Undercrossing at San Antonio Station

Proposed Churchill Avenue Undercrossing Concept - Option 1 - Looking North

Proposed Churchill Avenue Undercrossing Concept - Option 2 - Looking West

CITY OF PALO ALTO

Churchill Closure with Mitigations

About the Closure

For the Churchill closure alternative, the railroad tracks will remain at their existing location and elevation (as is). Churchill Avenue will become a T-intersection with Alma Street on the east side and will end at Mariposa Avenue on the west side. A pedestrian/bike only undercrossing will be constructed. Two options are proposed: one crosses under the railroad tracks only (Option 1) and the other crosses under both the railroad tracks and Alma Street (Option 2). Ramps and stairs in varying configurations will provide access to the undercrossing for pedestrians and cyclists.

There are several intersection modification associated with the Churchill Avenue closure to mitigate the anticipated diversion in traffic. These modification will include:

- **Embarcadero Road/Alma Street:** constructing a pedestrian/bike overcrossing at Embarcadero Road, widening Alma Street on the Embarcadero underpass, adding a left turn lane from southbound Alma Street, and installing a new signal at the Embarcadero Road/Kingsley Avenue/High Street intersection.
- **El Camino Real/Embarcadero Road:** optimizing signal timing and installing an additional westbound left turn lane and northbound right turn lane.
- **Alma Street/Oregon Expressway:** signalizing both on/off ramps.
- **El Camino Real/Oregon Expressway-Page Mill Road:** optimizing signal timing and installing a westbound right turn lane and northbound right turn lane from Oregon Expressway to El Camino Real Road.

Proposed Churchill Avenue Undercrossing Concept Overview - Option 1

For more Rail Fact Sheets visit: https://connectingpaloalto.com/fact sheets/

By the numbers

- Churchill Avenue is designed for 25 mph.
- Maximum grade on pedestrian/bike ramp is 8% with 5-foot landings.
- The pedestrian/bike ramp is 8-10 feet wide and approximately 230ft long with a maximum grade of 8%. 5-foot landings are spaced 35 feet apart. Dimensions are subject to change in the next phase of design.
- Travel lane widths are 10-12 feet.
- Bike lane widths are 5-6 feet.
- Construction period is approximately 2 years.

Engineering Challenges

- Pedestrian/bike undercrossing will require a sump pump.
- Relocation of pump house at Embarcadero Road will be required to widen Alma Street.
- Utility relocations will be required for pedestrian/bike undercrossing.
- Additional environmental review may be required for the Embarcadero Road underpass, which has been identified as eligible as a historic resource.

Neighborhood Considerations

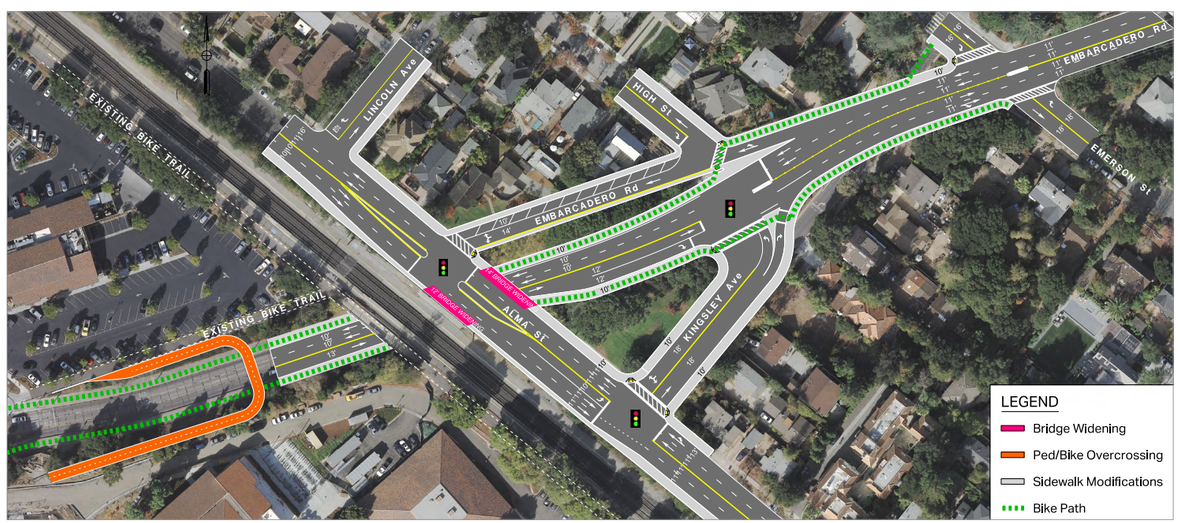
- During construction, Embarcadero Road, Alma Street, and Churchill Avenue will be closed intermittently at night and on weekends.
- Vertical clearance of the pedestrian undercrossing will be 8-10 feet.
- The railroad tracks will remain at the existing grade at Churchill Avenue.
- Traffic mitigations will be implemented to improve traffic at nearby intersections and reduce traffic on residential streets.

Proposed Churchill Avenue Undercrossing Concept - Option 2 - Looking East

Cost Breakdown

Roadway & Railroad Items	$22M to $24M
Structure Items	$4M to $9M
Right-of-way & Utilities	$4M to $7M
Support Costs	$11M to $14M
Escalation from 2018 to 2025 dollars	$9M to $11M
TOTAL PROJECT COSTS	**$50M to $65M**

Preliminary and subject to change. Maintenance costs and relocation of fiber optic lines not included. Intersection improvements included.



Proposed Embarcadero Road/High Street/Kingsley Avenue Plan View

Evaluation with City Council-Adopted Criteria

Facilitate movement across the corridor for all modes of transportation

Churchill Avenue will be closed to vehicles at the railroad tracks. Pedestrians and cyclists will be grade separated from the railroad in Option 1. For Option 2, pedestrians and cyclists will be grade separated from the railroad and vehicle traffic on Alma Street.

Reduce delay and congestion for vehicular traffic at rail crossings

With closure of Churchill Avenue, the traffic at nearby intersections will be impacted; however, this can be mitigated.

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

Pedestrians/cyclists will be separated from train traffic and vehicles.

Support continued rail operations and Caltrain service improvements

A temporary railroad track will not be required.

Finance with feasible funding sources (Order of magnitude cost)

The closure would require the lowest levels of local funding, with a substantial portion of capital costs covered by Regional, State and Federal sources.

Reduce rail noise and vibration

Train horn noise and warning bells will be eliminated with the removal of the at-grade crossings with roadway closure. Utilizing EMU trains instead of diesel engines will also reduce noise. There would be no change to vibration levels at nearby receptors.

Minimize visual changes along the corridor

Railroad tracks remain at existing grade. Residual roadway areas from closure provide opportunities for landscaping.

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

Vehicle access will be diverted and resultant regional traffic will be mitigated. Pedestrian and cyclist access will improve to mode separation.

Minimize right-of-way acquisition (Private property only)

No acquisition of private properties is required; however, there will be impacts to Palo Alto High School property. There also may be some parking loss on the east side of Churchill Avenue for the pedestrian/bike undercrossing (Option 2 only).

Minimize disruption and duration of construction

The closure will have minimal road closures (nights/weekends only). Construction would last for approximately 2 years.

Proposed Churchill Avenue Undercrossing Concept Overview - Option 2