5.7 TRANSPORTATION AND TRAFFIC

INTRODUCTION

This section of the Draft EIR describes the transportation and circulation conditions in the area surrounding the project site, and identifies transportation impacts associated with the development of the proposed project. The analysis focuses on potential impacts of the proposed project on intersections and roadway segments, pedestrian and bicycle facilities, and transit service. Significant impacts are quantified and mitigation measures are identified to address these impacts, as necessary. All technical analyses related to the traffic impact analysis are included in **Appendix 5.7.**

While all of the public comments that were received in response to the Notice of Preparation (NOP) issued for this EIR have been summarized and responded to in **Appendix 1.0** of this Draft EIR, it is important to note within this section why certain additional recommended analysis was excluded from the EIR analysis. Both the City of Concord and the California Department of Transportation (CalTrans) expressed concerns during the NOP process relating to additional analysis they both felt was necessary to evaluate the potential for cumulative impacts to the State Route (SR) 4 mainline and the assumed trip distribution for Kirker Pass/Ygnacio Valley Road under existing and future conditions.

Concerning potential direct and/or cumulative impacts to SR 4, it is important to note that traffic from the proposed project was considered in the design studies that were previously conducted to determine the required improvements to SR 4, which are currently under construction. The proposed project would not increase the traffic on any segment of SR 4 by more than 1 percent.[1] As a result, further study of the mainline freeway system would not be expected to yield any new meaningful information related to the potential for project traffic impacts; therefore, this information was not added to the analysis.

Regarding the assumed trip distribution percentages, as further described below, additional analysis was deemed unnecessary as only 11 percent of the project’s trips (about 37 PM peak hour trips) were assumed to continue west on Ygnacio Valley Road towards Walnut Creek. This distribution is considered valid given the current travel patterns of existing residential development to the north of the project site (according to traffic counts taken at the entrance of the Kirker Creek Apartments), which is approximately 2,000 feet from the proposed project entrance. The Contra Costa Transportation Authority (CCTA) standard for including signalized intersections in a traffic impact analysis is at least 50 peak hour

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1 This conclusion is based on the addition of 98 project trips to this segment of SR 4 during the PM peak hour and Caltrans data indicating a total peak hour volume of 10,300 trips per hour on this segment of SR 4 (98 trips/10,300 trips X 100 = 0.95 percent).

trips. As the proposed project would add less than 50 peak hour trips to intersections along Ygnacio Valley Road in the City of Concord, the analysis of these intersections was deemed to be unnecessary.

ENVIRONMENTAL SETTING

Project Study Intersections

Figure 5.7-1, Project Location, shows the location of the proposed project and the main arterial roadways in the vicinity of the project. All traffic from the project would access the local road network via two intersections on Kirker Pass Road (study intersections No. 6 and No. 7). There are 13 study intersections (identified below) that have been included in the analysis. All of the existing study intersections are controlled with traffic signals with the exception of the stop-controlled intersection at Somersville Road and James Donlon Boulevard.

1. California Avenue at SR 4 WB On-Ramp
2. Railroad Avenue at SR 4 Ramps
3. Railroad Avenue at Leland Road
4. Railroad Avenue at Atlantic Avenue
5. Railroad Avenue at Buchanan Road
6. Kirker Pass Road at Montreux Main Entrance (Proposed Signalized Intersection)
7. Kirker Pass Road at Montreux Secondary Entrance (Proposed Unsignalized Intersection)
8. Kirker Pass Road at Myrtle Drive
9. Kirker Pass Road at Concord Boulevard
10. Kirker Pass Road at Clayton Road
11. Somersville Road at James Donlon Boulevard
12. Buchanan Road at Harbor Street
13. Buchanan Road at Loveridge Road

SOURCE: Abrams Associates, Inc., June 25, 2013

FIGURE **5.7-1**

Project Location

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Existing Roadway Network

State Route 4

State Route SR 4 (SR 4) is the primary east-west corridor in Contra Costa County. It connects Interstate 80 (I-80) in the City of Hercules to the west with SR 160 and the cities of Oakley and Brentwood to the east. SR 4 is currently a two-lane roadway through Oakley and Brentwood and is a divided freeway from Interstate 680 east through Concord, Pittsburg, and Antioch. It should be noted that the SR 4 Bypass has been completed in Antioch and Brentwood providing an alternative to SR 4 in these cities. Interchanges along SR 4 within the study area include Railroad Avenue, Loveridge Road, and Somersville Road.

Kirker Pass Road

Kirker Pass Road is a north-south roadway that runs between Buchanan Road in Pittsburg and Clayton Road in Concord. In the Pittsburg 2020 General Plan, Kirker Pass Road is identified as a major arterial. Kirker Pass Road has four lanes and is divided by medians and barriers along most of its length within the City of Pittsburg.

Railroad Avenue

Railroad Avenue is a north-south roadway that starts at 3rd Street and ends at Buchanan Road where it turns into Kirker Pass Road. Railroad Avenue is a four-lane major arterial, as identified in the Pittsburg 2020 General Plan.

Buchanan Road

Buchanan Road is an east-west roadway that runs between Railroad Avenue and Contra Loma Boulevard. In the vicinity of the project area, Buchanan Road has two lanes with a center turning lane, a bike lane on both sides and a sidewalk on the northern side. In the Pittsburg 2020 General Plan, Buchanan Road is identified as a major arterial in the roadway system.

Harbor Street

Harbor Street is a north-south roadway that runs from 3rd Street to Buchanan Road. Within the study area, Harbor Street has two travel lanes with left turn pockets and is identified as a minor arterial in the Pittsburg 2020 General Plan.

Loveridge Road

Loveridge Road is a north-south roadway that runs between East 3rd Street and Buchanan Road. Within the study area, Loveridge Road is a four-lane major arterial, as identified in the Pittsburg 2020 General Plan.

East Leland Road

East Leland Road is an east-west roadway that runs between Century Boulevard and turns into West Leland Road at Railroad Avenue. In the vicinity of the study area, East Leland Road is a four-lane major arterial, as identified in the Pittsburg General Plan, with a bike lane in each direction and a median.

Somersville Road

Somersville Road is a north-south roadway that runs from Century Boulevard to Oil Canyon Road. From Century Boulevard to James Donlon Boulevard, Somersville Road is identified as a major arterial in the Pittsburg 2020 General Plan with four lanes between Century Boulevard and the Contra Costa Canal and two lanes between the Contra Costa Canal and James Donlon Boulevard. This two-lane section is planned to be expanded to four lanes in the near future along with a new signal at James Donlon Boulevard and Somersville Road. South of James Donlon Boulevard, Somersville Road provides access to the Black Diamond Mines Regional Park. This roadway is located entirely outside the Pittsburg City Limits.

James Donlon Boulevard

James Donlon Boulevard is an east-west roadway that begins west of Somersville Road in the City of Antioch and runs east until Lone Tree Way. This roadway is a four-lane arterial divided by medians and left turn pockets with sidewalks on both sides along most of its length.

Intersection Analysis Methodology

Existing operational conditions at the 13 study intersections were evaluated according to the requirements set forth by the Contra Costa County Transportation Authority (CCTA) using the methodology set forth in the Final Technical Procedures Update (dated July 19, 2006). Additional analysis of traffic operations was conducted using the *2000 Highway Capacity Manual (HCM)* Level of Service (LOS) methodology with Synchro software.

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. **Table 5.7-1, Level of Service Definitions**, describes level of service conditions.

Table 5.7-1
Level of Service Definitions

Level of Service	Description
A	Represents free flow. Individual users are virtually unaffected by others in the stream.
B	Stable flow, but the presence of other users in the traffic stream begins to be noticeable.
C	Stable flow, but the beginning of the range of flow in which the operation of individual users becomes significantly affected by interactions with others in the traffic stream.
D	Represents high-density, but stable flow.
E	Represents operating conditions at or near capacity level.
F	Represents forced or breakdown flow.

Source: Impact Sciences, Inc., (2013).

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 CCTA standards are based on LOS and the volume to capacity ratio (V/C) for the entire intersection. 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 is presented for the intersection (Abrams Associates 2013). **Table 5.7-2, Level of Service Criteria for Signalized Intersections,** summarizes the relationship between LOS, average control delay, and the volume to capacity ratio at signalized intersections.

Table 5.7-2
Level of Service Criteria for Signalized Intersections

Level of Services	Average Delay (seconds/vehicle)	Volume to Capacity Ratio
A	≤ 10	< 0.60
B	10.1 – 20	> 0.61 to 0.70
C	20.1 – 35.0	> 0.71 to 0.80
D	35.1 – 55.0	> 0.81 to 0.90
E	55.1 – 80.0	> 0.91 to 1.00
F	> 80	> 1.00

Source: Highway Capacity Manual, (TRB 2000).

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 (Abrams Associates 2013). **Table 5.7-3, Level of Service Criteria for Unsignalized Intersections** summarizes the relationship between LOS and average control delay at unsignalized intersections.

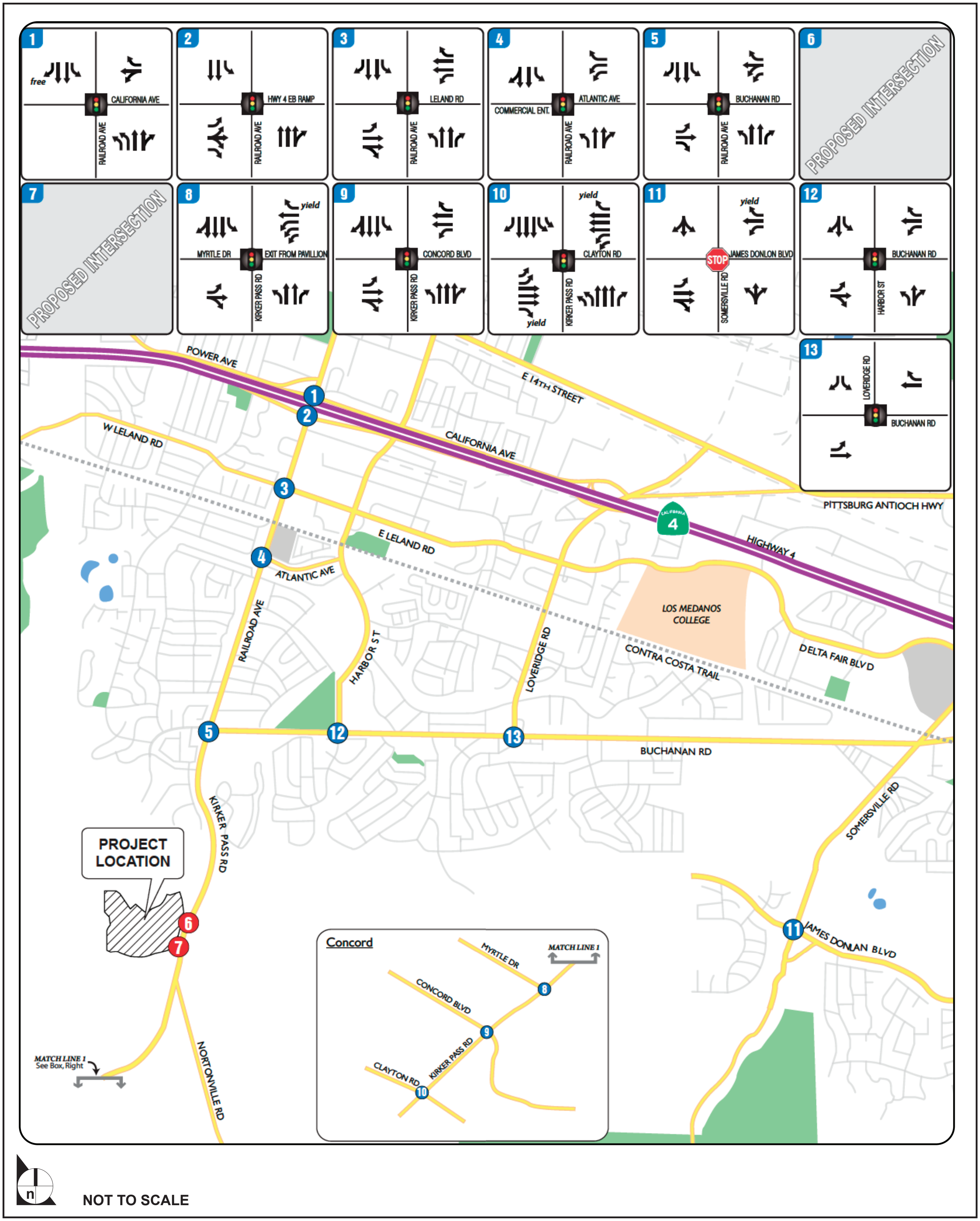
Table 5.7-3
Level of Service Criteria for Unsignalized Intersections

Level of Services	Average Delay (seconds/vehicle)
A	0 to 10
B	>10 to 15
C	>15 to 25
D	>25 to 35
E	>35 to 50
F	> 50

Source: Highway Capacity Manual, (TRB 2000).

Existing Intersection Capacity Conditions

The existing intersection geometry of the study intersections is presented in **Figure 5.7-2, Existing Lane Configurations,** and traffic volumes for weekday AM and PM peak hours are presented in **Figure 5.7-3, Existing AM (PM) Peak Hour Volumes**. Existing traffic counts for intersections 8, 9, and 10 were taken from the *Concord Community Reuse Plan Final Environmental Impact Report* (January 2010). Traffic counts at all of the remaining intersections were conducted between November 2012 and March 2013 at times when local schools were in session.



SOURCE: Abrams Associates, Inc., June 25, 2013

FIGURE **5.7-2**

Existing Lane Configurations

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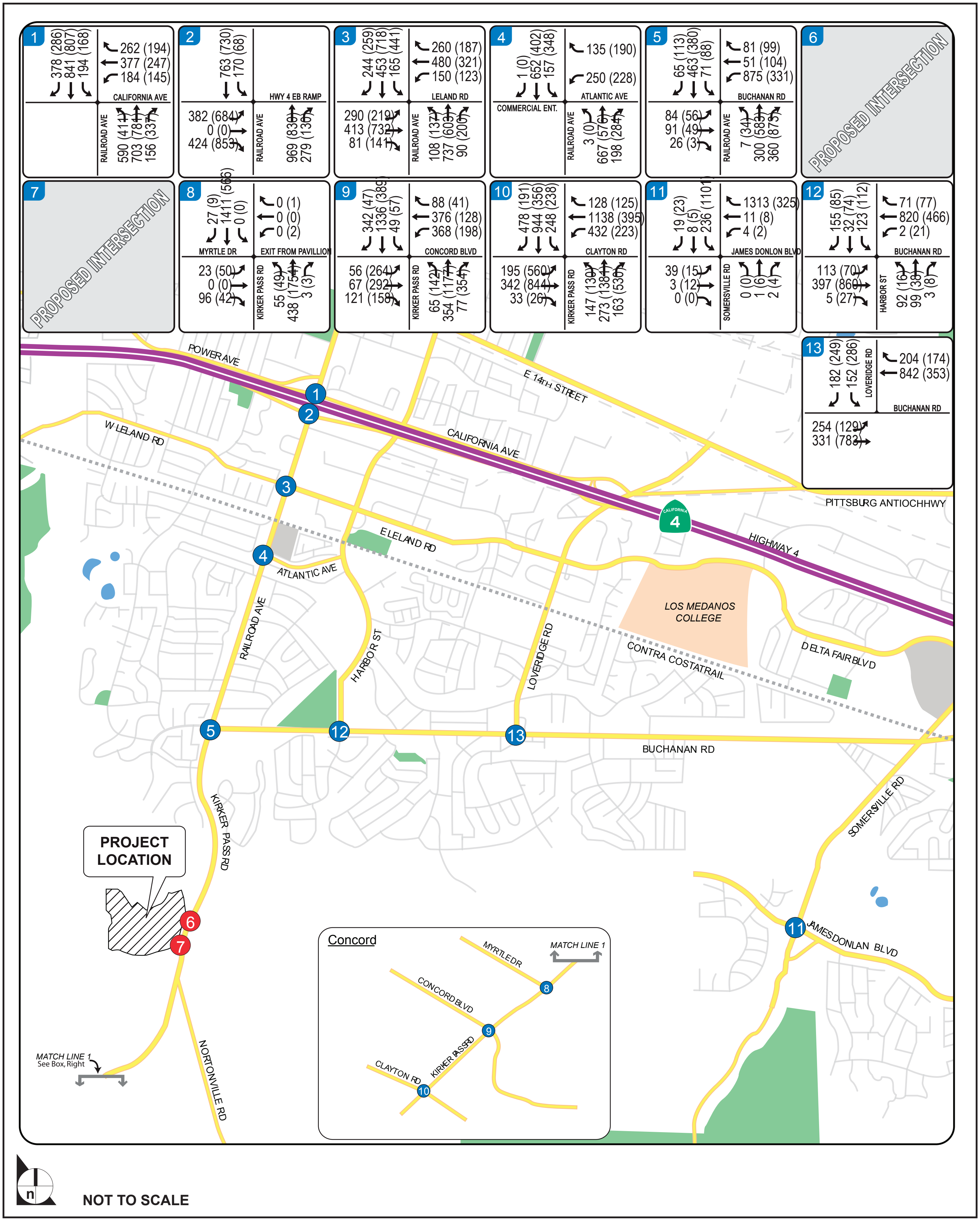

SOURCE: Abrams Associates, Inc., June 25, 2013

FIGURE 5.7-3

Existing AM (PM) Peak Hour Volumes

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Traffic counts conducted for the previous traffic analysis of the James Donlon Boulevard Extension (in 2007) were compared to the volumes counted six years later for this study (in 2013). This comparison indicated that the PM peak hour volumes on Kirker Pass Road have increased by about 6 percent during this six year period even though the Kirker Pass Road traffic travelling to and from Buchanan Road actually dropped by about 10 percent. This decrease on Buchanan Road was more than offset by the fact that the Kirker Pass Road traffic travelling to and from Railroad Avenue increased during this same period by about 25 percent. However, in general, the average vehicle volumes (ADT and peak hour) have declined and are currently similar to the volumes recorded back in 2000, according to the Contra Costa Transportation Authority's *Traffic Service Objective Monitoring Report*. **Table 5.7-4, Existing Intersection Level of Service Conditions,** summarizes the associated LOS computation results for the existing weekday AM and PM peak hour conditions.

It is also important to note that some of the queuing and delay that occurs on Buchanan Road is not fully reflected in the LOS calculations. This is because downstream traffic congestion during the peak hours often results in queues that limit the volume of traffic that can travel through adjacent intersections. In other words, the resulting LOS calculations do not always provide an accurate portrayal of the traffic operations because the volumes are restricted by the queuing problems that occur on Buchanan Road.

Planned Roadway Improvements

The most significant planned roadway improvement in the area is the proposed James Donlon Boulevard Extension. A portion of the expressway on the eastern side starting at Somersville Road and extending through the Black Diamond Ranch Project is complete. The project to complete the remainder of the expressway is in the planning stages and is currently being reviewed by the City of Pittsburg. If this project is approved, it would create a major east-west bypass that would alleviate the significant congestion that occurs on Buchanan Road during peak periods. The bypass roadway would connect the end of James Donlon Boulevard to Kirker Pass Road. Alternatives for connecting the new bypass roadway to Kirker Pass Road are being considered. This report analyzes an alternative where Kirker Pass Road would terminate at the traffic signal for the main entrance to the proposed project.

Pedestrian and Bicycle Facilities

Existing bicycle facilities are located along Kirker Pass Road from the Pittsburg City limits to the main project site. No other pedestrian facilities, such as a sidewalk or path, exist to connect the main project site with the existing development to the north.

Table 5.7-4
Existing Intersection Level of Service Conditions

	Intersection	Control	Peak Hour	Existing V/C Ratio	Existing LOS
1	Railroad Ave. & California Ave./SR 4 WB on-ramp	Traffic Signal	AM	0.76	C
			PM	0.65	B
2	Railroad Ave. & SR 4 Eastbound Ramp	Traffic Signal	AM	0.59	A
			PM	0.59	A
3	Railroad Ave. & Leland Rd.	Traffic Signal	AM	0.65	B
			PM	0.79	C
4	Railroad Ave. & Atlantic Ave.	Traffic Signal	AM	0.42	A
			PM	0.53	A
5	Railroad Ave. & Buchanan Rd.	Traffic Signal	AM	0.51	A
			PM	0.65	B
6	Proposed Future Intersection	Traffic Signal	AM	N/A	N/A
			PM	N/A	N/A
7	Proposed Future Intersection	Side Street Stop	AM	N/A	N/A
			PM	N/A	N/A
8	Kirker Pass Rd. & Myrtle Dr.	Traffic Signal	AM	0.30	A
			PM	0.56	A
9	Kirker Pass Rd. & Concord Blvd.	Traffic Signal	AM	0.66	B
			PM	0.60	B
10	Kirker Pass Rd. & Clayton Rd.	Traffic Signal	AM	0.59	A
			PM	0.65	B
11	Somersville Rd. & James Donlon Blvd.[a]	All Way Stop	AM	N/A	N/A
			PM	N/A	N/A
12	Buchanan Rd. & Harbor St.	Traffic Signal	AM	0.74	C
			PM	0.68	B
13	Buchanan Rd. & Loveridge Rd.	Traffic Signal	AM	0.73	C
			PM	0.62	B

Source: Abrams Associates Traffic Engineering, Inc., (2013).
Notes: Intersection Delay is presented in terms of the volume to capacity ratio. Please note that the CCTA methodology only applies to signalized intersections.

Transit Service

Three major public mass transit operators provide service within or adjacent to the study area, including BART and the Eastern Contra Costa Transit Authority, Tri Delta Transit, and County Connection Transit. These operators are further described below.

Bay Area Rapid Transit

BART is a rapid mass transit system, which provides regional transportation connections to much of the Bay Area. It runs from the North Bay Area in Richmond to the South Bay Area in Fremont. In the east-west direction it runs from Pittsburg to the San Francisco Airport and Milbrae with several connections in Oakland. The Pittsburg/Bay Point BART station, which is closest to the proposed project, serves all of Pittsburg, Bay Point, Antioch, and all other surrounding cities. BART trains from this station run from 4:00 AM to 12:00 midnight daily, with a weekday frequency of 15 minutes.

Tri Delta Transit

Tri Delta Transit serves eastern Contra Costa County (East County), including Brentwood, Oakley, Pittsburg, Antioch, Bay Point and unincorporated areas of the East County. Tri Delta Transit operates 14 local bus routes from Monday to Friday, including three express services, and three local bus routes during weekends and holidays. The Tri Delta Transit route that runs closest to the proposed project is Route 380, which has a bus stop approximately 1 mile north of the project at Railroad Avenue and Redondo Drive.

County Connection Transit

The County Connection currently operates 31 fixed-route bus routes on weekdays throughout Central Contra Costa County with limited service to the East County area. The route that serves the East County area is Route 93X. This is an express route that runs from the Hillcrest Park 'N Ride facility in Antioch, along Kirker Pass Road, along Ygnacio Valley Road, and ends at the Walnut Creek BART station. This route has a frequency of 30 minutes and runs from 5:07 AM to 7:41 PM during the weekdays. Currently, the bus stop for Route 93X nearest to the proposed project is located north of the project at Kirker Pass Road and Castlewood Drive.

REGULATORY FRAMEWORK

City of Pittsburg General Plan

The Pittsburg 2020 General Plan Transportation Element includes goals and policies related to traffic. The goals and policies applicable to the proposed project are listed below.

Street System and Traffic Standards

Goal 7-G-1	Achieve service level standards for roadway intersections that are based on the roadway's classification and location shown in Figure 7-2.

Policy 7-P-2 Use the adopted Regional and Local Transportation Impact Mitigation Fee ordinances to ensure that all new development pays an equitable pro-rata share of the cost of transportation improvements. Review the Traffic Impact Mitigation Fee schedule annually and update every five years at a minimum.

Level of Service (LOS) Standards

Policy 7-P-6 Ensure that all Regional Routes of Significance within the City maintain the following traffic levels of service (LOS) standards (applicable to non-freeway routes and routes not subject to a Traffic Management Program):

- LOS mid D (peak hour volume to capacity ratio less than or equal to 0.85) at intersections along major arterials, except for intersections along Bailey Road;
- LOS high E (peak hour volume to capacity ratio less than or equal to 0.99) at intersections along Bailey Road between West Leland Road and State Route 4; and
- LOS mid E (peak hour volume to capacity ratio less than or equal to 0.95) at intersections on Kirker Pass Road.

Bikeways and Pedestrian Movement

Bicycle and Pedestrian Access

Policy 7-P-33 Require mitigation for development proposals which result in potential conflicts, or fail to provide adequate access, for pedestrians and bicycles.

Policy 7-P-34 As part of development approval, ensure that safe and contiguous routes for pedestrians and bicyclists are provided within new development projects and on any roadways that are impacted as a result of new development.

Pedestrian Facilities

Policy 7-P-38	Develop a series of continuous pedestrian systems within Downtown and residential neighborhoods, connecting major activity centers and trails with City and County open space areas.
Policy 7-P-41	Ensure the provision of multi-use trails or trailheads within new hillside developments, preferably connecting to the regional trail network.

ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Thresholds of Significance

In accordance with Appendix G of the *2013 California Environmental Quality Act (CEQA) Guidelines*, the impact of the proposed project related to transportation and traffic would be considered significant 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 the County congestion management agency for designated roads or highways;
- Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks;
- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment);
- Result in inadequate emergency access; or
- Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

Intersection Impact Criteria

The goal of the City of Pittsburg is to maintain a LOS mid D during the peak hours (volume to capacity ratio less than or equal to 0.85) at all City intersections, with LOS mid E permissible at intersections along Kirker Pass Road, according to the City's General Plan. The goal of the City of Concord is to maintain a LOS mid E during peak hours on Ygnacio Valley Road, according to the City of Concord General Plan.

Signalized Intersections

Project-related operational impacts on the City of Pittsburg's signalized study intersections are considered significant if project-related traffic causes the LOS to deteriorate from LOS mid D or better to LOS high D, LOS E, or F, or from LOS E to LOS F. For Kirker Pass Road and Ygnacio Valley Road intersections in Concord, the impacts are considered significant if project-related traffic causes the LOS to deteriorate from LOS mid E or better to LOS high E, or LOS F.

Unsignalized Intersections

Project-related operational impacts on unsignalized intersections in Pittsburg 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.

CEQA Checklist Items Adequately Addressed in the Initial Study

The analysis in the Initial Study prepared for the project and circulated with the NOP concluded that further analysis of the following issues was not required in the EIR.

- Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks.

There are no public or private airports located within 2 miles of the City. The proposed project would consist of low-rise residential development that would not be located near, or interfere with the flight patterns of, any airports in the region or contribute to increased air traffic. There would be no impact with regard to this criterion.

- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).

The proposed project would be required to comply with the City's design standards and the design standards in the Uniform Fire Code for emergency access. Required compliance with these existing standards would prevent hazardous design features and would ensure adequate and safe access. According to the traffic study, 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 through traffic and vehicles backing out of the driveways and/or garages within the main project site. At the main project entrance on Kirker Pass Road no capacity problems were identified with the proposed project driveway configuration (Abrams Associates 2013). This impact is considered less than significant.

- Result in inadequate emergency access.

The proposed project would comply with all building, fire, and safety codes and specific development plans would be subject to review and approval by the Public Works and Development Services Departments and the Contra Costa County Fire Protection District. Required review by these departments would ensure that the proposed circulation system for the main project site would provide adequate emergency access. In addition, the proposed project would not cause any permanent or temporary closures to any roadway. There would be no impact with respect to this criterion.

Methodology

Project Trip Generation

The proposed project will consist of 356 single-family dwellings. However, the transportation study based its analysis on 368 trips. The trip generation calculations are shown in **Table 5.7-5, Trip Generation Calculations**. They are based on the trip generation for Single-Family Detached Housing (Land Use Code 210) from the Institute of Transportation Engineers' (ITE's) Trip Generation (8th Edition).

Table 5.7-5
Trip Generation Calculations

Land Use	ITE Code	Size	ADT	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total
Single-Family Detached Housing	210	368 units	3,448	67	202	269	214	125	339

Source: Abrams Associates Traffic Engineering, Inc., (2013).

The weighted trip rate for ITE Code 210 is 9.57 trips per unit while the trip rate used to estimate project trips was slightly less at 9.37 trips per unit. However, the reduced trip rate used for the proposed project is based on standard traffic engineering practice. There is a large body of data on trip generation for single-family detached housing and according to ITE the "fitted curve equations" shall be used to determine the trip generation when there is enough data to meet certain statistical criteria that has been established. In the case of the proposed project, the fitted curve equations yield results that are about 9 percent less than the weighted average rates. This is because the average number of units in the projects surveyed (i.e., in the 314 subdivisions where trip generation was surveyed for the ITE rates) was about 200 units and the proposed project is larger (with 368 units).

Please note that the results using the fitted curve equations are considered more accurate because they account for internal trip making associated with larger developments which reduces the net external trip generation of the project. In other words, the homes themselves are still assumed to generate the same amount of traffic per unit but the fitted curve equations account for the fact that more internal trips will occur in larger subdivisions. The following are a few examples of why this occurs: (1) typically in larger subdivisions more people would be able to share rides to work and school; (2) people are more likely to utilize businesses such as small child care and elder care operations being run out of people's homes within the project site; and (3) there are typically more internal trips from people visiting the homes of friends and family within a larger subdivision. Please note that the increased internal trips between the homes of family and friends are also sometimes associated with child or elder care.

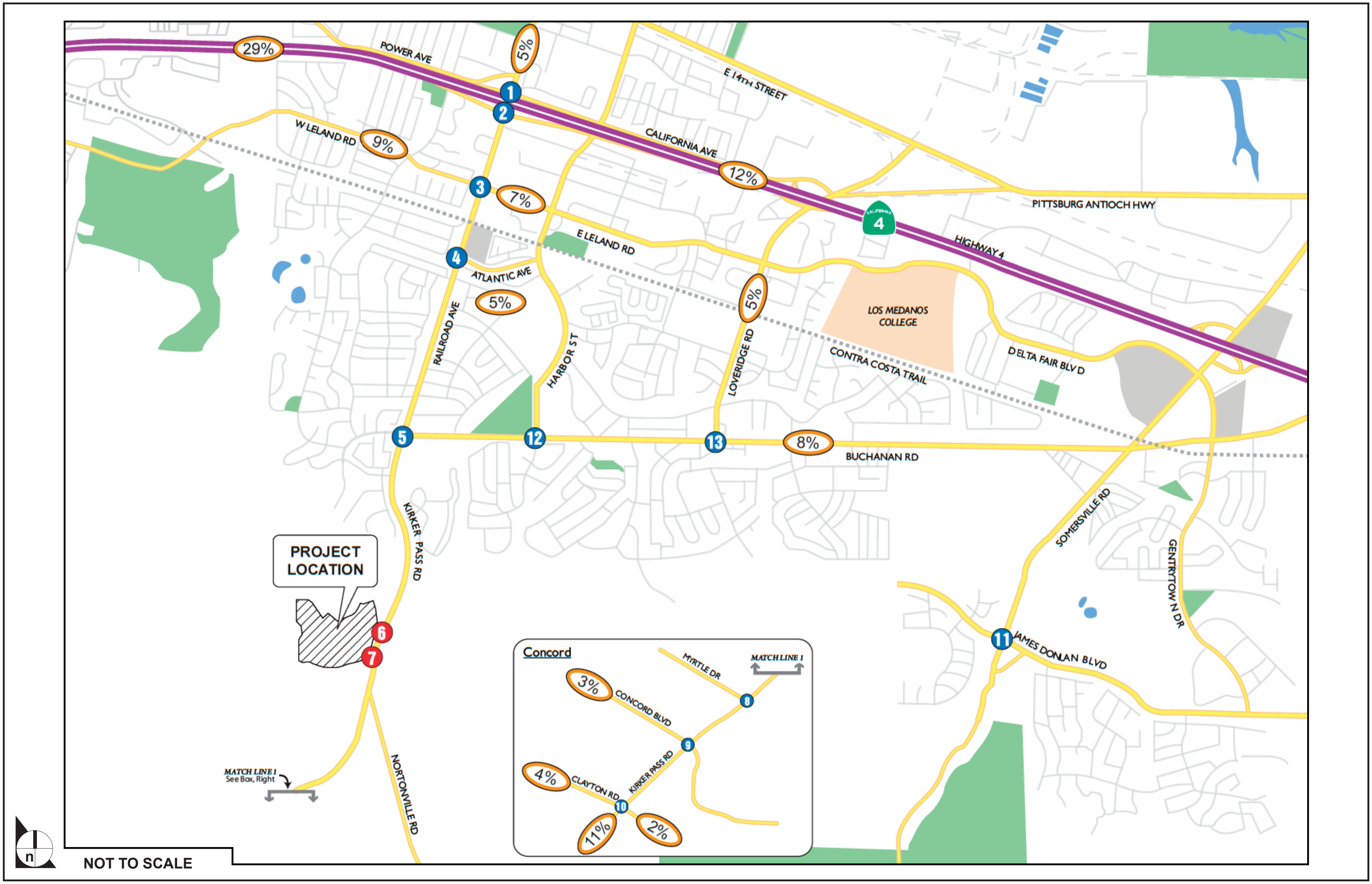
The total trips listed in **Table 5.7-5** reflect all vehicle trips that would be counted at the project driveways on Kirker Pass Road, both inbound and outbound. Since the project is residential, no adjustments were applied to account for pass-by or internal trips. The project is projected to generate a total of 269 vehicle trips during the AM peak hour and 339 trips during the PM peak hour.

For purposes of determining the reasonable worst-case impacts of traffic on the surrounding street network from a proposed project, the trips generated by this proposed development are estimated for the peak commute hours of 7:15 AM and 8:15 AM, and 4:45 PM and 5:45 PM, which represent the peak of "adjacent street traffic." This is the period when the project traffic would generally contribute to the greatest amount of congestion.

Project Trip Distribution

The trip distribution assumptions used in the traffic study are based on the project's proximity to freeway interchanges, the existing directional split at other local driveways and intersections, and the overall land use patterns in the area. **Figure 5.7-4, Existing Trip Distribution,** shows the percentage of project traffic assigned to various study roadways and **Figure 5.7-5, Project Trip Generation,** shows the AM and PM peak hour trips added by the proposed project at each study area intersection.

Additional research was conducted to verify the project trip distribution and the percentage of project traffic assigned to use Kirker Pass Road and Ygnacio Valley Road. Based on surveys of typical residential trip generation characteristics it can be shown that approximately 30 percent of peak hour residential trips are to and from work and/or university/college destinations (which comprise 6 percent of the total daily trips). If the "other" category of trips is also included then the net percentage of project trips that is not destined for local destinations should be a maximum of 45 percent. As seen in **Figure 5.7-4**, the project trip distribution assumes that 49 percent of project trips without the James Donlon Boulevard Extension and 46 percent of project trips with the James Donlon Boulevard Extension would travel to and from destinations to the west via SR 4 and Kirker Pass Road. Please note this does not include the project trips assumed to be headed west towards the Bay Point BART station.



SOURCE: Abrams Associates, Inc., June 25, 2013

FIGURE 5.7-4

Existing Trip Distribution

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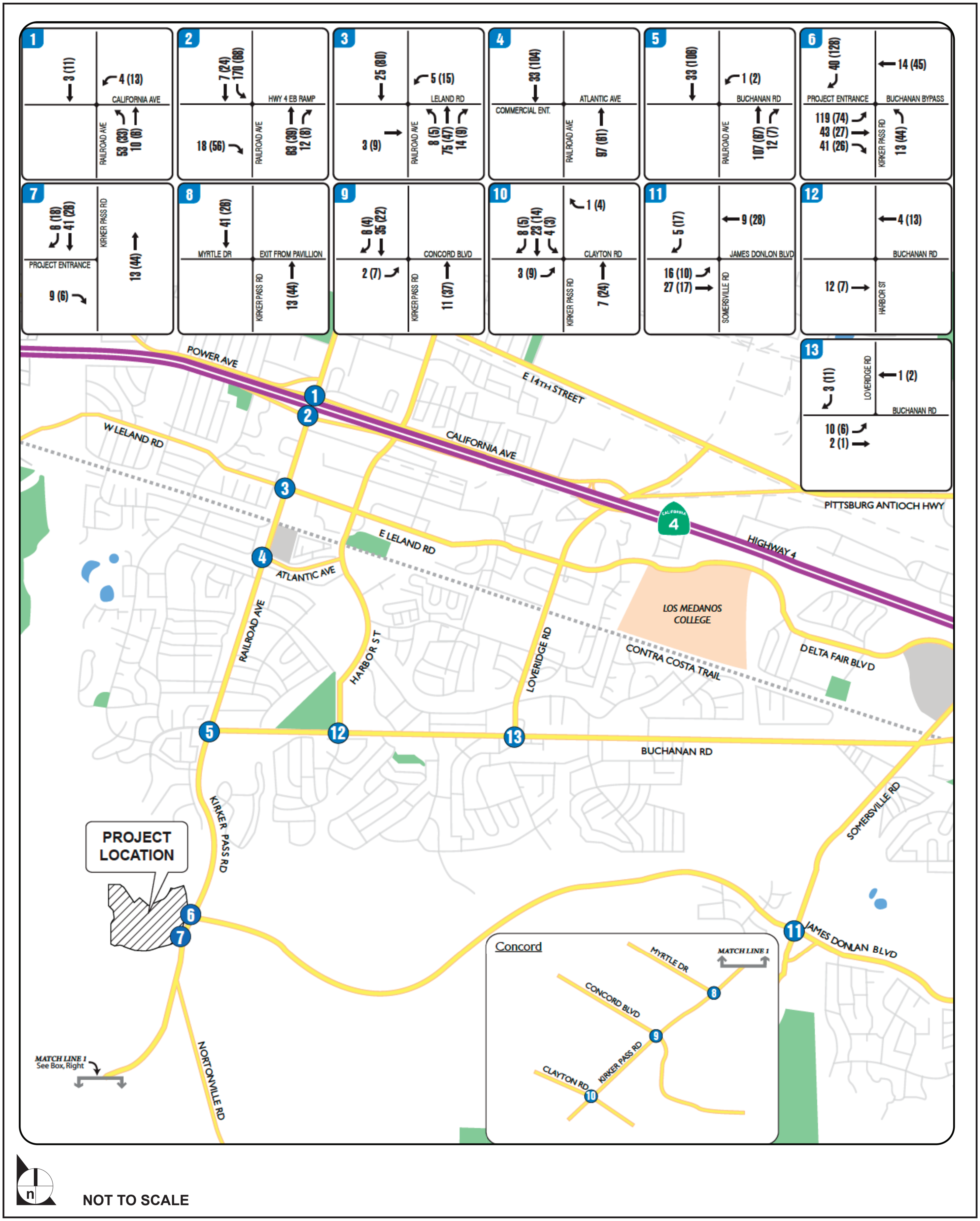

SOURCE: Abrams Associates, Inc., June 25, 2013

FIGURE 5.7-5

Project Trip Generation

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As shown in **Figure 5.7-3**, based the existing traffic volumes Kirker Pass Road carries a PM peak hour volume of approximately 2,400 vehicles per hour west of the main project site (total of both directions). Based on Caltrans traffic data SR 4 carries a total peak hour volume of approximately 8,600 vehicles. Using these volumes to distribute the 45 percent of work, college, and "other" trips, it can be concluded that approximately 10 percent of project traffic would use Kirker Pass Road and 35 percent would use SR 4. However, based on the project's location on Kirker Pass Road and traffic counts taken at adjacent residential projects (including Kirker Creek Apartments located approximately 2,000 feet north of the project entrance) it was conservatively assumed that 20 percent of the project traffic would head west via Kirker Pass Road.

The traffic assigned to Kirker Pass Road was then proportionally distributed to Ygnacio Valley Road, Clayton Road, and Concord Boulevard based on the relative volumes of traffic on each roadway. This resulted in the conclusion that approximately 11 percent of the total project traffic would travel to and from the west on Ygnacio Valley Road, beyond Clayton Road and Concord Boulevard. The distribution along Ygnacio Valley Road used in the transportation study is valid for both the AM and PM hour even though traffic signal metering is not in effect along Ygnacio Valley Road during the PM hour as severe congestion during the PM peak hour along this roadway has the same effect as metering.

Note that peak hour traffic counts were also conducted in 2010 and again in 2013 at the nearby intersection of Pheasant Drive and Kirker Pass Road (entrance to the Kirker Creek Apartments). This intersection serves as the only access to a nearby project that is exclusively residential (similar to the proposed project) and therefore can provide comparable data to verify the expected travel characteristics of the proposed project's residents. Based on the traffic counts conducted at the Kirker Creek Apartments entrance during the worst-case PM peak hour, 20 percent of the traffic generated by this existing residential area was found to travel to and from the west on Kirker Pass Road and 80 percent traveled to and from the east towards Pittsburg. These traffic counts provide further verification of the trip distribution assumptions used in this analysis.

Impact Analysis

Impact TRA-1 **Implementation of the proposed project would not conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system under Baseline plus Project conditions with and without the James Donlon Boulevard Extension and under Existing plus Project conditions.** ***(Less than significant)***

To determine the potential impact of the proposed project on each study intersection, traffic volumes generated by the proposed project were added to baseline traffic conditions with and without the addition of the James Donlon Boulevard Extension. Baseline conditions consist of existing traffic plus anticipated traffic from approved developments (the approved Sky Ranch II and Black Diamond Ranch residential projects) that would substantially affect the volumes at project study intersections. Tuscany Meadows was not included in Baseline conditions, as traffic from this project would not substantially affect volumes at project study intersections. The James Donlon Boulevard Extension consists of a planned bypass roadway that would connect James Donlon Boulevard to Kirker Pass Road in an effort to relieve traffic along Buchanan Road to the north. A portion of the James Donlon Boulevard Extension extending from Somersville Road through the Black Diamond Ranch project has already been completed. Alternatives for connecting the new bypass roadway are currently being considered. The traffic study assumed that the bypass roadway would terminate at the traffic signal for the main entrance to the main project site. **Figure 5.7-6, Proposed and Approved Projects**, identifies the location of the projects assumed under the baseline conditions and **Figure 5.7-7, Baseline AM (PM) Peak Hour Volumes**, presents the resulting baseline volumes at each of the project study intersections.

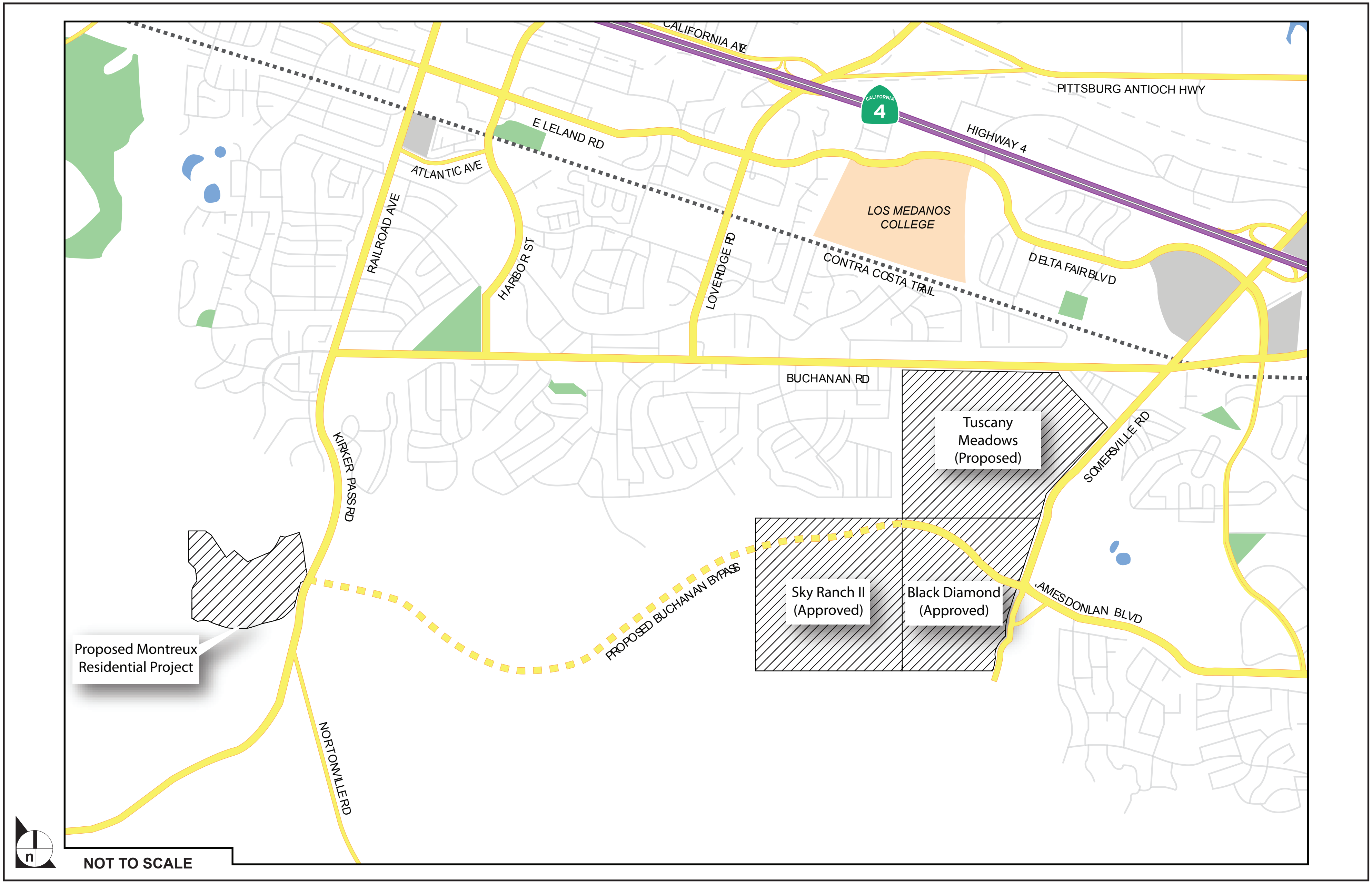
Baseline plus project traffic forecasts were developed by adding project-related traffic to the baseline traffic volumes. **Figure 5.7-8, Baseline Plus Project AM (PM) Peak Hour Volumes**, presents the base plus project volumes that were used in the analysis. As shown in **Table 5.7-6, Baseline Intersection Level of Service Conditions**, all study intersections would operate in accordance with LOS standards contained in the City of Pittsburg and City of Concord General Plans under baseline plus project conditions with or without the James Donlon Boulevard Extension.

In addition, an analysis was completed with project traffic volumes added to existing traffic volumes at the study intersections, although due to project timing such a scenario would not actually occur. As shown in **Table 5.7-7, Existing Intersection Level of Service Conditions**, all study intersections would operate in accordance with LOS standards contained in the City of Pittsburg and City of Concord General Plans under existing plus project conditions.

Based on the analysis provided above, the proposed project would not conflict with measures of effectiveness for the performance of the circulation system contained in the City of Pittsburg and City of Concord General Plans. Impacts on the circulation system would be less than significant.

Mitigation Measures

No mitigation measures are required.



SOURCE: Abrams Associates, Inc., June 25, 2013

FIGURE **5.7-6**

Proposed and Approved Projects

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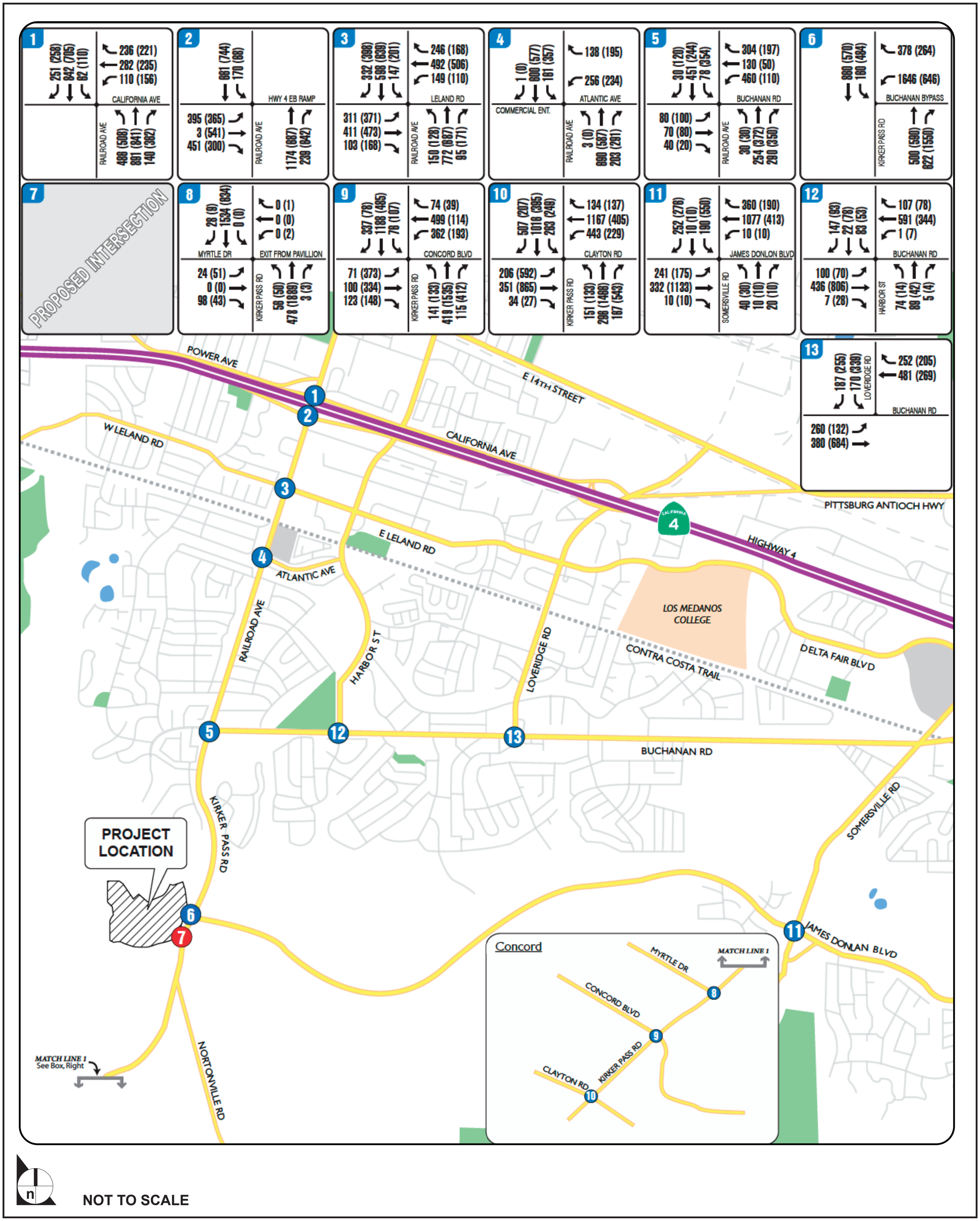
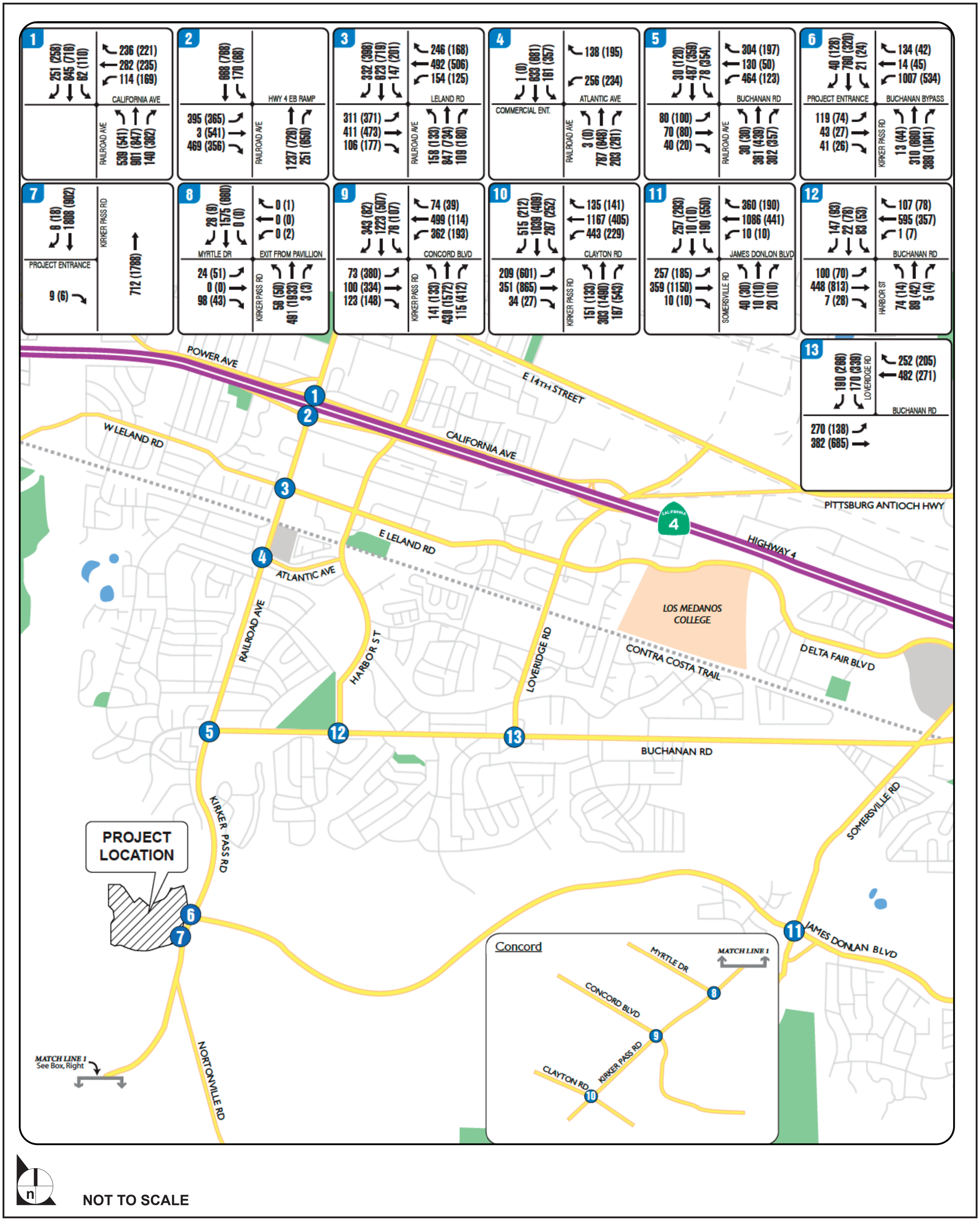


SOURCE: Abrams Associates, Inc., June 25, 2013

FIGURE 5.7-7

Baseline AM (PM) Peak Hour Volumes



SOURCE: Abrams Associates, Inc., June 25, 2013

FIGURE **5.7-8**

Baseline Plus Project AM (PM) Peak Hour Volumes

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Table 5.7-6
Baseline Intersection Level of Service Conditions

	Intersections	Control	Peak Hour	Without James Donlon Boulevard Extension				With James Donlon Boulevard Extension			
				Baseline		Baseline Plus Project		Baseline		Baseline Plus Project	
				V/C Ratio	LOS	V/C Ratio	LOS	V/C Ratio	LOS	V/C Ratio	LOS
1	Railroad Ave. & California Ave./SR 4 WB on-ramp	Traffic Signal	AM	0.63	B	0.65	B	0.63	B	0.65	B
			PM	0.64	B	0.66	B	0.64	B	0.65	B
2	Railroad Ave. & SR 4 Eastbound Ramp	Traffic Signal	AM	0.61	B	0.63	B	0.61	B	0.63	B
			PM	0.80	C	0.81	D	0.80	C	0.80	D
3	Railroad Ave. & Leland Rd.	Traffic Signal	AM	0.66	B	0.69	B	0.66	B	0.68	B
			PM	0.71	C	0.73	C	0.71	C	0.72	C
4	Railroad Ave. & Atlantic Ave.	Traffic Signal	AM	0.48	A	0.52	A	0.44	A	0.46	A
			PM	0.54	A	0.56	A	0.54	A	0.56	A
5	Railroad Ave. & Buchanan Rd.	Traffic Signal	AM	0.72	C	0.73	C	0.40	A	0.41	A
			PM	0.85	D	0.86	D	0.50	A	0.51	A
6	Kirker Pass Rd. & Montreux Main Driveway	Traffic Signal	AM	N/A	N/A	0.62	B	0.54	A	0.60	A
			PM	N/A	N/A	0.55	C	0.38	A	0.41	A
7	Kirker Pass Rd. & Montreux Secondary Driveway[a]	Side Street Stop	AM	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			PM	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
8	Kirker Pass Rd. & Myrtle Dr.	Traffic Signal	AM	0.32	A	0.32	A	0.32	A	0.32	A
			PM	0.60	B	0.62	B	0.50	B	0.62	B
9	Kirker Pass Rd. & Concord Blvd.	Traffic Signal	AM	0.67	B	0.68	B	0.67	B	0.68	B
			PM	0.72	C	0.73	C	0.72	C	0.73	C
10	Kirker Pass Rd. & Clayton Rd.	Traffic Signal	AM	0.62	B	0.63	B	0.62	B	0.63	B
			PM	0.69	B	0.70	B	0.69	B	0.70	B
11	Somersville Rd. & James Donlon Blvd.[a]	Traffic Signal	AM	0.33	A	0.33	A	0.55	A	0.57	A
			PM	0.61	B	0.61	A	0.55	A	0.55	A
12	Buchanan Rd. & Harbor St.	Traffic Signal	AM	0.82	D	0.82	D	0.58	A	0.58	A
			PM	0.78	C	0.79	C	0.64	B	0.65	B
13	Buchanan Rd. & Loveridge Rd.	Traffic Signal	AM	0.76	C	0.77	C	0.53	A	0.54	A
			PM	0.77	C	0.77	C	0.60	A	0.60	A

Source: Abrams Associates Traffic Engineering, Inc., 2013).

[a] *For non-signalized intersections, the traffic study indicates that all stop-controlled side-street approaches would continue to operate at LOS D or better.*

Table 5.7-7
Existing Intersection Level of Service Conditions

	Intersection	Control	Peak Hour	Existing V/C Ratio	Existing LOS	Existing Plus Project V/C Ratio	Existing Plus Project LOS
1	Railroad Ave. & California Ave./SR 4 WB on-ramp	Traffic Signal	AM	0.76	C	0.78	C
			PM	0.65	B	0.67	B
2	Railroad Ave. & SR 4 Eastbound Ramp	Traffic Signal	AM	0.59	A	0.61	B
			PM	0.59	A	0.61	B
3	Railroad Ave. & Leland Rd.	Traffic Signal	AM	0.65	B	0.67	B
			PM	0.79	C	0.82	D
4	Railroad Ave. & Atlantic Ave.	Traffic Signal	AM	0.42	A	0.46	A
			PM	0.53	A	0.55	A
5	Railroad Ave. & Buchanan Rd.	Traffic Signal	AM	0.51	A	0.54	A
			PM	0.65	B	0.66	B
6	Kirker Pass Rd. & Montreux Main Driveway	Traffic Signal	AM	N/A	N/A	0.53	A
			PM	N/A	N/A	0.50	A
7	Kirker Pass Rd. & Montreux Secondary Driveway[a]	Side Street Stop	AM	N/A	N/A	N/A	N/A
			PM	N/A	N/A	N/A	N/A
8	Kirker Pass Rd. & Myrtle Dr.	Traffic Signal	AM	0.30	A	0.30	A
			PM	0.56	A	0.58	A
9	Kirker Pass Rd. & Concord Blvd.	Traffic Signal	AM	0.66	B	0.67	B
			PM	0.60	B	0.61	B
10	Kirker Pass Rd. & Clayton Rd.	Traffic Signal	AM	0.59	A	0.60	A
			PM	0.65	B	0.66	B
11	Somersville Rd. & James Donlon Blvd.[a]	All Way Stop	AM	N/A	N/A	N/A	N/A
			PM	N/A	N/A	N/A	N/A
12	Buchanan Rd. & Harbor St.	Traffic Signal	AM	0.74	C	0.74	C
			PM	0.68	B	0.68	B
13	Buchanan Rd. & Loveridge Rd.	Traffic Signal	AM	0.73	C	0.73	C
			PM	0.62	B	0.63	B

Source: Abrams Associates Traffic Engineering, Inc., (2013).
Note:
[a] *CCTA methodology only applies to signalized intersections*

Impact TRA-2 **Implementation of the proposed project would not conflict with an applicable congestion management program.** ***(Less than significant)***

Kirker Pass Road in the vicinity of the main project site is designed as a principal arterial in the Contra Costa Congestion Management Program network (CCTA 2009). As discussed above, all study intersections along Kirker Pass Road would operate at an acceptable LOS under baseline plus project conditions with or without the James Donlon Boulevard Extension and under existing plus project conditions. Therefore, a conflict with the applicable congestion management plan would not occur and this impact would be less than significant.

Mitigation Measures

No mitigation measures are required.

Impact TRA-3 **Implementation of the proposed project has the potential to conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.** ***(Potentially Significant)***

According to the traffic study, the proposed project would not significantly impact any existing bicycle or pedestrian facilities, including bike lanes, routes, or paths. General Plan Policy 7-P-33 requires that development proposals provide mitigation if they fail to provide adequate access for pedestrians and bicycles while General Plan Policy 7-P-34 requires that safe and contiguous routes for pedestrians and bicyclists are provided within new development projects. In addition, General Plan Policy 7-P-38 requires the development of a series of continuous pedestrian systems within Downtown and residential neighborhoods, connecting major activity centers and trails with City and County open space areas. The current project plans do not show a pedestrian connection to existing retail uses or parks located to the north of the main project site. Thus, the proposed project conflicts with the policies described above, and this represents a potentially significant impact. However, with implementation of **Mitigation Measure MM TRA-3**, which requires the developer to construct a sidewalk along the west side of Kirker Pass Road, or some other alternative pedestrian access route, connecting the main project site to the nearest existing sidewalk to the north, the impact would be reduced to a less than significant level.

Concerning public transit, the proposed project would include a bus stop near the entrance to the subdivision that would allow bus service to be extended to the main project site. In addition, the proposed project is located approximately 3 miles from the existing Pittsburg-Bay Point BART station and about 2 miles from the proposed eBART station along SR 4 at Railroad Avenue. As a result of the accommodation for bus service to the main site and the close proximity of the main site to other regional transit facilities, the proposed project would not conflict with adopted policies, plans, or programs regarding public transit, and this impact is less than significant.

Mitigation Measures

MM TRA-3 The developer shall construct a sidewalk along the west side of Kirker Pass Road, or some other alternative pedestrian access route, connecting the project site to the nearest existing sidewalk to the north. The sidewalk or alternative pedestrian route shall be constructed prior to occupancy of the first units constructed on the project site.

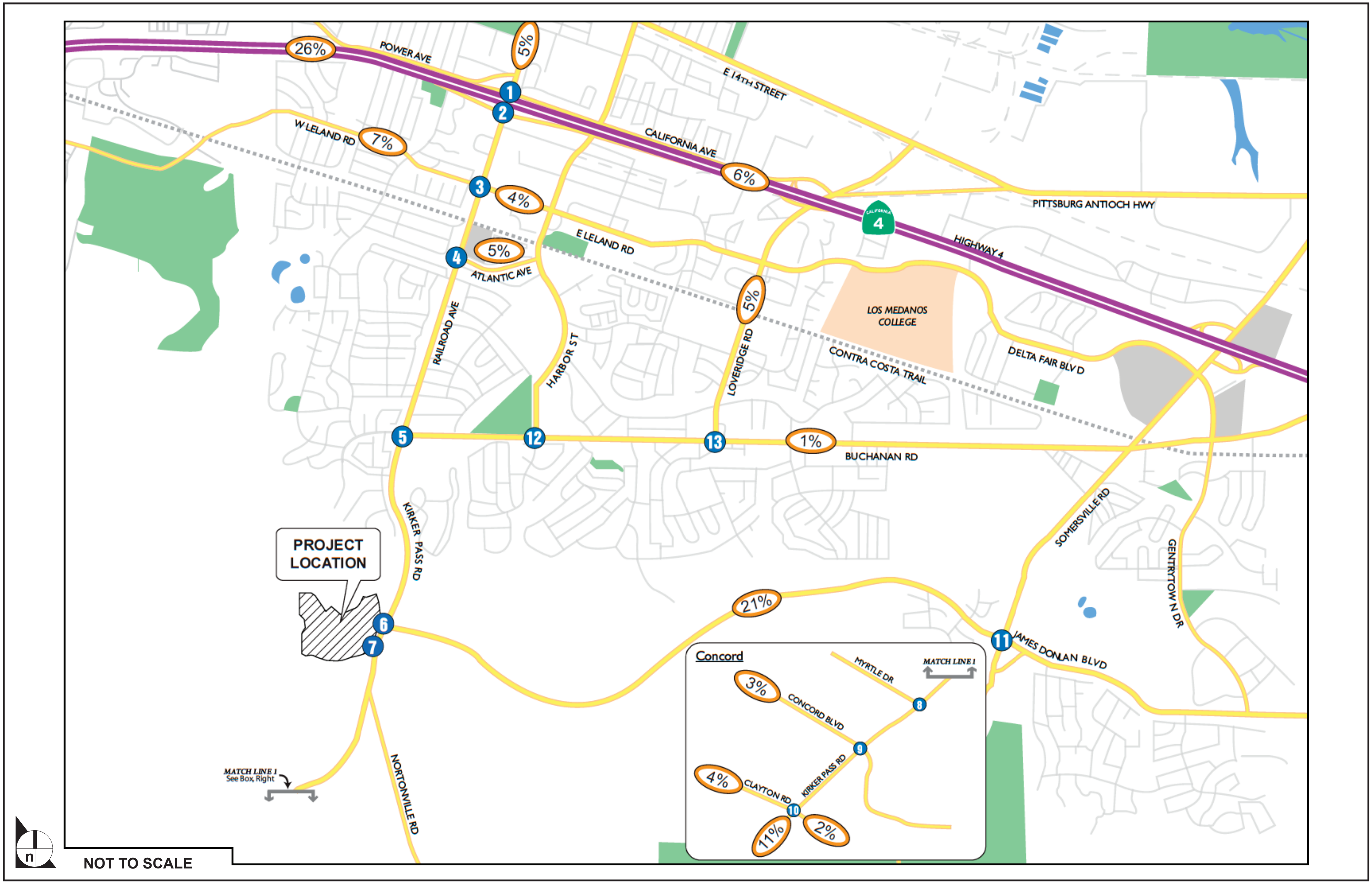
Residual Impacts after Mitigation

This impact would be reduced to a less than significant level.

Cumulative Impacts

Impact TRA-4: **Implementation of the proposed project, in conjunction with other reasonably foreseeable future development, would not conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system under Cumulative (2035) plus Project conditions with or without the James Donlon Boulevard Extension. (*Less than significant*)**

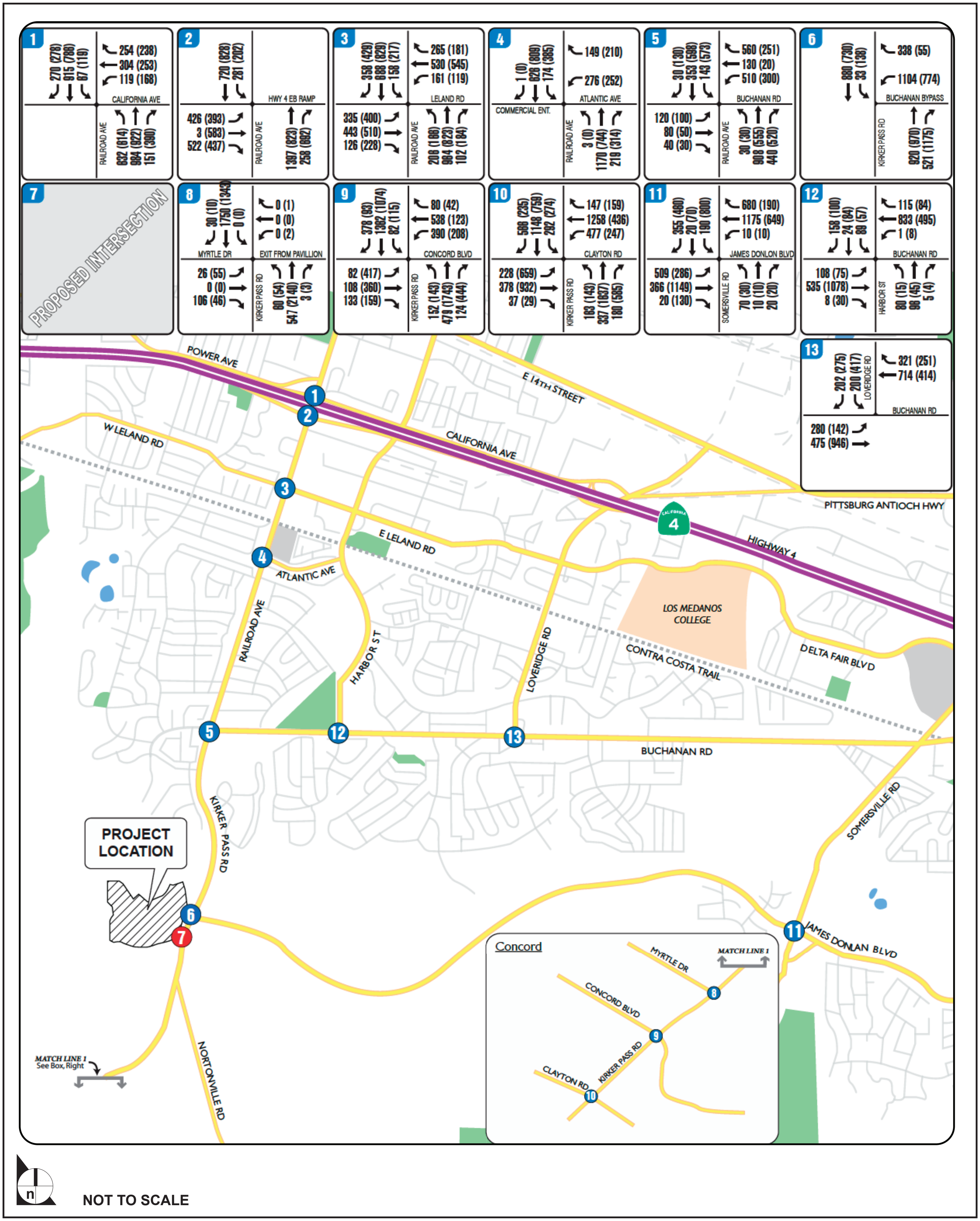
For cumulative conditions (2035), the intersection traffic volumes were estimated based on the existing turning movements plus traffic from all reasonably foreseeable projects, including the previously approved Sky Ranch II and Black Diamond Ranch residential subdivisions, and the proposed Tuscany Meadows residential subdivision, plus the addition of growth estimated by the County's traffic model. The cumulative analysis also took into account the anticipated traffic from the planned city center project as per the *Railroad Avenue Specific Plan Environmental Impact Report*. **Figure 5.7-9, Future Trip Distribution,** shows the project trip distribution with the planned James Donlon Boulevard Extension. **Figure 5.7-10, Cumulative AM (PM) Peak Hour Volumes**, (With James Donlon Boulevard Extension), presents cumulative (no project) traffic volumes at each of the project study intersections and **Figure 5.7-11, Cumulative Plus Project AM (PM) Peak Hour Volumes**, (With James Donlon Boulevard Extension), presents the volumes with the addition of traffic from the proposed residential project. **Figure 5.7-12, Cumulative Plus Project AM (PM) Peak Hour Volumes – No Bypass**, (No James Donlon Boulevard Extension), illustrates the peak hour volumes plus the estimated traffic created by the proposed project without the construction of the James Donlon Boulevard Extension.



SOURCE: Abrams Associates, Inc., June 25, 2013

FIGURE **5.7-9**

Future Trip Distribution



SOURCE: Abrams Associates, Inc., June 25, 2013

FIGURE **5.7-10**

Cumulative AM (PM) Peak Hour Volumes

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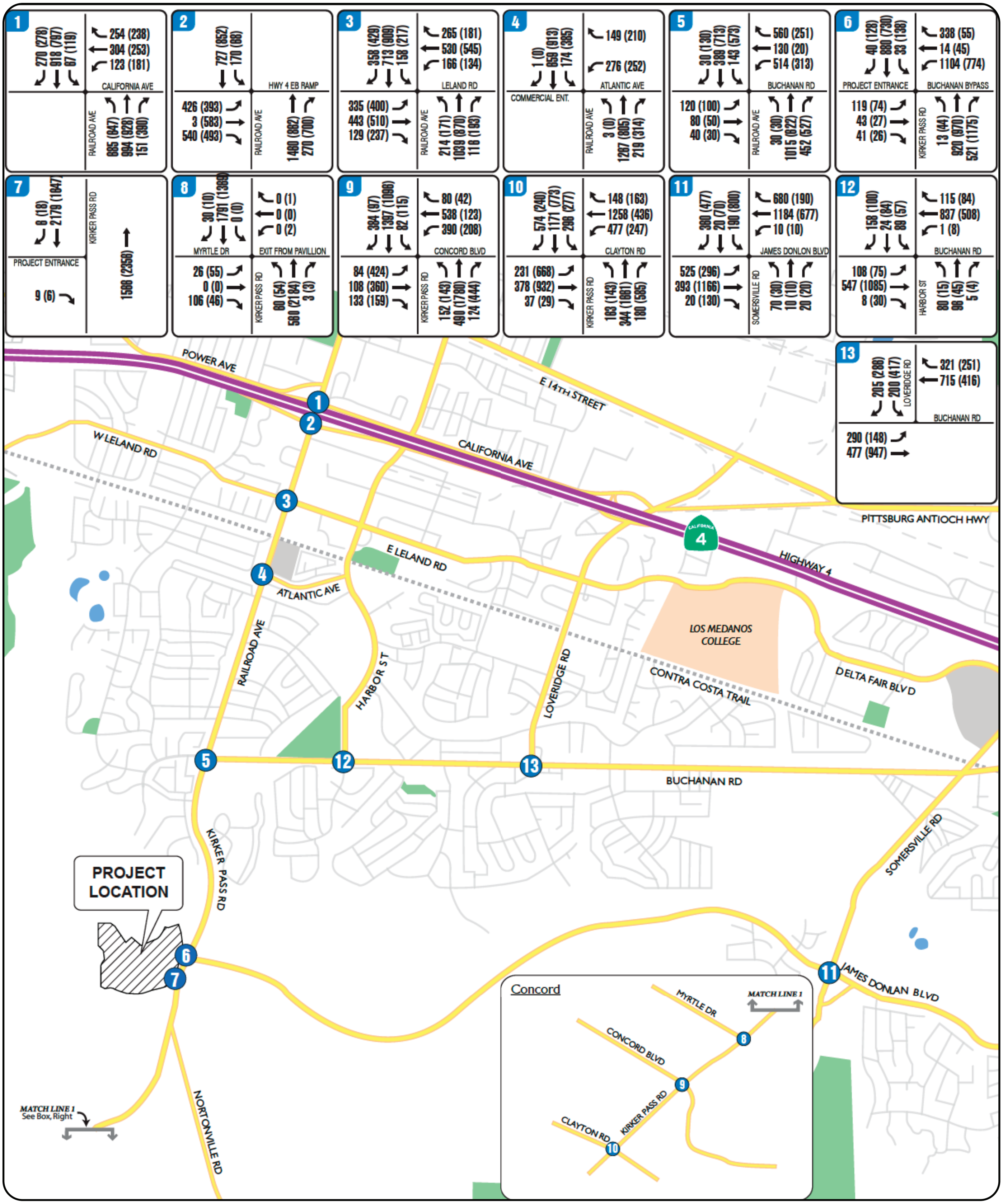

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NOT TO SCALE

SOURCE: Abrams Associates, Inc., June 25, 2013

FIGURE **5.7-11**

Cumulative Plus Project AM (PM) Peak Hour Volumes

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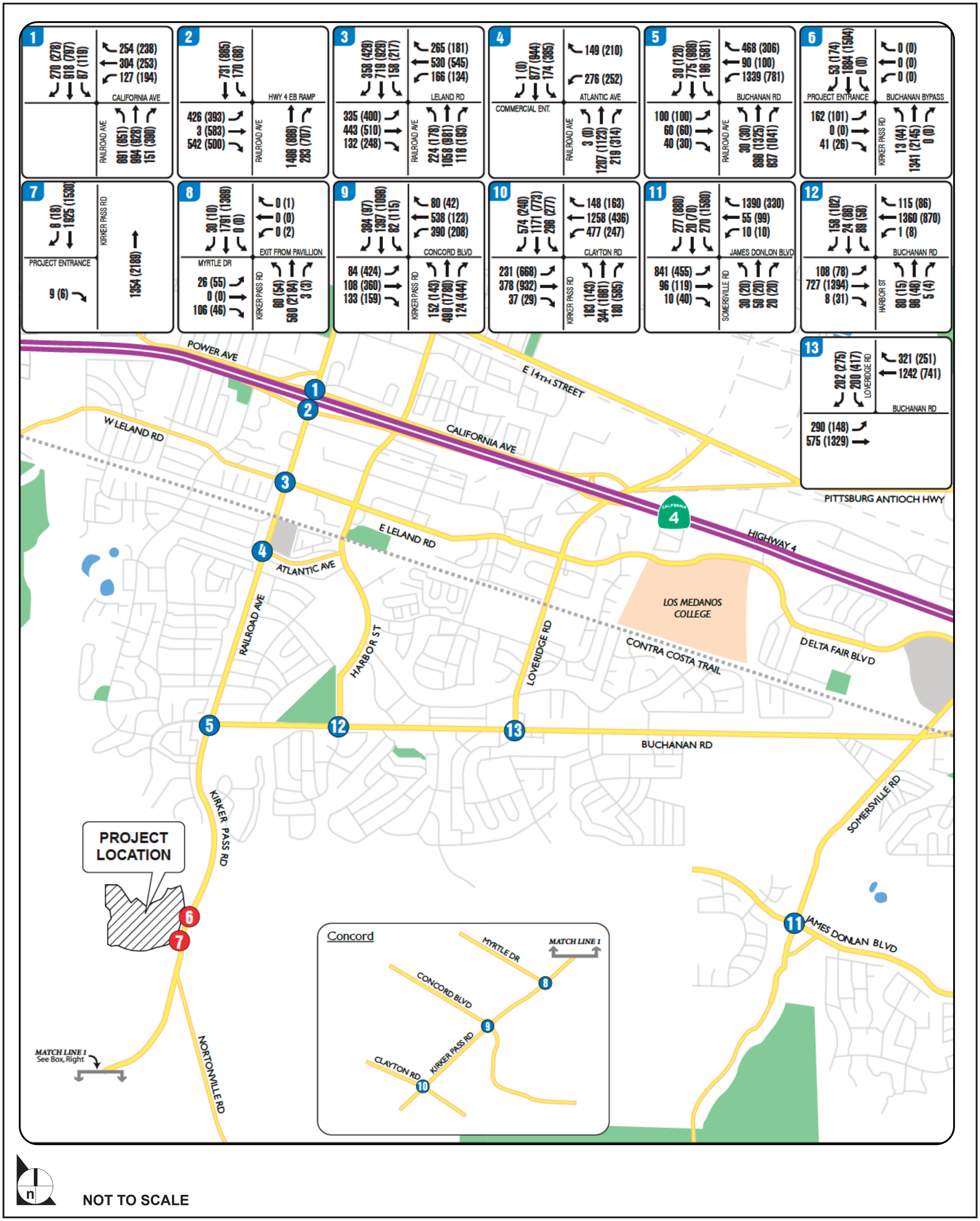

SOURCE: Abrams Associates, Inc., June 25, 2013

FIGURE **5.7-12**

Cumulative Plus Project AM (PM) Peak Hour Volumes – No Bypass

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As shown in **Table 5.7-8, Cumulative (2035) Intersection Level of Service Conditions**, all of the signalized study intersections would continue to operate in accordance with LOS standards contained in the City of Pittsburg and City of Concord General Plans during the weekday AM and PM peak hours with the James Donlon Boulevard Extension. For the unsignalized study intersections, all of the stop-controlled side-street approaches would continue to operate in accordance with LOS standards contained in the City of Pittsburg General Plan with the James Donlon Expressway. For comparison, **Table 5.7-8** also presents the LOS results for the Cumulative Plus Project traffic conditions without the construction of the James Donlon Boulevard Extension. As shown in **Table 5.7-8**, not all of the intersections would operate in accordance with LOS standards contained in the City of Pittsburg and City of Concord General Plans without the James Donlon Boulevard Extension. Under this scenario, the intersections of Railroad Avenue and Buchanan Road (Intersection 5), Buchanan Road and Harbor Street (Intersection 12), and Buchanan Road and Loveridge Road (Intersection 13) would operate at LOS E or worse under AM and PM peak hour conditions. However, Buchanan Road is included in the East County Action Plan, which is intended to reduce cumulative regional traffic impacts of forecast development in eastern Contra Costa County, and is subject to a Traffic Management Plan. According to the action plan, intersections with an LOS E or F designation that are subject to a Traffic Management Plan are acceptable. Therefore, the cumulative impacts with regard to intersection capacity and LOS with and without the James Donlon Expressway would be less than significant.

Mitigation Measures

No mitigation measures are required.

REFERENCES

Abrams Associates Traffic Engineers, Inc., 2013. *Montreux Residential Project Subdivision 8279 Traffic Impact Study.* June 25. (Abrams Associates 2013)

City of Pittsburg. 2004. *City of Pittsburg General Plan*. (Pittsburg 2004)

Contra Costa Transportation Authority. 2009. 2009 Contra Costa Congestion Management Program. (CCTA 2009)

Table 5.7-8
Cumulative (2030) Intersection Level of Service Conditions

				Without James Donlon Expressway				With James Donlon Expressway			
			Peak	Cumulative		Cumulative Plus Project		Cumulative		Cumulative Plus Project	
	Intersections	Control	Hour	V/C Ratio	LOS	V/C Ratio	LOS	V/C Ratio	LOS	V/C Ratio	LOS
1	Railroad Ave. & California Ave./SR 4 WB on-ramp	Traffic Signal	AM	0.71	C	0.74	C	0.71	C	0.73	C
			PM	0.70	B	0.71	B	0.70	B	0.71	C
2	Railroad Ave. & SR 4 Eastbound Ramp	Traffic Signal	AM	0.69	B	0.71	B	0.69	B	0.71	C
			PM	0.86	D	0.87	D	0.86	D	0.87	D
3	Railroad Ave. & Leland Rd.	Traffic Signal	AM	0.75	C	0.78	C	0.75	C	0.77	C
			PM	0.79	C	0.80	C	0.79	C	0.80	D
4	Railroad Ave. & Atlantic Ave.	Traffic Signal	AM	0.57	A	0.60	A	0.59	A	0.62	B
			PM	0.61	B	0.63	B	0.61	B	0.63	B
5	Railroad Ave. & Buchanan Rd.	Traffic Signal	AM	**0.88**	**D**	**0.93**	**D**	0.69	B	0.72	C
			PM	**1.08**	**F**	**1.11**	**F**	0.73	C	0.73	C
6	Kirker Pass Rd. & Montreux Main Driveway	Traffic Signal	AM	0.52	A	0.65	A	0.64	B	0.69	B
			PM	0.60	A	0.68	A	0.61	B	0.65	B
7	Kirker Pass Rd. & Montreux Secondary Driveway[a]	Side Street Stop	AM	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			PM	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
8	Kirker Pass Rd. & Myrtle Dr.	Traffic Signal	AM	0.36	A	0.36	A	0.36	A	0.36	A
			PM	0.68	B	0.70	B	0.68	B	0.70	B
9	Kirker Pass Rd. & Concord Blvd.	Traffic Signal	AM	0.74	C	0.75	C	0.74	C	0.75	C
			PM	0.80	C	0.81	C	0.80	C	0.81	D
10	Kirker Pass Rd. & Clayton Rd.	Traffic Signal	AM	0.68	B	0.69	B	0.68	B	0.69	B
			PM	0.76	C	0.77	C	0.76	C	0.77	C
11	Somersville Rd. & James Donlon Blvd.[a]	Traffic Signal	AM	0.66	B	0.66	B	0.75	C	0.76	C
			PM	0.86	D	0.86	D	0.68	B	0.68	B
12	Buchanan Rd. & Harbor St.	Traffic Signal	AM	**1.06**	**F**	**1.06**	**F**	0.74	C	0.74	C
			PM	**1.06**	**F**	**1.06**	**F**	0.82	D	0.82	D
13	Buchanan Rd. & Loveridge Rd.	Traffic Signal	AM	**1.00**	**E**	**1.01**	**E**	0.69	B	0.70	C
			PM	**1.01**	**F**	**1.01**	**F**	0.79	C	0.79	C

Source: Abrams Associates Traffic Engineering, Inc., (2013).
*Note: **Bold** indicates unacceptable LOS*
[a] *For non-signalized intersections, the traffic study indicates that all stop-controlled side-street approaches would continue to operate at LOS D or better.*