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TO:	Planning Commission	Agenda of:	October 24, 2019
FROM:	Aaron Mount, Senior Planner	Item No.:	2
DATE:	October 23, 2019		
RE:	**Response to Planning Commission's Request for Traffic Analysis** **Revision to Condition of Approval #13** **New Condition, Village J Lot H Park** **PD18-0005/TM18-1536/Serrano Village J7**		

Response to the Planning Commission's request for evaluation of traffic data from Bass Lake Road

At the August 22, 2019 Planning Commission hearing, the Commissioners approved a motion to continue Agenda Item 3 (Legistar File: 19-1171) to the October 24, 2019 meeting. The Commissioners requested that County staff and the Applicant evaluate new traffic data from Bass Lake Road as it relates to the project.

The Department of Transportation reviewed the Applicant's submitted traffic analysis and concluded that no additional conditions of approval are required for the subject project (Exhibits A and B). DOT's memo includes analysis of Level of Service, intersection LOS and traffic signal warrants, left turn pockets, safety, and future traffic volume projections. None of the evaluation criteria meets or exceeds the County's requirements for traffic related improvements.

Revision to Condition of Approval Number 13

At the August 8, 2019 Planning Commission hearing, Commissioners questioned the wording "fair share" within the conditions of approval. The Department of Transportation (DOT) is requesting the following revision to Condition of Approval Number 13:

*13. **Bass Lake Road:** Design the project grading and improvement plans consistent with the ultimate alignment of Bass Lake Road. Enter into a Deferred Frontage Agreement with the County, and deposit funds with the County representing the Village J7 ~~fair share portion of the~~ future frontage improvements. These funds are to be dedicated to future construction of the project's ~~fair share~~ frontage improvements, at such time as the ultimate alignment of Bass Lake Road is constructed.*

It was determined by DOT that the words "fair share" do not exist in the County Code and therefore should be removed from the condition. The proposed revision would have no effect on the frontage improvement contribution amount or the County's process in acquiring these funds.

New Condition of Approval: Serrano Village J Lot H Park

Serrano Village J, Lot H was approved as a park site in previous entitlements. The El Dorado Hills Community Services District (EDHCSD) and Serrano Associates are still in discussion over the final design of the park and the EDHCSD anticipates direction for the construction of the park by November 15, 2019, subject to an executed Parkland Dedication Agreement. Based on negotiations between the EDHCSD and Serrano, Planning is recommending the following condition of approval be added to the project to ensure that the park site is developed:

50. Prior to recordation of the final map for Village J7, Developer shall record against the 12.5 acre parcel within Serrano Village J, Lot H a Declaration of Restrictions, in form acceptable to County Counsel, preserving the property for public park purposes only, pending actual construction of the parcel by Developer and dedication to the El Dorado Hills Community Services District. Developer shall cooperate in good faith with the El Dorado Hills Community Services District to provide for the design and construction of the 12.5 acre park in Village J, Lot H as soon as reasonably feasible and in accordance with the El Dorado Hills Specific Plan and the El Dorado Hills Specific Plan Public Improvements Financing Plan.

Attachments

Attachment A: Memo from the Department of Transportation dated October 21, 2019
Attachment B: Memo from the Department of Transportation dated October 21, 2019, Attachments A-D

COUNTY OF EL DORADO
DEPARTMENT OF TRANSPORTATION

INTEROFFICE MEMORANDUM

Date: October 21, 2019

To: El Dorado County Planning Commission

From: Natalie K. Porter, P.E., T.E.
Senior Traffic Engineer

Subject: ***Bass Lake Road Traffic Data***

BACKGROUND

At the August 22, 2019 Planning Commission meeting, questions arose during Agenda Item #3 - PD18-0005/TM18-1536/Serrano Village J7 regarding current traffic counts on Bass Lake Road.

Serrano Associates, LLC hired Fehr & Peers, a transportation consultant, to collect traffic data on Bass Lake Road segments as well as the intersections of Serrano Parkway/Sienna Ridge Road, Bridlewood Drive, and Madera Way with Bass Lake Road (See Attachment A).

Bass Lake Road is identified in the El Dorado County General Plan Transportation and Circulation Element as a Major two-lane road within the Community Region Boundary, approximately north of Old Bass Lake Road. Also included on *Figure TC-1, Circulation Map for the El Dorado County General Plan* is a table entitled "2035 and Potential Future Roadway Facilities" which identifies Bass Lake Road between U.S. Highway 50 and Silver Springs Parkway as a four-lane divided road in the future beyond 2035.

DISCUSSION

Traffic Volumes and Road Segment Level of Service (LOS)

Bass Lake Road in the vicinity of Serrano Village J7 is in the Community Region of El Dorado Hills. The acceptable LOS for roads within the Community Region is LOS E.

General Plan Policy TC- Xd states, "Level of Service (LOS) for County-maintained roads and state highways within the unincorporated areas of the county shall not be worse than LOS E in the Community Regions or LOS D in the Rural Centers and Rural Regions except as specified in Table TC-2. The volume to capacity ratio of the roadway segments listed in Table TC-2 shall not exceed the ratio specified in that table. Level of Service will be as defined in the latest edition of the Highway Capacity Manual (Transportation Research Board, National Research Council)

and calculated using the methodologies contained in that manual. Analysis periods shall be based on the professional judgment of the Department of Transportation, which shall consider periods including, but not limited to, Weekday Average Daily Traffic (ADT), AM Peak Hour, and PM Peak hour traffic volumes."

Prevailing best practices to determine the appropriate number of lanes for a roadway is to use peak hour volumes and LOS calculations as roadways are designed to accommodate the peak hour. As El Dorado County specifies the use of the latest edition of the Highway Capacity Manual as the source of the methodologies to determine LOS (see Policy TC-Xd above), the Department of Transportation (Transportation) has used these methodologies to determine the appropriate roadways needed to support the current General Plan. In 2018, Transportation prepared a Technical Update to the Traffic Impact Mitigation (TIM) Fee Program, based on the latest edition of the Highway Capacity Manual (HCM). In the analysis for the TIM Fee update, a revised service volume table was included (see Attachment B). The service volume table does account for roadway conditions such as grade and travel speed. The updated planning level service volume table identifies the maximum two-way peak hour volume for each LOS. For a two-lane arterial the maximum peak hour volume for LOS E is 1,510.

Below are the segment volumes collected on Bass Lake Road on September 10-12, 2019 and the accompanying LOS based on the average of the three days. School was in session, the weather was clear and no major incidents were reported. For the individual day statistics, see Attachment A.

Bass Lake Road Peak Hour Volumes – Existing Conditions

Count Location	Maximum Peak Hour Volume for LOS E	AM Pk Hr Count/LOS	PM Pk Hr Count/LOS
Bass Lake Road s/o Green Valley Road	1,510	487/C	519/C
Bass Lake Road n/o Serrano Parkway	1,510	856/D	859/D
Bass Lake Road n/o Country Club Drive	1,510	1,160/D	1,104/D

Intersection LOS and Traffic Signal Warrants

Intersection turning movement counts were collected for the AM and PM Peak hours. These volumes were used to determine LOS. The information was also used to determine whether the Bass Lake Road/Bridlewood Drive and the Bass Lake Road/Madera Way intersections meet the peak hour traffic signal warrant, as described in the latest edition of the California Manual on Uniform Traffic Control Devices (CA MUTCD) published by Caltrans. The peak hour warrant is typically the easiest warrant to meet.

A warrant is a set of criteria that can be used to define the relative need for, and appropriateness of, a particular traffic control device (e.g., STOP or YIELD sign, traffic signal,

etc.). Warrants are usually expressed in the form of a numerical requirement such as the volume of vehicular or pedestrian traffic.

Warrants should be viewed as guidelines, not as a final determination. The warrant analysis process is just one of the tools to be used in determining if a traffic signal is necessary. The CA MUTCD states, "Satisfaction of one or more warrants does not in itself require the installation of a traffic signal" and "an engineering study of traffic conditions, pedestrian characteristics, and physical characteristics of the location shall be performed to determine whether installation of a traffic control signal is justified at a particular location." However, a traffic signal should not be installed if it does not satisfy any of the warrants.

Neither intersection meets the peak hour signal warrant. Both intersections currently operate at LOS C.

Left Turn Pocket

The volumes were used to evaluate the need for a left turn pocket for Bridlewood Drive. El Dorado County has used the American Association of State Highway and Transportation Officials (AASHTO) Green Book and the National Cooperative Highway Research Program 457 (NCHRP) *Evaluating Intersection Improvements: An Engineering Study Guide* to evaluate if a location warrants a left turn pocket.

Based on the turning movement counts that were collected in September 2019, the intersection of Bridlewood Drive does warrant a left turn pocket for the PM peak hour under existing conditions without the project (See Attachment C). The determination that a left turn pocket is merited does not affect the analysis of level of service and thus does not implicate General Plan policies addressing level of service. Moreover, the condition exists without Serrano Village J7 and Village J7 is estimated to increase trips passing Bridlewood Drive by only 13 trips or approximately 1.4% of the total PM peak hour trips. Given that a left turn pocket project is not currently programmed and the minimal impact Serrano Village J7 has on this existing condition, Serrano Village J7 is not conditioned to construct or fund this improvement. Transportation will add the installation of a left turn pocket at Bridlewood Drive to the Unfunded Capital Improvement Program (CIP) list.

Serrano Associates, LLC provided a left-turn warrant evaluation for Serrano Village J7. A left-turn pocket into Village J7 is not warranted (See Attachment D).

Safety

Transportation's Traffic Operations staff maintains a collision database for the County's 1,082.77 miles of maintained roads. The sole source of all reported collisions is the California Highway Patrol (CHP). Collisions or accidents per Million Entering Vehicles (Acc/MEV) are used to compare the frequency of collisions. This rate indicates the frequency of collisions in relation to the traffic volume during a specified period of time. A benchmark of 1.00 Acc/MEV is the County's accepted rate for single sites, such as an intersection or an individual curve. Any site with an accident rate of 1.00 or above will be considered for additional action.

For the road segment between Serrano Parkway/Sienna Ridge Road to Bridlewood Drive the accident rate, for a five year period between 2014 and 2018, is 0.74. This does not exceed the 1.00 rate benchmark to be considered for additional action.

Speed zones
Two separate speed zones exist on Bass Lake Road. The latest speed zone survey was approved by the El Dorado County Traffic Advisory Committee on June 15, 2017, and the following information is from the approved report. The Traffic Advisory Committee consists of representatives from the CHP, the County Sheriff's Department, Transportation's Deputy Director of Maintenance and Operations, and the County's Risk Management Office.

For continued radar enforcement, the *California Vehicle Code,* Section 40802, requires that an "Engineering and Traffic Survey" be completed every five (5) years where enforcement involves the use of radar or other electronic devices that measure the speed of moving objects.

Section 627 of the *California Vehicle Code* provides a definition for "Engineering and Traffic Survey", and states that an "Engineering and Traffic Survey" shall include:

1. Prevailing speeds as determined by traffic engineering measurements
2. Accident records
3. Highway, traffic, and roadside conditions not readily apparent to the driver.

Additionally, residential density, pedestrian, and bicycle safety may be considered.

The study was limited to determining if the 50 mile per hour speed limit currently posted on Bass Lake Road from U.S. Highway 50 northerly to 1,300 feet north of Sienna Ridge Road and the 40 mile per hour speed limit currently posted on Bass Lake Road from 1,300 feet north of Sienna Ridge Road to Green Valley Road are in compliance with current provisions of the *California Vehicle Code* governing the establishment of speed zones.

The conclusion reached was, based on the data, Section 1 – U.S. Highway 50 to 1,300 feet north of Sienna Ridge Road, 50 miles per hour is the appropriate speed limit. Section 2 – 1,300 feet north of Sienna Ridge Road to Green Valley Road, 40 miles per hour is the appropriate speed after reducing the speed by 5 miles per hour due to the abundance of encroachments, rolling grades and curvilinear nature of the roadway.

<u>Future Traffic Volume Projections</u>
The El Dorado County Travel Demand Model (TDM) was used to provide traffic projections for the General Plan roadway network. During the 2018 Technical Update to the TIM Fee Program, the roadway projections were reported for 2035 Cumulative Conditions (See June 26, 2018 Board of Supervisors Hearing, Agenda Item #60, Attachment C). The Cumulative analysis includes all approved development projects, all general plan designated land uses, and the connection of Silver Springs Parkway to Bass Lake Road. The projects that are incorporated into the TDM include: Hawk View, Bell Wood, Bell Ranch, Serrano J6, Serrano J7, EDH CSD

Village Park, Safeway and Silver Springs. Other specific projects not specifically mentioned are potentially included if they are consistent with the general plan designated land uses.

General Plan Policy TC-Xf first paragraph states, "At the time of approval of a tentative parcel map for a single family residential subdivision of five or more parcels that worsens (defined as a project that triggers Policy TC-Xe [A] or [B] or [C]) traffic on the County road system, the County shall do one of the following: (1) condition the project to construct all road improvements necessary to maintain or attain Level of Service standards detailed in this Transportation and Circulation Element based on existing traffic plus traffic generated from the development plus forecasted traffic growth at 10-years from project submittal; or (2) ensure the commencement of construction of the necessary road improvements are included in the County's 10-year CIP."

The table below indicates a capital improvement project to add lanes to Bass Lake Road is not required through 2035, and therefore Serrrano Village J7 is in compliance with General Plan Policy TC-Xf.

Bass Lake Road – Cumulative Conditions (2035) Traffic Volume Projections

Count Location	Maximum Peak Hour Volume for LOS E	AM Pk Hr Projection/LOS	PM Pk Hr Projection/LOS
Bass Lake Road s/o Green Valley Road	1,510	810/D	690/D
Bass Lake Road n/o Serrano Parkway	1,510	1,150/D	1,130/D
Bass Lake Road n/o Country Club Drive	1,510	1,410/E	1,400/E

It is anticipated that at some point beyond 2035, Bass Lake Road between U.S. Highway 50 and Silver Springs Parkway will need to be a four-lane facility. Thus, the inclusion of this Bass Lake Road segment in the table entitled "2035 and Potential Future Roadway Facilities" on the General Plan *Figure TC-1, Circulation Map for the El Dorado County General Plan.*

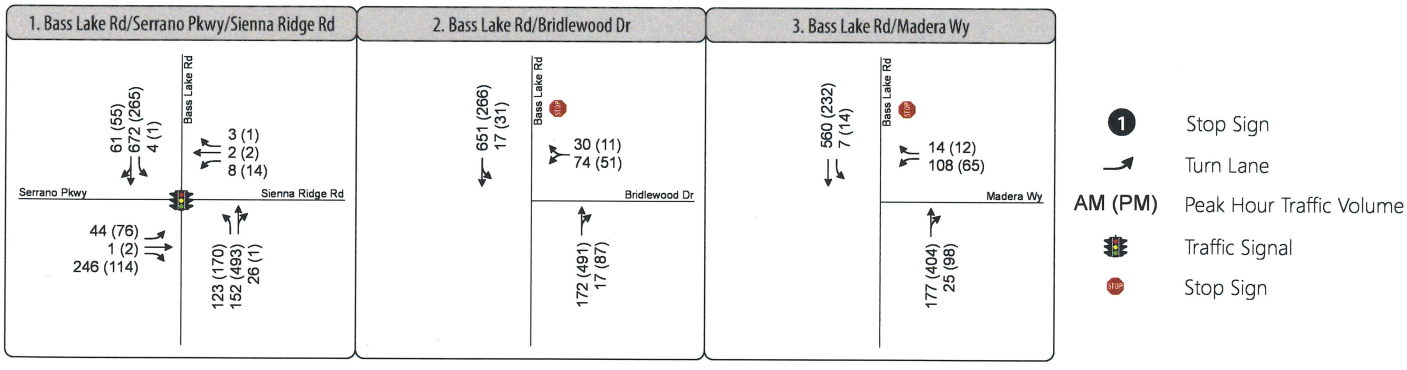


Figure 1

Peak Hour Traffic Volumes and Lane Configurations - Existing Conditions

Intersection	Control	Peak Hour	Existing	
			Delay	LOS
Bass Lake Road / Bridlewood Drive	SSSC	AM	3 (22)	A (C)
		PM	2 (22)	A (C)
Bass Lake Road / Madera Way	SSSC	AM	3 (21)	A (C)
		PM	2 (18)	A (C)

Intersection	Control	Peak Hour	Existing	
			Delay	LOS
Bass Lake Road / Bridlewood Drive	AWSC	AM	34	D
		PM	19	C

Count Location	ADT									
	Tuesday (9-10-19)			Wednesday (9-11-19)			Thursday (9-12-19)			3-Day Average
	NB	SB	Total	NB	SB	Total	NB	SB	Total	
Bass Lake Rd s/o Green Valley Rd	3,166	3,140	6,306	3,117	3,157	6,274	3,286	3,316	6,602	**6,394**
Bass Lake Rd n/o Serrano Parkway	4,814	4,973	9,787	4,706	4,990	9,696	4,981	5,254	10,235	**9,906**
Bass Lake Rd n/o Country Club Dr	6,546	6,638	13,184	6,623	6,881	13,504	6,734	6,955	13,689	**13,459**

Count Location	AM Peak Hour Volumes							Threshold Volume	Delta b/w Threshold and Existing Volumes	LOS
	Tuesday (9-10-19)		Wednesday (9-11-19)		Thursday (9-12-19)		3-Day Average			
	Time	Total	Time	Total	Time	Total				
Bass Lake Rd s/o Green Valley Rd	7:00-8:00 AM	598	7:00-8:00 AM	583	7:00-8:00 AM	279	**487**	**1,510**	**1,023**	**C**
Bass Lake Rd n/o Serrano Parkway	7:00-8:00 AM	833	7:00-8:00 AM	824	7:00-8:00 AM	910	**856**	**1,510**	**654**	**D**
Bass Lake Rd n/o Country Club Dr	7:00-8:00 AM	1,135	7:00-8:00 AM	1,150	7:00-8:00 AM	1,195	**1,160**	**1,510**	**350**	**D**

Count Location	PM Peak Hour Volumes							Threshold Volume	Delta b/w Threshold and Existing Volumes	LOS
	Tuesday (9-10-19)		Wednesday (9-11-19)		Thursday (9-12-19)		3-Day Average			
	Time	Total	Time	Total	Time	Total				
Bass Lake Rd s/o Green Valley Rd	5:00-6:00 PM	525	5:00-6:00 PM	518	5:00-6:00 PM	515	**519**	**1,510**	**991**	**C**
Bass Lake Rd n/o Serrano Parkway	5:00-6:00 PM	831	5:00-6:00 PM	856	5:00-6:00 PM	890	**859**	**1,510**	**651**	**D**
Bass Lake Rd n/o Country Club Dr	5:00-6:00 PM	1,104	5:00-6:00 PM	1,107	5:00-6:00 PM	1,101	**1,104**	**1,510**	**406**	**D**

ATTACHMENT A

Prepared by National Data & Surveying Services

MAX QUEUE STUDY

Location: Bass Lake Rd & Bridlewood Dr
City: El Dorado Hills, CA
Date: 9/12/2019
Day: Thursday

Time	Max Queue Length *(# of vehicles)*
6:00 AM	4
6:15 AM	3
6:30 AM	2
6:45 AM	5
7:00 AM	3
7:15 AM	6
7:30 AM	4
7:45 AM	2
8:00 AM	3
8:15 AM	3
8:30 AM	3
8:45 AM	3
4:00 PM	2
4:15 PM	2
4:30 PM	1
4:45 PM	2
5:00 PM	3
5:15 PM	2
5:30 PM	3
5:45 PM	2
6:00 PM	4
6:15 PM	3
6:30 PM	2
6:45 PM	3

	AM	PM
MAX	6	4
Average	3	2

FEHR PEERS

Major Street	Bass Lake Rd
Minor Street	Madera Wy

Project	Bass Lake Rd
Scenario	Existing (2019) Conditions
Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	-	0	108
Through	177	557	0	0
Right	25	0	0	14
Total	202	557	0	122

Major Street Direction

x	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	2
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	20.6
Approach with Worst Case Delay	WB
Total Vehicles on Approach	122

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
Existing (2019) Conditions	**0.7**	**122**	**881**
Limiting Value	**5**	**150**	**650**
Condition Satisfied?	**Not Met**	**Not Met**	**Met**
Warrant Met	**NO**		

FEHR & PEERS

Major Street	Bass Lake Rd
Minor Street	Madera Wy

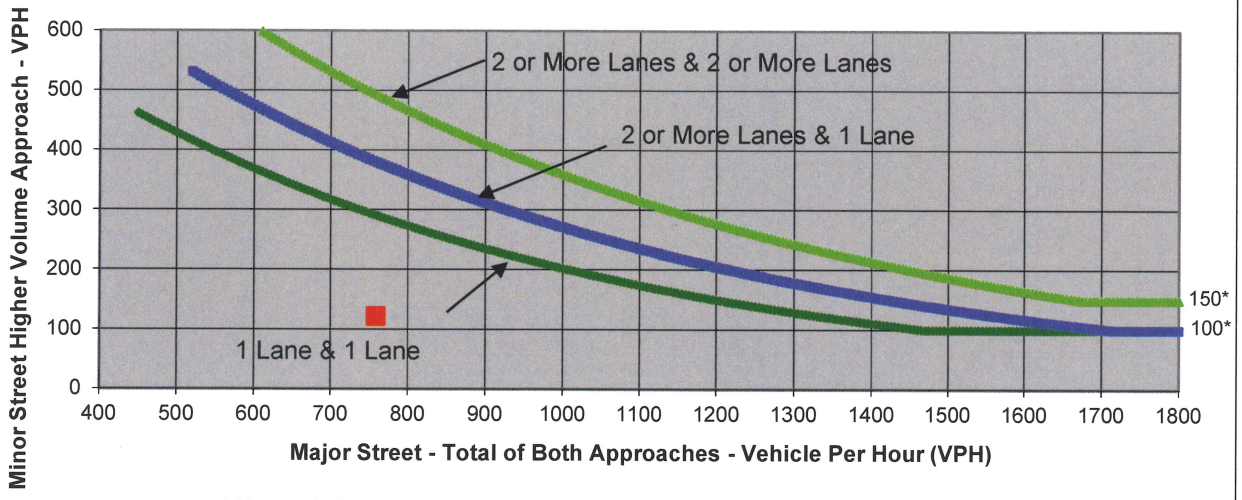
Project	Bass Lake Rd
Scenario	Existing (2019) Conditions
Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left		-		108
Through	177	557		
Right	25			14
Total	202	557	0	122

Major Street Direction

x	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Bass Lake Rd	Madera Wy	
Number of Approach Lanes	**1**	**2**	**NO**
Traffic Volume (VPH) *	**759**	**122**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Bass Lake Rd
Minor Street	Bridlewood Dr

Project	Bass Lake Rd
Scenario	Existing (2019) Conditions
Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	17	0	74
Through	170	651	0	0
Right	17	0	0	30
Total	187	668	0	104

Major Street Direction

x	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	21.6
Approach with Worst Case Delay	WB
Total Vehicles on Approach	104

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
Existing (2019) Conditions	**0.6**	**104**	**959**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Not Met**	**Met**	**Met**
Warrant Met	**NO**		

FEHR & PEERS

Major Street	Bass Lake Rd
Minor Street	Bridlewood Dr

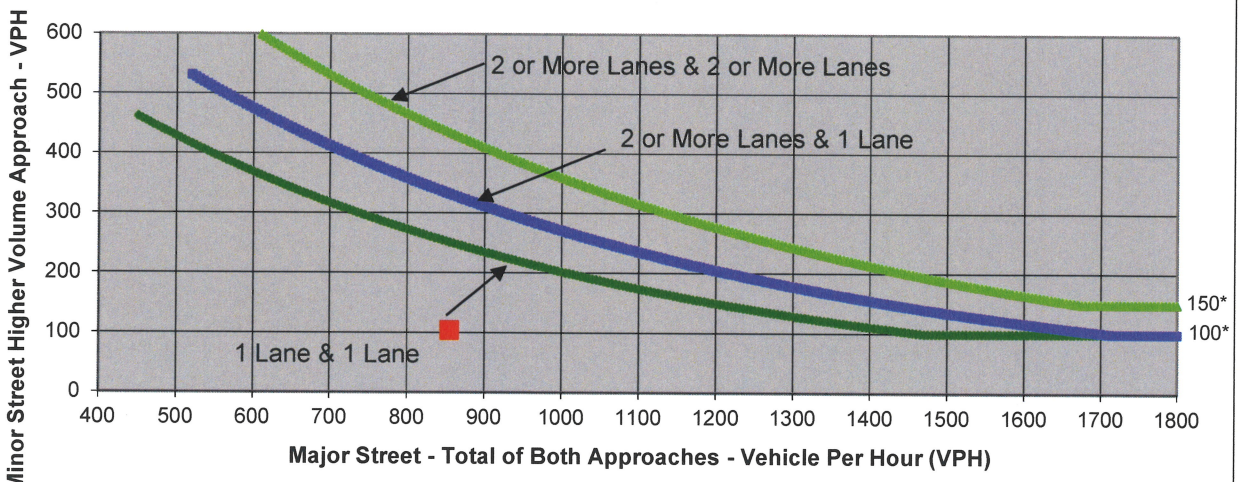
Project	Bass Lake Rd
Scenario	Existing (2019) Conditions
Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left		17		74
Through	170	651		
Right	17			30
Total	187	668	0	104

Major Street Direction

x	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Bass Lake Rd	Bridlewood Dr	
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**855**	**104**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Bass Lake Rd
Minor Street	Madera Wy

Project	Bass Lake Rd
Scenario	Existing (2019) Conditions
Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	14	0	65
Through	401	230	0	0
Right	97	0	0	12
Total	498	244	0	77

Major Street Direction

x	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	2
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	17
Approach with Worst Case Delay	WB
Total Vehicles on Approach	77

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
Existing (2019) Conditions	**0.4**	**77**	**819**
Limiting Value	**5**	**150**	**650**
Condition Satisfied?	**Not Met**	**Not Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

Major Street	Bass Lake Rd
Minor Street	Madera Wy

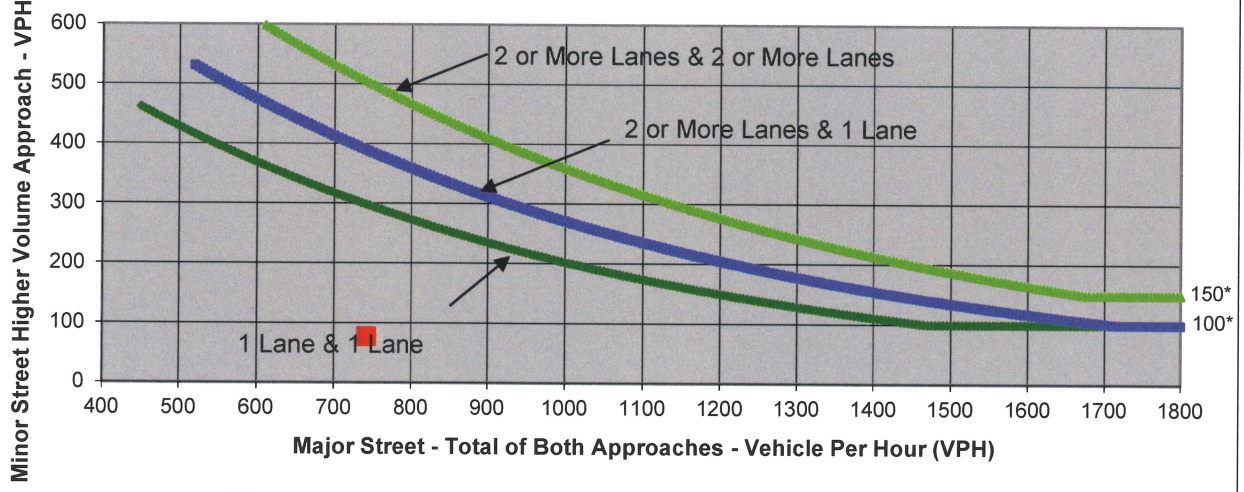
Project	Bass Lake Rd
Scenario	Existing (2019) Conditions
Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left		14		65
Through	401	230		
Right	97			12
Total	498	244	0	77

Major Street Direction

x	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Bass Lake Rd	Madera Wy	
Number of Approach Lanes	**1**	**2**	**NO**
Traffic Volume (VPH) *	**742**	**77**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Bass Lake Rd
Minor Street	Bridlewood Dr

Project	Bass Lake Rd
Scenario	Existing (2019) Conditions
Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	31	0	51
Through	491	266	0	0
Right	87	0	0	11
Total	578	297	0	62

Major Street Direction

x	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	22
Approach with Worst Case Delay	WB
Total Vehicles on Approach	62

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
Existing (2019) Conditions	**0.4**	**62**	**937**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Not Met**	**Not Met**	**Met**
Warrant Met	**NO**		

FEHR & PEERS

Major Street	Bass Lake Rd
Minor Street	Bridlewood Dr

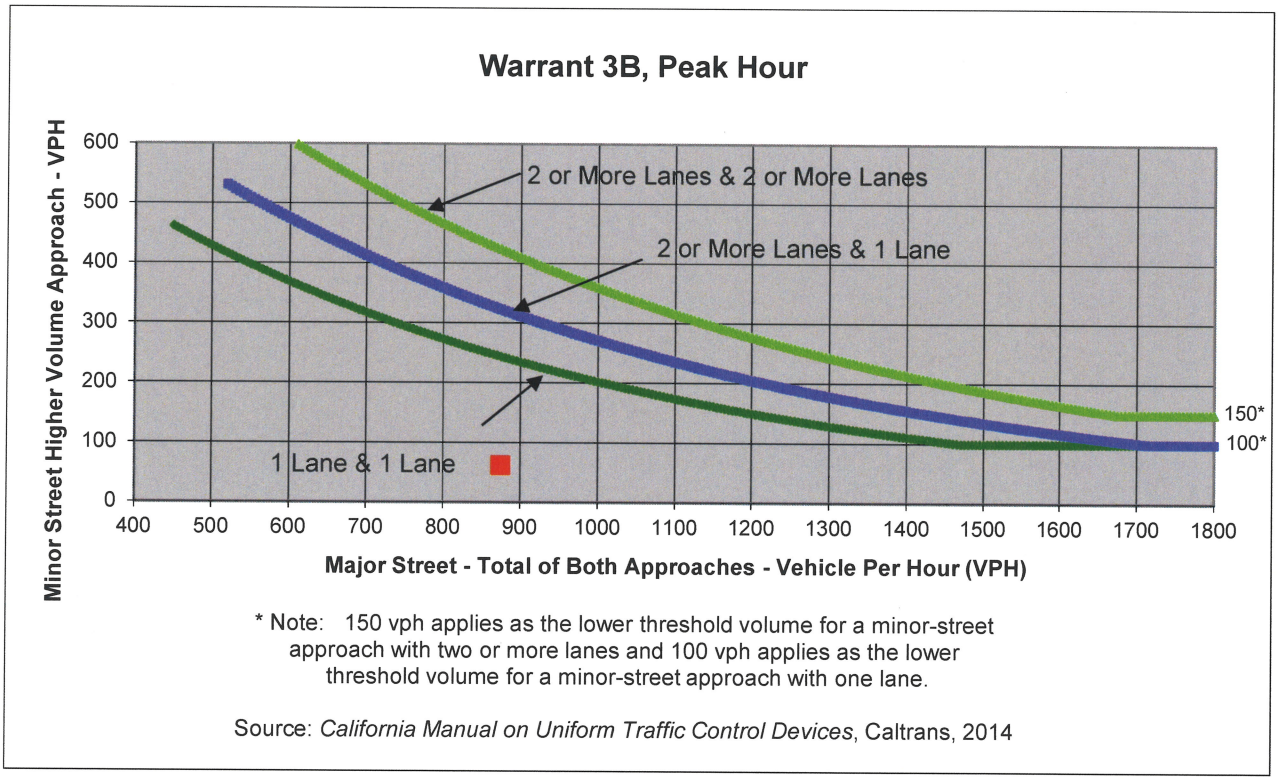
Project	Bass Lake Rd
Scenario	Existing (2019) Conditions
Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left		31		51
Through	491	266		
Right	87			11
Total	578	297	0	62

Major Street Direction

x	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Bass Lake Rd	Bridlewood Dr	
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**875**	**62**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

Kimley»Horn

Table 1 – HCM 2010 and HCM 6th Edition Roadway Segment Thresholds by Facility Type

CLASS		HCM 2010 LOS					HCM 6th Edition					Delta between HCM 6th Edition and HCM 2010 LOS				
		A	B	C	D	E	A	B	C	D	E	A	B	C	D	E
2R	Minor Two-Lane Highway	-	330	710	1,310	2,480	-	330	710	1,310	2,480	-	0	0	0	0
2U	Major Two-Lane Highway	-	330	710	1,310	2,480	-	330	710	1,310	2,480	-	0	0	0	0
4M	Multilane Four-Lane Highway	-	1,790	2,580	3,290	3,660	-	1,770	2,540	3,160	3,600	-	(20)	(40)	(130)	(60)
2A	Two-Lane Arterial	-	-	850	1,540	1,650	-	-	640	1,310	1,510	-	-	(210)	(230)	(140)
4AU	Four-Lane Arterial, Undivided	-	-	1,760	3,070	3,130	-	-	1,360	2,770	3,030	-	-	(400)	(300)	(100)
4AD	Four-Lane Arterial, Divided	-	-	1,850	3,220	3,290	-	-	1,430	2,910	3,180	-	-	(420)	(310)	(110)
6AD	Six-Lane Arterial, Divided	-	-	2,760	4,680	4,710	-	-	2,210	4,480	4,790	-	-	(550)	(200)	80
2F	Two Freeway Lanes	-	2,070	2,880	3,590	4,150	-	2,150	2,960	3,610	4,100	-	80	80	20	(50)
2FA	Two Freeway Lanes + Auxiliary Lane	-	2,610	3,630	4,520	5,230	-	3,150	3,960	4,610	5,100	-	540	330	90	(130)
3F	Three Freeway Lanes	-	3,100	4,320	5,380	6,230	-	3,230	4,440	5,420	6,150	-	130	120	40	(80)
3FA	Three Freeway Lanes + Auxiliary Lane	-	3,640	5,070	6,320	7,310	-	4,230	5,440	6,420	7,150	-	590	370	100	(160)
4F	Four Freeway Lanes	-	4,140	5,760	7,180	8,310	-	4,300	5,930	7,220	8,200	-	160	170	40	(110)
W22	Minor Two-Lane Highway	-	330	710	1,310	2,480	-	330	710	1,310	2,480	-	0	0	0	0
W20	Minor Two-Lane Highway	-	330	710	1,310	2,480	-	330	710	1,310	2,480	-	0	0	0	0
W18	Minor Two-Lane Highway	-	330	710	1,310	2,480	-	330	710	1,310	2,480	-	0	0	0	0

Notes:

(1) Threshold reductions between HCM 2010 and HCM 6th Edition are shown in red text and highlighted

(2) HCM 2010 Freeway LOS based on Exhibit 10-8, Urban Area, Rolling Terrain, K-factor of 0.09, and D-factor of 0.60

(3) HCM 6th Edition Freeway LOS based on Exhibits 12-39 and 12-40, Urban Area/Rural Area, Rolling Terrain, K-factor of 0.09, and D-factor of 0.60

(4) HCM 2010 Multilane Highway LOS based on Exhibit 14-19, Urban Area/Rural Area, Rolling Terrain, K-factor of 0.09, and D-factor of 0.60

(5) HCM 6th Edition Multilane Highway LOS based on Exhibits 12-41 and 12-42, Urban Area/Rural Area, Rolling Terrain, K-factor of 0.09, and D-factor of 0.60

(6) HCM 2010 2-lane highway LOS based on Exhibit 15-30, Class II Rolling, 0.09 K-factor, and D-factor of 0.60

(7) HCM 6th Edition 2-lane highway LOS based on Exhibit 15-46, Class II Rolling, 0.09 K-factor, and D-factor of 0.60

(8) HCM 2010 Arterial LOS based on Exhibit 16-14, K-factor of 0.09, D-factor of 0.60, posted speed 45 mi/h

(9) HCM 6th Edition Arterial LOS based on Exhibit 16-16, K-factor of 0.09, D-factor of 0.60, posted speed 45 mi/h

ATTACHMENT B

COUNTY OF EL DORADO
DEPARTMENT OF TRANSPORTATION

INTEROFFICE MEMORANDUM

Date: October 22, 2019

To: File

From: Natalie K. Porter, P.E., T.E.
Senior Traffic Engineer

Subject: ***Bass Lake Road at Bridlewood Drive***

Fehr & Peers provided the following information to evaluate the need for a left turn pocket at Bridlewood Drive and Bass Lake Road.

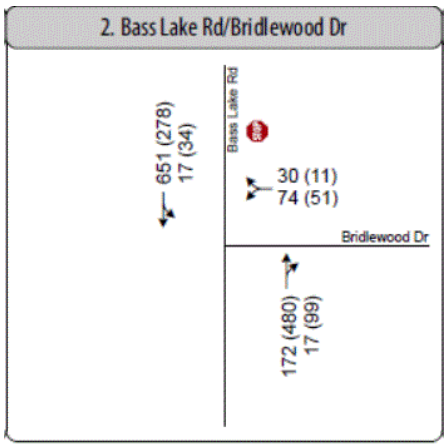
Evaluation Methodology

Guidance from the *National Cooperative Highway Research Program's* (NCHRP) Report 457 was applied to identify if a southbound left-turn pocket is needed at Bass Lake Road / Bridlewood Drive. The left-turn pocket warrant methodology considers the following inputs:

- Posted Speed
- Peak hour left-turn movement volume
- Peak hour volume in same direction as left-turn movement (Advancing Volume – V_A)
- Peak hour volume in opposite direction as left-turn movement (Opposing Volume – V_O)
- Left-turn movement peak hour volume as a percentage of V_A

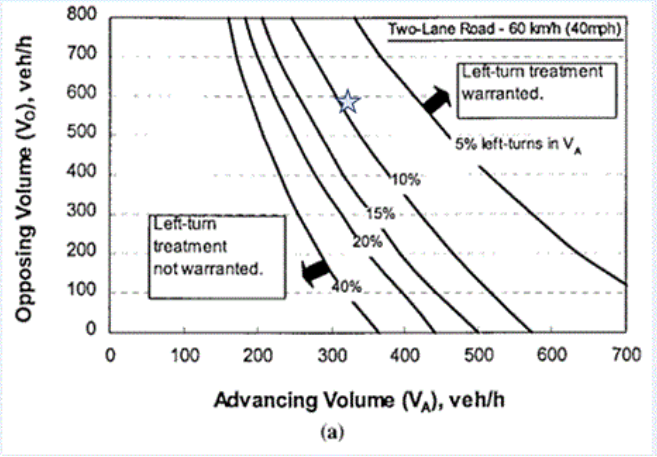
The table below summarizes the inputs used for the evaluation of the left-turn pocket into Bridlewood Drive for PM peak hour conditions, which represents the highest peak hour for the left-turn movement.

The values in the table were entered into the NCHRP 457 left-turn warrant model for a two-lane roadway with a posted speed limit of 40 miles per hour. The intersection of VO and VA is plotted on the model below and shown with a blue star. As shown, the intersection of VO and VA is right of the line that would represent 11% of left turns in VA. Therefore, a southbound left-turn pocket is warranted.



Existing Counts (September 2019)
AM (PM) Peak Hour Traffic Volume

NCHRP 457 MODEL INPUTS – BASS LAKE ROAD / BRIDLEWOOD DRIVE	
Input	**PM Peak Hour Value**
Advancing Volume (V_A)	312
Left Turn Volume	34
% Left-turns in V_A	11%
Opposing Volume (V_O)	579
Source: Fehr & Peers, 2019	



FEHR & PEERS
Improving Communities Since 1985

MEMORANDUM

Date: October 18, 2018

To: Andrea Howard, Parker Development

From: David B. Robinson, Fehr & Peers

Subject: **Serrano Village J7**

RS10-2829

Fehr & Peers has completed a left-turn warrant evaluation for Serrano Village J7. This memorandum outlines the proposed land use modifications for Serrano Village J7 and access, the evaluation methodology, and findings.

Land Use Modifications

Table 1 compares approved and proposed land use for Serrano Village J7. Figure 1 shows the proposed changes. Village J7 is located east of the Bass Lake Road/Serrano Parkway Intersection. As proposed, the Village J7 residential dwelling units would be reduced from 71 single family halfplex units to 65 single family units.

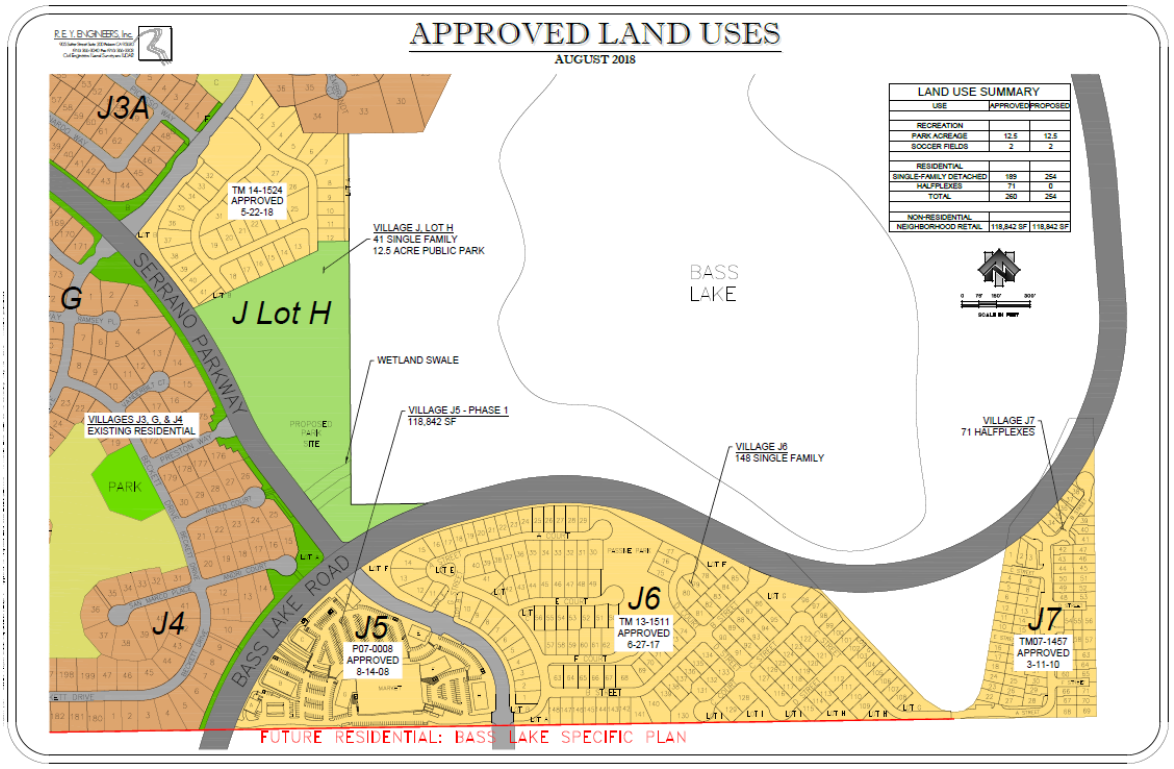
TABLE 1
PROPOSED LAND USE – SERRANO VILLAGES J7

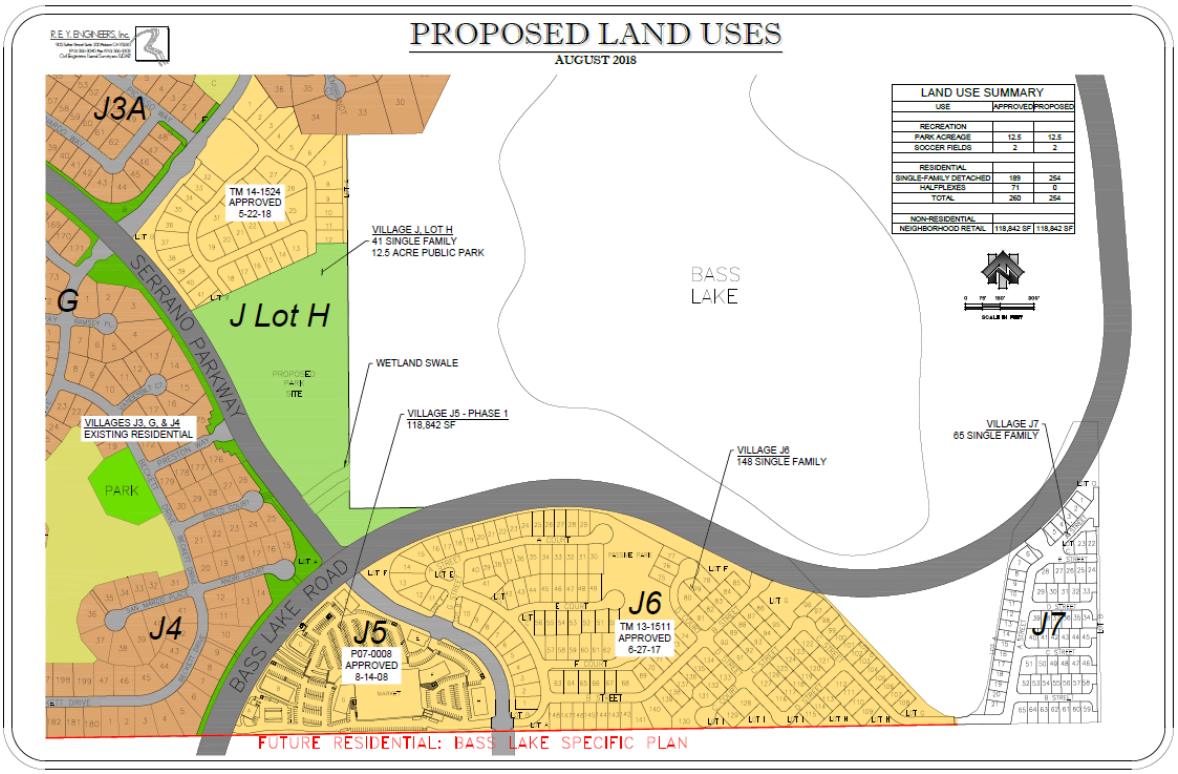
Village	Approved Land Use	Proposed Land Use
J7	Residential (71 Single Family Halfplex Units)	Single Family Residential (65 Single Family Units)

Source: Fehr & Peers, 2018

Access would continue to be provided by a full access connection to Bass Lake Road, located about 400 feet south of the Bass Lake Road/Bridlewood Drive intersection.

Figure 1: Approved and Proposed Land Uses





Evaluation Methodology

We applied guidance provided in *National Cooperative Highway Research Program (NCHRP) Report 457*, Transportation Research Board to identify if a southbound left-turn pocket is needed at the proposed access to Village J7. The left-turn pocket warrant methodology, considers the following inputs:

- Posted speed
- Peak hour left-turn movement volume
- Peak hour volume in same direction as left-turn movement (Advancing Volume – Va)
- Peak hour volume in opposite direction as left-turn movement (Opposing Volume – Vo)
- Left-turn movement peak hour volume as a percentage of Va

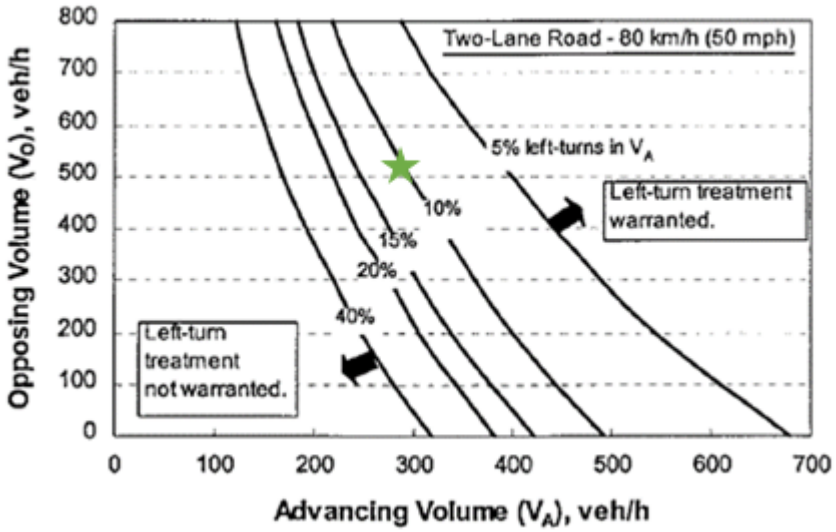
Table 2 summarizes the inputs used for the evaluation of the Village J7 left-turn pocket for PM peak hour conditions, which represents the highest peak hour for the left-turn movement.

TABLE 2
NCHRP 457 MODEL INPUTS – VILLAGE J7

Input	PM Peak Hour Value
Advancing Volume (Va)	288
Left Turn Volume	11
% Left-turns in Va	4%
Opposing Volume (Vo)	515

Source: Fehr & Peers, 2018

The values in Table 2 were entered into the NCHRP 457 left-turn warrant model for a two-lane roadway with a posted speed limit of 50 miles per hour. The intersection of Vo and Va is plotted on the model below and show with a green star. As shown, the intersection of Vo and Va is left of the line that would represent 4% of left turns in Va. Therefore, a left-turn pocket is not warranted.



Findings

As shown on the model above, the intersection of Vo and Va is left of the line that representing 5% of left turns in Va. Therefore, a left-turn pocket is not warranted. In addition, we tested the sensitivity of the warrant to the left-turn volume and determined that warrant would not be satisfied even if the left-turn movement into Village J7 was doubled.