

# COMMUNITY MEETING

November 7, 2019





# Agenda

- Welcome & Update
- Project Background & Purpose
- Overview of Churchill Ave & South Palo Alto Tunnel Alternatives
- Q & A
- Break-out Stations
  - Churchill Ave
  - South Palo Alto Tunnel
  - Evaluation Matrix & Engineering Impacts
  - City Staff & Other Crossings
  - Traffic
  - Noise/Vibration
  - Creeks/Drainage
- Station Report Out
- Next Steps



## Ed Shikada City Manager



- Community Advisory Panel (CAP) was replaced by the Extended Community Advisory Panel (XCAP).
- City Council modified the list of current alternatives including eliminating the Citywide Tunnel from consideration and adding the Churchill Viaduct and the South Palo Alto Tunnels.
- Palo Alto Ave was removed and will be studied through a separate coordinated area plan due to its proximity to Downtown.
- City Council began to explore the feasibility of greater levels of local funding in the form of fees or taxes.

## Background: What is an at-grade crossing?

Also known as a “railroad crossing”... a location where a roadway and sidewalk cross railroad tracks at grade (same level as the street).

Drop-down gates and red flashing lights are used to stop traffic when a train approaches.

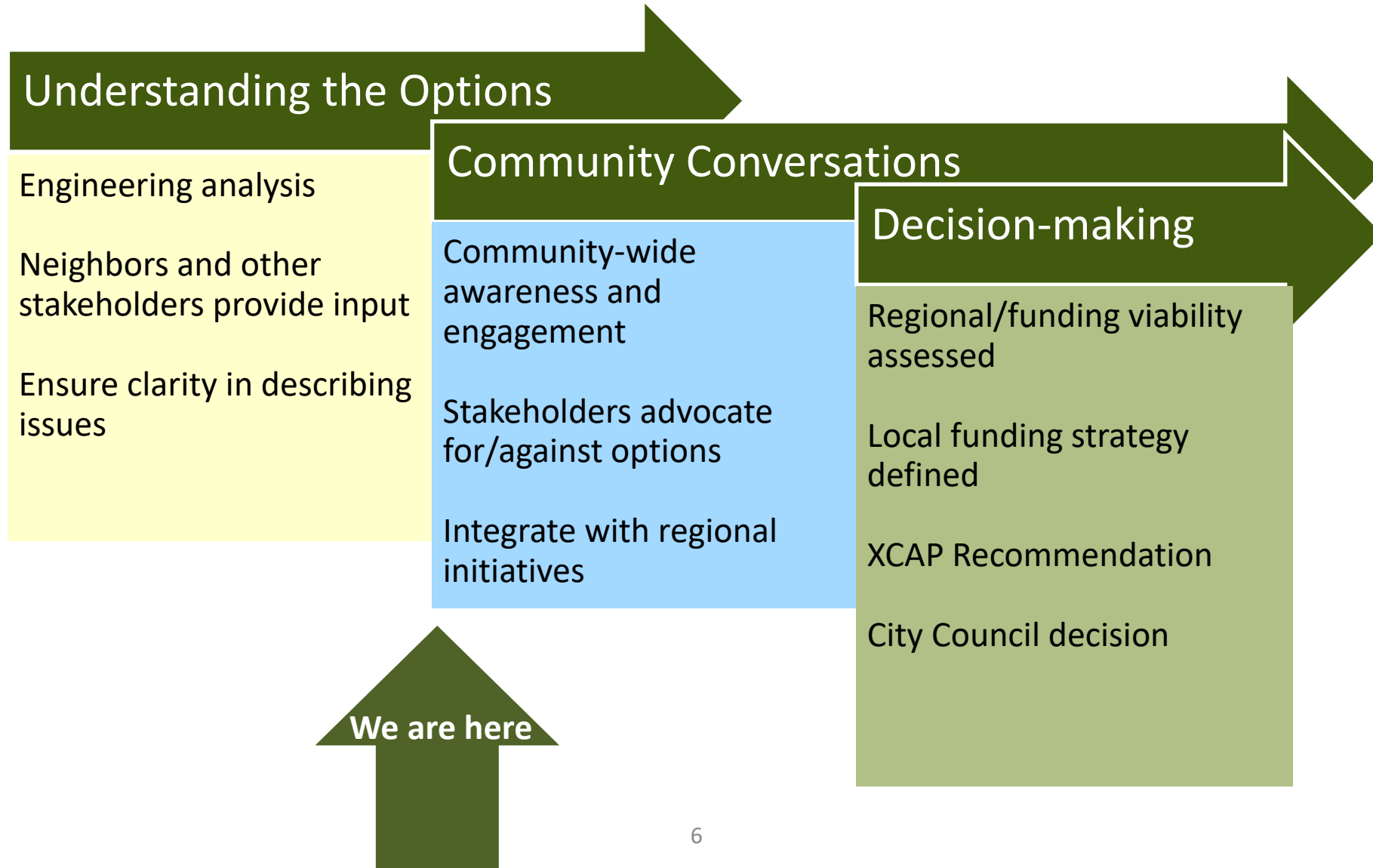


At-Grade Crossing  
Meadow Drive and Caltrain Tracks

# Community-Driven Process

- The City is guiding a community-based process to address impacts caused from Caltrain electrification and the increased service impacts on Palo Alto grade crossings
- Expanded Community Advisory Panel (XCAP) work continues and will inform the City Council's decision as one form of input
- Timing is for the City Council to decide in Spring 2020 on preferred alternatives
- Goal is to gain community feedback all along the way throughout this process
- Today's community meeting is the beginning of our next phase and community engagement is planned now through Spring 2020

# Connecting Palo Alto Phases



# Community Conversations

- New website is launched
  - Evolving Frequently Asked Questions based on input tonight and through the process
- New blog series has begun to inform and bring the community up to speed
- New fact sheets are available tonight – seeking input on these as well
- Creating new collateral to answer questions and inform

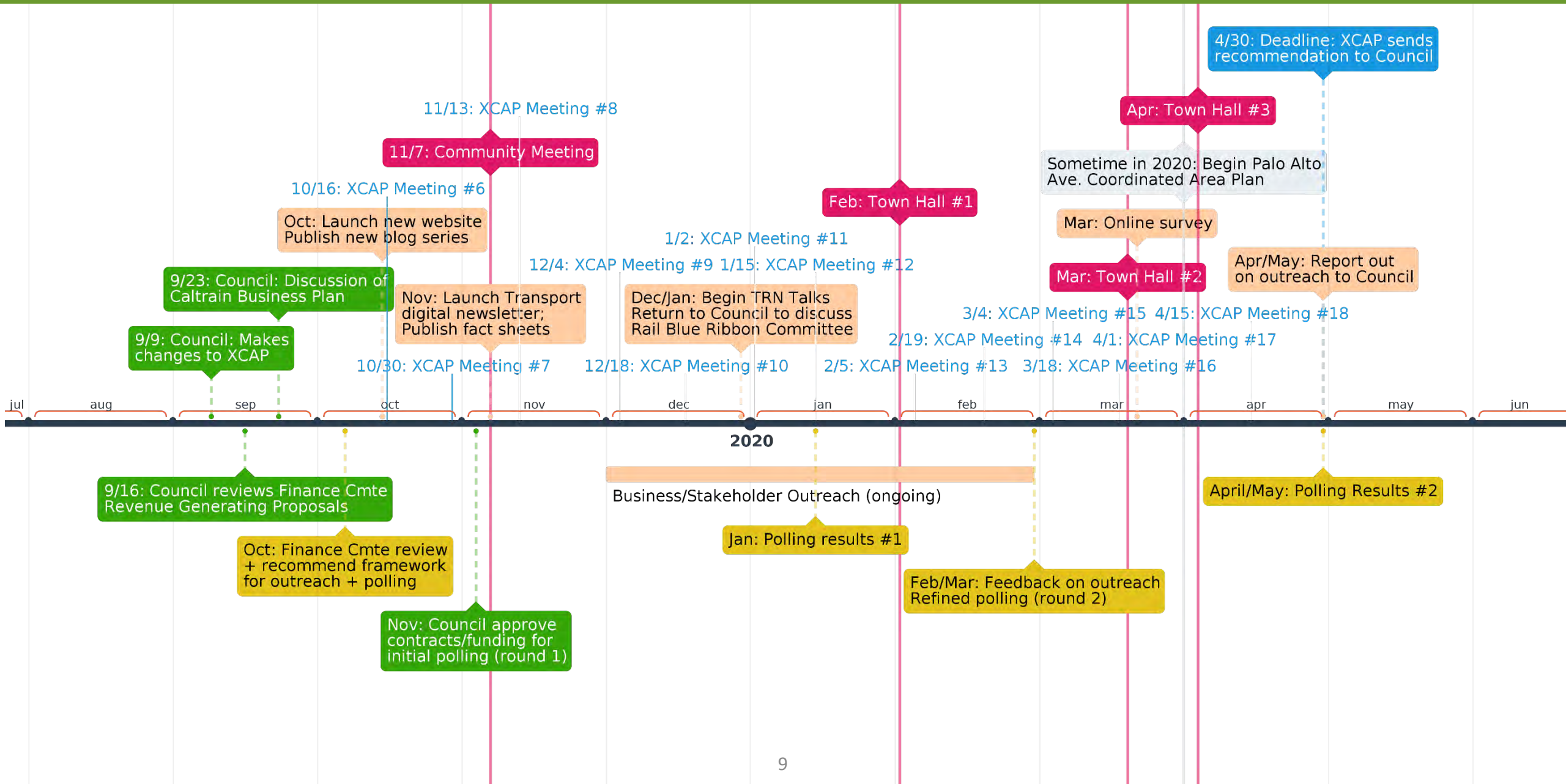


# Community Conversations

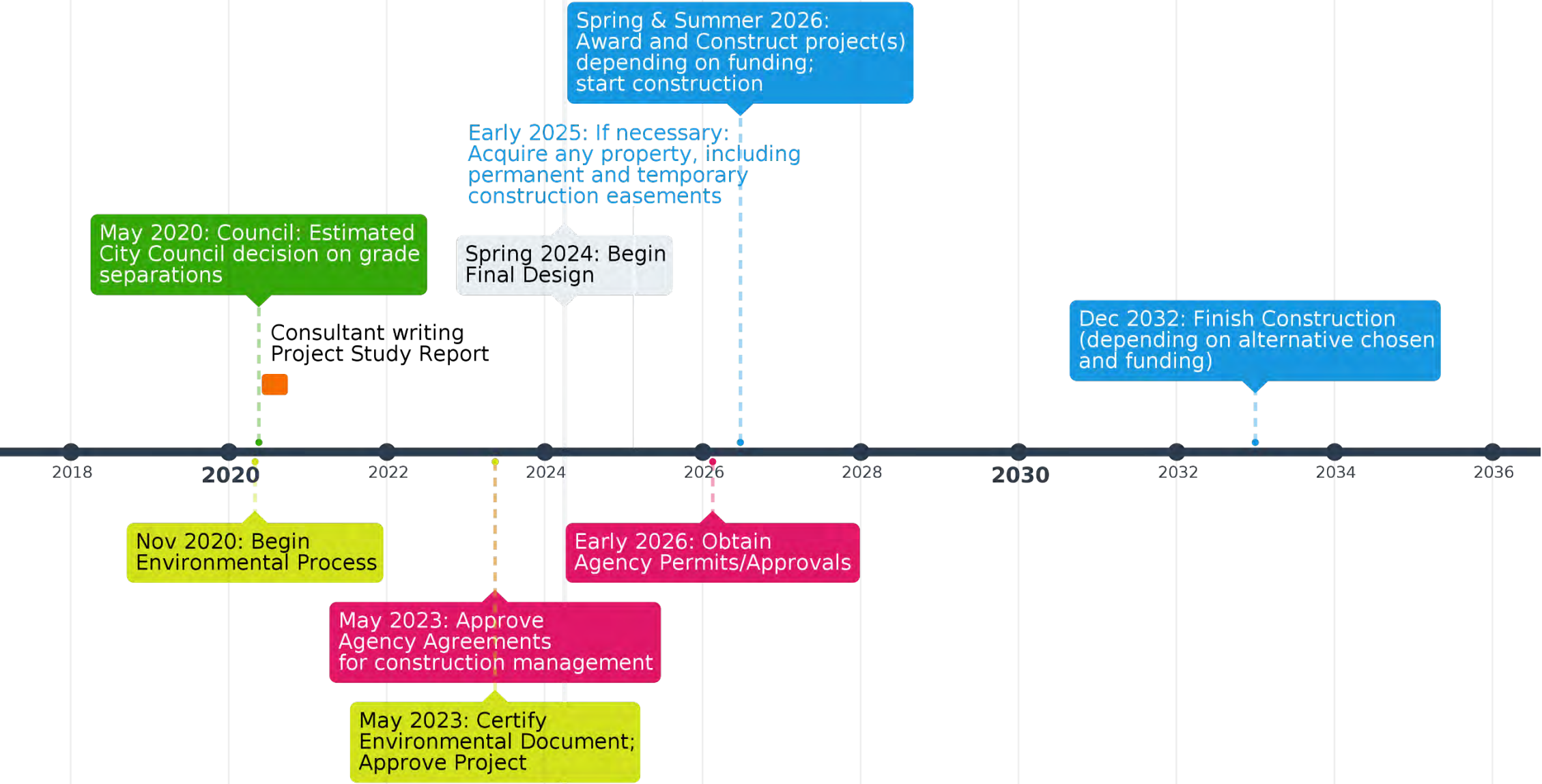
- Planning three Town Halls in 2020
- Attending upcoming community events
- Launching informal conversations about transportation efforts, including rail
- Developing several online surveys to engage and gain community input



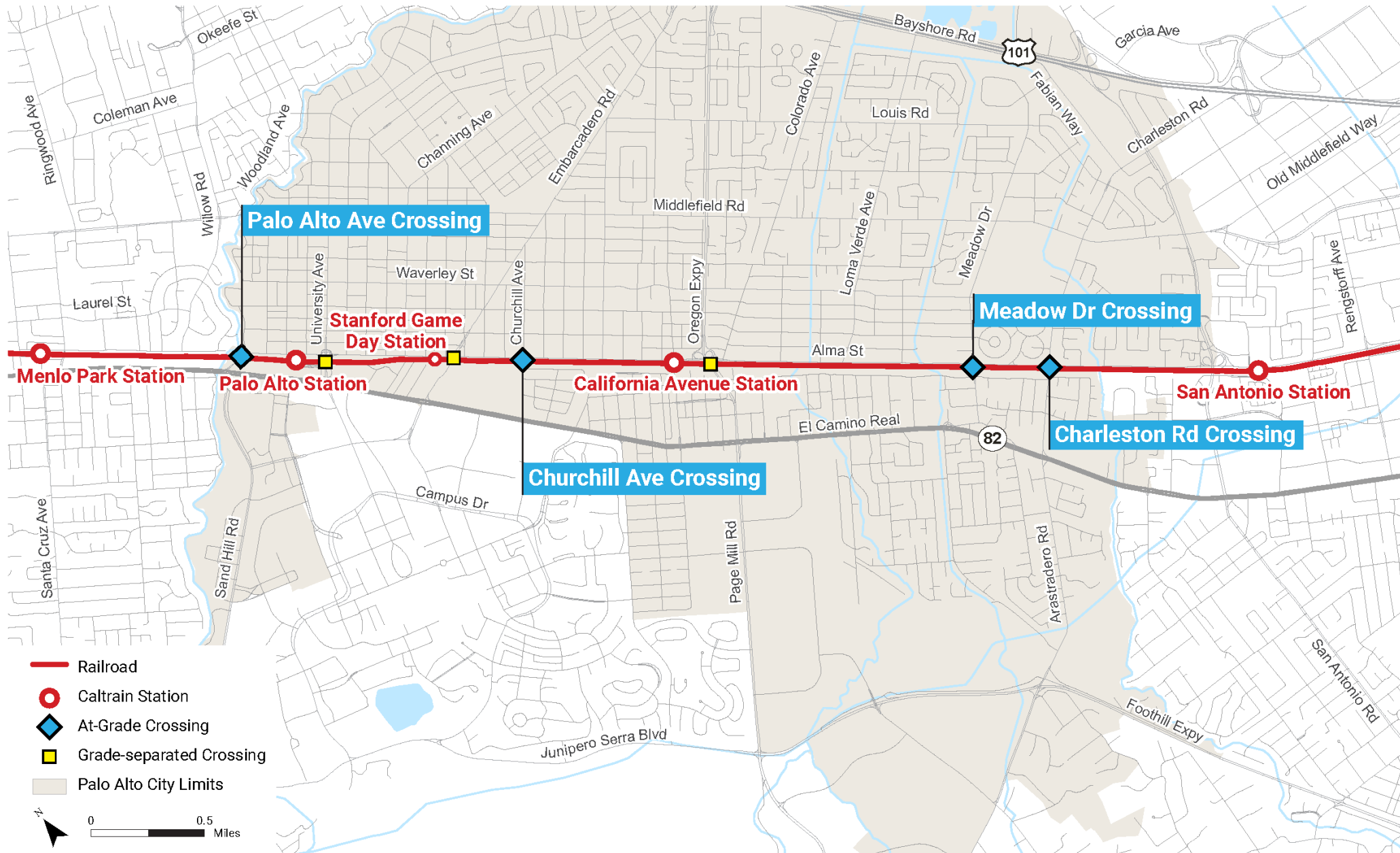
# Estimated Timeline – September 2019 through Spring 2020



# Estimated Timeline – Spring 2020 through the end of construction



# Palo Alto Existing At-Grade Crossings





# Near Miss: Vehicle Stopped on Tracks





# Why is the City undertaking this effort?

## Increase Public Safety (vehicular, bicycle, and pedestrian)

- Eliminate pedestrian, bicyclist and motor vehicle conflicts with the railroad
- Improve pedestrian and bicycle access

## Improve Traffic Circulation/Mobility

- Reduce traffic delays caused by gate down times
- Improve traffic flow across railroad crossing

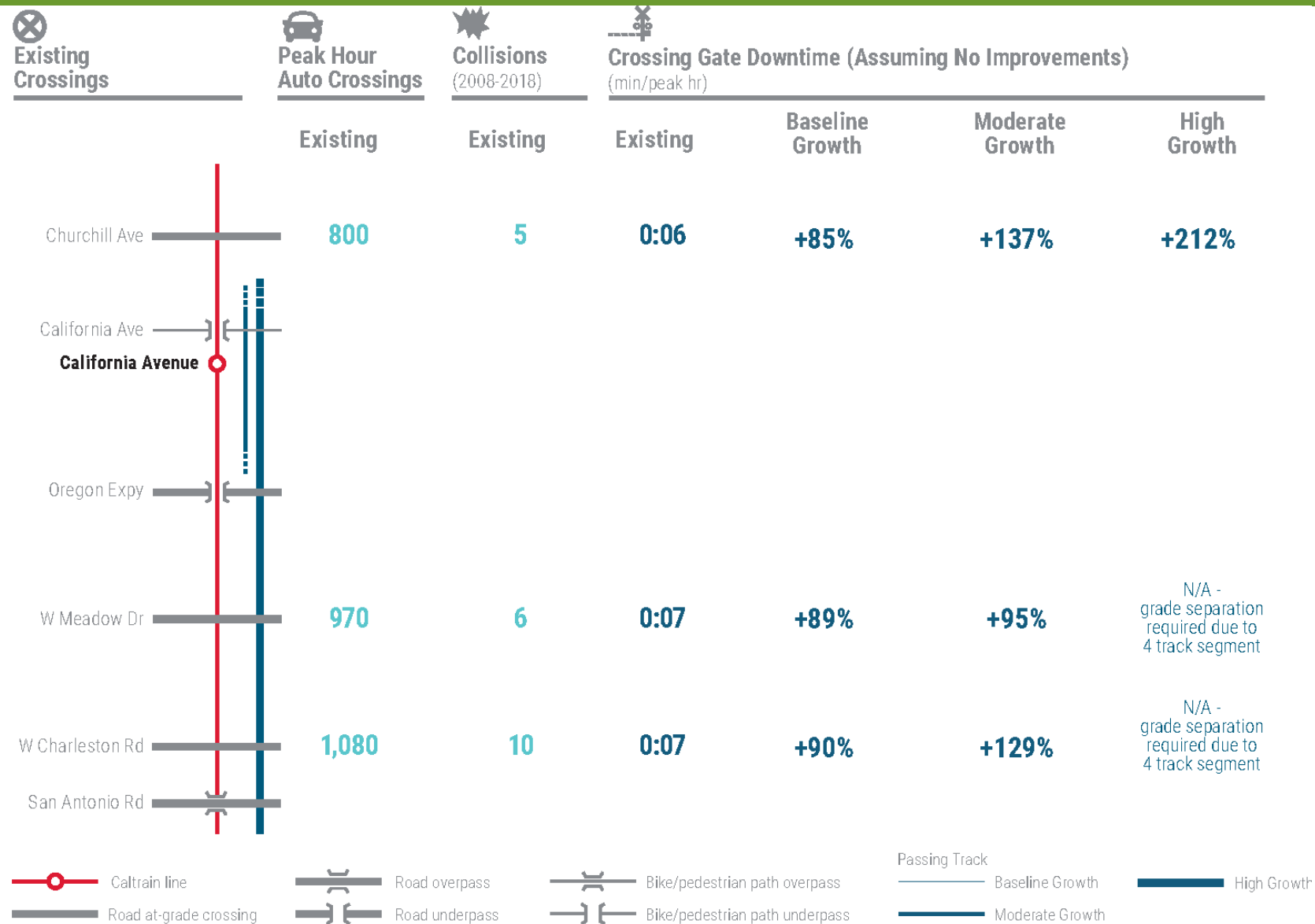
California's most dangerous grade crossings:

#4 CHARLESTON ROAD

#5 MEADOW DRIVE

#15 CHURCHILL AVENUE

# Caltrain's 2040 Vision -Gate Down Times

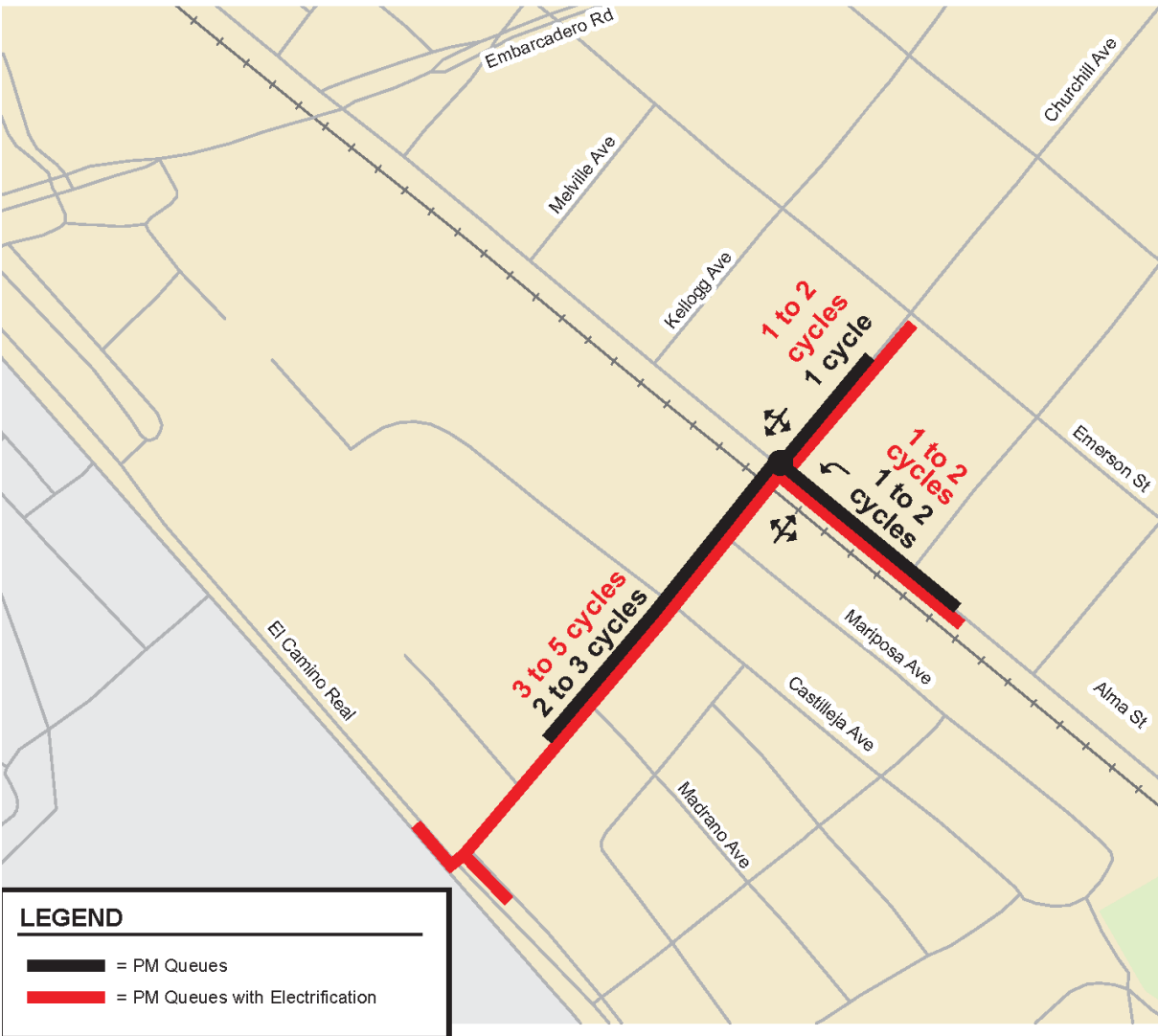


**Note:** Conceptual 4 Track Segment to be refined through further analysis and community engagement.

Source: Caltrain Business Plan, Developing a Long-Range Vision, City of Palo Alto Booklet, May 2019

# Excessive Queue Lengths

## PM Queues



## AM Queues



# Alternatives Still Under Consideration



## Meadow / Charleston Trench

- Lower the railroad below the roadways at Meadow and Charleston



## Meadow / Charleston Hybrid

- Partially lower the roads and partially elevate the tracks at Meadow and Charleston



## Meadow / Charleston Viaduct

- Raise the railroad above the roadways at Meadow and Charleston on structure



## South Palo Alto Tunnel – Passenger & Freight

- Tunnel south of Oregon Expressway under Meadow and Charleston



## South Palo Alto Tunnel with At-Grade Freight

- Tunnel south of Oregon Expressway under Meadow and Charleston with at grade freight



## Churchill Ave. Vicinity Viaduct

- Raise the railroad above the roadways in the vicinity of Churchill on structure

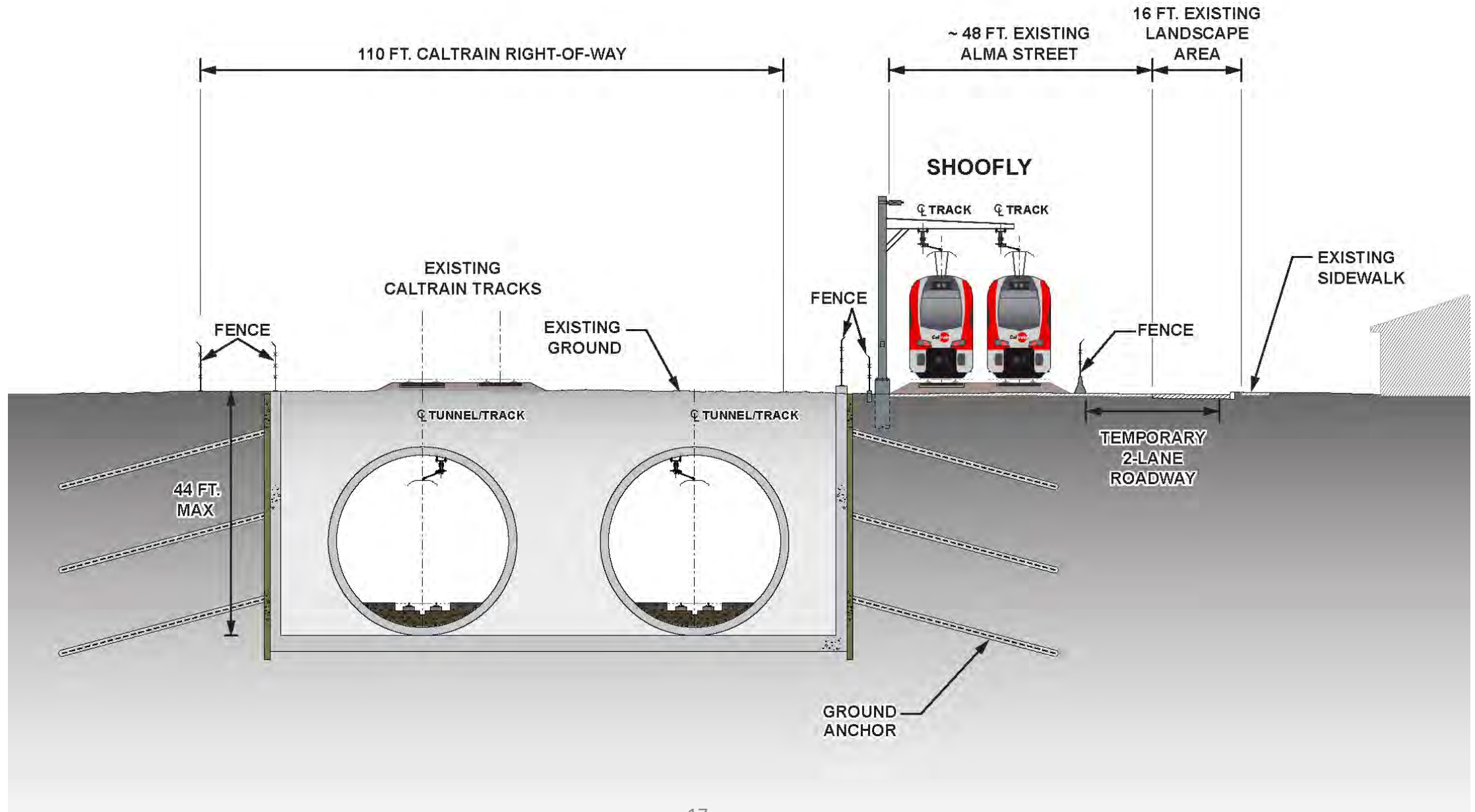


## Churchill Ave. Closure

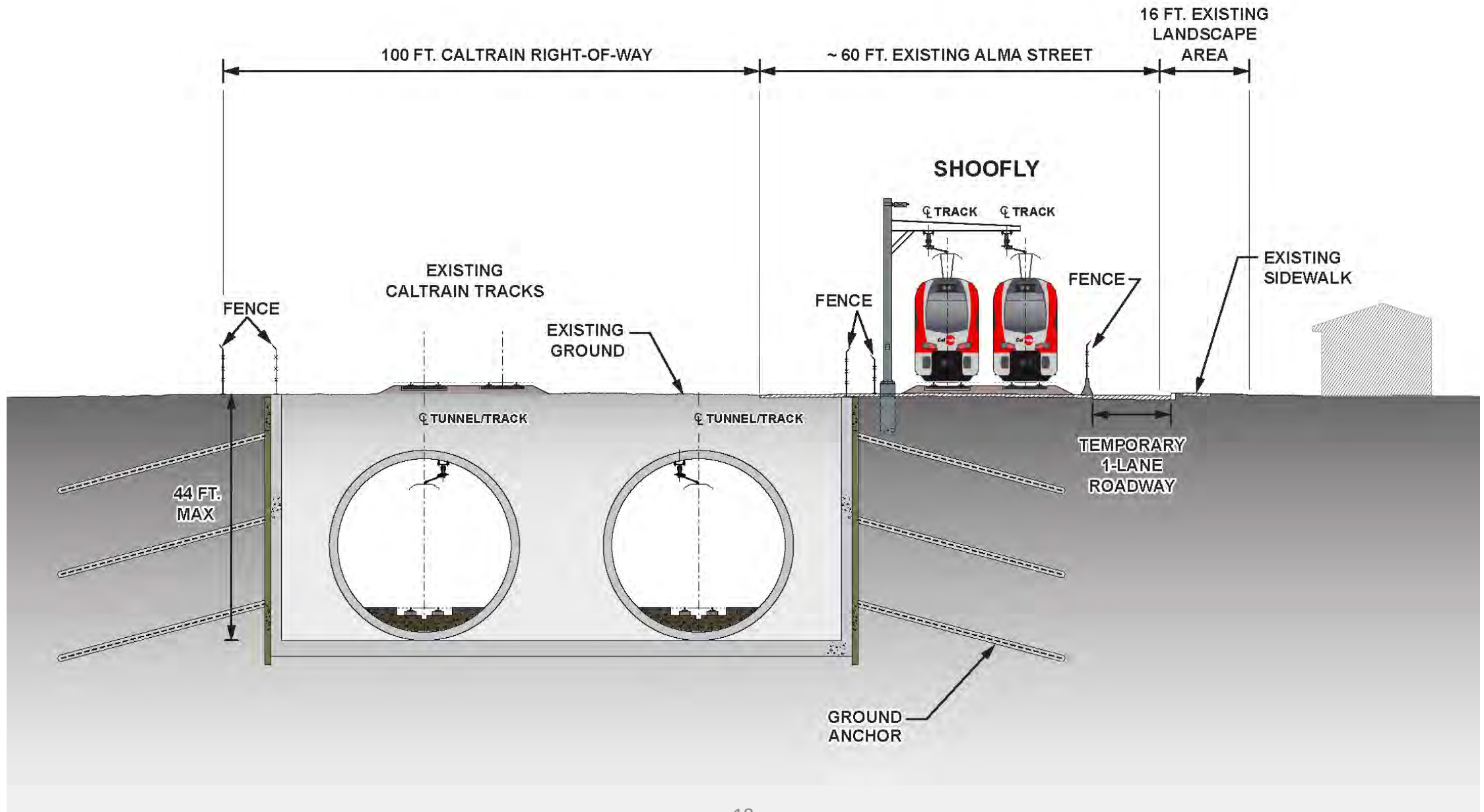
- At-grade crossing to be fully closed at Churchill Ave. with a grade separation for Bike/Ped connectivity. Will also consider all street mitigation options including Embarcadero.



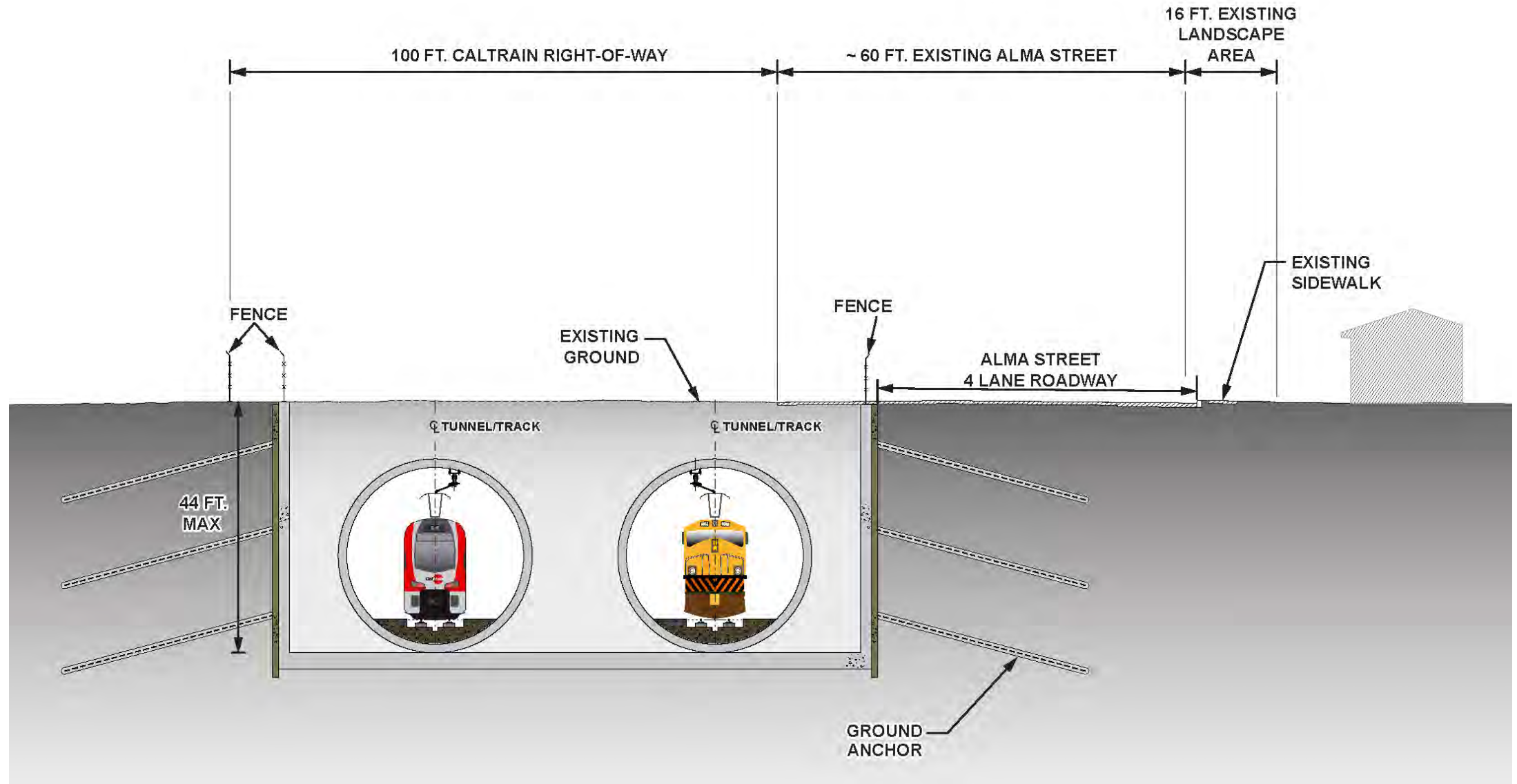
# South Palo Alto Tunnel – Passenger & Freight continued, North Portal Launch Pit



# South Palo Alto Tunnel – Passenger & Freight continued, South Portal Launch Pit

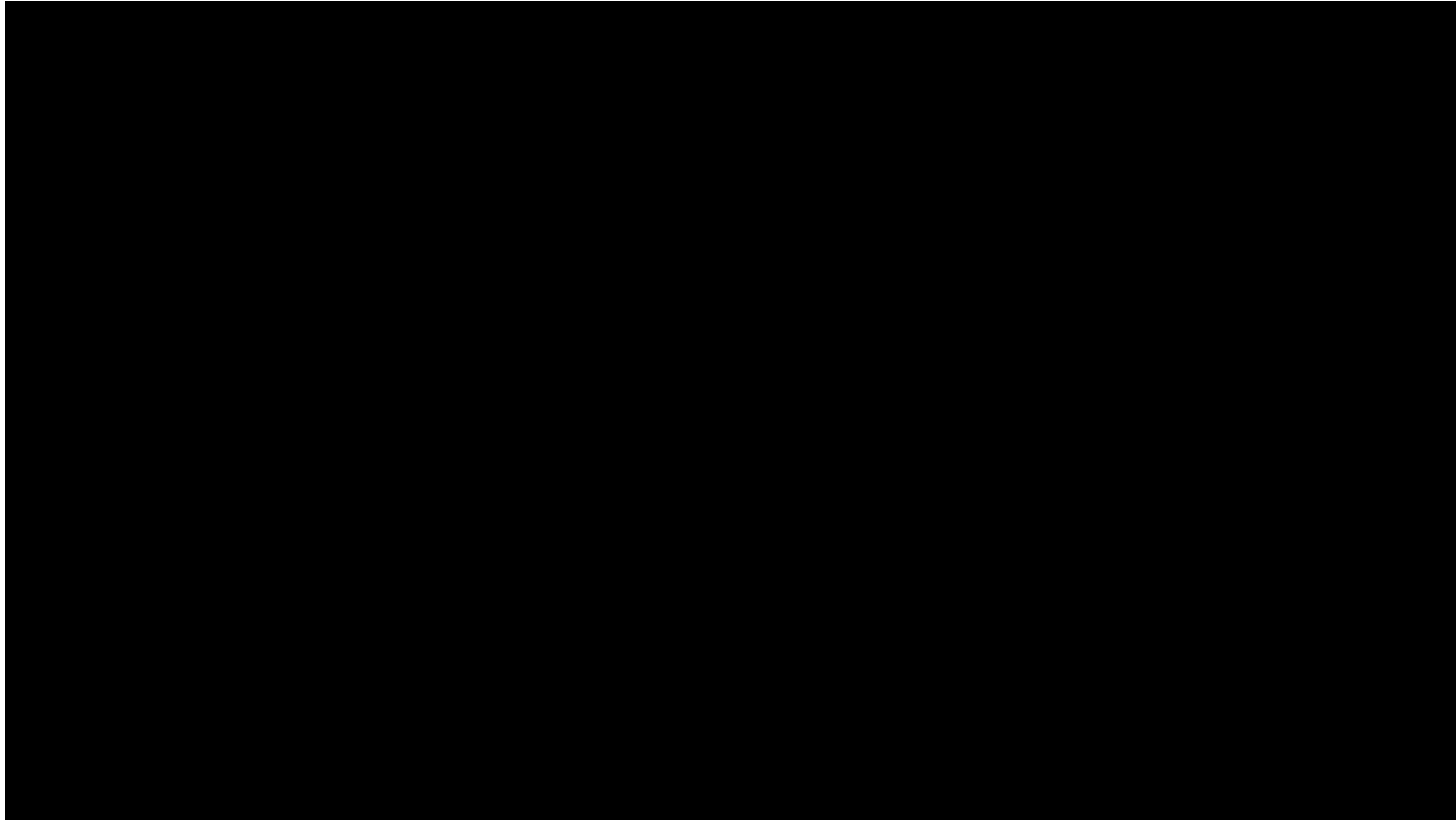


## South Palo Alto Tunnel – Passenger & Freight continued, South Portal Proposed



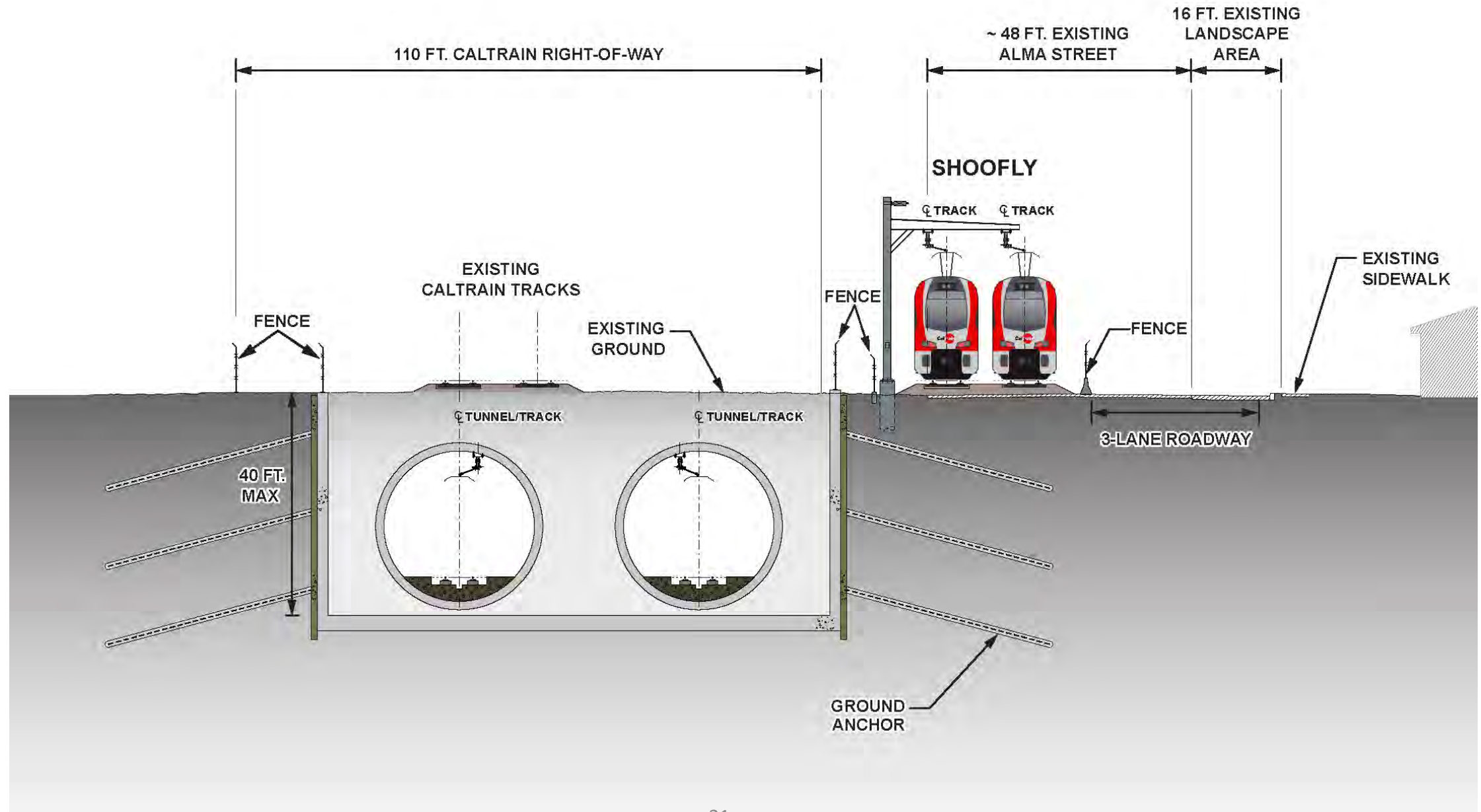
# South Palo Alto Tunnel Passenger & Freight Animation

<https://connectingpaloalto.com/renderings-plans-and-animations/>

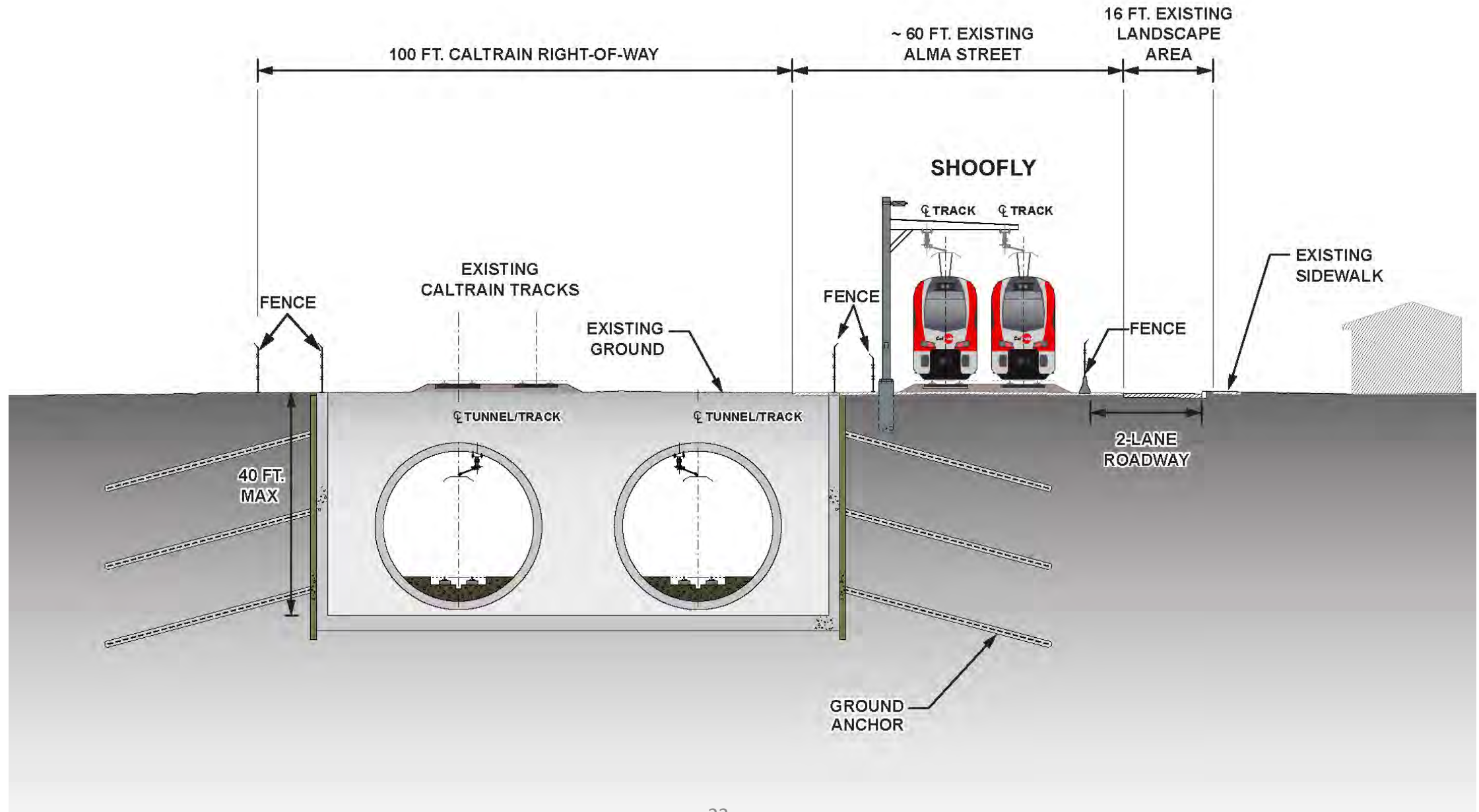




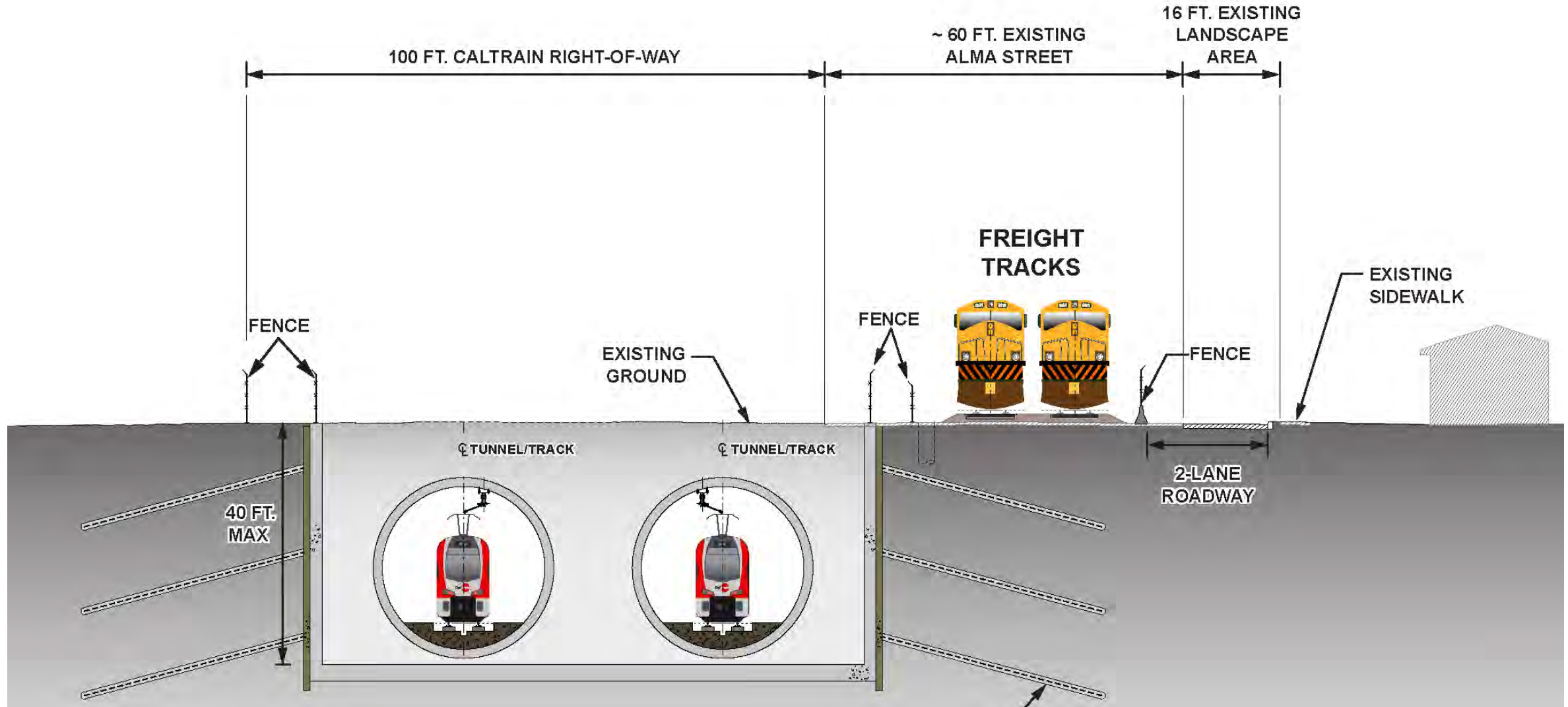
# South Palo Alto Tunnel with At-Grade Freight continued, North Portal Launch Pit



# South Palo Alto Tunnel with At-Grade Freight continued, South Portal Launch Pit

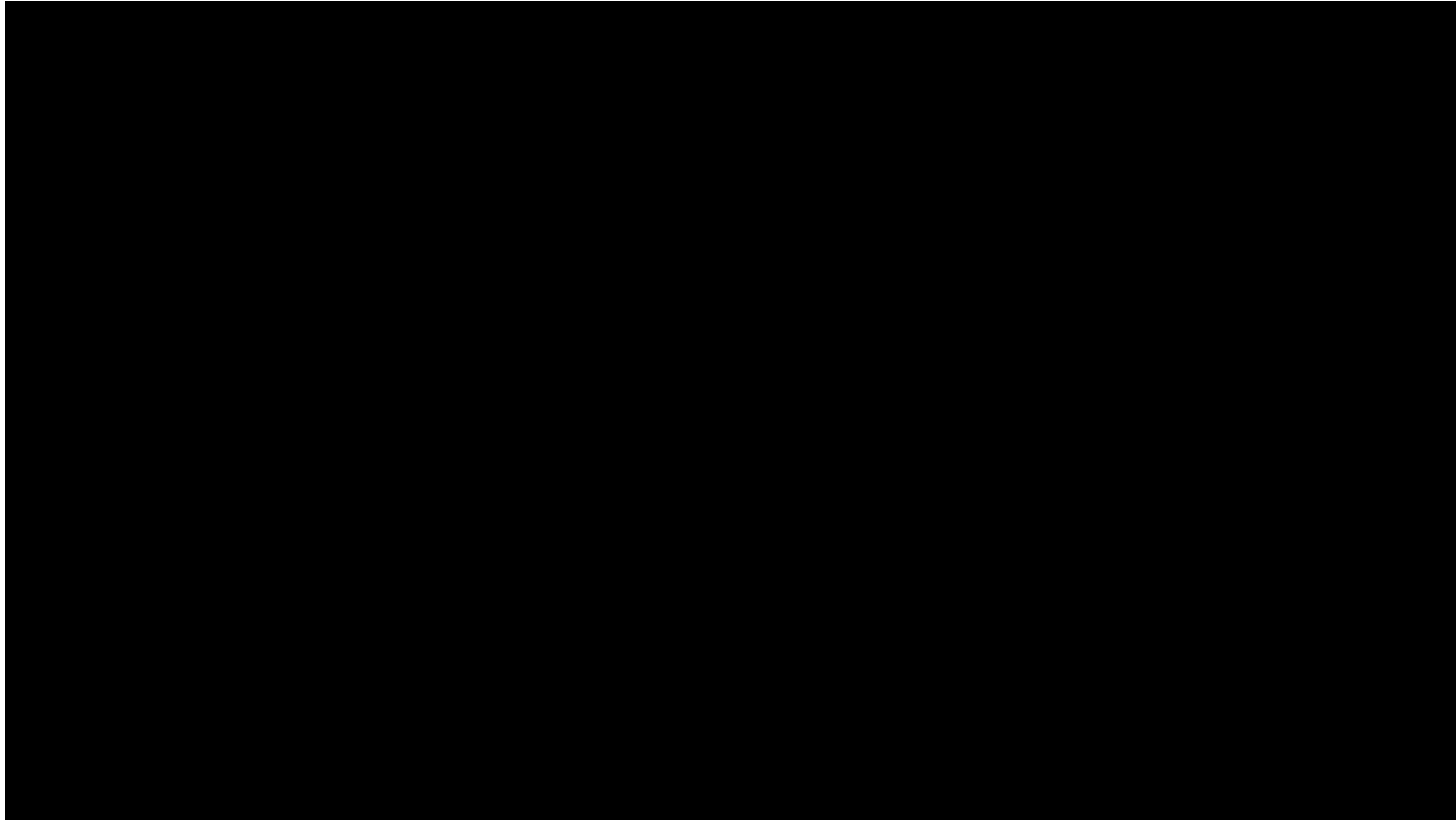


# South Palo Alto Tunnel with At-Grade Freight continued, Tracks in Tunnel



# South Palo Alto Tunnel with At-Grade Freight Animation

<https://connectingpaloalto.com/renderings-plans-and-animations/>





# Alternatives Still Under Consideration



## Meadow / Charleston Trench

- Lower the railroad below the roadways at Meadow and Charleston



## Meadow / Charleston Hybrid

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## Meadow / Charleston Viaduct

- Raise the railroad above the roadways at Meadow and Charleston on structure



## South Palo Alto Tunnel – Passenger & Freight

- Tunnel south of Oregon Expressway under Meadow and Charleston



## South Palo Alto Tunnel with At-Grade Freight

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## Churchill Ave. Vicinity Viaduct

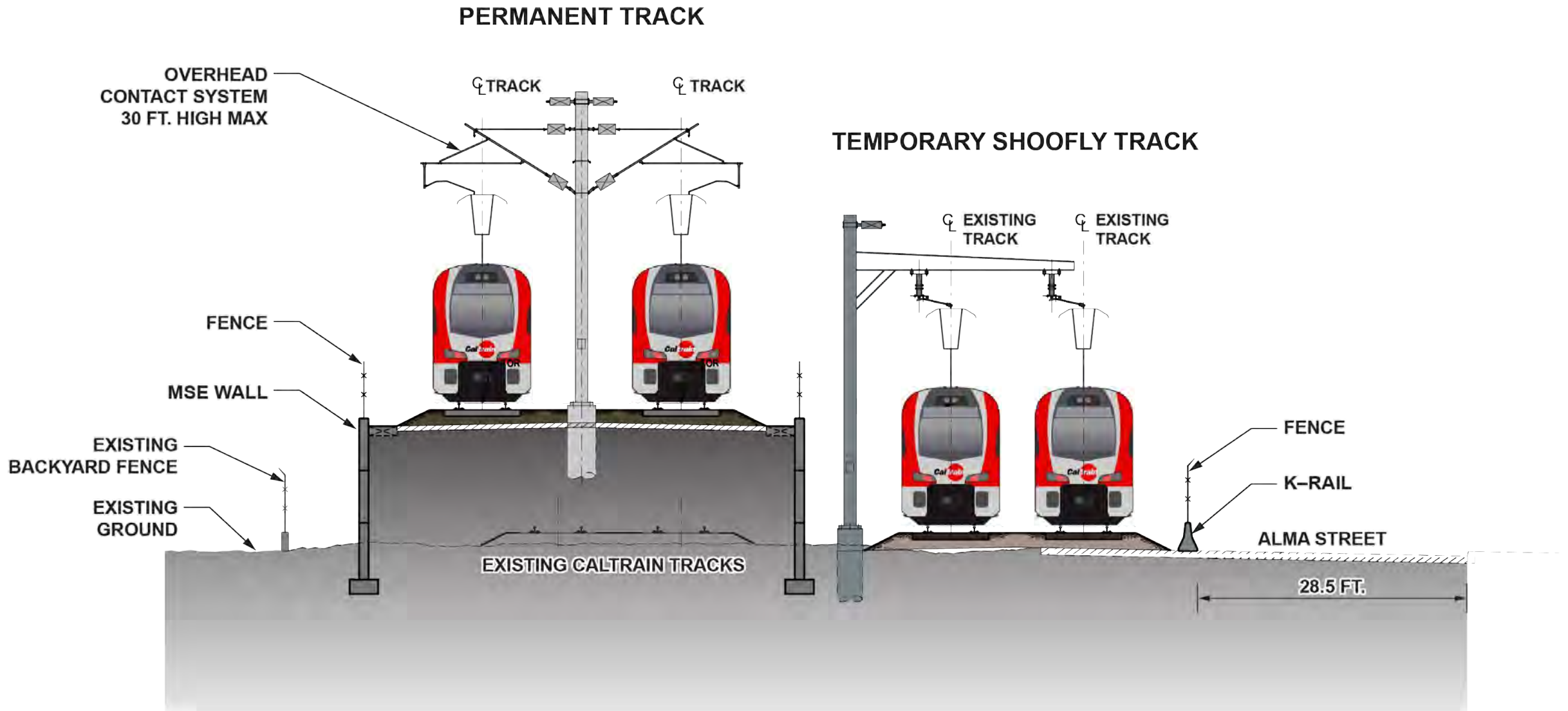
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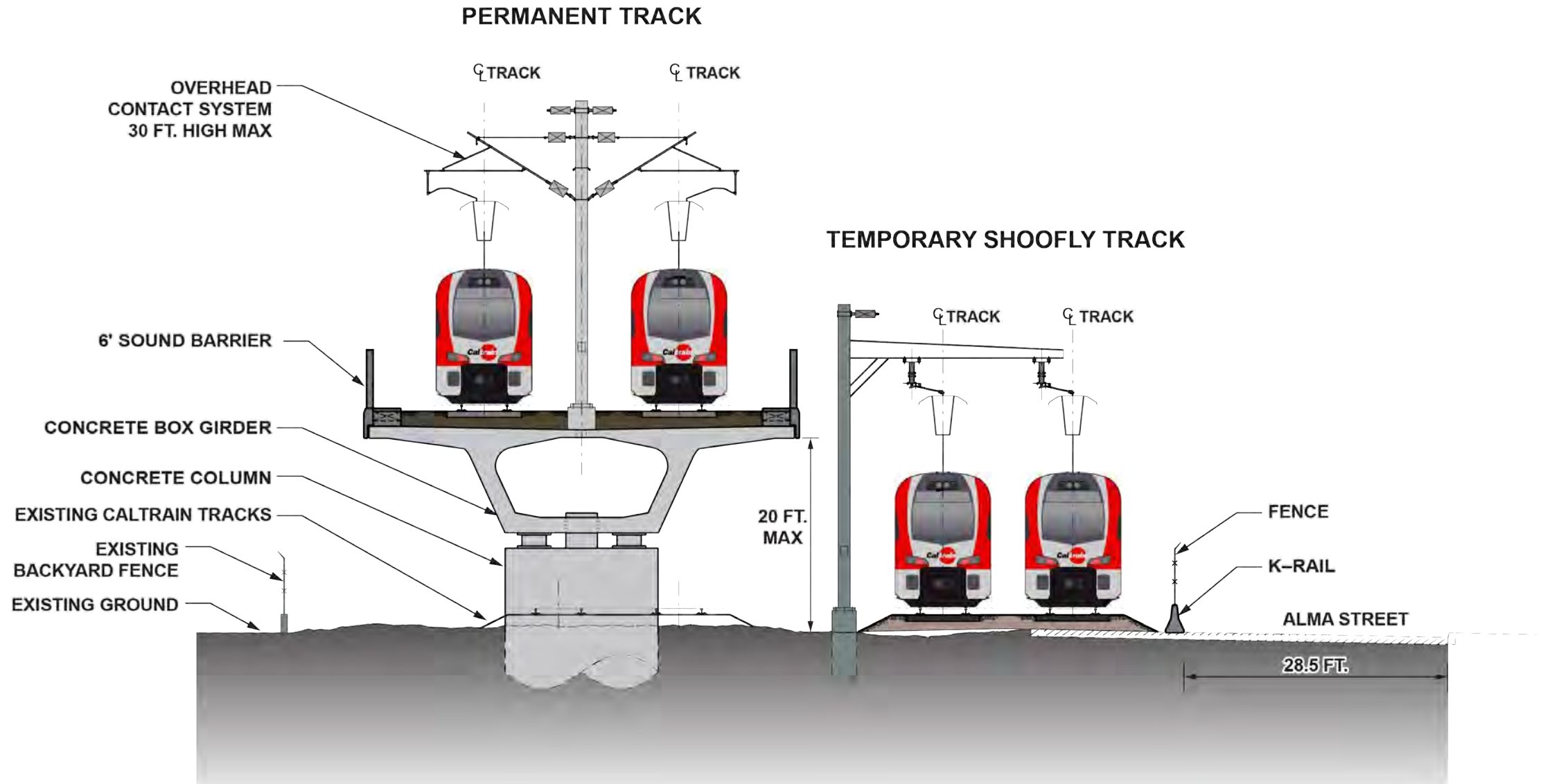
## Churchill Ave. Closure

- At-grade crossing to be fully closed at Churchill Ave. with a grade separation for Bike/Ped connectivity. Will also consider all street mitigation options including Embarcadero.

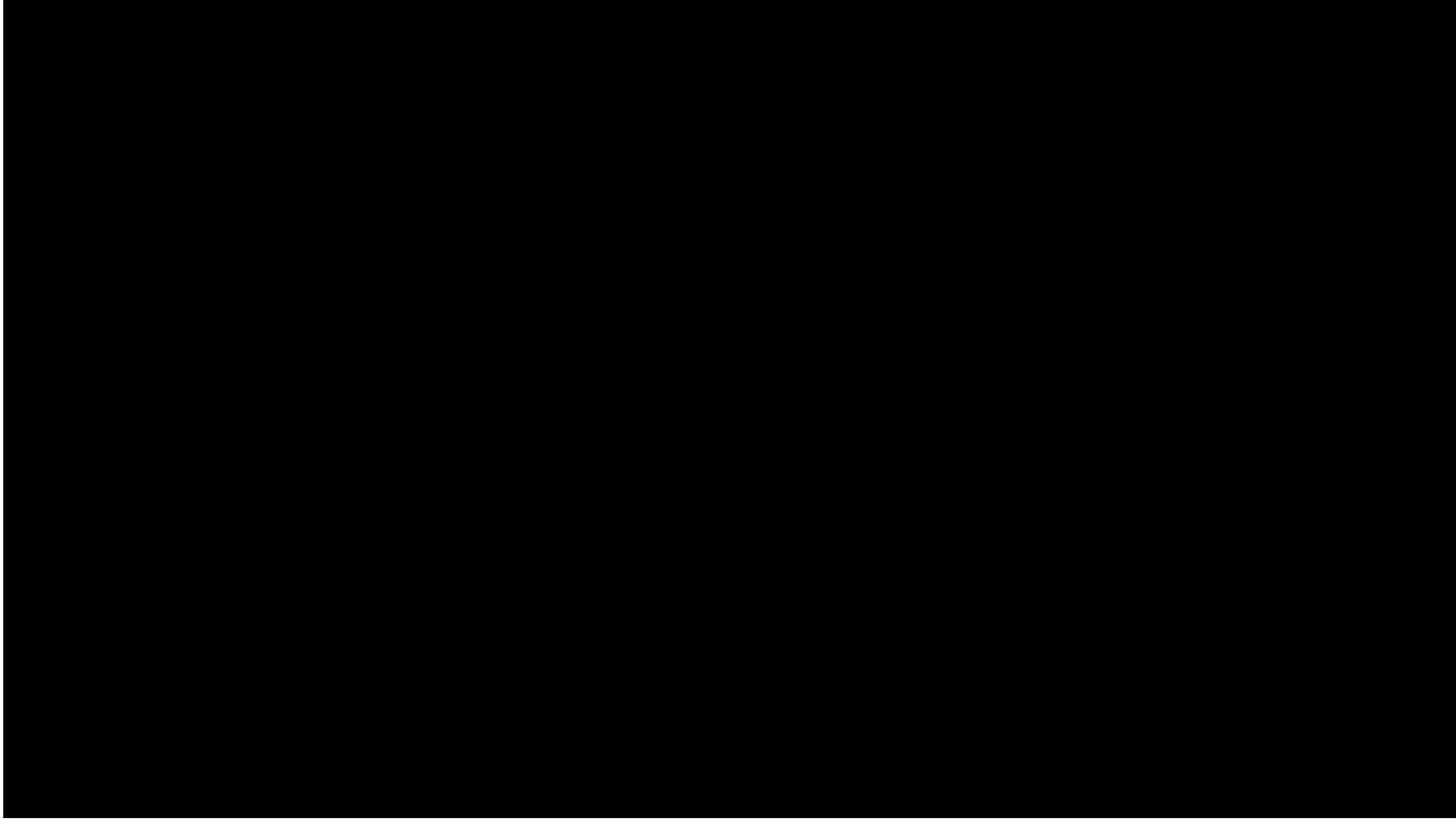
# Churchill Viaduct – Retained Fill





# Churchill Viaduct –Aerial Guideway

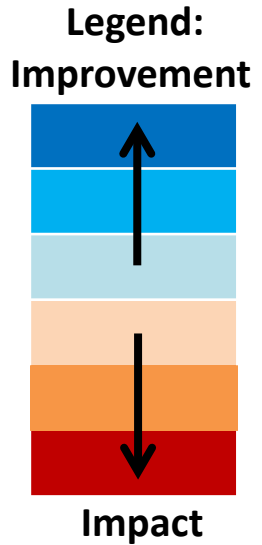


# Churchill Viaduct Animation <https://connectingpaloalto.com/renderings-plans-and-animations/>





# South Palo Alto Tunnel Evaluation with City Council-Adopted Criteria

Criteria		 Passenger and Freight	 At-Grade Freight	Comments
A	Improve East-West Connectivity			<p>For a detailed comparison of the Meadow/Charleston alternatives including the South Palo Alto Tunnel alternatives, see the Evaluation Matrix &amp; Engineering Challenges Station or visit:</p> <p><a href="https://connectingpaloalto.com/renderings-plans-and-animations/">https://connectingpaloalto.com/renderings-plans-and-animations/</a></p>
B	Reduce traffic congestion and delays			
C	Provide clear, safe routes for pedestrians and bikes			
D	Support continued rail operations			
E	Finance with feasible funding sources			
F	Minimize right-of-way acquisition			
G	Reduce rail noise and vibration			
H	Maintain or improve local access			
I	Minimize visual changes along the corridor			
J	Minimize disruption and duration of construction			
	Order of Magnitude Cost	\$1,218M to \$1,827M*	\$1,173XM to \$1,759M*	* Total Preliminary Construction Costs in 2018 dollars with escalation to 2025 (Subject to Change)





# South Palo Alto Tunnel Engineering Challenges

Engineering Impacts		 Passenger and Freight	 At-Grade Freight
L	Creek/Drainage Impacts	<input type="checkbox"/> Requires diversion of Adobe and Matadero creeks resulting in the need for pump stations <input type="checkbox"/> Numerous regulatory agency approvals required for creek diversion <input type="checkbox"/> Pump stations also required to dewater the trench and tunnel <input type="checkbox"/> Increased risk of flooding due to pump stations	<input type="checkbox"/> Required diversion of Adobe and Matadero creeks resulting in the need for pump stations <input type="checkbox"/> Numerous regulatory agency approvals required for creek diversion <input type="checkbox"/> Pump stations also required to dewater the trench and tunnel <input type="checkbox"/> Increased risk of flooding due to pump stations
M	Long Term Maintenance	<input type="checkbox"/> Increased maintenance costs due to: <ul style="list-style-type: none"> <li>• Pump stations for creek diversions</li> <li>• Pump stations for trench dewatering</li> <li>• Below ground railroad alignment</li> </ul>	<input type="checkbox"/> Increased maintenance costs due to: <ul style="list-style-type: none"> <li>• Pump stations for creek diversions</li> <li>• Pump stations for trench dewatering</li> <li>• Below ground railroad alignment as well as at-grade railroad alignment</li> </ul>
N	Utility Relocations	<input type="checkbox"/> Major utility relocations for lowered railroad	<input type="checkbox"/> Major utility relocations for lowered railroad
O	Railroad Operations Impacts during Construction	<input type="checkbox"/> Temporary track (shoofly) is required	<input type="checkbox"/> Temporary track (shoofly) is required.
P	Local Street Circulation Impacts during Construction	<input type="checkbox"/> Alma Street will be reduced to one lane in each direction from south of Oregon Expressway to Ventura Avenue <input type="checkbox"/> From Charleston Road to Ferne Avenue, there will be only one southbound lane on Alma Street	<input type="checkbox"/> Alma Street will be reduced to one lane in each direction from south of Oregon Expressway to Ventura Avenue
Q	Caltrain Design Exceptions Needed	2% grade on track required. Maximum allowed by Caltrain is 1%	2% grade on track required. Maximum allowed by Caltrain is 1%

# Churchill Closure

## Ped/Bike Undercrossing

- Option 1: crosses under the railroad tracks only
- Option 2: crosses under both the railroad tracks and Alma St

## Embarcadero/Alma Street Improvements

- Construct ped/bike overcrossing over Embarcadero Rd and widen Alma Street bridge
- Add right turn from eastbound Embarcadero Rd and left turn from southbound Alma St
- Install new signal at Embarcadero Rd/ Kingsley Ave/High St
- Provide full connectivity to/from High Street (Option A) or keep the movement as it is today (Option B)

## Intersection Improvements

- El Camino Real/Embarcadero Rd: optimize signal timing and add turn lanes
- Alma St/Oregon Expressway: signalize both on/off ramps
- El Camino Real/Oregon Expressway-Page Mill Rd: optimize signal timing and add turn lanes



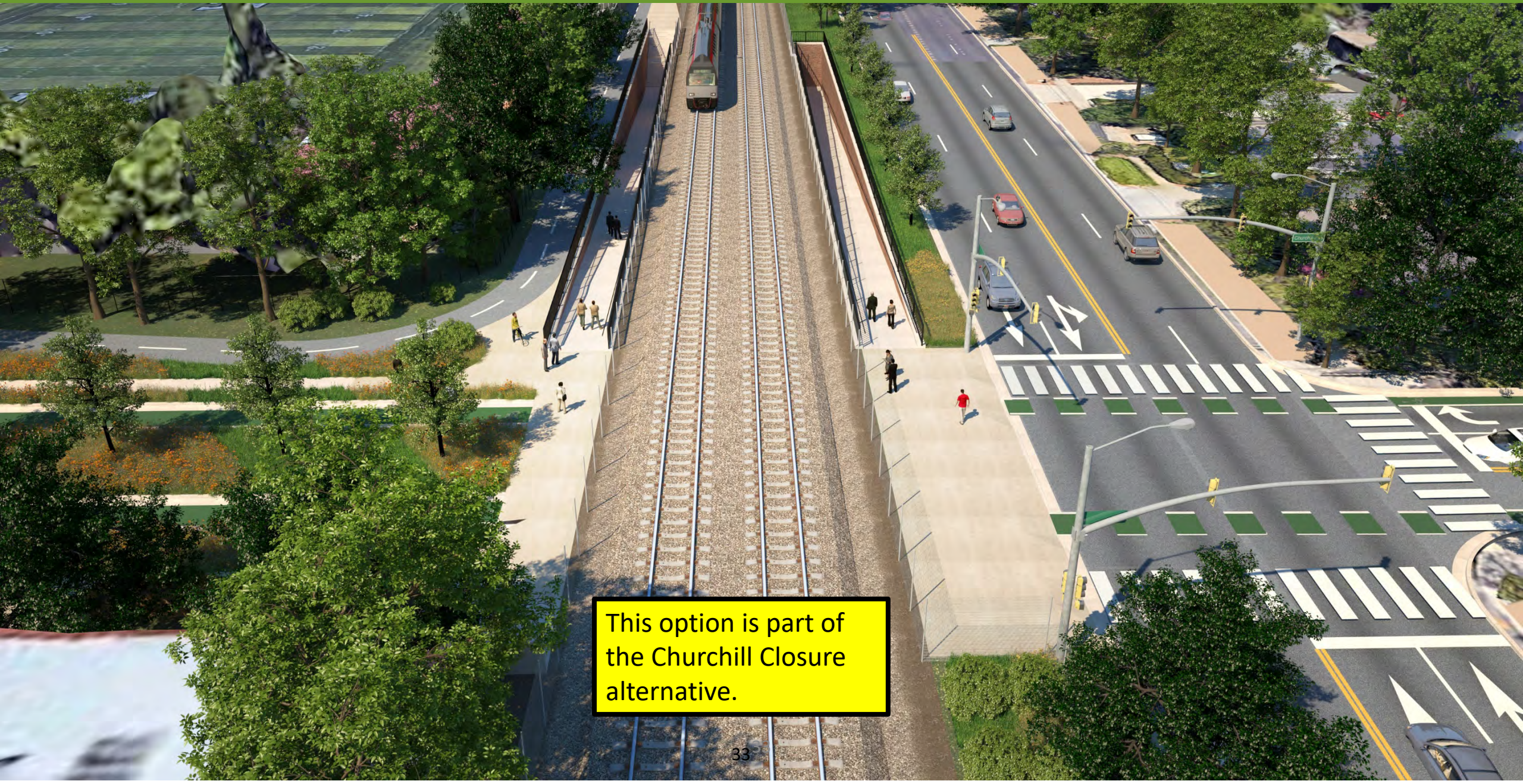
# Churchill Ave Ped/Bike Undercrossing – Option 1



This option is part of the Churchill Closure alternative.



# Churchill Ave Ped/Bike Undercrossing – Option 1



This option is part of the Churchill Closure alternative.



# Churchill Ave Ped/Bike Undercrossing – Option 2



This option is part of the Churchill Closure alternative.

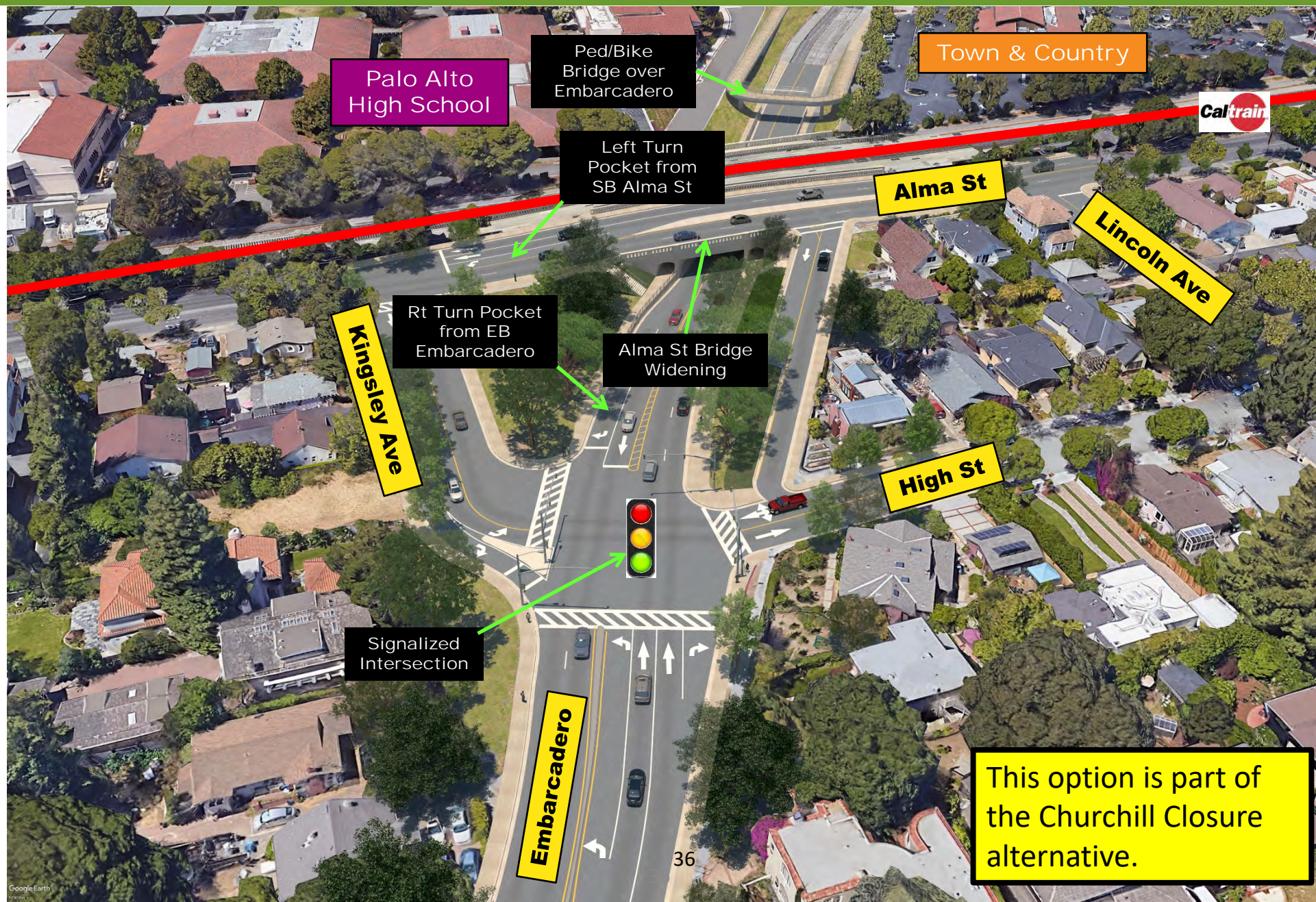


# Churchill Ave Ped/Bike Undercrossing – Option 2





# Embarcadero/Alma (3D Rendering. Looking West)





# Improvement for El Camino Real/Embarcadero Rd

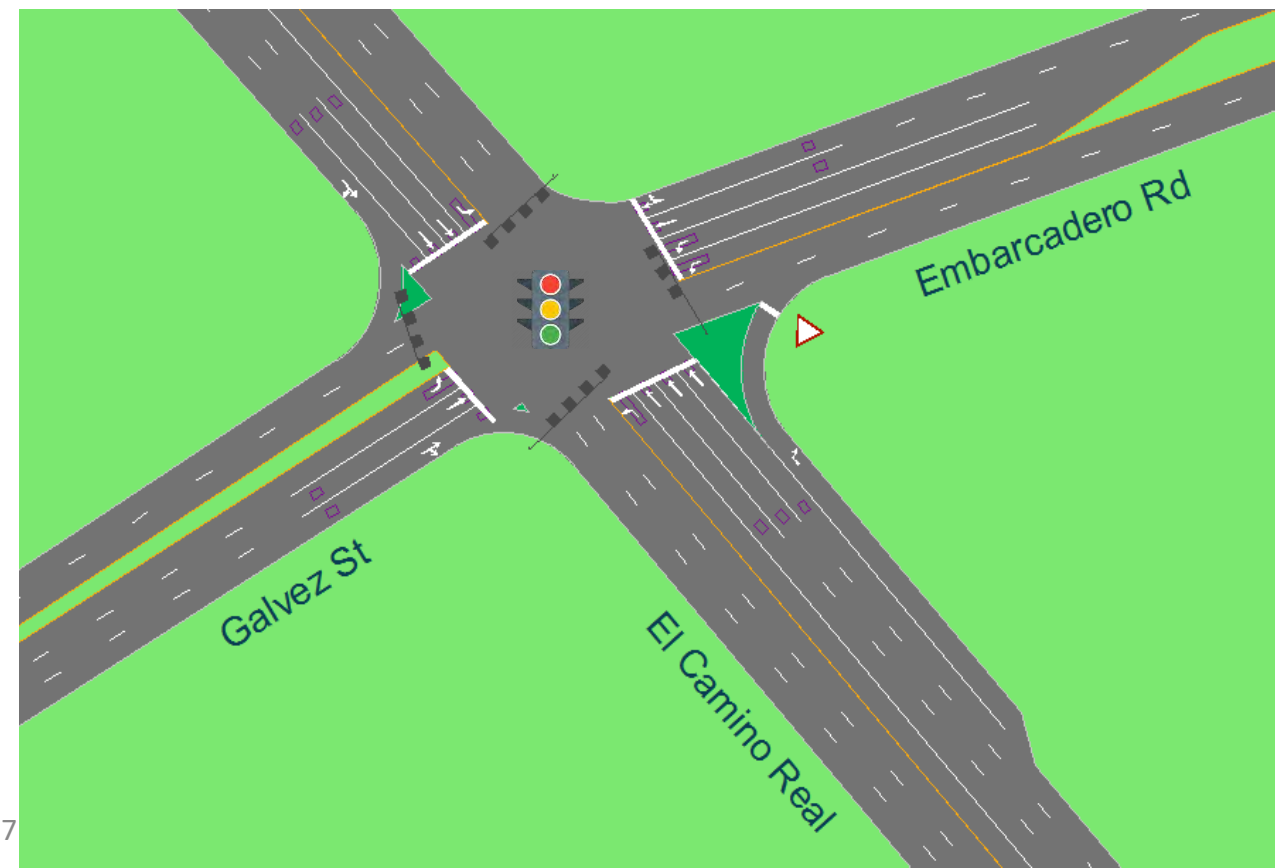
- Install additional westbound left turn lane and northbound right turn lane
- Optimize signal timings

This option is part of the Churchill Closure alternative.

*Existing Layout*



*Proposed Layout*





# Improvement for Alma Street/Oregon Expressway

- Signalize both on/off ramps with one controller

This option is part of the Churchill Closure alternative.

*Existing Layout*



*Proposed Layout*





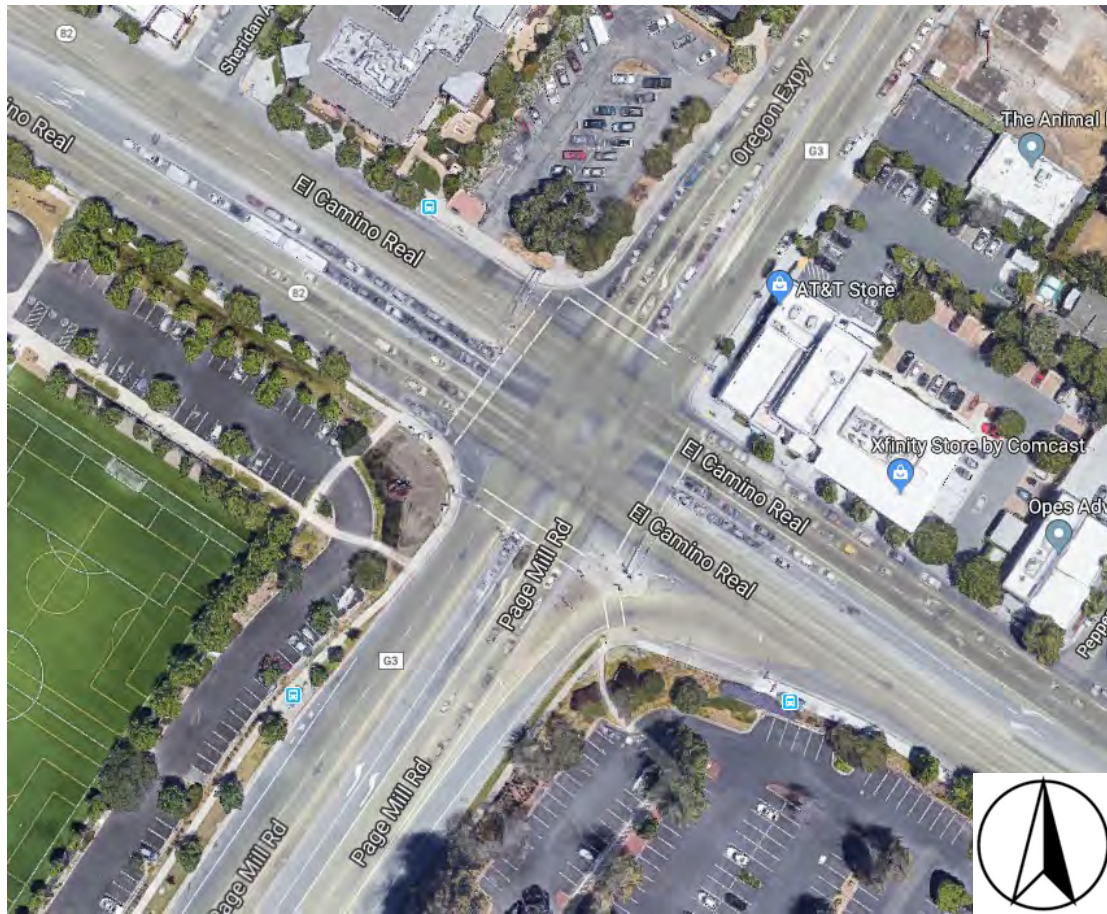
# Improvement for El Camino Real/Oregon Expressway-Page Mill Road

- Install westbound right turn lane from Oregon Expressway to El Camino Real

- Optimize signal timing

This option is part of the Churchill Closure alternative.



*Existing Layout*



*Proposed Layout*



# Churchill Avenue Evaluation with City Council-Adopted Criteria



Criteria		 Closure	 Viaduct	Comments
A	Improve East-West Connectivity			<p>For a detailed comparison of the Churchill Avenue alternatives, see the Evaluation Matrix &amp; Engineering Impacts Station or visit: <a href="https://connectingpaloalto.com/renderings-plans-and-animations/">https://connectingpaloalto.com/renderings-plans-and-animations/</a></p>
B	Reduce traffic congestion and delays			
C	Provide clear, safe routes for pedestrians and bikes			
D	Support continued rail operations			
E	Finance with feasible funding sources			
F	Minimize right-of-way acquisition			
G	Reduce rail noise and vibration			
H	Maintain or improve local access			
I	Minimize visual changes along the corridor			
J	Minimize disruption and duration of construction			
Order of Magnitude Cost		\$50M to \$65M*	\$300M to \$400M*	* Total Preliminary Construction Costs in 2018 dollars with escalation to 2025 (Subject to Change)

**Legend:**  
Improvement



Impact

# Churchill Avenue Engineering Challenges

Engineering Impacts		 Closure	 Viaduct
L	Creek/Drainage Impacts	<input type="checkbox"/> Pump station required for lowered pedestrian/bike way. <input type="checkbox"/> Increased risk of flooding with pump stations <input type="checkbox"/> Relocation of the pump house at Embarcadero Road required to accommodate widening of Alma Street	<input type="checkbox"/> No significant creek or drainage impacts
M	Long Term Maintenance	<input type="checkbox"/> Increased maintenance costs due to: <ul style="list-style-type: none"> <li>• Pump stations for undercrossing dewatering</li> </ul>	<input type="checkbox"/> Increased maintenance costs due to: <ul style="list-style-type: none"> <li>• Above ground railroad alignment with embankments and viaduct structures</li> </ul>
N	Utility Relocations	<input type="checkbox"/> Potential utility relocations in Alma Street and Churchill Avenue for ped/bike undercrossing <input type="checkbox"/> Minor utility relocations for Embarcadero Road/Alma Street improvements	<input type="checkbox"/> Minimal impacts to utilities
O	Railroad Operations Impacts during Construction	<input type="checkbox"/> No temporary track (i.e., shoofly) required, only single tracking during nights and weekends	<input type="checkbox"/> Temporary track (i.e., shoofly) is required
P	Local Street Circulation Impacts during Construction	<input type="checkbox"/> Path along Palo Alto High School will temporarily be impacted during construction <input type="checkbox"/> Temporary night and weekend closures of lanes on Churchill Avenue, Alma Street and Embarcadero Road	<input type="checkbox"/> Alma Street reduced to 2 lanes <input type="checkbox"/> Removal of right turn lanes on Alma St at Churchill Avenue; however, traffic will still be able to flow as needed despite lane reduction <input type="checkbox"/> Temporary night and weekend closures of lanes on Alma Street and Churchill Avenue
Q	Caltrain Design Exceptions Needed	None required.	1.6% grade on track required. Maximum allowed by Caltrain is 1%.





# Question & Answers

# Break-out Stations

- ☐ Churchill Ave
- ☐ South Palo Alto Tunnel
- ☐ Meadow/Charleston
- ☐ Evaluation Matrix and Engineering Impacts
- ☐ City Staff and Other Crossings
- ☐ Traffic
- ☐ Noise/Vibration
- ☐ Creeks/Drainage

# Stay Engaged



Visit our website at: [ConnectingPaloAlto.com](https://ConnectingPaloAlto.com)

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[medium.com/paloalto connect](https://medium.com/paloalto-connect)



**Thank you**