

Keys to a Successful Grant Application Review and Feasibility Exercise

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Review and Feasibility Exercise



BEFORE

High Speed Differential & Limited Sight Distance



AFTER

Low Speed, Minimal Speed Differential & Delay

This is the Key to Safer Streets

<https://www.youtube.com/watch?v=xsSp8gxzfjo>

Review and Feasibility Exercise



9 Injury Crashes
(3 Bike and 1 Ped SI)
from 2019 thru 23
at **All-Way Stop**
Intersection

Crash concentration at Intersection of two suburban arterials (each 2-lane)

**TABLE 1: Preliminary List
Candidates Eligible for 2024 Highway
Safety Improvement Program (Cycle 12)**

List of 20 locations encompassing crash-prone intersections described below:

- 7 with **Two-Way Stop Control (TWSC)**
- 5 with **One-Way Stop Control (Tee)**
- 3 with **All-Way Stop Control**
- 3 with **Signal Control**
- 1 with **Three-Way Stop Control (of 4)**
- 1 **Mini-Traffic Circle** with TWSC
- 1 Segment with three intersections:
 - Two with TWSC
 - One with Signal Control

Note: 4 "hot spots" are located along one corridor

The table contains traffic volume and crash data, and the findings of preliminary design, capacity, safety and economic analyses. The *highest* Benefit Cost Ratios for small roundabout and traffic signal alternatives are highlighted in yellow.

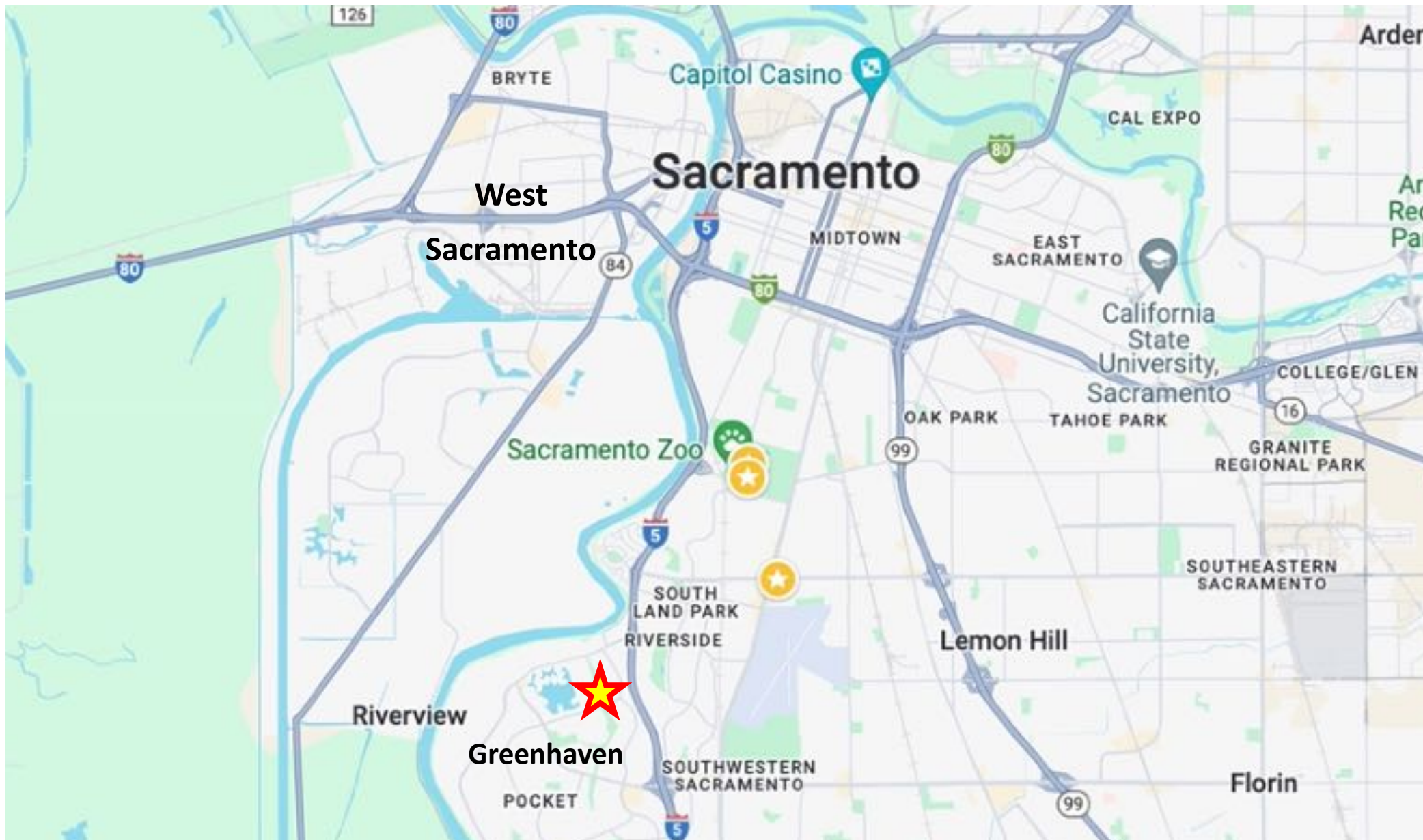
INTERSECTION (I/S) Neighborhoods	Existing Traffic (ADT)	Crashes (2019-2023)*					Alternatives	COST	Benefit Cost Ratio ¹	Comments	
		F (K)	SI	VI	C O P	P D O					
						→ assumed					
1	MLK Jr. / 26 th Ave Fruitridge Park	TWSC-O		1	3	7	4	Mini-RAB Signal	300 550	21.2 21.2	"O" = Offset I/S; install RAB at southerly I/S
2	24 th St / Kenworthy Meadowview	TWSC-T	1P	1	1	1	4	Mini-RAB Signal	350 500	25.1 12.2	Partial Road Diet: re- stripe SB 24 th to 1-lane
3	14 th Ave / 71 st Street Colonial	1WSC-T		1	2	4	3	Mini-RAB Signal	300 550	34.1 12.9	No speed or traffic control between 65 th & Power Inn
4	MLK Jr / 16 th Ave Oak Park	TWSC-O		1P	18	4	3	Mini-RAB Signal	300 550	20.4 6.4	Offset; install RAB at westerly leg
5	Alhambra / U Street Alhambra Triangle	TWSC		1B	2	1	3	Mini-RAB Signal	300 550	27.0 8.8	Plus: SI (B) crash in '14
6	14 th Ave / 62 nd St. Tahoe Park	TWSC		1B	2	1B	3	Mini-RAB Signal	300 550	24.0 8.5	Which Alt will produce slower & safer corridor
7	K Street / 20 th Street Midtown	AWSC		1	2B	4(B) (3P)	3	Mini-RAB Signal	350 550	20.4 7.1	High crash numbers at existing AWSC
8	Rio Linda / Marysville Robla	Signal		2	1	5	3	Mini-RAB	400	27.0	Hi-speed approaches warrant longer islands
9	Alhambra / T Street Alhambra Triangle	Signal		2	2	5	8	2 Mini-RABs	450	40.0	Peanut-shaped RAB; similar in Paso Robles
10	Greenhaven / Gloria Greenhaven	AWSC		1P	3	3	5	Modular-RAB Signal	400 550	33.8 15.5	High crash numbers for AWSC; D > 90 ft;
11	Capitol Way / 25th St Midtown	T Circle	1	1	2	1	4	Mini-RAB Signal	325 550	29.0 11.4	Needs Raised Splitter islands & Yield Control
12	Broadway / 5 th St. Upper Land Park	Signal		2	8	9	6	Modular-RAB	325	46.7	Diameter > 90 ft.; RAB will reduce speeds
13	MLK Jr / 21 st to 23 rd Oak Park	Sig + TWSC		4 (3P)	3 (1B)	7	4	2 Mini-RABs	750	26.1	2 will reduce speed & crashes for 3 blocks
14	Sutterville / Mead south access to WLP	TWSC		2 (1P-1B)	2	1	5	Mini-RAB Signal	350 850	32.4 8.3	Unbalanced volumes; compare to signal Alt
15	24 th St / Casa Linda Meadowview	TWSC		1	6	1	3	Modular RAB Signal	450 550	24.6 12.2	Diet: Reduce NB & SB approaches to 1-lane
16	Jibboom / Richards So. Pacific - Richards	1WSC-T	1P		0	1	2	Mini-RAB Signal	350 550	11.3	Fatal crash injured multiple victims
17	Alhambra / W Street Alhambra Triangle	1WSC-T		1	2	2	3	Mini-RAB Signal	275 500	27.2 10.5	RAB will reduce speeds prior to X St
18	Seamas / Riverside Little Pocket	3WSC		1B	1	3	2	Mini-RAB Signal	350 650	21.5 8.1	No Right on Red from SB S exit ramp
19	Riverside / 35 th St. Little Pocket	1WSC-T		1P	1	1	3	Mini-RAB Signal	300 500	22.3 7.4	Will complement Mini at Seamas
20	Rio Linda Blvd/South Del Paso Heights	AWSC 13k+4k	2 (1P)	1P	4 (2B)	8	8	Mini-RAB Signal	350	63.6 33.4	Diam: 85 ft; High crash #'s & severity for AWSC

TABLE 1: Preliminary List of Candidates Eligible for 2024 Highway Safety Improvement Program (Cycle 12)

INTERSECTION (I/S) Neighborhoods	Existing Traffic (ADT)	CRASHES 2019-23*					P D O	Alternatives	Cost	Benefit Cost Ratio ¹	Comments
		F (K)	SI	VI	C O P	P D O					
								← assumed			
1	MLK Jr. / 26 th Ave Fruitridge Park	TWSC-O		1	3	7	4	Mini-RAB Signal	300 550	49.4 21.2	"O" = Offset I/S; install RAB at southerly I/S
2	24 th St / Kenworthy Meadowview	TWSC-T	1P	1	1	1	4	Mini-RAB Signal	350 500	25.1 12.2	Partial <i>Road Diet</i> : re- stripe SB 24 th to 1-lane
3	14 th Ave / 71 st Street Colonial	1WSC-T		1	2	4	3	Mini-RAB Signal	300 550	34.1 12.9	No speed or traffic control between 65 th & Power Inn
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5	Alhambra / U Street Alhambra Triangle	TWSC		1B	2	1	3	Mini-RAB Signal	300 550	27.0 8.8	Plus: SI (B) crash in '14
6	14 th Ave / 62 nd St. Tahoe Park	TWSC		1B	2	1B	3	Mini-RAB Signal	300 550	24.0 8.5	Which <i>Alt</i> will produce slower & safer corridor
7	K Street / 20 th Street Midtown	AWSC		1	2B	4(B) (3P)	3	Mini-RAB Signal	350 550	20.4 7.1	High crash numbers at existing AWSC
8	Rio Linda / Marysville Robla	Signal		2	1	5	3	Mini-RAB	400	27.0	Hi-speed approaches warrant longer islands
9	Alhambra / T Street Alhambra Triangle	Signal		2	2	5	8	2 Mini-RABs	450	40.0	Peanut-shaped RAB; similar in Paso Robles
10	Greenhaven / Gloria Greenhaven	AWSC		1 (P)	6 (2B)	2 (1B)	5	Modular-RAB Signal	400 550	35.5 17.3	High crash numbers for AWSC; D > 90 ft;
11	Capitol Way / 25th St Midtown	T Circle	1	1	2	1	4	Mini-RAB Signal	325 550	29.0 11.4	Needs Raised Splitter islands & Yield Control
12	Broadway / 5 th St.	Signal		2	8	9	6	Modular-RAB	325	46.7	Diameter > 90 ft.; RAB



Intersection of Greenhaven and Gloria Drive (approximately 5 miles south of downtown)



Intersection of Greenhaven and Gloria Drive: Suburban Area | 2-lane arterials



Aerial view of a portion of the Pocket–Greenhaven Community, 6 miles south of downtown Sacramento

Existing Conditions: Intersection of Greenhaven and Gloria Drive (Sacramento)



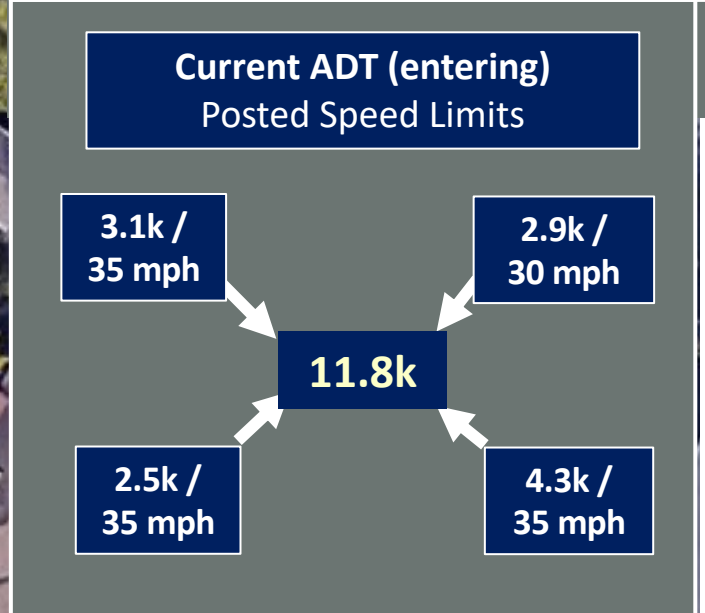
Existing Conditions: Intersection of Greenhaven and Gloria Drive (Sacramento)



Roundabout Alternative Feasibility Check: Capacity & Speed Assessment



- FINDINGS:**
- Capacity of small single-lane roundabout is more than adequate for volumes
(ADT < 25k; Peak Hour (ADT x 10%) < 1800)
 - Approach speeds are typical
(Posted Speed Limits are 35 or less)



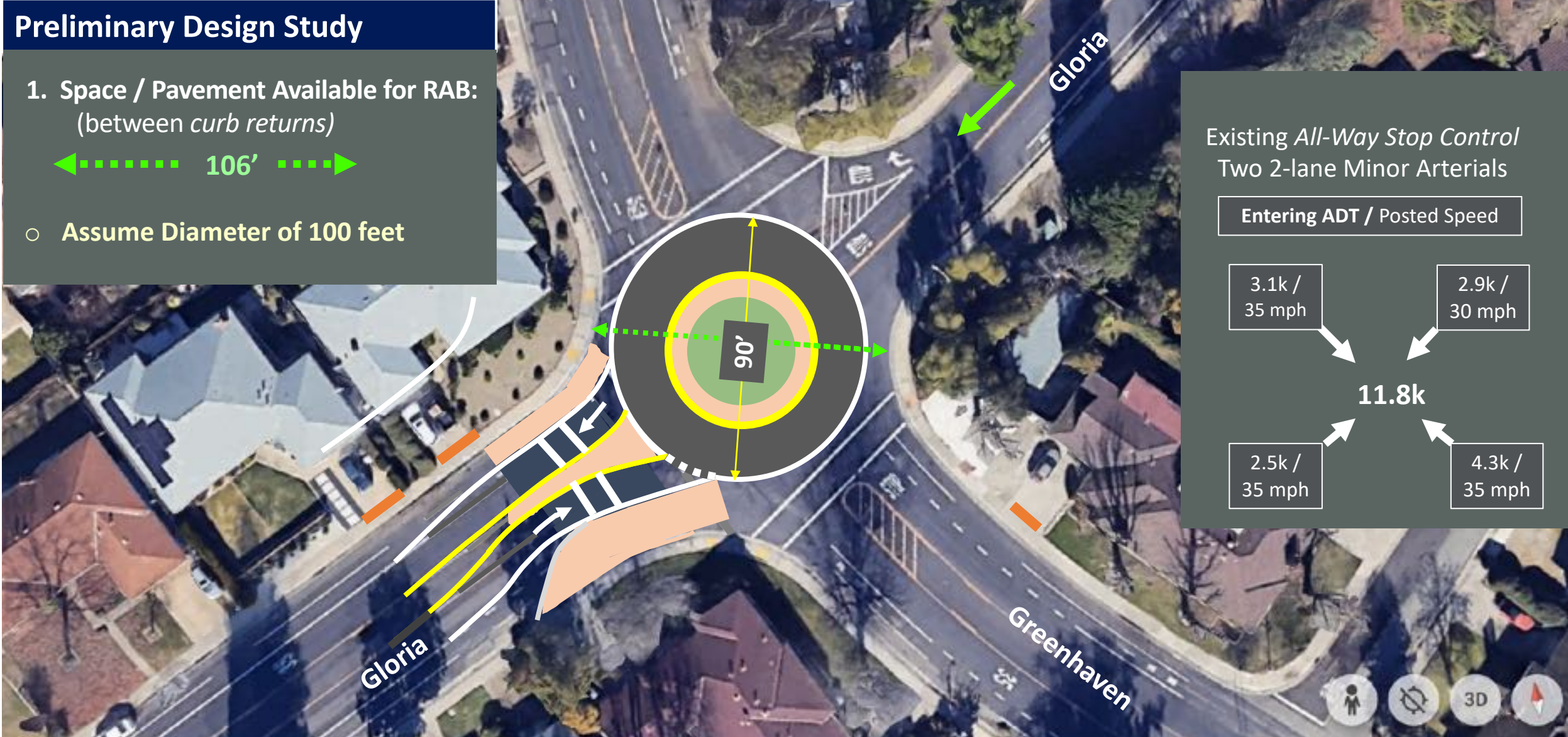
Roundabout Alternative Feasibility Check: *Size & Fit*

Preliminary Design Study

1. Space / Pavement Available for RAB:
(between curb returns)

←..... 106'→

○ Assume Diameter of 100 feet



Roundabout Alternative Feasibility Check: *Size & Fit*

Preliminary Design Study

1. Space / Pavement Available for RAB:
(between *curb returns*)

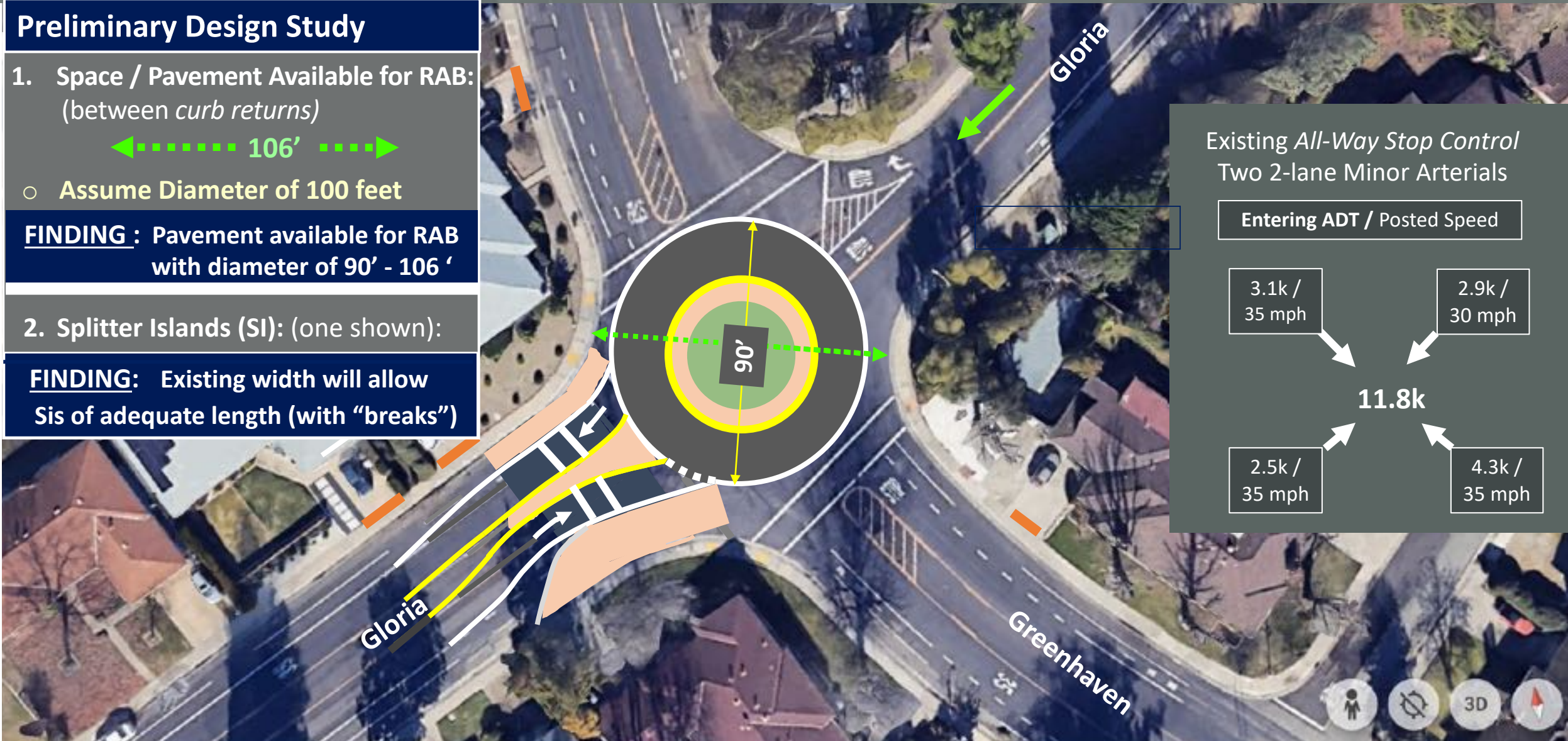
←..... 106'→

- Assume Diameter of 100 feet

FINDING : Pavement available for RAB
with diameter of 90' - 106'

2. Splitter Islands (SI): (one shown):

FINDING: Existing width will allow
Sis of adequate length (with "breaks")



Severe Injury Crash Summary Report

Vehicle vs. Ped
Oct. 5, 2023

8 additional
injury crashes
(3 involving cyclists)
occurred during
the 5-year period
from 2019 thru '23

Transportation Injury Mapping System

Home About - Statewide Summary - Tools - Help Donate

Jerry Champa -

Print (PDF)

Crash Details for: Case ID 82200633

Crash Information

County	Sacramento
City	Sacramento
Date & Time (M/D/Y)	10/05/2023 11:50
Location (Intersection)	Greenhaven Dr & Gloria Dr
Dist. & Dir. from Intersection	At Intersection
State Highway	No
Geocoded Location	38.5079498, -121.5240707 Fix

Type of Crash	G - Vehicle/Pedestrian
Motor Vehicle Involved With	B - Pedestrian
Crash Severity	2 - Injury (Severe)
PCF Violation Category	10 - Pedestrian Right of Way
Weather	A - Clear
Alcohol Involved	No

Pedestrian Crash	Yes	Bicycle Crash	No
Motorcycle Crash	No	Truck Crash	No

Parties: 2

Party Number	Party Type	Statewide Vehicle Type	At Fault	Party Direction	Movement Preceding Collision
1	1 - Driver (Including Hit and Run)	A - Passenger Car/Station Wagon	Yes	South	B - Proceeding Straight
2	2 - Pedestrian	N - Pedestrian	No	East	B - Proceeding Straight

Victims: 1

Party Number	Victim Role	Victim Gender	Victim Age	Victim Degree of Injury
2	3 - Pedestrian	F - Female	19	5 - Suspected Serious Injury

< <https://tims.berkeley.edu/> >

EXAMPLE:

Crash Concentration and Pattern at Greenhaven / Gloria Drive

Abbreviated ISOAP (ICE) & Benefit / Cost Ratio

ALTERNATIVES COMPARISON
via *Intersection Control Evaluation*

1. Small Modular Roundabout
2. Traffic Signal

Example:
Collision Cost Analysis
Spreadsheet Print-Out

BCR Analyzer: Collision Cost Analysis and B/C							
County	Rte	Postmile	Location Description		Area		Intersection Type:
Sac	Greenhaven		Cross Street: Gloria		<input type="radio"/> Rural	<input checked="" type="radio"/> Suburban	<input type="radio"/> Urban
Existing Condition			# of Years for Analysis	Rate Group			
All Way Stop, Type F, M or S			20	18			
Existing ADT (x1000)		Future ADT (x1000)					
Mainline	Cross St	Mainline	Cross St	Average ADT	VCF		
7.4	5.4	8.0	5.0	12.9	1.01		
Est. Capital Cost (x1000) for Desired Improvement				Existing Collision Data			
Desired Improvement	Const	R/W	Total	Number of Years	5	Total Collisions	14
Yield Control (Roundabout 2-Lane)	\$ 400		\$ 400	Injury	9	PDO	5
Yield Control (Roundabout 2-Lane)			\$ -	Fatal	0	Fat + Inj	9
Traffic Signal, Type F, M or S	\$ 600	\$ -	\$ 600				
All Way Stop, Type F, M or S			\$ -				
Collision Cost (x1000)							B/C
	Existing Condition		Desired Improvement		Projected Savings		
1	All Way Stop, Type F, M or S	\$14,980	Yield Control (Roundabout 1-Lane)	\$771	\$14,209		35.52
2	All Way Stop, Type F, M or S	\$14,980	Yield Control (Roundabout 2-Lane)	\$1,908	\$13,072		0.00
3	All Way Stop, Type F, M or S	\$14,980	Traffic Signal, Type F, M or S	\$4,596	\$10,384		17.31
4	All Way Stop, Type F, M or S	\$14,980	All Way Stop, Type F, M or S	\$6,208	\$8,773		0.00

EXAMPLE:
Abbreviated ISOAP (ICE) &
Benefit / Cost Ratio

ALTERNATIVES COMPARISON

(via *Intersection Control Evaluation*)

1. Small Modular Roundabout
2. Traffic Signal

BCR Analyzer *INPUTS*:

- Existing and *future* traffic control
- Traffic and crash data
- Cost Estimates

BCR Analyzer: Collision Cost Analysis and B/C							
-- Fill in tan boxes along with 'Area' --							
County	Rte	Postmile	Location Description			Area	
SAC	Greenhaven		X Street: Gloria			<input type="radio"/> Rural <input checked="" type="radio"/> Suburban <input type="radio"/> Urban	
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All Way Stop, Type F, M, S				20	18		
Existing ADT (x 1000)		Future ADT (x 1000)		Average ADT		VCF	
Mainline	Cross St	Mainline	Cross St				
7.4	5.4	8.0	5.0	12.9		1.01	
Project Cost (x1000) for Desired Improvement				Existing Collision Data			
Desired Improvement	Const	R/W	Total	# Years	5	Total Collisions	14
Yield Control (Roundabout: 2-Lane)	\$ 400		\$ 400	Injury	9	PDO	5
Yield Control (Roundabout: 2-Lane)			\$ -	Fatal	0	F + I	9
Traffic Signal, Type F, M or S	\$ 600	\$ -	\$ 600				
All Way Stop, Type F, M or S			\$ -				

Collision Cost Analysis spreadsheet Print-Out (top half)

EXAMPLE: Abbreviated ISOAP (ICE) & Benefit / Cost Ratio for Greenhaven at Gloria Drive

BCR Analyzer
Collision Cost Analysis and B/C
Greenhaven at Gloria Drive

ALTERNATIVES COMPARISON
 via *Intersection Control Evaluation*

1. Small Modular Roundabout
2. Traffic Signal

BCR Analyzer *OUTPUTS*:

- Projected Savings (\$)
- **Benefit / Cost Ratio**

	Collision Cost (x1000)				B/C Ratio	
	Existing Condition		Desired Improvement			Projected Savings
1	All Way Stop	\$14,980	Yield Control Roundabout 1-lane		\$14,209	35.5
2	All Way Stop	\$14,980	Yield Control Roundabout 2-lane		\$13,072	0.0
3	All Way Stop	\$14,980	Traffic Signal		\$10,384	17.3
4	All Way Stop	\$14,980	All Way Stop		\$8,773	0.0

**TABLE 1:
Preliminary List of
Safety Grant
Candidates**

INTERSECTION (I/S) Neighborhoods	Existing Traffic (ADT)	Crashes (2019-2023)*					Alternatives	COST	Benefit Cost Ratio ¹	Comments	
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14	Sutterville / Mead south access to WLP	TWSC		2 (1P-18)	2	1	5	Mini-RAB Signal	350 850	32.4 8.3	Unbalanced volumes; compare to signal Alt

Locations 1, 4 and 13 include 4 crash hot spots where a total of 6 severe crashes resulted in severe injuries to 6 pedestrians.

These (and a 5th intersection) can be packaged in one application for a systemic safety project grant.

Martin Luther King Jr. Boulevard

Between Broadway & Fruitridge
(multi-lane arterials) ...

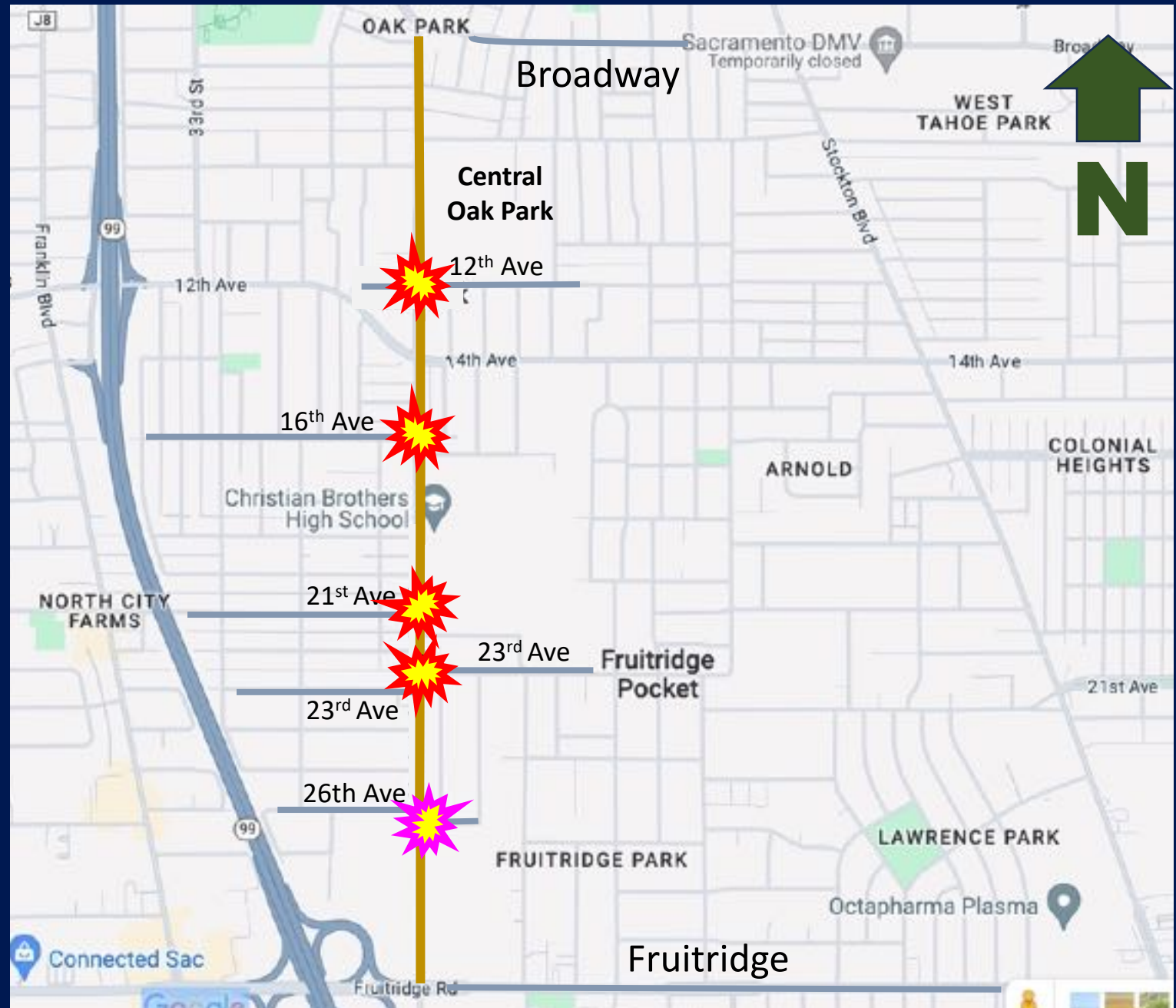
MLK Jr Blvd is a 2-lane arterial with 21 intersections, of which 3 are signalized. Three schools and a community center are located along the 1.6 mile long corridor



Intersection with severe crash concentration / pattern



Intersection with multiple severe crashes, injury crash concentration, pattern and highest approach speed



Martin Luther King Jr. Boulevard

Safe & Slow Corridor Concept

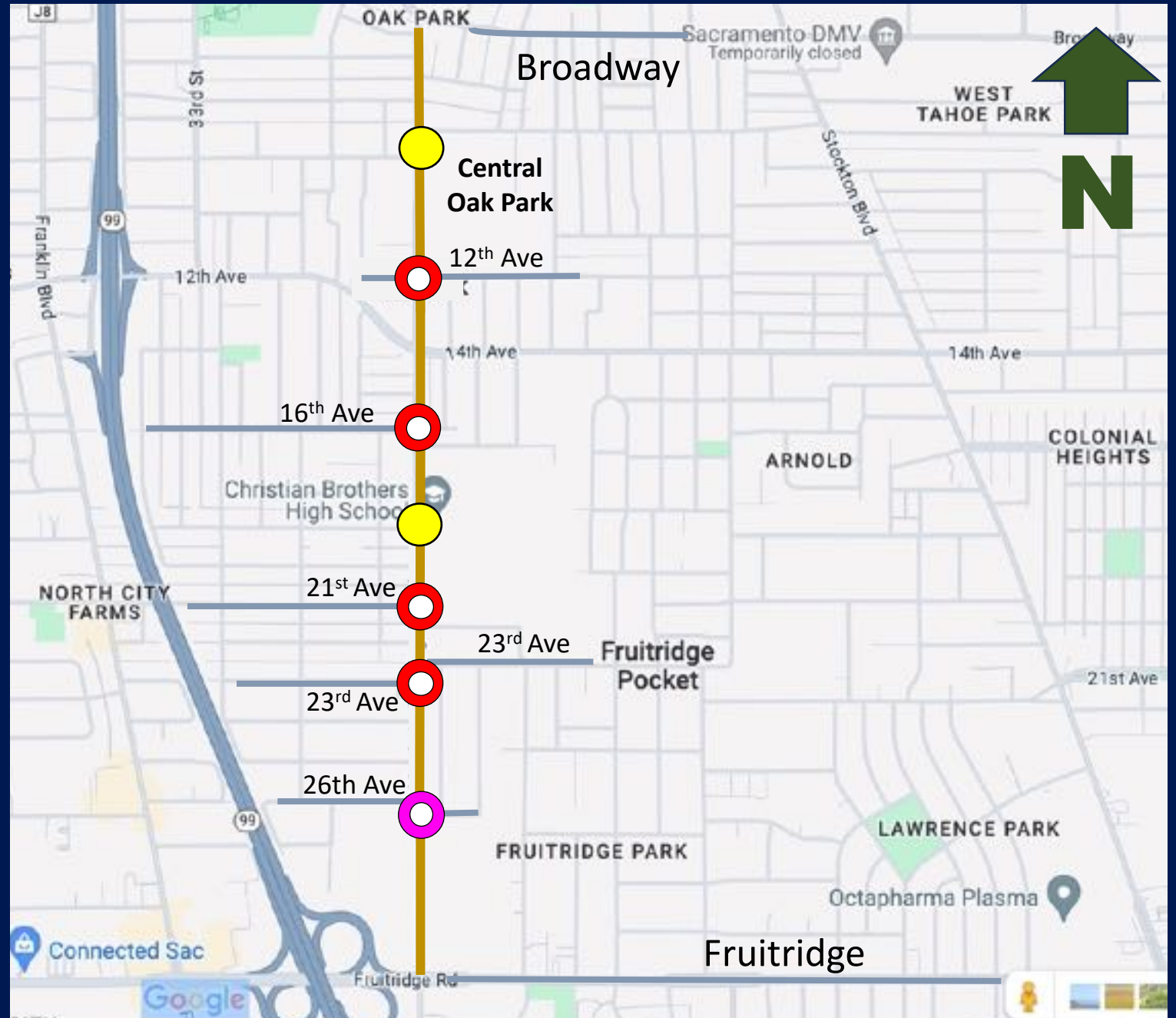
Featuring a series of small roundabouts (7) to control vehicles speeds along a 1.1 mile segment



Mini-Roundabouts at intersections with severe crash concentrations



Mini-Roundabouts to control speed along corridor



Keys to a Successful Grant Application

QUESTIONS?

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