



Rail Committee Staff Report

From: Philip Kamhi, Chief Transportation Official

Report Type: ACTION ITEMS

Meeting Date: May 17, 2023

Report #: 2302-0973

TITLE

Approve the refined conceptual plans for the Partial Underpass Alternative at Churchill Avenue and the Underpass Alternatives at Meadow Drive and Charleston Road.

EXECUTIVE SUMMARY

On October 19, 2022, and November 18, 2022, Rail Committee study sessions were conducted to review the various elements under consideration for the refinement of the conceptual plans for the Partial Underpass Alternative at Churchill Avenue and the Underpass Alternatives at Meadow Drive and Charleston Road. Based on the discussion, the Consultant updated the conceptual plans. Staff is seeking Rail Committee review and approval of the refined conceptual plans.

BACKGROUND

On May 23, 2022, City Council authorized staff to seek additional feedback from the key stakeholders for the revisions of the Partial Underpass Alternative at Churchill Avenue and Underpass Alternatives at Meadow Drive and Charleston Road. City Staff and the consultant reached out to the Pedestrian and Bike Advisory Committee (PABAC), Palo Alto Unified School District (PAUSD), Stanford, City School Transportation Safety Committee (CSTSC), and members from the community who were involved in developing the conceptual design of these partial underpass alternatives for their feedback and comments for refinement to the conceptual plans.

Staff compiled all the comments received from these stakeholders and developed a master list of all comments. These comments were then categorized into four elements: Bicycle and Pedestrian, Roadway, Structures, and Rail. The various elements related to these facilities were discussed during Rail Committee study sessions on October 19, 2022 (CMR 14813) ¹ and November 18, 2022 (CMR 14904) ².

¹ CMR 14813 <https://www.cityofpaloalto.org/files/assets/public/agendas-minutes-reports/agendas-minutes/rail-committee/2022/20221019/20221019prailr-linked.pdf>

² CMR 14904 <https://www.cityofpaloalto.org/files/assets/public/agendas-minutes-reports/agendas-minutes/rail-committee/2022/20221118/20221118prailsm-final.pdf>

DISCUSSION

Based on the study session review, the following elements were refined in the Conceptual Plans of the Partial Underpass at Churchill Avenue and Underpass Alternatives at Meadow Drive and Charleston Road.

Refinements to Conceptual Plans

Bike and Pedestrian Facilities:

Width & Pathway Configuration:

The width of the bicycle and pedestrian ramps is proposed to be increased from 10 feet to 12 feet, if possible, without significantly affecting the right of way. The plans have been updated to reflect the wider pathways. The lane widths on Kellogg Avenue have also been increased to accommodate emergency vehicles. The Palo Alto Fire Department concurred with a reduction of up to 4 feet of the California Fire Code requirement of 20 feet, allowing for a 16-foot roadway width on Kellogg Avenue, which will be achieved by removing the landscaping strip between the roadway and sidewalk. It will result in reduced frontage landscaping for property owners and will likely also need undergrounding of existing utilities. The proposed improvements are shown in the Plan View of Kellogg Avenue and Rendering in Figures 1 and 2 below. Figure 3 shows a cross-section view and provides dimensions. Similar improvements can be implemented at Seale Avenue if Peers Park is chosen as the preferred location for the ped/bike undercrossing.

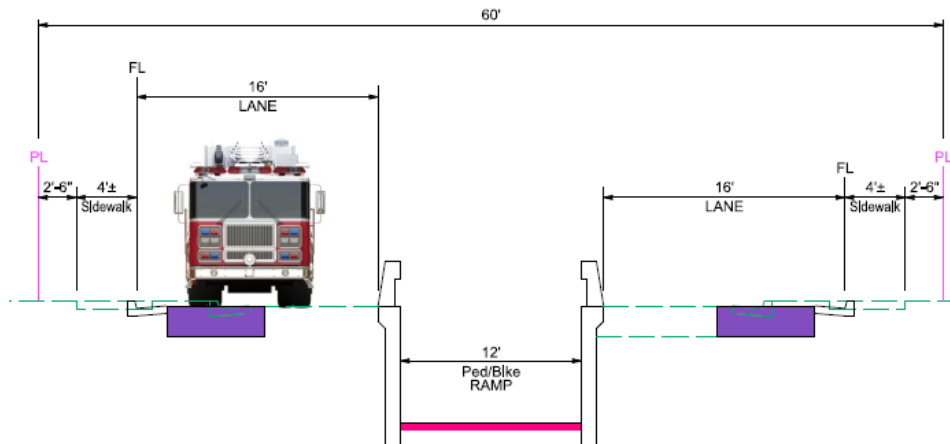
Figure 1: Plan View of Kellogg Avenue



Figure 2: Rendering of Kellogg Avenue (looking west)



Figure 3: Cross-section View at Kellogg Avenue



Typical Section Kellogg Ave

Widening pathways at other locations has implications to the right-of-way. For Charleston Avenue crossings, the widening of the bicycle and pedestrian pathway on the south sides from 10 feet to 12 feet will require additional right-of-way from the fronting properties; as such, the project (edge of the pathway) will be two (2) feet closer to the homes.

Figure 4: Rendering of Charleston Avenue looking east)



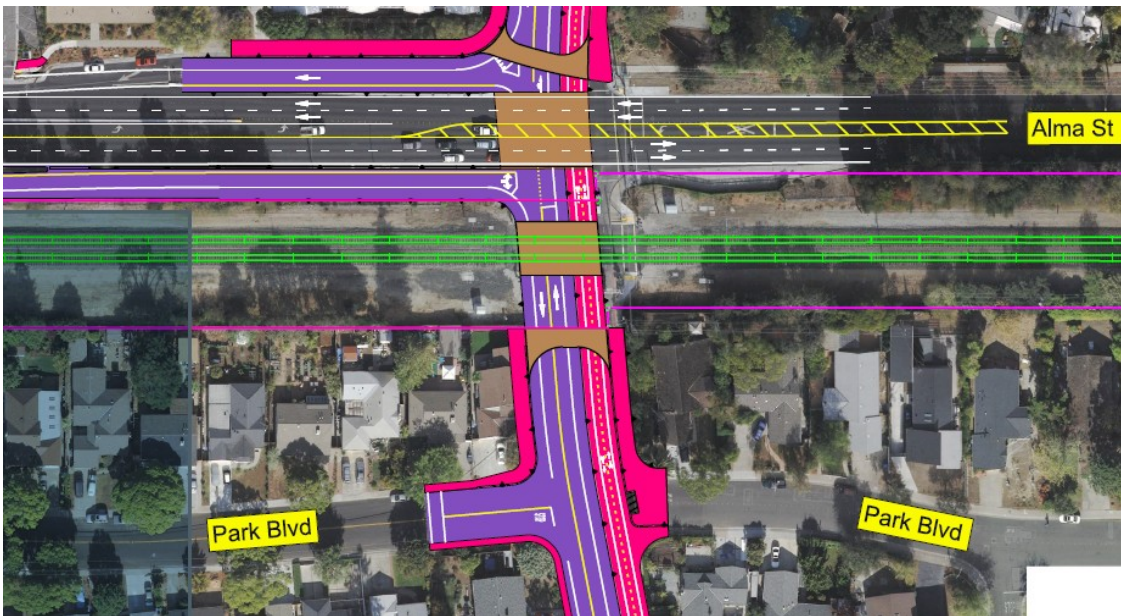
Design Speed, Design Bicycle, Turning Radius, Sight Distance:

The feedback about the design bicycle and design speed was considered in the refinement of plans. To improve the maneuvering ability and line of sight of bicyclists at each location, the turning radius was adjusted to accommodate standard bicycles, tandem bikes, and bike trailers. The modification is depicted in the following rendering, which shows the improved turning movements at Kellogg Avenue undercrossing (Figure 5) and Meadow Drive pedestrian bridges (Figure 6).

Figure 5: Rendering of the Kellogg Avenue Tunnel at Embarcadero Bike Trail.



Figure 6: Meadow Drive: Pedestrian Bridges



Bicycle Pedestrian Pathway on each side (Meadow and Charleston Underpass Alternative):

The staff and consultant evaluated the impact of adding bicycle and pedestrian pathways on both sides of the underpass alternative at the Meadow Drive and Charleston Road crossings. The underpass alternative is designed with a roadway grade of 10-12% and a pathway grade of 5%. Due to the different grades of these facilities, there will be elevation differential between the two structures. Therefore, accommodating a separated bicycle and pedestrian pathway on both sides would result in prohibiting additional traffic movements at these crossings.

At Meadow Drive, all turning movements from and to Alma Street will become physically prohibitive, thereby allowing only through movements on Meadow Drive. At Charleston Road, the eastbound right turn movement onto southbound Alma Street would be prohibited. This results in additional traffic entering the roundabout at Charleston Avenue, just west of Mumford Place.

The traffic consultant's review of the turning movement volumes indicates that these prohibited movements would cause vehicles that previously used these turning movements to be rerouted through the Alma Street and Charleston Road intersection to utilize the roundabout on Charleston Road between Wright Place and Mumford Place. Therefore, causing diversion and increased traffic on to the remaining movements at the Charleston crossing. Based on this simulation analysis, this new alternative is projected to cause significant congestion and queue build-up at the Alma Street and Charleston Road intersection, resulting in poor traffic circulation.

Based on the simulation analysis, all intersections on Charleston Avenue are expected to operate at LOS F during both the AM and PM peak hours under both existing and year 2030 conditions with the new underpass alternative. During both the AM and PM peak hours, queues for the westbound right-turn movement from Charleston Road onto Alma Street would extend back into the roundabout. Queues from the roundabout would extend along westbound and eastbound Charleston Road and onto the northbound right-turn lane on Alma Street. Queues for the southbound left-turn movement on Alma Street would extend back toward E. Meadow Drive during both peak hours. (Attachment J, Traffic Analysis).

Kellogg Ave vs Seale & Bike lane configuration on the pathway (Churchill Avenue):

The consultant has performed an initial review at Seale Avenue to assess the feasibility of a bicycle and pedestrian undercrossing. A preliminary conceptual plan showing the conceptual alignment is developed (Figure 8). The concept utilizes space available in Peers Park to daylight the undercrossing on the west side of the railroad. On the east side, a configuration will be similar to the currently proposed concept at Kellogg Avenue (Figure 7).

The merits of different locations, including Kellogg Avenue and Seale Avenue, will be considered along with community feedback as part of the Bicycle and Pedestrian Transportation Plan.

Figure 7: Bike Lane Configuration at Kellogg Avenue

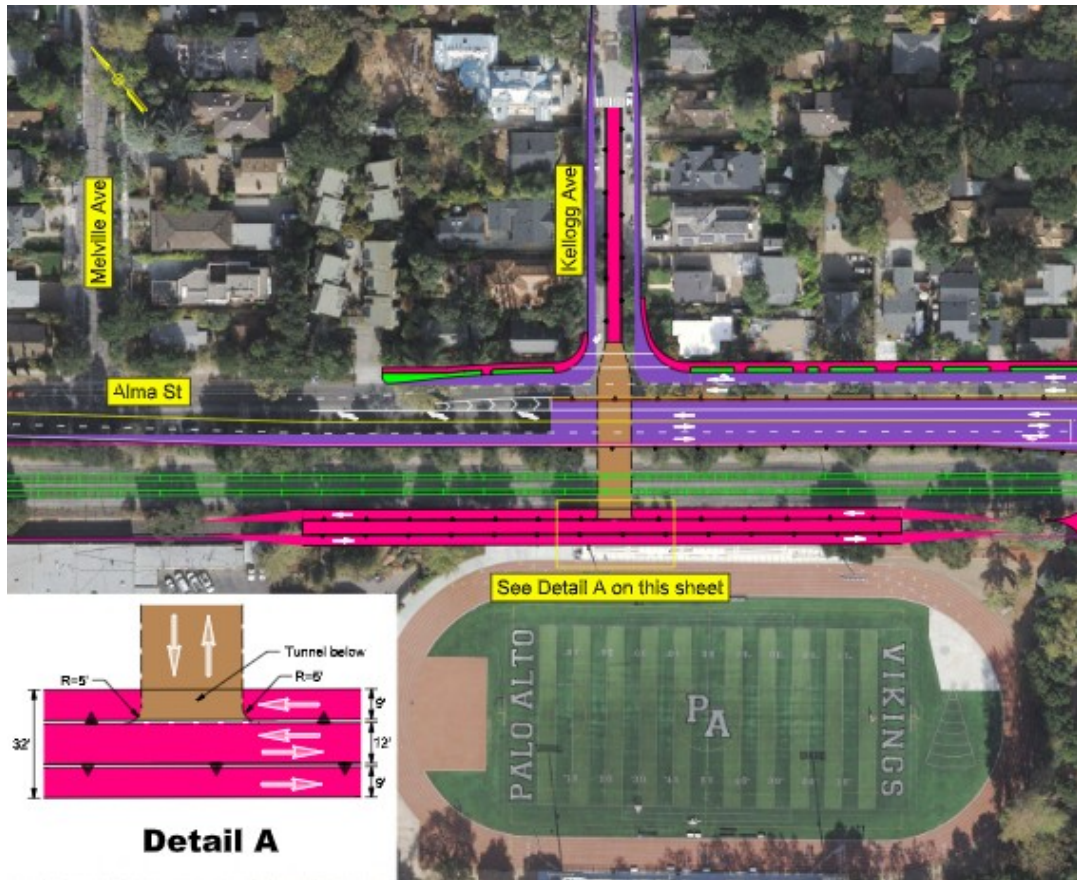
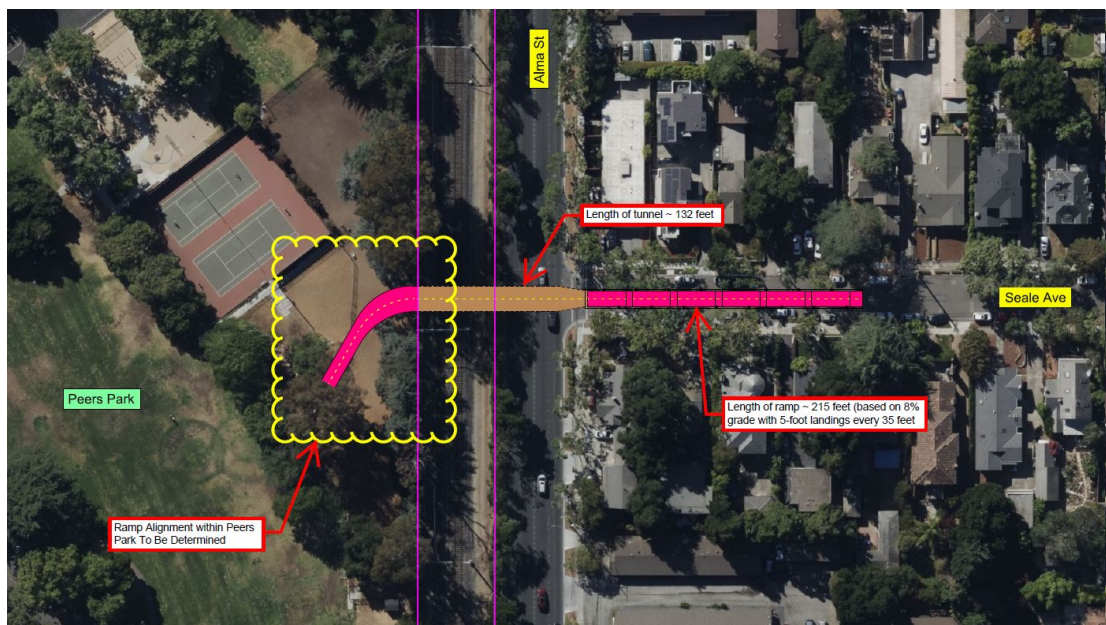


Figure 8: Proposed Bike lane configuration at Seale Avenue



Roadway Facilities – Refinements to Conceptual Plans

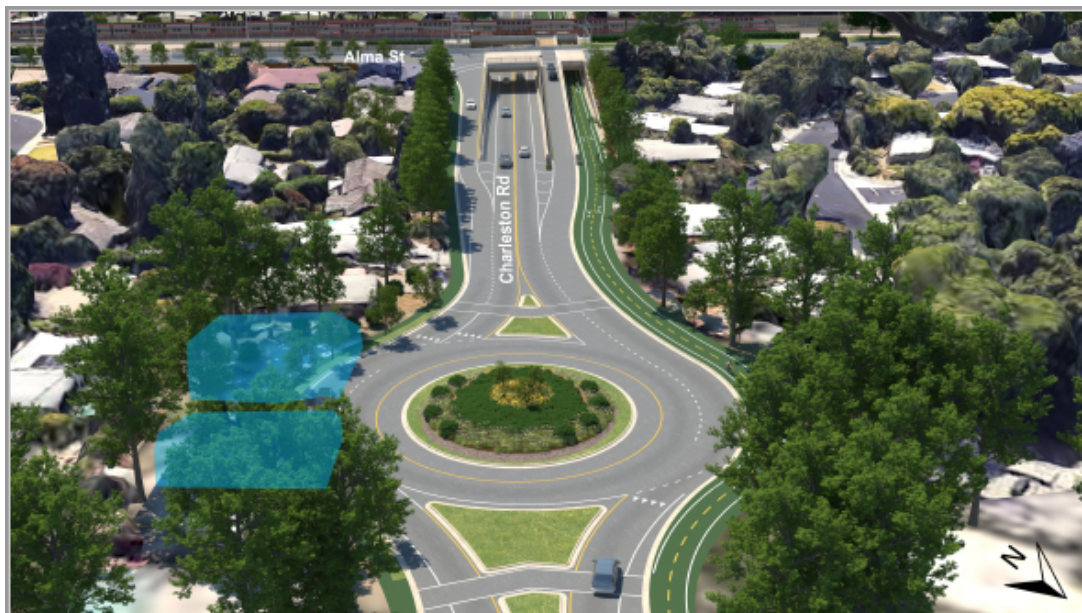
Roundabout for Charleston Underpass Alternative only:

The Roundabout will be reviewed further for its size during the preliminary engineering design phase and development of environmental documents. In addition, the project goal is to construct the smallest footprint that meets the design guidelines while accommodating traffic movements. The traffic engineering review through simulation indicates that the two-lane roundabout will operate adequately to accommodate the traffic movements. A 150-foot weaving area will be provided before entering the roundabout in the eastbound direction to allow for lane assignment of turning vehicles.

A bike lane extension was also reviewed to extend to the bicycle and pedestrian path from its current termini at Mumford Place to the intersection of Carlson Court (Figure 9). Due to right of way constraints, the bicycle and pedestrian path width will be narrowed from 20 feet on the west side of the roundabout to a twelve (12) foot Class I facility from the east side of the roundabout to Carlson Court. This extension of the Pedestrian and Bicycle Path may also require undergrounding of existing utilities

The initial review indicates that the right-of-way constraints will result in the elimination of the existing landscaping in this segment to provide a shared Class I bicycle and pedestrian path. A detailed review will need to be performed during the preliminary engineering design to propose alternative landscaping and to review the roadway cross-section in this segment.

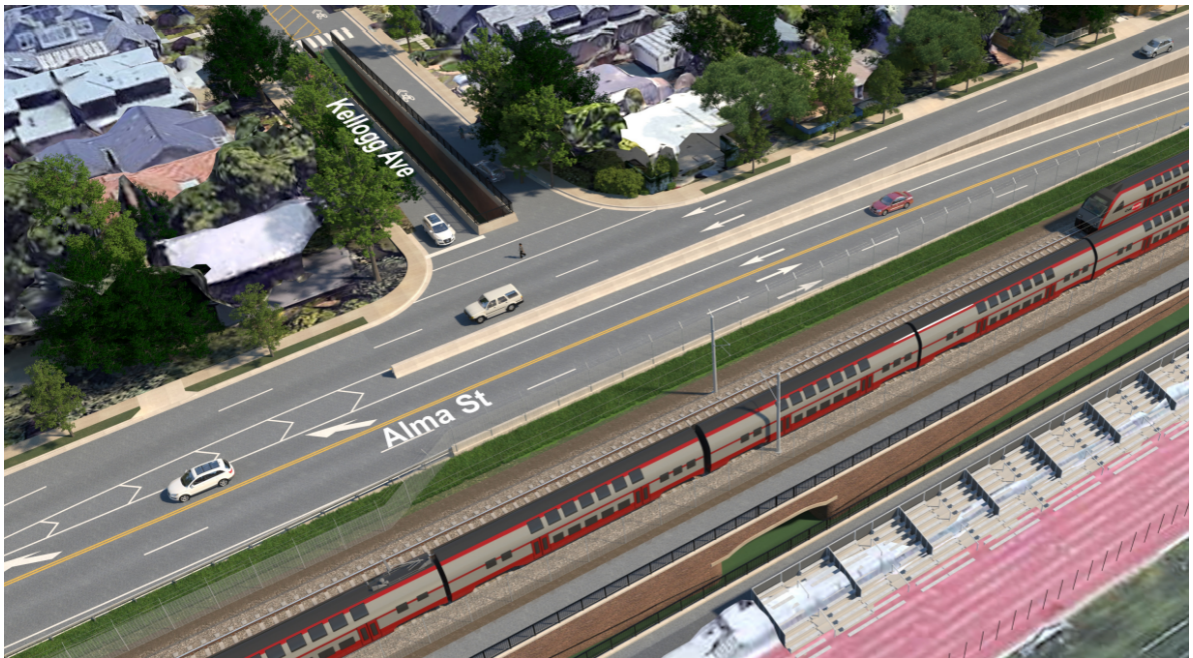
Figure 9: Charleston Road looking west; showing a 2-way bike path on the north side of the roundabout.



Buffer along the Alma Street Frontage:

In previous study sessions, the members of the Rail Committee expressed their concerns regarding the contiguous sidewalk along Alma Street and emphasized the need for a buffer between the sidewalk and curb to create a safer environment for pedestrians. The plans for Churchill Avenue and Charleston Road now propose a four-foot-wide strip of landscaping that will serve as this buffer zone (Figure 10). Implementing this buffer segment will lead to an increase in right-of-way required and will also necessitate adjustments to the existing driveways. The buffer zone will limit the availability of right-of-way for existing utilities thereby requiring additional undergrounding of existing utilities

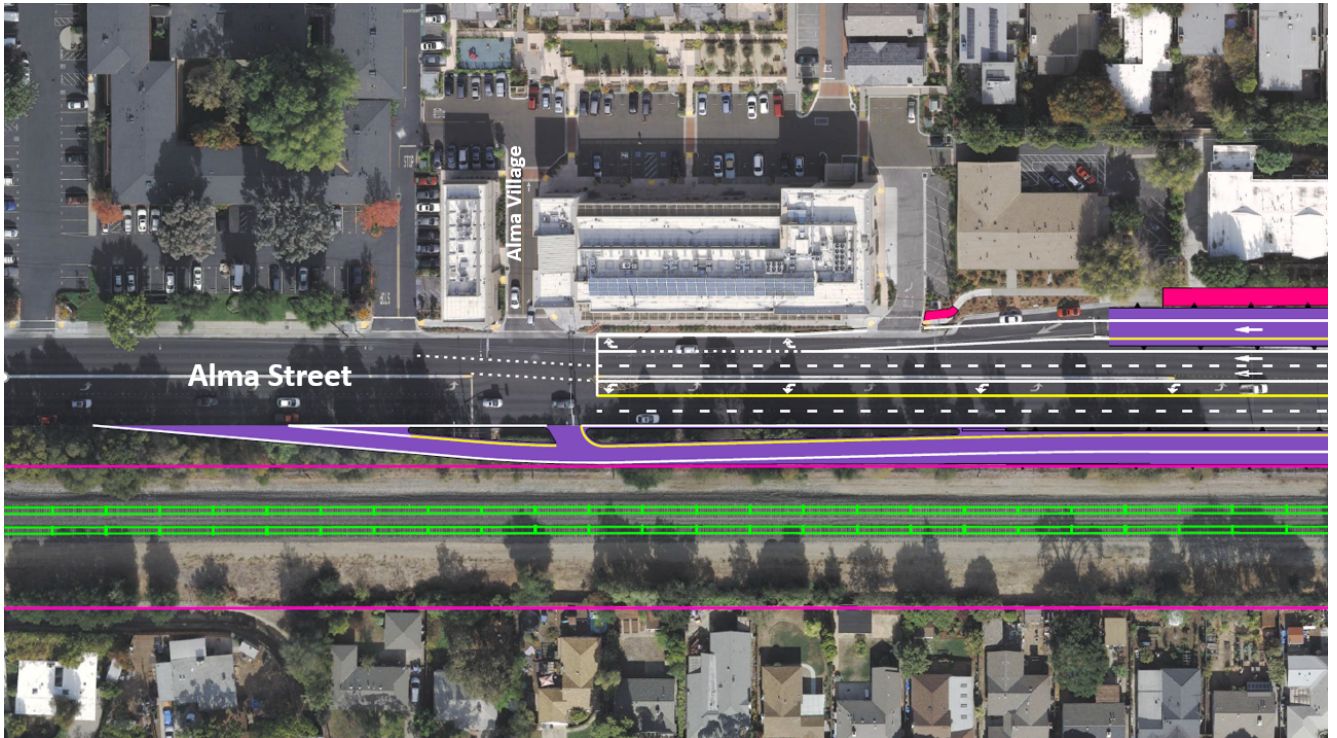
Figure 10: Alma Street at Kellogg Avenue; showing buffer between the sidewalk and travel lane



Northbound Left Turn movement at Alma Village

During the review of turning movement, it was noted that U-turns at Alma Village and Alma Street intersection will only be feasible for regular passenger vehicles. Therefore, the U-turns will be restricted for trucks at this intersection (Figure 11).

Figure 11: Charleston Road looking west; showing a 2-way bike path on the north side of the roundabout.



Structures:

Bridge Deck Span:

The conceptual plans are updated to revise the bridge span as discussed. The center column bridge support is now eliminated at Churchill Avenue to provide a continuous single-span bridge (Figure 12).

Figure 12: Churchill Avenue looking east, showing a single-span bridge.



Staff seeks the Rail Committee's review and approval of the updates to the various elements. The updated plans, profiles, and renderings of the Partial Underpass Alternative at Churchill Avenue and Underpass Alternatives at Meadow Drive and Charleston Road are attached.

RESOURCE IMPACT

Revisions to existing conceptual plans and cost estimates provided herein are within the approved scope of the consultant contract. For the development of new alternatives or revisions beyond the refinement of current alternatives, additional services of the consultant would be needed.

ENVIRONMENTAL REVIEW

The proposed action is part of a planning study for a possible future action, which has not been approved, adopted, or funded and is therefore exempt from the California Environmental Quality Act (CEQA) in accordance with CEQA Guidelines Section 15262. The future decision to approve the construction of any one of the identified potential alternatives would be subject to CEQA and require the preparation of an environmental analysis. Environmental review and design for the grade separation project will be performed in the subsequent steps of the project development.

STAKEHOLDER ENGAGEMENT

The Rail Committee meetings are open to the public and therefore provide the community with opportunities to provide comments to the rail committee and City.

ATTACHMENTS

Attachment A: Churchill Avenue Plan & Profile

Attachment B: Churchill Avenue Typical Sections

Attachment C: Churchill Avenue Renderings

Attachment D: Meadow Drive Plan

Attachment E: Meadow Drive Typical Sections

Attachment F: Meadow Drive Renderings

Attachment G: Charleston Road Plan

Attachment H: Charleston Road Typical Sections

Attachment I: Charleston Road Renderings

Attachment J: Hexagon Traffic Analysis

APPROVED BY:

Philip Kamhi, Chief Transportation Official

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