4.9 TRAFFIC AND TRANSPORTATION

This section describes the existing traffic and circulation conditions in the vicinity of the project, provides an analysis of potential impacts the project may have on these conditions and suggests mitigation measures for those impacts. It is based on a Traffic Impact Analysis completed by Korve Engineering, included as Appendix I of this EIR.

A. Existing Setting

1. Regulatory Setting

The Land Use and Transportation Element (LUTE) of the Oakland General Plan contains information on existing circulation conditions as well as goals and polices for the development of future circulation systems within the city.

The City has established Level of Service D as the minimum acceptable level of operation for intersections outside of the central Downtown area. Therefore, a proposed project is considered to have a significant adverse traffic impacts if it would result in an increased level of congestion at LOS D or below.

2. Existing Roadway Network

There are three main roadways in the vicinity of the proposed project site: Keller Avenue, I-580 and Mountain Boulevard. Keller Avenue runs along the west side of the project site. It is a four-lane arterial roadway extending from Greenly Drive just west of I-580 to Skyline Boulevard to the east. Entry to the project site would be provided via a new intersection on Keller Avenue between Greenridge Drive and Rilea Way. All vehicle trips to and from the project site would have to use Keller Avenue as part of their trip. In the study area, Keller Avenue has a signed speed limit of 35 miles per hour.

I-580 is the closest freeway to the site, and is almost immediately to the west of Keller Avenue. I-580 is an eight-lane divided freeway extending from Highway 101 in San Rafael to State Route 5 in San Joaquin County. North of Keller Avenue, I-580 carries approximately 13,100 peak hour and 145,000 daily vehicles, according to the most recent monitoring counts conducted by

Caltrans. Eastbound on- and off-ramps to I-580 are provided at the Keller Avenue interchange.

Mountain Boulevard is the third main road in the vicinity of the project site. In the study area, Mountain Boulevard is a two-lane collector roadway that functions as a frontage road east of I-580. Mountain Boulevard provides a north/south connection to I-580 and Golf Links Road for study area trips.

3. Existing Traffic Conditions

Traffic operations at the study intersections included in this analysis were assessed during the weekday morning and evening peak hours of travel for the following four scenarios:

1. Existing
2. Existing plus Approved Projects;
3. Existing plus Approved Projects plus Project; and
4. Cumulative, with Project (Year 2020)

The analysis of existing traffic conditions was included in the first two scenarios. The following six intersections in the study area, illustrated in Figure 21, were identified as being inclusive of all existing facilities on which the project may have a traffic impact:

1. Mountain Boulevard/Rifle Lane;
2. Mountain Boulevard/I-580 westbound on-ramp – Maynard Avenue;
3. Keller Avenue/Greenly Drive;
4. Keller Avenue/I-580 eastbound ramps;
5. Mountain Boulevard/Keller Avenue; and
6. Mountain Boulevard/I-580 westbound off-ramp - Sanford Street

Figure 22 illustrates the lane configurations and control types at the study intersections. The Keller Avenue/I-580 eastbound ramps, Mountain Boulevard/Keller Avenue, and Greenly Drive/Keller Avenue intersections are all-way-stop controlled. Other study intersections are two-way stop controlled with stop sign control on the minor street approach.

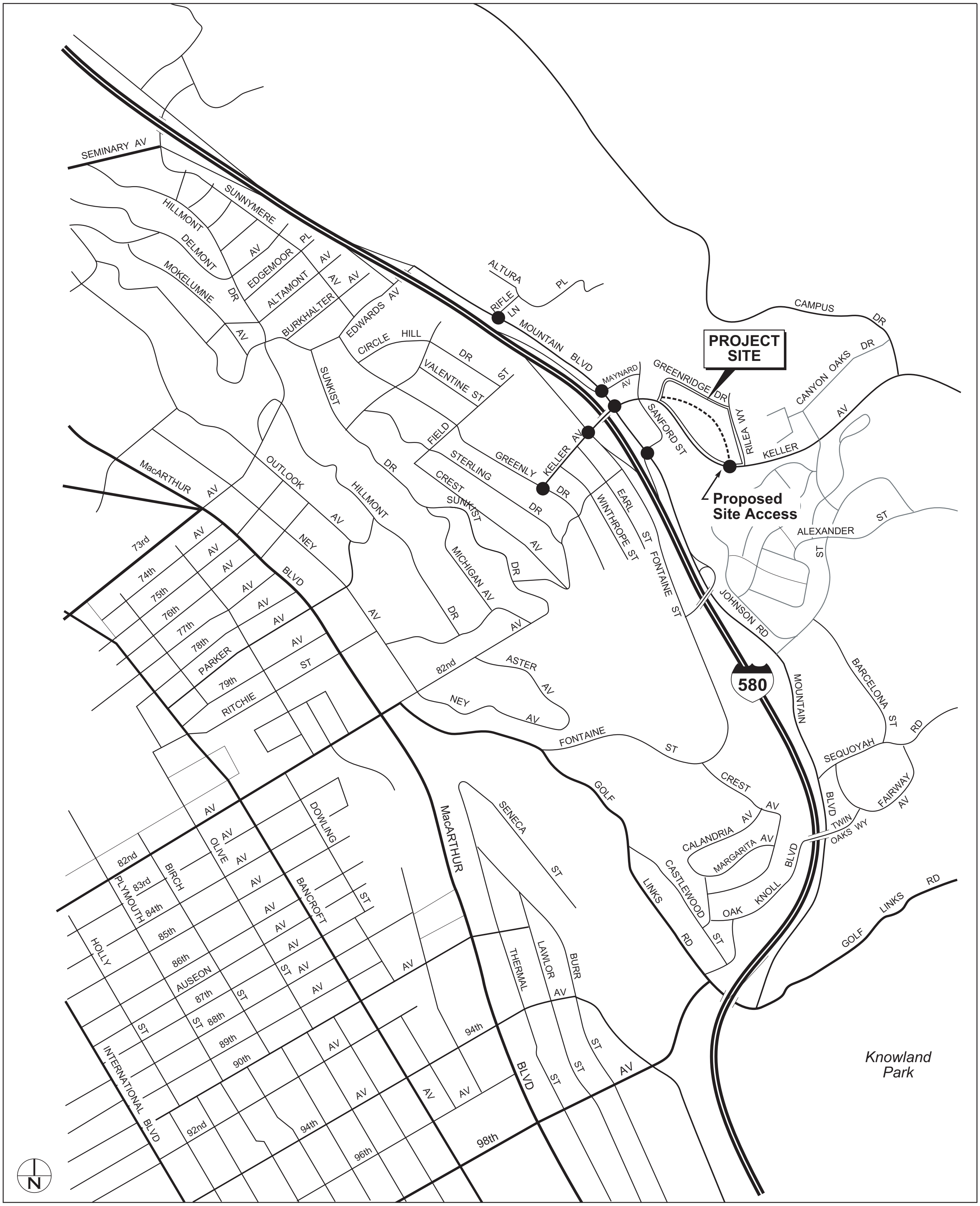


FIGURE 21

STUDY INTERSECTIONS

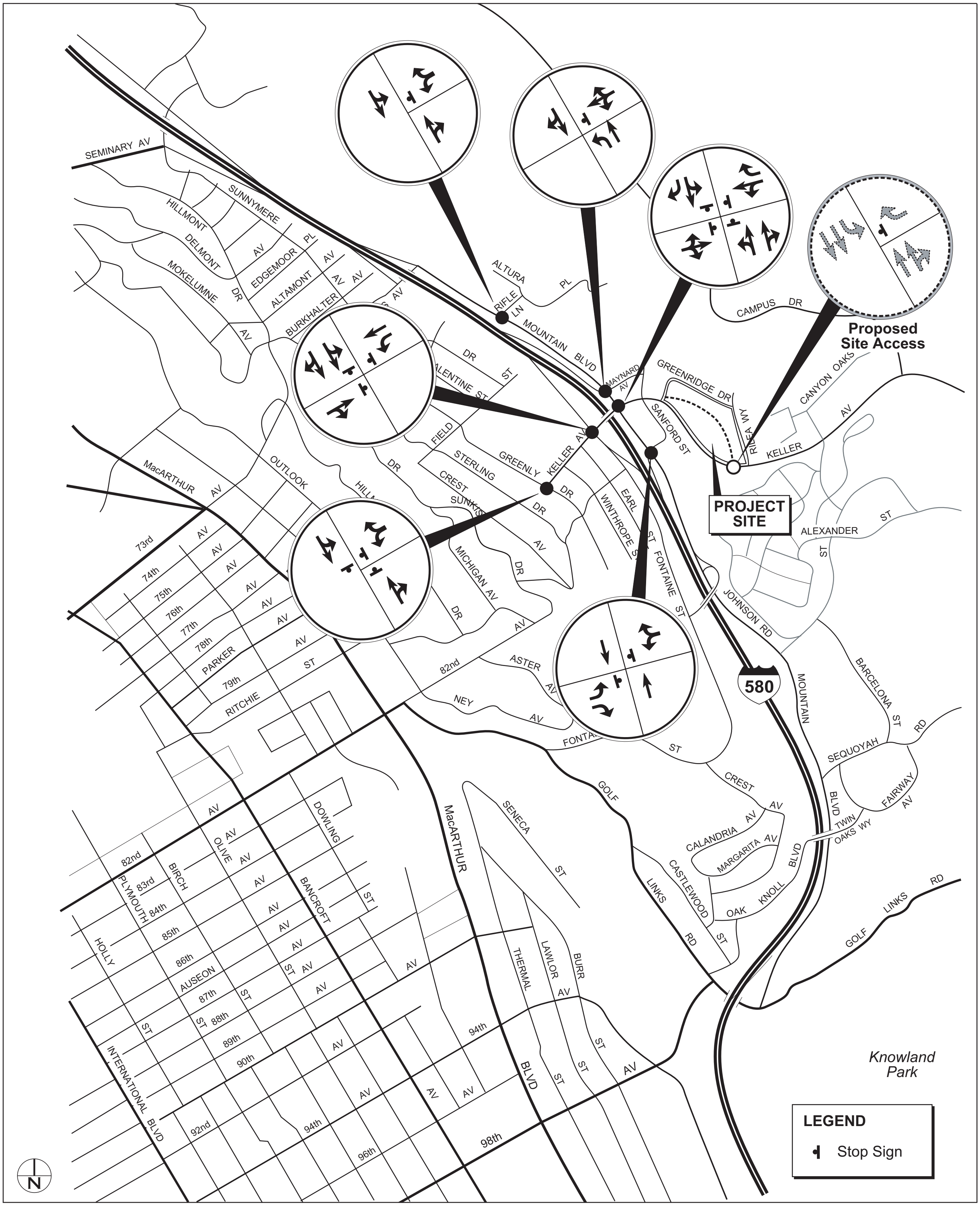


FIGURE 22

EXISTING AND PROPOSED LANE GEOMETRY AND TRAFFIC CONTROL

TABLE 11 **INTERSECTION LEVEL OF SERVICE DEFINITIONS**

Level of Service	Description	Signalized Intersections	Unsignalized Intersections
A	Little or no delay	< 10.0	< 10.0
B	Short traffic delay	> 10.0 and < 20.0	> 10.0 and < 15.0
C	Average traffic delay	>20.0 and < 35.0	> 15.0 and < 25.0
D	Long traffic delay	> 35.0 and < 55.0	> 25.0 and < 35.0
E	Very long traffic delay	> 55.0 and < 80.0	> 35.0 and < 50.0
F	Extreme traffic delay	> 80.0	> 50.0

Source: Highway Capacity Manual, Special Report 209 Transportation Research Board, 1997.

a. Intersection LOS Methodologies

Level of Service (LOS) is a common measure of traffic service that uses letters A through F to indicate the amount of traffic congestion and delay, as shown in Table 11. The LOS concept was developed to correlate numerical traffic volumes to subjective descriptions of traffic performance at intersections which are the controlling bottlenecks of traffic flow. LOS levels are qualitatively described as follows:

- LOS A indicates free flowing traffic conditions.
- LOS B indicates stable conditions with acceptable delays.
- LOS C indicates stable conditions with slightly longer acceptable delays.
- LOS D indicates average delays in the range of 25 to 40 seconds.
- LOS E is approaching capacity.
- LOS F represents conditions at or above capacity, with average delays over 60 seconds.

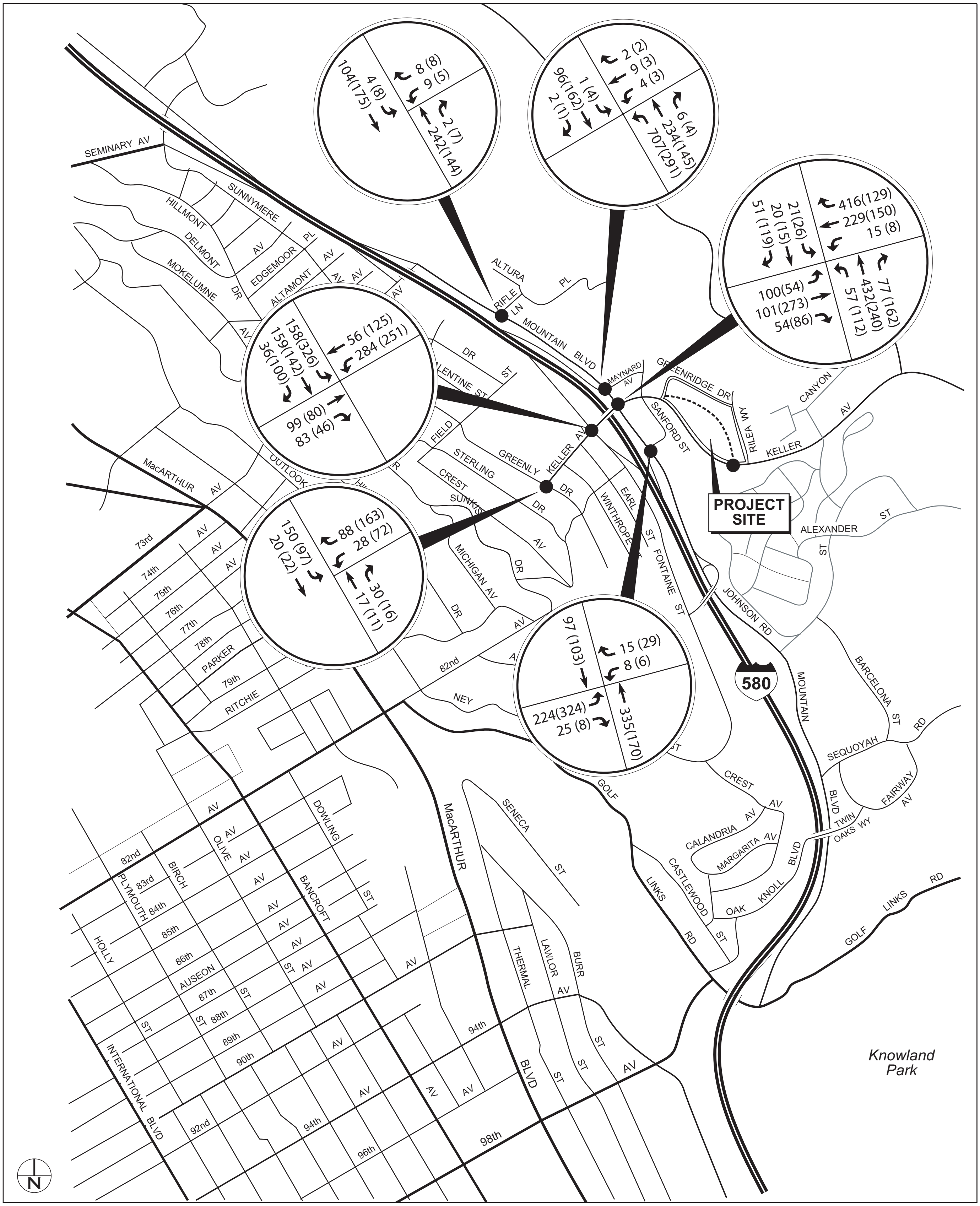
LOS A through LOS C are considered to be fair to good traffic flows. LOS D is considered acceptable for peak hours in urban areas. LOS E or LOS F are typically considered unacceptable levels of service. The City of Oakland has established a LOS standard of LOS D for all areas outside the central Downtown.

Traffic conditions at study intersections are evaluated for the morning and evening peak hours using the methodology of the Transportation Research Board's 1994 Highway Capacity Manual. With this methodology a level of service is assigned based on average total vehicle delay. The LOS calculations are assessed using the TRAFFIX software. LOS calculation worksheets for each of the seven study intersections and four analysis scenarios are included in Appendix I.

b. Existing Intersection Levels of Service

Figure 23 presents the existing traffic volumes at the existing study intersections. Table 12 presents the existing LOS at the study intersections. This table includes two ways of evaluating intersection operations. The first is overall intersection LOS, discussed above. The second calculation indicates "single worst minor street movement." This column calculates the single worst-case scenario for a vehicle waiting on a side street to enter or cross the traffic flow on a major street, such as a car waiting to turn left from Maynard Avenue onto Mountain Boulevard during the evening commute hours. This column presents the single worst-case event, rather than the average LOS for the intersection. This calculation is only relevant for intersections that are controlled by stop signs on the minor street only, since vehicles at intersections controlled by all-way stops would not be forced to wait for a break in the traffic flow to complete their movement. In this way, specific problems can be identified with certain turning movements.

As illustrated in Table 12, currently all study intersections function at satisfactory levels (LOS A, B, and C). Under the existing conditions, the worst minor street movements occur at the Mountain Boulevard/I-580 westbound on-ramp intersection. This movement is equivalent to LOS D.



SOURCE: Leona Quarry DEIR

FIGURE 23

EXISTING TRAFFIC VOLUMES: AM (PM) PEAK HOUR

TABLE 12 **EXISTING CONDITIONS: INTERSECTION LEVEL OF SERVICE** [1]

Intersection	Control Type	Peak Hour	Intersection Level of Service (Average Vehicle Delay in Seconds)[2]	*Single Worst Minor Street Movement (Delay in Seconds)* [2]
Mountain Boulevard/ Rifle Lane	Stop Control on WB Approach	AM	A (0.3)	*A (4.6)*
		PM	A (0.2)	*A (4.1)*
Mountain Boulevard/ I-580 westbound on-ramp – Maynard Avenue	Two-way Stop	AM	A (3.3)	*D (23.1)*
		PM	A (1.7)	*B (7.8)*
Keller Avenue/ Greenly Drive	All-Way Stop	AM	A (2.3)	
		PM	A (3.1)	
Keller Avenue/I-580 eastbound ramps	All-Way Stop	AM	B (12.2)	
		PM	B (14.4)	
Mountain Boulevard/ Keller Avenue	All-Way Stop	AM	C (17.5)	
		PM	B (9.4)	
Mountain Boulevard/ I-580 westbound off-ramp - Sanford Street	Stop Control on EB Approach	AM	A (3.7)	*C (10.1)*
		PM	B (5.3)	*B (9.5)*

1. The Existing Conditions analysis is based on traffic counts conducted in 2000 and 2001.
2. The LOS and Average Vehicle Delay in Seconds in this Traffic Impact Analysis are slightly different from the Existing Conditions data contained in the Leona Quarry Draft EIR because the traffic modeling for the two projects used slightly different peak hour factors. This difference is not large enough to affect the overall conclusions of the Siena Hill Traffic Impact Analysis.

4. Existing Plus Approved Projects

The Existing plus Approved Projects scenario analyzed traffic conditions from the baseline of existing conditions, with the addition of several projects which have already been approved by the City but have not yet been developed. The primary approved project in the study area is the Leona Quarry residential development located at 7100 Mountain Boulevard, which would include:

- 458 attached residential units in the lower 45 acres with access from Edwards Avenue and 19 single-family detached units with access from Campus Drive, for a total of 477 units.
- 3,000 square-feet community center.

Improvements to Mountain Boulevard/Keller Avenue approved as part of the Leona Quarry project call for installation of traffic signals and re-striping of the eastbound Keller Avenue approach to provide two through lanes. These improvements were considered in the Existing plus Approved Projects scenario.

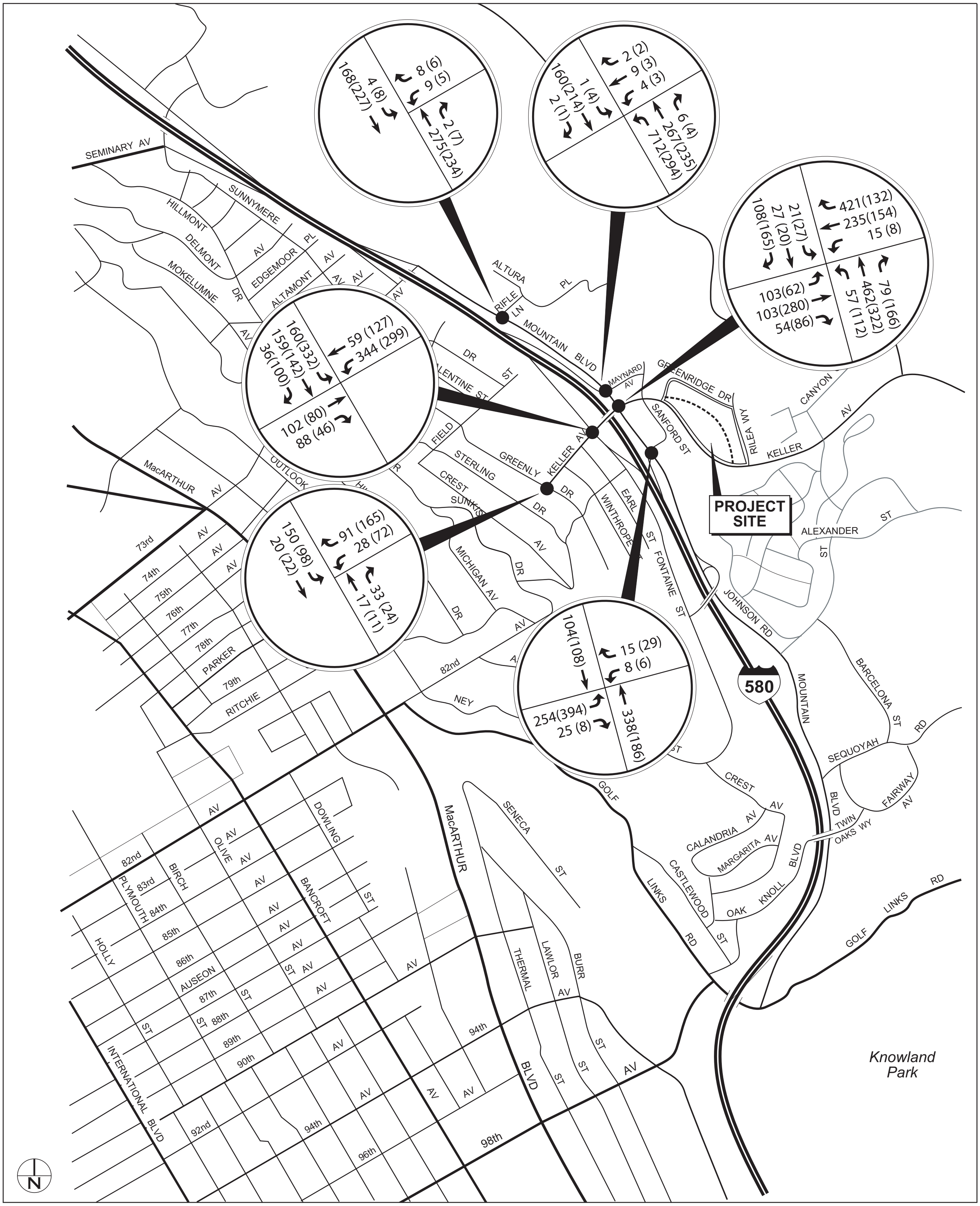
Traffic volumes under the Existing plus Approved Projects scenario are illustrated in Figure 24.

5. Transit Service

The Alameda/Contra Costa County Transit District (AC Transit) operates Routes 46A, 646, and 650 on Keller Avenue. The nearest bus stops to the proposed project site are provided at the Keller Avenue/Rilea Way and Keller Avenue/Greenridge Drive intersections. Local Service Route 46A provides service between the Oakland Coliseum BART station and the Fruitvale and Montana intersection via Skyline Boulevard. School Service Routes 646 and 650 provide service to Montera Middle School, King Estates Middle School, and Skyline High School. In addition, AC Transit Routes NV (Transbay) and 56 provide service along Mountain Boulevard.

6. Bicycle and Pedestrian Facilities

Keller Avenue is a Class III bicycle route that extends from the Golf Link and Mountain Boulevard intersection to the Oakland/Berkeley city borders via Keller Avenue and Skyline Boulevard. Class III bicycle routes are defined as those roadways recommended for use by bicycles, which generally connect roadways with bike lanes and bike paths and are designated with signs. Keller



SOURCE: Leona Quarry DEIR

FIGURE 24

EXISTING AND APPROVED PROJECTS TRAFFIC VOLUMES: AM (PM) PEAK HOUR

Avenue also provides pedestrian sidewalks on both sides of the roadway and the nearest pedestrian crossing of Keller Avenue is located at the Mountain Boulevard intersection.

7. Parking

City of Oakland parking standards require projects within the R-30 zone, which has been determined to be the "Best Fit" zone for the project site, to provide two parking spaces per unit. City staff also recommends additional dedicated off-street parking spaces since cars cannot park on-street due to the street width; these spaces have been included in the project analyzed in this EIR.

8. On-Site Circulation

The site is currently undeveloped and does not contain access driveways or roadways. The circulation improvements proposed as part of this project are described below.

B. Standards Of Significance

The project would have a significant impact on the environment if it would cause an increase in traffic which is substantial in relation to the traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections), or change the condition of an existing street (i.e., street closures, changing direction of travel) in a manner that would substantially impact access or traffic load and capacity of the street system.

Specifically,

- at a study, signalized intersection which is located outside the Downtown area, the project would cause the level of service (LOS) to degrade to worse than LOS D (i.e., E);

- at a study, signalized intersection which is located within the Downtown area, the project would cause the LOS to degrade to worse than LOS E (i.e., F);
- at a study, signalized intersection outside the Downtown area where the level of service is LOS E, the project would cause the total intersection average vehicle delay to increase by four (4) or more seconds, or degrade to worse than LOS E (i.e., F);
- at a study, signalized intersection for all areas where the level of service is LOS E, the project would cause an increase in the average delay for any of the critical movements of six (6) seconds or more, or degrade to worse than LOS E (i.e., F);
- at a study, signalized intersection for all areas where the level of service is LOS F, the project would cause
  - (a) the total intersection average vehicle delay to increase by two (2) or more seconds, or
  - (b) an increase in average delay for any of the critical movements of four (4) seconds or more; or
  - (c) the volume-to-capacity ("V/C") ratio exceeds three (3) percent (but only if the delay values cannot be measured accurately);
- at a study, unsignalized intersection which is located outside the Downtown area, the project would cause the LOS to degrade to worse than LOS D (i.e., E).

A project's contribution to cumulative impacts is considered "considerable" when the project would:

- Contribute five (5) percent or more of the cumulative traffic increase as measured by the difference between existing and future cumulative (with project) conditions;
- Cause a roadway segment on the Metropolitan Transportation System to operate at LOS F or increase the V/C ratio by more than three (3) per-

cent for a roadway segment that would operate at LOS F without the project;

- 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 traffic hazards to motor vehicles, bicycles, or pedestrians due to a design feature (e.g., sharp curves or dangerous intersections) that does not comply with Caltrans design standards or incompatible uses (e.g., farm equipment);
- Result in less than two emergency access routes for streets exceeding 600 feet in length;
- Fundamentally conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle routes); or
- Generate added transit ridership that would:
  - Increase the average ridership on AC Transit lines by three (3) percent at bus stops where the average load factor with the project in place would exceed 125 percent over a peak thirty minute period;
  - Increase the peak hour average ridership on BART by three (3) percent where the passenger volume would exceed the standing capacity of BART trains; or
  - Increase the peak hour average ridership at a BART station by three (3) percent where average waiting time at fare gates would exceed one minute.

C. Impacts and Mitigation Measures

This section describes the methodology used for the traffic impact analysis, discusses the circulation improvements proposed as part of the project and evaluates traffic impacts that could occur as a result of the project.

1. Traffic Impact Analysis Methodology

As discussed above, traffic operations at the seven study intersections were assessed during the weekday morning and evening peak hours of travel for four scenarios:

1. Existing
2. Existing plus Approved Projects;
3. Existing plus Approved Projects plus Project; and
4. Cumulative, with Project (Year 2020)

Traffic operations under the existing conditions, and with the addition of projects that have already been approved for development, were discussed above under the Existing Setting Section.

Traffic impacts resulting from the proposed project were analyzed under the latter two scenarios and are discussed in this section. In addition to the six study intersections discussed above, the traffic impact analysis also considered LOS at the intersection of Keller Avenue and the proposed Siena Drive.

The Cumulative scenario includes background traffic growth as well as the proposed project. The Cumulative scenario includes the following specific projects in the vicinity of the study area:

- Leona Quarry residential development (19 single-family detached units, 458 attached units);
- Oak Knoll (577 residential units and 25,000-square-feet of retail space on the east side of Mountain Boulevard south of Keller Avenue);
- Eastmont Area (60 residential units on 73rd Avenue west of MacArthur Boulevard);
- MacArthur Boulevard (70 residential units, south of 73rd Avenue); and
- Golf Links Road Scattered Site Housing (90 residential units).

2. Circulation Components of the Proposed Project

Access to the proposed project would be directly provided off of Keller Avenue via a new one-way roadway, Siena Drive. As illustrated in the project site plan in Figure 4 in Chapter 3, the centerline of Siena Drive would be located approximately 110 feet from the northern edge of the property line along Keller Avenue. Siena Drive would exit the project site onto Greenridge Drive at the northwestern corner of the site. Traffic exiting the project would be one-way stop controlled. The proposed Keller Avenue entrance to Siena Drive would not be stop controlled. In addition, a left turn lane with approximately 50 feet of storage would be created on eastbound Keller Avenue for cars entering Siena Drive. Emergency vehicle access would be provided directly off of Greenridge Drive. These facilities would provide adequate circulation to and through the proposed project, and no impact would occur.

3. Project Trip Generation

The number of vehicle trips that would be generated by the proposed project was estimated through a trip generation analysis. Trip generation rates and inbound/outbound splits for the land use under consideration were taken from the Institute of Transportation Engineers *Trip Generation Manual*, Sixth Edition. The trip generation rates in the *Trip Generation Manual* are compiled based on traffic counts taken for similar types of land uses at hundreds of sites throughout the country. Table 13 presents the results of the project's trip generation analysis.

The proposed project would result in a daily increase in traffic to and from the study area. The proposed project would generate approximately 306 daily trips. In the morning peak hour the proposed project is forecast to generate approximately 24 vehicle trips. In the evening peak commute hour the project will generate roughly 32 vehicle trips. This number of trips would not be a significant increase over the number of daily trips that would occur in the project area without the proposed project. Therefore, impacts from project trip generation would be less than significant.

TABLE 13 **PROJECT TRIP GENERATION**

Land Use/Size	Generation Rate	Daily Trips	AM Peak	PM Peak
Detached Single Family Housing 32 Units	9.6	306	24	32

4. Project Trip Distribution

Vehicle trips forecast to be generated by the proposed project were assigned to the surrounding transportation network based on a distribution pattern developed specifically for this study. The pattern is based on existing traffic flows on streets in the study area, the locations of potential origins and destinations and logical circulation patterns on the area's roadway network, and direct observation and personal judgment.

Figure 25 illustrates the project traffic volumes on the study area network. Figures 26 and 27 illustrate the project's anticipated trip distribution pattern in the AM peak and PM peak hours, respectively.

As illustrated in Figure 26, in the morning peak hour, approximately twenty five percent of project traffic is forecast to arrive from and depart to the east via Interstate 580: approximately 55 percent of inbound and 45 percent of outbound trips to the north via Interstate 580 and Mountain Boulevard, and 30 to 35 percent of outbound to the south via Interstate 580, 5 percent to the east via Keller Avenue, and 5 to 10 percent to the neighborhoods west of Interstate 580.

As illustrated in Figure 27, in the evening peak hour, approximately 50 percent of project traffic is forecast to arrive from and depart to the north via Interstate 580 and Mountain Boulevard, 5 percent to the east via Keller Avenue, 45 percent of inbound and 25 percent of outbound to trips to the south via Interstate 580 and Mountain Boulevard, and another 8 percent of inbound

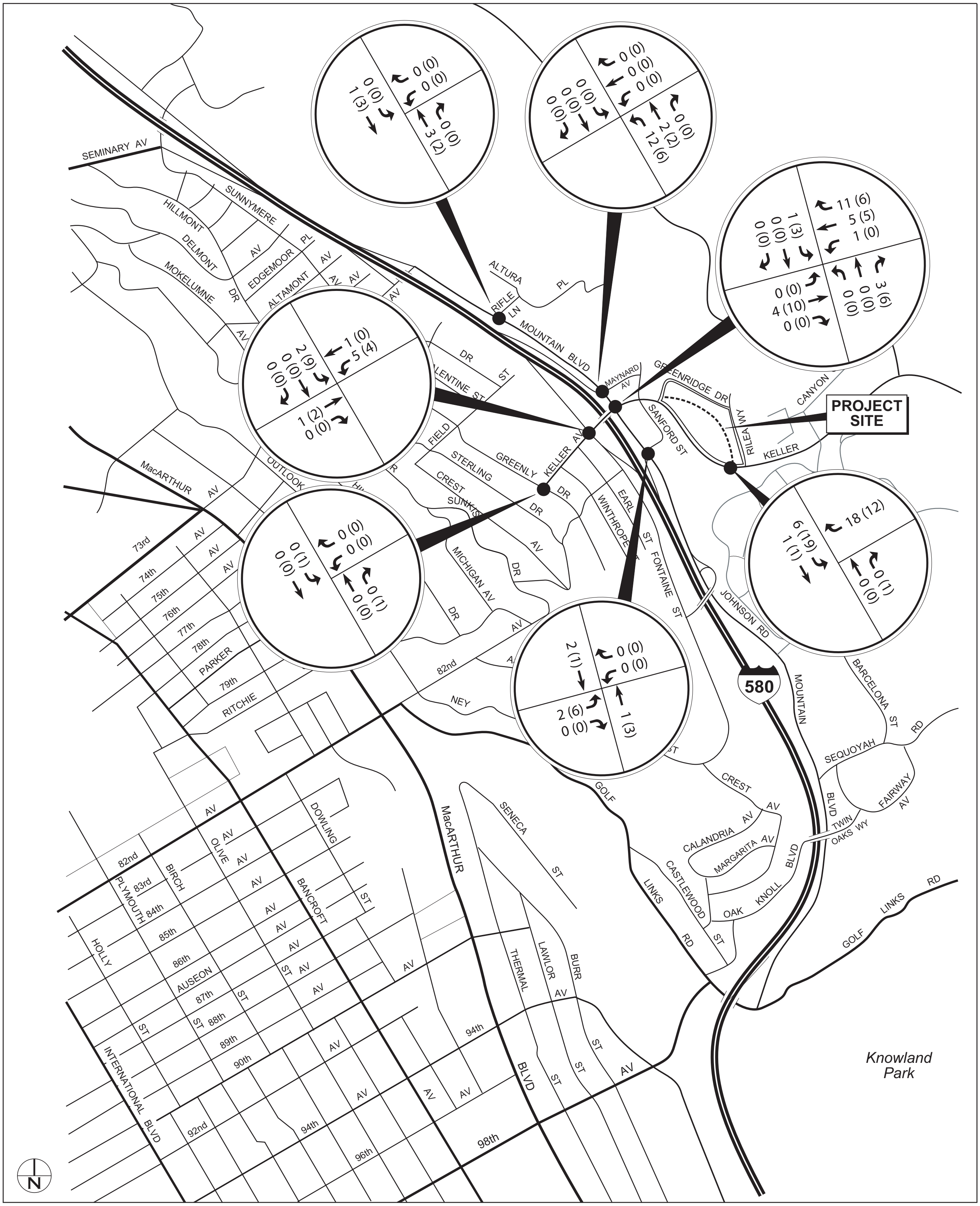


FIGURE 25

PROJECT TRAFFIC VOLUMES: AM (PM) PEAK HOUR

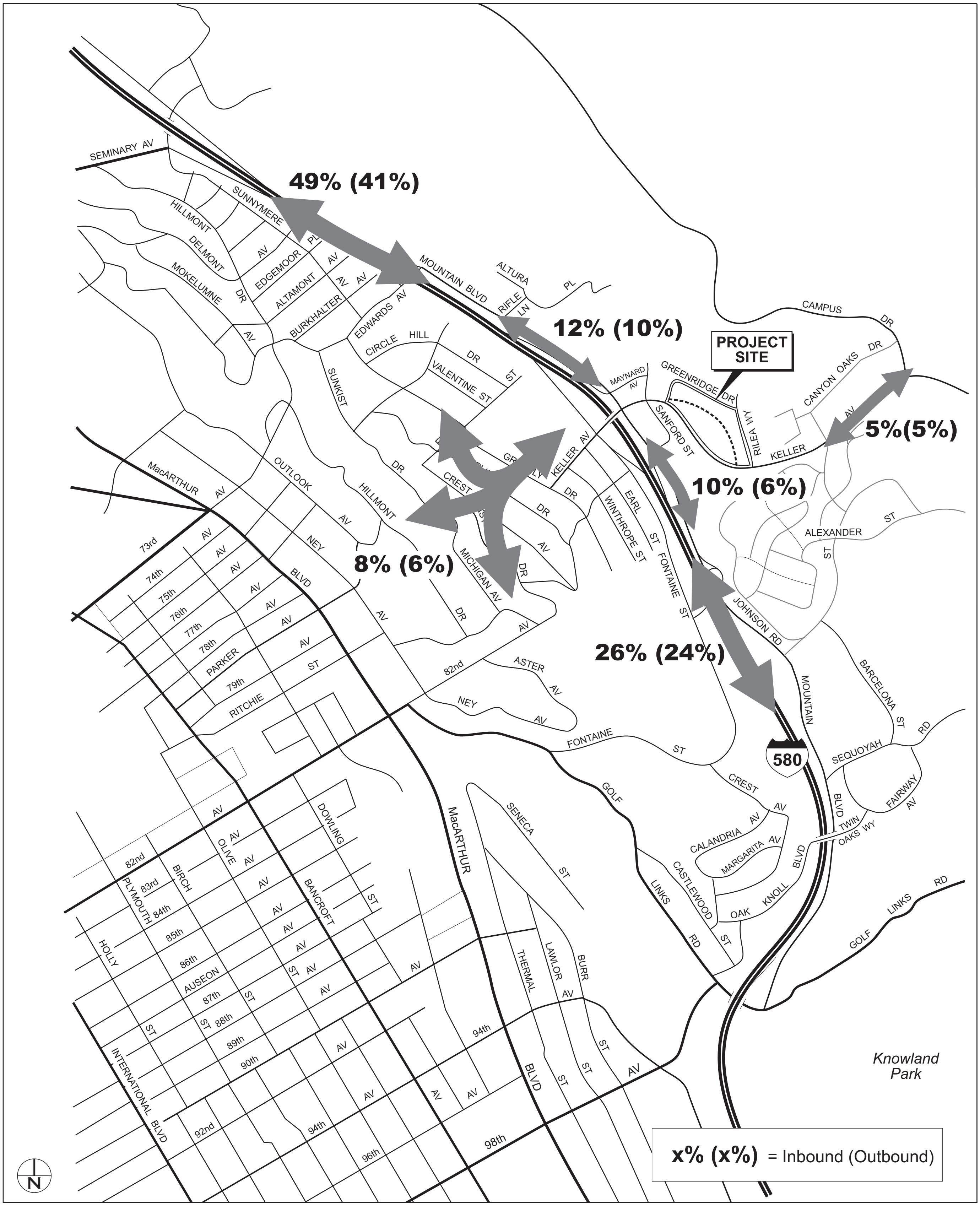


FIGURE 26

PROJECT TRIP DITRIBUTION: AM PEAK HOUR

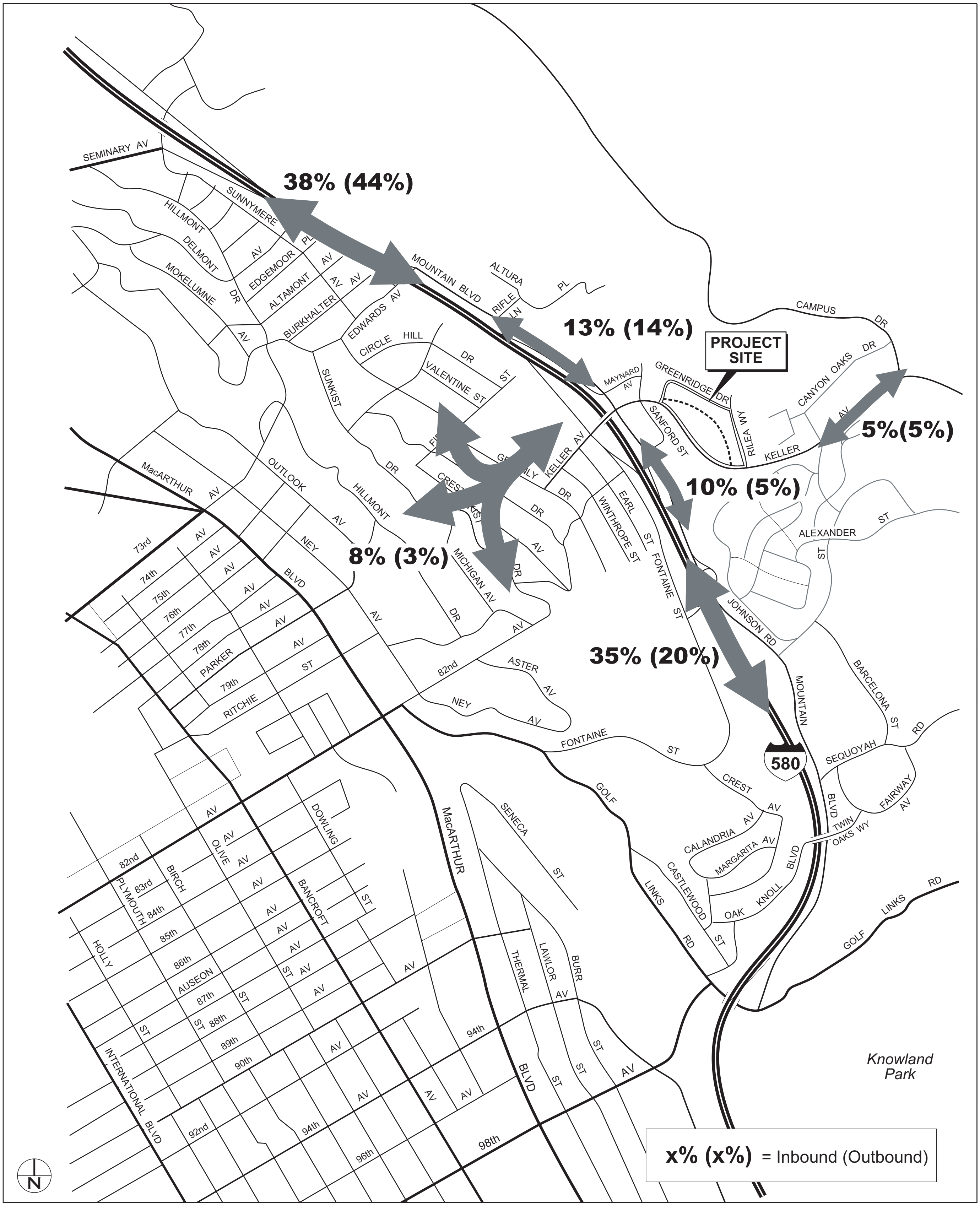


FIGURE 27

PROJECT TRIP DISTRIBUTION: PM PEAK HOUR

and 3 percent of outbound trips to and from the neighborhoods west of Interstate 580. Again, since the trips generated by the project itself would create less-than-significant impacts on the surrounding roadways, and since the trips generated by the proposed project would be expected to follow existing patterns of trip distribution, the impacts of the trip distribution of the proposed project would be less than significant.

5. Cumulative Intersection Operations

As with the existing conditions analysis, the seven study intersections were evaluated for both overall level of service and single worst minor street movement under existing, existing plus approved project, existing plus approved plus project, and cumulative conditions. The results of this analysis are described below.

a. Cumulative Level of Service

Impact TRAF-1: With the addition of project-related traffic, the Keller Avenue/Mountain Boulevard intersection, currently controlled by four-way stop signs, would operate at LOS E. (Significant)

Figure 28 illustrates total cumulative traffic volumes in the Year 2020 scenario, including the proposed project, existing and approved projects, and general background increases in traffic. Table 14 shows the results these volumes would have on average LOS at the seven study intersections both with and without the project. All seven intersections would operate acceptably with the project. The Mountain Boulevard/Keller Avenue intersection would operate at LOS E in the PM peak hour in the Year 2020 under Cumulative conditions. The proposed project's contribution to this decrease in LOS would be a significant impact.

Currently the Mountain Boulevard/Keller Avenue intersection meets volumetric signal warrant in the PM peak hour. In the other three scenarios included in this traffic analysis, the intersection meets the peak hour signal warrant in both the AM and PM peak hours. With the installation of a traffic

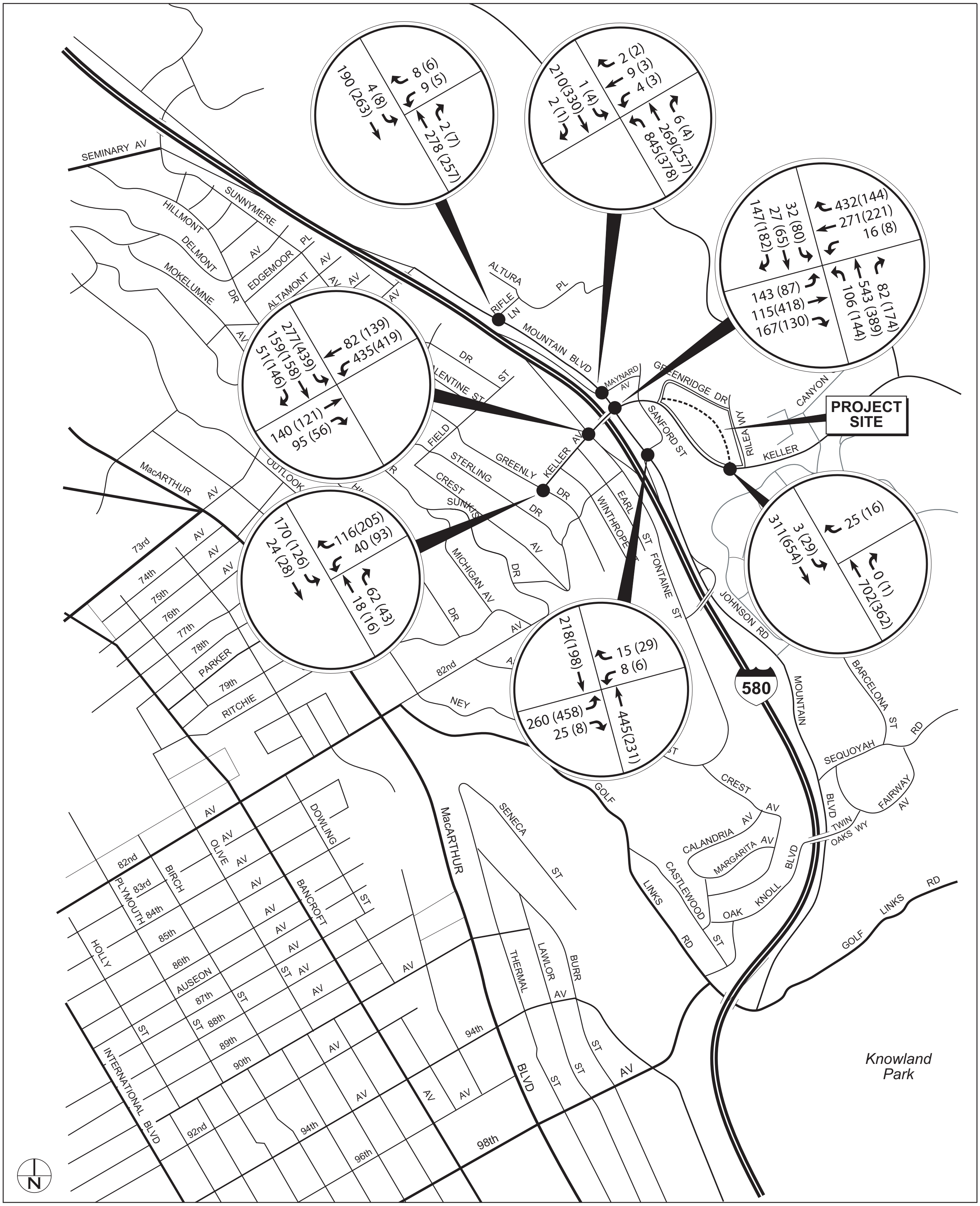


FIGURE 28

CUMULATIVE (WITH PROJECT) TRAFFIC VOLUMES: AM (PM) PEAK HOURS

TABLE 14 **FUTURE INTERSECTION LEVEL OF SERVICE SUMMARY**

		Intersection Level of Service (Average Vehicle Delay in Seconds)				
Intersection	**Peak Hour**	**Existing**	**Existing + Approved**	**Existing + Approved + Project**	**Cumulative (Year 2020)**	**Maximum Contribution of Project Traffic**
Mountain Blvd/ Rifle Lane	AM	A (0.3)	A (0.2)	A (0.2)	A(0.2)	1.1%
	PM	A (0.2)	A (0.2)	A (0.2)	A (0.2))	1.1%
Mountain Blvd / I-580 westbound on-ramp – Maynard Avenue	AM	A (3.3))	A (3.5)	A (3.6)	B (5.2)	1.4%
	PM	A (1.7)	A (1.5)	A (1.5)	A (1.9)	1.5%
Keller Avenue / Greenly Drive	AM	A (2.3)	A (2.3)	A (2.3)	A (2.7)	0%
	PM	A (3.1)	A (3.2)	A (3.2)	A (4.1)	2.3%
Keller Avenue / I-580 eastbound ramps	AM	B (12.2)	B (13.7)	B (13.8)	C (22.2)	0.7%
	PM	B (14.4)	B (15.8)	C (16.2)	D (30.8)	2.0%
Mountain Blvd / Keller Avenue	AM	C (17.5)	C (18.6)	C (19.7)	D (24.1)	3.6%
	PM	B (9.4)	C (11.9)	C (12.3)	E (40.2)	4.2%
Mountain Blvd / I-580 westbound off-ramp - Sanford Street	AM	A (3.7))	A (4.4)	A (4.4)	A (6.4)	0.7%
	PM	B (5.3))	B (7.2)	B (7.3)	C (16.1)	1.3%
Keller Avenue / Site Access (Siena Drive)	AM	NA	NA	A (0.1)	A (0.1)	100%
	PM	NA	NA	A (0.1)	A (0.2)	75%

TABLE 15 **WORST MINOR STREET MOVEMENTS**

		Worst Minor Street Movement for Two-Way Stop Controlled Intersections (Delay in Seconds)			
Intersection *	**Peak Hour**	**Existing**	**Existing + Approved**	**Existing + Approved + Project**	**Cumulative (Year 2020)**
Mountain Blvd/ Rifle Lane	AM	A (4.6)	B (5.0)	B (5.1)	B (5.2)
	PM	A (4.1)	A (4.8)	A (4.9)	B (5.1)
Mountain Blvd / I-580 westbound on-ramp – Maynard Avenue	AM	D (23.1)	E (28.8)	E (30.0)	F(54.6)
	PM	B (7.8)	B (9.5)	B (9.8)	C (14.4)
Mountain Blvd / I-580 westbound off-ramp - Sanford Street	AM	C (10.1)	C (11.3)	C (11.5)	D (21.6)
	PM	B (9.5)	C (12.4)	C (12.7)	E (30.4)
Keller Avenue / Site Access (Siena Drive)	AM	NA	NA	A (3.0)	A (4.0)
	PM	NA	NA	A (3.1)	A (3.3)

* The Keller Avenue / Greenly Drive, Keller Avenue /I-580 eastbound ramps, and Mountain Blvd / Keller Avenue intersections are not included in this table because they are all-way-stop controlled intersections.

signal and other improvements already approved as part of the Leona Quarry project, the intersection would operate at a satisfactory level (LOS B) in all scenarios. The details of signal warrant analysis and the approved improvements to the Mountain Boulevard/Keller Avenue intersection are provided as part of Appendix I.

Mitigation Measure TRAF-1: The project applicant shall pay a proportional share towards installation of the previously approved set of improvements at the intersection of Mountain Boulevard and Keller Avenue to improve the level of service ratio to the City of Oakland standard of LOS D. Such payment shall be determined based on the approved cost

estimate and a formula as derived from the Leona Quarry Traffic Improvement Program and Traffic Improvement Fee (TIP/TIF). If the TIP/TIF is not approved, the fair share payment shall be based on the adopted cost estimate for the Mountain Boulevard/Keller Avenue intersection as set forth in the Leona Quarry City Council Resolution # 78358.

Significance After Mitigation: Less than Significant.

b. Worst Minor Street Movements

Table 15 shows the single worst minor street movement for vehicles waiting on major streets from minor streets at two-way stop controlled intersections. This is not equivalent to the average LOS for the intersection, but represents the single longest amount of time that a vehicle stopped at a stop sign would have to wait to enter or cross a major street not controlled by a stop sign in the AM or PM peak hour.

As illustrated in Table 15, minor street movements from Maynard Avenue at the Mountain Boulevard/Interstate 580 (I-580) Westbound On-Ramp - Maynard Avenue intersection would operate at LOS E in Existing plus Approved Projects and Existing plus Approved Projects plus Project Conditions in the AM peak hour, and would deteriorate to LOS F under Cumulative conditions in the AM peak hour. This occurs because prevailing traffic volumes on the major street, Mountain Boulevard, would be too intense to provide sufficient gaps for traffic on Maynard Avenue to turn into and across the traffic flow on Mountain Boulevard.

The minor street movements at the Mountain Boulevard/I-580 westbound off-ramp – Sanford Street intersection also fall to LOS E under Cumulative Conditions. This also occurs because prevailing traffic volumes on the Mountain Boulevard would be too intense to provide sufficient gaps for traffic on Sanford Street to turn into and across the traffic flow on Mountain Boulevard.

Traffic impacts are judged based on average intersection LOS rather than on single worst minor street movements. Although two of the four two-way-stop-controlled intersections in Table 15 would experience single worst-case delays of over 30 seconds (equivalent to LOS E and below), the overall LOS at these intersections would remain at acceptable levels of D and better. Therefore, impacts would be less than significant, and no mitigation is required. In addition, as part of the approved Leona Quarry project, the Mountain Boulevard/Keller Avenue intersection would be re-striped and signalized so that the intersection would operate at LOS C under Cumulative Conditions in 2020.

6. Design Hazards

The project design contains a number of design features that mitigate speeding-related traffic hazards at the proposed intersection with Keller Avenue. The intersection at the proposed site entrance would include a deceleration lane for right turns onto Siena Drive and a dedicated left turn lane for left turns onto Siena Drive. With the inclusion of these design features, impacts from traffic hazards would be less than significant.[1]

a. Sight Distance from Siena Drive Entrance

A left turn lane for entry to Siena Drive would be provided on Keller Avenue. Vehicles in the left-turn lane would have sight distance greater than 400 feet to turn onto Siena Drive safely, which would meet Caltrans standards for adequate sight distance. Therefore, there would be no significant impacts to sight distance at the Siena Drive entrance to the proposed project.

b. Sight Distance to Parallel Parking along Keller Avenue

As described above, the proposed project would add 22 parallel parking spaces along the east side of Keller Avenue. These parallel parking spaces would reduce sight distance in the right-hand westbound lane on Keller Avenue to approximately 350 feet. According to Caltrans *Highway Design Manual*, Ta-

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[1] Meeting Communication, Henry Choi, Assistant Transportation Engineer, City of Oakland Public Works Agency, April 2, 2003.

ble 201.1, a clear stopping sight distance of 250 feet must be maintained on Keller Avenue, which has a posted speed limit of 35 miles per hour. If the speed limit on Keller Avenue were 40 miles per hour, a stopping sight distance of 300 feet would be required. The proposed parallel parking spaces would maintain a stopping sight distance of 350 feet, which would be a greater-than-adequate distance according to Caltrans standards. Therefore, no impacts to sight distance would occur from the implementation of the proposed parallel parking spaces.[2]

7. Emergency Vehicle Access

Siena Drive would be a posted one-way street except in cases of emergency vehicle access. Emergency vehicles would be able to access Siena Drive from both Keller Avenue and Greenridge Drive. Site plans for the proposed project and the design of Siena Drive were reviewed by the Oakland Fire Department and were found to provide adequate emergency vehicle access. Therefore, impacts to emergency vehicle access would be less than significant.[3]

8. Parking

The Court of Appeal has held that parking is not part of the permanent physical environment, that parking conditions change over time as people change their travel patterns, and that unmet parking demand created by a project need not be considered a significant environmental impact under CEQA unless it would cause significant secondary effects.[4] Parking supply/demand varies by time of day, day of week, and seasonally. As parking demand increases faster than the supply, parking prices rise to reach equilibrium between supply and demand. Decreased availability and increased costs result in changes to people's mode and pattern of travel. However, the City

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[2] Bill Burton, Senior Traffic Engineer, Korve Engineering, Memo Re: Keller Avenue Sight Distance, April 2, 2004.

[3] Meeting Communication, Ernest Robinson, Fire Marshal, Oakland Fire Department, April 2, 2003.

[4] San Franciscans Upholding the Downtown Plan v. the City and County of San Francisco (2002) 102 Cal.App.4th 656.

of Oakland, in its review of the proposed project, wants to ensure that the project's provision of additional parking spaces along with measures to lessen parking demand (by encouraging the use of non auto travel modes) would result in minimal adverse effects to project occupants and visitors, and that any secondary effects (such as on air quality due to drivers searching for parking spaces) would be minimized. As such, although not required by CEQA, parking conditions are evaluated in this document.

Standard parking demand for the type of housing proposed in the project would be 1.11 spaces, resulting in a total of 36 needed spaces for 32 units. Standard weekend parking demand would be 0.9 spaces, resulting in a total of 30 needed spaces for 32 units.[5]

The adequacy of on-site parking has been assessed using both the City of Oakland's Zoning Ordinance and Municipal Code. This project is located in an R-50 zone. A detached housing unit in the R-50 zone would be required to provide one stall per dwelling unit. City staff has requested that the project include an additional two spaces per unit for guest parking. Therefore, the project would be required to provide a minimum of 96 parking spaces. The proposed project would include 3 spaces for each unit: one space in the garage of each unit, and two spaces in each unit's driveway, for a total of 96 off-street parking spaces. In addition, 7 unassigned off-street parking spaces would be scattered throughout the development, for a total of 103 off-street parking spaces.

In addition, the applicant would submit an application to the Public Works Agency to re-stripe approximately 550 feet of the east side of Keller Avenue to provide up to 22 on-street parallel public parking spaces. These spaces would be accessed via two publicly-accessible stairways in the development. Keller Avenue is already sufficiently wide to allow two lanes of traffic and one lane of parallel parking, but spaces are not currently demarcated on the street. The Public Works Agency would review this application and study

[5] ITE Parking Generation, Second Edition

the feasibility and safety of the proposed parking spaces with regard to issues such as average speed of traffic, the curve and degree of slope of Keller Avenue, and adequate sight distance. If the application for re-striping were confirmed by the Public Works Agency, it would then be forwarded to the City Council for approval.

9. Construction Traffic

Impact TRAF-2: Truck traffic during construction of the proposed project could have a significant impact on local roadways. (Potentially Significant)

The construction of the project would take place in four phases over about three years, beginning in April 2005 and ending in June 2008. The first phase will involve grading of the site and construction of retaining walls. Phases two, three and four would include the construction of eight, twelve and twelve units, respectively. During construction, temporary and intermittent traffic and possible safety impacts would result from truck movements to and from the site.

During the proposed project's construction, the maximum hourly truck traffic is estimated to be eight truck trips (four inbound and four outbound trips). The maximum number of daily truck trips would be 48 truck trips (24 inbound and 24 outbound trips). These trucks would primarily use Seminary Avenue or 98th Avenue between the project site and I-880. Because construction-generated truck trips would be spread evenly throughout the work day, impacts on peak-hour traffic would be limited. However, truck trips during commute hours (7:00 a.m to 9:00 a.m. and 4:00 p.m. to 6:00 p.m.) could cause a significant impact on local traffic. In addition, truck traffic would cause a temporary and intermittent lessening of the capacity of local roadways due to their slower movements and larger turning radii. Therefore, a specific Haul Route Plan would be prepared in consultation with the City's Traffic Engineering Division.

Temporary lane closures might be required for loading or unloading of special equipment or materials; staging of construction vehicles and equipment would be located on-site as much as possible. Traffic control mechanisms would be implemented for the duration of any lane closures, including flaggers and signs. Unsafe lane closures or blockages would be a significant impact.

It is anticipated that most construction-related vehicles could be parked on the project site itself after grading of the site is completed. Therefore, impacts from parking of construction equipment on Keller Avenue or other local roadways would be less than significant.

During the construction period, a perimeter fence around the site would be erected for the safety of pedestrians. During part of the site preparation and building construction periods, the Keller Avenue sidewalk along the project site frontage might need to be closed and pedestrians re-directed to the sidewalk on the west side of the street. This would be a less-than-significant impact.

Mitigation Measure TRAF-2: Prior to construction activity, the project applicant shall submit a construction management plan for review and approval by the City's Traffic Engineering Division.

This plan shall include, but is not limited to, the following items:

- Identification of routes (in a Haul Route Plan) for the movements of construction vehicles that would minimize the impacts on vehicular traffic circulation and safety in the area.
- Staging of the movements of construction materials and equipment so as not to hinder the general flow of traffic in the immediate vicinity of the project site.
- Identification of areas required for encroachment within the public right-of-way.

- Accommodation of on-site placement of construction equipment, construction vehicles, and construction worker vehicles.
- Designation of an on-site complaint and enforcement manager to respond to and track complaints, as well as posting of signs at the construction site that include permitted construction days and hours, a day and evening contact number for the designated complaint manager, and a day and evening contact number for the City of Oakland in the event of problems.
- Provision of adequate notification procedures for any road closures.

Significance After Mitigation: Less than Significant.