



HEXAGON TRANSPORTATION CONSULTANTS, INC.

Memorandum

Date: April 10, 2023

To: Mr. Peter DeStefano, AECOM
Ripon Bhatia, City of Palo Alto

From: Trisha Dudala, Katie Riutta

Subject: Traffic Study for the Palo Alto Grade Separation New Underpass Alternative

Hexagon Transportation Consultants, Inc. has completed a traffic study for the new underpass alternative for the Palo Alto Grade Separation project. The current underpass alternative consists of two-way bike lanes on the south side of E. Meadow Drive and on the north side of Charleston Road. The new underpass alternative includes bike lanes on both sides of E. Meadow Drive and on both sides of Charleston Road. As a result, some intersection movements would need to be prohibited (see attachment). The prohibited movements include the southbound off-ramp and northbound on-ramp on Alma Street at E. Meadow Drive and the southbound on-ramp on Alma Street at Charleston Road. The blue "X" shown in the drawings represent the prohibited movements. As Charleston Road is located only one block from Meadow, to represent a conservative analysis, all traffic from the prohibited movements at Alma/Meadow intersection (from southbound Alma to Meadow from Meadow to northbound Alma) were reassigned to the Alma/Charleston intersection. Also, traffic on eastbound Charleston to southbound Alma would need to make a U-turn at the roundabout and make a left-turn at the Alma Street/Charleston westbound on-ramp signal under this new alternative.

Traffic Operations Analysis

Traffic operations along Alma Street and Charleston Road were examined using simulation analysis. Table 1 shows the intersection delays and level of service (LOS) under the new underpass alternative with existing volumes and year 2030 volumes. Based on the simulation analysis, all intersections 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.

Table 1
Intersection Level of Service Summary

Intersection	Peak Hour	Existing		Year 2030	
		Delay (s)	LOS	Delay (s)	LOS
Alma Street & Charleston Road (North)	AM	205.06	F	245.78	F
	PM	227.89	F	229.81	F
Alma Street & Charleston Road (South)	AM	173.29	F	592.81	F
	PM	122.12	F	399.31	F
Roundabout on Charleston Road	AM	83.28	F	171.13	F
	PM	102.38	F	253.95	F

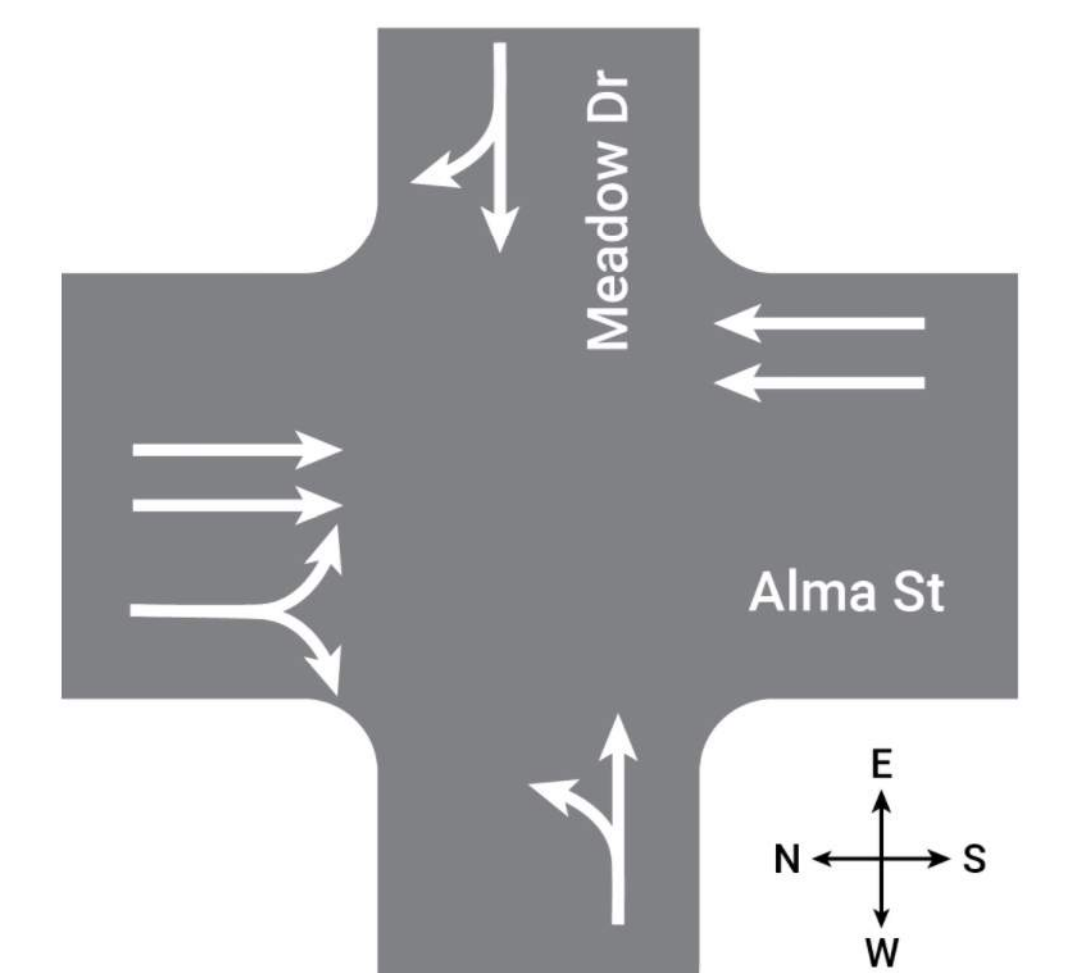
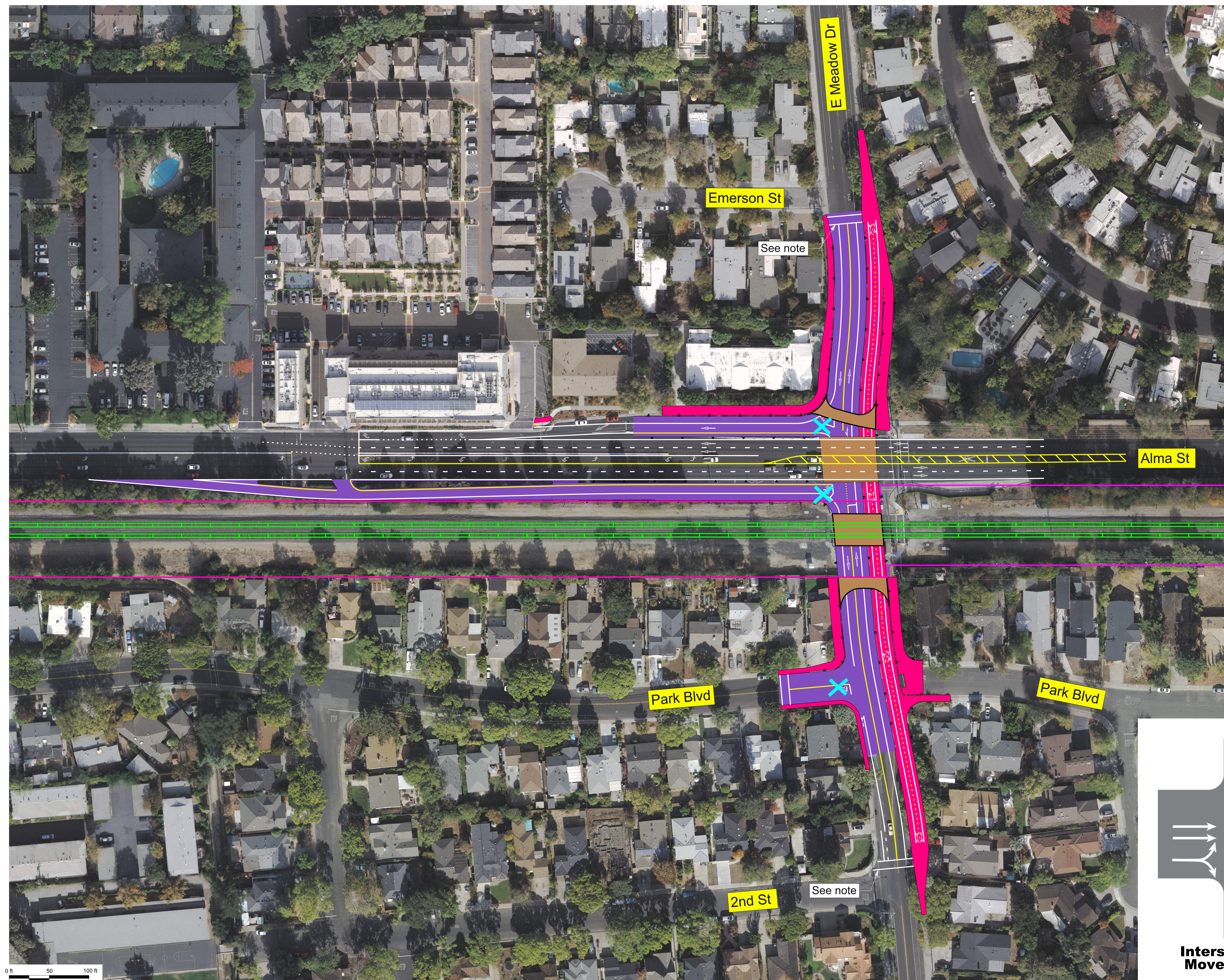
During both the AM and PM peak hours, queues for the westbound right and left-turn movements from Charleston Road onto Alma Street would extend back into the roundabout. Queues from the roundabout would extend along westbound and eastbound Charleston Road and onto the northbound right-turn lane on Alma Street. Queues for the southbound left-turn movement on Alma Street at Charleston Road would extend back toward E. Meadow Drive during both peak hours.

Conclusion

Based on the reported vehicle delays and the observed vehicle queues in the simulation analysis, the new underpass alternative would not be able to adequately accommodate existing or future vehicle traffic.

Appendix A

Intersection Turning Movement Diagrams



Intersection Turning Movement Diagram

NOTE:

Additional features at crosswalks, such as HAWK traffic signals and rectangular rapid flashing beacons, to be considered in future phases.

LEGEND:

	Track
	Retaining Wall
	Right-of-Way
	Roadway Modifications
	Ped/Bike Ramps & Sidewalks
	Structure
	Direction of Traffic

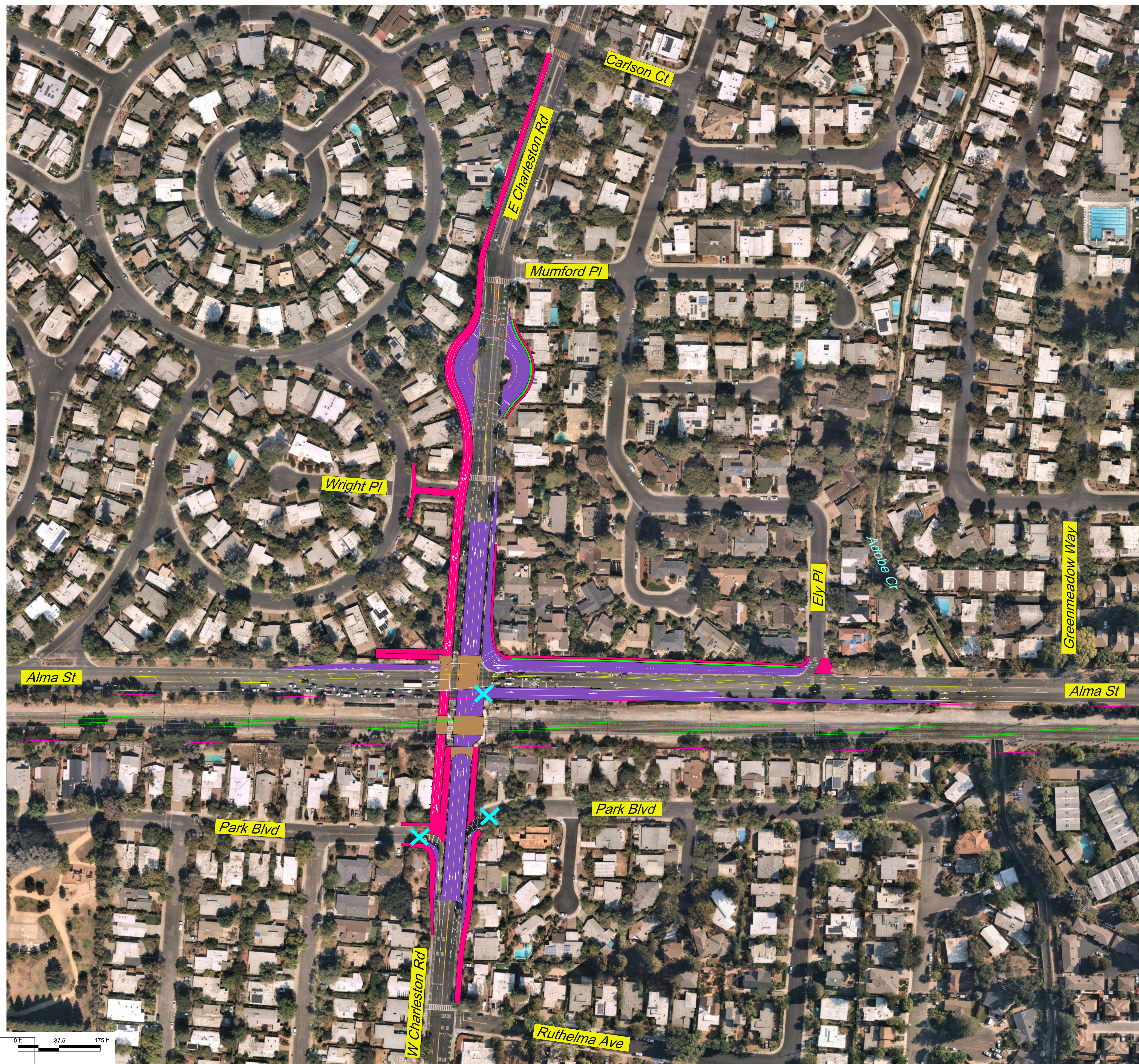
Meadow Drive Aerial View (Plan)

Palo Alto Grade Separation Planning Study Meadow Underpass

PRELIMINARY
FOR DISCUSSION PURPOSES ONLY

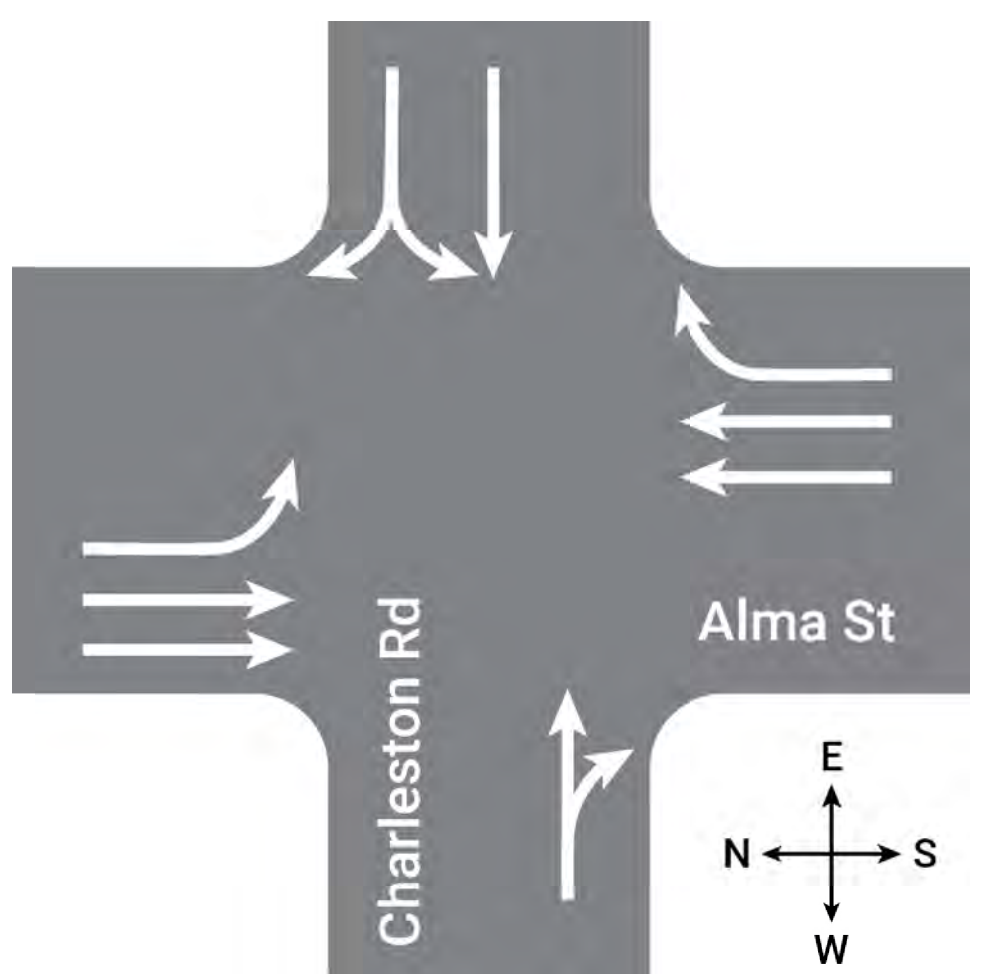


AECOM



Charleston Road Aerial View (Plan)

**Palo Alto Grade Separation Planning Study
Charleston Underpass**



Intersection Turning Movement Diagram

PRELIMINARY
FOR DISCUSSION PURPOSES ONLY



AECOM