

# **APPENDIX F**

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## **Transportation Technical Documentation**

## APPENDIX F

### CMP Analysis for Oak Knoll Project SEIR

#### Alameda County Congestion Management Agency Analysis

This section outlines the ACCMA roadway analysis, which considers the impact of the proposed project on freeways, major arterials, and other major roadways in Alameda County. Main items of discussion include the Notice of Preparation (NOP) comments from the ACCMA, the geographic scope of the ACCMA roadway analysis, the analysis methodology, and the results for 2010 and 2025. Impacts to the transit system, including BART and AC Transit, are discussed in Section IV.B of the SEIR.

#### NOP Comment

The ACCMA made the following statements in a NOP comment letter dated March 12, 2007:

*Potential impacts of the project on the Metropolitan Transportation System (MTS), including cumulative impacts need to be addressed. (See 2003 CMP Figures E-2 and E-3 and Figure 2). The SEIR should address all potential impacts of the project on the MTS roadway and transit systems. These include I-580, SR 13, Skyline Boulevard, 98th Avenue, 73rd Avenue, and MacArthur Boulevard, as well as BART and AC Transit. Potential impacts of the project must be addressed for 2010 and 2025 conditions.*

- *Please note that the ACCMA does not have a policy for determining a threshold of significance for Level of Service for the Land Use Analysis Program of the CMP. Professional judgment should be applied to determine the significance of project impacts (Please see chapter 6 of the 2003 CMP for more information).*
- *In addition, the adopted 2003 CMP requires the use of the 1985 Highway Capacity Manual for freeway capacity standards.*

#### ACCMA Roadway Analysis Study Area

As requested by the ACCMA, freeway and surface street segments in Oakland and other areas of Alameda County were analyzed. The complete list of freeway and roadway segments from the NOP letter was included in the analysis. The following 12 directional freeway and 20 directional roadway segments were analyzed:

- I-580 (10 segments)
- SR 13 (2 segments)
- Skyline Boulevard (2 segments)
- 98th Avenue (6 segments)
- 73rd Avenue (4 segments)
- MacArthur Boulevard (8 segments)

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### Traffic Forecasts

The ACCMA model was used to forecast 2010 and 2025 traffic volumes on the MTS roadway system. The forecasts for the MTS system differ from the intersection and freeway forecasts discussed in Section IV.B of the SEIR, in the following aspects:

- The land use data sets used for the intersection forecasts and the MTS forecasts are different. The intersection forecasts, which are used to assess project traffic impacts on City of Oakland intersections, are based on land use data developed by Hausrath Economic Group (HEG) for the City of Oakland, which differs from the data in the ACCMA model.
- The intersection forecasts use the output of the ACCMA model and the existing intersection counts to “Furness” future intersection turning movement.<sup>1</sup> The MTS roadway analysis reports the outputs of the ACCMA model directly on a roadway segment level.

Due to the differences in the land use data and future volume development, the results from the two analyses are not directly comparable.

The results of the ACCMA model were used to forecast the No Project condition for 2010 and 2025. Project trips were manually distributed to the MTS roadway segments (including both freeways and surface streets) identified above using the project trip distribution presented in Section IV.B of the SEIR. The distribution of project trips onto the MTS segments results in the With Project volumes for 2010 and 2025.

### Analysis Method

Operations of the MTS freeway and surface street segments were assessed based on volume-to-capacity (V/C) ratios. For freeway segments, a per-lane capacity of 2,000 vehicles per hour (vph) for SR 13 and 2,200 vph for I-580 was used. This capacity is consistent with the Congestion Management Plan documents. For surface streets, a per-lane capacity of 800 vehicles per hour was used. Roadway segments with a V/C ratio greater than 1.00 are assigned LOS F.

### Analysis Results

The roadway segment AM and PM peak-hour MTS roadway analysis under 2010 and 2025 conditions are summarized in the appendix to the technical resource document [*Oak Knoll Project Final CEQA Transportation Study*, August 2007, on-file at the City of Oakland office]. The addition of project trips would not cause any of the studied roadway or freeway segment to degrade to LOS F or increase the V/C ratio of a segment already operating at LOS F by more than three percent. Thus, the proposed project would not cause a significant impact on any MTS roadway segments.

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<sup>1</sup> Furnessing is an iterative process that develops future intersection turning movement volumes by comparing the base model approach and departure volumes to existing turning movement volumes, and then applying those differences to future model approach and departure volumes.

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### Pre-Closure of Naval Medical Center Oakland Conditions (Non-CEQA Evaluation)

The 1998 EIS/EIR contained an estimate of trip generation prior to closure of the Naval Medical Center Oakland (NMCO), i.e., “pre-closure” conditions, which this SEIR presents for information (non-CEQA) purposes only.

Based on the 1998 EIS/EIR, the pre-closure use of the project site (i.e., the NMCO) generated about 4,804 daily trips, 733 a.m. peak-hour trips, and 677 p.m. peak-hour trips (see **Table F-1**). As described in Section IV.B of the SEIR, the proposed project would generate about 12,862 daily trips, 887 a.m. peak-hour trips, and 1,312 p.m. peak-hour trips.

**TABLE F-1**  
**TRIP GENERATION ESTIMATE – PRE-CLOSURE OF NAVAL MEDICAL CENTER OAKLAND**

Land Use	Daily	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Naval Medical Center Pre-Closure Trips	4,804	622	111	733	187	490	677

SOURCE: Fehr & Peers, 2007; *Naval Medical Center Oakland Disposal and Reuse Final EIS/EIR*, April 1998.

Although impacts associated with the proposed project were determined by comparing project conditions against existing conditions, for information purposes, a comparison of the proposed project against pre-closure conditions yields the same impact determinations as those already disclosed in this SEIR (see **Table F-2**).

Similarly, although cumulative impacts associated with the proposed project were determined by comparing project conditions against cumulative baseline conditions, for information purposes, a comparison of the proposed project against pre-closure conditions yields no additional impacts beyond those already disclosed in this SEIR (see **Table F-3**).

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**TABLE F-2  
INTERSECTION LEVELS OF SERVICE (LOS) – EXISTING PLUS PRE-CLOSURE PLUS PROJECT CONDITIONS**

Intersection	Traffic Control <sup>a</sup>	Peak Hour	Existing		Existing plus Pre-Closure		Existing plus Project	
			Delay (seconds) <sup>b</sup>	LOS	Delay (seconds) <sup>b</sup>	LOS	Delay (seconds) <sup>b</sup>	LOS
1 I-580 Eastbound Off-Ramp / Fontaine Street / Keller Avenue	AWSC	AM	13	B	31	D	21	C
		PM	13	B	17	C	37	E
2 Mountain Blvd / Keller Avenue	AWSC	AM	32	D	>70	F	>70	F
		PM	18	C	43	E	>70	F
3 I-580 Westbound On-Ramp / Mountain Blvd / Maynard Avenue	SSSC	AM	>70	F	>70	F	>70	F
		PM	23	C	49	E	56	F
4 I-580 Westbound Off-Ramp / Mountain Blvd / Shone Avenue	SSSC	AM	28	D	>70	F	>70	F
		PM	22	C	>70	F	>70	F
5 Canyon Oaks Drive / Keller Avenue / Project Site Access	SSSC	AM	10	B	14	B	21	C
		PM	10	B	18	C	23	C
6 Mountain Boulevard / Project Site Access	SSSC/ Signal <sup>d</sup>	AM	11	B	12	B	14	B
		PM	9	A	11	B	14	B
7 Mountain Boulevard / Golf Links Road	SSSC	AM	>70	F	>70	F	>70	F
		PM	>70	F	>70	F	>70	F
8 I-580 Westbound Ramps / Golf Links Road <sup>d</sup>	Signal	AM	74	E	69	E	67	E
		PM	62	E	56	E	53	D
9 Golf Links Road / I-580 Off-Ramp / 98th Avenue	Signal	AM	27	C	27	C	26	C
		PM	53	D	53	D	60	E
11 Mountain Boulevard / Sequoyah Road	SSSC	AM	11	B	15	B	16	C
		PM	10	B	12	B	17	C
12 Mountain Boulevard / I-580 Overcrossing	SSSC	AM	11	B	12	B	13	B
		PM	9	A	11	B	15	C
13 Bancroft Avenue / 82nd Avenue	Signal	AM	27	C	27	C	28	C
		PM	34	C	34	C	34	C

(See last page of table for footnotes)

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**TABLE F-2 (CONTINUED)**

**INTERSECTION LEVELS OF SERVICE (LOS) – SUMMARY OF “EXISTING PLUS” CONDITIONS**

Intersection	Traffic Control <sup>a</sup>	Peak Hour	Existing		Existing plus Pre-Closure		Existing plus Project	
			Delay (seconds) <sup>b</sup>	LOS	Delay (seconds) <sup>b</sup>	LOS	Delay (seconds) <sup>b</sup>	LOS
14 MacArthur Boulevard / 82nd Avenue	Signal	AM	13	B	13	B	13	B
		PM	13	B	13	B	14	B
15 Golf Links Road / 82nd Avenue	SSSC	AM	14	B	14	B	15	C
		PM	13	B	13	B	16	C
16 Fontaine Street / I-580 Overcrossing	SSSC	AM	10	B	11	B	11	B
		PM	10	B	10	B	10	B
17 Golf Links Road / Fontaine Street	AWSC	AM	9	A	10	B	10	B
		PM	9	A	9	A	11	B
18 Crest Avenue / Fontaine Street	SSSC	AM	9	A	9	A	9	A
		PM	10	B	10	B	11	B
19 Bancroft Avenue / 98th Avenue	Signal	AM	37	D	39	D	47	D
		PM	38	D	45	D	58	E
20 MacArthur Boulevard / 98th Avenue	Signal	AM	25	C	25	C	26	C
		PM	29	C	30	C	32	C
21 Lawlor Street / 98th Avenue	Signal	AM	16	B	15	B	15	B
		PM	7	A	7	A	7	A
22 Stearns Street / 98th Avenue	Signal	AM	18	B	18	B	18	B
		PM	13	B	13	B	12	B
23 Greenly Drive / Edwards Avenue	Signal	AM	8	A	8	A	8	A
		PM	10	B	10	B	10	B
24 MacArthur Boulevard / Foothill Blvd / 73rd Avenue <sup>c</sup>	Signal	AM	74	E	73	E	74	E
		PM	73	E	75	E	74	E

(See last page of table for footnotes)

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**TABLE F-2 (CONTINUED)**

**INTERSECTION LEVELS OF SERVICE (LOS) – SUMMARY OF “EXISTING PLUS” CONDITIONS**

Intersection	Traffic Control <sup>a</sup>	Peak Hour	Existing		Existing plus Pre-Closure		Existing plus Project	
			Delay (seconds) <sup>b</sup>	LOS	Delay (seconds) <sup>b</sup>	LOS	Delay (seconds) <sup>b</sup>	LOS
25 I-580 Eastbound On-Ramp / Seminary Avenue / Kuhnle Avenue	AWSC	AM	26	D	31	D	32	D
		PM	24	C	28	D	31	D
26 I-580 Eastbound Off-Ramp / Seminary Avenue / Overdale Ave	SSSC	AM	25	C	25	C	25	C
		PM	>70	F	>70	F	>70	F
27 I-580 Westbound Off-Ramp / Mountain Blvd / Kuhnle Avenue	SSSC	AM	>70	F	>70	F	>70	F
		PM	>70	F	>70	F	>70	F
28 Greenly Drive / Keller Avenue	AWSC	AM	8	A	8	A	8	A
		PM	8	A	8	A	8	A
29 Mountain Boulevard / Rifle Lane	SSSC	AM	11	B	11	B	11	B
		PM	10	B	10	B	11	B
30 I-580 Westbound On-Ramp /Mountain Blvd / Edwards Avenue	Signal	AM	22	C	22	C	22	C
		PM	16	B	16	B	15	B
31 I-580 Eastbound Off-Ramp / Edwards Avenue	Signal	AM	22	C	25	C	22	C
		PM	20	B	22	C	21	C
32 Lacey Avenue / Ney Avenue / 73 <sup>rd</sup> Avenue	Signal	AM	14	B	14	B	14	B
		PM	14	B	13	B	13	B
33 Campus Drive/Keller Avenue	SSSC	AM	10	B	10	B	10	B
		PM	13	B	13	B	14	B

a Signal = traffic signal; SSSC = side-street stop-sign control; AWSC = all-way stop-sign control.

b The LOS/Delay for Side-Street Stop-Control intersections represent the worst movement or approach; for Signalized and All-Way Stop-Control, the LOS/Delay represent overall intersection.

c Intersection is currently side-street stop-controlled, but would be signalized as part of the project.

d Existing intersections operations are slightly worse than operations with the addition of pre-closure, project, or maximum capacity traffic because delay is based on a weighted average, and traffic would be added to approaches with a low delay so overall delay decreases.

SOURCE: Fehr & Peers, 2007

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**TABLE F-3  
INTERSECTION LEVELS OF SERVICE (LOS) – CUMULATIVE PLUS PRE-CLOSURE CONDITIONS**

Intersection	Traffic Control <sup>a</sup>	Peak Hour	Cumulative Base		Cumulative Base plus Pre-Closure		Cumulative Base plus Project	
			Delay (seconds) <sup>b</sup>	LOS	Delay (seconds) <sup>b</sup>	LOS	Delay (seconds) <sup>b</sup>	LOS
1 I-580 Eastbound Off-Ramp / Fontaine Street / Keller Avenue	AWSC	AM	15	B	36	E	25	C
		PM	14	B	19	C	41	E
2 Mountain Blvd / Keller Avenue	AWSC	AM	49	E	>70	F	>70	F
		PM	26	D	>70	F	>70	F
3 I-580 Westbound On-Ramp / Mountain Blvd / Maynard Avenue	SSSC	AM	>70	F	>70	F	>70	F
		PM	30	D	69	F	>70	F
4 I-580 Westbound Off-Ramp / Mountain Blvd / Shone Avenue	SSSC	AM	56	E	>70	F	>70	F
		PM	36	E	>70	F	>70	F
5 Canyon Oaks Drive / Keller Ave / Project Site Access	SSSC	AM	11	B	15	B	25	C
		PM	11	B	20	C	27	D
6 Mountain Boulevard / Project Site Access	SSSC/ Signal <sup>c</sup>	AM	12	B	13	B	14	B
		PM	10	B	11	B	13	B
7 Mountain Boulevard / Golf Links Road	SSSC	AM	>70	F	>70	F	>70	F
		PM	>70	F	>70	F	>70	F
8 I-580 Westbound Ramps / Golf Links Road <sup>d</sup>	Signal	AM	89	F	84	F	82	F
		PM	78	E	71	E	68	E
9 Golf Links Road / I-580 Off-Ramp / 98th Avenue	Signal	AM	27	C	28	C	27	C
		PM	62	E	61	E	62	E
11 Mountain Boulevard / Sequoyah Road	SSSC	AM	12	B	18	C	20	C
		PM	11	B	14	B	23	C
12 Mountain Boulevard / I-580 Overcrossing	SSSC	AM	11	B	13	B	15	B
		PM	10	B	13	B	19	C
13 Bancroft Avenue / 82nd Avenue	Signal	AM	44	D	44	D	47	D
		PM	44	D	43	D	43	D

(See last page of table for footnotes)

**APPENDIX F**

**TABLE F-3 (CONTINUED)**

**INTERSECTION LEVELS OF SERVICE (LOS) – CUMULATIVE PLUS PRE-CLOSURE CONDITIONS**

Intersection	Traffic Control <sup>a</sup>	Peak Hour	Cumulative Base		Cumulative Base plus Pre-Closure		Cumulative Base plus Project	
			Delay (seconds) <sup>b</sup>	LOS	Delay (seconds) <sup>b</sup>	LOS	Delay (seconds) <sup>b</sup>	LOS
14 MacArthur Boulevard / 82nd Avenue	Signal	AM	13	B	14	B	14	B
		PM	14	B	14	B	15	B
15 Golf Links Road / 82nd Avenue	SSSC	AM	17	C	17	C	20	C
		PM	16	C	17	C	24	C
16 Fontaine Street / I-580 Overcrossing	SSSC	AM	11	B	12	B	12	B
		PM	10	B	11	B	12	B
17 Golf Links Road / Fontaine Street	AWSC	AM	10	B	10	B	11	B
		PM	10	B	10	B	12	B
18 Crest Avenue / Fontaine Street	SSSC	AM	10	B	10	B	10	B
		PM	10	B	10	B	11	B
19 Bancroft Avenue / 98th Avenue	Signal	AM	45	D	48	D	62	E
		PM	51	D	62	E	75	E
20 MacArthur Boulevard / 98th Avenue	Signal	AM	29	C	29	C	31	C
		PM	31	C	32	C	34	C
21 Lawlor Street / 98th Avenue	Signal	AM	18	B	18	B	18	B
		PM	8	A	8	A	8	A
22 Stearns Street / 98th Avenue	Signal	AM	36	D	35	C	35	C
		PM	14	B	14	B	14	B
23 Greenly Drive / Edwards Ave	Signal	AM	10	B	10	B	10	B
		PM	14	B	14	B	14	B
24 MacArthur Boulevard / Foothill Blvd / 73rd Avenue	Signal	AM	94	F	93	F	94	F
		PM	99	F	>100	F	>100	F

(See last page of table for footnotes)

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**TABLE F-3 (CONTINUED)**

**INTERSECTION LEVELS OF SERVICE (LOS) – CUMULATIVE PLUS PRE-CLOSURE CONDITIONS**

Intersection	Traffic Control <sup>a</sup>	Peak Hour	Cumulative Base		Cumulative Base plus Pre-Closure		Cumulative Base plus Project <sup>c</sup>	
			Delay (seconds) <sup>b</sup>	LOS	Delay (seconds) <sup>b</sup>	LOS	Delay (seconds) <sup>b</sup>	LOS
25 I-580 Eastbound On-Ramp / Seminary Avenue / Kuhnle Avenue	AWSC	AM	53	F	53	F	55	F
		PM	45	E	45	E	50	E
26 I-580 Eastbound Off-Ramp / Seminary Avenue / Overdale Avenue	SSSC	AM	>70	F	>70	F	>70	F
		PM	>70	F	68	F	>70	F
27 I-580 Westbound Off-Ramp / Mountain Blvd / Kuhnle Avenue	SSSC	AM	>70	F	>70	F	>70	F
		PM	>70	F	>70	F	>70	F
28 Greenly Drive / Keller Avenue	AWSC	AM	8	A	8	A	8	A
		PM	8	A	8	A	8	A
29 Mountain Boulevard / Rifle Lane	SSSC	AM	11	B	11	B	11	B
		PM	11	B	11	B	11	B
30 I-580 Westbound On-Ramp / Mountain Blvd / Edwards Avenue	Signal	AM	26	C	26	C	26	C
		PM	17	B	18	B	17	B
31 I-580 Eastbound Off-Ramp / Edwards Avenue	Signal	AM	52	D	57	E	53	D
		PM	38	D	42	D	41	D
32 Lacey Avenue / Ney Avenue / 73 <sup>rd</sup> Avenue	Signal	AM	17	B	17	B	17	B
		PM	17	B	18	B	18	B
33 Campus Drive / Keller Avenue	SSSC	AM	14	B	14	B	14	B
		PM	14	B	15	B	15	B

a Signal = traffic signal; SSSC = side-street stop-sign control; AWSC = all-way stop-sign control.

b The LOS/Delay for Side-Street Stop-Control intersections represent the worst movement or approach; for Signalized and All-Way Stop-Control, the LOS/Delay represent overall intersection.

c Intersection is currently side-street stop-controlled, but would be signalized as part of the project.

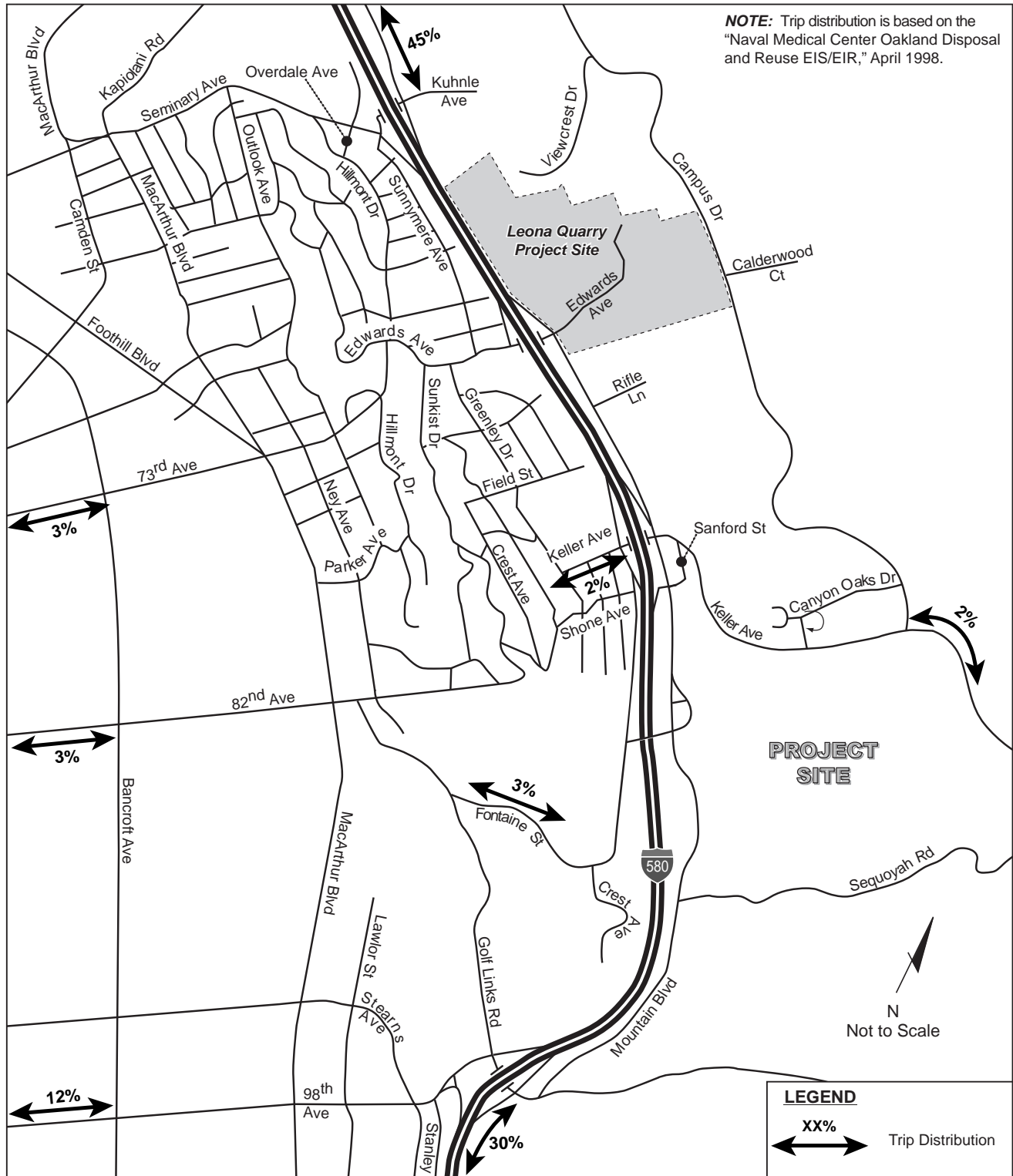
d Existing intersections operations are slightly worse than operations with the addition of pre-closure, project, or maximum capacity traffic because delay is based on a weighted average, and traffic would be added to approaches with a low delay so overall delay decreases.

SOURCE: Fehr & Peers, 2007

## APPENDIX F

### 1998 EIS/EIR Maximum Capacity Alternative

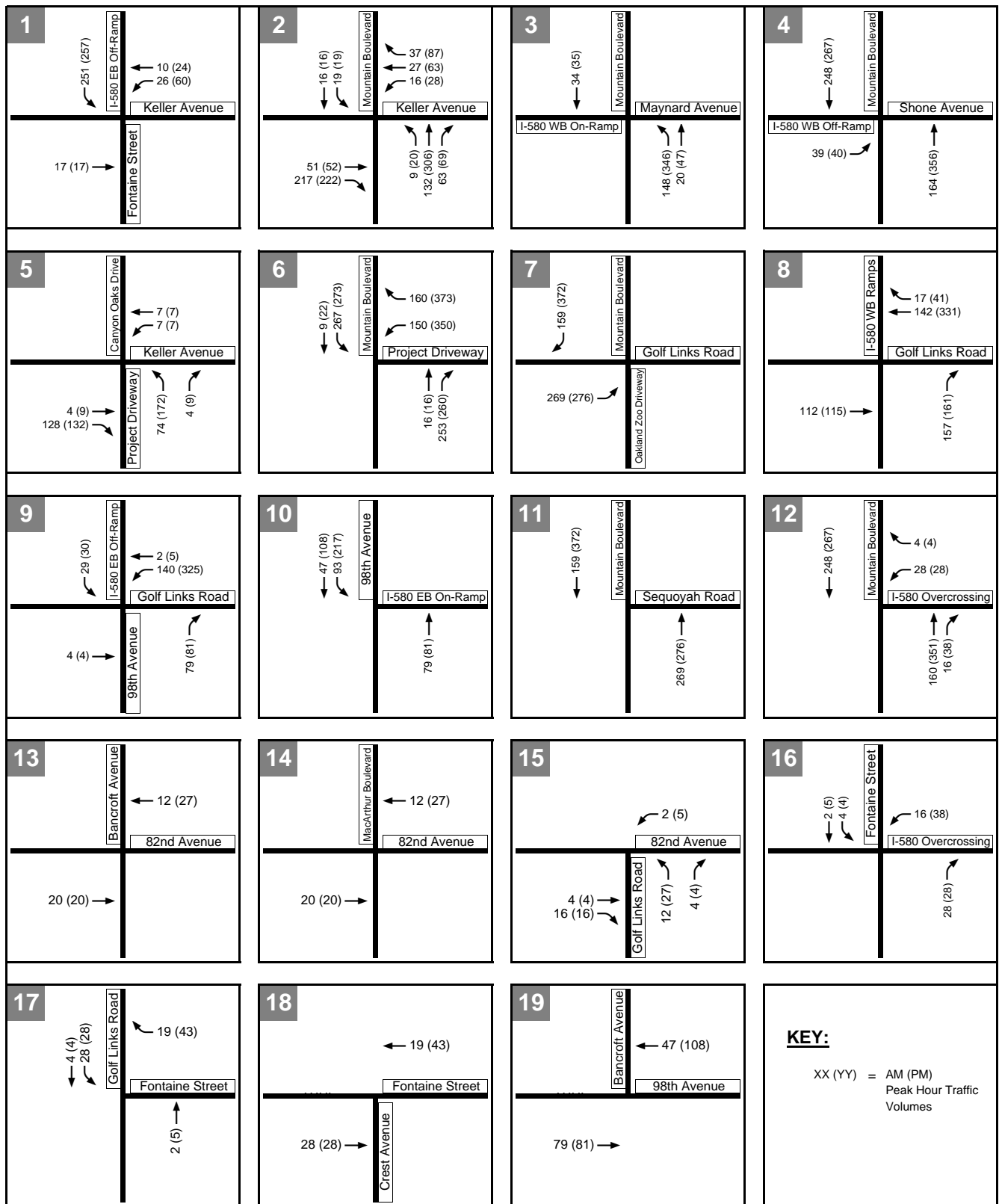
As described in Section IV.B of the SEIR, trip distribution and assignment for the Maximum Capacity Alternative is based on the 1998 EIS/EIR. The 1998 EIS/EIR assumed access to the site on Keller Avenue and Mountain Boulevard only, with 80 percent assigned to the Mountain Boulevard entrance and 20 percent to the Keller Avenue entrance. **Figure F-1** shows the trip distribution, and **Figure F-2** shows the trip assignment at the study intersections. **Figure F-3** shows the Existing plus Maximum Capacity Alternative traffic volumes, and **Figure F-4** shows the Cumulative plus Maximum Capacity Alternative traffic volumes.



SOURCE: Fehr & Peers

Oak Knoll Mixed Use Community Plan Project . 206232

**Figure F-1**  
 1998 EIR Maximum Capacity  
 Alternative Trip Distribution

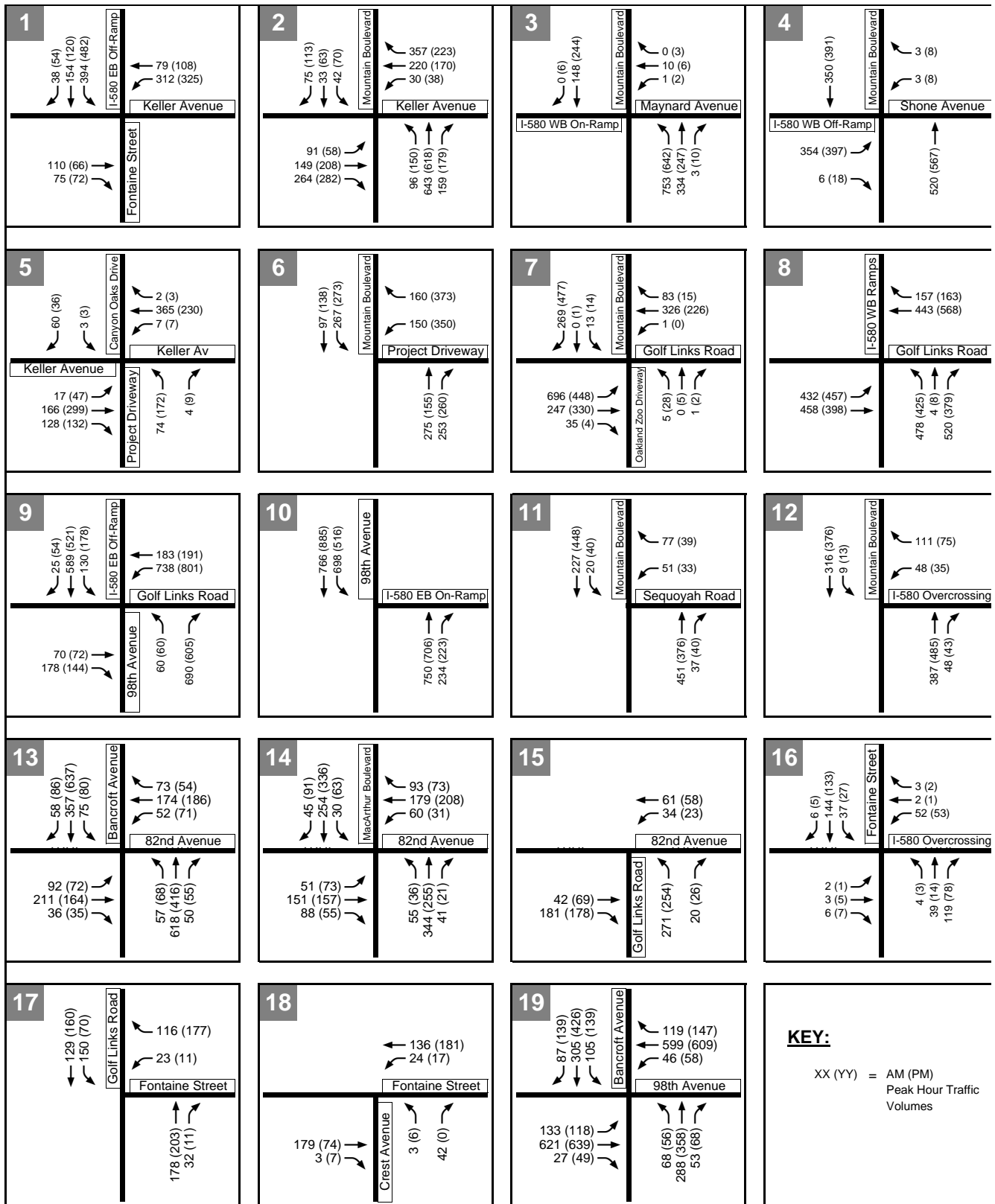


SOURCE: Fehr & Peers

Oak Knoll Mixed Use Community Plan Project . 206232

**Figure F-2A**  
1998 EIR Maximum Capacity Alternative  
Project Trip Assignment

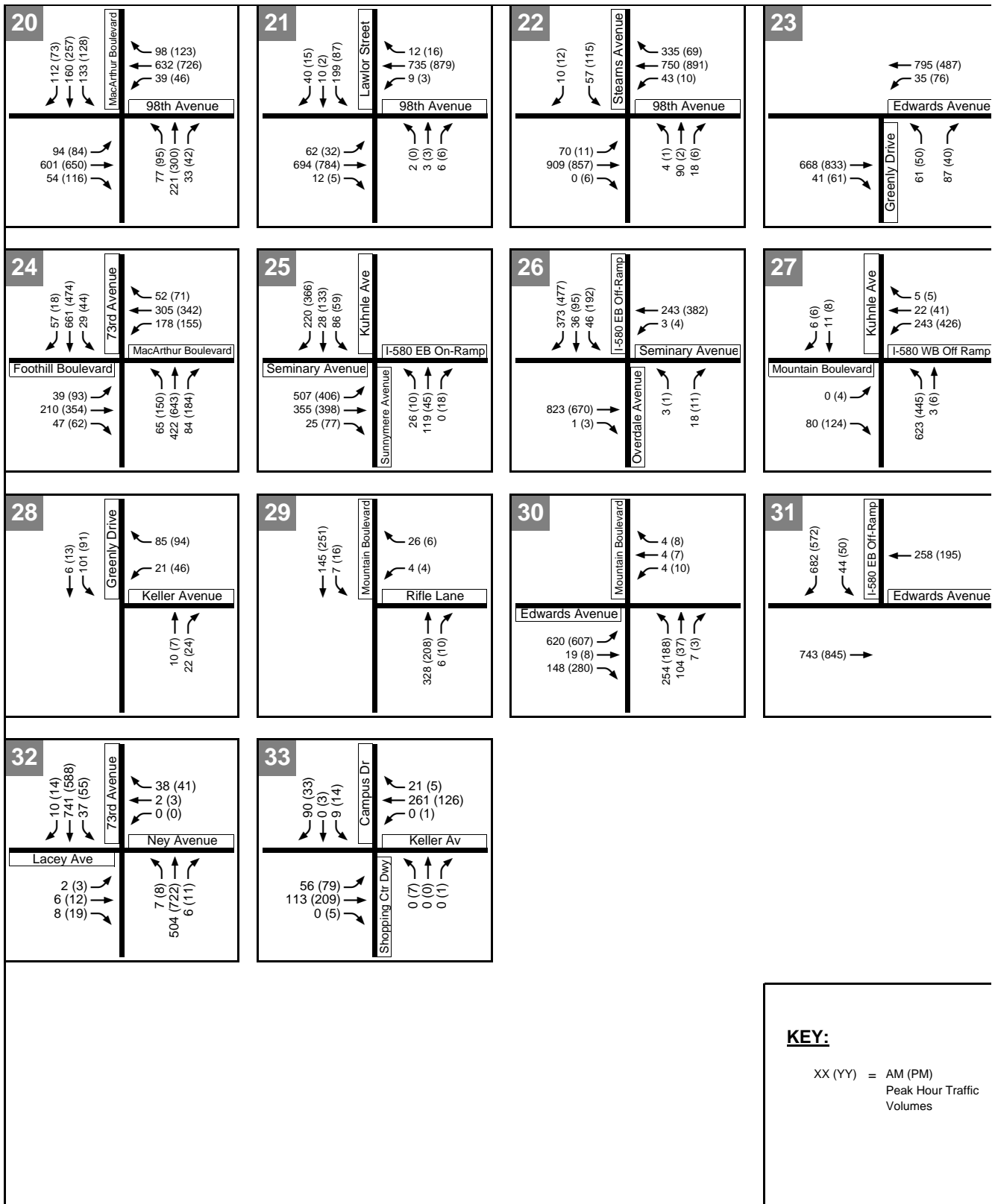




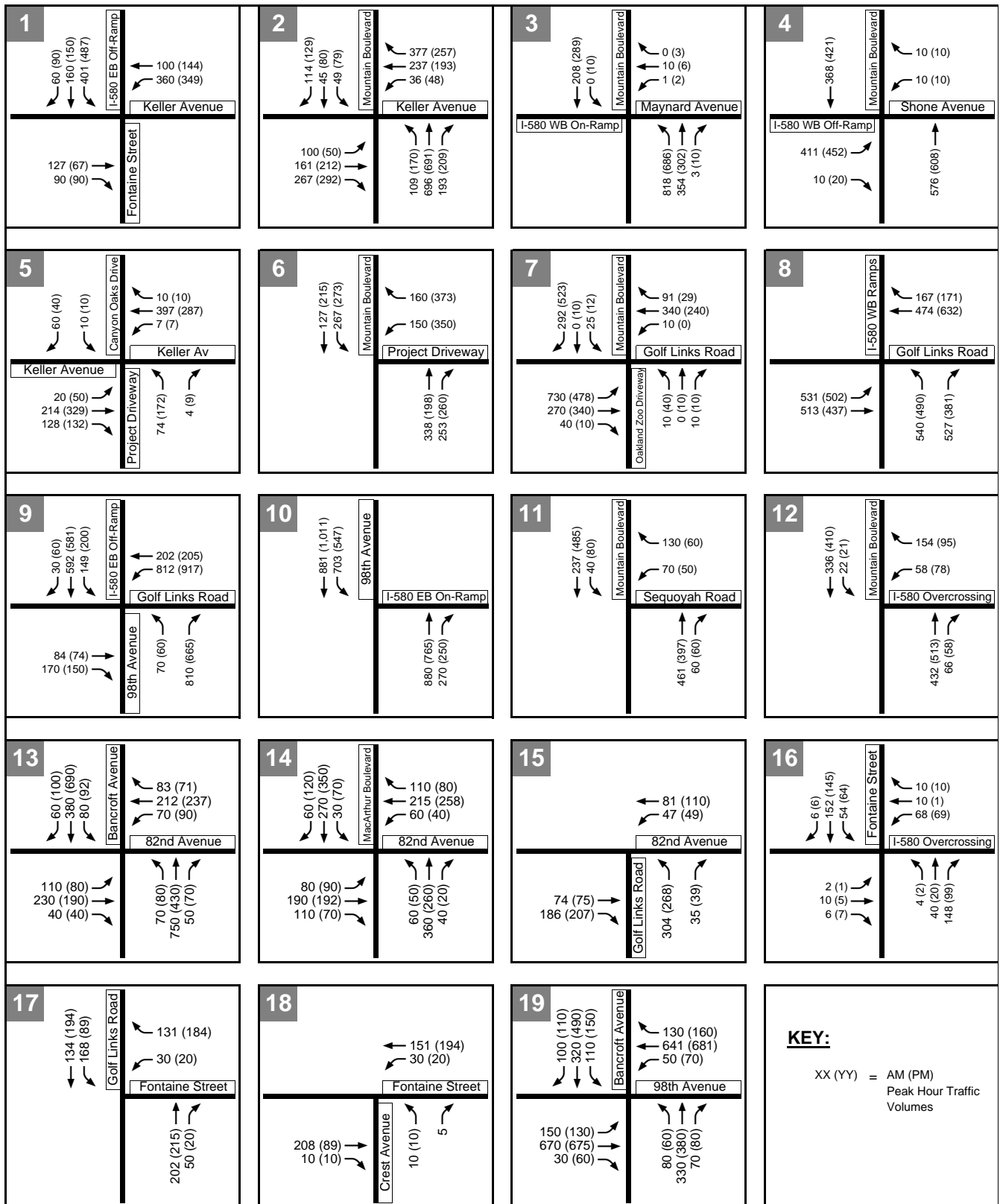
SOURCE: Fehr & Peers

Oak Knoll Mixed Use Community Plan Project . 206232

**Figure F-3A**  
Existing Plus 1998 EIR Maximum Capacity Alternative  
Peak Hour Traffic Volumes



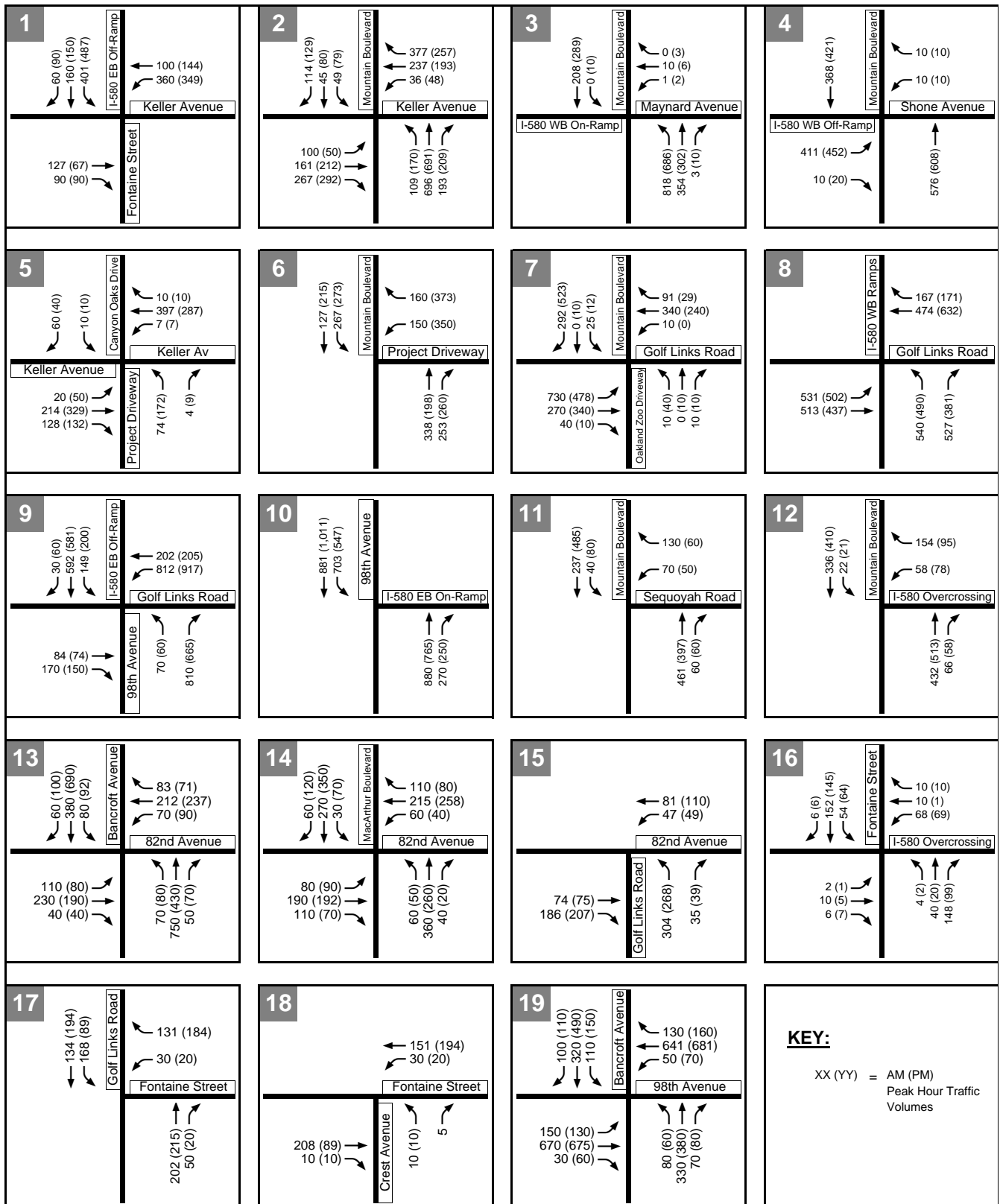
**Figure F-3B**  
 Existing Plus 1998 EIR Maximum Capacity Alternative  
 Peak Hour Traffic Volumes



SOURCE: Fehr & Peers

Oak Knoll Mixed Use Community Plan Project . 206232

**Figure F-4A**  
 Cumulative Plus 1998 EIR Maximum Capacity Alternative  
 Peak Hour Traffic Volumes



SOURCE: Fehr & Peers

Oak Knoll Mixed Use Community Plan Project . 206232

**Figure F-4B**  
 Cumulative Plus 1998 EIR Maximum Capacity Alternative  
 Peak Hour Traffic Volumes