



Planning & Transportation Commission

Staff Report (ID # 10631)

Report Type:	Action Items	Meeting Date: 11/13/2019
Summary Title:	San Antonio Road & East Charleston Road Intersection Improvements Project	
Title:	Discuss the Concept Plan Alternatives for Improvements to the San Antonio Road and East Charleston Road Intersection and Recommend that City Council Direct Staff to Complete Final Design Plans, Environmental Analysis, Specifications and Estimates for Construction for the Preferred Alternative Concept Plan	
From:	Jonathan Lait	

Recommendation

Staff recommends that the Planning and Transportation Commission (PTC) take the following action:

1. Recommend City Council to review the preferred alternative concept plan for San Antonio Road and East Charleston Road intersection and direct staff to complete final design plans, environmental analysis, specifications and estimates for construction.

Report Summary

City staff initiated a traffic safety project at the intersection of San Antonio Road and East Charleston Road in response to resident and constituent concerns about traffic safety and operations at this intersection. The objectives of the project are to improve pedestrian safety, address intersection operations, and maintain or improve motor vehicle level of service. As part of developing the concept plans, four (4) community meetings have been held since 2018. The first meeting focused on understanding project goals, identifying issues and opportunities, and presenting details of existing conditions. Follow up community meetings included a discussion of various improvement alternatives for the intersection and corresponding effects on safety and operations. As a result of this community-driven process, City staff has identified a preferred alternative concept plan which includes improving pedestrian visibility and reducing crossing distances for two crosswalks by modifying the southwest corner for pedestrians and vehicular access to the frontage road, and by improving vehicular operations by adding a

second southbound left-turn lane on San Antonio Road and implementing an overlap phase for the southbound right-turn lanes.

Background

Both San Antonio Road and East Charleston Road are classified as arterial streets, and their junction is a major signalized intersection within the City of Palo Alto. For the purposes of this report, San Antonio Road runs north-south, and East Charleston runs east-west. A frontage road exists parallel to San Antonio Road on the west side that provides access to Fabian Way, to the 76 gas station, and to residents and businesses on the northwest quadrant of this intersection. This intersection provides a direct connection to the US 101 Freeway, the Jewish Community Center, Space Systems Loral, and the City of Mountain View; and has been identified as an intersection of concern due to complaints related to traffic congestion and pedestrian safety. Comprehensive Plan Goal T-2, concerning Traffic Delay and Congestion, states “Decrease delay, congestion and VMT with a priority on our worst intersections and our peak commute times, including school traffic”.

About 4,000 motor vehicles and 20 bicycles travel through this intersection during the one-hour morning peak on a typical weekday. This intersection currently operates at a motor vehicle Level of Service C during the morning peak-hour and Level of Service D during the evening peak-hour but will sometimes exceed its practical capacity when surges of traffic from multiple directions occur simultaneously. Level of Service D can be described as approaching unstable flow of traffic and occasionally waiting through more than one signal cycle before proceeding. San Antonio Road and Charleston Road are designated as a future enhanced bikeway in the Bicycle and Pedestrian Transportation Plan (2012) in the vicinity of this intersection.

In November 2017, City Staff began collecting and analyzing comprehensive traffic volume, speed and collision data. On April 26, 2018, Staff hosted the first community meeting where community members and stakeholders provided input on project goals and helped identify issues and opportunities. Two follow-up community meetings were held on September 5, 2018 and August 22, 2019, to discuss and present revised alternative concept ideas for the intersection. In addition, Staff also met with surrounding businesses in a daytime community meeting on February 12, 2019 to discuss any issues and concerns more directly related to the local business operations.

Staff received many constructive comments from the community. Most were related to specific pedestrian improvements, overall traffic safety, parking concerns, and maintaining or improving the current vehicle operations. With input from stakeholders and evaluation by the consulting team, two alternative concept plans were developed. These two alternatives are discussed in more detail below.

Discussion

The San Antonio Road and East Charleston Road Intersection Improvement project is intended to address concerns brought to staff by local residents that live near or commute through this intersection. The focus of this current project is targeted at three main goals:

- Improve access and mobility of all modes of travel;
- Reduce vehicular collisions and improve intersection safety for pedestrians; and
- Rationalize traffic operations.

Local residents, employees, and community center visitors have cited a history of collisions, pedestrian safety and congestion during the peak hours as recurring issues at this intersection. Of particular concern was pedestrian safety crossing the west leg of East Charleston Road with two conflicting southbound right-turn lanes on San Antonio Road. During field observations, it was noted that vehicles in the second right-turn lane do not always yield to pedestrians as required.

According to data assembled by the California Highway Patrol, using the Statewide Integrated Traffic Records System (SWITRS) database, this intersection had approximately 25 reported collisions over a five-year period from January 2012 to December 2016. For a typical collision history analysis, the last five years of complete data is commonly reviewed. In reviewing the reported-collision history and primary collision factors, the City's Transportation staff determined that most collisions were likely caused by unsafe speed or improper turning; and the prevailing crash type was rear-end or sideswipe, which can likely be attributed to vehicles speeding or heavy traffic congestion. The highest number of rear-end collisions occurred on westbound Charleston Road with the highest number of sideswipe collisions on southbound San Antonio Road and eastbound Charleston Road.

As part of the Office of Transportation's Traffic Safety Program, staff worked with the neighborhood to identify potential options and ideas and held a community meeting on April 26, 2018 at the Jewish Community Center. About 40 people were present at this meeting where staff presented three (3) preliminary ideas to address identified concerns that could be implemented within a short time and a longer-term idea that would be possible to implement with the US 101 Freeway Interchange project.

Preliminary Concept Idea A: Idea A includes removal of one southbound right-turn travel lane on San Antonio Road and addition of an Overlap phase in the traffic signal timing. Addition of a southbound bike lane on San Antonio Road and pedestrian improvements at southwest corner are also proposed. Two through southbound lanes and one left turn lane would be maintained.

Preliminary Concept Idea B: Idea B includes addition of a second southbound left-turn lane on San Antonio Road. Two through southbound lanes, one shared through-right turn lane and a right only turn lane would be maintained.

Preliminary Concept Idea C: Idea C combines features of both ideas A and B. This idea includes removal of one southbound right-turn travel lane and addition of a southbound bike lane on San Antonio Road. Pedestrian improvements at southwest corner and addition of an Overlap phase in the traffic signal timing are also proposed. It also includes addition of a second southbound left-turn lane on San Antonio Road. Two through southbound lanes would be maintained.

At the first meeting, residents were generally in favor of idea C but expressed concerns about traffic back up and congestion if one southbound right-turn travel lane were to be removed. Based on community input from the first outreach meeting as well as additional operational evaluations, idea “D” was developed to incorporate more protected pedestrian movement.

Preliminary Idea D: Idea D includes addition of a second southbound left-turn lane on San Antonio Road and pedestrian improvements at southwest corner. Two through southbound lanes would be maintained and the shared through-right turn lane would be converted to right only turn lane.

Newly developed idea D and previously discussed idea C were presented at the second community meeting held on September 5, 2018 at the Jewish Community Center. 45 people attended this meeting and provided constructive feedback on both ideas. Most people were generally in favor of idea D but were concerned about pedestrian safety when crossing the west leg of East Charleston Road with two conflicting southbound right-turn lanes on San Antonio Road (as it currently exists). Staff committed to further evaluate southbound right-turn signal operations. Some of the business owners requested another focused meeting with staff so they could better understand how the modifications at the southwest corner would impact them in terms of access and parking. As presented, corner modifications would eliminate three parking spaces along the frontage road on San Antonio and align the crosswalk for better visibility. Due to high parking demand, loss of three parking spaces is significant for businesses in this area.

Staff further revised idea D to add additional parking spaces further south such that no net loss of parking spaces along the frontage road would occur. Modifications to the southwest corner was also revised to incorporate a full third receiving lane (ten to 11 feet wide) for vehicles entering the frontage road and also to accommodate larger vehicles access to the frontage road and gas station.

Analysis¹

¹ The information provided in this section is based on analysis prepared by the report author prior to the public hearing. The Planning and Transportation Commission in its review of the administrative record and based on public testimony may reach a different conclusion from that presented in this report and may choose to take an action that is different than the recommended action.

After preliminary feasibility analysis, the concept ideas were reduced to two options: Concept Plans C and D, which could reasonably be implemented within the existing constraints. Both ideas and their alternate comparisons are discussed below:

Preliminary Idea C: This concept plan is included as Attachment A in this report. This Plan includes removal of one southbound right-turn travel lane and addition of a southbound bike lane on San Antonio Road and adds a southbound buffered bicycle lane. It also includes modifications to the southwest corner of the intersection and improves access to the San Antonio Road frontage road. These modifications would allow the crosswalk on the west leg of East Charleston to be aligned with the roadway at 90 degrees thus minimizing the exposure of vehicles to potential conflicts with pedestrians and reduce the severity of a conflict. Currently this crosswalk is skewed and results in reduced sight angles between pedestrians crossing and drivers turning right onto Charleston Road. Skewed crossings also result in additional distance pedestrians must travel to traverse the intersection. This additional distance requires the need for additional green time for the total walk interval of the pedestrian phase in signal timing.

Addition of an Overlap phase in the traffic signal timing is also proposed for the southbound right turn. An "overlap" is a special output of the traffic signal controller that allows for a right turn to receive a green arrow at the same time as a left –turn movement on the adjacent leg. This also allows for an "overlap" from one phase movement to another. At this intersection, the dedicated right turn lane would be signalized with a right turn arrow and would then operate when the adjacent eastbound left is green. This signal overlap would allow the southbound right-turn traffic to continue moving during some portions when the southbound through traffic has a red signal. The use of an overlap would potentially help the overall traffic capacity through this intersection.

This concept also includes addition of a second southbound left-turn lane on San Antonio Road to maximize queue storage and traffic operations in an effort to reduce congestion. This would improve traffic flow through the intersection by increasing the capacity of the roadway. This congestion mitigation technique would not require any right-of-way acquisitions and could be implemented by utilizing the current area that has median markings adjacent to the northbound through travel lane. Roadway configuration for southbound traffic would then be two left turn lanes, two through lanes, one bike lane and one right turn only lane.

Pros: Modifications to the southwest corner of the intersection shortens pedestrian crossing and improves sightlines. Bicycle lane adds bike safety for southbound direction. Addition of a second southbound left turn vehicular travel lane would increase roadway capacity.

Cons: Vehicular Level of Service (LOS) would worsen during the morning peak period and remain about the same during the evening peak period. The AM

peak period is affected by the right turn lane reduction along with existing heavy southbound right turning vehicle demands.

Preliminary Idea D: This concept plan is included as Attachment B in this report. Idea D includes keeping the second southbound shared right -turn lane on San Antonio Road but converts it to right-turn only (onto Charleston) modifies the southwest corner of the intersection, and adds an overlap phase as discussed above in Idea C. Two through southbound lanes would be maintained, however the right-most through lane would become a shared through-right lane for vehicles traveling to the frontage road south of the intersection. This would allow more vehicles to turn right thus improving the traffic flow during the morning peak period. Roadway configuration for southbound traffic would then be two left turn lanes, two through lanes, and two right turn only lanes.

Pros: Modifications to the southwest corner of the intersection shortens pedestrian crossing and improves sightlines. Addition of a second southbound left turn vehicular travel lane would increase roadway capacity. Southbound right turn capacity is maintained with overlap phase.

Cons: Bicycle conditions remain same as existing.

Using the City's adopted standards of significance for increased delays at signalized intersections and existing traffic volumes, staff evaluated both the preliminary ideas described above and determined that a reduction from two to one right turn travel lane on southbound San Antonio Road would trigger a potentially significant environmental impact at the intersection. Based on this analysis, staff recommends implementing idea D for improvements to the intersection of San Antonio Road and East Charleston Road.

Resource Impact

This project is funded through the Charleston-Arastradero Corridor Traffic Impact Fee. A total of \$900,000 was budgeted in the FY20 Adopted Capital Budget for this project.

Environmental Review

Given the nature of the proposed improvements for the concept plan, the project is anticipated to qualify for a Class 1 Categorical Exemption. However, this will be reviewed further and if necessary, an Initial Study/Mitigated Negative Declaration (IS/MND) will be prepared prior to final approval.

The Class 1 exemption covers minor alterations to existing facilities so long as they involve no or negligible expansion of use. Although the project would include addition of a second southbound left-turn lane on San Antonio Road, the overall roadway width and the existing curb-to-curb dimension remains unchanged. This signalized intersection is anticipated to operate at an improved motor vehicle level of service than it does under existing conditions.

Public Notification, Outreach & Comments

Notice cards for this public hearing were sent to residents and businesses within 500 feet radius of this intersection. Attendees who provided their email addresses during community meetings were also notified through an email. The meeting details were posted on social media and the city's website and were open to all.

More extensive outreach to the local businesses and residents during the four community meetings/workshops was conducted as described above in Background section of this report.

Next Steps

City Council consideration of this project is tentatively scheduled for December 16, 2019. Upon approval from City Council, staff will begin working with on-call consultants on the environmental analysis, plans, specifications, and estimates for construction.

Design and environmental work is scheduled to be completed by summer 2020. Construction will be scheduled soon thereafter.

Report Author & Contact Information

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PTC² Liaison & Contact Information

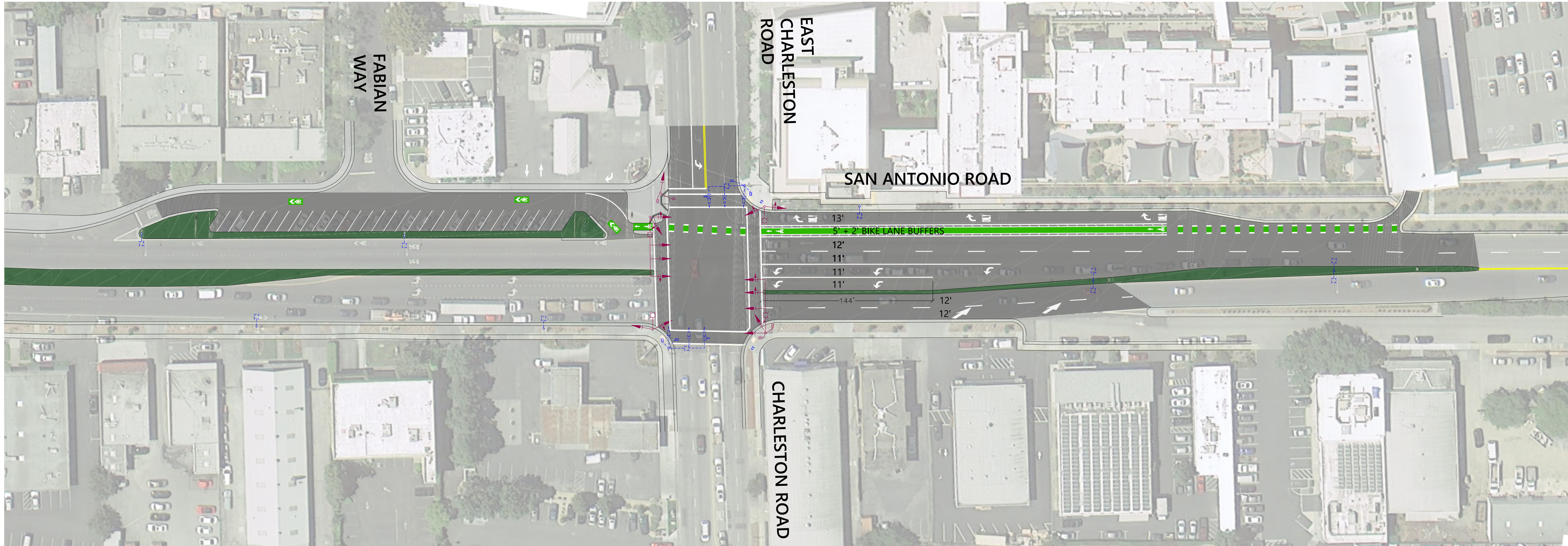
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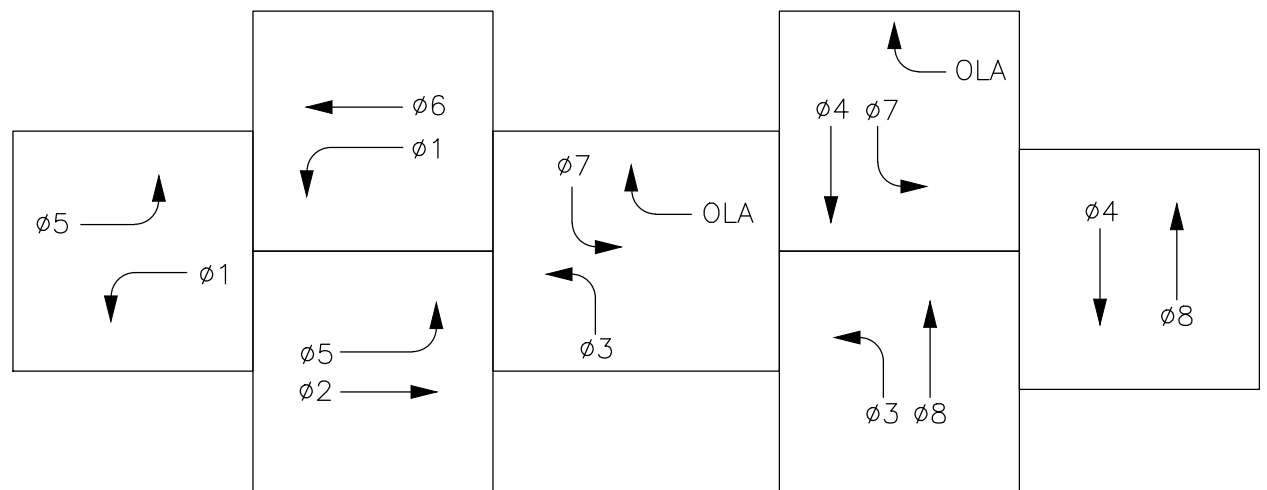
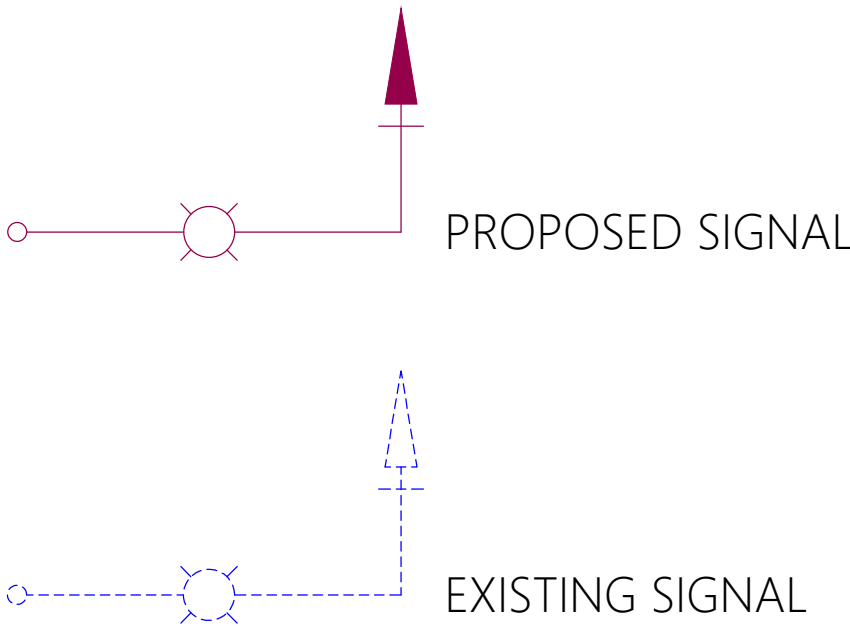
Attachments:

- Attachment A: Preliminary Concept Plan C (PDF)
- Attachment B: Preliminary Concept Plan D (PDF)

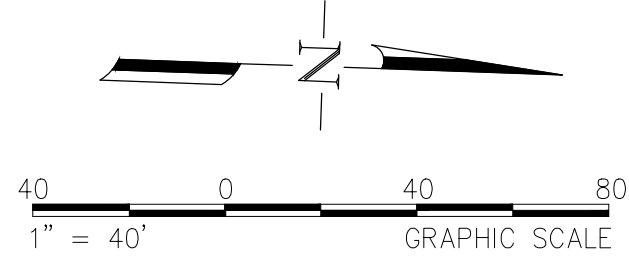
² Emails may be sent directly to the PTC using the following address: planning.commission@cityofpaloalto.org



LEGEND

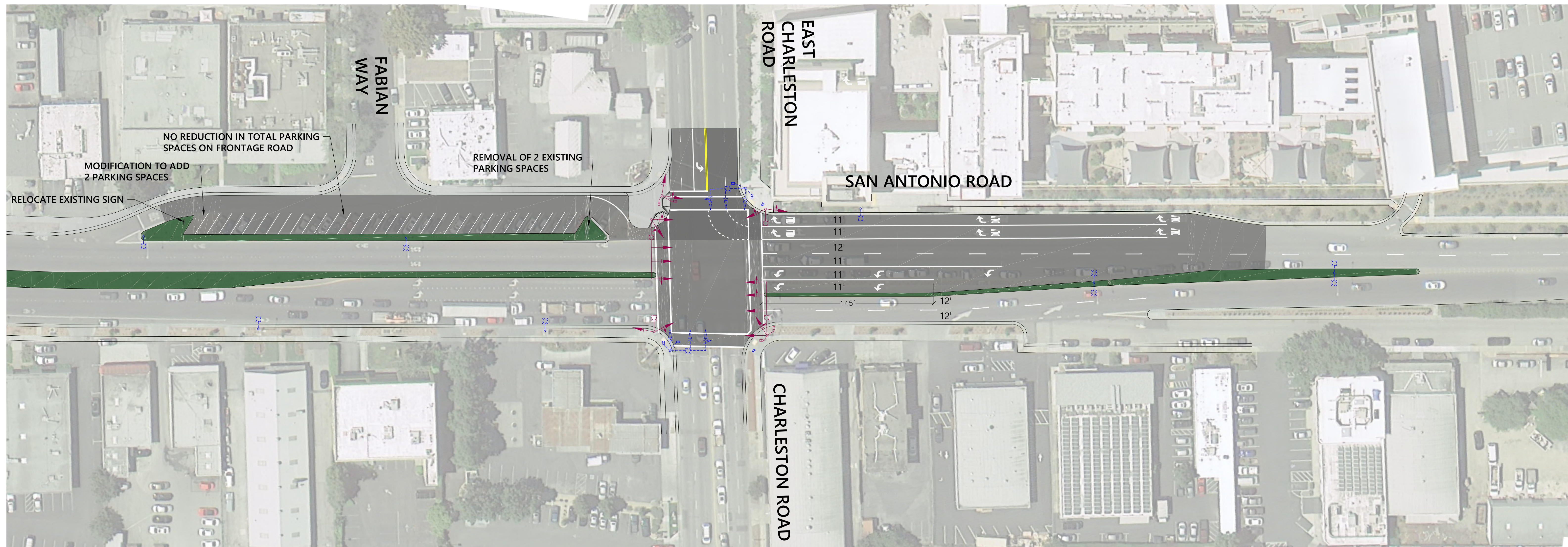


PHASE DIAGRAM

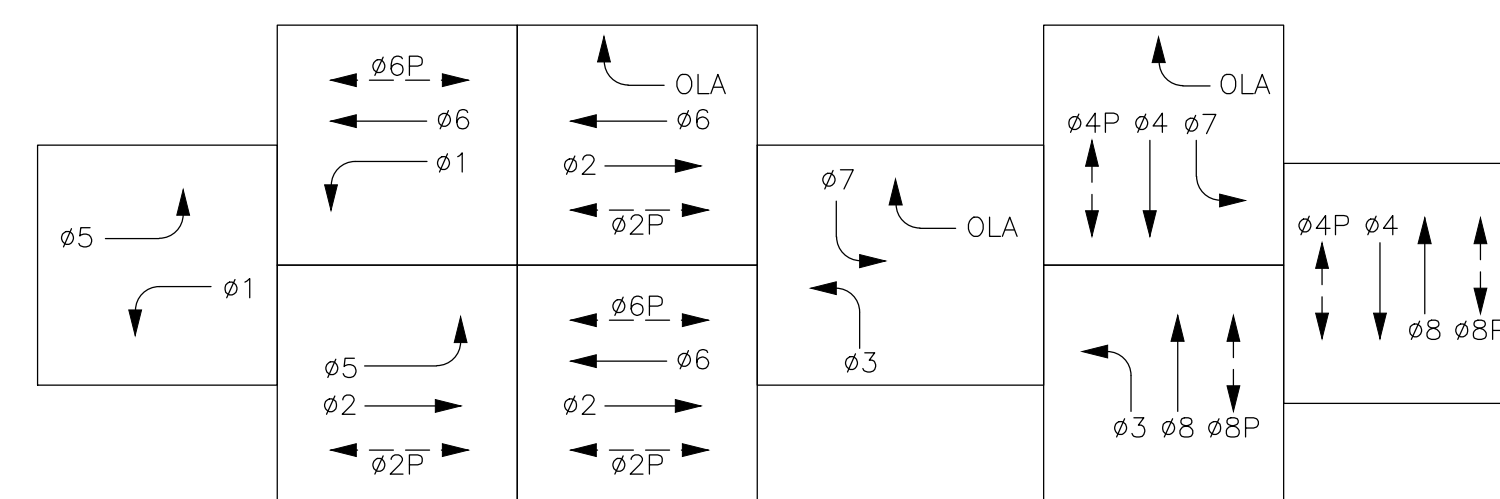
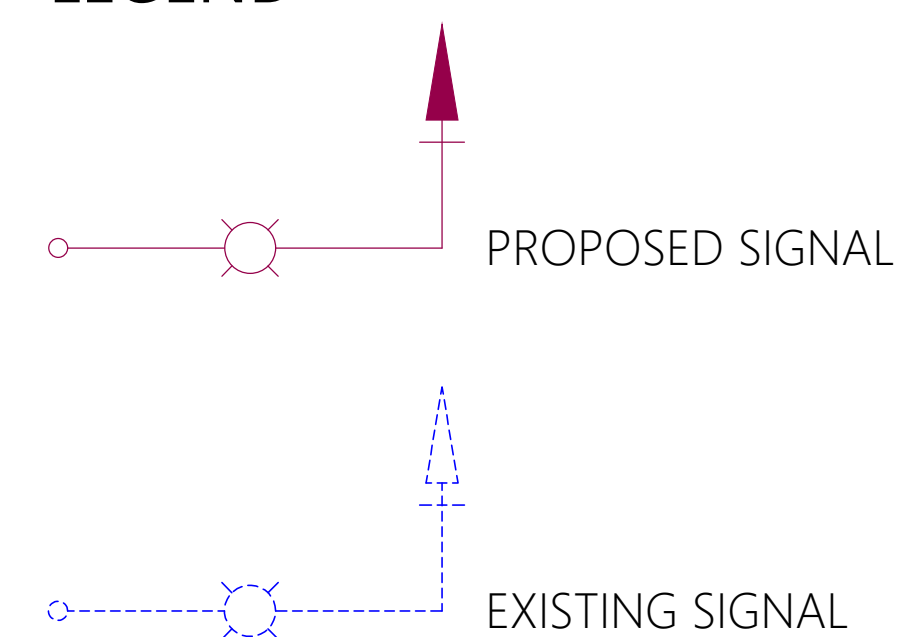


CONCEPTUAL - NOT FOR CONSTRUCTION
DETAILED ENGINEERING DESIGN REQUIRED

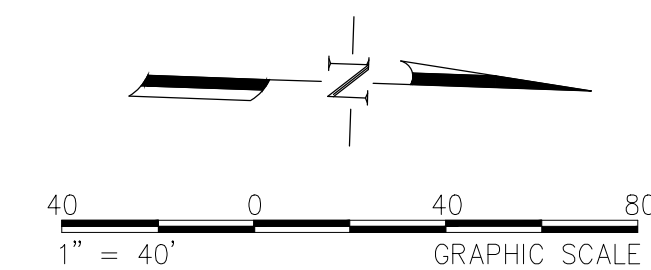
Alternative C - Addition of Left-Turn Lane and Removal of One Right-Turn Lane
San Antonio Road & Charleston Road, Palo Alto, CA



LEGEND



PHASE DIAGRAM



Short-term Idea D - Addition of Second Left-Turn Lane, Adjustment to Right Turns
San Antonio Road & Charleston Road, Palo Alto, CA

CONCEPTUAL - NOT FOR CONSTRUCTION
DETAILED ENGINEERING DESIGN REQUIRED