



Project Description

New development demands traffic improvement along a 10 intersection corridor along Von Karman Ave. and Tustin Ranch Rd.

- Corridor spans from Walnut Ave to Intersect
- All changes/design are based on PM peak traffic

Project Objectives

- Update the existing basic timing of the intersections to comply with safety standards
- Optimize corridor cycle length with proposed timing parameters to achieve traffic signal synchronization (maximizes vehicles moving through intersection)

Design Method

Basic/Proposed Timing Parameters

- Pedestrian Clearance/Vehicle Intervals

CA MUTCD Calculations

- Minimum & Bike Greens/Yellow/All Red Clearance
- Walk/Pedestrian Clearances

Synchro Base Maps

- Volumes - Traffic Counts
- Cycle Lengths/Offsets - Time Space Diagram (TSD)
- Level of Service (LOS)/Delay Times
- Volume to Capacity Ratio (V/C) < 1

Time Space Diagrams

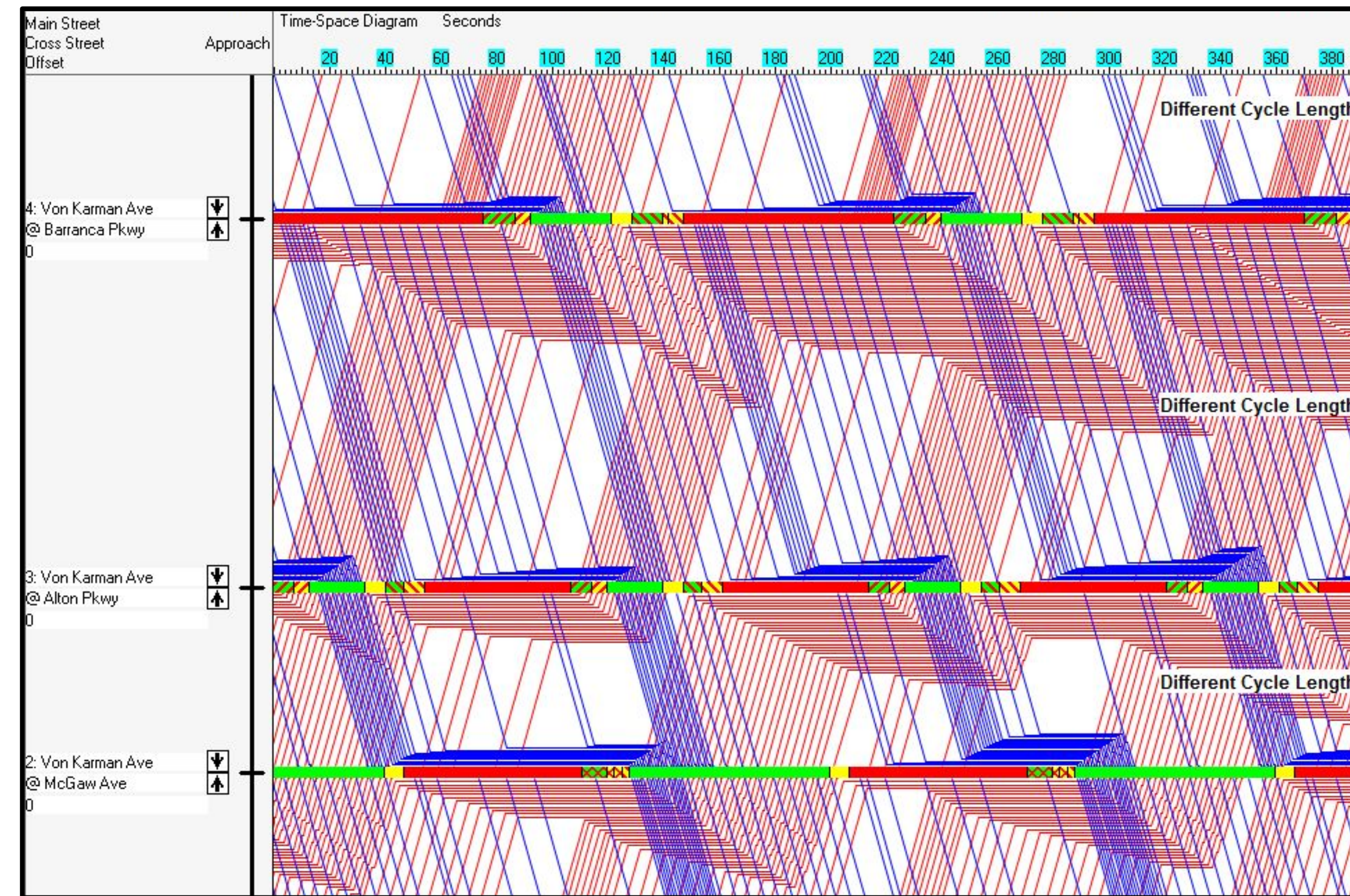


Figure 3. Time Space Diagrams Before Synchronization

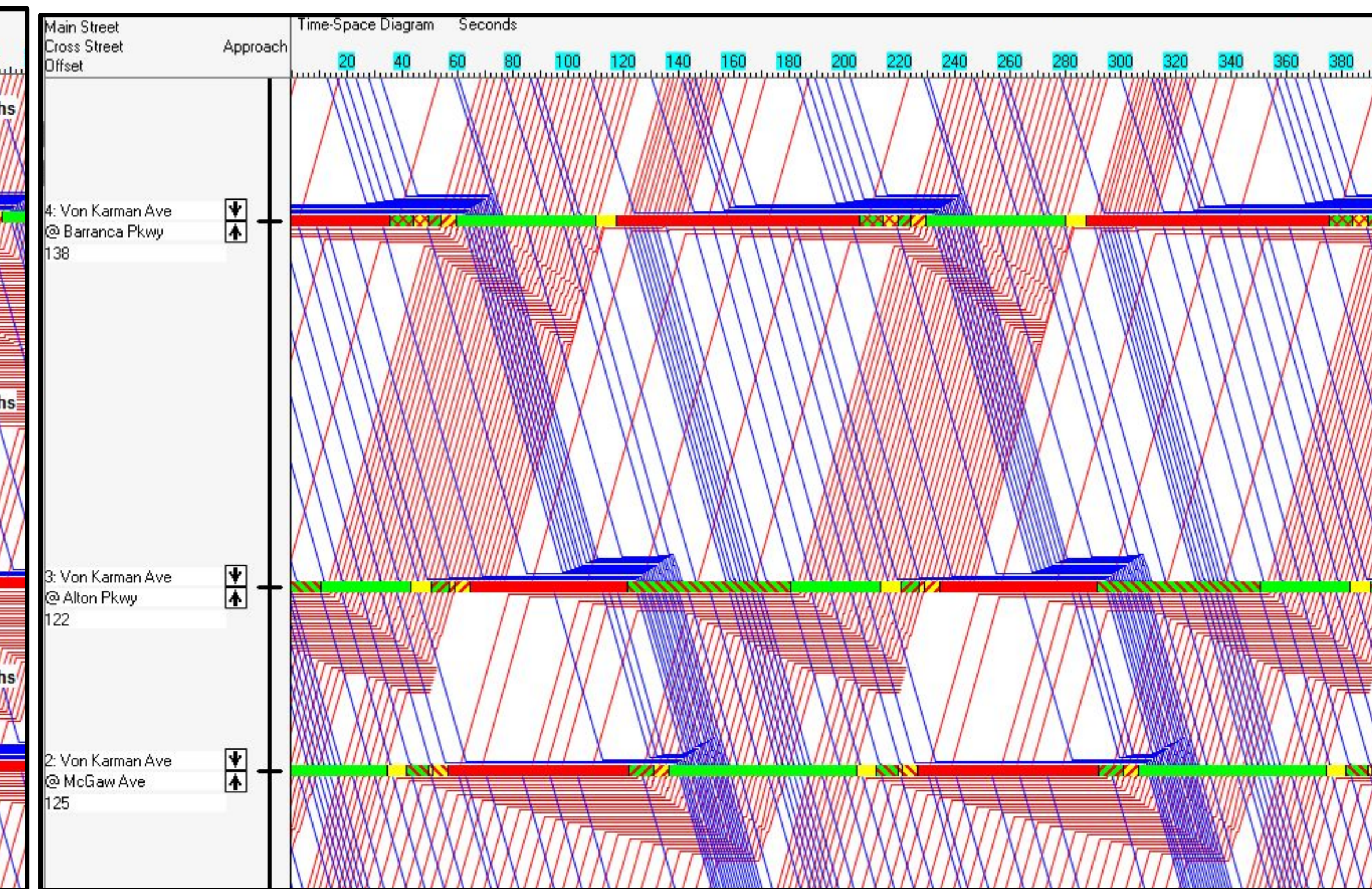


Figure 4. Time Space Diagrams After Synchronization

Coordination

Constraints and Parameters

CA MUTCD 2014 Revision

Nearby establishments (schools)
Pedestrian and Vehicle Volume

Existing Intersection Design

- Lane geometry/Traffic control devices/Phase plan

Before Studies

Trips	Directions	Time (minutes)
1	SB	11.47
2	NB	15.27
3	SB	11.51

Figure 1. Summary of Travel Times for PM Peak (6PM-7PM) on January 22nd - 23rd



Figure 2. Corridor Map

Minor Street (E-W)	Major Street (N-S)	LOS (Existing)	(Proposed)	Max V/C Ratio
Intersect	Von Karman	A	A	0.45
McGaw	Von Karman	D	D	0.86
Alton	Von Karman	F	F	5.88
Barranca	Von Karman/Tustin Ranch	F	F	1.55
Park	Von Karman	D	C	0.88
Warner (S)	Von Karman	B	B	0.86
Warner (N)	Von Karman	C	B	0.71
Victory	Von Karman	A	A	0.77
Valenca	Von Karman	B	B	0.76
Walnut	Von Karman	E	E	1.06

Table 1. Summary of Coordination Data

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Traffic Volume (VPH)	619	1085	116	204	820	235	224	1128	281	2	85	295	230
v/c Ratio (Before)	2.54	0.84		0.78	0.42	0.4	0.94	1.47			0.31	0.28	0.24
v/c Ratio (After)	1.55	0.79		0.81	0.47	0.45	0.75	1.28			0.57	0.3	0.25
Total Delay (Before)	728.5	50.4		84.2	38.4	12.6	109	250.8			61.1	38.2	4.5
Total Delay (After)	304	52.6		97.3	49.2	18.9	111.3	149.2			78.1	40.8	10.4
LOS (Before)	F	D		F	D	B	F	F			E	D	A
LOS (After)	F	D		F	D	B	F	F			E	D	B
Intersection LOS (Before)	F												
Intersection LOS (After)	F												

Table 2. Detailed Coordination of Barranca/Von Karman

Synchro Base Maps

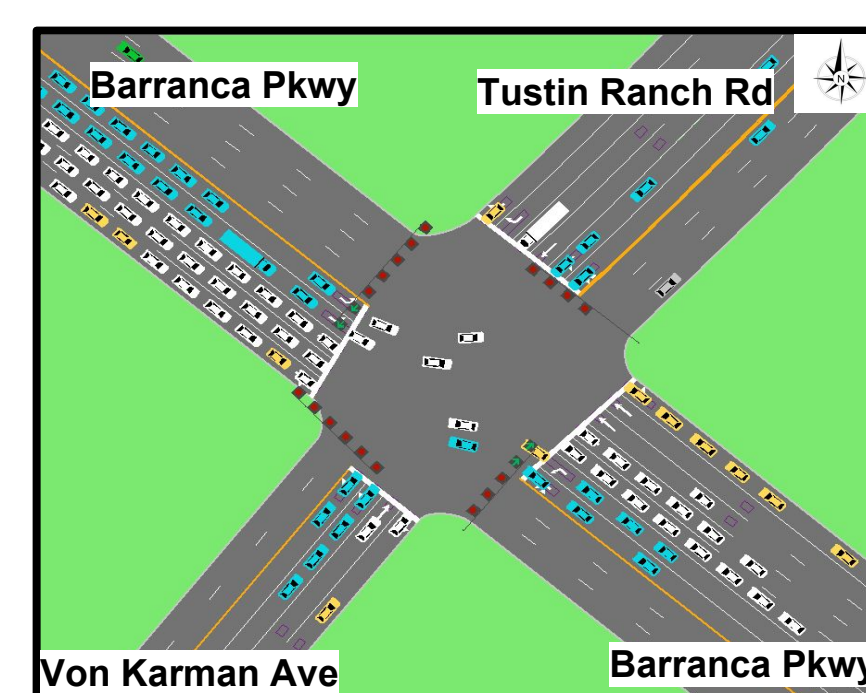


Figure 5. Barranca Pkwy/Von Karman with SimTraffic

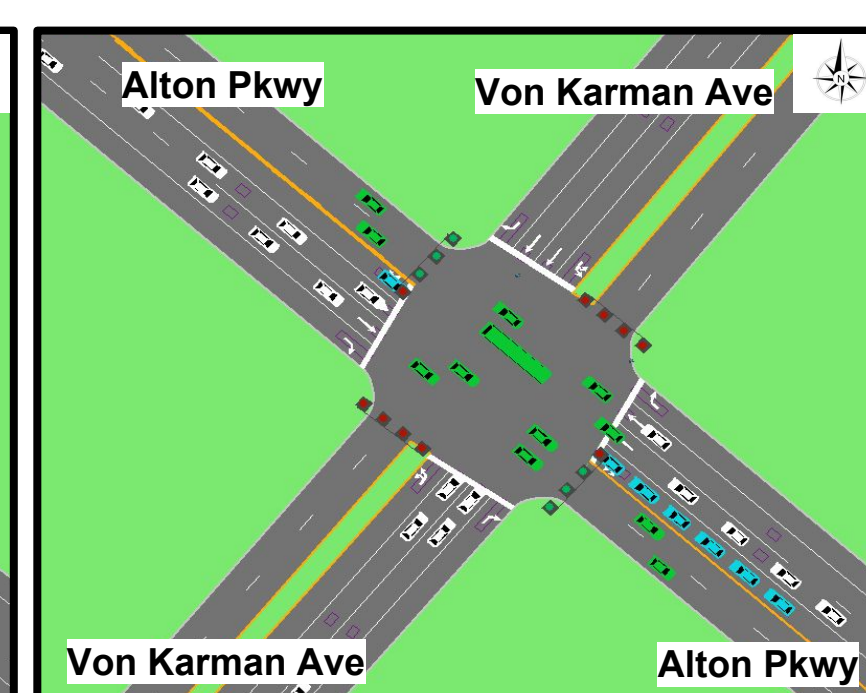


Figure 6. Alton Pkwy/Von Karman Ave with SimTraffic

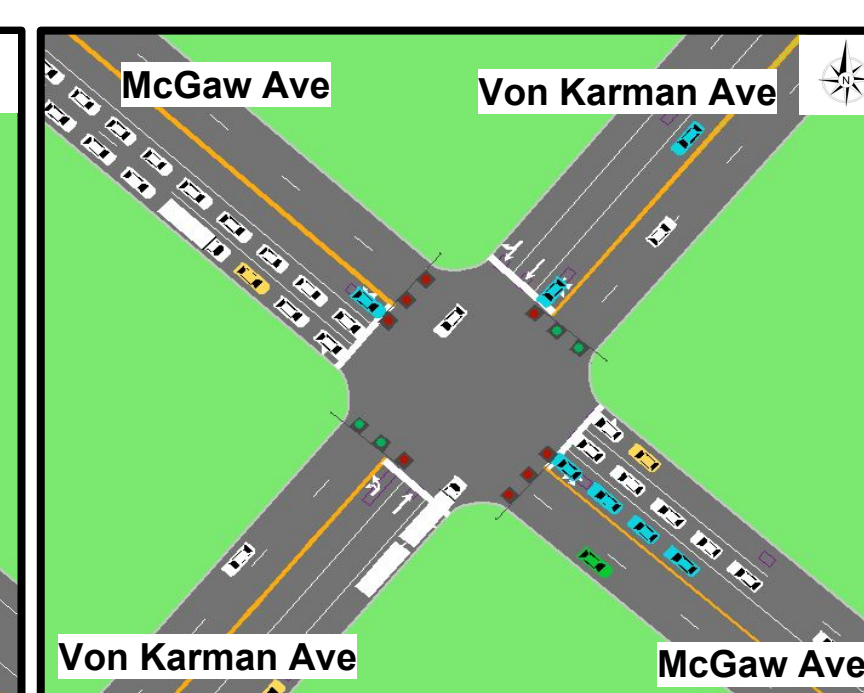


Figure 7. McGaw Ave/Von Karman Ave with SimTraffic

Next Phase Plans

Data Collection

Base Plan Development

50%/90%/100% Design PS&E

Utility Coordination

Signing and Striping

Traffic Signal

Traffic Control Plans

After Travel Studies

References

California State Transportation Agency. (2018, March 9). California Manual on Uniform Traffic Control Devices. Retrieved March 4, 2019, from http://www.dot.ca.gov/trafficops/camutcd/docs/2014r3/CAMUTCD2014_rev3.pdf

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