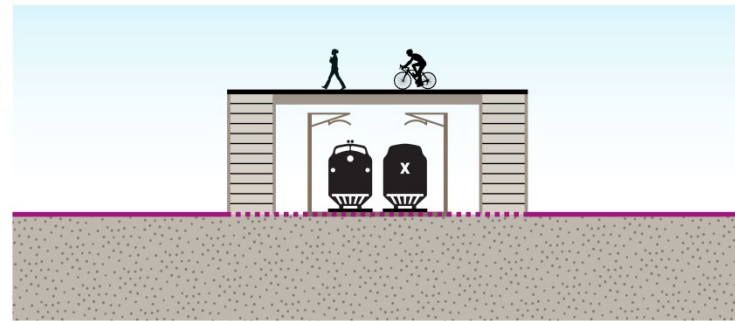


**Scott Street**  
Rail at-grade with a **Ped/Bike Overpass or Underpass**

## Alternative 4: Rail at grade with Roadway Overpass



**South Linden Avenue**  
Rail at-grade, Roadway Elevated

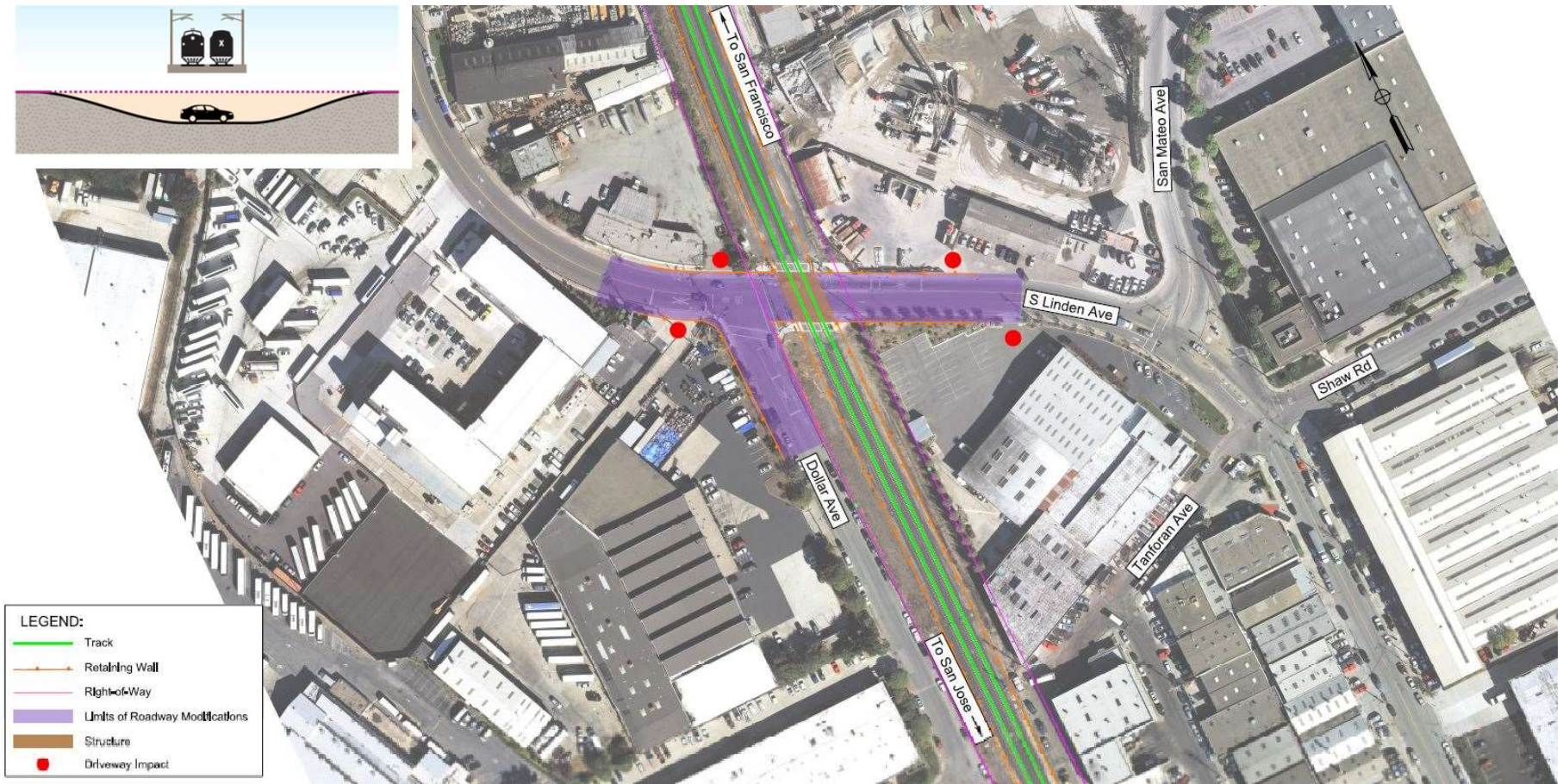


**Scott Street**  
Rail at-grade with a **Ped/Bike Overpass or Underpass**

### South Linden Avenue and Scott Street Grade Separation Planning Study



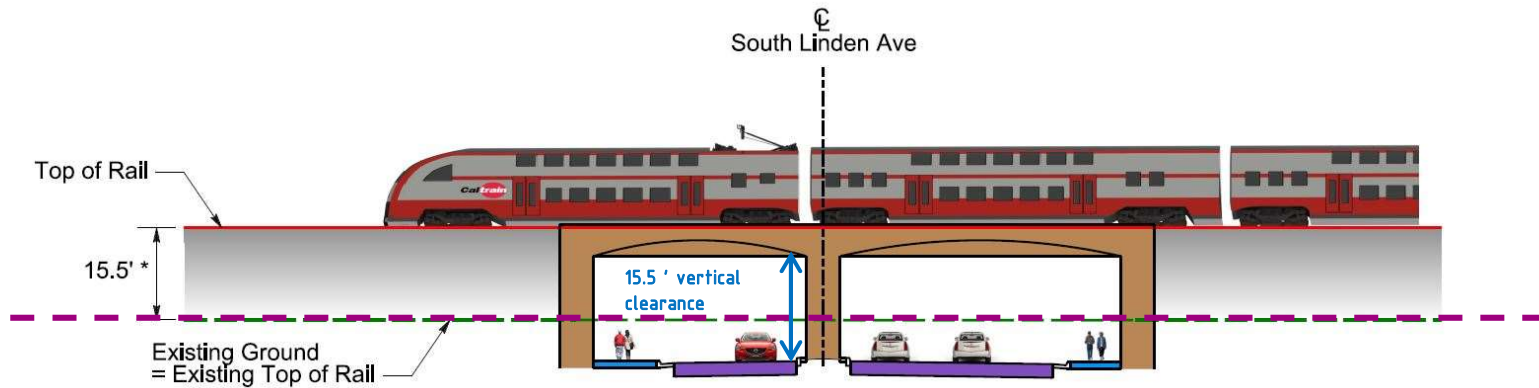
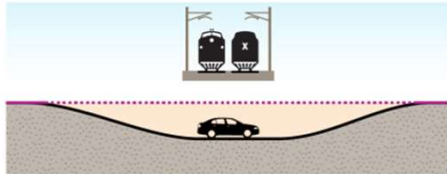
# Alternative 1: Hybrid (Track Raised, Roadway Lowered) South Linden Avenue Layout



## South Linden Avenue and Scott Street Grade Separation Planning Study



# Alternative 1: Hybrid (Track Raised, Roadway Lowered) South Linden Avenue Typical Section



South Linden Avenue and Scott Street Grade Separation Planning Study



# Hybrid Alternative

- Holly Street, San Carlos
- Issues
  - Long embankments
  - Raised tracks
  - Improved connectivity
  - Reduced impact to adjacent properties



South Linden Avenue and Scott Street Grade Separation Planning Study



# Alternative 2: Hybrid (Track Lowered, Roadway Raised)

## South Linden Avenue Layout

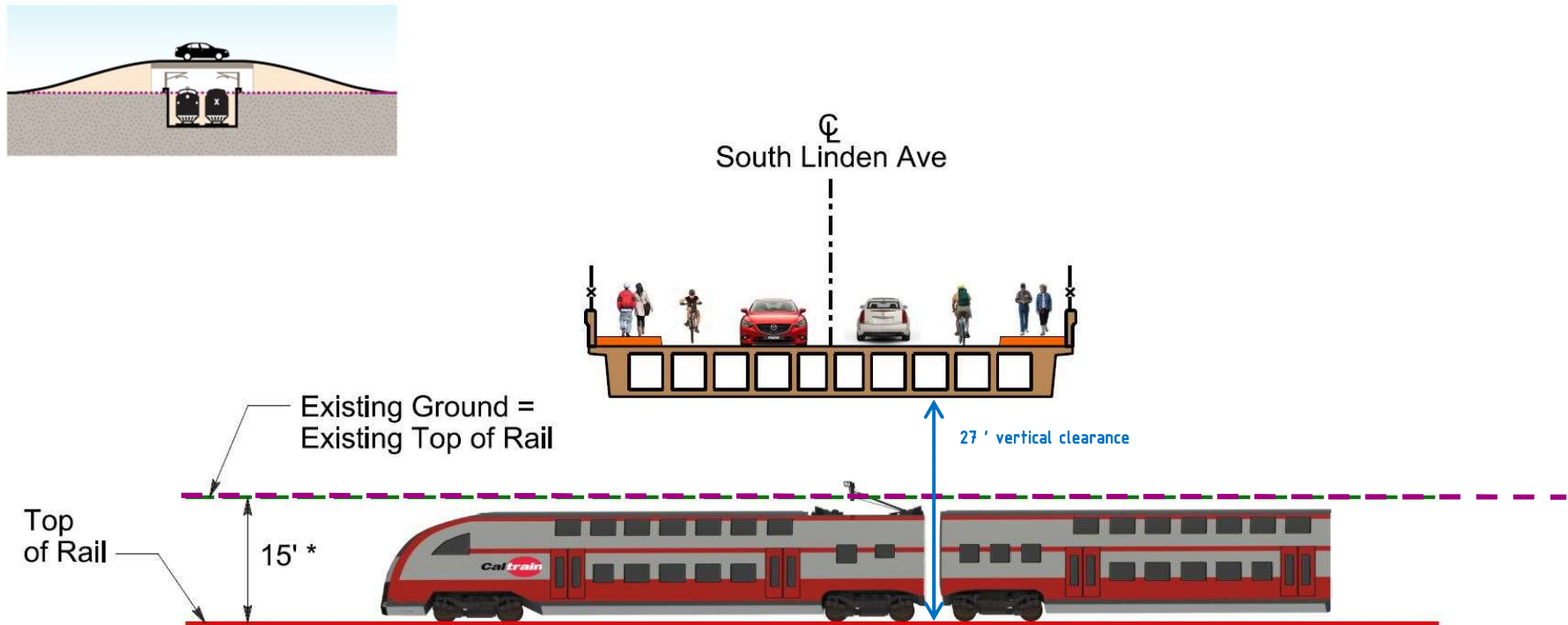


South Linden Avenue and Scott Street Grade Separation Planning Study



# Alternative 2: Hybrid (Track Lowered, Roadway Raised)

## South Linden Avenue Typical Section



\* Elevation difference between the proposed and existing top of rail at the centerline of South Linden Avenue

South Linden Avenue and Scott Street Grade Separation Planning Study



# Alternative 3: Rail at grade with Roadway Underpass

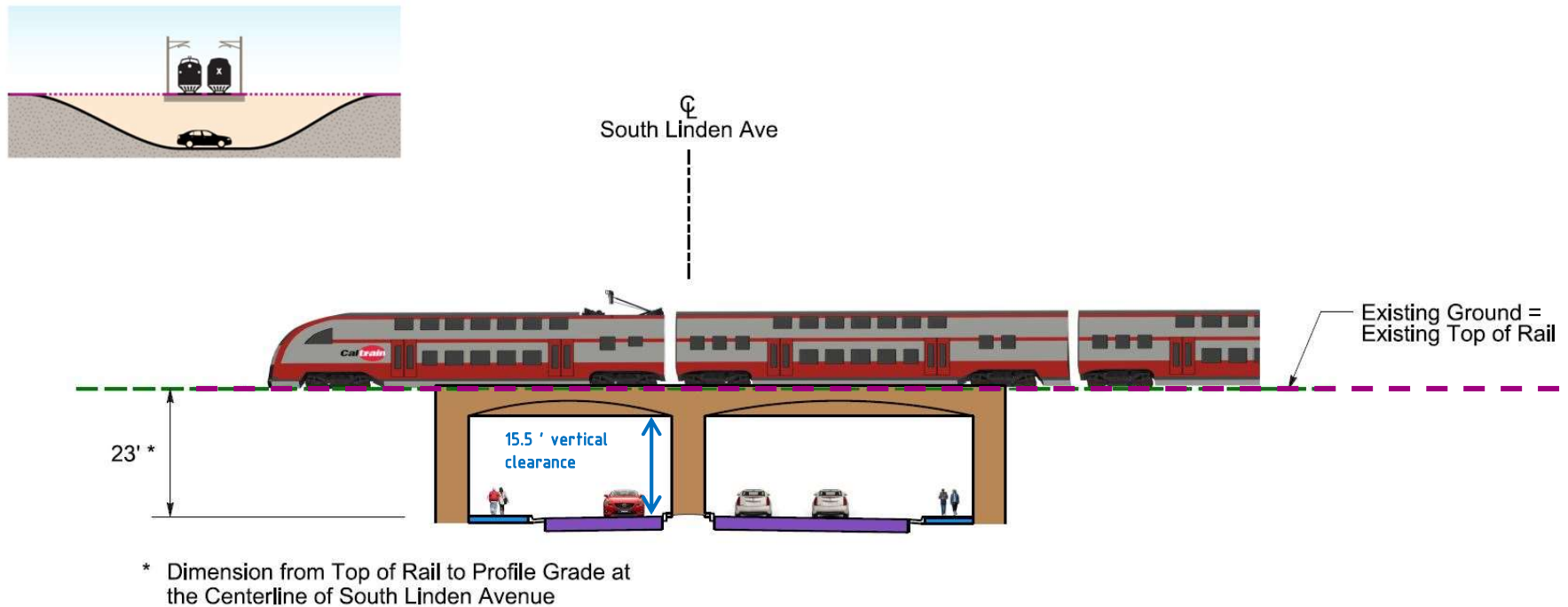
## South Linden Avenue Layout



South Linden Avenue and Scott Street Grade Separation Planning Study



# Alternative 3: Rail at grade with Roadway Underpass South Linden Avenue Typical Section



## South Linden Avenue and Scott Street Grade Separation Planning Study





# Underpass Alternative

- Jefferson Avenue, Redwood City
- Issues
  - Retaining walls
  - Limits access to adjacent properties
  - Side street connectivity

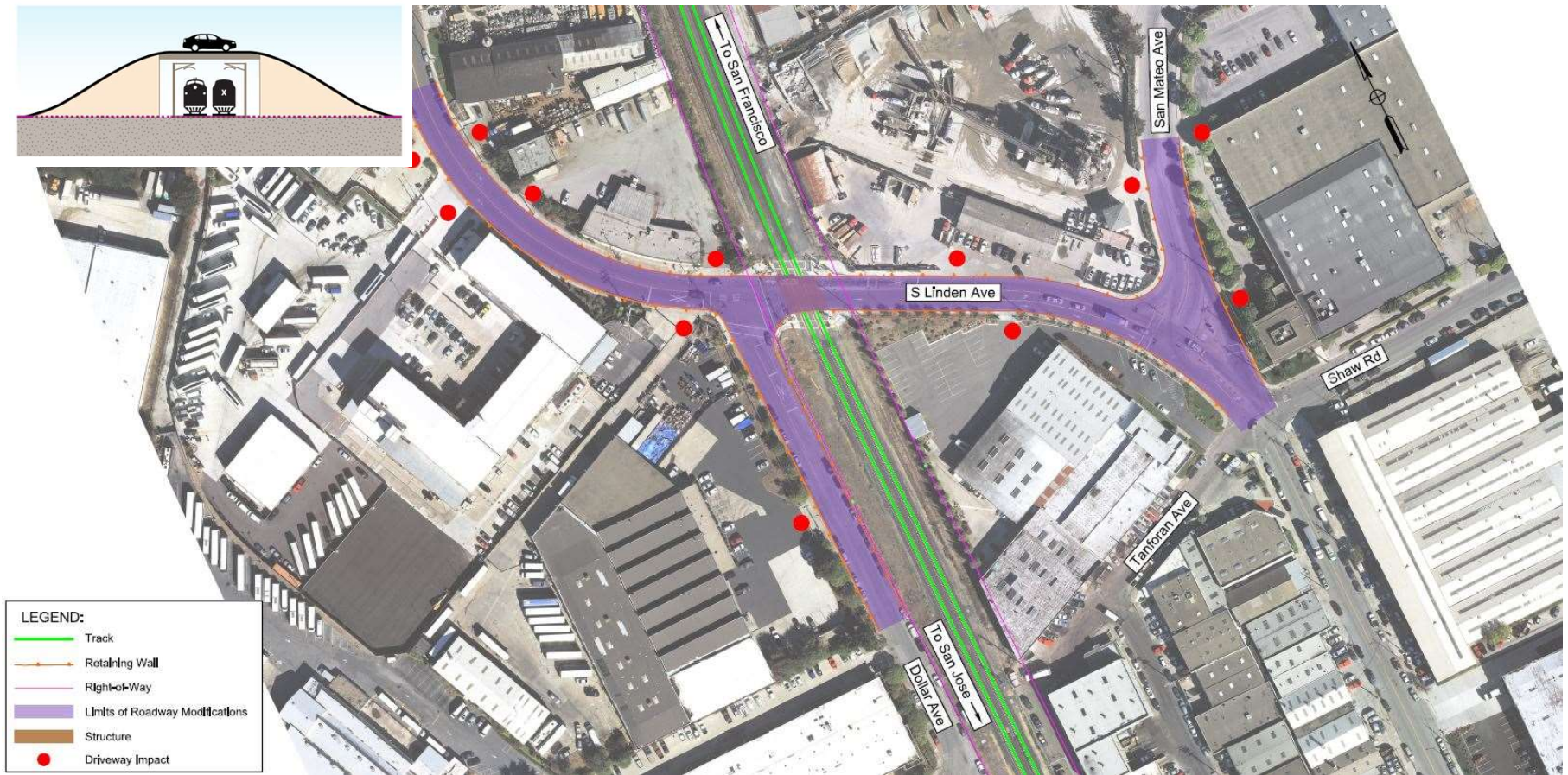


South Linden Avenue and Scott Street Grade Separation Planning Study



# Alternative 4: Rail at grade with Roadway Overpass

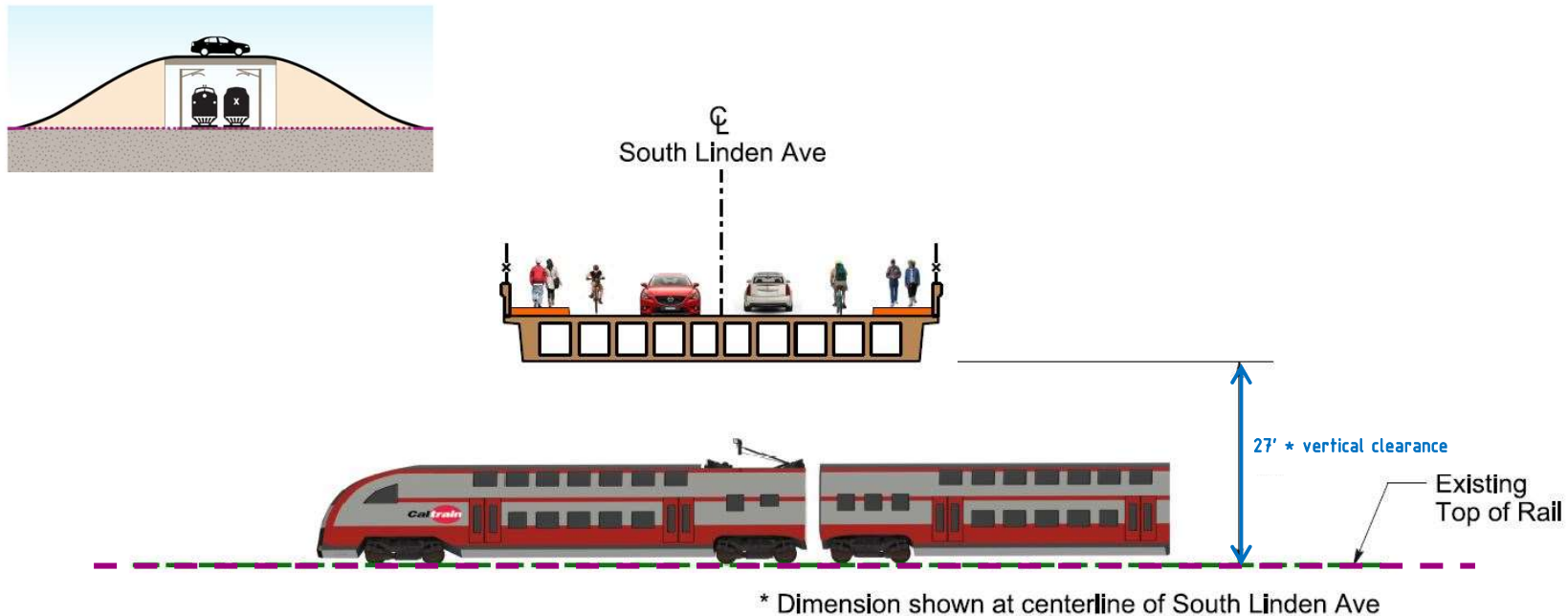
## South Linden Avenue Layout



South Linden Avenue and Scott Street Grade Separation Planning Study



# Alternative 4: Rail at grade with Roadway Overpass South Linden Avenue – Typical Section



South Linden Avenue and Scott Street Grade Separation Planning Study



# Overpass Alternative

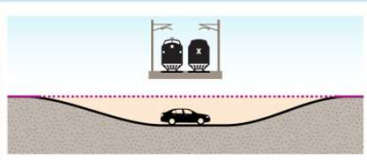
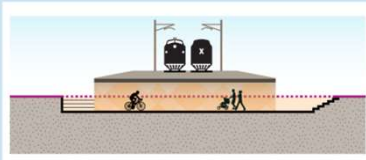
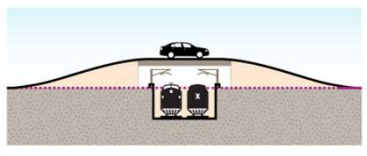

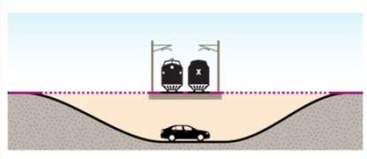
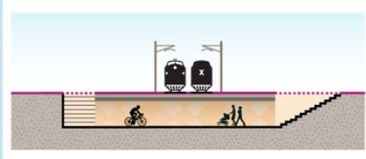
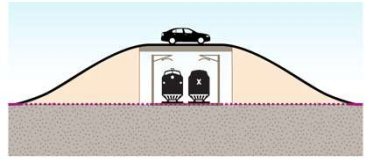
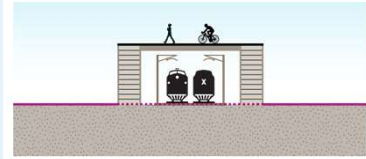
- San Antonio Road, Mountain View
- Issues
  - Requires 30 ft bridge
  - Overpass length: 1,100 ft
  - Requires raising El Camino Real
  - Major visual impacts
  - Largest footprint



South Linden Avenue and Scott Street Grade Separation Planning Study



# Summary of Alternatives

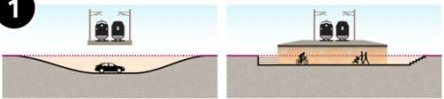
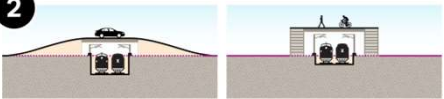
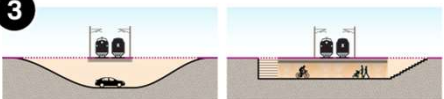
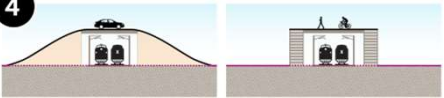
Alt	South Linden Avenue	Scott Street
1	 <ul style="list-style-type: none"> <li>▪ Rail Elevated</li> <li>▪ Roads Lowered</li> </ul>	 <ul style="list-style-type: none"> <li>▪ Rail Elevated</li> <li>▪ Road Closed</li> <li>▪ Ped/Bike Tunnel</li> </ul>
2	 <ul style="list-style-type: none"> <li>▪ Rail Lowered</li> <li>▪ Roads Elevated</li> </ul>	 <ul style="list-style-type: none"> <li>▪ Rail Lowered</li> <li>▪ Road Closed</li> <li>▪ Ped/Bike Crossing*</li> </ul>
3	 <ul style="list-style-type: none"> <li>▪ Rail At-Grade</li> <li>▪ Roads Fully Lowered</li> </ul>	 <ul style="list-style-type: none"> <li>▪ Rail At-Grade</li> <li>▪ Road Closed</li> <li>▪ Ped/Bike Crossing*</li> </ul>
4	 <ul style="list-style-type: none"> <li>▪ Rail At-Grade</li> <li>▪ Roads Fully Elevated</li> </ul>	 <ul style="list-style-type: none"> <li>▪ Rail At-Grade</li> <li>▪ Road Closed</li> <li>▪ Ped/Bike Crossing*</li> </ul>

\* A Ped/Bike Underpass (Tunnel) or an Overcrossing can be designed for this alternative

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# Advantages & Disadvantages

Alternative	Advantages	Disadvantages
<p><b>1</b></p>  <p><b>South Linden Avenue</b> Rail Partially Elevated/ Roadway Partially Lowered</p> <p><b>Scott Street</b> Rail Partially Elevated with a Pedestrian/Bike Underpass</p>	<ul style="list-style-type: none"> <li>▪ <b>Least Property Impacts</b></li> <li>▪ <b>Lowest Cost (Probable)</b></li> </ul>	<ul style="list-style-type: none"> <li>▪ <b>Shoofly Required*</b></li> </ul>
<p><b>2</b></p>  <p><b>South Linden Avenue</b> Rail Lowered, Roadway Elevated</p> <p><b>Scott Street</b> Rail Lowered with a Ped/Bike Overpass or Underpass</p>	<ul style="list-style-type: none"> <li>▪ <b>Reduces Train Noise (Rail Elevation Lowered)</b></li> </ul>	<ul style="list-style-type: none"> <li>▪ <b>More Property Impacts than Alt 1</b></li> <li>▪ <b>Shoofly Required*</b></li> <li>▪ <b>High Cost</b></li> </ul>
<p><b>3</b></p>  <p><b>South Linden Avenue</b> Rail Partially Elevated/ Roadway Partially Lowered</p> <p><b>Scott Street</b> Rail Partially Elevated with a Pedestrian/Bike Underpass</p>	<ul style="list-style-type: none"> <li>▪ <b>Rail Remains At-Grade</b></li> </ul>	<ul style="list-style-type: none"> <li>▪ <b>More Property Impacts than Alt 1</b></li> <li>▪ <b>Limits Access to Adjacent Properties</b></li> <li>▪ <b>Greatest Impacts to Sidestreets</b></li> <li>▪ <b>Shoofly Required*</b></li> <li>▪ <b>High Cost</b></li> </ul>
<p><b>4</b></p>  <p><b>South Linden Avenue</b> Rail at-grade, Roadway Elevated</p> <p><b>Scott Street</b> Rail at-grade with a Ped/Bike Overpass or Underpass</p>	<ul style="list-style-type: none"> <li>▪ <b>Rail Remains At-Grade</b></li> <li>▪ <b>No Shoofly Required</b></li> </ul>	<ul style="list-style-type: none"> <li>▪ <b>Greatest Property Impacts</b></li> <li>▪ <b>Visual impacts</b></li> <li>▪ <b>High Cost</b></li> </ul>

\* Shoofly will result in disruption to traffic on Dollar/ Herman during construction

South Linden Avenue and Scott Street Grade Separation Planning Study



Thank you

The background is a solid blue color. On the right side, there are several thin white lines that intersect to form a series of overlapping triangles and quadrilaterals, creating a geometric pattern.