

Caltrans Sonora and Jamestown SR 108/49 Corridor Study



July 20th, 2020



Office of System Planning and Goods Movement

Caltrans District 10



Purpose: 1. Evaluate multimodal strategies that address corridor congestion and enhance active transportation

Steps:

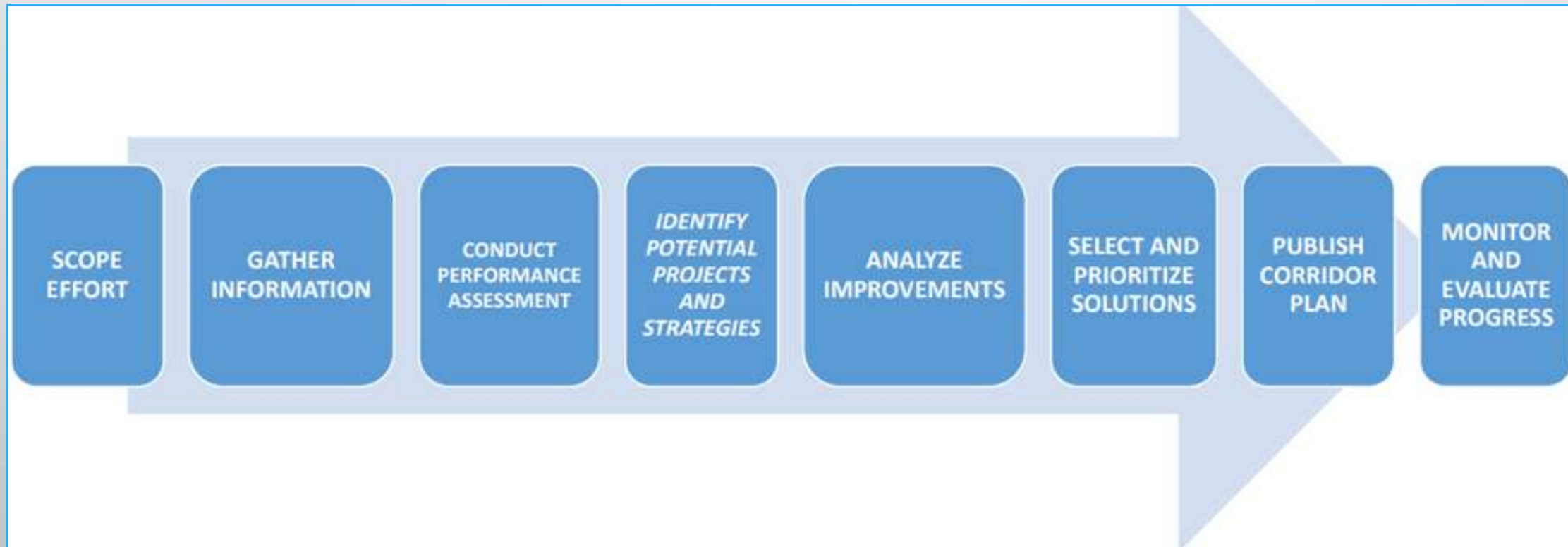
1. Document conditions
2. Use performance assessments to evaluate facilities
3. Present and analyze strategies
4. Document results
5. Review Draft
6. Publish

Needs:

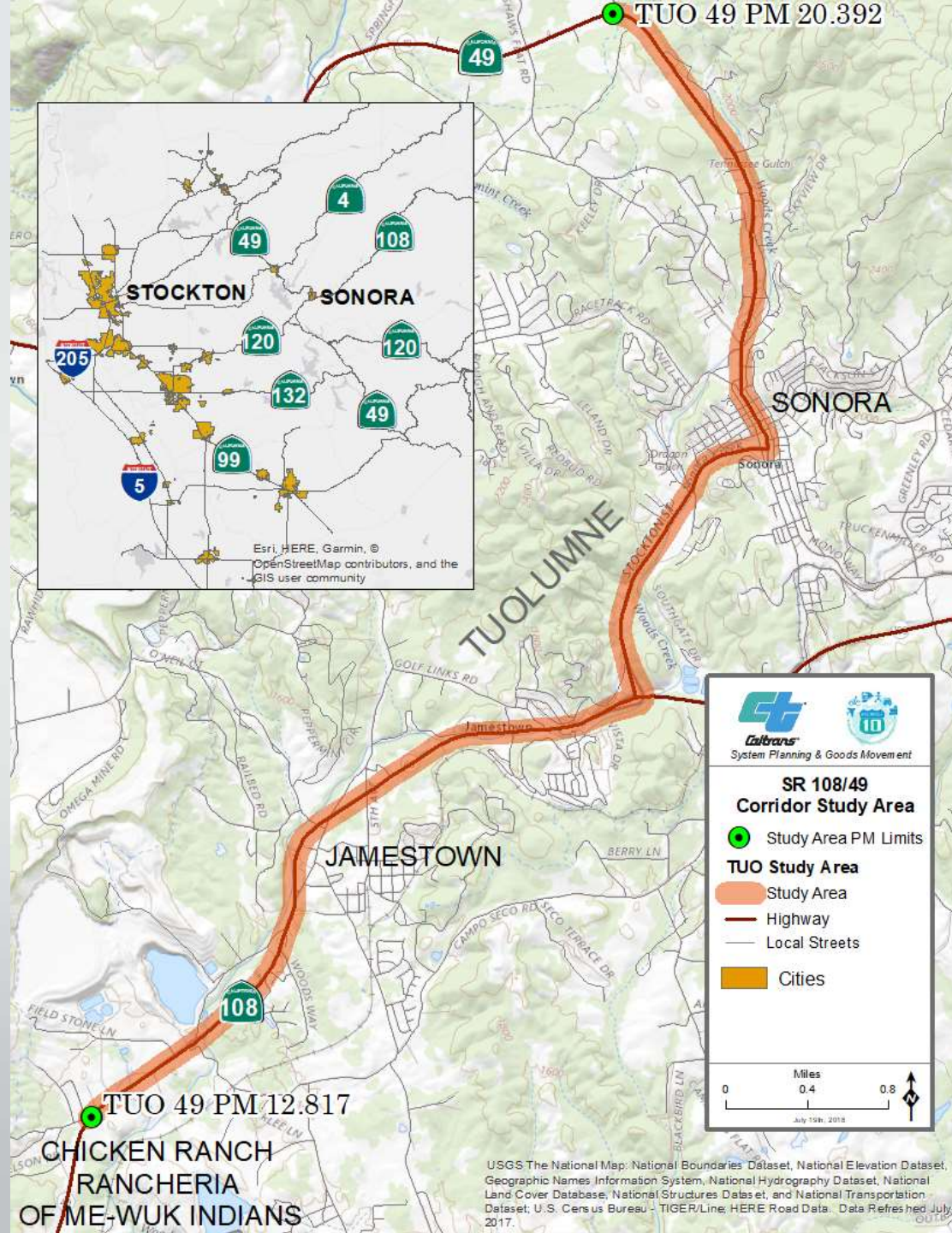
1. Reduce congestion on the state highway
2. Enhance safety
3. Enhance active transportation

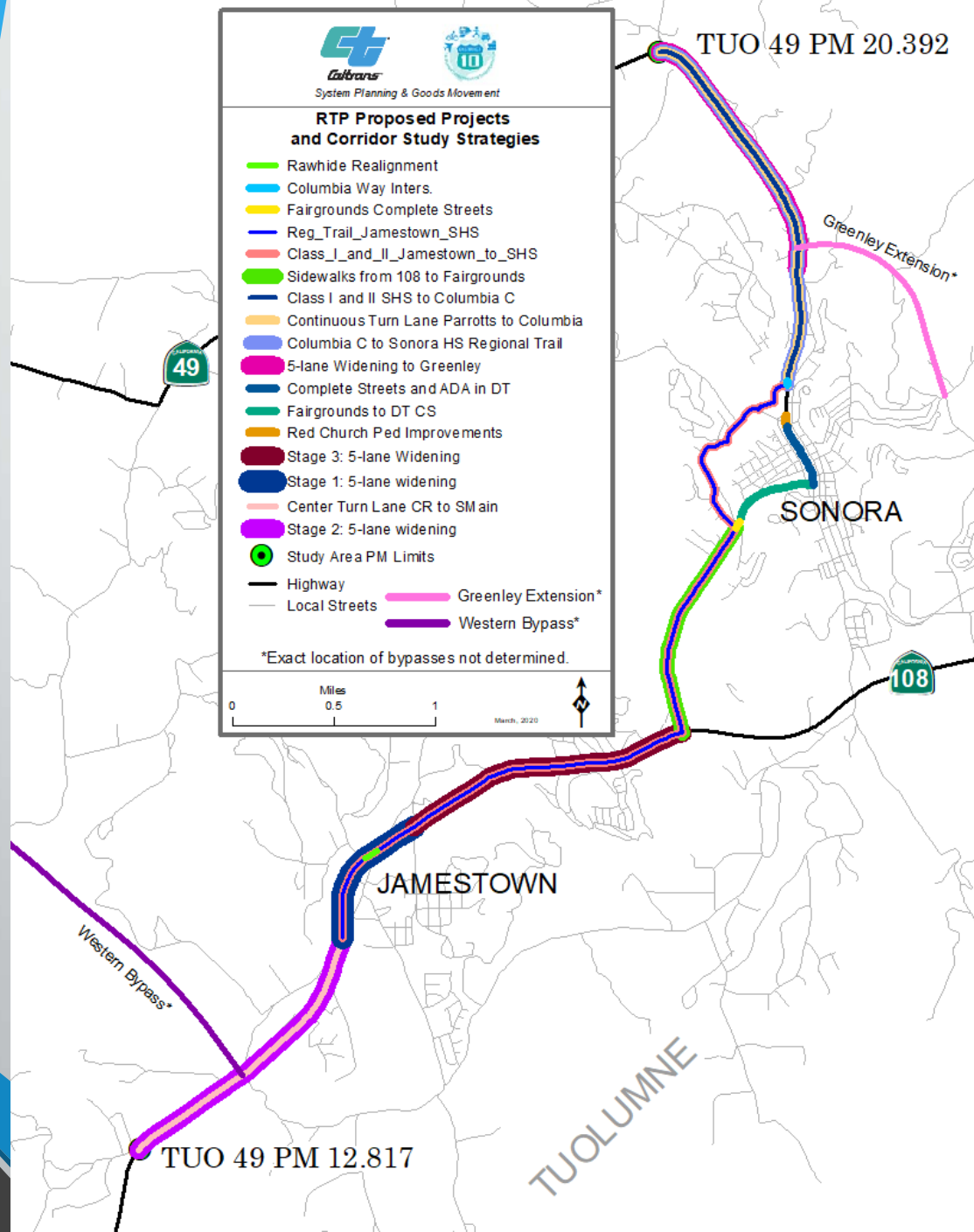
Scope: SR 108/49 from Chicken Ranch Road to Parrott's Ferry Road

Steps in the Congested Corridor Planning Process



Corridor Study Coverage Area





19 RTP-based strategies were included in whole or in part in this corridor study.

- Active transportation enhancements
- Strategies meant to address traffic congestion on the highway

List of Strategies and Goals Met

Goals and Objectives			Proposed Corridor Study Strategies																		
			Bypass			Operations										Non-motorized					
			Bell Mooney	Montezuma	Greenley	Shaws Flat	Mackey Ranch	Bridge Realign	Greenley	Signals**	5 lanes	4 lanes	2040 No-build	AT Pathway	108 Freeway	All strategies	Sidewalks	ADA ramps	AT Pathway	Crosswalks*	Shoulders
1	Enhance safety					U	U						Y			Y	Y	Y	Y	Y	
2	Reduce (2018)	Delay and congestion				N	N	Y		Y	Y	Y		N	Y	Y					
		VMT				Y	Y	Y			Y	Y		Y	Y	Y					
		Queueing				N	N	Y		Y	Y	Y		N	Y	Y					
	Reduce (2040)	Delay and congestion	N	N	Y	N	N	Y	Y	Y	Y	Y	N	Y	Y	Y					
		VMT				Y	Y	Y	Y		N	N	Y	Y	N	Y					
3	Reduce gaps in	Queueing				N	N	N	N	N	Y	Y	N	Y	Y	Y					
		Active Transport												Y			Y	Y	Y	Y	
		Separate Bikeways												Y					Y	N	
4	Lower	Protected Bikeways											Y					Y		N	
		GHG emissions (2018)				N	N	Y			Y	Y		N	Y	Y					
5	Reduce	GHG emissions (2040)				N	N	Y	Y		Y	Y	N	N	Y	Y					
		Gaps in STAA HWYs	Y	Y	Y																
5	Reduce	Truck Delay/Congestion	N	N	Y	N	N	Y	Y	Y	Y	Y	N		Y	Y					
		Percentage of goals met		33	33	100	22	22	89	80	80	89	89	20	67	89	100	100	100	100	50
Y: goal met; N: goal not met U: Unclear: roundabouts can reduce the severity of vehicle crashes, but safety benefits to pedestrians and cyclists are not clear without data on local traffic behavior characteristics and Complete Streets-centric design enhancements taken into consideration *Crosswalks can assist in attaining Goal 1 if they include additional street and curb design elements, as identified in Section 4.11 **Signal timing adjustments modeled using Synchro 10; results based on data at the Rawhide intersection with a four-lane widening RP: Results Pending; NA: not applicable																					

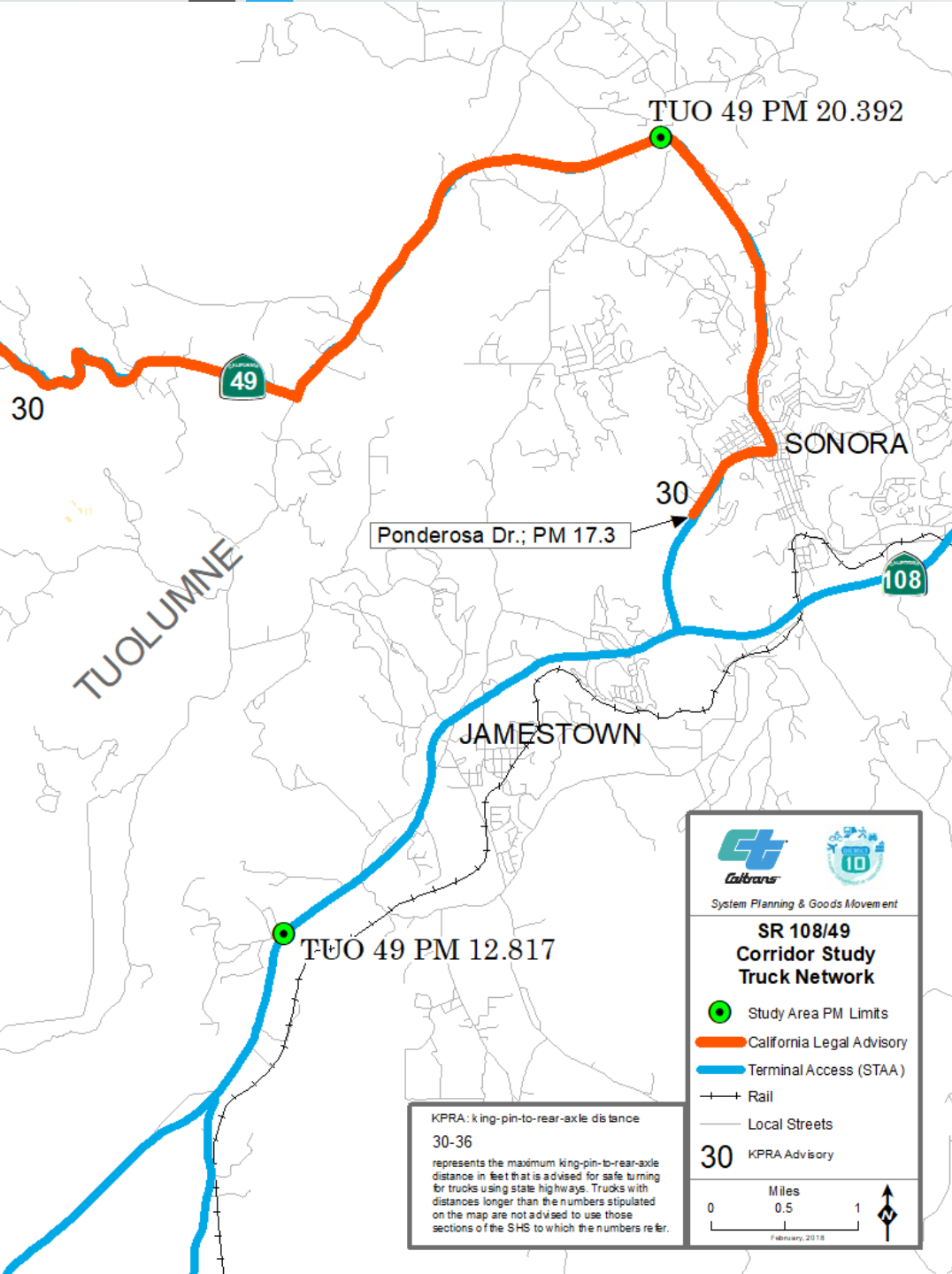
Comparison of Non-motorized Strategy Performance and Rankings

Strategy/Project	Percent Change from Existing 2018 Conditions							Empty Cell
	Queue Length	Delay	VMT	Emissions	CO2 Emissions	LOS	Gap Fill Need	Rank
8ft. paved shoulders	NA						85	3
Sidewalk gap fill							77 to 81.5	4
Active Transportation Pathway							100	1
ADA updates							97	2
Crosswalks							74	5

NA: Not Applicable

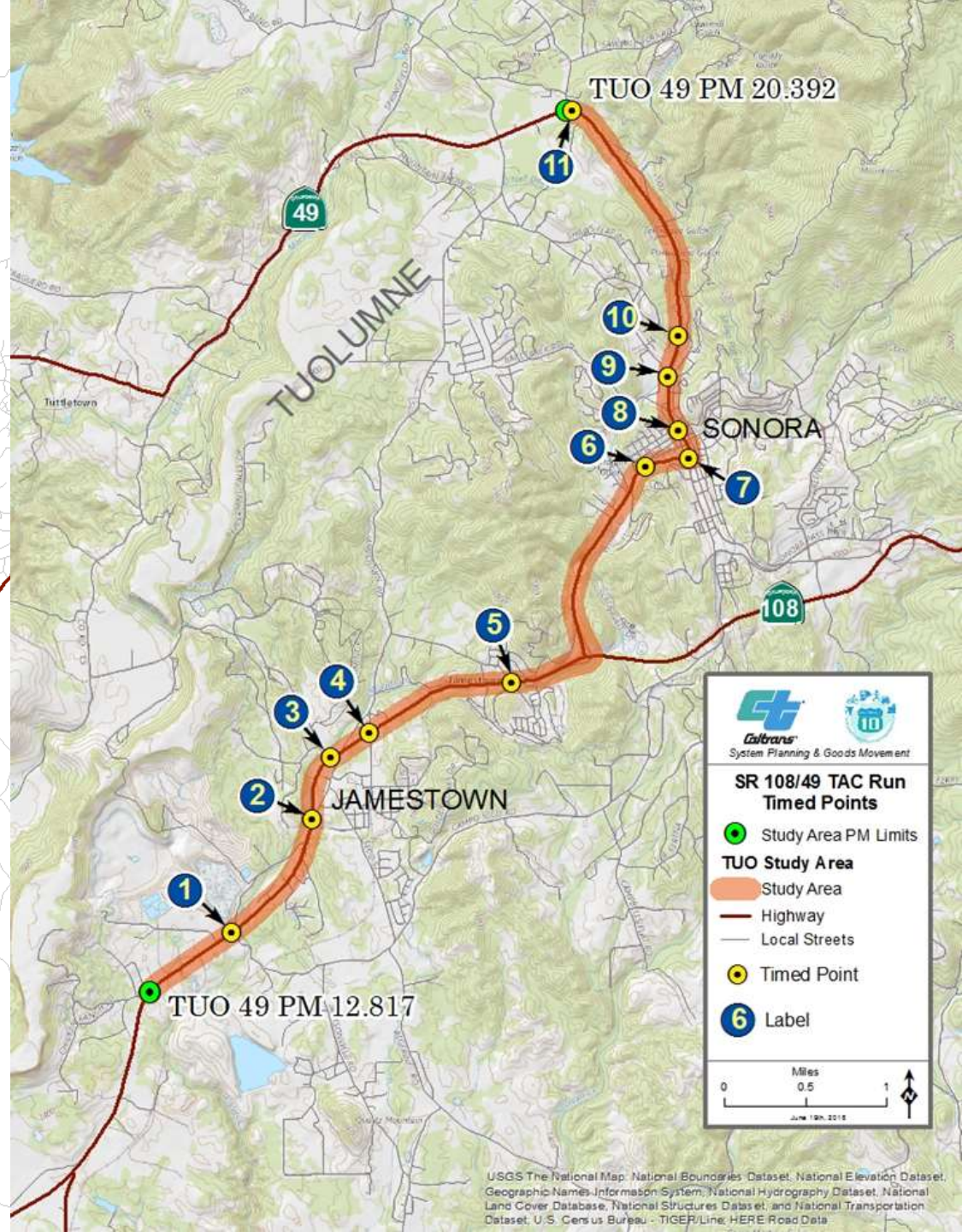
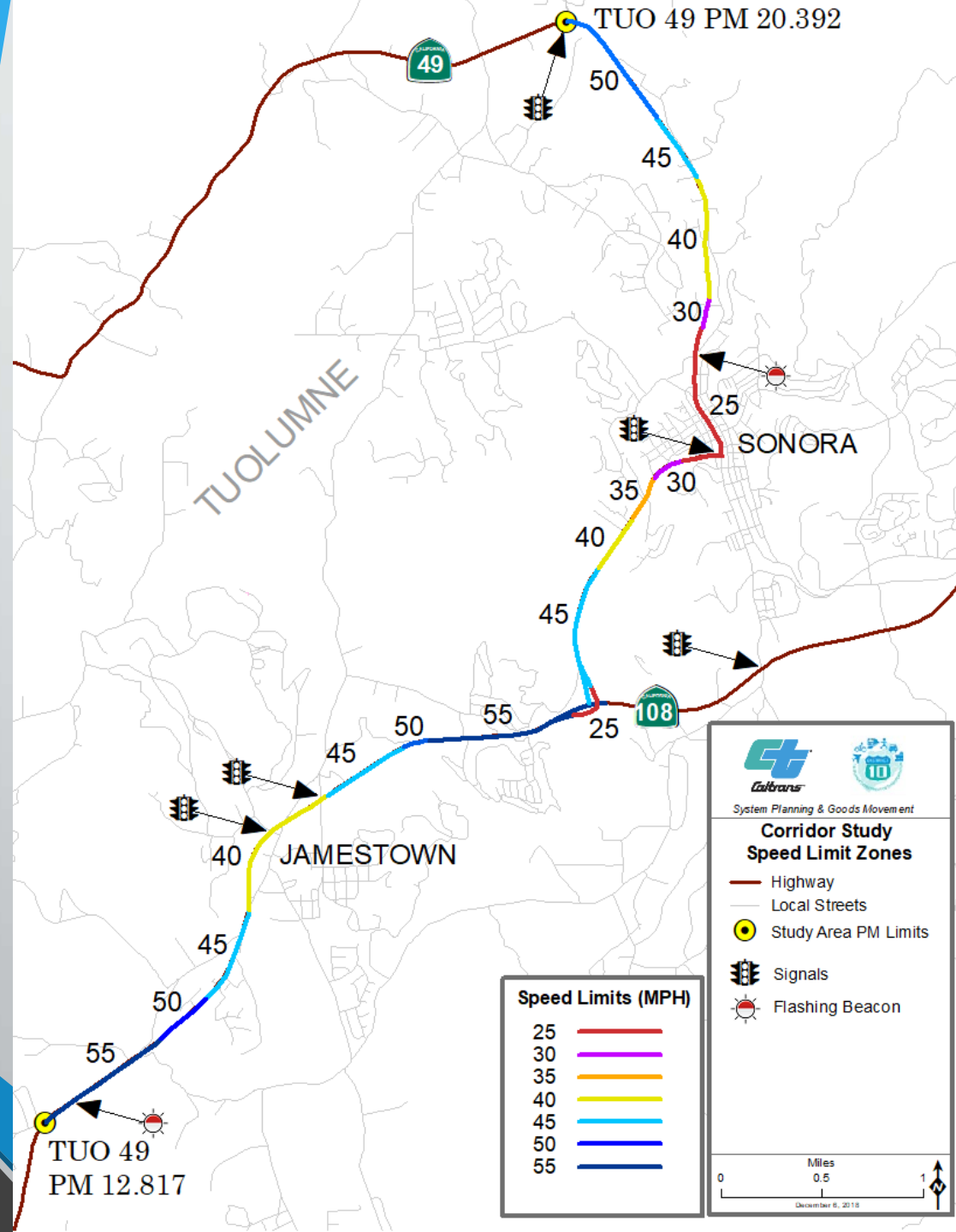
Simulation Results

1. 5-lane widening scenario performed best in 2018 and 2040
(this scenario includes multimodal enhancements)
2. Signal timing adjustments at Rawhide and Fifth Ave. performed 5th best overall in both 2018 and 2040
3. Active transportation pathway performed better than the no-build condition in 2040
4. Rawhide Realignment performed well in 2018 and 2040
5. All-Strategies scenario did well in both conditions, but it performed 2nd best overall in 2040
6. Greenley Extension performed better than no-build conditions in both micro and macro simulations
7. Western bypass scenarios showed minor reductions to volume in downtown Sonora
8. Western bypass scenarios could fill the existing gap in STAA terminal access truck facilities

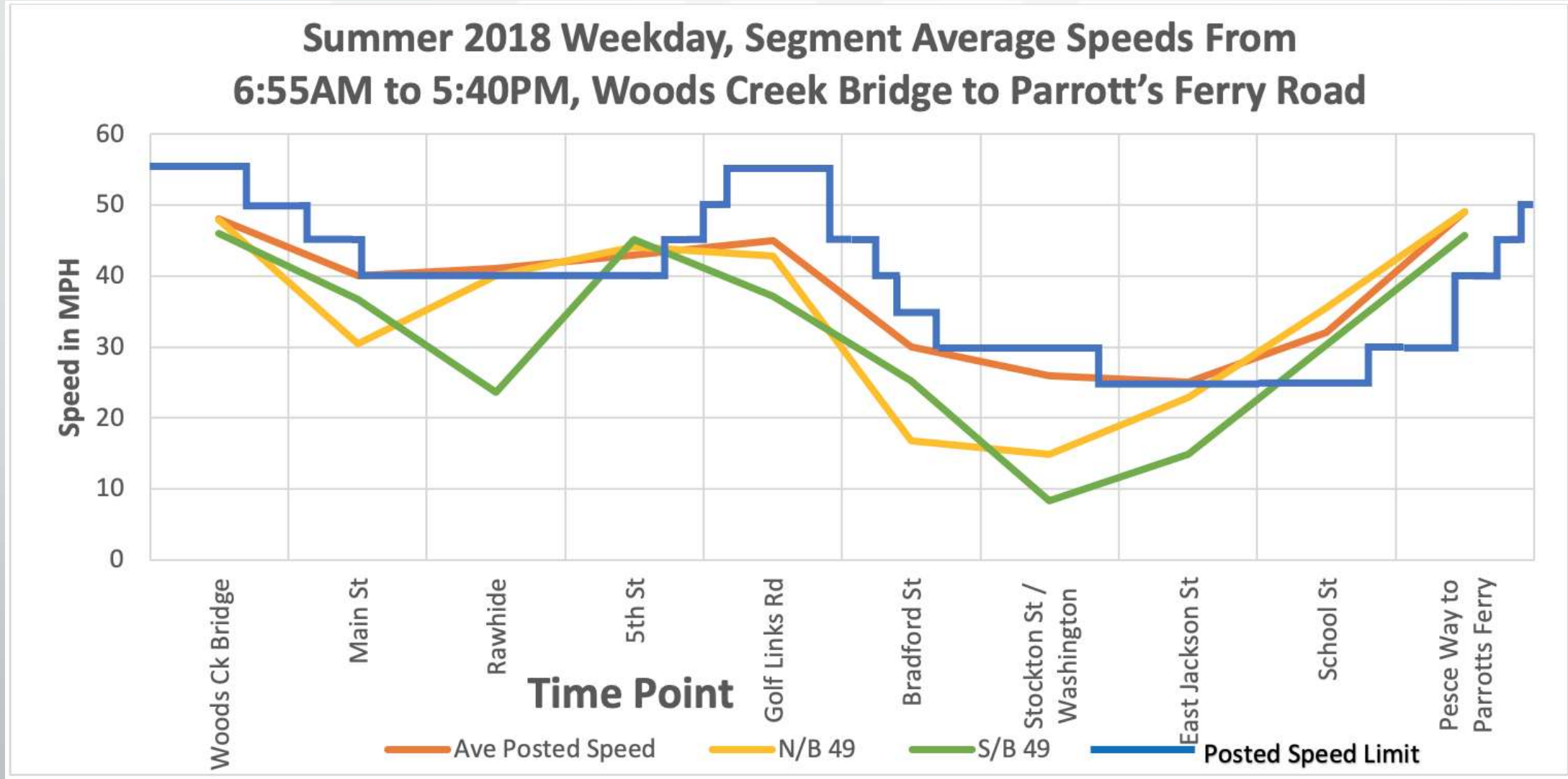


Existing Highway
Truck Network
Conditions



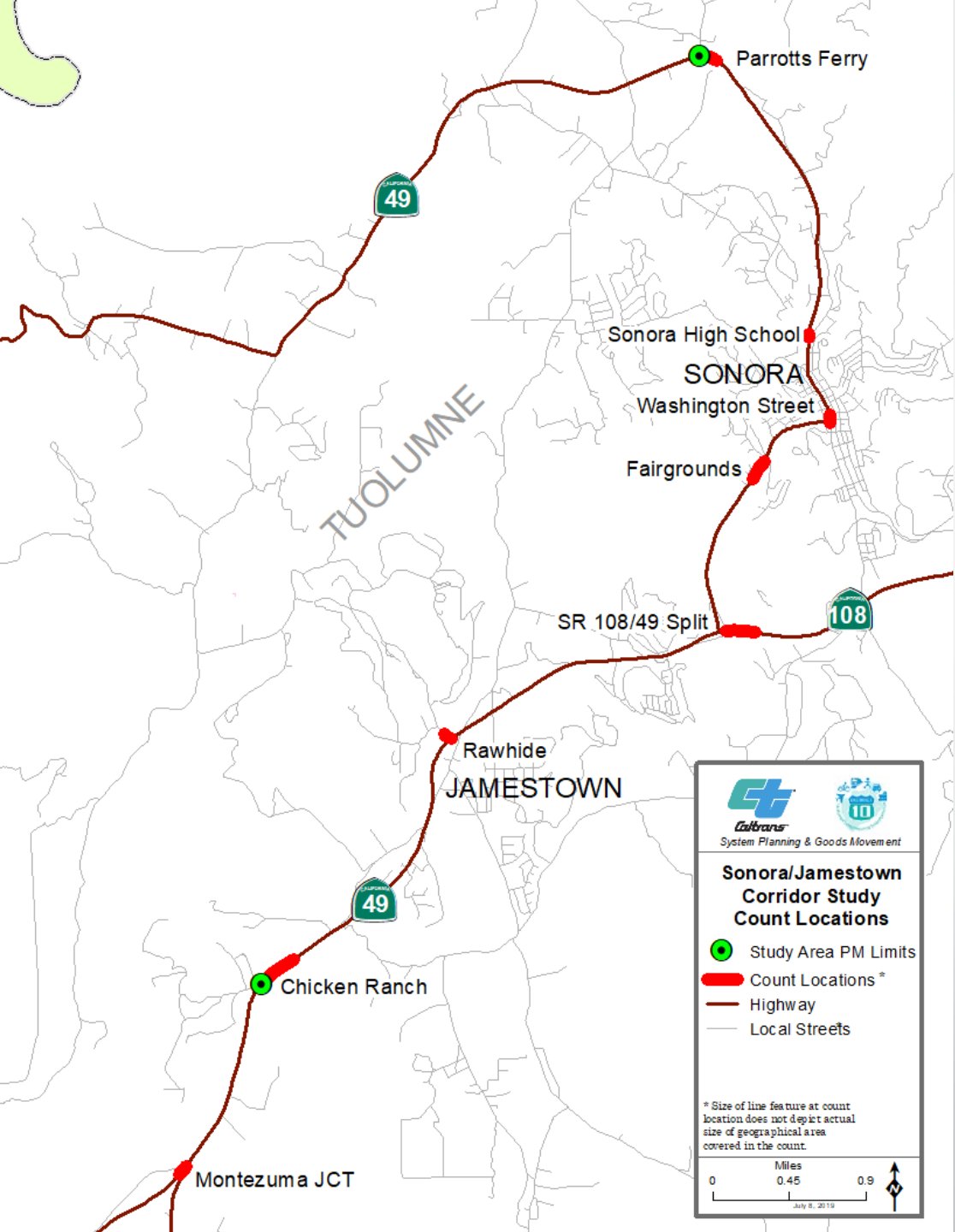


Tachometer Run Results



Existing Conditions

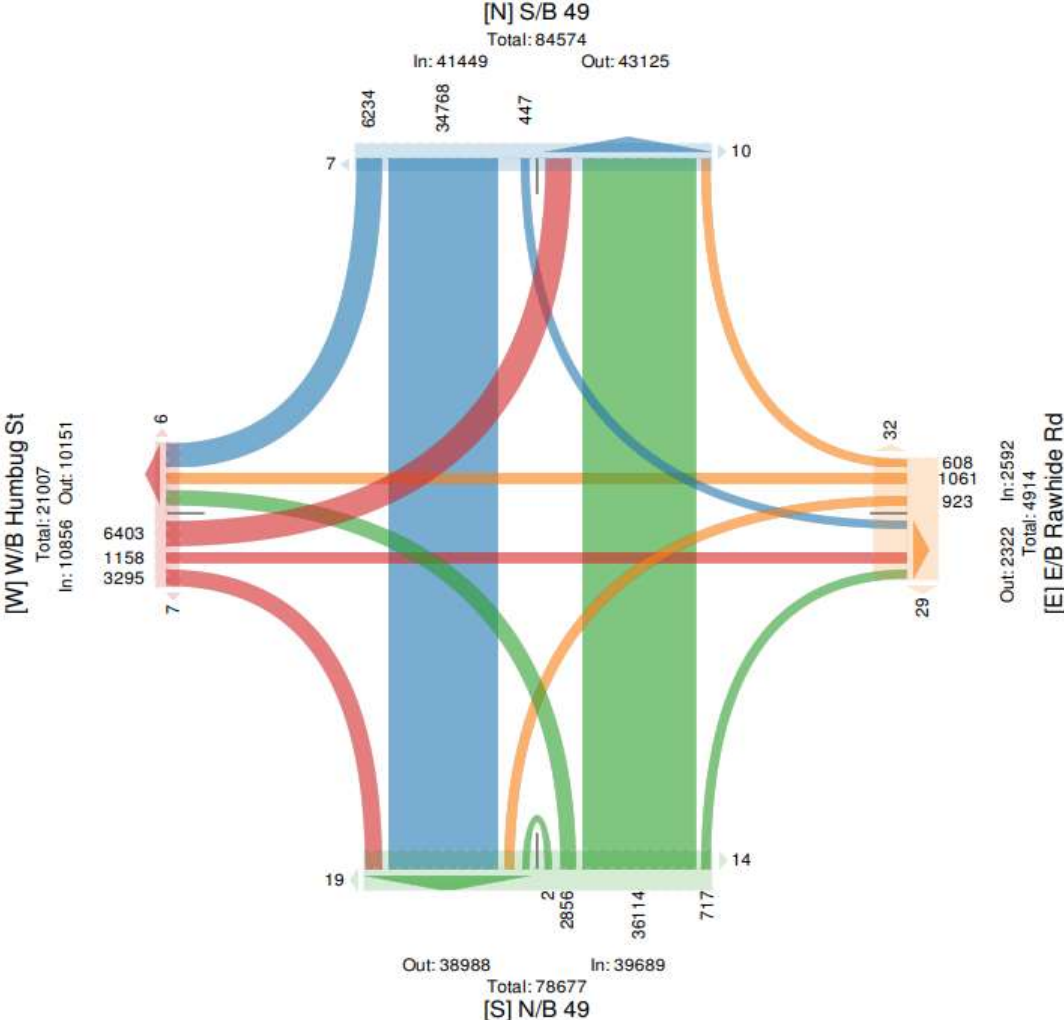
Camera Traffic Data Collection



Tuo 49 Rawhide Rd - TMC

Wed May 2, 2018
Full Length (3:30PM-3:30PM (+4))
All Classes (Motorcycles, Cars, Light Goods Vehicles, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)
All Movements
ID: 522865, Location: 37.956293, -120.422693

Provided by: Caltrans District 10
- System Planning
1976 Martin Luther King Jr. Blvd., Stockton, CA, 95205, US





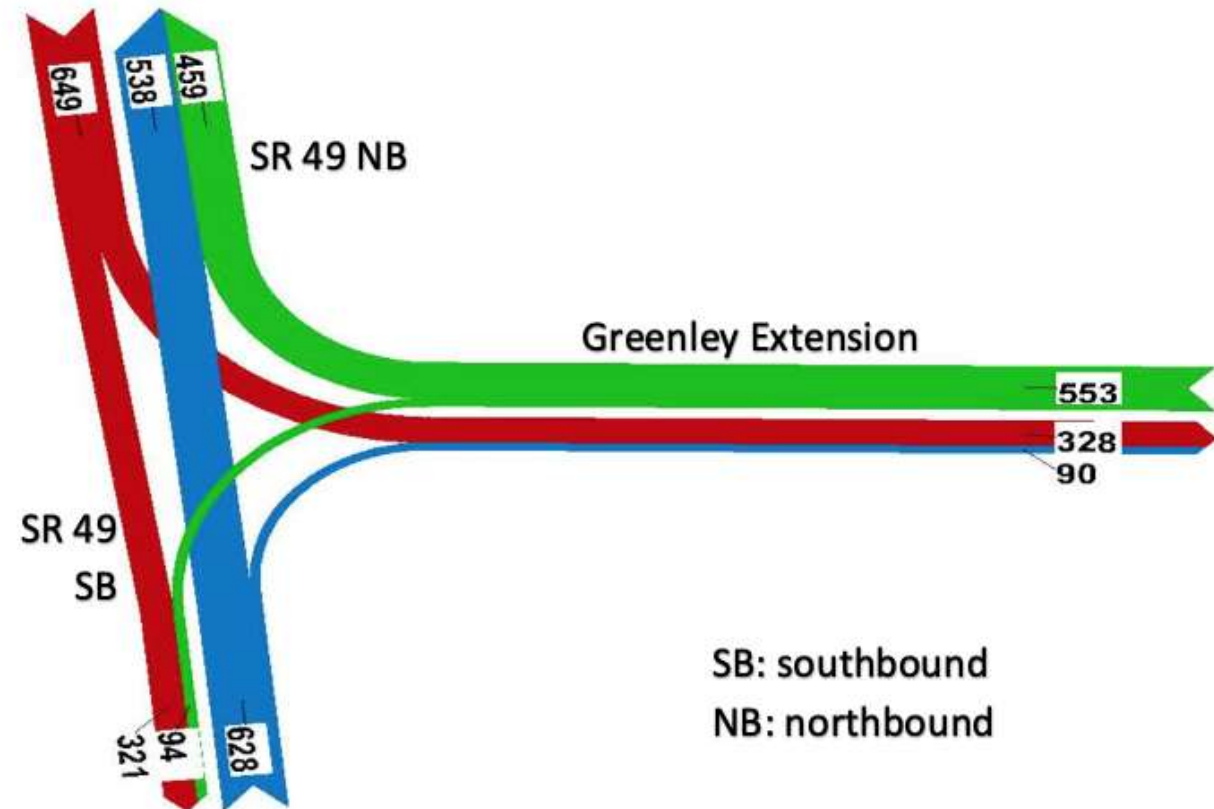
Congested Reduction and Operations Strategies

Rawhide Bridge and Intersection Realignment Strategy





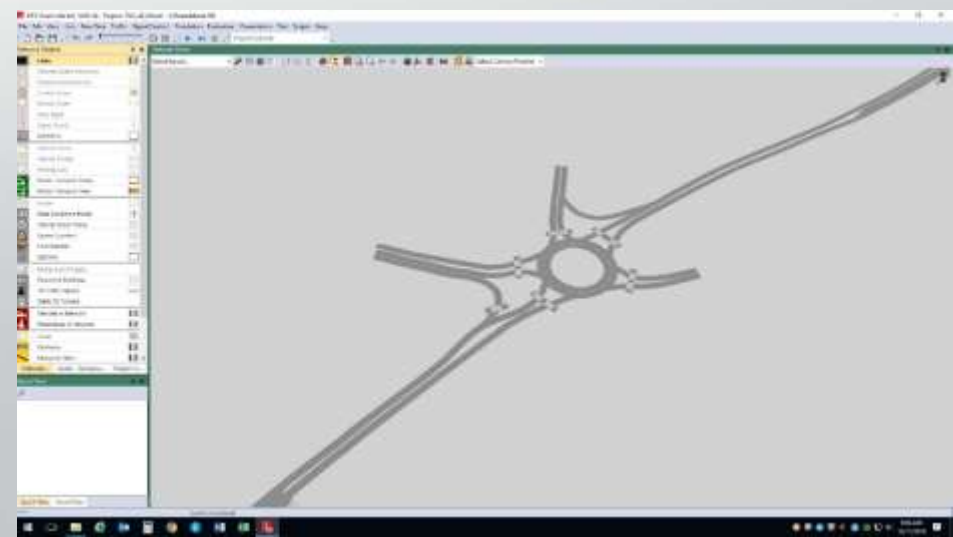
Greenley Extension Strategy



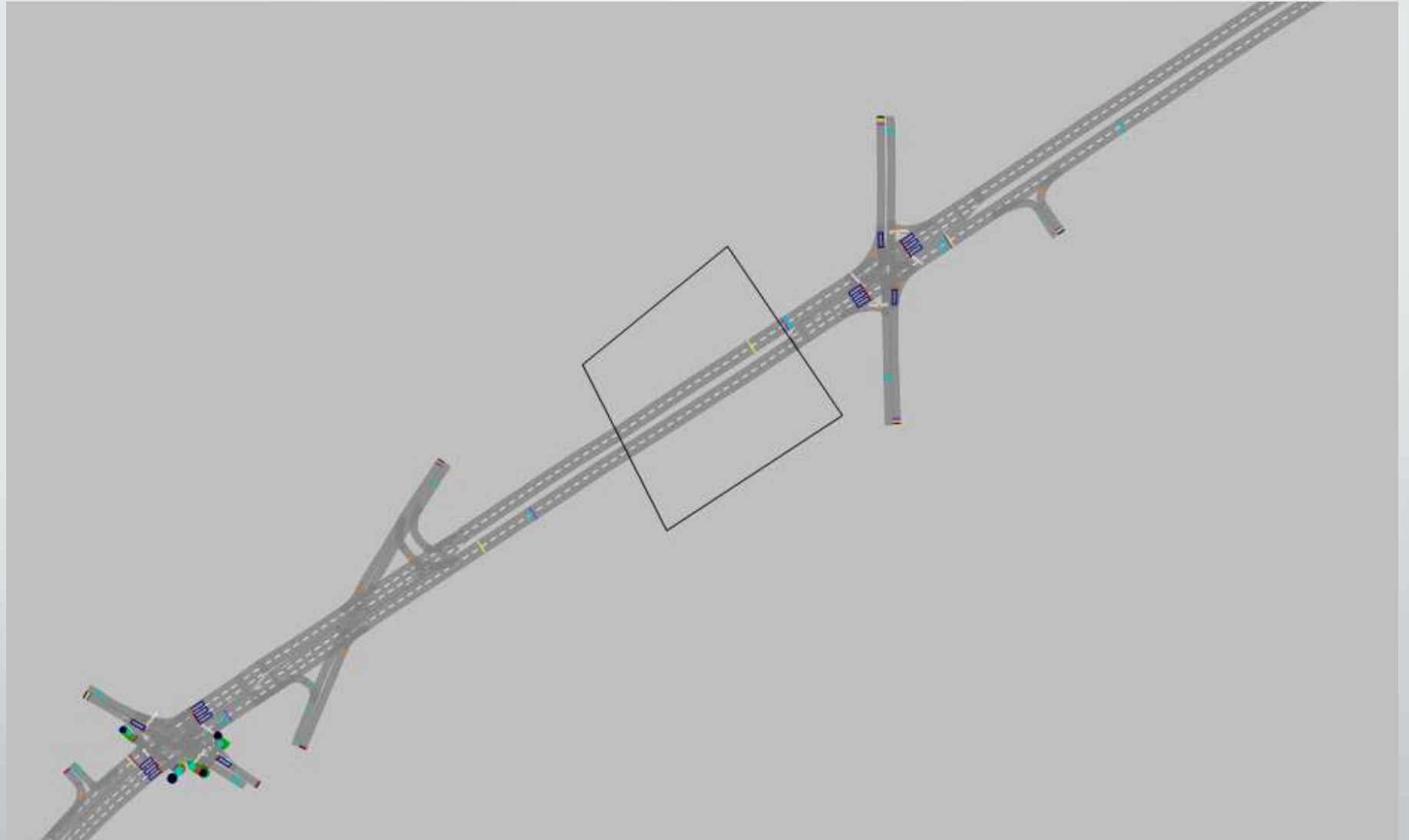
Mackey Ranch Roundabout Project



Columbia Way Roundabout near Sonora High School



Five-Lane Widening Strategy



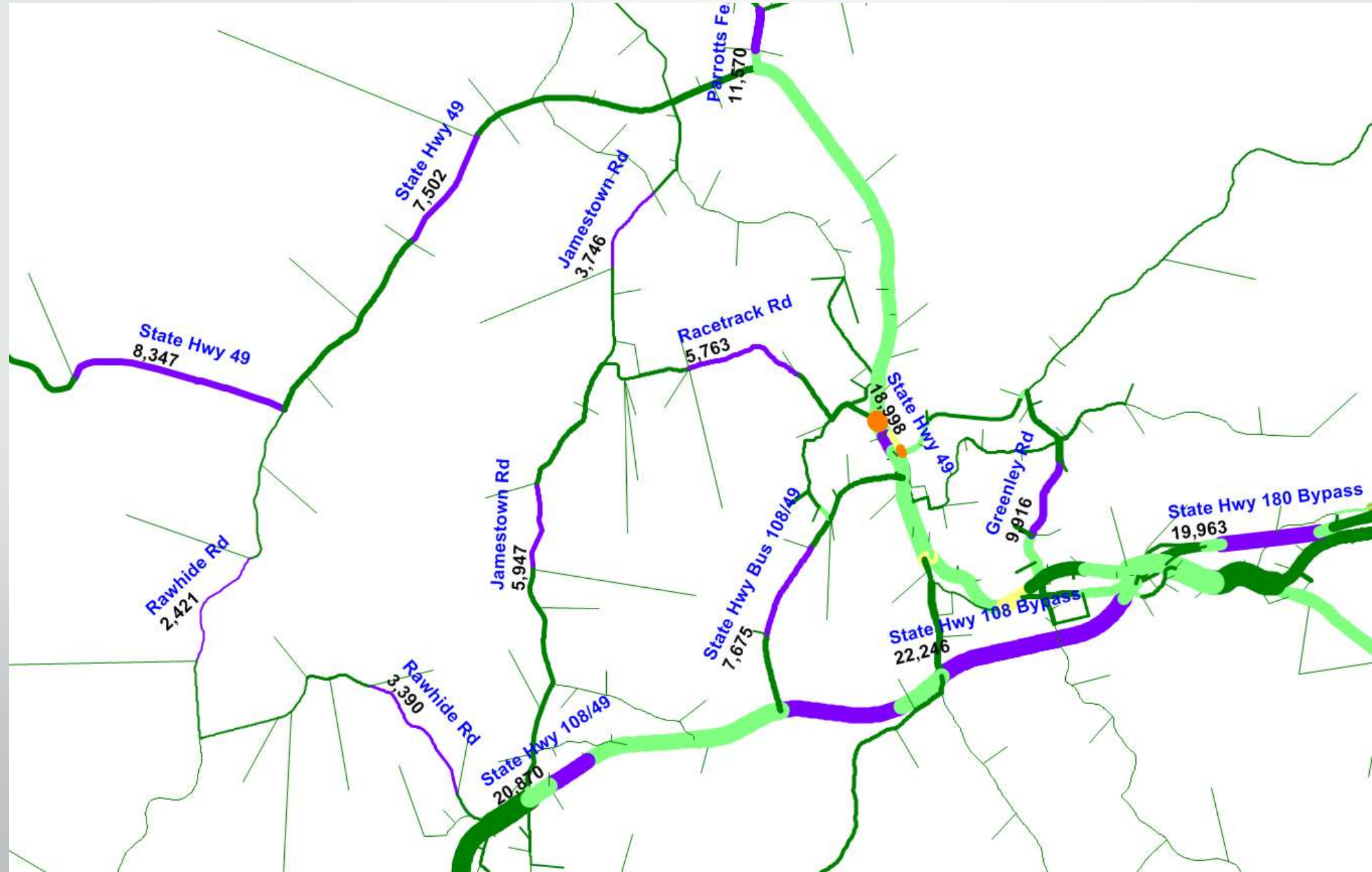


Rawhide and Fifth Avenue Signal Adjustments Strategy

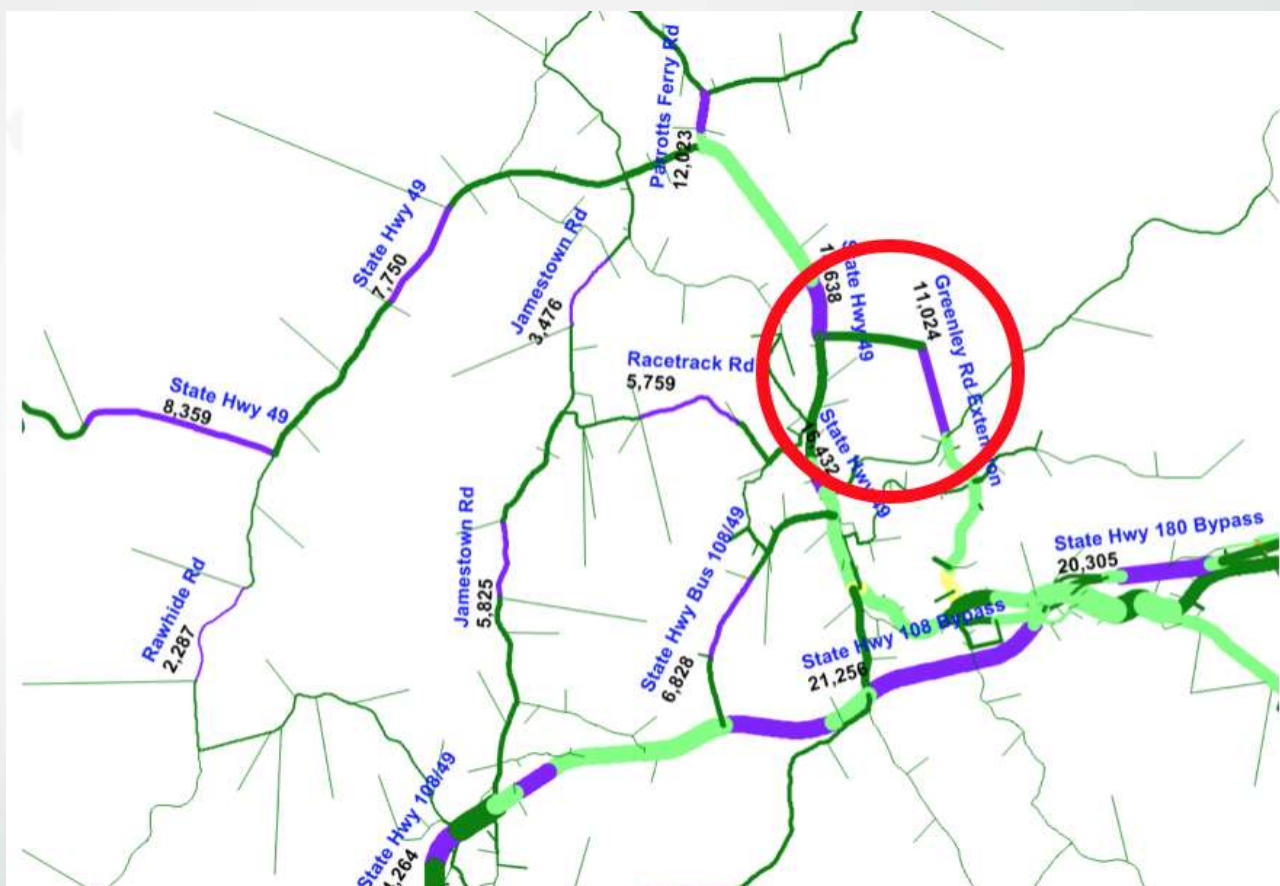
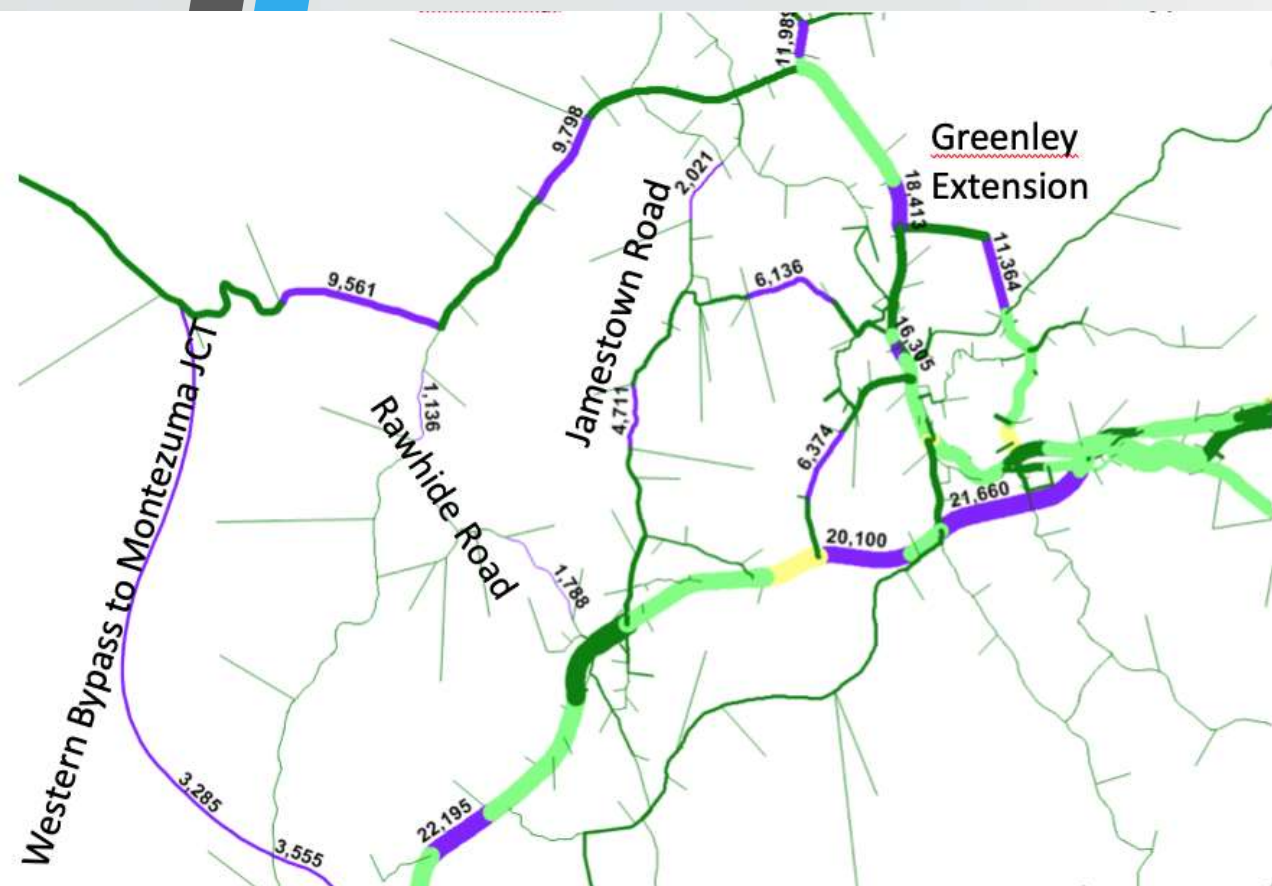
2040 Conditions Signal Timing with Geometric Strategies				
Scenario	Location	Average Delay (sec.)	LOS	95% Q (ft.)
2040 Coordination and Optimized Timing	Rawhide Rd	130.1	F	298 (EBL) / 27 (WBL)
	Fifth Avenue	136.2	F	146 (EBL) / 510 (WBL)
2040 Coordination and Optimized Timing with the Rawhide Bridge and Intersection Realignment	Rawhide Rd	59.8	E	268 (EBL) / 369 (WBL)
	Fifth Avenue	67.5	E	338 (EBL) / 486 (WBL)
2040 Coordination and Optimized Timing with four-lane widening on SR 108/49 between Rawhide and Fifth Avenue	Rawhide Rd	38.5	D	174 (EBL) / 221 (WBL)
	Fifth Avenue	48.2	D	274 (EBL) / 323 (EBL)
Results are estimated using methodology described in the Highway Capacity Manual 6th Edition and using PM peak hour data. Q: queue length; ft.: feet; EBL: east bound lane; WBL: west bound lane; Rd: road				



Existing Conditions without Greenley Extension



2040 Conditions with Extension and Western Bypass



Comparison of Strategy Performance and Rankings

Strategy/Project	Volume**	Percent of No-build Volume	Rank of Effectiveness***
2040 No-build TransCAD	18,498	100	4
Greenley Extension	16,432	89	1
Montezuma Junction Western Bypass*	16,305	88.14	2
Bell Mooney Western Bypass*	16,380	88.5	3

DNA: data not available

*Both strategies incorporated simulations that already included installation of the Greenley Extension into 2040 projected model

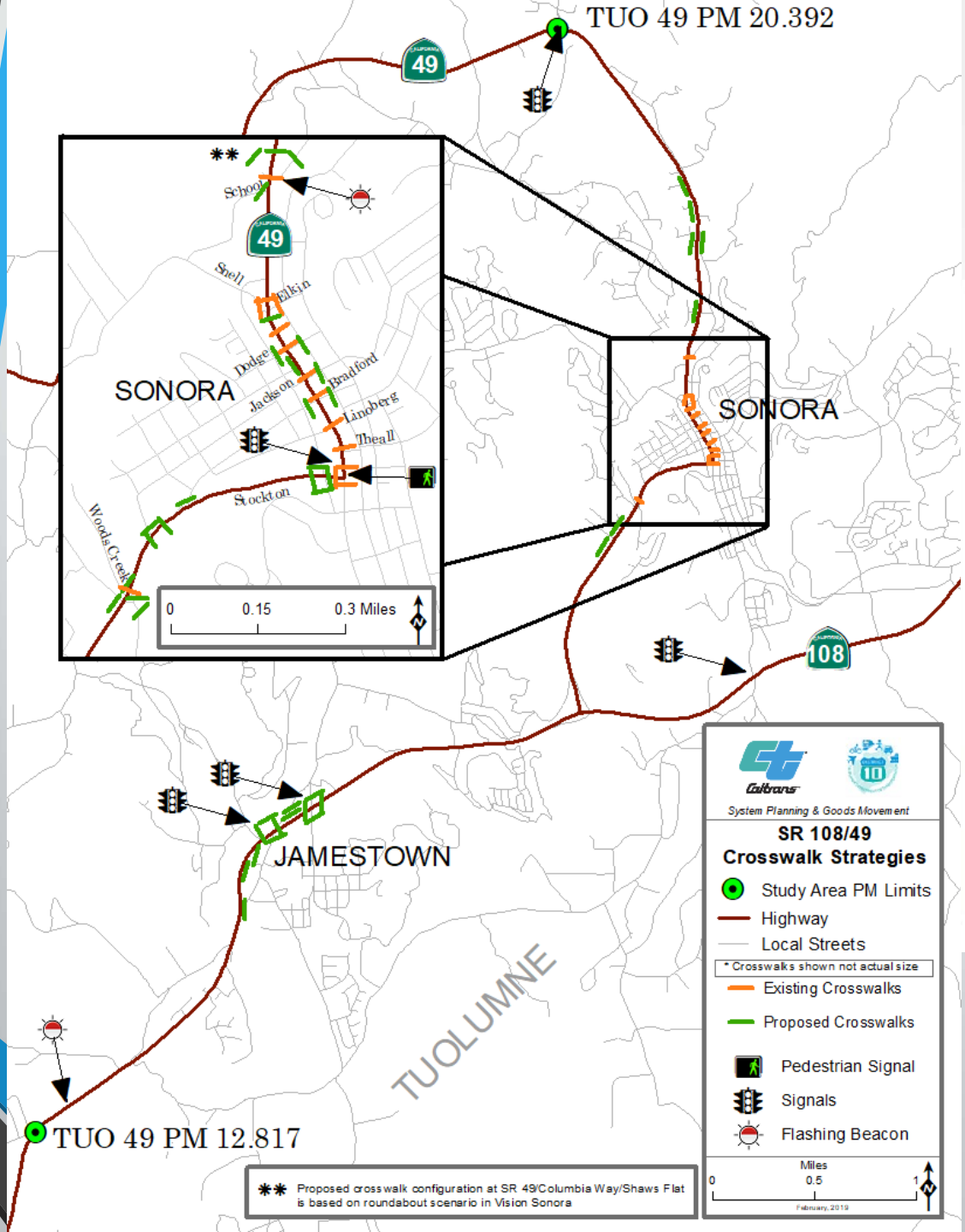
**Volumes in Downtown Sonora based on origin/destination studies using the Tuolumne TransCAD model

*** 1 = most effective at reducing volume; 4 = least effective at reducing volume



Active Transportation Strategies

Crosswalk Strategies



Before



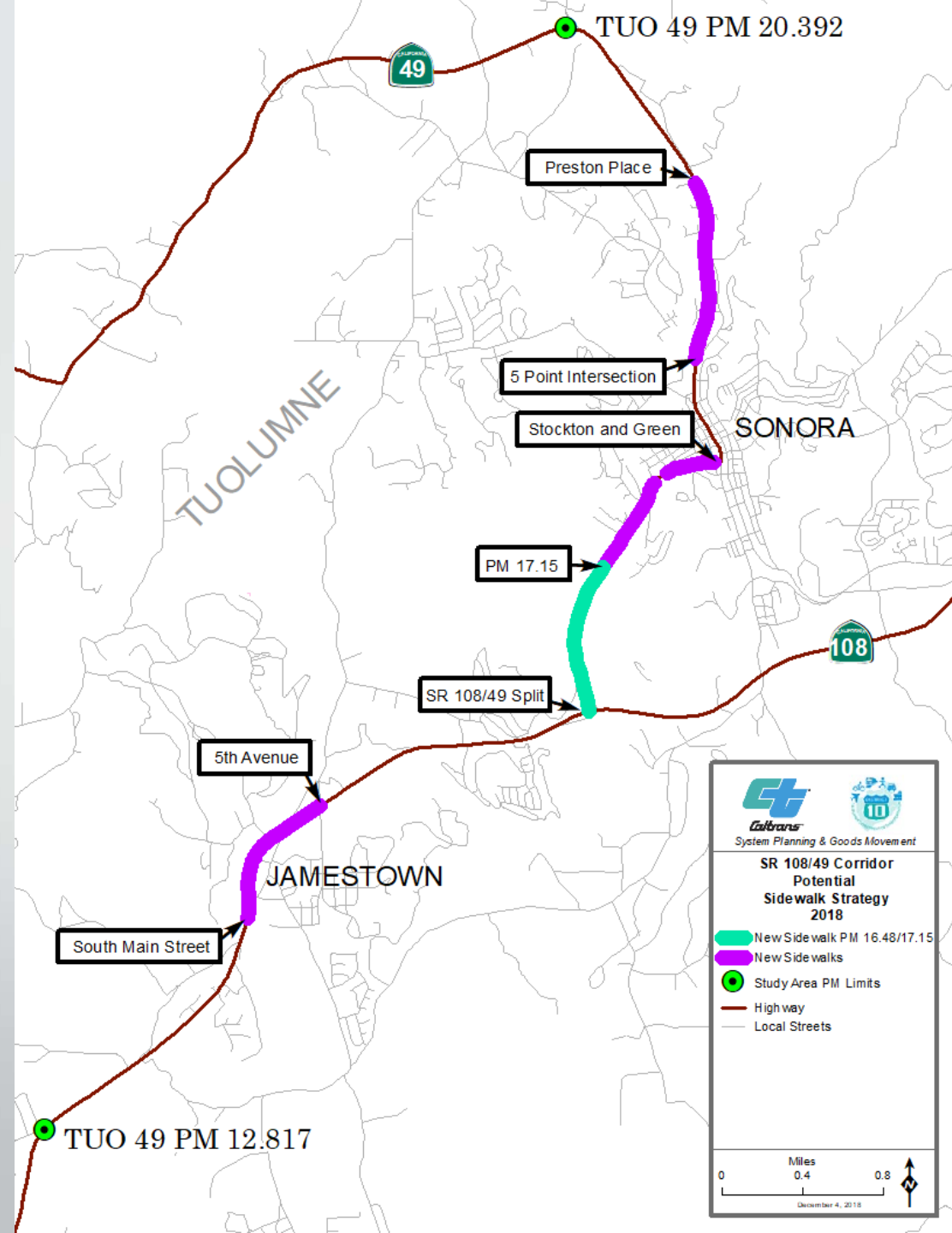
After

Figure 3-13. Fairgrounds Entrance Facing East

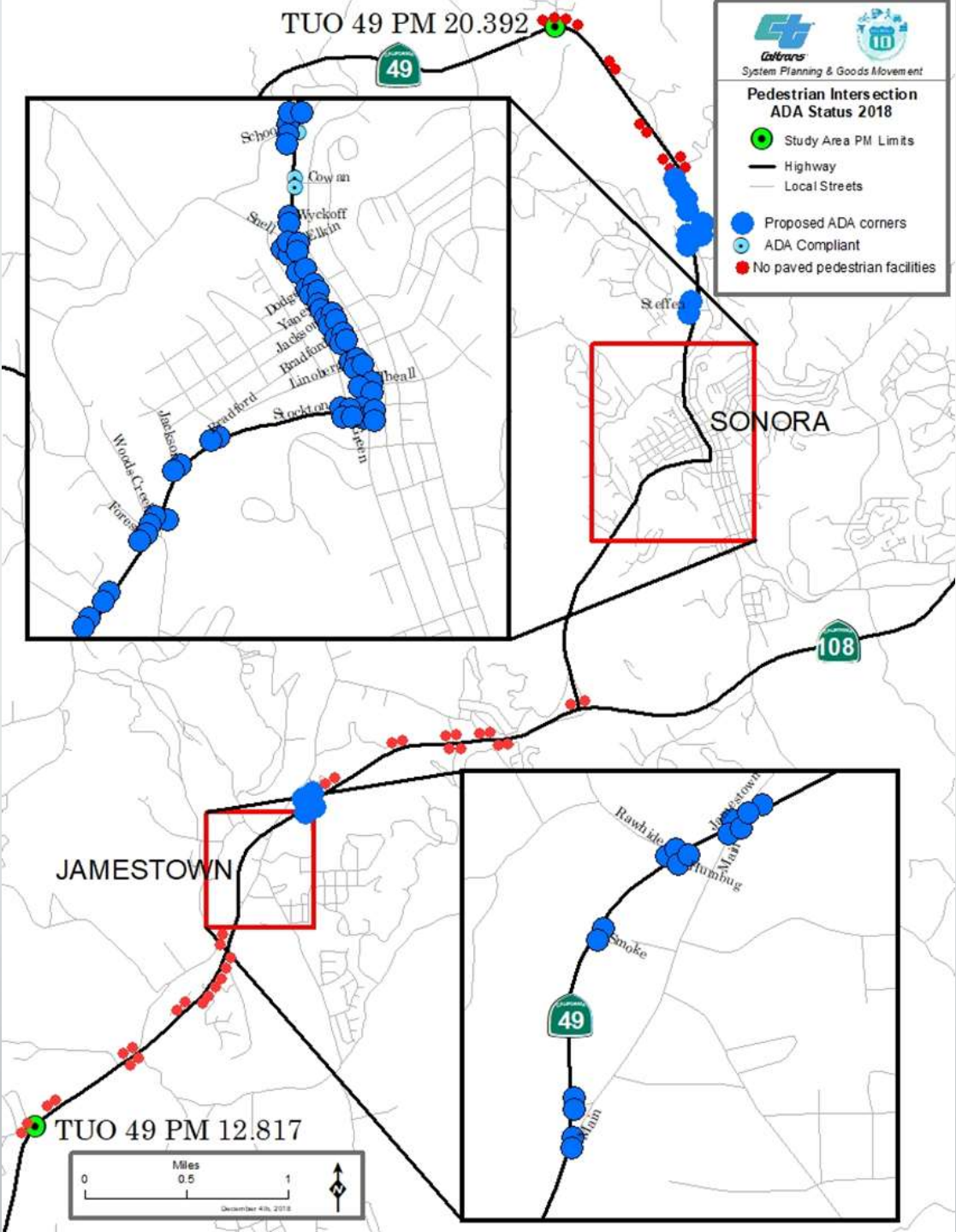


Figure 3-14. Fairgrounds Entrance

Sidewalk Strategies



ADA Strategies



Active Transportation Pathway

Active Transportation Camera Counts in the SR 108/49 Corridor, 2018

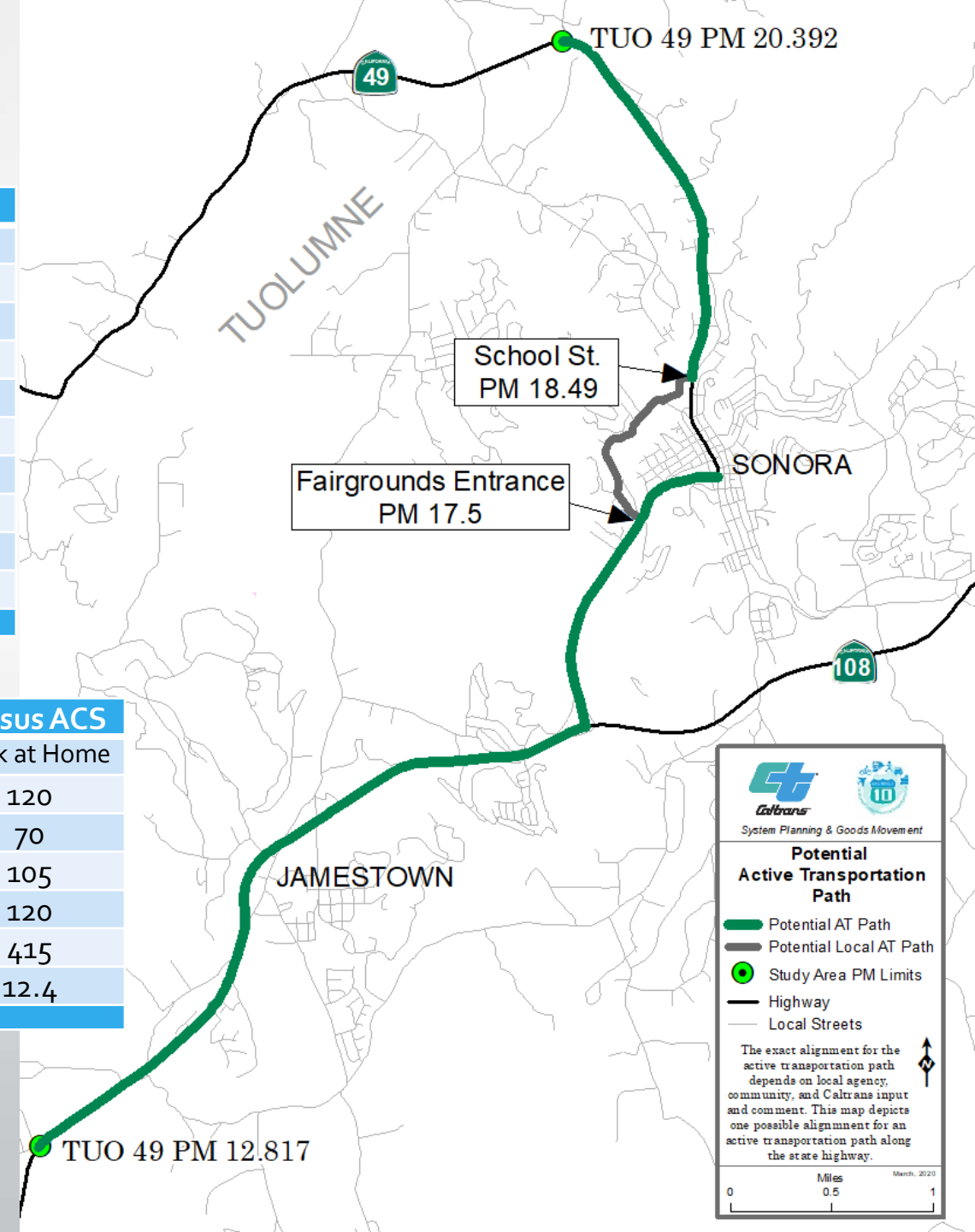
	Pedestrians	Bicyclists
Montezuma Junction	46	15
Chicken Ranch Road	13	22
Rawhide/Humbug	141	42
East of SR 108/49 Split	16	11
Fairgrounds Entrance	10,827*	53
Stockton/Washington	5,491	156
Shaw's Flat/Columbia Way	283	22
Parrott's Ferry	7	32
Total	16,824	353

*Counts taken during the 2018 Celtic Faire

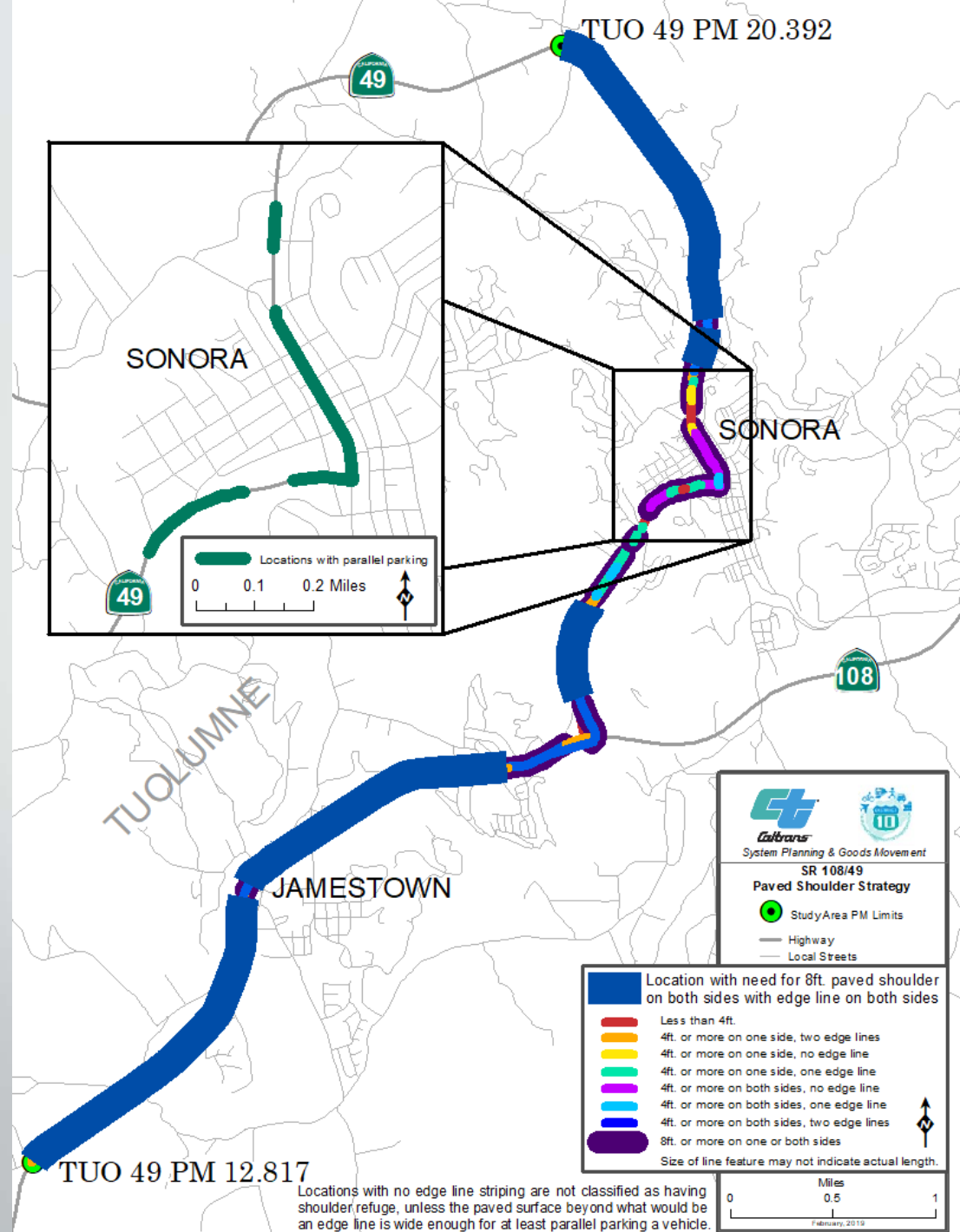
CTPP Means of Commute Transportation in Tuolumne County, 2012-2016 U.S. Census ACS

Tract No.	Total	SOV	2 people	3 or more	Transit	Walking	Cycling	Work at Home
11	732	474	0	35	8	80	15	120
12	625	484	4	4	43	20	0	70
21	760	555	60	10	0	30	0	105
51	1,235	845	185	4	0	80	0	120
Total	3,352	2,358	249	53	51	210	15	415
% of Total	NA	70.3	7.4	1.5	1.5	6.3	0.45	12.4

SOV: single occupancy vehicle; No.: number; NA: not applicable



Paved Shoulder Widening Strategy



Locations with no edge line striping are not classified as having shoulder refuge, unless the paved surface beyond what would be an edge line is wide enough for at least parallel parking a vehicle.

Strategy Timeframes in the SR 108/49 Corridor Study

Strategy	Empty cell	Empty cell	Empty cell	Time Frame			
	Location	Beg TUO 49 PM	End TUO 49 PM	Short-term	Medium-term	Long-term	Hypothetical
Signal Timing and Coordination	Rawhide and Fifth Avenue	14.74	15.0	X			
Mackey Ranch Improvement	SR 108/49 and Mackey Ranch	12.12	12.12	X			
4-lane widening	Various locations in the corridor	12.81/~19.1	16.48/20.4				X
5-lane widening	Chicken Ranch to S. Main	12.81	14.04			X	
	S. Main to Fifth Ave.	14.04	15.31		X		
	Fifth Ave. to Stockton Rd.	15.31	16.48			X	
	Greenley to Parrott's	~19.1	20.4			X	
Rawhide and Bridge Realign	Rawhide Rd. to Jamestown Rd.	14.5	14.9	X			
Shaw's Flat Improvement	Shaw's Flat/Columbia Way/SR 49	18.51	18.51		X		
Greenley Extension	Greenley and SR 49	~19.1	~19.1		X		
Western Bypass	Montezuma Junction	11.6	25.75				X
	Bell Mooney	13.4	25.75				X
Active Transportation Path	Chicken Ranch to S. Main	12.81	14.04		X		
	S. Main to Fifth Ave.	14.04	15.0		X		
	Fifth Ave. to SHS	15.0	18.51			X	
	Fairgrounds to DT Sonora	17.5	17.94			X	
	SHS to Columbia College	18.51	20.4			X	
ADA Improvements	S. Main to Fifth Ave.	14.04	15.0		X		
	SR 108 to Fairgrounds	16.48	17.5			X	
	Fairgrounds to DT Sonora	17.5	17.94			X	
	Downtown Sonora	17.94	18.3		X		
	Shaw's Flat to Preston Place	18.51	19.4			X	
Sidewalk Improvements	S. Main to Fifth Ave.	14.04	15.0		X		
	SR 108 to Fairgrounds Ent.	16.48	17.5			X	
	Fairgrounds to DT Sonora	17.5	17.94			X	
	Downtown Sonora	17.94	18.3		X		
	Shaw's Flat to Preston Place	18.51	19.4			X	
Crosswalk Improvements	S. Main to Fifth Ave.	14.04	15.0		X		
	SR 108 to Fairgrounds Ent.	16.48	17.5			X	
	Fairgrounds to DT Sonora	17.5	17.94			X	
	Downtown Sonora	17.94	18.3		X		
	Shaw's Flat to Preston Place	18.51	19.4			X	
Paved shoulder widening	Mackey Ranch to S. Main	12.12	14.04		X		
	S. Main to Fifth Ave.	14.04	15.0		X		
	Fifth Ave. to Stockton Rd.	15.0	16.48			X	
	SR 108 to Fairgrounds	16.48	17.5			X	
	Fairgrounds to DT Sonora	17.5	17.94			X	
	DT Sonora to Parrott's	18.3	20.4			X	
SR 108 Freeway	Mackey Ranch to Stockton	12.12	16.48				X
2040 No-build Alternative	various	12.12	20.4				X

PM: postmile; Ave.: avenue; Rd.: road; S.: south; ~: approximate location; DT: downtown; SHS: Sonora High School; Ent.: entrance
NA: not applicable

Questions?

