

APPENDIX M

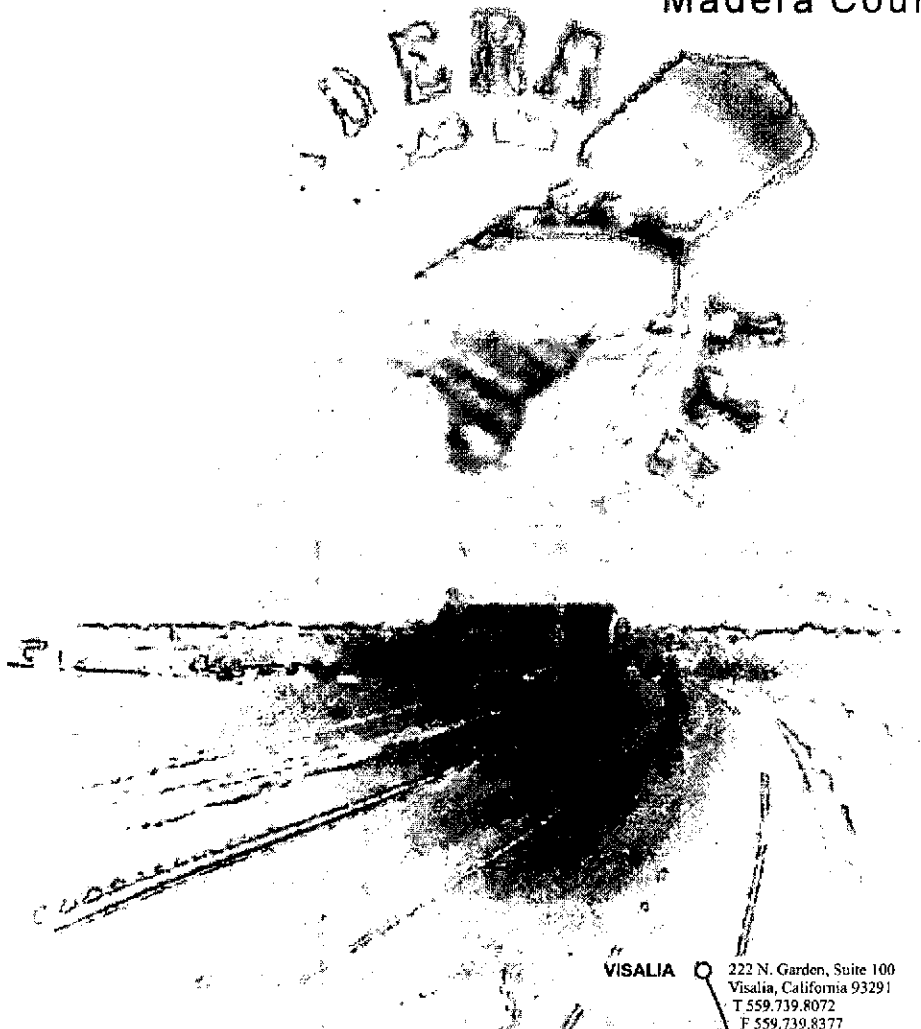
Updated Traffic Impact Study

OCTOBER 2008
FINAL

04-837.2

North Fork Casino

Madera County



TRAFFIC IMPACT STUDY

- VISALIA** ○ 222 N. Garden, Suite 100
Visalia, California 93291
T 559.739.8072
F 559.739.8377
- FRESNO** ○ 770 E. Shaw Avenue, Suite 120
Fresno, California 93710
T 559.439.4881
F 559.439.1142
- SAN LUIS OBISPO** ○ 560 Higuera Street, Suite E
San Luis Obispo, California 93401
T 805.547.9498
F 805.547.9596
- TEXAS** ○ 6807 Leameadow
Dallas, Texas 75248
T 903.566.3150
F 903.566.3510
- COLORADO** ○ 1950 W. Littleton Blvd, Suite 101
Littleton, Colorado 80120
T 303.797.0989
F 303.797.0987

tpgconsulting@tpgconsulting.net

www.tpgconsulting.net



TRAFFIC IMPACT STUDY

FOR THE

NORTH FORK CASINO

Madera County, California

Final: October 2008
2nd Draft: October 2006
1st Draft: October 2005

Prepared for:
Mr. Chad Broussard
Analytical Environmental Services
2021 "N" Street, Suite 200
Sacramento, CA 95814

Prepared by
TPG Consulting, Inc.
222 N. Garden, Ste. 100
Visalia, CA 93291
(559) 739-8072

Charles Clouse, AICP, Principal-in-Charge
N. Ruth Davis, PE, PTOE, Project Manager
Jill Gormley, TE, Associate Engineer
Wally Hutcheson, EIT, Assistant Engineer
Nabor Solorio, Graphics
Sofie Leon, Technician
Robert Jones, Technician
Jason Quick, Technician

This report and the data contained herein have been prepared expressly for the purposes of this project. The use of this data, the conclusions contained in the report or the information provided herein by individuals or agencies is done so at their sole discretion and at their own responsibility. Publication of this document does not warrant the use of the data, the conclusions or the information for any purpose other than that described within this report.

TRAFFIC IMPACT STUDY

FOR THE

NORTH FORK CASINO

I. EXECUTIVE SUMMARY

This Traffic Impact Study (TIS) was prepared to assess the traffic impacts due to the development of the North Fork Casino (Project) and will be used in the preparation of a Project Environmental Impact Statement (EIS). The five (5) alternatives evaluated for the TIS include:

- Alternative A: Proposed Project Alternative located on the Madera Site
- Alternative B: Reduced Intensity Alternative located on the Madera Site
- Alternative C: Commercial Land Use Alternative located on the Madera Site
- Alternative D: Off-Site Alternative located on the North Fork Site
- Alternative E: No Project Alternative

The following sections provide a summary of identified impacts and recommended improvements for each alternative land use and location along with proportionate share information for the recommended improvements.

Alternative A, Proposed Project Alternative (Madera Site)

Alternative A, which is the Proposed Project Alternative, would consist of the following land uses:

- 268,480 square foot (sf) casino including a gift shop, lounge (entertainment), and restaurants
- 200 room (224,530 sf) hotel

The Alternative A total square footage would be 493,010 sf and the Project would be constructed and operational by 2010. Alternative A would be located on the approximately 305 acre Madera Site, which is located to the west of Golden State Boulevard, east of Road 23, north of Avenue 17, and south of Avenue 18 in Madera County.

Table 1 shows the Alternative A levels of service summary for the various scenarios for the County segments, freeway segments, and intersections surrounding the Madera Site. County segments, freeway segments, or intersections operating or projected to operate below the adopted level of service are shown bolded in Table 1. The signalized and all-way stopped-controlled (AWSC) intersection levels of service shown in Table 1 are representative of the whole intersection. Individual intersection movements or approaches may operate above or below the signalized and AWSC level of service or delay shown in Table 1. The signalized levels of service or delay shown in Table 1 may not reflect the effects of 95th percentile queues that exceed the capacity for their movement.

Table 2 shows the results of the Alternative A peak hour volume signal warrant analyses for the various scenarios for the study intersections surrounding the Madera Site. If a study intersection met the peak hour volume signal warrant then a “Yes” is shown in the appropriate scenario column. If the intersection did not meet the peak hour volume signal warrant then a “No” is shown in the appropriate scenario column. Intersections by scenario that met the peak hour volume signal warrant are shown bolded Table 2.

Table 3 shows the Alternative A projected 95th-percentile queue lengths for the various scenarios for the various study locations surrounding the Madera Site. Movements with queue lengths that exceed or are projected to exceed their available storage lengths are shown bolded in Table 3. Please note that storage lengths for mitigated scenarios may be different than those shown in the Existing Queue Storage Length column.

TABLE 1:
WEEKDAY LEVELS OF SERVICE SUMMARY FOR THE COUNTY SEGMENTS, FREEWAY SEGMENTS, AND INTERSECTIONS
ALTERNATIVE A (PROPOSED PROJECT ALTERNATIVE / MADERA SITE)

County Segment	Existing		2010 No Project		2010 Project		Mitigated 2010 Project		2030 No Project		2030 Project		Mitigated 2030 Project	
	LOS AM/PM	Density (pc/mi/ln) AM/PM	LOS AM/PM	Density (pc/mi/ln) AM/PM	LOS AM/PM	Density (pc/mi/ln) AM/PM	LOS AM/PM	Density (pc/mi/ln) AM/PM	LOS AM/PM	Density (pc/mi/ln) AM/PM	LOS AM/PM	Density (pc/mi/ln) AM/PM	LOS AM/PM	Density (pc/mi/ln) AM/PM
SR 99 north of Avenue 18 1/2	C/C	22.6/22.1	C/C	23.9/24.2	C/C	24.3/25.2	C/C	24.3/25.2	D/D	26.5/33.2	D/D	26.6/33.6	C/C	19.3/22.7
SR 99 between Avenue 18 1/2 and Avenue 17	C/D	18.4/28.1	C/D	19.6/31.1	C/D	20.0/32.5	B/C	13.3/19.7	C/E	23.9/41.4	C/E	24.1/42.2	B/C	17.8/25.7
SR 99 south of Avenue 17	C/C	23.6/23.0	C/C	24.9/25.5	C/D	25.3/27.0	B/B	16.5/17.4	D/D	26.4/31.4	D/D	26.4/31.4	C/C	19.2/21.7
SR 99 south of Avenue 17	C/D	19.1/29.7	C/D	20.4/33.6	C/E	21.0/36.1	B/C	14.0/20.8	C/E	23.5/40.5	C/E	23.5/40.5	B/C	17.3/25.2
SR 99 south of Avenue 17	C/C	25.1/24.5	D/D	28.7/31.0	D/E	31.5/38.7	C/C	19.3/21.6	E/F	39.0/—	E/F	42.6/—	C/E	25.9/41.8
SR 99 south of Avenue 17	C/D	20.2/32.4	C/E	22.8/44.4	C/F	24.7/—	B/C	16.2/25.8	D/F	29.2/—	D/F	30.1/—	C/F	21.1/—
Intersection	LOS AM/PM	Density (pc/mi/ln) AM/PM	LOS AM/PM	Density (pc/mi/ln) AM/PM	LOS AM/PM	Density (pc/mi/ln) AM/PM	LOS AM/PM	Density (pc/mi/ln) AM/PM	LOS AM/PM	Density (pc/mi/ln) AM/PM	LOS AM/PM	Density (pc/mi/ln) AM/PM	LOS AM/PM	Density (pc/mi/ln) AM/PM
Avenue 18 1/2 at SR 99 NB ramps	A/A	8.2/7.9	A/A	6.4/5.6	A/A	8.4/8.1	B/B	13.4/13.4	A/B	7.5/10.1	B/B	14.7/13.2	B/B	13.5/12.8
• EB Left	C/B	16.3/14.8	C/C	21.3/21.4	C/D	22.7/26.4	A/B	9.1/11.3	F/F	337.7/523.8	B/E	17.8/58.6	A/B	9.6/14.2
Avenue 18 1/2 at SR 99 SB ramps/Road 23	A/A	0.6/1.2	A/A	0.8/1.5	A/A	0.8/1.4								
• WB Left-Through	B/C	13.9/17.2	C/E	18.5/36.5	C/F	20.8/63.1								
• NB Approach	B/C	13.5/17.2	C/D	16.5/28.5	C/E	17.2/36.5	F/F	52.0/332.3						
Avenue 18 1/2 at Pistachio Drive	A/A	0.0/0.4	A/A	0.0/0.4	A/A	0.0/0.4	A/A	0.0/0.4	A/A	0.7/2.2	A/A	0.7/2.5	A/A	0.7/2.6
• EB Left-Through	B/B	12.7/13.8	B/C	14.3/17.3	B/C	15.0/20.3	B/C	15.0/20.3	C/F	24.8/187.5	D/F	27.8/309.6	B/C	14.2/17.9
Avenue 18 1/2 at Golden State Boulevard	A/A	0.4/0.1	A/A	0.3/0.1	A/A	0.3/0.1	A/A	0.3/0.1						
• EB Left-Through	B/B	10.9/10.9	B/B	11.8/12.2	B/B	12.1/12.9	B/B	12.1/12.9						
• SB Approach														
• EB Left-Through-Right														
• WB Left-Through														
• NB Approach														
Avenue 18 at Road 23	A/A	0.1/0.5	A/A	0.1/0.2	A/A	0.1/0.2	A/A	0.1/0.2	A/A	0.0/0.2	A/A	0.0/0.2	A/A	5.1/7.4
• NB Left-Through-Right	A/A	0.4/0.6	A/A	1.4/1.4	A/A	1.7/1.7	A/A	1.7/1.7	A/A	0.8/1.0	A/A	2.3/2.7	A/A	2.3/2.7
• SB Left-Through-Right	A/A	9.4/9.8	A/B	9.7/10.2	A/B	9.6/10.1	A/B	14.5/17.9	B/C	14.5/17.9	C/C	15.3/21.2	C/C	15.3/21.2
• WB Approach	A/B	9.9/10.1	B/B	10.7/11.9	B/B	10.8/12.1	B/B	10.8/12.1	C/C	16.4/24.8	C/D	18.8/31.5		
• EB Approach														

SR = State Route Delay per vehicle secs = seconds NB = northbound WB = westbound EB = eastbound n/a = not applicable
Bolded Text = Intersection/movement operates below the appropriate level of service standard -- = exceeds software parameters

TABLE 1:
WEEKDAY LEVELS OF SERVICE SUMMARY FOR THE COUNTY SEGMENTS, FREEWAY SEGMENTS, AND INTERSECTIONS
ALTERNATIVE A (PROPOSED PROJECT ALTERNATIVE/MADERA SITE)

Intersection	Existing			2010 No Project			2010 Project			Mitigated 2010 Project			2030 No Project			2030 Project			Mitigated 2030 Project		
	LOS AM/PM	Delay AM/PM (secs)	LOS AM/PM	Delay AM/PM (secs)	LOS AM/PM	Delay AM/PM (secs)	LOS AM/PM	Delay AM/PM (secs)	LOS AM/PM	Delay AM/PM (secs)	LOS AM/PM	Delay AM/PM (secs)	LOS AM/PM	Delay AM/PM (secs)	LOS AM/PM	Delay AM/PM (secs)	LOS AM/PM	Delay AM/PM (secs)	LOS AM/PM	Delay AM/PM (secs)	
Avenue 17 at SR 99 NB ramps	A/A	9.0/8.0	B/B	10.0/10.2	B/B	11.0/13.9	B/B	13.0/18.1	D/F	27.7/617.2	E/F	75.1/268.4	C/F								
• NB Approach	B/B	11.9/13.3	F/F	114.6/371.0	F/F	601.5/4113.0															
Avenue 17 at SR 99 SB off-ramp	B/B	10.2/11.1	C/F	16.6/174.5	E/F	37.6/6974.5															
• SB Approach	A/A	0.0/0.0	A/A	8.2/8.7	A/B	9.2/10.7															
• EB Left	A/A	7.6/7.5	A/A	8.5/8.9	A/B	9.2/10.8															
• WB Left	A/A	9.7/9.3	C/D	22.2/32.4	F/F	250.4/—															
• NB Approach	B/B	12.2/11.9	F/F	113.9/—	F/F	—/—															
• SB Approach	A/A	0.1/0.4	A/A	0.7/1.4	A/A	0.7/1.7															
• NB Left-Through-Right	A/A	1.1/0.7	A/A	0.7/0.6	A/A	0.7/0.6															
• SB Left-Through-Right	B/B	10.3/10.6	B/C	13.9/18.9	C/E	15.5/39.0															
• WB Approach	B/B	10.3/10.4	B/B	12.3/14.9	B/C	13.1/19.2															
• EB Approach	A/A	4.8/5.5	A/A	6.6/9.5	A/B	7.6/13.3															
Ellis Street at Road 26	B/B	10.3/11.0	B/B	10.6/11.4	B/B	10.7/11.5															
Gateway/Avenue 16 at SR 99 NB ramps	A/B	9.7/10.6	B/B	10.1/11.4	B/B	10.3/11.9															
• SB Approach	A/A	4.7/4.8	A/A	5.0/5.4	A/A	5.2/5.8															
Avenue 16 at SR 99 NB ramp connector	A/A	9.0/9.6	A/A	9.1/9.9	A/A	9.2/9.9															
• EB Left-Through																					
Avenue 16/Ellis Overcrossing at SR 99 NB ramps																					
• SB Approach	A/A	9.3/10.0	A/B	9.2/10.1	A/B	9.2/10.1															
Avenue 16 at SR 99 SB ramps																					
• EB Left	B/B	11.0/13.0																			
• SB Approach	A/B	8.4/10.9																			
Avenue 16 at Schnoor Avenue/Golden State																					
• SB Approach	B/B	12.1/15.1	B/C	14.3/22.7	B/D	14.9/36.4															
Avenue 16/Ellis Overcrossing at Aviation Drive	B/B	14.2/12.2	B/B	15.2/14.2	B/B	15.4/18.6															
Cleveland Avenue/Avenue 15 1/2 at SR 99 NB ramps	A/A	0.0/0.0	A/A	0.0/0.0	A/A	0.0/0.0															
Cleveland Avenue/Avenue 15 1/2 at SR 99 SB ramps	A/A	1.0/1.7	A/A	1.0/1.8	A/A	1.1/2.0															
Avenue 15 1/2 at Road 23	B/B	10.1/10.7	B/B	10.8/12.0	B/B	11.0/12.7															
• NB Left-Through-Right	A/B	0.0/1.2	A/B	0.0/1.1	A/B	0.0/1.6															
• SB Left-Through-Right	A/B	9.1/13.1	A/A	5.6/6.6	A/B	5.6/10.7															
• WB Approach	A/B	22.1/31.2	C/C	21.1/33.3	C/D	23.2/38.7															
• EB Approach	B/B	10.6/11.0	B/B	13.1/14.1	B/B	13.9/17.0															
SR 145/Madera Avenue at SR 99 NB ramps																					
• SB Left-Through-Right																					
• WB Left-Through-Right																					
• EB Approach																					
• SB Approach																					
SR 145/Madera Avenue at SR 99 SB on-ramp at SR 145																					
• NB Left-Through-Right																					
• WB Left-Through-Right																					
• EB Approach																					
• SB Approach																					
Olive Avenue/Avenue 14 at SR 99 SB off-ramp																					
• NB Left-Through-Right																					
• WB Left-Through-Right																					
• EB Approach																					
• SB Approach																					

SR = State Route
 Bolded Text = Intersection/movement operates below the appropriate level of service standard
 secs = seconds
 Delay per vehicle
 n/a = not applicable
 EB = eastbound
 WB = westbound
 SB = southbound
 NB = northbound
 LOS = Level of Service
 AM/PM = AM/PM
 Delay = Delay
 F/F = Free Flow
 C/F = Critical Flow
 B/B = Best of Best
 B/C = Best of Critical
 B/D = Best of Degrade
 C/E = Critical of Egrade
 C/F = Critical of Flow
 C/G = Critical of Grade
 C/H = Critical of Height
 C/I = Critical of Inflow
 C/J = Critical of Junction
 C/K = Critical of Kinematics
 C/L = Critical of Load
 C/M = Critical of Maintenance
 C/N = Critical of Noise
 C/O = Critical of Operation
 C/P = Critical of Pollution
 C/Q = Critical of Quality
 C/R = Critical of Reliability
 C/S = Critical of Safety
 C/T = Critical of Traffic
 C/U = Critical of Urban
 C/V = Critical of Visual
 C/W = Critical of Weather
 C/X = Critical of X-factor
 C/Y = Critical of Yield
 C/Z = Critical of Zone

Traffic Impact Study for the North Fork Casino Project
Madera County, California

TABLE 1:
WEEKDAY LEVELS OF SERVICE SUMMARY FOR THE COUNTY SEGMENTS, FREEWAY SEGMENTS, AND INTERSECTIONS
ALTERNATIVE A (PROPOSED PROJECT ALTERNATIVE / MADERA SITE)

Intersection	Existing		2010 No Project		2010 Project		Mitigated 2010 Project		2030 No Project		2030 Project		Mitigated 2030 Project	
	LOS AM/PM	Delay' AM/PM (secs)	LOS AM/PM	Delay' AM/PM (secs)	LOS AM/PM	Delay' AM/PM (secs)	LOS AM/PM	Delay' AM/PM (secs)	LOS AM/PM	Delay' AM/PM (secs)	LOS AM/PM	Delay' AM/PM (secs)	LOS AM/PM	Delay' AM/PM (secs)
Avenue 14 at Road 23	A/A	8.4/8.4	A/A	8.8/9.3	A/A	9.0/9.8	A/A	9.0/9.8	B/C	11.6/16.6	B/C	11.8/17.8	A/A	7.0/6.9
Avenue 12/Golden State Boulevard at SR 99 SB ramps	A/A	4.6/3.4	A/A	6.1/3.7	A/A	6.1/3.7	B/B	14.1/13.1	B/C	9.1/7.5	C/C	21.7/24.1	C/B	20.6/17.8
• SB Left-Through	C/C	15.3/16.8	E/D	43.3/30.0	F/E	50.7/44.3			F/F	9323.4/9051.8				
• WB Approach	D/F	51.0/90.1	D/D	54.0/52.0	D/E	54.3/58.4	D/D	39.8/41.2	F/F	205.2/328.4	E/F	75.6/155.1	C/D	34.4/39.5
Avenue 12 at Golden State Boulevard	A/A	2.3/4.1	B/C	17.9/21.7	B/C	19.1/21.9	B/B	12.9/12.8	C/E	21.5/27.9	C/E	22.9/63.8	B/B	16.5/18.0
Avenue 12 at SR 99 NB ramps	A/A	2.3/4.1												
• EB Left-Through	F/F	119.1/182.2												
• NB Approach														

SB = State Route Delay per vehicle secs = seconds NB = northbound SB = southbound WB = westbound EB = eastbound --- = exceeds software parameters n/a = not applicable
 Bolded Text = Intersection/movement operates below the appropriate level of service standard

**TABLE 2:
SIGNAL WARRANT ANALYSIS
ALTERNATIVE A (PROPOSED PROJECT ALTERNATIVE / MADERA SITE)**

Intersection	Existing	2010 No Project	2010 Project	2030 No Project	2030 Project
Avenue 18 ½ at SR 99 SB ramps/Road 23	No	No	No	Yes	Yes
Avenue 18 ½ at SR 99 NB ramps	No	No	No	Yes	Yes
Avenue 17 at SR 99 SB off-ramp	No	Yes	Yes	Yes	---
Avenue 17 at SR 99 NB ramps	Yes	Yes	Yes	Yes	---
Avenue 12/Golden State Boulevard at SR 99 SB ramps	No	Yes	Yes	Yes	---
Avenue 12 at Golden State Boulevard	---	---	---	---	---
Avenue 12 at SR 99 NB ramps	Yes	---	---	---	---
Avenue 18 at Road 23	No	No	No	No	Yes
Avenue 17 at Road 23	No	No	Yes	Yes	---
Avenue 17 at Golden State Boulevard	No	Yes	Yes	Yes	---
Ellis Street at Road 26	---	---	---	---	---
Avenue 15 ½ at Road 23	No	No	No	Yes	Yes
Avenue 14 at Road 23	No	No	No	Yes	Yes
Avenue 16 at Schnoor Avenue	Yes	---	---	---	---
Avenue 16 at Aviation Drive	---	---	---	---	---
Avenue 16 at SR 99 SB ramps	No	---	---	---	---
Avenue 16/Avenue 16 connector at SR 99 NB ramps	No	No	No	---	---
Avenue 16 at SR 99 NB ramp connector	No	No	No	---	---
Gateway/Avenue 16 at SR 99 NB ramps	No	No	No	---	---
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	---	---	---	---	---
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	---	---	---	---	---
SR 99 NB ramps at SR 145/Madera Avenue	---	---	---	---	---
Olive Avenue/Avenue 14 at SR 99 SB off-ramp	---	---	---	---	---
Olive Avenue/Avenue 14/ SR 99 SB on-ramp at SR 145	---	---	---	---	---
Avenue 18 ½ at Pistachio Drive	No	No	No	Yes	Yes
Avenue 18 ½ at Golden State Boulevard	No	No	No	Yes	Yes

SR = State Route

Yes = meets urban/rural peak hour volume signal warrant

No = does not meet urban/rural peak hour volume signal warrant

--- = signalized intersection/no warrant prepared

Bolded Text = intersection meets the peak hour signal warrant

TABLE 3:
95th PERCENTILE QUEUE LENGTH SUMMARY
ALTERNATIVE A (PROPOSED PROJECT ALTERNATIVE / MADERA SITE)

Intersection	Existing Storage Length (ft)	95 th Percentile Queue Length (ft)							
		Existing	2010 No Project	2010 Project	Mitigated 2010 Project ⁴	2030 No Project	2030 Project	Mitigated 2030 Project ⁴	
SR 99 NB off-ramp at Avenue 18 1/2	1,204 ¹ (770 ²)	43/38	69/80	77/134	110/131	46/1/---	#164/#181	148/188	
• NB Left		4/4	4/4	4/5	19/0	8/9	26/0	25/0	
• NB Through-Right									
SR 99 SB off-ramp at Avenue 18 1/2	1,256 ¹ (822 ²)	22/47	35/95	37/118	63/97	246/860			
• SB Left-Through-Right									
• SB Left							#209/#357	82/124	
• SB Left-Right									
• SB Right								61/#119	
SR 99 SB off-ramp at Avenue 17	1,341 ¹ (907 ²)	4/13	15/259	62/---	56/163	---/---	#358/#657	110/#308	
• SB Left	589 ³	1/1	8/11	20/44	35/38	239/---	106/192	46/122	
• SB Right	589 ³ (626 ²)								
SR 99 NB off-ramp at Avenue 17	1,060 ¹ (626 ²)	17/8	322/623	---	128/160	---	#766/#1,383	275/#838	
• NB Left	45 ³				129/161	---	#773/#1,406	49/#664	
• NB Left-Through								29/#541	
• NB Through-Right									
• NB Right	45 ³								
SR 99 NB off-ramp at Avenue 16 [Avenue 16/Ellis Avenue Overcrossing]	1,150 ¹ (716 ²)	12/66	27/588	49/1,557	26/214	403/---	53/#901	29/#541	
• SE Through-Right									
• [NB Left]		0/0	0/0	0/0	0/0				
• [NB Through-Right]									
SR 99 SB off-ramp at Avenue 16 [Avenue 16/Ellis Avenue Overcrossing]	1,020 ¹ (586 ²)	9/18	33/49	34/50	34/50	34/56	34/56	34/56	
• SB Left		15/29	40/51	42/54	42/54	24/123	24/127	24/127	
• SB Right									
SR 99 NB off-ramp at Avenue 15 1/2 /Cleveland Avenue	881 ¹ (447 ²)	83/103	110/192	137/292	110/#318	141/205	142/186	137/231	
• NB Left	353 ³	82/103	110/194	137/293	110/#321	141/209	142/190	137/235	
• NB Left-Through	353 ³	39/129	41/208	42/254	37/#269	232/#828	#239/#766	74/#383	
• NB Right	353 ³								

95th percentile queue length - is minimum amount of storage needed for each movement
 SR = Site Route
 β = feet
 β = Distance of ramp striped as 2-lanes (existing)
 [ft] = 2030 conditions
 β = Total ramp length
 β = Calculated storage distance
 --- = not calculated for unsignalized intersections
 β = 95th percentile volume exceeds capacity, queue may be longer, queue shown is maximum after two (2) cycles
 Bolded text = 95th percentile queues exceed the available storage capacity
 4 = Storage lengths for mitigated scenarios may be different than those shown in the Existing Queue Storage Length column
 m = volume for 95th percentile queue is metered by upstream signal
 SB = southbound
 WB = westbound
 EB = eastbound

TABLE 3:
95th-PERCENTILE QUEUE LENGTH SUMMARY
ALTERNATIVE A (PROPOSED PROJECT ALTERNATIVE / MADERA SITE)

Intersection	Existing Queue Storage Length (ft)	95 th Percentile Queue Length (AM/PM)						
		Existing	2010 No Project	2010 Project	Mitigated 2010 Project ^a	2030 No Project	2030 Project	Mitigated 2030 Project ^d
SR 99 SB off-ramp at Avenue 15 1/2 /Cleveland Avenue	1,000 ¹ (566 ²)							
• SB Left	65 ³	76/123	95/135	108/179	78/148	#407/#813	#407/#781	137/#360
• SB Left-Through								
• SB Through - Right								
• SB Right	65 ³	30/25	38/65	42/145	33/124	114/241	115/221	103/#334
SR 99 NB off-ramp at SR 145/Madera Avenue	1,310 ¹ (876 ²)							
• WB Left	90 ³	116/103	117/108	117/108	109/85	#459/#575	#395/#575	104/115
• WB Through-Right	90 ³	0/30	0/31	0/31	0/26	0/62	0/62	0/45
SR 99 SB off-ramp at Avenue 14/Olive Avenue	1,254 ¹ (820 ²)							
• SB Left	65 ³	143/143	171/210	187/266	92/109	454/#1,062	197/389	
• SB Left-Right								
• SB Right	65 ³	43/37	41/33	40/30	47/35	174/244	185/303	154/248
SR 99 SB off-ramp at Avenue 12/Golden State Boulevard	1,431 ¹ (997 ²)							
• WB Left		70/81	239/190	273/277	60/64	---	431/532	359/445
• WB Right		7/7	7/8	7/8	14/14	7/15	28/73	23/32
SR 99 NB off-ramp at Avenue 12	1,223 ¹ (789 ²)							
• NB Left								
• NB Left-Through	49 ³	259/300	216/224	236/#240	173/163	#501/#581	#512/#593	187/182
• NB Through-Right								
• NB Right	49 ³	18/21	49/58	52/59	42/47	234/#501	236/#511	101/182
Avenue 17 between SR 99 SB off-ramp and Golden State Boulevard	481							102/180
• WB Left (at Golden State Boulevard)		6/3	10/10	13/21	#131/#170	437/---	m#634/m#499	#270/m#431
• WB Through (at Golden State Boulevard)					74/132		m133/m310	
• WB Through-Right (at Golden State Boulevard)		0/0	0/0	0/0		0/0		262/#1,084
• WB Right (at Golden State Boulevard)								
• EB Through (at SR 99 SB off-ramp)		0/0	0/0	0/0	15/28	m17/m12	m77/m109	90/m213

95th percentile queue length - is minimum amount of storage needed for each movement
 SR = State Route
 β = feet
 f = Distance of ramp striped as 2-lanes (existing)
 ft = 2030 conditions
 l = Total ramp length
 --- = not calculated for unsignalized intersections
 β = 95th percentile volume exceeds capacity, queue may be longer, queue shown is maximum after two (2) cycles
 Bolded text = 95th percentile queues exceed the available storage capacity
 m = volumes for 95th percentile queue is metered by upstream signal
 * = Storage lengths for mitigated scenarios may be different than those shown in the Existing Queue Storage Length column

Table 4 shows the Alternative A ramp widening/auxiliary lane thresholds for the various scenarios for the various State Route (SR) 99 off-ramps. Locations that are projected to meet the thresholds are shown bolded in Table 4.

Table 5 shows the Alternative A calculated left-turn storage lengths for movements which have existing separate left-turn or right-turn lanes, meet left-turn channelization warrants, or require dual left-turn lanes or separate right-turn lanes for the various Project scenarios for the various study locations surrounding the Madera Site. SR 99 off-ramp approaches and movements included in the queue length analysis are not included in the storage length calculations. It should be noted that the calculated left-turn storage length increases are not solely due to Project only trips but are also due to increases in background traffic.

TABLE 4:
RAMP WIDENING/AUXILIARY LANE THRESHOLD SUMMARY
ALTERNATIVE A (PROPOSED PROJECT / MADERA SITE)

Intersection	Existing			2010 No Project			2010 Project			2030 No Project			2030 Project		
	PCE (AM/PM)	900 to 1,499 PCE Threshold (AM/PM) (Y/N)	1,500 PCE Threshold (AM/PM) (Y/N)	PCE (AM/PM)	900 to 1,499 PCE Threshold (AM/PM) (Y/N)	1,500 PCE Threshold (AM/PM) (Y/N)	PCE (AM/PM)	900 to 1,499 PCE Threshold (AM/PM) (Y/N)	1,500 PCE Threshold (AM/PM) (Y/N)	PCE (AM/PM)	900 to 1,499 PCE Threshold (AM/PM) (Y/N)	1,500 PCE Threshold (AM/PM) (Y/N)	PCE (AM/PM)	900 to 1,499 PCE Threshold (AM/PM) (Y/N)	1,500 PCE Threshold (AM/PM) (Y/N)
SR 99 NB off-ramp at Avenue 18 1/2	248/231	N/N	N/N	282/302	N/N	N/N	292/347	N/N	N/N	378/406	N/N	N/N	378/406	N/N	N/N
SR 99 SB off-ramp at Avenue 18 1/2	155/248	N/N	N/N	189/289	N/N	N/N	190/290	N/N	N/N	504/737	N/N	N/N	548/793	N/N	N/N
SR 99 SB off-ramp at Avenue 17	55/111	N/N	N/N	109/222	N/N	N/N	164/320	N/N	N/N	497/745	N/N	N/N	497/745	N/N	N/N
SR 99 NB off-ramp at Avenue 17	204/428	N/N	N/N	424/822	N/N	N/N	617/1186	N/Y	N/N	1650/3347	N/N	Y/Y	1863/3603	N/N	Y/Y
SR 99 NB off-ramp at Avenue 16	60/104	N/N	N/N	69/115	N/N	N/N	69/115	N/N	N/N	314/430	N/N	N/N	314/430	N/N	N/N
SR 99 SB off-ramp at Avenue 16	185/269	N/N	N/N	248/385	N/N	N/N	282/464	N/N	N/Y	630/950	N/Y	N/N	637/964	N/Y	N/N
SR 99 NB off-ramp at Avenue 15 1/2 /Cleveland Avenue	328/552	N/N	N/N	451/846	N/N	N/N	540/1100	N/Y	N/Y	753/1298	N/Y	N/N	753/1298	N/Y	N/Y
SR 99 SB off-ramp at Avenue 15 1/2 /Cleveland Avenue	129/181	N/N	N/N	192/303	N/N	N/N	242/408	N/N	N/Y	707/1134	N/Y	N/N	736/1196	N/Y	N/N
SR 99 NB off-ramp at SR 145/Madera Avenue	217/186	N/N	N/N	223/193	N/N	N/N	223/193	N/N	N/N	496/534	N/N	N/N	496/534	N/N	N/N
SR 99 SB off-ramp at Avenue 14/Olive Avenue	361/317	N/N	N/N	439/504	N/N	N/N	487/657	N/N	Y/Y	958/1400	Y/Y	N/N	975/1438	Y/Y	N/N
SR 99 SB off-ramp at Avenue 12/Golden State Boulevard	369/372	N/N	N/N	470/490	N/N	N/N	490/550	N/N	Y/N	1176/1567	Y/N	N/Y	1185/1590	Y/N	N/Y
SR 99 NB off-ramp at Avenue 12	313/294	N/N	N/N	355/343	N/N	N/N	355/343	N/N	N/N	745/805	N/N	N/N	745/805	N/N	N/N

PCE = Passenger Car Equivalent
(N) = Mitigations Not Included in Analyses & Cost Estimates
Y = Threshold Met
N = Threshold Not Met
SB = southbound
NB = northbound
SB - southbound
NB - northbound
SB - southbound
NB - northbound
SB - southbound
NB - northbound

**TABLE 5:
TURN LANE STORAGE CALCULATIONS SUMMARY
ALTERNATIVE A (PROPOSED PROJECT/MADERA SITE)**

Intersection	Movement	Existing Storage Length (ft)	2010 Project Storage Length (ft)	2030 Project Storage Length (ft)
Avenue 18 ½ at SR 99 SB ramps/Road 23	NBL	25	100	n/a
	NBR	25	100	n/a
	WBL	---	n/a	n/a
	SBL	---	n/a	200
	SBR	---	n/a	500
Avenue 18 ½ at SR 99 NB ramps	EBL	150	150	300 ¹
Avenue 17 at SR 99 NB ramps	WBR	---	250	n/a
	EBL	300	100	300 ¹
Avenue 12/Golden State Boulevard at SR 99 SB ramps	NBR	---	350	900
	SBL	---	200	500
Avenue 12 at Golden State Boulevard	NBL	200	100	100
	WBL	---	100	100
	WBR	---	n/a	700
	SBL	400	350 ¹	750 ⁴
	SBR	200	100	n/a
	EBL	350	300	400
	EBR	425	100	n/a
Avenue 12 at SR 99 NB ramps	WBR	---	600	1,800
	EBL	---	250	300 ¹
Avenue 17 at Road 23	NBL	---	n/a	150
	WBL	---	n/a	100
	SBR	---	n/a	300
	EBR	---	n/a	300
Avenue 17 at Golden State Boulevard	NBL	50	150	300
	NBR	---	n/a	650 ³
	WBL	---	200	600 ¹
	WBR	---	350	n/a
	SBL	---	200 ¹	600 ⁴
	EBL	---	---	100 ¹
Ellis Street at Road 26	NBL	---	100	100
	WBR	---	250	150
	SBL	---	200	200
	EBR	---	100	100

ft = feet

SR = State Route

NB = northbound

SB = southbound

WB = westbound

EB = eastbound

n/a = not applicable --- = no existing lane

¹ = dual lefts required, length of each left-turn lane

² = exceeds available distance to nearest intersection

³ = dual rights required, length of each right-turn lane

⁴ = triple lefts required, length of each left-turn lane

**TABLE 5:
TURN LANE STORAGE CALCULATIONS SUMMARY
ALTERNATIVE A (PROPOSED PROJECT/MADERA SITE)**

Intersection	Movement	Existing Storage Length (ft)	2010 Project Storage Length (ft)	2030 Project Storage Length (ft)
Avenue 16/Ellis Street at Aviation Drive	NBL	75	100	400
	NBR	75	n/a	1,100 ³
	WBL	200	400	850 ¹
	SBL	---	100	400 ¹
	SBR	---	100	n/a
	EBL	---	100	150
	EBR	---	n/a	350
Avenue 16 at SR 99 SB ramps	WBR	---	100	n/a
	EBL	---	150	n/a
Avenue 16 at SR 99 NB ramps	EBL	---	n/a	n/a
	EBR	---	n/a	n/a
Avenue 16/Ellis Street at SR 99 NB ramps	NBL	---	n/a	150 ¹
	NBTR	---	n/a	150
	WBR	---	n/a	200
	EBL	300	n/a	400 ¹
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	WBR	50	200	1,050
	EBL	100	250	200 ¹
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps	WBL	125	250	450
	EBR	125	700	900
SR 145/Madera Avenue at SR 99 NB ramps	NBL	---	250 ¹	600 ¹
	SBR	---	n/a	350
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	NBL	125	100 ¹	200 ¹
	SBL	100	n/a	250
	SBR	25	250	550
	EBL	175	250	300 ¹
	EBR	175	500	1,150
Avenue 18 ½ at Golden State Boulevard/Road 23	NBL	---	n/a	100
	NBR	---	n/a	500
	WBL	---	n/a	350 ¹
	WBR	---	175	n/a
	SBL	---	n/a	150
Avenue 18 at Pistachio Drive	WBR	---	250	250

ft = feet SR = State Route NB = northbound SB = southbound
 WB = westbound EB = eastbound n/a = not applicable --- = no existing lane
¹ = dual lefts required, length of each left-turn lane ² = exceeds available distance to nearest intersection
³ = dual rights required, length of each right-turn lane ⁴ = triple lefts required, length of each left-turn lane

In order to mitigate the County segments, freeway segments, and intersections projected to operate below the level of service standard as identified in Table 1, meet the peak hour volume signal warrant as identified in Table 2, exceed the 95th percentile queue storage lengths as identified in Table 3, meet the ramp widening/auxiliary lane thresholds as identified in Table 4, and/or exceed the available storage length, meet the left-turn channelization warrant, require dual left-turn lanes, or separate

right-turn lanes as identified in Table 5, the following improvements by scenario are proposed for Alternative A at the Madera Site:

Opening Day (2010) Improvements for Alternative A

County Segments

- Avenue 17 – SR 99 to Road 27
 - Restripe/widen from two (2) lanes to four (4) lanes

Freeway Segments

- SR 99 north of Avenue 18 1/2
 - Restripe/widen the SB leg from two (2) lanes to three (3) lanes
- SR 99 between Avenue 18 ½ to Avenue 17
 - Restripe/widen the NB leg from two (2) lanes to three (3) lanes
 - Restripe/widen the SB leg from two (2) lanes to three (3) lanes
- SR 99 south of Avenue 17
 - Restripe/widen the NB leg from two (2) lanes to three (3) lanes
 - Restripe/widen the SB leg from two (2) lanes to three (3) lanes

Intersections

- Avenue 18 ½ at SR 99 NB ramps
 - Signalize the intersection
- Avenue 18 ½ at SR 99 SB ramps/Road 23
 - Signalize the intersection
- Avenue 17 at SR 99 NB ramps
 - Signalize the intersection
 - Restripe/widen the NB approach, south leg, from one (1) shared left-through lane and one (1) right-turn lane to one (1) left-turn lane, one (1) shared left-through lane and two (2) right-turn lanes
 - Restripe/widen the EB approach, west leg, from one (1) left-turn lane and one (1) through lane to one (1) left-turn lane and two (2) through lanes
 - Restripe/widen the WB approach from one (1) through lane and one (1) right-turn lane to two (2) through lanes and one (1) right-turn lane
- Avenue 17 at SR 99 SB ramps
 - Signalize the intersection
 - Restripe/widen the EB approach, west leg, from one (1) through lane to two (2) through lanes
 - Restripe/widen the WB approach, east leg, from one (1) through lane to two (2) through lanes
- Avenue 17 at Golden State Boulevard
 - Signalize the intersection
 - Restripe/widen the SB approach, north leg, from one (1) shared left-through-right lane to two (2) left-turn lanes and one (1) shared through-right lane

- Restripe/widen the EB approach, west leg, from one (1) left-turn lane, one (1) through lane, and one (1) right-turn lane to one (1) left-turn lane, one (1) through lane, and one (1) shared through-right lane
- Restripe/widen the WB approach, east leg, from one (1) left-turn lane and one (1) shared through-right lane to one (1) left-turn lane, two (2) through lanes, and one (1) right-turn lane

- Avenue 17 at Road 23
 - Signalize the intersection

- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145
 - Restripe/widen the EB approach, west leg, from one (1) shared left-through and one (1) right-turn lane to one (1) left-turn lane, one (1) through lane, and one (1) right-turn lane

- Olive Avenue/Avenue 14 at SR 99 SB off-ramp
 - Restripe/widen the SB approach, north leg, from one (1) left-turn lane and one (1) right-turn lane to two (2) left-turn lanes and one (1) right-turn lane

- Avenue 12/Golden State Boulevard at SR 99 SB off ramps
 - Signalize the intersection
 - Restripe/widen the SB approach, north leg, from one (1) shared left-through lane to one (1) left-turn lane and one (1) through lane
 - Restripe/widen the WB approach, east leg, from one (1) left-turn lane and one (1) right-turn lane to dual (2) left-turn lanes and one (1) right-turn lane

- Avenue 12 at Golden State Boulevard
 - Restripe/widen the SB approach, north leg, from one (1) left-turn lane, one (1) through lane and one (1) right-turn lane to dual (2) left-turn lanes, one (1) through lane and one (1) right-turn lane

- Avenue 12 at SR 99 NB ramps
 - Restripe/widen the WB approach, east leg, from a shared through-right lane to one (1) through lane and one (1) right-turn lane

2030 Improvements for Alternative A

County Segments

- Avenue 17 – SR 99 to Road 27
 - Restripe/widen from four (4) lanes to six (6) lanes

- Avenue 17 – Road 23 to SR 99
 - Restripe/widen from two (2) lanes to six (6) lanes

Freeway Segments

- SR 99 north of Avenue 18 1/2
 - Restripe/widen the NB leg from three (3) lanes to four (4) lanes
 - Restripe/widen the SB leg from three (3) lanes to four (4) lanes

- SR 99 between Avenue 18 ½ to Avenue 17

- Restripe/widen the NB leg from three (3) lanes to four (4) lanes
- Restripe/widen the SB leg from three (3) lanes to four (4) lanes

- SR 99 south of Avenue 17
 - Restripe/widen the NB leg from three (3) lanes to four (4) lanes
 - Restripe/widen the SB leg from three (3) lanes to four (4) lanes

Intersections

- Avenue 18 ½ at SR 99 NB ramps
 - Restripe/widen the EB approach, west leg, from one (1) left-turn lane and one (1) through lane, to dual (2) left-turn lanes and one (1) through lane

- Avenue 18 ½ at SR 99 SB ramps/Road 23
 - Restripe/widen the SB approach, north leg, from a shared left-right lane to one (1) left-turn lane and one (1) right-turn lane

- Avenue 18 ½ at Pistachio Drive
 - Although the Avenue 18 ½ at Pistachio Drive intersection is projected to meet the urban peak hour volume signal warrant, it will not be signalized due to its proximity to the SR 99 SB off-ramp. The intersection will be restricted to right-in/right-out/left-in access, which reduces the need for a signal and allows the intersection to operate at an acceptable level of service without a signal.

- Avenue 18 ½ at Golden State Boulevard / Road 23
 - Signalize the intersection
 - Restripe/widen the NB approach, south leg, from one (1) left-turn lane and one (1)-through-right lane, to one (1) left-turn lane, one (1) through lane, and one (1) right-turn lane
 - Restripe/widen the SB approach, north leg, from one (1) shared left-through-right lane, to one (1) left-turn lane and one (1) through-right lane
 - Restripe/widen the WB approach, east leg, from one (1) shared left-through lane and one (1) right-turn lane, to dual (2) left-turn lanes and one (1) shared through-right lane

- Avenue 18 at Road 23
 - Signalize the intersection

- Avenue 17 at SR 99 NB ramps
 - Restripe/widen the NB approach, south leg, from one (1) left-turn lane, one (1) shared left-through lane, and two (2) right-turn lanes to three (3) left-turn lanes, one (1) shared through-right lane, and two (2) right-turn lanes
 - Restripe/widen the EB approach, west leg, from one (1) left-turn lane and two (2) through lanes to two (2) left-turn lanes and three (3) through lanes
 - Restripe/widen the WB approach, east leg, from two (2) through lanes and one (1) right-turn lane to two (2) through lanes and one (1) shared through-right lane
 - Widen the NB off-ramp to two (2) lanes with a NB auxiliary lane on SR 99

- Avenue 17 at SR 99 SB ramps
 - Restripe/widen the SB approach, north leg, from one (1) left-turn lane and one (1) right-turn lane to two (2) left-turn lanes and two (2) right-turn lanes

- Restripe/widen the EB approach, west leg, from two (2) through lanes to four (4) through lanes
- Restripe/widen the WB approach, east leg, from two (2) through lanes to three (3) through lanes

- Avenue 17 at Golden State Boulevard
 - Restripe/widen the NB approach, south leg, from one (1) left-turn lane, one (1) through lane, and one (1) right-turn lane to one (1) left-turn lane, one (1) through lane, and two (2) right-turn lanes
 - Restripe/widen the SB approach, north leg, from two (2) left-turn lanes and one (1) shared through-right lane to two (2) left-turn lanes, one (1) through lane and one (1) right-turn lane
 - Restripe/widen the EB approach, west leg, from one (1) left-turn lane, one (1) through lane, and one (1) shared through-right lane to two (2) left-turn lanes, two (2) through lanes, and one (1) shared through-right lane
 - Restripe/widen the WB approach, east leg, from one (1) left-turn lane, two (2) through lanes, and one (1) right-turn lane to two (2) left-turn lanes, two (2) through lanes, and one (1) shared through-right lane

- Avenue 17 at Road 23
 - Restripe/widen the NB approach, south leg, from one (1) shared left-through-right lane to one (1) left-turn lane and one (1) shared through-right lane
 - Restripe/widen the SB approach, north leg, from one (1) shared left-through-right lane to one (1) shared left-through lane and one (1) right-turn lane
 - Restripe/widen the EB approach, west leg, from one (1) shared left-through-right lane to one (1) shared left-through lane, one (1) through lane, and one (1) right-turn lane
 - Restripe/widen the WB approach, east leg, from one (1) shared left-through-right lane to one (1) left-turn lane and one (1) through lane, and one (1) shared through-right lane

- Avenue 16/Ellis Street at Aviation Drive/Kennedy
 - Restripe/widen the NB approach, south leg, from one (1) left-turn lane and one (1) shared through-right lane to one (1) left-turn lane, one (1) through lane, and two (2) right-turn lanes
 - Restripe/widen the SB approach, north leg, from one (1) left-turn lane, one (1) through lane, and one (1) right-turn lane to two (2) left-turn lanes, one (1) through lane, and one (1) shared through-right lane
 - Restripe/widen the EB approach, west leg, from one (1) left-turn lane, one (1) through lane and one (1) shared through-right lane to one (1) left-turn lane, two (2) through lanes, and one (1) right-turn lane
 - Restripe/widen the WB approach, east leg, from one (1) left-turn lane, one (1) through lane, and one (1) shared through-right lane to two (2) left-turn lanes, one (1) through lane, and one (1) through-right lane

- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps
 - Restripe/widen the EB approach, west leg, from one (1) left-turn lane and two (2) through lanes to two (2) left-turn lanes and two (2) through lanes
 - Restripe/widen the NB approach, south leg, from one (1) left-turn lane, one (1) shared left-through lane, and one (1) right-turn lane to one (1) left-turn lane, one (1) shared left-through lane, and two (2) right-turn lanes

- Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps

- Restripe/widen the SB approach, north leg, from one (1) shared left-through lane and one (1) right-turn lane to two (2) left-turn lanes and one (1) shared through-right lane
- Avenue 15 ½ at Road 23
 - Signalize the intersection
- SR 145/Madera Avenue at SR 99 NB ramps
 - Restripe/widen the SB approach, north leg, from one (1) through lane and one (1) shared through-right lane to two (2) through lanes and one (1) right-turn lane
 - Restripe/widen the WB approach, east leg, from one (1) left-turn lane and one (1) shared through-right lane to two (2) left-turn lanes and one (1) shared through-right lane
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145
 - Restripe/widen the NB approach, south leg, from two (2) left-turn lanes, one (1) through lane, and one (1) shared through-right lane, to dual (2) left-turn lanes, two (2) through lanes, and one (1) shared through-right lane
 - Restripe/widen the SB approach, north leg, from one (1) shared left-through lane, one (1) through lane, and one (1) right-turn lane, to one (1) left-turn lane, two (2) through lanes, and one (1) right-turn lane
 - Restripe/widen the EB approach, west leg, from one (1) left-turn lane, one (1) through lane and one (1) right-turn lane, to dual (2) left-turn lanes, one (1) through lane, one (1) shared through-right lane and one (1) right-turn lane
- Olive Avenue/Avenue 14 at SR 99 SB off-ramp
 - Restripe/widen the SB approach, north leg, from two (2) left-turn lanes and one (1) right-turn lane to one (1) left-turn lane, one (1) shared left-right-turn lane, and one (1) right-turn lane
- Avenue 14 at Road 23
 - Signalize the intersection
 - Restripe/widen the SB approach, north leg, from one (1) shared left-through-right lane, to one (1) left-turn lane and one (1) shared through-right lane
 - Restripe/widen the EB approach, west leg, from one (1) shared left-through-right lane, to one (1) left-turn lane and one (1) shared through-right lane
- Avenue 12/Golden State Boulevard at SR 99 SB off ramps
 - Widen the SB off-ramp to two (2) lanes with a SB auxiliary lane on SR 99
- Avenue 12 at Golden State Boulevard
 - Restripe/widen the SB approach, north leg, from two (2) left-turn lanes, one (1) through lane and one (1) right-turn lane, to three (3) left-turn lanes, and one (1) shared through-right lane
 - Restripe/widen the WB approach, east leg, from one (1) left-turn lane, one (1) through lane, and one (1) shared through-right lane, to one (1) left-turn lane, three (3) through lanes, and one (1) right-turn lane
- Avenue 12 at SR 99 NB ramps
 - Restripe/widen the NB approach, south leg from a shared left-through lane and a separate right-turn lane, to dual (2) left-turn lanes, a shared through-right lane, and one (1) right-turn lane

- Restripe/widen the EB approach, west leg, from one (1) left-turn lane and two (2) through lane, to dual (2) left-turn lanes and three (3) through lanes
- Restripe/widen the WB approach, east leg, from two (2) through lanes and one (1) right-turn lane, to two (2) through lanes, one (1) shared through-right lane and one (1) right-turn lane

With the proposed Alternative A/Madera Site improvements detailed previously, two (2) freeway segments and two (2) intersections are still projected to operate below the adopted level of service standard even with the recommended improvements. The NB and SB SR 99 south of Avenue 17 freeway segments are projected to operate at LOS “E” and “F” respectively in the PM peak hour. Per discussions with Caltrans staff, SR 99 is only programmed for eight (8) lanes for this segment. The Avenue 17 at SR 99 NB ramps and Avenue 17 at Golden State Boulevard intersections are both still projected to operate at a LOS “F” in the PM peak hour. Per discussions with Caltrans staff, widening Avenue 17 to eight (8) lanes is not recommended. However with the proposed Alternative A mitigations, these four (4) locations in the 2030 Project scenario are projected to operate above the 2030 No Project measures of effectiveness (freeway density and intersection delay). Therefore these four (4) locations should be viewed as mitigated as appropriate by the Project.

Alternative B, Reduced Intensity Alternative (Madera Site)

Alternative B, which is the Reduced Intensity Alternative, would consist of a 198,990 sf casino including a gift shop, lounge (entertainment), and restaurants, and would be constructed and operational by 2010. Alternative B would be located on the approximately 305 acre Madera Site, which is located to the west of Golden State Boulevard, east of Road 23, north of Avenue 17, and south of Avenue 18 in Madera County.

Table 6 shows the Alternative B levels of service summary for the various scenarios for the County segments, freeway segments, and intersections surrounding the Madera Site. County segments, freeway segments, or intersections operating or projected to operate below the adopted level of service are shown bolded in Table 6. The signalized and AWSC intersection levels of service shown in Table 6 are representative of the whole intersection. Individual intersection movements or approaches may operate above or below the signalized and AWSC level of service or delay shown in Table 6. The signalized levels of service or delay shown in Table 6 may not reflect the effects of 95th percentile queues that exceed the capacity for their movement.

TABLE 6:
WEEKDAY LEVELS OF SERVICE SUMMARY FOR THE COUNTY SEGMENTS, FREEWAY SEGMENTS, AND INTERSECTIONS
ALTERNATIVE B (REDUCED INTENSITY ALTERNATIVE / MADERA SITE)

County Segment	Existing		2010 No Project		2010 Project		Mitigated 2010 Project		2030 No Project		2030 Project		Mitigated 2030 Project	
	LOS AM/PM	Density (pc/mi/ln) AM/PM	LOS AM/PM	Density (pc/mi/ln) AM/PM	LOS AM/PM	Density (pc/mi/ln) AM/PM	LOS AM/PM	Density (pc/mi/ln) AM/PM	LOS AM/PM	Density (pc/mi/ln) AM/PM	LOS AM/PM	Density (pc/mi/ln) AM/PM	LOS AM/PM	Density (pc/mi/ln) AM/PM
SR 99 north of Avenue 18 1/2	C/C	23,924.2	C/C	24,225.2	C/C	24,225.2	C/C	24,225.2	D/D	26.5/33.2	D/D	26.6/34.3	C/C	19.4/23.0
• NB	C/D	18,428.1	C/D	20,032.5	C/D	20,032.5	B/C	13.3/19.7	C/E	23.9/41.4	C/E	24.1/43.0	B/C	17.8/26.0
• SB	C/C	23,623.0	C/C	24,925.5	C/D	25,327.0	B/B	16.5/17.4	D/D	26.4/31.4	D/D	26.5/32.5	C/C	19.3/22.2
SR 99 between Avenue 18 1/2 and Avenue 17	C/D	19,129.7	C/D	20,433.6	C/E	21,036.1	B/C	14.0/20.8	C/E	23.5/40.5	C/E	23.7/42.1	B/C	17.6/25.7
• NB	C/C	23,124.5	B/D	24,731.0	D/E	31.5/38.6	C/C	19.3/21.5	E/F	39.0/---	E/F	41.5/---	C/E	25.5/40.9
• SB	C/D	20,232.4	C/E	22,844.4	C/F	24.7/---	B/C	16.2/25.8	D/F	29.2/---	D/F	29.8/---	C/F	21.0/---
SR 99 south of Avenue 17	LOS AM/PM	Density (pc/mi/ln) AM/PM	LOS AM/PM	Density (pc/mi/ln) AM/PM	LOS AM/PM	Density (pc/mi/ln) AM/PM	LOS AM/PM	Density (pc/mi/ln) AM/PM	LOS AM/PM	Density (pc/mi/ln) AM/PM	LOS AM/PM	Density (pc/mi/ln) AM/PM	LOS AM/PM	Density (pc/mi/ln) AM/PM
Intersection	LOS AM/PM	Density (pc/mi/ln) AM/PM	LOS AM/PM	Density (pc/mi/ln) AM/PM	LOS AM/PM	Density (pc/mi/ln) AM/PM	LOS AM/PM	Density (pc/mi/ln) AM/PM	LOS AM/PM	Density (pc/mi/ln) AM/PM	LOS AM/PM	Density (pc/mi/ln) AM/PM	LOS AM/PM	Density (pc/mi/ln) AM/PM
Avenue 18 1/2 at SR 99 NB ramps	A/A	8,277.9	A/A	6,456.6	A/A	8,478.1	B/B	13.3/13.4	A/B	7.5/10.1	B/B	14.5/12.8	B/B	12.9/11.3
• EB Left	C/B	16,314.8	C/C	21,321.4	C/D	22,726.4	F/F	337.7/753.8	F/F	337.7/753.8	B/D	17.3/54.9	A/B	9.7/14.7
• NB Approach	A/A	0.6/1.2	A/A	0.8/1.5	A/A	0.8/1.4	A/B	8.9/11.3	A/B	8.9/11.3				
Avenue 18 1/2 at SR 99 SB ramps/Road 23	B/C	13,917.2	C/E	18,536.5	C/F	20.8/63.1								
• WB Left-Through	B/C	13,517.2	C/D	16,528.5	C/E	17,236.5	F/F	52.0/332.3	F/F	52.0/332.3				
• NB Approach	A/A	0.0/0.4	A/A	0.0/0.4	A/A	0.0/0.4	A/A	0.0/0.4	A/A	0.7/2.2	A/A	0.7/2.6	A/A	0.7/2.5
Avenue 18 1/2 at Pistachio Drive	B/B	12,713.8	B/C	14,317.3	B/C	15,020.3	B/C	15.0/20.3	C/F	24.8/187.5	D/F	26.7/277.0	B/C	14.0/17.4
• EB Left-Through	A/A	0.0/0.4	A/A	0.0/0.4	A/A	0.0/0.4	A/A	0.3/0.1	A/A	0.3/0.1				
• SB Approach	B/B	10,910.9	B/B	11,812.2	B/B	12,112.9	B/B	12.1/12.9	A/A	1.0/0.9	A/A	1.0/0.9	A/A	1.0/0.9
Avenue 18 at Road 23	A/A	0.1/0.5	A/A	0.1/0.2	A/A	0.1/0.2	A/A	0.1/0.2	A/A	0.0/0.2	A/A	0.0/0.2	A/A	4.8/7.1
• NB Left-Through-Right	A/A	0.4/0.6	A/A	1.4/1.4	A/A	1.7/1.7	A/A	1.7/1.7	A/A	0.8/1.0	A/A	1.9/2.2	A/A	1.9/2.2
• SB Left-Through-Right	A/A	9.4/9.8	A/B	9.7/10.2	A/B	9.6/10.1	A/B	9.6/10.1	B/C	14.5/17.9	B/C	14.9/20.3	B/C	14.9/20.3
• WB Approach	A/B	9.9/10.1	B/B	10.7/11.9	B/B	10.8/12.1	B/B	10.8/12.1	C/C	16.4/24.8	C/D	18.0/29.3	C/D	18.0/29.3
• EB Approach														

SR = State Route
 Delay per vehicle
 Bolded Text = Intersection/movement operates below the appropriate level of service standard
 secs = seconds
 NB = northbound
 SB = southbound
 WB = westbound
 EB = eastbound
 --- = exceeds software parameters

TABLE 6:
WEEKDAY LEVELS OF SERVICE SUMMARY FOR THE COUNTY SEGMENTS, FREEWAY SEGMENTS, AND INTERSECTIONS
ALTERNATIVE B (REDUCED INTENSITY ALTERNATIVE / MADERA SITE)

Intersection	Existing			2010 No Project			2010 Project			Mitigated 2010 Project			2030 No Project			2030 Project			Mitigated 2030 Project			
	LOS AM/PM	Delay AM/PM (secs)	LOS AM/PM	Delay AM/PM (secs)	LOS AM/PM	Delay AM/PM (secs)	LOS AM/PM	Delay AM/PM (secs)	LOS AM/PM	Delay AM/PM (secs)	LOS AM/PM	Delay AM/PM (secs)	LOS AM/PM	Delay AM/PM (secs)	LOS AM/PM	Delay AM/PM (secs)	LOS AM/PM	Delay AM/PM (secs)	LOS AM/PM	Delay AM/PM (secs)		
Avenue 17 at SR 99 NB ramps	A/A	9.0/8.0	B/B	10.0/10.2	B/B	11.0/13.9	B/B	13.0/18.1	B/B	13.0/18.1	B/B	13.0/18.1	D/F	27.7/617.2	E/F	69.3/260.2	D/F	27.7/617.2	E/F	69.3/260.2	C/F	21.5/91.1
• NB Approach	B/B	11.9/13.3	F/F	114.6/371.0	F/F	6001.8/4093.9	F/F	6001.8/4093.9	F/F	6001.8/4093.9	F/F	6001.8/4093.9	F/F	6790.7/—	B/F	17.1/277.5	F/F	6790.7/—	B/F	17.1/277.5	A/B	5.1/11.8
Avenue 17 at SR 99 SB off-ramp	B/B	10.2/11.1	C/F	16.6/174.5	E/F	37.6/6974.5	E/F	37.6/6974.5	E/F	37.6/6974.5	E/F	37.6/6974.5	B/C	18.9/21.5	F/F	62.5/409.1	F/F	7445.5/—	F/F	62.5/409.1	C/F	22.4/118.6
• EB Left	A/A	0.0/0.0	A/A	8.2/8.7	A/B	9.2/10.7	A/B	9.2/10.7	A/B	9.2/10.7	A/B	9.2/10.7	B/D	12.5/29.4	F/F	—/—	B/D	12.5/29.4	F/F	—/—	C/F	—/—
• WB Left	A/A	7.6/7.5	A/A	8.5/8.9	A/B	9.2/10.8	A/B	9.2/10.8	A/B	9.2/10.8	A/B	9.2/10.8	F/F	71.5/275.4	F/F	—/—	F/F	71.5/275.4	F/F	—/—	C/F	—/—
• NB Approach	A/A	9.9/9.3	C/D	22.2/32.4	F/F	250.4/—	F/F	250.4/—	F/F	250.4/—	F/F	250.4/—	F/F	—/—	F/F	—/—	F/F	—/—	F/F	—/—	C/F	—/—
• SB Approach	B/B	12.2/11.9	F/F	113.9/—	F/F	—/—	F/F	—/—	F/F	—/—	F/F	—/—	F/F	—/—	F/F	—/—	F/F	—/—	F/F	—/—	C/F	—/—
Avenue 17 at Road 23	A/A	0.1/0.4	A/A	0.7/1.4	A/A	0.7/1.7	A/A	0.7/1.7	A/A	0.7/1.7	A/A	0.7/1.7	A/A	7.4/9.5	E/F	56.3/248.6	A/A	7.4/9.5	E/F	56.3/248.6	B/B	13.2/16.0
• NB Left-Through-Right	A/A	1.1/0.7	A/A	0.7/0.6	A/A	0.7/0.6	A/A	0.7/0.6	A/A	0.7/0.6	A/A	0.7/0.6	A/A	3.2/3.3	A/A	—/—	A/A	3.2/3.3	A/A	—/—	C/F	—/—
• SB Left-Through-Right	B/B	10.5/10.6	B/C	13.9/18.9	C/E	15.5/39.2	C/E	15.5/39.2	C/E	15.5/39.2	C/E	15.5/39.2	F/F	0.8/0.3	A/A	—/—	F/F	0.8/0.3	A/A	—/—	C/F	—/—
• WB Approach	B/B	10.3/10.4	B/B	12.3/14.9	B/C	13.1/19.1	B/C	13.1/19.1	B/C	13.1/19.1	B/C	13.1/19.1	F/F	—/—	F/F	—/—	F/F	—/—	F/F	—/—	C/F	—/—
Ellis Street at Road 26	A/A	4.8/5.5	A/A	6.6/9.5	A/B	7.6/13.2	A/B	7.6/13.2	A/B	7.6/13.2	A/B	7.6/13.2	A/B	10.1/22.2	A/B	9.9/19.7	A/B	10.1/22.2	A/B	9.9/19.7	A/B	9.9/19.7
Gateway/Avenue 16 at SR 99 NB ramps	B/B	10.3/11.0	B/B	10.6/11.4	B/B	10.7/11.5	B/B	10.7/11.5	B/B	10.7/11.5	B/B	10.7/11.5	B/B	10.3/11.9	B/B	—/—	B/B	10.3/11.9	B/B	—/—	C/F	—/—
• SB Approach	A/B	9.7/10.6	B/B	10.1/11.4	B/B	10.3/11.9	B/B	10.3/11.9	B/B	10.3/11.9	B/B	10.3/11.9	B/B	10.3/11.9	B/B	—/—	B/B	10.3/11.9	B/B	—/—	C/F	—/—
Avenue 16 at SR 99 NB ramp connector	A/A	4.7/4.8	A/A	5.0/5.4	A/A	5.2/5.9	A/A	5.2/5.9	A/A	5.2/5.9	A/A	5.2/5.9	A/A	5.2/5.9	A/A	—/—	A/A	5.2/5.9	A/A	—/—	C/F	—/—
• EB Left-Through	A/A	9.0/9.6	A/A	9.1/9.9	A/A	9.2/9.9	A/A	9.2/9.9	A/A	9.2/9.9	A/A	9.2/9.9	A/A	9.2/9.9	A/A	—/—	A/A	9.2/9.9	A/A	—/—	C/F	—/—
• SB Approach	A/A	7.7/7.9	A/A	9.3/10.0	A/B	9.2/10.1	A/B	9.2/10.1	A/B	9.2/10.1	A/B	9.2/10.1	A/B	9.2/10.1	A/B	—/—	A/B	9.2/10.1	A/B	—/—	C/F	—/—
Avenue 16 at Schmoor Avenue/Golden State	B/B	11.0/13.0	A/B	18.1/21.2	B/C	18.5/25.9	B/C	18.5/25.9	B/C	18.5/25.9	B/C	18.5/25.9	B/C	18.5/25.9	B/C	—/—	B/C	18.5/25.9	B/C	—/—	C/D	—/—
Avenue 16/Ellis Overcrossing at Aviation Drive	A/B	8.4/10.9	B/C	14.3/22.7	B/D	14.9/36.8	B/D	14.9/36.8	B/D	14.9/36.8	B/D	14.9/36.8	B/D	14.9/36.8	B/D	—/—	B/D	14.9/36.8	B/D	—/—	C/D	—/—
Cleveland Avenue/Avenue 15 1/2 at SR 99 NB ramps	B/B	12.1/15.1	B/C	14.3/22.7	B/D	14.9/36.8	B/D	14.9/36.8	B/D	14.9/36.8	B/D	14.9/36.8	B/D	14.9/36.8	B/D	—/—	B/D	14.9/36.8	B/D	—/—	C/D	—/—
Cleveland Avenue/Avenue 15 1/2 at SR 99 SB ramps	B/B	14.2/12.2	B/B	15.2/14.2	B/B	15.4/18.6	B/B	15.4/18.6	B/B	15.4/18.6	B/B	15.4/18.6	B/B	15.4/18.6	B/B	—/—	B/B	15.4/18.6	B/B	—/—	C/E	—/—
Avenue 15 1/2 at Road 23	A/A	0.0/0.0	A/A	0.0/0.0	A/A	0.0/0.0	A/A	0.0/0.0	A/A	0.0/0.0	A/A	0.0/0.0	A/A	0.0/0.0	A/A	—/—	A/A	0.0/0.0	A/A	—/—	A/A	5.4/7.1
• NB Left-Through-Right	A/A	1.0/1.7	A/A	1.0/1.8	A/A	1.1/2.0	A/A	1.1/2.0	A/A	1.1/2.0	A/A	1.1/2.0	A/A	1.1/1.7	A/A	—/—	A/A	1.1/1.7	A/A	—/—	A/A	0.0/0.0
• SB Left-Through-Right	B/B	10.1/10.7	B/B	10.8/12.0	B/B	11.0/12.7	B/B	11.0/12.7	B/B	11.0/12.7	B/B	11.0/12.7	B/B	16.9/34.4	C/E	17.3/37.1	C/D	16.9/34.4	C/E	17.3/37.1	C/D	22.4/52.4
• WB Approach	A/B	0.0/10.2	A/B	0.0/11.1	A/B	0.0/11.6	A/B	0.0/11.6	A/B	0.0/11.6	A/B	0.0/11.6	A/B	0.0/19.0	A/C	0.0/19.6	A/B	0.0/19.0	A/C	0.0/19.6	A/C	12.4/28.9
• EB Approach	A/B	9.1/13.1	A/A	5.6/6.6	A/B	5.6/10.2	A/A	5.6/10.2	A/A	5.6/10.2	A/A	5.6/10.2	A/A	6.3/7.6	D/F	48.5/257.0	D/F	6.3/7.6	D/F	48.5/257.0	D/F	15.2/23.3
SR 145/Madera Avenue at SR 99 NB ramps	C/C	22.1/31.2	C/C	21.1/33.3	C/D	22.0/38.7	C/D	22.0/38.7	C/D	22.0/38.7	C/D	22.0/38.7	C/D	10.5/13.5	E/F	24.4/98.0	C/F	10.5/13.5	E/F	24.4/98.0	C/F	15.8/28.6
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	C/C	22.1/31.2	C/C	21.1/33.3	C/D	22.0/38.7	C/D	22.0/38.7	C/D	22.0/38.7	C/D	22.0/38.7	C/D	10.5/13.5	E/F	24.4/98.0	C/F	10.5/13.5	E/F	24.4/98.0	C/F	15.8/28.6

SR = State Route
Delay per vehicle
Intersection/movement operates below the appropriate level of service standard

SB = southbound

WB = westbound

EB = eastbound

— = exceeds software parameters

TABLE 6:
WEEKDAY LEVELS OF SERVICE SUMMARY FOR THE COUNTY SEGMENTS, FREEWAY SEGMENTS, AND INTERSECTIONS
ALTERNATIVE B (REDUCED INTENSITY ALTERNATIVE / MADERA SITE)

Intersection	Existing			2010 No Project			2010 Project			Mitigated 2010 Project			2030 No Project			2030 Project			Mitigated 2030 Project			
	LOS AM/PM	Delay AM/PM (secs)	Delay AM/PM (secs)	LOS AM/PM	Delay AM/PM (secs)	Delay AM/PM (secs)	LOS AM/PM	Delay AM/PM (secs)	Delay AM/PM (secs)	LOS AM/PM	Delay AM/PM (secs)	Delay AM/PM (secs)	LOS AM/PM	Delay AM/PM (secs)	Delay AM/PM (secs)	LOS AM/PM	Delay AM/PM (secs)	Delay AM/PM (secs)	LOS AM/PM	Delay AM/PM (secs)	Delay AM/PM (secs)	
Olive Avenue/Avenue 14 at SR 99 SB off-ramp	B/B	10.6/11.0	13.1/14.1	B/B	13.9/17.0	11.2/12.1	B/B	11.2/12.1	13.9/17.0	B/B	11.2/12.1	11.2/12.1	B/B	11.2/12.1	11.2/12.1	B/B	11.2/12.1	11.2/12.1	B/B	11.2/12.1	11.2/12.1	11.2/12.1
Avenue 14 at Road 23	A/A	8.4/8.4	8.8/9.3	A/A	9.0/9.8	9.0/9.8	A/A	9.0/9.8	9.0/9.8	A/A	9.0/9.8	9.0/9.8	A/A	9.0/9.8	9.0/9.8	A/A	9.0/9.8	9.0/9.8	A/A	9.0/9.8	9.0/9.8	9.0/9.8
Avenue 12/Golden State Boulevard at SR 99 SB ramps	A/A	4.6/3.4	6.1/3.7	A/A	6.1/3.7	6.1/3.7	A/A	6.1/3.7	6.1/3.7	A/A	6.1/3.7	6.1/3.7	A/A	6.1/3.7	6.1/3.7	A/A	6.1/3.7	6.1/3.7	A/A	6.1/3.7	6.1/3.7	6.1/3.7
• SB Left-Through	C/C	15.3/16.8	43.3/30.0	E/D	50.7/44.3	33.5/41.6	F/E	50.7/44.3	33.5/41.6	F/E	50.7/44.3	33.5/41.6	F/E	50.7/44.3	33.5/41.6	F/E	50.7/44.3	33.5/41.6	F/E	50.7/44.3	33.5/41.6	33.5/41.6
• WB Approach	D/F	51.0/90.1	54.0/52.0	D/D	54.3/58.4	19.1/21.9	D/E	54.3/58.4	19.1/21.9	C/D	33.5/41.6	33.5/41.6	F/F	205.2/328.4	75.2/154.2	E/F	75.2/154.2	75.2/154.2	C/D	27.3/39.9	27.3/39.9	27.3/39.9
Avenue 12 at Golden State Boulevard	A/A	2.3/4.1	17.9/21.7	B/C	19.1/21.9	12.9/13.8	B/C	19.1/21.9	12.9/13.8	B/B	12.9/13.8	12.9/13.8	B/B	12.9/13.8	12.9/13.8	C/E	21.5/57.9	21.5/57.9	C/E	22.8/62.8	22.8/62.8	22.8/62.8
Avenue 12 at SR 99 NB ramps	A/A	2.3/4.1	17.9/21.7	B/C	19.1/21.9	12.9/13.8	B/C	19.1/21.9	12.9/13.8	B/B	12.9/13.8	12.9/13.8	B/B	12.9/13.8	12.9/13.8	C/E	21.5/57.9	21.5/57.9	C/E	22.8/62.8	22.8/62.8	22.8/62.8
• EB Left-Through	A/A	2.3/4.1	17.9/21.7	B/C	19.1/21.9	12.9/13.8	B/C	19.1/21.9	12.9/13.8	B/B	12.9/13.8	12.9/13.8	B/B	12.9/13.8	12.9/13.8	C/E	21.5/57.9	21.5/57.9	C/E	22.8/62.8	22.8/62.8	22.8/62.8
• NB Approach	F/F	119.1/182.2	119.1/182.2	F/F	119.1/182.2	119.1/182.2	F/F	119.1/182.2	119.1/182.2	F/F	119.1/182.2	119.1/182.2	F/F	119.1/182.2	119.1/182.2	F/F	119.1/182.2	119.1/182.2	F/F	119.1/182.2	119.1/182.2	119.1/182.2

SR = State Route sec = seconds ... = exceeds software parameters
 Delay per vehicle NB = northbound WB = westbound FB = eastbound
 Intersection/movement operates below the appropriate level of service standard SB = southbound

Table 7 shows the results of the Alternative B peak hour volume signal warrant analyses for the various scenarios for the study intersections surrounding the Madera Site. If a study intersection met the peak hour volume signal warrant then a “Yes” is shown in the appropriate scenario column. If the intersection did not meet the peak hour volume signal warrant then a “No” is shown in the appropriate scenario column. Intersections by scenario that met the peak hour volume signal warrant are shown bolded Table 7.

TABLE 7: SIGNAL WARRANT ANALYSIS ALTERNATIVE B (REDUCED INTENSITY ALTERNATIVE / MADERA SITE)					
Intersection	Existing	2010 No Project	2010 Project	2030 No Project	2030 Project
Avenue 18 ½ at SR 99 SB ramps/Road 23	No	No	No	Yes	Yes
Avenue 18 ½ at SR 99 NB ramps	No	No	No	Yes	Yes
Avenue 17 at SR 99 SB off-ramp	No	Yes	Yes	Yes	---
Avenue 17 at SR 99 NB ramps	Yes	Yes	Yes	Yes	---
Avenue 12/Golden State Boulevard at SR 99 SB ramps	No	Yes	Yes	Yes	---
Avenue 12 at Golden State Boulevard	---	---	---	---	---
Avenue 12 at SR 99 NB ramps	Yes	---	---	---	---
Avenue 18 at Road 23	No	No	No	No	Yes
Avenue 17 at Road 23	No	No	Yes	Yes	---
Avenue 17 at Golden State Boulevard	No	Yes	Yes	Yes	---
Ellis Street at Road 26	---	---	---	---	---
Avenue 15 ½ at Road 23	No	No	No	Yes	Yes
Avenue 14 at Road 23	No	No	No	Yes	Yes
Avenue 16 at Schnoor Avenue	Yes	---	---	---	---
Avenue 16 at Aviation Drive	---	---	---	---	---
Avenue 16 at SR 99 SB ramps	No	---	---	---	---
Avenue 16/Avenue 16 connector at SR 99 NB ramps	No	No	No	---	---
Avenue 16 at SR 99 NB ramp connector	No	No	No	---	---
Gateway/Avenue 16 at SR 99 NB ramps	No	No	No	---	---
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	---	---	---	---	---
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	---	---	---	---	---
SR 99 NB ramps at SR 145/Madera Avenue	---	---	---	---	---
Olive Avenue/Avenue 14 at SR 99 SB off-ramp	---	---	---	---	---
Olive Avenue/Avenue 14/ SR 99 SB on-ramp at SR 145	---	---	---	---	---
Avenue 18 ½ at Pistachio Drive	No	No	No	Yes	Yes
Avenue 18 ½ at Golden State Boulevard	No	No	No	Yes	Yes

SR = State Route

Yes = meets urban/rural peak hour volume signal warrant

No = does not meet urban/rural peak hour volume signal warrant

--- = signalized intersection/no warrant prepared

Bolded Text = intersection meets the peak hour signal warrant

Table 8 shows the Alternative B projected 95th-percentile queue lengths for the various scenarios for the various study locations surrounding the Madera Site. Movements with queue lengths that exceed or are projected to exceed their available storage lengths are shown bolded in Table 8. Please note that storage lengths for mitigated scenarios may be different than those shown in the Existing Queue Storage Length column.

Table 9 shows the Alternative B ramp widening/auxiliary lane thresholds for the various scenarios for the various SR 99 off-ramps. Locations that are projected to meet the thresholds are shown bolded in Table 9.

TABLE 8:
95th-PERCENTILE QUEUE LENGTH SUMMARY
ALTERNATIVE B (REDUCED INTENSITY ALTERNATIVE / MADERA SITE)

Intersection	Existing Queue Storage Length (ft)	95 th Percentile Queue Length (ft)							
		Existing	2010 No Project	2010 Project	Mitigated 2010 Project	2030 No Project	2030 Project	Mitigated 2030 Project	
SR 99 NB off-ramp at Avenue 18 1/2	1,204 ¹ (770 ²)	43/38	69/80	77/114	110/131	#671/#813	#164/#181	148/162	
• NB Left		4/4	4/4	4/5	19/0		26/0	25/0	
• NB Through-Right						0/241			
SR 99 SB off-ramp at Avenue 18 1/2	1,256 ¹ (822 ²)	22/47	35/95	37/118	61/97				
• SB Left-Through-Right									
• SB Left					209/221			84/109	
• SB Left-Right						35/64	#199/#351		
• SB Right								61/#107	
SR 99 SB off-ramp at Avenue 17	1,341 ¹ (907 ²)					#425/#819			
• SB Left	589 ¹	4/13	15/259	62/—	56/163		#348/#657	110/#297	
• SB Right	589 ¹	1/1	8/11	20/44	35/38	132/202	103/192	46/122	
SR 99 NB off-ramp at Avenue 17	1,060 ¹ (626 ²)								
• NB Left	45 ¹	1/78	322/623	—/—	127/157	—/—	#727/#1,332	264/#810	
• NB Left-Through	45 ¹				128/158	7/15	#736/#1,355		
• NB Through-Right								50/#664	
• NB Right	45 ¹	12/66	27/588	49/1,571	26/216	#501/#581	48/#896	29/#541	
SR 99 NB off-ramp at Avenue 16 [Avenue 16/Elita Avenue Overcrossing]	1,150 ¹ (716 ²)								
• SB Through-Right		0/0	0/0	0/0	0/0				
• [NB Left]	1150 ¹					234/#501	55/89	55/89	
• [NB Through-Right]	1150 ¹						29/48	29/48	
SR 99 SB off-ramp at Avenue 16 [Avenue 16/Elita Avenue Overcrossing]	1,020 ¹ (586 ²)					437/—			
• SB Left	225 ¹	9/18	33/49	34/50	34/50		34/56	34/56	
• SB Right	225 ¹	15/29	40/51	42/54	42/54	0/0	24/126	24/126	
SR 99 NB off-ramp at Avenue 15 1/2 /Cleveland Avenue	881 ¹ (447 ²)								
• NB Left	353 ¹	83/103	110/192	137/292	110/#349	0/0	142/186	137/210	
• NB Left-Through		82/103	110/194	137/293	1108/#350	#671/#813	142/190	137/215	
• NB Right	353 ¹	39/129	41/208	42/244	37/#275	0/241	#238/#166	73/#352	

95th percentile queue length - is minimum amount of storage needed for each movement
 [ft] = 2010 conditions
 --- = not calculated for unsignalized intersections
 # = 95th percentile volume exceeds capacity, queue may be longer, queue shown is maximum after two (2) cycles
 * = Storage lengths for mitigated scenarios may be different than those shown in the Existing Queue Storage Length column

ft = feet
 i = Distance of ramp striped as 2-lanes (existing)
 SR = Starts from
 j = Calculated storage distance

SB = southbound
 NB = northbound
 EB = eastbound
 WB = westbound

TABLE 8:
95th PERCENTILE QUEUE LENGTH SUMMARY
ALTERNATIVE B (REDUCED INTENSITY ALTERNATIVE / MADERA SITE)

Intersection	Existing Queue Storage Length (ft)	95 th Percentile Queue Length (ft)							
		Existing	2010 No Project	2010 Project	Mitigated 2010 Project (AM/PM)	2030 No Project	2030 Project	Mitigated 2030 Project	
SR 99 SB off-ramp at Avenue 15 1/2 / Cleveland Avenue	1,000 ¹ (566 ²)								
• SB Left	65 ³	76/123	95/155	108/179	78/173	#407/#813	#401/#765	135/#327	
• SB Left-Through									
• SB Through-Right									
• SB Right	65 ³	30/25	38/65	42/45	33/139	114/241	115/2119	102/#309	
SR 99 NB off-ramp at SR 145/Madera Avenue	1,310 ¹ (876 ²)								
• WB Left	90 ³	116/103	117/108	117/108	109/99	#459/#575	#395/#575	104/156	
• WB Through-Right		0/30	0/31	0/31	0/29	0/62	0/62	0/54	
SR 99 SB off-ramp at Avenue 14/Olive Avenue	1,254 ¹ (820 ²)								
• SB Left	65 ³	143/143	171/210	187/266	92/131	454/#1,062	197/#387		
• SB Left-Through									
• SB Right	65 ³	43/37	41/33	40/30	47/40	174/244	184/300	153/298	
SR 99 SB off-ramp at Avenue 12/Golden State Boulevard	1,431 ¹ (997 ²)								
• WB Left		70/81	239/190	273/277	158/75	---	431/531	309/458	
• WB Right		7/7	7/8	7/8	12/38	7/15	28/72	26/54	
SR 99 NB off-ramp at Avenue 12	1,223 ¹ (789 ²)								
• NB Left	49 ³	259/300	216/224	236/1240	173/181	#501/#581	#512/#593	157/178	
• NB Left-Through									
• NB Through-Right									
• NB Right	49 ³	18/21	49/58	52/59	42/50	234/#501	236/#511	83/173	
Avenue 17 between SR 99 SB off-ramp and Golden State Boulevard	481								
• WB Left (at Golden State Boulevard)		6/3	10/10	13/21	#130/#170	437/---	m#684/m#522	#271/m#431	
• WB Through (at Golden State Boulevard)							m122/m362		
• WB Through-Right (at Golden State Boulevard)		0/0	0/0	0/0	75/132	0/0			
• WB Right (at Golden State Boulevard)									
• EB Through (at SR 99 SB off-ramp)		0/0	0/0	0/0	15/58		m16/m28	224/#634	

95th percentile queue length - is minimum amount of storage needed for each movement
 SR = State Route
 β = feet
 λ = Distance of ramp striped as 2-lanes (existing)
 fscr = 2030 conditions
 λ = Calculated storage distance
 ... = not calculated for unsignalized intersections
 h = 95th percentile volume exceeds capacity, queue may be longer, queue shown is maximum after two (2) cycles
 m = volume for 95th percentile queue is metered by upstream signal
 Bolded text = 95th percentile queues exceed the available storage capacity
 † = Storage lengths for mitigated scenarios may be different than those shown in the Existing Queue Storage Length column

**TABLE 9:
RAMP WIDENING/AUXILIARY LANE THRESHOLD SUMMARY
ALTERNATIVE B (REDUCED INTENSITY ALTERNATIVE / MADERA SITE)**

Intersection	Existing		2010 No Project		2010 Project		2030 No Project		2030 Project	
	PCE (AM/PM)	1,500 PCE Threshold (AM/PM) (Y/N)	PCE (AM/PM)	1,500 PCE Threshold (AM/PM) (Y/N)	PCE (AM/PM)	1,500 PCE Threshold (AM/PM) (Y/N)	PCE (AM/PM)	1,500 PCE Threshold (AM/PM) (Y/N)	PCE (AM/PM)	1,500 PCE Threshold (AM/PM) (Y/N)
SR 99 NB off-ramp at Avenue 18 ½	248/231	N/N	282/302	N/N	292/347	N/N	378/406	N/N	378/406	N/N
SR 99 SB off-ramp at Avenue 18 ½	155/248	N/N	189/289	N/N	190/290	N/N	504/737	N/N	536/776	N/N
SR 99 SB off-ramp at Avenue 17	55/111	N/N	109/222	N/N	164/320	N/N	497/745	N/N	497/746	N/N
SR 99 NB off-ramp at Avenue 17	204/428	N/N	424/822	N/N	615/1183	N/Y	1650/3347	N/N	1800/3537	N/N
SR 99 NB off-ramp at Avenue 16	60/104	N/N	69/115	N/N	69/115	N/N	314/430	N/N	314/430	N/N
SR 99 SB off-ramp at Avenue 16	185/269	N/N	248/385	N/N	282/464	N/N	630/950	N/Y	635/960	N/N
SR 99 NB off-ramp at Avenue 15 ½ /Cleveland Avenue	328/552	N/N	451/846	N/N	540/1090	N/Y	753/1298	N/Y	753/1299	N/N
SR 99 SB off-ramp at Avenue 15 ½ /Cleveland Avenue	129/181	N/N	192/303	N/N	242/408	N/N	707/1134	N/Y	728/1178	N/N
SR 99 NB off-ramp at SR 145/Madera Avenue	217/186	N/N	223/193	N/N	223/193	N/N	496/534	N/N	496/534	N/N
SR 99 SB off-ramp at Avenue 14/Olive Avenue	361/317	N/N	439/504	N/N	487/657	N/N	958/1400	Y/Y	968/1427	N/N
SR 99 SB off-ramp at Avenue 12/Golden State Boulevard	369/372	N/N	470/490	N/N	490/550	N/N	1176/1567	Y/N	1182/1585	N/Y
SR 99 NB off-ramp at Avenue 12	313/294	N/N	355/343	N/N	355/343	N/N	745/805	N/N	745/805	N/N

PCE = Passenger Car Equivalent
(N) = Mitigations Not Included in Analyses & Cost Estimates
Y = Threshold Met
N = Threshold Not Met
SR = State Route
NB = northbound
SB = southbound
Y = Mitigations Included in Analyses & Cost Estimates

Table 10 shows the Alternative B calculated left-turn storage lengths for movements which have existing separate left-turn or right-turn lanes, meet left-turn channelization warrants, or require dual left-turn lanes or separate right-turn lanes for the various Project scenarios for the various study locations surrounding the Madera Site. SR 99 off-ramp approaches and movements included in the queue length analysis are not included in the storage length calculations. It should be noted that the calculated left-turn storage length increases are not solely due to Project only trips but are also due to increases in background traffic.

TABLE 10: TURN LANE STORAGE CALCULATIONS SUMMARY ALTERNATIVE B (REDUCED INTENSITY/MADERA SITE)				
Intersection	Movement	Existing Storage Length (ft)	2010 Project Storage Length (ft)	2030 Project Storage Length (ft)
Avenue 18 ½ at SR 99 SB ramps/Road 23	NBL	25	100	n/a
	NBR	25	100	n/a
	WBL	---	n/a	n/a
	SBL			150
	SBR			450
Avenue 18 ½ at SR 99 NB ramps	EBL	150	150	250 ¹
Avenue 17 at SR 99 NB ramps	WBR		200	n/a
	EBL	300	100	300 ¹
Avenue 12/Golden State Boulevard at SR 99 SB ramps	NBR	---	400	850
	SBL	---	200	500
Avenue 12 at Golden State Boulevard	NBL	200	100	100
	WBL	---	100	100
	WBR		n/a	650
	SBL	400	350 ¹	700 ⁴
	SBR	200	100	n/a
	EBL	350	300	350
	EBR	425	100	n/a
Avenue 12 at SR 99 NB ramps	WBR	---	650	1,650
	EBL	---	250	300 ¹
Avenue 17 at Road 23	NBL	---	n/a	150
	WBL	---	n/a	100
	SBR	---	n/a	250
	EBR		n/a	300
Avenue 17 at Golden State Boulevard	NBL	50	150	300
	NBR	---	n/a	650 ³
	WBL	---	200	600 ¹
	WBR	---	300	n/a
	SBL	---	200 ¹	550 ¹
	EBL	---		100 ¹

ft = feet

SR = State Route

NB = northbound

SB = southbound

WB = westbound

EB = eastbound

n/a = not applicable

--- = no existing lane

¹ = dual lefts required, length of each left-turn lane

² = exceeds available distance to nearest intersection

³ = dual rights required, length of each right-turn lane

⁴ = triple lefts required, length of each left-turn lane

**TABLE 10:
TURN LANE STORAGE CALCULATIONS SUMMARY
ALTERNATIVE B (REDUCED INTENSITY/MADERA SITE)**

Intersection	Movement	Existing Storage Length (ft)	2010 Project Storage Length (ft)	2030 Project Storage Length (ft)
Ellis Street at Road 26	NBL	---	100	100
	WBR	---	250	150
	SBL	---	200	200
	EBR	---	100	100
Avenue 16/Ellis Street at Aviation Drive	NBL	75	100	400
	NBR	75	n/a	1,100 ³
	WBL	200	400	850 ¹
	SBL		100	400 ¹
	SBR		100	n/a
	EBL	---	100	150
	EBR		n/a	350
Avenue 16 at SR 99 SB ramps	WBR		100	n/a
	EBL		150	n/a
Avenue 16/Ellis Street at SR 99 NB ramps	NBL		n/a	150 ¹
	NBTR		n/a	150
	WBR	---	n/a	200
	EBL	300	n/a	400 ¹
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	WBR	50	250	950
	EBL	100	250	200 ¹
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps	WBL	125	300	450
	EBR	125	800	800
SR 145/Madera Avenue at SR 99 NB ramps	NBL	---	300 ¹	800 ¹
	SBR	---	n/a	450
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	NBL	125	100 ¹	250 ¹
	SBL	100	n/a	300
	SBR	25	250	700
	EBL	175	250	350 ¹
	EBR	175	600	1,450
Avenue 18 ½ at Golden State Boulevard/Road 23	NBL	---	n/a	100
	NBR	---	n/a	450
	WBL	---	n/a	350 ¹
	WBR		175	n/a
	SBL	---	n/a	150
Avenue 18 at Pistachio Drive	WBR		250	250

ft = feet SR = State Route NB = northbound SB = southbound
 WB = westbound EB = eastbound n/a = not applicable --- = no existing lane
¹ = dual lefts required, length of each left-turn lane ² = exceeds available distance to nearest intersection
³ = dual rights required, length of each right-turn lane ⁴ = triple lefts required, length of each left-turn lane

In order to mitigate the County segments, freeway segments, and intersections projected to operate below the level of service standard as identified in Table 6, meet the peak hour volume signal warrant as identified in Table 7, exceed the 95th percentile queue storage lengths as identified in Table 8, meet the ramp widening/auxiliary lane thresholds as identified in Table 9, and/or exceed the available storage length, meet the left-turn channelization warrant, require dual left-turn lanes, or separate right-turn lanes as identified in Table 10, the following improvements by scenario are proposed for Alternative B at the Madera Site:

Opening Day (2010) Improvements for Alternative B

County Segments

- Avenue 17 – SR 99 to Road 27
 - Restripe/widen from two (2) lanes to four (4) lanes

Freeway Segments

- SR 99 north of Avenue 18 1/2
 - Restripe/widen the SB leg from two (2) lanes to three (3) lanes
- SR 99 between Avenue 18 ½ to Avenue 17
 - Restripe/widen the NB leg from two (2) lanes to three (3) lanes
 - Restripe/widen the SB leg from two (2) lanes to three (3) lanes
- SR 99 south of Avenue 17
 - Restripe/widen the NB leg from two (2) lanes to three (3) lanes
 - Restripe/widen the SB leg from two (2) lanes to three (3) lanes

Intersections

- Avenue 18 ½ at SR 99 NB ramps
 - Signalize the intersection
- Avenue 18 ½ at SR 99 SB ramps/Road 23
 - Signalize the intersection
- Avenue 17 at SR 99 NB ramps
 - Signalize the intersection
 - Restripe/widen the NB approach, south leg, from one (1) shared left-through lane and one (1) right-turn lane to one (1) left-turn lane, one (1) shared left-through lane and two (2) right-turn lanes
 - Restripe/widen the EB approach, west leg, from one (1) left-turn lane and one (1) through lane to one (1) left-turn lane and two (2) through lanes
 - Restripe/widen the WB approach from one (1) through lane and one (1) right-turn lane to two (2) through lanes and one (1) right-turn lane
- Avenue 17 at SR 99 SB ramps
 - Signalize the intersection
 - Restripe/widen the EB approach, west leg, from one (1) through lane to two (2) through lanes
 - Restripe/widen the WB approach, east leg, from one (1) through lane to two (2) through lanes

- Avenue 17 at Golden State Boulevard
 - Signalize the intersection
 - Restripe/widen the SB approach, north leg, from one (1) shared left-through-right lane to two (2) left-turn lanes and one (1) shared through-right lane
 - Restripe/widen the EB approach, west leg, from one (1) left-turn lane, one (1) through lane, and one (1) right-turn lane to one (1) left-turn lane, one (1) through lane, and one (1) shared through-right lane
 - Restripe/widen the WB approach, east leg, from one (1) left-turn lane and one (1) shared through-right lane to one (1) left-turn lane, two (2) through lanes, and one (1) right-turn lane
- Avenue 17 at Road 23
 - Signalize the intersection
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145
 - Restripe/widen the EB approach, west leg, from one (1) shared left-through and one (1) right-turn lane to one (1) left-turn lane, one (1) through lane, and one (1) right-turn lane
- Olive Avenue/Avenue 14 at SR 99 SB off-ramp
 - Restripe/widen the SB approach, north leg, from one (1) left-turn lane and one (1) right-turn lane to two (2) left-turn lanes and one (1) right-turn lane
- Avenue 12/Golden State Boulevard at SR 99 SB off ramps
 - Signalize the intersection
 - Restripe/widen the SB approach, north leg, from one (1) shared left-through lane to one (1) left-turn lane and one (1) through lane
 - Restripe/widen the WB approach, east leg, from one (1) left-turn lane and one (1) right-turn lane to dual (2) left-turn lanes and one (1) right-turn lane
- Avenue 12 at Golden State Boulevard
 - Restripe/widen the SB approach, north leg, from one (1) left-turn lane, one (1) through lane and one (1) right-turn lane to dual (2) left-turn lanes, one (1) through lane and one (1) right-turn lane
- Avenue 12 at SR 99 NB ramps
 - Restripe/widen the WB approach, east leg, from a shared through-right lane to one (1) through lane and one (1) right-turn lane

2030 Improvements for Alternative B

County Segments

- Avenue 17 – SR 99 to Road 27
 - Restripe/widen from four (4) lanes to six (6) lanes
- Avenue 17 – Road 23 to SR 99
 - Restripe/widen from two (2) lanes to six (6) lanes

Freeway Segments

- SR 99 north of Avenue 18 1/2

- Restripe/widen the NB leg from three (3) lanes to four (4) lanes
- Restripe/widen the SB leg from three (3) lanes to four (4) lanes

- SR 99 between Avenue 18 ½ to Avenue 17
 - Restripe/widen the NB leg from three (3) lanes to four (4) lanes
 - Restripe/widen the SB leg from three (3) lanes to four (4) lanes

- SR 99 south of Avenue 17
 - Restripe/widen the NB leg from three (3) lanes to four (4) lanes
 - Restripe/widen the SB leg from three (3) lanes to four (4) lanes

Intersections

- Avenue 18 ½ at SR 99 NB ramps
 - Restripe/widen the EB approach, west leg, from one (1) left-turn lane and one (1) through lane, to dual (2) left-turn lanes and one (1) through lane

- Avenue 18 ½ at SR 99 SB ramps/Road 23
 - Restripe/widen the SB approach, north leg, from a shared left-right lane to one (1) left-turn lane and one (1) right-turn lane

- Avenue 18 ½ at Pistachio Drive
 - Although the Avenue 18 ½ at Pistachio Drive intersection is projected to meet the urban peak hour volume signal warrant, it will not be signalized due to its proximity to the SR 99 SB off-ramp. The intersection will be restricted to right-in/right-out/left-in access, which reduces the need for a signal and allows the intersection to operate at an acceptable level of service without a signal.

- Avenue 18 ½ at Golden State Boulevard / Road 23
 - Signalize the intersection
 - Restripe/widen the NB approach, south leg, from one (1) left-turn lane and one (1)-through-right lane, to one (1) left-turn lane, one (1) through lane, and one (1) right-turn lane
 - Restripe/widen the SB approach, north leg, from one (1) shared left-through-right lane, to one (1) left-turn lane and one (1) through-right lane
 - Restripe/widen the WB approach, east leg, from one (1) shared left-through lane and one (1) right-turn lane, to dual (2) left-turn lanes and one (1) shared through-right lane

- Avenue 18 at Road 23
 - Signalize the intersection

- Avenue 17 at SR 99 NB ramps
 - Restripe/widen the NB approach, south leg, from one (1) left-turn lane, one (1) shared left-through lane, and two (2) right-turn lanes to three (3) left-turn lanes, one (1) shared through-right lane, and two (2) right-turn lanes
 - Restripe/widen the EB approach, west leg, from one (1) left-turn lane and two (2) through lanes to two (2) left-turn lanes and three (3) through lanes
 - Restripe/widen the WB approach, east leg, from two (2) through lanes and one (1) right-turn lane to two (2) through lanes and one (1) shared through-right lane
 - Widen the NB off-ramp to two (2) lanes with a NB auxiliary lane on SR 99

- Avenue 17 at SR 99 SB ramps
 - Restripe/widen the SB approach, north leg, from one (1) left-turn lane and one (1) right-turn lane to two (2) left-turn lanes and two (2) right-turn lanes
 - Restripe/widen the EB approach, west leg, from two (2) through lanes to four (4) through lanes
 - Restripe/widen the WB approach, east leg, from two (2) through lanes to three (3) through lanes

- Avenue 17 at Golden State Boulevard
 - Restripe/widen the NB approach, south leg, from one (1) left-turn lane, one (1) through lane, and one (1) right-turn lane to one (1) left-turn lane, one (1) through lane, and two (2) right-turn lanes
 - Restripe/widen the SB approach, north leg, from two (2) left-turn lanes and one (1) shared through-right lane to two (2) left-turn lanes, one (1) through lane and one (1) right-turn lane
 - Restripe/widen the EB approach, west leg, from one (1) left-turn lane, one (1) through lane, and one (1) shared through-right lane to two (2) left-turn lanes, two (2) through lanes, and one (1) shared through-right lane
 - Restripe/widen the WB approach, east leg, from one (1) left-turn lane, two (2) through lanes, and one (1) right-turn lane to two (2) left-turn lanes, two (2) through lanes, and one (1) shared through-right lane

- Avenue 17 at Road 23
 - Restripe/widen the NB approach, south leg, from one (1) shared left-through-right lane to one (1) left-turn lane and one (1) shared through-right lane
 - Restripe/widen the SB approach, north leg, from one (1) shared left-through-right lane to one (1) shared left-through lane and one (1) right-turn lane
 - Restripe/widen the EB approach, west leg, from one (1) shared left-through-right lane to one (1) shared left-through lane, one (1) through lane, and one (1) right-turn lane
 - Restripe/widen the WB approach, east leg, from one (1) shared left-through-right lane to one (1) left-turn lane and one (1) through lane, and one (1) shared through-right lane

- Avenue 16/Ellis Street at Aviation Drive/Kennedy
 - Restripe/widen the NB approach, south leg, from one (1) left-turn lane and one (1) shared through-right lane to one (1) left-turn lane, one (1) through lane, and two (2) right-turn lanes
 - Restripe/widen the SB approach, north leg, from one (1) left-turn lane, one (1) through lane, and one (1) right-turn lane to two (2) left-turn lanes, one (1) through lane, and one (1) shared through-right lane
 - Restripe/widen the EB approach, west leg, from one (1) left-turn lane, one (1) through lane and one (1) shared through-right lane to one (1) left-turn lane, two (2) through lanes, and one (1) right-turn lane
 - Restripe/widen the WB approach, east leg, from one (1) left-turn lane, one (1) through lane, and one (1) shared through-right lane to two (2) left-turn lanes, one (1) through lane, and one (1) through-right lane

- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps
 - Restripe/widen the EB approach, west leg, from one (1) left-turn lane and two (2) through lanes to two (2) left-turn lanes and two (2) through lanes

- Restripe/widen the NB approach, south leg, from one (1) left-turn lane, one (1) shared left-through lane, and one (1) right-turn lane to one (1) left-turn lane, one (1) shared left-through lane, and two (2) right-turn lanes

- Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps
 - Restripe/widen the SB approach, north leg, from one (1) shared left-through lane and one (1) right-turn lane to two (2) left-turn lanes and one (1) shared through-right lane

- Avenue 15 ½ at Road 23
 - Signalize the intersection

- SR 145/Madera Avenue at SR 99 NB ramps
 - Restripe/widen the SB approach, north leg, from one (1) through lane and one (1) shared through-right lane to two (2) through lanes and one (1) right-turn lane
 - Restripe/widen the WB approach, east leg, from one (1) left-turn lane and one (1) shared through-right lane to two (2) left-turn lanes and one (1) shared through-right lane

- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145
 - Restripe/widen the NB approach, south leg, from two (2) left-turn lanes, one (1) through lane, and one (1) shared through-right lane, to dual (2) left-turn lanes, two (2) through lanes, and one (1) shared through-right lane
 - Restripe/widen the SB approach, north leg, from one (1) shared left-through lane, one (1) through lane, and one (1) right-turn lane, to one (1) left-turn lane, two (2) through lanes, and one (1) right-turn lane
 - Restripe/widen the EB approach, west leg, from one (1) left-turn lane, one (1) through lane and one (1) right-turn lane, to dual (2) left-turn lanes, one (1) through lane, one (1) shared through-right lane and one (1) right-turn lane

- Olive Avenue/Avenue 14 at SR 99 SB off-ramp
 - Restripe/widen the SB approach, north leg, from two (2) left-turn lanes and one (1) right-turn lane to one (1) left-turn lane, one (1) shared left-right-turn lane, and one (1) right-turn lane

- Avenue 14 at Road 23
 - Signalize the intersection
 - Restripe/widen the SB approach, north leg, from one (1) shared left-through-right lane, to one (1) left-turn lane and one (1) shared through-right lane
 - Restripe/widen the EB approach, west leg, from one (1) shared left-through-right lane, to one (1) left-turn lane and one (1) shared through-right lane

- Avenue 12/Golden State Boulevard at SR 99 SB off ramps
 - Widen the SB off-ramp to two (2) lanes with a SB auxiliary lane on SR 99

- Avenue 12 at Golden State Boulevard
 - Restripe/widen the SB approach, north leg, from two (2) left-turn lanes, one (1) through lane and one (1) right-turn lane, to three (3) left-turn lanes, and one (1) shared through-right lane
 - Restripe/widen the WB approach, east leg, from one (1) left-turn lane, one (1) through lane, and one (1) shared through-right lane, to one (1) left-turn lane, three (3) through lanes, and one (1) right-turn lane

- Avenue 12 at SR 99 NB ramps
 - Restripe/widen the NB approach, south leg from a shared left-through lane and a separate right-turn lane, to dual (2) left-turn lanes, a shared through-right lane, and one (1) right-turn lane
 - Restripe/widen the EB approach, west leg, from one (1) left-turn lane and two (2) through lane, to dual (2) left-turn lanes and three (3) through lanes
 - Restripe/widen the WB approach, east leg, from two (2) through lanes and one (1) right-turn lane, to two (2) through lanes, one (1) shared through-right lane and one (1) right-turn lane

With the proposed Alternative B/Madera Site improvements detailed previously, two (2) freeway segments and two (2) intersections are still projected to operate below the adopted level of service standard even with the recommended improvements. The NB and SB SR 99 south of Avenue 17 freeway segments are projected to operate at LOS “E” and “F” respectively in the PM peak hour. Per discussions with Caltrans staff, SR 99 is only programmed for eight (8) lanes for this segment. The Avenue 17 at SR 99 NB ramps and Avenue 17 at Golden State Boulevard intersections are both still projected to operate at a LOS “F” in the PM peak hour. Per discussions with Caltrans staff, widening Avenue 17 to eight (8) lanes is not recommended. However with the proposed Alternative B mitigations, these four (4) locations in the 2030 Project scenario are projected to operate above the 2030 No Project measures of effectiveness (freeway density and intersection delay). Therefore these four (4) locations should be viewed as mitigated as appropriate by the Project.

Alternative C, Commercial Land Use Alternative (Madera Site)

Alternative C, which is the Commercial Land Use Alternative, would consist of the following land uses:

- 125,000 sf Free Standing Discount Superstore
- 100,000 sf Discount Club
- 3,000 sf Fast Food Restaurant with Drive-Through
- 4,000 sf High-Turnover Sit-Down Restaurant
- 5,000 sf High-Turnover Sit-Down Restaurant

The Alternative C total square footage would be 237,000 sf and the Project would be constructed and operational by 2010. Alternative C would be located on the approximately 305 acre Madera Site, which is located to the west of Golden State Boulevard, east of Road 23, north of Avenue 17, and south of Avenue 18 in Madera County.

Table 11 shows the Alternative C levels of service summary for the various scenarios for the County segments, freeway segments, and intersections surrounding the Madera Site. County segments, freeway segments, or intersections operating or projected to operate below the adopted level of service are shown bolded in Table 11. The signalized and AWSC intersection levels of service shown in Table 11 are representative of the whole intersection. Individual intersection movements or approaches may operate above or below the signalized and AWSC level of service or delay shown in Table 11. The signalized levels of service or delay shown in Table 11 may not reflect the effects of 95th percentile queues that exceed the capacity for their movement.

Table 12 shows the results of the Alternative C peak hour volume signal warrant analyses for the various scenarios for the study intersections surrounding the Madera Site. If a study intersection met the peak hour volume signal warrant then a “Yes” is shown in the appropriate scenario column. If the intersection did not meet the peak hour volume signal warrant then a “No” is shown in the appropriate

scenario column. Intersections by scenario that met the peak hour volume signal warrant are shown bolded Table 12.

Table 13 shows the Alternative C projected 95th-percentile queue lengths for the various scenarios for the various study locations surrounding the Madera Site. Movements with queue lengths that exceed or are projected to exceed their available storage lengths are shown bolded in Table 13. Please note that storage lengths for mitigated scenarios may be different than those shown in the Existing Queue Storage Length column.

Table 14 shows the Alternative C ramp widening/auxiliary lane thresholds for the various scenarios for the various SR 99 off-ramps. Locations that are projected to meet the thresholds are shown bolded in Table 14.

Table 15 shows the Alternative C calculated left-turn storage lengths for movements which have existing separate left-turn or right-turn lanes, meet left-turn channelization warrants, or require dual left-turn lanes or separate right-turn lanes for the various Project scenarios for the various study locations surrounding the Madera Site. SR 99 off-ramp approaches and movements included in the queue length analysis are not included in the storage length calculations. It should be noted that the calculated left-turn storage length increases are not solely due to Project only trips but are also due to increases in background traffic.

TABLE 11:
WEEKDAY LEVELS OF SERVICE SUMMARY FOR THE COUNTY SEGMENTS, FREEWAY SEGMENTS, AND INTERSECTIONS
ALTERNATIVE C (COMMERCIAL LAND USE ALTERNATIVE /MADERA SITE)

County Segment	Existing		2010 No Project		2010 Project		Mitigated 2010 Project		2030 No Project		2030 Project		Mitigated 2030 Project	
	LOS AM/PM	Density (pc/mi/ln) AM/PM	LOS AM/PM	Density (pc/mi/ln) AM/PM	LOS AM/PM	Density (pc/mi/ln) AM/PM	LOS AM/PM	Density (pc/mi/ln) AM/PM	LOS AM/PM	Density (pc/mi/ln) AM/PM	LOS AM/PM	Density (pc/mi/ln) AM/PM	LOS AM/PM	Density (pc/mi/ln) AM/PM
SR 99 north of Avenue 18 1/2	C/C	22,622.1	C/C	23,924.2	C/C	24,272.5	C/C	24,272.5	D/D	26.5/33.2	D/D	26.5/33.2	C/C	19.4/23.0
SR 99 between Avenue 18 1/2 and Avenue 17	C/D	18,474.1	C/D	19,631.1	C/D	19,972.5	B/C	13,319.7	C/E	23.9/41.4	C/E	24.1/43.0	B/C	17.8/26.0
SR 99 south of Avenue 17	C/C	23,623.0	C/C	24,925.5	C/D	25,327.0	B/B	16.5/17.4	D/D	26.4/31.4	D/D	26.5/32.5	C/C	19.3/22.2
SR 99 south of Avenue 17	C/D	19,129.7	C/D	20,433.6	C/E	21,076.1	B/C	14.0/20.8	C/E	23.5/40.5	C/E	23.7/40.6	B/C	17.6/25.2
SR 99 south of Avenue 17	C/C	25,124.5	D/D	28,731.0	D/E	31,638.8	C/C	19.3/21.6	E/F	39.0/—	E/F	41.2/—	C/E	25.4/41.9
SR 99 south of Avenue 17	C/D	20,232.4	C/E	22,844.4	C/F	24.8/—	B/C	16.2/25.9	D/F	29.2/—	D/F	30.3/—	C/F	21.2/—
Intersection	LOS AM/PM	Density (secs) AM/PM	LOS AM/PM	Density (secs) AM/PM	LOS AM/PM	Density (secs) AM/PM	LOS AM/PM	Density (secs) AM/PM	LOS AM/PM	Density (secs) AM/PM	LOS AM/PM	Density (secs) AM/PM	LOS AM/PM	Density (secs) AM/PM
Avenue 18 1/2 at SR 99 NB ramps	A/A	8,277.9	A/A	6,456.6	A/A	8,478.1	B/B	13.3/13.4	A/B	7.5/10.1	B/B	14.9/13.5	B/B	12.9/12.8
• NB Approach	C/B	16.3/14.8	C/C	21.3/21.4	C/D	22.7/26.4	A/B	8.9/11.3	E/F	33.7/77.5	B/E	18.2/64.4	A/B	9.8/14.1
Avenue 18 1/2 at SR 99 SB ramps/Road 23	A/A	0.6/1.2	A/A	0.8/1.5	A/A	0.8/1.4								
• WB Left-Through	B/C	13.9/17.2	C/E	18.5/36.5	C/F	20.8/60.2								
• NB Approach	B/C	13.5/17.2	C/D	16.5/28.5	C/E	17.2/36.3								
Avenue 18 1/2 at Pistachio Drive	A/A	0.0/0.4	A/A	0.0/0.4	A/A	0.0/0.4								
• EB Left-Through	B/B	12.7/13.8	B/C	14.3/17.3	B/C	15.0/20.2	A/A	0.0/0.4	A/A	0.7/2.2	A/A	0.7/2.5	A/A	0.7/2.6
• SB Approach	A/A	0.4/0.1	A/A	0.3/0.1	A/A	0.3/0.1								
Avenue 18 1/2 at Golden State Boulevard	B/B	10.9/10.9	B/B	11.8/12.2	B/B	12.1/12.9	B/B	12.1/12.9						
• EB Left-Through														
• EB Left-Through-Right														
• WB Left-Through														
• NB Approach														
• SB Approach														
Avenue 18 at Road 23	A/A	0.1/0.5	A/A	0.1/0.2	A/A	0.1/0.2								
• NB Left-Through-Right	A/A	0.4/0.6	A/A	1.4/1.4	A/A	1.7/1.6	A/A	0.8/1.0	A/A	0.0/0.2	A/A	0.0/0.2	A/A	5.2/7.9
• WB Left-Through-Right	A/A	9.4/9.8	A/B	9.7/10.2	A/B	9.6/10.1	A/B	9.6/10.1	B/C	14.5/17.9	B/C	14.7/22.0		
• NB Approach	A/B	9.9/10.1	B/B	10.7/11.9	B/B	10.8/12.0	B/B	10.8/12.0	C/C	16.4/24.8	C/D	17.8/31.9		
• EB Approach														

SR = State Route secs = seconds Delay per vehicle NB = northbound SB = southbound WB = westbound EB = eastbound
 Bolded text = intersections/movement operates below the appropriate level of service standard --- = exceeds software parameters

TABLE 1:
WEEKDAY LEVELS OF SERVICE SUMMARY FOR THE COUNTY SEGMENTS, FREEWAY SEGMENTS, AND INTERSECTIONS
ALTERNATIVE C (COMMERCIAL LAND USE ALTERNATIVE/MADERA SITE)

Intersection	Existing			2010 No Project			2010 Project			Mitigated 2010 Project			2030 No Project			2030 Project			Mitigated 2030 Project		
	LOS AM/PM	Delay AM/PM (secs)	LOS AM/PM	Delay (secs)	LOS AM/PM	Delay (secs)	LOS AM/PM	Delay (secs)	LOS AM/PM	Delay (secs)	LOS AM/PM	Delay (secs)	LOS AM/PM	Delay (secs)	LOS AM/PM	Delay (secs)	LOS AM/PM	Delay (secs)	LOS AM/PM	Delay (secs)	
Avenue 17 at SR 99 NB ramps	A/A	9.0/8.0	B/B	10.0/10.2	B/B	11.0/13.9	B/B	13.1/17.8	D/F	27.7/617.2	E/F	67.9/267.6	C/F	21.3/95.8							
• EB Left	B/B	11.9/13.3	F/F	114.6/371.0	F/F	6029.1/4161.6															
• NB Approach	B/B	10.2/11.1	C/F	16.6/174.5	E/F	38.2/6994.7															
Avenue 17 at SR 99 SB off-ramp																					
• SB Approach	A/A	0.0/0.0	A/A	8.2/8.7	A/B	9.2/10.8															
Avenue 17 at Golden State Boulevard	A/A	7.6/7.5	A/A	8.5/8.9	A/B	9.2/10.8															
• EB Left	A/A	9.7/9.3	C/D	22.2/32.4	F/F	247.8/---															
• NB Approach	B/B	12.2/11.9	F/F	113.9/---	F/F	---															
• SB Approach	A/A	0.1/0.4	A/A	0.7/1.4	A/A	0.7/1.9															
Avenue 17 at Road 23	A/A	1.1/0.7	A/A	0.7/0.6	A/A	0.7/0.6															
• NB Left-Through-Right	B/B	10.5/10.6	B/C	13.9/18.9	C/E	15.4/35.8															
• SB Left-Through-Right	B/B	10.3/10.4	B/B	12.3/14.9	B/C	13.1/19.6															
• WB Approach	A/A	4.8/5.5	A/A	6.6/9.5	A/B	7.6/13.2															
Ellis Street at Road 26	B/B	10.3/11.0	B/B	10.6/11.4	B/B	10.7/11.6															
• SB Approach	A/B	9.7/10.6	B/B	10.1/11.4	B/B	10.3/11.9															
Gateway/Avenue 16 at SR 99 NB ramps	A/A	4.7/4.8	A/A	5.0/5.4	A/A	5.2/5.8															
• SB Approach	A/A	9.0/9.6	A/A	9.1/9.9	A/A	9.2/9.9															
Avenue 16 at SR 99 NB ramp connector	A/A	7.7/7.9																			
• EB Left	B/B	11.0/13.0																			
• SB Approach	A/B	8.4/10.9																			
Avenue 16 at Schnoor Avenue/Golden State	B/B	12.1/15.1	B/C	14.3/22.7	B/D	14.9/38.2															
• NB Left-Through-Right	B/B	14.2/12.2	B/B	15.2/14.2	B/B	15.4/18.9															
• WB Approach	A/A	0.0/0.0	A/A	0.0/0.0	A/A	0.0/0.0															
• SB Approach	A/A	1.0/1.7	A/A	1.0/1.8	A/A	1.1/1.8															
Avenue 16/Ellis Overcrossing at Aviation Drive	B/B	10.1/10.7	B/B	10.8/12.0	B/B	11.0/12.5															
• NB Left-Through-Right	A/B	0.0/10.2	A/B	0.0/11.1	A/B	0.0/11.5															
• WB Approach	A/B	9.1/13.1	A/A	5.6/6.6	A/B	5.6/10.1															
SR 145/Madera Avenue at SR 99 NB ramps	C/C	22.1/31.2	C/C	21.1/33.3	C/D	22.0/39.1															
• SB Approach																					
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145																					
• NB Left-Through-Right																					
• SB Left-Through-Right																					

secs = seconds
SR = State Route
Delay per vehicle
Bolded text = intersection/movement operates below the appropriate level of service standard
NB = northbound
SB = southbound
WB = westbound
EB = eastbound
--- = exceeds software parameters

TABLE 11:
WEEKDAY LEVELS OF SERVICE SUMMARY FOR THE COUNTY SEGMENTS, FREEWAY SEGMENTS, AND INTERSECTIONS
ALTERNATIVE C (COMMERCIAL LAND USE ALTERNATIVE/MADERA SITE)

Intersection	Existing			2010 No Project			2010 Project			Mitigated 2010 Project			2030 No Project			2030 Project			Mitigated 2030 Project		
	LOS AM/PM	Delay AM/PM (secs)		LOS AM/PM	Delay AM/PM (secs)		LOS AM/PM	Delay AM/PM (secs)		LOS AM/PM	Delay AM/PM (secs)		LOS AM/PM	Delay AM/PM (secs)		LOS AM/PM	Delay AM/PM (secs)		LOS AM/PM	Delay AM/PM (secs)	
Off-ramp/Avenue 14 at SR 99 SB off-ramp	B/B	10.6/11.0		B/B	13.1/14.1		B/B	13.9/16.5		B/B	11.2/12.1		C/F	29.7/163.2		B/C	16.2/24.5		B/B	12.8/17.7	
Avenue 14 at Road 23	A/A	8.4/8.4		A/A	8.8/9.3		A/A	9.0/9.7		A/A	9.0/9.7		B/C	11.6/16.6		B/C	11.8/18.0		A/A	7.0/7.0	
Avenue 12/Golden State Boulevard at SR 99 SB ramps	A/A	4.6/3.4		A/A	6.1/3.7		A/A	6.1/3.7		B/B	14.6/13.1		A/A	9.1/7.5		C/C	22.0/24.0		B/B	16.3/17.1	
• SB Left-Through	C/C	15.3/16.8		E/D	43.3/30.0		F/E	50.7/47.9					F/F	9323.4/9051.8							
• WB Approach	D/F	51.0/90.1		D/D	54.0/52.0		D/E	54.3/60.0		D/D	40.8/40.4		F/F	205.2/328.4		E/F	75.9/154.5		C/D	30.2/40.2	
Avenue 12 at Golden State Boulevard	A/A	2.3/4.1		B/C	17.9/21.7		B/C	19.1/21.9		B/B	13.0/12.9		C/E	21.5/57.9		C/E	23.3/66.3		B/B	10.4/15.2	
• EB Left-Through	F/F	119.1/182.2																			
• NB Approach																					

SR = State Route
 Delay per vehicle
 Bolded text = intersection/movement operates below the appropriate level of service standard
 sec = seconds
 --- = exceeds software parameters
 SB = southbound
 WB = westbound
 EB = eastbound

**TABLE 12:
SIGNAL WARRANT ANALYSIS
ALTERNATIVE C (COMMERCIAL LAND USE ALTERNATIVE / MADERA SITE)**

Intersection	Existing	2010 No Project	2010 Project	2030 No Project	2030 Project
Avenue 18 ½ at SR 99 SB ramps/Road 23	No	No	No	Yes	Yes
Avenue 18 ½ at SR 99 NB ramps	No	No	No	Yes	Yes
Avenue 17 at SR 99 SB off-ramp	No	Yes	Yes	Yes	---
Avenue 17 at SR 99 NB ramps	Yes	Yes	Yes	Yes	---
Avenue 12/Golden State Boulevard at SR 99 SB ramps	No	Yes	Yes	Yes	---
Avenue 12 at Golden State Boulevard	---	---	---	---	---
Avenue 12 at SR 99 NB ramps	Yes	---	---	---	---
Avenue 18 at Road 23	No	No	No	No	Yes
Avenue 17 at Road 23	No	No	Yes	Yes	---
Avenue 17 at Golden State Boulevard	No	Yes	Yes	Yes	---
Ellis Street at Road 26	---	---	---	---	---
Avenue 15 ½ at Road 23	No	No	No	Yes	Yes
Avenue 14 at Road 23	No	No	No	Yes	Yes
Avenue 16 at Schnoor Avenue	Yes	---	---	---	---
Avenue 16 at Aviation Drive	---	---	---	---	---
Avenue 16 at SR 99 SB ramps	No	---	---	---	---
Avenue 16/Avenue 16 connector at SR 99 NB ramps	No	No	No	---	---
Avenue 16 at SR 99 NB ramp connector	No	No	No	---	---
Gateway/Avenue 16 at SR 99 NB ramps	No	No	No	---	---
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	---	---	---	---	---
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	---	---	---	---	---
SR 99 NB ramps at SR 145/Madera Avenue	---	---	---	---	---
Olive Avenue/Avenue 14 at SR 99 SB off-ramp	---	---	---	---	---
Olive Avenue/Avenue 14/ SR 99 SB on-ramp at SR 145	---	---	---	---	---
Avenue 18 ½ at Pistachio Drive	No	No	No	Yes	Yes
Avenue 18 ½ at Golden State Boulevard	No	No	No	Yes	Yes

SR = State Route

Yes = meets urban/rural peak hour volume signal warrant

No = does not meet urban/rural peak hour volume signal warrant

--- = signalized intersection/no warrant prepared

Bolded Text = intersection meets the peak hour signal warrant

**TABLE 13:
95th-PERCENTILE QUEUE LENGTH SUMMARY
ALTERNATIVE C (COMMERCIAL LAND USE ALTERNATIVE / MADERA SITE)**

Intersection	Existing Storage Length (ft)	Existing	95 th Percentile Queue Length (ft)						Mitigated 2030 Project
			2010 No Project	2010 Project	Mitigated 2010 Project	2030 No Project	2030 Project	Mitigated 2030 Project	
SR 99 NB off-ramp at Avenue 18 1/2	1,204 ¹ (770 ³)	43/38 4/4	69/80 4/4	77/114 4/5	110/131 19/0	#671/#813	#164/#181	148/188 25/0	
SR 99 SB off-ramp at Avenue 18 1/2	1,256 ¹ (822 ²)	22/47	35/95	37/118	61/97	0/241			
• SB Left-Through-Right									
• SB Left						209/221		84/124	
• SB Left-Right						35/64	#210/#360		
• SB Right								60/#119	
SR 99 SB off-ramp at Avenue 17	1,341 ¹ (907 ³)	4/13	15/259	62/—	56/164		#348/#657	110/#308	
• SB Left	589 ³	1/1	8/11	20/45	35/39	132/202	102/194	45/124	
• SB Right	1,060 ¹ (626 ³)								
SR 99 NB off-ramp at Avenue 17	45 ³	17/8	322/623	—/—	129/162	—/—	#730/#1,381	260/#838	
• NB Left	45 ³				129/163	7/15	#736/#1,406	50/#665	
• NB Left-Through								29/#542	
• NB Through-Right									
• NB Right	45 ³	12/66	27/588	49/1,555	26/214	#501/#581	51/#901		
SR 99 NB off-ramp at Avenue 16 [Avenue 16/Ellis Avenue Overcrossing]	1,150 ¹ (716 ³)	0/0	0/0	0/0	0/0				
• SE Through-Right									
• [NB Left]	[150 ³]					234/#501	55/88	55/88	
• [NB Through-Right]	[150 ³]						29/48	29/48	

95th percentile queue length - is minimum amount of storage needed for each movement
 [ft] = 2030 conditions
 ... = not calculated for unsignalized intersections
 Bolded Text = 95th percentile queues exceed the available storage capacity
 1 = Total ramp length
 2 = Calculated storage distance
 3 = Distance of ramp striped as 2-lanes (existing)
 4 = Storage lengths for mitigated scenarios may be different than those shown in the Existing Queue Storage Length column
 fi = feet
 SR = State Route
 NB = northbound
 SB = southbound
 WB = westbound
 EB = eastbound
 m = volume for 95th percentile queue is metered by upstream signal
 m = volume for 95th percentile queue is metered by upstream signal

Intersection	Existing Queue Storage Length (ft)	95 th Percentile Queue Length (ft)							
		Existing	2010 No Project	2010 Project	Mitigated 2010 Project	2030 No Project	2030 Project	Mitigated 2030 Project	
SR 99 SB off-ramp at Avenue 16 [Avenue 16/Ellis Avenue Overcrossing]	1,020 ¹ (586 ²) [225 ³]	9/18	33/49	34/56	34/56	437/—	34/57	34/57	
• SB Left		15/29	40/51	43/55	43/55	0/0	24/127	24/127	
• SB Right	881 ¹ (447 ²)								
SR 99 NB off-ramp at Avenue 15 1/2 /Cleveland Avenue	353 ¹	83/103	110/192	137/286	110/321	0/0	142/200	137/230	
• NB Left		82/103	110/194	137/286	110/322	#671/#813	142/204	137/235	
• NB Right	353 ¹	39/129	41/208	42/247	37/#268	0/241	#241/#833	75/#383	
SR 99 SB off-ramp at Avenue 15 1/2 /Cleveland Avenue	1,000 ¹ (566 ²)								
• SB Left	65 ³	76/123	95/155	108/184	78/152	#407/#813	#413/#860	139/#364	
• SB Left-Through		30/25	38/65	42/145	33/124	114/241	117/239	105/#334	
• SB Through-Right	65 ³								
SR 99 NB off-ramp at SR 145/Madera Avenue	1,310 ¹ (876 ²)								
• WB Left	90 ³	116/103	117/108	117/108	109/99	#459/#575	#395/#575	104/136	
• WB Right	90 ³	0/30	0/31	0/31	0/29	0/62	0/62	0/50	
SR 99 SB off-ramp at Avenue 14/Olive Avenue	1,254 ¹ (820 ²)								
• SB Left	65 ³	143/143	171/210	187/263	92/130	454/#1,062	198/389	154/278	
• SB Left-Right		43/37	41/33	40/30	47/140	174/244	185/304	139/267	
• SB Right	65 ³								
SR 99 SB off-ramp at Avenue 12/Golden State Boulevard	1,431 ¹ (997 ²)								
• WB Left		70/81	239/190		59/70	—/—	443/533	290/459	
• WB Right		7/7	7/8	40/30	13/14	7/15	28/72	25/54	
SR 99 NB off-ramp at Avenue 12	1,223 ¹ (789 ²)								
• NB Left	49 ³	259/300	216/224	236/#240	173/163	#501/#581	#512/#593	144/178	
• NB Left-Through									
• NB Through-Right	49 ³	18/21	49/58	52/59	42/47	234/#501	#236/#508	76/171	
• NB Right	49 ³							76/170	

95th percentile queue length - is minimum amount of storage needed for each movement
 [ft] = 2030 conditions
 ... = not calculated for unsignalized intersection
Bolded Text = 95th percentile queues exceed the available storage capacity
 4 = Storage lengths for mitigated scenarios may be different than those shown in the Existing Queue Storage Length column

SR = State Route
 f = feet
 1 = Distance of ramp subject to 2-lanes (existing)
 2 = Calculated storage distance
 3 = Total ramp length
 4 = 95th percentile volume exceeds capacity; queue may be longer, queue shown is maximum after two (2) cycles

SB = southbound
 WB = westbound
 EB = eastbound

TABLE 13:
95th-PERCENTILE QUEUE LENGTH SUMMARY
ALTERNATIVE C (COMMERCIAL LAND USE ALTERNATIVE / MADERA SITE)

Intersection	Existing Queue Storage Length (ft)	95 th Percentile Queue Length (ft)						Mitigated 2030 Project
		Existing	2010 No Project	2010 Project	Mitigated 2010 Project (AM/PM)	2030 No Project	2030 Project	
Avenue 17 between SR 99 SB off-ramp and Golden State Boulevard	481							
• WB Left (at Golden State Boulevard)		6/3	10/10	13/21	#130/#169	437/—	m#701/m#498	#272/m#431
• WB Through (at Golden State Boulevard)		0/0	0/0	0/0	74/135		m150/m311	
• WB Through-Right (at Golden State Boulevard)		0/0	0/0	0/0	15/36			241/#1098
• WB Right (at Golden State Boulevard)		0/0	0/0	0/0	3/52		m21/m12	
• EB Through (at SR 99 SB off-ramp)		0/0	0/0	0/0		0/0	m77/m106	m97/m212

95th percentile queue length - is minimum amount of storage needed for each movement
 [ex] = 2030 conditions
 -- = not calculated for unsignalized intersections
Italicized Text = 95th percentile queues exceed the available storage capacity
 f = feet
 j = Calculated storage distance
 h = Total ramp length
 i = Distance of ramp striped as 2-lanes (existing)
 SR = State Route
 NB = northbound
 SB = southbound
 WB = westbound
 EB = eastbound
 m = volume for 95th percentile queue; is metered by upstream signal
 # = Storage length for mitigated scenarios may be different than those shown in the Existing Queue Storage Length column

TABLE 14:
RAMP WIDENING/AUXILIARY LANE THRESHOLD SUMMARY
ALTERNATIVE C (COMMERCIAL LAND USE ALTERNATIVE / MADERA SITE)

Intersection	Existing		2010 No Project		2010 Project		2030 No Project		2030 Project	
	PCE (AM/PM)	900 to 1,499 PCE Threshold (AM/PM) (Y/N)	PCE (AM/PM)	1,500 PCE Threshold (AM/PM) (Y/N)	PCE (AM/PM)	900 to 1,499 PCE Threshold (AM/PM) (Y/N)	PCE (AM/PM)	1,500 PCE Threshold (AM/PM) (Y/N)	PCE (AM/PM)	900 to 1,499 PCE Threshold (AM/PM) (Y/N)
SR 99 NB off-ramp at Avenue 18 ½	248/231	N/N	282/302	N/N	292/347	N/N	378/406	N/N	378/406	N/N
SR 99 SB off-ramp at Avenue 18 ½	155/248	N/N	189/289	N/N	190/290	N/N	504/737	N/N	532/793	N/N
SR 99 SB off-ramp at Avenue 17	55/111	N/N	109/222	N/N	164/322	N/N	497/745	N/N	496/748	N/N
SR 99 NB off-ramp at Avenue 17	204/428	N/N	424/822	N/N	619/1192	N/Y	1650/3347	N/N	1787/3600	N/N
SR 99 NB off-ramp at Avenue 16	60/104	N/N	69/115	N/N	69/115	N/N	314/430	N/N	314/428	N/N
SR 99 SB off-ramp at Avenue 16	185/269	N/N	248/385	N/N	284/482	N/N	630/950	N/Y	639/969	N/Y
SR 99 NB off-ramp at Avenue 15 ½	328/552	N/N	451/846	N/N	540/1075	N/Y	753/1298	N/Y	753/1297	N/Y
SR 99 SB off-ramp at Avenue 15 ½	129/181	N/N	192/303	N/N	242/412	N/N	707/1134	N/Y	746/1202	N/Y
SR 99 NB off-ramp at SR 145/Madera Avenue	217/186	N/N	223/193	N/N	223/193	N/N	496/534	N/N	496/534	N/N
SR 99 SB off-ramp at Avenue 14/Ohive Avenue	361/317	N/N	439/504	N/N	487/650	N/N	958/1400	Y/Y	977/1439	Y/Y
SR 99 SB off-ramp at Avenue 12/Golden State Boulevard	369/372	N/N	470/490	N/N	490/561	N/N	1176/1567	Y/N	1188/1587	Y/N
SR 99 NB off-ramp at Avenue 12	313/294	N/N	355/343	N/N	355/343	N/N	745/805	N/N	745/805	N/Y

PCE = Passenger Car Equivalent
(N) = Mitigations Not Included in Analyses & Cost Estimates
Y = Threshold Met
N = Threshold Not Met
SR = State Route
NB = northbound
SB = southbound
Bolded Text = ramps meet at least one of the volume thresholds
(Y) = Mitigations Included in Analyses & Cost Estimates

**TABLE 15:
TURN LANE STORAGE CALCULATIONS SUMMARY
ALTERNATIVE C (COMMERCIAL LAND USE/MADERA SITE)**

Intersection	Movement	Existing Storage Length (ft)	2010 Project Storage Length (ft)	2030 Project Storage Length (ft)
Avenue 18 ½ at SR 99 SB ramps/Road 23	NBL	25	100	n/a
	NBR	25	100	n/a
	WBL	---	n/a	n/a
	SBL		n/a	200
	SBR		n/a	500
Avenue 18 ½ at SR 99 NB ramps	EBL	150	150	300 ¹
Avenue 17 at SR 99 NB ramps	WBR		250	n/a
	EBL	300	100	300 ¹
Avenue 12/Golden State Boulevard at SR 99 SB ramps	NBR	---	350	900
	SBL	---	200	500
Avenue 12 at Golden State Boulevard	NBL	200	100	100
	WBL	---	100	100
	WBR		n/a	700
	SBL	400	350 ¹	700 ⁴
	SBR	200	100	n/a
	EBL	350	300	350
	EBR	425	100	n/a
Avenue 12 at SR 99 NB ramps	WBR	---	600	1,650
	EBL	---	250	300 ¹
	NBL	---	n/a	150
Avenue 17 at Road 23	WBL	---	n/a	100
	SBR	---	n/a	300
	EBR		n/a	300
	NBL	50	150	300
Avenue 17 at Golden State Boulevard	NBR	---	n/a	650 ³
	WBL	---	200	600 ¹
	WBR	---	350	n/a
	SBL	---	200 ¹	650 ¹
	EBL	---		100 ¹
	NBL	---	100	100
Ellis Street at Road 26	WBR	---	250	150
	SBL	---	200	200
	EBR		100	100

ft = feet SR = State Route NB = northbound

SB = southbound WB = westbound

EB = eastbound n/a = not applicable --- = no existing lane

¹ = dual lefts required, length of each left-turn lane

² = exceeds available distance to nearest intersection

³ = dual rights required, length of each right-turn lane

⁴ = triple lefts required, length of each left-turn lane

**TABLE 15:
TURN LANE STORAGE CALCULATIONS SUMMARY
ALTERNATIVE C (COMMERCIAL LAND USE/MADERA SITE)**

Intersection	Movement	Existing Storage Length (ft)	2010 Project Storage Length (ft)	2030 Project Storage Length (ft)
Avenue 16/Ellis Street at Aviation Drive	NBL	75	100	350
	NBR	75	n/a	1,000 ³
	WBL	200	400	800 ¹
	SBL		100	400 ¹
	SBR		100	n/a
	EBL	---	100	150
	EBR		n/a	350
Avenue 16 at SR 99 SB ramps	WBR		100	n/a
	EBL		150	n/a
Avenue 16/Ellis Street at SR 99 NB ramps	NBL		n/a	150 ¹
	NBTR		n/a	150
	WBR	---	n/a	200
	EBL	300	n/a	400 ¹
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	WBR	50	250	1,050
	EBL	100	250	200 ¹
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps	WBL	125	300	450
	EBR	125	800	900
SR 145/Madera Avenue at SR 99 NB ramps	NBL	---	300 ¹	700 ¹
	SBR	---	n/a	450
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	NBL	125	100 ¹	200 ¹
	SBL	100	n/a	250
	SBR	25	250	600
	EBL	175	250	350 ¹
	EBR	175	600	1,150
Avenue 18 ½ at Golden State Boulevard/Road 23	NBL	---	n/a	100
	NBR	---	n/a	500
	WBL	---	n/a	350 ¹
	WBR		175	n/a
	SBL	---	n/a	150
Avenue 18 at Pistachio Drive	WBR		250	250

ft = feet SR = State Route NB = northbound SB = southbound WB = westbound

EB = eastbound n/a = not applicable --- = no existing lane

¹ = dual lefts required, length of each left-turn lane

² = exceeds available distance to nearest intersection

³ = dual rights required, length of each right-turn lane

⁴ = triple lefts required, length of each left-turn lane

In order to mitigate the County segments, freeway segments, and intersections projected to operate below the level of service standard as identified in Table 11, meet the peak hour volume signal warrant as identified in Table 12, exceed the 95th percentile queue storage lengths as identified in Table 13, meet the ramp widening/auxiliary lane thresholds as identified in Table 14, and/or exceed the available storage length, meet the left-turn channelization warrant, require dual left-turn lanes, or separate right-turn lanes

as identified in Table 15, the following improvements by scenario are proposed for Alternative C at the Madera Site:

Opening Day (2010) Improvements for Alternative C

County Segments

- Avenue 17 – SR 99 to Road 27
 - Restripe/widen from two (2) lanes to four (4) lanes

Freeway Segments

- SR 99 north of Avenue 18 1/2
 - Restripe/widen the SB leg from two (2) lanes to three (3) lanes
- SR 99 between Avenue 18 ½ to Avenue 17
 - Restripe/widen the NB leg from two (2) lanes to three (3) lanes
 - Restripe/widen the SB leg from two (2) lanes to three (3) lanes
- SR 99 south of Avenue 17
 - Restripe/widen the NB leg from two (2) lanes to three (3) lanes
 - Restripe/widen the SB leg from two (2) lanes to three (3) lanes

Intersections

- Avenue 18 ½ at SR 99 NB ramps
 - Signalize the intersection
- Avenue 18 ½ at SR 99 SB ramps/Road 23
 - Signalize the intersection
- Avenue 17 at SR 99 NB ramps
 - Signalize the intersection
 - Restripe/widen the NB approach, south leg, from one (1) shared left-through lane and one (1) right-turn lane to one (1) left-turn lane, one (1) shared left-through lane and two (2) right-turn lanes
 - Restripe/widen the EB approach, west leg, from one (1) left-turn lane and one (1) through lane to one (1) left-turn lane and two (2) through lanes
 - Restripe/widen the WB approach from one (1) through lane and one (1) right-turn lane to two (2) through lanes and one (1) right-turn lane
- Avenue 17 at SR 99 SB ramps
 - Signalize the intersection
 - Restripe/widen the EB approach, west leg, from one (1) through lane to two (2) through lanes
 - Restripe/widen the WB approach, east leg, from one (1) through lane to two (2) through lanes
- Avenue 17 at Golden State Boulevard
 - Signalize the intersection
 - Restripe/widen the SB approach, north leg, from one (1) shared left-through-right lane to two (2) left-turn lanes and one (1) shared through-right lane

- Restripe/widen the EB approach, west leg, from one (1) left-turn lane, one (1) through lane, and one (1) right-turn lane to one (1) left-turn lane, one (1) through lane, and one (1) shared through-right lane
- Restripe/widen the WB approach, east leg, from one (1) left-turn lane and one (1) shared through-right lane to one (1) left-turn lane, two (2) through lanes, and one (1) right-turn lane

- Avenue 17 at Road 23
 - Signalize the intersection

- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145
 - Restripe/widen the EB approach, west leg, from one (1) shared left-through and one (1) right-turn lane to one (1) left-turn lane, one (1) through lane, and one (1) right-turn lane

- Olive Avenue/Avenue 14 at SR 99 SB off-ramp
 - Restripe/widen the SB approach, north leg, from one (1) left-turn lane and one (1) right-turn lane to two (2) left-turn lanes and one (1) right-turn lane

- Avenue 12/Golden State Boulevard at SR 99 SB off ramps
 - Signalize the intersection
 - Restripe/widen the SB approach, north leg, from one (1) shared left-through lane to one (1) left-turn lane and one (1) through lane
 - Restripe/widen the WB approach, east leg, from one (1) left-turn lane and one (1) right-turn lane to dual (2) left-turn lanes and one (1) right-turn lane

- Avenue 12 at Golden State Boulevard
 - Restripe/widen the SB approach, north leg, from one (1) left-turn lane, one (1) through lane and one (1) right-turn lane to dual (2) left-turn lanes, one (1) through lane and one (1) right-turn lane

- Avenue 12 at SR 99 NB ramps
 - Restripe/widen the WB approach, east leg, from a shared through-right lane to one (1) through lane and one (1) right-turn lane

2030 Improvements for Alternative C

County Segments

- Road 23 – Avenue 18 ½ to Avenue 17
 - Restripe/widen from two (2) lanes to four (4) lanes (Alternative C only)

- Avenue 17 – SR 99 to Road 27
 - Restripe/widen from four (4) lanes to six (6) lanes

- Avenue 17 – Road 23 to SR 99
 - Restripe/widen from two (2) lanes to six (6) lanes

Freeway Segments

- SR 99 north of Avenue 18 1/2
 - Restripe/widen the NB leg from three (3) lanes to four (4) lanes
 - Restripe/widen the SB leg from three (3) lanes to four (4) lanes

- SR 99 between Avenue 18 ½ to Avenue 17
 - Restripe/widen the NB leg from three (3) lanes to four (4) lanes
 - Restripe/widen the SB leg from three (3) lanes to four (4) lanes
- SR 99 south of Avenue 17
 - Restripe/widen the NB leg from three (3) lanes to four (4) lanes
 - Restripe/widen the SB leg from three (3) lanes to four (4) lanes

Intersections

- Avenue 18 ½ at SR 99 NB ramps
 - Restripe/widen the EB approach, west leg, from one (1) left-turn lane and one (1) through lane, to dual (2) left-turn lanes and one (1) through lane
- Avenue 18 ½ at SR 99 SB ramps/Road 23
 - Restripe/widen the SB approach, north leg, from a shared left-right lane to one (1) left-turn lane and one (1) right-turn lane
- Avenue 18 ½ at Pistachio Drive
 - Although the Avenue 18 ½ at Pistachio Drive intersection is projected to meet the urban peak hour volume signal warrant, it will not be signalized due to its proximity to the SR 99 SB off-ramp. The intersection will be restricted to right-in/right-out/left-in access, which reduces the need for a signal and allows the intersection to operate at an acceptable level of service without a signal.
- Avenue 18 ½ at Golden State Boulevard / Road 23
 - Signalize the intersection
 - Restripe/widen the NB approach, south leg, from one (1) left-turn lane and one (1)-through-right lane, to one (1) left-turn lane, one (1) through lane, and one (1) right-turn lane
 - Restripe/widen the SB approach, north leg, from one (1) shared left-through-right lane, to one (1) left-turn lane and one (1) through-right lane
 - Restripe/widen the WB approach, east leg, from one (1) shared left-through lane and one (1) right-turn lane, to dual (2) left-turn lanes and one (1) shared through-right lane
- Avenue 18 at Road 23
 - Signalize the intersection
- Avenue 17 at SR 99 NB ramps
 - Restripe/widen the NB approach, south leg, from one (1) left-turn lane, one (1) shared left-through lane, and two (2) right-turn lanes to three (3) left-turn lanes, one (1) shared through-right lane, and two (2) right-turn lanes
 - Restripe/widen the EB approach, west leg, from one (1) left-turn lane and two (2) through lanes to two (2) left-turn lanes and three (3) through lanes
 - Restripe/widen the WB approach, east leg, from two (2) through lanes and one (1) right-turn lane to two (2) through lanes and one (1) shared through-right lane
 - Widen the NB off-ramp to two (2) lanes with a NB auxiliary lane on SR 99

- Avenue 17 at SR 99 SB ramps
 - Restripe/widen the SB approach, north leg, from one (1) left-turn lane and one (1) right-turn lane to two (2) left-turn lanes and two (2) right-turn lanes
 - Restripe/widen the EB approach, west leg, from two (2) through lanes to four (4) through lanes
 - Restripe/widen the WB approach, east leg, from two (2) through lanes to three (3) through lanes

- Avenue 17 at Golden State Boulevard
 - Restripe/widen the NB approach, south leg, from one (1) left-turn lane, one (1) through lane, and one (1) right-turn lane to one (1) left-turn lane, one (1) through lane, and two (2) right-turn lanes
 - Restripe/widen the SB approach, north leg, from two (2) left-turn lanes and one (1) shared through-right lane to two (2) left-turn lanes, one (1) through lane and one (1) right-turn lane
 - Restripe/widen the EB approach, west leg, from one (1) left-turn lane, one (1) through lane, and one (1) shared through-right lane to two (2) left-turn lanes, two (2) through lanes, and one (1) shared through-right lane
 - Restripe/widen the WB approach, east leg, from one (1) left-turn lane, two (2) through lanes, and one (1) right-turn lane to two (2) left-turn lanes, two (2) through lanes, and one (1) shared through-right lane

- Avenue 17 at Road 23
 - Restripe/widen the NB approach, south leg, from one (1) shared left-through-right lane to one (1) left-turn lane and one (1) shared through-right lane
 - Restripe/widen the SB approach, north leg, from one (1) shared left-through-right lane to one (1) shared left-through lane and one (1) right-turn lane
 - Restripe/widen the EB approach, west leg, from one (1) shared left-through-right lane to one (1) shared left-through lane, one (1) through lane, and one (1) right-turn lane
 - Restripe/widen the WB approach, east leg, from one (1) shared left-through-right lane to one (1) left-turn lane and one (1) through lane, and one (1) shared through-right lane

- Avenue 16/Ellis Street at Aviation Drive/Kennedy
 - Restripe/widen the NB approach, south leg, from one (1) left-turn lane and one (1) shared through-right lane to one (1) left-turn lane, one (1) through lane, and two (2) right-turn lanes
 - Restripe/widen the SB approach, north leg, from one (1) left-turn lane, one (1) through lane, and one (1) right-turn lane to two (2) left-turn lanes, one (1) through lane, and one (1) shared through-right lane
 - Restripe/widen the EB approach, west leg, from one (1) left-turn lane, one (1) through lane and one (1) shared through-right lane to one (1) left-turn lane, two (2) through lanes, and one (1) right-turn lane
 - Restripe/widen the WB approach, east leg, from one (1) left-turn lane, one (1) through lane, and one (1) shared through-right lane to two (2) left-turn lanes, one (1) through lane, and one (1) through-right lane

- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps
 - Restripe/widen the EB approach, west leg, from one (1) left-turn lane and two (2) through lanes to two (2) left-turn lanes and two (2) through lanes
 - Restripe/widen the NB approach, south leg, from one (1) left-turn lane, one (1) shared left-through lane, and one (1) right-turn lane to one (1) left-turn lane, one (1) shared left-through lane, and two (2) right-turn lanes

- Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps
 - Restripe/widen the SB approach, north leg, from one (1) shared left-through lane and one (1) right-turn lane to two (2) left-turn lanes and one (1) shared through-right lane
- Avenue 15 ½ at Road 23
 - Signalize the intersection
- SR 145/Madera Avenue at SR 99 NB ramps
 - Restripe/widen the SB approach, north leg, from one (1) through lane and one (1) shared through-right lane to two (2) through lanes and one (1) right-turn lane
 - Restripe/widen the WB approach, east leg, from one (1) left-turn lane and one (1) shared through-right lane to two (2) left-turn lanes and one (1) shared through-right lane
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145
 - Restripe/widen the NB approach, south leg, from two (2) left-turn lanes, one (1) through lane, and one (1) shared through-right lane, to dual (2) left-turn lanes, two (2) through lanes, and one (1) shared through-right lane
 - Restripe/widen the SB approach, north leg, from one (1) shared left-through lane, one (1) through lane, and one (1) right-turn lane, to one (1) left-turn lane, two (2) through lanes, and one (1) right-turn lane
 - Restripe/widen the EB approach, west leg, from one (1) left-turn lane, one (1) through lane and one (1) right-turn lane, to dual (2) left-turn lanes, one (1) through lane, one (1) shared through-right lane and one (1) right-turn lane
- Olive Avenue/Avenue 14 at SR 99 SB off-ramp
 - Restripe/widen the SB approach, north leg, from two (2) left-turn lanes and one (1) right-turn lane to one (1) left-turn lane, one (1) shared left-right-turn lane, and one (1) right-turn lane
- Avenue 14 at Road 23
 - Signalize the intersection
 - Restripe/widen the SB approach, north leg, from one (1) shared left-through-right lane, to one (1) left-turn lane and one (1) shared through-right lane
 - Restripe/widen the EB approach, west leg, from one (1) shared left-through-right lane, to one (1) left-turn lane and one (1) shared through-right lane
- Avenue 12/Golden State Boulevard at SR 99 SB off ramps
 - Widen the SB off-ramp to two (2) lanes with a SB auxiliary lane on SR 99
- Avenue 12 at Golden State Boulevard
 - Restripe/widen the SB approach, north leg, from two (2) left-turn lanes, one (1) through lane and one (1) right-turn lane, to three (3) left-turn lanes, and one (1) shared through-right lane
 - Restripe/widen the WB approach, east leg, from one (1) left-turn lane, one (1) through lane, and one (1) shared through-right lane, to one (1) left-turn lane, three (3) through lanes, and one (1) right-turn lane
- Avenue 12 at SR 99 NB ramps
 - Restripe/widen the NB approach, south leg from a shared left-through lane and a separate right-turn lane, to dual (2) left-turn lanes, a shared through-right lane, and one (1) right-turn lane

- Restripe/widen the EB approach, west leg, from one (1) left-turn lane and two (2) through lane, to dual (2) left-turn lanes and three (3) through lanes
- Restripe/widen the WB approach, east leg, from two (2) through lanes and one (1) right-turn lane, to two (2) through lanes, one (1) shared through-right lane and one (1) right-turn lane

With the proposed Alternative C/Madera Site improvements detailed previously, two (2) freeway segments and two (2) intersections are still projected to operate below the adopted level of service standard even with the recommended improvements. The NB and SB SR 99 south of Avenue 17 freeway segments are projected to operate at LOS "E" and "F" respectively in the PM peak hour. Per discussions with Caltrans staff, SR 99 is only programmed for eight (8) lanes for this segment. The Avenue 17 at SR 99 NB ramps and Avenue 17 at Golden State Boulevard intersections are both still projected to operate at a LOS "F" in the PM peak hour. Per discussions with Caltrans staff, widening Avenue 17 to eight (8) lanes is not recommended. However with the proposed Alternative C mitigations, these four (4) locations in the 2030 Project scenario are projected to operate above the 2030 No Project measures of effectiveness (freeway density and intersection delay). Therefore these four (4) locations should be viewed as mitigated as appropriate by the Project.

Alternative D, Off-Site Alternative (North Fork Site)

Alternative D, which is the Off-Site Alternative, would consist of a 26,001 sf casino including a restaurant and would be constructed and operational by 2010. Alternative D would be located on the North Fork Site, which is located to the west of Mission Drive/Federal Road 209, east of road 225, and south of Cascadel Road in Madera County.

Table 16 shows the Alternative D levels of service summary for the study intersections for the various scenarios surrounding the North Fork Site. Intersections operating or projected to operate below the adopted level of service are shown bolded in Table 16. The signalized and AWSC intersection levels of service shown in Table 16 are representative of the whole intersection. Individual intersection movements or approaches may operate above or below the signalized and AWSC level of service or delay shown in Table 16.

Table 17 shows the Alternative D peak hour volume signal warrant analyses for the various scenarios for the study intersections surrounding the North Fork Site. If a study intersection met the peak hour volume signal warrant then a Yes is shown in the appropriate scenario column. If the intersection did not meet the peak hour volume signal warrant then a No is shown in the appropriate scenario column. Intersections by scenario that met the peak hour volume signal warrant are shown bolded Table 17.

TABLE 16:
 WEEKDAY LEVELS OF SERVICE SUMMARY FOR THE STUDY INTERSECTIONS
 ALTERNATIVE D (OFF-SITE ALTERNATIVE/NORTH FORK SITE)

Intersection	Existing			2010 No Project			2010 Project			2030 No Project			2030 Project			Mitigated 2030 Project				
	LOS AM/PM	Delay AM/PM (secs)	LOS AM/PM	Delay AM/PM (secs)	LOS AM/PM	Delay AM/PM (secs)	LOS AM/PM	Delay AM/PM (secs)	LOS AM/PM	Delay AM/PM (secs)	LOS AM/PM	Delay AM/PM (secs)	LOS AM/PM	Delay AM/PM (secs)	LOS AM/PM	Delay AM/PM (secs)	LOS AM/PM	Delay AM/PM (secs)		
SR 145 at SR 41	B/C	14.0/21.6	B/C	15.4/22.8	B/C	15.4/22.9	C/D	39.6/40.6	C/D	29.6/40.7	C/D	29.6/40.7	C/D	29.6/40.7	C/C	20.7/30.1	A/A	9.3/8.5	A/A	
SR 41 at Road 200	A/A	8.1/5.7	A/A	8.2/5.7	A/A	8.2/5.8	A/A	9.3/7.7	A/A	9.3/8.5	A/A	9.3/8.5	A/A	9.3/8.5	A/A	9.3/8.5	A/A	9.3/8.5	A/A	
SR 41 at Road 420 (Thornberry Road)	A/A	8.7/8.9	A/A	8.8/9.0	A/A	8.8/9.0	A/B	9.7/10.2	A/A	9.7/10.2	A/B	9.7/10.2	A/B	9.7/10.2	A/A	6.1/6.5	A/A	6.1/6.5	A/A	
WB Approach	B/B	12.9/14.3	B/B	13.3/14.9	B/B	13.3/14.9	B/B	20.2/27.5	B/B	20.2/27.5	C/D	20.2/27.5	C/D	20.2/27.5	B/B	11.1/14.7				
SR 41 at SR 49	A/B	9.9/11.9	B/B	10.0/12.1	B/B	10.1/12.1	B/B	11.4/14.7	B/B	11.4/14.7	B/B	11.4/14.7	B/B	11.4/14.7	B/B	11.1/14.7				
Road 274 (Malum Ridge Rd) at Road 225 (Mammoth Pool Rd)	A/A	7.0/7.3	A/A	7.1/7.4	A/A	7.3/7.7	A/A	7.9/8.7	A/A	8.2/9.2	A/A	8.2/9.2	A/A	8.2/9.2	A/A	8.2/9.2				
Road 225 (Mammoth Pool Rd) at Castadel Road																				
SB Left	A/A	7.4/7.3	A/A	7.4/7.3	A/A	7.5/7.4	A/A	7.5/7.4	A/A	7.5/7.4	A/A	7.5/7.4	A/A	7.5/7.4	A/A	7.5/7.5				
WB Approach	A/A	8.6/8.6	A/A	8.7/8.7	A/A	8.7/8.8	A/A	9.1/9.7	A/A	9.3/9.6	A/A	9.3/9.6	A/A	9.3/9.6	A/A	9.3/9.6				
Castadel Road at Mission Drive																				
SB Left-Through	-/A	-/1.1	-/A	-/1.1	-/A	5.3/6.7	-/A	-/1.2	-/A	4.3/6.3	-/A	4.3/6.3	-/A	4.3/6.3	-/A	4.3/6.3				
WB Approach	A/A	8.6/8.6	A/A	8.7/8.6	A/A	8.8/8.9	A/A	8.8/8.8	A/A	8.9/9.1	A/A	8.9/9.1	A/A	8.9/9.1	A/A	8.9/9.1				
North Fork Road at Auberry Road																				
EB Left-Through	-/A	-/A	-/A	0.2/0.2	-/A	0.1/1.0	-/A	1.1/1.2	-/A	1.6/1.6	-/A	1.6/1.6	-/A	1.6/1.6	-/A	1.6/1.6				
WB Left	A/A	7.4/7.5	A/A	7.4/7.5	A/A	7.5/7.5	A/A	7.6/7.6	A/A	7.6/7.6	A/A	7.6/7.6	A/A	7.6/7.6	A/A	7.6/7.6				
WB Approach	A/A	9.1/9.1	A/B	9.2/10.6	A/A	9.4/9.4	B/B	10.3/11.1	B/B	10.9/11.4	B/B	10.9/11.4	B/B	10.9/11.4	B/B	10.9/11.4				
SB Approach	B/A	10.1/8.8	A/A	9.9/9.8	A/A	9.7/9.7	B/B	12.2/13.1	B/B	12.5/13.4	B/B	12.5/13.4	B/B	12.5/13.4	B/B	12.5/13.4				
North Fork Road at Crane Valley Road																				
EB Left-Through	A/A	1.3/2.6	A/A	1.3/2.7	A/A	1.3/2.6	A/A	1.7/3.3	A/A	1.6/3.3	A/A	1.6/3.3	A/A	1.6/3.3	A/A	1.6/3.3				
SB Approach	A/A	9.3/9.9	A/B	9.3/10.0	A/A	9.4/10.1	B/B	10.1/11.7	B/B	10.1/11.8	B/B	10.1/11.8	B/B	10.1/11.8	B/B	10.1/11.8				

SR = State Route
 Delay per vehicle
 Bolded Text = intersection/movement operates below the appropriate level of service standard

SB = southbound

WB = westbound

EB = eastbound

**TABLE 17:
SIGNAL WARRANT ANALYSIS
ALTERNATIVE D (OFF-SITE ALTERNATIVE/NORTH FORK SITE)**

Intersection	Existing	2010 No Project	2010 Project	2030 No Project	2030 Project
SR 41 at SR 145	---	---	---	---	---
SR 41 at Road 200	---	---	---	---	---
SR 41 at Road 420 (Thornberry)	No	No	No	Yes	Yes
SR 41 at SR 49	---	---	---	---	---
Road 274 (Malum Ridge Rd) at Road 225 (Mammoth Pool Rd)	No	No	No	No	No
Road 225 (Mammoth Pool Rd) at Cascadel Road	No	No	No	No	No
Cascadel Rd at Mission Dr	No	No	No	No	No
North Fork Rd at Auberry Rd	No	No	No	No	No
North Fork Rd at Crane Valley Rd	No	No	No	No	No

SR = State Route Yes = meets urban/rural peak hour volume signal warrant
 No = does not meet urban/rural peak hour volume signal warrant --- = signalized intersection/no warrant prepared
 Bolded Text = intersection meets the peak hour signal warrant

Table 18 shows the Alternative D calculated left-turn storage lengths for movements which have existing separate left-turn or right-turn lanes, meet left-turn channelization warrants, or require dual left-turn lanes or separate right-turn lanes for the various Project scenarios for the various study locations surrounding the North Fork Site. It should be noted that the calculated left-turn storage length increases are not solely due to Project only trips but are also due to increases in background traffic.

**TABLE 18:
TURN LANE STORAGE CALCULATIONS SUMMARY
ALTERNATIVE D (OFF-SITE ALTERNATIVE/NORTH FORK SITE)**

Intersection	Movement	Existing Storage Length (ft)	2010 Project Storage Length (ft)	2030 Project Storage Length (ft)
SR 145 at SR 41	NBL	500	100	100
	WBL	175	100	100
	SBL	425	100	100
	EBL	200	200	200
	EBR	200	100	100
SR 41 at Road 200	NBR	475	100	100
	WBL	200	100	100
	WBR	200	100	100
	SBL	500	100	100
SR 41 at Road 420 (Thornberry Road)	SBL	425	100	100
SR 41 at SR 49	NBL	125	100	100
	SBR	150	350	400
	EBL	225	200	250
	EBR	225	100	150
Road 274 (Malum Ridge Rd) at Road 225 (Mammoth Pool Rd)	WBR	---	100	100
	EBR	---	100	100
Road 225 (Mammoth Pool Rd) at Cascadel Road	SBL	150	100	100
North Fork Rd at Auberry Rd	NBR	---	100	100
	WBL	125	100	100
	EBR	---	100	100

ft = feet SR = State Route NB = northbound SB = southbound WB = westbound
 EB = eastbound --- = no existing lane ¹ = dual lefts required, length of each left-turn lane
² = exceeds available distance to nearest intersection ³ = dual rights required, length of each right-turn lane
⁴ = triple lefts required, length of each left-turn lane

In order to mitigate the intersections projected to operate below the level of service standard as identified in Table 16, meet the peak hour volume signal warrant as identified in Table 17, and/or meet the left-turn channelization warrant as identified in Table 18, the following improvements by scenario are proposed for Alternative D at the North Fork Site:

2030 Improvements for Alternative D

- SR 145 at SR 41
 - Optimize the signal cycle length
- SR 41 at Road 420 (Thornberry Road)
 - Signalize the intersection

Proportionate Share Percentages

Table 19 shows the Proportionate Share Percentages recommended for the proposed improvements detailed previously and other roadway improvements as defined in the 2007 Regional Transportation Plan (RTP) and by the various reviewing agencies. The traffic growth that is projected for each of these study locations is due not only to this Project but to all planned and pending projects.

The Proportionate Share Percentages were calculated by taking the Project trips and dividing by the total 2030 Project volumes – the Existing volumes for the given study location. The formula used in calculating the Proportionate Share Percentages is:

$$\text{Proportionate Share Percentage} = \text{Project only trips} / (\text{2030 Project volume} - \text{Existing Volume})$$

TABLE 19: PROJECT PROPORTIONATE SHARE PERCENTAGES			
	Proportionate Share Percentage (%)		
	County of Madera¹	City of Madera¹	Caltrans¹
	Alternative A/B/C	Alternative A/B/C	Alternative A/B/C
Madera Site			
County Segment			
Road 23 – Avenue 18 ½ to Avenue 17	---/---/8.21	---	---
Avenue 17 – Road 23 to SR 99	9.91/7.02/8.21		
Avenue 17 – SR 99 to Road 27	6.18/4.64/5.77	---	---
Freeway Segment			
SR 99 north of Avenue 18 ½	---	---	1.39/3.20/3.22
SR 99 between Avenue 18 ½ and Avenue 17	---	---	0.00 ² /3.92/2.27
SR 99 south of Avenue 17	---	---	5.57/3.94/5.31
Intersection			
Avenue 18 ½ at SR 99 NB ramps	5.78/4.23/6.40	---	5.78/4.23/6.40
Avenue 18 ½ at SR 99 SB ramps/Road 23	8.80/6.42/9.19	---	8.80/6.42/9.19
Avenue 18 ½ at Pistachio Drive	7.29/5.30/7.69	---	7.29/5.30/7.69
Avenue 18 ½ at Golden State Blvd/Road 23	8.04/5.91/8.50	---	8.04/5.91/8.50
Avenue 18 at Road 23	11.02/8.25/11.66	---	11.02/8.25/11.66
Avenue 17 at SR 99 NB ramps	8.69/6.24/6.27	---	8.69/6.24/6.27
Avenue 17 at SR 99 SB ramps	9.47/6.78/8.83	---	9.47/6.78/8.83
Avenue 17 at Golden State Boulevard	11.95/8.61/10.75	---	11.95/8.61/10.75
Avenue 17 at Road 23	3.04/2.18/3.33	---	3.04/2.18/3.33

SR = State Route

¹ = Proportionate Share Percentages are based on the controlling jurisdiction

² = All Project trips to/from the south are projected to use Avenue 17 and all trips to/from the north are projected to use Avenue 18 ½ to access the site

TABLE 19: PROJECT PROPORTIONATE SHARE PERCENTAGES			
	Proportionate Share Percentage (%)		
	County of Madera¹	City of Madera¹	Caltrans¹
	Alternative A/B/C	Alternative A/B/C	Alternative A/B/C
Intersection			
Ellis Street at Road 26	2.91/2.01/2.61	---	2.91/2.01/2.61
Ellis Street/Avenue 16 at SR 99 NB ramps	---	1.55/1.07/1.31	1.55/1.07/1.31
Ellis Street/Avenue 16 at SR 99 SB ramps	---	1.29/0.95/1.18	1.29/0.95/1.18
Avenue 16/Ellis Overcrossing at Aviation Drive	---	2.56/1.79/2.90	---
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	---	3.97/2.80/3.91	3.97/2.80/3.91
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps	---	2.45/1.75/2.76	2.45/1.75/2.76
Avenue 15 ½ at Road 23	---	4.76/3.53/5.18	---
SR 145/Madera Avenue at SR 99 NB ramps	---	2.92/2.03/2.43	2.92/2.03/2.43
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	---	1.31/1.25/1.96	1.31/1.25/1.96
Olive Avenue/Avenue 14 at SR 99 SB off-ramp	---	2.22/1.57/2.56	2.22/1.57/2.56
Avenue 14 at Road 23	---	4.59/3.32/5.05	---
Avenue 12/Golden State Boulevard at SR 99 SB ramps	1.27/0.92/1.27	---	1.27/0.92/1.27
Avenue 12 at Golden State Boulevard	1.04/0.76/1.04	---	1.04/0.76/1.04
Avenue 12 at SR 99 NB ramps	1.63/1.17/1.54	---	1.63/1.17/1.54
North Fork Site			
	Alternative D	Alternative D	Alternative D
Intersection			
SR 41 at Road 420 (Thornberry Road)	---	---	0.00

SR = State Route ¹ = Proportionate Share Percentages are based on the controlling jurisdiction
² = All Project trips to/from the south are projected to use Avenue 17 and all trips to/from the north are projected to use Avenue 18 ½ to access the site

II. TABLE OF CONTENTS

	<u>Page</u>
I. EXECUTIVE SUMMARY	1
II. TABLE OF CONTENTS	lvii
LIST OF FIGURES.....	lviii
LIST OF TABLES	lx
LIST OF WORKSHEETS	lxiv
III. INTRODUCTION.....	1
A. PROJECT DESCRIPTION	1
B. PROJECT LOCATION.....	2
C. SITE PLAN	2
D. CIRCULATION NETWORK.....	10
E. LAND USE AND ZONING.....	14
F. PHASING PLAN.....	14
G. PROJECT SPONSOR AND CONTACT PERSON	14
H. REFERENCES.....	14
IV. TRAFFIC ANALYSIS.....	17
A. STUDY ASSUMPTIONS.....	17
B. TRAFFIC VOLUMES, FACILITY GEOMETRY, AND TRAFFIC CONTROLS	17
C. PROJECT TRIP GENERATION	108
D. PROJECT TRIP DISTRIBUTION AND ASSIGNMENT	124
E. LEVELS OF SERVICE AND WARRANT ANALYSES	142
V. CONCLUSIONS AND RECOMMENDATIONS.....	322
A. NO PROJECT/PROJECT COMPARISON	322
B. MITIGATION PHASING PLAN.....	352
C. IMPLEMENTATION RESPONSIBILITIES	352
D. COST ESTIMATES AND FINANCING PLAN FOR MITIGATION MEASURES	352
VI. APPENDICES.....	A-1
A. TRAFFIC DATA	A-1
B. METHODOLOGY AND ASSUMPTIONS.....	A-3
C. WORKSHEETS	A-17

LIST OF FIGURES

	<u>Page</u>
Figure 1: Vicinity Map – Madera Site – Alternative A, B, C.....	3
Figure 2: Vicinity Map – North Fork Site – Alternative D	5
Figure 3: Site Plan – Alternative A – Proposed Project	6
Figure 4: Site Plan – Alternative B – Reduced Intensity Alternative.....	7
Figure 5: Site Plan – Alternative C – Commercial Land Use Alternative.....	8
Figure 6: Site Plan – Alternative D – Off-Site Alternative	9
Figure 7: Existing (2008) Lane Configurations and Intersection Control – Madera Site.....	18
Figure 8: Existing (2008) Peak Hour Volumes – Madera Site.....	20
Figure 9: Existing (2008) Levels of Service – Madera Site	22
Figure 10: Opening Day (2010) No Project Lane Configurations and Intersection Control – Madera Site – Alternative E	24
Figure 11: Opening Day (2010) No Project Peak Hour Volumes – Madera Site – Alternative E.....	26
Figure 12: Opening Day (2010) No Project Levels of Service – Madera Site – Alternative E.....	28
Figure 13: Opening Day (2010) Project Peak Hour Volumes – Madera Site – Alternative A.....	31
Figure 14: Opening Day (2010) Project Levels of Service – Madera Site – Alternative A	33
Figure 15: Opening Day (2010) Project Peak Hour Volumes – Madera Site – Alternative B.....	35
Figure 16: Opening Day (2010) Project Levels of Service – Madera Site – Alternative B	37
Figure 17: Opening Day (2010) Project Peak Hour Volumes – Madera Site – Alternative C.....	39
Figure 18: Opening Day (2010) Project Levels of Service – Madera Site – Alternative C	41
Figure 19: Mitigated Opening Day (2010) Project Lane Configurations and Intersection Control – Madera Site – Alternative A.....	43
Figure 20: Mitigated Opening Day (2010) Project Levels of Service – Madera Site – Alternative A	45
Figure 21: Mitigated Opening Day (2010) Project Lane Configurations and Intersection Control – Madera Site – Alternative B.....	48
Figure 22: Mitigated Opening Day (2010) Project Levels of Service – Madera Site – Alternative B	50
Figure 23: Mitigated Opening Day (2010) Project Lane Configurations and Intersection Control – Madera Site – Alternative C.....	52
Figure 24: Mitigated Opening Day (2010) Project Levels of Service – Madera Site – Alternative C	54
Figure 25: 2030 No Project Lane Configurations and Intersection Control – Madera Site – Alternative E.....	56
Figure 26: 2030 No Project Peak Hour Volumes – Madera Site – Alternative E	58
Figure 27: 2030 No Project Levels of Service – Madera Site – Alternative E.....	60
Figure 28: 2030 Project Lane Configurations and Intersection Control – Madera Site – Alternative A	62
Figure 29: 2030 Project Peak Hour Volumes – Madera Site – Alternative A.....	64
Figure 30: 2030 Project Levels of Service – Madera Site – Alternative A	66
Figure 31: 2030 Project Lane Configurations and Intersection Control – Madera Site – Alternative B	69
Figure 32: 2030 Project Peak Hour Volumes – Madera Site – Alternative B.....	71
Figure 33: 2030 Project Levels of Service – Madera Site – Alternative B	73
Figure 34: 2030 Project Lane Configurations and Intersection Control – Madera Site – Alternative C	75

Figure 35: 2030 Project Peak Hour Volumes – Madera Site – Alternative C.....	77
Figure 36: 2030 Project Levels of Service – Madera Site – Alternative C	79
Figure 37: Mitigated 2030 Project Lane Configurations and Intersection Control – Madera Site – Alternative A.....	81
Figure 38: Mitigated 2030 Project Levels of Service – Madera Site – Alternative A.....	83
Figure 39: Mitigated 2030 Project Lane Configurations and Intersection Control – Madera Site – Alternative B	85
Figure 40: Mitigated 2030 Project Levels of Service – Madera Site – Alternative B.....	87
Figure 41: Mitigated 2030 Project Lane Configurations and Intersection Control – Madera Site – Alternative C	90
Figure 42: Mitigated 2030 Project Levels of Service – Madera Site – Alternative C.....	92
Figure 43: Existing (2008) Lane Configurations and Intersection Control – North Fork Site.....	94
Figure 44: Existing (2008) Peak Hour Volumes – North Fork Site	95
Figure 45: Existing (2008) Levels of Service – North Fork Site.....	96
Figure 46: Opening Day (2010) No Project Peak Hour Volumes – North Fork Site - Alternative E.....	97
Figure 47: Opening Day (2010) No Project Levels of Service – North Fork Site - Alternative E.....	98
Figure 48: Opening Day (2010) Project Peak Hour Volumes – North Fork Site – Alternative D	100
Figure 49: Opening Day (2010) Project Levels of Service – North Fork Site – Alternative D	101
Figure 50: 2030 No Project Peak Hour Volumes – North Fork Site - Alternative E	102
Figure 51: 2030 No Project Levels of Service – North Fork Site - Alternative E.....	103
Figure 52: 2030 Project Peak Hour Volumes – North Fork Site – Alternative D.....	104
Figure 53: 2030 Project Levels of Service – North Fork Site – Alternative D	105
Figure 54: Mitigated 2030 Project Lane Configurations and Intersection Control – North Fork Site – Alternative D	106
Figure 55: Mitigated 2030 Project Levels of Service – North Fork Site – Alternative D.....	107
Figure 56: Project Trip Distribution Percentages – Madera Site – Alternative A.....	125
Figure 57: 2010 Project Trip Assignment – Madera Site – Alternative A	126
Figure 58: 2030 Project Trip Assignment – Madera Site – Alternative A	128
Figure 59: Project Trip Distribution Percentages – Madera Site – Alternative B	130
Figure 60: 2010 Project Trip Assignment – Madera Site – Alternative B	131
Figure 61: 2030 Project Trip Assignment – Madera Site – Alternative B	133
Figure 62: Project Trip Distribution Percentages – Madera Site – Alternative C	135
Figure 63: 2010 Project Trip Assignment – Madera Site – Alternative C	136
Figure 64: 2030 Project Trip Assignment – Madera Site – Alternative C	138
Figure 65: Project Trip Distribution Percentages – North Fork Site – Alternative D	140
Figure 66: Project Trip Assignment – North Fork Site – Alternative D	141

LIST OF TABLES

	<u>Page</u>
Table 1: Weekday Levels Of Service Summary For The County Segments, Freeway Segments, and Intersections Alternative A (Proposed Project Alternative / Madera Site)	iii
Table 2: Signal Warrant Analysis Alternative A (Proposed Project Alternative / Madera Site).....	vi
Table 3: 95 th -Percentile Queue Length Summary Alternative A (Proposed Project Alternative / Madera Site).....	vii
Table 4: Ramp Widening/Auxiliary Lane Threshold Summary Alternative A (Proposed Project / Madera Site)	x
Table 5: Turn Lane Storage Calculations Summary Alternative A (Proposed Project/Madera Site).....	xi
Table 6: Weekday Levels Of Service Summary For The County Segments, Freeway Segments, and Intersections Alternative B (Reduced Intensity Alternative / Madera Site).....	xix
Table 7: Signal Warrant Analysis Alternative B (Reduced Intensity Alternative / Madera Site) ...	xxii
Table 8: 95 th -Percentile Queue Length Summary Alternative B (Reduced Intensity Alternative / Madera Site)	xxiv
Table 9: Ramp Widening/Auxiliary Lane Threshold Summary Alternative B (Reduced Intensity Alternative / Madera Site).....	xxvi
Table 10: Turn Lane Storage Calculations Summary Alternative B (Reduced Intensity/Madera Site).....	xxvii
Table 11: Weekday Levels Of Service Summary For The County Segments, Freeway Segments, and Intersections Alternative C (Commercial Land Use Alternative / Madera Site).....	xxxvi
Table 12: Signal Warrant Analysis Alternative C (Commercial Land Use Alternative / Madera Site).....	xxxix
Table 13: 95 th -Percentile Queue Length Summary Alternative C (Commercial Land Use Alternative / Madera Site).....	xl
Table 14: Ramp Widening/Auxiliary Lane Threshold Summary Alternative C (Commercial Land Use Alternative / Madera Site)	xliii
Table 15: Turn Lane Storage Calculations Summary Alternative C (Commercial Land Use/Madera Site)	xliv
Table 16: Weekday Levels Of Service Summary For The Study Intersections Alternative D (Off-Site Alternative/North Fork Site)	lii
Table 17: Signal Warrant Analysis Alternative D (Off-Site Alternative/North Fork Site).....	liii
Table 18: Turn Lane Storage Calculations Summary Alternative D (Off-Site Alternative/North Fork Site)	liv
Table 19: Project Proportionate Share Percentages.....	lv
Table 20: Description Of Existing (2008) Street System Madera Project Site (Alternative A, B, C)	11
Table 21: Existing (2008) Intersection Control Madera Project Site (Alternative A, B, C)	12
Table 22: Description Of Existing (2008) Street System North Fork Site (Alternative D).....	13
Table 23: Existing (2008) Intersection Control North Fork Site (Alternative D)	13
Table 24: Casino Gaming Facility Trip Generation Data Alternative A (Proposed Project Alternative) Average Rate and Directional Distribution Data.....	110
Table 25: Casino Gaming Facility Trip Generation Data Alternative B (Reduced Intensity Alternative) Average Rate and Directional Distribution Data.....	112
Table 26: Casino Gaming Facility Trip Generation Data Alternative D (Off-Site Alternative) Average Rate and Directional Distribution Data.....	114

Table 27: Casino Gaming Facility Trip Generation Data Alternative A (Proposed Project Alternative) Weekday Daily and Peak Hour of Street Trips	115
Table 28: Casino Gaming Facility Trip Generation Data Alternative B (Reduced Intensity Alternative) Weekday Daily and Peak Hour of Street Trips	115
Table 29: Casino Gaming Facility Trip Generation Data Alternative D (Off-Site Alternative) Weekday Daily and Peak Hour of Street Trips.....	116
Table 30: ITE Trip Generation Data Manual Reference Information	116
Table 31: ITE Trip Generation Data Average Rate and Directional Distribution Data	116
Table 32: Hotel Trip Generation Data Average Rate and Directional Distribution Data.....	117
Table 33: Hotel Trip Generation Data Alternative A (Proposed Project Alternative) Weekday Daily and Peak Hour of Generator Trips	118
Table 34: ITE Trip Generation Data Manual Reference Information	118
Table 35: ITE Trip Generation Data Average Rate and Directional Distribution Data	119
Table 36: Project Trip Generation Data <i>Alternative A (Proposed Project Alternative)</i>	122
Table 37: Project Trip Generation Data <i>Alternative B (Reduced Intensity Alternative)</i>	122
Table 38: Project Trip Generation Data <i>Alternative C (Commercial Land Use Alternative)</i>	123
Table 39: Project Trip Generation Data Alternative D (Off-Site Alternative)	123
Table 40: Existing (2008) Conditions County Segment, Freeway Segment, and Intersection Weekday Level Of Service <i>Madera Site</i>	142
Table 41: Existing (2008) Conditions Weekday 95th Percentile Queue Length <i>Madera Site</i>	146
Table 42: Existing (2008) Conditions Ramp Widening/Auxiliary Lane Threshold Summary <i>Madera Site</i>	148
Table 43: Opening Day (2010) No Project Conditions County Segment, Freeway Segment, and Intersection Weekday Level Of Service <i>Madera Site (Alternative E, No Project Alternative)</i>	149
Table 44: Opening Day (2010) No Project Conditions Weekday 95th Percentile Queue Length <i>Madera Site (Alternative E)</i>	154
Table 45: Opening Day (2010) No Project Conditions Ramp Widening/Auxiliary Lane Threshold Summary <i>Madera Site (Alternative E)</i>	156
Table 46: Opening Day (2010) with Project Conditions county Segment, Freeway Segment, and Intersection Weekday Level Of Service <i>Madera Site (Alternative A, Proposed Project Alternative)</i>	157
Table 47: Opening Day (2010) with Project Conditions Weekday 95th Percentile Queue Length <i>Madera Site (Alternative A, Proposed Project Alternative)</i>	161
Table 48: Opening Day (2010) with Project Conditions Ramp Widening/Auxiliary Lane Threshold Summary <i>Madera Site (Alternative A, Proposed Project Alternative)</i>	164
Table 49: Opening Day (2010) with Project Conditions Turn Lane Storage Calculations Summary <i>Alternative A (Proposed Project/Madera Site)</i>	167
Table 50: Opening Day (2010) with Project Conditions County Segment, Freeway Segment, and Intersection Weekday Level Of Service <i>Madera Site (Alternative B, Reduced Intensity Alternative)</i>	169
Table 51: Opening Day (2010) with Project Conditions Weekday 95th Percentile Queue Length <i>Madera Site (Alternative B, Reduced Intensity Alternative)</i>	173
Table 52: Opening Day (2010) Project Conditions Ramp Widening/Auxiliary Lane Threshold Summary <i>Madera Site (Alternative B, Reduced Intensity Alternative)</i>	176
Table 53: Opening Day (2010) with Project Conditions Turn Lane Storage Calculations Summary <i>Alternative B (Reduced Intensity/Madera Site)</i>	179
Table 54: Opening Day (2010) with Project Conditions County Segment, Freeway Segment, and Intersection Weekday Level Of Service <i>Madera Site (Alternative C, Commercial Land Use Alternative)</i>	181

Table 55: Opening Day (2010) with Project Conditions Weekday 95th Percentile Queue Length <i>Madera Site (Alternative C, Alternative Land Use Alternative)</i>	185
Table 56: Opening Day (2010) with Project Conditions Ramp Widening/Auxiliary Lane Threshold Summary <i>Madera Site (Alternative C, Alternate Land Use Alternative)</i>	188
Table 57: Opening Day (2010) with Project Conditions Turn Lane Storage Calculations Summary <i>Alternative C (Alternative Land Use/Madera Site)</i>	191
Table 58: Mitigated Opening Day (2010) with Project Conditions County Segment, Freeway Segment, and Intersection Weekday Level Of Service <i>Madera Site (Alternative A, Proposed Project Alternative)</i>	199
Table 59: Mitigated Opening Day (2010) with Project Conditions Weekday 95th Percentile Queue Length <i>Madera Site (Alternative A, Proposed Project Alternative)</i>	201
Table 60: Mitigated Opening Day (2010) with Project Conditions County Segment, Freeway Segment, and Intersection Weekday Level Of Service <i>Madera Site (Alternative B, Reduced Intensity Alternative)</i>	209
Table 61: Mitigated Opening Day (2010) with Project Conditions Weekday 95th Percentile Queue Length <i>Madera Site (Alternative B, Reduced Intensity Alternative)</i>	211
Table 62: Mitigated Opening Day (2010) with Project Conditions County Segment, Freeway Segment, and Intersection Weekday Level Of Service <i>Madera Site (Alternative C, Alternate Land Use Alternative)</i>	219
Table 63: Mitigated Opening Day (2010) with Project Conditions Weekday 95th Percentile Queue Length <i>Madera Site (Alternative C, Alternate Land Use Alternative)</i>	221
Table 64: 2030 No Project Conditions County Segment, Freeway Segment, and Intersection Weekday Level Of Service <i>Madera Site (Alternative E, No Project Alternative)</i>	224
Table 65: 2030 No Project Conditions Weekday 95th Percentile Queue Length <i>Madera Site (Alternative E, No Project Alternative)</i>	228
Table 66: 2030 No Project Conditions Ramp Widening/Auxiliary Lane Threshold Summary <i>Madera Site (Alternative E, No Project Alternative)</i>	232
Table 67: 2030 with Project Conditions County Segment, Freeway Segment, and Intersection Weekday Level Of Service <i>Madera Site (Alternative A, Proposed Project Alternative)</i>	233
Table 68: 2030 with Project Conditions Weekday 95th Percentile Queue Length <i>Madera Site (Alternative A, Proposed Project Alternative)</i>	237
Table 69: 2030 with Project Conditions Ramp Widening/Auxiliary Lane Threshold Summary <i>Madera Site (Alternative A, Proposed Project Alternative)</i>	240
Table 70: 2030 with Project Conditions Turn Lane Storage Calculations Summary <i>Alternative A (Proposed Project/Madera Site)</i>	243
Table 71: 2030 with Project Conditions County Segment, Freeway Segment, and Intersection Weekday Level Of Service <i>Madera Site (Alternative B, Reduced Intensity Alternative)</i>	246
Table 72: 2030 with Project Conditions Weekday 95th Percentile Queue Length <i>Madera Site (Alternative B, Reduced Intensity Alternative)</i>	250
Table 73: 2030 with Project Conditions Ramp Widening/Auxiliary Lane Threshold Summary <i>Madera Site (Alternative B, Reduced Intensity Alternative)</i>	253
Table 74: 2030 with Project Conditions Turn Lane Storage Calculations Summary <i>Alternative B (Reduced Intensity/Madera Site)</i>	256
Table 75: 2030 with Project Conditions County Segment, Freeway Segment, and Intersection Weekday Level Of Service <i>Madera Site (Alternative C, Commercial Land Use Alternative)</i>	259
Table 76: 2030 with Project Conditions Weekday 95th Percentile Queue Length <i>Madera Site (Alternative C, Commercial Land Use Alternative)</i>	263
Table 77: 2030 with Project Conditions Ramp Widening/Auxiliary Lane Threshold Summary <i>Madera Site (Alternative C, Commercial Land Use Alternative)</i>	265

Table 78: 2030 with Project Conditions Turn Lane Storage Calculations Summary <i>Alternative C (Commercial Land Use/Madera Site)</i>	269
Table 79: Mitigated 2030 with Project Conditions County Segment, Freeway Segment, and Intersection Weekday Level Of Service <i>Madera Site (Alternative A, Proposed Project)</i> ..	280
Table 80: Mitigated 2030 with Project Conditions Weekday 95th Percentile Queue Length <i>Madera Site (Alternative A, Proposed Project)</i>	282
Table 81: Mitigated with 2030 Project Conditions County Segment, Freeway Segment, and Intersection Weekday Level Of Service <i>Madera Site (Alternative B, Reduced Intensity Alternative)</i>	293
Table 82: Mitigated 2030 with Project Conditions Weekday 95th Percentile Queue Length <i>Madera Site (Alternative B, Reduced Intensity Alternative)</i>	295
Table 83: Mitigated with 2030 Project Conditions County Segment, Freeway Segment, and Intersection Weekday Level Of Service <i>Madera Site (Alternative C, Alternate Land use Alternative)</i>	306
Table 84 Mitigated 2030 with Project Conditions Weekday 95th Percentile Queue Length <i>Madera Site (Alternative C, Alternate Land Use Alternative)</i>	308
Table 85: Existing (2008) Conditions Intersection Weekday Level Of Service <i>North Fork Site (Alternative D Off Site Alternative)</i>	311
Table 86: Opening Day (2010) No Project Conditions Intersection Weekday Level Of Service <i>North Fork Site (Alternative D, Off Site Alternative)</i>	312
Table 87: Opening Day (2010) with Project Conditions Intersection Weekday Level Of Service <i>North Fork Site (Alternative D, Off-Site Alternative)</i>	314
Table 88: Opening Day (2010) with Project Conditions Turn Lane Storage Calculations Summary <i>Alternative D (Off-Site Alternative/North Fork Site)</i>	315
Table 89: 2030 No Project Conditions Intersection Weekday Level Of Service <i>North Fork Site (Alternative D, Off Site Alternative)</i>	316
Table 90: 2030 with Project Conditions Intersection Weekday Level Of Service <i>North Fork Site (Alternative D, Off-Site Alternative)</i>	318
Table 91: 2030 with Project Conditions Turn Lane Storage Calculations Summary <i>Alternative D (Off-Site Alternative/North Fork Site)</i>	319
Table 92: Mitigated 2030 with Project Conditions Intersection Weekday Level Of Service <i>North Fork Site (Alternative D, Off-Site Alternative)</i>	321
Table 93: Comparison Of 2010 No Project, 2010 Project, and Mitigated 2010 Project Levels of Service <i>Madera Site (Alternative A, Proposed Project Alternative)</i>	324
Table 94: Comparison Of 2030 No Project, 2030 Project, and Mitigated 2030 Project Levels of Service <i>Madera Site (Alternative A, Proposed Project Alternative)</i>	326
Table 95: Comparison Of 2010 No Project, 2010 Project, and Mitigated 2010 Project Levels of Service <i>Madera Site (Alternative B, Reduced Intensity Alternative)</i>	333
Table 96: Comparison Of 2030 No Project, 2030 Project, and Mitigated 2030 Project Levels of Service <i>Madera Site (Alternative B, Reduced Intensity Alternative)</i>	335
Table 97: Comparison of 2010 No Project, 2010 Project, and Mitigated 2010 Project Levels of Service <i>Madera Site (Alternative C, Alternative Land Use Alternative)</i>	342
Table 98: Comparison of 2030 No Project, 2030 Project, and Mitigated 2030 Project Levels of Service <i>Madera Site (Alternative C, Alternative Land Use Alternative)</i>	344
Table 99: Comparison of 2030 No Project, 2030 Project, and Mitigated 2030 Project Levels of Service <i>North Fork Site (Alternative D, Off-Site Alternative)</i>	351
Table 100: Opinion of Probable Construction Costs for Recommended Improvements	352
Table 101: Existing Segment and Intersection Counts Days and Dates Counted	A-1
Table 102: Basic Freeway Level Of Service Description (Free-flow Speed = 65 or 70 mph)	A-15
Table 103: Intersection Level Of Service Description	A-16

LIST OF WORKSHEETS

- Attachment VI – C - 1 North Fork Casino Project Alternative C Trip Generation Data
- Attachment VI – C - 2 Existing (2008) Conditions Madera Site - Alternative A/B/C Freeway Level of Service Calculations
- Attachment VI – C - 3 Existing (2008) Conditions Madera Site - Alternative A/B/C Intersection Level of Service Calculations
- Attachment VI – C - 4 Existing (2008) Conditions Madera Site - Alternative A/B/C Signal Warrants
- Attachment VI – C - 5 Opening Day (2010) No Project Conditions Madera Site - Alternative A/B/C Freeway Level of Service Calculations
- Attachment VI – C - 6 Opening Day (2010) No Project Conditions Madera Site - Alternative A/B/C Intersection Level of Service Calculations
- Attachment VI – C - 7 Opening Day (2010) No Project Conditions Madera Site - Alternative A/B/C Signal Warrants
- Attachment VI – C - 8 Opening Day (2010) Project Conditions Madera Site - Alternative A Freeway Level of Service Calculations
- Attachment VI – C - 9 Opening Day (2010) Project Conditions Madera Site - Alternative A Intersection Level of Service Calculations
- Attachment VI – C - 10 Opening Day (2010) Project Conditions Madera Site - Alternative A Signal Warrants
- Attachment VI – C - 11 Opening Day (2010) Project Conditions Madera Site - Alternative B Freeway Level of Service Calculations
- Attachment VI – C - 12 Opening Day (2010) Project Conditions Madera Site - Alternative B Intersection Level of Service Calculations
- Attachment VI – C - 13 Opening Day (2010) Project Conditions Madera Site - Alternative B Signal Warrants
- Attachment VI – C - 14 Opening Day (2010) Project Conditions Madera Site - Alternative C Freeway Level of Service Calculations
- Attachment VI – C - 15 Opening Day (2010) Project Conditions Madera Site - Alternative C Intersection Level of Service Calculations
- Attachment VI – C - 16 Opening Day (2010) Project Conditions Madera Site - Alternative C Signal Warrants
- Attachment VI – C - 17 Mitigated Opening Day (2010) Project Conditions Madera Site - Alternative A Freeway Level of Service Calculations
- Attachment VI – C - 18 Mitigated Opening Day (2010) Project Conditions Madera Site - Alternative A Intersection Level of Service Calculations
- Attachment VI – C - 19 Mitigated Opening Day (2010) Project Conditions Madera Site - Alternative B Freeway Level of Service Calculations
- Attachment VI – C - 20 Mitigated Opening Day (2010) Project Conditions Madera Site - Alternative B Intersection Level of Service Calculations
- Attachment VI – C - 21 Mitigated Opening Day (2010) Project Conditions Madera Site - Alternative C Freeway Level of Service Calculations
- Attachment VI – C - 22 Mitigated Opening Day (2010) Project Conditions Madera Site - Alternative C Intersection Level of Service Calculations
- Attachment VI – C - 23 2030 No Project Conditions Madera Site - Alternative A/B/C Freeway Level of Service Calculations
- Attachment VI – C - 24 2030 No Project Conditions Madera Site - Alternative A/B/C Intersection Level of Service Calculations
- Attachment VI – C - 25 2030 No Project Conditions Madera Site - Alternative A/B/C Signal Warrants

- Attachment VI – C - 26 2030 Project Conditions Madera Site - Alternative A Freeway Level of Service Calculations
- Attachment VI – C - 27 2030 Project Conditions Madera Site - Alternative A Intersection Level of Service Calculations
- Attachment VI – C - 28 2030 Project Conditions Madera Site - Alternative A Signal Warrants
- Attachment VI – C - 29 2030 Project Conditions Madera Site - Alternative B Freeway Level of Service Calculations
- Attachment VI – C - 30 2030 Project Conditions Madera Site - Alternative B Intersection Level of Service Calculations
- Attachment VI – C - 31 2030 Project Conditions Madera Site - Alternative B Signal Warrants
- Attachment VI – C - 32 2030 Project Conditions Madera Site - Alternative C Freeway Level of Service Calculations
- Attachment VI – C - 33 2030 Project Conditions Madera Site - Alternative C Intersection Level of Service Calculations
- Attachment VI – C - 34 2030 Project Conditions Madera Site - Alternative C Signal Warrants
- Attachment VI – C - 35 Mitigated 2030 Project Conditions Madera Site - Alternative A Freeway Level of Service Calculations
- Attachment VI – C - 36 Mitigated 2030 Project Conditions Madera Site - Alternative A Intersection Level of Service Calculations
- Attachment VI – C - 37 Mitigated 2030 Project Conditions Madera Site - Alternative B Freeway Level of Service Calculations
- Attachment VI – C - 38 Mitigated 2030 Project Conditions Madera Site - Alternative B Intersection Level of Service Calculations
- Attachment VI – C - 39 Mitigated 2030 Project Conditions Madera Site - Alternative C Freeway Level of Service Calculations
- Attachment VI – C - 40 Mitigated 2030 Project Conditions Madera Site - Alternative C Intersection Level of Service Calculations
- Attachment VI – C - 41 Existing (2005) Conditions North Fork Site - Alternative D Intersection Level of Service Calculations
- Attachment VI – C - 42 Existing (2005) Conditions North Fork Site - Alternative D Signal Warrants
- Attachment VI – C - 43 Opening Day (2010) No Project Conditions North Fork Site - Alternative D Intersection Level of Service Calculations
- Attachment VI – C - 44 Opening Day (2010) No Project Conditions North Fork Site - Alternative D Signal Warrants
- Attachment VI – C - 45 Opening Day (2010) Project Conditions North Fork Site - Alternative D Intersection Level of Service Calculations
- Attachment VI – C - 46 Opening Day (2010) Project Conditions North Fork Site - Alternative D Signal Warrants
- Attachment VI – C - 47 Mitigated Opening Day (2010) Project Conditions North Fork Site - Alternative D Intersection Level of Service Calculations
- Attachment VI – C - 48 2030 No Project Conditions North Fork Site - Alternative D Intersection Level of Service Calculations
- Attachment VI – C - 49 2030 No Project Conditions North Fork Site - Alternative D Signal Warrants
- Attachment VI – C - 50 2030 Project Conditions North Fork Site - Alternative D Intersection Level of Service Calculations
- Attachment VI – C - 51 2030 Project Conditions North Fork Site - Alternative D Signal Warrants
- Attachment VI – C - 52 Mitigated 2030 Project Conditions North Fork Site - Alternative D Intersection Level of Service Calculations

Attachment VI – C - 53 Raw Count Data
Attachment VI – C - 54 Madera County Capacity Table

III. INTRODUCTION

This TIS was prepared to assess the traffic impacts due to the development of the North Fork Casino (Project) and will be used in the preparation of a Project EIS. The five (5) alternatives evaluated for the TIS include:

- Alternative A: Proposed Project located on the Madera Site
- Alternative B: Reduced Intensity Alternative located on the Madera Site
- Alternative C: Commercial Land Use located on the Madera Site
- Alternative D: Off-Site Alternative located the North Fork Site
- Alternative E: No Project Alternative

The following sections provide information on the various project alternative descriptions, locations of the various alternatives, current land use and zoning, alternative phasing, project sponsor/contact person and reference sources.

A. PROJECT DESCRIPTION

Alternative A (Madera Site)

Alternative A, which is the Proposed Project, will consist of the following land uses:

- 268,480 square foot (sf) casino including a gift shop, lounge (entertainment), and restaurants
- 200 room (224,530 sf) hotel

Total Alternative A square footage would be 493,010 sf.

Alternative B (Madera Site)

Alternative B, which is the Reduced Intensity Alternative, will consist of a 198,990 sf casino including a gift shop, lounge (entertainment), and restaurants.

Alternative C (Madera Site)

Alternative C, which is the Commercial Land Use Alternative, will consist of the following land uses:

- 125,000 sf Free Standing Discount Superstore
- 100,000 sf Discount Club
- 3,000 sf Fast Food Restaurant with Drive-Through
- 4,000 sf High-Turnover Sit-Down Restaurant
- 5,000 sf High-Turnover Sit-Down Restaurant

Total Alternative C square footage would be 237,000 sf.

Alternative D (North Fork Site)

Alternative D, which is the Off-Site Alternative, will consist of a 26,001 sf casino including a restaurant.

Alternative E (Madera or North Fork Site)

Alternative E, which is the No Project Alternative, assumes that both sites will remain vacant. Other development in the study areas would continue to occur.

B. PROJECT LOCATION

Madera Site (Alternative A, B, C)

The Madera Site is located to the west of Golden State Boulevard, east of Road 23, north of Avenue 17, and south of Avenue 18 in Madera County. Figure 1 shows the Madera Site in relation to the surrounding street system.

North Fork Site (Alternative D)

The North Fork Site is located to the west of Mission Drive/Federal Road 209, east of Road 225, and south of Cascadel Road in Madera County. Figure 2 shows the North Fork Site in relation to the surrounding street system.

C. SITE PLAN

Alternative A (Madera Site)

Figure 3 shows the Alternative A, Proposed Project, site plan.

Alternative B (Madera Site)

Figure 4 shows the Alternative B, Reduced Intensity Alternative, site plan.

Alternative C (Madera Site)

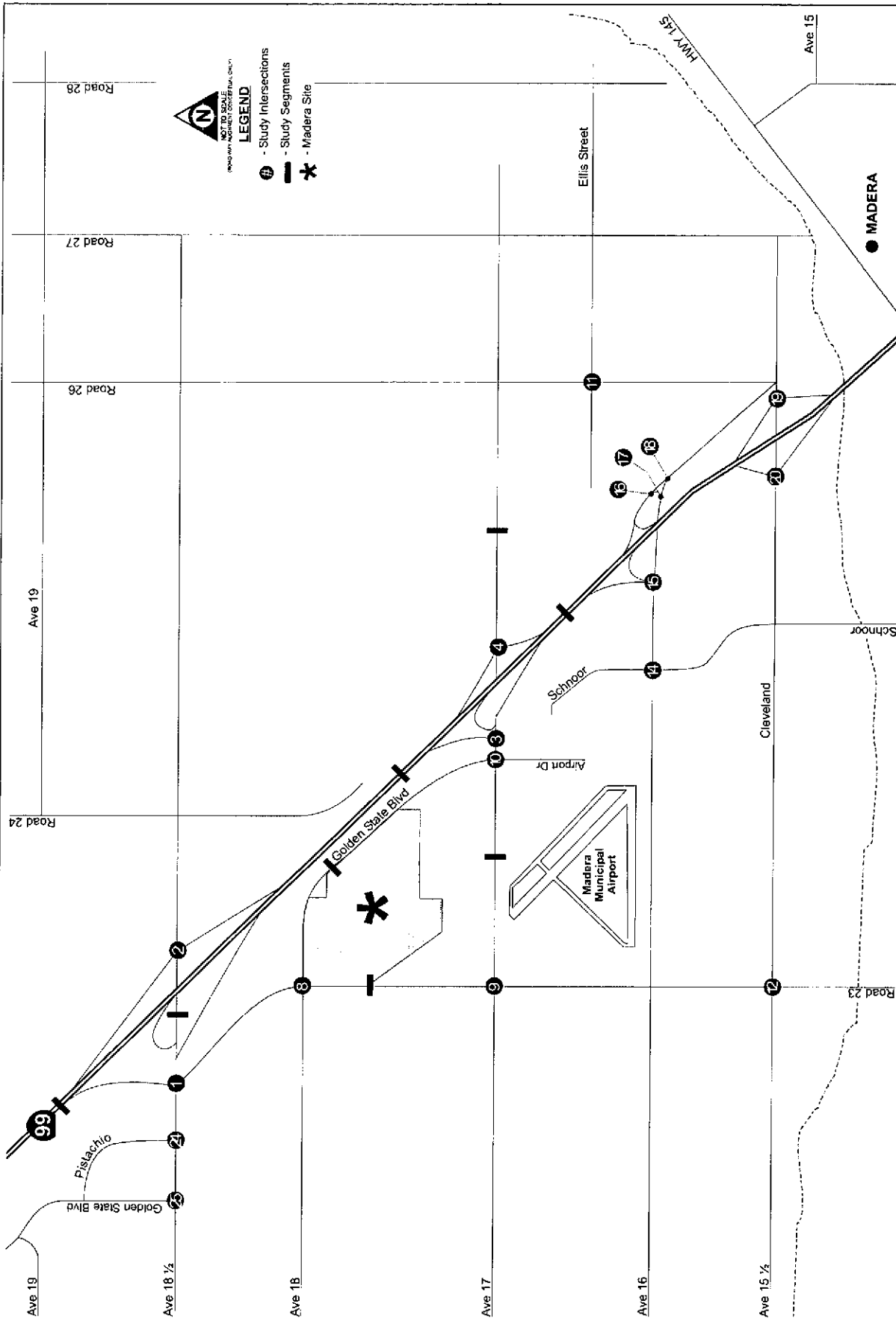
Figure 5 shows the Alternative C, Commercial Land Use Alternative, site plan.

Alternative D (North Fork Site)

Figure 6 shows the Alternative D, Off-Site Alternative, site plan.

Alternative E (Madera or North Fork Site)

There is no site plan for Alternative E since both the Madera and North Fork Sites would remain vacant.



SEE MAP 1B



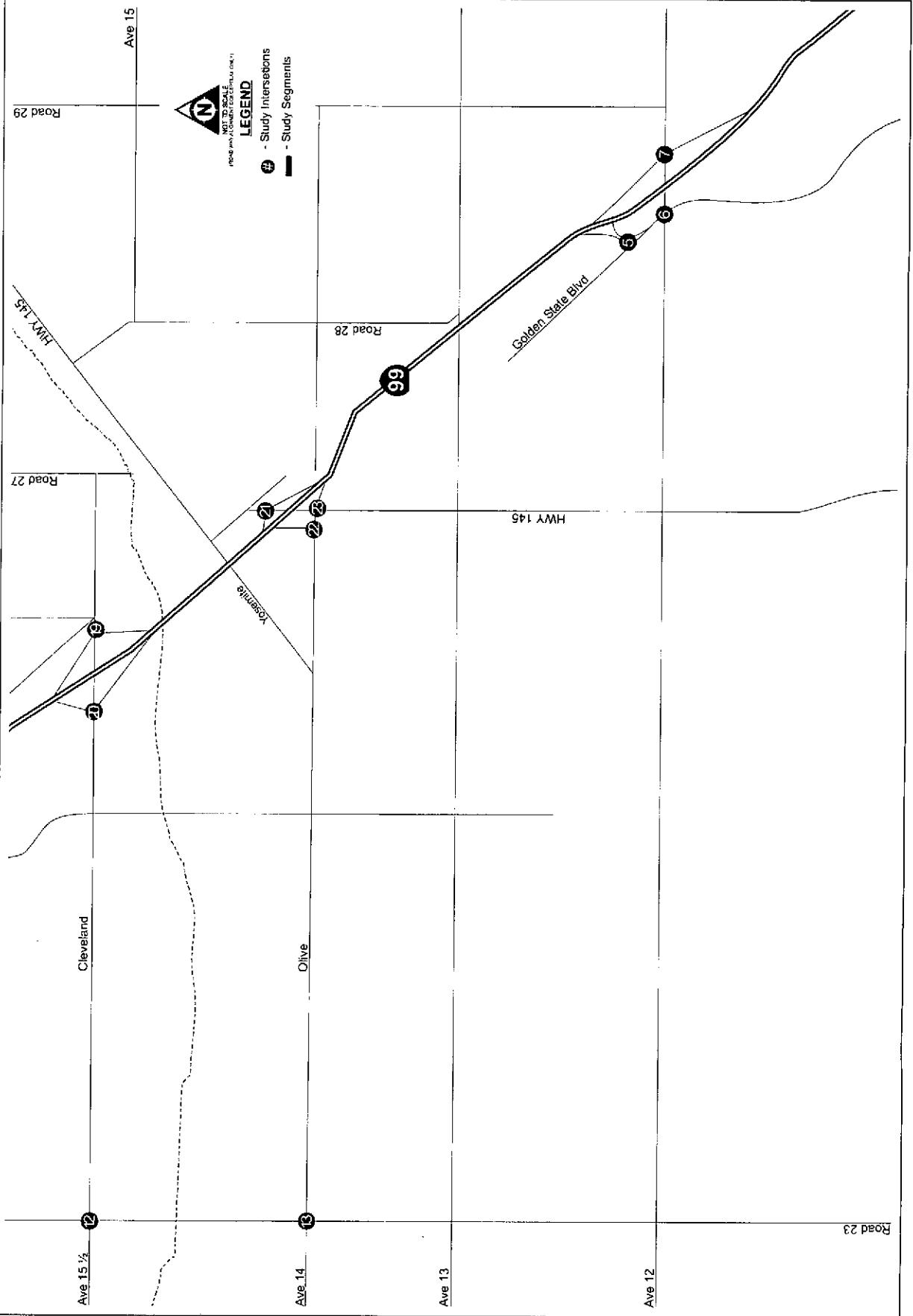
KINITY MAP
Madera Site
(Alternative A,B,C)

North Fork Casino
Madera County

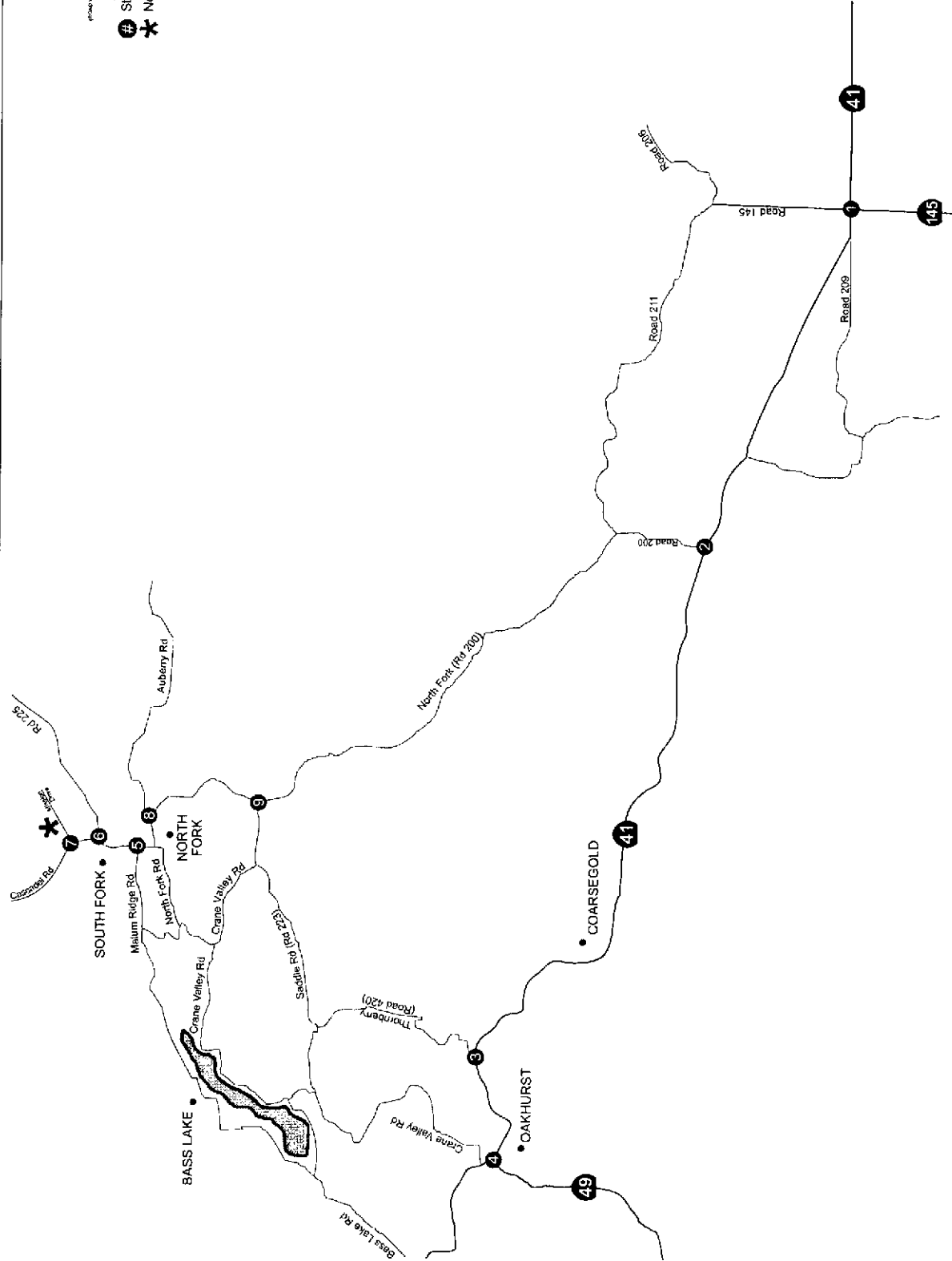
Figure 1

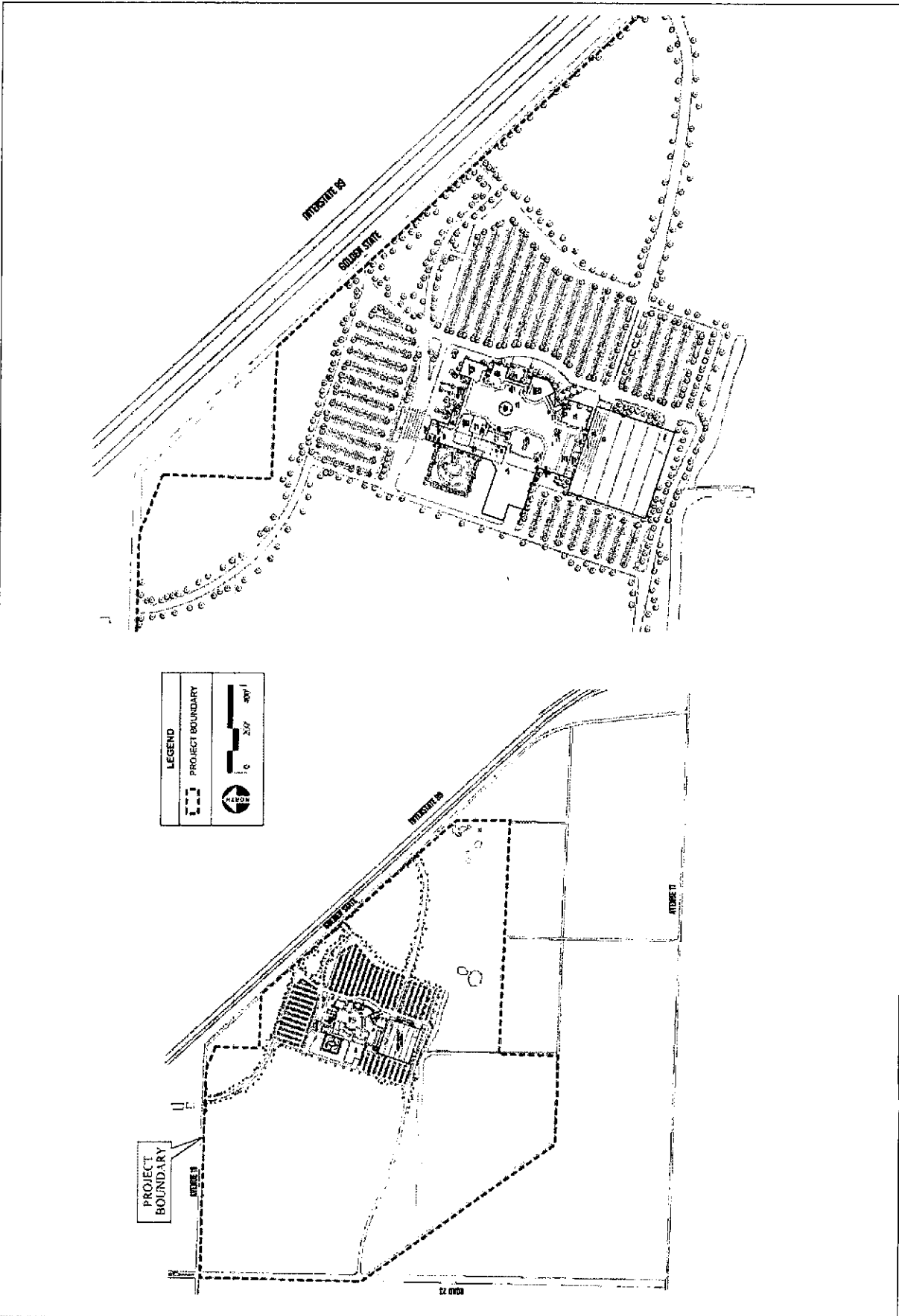
DA-437.2

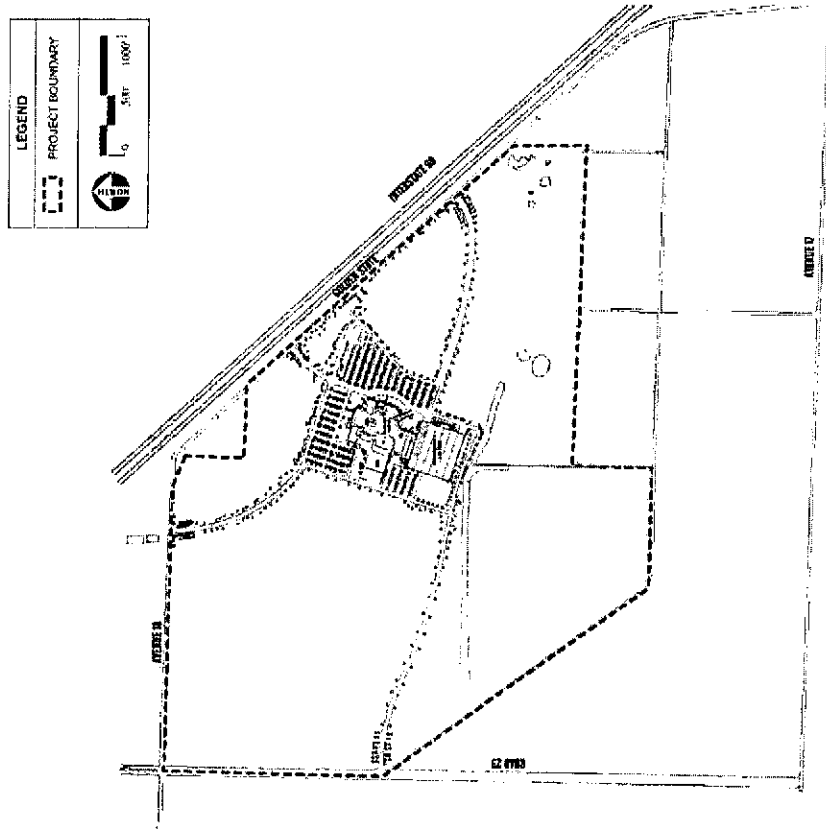
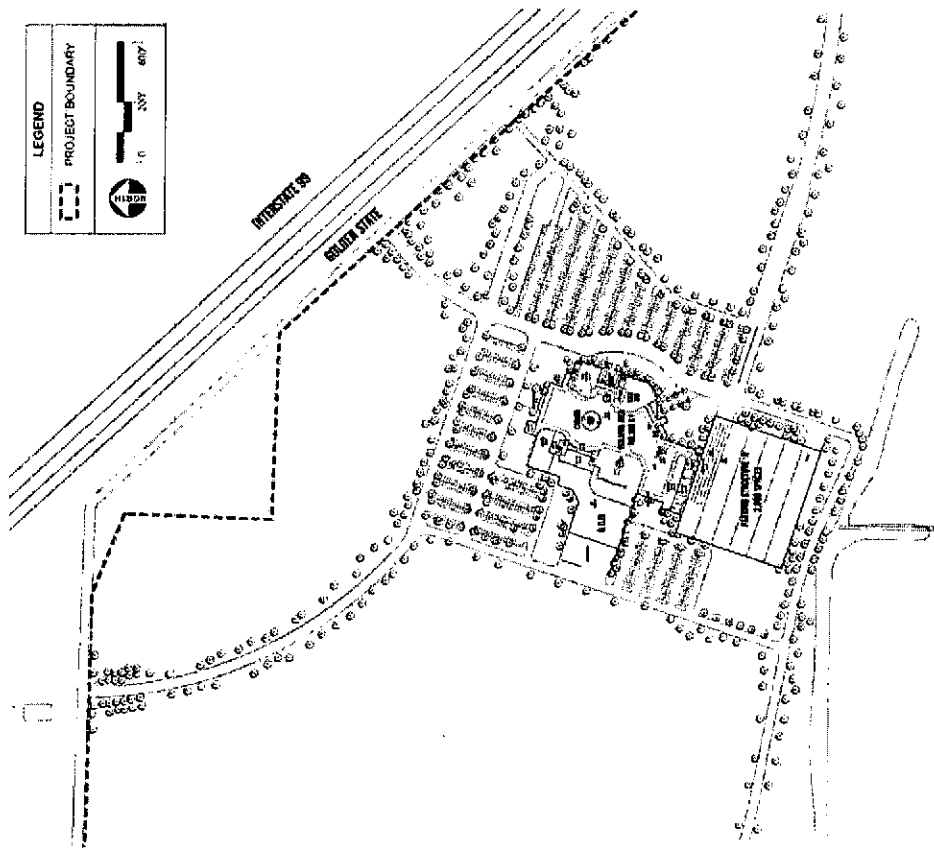
SEE MAP 1A

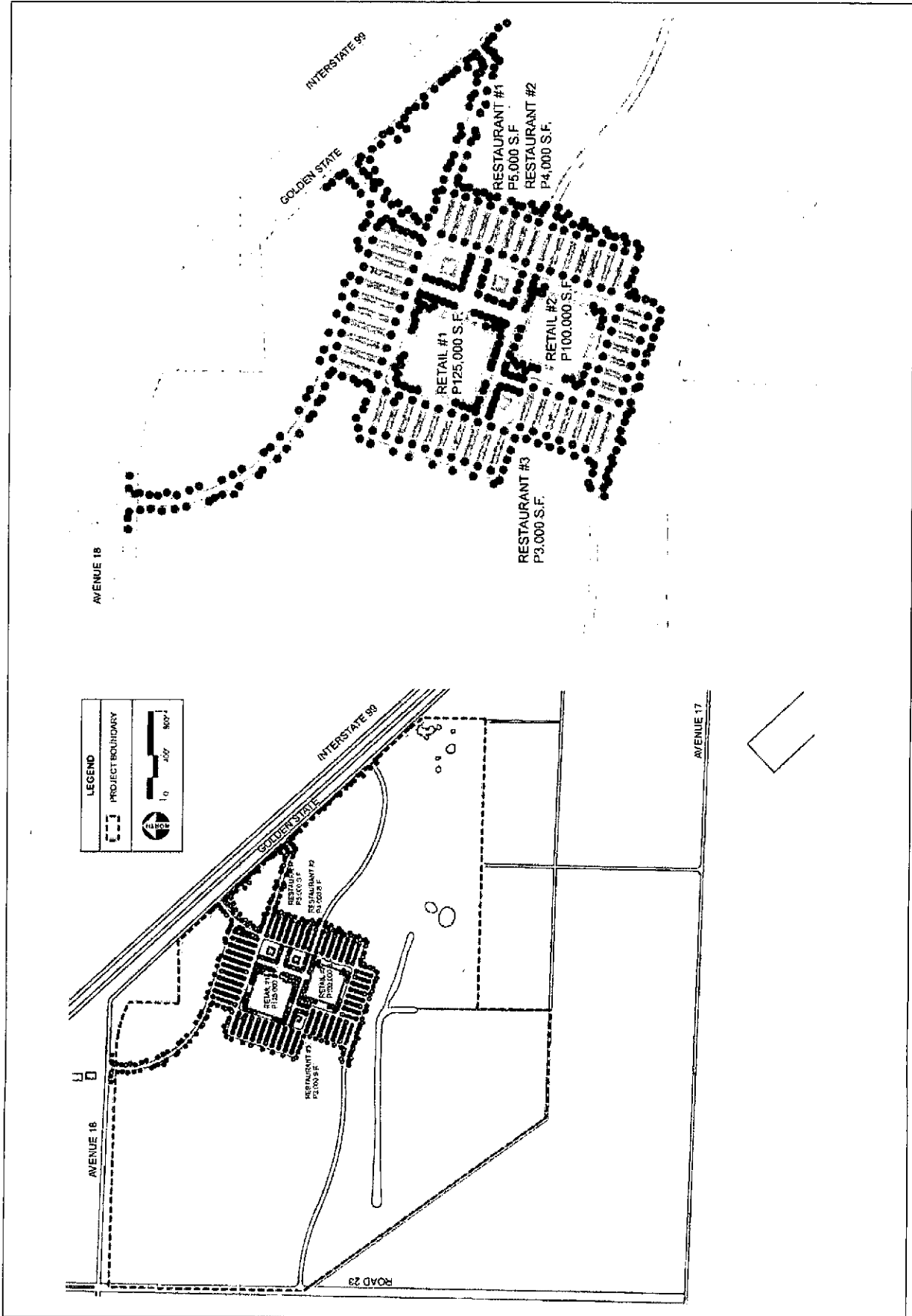


LEGEND
Study Intersections
* North Fork Site






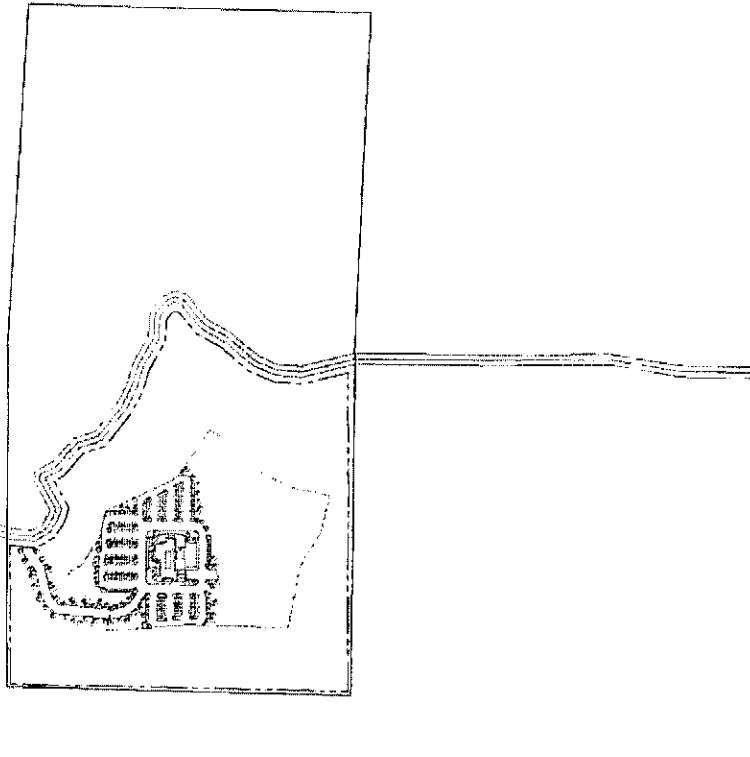
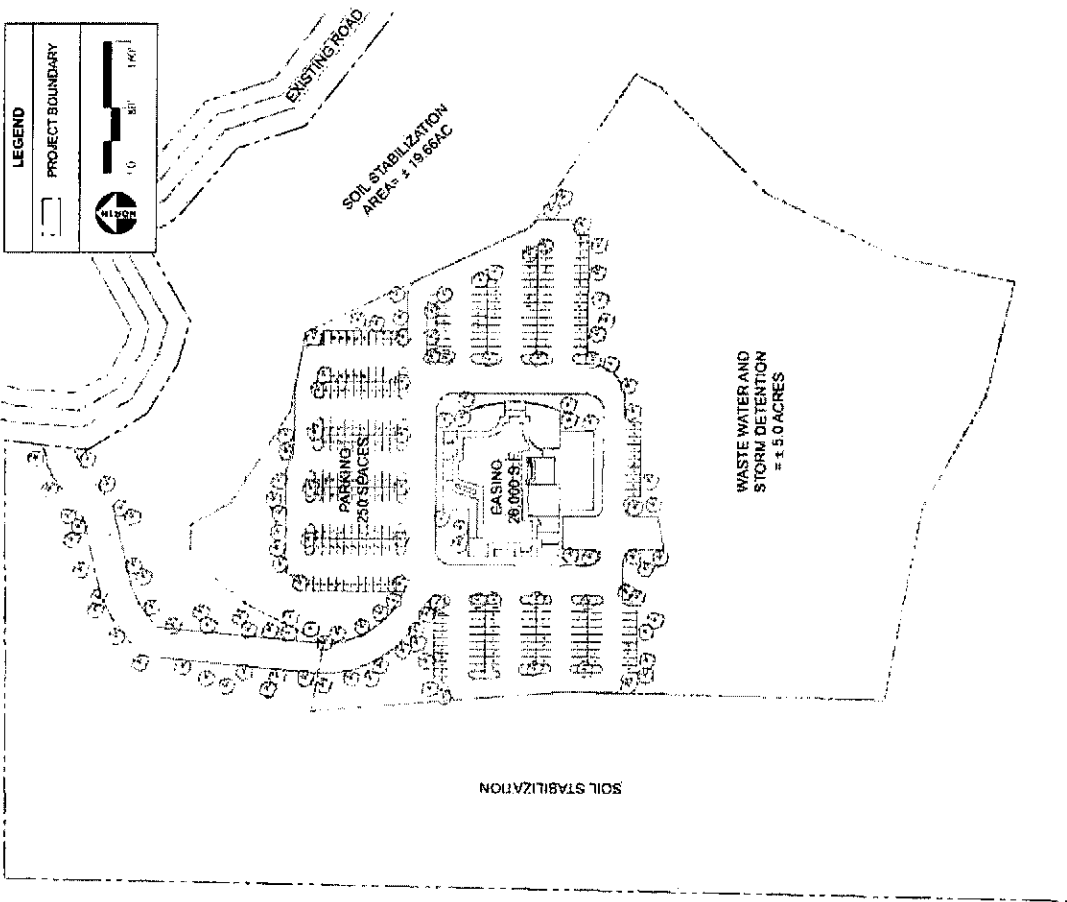






LEGEND

-  PROJECT BOUNDARY
-  NORTH
-  0 50' 100'



D. CIRCULATION NETWORK

Madera Site (Alternative A, B, C)

Figure 1 shows the Madera Site (Alternatives A, B, C) and its relation to the surrounding roadway system. The following sections describe the Existing (2008) transit, bike and roadway systems in the vicinity of the Madera Site.

Transit

Madera Dial-A-Ride service is offered in the City of Madera and its surrounding environs. Dial-A-Ride is a combined general public/demand-response service offered by the City of Madera with cooperative funding by Madera County. Service area is within approximately five miles of Downtown. Hours of operation are 7:00 AM to 6:30 PM Monday through Friday, 9:00 AM to 4:00 PM Saturday, and 8:30 AM to 2:30 PM Sunday. Reservations are required two hours in advance for service Monday through Saturday. Sunday reservations are required by 3:00 PM Saturday. County fares are \$1.00 for rides beginning or ending within the City limits (Ellis to the north, Avenue 13 to the south, Road 24 ½ to the west and Road 29 to the east) and \$2.00 for rides beginning or ending outside of the City limits but within the area bounded by Avenue 19 to the north, Avenue 12 to the south, Road 23 to the west and Road 29 ½ and Road 30 ½ to the east. Tickets may be purchased at the Intermodal Center and Save Mart Pharmacy.

Greyhound offers inter-community bus service several times a day with stops in the City of Madera. They operate seven days a week from the City of Madera's Downtown Intermodal Center.

Madera County also has one private taxi operator that provides service seven days per week, 24 hours per day.

Bike

There are no bike paths, lanes, and routes located in the study area surrounding the Madera Site currently. Bike paths provide for bicycle travel on a right-of-way completely separated from any street or highway. Bike lanes provide for a striped lane for one-way travel on a street or highway. Bike routes provide for shared use with pedestrian or motor vehicle traffic. According to the *Madera County 2004 Regional Bicycle Transportation Plan*, bike facilities are planned for the study area surrounding the Madera Site and are projected to be constructed within 10 years.

Roadways

Table 20 describes the Existing (2008) street system in the study area surrounding the Madera Site including the street classification, number of lanes, and the posted speed limits.

**TABLE 20:
DESCRIPTION OF EXISTING (2008) STREET SYSTEM
MADERA PROJECT SITE (ALTERNATIVE A, B, C)**

Street	Classification	No. of Lanes (2-dir)	Posted Speed Limit (mph)
Avenue 18 ½	County Road	2	35
Avenue 18	Arterial	2	NPS
Avenue 17	Arterial	2	45
Avenue 16	Arterial	2	35-40
Avenue 15 ½	Arterial	2	NPS
Avenue 14	Arterial	2	NPS
Avenue 12	Arterial	2	35
Road 23	County Road	2	45
Road 26	County Road	4	NPS
Golden State Blvd/Airport Road	Arterial	2	35
Golden State Boulevard	Arterial	2	NPS
Schnoor Avenue	Arterial	2	40
Cleveland Avenue	Arterial	4	35
Olive Avenue	Arterial	2-3	30
Ellis Street	Arterial	2	NPS
SR 99	Freeway	4	65
SR 145	Highway	2	35

SR = State Route

NPS = no posted speed limit

Table 21 lists the Existing (2008) Madera Site study intersections and their associated intersection control.

**TABLE 21:
EXISTING (2008) INTERSECTION CONTROL
MADERA PROJECT SITE (ALTERNATIVE A, B, C)**

Intersection	Signalized/Unsignalized	Type
Avenue 18 ½ at SR 99 southbound off-ramp/Road 23	Unsignalized	TWSC
Avenue 18 ½ at SR 99 northbound ramps	Unsignalized	TWSC
Avenue 17 at SR 99 southbound off-ramp	Unsignalized	TWSC
Avenue 17 at SR 99 northbound ramps	Unsignalized	TWSC
Avenue 12/Golden State Boulevard at SR 99 SB ramps	Unsignalized	TWSC
Avenue 12 at Golden State Boulevard	Signalized	AU
Avenue 12 at SR 99 NB ramps	Unsignalized	TWSC
Avenue 18 ½ at Pistachio	Unsignalized	TWSC
Avenue 18 ½ at Golden State	Unsignalized	TWSC
Avenue 18 at Road 23	Unsignalized	TWSC
Avenue 17 at Road 23	Unsignalized	TWSC
Avenue 17 at Golden State Boulevard/Airport Road	Unsignalized	TWSC
Ellis Street at Road 26	Signalized	AU
Avenue 15 ½ at Road 23	Unsignalized	TWSC
Avenue 14 at Road 23	Unsignalized	AWSC
Avenue 16 at Schnoor Avenue	Unsignalized	AWSC
Avenue 16 at SR 99 SB ramps	Unsignalized	TWSC
Avenue 16 at SR 99 NB ramps	Unsignalized	TWSC
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	Signalized	AC
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps	Signalized	AC
SR 145/Madera Avenue at SR 99 NB ramps	Signalized	AC
Olive Avenue/Avenue 14 at SR 99 SB off-ramp	Signalized	AC
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	Signalized	AC

TWSC = two-way stop controlled

AWSC = all-way stop-control

AC = actuated coordinated

AU = actuated uncoordinated

SR = State Route

NB = northbound

SB = southbound

North Fork Site (Alternative D)

Figure 2 shows the North Fork Site (Alternative D) and its relation to the surrounding roadway system. The following sections describe the Existing (2008) transit, bike and roadway systems in the vicinity of the North Fork Site.

Transit

Madera County has one private taxi operator that provides service seven days per week, 24 hours per day.

Bike

There are no bike paths, lanes, and routes located in the study area surrounding the North Fork Site currently. Bike paths provide for bicycle travel on a right-of-way completely separated from any street or highway. Bike lanes provide for a striped lane for one-way travel on a street or highway. Bike routes provide for shared use with pedestrian or motor vehicle traffic.

Roadways

Table 22 describes the Existing (2008) street system in the study area surrounding the North Fork Site including the street classification, number of lanes, and the posted speed limits.

**TABLE 22:
DESCRIPTION OF EXISTING (2008) STREET SYSTEM
NORTH FORK SITE (ALTERNATIVE D)**

Street	Classification	No. of Lanes (2-dir)	Posted Speed Limit (mph)
SR 145	Highway/County Road	2	55
SR 41	Highway	4	45-55
SR 49	Highway	2	35
Road 200	County Road	2	55
Road 420 (Thornberry Road)	County Road	2	NPS
Road 274 (Malum Ridge Road)	County Road	2	55
Road 225 (Mammoth Pool Road)	County Road	2	35
Cascadel Road	County Road	2	35
Mission Drive	County Road	2	NPS
North Fork Road	County Road	2	55
Auberry Road	County Road	2	NPS
Crane Valley Road	County Road	2	55

NPS = no posted speed limit

SR = State Route

Table 23 lists the Existing (2008) North Fork Site study intersections and their associated intersection control.

**TABLE 23:
EXISTING (2008) INTERSECTION CONTROL
NORTH FORK SITE (ALTERNATIVE D)**

Intersection	Signalized/Unsignalized	Type
SR 145 at SR 41	Signalized	AU
SR 41 at Road 200	Signalized	AU
SR 41 at Road 420 (Thornberry Road)	Unsignalized	TWSC
SR 41 at SR 49	Signalized	AU
Road 274 (Malum Ridge Rd) at Road 225 (Mammoth Pool Rd)	Unsignalized	AWSC
Road 225 (Mammoth Pool Road) at Cascadel Road	Unsignalized	TWSC
Cascadel Road at Mission Drive	Unsignalized	TWSC
North Fork Road at Auberry Road	Unsignalized	TWSC
North Fork Road at Crane Valley Road	Unsignalized	TWSC

TWSC = two-way stop controlled

AWSC = all-way stop-control

AU = actuated-coordinated

SR = State Route

E. LAND USE AND ZONING

Madera Site (Alternative A, B, C)

The approximately 305 acre Madera Site is currently vacant and zoned ARE-40 (agricultural, rural, exclusive, forty acre district). If the Madera Site is chosen, the land will be taken into Federal trust and land use zoning classifications will no longer apply.

North Fork Site (Alternative D)

Three (3) single family residences are currently located on the approximately 80 acre North Fork Site, which is in Federal trust. Since the land is in Federal trust no land use zoning classifications apply. Should Alternative D be developed, the one (1) house located on the west side of Mission Drive would be removed and the remaining two (2) houses on the east side of Mission Drive would remain.

F. PHASING PLAN

Alternative A, B, C (Madera Site)

Alternative A, B, or C would be constructed and occupied in a single phase and would be operational in 2010.

Alternative D (North Fork Site)

Alternative D would be constructed and occupied in a single phase and would be operational in 2010.

G. PROJECT SPONSOR AND CONTACT PERSON

The Project Sponsor for all four (4) build alternatives is the North Fork Rancheria of Mono Indians of California. The Project Contact is Ms. Elaine Bethel Fink, Tribal Chairperson.

H. REFERENCES

This report was prepared using information taken from the following sources:

- *2000 Highway Capacity Manual (HCM 2000)*, Transportation Research Board, 2000.
- *2000 Highway Capacity Software (HCS+)*, Version 5.1, University of Florida, McTrans Center, 2005.
- *2007 Annual Average Daily Truck Traffic on the California State Highway System*, <http://www.dot.ca.gov/hq/traffops/saferesr/trafddata/truck2007final.pdf>, 2008.
- *2007 Traffic Volumes*, Caltrans Traffic Operations Program, <http://www.dot.ca.gov/hq/traffops/saferesr/trafddata/2007all.htm>, 2008.
- Anthony Docto, Former Director of Community Development/City Engineer, Community Development, City of Madera, Phone/email/meeting discussions, 2004.

- *California Manual on Uniform Traffic Control Devices (MUTCD) for Streets and Highways (FHWA's MUTCD 2003 Edition as amended for use in California)*, California Department of Transportation, Division of Traffic Operations, September 26, 2006.
- *CAT 17 Traffic Impact Study*, TPG Consulting, March 2007.
- Chad Broussard, Deputy Project Manager, Analytical Environmental Services, Phone/email/meeting discussions, 2004/2005/2006/2008.
- Dave Merchen, Assistant Director, Planning Department, County of Madera Resource Management Agency, Phone/email discussions, 2004/2005.
- Dave Merchen, Community Development Director, Planning Department, City of Madera, Phone/email discussions, 2006/2008.
- Derek Winning, Deputy Director and Transportation Planner II, Madera County Transportation Commission, Phone/email discussions, 2004/2005/2008.
- Ellen Bitter, Projects Manager, Community Development Department, Building and Planning, City of Chowchilla, Phone/email discussions, 2004/2005.
- *Enterprise Rancheria Casino-Hotel Traffic Impact Study*, Analytical Environmental Services, March 2003.
- *Guide for the Preparation of Traffic Impact Studies*, State of California Department of Transportation, December 2002.
- *Highway Design Manual*, 5th Edition, Caltrans, July 2004.
- John Liu, Deputy District Director and Senior Transportation Engineer, Caltrans, District 6, Phone/email discussions, 2004/2005/2006/2008.
- Keith Helmuth, Senior Civil Engineer, Roads Department, Madera County Resource Management Agency, Phone/email discussions, 2004/2005.
- Keith Helmuth, Director, Engineering Department, City of Madera, Phone/email discussions, 2006/2008.
- Larry Red, Planning Director, Planning Department, City of Madera, Phone/email discussions, 2005.
- Leon Lancaster, Interim City Engineer, City of Madera, Phone/email discussions, 2004/2005.
- Les Jorgensen, Roads Department, City of Madera, Email discussions, 2008.
- Lisa Worrall, Associate, Analytical Environmental Services, Phone/email discussions, 2004/2005.
- *Madera County 2007 Regional Transportation Plan*, Madera County Transportation Commission, May, 23, 2007.
- *Madera County Travel Forecasting Model*, Madera County Transportation Commission, April 2001.
- *Madera County Travel Forecasting Model Documentation*, Korve Engineering, November 1, 2001.
- *Madera East Olive Avenue Specific Plan*, Mid-Valley Engineering, December 14, 2004.
- *Madera Town Center Traffic Impact Study*, TPG Consulting, February 2006.
- Marilyn Olson, Roads Department, City of Madera, Phone/email discussions, 2008.
- Michael Navarro, Office of Transportation Planning, Caltrans, District 6, Email/meeting discussions, 2004/2005/2006/2008.
- Mitch Hemaidan, Development Services Engineer, Road Department, Madera County Resource Management Agency, Phone/email discussions, 2004/2005.
- Moses Stites, Office of Transportation Planning, Caltrans, District 6, Email/meeting discussions, 2004/2005/2006.
- *Outlet Center Madera County Traffic Impact Analysis*, VRPA Technologies, April 7, 2006.
- *Project Study Report for the Avenue 12 at SR 99 Interchange*, Caltrans District 6, December 2003.

- *Project Study Report on SR 99 between Cleveland Avenue and Avenue 17*, Caltrans District 06, March 2004.
- *Proposed Commercial Development Traffic Impact Study, Southwest of the Intersection of Avenue 17 and Airport Drive*, Peters Engineering Group, February 3, 2006.
- Ray Salazar, City Engineer, Engineering Department, City of Madera, Phone/email discussions, 2005.
- Richard Poythress, Transportation Planner I, Madera County Transportation Commission, Phone/email discussions, 2008.
- Robert Townsend, Road Commissioner, Road Department, Madera County Resource Management Agency, Phone/email discussions, 2004/2005.
- Scott Rapoport, Director of Development, Station Casinos, Inc. Phone/email discussions, 2004.
- Severo Lopez, Project Manager, Design Division, Caltrans District 06, Phone/email discussions, 2006.
- Sharri Ehler, Senior Transportation Engineer, Caltrans District 06, Phone/email discussions, 2004/2005.
- *Shingle Springs Rancheria Interchange Project Transportation/Circulation Technical Study*, David Evans and Associates, Inc., April 2002.
- Sofia Liang, Traffic Engineer, Traffic Operations, Caltrans, District 6, Phone/email discussions, 2004/2005/2006/2008.
- *State Route 99 Transportation Concept Report*, California Department of Transportation, Office of Systems Planning, District 6, November 2003.
- *Synchro 6.0*, Trafficware, 2003.
- Tom Skinner, Valley Planning Consultants, Phone/email discussions, 2005.
- *Traffic Access and Impact Studies for Site Development*, A Recommended Practice, ITE, Transportation Planners Council Task Force on Traffic Access/Impact Studies, 1991.
- *Traffic Study for the Enochs Packing Company Annexation Specific Plan*, KD Anderson Transportation Engineers, December 13, 2004.
- *Trip Generation*, 7th edition, Volumes 2 and 3, ITE, 2003.
- *Trip Generation* (software), Version 5, Microtrans, 2003.
- *Update on Impacts of Tribal Economic Development Projects in San Diego County*, San Diego County Department of Public Works, April 2003.
- *Volume Warrants for Left-Turn Storage Lanes at Unsignalized Grade Intersections*, M. D. Harmelink, Highway Research Record Number 211, Highway Research Board, 1967.
- Wilma Quan, Transportation Planner, Transportation Planning Department, Caltrans, District 6, Phone/email discussions, 2005.

IV. TRAFFIC ANALYSIS

The following sections provide information on the existing and projected segment and intersection traffic volumes, facility geometry and traffic controls; trip generation data for the various alternatives; trip distribution data for the various alternatives, and resulting levels of service for all alternatives for all scenarios.

A. STUDY ASSUMPTIONS

Information on all study methodologies and study assumptions used in this traffic evaluation can be found in the Appendices section VI – B.

B. TRAFFIC VOLUMES, FACILITY GEOMETRY, AND TRAFFIC CONTROLS

The lane configurations, associated intersection control, and peak hour volumes shown in the following figures were used in the various analyses as appropriate. The resulting levels of service are also shown in the following figures.

Madera Site (Alternative A, B, C, E)

Existing (2008) Conditions

Figures 7, 8, and 9 show the Existing (2008) lane configurations and intersection control, AM and PM peak hour traffic volumes (segment, freeway, and intersection), and resulting Existing (2008) levels of service for the Madera Site. The two-way stop-controlled (TWSC) levels of service shown on Figure 9 are the levels of service for the worst operating movement at that intersection. The signalized and AWSC intersection levels of service shown on Figure 9 are representative of the whole intersection. Individual intersection movements or approaches may operate above or below the signalized or AWSC level of service or delay shown on Figure 9.

Opening Day (2010) No Project Conditions

Alternative E (No Project Alternative)

Figures 10, 11, and 12 show the Opening Day (2010) No Project Alternative E lane configurations and intersection control, AM and PM peak hour traffic volumes (segment, freeway, and intersection), and resulting Opening Day (2010) No Project Alternative E levels of service for the Madera Site. The Opening Day (2010) No Project Alternative E lane configurations and intersection control are also used in the Opening Day (2010) Project analyses. The TWSC levels of service shown on Figure 12 are the levels of service for the worst operating movement at that intersection. The signalized and AWSC intersection levels of service shown on Figure 12 are representative of the whole intersection. Individual intersection movements or approaches may operate above or below the signalized or AWSC level of service or delay shown on Figure 12. The signalized intersection levels of service or delay shown in Figure 12 may not reflect the effects of 95th percentile queues that exceed the capacity for their movement.

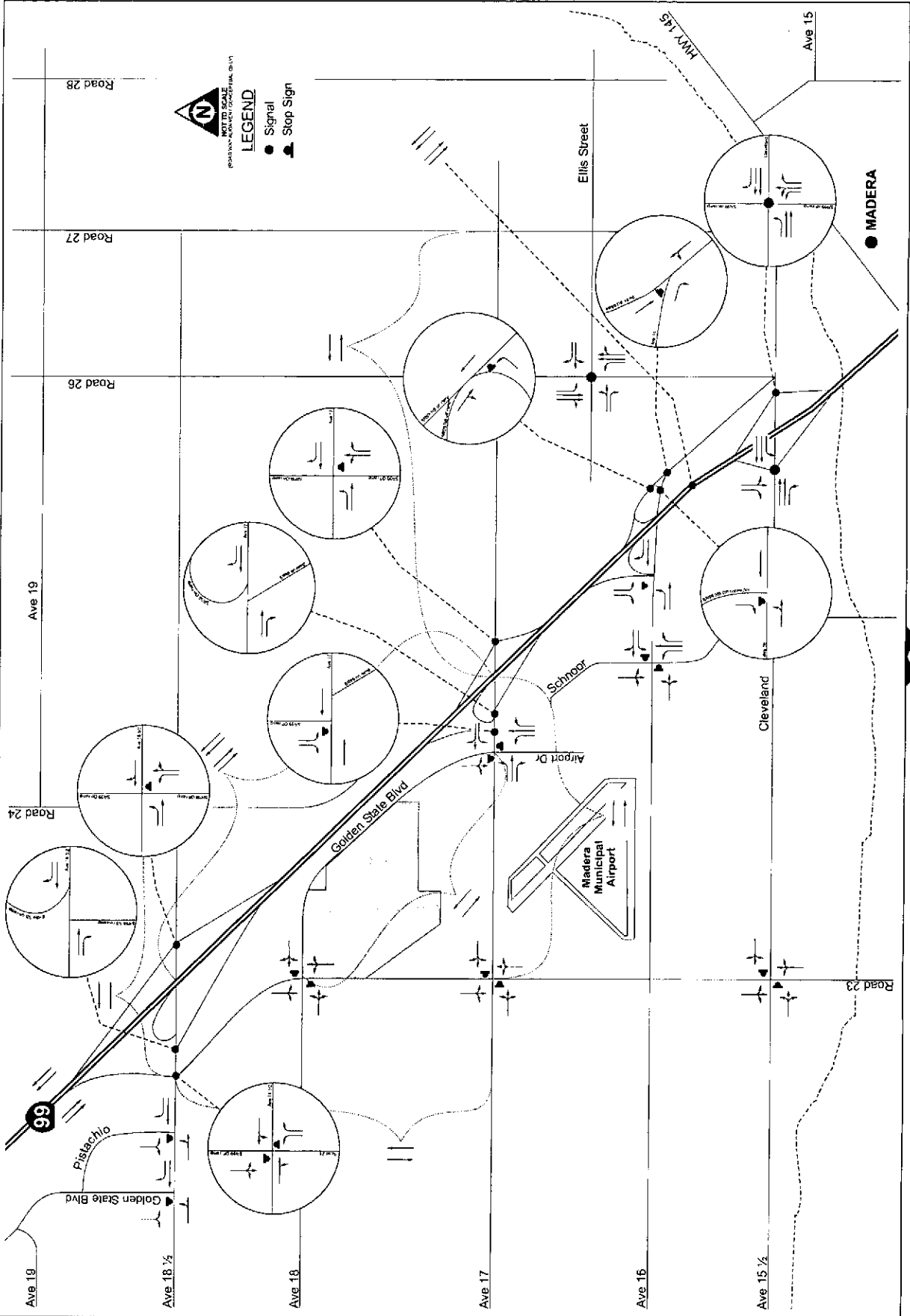
LANE CONFIGURATION AND INTERSECTION CONTROL

Existing
Madera Site
(Alternative E)

North Fork Casino
Madera County

Figure 7

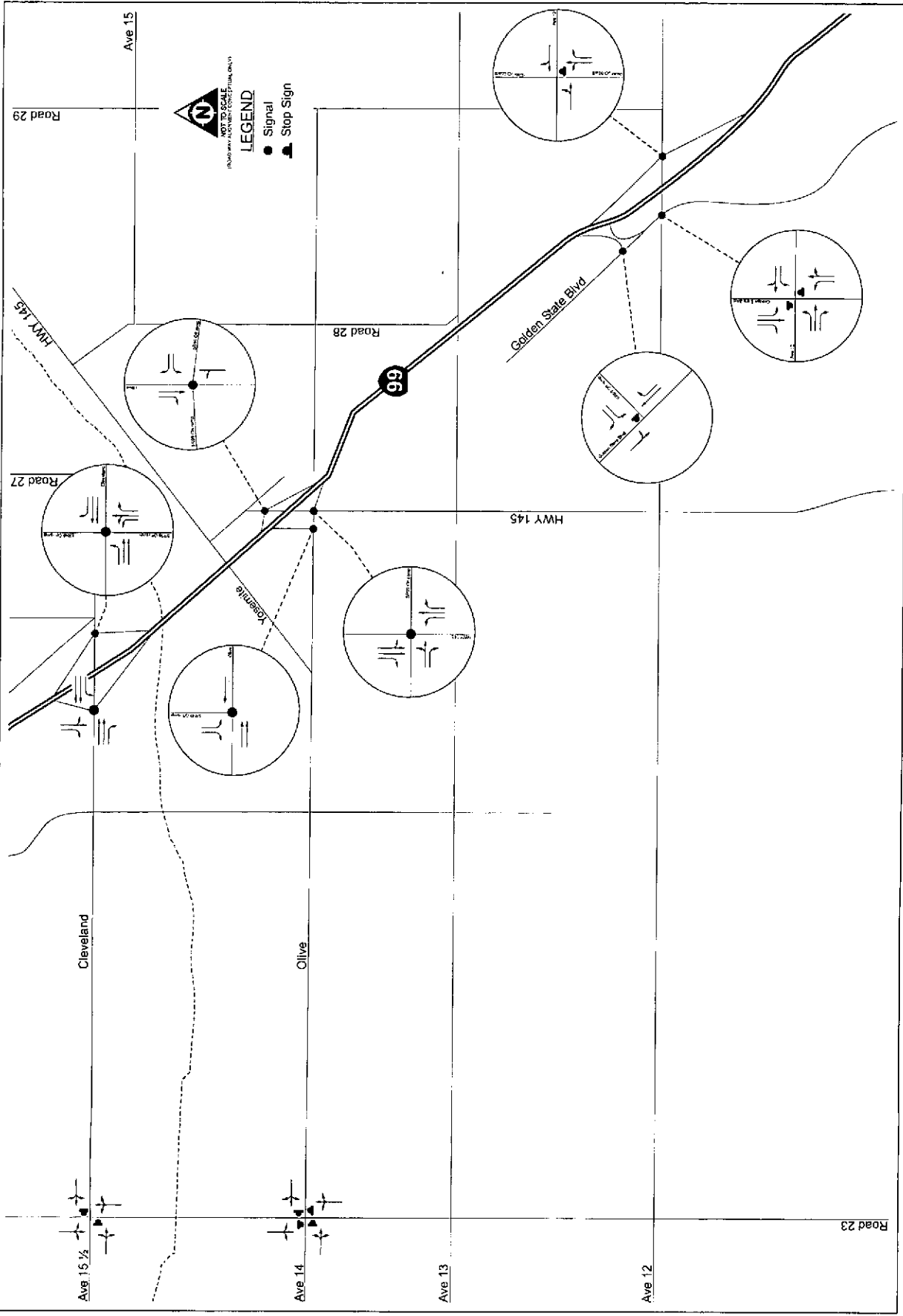
04-837.2



78
SEE MAP

LANE CONFIGURATION AND INTERSECTION CONTROL
Existing
Madera Site
(Alternative E)

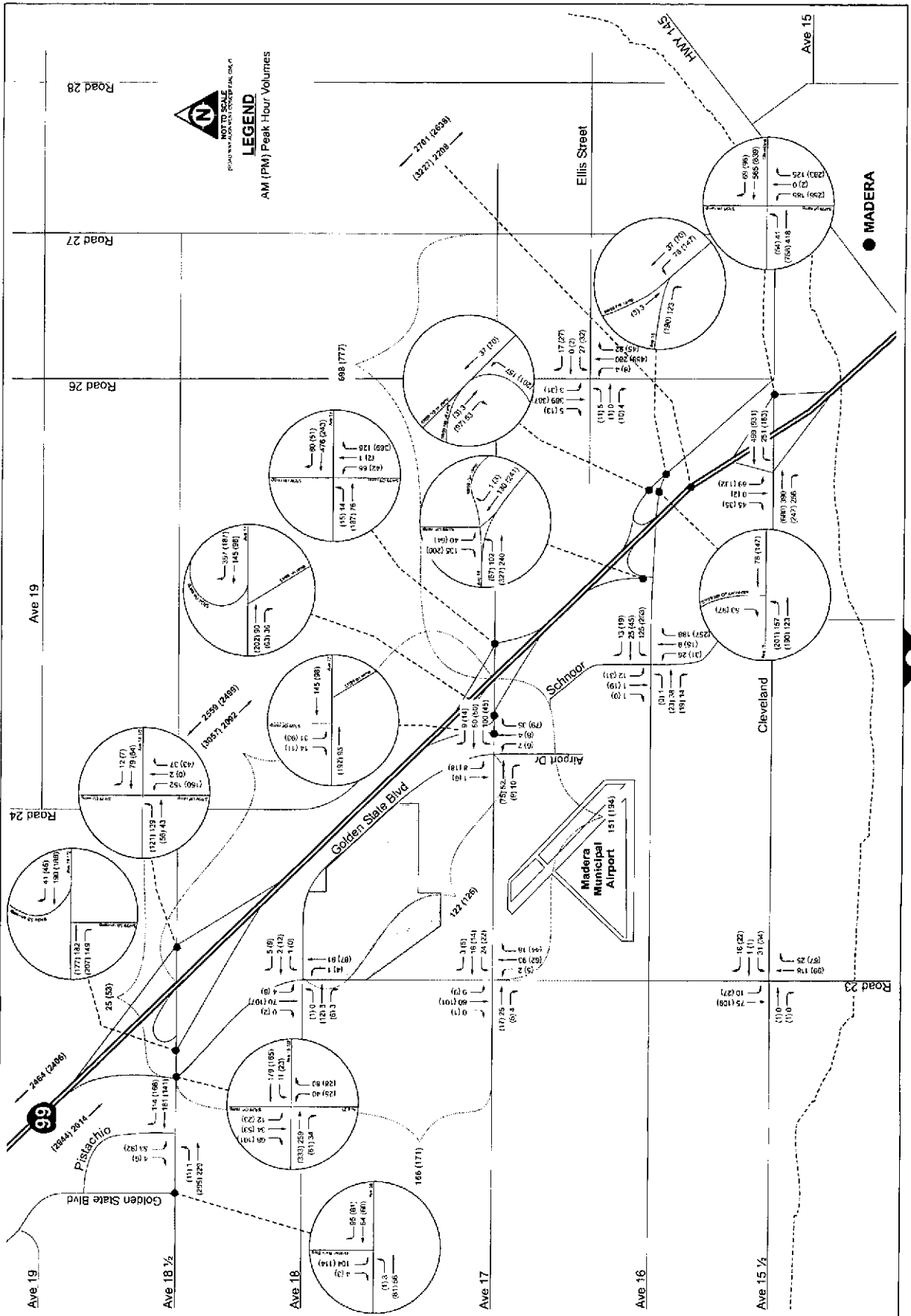
North Fork Casino
Madera County
Figure 7



SEE MAP

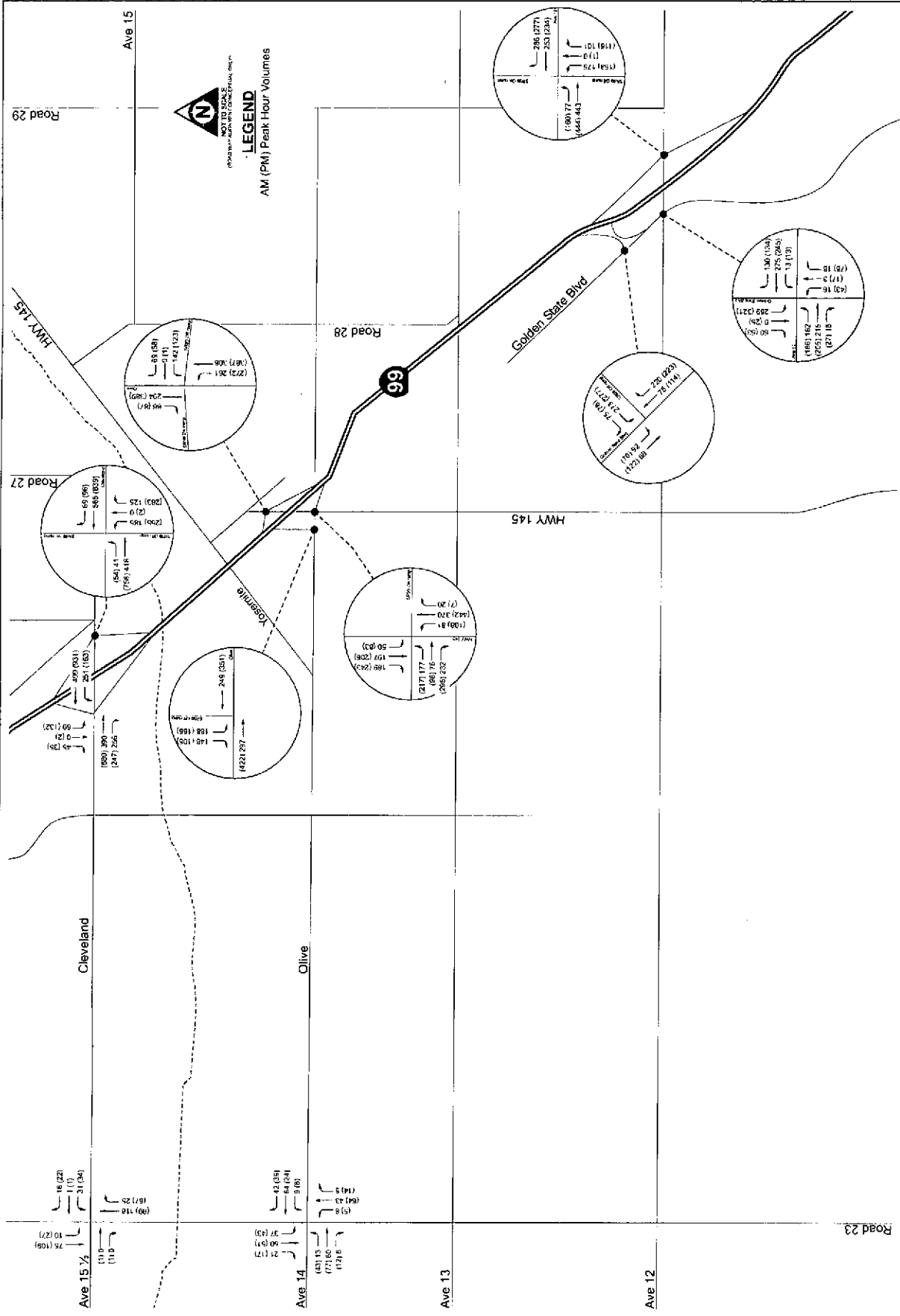
DA-837.2

PEAK HOUR TRAFFIC VOLUMES Existing Madera Site (Alternative E)



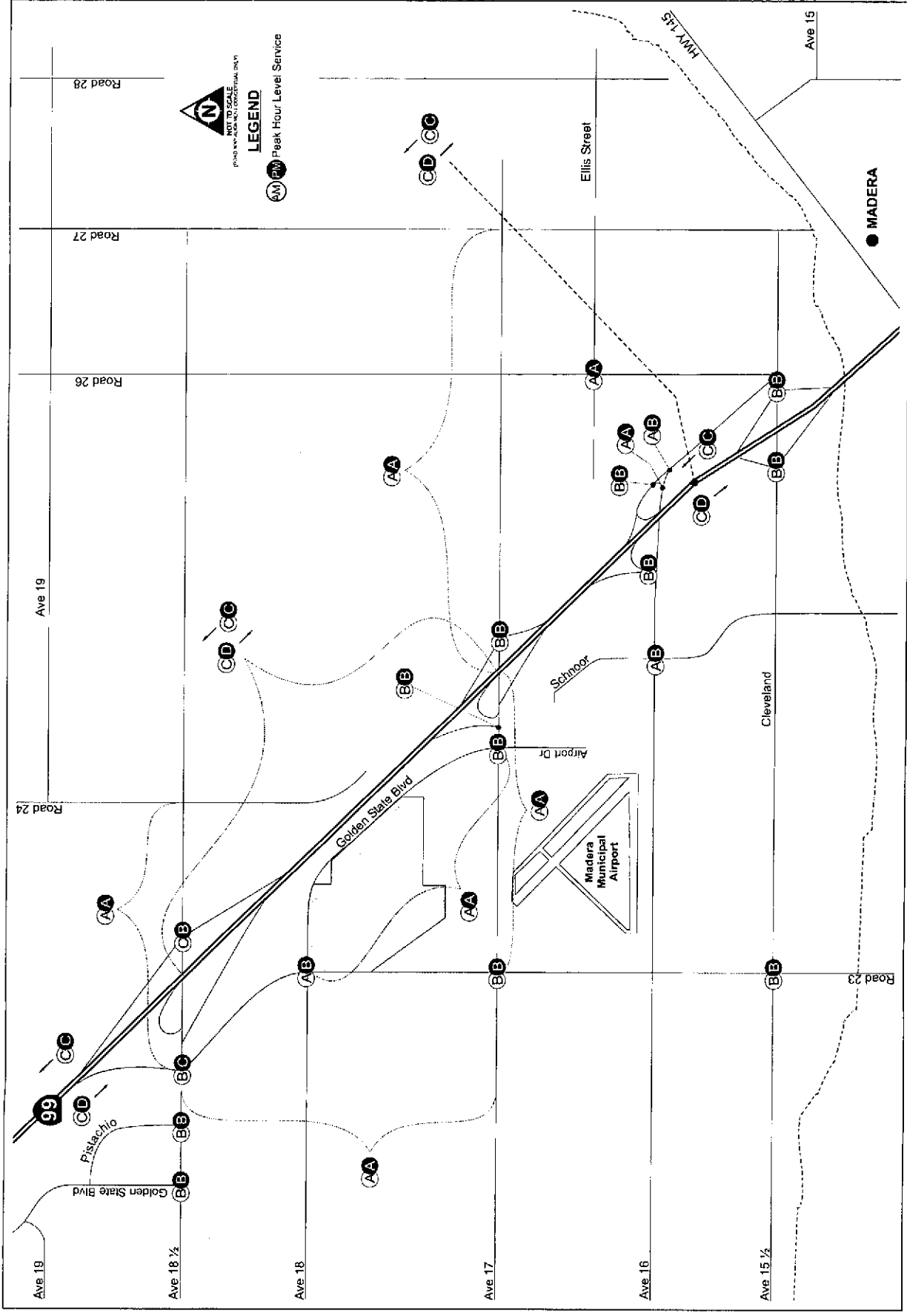
SEE MAP
B3

SEE MAP 6A



LEVELS OF SERVICE
Existing
Madera Site
(Alternative E)

North Fork Casino
Madera County
06-437.2
Figure 9



LEGEND

NOT TO SCALE
FOR INFORMATION ONLY

AA Peak Hour Level Service

SEE MAP **SB**



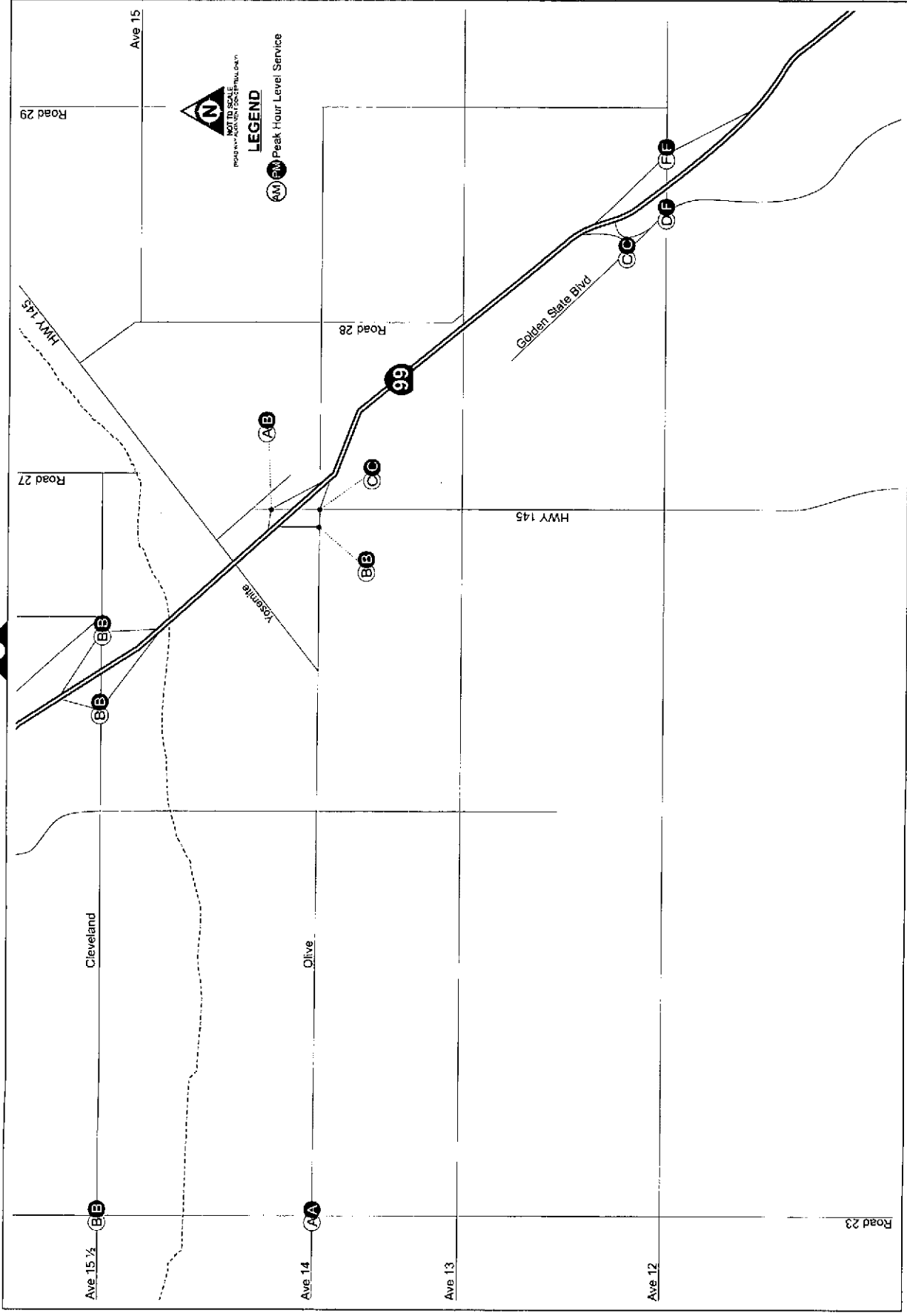
LELIS OF SER ICE
 Existing
 Madera Site
 (Alternative E)

North Fork Casino
 Madera County

04-837.2

Figure 9

SEE MAP 6A

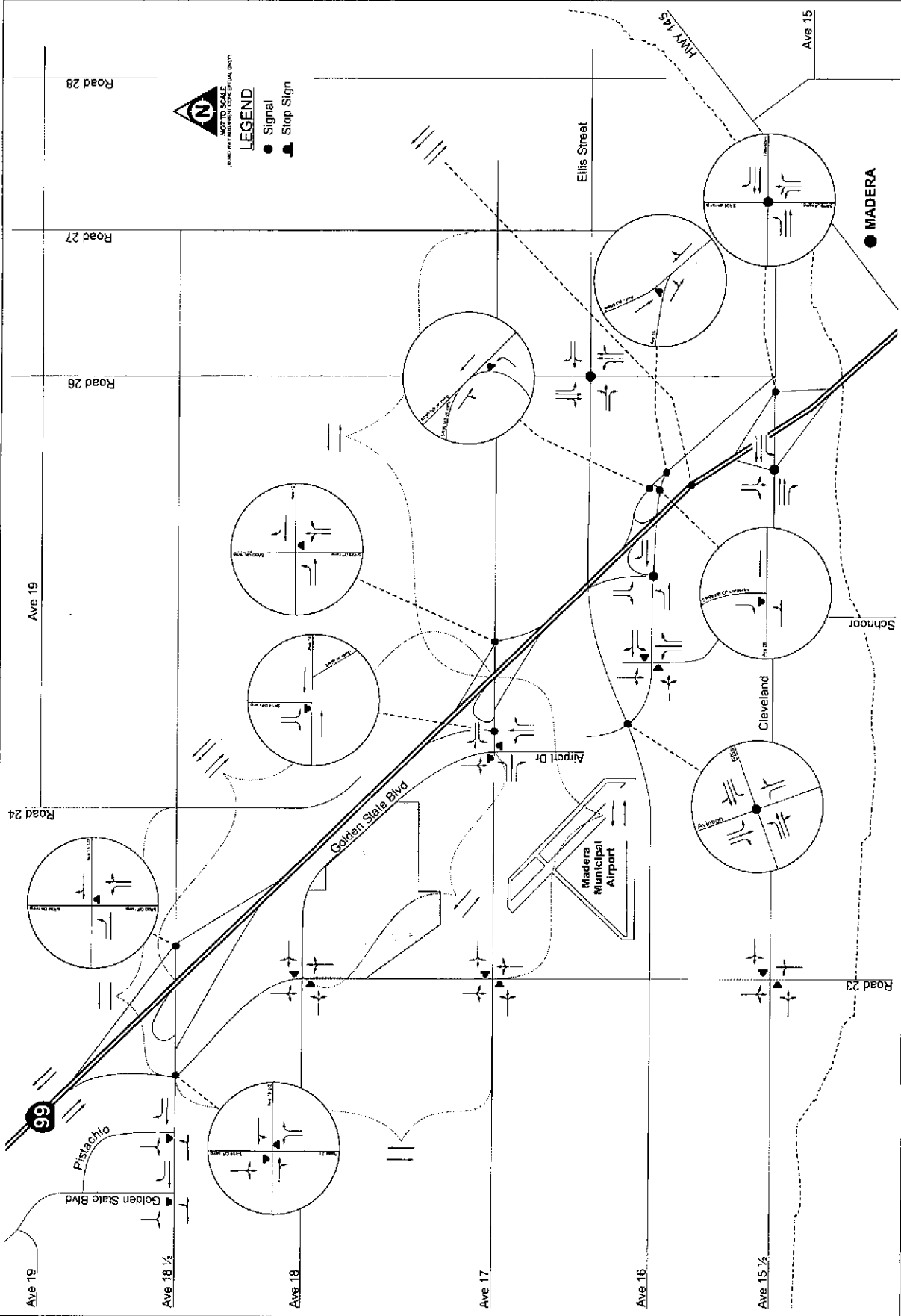


LANE CONFIGURATION AND INTERSECTION CONTROL
 2010 No Project
 Madera Site
 (Alternative E)

North Fork Casino
 Madera County

04-537.2

Figure 10



SEE MAP 10B

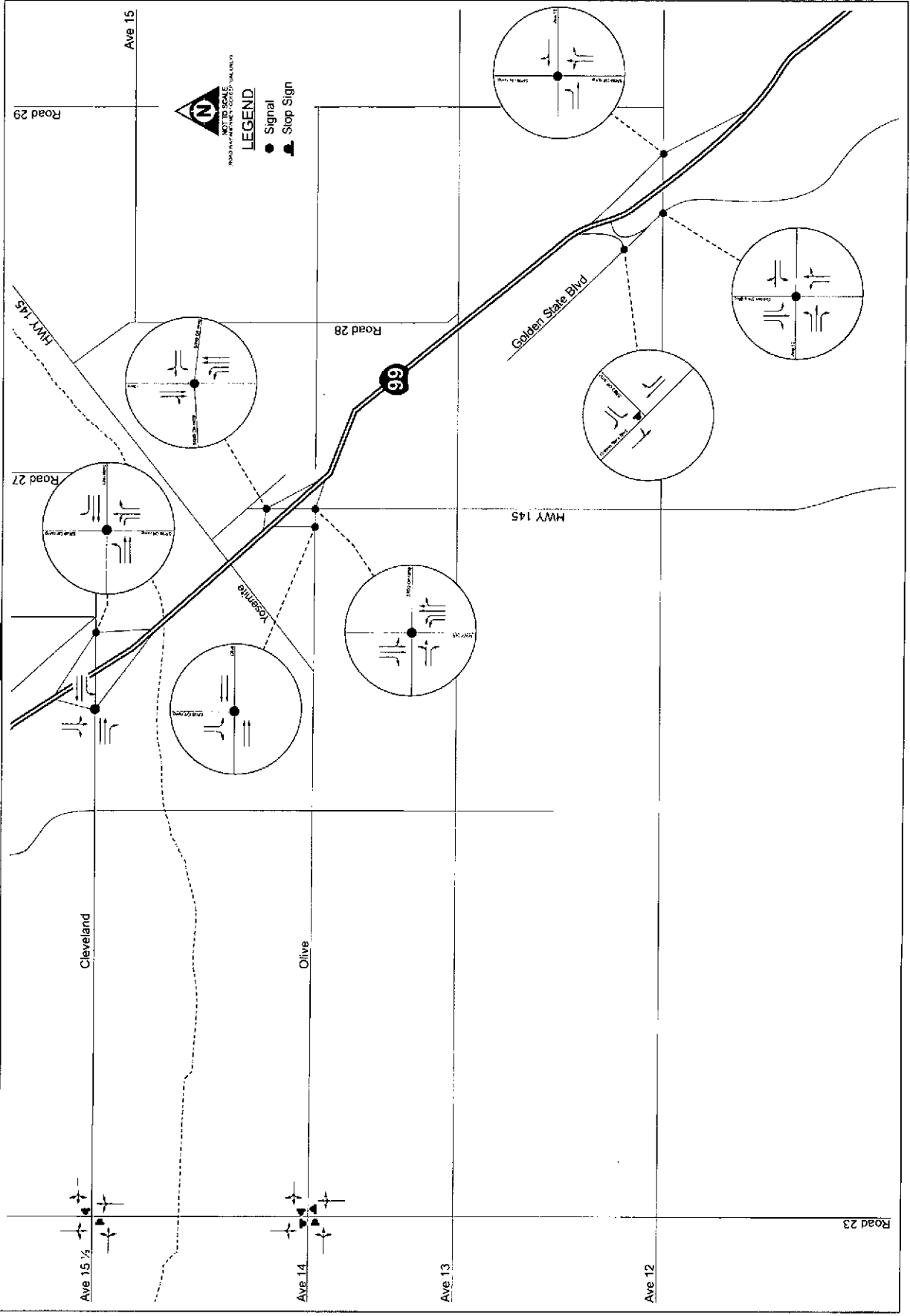


LANE CONFIGURATION AND INTERSECTION CONTROL
Madera Site
2010 No Project
(Alternative E)

North Fork Casino
Madera County

04-837.2
Figure 10

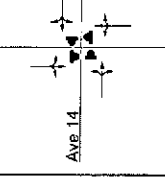
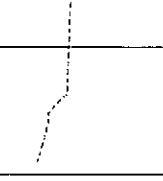
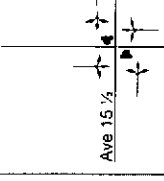
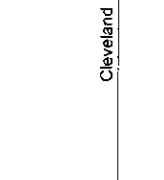
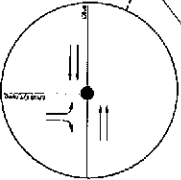
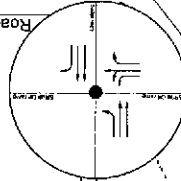
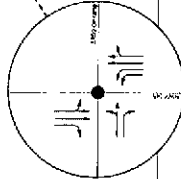
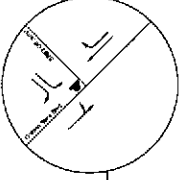
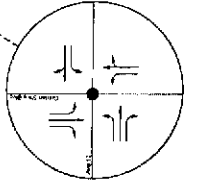
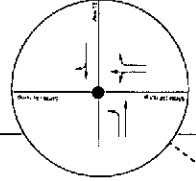
SEE MAP 100A



NOT TO SCALE
ROADWAY WIDTHS BASED ON 2010 DATA

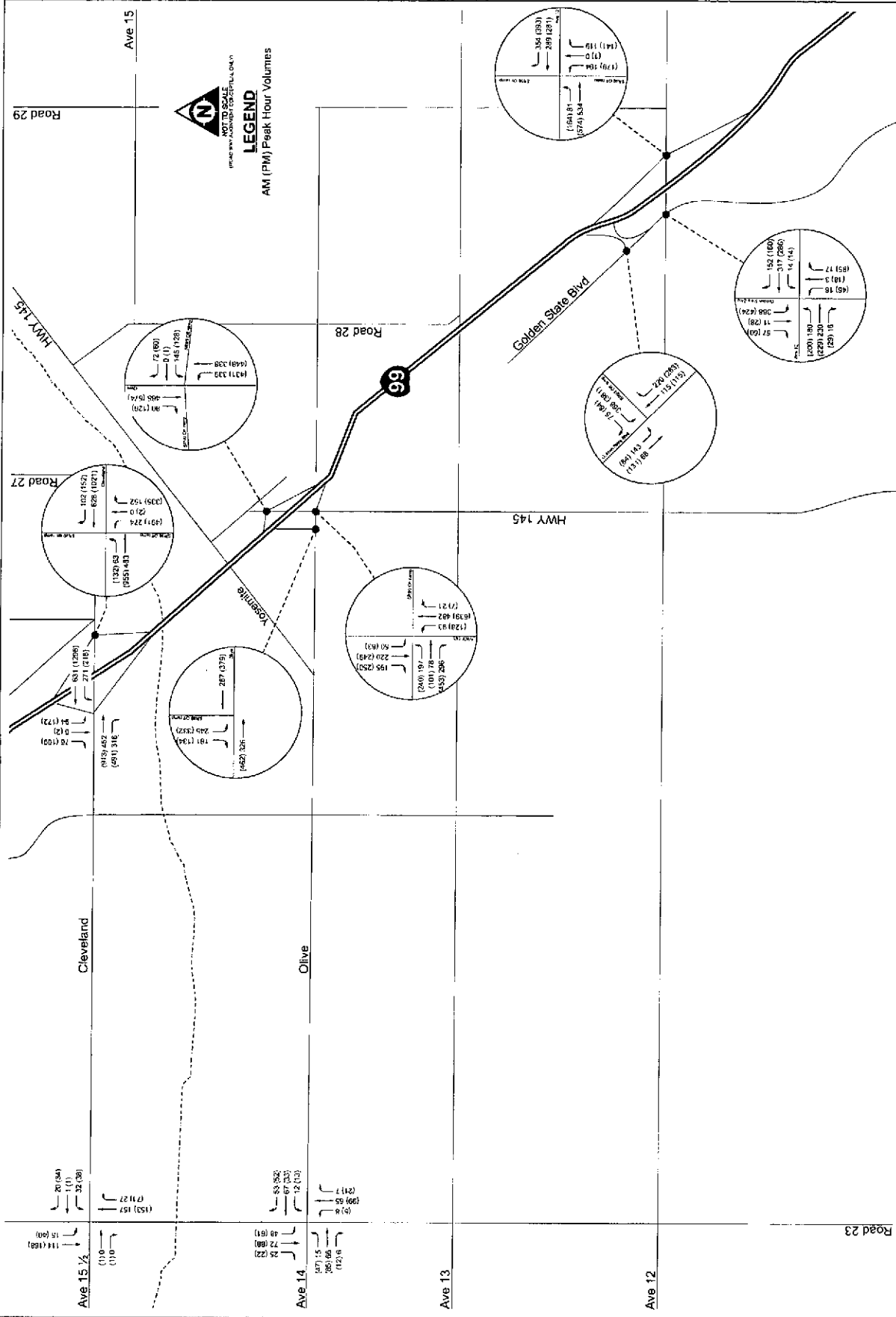
LEGEND

- Signal
- ▲ Stop Sign



PEAK HOUR TRAFFIC VOLUMES
 2010 No Project
 Madera Site
 (Alternative E)

North Fork Casino
 Madera County
 Figure 11



SEE MAP 11A

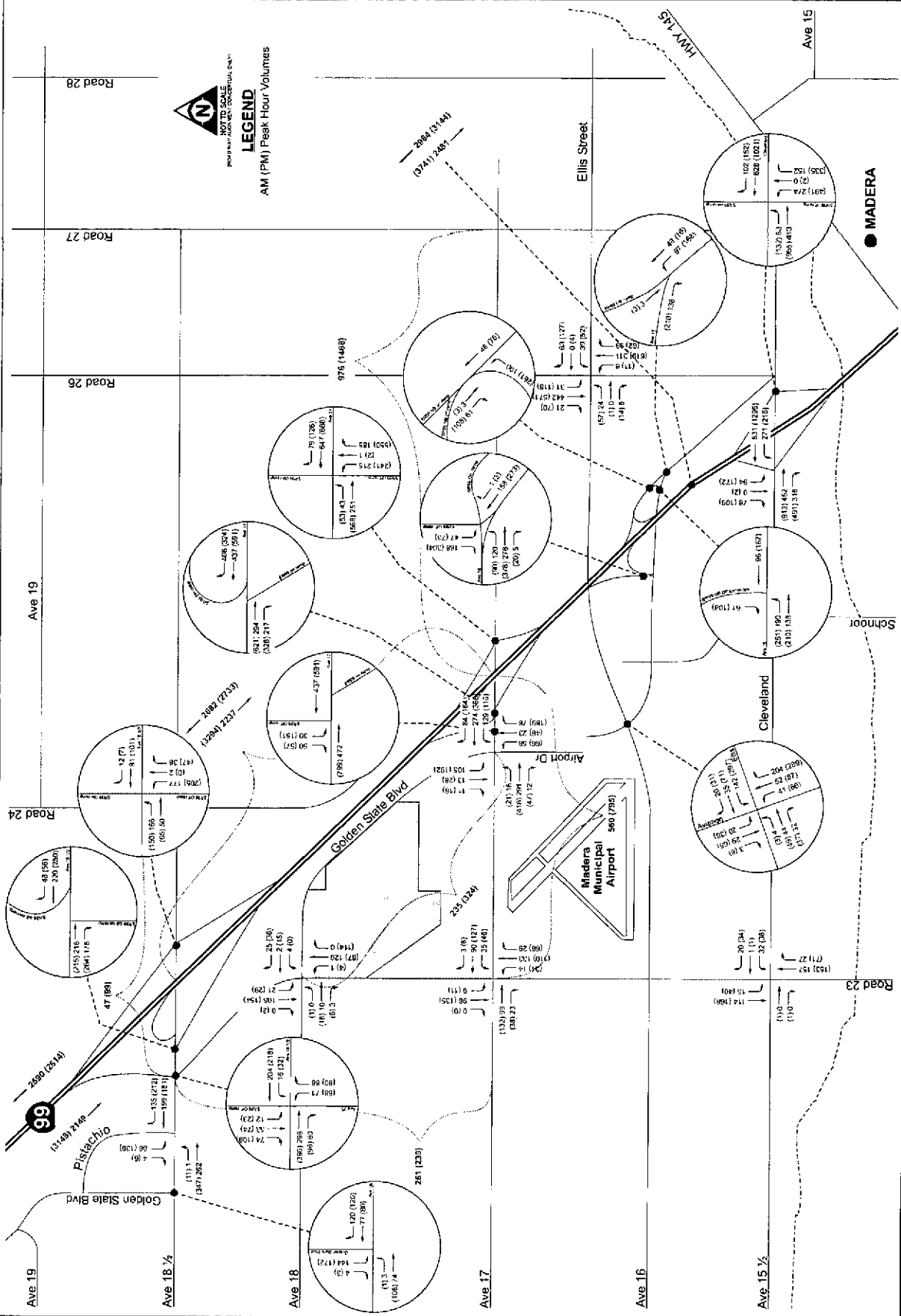
04-637.2

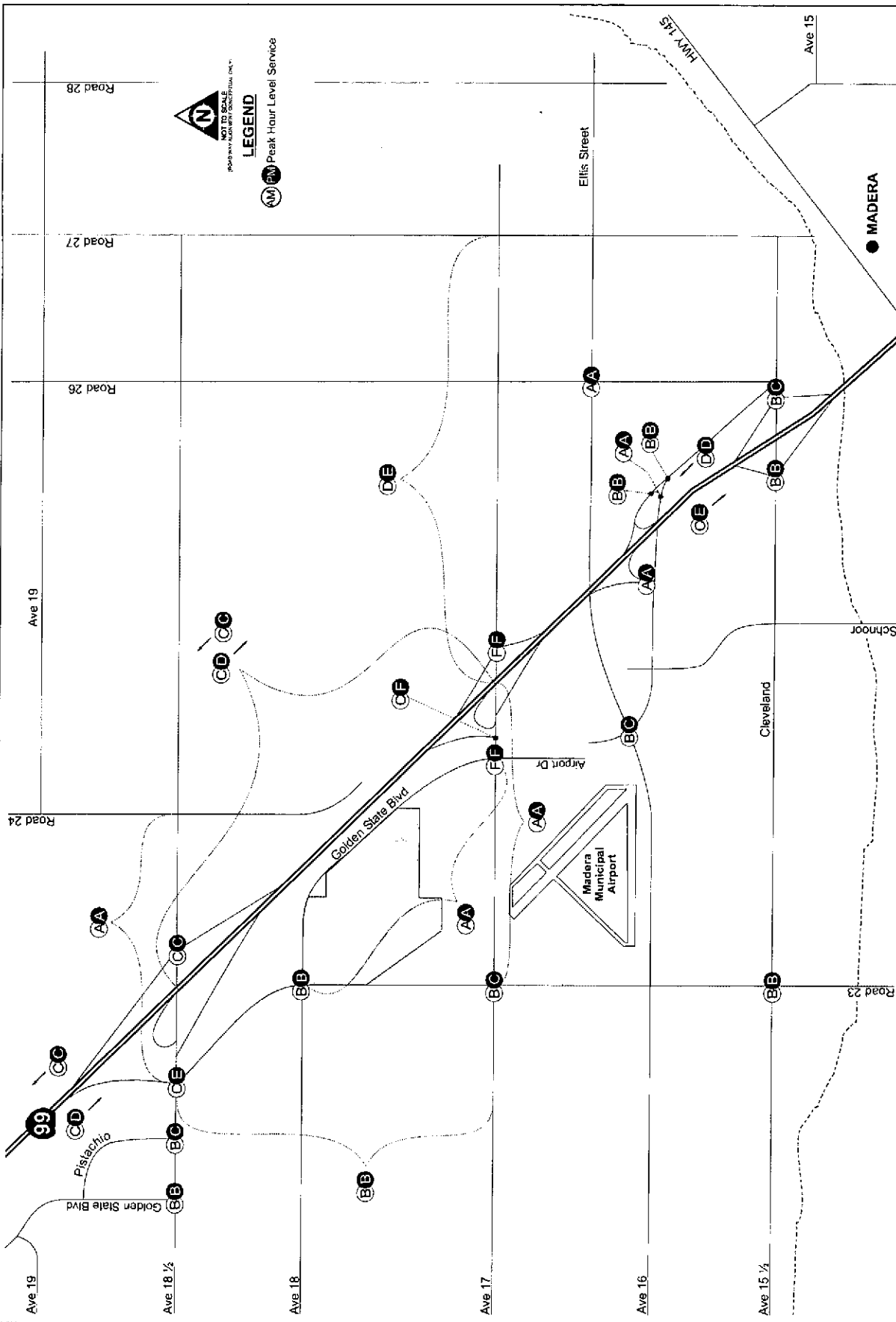
PEAK HOUR TRAFFIC VOLUMES
 2010 No Project
 Madera Site
 (Alternative E)

North Fork Casino
 Madera County

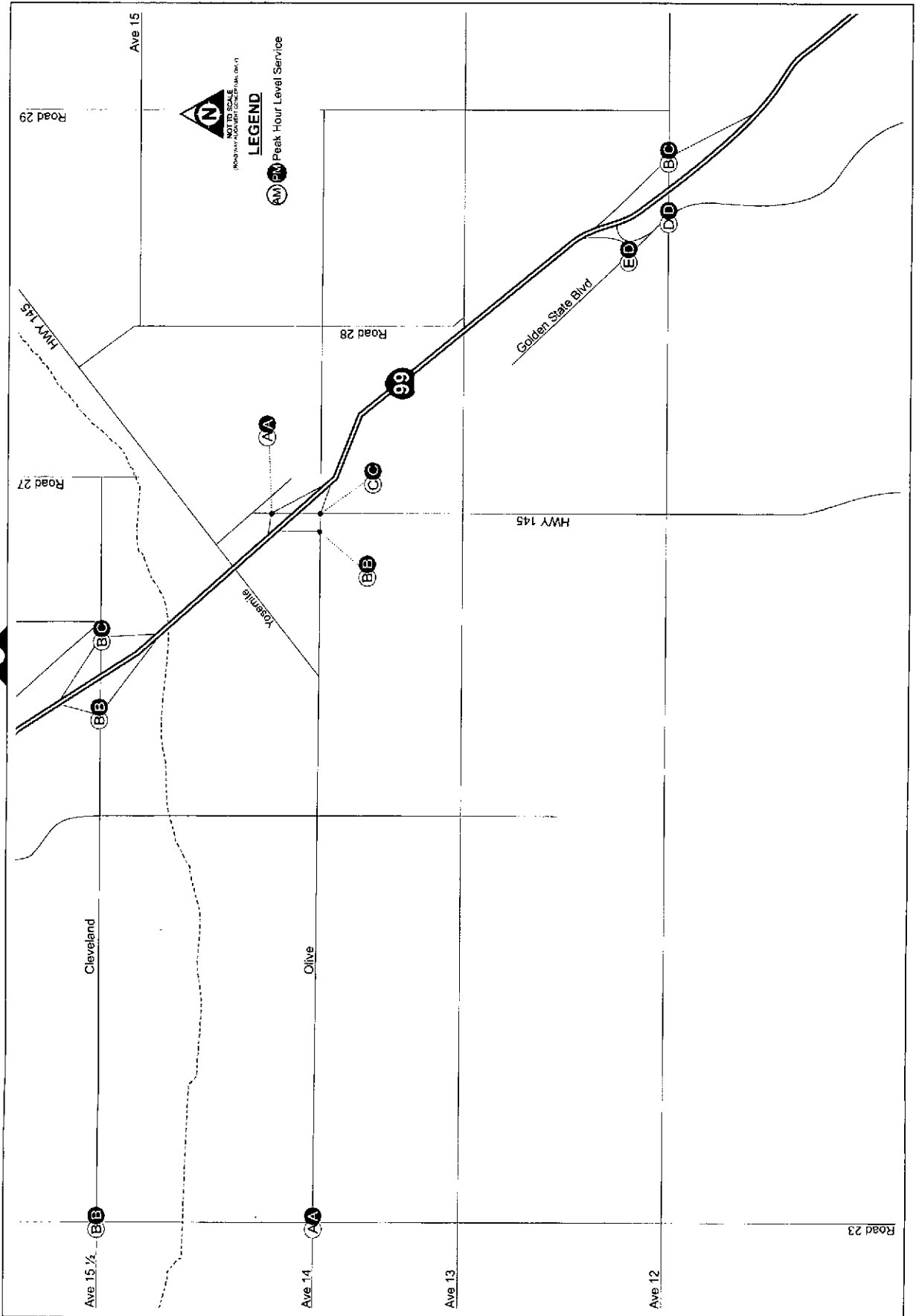
Figure 11

04-157.2





SEE MAP 12A

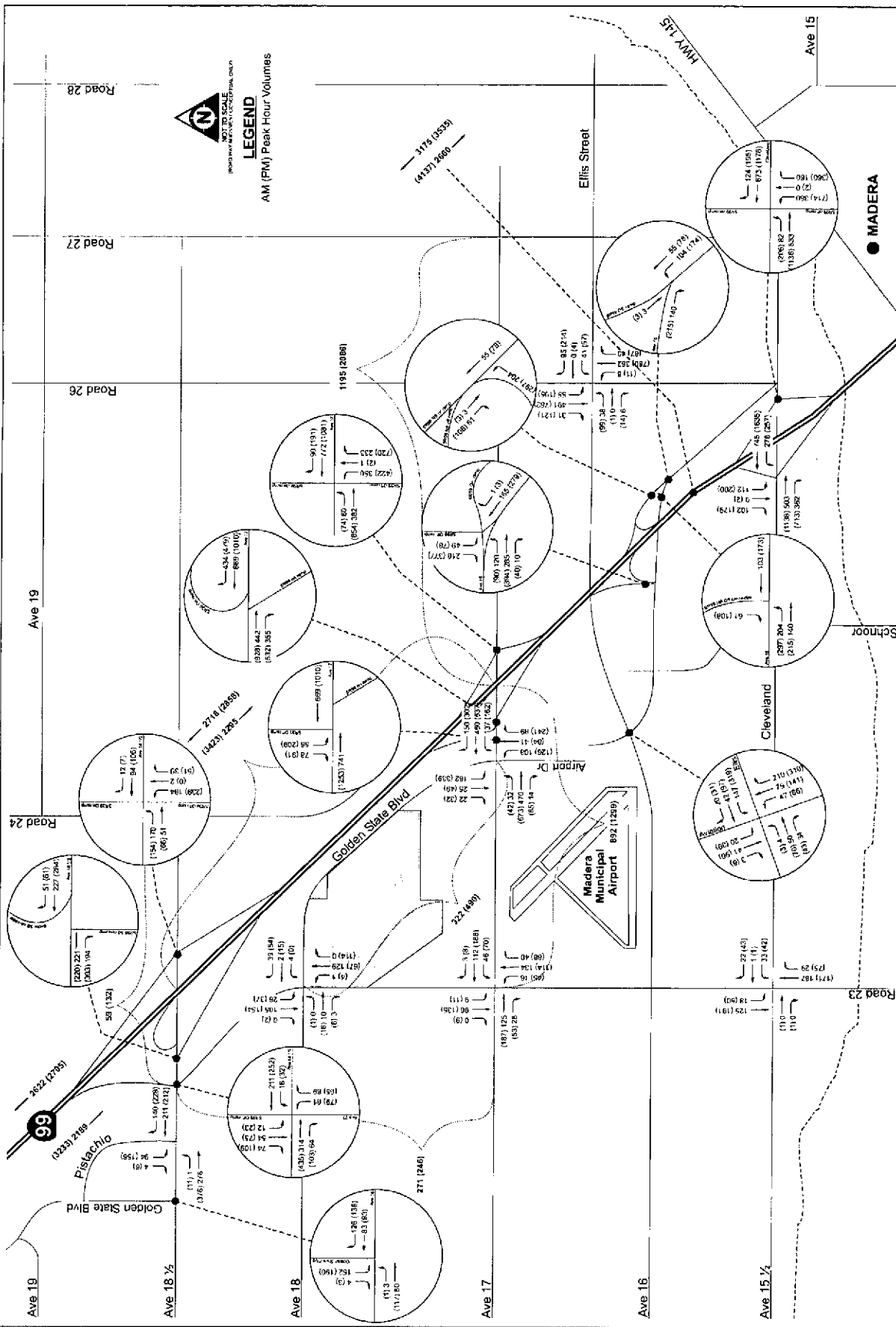


PEAK HOUR TRAFFIC VOLUMES
2010 Project
Madera Site
(Alternative A)

North Fork Casino
Madera County

Figure 13

04-837.2

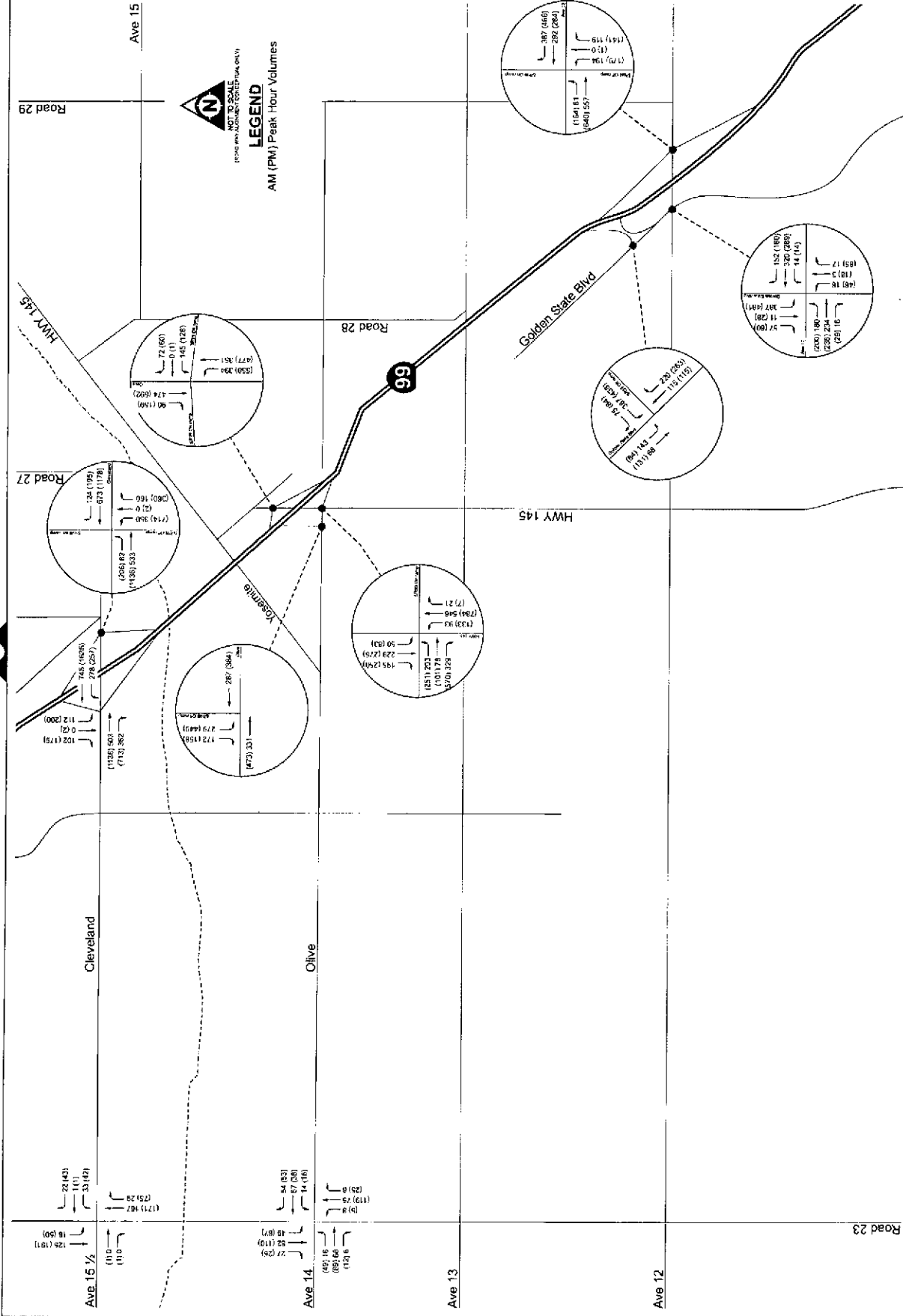


PEAK HOUR TRAFFIC VOLUMES
2010 Project
Madera Site
(Alternative A)

North Fork Casino
Madera County

04-837-2

Figure 13



SEE MAP 13A

Opening Day (2010) Project Conditions

Alternative A (Proposed Project Alternative)

Figures 13 and 14 show the Opening Day (2010) Project Alternative A AM and PM peak hour traffic volumes (segment, freeway, and intersection), and resulting Opening Day (2010) Project Alternative A levels of service for the Madera Site. The TWSC levels of service shown on Figure 14 are the levels of service for the worst operating movement at that intersection. The signalized and AWSC intersection levels of service shown on Figure 14 are representative of the whole intersection. Individual intersection movements or approaches may operate above or below the signalized or AWSC level of service or delay shown on Figure 14. The signalized intersection levels of service or delay shown in Figure 14 may not reflect the effects of 95th percentile queues that exceed the capacity for their movement.

Alternative B (Reduced Intensity Alternative)

Figures 15 and 16 show the Opening Day (2010) Project Alternative B AM and PM peak hour traffic volumes (segment, freeway, and intersection), and resulting Opening Day (2010) Project Alternative B levels of service for the Madera Site. The TWSC levels of service shown on Figure 16 are the levels of service for the worst operating movement at that intersection. The signalized and AWSC intersection levels of service shown on Figure 16 are representative of the whole intersection. Individual intersection movements or approaches may operate above or below the signalized or AWSC level of service or delay shown on Figure 16. The signalized intersection levels of service or delay shown in Figure 16 may not reflect the effects of 95th percentile queues that exceed the capacity for their movement.

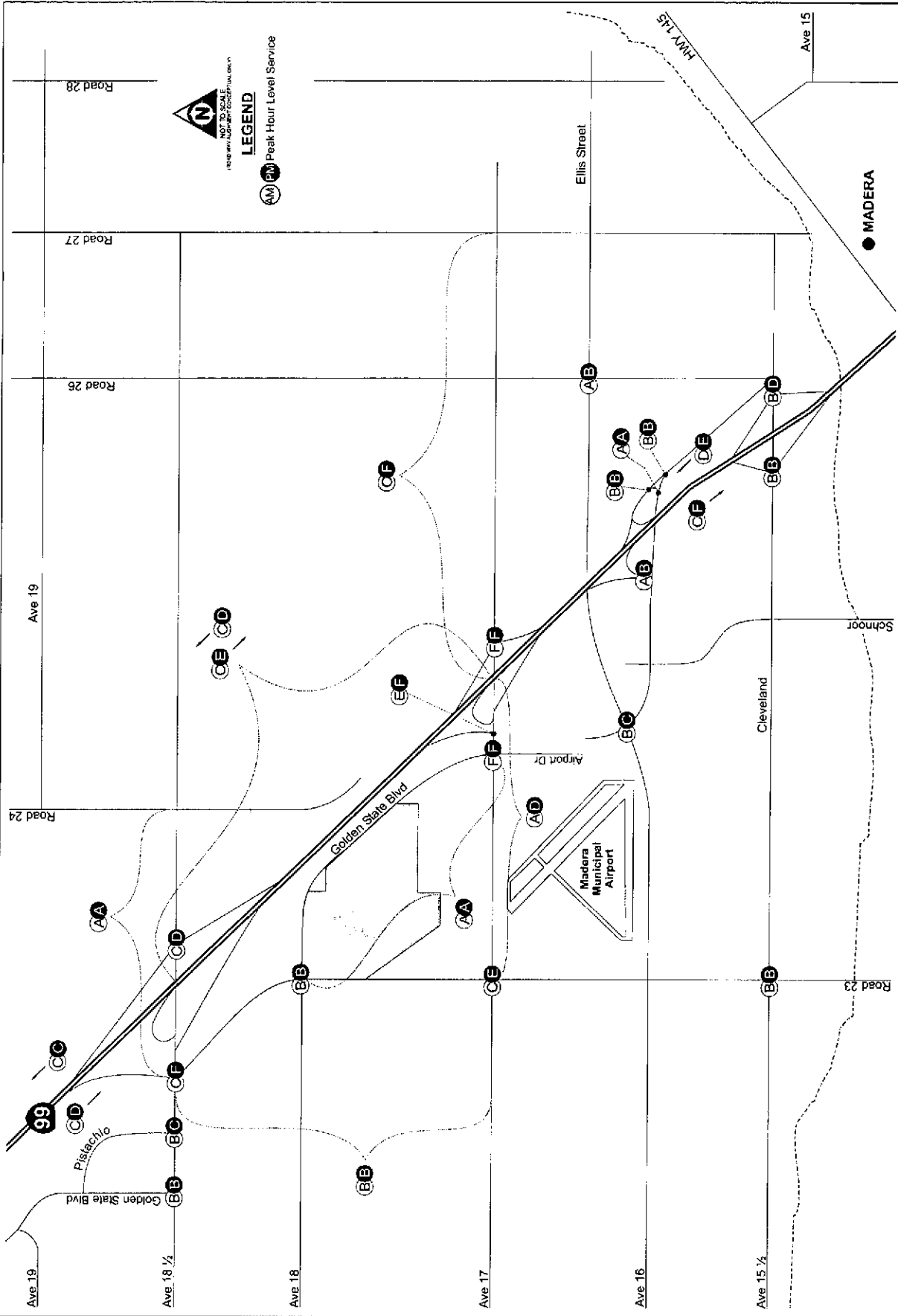
Alternative C (Commercial Land Use Alternative)

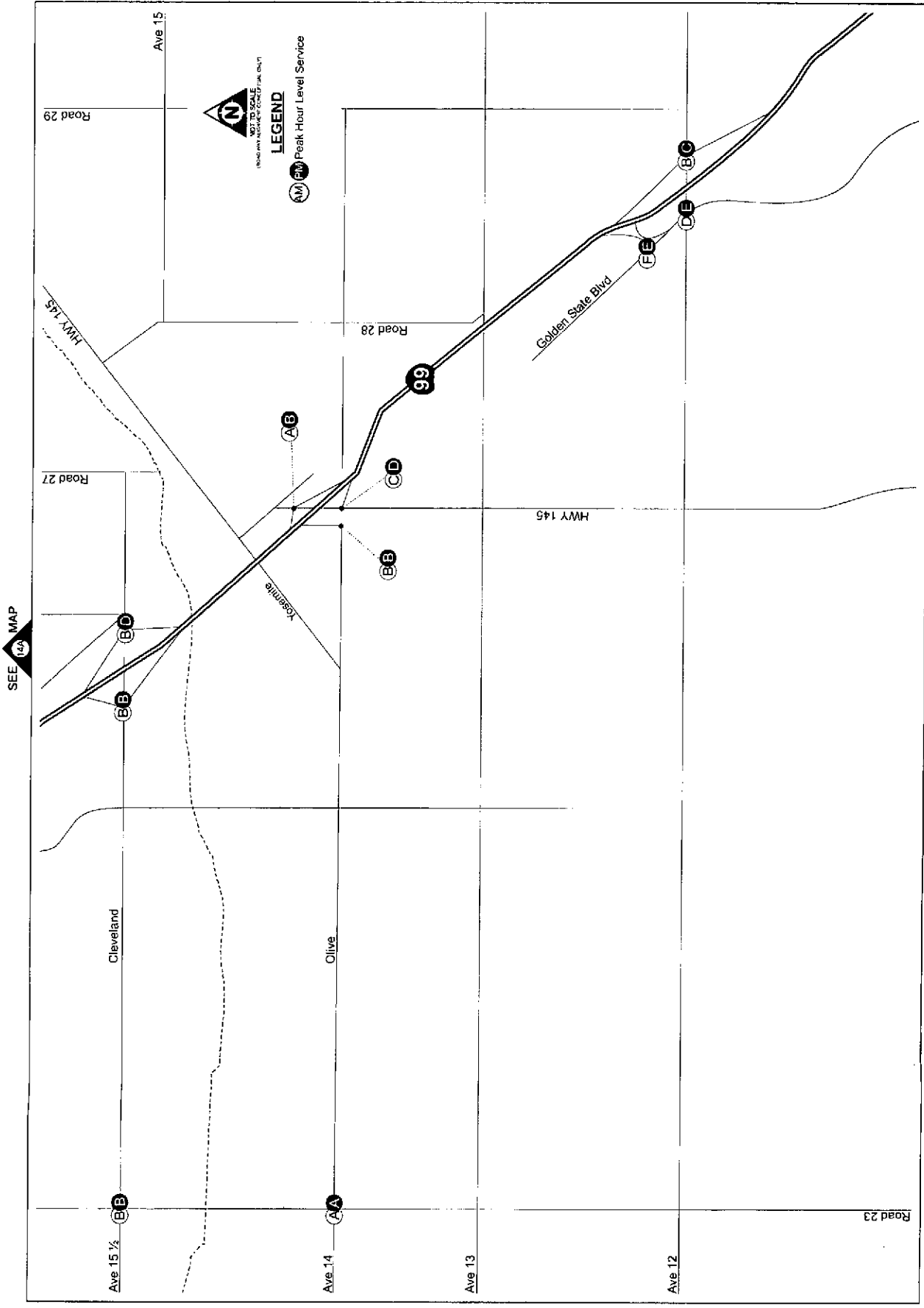
Figures 17 and 18 show the Opening Day (2010) Project Alternative C AM and PM peak hour traffic volumes (segment, freeway, and intersection), and resulting Opening Day (2010) Project Alternative C levels of service for the Madera Site. The TWSC levels of service shown on Figure 18 are the levels of service for the worst operating movement at that intersection. The signalized and AWSC intersection levels of service shown on Figure 18 are representative of the whole intersection. Individual intersection movements or approaches may operate above or below the signalized or AWSC level of service or delay shown on Figure 18. The signalized intersection levels of service or delay shown in Figure 18 may not reflect the effects of 95th percentile queues that exceed the capacity for their movement.

Mitigated Opening Day (2010) Project Conditions

Alternative A (Proposed Project Alternative)

Figures 19 and 20 show the Mitigated Opening Day (2010) Project Alternative A lane configurations and intersection control, and resulting Mitigated Opening Day (2010) Project Alternative A levels of service for the Madera Site. The TWSC levels of service shown on Figure 20 are the levels of service for the worst operating movement at that intersection. The signalized and AWSC intersection levels of service shown on Figure 20 are representative of the whole intersection. Individual intersection movements or approaches may operate above or below the signalized and AWSC level of service or delay shown on Figure 20. The signalized intersection levels of service or delay shown in Figure 20 may not reflect the effects of 95th percentile queues that exceed the capacity for their movement.

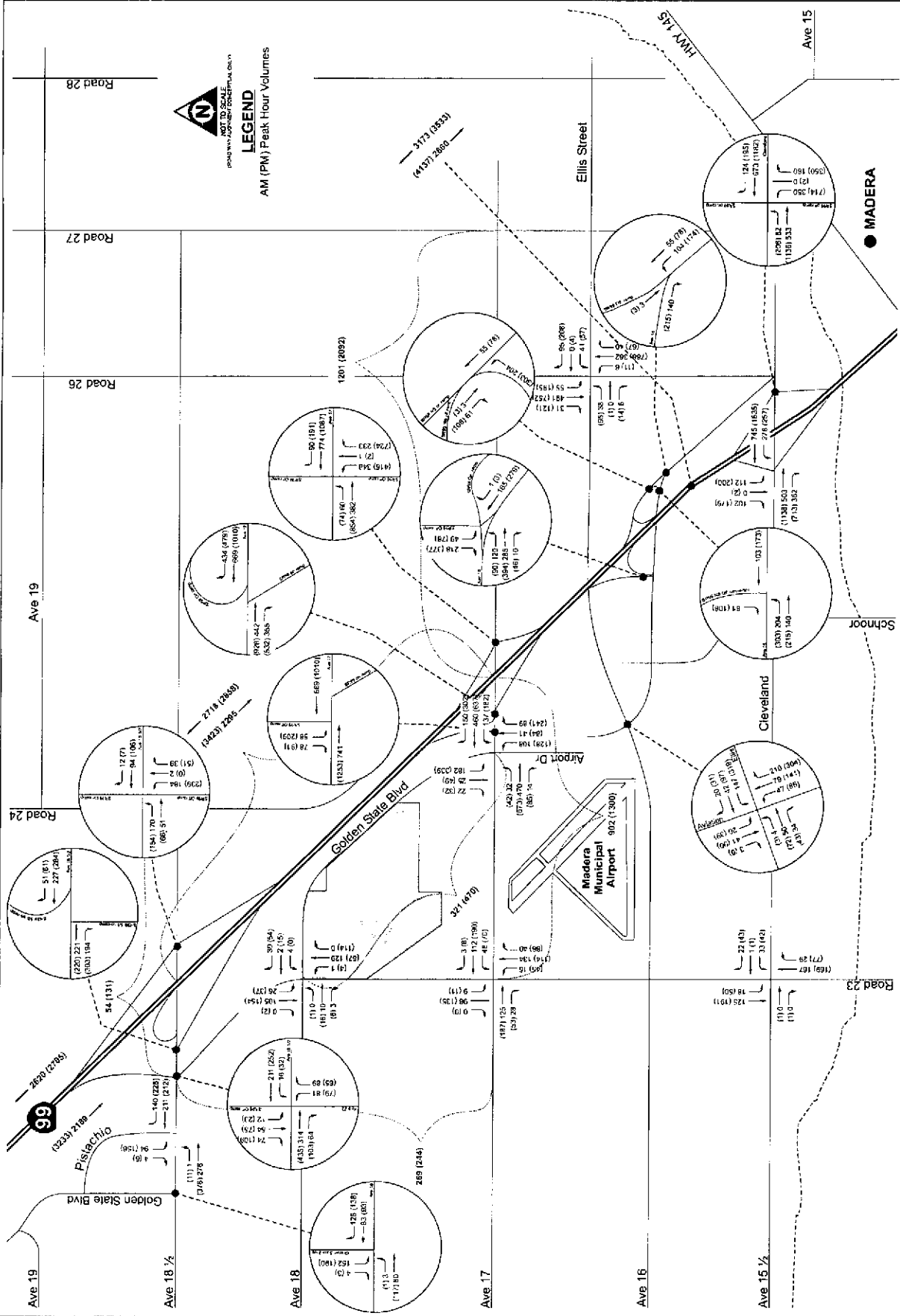


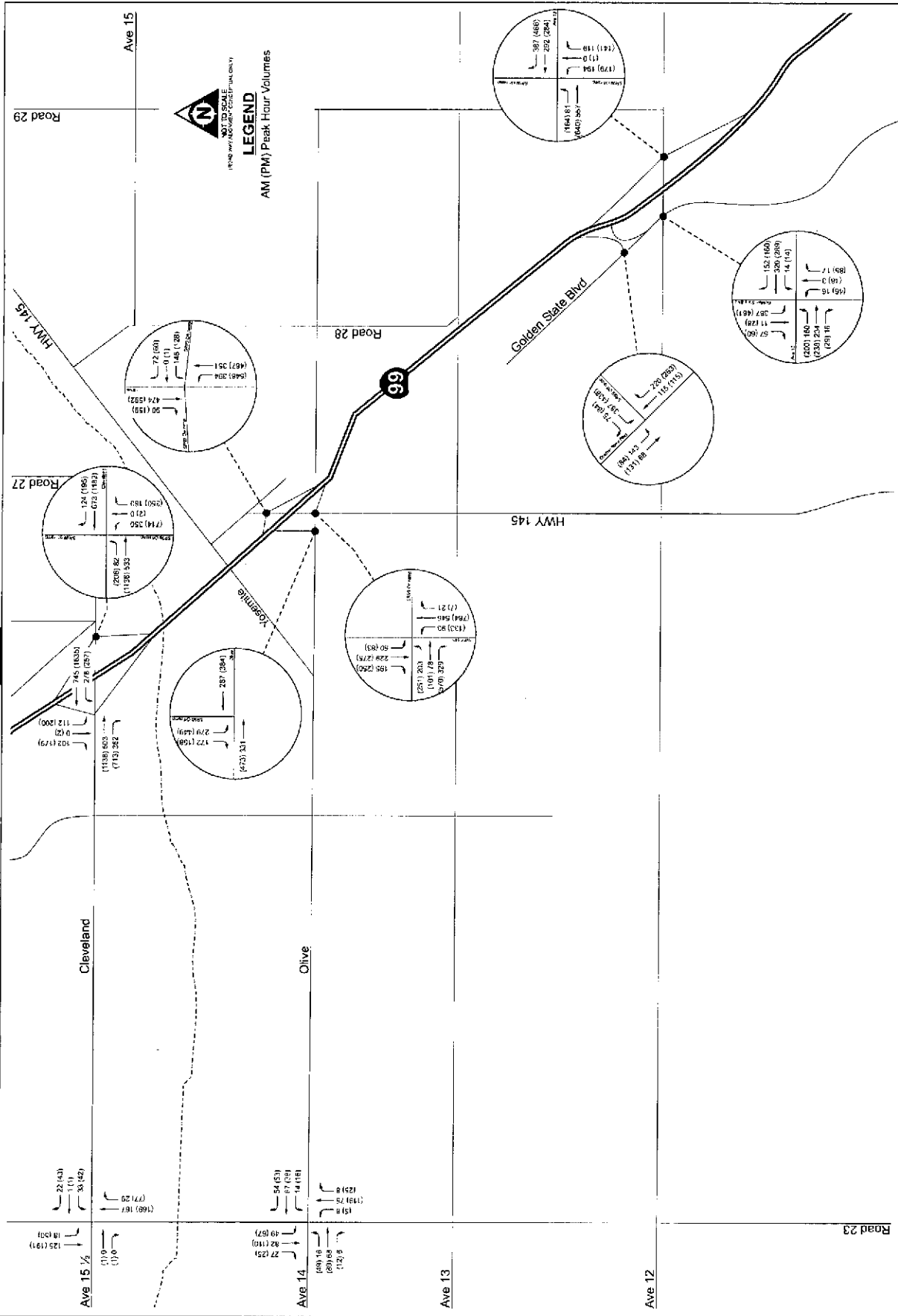


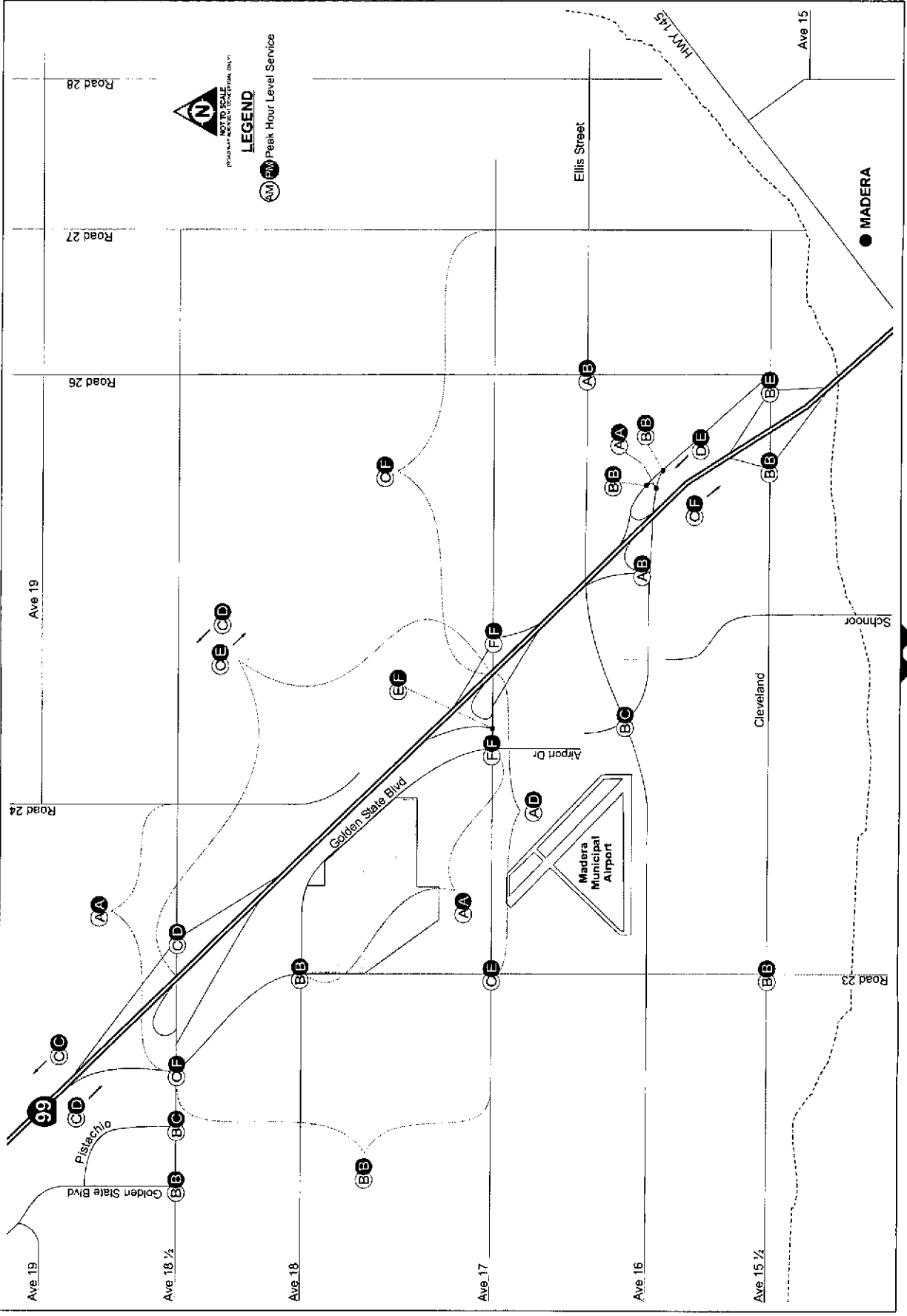
PEAK HOUR TRAFFIC VOLUMES
2010 Project
Madera Site
(Alternative B)

North Fork Casino
Madera County

Figure 15

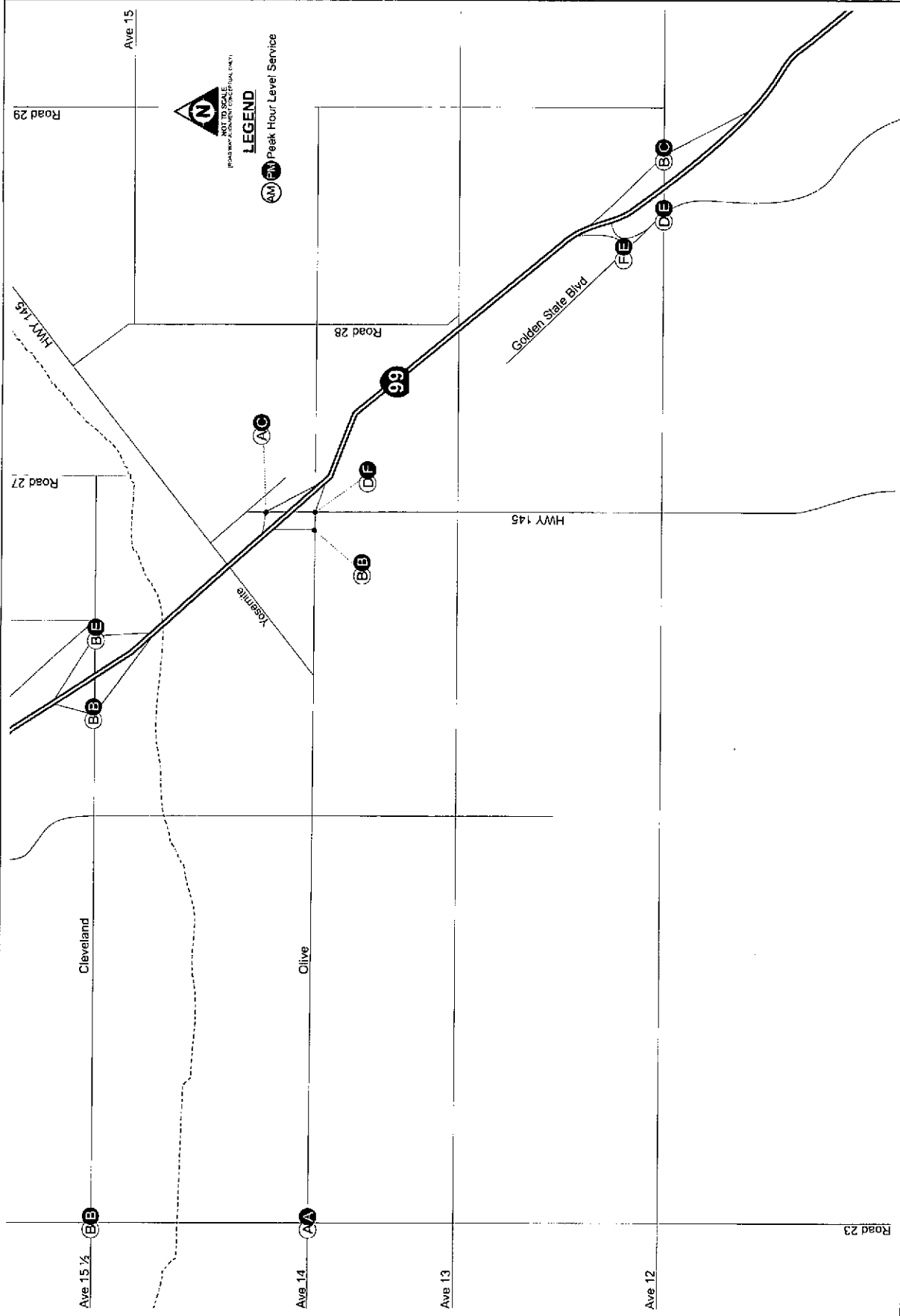






SEE MAP 16B

SEE MAP 16A

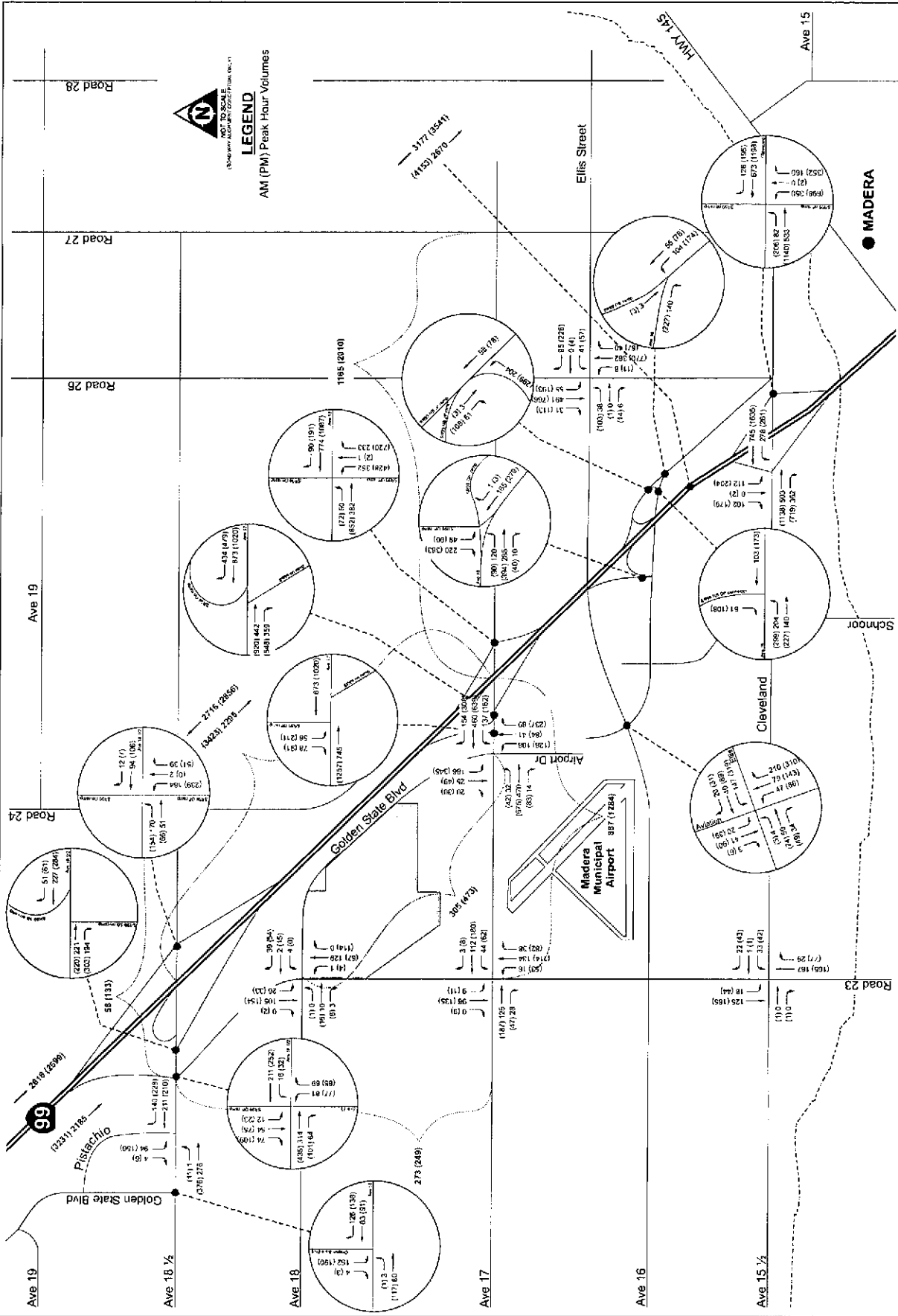


2010 Project
Madera Site
(Alternative C)

North Fork Casino
Madera County

Figure 17

04-837.2



SEE MAP 17B

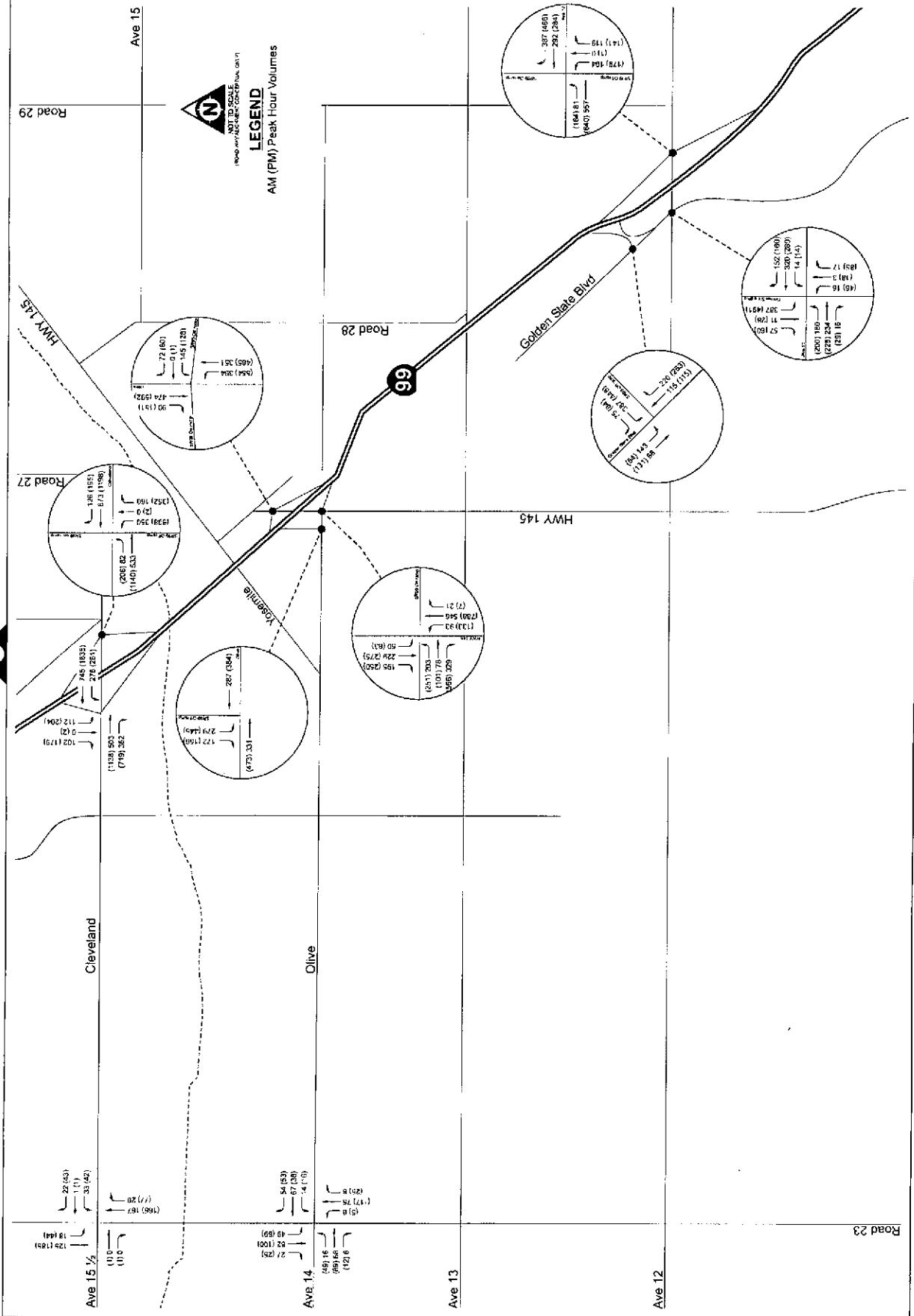
PEAK HOUR TRAFFIC VOLUMES
 2010 Project
 Madera Site
 (Alternative C)

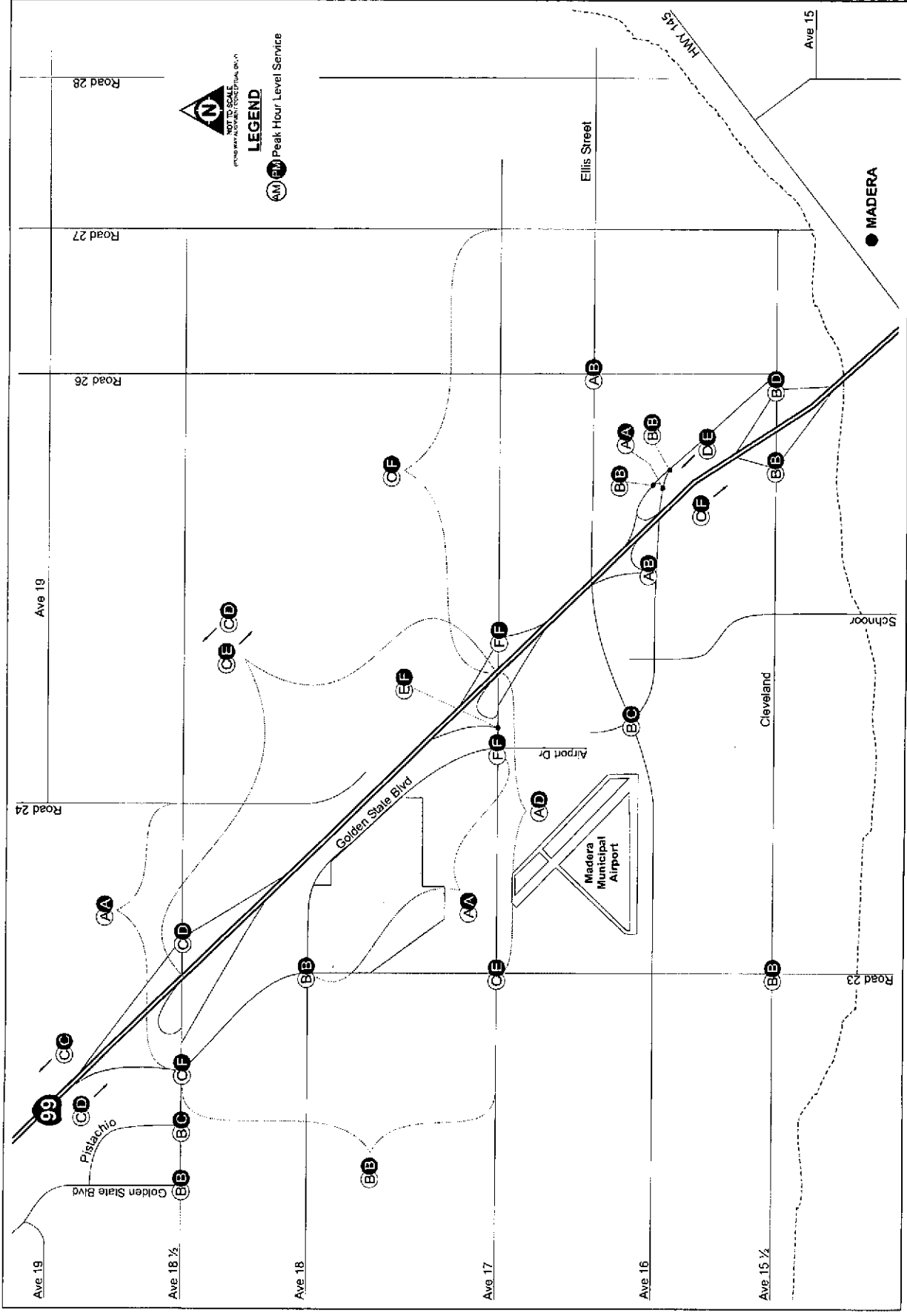
North Fork Casino
 Madera County

Figure 17

04-27-12

SEE MAP 17A





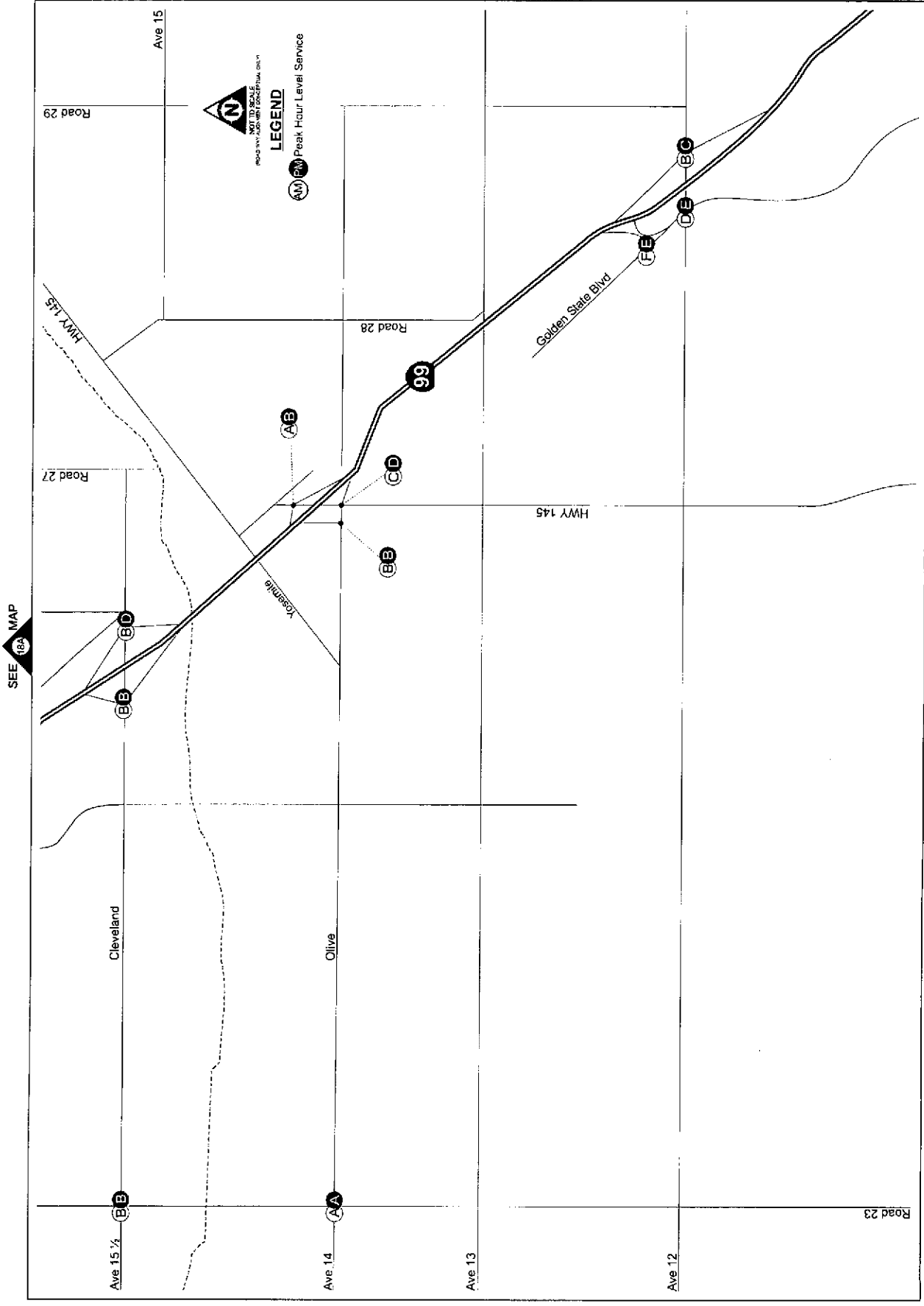
SEE MAP 10B



LELIS OF SER ICE
 2010 Project
 Madera Site
 (Alternative C)

North Fork Casino
 Madera County
 04-837.2

Figure 18

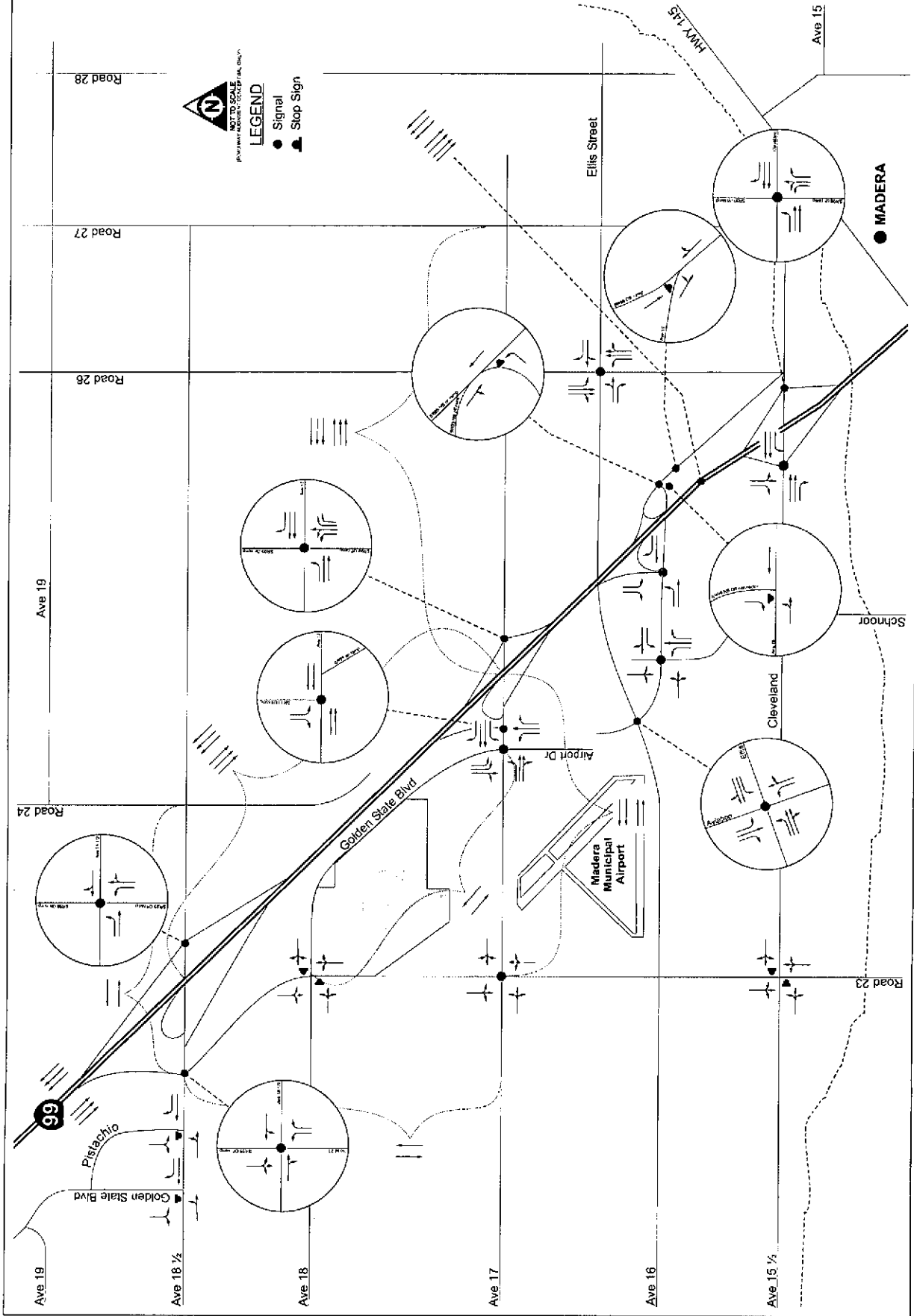


LANE CONFIGURATION AND INTERSECTION CONTROL
 Mitigated 2010 Project
 Madera Site
 (Alternative A)

North Fork Casino
 Madera County

Figure 19

04-09-2012



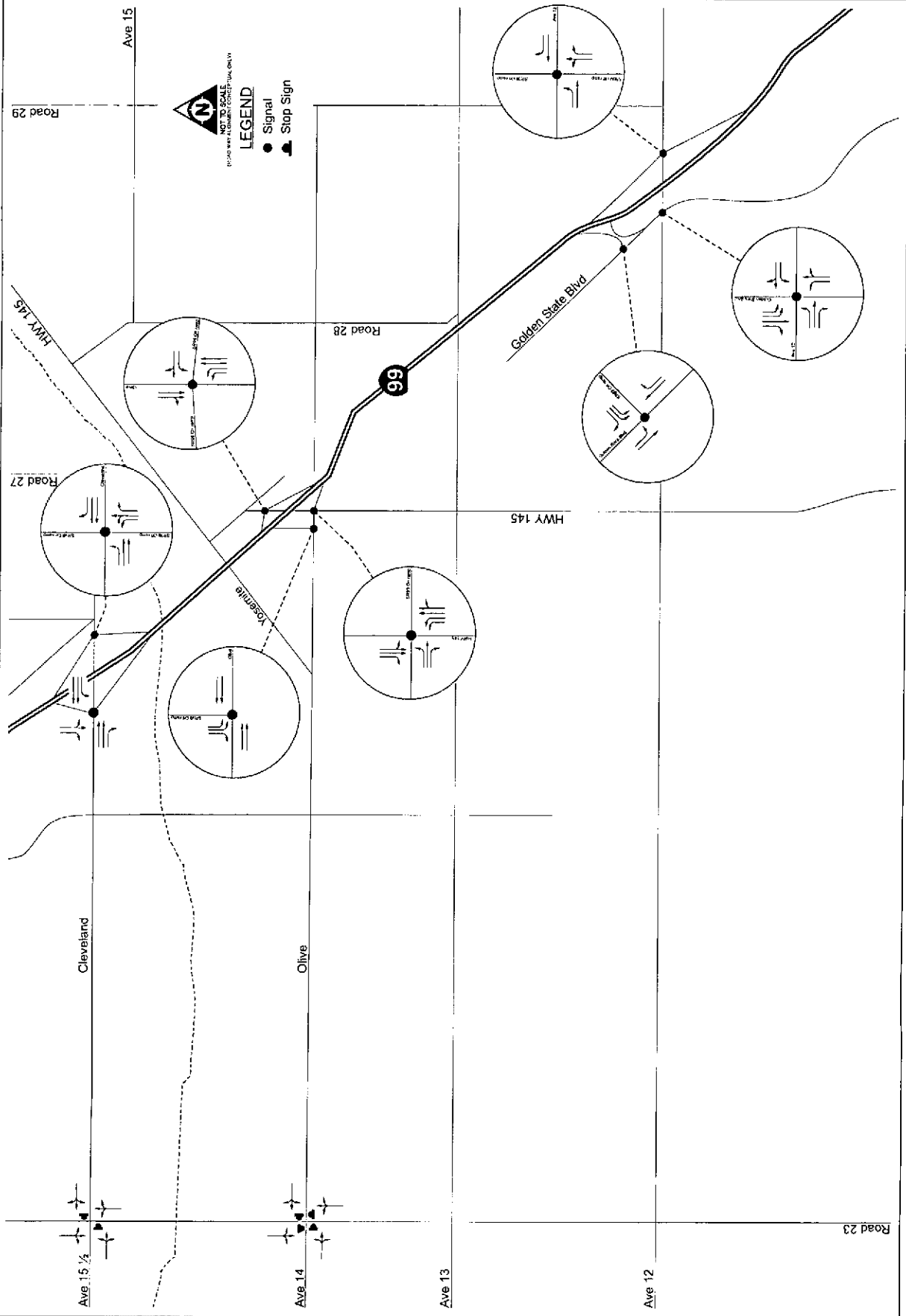


LANE CONFIGURATION AND INTERSECTION CONTROL
 Mitigated 2010 Project
 Madera Site
 (Alternative A)

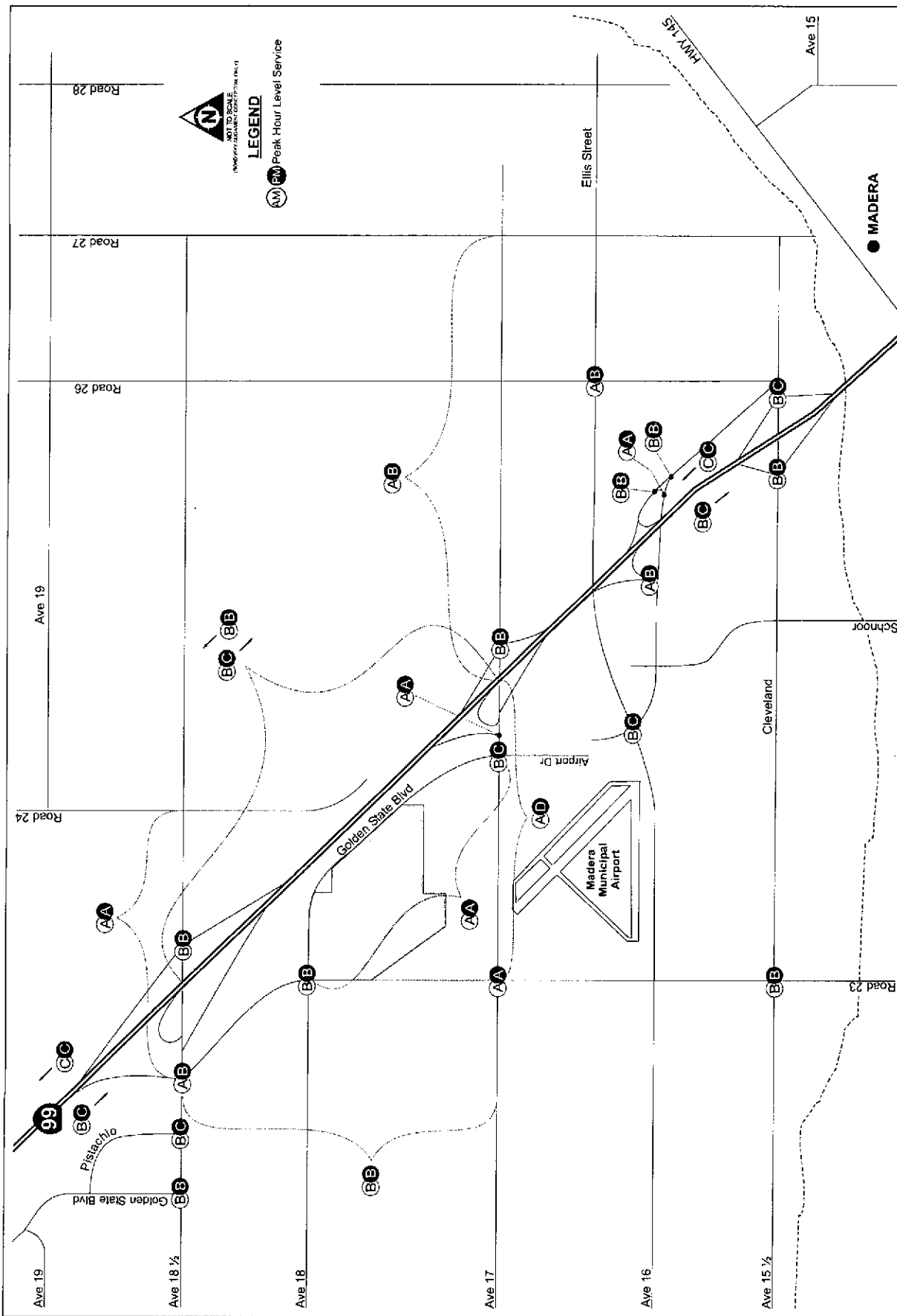
North Fork Casino
 Madera County

04-937.2

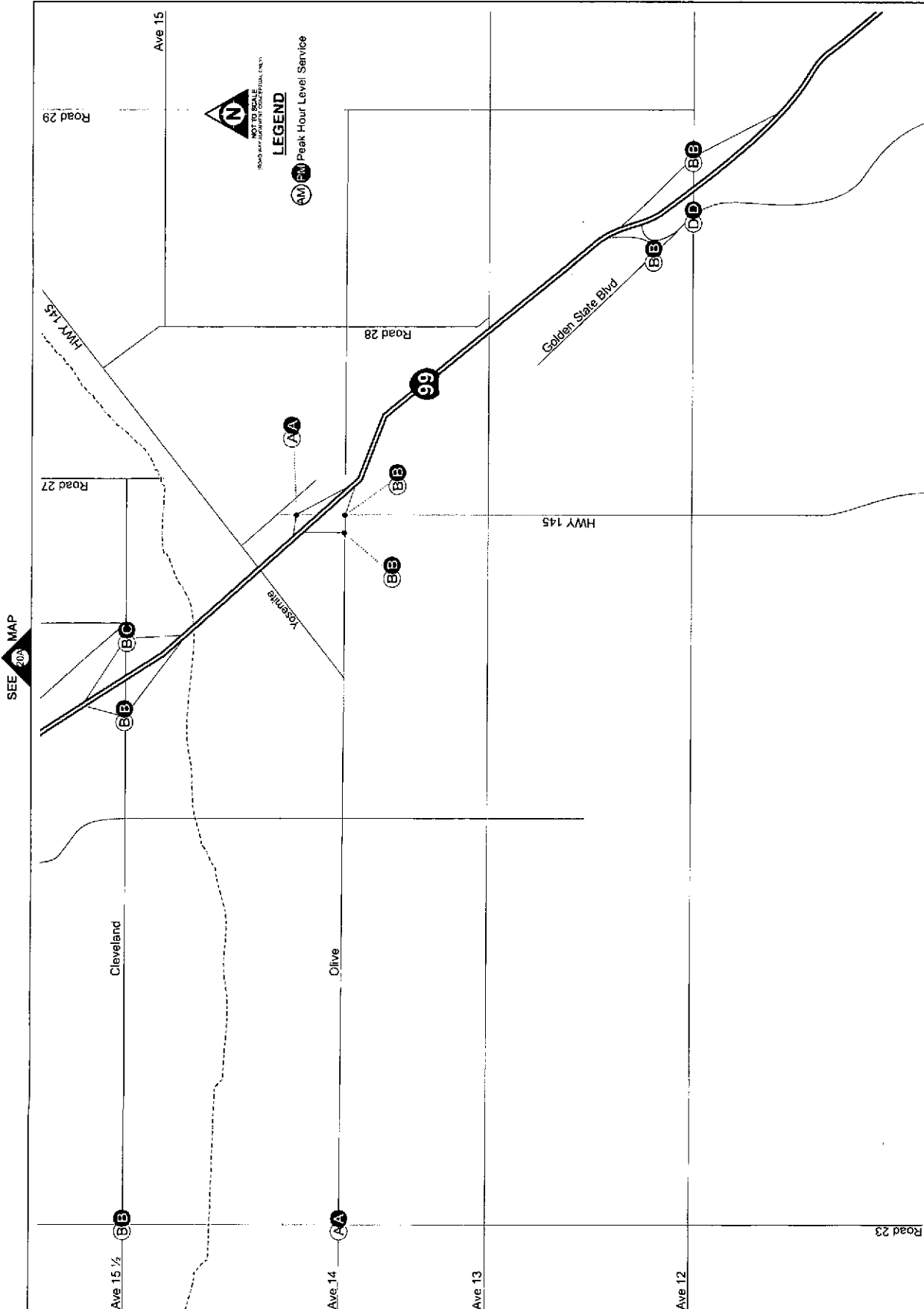
Figure 19



SEE MAP 19A



SEE MAP 20B



Alternative B (Reduced Intensity Alternative)

Figures 21 and 22 show the Mitigated Opening Day (2010) Project Alternative B lane configurations and intersection control, and resulting Mitigated Opening Day (2010) Project Alternative B levels of service for the Madera Site. The TWSC levels of service shown on Figure 22 are the levels of service for the worst operating movement at that intersection. The signalized and AWSC intersection levels of service shown on Figure 22 are representative of the whole intersection. Individual intersection movements or approaches may operate above or below the signalized and AWSC level of service or delay shown on Figure 22. The signalized intersection levels of service or delay shown in Figure 22 may not reflect the effects of 95th percentile queues that exceed the capacity for their movement.

Alternative C (Commercial Land Use Alternative)

Figures 23 and 24 show the Mitigated Opening Day (2010) Project Alternative C lane configurations and intersection control, and resulting Mitigated Opening Day (2010) Project Alternative C levels of service for the Madera Site. The TWSC levels of service shown on Figure 24 are the levels of service for the worst operating movement at that intersection. The signalized and AWSC intersection levels of service shown on Figure 24 are representative of the whole intersection. Individual intersection movements or approaches may operate above or below the signalized and AWSC level of service or delay shown on Figure 24. The signalized intersection levels of service or delay shown in Figure 24 may not reflect the effects of 95th percentile queues that exceed the capacity for their movement.

2030 No Project Conditions

Alternative E (No Project Alternative)

Figures 25, 26, and 27 show the 2030 No Project Alternative E lane configurations and intersection control, AM and PM peak hour traffic volumes (segment, freeway, and intersection), and resulting 2030 No Project Alternative E levels of service for the Madera Site. The TWSC levels of service shown on Figure 27 are the levels of service for the worst operating movement at that intersection. The signalized and AWSC intersection levels of service shown on Figure 27 are representative of the whole intersection. Individual intersection movements or approaches may operate above or below the signalized or AWSC level of service or delay shown on Figure 27. The signalized intersection levels of service or delay shown in Figure 27 may not reflect the effects of 95th percentile queues that exceed the capacity for their movement.

2030 Project Conditions

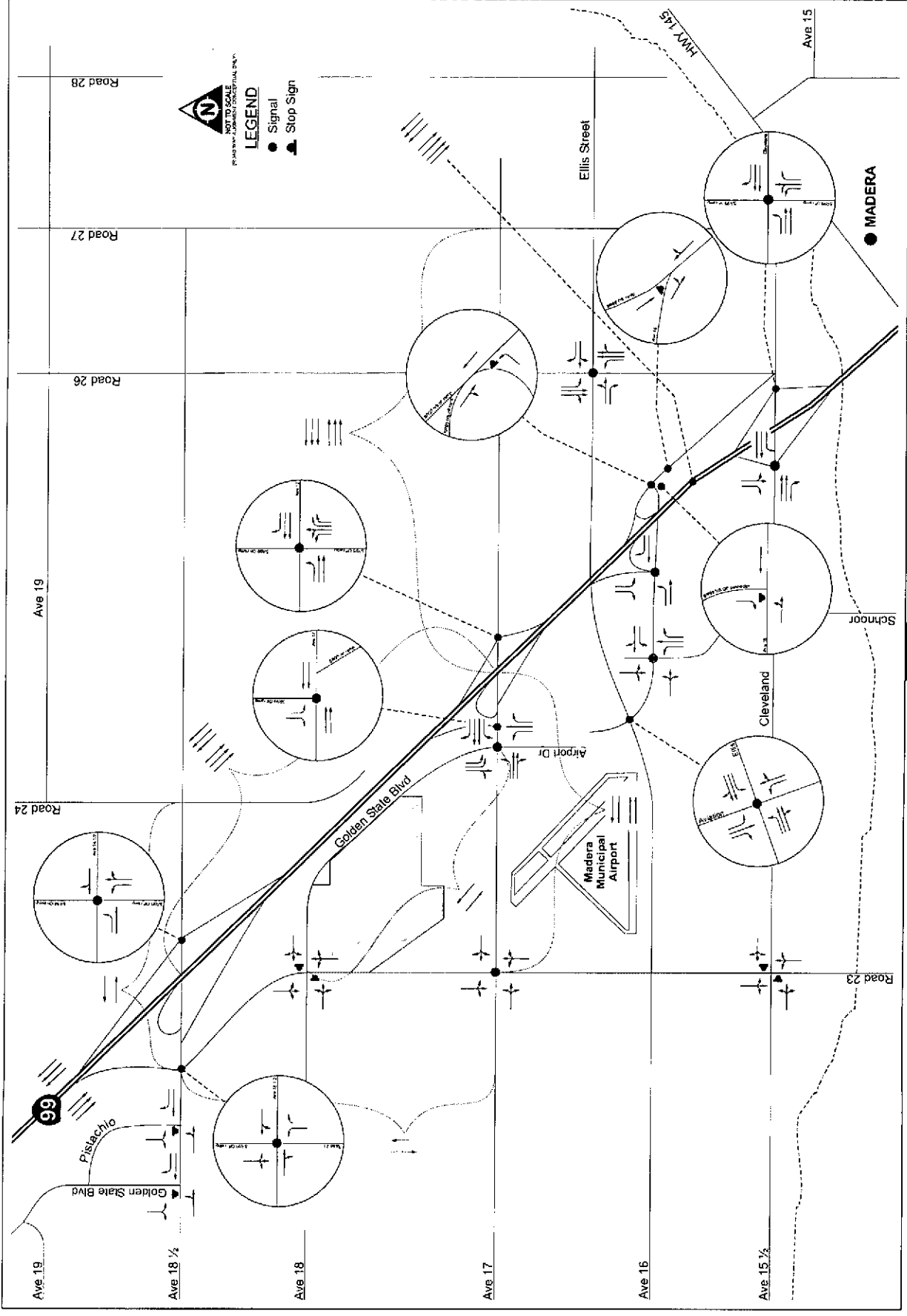
Alternative A (Proposed Project Alternative)

Figures 28, 29, and 30 show the 2030 Project Alternative A lane configurations and intersection control, Alternative A AM and PM peak hour traffic volumes (segment, freeway, and intersection), and resulting 2030 Project Alternative A levels of service for the Madera Site. The TWSC levels of service shown on Figure 30 are the levels of service for the worst operating movement at that intersection. The signalized and AWSC intersection levels of service shown on Figure 30 are representative of the whole intersection. Individual intersection movements or approaches may operate above or below the signalized or AWSC level of service or delay shown on Figure 30. The signalized intersection levels of service or delay shown in Figure 30 may not reflect the effects of 95th percentile queues that exceed the capacity for their movement.

LANE CONFIGURATION AND INTERSECTION CONTROL
 Mitigated 2008 Project
 Madera Site
 (Alternative B)

North Fork Casino
 Madera County
 CA 95372

Figure 21



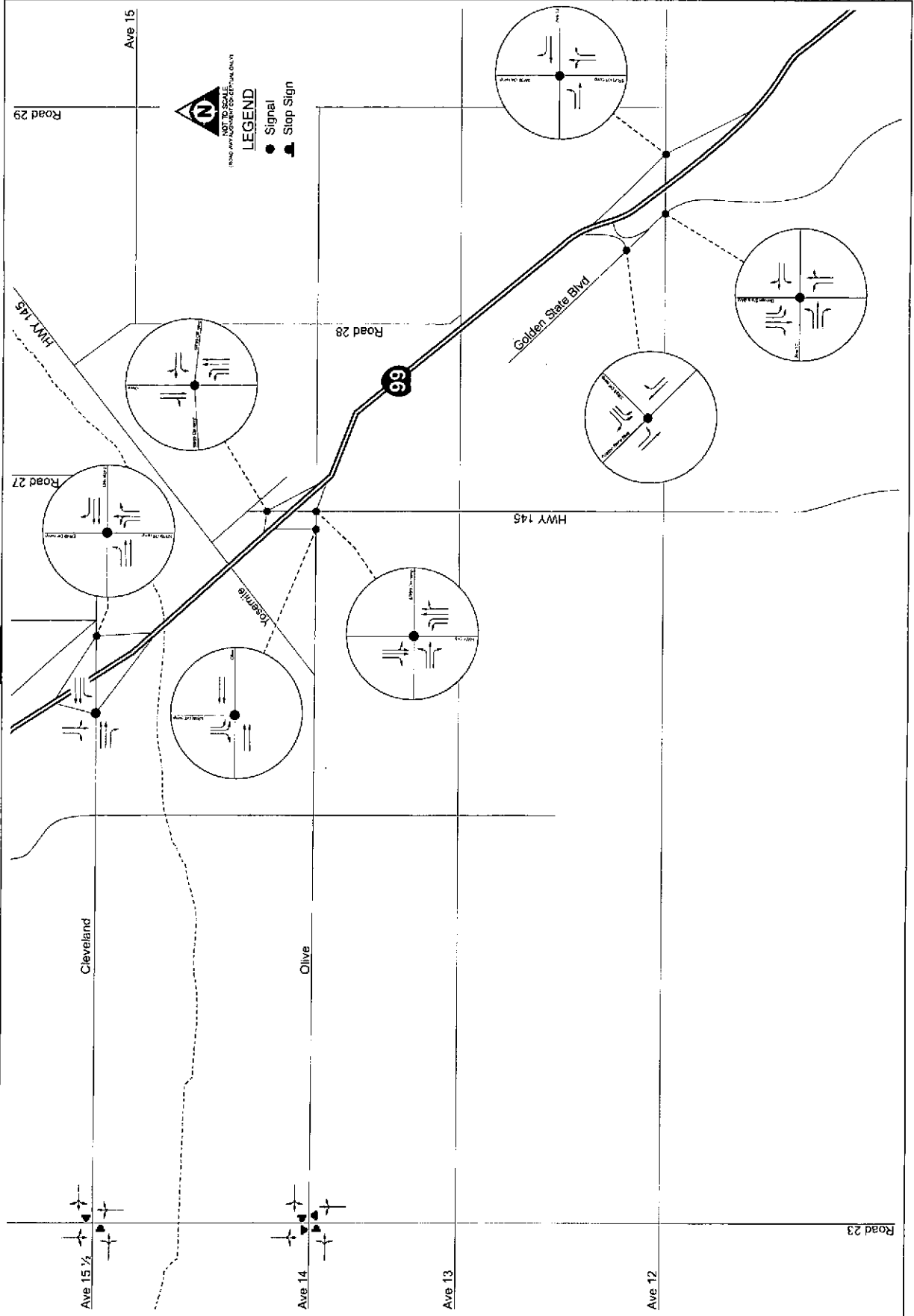
SEE MAP 21B

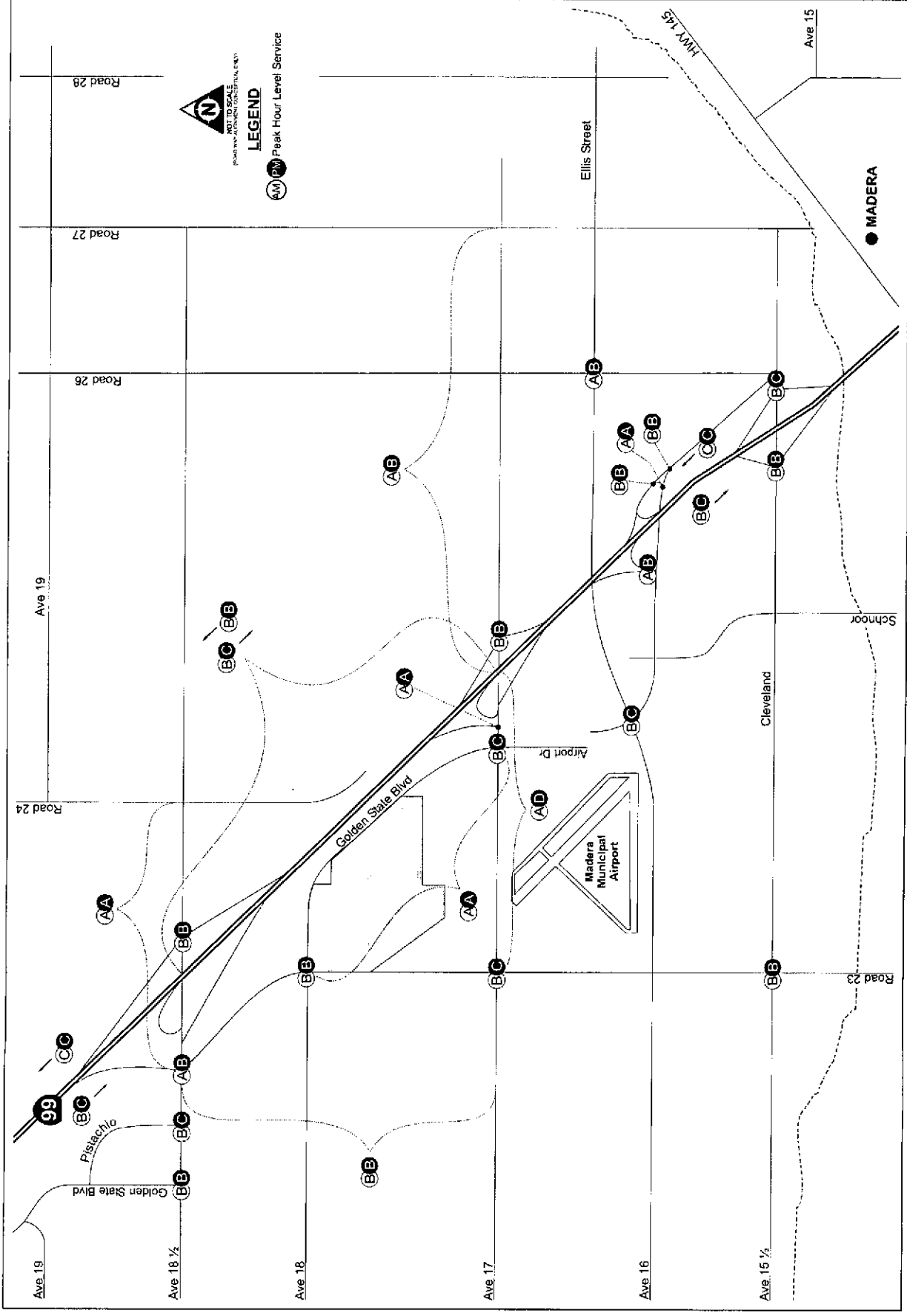
LANE CONFIGURATION AND INTERSECTION CONTROL
 Mitigated 2008 Project
 Madera Site
 (Alternative B)

North Fork Casino
 Madera County

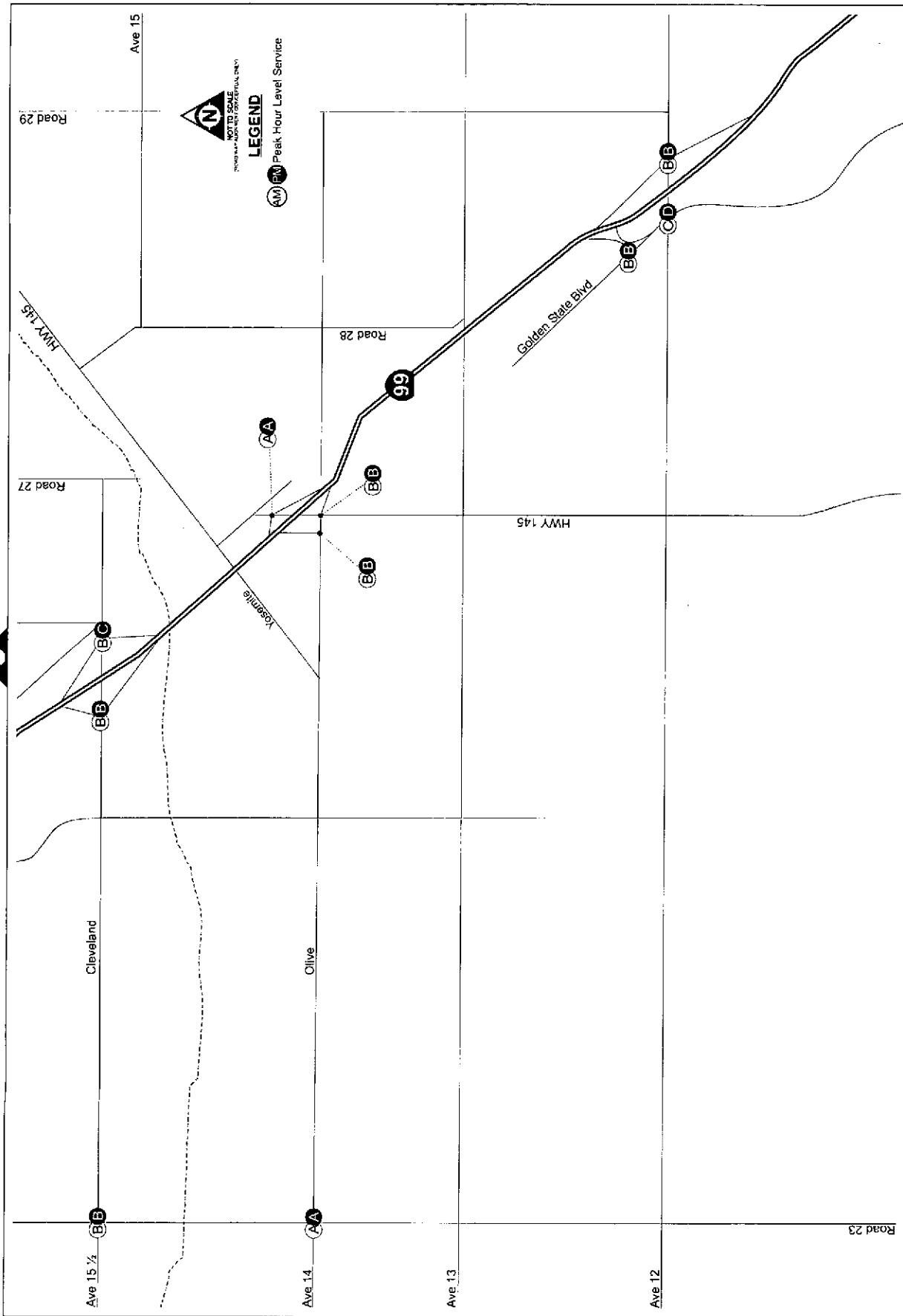
04-837.2

Figure 21





SEE MAP 22

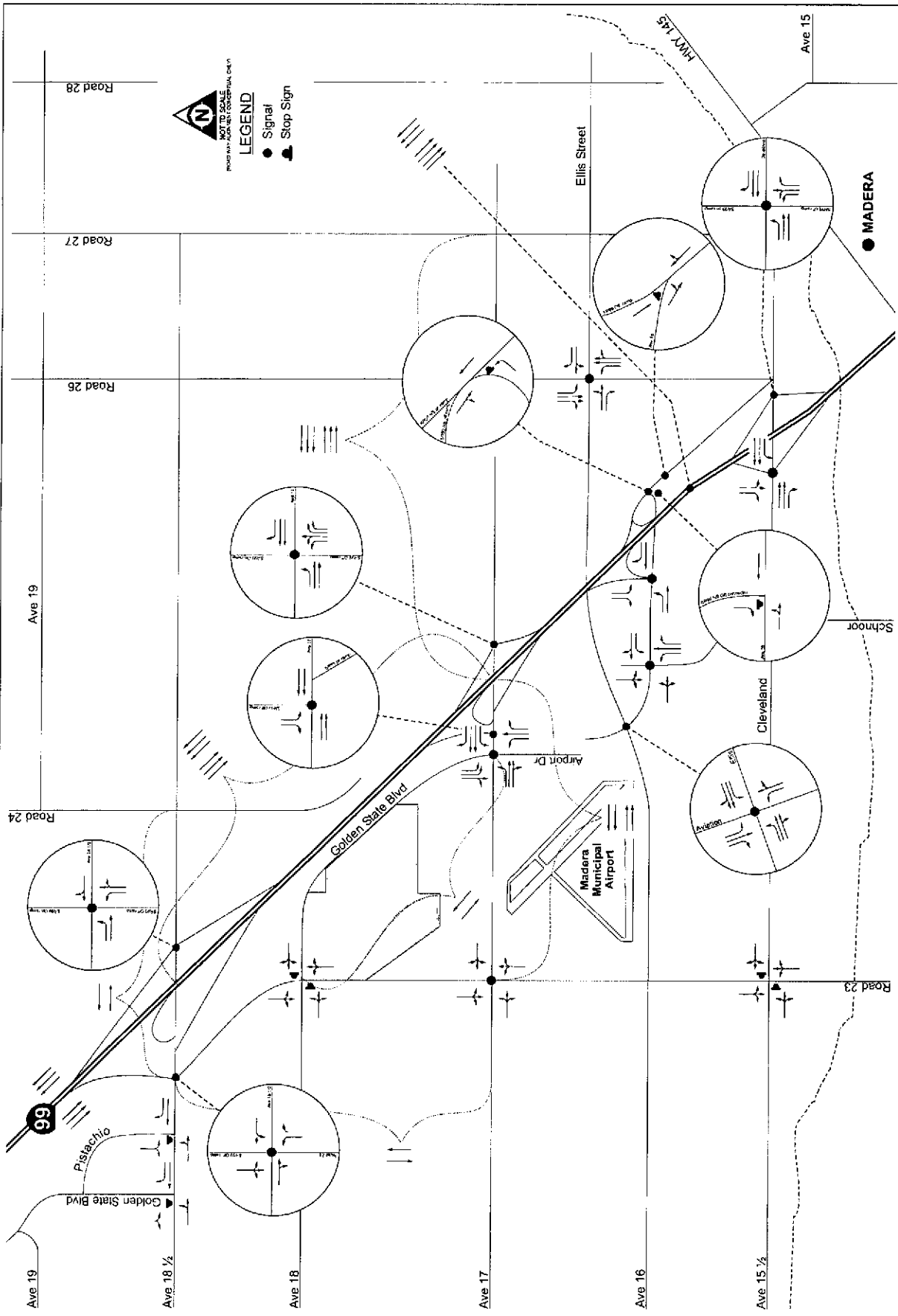


LANE CONFIGURATION AND INTERSECTION CONTROL
 Mitigated 2008 Project
 Madera Site
 (Alternative C)

North Fork Casino
 Madera County

Figure 23

04-037.2

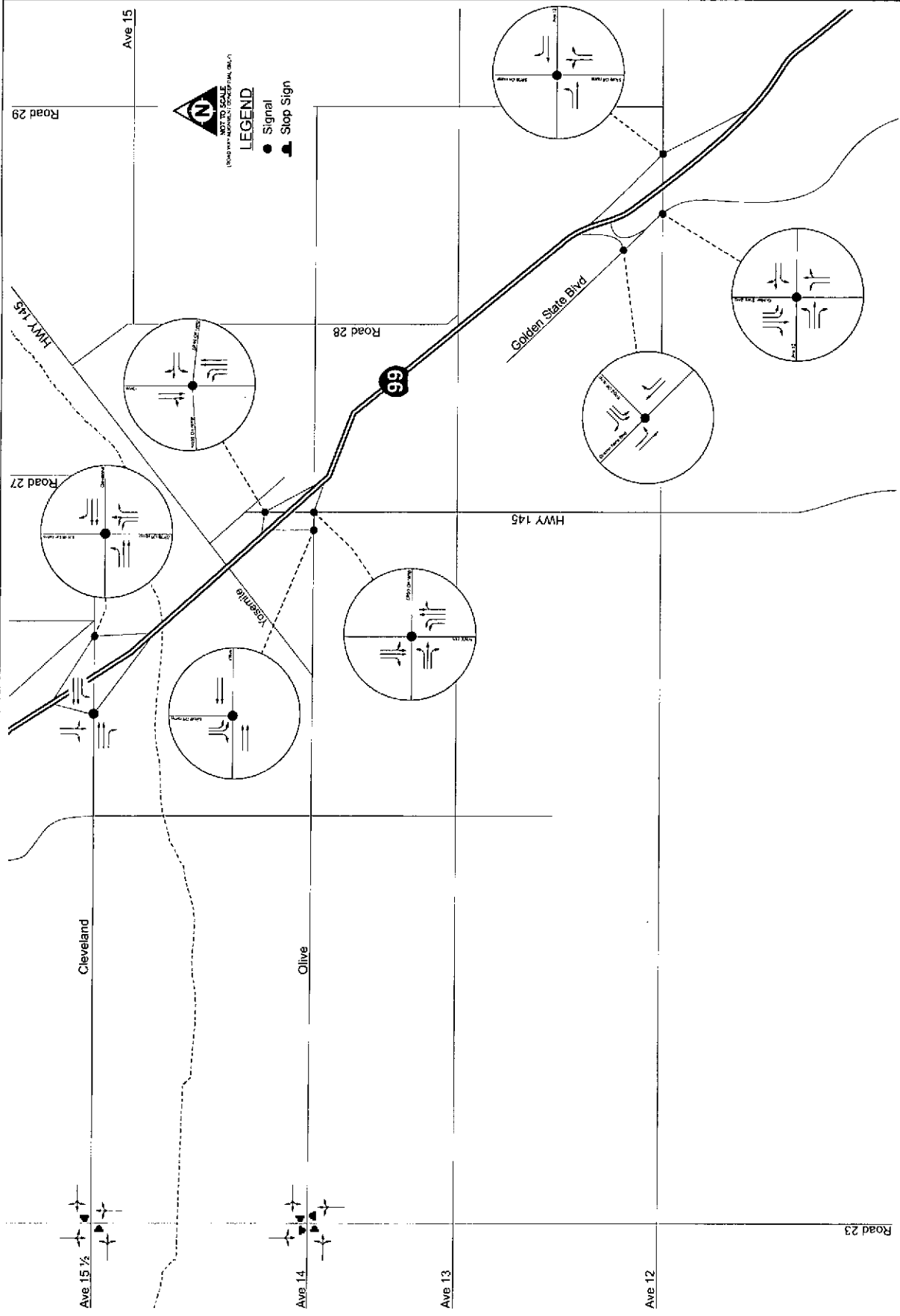


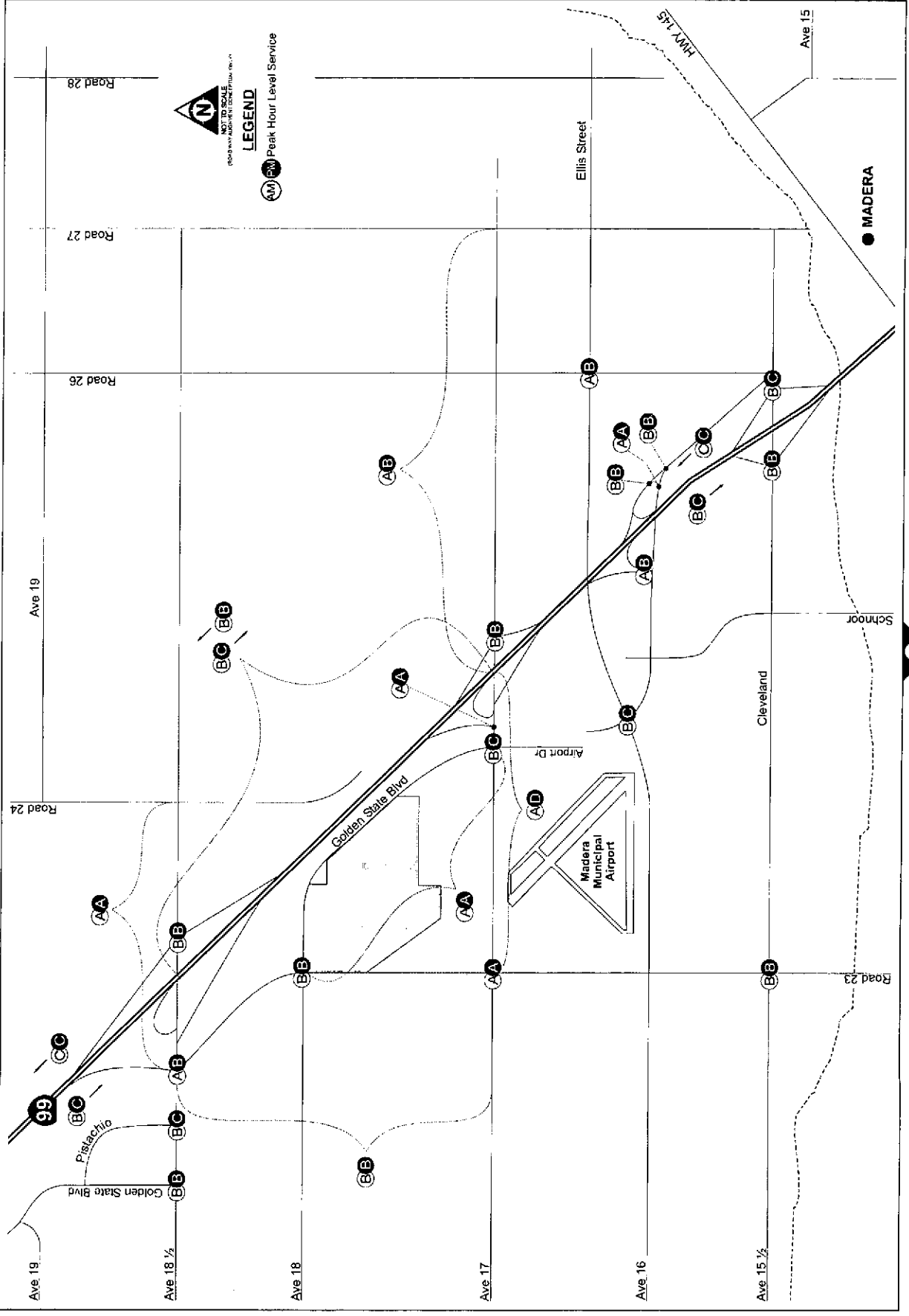
LEGEND

- Signal
- ▲ Stop Sign

NOT TO SCALE
 NORTH
 MADERA MUNICIPAL DEPT.

SEE MAP 23B





SEE MAP 24B

NOT TO SCALE
CHECK WITH AERIAL PHOTOGRAPHY, IF APPROPRIATE

LEGEND

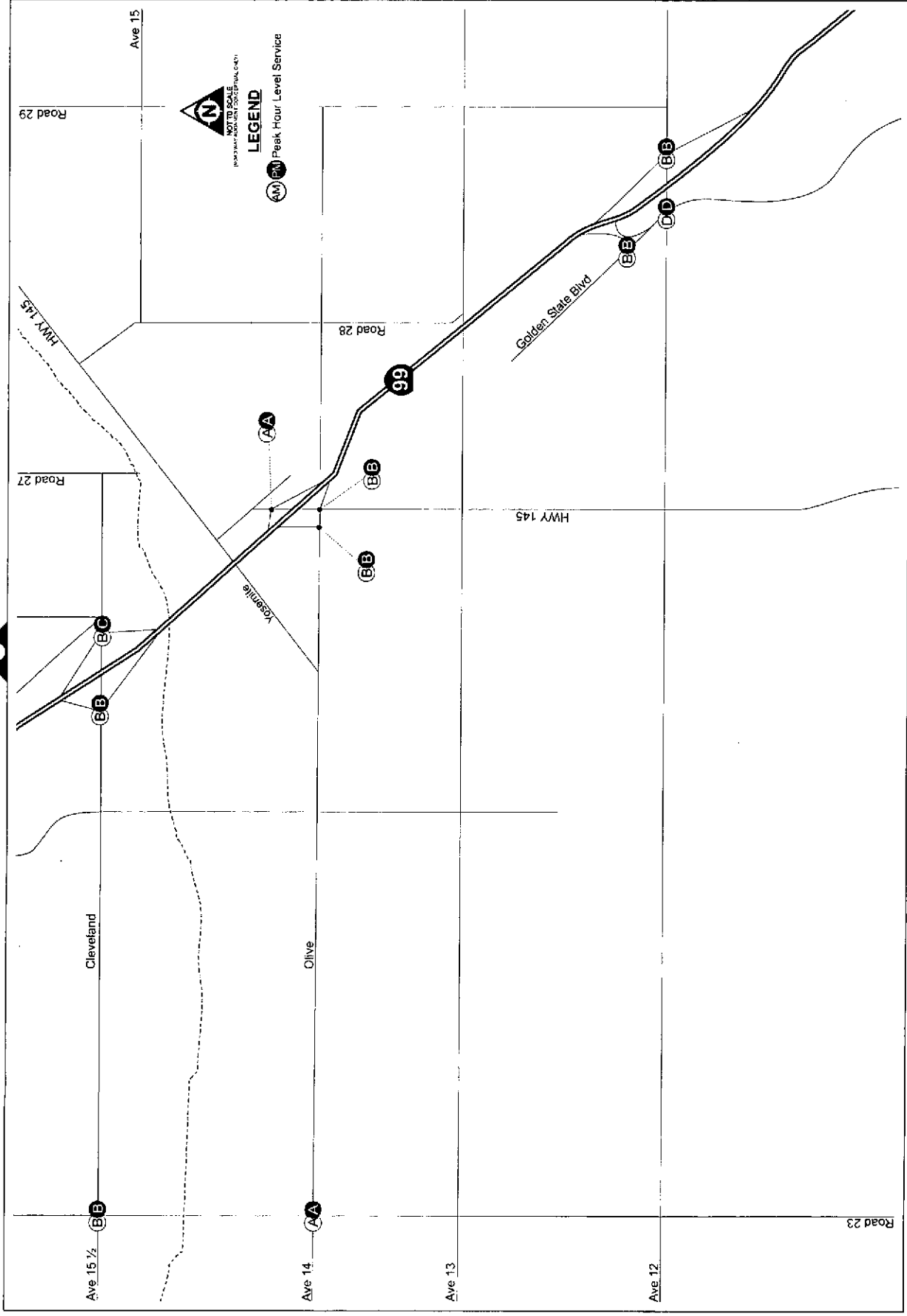
(AA) (AB) (BC) (CC) Peak Hour Level Service

(N) North Arrow



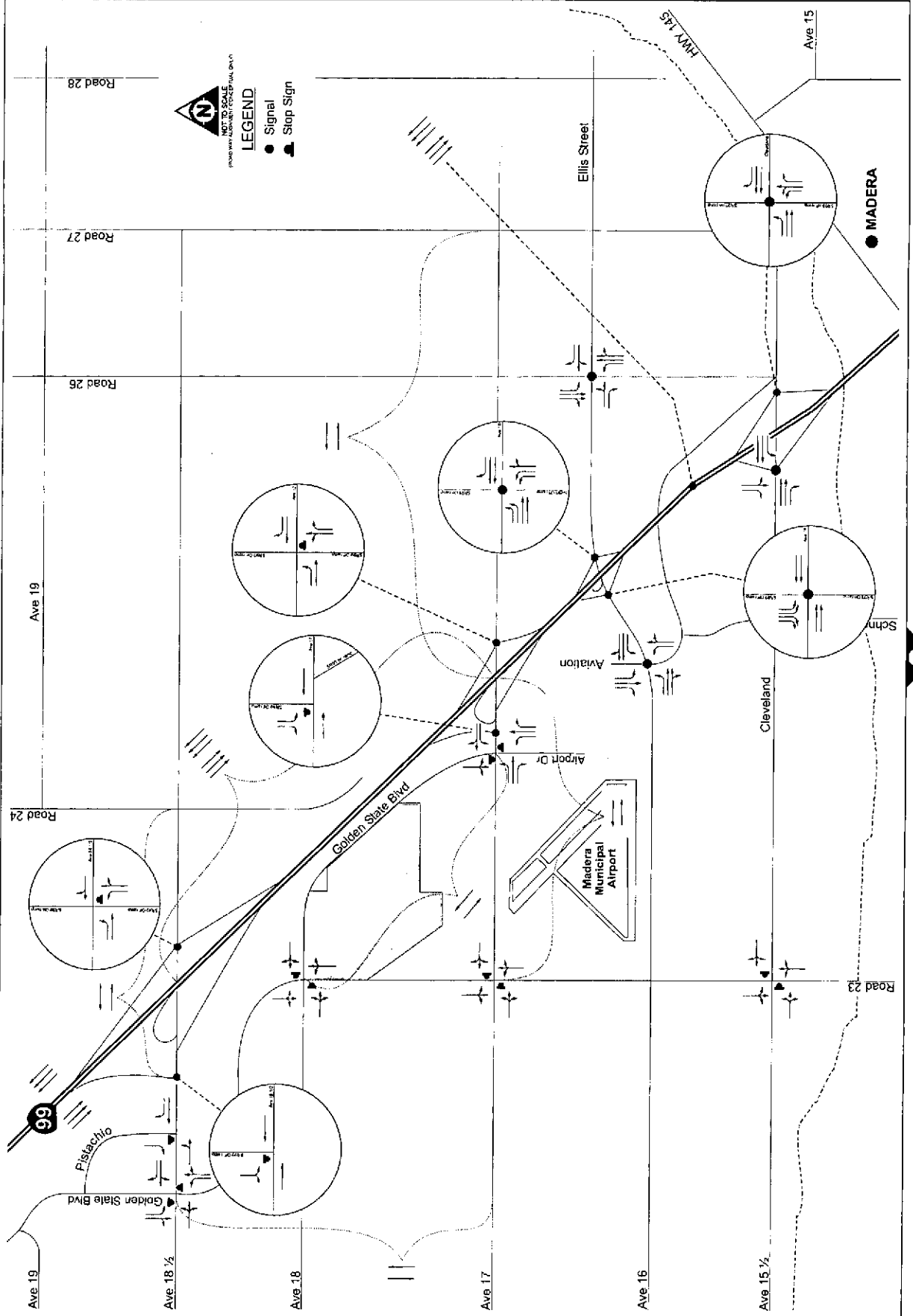
LEVELS OF SERVICE
Mitigated 2010 Project
Madera Site
(Alternative C)

North Fork Casino
Madera County
04-637.2
Figure 24



LANE CONFIGURATION AND INTERSECTION CONTROL
2030 No Project
Madera Site
(Alternative E)

North Fork Casino
Madera County
04-937.2



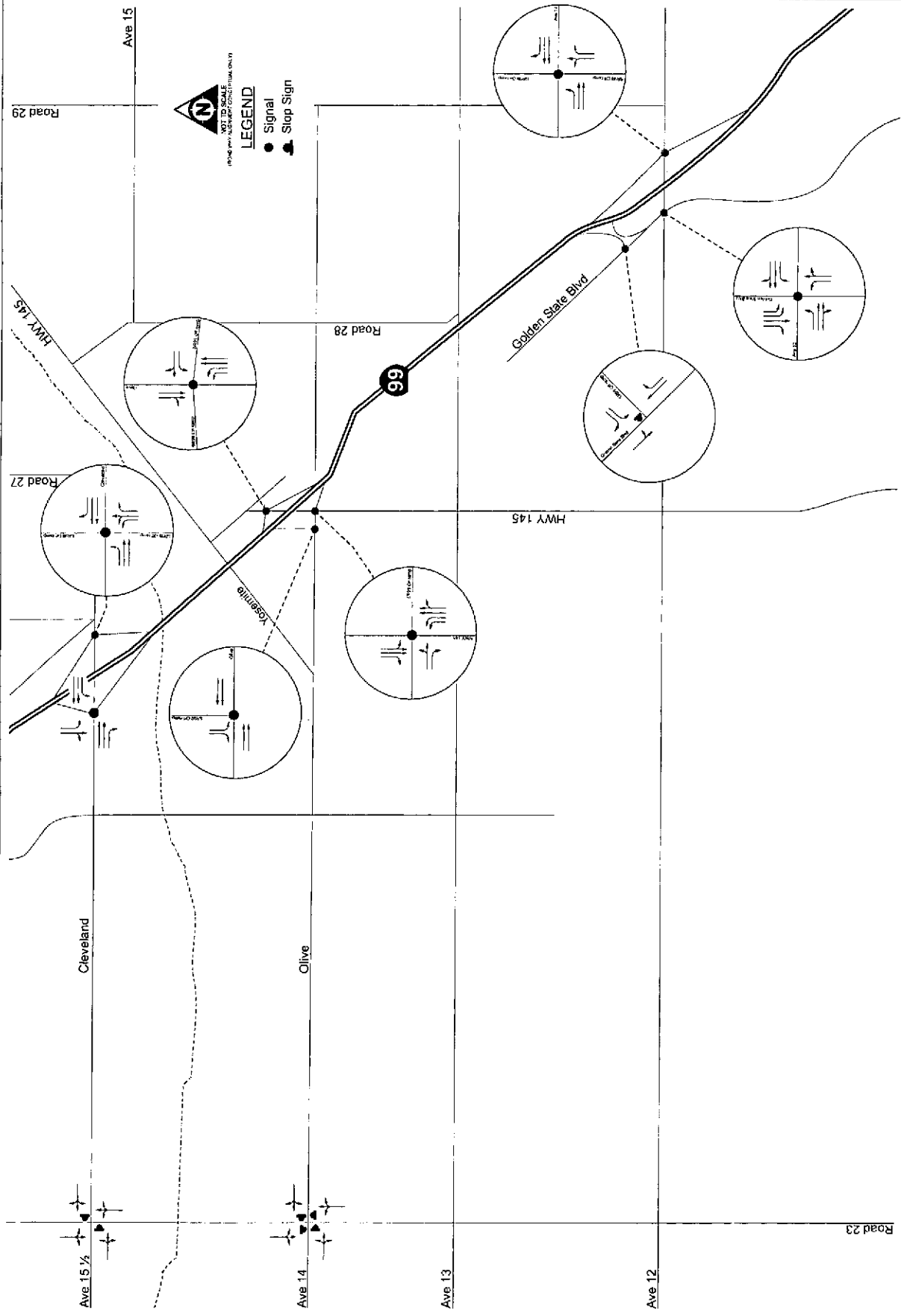
SEE MAP

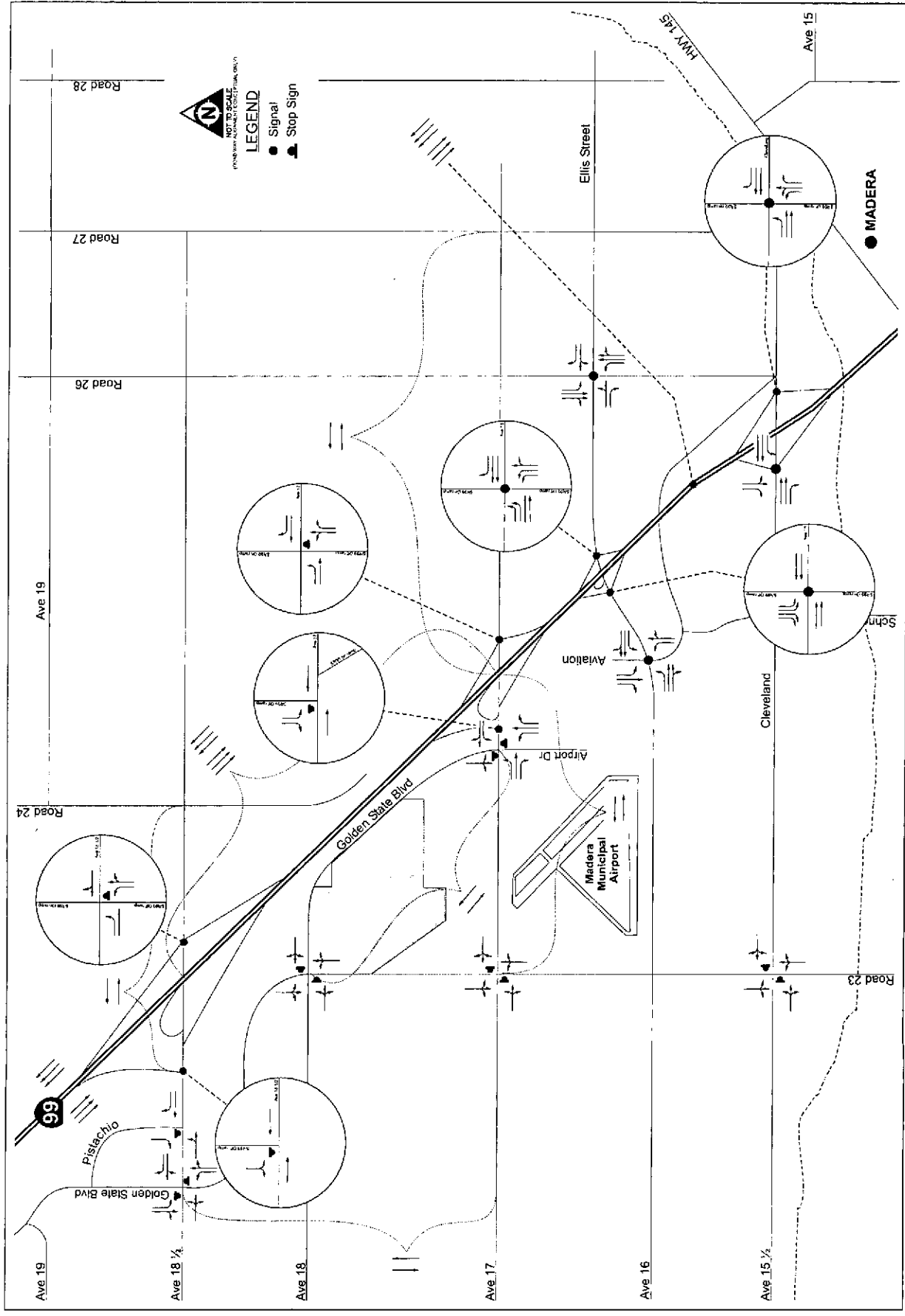
LANE CONFIGURATION AND INTERSECTION CONTROL
 2030 No Project
 Madera Site
 (Alternative E)

North Fork Casino
 Madera County

CA-R37.2

Figure 25



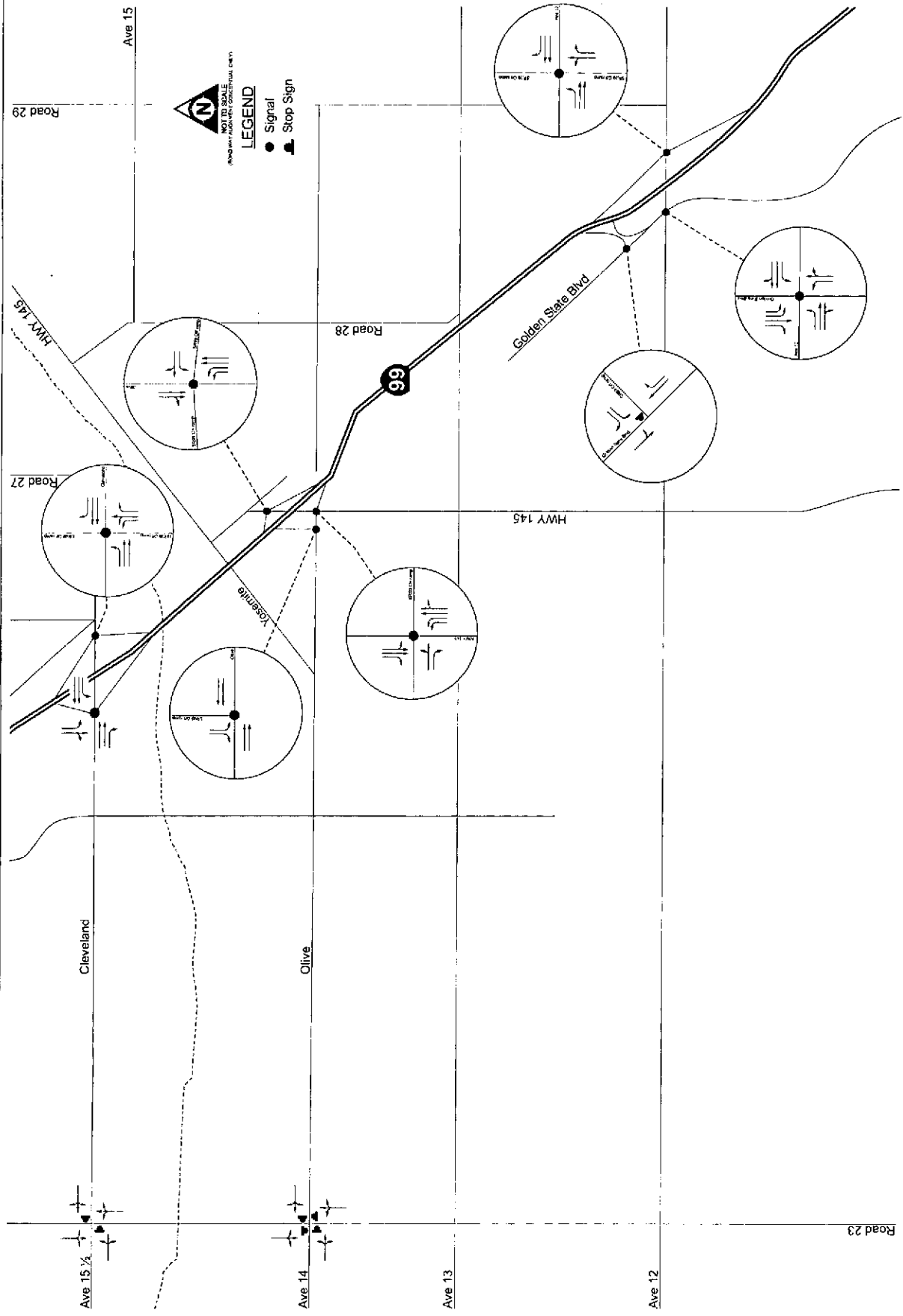


LANE CONFIGURATION AND INTERSECTION CONTROL
 2030 No Project
 Madera Site
 (Alternative E)

North Fork Casino
 Madera County

04-557.2

Figure 25

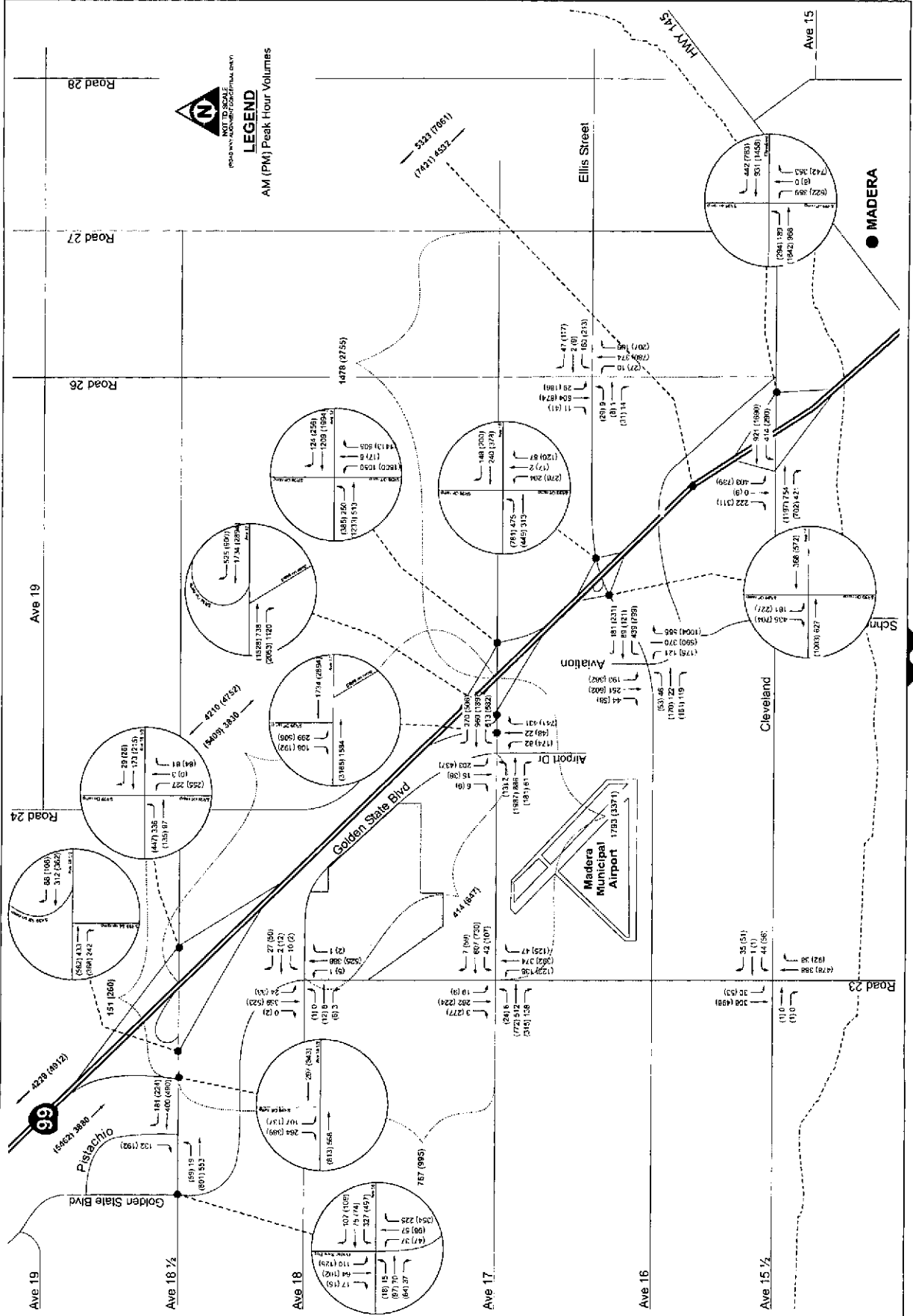


PEAK HOUR TRAFFIC VOLUMES

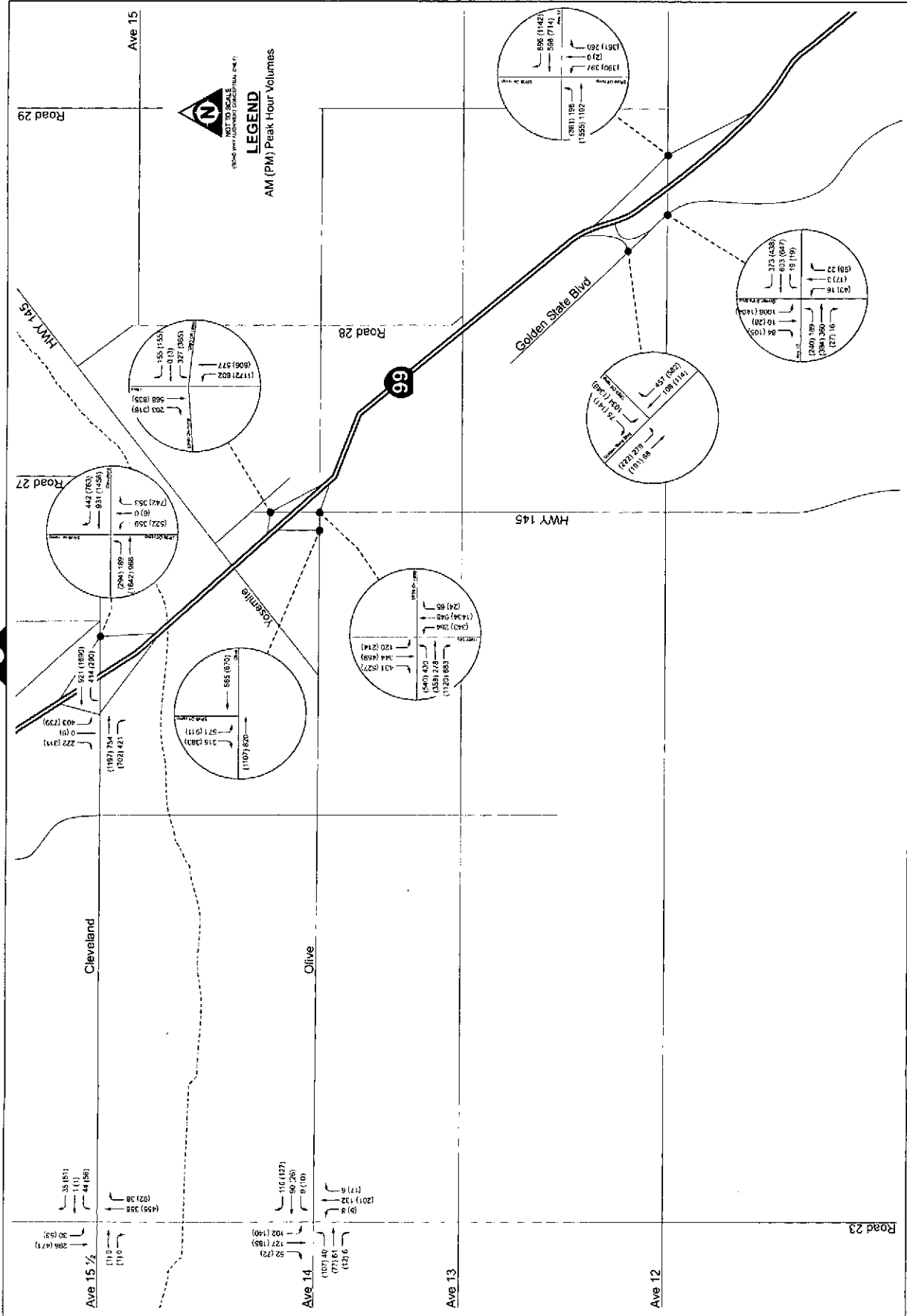
2030 No Project
Madera Site
(Alternative E)

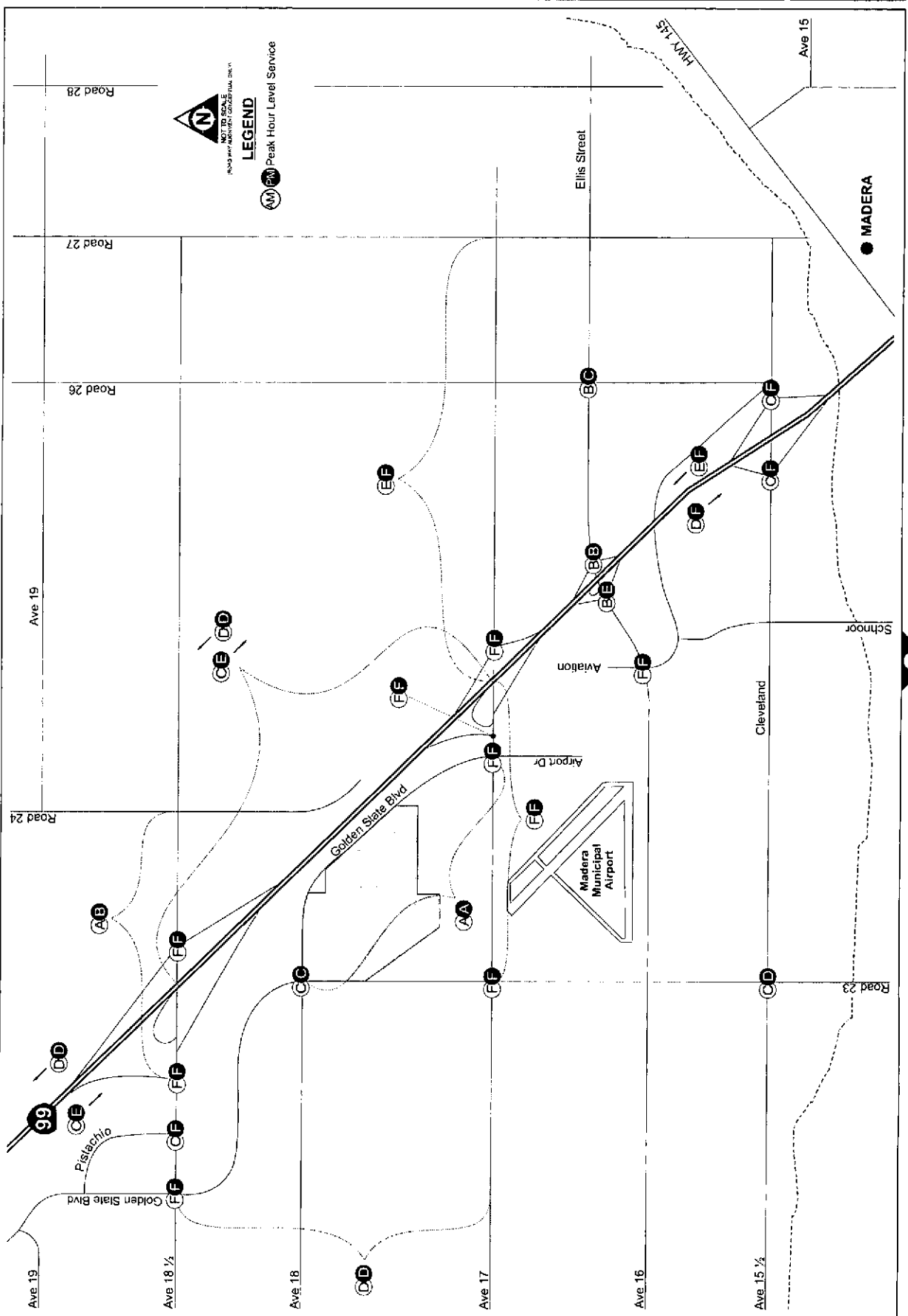
North Fork Casino
Madera County

04.637.2
Figure 26



SEE MAP
63





SEE MAP 27B



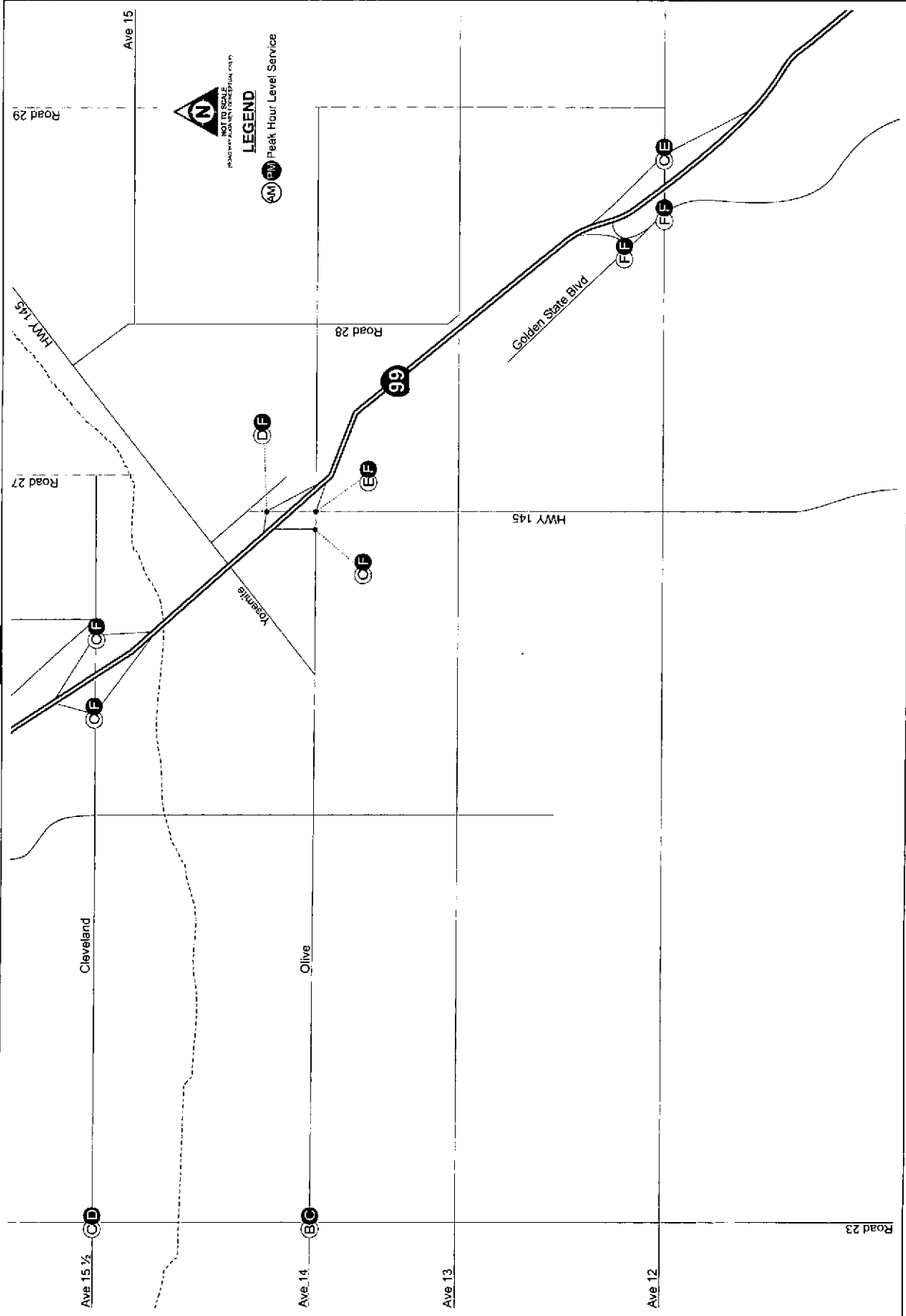
LEVELS OF SERVICE
2030 No Project
Madera Site
(Alternative E)

North Fork Casino
Madera County

Figure 27

04-037.2

SEE MAP 27A



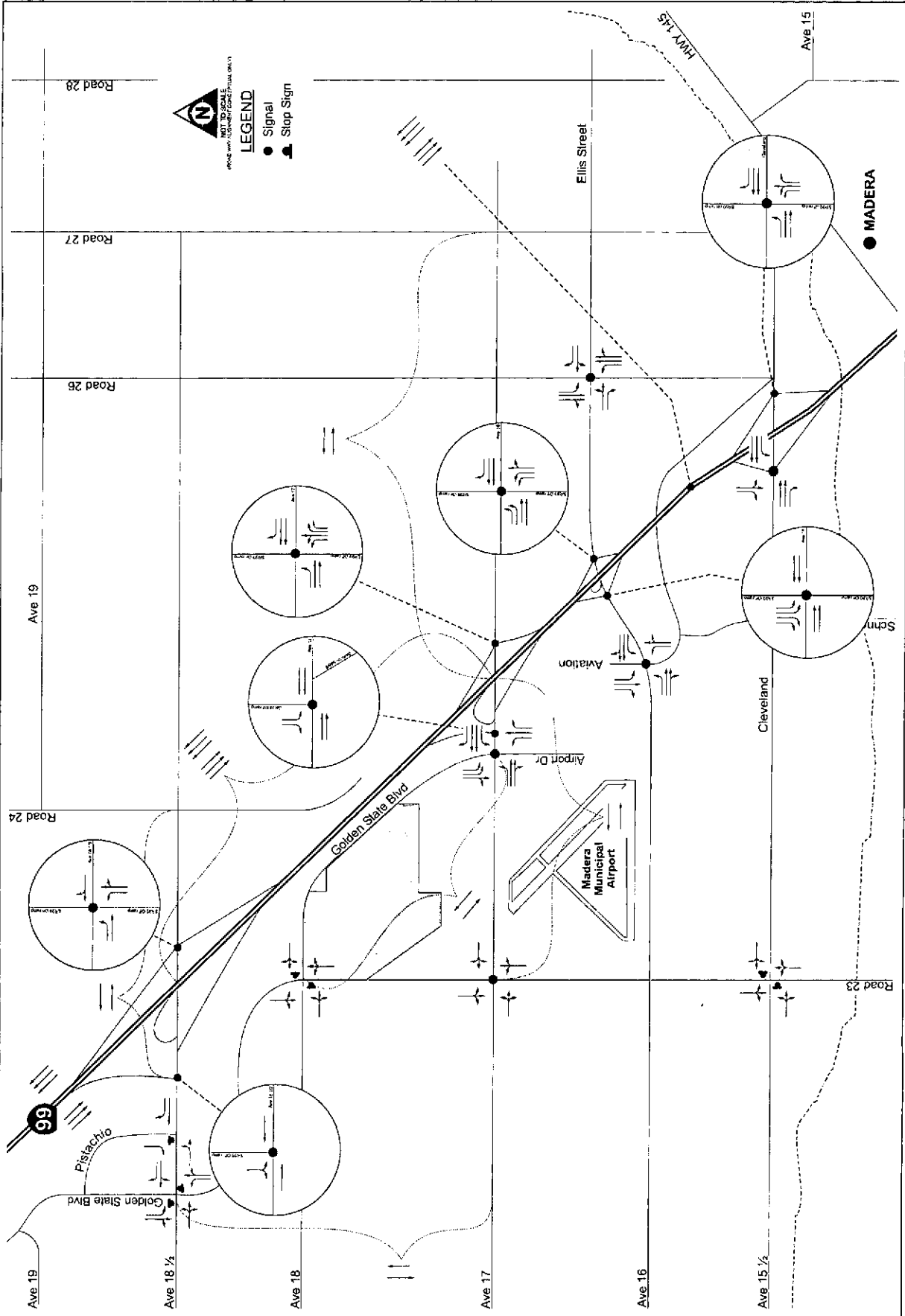


LANE CONFIGURATION AND INTERSECTION CONTROL
2030 Project
Madera Site
(Alternative A)

North Fork Casino
Madera County

04-837.2

Figure 28



NOT TO SCALE
PLEASE REFER TO SUPPLEMENTAL DRAWINGS

LEGEND

- Signal
- ▲ Stop Sign

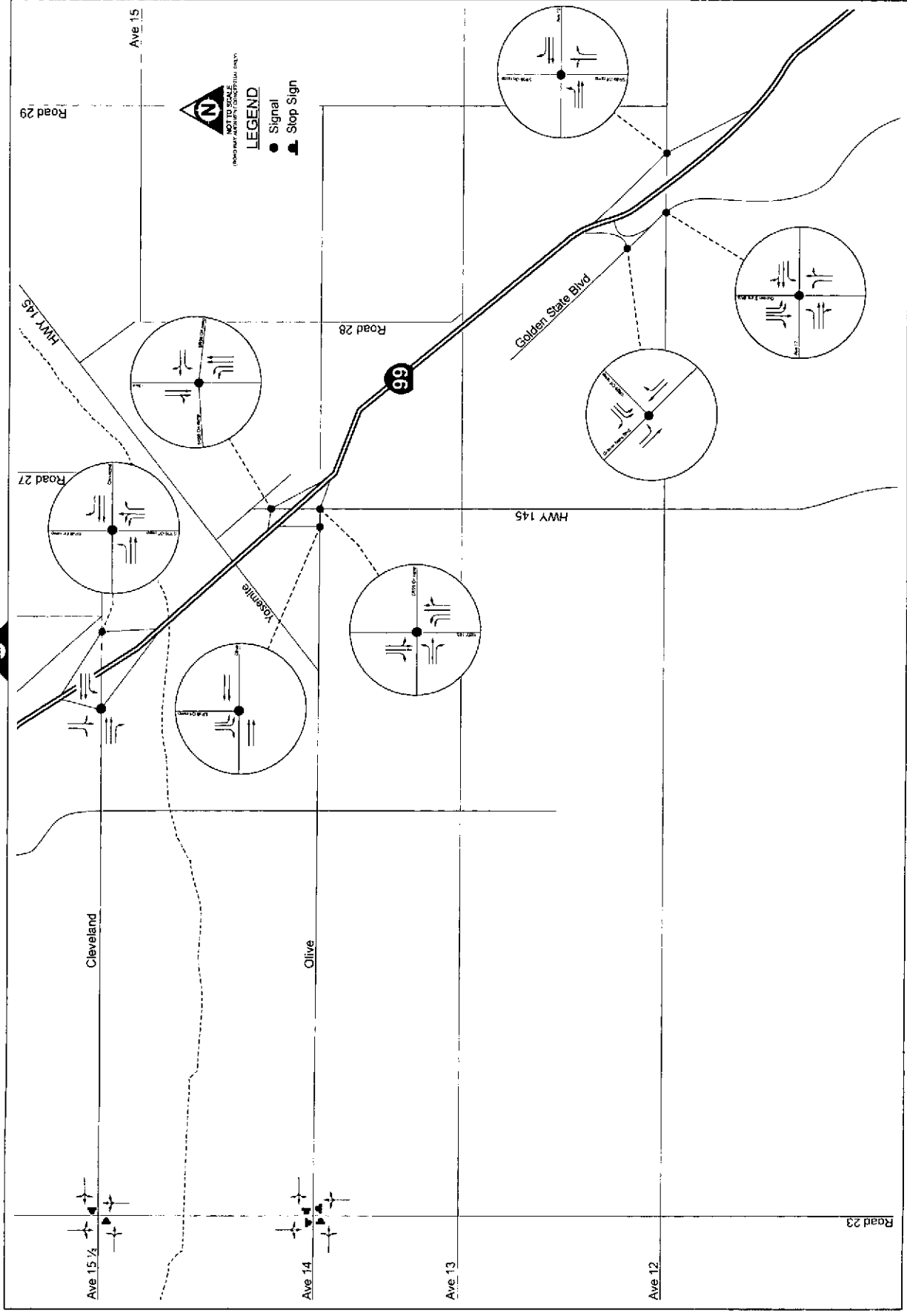
SEE MAP 28B



LANE CONFIGURATION AND INTERSECTION CONTROL
2030 Project
Madera Site
(Alternative A)

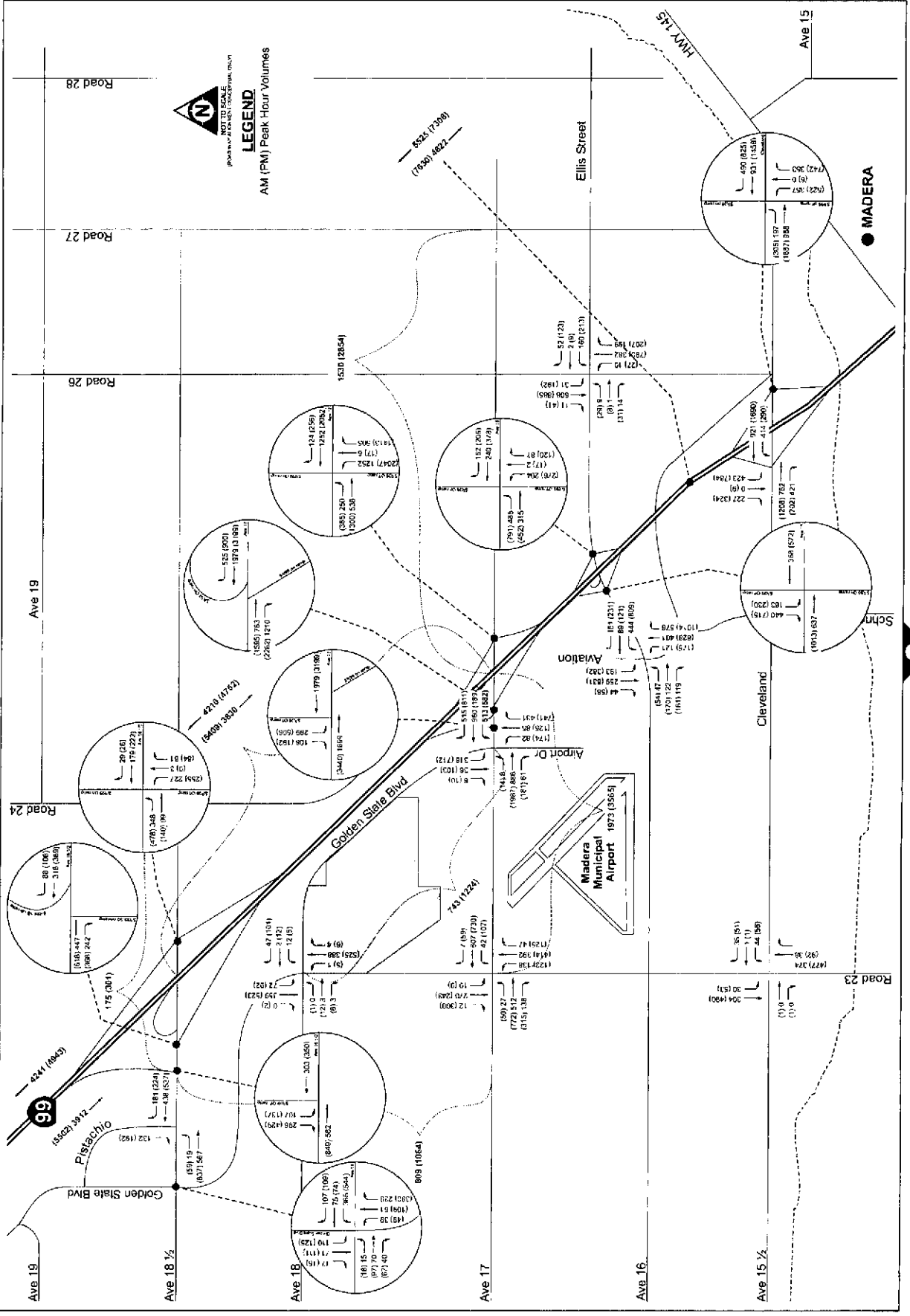
North Fork Casino
Madera County

CA-497.2
Figure 28



PEAK HOUR TRAFFIC VOLUMES
 2030 Project
 Madera Site
 (Alternative A)

North Fork Casino
 Madera County
 Figure 29

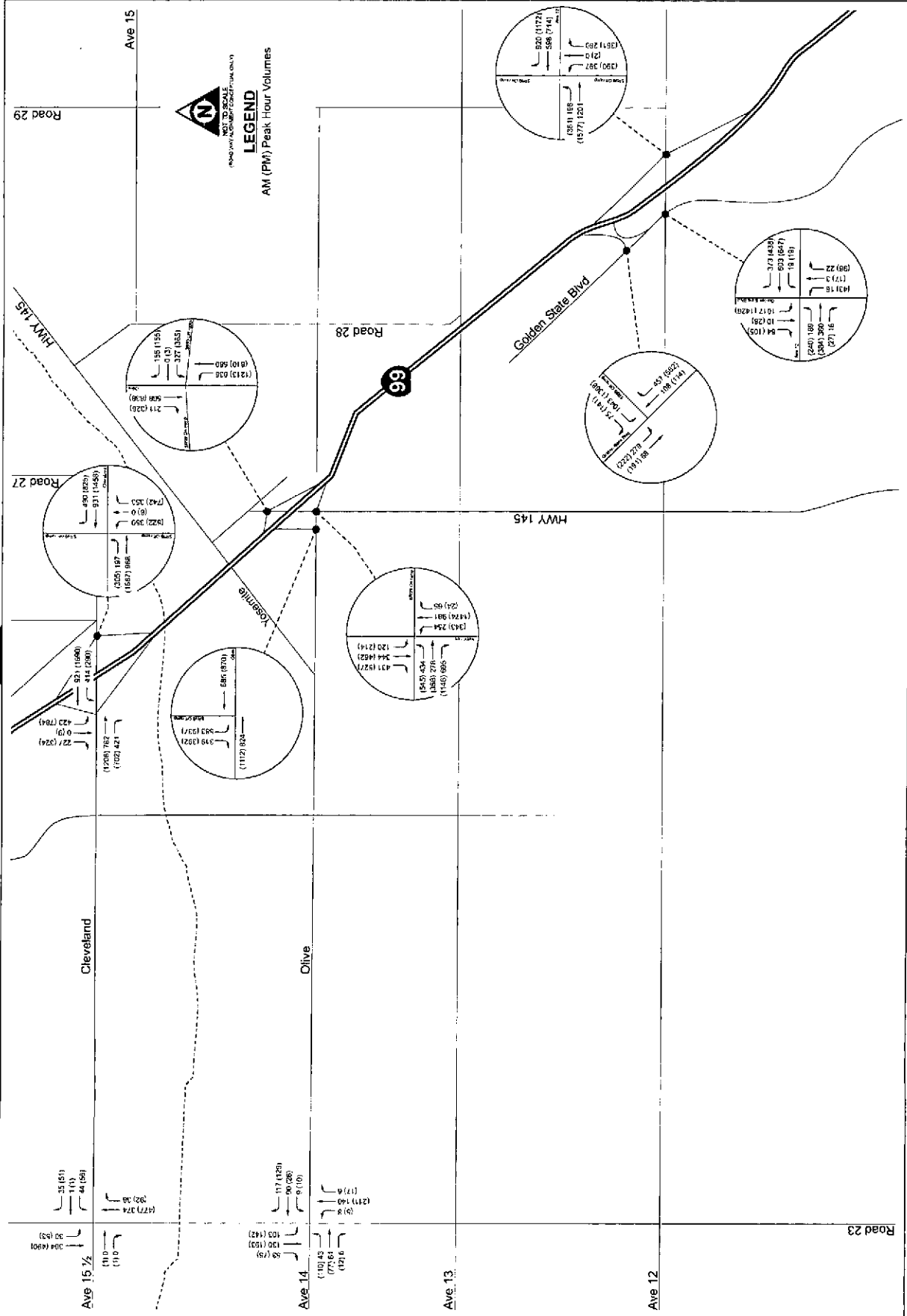


SEE MAP 29B



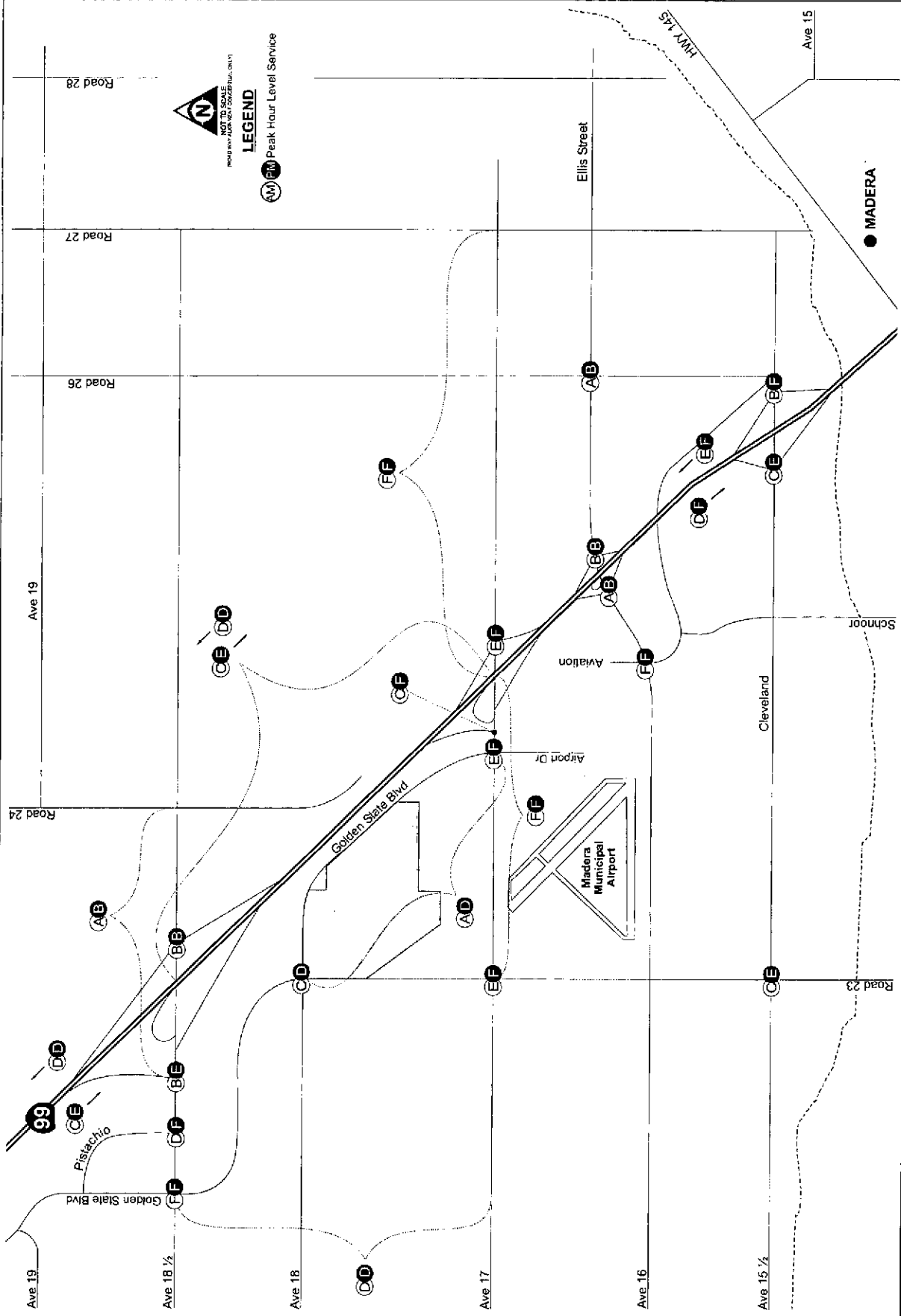
PEAK HOUR TRAFFIC VOLUMES
 2030 Project
 Madera Site
 (Alternative A)

North Fork Casino
 Madera County
 Figure 29



SEE MAP 29

04-837.2



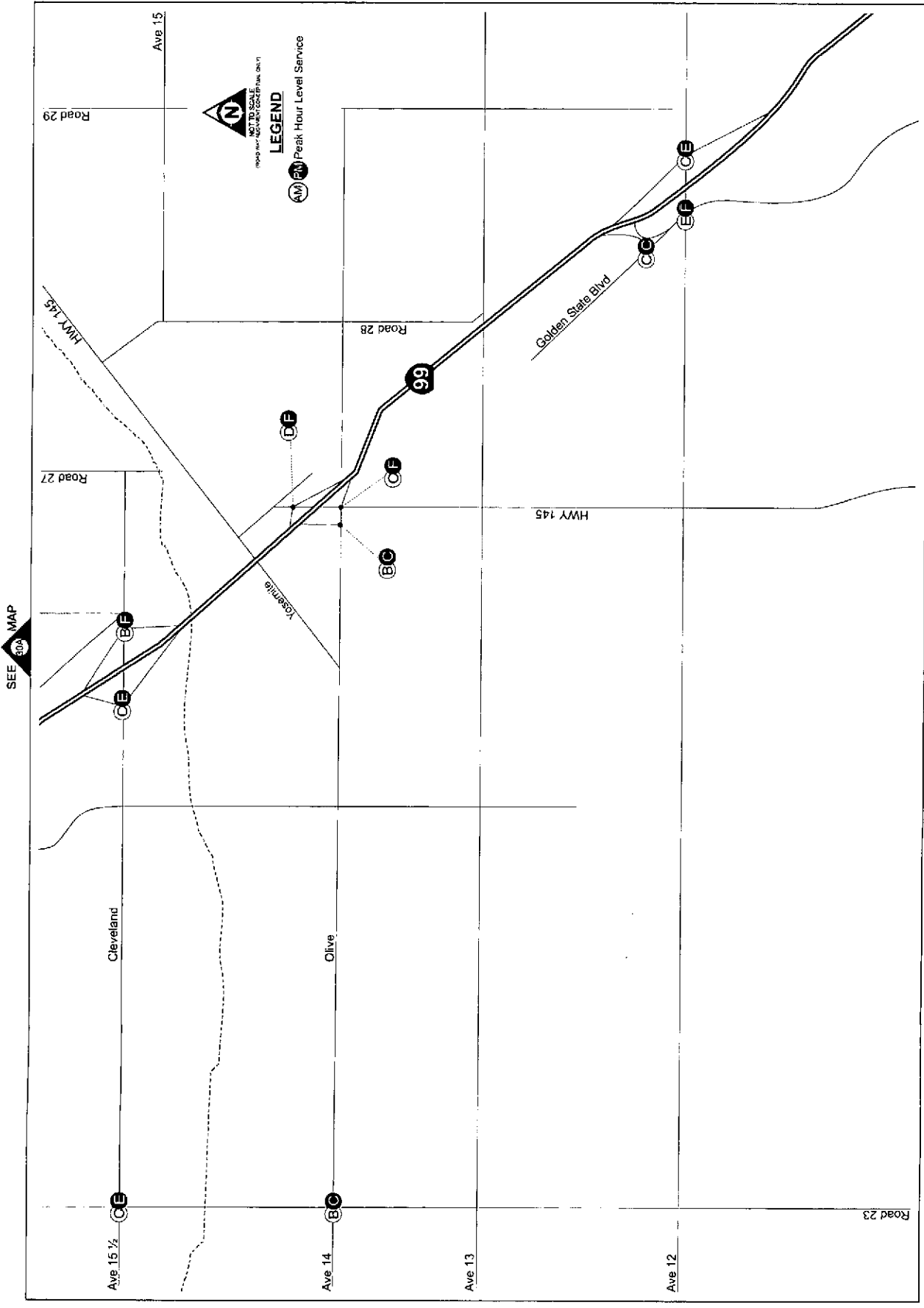
SEE MAP 30B



LEIS OF SER ICE
 2030 Project
 Madera Site
 (Alternative A)

North Fork Casino
 Madera County

DC-837.2
 Figure 30



Alternative B (Reduced Intensity Alternative)

Figures 31, 32, and 33 show the 2030 Project Alternative B lane configurations and intersection control, Alternative B AM and PM peak hour traffic volumes (segment, freeway, and intersection), and resulting 2030 Project Alternative B levels of service for the Madera Site. The TWSC levels of service shown on Figure 33 are the levels of service for the worst operating movement at that intersection. The signalized and AWSC intersection levels of service shown on Figure 33 are representative of the whole intersection. Individual intersection movements or approaches may operate above or below the signalized or AWSC level of service or delay shown on Figure 33. The signalized intersection levels of service or delay shown in Figure 33 may not reflect the effects of 95th percentile queues that exceed the capacity for their movement.

Alternative C (Alternative Land Use Alternative)

Figures 34, 35, and 36 show the 2030 Project Alternative C lane configurations and intersection control, Alternative C AM and PM peak hour traffic volumes (segment, freeway, and intersection), and resulting 2030 Project Alternative C levels of service for the Madera Site. The TWSC levels of service shown on Figure 36 are the levels of service for the worst operating movement at that intersection. The signalized and AWSC intersection levels of service shown on Figure 36 are representative of the whole intersection. Individual intersection movements or approaches may operate above or below the signalized or AWSC level of service or delay shown on Figure 36. The signalized intersection levels of service or delay shown in Figure 36 may not reflect the effects of 95th percentile queues that exceed the capacity for their movement.

Mitigated 2030 Project Conditions

Alternative A (Proposed Project Alternative)

Figures 37 and 38 show the Mitigated 2030 Project Alternative A lane configurations and intersection control, and resulting Mitigated 2030 Project Alternative A levels of service for the Madera Site. The TWSC levels of service shown on Figure 38 are the levels of service for the worst operating movement at that intersection. The signalized intersection levels of service shown on Figure 38 are representative of the whole intersection. Individual intersection movements or approaches may operate above or below the signalized level of service or delay shown on Figure 38. The signalized intersection levels of service or delay shown in Figure 38 may not reflect the effects of 95th percentile queues that exceed the capacity for their movement.

Alternative B (Reduced Intensity Alternative)

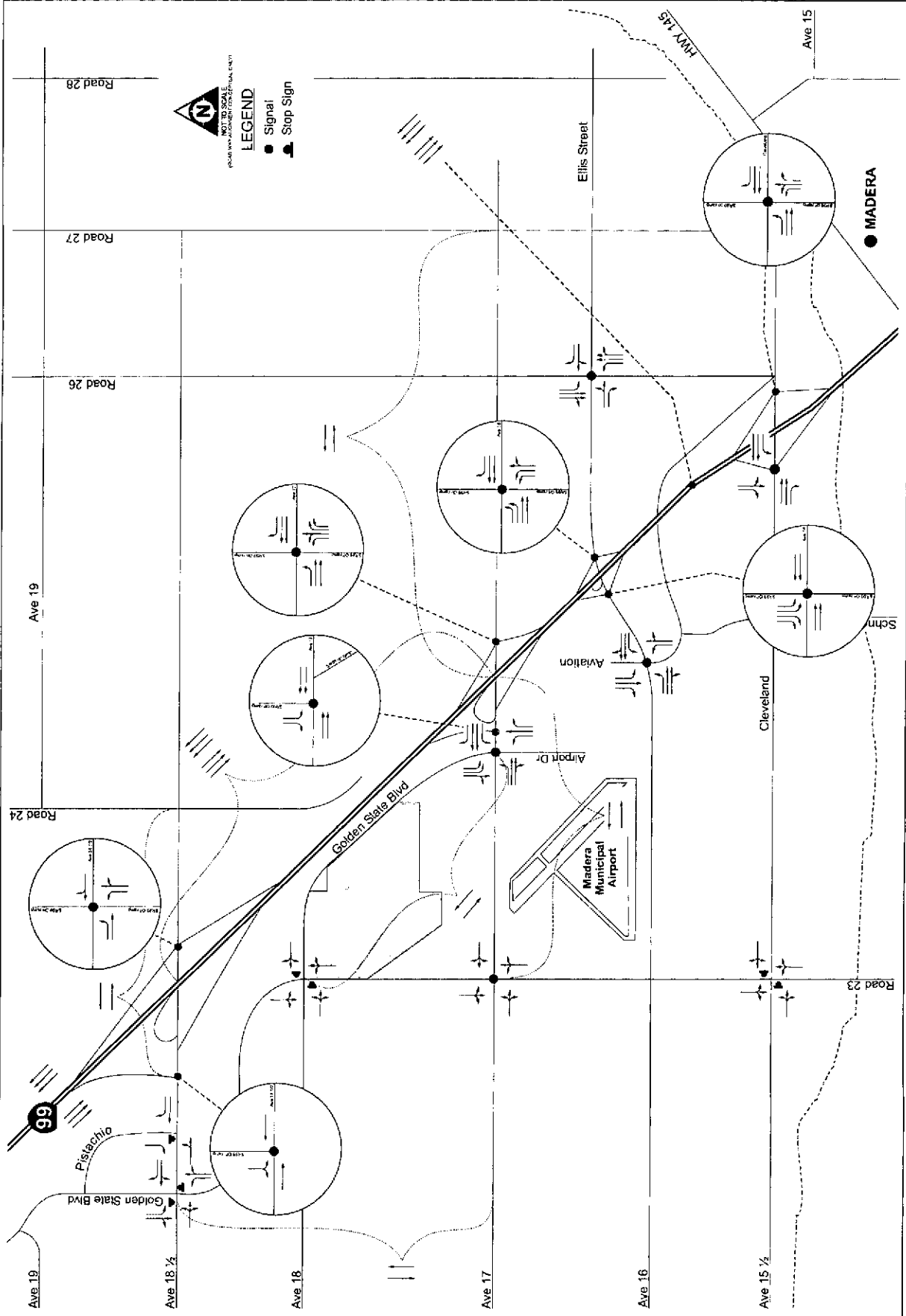
Figures 39 and 40 show the Mitigated 2030 Project Alternative B lane configurations and intersection control, and resulting Mitigated 2030 Project Alternative B levels of service for the Madera Site. The TWSC levels of service shown on Figure 40 are the levels of service for the worst operating movement at that intersection. The signalized intersection levels of service shown on Figure 40 are representative of the whole intersection. Individual intersection movements or approaches may operate above or below the signalized level of service or delay shown on Figure 40. The signalized intersection levels of service or delay shown in Figure 40 may not reflect the effects of 95th percentile queues that exceed the capacity for their movement.

LANE CONFIGURATION AND INTERSECTION CONTROL
 2030 Project
 Madera Site
 (Alternative B)

North Fork Casino
 Madera County

04-537.2

Figure 31



SEE MAP 31B

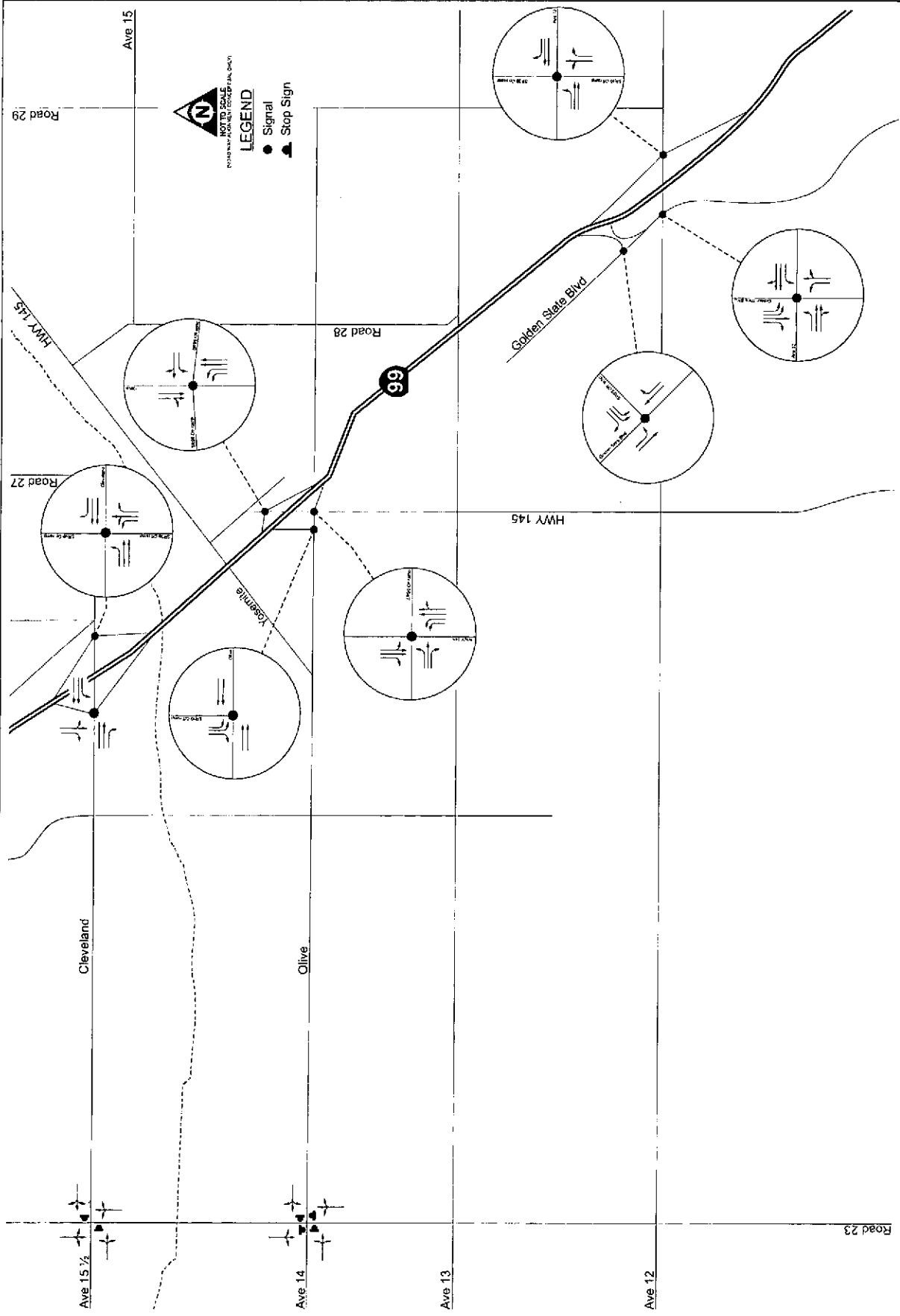
LANE CONFIGURATION AND INTERSECTION CONTROL
 2030 Project
 Madera Site
 (Alternative B)

North Fork Casino
 Madera County

Figure 31

CA-937.2

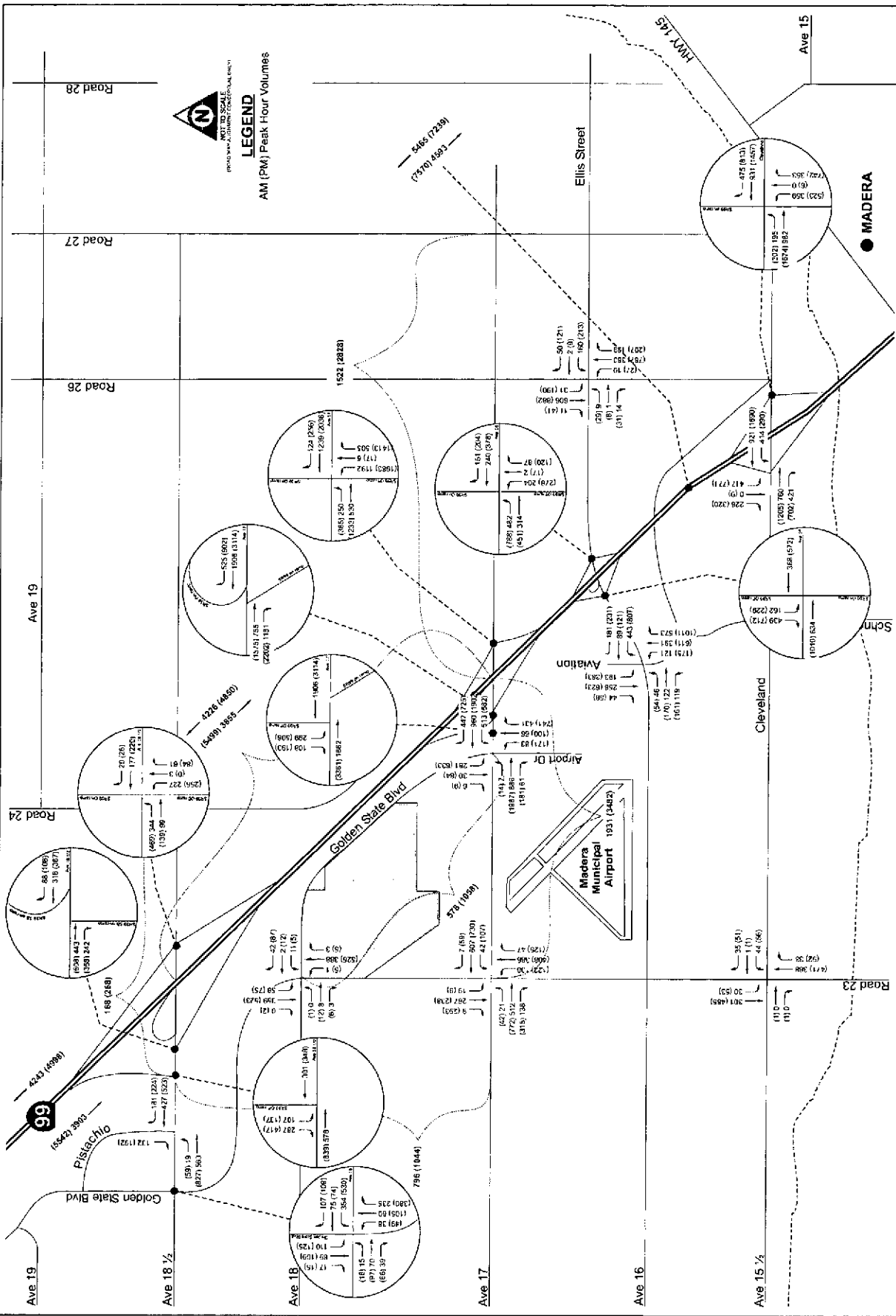
SEE MAP 31A



NOT TO SCALE
 FOR INFORMATIONAL ONLY

LEGEND

- Signal
- ▲ Stop Sign



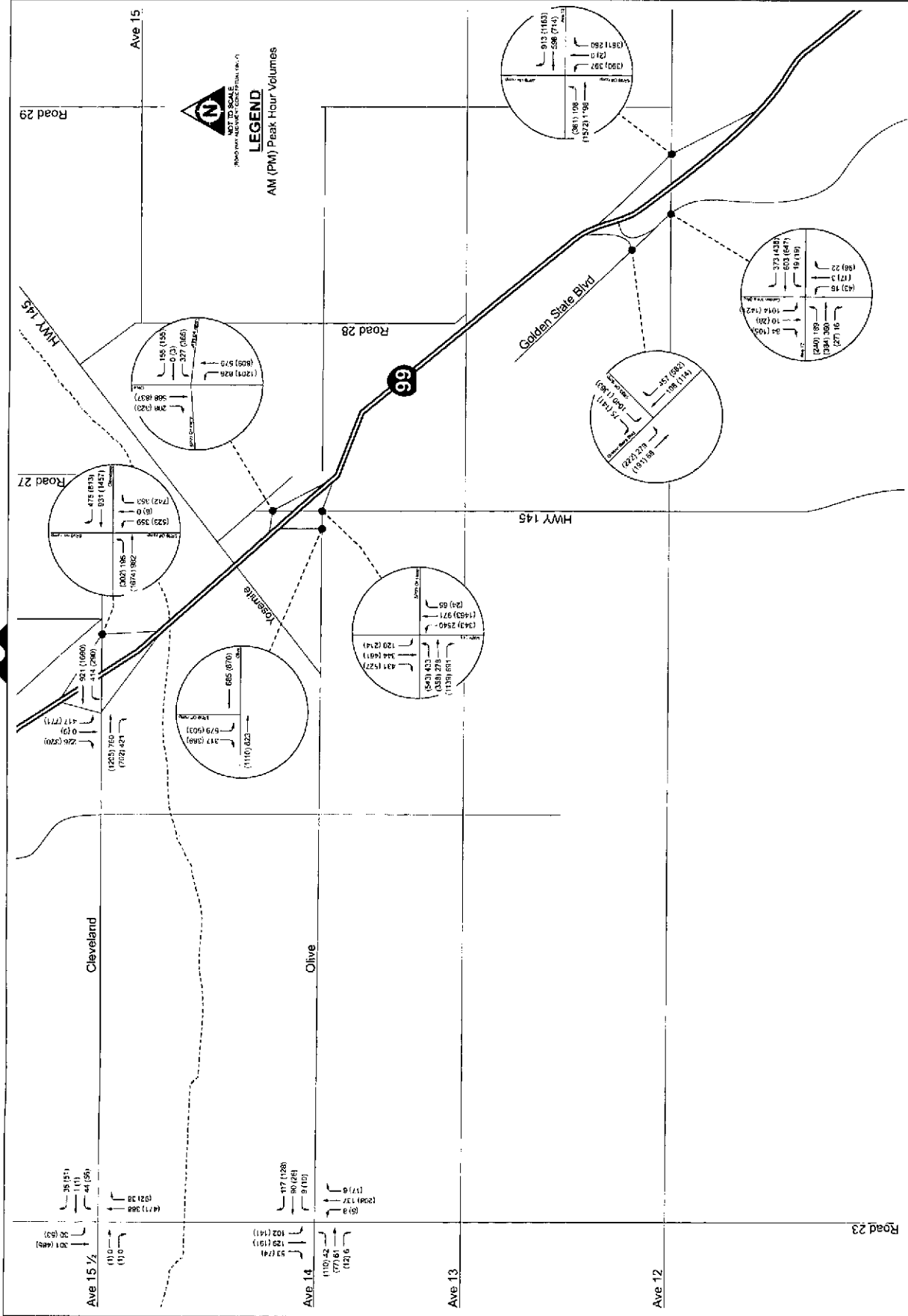
SEE MAP 52B

PEAK HOUR TRAFFIC VOLUMES
2030 Project
Madera Site
(Alternative B)

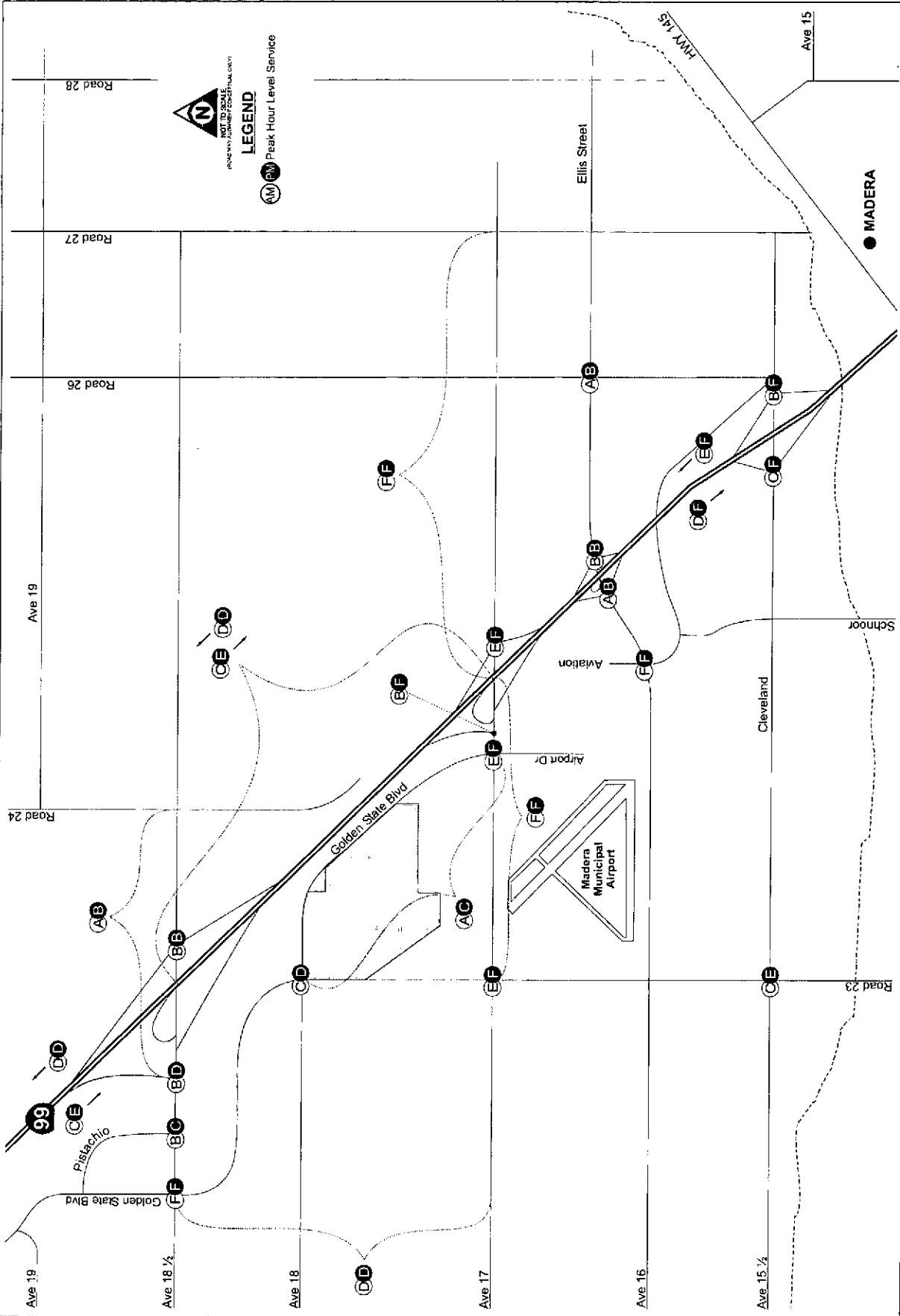
North Fork Casino
Madera County

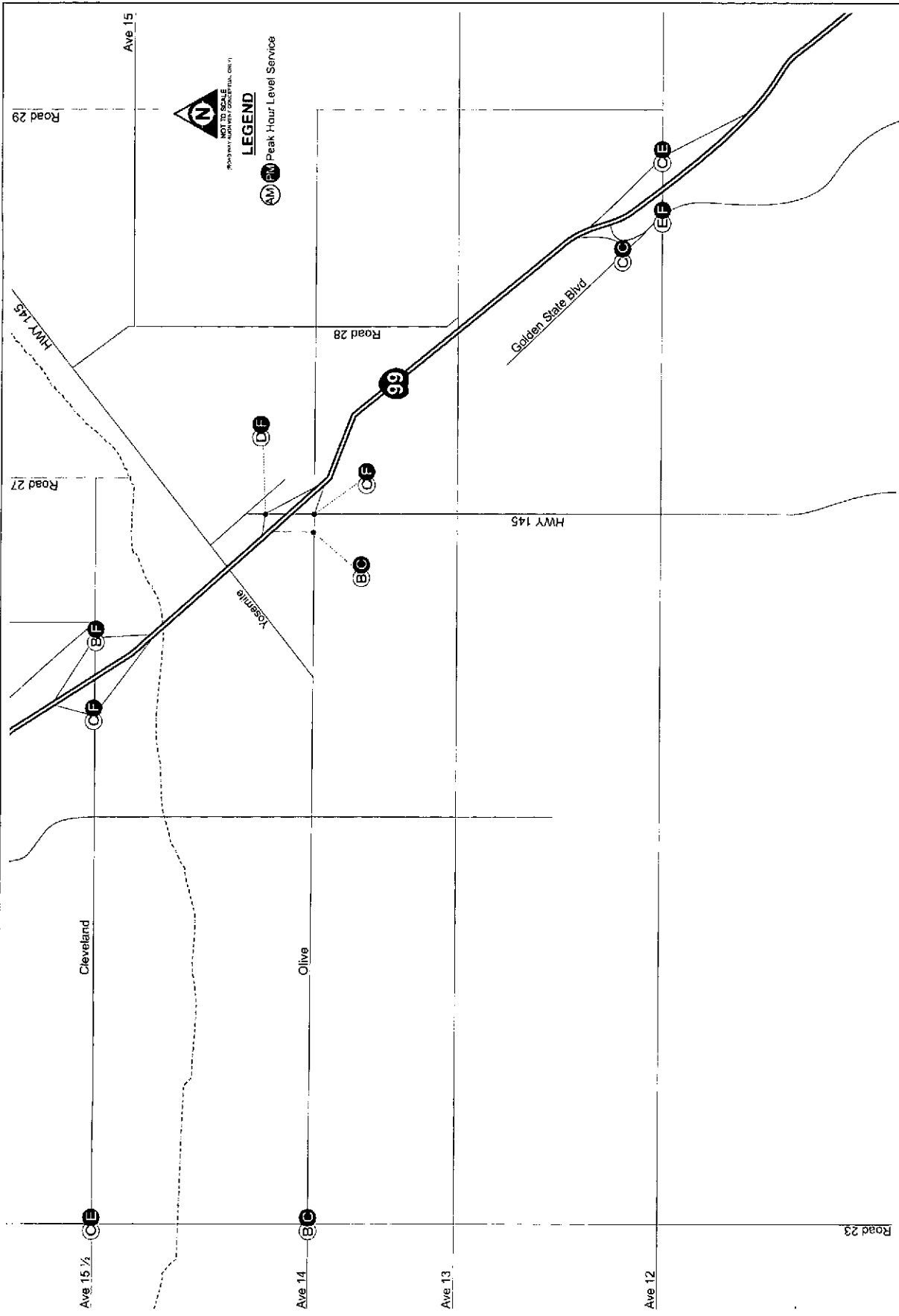
Figure 32

04-837.2

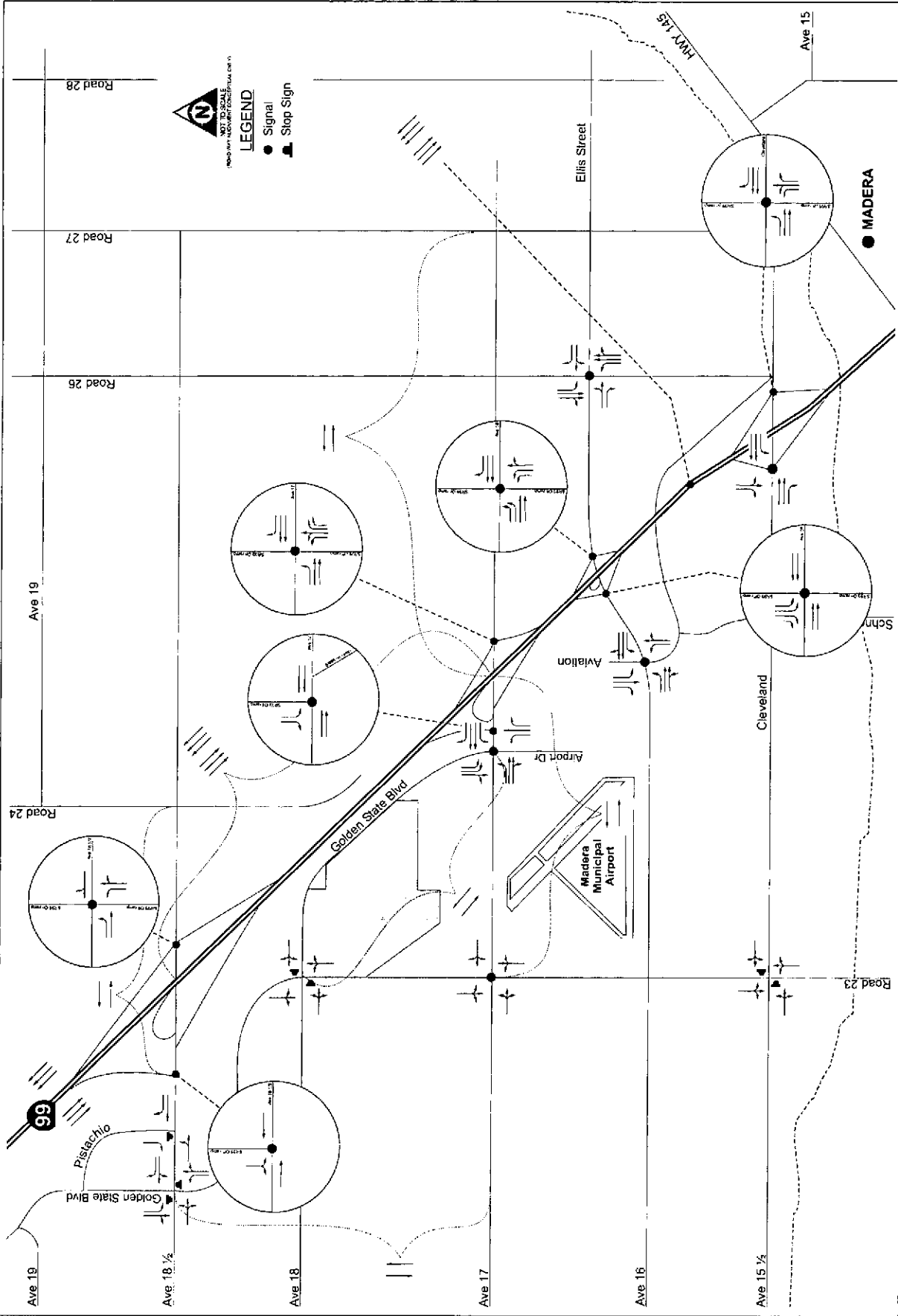


SEE MAP 32A





SEE MAP 33A



SEE MAP 64B

LEGEND

- Signal
- ▲ Stop Sign

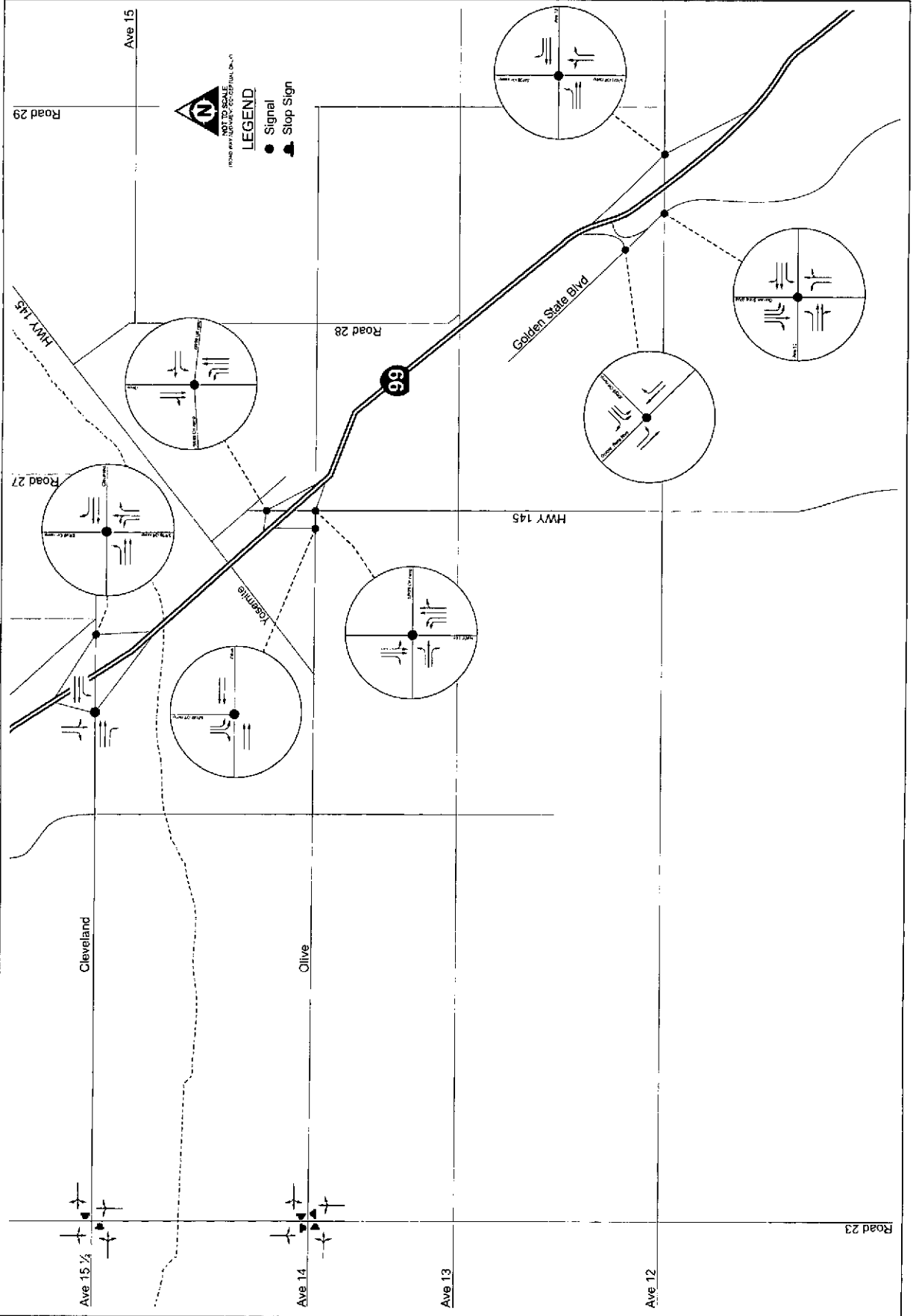
NOT TO SCALE
Madera Municipal Airport

LANE CONFIGURATION AND INTERSECTION CONTROL
2030 Project
Madera Site
(Alternative C)

North Fork Casino
Madera County

04-897-Z

Figure 34

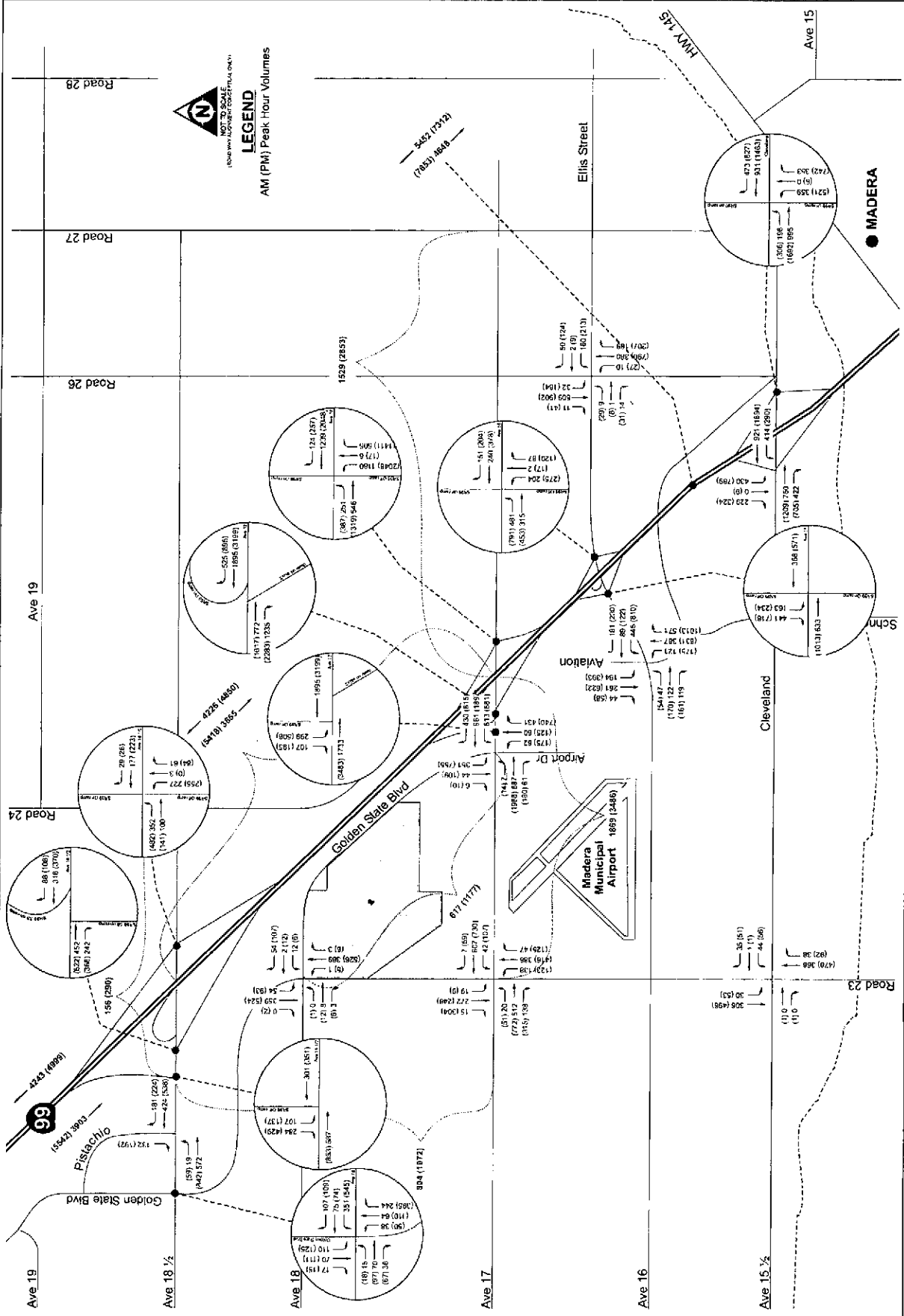


PEAK HOUR TRAFFIC VOLUMES
 2030 Project
 Madera Site
 (Alternative C)

North Fork Casino
 Madera County

Figure 35

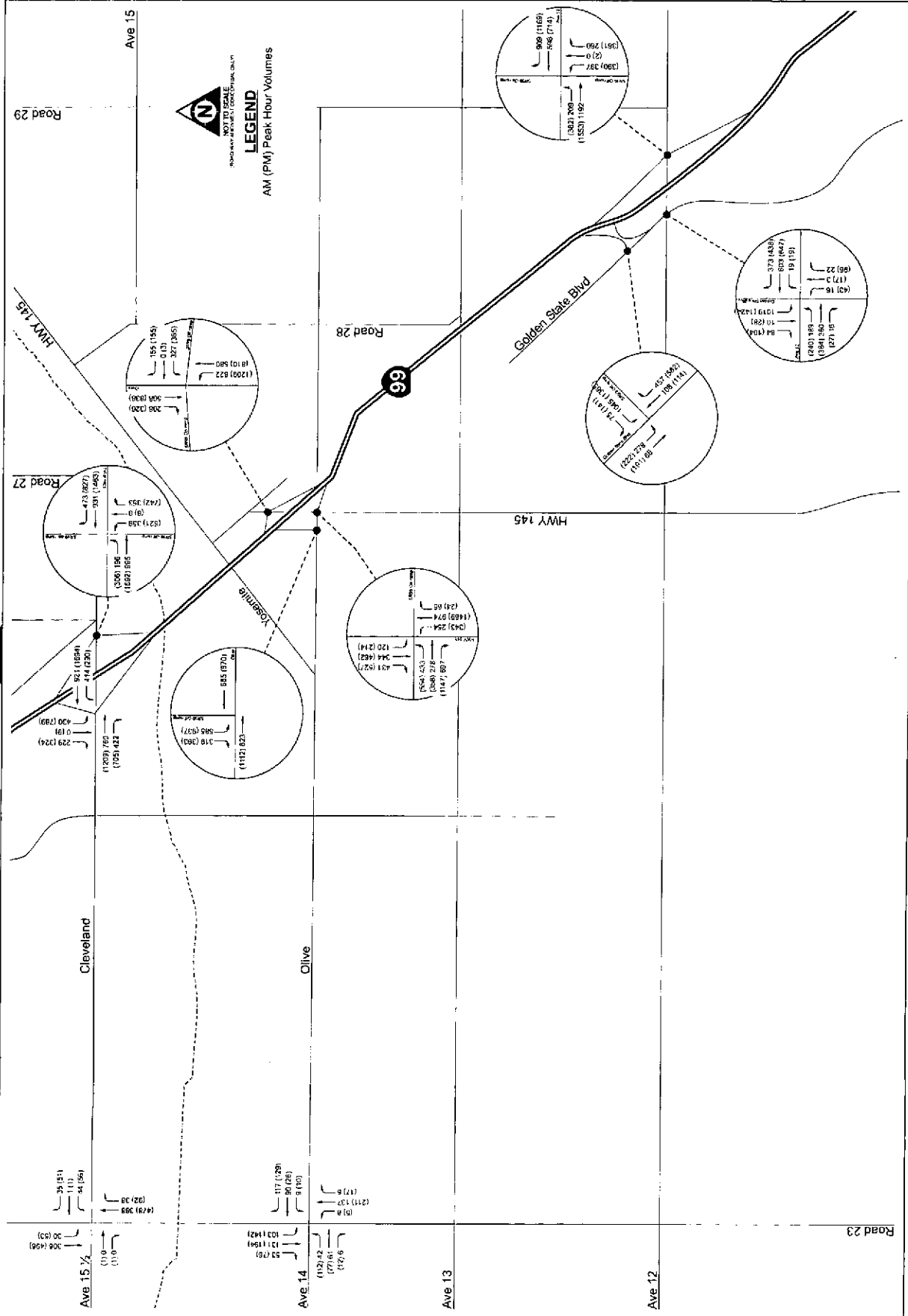
04-037.2

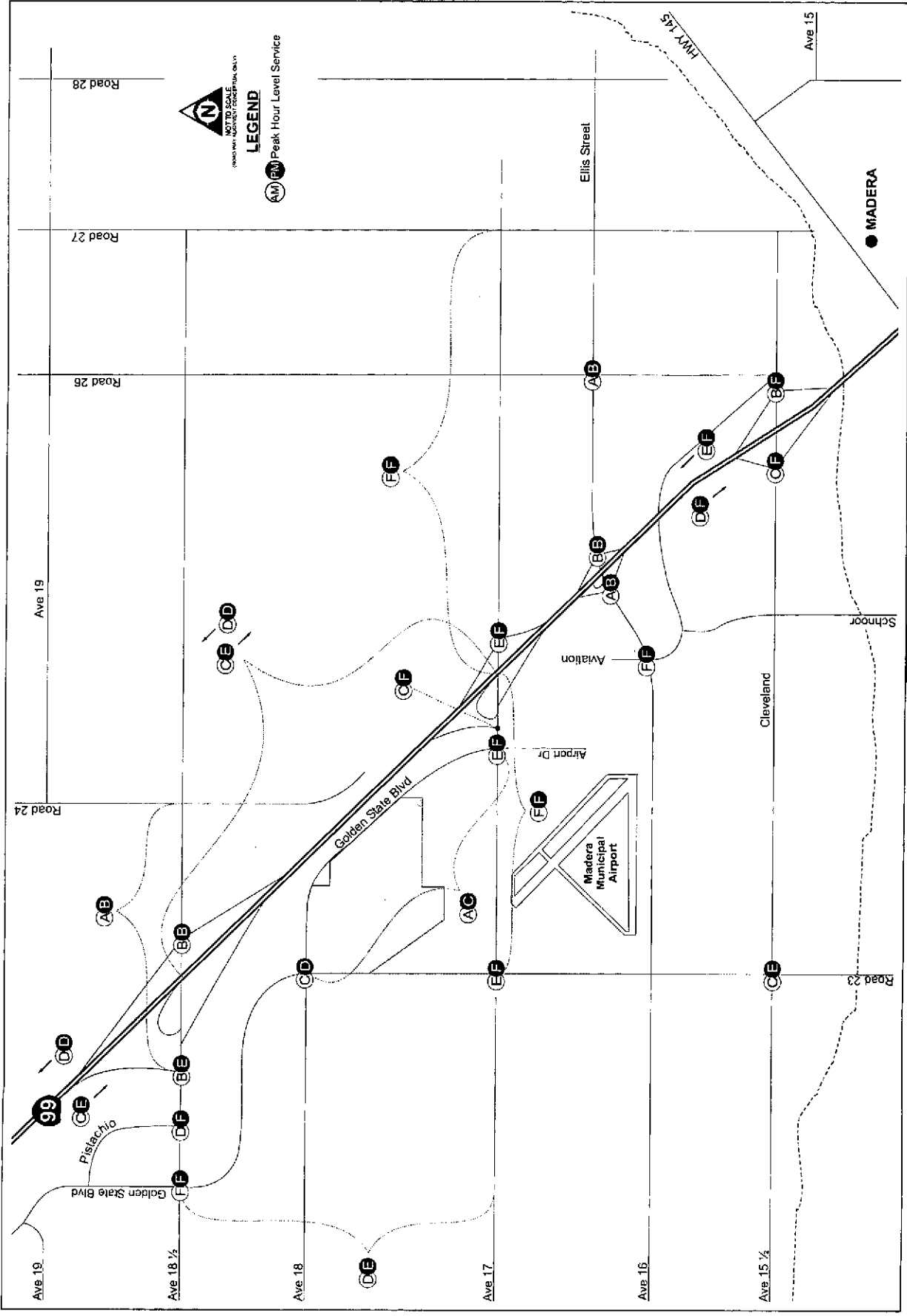


SEE MAP

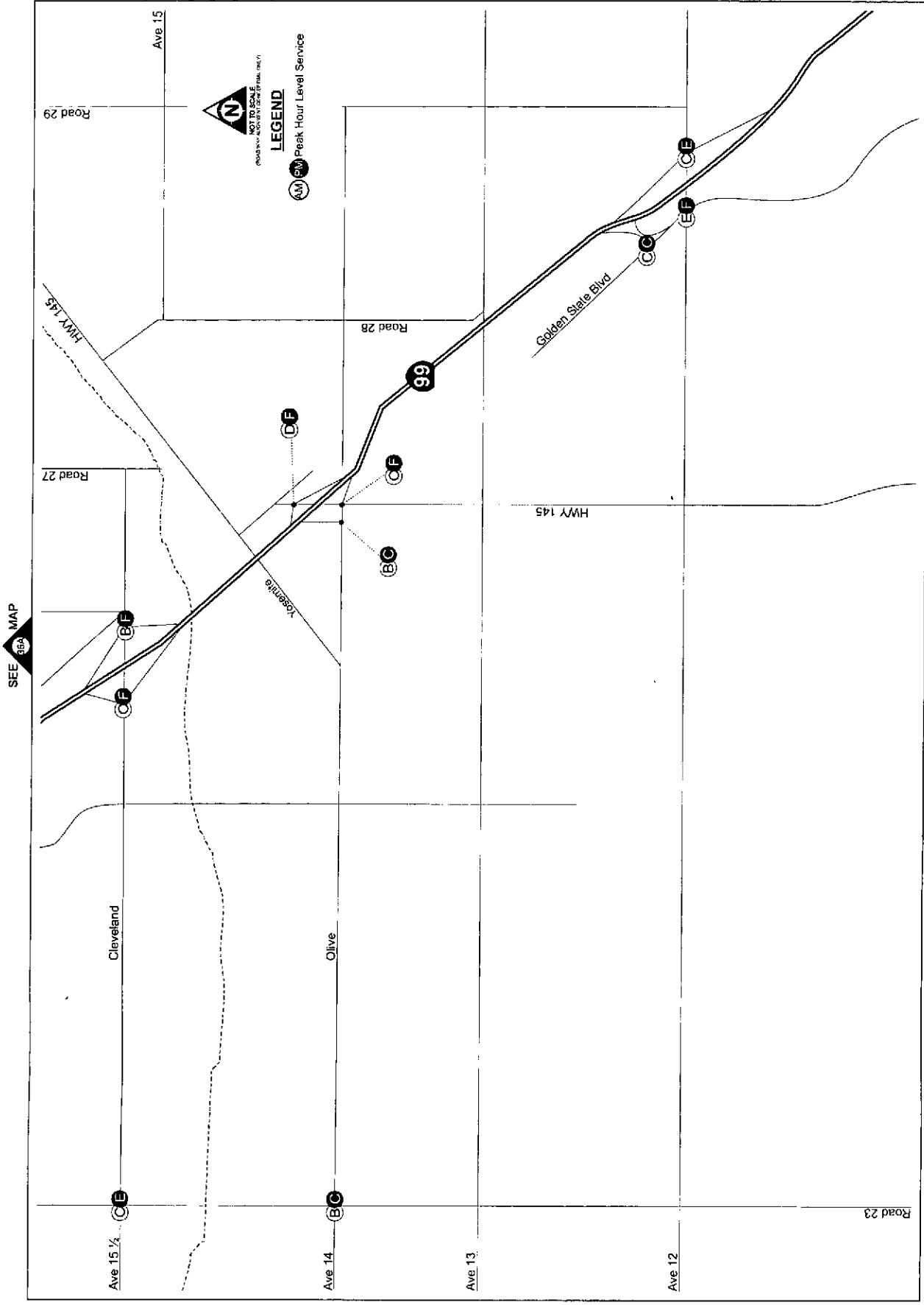
PEAK HOUR TRAFFIC VOLUMES
 2030 Project
 Madera Site
 (Alternative C)

North Fork Casino
 Madera County
 Figure 35





SEE MAP 563

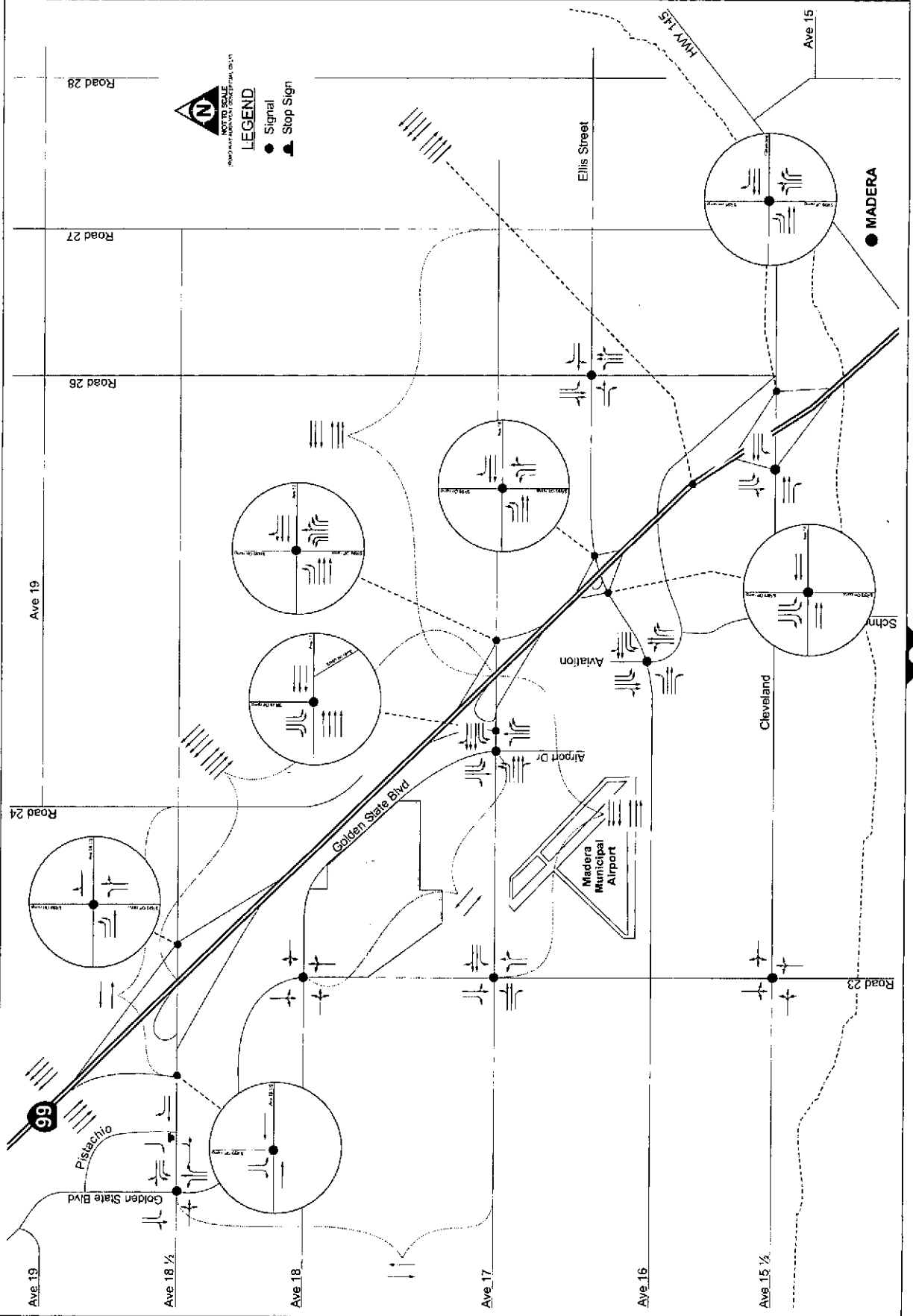


LANE CONFIGURATION AND INTERSECTION CONTROL
 Mitigated 2030 Project
 Madera Site
 (Alternative A)

North Fork Casino
 Madera County

04-897-2

Figure 37



NOT TO SCALE
 NORTH ARROW

LEGEND

- Signal
- ▲ Stop Sign

SEE MAP 37B

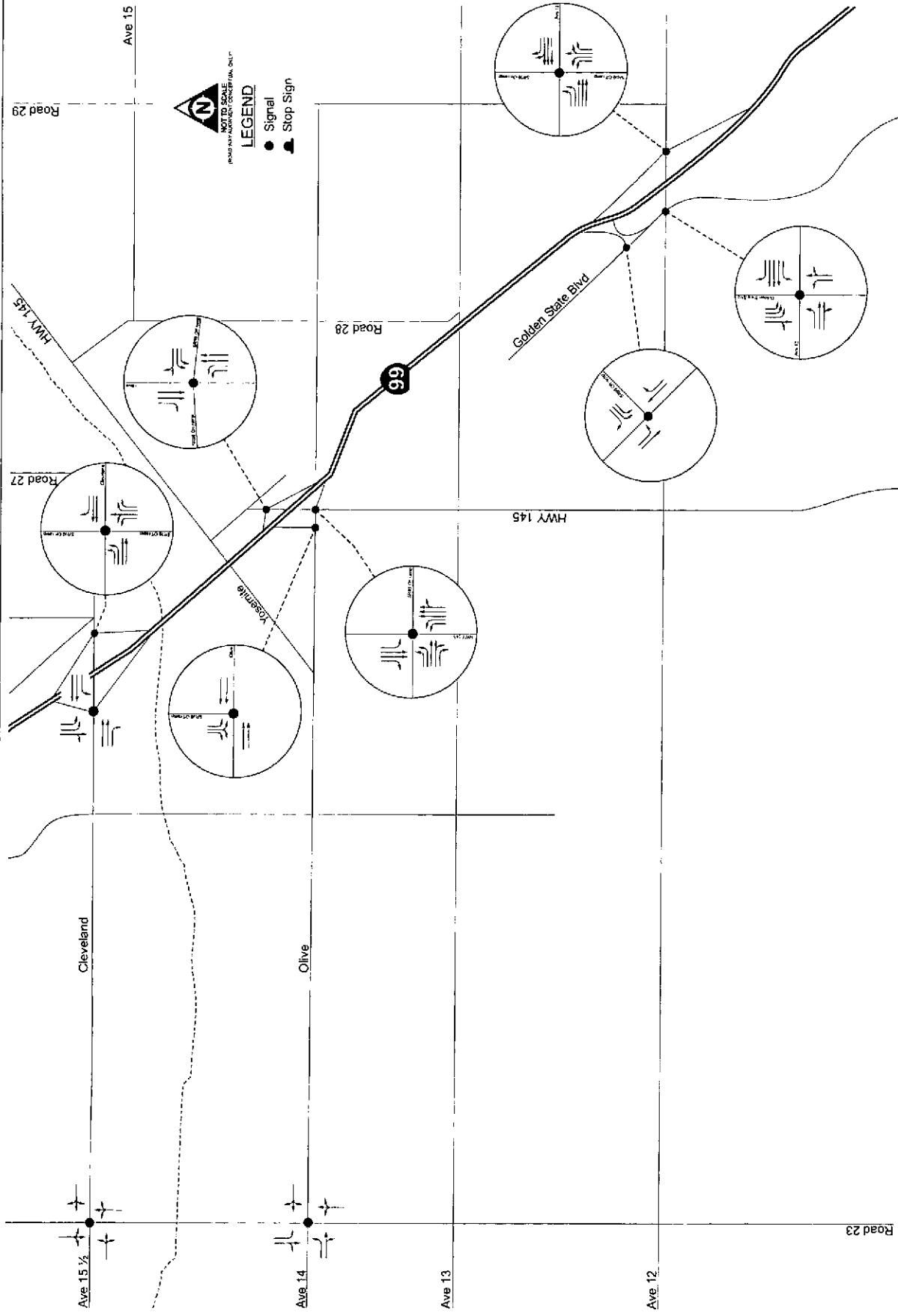
LANE CONFIGURATION AND INTERSECTION CONTROL
Mitigated 2030 Project
Madera Site
(Alternative A)

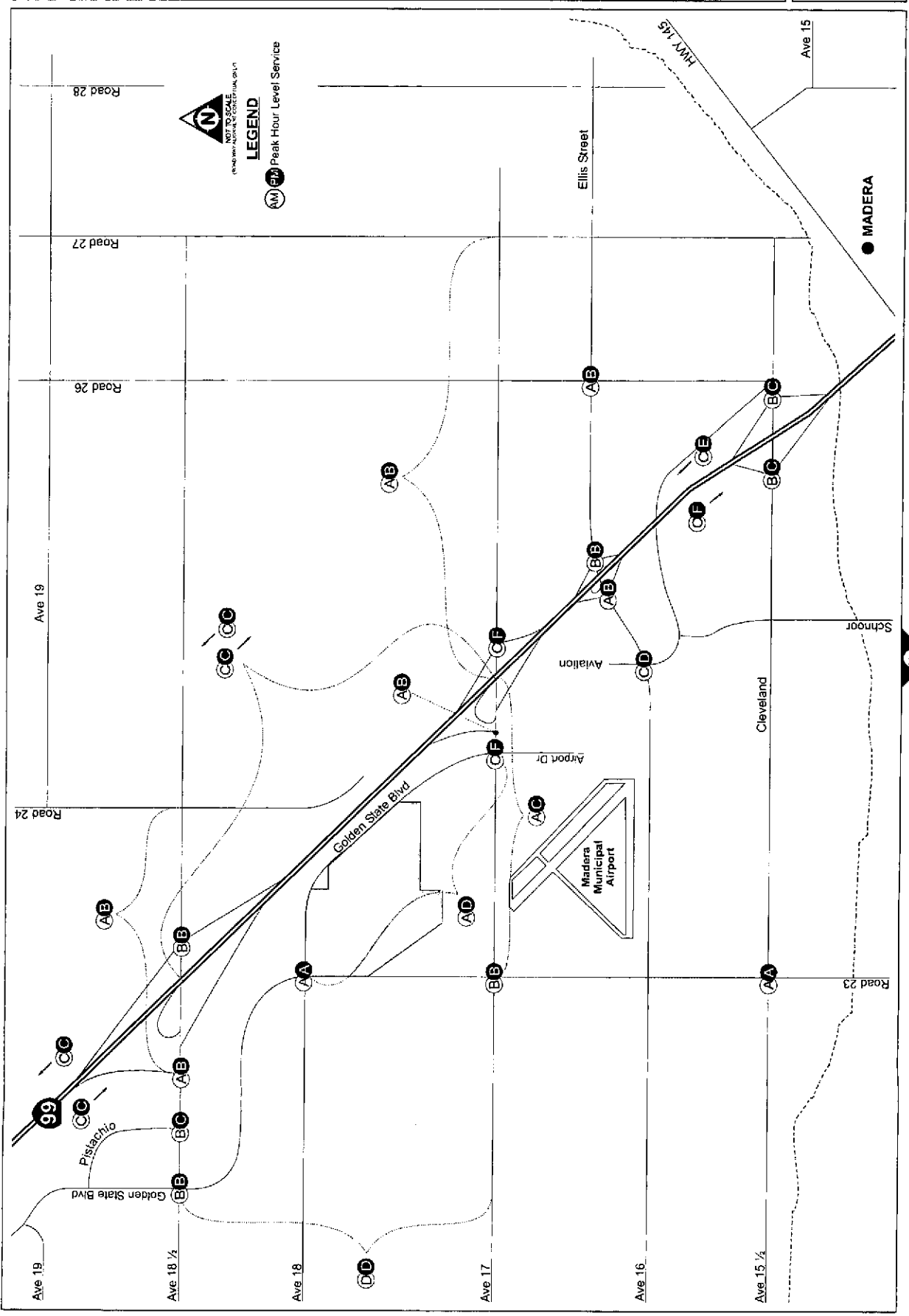
North Fork Casino
Madera County

Figure 37

04-837.2

SEE MAP 37A





SEE MAP 38B

04-637.2



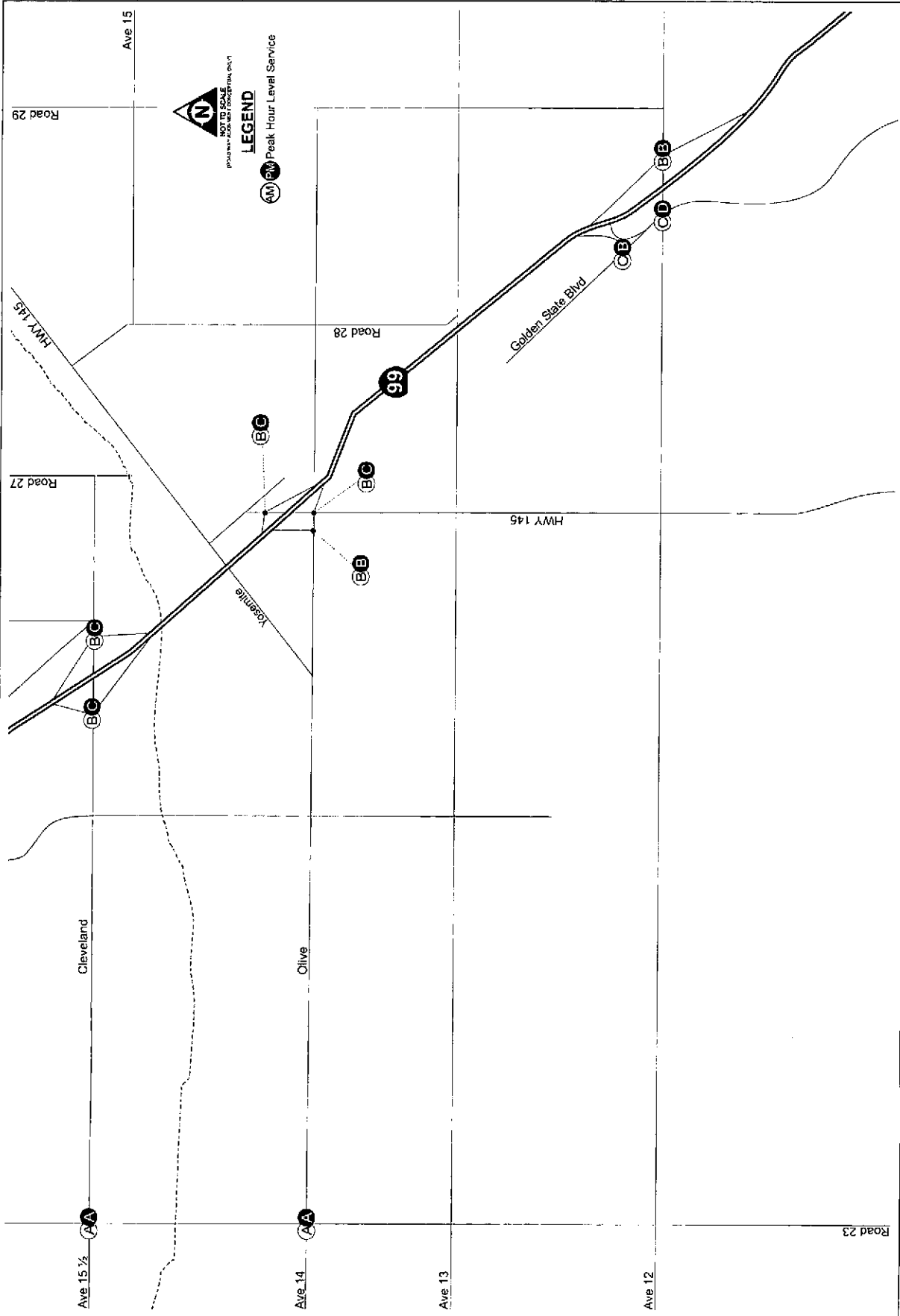
LEVELS OF SERVICE
Mitigated 2030 Project
Madera Site
(Alternative A)

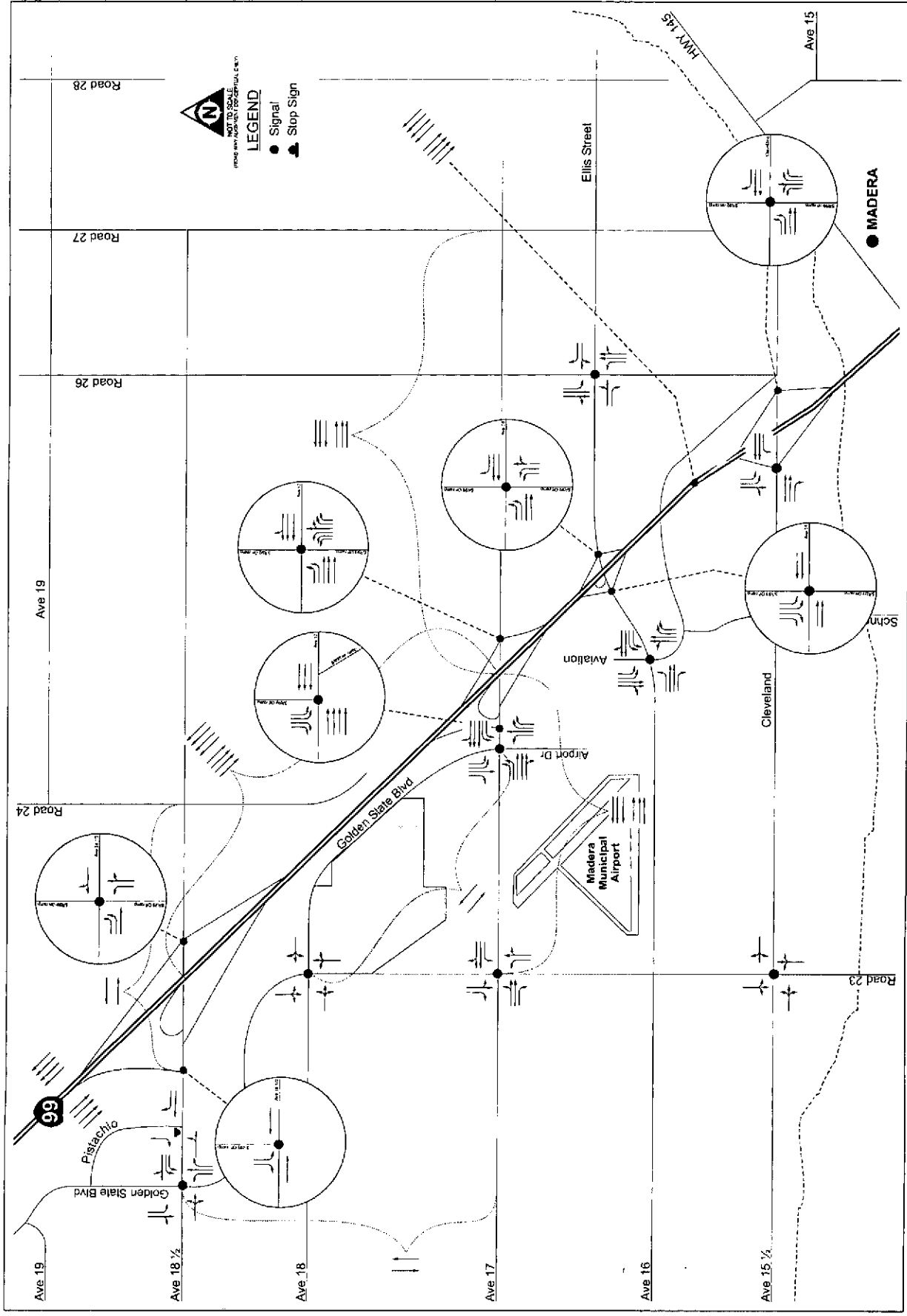
North Fork Casino
Madera County

Figure 38

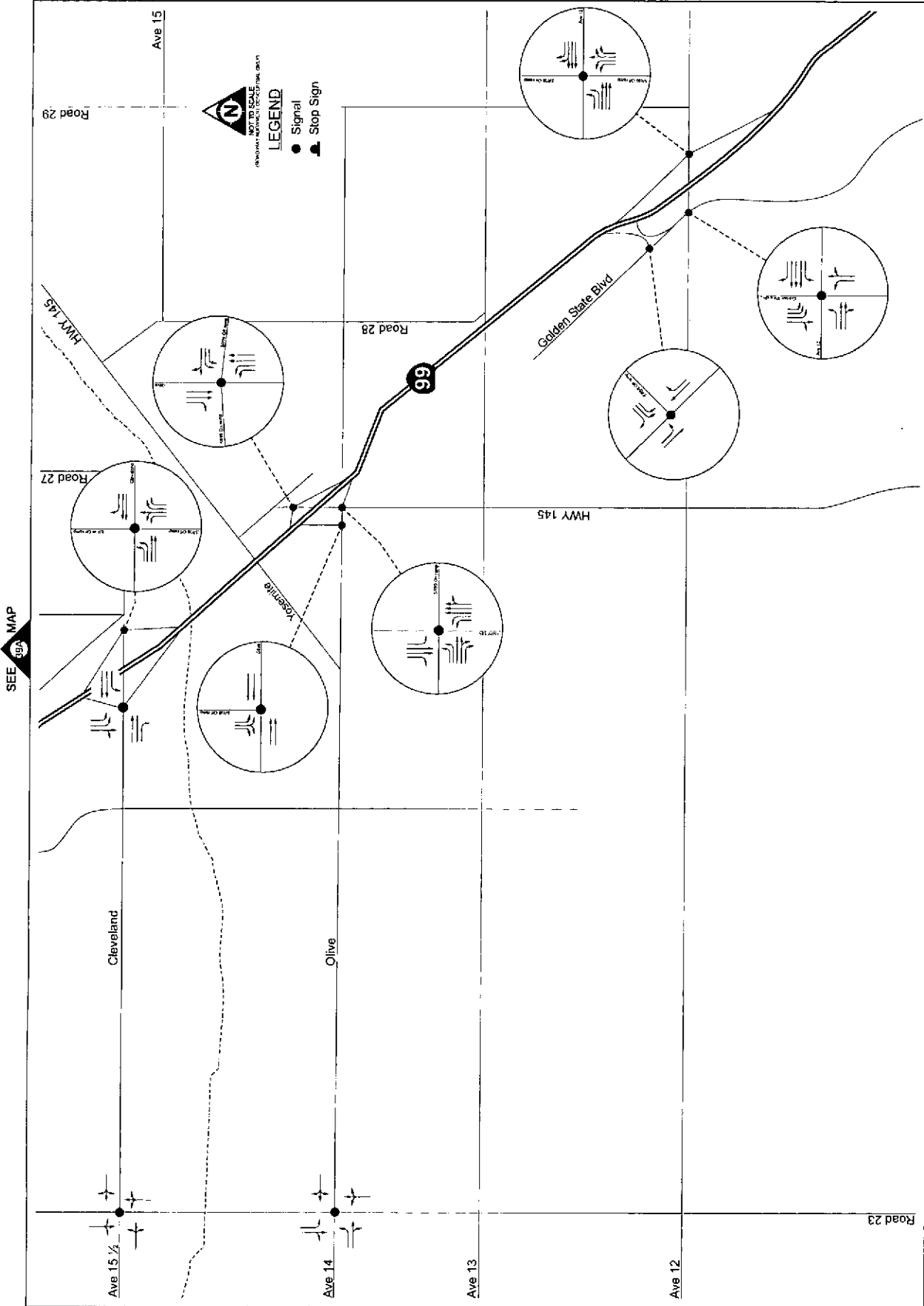
04-837.2

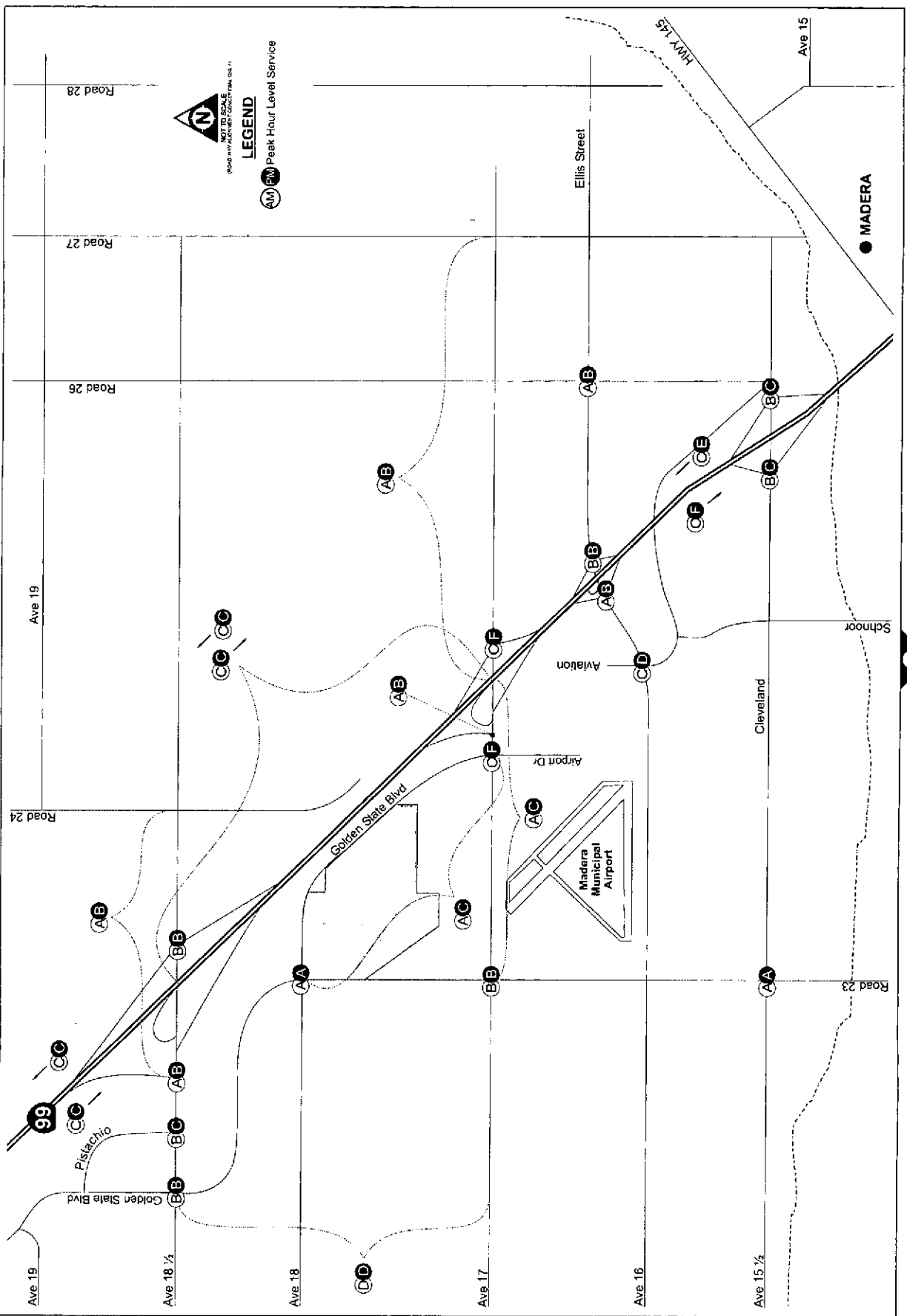
SEE MAP 186A



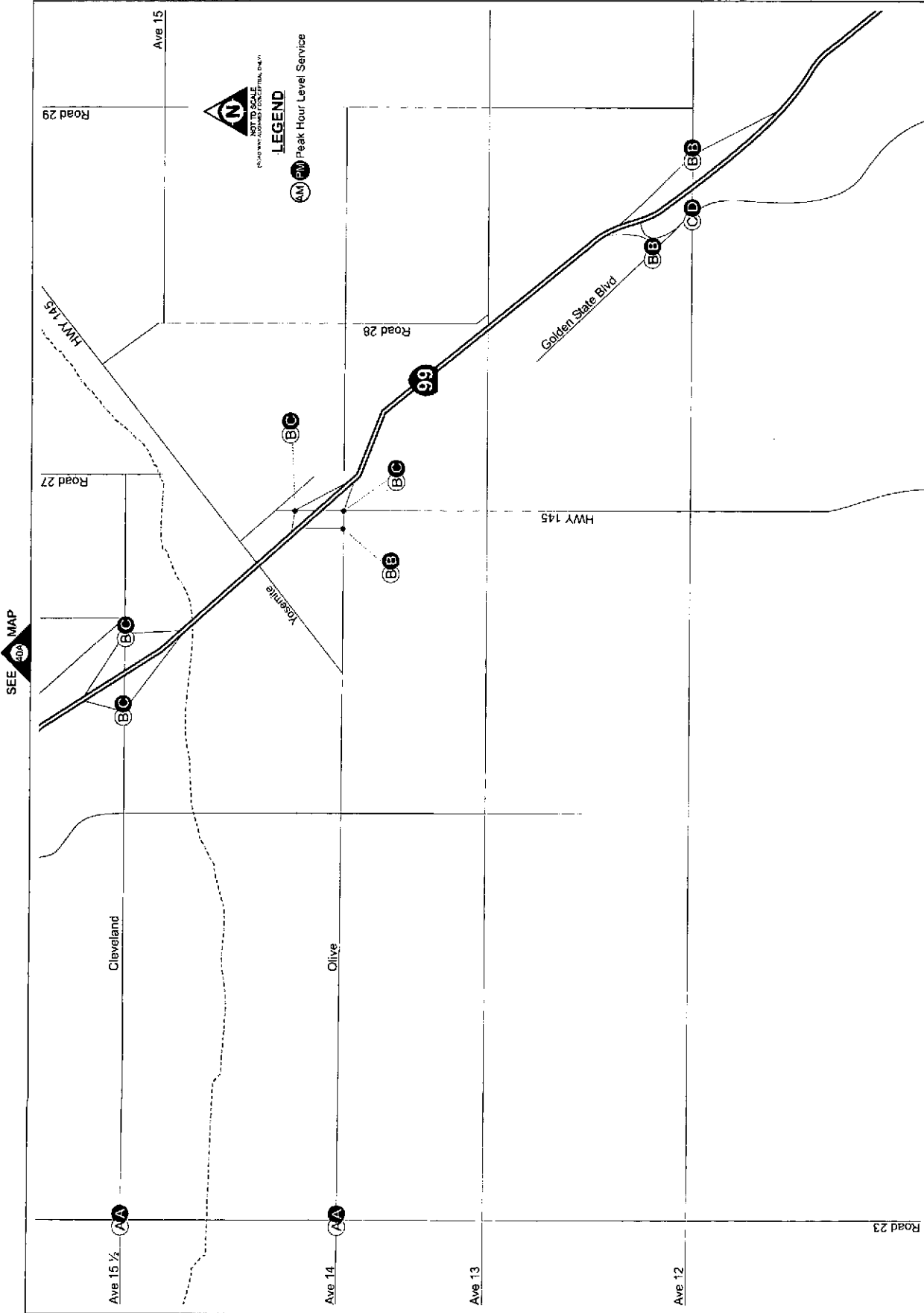


SEE MAP 39B





SEE MAP 40B



Alternative C (Alternative Land Use Alternative)

Figures 41 and 42 show the Mitigated 2030 Project Alternative C lane configurations and intersection control, and resulting Mitigated 2030 Project Alternative C levels of service for the Madera Site. The TWSC levels of service shown on Figure 42 are the levels of service for the worst operating movement at that intersection. The signalized intersection levels of service shown on Figure 42 are representative of the whole intersection. Individual intersection movements or approaches may operate above or below the signalized level of service or delay shown on Figure 42. The signalized intersection levels of service or delay shown in Figure 42 may not reflect the effects of 95th percentile queues that exceed the capacity for their movement.

North Fork Site (Alternative D, E)

Existing (2008) Conditions

Figures 43, 44, and 45 show the Existing (2008) lane configurations and intersection control, AM and PM peak hour intersection traffic volumes, and resulting Existing (2008) levels of service for the North Fork Site. The Existing (2008) lane configurations and intersection control are also used in the following analysis scenarios:

- Opening Day (2010) No Project
- Opening Day (2010) Project
- 2030 No Project
- 2030 Project

The TWSC levels of service shown on Figure 45 are the levels of service for the worst operating movement at that intersection. The signalized and AWSC intersection levels of service shown on Figure 45 are representative of the whole intersection. Individual intersection movements or approaches may operate above or below the signalized or AWSC level of service or delay shown on Figure 45.

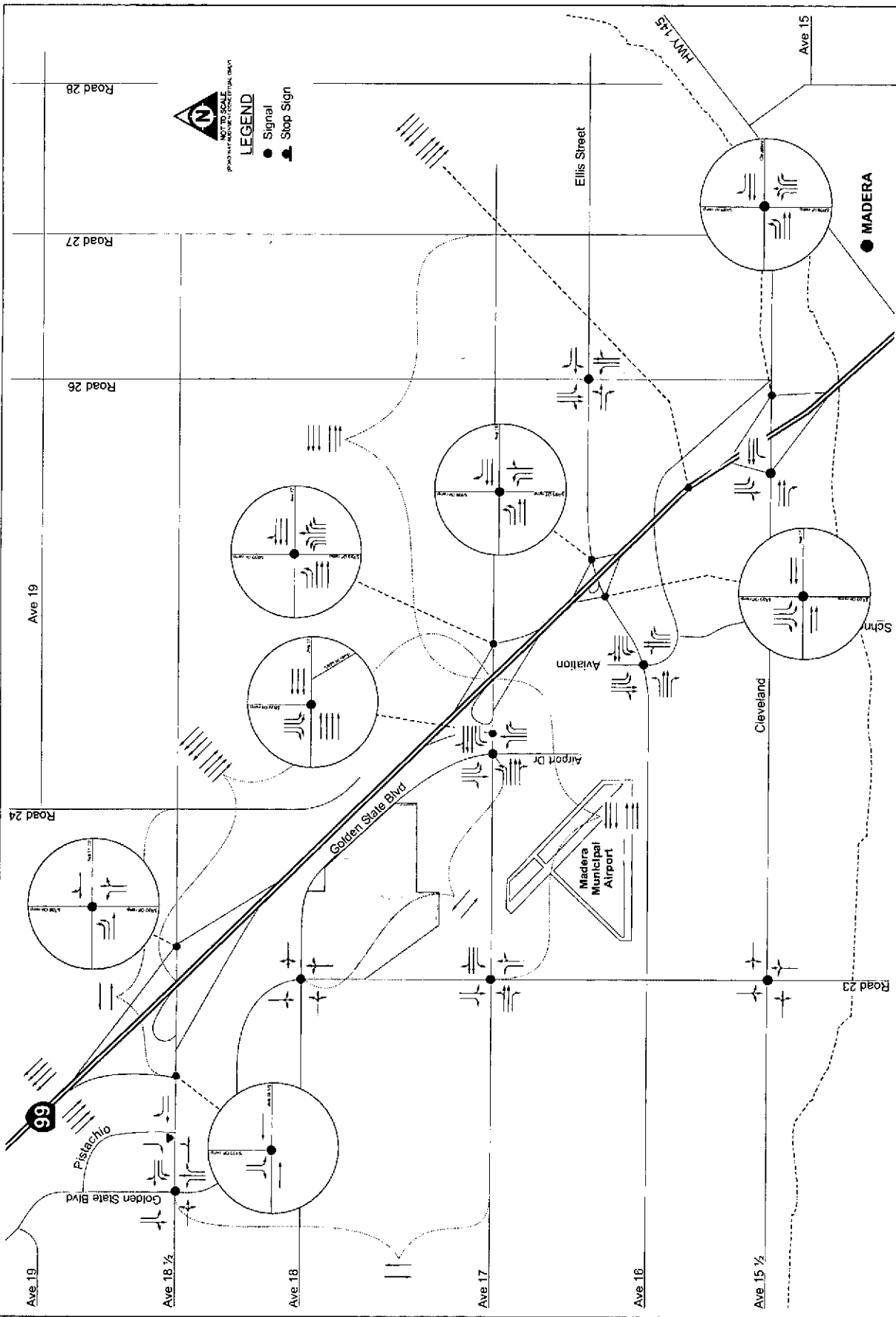
Opening Day (2010) No Project Conditions

Alternative E (No Project Alternative)

Figures 46 and 47 show the Opening Day (2010) No Project Alternative E AM and PM peak hour intersection traffic volumes, and resulting Opening Day (2010) No Project Alternative E levels of service for the North Fork Site. The TWSC levels of service shown on Figure 47 are the levels of service for the worst operating movement at that intersection. The signalized and AWSC intersection levels of service shown on Figure 47 are representative of the whole intersection. Individual intersection movements or approaches may operate above or below the signalized or AWSC level of service or delay shown on Figure 47.

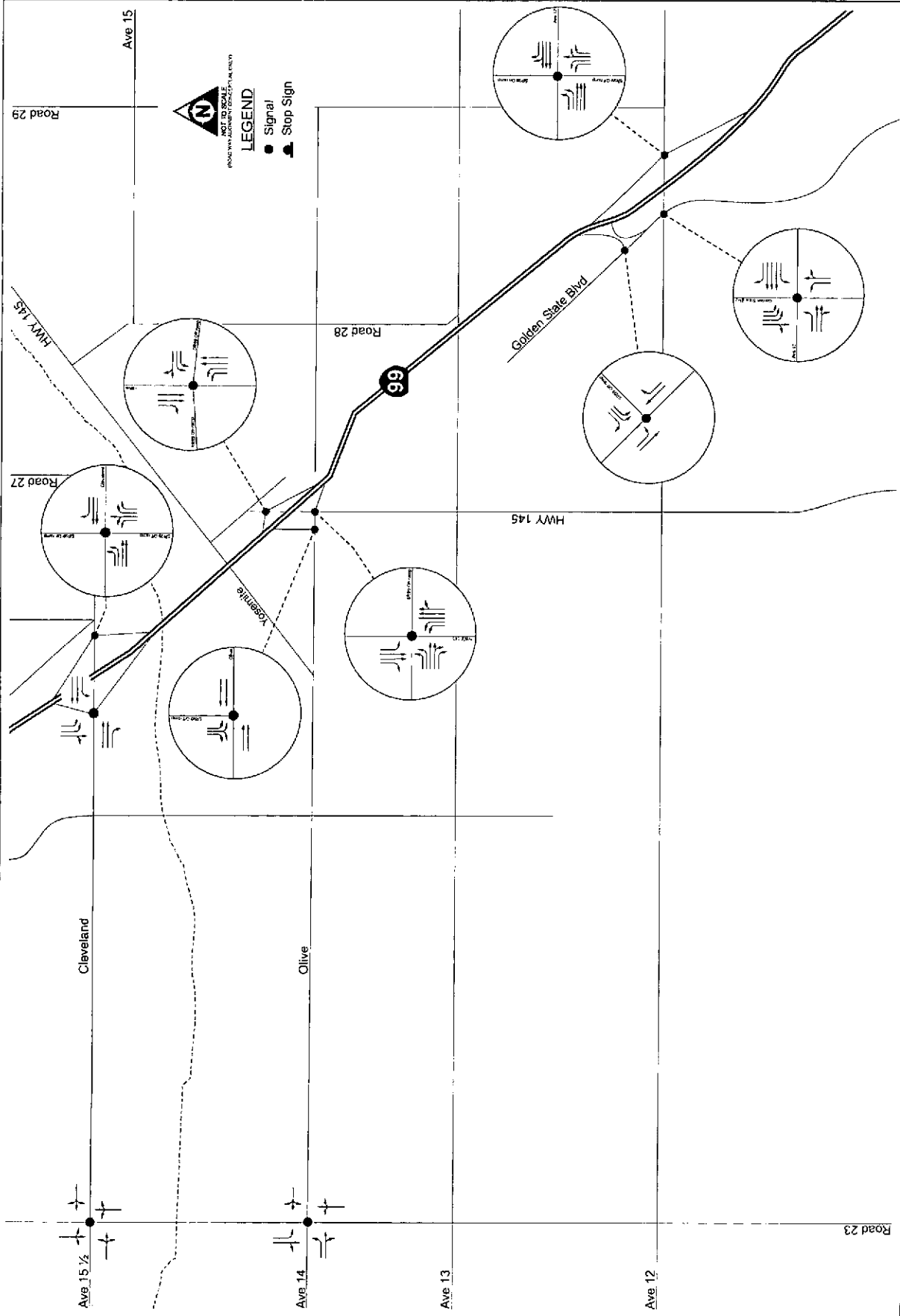
LANE CONFIGURATION AND INTERSECTION CONTROL
 Mitigated 2030 Project
 Madera Site
 (Alternative C)

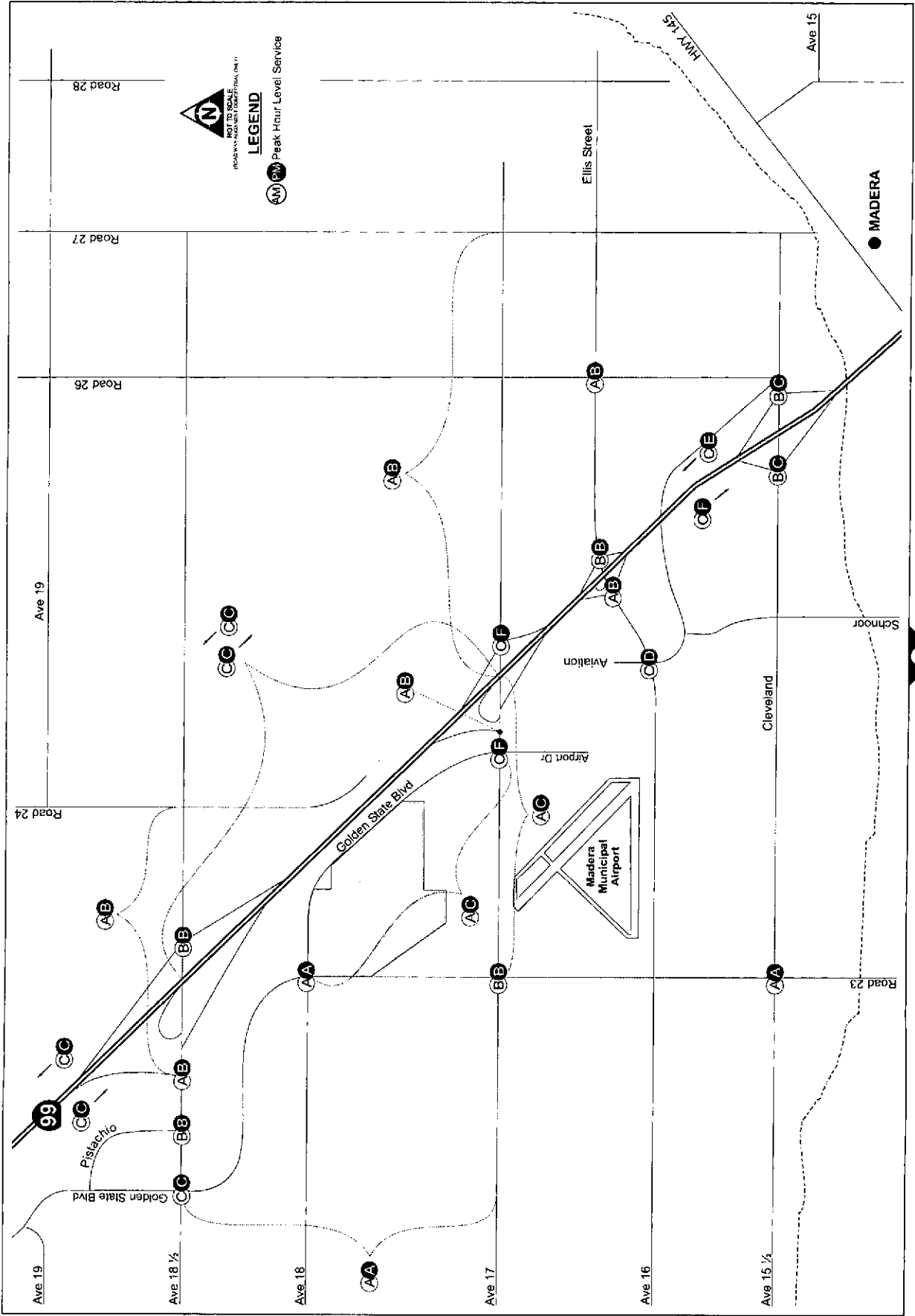
North Fork Casino
 Madera County
 CA-857.2



SEE MAP 41B

SEE MAP





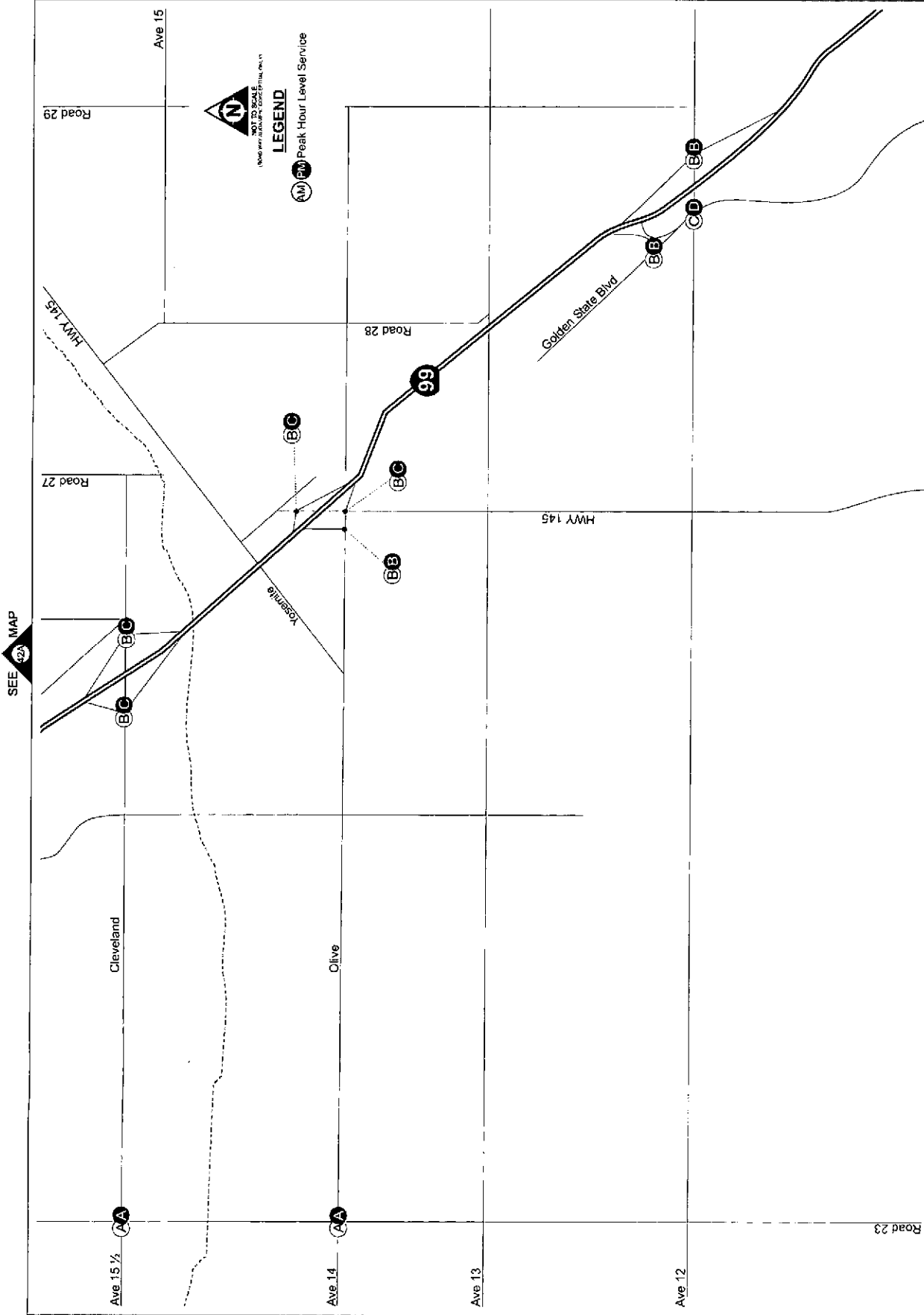


LEVELS OF SERVICE
Mitigated 2030 Project
Madera Site
(Alternative C)

North Fork Casino
Madera County

04-807.2

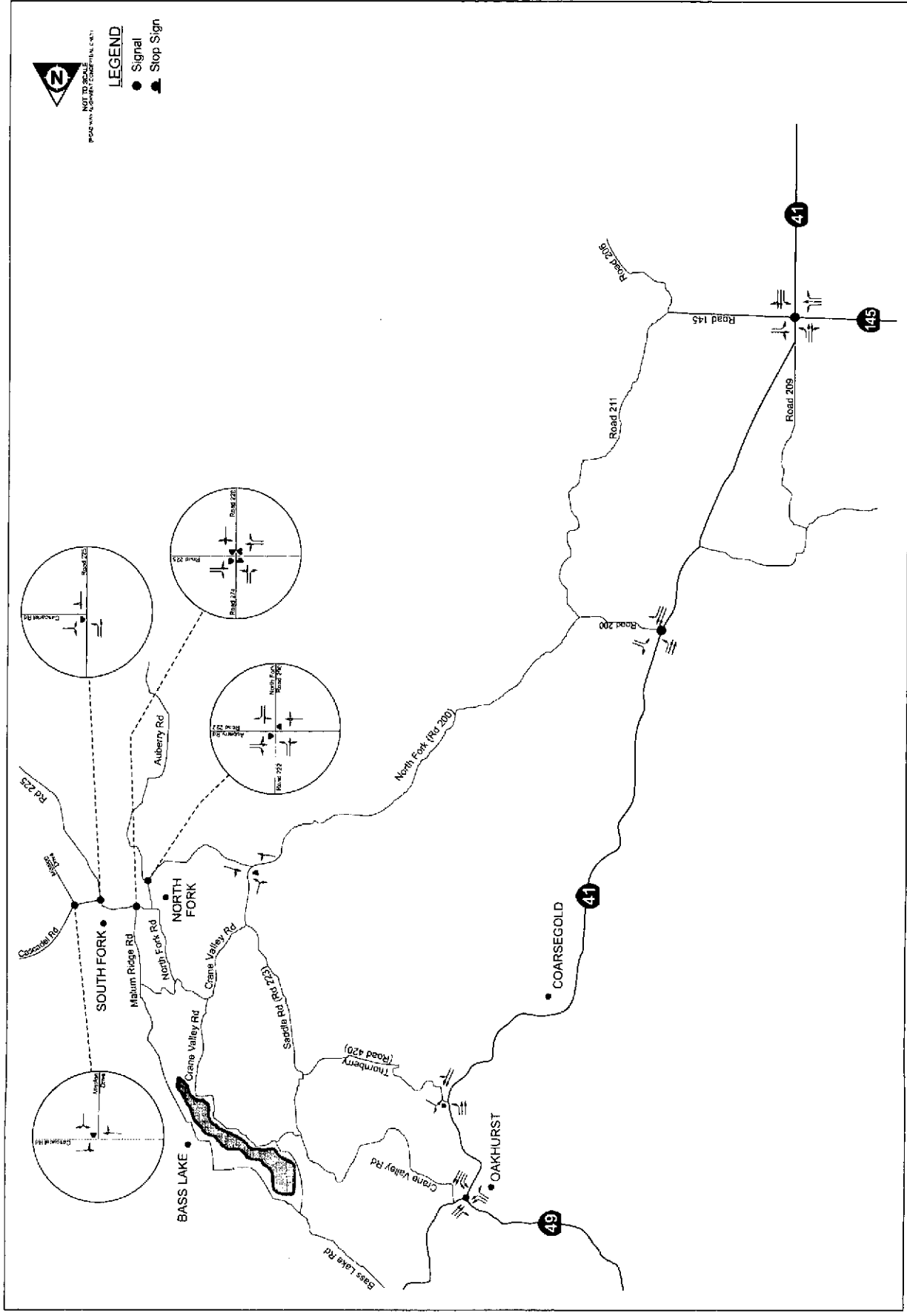
Figure 42



LANE CONFIGURATION AND INTERSECTION CONTROL
 Existing
 North Fork Site
 (Alternative D)

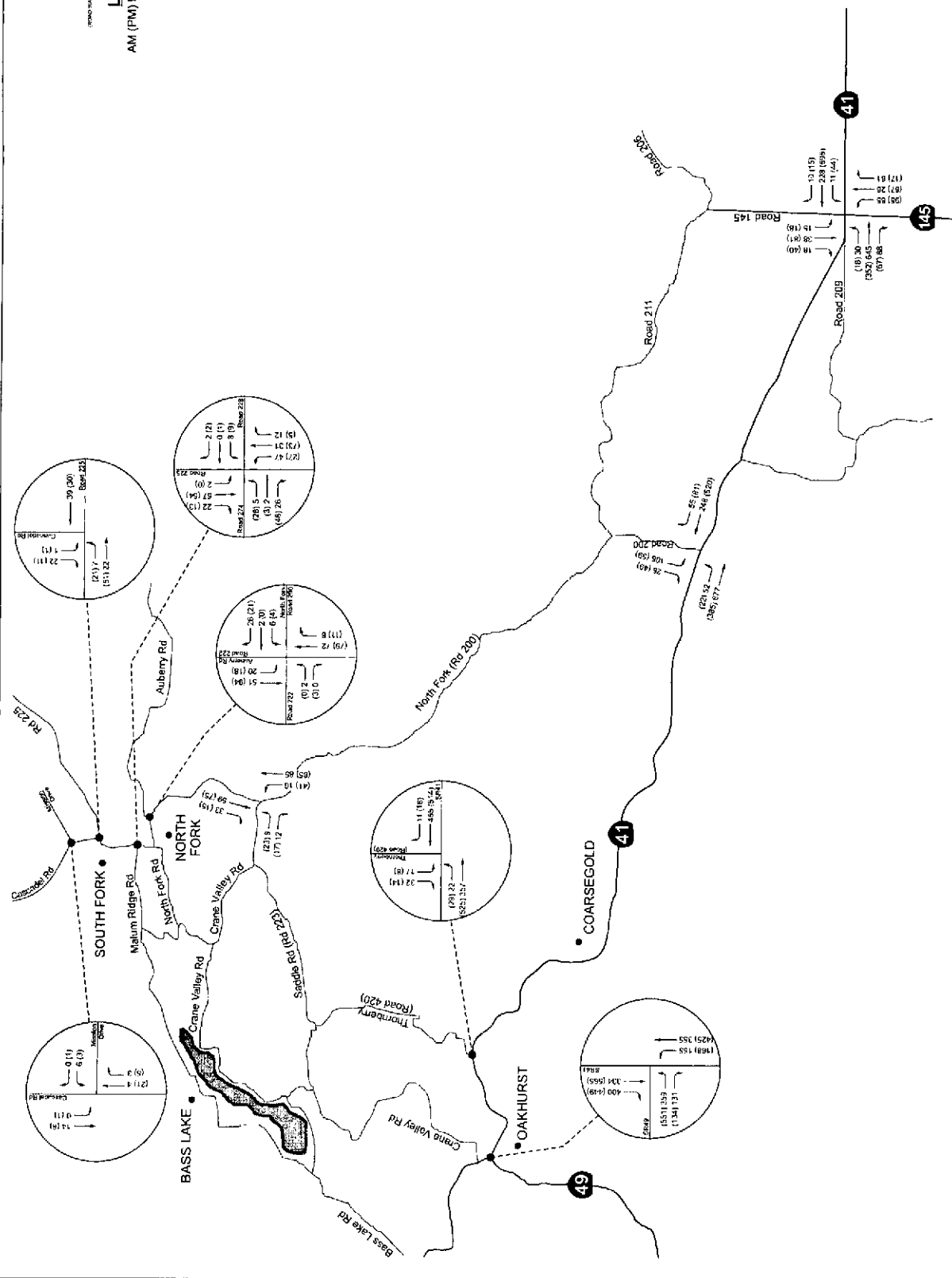
North Fork Casino
 Madera County
 CA-8372

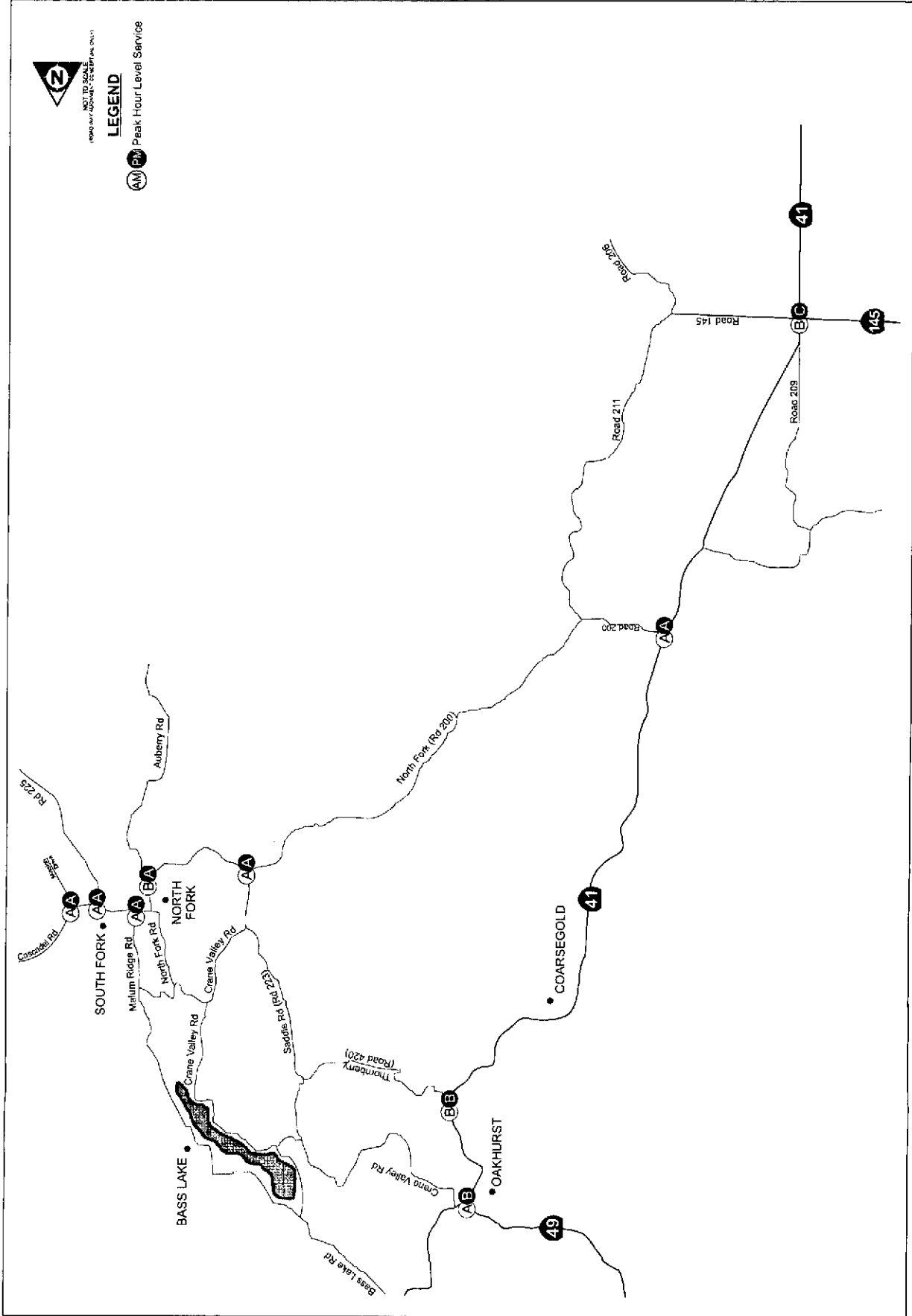
Figure 43





AM (PM) Peak Hour Volumes
LEGEND

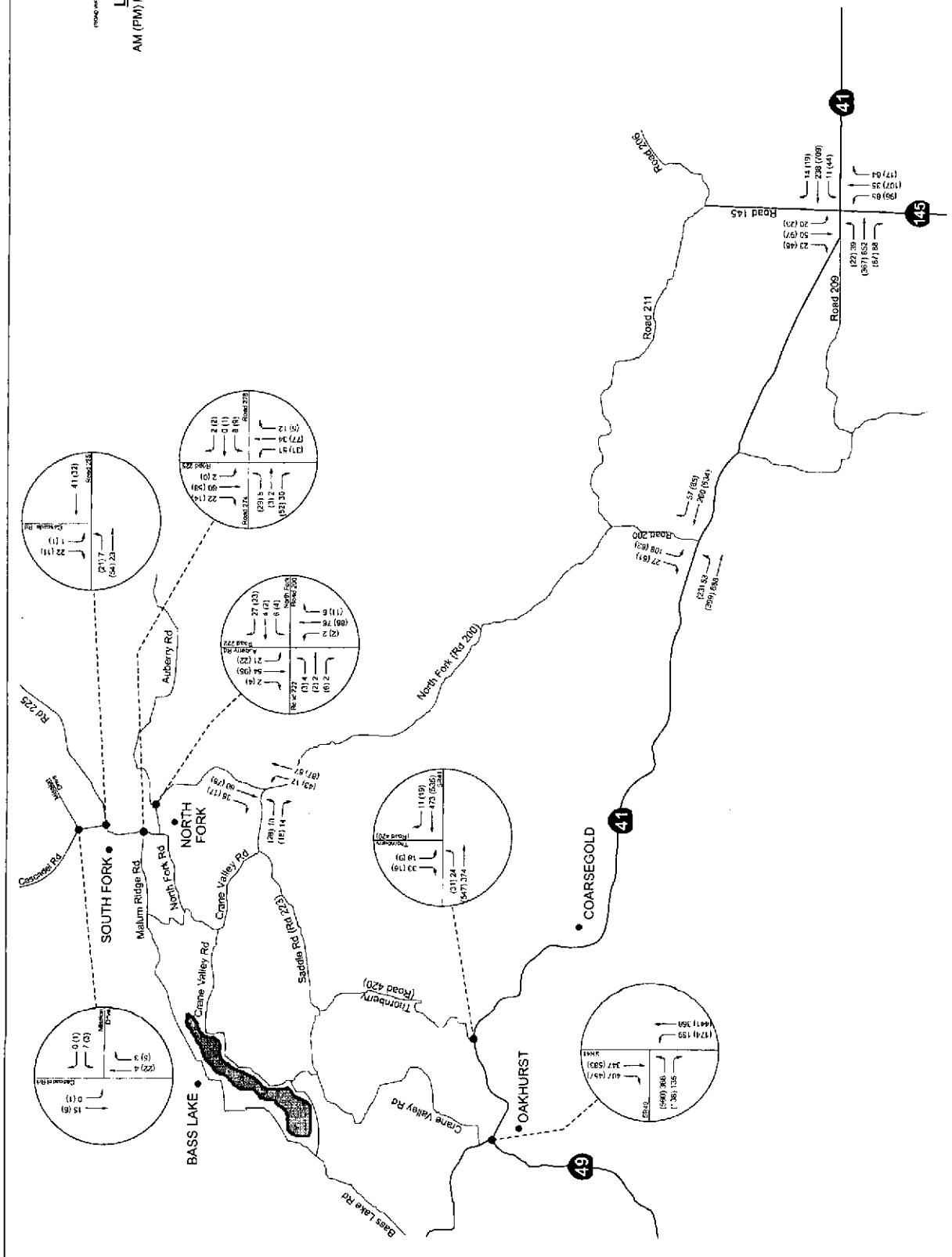




AM (PM) Peak Hour Volumes

LEGEND

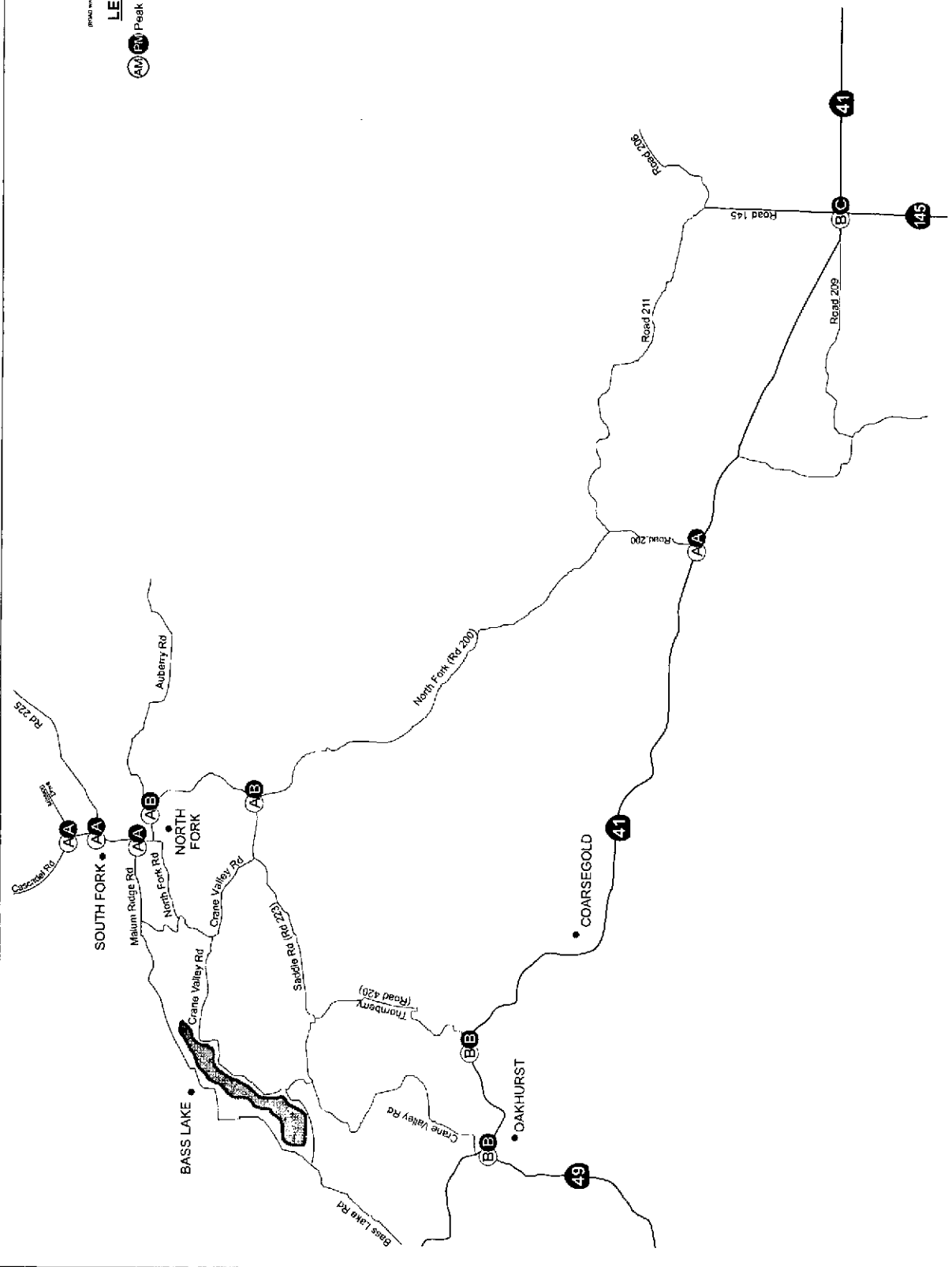
ROAD AND TRAFFIC VOLUMES (AM (PM))



NOT TO SCALE
BASED ON AERIAL PHOTOGRAPHY FROM 2004

LEGEND

AM PM Peak Hour Level Service



Opening Day (2010) Project Conditions

Alternative D (Off-site Alternative)

Figures 48 and 49 show the Opening Day (2010) Project Alternative D AM and PM peak hour intersection traffic volumes, and resulting Opening Day (2010) Project Alternative D levels of service for the North Fork Site. The TWSC levels of service shown on Figure 49 are the levels of service for the worst operating movement at that intersection. The signalized and AWSC intersection levels of service shown on Figure 49 are representative of the whole intersection. Individual intersection movements or approaches may operate above or below the signalized or AWSC level of service or delay shown on Figure 49.

2030 No Project Conditions

Alternative E (No Project Alternative)

Figures 50 and 51 show the 2030 No Project Alternative E AM and PM peak hour intersection traffic volumes, and resulting 2030 No Project Alternative E levels of service for the North Fork Site. The TWSC levels of service shown on Figure 51 are the levels of service for the worst operating movement at that intersection. The signalized and AWSC intersection levels of service shown on Figure 51 are representative of the whole intersection. Individual intersection movements or approaches may operate above or below the signalized or AWSC level of service or delay shown on Figure 51.

2030 Project Conditions

Alternative D (Off-site Alternative)

Figures 52 and 53 show the 2030 Project Alternative D AM and PM peak hour intersection traffic volumes and resulting 2030 Project Alternative D levels of service for the North Fork Site. The TWSC levels of service shown on Figure 53 are the levels of service for the worst operating movement at that intersection. The signalized and AWSC intersection levels of service shown on Figure 53 are representative of the whole intersection. Individual intersection movements or approaches may operate above or below the signalized or AWSC level of service or delay shown on Figure 53.

Mitigated 2030 Project Conditions

Alternative D (Off-site Alternative)

Figures 54 and 55 show the Mitigated 2030 Project Alternative D lane configurations and intersection control, and resulting Mitigated 2030 Project Alternative D levels of service for the North Fork Site. The TWSC levels of service shown on Figure 55 are the levels of service for the worst operating movement at that intersection. The signalized and AWSC intersection levels of service shown on Figure 55 are representative of the whole intersection. Individual intersection movements or approaches may operate above or below the signalized or AWSC level of service or delay shown on Figure 55.

PEAK HOUR TRAFFIC VOLUMES
2010 Project
North Fork Site
(Alternative D)

North Fork Casino
Madera County

04-057.2

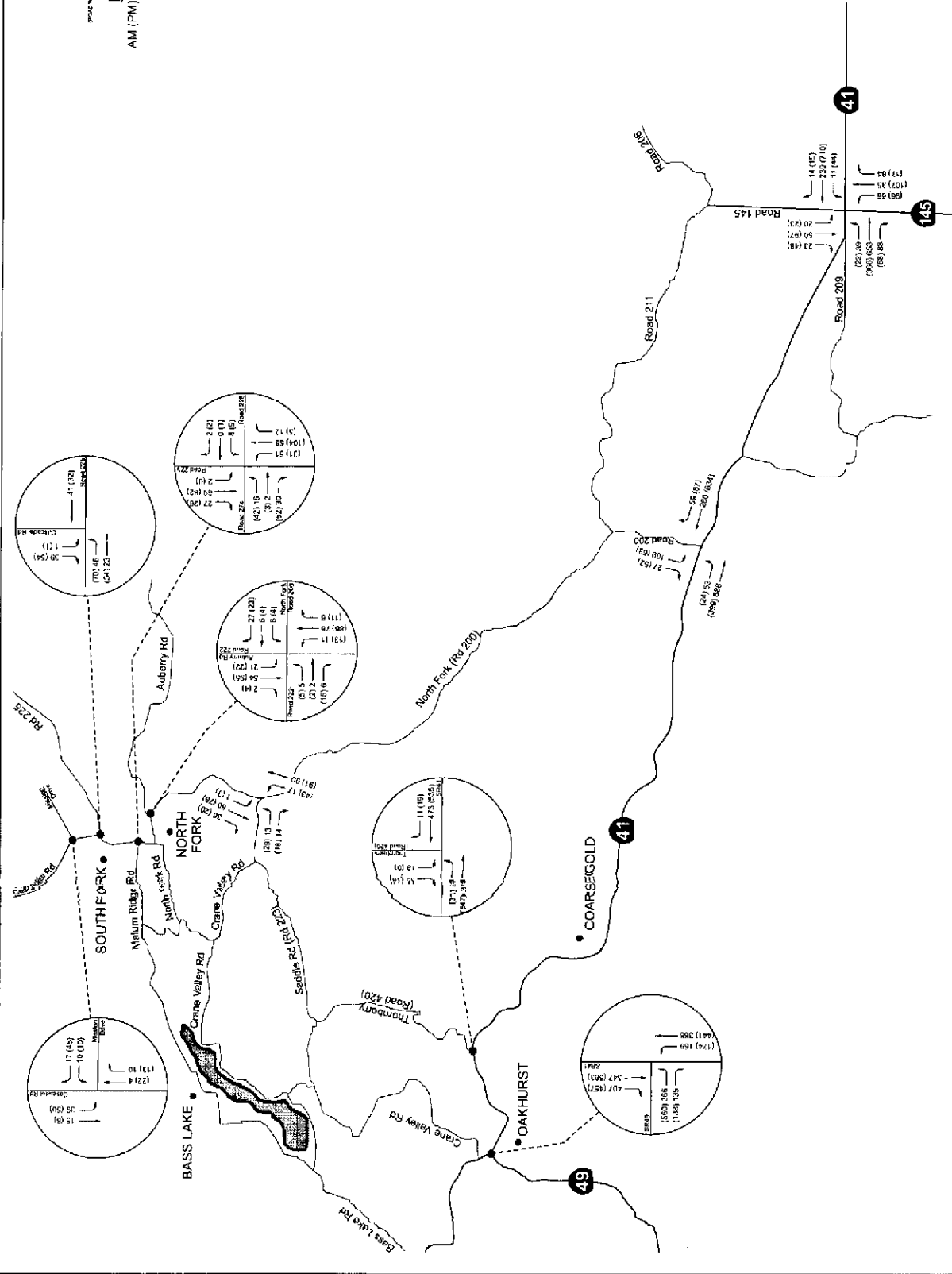
Figure 48



TRC CONSULTING
1001 W. 10th Street, Suite 200
Madera, CA 93694

LEGEND

AM (PM) Peak Hour Volumes



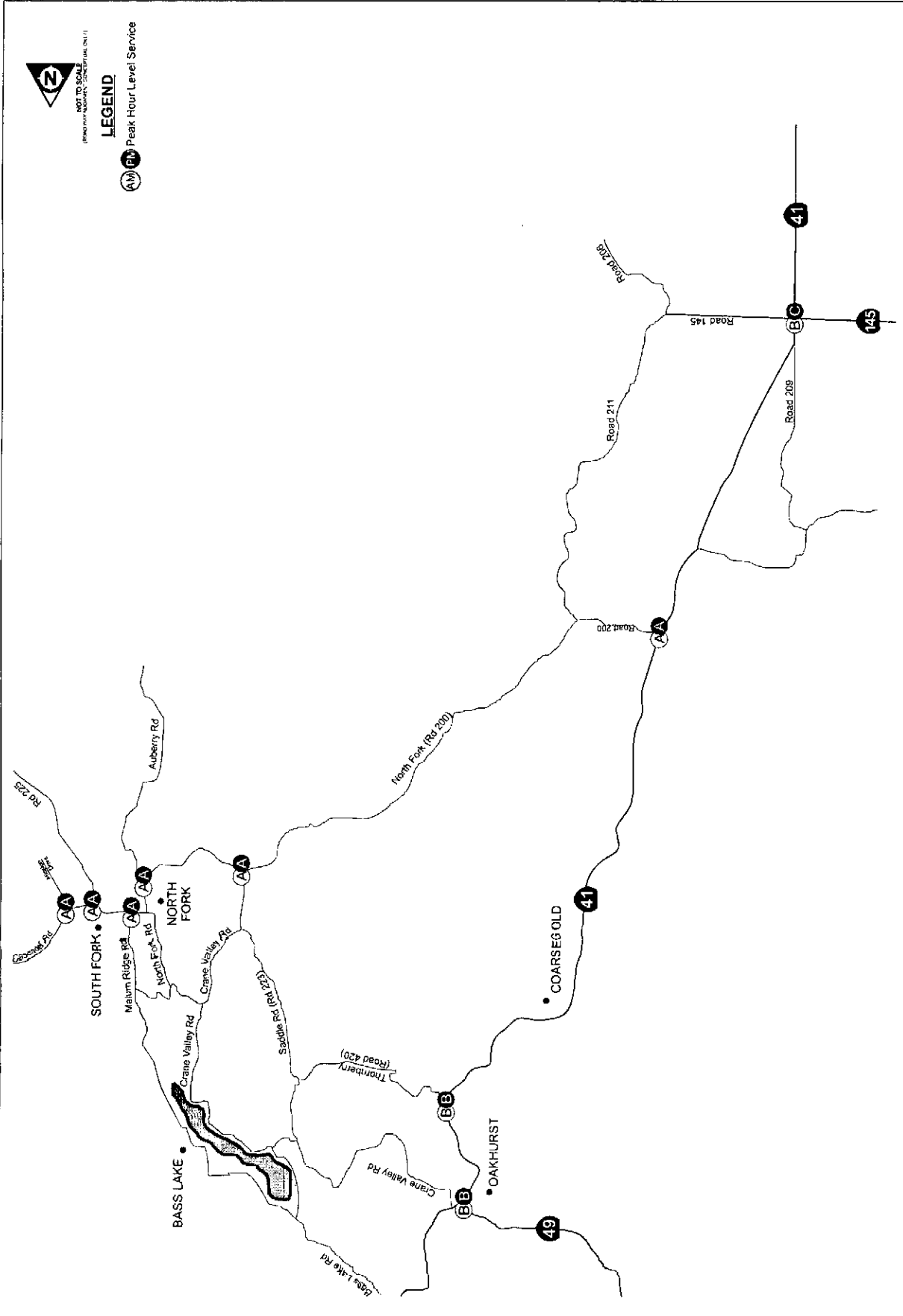


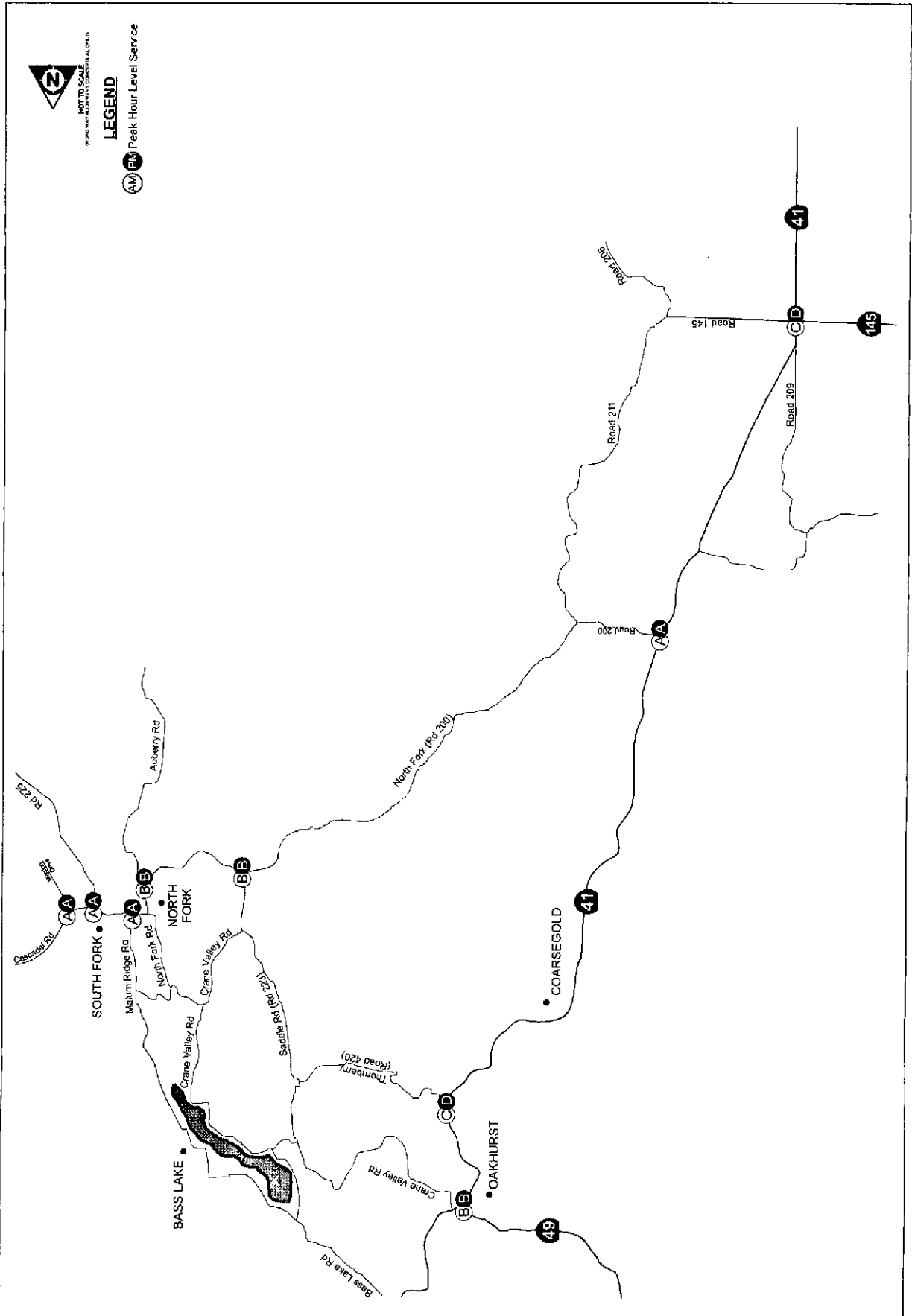
LEVEL OF SERVICE
2010 Project
North Fork Site
(Alternative D)

North Fork Casino
Madera County

Figure 49

DA-537.2





NOT TO SCALE
ROADWAY ALIGNMENT IS PRELIMINARY ONLY

LEGEND

AA' BB' Peak Hour Level Service

AA BB Peak Hour Level Service



PEAK HOUR TRAFFIC VOLUMES
 2030 Project
 North Fork Site
 (Alternative D)

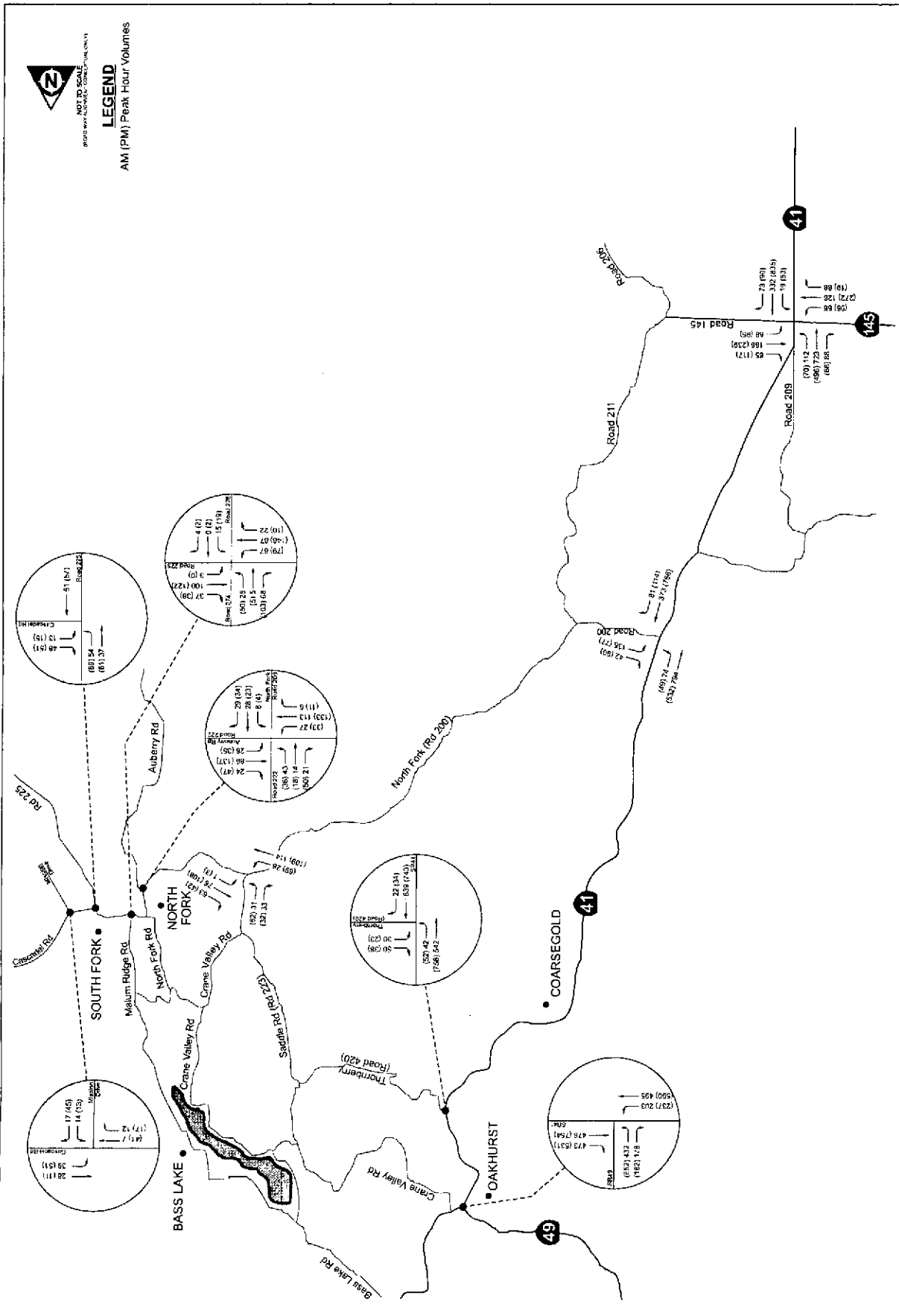
North Fork Casino
 Madera County

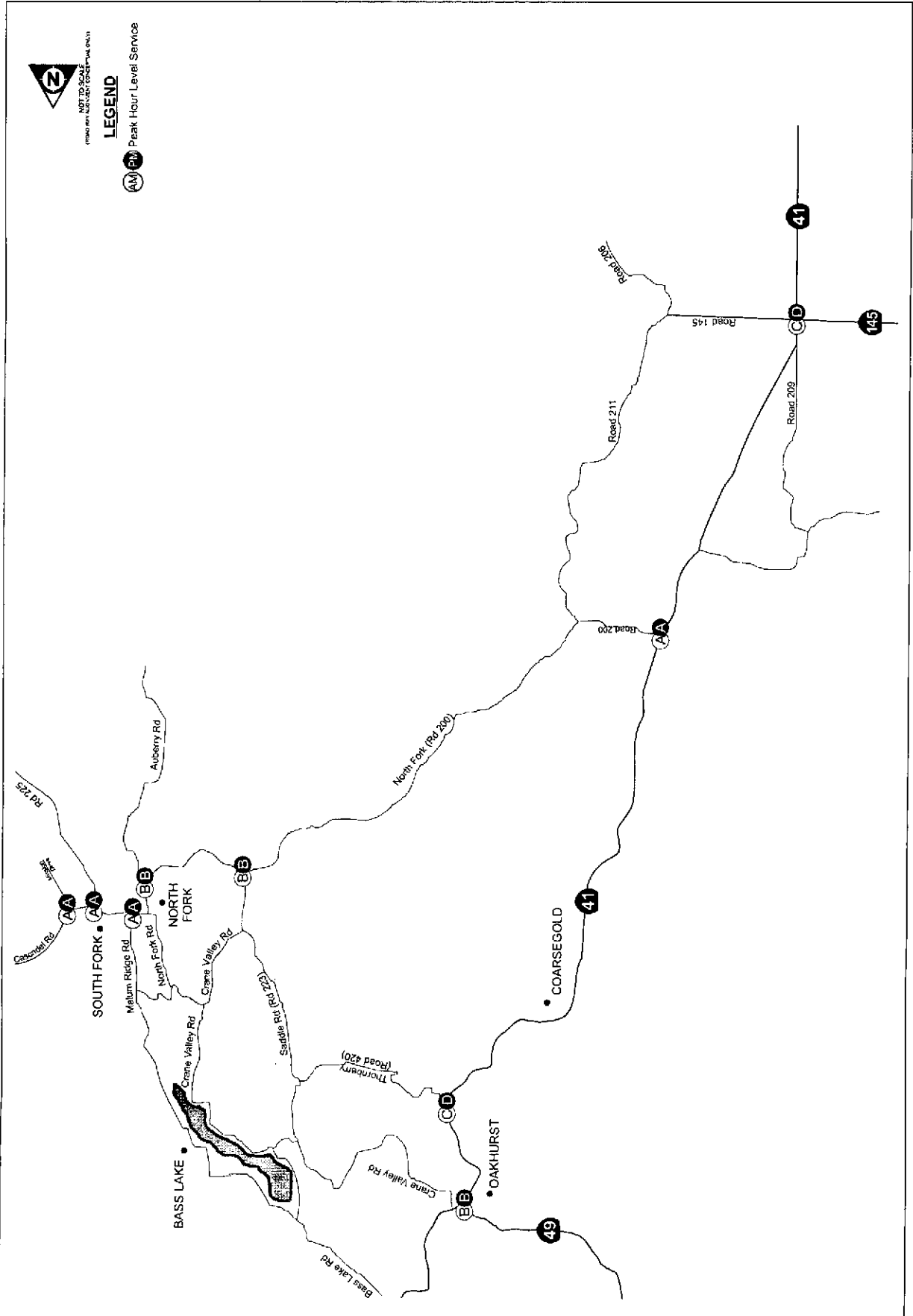
Figure 52

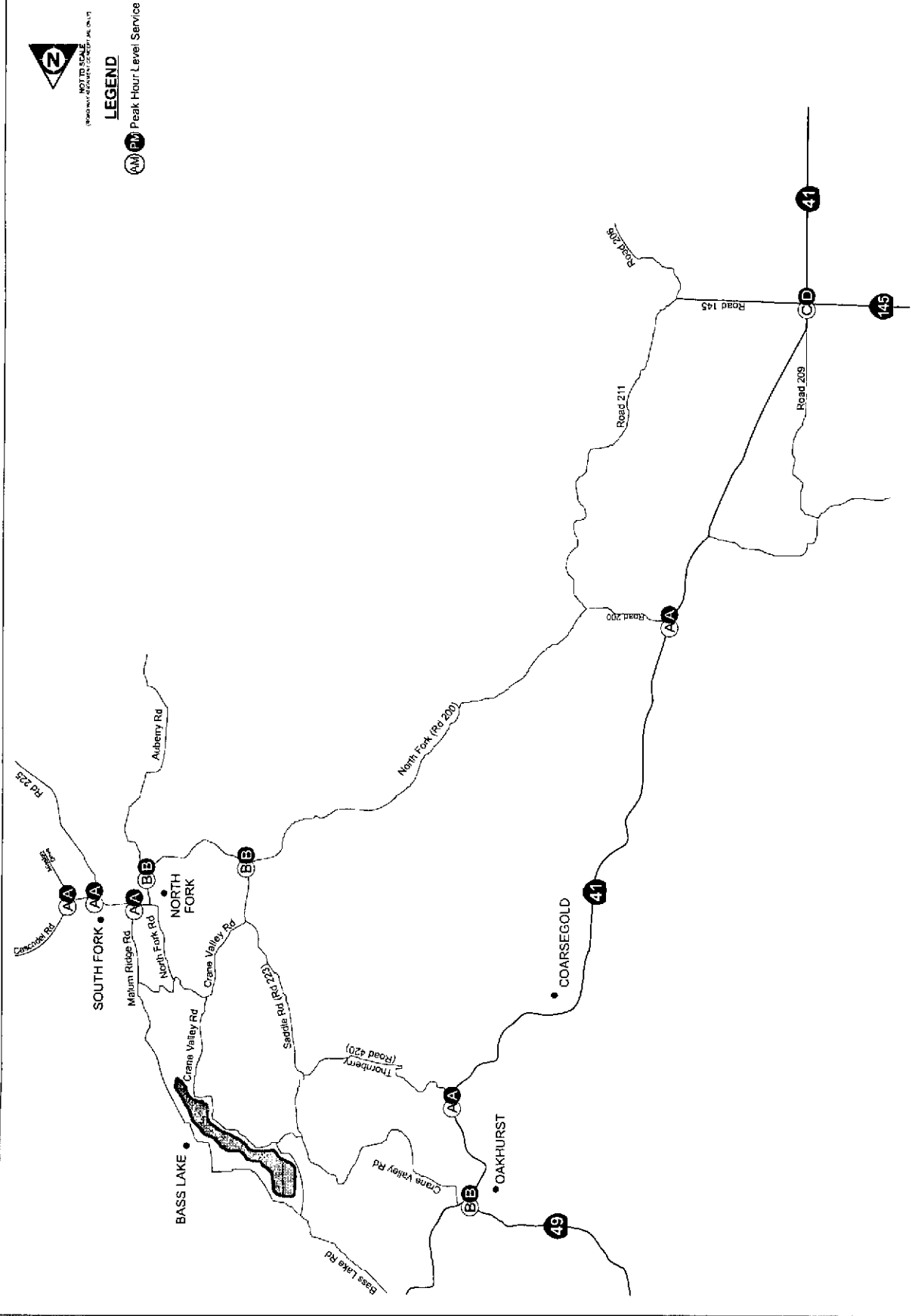
04-937.2



LEGEND
 AM (PM) Peak Hour Volumes







C. PROJECT TRIP GENERATION

Trip Rates and Resulting Trips by Component

Alternative A, B, D

Casino Gaming Facility/Hotel Trip Rate Data Sources

Per the County of Madera scoping letter, “Project trip generation should be based upon those standards contained within the ITE periodicals, relevant publications by other entities such as the San Diego Area Association of Governments (SANDAG), or actual counts at local casinos.” AES, National Environmental Policy Act (NEPA) preparer for this Project, provided copies of two (2) recent casino-hotel traffic studies, which were to be used to develop appropriate trip generation information for use in this study. The Shingle Springs Rancheria Interchange Project Transportation/Circulation Technical Study and the Enterprise Rancheria Casino-Hotel Traffic Impact Study have both received approval from the Bureau of Indian Affairs (BIA). Both documents have extensive discussions on the research performed to determine an appropriate trip generation rate for Indian gaming facilities and on the trip rates developed for weekday daily, AM and PM peak of the street as well as Saturday peak hour of the generator conditions.

The trip generation rates used in the Shingle Springs Rancheria Interchange Project Transportation/Circulation Technical Study¹ was based on data from five (5) northern California Indian gaming casinos ranging in size from 17,300 sf to 78,000 sf. Inbound and outbound traffic data was collected for a weekday AM peak of the street, a weekday PM peak of the street, and a Saturday peak hour of the generator. The resulting traffic data was then converted to trip generation data for use in the Shingle Springs document using a weighted average rate methodology².

The trip generation rates used in the Enterprise Rancheria Casino-Hotel Traffic Impact Study³ included the data from the Shingle Springs document and additional information from the following sources:

- San Diego County Casino Study
- Mystic Lake Casino Survey
- Barona Indian Gaming Casino Survey
- Sycuan Indian Gaming Casino Survey
- Gaming Casino Traffic Article from Institute of Transportation Engineers (ITE) Journal, March 1998
- Mississippi Gulf Coast Casino Study

¹ The Shingle Springs Rancheria Project consisted of a 238,500 sf casino complex, a 250 room hotel and a 37,400 sf convention/event center.

² Weighted Average Trip Generation Rate – This rate is defined as the number of weighted trip ends per unit of the independent variable. The rate simply assumes a linear relationship between trip ends and the independent variable, having a slope equal to the rate and with the straight line passing through the origin (i.e. with a value of zero for the independent variable, the number of trips generated is zero). The average rates are typically weighted by the units of the independent variable. – Institute of Transportation Engineers (ITE) Trip Generation Handbook, page 7, March 2001.

³ The Enterprise Casino-Hotel Project consisted of a 207,760 sf casino complex and a 170 room hotel.

The San Diego County Casino Study was developed based on surveys of numerous southern California Indian gaming casinos. This study found that Indian gaming casinos typically generate 100 trips per 1,000 sf of gaming floor area on an average day. Please note that gaming floor area is a subset of a typically much larger casino floor area. Casino floor area usually consists of not only the gaming floor area but also includes restrooms, administration areas, entryways, and food/beverage areas. This report also determined that when a hotel is part of a casino-hotel establishment, that the daily trip rate for the hotel was 3.0 trips per room rather than the typical 8.23 trips per room rate found in the *Trip Generation* manual.

Trip rates for the Mystic Lake Casino, a large stand-alone Indian gaming casino-hotel facility located in southwestern Minnesota, were based on surveys of existing weekday PM peak hour and Saturday peak hour trips.

Weeklong driveway count data collected for the Barona Indian Gaming Casino, a 120,000 sf Indian gaming casino located in San Diego County, showed that on average, average weekday peak hour traffic volumes are approximately 7% of average weekday daily volumes.

The Sycuan Indian Gaming Casino Survey showed that on average Saturday volumes are 27% higher than volumes on an average weekday. This data was based on weeklong driveway counts.

The March 1998 ITE Journal article summarized the results of year long traffic counts at two (2) St. Louis, Missouri area casinos. This article provides conversion factors that can be used to convert trip generation rates for one time period to other time periods. This article also showed that on average, average weekday peak hour traffic volumes are approximately 7% of average weekday daily volumes.

The Mississippi Gulf Coast Casino Study surveyed traffic volumes at eight casinos on a Saturday along the Mississippi coast. This study included four (4) casinos with hotel facilities and four (4) casinos without hotel facilities, and provided an opportunity to see how the presence of a hotel effects trip generation.

Casino Gaming Facility Trip Rates

Alternative A (Proposed Project Alternative)

To develop the casino trip generation information used in this study for Alternative A, TPG utilized the data sources and survey data described in the *Casino Gaming Facility/Hotel Trip Rate* data sources discussed previously. Table 24 shows the resulting average weekday daily and peak of street trip rates derived from the data sources and used in this study for the casino portion of the Project.

TABLE 24: CASINO GAMING FACILITY TRIP GENERATION DATA ALTERNATIVE A (PROPOSED PROJECT ALTERNATIVE) AVERAGE RATE AND DIRECTIONAL DISTRIBUTION DATA				
Land Use	Period	Average Rate¹	Directional Distribution (%)	
			Enter	Exit
Casino (per ksf casino floor area)	Daily	45.30	50	50
	AM Peak of Street	2.36	70	30
	PM Peak of Street	3.93	53	47

¹ Trips per 1,000 square feet ksf = 1,000 square feet

The data shown in Table 24 consists of the following:

- Type of land use – casino
- Time period – average weekday daily or average weekday AM/PM peak hour of street
- Average trip generation rate – the number of trips generated per time period per 1,000 sf of casino floor area
- Directional distribution percentage – enter and exit

As shown in Table 24, the 268,480 sf Alternative A casino is projected to generate 45.30 trips for every 1,000 sf of casino floor area in a 24-hour average weekday period. The 43.50 trips per 1,000 sf of casino floor area was derived based on the San Diego Casino Study survey data that showed Indian gaming casinos typically generated 100 trips per 1,000 sf of gaming floor area on a typical weekday. The Alternative A casino gaming floor area will consist of 121,630 sf, which equates to approximately 12,163 average weekday trips. Converting the trips per 1,000 sf of gaming floor area to trips per 1,000 sf of casino floor area results in a trip rate of 45.30 per 1,000 sf of casino floor area on an average weekday. Daily trips are typically assumed to be 50 percent entering and 50 percent exiting within a 24-hour period.

Pass-by trips are vehicular trips that are attracted to Project land uses from the existing traffic stream on roadways adjacent to the Project site that have direct access to the Project site. Diverted link trips are similar to pass-by trips, except that they are attracted from nearby roadways that do not have direct access to the Project site. Per the Caltrans *Guide for the Preparation of Traffic Impact Studies*, a 15% pass-by/diverted link rate was applied to the Project casino and hotel uses that would likely show a reduction due to pass-by trips traveling along SR 99 (diverted link) and Road 23 (pass-by).

The Enterprise study PM peak hour trip rate estimate was based in part on the Shingle Springs document but expanded the weighted average rate to include the data from the Barona and Mystic Lake Casinos. Both the Barona and Mystic Lake casinos are larger in size and more closely resemble the Enterprise Casino and the proposed Alternative A Project. The final PM peak of the street trip generation rate used in the Enterprise document was established by averaging together the following two trip rates: (1) the trip rate of 3.48 trips per 1,000 square feet of casino floor area established by plotting the trip rates for seven (7) casinos ranging in size from 17,000 sf to the 447,600 sf with a best fit curve; and (2) the trip rate of 4.37 established from a straight line interpolation of 4.56 trips per 1,000 sf of casino floor area for the Barona casino and 3.87 trips per 1,000 sf of casino floor area for the Mystic Lake casino.

As shown in both the Shingle Springs and the Enterprise documents, the smaller the casino size the greater the number of peak hour trips per 1,000 square feet of casino floor area. Conversely the larger the casino, the smaller the number of peak hour trips per 1,000 square feet of casino floor area. Both the Shingle Springs Project (238,500 sf) and the Enterprise Casino-Hotel Project (207,760 sf) consisted of smaller casino facilities than will the proposed North Fork Casino Project (268,480 sf). As such, using the Enterprise Project AM/PM peak hour trip generation rates for the North Fork Project should provide a conservative estimate of weekday AM and PM peak hour trips. Therefore, the PM peak hour trip rate of 3.93 trips per 1,000 sf of casino floor area developed in the Enterprise document was also utilized in this study for Alternative A and is shown in Table 24. Per the Barona Indian Gaming Casino Survey and the March 1998 ITE Journal article, average weekday peak hour traffic volumes are approximately 7% of the average weekday daily volumes. Dividing the average weekday PM peak hour trip rate of 3.93 trips per 1,000 sf of casino floor area by the average weekday daily trip rate of 43.50 trips per 1,000 sf of casino floor area shows that the average weekday PM peak hour trip rate is approximately 9% of the average weekday daily rate. Therefore the use of the average weekday PM peak hour trip rate of 3.93 trips per 1,000 sf of casino floor area should be considered a conservative number. Conversion of the 3.93 trips per 1,000 sf of casino floor area to trips per 1,000 sf of gaming floor area results in a PM peak hour trip rate of 8.674 trips per 1,000 sf of gaming floor area.

The Shingle Springs document also collected AM peak of the street data for one of the five (5) northern California casinos. As stated in the Shingles document, very few casino trips are generated in the AM peak of the street time period with the majority of the Project trips occurring during the PM peak of the street time period or in some cases even later evening, such as 7:00 to 9:00 PM. Since the PM peak is considered the worst case, it was considered sufficient for study purposes to collect AM data at only one Casino location. The AM peak of the street casino trips was found to be 60% of the PM peak of the street casino trips. Therefore the AM peak of the street trip generation rate used in the North Fork study for Alternative A is 2.36 trips (3.93×0.6) per 1,000 sf of casino floor area and is shown in Table 24.

Peak hour of the street conditions typically show a heavier entering or exiting volume depending on the use and are rarely a 50/50 split. In the case of the casino traffic previous survey data has shown that for an average weekday AM peak of the street condition, the direction percentage is typically 70% entering and 30% exiting, while for the PM peak hour of the street condition, the directional percentage is typically 53% entering and 47% exiting.

Comparison to Chukchansi Casino Trip Rates

To verify that this study was using a conservative set of data assumptions for the development of the Alternative A casino trip generation information, a comparison of trip rates was made between the Alternative A, Proposed Project Alternative, and the Chukchansi Casino. The Chukchansi Casino, which is located in Madera County near the intersection of SR 41 and Lucky Lane, is estimated to consist of the following uses:

- Casino Floor Area – 176,000 sf (52,000 sf of gaming floor area)
- Hotel – 120,000 sf (204 rooms)

Per Caltrans April 11, 2006 letter commenting on the North Fork Casino first draft, the latest PM peak hour counts at the SR 41 and Lucky Lane intersection showed that 358 two directional trips were being generated by the Chukchansi Casino. If a worst case assessment was used, which assumes that the entire 358 PM peak hour trips were generated by the casino as opposed to the 358 PM peak hour trips being generated by a combination of the casino and hotel, the resulting trip rate would be

6.88 trips per 1,000 sf of gaming floor area (358 trips/52 ksf gaming floor area), and 2.034 trips per 1,000 sf of casino floor area (358 trips/176 ksf casino floor area). As shown in the discussion on the development of the Alternative A casino trip rates, this document utilizes an 8.674 trip rate per 1,000 sf of gaming floor area and a 3.93 trip rate per 1,000 sf of casino floor area. Since the proposed Alternative A casino trip rates for either the gaming or casino floor area are greater than those being currently generated by the Chukchansi Casino this analysis should be considered a worst case assessment. Again it should also be noted that typically the smaller the casino size the greater the number of peak hour trips per 1,000 square feet of casino floor area. Conversely the larger the casino size the lower the number of peak hour trips per 1,000 square feet of casino floor area. Therefore since the proposed Alternative A Casino is larger than the current Chukchansi Casino the use of trip generation rates greater than the known rates generated by the Chukchansi Casino should be considered a worst case assessment.

Alternative B (Reduced Intensity Alternative)

To develop the casino trip generation information used in this study for Alternative B, TPG utilized the data sources and survey data described in the *Casino Gaming Facility/Hotel Trip Rate* data sources discussed previously. Table 25 shows the resulting average weekday daily and peak of street trip rates derived from the data sources and used in this study for the casino portion of the Project.

TABLE 25: CASINO GAMING FACILITY TRIP GENERATION DATA ALTERNATIVE B (REDUCED INTENSITY ALTERNATIVE) AVERAGE RATE AND DIRECTIONAL DISTRIBUTION DATA				
Land Use	Period	Average Rate¹	Directional Distribution (%)	
			Enter	Exit
Casino (per ksf casino floor area)	Daily	45.36	50	50
	AM Peak of Street	2.36	70	30
	PM Peak of Street	3.93	53	47

¹ Trips per 1,000 square feet ksf = 1,000 square feet

The data shown in Table 25 consists of the following:

- Type of land use – casino
- Time period – average weekday daily or average weekday AM/PM peak hour of street
- Average trip generation rate – the number of trips generated per time period per 1,000 sf of casino floor area
- Directional distribution percentage – enter and exit

As shown in Table 25, the 198,990 sf Alternative B casino is projected to generate 45.36 trips for every 1,000 sf of casino floor area in a 24-hour average weekday period. The 43.56 trips per 1,000 sf of casino floor area was derived based on the San Diego Casino Study survey data that showed Indian gaming casinos typically generated 100 trips per 1,000 sf of gaming floor area on a typical weekday. The Alternative B casino gaming floor area will consist of 90,255 sf, which equates to approximately 9,026 average weekday trips. Converting the trips per 1,000 sf of gaming floor area to trips per 1,000 sf of casino floor area results in a trip rate of 45.36 per 1,000 sf of casino floor area on an average weekday. Daily trips are typically assumed to be 50 percent entering and 50 percent exiting within a 24-hour period.

Pass-by trips are vehicular trips that are attracted to Project land uses from the existing traffic stream on roadways adjacent to the Project site that have direct access to the Project site. Diverted link trips are similar to pass-by trips, except that they are attracted from nearby roadways that do not have direct access to the Project site. Per the Caltrans *Guide for the Preparation of Traffic Impact Studies*, a 15% pass-by/diverted link rate was applied to the Project casino use that would likely show a reduction due to pass-by trips traveling along SR 99 (diverted link) and Road 23 (pass-by).

As stated previously, the Enterprise study PM peak hour trip rate estimate was based in part on the Shingle Springs document but expanded the weighted average rate to include the data from the Barona and Mystic Lake Casinos. Both the Barona and Mystic Lake casinos are larger in size and more closely resemble the Enterprise Casino and the proposed Alternative B Project. The final PM peak of the street trip generation rate used in the Enterprise document was established by averaging together the following two trip rates: (1) the trip rate of 3.48 trips per 1,000 square feet of casino floor area established by plotting the trip rates for seven (7) casinos ranging in size from 17,000 sf to the 447,600 sf with a best fit curve; and (2) the trip rate of 4.37 established from a straight line interpolation of 4.56 trips per 1,000 sf of casino floor area for the Barona casino and 3.87 trips per 1,000 sf of casino floor area for the Mystic Lake casino.

The PM peak hour trip rate of 3.93 trips per 1,000 sf of casino floor area developed in the Enterprise document was also utilized in this study for Alternative B and is shown in Table 25. Per the Barona Indian Gaming Casino Survey and the March 1998 ITE Journal article, average weekday PM peak hour traffic volumes are approximately 7% of the average weekday daily volumes. Dividing the average weekday PM peak hour trip rate of 3.93 trips per 1,000 sf of casino floor area by the average weekday daily trip rate of 43.50 trips per 1,000 sf of casino floor area shows that the average weekday PM peak hour trip rate is approximately 9% of the average weekday daily rate. Therefore the use of the average weekday PM peak hour trip rate of 3.93 trips per 1,000 sf of casino floor area should be considered a conservative number.

The Shingle Springs document also collected AM peak of the street data for one of the five (5) northern California casinos. As stated in the Shingles document, very few casino trips are generated in the AM peak of the street time period with the majority of the Project trips occurring during the PM peak of the street time period or in some cases even later evening, such as 7:00 to 9:00 PM. Since the PM peak is considered the worst case, it was considered sufficient for study purposes to collect AM data at only one Casino location. The AM peak of the street casino trips was found to be 60% of the PM peak of the street casino trips. Therefore the AM peak of the street trip generation rate used in the North Fork study for Alternative B is 2.36 trips (3.93×0.6) per 1,000 sf of casino floor area and is shown in Table 25.

Peak hour of the street conditions typically show a heavier entering or exiting volume depending on the use and are rarely a 50/50 split. In the case of the casino traffic previous survey data has shown that for an average weekday AM peak of the street condition, the direction percentage is typically 70% entering and 30% exiting, while for the PM peak hour of the street condition, the directional percentage is typically 53% entering and 47% exiting.

Alternative D (Off-Site Alternative)

To develop the casino trip generation information used in this study for Alternative D, TPG utilized the data sources and survey data described in the *Casino Gaming Facility/Hotel Trip Rate* data sources discussed previously. Table 26 shows the resulting average weekday daily and peak of street trip rates derived from the data sources and used in this study for the casino portion of the Project.

TABLE 26: CASINO GAMING FACILITY TRIP GENERATION DATA ALTERNATIVE D (OFF-SITE ALTERNATIVE) AVERAGE RATE AND DIRECTIONAL DISTRIBUTION DATA				
Land Use	Period	Average Rate¹	Directional Distribution (%)	
			Enter	Exit
Casino (per ksf casino floor area)	Daily	59.42	50	50
	AM Peak of Street	2.50	70	30
	PM Peak of Street	4.16	53	47

¹ Trips per 1,000 square feet ksf = 1,000 square feet

The data shown in Table 26 consists of the following:

- Type of land use – casino
- Time period – average weekday daily or average weekday AM/PM peak hour of street
- Average trip generation rate – the number of trips generated per time period per 1,000 sf of casino floor area
- Directional distribution percentage – enter and exit

As shown in Table 26, the 26,001 sf Alternative D casino is projected to generate 59.42 trips for every 1,000 sf of casino floor area in a 24-hour average weekday period. The 59.42 trips per 1,000 sf of casino floor area was derived based on the San Diego Casino Study survey data that showed Indian gaming casinos typically generated 100 trips per 1,000 sf of gaming floor area on a typical weekday. The Alternative D casino gaming floor area will consist of 15,451 sf, which equates to 1,545 average weekday trips. Converting the trips per 1,000 sf of gaming floor area to trips per 1,000 sf of casino floor area results in a trip rate of 59.42 per 1,000 sf of casino floor area on an average weekday. Daily trips are typically assumed to be 50 percent entering and 50 percent exiting within a 24-hour period.

Pass-by and/or diverted link trips were not accounted for the Alternative D due to the remote location.

Per the Barona Indian Gaming Casino Survey and the March 1998 ITE Journal article, average weekday PM peak hour traffic volumes are approximately 7% of the average weekday daily volumes. Multiplying the average weekday daily trip rate of 59.42 trips per 1,000 sf of casino floor area by 7% results in an average weekday PM peak hour trip rate of 4.16 trips per 1,000 sf of casino floor area. The average weekday PM peak hour trip rate of 4.16 was used in this study for Alternative D.

The Shingle Springs document also collected AM peak of the street data for one of the five (5) northern California casinos. As stated in the Shingles document, very few casino trips are generated in the AM peak of the street time period with the majority of the Project trips occurring during the PM peak of the street time period or in some cases even later evening, such as 7:00 to 9:00 PM. Since the PM peak is considered the worst case, it was considered sufficient for study purposes to collect AM data at only one Casino location. The AM peak of the street casino trips was found to be 60% of the PM peak of the street casino trips. Therefore the AM peak of the street trip generation rate used in the North Fork study is 2.50 trips (4.16*0.6) per 1,000 sf of casino floor area and is shown in Table 26.

Peak hour of the street conditions typically show a heavier entering or exiting volume depending on the use and are rarely a 50/50 split. In the case of the casino traffic previous survey data has shown

that for an average weekday AM peak of the street condition, the direction percentage is typically 70% entering and 30% exiting, while for the PM peak hour of the street condition, the directional percentage is typically 53% entering and 47% exiting.

Casino Gaming Facility Trips

Alternative A (Proposed Project Alternative)

Table 27 shows the resulting primary (new), pass-by/diverted link, and total casino gaming facility trips used in this analysis for Alternative A. As shown in Table 27 using the rates shown in Table 24, the 268,480 sf Alternative A casino is projected to generate a total of 12,163 daily two directional trips. The Alternative A casino is also projected to generate a total of 633 two directional AM peak of the street trips with 443 entering and 190 trips exiting, and a total of 1,055 two directional PM peak of the street trips with 559 entering and 496 trips exiting.

TABLE 27: CASINO GAMING FACILITY TRIP GENERATION DATA ALTERNATIVE A (PROPOSED PROJECT ALTERNATIVE) WEEKDAY DAILY AND PEAK HOUR OF STREET TRIPS						
Uses	Size	Daily (trips)	AM Peak		PM Peak	
			Enter (trips)	Exit (trips)	Enter (trips)	Exit (trips)
Primary (New) Project Trips	268,480 sf	10,339	377	161	475	422
Pass-By/Diverted Link	268,480 sf	1,824	66	29	84	74
Total	268,480 sf	12,163	443	190	559	496

ksf = 1,000 square feet

sf = square feet

trips are calculated per ksf

Alternative B (Reduced Intensity Alternative)

Table 28 shows the resulting primary (new), pass-by/diverted link, and total casino gaming facility trips used in this analysis for Alternative B. As shown in Table 28 using the rates shown in Table 25, the 198,990 sf Alternative B casino is projected to generate a total of 9,026 daily two directional trips. The Alternative B casino is also projected to generate a total of 469 two directional AM peak of the street trips with 328 entering and 141 trips exiting, and a total of 782 two directional PM peak of the street trips with 414 entering and 368 trips exiting.

TABLE 28: CASINO GAMING FACILITY TRIP GENERATION DATA ALTERNATIVE B (REDUCED INTENSITY ALTERNATIVE) WEEKDAY DAILY AND PEAK HOUR OF STREET TRIPS						
Uses	Size	Daily (trips)	AM Peak		PM Peak	
			Enter (trips)	Exit (trips)	Enter (trips)	Exit (trips)
Primary (New) Project Trips	198,990 sf	7,672	279	120	352	313
Pass-By/Diverted Link	198,990 sf	1,354	49	21	62	55
Total	198,990 sf	9,026	328	141	414	368

ksf = 1,000 square feet

sf = square feet

trips are calculated per ksf

Alternative D (Off-Site Alternative)

Table 29 shows the resulting casino gaming facility trips used in this analysis for Alternative D. As shown in Table 29 using the rates shown in Table 26, the 26,001 sf Alternative D casino is projected to generate a total of 1,545 daily two directional trips. The Alternative D casino is also projected to generate a total of 66 two directional AM peak of the street trips with 46 entering and 20 trips exiting, and a total of 108 two directional PM peak of the street trips with 57 entering and 51 trips exiting.

**TABLE 29:
CASINO GAMING FACILITY TRIP GENERATION DATA
ALTERNATIVE D (OFF-SITE ALTERNATIVE)
WEEKDAY DAILY AND PEAK HOUR OF STREET TRIPS**

Uses	Size	Daily (trips)	AM Peak		PM Peak	
			Enter (trips)	Exit (trips)	Enter (trips)	Exit (trips)
Casino	26,001 sf	1,545	46	20	57	51

*k*sf = 1,000 square feet *sf* = square feet *trips* are calculated per *k*sf

Hotel Trip Rates

The Hotel component base trip generation information was developed from the number of rooms provided by the applicant using the Institute of Transportation Engineers (ITE) Trip Generation manual and the corresponding software⁴. Table 30 lists the corresponding land use codes and page numbers as provided for in the Trip Generation manual that were looked at in developing the Project trip generation Hotel component information.

**TABLE 30:
ITE TRIP GENERATION DATA
MANUAL REFERENCE INFORMATION**

Land Use	Land Use Code	Page Number
Hotel	310	541 - 568

Table 31 lists the daily, AM peak of the street, and PM peak of the street average rates and the directional distribution as provided in the Trip Generation manual.

**TABLE 31:
ITE TRIP GENERATION DATA
AVERAGE RATE AND DIRECTIONAL DISTRIBUTION DATA**

Land Use	Period	Average ¹ Rate	Directional Distribution (%)	
			Enter	Exit
Hotel (per room)	Daily	8.17	50	50
	AM Peak of Street	0.56	61	39
	PM Peak of Street	0.59	53	47

¹ Trips per room

⁴ *Trip Generation* (software), Version 5, Microtrans, 2003.

As discussed previously, the San Diego County Department of Public Works prepared a casino trip generation study that contained surveys of numerous southern California Indian gaming casinos. As stated previously, this report determined that when a hotel is part of a casino-hotel establishment, the daily trip rate for the hotel was 3.0 trips per room rather than the typical 8.17 trips per room rate found in the Trip Generation manual. This is a 63.5% reduction in number of daily trips likely to be generated by a hotel when the hotel is combined with a casino. This reduction in number of trips likely to be generated by a hotel when it is a part of a casino project is due to the “capturing” of trips by the casino, i.e. guests staying at Indian casino hotels are there for the express purpose of gaming at the adjacent casino and are not using the hotel as typical lodging. This reduction in number of trips also applies to both the AM and PM peak of the street hotel rates. Table 32 shows the resulting average weekday daily and AM/PM peak hour of street hotel rates used in this study.

TABLE 32: HOTEL TRIP GENERATION DATA AVERAGE RATE AND DIRECTIONAL DISTRIBUTION DATA				
Land Use	Period	Average Rate¹	Directional Distribution (%)	
			Enter	Exit
Hotel (per room)	Daily	3.00	50	50
	AM Peak of Street	0.21	61	39
	PM Peak of Street	0.22	53	47

¹ Trips per room

The data shown in Table 32 consists of the following:

- Type of land use – hotel
- Time period – average weekday daily or average weekday AM/PM peak hour of street
- Average trip generation rate – the number of trips generated per time period per room
- Directional distribution percentage – enter and exit

As shown in Table 32, the 224,530 sf (200 room) hotel is projected to generate 3.00 trips for every room in an average weekday 24-hour period. The hotel is also projected to generate 0.21 trips for every room during the average weekday AM peak hour of the street and 0.22 trips for every room during the average weekday PM peak hour of the street. Daily trips are typically assumed to be 50 percent entering and 50 percent exiting within a 24-hour period. As stated previously peak hour of the street conditions typically show a heavier entering or exiting volume depending on the use and is rarely a 50/50 split. In the case of the hotel traffic ITE survey data has shown that for an average weekday AM peak hour of the street condition, the directional percentage is typically 61% entering and 39% exiting, while for the average weekday PM peak hour of the street condition, the directional percentage is typically 53% entering and 47% exiting.

Hotel Trips

Alternative A (Proposed Project Alternative)

Table 33 shows the resulting primary (new), pass-by/diverted link, and total hotel trips used in this analysis. As shown in Table 33 using the rates shown in Table 32, the 224,530 sf (200 room) Alternative A hotel is projected to generate a total of 600 daily two directional trips. The Alternative A hotel is also projected to generate a total of 41 two directional AM peak of the street trips with 25

entering and 16 trips exiting, and a total of 44 two directional PM peak of the street trips with 23 entering and 21 trips exiting.

**TABLE 33:
HOTEL TRIP GENERATION DATA
ALTERNATIVE A (PROPOSED PROJECT ALTERNATIVE)
WEEKDAY DAILY AND PEAK HOUR OF GENERATOR TRIPS**

Uses	Size	Daily (trips)	AM Peak		PM Peak	
			Enter (trips)	Exit (trips)	Enter (trips)	Exit (trips)
Primary (New) Project Trips	224,530 sf / 200 rooms	510	21	14	20	18
Pass-By/Diverted Link	224,530 sf / 200 rooms	90	4	2	3	3
Total	224,530 sf / 200 rooms	600	25	16	23	21

sf = square feet

trips are calculated per room

Alternative C

Trip Generation

The Alternative C trip generation information was developed based on information provided by AES and using the Institute of Transportation Engineers (ITE) Trip Generation manual and the corresponding software⁵. Table 34 lists the corresponding land use codes and page numbers as provided for in the Trip Generation manual.

**TABLE 34:
ITE TRIP GENERATION DATA
MANUAL REFERENCE INFORMATION**

Land Use	Land Use Code	Page Number
Free Standing Discount Superstore	813	1,327 – 1,336
Discount Club	861	1,579 – 1,597
Fast Food Restaurant with Drive Through	934	1,749 – 1,770
High Turnover (sit-down) Restaurant	932	1,722 – 1,740

According to the ITE Trip Generation manual⁶, the uses analyzed in this report are defined as follows:

- “Free-standing discount superstores are similar to the free-standing discount stores described in Land Use 815, with the exception that they also contain a full service grocery department under the same roof that shares entrances and exits with the discount store area. The stores usually offer a variety of customer services, centralized cashiering and a wide range of products. They typically maintain long store hours 7 days a week. The stores included in this land use are often the only ones on the site, but they can also be found in mutual operation with a related or unrelated garden center and/or service station. They also are sometimes found as separate parcels within a retail complex with their own dedicated parking area.”

⁵ *Trip Generation* (software), Version 5, Microtrans, 2003.

⁶ *Trip Generation*, 7th edition, Volume 3, ITE, 2003, pages 1173,1675.

- “A discount club is a discount store or warehouse where shoppers pay a membership fee in order to take advantage of discounted prices on a wide variety of items such as food, clothing, tires and appliances; many items are sold in large quantities or bulk.”
- “Fast-food restaurant with drive-through window is characterized by a large carryout clientele; long hours of services (some are open for breakfast, all are open for lunch and dinner, some are open late at night or 24 hours); and high turnover rates for eat-in customers. These limited-service eating establishments do not provide table service. Patrons generally order at a cash register and pay before they eat.”
- “High-turnover (sit-down) restaurants consist of sit-down, full-service eating establishments with turnover rates of approximately one hour or less. This type of restaurant is usually moderately priced and frequently belongs to a restaurant chain. Generally, these restaurants serve lunch and dinner; they may also be open for breakfast and are sometimes open 24 hours per day. These restaurants typically do not take reservations. Some facilities contained within this land use may also contain a bar area for serving food and alcoholic drinks.”

Table 35 lists the daily, and AM and PM peak of the street average rates and the directional distribution used in this Project assessment. Project trips were actually calculated using the Trip Generation software and therefore there may be some rounding differences in the data used in the analysis and data prepared using the rates shown in Table 35. It should be noted that the trip generation information prepared from the use of the manual or software is raw data to be used as a basis for further evaluation by the traffic impact study preparer.

Land Use	Period	Average Rate ¹	Directional Distribution (%)	
			Enter	Exit
Free Standing Discount Superstore	Daily	49.21	50	50
	AM Peak of Street	1.84	51	49
	PM Peak of Street	3.87	49	51
Discount Club	Daily	41.80	50	50
	AM Peak of Street	0.56	71	29
	PM Peak of Street	4.24	50	50
Fast Food Restaurant w/ drive-thru	Daily	496.12	50	50
	AM Peak of Street	53.11	51	49
	PM Peak of Street	34.64	52	48
High Turnover (sit-down) Restaurant	Daily	127.15	50	50
	AM Peak of Street	11.52	52	48
	PM Peak of Street	10.92	61	39

¹ Trip Ends Per Thousand Square Feet

The data shown in Table 35 consists of the following:

- Type of land use – Free Standing Discount Superstore, Discount Club, and Fast Food Restaurant w/ drive-thru, High Turnover (sit-down) Restaurant
- Time period – average weekday daily or average weekday AM/PM peak hour of street
- Average trip generation rate – the number of trips generated per time period per room
- Directional distribution percentage – enter and exit

As shown in Table 35, the 125,000 sf Free Standing Discount Superstore is projected to generate 49.21 trips for every 1,000 sf in an average weekday 24-hour period. The Free Standing Discount Superstore is also projected to generate 1.84 trips for every 1,000 sf during the average weekday AM peak hour of the street and 3.87 trips for every 1,000 sf during the average weekday PM peak hour of the street. Daily trips are typically assumed to be 50 percent entering and 50 percent exiting within a 24-hour period. As stated previously peak hour of the street conditions typically show a heavier entering or exiting volume depending on the use and is rarely a 50/50 split. In the case of the Free Standing Discount Superstore traffic ITE survey data has shown that for an average weekday AM peak hour of the street condition, the directional percentage is typically 51% entering and 49% exiting, while for the average weekday PM peak hour of the street condition, the directional percentage is typically 49% entering and 51% exiting.

The 100,000 sf Discount Club is projected to generate 41.80 trips for every 1,000 sf in an average weekday 24-hour period. The Discount Club is also projected to generate 0.56 trips for every 1,000 sf during the average weekday AM peak hour of the street and 4.24 trips for every 1,000 sf during the average weekday PM peak hour of the street. Daily trips are typically assumed to be 50 percent entering and 50 percent exiting within a 24-hour period. As stated previously peak hour of the street conditions typically show a heavier entering or exiting volume depending on the use and is rarely a 50/50 split. In the case of the Discount Club traffic ITE survey data has shown that for an average weekday AM peak hour of the street condition, the directional percentage is typically 71% entering and 29% exiting, while for the average weekday PM peak hour of the street condition, the directional percentage is typically 50% entering and 50% exiting.

The 3,000 sf Fast Food Restaurant w/ drive-thru is projected to generate 496.12 trips for every 1,000 sf in an average weekday 24-hour period. The Fast Food Restaurant w/ drive-thru is also projected to generate 53.11 trips for every 1,000 sf during the average weekday AM peak hour of the street and 34.64 trips for every 1,000 sf during the average weekday PM peak hour of the street. Daily trips are typically assumed to be 50 percent entering and 50 percent exiting within a 24-hour period. As stated previously peak hour of the street conditions typically show a heavier entering or exiting volume depending on the use and is rarely a 50/50 split. In the case of the Fast Food Restaurant w/ drive-thru traffic ITE survey data has shown that for an average weekday AM peak hour of the street condition, the directional percentage is typically 51% entering and 49% exiting, while for the average weekday PM peak hour of the street condition, the directional percentage is typically 52% entering and 48% exiting.

The 4,000 and 5,000 sf High Turnover (sit-down) Restaurants are projected to generate 127.15 trips for every 1,000 sf in an average weekday 24-hour period. The High Turnover (sit-down) Restaurants are also projected to generate 11.52 trips for every 1,000 sf during the average weekday AM peak hour of the street and 10.92 trips for every 1,000 sf during the average weekday PM peak hour of the street. Daily trips are typically assumed to be 50 percent entering and 50 percent exiting within a 24-hour period. As stated previously peak hour of the street conditions typically show a heavier entering or exiting volume depending on the use and is rarely a 50/50 split. In the case of the High Turnover (sit-down) Restaurants traffic ITE survey data has shown that for an average weekday AM peak hour of the street condition, the directional percentage is typically 52% entering and 48% exiting, while for the average weekday PM peak hour of the street condition, the directional percentage is typically 61% entering and 39% exiting.

Captured Project Trips

Captured trips are trips between two or more uses that stay internal, or do not exit, a mixed-use or multi-use site. *Traffic Impact Analysis* states:

“There can be a sharing of trips within a mixed-use center, which is defined as a development with several types of land uses that is served by one access system connected to the public roadway. Typical mixed-use centers are shopping centers that have additional land uses on the perimeter of the site: banks, restaurants, photo processing stands, auto centers, theaters, etc. An assumption is made that some trips to the site likely will stop at one or more of these peripheral land uses in addition to stopping at the shopping center. Although no major documentation exists, some analysts use 10 percent or more (to account for this sharing of trips), depending on the project and local area characteristics.”⁷

According to the ITE *Trip Generation Handbook (ITE Handbook)*, which is widely considered one of the industry standards for the preparation of traffic evaluations, a “multi-use development is typically a single real-estate project that consists of two or more ITE land use classifications between which trips can be made without using the off-site road system”⁸. The proposed “Free-Standing Discount Superstore”, “Discount Club”, “Fast-Food Restaurant w/ Drive-Thru”, and “High Turnover (sit-down) Restaurant” are all ITE land use classifications and could capture some trips on-site as opposed to all vehicular trips entering/exiting the site as primary (new) or pass-by trips. The methodology shown in the *ITE Handbook* for determining captured trips was used in this study to develop captured trips for the proposed “Free-Standing Discount Superstore”, “Discount Club”, “Fast-Food Restaurant w/ Drive-Thru”, and “High Turnover (sit-down) Restaurant” as appropriate. The capture rates used in this study were 5% for both the AM and PM peak hours. This 5% capture rate is consistent with the Caltrans *Guide for the Preparation of Traffic Impact Studies*. For further information on the application of the captured trip methodology, please refer to the *ITE Handbook*⁹. Captured trips were calculated between all Project components.

Pass-By/Diverted Link Project Trips

Pass-by trips are vehicular trips that are attracted to Project land uses from the existing traffic stream on roadways adjacent to the Project site that have direct access to the Project site. Diverted link trips are similar to pass-by trips, except that they are attracted from nearby roadways that do not have direct access to the Project site. Per the Caltrans *Guide for the Preparation of Traffic Impact Studies*, a 15% pass-by/diverted link rate was applied to the Project restaurant uses that would likely show a reduction due to pass-by trips traveling along SR 99 (diverted link) and Road 23 (pass-by).

Total Project Trips

Alternative A (Proposed Project Alternative)

Table 36 shows the projected number of daily, AM and PM peak hour trips that would be generated by the Alternative A, Proposed Project Alternative, land use components based on the average rate and distributional data shown in Table 24. Table 36 also shows the primary (new) and pass-by/diverted link Project trips for Alternative A, Proposed Project Alternative.

⁷ *Traffic Impact Analysis*, American Planning Association (APA) Report # 387, Froda Greenberg and Jim Hecimovich, 1984, page 6.

⁸ *Trip Generation Handbook*, A Recommended Practice, ITE, March 2001, page 79.

⁹ *Trip Generation Handbook*, A Recommended Practice, ITE, March 2001, page 79.

TABLE 36:
PROJECT TRIP GENERATION DATA
ALTERNATIVE A (PROPOSED PROJECT ALTERNATIVE)

Uses	Size	Daily (trips)	AM Peak		PM Peak	
			Enter (trips)	Exit (trips)	Enter (trips)	Exit (trips)
Primary (New) Project Trips						
Casino	268,480 sf	10,339	377	161	475	422
Hotel	224,530 sf/200 Rooms	510	21	14	20	18
Pass-By/Diverted Link Trips						
Casino	268,480 sf	1,824	66	29	84	74
Hotel	224,530 sf/200 Rooms	90	4	2	3	3
Total Project Trips						
Total	493,010 sf/200 Rooms	12,763	468	206	582	517

sf = square feet

Alternative B (Reduced Intensity Alternative)

Table 37 shows the projected number of daily, AM and PM peak hour trips that would be generated by the Alternative B, Reduced Intensity Alternative, land use components based on the average rate and distributional data shown in Table 25.

TABLE 37:
PROJECT TRIP GENERATION DATA
ALTERNATIVE B (REDUCED INTENSITY ALTERNATIVE)

Uses	Size	Daily (trips)	AM Peak		PM Peak	
			Enter (trips)	Exit (trips)	Enter (trips)	Exit (trips)
Primary (New) Project Trips	198,990 sf	7,672	279	120	352	313
Pass-By/Diverted Link	198,990 sf	1,354	49	21	62	55
Total	198,990 sf	9,026	328	141	414	368

sf = square feet

Alternative C (Commercial Land Use Alternative)

Table 38 shows the projected number of daily, AM and PM peak hour trips that would be generated by the Alternative C, Commercial Land Use Alternative, land use components based on the average rate and distributional data shown in Table 35. Table 38 also shows the base, primary (new), capture, and pass-by/diverted link Project trips for Alternative C, Commercial Land Use Alternative.

**TABLE 38:
PROJECT TRIP GENERATION DATA
ALTERNATIVE C (COMMERCIAL LAND USE ALTERNATIVE)**

Land Use	Size	Daily (trips)	AM Peak		PM Peak	
			Enter (trips)	Exit (trips)	Enter (trips)	Exit (trips)
Primary (New) Project Trips						
Free Standing Discount Superstore	125,000 sf	6,151	111	105	223	229
Discount Club	100,000 sf	4,180	36	14	197	195
Restaurants ¹	12,000 sf	2,238	109	110	87	68
Captured Trips						
Free Standing Discount Superstore	125,000 sf	---	7	8	15	17
Discount Club	100,000 sf	---	4	2	15	17
Restaurants ¹	12,000 sf	---	7	8	12	8
Pass-By/Diverted Link Trips						
Free Standing Discount Superstore	125,000 sf	0	0	0	0	0
Discount Club	100,000 sf	0	0	0	0	0
Restaurants ¹	12,000 sf	395	19	20	15	12
Total Project Trips						
Total	237,000 sf	12,964	293	267	564	546

¹ Includes all restaurant uses – (1) High Turnover Restaurant and (2) Fast-Food Restaurants w/ Drive-Thru
sf = square feet

A copy of the Alternative C trip generation data software printout is included in Appendices section Attachment VI – C - 1.

Alternative D (Off-Site Alternative)

Table 39 shows the projected number of daily, AM and PM peak hour trips that would be generated by the Alternative D, Off-Site Alternative, land use components based on the average rate and distributional data shown in Table 26.

**TABLE 39:
PROJECT TRIP GENERATION DATA
ALTERNATIVE D (OFF-SITE ALTERNATIVE)**

Uses	Size	Daily (trips)	AM Peak		PM Peak	
			Enter (trips)	Exit (trips)	Enter (trips)	Exit (trips)
Casino	26,001 sf	1,545	46	20	57	51

sf = square feet

It should be noted that no captured or pass-by trip reductions were utilized in this evaluation. As such the Alternative D, Off-Site Alternative, project primary (new) trips should be considered worst case.

D. PROJECT TRIP DISTRIBUTION AND ASSIGNMENT

Trip distribution for the Project primary (new) trips for the various alternatives was based on Traffic Model generated trip distribution data.¹⁰ Basically the Traffic Model determines the locations of workers or consumers likely to access the Project site. The Model then estimates the roadways that these workers or consumers would likely use to travel to the site, and calculates the number of Model generated vehicle trips projected to occur on each roadway. This roadway trip data is then converted to match the primary (new) trip generation data developed for the Project alternatives. Per *Traffic Access and Impact Studies for Site Development*, use of a Traffic Model is one of the most commonly accepted methods for estimating trip distribution¹¹. As stated previously, the Project primary (new) trip distribution data for the various alternatives was prepared using the 2025 Model.

Alternative A (Proposed Project/Madera Site)

Figure 56 shows the Alternative A, Proposed Project, primary (new) trip distribution percentages for both 2010 and 2030. Figures 57 and 58 show the Alternative A primary (new) trip assignment for 2010 and 2030 respectively for the various study intersections.

Alternative B (Reduced Intensity Alternative/Madera Site)

Figure 59 shows the Alternative B, Reduced Intensity Alternative, primary (new) trip distribution percentages for both 2010 and 2030. Figures 60 and 61 show the Alternative B primary (new) trip assignments for 2010 and 2030 respectively for the various study intersections.

Alternative C (Commercial Land Use Alternative/Madera Site)

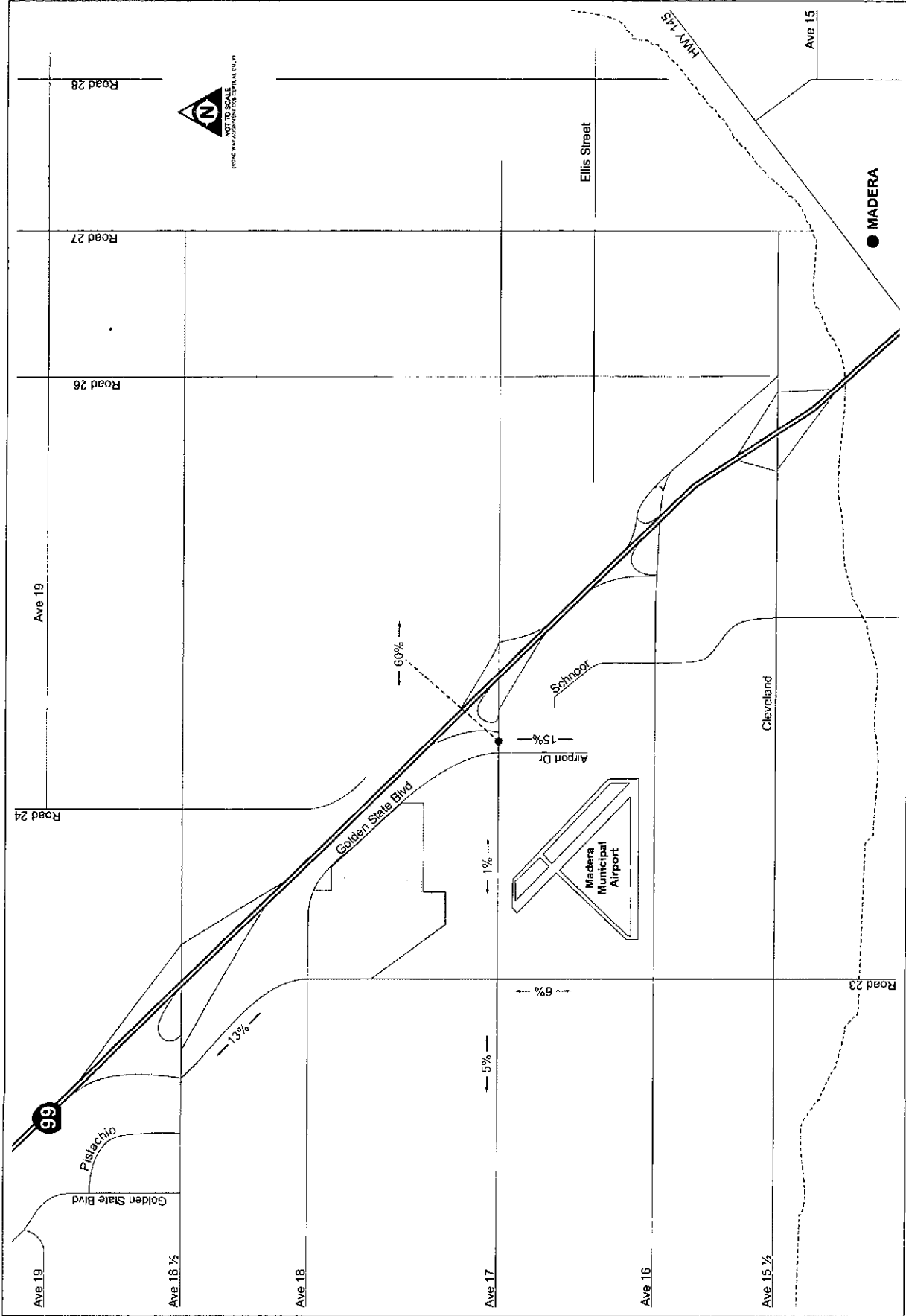
Figure 62 shows the Alternative C, Commercial Land Use Alternative, primary (new) trip distribution percentages for both 2010 and 2030. Figures 63 and 64 show the Alternative C primary (new) trip assignments for 2010 and 2030 respectively for the various study intersections.

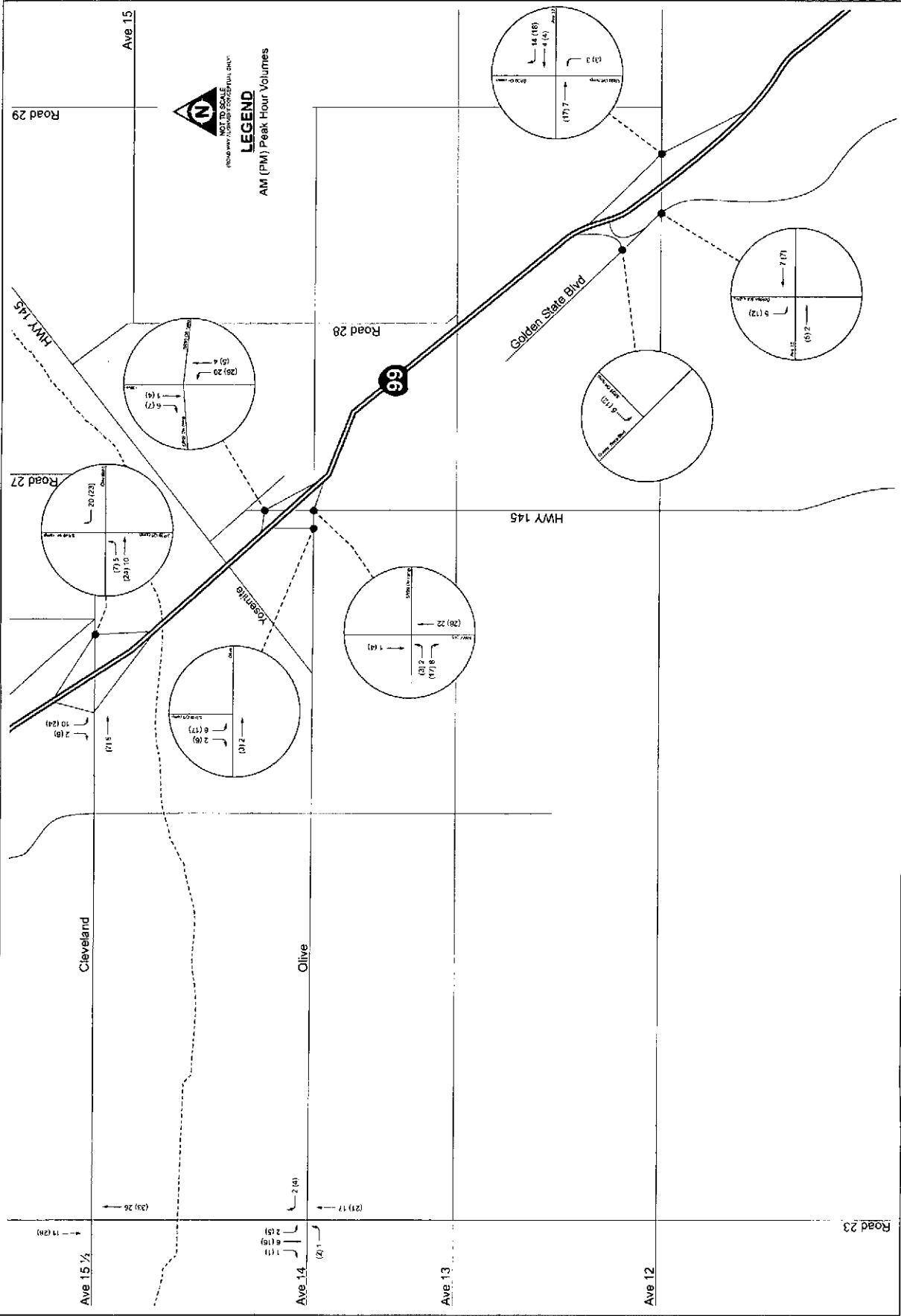
Alternative D (Off-Site Alternative/North Fork Site)

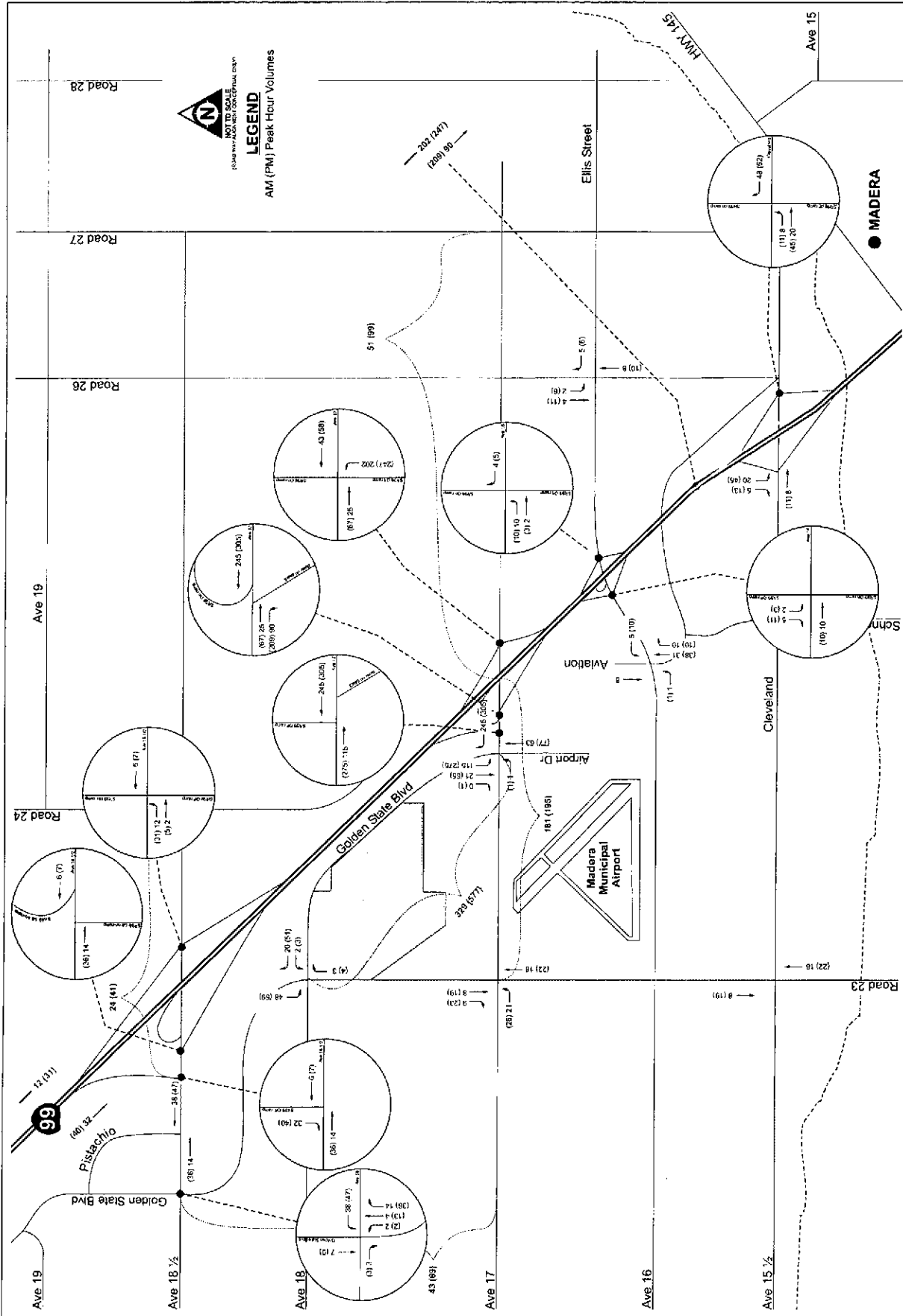
Figures 65 and 66 shows the Alternative D, Off-Site Alternative, primary (new) trip distribution percentages and the Alternative D primary (new) trip assignment respectively for the various study intersections.

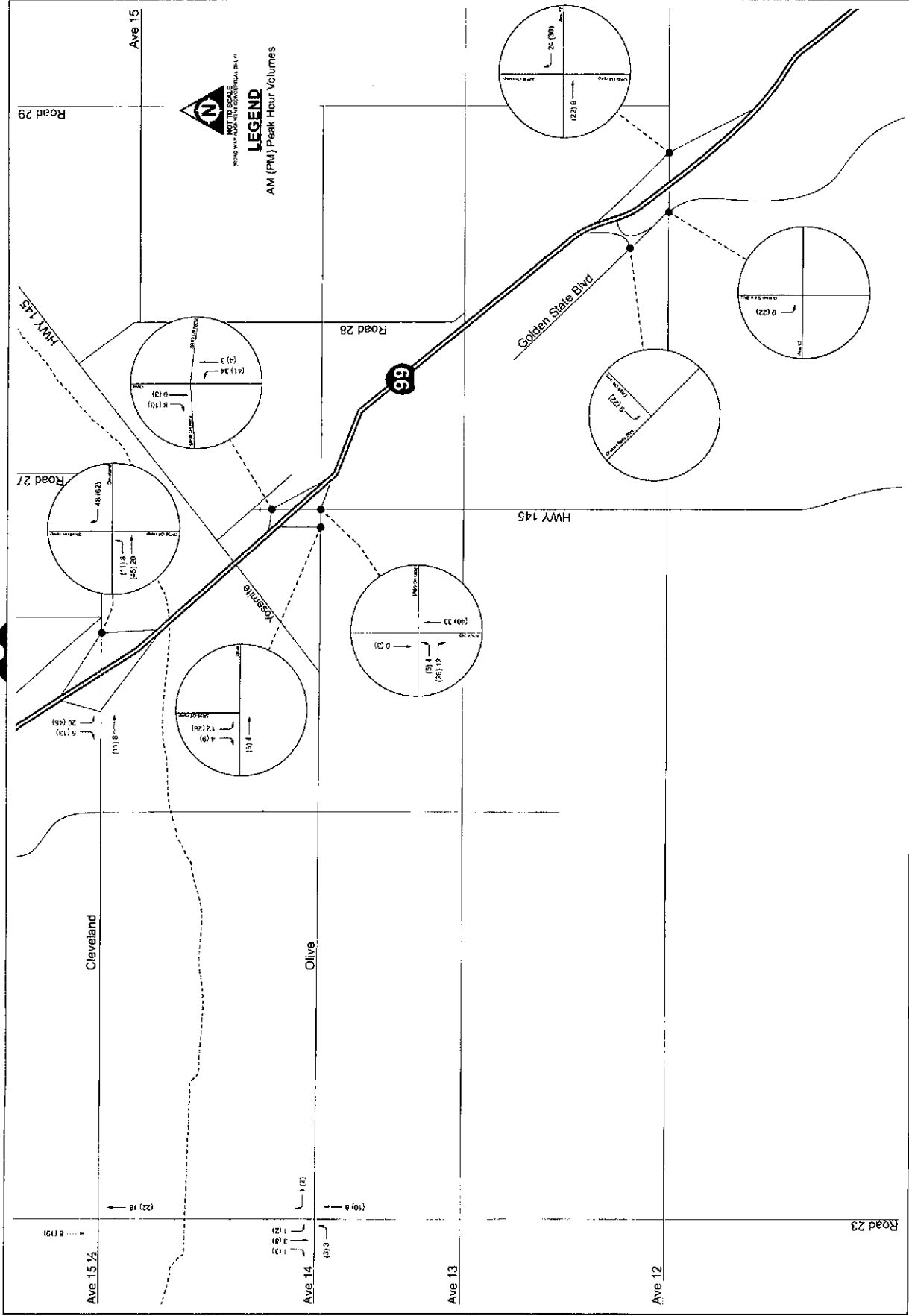
¹⁰ Project primary (new) trip distribution was based on a MCTC Model select zone analysis utilizing the 2025 network.

¹¹ *Traffic Access and Impact Studies for Site Development*, A Recommended Practice, ITE, Transportation Planners Council Task Force on Traffic Access/Impact Studies, 1991, page 27.

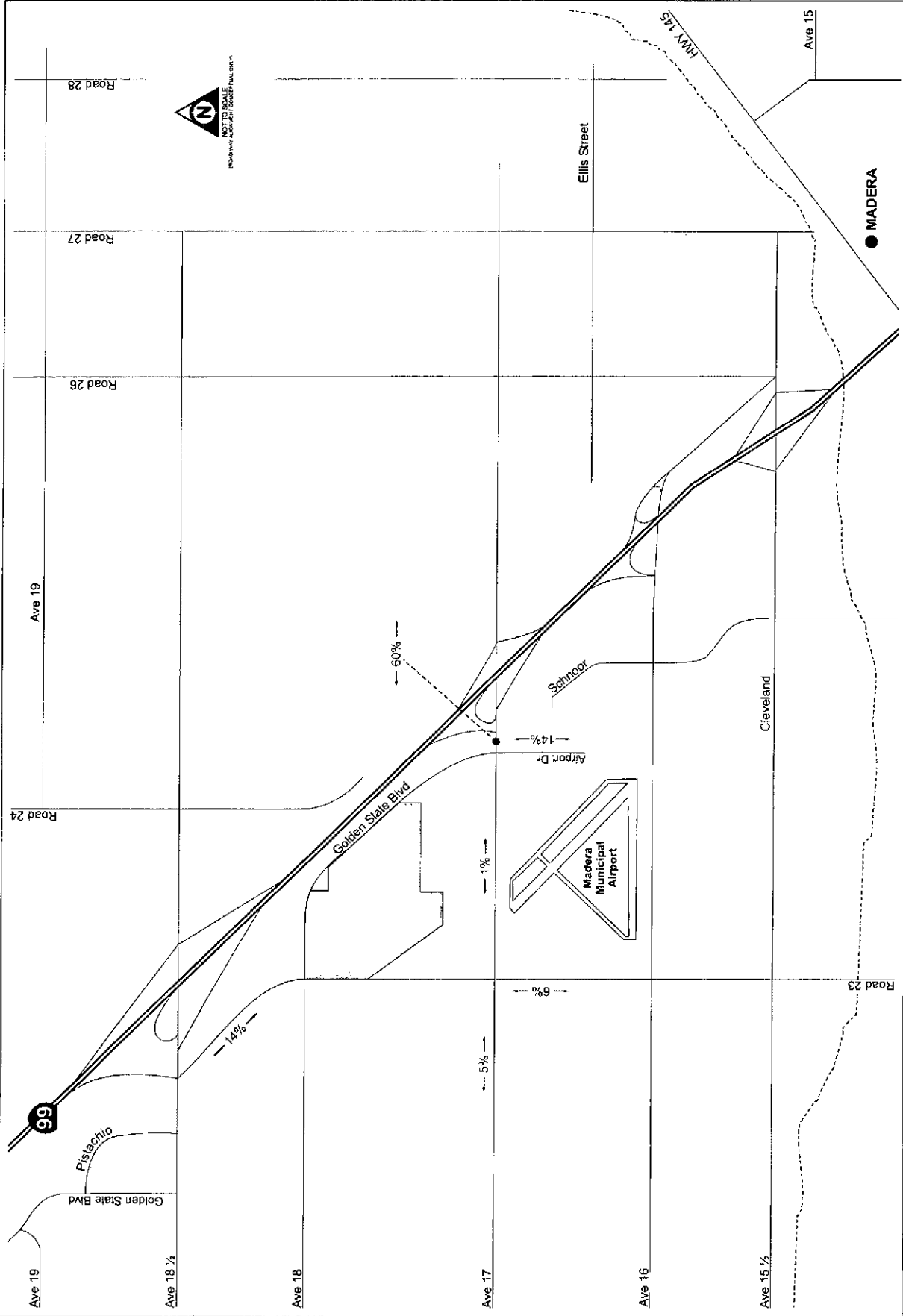


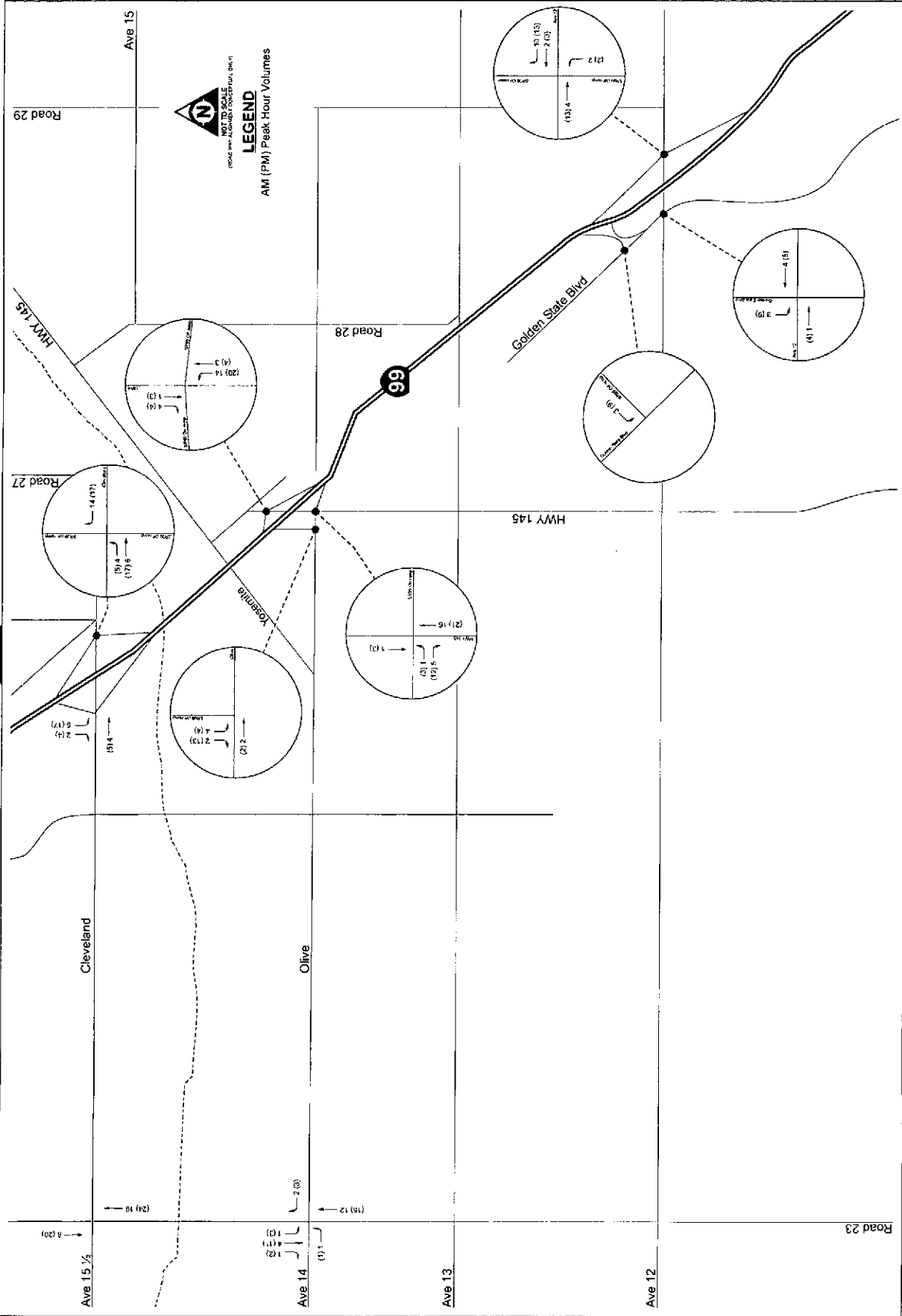






SEE MAP

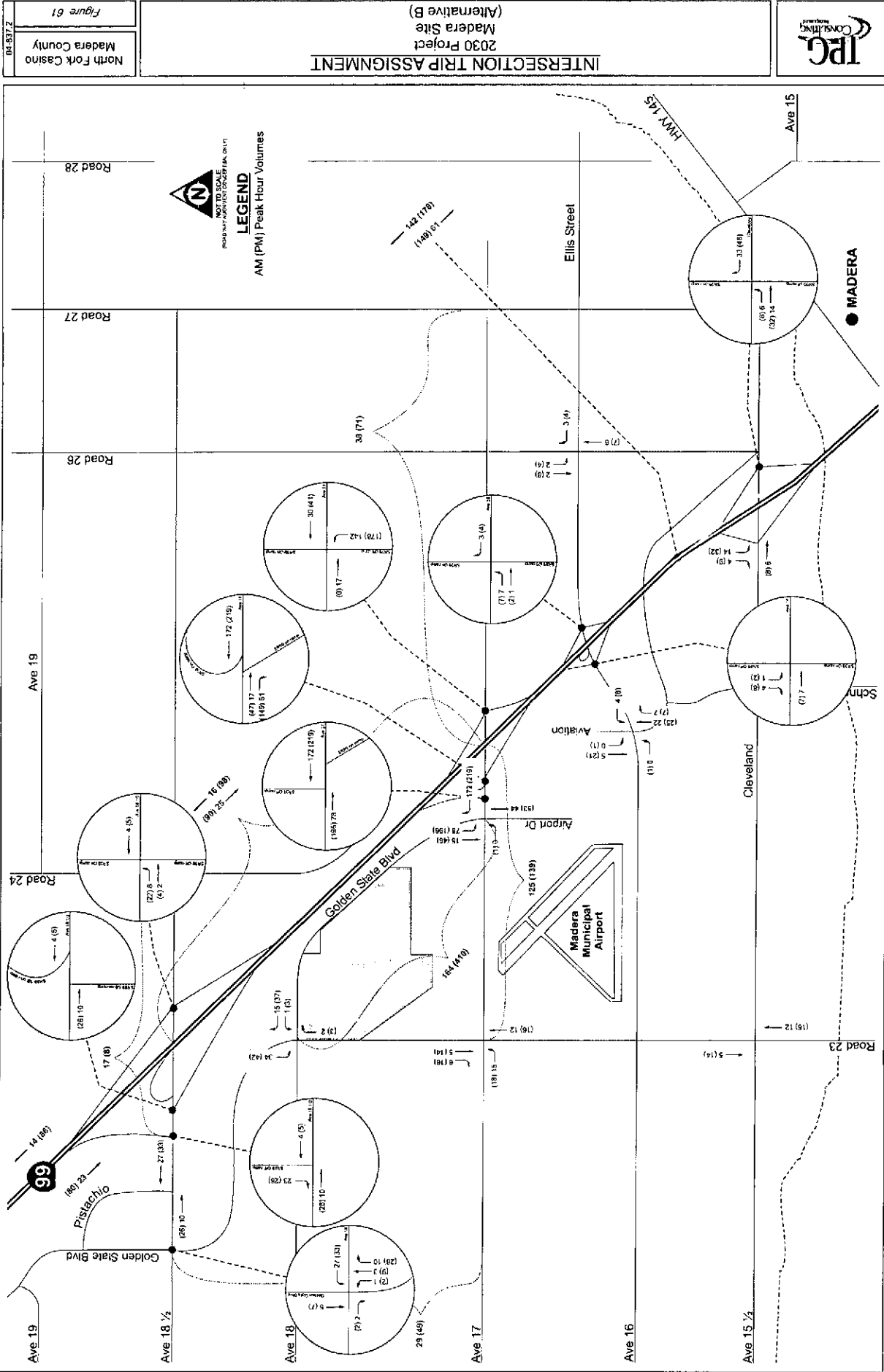




INTERSECTION TRIP ASSIGNMENT
2030 Project
Madera Site
(Alternative B)

North Fork Casino
Madera County

Figure 61



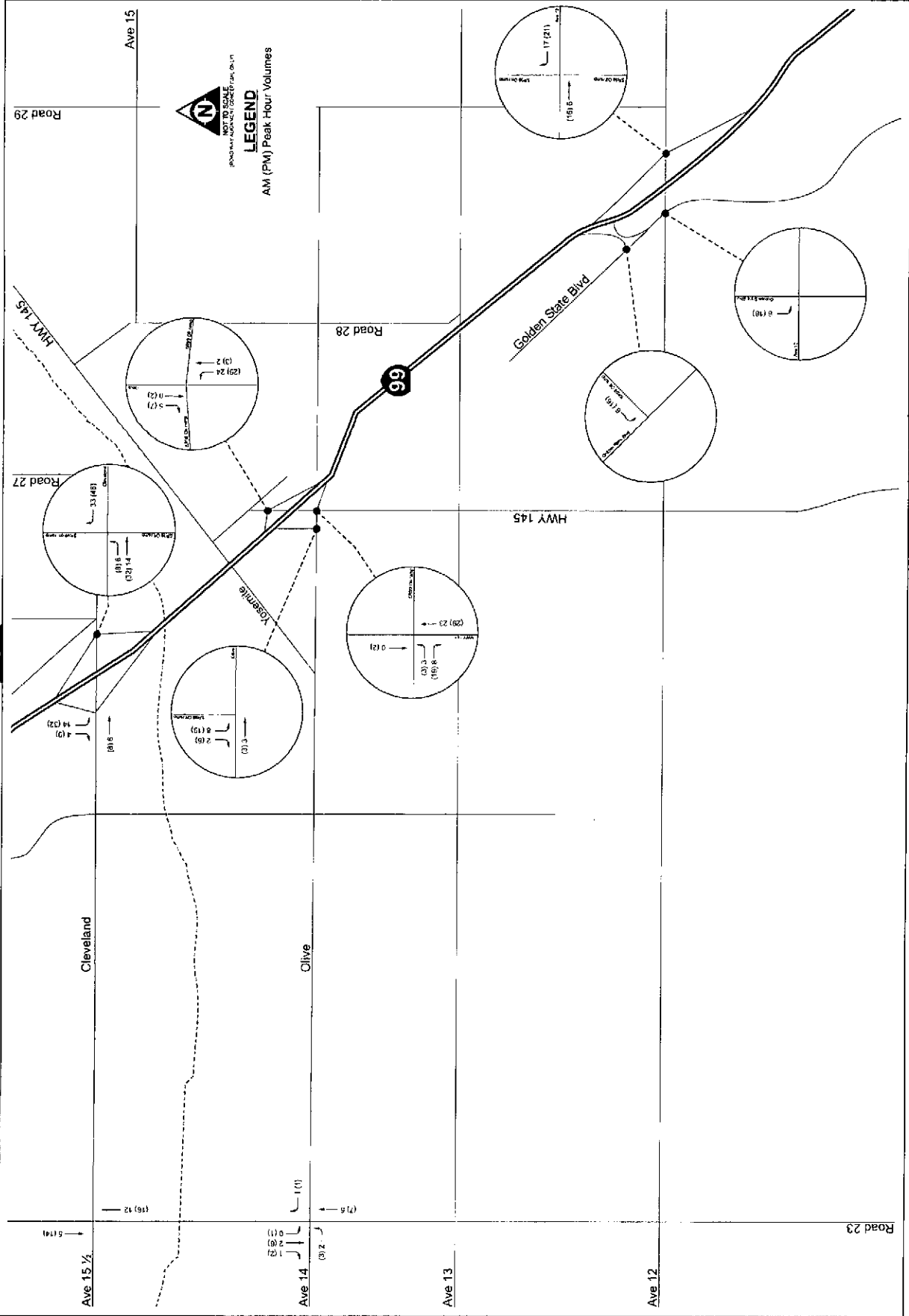
SEE MAP 31B

INTERSECTION TRIP ASSIGNMENT
 2030 Project
 Madera Site
 (Alternative B)

North Fork Casino
 Madera County

Figure 61

04-8372

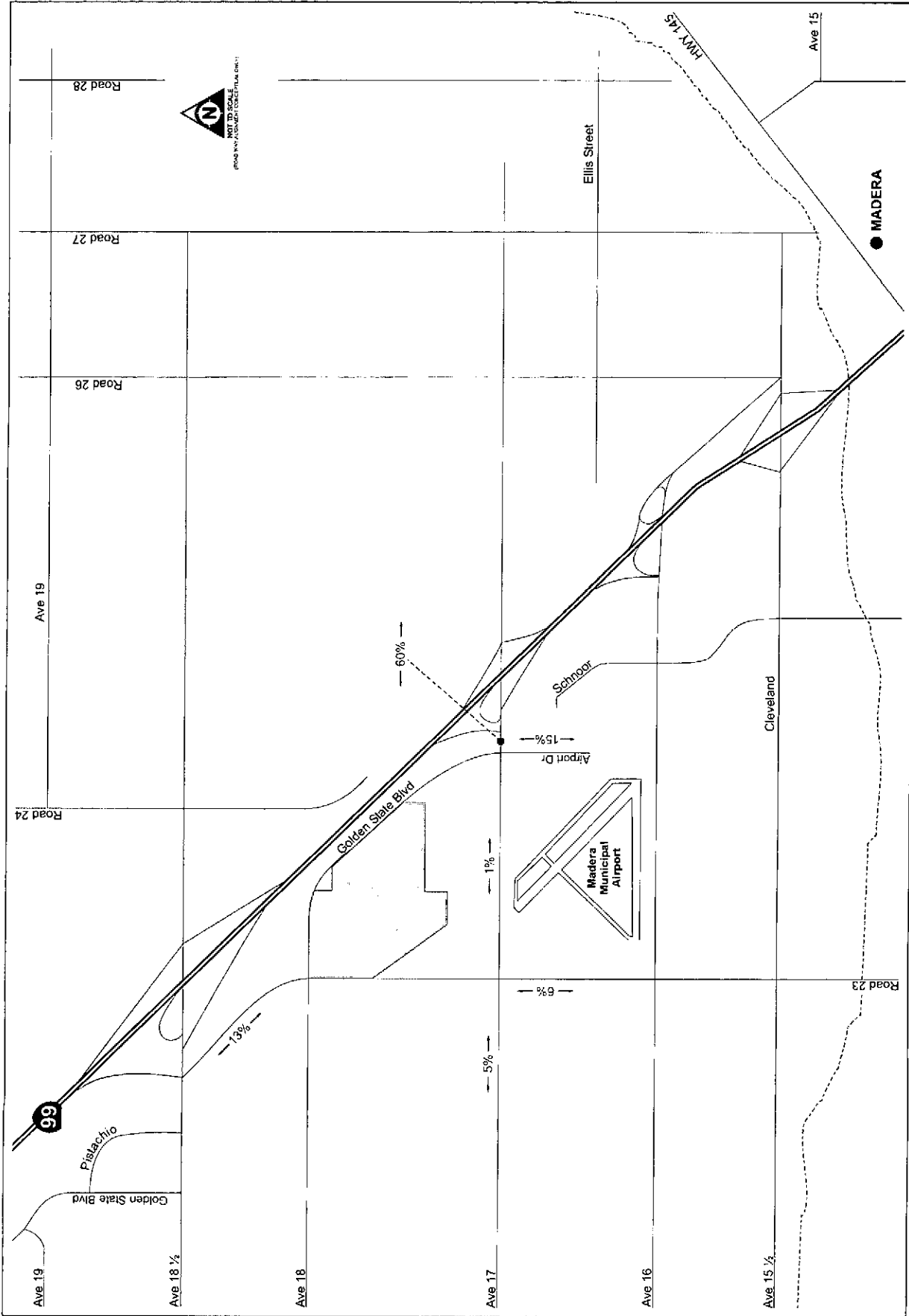


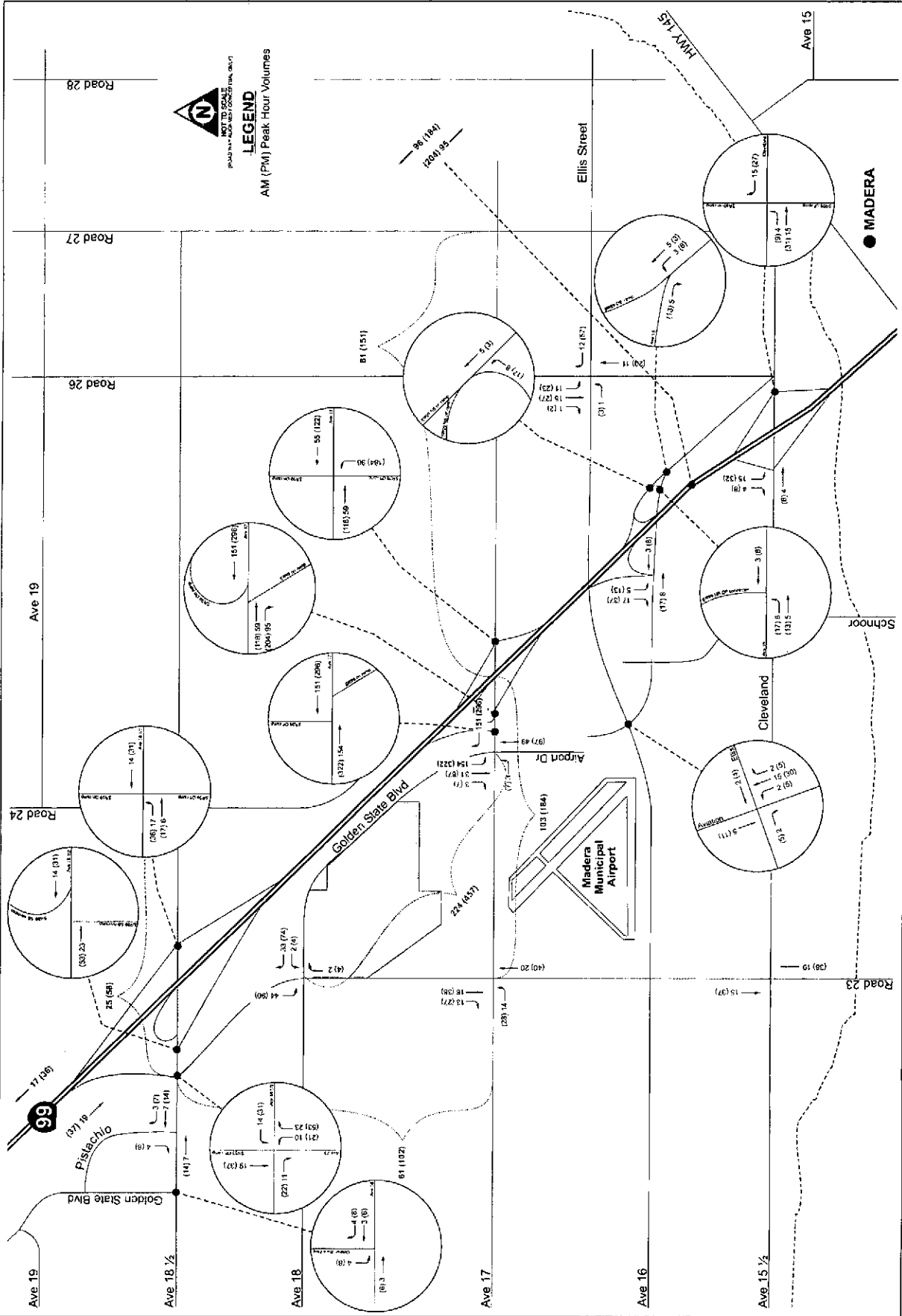
TRIP DISTRIBUTION PERCENTAGES
Project
Madera Site
(Alternative C)

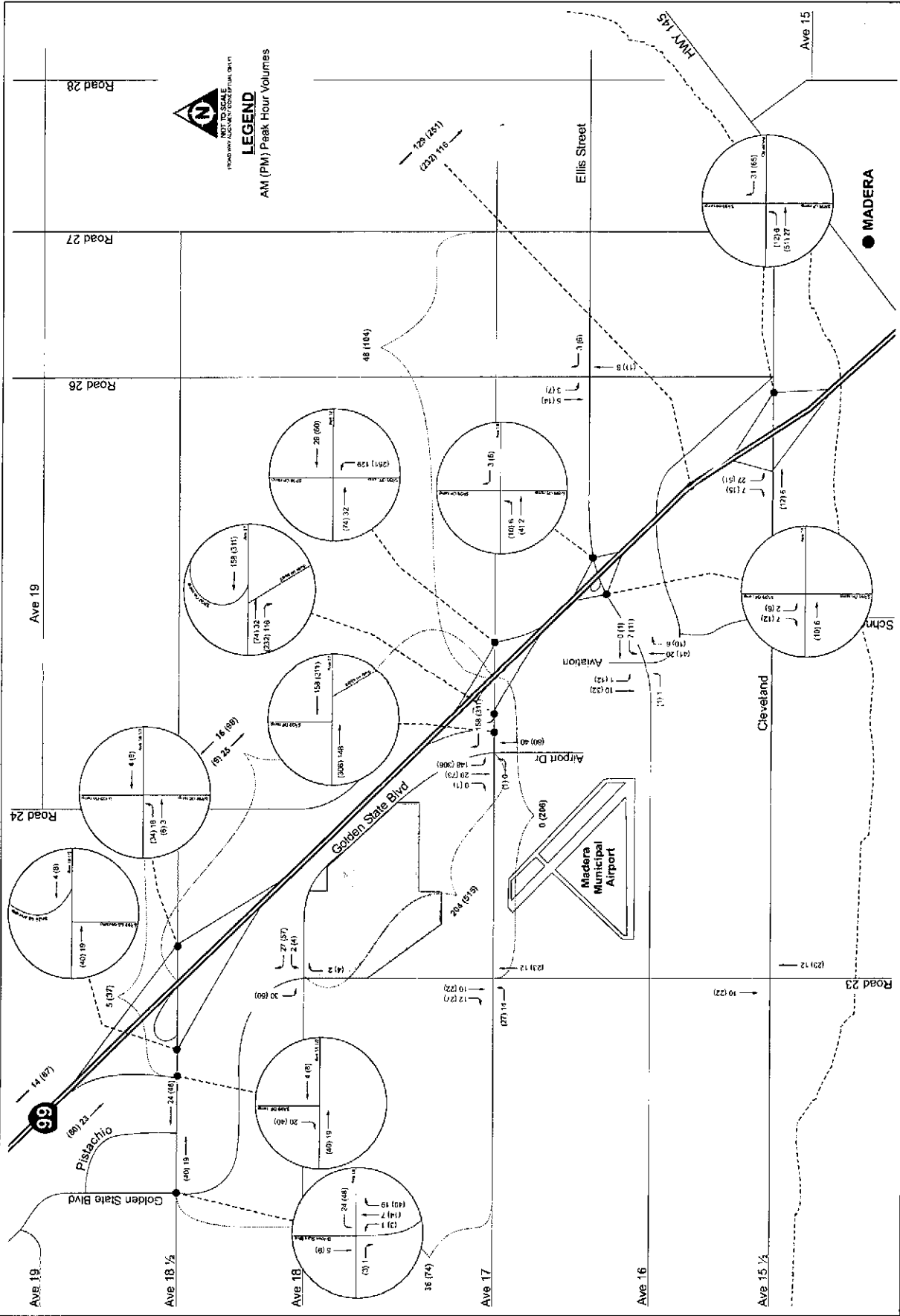
North Fork Casino
Madera County

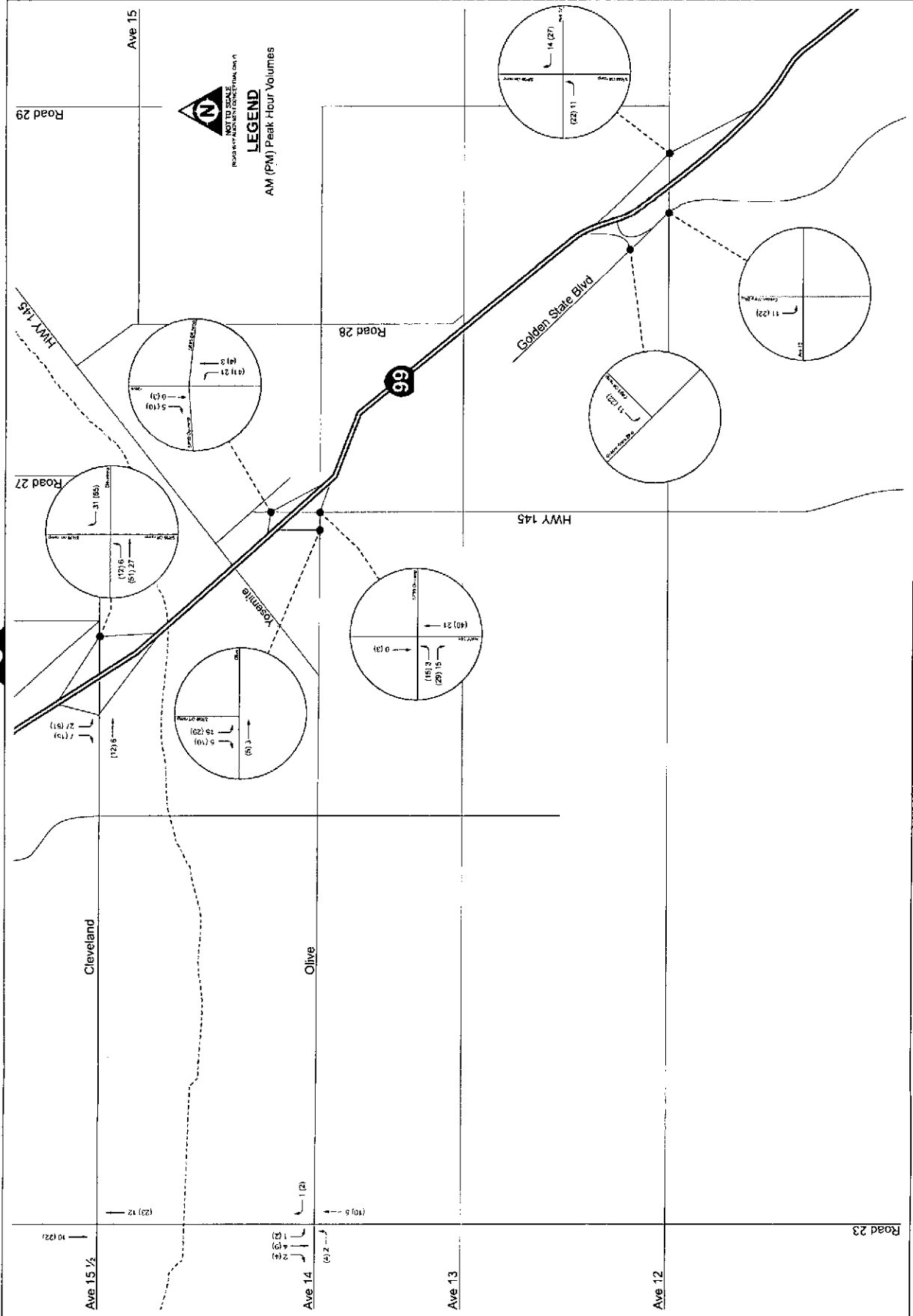
Figure 62

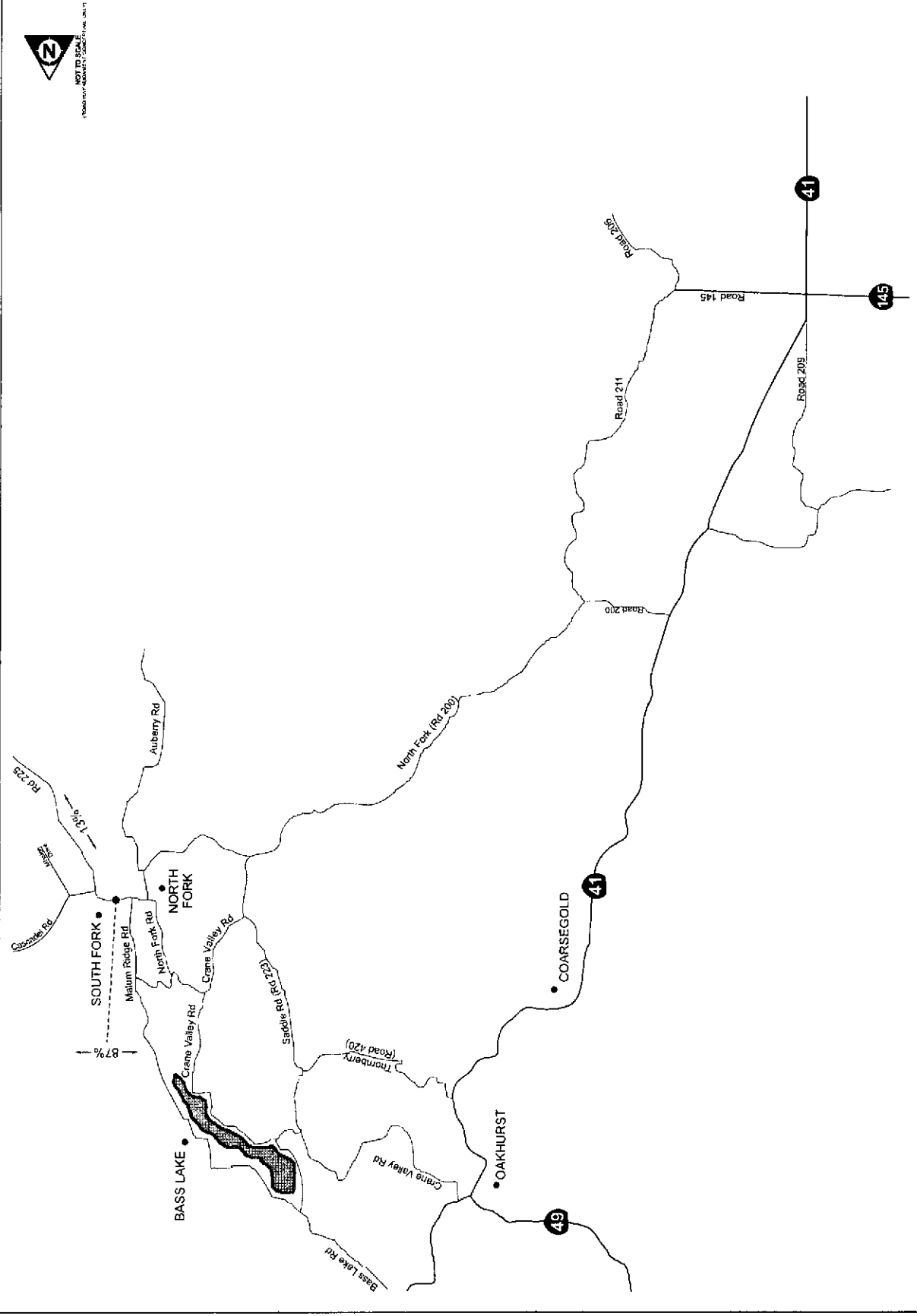
05-837.2







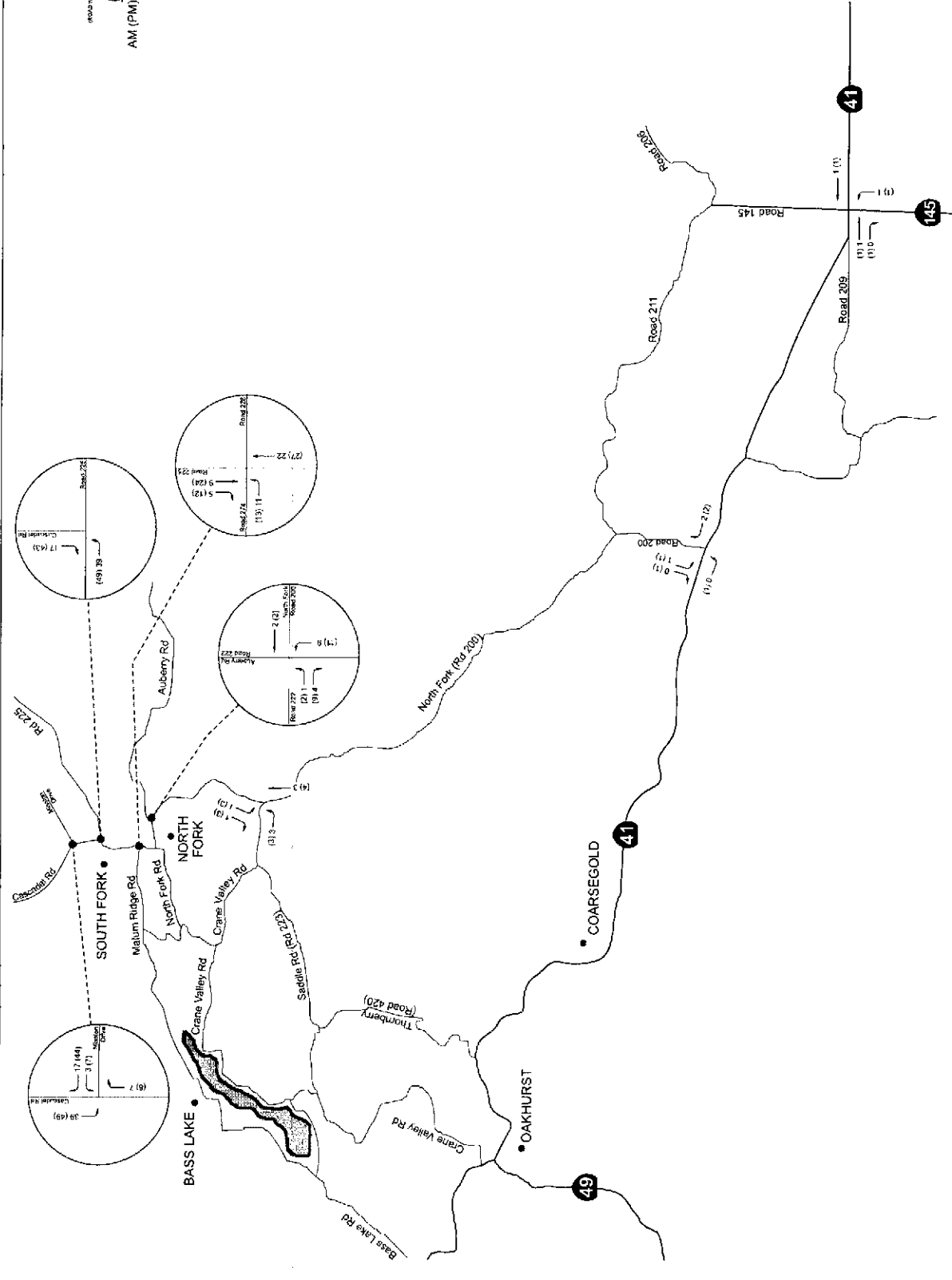






NOT TO SCALE
 (FOR INFORMATION ONLY)

AM (PM) Peak Hour Volumes



E. LEVELS OF SERVICE AND WARRANT ANALYSES

Madera Site (Alternative A, B, C)

Existing (2008) Conditions

Roadway Levels of Service

Table 40 shows the Existing (2008) levels of service for the County segments, freeway segments, and intersections for the Madera Site utilizing Figures 7 (lane configurations) and 8 (peak hour volumes) shown previously. The signalized and AWSC intersection levels of service shown on Table 40 are representative of the whole intersection. Individual intersection movements or approaches may operate above or below the signalized or AWSC level of service or delay shown on Table 40. The signalized levels of service or delay shown in Table 40 may not reflect the effects of 95th percentile queues that exceed the capacity for their movement. The Existing (2008) freeway segment and intersection levels of service calculations for the Madera Site are included in the Appendices section Attachment VI – C – 2 and Attachment VI – C – 3 respectively. Figure 9 provides a graphical representation of the resulting Existing (2008) levels of service.

TABLE 40: EXISTING (2008) CONDITIONS COUNTY SEGMENT, FREEWAY SEGMENT, AND INTERSECTION WEEKDAY LEVEL OF SERVICE MADERA SITE				
County Segment	AM Peak Hour		PM Peak Hour	
	LOS		LOS	
Avenue 18 ½ - Road 24 to Road 23	A		A	
Road 23 – Avenue 18 ½ to Avenue 17	A		A	
Avenue 17 – Road 23 to SR 99	A		A	
Avenue 17 – SR 99 to Road 27	A		A	
Golden State Boulevard – Avenue 17 to Road 23	A		A	
Freeway Segment	AM Peak Hour		PM Peak Hour	
	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)
SR 99 north of Avenue 18 ½				
• NB	C	22.6	C	22.1
• SB	C	18.4	D	28.1
SR 99 between Avenue 18 ½ and Avenue 17				
• NB	C	23.6	C	23.0
• SB	C	19.1	D	29.7
SR 99 south of Avenue 17				
• NB	C	25.1	C	24.5
• SB	C	20.2	D	32.4

SR = State Route ¹ Delay per vehicle secs = seconds WB = westbound
 NB = northbound SB = southbound EB = eastbound
 Bolded Text = intersection/movement operates below the appropriate level of service standard

TABLE 40:
EXISTING (2008) CONDITIONS
COUNTY SEGMENT, FREEWAY SEGMENT, AND INTERSECTION WEEKDAY LEVEL OF SERVICE
MADERA SITE

Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay ¹ (secs)	LOS	Delay ¹ (secs)
Avenue 18 ½ at SR 99 NB ramps				
• EB Left	A	8.2	A	7.9
• NB Approach	C	16.3	B	14.8
Avenue 18 ½ at SR 99 SB ramps/Road 23				
• WB Left-Through	A	0.6	A	1.2
• NB Approach	B	13.9	C	17.2
• SB Approach	B	13.5	C	17.2
Avenue 18 ½ at Pistachio Drive				
• EB Approach	A	0.0	A	0.4
• SB Approach	B	12.7	B	13.8
Avenue 18 ½ at Golden State Boulevard				
• EB Approach	A	0.4	A	0.1
• SB Approach	B	10.9	B	10.9
Avenue 18 at Road 23				
• NB Left-Through-Right	A	0.1	A	0.5
• SB Left-Through-Right	A	0.4	A	0.6
• WB Approach	A	9.4	A	9.8
• EB Approach	A	9.9	B	10.1
Avenue 17 at SR 99 NB ramps				
• EB Left	A	9.0	A	8.0
• NB Approach	B	11.9	B	13.3
Avenue 17 at SR 99 SB ramps				
• SB Approach	B	10.2	B	11.1
Avenue 17 at Golden State Boulevard				
• EB Left-Through-Right	A	0.0	A	0.0
• WB Left-Through-Right	A	7.6	A	7.5
• NB Approach	A	9.7	A	9.3
• SB Approach	B	12.2	B	11.9
Avenue 17 at Road 23				
• NB Left-Through-Right	A	0.1	A	0.4
• SB Left-Through-Right	A	1.1	A	0.7
• WB Approach	B	10.5	B	10.6
• EB Approach	B	10.3	B	10.4
Ellis Street at Road 26	A	4.8	A	5.5
Gateway/Avenue 16 at SR 99 NB ramps				
• SB Approach	B	10.3	B	11.0

SR = State Route ¹ Delay per vehicle secs = seconds WB = westbound
 NB = northbound SB = southbound EB = eastbound
 Bolded Text = intersection/movement operates below the appropriate level of service standard

**TABLE 40:
EXISTING (2008) CONDITIONS
COUNTY SEGMENT, FREEWAY SEGMENT, AND INTERSECTION WEEKDAY LEVEL OF SERVICE
MADERA SITE**

Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay ¹ (secs)	LOS	Delay ¹ (secs)
Avenue 16/Avenue 16 connector at SR 99 NB ramps				
• EB Left	A	9.7	B	10.6
Avenue 16 at SR 99 NB ramp connector				
• EB Left-Through	A	4.7	A	4.8
• SB Approach	A	9.0	A	9.6
Avenue 16 at SR 99 SB ramps				
• EB Left	A	7.7	A	7.9
• SB Approach	B	11.0	B	13.0
Avenue 16 at Schnoor Avenue	A	8.4	B	10.9
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	B	12.1	B	15.1
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps	B	14.2	B	12.2
Avenue 15 ½ at Road 23				
• NB Left-Through-Right	A	0.0	A	0.0
• SB Left-Through-Right	A	1.0	A	1.7
• WB Approach	B	10.1	B	10.7
• EB Approach	A	0.0	B	10.2
SR 145/Madera Avenue at SR 99 NB ramps	A	9.1	B	13.1
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	C	22.1	C	31.2
Olive Avenue/Avenue 14 at SR 99 SB off-ramp	B	10.6	B	11.0
Avenue 14 at Road 23	A	8.4	A	8.4
Avenue 12/Golden State Boulevard at SR 99 SB ramps				
• SB Left-Through	A	4.6	A	3.4
• WB Approach	C	15.3	C	16.8
Avenue 12 at Golden State Boulevard	D	51.0	F	90.1
Avenue 12 at SR 99 NB ramps				
• EB Left-Through	A	2.3	A	4.1
• NB Approach	F	119.1	F	182.2

SR = State Route ¹ Delay per vehicle secs = seconds WB = westbound
 NB = northbound SB = southbound EB = eastbound
 Bolded Text = intersection/movement operates below the appropriate level of service standard

Count segments, freeway segments and intersections within the study area that are currently operating below the adopted level of service standard are shown bolded in Table 40. As shown in Table 40 and Figure 9, the following freeway segments (3) and intersections (2) are currently operating or have movements currently operating below the adopted level of service standards in the Existing (2008) scenario:

Freeway Segments

- SR 99 north of Avenue 18 ½
 - SB – PM peak hour – LOS “D”
- SR 99 between Avenue 18 ½ and Avenue 17

- SB – PM peak hour – LOS “D”
- SR 99 south of Avenue 17
 - SB – PM peak hour – LOS “D”

Intersections

- Avenue 12 at Golden State Boulevard – PM peak hour – LOS “F”
- Avenue 12 at SR 99 NB ramps
 - NB Approach – AM/PM peak hour – LOS “F”/“F”

The remaining County segments, freeway segments, and intersections are currently operating at or above the adopted standards in the Existing (2008) scenario.

Signal Warrants

Rural and urban peak hour volume signal warrants were prepared for the following nineteen (19) unsignalized intersections:

- Avenue 18 ½ at SR 99 SB ramps/Road 23 - Urban
- Avenue 18 ½ at SR 99 NB ramps - Urban
- Avenue 18 ½ at Pistachio Drive - Urban
- Avenue 18 ½ at Golden State Boulevard/Road 23 - Urban
- Avenue 18 at Road 23 -Rural
- Avenue 17 at SR 99 SB ramps - Rural
- Avenue 17 at SR 99 NB ramps - Rural
- Avenue 17 at Golden State Boulevard - Rural
- Avenue 17 at Road 23 - Rural
- Ellis Street at Road 26 - Urban
- Avenue 16 at Schnoor Avenue - Rural
- Avenue 16 at SR 99 SB ramps - Urban
- Avenue 16/Avenue 16 connector at SR 99 NB ramps - Urban
- Avenue 16 at SR 99 NB ramp connector - Urban
- Gateway/Avenue 16 at SR 99 NB ramps - Urban
- Avenue 15 ½ at Road 23 - Rural
- Avenue 14 at Road 23 - Rural
- Avenue 12/Golden State Boulevard at SR 99 SB ramps - Urban
- Avenue 12 at SR 99 NB ramps - Urban

Based on the rural and urban peak hour volume signal warrant, the signal warrant is currently met at the following three (3) locations potentially indicating the need for a traffic signal:

- Avenue 17 at SR 99 NB ramps - Rural
- Avenue 16 at Schnoor Avenue - Rural
- Avenue 12 at SR 99 NB ramps - Urban

The signal warrant is not met at the remaining sixteen (16) study intersections in the Existing (2008) scenario. This warrant analysis is limited to the peak hour volume warrant only and other conditions may exist which meet other traffic signal warrants. Copies of the warrant analyses are included in the Appendices section Attachment VI – C - 4.

Queue Lengths

Table 41 shows the estimated Existing (2008) conditions queue lengths developed from the level of service analyses for the Madera Site study locations.

TABLE 41: EXISTING (2008) CONDITIONS WEEKDAY 95TH PERCENTILE QUEUE LENGTH MADERA SITE		
Intersection Approach	Existing Queue Storage Length (ft)	95th Percentile Queue Length (ft) (AM/PM)
SR 99 NB off-ramp at Avenue 18 ½ <ul style="list-style-type: none"> • NB Left • NB Left-Through-Right 	1,204 ¹ (770 ²)	43/38 4/4
SR 99 SB off-ramp at Avenue 18 ½ <ul style="list-style-type: none"> • SB Left-Through-Right 	1,256 ¹ (822 ²)	22/47
SR 99 SB off-ramp at Avenue 17 <ul style="list-style-type: none"> • SB Left • SB Right 	1,341 ¹ (907 ²) 589 ³ 589 ³	4/13 1/1
SR 99 NB off-ramp at Avenue 17 <ul style="list-style-type: none"> • NB Left-Through • NB Right 	1,060 ¹ (626 ²) 45 ³ 45 ³	17/8 12/66
SR 99 NB off-ramp at Avenue 16 <ul style="list-style-type: none"> • SE Through-Right 	1,150 ¹ (716 ²)	0/0
SR 99 SB off-ramp at Avenue 16 <ul style="list-style-type: none"> • SB Left • SB Right 	1,020 ¹ (586 ²)	9/18 15/29
SR 99 NB off-ramp at Avenue 15 1/2 /Cleveland Avenue <ul style="list-style-type: none"> • NB Left • NB Left-Through • NB Right 	881 ¹ (447 ²) 353 ³ 353 ³ 353 ³	83/103 82/103 39/129

SR = State Route ft = feet

95th percentile queue length - is minimum amount of storage needed for each movement

NB = northbound SB = southbound WB = westbound EB = eastbound

¹ = Total ramp length ² = Calculated storage distance

³ = Distance of ramp striped as 2-lanes --- not calculated for unsignalized intersections

= 95th percentile volume exceeds capacity, queue may be longer, queue shown is maximum after two (2) cycles

TABLE 41: EXISTING (2008) CONDITIONS WEEKDAY 95TH PERCENTILE QUEUE LENGTH MADERA SITE		
Intersection Approach	Existing Queue Storage Length (ft)	95th Percentile Queue Length (ft) (AM/PM)
SR 99 SB off-ramp at Avenue 15 1/2/Cleveland Avenue <ul style="list-style-type: none"> • SB Left-Through • SB Right 	1,000 ¹ (566 ²) 65 ³ 65 ³	76/130 30/25
SR 99 NB off-ramp at SR 145/Madera Avenue <ul style="list-style-type: none"> • WB Left • WB Through-Right 	1,310 ¹ (876 ²) 90 ³ 90 ³	106/103 0/30
SR 99 SB off-ramp at Avenue 14/Olive Avenue <ul style="list-style-type: none"> • SB Left • SB Right 	1,254 ¹ (820 ²) 65 ³ 65 ³	143/143 43/37
SR 99 SB off-ramp at Avenue 12/Golden State Boulevard <ul style="list-style-type: none"> • WB Left • WB Right 	1,431 ¹ (997 ²)	70/81 7/7
SR 99 NB off-ramp at Avenue 12 <ul style="list-style-type: none"> • NB Left-Through • NB Right 	1,223 ¹ (789 ²) 49 ³ 49 ³	259/300 18/21
Avenue 17 between the SR 99 SB off-ramp and Golden State Boulevard <ul style="list-style-type: none"> • WB Left (at Golden State Blvd) • WB Through-Right (at Golden State Blvd) • EB Through (at SR 99 SB off-ramp) 	481	6/3 0/0 0/0

SR = State Route ft = feet
95th percentile queue length - is minimum amount of storage needed for each movement
NB = northbound SB = southbound WB = westbound EB = eastbound
¹ = Total ramp length ² = Calculated storage distance
³ = Distance of ramp striped as 2-lanes --- not calculated for unsignalized intersections
= 95th percentile volume exceeds capacity, queue may be longer, queue shown is maximum after two (2) cycles

As shown, in Table 41, no analyzed queue lengths are estimated to currently exceed the allowable storage length in the 95th percentile condition in the Existing (2008) scenario for the Madera Site location.

Ramp Widening/Auxiliary Lane Threshold

Table 42 shows the SR 99 off-ramp volumes and whether the PCE volumes by time period meet or exceed one or both of these two thresholds.

TABLE 42:
EXISTING (2008) CONDITIONS
RAMP WIDENING/AUXILIARY LANE THRESHOLD SUMMARY
MADERA SITE

Scenario	PCE (AM/PM)	900 to 1,499 PCE Threshold (AM/PM) (Y/N)	≥ 1,500 PCE Threshold (AM/PM) (Y/N)
SR 99 NB off-ramp at Avenue 18 ½	248/231	N/N	N/N
SR 99 SB off-ramp at Avenue 18 ½	155/248	N/N	N/N
SR 99 SB off-ramp at Avenue 17	55/111	N/N	N/N
SR 99 NB off-ramp at Avenue 17	204/428	N/N	N/N
SR 99 NB off-ramp at Avenue 16	60/104	N/N	N/N
SR 99 SB off-ramp at Avenue 16	185/269	N/N	N/N
SR 99 NB off-ramp at Avenue 15 ½ /Cleveland Avenue	328/552	N/N	N/N
SR 99 SB off-ramp at Avenue 15 ½ /Cleveland Avenue	129/181	N/N	N/N
SR 99 NB off-ramp at SR 145/Madera Avenue	217/186	N/N	N/N
SR 99 SB off-ramp at Avenue 14/Olive Avenue	361/317	N/N	N/N
SR 99 SB off-ramp at Avenue 12/Golden State Boulevard	369/372	N/N	N/N
SR 99 NB off-ramp at Avenue 12	313/294	N/N	N/N

SR = State Route
N = Threshold Not Met

PCE = Passenger Car Equivalent
NB = northbound

Y = Threshold Met
SB = southbound

As shown in Table 42, none of the study off-ramps are projected to meet the 900 to 1,499 PCE or the >1,500 PCE threshold in the Existing (2008) scenario for the Madera Site.

Opening Day (2010) No Project Conditions

Alternative E (No Project Alternative)

Roadway Levels of Service

The 2010 No Project lane configurations and intersection control incorporated the proposed improvements identified by Caltrans including the following:

- Avenue 16 at SR 99 SB ramps
 - Signalize the intersection
- SR 145/Madera Avenue at SR 99 NB ramps
 - Restripe/widen the NB approach, south leg, from a shared through-left lane, to dual (2) left-turn lanes and two (2) through lanes
 - Restripe/widen the SB approach, north leg, from one (1) through lane and a separate right-turn lane, to one (1) through lane and a shared through-right lane

- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145
 - Restripe/widen the NB approach, south leg, from a separate left-turn lane, one (1) through lane, and a separate right-turn lane, to dual (2) left-turn lanes, one (1) through lane, and a shared through-right lane
- Olive Avenue/Avenue 14 at SR 99 SB off-ramp
 - Restripe/widen the WB approach, east leg, from one (1) through lane to two (2) through lanes
 - Restripe/widen the WB departure, west leg, from a separate left-turn lane and one (1) through lane, to a separate left-turn lane and two (2) through lanes
- Avenue 12 at SR 99 NB ramps
 - Signalize the intersection
 - Restripe/widen the EB approach, west leg, from a shared left-through, to a separate left-turn lane and one (1) through lane

A new overcrossing will be built at Ellis Street over SR 99. Ellis Street will cross SR 99 from the east and merge with Avenue 16 west of SR 99. The overcrossing will not change the Avenue 16 at SR 99 interchange until the 2030 No Project scenario.

Table 43 shows the Opening Day (2010) No Project levels of service for the County segments, freeway segments, and intersections for the Madera Site utilizing Figures 10 (lane configurations) and 11 (peak hour volumes) shown previously. The signalized and AWSC intersection levels of service shown on Table 43 are representative of the whole intersection. Individual intersection movements or approaches may operate above or below the signalized or AWSC level of service or delay shown on Table 43. The signalized levels of service or delay shown in Table 43 may not reflect the effects of 95th percentile queues that exceed the capacity for their movement. The Opening Day (2010) No Project freeway segment and intersection levels of service calculations for the Madera Site are included in the Appendices section Attachment VI – C – 5 and Attachment VI – C – 6 respectively. Figure 12 provides a graphical representation of the resulting Opening Day (2010) No Project levels of service.

TABLE 43: OPENING DAY (2010) NO PROJECT CONDITIONS COUNTY SEGMENT, FREEWAY SEGMENT, AND INTERSECTION WEEKDAY LEVEL OF SERVICE MADERA SITE (ALTERNATIVE E, NO PROJECT ALTERNATIVE)		
County Segment	AM Peak Hour	PM Peak Hour
	LOS	LOS
Avenue 18 ½ - Road 24 to Road 23	A	A
Road 23 – Avenue 18 ½ to Avenue 17	B	B
Avenue 17 – Road 23 to SR 99	A	A
Avenue 17 – SR 99 to Road 27	B	E
Golden State Boulevard – Avenue 17 to Road 23	A	A

SR = State Route

¹ Delay per vehicle

secs = seconds

WB = westbound

NB = northbound

SB = southbound

EB = eastbound

--- = beyond software limitations

Bolded Text = intersection/movement operates below the appropriate level of service standard

TABLE 43: OPENING DAY (2010) NO PROJECT CONDITIONS COUNTY SEGMENT, FREEWAY SEGMENT, AND INTERSECTION WEEKDAY LEVEL OF SERVICE MADERA SITE (ALTERNATIVE E, NO PROJECT ALTERNATIVE)				
Freeway Segment	AM Peak Hour		PM Peak Hour	
	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)
SR 99 north of Avenue 18 ½				
• NB	C	23.9	C	24.2
• SB	C	19.6	D	31.1
SR 99 between Avenue 18 ½ and Avenue 17				
• NB	C	24.9	C	25.5
• SB	C	20.4	D	33.6
SR 99 south of Avenue 17				
• NB	D	28.7	D	31.0
• SB	C	22.8	E	44.4
Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay ¹ (secs)	LOS	Delay ¹ (secs)
Avenue 18 ½ at SR 99 NB ramps				
• EB Left	A	6.4	A	5.6
• NB Approach	C	21.3	C	21.4
Avenue 18 ½ at SR 99 SB ramps/Road 23				
• WB Left-Through	A	0.8	A	1.5
• NB Approach	C	18.5	E	36.5
• SB Approach	C	16.5	D	28.5
Avenue 18 ½ at Pistachio Drive				
• EB Approach	A	0.0	A	0.4
• SB Approach	B	14.3	C	17.3
Avenue 18 ½ at Golden State Boulevard				
• EB Approach	A	0.3	A	0.1
• SB Approach	B	11.8	B	12.2
Avenue 18 at Road 23				
• NB Left-Through-Right	A	0.1	A	0.2
• SB Left-Through-Right	A	1.4	A	1.4
• WB Approach	B	9.7	B	10.2
• EB Approach	B	10.7	B	11.9

SR = State Route ¹ Delay per vehicle secs = seconds WB = westbound
 NB = northbound SB = southbound EB = eastbound
 --- = beyond software limitations
 Bolded Text = intersection/movement operates below the appropriate level of service standard

TABLE 43:
OPENING DAY (2010) NO PROJECT CONDITIONS
COUNTY SEGMENT, FREEWAY SEGMENT, AND INTERSECTION WEEKDAY LEVEL OF SERVICE
MADERA SITE (ALTERNATIVE E, NO PROJECT ALTERNATIVE)

Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay ¹ (secs)	LOS	Delay ¹ (secs)
Avenue 17 at SR 99 NB ramps				
• EB Left	B	10.0	B	10.2
• NB Approach	F	114.6	F	371.0
Avenue 17 at SR 99 SB ramps				
• SB Approach	C	16.6	F	174.5
Avenue 17 at Golden State Boulevard				
• EB Left-Through-Right	A	8.2	A	7.4
• WB Left-Through-Right	A	8.5	A	8.9
• NB Approach	C	22.2	D	32.4
• SB Approach	F	113.9	F	---
Avenue 17 at Road 23				
• NB Left-Through-Right	A	0.7	A	1.4
• SB Left-Through-Right	A	0.7	A	0.6
• WB Approach	B	13.9	C	18.9
• EB Approach	B	12.3	B	14.9
Ellis Street at Road 26	A	6.6	A	9.5
Gateway/Avenue 16 at SR 99 NB ramps				
• SB Approach	B	10.6	B	11.4
Avenue 16/Avenue 16 connector at SR 99 NB ramps				
• EB Left	B	10.1	B	11.4
Avenue 16 at SR 99 SB ramps	A	9.3	A	10.0
Avenue 16 at Aviation Drive	B	18.1	C	21.2
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	B	14.3	C	22.7
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps	B	15.2	B	14.2
Avenue 16 at SR 99 NB ramp connector				
• EB Left-Through	A	5.0	A	5.4
• SB Approach	A	9.1	A	9.9
Avenue 15 ½ at Road 23				
• NB Left-Through-Right	A	0.0	A	0.0
• SB Left-Through-Right	A	1.0	A	1.8
• WB Approach	B	10.8	B	12.0
• EB Approach	A	0.0	B	11.1
SR 145/Madera Avenue at SR 99 NB ramps	A	5.6	A	6.6
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	C	21.15	C	33.3
Olive Avenue/Avenue 14 at SR 99 SB off-ramp	B	13.1	B	14.1
Avenue 14 at Road 23	A	8.8	A	9.3

SR = State Route

¹ Delay per vehicle

secs = seconds

WB = westbound

NB = northbound

SB = southbound

EB = eastbound

--- = beyond software limitations

Bolded Text = intersection/movement operates below the appropriate level of service standard

**TABLE 43:
OPENING DAY (2010) NO PROJECT CONDITIONS
COUNTY SEGMENT, FREEWAY SEGMENT, AND INTERSECTION WEEKDAY LEVEL OF SERVICE
MADERA SITE (ALTERNATIVE E, NO PROJECT ALTERNATIVE)**

Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay ¹ (secs)	LOS	Delay ¹ (secs)
Avenue 12/Golden State Boulevard at SR 99 SB ramps				
• SB Left-Through	A	6.1	A	3.7
• WB Approach	E	43.3	D	30.0
Avenue 12 at Golden State Boulevard	D	54.0	D	52.0
Avenue 12 at SR 99 NB ramps	B	17.9	C	21.7

SR = State Route ¹ Delay per vehicle secs = seconds WB = westbound
 NB = northbound SB = southbound EB = eastbound
 --- = beyond software limitations
 Bolded Text = intersection/movement operates below the appropriate level of service standard

County segments, freeway segments, and intersections within the study area that are projected to operate below the adopted level of service standard are shown bolded in Table 43. As shown in Table 43 and Figure 12, the following County segment (1), freeway segments (4), and intersections (5) are projected to operate or have movements projected to operate below the adopted level of service standards in the Opening Day (2010) No Project Alternative E scenario:

County Segments

- Avenue 17 – SR 99 to Road 27 – AM/PM peak hours – LOS “E”

Freeway Segments

- SR 99 north of Avenue 18 ½
 - SB – PM peak hour – LOS “D”
- SR 99 between Avenue 18 ½ and Avenue 17
 - SB – PM peak hour – LOS “D”
- SR 99 south of Avenue 17
 - NB – AM/PM peak hours – LOS “D”
 - SB – PM peak hours – LOS “E”

Intersections

- Avenue 18 ½ at SR 99 SB ramps/Road 23
 - NB Approach – PM peak hour – LOS “E”
 - SB Approach – PM peak hour – LOS “D”
- Avenue 17 at SR 99 NB ramps
 - NB Approach – AM/PM peak hours – LOS “F”
- Avenue 17 at SR 99 SB ramps
 - SB Approach – PM peak hour – LOS “F”
- Avenue 17 at Golden State Boulevard
 - SB Approach – AM/PM peak hours – LOS “F”
- Avenue 12/Golden State Boulevard at SR 99 SB ramps
 - WB Approach – AM/PM peak hours – LOS “E”/“D”

The remaining County segments, freeway segments, and intersections are projected to operate at or above the adopted level of service standards in the Opening Day (2010) No Project Alternative E scenario.

Signal Warrants

Rural and urban peak hour volume signal warrants were prepared for the following fifteen (15) unsignalized intersections:

- Avenue 18 ½ at SR 99 SB ramps/Road 23 - Urban
- Avenue 18 ½ at SR 99 NB ramps - Urban
- Avenue 18 ½ at Pistachio Drive - Urban
- Avenue 18 ½ at Golden State Boulevard/Road 23 - Urban
- Avenue 18 at Road 23 - Rural
- Avenue 17 at SR 99 SB ramps - Rural
- Avenue 17 at SR 99 NB ramps - Rural
- Avenue 17 at Golden State Boulevard - Rural
- Avenue 17 at Road 23 - Rural
- Avenue 16/Avenue 16 connector at SR 99 NB ramps - Urban
- Gateway/Avenue 16 at SR 99 NB ramps - Urban
- Avenue 16 at SR 99 NB ramp connector - Urban
- Avenue 15 ½ at Road 23 - Rural
- Avenue 14 at Road 23 - Rural
- Avenue 12/Golden State Boulevard at SR 99 SB ramps - Urban

Based on the rural and urban peak hour volume warrant, the signal warrant is met at the following four (4) locations potentially indicating the need for a traffic signal:

- Avenue 17 at SR 99 SB ramps - Rural
- Avenue 17 at SR 99 NB ramps - Rural
- Avenue 17 at Golden State Boulevard - Rural
- Avenue 12/Golden State Boulevard at SR 99 SB ramps - Urban

The signal warrant is not met at the remaining eleven (11) study intersections in the Opening Day (2010) No Project Alternative E scenario. This warrant analysis is limited to the peak hour volume warrant only and other conditions may exist which meet other traffic signal warrants. Copies of the warrant analyses are included in Appendices section Attachment VI – C - 7.

Queue Lengths

Table 44 shows the estimated Opening Day (2010) No Project Alternative E conditions queue lengths developed from the level of service analyses.

TABLE 44: OPENING DAY (2010) NO PROJECT CONDITIONS WEEKDAY 95TH PERCENTILE QUEUE LENGTH MADERA SITE (ALTERNATIVE E)		
Intersection Approach	Existing Queue Storage Length (ft)	95th Percentile Queue Length (ft) (AM/PM)
SR 99 NB off-ramp at SR 145/Madera Avenue <ul style="list-style-type: none"> • WB Left • WB Through-Right 	1,310 ¹ (876 ²) 90 ³ 90 ³	117/108 0/31
SR 99 SB off-ramp at Avenue 14/Olive Avenue <ul style="list-style-type: none"> • SB Left • SB Right 	1,254 ¹ (820 ²) 65 ³ 65 ³	171/210 41/33
SR 99 SB off-ramp at Avenue 12/Golden State Boulevard <ul style="list-style-type: none"> • WB Left • WB Right 	1,431 ¹ (997 ²)	239/190 7/8
SR 99 NB off-ramp at Avenue 12 <ul style="list-style-type: none"> • NB Left • NB Right 	1,223 ¹ (789 ²) 49 ³ 49 ³	216/224 49/58
Avenue 17 between the SR 99 SB off-ramp and Golden State Boulevard <ul style="list-style-type: none"> • WB Left (at Golden State Boulevard) • WB Through-Right (at Golden State Boulevard) • EB Through (at SR 99 SB off-ramp) 	481	10/10 0/0 0/0

ft = feet
 NB = northbound
 SR = State Route
³ = Distance of ramp striped as 2-lanes or more
Bolded Text = 95th percentile queues exceed the available storage capacity

95th percentile queue length - is minimum amount of storage needed for each movement
 SB = southbound
¹ = Total ramp length
² = Calculated storage distance
 --- not calculated for unsignalized intersections

WB = westbound
 EB = eastbound

= 95th percentile volume exceeds capacity, queue may be longer, queue shown is maximum after two (2) cycles

Movements with queue lengths that are projected to exceed their available storage lengths are shown bolded in Table 44. As shown in Table 44, the following location by time period are projected to exceed the allowable storage length in the Opening Day (2010) No Project Alternative E scenario with 95th percentile traffic conditions:

- Avenue 17 at SR 99 NB off-ramp
 - NB Left-Through – PM peak hour
 - NB Right – PM peak hour

These queue exceedances indicate that it is likely that at some point during either the AM or PM peak hour, deceleration for vehicles utilizing these various ramps would likely occur on the mainline. It should be noted that these queue exceedances are estimated based on the level of service analysis and

are provided for information only. They are to be used in the design process and are not intended for use as a significance criteria.

All remaining study queue lengths are not projected to exceed the allowable storage lengths in the 95th percentile condition in the Opening Day (2010) No Project Alternative E scenario.

Ramp Widening/Auxiliary Lane Threshold

Table 45 shows the SR 99 off-ramp volumes and whether the PCE volumes by time period meet or exceed one or both of these two thresholds.

TABLE 45: OPENING DAY (2010) NO PROJECT CONDITIONS RAMP WIDENING/AUXILIARY LANE THRESHOLD SUMMARY MADERA SITE (ALTERNATIVE E)			
Scenario	PCE (AM/PM)	900 to 1,499 PCE Threshold (AM/PM) (Y/N)	≥ 1,500 PCE Threshold (AM/PM) (Y/N)
SR 99 NB off-ramp at Avenue 18 ½	282/302	N/N	N/N
SR 99 SB off-ramp at Avenue 18 ½	189/289	N/N	N/N
SR 99 SB off-ramp at Avenue 17	109/222	N/N	N/N
SR 99 NB off-ramp at Avenue 17	424/822	N/N	N/N
SR 99 NB off-ramp at Avenue 16	69/115	N/N	N/N
SR 99 SB off-ramp at Avenue 16	248/385	N/N	N/N
SR 99 NB off-ramp at Avenue 15 ½ /Cleveland Avenue	451/846	N/N	N/N
SR 99 SB off-ramp at Avenue 15 ½ /Cleveland Avenue	192/303	N/N	N/N
SR 99 NB off-ramp at SR 145/Madera Avenue	223/193	N/N	N/N
SR 99 SB off-ramp at Avenue 14/Olive Avenue	439/504	N/N	N/N
SR 99 SB off-ramp at Avenue 12/Golden State Boulevard	470/490	N/N	N/N
SR 99 NB off-ramp at Avenue 12	355/343	N/N	N/N

PCE = Passenger Car Equivalent Y = Threshold Met N = Threshold Not Met
SR = State Route NB = northbound SB = southbound
Bolded Text = ramps meet at least one of the volume thresholds

As shown in Table 45, none of the study off-ramps are projected to meet the 900 to 1,499 PCE or >1,500 PCE threshold in the Opening Day (2010) No Project Alternative E scenario.

Opening Day (2010) with Project Conditions

Alternative A (Proposed Project Alternative)

Roadway Levels of Service

Table 46 show the Opening Day (2010) with Project Alternative A levels of service for the County segments, freeway segments, and intersections for the Madera Site utilizing Figures 10 (lane configurations) and 13 (peak hour volumes) shown previously. The signalized and AWSC intersection levels of service shown on Table 46 are representative of the whole intersection. Individual intersection movements or approaches may operate above or below the signalized or AWSC level of service or delay shown on Table 46. The signalized levels of service or delay shown in Table 46 may not reflect the effects of 95th percentile queues that exceed the capacity for their movement. The Opening Day (2010) with Project Alternative A freeway segment and intersection levels of service calculations for the Madera Site are included in the Appendices section Attachment VI – C – 8 and Attachment VI – C – 9 respectively. Figure 14 provides a graphical representation of the resulting Opening Day (2010) with Project Alternative A levels of service.

TABLE 46: OPENING DAY (2010) WITH PROJECT CONDITIONS COUNTY SEGMENT, FREEWAY SEGMENT, AND INTERSECTION WEEKDAY LEVEL OF SERVICE MADERA SITE (ALTERNATIVE A, PROPOSED PROJECT ALTERNATIVE)				
County Segment	AM Peak Hour		PM Peak Hour	
	LOS		LOS	
Avenue 18 ½ - Road 24 to Road 23	A		A	
Road 23 – Avenue 18 ½ to Avenue 17	B		B	
Avenue 17 – Road 23 to SR 99	A		D	
Avenue 17 – SR 99 to Road 27	C		F	
Golden State Boulevard – Avenue 17 to Road 23	A		A	
Freeway Segment	AM Peak Hour		PM Peak Hour	
	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)
SR 99 north of Avenue 18 ½				
• NB	C	24.3	C	25.2
• SB	C	20.3	D	32.5
SR 99 between Avenue 18 ½ and Avenue 17				
• NB	C	25.3	D	27.0
• SB	C	21.0	E	36.1
SR 99 south of Avenue 17				
• NB	D	31.5	E	38.7
• SB	C	24.1	F	---
Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay¹ (secs)	LOS	Delay¹ (secs)
Avenue 18 ½ at SR 99 NB ramps				
• EB Left	A	8.4	A	8.1
• NB Approach	C	22.7	D	26.4
Avenue 18 ½ at SR 99 SB ramps/Road 23				
• WB Left-Through	A	0.8	A	1.4
• NB Approach	C	20.8	F	63.1
• SB Approach	C	17.2	E	36.5

SR = State Route ¹ Delay per vehicle secs = seconds WB = westbound
 NB = northbound SB = southbound EB = eastbound *** = NO LOS/delay reported
 --- = beyond software limitations
 Bolded Text = intersection/movement operates below the appropriate level of service standard

TABLE 46: OPENING DAY (2010) WITH PROJECT CONDITIONS COUNTY SEGMENT, FREEWAY SEGMENT, AND INTERSECTION WEEKDAY LEVEL OF SERVICE MADERA SITE (ALTERNATIVE A, PROPOSED PROJECT ALTERNATIVE)				
Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay¹ (secs)	LOS	Delay¹ (secs)
Avenue 18 ½ at Pistachio Drive				
• EB Approach	A	0.0	A	0.4
• SB Approach	B	15.0	C	20.3
Avenue 18 ½ at Golden State Boulevard				
• EB Approach	A	0.3	A	0.1
• SB Approach	B	12.1	B	12.9
Avenue 18 at Road 23				
• NB Left-Through-Right	A	0.1	A	0.2
• SB Left-Through-Right	A	1.7	A	1.7
• WB Approach	A	9.6	B	10.1
• EB Approach	B	10.8	B	12.1
Avenue 17 at SR 99 NB ramps				
• EB Left	B	11.0	B	13.9
• NB Approach	F	6015.5	F	4113.0
Avenue 17 at SR 99 SB ramps				
• SB Approach	E	37.6	F	6974.5
Avenue 17 at Golden State Boulevard				
• EB Left-Through-Right	A	9.2	B	10.7
• WB Left-Through-Right	A	9.2	B	10.8
• NB Approach	F	250.4	F	---
• SB Approach	F	---	F	---
Avenue 17 at Road 23				
• NB Left-Through-Right	A	0.7	A	1.7
• SB Left-Through-Right	A	0.7	A	0.6
• WB Approach	C	15.5	E	39.0
• EB Approach	B	13.1	C	19.2
Ellis Street at Road 26	A	7.6	B	13.3
Gateway/Avenue 16 at SR 99 NB ramps				
• SB Approach	B	10.7	B	11.5
Avenue 16/Avenue 16 connector at SR 99 NB ramps				
• EB Left	B	10.3	B	11.9
Avenue 16 at SR 99 NB ramp connector				
• EB Left-Through	A	5.2	A	5.8
• SB Approach	A	9.2	A	9.9
Avenue 16 at SR 99 SB ramps	A	9.2	B	10.1

SR = State Route ¹ Delay per vehicle secs = seconds WB = westbound
 NB = northbound SB = southbound EB = eastbound *** = NO LOS/delay reported
 --- = beyond software limitations
 Bolded Text = intersection/movement operates below the appropriate level of service standard

**TABLE 46:
OPENING DAY (2010) WITH PROJECT CONDITIONS
COUNTY SEGMENT, FREEWAY SEGMENT, AND INTERSECTION WEEKDAY LEVEL OF SERVICE
MADERA SITE (ALTERNATIVE A, PROPOSED PROJECT ALTERNATIVE)**

Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay ¹ (secs)	LOS	Delay ¹ (secs)
Avenue 16 at Aviation Drive	B	18.5	C	25.9
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	B	14.9	D	36.4
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps	B	15.4	B	18.6
Avenue 15 ½ at Road 23				
• NB Left-Through-Right	***	***	***	***
• SB Left-Through-Right	A	1.1	A	2.0
• WB Approach	B	11.0	B	12.7
• EB Approach	A	0.0	B	11.6
SR 145/Madera Avenue at SR 99 NB ramps	A	5.6	B	10.7
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	C	22.0	D	38.7
Olive Avenue/Avenue 14 at SR 99 SB off-ramp	B	13.9	B	17.0
Avenue 14 at Road 23	A	9.0	A	9.8
Avenue 12/Golden State Boulevard at SR 99 SB ramps				
• SB Left-Through	A	6.1	A	3.7
• WB Approach	F	50.7	E	44.3
Avenue 12 at Golden State Boulevard	D	54.3	E	58.4
Avenue 12 at SR 99 NB ramps	B	19.1	C	21.9

SR = State Route ¹ Delay per vehicle secs = seconds WB = westbound
 NB = northbound SB = southbound EB = eastbound *** = NO LOS/delay reported
 --- = beyond software limitations

Bolded Text = intersection/movement operates below the appropriate level of service standard

County segments, freeway segments, and intersections within the study area that are projected to operate below the adopted level of service standard are shown bolded in Table 46. As shown in Table 46 and Figure 14, the following County segment (1), freeway segments (5), and intersections (10) are projected to operate or have movements projected to operate below the adopted level of service standards in the Opening Day (2010) with Project Alternative A scenario:

County Segments

- Avenue 17 – SR 99 to Road 27 – PM peak hour - LOS “F”

Freeway Segments

- SR 99 north of Avenue 18 ½
 - SB – PM peak hour – LOS “D”
- SR 99 between Avenue 18 ½ and Avenue 17
 - NB – PM peak hour – LOS “D”
 - SB – PM peak hour – LOS “E”
- SR 99 south of Avenue 17
 - NB – AM/PM peak hours – LOS “D”/“E”

- SB – PM peak hour – LOS “F”

Intersections

- Avenue 18 at SR 99 NB ramps
 - NB Approach – PM peak hour – LOS “D”
- Avenue 18 ½ at SR 99 SB ramps/Road 23
 - NB Approach – PM peak hour – LOS “F”
 - SB Approach – PM peak hour – LOS “E”
- Avenue 17 at SR 99 NB ramps
 - NB Approach – AM/PM peak hour – LOS “F”
- Avenue 17 at SR 99 SB ramps
 - SB Approach – AM/PM peak hours – LOS “E”/“F”
- Avenue 17 at Golden State Boulevard
 - NB Approach – AM/PM peak hours – LOS “F”
 - SB Approach – AM/PM peak hours – LOS “F”
- Avenue 17 at Road 23
 - WB Approach – PM peak hour – LOS “E”
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps – PM peak hour – LOS “D”
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145 – PM peak hour – LOS “D”
- Avenue 12/Golden State Boulevard at SR 99 SB ramps
 - WB Approach – AM/PM peak hours – LOS “F”/“E”
- Avenue 12 at Golden State Boulevard – PM peak hour – LOS “E”

The remaining County segments, freeway segments, and intersections are projected to operate at or above the adopted level of service standard in the Opening Day (2010) Project Alternative A scenario.

Signal Warrants

Rural and urban peak hour volume signal warrants were prepared for the following fifteen (15) unsignalized intersections:

- Avenue 18 ½ at SR 99 SB ramps/Road 23 - Urban
- Avenue 18 ½ at SR 99 NB ramps - Urban
- Avenue 18 ½ at Pistachio Drive - Urban
- Avenue 18 ½ at Golden State Boulevard/Road 23 - Urban
- Avenue 18 at Road 23 - Rural
- Avenue 17 at SR 99 SB ramps - Rural
- Avenue 17 at SR 99 NB ramps - Rural
- Avenue 17 at Golden State Boulevard - Rural
- Avenue 17 at Road 23 - Rural
- Avenue 16/Avenue 16 connector at SR 99 NB ramps - Urban
- Gateway/Avenue 16 at SR 99 NB ramps - Urban
- Avenue 16 at SR 99 NB ramp connector - Urban
- Avenue 15 ½ at Road 23 - Rural
- Avenue 14 at Road 23 - Rural
- Avenue 12/Golden State Boulevard at SR 99 SB ramps - Urban

Based on the rural and urban peak hour volume warrant, the signal warrant is met at the following five (5) locations potentially indicating the need for a traffic signal:

- Avenue 17 at SR 99 SB ramps - Rural
- Avenue 17 at SR 99 NB ramps - Rural
- Avenue 17 at Golden State Boulevard - Rural
- Avenue 17 at Road 23 - Rural
- Avenue 12/Golden State Boulevard at SR 99 SB ramps - Urban

The signal warrant is not met at the remaining ten (10) study intersections in the Opening Day (2010) Project Alternative A scenario. This warrant analysis is limited to the peak hour volume warrant only and other conditions may exist which meet other traffic signal warrants. Copies of the warrant analyses are included in Appendices section Attachment VI – C - 10.

Queue Lengths

Table 47 shows the estimated Opening Day (2010) Project Alternative A conditions queue lengths developed from the level of service analyses for the Madera Site study locations.

TABLE 47: OPENING DAY (2010) WITH PROJECT CONDITIONS WEEKDAY 95TH PERCENTILE QUEUE LENGTH MADERA SITE (ALTERNATIVE A, PROPOSED PROJECT ALTERNATIVE)		
Intersection Approach	Existing Queue Storage Length (ft)	95th Percentile Queue Length (ft) (AM/PM)
SR 99 NB off-ramp at Avenue 18 ½ • NB Left • NB Through-Right	1,2041 (770 ²)	77/114 4/5
SR 99 SB off-ramp at Avenue 18 ½ • SB Left-Through-Right	1,256 ¹ (822 ²)	37/118
SR 99 SB off-ramp at Avenue 17 • SB Left • SB Right	1,341 ¹ (907 ²) 589 ³ 589 ³	62/--- 20/44
SR 99 NB off-ramp at Avenue 17 • NB Left-Through • NB Right	1,060 ¹ (626 ²) 45 ³ 45 ³	---/--- 49/1,557

ft = feet
 NB = northbound SB = southbound WB = westbound EB = eastbound
 SR = State Route ¹ = Total ramp length ² = Calculated storage distance
³ = Distance of ramp striped as 2-lanes or more --- not calculated for unsignalized intersections
 # = 95th percentile volume exceeds capacity, queue may be longer, queue shown is maximum after two (2) cycles
Bolded Text = 95th percentile queues exceed the available storage capacity

**TABLE 47:
OPENING DAY (2010) WITH PROJECT CONDITIONS
WEEKDAY 95TH PERCENTILE QUEUE LENGTH
MADERA SITE (ALTERNATIVE A, PROPOSED PROJECT ALTERNATIVE)**

Intersection Approach	Existing Queue Storage Length (ft)	95th Percentile Queue Length (ft) (AM/PM)
SR 99 NB off-ramp at Avenue 16 • SE Through-Right	1,150 ¹ (716 ²)	0/0
SR 99 SB off-ramp at Avenue 16 • SB Left • SB Right	1,020 ¹ (586 ²)	34/50 42/54
SR 99 NB off-ramp at Avenue 15 1/2 /Cleveland Avenue • NB Left • NB Left-Through • NB Right	881 ¹ (447 ²) 353 ³ 353 ³ 353 ³	137/292 137/293 42/254
SR 99 SB off-ramp at Avenue 15 1/2/Cleveland Avenue • SB Left-Through • SB Right	1,000 ¹ (566 ²) 65 ³ 65 ³	108/179 42/145
SR 99 NB off-ramp at SR 145/Madera Avenue • WB Left • WB Through-Right	1,310 ¹ (876 ²) 90 ³ 90 ³	117/108 0/31
SR 99 SB off-ramp at Avenue 14/Olive Avenue • SB Left • SB Right	1,254 ¹ (820 ²) 65 ³ 65 ³	187/266 40/30
SR 99 SB off-ramp at Avenue 12/Golden State Boulevard • WB Left • WB Right	1,431 ¹ (997 ²)	273/277 7/8
SR 99 NB off-ramp at Avenue 12 • NB Left • NB Right	1,223 ¹ (789 ²) 49 ³ 49 ³	236/#240 52/59

ft = feet 95th percentile queue length - is minimum amount of storage needed for each movement
 NB = northbound SB = southbound WB = westbound EB = eastbound
 SR = State Route ¹ = Total ramp length ² = Calculated storage distance
³ = Distance of ramp striped as 2-lanes or more --- not calculated for unsignalized intersections
 # = 95th percentile volume exceeds capacity, queue may be longer, queue shown is maximum after two (2) cycles
Bolded Text = 95th percentile queues exceed the available storage capacity

TABLE 47: OPENING DAY (2010) WITH PROJECT CONDITIONS WEEKDAY 95TH PERCENTILE QUEUE LENGTH MADERA SITE (ALTERNATIVE A, PROPOSED PROJECT ALTERNATIVE)		
Intersection Approach	Existing Queue Storage Length (ft)	95th Percentile Queue Length (ft) (AM/PM)
Avenue 17 between the SR 99 SB off-ramp and Golden State Boulevard	481	
<ul style="list-style-type: none"> • WB Left (at Golden State Boulevard) • WB Through-Right (at Golden State Boulevard) • EB Through (at SR 99 SB off-ramp) 		<p>13/21</p> <p>0/0</p> <p>0/0</p>

ft = feet 95th percentile queue length - is minimum amount of storage needed for each movement
 NB = northbound SB = southbound WB = westbound EB = eastbound
 SR = State Route ¹ = Total ramp length ² = Calculated storage distance
³ = Distance of ramp striped as 2-lanes or more --- not calculated for unsignalized intersections
 # = 95th percentile volume exceeds capacity, queue may be longer, queue shown is maximum after two (2) cycles
Bolded Text = 95th percentile queues exceed the available storage capacity

Movements with queue lengths that are projected to exceed their available storage lengths are shown bolded in Table 47. As shown in Table 47, the following locations by time period are projected to exceed the allowable storage length in the Opening Day (2010) with Project Alternative A scenario with 95th percentile traffic conditions:

- Avenue 17 at SR 99 SB off-ramp
 - SB Left – PM peak hour
- Avenue 17 at SR 99 NB off-ramp
 - NB Left-Through – AM/PM peak hours
 - NB Right – PM peak hour

These queue exceedances indicate that it is likely that at some point during either the AM or PM peak hour, deceleration for vehicles utilizing these various ramps would likely occur on the mainline. It should be noted that these queue exceedances are estimated based on the level of service analysis and are provided for information only. They are to be used in the design process and are not intended for use as a significance criteria.

All remaining study queue lengths are not projected to exceed the allowable storage lengths in the 95th percentile condition in the Opening Day (2010) Project Alternative A scenario.

Ramp Widening/Auxiliary Lane Threshold

Table 48 shows the SR 99 off-ramp volumes and whether the PCE volumes by time period meet or exceed one or both of these two thresholds.

**TABLE 48:
OPENING DAY (2010) WITH PROJECT CONDITIONS
RAMP WIDENING/AUXILIARY LANE THRESHOLD SUMMARY
MADERA SITE (ALTERNATIVE A, PROPOSED PROJECT ALTERNATIVE)**

Scenario	PCE (AM/PM)	900 to 1,499 PCE Threshold (AM/PM) (Y/N)	≥ 1,500 PCE Threshold (AM/PM) (Y/N)
SR 99 NB off-ramp at Avenue 18 ½	292/347	N/N	N/N
SR 99 SB off-ramp at Avenue 18 ½	190/290	N/N	N/N
SR 99 SB off-ramp at Avenue 17	164/320	N/N	N/N
SR 99 NB off-ramp at Avenue 17	617/1186	N/Y	N/N
SR 99 NB off-ramp at Avenue 16	69/115	N/N	N/N
SR 99 SB off-ramp at Avenue 16	282/464	N/N	N/N
SR 99 NB off-ramp at Avenue 15 ½ /Cleveland Avenue	540/1100	N/Y	N/N
SR 99 SB off-ramp at Avenue 15 ½ /Cleveland Avenue	242/408	N/N	N/N
SR 99 NB off-ramp at SR 145/Madera Avenue	223/193	N/N	N/N
SR 99 SB off-ramp at Avenue 14/Olive Avenue	487/657	N/N	N/N
SR 99 SB off-ramp at Avenue 12/Golden State Boulevard	490/550	N/N	N/N
SR 99 NB off-ramp at Avenue 12	355/343	N/N	N/N

PCE = Passenger Car Equivalent Y = Threshold Met N = Threshold Not Met
SR = State Route NB = northbound SB = southbound
Bolded Text = ramps meet at least one of the volume thresholds

Off-ramps projected to meet one or both thresholds are shown in bold in Table 48. As shown in Table 48, the following off-ramps, by time period, are projected to meet the 900 to 1,499 PCE threshold in the Opening Day (2010) with Project Alternative A scenario:

- Avenue 17 at SR 99 NB off-ramp – AM/PM peak hours
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB off-ramp – PM peak hour

When ramp volumes are between 900 to 1,499 PCE, provisions should be made for the future widening of a one-lane ramp to two-lanes and for the future construction of an associated 1,333 ft (minimum) auxiliary lane prior to the widened ramp. When ramp volumes are equal to or exceed 1,500 PCE, a two-lane ramp and associated 1,333 ft (minimum) auxiliary lane should be constructed.

Left-Turn Warrants

Left-turn lane channelization warrants were prepared to determine the need for separate left-turn lanes at six (6) County of Madera intersections that are currently unchannelized. The following intersection movements were analyzed to determine if separate left-turn lanes were warranted:

- Avenue 18 ½ at SR 99 SB ramps/Road 23
 - WB left-turn

- Avenue 12/Golden State Boulevard at SR 99 SB ramps
 - SB left-turn
- Avenue 18 at Road 23
 - NB left-turn
 - SB left-turn
 - EB left-turn
 - WB left-turn
- Avenue 17 at Road 23
 - NB left-turn
 - SB left-turn
 - EB left-turn
 - WB left-turn
- Avenue 17 at Golden State Boulevard
 - SB left-turn
 - EB left-turn
 - WB left-turn
- Ellis Street at Road 26
 - NB left-turn
 - SB left-turn
 - EB left-turn
 - WB left-turn

The locations that met the left-turn warrant for the Opening Day (2010) with Project Alternative A are as follows:

- Avenue 18 ½ at SR 99 SB ramps/Road 23
 - WB left-turn
- Avenue 12/Golden State Boulevard at SR 99 SB ramps
 - SB left-turn
- Avenue 18 at Road 23
 - SB left-turn
- Avenue 17 at Road 23
 - SB left-turn
 - WB left-turn
- Avenue 17 at Golden State Boulevard
 - SB left-turn
 - EB left-turn
 - WB left-turn
- Ellis Street at Road 26
 - NB left-turn
 - SB left-turn

Standard state of the practice dictates that dual left-turn lanes are recommended for left-turning volumes greater than 300 vehicles per hour and that separate right-turn lanes are recommended for right-turning volumes greater than 300 vehicles per hour. Based on this standard of practice, the following locations and movements should be considered for either dual left-turn lanes or a separate right-turn lane:

- Avenue 17 at SR 99 NB ramps

- Dual NB left-turn lanes
- Separate NB right-turn lane
- Avenue 12/Golden State Boulevard at SR 99 SB ramps
 - Separate WB right-turn lane
- Avenue 12 at SR 99 NB ramps
 - Separate WB right-turn lane
- Avenue 17 at Golden State Boulevard
 - Dual SB left-turn lanes
 - Separate WB right-turn lane
- Avenue 16 at Schnoor Avenue
 - Dual WB left-turn lanes
 - Dual EB left-turn lanes
- Avenue 16 at SR 99 SB ramps
 - Dual NB left-turn lanes
 - Separate SB right-turn lane
 - Separate EB right-turn lane
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps
 - Dual NB left-turn lanes
 - Separate NB right-turn lane
 - Separate WB right-turn lane
- Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps
 - Dual SB left-turn lanes
 - Dual WB left-turn lanes
 - Separate EB right-turn lane
- SR 145/Madera Avenue at SR 99 NB ramps
 - Dual NB left-turn lanes
 - Separate SB right-turn lane
 - Dual WB left-turn lanes
- Olive Avenue/Avenue 14 at SR 99 SB off-ramp
 - Dual SB left-turn lanes
 - Separate SB right-turn lane
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145
 - Dual EB left-turn lanes
 - Separate EB right-turn lane

Turn Lane Storage Calculations

Table 49 shows the calculated left-turn storage lengths for movements which have existing separate left-turn or right-turn lanes, meet the left-turn channelization warrant, or require dual left-turn lanes or separate right-turn lanes. SR 99 off-ramp approaches and movements included in the queue length analysis are not included in the storage length calculations. It should be noted that the calculated left-turn storage length increases are not solely due to Project only trips but are also due to increases in background traffic.

**TABLE 49:
OPENING DAY (2010) WITH PROJECT CONDITIONS
TURN LANE STORAGE CALCULATIONS SUMMARY
ALTERNATIVE A (PROPOSED PROJECT/MADERA SITE)**

Intersection	Movement	Existing Storage Length (ft)	2010 with Project Storage Length (ft)
Avenue 18 ½ at SR 99 SB ramps/Road 23	NBL	25	100
	NBR	25	100
	WBL	---	n/a
Avenue 18 ½ at SR 99 NB ramps	EBL	150	150
Avenue 17 at SR 99 NB ramps	WBR		250
	EBL	300	100
Avenue 12/Golden State Boulevard at SR 99 SB ramps	NBR	---	350
	SBL	---	200
Avenue 12 at Golden State Boulevard	NBL	200	100
	WBL	---	100
	WBR		n/a
	SBL	400	350 ¹
	SBR	200	100
	EBL	350	300
	EBR	425	100
Avenue 12 at SR 99 NB ramps	WBR	---	600
	EBL	---	250
Avenue 17 at Road 23	NBL	---	n/a
	WBL	---	n/a
	SBR	---	n/a
	EBR		n/a
Avenue 17 at Golden State Boulevard	NBL	50	150
	NBR	---	n/a
	WBL	---	200
	WBR	---	350
	SBL	---	200 ¹
	EBL	---	
Ellis Street at Road 26	NBL	---	100
	WBR	---	250
	SBL	---	200
	EBR		100

ft = feet NB = northbound SB = southbound WB = westbound
 EB = eastbound n/a = not applicable --- = no existing lane
 SR = State Route ¹ = dual lefts required, length of each left-turn lane
² = exceeds available distance to nearest intersection
³ = dual rights required, length of each right-turn lane

**TABLE 49:
OPENING DAY (2010) WITH PROJECT CONDITIONS
TURN LANE STORAGE CALCULATIONS SUMMARY
ALTERNATIVE A (PROPOSED PROJECT/MADERA SITE)**

Intersection	Movement	Existing Storage Length (ft)	2010 with Project Storage Length (ft)
Avenue 16/Ellis Street at Aviation Drive	NBL	75	100
	NBR	75	n/a
	WBL	200	400
	SBL		100
	SBR		100
	EBL	---	100
	EBR		n/a
Avenue 16 at SR 99 SB ramps	WBR		100
	EBL		150
Avenue 16/Ellis Street at SR 99 NB ramps	WBR	---	n/a
	EBL	300	n/a
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	WBR	50	200
	EBL	100	250
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps	WBL	125	250
	EBR	125	700
SR 145/Madera Avenue at SR 99 NB ramps	NBL	---	250 ¹
	SBR	---	n/a
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	NBL	125	100 ¹
	SBL	100	n/a
	SBR	25	250
	EBL	175	250
	EBR	175	500
Avenue 18 ½ at Golden State Boulevard/Road 23	NBL	---	n/a
	NBR	---	n/a
	WBL	---	n/a
	WBR		175
	SBL	---	n/a
Avenue 18 at Pistachio Drive	WBR		250

ft = feet NB = northbound SB = southbound WB = westbound
 EB = eastbound n/a = not applicable --- = no existing lane
 SR = State Route ¹ = dual lefts required, length of each left-turn lane
² = exceeds available distance to nearest intersection
³ = dual rights required, length of each right-turn lane

Alternative B (Reduced Intensity Alternative)

Roadway Levels of Service

Table 50 shows the Opening Day (2010) with Project Alternative B levels of service for the County segments, freeway segments, and intersections for the Madera Site utilizing Figures 10 (lane configurations) and 15 (peak hour volumes) shown previously. The signalized and AWSC

intersection levels of service shown on Table 50 are representative of the whole intersection. Individual intersection movements or approaches may operate above or below the signalized or AWSC level of service or delay shown on Table 50. The signalized levels of service or delay shown in Table 50 may not reflect the effects of 95th percentile queues that exceed the capacity for their movement. The Opening Day (2010) with Project Alternative B freeway segment and intersection levels of service calculations for the Madera Site are included in the Appendices section Attachment VI – C – 11 and Attachment VI – C - 12. Figure 16 provides a graphical representation of the resulting Opening Day (2010) with Project Alternative B levels of service.

TABLE 50: OPENING DAY (2010) WITH PROJECT CONDITIONS COUNTY SEGMENT, FREEWAY SEGMENT, AND INTERSECTION WEEKDAY LEVEL OF SERVICE MADERA SITE (ALTERNATIVE B, REDUCED INTENSITY ALTERNATIVE)				
County Segment	AM Peak Hour		PM Peak Hour	
	LOS		LOS	
Avenue 18 ½ - Road 24 to Road 23	A		A	
Road 23 – Avenue 18 ½ to Avenue 17	B		B	
Avenue 17 – Road 23 to SR 99	A		D	
Avenue 17 – SR 99 to Road 27	C		F	
Golden State Boulevard – Avenue 17 to Road 23	A		A	
Freeway Segment	AM Peak Hour		PM Peak Hour	
	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)
SR 99 north of Avenue 18 ½				
• NB	C	24.2	C	25.2
• SB	C	20.0	D	32.5
SR 99 between Avenue 18 ½ and Avenue 17				
• NB	C	25.3	D	27.0
• SB	C	21.0	E	36.1
SR 99 south of Avenue 17				
• NB	D	31.5	E	38.6
• SB	C	24.7	F	---
Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay¹ (secs)	LOS	Delay¹ (secs)
Avenue 18 ½ at SR 99 NB ramps				
• EB Left	A	8.4	A	8.1
• NB Approach	C	22.7	D	26.4
Avenue 18 ½ at SR 99 SB ramps/Road 23				
• WB Left-Through	A	0.8	A	1.4
• NB Approach	C	20.8	F	63.1
• SB Approach	C	17.2	E	36.5

SR = State Route ¹ Delay per vehicle secs = seconds WB = westbound
 NB = northbound SB = southbound EB = eastbound *** = no LOS/delay reported
 --- = beyond software limitations
 Bolded Text = intersection/movement operates below the appropriate level of service standard

TABLE 50: OPENING DAY (2010) WITH PROJECT CONDITIONS COUNTY SEGMENT, FREEWAY SEGMENT, AND INTERSECTION WEEKDAY LEVEL OF SERVICE MADERA SITE (ALTERNATIVE B, REDUCED INTENSITY ALTERNATIVE)				
Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay¹ (secs)	LOS	Delay¹ (secs)
Avenue 18 ½ at Pistachio Drive				
• EB Approach	A	0.0	A	0.4
• SB Approach	B	15.0	C	20.3
Avenue 18 ½ at Golden State Boulevard				
• EB Approach	A	0.3	A	0.1
• SB Approach	B	12.1	B	12.9
Avenue 18 at Road 23				
• NB Left-Through-Right	A	0.1	A	0.2
• SB Left-Through-Right	A	1.7	A	1.7
• WB Approach	A	9.6	B	10.1
• EB Approach	B	10.8	B	12.1
Avenue 17 at SR 99 NB ramps				
• EB Left	B	11.0	B	13.9
• NB Approach	F	6001.8	F	4093.9
Avenue 17 at SR 99 SB ramps				
• SB Approach	E	37.6	F	6974.5
Avenue 17 at Golden State Boulevard				
• EB Left-Through-Right	A	9.2	B	10.7
• WB Left-Through-Right	A	9.2	B	10.8
• NB Approach	F	250.4	F	---
• SB Approach	F	---	F	---
Avenue 17 at Road 23				
• NB Left-Through-Right	A	0.7	A	1.7
• SB Left-Through-Right	A	0.7	A	0.6
• WB Approach	C	15.5	E	39.2
• EB Approach	B	13.1	C	19.1
Ellis Street at Road 26				
	A	7.6	B	13.2
Gateway/Avenue 16 at SR 99 NB ramps				
• SB Approach	B	10.7	B	11.5
Avenue 16/Avenue 16 connector at SR 99 NB ramps				
• EB Left	B	10.3	B	11.9
Avenue 16 at SR 99 NB ramp connector				
• EB Left-Through	A	5.2	A	5.9
• SB Approach	A	9.2	A	9.9
Avenue 16 at SR 99 SB ramps				
	A	9.2	B	10.1

SR = State Route ¹ Delay per vehicle secs = seconds WB = westbound
 NB = northbound SB = southbound EB = eastbound *** = no LOS/delay reported
 --- = beyond software limitations
 Bolded Text = intersection/movement operates below the appropriate level of service standard

TABLE 50: OPENING DAY (2010) WITH PROJECT CONDITIONS COUNTY SEGMENT, FREEWAY SEGMENT, AND INTERSECTION WEEKDAY LEVEL OF SERVICE MADERA SITE (ALTERNATIVE B, REDUCED INTENSITY ALTERNATIVE)				
Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay¹ (secs)	LOS	Delay¹ (secs)
Avenue 16 at Aviation Drive	B	18.5	C	25.9
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	B	14.9	D	36.8
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps	B	15.4	B	18.6
Avenue 15 ½ at Road 23				
• NB Left-Through-Right	***	***	***	***
• SB Left-Through-Right	A	1.1	A	2.0
• WB Approach	B	11.0	B	12.7
• EB Approach	A	0.0	B	11.6
SR 145/Madera Avenue at SR 99 NB ramps	A	5.6	B	10.2
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	C	22.0	D	38.7
Olive Avenue/Avenue 14 at SR 99 SB off-ramp	B	13.9	B	17.0
Avenue 14 at Road 23	A	9.0	A	9.8
Avenue 12/Golden State Boulevard at SR 99 SB ramps				
• SB Left-Through	A	6.1	A	3.7
• WB Approach	F	50.7	E	44.3
Avenue 12 at Golden State Boulevard	D	54.3	E	58.4
Avenue 12 at SR 99 NB ramps	B	19.1	C	21.9

SR = State Route ¹ Delay per vehicle secs = seconds WB = westbound
 NB = northbound SB = southbound EB = eastbound *** = no LOS/delay reported
 --- = beyond software limitations
 Bolded Text = intersection/movement operates below the appropriate level of service standard

County segments, freeway segments, and intersections within the study area that are projected to operate below the adopted level of service standards are shown bolded in Table 50. As shown in Table 50 and Figure 16, the following County segment (1), freeway segments (5), and intersections (10) are projected to operate or have movements projected to operate below the adopted level of service standards in the Opening Day (2010) Project Alternative B scenario:

County Segments

- Avenue 17 – SR 99 to Road 27 – PM peak hour - LOS “F”

Freeway Segments

- SR 99 north of Avenue 18 ½
 - SB – PM peak hour – LOS “D”
- SR 99 between Avenue 18 ½ and Avenue 17
 - NB – PM peak hour – LOS “D”

- SB – PM peak hour – LOS “E”
- SR 99 south of Avenue 17
 - NB – AM/PM peak hours – LOS “D”/“E”
 - SB – PM peak hour – LOS “F”

Intersections

- Avenue 18 at SR 99 NB ramps
 - NB Approach – PM peak hour – LOS “D”
- Avenue 18 ½ at SR 99 SB ramps/Road 23
 - NB Approach – PM peak hour – LOS “F”
 - SB Approach – PM peak hour – LOS “E”
- Avenue 17 at SR 99 NB ramps
 - NB Approach – AM/PM peak hour – LOS “F”
- Avenue 17 at SR 99 SB ramps
 - SB Approach – AM/PM peak hours – LOS “E”/“F”
- Avenue 17 at Golden State Boulevard
 - NB Approach – AM/PM peak hours – LOS “F”
 - SB Approach – AM/PM peak hours – LOS “F”
- Avenue 17 at Road 23
 - WB Approach – PM peak hour – LOS “E”
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps – PM peak hour – LOS “D”
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145 – PM peak hour – LOS “D”
- Avenue 12/Golden State Boulevard at SR 99 SB ramps
 - WB Approach – AM/PM peak hours – LOS “F”/“E”
- Avenue 12 at Golden State Boulevard – PM peak hour – LOS “E”

The remaining County segments, freeway segments, and intersections are projected to operate at or above the adopted level of service standard in the Opening Day (2010) Project Alternative B scenario.

Signal Warrants

Rural and urban peak hour volume signal warrants were prepared for the following fifteen (15) unsignalized intersections:

- Avenue 18 ½ at SR 99 SB ramps/Road 23 - Urban
- Avenue 18 ½ at SR 99 NB ramps - Urban
- Avenue 18 ½ at Pistachio Drive - Urban
- Avenue 18 ½ at Golden State Boulevard/Road 23 - Urban
- Avenue 18 at Road 23 - Rural
- Avenue 17 at SR 99 SB ramps - Rural
- Avenue 17 at SR 99 NB ramps - Rural
- Avenue 17 at Golden State Boulevard - Rural
- Avenue 17 at Road 23 - Rural
- Avenue 16/Avenue 16 connector at SR 99 NB ramps - Urban
- Gateway/Avenue 16 at SR 99 NB ramps - Urban
- Avenue 16 at SR 99 NB ramp connector - Urban
- Avenue 15 ½ at Road 23 - Rural
- Avenue 14 at Road 23 - Rural

- Avenue 12/Golden State Boulevard at SR 99 SB ramps - Urban

Based on the rural and urban peak hour volume warrant, the signal warrant is met at the following five (5) locations potentially indicating the need for a traffic signal:

- Avenue 17 at SR 99 SB ramps - Rural
- Avenue 17 at SR 99 NB ramps - Rural
- Avenue 17 at Golden State Boulevard - Rural
- Avenue 17 at Road 23 - Rural
- Avenue 12/Golden State Boulevard at SR 99 SB ramps - Urban

The signal warrant is not met at the remaining ten (10) study intersections in the Opening Day (2010) with Project Alternative B scenario. This warrant analysis is limited to the peak hour volume warrant only and other conditions may exist which meet other traffic signal warrants. Copies of the warrant analyses are included in Appendices section Attachment VI – C - 13.

Queue Lengths

Table 51 shows the estimated Opening Day (2010) with Project Alternative B conditions queue lengths developed from the level of service analyses for the Madera Site study locations.

TABLE 51 OPENING DAY (2010) WITH PROJECT CONDITIONS WEEKDAY 95TH PERCENTILE QUEUE LENGTH MADERA SITE (ALTERNATIVE B, REDUCED INTENSITY ALTERNATIVE)		
Intersection Approach	Existing Queue Storage Length (ft)	95th Percentile Queue Length (ft) (AM/PM)
SR 99 NB off-ramp at Avenue 18 ½ • NB Left • NB Through-Right	1,204 ¹ (770 ²)	77/114 4/5
SR 99 SB off-ramp at Avenue 18 ½ • SB Left-Through-Right	1,256 ¹ (822 ²)	37/118
SR 99 SB off-ramp at Avenue 17 • SB Left • SB Right	1,341 ¹ (907 ²) 589 ³ 589 ³	62/--- 20/44

ft = feet 95th percentile queue length - is minimum amount of storage needed for each movement
 NB = northbound SB = southbound WB = westbound EB = eastbound
 SR = State Route ¹ = Total ramp length ² = Calculated storage distance
³ = Distance of ramp striped as 2-lanes or more --- not calculated for unsignalized intersections
 # = 95th percentile volume exceeds capacity, queue may be longer, queue shown is maximum after two (2) cycles
Bolded Text = 95th percentile queues exceed the available storage capacity

TABLE 51 OPENING DAY (2010) WITH PROJECT CONDITIONS WEEKDAY 95TH PERCENTILE QUEUE LENGTH MADERA SITE (ALTERNATIVE B, REDUCED INTENSITY ALTERNATIVE)		
Intersection Approach	Existing Queue Storage Length (ft)	95th Percentile Queue Length (ft) (AM/PM)
SR 99 NB off-ramp at Avenue 17 <ul style="list-style-type: none"> • NB Left-Through • NB Right 	1,060 ¹ (626 ²) 45 ³ 45 ³	---/--- 49/1,571
SR 99 NB off-ramp at Avenue 16 <ul style="list-style-type: none"> • WB Left 	1,150 ¹ (716 ²)	0/0
SR 99 SB off-ramp at Avenue 16 <ul style="list-style-type: none"> • SB Left • SB Right 	1,020 ¹ (586 ²)	30/50 42/54
SR 99 NB off-ramp at Avenue 15 ½ /Cleveland Avenue <ul style="list-style-type: none"> • NB Left • NB Left-Through • NB Right 	881 ¹ (447 ²) 353 ³ 353 ³ 353 ³	137/292 137/293 42/244
SR 99 SB off-ramp at Avenue 15 ½ /Cleveland Avenue <ul style="list-style-type: none"> • SB Left-Through • SB Right 	1,000 ¹ (566 ²) 65 ³ 65 ³	108/179 42/145
SR 99 NB off-ramp at SR 145/Madera Avenue <ul style="list-style-type: none"> • WB Left • WB Through-Right 	1,310 ¹ (876 ²) 90 ³ 90 ³	117/108 0/31
SR 99 SB off-ramp at Avenue 14/Olive Avenue <ul style="list-style-type: none"> • SB Left • SB Right 	1,254 ¹ (820 ²) 65 ³ 65 ³	187/266 40/30
SR 99 SB off-ramp at Avenue 12/Golden State Boulevard <ul style="list-style-type: none"> • WB Left • WB Right 	1,431 ¹ (997 ²)	273/277 7/8

ft = feet *95th percentile queue length - is minimum amount of storage needed for each movement*
NB = northbound *SB = southbound* *WB = westbound* *EB = eastbound*
SR = State Route *¹ = Total ramp length* *² = Calculated storage distance*
³ = Distance of ramp striped as 2-lanes or more *--- not calculated for unsignalized intersections*
= 95th percentile volume exceeds capacity, queue may be longer, queue shown is maximum after two (2) cycles
Bolded Text = 95th percentile queues exceed the available storage capacity

TABLE 51 OPENING DAY (2010) WITH PROJECT CONDITIONS WEEKDAY 95TH PERCENTILE QUEUE LENGTH MADERA SITE (ALTERNATIVE B, REDUCED INTENSITY ALTERNATIVE)		
Intersection Approach	Existing Queue Storage Length (ft)	95th Percentile Queue Length (ft) (AM/PM)
SR 99 NB off-ramp at Avenue 12 • NB Left-Through • NB Right	1,223 ¹ (789 ²) 49 ³ 49 ³	236/#240 52/59
Avenue 17 between the SR 99 SB off-ramp and Golden State Boulevard • WB Left (at Golden State Blvd) • WB Through-Right (at Golden State Blvd) • EB Through (at SR 99 SB off-ramp)	481	13/21 0/0 0/0

ft = feet 95th percentile queue length - is minimum amount of storage needed for each movement
NB = northbound SB = southbound WB = westbound EB = eastbound
SR = State Route ¹ = Total ramp length ² = Calculated storage distance
³ = Distance of ramp striped as 2-lanes or more --- not calculated for unsignalized intersections
= 95th percentile volume exceeds capacity, queue may be longer, queue shown is maximum after two (2) cycles
Bolded Text = 95th percentile queues exceed the available storage capacity

Movements with queue lengths that are projected to exceed their available storage lengths are shown bolded in Table 51. As shown in Table 51, the following locations by time period are projected to exceed the allowable storage length in the Opening Day (2010) Project Alternative B scenario with 95th percentile traffic conditions:

- Avenue 17 at SR 99 SB off-ramp
 - SB Left – PM peak hour
- Avenue 17 at SR 99 NB off-ramp
 - NB Left-Through – AM/PM peak hours
 - NB Right – PM peak hour

These queue exceedances indicate that it is likely that at some point during either the AM or PM peak hour, deceleration for vehicles utilizing these various ramps would likely occur on the mainline. It should be noted that these queue exceedances are estimated based on the level of service analysis and are provided for information only. They are to be used in the design process and are not intended for use as a significance criteria.

All remaining study queue lengths are not projected to exceed the allowable storage lengths in the 95th percentile condition in the Opening Day (2010) Project Alternative B scenario.

Ramp Widening/Auxiliary Lane Threshold

Table 52 shows the SR 99 off-ramp volumes and whether the PCE volumes by time period meet or exceed one or both of these two thresholds.

**TABLE 52:
OPENING DAY (2010) PROJECT CONDITIONS
RAMP WIDENING/AUXILIARY LANE THRESHOLD SUMMARY
MADERA SITE (ALTERNATIVE B, REDUCED INTENSITY ALTERNATIVE)**

Scenario	PCE (AM/PM)	900 to 1,499 PCE Threshold (AM/PM) (Y/N)	≥ 1,500 PCE Threshold (AM/PM) (Y/N)
SR 99 NB off-ramp at Avenue 18 ½	292/347	N/N	N/N
SR 99 SB off-ramp at Avenue 18 ½	190/290	N/N	N/N
SR 99 SB off-ramp at Avenue 17	164/320	N/N	N/N
SR 99 NB off-ramp at Avenue 17	615/1183	N/Y	N/N
SR 99 NB off-ramp at Avenue 16	69/115	N/N	N/N
SR 99 SB off-ramp at Avenue 16	282/464	N/N	N/N
SR 99 NB off-ramp at Avenue 15 ½ /Cleveland Avenue	540/1090	N/Y	N/N
SR 99 SB off-ramp at Avenue 15 ½ /Cleveland Avenue	242/408	N/N	N/N
SR 99 NB off-ramp at SR 145/Madera Avenue	223/193	N/N	N/N
SR 99 SB off-ramp at Avenue 14/Olive Avenue	487/657	N/N	N/N
SR 99 SB off-ramp at Avenue 12/Golden State Boulevard	490/550	N/N	N/N
SR 99 NB off-ramp at Avenue 12	355/343	N/N	N/N

PCE = Passenger Car Equivalent Y = Threshold Met N = Threshold Not Met
SR = State Route NB = northbound SB = southbound
Bolted Text = ramps meet at least one of the volume thresholds

Off-ramps projected to meet one or both thresholds are shown in bold in Table 52. As shown in Table 52, the following off-ramps, by time period, are projected to meet the 900 to 1,499 PCE threshold in the Opening Day (2010) Project Alternative B scenario:

- Avenue 17 at SR 99 NB off-ramp – PM peak hour
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB off-ramp – PM peak hour

When ramp volumes are between 900 to 1,499 PCE, provisions should be made for the future widening of a one-lane ramp to two-lanes and for the future construction of an associated 1,333 ft (minimum) auxiliary lane prior to the widened ramp. When ramp volumes are equal to or exceed 1,500 PCE, a two-lane ramp and associated 1,333 ft (minimum) auxiliary lane should be constructed.

Left-Turn Warrants

Left-turn lane channelization warrants were prepared to determine the need for separate left-turn lanes at six (6) County of Madera intersections that are currently unchannelized. The following intersection movements were analyzed to determine if separate left-turn lanes were warranted:

- Avenue 18 ½ at SR 99 SB ramps/Road 23
 - WB left-turn

- Avenue 12/Golden State Boulevard at SR 99 SB ramps
 - SB left-turn
- Avenue 18 at Road 23
 - NB left-turn
 - SB left-turn
 - EB left-turn
 - WB left-turn
- Avenue 17 at Road 23
 - NB left-turn
 - SB left-turn
 - EB left-turn
 - WB left-turn
- Avenue 17 at Golden State Boulevard
 - SB left-turn
 - EB left-turn
 - WB left-turn
- Ellis Street at Road 26
 - NB left-turn
 - SB left-turn
 - EB left-turn
 - WB left-turn

The locations that met the left-turn warrant for the Opening Day (2010) with Project Alternative B are as follows:

- Avenue 18 ½ at SR 99 SB ramps/Road 23
 - WB left-turn
- Avenue 12/Golden State Boulevard at SR 99 SB ramps
 - SB left-turn
- Avenue 18 at Road 23
 - SB left-turn
- Avenue 17 at Road 23
 - SB left-turn
 - WB left-turn
- Avenue 17 at Golden State Boulevard
 - SB left-turn
 - EB left-turn
 - WB left-turn
- Ellis Street at Road 26
 - NB left-turn
 - SB left-turn

Standard state of the practice dictates that dual left-turn lanes are recommended for left-turning volumes greater than 300 vehicles per hour and that separate right-turn lanes are recommended for right-turning volumes greater than 300 vehicles per hour. Based on this standard of practice, the following locations and movements should be considered for either dual left-turn lanes or a separate right-turn lane:

- Avenue 17 at SR 99 NB ramps

- Dual NB left-turn lanes
- Separate NB right-turn lane
- Avenue 12/Golden State Boulevard at SR 99 SB ramps
 - Separate WB right-turn lane
- Avenue 12 at SR 99 NB ramps
 - Separate WB right-turn lane
- Avenue 17 at Golden State Boulevard
 - Dual SB left-turn lanes
 - Separate WB right-turn lane
- Avenue 16 at Schnoor Avenue
 - Dual WB left-turn lanes
 - Dual EB left-turn lanes
- Avenue 16 at SR 99 SB ramps
 - Dual NB left-turn lanes
 - Separate SB right-turn lane
 - Separate EB right-turn lane
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps
 - Dual NB left-turn lanes
 - Separate NB right-turn lane
 - Separate WB right-turn lane
- Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps
 - Dual SB left-turn lanes
 - Dual WB left-turn lanes
 - Separate EB right-turn lane
- SR 145/Madera Avenue at SR 99 NB ramps
 - Dual NB left-turn lanes
 - Separate SB right-turn lane
 - Dual WB left-turn lanes
- Olive Avenue/Avenue 14 at SR 99 SB off-ramp
 - Dual SB left-turn lanes
 - Separate SB right-turn lane
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145
 - Dual EB left-turn lanes
 - Separate EB right-turn lane

Turn Lane Storage Calculations

Table 53 shows the calculated left-turn storage lengths for movements which have existing separate left or right-turn lanes, meet the left-turn channelization warrant, or require dual left-turn lanes or separate right-turn lanes. SR 99 off-ramp approaches and movements included in the queue length analysis are not included in the storage length calculations. It should be noted that the calculated left-turn storage length increases are not solely due to Project only trips but are also due to increases in background traffic.

**TABLE 53:
OPENING DAY (2010) WITH PROJECT CONDITIONS
TURN LANE STORAGE CALCULATIONS SUMMARY
ALTERNATIVE B (REDUCED INTENSITY/MADERA SITE)**

Intersection	Movement	Existing Storage Length (ft)	2010 Project Storage Length (ft)
Avenue 18 ½ at SR 99 SB ramps/Road 23	NBL	25	100
	NBR	25	100
	WBL	---	n/a
Avenue 18 ½ at SR 99 NB ramps	EBL	150	150
Avenue 17 at SR 99 NB ramps	WBR		200
	EBL	300	100
Avenue 12/Golden State Boulevard at SR 99 SB ramps	NBR	---	400
	SBL	---	200
Avenue 12 at Golden State Boulevard	NBL	200	100
	WBL	---	100
	WBR		n/a
	SBL	400	350 ¹
	SBR	200	100
	EBL	350	300
	EBR	425	100
Avenue 12 at SR 99 NB ramps	WBR	---	650
	EBL	---	250
Avenue 17 at Road 23	NBL	---	n/a
	WBL	---	n/a
	SBR	---	n/a
	EBR		n/a
Avenue 17 at Golden State Boulevard	NBL	50	150
	NBR	---	n/a
	WBL	---	200
	WBR	---	300
	SBL	---	200 ¹
	EBL	---	
Ellis Street at Road 26	NBL	---	100
	WBR	---	250
	SBL	---	200
	EBR		100

ft = feet SR = State Route NB = northbound SB = southbound
 WB = westbound EB = eastbound n/a = not applicable --- = no existing lane
¹ = dual lefts required, length of each left-turn lane
² = exceeds available distance to nearest intersection
³ = dual rights required, length of each right-turn lane

**TABLE 53:
OPENING DAY (2010) WITH PROJECT CONDITIONS
TURN LANE STORAGE CALCULATIONS SUMMARY
ALTERNATIVE B (REDUCED INTENSITY/MADERA SITE)**

Intersection	Movement	Existing Storage Length (ft)	2010 Project Storage Length (ft)
Avenue 16/Ellis Street at Aviation Drive	NBL	75	100
	NBR	75	n/a
	WBL	200	400
	SBL		100
	SBR		100
	EBL	---	100
	EBR		n/a
Avenue 16 at SR 99 SB ramps	WBR		100
	EBL		150
Avenue 16/Ellis Street at SR 99 NB ramps	WBR	---	n/a
	EBL	300	n/a
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	WBR	50	250
	EBL	100	250
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps	WBL	125	300
	EBR	125	800
SR 145/Madera Avenue at SR 99 NB ramps	NBL	---	300 ¹
	SBR	---	n/a
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	NBL	125	100 ¹
	SBL	100	n/a
	SBR	25	250
	EBL	175	250
	EBR	175	600
Avenue 18 ½ at Golden State Boulevard/Road 23	NBL	---	n/a
	NBR	---	n/a
	WBL	---	n/a
	WBR		175
	SBL	---	n/a
Avenue 18 at Pistachio Drive	WBR		250

ft = feet SR = State Route NB = northbound SB = southbound
 WB = westbound EB = eastbound n/a = not applicable --- = no existing lane
¹ = dual lefts required, length of each left-turn lane
² = exceeds available distance to nearest intersection
³ = dual rights required, length of each right-turn lane

Alternative C (Commercial Land Use Alternative)

Roadway Levels of Service

Table 54 shows the Opening Day (2010) with Project Alternative C levels of service for the County segments, freeway segments, and intersections for the Madera Site utilizing Figures 10 (lane configurations) and 17 (peak hour volumes) shown previously. The signalized and AWSC intersection levels of service shown on Table 54 are representative of the whole intersection. Individual intersection movements or approaches may operate above or below the signalized or AWSC level of service or delay shown on Table 54. The signalized levels of service or delay shown in Table 54 may not reflect the effects of 95th percentile queues that exceed the capacity for their movement. The Opening Day (2010) with Project Alternative C freeway segment and intersection levels of service calculations for the Madera Site are included in the Appendices section Attachment VI – C – 14 and Attachment VI – C – 15 respectively. Figure 18 provides a graphical representation of the resulting Opening Day (2010) with Project Alternative C levels of service.

TABLE 54 OPENING DAY (2010) WITH PROJECT CONDITIONS COUNTY SEGMENT, FREEWAY SEGMENT, AND INTERSECTION WEEKDAY LEVEL OF SERVICE MADERA SITE (ALTERNATIVE C, COMMERCIAL LAND USE ALTERNATIVE)				
County Segment	AM Peak Hour		PM Peak Hour	
	LOS		LOS	
Avenue 18 ½ - Road 24 to Road 23	A		A	
Road 23 – Avenue 18 ½ to Avenue 17	B		B	
Avenue 17 – Road 23 to SR 99	A		D	
Avenue 17 – SR 99 to Road 27	C		F	
Golden State Boulevard – Avenue 17 to Road 23	A		A	
Freeway Segment	AM Peak Hour		PM Peak Hour	
	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)
SR 99 north of Avenue 18 ½				
• NB	C	24.2	C	25.1
• SB	C	19.9	D	32.5
SR 99 between Avenue 18 ½ and Avenue 17				
• NB	C	25.3	D	27.0
• SB	C	21.0	E	36.1
SR 99 south of Avenue 17				
• NB	D	31.6	E	38.8
• SB	C	24.8	F	---
Avenue 18 ½ at SR 99 NB ramps				
• EB Left	A	8.4	A	8.1
• NB Approach	C	22.7	D	26.4

SR = State Route ¹ Delay per vehicle secs = seconds WB = westbound
 NB = northbound SB = southbound EB = eastbound
 --- = beyond software limitations
 Bolded Text = intersection/movement operates below the appropriate level of service standard

TABLE 54 OPENING DAY (2010) WITH PROJECT CONDITIONS COUNTY SEGMENT, FREEWAY SEGMENT, AND INTERSECTION WEEKDAY LEVEL OF SERVICE MADERA SITE (ALTERNATIVE C, COMMERCIAL LAND USE ALTERNATIVE)				
Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay¹ (secs)	LOS	Delay¹ (secs)
Avenue 18 ½ at SR 99 SB ramps/Road 23				
• WB Left-Through	A	0.8	A	1.4
• NB Approach	C	20.8	F	60.2
• SB Approach	C	17.2	E	36.3
Avenue 18 ½ at Pistachio Drive				
• EB Approach	A	0.0	A	0.4
• SB Approach	B	15.0	C	20.2
Avenue 18 ½ at Golden State Boulevard				
• EB Approach	A	0.3	A	0.1
• SB Approach	B	12.1	B	12.9
Avenue 18 at Road 23				
• NB Left-Through-Right	A	0.1	A	0.2
• SB Left-Through-Right	A	1.7	A	1.6
• WB Approach	A	9.6	B	10.1
• EB Approach	B	10.8	B	12.0
Avenue 17 at SR 99 NB ramps				
• EB Left	B	11.0	B	13.9
• NB Approach	F	6029.1	F	4161.6
Avenue 17 at SR 99 SB ramps				
• SB Approach	E	38.2	F	6994.7
Avenue 17 at Golden State Boulevard				
• EB Left-Through-Right	A	9.2	B	10.8
• WB Left-Through-Right	A	9.2	B	10.8
• NB Approach	F	247.8	F	---
• SB Approach	F	---	F	---
Avenue 17 at Road 23				
• NB Left-Through-Right	A	0.7	A	1.9
• SB Left-Through-Right	A	0.7	A	0.6
• WB Approach	C	15.4	E	35.8
• EB Approach	B	13.1	C	19.6
Ellis Street at Road 26	A	7.6	B	13.2
Gateway/Avenue 16 at SR 99 NB ramps				
• SB Approach	B	10.7	B	11.6
Avenue 16/Avenue 16 connector at SR 99 NB ramps				
• EB Left	B	10.3	B	11.9

SR = State Route ¹ Delay per vehicle secs = seconds WB = westbound
 NB = northbound SB = southbound EB = eastbound
 --- = beyond software limitations
 Bolded Text = intersection/movement operates below the appropriate level of service standard

TABLE 54 OPENING DAY (2010) WITH PROJECT CONDITIONS COUNTY SEGMENT, FREEWAY SEGMENT, AND INTERSECTION WEEKDAY LEVEL OF SERVICE MADERA SITE (ALTERNATIVE C, COMMERCIAL LAND USE ALTERNATIVE)				
Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay¹ (secs)	LOS	Delay¹ (secs)
Avenue 16 at SR 99 NB ramp connector				
• EB Left-Through	A	5.2	A	5.8
• SB Approach	A	9.2	A	9.9
Avenue 16 at SR 99 SB ramps	A	9.2	B	10.2
Avenue 16 at Aviation Drive	B	18.5	C	26.0
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	B	14.9	D	38.2
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps	B	15.4	B	18.9
Avenue 15 ½ at Road 23				
• NB Left-Through-Right	A	0.0	A	0.0
• SB Left-Through-Right	A	1.1	A	1.8
• WB Approach	B	11.0	B	12.5
• EB Approach	A	0.0	B	11.5
SR 145/Madera Avenue at SR 99 NB ramps	A	5.6	B	10.1
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	C	22.0	D	39.1
Olive Avenue/Avenue 14 at SR 99 SB off-ramp	B	13.9	B	16.5
Avenue 14 at Road 23	A	9.0	A	9.7
Avenue 12/Golden State Boulevard at SR 99 SB ramps				
• SB Left-Through	A	6.1	A	3.7
• WB Approach	F	50.7	E	47.9
Avenue 12 at Golden State Boulevard	D	54.3	E	60.0
Avenue 12 at SR 99 NB ramps	B	19.1	C	21.9

SR = State Route ¹ Delay per vehicle secs = seconds WB = westbound
 NB = northbound SB = southbound EB = eastbound
 --- = beyond software limitations

Bolded Text = intersection/movement operates below the appropriate level of service standard

County segments, freeway segments and intersections within the study area that are projected to operate below the adopted level of service standard are shown bolded in Table 54. As shown in Table 54 and in Figure 18, the following County segment (1), freeway segments (5), and intersections (10) are projected to operate or have movements projected to operate below the adopted level of service standards in the Opening Day (2010) with Project Alternative C scenario:

County Segments

- Avenue 17 – SR 99 to Road 27 – PM peak hour - LOS “F”

Freeway Segments

- SR 99 north of Avenue 18 ½
 - SB – PM peak hour – LOS “D”
- SR 99 between Avenue 18 ½ and Avenue 17
 - NB – PM peak hour – LOS “D”
 - SB – PM peak hour – LOS “E”
- SR 99 south of Avenue 17
 - NB – AM/PM peak hours – LOS “D”/“E”
 - SB – PM peak hour – LOS “F”

Intersections

- Avenue 18 at SR 99 NB ramps
 - NB Approach – PM peak hour – LOS “D”
- Avenue 18 ½ at SR 99 SB ramps/Road 23
 - NB Approach – PM peak hour – LOS “F”
 - SB Approach – PM peak hour – LOS “E”
- Avenue 17 at SR 99 NB ramps
 - NB Approach – AM/PM peak hour – LOS “F”
- Avenue 17 at SR 99 SB ramps
 - SB Approach – AM/PM peak hours – LOS “E”/“F”
- Avenue 17 at Golden State Boulevard
 - NB Approach – AM/PM peak hours – LOS “F”
 - SB Approach – AM/PM peak hours – LOS “F”
- Avenue 17 at Road 23
 - WB Approach – PM peak hour – LOS “E”
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps – PM peak hour – LOS “D”
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145 – PM peak hour – LOS “D”
- Avenue 12/Golden State Boulevard at SR 99 SB ramps
 - WB Approach – AM/PM peak hours – LOS “F”/“E”
- Avenue 12 at Golden State Boulevard – PM peak hour – LOS “E”

The remaining County segments, freeway segments, and intersections are projected to operate at or above the adopted level of service standards in the Opening Day (2010) Project Alternative C scenario.

Signal Warrants

Rural and urban peak hour volume signal warrants were prepared for the following fifteen (15) unsignalized intersections:

- Avenue 18 ½ at SR 99 SB ramps/Road 23 - Urban
- Avenue 18 ½ at SR 99 NB ramps - Urban
- Avenue 18 ½ at Pistachio Drive - Urban
- Avenue 18 ½ at Golden State Boulevard/Road 23 - Urban
- Avenue 18 at Road 23 - Rural
- Avenue 17 at SR 99 SB ramps - Rural
- Avenue 17 at SR 99 NB ramps - Rural
- Avenue 17 at Golden State Boulevard - Rural

- Avenue 17 at Road 23 - Rural
- Avenue 16/Avenue 16 connector at SR 99 NB ramps - Urban
- Gateway/Avenue 16 at SR 99 NB ramps - Urban
- Avenue 16 at SR 99 NB ramp connector - Urban
- Avenue 15 ½ at Road 23 - Rural
- Avenue 14 at Road 23 - Rural
- Avenue 12/Golden State Boulevard at SR 99 SB ramps - Urban

Based on the rural and urban peak hour volume warrant, the signal warrant is met at the following five (5) locations potentially indicating the need for a traffic signal:

- Avenue 17 at SR 99 SB ramps - Rural
- Avenue 17 at SR 99 NB ramps - Rural
- Avenue 17 at Golden State Boulevard - Rural
- Avenue 17 at Road 23 - Rural
- Avenue 12/Golden State Boulevard at SR 99 SB ramps - Urban

The signal warrant is not met at the remaining ten (10) study intersections in the Opening Day (2010) Project Alternative C scenario. This warrant analysis is limited to the peak hour volume warrant only and other conditions may exist which meet other traffic signal warrants. Copies of the warrant analyses are included in Appendices section Attachment VI – C - 16.

Queue Lengths

Table 55 shows the estimated Opening Day (2010) Project Alternative C conditions queue lengths developed from the level of service analyses for the Madera Site study locations.

TABLE 55: OPENING DAY (2010) WITH PROJECT CONDITIONS WEEKDAY 95TH PERCENTILE QUEUE LENGTH MADERA SITE (ALTERNATIVE C, ALTERNATIVE LAND USE ALTERNATIVE)		
Intersection Approach	Existing Queue Storage Length (ft)	95th Percentile Queue Length (ft) (AM/PM)
SR 99 NB off-ramp at Avenue 18 ½ • NB Left • NB Through-Right	1,204 ¹ (770 ²)	77/114 4/5
SR 99 SB off-ramp at Avenue 18 ½ • SB Left-Through-Right	1,256 ¹ (822 ²)	37/118

ft = feet 95th percentile queue length - is minimum amount of storage needed for each movement
 NB = northbound SB = southbound WB = westbound EB = eastbound
 SR = State Route ¹ = Total ramp length ² = Calculated storage distance
³ = Distance of ramp striped as 2-lanes or more --- not calculated for unsignalized intersections
 # = 95th percentile volume exceeds capacity, queue may be longer, queue shown is maximum after two (2) cycles
 m = volume for 95th percentile queue is metered by upstream signal
Bolded Text = 95th percentile queues exceed the available storage capacity

TABLE 55: OPENING DAY (2010) WITH PROJECT CONDITIONS WEEKDAY 95TH PERCENTILE QUEUE LENGTH MADERA SITE (ALTERNATIVE C, ALTERNATIVE LAND USE ALTERNATIVE)		
Intersection Approach	Existing Queue Storage Length (ft)	95th Percentile Queue Length (ft) (AM/PM)
SR 99 SB off-ramp at Avenue 17 • SB Left • SB Right	1,341 ¹ (907 ²) 589 ³ 589 ³	62/--- 20/45
SR 99 NB off-ramp at Avenue 17 • NB Left-Through • NB Right	1,060 ¹ (626 ²) 45 ³ 45 ³	---/--- 49/1,555
SR 99 NB off-ramp at Avenue 16 • WB Left	1,150 ¹ (716 ²)	0/0
SR 99 SB off-ramp at Avenue 16 • SB Left • SB Right	1,020 ¹ (586 ²)	34/56 43/55
SR 99 NB off-ramp at Avenue 15 1/2 /Cleveland Avenue • NB Left • NB Left-Through • NB Right	881 ¹ (447 ²) 353 ³ 353 ³ 353 ³	137/286 137/286 42/247
SR 99 SB off-ramp at Avenue 15 1/2/Cleveland Avenue • SB Left-Through • SB Right	1,000 ¹ (566 ²) 65 ³ 65 ³	108/184 42/145
SR 99 NB off-ramp at SR 145/Madera Avenue • WB Left • WB Right	1,310 ¹ (876 ²) 90 ³ 90 ³	117/108 0/31
SR 99 SB off-ramp at Avenue 14/Olive Avenue • SB Left • SB Right	1,254 ¹ (820 ²) 65 ³ 65 ³	187/263 40/30

ft = feet 95th percentile queue length - is minimum amount of storage needed for each movement
 NB = northbound SB = southbound WB = westbound EB = eastbound
 SR = State Route ¹ = Total ramp length ² = Calculated storage distance
³ = Distance of ramp striped as 2-lanes or more --- not calculated for unsignalized intersections
 # = 95th percentile volume exceeds capacity, queue may be longer, queue shown is maximum after two (2) cycles
 m = volume for 95th percentile queue is metered by upstream signal
Bolded Text = 95th percentile queues exceed the available storage capacity

TABLE 55: OPENING DAY (2010) WITH PROJECT CONDITIONS WEEKDAY 95TH PERCENTILE QUEUE LENGTH MADERA SITE (ALTERNATIVE C, ALTERNATIVE LAND USE ALTERNATIVE)		
Intersection Approach	Existing Queue Storage Length (ft)	95th Percentile Queue Length (ft) (AM/PM)
SR 99 SB off-ramp at Avenue 12/Golden State Boulevard • WB Left • WB Right	1,431 ¹ (997 ²)	273/295 7/8
SR 99 NB off-ramp at Avenue 12 • NB Left • NB Right	1,223 ¹ (789 ²) 49 ³ 49 ³	236/#240 52/59
Avenue 17 between the SR 99 SB off-ramp and Golden State Boulevard • WB Left (at Golden State Blvd) • WB Through-Right (at Golden State Blvd) • EB Through (at SR 99 SB off-ramp)	481	13/21 0/0 0/0

ft = feet 95th percentile queue length - is minimum amount of storage needed for each movement
 NB = northbound SB = southbound WB = westbound EB = eastbound
 SR = State Route ¹ = Total ramp length ² = Calculated storage distance
³ = Distance of ramp striped as 2-lanes or more --- not calculated for unsignalized intersections
 # = 95th percentile volume exceeds capacity, queue may be longer, queue shown is maximum after two (2) cycles
 m = volume for 95th percentile queue is metered by upstream signal
Bolded Text = 95th percentile queues exceed the available storage capacity

Movements with queue lengths that are projected to exceed their available storage lengths are shown bolded in Table 55. As shown in Table 55, the following locations by time period are projected to exceed the allowable storage length in the Opening Day (2010) Project Alternative C scenario with 95th percentile traffic conditions:

- Avenue 17 at SR 99 SB off-ramp
 - SB Left – PM peak hour
- Avenue 17 at SR 99 NB off-ramp
 - NB Left-Through – AM/PM peak hours
 - NB Right – PM peak hour

These queue exceedances indicate that it is likely that at some point during either the AM or PM peak hour, deceleration for vehicles utilizing these various ramps would likely occur on the mainline. It should be noted that these queue exceedances are estimated based on the level of service analysis and are provided for information only. They are to be used in the design process and are not intended for use as a significance criteria.

All remaining study queue lengths are not projected to exceed the allowable storage lengths in the 95th percentile condition in the Opening Day (2010) with Project Alternative C scenario.

Ramp Widening/Auxiliary Lane Threshold

Table 56 shows the SR 99 off-ramp volumes and whether the PCE volumes by time period meet or exceed one or both of these two thresholds.

TABLE 56: OPENING DAY (2010) WITH PROJECT CONDITIONS RAMP WIDENING/AUXILIARY LANE THRESHOLD SUMMARY MADERA SITE (ALTERNATIVE C, ALTERNATE LAND USE ALTERNATIVE)			
Scenario	PCE (AM/PM)	900 to 1,499 PCE Threshold (AM/PM) (Y/N)	≥ 1,500 PCE Threshold (AM/PM) (Y/N)
SR 99 NB off-ramp at Avenue 18 ½	292/347	N/N	N/N
SR 99 SB off-ramp at Avenue 18 ½	190/290	N/N	N/N
SR 99 SB off-ramp at Avenue 17	164/322	N/N	N/N
SR 99 NB off-ramp at Avenue 17	619/1192	N/Y	N/N
SR 99 NB off-ramp at Avenue 16	69/115	N/N	N/N
SR 99 SB off-ramp at Avenue 16	284/482	N/N	N/N
SR 99 NB off-ramp at Avenue 15 ½ /Cleveland Avenue	540/1075	N/Y	N/N
SR 99 SB off-ramp at Avenue 15 ½ /Cleveland Avenue	242/412	N/N	N/N
SR 99 NB off-ramp at SR 145/Madera Avenue	223/193	N/N	N/N
SR 99 SB off-ramp at Avenue 14/Olive Avenue	487/650	N/N	N/N
SR 99 SB off-ramp at Avenue 12/Golden State Boulevard	490/561	N/N	N/N
SR 99 NB off-ramp at Avenue 12	355/343	N/N	N/N

PCE = Passenger Car Equivalent Y = Threshold Met N = Threshold Not Met
SR = State Route NB = northbound SB = southbound
Bolded Text = ramps meet at least one of the volume thresholds

Off-ramps projected to meet one or both thresholds are shown in bold in Table 56. As shown in Table 56, the following off-ramps, by time period, are projected to meet the 900 to 1,499 PCE threshold in the Opening Day (2010) Project Alternative C scenario:

- Avenue 17 at SR 99 NB off-ramp – PM peak hour
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB off-ramp – PM peak hour

When ramp volumes are between 900 to 1,499 PCE, provisions should be made for the future widening of a one-lane ramp to two-lanes and for the future construction of an associated 1,333 ft (minimum) auxiliary lane prior to the widened ramp. When ramp volumes are equal to or exceed 1,500 PCE, a two-lane ramp and associated 1,333 ft (minimum) auxiliary lane should be constructed.

Left-Turn Warrants

Left-turn lane channelization warrants were prepared to determine the need for separate left-turn lanes at six (6) County of Madera intersections that are currently unchannelized. The following intersection movements were analyzed to determine if separate left-turn lanes were warranted:

- Avenue 18 ½ at SR 99 SB ramps/Road 23
 - WB left-turn
- Avenue 12/Golden State Boulevard at SR 99 SB ramps
 - SB left-turn
- Avenue 18 at Road 23
 - NB left-turn
 - SB left-turn
 - EB left-turn
 - WB left-turn
- Avenue 17 at Road 23
 - NB left-turn
 - SB left-turn
 - EB left-turn
 - WB left-turn
- Avenue 17 at Golden State Boulevard
 - SB left-turn
 - EB left-turn
 - WB left-turn
- Ellis Street at Road 26
 - NB left-turn
 - SB left-turn
 - EB left-turn
 - WB left-turn

The locations that met the left-turn warrant for the Opening Day (2010) with Project Alternative C are as follows:

- Avenue 18 ½ at SR 99 SB ramps/Road 23
 - WB left-turn
- Avenue 12/Golden State Boulevard at SR 99 SB ramps
 - SB left-turn
- Avenue 18 at Road 23
 - SB left-turn
- Avenue 17 at Road 23
 - SB left-turn
 - WB left-turn
- Avenue 17 at Golden State Boulevard
 - SB left-turn
 - EB left-turn
 - WB left-turn
- Ellis Street at Road 26
 - NB left-turn
 - SB left-turn

Standard state of the practice dictates that dual left-turn lanes are recommended for left-turning volumes greater than 300 vehicles per hour and that separate right-turn lanes are recommended for right-turning volumes greater than 300 vehicles per hour. Based on this standard of practice, the following locations and movements should be considered for either dual left-turn lanes or a separate right-turn lane:

- Avenue 17 at SR 99 NB ramps
 - Dual NB left-turn lanes
 - Separate NB right-turn lane
- Avenue 12/Golden State Boulevard at SR 99 SB ramps
 - Separate WB right-turn lane
- Avenue 12 at SR 99 NB ramps
 - Separate WB right-turn lane
- Avenue 17 at Golden State Boulevard
 - Dual SB left-turn lanes
 - Separate WB right-turn lane
- Avenue 16 at Schnoor Avenue
 - Dual WB left-turn lanes
 - Dual EB left-turn lanes
- Avenue 16 at SR 99 SB ramps
 - Dual NB left-turn lanes
 - Separate SB right-turn lane
 - Separate EB right-turn lane
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps
 - Dual NB left-turn lanes
 - Separate NB right-turn lane
 - Separate WB right-turn lane
- Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps
 - Dual SB left-turn lanes
 - Dual WB left-turn lanes
 - Separate EB right-turn lane
- SR 145/Madera Avenue at SR 99 NB ramps
 - Dual NB left-turn lanes
 - Separate SB right-turn lane
 - Dual WB left-turn lanes
- Olive Avenue/Avenue 14 at SR 99 SB off-ramp
 - Dual SB left-turn lanes
 - Separate SB right-turn lane
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145
 - Dual EB left-turn lanes
 - Separate EB right-turn lane

Turn Lane Storage Calculations

Table 57 shows the calculated left-turn storage lengths for movements which have existing separate left-turn or right-turn lanes, meet the left-turn channelization warrant, or require dual left-turn lanes or separate right-turn lanes. SR 99 off-ramp approaches and movements included in the queue length analysis are not included in the storage length calculations. It should be noted that the calculated left-turn storage length increases are not solely due to Project only trips but are also due to increases in background traffic.

TABLE 57: OPENING DAY (2010) WITH PROJECT CONDITIONS TURN LANE STORAGE CALCULATIONS SUMMARY ALTERNATIVE C (ALTERNATIVE LAND USE/MADERA SITE)			
Intersection	Movement	Existing Storage Length (ft)	2010 Project Storage Length (ft)
Avenue 18 ½ at SR 99 SB ramps/Road 23	NBL	25	100
	NBR	25	100
	WBL	---	n/a
Avenue 18 ½ at SR 99 NB ramps	EBL	150	150
Avenue 17 at SR 99 NB ramps	WBR		250
	EBL	300	100
Avenue 12/Golden State Boulevard at SR 99 SB ramps	NBR	---	350
	SBL	---	200
Avenue 12 at Golden State Boulevard	NBL	200	100
	WBL	---	100
	WBR		n/a
	SBL	400	350 ¹
	SBR	200	100
	EBL	350	300
	EBR	425	100
Avenue 12 at SR 99 NB ramps	WBR	---	600
	EBL	---	250
Avenue 17 at Road 23	NBL	---	n/a
	WBL	---	n/a
	SBR	---	n/a
	EBR		n/a
Avenue 17 at Golden State Boulevard	NBL	50	150
	NBR	---	n/a
	WBL	---	200
	WBR	---	350
	SBL	---	200 ¹
	EBL	---	

ft = feet SR = State Route NB = northbound SB = southbound
 WB = westbound EB = eastbound n/a = not applicable --- = no existing lane
¹ = dual lefts required, length of each left-turn lane ² = exceeds available distance to nearest intersection
³ = dual rights required, length of each right-turn lane

**TABLE 57:
OPENING DAY (2010) WITH PROJECT CONDITIONS
TURN LANE STORAGE CALCULATIONS SUMMARY
ALTERNATIVE C (ALTERNATIVE LAND USE/MADERA SITE)**

Intersection	Movement	Existing Storage Length (ft)	2010 Project Storage Length (ft)
Ellis Street at Road 26	NBL	---	100
	WBR	---	250
	SBL	---	200
	EBR		100
Avenue 16/Ellis Street at Aviation Drive	NBL	75	100
	NBR	75	n/a
	WBL	200	400
	SBL		100
	SBR		100
	EBL	---	100
	EBR		n/a
Avenue 16 at SR 99 SB ramps	WBR		100
	EBL		150
Avenue 16/Ellis Street at SR 99 NB ramps	NBL		n/a
	NBTR		n/a
	WBR	---	n/a
	EBL	300	n/a
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	WBR	50	200
	EBL	100	250
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps	WBL	125	300
	EBR	125	700
SR 145/Madera Avenue at SR 99 NB ramps	NBL	---	300 ¹
	SBR	---	n/a
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	NBL	125	100 ¹
	SBL	100	n/a
	SBR	25	250
	EBL	175	250
	EBR	175	600
Avenue 18 ½ at Golden State Boulevard/Road 23	NBL	---	n/a
	NBR	---	n/a
	WBL	---	n/a
	WBR		175
	SBL	---	n/a
Avenue 18 at Pistachio Drive	WBR		250

ft = feet SR = State Route NB = northbound SB = southbound
 WB = westbound EB = eastbound n/a = not applicable --- = no existing lane
¹ = dual lefts required, length of each left-turn lane ² = exceeds available distance to nearest intersection
³ = dual rights required, length of each right-turn lane

The calculated storage lengths shown in Table 57 are for one lane only. All turn lanes requiring two (2) or more lanes, the length shown must be divided by the number of lanes to determine the storage per lane.

Mitigated Opening Day (2010) with Project Conditions

Alternative A (Proposed Project)

Roadway Levels of Service

Based on the information provided in the previous sections, the following locations, by scenario, are currently or are projected to operate below the adopted level of service standards:

Existing (2008)

Freeway Segments

- SR 99 north of Avenue 18 ½
 - SB – PM peak hour – LOS “D”
- SR 99 between Avenue 18 ½ and Avenue 17
 - SB – PM peak hour – LOS “D”
- SR 99 south of Avenue 17
 - SB – PM peak hour – LOS “D”

Intersections

- Avenue 12 at Golden State Boulevard – PM peak hour – LOS “F”
- Avenue 12 at SR 99 NB ramps
 - NB Approach – AM/PM peak hour – LOS “F”/“F”

Opening Day (2010) No Project - Alternative E

County Segments

- Avenue 17 – SR 99 to Road 27 – AM/PM peak hours – LOS “E”

Freeway Segments

- SR 99 north of Avenue 18 ½
 - SB – PM peak hour – LOS “D”
- SR 99 between Avenue 18 ½ and Avenue 17
 - SB – PM peak hour – LOS “D”
- SR 99 south of Avenue 17
 - NB – AM/PM peak hours – LOS “D”
 - SB – PM peak hours – LOS “E”

Intersections

- Avenue 18 ½ at SR 99 SB ramps/Road 23
 - NB Approach – PM peak hour – LOS “E”
 - SB Approach – PM peak hour – LOS “D”
- Avenue 17 at SR 99 NB ramps

- NB Approach – AM/PM peak hours – LOS "F"
- Avenue 17 at SR 99 SB ramps
 - SB Approach – PM peak hour – LOS "F"
- Avenue 17 at Golden State Boulevard
 - SB Approach – AM/PM peak hours – LOS "F"
- Avenue 12/Golden State Boulevard at SR 99 SB ramps
 - WB Approach – AM/PM peak hours – LOS "E"/"D"

Opening Day (2010) with Alternative A Project

County Segments

- Avenue 17 – SR 99 to Road 27 – PM peak hour - LOS "F"

Freeway Segments

- SR 99 north of Avenue 18 ½
 - SB – PM peak hour – LOS "D"
- SR 99 between Avenue 18 ½ and Avenue 17
 - NB – PM peak hour – LOS "D"
 - SB – PM peak hour – LOS "E"
- SR 99 south of Avenue 17
 - NB – AM/PM peak hours – LOS "D"/"E"
 - SB – PM peak hour – LOS "F"

Intersections

- Avenue 18 at SR 99 NB ramps
 - NB Approach – PM peak hour – LOS "D"
- Avenue 18 ½ at SR 99 SB ramps/Road 23
 - NB Approach – PM peak hour – LOS "F"
 - SB Approach – PM peak hour – LOS "E"
- Avenue 17 at SR 99 NB ramps
 - NB Approach – AM/PM peak hour – LOS "F"
- Avenue 17 at SR 99 SB ramps
 - SB Approach – AM/PM peak hours – LOS "E"/"F"
- Avenue 17 at Golden State Boulevard
 - NB Approach – AM/PM peak hours – LOS "F"
 - SB Approach – AM/PM peak hours – LOS "F"
- Avenue 17 at Road 23
 - WB Approach – PM peak hour – LOS "E"
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps – PM peak hour – LOS "D"
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145 – PM peak hour – LOS "D"
- Avenue 12/Golden State Boulevard at SR 99 SB ramps
 - WB Approach – AM/PM peak hours – LOS "F"/"E"
- Avenue 12 at Golden State Boulevard – PM peak hour – LOS "E"

The following locations, by scenario are also projected to meet either the rural or urban peak hour volume warrant:

Existing (2008)

- Avenue 17 at SR 99 NB ramps - Rural
- Avenue 17 at Schnoor Avenue - Rural
- Avenue 12 at SR 99 NB ramps - Urban

Opening Day (2010) No Project – Alternative E

- Avenue 17 at SR 99 SB ramps - Rural
- Avenue 17 at SR 99 NB ramps - Rural
- Avenue 17 at Golden State Boulevard - Rural
- Avenue 12/Golden State Boulevard at SR 99 SB ramps - Urban

Opening Day (2010) with Alternative A Project

- Avenue 17 at SR 99 SB ramps - Rural
- Avenue 17 at SR 99 NB ramps - Rural
- Avenue 17 at Golden State Boulevard - Rural
- Avenue 17 at Road 23 - Rural
- Avenue 12/Golden State Boulevard at SR 99 SB ramps - Urban

The following locations, by scenario, are also projected to exceed the available queue storage lengths with 95th percentile traffic conditions:

Opening Day (2010) No Project – Alternative E

- Avenue 17 at SR 99 NB off-ramp
 - NB Left-Through – PM peak hour
 - NB Right – PM peak hour

Opening Day (2010) with Alternative A Project

- Avenue 17 at SR 99 SB off-ramp
 - SB Left – PM peak hour
- Avenue 17 at SR 99 NB off-ramp
 - NB Left-Through – AM/PM peak hours
 - NB Right – PM peak hour

The locations that met the left-turn warrant for the Opening Day (2010) with Project Alternative A scenario are as follows:

- Avenue 18 ½ at SR 99 SB ramps/Road 23
 - WB left-turn
- Avenue 12/Golden State Boulevard at SR 99 SB ramps
 - SB left-turn
- Avenue 18 at Road 23
 - SB left-turn
- Avenue 17 at Road 23
 - SB left-turn
 - WB left-turn
- Avenue 17 at Golden State Boulevard

- SB left-turn
- EB left-turn
- WB left-turn
- Ellis Street at Road 26
 - NB left-turn
 - SB left-turn

In addition the following locations are projected to need dual (2) left-turn lanes and/or separate right-turn lanes:

- Avenue 17 at SR 99 NB ramps
 - Dual NB left-turn lanes
 - Separate NB right-turn lane
- Avenue 12/Golden State Boulevard at SR 99 SB ramps
 - Separate WB right-turn lane
- Avenue 12 at SR 99 NB ramps
 - Separate WB right-turn lane
- Avenue 17 at Golden State Boulevard
 - Dual SB left-turn lanes
 - Separate WB right-turn lane
- Avenue 16 at Schnoor Avenue
 - Dual WB left-turn lanes
 - Dual EB left-turn lanes
- Avenue 16 at SR 99 SB ramps
 - Dual NB left-turn lanes
 - Separate SB right-turn lane
 - Separate EB right-turn lane
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps
 - Dual NB left-turn lanes
 - Separate NB right-turn lane
 - Separate WB right-turn lane
- Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps
 - Dual SB left-turn lanes
 - Dual WB left-turn lanes
 - Separate EB right-turn lane
- SR 145/Madera Avenue at SR 99 NB ramps
 - Dual NB left-turn lanes
 - Separate SB right-turn lane
 - Dual WB left-turn lanes
- Olive Avenue/Avenue 14 at SR 99 SB off-ramp
 - Dual SB left-turn lanes
 - Separate SB right-turn lane
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145
 - Dual EB left-turn lanes
 - Separate EB right-turn lane

To mitigate the County segments, freeway segments, or intersections projected to operate below the appropriate adopted level of service standard, meet either the rural or urban peak hour volume

warrant, meet the ramp widening/auxiliary lane threshold, exceed the available storage lengths, or require left-turn or right-turn channelization the following improvements are recommended:

Opening Day (2010) with Alternative A Project

County Segments

- Avenue 17 – SR 99 to Road 27
 - Restripe/widen from two (2) lanes to four (4) lanes

Freeway Segments

- SR 99 north of Avenue 18 1/2
 - Restripe/widen the SB leg from two (2) lanes to three (3) lanes
- SR 99 between Avenue 18 ½ to Avenue 17
 - Restripe/widen the NB leg from two (2) lanes to three (3) lanes
 - Restripe/widen the SB leg from two (2) lanes to three (3) lanes
- SR 99 south of Avenue 17
 - Restripe/widen the NB leg from two (2) lanes to three (3) lanes
 - Restripe/widen the SB leg from two (2) lanes to three (3) lanes
- Avenue 18 ½ at SR 99 NB ramps
 - Signalize the intersection – Did not meet the warrant in 2010 but was shown as signalized since the SB ramp intersection was signalized as a mitigation in 2010; did meet the warrant in 2030 NP

Intersections

- Avenue 18 ½ at SR 99 SB ramps/Road 23
 - Signalize the intersection – Did not meet the warrant in 2010 but was used as a mitigation in 2010; did meet the warrant in 2030 NP
- Avenue 17 at SR 99 NB ramps
 - Signalize the intersection
 - Restripe/widen the NB approach, south leg, from one (1) shared left-through lane and one (1) right-turn lane to one (1) left-turn lane, one (1) shared left-through lane and two (2) right-turn lanes
 - Restripe/widen the EB approach, west leg, from one (1) left-turn lane and one (1) through lane to one (1) left-turn lane and two (2) through lanes
 - Restripe/widen the WB approach from one (1) through lane and one (1) right-turn lane to two (2) through lanes and one (1) right-turn lane
- Avenue 17 at SR 99 SB ramps
 - Signalize the intersection
 - Restripe/widen the EB approach, west leg, from one (1) through lane to two (2) through lanes
 - Restripe/widen the WB approach, east leg, from one (1) through lane to two (2) through lanes
- Avenue 17 at Golden State Boulevard
 - Signalize the intersection
 - Restripe/widen the SB approach, north leg, from one (1) shared left-through-right lane to two (2) left-turn lanes and one (1) shared through-right lane

- Restripe/widen the EB approach, west leg, from one (1) left-turn lane, one (1) through lane, and one (1) right-turn lane to one (1) left-turn lane, one (1) through lane, and one (1) shared through-right lane
- Restripe/widen the WB approach, east leg, from one (1) left-turn lane and one (1) shared through-right lane to one (1) left-turn lane, two (2) through lanes, and one (1) right-turn lane
- Avenue 17 at Road 23
 - Signalize the intersection
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145
 - Restripe/widen the EB approach, west leg, from one (1) shared left-through and one (1) right-turn lane to one (1) left-turn lane, one (1) through lane, and one (1) right-turn lane
- Olive Avenue/Avenue 14 at SR 99 SB off-ramp
 - Restripe/widen the SB approach, north leg, from one (1) left-turn lane and one (1) right-turn lane to two (2) left-turn lanes and one (1) right-turn lane
- Avenue 12/Golden State Boulevard at SR 99 SB off ramps
 - Signalize the intersection
 - Restripe/widen the SB approach, north leg, from one (1) shared left-through lane to one (1) left-turn lane and one (1) through lane
 - Restripe/widen the WB approach, east leg, from one (1) left-turn lane and one (1) right-turn lane to dual (2) left-turn lanes and one (1) right-turn lane
- Avenue 12 at Golden State Boulevard
 - Restripe/widen the SB approach, north leg, from one (1) left-turn lane, one (1) through lane and one (1) right-turn lane to dual (2) left-turn lanes, one (1) through lane and one (1) right-turn lane
- Avenue 12 at SR 99 NB ramps
 - Restripe/widen the WB approach, east leg, from a shared through-right lane to one (1) through lane and one (1) right-turn lane

Table 58 shows the Mitigated Opening Day (2010) with Project Alternative A levels of service for the County segments, freeway segments, and intersections for the Madera Site utilizing Figures 19 (lane configurations) and 13 (peak hour volumes) shown previously. The signalized and AWSC intersection levels of service shown on Table 58 are representative of the whole intersection. Individual intersection movements or approaches may operate above or below the signalized or AWSC level of service or delay shown on Table 58. The signalized levels of service or delay shown in Table 58 may not reflect the effects of 95th percentile queues that exceed the capacity for their movement. The Mitigated Opening Day (2010) Project Alternative A freeway segment and intersection levels of service calculations for the Madera Site are included in the Appendices section Attachment VI – C – 17 and Attachment VI – C – 18 respectively. Figure 20 provides a graphical representation of the resulting Mitigated Opening Day (2010) Project Alternative A levels of service.

TABLE 58: MITIGATED OPENING DAY (2010) WITH PROJECT CONDITIONS COUNTY SEGMENT, FREEWAY SEGMENT, AND INTERSECTION WEEKDAY LEVEL OF SERVICE MADERA SITE (ALTERNATIVE A, PROPOSED PROJECT ALTERNATIVE)				
County Segment	AM Peak Hour		PM Peak Hour	
	LOS		LOS	
Avenue 18 ½ - Road 24 to Road 23	A		A	
Road 23 – Avenue 18 ½ to Avenue 17	B		B	
Avenue 17 – Road 23 to SR 99	A		D	
Avenue 17 – SR 99 to Road 27	A		B	
Golden State Boulevard – Avenue 17 to Road 23	A		A	
Freeway Segment	AM Peak Hour		PM Peak Hour	
	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)
SR 99 north of Avenue 18 ½				
• NB	C	24.3	C	25.2
• SB	B	13.3	C	19.7
SR 99 between Avenue 18 ½ and Avenue 17				
• NB	B	16.5	B	17.4
• SB	B	14.0	C	20.8
SR 99 south of Avenue 17				
• NB	C	19.3	C	21.6
• SB	B	16.2	C	25.8
Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay¹ (secs)	LOS	Delay¹ (secs)
Avenue 18 ½ at SR 99 NB ramps	B	13.4	B	13.4
Avenue 18 ½ at SR 99 SB ramps/Road 23	A	9.1	B	11.3
Avenue 18 ½ at Pistachio Drive				
• EB Approach	A	0.0	A	0.4
• SB Approach	B	15.0	C	20.3
Avenue 18 ½ at Golden State Boulevard				
• EB Approach	A	0.3	A	0.1
• SB Approach	B	12.1	B	12.9
Avenue 18 at Road 23				
• NB Left-Through-Right	A	0.1	A	0.2
• SB Left-Through-Right	A	1.7	A	1.7
• WB Approach	A	9.6	B	10.1
• EB Approach	B	10.8	B	12.1
Avenue 17 at SR 99 NB ramps	B	13.0	B	18.1
Avenue 17 at SR 99 SB ramps	A	2.7	A	5.5
Avenue 17 at Golden State Boulevard	B	18.8	C	21.5
Avenue 17 at Road 23	A	7.6	A	9.7

SR = State Route
NB = northbound

¹ Delay per vehicle
SB = southbound

secs = seconds
EB = eastbound

WB = westbound

**TABLE 58:
MITIGATED OPENING DAY (2010) WITH PROJECT CONDITIONS
COUNTY SEGMENT, FREEWAY SEGMENT, AND INTERSECTION WEEKDAY LEVEL OF SERVICE
MADERA SITE (ALTERNATIVE A, PROPOSED PROJECT ALTERNATIVE)**

Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay ¹ (secs)	LOS	Delay ¹ (secs)
Ellis Street at Road 26	A	7.6	B	13.3
Gateway/Avenue 16 at SR 99 NB ramps				
• SB Approach	B	10.7	B	11.5
Avenue 16/Avenue 16 connector at SR 99 NB ramps				
• EB Left	B	10.3	B	11.9
Avenue 16 at SR 99 NB ramp connector				
• EB Left-Through	A	5.2	A	5.8
• SB Approach	A	9.2	A	9.9
Avenue 16 at SR 99 SB ramps	A	9.2	B	10.1
Avenue 16 at Aviation Drive	B	18.5	C	25.9
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	B	12.1	C	24.4
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps	B	10.1	B	14.0
Avenue 15 ½ at Road 23				
• NB Left-Through-Right	A	0.0	A	0.0
• SB Left-Through-Right	A	1.1	A	2.0
• WB Approach	B	11.0	B	12.7
• EB Approach	A	0.0	B	11.6
SR 145/Madera Avenue at SR 99 NB ramps	A	6.4	A	7.3
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	B	10.5	B	13.1
Olive Avenue/Avenue 14 at SR 99 SB off-ramp	B	11.1	B	10.4
Avenue 14 at Road 23	A	9.0	A	9.8
Avenue 12/Golden State Boulevard at SR 99 SB ramps	B	14.1	B	13.1
Avenue 12 at Golden State Boulevard	D	39.8	D	41.2
Avenue 12 at SR 99 NB ramps	B	12.9	B	12.8

SR = State Route ¹ Delay per vehicle secs = seconds WB = westbound
NB = northbound SB = southbound EB = eastbound

As shown in Table 58 and Figure 20, all of the County segments, freeway segments, and intersections are projected to operate at or above the appropriate level of service standard in the Mitigated Opening Day (2010) Project Alternative A scenario.

Queue Lengths

Table 59 shows the estimated Mitigated Opening Day (2010) with Project Alternative A conditions queue lengths developed from the level of service analyses for the Madera Site study locations. Please note that storage lengths for mitigated scenarios may be different than those shown in the Existing Queue Storage Length column.

TABLE 59: MITIGATED OPENING DAY (2010) WITH PROJECT CONDITIONS WEEKDAY 95TH PERCENTILE QUEUE LENGTH MADERA SITE (ALTERNATIVE A, PROPOSED PROJECT ALTERNATIVE)		
Intersection Approach	Existing Queue Storage Length (ft)	95th Percentile Queue Length (ft) (AM/PM)
SR 99 NB off-ramp at Avenue 18 ½ <ul style="list-style-type: none"> • NB Left • NB Through-Right 	1,204 ¹ (770 ²)	110/131 19/0
SR 99 SB off-ramp at Avenue 18 ½ <ul style="list-style-type: none"> • SB Left-Through-Right 	1,256 ¹ (822 ²)	63/97
SR 99 SB off-ramp at Avenue 17 <ul style="list-style-type: none"> • SB Left • SB Right 	1,341 ¹ (907 ²) 589 ³ 589 ³	56/163 35/38
SR 99 NB off-ramp at Avenue 17 <ul style="list-style-type: none"> • NB Left • NB Left-Through • NB Right 	1,060 ¹ (626 ²)	128/160 129/161 26/214
SR 99 NB off-ramp at Avenue 16 <ul style="list-style-type: none"> • SE Through-Right 	1,150 ¹ (716 ²)	0/0
SR 99 SB off-ramp at Avenue 16 <ul style="list-style-type: none"> • SB Left • SB Right 	1,020 ¹ (586 ²)	34/50 42/54
SR 99 NB off-ramp at Avenue 15 1/2 /Cleveland Avenue <ul style="list-style-type: none"> • NB Left • NB Left-Through • NB Right 	881 ¹ (447 ²) 353 ³ 353 ³ 353 ³	110/#318 110/#321 37/#269
SR 99 SB off-ramp at Avenue 15 1/2/Cleveland Avenue <ul style="list-style-type: none"> • SB Left-Through • SB Right 	1,000 ¹ (566 ²) 65 ² 65 ²	78/148 33/124

ft = feet
 95th percentile queue length - is minimum amount of storage needed for each movement
 NB = northbound SB = southbound WB = westbound EB = eastbound
 SR = State Route ¹ = Total ramp length ² = Calculated storage distance
³ = Distance of ramp striped as 2-lanes or more
 # = 95th percentile volume exceeds capacity, queue may be longer, queue shown is maximum after two (2) cycles
 m = volume for 95th percentile queue is metered by upstream signal
⁴ = Storage lengths for mitigated scenarios may be different than those shown in the Existing Queue Storage Length column

TABLE 59: MITIGATED OPENING DAY (2010) WITH PROJECT CONDITIONS WEEKDAY 95TH PERCENTILE QUEUE LENGTH MADERA SITE (ALTERNATIVE A, PROPOSED PROJECT ALTERNATIVE)		
Intersection Approach	Existing Queue Storage Length (ft)	95th Percentile Queue Length (ft) (AM/PM)
SR 99 NB off-ramp at SR 145/Madera Avenue <ul style="list-style-type: none"> • WB Left • WB Through-Right 	1,310 ¹ (876 ²) 90 ³ 90 ³	109/85 0/26
SR 99 SB off-ramp at Avenue 14/Olive Avenue <ul style="list-style-type: none"> • SB Left • SB Right 	1,254 ¹ (820 ²) 65 ³ 65 ³	92/109 47/35
SR 99 SB off-ramp at Avenue 12/Golden State Boulevard <ul style="list-style-type: none"> • WB Left • WB Right 	1,431 ¹ (997 ²)	60/64 14/14
SR 99 NB off-ramp at Avenue 12 <ul style="list-style-type: none"> • NB Left-Through • NB Right 	1,223 ¹ (789 ²) 49 ³ 49 ³	173/163 42/47
Avenue 17 between the SR 99 SB off-ramp and Golden State Boulevard <ul style="list-style-type: none"> • WB Left (at Golden State Blvd) • WB Through (at Golden State Boulevard) • WB Right (at Golden State Boulevard) • EB Through (at SR 99 SB off-ramp) 	481	#131/#170 74/132 15/28 3/52

ft = feet *95th percentile queue length - is minimum amount of storage needed for each movement*
NB = northbound *SB = southbound* *WB = westbound* *EB = eastbound*
SR = State Route *¹ = Total ramp length* *² = Calculated storage distance*
³ = Distance of ramp striped as 2-lanes or more
= 95th percentile volume exceeds capacity, queue may be longer, queue shown is maximum after two (2) cycles
m = volume for 95th percentile queue is metered by upstream signal
⁴ = Storage lengths for mitigated scenarios may be different than those shown in the Existing Queue Storage Length column

As shown in Table 59, all study queue lengths are not projected to exceed the allowable storage lengths in the 95th percentile condition in the Mitigated Opening Day (2010) Project Alternative A scenario.

Alternative B (Reduced Intensity Alternative)

Roadway Levels of Service

Based on the information provided in the previous sections, the following locations, by scenario, are currently or are projected to operate below the adopted level of service standards:

Existing (2008)

Freeway Segments

- SR 99 north of Avenue 18 ½
 - SB – PM peak hour – LOS “D”
- SR 99 between Avenue 18 ½ and Avenue 17
 - SB – PM peak hour – LOS “D”
- SR 99 south of Avenue 17
 - SB – PM peak hour – LOS “D”

Intersections

- Avenue 12 at Golden State Boulevard – PM peak hour – LOS “F”
- Avenue 12 at SR 99 NB ramps
 - NB Approach – AM/PM peak hour – LOS “F”/“F”

Opening Day (2010) No Project - Alternative E

County Segments

- Avenue 17 – SR 99 to Road 27 – AM/PM peak hours – LOS “E”

Freeway Segments

- SR 99 north of Avenue 18 ½
 - SB – PM peak hour – LOS “D”
- SR 99 between Avenue 18 ½ and Avenue 17
 - SB – PM peak hour – LOS “D”
- SR 99 south of Avenue 17
 - NB – AM/PM peak hours – LOS “D”
 - SB – PM peak hours – LOS “E”

Intersections

- Avenue 18 ½ at SR 99 SB ramps/Road 23
 - NB Approach – PM peak hour – LOS “E”
 - SB Approach – PM peak hour – LOS “D”
- Avenue 17 at SR 99 NB ramps
 - NB Approach – AM/PM peak hours – LOS “F”
- Avenue 17 at SR 99 SB ramps
 - SB Approach – PM peak hour – LOS “F”
- Avenue 17 at Golden State Boulevard
 - SB Approach – AM/PM peak hours – LOS “F”
- Avenue 12/Golden State Boulevard at SR 99 SB ramps
 - WB Approach – AM/PM peak hours – LOS “E”/“D”

Opening Day (2010) with Alternative B Project

County Segments

- Avenue 17 – SR 99 to Road 27 – PM peak hour - LOS “F”

Freeway Segments

- SR 99 north of Avenue 18 ½
 - SB – PM peak hour – LOS “D”
- SR 99 between Avenue 18 ½ and Avenue 17
 - NB – PM peak hour – LOS “D”
 - SB – PM peak hour – LOS “E”
- SR 99 south of Avenue 17
 - NB – AM/PM peak hours – LOS “D”/“E”
 - SB – PM peak hour – LOS “F”

Intersections

- Avenue 18 at SR 99 NB ramps
 - NB Approach – PM peak hour – LOS “D”
- Avenue 18 ½ at SR 99 SB ramps/Road 23
 - NB Approach – PM peak hour – LOS “F”
 - SB Approach – PM peak hour – LOS “E”
- Avenue 17 at SR 99 NB ramps
 - NB Approach – AM/PM peak hour – LOS “F”
- Avenue 17 at SR 99 SB ramps
 - SB Approach – AM/PM peak hours – LOS “E”/“F”
- Avenue 17 at Golden State Boulevard
 - NB Approach – AM/PM peak hours – LOS “F”
 - SB Approach – AM/PM peak hours – LOS “F”
- Avenue 17 at Road 23
 - WB Approach – PM peak hour – LOS “E”
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps – PM peak hour – LOS “D”
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145 – PM peak hour – LOS “D”
- Avenue 12/Golden State Boulevard at SR 99 SB ramps
 - WB Approach – AM/PM peak hours – LOS “F”/“E”
- Avenue 12 at Golden State Boulevard – PM peak hour – LOS “E”

The following locations, by scenario are also projected to meet either the rural or urban peak hour volume warrant:

Existing (2008)

- Avenue 17 at SR 99 NB ramps - Rural
- Avenue 17 at Schnoor Avenue - Rural
- Avenue 12 at SR 99 NB ramps - Urban

Opening Day (2010) No Project – Alternative E

- Avenue 17 at SR 99 SB ramps - Rural
- Avenue 17 at SR 99 NB ramps - Rural
- Avenue 17 at Golden State Boulevard - Rural
- Avenue 12/Golden State Boulevard at SR 99 SB ramps - Urban

Opening Day (2010) with Alternative B Project

- Avenue 17 at SR 99 SB ramps - Rural
- Avenue 17 at SR 99 NB ramps - Rural
- Avenue 17 at Golden State Boulevard - Rural
- Avenue 17 at Road 23 - Rural
- Avenue 12/Golden State Boulevard at SR 99 SB ramps - Urban

The following locations, by scenario, are also projected to exceed the available queue storage lengths with 95th percentile traffic conditions:

Opening Day (2010) No Project – Alternative E

- Avenue 17 at SR 99 NB off-ramp
 - NB Left-Through – PM peak hour
 - NB Right – PM peak hour

Opening Day (2010) with Alternative B Project

- Avenue 17 at SR 99 SB off-ramp
 - SB Left – PM peak hour
- Avenue 17 at SR 99 NB off-ramp
 - NB Left-Through – AM/PM peak hours
 - NB Right – PM peak hour

The locations that met the left-turn warrant for the Opening Day (2010) Project Alternative B are as follows:

- Avenue 18 ½ at SR 99 SB ramps/Road 23
 - WB left-turn
- Avenue 12/Golden State Boulevard at SR 99 SB ramps
 - SB left-turn
- Avenue 18 at Road 23
 - SB left-turn
- Avenue 17 at Road 23
 - SB left-turn
 - WB left-turn
- Avenue 17 at Golden State Boulevard
 - SB left-turn
 - EB left-turn
 - WB left-turn
- Ellis Street at Road 26
 - NB left-turn
 - SB left-turn

In addition the following locations are projected to need dual (2) left-turn lanes and/or separate right-turn lanes:

- Avenue 17 at SR 99 NB ramps
 - Dual NB left-turn lanes
 - Separate NB right-turn lane

- Avenue 12/Golden State Boulevard at SR 99 SB ramps
 - Separate WB right-turn lane
- Avenue 12 at SR 99 NB ramps
 - Separate WB right-turn lane
- Avenue 17 at Golden State Boulevard
 - Dual SB left-turn lanes
 - Separate WB right-turn lane
- Avenue 16 at Schnoor Avenue
 - Dual WB left-turn lanes
 - Dual EB left-turn lanes
- Avenue 16 at SR 99 SB ramps
 - Dual NB left-turn lanes
 - Separate SB right-turn lane
 - Separate EB right-turn lane
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps
 - Dual NB left-turn lanes
 - Separate NB right-turn lane
 - Separate WB right-turn lane
- Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps
 - Dual SB left-turn lanes
 - Dual WB left-turn lanes
 - Separate EB right-turn lane
- SR 145/Madera Avenue at SR 99 NB ramps
 - Dual NB left-turn lanes
 - Separate SB right-turn lane
 - Dual WB left-turn lanes
- Olive Avenue/Avenue 14 at SR 99 SB off-ramp
 - Dual SB left-turn lanes
 - Separate SB right-turn lane
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145
 - Dual EB left-turn lanes
 - Separate EB right-turn lane

To mitigate the County segments, freeway segments, or intersections projected to operate below the appropriate adopted level of service standard, meet either the rural or urban peak hour volume warrant, meet the ramp widening/auxiliary lane threshold, exceed the available storage lengths, or require left-turn or right-turn channelization the following improvements are recommended:

Opening Day (2010) with Alternative B Project

County Segments

- Avenue 17 – SR 99 to Road 27
 - Restripe/widen from two (2) lanes to four (4) lanes

Freeway Segments

- SR 99 north of Avenue 18 1/2
 - Restripe/widen the SB leg from two (2) lanes to three (3) lanes

- SR 99 between Avenue 18 ½ to Avenue 17
 - Restripe/widen the NB leg from two (2) lanes to three (3) lanes
 - Restripe/widen the SB leg from two (2) lanes to three (3) lanes

- SR 99 south of Avenue 17
 - Restripe/widen the NB leg from two (2) lanes to three (3) lanes
 - Restripe/widen the SB leg from two (2) lanes to three (3) lanes

- Avenue 18 ½ at SR 99 NB ramps
 - Signalize the intersection – Did not meet the warrant in 2010 but was shown as signalized since the SB ramp intersection was signalized as a mitigation in 2010; did meet the warrant in 2030 NP

Intersections

- Avenue 18 ½ at SR 99 SB ramps/Road 23
 - Signalize the intersection – Did not meet the warrant in 2010 but was used as a mitigation in 2010; did meet the warrant in 2030 NP
- Avenue 17 at SR 99 NB ramps
 - Signalize the intersection
 - Restripe/widen the NB approach, south leg, from one (1) shared left-through lane and one (1) right-turn lane to one (1) left-turn lane, one (1) shared left-through lane and two (2) right-turn lanes
 - Restripe/widen the EB approach, west leg, from one (1) left-turn lane and one (1) through lane to one (1) left-turn lane and two (2) through lanes
 - Restripe/widen the WB approach from one (1) through lane and one (1) right-turn lane to two (2) through lanes and one (1) right-turn lane
- Avenue 17 at SR 99 SB ramps
 - Signalize the intersection
 - Restripe/widen the EB approach, west leg, from one (1) through lane to two (2) through lanes
 - Restripe/widen the WB approach, east leg, from one (1) through lane to two (2) through lanes
- Avenue 17 at Golden State Boulevard
 - Signalize the intersection
 - Restripe/widen the SB approach, north leg, from one (1) shared left-through-right lane to two (2) left-turn lanes and one (1) shared through-right lane
 - Restripe/widen the EB approach, west leg, from one (1) left-turn lane, one (1) through lane, and one (1) right-turn lane to one (1) left-turn lane, one (1) through lane, and one (1) shared through-right lane
 - Restripe/widen the WB approach, east leg, from one (1) left-turn lane and one (1) shared through-right lane to one (1) left-turn lane, two (2) through lanes, and one (1) right-turn lane
- Avenue 17 at Road 23
 - Signalize the intersection
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145
 - Restripe/widen the EB approach, west leg, from one (1) shared left-through and one (1) right-turn lane to one (1) left-turn lane, one (1) through lane, and one (1) right-turn lane
- Olive Avenue/Avenue 14 at SR 99 SB off-ramp
 - Restripe/widen the SB approach, north leg, from one (1) left-turn lane and one (1) right-turn lane to two (2) left-turn lanes and one (1) right-turn lane

- Avenue 12/Golden State Boulevard at SR 99 SB off ramps
 - Signalize the intersection
 - Restripe/widen the SB approach, north leg, from one (1) shared left-through lane to one (1) left-turn lane and one (1) through lane
 - Restripe/widen the WB approach, east leg, from one (1) left-turn lane and one (1) right-turn lane to dual (2) left-turn lanes and one (1) right-turn lane
- Avenue 12 at Golden State Boulevard
 - Restripe/widen the SB approach, north leg, from one (1) left-turn lane, one (1) through lane and one (1) right-turn lane to dual (2) left-turn lanes, one (1) through lane and one (1) right-turn lane
- Avenue 12 at SR 99 NB ramps
 - Restripe/widen the WB approach, east leg, from a shared through-right lane to one (1) through lane and one (1) right-turn lane

Table 60 shows the Mitigated Opening Day (2010) with Project Alternative B levels of service for the County segments, freeway segments, and intersections for the Madera Site utilizing Figures 21 (lane configurations) and 15 (peak hour volumes) shown previously. The signalized and AWSC intersection levels of service shown on Table 60 are representative of the whole intersection. Individual intersection movements or approaches may operate above or below the signalized or AWSC level of service or delay shown on Table 60. The signalized levels of service or delay shown in Table 60 may not reflect the effects of 95th percentile queues that exceed the capacity for their movement. The Mitigated Opening Day (2010) with Project Alternative B freeway segment and intersection levels of service calculations for the Madera Site are included in the Appendices section Attachment VI – C – 19 and Attachment VI – C – 20 respectively. Figure 22 provides a graphical representation of the resulting Mitigated Opening Day (2010) with Project Alternative B levels of service.

TABLE 60: MITIGATED OPENING DAY (2010) WITH PROJECT CONDITIONS COUNTY SEGMENT, FREEWAY SEGMENT, AND INTERSECTION WEEKDAY LEVEL OF SERVICE MADERA SITE (ALTERNATIVE B, REDUCED INTENSITY ALTERNATIVE)				
County Segment	AM Peak Hour		PM Peak Hour	
	LOS		LOS	
Avenue 18 ½ - Road 24 to Road 23	A		A	
Road 23 – Avenue 18 ½ to Avenue 17	B		B	
Avenue 17 – Road 23 to SR 99	A		D	
Avenue 17 – SR 99 to Road 27	A		B	
Golden State Boulevard – Avenue 17 to Road 23	A		A	
Freeway Segment	AM Peak Hour		PM Peak Hour	
	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)
SR 99 north of Avenue 18 ½				
• NB	C	24.2	C	25.2
• SB	B	13.3	C	19.7
SR 99 between Avenue 18 ½ and Avenue 17				
• NB	C	16.5	C	17.4
• SB	B	14.0	C	20.8
SR 99 south of Avenue 17				
• NB	C	19.3	C	21.5
• SB	B	16.2	C	25.8
Avenue 18 ½ at SR 99 NB ramps	B	13.3	B	13.4
Avenue 18 ½ at SR 99 SB ramps/Road 23	A	8.9	B	11.3
Avenue 18 ½ at Pistachio Drive				
• EB Approach	A	0.0	A	0.4
• SB Approach	B	15.0	C	20.3
Avenue 18 ½ at Golden State Boulevard				
• EB Approach	A	0.3	A	0.1
• SB Approach	B	12.1	B	12.9
Avenue 18 at Road 23				
• NB Left-Through-Right	A	0.1	A	0.2
• SB Left-Through-Right	A	1.7	A	1.7
• WB Approach	A	9.6	B	10.1
• EB Approach	B	10.8	B	12.1
Avenue 17 at SR 99 NB ramps	B	13.0	B	18.1
Avenue 17 at SR 99 SB ramps	A	2.7	A	5.5
Avenue 17 at Golden State Boulevard	B	18.9	C	21.5
Avenue 17 at Road 23	A	7.4	A	9.5
Ellis Street at Road 26	A	7.6	B	13.2
Gateway/Avenue 16 at SR 99 NB ramps				
• SB Approach	B	10.7	B	11.5

SR = State Route
NB = northbound

¹ Delay per vehicle
SB = southbound

secs = seconds
EB = eastbound

WB = westbound
*** = no LOS/Delay reported

**TABLE 60:
MITIGATED OPENING DAY (2010) WITH PROJECT CONDITIONS
COUNTY SEGMENT, FREEWAY SEGMENT, AND INTERSECTION WEEKDAY LEVEL OF SERVICE
MADERA SITE (ALTERNATIVE B, REDUCED INTENSITY ALTERNATIVE)**

Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay ¹ (secs)	LOS	Delay ¹ (secs)
Avenue 16/Avenue 16 connector at SR 99 NB ramps				
• EB Left	B	10.3	B	11.9
Avenue 16 at SR 99 NB ramp connector				
• EB Left-Through	A	5.2	A	5.9
• SB Approach	A	9.2	A	9.9
Avenue 16 at SR 99 SB ramps	A	9.2	B	10.1
Avenue 16 at Aviation Drive	B	18.5	C	25.9
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	B	12.1	C	24.9
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps	B	10.1	B	14.1
Avenue 15 ½ at Road 23				
• NB Left-Through-Right	A	0.0	A	0.0
• SB Left-Through-Right	A	1.1	A	2.0
• WB Approach	B	11.0	B	12.7
• EB Approach	A	0.0	B	11.6
SR 145/Madera Avenue at SR 99 NB ramps	A	6.3	A	7.6
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	B	10.5	B	13.5
Olive Avenue/Avenue 14 at SR 99 SB off-ramp	B	11.2	B	12.1
Avenue 14 at Road 23	A	9.0	A	9.8
Avenue 12/Golden State Boulevard at SR 99 SB ramps	B	18.1	B	14.8
Avenue 12 at Golden State Boulevard	C	33.5	D	41.6
Avenue 12 at SR 99 NB ramps	B	12.9	B	13.8

SR = State Route
NB = northbound

¹ Delay per vehicle
SB = southbound

secs = seconds
EB = eastbound

WB = westbound
*** = no LOS/Delay reported

As shown in Table 60 and Figure 22, all of the County segments, freeway segments, and intersections are projected to operate at or above the appropriate level of service standard in the Mitigated Opening Day (2010) Project Alternative B scenario.

Queue Lengths

Table 61 shows the estimated Mitigated Opening Day (2010) with Project Alternative B conditions queue lengths developed from the level of service analyses for the Madera Site study locations. Please note that storage lengths for mitigated scenarios may be different than those shown in the Existing Queue Storage Length column.

TABLE 61: MITIGATED OPENING DAY (2010) WITH PROJECT CONDITIONS WEEKDAY 95TH PERCENTILE QUEUE LENGTH MADERA SITE (ALTERNATIVE B, REDUCED INTENSITY ALTERNATIVE)		
Intersection Approach	Existing Queue Storage Length (ft)	95th Percentile Queue Length (ft) (AM/PM)
SR 99 NB off-ramp at Avenue 18 ½ <ul style="list-style-type: none"> • NB Left • NB Through-Right 	1,204 ¹ (770 ²)	110/131 19/0
SR 99 SB off-ramp at Avenue 18 ½ <ul style="list-style-type: none"> • SB Left-Through-Right 	1,256 ¹ (822 ²)	61/97
SR 99 SB off-ramp at Avenue 17 <ul style="list-style-type: none"> • SB Left • SB Right 	1,341 ¹ (907 ²) 589 ³ 589 ³	56/163 35/38
SR 99 NB off-ramp at Avenue 17 <ul style="list-style-type: none"> • NB Left • NB Left-Through • NB Right 	1,060 ¹ (626 ²)	127/157 128/158 26/216
SR 99 NB off-ramp at Avenue 16 <ul style="list-style-type: none"> • SB Through-Right 	1,150 ¹ (716 ²)	0/0
SR 99 SB off-ramp at Avenue 16 <ul style="list-style-type: none"> • SB Left • SB Through • SB Right 	1,020 ¹ (586 ²)	34/50 42/54
SR 99 NB off-ramp at Avenue 15 1/2 /Cleveland Avenue <ul style="list-style-type: none"> • NB Left • NB Left-Through • NB Right 	881 ¹ (447 ²) 353 ³ 353 ³	110/#349 110/#350 37/#275

ft = feet 95th percentile queue length - is minimum amount of storage needed for each movement
 NB = northbound SB = southbound WB = westbound EB = eastbound
 SR = State Route ¹ = Total ramp length ² = Calculated storage distance
³ = Distance of ramp striped as 2-lanes or more
 # = 95th percentile volume exceeds capacity, queue may be longer, queue shown is maximum after two (2) cycles
 m = volume for 95th percentile queue is metered by upstream signal
⁴ = Storage lengths for mitigated scenarios may be different than those shown in the Existing Queue Storage Length column

TABLE 61: MITIGATED OPENING DAY (2010) WITH PROJECT CONDITIONS WEEKDAY 95TH PERCENTILE QUEUE LENGTH MADERA SITE (ALTERNATIVE B, REDUCED INTENSITY ALTERNATIVE)		
Intersection Approach	Existing Queue Storage Length (ft)	95th Percentile Queue Length (ft) (AM/PM)
SR 99 SB off-ramp at Avenue 15 1/2/Cleveland Avenue <ul style="list-style-type: none">• SB Left• SB Left-Through• SB Right	1,000 ¹ (566 ²) 65 ² 65 ²	78/173 33/139
SR 99 NB off-ramp at SR 145/Madera Avenue <ul style="list-style-type: none">• WB Left• WB Through-Right	1,310 ¹ (876 ²) 90 ³ 90 ³	109/99 0/29
SR 99 SB off-ramp at Avenue 14/Olive Avenue <ul style="list-style-type: none">• SB Left• SB Right	1,254 ¹ (820 ²) 65 ³ 65 ³	92/131 47/40
SR 99 SB off-ramp at Avenue 12/Golden State Boulevard <ul style="list-style-type: none">• WB Left• WB Right	1,431 ¹ (997 ²)	158/75 12/38
SR 99 NB off-ramp at Avenue 12 <ul style="list-style-type: none">• NB Left-Through• NB Right	1,223 ¹ (789 ²) 49 ³ 49 ³	173/181 42/50
Avenue 17 between the SR 99 SB off-ramp and Golden State Boulevard <ul style="list-style-type: none">• WB Left (at Golden State Blvd)• WB Through (at Golden State Blvd)• WB Right (at Golden State Blvd)• EB Through (at SR 99 SB off-ramp)	481	#130/#170 75/132 15/27 3/52

ft = feet 95th percentile queue length - is minimum amount of storage needed for each movement
 NB = northbound SB = southbound WB = westbound EB = eastbound
 SR = State Route ¹ = Total ramp length ² = Calculated storage distance
³ = Distance of ramp striped as 2-lanes or more
 # = 95th percentile volume exceeds capacity, queue may be longer, queue shown is maximum after two (2) cycles
 m = volume for 95th percentile queue is metered by upstream signal
⁴ = Storage lengths for mitigated scenarios may be different than those shown in the Existing Queue Storage Length column

As shown in Table 61, all study queue lengths are not projected to exceed the allowable storage lengths in the 95th percentile condition in the Mitigated Opening Day (2010) Project Alternative B scenario.

Alternative C (Commercial Land Use Alternative)

Roadway Levels of Service

Based on the information provided in the previous sections, the following locations, by scenario, are currently or are projected to operate below the adopted level of service standards:

Existing (2008)

Freeway Segments

- SR 99 north of Avenue 18 ½
 - SB – PM peak hour – LOS “D”
- SR 99 between Avenue 18 ½ and Avenue 17
 - SB – PM peak hour – LOS “D”
- SR 99 south of Avenue 17
 - SB – PM peak hour – LOS “D”

Intersections

- Avenue 12 at Golden State Boulevard – PM peak hour – LOS “F”
- Avenue 12 at SR 99 NB ramps
 - NB Approach – AM/PM peak hour – LOS “F”/“F”

Opening Day (2010) No Project - Alternative E

County Segments

- Avenue 17 – SR 99 to Road 27 – AM/PM peak hours – LOS “E”

Freeway Segments

- SR 99 north of Avenue 18 ½
 - SB – PM peak hour – LOS “D”
- SR 99 between Avenue 18 ½ and Avenue 17
 - SB – PM peak hour – LOS “D”
- SR 99 south of Avenue 17
 - NB – AM/PM peak hours – LOS “D”
 - SB – PM peak hours – LOS “E”

Intersections

- Avenue 18 ½ at SR 99 SB ramps/Road 23
 - NB Approach – PM peak hour – LOS “E”
 - SB Approach – PM peak hour – LOS “D”
- Avenue 17 at SR 99 NB ramps
 - NB Approach – AM/PM peak hours – LOS “F”
- Avenue 17 at SR 99 SB ramps
 - SB Approach – PM peak hour – LOS “F”
- Avenue 17 at Golden State Boulevard
 - SB Approach – AM/PM peak hours – LOS “F”

- Avenue 12/Golden State Boulevard at SR 99 SB ramps
 - WB Approach – AM/PM peak hours – LOS “E”/“D”

Opening Day (2010) with Alternative C Project

County Segments

- Avenue 17 – SR 99 to Road 27 – PM peak hour - LOS “F”

Freeway Segments

- SR 99 north of Avenue 18 ½
 - SB – PM peak hour – LOS “D”
- SR 99 between Avenue 18 ½ and Avenue 17
 - NB – PM peak hour – LOS “D”
 - SB – PM peak hour – LOS “E”
- SR 99 south of Avenue 17
 - NB – AM/PM peak hours – LOS “D”/“E”
 - SB – PM peak hour – LOS “F”

Intersections

- Avenue 18 at SR 99 NB ramps
 - NB Approach – PM peak hour – LOS “D”
- Avenue 18 ½ at SR 99 SB ramps/Road 23
 - NB Approach – PM peak hour – LOS “F”
 - SB Approach – PM peak hour – LOS “E”
- Avenue 17 at SR 99 NB ramps
 - NB Approach – AM/PM peak hour – LOS “F”
- Avenue 17 at SR 99 SB ramps
 - SB Approach – AM/PM peak hours – LOS “E”/“F”
- Avenue 17 at Golden State Boulevard
 - NB Approach – AM/PM peak hours – LOS “F”
 - SB Approach – AM/PM peak hours – LOS “F”
- Avenue 17 at Road 23
 - WB Approach – PM peak hour – LOS “E”
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps – PM peak hour – LOS “D”
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145 – PM peak hour – LOS “D”
- Avenue 12/Golden State Boulevard at SR 99 SB ramps
 - WB Approach – AM/PM peak hours – LOS “F”/“E”
- Avenue 12 at Golden State Boulevard – PM peak hour – LOS “E”

The following locations, by scenario are also projected to meet either the rural or urban peak hour volume warrant:

Existing (2008)

- Avenue 17 at SR 99 NB ramps - Rural
- Avenue 17 at Schnoor Avenue - Rural
- Avenue 12 at SR 99 NB ramps - Urban

Opening Day (2010) No Project – Alternative E

- Avenue 17 at SR 99 SB ramps - Rural
- Avenue 17 at SR 99 NB ramps - Rural
- Avenue 17 at Golden State Boulevard - Rural
- Avenue 12/Golden State Boulevard at SR 99 SB ramps - Urban

Opening Day (2010) with Alternative C Project

- Avenue 17 at SR 99 SB ramps - Rural
- Avenue 17 at SR 99 NB ramps - Rural
- Avenue 17 at Golden State Boulevard - Rural
- Avenue 17 at Road 23 - Rural
- Avenue 12/Golden State Boulevard at SR 99 SB ramps - Urban

The following locations, by scenario, are also projected to exceed the available queue storage lengths with 95th percentile traffic conditions:

Opening Day (2010) No Project – Alternative E

- Avenue 17 at SR 99 NB off-ramp
 - NB Left-Through – PM peak hour
 - NB Right – PM peak hour

Opening Day (2010) with Alternative C Project

- Avenue 17 at SR 99 SB off-ramp
 - SB Left – PM peak hour
- Avenue 17 at SR 99 NB off-ramp
 - NB Left-Through – AM/PM peak hours
 - NB Right – PM peak hour

The locations that met the left-turn warrant for the Opening Day (2010) with Project Alternative C are as follows:

- Avenue 18 ½ at SR 99 SB ramps/Road 23
 - WB left-turn
- Avenue 12/Golden State Boulevard at SR 99 SB ramps
 - SB left-turn
- Avenue 18 at Road 23
 - SB left-turn
- Avenue 17 at Road 23
 - SB left-turn
 - WB left-turn
- Avenue 17 at Golden State Boulevard
 - SB left-turn
 - EB left-turn
 - WB left-turn
- Ellis Street at Road 26
 - NB left-turn
 - SB left-turn

In addition the following locations are projected to need dual (2) left-turn lanes and/or separate right-turn lanes:

- Avenue 17 at SR 99 NB ramps
 - Dual NB left-turn lanes
 - Separate NB right-turn lane
- Avenue 12/Golden State Boulevard at SR 99 SB ramps
 - Separate WB right-turn lane
- Avenue 12 at SR 99 NB ramps
 - Separate WB right-turn lane
- Avenue 17 at Golden State Boulevard
 - Dual SB left-turn lanes
 - Separate WB right-turn lane
- Avenue 16 at Schnoor Avenue
 - Dual WB left-turn lanes
 - Dual EB left-turn lanes
- Avenue 16 at SR 99 SB ramps
 - Dual NB left-turn lanes
 - Separate SB right-turn lane
 - Separate EB right-turn lane
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps
 - Dual NB left-turn lanes
 - Separate NB right-turn lane
 - Separate WB right-turn lane
- Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps
 - Dual SB left-turn lanes
 - Dual WB left-turn lanes
 - Separate EB right-turn lane
- SR 145/Madera Avenue at SR 99 NB ramps
 - Dual NB left-turn lanes
 - Separate SB right-turn lane
 - Dual WB left-turn lanes
- Olive Avenue/Avenue 14 at SR 99 SB off-ramp
 - Dual SB left-turn lanes
 - Separate SB right-turn lane
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145
 - Dual EB left-turn lanes
 - Separate EB right-turn lane

To mitigate the County segments, freeway segments, or intersections projected to operate below the appropriate adopted level of service standard, meet either the rural or urban peak hour volume warrant, meet the ramp widening/auxiliary lane threshold, exceed the available storage lengths, or require left-turn or right-turn channelization the following improvements are recommended:

Opening Day (2010) with Alternative C Project

County Segments

- Avenue 17 – SR 99 to Road 27
 - Restripe/widen from two (2) lanes to four (4) lanes

Freeway Segments

- SR 99 north of Avenue 18 1/2
 - Restripe/widen the SB leg from two (2) lanes to three (3) lanes
- SR 99 between Avenue 18 ½ to Avenue 17
 - Restripe/widen the NB leg from two (2) lanes to three (3) lanes
 - Restripe/widen the SB leg from two (2) lanes to three (3) lanes
- SR 99 south of Avenue 17
 - Restripe/widen the NB leg from two (2) lanes to three (3) lanes
 - Restripe/widen the SB leg from two (2) lanes to three (3) lanes
- Avenue 18 ½ at SR 99 NB ramps
 - Signalize the intersection – Did not meet the warrant in 2010 but was shown as signalized since the SB ramp intersection was signalized as a mitigation in 2010; did meet the warrant in 2030 NP

Intersections

- Avenue 18 ½ at SR 99 SB ramps/Road 23
 - Signalize the intersection – Did not meet the warrant in 2010 but was used as a mitigation in 2010; did meet the warrant in 2030 NP
- Avenue 17 at SR 99 NB ramps
 - Signalize the intersection
 - Restripe/widen the NB approach, south leg, from one (1) shared left-through lane and one (1) right-turn lane to one (1) left-turn lane, one (1) shared left-through lane and two (2) right-turn lanes
 - Restripe/widen the EB approach, west leg, from one (1) left-turn lane and one (1) through lane to one (1) left-turn lane and two (2) through lanes
 - Restripe/widen the WB approach from one (1) through lane and one (1) right-turn lane to two (2) through lanes and one (1) right-turn lane
- Avenue 17 at SR 99 SB ramps
 - Signalize the intersection
 - Restripe/widen the EB approach, west leg, from one (1) through lane to two (2) through lanes
 - Restripe/widen the WB approach, east leg, from one (1) through lane to two (2) through lanes
- Avenue 17 at Golden State Boulevard
 - Signalize the intersection
 - Restripe/widen the SB approach, north leg, from one (1) shared left-through-right lane to two (2) left-turn lanes and one (1) shared through-right lane
 - Restripe/widen the EB approach, west leg, from one (1) left-turn lane, one (1) through lane, and one (1) right-turn lane to one (1) left-turn lane, one (1) through lane, and one (1) shared through-right lane
 - Restripe/widen the WB approach, east leg, from one (1) left-turn lane and one (1) shared through-right lane to one (1) left-turn lane, two (2) through lanes, and one (1) right-turn lane

- Avenue 17 at Road 23
 - Signalize the intersection
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145
 - Restripe/widen the EB approach, west leg, from one (1) shared left-through and one (1) right-turn lane to one (1) left-turn lane, one (1) through lane, and one (1) right-turn lane
- Olive Avenue/Avenue 14 at SR 99 SB off-ramp
 - Restripe/widen the SB approach, north leg, from one (1) left-turn lane and one (1) right-turn lane to two (2) left-turn lanes and one (1) right-turn lane
- Avenue 12/Golden State Boulevard at SR 99 SB off ramps
 - Signalize the intersection
 - Restripe/widen the SB approach, north leg, from one (1) shared left-through lane to one (1) left-turn lane and one (1) through lane
 - Restripe/widen the WB approach, east leg, from one (1) left-turn lane and one (1) right-turn lane to dual (2) left-turn lanes and one (1) right-turn lane
- Avenue 12 at Golden State Boulevard
 - Restripe/widen the SB approach, north leg, from one (1) left-turn lane, one (1) through lane and one (1) right-turn lane to dual (2) left-turn lanes, one (1) through lane and one (1) right-turn lane
- Avenue 12 at SR 99 NB ramps
 - Restripe/widen the WB approach, east leg, from a shared through-right lane to one (1) through lane and one (1) right-turn lane

Table 62 shows the Mitigated Opening Day (2010) with Project Alternative C levels of service for the County segments, freeway segments, and intersections for the Madera Site utilizing Figures 23 (lane configurations) and 17 (peak hour volumes) shown previously. The signalized and AWSC intersection levels of service shown on Table 62 are representative of the whole intersection. Individual intersection movements or approaches may operate above or below the signalized or AWSC level of service or delay shown on Table 62. The signalized levels of service or delay shown in Table 62 may not reflect the effects of 95th percentile queues that exceed the capacity for their movement. The Mitigated Opening Day (2010) with Project Alternative C freeway segment and intersection levels of service calculations for the Madera Site are included in the Appendices section Attachment VI – C – 21 and Attachment VI – C – 22 respectively. Figure 24 provides a graphical representation of the resulting Mitigated Opening Day (2010) with Project Alternative C levels of service.

TABLE 62: MITIGATED OPENING DAY (2010) WITH PROJECT CONDITIONS COUNTY SEGMENT, FREEWAY SEGMENT, AND INTERSECTION WEEKDAY LEVEL OF SERVICE MADERA SITE (ALTERNATIVE C, ALTERNATE LAND USE ALTERNATIVE)				
County Segment	AM Peak Hour		PM Peak Hour	
	LOS		LOS	
Avenue 18 ½ - Road 24 to Road 23	A		A	
Road 23 – Avenue 18 ½ to Avenue 17	B		B	
Avenue 17 – Road 23 to SR 99	A		D	
Avenue 17 – SR 99 to Road 27	A		B	
Golden State Boulevard – Avenue 17 to Road 23	A		A	
Freeway Segment	AM Peak Hour		PM Peak Hour	
	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)
SR 99 north of Avenue 18 ½				
• NB	C	24.2	C	25.1
• SB	B	13.3	C	19.7
SR 99 between Avenue 18 ½ and Avenue 17				
• NB	B	16.5	B	17.4
• SB	B	14.0	C	20.8
SR 99 south of Avenue 17				
• NB	C	19.3	C	21.6
• SB	B	16.2	C	25.9
Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay¹ (secs)	LOS	Delay¹ (secs)
Avenue 18 ½ at SR 99 NB ramps	B	13.3	B	13.4
Avenue 18 ½ at SR 99 SB ramps/Road 23	A	8.9	B	11.3
Avenue 18 ½ at Pistachio Drive				
• EB Approach	A	0.0	A	0.4
• SB Approach	B	15.0	C	20.2
Avenue 18 ½ at Golden State Boulevard				
• EB Approach	A	0.3	A	0.1
• SB Approach	B	12.1	B	12.9
Avenue 18 at Road 23				
• NB Left-Through-Right	A	0.1	A	0.2
• SB Left-Through-Right	A	1.7	A	1.6
• WB Approach	A	9.6	B	10.1
• EB Approach	B	10.8	B	12.0
Avenue 17 at SR 99 NB ramps	B	13.1	B	17.8
Avenue 17 at SR 99 SB ramps	A	2.7	A	5.6
Avenue 17 at Golden State Boulevard	B	18.9	C	21.6
Avenue 17 at Road 23	A	7.5	A	9.6
Ellis Street at Road 26	A	7.6	B	13.2

SR = State Route
NB = northbound

¹ Delay per vehicle
SB = southbound

secs = seconds
EB = eastbound

WB = westbound
*** = no LOS/Delay reported

TABLE 62: MITIGATED OPENING DAY (2010) WITH PROJECT CONDITIONS COUNTY SEGMENT, FREEWAY SEGMENT, AND INTERSECTION WEEKDAY LEVEL OF SERVICE MADERA SITE (ALTERNATIVE C, ALTERNATE LAND USE ALTERNATIVE)				
Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay¹ (secs)	LOS	Delay¹ (secs)
Gateway/Avenue 16 at SR 99 NB ramps				
• SB Approach	B	10.7	B	11.6
Avenue 16/Avenue 16 connector at SR 99 NB ramps				
• EB Left	B	10.3	B	11.9
Avenue 16 at SR 99 NB ramp connector				
• EB Left-Through	A	5.2	A	5.8
• SB Approach	A	9.2	A	9.9
Avenue 16 at SR 99 SB ramps	A	9.2	B	10.2
Avenue 16 at Aviation Drive	B	18.5	C	26.0
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	B	12.1	C	24.5
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps	B	10.1	B	14.5
Avenue 15 ½ at Road 23				
• NB Left-Through-Right	A	0.0	A	0.0
• SB Left-Through-Right	A	1.1	A	1.8
• WB Approach	B	11.0	B	12.5
• EB Approach	A	0.0	B	11.5
SR 145/Madera Avenue at SR 99 NB ramps	A	6.3	A	7.1
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	B	10.5	B	12.8
Olive Avenue/Avenue 14 at SR 99 SB off-ramp	B	11.2	B	12.1
Avenue 14 at Road 23	A	9.0	A	9.7
Avenue 12/Golden State Boulevard at SR 99 SB ramps	B	14.7	B	13.1
Avenue 12 at Golden State Boulevard	D	41.1	D	40.6
Avenue 12 at SR 99 NB ramps	B	13.0	B	12.9

SR = State Route ¹ Delay per vehicle secs = seconds WB = westbound
NB = northbound SB = southbound EB = eastbound *** = no LOS/Delay reported

As shown in Table 62 and Figure 24, all of the County segments, freeway segments, and intersections are projected to operate at or above the appropriate level of service standard in the Mitigated Opening Day (2010) Project Alternative C scenario.

Queue Lengths

Table 63 shows the estimated Mitigated Opening Day (2010) with Project Alternative C conditions queue lengths developed from the level of service analyses for the Madera Site study locations. Please note that storage lengths for mitigated scenarios may be different than those shown in the Existing Queue Storage Length column.

TABLE 63: MITIGATED OPENING DAY (2010) WITH PROJECT CONDITIONS WEEKDAY 95TH PERCENTILE QUEUE LENGTH MADERA SITE (ALTERNATIVE C, ALTERNATE LAND USE ALTERNATIVE)		
Intersection Approach	Existing Queue Storage Length (ft)	95th Percentile Queue Length (ft) (AM/PM)
SR 99 NB off-ramp at Avenue 18 ½ <ul style="list-style-type: none">• NB Left• NB Through-Right	1,204 ¹ (770 ²)	110/131 19/0
SR 99 SB off-ramp at Avenue 18 ½ <ul style="list-style-type: none">• SB Left-Through-Right	1,256 ¹ (822 ²)	61/97
SR 99 SB off-ramp at Avenue 17 <ul style="list-style-type: none">• SB Left• SB Right	1,341 ¹ (907 ²) 589 ³ 589 ³	56/164 35/39
SR 99 NB off-ramp at Avenue 17 <ul style="list-style-type: none">• NB Left• NB Left-Through• NB Right	1,060 ¹ (626 ²)	129/162 129/163 26/214
SR 99 NB off-ramp at Avenue 16 <ul style="list-style-type: none">• SB Through-Right	1,150 ¹ (716 ²)	0/0
SR 99 SB off-ramp at Avenue 16 <ul style="list-style-type: none">• SB Left• SB Through• SB Right	1,020 ¹ (586 ²)	34/56 43/55
SR 99 NB off-ramp at Avenue 15 1/2 /Cleveland Avenue <ul style="list-style-type: none">• NB Left• NB Left-Through• NB Right	881 ¹ (447 ²) 353 ³ 353 ³ 353 ³	110/#321 110/#322 37/#268

ft = feet 95th percentile queue length - is minimum amount of storage needed for each movement

NB = northbound SB = southbound WB = westbound EB = eastbound

SR = State Route ¹ = Total ramp length ² = Calculated storage distance

³ = Distance of ramp striped as 2-lanes or more

= 95th percentile volume exceeds capacity, queue may be longer, queue shown is maximum after two (2) cycles

m = volume for 95th percentile queue is metered by upstream signal

Bolded Text = 95th percentile queues exceed the available storage capacity

⁴ = Storage lengths for mitigated scenarios may be different than those shown in the Existing Queue Storage Length column

TABLE 63: MITIGATED OPENING DAY (2010) WITH PROJECT CONDITIONS WEEKDAY 95TH PERCENTILE QUEUE LENGTH MADERA SITE (ALTERNATIVE C, ALTERNATE LAND USE ALTERNATIVE)		
Intersection Approach	Existing Queue Storage Length (ft)	95th Percentile Queue Length (ft) (AM/PM)
SR 99 SB off-ramp at Avenue 15 1/2/Cleveland Avenue <ul style="list-style-type: none">• SB Left-Through• SB Right	1,000 ¹ (566 ²) 65 ² 65 ²	78/#152 33/124
SR 99 NB off-ramp at SR 145/Madera Avenue <ul style="list-style-type: none">• WB Left• WB Right	1,310 ¹ (876 ²) 90 ³ 90 ³	109/99 0/29
SR 99 SB off-ramp at Avenue 14/Olive Avenue <ul style="list-style-type: none">• SB Left• SB Right	1,254 ¹ (820 ²) 65 ³ 65 ³	92/130 47/40
SR 99 SB off-ramp at Avenue 12/Golden State Boulevard <ul style="list-style-type: none">• WB Left• WB Right	1,431 ¹ (997 ²)	59/70 13/14
SR 99 NB off-ramp at Avenue 12 <ul style="list-style-type: none">• NB Left-Through• NB Right	1,223 ¹ (789 ²) 49 ³ 49 ³	173/163 42/47
Avenue 17 between the SR 99 SB off-ramp and Golden State Boulevard <ul style="list-style-type: none">• WB Left (at Golden State Blvd)• WB Through (at Golden State Blvd)• WB Right (at Golden State Blvd)• EB Through (at SR 99 SB off-ramp)	481	#130/#169 74/135 15/36 3/52

ft = feet 95th percentile queue length - is minimum amount of storage needed for each movement

NB = northbound SB = southbound WB = westbound EB = eastbound

SR = State Route ¹ = Total ramp length ² = Calculated storage distance

³ = Distance of ramp striped as 2-lanes or more

= 95th percentile volume exceeds capacity, queue may be longer, queue shown is maximum after two (2) cycles

m = volume for 95th percentile queue is metered by upstream signal

Bolded Text = 95th percentile queues exceed the available storage capacity

⁴ = Storage lengths for mitigated scenarios may be different than those shown in the Existing Queue Storage Length column

As shown in Table 63, all study queue lengths are not projected to exceed the allowable storage lengths in the 95th percentile condition in the Mitigated Opening Day (2010) with Project Alternative C scenario.

2030 No Project Conditions

Alternative E, No Project Alternative

Roadway Levels of Service

The 2030 No Project lane configurations and intersection control incorporated the proposed improvements identified by Caltrans and included in the Madera County 2007 RTP including the following:

- SR 99 from Avenue 16 to Avenue 21
 - Restripe/widen from four (4) lanes to six (6) lanes
- Airport from Avenue 17 to Yeager
 - Restripe/widen from two (2) lanes to four (4) lanes
- Avenue 18 ½ at SR 99 SB off-ramp
 - Remove NB approach, south leg
 - Restripe the SB approach, north leg, from a shared left-through-right lane, to a shared left-right lane
 - Restripe the EB approach, west leg, from a shared through-right lane, to one (1) through lane
 - Restripe the WB approach, east leg, from a shared left-through lane, to one (1) through lane
- Avenue 18 ½ at Pistachio Drive
 - Restripe the SB approach, north leg, from a shared left-right lane, to a separate right-turn lane
- Avenue 18 ½ at Golden State Boulevard
 - Realign Road 23 from current northern terminus at the intersection of Avenue 18 ½ at SR 99 SB ramps to the NB approach, south leg, of Avenue 18 ½ at Golden State Boulevard
- Avenue 12 at Golden State Boulevard
 - Restripe/widen the EB approach, west leg, from a separate left-turn lane, one (1) through lane, and a separate right-turn lane, to separate left-turn lane, one (1) through lane, and a shared through-right lane
 - Restripe/widen the WB approach, east leg, from a separate left-turn lane and a shared through-right lane, to separate left-turn lane, one (1) through lane, and a shared through-right lane
- Avenue 12 at SR 99 NB Ramps
 - Restripe/widen the EB approach, west leg, from a separate left-turn lane and one (1) through lane, to a separate left-turn lane and two (2) through lanes
 - Restripe/widen the WB approach, east leg, from a shared through-right lane to two (2) through lanes and a separate right-turn lane

A new interchange will be built at Ellis Street at SR 99. Ellis Street will cross SR 99 from the east and merge with Avenue 16 west of SR 99. The Avenue 16 at SR 99 interchange ramps will be removed and converted to an overpass. The new Ellis Street/Avenue 16 at SR 99 interchange is based on the *Avenue 16 at SR 99 Project Study Report* (PSR) prepared by Caltrans in March 2004. With the new interchange, the Avenue 16 at Schnoor Avenue intersection analysis will be replaced by the intersection of Avenue 16/Ellis Street at Golden State Boulevard.

Table 64 shows the 2030 No Project levels of service for the County segments, freeway segments, and intersections for the Madera Site utilizing Figures 25 (lane configurations) and 26 (peak hour volumes) shown previously. The signalized and AWSC intersection levels of service shown on Table 64 are representative of the whole intersection. Individual intersection movements or approaches may operate above or below the signalized or AWSC level of service or delay shown on Table 64. The

signalized levels of service or delay shown in Table 64 may not reflect the effects of 95th percentile queues that exceed the capacity for their movement. The Opening 2030 No Project freeway segment and intersection levels of service calculations for the Madera Site are included in the Appendices section Attachment VI – C – 23 and Attachment VI – C – 24 respectively. Figure 27 provides a graphical representation of the resulting 2030 No Project levels of service.

TABLE 64: 2030 NO PROJECT CONDITIONS COUNTY SEGMENT, FREEWAY SEGMENT, AND INTERSECTION WEEKDAY LEVEL OF SERVICE MADERA SITE (ALTERNATIVE E, NO PROJECT ALTERNATIVE)				
County Segment	AM Peak Hour		PM Peak Hour	
	LOS		LOS	
Avenue 18 ½ - Road 24 to Road 23	A		B	
Road 23 – Avenue 18 ½ to Avenue 17	D		D	
Avenue 17 – Road 23 to SR 99	F		F	
Avenue 17 – SR 99 to Road 27	E		F	
Golden State Boulevard – Avenue 17 to Road 23	A		A	
Freeway Segment	AM Peak Hour		PM Peak Hour	
	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)
SR 99 north of Avenue 18 ½				
• NB	D	26.5	D	33.2
• SB	C	23.9	E	41.4
SR 99 between Avenue 18 ½ and Avenue 17				
• NB	D	26.4	D	31.4
• SB	C	23.5	E	40.5
SR 99 south of Avenue 17				
• NB	E	39.0	F	---
• SB	D	29.2	F	---
Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay¹ (secs)	LOS	Delay¹ (secs)
Avenue 18 ½ at SR 99 NB ramps				
• EB Left	A	7.5	B	10.1
• NB Approach	F	337.7	F	7523.8
Avenue 18 ½ at SR 99 SB ramps/Road 23				
• WB Left-Through	A	0.0	A	0.0
• NB Approach	A	1.0	A	0.0
• SB Approach	F	52.0	F	332.3
Avenue 18 ½ at Pistachio Drive				
• EB Approach	A	0.7	A	2.2
• SB Approach	C	24.8	F	187.5

SR = State Route ¹ Delay per vehicle secs = seconds WB = westbound
 NB = northbound SB = southbound EB = eastbound
 --- = beyond software limitations
 Bolded Text = intersection/movement operates below the appropriate level of service standard

TABLE 64: 2030 NO PROJECT CONDITIONS COUNTY SEGMENT, FREEWAY SEGMENT, AND INTERSECTION WEEKDAY LEVEL OF SERVICE MADERA SITE (ALTERNATIVE E, NO PROJECT ALTERNATIVE)				
Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay¹ (secs)	LOS	Delay¹ (secs)
Avenue 18 ½ at Golden State Boulevard				
• EB Left-Through-Right	A	1.0	A	0.9
• WB Left-Through	A	6.6	A	7.5
• NB Approach	C	19.2	F	137.3
• SB Approach	F	429.1	F	9379.8
Avenue 18 at Road 23				
• NB Left-Through-Right	A	0.0	A	0.2
• SB Left-Through-Right	A	0.8	A	1.0
• WB Approach	B	14.5	C	17.9
• EB Approach	C	16.4	C	24.8
Avenue 17 at SR 99 NB ramps				
• EB Left	D	27.7	F	617.2
• NB Approach	F	6790.7	F	---
Avenue 17 at SR 99 SB ramps				
• SB Approach	F	7445.5	F	---
Avenue 17 at Golden State Boulevard				
• EB Left	B	12.5	D	29.4
• WB Left	F	71.5	F	275.4
• NB Approach	F	---	F	---
• SB Approach	F	---	F	---
Avenue 17 at Road 23				
• NB Left-Through-Right	A	3.2	A	3.3
• SB Left-Through-Right	A	0.8	A	0.3
• WB Approach	F	---	F	---
• EB Approach	F	---	F	---
Ellis Street at Road 26				
	B	10.1	C	22.2
Avenue 16/Ellis Street at SR NB ramps				
	B	11.7	B	13.9
Avenue 16/Ellis Street at SR 99 SB ramps				
	A	7.3	B	10.6
Avenue 16/Ellis Street at Aviation Drive				
	F	115.7	F	399.6
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps				
	C	26.8	F	199.2
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps				
	C	31.4	F	133.0
Avenue 15 ½ at Road 23				
• NB Left-Through-Right	A	0.0	A	0.0
• SB Left-Through-Right	A	1.1	A	1.7
• WB Approach	C	16.9	D	34.4
• EB Approach	A	0.0	C	19.0

SR = State Route ¹ Delay per vehicle secs = seconds WB = westbound
 NB = northbound SB = southbound EB = eastbound
 --- = beyond software limitations
 Bolded Text = intersection/movement operates below the appropriate level of service standard

**TABLE 64:
2030 NO PROJECT CONDITIONS
COUNTY SEGMENT, FREEWAY SEGMENT, AND INTERSECTION WEEKDAY LEVEL OF SERVICE
MADERA SITE (ALTERNATIVE E, NO PROJECT ALTERNATIVE)**

Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay ¹ (secs)	LOS	Delay ¹ (secs)
SR 145/Madera Avenue at SR 99 NB ramps	D	37.0	F	242.9
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	E	70.9	F	238.7
Olive Avenue/Avenue 14 at SR 99 SB off-ramp	C	29.7	F	163.2
Avenue 14 at Road 23	B	11.6	C	16.6
Avenue 12/Golden State Boulevard at SR 99 SB ramps				
• SB Left-Through	A	9.1	A	7.5
• WB Approach	F	9323.4	F	9051.8
Avenue 12 at Golden State Boulevard	F	205.2	F	328.4
Avenue 12 at SR 99 NB ramps	C	21.5	E	57.9

SR = State Route ¹ Delay per vehicle secs = seconds WB = westbound
 NB = northbound SB = southbound EB = eastbound
 --- = beyond software limitations
 Bolded Text = intersection/movement operates below the appropriate level of service standard

County segments, freeway segments, and intersections within the study area that are projected to operate below the adopted level of service standard in 2030 are shown bolded in Table 64. As shown in Table 64 and Figure 27, the following County segments (2), freeway segments (6), and intersections (17) are projected to operate or have movements projected to operate below the adopted level of service standards in the 2030 No Project Alternative E scenario:

County Segments

- Avenue 17 – Road 23 to SR 99 – AM/PM peak hours – LOS “F”
- Avenue 17 – SR 99 to Road 27 – AM/PM peak hours – LOS “E”/“F”

Freeway Segments

- SR 99 north of Avenue 18 ½
 - NB – AM/PM peak hours – LOS “D”
 - SB – PM peak hour – LOS “E”
- SR 99 between Avenue 18 ½ and Avenue 17
 - NB – AM/PM peak hours – LOS “D”
 - SB – PM peak hour – LOS “E”
- SR 99 south of Avenue 17
 - NB – AM/PM peak hours – LOS “E”/“F”
 - SB – AM/PM peak hours – LOS “D”/“F”

Intersections

- Avenue 18 ½ at SR 99 NB ramps
 - NB Approach – AM/PM peak hours – LOS “F”

- Avenue 18 ½ at SR 99 SB Ramps
 - SB Approach – AM/PM peak hours – LOS “F”
- Avenue 18 ½ at Pistachio Drive
 - SB Approach – PM peak hour – LOS “F”
- Avenue 18 ½ at Golden State Boulevard/Road 23
 - NB Approach – PM peak hour – LOS “F”
 - SB Approach – AM/PM peak hours – LOS “F”
- Avenue 17 at SR 99 NB ramps
 - EB Left – AM/PM peak hours – LOS “D”/“F”
 - NB Approach – AM/PM peak hours – LOS “F”
- Avenue 17 at SR 99 SB ramps
 - SB Approach – AM/PM peak hours – LOS “F”
- Avenue 17 at Golden State Boulevard
 - WB Left – AM/PM peak hours – LOS “F”
 - NB Approach – AM/PM peak hours – LOS “F”
 - SB Approach – AM/PM peak hours – LOS “F”
- Avenue 17 at Road 23
 - WB Approach – AM/PM peak hours – LOS “F”
 - EB Approach – AM/PM peak hours – LOS “F”
- Avenue 16/Ellis Overcrossing at Aviation Drive – AM/PM peak hours – LOS “F”
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps – PM peak hour – LOS “F”
- Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps – PM peak hour – LOS “F”
- SR 145/Madera Avenue at SR 99 NB ramps – AM/PM peak hours – LOS “D”/“F”
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145 – AM/PM peak hours – LOS “E”/“F”
- Olive Avenue/Avenue 14 at SR 99 SB off-ramp – PM peak hour – LOS “F”
- Avenue 12/Golden State Boulevard at SR 99 SB ramps
 - WB Approach – AM/PM peak hours – LOS “F”
- Avenue 12 at Golden State Boulevard – AM/PM peak hours – LOS “F”
- Avenue 12 at SR 99 NB ramps – PM peak hour – LOS “E”

The remaining County segments, freeway segments, and intersections are projected to operate at or above the adopted level of service standard in the 2030 No Project Alternative E scenario.

Signal Warrants

Rural and urban peak hour volume signal warrants were prepared for the following eleven (11) unsignalized intersections:

- Avenue 18 ½ at SR 99 SB ramps - Urban
- Avenue 18 ½ at SR 99 NB ramps - Urban
- Avenue 18 ½ at Pistachio Drive - Urban
- Avenue 18 ½ at Golden State Boulevard/Road 23 - Urban
- Avenue 18 at Road 23 - Rural
- Avenue 17 at SR 99 SB Ramps - Rural
- Avenue 17 at SR 99 NB Ramps - Rural
- Avenue 17 at Golden State Boulevard - Rural
- Avenue 17 at Road 23 - Rural
- Avenue 15 ½ at Road 23 - Rural

- Avenue 14 at Road 23 – Rural

Based on the rural and urban peak hour volume warrant, the signal warrant is met at the following ten (10) locations potentially indicating the need for a traffic signal:

- Avenue 18 ½ at SR 99 SB ramps - Urban
- Avenue 18 ½ at SR 99 NB ramps - Urban
- Avenue 18 ½ at Pistachio Drive - Urban
- Avenue 18 ½ at Golden State Boulevard/Road 23 - Urban
- Avenue 17 at SR 99 SB Ramps - Rural
- Avenue 17 at SR 99 NB Ramps - Rural
- Avenue 17 at Golden State Boulevard - Rural
- Avenue 17 at Road 23 - Rural
- Avenue 15 ½ at Road 23 - Rural
- Avenue 14 at Road 23 - Rural

The signal warrant is not met at the remaining study intersection in the 2030 No Project Alternative E scenario. This warrant analysis is limited to the peak hour volume warrant only and other conditions may exist which meet other traffic signal warrants. The warrant is not met at the remaining unsignalized intersection. Copies of the warrant analyses are included in Appendices section Attachment VI – C - 25.

Queue Lengths

Table 65 shows the estimated 2030 No Project Alternative E conditions queue lengths developed from the level of service analyses for the Madera Site study locations.

TABLE 65: 2030 NO PROJECT CONDITIONS WEEKDAY 95TH PERCENTILE QUEUE LENGTH MADERA SITE (ALTERNATIVE E, NO PROJECT ALTERNATIVE)		
Intersection	Existing Queue Storage Length (ft)	95th Percentile Queue Length (ft) (AM/PM)
SR 99 NB off-ramp at Avenue 18 ½ <ul style="list-style-type: none"> • NB Left • NB Through-Right 	1,204 ¹ (770 ²)	461/--- 8/9
SR 99 SB off-ramp at Avenue 18 ½ <ul style="list-style-type: none"> • SB Left-Through-Right 	1,256 ¹ (822 ²)	246/860

ft = feet 95th percentile queue length - is minimum amount of storage needed for each movement
 NB = northbound SB = southbound WB = westbound EB = eastbound
 SR = State Route ¹ = Total ramp length ² = Calculated storage distance
³ = Distance of ramp striped as 2-lanes or more
 # = 95th percentile volume exceeds capacity, queue may be longer, queue shown is maximum after two (2) cycles
 m = volume for 95th percentile queue is metered by upstream signal
Bolded Text = 95th percentile queues exceed the available storage capacity

TABLE 65: 2030 NO PROJECT CONDITIONS WEEKDAY 95TH PERCENTILE QUEUE LENGTH MADERA SITE (ALTERNATIVE E, NO PROJECT ALTERNATIVE)		
Intersection	Existing Queue Storage Length (ft)	95 th Percentile Queue Length (ft) (AM/PM)
SR 99 SB off-ramp at Avenue 17 <ul style="list-style-type: none"> • SB Left • SB Right 	1,341 ¹ (907 ²) 589 ³ 589 ³	---/--- 239/---
SR 99 NB off-ramp at Avenue 17 <ul style="list-style-type: none"> • NB Left-Through • NB Right 	1,060 ¹ (626 ²) 45 ³ 45 ³	---/--- 403/---
SR 99 NB off-ramp at Avenue 16/Ellis Avenue <ul style="list-style-type: none"> • NB Left • NB Through-Right 	1,150 ¹ (716 ²) 150 ³ 150 ³	55/89 29/48
SR 99 SB off-ramp at Avenue 16/Ellis Avenue <ul style="list-style-type: none"> • SB Left • SB Right 	1,020 ¹ (586 ²) 225 ³ 225 ³	34/56 24/123
SR 99 NB off-ramp at Avenue 15 ½ /Cleveland Avenue <ul style="list-style-type: none"> • NB Left • NB Left-Through • NB Right 	881 ¹ (447 ²) 353 ³ 353 ³ 353 ³	141/205 141/209 232/#828
SR 99 SB off-ramp at Avenue 15 ½ /Cleveland Avenue <ul style="list-style-type: none"> • SB Left-Through • SB Right 	1,000 ¹ (566 ²) 65 ³ 65 ³	#407/#813 114/241
SR 99 NB off-ramp at SR 145/Madrea Avenue <ul style="list-style-type: none"> • WB Left • WB Right 	1,310 ¹ (876 ²) 90 ³ 90 ³	#459/#575 0/62
SR 99 SB off-ramp at Avenue 14/Olive Avenue <ul style="list-style-type: none"> • SB Left • SB Right 	1,254 ¹ (820 ²) 65 ³ 65 ³	454/# 1,062 174/244

ft = feet *95th percentile queue length - is minimum amount of storage needed for each movement*
NB = northbound *SB = southbound* *WB = westbound* *EB = eastbound*
SR = State Route ¹ = Total ramp length ² = Calculated storage distance
³ = Distance of ramp striped as 2-lanes or more
 # = 95th percentile volume exceeds capacity, queue may be longer, queue shown is maximum after two (2) cycles
 m = volume for 95th percentile queue is metered by upstream signal
Bolded Text = 95th percentile queues exceed the available storage capacity

TABLE 65: 2030 NO PROJECT CONDITIONS WEEKDAY 95TH PERCENTILE QUEUE LENGTH MADERA SITE (ALTERNATIVE E, NO PROJECT ALTERNATIVE)		
Intersection	Existing Queue Storage Length (ft)	95th Percentile Queue Length (ft) (AM/PM)
SR 99 SB off-ramp at Avenue 12/Golden State Boulevard <ul style="list-style-type: none"> • WB Left • WB Right 	1,431 ¹ (997 ²)	---/--- 7/15
SR 99 NB off-ramp at Avenue 12 <ul style="list-style-type: none"> • NB Left-Through • NB Right 	1,223 ¹ (789 ²) 49 ³ 49 ³	#501/#581 234/#501
Avenue 17 between SR 99 SB off-ramp and Golden State Boulevard <ul style="list-style-type: none"> • WB Left (at Golden State Boulevard) • WB Through-Right • EB Through (at SR 99 SB off-ramp) 	481	437/--- 0/0 0/0

ft = feet *95th percentile queue length - is minimum amount of storage needed for each movement*

NB = northbound *SB = southbound* *WB = westbound* *EB = eastbound*

SR = State Route *¹ = Total ramp length* *² = Calculated storage distance*

³ = Distance of ramp striped as 2-lanes or more

= 95th percentile volume exceeds capacity, queue may be longer, queue shown is maximum after two (2) cycles

m = volume for 95th percentile queue is metered by upstream signal

***Bolded Text** = 95th percentile queues exceed the available storage capacity*

Movements with queue lengths that are projected to exceed their available storage lengths are shown bolded in Table 65. As shown in Table 65, the following locations by time period are projected to exceed the allowable storage length with 95th percentile traffic conditions:

- Avenue 18 ½ at SR 99 NB off-ramp
 - NB Left – PM peak hour
- Avenue 18 ½ at SR 99 SB off-ramp
 - SB Left-Through-Right – PM peak hour
- Avenue 17 at SR 99 SB off-ramp
 - SB Left – AM/PM peak hours
 - SB Right – PM peak hour
- Avenue 17 at SR 99 NB off-ramp
 - NB Left-Through – AM/PM peak hours
 - NB Right – AM/PM peak hours
- Avenue 15 ½/Cleveland Avenue at SR 99 NB off-ramp
 - NB Right – PM peak hour
- Avenue 15 ½/Cleveland Avenue at SR 99 SB off-ramp
 - SB Left-Through – PM peak hour
 - SB Right – PM peak hour
- Avenue 14/Olive Avenue at SR 99 SB off-ramp
 - SB Left – PM peak hour

- SB Right – PM peak hour
- Avenue 12/Golden State Boulevard at SR 99 SB off-ramp
 - WB Left – AM/PM peak hours
- Avenue 12 at SR 99 NB off-ramp
 - NB Left-Through – PM peak hour
 - NB Right – PM peak hour
- Avenue 17 between SR 99 SB off-ramp and Golden State Boulevard
 - WB Left – PM peak hour

These queue exceedances indicate that it is likely that at some point during either the AM or PM peak hour, deceleration for vehicles utilizing these various ramps would likely occur on the mainline. The queue exceedances on Avenue 17 indicate that at some point during either the PM peak hour, spillback from vehicles in the through or turn lanes is expected to block the adjacent intersection. It should be noted that these queue exceedances are estimated based on the level of service analysis and are provided for information only. They are to be used in the design process and are not intended for use as a significance criteria.

All remaining study queue lengths are not projected to exceed the allowable storage lengths in the 95th percentile condition in the 2030 No Project Alternative E scenario.

Ramp Widening/Auxiliary Lane Threshold

Table 66 shows the SR 99 off-ramp volumes and whether the PCE volumes by time period meet or exceed one or both of these two thresholds.

TABLE 66: 2030 NO PROJECT CONDITIONS RAMP WIDENING/AUXILIARY LANE THRESHOLD SUMMARY MADERA SITE (ALTERNATIVE E, NO PROJECT ALTERNATIVE)			
Scenario	PCE (AM/PM)	900 to 1,499 PCE Threshold (AM/PM) (Y/N)	≥ 1,500 PCE Threshold (AM/PM) (Y/N)
SR 99 NB off-ramp at Avenue 18 ½	378/406	N/N	N/N
SR 99 SB off-ramp at Avenue 18 ½	504/737	N/N	N/N
SR 99 SB off-ramp at Avenue 17	497/745	N/N	N/N
SR 99 NB off-ramp at Avenue 17	1650/3347	N/N	Y/Y
SR 99 NB off-ramp at Avenue 16	314/430	N/N	N/N
SR 99 SB off-ramp at Avenue 16	630/950	N/Y	N/N
SR 99 NB off-ramp at Avenue 15 ½ /Cleveland Avenue	753/1298	N/Y	N/N
SR 99 SB off-ramp at Avenue 15 ½ /Cleveland Avenue	707/1134	N/Y	N/N
SR 99 NB off-ramp at SR 145/Madera Avenue	496/534	N/N	N/N
SR 99 SB off-ramp at Avenue 14/Olive Avenue	958/1400	Y/Y	N/N
SR 99 SB off-ramp at Avenue 12/Golden State Boulevard	1176/1567	Y/N	N/Y
SR 99 NB off-ramp at Avenue 12	745/805	N/N	N/N

PCE = Passenger Car Equivalent Y = Threshold Met N = Threshold Not Met
SR = State Route NB = northbound SB = southbound
Bolded Text = ramps meet at least one of the volume thresholds

Off-ramps projected to meet one or both thresholds are shown in bold in Table 66. As shown in Table 66, the following off-ramps, by time period, are projected to meet the 900 to 1,499 PCE threshold in the 2030 No Project Alternative E scenario:

- Avenue 17 at SR 99 NB off-ramp – AM/PM peak hours
- Avenue 16 at SR 99 SB off-ramp – PM peak hour
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB off-ramp – PM peak hour
- Cleveland Avenue/Avenue 15 ½ at SR 99 SB off-ramp – PM peak hour
- Avenue 14/Olive Avenue at SR 99 SB off-ramp – AM/PM peak hours
- Avenue 12/Golden State Boulevard at SR 99 SB off-ramp – AM/PM peak hours

The following off-ramps are projected to meet the 1,500 PCE threshold:

- Avenue 17 at SR 99 NB off-ramp – AM/PM peak hours

When ramp volumes are between 900 to 1,499 PCE, provisions should be made for the future widening of a one-lane ramp to two-lanes and for the future construction of an associated 1,333 ft (minimum) auxiliary lane prior to the widened ramp. When ramp volumes are equal to or exceed 1,500 PCE, a two-lane ramp and associated 1,333 ft (minimum) auxiliary lane should be constructed.

2030 with Project Conditions

Alternative A, Proposed Project Alternative

Roadway Levels of Service

The 2030 with Project Alternative A scenario lane configurations and intersection control incorporated the recommended improvements identified in the Mitigated Opening Day (2010) Alternative A scenario and the proposed improvements identified by Caltrans and included in the Madera County 2007 RTP as shown in the 2030 No Project scenario.

Table 67 shows the 2030 Project Alternative A levels of service for the County segments, freeway segments, and intersections for the Madera Site utilizing Figures 28 (lane configurations) and 29 (peak hour volumes) shown previously. The signalized and AWSC intersection levels of service shown on Table 67 are representative of the whole intersection. Individual intersection movements or approaches may operate above or below the signalized or AWSC level of service or delay shown on Table 67. The signalized levels of service or delay shown in Table 67 may not reflect the effects of 95th percentile queues that exceed the capacity for their movement. The 2030 Project Alternative A freeway segment and intersection levels of service calculations for the Madera Site are included in the Appendices section Attachment VI – C – 26 and Attachment VI – C – 27 respectively. Figure 30 provides a graphical representation of the resulting 2030 Project Alternative A levels of service.

TABLE 67: 2030 WITH PROJECT CONDITIONS COUNTY SEGMENT, FREEWAY SEGMENT, AND INTERSECTION WEEKDAY LEVEL OF SERVICE MADERA SITE (ALTERNATIVE A, PROPOSED PROJECT ALTERNATIVE)				
County Segment	AM Peak Hour		PM Peak Hour	
	LOS		LOS	
Avenue 18 ½ - Road 24 to Road 23	A		B	
Road 23 – Avenue 18 ½ to Avenue 17	D		D	
Avenue 17 – Road 23 to SR 99	F		F	
Avenue 17 – SR 99 to Road 27	F		F	
Golden State Boulevard – Avenue 17 to Road 23	A		D	
Freeway Segment	AM Peak Hour		PM Peak Hour	
	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)
SR 99 north of Avenue 18 ½				
• NB	D	26.6	D	33.6
• SB	C	24.1	E	42.2
SR 99 between Avenue 18 ½ and Avenue 17				
• NB	D	26.4	D	31.4
• SB	C	23.5	E	40.5

SR = State Route ¹ Delay per vehicle secs = seconds WB = westbound
 NB = northbound SB = southbound EB = eastbound *** = no LOS/Delay reported
 --- = beyond software limitations
 Bolded Text = intersection/movement operates below the appropriate level of service standard

TABLE 67: 2030 WITH PROJECT CONDITIONS COUNTY SEGMENT, FREEWAY SEGMENT, AND INTERSECTION WEEKDAY LEVEL OF SERVICE MADERA SITE (ALTERNATIVE A, PROPOSED PROJECT ALTERNATIVE)				
Freeway Segment	AM Peak Hour		PM Peak Hour	
	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)
SR 99 south of Avenue 17				
• NB	E	42.6	F	---
• SB	D	30.1	F	---
Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay ¹ (secs)	LOS	Delay ¹ (secs)
Avenue 18 ½ at SR 99 NB ramps	B	14.7	B	13.2
Avenue 18 ½ at SR 99 SB ramps/Road 23	B	17.8	E	58.6
Avenue 18 ½ at Pistachio Drive				
• EB Approach	A	0.7	A	2.5
• SB Right	D	27.8	F	309.6
Avenue 18 ½ at Golden State Boulevard				
• NB Left-Through-Right	A	1.0	A	0.9
• SB Left-Through-Right	A	6.9	A	7.9
• EB Approach	C	23.7	F	360.3
• WB Approach	F	685.3	F	---
Avenue 18 at Road 23				
• NB Left-Through-Right	A	0.0	A	0.2
• SB Left-Through-Right	A	2.3	A	2.7
• WB Approach	C	15.3	C	21.2
• EB Approach	C	18.8	D	31.5
Avenue 17 at SR 99 NB ramps	E	75.1	F	268.4
Avenue 17 at SR 99 SB ramps	C	24.4	F	336.6
Avenue 17 at Golden State Boulevard	E	65.1	F	416.9
Avenue 17 at Road 23	E	58.6	F	256.4
Ellis Street at Road 26	A	9.9	B	19.8
Avenue 16/Ellis Street at SR NB ramps	B	11.7	B	13.8
Avenue 16/Ellis Street at SR 99 SB ramps	A	7.4	B	10.9
Avenue 16/Ellis Street at Aviation Drive	F	126.3	F	415.2
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	B	16.8	F	93.9
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps	C	27.5	E	80.3

SR = State Route ¹ Delay per vehicle secs = seconds WB = westbound
 NB = northbound SB = southbound EB = eastbound *** = no LOS/Delay reported
 --- = beyond software limitations
 Bolded Text = intersection/movement operates below the appropriate level of service standard

**TABLE 67:
2030 WITH PROJECT CONDITIONS
COUNTY SEGMENT, FREEWAY SEGMENT, AND INTERSECTION WEEKDAY LEVEL OF SERVICE
MADERA SITE (ALTERNATIVE A, PROPOSED PROJECT ALTERNATIVE)**

Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay ¹ (secs)	LOS	Delay ¹ (secs)
Avenue 15 ½ at Road 23				
• NB Left-Through-Right	A	0.0	A	0.0
• SB Left-Through-Right	A	1.1	A	1.7
• WB Approach	C	17.5	E	38.1
• EB Approach	A	0.0	C	19.8
SR 145/Madera Avenue at SR 99 NB ramps	D	51.2	F	264.3
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	C	24.4	F	99.2
Olive Avenue/Avenue 14 at SR 99 SB off-ramp	B	16.2	C	24.4
Avenue 14 at Road 23	B	11.8	C	17.8
Avenue 12/Golden State Boulevard at SR 99 SB ramps	C	21.7	C	24.1
Avenue 12 at Golden State Boulevard	E	75.6	F	155.1
Avenue 12 at SR 99 NB ramps	C	22.9	E	63.8

SR = State Route ¹ Delay per vehicle secs = seconds WB = westbound
 NB = northbound SB = southbound EB = eastbound *** = no LOS/Delay reported
 --- = beyond software limitations
 Bolded Text = intersection/movement operates below the appropriate level of service standard

County segments, freeway segments, and intersections within the study area that are projected to operate below the adopted level of service standards are shown bolded in Table 67. As shown in Table 67 and Figure 30, the following County segments (2), freeways segments (6), and intersections (15) are projected to operate or have movements projected to operate below the adopted level of service standards in the 2030 with Project Alternative A scenario:

County Segments

- Avenue 17 – Road 23 to SR 99 – AM/PM peak hours – LOS “F”
- Avenue 17 – SR 99 to Road 27 – AM/PM peak hours – LOS “F”

Freeway Segments

- SR 99 north of Avenue 18 ½
 - NB – AM/PM peak hours – LOS “D”
 - SB – PM peak hour – LOS “E”
- SR 99 between Avenue 18 ½ and Avenue 17
 - NB – AM/PM peak hours – LOS “D”
 - SB – PM peak hour – LOS “E”
- SR 99 south of Avenue 17
 - NB – AM/PM peak hours – LOS “E”/“F”
 - SB – AM/PM peak hours – LOS “D”/“F”

Intersections

- Avenue 18 ½ at SR 99 SB ramps – PM peak hour – LOS “E”
- Avenue 18 ½ at Pistachio Drive
 - SB Approach – PM peak hour – LOS “F”
- Avenue 18 ½ at Golden State Boulevard/Road 23
 - NB Approach – PM peak hour – LOS “F”
 - SB Approach – AM/PM peak hours – LOS “F”
- Avenue 17 at SR 99 NB ramps – AM/PM peak hours – LOS “E”/“F”
- Avenue 17 at SR 99 SB ramps – PM peak hour – LOS “F”
- Avenue 17 at Golden State Boulevard – AM/PM peak hours – LOS “E”/“F”
- Avenue 17 at Road 23 – AM/PM peak hours – LOS “E”/“F”
- Avenue 16/Ellis Overcrossing at Aviation Drive – AM/PM peak hours – LOS “F”
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps – PM peak hour – LOS “F”
- Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps – PM peak hour – LOS “E”
- Avenue 15 ½ at Road 23
 - WB Approach – PM peak hour – LOS “E”
- SR 145/Madera Avenue at SR 99 NB ramps – AM/PM peak hours – LOS “D”/“F”
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145 – PM peak hour – LOS “F”
- Avenue 12 at Golden State Boulevard – AM/PM peak hours – LOS “E”/“F”
- Avenue 12 at SR 99 NB ramps – PM peak hour – LOS “E”

The remaining County segments, freeway segments, and intersections are projected to operate at or above the adopted level of service standards in the 2030 with Project Alternative A scenario.

Signal Warrants

Rural and urban peak hour volume signal warrants were prepared for the following seven (7) unsignalized intersections:

- Avenue 18 ½ at SR 99 SB ramps - Urban
- Avenue 18 ½ at SR 99 NB ramps - Urban
- Avenue 18 ½ at Pistachio Drive - Urban
- Avenue 18 ½ at Golden State Boulevard/Road 23 - Urban
- Avenue 18 at Road 23 - Rural
- Avenue 15 ½ at Road 23 - Rural
- Avenue 14 at Road 23 - Rural

Based on the rural and urban peak hour volume warrant, the signal warrant is met at the following seven (7) locations potentially indicating the need for a traffic signal:

- Avenue 18 ½ at SR 99 SB ramps - Urban
- Avenue 18 ½ at SR 99 NB ramps - Urban
- Avenue 18 ½ at Pistachio Drive - Urban
- Avenue 18 ½ at Golden State Boulevard/Road 23 - Urban
- Avenue 18 at Road 23 - Rural
- Avenue 15 ½ at Road 23 - Rural
- Avenue 14 at Road 23 - Rural

This warrant analysis is limited to the peak hour volume warrant only and other conditions may exist which meet other traffic signal warrants. Copies of the warrant analyses are included in Appendices section Attachment VI – C - 28.

Queue Lengths

Table 68 shows the estimated 2030 with Project Alternative A conditions queue lengths developed from the level of service analyses for the Madera Site study locations.

TABLE 68: 2030 WITH PROJECT CONDITIONS WEEKDAY 95TH PERCENTILE QUEUE LENGTH MADERA SITE (ALTERNATIVE A, PROPOSED PROJECT ALTERNATIVE)		
Intersection	Existing Queue Storage Length (ft)	95th Percentile Queue Length (ft) (AM/PM)
SR 99 NB off-ramp at Avenue 18 ½ • NB Left • NB Through-Right	1,204 ¹ (770 ²)	#164/#181 26/0
SR 99 SB off-ramp at Avenue 18 1/2 • SB Left-Right	1,256 ¹ (822 ²)	#209/#357
SR 99 SB off-ramp at Avenue 17 • SB Left • SB Right	1,341 ¹ (907 ²) 589 ³ 589 ³	#358/#657 106/192
SR 99 NB off-ramp at Avenue 17 • NB Left • NB Left-Through • NB Right	1,060 ¹ (626 ²) 45 ³ 45 ³ 45 ³	#766/#1,383 #773/#1,406 53/#901
SR 99 NB off-ramp at Avenue 16/Ellis Avenue • NB Left • NB Through-Right	1,150 ¹ (716 ²) 150 ³ 150 ³	55/89 29/48

ft = feet 95th percentile queue length - is minimum amount of storage needed for each movement

NB = northbound SB = southbound WB = westbound EB = eastbound

SR = State Route ¹ = Total ramp length ² = Calculated storage distance

³ = Distance of ramp striped as 2-lanes

= 95th percentile volume exceeds capacity, queue may be longer, queue shown is maximum after two (2) cycles

m = volume for 95th percentile queue is metered by upstream signal

Bolded Text = 95th percentile queues exceed the available storage capacity

TABLE 68: 2030 WITH PROJECT CONDITIONS WEEKDAY 95TH PERCENTILE QUEUE LENGTH MADERA SITE (ALTERNATIVE A, PROPOSED PROJECT ALTERNATIVE)		
Intersection	Existing Queue Storage Length (ft)	95th Percentile Queue Length (ft) (AM/PM)
SR 99 SB off-ramp at Avenue 16/Ellis Avenue <ul style="list-style-type: none"> • SB Left • SB Right 	1,020 ¹ (586 ²) 225 ³ 225 ³	34/56 24/127
SR 99 NB off-ramp at Avenue 15 ½ /Cleveland Avenue <ul style="list-style-type: none"> • NB Left • NB Left-Through • NB Right 	881 ¹ (447 ²) 353 ³ 353 ³ 353 ³	142/186 142/190 #239/#766
SR 99 SB off-ramp at Avenue 15 ½ /Cleveland Avenue <ul style="list-style-type: none"> • SB Left-Through • SB Right 	1,000 ¹ (566 ²) 65 ³ 65 ³	#409/#781 115/221
SR 99 NB off-ramp at SR 145/Madera Avenue <ul style="list-style-type: none"> • WB Left • WB Through-Right 	1,310 ¹ (876 ²) 90 ³ 90 ³	#395/#575 0/62
SR 99 SB off-ramp at Avenue 14/Olive Avenue <ul style="list-style-type: none"> • SB Left • SB Right 	1,254 ¹ (820 ²) 65 ³ 65 ³	197/389 185/303
SR 99 SB off-ramp at Avenue 12/Golden State Boulevard <ul style="list-style-type: none"> • WB Left • WB Right 	1,431 ¹ (997 ²)	431/532 28/73
SR 99 NB off-ramp at Avenue 12 <ul style="list-style-type: none"> • NB Left-Through • NB Right 	1,223 ¹ (789 ²) 49 ³ 49 ³	#512/#593 236/#511
Avenue 17 between SR 99 SB off-ramp and Golden State Boulevard <ul style="list-style-type: none"> • WB Left (at Golden State Boulevard) • WB Through • WB Right (at Golden State Boulevard) • EB Through (at SR 99 SB off-ramp) 	481	m#634/m#499 m133/m310 m17/m12 m77/m109

ft = feet 95th percentile queue length - is minimum amount of storage needed for each movement

NB = northbound SB = southbound WB = westbound EB = eastbound

SR = State Route ¹ = Total ramp length ² = Calculated storage distance

³ = Distance of ramp striped as 2-lanes

= 95th percentile volume exceeds capacity, queue may be longer, queue shown is maximum after two (2) cycles

m = volume for 95th percentile queue is metered by upstream signal

Bolded Text = 95th percentile queues exceed the available storage capacity

Movements with queue lengths that are projected to exceed their available storage lengths are shown bolded in Table 68. As shown in Table 68, the following locations by time period are projected to exceed the allowable storage length with 95th percentile traffic conditions:

- Avenue 17 at SR 99 NB off-ramp
 - NB Left – AM/PM peak hours
 - NB Left-Through – AM/PM peak hours
 - NB Right – AM/PM peak hours
- Avenue 15 ½/Cleveland Avenue at SR 99 NB off-ramp
 - NB Right – PM peak hour
- Avenue 15 ½/Cleveland Avenue at SR 99 SB off-ramp
 - SB Left-Through – PM peak hour
 - SB Right – PM peak hour
- Avenue 12 at SR 99 NB off-ramp
 - NB Left-Through – PM peak hour
 - NB Right – PM peak hour
- Avenue 17 between SR 99 SB off-ramp and Golden State Boulevard
 - WB Left – AM/PM peak hours

These queue exceedances indicate that it is likely that at some point during either the AM or PM peak hour, deceleration for vehicles utilizing these various ramps would likely occur on the mainline. The queue exceedances on Avenue 17 indicate that at some point during either the AM or PM peak hours, spillback from vehicles in the through or turn lanes is expected to block the adjacent intersection. It should be noted that these queue exceedances are estimated based on the level of service analysis and are provided for information only. They are to be used in the design process and are not intended for use as a significance criteria.

All remaining study queue lengths are not projected to exceed the allowable storage lengths in the 95th percentile condition in the 2030 with Project Alternative A scenario.

Ramp Widening/Auxiliary Lane Threshold

Table 69 shows the SR 99 off-ramp volumes and whether the PCE volumes by time period meet or exceed one or both of these two thresholds.

TABLE 69: 2030 WITH PROJECT CONDITIONS RAMP WIDENING/AUXILIARY LANE THRESHOLD SUMMARY MADERA SITE (ALTERNATIVE A, PROPOSED PROJECT ALTERNATIVE)			
Scenario	PCE (AM/PM)	900 to 1,499 PCE Threshold (AM/PM) (Y/N)	≥ 1,500 PCE Threshold (AM/PM) (Y/N)
SR 99 NB off-ramp at Avenue 18 ½	378/406	N/N	N/N
SR 99 SB off-ramp at Avenue 18 ½	548/793	N/N	N/N
SR 99 SB off-ramp at Avenue 17	497/745	N/N	N/N
SR 99 NB off-ramp at Avenue 17	1863/3603	N/N	Y/Y
SR 99 NB off-ramp at Avenue 16	314/430	N/N	N/N
SR 99 SB off-ramp at Avenue 16	637/964	N/Y	N/N
SR 99 NB off-ramp at Avenue 15 ½ /Cleveland Avenue	753/1298	N/Y	N/N
SR 99 SB off-ramp at Avenue 15 ½ /Cleveland Avenue	736/1196	N/Y	N/N
SR 99 NB off-ramp at SR 145/Madera Avenue	496/534	N/N	N/N
SR 99 SB off-ramp at Avenue 14/Olive Avenue	975/1438	Y/Y	N/N
SR 99 SB off-ramp at Avenue 12/Golden State Boulevard	1185/1590	Y/N	N/Y
SR 99 NB off-ramp at Avenue 12	745/805	N/N	N/N

PCE = Passenger Car Equivalent Y = Threshold Met N = Threshold Not Met
SR = State Route NB = northbound SB = southbound
Bolded Text = ramps meet at least one of the volume thresholds

Off-ramps projected to meet one or both thresholds are shown in bold in Table 69. As shown in Table 69, the following off-ramps, by time period, are projected to meet the 900 to 1,499 PCE threshold in the 2030 with Project Alternative A scenario:

- Avenue 17 at SR 99 NB off-ramp – AM/PM peak hours
- Avenue 16 at SR 99 SB off-ramp – PM peak hour
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB off-ramp – PM peak hour
- Cleveland Avenue/Avenue 15 ½ at SR 99 SB off-ramp – PM peak hour
- Avenue 14/Olive Avenue at SR 99 SB off-ramp – AM/PM peak hours
- Avenue 12/Golden State Boulevard at SR 99 SB off-ramp – AM/PM peak hours

The following off-ramps are projected to meet the 1,500 PCE threshold:

- Avenue 17 at SR 99 NB off-ramp – AM/PM peak hours
- Avenue 12/Golden State Boulevard at SR 99 SB off-ramp – PM peak hour

When ramp volumes are between 900 to 1,499 PCE, provisions should be made for the future widening of a one-lane ramp to two-lanes and for the future construction of an associated 1,333 ft (minimum) auxiliary lane prior to the widened ramp. When ramp volumes are equal to or exceed 1,500 PCE, a two-lane ramp and associated 1,333 ft (minimum) auxiliary lane should be constructed.

Left-Turn Warrants

Left-turn lane channelization warrants were prepared to determine the need for separate left-turn lanes at six (6) County of Madera intersections that are currently unchannelized. The following intersection movements were analyzed to determine if separate left-turn lanes were warranted:

- Avenue 12/Golden State Boulevard at SR 99 SB ramps
 - SB left-turn
- Avenue 18 at Road 23
 - NB left-turn
 - SB left-turn
 - EB left-turn
 - WB left-turn
- Avenue 17 at Road 23
 - NB left-turn
 - SB left-turn
 - EB left-turn
 - WB left-turn
- Avenue 17 at Golden State Boulevard
 - SB left-turn
 - EB left-turn
 - WB left-turn
- Ellis Street at Road 26
 - NB left-turn
 - SB left-turn
 - EB left-turn
 - WB left-turn
- Avenue 18 ½ at Golden State Boulevard/Road 23
 - EB left-turn
 - WB left-turn

The locations that met the left-turn warrant for the 2030 with Project Alternative A are as follows:

- Avenue 12/Golden State Boulevard at SR 99 SB ramps
 - SB left-turn
- Avenue 18 at Road 23
 - **NB left-turn**
 - SB left-turn
- Avenue 17 at Road 23
 - NB left-turn
 - SB left-turn
 - WB left-turn
- Avenue 17 at Golden State Boulevard
 - SB left-turn
 - EB left-turn
 - WB left-turn
- Ellis Street at Road 26
 - NB left-turn
 - SB left-turn

- WB left-turn
- Avenue 18 ½ at Golden State Boulevard/Road 23
 - EB left-turn
 - WB left-turn

Standard state of the practice dictates that dual left-turn lanes are recommended for left-turning volumes greater than 300 vehicles per hour and that separate right-turn lanes are recommended for right-turning volumes greater than 300 vehicles per hour. Based on this standard of practice, the following locations and movements should be considered for either dual left-turn lanes or a separate right-turn lane:

- Avenue 18 ½ at SR 99 NB ramps
 - Dual EB left-turn lanes
- Avenue 17 at SR 99 NB ramps
 - Dual NB left-turn lanes
- Avenue 12/Golden State Boulevard at SR 99 SB ramps
 - Separate NB right-turn lane
 - Dual SB left-turn lanes
- Avenue 12 at Golden State Boulevard
 - Separate NB right-turn lane
 - Dual SB left-turn lanes
 - Dual EB left-turn lanes
- Avenue 12 at SR 99 NB ramps
 - Separate WB right-turn lane
- Avenue 17 at Golden State Boulevard
 - Separate NB right-turn lane
 - Dual SB left-turn lanes
 - Dual WB left-turn lanes
 - Separate WB right-turn lane
- Ellis Street at Road 26
 - Separate SB right-turn lane
- Avenue 16/Ellis Street at Golden State Boulevard
 - Separate NB right-turn lane
 - Dual WB left-turn lanes
 - Separate WB right-turn lane
- Avenue 16/Ellis Street at SR 99 NB ramps
 - Separate WB right-turn lane
 - Dual EB left-turn lanes
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps
 - Dual EB left-turn lanes
 - Separate WB right-turn lane
- Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps
 - Dual WB left-turn lanes
 - Separate EB right-turn lane
- SR 145/Madera Avenue at SR 99 NB ramps
 - Dual NB left-turn lanes
 - Separate SB right-turn lane
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145
 - Dual NB left-turn lanes

- Separate NB right-turn lane
- Dual EB left-turn lanes
- Separate EB right-turn lane
- Avenue 18 ½ at Golden State Boulevard/Road 23
 - Separate NB right-turn lane
 - Dual WB left-turn lanes

Turn Lane Storage Calculations

Table 70 shows the calculated left-turn storage lengths for movements which have existing separate left-turn or right-turn lanes, meet the left-turn channelization warrant, or require dual left-turn lanes or separate right-turn lanes. SR 99 off-ramp approaches and movements included in the queue length analysis are not included in the storage length calculations. It should be noted that the calculated left-turn storage length increases are not solely due to Project only trips but are also due to increases in background traffic.

TABLE 70: 2030 WITH PROJECT CONDITIONS TURN LANE STORAGE CALCULATIONS SUMMARY ALTERNATIVE A (PROPOSED PROJECT/MADERA SITE)			
Intersection	Movement	Existing Storage Length (ft)	2030 Project Storage Length (ft)
Avenue 18 ½ at SR 99 SB ramps/Road 23	NBL	25	n/a
	NBR	25	n/a
	WBL	---	n/a
Avenue 18 ½ at SR 99 NB ramps	EBL	150	300 ¹
	WBR		n/a
Avenue 17 at SR 99 NB ramps	EBL	300	300 ¹
Avenue 12/Golden State Boulevard at SR 99 SB ramps	NBR	---	900
	SBL	---	500
Avenue 12 at Golden State Boulevard	NBL	200	100
	WBL	---	100
	WBR		700
	SBL	400	750 ²
	SBR	200	n/a
	EBL	350	400
Avenue 12 at SR 99 NB ramps	EBR	425	n/a
	WBR	---	1,800
	EBL	---	300 ¹

SR = State Route *ft = feet* *NB = northbound* *SB = southbound*
WB = westbound *EB = eastbound* *n/a = not applicable* *--- = no existing lane*
¹ = dual lefts required, length of each left-turn lane ² = exceeds available distance to nearest intersection
³ = dual rights required, length of each right-turn lane ⁴ = triple lefts required, length of each left-turn lane

**TABLE 70:
2030 WITH PROJECT CONDITIONS
TURN LANE STORAGE CALCULATIONS SUMMARY
ALTERNATIVE A (PROPOSED PROJECT/MADERA SITE)**

Intersection	Movement	Existing Storage Length (ft)	2030 Project Storage Length (ft)
Avenue 17 at Road 23	NBL	---	150
	WBL	---	100
	SBR	---	300
	EBR	---	300
Avenue 17 at Golden State Boulevard	NBL	50	300
	NBR	---	650 ¹
	WBL	---	600 ¹
	WBR	---	n/a
	SBL	---	600 ¹
	EBL	---	100 ¹
Ellis Street at Road 26	NBL	---	100
	WBR	---	150
	SBL	---	200
	EBR	---	100
Avenue 16/Ellis Street at Aviation Drive	NBL	75	400
	NBR	75	1,100 ¹
	WBL	200	850 ¹
	SBL	---	400 ¹
	SBR	---	n/a
	EBL	---	150
	EBR	---	350
Avenue 16 at SR 99 SB ramps	WBR	---	n/a
	EBL	---	n/a
	EBR	---	n/a
Avenue 16/Ellis Street at SR 99 NB ramps	WBR	---	200
	EBL	300	400 ¹
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	WBR	50	1,050
	EBL	100	200 ¹
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps	WBL	125	450
	EBR	125	900
SR 145/Madera Avenue at SR 99 NB ramps	NBL	---	600 ¹
	SBR	---	350

SR = State Route ft = feet NB = northbound SB = southbound
 WB = westbound EB = eastbound n/a = not applicable --- = no existing lane
¹ = dual lefts required, length of each left-turn lane ² = exceeds available distance to nearest intersection
³ = dual rights required, length of each right-turn lane ⁴ = triple lefts required, length of each left-turn lane

**TABLE 70:
2030 WITH PROJECT CONDITIONS
TURN LANE STORAGE CALCULATIONS SUMMARY
ALTERNATIVE A (PROPOSED PROJECT/MADERA SITE)**

Intersection	Movement	Existing Storage Length (ft)	2030 Project Storage Length (ft)
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	NBL	125	200 ¹
	SBL	100	250
	SBR	25	550
	EBL	175	300 ¹
	EBR	175	1,150
Avenue 18 ½ at Golden State Boulevard/Road 23	NBL	---	100
	NBR	---	450
	WBL	---	350 ¹
	WBR		n/a
	SBL	---	150
Avenue 18 at Pistachio Drive	WBR		250

SR = State Route ft = feet NB = northbound SB = southbound
WB = westbound EB = eastbound n/a = not applicable --- = no existing lane
¹ = dual lefts required, length of each left-turn lane ² = exceeds available distance to nearest intersection
³ = dual rights required, length of each right-turn lane ⁴ = triple lefts required, length of each left-turn lane

Alternative B (Reduced Intensity Alternative)

Roadway Levels of Service

The 2030 with Project Alternative B scenario lane configurations and intersection control incorporated the recommended improvements identified in the Mitigated Opening Day (2010) with Alternative B scenario and the proposed improvements identified by Caltrans and included in the Madera County 2007 RTP as shown in the 2030 No Project scenario.

Table 71 shows the 2030 with Project Alternative B levels of service for the County segments, freeway segments, and intersections for the Madera Site utilizing Figures 31 (lane configurations) and 32 (peak hour volumes) shown previously. The signalized and AWSC intersection levels of service shown on Table 71 are representative of the whole intersection. Individual intersection movements or approaches may operate above or below the signalized or AWSC level of service or delay shown on Table 71. The signalized levels of service or delay shown in Table 71 may not reflect the effects of 95th percentile queues that exceed the capacity for their movement. The 2030 Project Alternative B freeway segment and intersection levels of service calculations for the Madera Site are included in the Appendices section Attachment VI – C – 29 and Attachment VI – C – 30 respectively. Figure 33 provides a graphical representation of the resulting 2030 Project Alternative B levels of service.

TABLE 71: 2030 WITH PROJECT CONDITIONS COUNTY SEGMENT, FREEWAY SEGMENT, AND INTERSECTION WEEKDAY LEVEL OF SERVICE MADERA SITE (ALTERNATIVE B, REDUCED INTENSITY ALTERNATIVE)				
County Segment	AM Peak Hour		PM Peak Hour	
	LOS		LOS	
Avenue 18 ½ - Road 24 to Road 23	A		B	
Road 23 – Avenue 18 ½ to Avenue 17	D		D	
Avenue 17 – Road 23 to SR 99	F		F	
Avenue 17 – SR 99 to Road 27	F		F	
Golden State Boulevard – Avenue 17 to Road 23	A		C	
Freeway Segment	AM Peak Hour		PM Peak Hour	
	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)
SR 99 north of Avenue 18 ½				
• NB	C	26.6	D	34.3
• SB	C	24.1	E	43.0
SR 99 between Avenue 18 ½ and Avenue 17				
• NB	D	26.5	D	32.5
• SB	C	23.7	E	42.1
SR 99 south of Avenue 17				
• NB	E	41.5	F	---
• SB	D	29.8	F	---
Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay¹ (secs)	LOS	Delay¹ (secs)
Avenue 18 ½ at SR 99 NB ramps	B	14.5	B	12.8
Avenue 18 ½ at SR 99 SB ramps	B	17.3	D	54.9
Avenue 18 ½ at Pistachio Drive				
• EB Approach	A	0.7	A	2.4
• SB Right	D	26.7	F	277.0

SR = State Route ¹ Delay per vehicle secs = seconds WB = westbound
 NB = northbound SB = southbound EB = eastbound
 --- = beyond software limitations

Bolded Text = intersection/movement operates below the appropriate level of service standard

TABLE 71: 2030 WITH PROJECT CONDITIONS COUNTY SEGMENT, FREEWAY SEGMENT, AND INTERSECTION WEEKDAY LEVEL OF SERVICE MADERA SITE (ALTERNATIVE B, REDUCED INTENSITY ALTERNATIVE)				
Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay¹ (secs)	LOS	Delay¹ (secs)
Avenue 18 ½ at Golden State Boulevard				
• NB Left-Through-Right	A	1.0	A	0.9
• SB Left-Through-Right	A	6.8	A	7.8
• EB Approach	C	22.2	F	268.4
• WB Approach	F	602.1	F	9397.2
Avenue 18 at Road 23				
• NB Left-Through-Right	A	0.0	A	0.2
• SB Left-Through-Right	A	1.9	A	2.2
• WB Approach	B	14.9	C	20.3
• EB Approach	C	18.0	D	29.3
Avenue 17 at SR 99 NB ramps	E	69.3	F	260.2
Avenue 17 at SR 99 SB ramps	B	17.1	F	277.5
Avenue 17 at Golden State Boulevard	E	62.5	F	409.1
Avenue 17 at Road 23	E	56.3	F	248.6
Ellis Street at Road 26	A	9.9	B	19.7
Avenue 16/Ellis Street at SR NB ramps	B	11.7	B	13.9
Avenue 16/Ellis Street at SR 99 SB ramps	A	7.4	B	10.8
Avenue 16/Ellis Street at Aviation Drive	F	123.5	F	409.2
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	B	16.9	F	91.7
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps	C	27.0	E	78.2
Avenue 15 ½ at Road 23				
• NB Left-Through-Right	A	0.0	A	0.0
• SB Left-Through-Right	A	1.1	A	1.7
• WB Approach	C	17.3	E	37.1
• EB Approach	A	0.0	C	19.6
SR 145/Madera Avenue at SR 99 NB ramps	D	48.5	F	257.0
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	C	24.4	F	98.0
Olive Avenue/Avenue 14 at SR 99 SB off-ramp	B	16.2	C	24.3
Avenue 14 at Road 23	B	11.7	C	17.5
Avenue 12/Golden State Boulevard at SR 99 SB ramps	C	21.7	C	24.0
Avenue 12 at Golden State Boulevard	E	75.2	F	154.2
Avenue 12 at SR 99 NB ramps	C	22.8	E	62.8

SR = State Route ¹ Delay per vehicle secs = seconds WB = westbound
 NB = northbound SB = southbound EB = eastbound
 --- = beyond software limitations
 Bolded Text = intersection/movement operates below the appropriate level of service standard

County segments, freeway segments, and intersections within the study area that are projected to operate below the adopted level of service standards are shown bolded in Table 71. As shown in Table 71 and Figure 33, the following County segments (2), freeways segments (6), and intersections (15) are projected to operate or have movements projected to operate below the adopted level of service standards in the 2030 with Project Alternative B scenario:

County Segments

- Avenue 17 – Road 23 to SR 99 – AM/PM peak hours – LOS “F”
- Avenue 17 – SR 99 to Road 27 – AM/PM peak hours – LOS “F”

Freeway Segments

- SR 99 north of Avenue 18 ½
 - NB – AM/PM peak hours – LOS “D”
 - SB – PM peak hour – LOS “E”
- SR 99 between Avenue 18 ½ and Avenue 17
 - NB – AM/PM peak hours – LOS “D”
 - SB – PM peak hour – LOS “E”
- SR 99 south of Avenue 17
 - NB – AM/PM peak hours – LOS “E”/“F”
 - SB – AM/PM peak hours – LOS “D”/“F”

Intersections

- Avenue 18 ½ at SR 99 SB ramps – PM peak hour – LOS “D”
- Avenue 18 ½ at Pistachio Drive
 - SB Approach – PM peak hour – LOS “F”
- Avenue 18 ½ at Golden State Boulevard/Road 23
 - NB Approach – PM peak hour – LOS “F”
 - SB Approach – AM/PM peak hours – LOS “F”
- Avenue 17 at SR 99 NB ramps – AM/PM peak hours – LOS “E”/“F”
- Avenue 17 at SR 99 SB ramps – PM peak hour – LOS “F”
- Avenue 17 at Golden State Boulevard – AM/PM peak hours – LOS “E”/“F”
- Avenue 17 at Road 23 – AM/PM peak hours – LOS “E”/“F”
- Avenue 16/Ellis Overcrossing at Aviation Drive – AM/PM peak hours – LOS “F”
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps – PM peak hour – LOS “F”
- Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps – PM peak hour – LOS “E”
- Avenue 15 ½ at Road 23
 - WB Approach – PM peak hour – LOS “E”
- SR 145/Madera Avenue at SR 99 NB ramps – AM/PM peak hours – LOS “D”/“F”
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145 – PM peak hour – LOS “F”
- Avenue 12 at Golden State Boulevard – AM/PM peak hours – LOS “E”/“F”
- Avenue 12 at SR 99 NB ramps – PM peak hour – LOS “E”

The remaining County segments, freeway segments, and intersections are projected to operate at or above the adopted level of service standards in the 2030 with Project Alternative B scenario.

Signal Warrants

Rural and urban peak hour volume signal warrants were prepared for the following seven (7) unsignalized intersections:

- Avenue 18 ½ at SR 99 SB ramps - Urban
- Avenue 18 ½ at SR 99 NB ramps - Urban
- Avenue 18 ½ at Pistachio Drive - Urban
- Avenue 18 ½ at Golden State Boulevard/Road 23 - Urban
- Avenue 18 at Road 23 - Rural
- Avenue 15 ½ at Road 23 - Rural
- Avenue 14 at Road 23 - Rural

Based on the rural and urban peak hour volume warrant, the signal warrant is met at the following seven (7) locations potentially indicating the need for a traffic signal:

- Avenue 18 ½ at SR 99 SB ramps - Urban
- Avenue 18 ½ at SR 99 NB ramps - Urban
- Avenue 18 ½ at Pistachio Drive - Urban
- Avenue 18 ½ at Golden State Boulevard/Road 23 - Urban
- Avenue 18 at Road 23 - Rural
- Avenue 15 ½ at Road 23 - Rural
- Avenue 14 at Road 23 - Rural

This warrant analysis is limited to the peak hour volume warrant only and other conditions may exist which meet other traffic signal warrants. Copies of the warrant analyses are included in Appendices section Attachment VI – C – 31.

Queue Lengths

Table 72 shows the estimated 2030 with Project Alternative B conditions queue lengths developed from the level of service analyses for the Madera Site study locations.

TABLE 72: 2030 WITH PROJECT CONDITIONS WEEKDAY 95th PERCENTILE QUEUE LENGTH MADERA SITE (ALTERNATIVE B, REDUCED INTENSITY ALTERNATIVE)		
Intersection	Existing Queue Storage Length (ft)	95 th Percentile Queue Length (ft) (AM/PM)
SR 99 NB off-ramp at Avenue 18 ½ • NB Left • NB Right	1,204 ¹ (770 ²)	#164/#181 26/0
SR 99 SB off-ramp at Avenue 18 1/2 • SB Left-Right	1,256 ¹ (822 ²)	#199/#351
SR 99 SB off-ramp at Avenue 17 • SB Left • SB Right	1,341 ¹ (907 ²) 589 ³ 589 ³	#348/#657 103/192
SR 99 NB off-ramp at Avenue 17 • NB Left • NB Left-Through • NB Right	1,060 ¹ (626 ²) 45 ³ 45 ³ 45 ³	#727/#1,332 #736/#1,355 48/#896
SR 99 NB off-ramp at Avenue 16/Ellis Avenue • NB Left • NB Through-Right	1,150 ¹ (716 ²) 150 ³ 150 ³	55/89 29/48
SR 99 SB off-ramp at Avenue 16/Ellis Avenue • SB Left • SB Right	1,020 ¹ (586 ²) 225 ³ 225 ³	34/56 24/126
SR 99 NB off-ramp at Avenue 15 ½ /Cleveland Avenue • NB Left • NB Left-Through • NB Through-Right	881 ¹ (447 ²) 353 ³ 353 ³ 353 ³	142/186 142/190 #238/#766

ft = feet 95th percentile queue length - is minimum amount of storage needed for each movement

NB = northbound SB = southbound WB = westbound EB = eastbound

SR = State Route ¹ = Total ramp length ² = Calculated storage distance

³ = Distance of ramp striped as 2-lanes

= 95th percentile volume exceeds capacity, queue may be longer, queue shown is maximum after two (2) cycles

m = volume for 95th percentile queue is metered by upstream signal

Bolded Text = 95th percentile queues exceed the available storage capacity

TABLE 72: 2030 WITH PROJECT CONDITIONS WEEKDAY 95TH PERCENTILE QUEUE LENGTH MADERA SITE (ALTERNATIVE B, REDUCED INTENSITY ALTERNATIVE)		
Intersection	Existing Queue Storage Length (ft)	95th Percentile Queue Length (ft) (AM/PM)
SR 99 SB off-ramp at Avenue 15 ½ /Cleveland Avenue <ul style="list-style-type: none"> • SB Left-Through • SB Right 	1,000 ¹ (566 ²) 65 ³ 65 ³	#401/#765 115/219
SR 99 NB off-ramp at SR 145/Madera Avenue <ul style="list-style-type: none"> • WB Left • WB Through-Right 	1,310 ¹ (876 ²) 90 ³ 90 ³	#395/#575 0/62
SR 99 SB off-ramp at Avenue 14/Olive Avenue <ul style="list-style-type: none"> • SB Left • SB Right 	1,254 ¹ (820 ²) 65 ³ 65 ³	197/387 184/300
SR 99 SB off-ramp at Avenue 12/Golden State Boulevard <ul style="list-style-type: none"> • WB Left • WB Right 	1,431 ¹ (997 ²)	431/531 28/72
SR 99 NB off-ramp at Avenue 12 <ul style="list-style-type: none"> • NB Left-Through • NB Right 	1,223 ¹ (789 ²) 49 ³ 49 ³	#512/#593 236/#511
Avenue 17 between SR 99 SB off-ramp and Golden State Boulevard <ul style="list-style-type: none"> • WB Left (at Golden State Boulevard) • WB Through (at Golden State Boulevard) • WB Right (at Golden State Boulevard) • EB Through (at SR 99 SB off-ramp) 	481	m#684/m#522 m122/m362 m16/m28 m72/m70

ft = feet *95th percentile queue length - is minimum amount of storage needed for each movement*
NB = northbound *SB = southbound* *WB = westbound* *EB = eastbound*
SR = State Route ¹ = Total ramp length ² = Calculated storage distance
³ = Distance of ramp striped as 2-lanes
 # = 95th percentile volume exceeds capacity, queue may be longer, queue shown is maximum after two (2) cycles
 m = volume for 95th percentile queue is metered by upstream signal
Bolded Text = 95th percentile queues exceed the available storage capacity

Movements with queue lengths that are projected to exceed their available storage lengths are shown bolded in Table 72. As shown in Table 72, the following locations by time period are projected to exceed the allowable storage length with 95th percentile traffic conditions:

- Avenue 17 at SR 99 NB off-ramp
 - NB Left – AM/PM peak hours
 - NB Left-Through – AM/PM peak hours
 - NB Right – AM/PM peak hours

- Avenue 15 ½/Cleveland Avenue at SR 99 NB off-ramp
 - NB Right – PM peak hour
- Avenue 15 ½/Cleveland Avenue at SR 99 SB off-ramp
 - SB Left-Through – PM peak hour
 - SB Right – PM peak hour
- Avenue 12 at SR 99 NB off-ramp
 - NB Left-Through – PM peak hour
 - NB Right – PM peak hour
- Avenue 17 between SR 99 SB off-ramp and Golden State Boulevard
 - WB Left – AM/PM peak hours

These queue exceedances indicate that it is likely that at some point during either the AM or PM peak hour, deceleration for vehicles utilizing these various ramps would likely occur on the mainline. The queue exceedances on Avenue 17 indicate that at some point during either the AM or PM peak hours, spillback from vehicles in the through or turn lanes is expected to block the adjacent intersection. It should be noted that these queue exceedances are estimated based on the level of service analysis and are provided for information only. They are to be used in the design process and are not intended for use as a significance criteria.

All remaining study queue lengths are not projected to exceed the allowable storage lengths in the 95th percentile condition in the 2030 Project Alternative B scenario.

Ramp Widening/Auxiliary Lane Threshold

Table 73 shows the SR 99 off-ramp volumes and whether the PCE volumes by time period meet or exceed one or both of these two thresholds.

TABLE 73: 2030 WITH PROJECT CONDITIONS RAMP WIDENING/AUXILIARY LANE THRESHOLD SUMMARY MADERA SITE (ALTERNATIVE B, REDUCED INTENSITY ALTERNATIVE)			
Scenario	PCE (AM/PM)	900 to 1,499 PCE Threshold (AM/PM) (Y/N)	≥ 1,500 PCE Threshold (AM/PM) (Y/N)
SR 99 NB off-ramp at Avenue 18 ½	378/406	N/N	N/N
SR 99 SB off-ramp at Avenue 18 ½	536/776	N/N	N/N
SR 99 SB off-ramp at Avenue 17	497/746	N/N	N/N
SR 99 NB off-ramp at Avenue 17	1800/3537	N/N	Y/Y
SR 99 NB off-ramp at Avenue 16	314/430	N/N	N/N
SR 99 SB off-ramp at Avenue 16	635/960	N/Y	N/N
SR 99 NB off-ramp at Avenue 15 ½ /Cleveland Avenue	753/1299	N/Y	N/N
SR 99 SB off-ramp at Avenue 15 ½ /Cleveland Avenue	728/1178	N/Y	N/N
SR 99 NB off-ramp at SR 145/Madera Avenue	496/534	N/N	N/N
SR 99 SB off-ramp at Avenue 14/Olive Avenue	968/1427	Y/Y	N/N
SR 99 SB off-ramp at Avenue 12/Golden State Boulevard	1182/1585	Y/N	N/Y
SR 99 NB off-ramp at Avenue 12	745/805	N/N	N/N

PCE = Passenger Car Equivalent Y = Threshold Met N = Threshold Not Met
SR = State Route NB = northbound SB = southbound
Bolded Text = ramps meet at least one of the volume thresholds

Off-ramps projected to meet one or both thresholds are shown in bold in Table 73. As shown in Table 73, the following off-ramps, by time period, are projected to meet the 900 to 1,499 PCE threshold in the 2030 Project Alternative B scenario:

- Avenue 17 at SR 99 NB off-ramp – AM/PM peak hours
- Avenue 16 at SR 99 SB off-ramp – PM peak hour
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB off-ramp – PM peak hour
- Cleveland Avenue/Avenue 15 ½ at SR 99 SB off-ramp – PM peak hour
- Avenue 14/Olive Avenue at SR 99 SB off-ramp – AM/PM peak hours
- Avenue 12/Golden State Boulevard at SR 99 SB off-ramp – AM/PM peak hours

The following off-ramps are projected to meet the 1,500 PCE threshold:

- Avenue 17 at SR 99 NB off-ramp – AM/PM peak hours
- Avenue 12/Golden State Boulevard at SR 99 SB off-ramp – PM peak hour

When ramp volumes are between 900 to 1,499 PCE, provisions should be made for the future widening of a one-lane ramp to two-lanes and for the future construction of an associated 1,333 ft (minimum) auxiliary lane prior to the widened ramp. When ramp volumes are equal to or exceed 1,500 PCE, a two-lane ramp and associated 1,333 ft (minimum) auxiliary lane should be constructed.

Left-Turn Warrants

Left-turn lane channelization warrants were prepared to determine the need for separate left-turn lanes at six (6) County of Madera intersections that are currently unchannelized. The following intersection movements were analyzed to determine if separate left-turn lanes were warranted:

- Avenue 12/Golden State Boulevard at SR 99 SB ramps
 - SB left-turn
- Avenue 18 at Road 23
 - NB left-turn
 - SB left-turn
 - EB left-turn
 - WB left-turn
- Avenue 17 at Road 23
 - NB left-turn
 - SB left-turn
 - EB left-turn
 - WB left-turn
- Avenue 17 at Golden State Boulevard
 - SB left-turn
 - EB left-turn
 - WB left-turn
- Ellis Street at Road 26
 - NB left-turn
 - SB left-turn
 - EB left-turn
 - WB left-turn
- Avenue 18 ½ at Golden State Boulevard/Road 23
 - EB left-turn
 - WB left-turn

The locations that met the left-turn warrant for the 2030 with Project Alternative B are as follows:

- Avenue 12/Golden State Boulevard at SR 99 SB ramps
 - SB left-turn
- Avenue 18 at Road 23
 - NB left-turn
 - SB left-turn
- Avenue 17 at Road 23
 - NB left-turn
 - SB left-turn
 - WB left-turn
- Avenue 17 at Golden State Boulevard
 - SB left-turn
 - EB left-turn
 - WB left-turn
- Ellis Street at Road 26
 - NB left-turn

- SB left-turn
- WB left-turn
- Avenue 18 ½ at Golden State Boulevard/Road 23
 - EB left-turn
 - WB left-turn

Standard state of the practice dictates that dual left-turn lanes are recommended for left-turning volumes greater than 300 vehicles per hour and that separate right-turn lanes are recommended for right-turning volumes greater than 300 vehicles per hour. Based on this standard of practice, the following locations and movements should be considered for either dual left-turn lanes or a separate right-turn lane:

- Avenue 18 ½ at SR 99 NB ramps
 - Dual EB left-turn lanes
- Avenue 17 at SR 99 NB ramps
 - Dual NB left-turn lanes
- Avenue 12/Golden State Boulevard at SR 99 SB ramps
 - Separate NB right-turn lane
 - Dual SB left-turn lanes
- Avenue 12 at Golden State Boulevard
 - Separate NB right-turn lane
 - Dual SB left-turn lanes
 - Dual EB left-turn lanes
- Avenue 12 at SR 99 NB ramps
 - Separate WB right-turn lane
- Avenue 17 at Golden State Boulevard
 - Separate NB right-turn lane
 - Dual SB left-turn lanes
 - Dual WB left-turn lanes
 - Separate WB right-turn lane
- Ellis Street at Road 26
 - Separate SB right-turn lane
- Avenue 16/Ellis Street at Golden State Boulevard
 - Separate NB right-turn lane
 - Dual WB left-turn lanes
 - Separate WB right-turn lane
- Avenue 16/Ellis Street at SR 99 NB ramps
 - Separate WB right-turn lane
 - Dual EB left-turn lanes
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps
 - Dual EB left-turn lanes
 - Separate WB right-turn lane
- Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps
 - Dual WB left-turn lanes
 - Separate EB right-turn lane
- SR 145/Madera Avenue at SR 99 NB ramps
 - Dual NB left-turn lanes
 - Separate SB right-turn lane

- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145
 - Dual NB left-turn lanes
 - Separate NB right-turn lane
 - Dual EB left-turn lanes
 - Separate EB right-turn lane
- Avenue 18 ½ at Golden State Boulevard/Road 23
 - Separate NB right-turn lane
 - Dual WB left-turn lanes

Turn Lane Storage Calculations

Table 74 shows the calculated left-turn storage lengths for movements which have existing separate left-turn or right-turn lanes, meet the left-turn channelization warrant, or require dual left-turn lanes or separate right-turn lanes. SR 99 off-ramp approaches and movements included in the queue length analysis are not included in the storage length calculations. It should be noted that the calculated left-turn storage length increases are not solely due to Project only trips but are also due to increases in background traffic.

TABLE 74: 2030 WITH PROJECT CONDITIONS TURN LANE STORAGE CALCULATIONS SUMMARY ALTERNATIVE B (REDUCED INTENSITY/MADERA SITE)			
Intersection	Movement	Existing Storage Length (ft)	2030 Project Storage Length (ft)
Avenue 18 ½ at SR 99 SB ramps/Road 23	NBL	25	n/a
	NBR	25	n/a
	WBL	---	n/a
Avenue 18 ½ at SR 99 NB ramps	EBL	150	250 ¹
Avenue 17 at SR 99 NB ramps	WBR		n/a
	EBL	300	300 ¹
Avenue 12/Golden State Boulevard at SR 99 SB ramps	NBR	---	850
	SBL	---	500
Avenue 12 at Golden State Boulevard	NBL	200	100
	WBL	---	100
	WBR		650
	SBL	400	700 ⁴
	SBR	200	n/a
	EBL	350	350
Avenue 12 at SR 99 NB ramps	EBR	425	n/a
	WBR	---	1,650
	EBL	---	300 ¹

SR = State Route ft = feet NB = northbound SB = southbound
 WB = westbound EB = eastbound n/a = not applicable --- = no existing lane
¹ = dual lefts required, length of each left-turn lane ² = exceeds available distance to nearest intersection
³ = dual rights required, length of each right-turn lane ⁴ = triple lefts required, length of each left-turn lane

TABLE 74:
2030 WITH PROJECT CONDITIONS
TURN LANE STORAGE CALCULATIONS SUMMARY
ALTERNATIVE B (REDUCED INTENSITY/MADERA SITE)

Intersection	Movement	Existing Storage Length (ft)	2030 Project Storage Length (ft)
Avenue 17 at Road 23	NBL	---	150
	WBL	---	100
	SBR	---	250
	EBR		300
Avenue 17 at Golden State Boulevard	NBL	50	300
	NBR	---	650 ³
	WBL	---	600 ¹
	WBR	---	n/a
	SBL	---	550 ¹
	EBL	---	100 ¹
Ellis Street at Road 26	NBL	---	100
	WBR	---	150
	SBL	---	200
	EBR		100
Avenue 16/Ellis Street at Aviation Drive	NBL	75	400
	NBR	75	1,100 ³
	WBL	200	850 ¹
	SBL		400 ¹
	SBR		n/a
	EBL	---	150
	EBR		350
Avenue 16 at SR 99 SB ramps	WBR		n/a
	EBL		n/a
Avenue 16/Ellis Street at SR 99 NB ramps	WBR	---	200
	EBL	300	400 ¹
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	WBR	50	950
	EBL	100	200 ¹
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps	WBL	125	450
	EBR	125	800
SR 145/Madera Avenue at SR 99 NB ramps	NBL	---	800 ¹
	SBR	---	450

SR = State Route

ft = feet

NB = northbound

SB = southbound

WB = westbound

EB = eastbound

n/a = not applicable

--- = no existing lane

¹ = dual lefts required, length of each left-turn lane

² = exceeds available distance to nearest intersection

³ = dual rights required, length of each right-turn lane

⁴ = triple lefts required, length of each left-turn lane

TABLE 74:
2030 WITH PROJECT CONDITIONS
TURN LANE STORAGE CALCULATIONS SUMMARY
ALTERNATIVE B (REDUCED INTENSITY/MADERA SITE)

Intersection	Movement	Existing Storage Length (ft)	2030 Project Storage Length (ft)
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	NBL	125	250 ¹
	SBL	100	300
	SBR	25	700
	EBL	175	350 ¹
	EBR	175	1,450
Avenue 18 ½ at Golden State Boulevard/Road 23	NBL	---	100
	NBR	---	400
	WBL	---	300 ¹
	WBR		n/a
	SBL	---	150
Avenue 18 at Pistachio Drive	WBR		250

SR = State Route ft = feet NB = northbound SB = southbound
WB = westbound EB = eastbound n/a = not applicable --- = no existing lane
¹ = dual lefts required, length of each left-turn lane ² = exceeds available distance to nearest intersection
³ = dual rights required, length of each right-turn lane ⁴ = triple lefts required, length of each left-turn lane

Alternative C (Commercial Land Use Alternative)

Roadway Levels of Service

The 2030 with Project Alternative C scenario lane configurations and intersection control incorporated the recommended improvements identified in the Mitigated Opening Day (2010) Alternative C scenario and the proposed improvements identified by Caltrans and included in the Madera County 2007 RTP as shown in the 2030 No Project scenario.

Table 75 shows the 2030 with Project Alternative C levels of service for the County segments, freeway segments, and intersections for the Madera Site utilizing Figures 34 (lane configurations) and 35 (peak hour volumes) shown previously. The signalized and AWSC intersection levels of service shown on Table 75 are representative of the whole intersection. Individual intersection movements or approaches may operate above or below the signalized or AWSC level of service or delay shown on Table 75. The signalized levels of service or delay shown in Table 75 may not reflect the effects of 95th percentile queues that exceed the capacity for their movement. The 2030 Project Alternative C freeway segment and intersection levels of service calculations for the Madera Site are included in the Appendices section Attachment VI – C – 32 and Attachment VI – C – 33 respectively. Figure 36 provides a graphical representation of the resulting 2030 with Project Alternative C levels of service.

TABLE 75: 2030 WITH PROJECT CONDITIONS COUNTY SEGMENT, FREEWAY SEGMENT, AND INTERSECTION WEEKDAY LEVEL OF SERVICE MADERA SITE (ALTERNATIVE C, COMMERCIAL LAND USE ALTERNATIVE)				
County Segment	AM Peak Hour		PM Peak Hour	
	LOS		LOS	
Avenue 18 ½ - Road 24 to Road 23	A		B	
Road 23 – Avenue 18 ½ to Avenue 17	D		E	
Avenue 17 – Road 23 to SR 99	F		F	
Avenue 17 – SR 99 to Road 27	F		F	
Golden State Boulevard – Avenue 17 to Road 23	A		C	
Freeway Segment	AM Peak Hour		PM Peak Hour	
	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)
SR 99 north of Avenue 18 ½				
• NB	D	26.6	D	34.3
• SB	C	24.1	E	43.0
SR 99 between Avenue 18 ½ and Avenue 17				
• NB	D	26.5	D	32.5
• SB	C	23.7	E	40.6
SR 99 south of Avenue 17				
• NB	E	41.2	F	---
• SB	D	30.3	F	---
Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay¹ (secs)	LOS	Delay¹ (secs)
Avenue 18 ½ at SR 99 NB ramps	B	14.9	B	13.5
Avenue 18 ½ at SR 99 SB ramps/Road 23	B	18.2	E	64.4
Avenue 18 ½ at Pistachio Drive				
• EB Approach	A	0.7	A	2.5
• SB Right	D	26.9	F	314.1
Avenue 18 ½ at Golden State Boulevard				
• NB Left-Through-Right	A	1.0	A	0.9
• SB Left-Through-Right	A	6.8	A	7.9
• EB Approach	C	23.0	F	1155.7
• WB Approach	F	633.7	F	---

SR = State Route ¹ Delay per vehicle secs = seconds WB = westbound
 NB = northbound SB = southbound EB = eastbound
 --- = beyond software limitations
 Bolded Text = intersection/movement operates below the appropriate level of service standard

**TABLE 75:
2030 WITH PROJECT CONDITIONS
COUNTY SEGMENT, FREEWAY SEGMENT, AND INTERSECTION WEEKDAY LEVEL OF SERVICE
MADERA SITE (ALTERNATIVE C, COMMERCIAL LAND USE ALTERNATIVE)**

Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay ¹ (secs)	LOS	Delay ¹ (secs)
Avenue 18 at Road 23				
• NB Left-Through-Right	A	0.0	A	0.2
• SB Left-Through-Right	A	1.7	A	2.7
• WB Approach	B	14.7	C	22.0
• EB Approach	C	17.8	D	31.9
Avenue 17 at SR 99 NB ramps	E	67.9	F	267.6
Avenue 17 at SR 99 SB ramps	C	20.1	F	341.9
Avenue 17 at Golden State Boulevard	E	70.3	F	417.6
Avenue 17 at Road 23	E	56.7	F	258.1
Ellis Street at Road 26	A	10.0	B	19.5
Avenue 16/Ellis Street at SR NB ramps	B	11.7	B	13.8
Avenue 16/Ellis Street at SR 99 SB ramps	A	7.4	B	10.9
Avenue 16/Ellis Street at Aviation Drive	F	122.4	F	419.0
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	B	16.8	F	96.2
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps	C	28.0	F	86.0
Avenue 15 ½ at Road 23				
• NB Left-Through-Right	A	0.0	A	0.0
• SB Left-Through-Right	A	1.1	A	1.7
• WB Approach	C	17.4	E	38.8
• EB Approach	A	0.0	C	20.0
SR 145/Madera Avenue at SR 99 NB ramps	D	47.6	F	262.6
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	C	24.4	F	99.8
Olive Avenue/Avenue 14 at SR 99 SB off-ramp	B	16.2	C	24.5
Avenue 14 at Road 23	B	11.8	C	18.0
Avenue 12/Golden State Boulevard at SR 99 SB ramps	C	22.0	C	24.0
Avenue 12 at Golden State Boulevard	E	75.9	F	154.5
Avenue 12 at SR 99 NB ramps	C	23.3	E	66.3

SR = State Route ¹ Delay per vehicle secs = seconds WB = westbound
 NB = northbound SB = southbound EB = eastbound
 --- = beyond software limitations
 Bolded Text = intersection/movement operates below the appropriate level of service standard

County segments, freeway segments, and intersections within the study area that are projected to operate below the adopted level of service standards are shown bolded in Table 75. As shown in Table 75 and Figure 36, the following County segments (3), freeways segments (6), and intersections (15) are projected to operate or have movements projected to operate below the adopted level of service standards in the 2030 with Project Alternative C scenario:

County Segments

- Road 23 – Avenue 18 ½ to Avenue 17 – PM peak hour – LOS “E”

- Avenue 17 – Road 23 to SR 99 – AM/PM peak hours – LOS “F”
- Avenue 17 – SR 99 to Road 27 – AM/PM peak hours – LOS “F”

Freeway Segments

- SR 99 north of Avenue 18 ½
 - NB – AM/PM peak hours – LOS “D”
 - SB – PM peak hour – LOS “E”
- SR 99 between Avenue 18 ½ and Avenue 17
 - NB – AM/PM peak hours – LOS “D”
 - SB – PM peak hour – LOS “E”
- SR 99 south of Avenue 17
 - NB – AM/PM peak hours – LOS “E”/“F”
 - SB – AM/PM peak hours – LOS “D”/“F”

Intersections

- Avenue 18 ½ at SR 99 SB ramps – PM peak hour – LOS “D”
- Avenue 18 ½ at Pistachio Drive
 - SB Approach – PM peak hour – LOS “F”
- Avenue 18 ½ at Golden State Boulevard/Road 23
 - NB Approach – PM peak hour – LOS “F”
 - SB Approach – AM/PM peak hours – LOS “F”
- Avenue 17 at SR 99 NB ramps – AM/PM peak hours – LOS “E”/“F”
- Avenue 17 at SR 99 SB ramps – PM peak hour – LOS “F”
- Avenue 17 at Golden State Boulevard – AM/PM peak hours – LOS “E”/“F”
- Avenue 17 at Road 23 – AM/PM peak hours – LOS “E”/“F”
- Avenue 16/Ellis Overcrossing at Aviation Drive – AM/PM peak hours – LOS “F”
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps – PM peak hour – LOS “F”
- Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps – PM peak hour – LOS “F”
- Avenue 15 ½ at Road 23
 - WB Approach – PM peak hour – LOS “E”
- SR 145/Madera Avenue at SR 99 NB ramps – AM/PM peak hours – LOS “D”/“F”
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145 – PM peak hour – LOS “F”
- Avenue 12 at Golden State Boulevard – AM/PM peak hours – LOS “E”/“F”
- Avenue 12 at SR 99 NB ramps – PM peak hour – LOS “E”

The remaining County segments, freeway segments, and intersections are projected to operate at or above the adopted level of service standards in the 2030 Project Alternative B scenario.

Signal Warrants

Rural and urban peak hour volume signal warrants were prepared for the following seven (7) unsignalized intersections:

- Avenue 18 ½ at SR 99 SB ramps - Urban
- Avenue 18 ½ at SR 99 NB ramps - Urban
- Avenue 18 ½ at Pistachio Drive - Urban
- Avenue 18 ½ at Golden State Boulevard/Road 23 - Urban
- Avenue 18 at Road 23 - Rural

- Avenue 15 ½ at Road 23 - Rural
- Avenue 14 at Road 23 - Rural

Based on the rural and urban peak hour volume warrant, the signal warrant is met at the following seven (7) locations potentially indicating the need for a traffic signal:

- Avenue 18 ½ at SR 99 SB ramps - Urban
- Avenue 18 ½ at SR 99 NB ramps - Urban
- Avenue 18 ½ at Pistachio Drive - Urban
- Avenue 18 ½ at Golden State Boulevard/Road 23 - Urban
- Avenue 18 at Road 23 - Rural
- Avenue 15 ½ at Road 23 - Rural
- Avenue 14 at Road 23 - Rural

This warrant analysis is limited to the peak hour volume warrant only and other conditions may exist which meet other traffic signal warrants. Copies of the warrant analyses are included in Appendices section Attachment VI – C - 34.

Queue Lengths

Table 76 shows the estimated 2030 with Project Alternative C conditions queue lengths developed from the level of service analyses for the Madera Site study locations.

TABLE 76: 2030 WITH PROJECT CONDITIONS WEEKDAY 95TH PERCENTILE QUEUE LENGTH MADERA SITE (ALTERNATIVE C, COMMERCIAL LAND USE ALTERNATIVE)		
Intersection	Existing Queue Storage Length (ft)	95th Percentile Queue Length (ft) (AM/PM)
SR 99 NB off-ramp at Avenue 18 ½ • NB Left • NB Through-Right	1,204 ¹ (770 ²)	#164/#181 26/0
SR 99 SB off-ramp at Avenue 18 1/2 • SB Left-Right	1,256 ¹ (822 ²)	#210/#360
SR 99 SB off-ramp at Avenue 17 • SB Left • SB Right	1,341 ¹ (907 ²) 589 ³ 589 ³	#348/#657 102/194
SR 99 NB off-ramp at Avenue 17 • NB Left • NB Left-Through • NB Right	1,060 ¹ (626 ²) 45 ³ 45 ³ 45 ³	#730/#1,381 #736/#1,406 51/#901
SR 99 NB off-ramp at Avenue 16/Ellis Avenue • NB Left • NB Through-Right	1,150 ¹ (716 ²) 150 ³ 150 ³	55/88 29/48
SR 99 SB off-ramp at Avenue 16/Ellis Avenue • SB Left • SB Right	1,020 ¹ (586 ²) 225 ³ 225 ³	34/57 24/127
SR 99 NB off-ramp at Avenue 15 ½ /Cleveland Avenue • NB Left • NB Left-Through • NB Right	881 ¹ (447 ²) 353 ³ 353 ³ 353 ³	142/200 142/204 #241/#833
SR 99 SB off-ramp at Avenue 15 ½ /Cleveland Avenue • SB Left-Through • SB Right	1,000 ¹ (566 ²) 65 ³ 65 ³	#413/#860 117/239

ft = feet 95th percentile queue length - is minimum amount of storage needed for each movement

NB = northbound SB = southbound WB = westbound EB = eastbound

SR = State Route ¹ = Total ramp length ² = Calculated storage distance

³ = Distance of ramp striped as 2-lanes

= 95th percentile volume exceeds capacity, queue may be longer, queue shown is maximum after two (2) cycles

m = volume for 95th percentile queue is metered by upstream signal

Bolded Text = 95th percentile queues exceed the available storage capacity

TABLE 76: 2030 WITH PROJECT CONDITIONS WEEKDAY 95TH PERCENTILE QUEUE LENGTH MADERA SITE (ALTERNATIVE C, COMMERCIAL LAND USE ALTERNATIVE)		
Intersection	Existing Queue Storage Length (ft)	95th Percentile Queue Length (ft) (AM/PM)
SR 99 NB off-ramp at SR 145/Madera Avenue <ul style="list-style-type: none"> • WB Left • WB Right 	1,310 ¹ (876 ²) 90 ³ 90 ³	#395/#575 0/62
SR 99 SB off-ramp at Avenue 14/Olive Avenue <ul style="list-style-type: none"> • SB Left • SB Right 	1,254 ¹ (820 ²) 65 ³ 65 ³	198/389 185/304
SR 99 SB off-ramp at Avenue 12/Golden State Boulevard <ul style="list-style-type: none"> • WB Left • WB Right 	1,431 ¹ (997 ²)	443/533 28/72
SR 99 NB off-ramp at Avenue 12 <ul style="list-style-type: none"> • NB Left-Through • NB Right 	1,223 ¹ (789 ²) 49 ³ 49 ³	#512/#593 236/#508
Avenue 17 between SR 99 SB off-ramp and Golden State Boulevard <ul style="list-style-type: none"> • WB Left (at Golden State Boulevard) • WB Through • WB Right • EB Through (at SR 99 SB off-ramp) 	481	m#701/m#498 m150/m311 m21/m12 m77/m106

ft = feet *95th percentile queue length - is minimum amount of storage needed for each movement*
NB = northbound *SB = southbound* *WB = westbound* *EB = eastbound*
SR = State Route *¹ = Total ramp length* *² = Calculated storage distance*
³ = Distance of ramp striped as 2-lanes
= 95th percentile volume exceeds capacity, queue may be longer, queue shown is maximum after two (2) cycles
m = volume for 95th percentile queue is metered by upstream signal
Bolded Text = 95th percentile queues exceed the available storage capacity

Movements with queue lengths that are projected to exceed their available storage lengths are shown bolded in Table 76. As shown in Table 76, the following locations by time period are projected to exceed the allowable storage length with 95th percentile traffic conditions:

- Avenue 17 at SR 99 NB off-ramp
 - NB Left – AM/PM peak hours
 - NB Left-Through – AM/PM peak hours
 - NB Right – AM/PM peak hours
- Avenue 15 ½/Cleveland Avenue at SR 99 NB off-ramp
 - NB Right – PM peak hour
- Avenue 15 ½/Cleveland Avenue at SR 99 SB off-ramp
 - SB Left-Through – PM peak hour

- SB Right – PM peak hour
- Avenue 12 at SR 99 NB off-ramp
 - NB Left-Through – PM peak hour
 - NB Right – PM peak hour
- Avenue 17 between SR 99 SB off-ramp and Golden State Boulevard
 - WB Left – AM/PM peak hours

These queue exceedances indicate that it is likely that at some point during either the AM or PM peak hour, deceleration for vehicles utilizing these various ramps would likely occur on the mainline. The queue exceedances on Avenue 17 indicate that at some point during either the AM or PM peak hours, spillback from vehicles in the through or turn lanes is expected to block the adjacent intersection. It should be noted that these queue exceedances are estimated based on the level of service analysis and are provided for information only. They are to be used in the design process and are not intended for use as a significance criteria.

All remaining study queue lengths are not projected to exceed the allowable storage lengths in the 95th percentile condition in the 2030 Project Alternative C scenario.

Ramp Widening/Auxiliary Lane Threshold

Table 77 shows the SR 99 off-ramp volumes and whether the PCE volumes by time period meet or exceed one or both of these two thresholds.

TABLE 77: 2030 WITH PROJECT CONDITIONS RAMP WIDENING/AUXILIARY LANE THRESHOLD SUMMARY MADERA SITE (ALTERNATIVE C, COMMERCIAL LAND USE ALTERNATIVE)			
Scenario	PCE (AM/PM)	900 to 1,499 PCE Threshold (AM/PM) (Y/N)	≥ 1,500 PCE Threshold (AM/PM) (Y/N)
SR 99 NB off-ramp at Avenue 18 ½	378/406	N/N	N/N
SR 99 SB off-ramp at Avenue 18 ½	532/793	N/N	N/N
SR 99 SB off-ramp at Avenue 17	496/748	N/N	N/N
SR 99 NB off-ramp at Avenue 17	1787/3600	N/N	Y/Y
SR 99 NB off-ramp at Avenue 16	314/428	N/N	N/N
SR 99 SB off-ramp at Avenue 16	639/969	N/Y	N/N
SR 99 NB off-ramp at Avenue 15 ½ /Cleveland Avenue	753/1297	N/Y	N/N
SR 99 SB off-ramp at Avenue 15 ½ /Cleveland Avenue	746/1202	N/Y	N/N
SR 99 NB off-ramp at SR 145/Madera Avenue	496/534	N/N	N/N
SR 99 SB off-ramp at Avenue 14/Olive Avenue	977/1439	Y/Y	N/N
SR 99 SB off-ramp at Avenue 12/Golden State Boulevard	1188/1587	Y/N	N/Y
SR 99 NB off-ramp at Avenue 12	745/805	N/N	N/N

PCE = Passenger Car Equivalent

Y = Threshold Met

N = Threshold Not Met

SR = State Route

NB = northbound

SB = southbound

Bolded Text = ramps meet at least one of the volume thresholds

Off-ramps projected to meet one or both thresholds are shown in bold in Table 77. As shown in Table 77, the following off-ramps, by time period, are projected to meet the 900 to 1,499 PCE threshold in the 2030 Project Alternative C scenario:

- Avenue 17 at SR 99 NB off-ramp – AM/PM peak hours
- Avenue 16 at SR 99 SB off-ramp – PM peak hour
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB off-ramp – PM peak hour
- Cleveland Avenue/Avenue 15 ½ at SR 99 SB off-ramp – PM peak hour
- Avenue 14/Olive Avenue at SR 99 SB off-ramp – AM/PM peak hours
- Avenue 12/Golden State Boulevard at SR 99 SB off-ramp – AM/PM peak hours

The following off-ramps are projected to meet the 1,500 PCE threshold:

- Avenue 17 at SR 99 NB off-ramp – AM/PM peak hours
- Avenue 12/Golden State Boulevard at SR 99 SB off-ramp – PM peak hour

When ramp volumes are between 900 to 1,499 PCE, provisions should be made for the future widening of a one-lane ramp to two-lanes and for the future construction of an associated 1,333 ft (minimum) auxiliary lane prior to the widened ramp. When ramp volumes are equal to or exceed 1,500 PCE, a two-lane ramp and associated 1,333 ft (minimum) auxiliary lane should be constructed.

Left-Turn Warrants

Left-turn lane channelization warrants were prepared to determine the need for separate left-turn lanes at six (6) County of Madera intersections that are currently unchannelized. The following intersection movements were analyzed to determine if separate left-turn lanes were warranted:

- Avenue 12/Golden State Boulevard at SR 99 SB ramps
 - SB left-turn
- Avenue 18 at Road 23
 - NB left-turn
 - SB left-turn
 - EB left-turn
 - WB left-turn
- Avenue 17 at Road 23
 - NB left-turn
 - SB left-turn
 - EB left-turn
 - WB left-turn
- Avenue 17 at Golden State Boulevard
 - SB left-turn
 - EB left-turn
 - WB left-turn
- Ellis Street at Road 26
 - NB left-turn
 - SB left-turn
 - EB left-turn

- WB left-turn
- Avenue 18 ½ at Golden State Boulevard/Road 23
 - EB left-turn
 - WB left-turn

The locations that met the left-turn warrant for the 2030 Project Alternative C are as follows:

- Avenue 12/Golden State Boulevard at SR 99 SB ramps
 - SB left-turn
- Avenue 18 at Road 23
 - NB left-turn
 - SB left-turn
- Avenue 17 at Road 23
 - NB left-turn
 - SB left-turn
 - WB left-turn
- Avenue 17 at Golden State Boulevard
 - SB left-turn
 - EB left-turn
 - WB left-turn
- Ellis Street at Road 26
 - NB left-turn
 - SB left-turn
 - WB left-turn
- Avenue 18 ½ at Golden State Boulevard/Road 23
 - EB left-turn
 - WB left-turn

Standard state of the practice dictates that dual left-turn lanes are recommended for left-turning volumes greater than 300 vehicles per hour and that separate right-turn lanes are recommended for right-turning volumes greater than 300 vehicles per hour. Based on this standard of practice, the following locations and movements should be considered for either dual left-turn lanes or a separate right-turn lane:

- Avenue 18 ½ at SR 99 NB ramps
 - Dual EB left-turn lanes
- Avenue 17 at SR 99 NB ramps
 - Dual NB left-turn lanes
- Avenue 12/Golden State Boulevard at SR 99 SB ramps
 - Separate NB right-turn lane
 - Dual SB left-turn lanes
- Avenue 12 at Golden State Boulevard
 - Separate NB right-turn lane
 - Dual SB left-turn lanes
 - Dual EB left-turn lanes
- Avenue 12 at SR 99 NB ramps
 - Separate WB right-turn lane
- Avenue 17 at Golden State Boulevard

- Separate NB right-turn lane
- Dual SB left-turn lanes
- Dual WB left-turn lanes
- Separate WB right-turn lane
- Ellis Street at Road 26
 - Separate SB right-turn lane
- Avenue 16/Ellis Street at Golden State Boulevard
 - Separate NB right-turn lane
 - Dual WB left-turn lanes
 - Separate WB right-turn lane
- Avenue 16/Ellis Street at SR 99 NB ramps
 - Separate WB right-turn lane
 - Dual EB left-turn lanes
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps
 - Dual EB left-turn lanes
 - Separate WB right-turn lane
- Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps
 - Dual WB left-turn lanes
 - Separate EB right-turn lane
- SR 145/Madera Avenue at SR 99 NB ramps
 - Dual NB left-turn lanes
 - Separate SB right-turn lane
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145
 - Dual NB left-turn lanes
 - Separate NB right-turn lane
 - Dual EB left-turn lanes
 - Separate EB right-turn lane
- Avenue 18 ½ at Golden State Boulevard/Road 23
 - Separate NB right-turn lane
 - Dual WB left-turn lanes

Turn Lane Storage Calculations

Table 78 shows the calculated left-turn storage lengths for movements which have existing separate left-turn or right-turn lanes, meet the left-turn channelization warrant, or require dual left-turn lanes or separate right-turn lanes. SR 99 off-ramp approaches and movements included in the queue length analysis are not included in the storage length calculations. It should be noted that the calculated left-turn storage length increases are not solely due to Project only trips but are also due to increases in background traffic.

**TABLE 78:
2030 WITH PROJECT CONDITIONS
TURN LANE STORAGE CALCULATIONS SUMMARY
ALTERNATIVE C (COMMERCIAL LAND USE/MADERA SITE)**

Intersection	Movement	Existing Storage Length (ft)	2030 Project Storage Length (ft)
Avenue 18 ½ at SR 99 SB ramps/Road 23	NBL	25	n/a
	NBR	25	n/a
	WBL	---	n/a
Avenue 18 ½ at SR 99 NB ramps	EBL	150	300 ¹
Avenue 17 at SR 99 NB ramps	WBR		n/a
	EBL	300	300 ¹
Avenue 12/Golden State Boulevard at SR 99 SB ramps	NBR	---	900
	SBL	---	500
Avenue 12 at Golden State Boulevard	NBL	200	100
	WBL	---	100
	WBR		700
	SBL	400	700 ⁴
	SBR	200	n/a
	EBL	350	350
	EBR	425	n/a
Avenue 12 at SR 99 NB ramps	WBR	---	1,650
	EBL	---	300 ¹
Avenue 17 at Road 23	NBL	---	150
	WBL	---	100
	SBR	---	300
	EBR		300
Avenue 17 at Golden State Boulevard	NBL	50	300
	NBR	---	650 ³
	WBL	---	600 ¹
	WBR	---	n/a
	SBL	---	650 ¹
	EBL	---	100 ¹
Ellis Street at Road 26	NBL	---	100
	WBR	---	150
	SBL	---	200
	EBR		100

SR = State Route

ft = feet

NB = northbound

SB = southbound

WB = westbound

EB = eastbound

n/a = not applicable

--- = no existing lane

¹ = dual lefts required, length of each left-turn lane

² = exceeds available distance to nearest intersection

³ = dual rights required, length of each right-turn lane

⁴ = triple lefts required, length of each left-turn lane

**TABLE 78:
2030 WITH PROJECT CONDITIONS
TURN LANE STORAGE CALCULATIONS SUMMARY
ALTERNATIVE C (COMMERCIAL LAND USE/MADERA SITE)**

Intersection	Movement	Existing Storage Length (ft)	2030 Project Storage Length (ft)
Avenue 16/Ellis Street at Aviation Drive	NBL	75	350
	NBR	75	1,000 ³
	WBL	200	800 ¹
	SBL		400 ¹
	SBR		n/a
	EBL	---	150
	EBR		350
Avenue 16 at SR 99 SB ramps	WBR		n/a
	EBL		n/a
Avenue 16/Ellis Street at SR 99 NB ramps	WBR	---	200
	EBL	300	400 ¹
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	WBR	50	1,050
	EBL	100	200 ¹
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps	WBL	125	450
	EBR	125	900
SR 145/Madera Avenue at SR 99 NB ramps	NBL	---	700 ¹
	SBR	---	450
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	NBL	125	200 ¹
	SBL	100	250
	SBR	25	600
	EBL	175	350 ¹
	EBR	175	1,150
Avenue 18 ½ at Golden State Boulevard/Road 23	NBL	---	100
	NBR	---	450
	WBL	---	350 ¹
	WBR		n/a
	SBL	---	150
Avenue 18 at Pistachio Drive	WBR		250

SR = State Route

ft = feet

NB = northbound

SB = southbound

WB = westbound

EB = eastbound

n/a = not applicable

--- = no existing lane

¹ = dual lefts required, length of each left-turn lane

² = exceeds available distance to nearest intersection

³ = dual rights required, length of each right-turn lane

⁴ = triple lefts required, length of each left-turn lane

Mitigated 2030 Project Conditions

Alternative A (Proposed Project Alternative)

Roadway Levels of Service

Based on the information provided in the previous sections, the following locations, by scenario, are projected to operate below the adopted level of service standards:

2030 No Project

County Segments

- Avenue 17 – Road 23 to SR 99 – AM/PM peak hours – LOS “F”
- Avenue 17 – SR 99 to Road 27 – AM/PM peak hours – LOS “E”/“F”

Freeway Segments

- SR 99 north of Avenue 18 ½
 - NB – AM/PM peak hours – LOS “D”
 - SB – PM peak hour – LOS “E”
- SR 99 between Avenue 18 ½ and Avenue 17
 - NB – AM/PM peak hours – LOS “D”
 - SB – PM peak hour – LOS “E”
- SR 99 south of Avenue 17
 - NB – AM/PM peak hours – LOS “E”/“F”
 - SB – AM/PM peak hours – LOS “D”/“F”

Intersections

- Avenue 18 ½ at SR 99 NB ramps
 - NB Approach – AM/PM peak hours – LOS “F”
- Avenue 18 ½ at SR 99 SB Ramps
 - SB Approach – AM/PM peak hours – LOS “F”
- Avenue 18 ½ at Pistachio Drive
 - SB Approach – PM peak hour – LOS “F”
- Avenue 18 ½ at Golden State Boulevard/Road 23
 - NB Approach – PM peak hour – LOS “F”
 - SB Approach – AM/PM peak hours – LOS “F”
- Avenue 17 at SR 99 NB ramps
 - EB Left – AM/PM peak hours – LOS “D”/“F”
 - NB Approach – AM/PM peak hours – LOS “F”
- Avenue 17 at SR 99 SB ramps
 - SB Approach – AM/PM peak hours – LOS “F”
- Avenue 17 at Golden State Boulevard
 - WB Left – AM/PM peak hours – LOS “F”
 - NB Approach – AM/PM peak hours – LOS “F”
 - SB Approach – AM/PM peak hours – LOS “F”
- Avenue 17 at Road 23
 - WB Approach – AM/PM peak hours – LOS “F”

- EB Approach – AM/PM peak hours – LOS “F”
- Avenue 16/Ellis Overcrossing at Aviation Drive – AM/PM peak hours – LOS “F”
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps – PM peak hour – LOS “F”
- Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps – PM peak hour – LOS “F”
- SR 145/Madera Avenue at SR 99 NB ramps – AM/PM peak hours – LOS “D”/“F”
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145 – AM/PM peak hours – LOS “E”/“F”
- Olive Avenue/Avenue 14 at SR 99 SB off-ramp – PM peak hour – LOS “F”
- Avenue 12/Golden State Boulevard at SR 99 SB ramps
 - WB Approach – AM/PM peak hours – LOS “F”
- Avenue 12 at Golden State Boulevard – AM/PM peak hours – LOS “F”
- Avenue 12 at SR 99 NB ramps – PM peak hour – LOS “E”

2030 with Alternative A Project

County Segments

- Avenue 17 – Road 23 to SR 99 – AM/PM peak hours – LOS “F”
- Avenue 17 – SR 99 to Road 27 – AM/PM peak hours – LOS “F”

Freeway Segments

- SR 99 north of Avenue 18 ½
 - NB – AM/PM peak hours – LOS “D”
 - SB – PM peak hour – LOS “E”
- SR 99 between Avenue 18 ½ and Avenue 17
 - NB – AM/PM peak hours – LOS “D”
 - SB – PM peak hour – LOS “E”
- SR 99 south of Avenue 17
 - NB – AM/PM peak hours – LOS “E”/“F”
 - SB – AM/PM peak hours – LOS “D”/“F”

Intersections

- Avenue 18 ½ at SR 99 SB ramps – PM peak hour – LOS “E”
- Avenue 18 ½ at Pistachio Drive
 - SB Approach – PM peak hour – LOS “F”
- Avenue 18 ½ at Golden State Boulevard/Road 23
 - NB Approach – PM peak hour – LOS “F”
 - SB Approach – AM/PM peak hours – LOS “F”
- Avenue 17 at SR 99 NB ramps – AM/PM peak hours – LOS “E”/“F”
- Avenue 17 at SR 99 SB ramps – PM peak hour – LOS “F”
- Avenue 17 at Golden State Boulevard – AM/PM peak hours – LOS “E”/“F”
- Avenue 17 at Road 23 – AM/PM peak hours – LOS “E”/“F”
- Avenue 16/Ellis Overcrossing at Aviation Drive – AM/PM peak hours – LOS “F”
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps – PM peak hour – LOS “F”
- Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps – PM peak hour – LOS “E”
- Avenue 15 ½ at Road 23
 - WB Approach – PM peak hour – LOS “E”
- SR 145/Madera Avenue at SR 99 NB ramps – AM/PM peak hours – LOS “D”/“F”

- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145 – PM peak hour – LOS “F”
- Avenue 12 at Golden State Boulevard – AM/PM peak hours – LOS “E”/“F”
- Avenue 12 at SR 99 NB ramps – PM peak hour – LOS “E”

The following locations, by scenario are also projected to meet either the rural or urban peak hour volume warrant:

2030 No Project

- Avenue 18 ½ at SR 99 SB ramps - Urban
- Avenue 18 ½ at SR 99 NB ramps - Urban
- Avenue 18 ½ at Pistachio Drive - Urban
- Avenue 18 ½ at Golden State Boulevard/Road 23 - Urban
- Avenue 17 at SR 99 SB Ramps - Rural
- Avenue 17 at SR 99 NB Ramps - Rural
- Avenue 17 at Golden State Boulevard - Rural
- Avenue 17 at Road 23 - Rural
- Avenue 15 ½ at Road 23 - Rural
- Avenue 14 at Road 23 - Rural

2030 with Alternative A Project

- Avenue 18 ½ at SR 99 NB ramps - Urban
- Avenue 18 ½ at Pistachio Drive - Urban
- Avenue 18 ½ at Golden State Boulevard/Road 23 - Urban
- Avenue 18 at Road 23 - Rural
- Avenue 15 ½ at Road 23 - Rural
- Avenue 14 at Road 23 - Rural

The following locations, by scenario, are also projected to exceed the available queue storage lengths with 95th percentile traffic conditions:

2030 No Project

- Avenue 18 ½ at SR 99 NB off-ramp
 - NB Left – PM peak hour
- Avenue 18 ½ at SR 99 SB off-ramp
 - SB Left-Through-Right – PM peak hour
- Avenue 17 at SR 99 SB off-ramp
 - SB Left – AM/PM peak hours
 - SB Right – PM peak hour
- Avenue 17 at SR 99 NB off-ramp
 - NB Left-Through – AM/PM peak hours
 - NB Right – AM/PM peak hours
- Avenue 15 ½/Cleveland Avenue at SR 99 NB off-ramp
 - NB Right – PM peak hour
- Avenue 15 ½/Cleveland Avenue at SR 99 SB off-ramp
 - SB Left-Through – PM peak hour
 - SB Right – PM peak hour

- Avenue 14/Olive Avenue at SR 99 SB off-ramp
 - SB Left – PM peak hour
 - SB Right – PM peak hour
- Avenue 12/Golden State Boulevard at SR 99 SB off-ramp
 - WB Left – AM/PM peak hours
- Avenue 12 at SR 99 NB off-ramp
 - NB Left-Through – PM peak hour
 - NB Right – PM peak hour
- Avenue 17 between SR 99 SB off-ramp and Golden State Boulevard
 - WB Left – PM peak hour

2030 with Alternative A Project

- Avenue 17 at SR 99 NB off-ramp
 - NB Left – AM/PM peak hours
 - NB Left-Through – AM/PM peak hours
 - NB Right – AM/PM peak hours
- Avenue 15 ½/Cleveland Avenue at SR 99 NB off-ramp
 - NB Right – PM peak hour
- Avenue 15 ½/Cleveland Avenue at SR 99 SB off-ramp
 - SB Left-Through – PM peak hour
 - SB Right – PM peak hour
- Avenue 12 at SR 99 NB off-ramp
 - NB Left-Through – PM peak hour
 - NB Right – PM peak hour
- Avenue 17 between SR 99 SB off-ramp and Golden State Boulevard
 - WB Left – AM/PM peak hours

The following locations, by scenario, are also projected to meet the ramp widening/auxiliary lane threshold:

2030 No Project

- Avenue 17 at SR 99 NB off-ramp – AM/PM peak hours

2030 with Alternative A Project

- Avenue 17 at SR 99 NB off-ramp – AM/PM peak hours
- Avenue 12/Golden State Boulevard at SR 99 SB off-ramp – PM peak hour

The following locations met the left-turn warrant for the 2030 Project Alternative A scenario:

- Avenue 12/Golden State Boulevard at SR 99 SB ramps
 - SB left-turn
- Avenue 18 at Road 23
 - NB left-turn
 - SB left-turn
- Avenue 17 at Road 23
 - NB left-turn
 - SB left-turn

- WB left-turn
- Avenue 17 at Golden State Boulevard
 - SB left-turn
 - EB left-turn
 - WB left-turn
- Ellis Street at Road 26
 - NB left-turn
 - SB left-turn
 - WB left-turn
- Avenue 18 ½ at Golden State Boulevard/Road 23
 - EB left-turn
 - WB left-turn

The following locations and movements will require either dual left-turn lanes or a separate right-turn lane:

- Avenue 18 ½ at SR 99 NB ramps
 - Dual EB left-turn lanes
- Avenue 17 at SR 99 NB ramps
 - Dual NB left-turn lanes
- Avenue 12/Golden State Boulevard at SR 99 SB ramps
 - Separate NB right-turn lane
 - Dual SB left-turn lanes
- Avenue 12 at Golden State Boulevard
 - Separate NB right-turn lane
 - Dual SB left-turn lanes
 - Dual EB left-turn lanes
- Avenue 12 at SR 99 NB ramps
 - Separate WB right-turn lane
- Avenue 17 at Golden State Boulevard
 - Separate NB right-turn lane
 - Dual SB left-turn lanes
 - Dual WB left-turn lanes
 - Separate WB right-turn lane
- Ellis Street at Road 26
 - Separate SB right-turn lane
- Avenue 16/Ellis Street at Golden State Boulevard
 - Separate NB right-turn lane
 - Dual WB left-turn lanes
 - Separate WB right-turn lane
- Avenue 16/Ellis Street at SR 99 NB ramps
 - Separate WB right-turn lane
 - Dual EB left-turn lanes
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps
 - Dual EB left-turn lanes
 - Separate WB right-turn lane
- Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps
 - Dual WB left-turn lanes

- Separate EB right-turn lane
- SR 145/Madera Avenue at SR 99 NB ramps
 - Dual NB left-turn lanes
 - Separate SB right-turn lane
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145
 - Dual NB left-turn lanes
 - Separate NB right-turn lane
 - Dual EB left-turn lanes
 - Separate EB right-turn lane
- Avenue 18 ½ at Golden State Boulevard/Road 23
 - Separate NB right-turn lane
 - Dual WB left-turn lanes

To mitigate the County segments, freeway segments, or intersections projected to operate below the appropriate adopted level of service standard, meet either the rural or urban peak hour volume warrant, meet the ramp widening/auxiliary lane threshold, or exceed the available storage lengths the following improvements, by scenario, are recommended:

2030 with Alternative A Project

County Segments

- Avenue 17 – SR 99 to Road 27
 - Restripe/widen from four (4) lanes to six (6) lanes
- Avenue 17 – Road 23 to SR 99
 - Restripe/widen from two (2) lanes to six (6) lanes

Freeway Segments

- SR 99 north of Avenue 18 1/2
 - Restripe/widen the NB leg from three (3) lanes to four (4) lanes
 - Restripe/widen the SB leg from three (3) lanes to four (4) lanes
- SR 99 between Avenue 18 ½ to Avenue 17
 - Restripe/widen the NB leg from three (3) lanes to four (4) lanes
 - Restripe/widen the SB leg from three (3) lanes to four (4) lanes
- SR 99 south of Avenue 17
 - Restripe/widen the NB leg from three (3) lanes to four (4) lanes
 - Restripe/widen the SB leg from three (3) lanes to four (4) lanes

Intersections

- Avenue 18 ½ at SR 99 NB ramps
 - Restripe/widen the EB approach, west leg, from one (1) left-turn lane and one (1) through lane, to dual (2) left-turn lanes and one (1) through lane
- Avenue 18 ½ at SR 99 SB ramps/Road 23
 - Restripe/widen the SB approach, north leg, from a shared left-right lane to one (1) left-turn lane and one (1) right-turn lane
- Avenue 18 ½ at Pistachio Drive
 - Although the Avenue 18 ½ at Pistachio Drive intersection is projected to meet the urban peak hour volume signal warrant, it will not be signalized due to its proximity to the SR 99 SB off-

ramp. The intersection will be restricted to right-in/right-out/left-in access, which reduces the need for a signal and allows the intersection to operate at an acceptable level of service without a signal.

- Avenue 18 ½ at Golden State Boulevard / Road 23
 - Signalize the intersection
 - Restripe/widen the NB approach, south leg, from one (1) left-turn lane and one (1)-through-right lane, to one (1) left-turn lane, one (1) through lane, and one (1) right-turn lane
 - Restripe/widen the SB approach, north leg, from one (1) shared left-through-right lane, to one (1) left-turn lane and one (1) through-right lane
 - Restripe/widen the WB approach, east leg, from one (1) shared left-through lane and one (1) right-turn lane, to dual (2) left-turn lanes and one (1) shared through-right lane
- Avenue 18 at Road 23
 - Signalize the intersection
- Avenue 17 at SR 99 NB ramps
 - Restripe/widen the NB approach, south leg, from one (1) left-turn lane, one (1) shared left-through lane, and two (2) right-turn lanes to three (3) left-turn lanes, one (1) shared through-right lane, and two (2) right-turn lanes
 - Restripe/widen the EB approach, west leg, from one (1) left-turn lane and two (2) through lanes to two (2) left-turn lanes and three (3) through lanes
 - Restripe/widen the WB approach, east leg, from two (2) through lanes and one (1) right-turn lane to two (2) through lanes and one (1) shared through-right lane
 - Widen the NB off-ramp to two (2) lanes with a NB auxiliary lane on SR 99
- Avenue 17 at SR 99 SB ramps
 - Restripe/widen the SB approach, north leg, from one (1) left-turn lane and one (1) right-turn lane to two (2) left-turn lanes and two (2) right-turn lanes
 - Restripe/widen the EB approach, west leg, from two (2) through lanes to four (4) through lanes
 - Restripe/widen the WB approach, east leg, from two (2) through lanes to three (3) through lanes
- Avenue 17 at Golden State Boulevard
 - Restripe/widen the NB approach, south leg, from one (1) left-turn lane, one (1) through lane, and one (1) right-turn lane to one (1) left-turn lane, one (1) through lane, and two (2) right-turn lanes
 - Restripe/widen the SB approach, north leg, from two (2) left-turn lanes and one (1) shared through-right lane to two (2) left-turn lanes, one (1) through lane and one (1) right-turn lane
 - Restripe/widen the EB approach, west leg, from one (1) left-turn lane, one (1) through lane, and one (1) shared through-right lane to two (2) left-turn lanes, two (2) through lanes, and one (1) shared through-right lane
 - Restripe/widen the WB approach, east leg, from one (1) left-turn lane, two (2) through lanes, and one (1) right-turn lane to two (2) left-turn lanes, two (2) through lanes, and one (1) shared through-right lane
- Avenue 17 at Road 23
 - Restripe/widen the NB approach, south leg, from one (1) shared left-through-right lane to one (1) left-turn lane and one (1) shared through-right lane
 - Restripe/widen the SB approach, north leg, from one (1) shared left-through-right lane to one (1) shared left-through lane and one (1) right-turn lane
 - Restripe/widen the EB approach, west leg, from one (1) shared left-through-right lane to one (1) shared left-through lane, one (1) through lane, and one (1) right-turn lane

- Restripe/widen the WB approach, east leg, from one (1) shared left-through-right lane to one (1) left-turn lane and one (1) through lane, and one (1) shared through-right lane
- Avenue 16/Ellis Street at Aviation Drive/Kennedy
 - Restripe/widen the NB approach, south leg, from one (1) left-turn lane and one (1) shared through-right lane to one (1) left-turn lane, one (1) through lane, and two (2) right-turn lanes
 - Restripe/widen the SB approach, north leg, from one (1) left-turn lane, one (1) through lane, and one (1) right-turn lane to two (2) left-turn lanes, one (1) through lane, and one (1) shared through-right lane
 - Restripe/widen the EB approach, west leg, from one (1) left-turn lane, one (1) through lane and one (1) shared through-right lane to one (1) left-turn lane, two (2) through lanes, and one (1) right-turn lane
 - Restripe/widen the WB approach, east leg, from one (1) left-turn lane, one (1) through lane, and one (1) shared through-right lane to two (2) left-turn lanes, one (1) through lane, and one (1) through-right lane
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps
 - Restripe/widen the EB approach, west leg, from one (1) left-turn lane and two (2) through lanes to two (2) left-turn lanes and two (2) through lanes
 - Restripe/widen the NB approach, south leg, from one (1) left-turn lane, one (1) shared left-through lane, and one (1) right-turn lane to one (1) left-turn lane, one (1) shared left-through lane, and two (2) right-turn lanes
- Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps
 - Restripe/widen the SB approach, north leg, from one (1) shared left-through lane and one (1) right-turn lane to two (2) left-turn lanes and one (1) shared through-right lane
- Avenue 15 ½ at Road 23
 - Signalize the intersection
- SR 145/Madera Avenue at SR 99 NB ramps
 - Restripe/widen the SB approach, north leg, from one (1) through lane and one (1) shared through-right lane to two (2) through lanes and one (1) right-turn lane
 - Restripe/widen the WB approach, east leg, from one (1) left-turn lane and one (1) shared through-right lane to two (2) left-turn lanes and one (1) shared through-right lane
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145
 - Restripe/widen the NB approach, south leg, from two (2) left-turn lanes, one (1) through lane, and one (1) shared through-right lane, to dual (2) left-turn lanes, two (2) through lanes, and one (1) shared through-right lane
 - Restripe/widen the SB approach, north leg, from one (1) shared left-through lane, one (1) through lane, and one (1) right-turn lane, to one (1) left-turn lane, two (2) through lanes, and one (1) right-turn lane
 - Restripe/widen the EB approach, west leg, from one (1) left-turn lane, one (1) through lane and one (1) right-turn lane, to dual (2) left-turn lanes, one (1) through lane, one (1) shared through-right lane and one (1) right-turn lane
- Olive Avenue/Avenue 14 at SR 99 SB off-ramp
 - Restripe/widen the SB approach, north leg, from two (2) left-turn lanes and one (1) right-turn lane to one (1) left-turn lane, one (1) shared left-right-turn lane, an one (1) right-turn lane
- Avenue 14 at Road 23
 - Signalize the intersection
 - Restripe/widen the SB approach, north leg, from one (1) shared left-through-right lane, to one (1) left-turn lane and one (1) shared through-right lane
 - Restripe/widen the EB approach, west leg, from one (1) shared left-through-right lane, to one (1) left-turn lane and one (1) shared through-right lane

- Avenue 12/Golden State Boulevard at SR 99 SB off ramps
 - Widen the SB off-ramp to two (2) lanes with a SB auxiliary lane on SR 99
- Avenue 12 at Golden State Boulevard
 - Restripe/widen the SB approach, north leg, from to dual (2) left-turn lanes, one (1) through lane and one (1) right-turn lane, to three (3) left-turn lanes, and one (1) shared through-right lane
 - Restripe/widen the WB approach, east leg, from one (1) left-turn lane, one (1) through lane, and one (1) shared through-right lane, to one (1) left-turn lane, three (3) through lanes, and one (1) right-turn lane
- Avenue 12 at SR 99 NB ramps
 - Restripe/widen the NB approach, south leg from a shared left-through lane and a separate right-turn lane, to dual (2) left-turn lanes, a shared through-right lane, and one (1) right-turn lane
 - Restripe/widen the EB approach, west leg, from one (1) left-turn lane and two (2) through lane, to dual (2) left-turn lanes and three (3) through lanes
 - Restripe/widen the WB approach, east leg, from two (2) through lanes and one (1) right-turn lane, to two (2) through lanes, one (1) shared through-right lane and one (1) right-turn lane

Table 79 shows the Mitigated 2030 with Project Alternative A levels of service for the County segments, freeway segments, and intersections for the Madera Site utilizing Figures 37 (lane configurations) and 29 (peak hour volumes) shown previously. The signalized intersection levels of service shown on Table 79 are representative of the whole intersection. Individual intersection movements or approaches may operate above or below the signalized level of service or delay shown on Table 79. The signalized levels of service or delay shown in Table 79 may not reflect the effects of 95th percentile queues that exceed the capacity for their movement. The Mitigated 2030 Project Alternative A freeway segment and intersection levels of service calculations for the Madera Site are included in the Appendices section Attachment VI – C – 35 and Attachment VI – C – 36 respectively. Figure 38 provides a graphical representation of the resulting Mitigated 2030 with Project Alternative A levels of service.

TABLE 79: MITIGATED 2030 WITH PROJECT CONDITIONS COUNTY SEGMENT, FREEWAY SEGMENT, AND INTERSECTION WEEKDAY LEVEL OF SERVICE MADERA SITE (ALTERNATIVE A, PROPOSED PROJECT)				
County Segment	AM Peak Hour		PM Peak Hour	
	LOS		LOS	
Avenue 18 ½ - Road 24 to Road 23	A		B	
Road 23 – Avenue 18 ½ to Avenue 17	D		D	
Avenue 17 – Road 23 to SR 99	A		C	
Avenue 17 – SR 99 to Road 27	A		B	
Golden State Boulevard – Avenue 17 to Road 23	A		D	
Freeway Segment	AM Peak Hour		PM Peak Hour	
	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)
SR 99 north of Avenue 18 ½				
• NB	C	19.3	C	22.7
• SB	B	17.8	C	25.7
SR 99 between Avenue 18 ½ and Avenue 17				
• NB	C	19.2	C	21.7
• SB	B	17.5	C	25.2
SR 99 south of Avenue 17				
• NB	C	25.9	E	41.8
• SB	C	21.1	F	---
Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay¹ (secs)	LOS	Delay¹ (secs)
Avenue 18 ½ at SR 99 NB ramps	B	13.5	B	12.8
Avenue 18 ½ at SR 99 SB ramps/Road 23	A	9.6	B	14.2
Avenue 18 ½ at Pistachio Drive				
• EB Approach	A	0.7	A	2.6
• SB Right	B	14.2	C	17.9
Avenue 18 ½ at Golden State Boulevard	B	12.6	B	17.4
Avenue 18 at Road 23	A	5.1	A	7.4
Avenue 17 at SR 99 NB ramps	C	22.2	F	96.0
Avenue 17 at SR 99 SB ramps	A	5.1	B	13.6
Avenue 17 at Golden State Boulevard	C	23.3	F	133.2
Avenue 17 at Road 23	B	13.3	B	16.4
Ellis Street at Road 26	A	9.9	B	19.8
Avenue 16/Ellis Street at SR NB ramps	B	11.7	B	13.8
Avenue 16/Ellis Street at SR 99 SB ramps	A	7.4	B	10.9

SR = State Route ¹ Delay per vehicle secs = seconds WB = westbound
 NB = northbound SB = southbound EB = eastbound --- = beyond software limitations
 Bolded Text = intersection/movement operates below the appropriate level of service standard

TABLE 79:
MITIGATED 2030 WITH PROJECT CONDITIONS
COUNTY SEGMENT, FREEWAY SEGMENT, AND INTERSECTION WEEKDAY LEVEL OF SERVICE
MADERA SITE (ALTERNATIVE A, PROPOSED PROJECT)

Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay ¹ (secs)	LOS	Delay ¹ (secs)
Avenue 16/Ellis Street at Aviation Drive	C	22.7	D	53.8
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	B	12.5	C	29.2
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps	B	18.3	C	27.9
Avenue 15 ½ at Road 23	A	5.4	A	7.4
SR 145/Madera Avenue at SR 99 NB ramps	B	16.6	C	30.7
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	B	15.3	C	25.1
Olive Avenue/Avenue 14 at SR 99 SB off-ramp	B	12.7	B	16.6
Avenue 14 at Road 23	A	7.0	A	6.9
Avenue 12/Golden State Boulevard at SR 99 SB ramps	C	20.6	B	17.8
Avenue 12 at Golden State Boulevard	C	34.4	D	39.5
Avenue 12 at SR 99 NB ramps	B	16.5	B	18.0

SR = State Route ¹ Delay per vehicle secs = seconds WB = westbound
 NB = northbound SB = southbound EB = eastbound --- = beyond software limitations
 Bolded Text = intersection/movement operates below the appropriate level of service standard

County segments, freeway segments, and intersections within the study area that are projected to operate below the adopted level of service standards are shown bolded in Table 79. As shown in Table 79 and Figure 38, two (2) freeway segments and two (2) intersections are still projected to operate below the adopted level of service standard even with the recommended improvements. The NB and SB SR 99 south of Avenue 17 freeway segments are projected to operate at LOS “E” and “F” respectively in the PM peak hour. Per discussions with Caltrans staff, SR 99 is only programmed for eight (8) lanes for this segment. The Avenue 17 at SR 99 NB ramps and Avenue 17 at Golden State Boulevard intersections are still projected to operate at a LOS “F” in the PM peak hour. Per discussions with Caltrans staff, widening Avenue 17 to eight (8) lanes is not recommended. However with the proposed Alternative A mitigations, these four (4) locations in the 2030 Project scenario are projected to operate above the 2030 No Project measures of effectiveness (freeway density and intersection delay). Therefore these four (4) locations should be viewed as mitigated as appropriate by the Project. The remaining County segments, freeway segments, and intersections are projected to operate at or above the adopted level of service standards in the Mitigated 2030 with Project Alternative A scenario.

Queue Lengths

Table 80 shows the estimated Mitigated 2030 with Project Alternative A conditions queue lengths developed from the level of service analyses for the Madera Site study locations. Please note that storage lengths for mitigated scenarios may be different than those shown in the Existing Queue Storage Length column. Existing ramp queue storage lengths were used since final ramp lengths for future improvements are not known.

TABLE 80: MITIGATED 2030 WITH PROJECT CONDITIONS WEEKDAY 95th PERCENTILE QUEUE LENGTH MADERA SITE (ALTERNATIVE A, PROPOSED PROJECT)		
Intersection	Existing Queue Storage Length (ft)	95th Percentile Queue Length (ft) (AM/PM)
SR 99 NB off-ramp at Avenue 18 ½ • NB Left • NB Through-Right	1,204 ¹ (770 ²)	148/188 25/0
SR 99 SB off-ramp at Avenue 18 1/2 • SB Left • SB Right	1,256 ¹ (822 ²)	82/124 61/#119
SR 99 SB off-ramp at Avenue 17 • SB Left • SB Right	1,341 ¹ (907 ²) 589 ³ 589 ³	#110/#308 46/122
SR 99 NB off-ramp at Avenue 17 • NB Left • NB Through-Right • NB Right	1,060 ¹ (626 ²) 45 ³ 45 ³ 45 ³	275/#838 49/#664 29/#541
SR 99 NB off-ramp at Avenue 16/Ellis Avenue • NB Left • NB Through-Right	1,150 ¹ (716 ²) 150 ³ 150 ³	55/89 29/48
SR 99 SB off-ramp at Avenue 16/Ellis Avenue • SB Left • SB Right	1,020 ¹ (586 ²) 225 ³ 225 ³	34/56 24/127
SR 99 NB off-ramp at Avenue 15 ½ /Cleveland Avenue • NB Left • NB Left-Through • NB Right	881 ¹ (447 ²) 353 ³ 353 ³ 353 ³	137/231 137/235 74/#383

ft = feet 95th percentile queue length - is minimum amount of storage needed for each movement
 NB = northbound SB = southbound WB = westbound EB = eastbound
 SR = State Route ¹ = Total ramp length ² = Calculated storage distance
³ = Distance of ramp striped as 2-lanes
 # = 95th percentile volume exceeds capacity, queue may be longer, queue shown is maximum after two (2) cycles
 m = volume for 95th percentile queue is metered by upstream signal
Bolded Text = 95th percentile queues exceed the available storage capacity
⁴ = Storage lengths for mitigated scenarios may be different than those shown in the Existing Queue Storage Length column

TABLE 80: MITIGATED 2030 WITH PROJECT CONDITIONS WEEKDAY 95TH PERCENTILE QUEUE LENGTH MADERA SITE (ALTERNATIVE A, PROPOSED PROJECT)		
Intersection	Existing Queue Storage Length (ft)	95th Percentile Queue Length (ft) (AM/PM)
SR 99 SB off-ramp at Avenue 15 ½ /Cleveland Avenue • SB Left • SB Through-Right	1,000 ¹ (566 ²) 65 ³ 65 ³	137/#360 103/#334
SR 99 NB off-ramp at SR 145/Madera Avenue • WB Left • WB Through-Right	1,310 ¹ (876 ²) 90 ³ 90 ³	104/115 0/45
SR 99 SB off-ramp at Avenue 14/Olive Avenue • SB Left-Right • SB Right	1,254 ¹ (820 ²) 65 ³ 65 ³	154/248 137/242
SR 99 SB off-ramp at Avenue 12/Golden State Boulevard • WB Left • WB Right	1,431 ¹ (997 ²)	359/445 23/32
SR 99 NB off-ramp at Avenue 12 • NB Left • NB Through-Right • NB Right	1,223 ¹ (789 ²) 49 ³ 49 ³ 49 ³	187/182 101/182 102/180
Avenue 17 between SR 99 SB off-ramp and Golden State Boulevard • WB Left (at Golden State Boulevard) • WB Through-Right • WB Right • EB Through (at SR 99 SB off-ramp)	481	#270/m#431 262/ #1,084 90/m213

ft = feet 95th percentile queue length - is minimum amount of storage needed for each movement

NB = northbound SB = southbound WB = westbound EB = eastbound

SR = State Route ¹ = Total ramp length ² = Calculated storage distance

³ = Distance of ramp striped as 2-lanes

= 95th percentile volume exceeds capacity, queue may be longer, queue shown is maximum after two (2) cycles

m = volume for 95th percentile queue is metered by upstream signal

Bolded Text = 95th percentile queues exceed the available storage capacity

⁴ = Storage lengths for mitigated scenarios may be different than those shown in the Existing Queue Storage Length column

Movements with queue lengths that are projected to exceed their available storage lengths are shown bolded in Table 80. As shown in Table 80, the following locations by time period are projected to exceed the allowable storage length with 95th percentile traffic conditions:

- Avenue 17 at SR 99 NB off-ramp
 - NB Left – PM peak hour
 - NB Left-Through – PM peak hour

- NB Right – PM peak hour
- Avenue 17 between SR 99 SB off-ramp and Golden State Boulevard
 - WB Through – PM peak hour

These queue exceedances indicate that it is likely that at some point during either the AM or PM peak hour, deceleration for vehicles utilizing these various ramps would likely occur on the mainline. The queue exceedances on Avenue 17 indicate that at some point during either the AM or PM peak hours, spillback from vehicles in the through or turn lanes is expected to block the adjacent intersection. It should be noted that these queue exceedances are estimated based on the level of service analysis and are provided for information only. They are to be used in the design process and are not intended for use as a significance criteria.

All remaining study queue lengths are not projected to exceed the allowable storage lengths in the 95th percentile condition in the Mitigated 2030 Project Alternative A scenario.

Alternative B (Reduced Intensity Alternative)

Roadway Levels of Service

Based on the information provided in the previous sections, the following locations, by scenario, are projected to operate below the adopted level of service standards:

2030 No Project

County Segments

- Avenue 17 – Road 23 to SR 99 – AM/PM peak hours – LOS “F”
- Avenue 17 – SR 99 to Road 27 – AM/PM peak hours – LOS “E”/“F”

Freeway Segments

- SR 99 north of Avenue 18 ½
 - NB – AM/PM peak hours – LOS “D”
 - SB – PM peak hour – LOS “E”
- SR 99 between Avenue 18 ½ and Avenue 17
 - NB – AM/PM peak hours – LOS “D”
 - SB – PM peak hour – LOS “E”
- SR 99 south of Avenue 17
 - NB – AM/PM peak hours – LOS “E”/“F”
 - SB – AM/PM peak hours – LOS “D”/“F”

Intersections

- Avenue 18 ½ at SR 99 NB ramps
 - NB Approach – AM/PM peak hours – LOS “F”
- Avenue 18 ½ at SR 99 SB Ramps
 - SB Approach – AM/PM peak hours – LOS “F”
- Avenue 18 ½ at Pistachio Drive
 - SB Approach – PM peak hour – LOS “F”
- Avenue 18 ½ at Golden State Boulevard/Road 23
 - NB Approach – PM peak hour – LOS “F”

- SB Approach – AM/PM peak hours – LOS “F”
- Avenue 17 at SR 99 NB ramps
 - EB Left – AM/PM peak hours – LOS “D”/“F”
 - NB Approach – AM/PM peak hours – LOS “F”
- Avenue 17 at SR 99 SB ramps
 - SB Approach – AM/PM peak hours – LOS “F”
- Avenue 17 at Golden State Boulevard
 - WB Left – AM/PM peak hours – LOS “F”
 - NB Approach – AM/PM peak hours – LOS “F”
 - SB Approach – AM/PM peak hours – LOS “F”
- Avenue 17 at Road 23
 - WB Approach – AM/PM peak hours – LOS “F”
 - EB Approach – AM/PM peak hours – LOS “F”
- Avenue 16/Ellis Overcrossing at Aviation Drive – AM/PM peak hours – LOS “F”
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps – PM peak hour – LOS “F”
- Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps – PM peak hour – LOS “F”
- SR 145/Madera Avenue at SR 99 NB ramps – AM/PM peak hours – LOS “D”/“F”
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145 – AM/PM peak hours – LOS “E”/“F”
- Olive Avenue/Avenue 14 at SR 99 SB off-ramp – PM peak hour – LOS “F”
- Avenue 12/Golden State Boulevard at SR 99 SB ramps
 - WB Approach – AM/PM peak hours – LOS “F”
- Avenue 12 at Golden State Boulevard – AM/PM peak hours – LOS “F”
- Avenue 12 at SR 99 NB ramps – PM peak hour – LOS “E”

2030 with Alternative B Project

County Segments

- Avenue 17 – Road 23 to SR 99 – AM/PM peak hours – LOS “F”
- Avenue 17 – SR 99 to Road 27 – AM/PM peak hours – LOS “F”

Freeway Segments

- SR 99 north of Avenue 18 ½
 - NB – AM/PM peak hours – LOS “D”
 - SB – PM peak hour – LOS “E”
- SR 99 between Avenue 18 ½ and Avenue 17
 - NB – AM/PM peak hours – LOS “D”
 - SB – PM peak hour – LOS “E”
- SR 99 south of Avenue 17
 - NB – AM/PM peak hours – LOS “E”/“F”
 - SB – AM/PM peak hours – LOS “D”/“F”

Intersections

- Avenue 18 ½ at SR 99 SB ramps – PM peak hour – LOS “D”
- Avenue 18 ½ at Pistachio Drive
 - SB Approach – PM peak hour – LOS “F”
- Avenue 18 ½ at Golden State Boulevard/Road 23

- NB Approach – PM peak hour – LOS “F”
- SB Approach – AM/PM peak hours – LOS “F”
- Avenue 17 at SR 99 NB ramps – AM/PM peak hours – LOS “E”/“F”
- Avenue 17 at SR 99 SB ramps – PM peak hour – LOS “F”
- Avenue 17 at Golden State Boulevard – AM/PM peak hours – LOS “E”/“F”
- Avenue 17 at Road 23 – AM/PM peak hours – LOS “E”/“F”
- Avenue 16/Ellis Overcrossing at Aviation Drive – AM/PM peak hours – LOS “F”
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps – PM peak hour – LOS “F”
- Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps – PM peak hour – LOS “E”
- Avenue 15 ½ at Road 23
 - WB Approach – PM peak hour – LOS “E”
- SR 145/Madera Avenue at SR 99 NB ramps – AM/PM peak hours – LOS “D”/“F”
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145 – PM peak hour – LOS “F”
- Avenue 12 at Golden State Boulevard – AM/PM peak hours – LOS “E”/“F”
- Avenue 12 at SR 99 NB ramps – PM peak hour – LOS “E”

The following locations, by scenario are also projected to meet either the rural or urban peak hour volume warrant:

2030 No Project

- Avenue 18 ½ at SR 99 SB ramps - Urban
- Avenue 18 ½ at SR 99 NB ramps - Urban
- Avenue 18 ½ at Pistachio Drive - Urban
- Avenue 18 ½ at Golden State Boulevard/Road 23 - Urban
- Avenue 17 at SR 99 SB Ramps - Rural
- Avenue 17 at SR 99 NB Ramps - Rural
- Avenue 17 at Golden State Boulevard - Rural
- Avenue 17 at Road 23 - Rural
- Avenue 15 ½ at Road 23 - Rural
- Avenue 14 at Road 23 - Rural

2030 with Alternative B Project

- Avenue 18 ½ at SR 99 NB ramps - Urban
- Avenue 18 ½ at Pistachio Drive - Urban
- Avenue 18 ½ at Golden State Boulevard/Road 23 - Urban
- Avenue 18 at Road 23 - Rural
- Avenue 15 ½ at Road 23 - Rural
- Avenue 14 at Road 23 - Rural

The following locations, by scenario, are also projected to exceed the available queue storage lengths with 95th percentile traffic conditions:

2030 No Project

- Avenue 18 ½ at SR 99 NB off-ramp
 - NB Left – PM peak hour
- Avenue 18 ½ at SR 99 SB off-ramp
 - SB Left-Through-Right – PM peak hour

- Avenue 17 at SR 99 SB off-ramp
 - SB Left – AM/PM peak hours
 - SB Right – PM peak hour
- Avenue 17 at SR 99 NB off-ramp
 - NB Left-Through – AM/PM peak hours
 - NB Right – AM/PM peak hours
- Avenue 15 ½/Cleveland Avenue at SR 99 NB off-ramp
 - NB Right – PM peak hour
- Avenue 15 ½/Cleveland Avenue at SR 99 SB off-ramp
 - SB Left-Through – PM peak hour
 - SB Right – PM peak hour
- Avenue 14/Olive Avenue at SR 99 SB off-ramp
 - SB Left – PM peak hour
 - SB Right – PM peak hour
- Avenue 12/Golden State Boulevard at SR 99 SB off-ramp
 - WB Left – AM/PM peak hours
- Avenue 12 at SR 99 NB off-ramp
 - NB Left-Through – PM peak hour
 - NB Right – PM peak hour
- Avenue 17 between SR 99 SB off-ramp and Golden State Boulevard
 - WB Left – PM peak hour

2030 with Alternative B Project

- Avenue 17 at SR 99 NB off-ramp
 - NB Left – AM/PM peak hours
 - NB Left-Through – AM/PM peak hours
 - NB Right – AM/PM peak hours
- Avenue 15 ½/Cleveland Avenue at SR 99 NB off-ramp
 - NB Right – PM peak hour
- Avenue 15 ½/Cleveland Avenue at SR 99 SB off-ramp
 - SB Left-Through – PM peak hour
 - SB Right – PM peak hour
- Avenue 12 at SR 99 NB off-ramp
 - NB Left-Through – PM peak hour
 - NB Right – PM peak hour
- Avenue 17 between SR 99 SB off-ramp and Golden State Boulevard
 - WB Left – AM/PM peak hours

The following locations, by scenario, are also projected to meet the ramp widening/auxiliary lane threshold:

2030 No Project

- Avenue 17 at SR 99 NB off-ramp – AM/PM peak hours

2030 with Alternative B Project

- Avenue 17 at SR 99 NB off-ramp – AM/PM peak hours
- Avenue 12/Golden State Boulevard at SR 99 SB off-ramp – PM peak hour

The following locations met the left-turn warrant for the 2030 with Project Alternative B scenario:

- Avenue 12/Golden State Boulevard at SR 99 SB ramps
 - SB left-turn
- Avenue 18 at Road 23
 - NB left-turn
 - SB left-turn
- Avenue 17 at Road 23
 - NB left-turn
 - SB left-turn
 - WB left-turn
- Avenue 17 at Golden State Boulevard
 - SB left-turn
 - EB left-turn
 - WB left-turn
- Ellis Street at Road 26
 - NB left-turn
 - SB left-turn
 - WB left-turn
- Avenue 18 ½ at Golden State Boulevard/Road 23
 - EB left-turn
 - WB left-turn

The following locations and movements will require either dual left-turn lanes or a separate right-turn lane:

- Avenue 18 ½ at SR 99 NB ramps
 - Dual EB left-turn lanes
- Avenue 17 at SR 99 NB ramps
 - Dual NB left-turn lanes
- Avenue 12/Golden State Boulevard at SR 99 SB ramps
 - Separate NB right-turn lane
 - Dual SB left-turn lanes
- Avenue 12 at Golden State Boulevard
 - Separate NB right-turn lane
 - Dual SB left-turn lanes
 - Dual EB left-turn lanes
- Avenue 12 at SR 99 NB ramps
 - Separate WB right-turn lane
- Avenue 17 at Golden State Boulevard
 - Separate NB right-turn lane
 - Dual SB left-turn lanes
 - Dual WB left-turn lanes
 - Separate WB right-turn lane
- Ellis Street at Road 26
 - Separate SB right-turn lane
- Avenue 16/Ellis Street at Golden State Boulevard
 - Separate NB right-turn lane
 - Dual WB left-turn lanes

- Separate WB right-turn lane
- Avenue 16/Ellis Street at SR 99 NB ramps
 - Separate WB right-turn lane
 - Dual EB left-turn lanes
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps
 - Dual EB left-turn lanes
 - Separate WB right-turn lane
- Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps
 - Dual WB left-turn lanes
 - Separate EB right-turn lane
- SR 145/Madera Avenue at SR 99 NB ramps
 - Dual NB left-turn lanes
 - Separate SB right-turn lane
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145
 - Dual NB left-turn lanes
 - Separate NB right-turn lane
 - Dual EB left-turn lanes
 - Separate EB right-turn lane
- Avenue 18 ½ at Golden State Boulevard/Road 23
 - Separate NB right-turn lane
 - Dual WB left-turn lanes

To mitigate the County segments, freeway segments, or intersections projected to operate below the appropriate adopted level of service standard, meet either the rural or urban peak hour volume warrant, meet the ramp widening/auxiliary lane threshold, or exceed the available storage lengths the following improvements, by scenario, are recommended:

2030 with Alternative B Project

County Segments

- Avenue 17 – SR 99 to Road 27
 - Restripe/widen from four (4) lanes to six (6) lanes
- Avenue 17 – Road 23 to SR 99
 - Restripe/widen from two (2) lanes to six (6) lanes

Freeway Segments

- SR 99 north of Avenue 18 1/2
 - Restripe/widen the NB leg from three (3) lanes to four (4) lanes
 - Restripe/widen the SB leg from three (3) lanes to four (4) lanes
- SR 99 between Avenue 18 ½ to Avenue 17
 - Restripe/widen the NB leg from three (3) lanes to four (4) lanes
 - Restripe/widen the SB leg from three (3) lanes to four (4) lanes
- SR 99 south of Avenue 17
 - Restripe/widen the NB leg from three (3) lanes to four (4) lanes
 - Restripe/widen the SB leg from three (3) lanes to four (4) lanes

Intersections

- Avenue 18 ½ at SR 99 NB ramps
 - Restripe/widen the EB approach, west leg, from one (1) left-turn lane and one (1) through lane, to dual (2) left-turn lanes and one (1) through lane
- Avenue 18 ½ at SR 99 SB ramps/Road 23
 - Restripe/widen the SB approach, north leg, from a shared left-right lane to one (1) left-turn lane and one (1) right-turn lane
- Avenue 18 ½ at Pistachio Drive
 - Although the Avenue 18 ½ at Pistachio Drive intersection is projected to meet the urban peak hour volume signal warrant, it will not be signalized due to its proximity to the SR 99 SB off-ramp. The intersection will be restricted to right-in/right-out/left-in access, which reduces the need for a signal and allows the intersection to operate at an acceptable level of service without a signal.
- Avenue 18 ½ at Golden State Boulevard / Road 23
 - Signalize the intersection
 - Restripe/widen the NB approach, south leg, from one (1) left-turn lane and one (1)-through-right lane, to one (1) left-turn lane, one (1) through lane, and one (1) right-turn lane
 - Restripe/widen the SB approach, north leg, from one (1) shared left-through-right lane, to one (1) left-turn lane and one (1) through-right lane
 - Restripe/widen the WB approach, east leg, from one (1) shared left-through lane and one (1) right-turn lane, to dual (2) left-turn lanes and one (1) shared through-right lane
- Avenue 18 at Road 23
 - Signalize the intersection
- Avenue 17 at SR 99 NB ramps
 - Restripe/widen the NB approach, south leg, from one (1) left-turn lane, one (1) shared left-through lane, and two (2) right-turn lanes to three (3) left-turn lanes, one (1) shared through-right lane, and two (2) right-turn lanes
 - Restripe/widen the EB approach, west leg, from one (1) left-turn lane and two (2) through lanes to two (2) left-turn lanes and three (3) through lanes
 - Restripe/widen the WB approach, east leg, from two (2) through lanes and one (1) right-turn lane to two (2) through lanes and one (1) shared through-right lane
 - Widen the NB off-ramp to two (2) lanes with a NB auxiliary lane on SR 99
- Avenue 17 at SR 99 SB ramps
 - Restripe/widen the SB approach, north leg, from one (1) left-turn lane and one (1) right-turn lane to two (2) left-turn lanes and two (2) right-turn lanes
 - Restripe/widen the EB approach, west leg, from two (2) through lanes to four (4) through lanes
 - Restripe/widen the WB approach, east leg, from two (2) through lanes to three (3) through lanes
- Avenue 17 at Golden State Boulevard
 - Restripe/widen the NB approach, south leg, from one (1) left-turn lane, one (1) through lane, and one (1) right-turn lane to one (1) left-turn lane, one (1) through lane, and two (2) right-turn lanes
 - Restripe/widen the SB approach, north leg, from two (2) left-turn lanes and one (1) shared through-right lane to two (2) left-turn lanes, one (1) through lane and one (1) right-turn lane
 - Restripe/widen the EB approach, west leg, from one (1) left-turn lane, one (1) through lane, and one (1) shared through-right lane to two (2) left-turn lanes, two (2) through lanes, and one (1) shared through-right lane

- Restripe/widen the WB approach, east leg, from one (1) left-turn lane, two (2) through lanes, and one (1) right-turn lane to two (2) left-turn lanes, two (2) through lanes, and one (1) shared through-right lane
- Avenue 17 at Road 23
 - Restripe/widen the NB approach, south leg, from one (1) shared left-through-right lane to one (1) left-turn lane and one (1) shared through-right lane
 - Restripe/widen the SB approach, north leg, from one (1) shared left-through-right lane to one (1) shared left-through lane and one (1) right-turn lane
 - Restripe/widen the EB approach, west leg, from one (1) shared left-through-right lane to one (1) shared left-through lane, one (1) through lane, and one (1) right-turn lane
 - Restripe/widen the WB approach, east leg, from one (1) shared left-through-right lane to one (1) left-turn lane and one (1) through lane, and one (1) shared through-right lane
- Avenue 16/Ellis Street at Aviation Drive/Kennedy
 - Restripe/widen the NB approach, south leg, from one (1) left-turn lane and one (1) shared through-right lane to one (1) left-turn lane, one (1) through lane, and two (2) right-turn lanes
 - Restripe/widen the SB approach, north leg, from one (1) left-turn lane, one (1) through lane, and one (1) right-turn lane to two (2) left-turn lanes, one (1) through lane, and one (1) shared through-right lane
 - Restripe/widen the EB approach, west leg, from one (1) left-turn lane, one (1) through lane and one (1) shared through-right lane to one (1) left-turn lane, two (2) through lanes, and one (1) right-turn lane
 - Restripe/widen the WB approach, east leg, from one (1) left-turn lane, one (1) through lane, and one (1) shared through-right lane to two (2) left-turn lanes, one (1) through lane, and one (1) through-right lane
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps
 - Restripe/widen the EB approach, west leg, from one (1) left-turn lane and two (2) through lanes to two (2) left-turn lanes and two (2) through lanes
 - Restripe/widen the NB approach, south leg, from one (1) left-turn lane, one (1) shared left-through lane, and one (1) right-turn lane to one (1) left-turn lane, one (1) shared left-through lane, and two (2) right-turn lanes
- Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps
 - Restripe/widen the SB approach, north leg, from one (1) shared left-through lane and one (1) right-turn lane to two (2) left-turn lanes and one (1) shared through-right lane
- Avenue 15 ½ at Road 23
 - Signalize the intersection
- SR 145/Madera Avenue at SR 99 NB ramps
 - Restripe/widen the SB approach, north leg, from one (1) through lane and one (1) shared through-right lane to two (2) through lanes and one (1) right-turn lane
 - Restripe/widen the WB approach, east leg, from one (1) left-turn lane and one (1) shared through-right lane to two (2) left-turn lanes and one (1) shared through-right lane
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145
 - Restripe/widen the NB approach, south leg, from two (2) left-turn lanes, one (1) through lane, and one (1) shared through-right lane, to dual (2) left-turn lanes, two (2) through lanes, and one (1) shared through-right lane
 - Restripe/widen the SB approach, north leg, from one (1) shared left-through lane, one (1) through lane, and one (1) right-turn lane, to one (1) left-turn lane, two (2) through lanes, and one (1) right-turn lane

- Restripe/widen the EB approach, west leg, from one (1) left-turn lane, one (1) through lane and one (1) right-turn lane, to dual (2) left-turn lanes, one (1) through lane, one (1) shared through-right lane and one (1) right-turn lane
- Olive Avenue/Avenue 14 at SR 99 SB off-ramp
 - Restripe/widen the SB approach, north leg, from two (2) left-turn lanes and one (1) right-turn lane to one (1) left-turn lane, one (1) shared left-right-turn lane, and one (1) right-turn lane
- Avenue 14 at Road 23
 - Signalize the intersection
 - Restripe/widen the SB approach, north leg, from one (1) shared left-through-right lane, to one (1) left-turn lane and one (1) shared through-right lane
 - Restripe/widen the EB approach, west leg, from one (1) shared left-through-right lane, to one (1) left-turn lane and one (1) shared through-right lane
- Avenue 12/Golden State Boulevard at SR 99 SB off ramps
 - Widen the SB off-ramp to two (2) lanes with a SB auxiliary lane on SR 99
- Avenue 12 at Golden State Boulevard
 - Restripe/widen the SB approach, north leg, from to dual (2) left-turn lanes, one (1) through lane and one (1) right-turn lane, to three (3) left-turn lanes, and one (1) shared through-right lane
 - Restripe/widen the WB approach, east leg, from one (1) left-turn lane, one (1) through lane, and one (1) shared through-right lane, to one (1) left-turn lane, three (3) through lanes, and one (1) right-turn lane
- Avenue 12 at SR 99 NB ramps
 - Restripe/widen the NB approach, south leg from a shared left-through lane and a separate right-turn lane, to dual (2) left-turn lanes, a shared through-right lane, and one (1) right-turn lane
 - Restripe/widen the EB approach, west leg, from one (1) left-turn lane and two (2) through lane, to dual (2) left-turn lanes and three (3) through lanes
 - Restripe/widen the WB approach, east leg, from two (2) through lanes and one (1) right-turn lane, to two (2) through lanes, one (1) shared through-right lane and one (1) right-turn lane

Table 81 shows the Mitigated 2030 with Project Alternative B levels of service for the County segments, freeway segments, and intersections for the Madera Site utilizing Figures 39 (lane configurations) and 32 (peak hour volumes) shown previously. The signalized intersection levels of service shown on Table 81 are representative of the whole intersection. Individual intersection movements or approaches may operate above or below the signalized level of service or delay shown on Table 81. The signalized levels of service or delay shown in Table 81 may not reflect the effects of 95th percentile queues that exceed the capacity for their movement. The Mitigated 2030 Project Alternative B freeway segment and intersection levels of service calculations for the Madera Site are included in the Appendices section Attachment VI – C – 37 and Attachment VI – C – 38 respectively. Figure 40 provides a graphical representation of the resulting Mitigated 2030 with Project Alternative B levels of service.

TABLE 81: MITIGATED WITH 2030 PROJECT CONDITIONS COUNTY SEGMENT, FREEWAY SEGMENT, AND INTERSECTION WEEKDAY LEVEL OF SERVICE MADERA SITE (ALTERNATIVE B, REDUCED INTENSITY ALTERNATIVE)				
County Segment	AM Peak Hour		PM Peak Hour	
	LOS		LOS	
Avenue 18 ½ - Road 24 to Road 23	A		B	
Road 23 – Avenue 18 ½ to Avenue 17	D		D	
Avenue 17 – Road 23 to SR 99	A		C	
Avenue 17 – SR 99 to Road 27	A		B	
Golden State Boulevard – Avenue 17 to Road 23	A		C	
Freeway Segment	AM Peak Hour		PM Peak Hour	
	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)
SR 99 north of Avenue 18 ½				
• NB	C	19.4	C	23.0
• SB	B	17.8	C	26.0
SR 99 between Avenue 18 ½ and Avenue 17				
• NB	C	19.3	C	22.2
• SB	B	17.6	C	25.7
SR 99 south of Avenue 17				
• NB	C	25.5	E	40.9
• SB	C	21.0	F	---
Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay¹ (secs)	LOS	Delay¹ (secs)
Avenue 18 ½ at SR 99 NB ramps	B	12.9	B	11.3
Avenue 18 ½ at SR 99 SB ramps/Road 23	A	9.7	B	14.7
Avenue 18 ½ at Pistachio Drive				
• EB Approach	A	0.7	A	2.5
• SB Right	B	14.0	C	17.4
Avenue 18 ½ at Golden State Boulevard	B	14.6	B	16.3
Avenue 18 at Road 23	A	4.8	A	7.1
Avenue 17 at SR 99 NB ramps	C	21.5	F	91.1
Avenue 17 at SR 99 SB ramps	A	5.1	B	11.8
Avenue 17 at Golden State Boulevard	C	22.4	F	118.6
Avenue 17 at Road 23	B	13.2	B	16.0

SR = State Route ¹ Delay per vehicle secs = seconds WB = westbound

NB = northbound SB = southbound EB = eastbound

Bolded Text = intersection/movement operates below the appropriate level of service standard

TABLE 81:
MITIGATED WITH 2030 PROJECT CONDITIONS
COUNTY SEGMENT, FREEWAY SEGMENT, AND INTERSECTION WEEKDAY LEVEL OF SERVICE
MADERA SITE (ALTERNATIVE B, REDUCED INTENSITY ALTERNATIVE)

Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay ¹ (secs)	LOS	Delay ¹ (secs)
Ellis Street at Road 26	A	9.9	B	19.7
Avenue 16/Ellis Street at SR NB ramps	B	11.7	B	13.9
Avenue 16/Ellis Street at SR 99 SB ramps	A	7.4	B	10.8
Avenue 16/Ellis Street at Aviation Drive	C	22.4	D	52.4
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	B	12.4	C	28.9
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps	B	18.2	C	27.2
Avenue 15 ½ at Road 23	A	5.4	A	7.1
SR 145/Madera Avenue at SR 99 NB ramps	B	15.2	C	23.3
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	B	15.8	C	28.6
Olive Avenue/Avenue 14 at SR 99 SB off-ramp	B	12.7	B	19.0
Avenue 14 at Road 23	A	7.0	A	7.0
Avenue 12/Golden State Boulevard at SR 99 SB ramps	B	17.1	B	17.1
Avenue 12 at Golden State Boulevard	C	27.3	D	39.9
Avenue 12 at SR 99 NB ramps	B	11.5	B	15.0

SR = State Route ¹ Delay per vehicle secs = seconds WB = westbound
NB = northbound SB = southbound EB = eastbound
Bolded Text = intersection/movement operates below the appropriate level of service standard

County segments, freeway segments, and intersections within the study area that are projected to operate below the adopted level of service standards are shown bolded in Table 81. As shown in Table 81 and Figure 40, two (2) freeway segments and two (2) intersections are still projected to operate below the adopted level of service standard even with the recommended improvements. The NB and SB SR 99 south of Avenue 17 freeway segments are projected to operate at LOS “E” and “F” respectively in the PM peak hour. Per discussions with Caltrans staff, SR 99 is only programmed for eight (8) lanes for this segment. The Avenue 17 at SR 99 NB ramps and Avenue 17 at Golden State Boulevard intersections are still projected to operate at a LOS “F” in the PM peak hour. Per discussions with Caltrans staff, widening Avenue 17 to eight (8) lanes is not recommended. However with the proposed Alternative B mitigations, these four (4) locations in the 2030 Project scenario are projected to operate above the 2030 No Project measures of effectiveness (freeway density and intersection delay). Therefore these four (4) locations should be viewed as mitigated as appropriate by the Project. The remaining County segments, freeway segments, and intersections are projected to operate at or above the adopted level of service standards in the Mitigated 2030 with Project Alternative B scenario.

Queue Lengths

Table 82 shows the estimated Mitigated 2030 with Project Alternative B conditions queue lengths developed from the level of service analyses for the Madera Site study locations. Please note that storage lengths for mitigated scenarios may be different than those shown in the Existing Queue Storage Length column. Existing ramp queue storage lengths were used since final ramp lengths for future improvements are not known.

TABLE 82: MITIGATED 2030 WITH PROJECT CONDITIONS WEEKDAY 95TH PERCENTILE QUEUE LENGTH MADERA SITE (ALTERNATIVE B, REDUCED INTENSITY ALTERNATIVE)		
Intersection	Existing Queue Storage Length (ft)	95th Percentile Queue Length (ft) (AM/PM)
SR 99 NB off-ramp at Avenue 18 ½ • NB Left • NB Through-Right	1,204 ¹ (770 ²)	148/162 25/0
SR 99 SB off-ramp at Avenue 18 1/2 • SB Left • SB Right	1,256 ¹ (822 ²)	84/109 61/#107
SR 99 SB off-ramp at Avenue 17 • SB Left • SB Right	1,341 ¹ (907 ²) 589 ³ 589 ³	110/#297 46/122
SR 99 NB off-ramp at Avenue 17 • NB Left • NB Through-Right • NB Right	1,060 ¹ (626 ²) 45 ³ 45 ³ 45 ³	264/#810 50/#664 29/#541
SR 99 NB off-ramp at Avenue 16/Ellis Avenue • NB Left • NB Through-Right	1,150 ¹ (716 ²) 150 ³ 150 ³	55/89 29/48
SR 99 SB off-ramp at Avenue 16/Ellis Avenue • SB Left • SB Right	1,020 ¹ (586 ²) 225 ³ 225 ³	34/56 24/126
SR 99 NB off-ramp at Avenue 15 ½ /Cleveland Avenue • NB Left • NB Left-Through • NB Right	881 ¹ (447 ²) 353 ³ 353 ³ 353 ³	137/210 137/215 73/#215

ft = feet 95th percentile queue length - is minimum amount of storage needed for each movement
 NB = northbound SB = southbound WB = westbound EB = eastbound
 SR = State Route ¹ = Total ramp length ² = Calculated storage distance
³ = Distance of ramp striped as 2-lanes
 # = 95th percentile volume exceeds capacity, queue may be longer, queue shown is maximum after two (2) cycles
 m = volume for 95th percentile queue is metered by upstream signal
⁴ = Storage lengths for mitigated scenarios may be different than those shown in the Existing Queue Storage Length column

TABLE 82: MITIGATED 2030 WITH PROJECT CONDITIONS WEEKDAY 95TH PERCENTILE QUEUE LENGTH MADERA SITE (ALTERNATIVE B, REDUCED INTENSITY ALTERNATIVE)		
Intersection	Existing Queue Storage Length (ft)	95th Percentile Queue Length (ft) (AM/PM)
SR 99 SB off-ramp at Avenue 15 ½ /Cleveland Avenue • SB Left • SB Through-Right	1,000 ¹ (566 ²) 65 ³ 65 ³	135/#327 102/#309
SR 99 NB off-ramp at SR 145/Madera Avenue • WB Left • WB Through-Right	1,310 ¹ (876 ²) 90 ³ 90 ³	104/156 0/54
SR 99 SB off-ramp at Avenue 14/Olive Avenue • SB Left-Right • SB Right	1,254 ¹ (820 ²) 65 ³ 65 ³	153/298 136/281
SR 99 SB off-ramp at Avenue 12/Golden State Boulevard • WB Left • WB Right	1,431 ¹ (997 ²)	309/458 26/54
SR 99 NB off-ramp at Avenue 12 • NB Left • NB Through-Right • NB Right	1,223 ¹ (789 ²) 49 ³ 49 ³ 49 ³	157/178 83/173 83/171
Avenue 17 between SR 99 SB off-ramp and Golden State Boulevard • WB Left (at Golden State Boulevard) • WB Through-Right • EB Through (at SR 99 SB off-ramp)	481	#271/m#431 224/# 634 83/m228

ft = feet 95th percentile queue length - is minimum amount of storage needed for each movement

NB = northbound SB = southbound WB = westbound EB = eastbound

SR = State Route ¹ = Total ramp length ² = Calculated storage distance

³ = Distance of ramp striped as 2-lanes

= 95th percentile volume exceeds capacity, queue may be longer, queue shown is maximum after two (2) cycles

m = volume for 95th percentile queue is metered by upstream signal

⁴ = Storage lengths for mitigated scenarios may be different than those shown in the Existing Queue Storage Length column

Movements with queue lengths that are projected to exceed their available storage lengths are shown bolded in Table 82. As shown in Table 82, the following locations by time period are projected to exceed the allowable storage length with 95th percentile traffic conditions:

- Avenue 17 at SR 99 NB off-ramp
 - NB Left – PM peak hour
 - NB Left-Through – PM peak hour
 - NB Right – PM peak hour

- Avenue 17 between SR 99 SB off-ramp and Golden State Boulevard
 - WB Through – PM peak hour

These queue exceedances indicate that it is likely that at some point during either the AM or PM peak hour, deceleration for vehicles utilizing these various ramps would likely occur on the mainline. The queue exceedances on Avenue 17 indicate that at some point during either the AM or PM peak hours, spillback from vehicles in the through or turn lanes is expected to block the adjacent intersection. It should be noted that these queue exceedances are estimated based on the level of service analysis and are provided for information only. They are to be used in the design process and are not intended for use as a significance criteria.

All remaining study queue lengths are not projected to exceed the allowable storage lengths in the 95th percentile condition in the Mitigated 2030 Project Alternative B scenario.

Alternative C (Commercial Land Use Alternative)

Roadway Levels of Service

Based on the information provided in the previous sections, the following locations, by scenario, are projected to operate below the adopted level of service standards:

2030 No Project

County Segments

- Avenue 17 – Road 23 to SR 99 – AM/PM peak hours – LOS “F”
- Avenue 17 – SR 99 to Road 27 – AM/PM peak hours – LOS “E”/“F”

Freeway Segments

- SR 99 north of Avenue 18 ½
 - NB – AM/PM peak hours – LOS “D”
 - SB – PM peak hour – LOS “E”
- SR 99 between Avenue 18 ½ and Avenue 17
 - NB – AM/PM peak hours – LOS “D”
 - SB – PM peak hour – LOS “E”
- SR 99 south of Avenue 17
 - NB – AM/PM peak hours – LOS “E”/“F”
 - SB – AM/PM peak hours – LOS “D”/“F”

Intersections

- Avenue 18 ½ at SR 99 NB ramps
 - NB Approach – AM/PM peak hours – LOS “F”
- Avenue 18 ½ at SR 99 SB Ramps
 - SB Approach – AM/PM peak hours – LOS “F”
- Avenue 18 ½ at Pistachio Drive
 - SB Approach – PM peak hour – LOS “F”
- Avenue 18 ½ at Golden State Boulevard/Road 23
 - NB Approach – PM peak hour – LOS “F”
 - SB Approach – AM/PM peak hours – LOS “F”

- Avenue 17 at SR 99 NB ramps
 - EB Left – AM/PM peak hours – LOS “D”/“F”
 - NB Approach – AM/PM peak hours – LOS “F”
- Avenue 17 at SR 99 SB ramps
 - SB Approach – AM/PM peak hours – LOS “F”
- Avenue 17 at Golden State Boulevard
 - WB Left – AM/PM peak hours – LOS “F”
 - NB Approach – AM/PM peak hours – LOS “F”
 - SB Approach – AM/PM peak hours – LOS “F”
- Avenue 17 at Road 23
 - WB Approach – AM/PM peak hours – LOS “F”
 - EB Approach – AM/PM peak hours – LOS “F”
- Avenue 16/Ellis Overcrossing at Aviation Drive – AM/PM peak hours – LOS “F”
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps – PM peak hour – LOS “F”
- Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps – PM peak hour – LOS “F”
- SR 145/Madera Avenue at SR 99 NB ramps – AM/PM peak hours – LOS “D”/“F”
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145 – AM/PM peak hours – LOS “E”/“F”
- Olive Avenue/Avenue 14 at SR 99 SB off-ramp – PM peak hour – LOS “F”
- Avenue 12/Golden State Boulevard at SR 99 SB ramps
 - WB Approach – AM/PM peak hours – LOS “F”
- Avenue 12 at Golden State Boulevard – AM/PM peak hours – LOS “F”
- Avenue 12 at SR 99 NB ramps – PM peak hour – LOS “E”

2030 with Alternative C Project

County Segments

- Road 23 – Avenue 18 ½ to Avenue 17 – PM peak hour – LOS “E”
- Avenue 17 – Road 23 to SR 99 – AM/PM peak hours – LOS “F”
- Avenue 17 – SR 99 to Road 27 – AM/PM peak hours – LOS “F”

Freeway Segments

- SR 99 north of Avenue 18 ½
 - NB – AM/PM peak hours – LOS “D”
 - SB – PM peak hour – LOS “E”
- SR 99 between Avenue 18 ½ and Avenue 17
 - NB – AM/PM peak hours – LOS “D”
 - SB – PM peak hour – LOS “E”
- SR 99 south of Avenue 17
 - NB – AM/PM peak hours – LOS “E”/“F”
 - SB – AM/PM peak hours – LOS “D”/“F”

Intersections

- Avenue 18 ½ at SR 99 SB ramps – PM peak hour – LOS “D”
- Avenue 18 ½ at Pistachio Drive
 - SB Approach – PM peak hour – LOS “F”
- Avenue 18 ½ at Golden State Boulevard/Road 23

- NB Approach – PM peak hour – LOS “F”
- SB Approach – AM/PM peak hours – LOS “F”
- Avenue 17 at SR 99 NB ramps – AM/PM peak hours – LOS “E”/“F”
- Avenue 17 at SR 99 SB ramps – PM peak hour – LOS “F”
- Avenue 17 at Golden State Boulevard – AM/PM peak hours – LOS “E”/“F”
- Avenue 17 at Road 23 – AM/PM peak hours – LOS “E”/“F”
- Avenue 16/Ellis Overcrossing at Aviation Drive – AM/PM peak hours – LOS “F”
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps – PM peak hour – LOS “F”
- Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps – PM peak hour – LOS “F”
- Avenue 15 ½ at Road 23
 - WB Approach – PM peak hour – LOS “E”
- SR 145/Madera Avenue at SR 99 NB ramps – AM/PM peak hours – LOS “D”/“F”
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145 – PM peak hour – LOS “F”
- Avenue 12 at Golden State Boulevard – AM/PM peak hours – LOS “E”/“F”
- Avenue 12 at SR 99 NB ramps – PM peak hour – LOS “E”

The following locations, by scenario are also projected to meet either the rural or urban peak hour volume warrant:

2030 No Project

- Avenue 18 ½ at SR 99 SB ramps - Urban
- Avenue 18 ½ at SR 99 NB ramps - Urban
- Avenue 18 ½ at Pistachio Drive - Urban
- Avenue 18 ½ at Golden State Boulevard/Road 23 - Urban
- Avenue 17 at SR 99 SB Ramps - Rural
- Avenue 17 at SR 99 NB Ramps - Rural
- Avenue 17 at Golden State Boulevard - Rural
- Avenue 17 at Road 23 - Rural
- Avenue 15 ½ at Road 23 - Rural
- Avenue 14 at Road 23 - Rural

2030 with Alternative C Project

- Avenue 18 ½ at SR 99 NB ramps - Urban
- Avenue 18 ½ at Pistachio Drive - Urban
- Avenue 18 ½ at Golden State Boulevard/Road 23 - Urban
- Avenue 18 at Road 23 - Rural
- Avenue 15 ½ at Road 23 - Rural
- Avenue 14 at Road 23 - Rural

The following locations, by scenario, are also projected to exceed the available queue storage lengths with 95th percentile traffic conditions:

2030 No Project

- Avenue 18 ½ at SR 99 NB off-ramp
 - NB Left – PM peak hour
- Avenue 18 ½ at SR 99 SB off-ramp
 - SB Left-Through-Right – PM peak hour

- Avenue 17 at SR 99 SB off-ramp
 - SB Left – AM/PM peak hours
 - SB Right – PM peak hour
- Avenue 17 at SR 99 NB off-ramp
 - NB Left-Through – AM/PM peak hours
 - NB Right – AM/PM peak hours
- Avenue 15 ½/Cleveland Avenue at SR 99 NB off-ramp
 - NB Right – PM peak hour
- Avenue 15 ½/Cleveland Avenue at SR 99 SB off-ramp
 - SB Left-Through – PM peak hour
 - SB Right – PM peak hour
- Avenue 14/Olive Avenue at SR 99 SB off-ramp
 - SB Left – PM peak hour
 - SB Right – PM peak hour
- Avenue 12/Golden State Boulevard at SR 99 SB off-ramp
 - WB Left – AM/PM peak hours
- Avenue 12 at SR 99 NB off-ramp
 - NB Left-Through – PM peak hour
 - NB Right – PM peak hour
- Avenue 17 between SR 99 SB off-ramp and Golden State Boulevard
 - WB Left – PM peak hour

2030 with Alternative Project

- Avenue 17 at SR 99 NB off-ramp
 - NB Left – AM/PM peak hours
 - NB Left-Through – AM/PM peak hours
 - NB Right – AM/PM peak hours
- Avenue 15 ½/Cleveland Avenue at SR 99 NB off-ramp
 - NB Right – PM peak hour
- Avenue 15 ½/Cleveland Avenue at SR 99 SB off-ramp
 - SB Left-Through – PM peak hour
 - SB Right – PM peak hour
- Avenue 12 at SR 99 NB off-ramp
 - NB Left-Through – PM peak hour
 - NB Right – PM peak hour
- Avenue 17 between SR 99 SB off-ramp and Golden State Boulevard
 - WB Left – AM/PM peak hours

The following locations, by scenario, are also projected to meet the ramp widening/auxiliary lane threshold:

2030 No Project

- Avenue 17 at SR 99 NB off-ramp – AM/PM peak hours

2030 with Alternative C Project

- Avenue 17 at SR 99 NB off-ramp – AM/PM peak hours
- Avenue 12/Golden State Boulevard at SR 99 SB off-ramp – PM peak hour

The following locations met the left-turn warrant for the 2030 with Project Alternative C scenario:

- Avenue 12/Golden State Boulevard at SR 99 SB ramps
 - SB left-turn
- Avenue 18 at Road 23
 - NB left-turn
 - SB left-turn
- Avenue 17 at Road 23
 - NB left-turn
 - SB left-turn
 - WB left-turn
- Avenue 17 at Golden State Boulevard
 - SB left-turn
 - EB left-turn
 - WB left-turn
- Ellis Street at Road 26
 - NB left-turn
 - SB left-turn
 - WB left-turn
- Avenue 18 ½ at Golden State Boulevard/Road 23
 - EB left-turn
 - WB left-turn

The following locations and movements will require either dual left-turn lanes or a separate right-turn lane:

- Avenue 18 ½ at SR 99 NB ramps
 - Dual EB left-turn lanes
- Avenue 17 at SR 99 NB ramps
 - Dual NB left-turn lanes
- Avenue 12/Golden State Boulevard at SR 99 SB ramps
 - Separate NB right-turn lane
 - Dual SB left-turn lanes
- Avenue 12 at Golden State Boulevard
 - Separate NB right-turn lane
 - Dual SB left-turn lanes
 - Dual EB left-turn lanes
- Avenue 12 at SR 99 NB ramps
 - Separate WB right-turn lane
- Avenue 17 at Golden State Boulevard
 - Separate NB right-turn lane
 - Dual SB left-turn lanes
 - Dual WB left-turn lanes
 - Separate WB right-turn lane
- Ellis Street at Road 26
 - Separate SB right-turn lane
- Avenue 16/Ellis Street at Golden State Boulevard
 - Separate NB right-turn lane

- Dual WB left-turn lanes
- Separate WB right-turn lane
- Avenue 16/Ellis Street at SR 99 NB ramps
 - Separate WB right-turn lane
 - Dual EB left-turn lanes
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps
 - Dual EB left-turn lanes
 - Separate WB right-turn lane
- Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps
 - Dual WB left-turn lanes
 - Separate EB right-turn lane
- SR 145/Madera Avenue at SR 99 NB ramps
 - Dual NB left-turn lanes
 - Separate SB right-turn lane
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145
 - Dual NB left-turn lanes
 - Separate NB right-turn lane
 - Dual EB left-turn lanes
 - Separate EB right-turn lane
- Avenue 18 ½ at Golden State Boulevard/Road 23
 - Separate NB right-turn lane
 - Dual WB left-turn lanes

To mitigate the County segments, freeway segments, or intersections projected to operate below the appropriate adopted level of service standard, meet either the rural or urban peak hour volume warrant, meet the ramp widening/auxiliary lane threshold, or exceed the available storage lengths the following improvements, by scenario, are recommended:

2030 with Alternative C Project

County Segments

- Road 23 – Avenue 18 ½ to Avenue 17
 - Restripe/widen from two (2) lanes to four (4) lanes (Alternative C only)
- Avenue 17 – SR 99 to Road 27
 - Restripe/widen from four (4) lanes to six (6) lanes
- Avenue 17 – Road 23 to SR 99
 - Restripe/widen from two (2) lanes to six (6) lanes

Freeway Segments

- SR 99 north of Avenue 18 1/2
 - Restripe/widen the NB leg from three (3) lanes to four (4) lanes
 - Restripe/widen the SB leg from three (3) lanes to four (4) lanes
- SR 99 between Avenue 18 ½ to Avenue 17
 - Restripe/widen the NB leg from three (3) lanes to four (4) lanes
 - Restripe/widen the SB leg from three (3) lanes to four (4) lanes
- SR 99 south of Avenue 17
 - Restripe/widen the NB leg from three (3) lanes to four (4) lanes

- Restripe/widen the SB leg from three (3) lanes to four (4) lanes

Intersections

- Avenue 18 ½ at SR 99 NB ramps
 - Restripe/widen the EB approach, west leg, from one (1) left-turn lane and one (1) through lane, to dual (2) left-turn lanes and one (1) through lane
- Avenue 18 ½ at SR 99 SB ramps/Road 23
 - Restripe/widen the SB approach, north leg, from a shared left-right lane to one (1) left-turn lane and one (1) right-turn lane
- Avenue 18 ½ at Pistachio Drive
 - Although the Avenue 18 ½ at Pistachio Drive intersection is projected to meet the urban peak hour volume signal warrant, it will not be signalized due to its proximity to the SR 99 SB off-ramp. The intersection will be restricted to right-in/right-out/left-in access, which reduces the need for a signal and allows the intersection to operate at an acceptable level of service without a signal.
- Avenue 18 ½ at Golden State Boulevard / Road 23
 - Signalize the intersection
 - Restripe/widen the NB approach, south leg, from one (1) left-turn lane and one (1)-through-right lane, to one (1) left-turn lane, one (1) through lane, and one (1) right-turn lane
 - Restripe/widen the SB approach, north leg, from one (1) shared left-through-right lane, to one (1) left-turn lane and one (1) through-right lane
 - Restripe/widen the WB approach, east leg, from one (1) shared left-through lane and one (1) right-turn lane, to dual (2) left-turn lanes and one (1) shared through-right lane
- Avenue 18 at Road 23
 - Signalize the intersection
- Avenue 17 at SR 99 NB ramps
 - Restripe/widen the NB approach, south leg, from one (1) left-turn lane, one (1) shared left-through lane, and two (2) right-turn lanes to three (3) left-turn lanes, one (1) shared through-right lane, and two (2) right-turn lanes
 - Restripe/widen the EB approach, west leg, from one (1) left-turn lane and two (2) through lanes to two (2) left-turn lanes and three (3) through lanes
 - Restripe/widen the WB approach, east leg, from two (2) through lanes and one (1) right-turn lane to two (2) through lanes and one (1) shared through-right lane
 - Widen the NB off-ramp to two (2) lanes with a NB auxiliary lane on SR 99
- Avenue 17 at SR 99 SB ramps
 - Restripe/widen the SB approach, north leg, from one (1) left-turn lane and one (1) right-turn lane to two (2) left-turn lanes and two (2) right-turn lanes
 - Restripe/widen the EB approach, west leg, from two (2) through lanes to four (4) through lanes
 - Restripe/widen the WB approach, east leg, from two (2) through lanes to three (3) through lanes
- Avenue 17 at Golden State Boulevard
 - Restripe/widen the NB approach, south leg, from one (1) left-turn lane, one (1) through lane, and one (1) right-turn lane to one (1) left-turn lane, one (1) through lane, and two (2) right-turn lanes
 - Restripe/widen the SB approach, north leg, from two (2) left-turn lanes and one (1) shared through-right lane to two (2) left-turn lanes, one (1) through lane and one (1) right-turn lane

- Restripe/widen the EB approach, west leg, from one (1) left-turn lane, one (1) through lane, and one (1) shared through-right lane to two (2) left-turn lanes, two (2) through lanes, and one (1) shared through-right lane
- Restripe/widen the WB approach, east leg, from one (1) left-turn lane, two (2) through lanes, and one (1) right-turn lane to two (2) left-turn lanes, two (2) through lanes, and one (1) shared through-right lane
- Avenue 17 at Road 23
 - Restripe/widen the NB approach, south leg, from one (1) shared left-through-right lane to one (1) left-turn lane and one (1) shared through-right lane
 - Restripe/widen the SB approach, north leg, from one (1) shared left-through-right lane to one (1) shared left-through lane and one (1) right-turn lane
 - Restripe/widen the EB approach, west leg, from one (1) shared left-through-right lane to one (1) shared left-through lane, one (1) through lane, and one (1) right-turn lane
 - Restripe/widen the WB approach, east leg, from one (1) shared left-through-right lane to one (1) left-turn lane and one (1) through lane, and one (1) shared through-right lane
- Avenue 16/Ellis Street at Aviation Drive/Kennedy
 - Restripe/widen the NB approach, south leg, from one (1) left-turn lane and one (1) shared through-right lane to one (1) left-turn lane, one (1) through lane, and two (2) right-turn lanes
 - Restripe/widen the SB approach, north leg, from one (1) left-turn lane, one (1) through lane, and one (1) right-turn lane to two (2) left-turn lanes, one (1) through lane, and one (1) shared through-right lane
 - Restripe/widen the EB approach, west leg, from one (1) left-turn lane, one (1) through lane and one (1) shared through-right lane to one (1) left-turn lane, two (2) through lanes, and one (1) right-turn lane
 - Restripe/widen the WB approach, east leg, from one (1) left-turn lane, one (1) through lane, and one (1) shared through-right lane to two (2) left-turn lanes, one (1) through lane, and one (1) through-right lane
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps
 - Restripe/widen the EB approach, west leg, from one (1) left-turn lane and two (2) through lanes to two (2) left-turn lanes and two (2) through lanes
 - Restripe/widen the NB approach, south leg, from one (1) left-turn lane, one (1) shared left-through lane, and one (1) right-turn lane to one (1) left-turn lane, one (1) shared left-through lane, and two (2) right-turn lanes
- Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps
 - Restripe/widen the SB approach, north leg, from one (1) shared left-through lane and one (1) right-turn lane to two (2) left-turn lanes and one (1) shared through-right lane
- Avenue 15 ½ at Road 23
 - Signalize the intersection
- SR 145/Madera Avenue at SR 99 NB ramps
 - Restripe/widen the SB approach, north leg, from one (1) through lane and one (1) shared through-right lane to two (2) through lanes and one (1) right-turn lane
 - Restripe/widen the WB approach, east leg, from one (1) left-turn lane and one (1) shared through-right lane to two (2) left-turn lanes and one (1) shared through-right lane
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145
 - Restripe/widen the NB approach, south leg, from two (2) left-turn lanes, one (1) through lane, and one (1) shared through-right lane, to dual (2) left-turn lanes, two (2) through lanes, and one (1) shared through-right lane

- Restripe/widen the SB approach, north leg, from one (1) shared left-through lane, one (1) through lane, and one (1) right-turn lane, to one (1) left-turn lane, two (2) through lanes, and one (1) right-turn lane
- Restripe/widen the EB approach, west leg, from one (1) left-turn lane, one (1) through lane and one (1) right-turn lane, to dual (2) left-turn lanes, one (1) through lane, one (1) shared through-right lane and one (1) right-turn lane
- Olive Avenue/Avenue 14 at SR 99 SB off-ramp
 - Restripe/widen the SB approach, north leg, from two (2) left-turn lanes and one (1) right-turn lane to one (1) left-turn lane, one (1) shared left-right-turn lane, an one (1) right-turn lane
- Avenue 14 at Road 23
 - Signalize the intersection
 - Restripe/widen the SB approach, north leg, from one (1) shared left-through-right lane, to one (1) left-turn lane and one (1) shared through-right lane
 - Restripe/widen the EB approach, west leg, from one (1) shared left-through-right lane, to one (1) left-turn lane and one (1) shared through-right lane
- Avenue 12/Golden State Boulevard at SR 99 SB off ramps
 - Widen the SB off-ramp to two (2) lanes with a SB auxiliary lane on SR 99
- Avenue 12 at Golden State Boulevard
 - Restripe/widen the SB approach, north leg, from to dual (2) left-turn lanes, one (1) through lane and one (1) right-turn lane, to three (3) left-turn lanes, and one (1) shared through-right lane
 - Restripe/widen the WB approach, east leg, from one (1) left-turn lane, one (1) through lane, and one (1) shared through-right lane, to one (1) left-turn lane, three (3) through lanes, and one (1) right-turn lane
- Avenue 12 at SR 99 NB ramps
 - Restripe/widen the NB approach, south leg from a shared left-through lane and a separate right-turn lane, to dual (2) left-turn lanes, a shared through-right lane, and one (1) right-turn lane
 - Restripe/widen the EB approach, west leg, from one (1) left-turn lane and two (2) through lane, to dual (2) left-turn lanes and three (3) through lanes
 - Restripe/widen the WB approach, east leg, from two (2) through lanes and one (1) right-turn lane, to two (2) through lanes, one (1) shared through-right lane and one (1) right-turn lane

Table 83 shows the Mitigated 2030 with Project Alternative C levels of service for the County segments, freeway segments, and intersections for the Madera Site utilizing Figures 41 (lane configurations) and 35 (peak hour volumes) shown previously. The signalized intersection levels of service shown on Table 83 are representative of the whole intersection. Individual intersection movements or approaches may operate above or below the signalized level of service or delay shown on Table 83. The signalized levels of service or delay shown in Table 83 may not reflect the effects of 95th percentile queues that exceed the capacity for their movement. The Mitigated 2030 with Project Alternative C freeway segment and intersection levels of service calculations for the Madera Site are included in the Appendices section Attachment VI – C – 39 and Attachment VI – C – 40 respectively. Figure 42 provides a graphical representation of the resulting Mitigated 2030 with Project Alternative C levels of service.

TABLE 83: MITIGATED WITH 2030 PROJECT CONDITIONS COUNTY SEGMENT, FREEWAY SEGMENT, AND INTERSECTION WEEKDAY LEVEL OF SERVICE MADERA SITE (ALTERNATIVE C, ALTERNATE LAND USE ALTERNATIVE)				
County Segment	AM Peak Hour		PM Peak Hour	
	LOS		LOS	
Avenue 18 ½ - Road 24 to Road 23	A		B	
Road 23 – Avenue 18 ½ to Avenue 17	A		A	
Avenue 17 – Road 23 to SR 99	A		C	
Avenue 17 – SR 99 to Road 27	A		B	
Golden State Boulevard – Avenue 17 to Road 23	A		C	
Freeway Segment	AM Peak Hour		PM Peak Hour	
	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)
SR 99 north of Avenue 18 ½				
• NB	C	19.4	C	23.0
• SB	B	17.8	C	26.0
SR 99 between Avenue 18 ½ and Avenue 17				
• NB	C	19.3	C	22.2
• SB	B	17.6	C	25.2
SR 99 south of Avenue 17				
• NB	C	25.4	E	41.9
• SB	C	21.2	F	---
Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay¹ (secs)	LOS	Delay¹ (secs)
Avenue 18 ½ at SR 99 NB ramps	B	12.9	B	12.8
Avenue 18 ½ at SR 99 SB ramps/Road 23	A	9.8	B	14.1
Avenue 18 ½ at Pistachio Drive				
• EB Approach	A	0.7	A	2.6
• SB Right	B	14.0	C	17.9
Avenue 18 ½ at Golden State Boulevard	B	14.7	B	17.4
Avenue 18 at Road 23	A	5.2	A	7.9
Avenue 17 at SR 99 NB ramps	C	21.3	F	95.8
Avenue 17 at SR 99 SB ramps	A	5.1	B	14.4
Avenue 17 at Golden State Boulevard	C	24.0	F	140.6
Avenue 17 at Road 23	B	13.2	B	16.5
Ellis Street at Road 26	A	10.0	B	19.5
Avenue 16/Ellis Street at SR NB ramps	B	11.7	B	13.8
Avenue 16/Ellis Street at SR 99 SB ramps	A	7.4	B	10.9
Avenue 16/Ellis Street at Aviation Drive	C	22.1	D	54.1
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	B	12.5	C	29.4
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps	B	18.3	C	28.0
Avenue 15 ½ at Road 23	A	5.4	A	7.4

SR = State Route ¹ Delay per vehicle secs = seconds WB = westbound
 NB = northbound SB = southbound EB = eastbound
 Bolded Text = intersection/movement operates below the appropriate level of service standard

TABLE 83:
MITIGATED WITH 2030 PROJECT CONDITIONS
COUNTY SEGMENT, FREEWAY SEGMENT, AND INTERSECTION WEEKDAY LEVEL OF SERVICE
MADERA SITE (ALTERNATIVE C, ALTERNATE LAND USE ALTERNATIVE)

Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay ¹ (secs)	LOS	LOS
SR 145/Madera Avenue at SR 99 NB ramps	B	15.1	C	25.6
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	B	15.8	C	24.4
Olive Avenue/Avenue 14 at SR 99 SB off-ramp	B	12.8	B	17.7
Avenue 14 at Road 23	A	7.0	A	7.0
Avenue 12/Golden State Boulevard at SR 99 SB ramps	B	16.3	B	17.1
Avenue 12 at Golden State Boulevard	C	30.2	D	40.2
Avenue 12 at SR 99 NB ramps	B	10.4	B	15.2

SR = State Route ¹ Delay per vehicle secs = seconds WB = westbound
 NB = northbound SB = southbound EB = eastbound
 Bolded Text = intersection/movement operates below the appropriate level of service standard

County segments, freeway segments, and intersections within the study area that are projected to operate below the adopted level of service standards are shown bolded in Table 83. As shown in Table 83 and Figure 42, two (2) freeway segments and two (2) intersections are still projected to operate below the adopted level of service standard even with the recommended improvements. The NB and SB SR 99 south of Avenue 17 freeway segments are projected to operate at LOS “E” and “F” respectively in the PM peak hour. Per discussions with Caltrans staff, SR 99 is only programmed for eight (8) lanes for this segment. The Avenue 17 at SR 99 NB ramps and Avenue 17 at Golden State Boulevard intersections are still projected to operate at a LOS “F” in the PM peak hour. Per discussions with Caltrans staff, widening Avenue 17 to eight (8) lanes is not recommended. However with the proposed Alternative C mitigations, these four (4) locations in the 2030 Project scenario are projected to operate above the 2030 No Project measures of effectiveness (freeway density and intersection delay). Therefore these four (4) locations should be viewed as mitigated as appropriate by the Project. The remaining County segments, freeway segments, and intersections are projected to operate at or above the adopted level of service standards in the Mitigated 2030 with Project Alternative C scenario.

Queue Lengths

Table 84 shows the estimated Mitigated 2030 Project Alternative C conditions queue lengths developed from the level of service analyses for the Madera Site study locations. Please note that storage lengths for mitigated scenarios may be different than those shown in the Existing Queue Storage Length column. Existing ramp queue storage lengths were used since final ramp lengths for future improvements are not known.

TABLE 84 MITIGATED 2030 WITH PROJECT CONDITIONS WEEKDAY 95TH PERCENTILE QUEUE LENGTH MADERA SITE (ALTERNATIVE C, ALTERNATE LAND USE ALTERNATIVE)		
Intersection	Existing Queue Storage Length (ft)	95 th Percentile Queue Length (ft) (AM/PM)
SR 99 NB off-ramp at Avenue 18 ½ <ul style="list-style-type: none"> • NB Left • NB Through-Right 	1,204 ¹ (770 ²)	148/188 25/0
SR 99 SB off-ramp at Avenue 18 1/2 <ul style="list-style-type: none"> • SB Left • SB Right 	1,256 ¹ (822 ²)	84/124 60/#119
SR 99 SB off-ramp at Avenue 17 <ul style="list-style-type: none"> • SB Left • SB Right 	1,341 ¹ (907 ²) 589 ³ 589 ³	110/#308 45/124
SR 99 NB off-ramp at Avenue 17 <ul style="list-style-type: none"> • NB Left • NB Through-Right • NB Right 	1,060 ¹ (626 ²) 45 ³ 45 ³ 45 ³	260/#838 50/#665 29/#542
SR 99 NB off-ramp at Avenue 16/Ellis Avenue <ul style="list-style-type: none"> • NB Left • NB Through-Right 	1,150 ¹ (716 ²) 150 ³ 150 ³	55/88 29/48

ft = feet 95th percentile queue length - is minimum amount of storage needed for each movement
 NB = northbound SB = southbound WB = westbound EB = eastbound
 SR = State Route 1 = Total ramp length 2 = Calculated storage distance
 3 = Distance of ramp striped as 2-lanes
 # = 95th percentile volume exceeds capacity, queue may be longer, queue shown is maximum after two (2) cycles
 m = volume for 95th percentile queue is metered by upstream signal
Bolded Text = 95th percentile queues exceed the available storage capacity
 4 = Storage lengths for mitigated scenarios may be different than those shown in the Existing Queue Storage Length column

TABLE 84 MITIGATED 2030 WITH PROJECT CONDITIONS WEEKDAY 95TH PERCENTILE QUEUE LENGTH MADERA SITE (ALTERNATIVE C, ALTERNATE LAND USE ALTERNATIVE)		
Intersection	Existing Queue Storage Length (ft)	95th Percentile Queue Length (ft) (AM/PM)
SR 99 SB off-ramp at Avenue 16/Ellis Avenue <ul style="list-style-type: none"> • SB Left • SB Right 	1,020 ¹ (586 ²) 225 ³ 225 ³	34/57 24/127
SR 99 NB off-ramp at Avenue 15 ½ /Cleveland Avenue <ul style="list-style-type: none"> • NB Left • NB Left-Through • NB Right 	881 ¹ (447 ²) 353 ³ 353 ³ 353 ³	137/230 137/235 75/#383
SR 99 SB off-ramp at Avenue 15 ½ /Cleveland Avenue <ul style="list-style-type: none"> • SB Left • SB Through-Right 	1,000 ¹ (566 ²) 65 ³ 65 ³	139/#364 105/#334
SR 99 NB off-ramp at SR 145/Madera Avenue <ul style="list-style-type: none"> • WB Left • WB Right 	1,310 ¹ (876 ²) 90 ³ 90 ³	104/136 0/50
SR 99 SB off-ramp at Avenue 14/Olive Avenue <ul style="list-style-type: none"> • SB Left • SB Right 	1,254 ¹ (820 ²) 65 ³ 65 ³	154/278 139/267
SR 99 SB off-ramp at Avenue 12/Golden State Boulevard <ul style="list-style-type: none"> • WB Left • WB Right 	1,431 ¹ (997 ²)	290/459 25/54
SR 99 NB off-ramp at Avenue 12 <ul style="list-style-type: none"> • NB Left • NB Left-Through • NB Right 	1,223 ¹ (789 ²) 49 ³ 49 ³ 49 ³	144/178 76/171 76/170
Avenue 17 between SR 99 SB off-ramp and Golden State Boulevard <ul style="list-style-type: none"> • WB Left (at Golden State Boulevard) • WB Through-Right • EB Through (at SR 99 SB off-ramp) 	481	#272/m#431 241/ #1098 m97/m212

ft = feet 95th percentile queue length - is minimum amount of storage needed for each movement

NB = northbound SB = southbound WB = westbound EB = eastbound

SR = State Route ¹ = Total ramp length ² = Calculated storage distance

³ = Distance of ramp striped as 2-lanes

= 95th percentile volume exceeds capacity, queue may be longer, queue shown is maximum after two (2) cycles

m = volume for 95th percentile queue is metered by upstream signal

Bolded Text = 95th percentile queues exceed the available storage capacity

⁴ = Storage lengths for mitigated scenarios may be different than those shown in the Existing Queue Storage Length column

Movements with queue lengths that are projected to exceed their available storage lengths are shown bolded in Table 84. As shown in Table 84, the following locations by time period are projected to exceed the allowable storage length with 95th percentile traffic conditions:

- Avenue 17 at SR 99 NB off-ramp
 - NB Left – PM peak hour
 - NB Left-Through – PM peak hour
 - NB Right – PM peak hour
- Avenue 17 between SR 99 SB off-ramp and Golden State Boulevard
 - WB Through – PM peak hour

These queue exceedances indicate that it is likely that at some point during either the AM or PM peak hour, deceleration for vehicles utilizing these various ramps would likely occur on the mainline. The queue exceedances on Avenue 17 indicate that at some point during either the AM or PM peak hours, spillback from vehicles in the through or turn lanes is expected to block the adjacent intersection. It should be noted that these queue exceedances are estimated based on the level of service analysis and are provided for information only. They are to be used in the design process and are not intended for use as a significance criteria.

All remaining study queue lengths are not projected to exceed the allowable storage lengths in the 95th percentile condition in the Mitigated 2030 Project Alternative C scenario.

North Fork Site (Alternative D)

Existing (2008) Conditions

Roadway Levels of Service

Table 85 show the Existing (2008) levels of service for the study intersections for the North Fork Site utilizing Figures 43 (lane configurations) and 44 (peak hour volumes) shown previously. The signalized intersection levels of service shown on Table 85 are representative of the whole intersection. Individual intersection movements or approaches may operate above or below the signalized level of service or delay shown on Table 85. The Existing (2008) intersection levels of service calculations for the North Fork Site are included in the Appendix section Attachment VI – C - 41. Figure 45 provides a graphical representation of the resulting Existing (2008) levels of service.

TABLE 85: EXISTING (2008) CONDITIONS INTERSECTION WEEKDAY LEVEL OF SERVICE NORTH FORK SITE (ALTERNATIVE D OFF SITE ALTERNATIVE)				
Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay¹ (secs)	LOS	Delay¹ (secs)
SR 145 at SR 41	B	14.0	C	21.6
SR 41 at Road 200	A	8.1	A	5.7
SR 41 at Road 420 (Thornberry Road)				
• SB Left	A	8.7	A	8.9
• WB Approach	B	12.9	B	14.3
SR 41 at SR 49	A	9.9	B	11.9
Road 274 (Malum Ridge Rd) at Road 225 (Mammoth Pool Rd)	A	7.0	A	7.3
Road 225 (Mammoth Pool Rd) at Cascadel Road				
• SB Left	A	7.4	A	7.3
• WB Approach	A	8.6	A	8.6
Cascadel Road at Mission Drive				
• SB Left-Through	-	-	A	1.1
• WB Approach	A	8.6	A	8.6
North Fork Road at Auberry Road				
• EB Left-Through	-	-	-	-
• WB Left	A	7.4	A	7.5
• NB Approach	A	9.1	A	9.1
• SB Approach	B	10.1	A	8.8
North Fork Road at Crane Valley Road				
• EB Left-Through	A	1.3	A	2.6
• SB Approach	A	9.3	A	9.9

SR = State Route ¹ Delay per vehicle secs = seconds WB = westbound
NB = northbound SB = southbound EB = eastbound
Bolded Text = intersection/movement operates below the appropriate level of service standard

As shown in Table 85 and in figure 45, none of the study intersections are currently operating below the adopted level of service standard.

Signal Warrants

Rural peak hour volume signal warrants were prepared for the following six (6) unsignalized intersections:

- SR 41 at Road 420 (Thornberry Road)
- Road 274 (Malum Ridge Rd) at Road 225 (Mammoth Pool Rd)
- Road 225 (Mammoth Pool Rd) at Cascadel Road
- Cascadel Road at Mission Drive
- North Fork Road at Auberry Road
- North Fork Road at Crane Valley Road

Based on the rural peak hour volume warrant, the signal warrant is not met at any of the six (6) study intersections in the Existing (2008) scenario. This warrant analysis is limited to the peak hour volume warrant only and other conditions may exist which meet other traffic signal warrants. Copies of the warrant analyses are included in Appendices section Attachment VI – C - 42.

Opening Day (2010) No Project Conditions

Alternative D, No Project Alternative

Roadway Levels of Service

Table 86 show the Opening Day (2010) No Project Alternative D levels of service for the study intersections for the North Fork Site utilizing Figures 43 (lane configurations) and 46 (peak hour volumes) shown previously. The signalized intersection levels of service shown on Table 86 are representative of the whole intersection. Individual intersection movements or approaches may operate above or below the signalized level of service or delay shown on Table 86. The Opening Day (2010) No Project intersection levels of service calculations for the North Fork Site are included in the Appendix section Attachment VI – C - 43. Figure 47 provides a graphical representation of the resulting Opening Day (2010) No Project levels of service.

TABLE 86: OPENING DAY (2010) NO PROJECT CONDITIONS INTERSECTION WEEKDAY LEVEL OF SERVICE NORTH FORK SITE (ALTERNATIVE D, OFF SITE ALTERNATIVE)				
Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay¹ (secs)	LOS	Delay¹ (secs)
SR 145 at SR 41	B	C	15.4	22.8
SR 41 at Road 200	A	A	8.2	5.7
SR 41 at Road 420 (Thornberry Road)				
• SB Left	A	A	8.8	9.0
• WB Approach	B	B	13.3	14.9
SR 41 at SR 49	B	B	10.0	12.1
Road 274 (Malum Ridge Rd) at Road 225 (Mammoth Pool Rd)	A	A	7.1	7.4
Road 225 (Mammoth Pool Rd) at Cascadel Road				
• SB Left	A	A	7.4	7.3
• WB Approach	A	A	8.7	8.7
Cascadel Road at Mission Drive				
• SB Left-Through	-	A	-	1.1
• WB Approach	A	A	8.7	8.6
<i>SR = State Route ¹ Delay per vehicle secs = seconds WB = westbound NB = northbound SB = southbound EB = eastbound Bolded Text = intersection/movement operates below the appropriate level of service standard</i>				

TABLE 86: OPENING DAY (2010) NO PROJECT CONDITIONS INTERSECTION WEEKDAY LEVEL OF SERVICE NORTH FORK SITE (ALTERNATIVE D, OFF SITE ALTERNATIVE)				
North Fork Road at Auberry Road				
• EB Left-Through	A	A	0.2	0.2
• WB Left	A	A	7.4	7.5
• NB Approach	A	B	9.2	10.6
• SB Approach	A	A	9.9	9.8
North Fork Road at Crane Valley Road				
• EB Left-Through	A	A	1.3	2.7
• SB Approach	A	B	9.3	10.0

SR = State Route Delay per vehicle secs = seconds WB = westbound
 NB = northbound SB = southbound EB = eastbound
 Bolded Text = intersection/movement operates below the appropriate level of service standard

As shown in Table 86 and Figure 47, none of the study intersections are projected to operate below the adopted level of service standard.

Signal Warrants

Rural peak hour volume signal warrants were prepared for the following six (6) unsignalized intersections:

- SR 41 at Road 420 (Thornberry Road)
- Road 274 (Malum Ridge Rd) at Road 225 (Mammoth Pool Rd)
- Road 225 (Mammoth Pool Rd) at Cascadel Road
- Cascadel Road at Mission Drive
- North Fork Road at Auberry Road
- North Fork Road at Crane Valley Road

Based on the rural peak hour volume warrant, the signal warrant is not met at any of the six (6) study intersections in the Opening Day (2010) No Project scenario. This warrant analysis is limited to the peak hour volume warrant only and other conditions may exist which meet other traffic signal warrants. Copies of the warrant analyses are included in Appendices section Attachment VI – C - 44.

Opening Day (2010) with Project Conditions

Roadway Levels of Service

Table 87 shows the Opening Day (2010) Project Alternative D levels of service for the study intersections for the North Fork Site utilizing Figures 43 (lane configurations) and 48 (peak hour volumes) shown previously. The signalized intersection levels of service shown on Table 87 are representative of the whole intersection. Individual intersection movements or approaches may operate above or below the signalized level of service or delay shown on Table 87. The Opening Day (2010) Project Alternative D intersection levels of service calculations for the North Fork Site are included in the Appendix section Attachment VI – C - 45. Figure 49 provides a graphical representation of the resulting Opening Day (2010) Project Alternative D levels of service.

TABLE 87: OPENING DAY (2010) WITH PROJECT CONDITIONS INTERSECTION WEEKDAY LEVEL OF SERVICE NORTH FORK SITE (ALTERNATIVE D, OFF-SITE ALTERNATIVE)				
Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay¹ (secs)	LOS	Delay¹ (secs)
SR 145 at SR 41	B	15.4	C	22.9
SR 41 at Road 200	A	8.2	A	5.8
SR 41 at Road 420 (Thornberry Road)				
• SB Left	A	8.8	A	9.0
• WB Approach	B	13.3	B	14.9
SR 41 at SR 49	B	10.1	B	12.1
Road 274 (Malum Ridge Rd) at Road 225 (Mammoth Pool Rd)	A	7.3	A	7.7
Road 225 (Mammoth Pool Rd) at Cascadel Road				
• SB Left	A	7.5	A	7.4
• WB Approach	A	8.7	A	8.8
Cascadel Road at Mission Drive				
• WB Left-Through	A	5.3	A	6.7
• NB Approach	A	8.8	A	8.9
North Fork Road at Auberry Road				
• NB Left-Through-Right	A	0.1	A	1.0
• SB Left-Through-Right	A	7.5	A	7.5
• WB Approach	A	9.4	A	9.4
• EB Approach	A	9.7	A	9.7
North Fork Road at Crane Valley Road				
• EB Left-Through	A	1.3	A	2.6
• SB Approach	A	9.4	A	10.1

SR = State Route ¹ Delay per vehicle secs = seconds WB = westbound
NB = northbound SB = southbound EB = eastbound

Bolded Text = intersection/movement operates below the appropriate level of service standard

As shown in Table 87 and in Figure 49, none of the study intersections are projected to operate below the adopted level of service standard.

Signal Warrants

Rural peak hour volume signal warrants were prepared for the following six (6) unsignalized intersections:

- SR 41 at Road 420 (Thornberry Road)
- Road 274 (Malum Ridge Rd) at Road 225 (Mammoth Pool Rd)
- Road 225 (Mammoth Pool Rd) at Cascadel Road
- Cascadel Road at Mission Drive
- North Fork Road at Auberry Road
- North Fork Road at Crane Valley Road

Based on the rural peak hour volume warrant, the signal warrant is not met at any of the six (6) study intersections in the Opening Day (2010) Project Alternative D scenario. This warrant analysis is limited to the peak hour volume warrant only and other conditions may exist which meet other traffic signal warrants. Copies of the warrant analyses are included in Appendices section Attachment VI – C - 46.

Turn Lane Storage Calculations

Table 88 shows the calculated left-turn storage lengths for movements which have existing separate left-turn or right-turn lanes. No additional locations are projected to meet the warrant or separate left-turn or right-turn lanes. It should be noted that the calculated left-turn storage length increases are not solely due to Project only trips but are also due to increases in background traffic.

**TABLE 88:
OPENING DAY (2010) WITH PROJECT CONDITIONS
TURN LANE STORAGE CALCULATIONS SUMMARY
ALTERNATIVE D (OFF-SITE ALTERNATIVE/NORTH FORK SITE)**

Intersection	Movement	Existing Storage Length (ft)	2010 Project Storage Length (ft)
SR 145 at SR 41	NBL	500	100
	WBL	175	100
	SBL	425	100
	EBL	200	200
	EBR	200	100
SR 41 at Road 200	NBR	475	100
	WBL	200	100
	WBR	200	100
	SBL	500	100
SR 41 at Road 420 (Thomberry Road)	SBL	425	100
SR 41 at SR 49	NBL	125	100
	SBR	150	350
	EBL	225	200
	EBR	225	100
Road 274 (Malum Ridge Rd) at Road 225 (Mammoth Pool Rd)	WBR	---	100
	EBR	---	100
Road 225 (Mammoth Pool Rd) at Cascadel Road	SBL	150	100
North Fork Rd at Auberry Rd	NBR	---	100
	WBL	125	100
	EBR	---	100

ft = feet

SR = State Route

NB = northbound

SB = southbound

WB = westbound

EB = eastbound

n/a = not applicable --- = no existing lane

¹ = dual lefts required, length of each left-turn lane

² = exceeds available distance to nearest intersection

³ = dual rights required, length of each right-turn lane

⁴ = triple lefts required, length of each left-turn lane

2030 No Project Conditions

Alternative E, No Project Alternative

Roadway Levels of Service

Table 89 show the 2030 No Project levels of service for the study intersections for the North Fork Site utilizing Figures 43 (lane configurations) and 50 (peak hour volumes) shown previously. The signalized intersection levels of service shown on Table 88 are representative of the whole intersection. Individual intersection movements or approaches may operate above or below the signalized level of service or delay shown on Table 89. The 2030 No Project intersection levels of service calculations for the North Fork Site are included in the Appendix section Attachment VI – C - 48. Figure 51 provides a graphical representation of the resulting 2030 No Project levels of service.

TABLE 89: 2030 NO PROJECT CONDITIONS INTERSECTION WEEKDAY LEVEL OF SERVICE NORTH FORK SITE (ALTERNATIVE D, OFF SITE ALTERNATIVE)				
Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay¹ (secs)	LOS	Delay¹ (secs)
SR 145 at SR 41	C	D	39.6	40.6
SR 41 at Road 200	A	A	9.3	7.7
SR 41 at Road 420 (Thornberry Road)				
• SB Left	A	B	9.7	10.2
• WB Approach	C	D	20.2	27.5
SR 41 at SR 49	B	B	11.4	14.7
Road 274 (Malum Ridge Rd) at Road 225 (Mammoth Pool Rd)	A	A	7.9	8.7
Road 225 (Mammoth Pool Rd) at Cascadel Road				
• SB Left	A	A	7.5	7.4
• WB Approach	A	A	9.1	9.7
Cascadel Road at Mission Drive				
• SB Left-Through	-	A	-	1.2
• WB Approach	A	A	8.8	8.8
North Fork Road at Auberry Road				
• EB Left-Through	A	A	1.1	1.2
• WB Left	A	A	7.6	7.6
• NB Approach	B	B	10.7	11.1
• SB Approach	B	B	12.2	13.1
North Fork Road at Crane Valley Road				
• EB Left-Through	A	A	1.7	3.3
• SB Approach	B	B	10.1	11.7

SR = State Route ¹ Delay per vehicle secs = seconds WB = westbound
 NB = northbound SB = southbound EB = eastbound
 Bolded Text = intersection/movement operates below the appropriate level of service standard

As shown in Table 89 and Figure 51, none of the study intersections are projected to operate below the adopted level of service standard.

Signal Warrants

Rural peak hour volume signal warrants were prepared for the following six (6) unsignalized intersections:

- SR 41 at Road 420 (Thornberry Road)
- Road 274 (Malum Ridge Rd) at Road 225 (Mammoth Pool Rd)
- Road 225 (Mammoth Pool Rd) at Cascadel Road
- Cascadel Road at Mission Drive
- North Fork Road at Auberry Road
- North Fork Road at Crane Valley Road

Based on the rural peak hour volume warrant, the signal warrant is met at SR 41 at Road 420 (Thornberry Road) intersection in the 2030 No Project Alternative D conditions scenario. The warrant is not met at the remaining five (5) study intersections. This warrant analysis is limited to the peak hour volume warrant only and other conditions may exist which meet other traffic signal warrants. Copies of the warrant analyses are included in Appendices section Attachment VI – C - 49.

2030 with Project Conditions

Roadway Levels of Service

Table 90 shows the 2030 with Project Alternative D levels of service for the study intersections for the North Fork Site utilizing Figures 43 (lane configurations) and 52 (peak hour volumes) shown previously. The signalized intersection levels of service shown on Table 90 are representative of the whole intersection. Individual intersection movements or approaches may operate above or below the signalized level of service or delay shown on Table 90. The 2030 with Project Alternative D intersection levels of service calculations for the North Fork Site are included in the Appendix section Attachment VI – C - 50. Figure 53 provides a graphical representation of the resulting 2030 with Project Alternative D levels of service.

TABLE 90: 2030 WITH PROJECT CONDITIONS INTERSECTION WEEKDAY LEVEL OF SERVICE NORTH FORK SITE (ALTERNATIVE D, OFF-SITE ALTERNATIVE)				
Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay¹ (secs)	LOS	Delay¹ (secs)
SR 145 at SR 41	C	29.6	D	40.7
SR 41 at Road 200	A	9.3	A	8.5
SR 41 at Road 420 (Thornberry Road)				
• SB Left	A	9.7	B	10.2
• WB Approach	C	20.2	D	27.5
SR 41 at SR 49	B	11.1	B	14.7
Road 274 (Malum Ridge Rd) at Road 225 (Mammoth Pool Rd)	A	8.2	A	9.2
Road 225 (Mammoth Pool Rd) at Cascadel Road				
• SB Left	A	7.5	A	7.5
• WB Approach	A/A	9.3	A	9.6
Cascadel Road at Mission Drive				
• WB Left-Through	A	4.3	A	6.3
• NB Approach	A	8.9	A	9.1
North Fork Road at Auberry Road				
• NB Left-Through-Right	A	1.6	A	1.6
• SB Left-Through-Right	A	7.6	A	7.6
• WB Approach	B	10.9	B	11.4
• EB Approach	B	12.5	B	13.4
North Fork Road at Crane Valley Road				
• EB Left-Through	A	1.6	A	3.3
• SB Approach	B	10.1	B	11.8

SR = State Route ¹ Delay per vehicle secs = seconds WB = westbound
NB = northbound SB = southbound EB = eastbound
Bolded Text = intersection/movement operates below the appropriate level of service standard

Intersections within the study area that are currently operating below the adopted level of service standard are shown bolded in Table 90. As shown in Table 90 and Figure 53, the following intersection is projected to operate below the adopted level of service standard:

- SR 41 at Road 420 (Thornberry Road)
 - WB Approach – PM peak hour – LOS “D”

Signal Warrants

Rural peak hour volume signal warrants were prepared for the following six (6) unsignalized intersections:

- SR 41 at Road 420 (Thornberry Road)
- Road 274 (Malum Ridge Rd) at Road 225 (Mammoth Pool Rd)
- Road 225 (Mammoth Pool Rd) at Cascadel Road

- Cascadel Road at Mission Drive
- North Fork Road at Auberry Road
- North Fork Road at Crane Valley Road

Based on the rural peak hour volume warrant, the signal warrant is met at SR 41 at Road 420 (Thornberry Road) intersection in the 2030 Project Alternative D conditions scenario. The warrant is not met at the remaining five (5) study intersections. This warrant analysis is limited to the peak hour volume warrant only and other conditions may exist which meet other traffic signal warrants. Copies of the warrant analyses are included in Appendices section Attachment VI – C - 51.

Turn Lane Storage Calculations

Table 91 shows the calculated left-turn storage lengths for movements which have existing separate left-turn or right-turn lanes. No additional locations are projected to meet the warrant or separate left-turn or right-turn lanes. It should be noted that the calculated left-turn storage length increases are not solely due to Project only trips but are also due to increases in background traffic.

TABLE 91: 2030 WITH PROJECT CONDITIONS TURN LANE STORAGE CALCULATIONS SUMMARY ALTERNATIVE D (OFF-SITE ALTERNATIVE/NORTH FORK SITE)			
Intersection	Movement	Existing Storage Length (ft)	2030 Project Storage Length (ft)
SR 145 at SR 41	NBL	500	100
	WBL	175	100
	SBL	425	100
	EBL	200	200
	EBR	200	100
SR 41 at Road 200	NBR	475	100
	WBL	200	100
	WBR	200	100
	SBL	500	100
SR 41 at Road 420 (Thornberry Road)	SBL	425	100
SR 41 at SR 49	NBL	125	100
	SBR	150	400
	EBL	225	250
	EBR	225	150
Road 274 (Malum Ridge Rd) at Road 225 (Mammoth Pool Rd)	WBR	---	100
	EBR	---	100
Road 225 (Mammoth Pool Rd) at Cascadel Road	SBL	150	100
North Fork Rd at Auberry Rd	NBR	---	100
	WBL	125	100
	EBR	---	100

ft = feet
 SR = State Route
 WB = westbound
 EB = eastbound
¹ = dual lefts required, length of each left-turn lane
³ = dual rights required, length of each right-turn lane

NB = northbound
 SB = southbound
 n/a = not applicable --- = no existing lane
² = exceeds available distance to nearest intersection
⁴ = triple lefts required, length of each left-turn lane

Mitigated 2030 with Project Conditions

Roadway Levels of Service

Based on the information provided in the previous sections, the following locations, by scenario, are currently or projected to operate below the adopted level of service standard:

2030 No Project

- SR 145 at SR 41 – PM peak hour – LOS “D”

2030 with Alternative D Project

- SR 145 at SR 41 – PM peak hour – LOS “D”
- SR 41 at Road 420 (Thornberry Road)
 - WB Approach – PM peak hour – LOS “D”

The following locations, by scenario are also projected to meet the rural peak hour volume warrant:

2030 with Alternative D Project

- SR 41 at Road 420 (Thornberry Road)

To mitigate the intersections projected to operate below the appropriate adopted level of service standard, meet either the rural or urban peak hour volume warrant or require left-turn or right-turn channelization the following improvements are recommended:

- SR 145 at SR 41
 - Reoptimize the signal cycle length
- SR 41 at Road 420 (Thornberry Road)
 - Signalize the intersection

Table 92 shows the Mitigated 2030 with Project Alternative D levels of service for the study intersections for the North Fork Site utilizing Figures 54 (lane configurations) and 52 (peak hour volumes) shown previously. The signalized intersection levels of service shown on Table 92 are representative of the whole intersection. Individual intersection movements or approaches may operate above or below the signalized level of service or delay shown on Table 92. The Mitigated 2030 with Project Alternative D intersection levels of service calculations for the North Fork Site are included in the Appendix section Attachment VI – C - 52. Figure 55 provides a graphical representation of the resulting levels of service.

**TABLE 92:
MITIGATED 2030 WITH PROJECT CONDITIONS
INTERSECTION WEEKDAY LEVEL OF SERVICE
NORTH FORK SITE (ALTERNATIVE D, OFF-SITE ALTERNATIVE)**

Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay ¹ (secs)	LOS	Delay ¹ (secs)
SR 145 at SR 41	C	20.7	C	30.1
SR 41 at Road 200	A	9.3	A	8.5
SR 41 at Road 420 (Thornberry Road)	A	6.1	A	6.5
SR 41 at SR 49	B	11.1	B	14.7
Road 274 (Malum Ridge Rd) at Road 225 (Mammoth Pool Rd)	A	8.2	A	9.2
Road 225 (Mammoth Pool Rd) at Cascadel Road				
• SB Left	A	7.5	A	7.5
• WB Approach	A	9.3	A	9.6
Cascadel Road at Mission Drive				
• WB Left-Through	A	4.3	A	6.3
• NB Approach	A	8.9	A	9.1
North Fork Road at Auberry Road				
• NB Left-Through-Right	A	1.6	A	1.6
• SB Left-Through-Right	A	7.6	A	7.6
• WB Approach	B	10.9	B	11.4
• EB Approach	B	12.5	B	13.4
North Fork Road at Crane Valley Road				
• SB Left-Through	A	1.6	A	3.3
• WB Approach	B	10.1	B	11.8

SR = State Route
NB = northbound

¹ Delay per vehicle
SB = southbound

secs = seconds
EB = eastbound

WB = westbound

As shown in Table 92 and Figure 55, all of the study intersections are projected to operate at or above the appropriate level of service standard in the Mitigated 2030 Project Alternative D scenario.

V. CONCLUSIONS AND RECOMMENDATIONS

The following sections provide No Project/Project/Mitigated Project levels of service and measures of effectiveness comparison information for the various alternatives, a mitigations phasing plan (future insertion), implementation responsibilities (future insertion), cost estimates for the recommended mitigation measures, and associated financing plan (future insertion).

A. NO PROJECT/PROJECT COMPARISON

Alternative A (Madera Site)

Tables 93 and 94 compare the Alternative A, Proposed Project, Opening Day (2010) No Project, Opening Day (2010) Project, and Mitigated Opening Day (2010) Project, and the 2030 No Project, 2030 Project, and Mitigated 2030 Project level of service results for County segments, freeway segments and intersections projected to operate below the adopted level of service standards, respectively.

Comparison of Opening Day (2010) No Project, Opening Day (2010) Project, and Mitigated Opening Day (2010) Project Scenarios

County Segments

County segments exceeding the appropriate level of service standard are shown in bold print in Table 93. As can be seen in Table 93, one (1) County segment is projected to operate at a LOS “E” in the Opening Day (2010) No Project scenario is projected to operate at a LOS “F” in the Opening Day (2010) Project scenario. The County segment is:

- Avenue 17 – SR 99 to Road 27 – PM peak hour – LOS “E” to LOS “F”

The remaining County segments are projected to operate at acceptable levels of service with or without the Alternative A, Proposed Project, in the Opening Day (2010) scenarios.

As shown in Table 93, the County segment projected to operate below acceptable levels of service in Opening Day (2010) Project scenario is projected to operate at or above the acceptable levels of service in the Mitigated Opening Day (2010) Project scenario.

Freeway Segments

Freeway segments exceeding the appropriate level of service standard are shown in bold print in Table 93. As can be seen in Table 93, implementation of the Project is projected to cause one (1) new freeway segment operational failure when compared to the Opening Day (2010) No Project scenario. The freeway segment is:

- SR 99 between Avenue 18 ½ and Avenue 17
 - NB – PM peak hour – LOS “C” to LOS “D”

Two (2) freeway segments that are projected to operate at a LOS “D” in the Opening Day (2010) No Project scenario is projected to continue to operate at a LOS “D” in the Opening Day (2010) Project scenario but are projected to show an increased density. These freeway segments are:

- SR 99 north of Avenue 18 ½
 - SB – PM peak hour – LOS “D”
- SR 99 south of Avenue 17
 - NB – AM peak hour – LOS “D”

Two (2) freeway segments that are projected to operate at a LOS “D” in the Opening Day (2010) No Project scenario are projected to operate at a LOS “E” in the Opening Day (2010) Project scenario. These freeway segments are:

- SR 99 between Avenue 18 ½ and Avenue 17
 - SB – PM peak hour – LOS “D” to LOS “E”
- SR 99 south of Avenue 17
 - NB – PM peak hour – LOS “D” to LOS “E”

One (1) freeway segment that is projected to operate at a LOS “E” in the Opening Day (2010) No Project scenario is projected to operate at a LOS “F” in the Opening Day (2010) Project scenario. The freeway segment is:

- SR 99 south of Avenue 17
 - SB – PM peak hour – LOS “E” to LOS “F”

The remaining freeway segments by time period are projected to operate at acceptable levels of service with or without the Alternative A, Proposed Project, in the Opening Day (2010) scenarios.

As shown in Table 93, all freeway segments projected to operate below acceptable levels of service in the Opening Day (2010) No Project and Opening Day (2010) Project scenarios are projected to operate at or above the acceptable levels of service in the Mitigated Opening Day (2010) Project scenario.

Intersections

Intersections exceeding the appropriate level of service standard are shown in bold print in Table 93. As can be seen in Table 93, implementation of the Project is projected to cause seven (7) new intersection operational impacts when compared to the Opening Day (2010) No Project scenario. These seven (7) intersections are:

- Avenue 18 ½ at SR 99 NB ramps
 - NB Approach – PM peak hour – LOS “C” to LOS “D”
- Avenue 17 at SR 99 SB ramps
 - SB Approach – AM peak hour – LOS “C” to LOS “E”
- Avenue 17 at Golden State Boulevard
 - NB Approach – AM peak hour – LOS “C” to LOS “F”
 - NB Approach – PM peak hour – LOS “D” to LOS “F”
- Avenue 17 at Road 23
 - WB Approach – PM peak hour – LOS “C” to LOS “E”
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps – PM peak hour – LOS “C” to LOS “D”
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145 – PM peak hour – LOS “C” to LOS “D”
- Avenue 12 at Golden State Boulevard – PM peak hour – LOS “D” to LOS “E”

TABLE 93:
COMPARISON OF 2010 NO PROJECT, 2010 PROJECT, AND MITIGATED 2010 PROJECT LEVELS OF SERVICE
MADERA SITE (ALTERNATIVE A, PROPOSED PROJECT ALTERNATIVE)

County Segment	AM Peak Hour						PM Peak Hour					
	No Project		Mitigated Project		No Project		Mitigated Project		No Project		Mitigated Project	
	LOS	Project	LOS	Project	LOS	Project	LOS	Project	LOS	Project	LOS	Project
Avenue 17 - SR 99 to Road 27	B		A		E		B		F		B	
Freeway Segment	LOS		Density (pc/mi/ln)		LOS		Density (pc/mi/ln)		LOS		Density (pc/mi/ln)	
SR 99 north of Avenue 18 1/2	No Project	Mitigated Project	No Project	Mitigated Project	No Project	Mitigated Project	No Project	Mitigated Project	No Project	Mitigated Project	No Project	Mitigated Project
• NB	C	B	23.9	24.3	C	B	16.5	16.5	C	C	25.7	25.2
• SB	C	B	19.6	20.3	D	B	13.3	13.3	D	C	33.6	32.5
SR 99 between Avenue 18 1/2 and Avenue 17	No Project	Mitigated Project	No Project	Mitigated Project	No Project	Mitigated Project	No Project	Mitigated Project	No Project	Mitigated Project	No Project	Mitigated Project
• NB	C	B	24.9	25.3	C	B	19.3	19.3	C	C	28.2	27.0
• SB	C	B	20.4	21.0	D	B	14.0	14.0	D	C	39.1	36.1
SR 99 south of Avenue 17	No Project	Mitigated Project	No Project	Mitigated Project	No Project	Mitigated Project	No Project	Mitigated Project	No Project	Mitigated Project	No Project	Mitigated Project
• NB	D	C	28.7	31.5	D	C	20.6	20.6	D	C	38.7	38.7
• SB	C	B	22.8	24.1	E	B	16.2	16.2	E	C	---	---
Intersection	LOS		Delay (sec)		LOS		Delay (sec)		LOS		Delay (sec)	
Avenue 18 1/2 at SR 99 NB ramps	No Project	Mitigated Project	No Project	Mitigated Project	No Project	Mitigated Project	No Project	Mitigated Project	No Project	Mitigated Project	No Project	Mitigated Project
• EB Left	A	B	6.4	8.4	A	B	13.4	13.4	A	B	5.6	8.1
• NB Approach	C	A	21.3	22.7	C	A	9.1	9.1	C	D	21.4	26.4
Avenue 18 1/2 at SR 99 SB ramps/Road 23	No Project	Mitigated Project	No Project	Mitigated Project	No Project	Mitigated Project	No Project	Mitigated Project	No Project	Mitigated Project	No Project	Mitigated Project
• WB Left-Through	A	A	0.8	0.8	A	A	1.5	1.4	A	A	1.5	1.4
• NB Approach	C	C	18.5	20.8	E	F	36.5	63.1	E	F	36.5	63.1
• SB Approach	C	C	16.5	17.2	D	E	28.5	36.5	D	E	28.5	36.5
Avenue 17 at SR 99 NB ramps	No Project	Mitigated Project	No Project	Mitigated Project	No Project	Mitigated Project	No Project	Mitigated Project	No Project	Mitigated Project	No Project	Mitigated Project
• EB Left	B	B	10.0	11.0	B	B	10.2	13.9	B	B	10.2	13.9
• NB Approach	F	F	114.6	6015.5	F	F	371.0	4113.0	F	F	371.0	4113.0
Avenue 17 at SR 99 SB off-ramp	No Project	Mitigated Project	No Project	Mitigated Project	No Project	Mitigated Project	No Project	Mitigated Project	No Project	Mitigated Project	No Project	Mitigated Project
• SB Approach	C	E	16.6	37.6	F	F	174.5	6974.5	F	F	174.5	6974.5
Avenue 17 at Golden State Boulevard	No Project	Mitigated Project	No Project	Mitigated Project	No Project	Mitigated Project	No Project	Mitigated Project	No Project	Mitigated Project	No Project	Mitigated Project
• EB Left	A	A	8.2	9.2	A	B	8.7	10.7	A	B	8.7	10.7
• WB Left	A	A	8.5	9.2	A	B	8.9	10.8	A	B	8.9	10.8
• NB Approach	C	F	22.2	250.4	D	F	32.4	---	D	F	32.4	---
• SB Approach	F	F	113.9	---	F	F	---	---	F	F	---	---

SR = State Route Delay per vehicle secs = seconds
 Bolded text = intersection/movement operates below the appropriate level of service standard

SB = southbound WB = westbound EB = eastbound

--- = exceeds software parameters

**TABLE 93:
COMPARISON OF 2010 NO PROJECT, 2010 PROJECT, AND MITIGATED 2010 PROJECT LEVELS OF SERVICE
MADERA SITE (ALTERNATIVE A, PROPOSED PROJECT ALTERNATIVE)**

Intersection	AM Peak Hour						PM Peak Hour					
	LOS			Delay (sec)			LOS			Delay (sec)		
	No Project	Project	Mitigated Project	No Project	Project	Mitigated Project	No Project	Project	Mitigated Project	No Project	Project	Mitigated Project
Avenue 17 at Road 23			A			7.6			A			9.7
• NB Left-Through-Right	A	A	A	0.7	0.7	0.7	A	A	A	1.4	1.7	
• SB Left-Through-Right	A	A	A	0.7	0.7	0.7	A	A	A	0.6	0.6	
• WB Approach	B	C	C	13.9	15.5	15.5	C	E	E	18.9	39.0	
• EB Approach	B	B	B	12.3	13.1	13.1	B	C	C	14.9	19.2	
Cleveland Avenue/Avenue 15 1/2 at SR 99 NB ramps	B	B	B	14.3	14.9	14.9	C	D	C	22.7	36.4	24.4
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	C	C	B	21.1	22.2	10.6	C	D	B	33.3	38.7	13.1
Avenue 12/Golden State Boulevard at SR 99 SB ramps			B			14.1			B			13.1
• SB Left-Through	A	A	A	6.1	6.1	6.1	A	A	A	3.7	3.7	
• WB Approach	E	F	F	43.3	50.7	50.7	D	E	E	30.0	44.3	
Avenue 12 at Golden State Boulevard	D	D	D	54.0	54.3	39.8	D	E	D	52.0	58.4	41.2
SR = State Route	secs = seconds											
	* Delay per vehicle											
	Bolded text = intersection/movement operates below the appropriate level of service standard											
	NB = northbound						SB = southbound					
	WB = westbound						EB = eastbound					
	--- = exceeds software parameters											

TABLE 94:
COMPARISON OF 2030 NO PROJECT, 2030 PROJECT, AND MITIGATED 2030 PROJECT LEVELS OF SERVICE
MADERA SITE (ALTERNATIVE A, PROPOSED PROJECT ALTERNATIVE)

County Segment	AM Peak Hour			PM Peak Hour		
	No Project	Project	Mitigated Project	No Project	Project	Mitigated Project
	LOS	LOS	LOS	LOS	LOS	LOS
Avenue 17 – Road 23 to SR 99	F	F	A	F	F	C
Avenue 17 – SR 99 to Road 27	E	F	A	F	F	B
Freeway Segment	LOS			LOS		
SR 99 north of Avenue 18 1/2	No Project	Mitigated Project	Density (pc/mi/ln)	No Project	Mitigated Project	Density (pc/mi/ln)
• NB	D	C	26.5	D	C	33.2
• SB	C	C	23.9	E	C	41.4
SR 99 between Avenue 18 1/2 and Avenue 17	No Project	Mitigated Project	Density (pc/mi/ln)	No Project	Mitigated Project	Density (pc/mi/ln)
• NB	D	C	26.4	D	C	31.4
• SB	C	C	23.5	E	C	40.5
SR 99 south of Avenue 17	No Project	Mitigated Project	Delay (sec)	No Project	Mitigated Project	Delay (sec)
• NB	E	C	39.0	F	E	—
• SB	F	C	30.1	D	F	29.2
Intersection	LOS			LOS		
Avenue 18 1/2 at SR 99 NB ramps	No Project	Mitigated Project	Delay (sec)	No Project	Mitigated Project	Delay (sec)
• EB Left	A	B	7.5	B	B	10.1
• NB Approach	F	A	337.7	F	B	7523.8
Avenue 18 1/2 at SR 99 SB ramps/Road 23	No Project	Mitigated Project	Delay (sec)	No Project	Mitigated Project	Delay (sec)
• SB Approach	F	A	52.0	F	B	58.6
Avenue 18 1/2 at Pistachio Drive	No Project	Mitigated Project	Delay (sec)	No Project	Mitigated Project	Delay (sec)
• EB Left-Through	A	A	0.7	A	A	2.5
• SB Approach	C	B	24.8	F	C	187.5
Avenue 18 1/2 at Golden State Boulevard	No Project	Mitigated Project	Delay (sec)	No Project	Mitigated Project	Delay (sec)
• EB Left-Through-Right	A	A	1.0	A	A	0.9
• WB Left-Through	A	A	6.6	A	A	7.9
• NB Approach	C	C	19.2	F	F	137.3
• SB Approach	F	F	429.1	F	F	9379.8
Avenue 18 at Road 23	No Project	Mitigated Project	Delay (sec)	No Project	Mitigated Project	Delay (sec)
• NB Left-Through-Right	A	A	0.0	A	A	0.2
• SB Left-Through-Right	A	A	0.8	A	A	1.0
• WB Approach	B	C	14.5	C	C	17.9
• EB Approach	C	C	16.4	C	D	24.8

SR = State Route
 Delay per vehicle
 Intersection/movement operates below the appropriate level of service standard
 ssec = seconds
 SB = southbound
 NB = northbound
 WB = westbound
 EB = eastbound
 ... = exceeds software parameters

TABLE 94:
COMPARISON OF 2030 NO PROJECT, 2030 PROJECT, AND MITIGATED 2030 PROJECT LEVELS OF SERVICE
MADERA SITE (ALTERNATIVE A, PROPOSED PROJECT ALTERNATIVE)

Intersection	AM Peak Hour					PM Peak Hour					
	LOS			Delay (sec)		LOS			Delay (sec)		
	No Project	Mitigated Project	No Project	Project	Mitigated Project	No Project	Project	Mitigated Project	No Project	Mitigated Project	
Avenue 17 at SR 99 NB ramps	D	C	27.7	75.1	22.2	F	F	F	617.2	268.4	96.0
• EB Left											
• NB Approach	F	A	6790.7	24.4	5.1	F	F	B		336.6	13.6
Avenue 17 at SR 99 SB off-ramp	F	C	7445.5			F					
• SB Approach											
Avenue 17 at Golden State Boulevard	B	C	12.5	65.1	23.3	D	F	F	29.4	416.9	133.2
• EB Left											
• WB Left	F	C	71.5			F			275.4		
• NB Approach	F					F					
• SB Approach	F					F					
Avenue 17 at Road 23	A	B	3.2	58.6	13.3	A	F	B		256.4	16.4
• NB Left-Through-Right											
• SB Left-Through-Right	A	A	0.8			A	A	A	0.3		
• WB Approach	F					F					
• EB Approach	F					F					
Avenue 16/Ellis Overcrossing at Aviation Drive	F	C	115.7	126.3	22.7	F	F	D	399.6	415.2	53.8
Cleveland Avenue/Avenue 15 1/2 at SR 99 NB ramps	C	B	26.8	16.8	12.5	F	F	C	199.2	93.9	29.2
Cleveland Avenue/Avenue 15 1/2 at SR 99 SB ramps	C	B	31.4	27.5	18.3	F	F	C	133.0	80.3	27.9
Avenue 15 1/2 at Road 23	A	A		5.4	5.4	A		A			7.4
• NB Left-Through-Right	A	A	0.0	0.0		A	A	A	0.0	0.0	
• SB Left-Through-Right	A	A	1.1	1.1		A	A	A	1.7	1.7	
• WB Approach	C	C	16.9	17.5		D	E	E	34.4	38.1	
• EB Approach	A	A	0.0	0.0		C	C	C	19.0	19.8	
SR 145/Madera Avenue at SR 99 NB ramps	D	B	37.0	51.2	16.6	F	F	C	242.9	264.3	30.7
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	E	C	70.9	24.4	15.3	F	F	C	238.7	99.2	25.1
Olive Avenue/Avenue 14 at SR 99 SB off-ramp	C	B	29.7	16.2	12.7	F	F	B	163.2	24.4	16.6
Avenue 12/Golden State Boulevard at SR 99 SB ramps	A	C	9.1	21.7	20.6	A	C	C	7.5	24.1	17.8
• SB Left-Through											
• WB Approach	F	C	933.4			F			9051.8		
Avenue 12 at Golden State Boulevard	F	C	205.2	75.6	34.4	F	F	D	328.4	155.1	39.5
Avenue 12 at SR 99 NB ramps	C	B	21.5	22.9	16.5	E	E	B	57.9	63.8	18.0

sec = seconds
SR = State Route
Delay per vehicle
Intersection/movement operates below the appropriate level of service standard

NB = northbound
SB = southbound
WB = westbound
EB = eastbound

--- = exceeds software parameters

Three (3) intersections that are projected to operate at a LOS “F” in the Opening Day (2010) No Project scenario are projected to continue to operate at a LOS “F” in the Opening Day (2010) Project scenario but are projected to show an increased intersection stopped delay. These three (3) intersections are:

- Avenue 17 at SR 99 NB ramps
 - NB Approach – AM/PM peak hours – LOS “F”
- Avenue 17 at SR 99 SB ramps
 - SB Approach – PM peak hour – LOS “F”
- Avenue 17 at Golden State Boulevard
 - SB Approach – AM/PM peak hours – LOS “F”

Two (2) intersections that are projected to operate at a LOS “D” or “E” in the Opening Day (2010) No Project scenario are projected to show an increase in level of service and associated stopped delay in the Opening Day (2010) Project scenario. These two (2) intersections are:

- Avenue 18 ½ at SR 99 SB ramps/Road 23
 - NB Approach – PM peak hour – LOS “E” to LOS “F”
 - SB Approach – PM peak hour – LOS “D” to LOS “E”
- Avenue 12/Golden State Boulevard at SR 99 SB ramps
 - WB Approach – AM peak hour – LOS “E” to LOS “F”
 - WB Approach – PM peak hour – LOS “D” to LOS “E”

The remaining intersections by time period are projected to operate at acceptable levels of service with or without the Alternative A, Proposed Project, in the Opening Day (2010) scenarios.

As shown in Table 93, all intersections projected to operate below acceptable levels of service in the Opening Day (2010) No Project and Opening Day (2010) Project scenarios are projected to operate at or above the acceptable levels of service in the Mitigated Opening Day (2010) Project scenario.

Comparison of 2030 No Project, 2030 Project, and Mitigated 2030 Project Scenarios

County Segments

County segments exceeding the appropriate level of service standard are shown in bold print in Table 94. As can be seen in Table 94, one (1) County segment is projected to operate at a LOS “F” in the 2030 No Project scenario is projected to continue to operate at a LOS “F” in the 2030 Project scenario. This one (1) segment is:

- Avenue 17 – Road 23 to SR 99 – AM/PM peak hours – LOS “F”

Because the mitigations identified in the 2010 Project scenario were used in the 2030 Project scenario, level of service and measures of effectiveness comparisons of some county segments between the 2030 No Project scenario and the 2030 Project scenario could not be made due to additional lanes. The County segment analyzed with a different number of lanes in the 2030 No Project and 2030 Project scenarios is:

- Avenue 17 – SR 99 to Road 27

This County segment is projected to operate at a LOS “E/F” in the 2030 No Project scenario AM/PM peak hour respectively, and is projected to operate at a LOS “A/E” in the 2030 Project scenario AM/PM peak hour respectively.

The remaining County segments are projected to operate at acceptable levels of service with or without the Alternative A, Proposed Project, in the 2030 scenarios.

As shown in Table 94, all County segments projected to operate below acceptable levels of service in the 2030 No Project and 2030 Project scenarios are projected to operate at or above the acceptable levels of service in the Mitigated 2030 Project scenario.

Freeway Segments

Freeway segments exceeding the appropriate level of service standard are shown in bold print in Table 94. As can be seen in Table 94, five (5) freeway segments that are projected to operate at a LOS "D", "E" or "F" in the 2030 No Project scenario are projected to continue to operate at a LOS "D", "E" or "F" in the 2030 Project scenario but are projected to show an increased density. These five (5) freeway segments are:

- SR 99 north of Avenue 18 ½
 - NB – AM/PM peak hours – LOS "D"
 - SB – PM peak hour – LOS "E"
- SR 99 between Avenue 18 ½ and Avenue 17
 - NB – AM/PM peak hours – LOS "D"
- SR 99 south of Avenue 17
 - NB – AM peak hour – LOS "E"
 - NB – PM peak hour – LOS "F"
 - SB – AM peak hour – LOS "D"
 - SB – PM peak hour – LOS "F"

One (1) freeway segment that is projected to operate at a LOS "E" in the 2030 No Project scenario is projected to continue to operate at a LOS "E" in the 2030 Project scenario but is projected to show no increase in density. This one (1) freeway segment is:

- SR 99 between Avenue 18 ½ and Avenue 17
 - SB – PM peak hour – LOS "E"

The remaining freeway segments by time period are projected to operate at acceptable levels of service with or without the Alternative A, Proposed Project, in the 2030 scenarios.

As shown in Table 94, two (2) freeway segments are projected to operate below acceptable levels of service in the Mitigated 2030 Project scenario. The NB and SB SR 99 south of Avenue 17 freeway segments are projected to operate at LOS "E/F" respectively in the PM peak hour. Per discussions with Caltrans staff, SR 99 is only programmed for eight (8) lanes for this segment. All remaining freeway segments are projected to operate at or above the level of service standards in the Mitigated 2030 Project, Alternative A, scenario. However with the proposed Alternative A mitigations, these two (2) locations in the 2030 Project scenario are projected to operate above the 2030 No Project measures of effectiveness (freeway density). Therefore these two (2) locations should be viewed as mitigated as appropriate by the Project.

Intersections

Intersections exceeding the appropriate level of service standard are shown in bold print in Table 94. As can be seen in Table 94 implementation of the Project is projected to cause one (1) new intersection operational failures when compared to the 2030 No Project scenario. This intersection is:

- Avenue 15 ½ at Road 23 – WB Approach – PM peak hour – LOS “D” to LOS “E”

Five (5) intersections that are projected to operate at a LOS “D”, “E”, or “F” in the 2030 No Project scenario are projected to continue to operate at a LOS “D”, “E”, or “F” in the 2030 Project scenario but are projected to show an increased intersection stopped delay. These five (5) intersections are:

- Avenue 16/Ellis Overcrossing at Aviation Drive – AM/PM peak hours – LOS “F”
- Avenue 12 at SR 99 NB ramps – PM peak hour – LOS “E”
- SR 145/Madera Avenue at SR 99 NB ramps
 - AM peak hour – LOS “D”
 - PM peak hour – LOS “F”
- Avenue 18 ½ at Pistachio Drive – PM peak hour – LOS “F”
- Avenue 18 ½ at Golden State Boulevard/Road 23
 - NB Approach – PM peak hour – LOS “F”
 - SB Approach – AM/PM peak hours – LOS “F”

Because the mitigations identified in the 2010 Project scenario were used in the 2030 Project scenario, level of service and measures of effectiveness comparisons of some intersections between the 2030 No Project scenario and the 2030 Project scenario could not be made due to either signalization or reconfiguring of the intersections. Intersections analyzed with different lane configurations and intersection control in the 2030 No Project and 2030 Project scenarios are as follows:

- Avenue 18 ½ at SR 99 NB ramps
- Avenue 18 ½ at SR 99 SB ramps
- Avenue 17 at SR 99 NB ramps
- Avenue 17 at SR 99 SB ramps
- Avenue 17 at Golden State Boulevard
- Avenue 17 at Road 23
- Avenue 12/Golden State Boulevard at SR 99 SB ramps

Three (3) intersections are projected to operate at a LOS “F” in the 2030 No Project scenario and are projected to continue to operate at a LOS “F” in the 2030 Project scenario but are projected to show a decreased intersection stopped delay. These three (3) intersections are:

- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps – PM peak hour – LOS “F”
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145 – PM peak hour – LOS “F”
- Avenue 12 at Golden State Boulevard – PM peak hour – LOS “F”

Because of changing traffic conditions and optimization of coordinated signals, some intersections are projected to show a decrease in delay from the 2030 No Project scenario to the 2030 Project scenario. Two (2) intersections that are projected to operate at a LOS “D”, “E”, or “F” in the 2030 No Project scenario are projected to continue to operate at a LOS “D”, “E”, or “F” in the 2030 Project scenario but are projected to show a decreased intersection stopped delay. These two (2) intersections are:

- Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps – PM peak hour – LOS “F” to LOS “E”
- Avenue 12 at Golden State Boulevard – AM peak hour – LOS “F” to LOS “E”

Two (2) intersections that are projected to operate at a LOS “E” or “F” in the 2030 No Project scenario are projected to operate at an acceptable level of service in the 2030 Project scenario. These two (2) locations are:

- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145 - AM peak hour – LOS “E” to LOS “C”

- Olive Avenue/Avenue 14 at SR 99 SB off-ramp – PM peak hour – LOS “F” to LOS “C”

The remaining intersections by time period are projected to operate at acceptable levels of service with or without the Alternative A, Proposed Project, in the 2030 scenarios.

As shown in Table 94, two (2) intersections are projected to operate below acceptable levels of service in the Mitigated 2030 Project scenario. The Avenue 17 at SR 99 NB ramps intersection and the Avenue 17 at Golden State Boulevard intersection are both is projected to operate at a LOS “F” in the PM peak hour. Per the Avenue 17 PSR, Avenue 17 will be widened to a maximum of six (6) through lanes between the ramps and seven (7) through lanes between the SB ramps and Golden State Boulevard. This maximum six (6) to seven (7) lane cross-section is consistent with prior discussions with Caltrans staff, which said that widening Avenue 17 to eight (8) lanes is not recommended. All remaining intersections are projected to operate at or above the level of service thresholds in the Mitigated 2030 Project, Alternative A, scenario. However with the proposed Alternative A mitigations, these two (2) locations in the 2030 Project scenario are projected to operate above the 2030 No Project measures of effectiveness (intersection delay). Therefore these two (2) locations should be viewed as mitigated as appropriate by the Project.

Alternative B (Madera Site)

Tables 95 and 96 compare the Alternative B, Reduced Intensity Alternative, Opening Day (2010) No Project, Opening Day (2010) Project, and Mitigated Opening Day (2010) Project, and the 2030 No Project, 2030 Project, and Mitigated 2030 Project level of service results for County segments, freeway segments and intersections projected to operate below the adopted level of service standards, respectively.

Comparison of Opening Day (2010) No Project, Opening Day (2010) Project, and Mitigated Opening Day (2010) Project Scenarios

County Segments

County segments exceeding the appropriate level of service standard are shown in bold print in Table 95. As can be seen in Table 95, one (1) County segment is projected to operate at a LOS “E” in the Opening Day (2010) No Project scenario and is projected to operate at a LOS “F” in the Opening Day (2010) Project scenario. The County segment is:

- Avenue 17 – SR 99 to Road 27 – PM peak hour – LOS “E” to LOS “F”

The remaining County segments are projected to operate at acceptable levels of service with or without the Alternative B, Reduced Intensity Alternative, in the Opening Day (2010) scenarios.

As shown in Table 95, all County segments projected to operate below acceptable levels of service in the Opening Day (2010) No Project and Opening Day (2010) Project scenarios are projected to operate at or above the acceptable levels of service in the Mitigated Opening Day (2010) Project scenario.

Freeway Segments

Freeway segments exceeding the appropriate level of service standard are shown in bold print in Table 95. As can be seen in Table 95, implementation of the Project is projected to cause one (1) new freeway segment operational failure when compared to the Opening Day (2010) No Project scenario. The freeway segment is:

- SR 99 between Avenue 18 ½ and Avenue 17

- NB – PM peak hour – LOS “C” to LOS “D”

TABLE 95:
COMPARISON OF 2010 NO PROJECT, 2010 PROJECT, AND MITIGATED 2010 PROJECT LEVELS OF SERVICE
MADERA SITE (ALTERNATIVE B, REDUCED INTENSITY ALTERNATIVE)

County Segment	AM Peak Hour				PM Peak Hour				Density (pc/mi/h)
	No Project		Mitigated Project		No Project		Mitigated Project		
	LOS	Project	LOS	Project	LOS	Project	LOS	Project	
Avenue 17 - SR 99 to Road 27	B	C	A	E	F				
Freeway Segment	LOS		Density (pc/mi/h)		LOS		Density (pc/mi/h)		
SR 99 north of Avenue 18 1/2	No Project	Mitigated Project	No Project	Mitigated Project	No Project	Mitigated Project	No Project	Mitigated Project	
• NB	C	B	23.9	24.2	C	B	25.7	25.2	
• SB	C	B	19.6	20.0	D	C	33.6	32.5	
SR 99 between Avenue 18 1/2 and Avenue 17	C	C	24.9	25.3	C	C	28.2	27.0	
• NB	C	C	20.4	21.0	D	E	39.1	36.1	
• SB	D	C	28.7	31.5	D	C	---	---	
SR 99 south of Avenue 17	C	B	22.8	24.7	E	C	---	---	
• NB	C	B	---	---	F	C	---	---	
• SB	C	B	---	---	F	C	---	---	
Intersection	LOS		Delay (sec)		LOS		Delay (sec)		
Avenue 18 1/2 at SR 99 NB ramps	No Project	Mitigated Project	No Project	Mitigated Project	No Project	Mitigated Project	No Project	Mitigated Project	
• EB Left	A	B	6.4	8.4	A	B	5.6	8.1	
• NB Approach	C	A	21.3	22.7	C	A	21.4	26.4	
Avenue 18 1/2 at SR 99 SB ramps/Road 23	A	A	0.8	0.8	A	A	1.5	1.4	
• WB Left-Through	C	C	18.5	20.8	E	F	36.5	63.1	
• NB Approach	C	C	16.5	17.2	D	E	28.5	36.5	
Avenue 17 at SR 99 NB ramps	B	B	10.0	11.0	B	B	10.2	13.9	
• EB Left	F	A	114.6	6001.8	F	F	371.0	4093.9	
• NB Approach	C	E	16.6	37.6	F	F	174.5	6974.5	
Avenue 17 at SR 99 SB off-ramp	A	B	8.2	9.2	A	B	8.7	10.7	
• SB Approach	A	A	8.5	9.2	A	B	8.9	10.8	
Avenue 17 at Golden State Boulevard	C	F	22.2	250.4	D	F	32.4	---	
• EB Left	F	F	113.9	---	F	F	---	---	
• WB Left	A	A	0.7	0.7	A	A	1.4	1.7	
• NB Approach	A	A	0.7	0.7	A	A	0.6	0.6	
Avenue 17 at Road 23	B	C	13.9	15.5	C	E	18.9	39.2	
• SB Approach	B	B	---	---	C	E	---	---	
• NB Left-Through-Right	B	B	---	---	C	E	---	---	
• SB Left-Through-Right	B	B	---	---	C	E	---	---	
• WB Approach	B	B	---	---	C	E	---	---	
• EB Approach	B	B	---	---	C	E	---	---	

SR = State Route
 Delay per vehicle
 Bolded Text = intersection/movement operates below the appropriate level of service standard
 sec = seconds
 --- = exceeds software parameters
 NB = northbound
 SB = southbound
 WB = westbound
 EB = eastbound

TABLE 95:
COMPARISON OF 2010 NO PROJECT, 2010 PROJECT, AND MITIGATED 2010 PROJECT LEVELS OF SERVICE
MADERA SITE (ALTERNATIVE B, REDUCED INTENSITY ALTERNATIVE)

Intersection	AM Peak Hour						PM Peak Hour					
	LOS			Delay (sec)			LOS			Delay (sec)		
	No Project	Mitigated Project	No Project	Project	Mitigated Project	No Project	Project	Mitigated Project	No Project	Project	Mitigated Project	
Cleveland Avenue/Avenue 15 1/2 at SR 99 NB ramps	B	B	14.3	14.9	12.1	C	D	C	22.7	36.8	24.9	
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	C	B	21.1	22.0	10.5	C	D	B	33.3	38.7	13.5	
Avenue 12/Golden State Boulevard at SR 99 SB ramps	A	B	6.1	6.1	18.1	A	B	B	3.7	3.7	14.8	
• SB Left-Through	E	F	43.3	50.7		D	E		30.0	44.3		
• WB Approach	D	D	54.0	54.3	33.5	D	E	D	52.0	58.4	41.6	

SR = State Route
 Delay per vehicle
 secs = seconds
 Bolded text = intersection/movement operates below the appropriate level of service standard

SB = southbound

WB = westbound

EB = eastbound

--- = exceeds software parameters

TABLE 96:
COMPARISON OF 2030 NO PROJECT, 2030 PROJECT, AND MITIGATED 2030 PROJECT LEVELS OF SERVICE
MADERA SITE (ALTERNATIVE B, REDUCED INTENSITY ALTERNATIVE)

County Segment	AM Peak Hour				PM Peak Hour			
	No Project	Project	Mitigated Project	No Project	Project	Mitigated Project	No Project	Project
	LOS	LOS	LOS	LOS	LOS	LOS	LOS	LOS
Avenue 17 - Road 23 to SR 99	F	F	A	F	F	C	F	C
Avenue 17 - SR 99 to Road 27	E	F	A	F	F	B	F	B
Freeway Segment	LOS		Density (pc/mi/ln)		LOS		Density (pc/mi/ln)	
SR 99 north of Avenue 18 1/2	No Project	Mitigated Project	No Project	Project	Mitigated Project	No Project	Project	Mitigated Project
• NB	D	C	26.5	19.4	C	D	33.2	34.3
• SB	C	C	23.9	24.1	C	E	41.4	43.0
SR 99 between Avenue 18 1/2 and Avenue 17	No Project	Mitigated Project	No Project	Project	Mitigated Project	No Project	Project	Mitigated Project
• NB	D	C	26.4	19.3	C	D	31.4	32.5
• SB	C	C	23.5	23.7	C	E	40.5	42.1
SR 99 south of Avenue 17	No Project	Mitigated Project	No Project	Project	Mitigated Project	No Project	Project	Mitigated Project
• NB	E	C	39.0	23.5	C	F	---	---
• SB	F	C	---	21.0	C	D	29.2	---
Intersection	LOS		Delay (sec)		LOS		Delay (sec)	
Avenue 18 1/2 at SR 99 NB ramps	No Project	Mitigated Project	No Project	Project	Mitigated Project	No Project	Project	Mitigated Project
• EB Left	A	B	7.5	14.5	B	B	10.1	12.8
• NB Approach	F	B	337.7	---	B	F	7523.8	---
Avenue 18 1/2 at SR 99 SB ramps/Road 23	No Project	Mitigated Project	No Project	Project	Mitigated Project	No Project	Project	Mitigated Project
• EB Left-Through	A	A	0.7	0.7	A	A	2.2	2.6
• SB Approach	C	B	24.8	26.7	B	F	187.5	227.0
Avenue 18 1/2 at Golden State Boulevard	No Project	Mitigated Project	No Project	Project	Mitigated Project	No Project	Project	Mitigated Project
• EB Left-Through-Right	A	A	1.0	1.0	A	A	0.9	0.9
• WB Left-Through	A	A	6.6	7.3	A	A	7.5	8.7
• NB Approach	C	C	19.2	31.1	C	F	137.3	---
• SB Approach	F	F	429.1	593.0	F	F	9379.8	---
Avenue 18 at Road 23	No Project	Mitigated Project	No Project	Project	Mitigated Project	No Project	Project	Mitigated Project
• NB Left-Through-Right	A	A	0.0	0.0	A	A	0.2	0.2
• SB Left-Through-Right	A	A	0.8	1.9	A	A	1.0	2.2
• WB Approach	B	B	14.5	14.9	B	C	17.9	20.3
• EB Approach	C	C	16.4	18.0	C	D	24.8	29.3
Avenue 17 at SR 99 NB ramps	No Project	Mitigated Project	No Project	Project	Mitigated Project	No Project	Project	Mitigated Project
• EB Left	D	C	27.7	69.3	C	F	617.2	260.2
• NB Approach	F	C	6790.7	---	F	F	---	---

SR = State Route
Delay per vehicle
secs = seconds
Bolted Text = intersection/movement operates below the appropriate level of service standard

NB = northbound
SB = southbound
WB = westbound
EB = eastbound

--- = exceeds software parameters

TABLE 96:
COMPARISON OF 2030 NO PROJECT, 2030 PROJECT, AND MITIGATED 2030 PROJECT LEVELS OF SERVICE
MADERA SITE (ALTERNATIVE B, REDUCED INTENSITY ALTERNATIVE)

Intersection	LOS				AM Peak Hour				PM Peak Hour				
	No Project	Project	Mitigated Project	No Project	Delay (sec)		No Project	Project	Mitigated Project	No Project	Delay (sec)		Mitigated Project
					Project	Mitigated Project					Project	Mitigated Project	
Avenue 17 at SR 99 SB off-ramp	F	B	A	7445.5	17.1	5.1	F	F	B	277.5	11.8		
• SB Approach			C										
Avenue 17 at Golden State Boulevard	B	E	C	12.5	62.5	22.4	D	D	F	409.1	118.6		
• EB Left													
• WB Left	F	F		71.5			F	F					
• NB Approach	F	F					F	F					
• SB Approach	F	F					F	F					
Avenue 17 at Road 23	A	E	B	3.2	56.3	13.2	A	A	B	248.6	16.0		
• NB Left-Through-Right													
• SB Left-Through-Right	A	A		0.8			A	A					
• WB Approach	F	F					F	F					
• EB Approach	F	F					F	F					
Avenue 16/Ellis Overcrossing at Aviation Drive	F	F	C	115.7	123.5	22.4	F	F	D	399.6	52.4		
Cleveland Avenue/Avenue 15 1/2 at SR 99 NB ramps	C	B	B	26.8	16.9	12.4	C	F	C	199.2	28.9		
Cleveland Avenue/Avenue 15 1/2 at SR 99 SB ramps	C	C	B	31.4	27.0	18.2	C	F	C	133.0	27.2		
Avenue 15 1/2 at Road 23	A	A	A	0.0	0.0	5.4	A	A	A	0.0	7.1		
• NB Left-Through-Right													
• SB Left-Through-Right	A	A		1.1	1.1	0.0	A	A		0.0	0.0		
• WB Approach	C	C		16.9	17.3		C	D		1.7	1.7		
• EB Approach	A	A		0.0	0.0		A	C		34.4	37.1		
SR 145/Madera Avenue at SR 99 NB ramps	D	D	B	37.0	48.5	15.2	D	F	C	242.9	23.3		
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	E	C	B	70.9	24.4	15.8	E	F	C	238.7	28.6		
Olive Avenue/Avenue 14 at SR 99 SB off-ramp	C	B	B	29.7	16.2	12.7	C	F	C	163.2	19.0		
Avenue 12/Golden State Boulevard at SR 99 SB ramps	A	C	B	9.1	21.7	17.1	A	F	B	24.0	17.1		
• SB Left-Through													
• WB Approach	F	E	C	9323.4			F			9051.8			
Avenue 12 at Golden State Boulevard	F	E	C	205.2	75.2	27.3	F	F	D	328.4	39.9		
Avenue 12 at SR 99 NB ramps	C	C	B	21.5	22.8	11.5	C	E	B	57.9	15.0		

secs = seconds
SR = State Route
Bolded Text = intersection/movement operates below the appropriate level of service standard

NB = northbound
SB = southbound
WB = westbound
EB = eastbound

--- = exceeds software parameters

Two (2) freeway segments that are projected to operate at a LOS “D” in the Opening Day (2010) No Project scenario are projected to continue to operate at a LOS “D” in the Opening Day (2010) Project scenario but are projected to show an increased density. The freeway segments are:

- SR 99 north of Avenue 18 ½
 - SB – PM peak hour – LOS “D”
- SR 99 south of Avenue 17
 - NB – AM peak hour – LOS “D”

Two (2) freeway segments that are projected to operate at a LOS “D” in the Opening Day (2010) No Project scenario are projected to operate at a LOS “E” in the Opening Day (2010) Project scenario. These freeway segments are:

- SR 99 between Avenue 18 ½ and Avenue 17
 - SB – PM peak hour – LOS “D” to LOS “E”
- SR 99 south of Avenue 17
 - NB – PM peak hour – LOS “D” to LOS “E”

One (1) freeway segment that is projected to operate at a LOS “E” in the Opening Day (2010) No Project scenario is projected to operate at a LOS “F” in the Opening Day (2010) Project scenario. The freeway segment is:

- SR 99 south of Avenue 17
 - SB – PM peak hour – LOS “E” to LOS “F”

The remaining freeway segments by time period are projected to operate at acceptable levels of service with or without the Alternative B, Reduced Intensity Alternative, in the Opening Day (2010) scenarios.

As shown in Table 95, all freeway segments projected to operate below acceptable levels of service in the Opening Day (2010) No Project and Opening Day (2010) Project scenarios are projected to operate at or above the acceptable levels of service in the Mitigated Opening Day (2010) Project scenario.

Intersections

Intersections exceeding the appropriate level of service standard are shown in bold print in Table 95. As can be seen in Table 95, implementation of the Project is projected to cause seven (7) new intersection operational impacts when compared to the Opening Day (2010) No Project scenario. These seven (7) intersections are:

- Avenue 18 ½ at SR 99 NB ramps
 - NB Approach – PM peak hour – LOS “C” to LOS “D”
- Avenue 17 at SR 99 SB ramps
 - SB Approach – AM peak hour – LOS “C” to LOS “E”
- Avenue 17 at Golden State Boulevard
 - NB Approach – AM peak hour – LOS “C” to LOS “F”
 - NB Approach – PM peak hour – LOS “D” to LOS “F”
- Avenue 17 at Road 23
 - WB Approach – PM peak hour – LOS “C” to LOS “E”
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps – PM peak hour – LOS “C” to LOS “D”
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145 – PM peak hour – LOS “C” to LOS “D”
- Avenue 12 at Golden State Boulevard – PM peak hour – LOS “D” to LOS “E”

Three (3) intersections that are projected to operate at a LOS “F” in the Opening Day (2010) No Project scenario are projected to continue to operate at a LOS “F” in the Opening Day (2010) Project scenario but are projected to show an increased intersection stopped delay. These three (3) intersections are:

- Avenue 17 at SR 99 NB ramps
 - NB Approach – AM/PM peak hours – LOS “F”
- Avenue 17 at SR 99 SB ramps
 - SB Approach – PM peak hour – LOS “F”
- Avenue 17 at Golden State Boulevard
 - SB Approach – AM/PM peak hours – LOS “F”

Two (2) intersections that are projected to operate at a LOS “D” or “E” in the Opening Day (2010) No Project scenario are projected to show an increase in level of service and associated stopped delay in the Opening Day (2010) Project scenario. These two (2) intersections are:

- Avenue 18 ½ at SR 99 SB ramps/Road 23
 - NB Approach – PM peak hour – LOS “E” to LOS “F”
 - SB Approach – PM peak hour – LOS “D” to LOS “E”
- Avenue 12/Golden State Boulevard at SR 99 SB ramps
 - WB Approach – AM peak hour – LOS “E” to LOS “F”
 - WB Approach – PM peak hour – LOS “D” to LOS “E”

The remaining intersections by time period are projected to operate at acceptable levels of service with or without the Alternative B, Reduced Intensity Alternative, in the Opening Day (2010) scenarios.

As shown in Table 95, all intersections projected to operate below acceptable levels of service in the Opening Day (2010) No Project and Opening Day (2010) Project scenarios are projected to operate at or above the acceptable levels of service in the Mitigated Opening Day (2010) Project scenario.

Comparison of 2030 No Project, 2030 Project, and Mitigated 2030 Project Scenarios

County Segments

County segments exceeding the appropriate level of service standard are shown in bold print in Table 96. As can be seen in Table 96, one (1) County segment is projected to operate at a LOS “F” in the 2030 No Project scenario is projected to continue to operate at a LOS “F” in the 2030 Project scenario. This one (1) segment is:

- Avenue 17 – Road 23 to SR 99 – AM/PM peak hours – LOS “F”

Because the mitigations identified in the 2010 Project scenario were used in the 2030 Project scenario, level of service and measures of effectiveness comparisons of some county segments between the 2030 No Project scenario and the 2030 Project scenario could not be made due to additional lanes. The County segment analyzed with a different number of lanes in the 2030 No Project and 2030 Project scenarios is:

- Avenue 17 – SR 99 to Road 27

This County segment is projected to operate at a LOS “E/F” in the 2030 No Project scenario AM/PM peak hour respectively, and is projected to operate at a LOS “A/E” in the 2030 Project scenario AM/PM peak hour respectively.

The remaining County segments are projected to operate at acceptable levels of service with or without the Alternative B, Reduced Intensity Alternative, in the 2030 scenario.

As shown in Table 96, all County segments projected to operate below acceptable levels of service in the 2030 No Project and 2030 Project scenarios are projected to operate at or above the acceptable levels of service in the Mitigated 2030 Project scenario.

Freeway Segments

Freeway segments exceeding the appropriate level of service standard are shown in bold print in Table 96. As can be seen in Table 96, six (6) freeway segments that are projected to operate at a LOS “D”, “E” or “F” in the 2030 No Project scenario are projected to continue to operate at a LOS “D”, “E” or “F” in the 2030 Project scenario but are projected to show an increased density. These six (6) freeway segments are:

- SR 99 north of Avenue 18 ½
 - NB – AM/PM peak hour – LOS “D”
 - SB – PM peak hour – LOS “E”
- SR 99 between Avenue 18 ½ and Avenue 17
 - NB – AM/PM peak hours – LOS “D”
 - SB – PM peak hour – LOS “E”
- SR 99 south of Avenue 17
 - NB – AM peak hour – LOS “E”
 - NB – PM peak hour – LOS “F”
 - SB – AM peak hour – LOS “D”
 - SB – PM peak hour – LOS “F”

The remaining freeway segments by time period are projected to operate at acceptable levels of service with or without the Alternative B, Reduced Intensity Alternative, in the 2030 scenarios.

As shown in Table 96, two (2) freeway segments are projected to operate below acceptable levels of service in the Mitigated 2030 Project scenario. The NB and SB SR 99 south of Avenue 17 freeway segments are projected to operate at LOS “E/F” respectively in the PM peak hour. Per discussions with Caltrans staff, SR 99 is only programmed for eight (8) lanes for this segment. All remaining freeways segments are projected to operate at or above the adopted level of service standard in the Mitigated 2030 Project, Alternative B, scenario. However with the proposed Alternative B mitigations, these two (2) locations in the 2030 Project scenario are projected to operate above the 2030 No Project measures of effectiveness (freeway density). Therefore these two (2) locations should be viewed as mitigated as appropriate by the Project.

Intersections

Intersections exceeding the appropriate level of service standard are shown in bold print in Table 96. As can be seen in Table 96 implementation of the Project is projected to cause one (1) new intersection operational failures when compared to the 2030 No Project scenario. This intersection is:

- Avenue 15 ½ at Road 23 – WB Approach – PM peak hour – LOS “D” to LOS “E”

Five (5) intersections that are projected to operate at a LOS “D”, “E”, or “F” in the 2030 No Project scenario are projected to continue to operate at a LOS “D”, “E”, or “F” in the 2030 Project scenario but are projected to show an increased intersection stopped delay. These five (5) intersections are:

- Avenue 16/Ellis Overcrossing at Aviation Drive – AM/PM peak hours – LOS “F”
- Avenue 12 at SR 99 NB ramps – PM peak hour – LOS “E”
- SR 145/Madera Avenue at SR 99 NB ramps
 - AM peak hour – LOS “D”
 - PM peak hour – LOS “F”
- Avenue 18 ½ at Pistachio Drive – PM peak hour – LOS “F”
- Avenue 18 ½ at Golden State Boulevard/Road 23
 - NB Approach – PM peak hour – LOS “F”
 - SB Approach – AM/PM peak hours – LOS “F”

Because the mitigations identified in the 2010 Project scenario were used in the 2030 Project scenario, level of service and measures of effectiveness comparisons of some intersections between the 2030 No Project scenario and the 2030 Project scenario could not be made due to either signalization or reconfiguring of the intersections. Intersections analyzed with different lane configurations and intersection control in the 2030 No Project and 2030 Project scenarios are as follows:

- Avenue 18 ½ at SR 99 NB ramps
- Avenue 18 ½ at SR 99 SB ramps
- Avenue 17 at SR 99 NB ramps
- Avenue 17 at SR 99 SB ramps
- Avenue 17 at Golden State Boulevard
- Avenue 17 at Road 23
- Avenue 12/Golden State Boulevard at SR 99 SB ramps

Three (3) intersections are projected to operate at a LOS “F” in the 2030 No Project scenario and are projected to continue to operate at a LOS “F” in the 2030 Project scenario but are projected to show a decreased intersection stopped delay. These three (3) intersections are:

- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps – PM peak hour – LOS “F”
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145 – PM peak hour – LOS “F”
- Avenue 12 at Golden State Boulevard – PM peak hour – LOS “F”

Because of changing traffic conditions and optimization of coordinated signals, some intersections are projected to show a decrease in delay from the 2030 No Project scenario to the 2030 Project scenario. Two (2) intersections that are projected to operate at a LOS “D”, “E”, or “F” in the 2030 No Project scenario are projected to continue to operate at a LOS “D”, “E”, or “F” in the 2030 Project scenario but are projected to show a decreased intersection stopped delay. These two (2) intersections are:

- Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps – PM peak hour – LOS “F” to LOS “E”
- Avenue 12 at Golden State Boulevard – AM peak hour – LOS “F” to LOS “E”

Two (2) intersections that are projected to operate at a LOS “E” or “F” in the 2030 No Project scenario are projected to operate at an acceptable level of service in the 2030 Project scenario. These two (2) locations are:

- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145 - AM peak hour – LOS “E” to LOS “C”
- Olive Avenue/Avenue 14 at SR 99 SB off-ramp – PM peak hour – LOS “F” to LOS “C”

The remaining intersections by time period are projected to operate at acceptable levels of service with or without the Alternative B, Reduced Intensity Alternative, in the 2030 scenarios.

As shown in Table 96, two (2) intersections are projected to operate below acceptable levels of service in the Mitigated 2030 Project scenario. The Avenue 17 at SR 99 NB ramps intersection and the Avenue 17 at Golden State Boulevard intersection are both projected to operate at a LOS “F” in the PM peak hour. Per the Avenue 17 PSR, Avenue 17 will be widened to a maximum of six (6) through lanes between the ramps and seven (7) through lanes between the SB ramps and Golden State Boulevard. This maximum six (6) to seven (7) lane cross-section is consistent with prior discussions with Caltrans staff, which said that widening Avenue 17 to eight (8) lanes is not recommended. However with the proposed Alternative B mitigations, these two (2) locations in the 2030 Project scenario are projected to operate above the 2030 No Project measures of effectiveness (intersection delay). Therefore these two (2) locations should be viewed as mitigated as appropriate by the Project. All remaining intersections are projected to operate at or above the adopted level of service thresholds in the Mitigated 2030 Project, Alternative B, scenario.

Alternative C (Madera Site)

Tables 97 and 98 compare the Alternative C, Alternative Land Use Alternative, Opening Day (2010) No Project, Opening Day (2010) Project, and Mitigated Opening Day (2010) Project, and the 2030 No Project, 2030 Project, and Mitigated 2030 Project level of service results for County segments, freeway segments and intersections projected to operate below the adopted level of service standards, respectively.

Comparison of Opening Day (2010) No Project, Opening Day (2010) Project, and Mitigated Opening Day (2010) Project Scenarios

County Segments

County segments exceeding the appropriate level of service standard are shown in bold print in Table 97. As can be seen in Table 97, one (1) County segment is projected to operate at a LOS “E” in the Opening Day (2010) No Project scenario and are projected to operate at a LOS “F” in the Opening Day (2010) Project scenario. The County segment is:

- Avenue 17 – SR 99 to Road 27 – PM peak hour – LOS “E” to LOS “F”

The remaining County segments are projected to operate at acceptable levels of service with or without the Alternative C, Alternate Land Use Alternative, in the Opening Day (2010) scenarios.

As shown in Table 97, all County segments projected to operate below acceptable levels of service in the Opening Day (2010) No Project and Opening Day (2010) Project scenarios are projected to operate at or above the acceptable levels of service in the Mitigated Opening Day (2010) Project, Alternative C, scenario.

Freeway Segments

Freeway segments exceeding the appropriate level of service standard are shown in bold print in Table 97. As can be seen in Table 97, implementation of the Project is projected to cause one (1) new freeway segment operational failure when compared to the Opening Day (2010) No Project scenario. The freeway segment is:

- SR 99 between Avenue 18 ½ and Avenue 17
 - NB – PM peak hour – LOS “C” to LOS “D”

TABLE 97:
COMPARISON OF 2010 NO PROJECT, 2010 PROJECT, AND MITIGATED 2010 PROJECT LEVELS OF SERVICE
MADERA SITE (ALTERNATIVE C, ALTERNATIVE LAND USE ALTERNATIVE)

County Segment	A.M Peak Hour						P.M Peak Hour					
	No Project		Project		Mitigated Project		No Project		Project		Mitigated Project	
	LOS	B	LOS	C	LOS	A	LOS	E	LOS	F	LOS	B
Freeway Segment	Density (pc/mi/ln)											
SR 99 north of Avenue 18 1/2	No Project	Mitigated Project	No Project	Mitigated Project	No Project	Mitigated Project	No Project	Mitigated Project	No Project	Mitigated Project	No Project	Mitigated Project
• NB	C	B	23.9	24.0	16.5	C	C	C	25.7	25.1	17.4	
• SB	C	B	19.6	19.9	13.3	D	D	D	33.6	32.5	19.7	
SR 99 between Avenue 18 1/2 and Avenue 17	Density (pc/mi/ln)											
• NB	C	B	24.9	25.3	17.3	C	D	D	28.2	27.0	17.9	
• SB	C	B	20.4	21.0	14.0	D	E	E	39.1	36.1	20.8	
SR 99 south of Avenue 17	Density (pc/mi/ln)											
• NB	D	C	28.7	31.6	19.3	D	E	E	38.8	38.8	21.6	
• SB	C	B	22.8	24.8	16.2	E	F	F	---	---	25.9	
	Delay (sec)											
Intersection	LOS											
Avenue 18 1/2 at SR 99 NB ramps	No Project	Mitigated Project	No Project	Mitigated Project	No Project	Mitigated Project	No Project	Mitigated Project	No Project	Mitigated Project	No Project	Mitigated Project
EB Left	A	A	6.4	8.4	13.3	A	A	A	5.6	8.1	13.4	
• NB Approach	C	C	21.3	22.7	8.9	C	D	D	21.4	26.4	11.3	
Avenue 18 1/2 at SR 99 SB ramps/Road 23	Delay (sec)											
• WB Left-Through	A	A	0.8	0.8		A	A	A	1.5	1.4		
• NB Approach	C	C	18.5	20.82		E	F	F	36.5	60.2		
• SB Approach	C	C	16.5	17.2		D	E	E	28.5	36.3		
Avenue 17 at SR 99 NB ramps	Delay (sec)											
• EB Approach	B	B	10.7	10.8	10.8	B	B	B	11.9	12.0	12.0	
• EB Left	B	B	10.0	11.0	13.1	B	B	B	10.2	13.9	17.8	
• NB Approach	F	F	114.6	6029.1	2.7	F	F	F	371.0	4161.6	5.6	
Avenue 17 at SR 99 SB off-ramp	Delay (sec)											
• SB Approach	C	E	16.6	38.2	18.9	F	F	F	174.5	6994.7		
Avenue 17 at Golden State Boulevard	Delay (sec)											
• EB Left	A	A	8.2	9.2	18.9	A	B	B	8.7	10.8	21.6	
• WB Left	A	A	8.5	9.2		A	B	B	8.9	10.8		
• NB Approach	C	F	22.2	247.8		D	F	F	32.4	---		
• SB Approach	F	F	113.9	---		F	F	F	---	---		

SR = State Route
 Bolded Text = Intersection/movement operates below the appropriate level of service standard
 Delay per vehicle
 sec = seconds
 --- = exceeds software parameters
 NB = northbound
 SB = southbound
 WB = westbound
 EB = eastbound

TABLE 97:
COMPARISON OF 2010 NO PROJECT, 2010 PROJECT, AND MITIGATED 2010 PROJECT LEVELS OF SERVICE
MADERA SITE (ALTERNATIVE C, ALTERNATIVE LAND USE ALTERNATIVE)

Intersection	AM Peak Hour						PM Peak Hour					
	LOS			Delay (sec)			LOS			Delay (sec)		
	No Project	Mitigated Project	No Project	Project	Mitigated Project	No Project	Project	Mitigated Project	No Project	Project	Mitigated Project	
Avenue 17 at Road 23	A	A	0.7	0.7	7.5	A	A	A	1.4	1.9	9.6	
• NB Left-Through-Right	A	A	0.7	0.7		A	A	A	0.6	0.6		
• SB Left-Through-Right	A	A	0.7	0.7		A	A	A	0.6	0.6		
• WB Approach	B	C	13.9	15.4		C	E		18.9	35.8		
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	B	B	12.3	13.1		B	C		14.9	19.6		
Avenue 12/Golden State Boulevard at SR 99 SB ramps	C	C	21.1	22.0		C	D		33.3	39.1		
• SB Left-Through	A	B	6.1	6.1	14.6	A	B		3.7	3.7	13.1	
• WB Approach	E	F	43.3	50.7		D	E		30.0	47.9		
Avenue 12 at Golden State Boulevard	D	D	54.0	54.3	40.8	D	E	D	52.0	60.0	40.4	

SR = State Route
 Boded Text = intersection/movement operates below the appropriate level of service standard
 secs = seconds
 Delay per vehicle

SB = southbound

WB = westbound

EB = eastbound

... = exceeds software parameters

TABLE 98:
COMPARISON OF 2030 NO PROJECT, 2030 PROJECT, AND MITIGATED 2030 PROJECT LEVELS OF SERVICE
MADERA SITE (ALTERNATIVE C, ALTERNATIVE LAND USE ALTERNATIVE)

County Segment	AM Peak Hour				PM Peak Hour			
	No Project	Project	Mitigated Project	No Project	Project	Mitigated Project	No Project	Project
	LOS	LOS	LOS	LOS	LOS	LOS	LOS	LOS
Road 23 - Avenue 18 1/2 to Avenue 17	D	D	A	D	D	A	D	E
Avenue 17 - Road 23 to SR 99	F	F	A	F	F	A	F	F
Avenue 17 - SR 99 to Road 27	F	F	A	F	F	A	F	F
	LOS		Density (pc/mi/lb)		LOS		Density (pc/mi/lb)	
Freeway Segment	No Project	Mitigated Project	No Project	Mitigated Project	No Project	Mitigated Project	No Project	Mitigated Project
SR 99 north of Avenue 18 1/2	D	C	26.5	19.4	D	C	33.2	34.3
• NB	C	C	23.9	24.1	E	C	41.4	43.0
SR 99 between Avenue 18 1/2 and Avenue 17	D	C	26.4	19.3	D	C	31.4	32.5
• NB	C	C	23.5	23.7	E	C	40.5	40.6
SR 99 south of Avenue 17	E	C	39.0	25.4	F	F	—	—
• NB	F	C	—	21.2	D	F	29.2	—
• SB	LOS		Delay (sec)		LOS		Delay (sec)	
Intersection	No Project	Mitigated Project	No Project	Mitigated Project	No Project	Mitigated Project	No Project	Mitigated Project
Avenue 18 1/2 at SR 99 NB ramps	B	B	14.9	12.9	B	B	13.5	12.8
• EB Left	A		7.5		B		10.1	
• NB Approach	F		337.7		F		7523.8	
Avenue 18 1/2 at SR 99 SB ramps/Road 23	B	A	18.2	9.8	E	B	64.4	14.1
• WB Left-Through								
• NB Approach								
Avenue 18 1/2 at Pistachio Drive	F		52.0		F		332.3	
• EB Left-Through	A	A	0.7	0.7	A	A	2.2	2.5
• SB Approach	C	D	24.8	14.0	F	F	187.5	314.1
Avenue 18 1/2 at Golden State Boulevard	A	A	1.0	1.0	A	A	0.9	0.9
• EB Left-Through-Right	A	A	6.6	6.8	A	A	7.5	7.9
• WB Left-Through	C	C	19.2	23.0	F	F	137.3	1155.7
• NB Approach	F	F	429.1	633.7	F	F	9379.8	—
• SB Approach	NB = northbound		SB = southbound		WB = westbound		EB = eastbound	

SR = State Route
secs = seconds
Bolted Text = intersection/movement operates below the appropriate level of service standard

TABLE 98:
COMPARISON OF 2030 NO PROJECT, 2030 PROJECT, AND MITIGATED 2030 PROJECT LEVELS OF SERVICE
MADERA SITE (ALTERNATIVE C, ALTERNATIVE LAND USE ALTERNATIVE)

Intersection	AM Peak Hour				PM Peak Hour			
	LOS		Delay (sec)		LOS		Delay (sec)	
	No Project	Mitigated Project	No Project	Project	No Project	Mitigated Project	No Project	Mitigated Project
Avenue 18 at Road 23	A	A	0.0	0.0	A	A	0.2	0.2
• NB Left-Through-Right	A	A	0.8	1.7	A	A	1.0	2.7
• SB Left-Through-Right	B	C	14.5	14.7	C	C	17.9	22.0
• WB Approach	C	C	16.4	17.8	C	D	24.8	31.9
Avenue 17 at SR 99 NB ramps	E	C	67.9	21.3	F	F	267.6	95.8
• EB Left	D	C	27.7		F	F	617.2	
• NB Approach	F	A	6790.7		F	B		
Avenue 17 at SR 99 SB off-ramp	F	A	7445.5	20.1	F	B	341.9	14.4
• SB Approach	F	C		70.3	F	F	417.6	140.6
Avenue 17 at Golden State Boulevard	B	B	12.5		D	D	29.4	
• EB Left	F	F	71.5		F	F	275.4	
• WB Left	F	F			F	F		
• NB Approach	F	F			F	F		
• SB Approach	F	B		56.7	F	B	258.1	16.5
Avenue 17 at Road 23	A	A	3.2		A	A		
• NB Left-Through-Right	A	A	0.8		A	A	0.3	
• SB Left-Through-Right	F	F			F	F		
• WB Approach	F	F			F	F		
• EB Approach	F	F			F	F		
Avenue 16/Ellis Overcrossing at Aviation Drive	F	C	115.7	122.4	F	D	399.6	419.0
Cleveland Avenue/Avenue 15 1/2 at SR 99 NB ramps	C	B	26.8	16.8	F	F	199.2	96.2
Cleveland Avenue/Avenue 15 1/2 at SR 99 SB ramps	C	B	31.4	28.0	F	C	133.0	86.0
Avenue 15 1/2 at Road 23	A	A	0.0	0.0	A	A	0.0	0.0
• NB Left-Through-Right	A	A	1.1	1.1	A	A	1.7	1.7
• SB Left-Through-Right	C	C	16.9	17.4	D	E	34.4	38.8
• WB Approach	A	A	0.0	0.0	C	C	19.0	20.0
• EB Approach	D	D	37.0	47.6	F	C	242.9	262.6
SR 145/Madera Avenue at SR 99 NB ramps	E	C	70.9	24.4	F	C	238.7	99.8
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	C	B	29.7	16.2	F	C	163.2	24.5
Olive Avenue/Avenue 14 at SR 99 SB off-ramp	B	A	11.6	11.8	C	A	16.6	18.0
Avenue 14 at Road 23	C	C	9.1	22.0	A	B	24.0	17.1
Avenue 12/Golden State Boulevard at SR 99 SB ramps	A	F	9323.4		F	F	9051.8	
• SB Left-Through	F	C	205.2	75.9	F	D	328.4	154.5
• WB Approach	C	C	21.5	23.3	E	E	57.9	66.3
Avenue 12 at Golden State Boulevard	C	C			E	E		
Avenue 12 at SR 99 NB ramps	C	C			E	E		

secs = seconds
 SR = State Route
 Bolded Text = Intersection/movement operates below the appropriate level of service standard
 NB = northbound
 SB = southbound
 WB = westbound
 EB = eastbound
 --- = exceeds software parameters

Two (2) freeway segments that are projected to operate at a LOS “D” in the Opening Day (2010) No Project scenario are projected to operate at a LOS “E” in the Opening Day (2010) Project scenario. These freeway segments are:

- SR 99 between Avenue 18 ½ and Avenue 17
 - SB – PM peak hour – LOS “D” to LOS “E”
- SR 99 south of Avenue 17
 - NB – PM peak hour – LOS “D” to LOS “E”

One (1) freeway segment that is projected to operate at a LOS “E” in the Opening Day (2010) No Project scenario is projected to operate at a LOS “F” in the Opening Day (2010) Project scenario. The freeway segment is:

- SR 99 south of Avenue 17
 - SB – PM peak hour – LOS “E” to LOS “F”

The remaining freeway segments by time period are projected to operate at acceptable levels of service with or without the Alternative C, Alternate Land Use Alternative, in the Opening Day (2010) scenarios.

As shown in Table 97, all freeway segments projected to operate below acceptable levels of service in the Opening Day (2010) No Project and Opening Day (2010) Project scenarios are projected to operate at or above the acceptable levels of service in the Mitigated Opening Day (2010) Project, Alternative C, scenario.

Intersections

Intersections exceeding the appropriate level of service standard are shown in bold print in Table 97. As can be seen in Table 97, implementation of the Project is projected to cause seven (7) new intersection operational impacts when compared to the Opening Day (2010) No Project scenario. These seven (7) intersections are:

- Avenue 18 ½ at SR 99 NB ramps
 - NB Approach – PM peak hour – LOS “C” to LOS “D”
- Avenue 17 at SR 99 SB ramps
 - SB Approach – AM peak hour – LOS “C” to LOS “E”
- Avenue 17 at Golden State Boulevard
 - NB Approach – AM peak hour – LOS “C” to LOS “F”
 - NB Approach – PM peak hour – LOS “D” to LOS “F”
- Avenue 17 at Road 23
 - WB Approach – PM peak hour – LOS “C” to LOS “E”
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps – PM peak hour – LOS “C” to LOS “D”
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145 – PM peak hour – LOS “C” to LOS “D”
- Avenue 12 at Golden State Boulevard – PM peak hour – LOS “D” to LOS “E”

Three (3) intersections that are projected to operate at a LOS “F” in the Opening Day (2010) No Project scenario are projected to continue to operate at a LOS “F” in the Opening Day (2010) Project scenario but are projected to show an increased intersection stopped delay. These three (3) intersections are:

- Avenue 17 at SR 99 NB ramps
 - NB Approach – AM/PM peak hours – LOS “F”

- Avenue 17 at SR 99 SB ramps
 - SB Approach – PM peak hour – LOS “F”
- Avenue 17 at Golden State Boulevard
 - SB Approach – AM/PM peak hours – LOS “F”

Two (2) intersections that are projected to operate at a LOS “D” or “E” in the Opening Day (2010) No Project scenario are projected to show an increase in level of service and associated stopped delay in the Opening Day (2010) Project scenario. These two (2) intersections are:

- Avenue 18 ½ at SR 99 SB ramps/Road 23
 - NB Approach – PM peak hour – LOS “E” to LOS “F”
 - SB Approach – PM peak hour – LOS “D” to LOS “E”
- Avenue 12/Golden State Boulevard at SR 99 SB ramps
 - WB Approach – AM peak hour – LOS “E” to LOS “F”
 - WB Approach – PM peak hour – LOS “D” to LOS “E”

The remaining intersections by time period are projected to operate at acceptable levels of service with or without the Alternative C, Alternate Land Use Alternative, in the Opening Day (2010) scenarios.

As shown in Table 97, all intersections projected to operate below acceptable levels of service in the Opening Day (2010) No Project and Opening Day (2010) Project scenarios are projected to operate at or above the acceptable levels of service in the Mitigated Opening Day (2010) Project, Alternative C, scenario.

Comparison of 2030 No Project, 2030 Project, and Mitigated 2030 Project Scenarios

County Segments

County segments exceeding the appropriate level of service standard are shown in bold print in Table 98. As can be seen in Table 98, one (1) County segment is projected to operate at a LOS “F” in the 2030 No Project scenario is projected to continue to operate at a LOS “F” in the 2030 Project scenario. This one (1) segment is:

- Avenue 17 – Road 23 to SR 99 – AM/PM peak hours – LOS “F”

One (1) County segment is projected to operate at a LOS “D” in the 2030 No Project scenario and is projected to operate at a LOS “E” in the 2030 Project scenario. This one (1) segment is:

- Road 23 – Avenue 18 1/2 to Avenue 17 – PM peak hours – LOS “D” to LOS “E”

Because the mitigations identified in the 2010 Project scenario were used in the 2030 Project scenario, level of service and measures of effectiveness comparisons of some county segments between the 2030 No Project scenario and the 2030 Project scenario could not be made due to additional lanes. The County segment analyzed with a different number of lanes in the 2030 No Project and 2030 Project scenarios is:

- Avenue 17 – SR 99 to Road 27

This County segment is projected to operate at a LOS “E/F” in the 2030 No Project scenario AM/PM peak hour respectively, and is projected to operate at a LOS “A/E” in the 2030 Project scenario AM/PM peak hour respectively.

The remaining County segments are projected to operate at acceptable levels of service with or without the Alternative C, Alternate Land Use Alternative, in the 2030 scenarios.

As shown in Table 98, all County segments projected to operate below acceptable levels of service in the 2030 No Project and 2030 Project scenarios are projected to operate at or above the acceptable levels of service in the Mitigated 2030 Project, Alternative C, scenario.

Freeway Segments

Freeway segments exceeding the appropriate level of service standard are shown in bold print in Table 98. As can be seen in Table 98, six (6) freeway segments that are projected to operate at a LOS "D", "E" or "F" in the 2030 No Project scenario are projected to continue to operate at a LOS "D", "E" or "F" in the 2030 Project scenario but are projected to show an increased density. These six (6) freeway segments are:

- SR 99 north of Avenue 18 ½
 - NB – AM/PM peak hour – LOS "D"
 - SB – PM peak hour – LOS "E"
- SR 99 between Avenue 18 ½ and Avenue 17
 - NB – AM/PM peak hours – LOS "D"
 - SB – PM peak hour – LOS "E"
- SR 99 south of Avenue 17
 - NB – AM peak hour – LOS "E"
 - NB – PM peak hour – LOS "F"
 - SB – AM peak hour – LOS "D"
 - SB – PM peak hour – LOS "F"

The remaining freeway segments by time period are projected to operate at acceptable levels of service with or without the Alternative C, Alternate Land Use Alternative, in the 2030 scenarios.

As shown in Table 98, two (2) freeway segments are projected to operate below acceptable levels of service in the Mitigated 2030 Project scenario. The NB and SB SR 99 south of Avenue 17 freeway segments are projected to operate at LOS "E/F" in the PM peak hour. Per discussions with Caltrans staff, SR 99 is only programmed for eight (8) lanes for this segment. However with the proposed Alternative C mitigations, these two (2) locations in the 2030 Project scenario are projected to operate above the 2030 No Project measures of effectiveness (freeway density). Therefore these two (2) locations should be viewed as mitigated as appropriate by the Project. All remaining freeway segments are projected to operate at or above the adopted level of service threshold in the Mitigated 2030 Project, Alternative C, scenario.

Intersections

Intersections exceeding the appropriate level of service standard are shown in bold print in Table 98. As can be seen in Table 98 implementation of the Project is projected to cause one (1) new intersection operational failure when compared to the 2030 No Project scenario. The one (1) intersection is:

- Avenue 15 ½ at Road 23 – WB Approach – PM peak hour – LOS "D" to LOS "E"

Five (5) intersections that are projected to operate at a LOS "D", "E", or "F" in the 2030 No Project scenario are projected to continue to operate at a LOS "D", "E", or "F" in the 2030 Project scenario but are projected to show an increased intersection stopped delay. These five (5) intersections are:

- Avenue 16/Ellis Overcrossing at Aviation Drive – AM/PM peak hours – LOS “F”
- Avenue 12 at SR 99 NB ramps – PM peak hour – LOS “E”
- SR 145/Madera Avenue at SR 99 NB ramps
 - AM peak hour – LOS “D”
 - PM peak hour – LOS “F”
- Avenue 18 ½ at Pistachio Drive – PM peak hour – LOS “F”
- Avenue 18 ½ at Golden State Boulevard/Road 23
 - NB Approach – PM peak hour – LOS “F”
 - SB Approach – AM/PM peak hours – LOS “F”

Because the mitigations identified in the 2010 Project scenario were used in the 2030 Project scenario, level of service and measures of effectiveness comparisons of some intersections between the 2030 No Project scenario and the 2030 Project scenario could not be made due to either signalization or reconfiguring of the intersections. Intersections analyzed with different lane configurations and intersection control in the 2030 No Project and 2030 Project scenarios are as follows:

- Avenue 18 ½ at SR 99 NB ramps
- Avenue 18 ½ at SR 99 SB ramps
- Avenue 17 at SR 99 NB ramps
- Avenue 17 at SR 99 SB ramps
- Avenue 17 at Golden State Boulevard
- Avenue 17 at Road 23
- Avenue 12/Golden State Boulevard at SR 99 SB ramps

Four (4) intersections are projected to operate at a LOS “F” in the 2030 No Project scenario and are projected to continue to operate at a LOS “F” in the 2030 Project scenario but are projected to show a decreased intersection stopped delay. These four (4) intersections are:

- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps – PM peak hour – LOS “F”
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145 – PM peak hour – LOS “F”
- Avenue 12 at Golden State Boulevard – PM peak hour – LOS “F”
- Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps – PM peak hour – LOS “F”

Because of changing traffic conditions and optimization of coordinated signals, some intersections are projected to show a decrease in delay from the 2030 No Project scenario to the 2030 Project scenario. One (1) intersection that is projected to operate at a LOS “D”, “E”, or “F” in the 2030 No Project scenario is projected to continue to operate at a LOS “D”, “E”, or “F” in the 2030 Project scenario but is projected to show a decreased intersection stopped delay. This intersection is:

- Avenue 12 at Golden State Boulevard – AM peak hour – LOS “F” to LOS “E”

Two (2) intersections that are projected to operate at a LOS “E” or “F” in the 2030 No Project scenario are projected to operate at an acceptable level of service in the 2030 Project scenario. These two (2) locations are:

- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145 - AM peak hour – LOS “E” to LOS “C”
- Olive Avenue/Avenue 14 at SR 99 SB off-ramp – PM peak hour – LOS “F” to LOS “C”

The remaining intersections by time period are projected to operate at acceptable levels of service with or without the Alternative C, Alternative Land Use Alternative, in the 2030 scenarios.

As shown in Table 98, two (2) intersections are projected to operate below acceptable levels of service in the Mitigated 2030 Project scenario. The Avenue 17 at SR 99 NB ramps intersection and the Avenue 17 at Golden State Boulevard intersection are both projected to operate at a LOS “F” in the PM peak hour. Per the Avenue 17 PSR, Avenue 17 will be widened to a maximum of six (6) through lanes between the ramps and seven (7) through lanes between the SB ramps and Golden State Boulevard. This maximum six (6) to seven (7) lane cross-section is consistent with prior discussions with Caltrans staff, which said that widening Avenue 17 to eight (8) lanes is not recommended. However with the proposed Alternative C mitigations, these two (2) locations in the 2030 Project scenario are projected to operate above the 2030 No Project measures of effectiveness (intersection delay). Therefore these two (2) locations should be viewed as mitigated as appropriate by the Project. All remaining intersections are projected to operate at or above the adopted level of service thresholds in the Mitigated 2030 Project, Alternative C, scenario.

Alternative D (North Fork Site)

In the Opening Day (2010) scenarios, all intersections are projected to operate at acceptable levels of service with or without the Alternative D, Off-Site Alternative. Table 99 compares the Alternative D, Off-Site Alternative, 2030 No Project, 2030 Project, and Mitigated 2030 Project level of service results for intersections projected to operate below the adopted level of service standards, respectively.

Comparison of 2030 No Project, 2030 Project, and Mitigated 2030 Project Scenarios

Intersection movements exceeding the appropriate level of service standard are shown in bold print in Table 99. One (1) intersection is projected to operate below the appropriate level of service standard in the 2030 No Project scenario and is projected to continue to fail in the 2030 Project scenario but is projected to show an increased intersection stopped delay. This intersection is:

- SR 145 at SR 41 – PM peak hour – LOS “D”

The SR 41 at Road 420 (Thornberry) intersection, WB approach, in the PM peak hour is projected to operate at a LOS “D” with or without the Project but with no increase or decrease in the intersection stopped delay.

The remaining intersections by time period are projected to operate at acceptable levels of service with or without the Alternative D, Off-Site Alternative, in the 2030 scenarios.

As shown in Table 99, all intersections are projected to operate at or above acceptable levels of service in the Mitigated 2030 Project, Alternative D, scenario.

**TABLE 99:
COMPARISON OF 2030 NO PROJECT, 2030 PROJECT, AND MITIGATED 2030 PROJECT LEVELS OF SERVICE
NORTH FORK SITE (ALTERNATIVE D, OFF-SITE ALTERNATIVE)**

Intersection	AM Peak Hour						PM Peak Hour					
	LOS		Delay (sec)		Mitigated Project		LOS		Delay (sec)		Mitigated Project	
	No Project	Project	No Project	Project	No Project	Project	No Project	Project	No Project	Project	No Project	Project
SR 145 at SR 41	C	C	39.6	29.6	20.7	20.7	D	D	40.6	40.7	30.1	30.1
SR 41 at Road 420 (Thornberry Rd)	A	A	9.7	9.7	6.1	6.1	B	B	10.2	10.2	6.5	6.5
• SB Left	C	C	20.2	20.2	20.2	20.2	D	D	27.5	27.5	27.5	27.5

SR = State Route
 ... = exceeds software parameters
 ... = intersection/movement operates below the appropriate level of service standard
 SB = southbound
 WB = westbound

B. MITIGATION PHASING PLAN

To Be Determined

C. IMPLEMENTATION RESPONSIBILITIES

To Be Determined

D. COST ESTIMATES AND FINANCING PLAN FOR MITIGATION MEASURES

Cost Estimates

Table 100 shows the estimated costs for the improvements recommended in this TIS.

TABLE 100: OPINION OF PROBABLE CONSTRUCTION COSTS FOR RECOMMENDED IMPROVEMENTS		
	Cost Estimates (\$)	
	2010 Project	2030 Project
Madera Site (Alternatives A, B, & C)¹		
County Segments		
Avenue 17 – Road 23 to SR 99	---	\$9,342,000
Avenue 17 – SR 99 to Road 27	\$12,153,000	
Freeway Segments		
SR 99 north of Avenue 18 ½	\$1,646,000	\$3,117,000
SR 99 between Ave 18 ½ and Ave 17	\$9,311,000	\$9,308,000
SR 99 south of Avenue 17	\$3,097,000	\$3,096,000
Intersections		
Avenue 18 ½ at SR 99 SB ramps/Road 23	\$235,000	\$1,107,000
Avenue 18 ½ at SR 99 NB ramps	\$235,000	\$11,904,000
Avenue 18 ½ at Golden State/Road 23	---	\$3,916,000
Avenue 17 at SR 99 SB ramps	\$235,000	\$802,000
Avenue 17 at SR 99 NB ramps	\$1,877,000	\$2,099,000
Ave 12/Golden State at SR 99 SB ramps	\$586,000	\$1,734,000
Avenue 12 at Golden State Blvd	\$356,000	\$442,000
Avenue 12 at SR 99 NB ramps	\$343,000	\$17,031,000
Avenue 18 at Road 23		\$235,000
Avenue 17 at Road 23	\$235,000	\$994,000
Avenue 17 at Golden State Boulevard	\$811,000	\$698,000
Avenue 15 ½ at Road 23	---	\$235,000
Avenue 14 at Road 23	---	\$651,000
Ellis St/Ave 16 at Golden State Boulevard	---	\$822,000
Cleveland/Ave 15 ½ at SR 99 NB ramps	---	\$5,736,000
Cleveland/Ave 15 ½ at SR 99 SB ramps	---	\$2,744,000
SR 145/Madera Ave at SR 99 NB ramps	---	\$2,788,000
Olive/Avenue 14 at SR 99 SB off-ramp	\$435,000	\$200,000
Olive/Ave 14/SR 99 SB on-ramp at SR 145	\$2,933,000	\$6,654,000
Subtotal Construction Cost	\$34,488,000	\$85,655,000

TABLE 100: OPINION OF PROBABLE CONSTRUCTION COSTS FOR RECOMMENDED IMPROVEMENTS		
	Cost Estimates (\$)	
	2010 Project	2030 Project
Traffic Control/Construc. Staging (15%)	\$5,173,000	\$12,847,000
Miscellaneous (3%)	\$1,035,000	\$2,569,000
Contingencies (35%)	\$12,070,000	\$29,977,000
Construction Engineering (5%)	\$1,724,000	\$4,282,000
Plans, Spec's, and Engineering (10%)	\$3,449,000	\$8,565,000
Project Study Report (PSR)	\$1,250,000	\$1,750,000
Environmental Impact Report (EIR)	\$1,500,000	\$2,250,000
Total Cost	\$60,689,000	\$147,895,000
Madera Site (applies to Alternative C only)		
County Segment		
Road 23 - Avenue 18 ½ to Ave 17		\$3,163,000
Traffic Control/Construc. Staging (15%)		\$475,000
Miscellaneous (3%)		\$95,000
Contingencies (35%)		\$1,107,000
Construction Engineering (5%)		\$158,000
Plans, Spec's, and Engineering (10%)		\$316,000
Project Study Report (PSR)		---
Environmental Impact Report (EIR)		\$250,000
Total Cost	\$ - -	\$5,564,000
North Fork Site (applies to Alternative D only)		
Intersection		
SR 41 at Road 420 (Thornberry Road)	---	\$235,000
Subtotal Construction Cost	---	\$235,000
Traffic Control/Construc. Staging (15%)	---	\$35,000
Miscellaneous (3%)	---	
Contingencies (20%)	---	
Construction Engineering (5%)	---	\$12,000
Plans, Spec's, and Engineering (10%)	---	\$24,000
Total Construction Cost	---	
Project Study Report (PSR)	---	---
Environmental Impact Report (EIR)	---	---
Total Cost	\$ - -	\$306,000

SR = State Route

1 = Improvement costs are the same for Alternatives A, B, and C

Financing Plan

To Be Determined