

Expanded Community Advisory Panel (XCAP) Meeting

Agenda Item #3a and #3b

10.16.19



Alma Street & Churchill Avenue – Traffic Operations



Alma Street & Churchill Avenue – Traffic Counts

- New Counts– Tuesday, October 1st, 2019
- New Counts compared to December 6, 2018 Counts
- New Counts – lower by 5% during the AM and 10% during the PM

	AM Peak Hour				PM Peak Hour			
	Thursday 12/6/18 Counts	Tuesday 10/1/2019 Counts	Difference	% Difference	Thursday 12/6/18 Counts	Tuesday 10/1/2019 Counts	Difference	% Difference
Total	2,592	2,474	-118	-5%	3312	2973	-339	-10%

- Peak Hour Turning Movement Count (TMC) - December 6, 2018 Counts
- Signal timings (Cycle Lengths – 150s AM and 180s PM)
- # of trains – 8 trains AM peak Hour and 8 trains PM peak Hour (can be up to 10 trains)
- Approximate gate down time – 45s (6 minutes in an hour)
- Simulation using PTV Vissim

Alma & Churchill – Existing Traffic Volumes



- AM Peak Hour
 - 150 Pedestrian
 - 260 Bicycles
 - 2,600 Vehicles
- PM Peak Hour
 - 60 Pedestrian
 - 28 Bicycles
 - 3,310 Vehicles

- Same as existing turning movement counts
- Same as existing signal timings
- # of trains – 12 trains AM peak Hour and 12 trains PM peak Hour
 - (1 train every 5 mins)
- Approximate gate down time – 45s (9 minutes in an hour)

Alma & Churchill – Existing versus Electrification (AM Queues)

Intersection Delay increases by 40% with electrification

LEGEND

- █ = AM Queues
- █ = AM Queues with Electrification



Alma & Churchill – Existing versus Electrification (PM Queues)

Intersection
Delay increases
by 40% with
electrification

LEGEND

- █ = PM Queues
- █ = PM Queues with Electrification



Alma & Churchill – 2030 Traffic Conditions

- Year 2030 Volumes – 13% increase in peak hour volumes (based on Palo Alto Travel Demand Forecasting Model)
- AM Peak Hour
 - 3 to 4 cycles for the northbound Left-turn to clear (2 to 3 cycles under Existing conditions)
 - 2 to 3 cycles for westbound Churchill (1 to 3 cycles under existing conditions)
 - 30% increase in delay
- PM Peak Hour
 - 3 to 4 cycles for eastbound Churchill (2 to 3 cycles under existing conditions)
 - 25% increase in delays

RAIL FACT SHEETS

Meadow-Charleston Hybrid

What is a hybrid?

For the hybrid alternative, the railroad tracks will be raised above Meadow Drive and Charleston Road. The new electrified railroad tracks will be built at the same location as the existing railroad tracks and will begin rising near El Verano Avenue, remain raised above Meadow Drive and Charleston Road, and return to the existing elevation north of the Ferne Avenue.

Between Park Boulevard and Alma Street, the roadways at Meadow Drive and Charleston Road will be lowered and will have a similar configuration that exists today, with the addition of Class II buffered bike lanes on Charleston Road. This will require expanding the width of the road to maintain bike lanes through the underpass of the railroad and to accommodate the new column supporting the railroad structure.

By the numbers

- Railroad track is designed for 110 mph.
- Meadow Drive and Charleston Road are designed for 25 mph.
- Maximum grade on railroad is 1%.
- Maximum grade on roadway is 8%.
- Travel lane widths are 10-12 feet.
- Bike lane widths are 5-6 feet.

Neighborhood Considerations

- Vertical clearance of Meadow Drive and Charleston Road under the railroad will be 15.5 feet.
- The railroad tracks will be approximately 15 feet above the existing street between Meadow Drive and Charleston Road.
- With grade separations at Meadow Drive and Charleston Road the traffic at nearby intersections is expected to improve.
- During construction, Alma Street, Meadow Drive, and Charleston Road will be reduced to two lanes, and right turn lanes on Alma Street at Meadow Drive and Charleston Road will be removed.

Engineering Challenges

- A non-standard temporary vertical clearance of 12 feet will be required on tracks. Caltrain's minimum allowable clearance is 15.5 feet.
- Lowering of the roadways will require a pump station.
- Increased long-term maintenance costs and risk of flooding due to pump stations.
- Major utility relocations will be required for the lowered roadways.

Cost Breakdown

Roadway & Railroad Items	\$92M to \$115M
Structure Items	\$13M to \$20M
Right-of-way & Utilities	\$21M to \$25M
Support Costs	\$37M to \$45M
Escalation to 2025	\$37M to \$45M
TOTAL PROJECT COSTS	\$200M to \$250M



42nd Ave, San Mateo

For more information visit:
<https://connectingpaloalto.com>



Ground Level View - Looking East
Charleston Road Intersection



Proposed Hybrid Solution Overview - Looking East
Meadow Drive Intersection



Backyard View - Looking East
Typical Property West of Tracks

Draft Fact Sheets will be posted online with the October 16, 2019 Meeting Materials
<https://connectingpaloalto.com/presentations-and-reports/>

Draft Fact Sheets

Evaluation with City Council-Adopted Criteria

Facilitate movement across the corridor for all modes of transportation

Meadow Drive and Charleston Road will be grade separated from the railroad for all modes and will remain open.

Reduce delay and congestion for vehicular traffic at rail crossings

With construction of the grade separation, the railroad crossing gates and warning lights at Meadow Drive and Charleston Road will be removed. Thus, the traffic will not be interrupted by gates coming down.

Provide clear, safe routes for pedestrians and cyclists crossing the rail corridor, separate from vehicles

Pedestrians/cyclists will be separated from train traffic, and bike lanes will be added Charleston Road.

Support continued rail operation and Caltrain service improvements

A temporary railroad track will be required and a crossover track located north of the San Antonio Caltrain Station will be relocated.

Finance with feasible funding sources

At a construction cost of \$200-\$250 million, additional funding sources will need to be secured.

Reduce rail noise and vibration

Train horn noise and warning bells will be eliminated by the replacement of the at-grade crossings with grade separations. Train wheel noise could radiate out; however, this can be mitigated with a sound barrier.

Minimize visual changes along the corridor

Railroad tracks will be approximately 15 feet above grade. Landscaping with trees will be incorporated for screening where feasible.

Maintain access to neighborhoods, parks, and schools along the corridor while reducing regional traffic on neighborhood streets

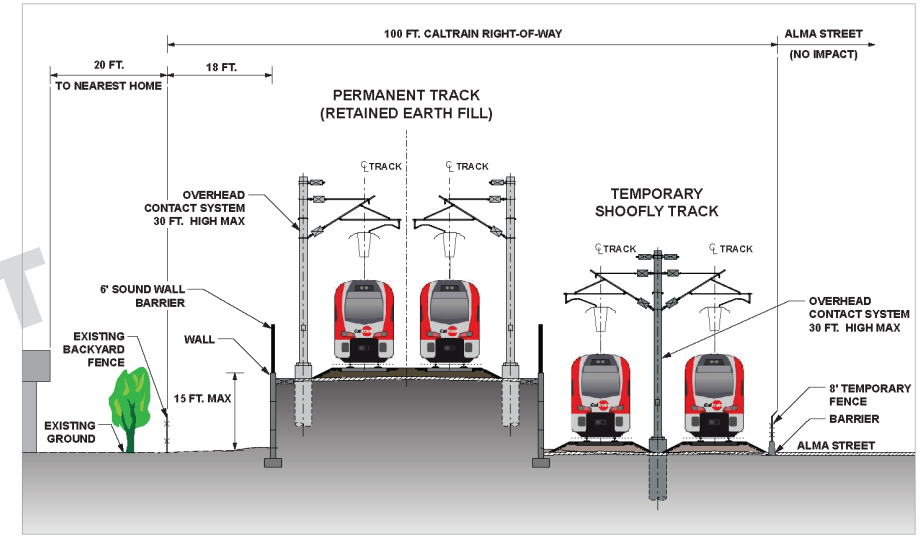
No diversion of regional traffic with construction of grade separations.

Minimize right-of-way acquisition

No acquisition of private properties is required; however, driveway modifications will be required.

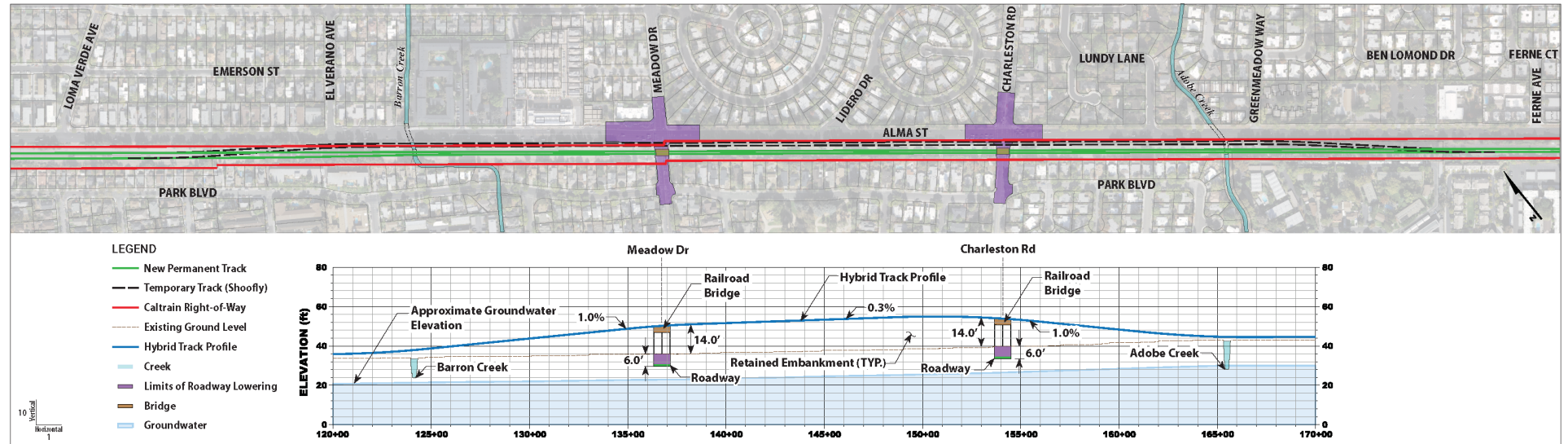
Minimize disruption and duration of construction

Extended lane reductions at Alma Street, Meadow Drive, and Charleston Road will be required. Construction would last for approximately 4 years.



Example Section - Hybrid - Looking North (Typical Between Meadow Drive & Charleston Road)

Concept Plan and Profile



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The background is a photograph of a railway track, tinted with a uniform green color. In the foreground, a white crossing sign is visible, partially obscured by the tracks. The tracks recede into the distance, creating a sense of depth.

Thank you