Fehr & Peers
Technical Memorandum

Date: June 4, 2026

To: Jack Varozza, TE, City of Roseville

From: John Gard, TE, Fehr & Peers

Subject: Sierra View Shopping Center Site Access Study

RS26-4455

This memo presents the analysis and recommendations of our site access study for the proposed Sierra View Shopping Center to be located in the southwest corner of the Pleasant Grove Boulevard/ Fiddyment Road intersection in the Sierra Vista Specific Plan (SVSP). This memorandum is organized into the following four sections:

1. Project Description
2. Project Travel Characteristics
3. Analysis of Project Access
4. Review of Internal Circulation

1. Project Description

According to the project site plan (*Sierra View Shopping Center*, Kimley Horn, April 2026) on **Figure 1** and the May 2026 Project Description, the project site would consist of seven retail buildings totaling 58,210 square feet of floor space. Specific uses for these buildings are presented in Section 2.

Vehicular access to the project would be provided by four driveways. Each driveway is described below (refer to Figure 1 for driveway spacing):

- Driveway 1 – full access driveway on Upland Drive
- Driveway 2 – westerly right-turn only driveway on Pleasant Grove Boulevard
- Driveway 3 – easterly right-turn only driveway on Pleasant Grove Boulevard
- Driveway 4 – right in/out and left-turn ingress driveway on Fiddyment Road

2. Project Travel Characteristics

The analysis focuses on weekday PM peak hour conditions as this hour has the highest combined project driveway and adjacent street traffic volumes.

Table 1 displays the weekday PM peak hour vehicular trip generation of the proposed project. These estimates were developed using trip generation rates from *the Trip Generation Manual (TGM), 12th Edition* (Institute of Transportation Engineers, 2025). As shown, the project would generate 354 new vehicle trips, and 392 pass-by trips. Pass-by trips are made by motorists already on the adjacent street who enter the site en route to a different primary destination.

Table 1. Project Trip Generation– PM Peak Hour

Project Land Use	Building	ITE LU Code	Units	Qty	Trip Rates			Trips		
					Total	In	Out	Total	In	Out
Gas Station w/ Convenience Store	5	945	Fuel positions	8	19.1	9.6	9.5	153	77	76
Coffee Shop with Drive Through Lane	1	937	ksf	3	39.0	19.5	19.5	117	59	58
Two Quick-Serve Restaurants with Drive Through Lanes	3 & 6	934	ksf	6.8	31.5	16.4	15.1	215	112	103
Retail including Supermarket [1]	2, 4 & 7	821	ksf	43.8	7.8	3.9	3.9	343	168	175
							Gross Trips	828	416	412
							Internal Trips [2]	-82	-41	-41
							Pass-by Trips [3]	-392	-196	-196
							New Trips	354	179	175

Notes: ksf = thousand square feet.
[1] Supermarket/grocery noted here because *Trip Generation Manual* requires this use to be toggled on/off for LUC 821 (Shopping Plaza).
[2] Estimated internal trips (10%) based on Fehr & Peers' Mixed-Use Trip Generation (MXD) model.
[3] Pass-by rates of 40% for retail, 55% for quick serve (fast food) restaurants, 81% for coffee shop, and 56% for gas station based on data in *Trip Generation Manual*.
Source: *Trip Generation Manual* (Institute of Transportation Engineers, 2025) and Fehr & Peers, 2026.

We used the City of Roseville 2035 Cumulative Year Travel Demand Model to estimate the project's expected distribution of new trips. Under cumulative conditions, Upland Drive extends southerly to Baseline Road. **Table 2** shows the expected distribution of new trips. As shown, the largest percentage of new project trips would be distributed to/from the south on Fiddyment Road and west of Pleasant Grove Boulevard.

Table 2. Project Trip Distribution (New Trips)

#	Direction of Trips	Project Trip Distribution
1	To/From North on Fiddyment Road	15%
2	To/From South on Fiddyment Road	30%
3	To/From West on Pleasant Grove Boulevard	25%
4	To/From East on Pleasant Grove Boulevard	15%
5	To/From South on Upland Drive	15%
	Total	100%

Source: Fehr & Peers, 2026.

We developed weekday PM peak hour forecasts at the driveways based on the project's trip generation and distribution, permitted driveway turning movements, and on-site circulation layout. **Figure 2** display the expected weekday PM peak hour driveway volumes.

3. Analysis of Project Access

This section begins by listing standards contained in the *City of Roseville Design and Construction Standards* ("City Design Standards", City of Roseville, 2025) that are applicable to the project driveways. An evaluation of project consistency with these standards is then presented along with study recommendations.

Per Section 5 (Site Access) and Section 7 (Streets) of the City Design Standards and Standard Drawings, the following standards are applicable to project driveways:

DRIVEWAY SPACING AND PERMITTED TURNING MOVEMENTS

Arterial Streets

1. Driveways shall be at least 250 feet apart on arterial streets. **Complies**.
2. Driveway on arterial streets near a public street intersection shall be located per Standard Drawing ST-46, which indicates:
    a. Driveways immediately downstream of an intersection are prohibited for the first 240 feet. **Complies**.
    b. Driveways upstream of an intersection are prohibited for the first 185 feet just prior to the intersection. **Complies**.
3. No portion of a driveway shall be allowed within the straight portion of an acceleration or deceleration lanes; however, driveways are permitted with the acceleration and deceleration lane tapers. **Complies**.
4. Left turns out of driveways onto six-lane roads shall be prohibited. **Complies**.
5. On six-lane roads, left turns into driveways may be allowed if all of the following conditions are met:
    a. The standard left turn lane length and bay taper can be achieved. **Complies.**
    b. Opposing traffic will not queue-up to the point of blocking the left turn in movement. Such a queuing calculation shall be based on the City's projected modeled traffic volumes for the model's horizon year. **Complies.**[1]
    c. The driveway is at least 400 feet downstream and 600 feet upstream of an intersection containing left turn pockets. **Does not comply as 390-foot driveway spacing is 10 feet short of this standard.** [2] Further evaluation of this standard is included at the end of this section.

[1] Driveway 4 would be 1,160 feet north of the signalized Fiddyment Road/Westhills Drive/Vista Grande Boulevard intersection. The recently completed citywide cumulative (2045) intersection operations analysis reveals this signalized intersection would operate at LOS D during the AM and PM peak hours. The level of service (LOS) output reveals the southbound approach would have 95th percentile queues (rounded to nearest 25 feet) of 600 and 650 feet, respectively (**See Appendix A)**. Since this is less than the distance to Driveway 4, queued southbound traffic would not block access to this driveway.

[2] According to the site plan, Driveway 4 would be situated 27 feet from a Western Area Power Authority (WAPA) electrical transmission tower. According to *Living and Working Around High Voltage Power Lines* (WAPA, 2021), 15 feet is a commonly referenced minimum distance from the tower to streets, driveways, parking lots, walkways, etc. Notably, a WAPA tower is situated 7 feet from the face of curb on Shasta Street in Roseville.

Collector Streets

6. Driveways shall be at least 200 feet apart on collector streets. **Complies.**
7. Driveways on collector streets shall be at least 150 feet from a collector/arterial intersection. **Complies.**

Proximity to Bus Stops/Turnouts

8. No portion of a driveway shall be allowed within a separate bus turnout including tapers. **Complies.**
9. Where a driveway is proposed downstream of a bus turnout, a continuous bus turnout / deceleration lane should be provided if: (a) the driveway is less than 450 feet from the upstream intersection, and (b) the right-turn ingress volume is greater than 50 vehicles per hour. **Both conditions are met at Driveway 4 on Fiddyment Road, which therefore necessitates a continuous bus turnout/deceleration lane.**

The following is recommended based on standard 9 above.

Recommendation 1: Construct a continuous bus turnout/deceleration lane on Fiddyment Road at Driveway 4.

With regard to standard 5c listed above, it would appear that Driveway 4 could be relocated 10 feet to the south. Doing so would enable compliance with this standard and further enhance sight distance (though marginally) for the northbound left-turn ingress movement. We do not have any background information with respect to why the driveway is spaced at its current location. ***We recommend that the City and applicant discuss where the driveway should be located and revise the site plan if needed.***

LEFT-TURN INGRESS LANE STORAGE AT DRIVEWAYS

1. The minimum left turn pocket length shall be 200 feet plus a 120 foot entry taper. Longer left turn pockets may be required if a Traffic Study demonstrates the need.
2. Left turn pockets are not required on collector streets.

The maximum queue in the unsignalized northbound left-turn ingress lane at Driveway 4 was estimated using the methodology contained in *Estimation of Maximum Queue Lengths at Unsignalized Intersections* (ITE Journal, 2001). This methodology is recommended for use in the *City of Roseville Design Standards.* As shown in **Appendix A,** the maximum queue would be 200 feet (8 vehicles).

The following recommendation is offered based on the above:

Recommendation 2: Construct 300-foot northbound left-turn ingress lane at Driveway 4.

The 300-foot left-turn ingress lane would not only accommodate the maximum queue of 200 feet, but would also provide deceleration opportunities.

Refer to next section regarding sight distance for left-turn ingress lane at Driveway 4.

RIGHT-TURN DECELERATION LANES/TAPERS AT DRIVEWAYS

A right-turn deceleration lane shall be provided at a driveway if all of the following conditions are met:

1. The driveway is located on an arterial or expressway.
2. Right turn ingress volume is expected to exceed 50 vehicles during peak hour flows on the roadway.
3. There is ample room and frontage to fit a deceleration lane as determined by the City Engineer.
4. The travel speed of the roadway, as determined by the City Engineer, equals or exceeds 45 mph.

For right turn ingress volumes between 10 and 50 vehicles per hour, city standards require a right turn curb taper be constructed

There may be cases where it will be necessary to merge a deceleration lane with an existing acceleration lane. Where the beginning of a deceleration taper will be within 100 feet of the end of acceleration taper, then the deceleration and acceleration shall be merged to form a continuous auxiliary lane.

According to city design standards and the estimated volumes at project driveways and input provided by City staff, the following is therefore recommended:

> Recommendation 3: Construct a right-turn deceleration taper at Driveway 2.

> Recommendation 4: Construct a right-turn deceleration lane at Driveway 3 and extend the eastbound right-turn lane at the Fiddyment Road/Pleasant Grove Boulevard intersection to Driveway 3, creating a continuous acceleration/deceleration lane.

DRIVEWAY THROAT DEPTHS

City design standards require driveway throat depth to be able to accommodate the maximum expected outbound vehicle queue. This minimizes the likelihood of inbound traffic spilling back onto public streets. **Table 3** summarizes maximum estimated outbound queues at the project driveways. Refer to **Appendix A** for detailed calculations.

As shown, three of the four driveways have adequate storage to meet the maximum expected vehicle queue. However, the throat depth at Driveway 2 is inadequate. The following is recommended to provide adequate throat depth and operations at this driveway:

> Recommendation 5: Widen Driveway 2 from 35 to 38 feet and stripe a 21-foot wide inbound lane and a 17-foot wide outbound lane.

Table 3. Maximum Outbound Vehicle Queues at Project Driveways – Cumulative PM Peak Hour Conditions

Driveway	Movement	Available Storage (feet)	Maximum Queue (feet)
1	Shared Left/Right	75 feet	75 feet
2	Right-Turn	65 feet	**75 feet**
3	Right-Turn	125 feet	100 feet
4	Right-Turn	225 feet	125 feet

Note:
Numbers in **bold** indicate queue lengths that exceed the storage provided.
The maximum queue is calculated assuming 25 feet per vehicle.
Available storage measured from project site plan.
Source: Fehr & Peers, 2026.

When three outbound vehicles (i.e., 75 feet of vehicle queue) are present at Driveway 2, an inbound vehicle desiring to turn left at the first internal intersection would be blocked. This could lead to following inbound vehicles queuing back onto Pleasant Grove Boulevard. To overcome this, the recommended 21-foot inbound lane provides sufficient width to allow the left-turning vehicle to be passed. Similar designs have been constructed and operate well elsewhere in Roseville (e.g., driveway on Pleasant Grove Boulevard near Fairway Drive). The site plan appears to have an adequate amount of landscaping area that could be used for the three-foot driveway widening.

SIGHT DISTANCE FOR LEFT-TURN INGRESS LANE AT DRIVEWAY 4

The median of Fiddyment Road at Driveway 4 is approximately 18 feet wide. An improved sight line of oncoming (southbound) traffic on Fiddyment Road can be achieved by constructing the turn lane as far westerly as possible. Accordingly, the following recommendation is offered:

> Recommendation 6: Position the left-turn ingress lane opening at Driveway 4 as far westerly as possible to maximize visibility of oncoming traffic.

Appendix A shows a motorist's approximate line of sight from the opening of the left-turn ingress lane at Driveway 4 and looking north. As shown, a southbound vehicle departing the Pleasant Grove Boulevard/Fiddyment Road intersection would be visible to a motorist in the left-turn lane for a distance of about 435 feet. As shown, vehicles queued in the northbound left-turn lane at the Fiddyment Road/Pleasant Grove Boulevard intersection do not block this line of sight.

Due to the distinct[3] conditions present on southbound Fiddyment Road immediately south of Pleasant Grove Boulevard, City of Roseville Traffic Engineering Department staff performed a speed survey using a radar gun on the segment. On June 2nd during an off-peak time period (12-12:30 PM) with free-flow conditions, 100 vehicles were randomly sampled, with sampling ratios of vehicles who had turned left, right, and traveled through the upstream intersection matching overall travel behavior during the AM and PM peak periods. The results (see Appendix A) revealed an 85th percentile speed of 44 mph.

[3] Distinct conditions include posted speed limit increase from 45 to 50 mph beyond intersection, and nearly half of all vehicles on this segment turn left or right from Pleasant Grove Boulevard onto Fiddyment Road.

The radar gun reading taken by the surveyor at the approximate location of Driveway 4 represents the greatest speed achieved by the vehicle before passing the surveyor. For southbound through vehicles arriving on green, their speed could have been maintained continuously at the measured level. But for eastbound right-turn and westbound left-turn movements and southbound through travel released after the light turns green, these vehicles will be accelerating up to their desired speed upon departure from the intersection. In fact, it would take a vehicle initially traveling at 15 mph and accelerating at a brisk rate of 6 ft/sec² about 8.9 seconds to travel 435 ft. This is 2.2 more seconds than the time it would take a vehicle traveling a constant speed of 45 mph. The fact that the 85th percentile speed in this location is 6 mph below the speed limit is indicative of the unique conditions in this area, in which 45% of traffic on this segment turns left or right and must accelerate to approach the speed limit.

This sight distance analysis utilizes a 45 mph design speed. Notably, all 13 of the 100 vehicles sampled that traveled above 45 mph were traveling in the 46 – 50 mph range. There were no observations of vehicles traveling over 50 mph. According to the *Highway Design Manual* (Caltrans, 2020), the stopping sight distance (SSD) values for 45 and 50 mph design speeds are 360 and 430 feet, respectively.[4] Since 435 feet of sight distance is available from the northbound left-turn lane opening at Driveway 4, the available line of sight exceeds that of a 50 mph SSD value. Therefore, sight distance is considered adequate for northbound left-turn movements at Driveway 4.

4. Review of Internal Circulation

This section focuses on the project's internal circulation system. It should be noted that this version of the site plan incorporates previous Fehr & Peers' recommendations. Therefore, relatively few recommendations are made here. The following potential circulatory issues were noted:

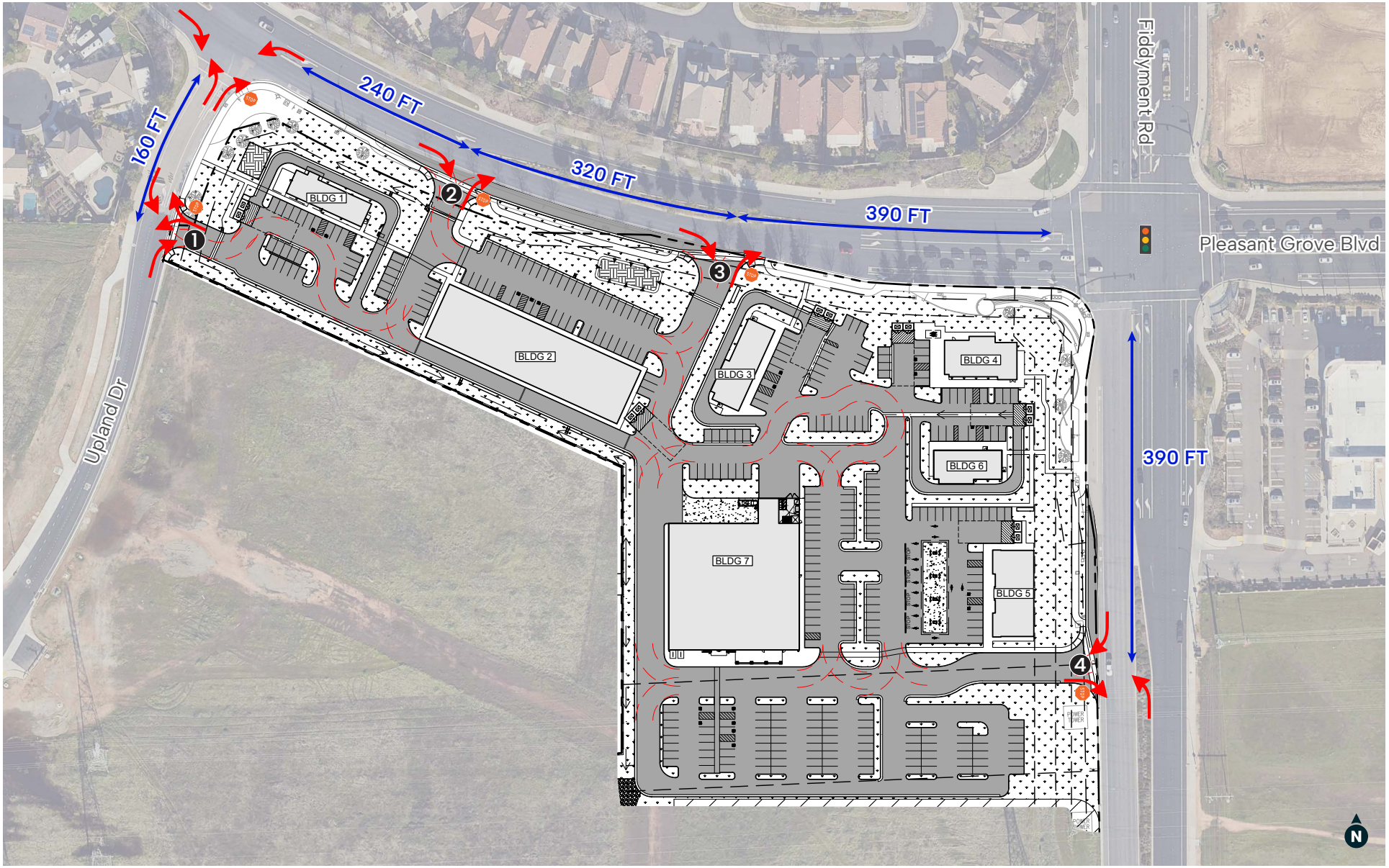
- Drive Aisle Behind Building 2 – This two-way drive aisle provides direct access to/from Driveway 1 on Upland Drive to the central part of the site. As this drive aisle is straight without any traffic controls, speeding could occur. The updated site plan now shows three lines the drive aisle behind this building, which presumably represents speed bumps or similar speed management devices that were previously recommended.
- Access to Fuel Pumps from Driveway 4 – Motorists entering the site from Driveway 4 and wanting to access the fuel pumps (which allow for westbound one-way only travel) would need to perform a reverse u-turn at the first internal intersection and then use the eastbound-only drive aisle to access the pumps (refer to Figure 3 for path of travel). This movement would likely be challenging for trucks and large SUVs due to the lack of any curb return radius at the curve and a receiving lane that is less than 15 feet wide (when a vehicle is fueling up at the adjacent pump).

Recommendation 7: Redesign the southerly part of the convenience market / fueling pumps site layout to better accommodate traffic entering from Driveway 4.

[4] Stopping sight distance (SSD) is the distance required by the user, traveling at a given speed, to bring the vehicle to a stop after an object ½-foot high on the road becomes visible.

The project site plan shows Americans with Disabilities (ADA) paths of travel within the site that connect to planned sidewalks along the project frontage. This includes a path that leads directly to the existing bus pullout on Fiddyment Road. Connections are also provided onto Pleasant Grove Boulevard and Upland Drive.

As the project site plan did not show drive aisle or driveway width dimensions, those were not reviewed. Additionally, as no specific users are known for the restaurants that would include drive-through lanes, it was not possible to conduct analysis of their vehicle storage requirements.



Note: Driveways measured from centerline to the near curb return of adjacent street.

Traffic Signal
Stop Sign
Permitted Movement

FIGURE 1

Project Site Plan

Fehr & Peers

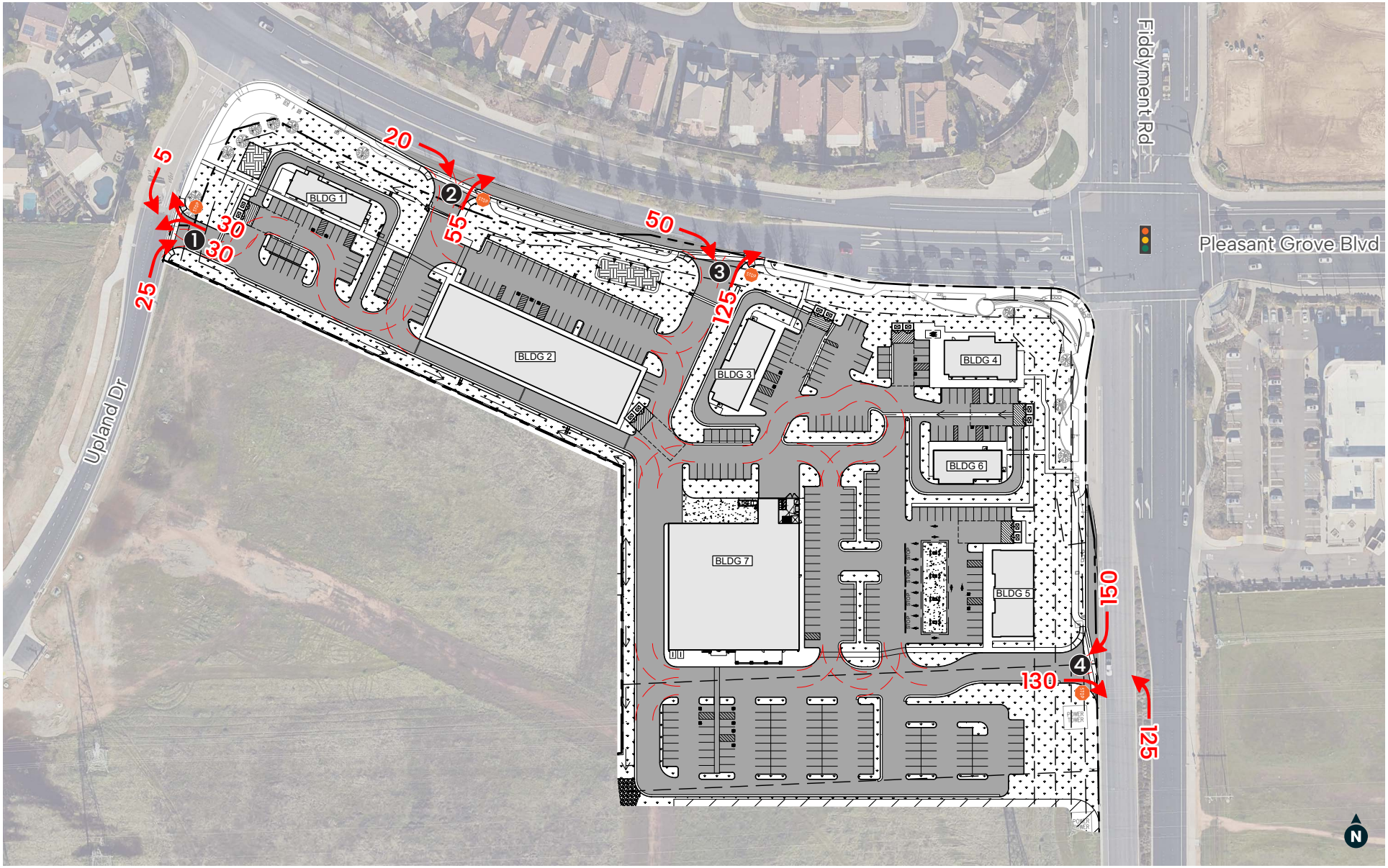


FIGURE 2

Weekday PM Peak Hour Driveway Volumes

Fehr & Peers

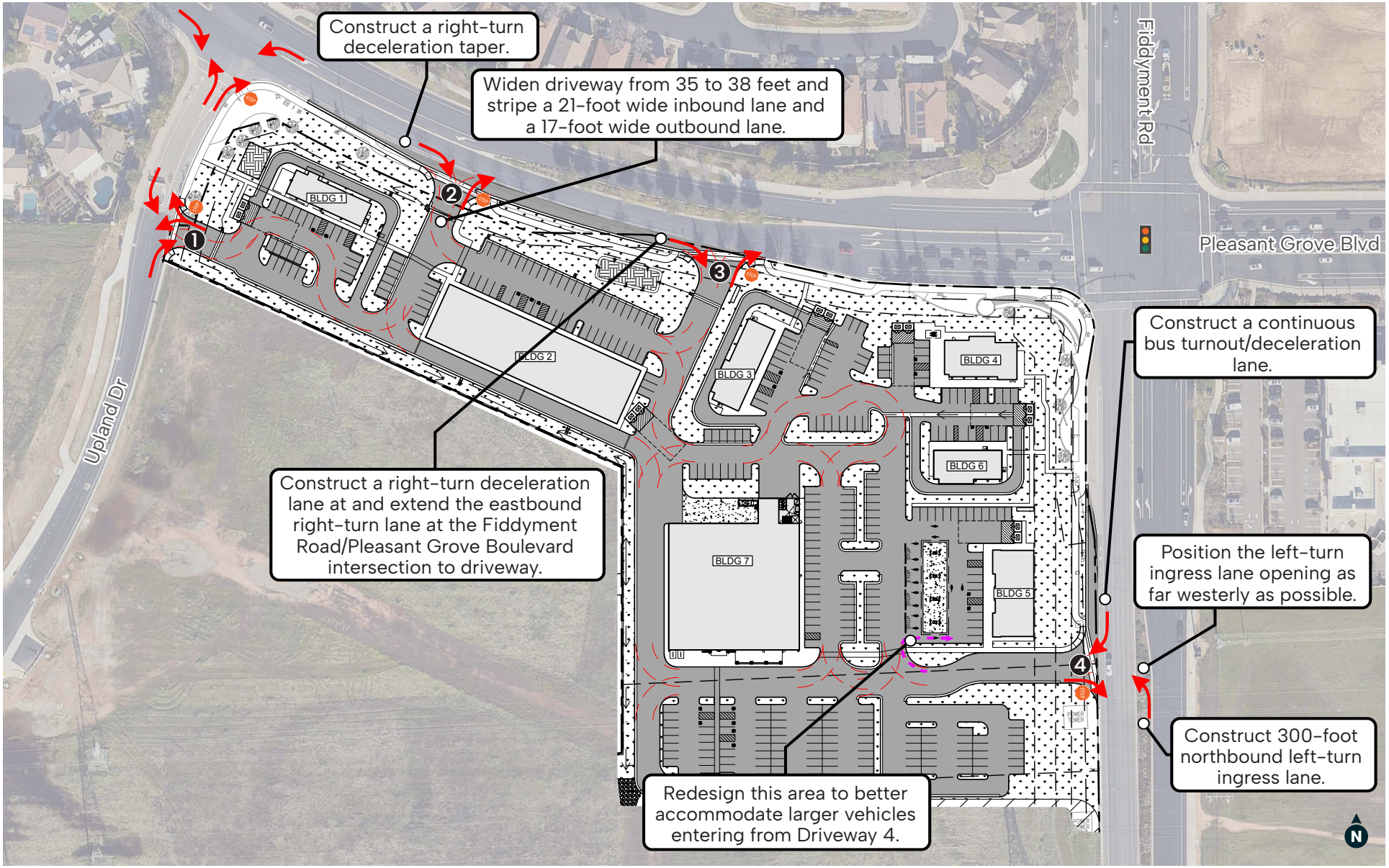
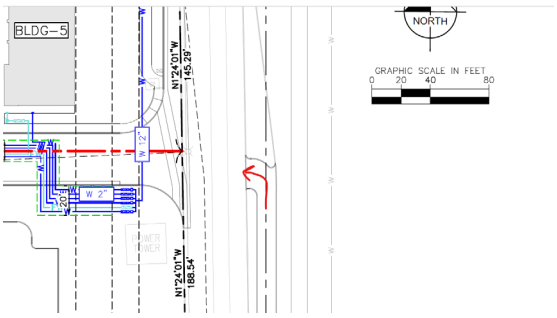


FIGURE 3

Recommendations



Turn lane location relative to existing street light positioned in the center of driveway location.
Note the 435-foot distance below is greater than the 390 ft spacing on Figure 1. The 45-foot difference is due to the added distance between the curb return and the crosswalk as well as location of vehicle waiting at Dwy 4

City of Roseville
Traffic Engineering Department
Lidar Speed Data Worksheet

Date: 6/2/2026 Location # _____

Street Name: SB Fiddyment Rd Observer: C. Parks

Limits: Pleasant Grove Blvd to 6828 Fiddyment Rd Location of Survey: 432' South of Pleasant Grove Blvd

Weather: Clear
Road Cond: Good
Posted Speed: 50 MPH
Lane Config: _____
Adjacent Land Use: _____

Roadway Geometrics: _____
Conditions Not Apparent: _____
Start Time: 12:08
End Time: 12:38

Street Classification: Arterial - Collector - Local
Average Daily Traffic: _____
Segment Length: _____
Speed Limit Changed? Yes - No
Revised Limit: _____
Checked By: _____

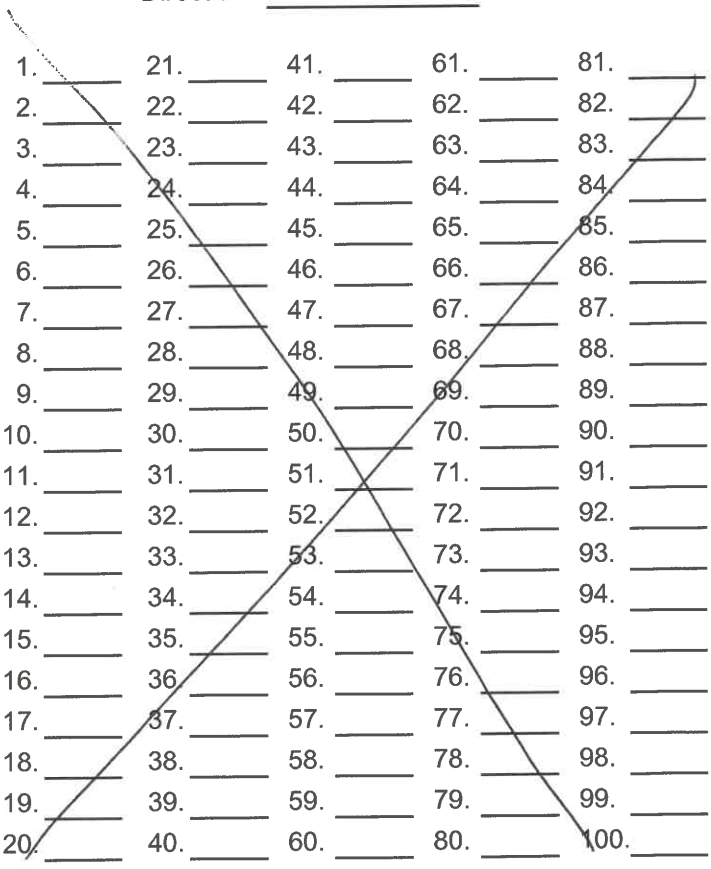
Collision Start Date: _____
Collision End Date: _____
Collision Period: _____
Total Collisions: _____
Collision Rate: _____
Expected Collision Rate: _____

Direction: SB

1. 40	21. 45	41. 33	61. 38	81. 30
2. 43	22. 41	42. 40	62. 41	82. 34
3. 39	23. 48	43. 29	63. 39	83. 36
4. 40	24. 45	44. 37	64. 38	84. 27
5. 32	25. 44	45. 42	65. 34	85. 38
6. 39	26. 38	46. 42	66. 38	86. 35
7. 41	27. 33	47. 41	67. 38	87. 32
8. 35	28. 36	48. 43	68. 40	88. 43
9. 48	29. 37	49. 42	69. 38	89. 44
10. 42	30. 48	50. 40	70. 35	90. 42
11. 50	31. 44	51. 41	71. 33	91. 32
12. 35	32. 40	52. 30	72. 35	92. 37
13. 32	33. 48	53. 48	73. 33	93. 37
14. 39	34. 42	54. 36	74. 43	94. 31
15. 50	35. 40	55. 39	75. 36	95. 42
16. 41	36. 44	56. 33	76. 35	96. 36
17. 42	37. 47	57. 39	77. 34	97. 30
18. 40	38. 44	58. 34	78. 38	98. 33
19. 35	39. 49	59. 38	79. 34	99. 35
20. 48	40. 42	60. 43	80. 38	100. 33

Direction: _____

1.	21.	41.	61.	81.
2.	22.	42.	62.	82.
3.	23.	43.	63.	83.
4.	24.	44.	64.	84.
5.	25.	45.	65.	85.
6.	26.	46.	66.	86.
7.	27.	47.	67.	87.
8.	28.	48.	68.	88.
9.	29.	49.	69.	89.
10.	30.	50.	70.	90.
11.	31.	51.	71.	91.
12.	32.	52.	72.	92.
13.	33.	53.	73.	93.
14.	34.	54.	74.	94.
15.	35.	55.	75.	95.
16.	36.	56.	76.	96.
17.	37.	57.	77.	97.
18.	38.	58.	78.	98.
19.	39.	59.	79.	99.
20.	40.	60.	80.	100.



Comments:

Thru Vehicles
NB LT Vehicles
EB RT Vehicles

City of Roseville

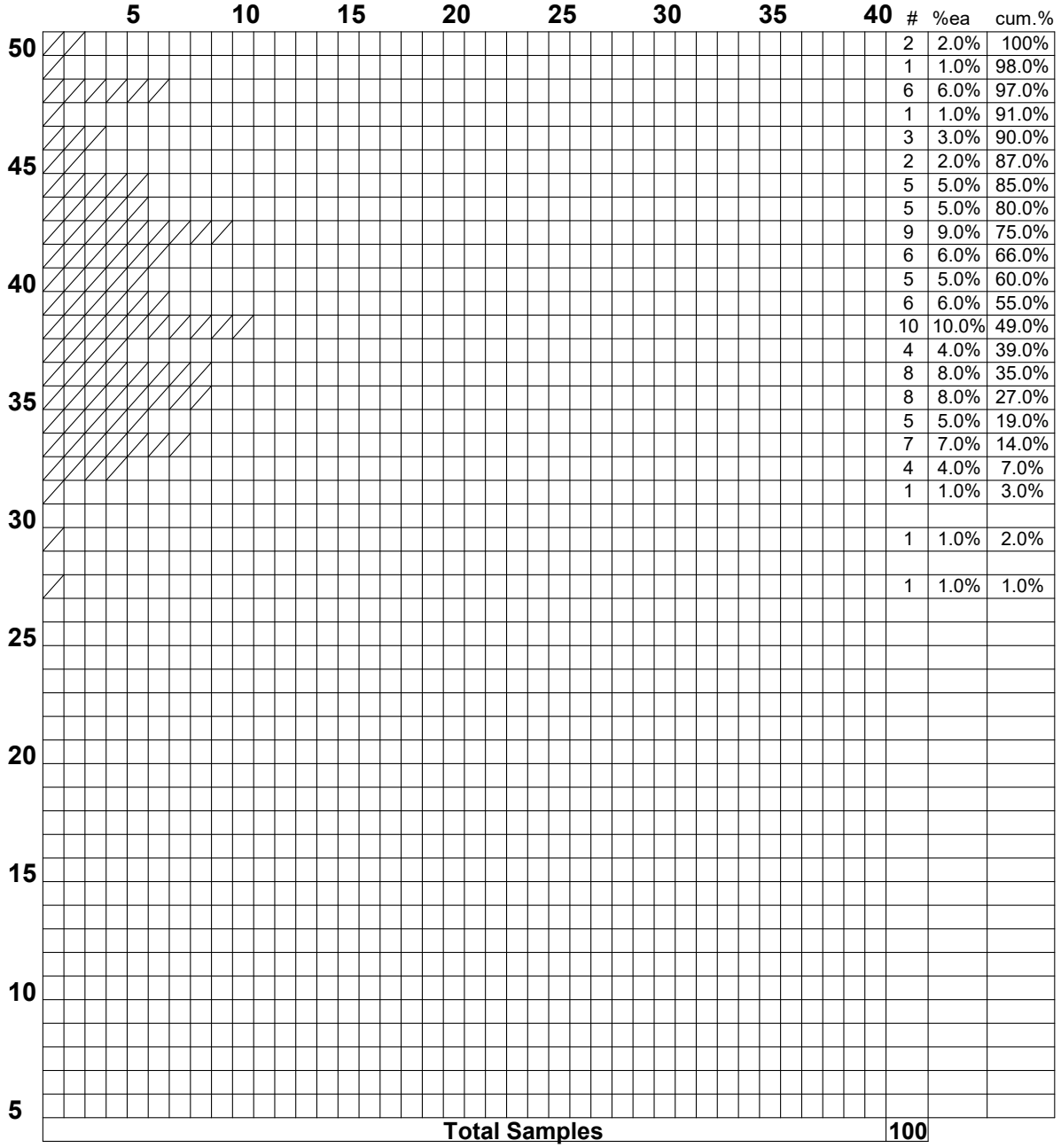
Traffic Engineering Department

Street Name: SB FIDDYMENT RD

Limits: PLEASANT GROVE BLVD to 6828 FIDDYMENT RD

Radar Survey Sheet

X=North /=South



#	%ea	cum.%
2	2.0%	100%
1	1.0%	98.0%
6	6.0%	97.0%
1	1.0%	91.0%
3	3.0%	90.0%
2	2.0%	87.0%
5	5.0%	85.0%
5	5.0%	80.0%
9	9.0%	75.0%
6	6.0%	66.0%
5	5.0%	60.0%
6	6.0%	55.0%
10	10.0%	49.0%
4	4.0%	39.0%
8	8.0%	35.0%
8	8.0%	27.0%
5	5.0%	19.0%
7	7.0%	14.0%
4	4.0%	7.0%
1	1.0%	3.0%
1	1.0%	2.0%
1	1.0%	1.0%
Total Samples	**100**	

85th Percentile Speed: 44.0
50th Percentile Speed: 38.2
15th Percentile Speed: 33.2

10 MPH Pace: 33- 42
Number in Pace: 68
Percent in Pace: 68.0%

Date of Survey: 6/2/2026
Weather: Clear
Road Condition: Good
Street Class.: Arterial
Observer: C PARKS
Conditions not Apparent:

Start Time: 12:08
End Time: 12:38
Posted Speed: 50

Lane Group	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	427	433	139	103	216	95	1500	7	237	1743	326
v/c Ratio	0.93	0.92	0.27	0.72	0.71	0.63	0.85	0.01	0.90	0.83	0.40
Control Delay (s/veh)	76.5	74.4	9.1	89.1	23.8	79.2	46.8	0.0	92.2	40.7	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	76.5	74.4	9.1	89.1	23.8	79.2	46.8	0.0	92.2	40.7	4.4
Queue Length 50th (ft)	409	414	7	94	14	87	475	0	217	522	1
Queue Length 95th (ft)	#661	#661	63	#191	107	153	557	0	#402	654	65
Internal Link Dist (ft)		1207		1361			914			680	
Turn Bay Length (ft)	240		275		100	250			260		360
Base Capacity (vph)	460	471	520	157	315	238	1985	635	276	2094	823
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.93	0.92	0.27	0.66	0.69	0.40	0.76	0.01	0.86	0.83	0.40

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	338	341	61	231	298	115	1621	30	235	1744	685
v/c Ratio	0.84	0.84	0.13	0.97	0.83	0.90	0.92	0.05	0.97	0.83	0.65
Control Delay (s/veh)	63.9	63.1	0.6	105.0	41.5	114.8	49.2	0.2	105.0	38.2	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	63.9	63.1	0.6	105.0	41.5	114.8	49.2	0.2	105.0	38.2	5.3
Queue Length 50th (ft)	277	280	0	190	95	95	462	0	194	461	0
Queue Length 95th (ft)	397	398	0	#397	#272	#234	#652	0	#404	608	90
Internal Link Dist (ft)		476		464			575			448	
Turn Bay Length (ft)	240		275		100	250			260		360
Base Capacity (vph)	555	564	606	239	359	128	1763	594	242	2091	1054
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.61	0.60	0.10	0.97	0.83	0.90	0.92	0.05	0.97	0.83	0.65

Intersection Summary

Description: Synchro

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Fehr & Peers

Maximum Queue Estimation for:

Major Street Left-Turn

Scenario:	Cumulative Plus Project - Driveway 4 on Fiddyment Road
Peak Hour:	PM

Input Data

Subject Approach		
Traffic Volume	125	vph
Peak Hour Factor (PHF)	0.95	

Major Street		
Conflicting Traffic Volume	2634	vph
Peak Hour Factor (PHF)	0.95	
Conflicting Number of Through Lanes	3	lanes
Posted Speed Limit	50	mph

Is a Traffic Signal Located on Major Street Within 1/4 mi of intersection? (Enter 1 if yes; 0 if no)	1

Output

Estimated Maximum Queue	8	vehicles

Source: Estimation of Maximum Queue Lengths at Unsignalized Intersections (ITE Journal, November 2001).

Fehr & Peers

Maximum Queue Estimation for:
Minor Street Left-Turn

Scenario:	C+P Dwy 1
Peak Hour:	PM

Input Data

Subject Approach		
Traffic Volume	35	vph
Peak Hour Factor (PHF)	0.9	

Major Street		
Conflicting Traffic Volume	515	vph
Peak Hour Factor (PHF)	0.95	
Posted Speed Limit	30	mph

Is a Traffic Signal Located on Major Street Within 1/4 mi of intersection? (Enter 1 if yes; 0 if no)	1

Output

Estimated Maximum Queue	3	vehicles

Source: Estimation of Maximum Queue Lengths at Unsignalized Intersections (ITE Journal, November 2001).

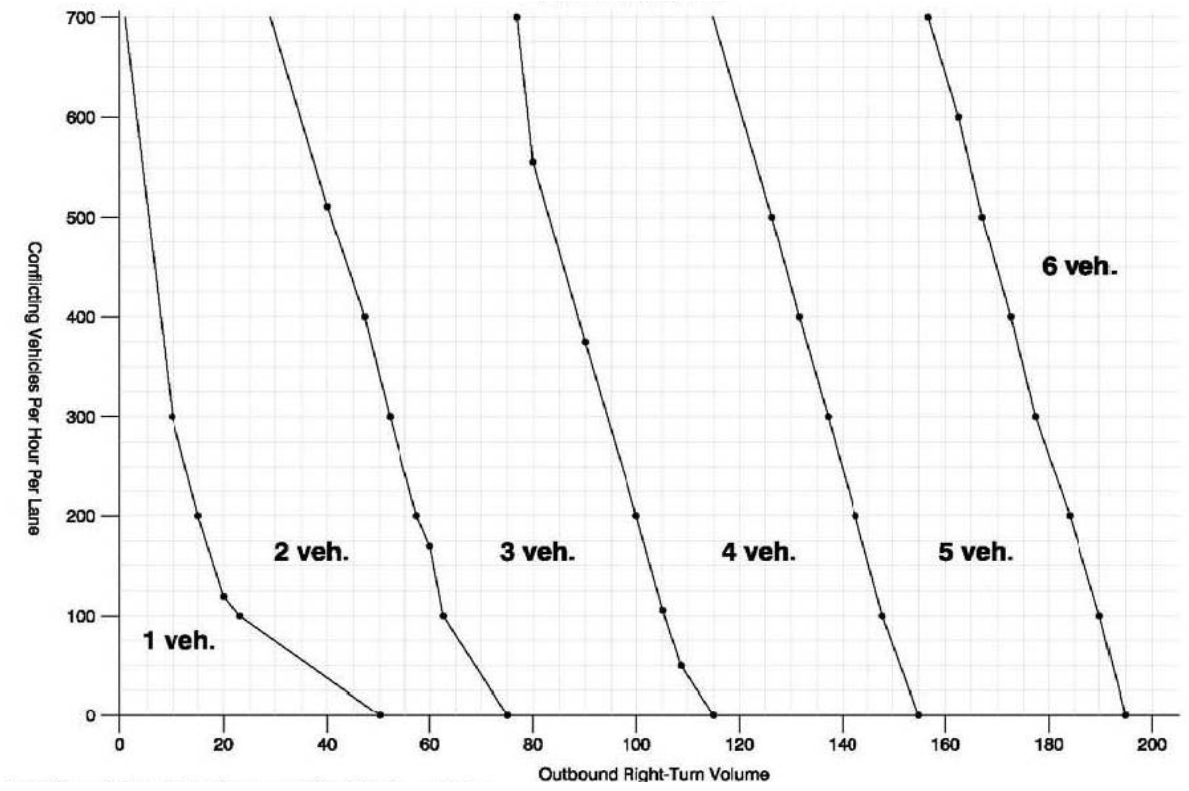
Fehr & Peers

Maximum Queue Estimation for:

Minor Street Right-Turn

Scenario:	C+P Dwy 2
Peak Hour:	PM

Minimum Required Throat Depth Calculations



If the data point is outside of range, use the following:

Input Data		
Approach Volume	55	vph
Conflicting Vehicles Per Lane	460	vphpl

Output		
Estimated Maximum Queue	3	vehicles

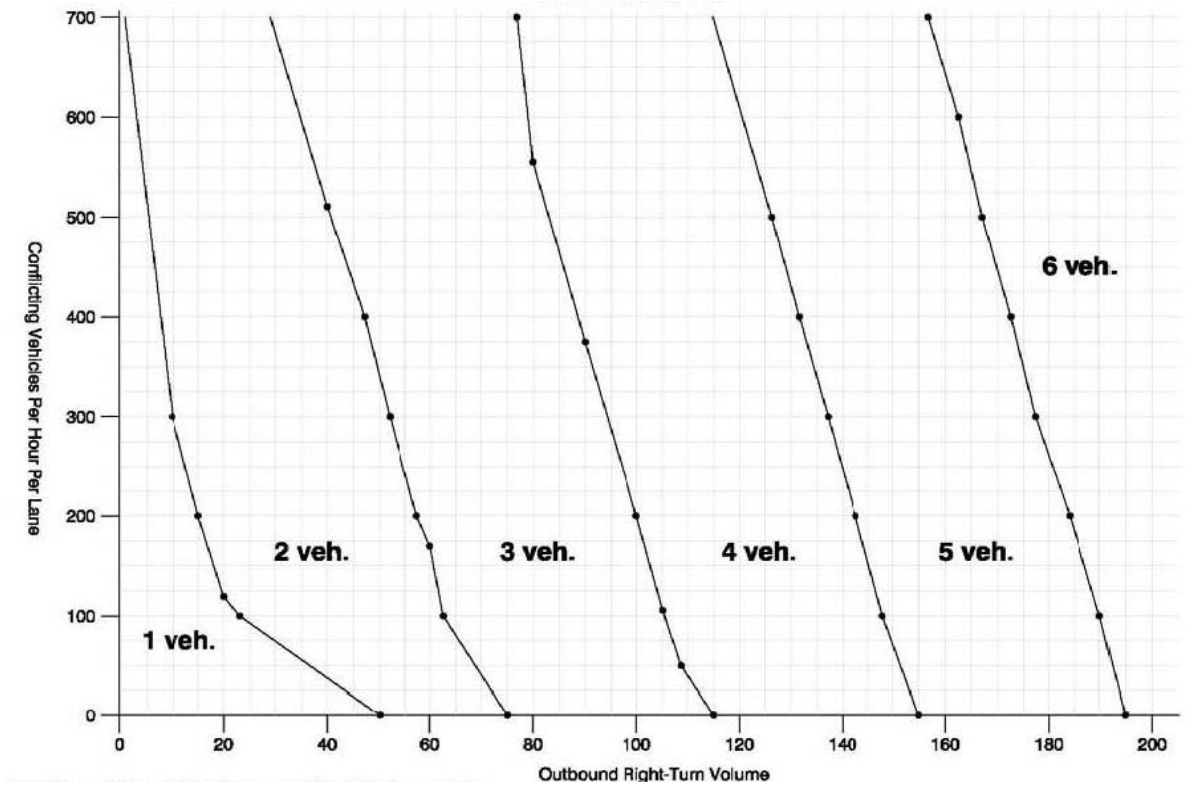
Source: Estimation of Maximum Queue Lengths at Unsignalized Intersections (ITE Journal, November 2001).

Fehr & Peers

Maximum Queue Estimation for:
Minor Street Right-Turn

Scenario:	C+P Dwy 3
Peak Hour:	PM

Minimum Required Throat Depth Calculations



If the data point is outside of range, use the following:

Input Data		
Approach Volume	125	vph
Conflicting Vehicles Per Lane	460	vphpl

Output		
Estimated Maximum Queue	4	vehicles

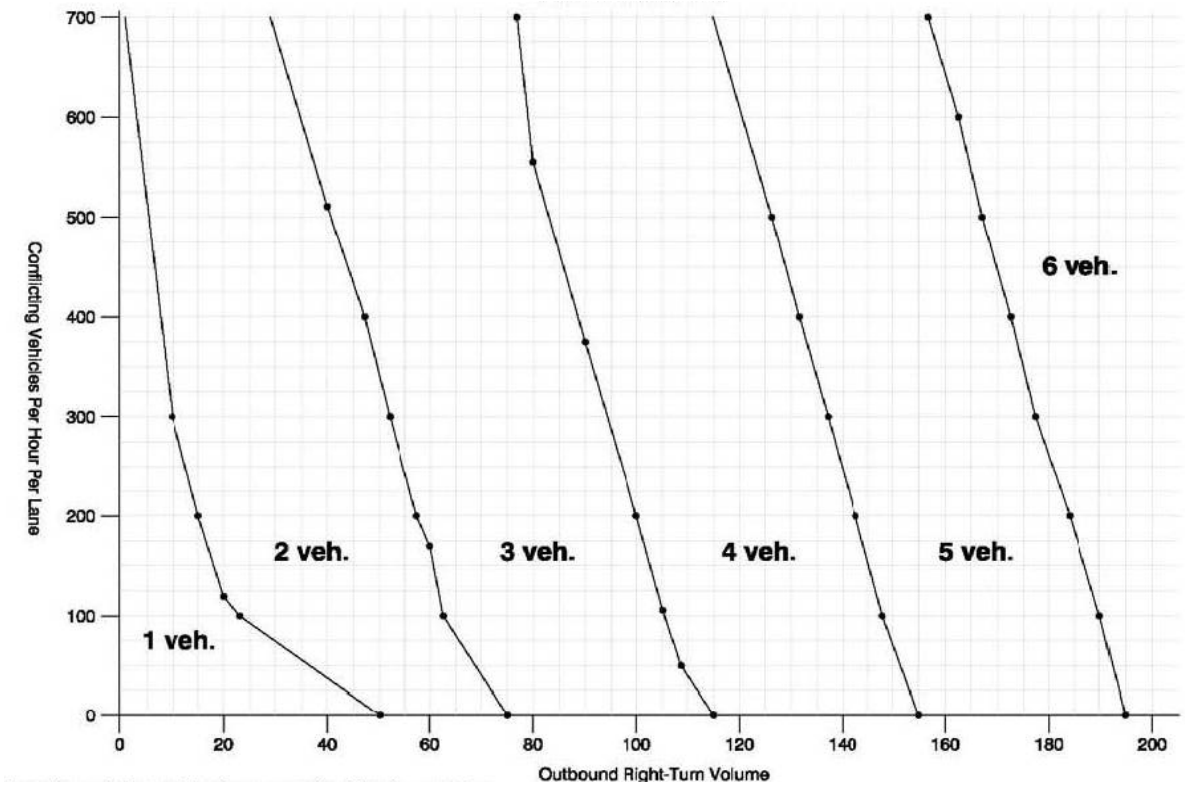
Source: Estimation of Maximum Queue Lengths at Unsignalized Intersections (ITE Journal, November 2001).

Fehr & Peers

Maximum Queue Estimation for:
Minor Street Right-Turn

Scenario:	C+P Dwy 4
Peak Hour:	PM

Minimum Required Throat Depth Calculations



If the data point is outside of range, use the following:

Input Data		
Approach Volume	130	vph
Conflicting Vehicles Per Lane	880	vphpl

Output		
Estimated Maximum Queue	5	vehicles

Source: Estimation of Maximum Queue Lengths at Unsignalized Intersections (ITE Journal, November 2001).