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City Council Meeting

Connecting Palo Alto

Rail Grade Separation Project

Discussion Outline

- Introduction
- Detailed Review of Churchill Avenue Alternatives
- Overview/Discussion on additional Studies
- Summary & Recommendations
- Public Comments
- Councilmembers Question & Comments

Purpose

- Review Three Grade Separation Design Alternatives for Churchill Avenue and Confirm Which Alternative(s) Continue Towards Selection of Preferred Alternative and discuss additional studies that will help in furthering the selection of preferred alternative(s) for Churchill Avenue.
- Direct staff on the additional studies that staff should pursue to evaluate the Churchill Avenue Grade crossing.
- Following the City Council meeting tonight, staff recommends:
 1. To initiate contract amendment and finalize scope with Consultant to perform recommended additional work for all three crossings (November 2021)
 2. Bring the contract amendment for City Council Approval at all three crossings (December 2021/January 2022)

Review of Issues from Study Session

- Detailed Design Review
- Additional Studies for Council Consideration
 - Track Review and Caltrain Coordination
 - Traffic Study Update (2040)
 - Design Refinement of Underpass Alternatives
 - Preliminary Geotechnical Investigations
 - Box Jacking System/Geotechnical Investigation & Feasibility Study
 - Shadow Analysis (Light Plane Review)
- Additional Noise Study
- Storm Drainage Infrastructure
- Additional Outreach
- Urban Designer
- Conceptual Design for Ped/Bike Undercrossing At Seale And Loma Verde
- Sustainability

Churchill Avenue – Alternatives

- **Closure with Mitigations**
 - **Option 1 & 2**
- **Viaduct**
- **Partial Underpass**



Churchill Ave – Closure with Mitigation

Option 1 - Layout



LEGEND

- Fence
- Right-of-Way
- Ramp
- Landscaping
- Roadway Modifications
- Sidewalk Modifications
- Undercrossing Structure
- Stairway



Churchill Ave – Closure with Mitigation

Option 1 - Renderings




Alma Street - Looking North



Alma Street - Looking Southeast


Churchill Ave – Closure with Mitigation

Option 2 - Layout



LEGEND

- Fence
- Right-of-Way
- Ramp
- Landscaping
- Roadway Modifications
- Sidewalk Modifications
- Undercrossing Structure
- Stairway



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Churchill Ave – Closure with Mitigation

Option 2 - Renderings



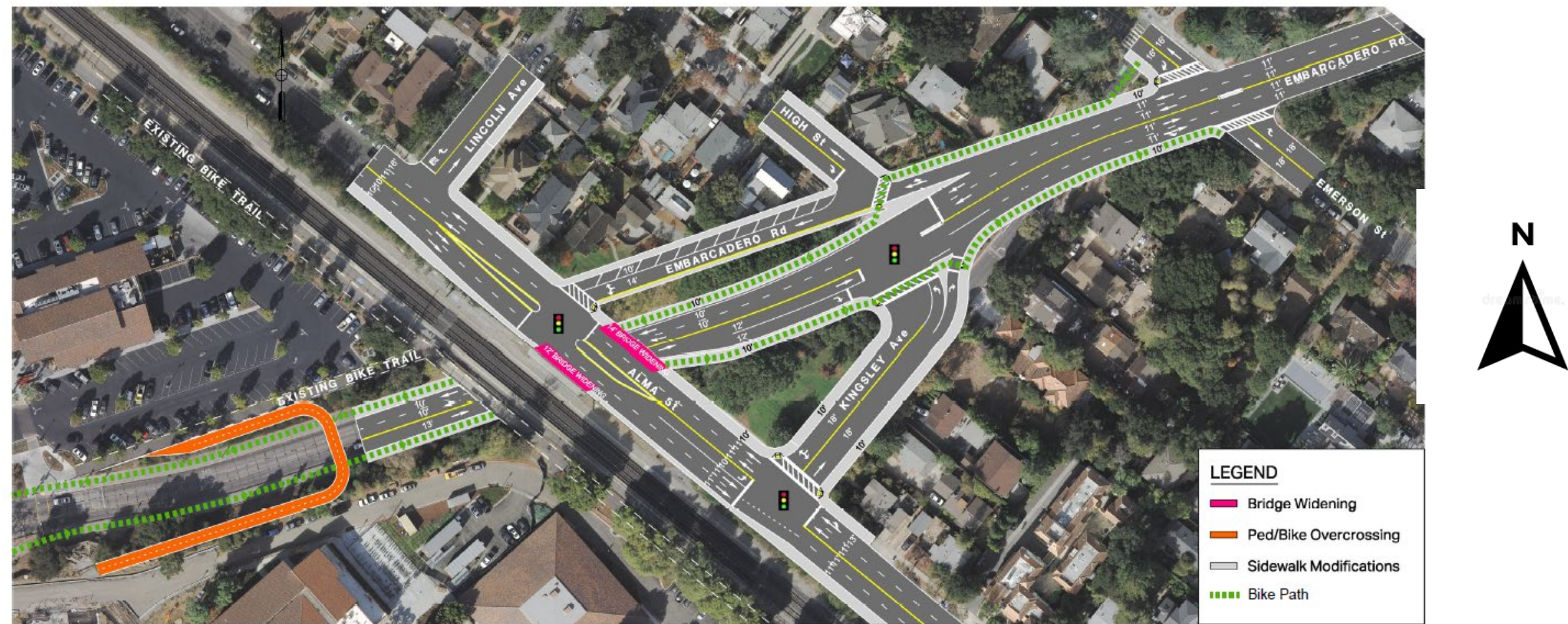
Churchill Avenue – Looking East



Churchill Avenue – Looking West

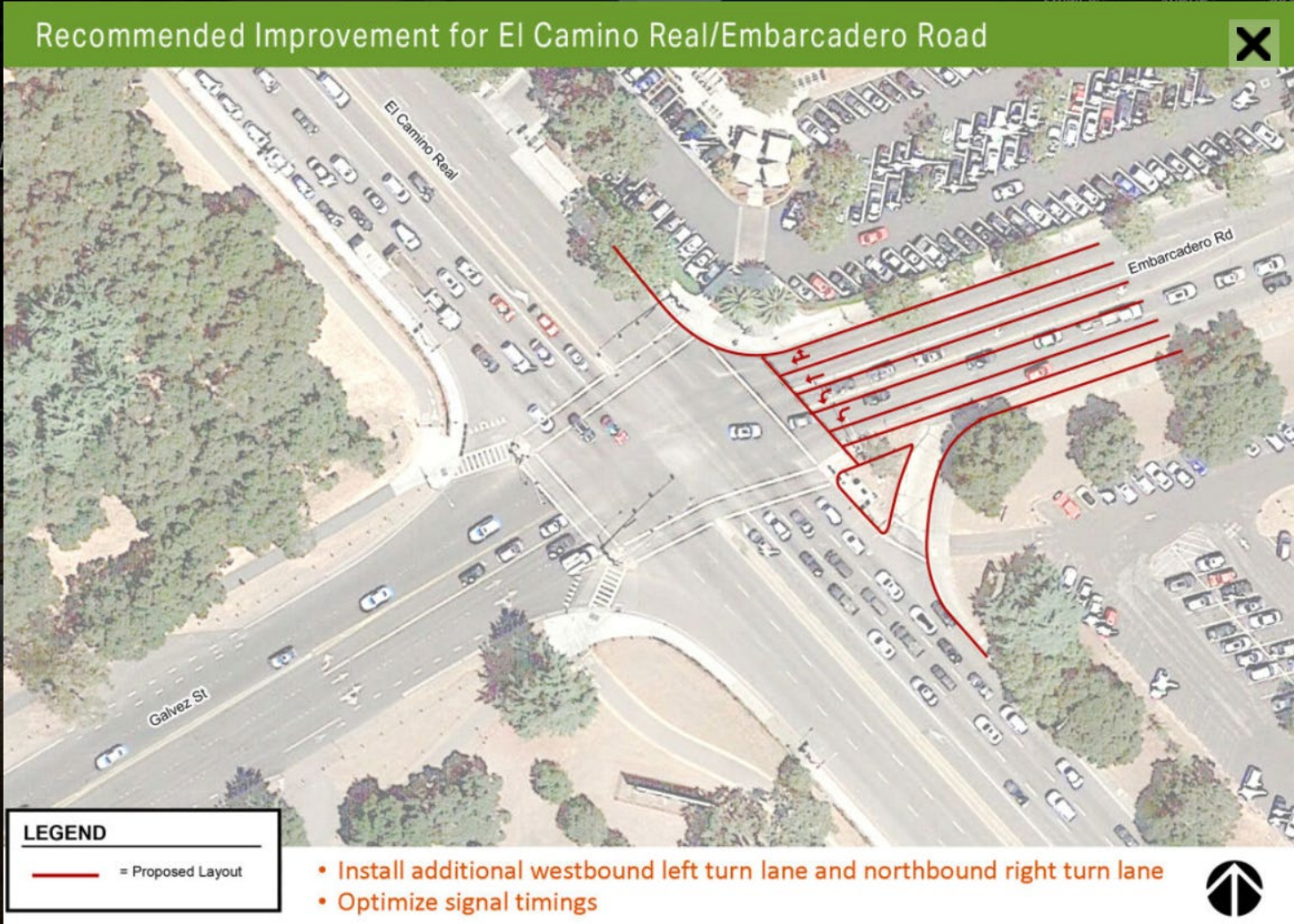
Churchill Ave – Closure with Mitigation

Embarcadero & Alma Area



Churchill Ave – Closure with Mitigation

El Camino Road and Embarcadero Road



Churchill Ave – Closure with Mitigation

El Camino Road and Oregon Expressway



Figure 10
El Camino Real and Page Mill Road/Oregon Expressway Improvements

Churchill Ave – Closure with Mitigation

Alma Street & Oregon Expressway

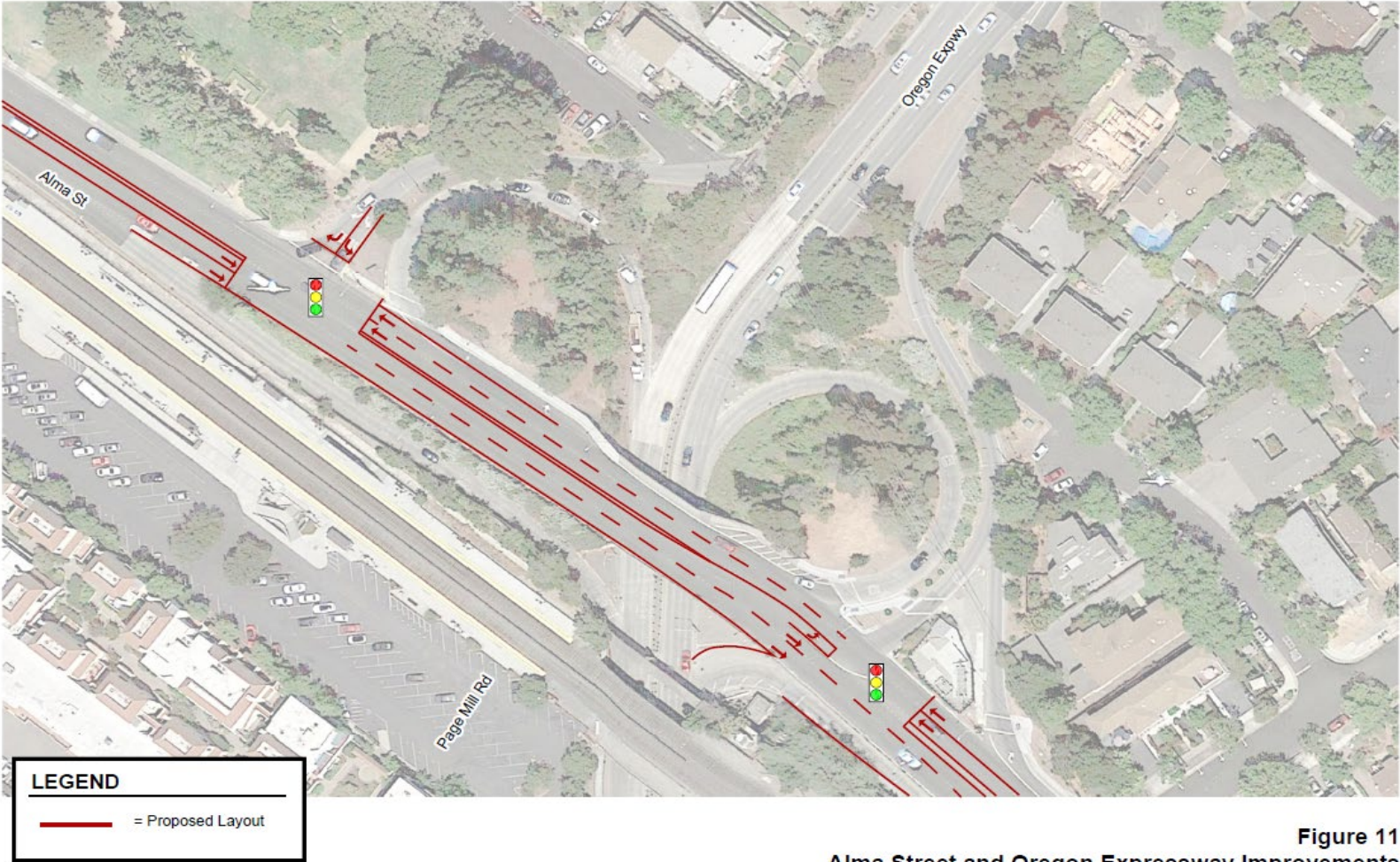


Figure 11
Alma Street and Oregon Expressway Improvements



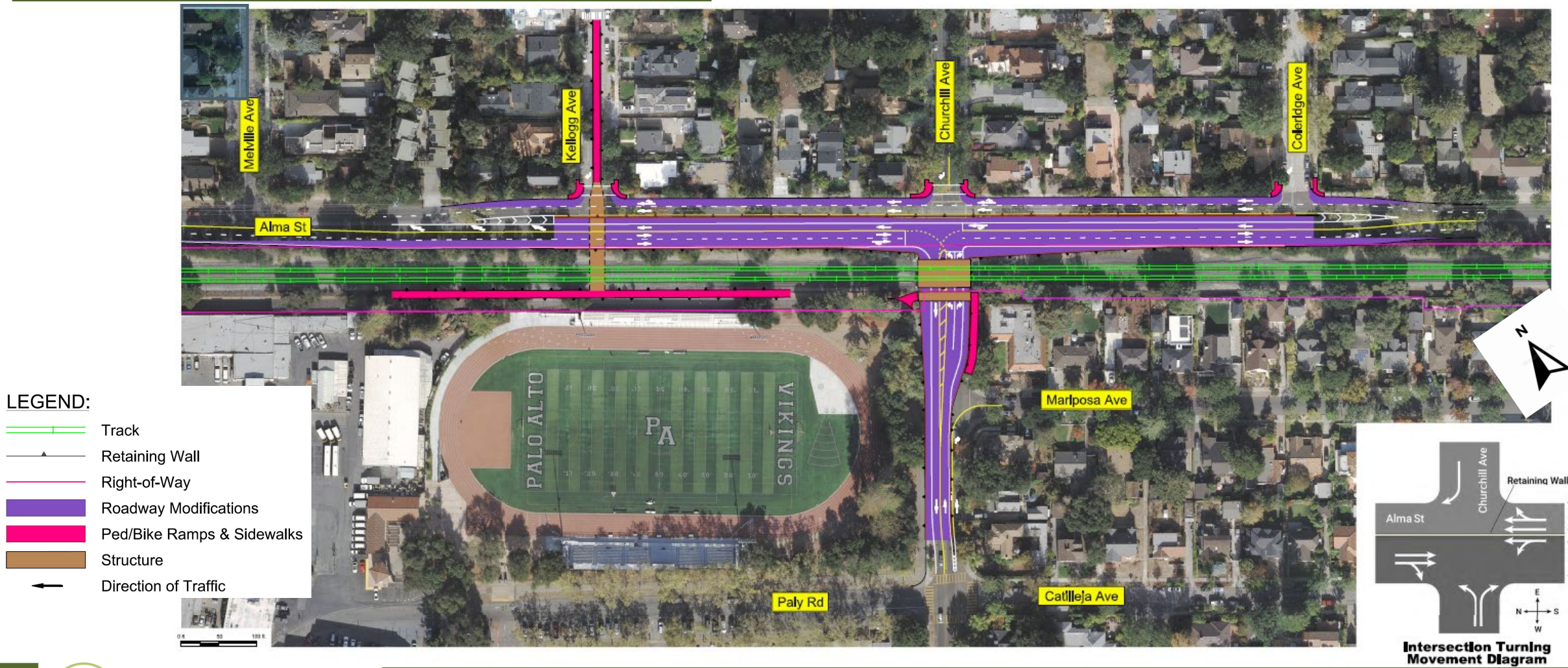


Churchill Ave – Viaduct Rendering



Churchill Ave – Partial Underpass

Layout



Churchill Ave – Partial Underpass

Photo Simulation



Before (Existing Condition)
(Looking North on Alma St)



After (Proposed Project)

Churchill Ave – Partial Underpass

Renderings



Looking Northwest
(PAHS in Background)



Looking North on Alma St

XCAP Recommendation

Six of nine members voted to support the Closure of Churchill Avenue Crossing

- The remaining three said they could not support the recommendation without further study.
- In a follow-on motion by a vote of 7-0-2 additional mitigations and studies for the Churchill Closure alternative were recommended beyond what was proposed by consultants.
- In a second follow-on motion, the same seven supported Option 2 of the bike/pedestrian tunnel (tunnel in the middle of Churchill) for the Closure with Mitigations alternative with further study of improvements, while the other two members abstained.

Track Review and Caltrain Coordination

Scope of Work

- Gather Data from Caltrain
 - Evaluate Alternatives
 - Meet with Caltrain
 - Prepare Memorandum Report
-
- **Determining if 4 tracks would not be precluded, as indicated in the Caltrain Business Plan, could potentially eliminate one or more alternatives.**

Preliminary Cost Estimate
\$ 90,000 – \$ 110,000

Traffic Study Update (2040)

Scope of Work

- Model Land Use and Forecast
 - Traffic Calculations
 - Documentation
- Since Palo Alto has not identified any growth beyond 2030, updating traffic volumes for 2040 land use would only affect zones outside of Palo Alto, and thus not make a significant difference to volumes in the project's study area.

Preliminary Cost Estimate
\$ 45,000 – \$ 55,000

Design Refinement of Underpass Alternatives

Scope of Work

- Enhance Alternatives
 - Update Exhibits & Renderings
 - Update Cost Estimates
 - Update Miscellaneous Items
 - Documentation
- Further study defines the alternatives in more detail and could provide additional information on the alternatives; however, this information may not help narrow the alternatives.**
- **Council Directed Design Refinement of Underpass Alternative for Charleston Meadow**

Preliminary Cost Estimate
\$ 125,000 – \$ 150,000

Preliminary Geotechnical Investigations

Scope of Work

- Data Collection and Review – Groundwater and Geotechnical
- Field Investigation – Two CPT Borings
- Memorandum Report – Draft and Final

Preliminary Cost Estimate
\$ 130,000 – \$ 160,000

- **Geotech investigations are typically completed during the next phase; however, could confirm assumptions and unit costs, and could help determine if the box jacking method has some merit.**
- **Council Directed preliminary Geotechnical Investigation for Charleston Meadow**
- **Obtain the cost for a second cost opinion of the Trench option, in particular to a company with experience of trenches, underground or subterranean methods in parallel to the geotechnical studies**

Box Jacking System/Geotechnical Investigation & Feasibility Study

Scope of Work

- Data Collection and Review – Groundwater and Geotechnical
 - Construction Methodology Evaluation
 - Construction Phasing / Sequencing
 - 3D Animation
 - Cost Estimates & Memorandum Report
- Relatively costly study since there are many aspects to consider (structural, geotechnical, groundwater, traffic impacts, etc.), and Caltrain would likely not review/endorse the construction method in this preliminary phase. In addition, there may not be cost savings realized with the Box Jacking System.**

Preliminary Cost Estimate

\$ 350,000 – \$ 600,000

Geotech Preliminary: \$ 125,000 – \$ 150,000

Structural Analysis \$230,00- \$450,000

Shadow Analysis (Light Plane Review)

Scope of Work

- 3D Model Development
- Shadow Analysis
- Study Documentation and Final Report

Preliminary Cost Estimate
\$ 20,000 – \$ 25,000

- **Visual impact studies are typically completed during the next phase; however, could help better understand one of the visual impacts of an elevated structure.**

Additional Noise Study

Scope of Work

- Expand Study Area/Measurements:
 - Expand Analysis for Future Growth
 - Analyze Structural Noise/Vibration
 - Update Noise Study Report
-
- **Adding Caltrain's long-term (2040) growth forecasts and the potential addition of substantial HSR activity to the analysis could cause some of the alternative recommendations to shift.**

Preliminary Cost Estimate
\$ 55,000 – \$ 65,000

Storm Drainage Infrastructure

Scope of Work

- Evaluate Drainage for Trench Alternatives
 - Evaluate Drainage for Underpass Alternatives
 - Prepare Memorandum Report
- Preliminary Cost Estimate**
\$ 200,000 – \$250,000
- **Could further define the impacts related to creek crossings, pump stations and siphons; and could help to better define drainage costs for all alternatives.**
 - **Negotiations with the regulatory agencies for permit approvals to divert the creeks for the trench would be lengthy and challenging since there are other “least impacting” alternatives that could be considered.**

Additional Outreach

Scope of Work

- Conduct Meetings with Additional Stakeholders
- Prepare Meeting Notes

Preliminary Cost Estimate
\$ 15,000 – \$20,000

- **Could help gather feedback and refine some details, and thus make it easier to narrow the alternatives under consideration.**

Urban Design

Scope of Work

- Urban Design / Public Realm Opportunity Mapping
- Urban Design / Public Realm Design Enhancements
- Meetings

Preliminary Cost Estimate
\$ 100,000 – \$125,000

- **Further study defines the alternatives in more detail and could provide additional information on the alternatives; however, this information may not help narrow the alternatives.**
- **This task is typically performed after the selection of the preferred alternative.**

Conceptual Design for Ped/Bike Undercrossing At Seale And Loma Verde

Scope of Work

- Conceptual Layouts
- Cost Estimates
- 3D Renderings
- Miscellaneous Public Outreach Materials

Preliminary Cost Estimate
\$ 80,000 – \$100,000

- As directed by the Council on August 23, 2021, Seale and/or Loma Verde Ped Crossings will be reviewed as part of the City's Ped/Bike Transportation Plan update and these projects would be independent of the grade separation study.

Sustainability

Scope of Work

- Sustainability Strategy Plan
- Bike/Ped Usage

Preliminary Cost Estimate
\$ 50,000 – \$80,000

- **This is typically completed during the next phase, and likely would not help narrow the alternatives.**

Additional Studies: Cost Distribution by Location

No.	Brief Description	Churchill	Meadow/Charleston
Task 1	4-Track Review and Caltrain Coordination	40%	70%
Task 2	Traffic Study Update (2040)	55%	75%
Task 3*	Design Refinements of Underpass Alternatives	40%	70%
Task 4*	Preliminary Geotechnical Investigations	40%	70%
Task 5	Box Jacking Evaluation	50%	70%
Task 6	Light Plane Review	33%	67%
Task 7	Additional Noise Study	65%	65%
Task 8	Storm Drainage Infrastructure	20%	90%
Task 9	Outreach	40%	70%
Task 10	Urban Designer	40%	70%
Task 11*	Bike/ Ped Usage	NA	NA
Task 12	Sustainability	40%	70%

Task #*	Tasks Directed by Council for Meadow-Charleston Crossings
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Next Steps

Next Steps:

The following are some of the potential items for consideration at the next Study Session:

- Initiate discussion to finalize scope and perform Contract amendment with Consultant for additional studies.
- Perform additional studies of selected alternatives as directed at each of the locations and bring back additional information for Council consideration
- Invite regional partners like Caltrain and Valley Transportation Agency (VTA) to discuss City Council's concerns and questions
- Rail Committee to discuss the financial consideration, when substantive information from the additional studies becomes available.
- Narrow the number of alternatives further for selection of preferred alternative(s)
- Direct staff to prepare the Project Study Report



Council Action

The goal is to provide grade separation and improve traffic safety and circulation across the Caltrain Corridor.

Recognizing this goal, tonight staff is seeking Council direction to:

- 1) Review Three Grade Separation Design Alternatives for Churchill Avenue and Confirm Which Alternative(s) Continue Towards Selection of Preferred Alternative
- 2) Provide direction on desired additional studies to help in further the selection of preferred alternative(s) for Churchill Avenue grade separation



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