



**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.
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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.

Future Traffic Volume Projections

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 Serrano 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*.