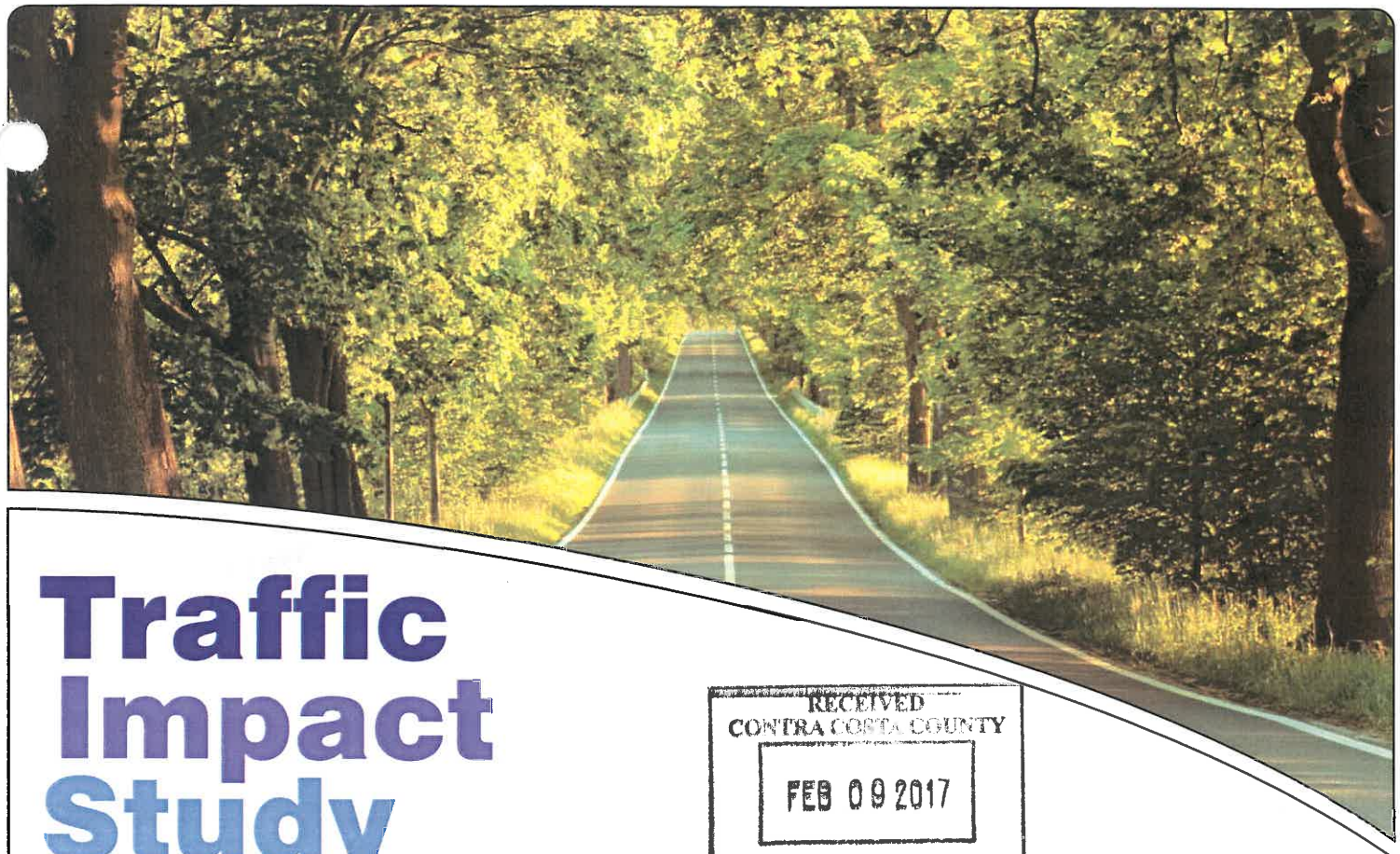
Appendix P: Traffic Impact Study and Addenda



Traffic Impact Study

SD13-9338

Ball Property

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Ball Property Traffic Study
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Development of the Ball Property
on
Camille Avenue in Alamo

TRAFFIC IMPACT STUDY

1) EXECUTIVE SUMMARY

The Ball Property is located at the end of Camille Avenue in the Alamo area of Contra Costa County. The proposed project would involve construction of 33 new single family homes and would replace an existing 21,657 square foot office building (20,709 square feet of rentable space). Based on this analysis, and according to established standards, the proposed project would not be expected to result in any significant traffic or transportation impacts.

This report describes the existing traffic and circulation system, as well as pedestrian, bicycle and transit conditions in the vicinity of the proposed project and provides an analysis of the potential impacts of the project. In Contra Costa County, a traffic study must be prepared for all projects that generate over 100 vehicle trips during a one-hour period. The Ball Property, with only 33 new residential units, will not meet this standard. Its trip generation will be less than 50 vehicle trips on a weekday during the critical commute hours. However, as a part of the project application, this report has been requested to answer questions that may arise regarding the project's traffic impacts.

2) SETTING

This section of the report describes the roadways, traffic conditions and other existing transportation characteristics in the vicinity of the project. The primary basis of the analysis is the peak hour level of service for the key intersections. The hours identified as the "peak" hours are generally between 8:00 a.m. and 9:00 a.m. and 5:00 p.m. and 6:00 p.m. for all of the transportation facilities described. Throughout this report, these peak hours will be identified as the AM and PM peak hours, respectively.

2.1 Project Study Intersections

Figure 1 shows the study area, which includes the project location and the adjacent street network in this section of Alamo. The intersections that have been studied for this report are listed below:

1. Danville Boulevard and Stone Valley Road
2. Danville Boulevard and Hemme Avenue

FIGURE 1 | PROJECT STUDY AREA
TRAFFIC IMPACT STUDY
Ball Property
Alamo Area of Contra Costa County

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3. Danville Boulevard and Camille Avenue
4. Danville Boulevard and El Portal
5. Danville Boulevard and El Cerro Boulevard

Each of these intersections is signalized with the exception of El Portal, which is controlled by a stop sign on the side street. All of these intersections are located in the unincorporated area of Contra Costa County, with the exception of El Cerro Boulevard and Danville Boulevard, which is located in the Town of Danville. In addition to the intersections, the segment of Danville Boulevard between Stone Valley Road and El Cerro Boulevard will also be studied, along with the segment of Camille Avenue between Danville Boulevard and the Ball Property project limits. **Figure 2** shows the project site plan and the tentative layout of the proposed subdivision.

2.2 Traffic Analysis Scenarios

In accordance with Contra Costa County standards, the study intersections were evaluated for the following scenarios:

- Scenario 1: Existing Conditions – Level of Service (LOS) based on existing peak hour volumes and existing intersection configurations.
- Scenario 2: Baseline Conditions – Existing traffic plus anticipated traffic from approved developments in the study area.
- Scenario 3: Baseline Conditions plus Project – Baseline conditions peak-hour volumes plus trips from the proposed project.
- Scenario 4: Cumulative Conditions (Year 2030) per the Certified General Plan EIR
- Scenario 5 Cumulative Conditions (Year 2030) plus the project

2.3 Existing Roadway Network

The project location and the surrounding roadway network have been illustrated in **Figure 1**. The primary roadways that would be affected by the project include:

- **Camille Avenue** – Camille Avenue is the roadway that would serve the Ball Property. It is a two-lane residential street which intersects with Danville Boulevard. The neighborhood that it serves contains about 160 homes, all of which use Camille Avenue for access. Other streets that connect to Camille Avenue for access include Daniel Drive, Gary Court, Camille Court, Escondido Court, and Ironwood Lane.

  A rather unique feature exists at the end of Camille Avenue, located within the Ball Property, where there is an existing 20,709 sf office building that has a number of active tenants. At the time of this study, the building had approximately 15,751 sq ft of rented office space and about 45 marked parking spaces.

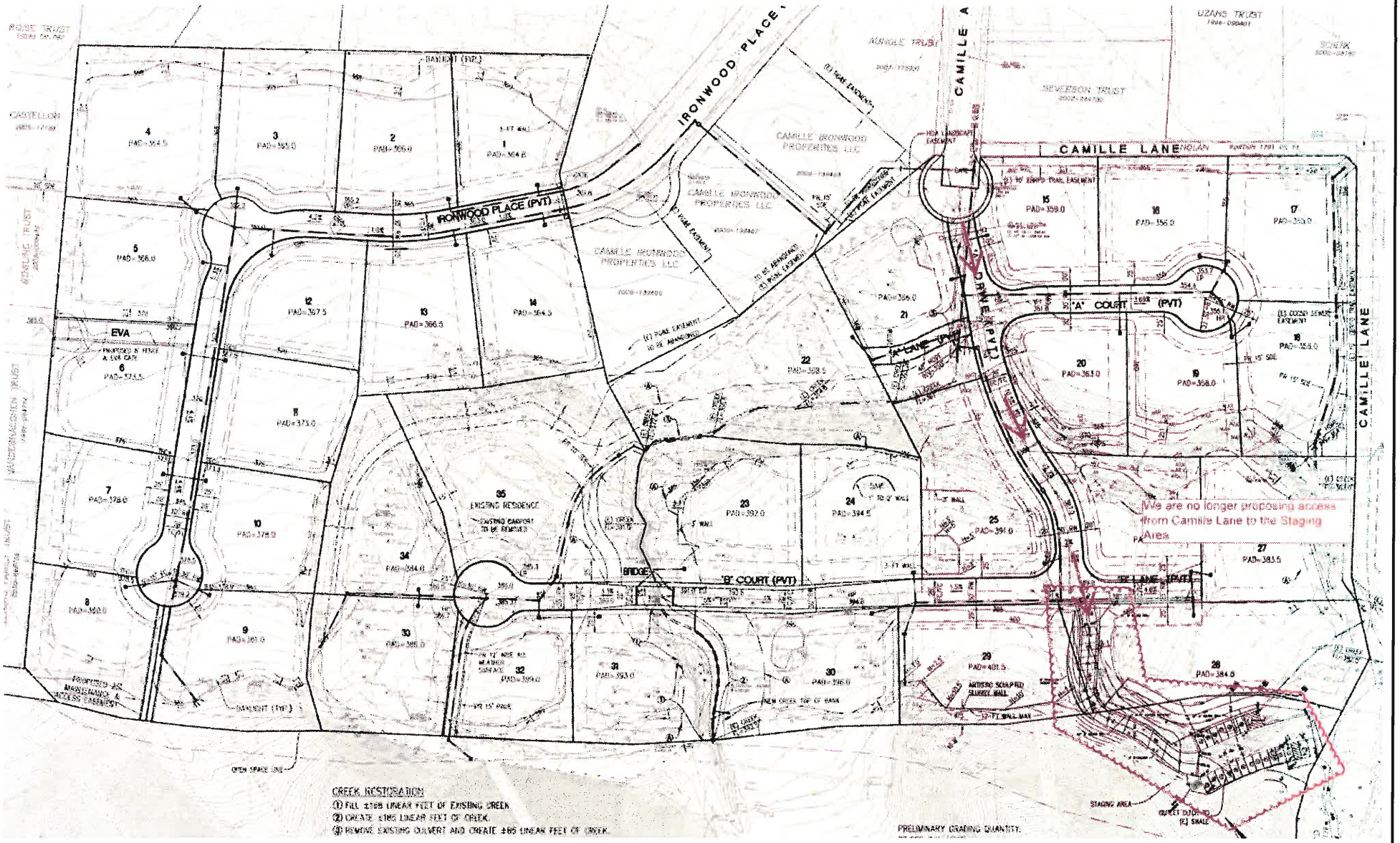

FIGURE 2 | SITE PLAN
TRAFFIC IMPACT STUDY
Ball Property
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The office building has been fully occupied, and this could be considered as the baseline for traffic flow. If the full occupancy were used, the effect of the project would be less, especially on Camille Avenue. Using the office at full occupancy, the traffic equivalency is about 20 homes.

Based on traffic counts taken in May 2012, the traffic to this building is approximately 110 trips per day with 13 trips during the PM peak hour (4 inbound and 9 outbound). This is the equivalent to the trip generation from about 15 homes. The office building traffic has its peak traffic during the weekday AM and PM peak hours, and has very little or no traffic during the day or on weekends.

- **Danville Boulevard** – Danville Boulevard is a two-lane roadway with turn lanes at all major intersections. It runs north-south to the west of and parallel to Highway 680. It is the major local arterial through this part of Alamo. Danville Boulevard has traffic signals at Stone Valley Road, Hemme Ave, Camille Avenue and El Cerro Boulevard.

  Traffic conditions on Danville Boulevard operate at Level of Service A for the most part, although a Level of Service C occurs at the intersection with Stone Valley Road. The only other traffic conditions on Stone Valley Road that are notable occur at Hemme Avenue during the AM peak (8:00 to 8:30 AM) in the vicinity of Rancho Romero Elementary School.

- **Hemme Avenue** is a two lane residential street that provides access to Rancho Romero Elementary School. There are turn lanes and a traffic signal at its intersection with Danville Boulevard.

- **El Portal** is also a two-lane residential street with a stop sign where it intersects with Danville Boulevard. It provides access to LaGonda Way and Hap Magee Ranch Park. It provides access to a partial interchange at El Pintado Road, and is used as a local route to and from the I-680 interchange.

- **El Cerro Boulevard** is an arterial street that connects with an interchange with I-680. All approaches have two or more lanes at the intersection with Danville Boulevard. This intersection and this part of the study area are located in the Town of Danville.

2.4 Intersection Analysis Methodology

Existing operational conditions at the five (5) study intersections have been evaluated using Synchro Software to implement the 2010 *Highway Capacity Manual* (*HCM*) Level of Service (LOS) methodology.[1] Level of service is an expression, in the form of a scale, of the relationship between the capacity of an intersection (or roadway segment) to accommodate the volume of traffic moving through it at any given time. The level of service scale describes traffic flow with six ratings ranging from A to F, with "A" indicating relatively free flow of traffic and "F" indicating stop-and-go traffic characterized by traffic jams.

[1] *Highway Capacity Manual*, Transportation Research Board, Washington D.C., 2010

As the amount of traffic moving through a given intersection or roadway segment increases, the traffic flow conditions that motorists experience rapidly deteriorate as the capacity of the intersection or roadway segment is reached. Under such conditions, there is general instability in the traffic flow, which means that relatively small incidents (e.g., momentary engine stall) can cause considerable fluctuations in speeds and delays that lead to traffic congestion. This near-capacity situation is labeled level of service (LOS) E. Beyond LOS E, the intersection or roadway segment capacity has been exceeded, and arriving traffic will exceed the ability of the intersection to accommodate it.

For signalized intersections, the *HCM* methodology determines the capacity of each lane group approaching the intersection. The LOS is then based on average control delay (in seconds per vehicle) for the various movements within the intersection. A combined weighted average control delay and LOS are presented for the intersection. **Table 1** summarizes the relationship between LOS and average control delay at signalized intersections. As per the requirements set forth by the Contra Costa County Transportation Authority (CCTA) all signalized intersections have also been analyzed using the methodology set forth in the Final Technical Procedures Update (dated January 16, 2013). The CCTA LOS printouts have been included in the appendix to allow verification that these results are the same or better when compared to the HCM results.

For unsignalized (all-way stop controlled and two-way stop controlled) intersections, the average control delay and LOS operating conditions are calculated by approach (e.g., northbound) and movement (e.g., northbound left-turn) for those movements that are subject to delay. In general, the operating conditions for unsignalized intersections are presented for the worst approach. **Table 2** summarizes the relationship between LOS and average control delay at unsignalized intersections.

2.5 Level of Service Policies

The Contra Costa Level of Service policy is set forth in the County's 2010 General Plan. In addition, Transportation Improvement Measures C and J and the Growth Management Plan (GMP) both require the use of the CCTA methods to determine LOS conditions.

The time of stopped delay used in this technical evaluation is based on the HCM 2010 procedures to calculate LOS. The HCM procedures used in the 2002 General Plan were based on the definitions from the 1994 Highway Capacity Manual. The resultant LOS letter grade is the same using either the 1994 or the 2010 HCM procedures. The LOS standards and V/C ratios are consistent with the requirements of the CCTA Measure C GMP.

2.6 Significance Criteria

Signalized Intersections - Project-related operational impacts on signalized intersections are considered significant if project-related traffic causes the Level of Service (LOS) rating to deteriorate from LOS D or better to LOS E or F, or from LOS E to LOS F.

TABLE 1
SIGNALIZED INTERSECTION LEVEL OF SERVICE DEFINITIONS

Level of Service	Description of Operations	Average Delay (sec/veh)
A	Insignificant Delays: No approach phase is fully used and no vehicle waits longer than one red indication.	≤ 10
B	Minimal Delays: An occasional approach phase is fully used. Drivers begin to feel restricted.	> 10 to 20
C	Acceptable Delays: Major approach phase may become fully used. Most drivers feel somewhat restricted.	> 20 to 35
D	Tolerable Delays: Drivers may wait through no more than one red indication. Queues may develop but dissipate rapidly without excessive delays.	> 35 to 55
E	Significant Delays: Volumes approaching capacity. Vehicles may wait through several signal cycles and long vehicle queues from upstream.	> 55 to 80
F	Excessive Delays: Represents conditions at capacity, with extremely long delays. Queues may block upstream intersections.	> 80

SOURCE: *Highway Capacity Manual*, Transportation Research Board, 2010.

[1]As part of the *HCM methodology*, adjustments are typically made for various factors that reduce the ability of the streets to accommodate vehicles (such as the downtown nature of the area, number of pedestrians, vehicle types, lane widths, grades, on-street parking and queues). These adjustments are performed to ensure that the LOS analysis results reflect the operating conditions that are observed in the field.

TABLE 2
UNSIGNALIZED INTERSECTION LEVEL OF SERVICE DEFINITIONS

Level of Service	Description of Operations	Average Delay (seconds/vehicle)
A	No delay for stop-controlled approaches.	0 to 10
B	Operations with minor delays.	> 10 to 15
C	Operations with moderate delays.	> 15 to 25
D	Operations with some delays.	> 25 to 35
E	Operations with high delays and long queues.	> 35 to 50
F	Operation with extreme congestion, with very high delays and long queues unacceptable to most drivers.	> 50

SOURCE: *Highway Capacity Manual*, Transportation Research Board, 2010.

Unsignalized Intersections - Project-related operational impacts on unsignalized intersections are considered significant if project generated traffic causes the worst-case movement (or average of all movements for all-way stop-controlled intersections and roundabouts) to deteriorate from LOS D or better to LOS E or F.

According to CEQA guidelines, a project would have a significant impact if it would:

- Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including, but not limited to, intersections, streets, highways and freeways, pedestrian and bicycle paths and mass transit.
- Conflict with an applicable congestion management program, including, but not limited to, level-of-service standards, and travel demand measures, or other standards established by a county congestion management agency for designated roads or highways.
- Result in inadequate emergency vehicle access.
- Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.
- Result in a projected future over-capacity freeway condition where current long-range planning studies show an under-capacity condition.
- Result in an internal circulation system design that does not meet City standards.

2.7 Travel Time Studies, MTSO's

The CCTA has a number of regional sub-committees. One of these is the Tri-Valley Transportation Council, which covers the Alamo area where this project is located. The TVTC has proscribed Multi-modal Transportation Service Objectives (MTSO's). For Danville Boulevard, the MTSO states that "*The peak hour peak direction delay index must be 2.0 or lower*".

The delay index (DI) is the ratio of the travel time during the peak hour to the travel time that would be experienced during off-peak, free-flow periods. Abrams Associates measured the travel time conditions in May 2011, and found results indicating that the current peak hour peak direction delay index is 1.30 in the northbound direction and 1.35 in the southbound direction.

2.8 Existing Intersection Capacity Conditions

The existing intersection geometry and traffic counts at the study intersections for weekday AM and PM peak hours are presented in the *Traffic Analysis Appendix*. AM and PM peak hour turning movement counts were conducted at each of the project study intersections in March of 2012 and at times when local schools were in session. **Figure 3** presents the existing lane configurations at the project study intersections and **Figure 4** presents the existing traffic volumes. **Table 3** summarizes the associated LOS computation results for the existing weekday AM and PM peak hour conditions (the corresponding LOS analysis calculation sheets are presented in the *Traffic Analysis Appendix*).

TABLE 3
EXISTING PEAK HOUR INTERSECTION LEVEL OF SERVICE

INTERSECTION		CONTROL	PEAK HOUR	EXISTING	
				MEASURE (sec/veh)	LOS
1	Danville Boulevard and Stone Valley Road	Traffic Signal	AM	22.2	C
			PM	28.2	C
2	Danville Boulevard and Hemme Avenue	Traffic Signal	AM	35.1	D
			PM	6.4	A
3	Danville Boulevard and Camille Avenue	Traffic Signal	AM	9.1	A
			PM	6.6	A
4	Danville Boulevard and El Portal	Side Street Stop Sign	AM	20.6	C
			PM	22.6	C
5	Danville Boulevard and El Cerro Boulevard	Traffic Signal	AM	13.1	B
			PM	19.2	B

NOTE: At traffic signals, the delay is the average for all vehicles at the intersection, and is presented in terms of seconds per vehicle. At an unsignalized intersection, the delay is calculated for the single most critical movement.

As shown in **Table 3**, the intersection capacity results reveal that all of the signalized intersections currently have acceptable conditions (LOS D or better) during both the weekday AM and PM peak hours.

2.9 Planned Roadway Improvements

There are no significant planned roadway improvements at any of the project study intersections and there are no significant planned roadway network changes that would be expected to alter the travel patterns in the area.

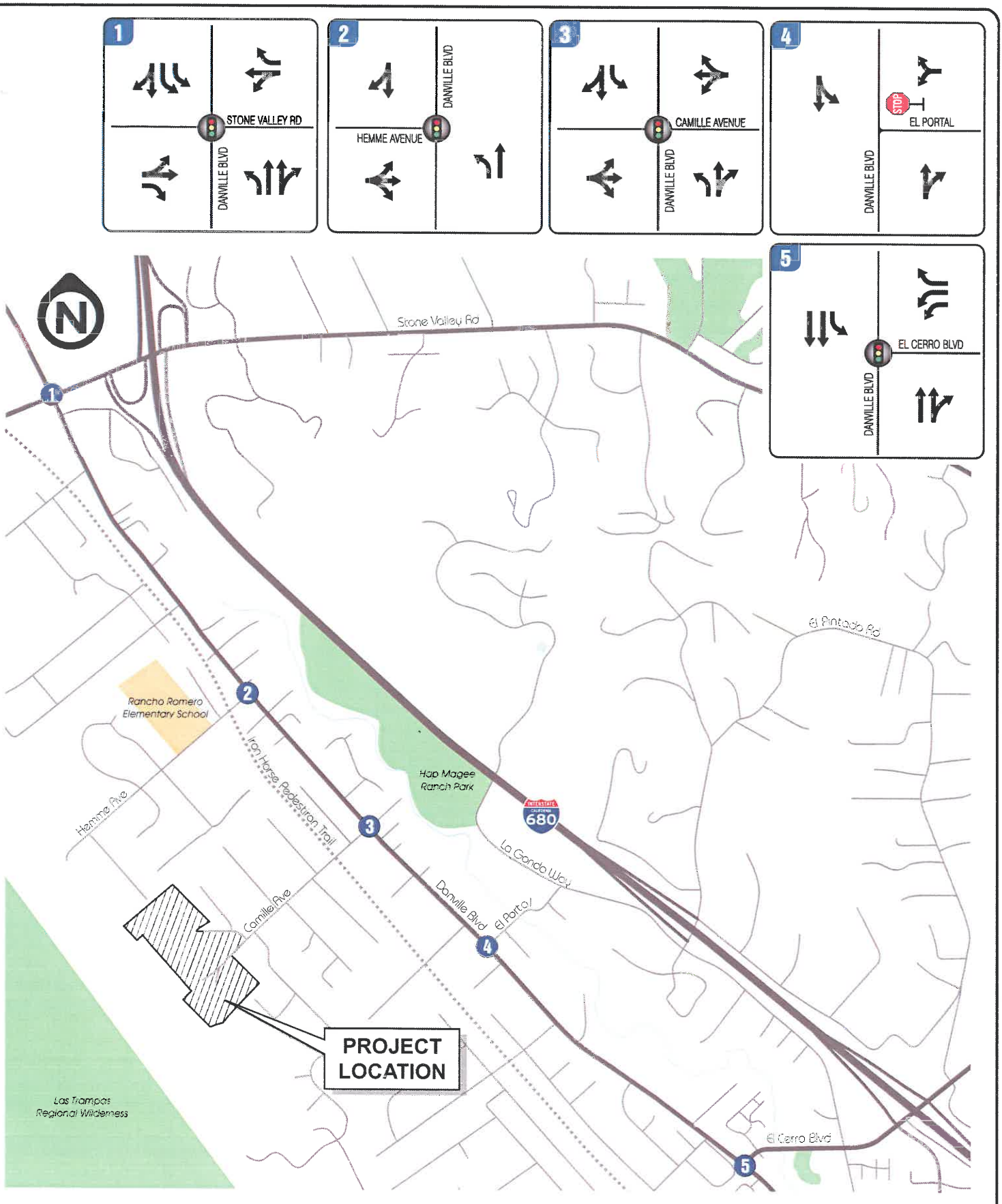

FIGURE 3 | EXISTING LANE CONFIGURATION
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Alamo Area of Contra Costa County

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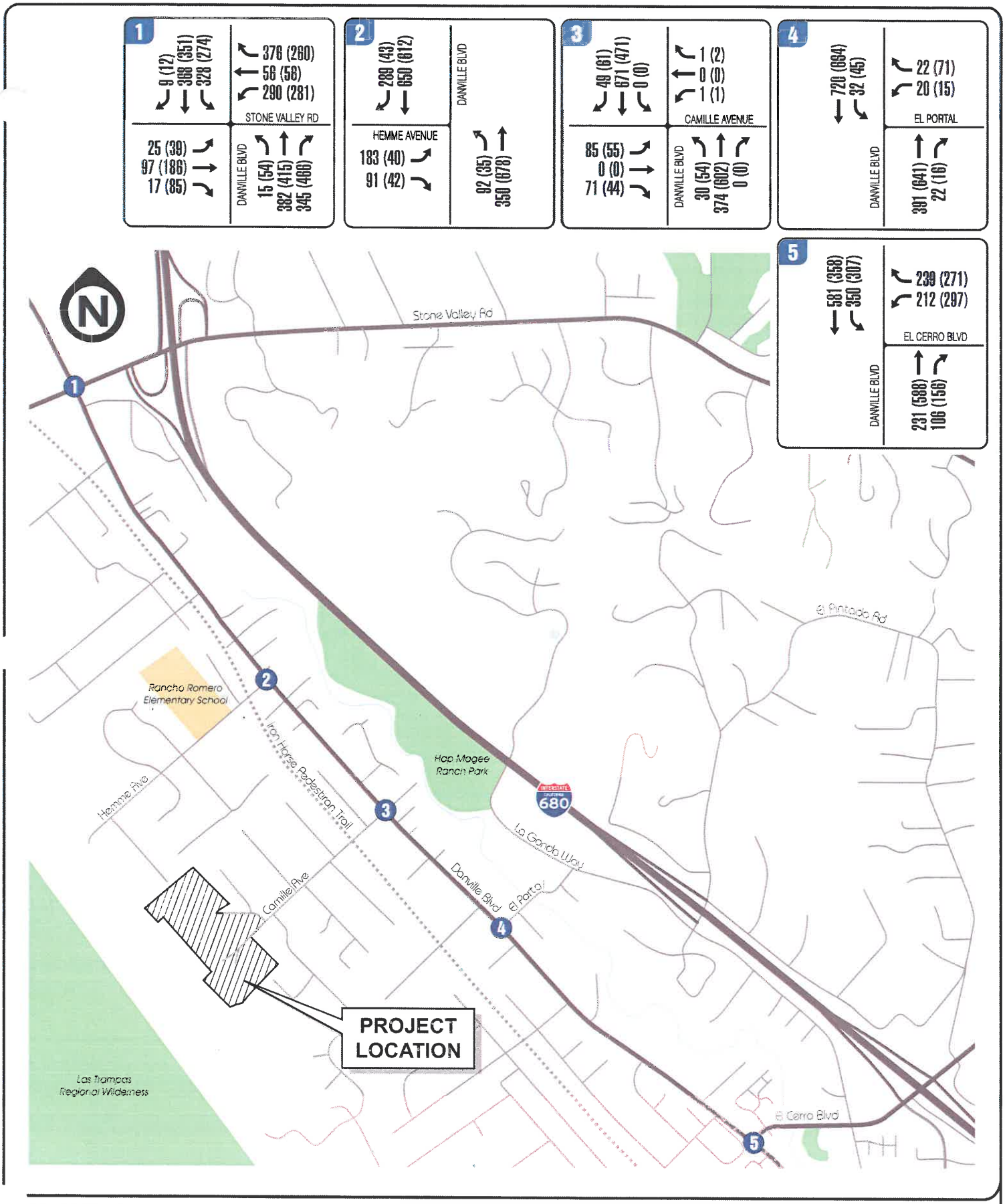

FIGURE 4 | EXISTING AM(PM) PEAK HOUR VOLUMES
TRAFFIC IMPACT STUDY
Ball Property
Alamo Area of Contra Costa County

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2.10 Pedestrian and Bicycle Facilities

Pedestrian activity is relatively light in the vicinity of the proposed project area. The heaviest pedestrian activity is on the Iron Horse Trail and on Hemme Avenue in the vicinity of Rancho Romero School. There is a significant amount of bicycle traffic on Danville Boulevard.

The Iron Horse Trail runs north-south and is located to the west of Danville Boulevard. It crosses Camille Avenue in the vicinity of Daniel Drive. Compared to other trails in the area, the Iron Horse Trail carries relatively large numbers of bicycle, pedestrian and other non-motorized vehicles, particularly on weekends.

There is an existing trail/trailhead at the end of Camille Lane, which splits off from Camille Avenue on the south side of the project. This trail is used by a number of hikers, particularly on weekends. Users park along the sides of Camille Lane. The maximum number of vehicles parked at the trailhead was 14 on a Saturday morning. The trip generation from the trailhead is estimated to be about two (2) vehicle trips during the weekday AM peak hour, and one (1) vehicle trip during the weekday PM peak hour.

3) IMPACTS AND MITIGATION MEASURES

3.1 Project Trip Generation

Based on the Institute of Transportation Engineers (ITE) (*Trip Generation Manual, Vol. 9*), the trip generation from the average single family home is 1.01 trips during the PM peak hour, and 10 trips per unit on an average weekday. This is the most commonly used trip generation rate for single-family residences, and would be the trip rate that would be used to evaluate the traffic impacts in an Environmental Impact Report (EIR).

When the proposed property is fully developed, there could be as many as 33 new estate residential properties. As noted, the standard average trip generation rate for a single-family home is 1.01 vehicle trips during the PM peak hour. This data is shown in **Table 4**. At this rate, the project would generate about 35 vehicle trips per hour.

This project, however, may need an adjustment to account for its unique characteristics. This project includes lots of over 20,000 square feet. The size of the homes would be a minimum of 5,000 square feet and it is likely to be a gated community. In the ITE Trip Generation Manual, there can be a substantial deviation from the average rates when there are larger homes. Dwelling units that are larger in size, more expensive, and further away from a business district typically have a higher trip generation per unit. For this project, it is recommended that a rate of 1.28 be used (a 27% increase over the average ITE rates for a single family dwelling), in order to test the maximum traffic generation assumptions. This is about the 85th percentile of the range of trip generation studies. **Table 4** shows the net new trip generation that will be generated from the Ball Property using this trip generation rate.

Table 4
Trip Generation Calculations

Land Use	ITE Code	Size	ADT	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Trip Generation Rate for Single-family Homes	210	Per Unit	9.57	0.19	0.56	0.75	0.64	0.37	1.01
Total Trip Generation for the Ball Property (rounded) per the ITE Manual.	210	33 Units	316	6	19	25	21	12	33
Plus a 28% Factor to test maximum assumptions.		33 units	404	8	24	32	27	16	43
Less Existing Office Building	710	15,751 sq ft	173	9	3	12	4	9	13
Total net new traffic				-1	21	20	23	7	30

Note: Trip generation data for the office building is based on current traffic counts. ITE trip rates for office buildings (ITE Land Use Code 710) were only used to calculate the ADT.

The total PM peak hour generation based on the maximum assumptions is estimated to be 32 vehicle trips per hour in the AM peak hour and 42 trips in the PM peak hour.

As noted earlier, at the end of Camille Avenue, and located within the Ball Property, there is an existing 20,709 sq. ft. office building that has a number of active tenants. The building had approximately 15,751 sq. ft. occupied at the height of its occupancy, and there were approximately 45 parking spaces. Based on traffic counts at that time, the traffic to this building was approximately 130 trips per day with 13 trips during the PM peak hour (4 inbound and 9 outbound).

The traffic to the office building at that time was equivalent the traffic for about 15 homes. Assuming full occupancy of the office, and extrapolating from Table 4, a fully occupied office building would be equivalent to the traffic for 20 homes (15,751 sq. ft. = 15 homes, 20,709 sq. ft. = 20 homes). Office building traffic is quite high during the AM and PM peak hours, but has virtually no traffic during the day or on weekends. The principal tenant of the building has always been the Ball Construction Company.

This existing office building will be vacated and removed when the proposed project is developed, and the traffic generated from the office building will no longer exist. The traffic counts of the existing building were taken on April 17 and 18, 2012 resulting in the following traffic characteristics shown below.

Time Period	Entering Traffic	Exiting Traffic	Total Count
7-8 AM	6	2	8
8-9 AM	9	3	12
4-5 PM	4	9	13
5-6 PM	3	4	7

Based on the ITE Trip Generation Manual, a building with 15,751 square foot of occupied space would be expected to generate an ADT of 173 trips per day, and a total of 25 trips during the AM and PM peak hours. The traffic count for the PM peak hour was 13 trips per hour while the traffic counted during the AM peak hour was 12 vehicle trips. This is considerably lower than the calculation from the ITE Manual. However, since the building was only approximately 40% occupied, it makes sense there would be less traffic than would be indicated by the ITE Manual. These trip generation changes have been reflected in **Table 4**.

3.1.1 Trip Generation Sensitivity Analysis

In this traffic report a very conservative analysis of trip generation was assumed in order to ensure that the study captured all possible traffic impacts that might occur as a result of the project. This section provides a sensitivity analysis that illustrates several different methods of calculating trip generation.

One of the most significant variables is traffic originating at the office building. At the time of the traffic counts, the office building was only about 40% occupied. The net change in trip generation due to replacing the office building with a 33-unit single-family home project is essentially negligible for all practical purposes.

The following table (Table 5) presents an estimate of the actual change in trip generation that would be associated with the approval of the proposed subdivision. Although the office may not be currently fully occupied the building does exist, the applicant would not require any additional permits to lease out the entire office building. In addition, standard average ITE trip generation was used. Therefore, the actual change in trip generation associated with approval of the project would be the difference in trip generation between 33 single family homes (using average ITE rates) and an office building with 15,751 sq ft of occupied space.

The traffic impact study for the project assumed partial occupancy of the office building as a mechanism to ensure that all possible traffic impacts were captured in a conservative review of traffic operations. However, this does not change the fact that when presenting the net change in traffic associated with approval of the proposed project, the calculations must take into account the fact that the existing office building could eventually be fully occupied under existing permits. This is a standard requirement for all traffic studies; and the complete development/full occupancy of the land uses must be analyzed.

Table 5
Trip Generation Summary Using Standard ITE Rates and
A Fully-Occupied Office Building

Land Use	ITE Code	Size	ADT	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Single-Family Housing Trip Generation	210	33 Units	314	8	24	32	26	16	42
Office Trip Generation	710	20,709 sq ft (fully occupied)	154	19	3	22	4	17	21
Net Change in Site Trip Generation			160	-11	21	10	22	-1	21

Note (**) Project = 35 units less 2 existing units = 33 units

As shown in the attached **Table 5**, when the trip generation from the existing office building is properly accounted for (i.e. assuming full occupancy) the net change in traffic from the project on Camille Avenue is very small. The change in traffic from approval of the project would result in an estimated increase of about 10 vehicles during the AM peak hour and about 21 vehicles per hour during the PM peak hour.

The peak direction of traffic for an office building is inbound in the AM and outbound in the PM, while the reverse occurs with residential development. This factor affects the number net new trips from the project.

To put this in perspective, this equates to an average of about one additional car every 6 minutes during the AM peak hour and an increase of one additional car every 3 minutes during the PM peak hour. Based on the detailed review of operations in the study area this amount of traffic would not result in any significant impacts to traffic volume or to traffic safety.

It should also be noted that based on CCTA and Caltrans guidelines for the preparation of traffic impact studies, a detailed analysis of roadway or intersection traffic operations is normally only required when a project adds at least 50 peak hour trip to the facility in question.[2] [3] Using this approach, the project only adds a maximum of about 21 peak hour trips which is less than half of the standard requirement for further analysis of a roadway (50 peak hour trips). The traffic study for this project is mainly a formality to allow the County to verify the project would have no significant traffic impacts.

3.2 Project Trip Distribution

The trip distribution assumptions have been based on the existing directional split at other local driveways and intersections and the project's proximity to various freeway interchanges, as well as the overall land use patterns in the area. **Figure 5** presents the trip distribution estimated by Abrams Associates and used in the analysis and the AM and PM peak hour trips generated by

[2] *Technical Procedures*, Contra Costa Transportation Authority, Walnut Creek, CA, January 16, 2013.
[3] *Caltrans Guide to the Preparation of Traffic Impact Studies*, Caltrans, Sacramento, CA, December, 2002.

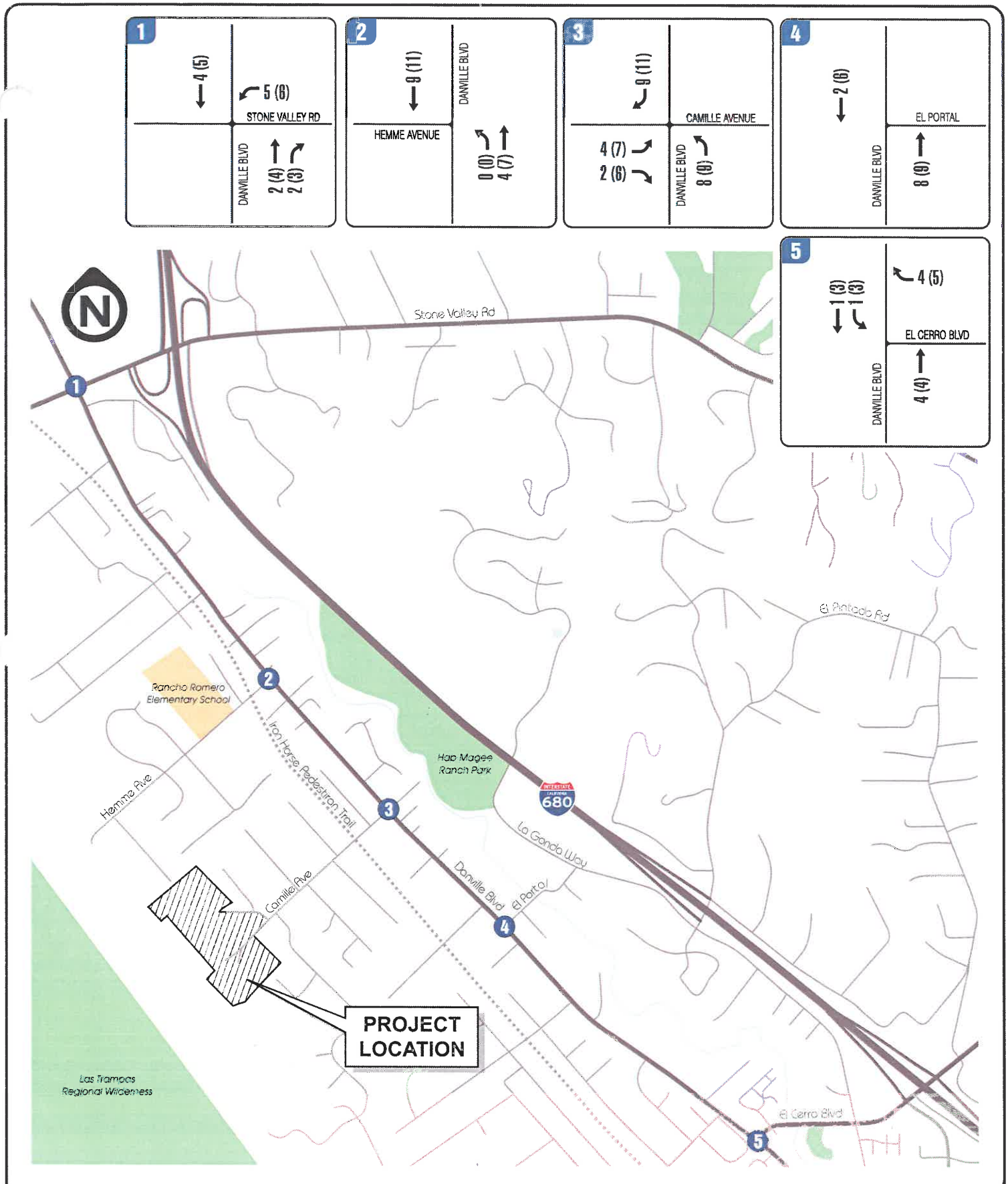

FIGURE 5 | PROJECT AM(PM) PEAK HOUR TRIPS
TRAFFIC IMPACT STUDY
Ball Property
Alamo Area of Contra Costa County

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the proposed project at each study area intersection. The percentage distribution of traffic is assumed to be as follows:

Road/Direction	Percent	AM Trips/Hour	PM Trips/Hour
Project Traffic Camille Avenue	100%	22 trips	30 trips
Danville Boulevard to the north	56%	12	17 trips
Danville Boulevard to the south	44%	10	13 trips

3.3 Existing Plus Project Traffic Conditions

This scenario in intended to evaluate the existing traffic conditions with the addition of traffic from the proposed project. **Figure 6** shows the existing plus project volumes. All of the signalized study intersections would continue to have acceptable conditions (LOS D or better) during the weekday AM and PM peak hours under this scenario. There is very little change in the average delay as a result of project traffic.

3.4 Baseline Traffic Capacity Conditions

The Baseline scenario in intended to evaluate the traffic conditions with the addition of traffic from reasonably foreseeable projects in the area at the time that the project is completed. The method used to project future year traffic for the baseline is based on the travel forecasts produced by the Central County ICMP computer traffic model. The county model includes trips generated in Alamo as well as in nearby jurisdictions. The traffic projection procedures are described in detail in the certified General Plan EIR. For the purposes of this analysis, it is assumed that the project could be completed in about three years, or by the year 2015. During this three year period there are no new or pending projects that have been identified. However, to account for the continuing growth in through traffic on Danville Boulevard we have assumed an annual average near term growth rate of 1.5 % per year. **Figure 7** shows the estimated baseline volumes.

Table 6 summarizes the associated LOS computation results for the Baseline weekday AM and PM peak hour conditions (the corresponding LOS analysis calculation sheets are presented in the *Traffic Analysis Appendix*). As shown in **Table 6**, all of the signalized study intersections would continue to have acceptable conditions (LOS D or better) during the weekday AM and PM peak hours.

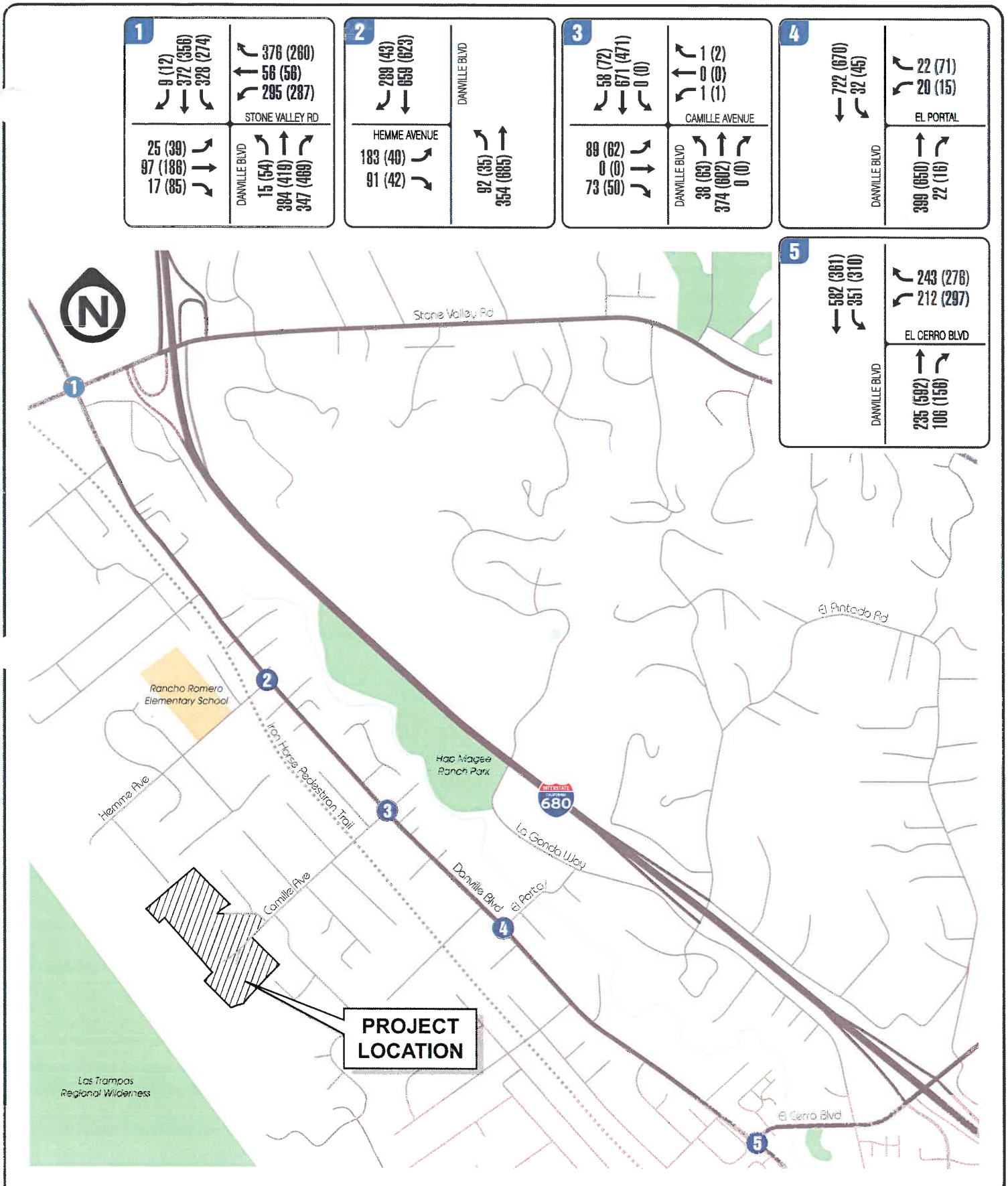

FIGURE 6 | EXISTING PLUS PROJECT AM(PM) PEAK HOUR VOLUMES

TRAFFIC IMPACT STUDY

Ball Property

Alamo Area of Contra Costa County

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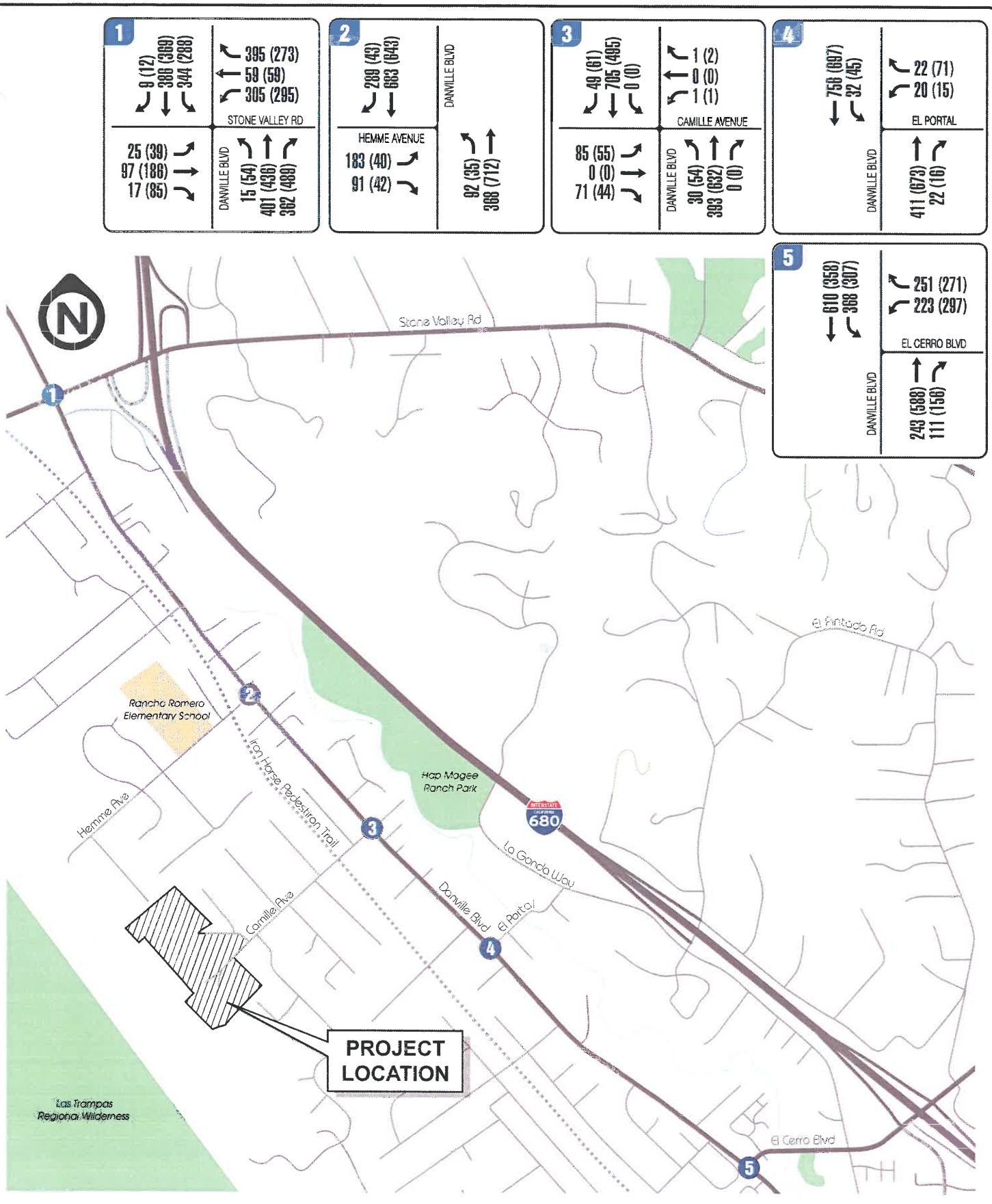

FIGURE 7 | BASELINE AM(PM) PEAK HOUR VOLUMES
TRAFFIC IMPACT STUDY
Ball Property
Alamo Area of Contra Costa County

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TABLE 6
BASELINE PEAK HOUR INTERSECTION LEVEL OF SERVICE

	INTERSECTION	CONTROL	PEAK HOUR	BASELINE	
				MEASURE (sec/veh)	LOS
1	Danville Boulevard and Stone Valley Road	Traffic Signal	AM	23.1	C
			PM	29.6	C
2	Danville Boulevard and Hemme Avenue	Traffic Signal	AM	38.2	D
			PM	6.4	A
3	Danville Boulevard and Camille Avenue	Traffic Signal	AM	9.3	A
			PM	6.6	A
4	Danville Boulevard and El Portal	Side Street Stop Sign	AM	22.2	C
			PM	24.6	C
5	Danville Boulevard and El Cerro Boulevard	Traffic Signal	AM	13.9	B
			PM	19.2	B

SOURCE: Abrams Associates, 2017
NOTE: At traffic signals, the delay is the average for all vehicles at the intersection is presented in terms of seconds per vehicle. At an unsignalized intersection, the delay is for the most critical single movement.

The results of these baseline traffic conditions are that there are only small changes forecast in the average delay. There will not be enough change to affect the Levels of Service, and all intersections will continue to operate at LOS C or better.

3.5 Baseline *Plus Project* Intersection Capacity Conditions

The Baseline plus proposed project traffic forecasts were developed by adding the project-generated traffic volumes shown in **Figure 5** to the Baseline traffic volumes. **Figure 8** shows the Baseline Plus Project traffic volumes that were used in the analysis to come up with the turning movements at each intersection. **Table 7** summarizes the LOS results for the Baseline Plus Project weekday AM and PM peak hour conditions (the corresponding LOS analysis calculation sheets are presented in the *Traffic Analysis Appendix*). As shown in **Table 7**, all of the signalized study intersections would continue to have acceptable conditions (LOS D or better) during the weekday AM and PM peak hours.

3.6 Roadway and Intersection Mitigation Measures

With the addition of project traffic, all of the signalized intersection capacity results meet the Contra Costa County or CCTA standards. Therefore, there are no mitigation measures that are required as a result of the project traffic.

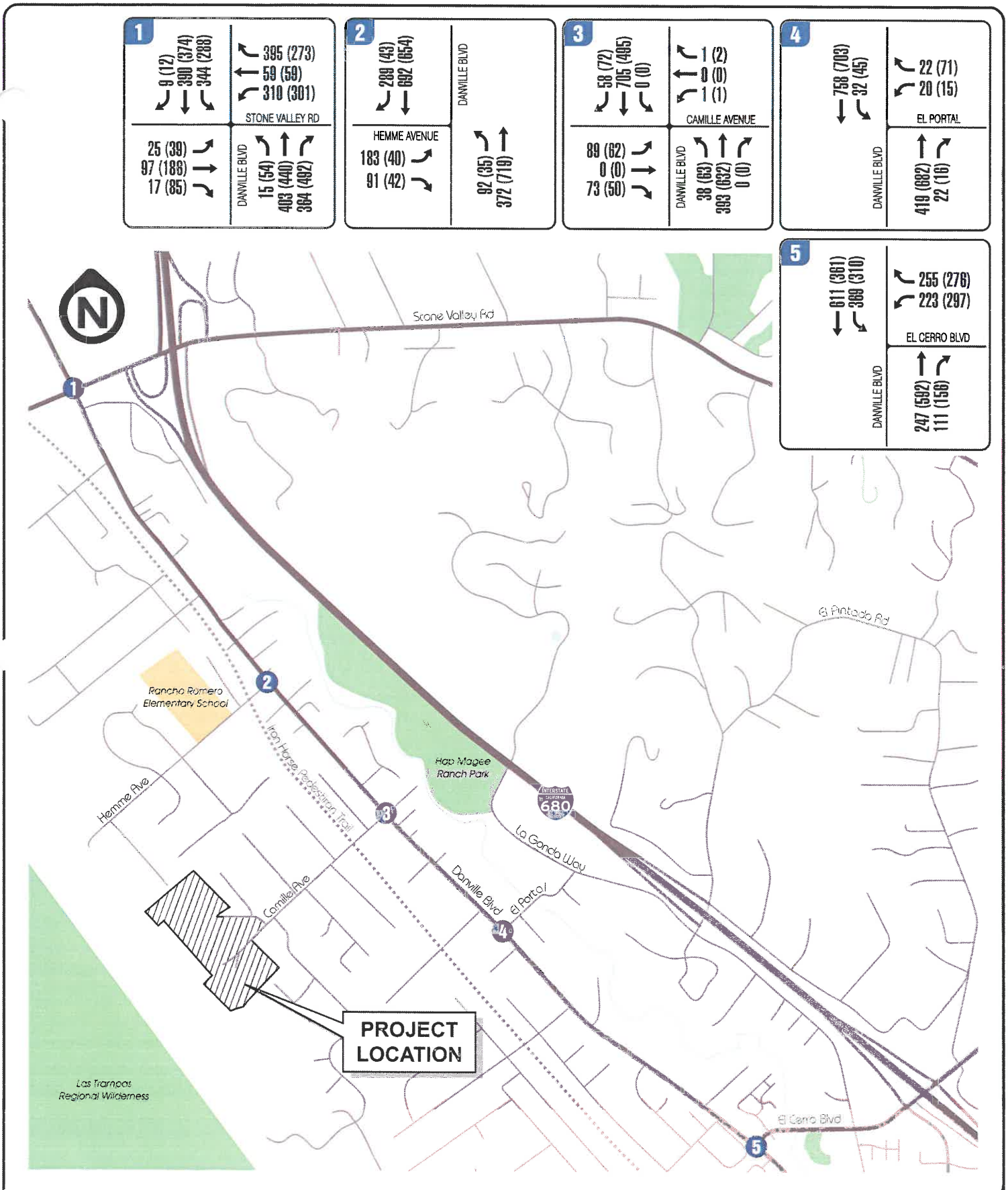


FIGURE 8 | BASELINE PLUS PROJECT AM(PM) PEAK HOUR VOLUMES
TRAFFIC IMPACT STUDY
Ball Property
Alamo Area of Contra Costa County

Abrams Associates
TRAFFIC ENGINEERING, INC.

TABLE 7
BASELINE+PROJECT INTERSECTION LEVEL OF SERVICE CONDITIONS

	INTERSECTION	CONTROL	PEAK HOUR	BASELINE + PROJECT	
				MEASURE (sec/veh)	LOS
1	Danville Boulevard and Stone Valley Road	Traffic Signal	AM	23.2	C
			PM	29.9	C
2	Danville Boulevard and Hemme Avenue	Traffic Signal	AM	39.2	D
			PM	6.4	A
3	Danville Boulevard and Camille Avenue	Traffic Signal	AM	10.0	A
			PM	7.3	A
4	Danville Boulevard and El Portal	Side Street Stop Sign	AM	22.4	C
			PM	25.1	D
5	Danville Boulevard and El Cerro Boulevard	Traffic Signal	AM	14.0	B
			PM	19.6	B

SOURCE: Abrams Associates, 2017

NOTE: At traffic signals, the delay is the average for all vehicles at the intersection is presented in terms of seconds per vehicle. At an unsignalized intersection, the delay is for the most critical single movement.

3.7 Internal Circulation and Access

Abrams Associates have worked with the site planner for the project to design a safe, efficient internal circulation system. No internal site circulation or access issues have been identified that would cause a traffic safety problem or any unusual traffic congestion or delay. It should be noted that the volumes on the internal roadways would be light enough so that no significant conflicts would be expected with vehicles backing out of the garages and/or parking spaces within the project. The project will have all vehicular access onto Ironwood Place and Camille Avenue and from there onto Danville Boulevard. There will be no through street connections to any other adjacent neighborhoods. Public cul-de-sacs are planned as turnarounds to be situated at the end of Camille Avenue and Ironwood Place before the two entrance gates to the project.

3.8 Change in Traffic on Camille Avenue

When the project is completed, there will be 30 new vehicle trips added to Camille Avenue during the PM peak hour. This traffic will be added to the existing 224 vehicle trips on Camille Avenue, resulting in a 13 percent increase in traffic. During the PM peak, the average vehicle delay to traffic on Camille Avenue would increase from 6.6 seconds per vehicle to 7.3 seconds. During the AM peak, the change would be an increase from 9.3 seconds to 10.0 seconds. This change would not be noticeable by existing traffic. There would not be any noticeable change to the vehicle turning movements from the various side streets or any change to the impact at the crossing of the Iron Horse Trail.

3.9 School Hours Traffic Issues

One of the defining traffic features of this part of Alamo is the influence of schools during the morning and afternoon peak hours. The morning peak hour at schools occurs from 7:30 to 8:30 AM, which generally corresponds with the commute period. However, the afternoon school peak occurs between 2:30 and 3:30 PM which is distinct and separate from the normal commute peak hour of 4:30 to 5:30 PM. The school with the greatest traffic impact is Rancho Romero Elementary School on Hemme Avenue.

Afternoon traffic counts were taken at Hemme Avenue and Danville Boulevard and the other study intersections in May 2012 to evaluate these impacts. **Figure 9** shows the traffic conditions on Danville Boulevard between Hemme Avenue and Camille Avenue during the afternoon school peak (2:30 to 3:30 PM). **Table 8** shows the Level of Service and vehicle delay conditions during the school PM peak hour.

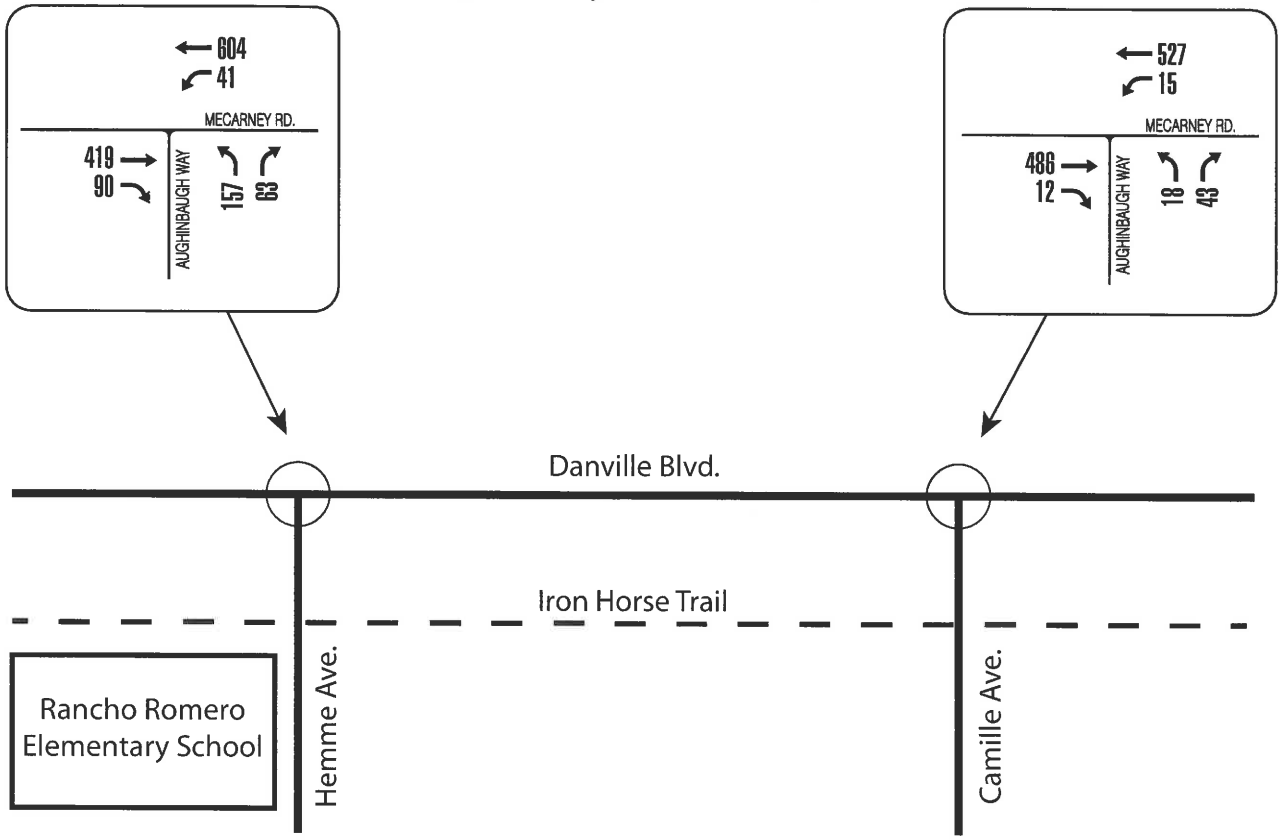
TABLE 8
SCHOOL HOUR (2:30-3:30 PM) LEVEL OF SERVICE CONDITIONS

Intersection		Traffic Control	Vehicle Delay (sec)	Level of Service
1	Danville Boulevard and Stone Valley Road	Traffic Signal	47.7 sec	D
2	Danville Boulevard and Hemme Avenue (School location)	Traffic Signal	9.6 sec	A
3	Danville Boulevard and Camille Avenue	Traffic Signal	6.6 sec	A
4	Danville Boulevard and El Portal	Side Street Stop Sign	22.6 sec	C
5	Danville Boulevard and El Cerro Boulevard	Traffic Signal	19.2 sec	B

SOURCE: Abrams Associates, 2017

Unlike the AM peak hour, the traffic effects of the afternoon school peak are very minor at all intersections except at Hemme Avenue and Danville Boulevard. At Hemme Avenue, the traffic is concentrated into a short 15-minute segment, rather than being spread out over an entire hour. The result is that at the time period between 3:00 and 3:15 PM when children are being picked up at the school, there is additional delay to the turning movements into Hemme Avenue. Queues form on several approaches, especially on the Hemme Avenue approach. There is also considerable delay on Hemme Avenue in the vicinity of the school, which is about 500 feet west of Danville Boulevard. Despite these conditions, the standard capacity calculations at Hemme show LOS "A", which indicates acceptable traffic conditions. Please note these results reflect the conditions over an entire hour, rather than the shorter, more intense period right after school lets out.

School Hour Volumes
(Weekday 2:30-3:30 PM)



Capacity Calculations
(Peak 15 Minute Period)

Hemme Avenue

Veh. Delay =	11.7 sec
V/C ratio =	0.61
Level of Service =	C

Camille Avenue

Veh. Delay =	8.4 sec
V/C ratio =	0.57
Level of Service =	B

FIGURE 9 | SCHOOL HOUR TRAFFIC CONDITIONS
PARKING STUDY
Ball Property
Alamo Area of Contra Costa County

Abrams Associates
TRAFFIC ENGINEERING, INC.

During the AM peak at Hemme Avenue, the school issue adds to the traffic congestion on Danville Boulevard. While the hourly results show LOS B (12.0 sec of delay, the peak 15-minutes can be calculated as LOS C (21.0 sec of delay). This again is due to peak hour factor (PHF) which is the relationship of the peak 15 minutes to the peak hour of traffic. During this peak 15-minute period when parents are dropping off children at Rancho Romero Elementary School and the Early Childhood Learning Center, there is significant congestion in front of the school, and this traffic problem spills over to the intersection of Hemme Avenue and Danville Boulevard. These results are also shown on **Figure 9**.

There are some potential improvements in the vicinity of Hemme Ave/Danville Boulevard that could be made to address safety concerns. These improvements could take many forms, including 1.) improved sidewalks on Danville Boulevard, 2.) an extension of the right turn lane, 3.) a two-lane approach on Hemme Avenue, 4.) traffic signal modifications and 5.) enhanced visibility at crosswalks. Further engineering studies need to be undertaken to determine the feasibility of these improvements.

3.10 Parking for Staging Area/Trail Use

On Camille Lane there is a situation where vehicles are occasionally parked so that hikers can gain access to a trail connection to the Las Trampas Open Space area. The trailhead is at the end of Camille Lane which is located on the southern edge of the Ball Property. On Saturdays, there can be up to 10 to 14 vehicles parked along Camille Lane, with the highest parking concentration occurring in the morning. On weekdays, about 6 to 8 vehicles are frequently parked in this area, again with the highest parking in the mornings. These observations were made during May 2014 and again in June 2015. All vehicles were parked to the west of Ironwood Place.

The amount of traffic generation that results from this parking by the trail users is very light. Since it occurs primarily on weekends and generally in the morning, there is no conflict with other traffic such as the office building. This daily use parking condition will not be affected by the development that is proposed for the Ball Property. There are no traffic mitigations related to the trail use that would be needed as a result of the Ball project.

On weekdays, because of the offsetting trips from the removal of the office building, the Ball development does not increase traffic, and will not have any impact on the trail users that are parking there. On weekends, there is no offsetting traffic from the offices. However, during the peak parking hours on weekends (9:00 – 11:00 AM), traffic from the new homes on the Ball property is negligible.

To provide a public benefit for the EBRPD trail to Las Trampas Ridge, the applicant is proposing to provide a new staging area for the trail users on property near Lot 28. The access connection will be widened from 10 feet to about 16 feet on the approach to this staging area. Access to this staging area will be through a gate open during park hours along "A" Drive, and connecting to a 22-ft wide driveway between lots 28 and 29, leading to the staging area parking lot.

3.11 Ironwood Place Connection

The proposed project includes an emergency vehicle access connection between the Ball Property and the existing segment of Ironwood Place north of the project. While not a part of the Ball Property project, the effects of connecting Ironwood Place as a through street has been studied.

Traffic Impacts of a Connection. With a connection between the two segments of Ironwood Place, there would obviously be some through traffic volumes that would not exist otherwise. Many trips would become shorter and more convenient as a result of this connection. There would also be a direct link from the Camille Avenue neighborhood to Rancho Romero Elementary School on Hemme Lane.

The exact traffic volumes that would use this connection are difficult to quantify. An average residential unit could have 0.3 elementary age children, based on Census data and recent estimates made by the Mt Diablo School District. In addition to the 35 units in the Ball project, there could be an additional 50 units in the Camille Avenue corridor that could use the Ironwood connection for this school trip. This could result in about 25 vehicle trips in the AM peak hour. During the remainder of the day, the typical amount of through traffic would probably be about 6 to 8 trips per hour. About 10% of the existing Camille Avenue and Hemme Lane could be enticed to use this connection.

Disadvantages. One disadvantage of such a connection is the neighborhood disruption that would occur on existing Ironwood Place. The existing section of Ironwood Place has long served as a cul-de-sac with very little traffic. It provides access to about seven (7) homes, and there are very few trips on this street. Additionally, such a connection would add through traffic into the Ball property, which would not be desirable Based on this traffic analysis, there is really no advantage or benefit to be derived by making this a though street. There are no traffic capacity or safety advantages to be gained by this connection, and it would have a negative affect the peacefulness of the neighborhood. Having it operate with an EVA, as approved by the San Ramon Valley Protection District, is the preferred alternative.

3.12 Cumulative Traffic Analysis

For the cumulative conditions, the intersection traffic volumes will be based on the existing turning movements plus the addition of growth estimated by the CCTA's traffic model. Based on the model forecasts the 2030 cumulative traffic volumes were developed by applying a 0.5%/year increase to the background traffic volumes. **Figure 10** shows the cumulative (no project) traffic volumes at each of the project study intersections.

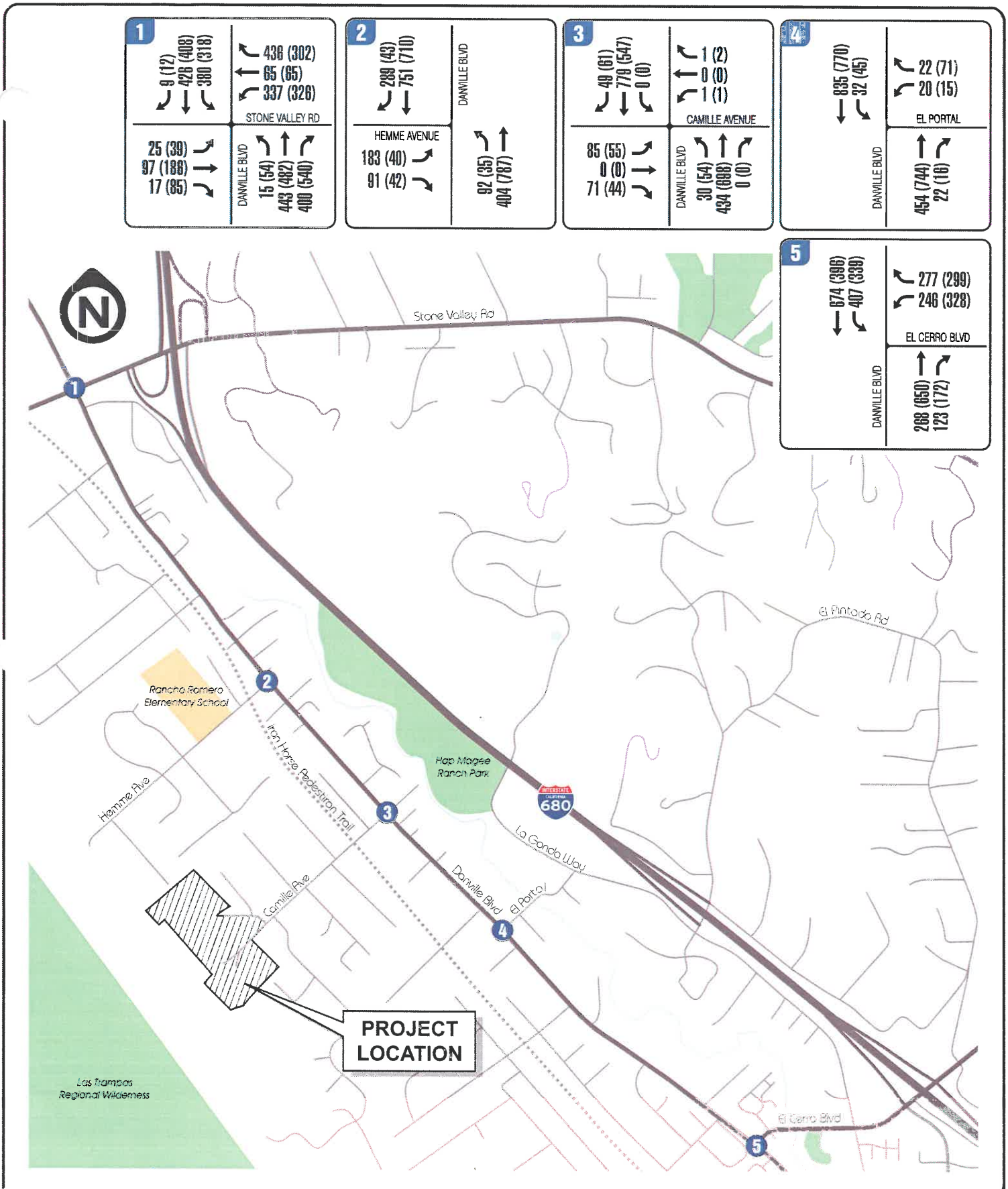


FIGURE 10 | CUMULATIVE AM(PM) PEAK HOUR VOLUMES
TRAFFIC IMPACT STUDY
Ball Property
Alamo Area of Contra Costa County

Abrams Associates
TRAFFIC ENGINEERING, INC.

3.13 Cumulative Traffic Capacity Conditions

Table 9 summarizes the associated LOS computation results for the Cumulative (Year 2030) weekday AM and PM peak hour traffic conditions without the proposed project. The corresponding LOS analysis calculation sheets are presented in the *Traffic Analysis Appendix*. As shown in **Table 9**, all of the signalized study intersections would continue to have acceptable conditions (LOS D or better) during the weekday AM and PM peak hours.

TABLE 9
CUMULATIVE INTERSECTION LEVEL OF SERVICE CONDITIONS

INTERSECTION		CONTROL	PEAK HOUR	CUMULATIVE	
				MEASURE (sec/veh)	LOS
1	Danville Boulevard and Stone Valley Road	Traffic Signal	AM	25.4	C
			PM	32.8	C
2	Danville Boulevard and Hemme Avenue	Traffic Signal	AM	46.6	D
			PM	6.5	A
3	Danville Boulevard and Camille Avenue	Traffic Signal	AM	10.0	B
			PM	6.8	A
4	Danville Boulevard and El Portal	Side Street Stop Sign	AM	26.0	D
			PM	30.4	D
5	Danville Boulevard and El Cerro Boulevard	Traffic Signal	AM	15.7	B
			PM	24.1	C

SOURCE: Abrams Associates, 2017

NOTE: At traffic signals, the delay is the average for all vehicles at the intersection is presented in terms of seconds per vehicle. At an unsignalized intersection, the delay is for the most critical single movement.

3.14 Cumulative Plus Project Traffic Capacity Conditions

Table 10 summarizes the associated LOS computation results for the Cumulative (Year 2030) weekday AM and PM peak hour traffic conditions without the proposed project. The corresponding LOS analysis calculation sheets are presented in the *Traffic Analysis Appendix*. As shown in **Table 10**, all of the signalized study intersections would continue to have acceptable conditions (LOS D or better) during the weekday AM and PM peak hours. **Figure 11** shows the cumulative plus project traffic volumes at each of the project study intersections.

TABLE 10
CUMULATIVE PLUS PROJECT INTERSECTION LEVEL OF SERVICE CONDITIONS

	INTERSECTION	CONTROL	PEAK HOUR	CUMULATIVE +PROJECT	
				MEASURE (sec/veh)	LOS
1	Danville Boulevard and Stone Valley Road	Traffic Signal	AM	25.5	C
			PM	33.2	C
2	Danville Boulevard and Hemme Avenue	Traffic Signal	AM	48.0	D
			PM	6.5	A
3	Danville Boulevard and Camille Avenue	Traffic Signal	AM	10.9	B
			PM	7.5	A
4	Danville Boulevard and El Portal	Side Street Stop Sign	AM	26.5	D
			PM	31.3	D
5	Danville Boulevard and El Cerro Boulevard	Traffic Signal	AM	15.9	B
			PM	24.7	C

SOURCE: Abrams Associates, 2017

NOTE: At traffic signals, the delay is the average for all vehicles at the intersection is presented in terms of seconds per vehicle. At an unsignalized intersection, the delay is for the most critical single movement.

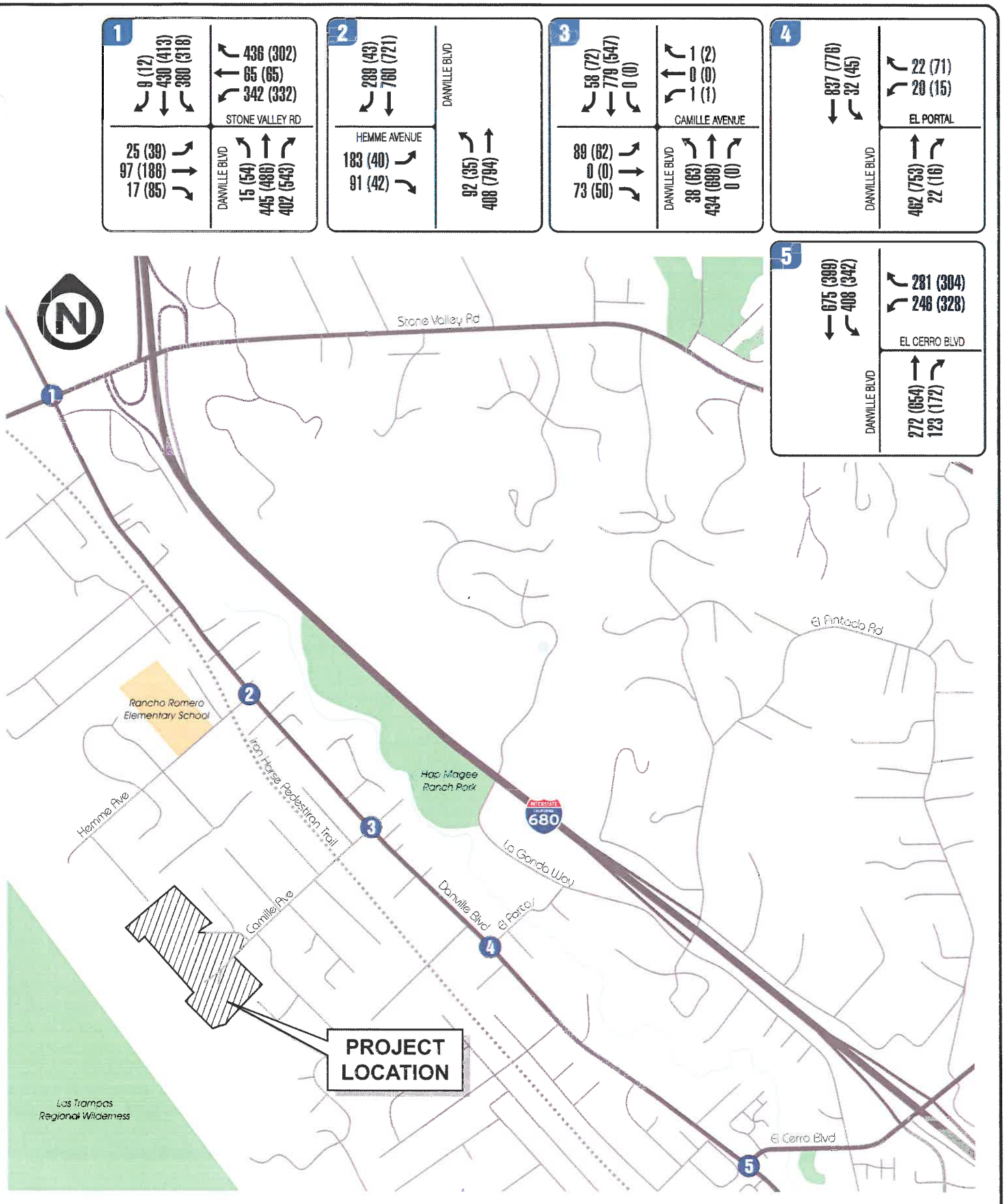


FIGURE 11 | CUMULATIVE PLUS PROJECT AM(PM) PEAK HOUR VOLUMES

TRAFFIC IMPACT STUDY

Ball Property

Alamo Area of Contra Costa County

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Development of the Ball Property

Camille Avenue in Alamo

TRAFFIC IMPACT STUDY ADDENDUM

February 3, 2017

This addendum is intended to clarify some of the conclusions and determinations of the Traffic Impact Study prepared for the Development of the Ball Property dated February 1, 2017.

Need for a Traffic Study. A detailed traffic study with intersection capacity analysis is required for a project that generates over 100 peak hour vehicle trips on the nearest major street. For this project that would be Danville Boulevard. This project would generate a total of 30 trips, with about 17 trips on Danville Boulevard north of Camille Avenue and 13 trips south of Camille Avenue. This is well below the threshold for preparation of a detailed traffic study.

Definition of Peak Hour. The PM peak hour is defined as the hour of highest traffic that occurs during the period from 4:00 to 6:00 PM. On Danville Blvd, this hour occurs between 5:00 and 6:00 PM, which is consistent with all of the major roadways in Alamo. For the office building on Ball property, however, the actual traffic counts indicate that the peak hourly traffic was from 4:00 to 5:00 PM. Even though the peak hours do not coincide, the accepted methodology is to combine data from the highest peak hour within the peak period. Notwithstanding the above, whether one identifies the peak hours as 4:00 to 5:00 pm or 5:00 to 6:00 pm, the project would generate well less than the applicable screening criteria (i.e., 100 peak hour vehicles trips).

Impacts of Project Traffic. The principal traffic from the project occurs at the intersection of Camille Avenue and Danville Boulevard. Based on the traffic counts, this intersection operates at Level of Service A during both the AM and PM peak hours. With the addition of project traffic, there is no significant change in the average delay and no change at all in the Level of Service. When the traffic from the existing Ball office building is removed, the results in the capacity calculations are unchanged. It has been verified the results would be the same if the building were vacant or if it were assumed to be 100% occupied. For the traffic report, the baseline was established after taking traffic counts of the existing office building in March 2012, which is when environmental review first commenced for the project. Additional counts were taken in August 2013, when the Notice of Preparation for the EIR was issued, and the traffic

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counts at that time were similar to the trip counts taken in March 2012, with no significant differences. In fact, the 2013 traffic count was about 5% lower than the 2012 count. The PM peak traffic on Camille Avenue in 2013 was about 5% higher than the previous counts.

Existing Plus Project Scenario. The existing plus project scenario is a snapshot of the traffic conditions at the time of the NOP. This scenario is based on the traffic counts that were collected in March 2012, with the addition of the estimated trip generation from the project. Please see Table 1, which is attached to this addendum.

TABLE 1
EXISTING PLUS PROJECT
PEAK HOUR INTERSECTION LEVEL OF SERVICE

	INTERSECTION	CONTROL	PEAK HOUR	EXISTING	
				DELAY (sec/veh)	LOS
1	Danville Boulevard and Stone Valley Road	Traffic Signal	AM	22.2	C
			PM	28.2	C
2	Danville Boulevard and Hemme Avenue	Traffic Signal	AM	35.8	D
			PM	6.4	A
3	Danville Boulevard and Camille Avenue	Traffic Signal	AM	9.7	B
			PM	7.2	A
4	Danville Boulevard and El Portal	Side Street Stop Sign	AM	21.0	C
			PM	23.1	C
5	Danville Boulevard and El Cerro Boulevard	Traffic Signal	AM	13.3	B
			PM	19.6	B

Note: At traffic signals, the delay is the average for all vehicles at the intersection, and is presented in terms of seconds per vehicle. At the unsignalized intersection (El Portal), the delay is calculated for the single most critical movement.

The results show that there would be very little change in the average vehicle delay at the project study intersections. At Camille, the average delay is forecast to increase by 0.6 seconds in the AM and PM peak hours. There is no change in the Level of Service. All of the intersections would continue to have acceptable operations during the AM and PM peak hours.

For informational purposes only, it is noted that the traffic conditions at Camille Avenue were checked in September 2016, and the overall volumes on Camille Avenue were found to be unchanged. On Danville Boulevard, there were some changes to the traffic volumes in the through traffic movements. Some of the movements increased and others decreased, but the total amount of traffic in the area was very similar to the 2012 traffic counts.

Abrams Associates
TRAFFIC ENGINEERING, INC.

February 2, 2017

SD13-9338

Wilson F. Wendt
Miller Starr Regalia
1331 N. California Blvd., Fifth Floor
Walnut Creek, CA 94596

Re: Addendum to Traffic Impact Study for the Ball Property; Dated June 17, 2016 Addressing Equestrian, Pedestrian and Bicycle Safety

Dear Mr. Wendt,

Our office prepared the Traffic Impact Study for the Ball Property dated June 17, 2016 and supplemented by the Traffic Impact Study Addendum (as supplemented, the "Traffic Study"). The question of the project's impacts upon equestrian, pedestrian and bicycle safety has been raised, and it was requested we review the Traffic Study in more detail and provide a more specific analysis of these subjects. We addressed pedestrian and bicycle facilities in Section 2.10 of the Traffic Study and analyzed parking impacts for the staging area/trail use in Section 3.10. In addition to that analysis we have the following findings:

Equestrian, Pedestrian and Bicycle Safety - As noted in Section 2.10 of the Traffic Study, pedestrian and bicycle activity on Camille Avenue west of the Iron Horse Trail is extremely limited, as it is on other local streets in the vicinity of the proposed project area. There is significant bicycle traffic on Danville Blvd. and mixed bicycle and pedestrian traffic on the Iron Horse Trail; however, during our many monitoring trips and traffic counts we have only noted very limited bicycle and pedestrian activity, and virtually no equestrian activity, on Camille Avenue.

The East Bay Regional Park District Master Plan shows Camille Avenue and Camille Lane as a part of the Las Trampas to Mt. Diablo Regional Trail, connecting the trail system of Mt. Diablo State Park to trails in the Las Trampas Regional Wilderness. The trail proceeds westerly through Hap Magee Park, then across Danville Blvd. and up Camille Avenue to the trailhead of the Madrone Trail on the Ball property, which accesses the East Bay Regional Park District Las Trampas Trails. During our observations at the project site, there was very little bicycle traffic travelling on Camille Avenue west of the Iron Horse Trail and no equestrian traffic was observed. The majority of hikers utilizing the Madrone Trail, meanwhile, drove to the end of Camille Avenue and accessed the trail off of Camille Lane.

Camille Avenue, between the project site and Danville Blvd. is a two lane residential street of approximately 30 feet in width. There is a sidewalk along the south side of the street and parking is permitted and there are typically only a few parked vehicles. The one exception is that some hikers normally park their vehicles at the west end of Camille Avenue where they can access the EBRPD trail system through the Madrone Trail. The impacts from the Ball property would be to create some additional traffic from the new residences. However, this would be mostly offset by the reduction in traffic due to the closure of the existing office building on the Ball property. The overall result would be a minimal number of new vehicle trips on Camille Avenue, with a de minimis increase in pedestrian and bicycle traffic.

In summary, our conclusion is that bicycle, pedestrian, and equestrian use of Camille Avenue and Camille Lane following the development of the project will continue to be very low, and the project traffic would not be expected to have a significant impact upon equestrian, pedestrian or bicycle activity.

Please contact me if you have any questions about these comments.

Sincerely,

Charlie Abrams

Charlie Abrams
Calif. CE #32500, Calif. TE #1417
Principal, Abrams Associates

Abrams Associates
TRAFFIC ENGINEERING, INC.

April 18, 2018

Wilson F. Wendt
Miller Starr Regalia
1331 N. California Blvd., Fifth Floor
Walnut Creek, CA 94596

Re: Addendum to Traffic Impact Study for the Ball Property; Dated June 17, 2016 Addressing Equestrian, Pedestrian and Bicycle Safety

Dear Mr. Wendt,

Our office prepared the Traffic Impact Study for the Ball Property dated June 17, 2016 and supplemented by the Traffic Impact Study Addendum (as supplemented, the "Traffic Study"). The question of the project's impacts upon equestrian, pedestrian and bicycle safety has been raised, and it was requested we review the Traffic Study in more detail and provide a more specific analysis of these subjects. We addressed pedestrian and bicycle facilities in Section 2.10 of the Traffic Study and analyzed parking impacts for the staging area/trail use in Section 3.10. In addition to that analysis we have the following findings:

Equestrian, Pedestrian and Bicycle Safety; Camille Avenue and Camille Lane - As noted in Section 2.10 of the Traffic Study, pedestrian and bicycle activity on Camille Avenue west of the Iron Horse Trail is extremely limited, as it is on other local streets in the vicinity of the proposed project area. There is significant bicycle traffic on Danville Blvd. and mixed bicycle and pedestrian traffic on the Iron Horse Trail; however, during our many monitoring trips and traffic counts we have only noted very limited bicycle and pedestrian activity, and virtually no equestrian activity, on Camille Avenue.

The East Bay Regional Park District Master Plan shows Camille Avenue and Camille Lane as a part of the Las Trampas to Mt. Diablo Regional Trail, connecting the trail system of Mt. Diablo State Park to trails in the Las Trampas Regional Wilderness. The trail proceeds westerly through Hap Magee Park, then across Danville Blvd. and up Camille Avenue to the trailhead of the Madrone Trail on the Ball property, which accesses the East Bay Regional Park District Las Trampas Trails. During our observations at the project site, there was very little bicycle traffic travelling on Camille Avenue west of the Iron Horse Trail and no equestrian traffic was observed. The majority of hikers utilizing the Madrone Trail, meanwhile, drove to the end of Camille Avenue and accessed the trail off of Camille Lane. Pedestrians, mainly from nearby neighborhoods, use the existing sidewalks on the south side of Camille to access the Madrone and Ironhorse Trails.

Camille Avenue, between the project site and Danville Blvd. is a two lane residential street of approximately 30 feet in width. There is a sidewalk along the south side of the street and parking is permitted and there are typically only a few parked vehicles. The one exception is that some hikers normally park their vehicles at the west end of Camille Avenue where they can access the EBRPD trail system through the Madrone Trail. The impacts from the Ball property would be to create some additional traffic from the new residences. However, this would be mostly offset by the reduction in traffic due to the closure of the existing office building on the Ball property. The overall result would be a minimal number of new vehicle trips on Camille Avenue, with a de minimis increase in pedestrian and bicycle traffic.

Pedestrian Safety Within the Project - The Project includes a proposal for sidewalks along one side of A Drive and B Court, serving the 21 lots connecting to Camille Avenue; and a sidewalk on one side of the new extension of Ironwood Place into the North 14 Lots. Section 96-8.402 of the Contra Costa County Code requires sidewalks along all streets in subdivisions zoned R-12 or zoning districts with a higher density. The Project is located within the R-20 zoning designation and, therefore, this provision does not require the provision of sidewalks. However, the section also requires sidewalks along all arterials, collector and minor streets serving as a direct access to schools within one mile of the Project. Rancho Romero Elementary School located on Hemme Drive is within one mile of the Project. The County Code also provides a provision for the granting of exceptions to these design requirements if certain findings can be made.

We have reviewed the proposed location of sidewalks in the Project both in accordance with the provisions of the Contra Costa County Code and in accordance with the requirements of the State's Safe Routes to School Program and the suggestions of the Federal Highway Administration Bicycle and Pedestrian Program. The streets which will not have sidewalks in the Project are two streets serving six (6) lots or less which fall within the County's definition of minor streets. They are all streets that dead end within the Project and will not be subject to through traffic from any other locations. The Project is located adjacent to the Las Trampas Wilderness on the west and the Project will not serve to connect any other streets or pedestrian ways to Camille Avenue or any other through streets. In our opinion, the traffic generated by these minor streets within the Project will be very light and the suggested sidewalk construction will be entirely adequate to protect the health and safety of all of the Project's residents, but particularly school aged children who will be walking to school.

Section 3.21 of the FHWA Bicycle and Pedestrian Program Guide for designing sidewalks and trails for access addresses the need for sidewalks. This program distinguishes between sidewalks in urban areas and those in rural and suburban areas, like this project. For rural and suburban areas, they encourage sidewalks only at "schools, local businesses and industrial plants that result in pedestrian concentrations."

The project is located in a rural, suburban area and will generate very little traffic. Residents will be safely and effectively served by the proposed sidewalk system. The proposed sidewalk system is consistent with the sidewalk system existing in the general area of the Project. A sidewalk exists on the south side of Camille Avenue running eastward to Danville Blvd. The proposed sidewalks in the Project retain the rustic and rural nature of the area while providing more than adequate safety and protection for Project residents who will be utilizing the sidewalks.

In summary, our conclusion is that bicycle, pedestrian, and equestrian use of Camille Avenue and Camille Lane following the development of the project will continue to be very low, and the project traffic would not be expected to have a significant impact upon equestrian, pedestrian or bicycle activity. Likewise, the sidewalk system proposed for the project is consistent with applicable regulations and more than adequately protects residents and users of that system.

Please contact me if you have any questions about these comments.

Sincerely,

Stephen C. Abrams
President, Abrams Associates
T.E. License No. TR1852