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COMMUNITY MEETING

November 7, 2019

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CITY OF PALO ALTO

WRECO

alta PLANNING + DESIGN

apex STRATEGIES

AECOM

Welcome & Major Update since March 2019 Community Meeting

Ed Shikada

City Manager

CITY OF PALO ALTO

- 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.

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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

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Community Engagement Schedule

TIMELINE TO BE INSERTED

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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

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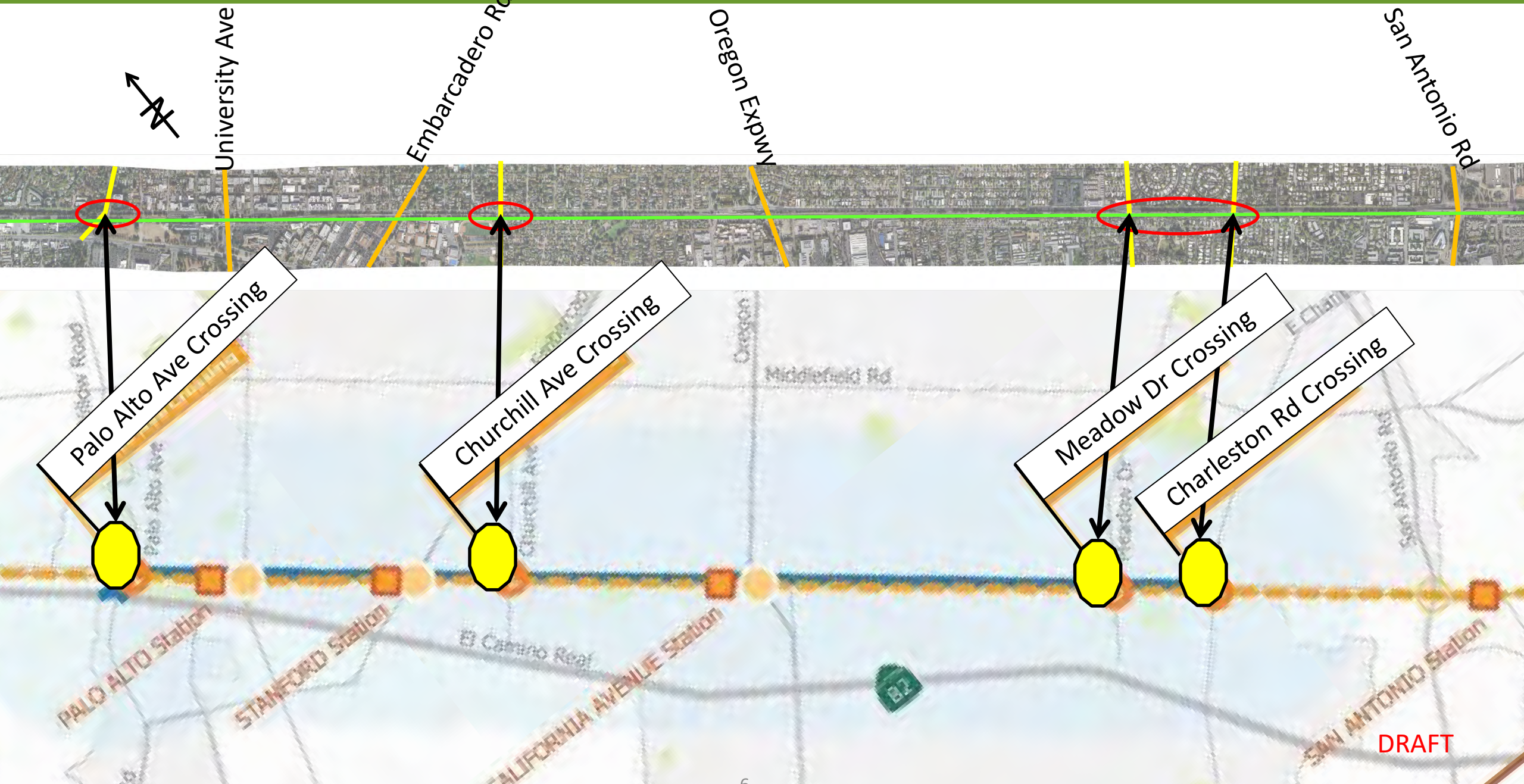
Palo Alto Existing At-Grade Crossings



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Near Miss: Vehicle Stopped on Tracks

Why is the City undertaking this effort?

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)

- Eliminate 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*

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Weekday Train Traffic

Total Number of Trains (per Weekday)

	Northbound (NB)	Southbound (SB)	Total
Caltrain (2018)	AM: 20 PM: 26 Total: 46	AM: 20 PM: 26 Total: 46	AM: 40 PM: 52 Total: 92
Caltrain (2022 Projection #)	57	57	114
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

TO BE UPDATED

2022 Projected Values based on Completion of the Peninsula Corridor Electrification Project (from FEIR, December 2014) (Prototypical Schedule)
+ 2029 Projected Values based on Blended Service and Completion of the High Speed Rail Project and 2014 CHSRA Business Plan

***HSR projections subject to change due to Gov. Newsom's change in direction early in 2019 for HSR service in the Caltrain corridor.**

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Ten Year Collison History

At-Grade Crossing Intersection	Total Collisions	Fatality & Injuries	Involving Pedestrians
Charleston Road	7	4	5
Meadow Drive	5	2	1
Churchill Avenue	5	0	0

Source: Federal Railroad Administration

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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. 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 Ave. Vicinity Viaduct

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

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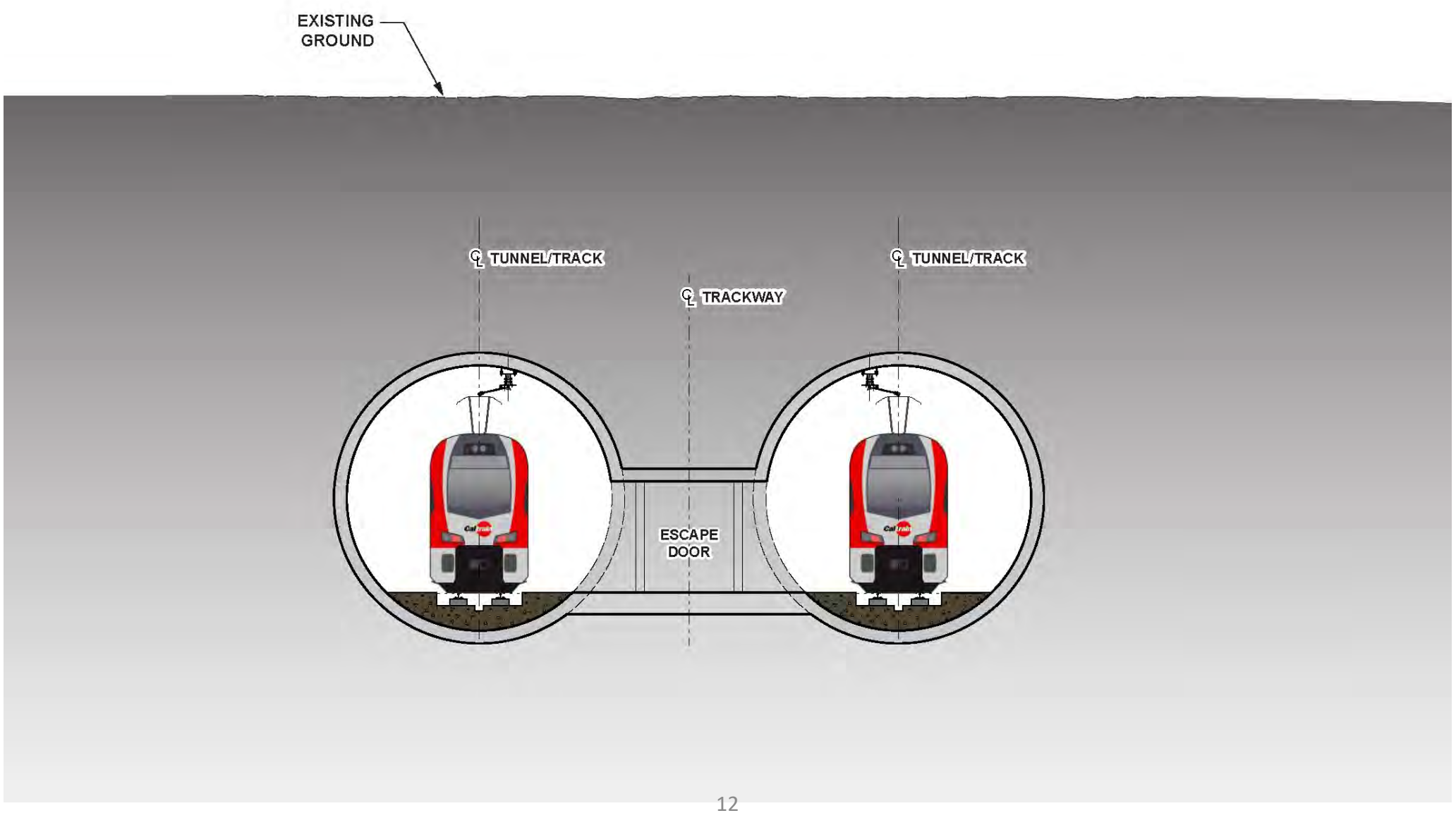
South Palo Alto Tunnel – Passenger & Freight, Twin Bore Tunnel



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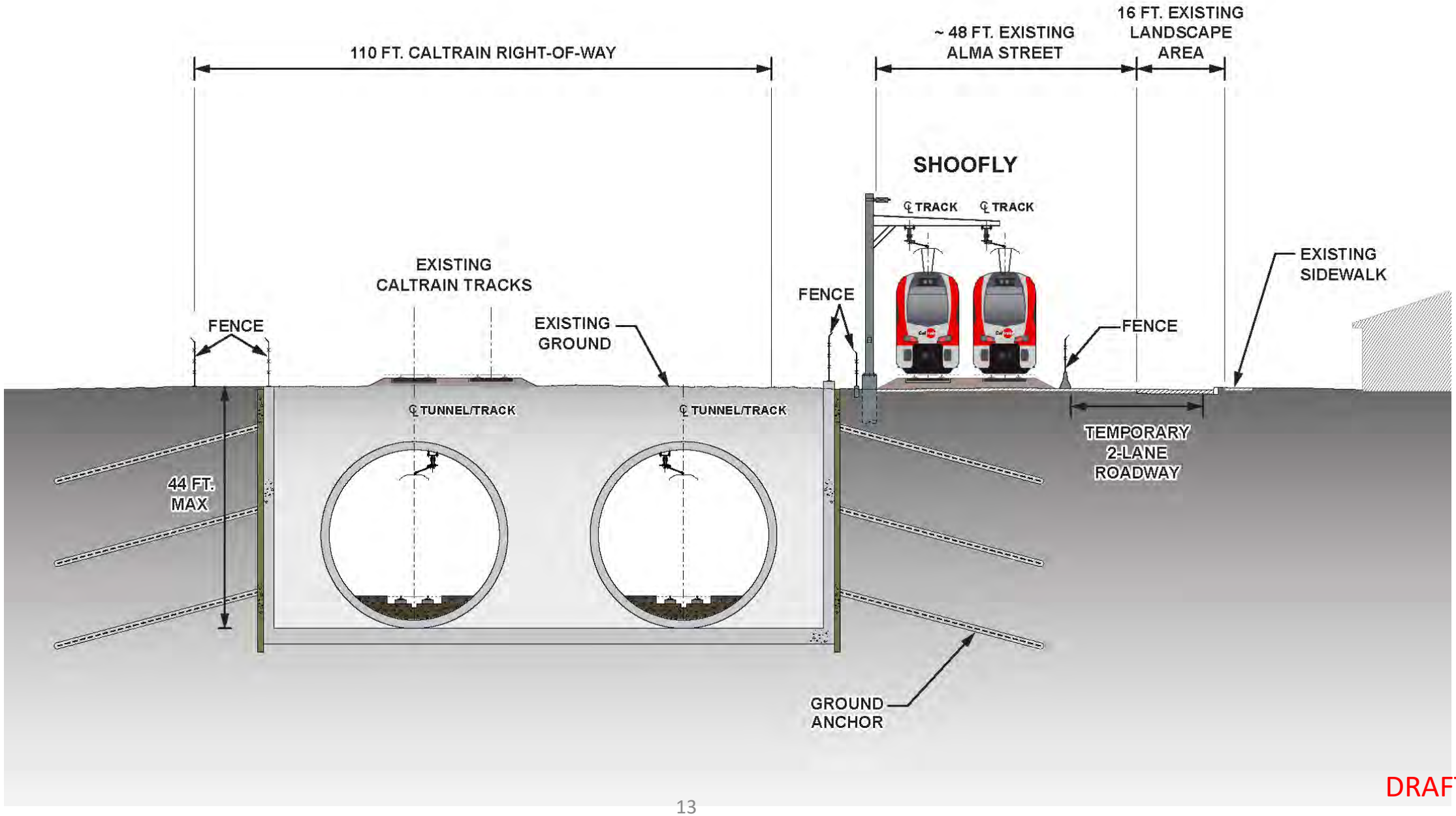
South Palo Alto Tunnel – Passenger & Freight continued, North Portal Launch Pit



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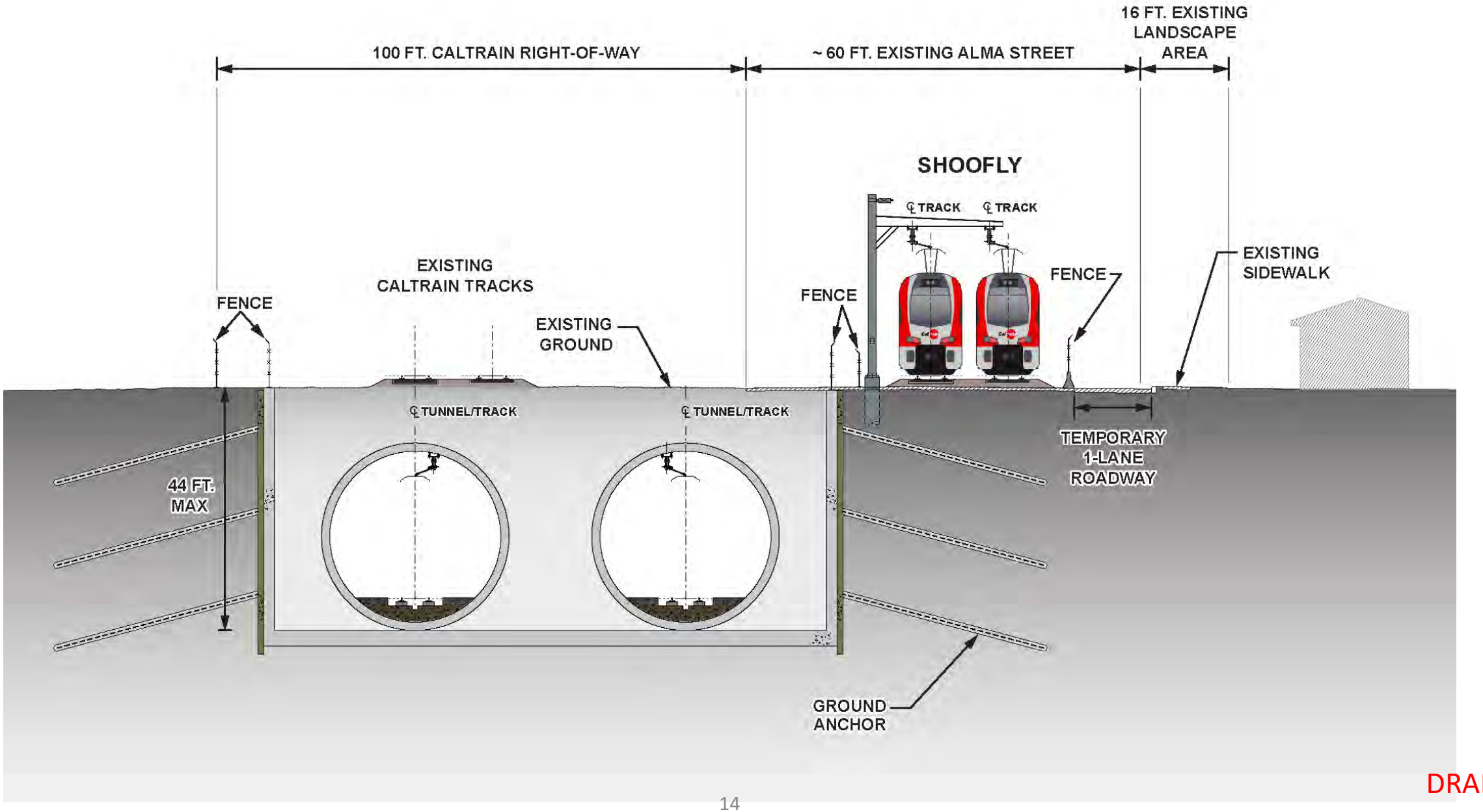
South Palo Alto Tunnel – Passenger & Freight continued, South Portal Launch Pit



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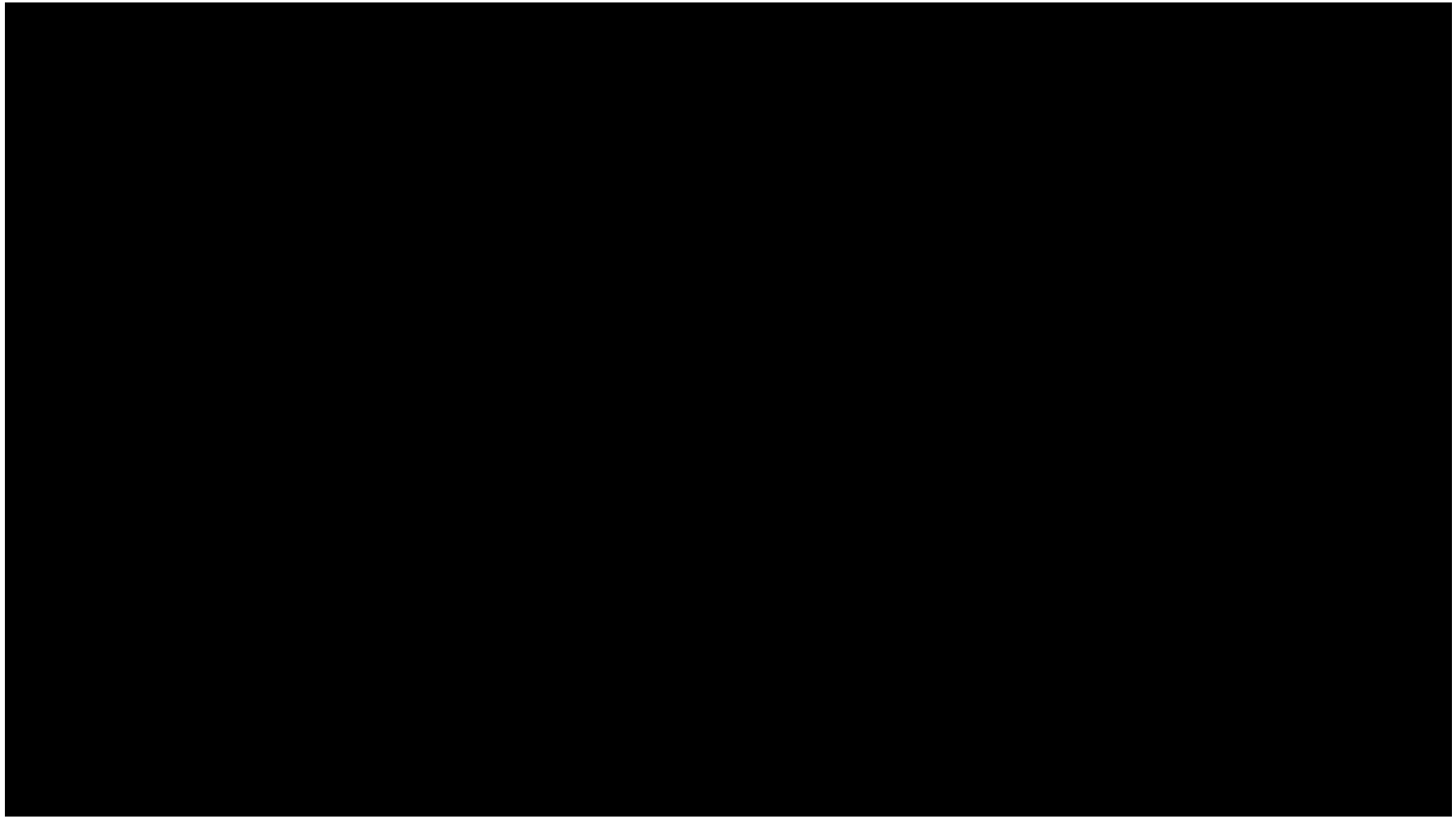
South Palo Alto Tunnel Passenger & Freight Animation

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



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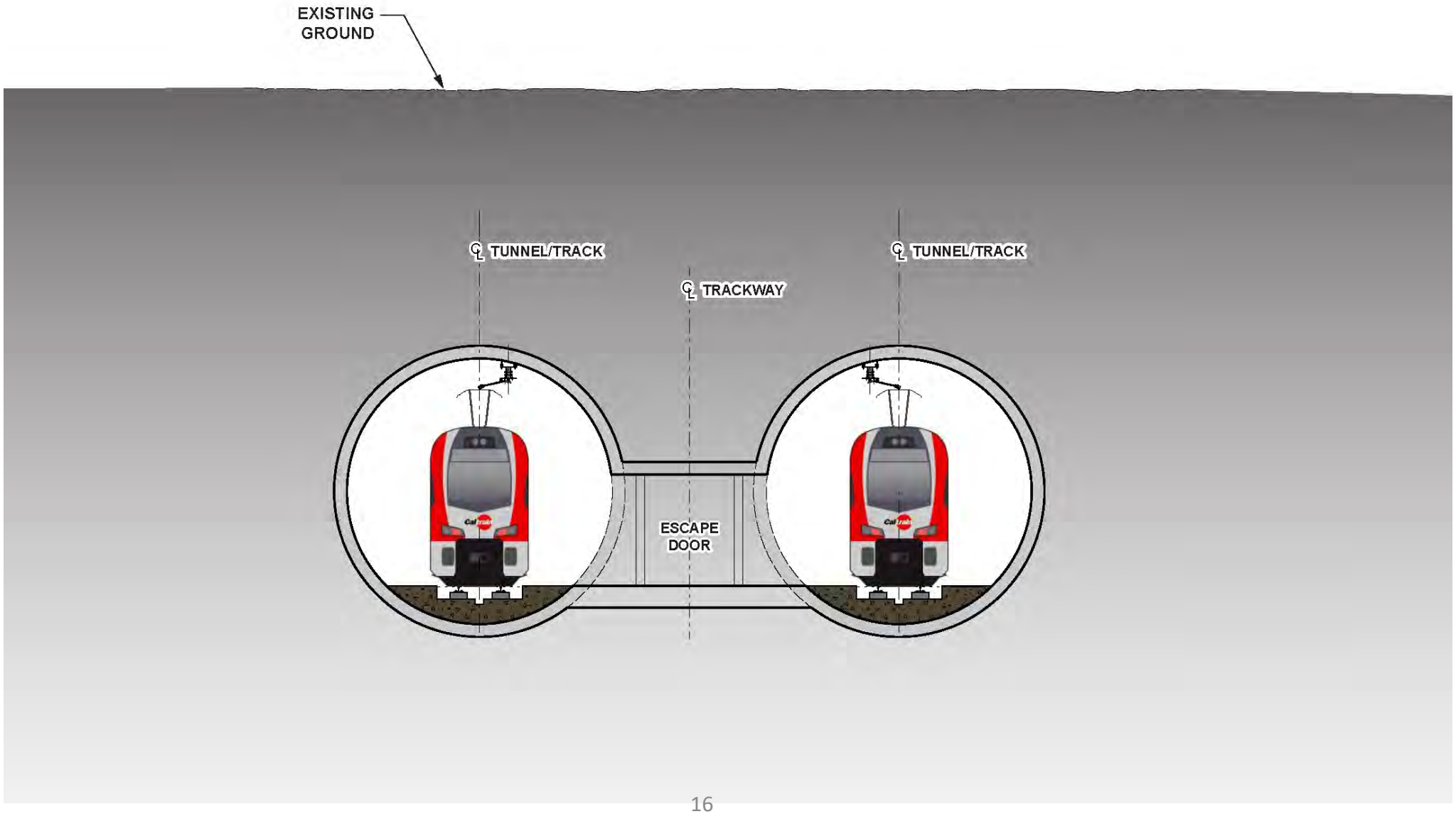
South Palo Alto Tunnel with At-Grade Freight, Twin Bore Tunnel



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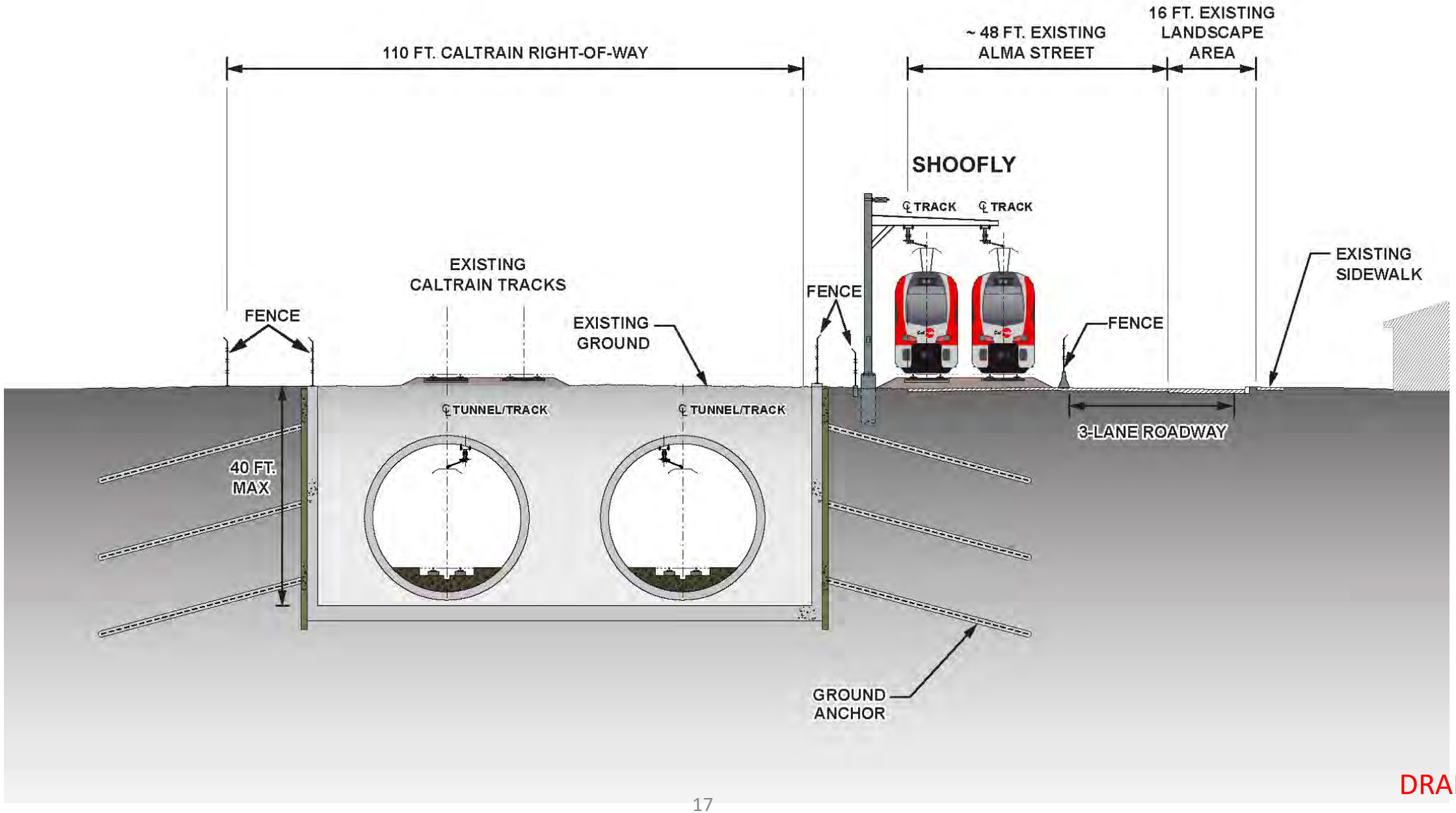

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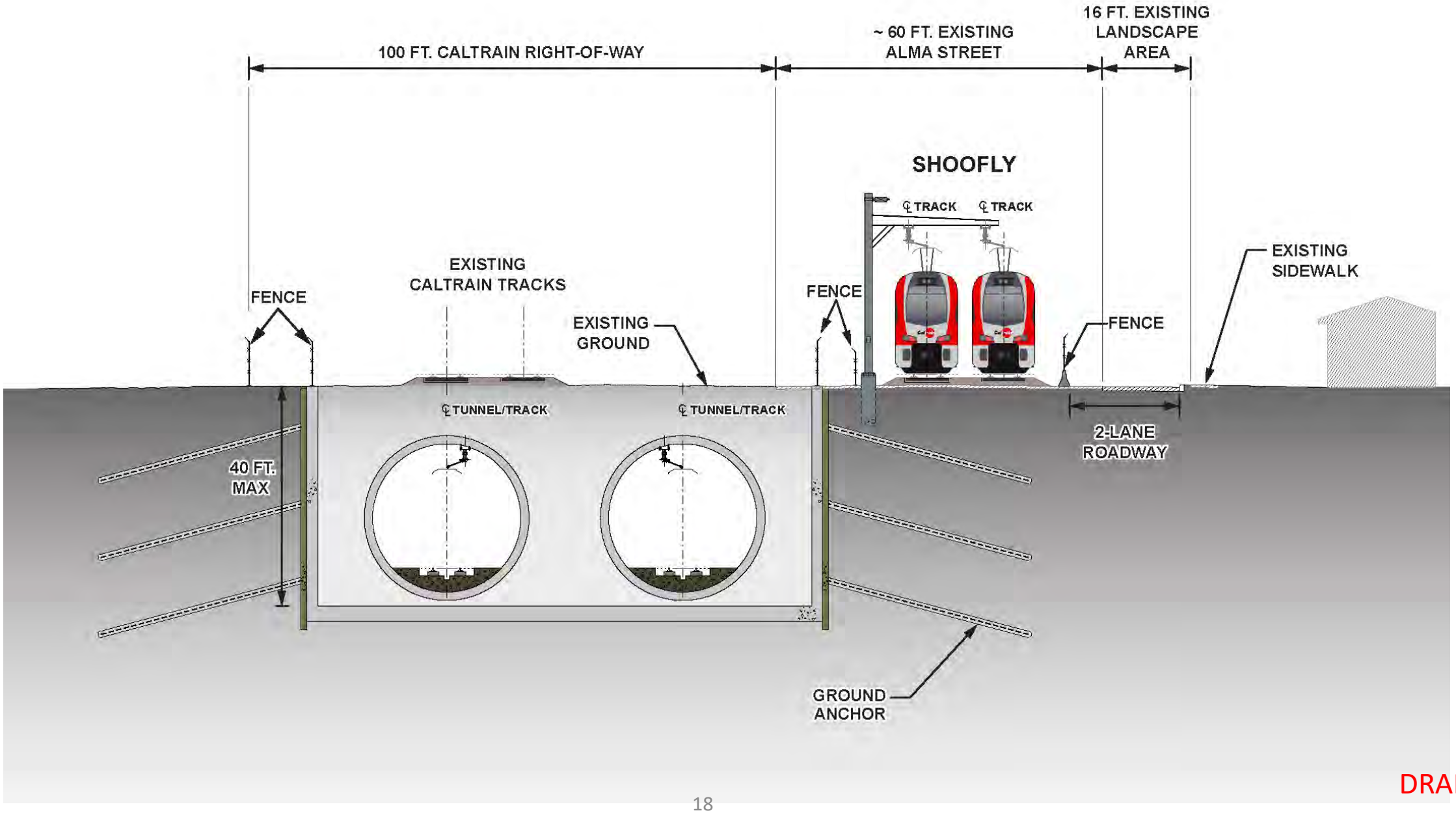
South Palo Alto Tunnel with At-Grade Freight continued, South Portal Launch Pit



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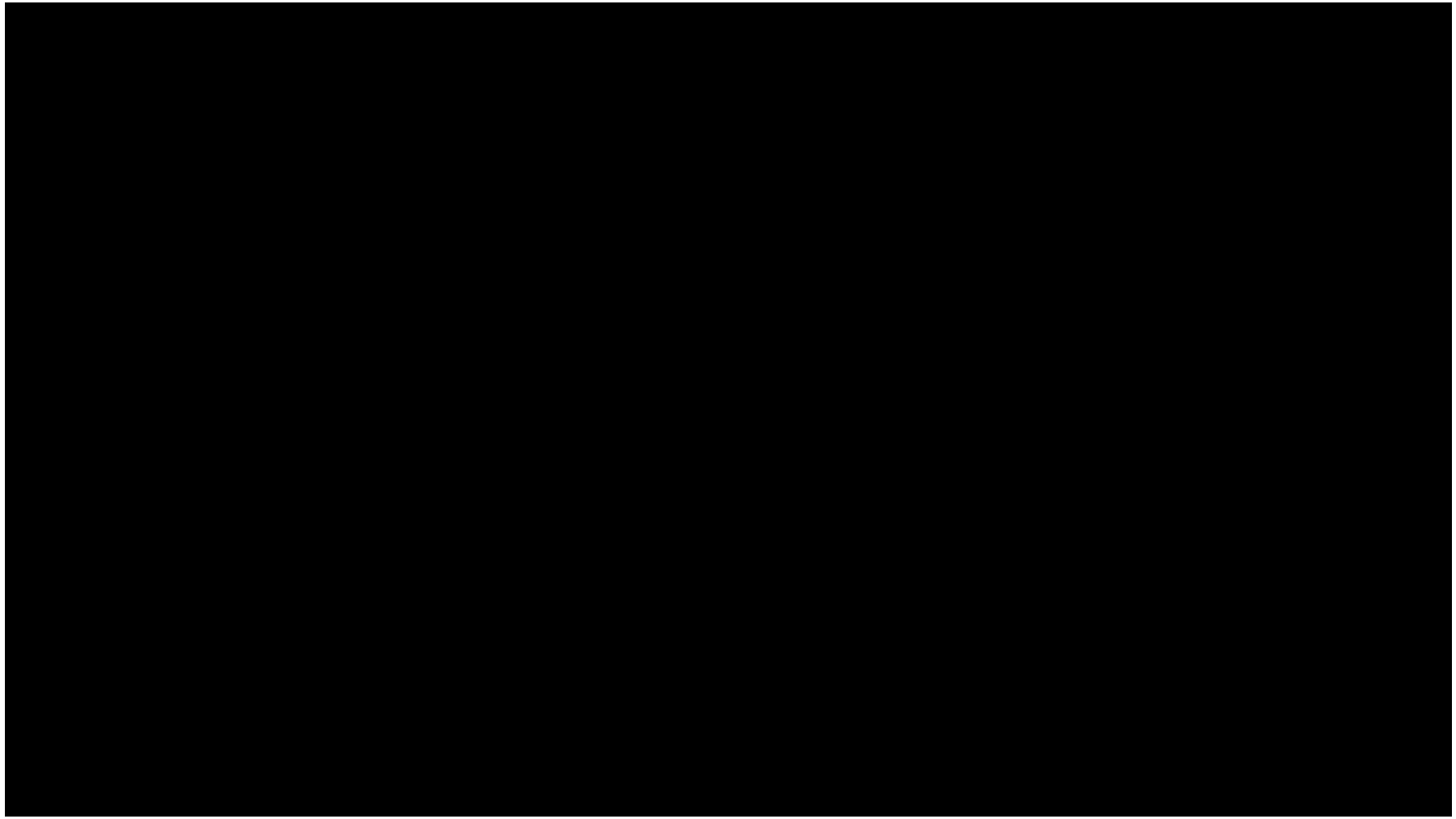

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Churchill Ave. Vicinity Viaduct

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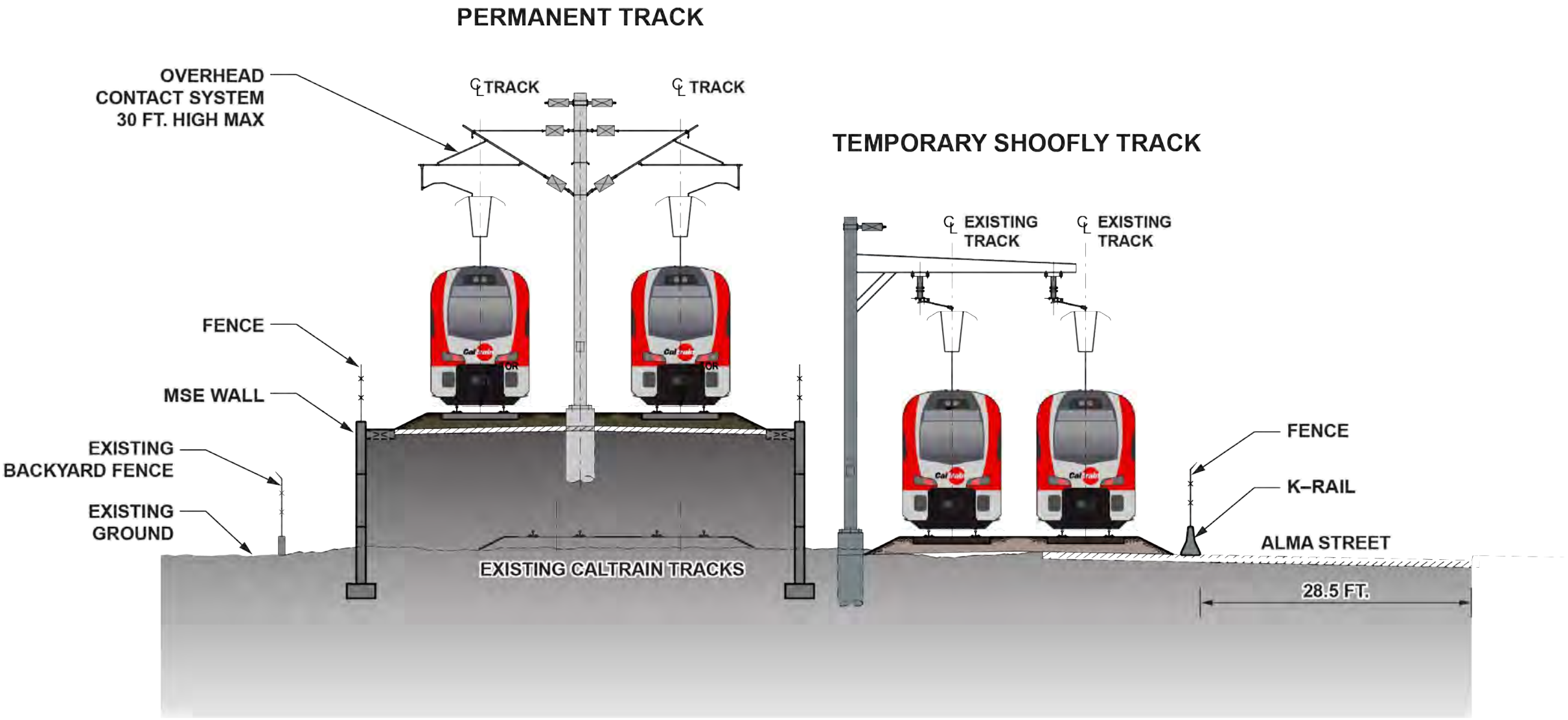
Churchill Viaduct – Option 1, Retained Fill



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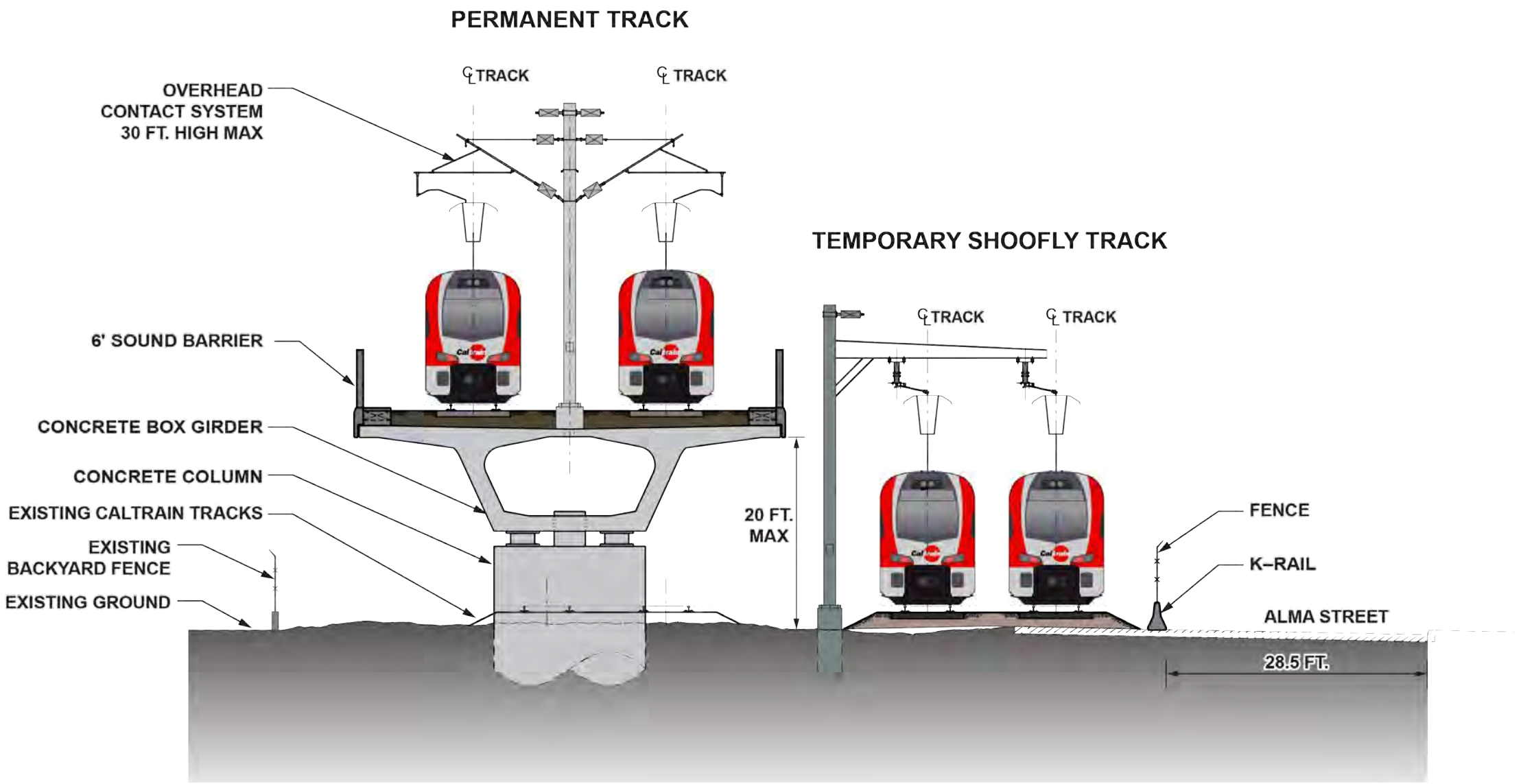
Churchill Viaduct – Option 1, Aerial Guideway



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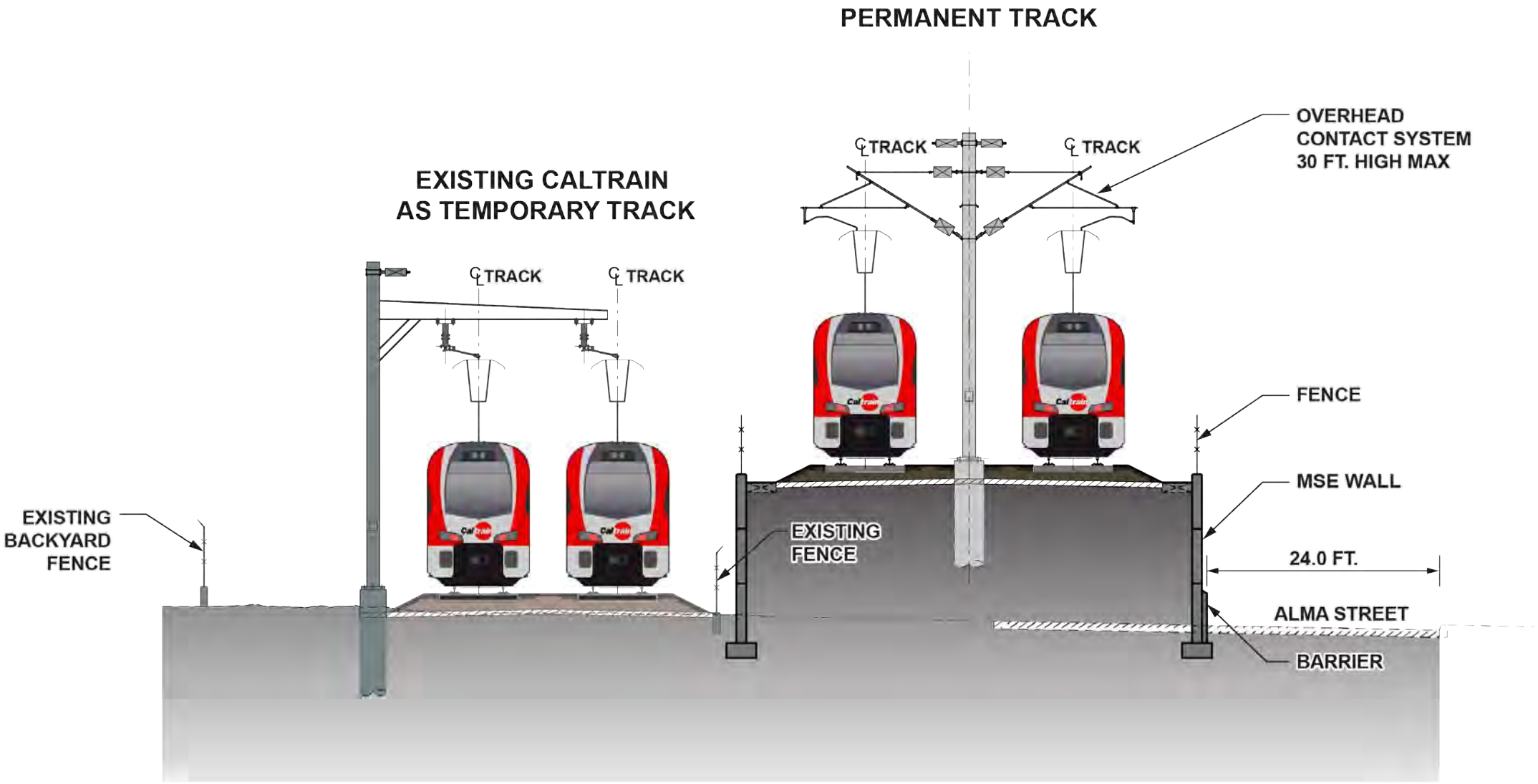
Churchill Viaduct – Option 2, Retained Fill



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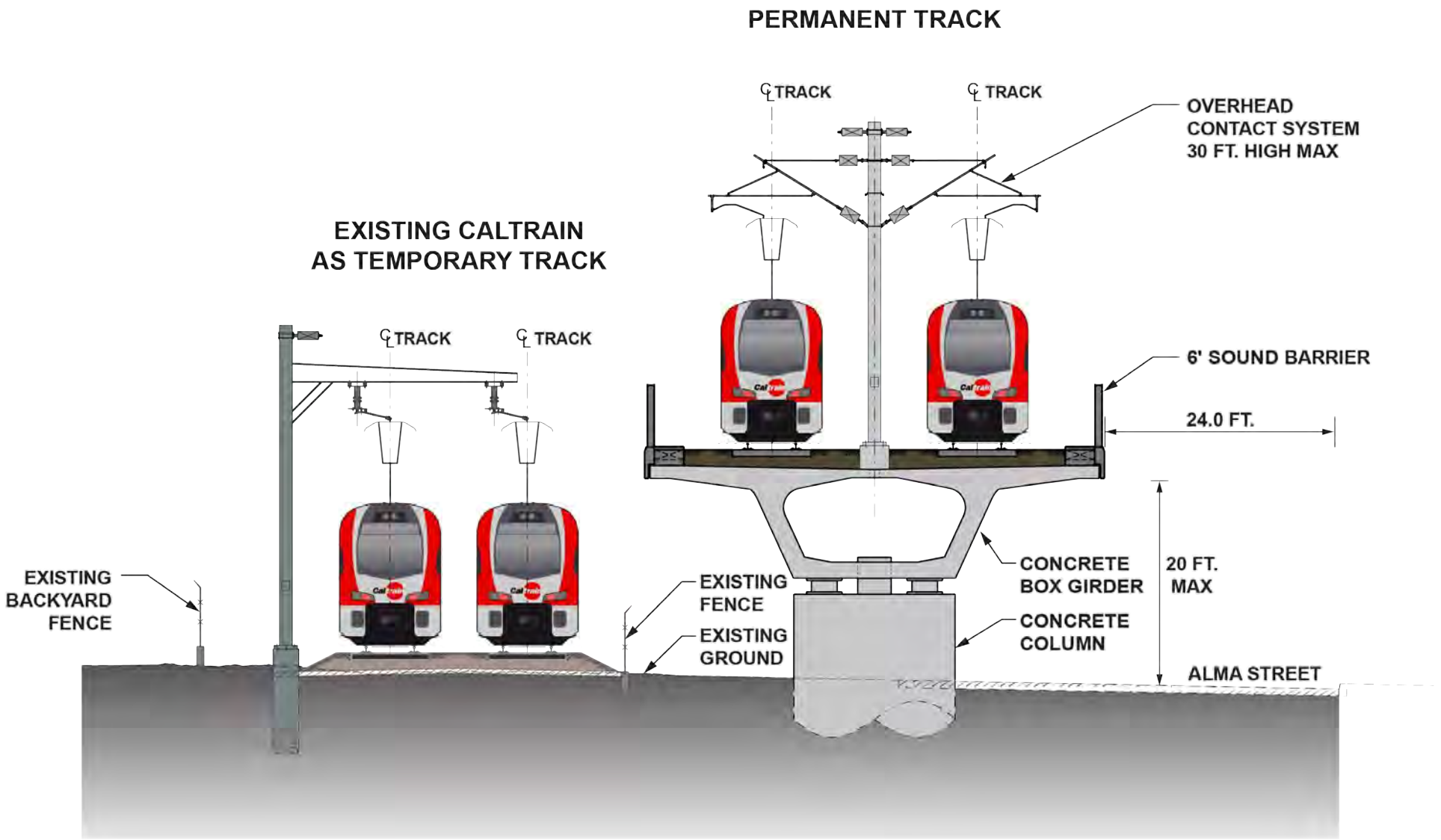
Churchill Viaduct – Option 2, Aerial Guideway



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

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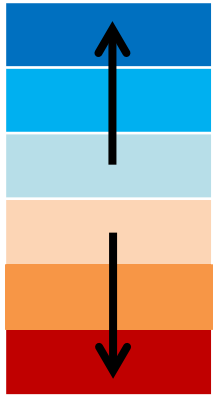
South Palo Alto Tunnel Evaluation with City Council-Adopted Criteria

	Criteria	Passenger and Freight	At-Grade Freight	Comments
A	Improve East-West Connectivity			For a detailed comparison of the Meadow/Charleston alternatives including the South Palo Alto Tunnel alternatives, see the Evaluation Matrix & Engineering Challenges Station or visit: https://connectingpaloalto.com/renderings-plans-and-animations/
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	X years	X years	
	Order of Magnitude Cost	$XXM to $XXM*	$XXM to $XXM*	* Total Preliminary Construction Costs in 2018 dollars with escalation to 2025 (Subject to Change)

Legend:
Improvement



Impact

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South Palo Alto Tunnel Engineering Challenges

Engineering Impacts		Passenger and Freight	At-Grade Freight
L	Creek/Drainage Impacts	❑ Requires diversion of Adobe and Matadero creeks resulting in the need for pump stations ❑ Numerous regulatory agency approvals required for creek diversion ❑ Pump stations also required to dewater the trench and tunnel ❑ Increased risk of flooding due to pump stations	❑ Required diversion of Adobe and Matadero creeks resulting in the need for pump stations ❑ Numerous regulatory agency approvals required for creek diversion ❑ Pump stations also required to dewater the trench and tunnel ❑ Increased risk of flooding due to pump stations
M	Long Term Maintenance	❑ Increased maintenance costs due to: • Pump stations for creek diversions • Pump stations for trench dewatering • Below ground railroad alignment	❑ Increased maintenance costs due to: • Pump stations for creek diversions • Pump stations for trench dewatering • Below ground railroad alignment as well as at-grade railroad alignment
N	Utility Relocations	❑ Major utility relocations for lowered railroad	❑ Major utility relocations for lowered railroad
O	Railroad Operations Impacts during Construction	❑ Temporary track (shoofly) is required	❑ Temporary track (shoofly) is required.
P	Local Street Circulation Impacts during Construction	❑ Alma Street will be reduced to one lane in each direction from south of Oregon Expressway to Ventura Avenue ❑ From Charleston Road to Ferne Avenue, there will be only one southbound lane on Alma Street	❑ 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%

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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

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Churchill Ave Ped/Bike Undercrossing – Option 1

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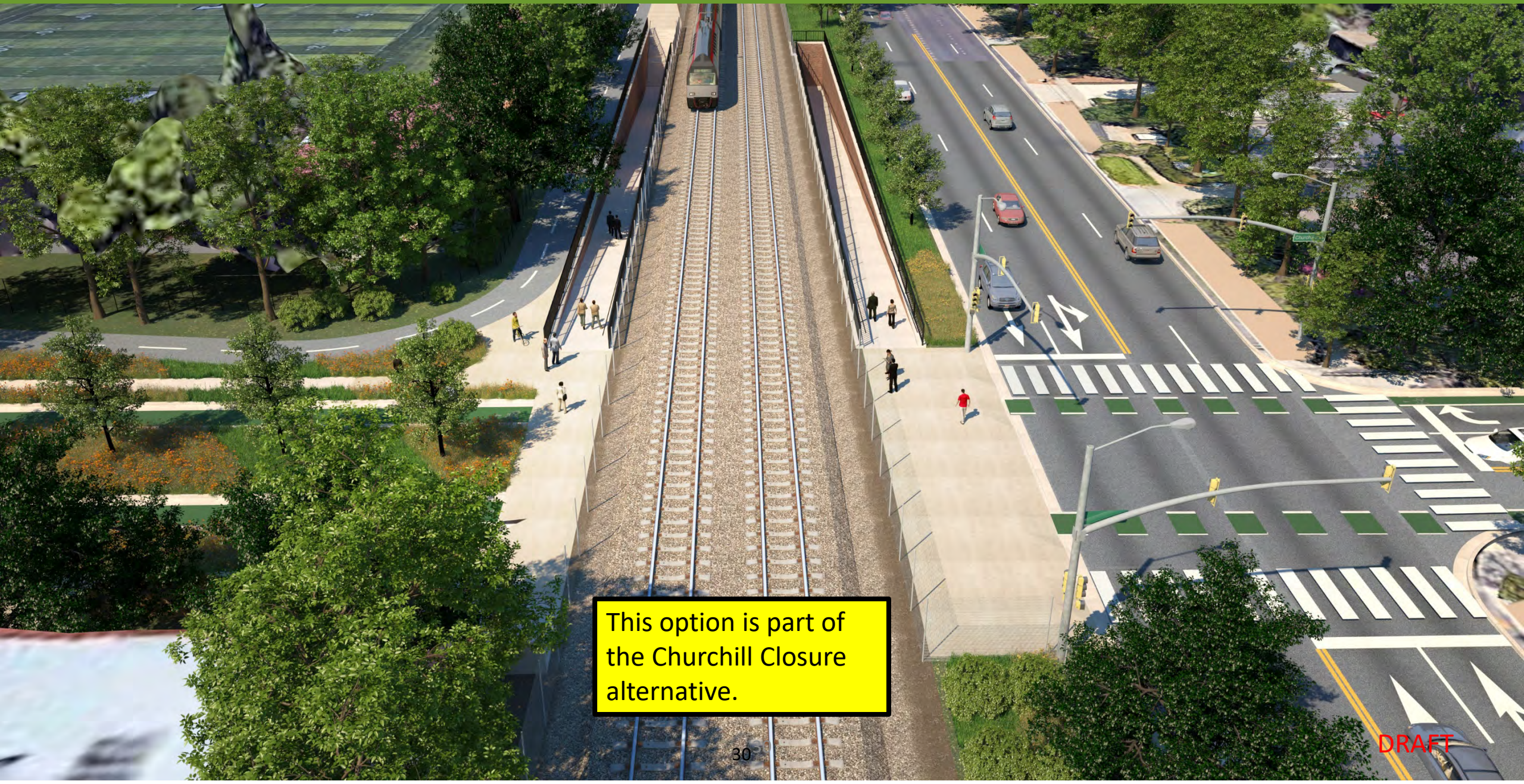
Churchill Ave Ped/Bike Undercrossing – Option 1



This option is part of the Churchill Closure alternative.

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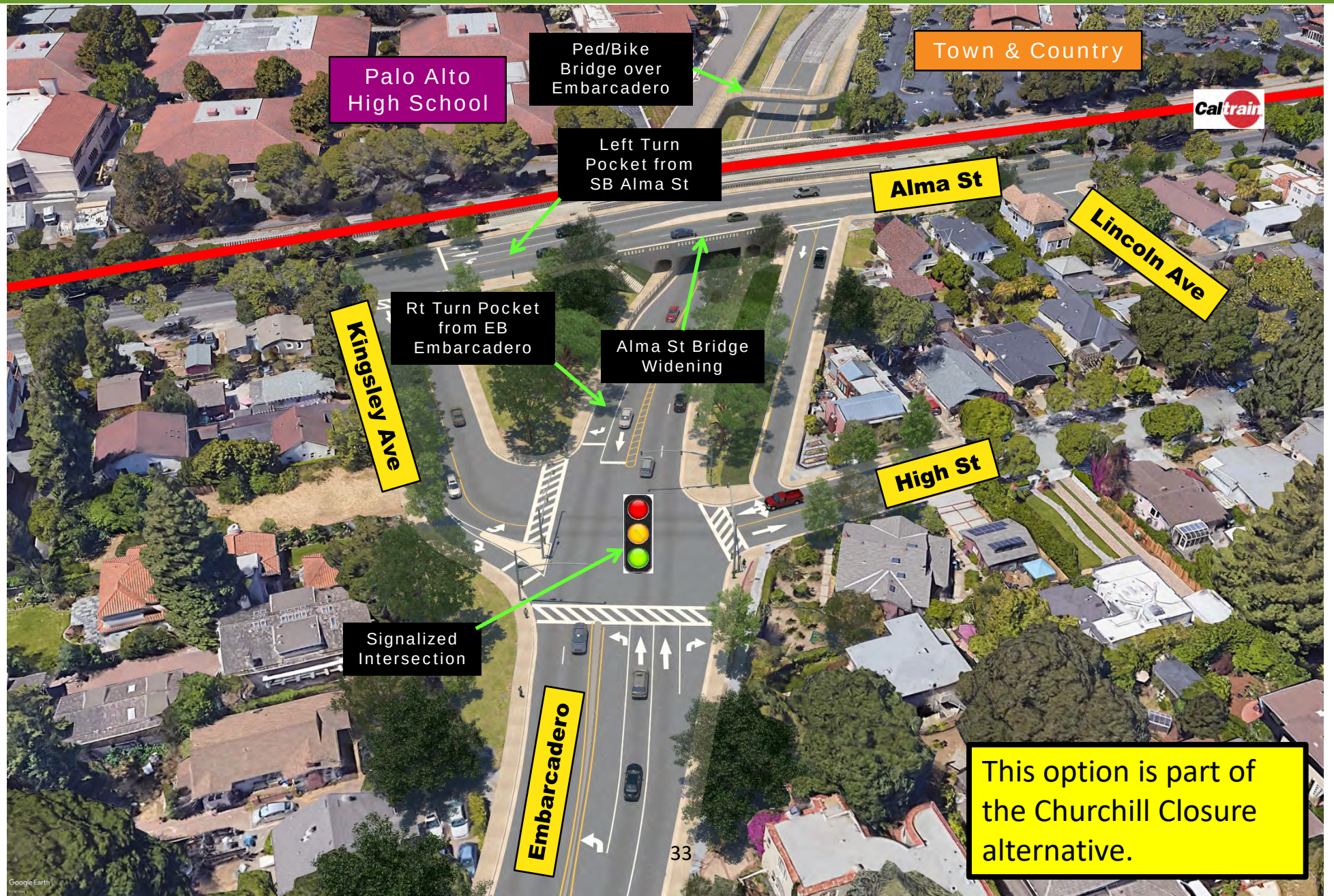
Churchill Ave Ped/Bike Undercrossing – Option 2

This option is part of the Churchill Closure alternative. DRAFT

Churchill Ave Ped/Bike Undercrossing – Option 2

Embarcadero/Alma (3D Rendering. Looking West)



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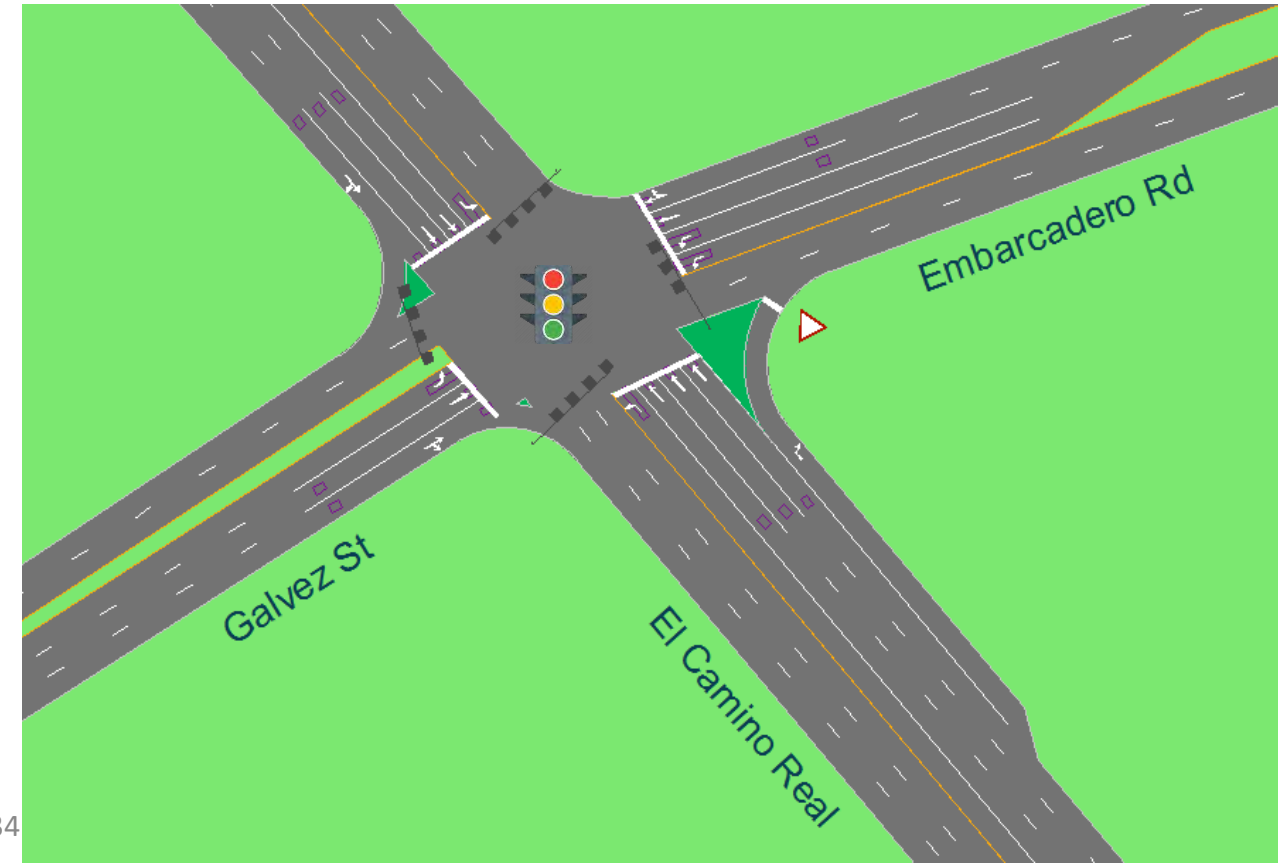
Improvement for El Camino Real/Embarcadero Rd

- 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

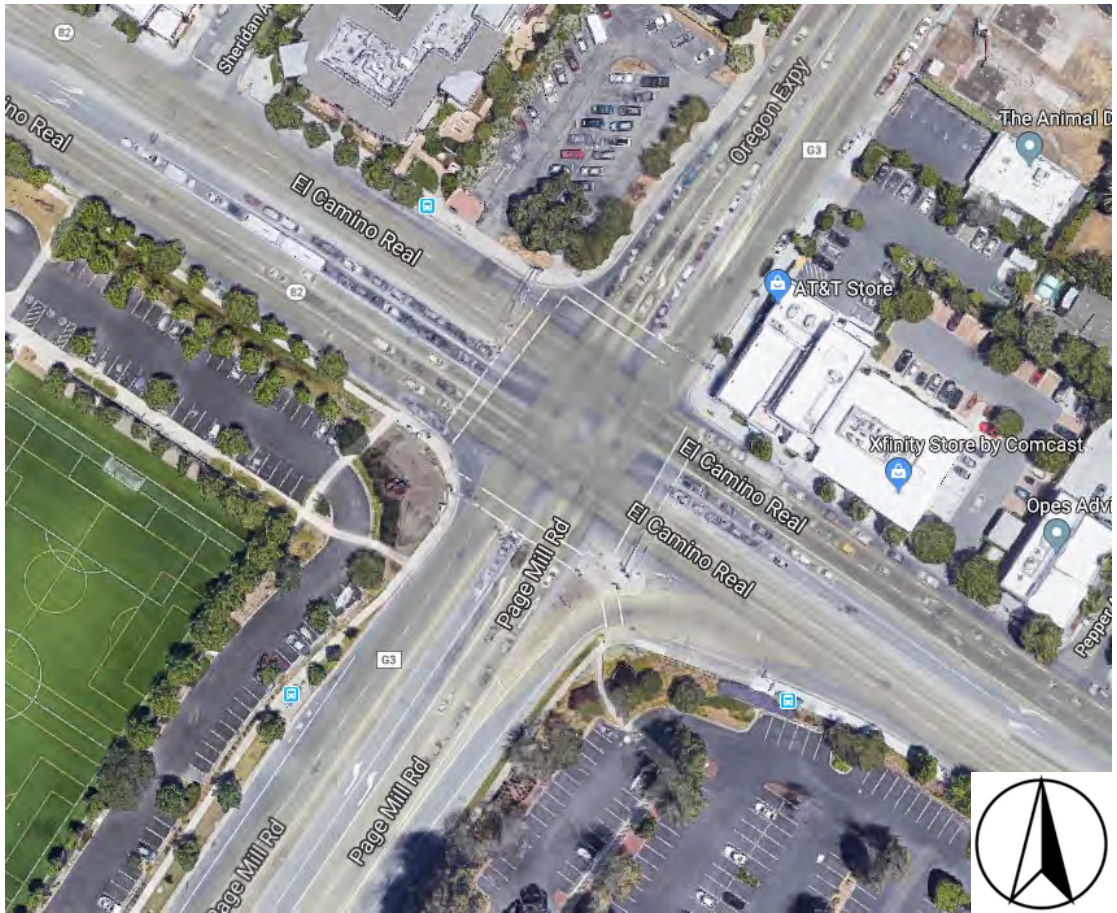
Proposed Layout

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

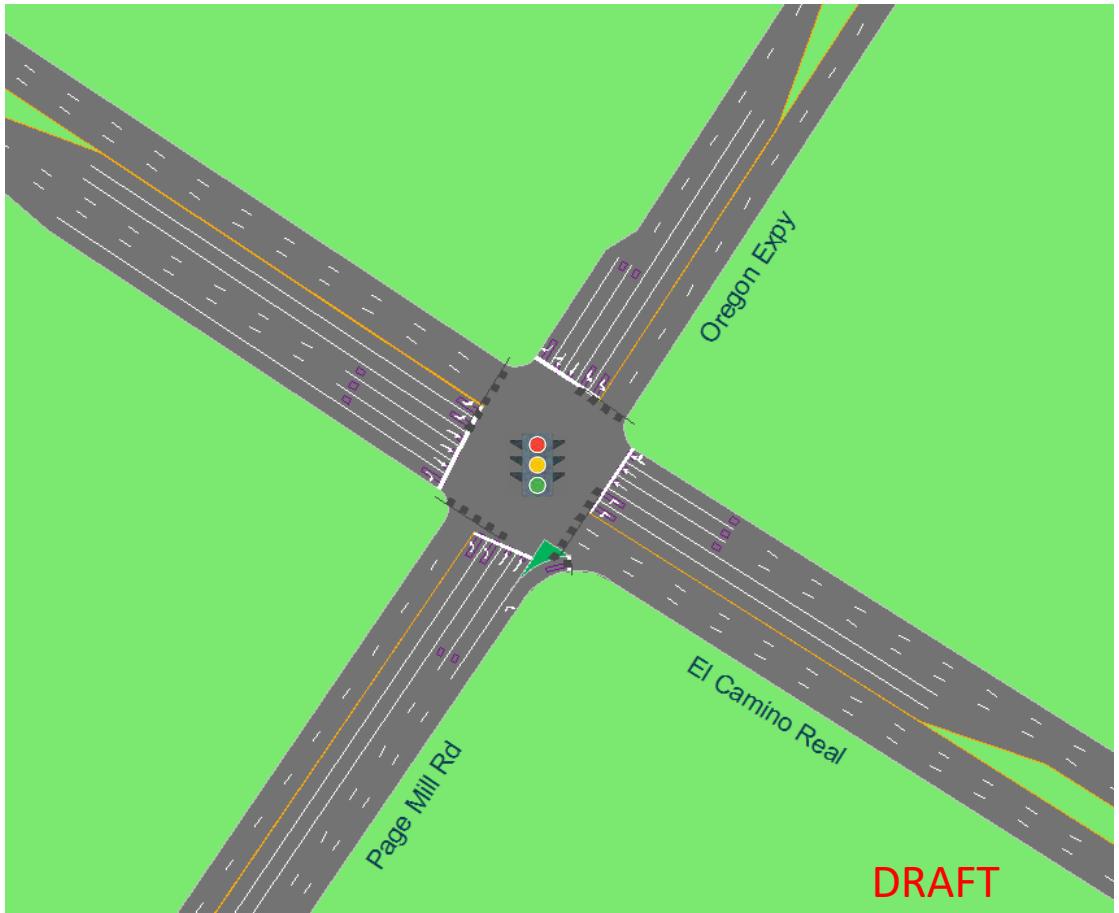
- Install westbound right turn lane from Oregon Expressway to El Camino Real
- Optimize signal timing

This option is part of the Churchill Closure alternative.

Existing Layout



Proposed Layout



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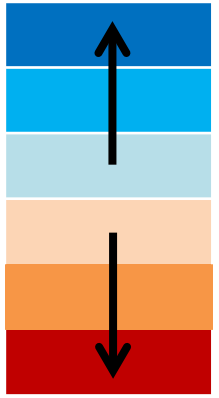
E	Finance with feasible funding sources			
F	Minimize right-of-way acquisition			
G	Reduce rail noise and vibration			
H	Maintain or improve local access			
I	Minimize visual changes along the corridor			
J	Minimize disruption and duration of construction	2 years	2 years	
	Order of Magnitude Cost	$50M to $65M*	$300M to $400M*	*** Total Preliminary Construction Costs in 2018 dollars with escalation to 2025 (Subject to Change)**

Legend:
Improvement



Impact

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Churchill Avenue Engineering Challenges

	Engineering Impacts	Closure	Viaduct
L	Creek/Drainage Impacts	❑ Pump station required for lowered pedestrian/bike way. ❑ Increased risk of flooding with pump stations ❑ Relocation of the pump house at Embarcadero Road required to accommodate widening of Alma Street	❑ No significant creek or drainage impacts
M	Long Term Maintenance	❑ Increased maintenance costs due to: •Pump stations for undercrossing dewatering	❑ Increased maintenance costs due to: •Above ground railroad alignment with embankments and viaduct structures
N	Utility Relocations	❑ Potential utility relocations in Alma Street and Churchill Avenue for ped/bike undercrossing ❑ Minor utility relocations for Embarcadero Road/Alma Street improvements	❑ Minimal impacts to utilities
O	Railroad Operations Impacts during Construction	❑ No temporary track (i.e., shoofly) required, only single tracking during nights and weekends	❑ Temporary track (i.e., shoofly) is required
P	Local Street Circulation Impacts during Construction	❑ Path along Palo Alto High School will temporarily be impacted during construction ❑ Temporary night and weekend closures of lanes on Churchill Avenue, Alma Street and Embarcadero Road	❑ Alma Street reduced to 2 lanes ❑ Removal of right turn lanes on Alma St at Churchill Avenue; however, traffic will still be able to flow as needed despite lane reduction ❑ 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%.

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Question & Answers

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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

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Stay Engaged

Visit our website at: ConnectingPaloAlto.com

Contact us at:

transportation@cityofpaloalto.org

(650) 329-2520

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Thank you

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