APPENDIX M

Traffic Impact Study

TRAFFIC IMPACT STUDY

FOR THE

NORTH FORK CASINO

Madera County, California

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

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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: Alternative 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 2008. 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)

	Existing		2008 No Project		2008 Project		Mitigated 2008 Project		2030 No Project		2030 Project		Mitigated 2030 Project	
County Segment	**LOS AM/PM**		**LOS AM/PM**		**LOS AM/PM**		**LOS AM/PM**		**LOS AM/PM**		**LOS AM/PM**		**LOS AM/PM**	
Avenue 18 ½ – Road 24 to Road 23	B/B		B/B		B/B		B/B		C/D		C/D		A/A	
Road 23 – Avenue 18 ½ to Avenue 17	B/B		B/C		B/C		B/C		D/D		D/D		D/D	
Avenue 17 – Road 23 to SR 99	A/A		A/F		B/F		A/B		A/D		A/E		A/B	
Avenue 17 – SR 99 to Road 27	E/C		F/F		F/F		A/B		B/E		A/B		A/B	
Golden State Blvd – Avenue 17 to Road 23	A/A		A/A		A/A		A/A		A/A		A/B		A/B	
Freeway Segment	**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 ½														
• **NB**	C/C	21.5/21.0	C/C	24.1/25.7	C/D	24.3/**26.3**	B/B	16.0/17.0	C/D	25.2/**26.1**	C/D	25.4/**26.5**	C/C	18.6/19.3
• **SB**	B/D	17.6/**26.5**	C/D	19.9/**33.6**	C/D	20.3/**34.6**	B/C	13.5/20.4	C/E	20.3/**35.2**	C/E	20.6/**36.0**	B/C	15.4/23.6
SR 99 between Avenue 18 ½ and Avenue 17														
• **NB**	C/C	23.8/23.2	D/D	**26.9/28.2**	D/D	**26.9/28.2**	B/B	17.3/17.9	D/D	**28.3/28.9**	D/D	**28.3/28.9**	C/C	20.2/20.5
• **SB**	C/D	19.3/**30.1**	C/E	21.6/**39.1**	C/E	21.6/**39.1**	B/C	14.3/21.7	C/E	22.2/**41.9**	C/E	22.2/**41.9**	B/C	16.6/25.6
SR 99 south of Avenue 17														
• **NB**	C/C	22.9/22.3	D/F	**31.6/---**	E/F	**35.4/---**	C/C	20.6/25.4	D/F	**33.1/---**	E/F	**36.8/---**	C/D	23.9/**29.9**
• **SB**	C/D	18.6/**28.5**	C/F	23.1/---	C/F	24.1/---	B/C	11.9/21.2	C/F	23.3/---	B/E	17.9/**35.7**	B/E	17.9/**35.7**
Intersection	**LOS AM/PM**	**Delay[1] AM/PM (secs)**	**LOS AM/PM**	**Delay[1] AM/PM (secs)**	**LOS AM/PM**	**Delay[1] AM/PM (secs)**	**LOS AM/PM**	**Delay[1] AM/PM (secs)**	**LOS AM/PM**	**Delay[1] AM/PM (secs)**	**LOS AM/PM**	**Delay[1] AM/PM (secs)**	**LOS AM/PM**	**Delay[1] AM/PM (secs)**
Avenue 18 ½ at SR 99 SB ramps/Road 23							B/C	19.7/22.4	A/B	9.4/14.8	B/C	10.1/20.9	A/B	8.3/13.2
• WB Left-Through	A/A	8.1/8.2	A/A	8.9/8.9	A/A	9.0/9.0								
• **NB Approach**	B/B	12.1/13.2	D/F	**25.6/63.3**	E/F	**45.1/---**								
• **SB Approach**	B/C	13.0/15.7	D/F	**30.0/178.0**	F/F	**56.6/397.7**								
Avenue 18 ½ at SR 99 NB ramps							C/C	28.8/27.6	C/C	27.9/30.2	C/C	27.8/28.3	C/C	21.7/21.6
• EB Left	A/A	8.3/7.8	A/A	8.5/8.3	A/A	8.7/8.6								
• **NB Approach**	C/C	15.8/15.8	E/F	**44.3/144.0**	F/F	62.7/284.2								
Avenue 17 at SR 99 SB ramps							A/A	4.5/9.8	A/F	7.9/**87.5**	A/F	8.3/**176.1**	A/C	6.3/22.0
• **SB Approach**	B/B	12.5/14.5	F/F	**153.6/8216**	F/F	**564.7/29611**								
Avenue 17 at SR 99 NB ramps							B/C	17.8/34.7	C/F	26.5/**113.6**	D/F	**36.1/146.5**	B/D	17.3/**49.9**
• EB Left	A/A	8.7/8.0	B/C	10.2/15.7	B/C	10.6/16.9								
• **NB Approach**	C/C	16.5/15.5	F/F	**738.0/5934**	F/F	**1610/13114**								
Avenue 12/Golden State Boulevard at SR 99 SB ramps							B/B	13.1/16.8	D/F	**41.8/245.9**	D/F	**51.2/251.3**	B/C	17.9/22.2
• SB Left-Through	A/A	8.3/8.7	A/A	8.4/9.0	A/A	8.4/9.0								
• **WB Approach**	B/E	11.3/**44.9**	C/F	15.6/**303.5**	C/F	16.4/**331.3**								
Avenue 12 at Golden State Boulevard			C/C	20.9/29.8	C/C	22.8/30.8	B/C	19.6/32.4	F/F	**126.8/418.3**	F/F	**126.0/420.3**	B/D	18.5/37.6
• EB Left	A/A	8.5/8.7												
• WB Left	A/A	8.1/8.6												
• **NB Approach**	C/F	20.9/**279.6**												
• **SB Approach**	D/F	**31.9/111.1**												
Avenue 12 at SR 99 NB ramps			B/B	13.9/14.6	B/B	14.8/17.5	A/B	9.7/10.5	D/F	**41.7/243.3**	D/F	**44.5/251.7**	B/C	11.2/21.2
• EB Left-Through	A/A	8.9/8.9												
• **NB Approach**	E/F	**46.9/95.1**												

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

	Existing		2008 No Project		2008 Project		Mitigated 2008 Project		2030 No Project		2030 Project		Mitigated 2030 Project	
Intersection	**LOS AM/PM**	**Delay[1] AM/PM (secs)**	**LOS AM/PM**	**Delay[1] AM/PM (secs)**	**LOS AM/PM**	**Delay[1] AM/PM (secs)**	**LOS AM/PM**	**Delay[1] AM/PM (secs)**	**LOS AM/PM**	**Delay[1] AM/PM (secs)**	**LOS AM/PM**	**Delay[1] AM/PM (secs)**	**LOS AM/PM**	**Delay[1] AM/PM (secs)**
Avenue 18 at Road 23													B/B	11.3/13.9
• NB Left-Through-Right	A/A	7.5/7.6	A/A	7.7/8.0	A/A	7.7/8.0	A/A	7.7/8.0	A/A	8.1/8.7	A/A	8.1/8.7		
• SB Left-Through-Right	A/A	7.6/7.6	A/A	7.8/8.0	A/A	8.0/8.2	A/A	8.0/8.2	A/A	8.2/8.6	A/A	8.4/9.0		
• WB Approach	B/A	10.5/9.8	B/B	10.8/11.0	B/B	11.0/11.7	B/B	10.9/11.6	B/C	14.3/15.6	B/C	14.2/17.0		
• **EB Approach**	A/B	9.8/10.2	B/B	11.1/13.4	B/C	12.5/16.5	B/C	12.5/16.2	B/C	14.8/25.0	C/E	18.0/**39.4**		
Avenue 17 at Road 23							B/C	13.2/21.3	B/C	18.1/26.4	B/C	18.5/27.7	B/C	18.5/27.7
• NB Left-Through-Right	A/A	7.4/7.4	A/A	7.5/7.6	A/A	7.5/7.7								
• SB Left-Through-Right	A/A	7.5/7.6	A/A	7.8/8.2	A/A	7.9/8.4								
• **WB Approach**	B/B	11.2/11.5	B/F	14.7/**50.5**	C/F	16.2/**100.9**								
• **EB Approach**	B/B	10.5/11.2	B/C	12.5/7.0	B/C	13.2/20.0								
Avenue 17 at Golden State Boulevard							B/D	17.4/40.7	C/F	24.1/**125.9**	C/F	26.2/**241.8**	B/D	17.7/44.5
• EB Left-Through-Right	A/A	7.5/7.4	A/B	9.1/11.0	B/B	10.5/14.1								
• WB Left-Through-Right	A/A	7.6/7.6	A/B	8.9/13.7	A/B	8.9/13.7								
• **NB Approach**	A/A	9.5/9.7	F/F	**73.0/ -**	F/F	**417.0/ -**								
• **SB Approach**	B/B	13.5/13.3	F/F	**282.2/ -**	F/F	**- / -**								
Ellis Street at Road 26	B/C	11.51/16.47	B/F	14.62/**96.48**	C/F	15.31/**110.19**	A/B	10.0/14.5	C/C	22.2/24.4	C/C	22.4/25.0	C/C	22.4/25.0
Avenue 15 ½ at Road 23													A/A	6.8/9.1
• NB Left-Through-Right	A/A	7.6/7.8	A/A	7.8/8.5	A/A	7.8/8.6	A/A	7.8/8.6	A/A	8.2/9.1	A/A	8.2/9.2		
• SB Left-Through-Right	A/A	7.6/7.6	A/A	7.9/8.2	A/A	8.0/8.3	A/A	8.0/8.3	A/A	8.2/8.8	A/A	8.3/8.9		
• WB Approach	B/A	10.3/9.9	B/B	11.9/14.6	B/C	12.5/15.9	B/C	12.5/15.9	C/D	15.8/25.8	C/D	16.5/28.8		
• EB Approach	B/B	10.2/11.8	B/C	12.5/16.9	B/C	13.1/18.4	B/C	13.1/18.4	B/D	14.6/25.3	C/D	15.1/27.8		
Avenue 14 at Road 23	A/B	8.72/10.03	A/C	9.77/16.62	B/C	10.09/19.49	B/B	15.9/19.9	B/C	15.9/22.8	B/C	18.7/23.0	B/C	18.7/23.0
Avenue 16 at Schnoor Avenue							C/B	25.3/18.0	n/a	n/a	n/a	n/a	n/a	n/a
• NB Left	A/A	7.3/7.4	A/A	7.4/7.6	A/A	7.4/7.6								
• SB Left-Through-Right	A/A	7.5/7.3	A/A	7.8/7.7	A/A	7.8/7.8								
• **WB Approach**	A/B	9.5/11.4	B/F	11.5/**63.4**	B/F	12.4/**125.2**								
• **EB Approach**	B/B	10.3/11.7	B/E	14.2/**49.5**	C/F	15.9/**84.3**								
Avenue 16 at SR 99 SB ramps	A/B	9.34/11.26	B/C	14.8/21.3	B/C	14.9/21.4	B/B	11.1/14.6	n/a	n/a	n/a	n/a	n/a	n/a
Avenue 16 at SR 99 NB ramps	n/a	n/a	n/a	n/a	n/a	n/a	B/B	11.4/14.5	n/a	n/a	n/a	n/a	n/a	n/a
Avenue 16/Avenue 16 connector at SR 99 NB ramps							n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
• **EB Left**	B/B	10.1/10.6	B/D	12.6/**26.5**	B/D	13.2/**32.8**								
Avenue 16 at SR 99 NB ramp connector							n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
• SB Left-Through	A/A	7.6/8.0	A/A	8.2/9.5	A/A	8.2/9.6								
• WB Right	A/A	8.8/9.3	A/B	9.6/12.8	A/B	9.6/12.8								
Gateway/Avenue 16 at SR 99 NB ramps							n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
• WB Left	A/B	9.6/10.6	B/C	11.1/15.4	B/C	11.2/16.1								
Avenue 16/Ellis Street at Golden State Boulevard	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	C/E	22.8/**72.4**	C/E	22.6/**78.5**	C/D	24.4/42.9
Avenue 16/Ellis Street at SR 99 SB ramps	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	B/E	13.7/**69.9**	B/E	14.1/**79.0**	A/B	7.7/20.0
Avenue 16/Ellis Street at SR 99 NB ramps	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	C/F	27.5/**153.0**	C/F	29.5/**163.6**	B/C	16.1/34.8
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	B/B	12.3/16.4	B/D	14.2/**35.1**	B/D	14.5/**36.4**	B/C	11.0/27.2	C/F	24.5/**177.3**	C/F	25.4/**178.2**	B/C	13.2/30.4
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps	B/B	11.6/15.3	B/C	13.0/34.3	B/D	13.1/**41.7**	A/B	8.9/19.6	C/F	27.1/**202.0**	B/F	15.5/**113.4**	B/C	12.1/27.8
SR 145/Madera Avenue at SR 99 NB ramps	C/C	27.3/21.9	D/D	**36.5/54.8**	D/E	**39.4/64.5**	B/B	13.7/13.0	C/D	20.3/**53.2**	C/E	21.0/**59.6**	B/C	17.4/25.7
Olive Avenue/Avenue 14 at SR 99 SB off-ramp	B/B	13.9/15.3	B/C	15.4/29.8	B/C	15.6/32.1	B/C	14.6/23.2	F/F	**101.7/273.1**	F/F	**103.5/280.1**	B/C	13.4/20.8
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	C/C	25.1/34.9	C/E	26.6/**61.1**	C/E	30.2/**69.5**	B/C	12.0/31.8	F/F	**102.5/357.7**	F/F	**104.1/368.9**	B/C	11.3/32.5

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

	Existing		2008 No Project		2008 Project		Mitigated 2008 Project		2030 No Project		2030 Project		Mitigated 2030 Project	
Intersection	**LOS AM/PM**	**Delay[1] AM/PM (secs)**	**LOS AM/PM**	**Delay[1] AM/PM (secs)**	**LOS AM/PM**	**Delay[1] AM/PM (secs)**	**LOS AM/PM**	**Delay[1] AM/PM (secs)**	**LOS AM/PM**	**Delay[1] AM/PM (secs)**	**LOS AM/PM**	**Delay[1] AM/PM (secs)**	**LOS AM/PM**	**Delay[1] AM/PM (secs)**
Avenue 18 ½ at Pistachio Drive														
• EB Approach	A/A	8.3/8.4	A/A	8.9/9.1	A/A	8.9/9.1	A/A	8.9/9.1	A/B	9.9/11.1	A/B	9.9/11.1	B/B	10.4/11.8
• SB Approach	B/B	12.4/13.8	C/D	22.5/25.5	C/D	23.3/27.0	C/D	23.3/27.0	n/a	n/a	n/a	n/a	n/a	n/a
• SB Right	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	C/D	19.8/33.4	C/D	19.8/33.4	C/C	15.7/19.4
Avenue 18 ½ at Golden State Boulevard														
• EB Approach	A/A	7.6/7.7	A/A	7.7/7.8	A/A	7.7/7.8	A/A	7.7/7.8						
• SB Approach	B/B	10.6/11.0	B/B	11.1/12.2	B/B	11.3/12.5	B/B	11.3/12.5						
Avenue 18 ½ at Golden State Boulevard / Road 23	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a					C/C	29.0/23.7
• NB Left-Through-Right									A/A	7.7/7.8	A/A	7.7/7.8		
• SB Left-Through-Right									B/B	10.0/12.7	B/B	10.0/12.7		
• **WB Approach**									**F/F**	**974.3/---**	**F/F**	**974.3/---**		
• **EB Approach**									**F/F**	**---/---**	**F/F**	**---/---**		

SR = State Route *[1] 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	2008 No Project	2008 Project	2030 No Project	2030 Project
Avenue 18 ½ at SR 99 SB ramps/Road 23	No	**Yes**	**Yes**	**Yes**	**Yes**
Avenue 18 ½ at SR 99 NB ramps	No	No	No	**Yes**	**Yes**
Avenue 17 at SR 99 SB ramps	No	**Yes**	**Yes**	**Yes**	**Yes**
Avenue 17 at SR 99 NB ramps	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Avenue 12/Golden State Boulevard at SR 99 SB ramps	No	**Yes**	**Yes**	**Yes**	**Yes**
Avenue 12 at Golden State Boulevard	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Avenue 12 at SR 99 NB ramps	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Avenue 18 at Road 23	No	No	No	No	**Yes**
Avenue 17 at Road 23	No	**Yes**	**Yes**	**Yes**	**Yes**
Avenue 17 at Golden State Boulevard	No	**Yes**	**Yes**	**Yes**	**Yes**
Ellis Street at Road 26	No	**Yes**	**Yes**	**Yes**	**Yes**
Avenue 15 ½ at Road 23	No	No	No	**Yes**	**Yes**
Avenue 14 at Road 23	No	**Yes**	**Yes**	**Yes**	**Yes**
Avenue 16 at Schnoor Avenue	No	**Yes**	**Yes**	**Yes**	**Yes**
Avenue 16 at SR 99 SB ramps	No	---	---	---	---
Avenue 16/Avenue 16 connector at SR 99 NB ramps	No	**Yes**	**Yes**	**Yes**	**Yes**
Avenue 16 at SR 99 NB ramp connector	No	**Yes**	**Yes**	**Yes**	**Yes**
Gateway/Avenue 16 at SR 99 NB ramps	No	No	No	---	---
SR 99 NB ramps at Cleveland Avenue/Avenue 15 ½	---	---	---	---	---
SR 99 SB Ramps at Cleveland Avenue/Avenue 15 ½	---	---	---	---	---
SR 99 NB ramps at SR 145/Madera Avenue	---	---	---	---	---
SR 99 SB off-ramp at Olive Avenue/Avenue 14	---	---	---	---	---
SR 99 SB on-ramp/Olive Avenue/Avenue 14 at SR 145	---	---	---	---	---

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)

		95th Percentile Queue Length (ft) (AM/PM)						
Intersection	**Existing Queue Storage Length (ft)**	**Existing**	**2008 No Project**	**2008 Project**	**Mitigated 2008 Project[4]**	**2030 No Project**	**2030 Project**	**Mitigated 2030 Project[4]**
SR 99 NB off-ramp at Avenue 18 ½	1,204[1] (770[2])							
• NB Left-Through-Right		37/52	175/399	217/553				
• NB Left-Through					#187/#236	#214/#250	#214/#271	#224/#271
• NB Right					17/32	28/49	28/56	30/56
SR 99 SB off-ramp at Avenue 18 1/2	1,256[1] (822[2])							
• SB Left-Through-Right		18/43	88/407	174/685	#164/#287	67/#141	74/#260	
• SB Left								26/40
• SB Right								39/164
SR 99 SB off-ramp at Avenue 17	1,341[1] (907[2])							
• **SB Left**	589[3]	19/37	236/**1,030**	379/**1,058**	102/#282	129/#485	135/#496	156/145
• SB Right	589[3]	3/4	19/63	34/128	31/66	182/#526	205/#548	143/#438
SR 99 NB off-ramp at Avenue 17	1,060[1] (626[2])							
• **NB Left**	45[3]				236#498	#430/**#1,051**	#634/**#1,368**	229/497
• **NB Left-Through**		55/13	**1,368/2,400**	**2,228/3,406**	250/#497	#501/**#1,057**	#682/**#1,375**	292/#648
• **NB Right**	45[3]	10/88	52/**2,619**	56/**2,763**	22/#503	26/**#957**	23/**#943**	21/#756
SR 99 NB off-ramp at Avenue 16 *[Avenue 16/Ellis Avenue]*	1,150[1] (716[2])							
• WB Left		1/1	1/2	1/2				
• SE Through-Right					37/65			
• NB Left	*[150[3]]*					150/#435	150/#435	127/#281
• NB Right	*[150[3]]*					65/#474	65/#487	58/#392
SR 99 SB off-ramp at Avenue 16 *[Avenue 16/Ellis Avenue]*	1,020[1] (586[2])							
• **SB Left**	*[225[3]]*		3/3	3/3	3/3	206/**556**	220/**#602**	103/215
• SB Through			87/141	93/161	75/137			
• **SB Right**	*[225[3]]*		52/80	52/83	47/71	212/**#1,020**	227/**#1,085**	63/#386
SR 99 NB off-ramp at Avenue 15 ½ /Cleveland Avenue	881[1] (447[2])							
• NB Left	353[3]	101/176	127/#347	127/#404	90/#335	129/310	129/336	101/#380
• **NB Right**	353[3]	49/#228	51/#338	51/#394	42/#331	#403/**#1,042**	#408/**#1,126**	62/#315

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

		95th Percentile Queue Length (ft) (AM/PM)						
Intersection	**Existing Queue Storage Length (ft)**	**Existing**	**2008 No Project**	**2008 Project**	**Mitigated 2008 Project[4]**	**2030 No Project**	**2030 Project**	**Mitigated 2030 Project[4]**
SR 99 SB off-ramp at Avenue 15 ½ /Cleveland Avenue	1,000[1] (566[2])							
• **SB Left**	65[3]	70/145			66/#232		158/**#571**	117/#443
• **SB Left-Through**			130/#424	145/#547	67/#234	#359/**#935**	158/**#570**	117/#443
• **SB Right**	65[3]	29/47	35/174	36/213	31/#215	142/**#402**	148/**#544**	120/#427
SR 99 NB off-ramp at SR 145/Madera Avenue	1,310[1] (876[2])							
• WB Left	90[3]	#323/#221	#368/#327	#374/#327	97/73	#262/#322	#241/#268	#189/#332
• WB Right	90[3]	23/25	25/30	25/30	20/21	26/32	24/29	21/34
SR 99 SB off-ramp at Avenue 14/Olive Avenue	1,254[1] (820[2])							
• **SB Left**	65[3]	241/220	280/423	285/455	238/#420	#700/**#1,112**	#647/**#1,021**	156/388
• **SB Right**	65[3]	44/32	59/29	62/30	54/28	174/**139**	162/**132**	143/157
SR 99 SB off-ramp at Avenue 12/Golden State Boulevard	1,431[1] (997[2])							
• **WB Left-Right**		32/356	64/**1,223**	70/**1,300**				
• **WB Left**					50/120	#601/**#1,319**	#653/**#1,353**	161/354
• **WB Right**					46/64	52/**#648**	72/**#649**	47/229
SR 99 NB off-ramp at Avenue 12	1,223[1] (789[2])							
• **NB Left-Through**	49[3]	123/208	141/153	121/153	100/151	273/**312**	293/**312**	198/278
• **NB Right**	49[3]	8/17	34/43	31/43	26/43	#494/**#1,108**	#525/**#1,020**	128/#371
Avenue 17 between SR 99 SB off-ramp and Golden State Boulevard	481							
• WB Left-Through-Right (at Golden State Boulevard)		7/4	12/41	12/41				
• WB Left					107/m#235	m#243/m#382	m#216/m#329	m#86/m#159
• **WB Through**					135/232	305/**m562**	282/**m532**	127/m356
• WB Right					94/93	m20/m33	60/m87	14/m419
• EB Through (at SR 99 SB off-ramp)		---	---	---	31/m81	79/m361	73/m353	178/m#123

95th percentile queue length - is minimum amount of storage needed for each movement *SR = State Route* *ft = feet* *NB = northbound* *SB = southbound* *WB = westbound* *EB = eastbound*
[xx] = 2030 conditions *[1] = Total ramp length* *[2] = Calculated storage distance* *[3] = Distance of ramp striped as 2-lanes (existing)*
--- = 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* *[4] = 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)

	Existing			2008 No Project			2008 Project			2030 No Project			2030 Project		
Intersection	**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 ½	149/212	N/N	N/N	264/331	N/N	N/N	264/331	N/N *(N)*	N/N *(N)*	279/359	N/N	N/N	279/359	N/N *(N)*	N/N *(N)*
SR 99 SB off-ramp at Avenue 18 ½	98/176	N/N	N/N	172/300	N/N	N/N	217/357	N/N *(N)*	N/N *(N)*	266/445	N/N	N/N	315/506	N/N *(N)*	N/N *(N)*
SR 99 SB off-ramp at Avenue 17	126/185	N/N	N/N	197/356	N/N	N/N	197/356	N/N *(N)*	N/N *(N)*	399/681	N/N	N/N	399/681	N/N *(N)*	N/N *(N)*
SR 99 NB off-ramp at Avenue 17	248/425	N/N	N/N	**780/1,689**	**Y/Y**	**N/Y**	**1,002/ 1,966**	**Y/Y** *(Y)*	**N/Y** *(Y)*	**1,432/ 2,876**	**Y/Y**	**N/Y**	**1,728/ 3,238**	**Y/Y** *(Y)*[1]	**Y/Y** *(Y)*[1]
SR 99 NB off-ramp at Avenue 16	55/97	N/N	N/N	139/309	N/N	N/N	139/309	N/N *(N)*	N/N *(N)*	698/**1,069**	**N/Y**	N/N	698/**1,069**	**N/Y** *(Y)*	N/N *(Y)*
SR 99 SB off-ramp at Avenue 16	186/304	N/N	N/N	291/623	N/N	N/N	310/672	N/N *(N)*	N/N *(N)*	763/**1,324**	**N/Y**	N/N	786/**1,379**	**N/Y** *(Y)*	N/N *(Y)*
SR 99 NB off-ramp at Avenue 15 ½ /Cleveland Avenue	429/768	N/N	N/N	528/**1,010**	**N/Y**	N/N	528/**1,010**	**N/Y** *(Y)*	N/N *(Y)*	854/**1,604**	**N/Y**	**N/Y**	854/**1,604**	**N/Y** *(Y)*[1]	**N/Y** *(Y)*[1]
SR 99 SB off-ramp at Avenue 15 ½ /Cleveland Avenue	112/234	N/N	N/N	231/555	N/N	N/N	255/614	N/N *(N)*	N/N *(N)*	573/**1,116**	**N/Y**	N/N	604/**1,191**	**N/Y** *(Y)*	N/N *(Y)*
SR 99 NB off-ramp at SR 145/Madera Avenue	411/279	N/N	N/N	419/288	N/N	N/N	419/288	N/N *(N)*	N/N *(N)*	727/764	N/N	N/N	727/764	N/N *(N)*	N/N *(N)*
SR 99 SB off-ramp at Avenue 14/Olive Avenue	659/418	N/N	N/N	779/807	N/N	N/N	796/848	N/N *(N)*	N/N *(N)*	**1,160/ 1,427**	**Y/Y**	N/N	**1,180/ 1,475**	**Y/Y** *(Y)*	N/N *(Y)*
SR 99 SB off-ramp at Avenue 12/Golden State Boulevard	213/634	N/N	N/N	270/781	N/N	N/N	277/795	N/N *(N)*	N/N *(N)*	823/**1,711**	**N/Y**	**N/Y**	833/**1,735**	**N/Y** *(Y)*	**N/Y** *(Y)*
SR 99 NB off-ramp at Avenue 12	189/227	N/N	N/N	237/306	N/N	N/N	237/306	N/N *(N)*	N/N *(N)*	665/**953**	**N/Y**	N/N	665/**953**	**N/Y** *(Y)*	N/N *(Y)*

PCE = Passenger Car Equivalent *SR = State Route* *Y = Threshold Met* *N = Threshold Not Met* *NB = northbound* *SB = southbound* *(Y) = Mitigations Included in Analyses & Cost Estimates*
(N) = Mitigations Not Included in Analyses & Cost Estimates *Bolded Text = ramps meet at least one of the volume thresholds* *[1] = mitigation already incorporated in the Mitigated 2008 Project scenario*

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

Intersection	Movement	Existing Storage Length (ft)	2008 Project Storage Length (ft)	2030 Project Storage Length (ft)
Avenue 18 ½ at SR 99 SB ramps/Road 23	NBL	25	75	n/a
	NBR	25	200	n/a
	WBL	---	75	n/a
Avenue 18 ½ at SR 99 NB ramps	EBL	150	275	200[1]
Avenue 17 at SR 99 NB ramps	EBL	300	50	100[1]
Avenue 12/Golden State Boulevard at SR 99 SB ramps	NBR	---	n/a	250[3]
	SBL	---	250	165[1]
Avenue 12 at Golden State Boulevard	NBL	200	150	150
	NBR	---	275	425
	SBL	400	175	465[1]
	SBR	200	50	75
	WBL	---	100	125
	EBL	350	250	190[1]
	EBR	425	50	50
Avenue 12 at SR 99 NB ramps	WBR	---	425	700[3]
	EBL	---	100	125
Avenue 18 at Road 23	NBL	---	n/a	50
	SBL	---	125	125
Avenue 17 at Road 23	NBL	---	n/a	50
	SBL	---	50	100
	WBL	---	175	175
Avenue 17 at Golden State Boulevard	NBL	50	75	100
	NBR	---	n/a	215[3]
	SBL	---	265[1]	260[4]
	WBL	---	200	165[1]
	WBR	---	550[2]	750[2]
	EBL	---	50	75
Ellis Street at Road 26	NBL	---	50	150
	SBL	---	175	175
	SBR	---	n/a	275
	WBL		n/a	75
Avenue 16 at Schnoor Avenue	NBL	75	100	n/a
	NBR	75	225	n/a
	WBL	150	225[1]	n/a
	EBL	---	140[1]	n/a
Avenue 16 at SR 99 SB ramps	NBL	75	225[1]	n/a
	NBR	75	50	n/a
	EBR	200	600	n/a

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

Intersection	Movement	Existing Storage Length (ft)	2008 Project Storage Length (ft)	2030 Project Storage Length (ft)
Avenue 16 at SR 99 NB ramps	EBL	---	200[1]	n/a
	EBR	---	375	n/a
Avenue 16/Ellis Street at Golden State Boulevard	NBR	---	n/a	400[3]
	WBL	200	n/a	365[1]
	WBR	---	n/a	500
Avenue 16/Ellis Street at SR 99 NB ramps	WBR	---	n/a	525
	EBL	300	n/a	425[1]
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	WBR	50	325	700
	EBL	100	225	215[1]
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps	WBL	125	165[1]	240[1]
	EBR	125	500	725
SR 145/Madera Avenue at SR 99 NB ramps	NBL	---	265[1]	490[1]
	SBR	---	400	675
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	NBL	125	150	150[1]
	NBR	100	50	100
	SBR	25	225	375
	EBL	175	150[1]	215[1]
	EBR	175	625[2]	550[3]
Avenue 18 ½ at Golden State Boulevard/ Road 23	NBL	---	n/a	50
	NBR	---	n/a	350
	SBL	---	n/a	175
	WBL	---	n/a	375[1]
	EBL	---	n/a	50

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:

Existing (2005)

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

- SR 99 north of Avenue 18 ½
  - Restripe/widen the southbound (SB) leg from two (2) lanes to three (3) lanes

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

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

- Avenue 17 at SR 99 northbound (NB) ramps
  - Signalize the intersection
  - Restripe/widen the NB approach, south leg, from a shared left-through and separate right to a separate left-turn lane, a shared left-through lane, and dual (2) right-turn lanes
  - Restripe/widen the eastbound (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 westbound (WB) approach, east leg, from a shared through-right lane, to two (2) through lanes and a separate right-turn lane

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

- Avenue 12 at Golden State Boulevard
  - Signalize the intersection
  - Restripe/widen the NB approach, south leg, from a shared left-through lane and one (1) right-turn lane to one (1) left-turn lane and a shared through-right lane
  - Restripe/widen the SB approach, north leg, from a shared left-through lane and one (1) right-turn lane to one (1) left-turn lane, one (1) through lane and one (1) right-turn lane

The signalization and widening of the NB and SB approaches for the Avenue 12 at Golden State Boulevard intersection is part of a current Caltrans project programmed for completion by 2008.

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

The signalization and widening of EB approach for the Avenue 12 at SR 99 NB ramps intersection is part of a current Caltrans project programmed for completion by 2008.

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

- Restripe/widen the SB approach, north leg, from a shared left-through-right lane to one (1) left-turn lane, one (1) through lane and one (1) right-turn lane
- Restripe/widen the EB approach, west leg, from a shared through-right lane to one (1) through lane and one (1) right-turn lane

Opening Day (2008) No Project – Alternative E

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

- SR 99 north of Avenue 18 ½
  - Restripe/widen the NB 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

- Avenue 18 ½ at SR 99 SB ramps/Road 23
  - Signalize the intersection
  - Restripe/widen the WB approach, east leg, from a shared left-through to a separate left-turn lane and one (1) through lane

- Avenue 18 ½ at SR 99 NB ramps
  - Signalize the intersection
  - Restripe/widen the NB approach, south leg, from a shared left-through-right lane, to a shared left-through lane and a separate right-turn lane

Although the Avenue 18 ½ at SR 99 NB ramps intersection does not meet the peak hour volumes signal warrant, Caltrans will require both the Avenue 18 ½ at SR 99 SB ramps/Road 23 and Avenue 18 ½ at SR 99 NB ramps intersections to be signalized at the same time. If both intersections are left unsignalized, their minor street movements are projected to operate at LOS "E" and "F" for the AM and PM peak hours even with appropriate lane additions.

- 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 SR 99 NB ramps
  - Widen the NB off-ramp to two (2) lanes with a NB auxiliary lane on SR 99
  - Restripe/widen the NB approach, south leg, to allow storage lanes at least 200 feet in length

- Avenue 12/Golden State Boulevard at SR 99 SB off ramps
  - Signalize the intersection

- Avenue 17 at Road 23
  - Signalize the intersection
  - Restripe/widen the NB approach, south leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the SB approach, north leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the EB approach, west leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the WB approach, east leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane

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

- Ellis Street at Road 26
  - Signalize the intersection
  - Restripe/widen the NB approach, south leg, from a shared left-through lane and a shared through-right lane to one (1) left-turn lane, one (1) through lane and a shared through-right lane
  - Restripe/widen the SB approach, north leg, from a shared left-through lane and a shared through-right lane to one (1) left-turn lane, one (1) through lane and a shared through-right lane
  - Restripe/widen the EB approach, west leg, from a shared left-through-right lane to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the EB approach, west leg, from a shared left-through-right lane to a separate left-turn lane and a shared through-right lane

- Avenue 14 at Road 23
  - Signalize the intersection
  - Restripe/widen the NB approach, south leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the SB approach, north leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the EB approach, west leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the WB approach, east leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane

- Avenue 16 at Schnoor Avenue
  - Signalize the intersection
  - Restripe/widen the SB approach, north leg, from a shared left-through-right lane to one (1) left-turn lane and a shared through-right lane
  - Restripe/widen the EB approach, west leg, from a shared left-through-right to dual (2) lefts and a shared through-right lane
  - Restripe/widen the WB approach, east leg, from one (1) left-turn lane and a shared through-right lane to dual (2) left-turn lanes and a shared through-right lane

- Avenue 16 at SR 99 NB ramps
  - Reconfigure/realign the Avenue 16/Avenue 16 connector at SR 99 NB ramps, Avenue 16 at SR 99 NB ramps connector and Gateway/Avenue 16 at SR 99 NB ramps to one (1) intersection
  - Signalize the intersection
  - Restripe/widen the NB approach, south leg, from a shared left-through lane, to a separate left-turn lane and one (1) through lane
  - Restripe/ widen the EB approach, west leg, from a shared left-right, to dual (2) left-turn lanes and a separate right-turn lane

- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps
  - Restripe/widen the EB approach, west leg, from a separate left-turn lane and two (2) through lanes, to dual (2) left-turn lanes and two (2) through lanes
  - Widen the NB off-ramp to two (2) lanes with a NB auxiliary lane on SR 99

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

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

Opening Day (2008) Project

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

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

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

- Avenue 18 at Road 23
  - Restripe/widen the SB approach, north leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane

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

2030 No Project – Alternative E

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

- SR 99 north of Avenue 18 ½
  - 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 and 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

- Avenue 18 ½ at SR 99 SB ramps
  - Restripe/widen the SB approach, north leg, from a shared left-right lane to a separate left-turn lane and a separate right-turn lane
  - 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 18 ½ at SR 99 NB ramps
  - Restripe/widen the EB approach, west leg, from a separate left-turn lane and one (1) through lane, to dual (2) left-turn lanes and two (2) through lanes
  - Restripe/widen the WB approach, east leg, from a shared through-right lane, to one through lane and a shared through-right lane

- Avenue 17 at SR 99 SB ramps
  - Restripe/widen the EB approach, west leg, from two (2) through lanes, to three (3) through lanes
  - Restripe/widen the WB approach, east leg, from two (2) through lanes, to three (3) through lanes

- Avenue 17 at SR 99 NB ramps
  - Restripe/widen the NB approach, south leg, from a separate left-turn lane, a shared left-through lane, and dual (2) right-turn lanes, to dual (2) left-turn lanes, a shared left-through lane, and dual (2) right –turn lanes
  - Restripe/widen the EB approach, west leg, from a separate left-turn lane and two (2) through lanes, to dual (2) left-turn lanes and three (3) through lanes
  - Restripe/widen the WB approach, east leg, from two (2) through lanes and a separate right-turn lane, to three (3) through lanes and a separate right-turn lane
  - Lengthen the NB off-ramp by 200 feet to accommodate the projected queues
  - Restripe/widen the NB approach, south leg, to allow storage lanes at least 500 feet in length

- Avenue 12/Golden State Boulevard at SR 99 SB off ramps
  - Restripe/widen the SB approach, north leg, from one (1) left-turn lane and one (1) through lane, to dual (2) left-turn lanes 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 a separate right-turn lane
  - Widen the SB off-ramp to two (2) lanes with a SB auxiliary lane on SR 99

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

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

- Avenue 17 at Golden State Boulevard
  - Restripe/widen the NB approach, south leg, from a separate left-turn lane and a shared through-right lane, to a separate left-turn lane, one (1) through lane, and dual (2) right-turn lanes
  - Restripe/widen the SB approach, north leg, from dual (2) left-turn lanes and a shared through-right lane, to triple (3) left-turn lanes and a shared through-right lane
  - Restripe/widen the EB approach, west leg, from a separate left-turn lane, one (1) though lane, and a shared through-right lane, to a separate left-turn lane, two (2) through lanes, and a 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 dual (2) left-turn lanes, three (3) through lanes, and a separate right-turn lane

- Avenue 15 ½ at Road 23
  - Signalize the intersection
  - Restripe/widen the NB approach, south leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the SB approach, north leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the EB approach, west leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the WB approach, east leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane

- Avenue 16/Ellis Street at Golden State Boulevard
  - Restripe/widen the NB approach, south leg, from a separate left-turn lane, one (1) through lane, and a shared through-right lane, to a separate left-turn lane, two (2) through lanes, and dual (2) right-turn lanes
  - Restripe/widen the WB approach, east leg, from dual (2) left-turn lanes, one (1) through lane, and a shared through-left lane, to dual (2) left-turn lanes, two (2) through lanes, and a separate right-turn lane

- Avenue 16/Ellis Street at SR 99 SB ramps
  - Restripe/widen the SB approach, north leg, from a separate left-turn lane and a separate right-turn lane, to dual (2) left-turn lanes and dual (2) right-turn lanes
  - Widen the SB off-ramp to two (2) lanes with a SB auxiliary lane on SR 99

- Avenue 16/Ellis Street at SR 99 NB ramps
  - Restripe/widen the EB approach, west leg, from a separate left-turn lane and two (2) through lanes, to dual (2) left-turn lanes and two (2) through lanes
  - Restripe/widen the WB approach, east leg from one (1) through lane and a shared through-right lane, to two (2) through lanes and a separate right-turn lane
  - Widen the NB off-ramp to two (2) lanes with a NB auxiliary lane on SR 99

- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps
  - Restripe/widen the NB approach, south leg, from dual (2) left-turn lanes and a separate right-turn lane, to dual (2) left-turn lanes and triple (3) right-turn lanes
  - Restripe/widen the EB approach, west leg, from to dual (2) left-turn lanes and two (2) through lanes, to dual (2) left-turn lanes and three (3) through lanes
  - Restripe/widen the WB approach, east leg, from two (2) through lanes and a separate right-turn lane, to three (3) through lanes and a separate right-turn lane

- Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps
  - Restripe/widen the EB approach, west leg, from a two (2) through lanes and a separate right-turn lane, to three (3) through lanes and a separate right-turn lane
  - Restripe/widen the WB approach, east leg, from dual (2) left-turn lanes and two (2) through lanes to dual (2) left-turn lanes and three (3) through lanes
  - Widen the SB off-ramp to two (2) lanes with a SB auxiliary lane on SR 99
  - Restripe/widen the SB approach, north leg, to allow storage lanes at least 200 feet in length

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

- Olive Avenue/Avenue 14 at SR 99 SB off-ramp
  - Restripe/widen the SB approach, north leg, from a separate left-turn lane and a separate right-turn lane to dual (2) left-turn lanes and a separate right-turn lane
  - Restripe/widen the WB approach, east leg, from one (1) through lane to two (2) through lanes
  - Widen the SB off-ramp to two (2) lanes with a SB auxiliary lane on SR 99

- 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 lane, two (2) through lanes, and a shared through-right lane
  - Restripe/widen the SB approach, north leg, from a shared left-through lane, one (1) through lane, and a separate right-turn lane, to a separate left-turn lane, two (2) through lanes, and a separate right-turn lane
  - Restripe/widen the EB approach, west leg, from dual (2) left-turn lanes, one (1) through lane and one (1) right-turn lane, to dual (2) left-turn lanes, two (2) through lanes, and dual (2) right-turn lanes

- Avenue 18 ½ at Pistachio Drive
  - Restripe/widen the EB approach, west leg, from a shared left-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 one (1) through lane and a shared through-right lane

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

2030 Project

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

- Avenue 18 at Road 23
  - Signalize the intersection
  - Restripe/widen the NB approach, south leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the SB approach, north leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the EB approach, west leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the WB approach, east leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane

With the proposed Alternative A/Madera Site improvements detailed previously, two (2) freeway segments and one (1) intersection 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 "D" and "E" 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 intersection is still projected to operate at a LOS "D" in the PM peak hour. Per discussions with Caltrans staff, widening Avenue 17 to eight (8) lanes is not recommended. If a NB to WB loop off-ramp were constructed, the Avenue 17 at SR 99 NB ramps intersection is projected to operate at a LOS "C" in the PM peak hour, with a delay of 33.1 seconds. However construction of a NB to WB loop off-ramp is not probable due to the proximity of the railroad tracks.

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 2008. 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)

	Existing		2008 No Project		2008 Project		Mitigated 2008 Project		2030 No Project		2030 Project		Mitigated 2030 Project	
County Segment	**LOS AM/PM**		**LOS AM/PM**		**LOS AM/PM**		**LOS AM/PM**		**LOS AM/PM**		**LOS AM/PM**		**LOS AM/PM**	
Avenue 18 ½ – Road 24 to Road 23	B/B		B/B		B/B		B/B		C/D		C/D		A/A	
Road 23 – Avenue 18 ½ to Avenue 17	B/B		B/C		B/C		B/C		D/D		D/D		D/D	
Avenue 17 – Road 23 to SR 99	A/A		A/F		A/F		A/A		A/D		A/E		A/B	
Avenue 17 – SR 99 to Road 27	E/C		F/F		F/F		A/B		B/E		A/B		A/B	
Golden State Blvd – Avenue 17 to Road 23	A/A		A/A		A/A		A/A		A/A		A/A		A/A	
Freeway Segment	**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 ½														
• **NB**	C/C	21.5/21.0	C/C	24.1/25.7	C/D	24.3/**26.1**	B/B	16.0/16.9	C/D	25.2/**26.1**	C/D	25.3/**26.4**	C/C	18.6/19.2
• **SB**	B/D	17.6/**26.5**	C/D	19.9/**33.6**	C/D	20.2/**34.3**	C/C	20.2/21.8	C/E	20.3/**35.2**	C/E	20.5/**35.7**	B/C	15.4/23.5
SR 99 between Avenue 18 ½ and Avenue 17														
• **NB**	C/C	23.8/23.2	D/D	**26.9/28.2**	D/D	**26.9/28.2**	B/B	17.3/17.9	D/D	**28.3/28.9**	D/D	**28.3/28.9**	C/C	20.2/20.5
• **SB**	C/D	19.3/**30.1**	C/E	21.6/**39.1**	C/E	21.6/**39.1**	B/C	14.3/21.7	C/E	22.2/**41.9**	C/E	22.2/**41.9**	B/C	16.6/25.6
SR 99 south of Avenue 17														
• **NB**	C/C	22.9/22.3	D/F	**31.6/---**	D/F	**34.2/---**	C/C	20.2/24.8	D/F	**33.1/---**	E/F	**35.6/---**	C/D	23.5/**29.2**
• **SB**	C/D	18.6/**28.5**	C/F	23.1/---	C/F	23.8/---	B/C	11.7/20.8	C/F	23.3/---	B/D	17.7/**34.8**	B/D	17.7/**34.8**
Intersection	**LOS AM/PM**	**Delay[1] AM/PM (secs)**	**LOS AM/PM**	**Delay[1] AM/PM (secs)**	**LOS AM/PM**	**Delay[1] AM/PM (secs)**	**LOS AM/PM**	**Delay[1] AM/PM (secs)**	**LOS AM/PM**	**Delay[1] AM/PM (secs)**	**LOS AM/PM**	**Delay[1] AM/PM (secs)**	**LOS AM/PM**	**Delay[1] AM/PM (secs)**
Avenue 18 ½ at SR 99 SB ramps/Road 23							B/C	14.4/21.3	A/B	9.4/14.8	A/B	9.8/16.6	A/B	8.3/11.1
• WB Left-Through	A/A	8.1/8.2	A/A	8.9/8.9	A/A	8.9/9.0								
• **NB Approach**	B/B	12.1/13.2	D/F	**25.6/63.3**	E/F	**37.0/458.3**								
• **SB Approach**	B/C	13.0/15.7	D/F	**30.0/178.0**	E/F	**45.9/324.1**								
Avenue 18 ½ at SR 99 NB ramps							C/C	28.5/27.3	C/C	27.9/30.2	C/C	27.9/31.1	C/C	21.4/21.2
• EB Left	A/A	8.3/7.8	A/A	8.5/8.3	A/A	8.6/8.5								
• **NB Approach**	C/C	15.8/15.8	E/F	**44.3/144.0**	F/F	**55.4/239.1**								
Avenue 17 at SR 99 SB ramps							A/A	4.4/9.4	A/F	7.9/**87.5**	A/F	8.1/**150.0**	A/B	6.0/16.9
• **SB Approach**	B/B	12.5/14.5	F/F	**153.6/8216**	F/F	**402.7/19627**								
Avenue 17 at SR 99 NB ramps							B/C	16.4/32.4	C/F	26.5/**113.6**	C/F	32.3/**135.6**	B/D	17.0/**47.8**
• EB Left	A/A	8.7/8.0	B/C	10.2/15.7	B/C	10.5/16.5								
• **NB Approach**	C/C	16.5/15.5	F/F	**738.0/5934**	F/F	**1301/10493**								
Avenue 12/Golden State Boulevard at SR 99 SB ramps							B/B	13.0/16.8	D/F	**41.8/245.9**	D/F	**50.6/251.5**	B/C	17.9/20.7
• SB Left-Through	A/A	8.3/8.7	A/A	8.4/9.0	A/A	8.4/9.0								
• **WB Approach**	B/E	11.3/**44.9**	C/F	15.6/**303.5**	C/F	16.2/**323.1**								
Avenue 12 at Golden State Boulevard			C/C	20.9/29.8	C/D	23.1/35.1	B/C	19.8/32.8	F/F	**126.8/418.3**	F/F	**124.9/419.5**	B/D	18.4/39.4
• EB Left	A/A	8.5/8.7												
• WB Left	A/A	8.1/8.6												
• **NB Approach**	C/F	20.9/**279.6**												
• **SB Approach**	D/F	**31.9/111.1**												
Avenue 12 at SR 99 NB ramps			B/B	13.9/14.6	B/C	15.1/20.2	A/B	9.7/10.5	D/F	**41.7/243.3**	D/F	**43.8/249.3**	B/C	11.2/21.4
• EB Left-Through	A/A	8.9/8.9												
• **NB Approach**	E/F	**46.9/95.1**												

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

	Existing		2008 No Project		2008 Project		Mitigated 2008 Project		2030 No Project		2030 Project		Mitigated 2030 Project	
Intersection	**LOS AM/PM**	**Delay[1] AM/PM (secs)**	**LOS AM/PM**	**Delay[1] AM/PM (secs)**	**LOS AM/PM**	**Delay[1] AM/PM (secs)**	**LOS AM/PM**	**Delay[1] AM/PM (secs)**	**LOS AM/PM**	**Delay[1] AM/PM (secs)**	**LOS AM/PM**	**Delay[1] AM/PM (secs)**	**LOS AM/PM**	**Delay[1] AM/PM (secs)**
Avenue 18 at Road 23													A/B	9.4/12.6
• NB Left-Through-Right	A/A	7.5/7.6	A/A	7.7/8.0	A/A	7.7/8.0	A/A	7.7/8.0	A/A	8.1/8.7	A/A	8.1/8.7		
• SB Left-Through-Right	A/A	7.6/7.6	A/A	7.8/8.0	A/A	7.9/8.2	A/A	7.9/8.2	A/A	8.2/8.6	A/A	8.3/8.9		
• WB Approach	B/A	10.5/9.8	B/B	10.8/11.0	B/B	10.9/11.3	B/B	10.9/11.3	B/C	14.3/15.6	B/C	14.2/16.2		
• **EB Approach**	A/B	9.8/10.2	B/B	11.1/13.4	B/C	12.0/15.4	B/C	12.0/15.3	B/C	14.8/25.0	C/D	26.9/33.5		
Avenue 17 at Road 23							B/C	13.2/21.1	B/C	18.1/26.4	B/C	18.3/27.7	B/C	18.3/27.7
• NB Left-Through-Right	A/A	7.4/7.4	A/A	7.5/7.6	A/A	7.5/7.6								
• SB Left-Through-Right	A/A	7.5/7.6	A/A	7.8/8.2	A/A	7.9/8.3								
• **WB Approach**	B/B	11.2/11.5	**B/F**	14.7/**50.5**	**C/F**	15.7/**83.6**								
• EB Approach	B/B	10.5/11.2	B/C	12.5/7.0	B/C	12.9/19.2								
Avenue 17 at Golden State Boulevard							B/D	17.5/35.6	C/F	24.1/**125.9**	C/F	25.4/**201.9**	B/C	17.8/34.2
• EB Left-Through-Right	A/A	7.5/7.4	A/B	9.1/11.0	B/B	10.1/13.1								
• WB Left-Through-Right	A/A	7.6/7.6	A/B	8.9/13.7	A/B	8.9/13.7								
• **NB Approach**	A/A	9.5/9.7	**F/F**	**73.0/ -**	**F/F**	**205.9/ -**								
• **SB Approach**	B/B	13.5/13.3	**F/F**	**282.2/ -**	**F/F**	**3462/ -**								
Ellis Street at Road 26	B/C	11.51/16.47	**B/F**	14.62/**96.48**	**C/F**	15.09/**106.43**	A/B	9.9/15.2	C/C	22.2/24.4	C/C	22.9/24.8	C/C	22.9/24.8
Avenue 15 ½ at Road 23													A/A	6.8/8.9
• NB Left-Through-Right	A/A	7.6/7.8	A/A	7.8/8.5	A/A	7.8/8.6	A/A	7.8/8.6	A/A	8.2/9.1	A/A	8.2/9.2		
• SB Left-Through-Right	A/A	7.6/7.6	A/A	7.9/8.2	A/A	7.9/8.3	A/A	7.9/8.3	A/A	8.2/8.8	A/A	8.3/8.8		
• WB Approach	B/A	10.3/9.9	B/B	11.9/14.6	B/C	12.4/15.5	B/C	12.4/15.5	C/D	15.8/25.8	C/D	16.3/27.8		
• EB Approach	B/B	10.2/11.8	B/C	12.5/16.9	B/C	12.9/17.9	B/C	12.9/17.9	B/D	14.6/25.3	B/D	14.9/26.8		
Avenue 14 at Road 23	A/B	8.72/10.03	A/C	9.77/16.62	A/C	9.99/18.41	B/B	15.3/19.8	B/C	15.9/22.8	B/C	16.0/22.9	B/C	16.0/22.9
Avenue 16 at Schnoor Avenue							C/B	25.4/17.5	n/a	n/a	n/a	n/a	n/a	n/a
• NB Left	A/A	7.3/7.4	A/A	7.4/7.6	A/A	7.4/7.6								
• SB Left-Through-Right	A/A	7.5/7.3	A/A	7.8/7.7	A/A	7.8/7.7								
• **WB Approach**	A/B	9.5/11.4	**B/F**	11.5/**63.4**	**B/F**	12.2/**105.0**								
• **EB Approach**	B/B	10.3/11.7	**B/E**	14.2/**49.5**	**C/F**	15.4/**72.9**								
Avenue 16 at SR 99 SB ramps	A/B	9.34/11.26	B/C	14.8/21.3	B/C	14.9/21.4	B/B	11.1/14.4	n/a	n/a	n/a	n/a	n/a	n/a
Avenue 16 at SR 99 NB ramps	n/a	n/a	n/a	n/a	n/a	n/a	B/B	11.5/14.6	n/a	n/a	n/a	n/a	n/a	n/a
Avenue 16/Avenue 16 connector at SR 99 NB ramps							n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
• **EB Left**	B/B	10.1/10.6	**B/D**	12.6/**26.5**	**B/D**	12.9/**30.5**								
Avenue 16 at SR 99 NB ramp connector							n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
• SB Left-Through	A/A	7.6/8.0	A/A	8.2/9.5	A/A	8.2/9.6								
• WB Right	A/A	8.8/9.3	A/B	9.6/12.8	A/B	9.6/12.8								
Gateway/Avenue 16 at SR 99 NB ramps							n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
• WB Left	A/B	9.6/10.6	B/C	11.1/15.4	B/C	11.2/15.9								
Avenue 16/Ellis Street at Golden State Boulevard	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	C/E	22.8/**72.4**	C/E	22.6/**76.7**	C/D	24.5/42.4
Avenue 16/Ellis Street at SR 99 SB ramps	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	B/E	13.7/**69.9**	B/E	13.8/**76.3**	A/B	7.6/19.2
Avenue 16/Ellis Street at SR 99 NB ramps	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	C/F	27.5/**153.0**	C/F	28.9/**160.5**	B/C	16.1/34.2
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	B/B	12.3/16.4	**B/D**	14.2/**35.1**	**B/D**	14.5/**36.7**	B/C	11.0/27.2	C/F	24.5/**177.3**	C/F	25.3/**176.6**	B/C	13.2/30.8
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps	B/B	11.6/15.3	B/C	13.0/34.3	**B/D**	13.0/**40.0**	A/B	8.8/19.2	C/F	27.1/**202.0**	B/F	15.4/**109.6**	B/C	12.0/26.7
SR 145/Madera Avenue at SR 99 NB ramps	C/C	27.3/21.9	**D/D**	**36.5/54.8**	**D/E**	**38.5/61.7**	B/B	13.6/13.0	C/D	20.3/**53.2**	B/E	19.9/**57.3**	B/C	17.3/25.0
Olive Avenue/Avenue 14 at SR 99 SB off-ramp	B/B	13.9/15.3	B/C	15.4/29.8	B/C	15.7/31.7	B/C	14.7/22.7	F/F	**101.7/273.1**	F/F	**102.8/272.6**	B/C	13.3/20.6
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	C/C	25.1/34.9	C/E	26.6/**61.1**	C/E	30.1/**67.2**	B/C	12.2/29.5	F/F	**102.5/357.7**	F/F	**103.3/361.6**	B/C	11.3/31.1

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

	Existing		2008 No Project		2008 Project		Mitigated 2008 Project		2030 No Project		2030 Project		Mitigated 2030 Project	
Intersection	**LOS AM/PM**	**Delay[1] AM/PM (secs)**	**LOS AM/PM**	**Delay[1] AM/PM (secs)**	**LOS AM/PM**	**Delay[1] AM/PM (secs)**	**LOS AM/PM**	**Delay[1] AM/PM (secs)**	**LOS AM/PM**	**Delay[1] AM/PM (secs)**	**LOS AM/PM**	**Delay[1] AM/PM (secs)**	**LOS AM/PM**	**Delay[1] AM/PM (secs)**
Avenue 18 ½ at Pistachio Drive														
• EB Approach	A/A	8.3/8.4	A/A	8.9/9.1	A/A	8.9/9.1	A/A	8.9/9.1	A/B	9.9/11.1	A/B	9.8/11.0	B/B	10.2/11.6
• SB Approach	B/B	12.4/13.8	C/D	22.5/25.5	C/D	23.0/26.5	C/D	23.0/26.5	n/a	n/a	n/a	n/a	n/a	n/a
• **SB Right**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	C/D	19.8/33.4	C/D	19.0/30.9	C/C	15.5/18.8
Avenue 18 ½ at Golden State Boulevard														
• EB Approach	A/A	7.6/7.7	A/A	7.7/7.8	A/A	7.7/7.8	A/A	7.7/7.8						
• SB Approach	B/B	10.6/11.0	B/B	11.1/12.2	B/B	11.2/12.4	B/B	11.2/12.4						
Avenue 18 ½ at Golden State Boulevard / Road 23	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a					C/C	29.2/23.9
• NB Left-Through-Right									A/A	7.7/7.8	A/A	7.7/7.8		
• SB Left-Through-Right									B/B	10.0/12.7	A/B	9.8/12.3		
• **WB Approach**									**F/F**	**974.3/---**	**F/F**	**687.0/---**		
• **EB Approach**									**F/F**	**---/---**	**F/F**	**---/---**		

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

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	2008 No Project	2008 Project	2030 No Project	2030 Project
Avenue 18 ½ at SR 99 SB ramps/Road 23	No	**Yes**	**Yes**	**Yes**	**Yes**
Avenue 18 ½ at SR 99 NB ramps	No	No	No	**Yes**	**Yes**
Avenue 17 at SR 99 SB ramps	No	**Yes**	**Yes**	**Yes**	**Yes**
Avenue 17 at SR 99 NB ramps	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Avenue 12/Golden State Boulevard at SR 99 SB ramps	No	**Yes**	**Yes**	**Yes**	**Yes**
Avenue 12 at Golden State Boulevard	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Avenue 12 at SR 99 NB ramps	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Avenue 18 at Road 23	No	No	No	No	**Yes**
Avenue 17 at Road 23	No	**Yes**	**Yes**	**Yes**	**Yes**
Avenue 17 at Golden State Boulevard	No	**Yes**	**Yes**	**Yes**	**Yes**
Ellis Street at Road 26	No	**Yes**	**Yes**	**Yes**	**Yes**
Avenue 15 ½ at Road 23	No	No	No	**Yes**	**Yes**
Avenue 14 at Road 23	No	**Yes**	**Yes**	**Yes**	**Yes**
Avenue 16 at Schnoor Avenue	No	**Yes**	**Yes**	**Yes**	**Yes**
Avenue 16 at SR 99 SB ramps	No	---	---	---	---
Avenue 16/Avenue 16 connector at SR 99 NB ramps	No	**Yes**	**Yes**	**Yes**	**Yes**
Avenue 16 at SR 99 NB ramp connector	No	**Yes**	**Yes**	**Yes**	**Yes**
Gateway/Avenue 16 at SR 99 NB ramps	No	No	No	---	---
SR 99 NB ramps at Cleveland Avenue/Avenue 15 ½	---	---	---	---	---
SR 99 SB Ramps at Cleveland Avenue/Avenue 15 ½	---	---	---	---	---
SR 99 NB ramps at SR 145/Madera Avenue	---	---	---	---	---
SR 99 SB off-ramp at Olive Avenue/Avenue 14	---	---	---	---	---
SR 99 SB on-ramp/Olive Avenue/Avenue 14 at SR 145	---	---	---	---	---

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)

		95th Percentile Queue Length (ft) (AM/PM)						
Intersection	**Existing Queue Storage Length (ft)**	**Existing**	**2008 No Project**	**2008 Project**	**Mitigated 2008 Project**	**2030 No Project**	**2030 Project**	**Mitigated 2030 Project**
SR 99 NB off-ramp at Avenue 18 ½	1,204[1] (770[2])							
• NB Left-Through-Right		37/52	175/399	202/510				
• NB Left-Through					#187/#236	#214/#250	#214/#250	#203/#250
• NB Right					17/32	28/49	28/49	30/49
SR 99 SB off-ramp at Avenue 18 1/2	1,256[1] (822[2])							
• SB Left-Through-Right		18/43	88/407	144/600	118/#275	67/#141	72/#207	
• SB Left								26/38
• SB Right								38/132
SR 99 SB off-ramp at Avenue 17	1,341[1] (907[2])							
• **SB Left**	589[3]	19/37	236/**1,030**	340/**1,053**	102/271	129/#485	134/#496	43/156
• SB Right	589[3]	3/4	19/63	28/107	29/61	182/#526	200/#546	147/#457
SR 99 NB off-ramp at Avenue 17	1,060[1] (626[2])							
• **NB Left**	45[3]				210/406	#430/**#1,051**	**#581/#1,275**	209/481
• **NB Left-Through**	45[3]	55/13	**1,368/2,400**	**1,968/3,116**	224/406	#501/**#1,057**	**#628/#1,284**	265/570
• **NB Right**	45[3]	10/88	52/**2,619**	54/**2,703**	22/#496	26/**#957**	24/**#948**	21/#810
SR 99 NB off-ramp at Avenue 16 *[Avenue 16/Ellis Avenue]*	1,150[1] (716[2])							
• WB Left		1/1	1/2	1/2				
• SB Through-Right					37/65			
• NB Left	*[150[3]]*					150/#435	150/#435	125/#282
• NB Right	*[150[3]]*					65/#474	65/#484	57/#390
SR 99 SB off-ramp at Avenue 16 *[Avenue 16/Ellis Avenue]*	1,020[1] (586[2])							
• **SB Left**	*[225[3]]*		3/3	3/3	3/3	206/**556**	215/**#585**	102/213
• SB Through			87/141	90/156	74/133			
• **SB Right**	*[225[3]]*		52/80	51/82	46/71	212/**#1,020**	223/**#1,066**	62/#377
SR 99 NB off-ramp at Avenue 15 ½ /Cleveland Avenue	881[1] (447[2])							
• NB Left	353[3]	101/176	127/#347	127/#408	90/#335	129/310	129/336	101/#346
• **NB Right**	353[3]	49/#228	51/#338	51/#391	41/#330	#403/**#1,042**	#408/**#1,126**	62/#289

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

		95th Percentile Queue Length (ft) (AM/PM)						
Intersection	**Existing Queue Storage Length (ft)**	**Existing**	**2008 No Project**	**2008 Project**	**Mitigated 2008 Project**	**2030 No Project**	**2030 Project**	**Mitigated 2030 Project**
SR 99 SB off-ramp at Avenue 15 ½ /Cleveland Avenue	1,000[1] (566[2])							
• **SB Left**	65[3]	70/145			65/#223		155/**#555**	114/#394
• **SB Left-Through**			130/#424	140/**#525**	65/#223	#359/**#935**	155/**#554**	114/#393
• **SB Right**	65[3]	29/47	35/174	36/**208**	31/#208	142/**#402**	145/**#537**	118/#385
SR 99 NB off-ramp at SR 145/Madera Avenue	1,310[1] (876[2])							
• WB Left	90[3]	#323/#221	#368/#327	#368/#327	97/73	#262/#322	#241/#268	#189/#320
• WB Right	90[3]	23/25	25/30	25/30	20/21	26/32	24/29	21/33
SR 99 SB off-ramp at Avenue 14/Olive Avenue	1,254[1] (820[2])							
• **SB Left**	65[3]	241/220	280/423	283/452	234/#413	#700/**#1,112**	#643/**#1,020**	156/381
• **SB Right**	65[3]	44/32	59/29	61/30	54/28	174/**m346**	160/**132**	142/155
SR 99 SB off-ramp at Avenue 12/Golden State Boulevard	1,431[1] (997[2])							
• **WB Left-Right**		32/356	64/**1,223**	69/**1,277**				
• **WB Left**					49/119	#601/**#1,319**	#644/**#1,352**	160/329
• **WB Right**					46/64	52/**#648**	71/**#656**	47/229
SR 99 NB off-ramp at Avenue 12	1,223[1] (789[2])							
• **NB Left-Through**	49[3]	123/208	141/153	110/153	100/151	273/**312**	293/**312**	198/253
• **NB Right**	49[3]	8/17	34/43	29/43	26/43	#494/**#1,108**	#525/**#1,020**	128/#342
Avenue 17 between SR 99 SB off-ramp and Golden State Boulevard	481							
• WB Left-Through-Right (at Golden State Boulevard)		7/4	12/41	12/41				
• WB Left					101/m#253	m#243/m#382	m#241/m#353	m84/m#182
• **WB Through**					141/222	305/**m562**	292/**m559**	101/m369
• WB Right					29/52	m20/m33	m49/m79	21/m202
• EB Through (at SR 99 SB off-ramp)		---	---	---	31/90	79/m361	76/m324	45/408

95th percentile queue length - is minimum amount of storage needed for each movement *SR = State Route* *ft = feet* *NB = northbound* *SB = southbound* *WB = westbound* *EB = eastbound*
[xx] = 2030 conditions *[1] = Total ramp length* *[2] = Calculated storage distance* *[3] = Distance of ramp striped as 2-lanes (existing)*
--- = 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* *[4] = 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)

	Existing			2008 No Project			2008 Project			2030 No Project			2030 Project		
Intersection	**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 ½	149/212	N/N	N/N	264/331	N/N	N/N	264/331	N/N *(N)*	N/N *(N)*	279/359	N/N	N/N	279/359	N/N *(N)*	N/N *(N)*
SR 99 SB off-ramp at Avenue 18 ½	98/176	N/N	N/N	172/300	N/N	N/N	204/340	N/N *(N)*	N/N *(N)*	266/445	N/N	N/N	301/488	N/N *(N)*	N/N *(N)*
SR 99 SB off-ramp at Avenue 17	126/185	N/N	N/N	197/356	N/N	N/N	197/356	N/N *(N)*	N/N *(N)*	399/681	N/N	N/N	399/681	N/N *(N)*	N/N *(N)*
SR 99 NB off-ramp at Avenue 17	248/425	N/N	N/N	**780/1,689**	**Y/Y**	**N/Y**	**936/1,886**	**Y/Y** *(Y)*	**N/Y** *(Y)*	**1,432/ 2,876**	**Y/Y**	**N/Y**	**1,641/ 3,130**	**Y/Y** *(Y)*[1]	**Y/Y** *(Y)*[1]
SR 99 NB off-ramp at Avenue 16	55/97	N/N	N/N	139/309	N/N	N/N	139/309	N/N *(N)*	N/N *(N)*	698/**1,069**	**N/Y**	N/N	698/**1,069**	**N/Y** *(Y)*	N/N *(Y)*
SR 99 SB off-ramp at Avenue 16	186/304	N/N	N/N	291/623	N/N	N/N	304/659	N/N *(N)*	N/N *(N)*	763/**1,324**	**N/Y**	N/N	779/**1,364**	**N/Y** *(Y)*	N/N *(Y)*
SR 99 NB off-ramp at Avenue 15 ½ /Cleveland Avenue	429/768	N/N	N/N	528/**1,010**	**N/Y**	N/N	528/**1,010**	**N/Y** *(Y)*	N/N *(Y)*	854/**1,604**	**N/Y**	**N/Y**	854/**1,604**	**N/Y** *(Y)*[1]	**N/Y** *(Y)*[1]
SR 99 SB off-ramp at Avenue 15 ½ /Cleveland Avenue	112/234	N/N	N/N	231/555	N/N	N/N	248/597	N/N *(N)*	N/N *(N)*	573/**1,116**	**N/Y**	N/N	594/**1,169**	**N/Y** *(Y)*	N/N *(Y)*
SR 99 NB off-ramp at SR 145/Madera Avenue	411/279	N/N	N/N	419/288	N/N	N/N	419/288	N/N *(N)*	N/N *(N)*	727/764	N/N	N/N	727/764	N/N *(N)*	N/N *(N)*
SR 99 SB off-ramp at Avenue 14/Olive Avenue	659/418	N/N	N/N	779/807	N/N	N/N	791/836	N/N *(N)*	N/N *(N)*	**1,160/ 1,427**	**Y/Y**	N/N	**1,173/ 1,461**	**Y/Y** *(Y)*	N/N *(Y)*
SR 99 SB off-ramp at Avenue 12/Golden State Boulevard	213/634	N/N	N/N	270/781	N/N	N/N	275/791	N/N *(N)*	N/N *(N)*	823/**1,711**	**N/Y**	**N/Y**	830/**1,728**	**N/Y** *(Y)*	**N/Y** *(Y)*
SR 99 NB off-ramp at Avenue 12	189/227	N/N	N/N	237/306	N/N	N/N	237/306	N/N *(N)*	N/N *(N)*	665/**953**	**N/Y**	N/N	665/**953**	**N/Y** *(Y)*	N/N *(Y)*

PCE = Passenger Car Equivalent *SR = State Route* *Y = Threshold Met* *N = Threshold Not Met* *NB = northbound* *SB = southbound* *(Y) = Mitigations Included in Analyses & Cost Estimates*
(N) = Mitigations Not Included in Analyses & Cost Estimates *Bolded Text = ramps meet at least one of the volume thresholds* *[1] = mitigation already incorporated in the Mitigated 2008 Project scenario*

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)	2008 Project Storage Length (ft)	2030 Project Storage Length (ft)
Avenue 18 ½ at SR 99 SB ramps/Road 23	NBL	25	75	n/a
	NBR	25	200	n/a
	WBL	---	75	n/a
Avenue 18 ½ at SR 99 NB ramps	EBL	150	275	190[1]
Avenue 17 at SR 99 NB ramps	EBL	300	50	100[1]
Avenue 12/Golden State Boulevard at SR 99 SB ramps	NBR	---	n/a	250[3]
	SBL	---	250	165[1]
Avenue 12 at Golden State Boulevard	NBL	200	150	150
	NBR	---	275	425
	SBL	400	175	450[1]
	SBR	200	50	75
	WBL	---	100	125
	EBL	350	250	190[1]
	EBR	425	50	50
Avenue 12 at SR 99 NB ramps	WBR	---	425	690[3]
	EBL	---	100	125
Avenue 18 at Road 23	NBL	---	n/a	50
	SBL	---	100	100
Avenue 17 at Road 23	NBL	---	n/a	50
	SBL	---	50	100
	WBL	---	175	175
Avenue 17 at Golden State Boulevard	NBL	50	75	100
	NBR	---	n/a	215[3]
	SBL	---	225	225[4]
	WBL	---	200	165[1]
	WBR	---	450	650[2]
	EBL	---	50	50
Ellis Street at Road 26	NBL	---	50	150
	SBL	---	150	150
	SBR	---	n/a	275
	WBL		n/a	75

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

Intersection	Movement	Existing Storage Length (ft)	2008 Project Storage Length (ft)	2030 Project Storage Length (ft)
Avenue 16 at Schnoor Avenue	NBL	75	100	n/a
	NBR	75	200	n/a
	WBL	150	225[1]	n/a
	EBL	---	140[1]	n/a
Avenue 16 at SR 99 SB ramps	NBL	75	225[1]	n/a
	NBR	75	50	n/a
	EBR	200	575	n/a
Avenue 16 at SR 99 NB ramps	EBL	---	200[1]	n/a
	EBR	---	375	n/a
Avenue 16/Ellis Street at Golden State Boulevard	NBR	---	n/a	390[3]
	WBL	200	n/a	365[1]
	WBR	---	n/a	500
Avenue 16/Ellis Street at SR 99 NB ramps	WBR	---	n/a	500
	EBL	300	n/a	415[1]
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	WBR	50	300	675
	EBL	100	225	200[1]
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps	WBL	125	165[1]	240[1]
	EBR	125	500	725
SR 145/Madera Avenue at SR 99 NB ramps	NBL	---	265[1]	475[1]
	SBR	---	400	650
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	NBL	125	150	150[1]
	NBR	100	50	100
	SBR	25	225	375
	EBL	175	150[1]	215[1]
	EBR	175	625[2]	550[3]
Avenue 18 ½ at Golden State Boulevard/ Road 23	NBL	---	n/a	50
	NBR	---	n/a	325
	SBL	---	n/a	175
	WBL	---	n/a	365[1]
	EBL	---	n/a	50

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:

Existing (2005)

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

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

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

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

- Avenue 17 at SR 99 NB ramps
  - Signalize the intersection
  - Restripe/widen the NB approach, south leg, from a shared left-through and separate right to a separate left-turn lane, a shared left-through lane, and dual (2) right-turn lanes
  - 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

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

- Avenue 12 at Golden State Boulevard
  - Signalize the intersection
  - Restripe/widen the NB approach, south leg, from a shared left-through lane and one (1) right-turn lane to one (1) left-turn lane and a shared through-right lane
  - Restripe/widen the SB approach, north leg, from a shared left-through lane and one (1) right-turn lane to one (1) left-turn lane, one (1) through lane and one (1) right-turn lane

The signalization and widening of the NB and SB approaches for the Avenue 12 at Golden State Boulevard intersection is part of a current Caltrans project programmed for completion by 2008.

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

The signalization and widening of the EB approach for the Avenue 12 at SR 99 NB ramps intersection is part of a current Caltrans project programmed for completion by 2008.

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

Opening Day (2008) No Project – Alternative E

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

- SR 99 north of Avenue 18 ½
  - Restripe/widen the NB 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

- Avenue 18 ½ at SR 99 SB ramps/Road 23
  - Signalize the intersection
  - Restripe/widen the WB approach, east leg, from a shared left-through to a separate left-turn lane and one (1) through lane

- Avenue 18 ½ at SR 99 NB ramps
  - Signalize the intersection
  - Restripe/widen the NB approach, south leg, from a shared left-through-right lane, to a shared left-through lane and a separate right-turn lane

Although the Avenue 18 ½ at SR 99 NB ramps intersection does not meet the peak hour volumes signal warrant, Caltrans will require both the Avenue 18 ½ at SR 99 SB ramps/Road 23 and Avenue 18 ½ at SR 99 NB ramps intersections to be signalized at the same time. If both intersections are left unsignalized, their minor street movements are projected to operate at LOS "E" and "F" for the AM and PM peak hours even with appropriate lane additions.

- 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 SR 99 NB ramps
  - Widen the NB off-ramp to two (2) lanes with a NB auxiliary lane on SR 99
  - Restripe/widen the SB approach, north leg, to allow storage lanes at least 75 feet in length

- Avenue 12/Golden State Boulevard at SR 99 SB off ramps
  - Signalize the intersection

- Avenue 17 at Road 23
  - Signalize the intersection
  - Restripe/widen the NB approach, south leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the SB approach, north leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the EB approach, west leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the WB approach, east leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane

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

- Ellis Street at Road 26
  - Signalize the intersection
  - Restripe/widen the NB approach, south leg, from a shared left-through lane and a shared through-right lane to one (1) left-turn lane, one (1) through lane and a shared through-right lane
  - Restripe/widen the SB approach, north leg, from a shared left-through lane and a shared through-right lane to one (1) left-turn lane, one (1) through lane and a shared through-right lane
  - Restripe/widen the EB approach, west leg, from a shared left-through-right lane to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the EB approach, west leg, from a shared left-through-right lane to a separate left-turn lane and a shared through-right lane

- Avenue 14 at Road 23
  - Signalize the intersection
  - Restripe/widen the NB approach, south leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the SB approach, north leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the EB approach, west leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the WB approach, east leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane

- Avenue 16 at Schnoor Avenue
  - Signalize the intersection
  - Restripe/widen the SB approach, north leg, from a shared left-through-right lane to one (1) left-turn lane and a shared through-right lane
  - Restripe/widen the EB approach, west leg, from a shared left-through-right to dual (2) lefts and a shared through-right lane
  - Restripe/widen the WB approach, east leg, from one (1) left-turn lane and a shared through-right lane to dual (2) left-turn lanes and a shared through-right lane

- Avenue 16 at SR 99 NB ramps
  - Reconfigure/realign the Avenue 16/Avenue 16 connector at SR 99 NB ramps, Avenue 16 at SR 99 NB ramps connector and Gateway/Avenue 16 at SR 99 NB ramps to one (1) intersection
  - Signalize the intersection
  - Restripe/widen the NB approach, south leg, from a shared left-through lane, to a separate left-turn lane and one (1) through lane
  - Restripe/ widen the EB approach, west leg, from a shared left-right, to dual (2) left-turn lanes and a separate right-turn lane

- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps
  - Restripe/widen the EB approach, west leg, from a separate left-turn lane and two (2) through lanes, to dual (2) left-turn lanes and two (2) through lanes
  - Widen the NB off-ramp to two (2) lanes with a NB auxiliary lane on SR 99

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

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

Opening Day (2008) Project

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

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

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

- Avenue 18 at Road 23
  - Restripe/widen the SB approach, north leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane

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

2030 No Project – Alternative E

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

- SR 99 north of Avenue 18 ½
  - 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 and 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

- Avenue 18 ½ at SR 99 SB ramps
  - Restripe/widen the SB approach, north leg, from a shared left-right lane to a separate left-turn lane and a separate right-turn lane
  - 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 18 ½ at SR 99 NB ramps
  - Restripe/widen the EB approach, west leg, from a separate left-turn lane and one (1) through lane, to dual (2) left-turn lanes and two (2) through lanes
  - Restripe/widen the WB approach, east leg, from a shared through-right lane, to one through lane and a shared through-right lane

- Avenue 17 at SR 99 SB ramps
  - Restripe/widen the EB approach, west leg, from two (2) through lanes, to three (3) through lanes
  - Restripe/widen the WB approach, east leg, from two (2) through lanes, to three (3) through lanes

- Avenue 17 at SR 99 NB ramps
  - Restripe/widen the NB approach, south leg, from a separate left-turn lane, a shared left-through lane, and dual (2) right-turn lanes, to dual (2) left-turn lanes, a shared left-through lane, and dual (2) right –turn lanes
  - Restripe/widen the EB approach, west leg, from a separate left-turn lane and two (2) through lanes, to dual (2) left-turn lanes and three (3) through lanes
  - Restripe/widen the WB approach, east leg, from two (2) through lanes and a separate right-turn lane, to three (3) through lanes and a separate right-turn lane
  - Lengthen the NB off-ramp by 250 feet to accommodate the projected queues
  - Restripe/widen the SB approach, north leg, to allow storage lanes at least 500 feet in length

- Avenue 12/Golden State Boulevard at SR 99 SB off ramps
  - Restripe/widen the SB approach, north leg, from one (1) left-turn lane and one (1) through lane, to dual (2) left-turn lanes 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 a separate right-turn lane
  - Widen the SB off-ramp to two (2) lanes with a SB auxiliary lane on SR 99

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

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

- Avenue 17 at Golden State Boulevard
  - Restripe/widen the NB approach, south leg, from a separate left-turn lane and a shared through-right lane, to a separate left-turn lane, one (1) through lane, and dual (2) right-turn lanes
  - Restripe/widen the SB approach, north leg, from dual (2) left-turn lanes and a shared through-right lane, to triple (3) left-turn lanes and a shared through-right lane
  - Restripe/widen the EB approach, west leg, from a separate left-turn lane, one (1) though lane, and a shared through-right lane, to a separate left-turn lane, two (2) through lanes, and a 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 dual (2) left-turn lanes, three (3) through lanes, and a separate right-turn lane

- Avenue 15 ½ at Road 23
  - Signalize the intersection
  - Restripe/widen the NB approach, south leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the SB approach, north leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the EB approach, west leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the WB approach, east leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane

- Avenue 16/Ellis Street at Golden State Boulevard
  - Restripe/widen the NB approach, south leg, from a separate left-turn lane, one (1) through lane, and a shared through-right lane, to a separate left-turn lane, two (2) through lanes, and dual (2) right-turn lanes
  - Restripe/widen the WB approach, east leg, from dual (2) left-turn lanes, one (1) through lane, and a shared through-left lane, to dual (2) left-turn lanes, two (2) through lanes, and a separate right-turn lane

- Avenue 16/Ellis Street at SR 99 SB ramps
  - Restripe/widen the SB approach, north leg, from a separate left-turn lane and a separate right-turn lane, to dual (2) left-turn lanes and dual (2) right-turn lanes
  - Widen the SB off-ramp to two (2) lanes with a SB auxiliary lane on SR 99

- Avenue 16/Ellis Street at SR 99 NB ramps
  - Restripe/widen the EB approach, west leg, from a separate left-turn lane and two (2) through lanes, to dual (2) left-turn lanes and two (2) through lanes
  - Restripe/widen the WB approach, east leg from one (1) through lane and a shared through-right lane, to two (2) through lanes and a separate right-turn lane
  - Widen the NB off-ramp to two (2) lanes with a NB auxiliary lane on SR 99

- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps
  - Restripe/widen the NB approach, south leg, from dual (2) left-turn lanes and a separate right-turn lane, to dual (2) left-turn lanes and triple (3) right-turn lanes
  - Restripe/widen the EB approach, west leg, from to dual (2) left-turn lanes and two (2) through lanes, to dual (2) left-turn lanes and three (3) through lanes
  - Restripe/widen the WB approach, east leg, from two (2) through lanes and a separate right-turn lane, to three (3) through lanes and a separate right-turn lane

- Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps
  - Restripe/widen the EB approach, west leg, from a two (2) through lanes and a separate right-turn lane, to three (3) through lanes and a separate right-turn lane
  - Restripe/widen the WB approach, east leg, from dual (2) left-turn lanes and two (2) through lanes to dual (2) left-turn lanes and three (3) through lanes
  - Widen the SB off-ramp to two (2) lanes with a SB auxiliary lane on SR 99
  - Restripe/widen the SB approach, north leg, to allow storage lanes at least 100 feet in length

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

- Olive Avenue/Avenue 14 at SR 99 SB off-ramp
  - Restripe/widen the SB approach, north leg, from a separate left-turn lane and a separate right-turn lane to dual (2) left-turn lanes and a separate right-turn lane
  - Restripe/widen the WB approach, east leg, from one (1) through lane to two (2) through lanes
  - Widen the SB off-ramp to two (2) lanes with a SB auxiliary lane on SR 99

- 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 lane, two (2) through lanes, and a shared through-right lane
  - Restripe/widen the SB approach, north leg, from a shared left-through lane, one (1) through lane, and a separate right-turn lane, to a separate left-turn lane, two (2) through lanes, and a separate right-turn lane
  - Restripe/widen the EB approach, west leg, from dual (2) left-turn lanes, one (1) through lane and one (1) right-turn lane, to dual (2) left-turn lanes, two (2) through lanes, and dual (2) right-turn lanes

- Avenue 18 ½ at Pistachio Drive
  - Restripe/widen the EB approach, west leg, from a shared left-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 one (1) through lane and a shared through-right lane

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 is 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 a shared left-through-right lane, to a separate left-turn lane, one (1) through lane, and a separate right-turn lane
  - Restripe/widen the SB approach, north leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the EB approach, west leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the WB approach, east leg, from a shared left-through-right lane, to dual (2) left-turn lanes and a shared through-right lane

2030 Project

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

- Avenue 18 at Road 23
  - Signalize the intersection
  - Restripe/widen the NB approach, south leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the SB approach, north leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the EB approach, west leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the WB approach, east leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane

With the proposed Alternative B/Madera Site improvements detailed previously, two (2) freeway segments and one (1) intersection 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 "D" 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 intersection is projected to operate at a LOS "D" in the PM peak hour. Per discussions with Caltrans staff, widening Avenue 17 to eight (8) lanes is not recommended. If a NB to WB loop off-ramp were constructed, the Avenue 17 at SR 99 NB ramps intersection is projected to operate at a LOS "C" in the PM peak hour, with a delay of 34.0 seconds. However construction of a NB to WB loop off-ramp is not probable due to the proximity of the railroad tracks.

Alternative C, Alternative Land Use Alternative (Madera Site)

Alternative C, which is the Alternative 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 2008. 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 (ALTERNATIVE LAND USE ALTERNATIVE / MADERA SITE)

	Existing		2008 No Project		2008 Project		Mitigated 2008 Project		2030 No Project		2030 Project		Mitigated 2030 Project	
County Segment	**LOS AM/PM**		**LOS AM/PM**		**LOS AM/PM**		**LOS AM/PM**		**LOS AM/PM**		**LOS AM/PM**		**LOS AM/PM**	
Avenue 18 ½ – Road 24 to Road 23	B/B		B/B		B/B		B/B		C/D		C/D		A/A	
Road 23 – Avenue 18 ½ to Avenue 17	B/B		B/C		C/C		C/C		D/D		D/D		D/D	
Avenue 17 – Road 23 to SR 99	A/A		A/F		A/F		A/B		A/D		A/F		A/B	
Avenue 17 – SR 99 to Road 27	**E**/C		**F/F**		**F/F**		A/B		B/**E**		A/B		A/B	
Golden State Blvd – Avenue 17 to Road 23	A/A		A/A		A/A		A/A		A/A		A/B		A/B	
Freeway Segment	**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 ½														
• **NB**	C/C	21.5/21.0	C/C	24.1/25.7	C/**D**	24.4/**26.3**	B/B	16.0/17.0	C/**D**	25.2/**26.1**	C/**D**	25.4/**26.5**	C/C	18.6/19.3
• **SB**	B/**D**	17.6/**26.5**	C/**D**	19.9/**33.6**	C/**D**	20.2/**34.6**	B/C	13.4/20.4	C/**E**	20.3/**35.2**	C/**E**	20.5/**35.9**	B/C	15.4/23.6
SR 99 between Avenue 18 ½ and Avenue 17														
• **NB**	C/C	23.8/23.2	**D/D**	**26.9/28.2**	**D/D**	**26.9/33.9**	B/B	17.3/17.9	**D/D**	**28.3/28.9**	**D/D**	**28.3/28.9**	C/C	20.2/20.5
• **SB**	C/**D**	19.3/**30.1**	C/**E**	21.6/**39.1**	C/**E**	21.6/**39.1**	B/C	14.3/21.7	C/**E**	22.2/**41.9**	C/**E**	22.2/**41.9**	B/C	16.6/25.6
SR 99 south of Avenue 17														
• **NB**	C/C	22.9/22.3	**D/F**	**31.6/---**	**D/F**	**33.9/---**	C/C	20.1/25.3	**D/F**	**33.1/---**	**E/F**	**35.4/---**	C/**D**	23.4/**29.8**
• **SB**	C/**D**	18.6/**28.5**	C/**F**	23.1/---	C/**F**	24.3/---	B/C	12.0/21.2	C/**F**	23.3/---	B/**E**	18.0/**35.9**	B/**E**	18.0/**35.9**
Intersection	**LOS AM/PM**	**Delay[1] AM/PM (secs)**	**LOS AM/PM**	**Delay[1] AM/PM (secs)**	**LOS AM/PM**	**Delay[1] AM/PM (secs)**	**LOS AM/PM**	**Delay[1] AM/PM (secs)**	**LOS AM/PM**	**Delay[1] AM/PM (secs)**	**LOS AM/PM**	**Delay[1] AM/PM (secs)**	**LOS AM/PM**	**Delay[1] AM/PM (secs)**
Avenue 18 ½ at SR 99 SB ramps/Road 23							B/C	14.1/22.1	A/B	9.4/14.8	B/C	10.1/20.7	A/B	8.4/13.0
• WB Left-Through	A/A	8.1/8.2	A/A	8.9/8.9	A/A	8.9/A								
• **NB Approach**	B/B	12.1/13.2	**D/F**	**25.6/63.3**	E/F	35.6/---								
• **SB Approach**	B/C	13.0/15.7	**D/F**	**30.0/178.0**	E/F	43.8/387.0								
Avenue 18 ½ at SR 99 NB ramps							C/C	30.0/27.8	C/C	27.9/30.2	C/C	28.6/28.4	C/C	21.6/24.0
• EB Left	A/A	8.3/7.8	A/A	8.5/8.3	A/A	8.7/8.6								
• **NB Approach**	C/C	15.8/15.8	**E/F**	**44.3/144.0**	F/F	65.3/286.9								
Avenue 17 at SR 99 SB ramps							A/A	4.2/9.8	A/**F**	7.9/**87.5**	A/**F**	8.0/**174.4**	A/C	6.0/20.5
• **SB Approach**	B/B	12.5/14.5	**F/F**	**153.6/8216**	**F/F**	**458.3/29610**								
Avenue 17 at SR 99 NB ramps							B/C	16.1/34.6	C/**F**	26.5/**113.6**	C/**F**	31.4/**155.0**	B/**D**	16.9/**48.6**
• **EB Left**	A/A	8.7/8.0	B/C	10.2/15.7	B/C	10.4/16.9								
• **NB Approach**	C/C	16.5/15.5	**F/F**	**738.0/5934**	**F/F**	**1294/12966**								
Avenue 12/Golden State Boulevard at SR 99 SB ramps							B/B	13.1/16.8	**D/F**	**41.8/245.9**	**D/F**	**43.3/252.1**	B/C	18.1/22.2
• SB Left-Through	A/A	8.3/8.7	A/A	8.4/9.0	A/A	8.4/9.0								
• **WB Approach**	B/**E**	11.3/**44.9**	C/**F**	15.6/**303.5**	C/**F**	16.5/**333.5**								
Avenue 12 at Golden State Boulevard			C/C	20.9/29.8	C/C	22.3/30.4	B/C	19.5/32.4	**F/F**	**126.8/418.3**	**F/F**	**134.6/420.5**	B/D	18.2/37.6
• EB Left	A/A	8.5/8.7												
• WB Left	A/A	8.1/8.6												
• **NB Approach**	C/**F**	20.9/**279.6**												
• **SB Approach**	**D/F**	**31.9/111.1**												
Avenue 12 at SR 99 NB ramps			B/B	13.9/14.6	B/B	15.1/17.0	A/B	9.7/10.5	**D/F**	**41.7/243.3**	**D/F**	**43.3/251.7**	B/C	11.2/21.2
• **EB Left-Through**	A/A	8.9/8.9												
• **NB Approach**	**E/F**	**46.9/95.1**												

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

	Existing		2008 No Project		2008 Project		Mitigated 2008 Project		2030 No Project		2030 Project		Mitigated 2030 Project	
Intersection	**LOS AM/PM**	**Delay[1] AM/PM (secs)**	**LOS AM/PM**	**Delay[1] AM/PM (secs)**	**LOS AM/PM**	**Delay[1] AM/PM (secs)**	**LOS AM/PM**	**Delay[1] AM/PM (secs)**	**LOS AM/PM**	**Delay[1] AM/PM (secs)**	**LOS AM/PM**	**Delay[1] AM/PM (secs)**	**LOS AM/PM**	**Delay[1] AM/PM (secs)**
Avenue 18 at Road 23													A/B	9.4/13.8
• NB Left-Through-Right	A/A	7.5/7.6	A/A	7.7/8.0	A/A	7.7/8.0	A/A	7.7/8.0	A/A	8.1/8.7	A/A	8.1/8.7		
• SB Left-Through-Right	A/A	7.6/7.6	A/A	7.8/8.0	A/A	7.9/8.2	A/A	7.9/8.2	A/A	8.2/8.6	A/A	8.3/9.0		
• WB Approach	B/A	10.5/9.8	B/B	10.8/11.0	B/B	10.7/11.8	B/B	10.6/11.5	B/C	14.3/15.6	B/C	13.5/17.2		
• EB Approach	A/B	9.8/10.2	B/B	11.1/13.4	B/C	12.0/16.7	B/C	12.0/16.2	B/C	14.8/25.0	C/**E**	17.0/**38.8**		
Avenue 17 at Road 23							B/C	14.0/21.3	B/C	18.1/26.4	B/C	18.4/27.7	B/C	18.4/27.7
• NB Left-Through-Right	A/A	7.4/7.4	A/A	7.5/7.6	A/A	7.5/7.7								
• SB Left-Through-Right	A/A	7.5/7.6	A/A	7.8/8.2	A/A	7.9/8.4								
• **WB Approach**	B/B	11.2/11.5	B/**F**	14.7/**50.5**	C/**F**	16.1/**104.5**								
• EB Approach	B/B	10.5/11.2	B/C	12.5/7.0	B/C	13.1/20.3								
Avenue 17 at Golden State Boulevard							B/D	19.0/42.8	C/**F**	24.1/**125.9**	C/**F**	28.5/**259.6**	B/D	18.7/42.7
• EB Left-Through-Right	A/A	7.5/7.4	A/B	9.1/11.0	A/B	9.9/14.0								
• WB Left-Through-Right	A/A	7.6/7.6	A/B	8.9/13.7	A/B	8.9/13.7								
• **NB Approach**	A/A	9.5/9.7	**F/F**	**73.0/ -**	**F/F**	**224.1/---**								
• **SB Approach**	B/B	13.5/13.3	**F/F**	**282.2/ -**	**F/F**	**4224/---**								
Ellis Street at Road 26	B/C	11.51/16.47	B/**F**	14.62/**96.48**	C/**F**	15.12/**110.38**	B/B	10.0/15.3	C/C	22.2/24.4	C/C	22.9/24.9	C/C	22.9/24.9
Avenue 15 ½ at Road 23													A/A	6.7/9.0
• NB Left-Through-Right	A/A	7.6/7.8	A/A	7.8/8.5	A/A	7.8/8.6	A/A	7.8/8.6	A/A	8.2/9.1	A/A	8.2/9.2		
• SB Left-Through-Right	A/A	7.6/7.6	A/A	7.9/8.2	A/A	7.9/8.3	A/A	7.9/8.3	A/A	8.2/8.8	A/A	8.3/8.9		
• WB Approach	B/A	10.3/9.9	B/B	11.9/14.6	B/C	12.4/16.0	B/C	12.4/16.0	C/D	15.8/25.8	C/D	16.4/28.6		
• EB Approach	B/B	10.2/11.8	B/C	12.5/16.9	B/C	13.0/18.4	B/C	13.0/18.4	B/D	14.6/25.3	B/D	15.0/27.4		
Avenue 14 at Road 23	A/B	8.72/10.03	A/C	9.77/16.62	B/C	10.04/19.38	B/B	15.3/19.8	B/C	15.9/22.8	B/C	16.0/23.0	B/C	16.0/23.0
Avenue 16 at Schnoor Avenue							C/B	20.1/17.7	n/a	n/a	n/a	n/a	n/a	n/a
• NB Left	A/A	7.3/7.4	A/A	7.4/7.6	A/A	7.4/7.6								
• SB Left-Through-Right	A/A	7.5/7.3	A/A	7.8/7.7	A/A	7.8/7.8								
• **WB Approach**	A/B	9.5/11.4	B/**F**	11.5/**63.4**	B/**F**	12.2/**121.5**								
• **EB Approach**	B/B	10.3/11.7	B/**E**	14.2/**49.5**	C/**F**	15.2/**82.8**								
Avenue 16 at SR 99 SB ramps	A/B	9.34/11.26	B/C	14.8/21.3	B/C	14.9/21.4	B/B	12.5/14.6	n/a	n/a	n/a	n/a	n/a	n/a
Avenue 16 at SR 99 NB ramps	n/a	n/a	n/a	n/a	n/a	n/a	B/B	15.2/14.5	n/a	n/a	n/a	n/a	n/a	n/a
Avenue 16/Avenue 16 connector at SR 99 NB ramps							n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
• **EB Left**	B/B	10.1/10.6	B/**D**	12.6/**26.5**	B/**D**	13.0/**32.3**								
Avenue 16 at SR 99 NB ramp connector							n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
• SB Left-Through	A/A	7.6/8.0	A/A	8.2/9.5	A/A	8.2/9.6								
• WB Right	A/A	8.8/9.3	A/B	9.6/12.8	A/B	9.6/12.8								
Gateway/Avenue 16 at SR 99 NB ramps							n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
• WB Left	A/B	9.6/10.6	B/C	11.1/15.4	B/C	11.2/16.1								
Avenue 16/Ellis Street at Golden State Boulevard	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	C/**E**	22.8/**72.4**	C/**E**	22.6/**78.7**	C/D	24.6/41.8
Avenue 16/Ellis Street at SR 99 SB ramps	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	B/**E**	13.7/**69.9**	B/**E**	14.1/**79.3**	A/C	7.8/20.6
Avenue 16/Ellis Street at SR 99 NB ramps	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	C/**F**	27.5/**153.0**	C/**F**	28.7/**163.2**	B/C	16.0/34.8
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	B/B	12.3/16.4	B/**D**	14.2/**35.1**	B/**D**	14.5/**36.5**	B/C	11.0/27.2	C/**F**	24.5/**177.3**	C/**F**	25.4/**178.4**	B/C	13.2/30.4
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps	B/B	11.6/15.3	B/C	13.0/34.3	B/**D**	13.3/**42.1**	A/B	8.9/19.7	C/**F**	27.1/**202.0**	B/**F**	15.6/**113.9**	B/C	12.1/27.9
SR 145/Madera Avenue at SR 99 NB ramps	C/C	27.3/21.9	**D/D**	**36.5/54.8**	**D/E**	**38.0/64.5**	B/B	13.3/13.0	C/**D**	20.3/**53.2**	C/**E**	20.7/**59.4**	B/C	17.3/25.6
Olive Avenue/Avenue 14 at SR 99 SB off-ramp	B/B	13.9/15.3	B/C	15.4/29.8	B/C	16.1/32.1	B/C	14.9/23.4	**F/F**	**101.7/273.1**	**F/F**	**110.5/280.4**	B/C	13.5/20.8
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	C/C	25.1/34.9	C/**E**	26.6/**61.1**	C/**E**	29.7/**69.8**	B/C	12.0/32.1	**F/F**	**102.5/357.7**	**F/F**	**103.9/369.1**	B/C	11.4/32.6

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

	Existing		2008 No Project		2008 Project		Mitigated 2008 Project		2030 No Project		2030 Project		Mitigated 2030 Project	
Intersection	**LOS AM/PM**	**Delay[1] AM/PM (secs)**	**LOS AM/PM**	**Delay[1] AM/PM (secs)**	**LOS AM/PM**	**Delay[1] AM/PM (secs)**	**LOS AM/PM**	**Delay[1] AM/PM (secs)**	**LOS AM/PM**	**Delay[1] AM/PM (secs)**	**LOS AM/PM**	**Delay[1] AM/PM (secs)**	**LOS AM/PM**	**Delay[1] AM/PM (secs)**
Avenue 18 ½ at Pistachio Drive														
• EB Approach	A/A	8.3/8.4	A/A	8.9/9.1	A/A	8.9/9.1	A/A	8.9/9.1	A/B	9.9/11.1	A/B	9.8/11.1	B/B	10.2/11.8
• SB Approach	B/B	12.4/13.8	C/D	22.5/25.5	C/D	23.1/27.0	C/D	23.1/27.0	n/a	n/a	n/a	n/a	n/a	n/a
• SB Right	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	C/D	19.8/33.4	C/D	18.8/33.0	C/C	15.4/19.3
Avenue 18 ½ at Golden State Boulevard														
• EB Approach	A/A	7.6/7.7	A/A	7.7/7.8	A/A	7.7/7.8	A/A	7.7/7.8						
• SB Approach	B/B	10.6/11.0	B/B	11.1/12.2	B/B	11.2/12.5	B/B	11.2/12.5						
Avenue 18 ½ at Golden State Boulevard / Road 23	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a					C/C	29.2/23.7
• NB Left-Through-Right									A/A	7.7/7.8	A/A	7.7/7.8		
• SB Left-Through-Right									B/B	10.0/12.7	A/B	9.8/12.6		
• **WB Approach**									**F/F**	**974.3/---**	**F/F**	**684.1/---**		
• **EB Approach**									**F/F**	**---/---**	**F/F**	**---/---**		

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

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

Intersection	Existing	2008 No Project	2008 Project	2030 No Project	2030 Project
Avenue 18 ½ at SR 99 SB ramps/Road 23	No	**Yes**	**Yes**	**Yes**	**Yes**
Avenue 18 ½ at SR 99 NB ramps	No	No	No	**Yes**	**Yes**
Avenue 17 at SR 99 SB ramps	No	**Yes**	**Yes**	**Yes**	**Yes**
Avenue 17 at SR 99 NB ramps	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Avenue 12/Golden State Boulevard at SR 99 SB ramps	No	**Yes**	**Yes**	**Yes**	**Yes**
Avenue 12 at Golden State Boulevard	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Avenue 12 at SR 99 NB ramps	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Avenue 18 at Road 23	No	No	No	No	**Yes**
Avenue 17 at Road 23	No	**Yes**	**Yes**	**Yes**	**Yes**
Avenue 17 at Golden State Boulevard	No	**Yes**	**Yes**	**Yes**	**Yes**
Ellis Street at Road 26	No	**Yes**	**Yes**	**Yes**	**Yes**
Avenue 15 ½ at Road 23	No	No	No	**Yes**	**Yes**
Avenue 14 at Road 23	No	**Yes**	**Yes**	**Yes**	**Yes**
Avenue 16 at Schnoor Avenue	No	**Yes**	**Yes**	**Yes**	**Yes**
Avenue 16 at SR 99 SB ramps	No	---	---	---	---
Avenue 16/Avenue 16 connector at SR 99 NB ramps	No	**Yes**	**Yes**	**Yes**	**Yes**
Avenue 16 at SR 99 NB ramp connector	No	**Yes**	**Yes**	**Yes**	**Yes**
Gateway/Avenue 16 at SR 99 NB ramps	No	No	No	---	---
SR 99 NB ramps at Cleveland Avenue/Avenue 15 ½	---	---	---	---	---
SR 99 SB Ramps at Cleveland Avenue/Avenue 15 ½	---	---	---	---	---
SR 99 NB ramps at SR 145/Madera Avenue	---	---	---	---	---
SR 99 SB off-ramp at Olive Avenue/Avenue 14	---	---	---	---	---
SR 99 SB on-ramp/Olive Avenue/Avenue 14 at SR 145	---	---	---	---	---

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 (ALTERNATE LAND USE ALTERNATIVE / MADERA SITE)

		95th Percentile Queue Length (ft) (AM/PM)						
Intersection	**Existing Queue Storage Length (ft)**	**Existing**	**2008 No Project**	**2008 Project**	**Mitigated 2008 Project**	**2030 No Project**	**2030 Project**	**Mitigated 2030 Project**
SR 99 NB off-ramp at Avenue 18 ½	1,204[1] (770[2])							
• NB Left-Through-Right		37/52	175/399	222/555				
• NB Left-Through					#187/#236	#214/#250	#271/#224	#224/#271
• NB Right					17/32	28/49	56/30	30/56
SR 99 SB off-ramp at Avenue 18 1/2	1,256[1] (822[2])							
• SB Left-Through-Right		18/43	88/407	137/674	116/#285	67/#141	79/#267	
• SB Left								26/41
• SB Right								38/159
SR 99 SB off-ramp at Avenue 17	1,341[1] (907[2])							
• **SB Left**	589[3]	19/37	236/**1,030**	357/**1,058**	102/#282	129/#485	137/#496	44/171
• SB Right	589[3]	3/4	19/63	26/126	27/66	182/#526	202/#548	146/#499
SR 99 NB off-ramp at Avenue 17	1,060[1] (626[2])							
• **NB Left**	45[3]				206/#492	#430/**#1,051**	**#564/#1,368**	207/575
• **NB Left-Through**	45[3]	55/13	**1,368/2,400**	**1,921/3,378**	220/#492	#501/**#1,057**	**#610/#1,376**	263/678
• **NB Right**	45[3]	10/88	52/**2,619**	**57/2,742**	23/#505	26/**#957**	24/**#951**	21/#875
SR 99 NB off-ramp at Avenue 16 *[Avenue 16/Ellis Avenue]*	1,150[1] (716[2])							
• WB Left		1/1	1/2	1/2				
• SB Through-Right					35/65			
• NB Left	*[150[3]]*					150/#435	150/#435	125/#299
• NB Right	*[150[3]]*					65/#474	65/#488	57/#420
SR 99 SB off-ramp at Avenue 16 *[Avenue 16/Ellis Avenue]*	1,020[1] (586[2])							
• **SB Left**	*[225[3]]*		3/3	3/3	3/3	206/**556**	220/**#607**	103/238
• SB Through			87/141	94/162	88/138			
• **SB Right**	*[225[3]]*		52/80	52/83	52/72	212/**#1,020**	230/**#1,089**	64/#417
SR 99 NB off-ramp at Avenue 15 ½ /Cleveland Avenue	881[1] (447[2])							
• **NB Left**	353[3]	101/176	127/#347	127/**#409**	90/#335	129/310	129/336	101/#380
• **NB Right**	353[3]	49/#228	51/#338	51/**#394**	43/#331	#403/**#1,042**	#410/**#1,126**	63/#315

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

		95th Percentile Queue Length (ft) (AM/PM)						
Intersection	**Existing Queue Storage Length (ft)**	**Existing**	**2008 No Project**	**2008 Project**	**Mitigated 2008 Project**	**2030 No Project**	**2030 Project**	**Mitigated 2030 Project**
SR 99 SB off-ramp at Avenue 15 ½ /Cleveland Avenue	1,000[1] (566[2])							
• **SB Left**	65[3]	70/145			67/#236		161/**#575**	120/#446
• **SB Left-Through**			130/#424	148/#552	68/#235	#359/**#935**	161/**#574**	120/#445
• **SB Right**	65[3]	29/47	35/174	37/212	32/#215	142/**#402**	149/**#544**	121/#427
SR 99 NB off-ramp at Avenue 14/Olive Avenue	1,310[1] (876[2])							
• WB Left	90[3]	#323/#221	#368/#327	#368/#327	97/73	#262/#322	#241/#268	#189/#332
• WB Right	90[3]	23/25	25/30	25/30	20/21	26/32	24/29	21/34
SR 99 SB off-ramp at Avenue 14/Olive Avenue	1,254[1] (820[2])							
• **SB Left**	65[3]	241/220	280/423	286/457	240/#423	#700/**#1,112**	#652/**#1,021**	157/388
• **SB Right**	65[3]	44/32	59/29	63/30	55/28	174/**139**	163/132	143/158
SR 99 SB off-ramp at Avenue 12/Golden State Boulevard	1,431[1] (997[2])							
• **WB Left-Right**		32/356	64/**1,223**	69/**1,306**				
• **WB Left**					51/122	#601/**#1,319**	#612/**#1,356**	158/355
• **WB Right**					46/64	52/**#648**	54/**#650**	46/229
SR 99 NB off-ramp at Avenue 12	1,223[1] (789[2])							
• **NB Left-Through**	49[3]	123/208	141/153	110/153	99/151	273/**312**	273/312	198/278
• **NB Right**	49[3]	8/17	34/43	29/43	26/43	#494/**#1,108**	#497/**#1,020**	128/#371
Avenue 17 between SR 99 SB off-ramp and Golden State Boulevard	481							
• WB Left-Through-Right (at Golden State Boulevard)		7/4	12/41	12/41				
• WB Left					#127/m#240	m#243/m#382	m#261/m#331	m#88/m#195
• **WB Through**					141/236	305/**m562**	312/**m510**	108/m424
• WB Right					40/111	m20/m33	m62/m82	20/m480
• EB Through (at SR 99 SB off-ramp)		---	---	---	31/m74	79/m361	73/m347	46/#484

95th percentile queue length - is minimum amount of storage needed for each movement *SR = State Route* *ft = feet* *NB = northbound* *SB = southbound* *WB = westbound* *EB = eastbound*
[xx] = 2030 conditions *[1] = Total ramp length* *[2] = Calculated storage distance* *[3] = Distance of ramp striped as 2-lanes (existing)*
--- = 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* *[4] = Storage lengths 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 (ALTERNATE LAND USE ALTERNATIVE / MADERA SITE)

	Existing			2008 No Project			2008 Project			2030 No Project			2030 Project		
Intersection	**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 ½	149/212	N/N	N/N	264/331	N/N	N/N	264/331	N/N *(N)*	N/N *(N)*	279/359	N/N	N/N	279/359	N/N *(N)*	N/N *(N)*
SR 99 SB off-ramp at Avenue 18 ½	98/176	N/N	N/N	172/300	N/N	N/N	201/355	N/N *(N)*	N/N *(N)*	266/445	N/N	N/N	297/504	N/N *(N)*	N/N *(N)*
SR 99 SB off-ramp at Avenue 17	126/185	N/N	N/N	197/356	N/N	N/N	197/356	N/N *(N)*	N/N *(N)*	399/681	N/N	N/N	399/681	N/N *(N)*	N/N *(N)*
SR 99 NB off-ramp at Avenue 17	248/425	N/N	N/N	**780/1,689**	**Y/Y**	**N/Y**	**919/1,958**	**Y/Y** *(Y)*	**N/Y** *(Y)*	**1,432/ 2,876**	**Y/Y**	**N/Y**	**1,619/ 3,227**	**Y/Y** *(Y)* [1]	**Y/Y** *(Y)* [1]
SR 99 NB off-ramp at Avenue 16	55/97	N/N	N/N	139/309	N/N	N/N	139/309	N/N *(N)*	N/N *(N)*	698/**1,069**	**N/Y**	N/N	698/**1,069**	**N/Y** *(Y)*	N/N *(Y)*
SR 99 SB off-ramp at Avenue 16	186/304	N/N	N/N	291/623	N/N	N/N	314/676	N/N *(N)*	N/N *(N)*	763/**1,324**	**N/Y**	N/N	792/**1,383**	**N/Y** *(Y)*	N/N *(Y)*
SR 99 NB off-ramp at Avenue 15 ½ /Cleveland Avenue	429/768	N/N	N/N	528/**1,010**	**N/Y**	N/N	528/**1,010**	**N/Y** *(Y)*	N/N *(Y)*	854/**1,604**	**N/Y**	**N/Y**	854/**1,604**	**N/Y** *(Y)* [1]	**N/Y** *(Y)* [1]
SR 99 SB off-ramp at Avenue 15 ½ /Cleveland Avenue	112/234	N/N	N/N	231/555	N/N	N/N	261/617	N/N *(N)*	N/N *(N)*	573/**1,116**	**N/Y**	N/N	611/**1,194**	**N/Y** *(Y)*	N/N *(Y)*
SR 99 NB off-ramp at SR 145/Madera Avenue	411/279	N/N	N/N	419/288	N/N	N/N	419/288	N/N *(N)*	N/N *(N)*	727/764	N/N	N/N	727/764	N/N *(N)*	N/N *(N)*
SR 99 SB off-ramp at Avenue 14/Olive Avenue	659/418	N/N	N/N	779/807	N/N	N/N	801/850	N/N *(N)*	N/N *(N)*	**1,160/ 1,427**	**Y/Y**	N/N	**1,184/ 1,478**	**Y/Y** *(Y)*	N/N *(Y)*
SR 99 SB off-ramp at Avenue 12/Golden State Boulevard	213/634	N/N	N/N	270/781	N/N	N/N	278/796	N/N *(N)*	N/N *(N)*	823/**1,711**	**N/Y**	**N/Y**	665/**953**	**N/Y** *(Y)*	**N/Y** *(Y)*
SR 99 NB off-ramp at Avenue 12	189/227	N/N	N/N	237/306	N/N	N/N	237/306	N/N *(N)*	N/N *(N)*	665/**953**	**N/Y**	N/N	836/**1,737**	**N/Y** *(Y)*	N/N *(Y)*

PCE = Passenger Car Equivalent *SR = State Route* *Y = Threshold Met* *N = Threshold Not Met* *NB = northbound* *SB = southbound* *(Y) = Mitigations Included in Analyses & Cost Estimates*
(N) = Mitigations Not Included in Analyses & Cost Estimates *Bolded Text = ramps meet at least one of the volume thresholds* *[1] = mitigation already incorporated in the Mitigated 2008 Project scenario*

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

Intersection	Movement	Existing Storage Length (ft)	2008 Project Storage Length (ft)	2030 Project Storage Length (ft)
Avenue 18 ½ at SR 99 SB ramps/Road 23	NBL	25	75	n/a
	NBR	25	200	n/a
	WBL	---	75	n/a
Avenue 18 ½ at SR 99 NB ramps	EBL	150	275	200[1]
Avenue 17 at SR 99 NB ramps	EBL	300	50	100[1]
Avenue 12/Golden State Boulevard at SR 99 SB ramps	NBR	---	n/a	250[3]
	SBL	---	250	165[1]
Avenue 12 at Golden State Boulevard	NBL	200	150	150
	NBR	---	275	425
	SBL	400	175	465[1]
	SBR	200	50	75
	WBL	---	100	125
	EBL	350	250	190[1]
	EBR	425	50	50
Avenue 12 at SR 99 NB ramps	WBR	---	425	700[3]
	EBL	---	100	125
Avenue 18 at Road 23	NBL	---	n/a	50
	SBL	---	125	125
Avenue 17 at Road 23	NBL	---	n/a	50
	SBL	---	50	100
	WBL	---	175	175
Avenue 17 at Golden State Boulevard	NBL	50	75	100
	NBR	---	n/a	215[3]
	SBL	---	275[1]	260[4]
	WBL	---	200	165[1]
	WBR	---	525[2]	750[2]
	EBL	---	50	75
Ellis Street at Road 26	NBL	---	50	150
	SBL	---	175	175
	SBR	---	n/a	275
	WBL		n/a	75
Avenue 16 at Schnoor Avenue	NBL	75	100	n/a
	NBR	75	225	n/a
	WBL	150	225[1]	n/a
	EBL	---	140[1]	n/a
Avenue 16 at SR 99 SB ramps	NBL	75	225[1]	n/a
	NBR	75	50	n/a
	EBR	200	600	n/a

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

Intersection	Movement	Existing Storage Length (ft)	2008 Project Storage Length (ft)	2030 Project Storage Length (ft)
Avenue 16 at SR 99 NB ramps	EBL	---	200[1]	n/a
	EBR	---	375	n/a
Avenue 16/Ellis Street at Golden State Boulevard	NBR	---	n/a	400[3]
	WBL	200	n/a	365[1]
	WBR	---	n/a	500
Avenue 16/Ellis Street at SR 99 NB ramps	WBR	---	n/a	500
	EBL	300	n/a	425[1]
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	WBR	50	325	700
	EBL	100	225	215[1]
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps	WBL	125	165[1]	240[1]
	EBR	125	500	725
SR 145/Madera Avenue at SR 99 NB ramps	NBL	---	265[1]	490[1]
	SBR	---	400	675
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	NBL	125	150	150[1]
	NBR	100	50	100
	SBR	25	225	375
	EBL	175	150[1]	215[1]
	EBR	175	625[2]	550[3]
Avenue 18 ½ at Golden State Boulevard/ Road 23	NBL	---	n/a	50
	NBR	---	n/a	350
	SBL	---	n/a	175
	WBL	---	n/a	375[1]
	EBL	---	n/a	50

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:

Existing (2005)

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

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

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

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

- Avenue 17 at SR 99 NB ramps
  - Signalize the intersection
  - Restripe/widen the NB approach, south leg, from a shared left-through and separate right to a separate left-turn lane, a shared left-through lane, and dual (2) right-turn lanes
  - 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

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

The signalization and widening of the NB and SB approaches for the Avenue 12 at Golden State Boulevard intersection is part of a current Caltrans project programmed for completion by 2008.

- Avenue 12 at Golden State Boulevard
  - Signalize the intersection
  - Restripe/widen the NB approach, south leg, from a shared left-through lane and one (1) right-turn lane to one (1) left-turn lane and a shared through-right lane
  - Restripe/widen the SB approach, north leg, from a shared left-through lane and one (1) right-turn lane to one (1) left-turn lane, one (1) through lane and one (1) right-turn lane

The signalization and widening of the EB approach for the Avenue 12 at SR 99 NB ramps intersection is part of a current Caltrans project programmed for completion by 2008.

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

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

Opening Day (2008) No Project – Alternative E

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

- SR 99 north of Avenue 18 ½
  - Restripe/widen the NB 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

- Avenue 18 ½ at SR 99 SB ramps/Road 23
  - Signalize the intersection
  - Restripe/widen the WB approach, east leg, from a shared left-through to a separate left-turn lane and one (1) through lane

- Avenue 18 ½ at SR 99 NB ramps
  - Signalize the intersection
  - Restripe/widen the NB approach, south leg, from a shared left-through-right lane, to a shared left-through lane and a separate right-turn lane

Although the Avenue 18 ½ at SR 99 NB ramps intersection does not meet the peak hour volumes signal warrant, Caltrans will require both the Avenue 18 ½ at SR 99 SB ramps/Road 23 and Avenue 18 ½ at SR 99 NB ramps intersections to be signalized at the same time. If both intersections are left unsignalized, their minor street movements are projected to operate at LOS "E" and "F" for the AM and PM peak hours even with appropriate lane additions.

- 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 SR 99 NB ramps
  - Widen the NB off-ramp to two (2) lanes with a NB auxiliary lane on SR 99
  - Restripe/widen the NB approach, south leg, to allow storage lanes at least 200 feet in length

- Avenue 12/Golden State Boulevard at SR 99 SB off ramps
  - Signalize the intersection

- Avenue 17 at Road 23
  - Signalize the intersection
  - Restripe/widen the NB approach, south leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the SB approach, north leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the EB approach, west leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the WB approach, east leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane

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

- Ellis Street at Road 26
  - Signalize the intersection
  - Restripe/widen the NB approach, south leg, from a shared left-through lane and a shared through-right lane to one (1) left-turn lane, one (1) through lane and a shared through-right lane
  - Restripe/widen the SB approach, north leg, from a shared left-through lane and a shared through-right lane to one (1) left-turn lane, one (1) through lane and a shared through-right lane
  - Restripe/widen the EB approach, west leg, from a shared left-through-right lane to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the EB approach, west leg, from a shared left-through-right lane to a separate left-turn lane and a shared through-right lane

- Avenue 14 at Road 23
  - Signalize the intersection
  - Restripe/widen the NB approach, south leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the SB approach, north leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the EB approach, west leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the WB approach, east leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane

- Avenue 16 at Schnoor Avenue
  - Signalize the intersection
  - Restripe/widen the SB approach, north leg, from a shared left-through-right lane to one (1) left-turn lane and a shared through-right lane
  - Restripe/widen the EB approach, west leg, from a shared left-through-right to dual (2) lefts and a shared through-right lane
  - Restripe/widen the WB approach, east leg, from one (1) left-turn lane and a shared through-right lane to dual (2) left-turn lanes and a shared through-right lane

- Avenue 16 at SR 99 NB ramps
  - Reconfigure/realign the Avenue 16/Avenue 16 connector at SR 99 NB ramps, Avenue 16 at SR 99 NB ramps connector and Gateway/Avenue 16 at SR 99 NB ramps to one (1) intersection
  - Signalize the intersection
  - Restripe/widen the NB approach, south leg, from a shared left-through lane, to a separate left-turn lane and one (1) through lane
  - Restripe/ widen the EB approach, west leg, from a shared left-right, to dual (2) left-turn lanes and a separate right-turn lane

- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps
  - Restripe/widen the EB approach, west leg, from a separate left-turn lane and two (2) through lanes, to dual (2) left-turn lanes and two (2) through lanes
  - Widen the NB off-ramp to two (2) lanes with a NB auxiliary lane on SR 99

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

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

Opening Day (2008) Project

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

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

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

- Avenue 18 at Road 23
  - Restripe/widen the SB approach, north leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane

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

2030 No Project – Alternative E

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

- SR 99 north of Avenue 18 ½
  - 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 and 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

- Avenue 18 ½ at SR 99 SB ramps
  - Restripe/widen the SB approach, north leg, from a shared left-right lane to a separate left-turn lane and a separate right-turn lane
  - 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 18 ½ at SR 99 NB ramps
  - Restripe/widen the EB approach, west leg, from a separate left-turn lane and one (1) through lane, to dual (2) left-turn lanes and two (2) through lanes
  - Restripe/widen the WB approach, east leg, from a shared through-right lane, to one through lane and a shared through-right lane

- Avenue 17 at SR 99 SB ramps
  - Restripe/widen the EB approach, west leg, from two (2) through lanes, to three (3) through lanes
  - Restripe/widen the WB approach, east leg, from two (2) through lanes, to three (3) through lanes

- Avenue 17 at SR 99 NB ramps
  - Restripe/widen the NB approach, south leg, from a separate left-turn lane, a shared left-through lane, and dual (2) right-turn lanes, to dual (2) left-turn lanes, a shared left-through lane, and dual (2) right –turn lanes
  - Restripe/widen the EB approach, west leg, from a separate left-turn lane and two (2) through lanes, to dual (2) left-turn lanes and three (3) through lanes
  - Restripe/widen the WB approach, east leg, from two (2) through lanes and a separate right-turn lane, to three (3) through lanes and a separate right-turn lane
  - Lengthen the NB off-ramp by 275 feet to accommodate the projected queues
  - Restripe/widen the SB approach, north leg, to allow storage lanes at least 600 feet in length

- Avenue 12/Golden State Boulevard at SR 99 SB off ramps
  - Restripe/widen the SB approach, north leg, from one (1) left-turn lane and one (1) through lane, to dual (2) left-turn lanes 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 a separate right-turn lane
  - Widen the SB off-ramp to two (2) lanes with a SB auxiliary lane on SR 99

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

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

- Avenue 17 at Golden State Boulevard
  - Restripe/widen the NB approach, south leg, from a separate left-turn lane and a shared through-right lane, to a separate left-turn lane, one (1) through lane, and dual (2) right-turn lanes
  - Restripe/widen the SB approach, north leg, from dual (2) left-turn lanes and a shared through-right lane, to triple (3) left-turn lanes and a shared through-right lane
  - Restripe/widen the EB approach, west leg, from a separate left-turn lane, one (1) though lane, and a shared through-right lane, to a separate left-turn lane, two (2) through lanes, and a 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 dual (2) left-turn lanes, three (3) through lanes, and a separate right-turn lane

- Avenue 15 ½ at Road 23
  - Signalize the intersection
  - Restripe/widen the NB approach, south leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the SB approach, north leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the EB approach, west leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the WB approach, east leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane

- Avenue 16/Ellis Street at Golden State Boulevard
  - Restripe/widen the NB approach, south leg, from a separate left-turn lane, one (1) through lane, and a shared through-right lane, to a separate left-turn lane, two (2) through lanes, and dual (2) right-turn lanes
  - Restripe/widen the WB approach, east leg, from dual (2) left-turn lanes, one (1) through lane, and a shared through-left lane, to dual (2) left-turn lanes, two (2) through lanes, and a separate right-turn lane

- Avenue 16/Ellis Street at SR 99 SB ramps
  - Restripe/widen the SB approach, north leg, from a separate left-turn lane and a separate right-turn lane, to dual (2) left-turn lanes and dual (2) right-turn lanes
  - Widen the SB off-ramp to two (2) lanes with a SB auxiliary lane on SR 99

- Avenue 16/Ellis Street at SR 99 NB ramps
  - Restripe/widen the EB approach, west leg, from a separate left-turn lane and two (2) through lanes, to dual (2) left-turn lanes and two (2) through lanes
  - Restripe/widen the WB approach, east leg from one (1) through lane and a shared through-right lane, to two (2) through lanes and a separate right-turn lane
  - Widen the NB off-ramp to two (2) lanes with a NB auxiliary lane on SR 99

- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps
  - Restripe/widen the NB approach, south leg, from dual (2) left-turn lanes and a separate right-turn lane, to dual (2) left-turn lanes and triple (3) right-turn lanes
  - Restripe/widen the EB approach, west leg, from to dual (2) left-turn lanes and two (2) through lanes, to dual (2) left-turn lanes and three (3) through lanes
  - Restripe/widen the WB approach, east leg, from two (2) through lanes and a separate right-turn lane, to three (3) through lanes and a separate right-turn lane

- Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps
  - Restripe/widen the EB approach, west leg, from a two (2) through lanes and a separate right-turn lane, to three (3) through lanes and a separate right-turn lane
  - Restripe/widen the WB approach, east leg, from dual (2) left-turn lanes and two (2) through lanes to dual (2) left-turn lanes and three (3) through lanes
  - Widen the SB off-ramp to two (2) lanes with a SB auxiliary lane on SR 99
  - Restripe/widen the SB approach, north leg, to allow storage lanes at least 200 feet in length

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

- Olive Avenue/Avenue 14 at SR 99 SB off-ramp
  - Restripe/widen the SB approach, north leg, from a separate left-turn lane and a separate right-turn lane to dual (2) left-turn lanes and a separate right-turn lane
  - Restripe/widen the WB approach, east leg, from one (1) through lane to two (2) through lanes
  - Widen the SB off-ramp to two (2) lanes with a SB auxiliary lane on SR 99

- 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 lane, two (2) through lanes, and a shared through-right lane
  - Restripe/widen the SB approach, north leg, from a shared left-through lane, one (1) through lane, and a separate right-turn lane, to a separate left-turn lane, two (2) through lanes, and a separate right-turn lane
  - Restripe/widen the EB approach, west leg, from dual (2) left-turn lanes, one (1) through lane and one (1) right-turn lane, to dual (2) left-turn lanes, two (2) through lanes, and dual (2) right-turn lanes

- Avenue 18 ½ at Pistachio Drive
  - Restripe/widen the EB approach, west leg, from a shared left-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 one (1) through lane and a shared through-right lane

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 is 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 a shared left-through-right lane, to a separate left-turn lane, one (1) through lane, and a separate right-turn lane
  - Restripe/widen the SB approach, north leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the EB approach, west leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the WB approach, east leg, from a shared left-through-right lane, to dual (2) left-turn lanes and a shared through-right lane

2030 Project

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

- Avenue 18 at Road 23
  - Signalize the intersection
  - Restripe/widen the NB approach, south leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the SB approach, north leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the EB approach, west leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the WB approach, east leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane

With the proposed Alternative C/Madera Site improvements detailed previously, two (2) freeway segments and one (1) intersection 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 "D" and "E" 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 intersection is still projected to operate at a LOS "D" in the PM peak hour. Per discussions with Caltrans staff, widening Avenue 17 to eight (8) lanes is not recommended. If a NB to WB loop off-ramp were constructed, the Avenue 17 at SR 99 NB ramps intersection is projected to operate at a LOS "C" in the PM peak hour, with a delay of 34.2 seconds. However construction of a NB to WB loop off-ramp is not probable due to the proximity of the railroad tracks.

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 2008. 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)

	Existing		2008 No Project		2008 Project		Mitigated 2008 Project		2030 No Project		2030 Project		Mitigated 2030 Project	
Intersection	**LOS AM/PM**	**Delay[1] AM/PM (secs)**	**LOS AM/PM**	**Delay[1] AM/PM (secs)**	**LOS AM/PM**	**Delay[1] AM/PM (secs)**	**LOS AM/PM**	**Delay[1] AM/PM (secs)**	**LOS AM/PM**	**Delay[1] AM/PM (secs)**	**LOS AM/PM**	**Delay[1] AM/PM (secs)**	**LOS AM/PM**	**Delay[1] AM/PM (secs)**
SR 145 at SR 41	B/C	16.3/22.1	B/C	19.7/25.1	B/C	19.8/25.2	B/C	19.8/25.2	**F/F**	**102.3/146.6**	**F/F**	**101.5/150.9**	C/C	23.9/29.8
SR 41 at Road 200							B/A	11.3/9.0			B/C	18.1/23.7	B/C	18.1/23.7
• SB Left	A/B	8.0/10.2	A/B	8.3/10.7	A/B	8.3/10.7			B/C	10.7/15.3				
• **WB Approach**	**E/D**	**40.2/29.9**	**F/E**	**87.7/47.5**	**F/F**	**88.7/50.9**			**F/F**	**1494/1976**				
SR 41 at Road 420 (Thornberry Rd)							A/A	6.1/4.3			A/A	9.5/8.1	A/A	9.5/8.1
• SB Left	A/A	9.1/9.1	A/A	9.5/9.4	A/A	9.5/9.4			B/B	12.7/12.5				
• **WB Approach**	C/C	18.0/15.3	C/C	22.2/17.7	C/C	22.2/17.7			**F/F**	**391.7/116.5**				
SR 41 at SR 49	A/B	9.8/16.2	B/C	16.6/24.2	B/C	16.6/24.5	B/C	16.6/24.5	**E/F**	**75.0/104.2**	**E/F**	**75.0/104.7**	B/B	11.5/16.0
Road 274 (Malum Ridge Rd) at Road 225 (Mammoth Pool Rd)	A/A	8.18/8.57	A/A	8.36/8.85	A/A	8.57/8.87	A/A	8.57/8.87	B/B	10.04/10.31	B/B	10.37/10.99	B/B	10.47/10.98
Road 225 (Mammoth Pool Rd) at Cascadel 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	7.5/7.5	A/A	7.6/7.6	A/A	7.6/7.6
• WB Approach	A/A	8.8/8.6	A/A	8.8/8.6	A/A	8.9/8.8	A/A	8.9/8.8	A/A	9.4/9.2	A/A	9.6/9.4	A/A	9.6/9.4
Cascadel Rd at Mission Dr														
• WB Left-Through	A/A	7.3/7.3	A/A	7.3/7.3	A/A	7.4/7.4	A/A	7.4/7.4	A/A	7.3/7.4	A/A	7.4/7.5	A/A	7.4/7.5
• NB Approach	A/A	8.7/8.7	A/A	8.8/8.8	A/A	8.9/9.0	A/A	8.9/9.0	A/A	9.1/9.1	A/A	9.3/9.4	A/A	9.3/9.4
North Fork Rd at Auberry Rd														
• NB Left-Through-Right	A/A	7.4/7.5	A/A	7.5/7.6	A/A	7.5/7.6	A/A	7.5/7.6	A/A	7.6/7.7	A/A	7.6/7.7	A/A	7.6/7.7
• SB Left-Through-Right	A/A	7.6/7.5	A/A	7.6/7.5	A/A	7.6/7.6	A/A	7.6/7.6	A/A	7.8/7.8	A/A	8.6/7.8	A/A	8.6/7.8
• WB Approach	A/A	9.4/9.9	A/B	9.6/10.1	A/B	9.7/10.2	A/B	9.7/10.2	B/B	11.0/12.2	C/B	16.9/12.5	C/B	16.9/12.5
• EB Approach	A/A	10.0/9.9	B/A	10.2/9.7	B/A	10.4/9.8	B/A	10.4/9.8	B/B	11.7/11.0	C/B	20.0/11.2	C/B	20.0/11.2
North Fork Rd at Crane Valley Rd														
• EB Left-Through	A/A	7.5/7.4	A/A	7.5/7.5	A/A	7.5/7.5	A/A	7.5/7.5	A/A	7.7/7.7	A/A	7.7/7.7	A/A	7.7/7.7
• SB Approach	A/A	9.2/9.8	A/B	9.3/10.0	A/B	9.4/10.2	A/B	9.4/10.2	B/B	10.6/12.1	B/B	10.6/12.3	B/B	10.6/12.3

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

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

Intersection	Existing	2008 No Project	2008 Project	2030 No Project	2030 Project
SR 41 at SR 145	---	---	---	---	---
SR 41 at Road 200	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
SR 41 at Road 420 (Thornberry)	No	**Yes**	**Yes**	**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 channelization, and storage requirements 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:
LEFT-TURN STORAGE CALCULATIONS SUMMARY
ALTERNATIVE D (OFF-SITE ALTERNATIVE/NORTH FORK SITE)

Intersection	Movement	2030 Project Storage Length (ft)
Road 274 (Malum Ridge Rd) at Road 225 (Mammoth Pool Rd)	EB Left-turn	50
	WB Left-turn	75

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:

Existing (2005)

- SR 41 at Road 200
  - Signalize the intersection
  - Restripe/widen the WB approach, east leg, from a shared left-right to one (1) left-turn lane and one (1) right-turn lane

Opening Day (2008) No Project – Alternative E

- SR 41 at Road 420 (Thornberry Road)
  - Signalize the intersection
  - Restripe/widen the WB approach, east leg, from a shared left-right to one (1) left-turn lane and one (1) right-turn lane

2030 No Project – Alternative E

- SR 145 at SR 41
  - 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, two (2) through lanes and one (1) right-turn lane
  - Restripe/widen the SB approach, north leg, from one (1) left-turn 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 a shared left-through-right to a separate left-turn lane, one (1) through lane and a separate right-turn lane
  - Restripe/widen the WB approach, east leg, from a shared left-through-right to a separate left-turn lane, one (1) through lane and a separate right-turn lane

- SR 41 at SR 49
  - Restripe/widen the NB approach, south 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
  - Restripe/widen the EB approach, west leg, from one (1) through lane and one (1) right-turn lane to one (1) through lane and dual (2) right-turn lanes
  - Restripe/widen the WB approach, east leg, from one (1) left-turn lane and one (1) through lane to dual (2) left-turn lanes and one (1) through lane

2030 Project

Road 274 (Malum Ridge Rd) at Road 225 (Mammoth Pool Rd)
- Restripe/widen the EB approach, west leg, from a shared left-through and a separate right-turn lane to one (1) left-turn lane and a shared through-right
- Restripe/widen the WB approach, east leg, from a shared left-through and a separate right-turn lane to one (1) left-turn lane and a shared through-right

Proportionate Share Percentages

Table 19 shows the Proportionate Share Percentages for the proposed improvements detailed previously and other roadway improvements as defined in the 2004 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 shown in Table 19 are provided as information only and it is up to the various commenting agencies to determine what mitigations, if any, they will require the Tribe to fund.

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:

Proportionate Share Percentage = Project only trips / (2030 Project volume – Existing Volume)

TABLE 19:
PROJECT PROPORTIONATE SHARE PERCENTAGES

	Proportionate Share Percentage (%)		
	County of Madera[1]	**City of Madera[1]**	**Caltrans[1]**
	Alternative A/B/C	**Alternative A/B/C**	**Alternative A/B/C**
Madera Site			
County Segment			
Avenue 17 – Road 23 to SR 99	15.86/11.50/13.68	---	---
Avenue 17 – SR 99 to Road 27	6.82/4.75/5.95	---	---
Freeway Segment			
SR 99 north of Avenue 18 ½	---	---	2.60/1.84/2.62
SR 99 between Avenue 18 ½ and Avenue 17	---	---	0.00[2]/0.00[2]/0.00[2]
SR 99 south of Avenue 17	---	---	8.90/6.39/8.68
Intersection			
Avenue 18 ½ at SR 99 SB ramps/Road 23	16.67/12.36/16.67	---	16.67/12.36/16.67
Avenue 18 ½ at SR 99 NB ramps	12.75/9.34/13.03	---	12.75/9.34/13.03
Avenue 17 at SR 99 SB ramps	15.75/11.57/13.33	---	15.75/11.57/13.33
Avenue 17 at SR 99 NB ramps	15.30/11.24/10.71	---	15.30/11.24/10.71
Avenue 12/Golden State Boulevard at SR 99 SB ramps	1.34/0.95/1.45	---	1.34/0.95/1.45
Avenue 12 at Golden State Boulevard	1.11/0.79/1.20	---	1.11/0.79/1.20
Avenue 12 at SR 99 NB ramps	1.59/1.14/1.51	---	1.59/1.14/1.51
Avenue 18 at Road 23	17.10/12.70/16.66	---	17.10/12.70/16.66
Avenue 17 at Road 23	8.78/6.20/8.03	---	8.78/6.20/8.03
Avenue 17 at Golden State Boulevard	16.98/12.48/15.46	---	16.98/12.48/15.46
Ellis Street at Road 26	1.44/1.00/1.44	---	1.44/1.00/1.44
Avenue 15 ½ at Road 23	---	7.53/5.13/6.67	---
Avenue 14 at Road 23	---	6.07/4.55/5.98	---
Ellis Street/Avenue 16 at Golden State Boulevard	---	1.50/1.06/1.52	---
Ellis Street/Avenue 16 at SR 99 SB ramps	---	2.01/.46/2.07	2.01/.46/2.07
Ellis Street/Avenue 16 at SR 99 NB ramps	---	2.27/1.65/1.88	2.27/1.65/1.88
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	---	5.42/3.87/4.53	5.42/3.87/4.53
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps	---	2.94/2.09/3.04	2.94/2.09/3.04

TABLE 19:
PROJECT PROPORTIONATE SHARE PERCENTAGES

	Proportionate Share Percentage (%)		
	County of Madera[1]	**City of Madera[1]**	**Caltrans[1]**
	Alternative A/B/C	**Alternative A/B/C**	**Alternative A/B/C**
Intersection			
SR 145/Madera Avenue at SR 99 NB ramps	---	3.65/2.60/2.59	3.65/2.60/2.59
Olive Avenue/Avenue 14 at SR 99 SB off-ramp	---	2.43/1.77/2.56	2.43/1.77/2.56
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	---	2.72/1.90/2.43	2.72/1.90/2.43
Avenue 18 ½ at Pistachio Drive	12.79/9.37/12.79	---	---
Avenue 18 ½ at Golden State Blvd/Road 23	10.81/7.89/10.87	---	---
North Fork Site			
	Alternative D	**Alternative D**	**Alternative D**
Intersection			
SR 145 at SR 41	0.40	---	0.40
SR 41 at Road 200	0.52	---	0.52
SR 41 at Road 420 (Thornberry Road)	0.00	---	0.00
SR 41 at SR 49	0.15	---	0.15
Road 274 (Malum Ridge Rd) at Road 225 (Mammoth Pool Rd)	16.96	---	16.96

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

I. EXECUTIVE SUMMARY 2
II. TABLE OF CONTENTS 67
LIST OF FIGURES 68
LIST OF TABLES 70
LIST OF WORKSHEETS 74
III. INTRODUCTION 77
A. PROJECT DESCRIPTION 77
B. PROJECT LOCATION 78
C. SITE PLAN 78
D. CIRCULATION NETWORK 86
E. LAND USE AND ZONING 90
F. PHASING PLAN 90
G. PROJECT SPONSOR AND CONTACT PERSON 90
H. REFERENCES 90
IV. TRAFFIC ANALYSIS 93
A. STUDY ASSUMPTIONS 93
B. TRAFFIC VOLUMES, FACILITY GEOMETRY, AND TRAFFIC CONTROLS 93
C. PROJECT TRIP GENERATION 188
D. PROJECT TRIP DISTIRBUTION AND ASSIGNMENT 203
E. LEVELS OF SERVICE AND WARRANT ANALYSES 221
V. CONCLUSIONS AND RECOMMENDATIONS 409
A. NO PROJECT/PROJECT COMPARISON 409
B. MITIGATION PHASING PLAN 438
C. IMPLEMENTATION RESPONSIBILITIES 438
D. COST ESTIMATES AND FINANCING PLAN FOR MITIGATION MEASURES 438
VI. APPENDICES 441
A. TRAFFIC DATA 441
B. METHODOLOGY AND ASSUMPTIONS 443
C. WORKSHEETS 456

LIST OF FIGURES

Figure 1: Vicinity Map – Madera Site – Alternative A, B, C 79
Figure 2: Vicinity Map – North Fork Site – Alternative D 81
Figure 3: Site Plan – Alternative A – Proposed Project 82
Figure 4: Site Plan – Alternative B – Reduced Intensity Alternative 83
Figure 5: Site Plan – Alternative C – Alternative Land Use Alternative 84
Figure 6: Site Plan – Alternative D – Off-Site Alternative 85
Figure 7: Existing (2005) Lane Configurations and Intersection Control – Madera Site 94
Figure 8: Existing (2005) Peak Hour Volumes – Madera Site 96
Figure 9: Existing (2005) Levels of Service – Madera Site 98
Figure 10: Opening Day (2008) No Project Lane Configurations and Intersection Control – Madera Site – Alternative E 100
Figure 11: Opening Day (2008) No Project Peak Hour Volumes – Madera Site – Alternative E 102
Figure 12: Opening Day (2008) No Project Levels of Service – Madera Site – Alternative E 104
Figure 13: Opening Day (2008) Project Peak Hour Volumes – Madera Site – Alternative A 107
Figure 14: Opening Day (2008) Project Levels of Service – Madera Site – Alternative A 109
Figure 15: Opening Day (2008) Project Peak Hour Volumes – Madera Site – Alternative B 111
Figure 16: Opening Day (2008) Project Levels of Service – Madera Site – Alternative B 113
Figure 17: Opening Day (2008) Project Peak Hour Volumes – Madera Site – Alternative C 115
Figure 18: Opening Day (2008) Project Levels of Service – Madera Site – Alternative C 117
Figure 19: Mitigated Opening Day (2008) Project Lane Configurations and Intersection Control – Madera Site – Alternative A 119
Figure 20: Mitigated Opening Day (2008) Project Levels of Service – Madera Site – Alternative A 121
Figure 21: Mitigated Opening Day (2008) Project Lane Configurations and Intersection Control – Madera Site – Alternative B 124
Figure 22: Mitigated Opening Day (2008) Project Levels of Service – Madera Site – Alternative B 126
Figure 23: Mitigated Opening Day (2008) Project Lane Configurations and Intersection Control – Madera Site – Alternative C 128
Figure 24: Mitigated Opening Day (2008) Project Levels of Service – Madera Site – Alternative C 130
Figure 25: 2030 No Project Lane Configurations and Intersection Control – Madera Site – Alternative E 132
Figure 26: 2030 No Project Peak Hour Volumes – Madera Site – Alternative E 134
Figure 27: 2030 No Project Levels of Service – Madera Site – Alternative E 136
Figure 28: 2030 Project Lane Configurations and Intersection Control – Madera Site – Alternative A 138
Figure 29: 2030 Project Peak Hour Volumes – Madera Site – Alternative A 140
Figure 30: 2030 Project Levels of Service – Madera Site – Alternative A 142
Figure 31: 2030 Project Lane Configurations and Intersection Control – Madera Site – Alternative B 145
Figure 32: 2030 Project Peak Hour Volumes – Madera Site – Alternative B 147
Figure 33: 2030 Project Levels of Service – Madera Site – Alternative B 149
Figure 34: 2030 Project Lane Configurations and Intersection Control – Madera Site – Alternative C 151
Figure 35: 2030 Project Peak Hour Volumes – Madera Site – Alternative C 153
Figure 36: 2030 Project Levels of Service – Madera Site – Alternative C 155

Figure 37: Mitigated 2030 Project Lane Configurations and Intersection Control – Madera Site – Alternative A 157
Figure 38: Mitigated 2030 Project Levels of Service – Madera Site – Alternative A 159
Figure 39: Mitigated 2030 Project Lane Configurations and Intersection Control – Madera Site – Alternative B 161
Figure 40: Mitigated 2030 Project Levels of Service – Madera Site – Alternative B 163
Figure 41: Mitigated 2030 Project Lane Configurations and Intersection Control – Madera Site – Alternative C 166
Figure 42: Mitigated 2030 Project Levels of Service – Madera Site – Alternative C 168
Figure 43: Existing (2005) Lane Configurations and Intersection Control – North Fork Site 170
Figure 44: Existing (2005) Peak Hour Volumes – North Fork Site 171
Figure 45: Existing (2005) Levels of Service – North Fork Site 172
Figure 46: Opening Day (2008) No Project Peak Hour Volumes – North Fork Site - Alternative E 173
Figure 47: Opening Day (2008) No Project Levels of Service – North Fork Site - Alternative E 174
Figure 48: Opening Day (2008) Project Peak Hour Volumes – North Fork Site – Alternative D 176
Figure 49: Opening Day (2008) Project Levels of Service – North Fork Site – Alternative D 177
Figure 50: Mitigated Opening Day (2008) Project Lane Configurations and Intersection Control – North Fork Site – Alternative D 178
Figure 51: Mitigated Opening Day (2008) Project Levels of Service – North Fork Site – Alternative D 179
Figure 52: 2030 No Project Peak Hour Volumes – North Fork Site - Alternative E 180
Figure 53: 2030 No Project Levels of Service – North Fork Site - Alternative E 181
Figure 54: 2030 Project Lane Configurations and Intersection Control – North Fork Site – Alternative D 182
Figure 55: 2030 Project Peak Hour Volumes – North Fork Site – Alternative D 183
Figure 56: 2030 Project Levels of Service – North Fork Site – Alternative D 184
Figure 57: Mitigated 2030 Project Lane Configurations and Intersection Control – North Fork Site – Alternative D 186
Figure 58: Mitigated 2030 Project Levels of Service – North Fork Site – Alternative D 187
Figure 59: Project Trip Distribution Percentages – Madera Site – Alternative A 204
Figure 60: 2008 Project Trip Assignment – Madera Site – Alternative A 205
Figure 61: 2030 Project Trip Assignment – Madera Site – Alternative A 207
Figure 62: Project Trip Distribution Percentages – Madera Site – Alternative B 209
Figure 63: 2008 Project Trip Assignment – Madera Site – Alternative B 210
Figure 64: 2030 Project Trip Assignment – Madera Site – Alternative B 212
Figure 65: Project Trip Distribution Percentages – Madera Site – Alternative C 214
Figure 66: 2008 Project Trip Assignment – Madera Site – Alternative C 215
Figure 67: 2030 Project Trip Assignment – Madera Site – Alternative C 217
Figure 68: Project Trip Distribution Percentages – North Fork Site – Alternative D 219
Figure 69: Project Trip Assignment – North Fork Site – Alternative D 220

LIST OF TABLES

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: 95th-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) xxiii
Table 7: Signal Warrant Analysis Alternative B (Reduced Intensity Alternative / Madera Site) xxvi
Table 8: 95th-Percentile Queue Length Summary Alternative B (Reduced Intensity Alternative / Madera Site) xxviii
Table 9: Ramp Widening/Auxiliary Lane Threshold Summary Alternative B (Reduced Intensity Alternative / Madera Site) xxx
Table 10: Turn Lane Storage Calculations Summary Alternative B (Reduced Intensity/Madera Site) xxxi
Table 11: Weekday Levels Of Service Summary For The County Segments, Freeway Segments, and Intersections Alternative C (Alternative Land Use Alternative / Madera Site) xliii
Table 12: Signal Warrant Analysis Alternative C (Alternative Land Use Alternative/Madera Site) xlvi
Table 13: 95th-Percentile Queue Length Summary Alternative C (Alternate Land Use Alternative / Madera Site) xlvii
Table 14: Ramp Widening/Auxiliary Lane Threshold Summary Alternative C (Alternate Land Use Alternative / Madera Site) xlix
Table 15: Turn Lane Storage Calculations Summary Alternative C (Alternative Land Use/Madera Site) l
Table 16: Weekday Levels Of Service Summary For The Study Intersections Alternative D (Off-Site Alternative/North Fork Site) lxii
Table 17: Signal Warrant Analysis Alternative D (Off-Site Alternative/North Fork Site) 63
Table 18: Left-Turn Storage Calculations Summary Alternative D (Off-Site Alternative/North Fork Site) 63
Table 19: Project Proportionate Share Percentages 65
Table 20: Description Of Existing (2005) Street System Madera Project Site (Alternative A, B, C). 87
Table 21: Existing (2005) Intersection Control Madera Project Site (Alternative A, B, C) 88
Table 22: Description Of Existing (2005) Street System North Fork Site (Alternative D) 89
Table 23: Existing (2005) Intersection Control North Fork Site (Alternative D) 89
Table 24: Casino Gaming Facility Trip Generation Data Alternative A (Proposed Project Alternative) Average Rate and Directional Distribution Data 190
Table 25: Casino Gaming Facility Trip Generation Data Alternative B (Reduced Intensity Alternative) Average Rate and Directional Distribution Data 192
Table 26: Casino Gaming Facility Trip Generation Data Alternative D (Off-Site Alternative) Average Rate and Directional Distribution Data 193
Table 27: Casino Gaming Facility Trip Generation Data Alternative A (Proposed Project Alternative) Weekday Daily and Peak Hour of Street Trips 195
Table 28: Casino Gaming Facility Trip Generation Data Alternative B (Reduced Intensity Alternative) Weekday Daily and Peak Hour of Street Trips 195

Table 29: Casino Gaming Facility Trip Generation Data Alternative D (Off-Site Alternative) Weekday Daily and Peak Hour of Street Trips 195
Table 30: ITE Trip Generation Data Manual Reference Information 196
Table 31: ITE Trip Generation Data Average Rate and Directional Distribution Data 196
Table 32: Hotel Trip Generation Data Average Rate and Directional Distribution Data 197
Table 33: Hotel Trip Generation Data Alternative A (Proposed Project Alternative) Weekday Daily and Peak Hour of Generator Trips 198
Table 34: ITE Trip Generation Data Manual Reference Information 198
Table 35: ITE Trip Generation Data Average Rate and Directional Distribution Data 199
Table 36: Project Trip Generation Data Alternative A (Proposed Project Alternative) 201
Table 37: Project Trip Generation Data Alternative B (Reduced Intensity Alternative) 201
Table 38: Project Trip Generation Data Alternative C (Alternative Land Use Alternative) 202
Table 39: Project Trip Generation Data Alternative D (Off-Site Alternative) 202
Table 40: Existing (2005) Conditions County Segment, Freeway Segment, and Intersection Weekday Level Of Service Madera Site 221
Table 41: Existing (2005) Conditions Weekday 95th Percentile Queue Length Madera Site 225
Table 42: Existing (2005) Conditions Ramp Widening/Auxiliary Lane Threshold Summary Madera Site 227
Table 43: Opening Day (2008) No Project Conditions County Segment, Freeway Segment, and Intersection Weekday Level Of Service Madera Site (Alternative E, No Project Alternative) . 228
Table 44: Opening Day (2008) No Project Conditions Weekday 95th Percentile Queue Length Madera Site (Alternative E) 233
Table 45: Opening Day (2008) No Project Conditions Ramp Widening/Auxiliary Lane Threshold Summary Madera Site (Alternative E) 235
Table 46: Opening Day (2008) Project Conditions county Segment, Freeway Segment, and Intersection Weekday Level Of Service Madera Site (Alternative A, Proposed Project Alternative) 236
Table 47: Opening Day (2008) Project Conditions Weekday 95th Percentile Queue Length Madera Site (Alternative A, Proposed Project Alternative) 241
Table 48: Opening Day (2008) Project Conditions Ramp Widening/Auxiliary Lane Threshold Summary Madera Site (Alternative A, Proposed Project Alternative) 243
Table 49: Opening Day (2008) Project Conditions Turn Lane Storage Calculations Summary Alternative A (Proposed Project/Madera Site) 246
Table 50: Opening Day (2008) Project Conditions County Segment, Freeway Segment, and Intersection Weekday Level Of Service Madera Site (Alternative B, Reduced Intensity Alternative) 248
Table 51 Opening Day (2008) Project Conditions Weekday 95th Percentile Queue Length Madera Site (Alternative B, Reduced Intensity Alternative) 253
Table 52: Opening Day (2008) Project Conditions Ramp Widening/Auxiliary Lane Threshold Summary Madera Site (Alternative B, Reduced Intensity Alternative) 255
Table 53: Opening Day (2008) Project Conditions Turn Lane Storage Calculations Summary Alternative B (Reduced Intensity/Madera Site) 258
Table 54 Opening Day (2008) Project Conditions County Segment, Freeway Segment, and Intersection Weekday Level Of Service Madera Site (Alternative C, Alternative Land Use Alternative) 260
Table 55: Opening Day (2008) Project Conditions Weekday 95th Percentile Queue Length Madera Site (Alternative C, Alternative Land Use Alternative) 265
Table 56: Opening Day (2008) Project Conditions Ramp Widening/Auxiliary Lane Threshold Summary Madera Site (Alternative C, Alternate Land Use Alternative) 267

Table 57: Opening Day (2008) Project Conditions Turn Lane Storage Calculations Summary Alternative C (Alternative Land Use/Madera Site) 270
Table 58: Mitigated Opening Day (2008) Project Conditions County Segment, Freeway Segment, and Intersection Weekday Level Of Service Madera Site (Alternative A, Proposed Project Alternative) 282
Table 59: Mitigated Opening Day (2008) Project Conditions Weekday 95th Percentile Queue Length Madera Site (Alternative A, Proposed Project Alternative) 283
Table 60: Mitigated Opening Day (2008) Project Conditions County Segment, Freeway Segment, and Intersection Weekday Level Of Service Madera Site (Alternative B, Reduced Intensity Alternative) 295
Table 61: Mitigated Opening Day (2008) Project Conditions Weekday 95th Percentile Queue Length Madera Site (Alternative B, Reduced Intensity Alternative) 297
Table 62: Mitigated Opening Day (2008) Project Conditions County Segment, Freeway Segment, and Intersection Weekday Level Of Service Madera Site (Alternative C, Alternate Land Use Alternative) 309
Table 63: Mitigated Opening Day (2008) Project Conditions Weekday 95th Percentile Queue Length Madera Site (Alternative C, Alternate Land Use Alternative) 310
Table 64: 2030 No Project Conditions County Segment, Freeway Segment, and Intersection Weekday Level Of Service Madera Site (Alternative E, No Project Alternative) 313
Table 65: 2030 No Project Conditions Weekday 95th Percentile Queue Length Madera Site (Alternative E, No Project Alternative) 317
Table 66: 2030 No Project Conditions Ramp Widening/Auxiliary Lane Threshold Summary Madera Site (Alternative E, No Project Alternative) 319
Table 67: 2030 Project Conditions County Segment, Freeway Segment, and Intersection Weekday Level Of Service Madera Site (Alternative A, Proposed Project Alternative) 321
Table 68: 2030 Project Conditions Weekday 95th Percentile Queue Length Madera Site (Alternative A, Proposed Project Alternative) 324
Table 69: 2030 Project Conditions Ramp Widening/Auxiliary Lane Threshold Summary Madera Site (Alternative A, Proposed Project Alternative) 326
Table 70: 2030 Project Conditions Turn Lane Storage Calculations Summary Alternative A (Proposed Project/Madera Site) 330
Table 71: 2030 Project Conditions County Segment, Freeway Segment, and Intersection Weekday Level Of Service Madera Site (Alternative B, Reduced Intensity Alternative) 332
Table 72: 2030 Project Conditions Weekday 95th Percentile Queue Length Madera Site (Alternative B, Reduced Intensity Alternative) 336
Table 73: 2030 Project Conditions Ramp Widening/Auxiliary Lane Threshold Summary Madera Site (Alternative B, Reduced Intensity Alternative) 338
Table 74: 2030 Project Conditions Turn Lane Storage Calculations Summary Alternative B (Reduced Intensity/Madera Site) 342
Table 75: 2030 Project Conditions County Segment, Freeway Segment, and Intersection Weekday Level Of Service Madera Site (Alternative C, Alternate Land Use Alternative) 344
Table 76: 2030 Project Conditions Weekday 95th Percentile Queue Length Madera Site (Alternative C, Alternate Land Use Alternative) 347
Table 77: 2030 Project Conditions Ramp Widening/Auxiliary Lane Threshold Summary Madera Site (Alternative C, Alternate Land Use Alternative) 349
Table 78: 2030 Project Conditions Turn Lane Storage Calculations Summary Alternative C (Alternative Land Use/Madera Site) 353
Table 79: Mitigated 2030 Project Conditions County Segment, Freeway Segment, and Intersection Weekday Level Of Service Madera Site (Alternative A, Proposed Project) 365

Table 80: Mitigated 2030 Project Conditions Weekday 95th Percentile Queue Length Madera Site (Alternative A, Proposed Project) 367
Table 81: Mitigated 2030 Project Conditions County Segment, Freeway Segment, and Intersection Weekday Level Of Service Madera Site (Alternative B, Reduced Intensity Alternative) 378
Table 82: Mitigated 2030 Project Conditions Weekday 95th Percentile Queue Length Madera Site (Alternative B, Reduced Intensity Alternative) 379
Table 83: Mitigated 2030 Project Conditions County Segment, Freeway Segment, and Intersection Weekday Level Of Service Madera Site (Alternative C, Alternate Land use Alternative) 391
Table 84 Mitigated 2030 Project Conditions Weekday 95th Percentile Queue Length Madera Site (Alternative C, Alternate Land Use Alternative) 392
Table 85: Existing (2005) Conditions Intersection Weekday Level Of Service North Fork Site 395
Table 86: Opening Day (2008) No Project Conditions Intersection Weekday Level Of Service North Fork Site (Alternative E, No Project Alternative) 396
Table 87: Opening Day (2008) Project Conditions Intersection Weekday Level Of Service North Fork Site (Alternative D, Off-Site Alternative) 398
Table 88: Mitigated Opening Day (2008) Project Conditions Intersection Weekday Level Of Service North Fork Site (Alternative D, Off-Site Alternative) 401
Table 89: 2030 No Project Conditions Intersection Weekday Level Of Service North Fork Site (Alternative E, No Project Alternative) 402
Table 90: 2030 Project Conditions Intersection Weekday Level Of Service North Fork Site (Alternative D, Off-Site Alternative) 404
Table 91: Mitigated 2030 Project Conditions Intersection Weekday Level Of Service North Fork Site (Alternative D, Off-Site Alternative) 407
Table 92: Comparison Of 2008 No Project, 2008 Project, and Mitigated 2008 Project Levels of Service Madera Site (Alternative A, Proposed Project Alternative) 410
Table 93: Comparison Of 2030 No Project, 2030 Project, and Mitigated 2030 Project Levels of Service Madera Site (Alternative A, Proposed Project Alternative) 412
Table 94: Comparison Of 2008 No Project, 2008 Project, and Mitigated 2008 Project Levels of Service Madera Site (Alternative B, Reduced Intensity Alternative) 419
Table 95: Comparison Of 2030 No Project, 2030 Project, and Mitigated 2030 Project Levels of Service Madera Site (Alternative B, Reduced Intensity Alternative) 421
Table 96: Comparison of 2008 No Project, 2008 Project, and Mitigated 2008 Project Levels of Service Madera Site (Alternative C, Alternative Land Use Alternative) 427
Table 97: Comparison of 2030 No Project, 2030 Project, and Mitigated 2030 Project Levels of Service Madera Site (Alternative C, Alternative Land Use Alternative) 429
Table 98: Comparison of 2008 No Project, 2008 Project, and Mitigated 2008 Project Levels of Service North Fork Site (Alternative D, Off-Site Alternative) 437
Table 99: Comparison of 2030 No Project, 2030 Project, and Mitigated 2030 Project Levels of Service North Fork Site (Alternative D, Off-Site Alternative) 437
Table 100: Recommended Improvement Cost Estimates 438
Table 101: Existing Segment and Intersection Counts Days and Dates Counted 441
Table 102: Basic Freeway Level Of Service Description (Free-flow Speed = 65 or 70 mph) 454
Table 103: Intersection Level Of Service Description 455

LIST OF WORKSHEETS

Attachment VI – C - 1 North Fork Casino Project Alternative C Trip Generation Data
Attachment VI – C - 2 Existing (2005) Conditions Madera Site - Alternative A/B/C Freeway Level of Service Calculations
Attachment VI – C - 3 Existing (2005) Conditions Madera Site - Alternative A/B/C Intersection Level of Service Calculations
Attachment VI – C - 4 Existing (2005) Conditions Madera Site - Alternative A/B/C Signal Warrants
Attachment VI – C - 5 Opening Day (2008) No Project Conditions Madera Site - Alternative A/B/C Freeway Level of Service Calculations
Attachment VI – C - 6 Opening Day (2008) No Project Conditions Madera Site - Alternative A/B/C Intersection Level of Service Calculations
Attachment VI – C - 7 Opening Day (2008) No Project Conditions Madera Site - Alternative A/B/C Signal Warrants
Attachment VI – C - 8 Opening Day (2008) Project Conditions Madera Site - Alternative A Freeway Level of Service Calculations
Attachment VI – C - 9 Opening Day (2008) Project Conditions Madera Site - Alternative A Intersection Level of Service Calculations
Attachment VI – C - 10 Opening Day (2008) Project Conditions Madera Site - Alternative A Signal Warrants
Attachment VI – C - 11 Opening Day (2008) Project Conditions Madera Site - Alternative B Freeway Level of Service Calculations
Attachment VI – C - 12 Opening Day (2008) Project Conditions Madera Site - Alternative B Intersection Level of Service Calculations
Attachment VI – C - 13 Opening Day (2008) Project Conditions Madera Site - Alternative B Signal Warrants
Attachment VI – C - 14 Opening Day (2008) Project Conditions Madera Site - Alternative C Freeway Level of Service Calculations
Attachment VI – C - 15 Opening Day (2008) Project Conditions Madera Site - Alternative C Intersection Level of Service Calculations
Attachment VI – C - 16 Opening Day (2008) Project Conditions Madera Site - Alternative C Signal Warrants
Attachment VI – C - 17 Mitigated Opening Day (2008) Project Conditions Madera Site - Alternative A Freeway Level of Service Calculations
Attachment VI – C - 18 Mitigated Opening Day (2008) Project Conditions Madera Site - Alternative A Intersection Level of Service Calculations
Attachment VI – C - 19 Mitigated Opening Day (2008) Project Conditions Madera Site - Alternative B Freeway Level of Service Calculations
Attachment VI – C - 20 Mitigated Opening Day (2008) Project Conditions Madera Site - Alternative B Intersection Level of Service Calculations
Attachment VI – C - 21 Mitigated Opening Day (2008) Project Conditions Madera Site - Alternative C Freeway Level of Service Calculations
Attachment VI – C - 22 Mitigated Opening Day (2008) 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 (2008) No Project Conditions North Fork Site - Alternative D Intersection Level of Service Calculations
Attachment VI – C - 44 Opening Day (2008) No Project Conditions North Fork Site - Alternative D Signal Warrants
Attachment VI – C - 45 Opening Day (2008) Project Conditions North Fork Site - Alternative D Intersection Level of Service Calculations
Attachment VI – C - 46 Opening Day (2008) Project Conditions North Fork Site - Alternative D Signal Warrants
Attachment VI – C - 47 Mitigated Opening Day (2008) 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: Alternative 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 Alternative 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)

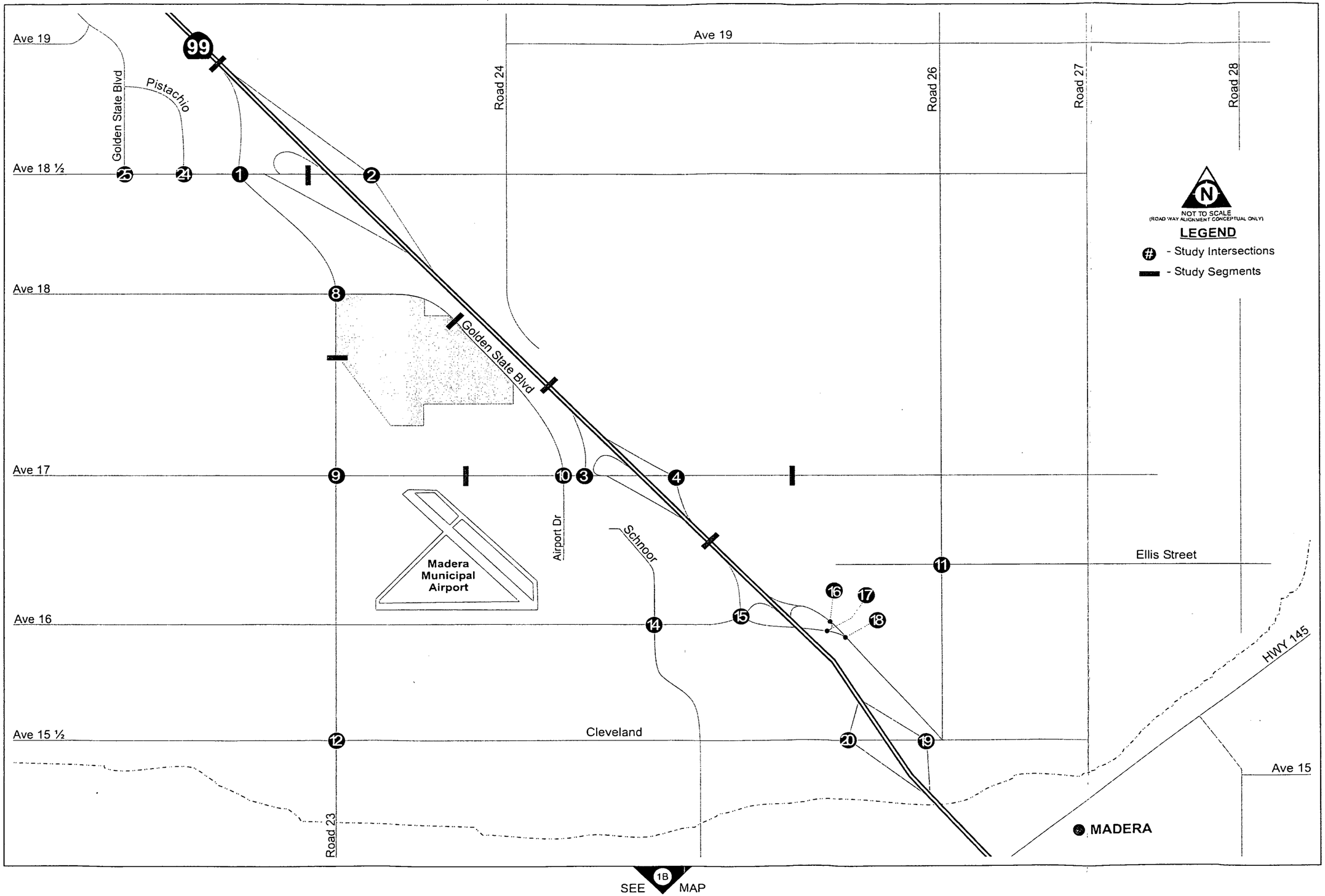
Figure 5 shows the Alternative C, Alternative Land Use Alternative, site plan.

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.



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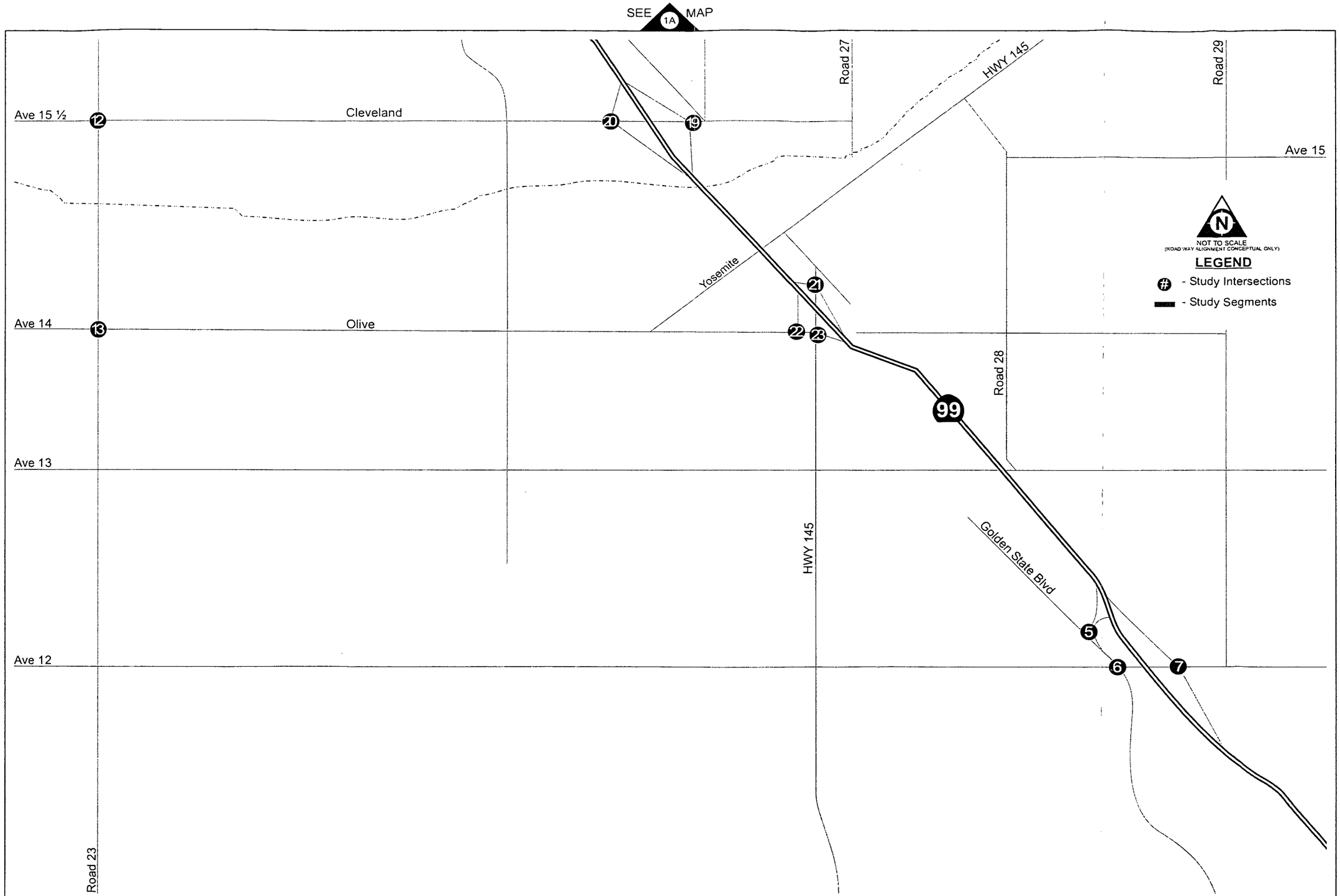
North Fork Casino
Madera County

Figure 1

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

TPG Consulting



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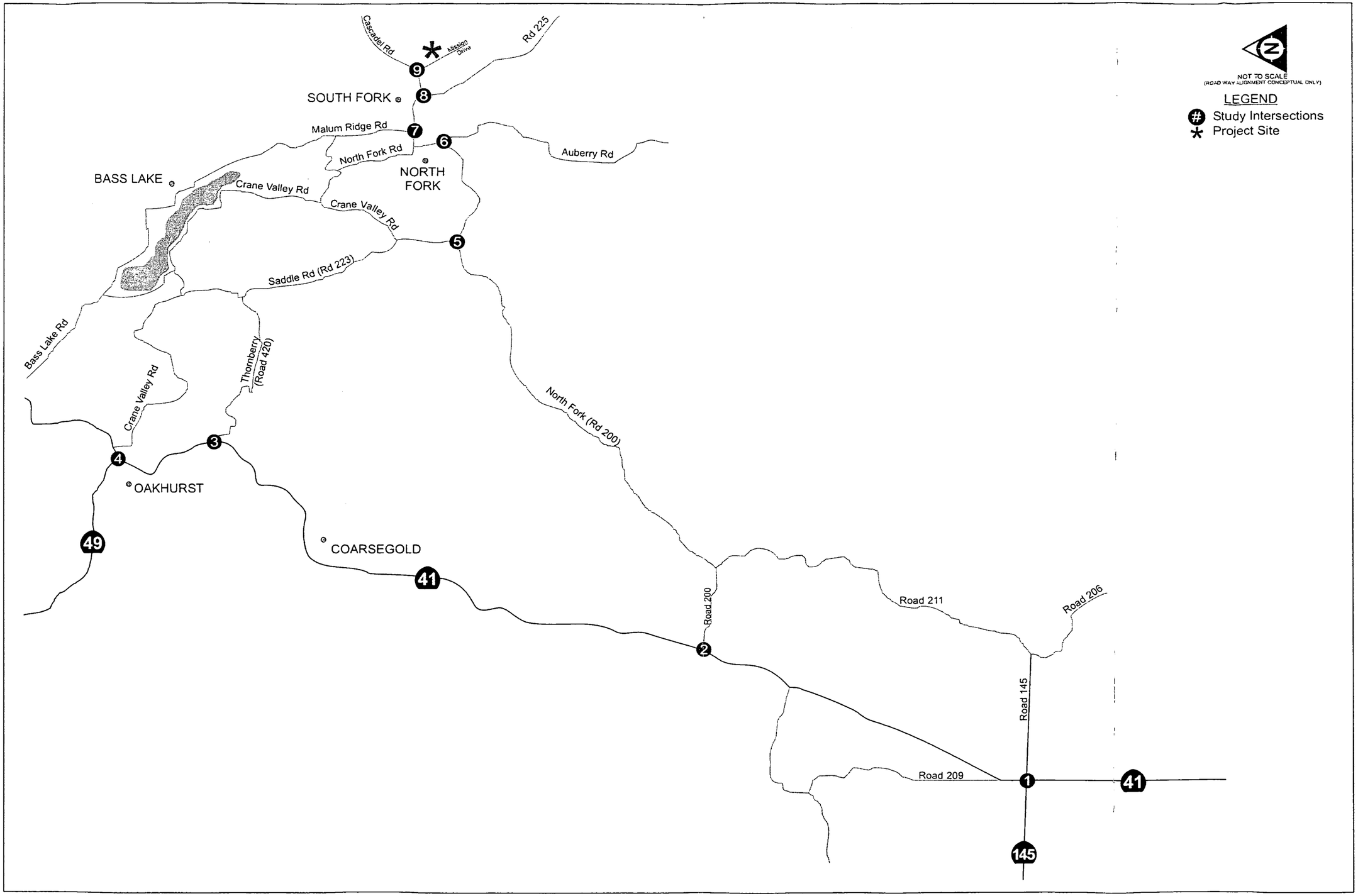
North Fork Casino
Madera County

Figure 1

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

TPG Consulting



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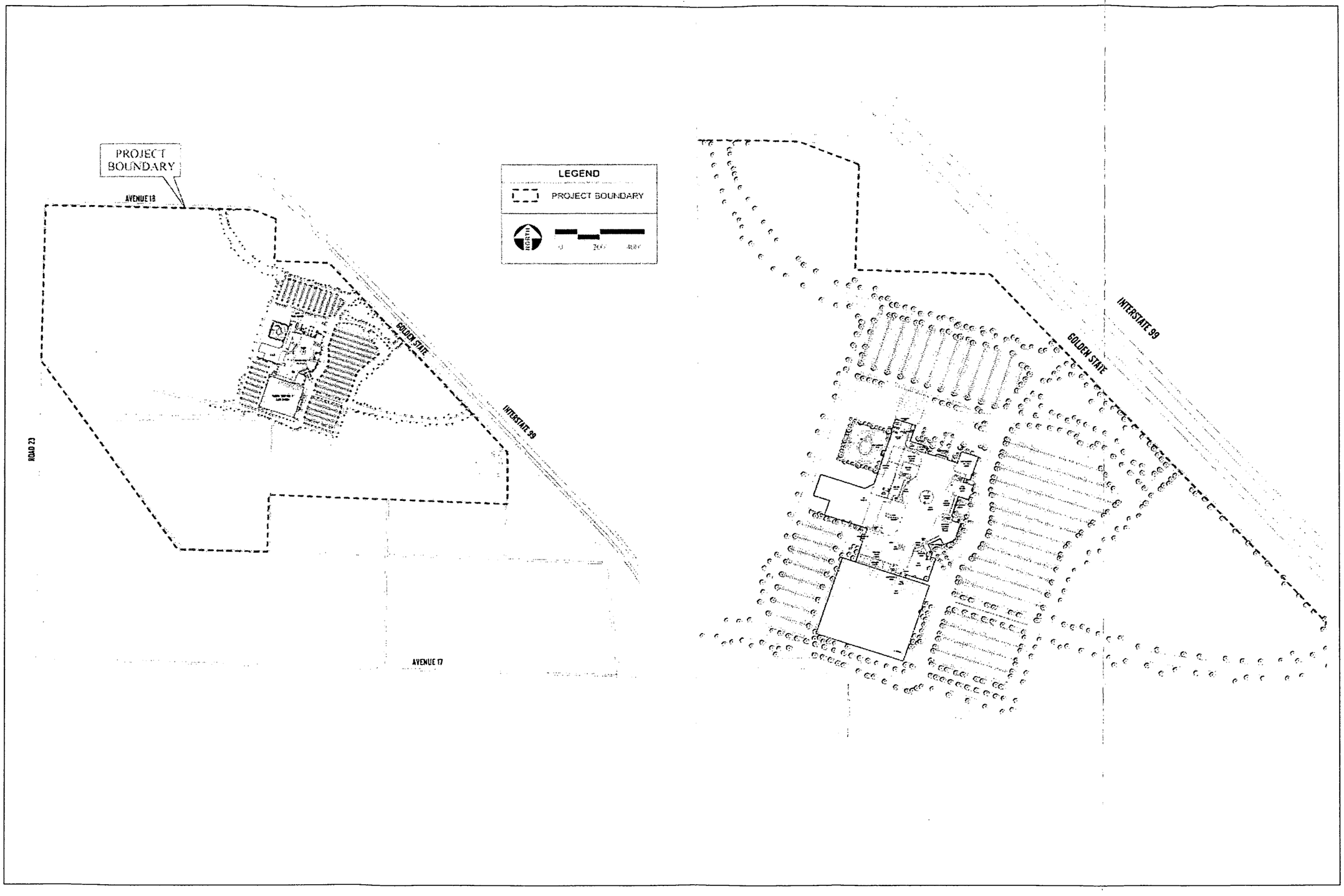
North Fork Casino
Madera County

Figure 2

VICINITY MAP
North Fork Site
(Alternative D)

TPG Consulting



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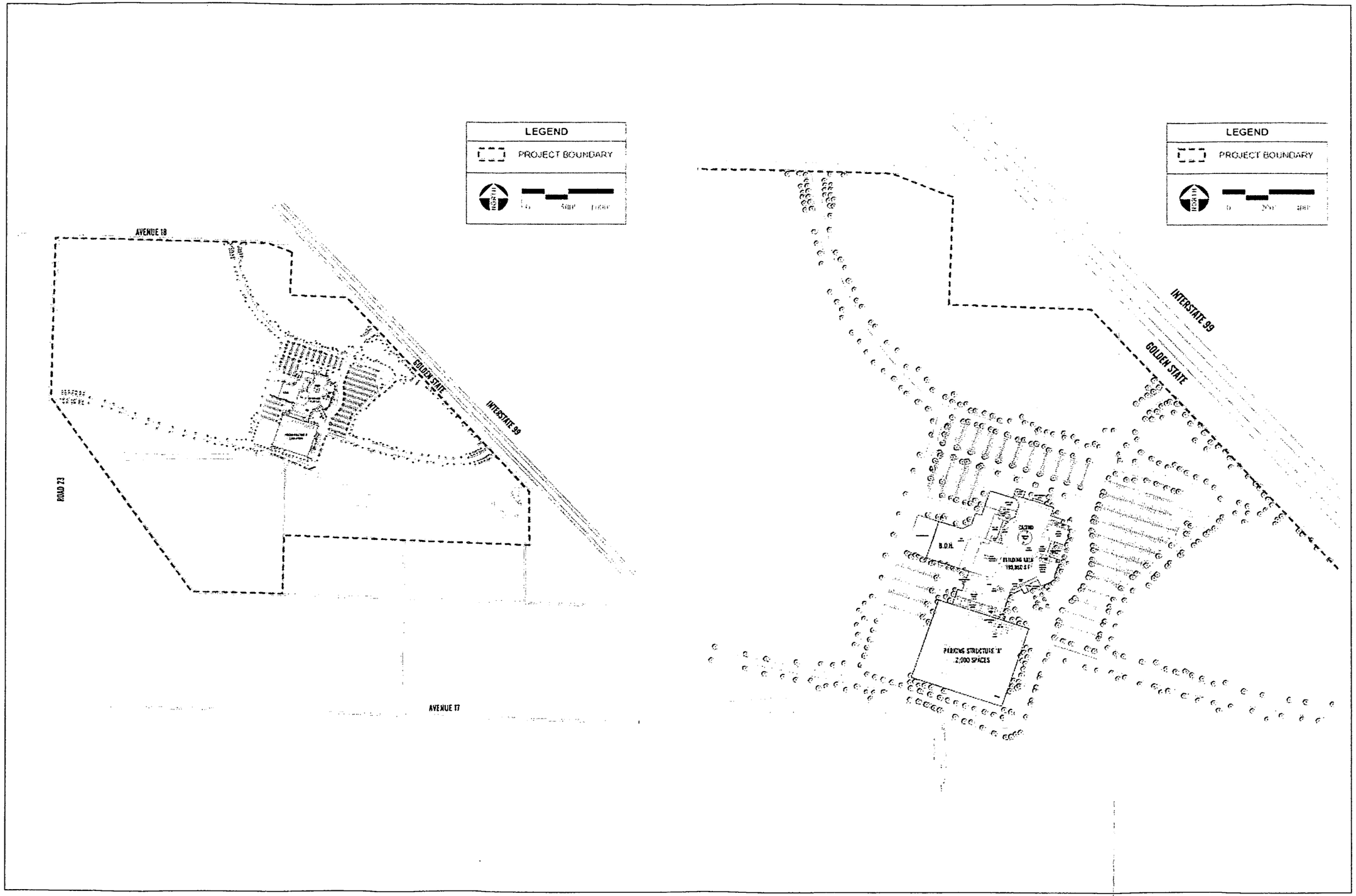
North Fork Casino
Madera County

Figure 3

SITE PLAN
Madera Site
(Alternative A)

TPG Consulting



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North Fork Casino
Madera County

Figure 4

SITE PLAN
Madera Site
(Alternative B)

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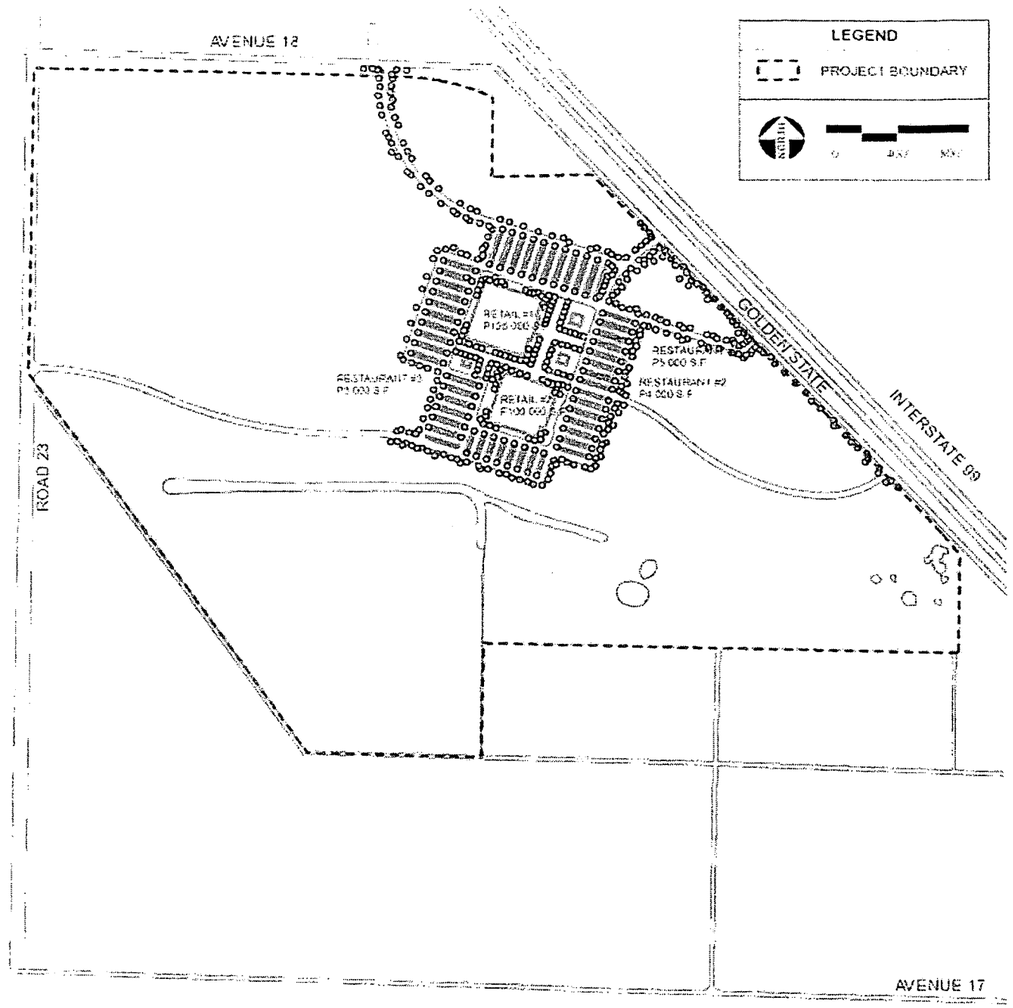

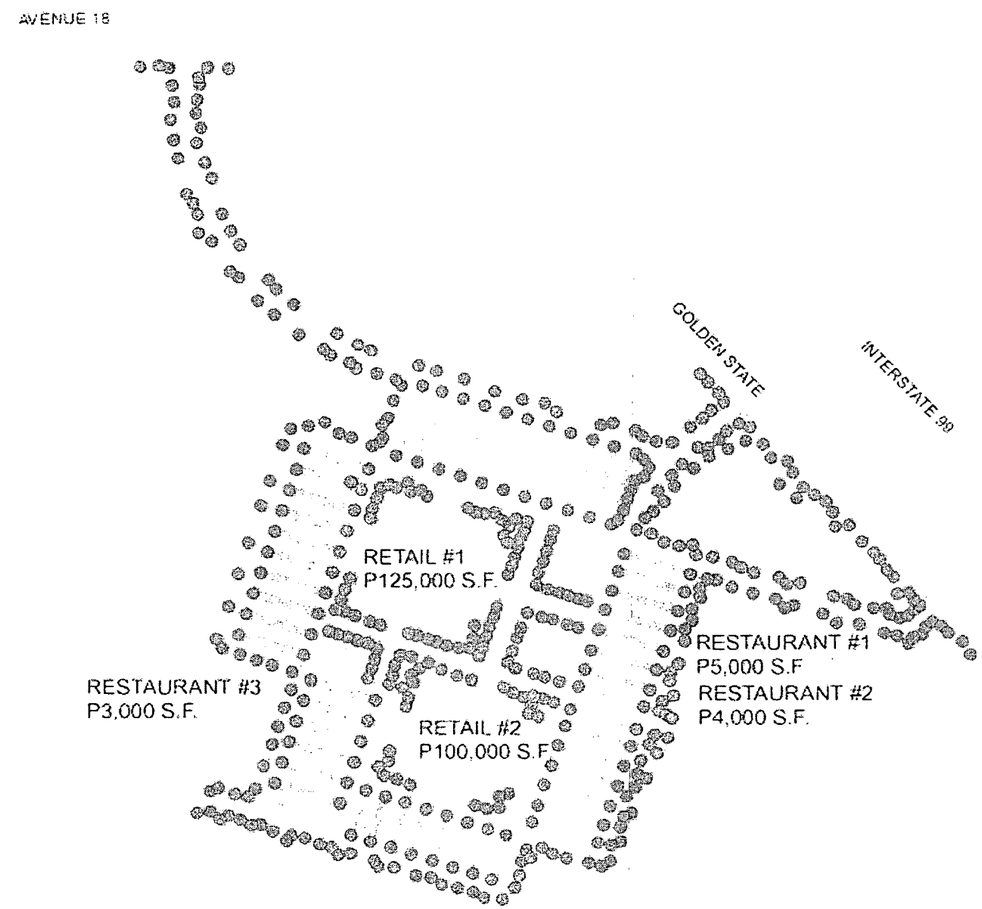

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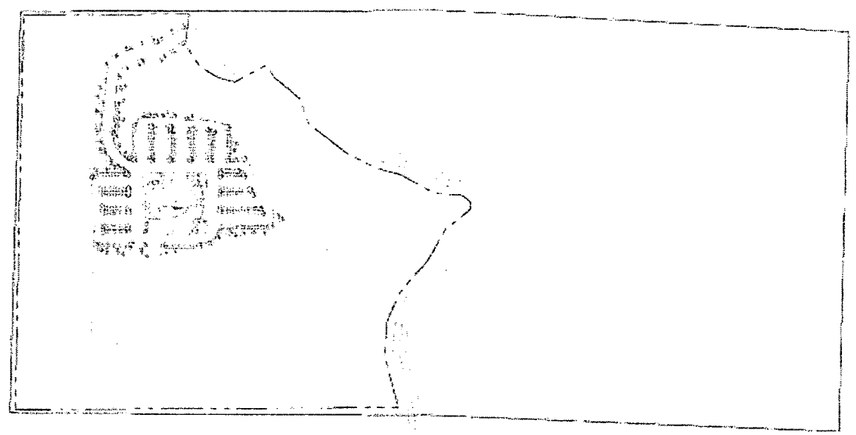
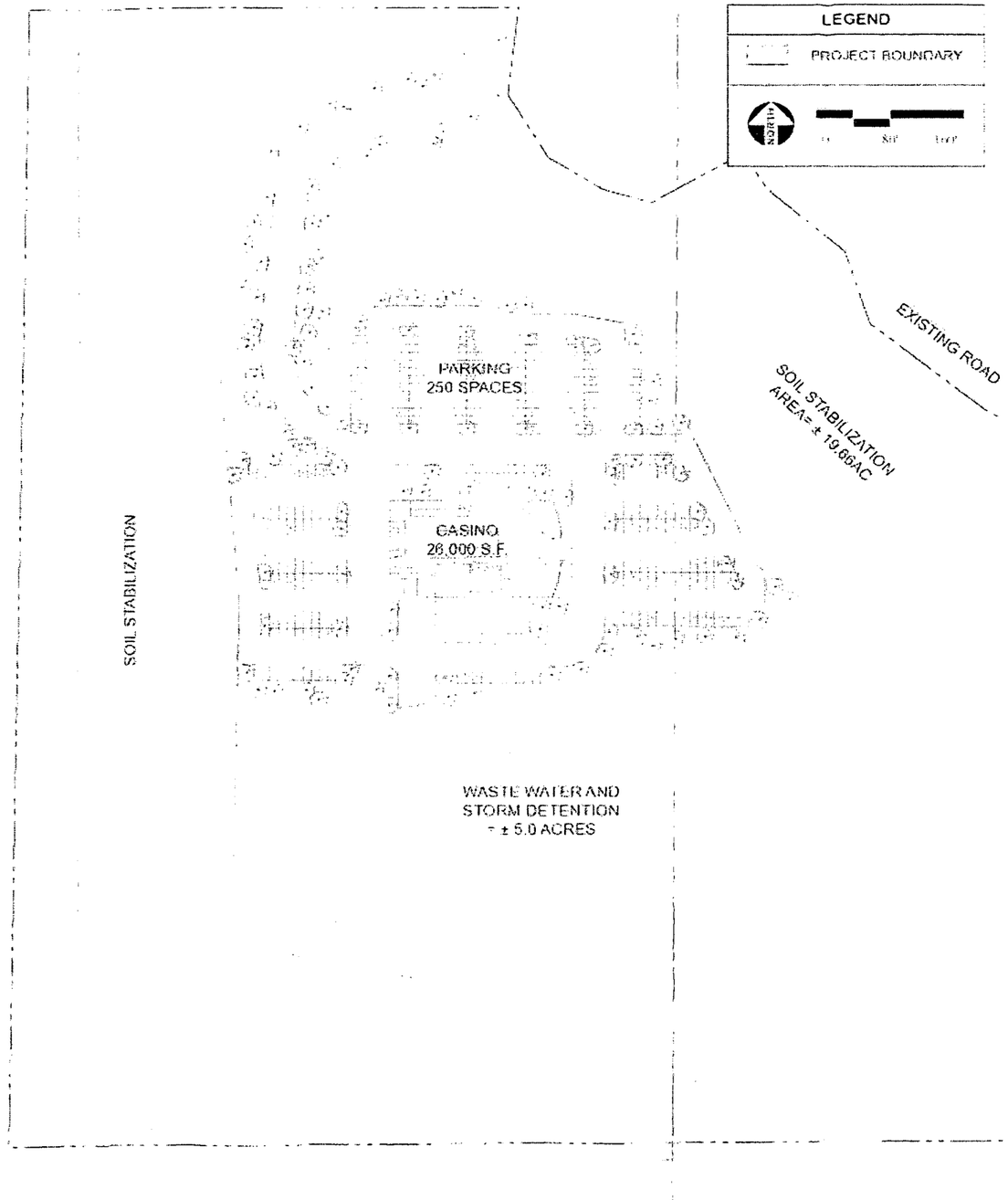
North Fork Casino
Madera County

Figure 5

SITE PLAN
Madera Site
(Alternative C)

TPG Consulting





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North Fork Casino
Madera County

Figure 6

SITE PLAN
North Fork Site
(Alternative D)

TPG Consulting

D. CIRCULATION NETWORK

Madera Site (Alternative A, B, C)

Figure 1 shows the Madera Site (Alternative A, B, C) and its relation to the surrounding roadway system. The following sections describe the Existing (2005) 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 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 4:00 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 City of Madera Finance Department, the Intermodal Center, and Save Mart Pharmacy.

Greyhound offers inter-community bus service several times a day with stops in both the City of Madera and Chowchilla. 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 (2005) 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 (2005) 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	3	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 (2005) Madera Site study intersections and their associated intersection control.

TABLE 21:
EXISTING (2005) 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	Unsignalized	TWSC
Avenue 12 at SR 99 NB ramps	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	Unsignalized	AWSC
Avenue 15 ½ at Road 23	Unsignalized	TWSC
Avenue 14 at Road 23	Unsignalized	AWSC
Avenue 16 at Schnoor Avenue	Unsignalized	TWSC
Avenue 16 at SR 99 SB ramps	Unsignalized	AWSC
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* *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 (2005) 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 (2005) 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 (2005) 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	2-4	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 (2005) North Fork Site study intersections and their associated intersection control.

TABLE 23:
EXISTING (2005) INTERSECTION CONTROL
NORTH FORK SITE (ALTERNATIVE D)

Intersection	Signalized/Unsignalized	Type
SR 145 at SR 41	Signalized	AU
SR 41 at Road 200	Unsignalized	TWSC
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 a Federal trust. Since the land is in a Federal trust no land use zoning classifications apply. Should the Off-Site Alternative 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 2008.

Alternative D (North Fork Site)

Alternative D would be constructed and occupied in a single phase and would be operational in 2008.

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 Mr. Michel De Mers, Tribal Administrator.

H. REFERENCES

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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)

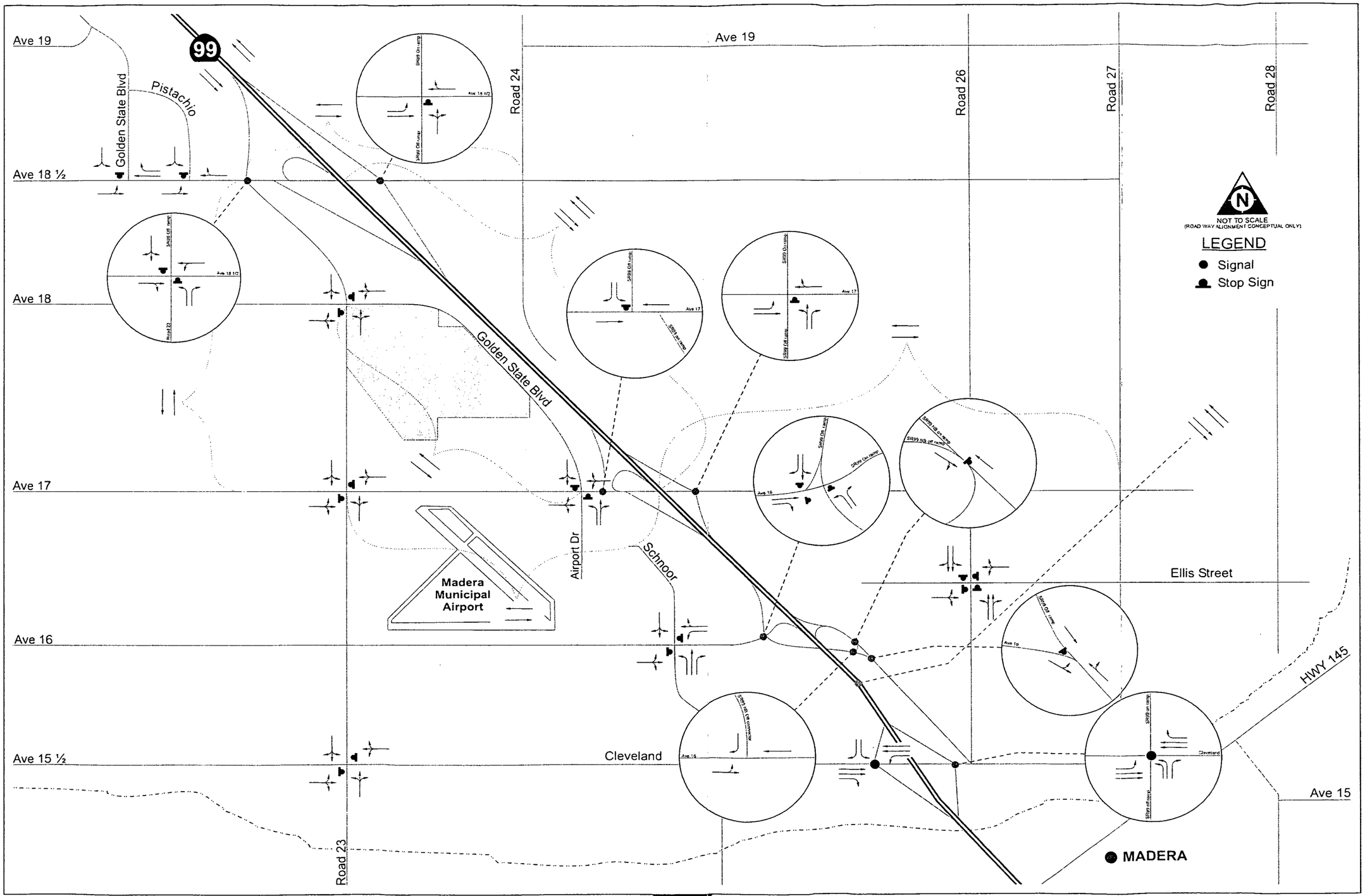
Existing (2005) Conditions

Figures 7, 8, and 9 show the Existing (2005) lane configurations and intersection control, AM and PM peak hour traffic volumes (segment, freeway, and intersection), and resulting Existing (2005) 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 (2008) No Project Conditions

Alternative E (No Project Alternative)

Figures 10, 11, and 12 show the Opening Day (2008) No Project Alternative E lane configurations and intersection control, AM and PM peak hour traffic volumes (segment, freeway, and intersection), and resulting Opening Day (2008) No Project Alternative E levels of service for the Madera Site. The Opening Day (2008) No Project Alternative E lane configurations and intersection control are also used in the Opening Day (2008) 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.



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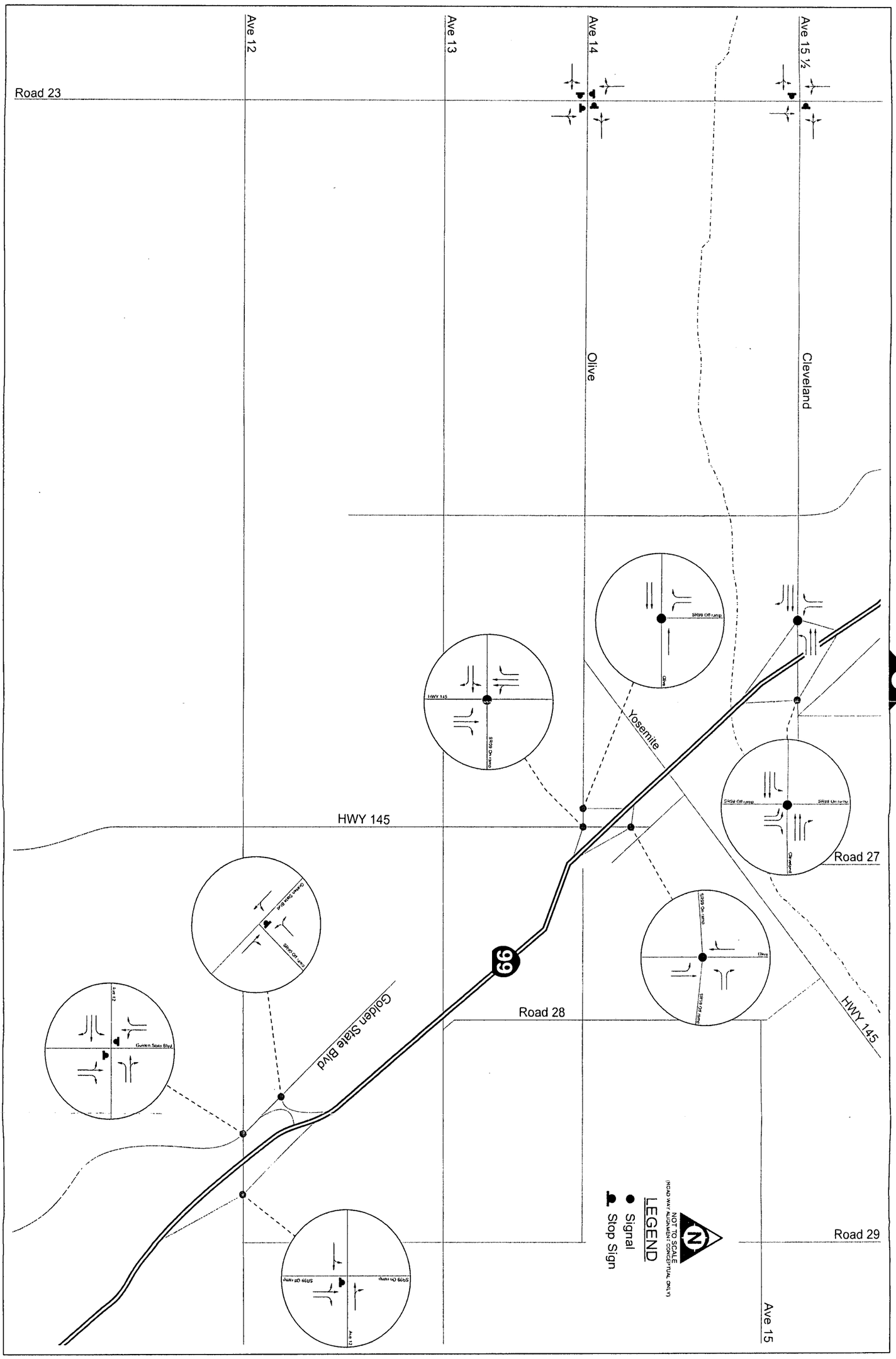
North Fork Casino
Madera County

Figure 7

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

TPG Consulting



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

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Figure 7

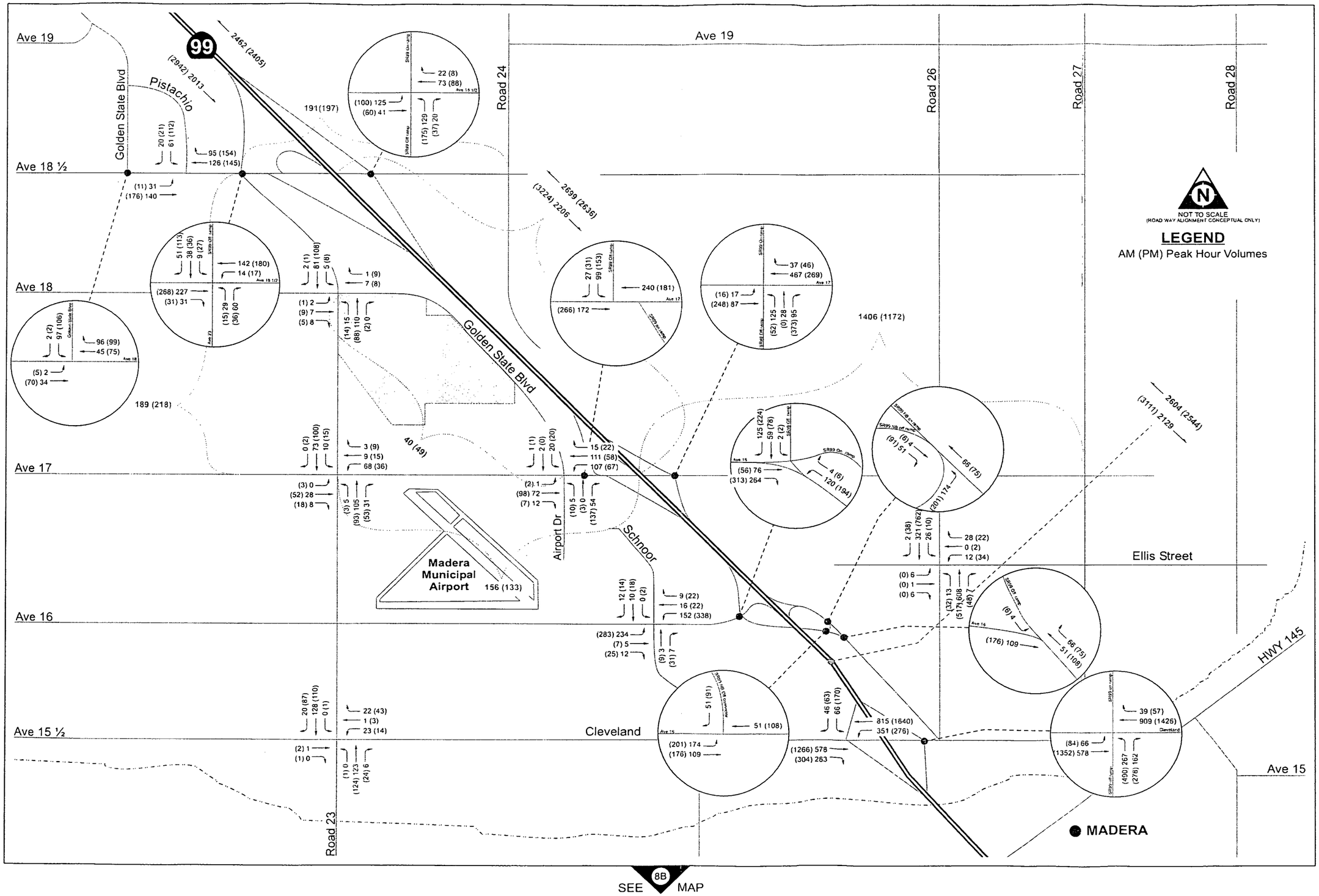

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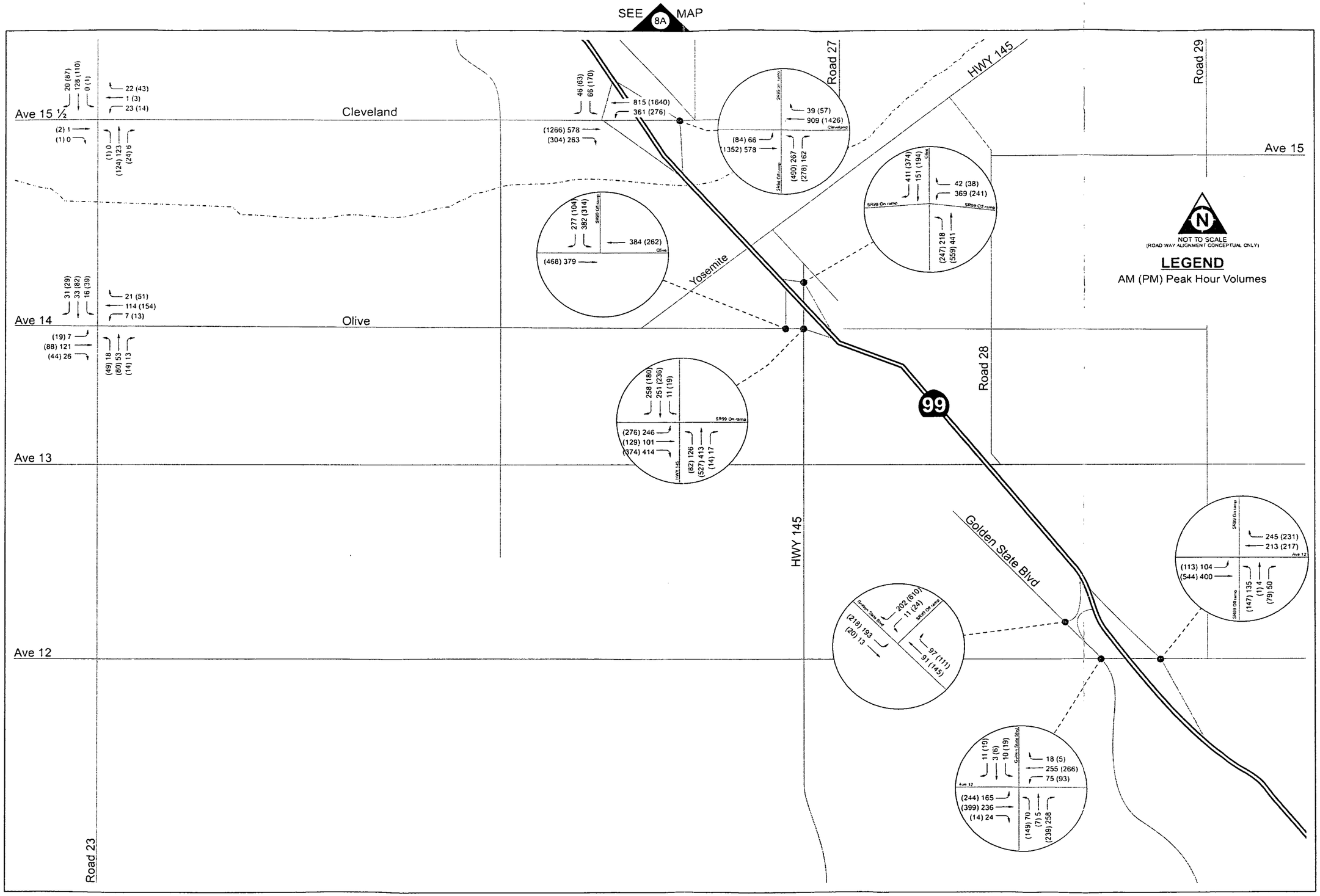
Figure 8

PEAK HOUR TRAFFIC VOLUMES
Existing
Madera Site
(Alternative E)

TPG Consulting



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Madera County

Figure 8

PEAK HOUR TRAFFIC VOLUMES
Existing
Madera Site

TPG Consulting

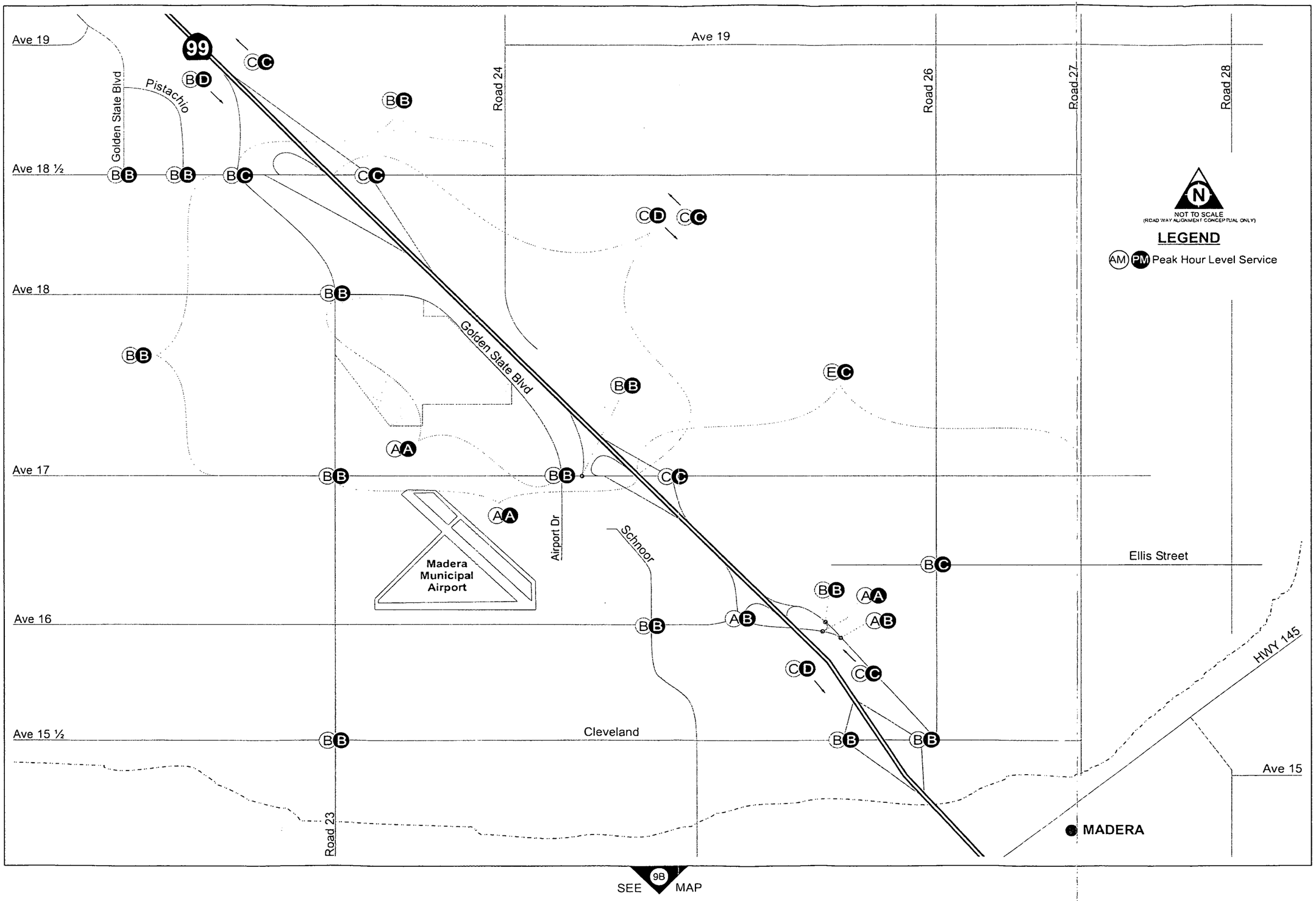

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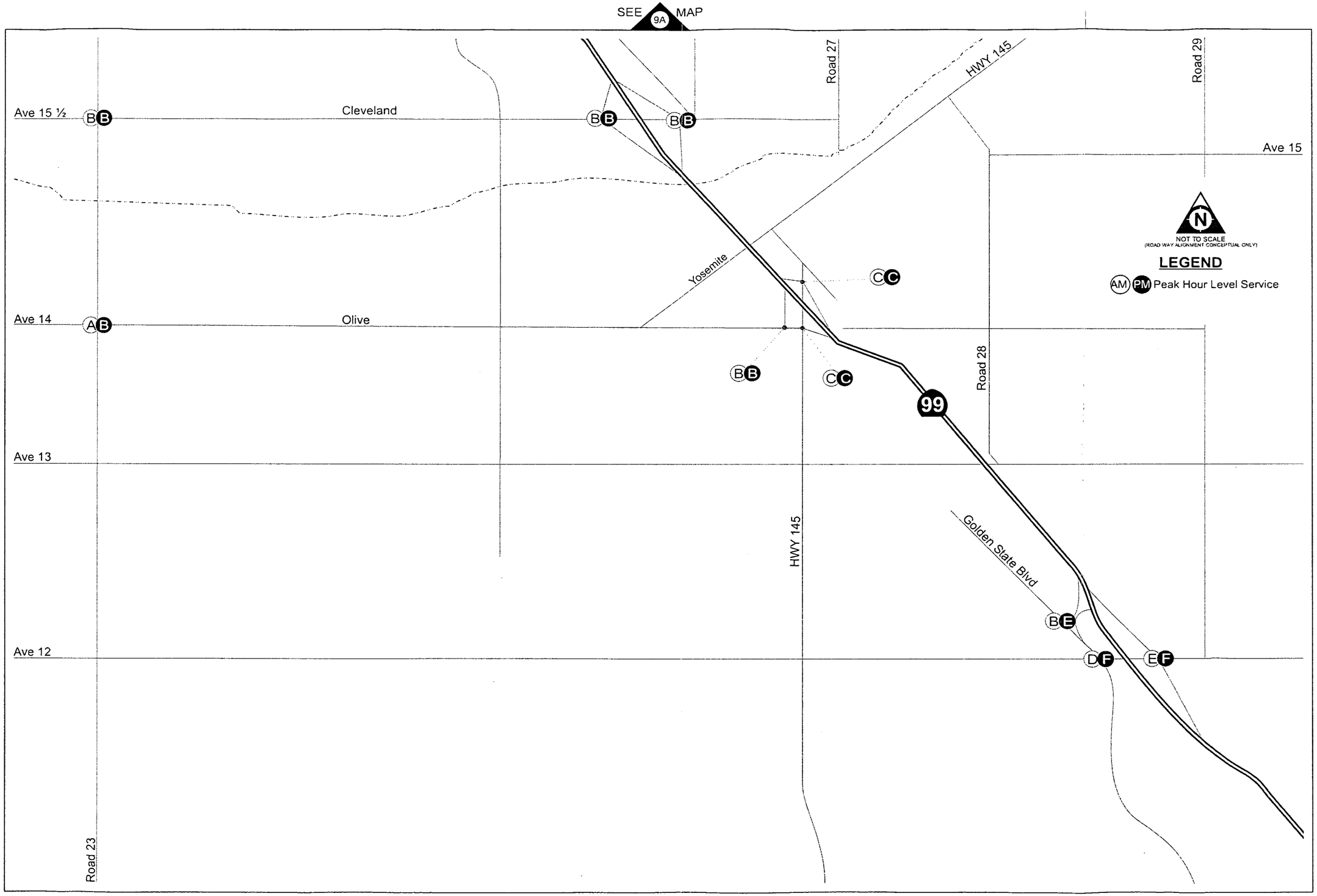
Figure 9

LEVELS OF SERVICE
Existing
Madera Site
(Alternative E)

TPG Consulting



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North Fork Casino
Madera County

Figure 9

LEVELS OF SERVICE
Existing
Madera Site
(Alternative E)

TPG Consulting

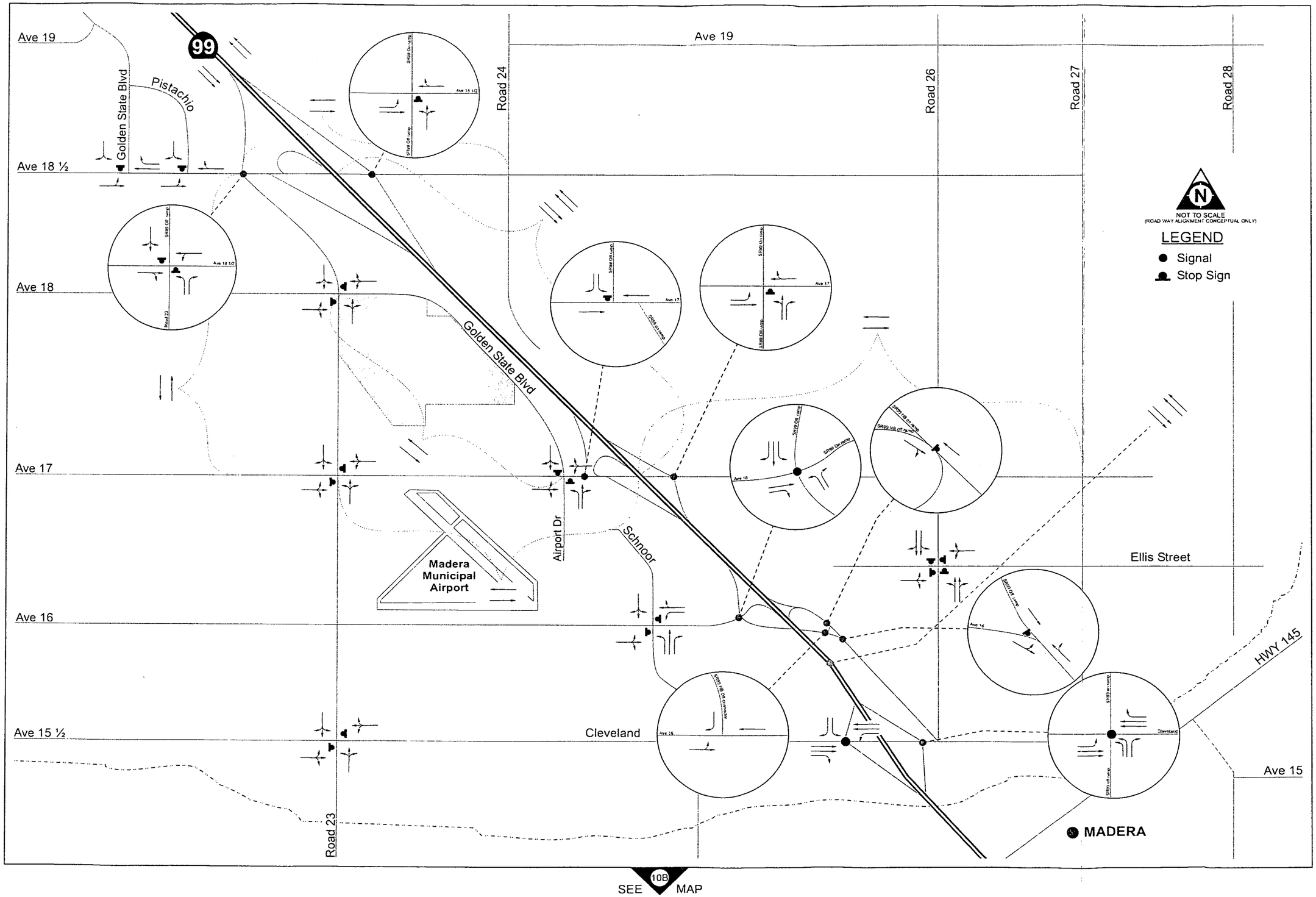

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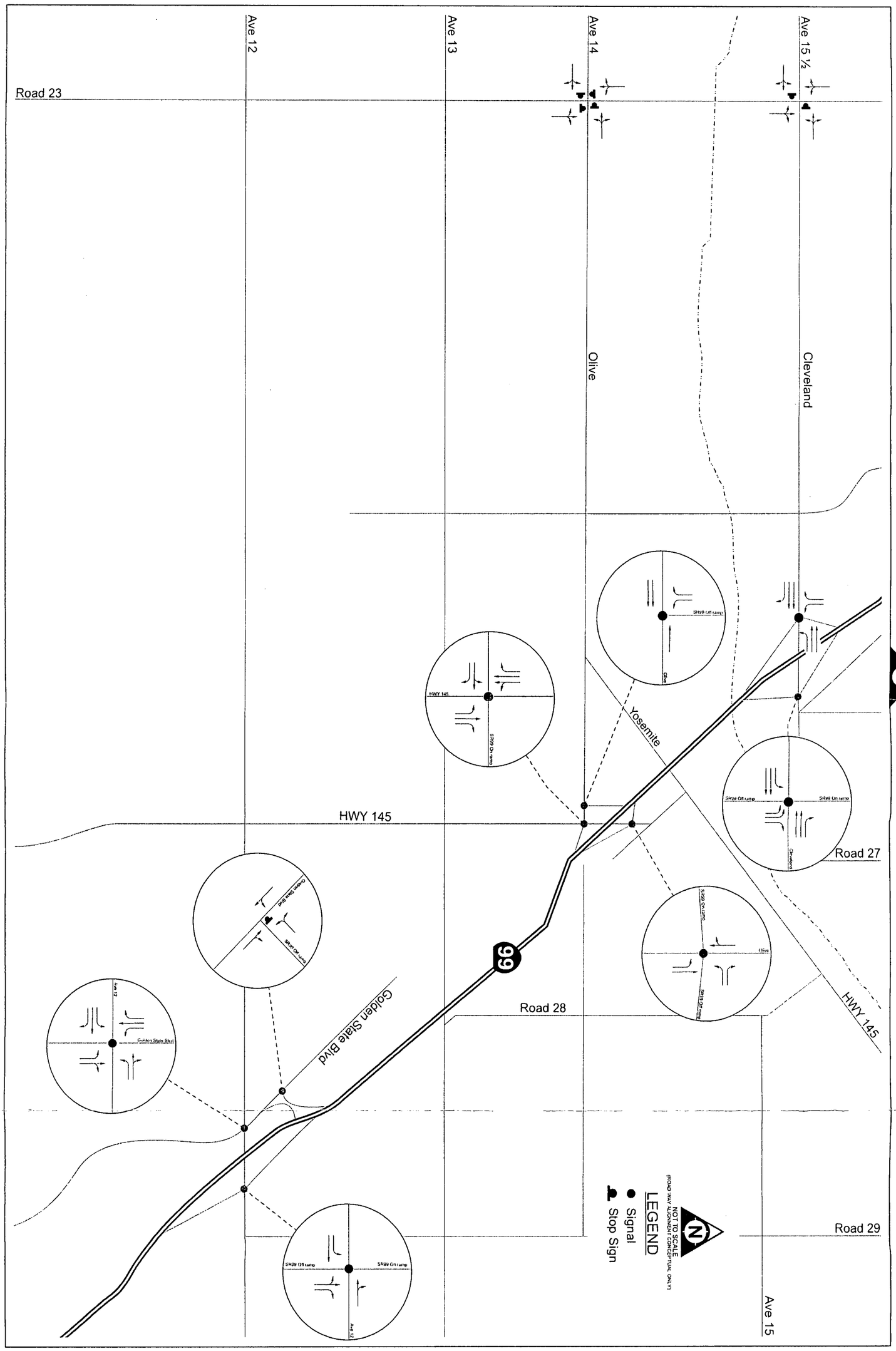
Figure 10

LANE CONFIGURATION AND INTERSECTION CONTROL
2008 No Project
Madera Site
(Alternative E)

TPG Consulting



TPG Consulting

LANE CONFIGURATION AND INTERSECTION CONTROL
2008 No Project
Madera Site
(Alternative E)

North Fork Casino
Madera County

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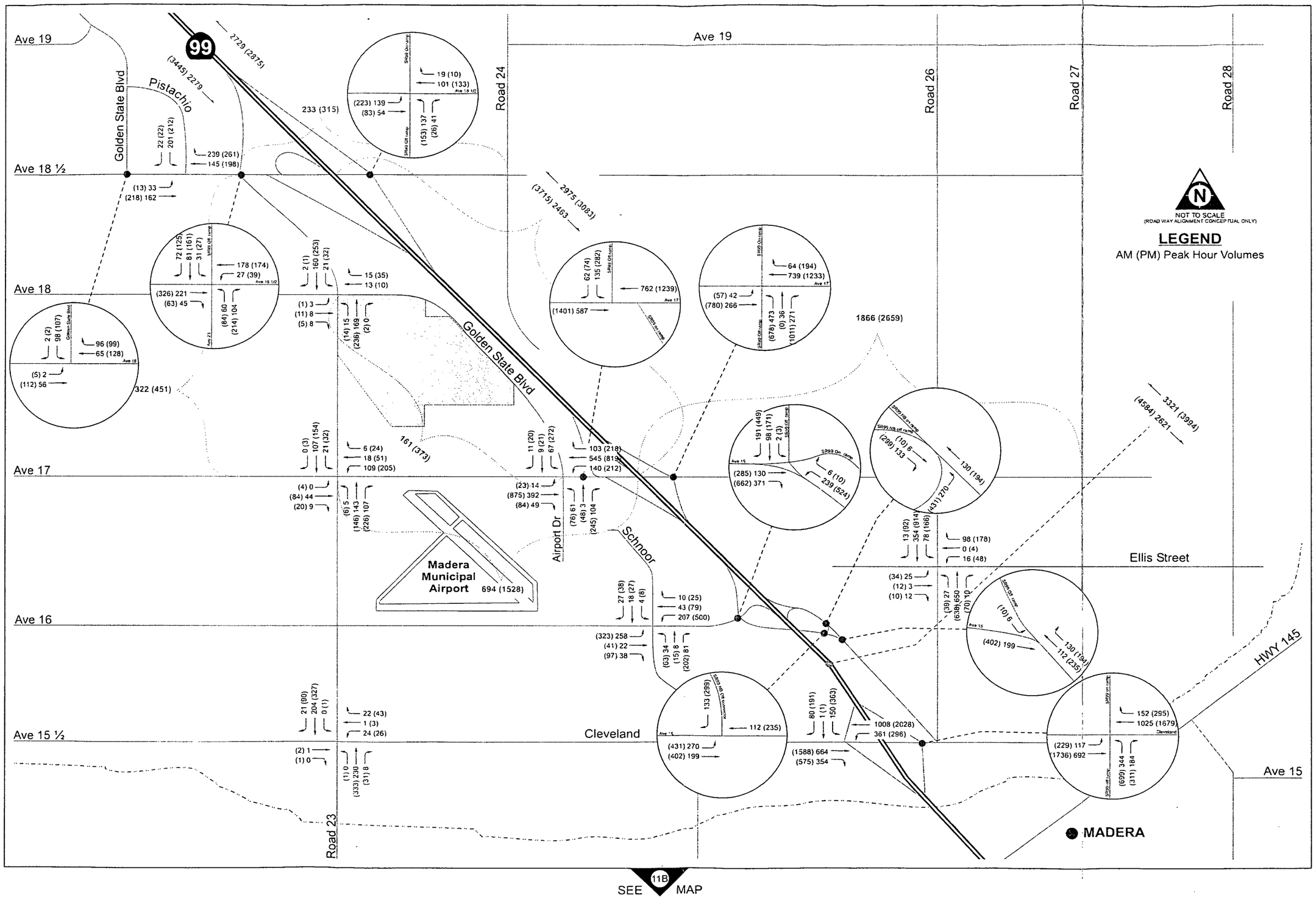
Figure 10



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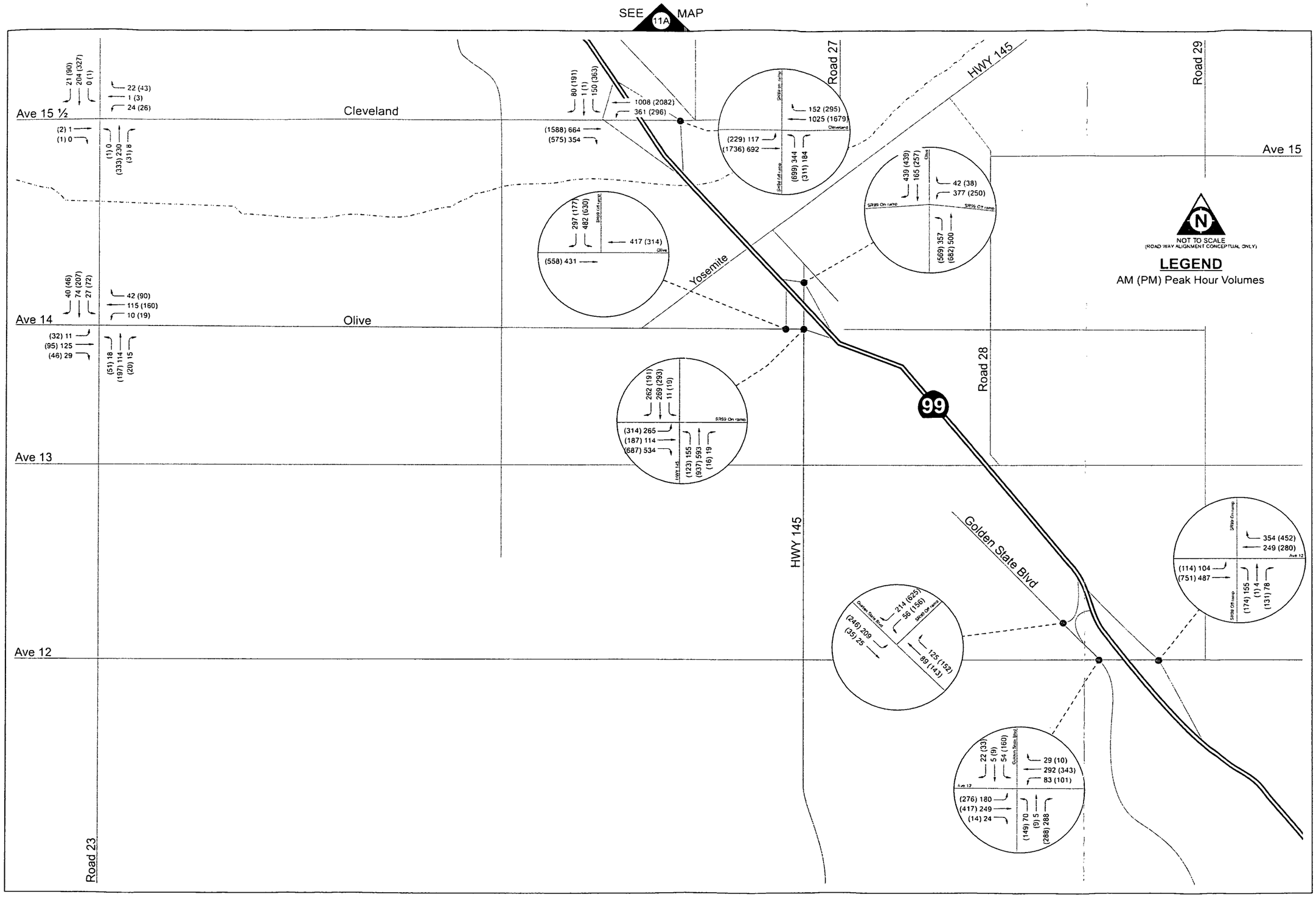
Madera County

Figure 11

PEAK HOUR TRAFFIC VOLUMES
2008 No Project
Madera Site
(Alternative E)

TPG Consulting



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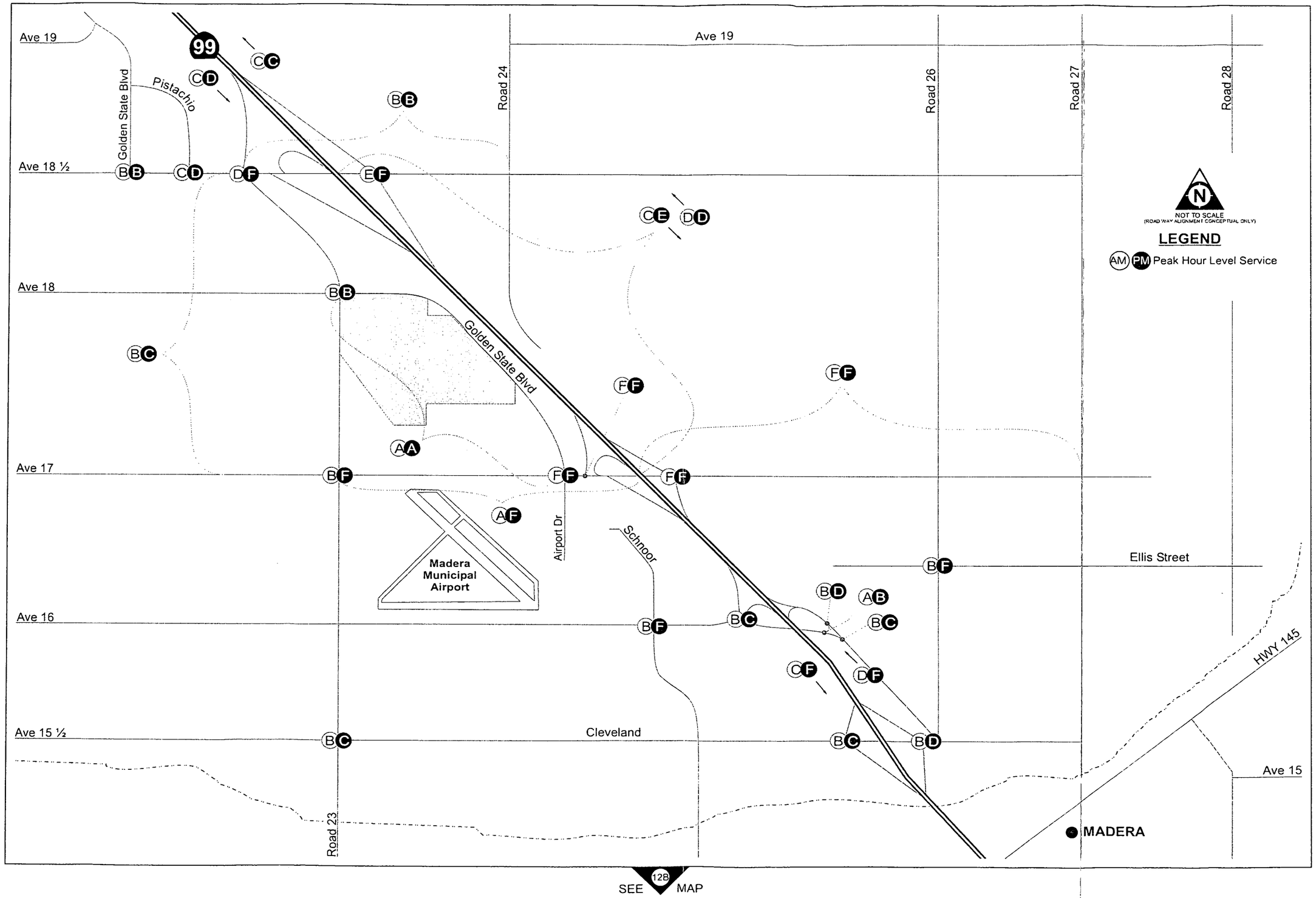
North Fork Casino
Madera County

Figure 11

PEAK HOUR TRAFFIC VOLUMES

2008 No Project
Madera Site
(Alternative E)

TPG CONSULTING



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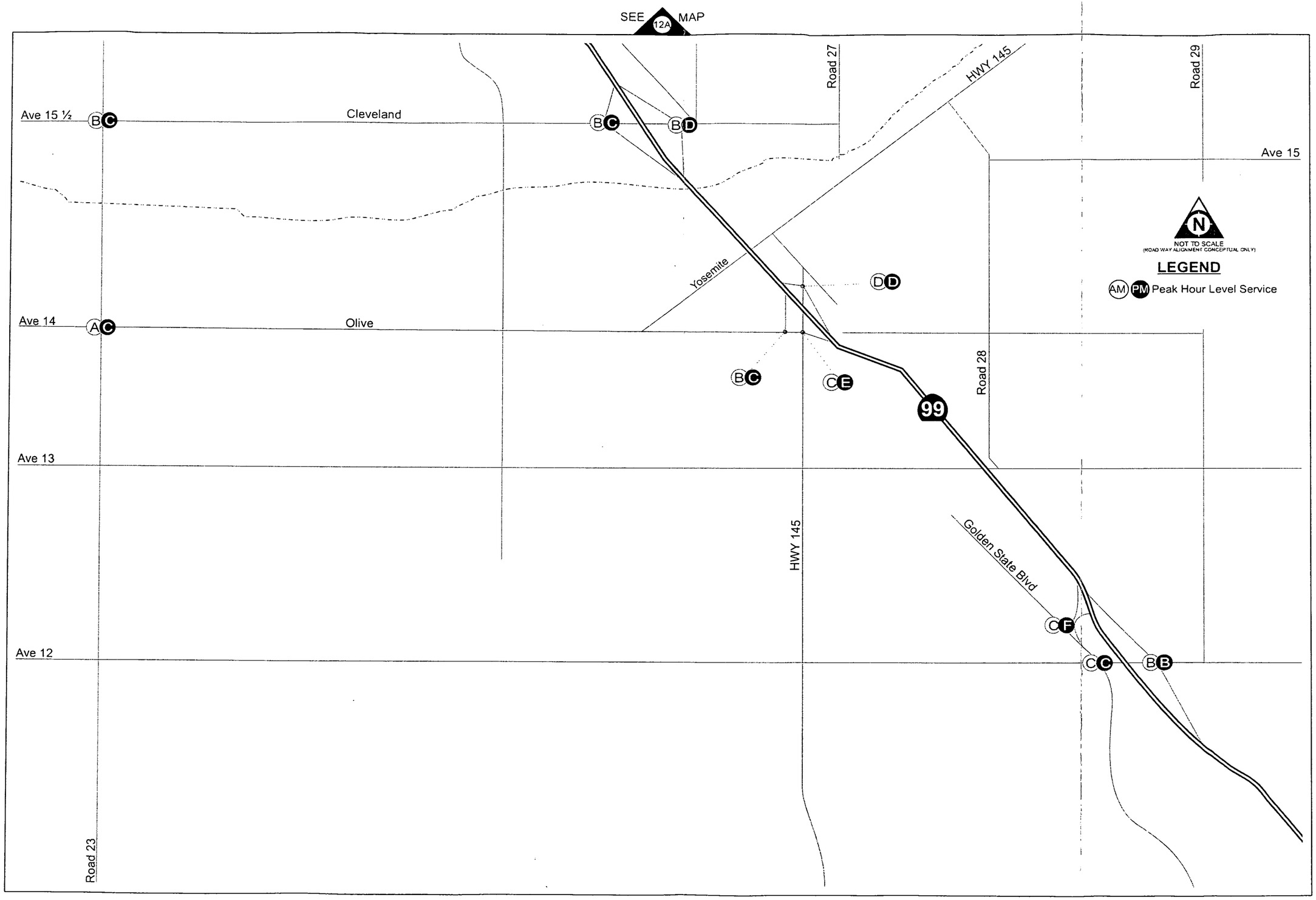
North Fork Casino
Madera County

Figure 12

LEVELS OF SERVICE
2008 No Project
Madera Site
(Alternative E)

TPG Consulting



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North Fork Casino
Madera County

Figure 12

LEVELS OF SERVICE
2008 No Project
Madera Site
(Alternative E)

TPG Consulting

Opening Day (2008) Project Conditions

Alternative A (Proposed Project Alternative)

Figures 13 and 14 show the Opening Day (2008) Project Alternative A AM and PM peak hour traffic volumes (segment, freeway, and intersection), and resulting Opening Day (2008) 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 (2008) Project Alternative B AM and PM peak hour traffic volumes (segment, freeway, and intersection), and resulting Opening Day (2008) 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.

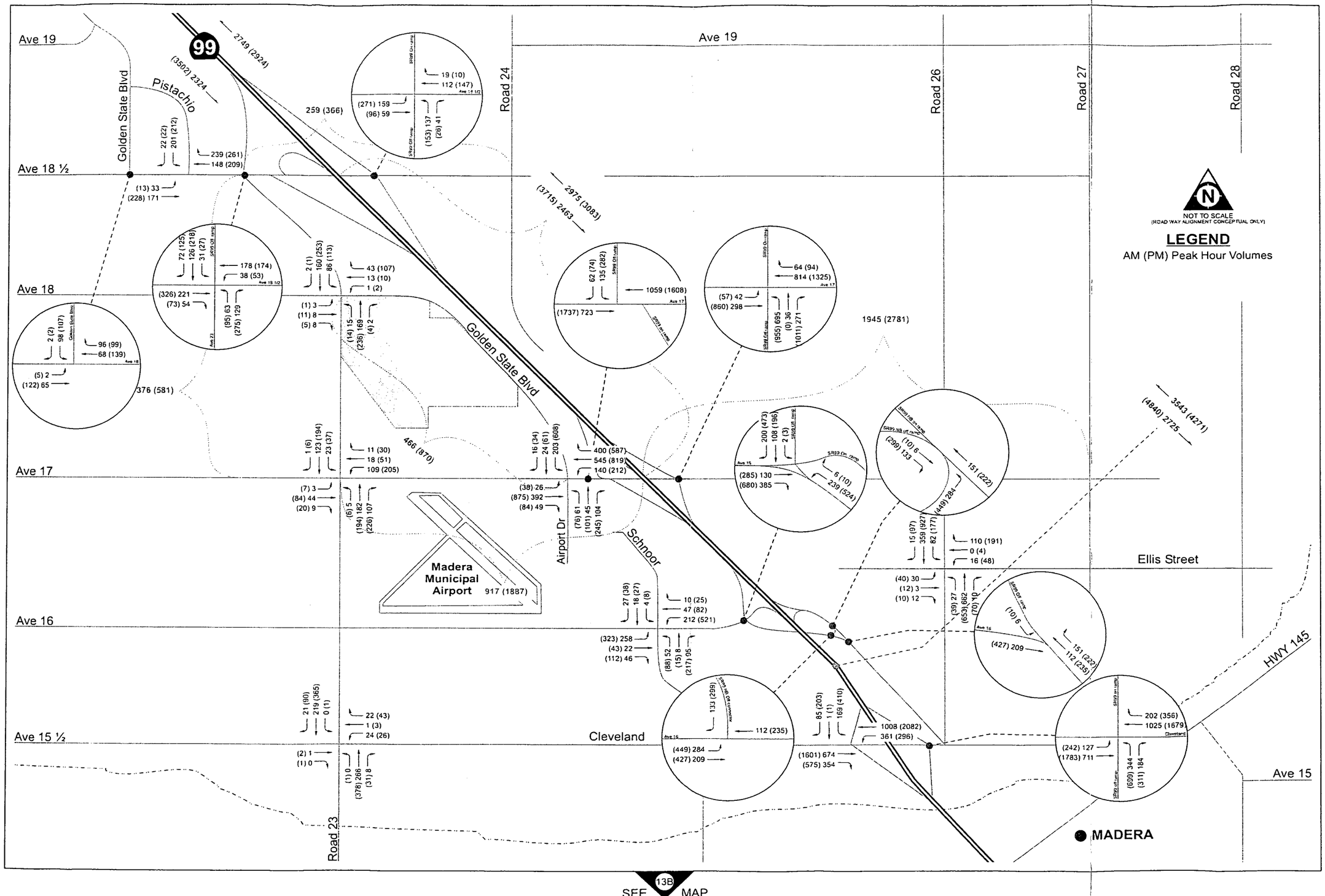
Alternative C (Alternative Land Use Alternative)

Figures 17 and 18 show the Opening Day (2008) Project Alternative C AM and PM peak hour traffic volumes (segment, freeway, and intersection), and resulting Opening Day (2008) 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 (2008) Project Conditions

Alternative A (Proposed Project Alternative)

Figures 19 and 20 show the Mitigated Opening Day (2008) Project Alternative A lane configurations and intersection control, and resulting Mitigated Opening Day (2008) 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.



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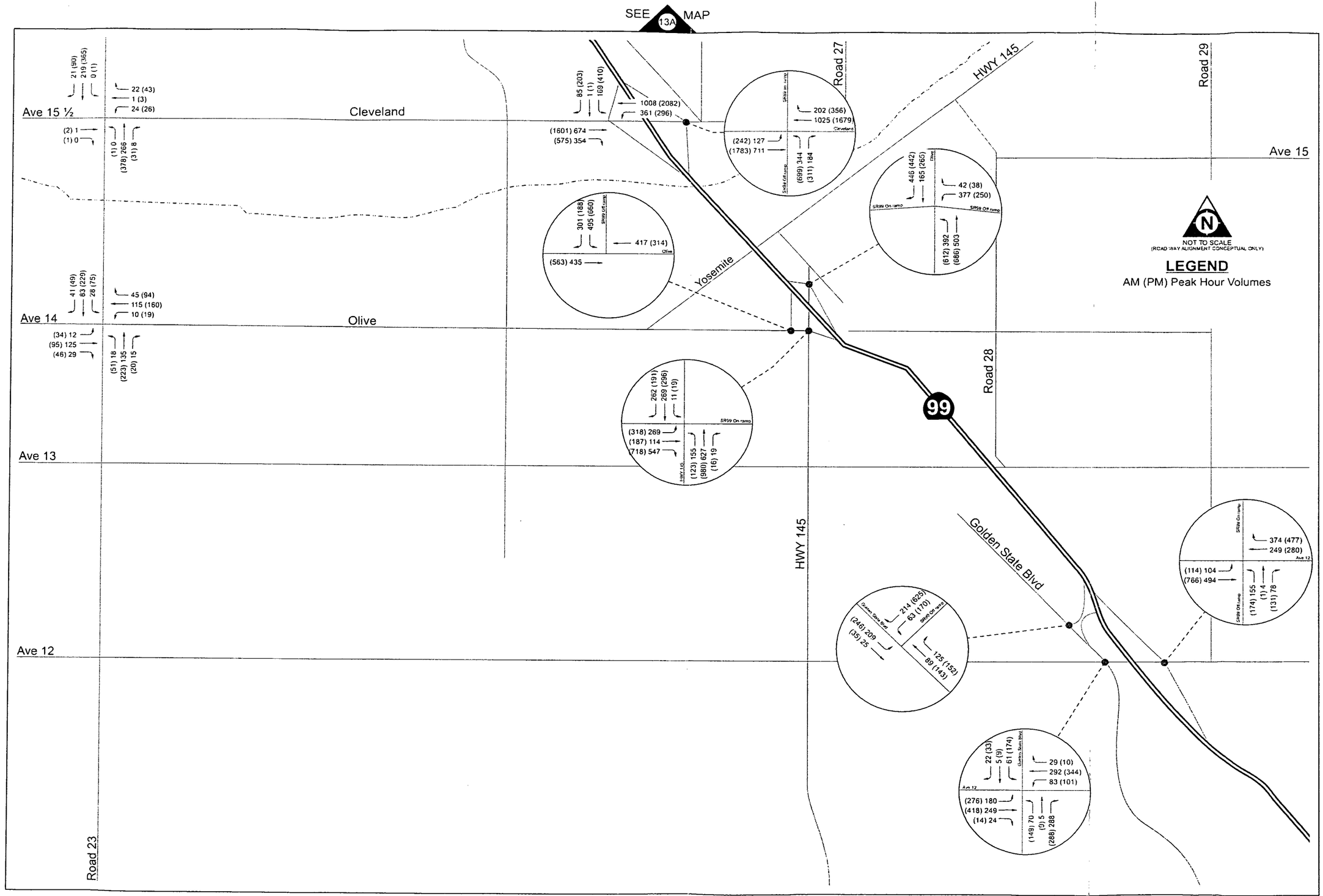
North Fork Casino
Madera County

Figure 13

PEAK HOUR TRAFFIC VOLUMES
2008 Project
Madera Site
(Alternative A)

TPG Consulting



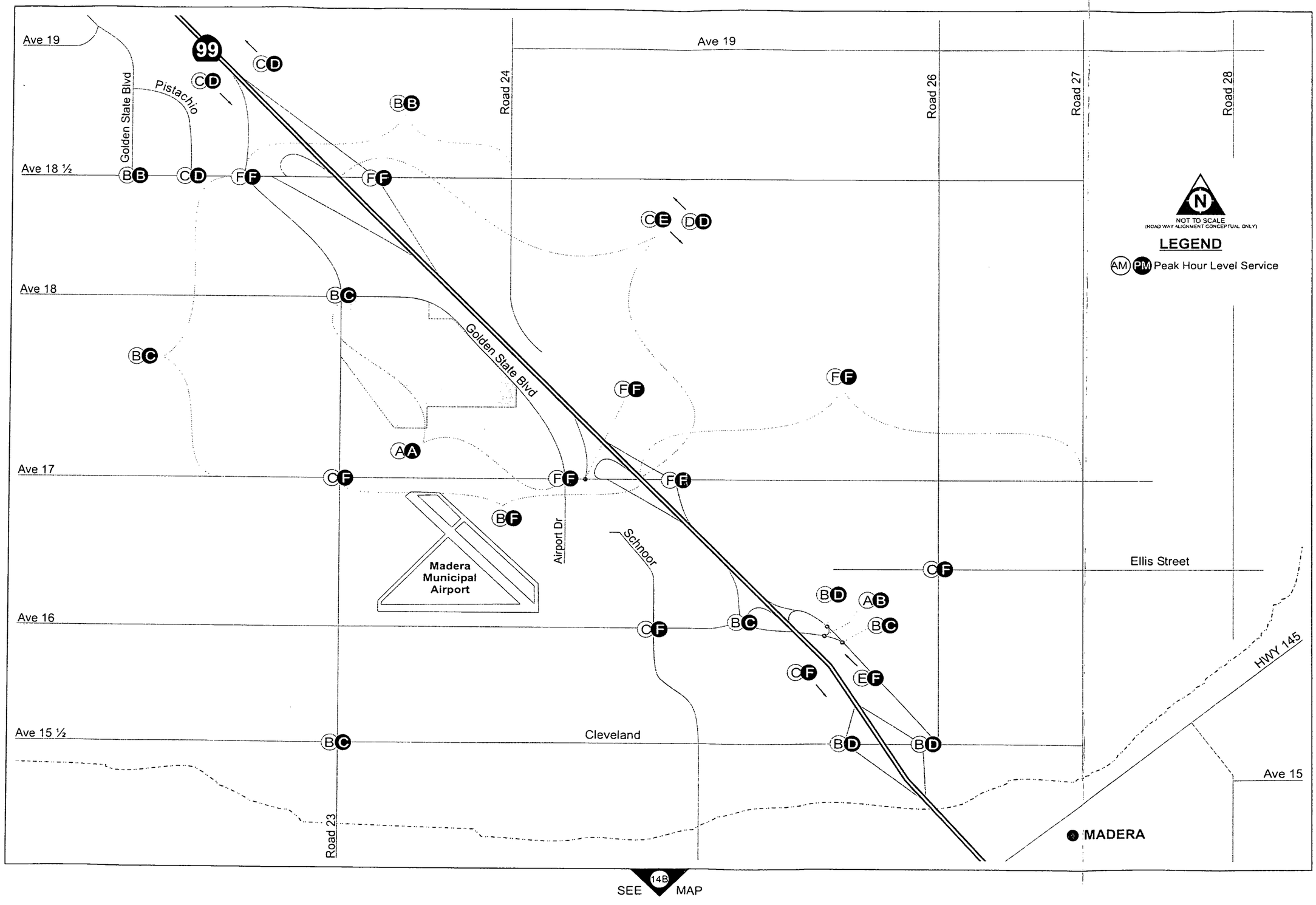
04-837.1

North Fork Casino
Madera County

Figure 13

PEAK HOUR TRAFFIC VOLUMES
2008 Project
Madera Site
(Alternative A)

TPG Consulting



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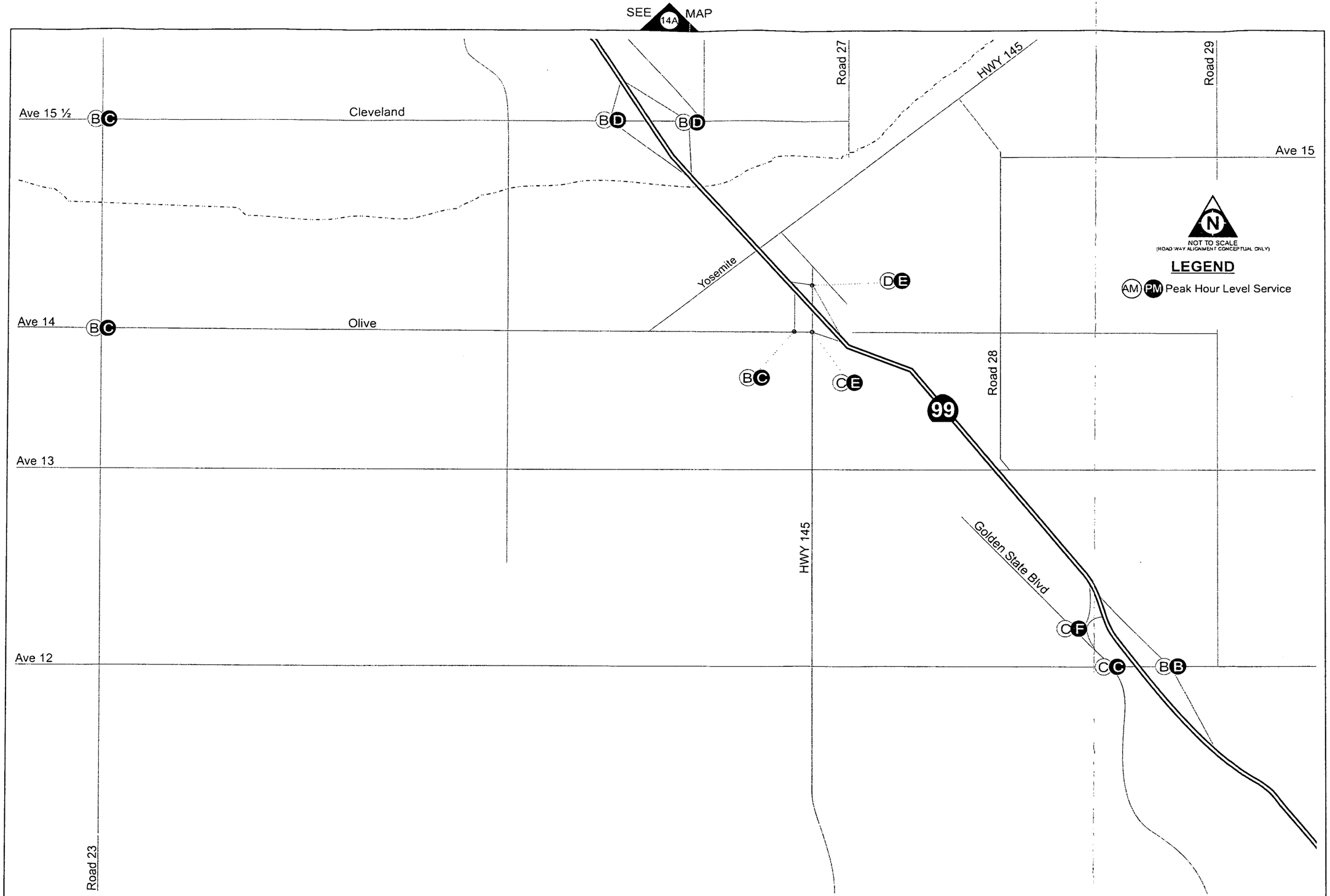
North Fork Casino
Madera County

Figure 14

LEVELS OF SERVICE
2008 Project
Madera Site
(Alternative A)

TPG Consulting



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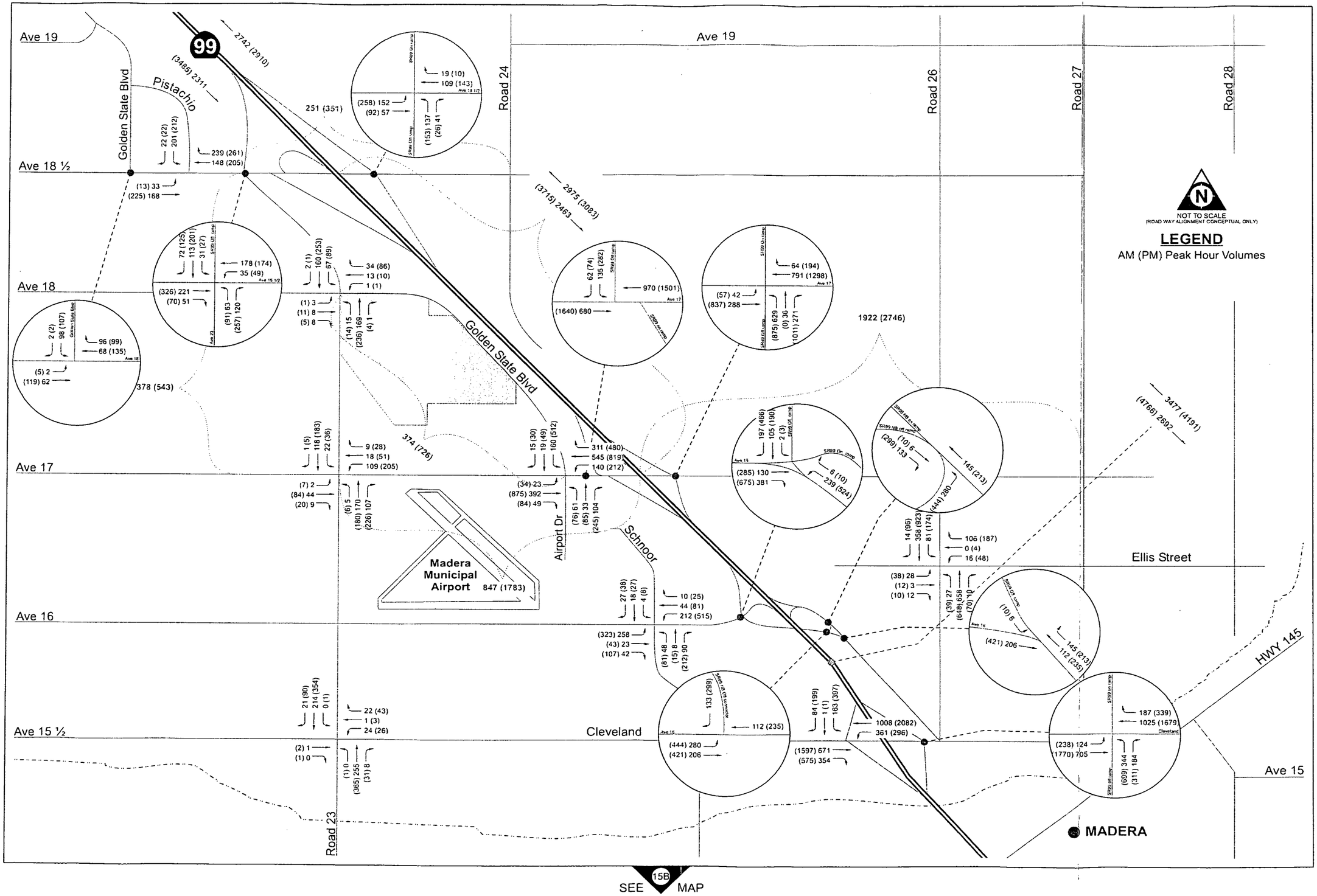
North Fork Casino
Madera County

Figure 14

LEVELS OF SERVICE
2008 Project
Madera Site
(Alternative A)

TPG Consulting



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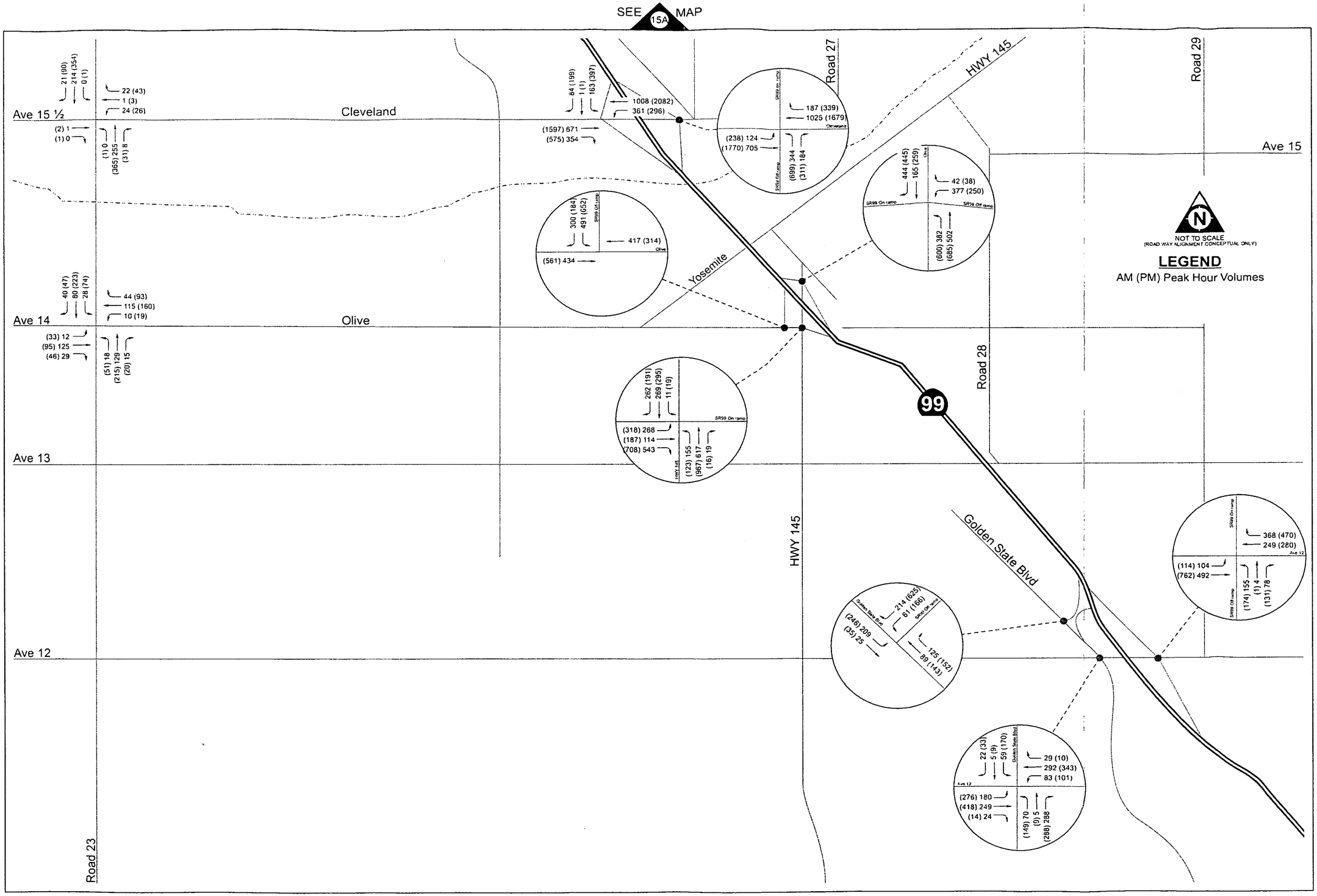
North Fork Casino
Madera County

Figure 15

PEAK HOUR TRAFFIC VOLUMES
2008 Project
Madera Site
(Alternative B)

TPG Consulting



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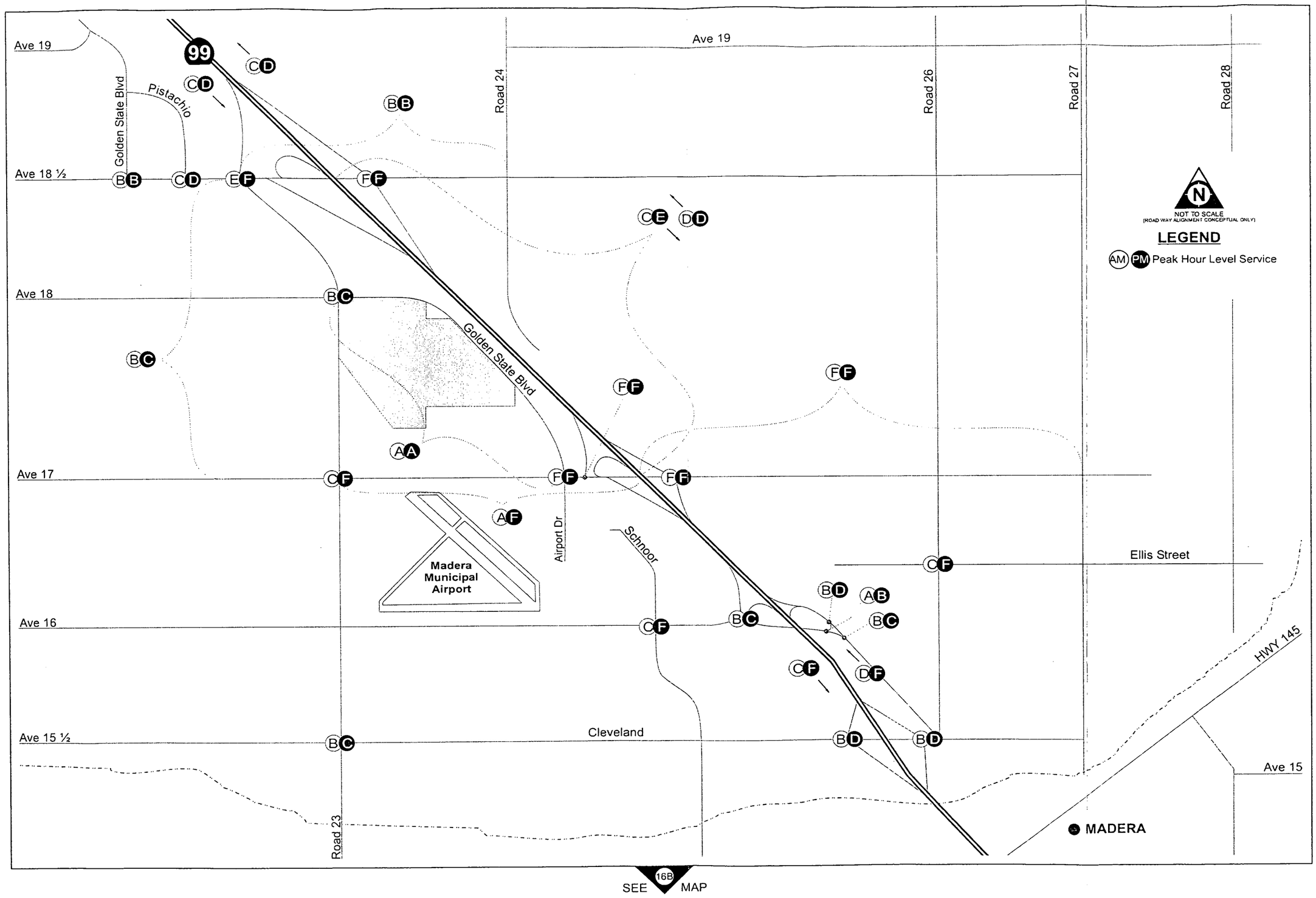
North Fork Casino
Madera County

Figure 15

PEAK HOUR TRAFFIC VOLUMES
2008 Project
Madera Site
(Alternative B)

TPG Consulting



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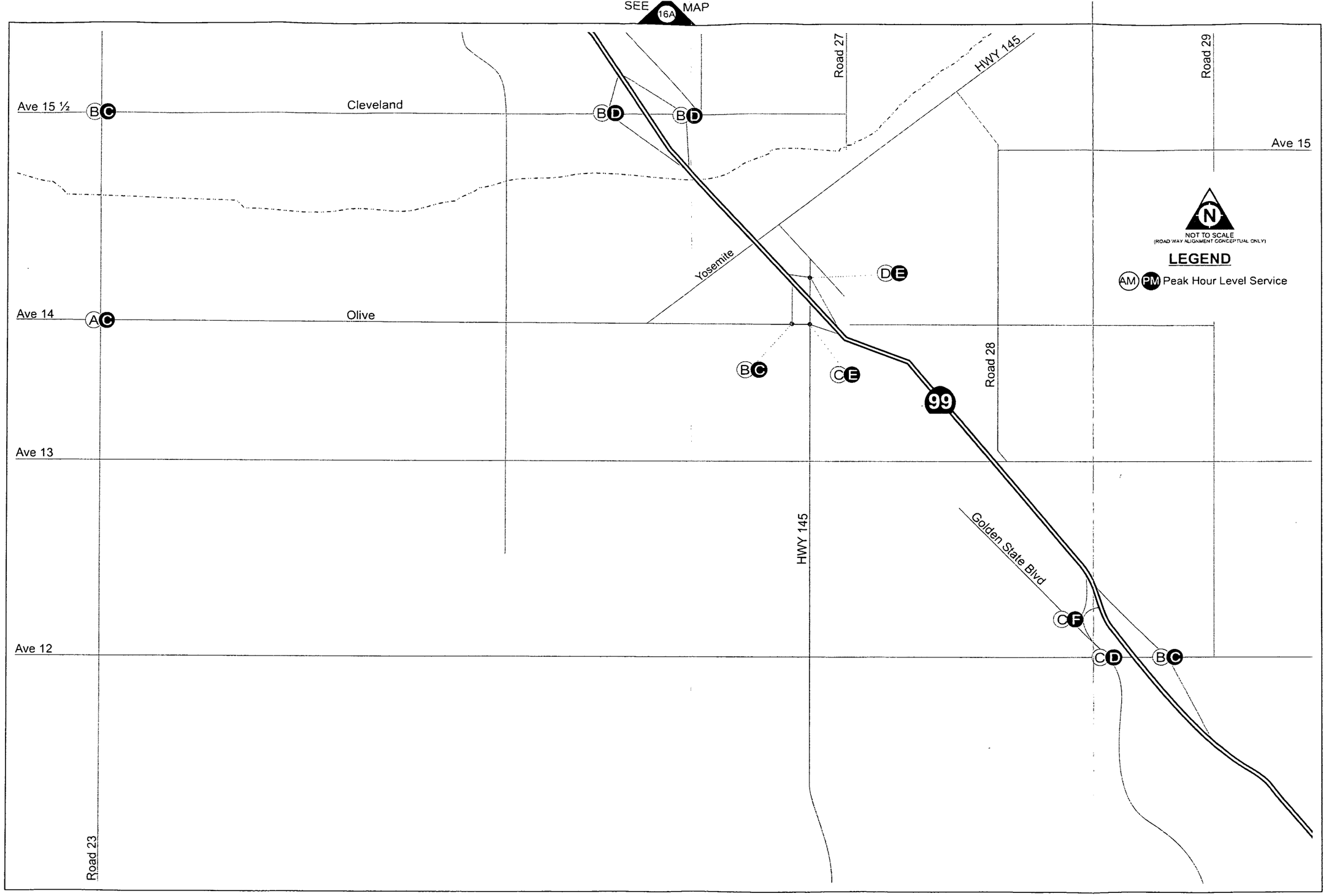
North Fork Casino
Madera County

Figure 16

LEVELS OF SERVICE
2008 Project
Madera Site
(Alternative B)

TPG Consulting



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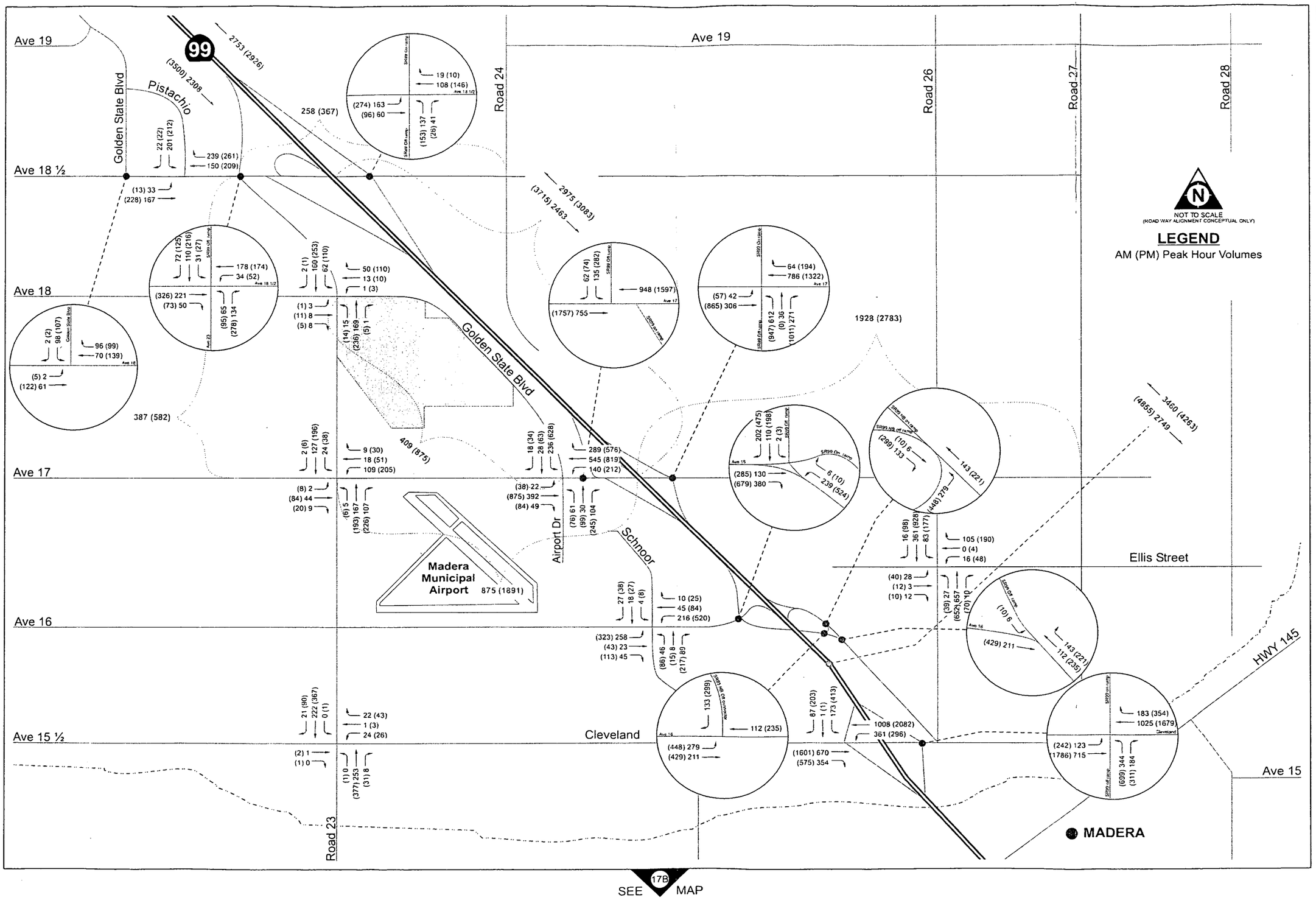
North Fork Casino
Madera County

Figure 16

LEVELS OF SERVICE
2008 Project
Madera Site
(Alternative B)

TPG CONSULTING



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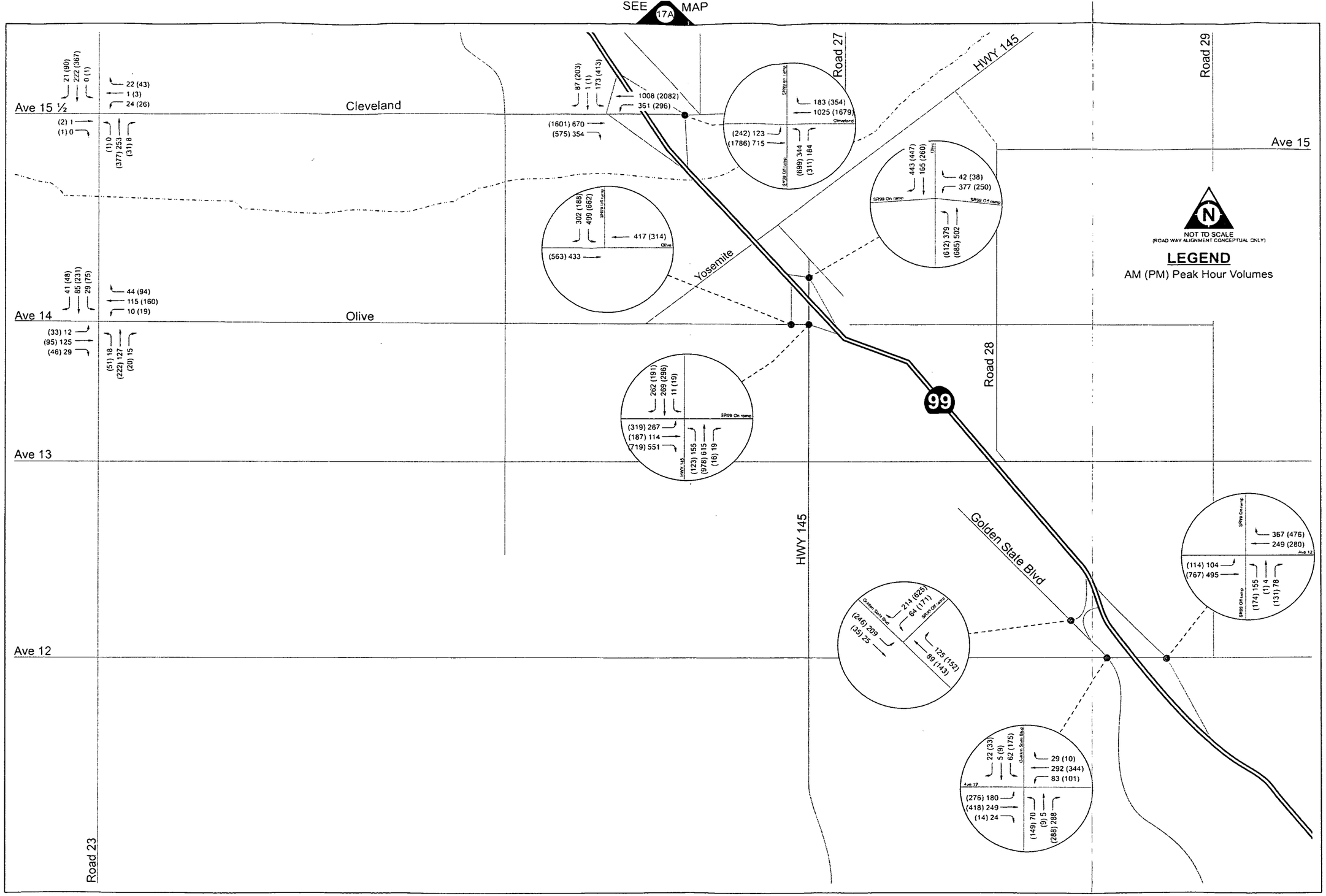
North Fork Casino
Madera County

Figure 17

PEAK HOUR TRAFFIC VOLUMES
2008 Project
Madera Site
(Alternative C)

TPG Consulting



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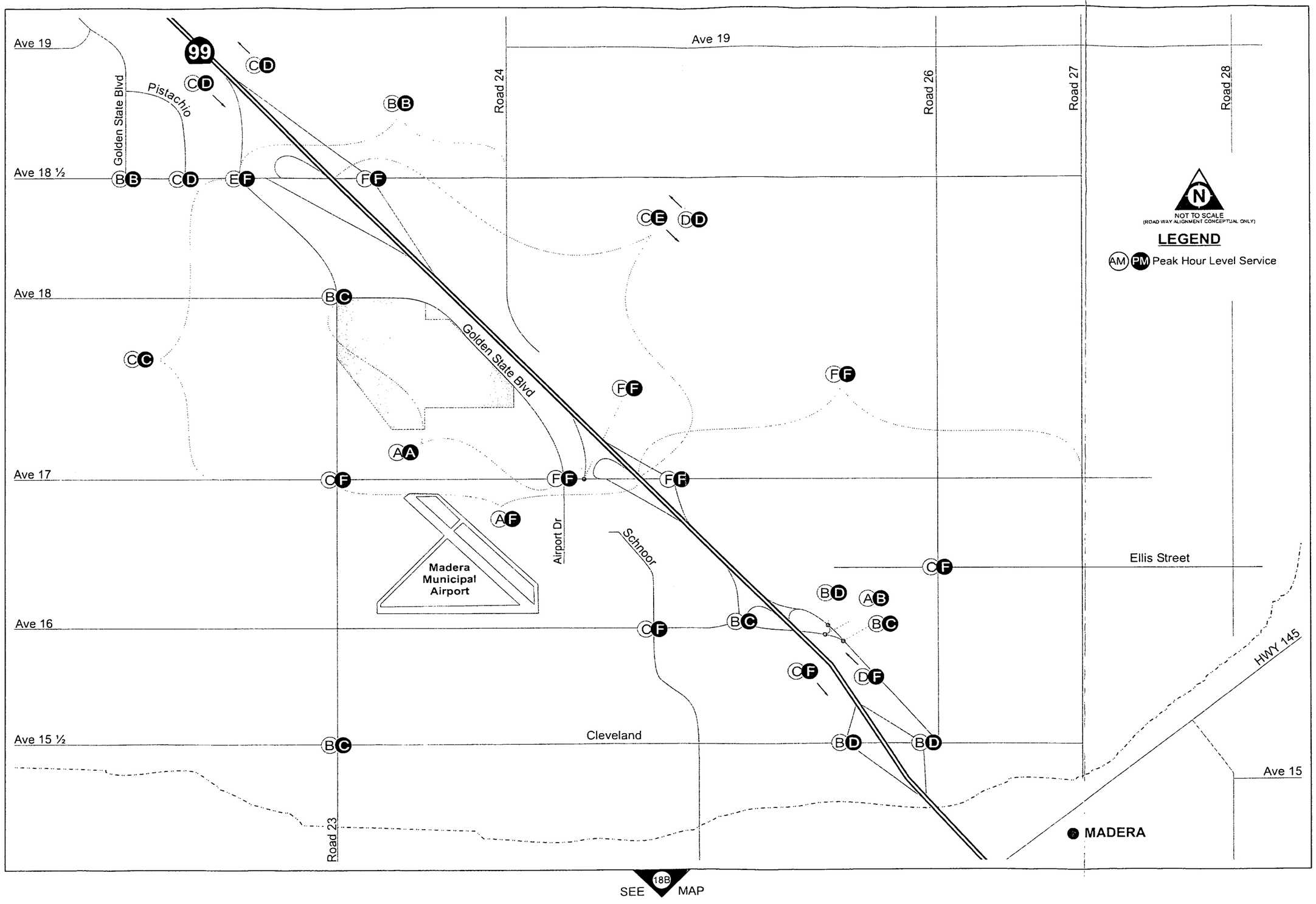
North Fork Casino
Madera County

Figure 17

PEAK HOUR TRAFFIC VOLUMES
2008 Project
Madera Site
(Alternative C)

TPG CONSULTING



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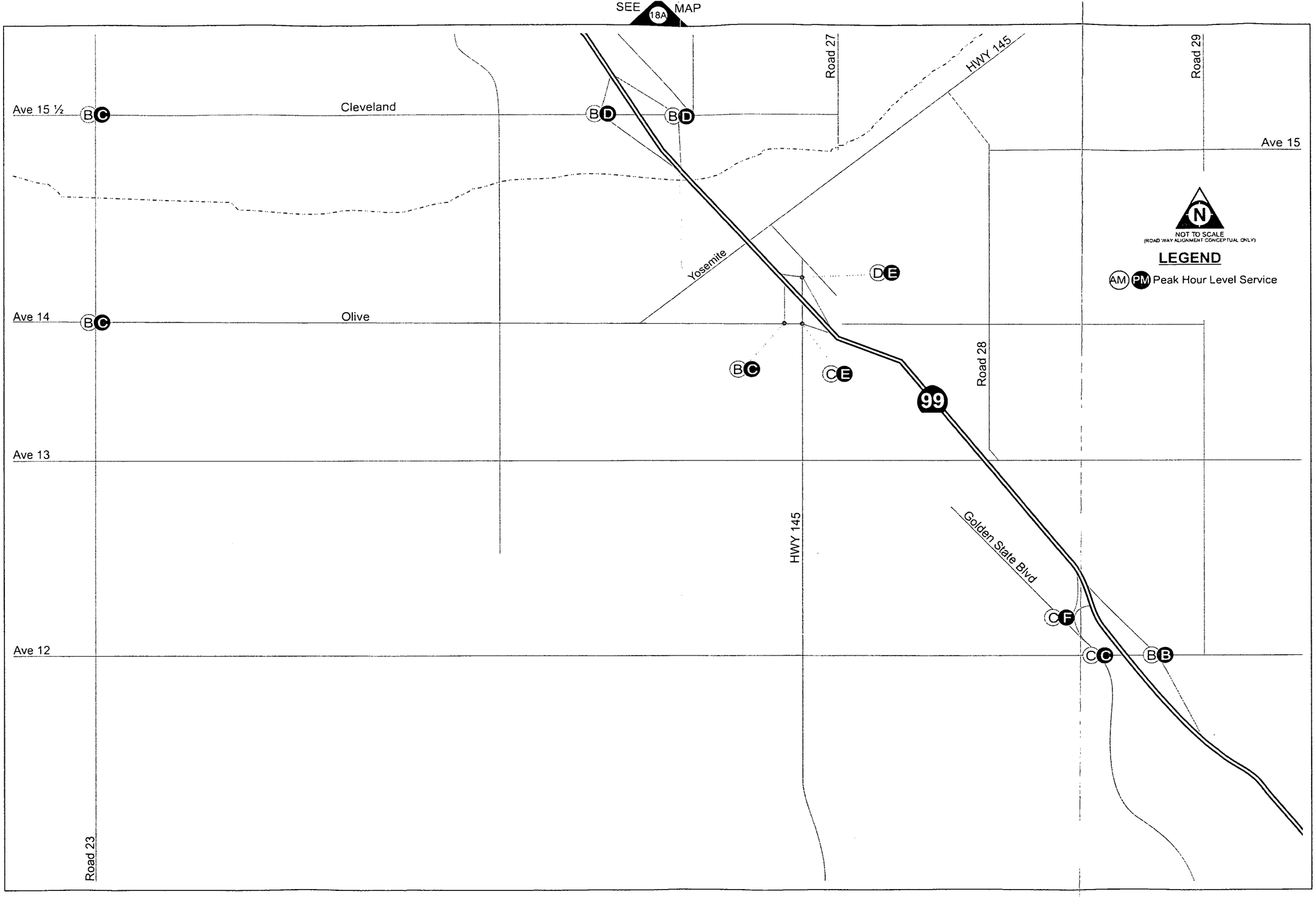
North Fork Casino
Madera County

Figure 18

LEVELS OF SERVICE
2008 Project
Madera Site
(Alternative C)

TPG Consulting



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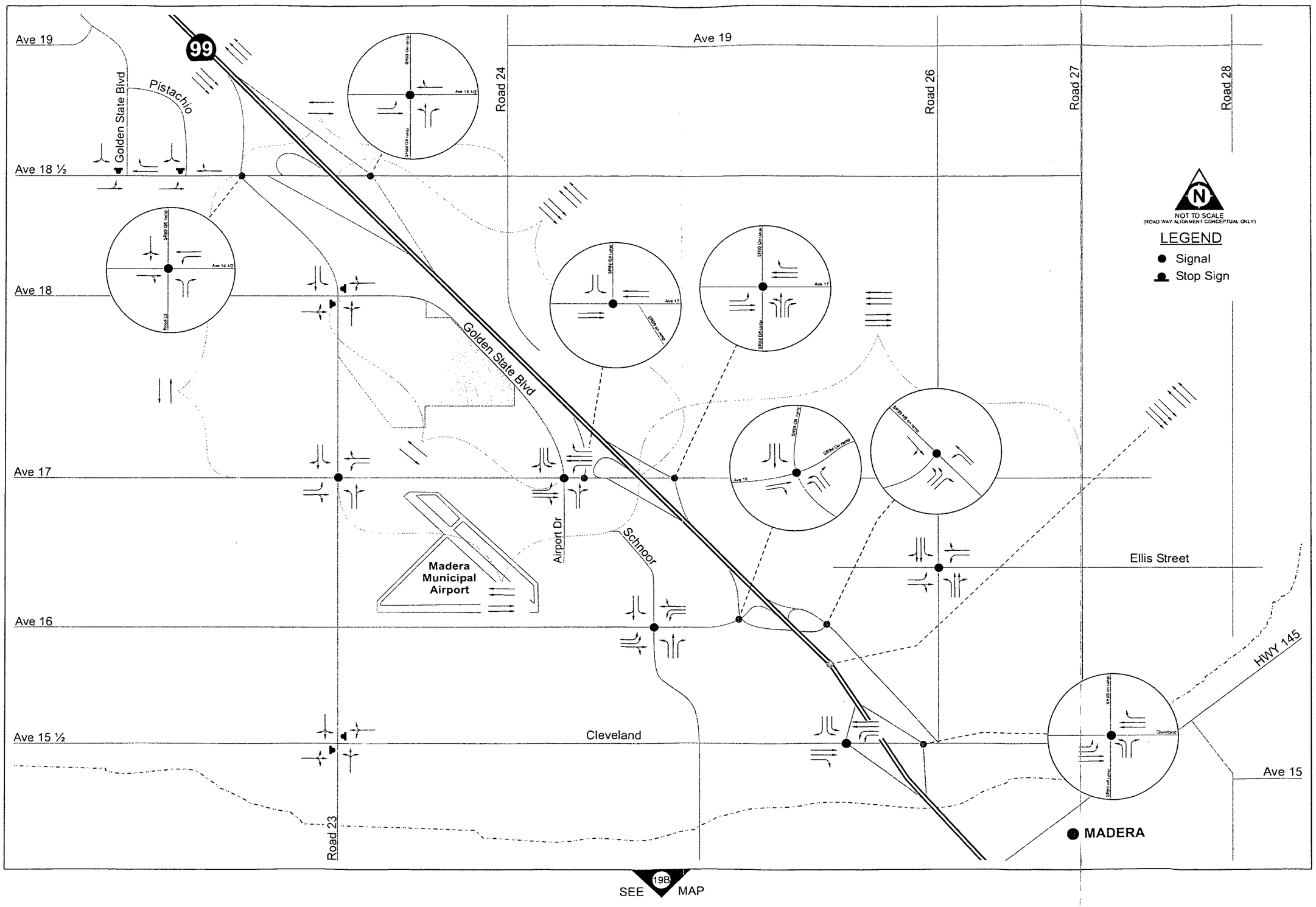
North Fork Casino
Madera County

Figure 18

LEVELS OF SERVICE
2008 Project
Madera Site
(Alternative C)

TPG Consulting



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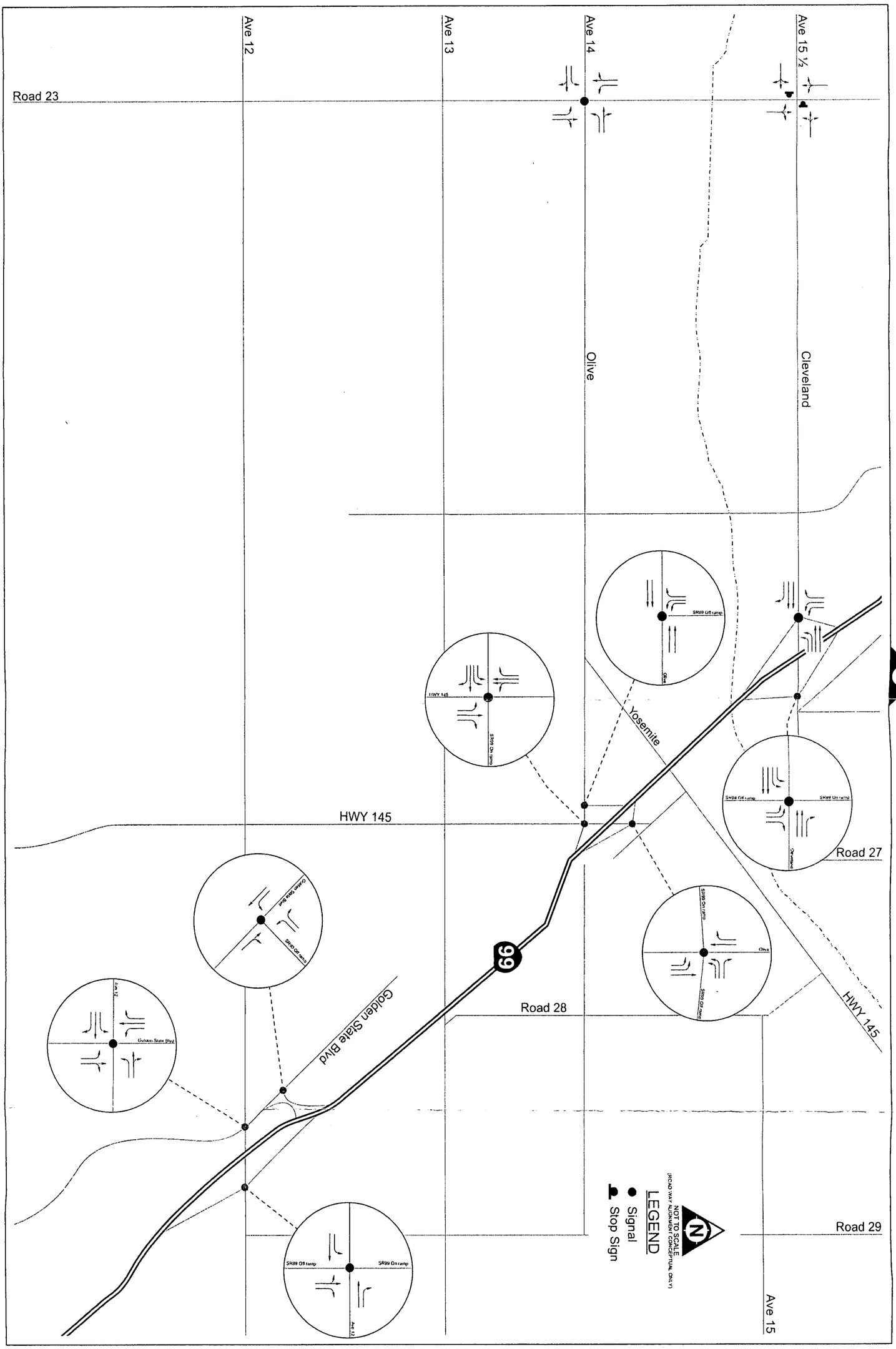
North Fork Casino
Madera County

Figure 19

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

TPG Consulting



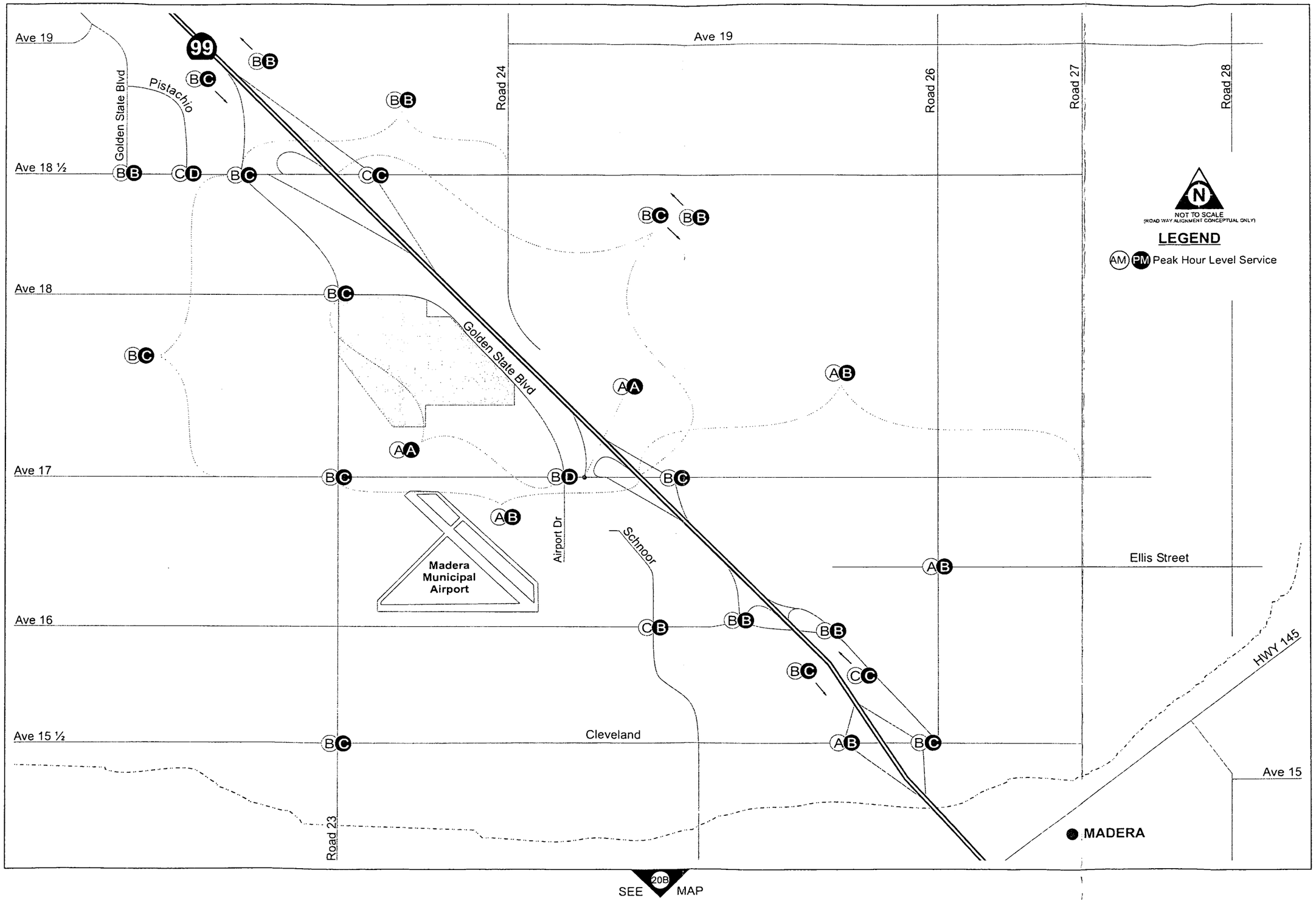
TPG Consulting

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

North Fork Casino
Madera County

04-837.1

Figure 19



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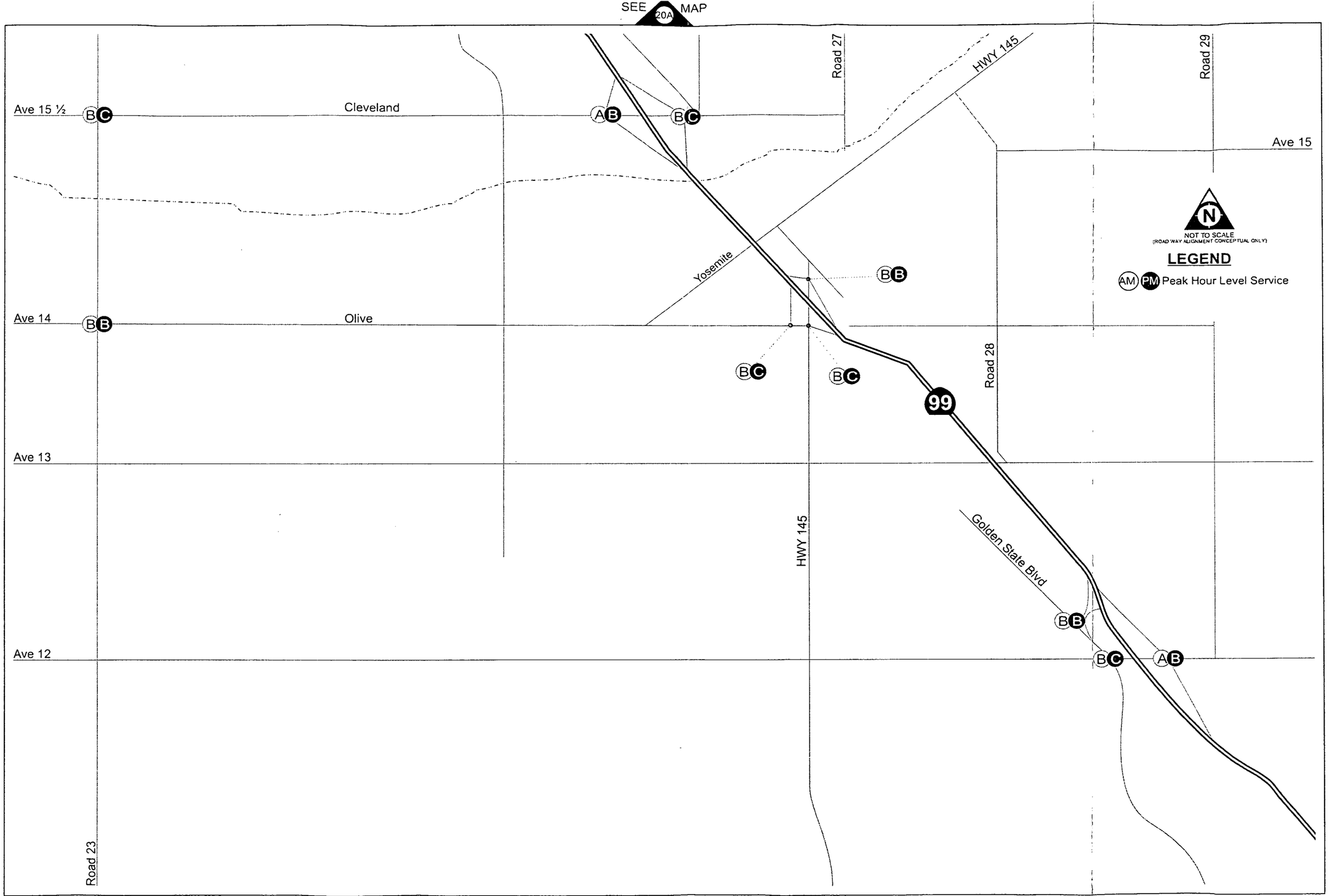
North Fork Casino
Madera County

Figure 20

LEVELS OF SERVICE
Mitigated 2008 Project
Madera Site
(Alternative A)

TPG Consulting



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North Fork Casino
Madera County

Figure 20

LEVELS OF SERVICE
Mitigated 2008 Project
Madera Site
(Alternative A)

TPG Consulting Engineers

Alternative B (Reduced Intensity Alternative)

Figures 21 and 22 show the Mitigated Opening Day (2008) Project Alternative B lane configurations and intersection control, and resulting Mitigated Opening Day (2008) 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 (Alternative Land Use Alternative)

Figures 23 and 24 show the Mitigated Opening Day (2008) Project Alternative C lane configurations and intersection control, and resulting Mitigated Opening Day (2008) 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

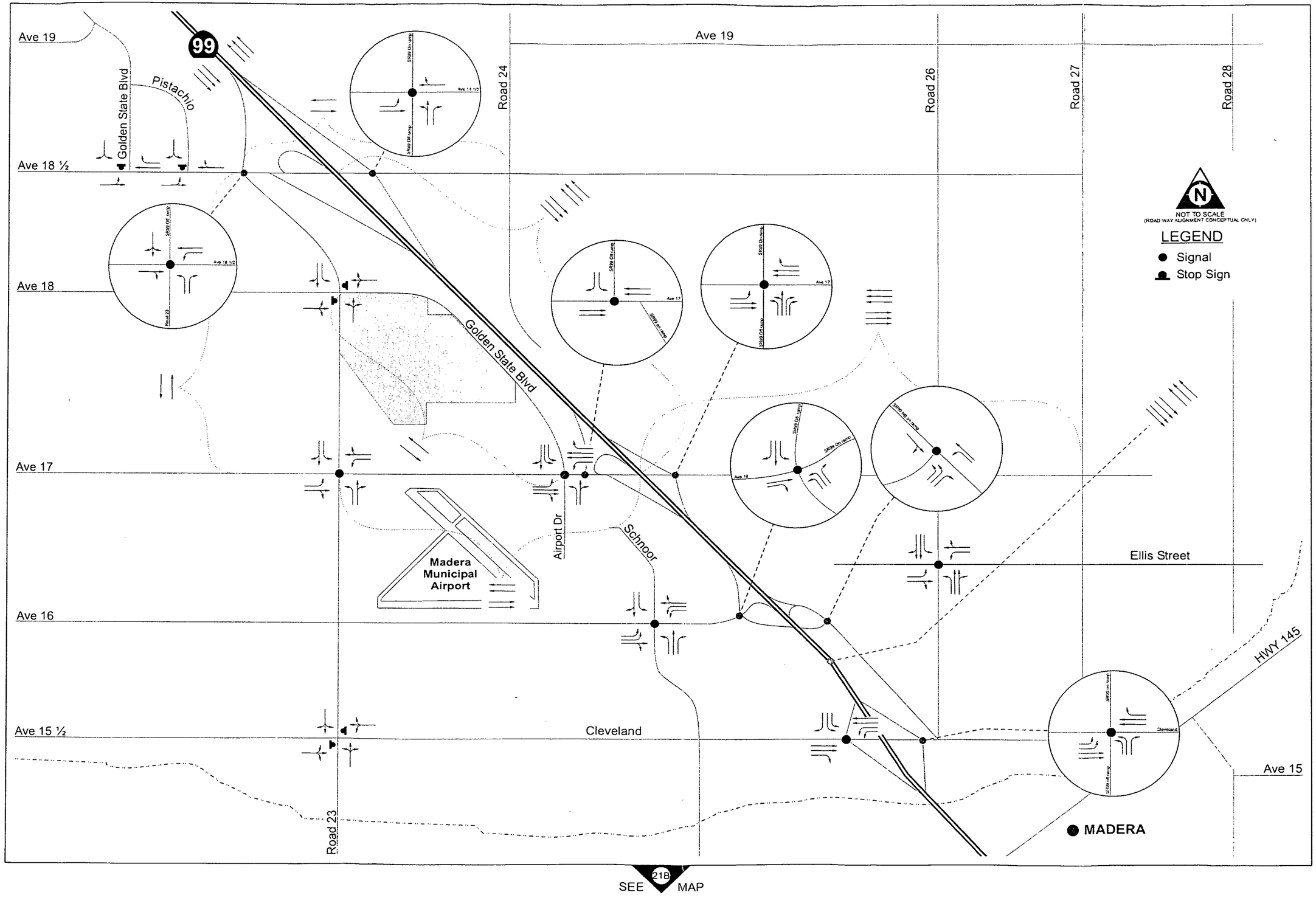
Alternative E (No Project Alternative)

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.



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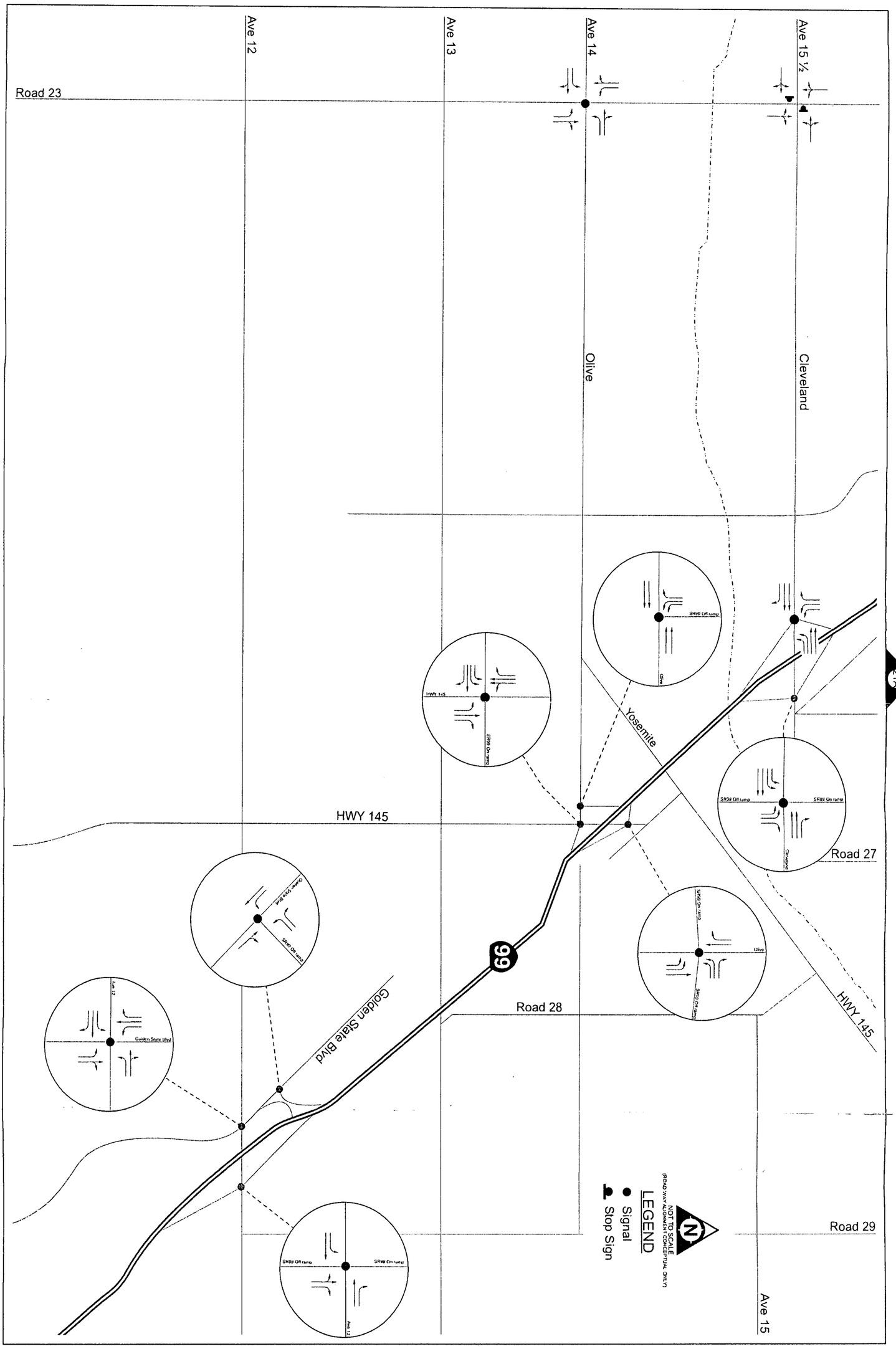
North Fork Casino
Madera County

Figure 21

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

TPG CONSULTING



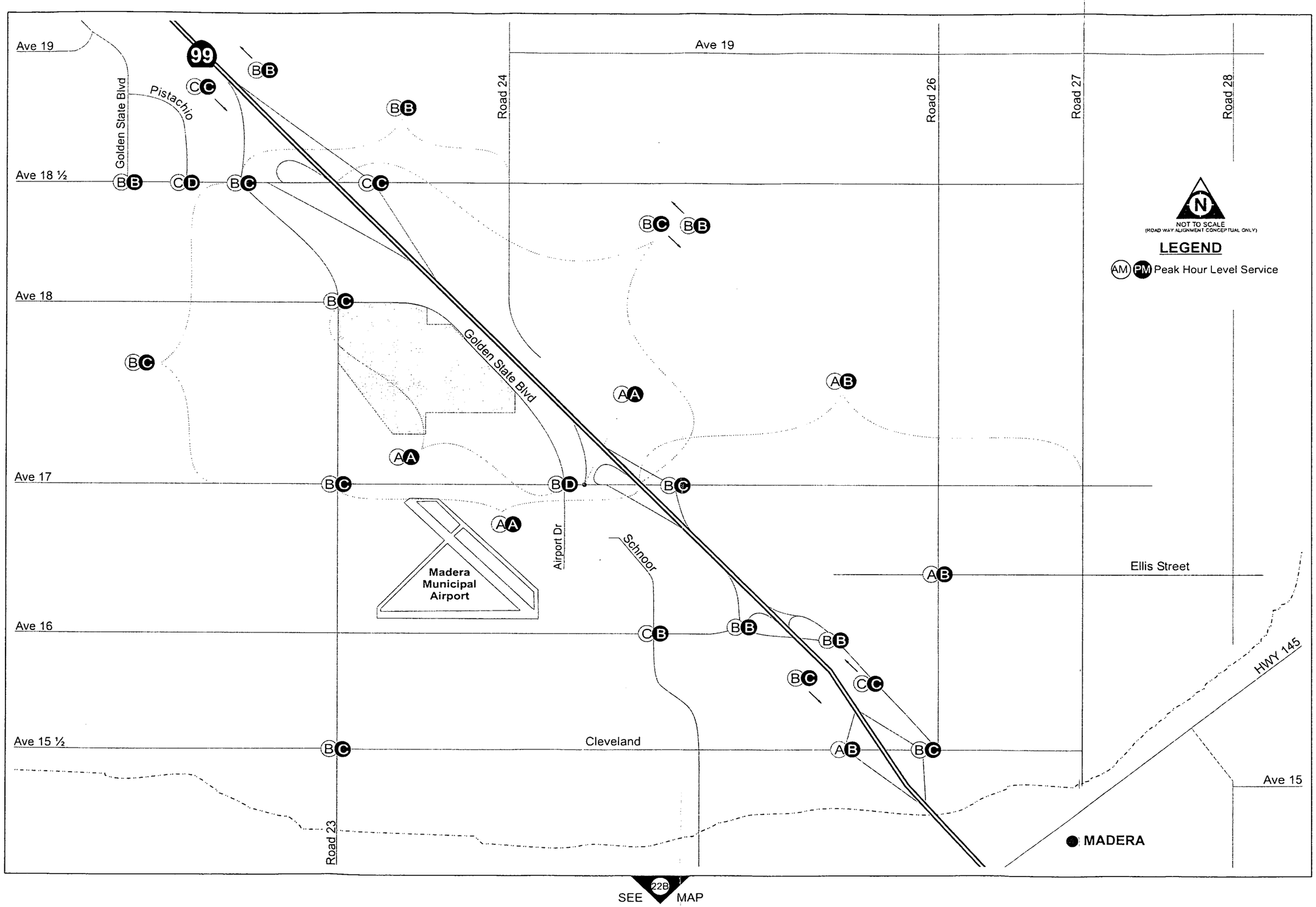
TPG Consulting

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

North Fork Casino
Madera County

04-837.1

Figure 21



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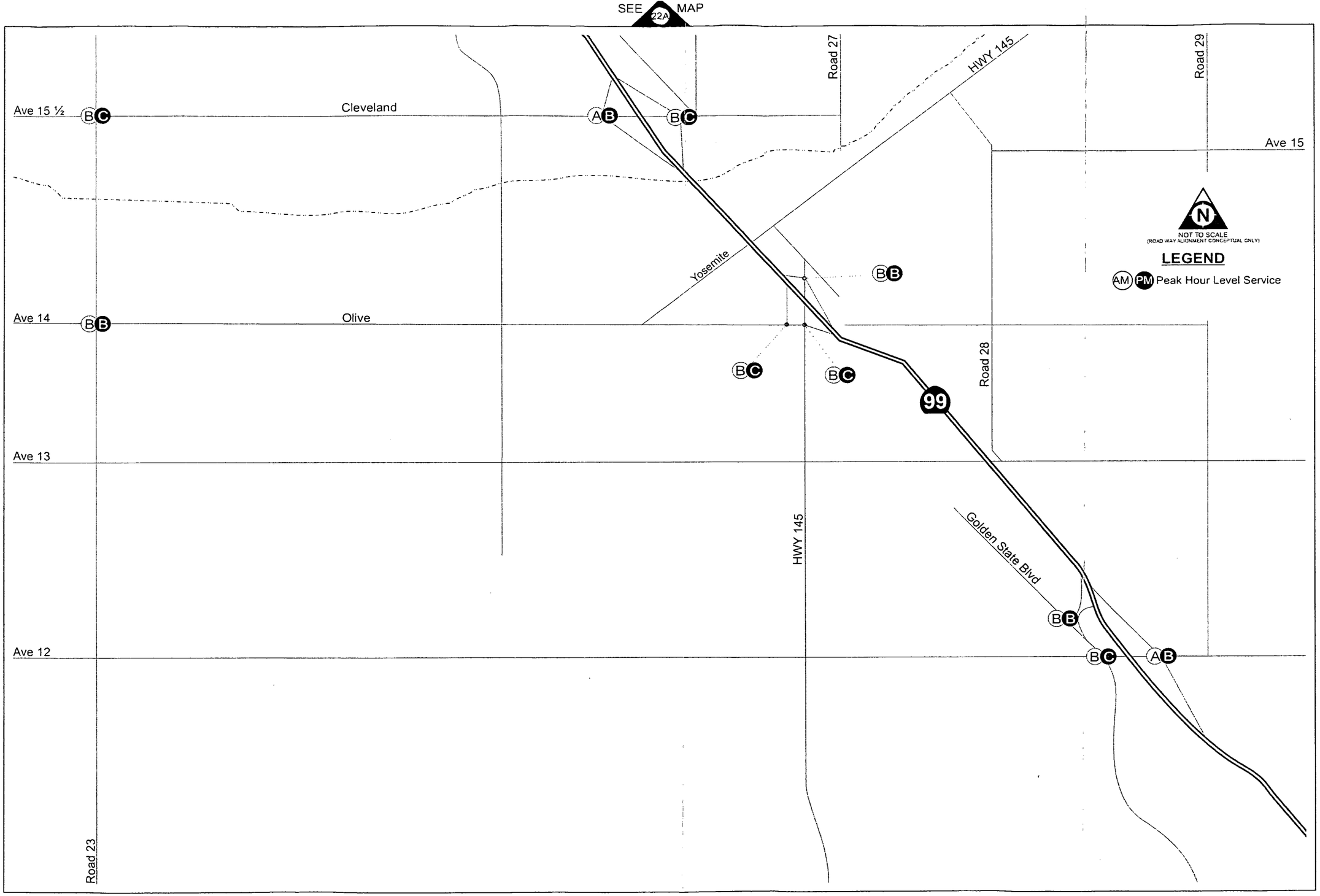
North Fork Casino
Madera County

Figure 22

LEVELS OF SERVICE
Mitigated 2008 Project
Madera Site
(Alternative B)

TPG CONSULTING



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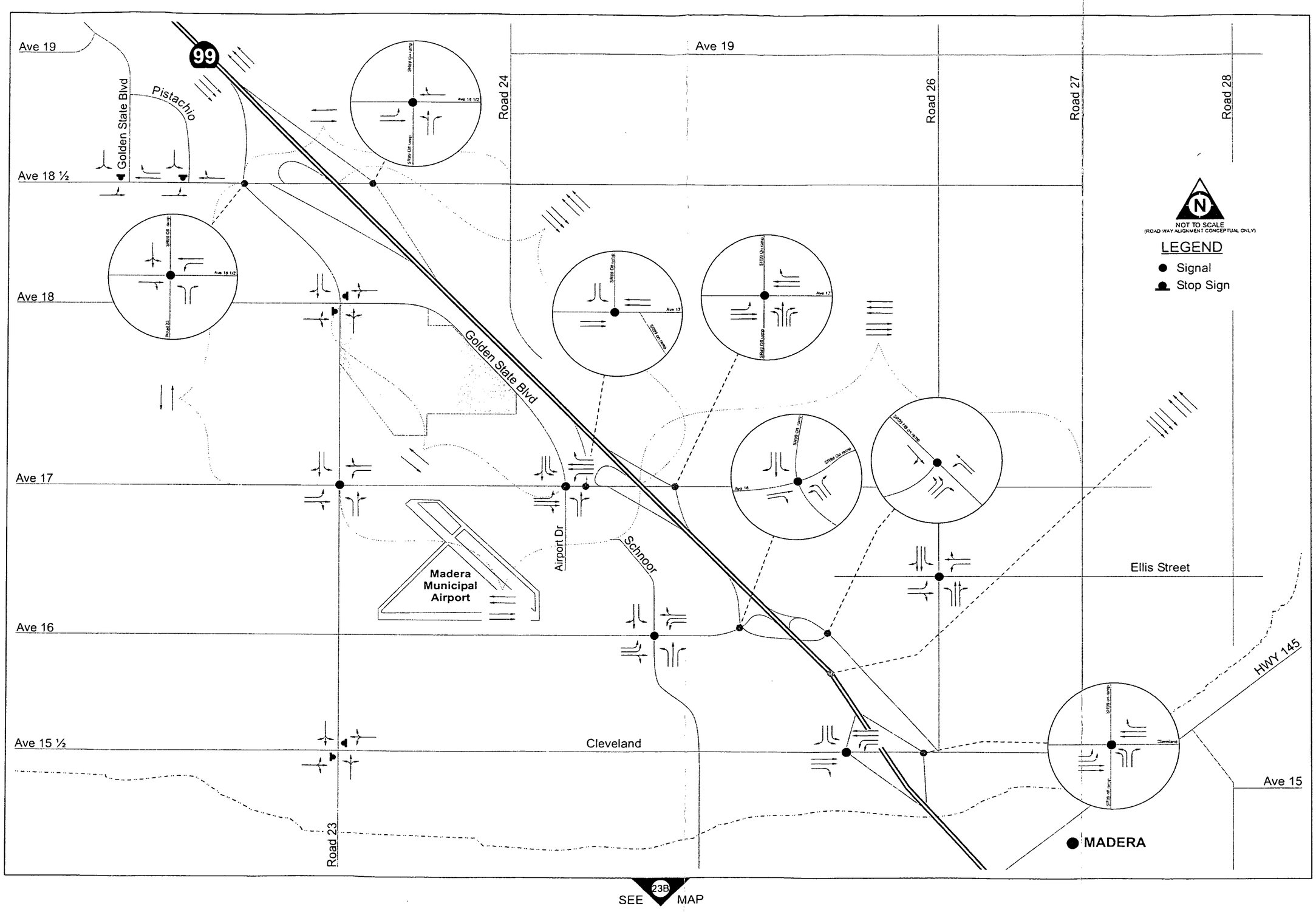
North Fork Casino
Madera County

Figure 22

LEVELS OF SERVICE
Mitigated 2008 Project
Madera Site
(Alternative B)

TPG Consulting



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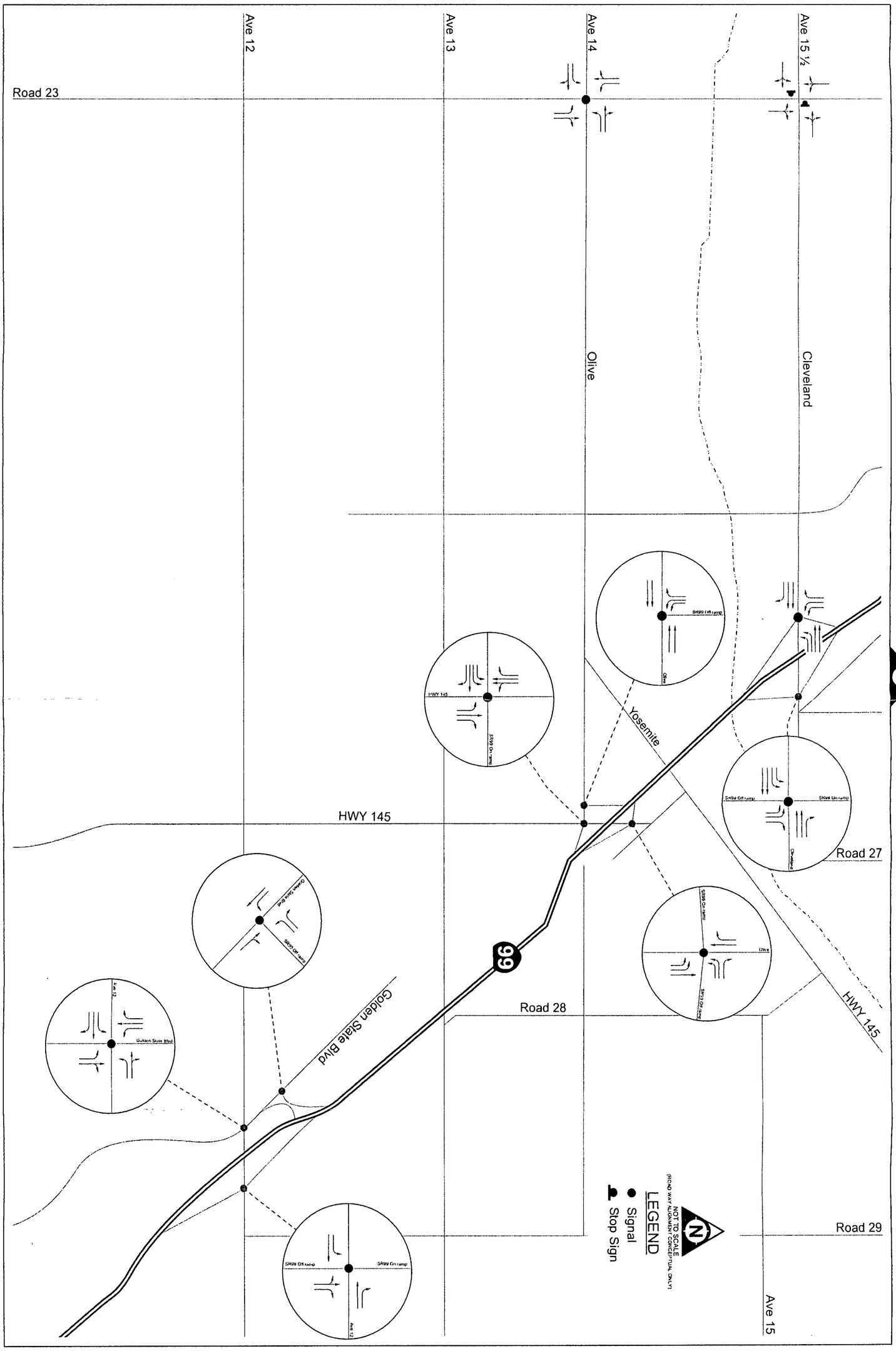
North Fork Casino
Madera County

Figure 23

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

TPG CONSULTING



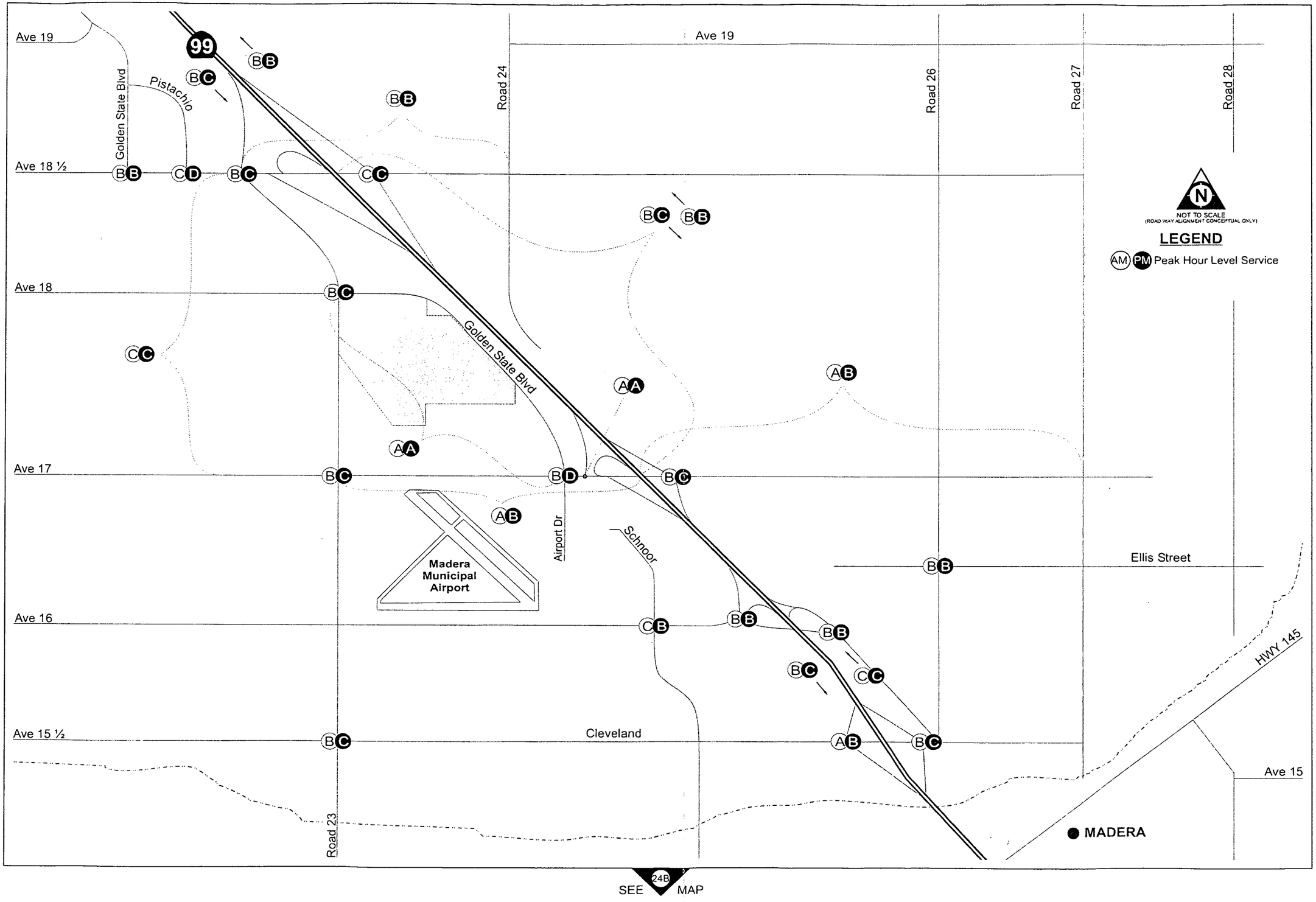
TPG Consulting

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

North Fork Casino
Madera County

04-837.1

Figure 23



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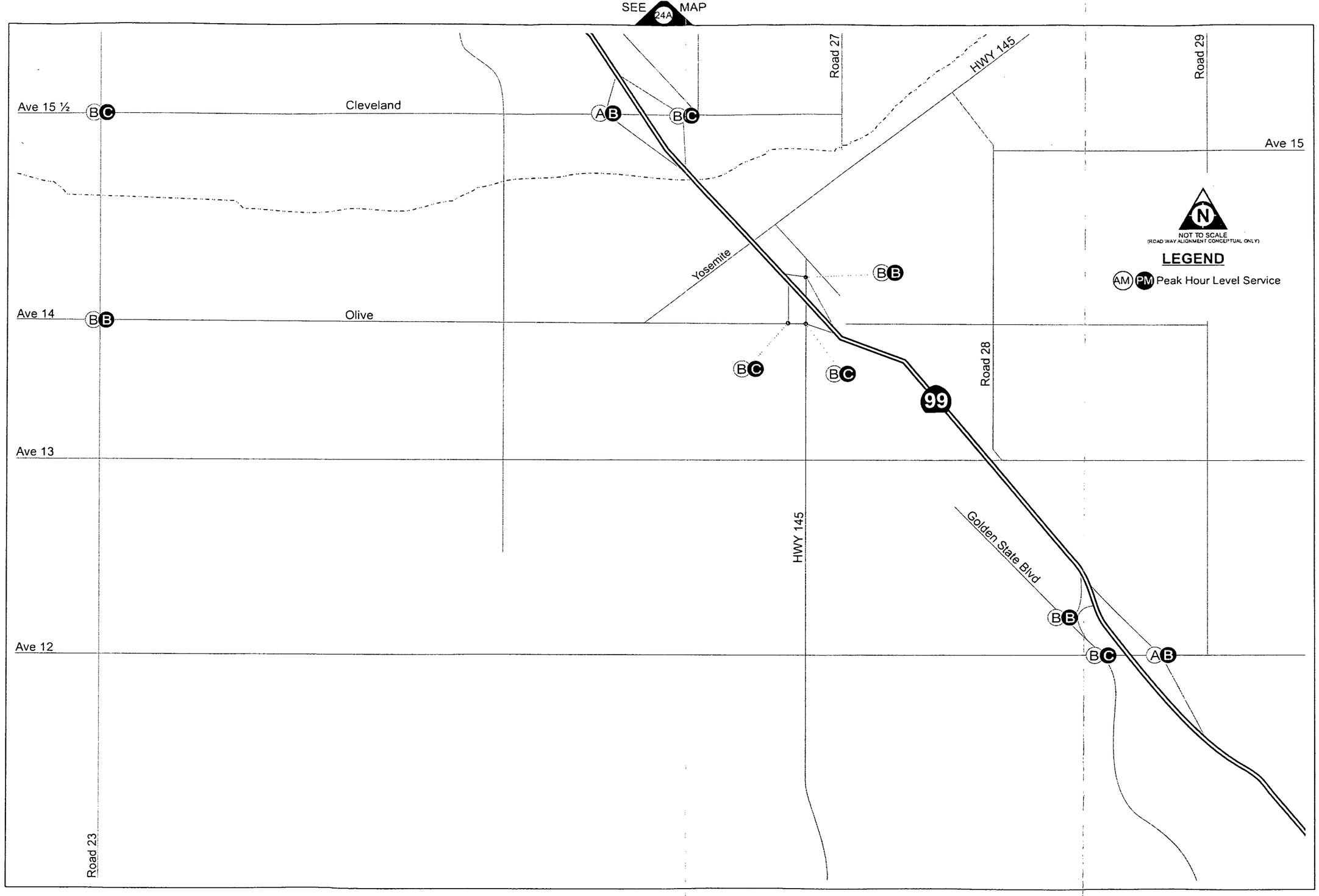
North Fork Casino
Madera County

Figure 24

LEVELS OF SERVICE
Mitigated 2008 Project
Madera Site
(Alternative C)

TPG Consulting



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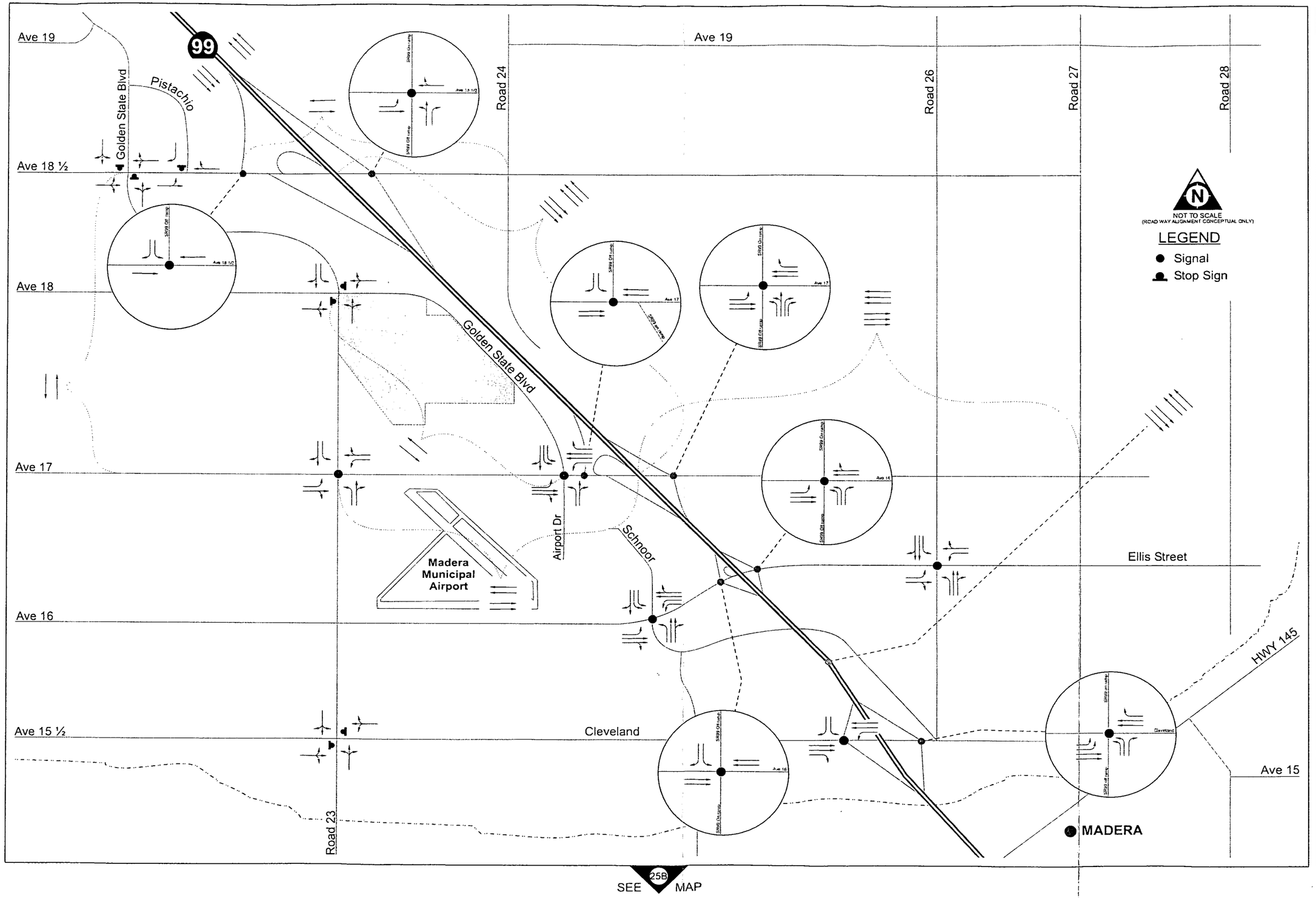
North Fork Casino
Madera County

Figure 24

LEVELS OF SERVICE
Mitigated 2008 Project
Madera Site
(Alternative C)

TPG Consulting



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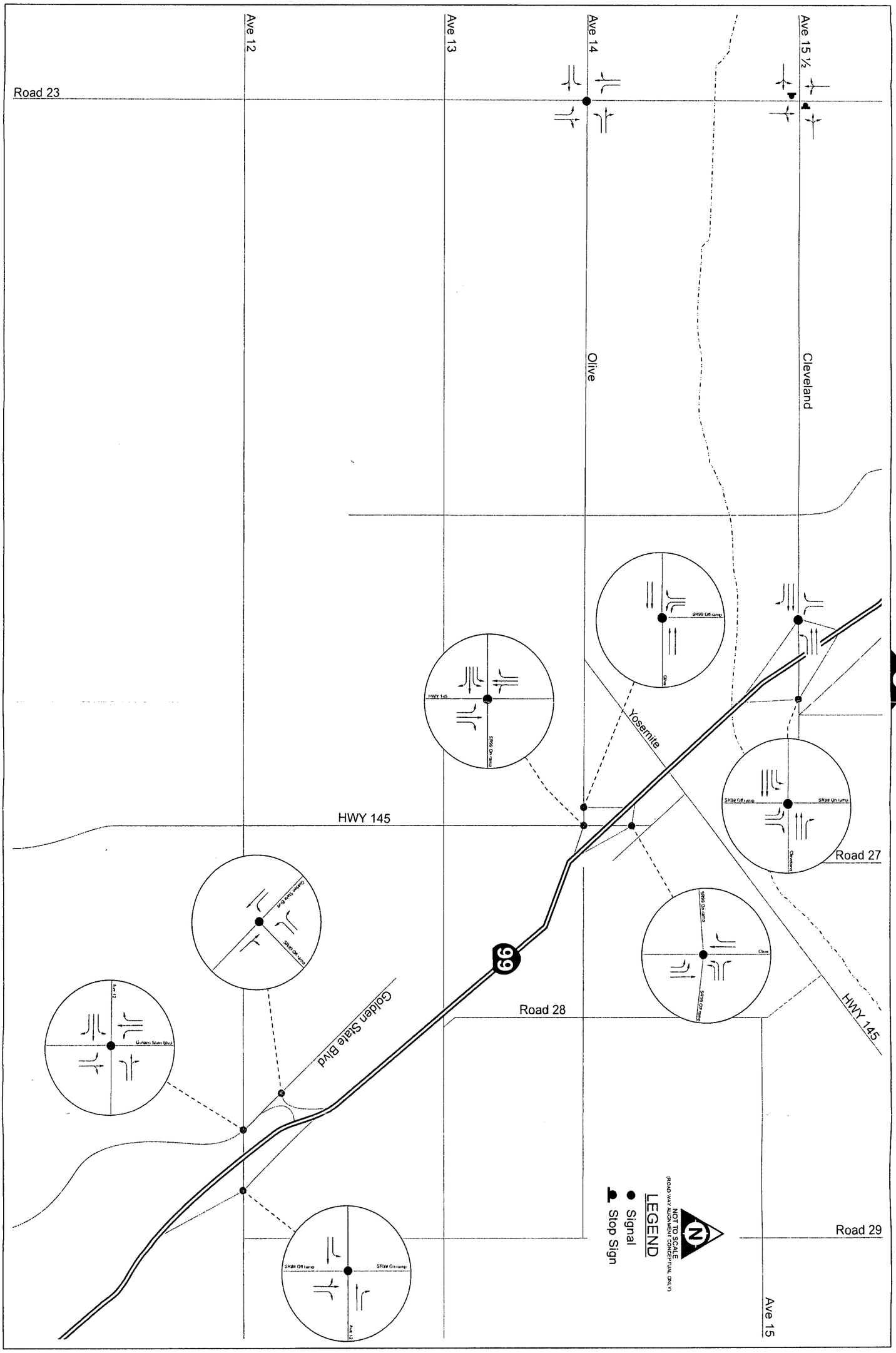
North Fork Casino
Madera County

Figure 25

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

TPG Consulting



TPG Consulting

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

North Fork Casino
Madera County

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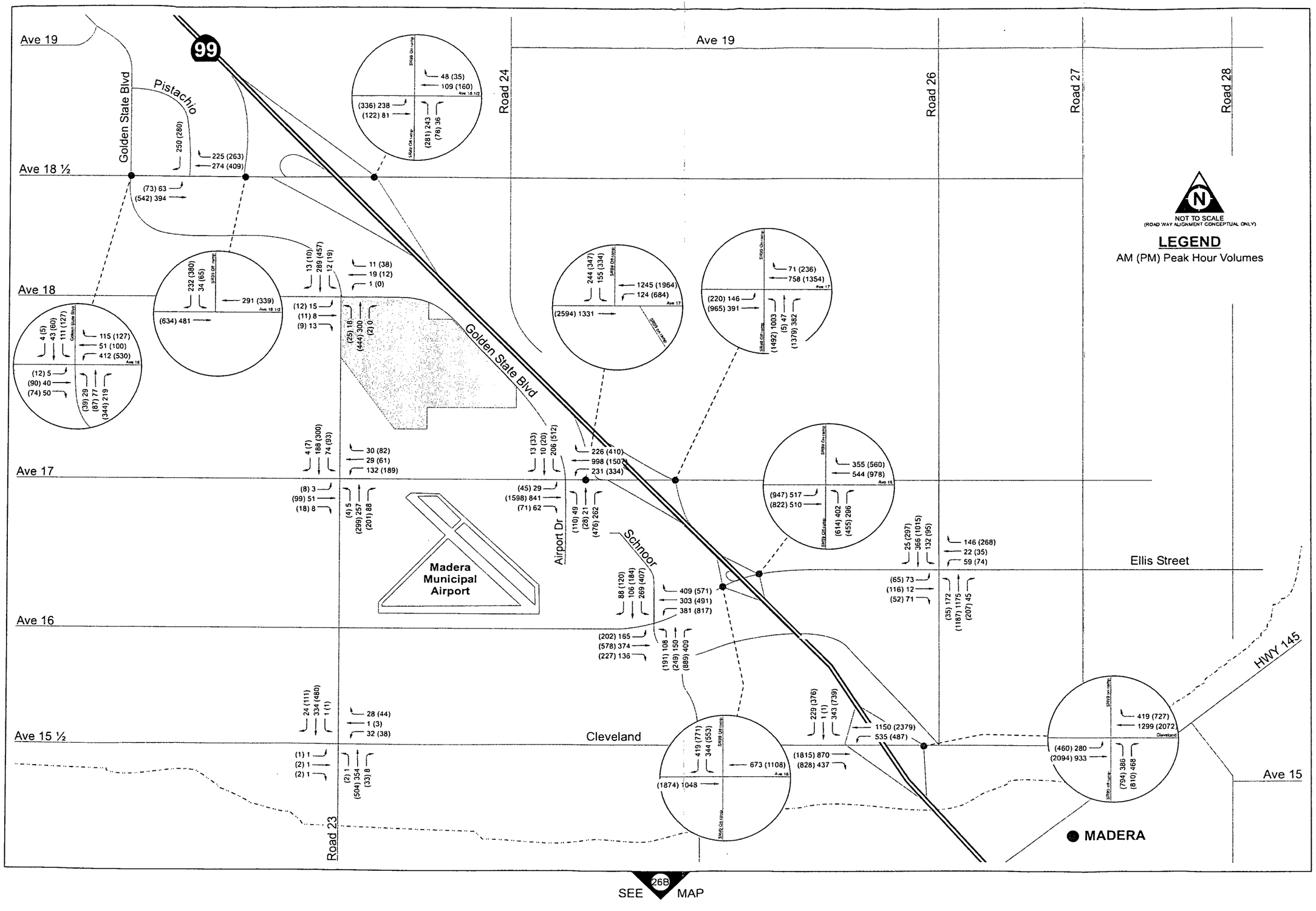
Figure 25



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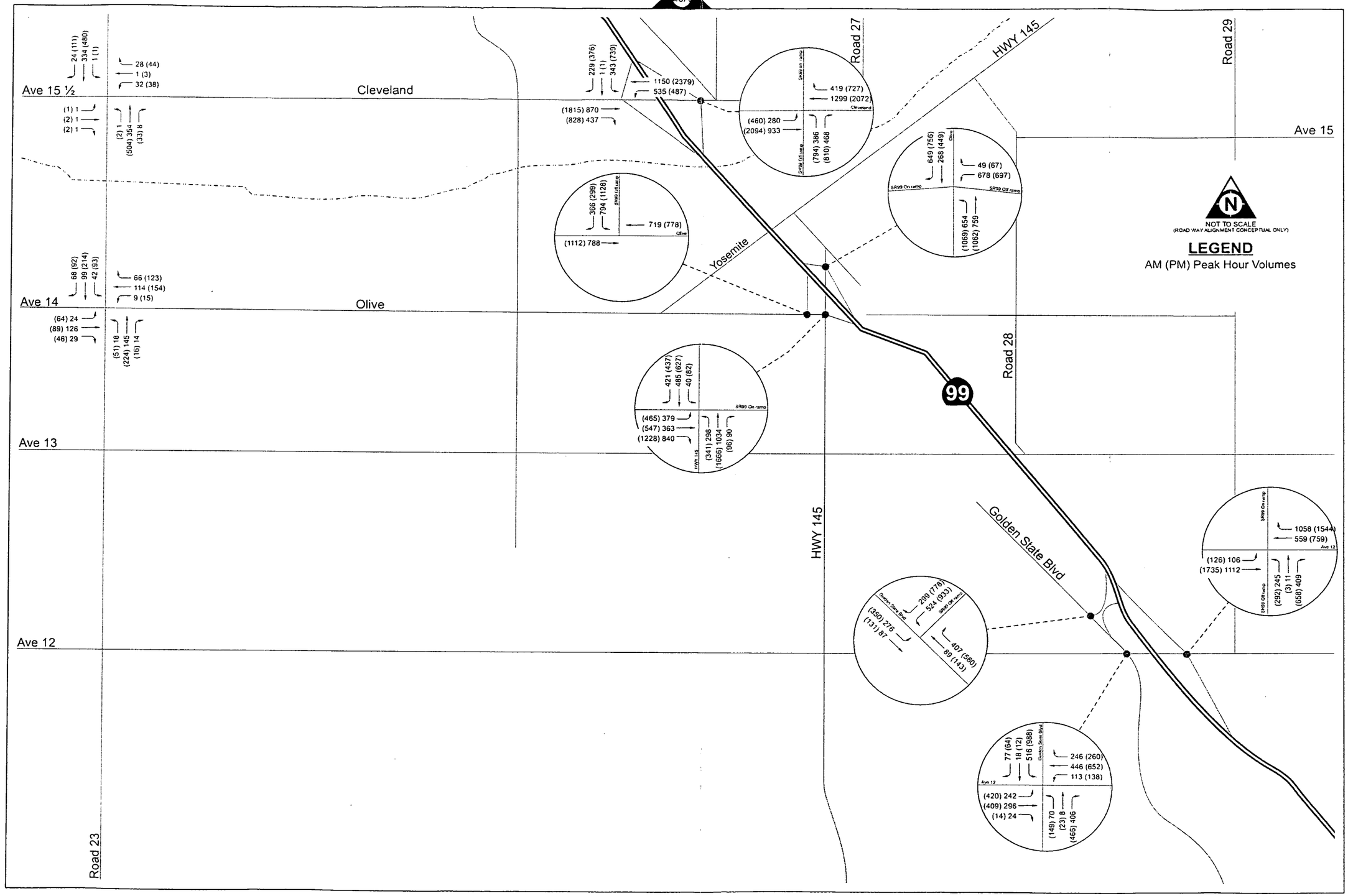
North Fork Casino
Madera County

Figure 26

PEAK HOUR TRAFFIC VOLUMES
2030 No Project
Madera Site
(Alternative E)

TPG CONSULTING



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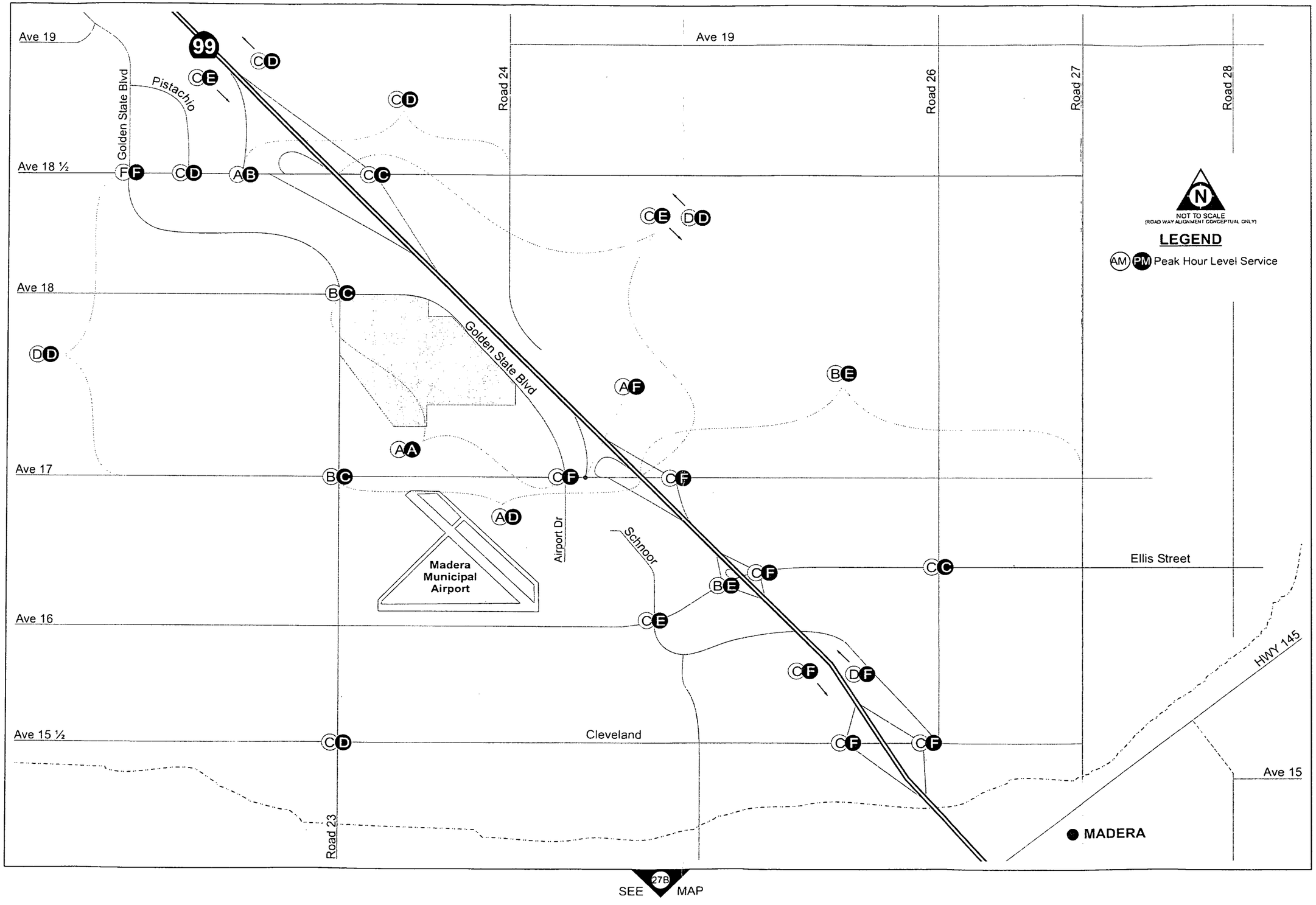
North Fork Casino
Madera County

Figure 26

PEAK HOUR TRAFFIC VOLUMES
2030 No Project
Madera Site
(Alternative E)

TPG CONSULTING



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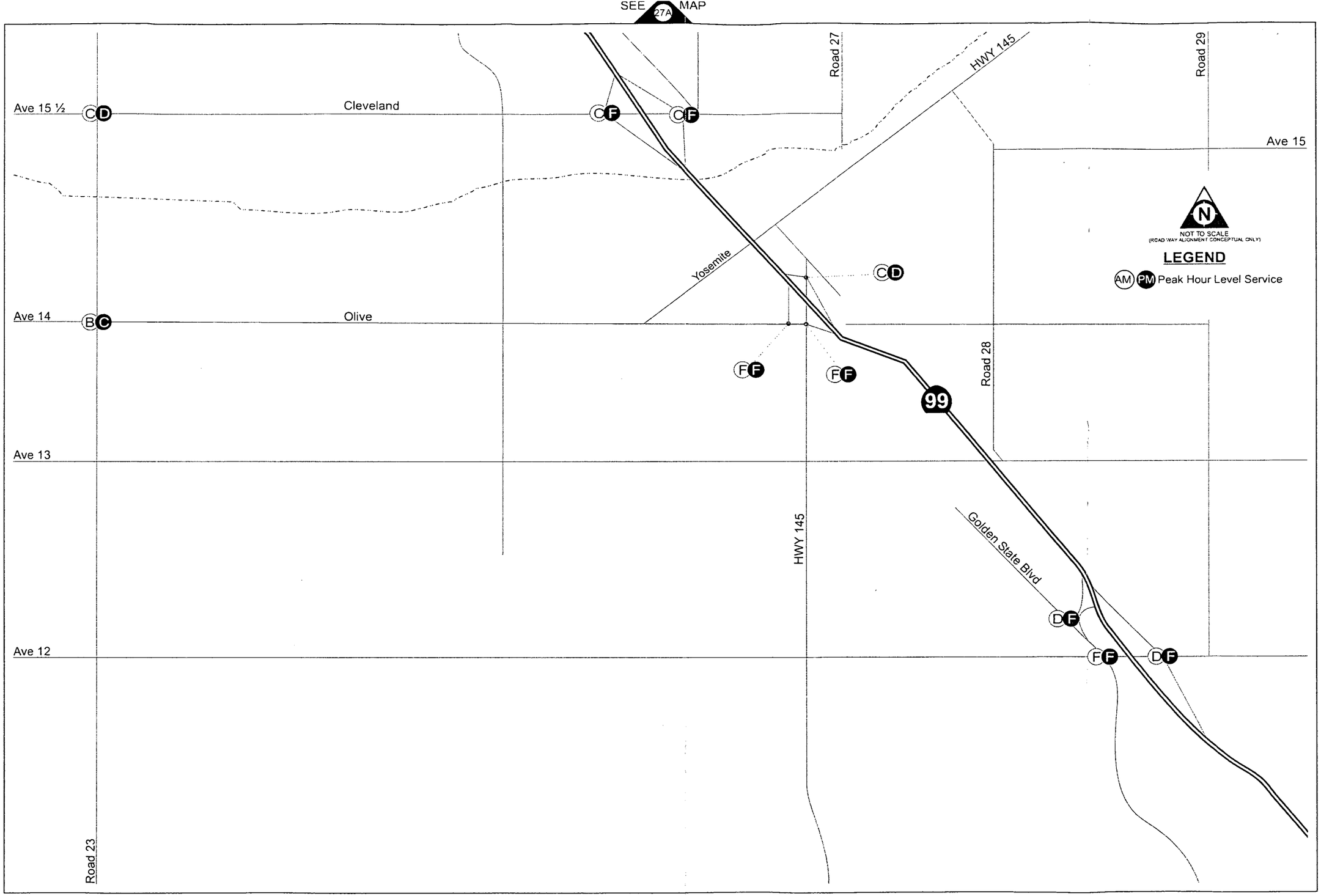
North Fork Casino
Madera County

Figure 27

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

TPG Consulting



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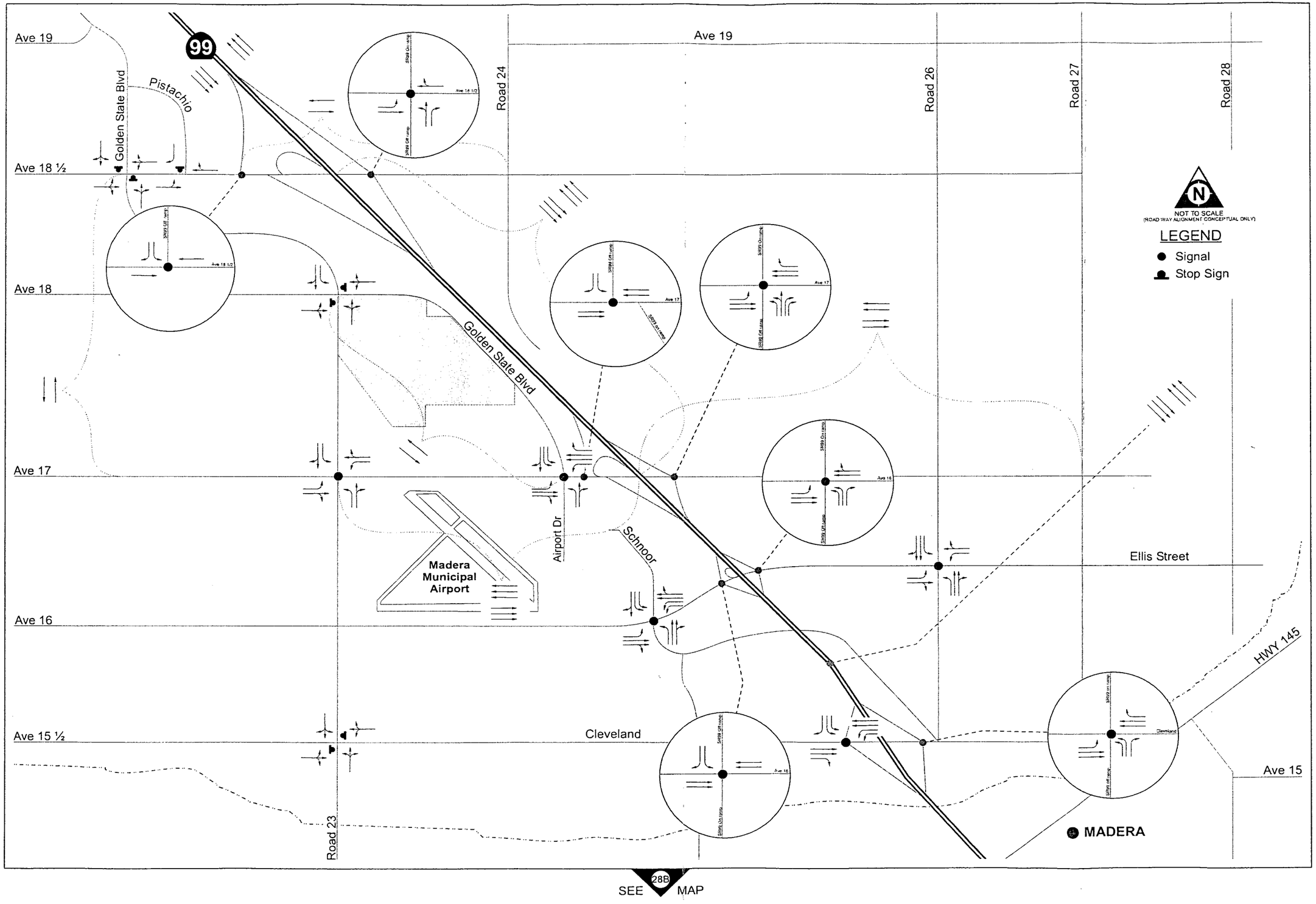
North Fork Casino
Madera County

Figure 27

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

TPG Consulting



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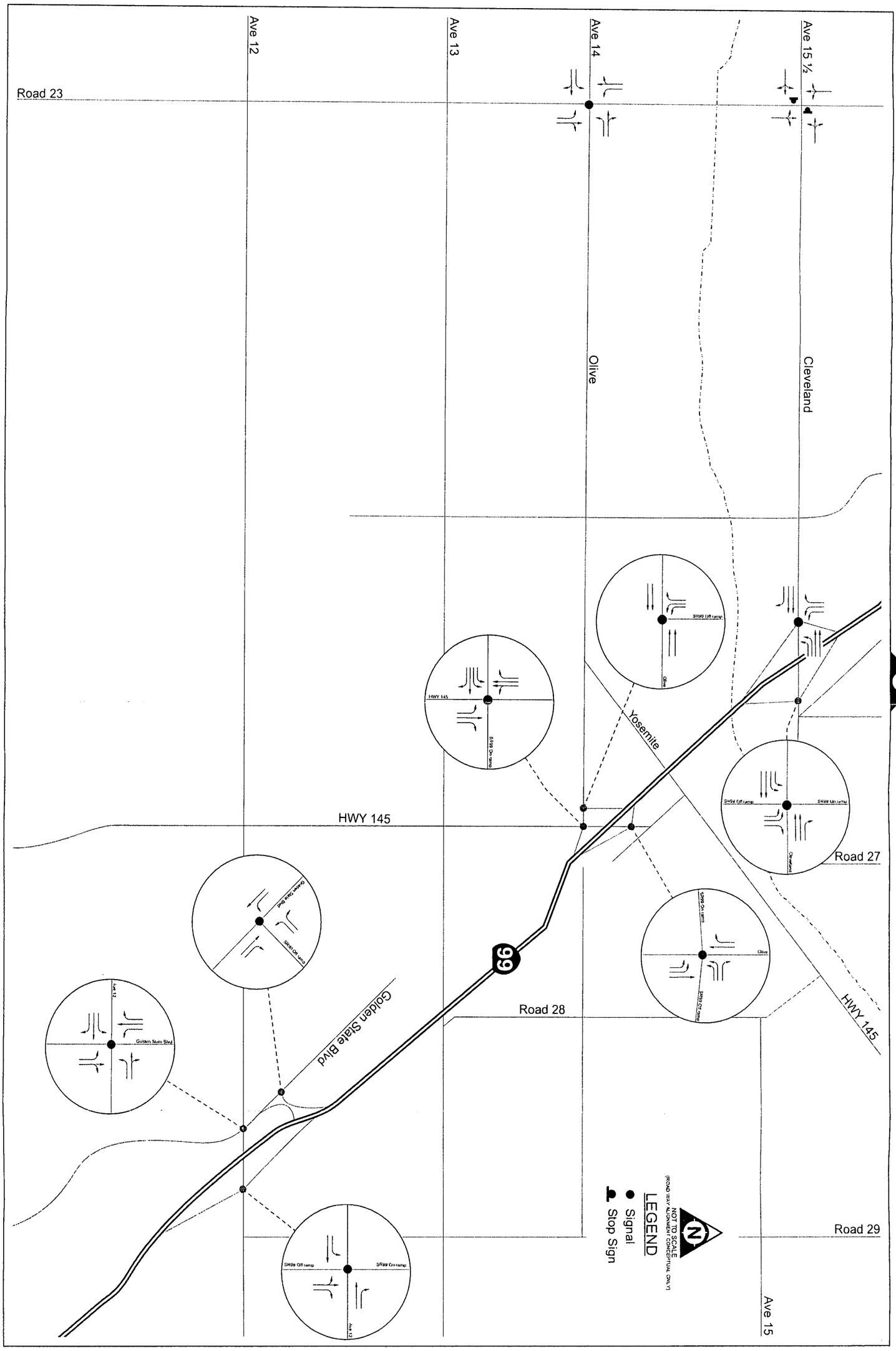
North Fork Casino
Madera County

Figure 28

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

TPG Consulting



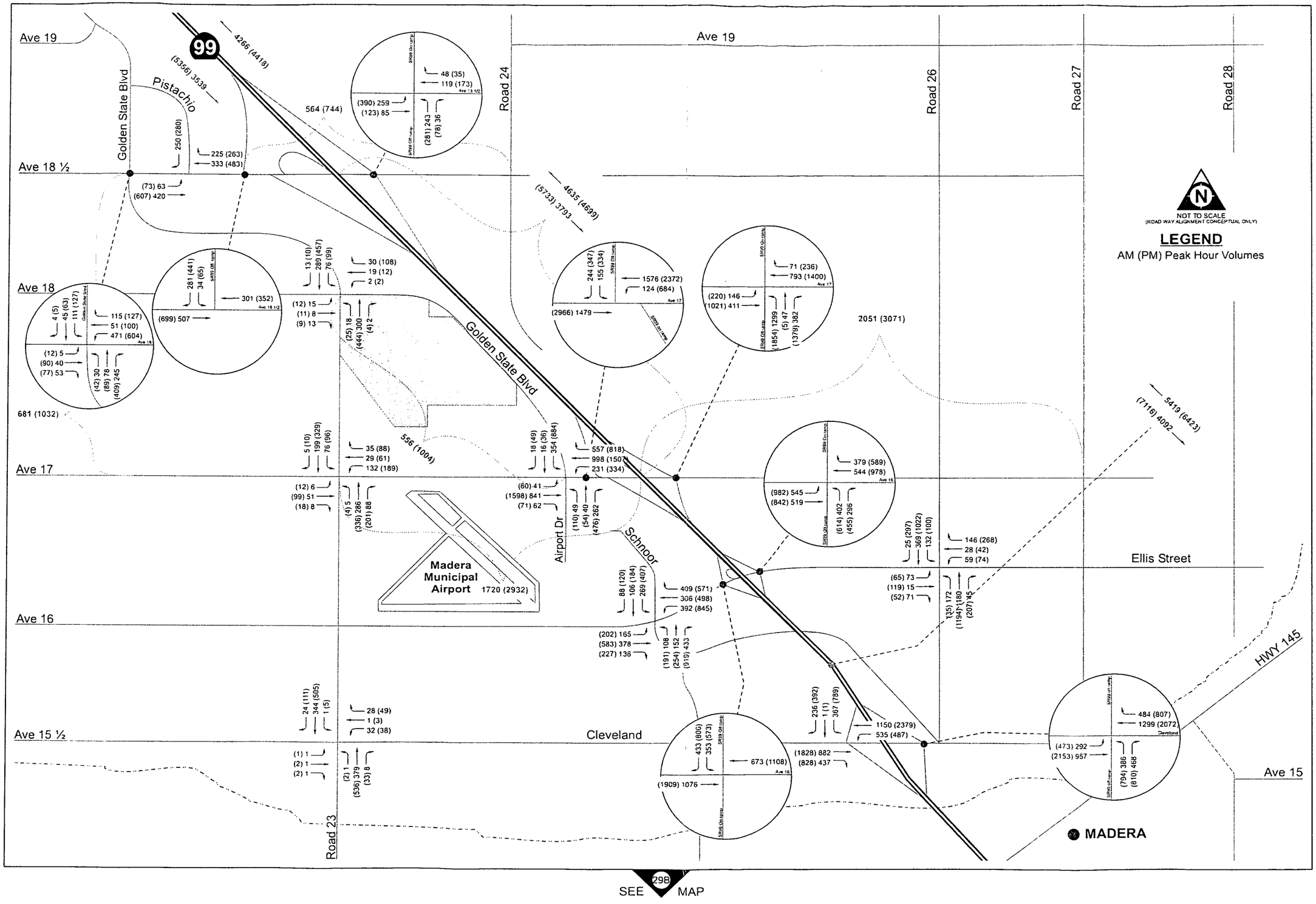
TPG Consulting

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

North Fork Casino
Madera County

04-837.1

Figure 28



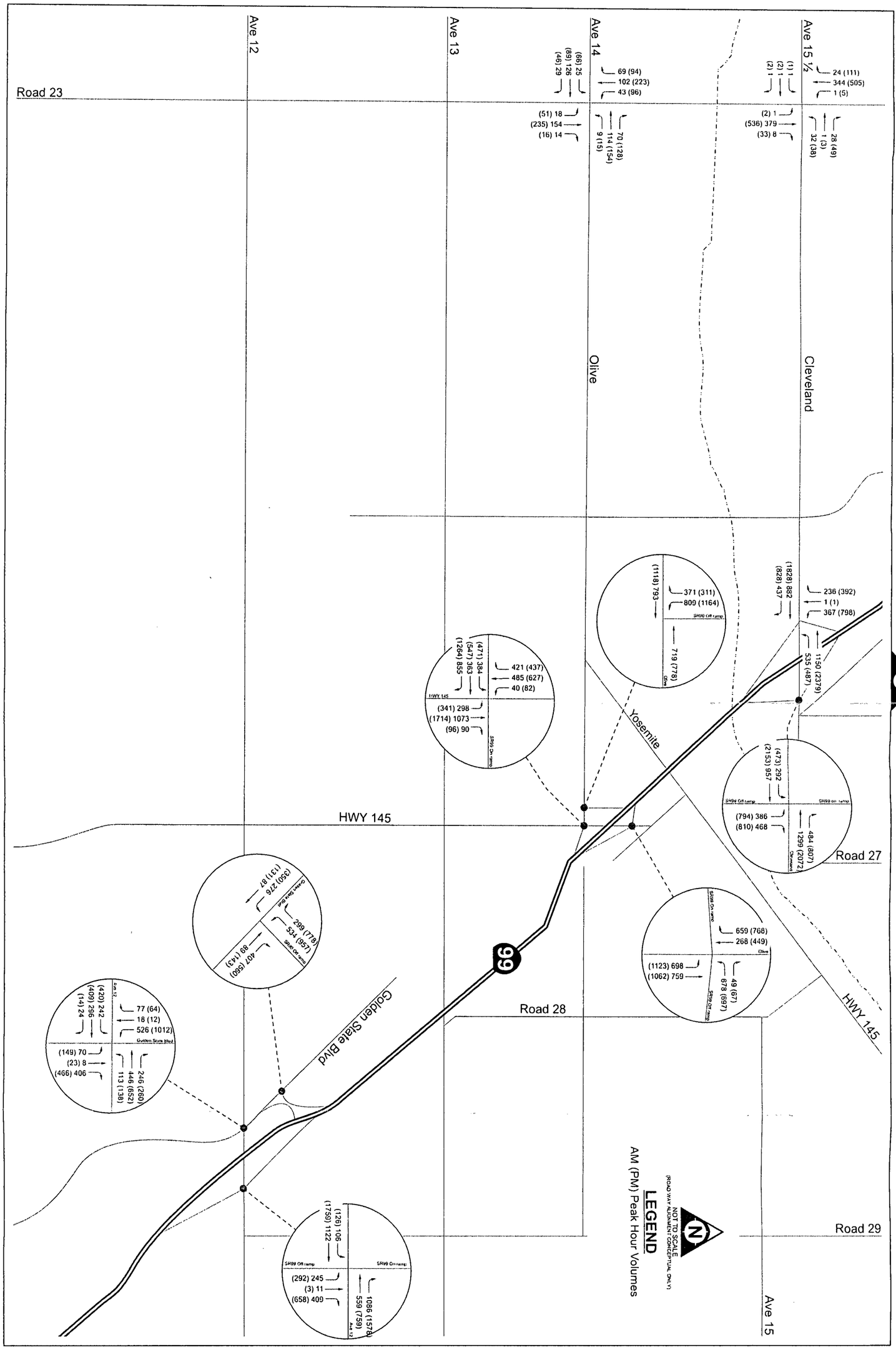
04-837.1

North Fork Casino
Madera County

Figure 29

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

TPG CONSULTING



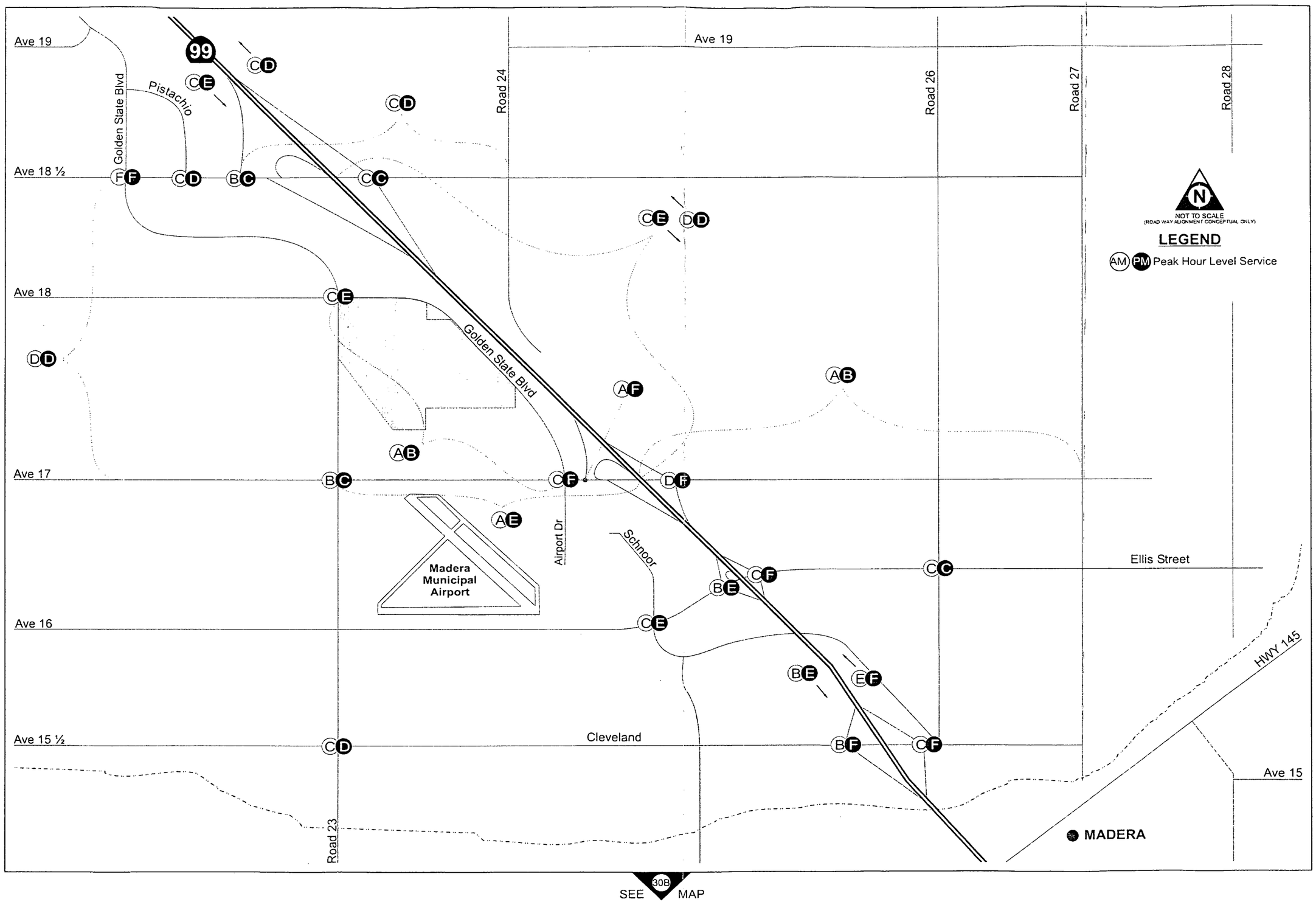
TPG Consulting

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

North Fork Casino
Madera County

04-837.1

Figure 29



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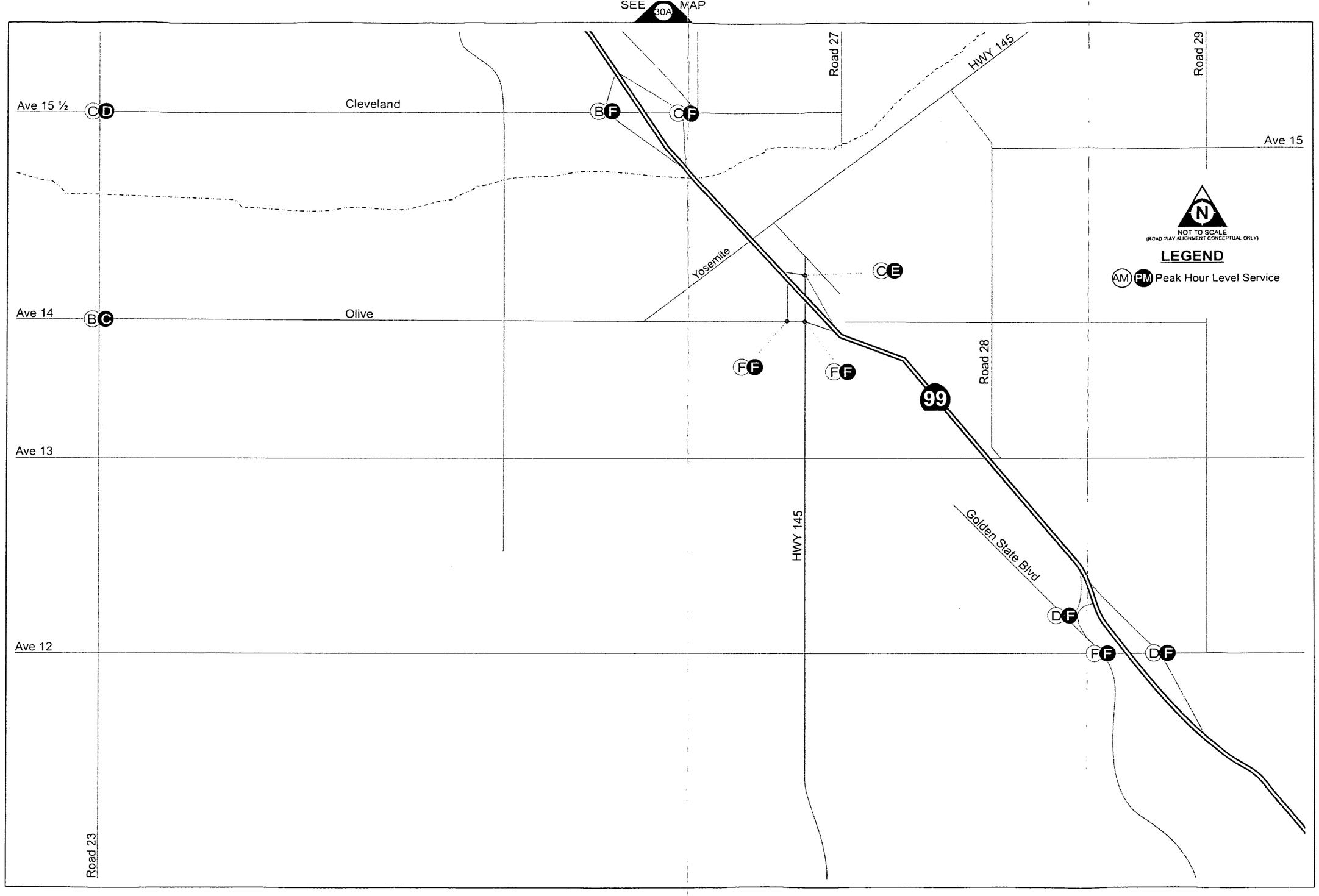
North Fork Casino
Madera County

Figure 30

LEVELS OF SERVICE
2030 Project
Madera Site
(Alternative A)

TPG Consulting



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North Fork Casino
Madera County

Figure 30

LEVELS OF SERVICE
2030 Project
Madera Site
(Alternative A)

TPG Consulting

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.

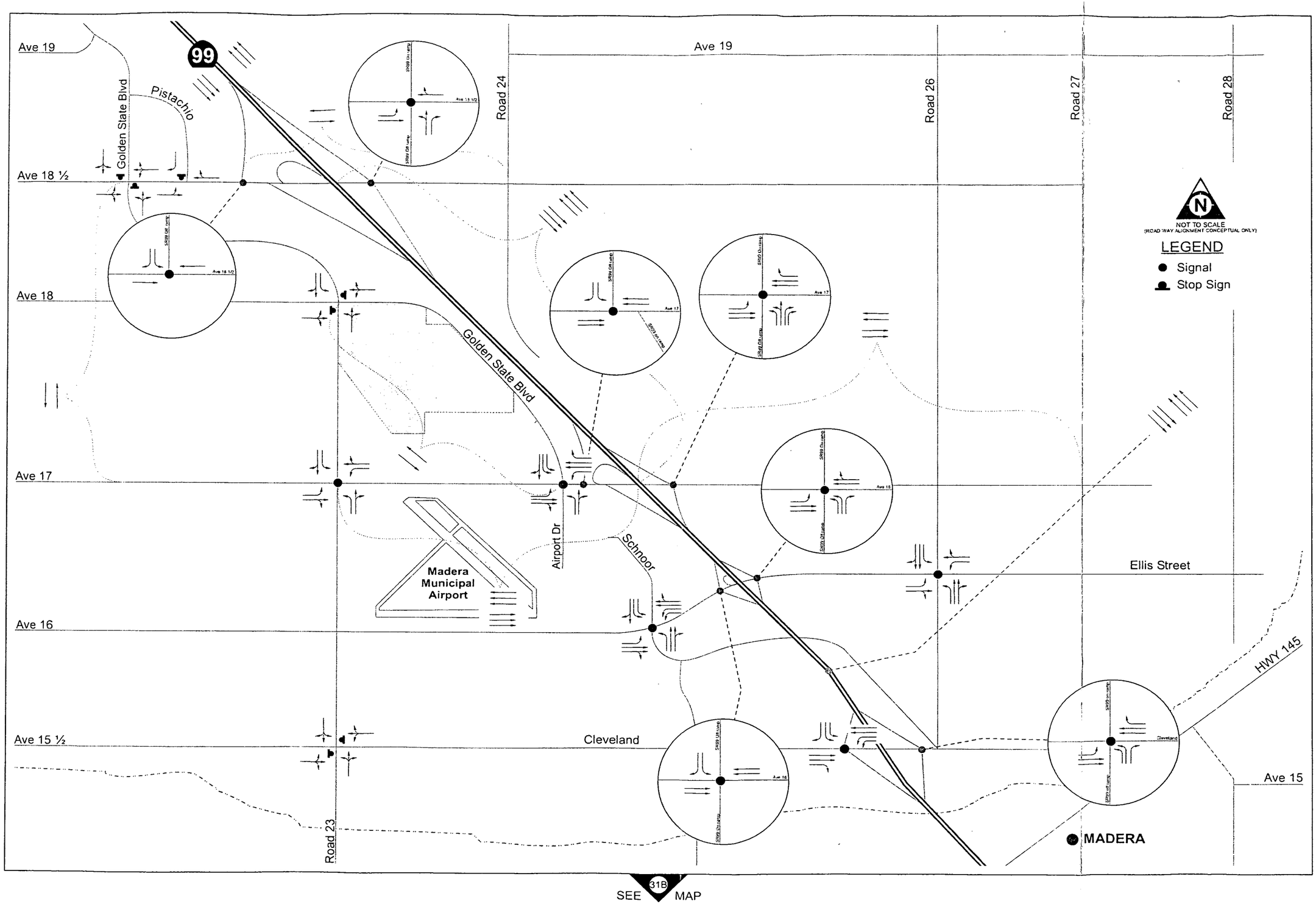
Mitigated 2030 Project Conditions

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.



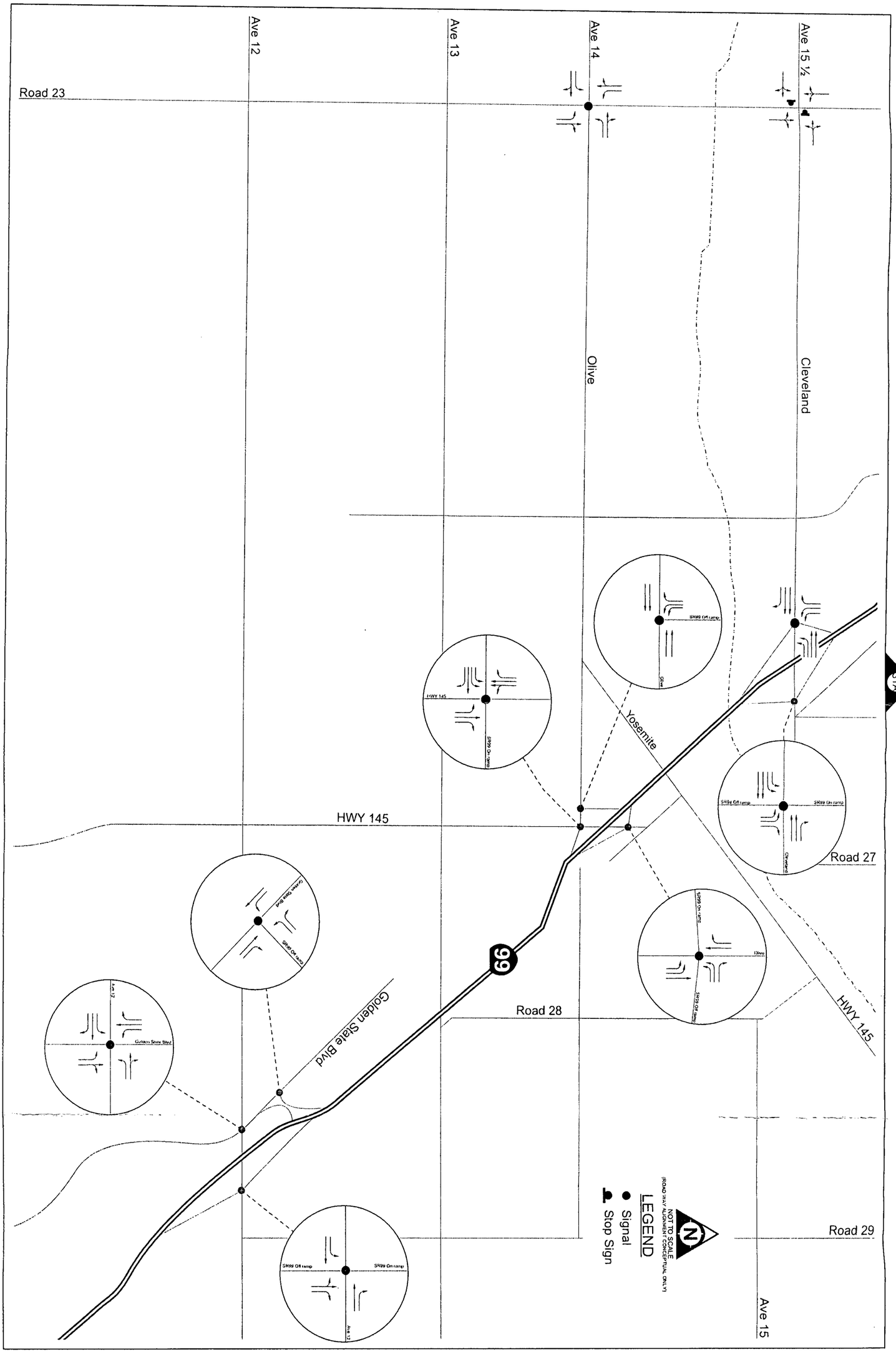
04-837.1

North Fork Casino
Madera County

Figure 31

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

TPG Consulting



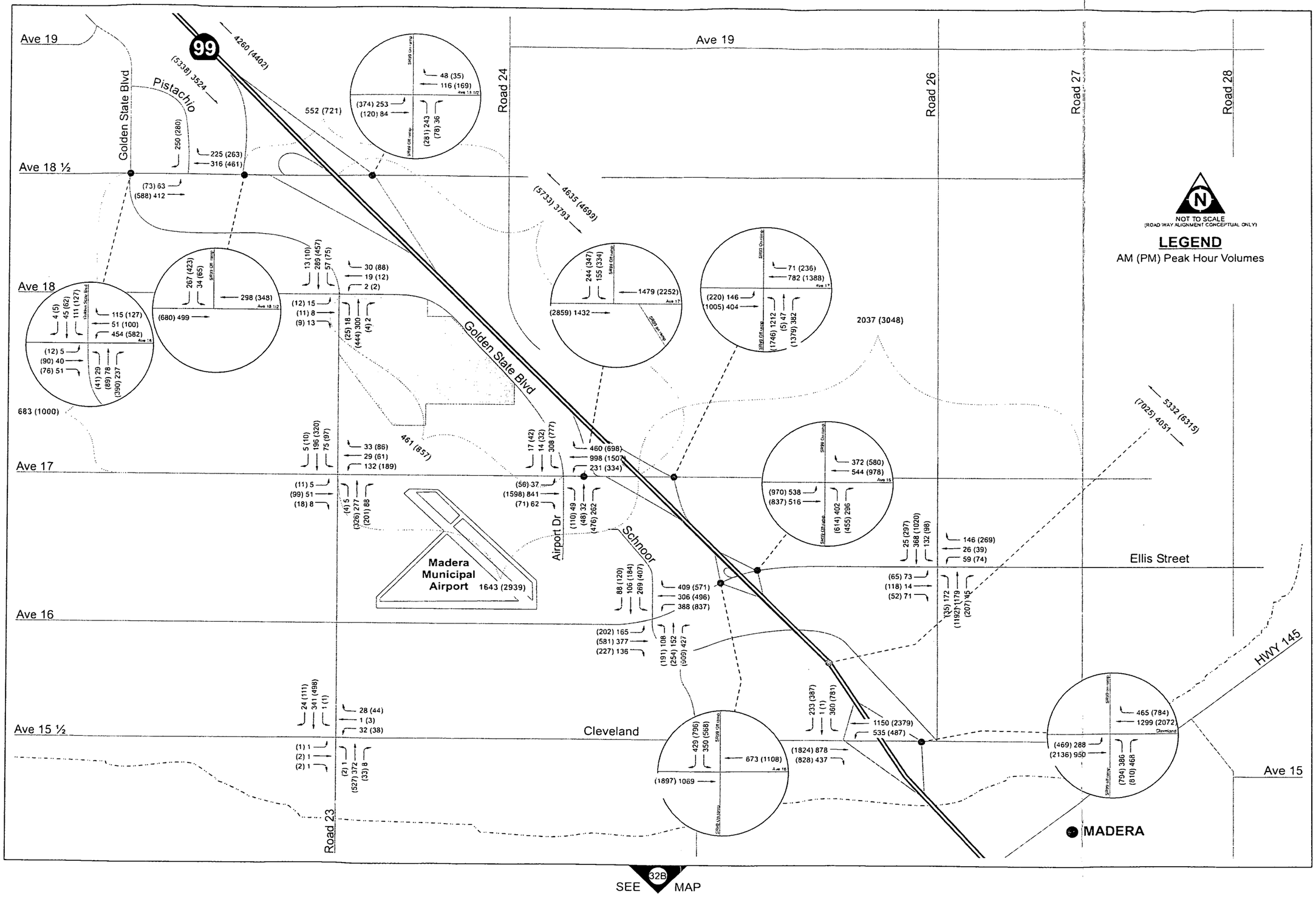
TPG Consulting

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

North Fork Casino
Madera County

04-837.1

Figure 31



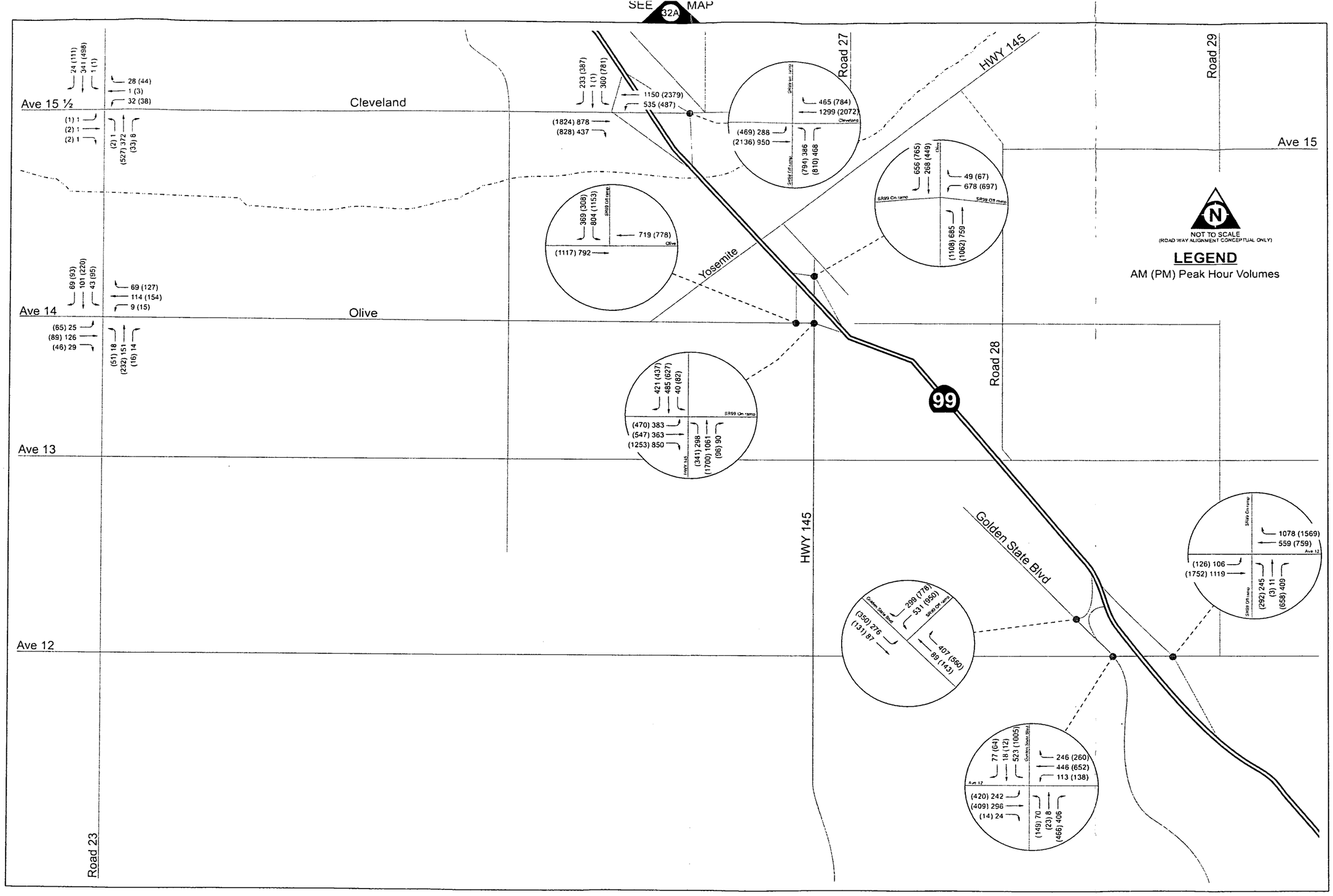
04-837.1

North Fork Casino
Madera County

Figure 32

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

TPG CONSULTING



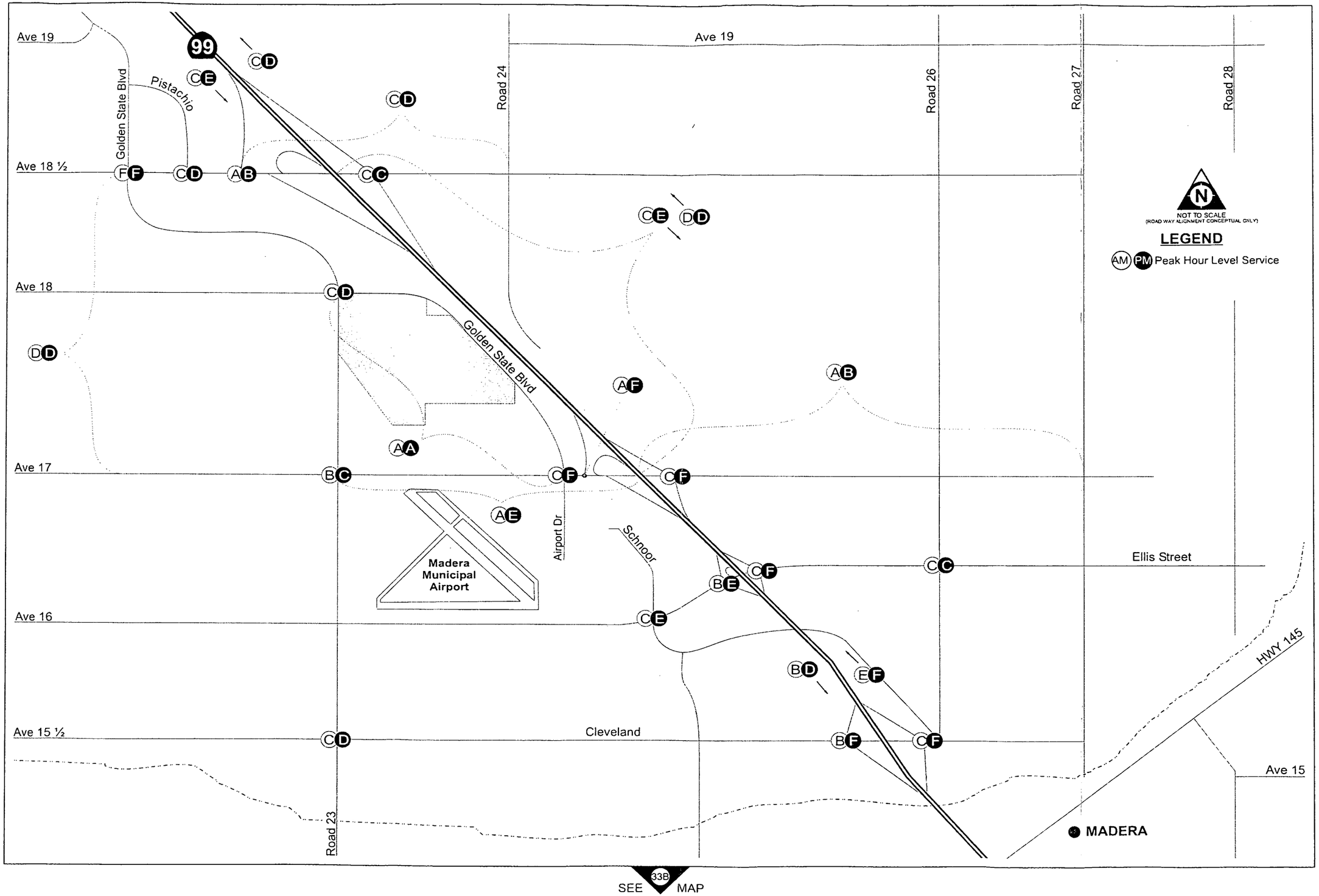
04-837.1

North Fork Casino
Madera County

Figure 32

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

TPG CONSULTING



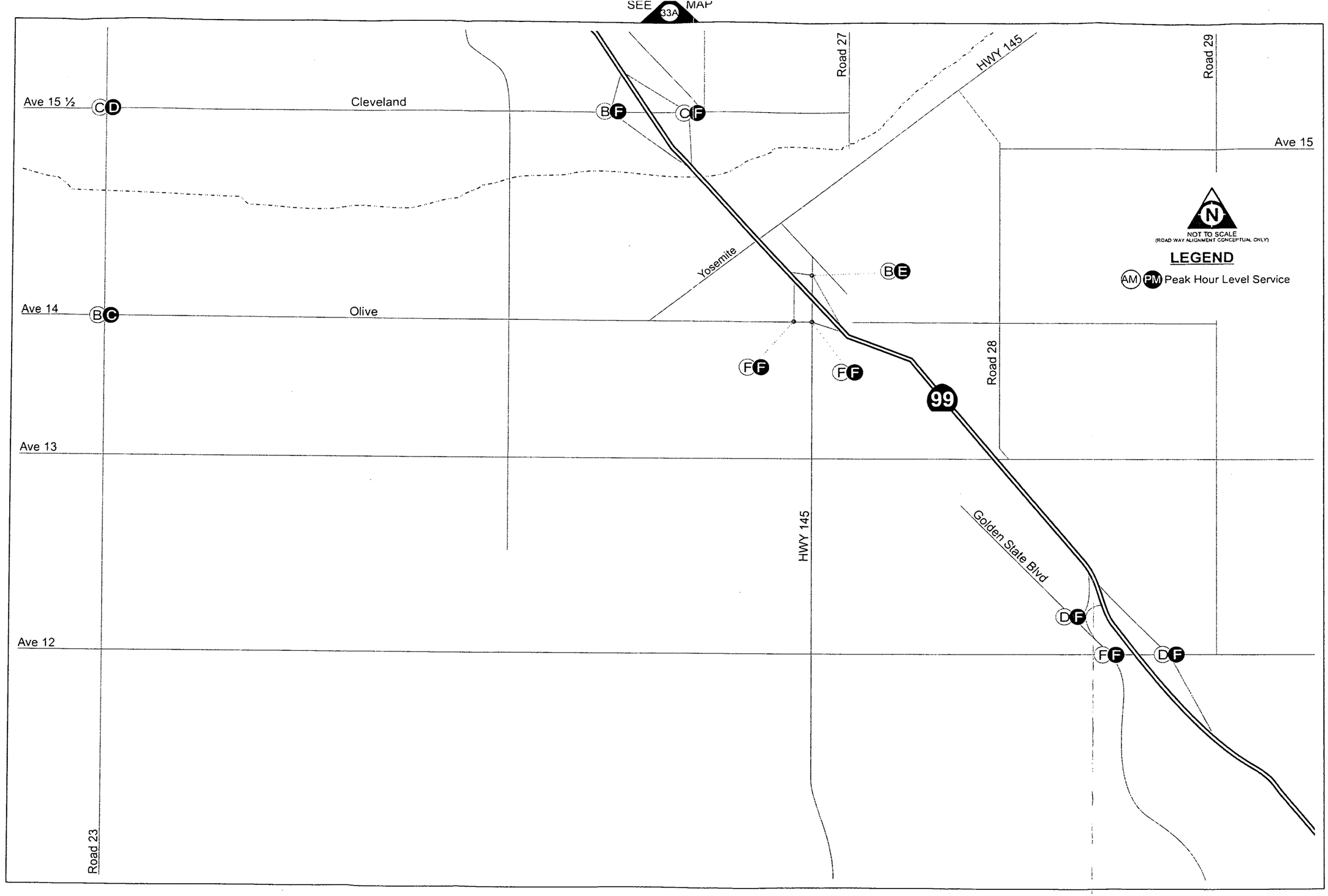
04-837.1

North Fork Casino
Madera County

Figure 33

LEVELS OF SERVICE
2030 Project
Madera Site
(Alternative B)

TPG Consulting



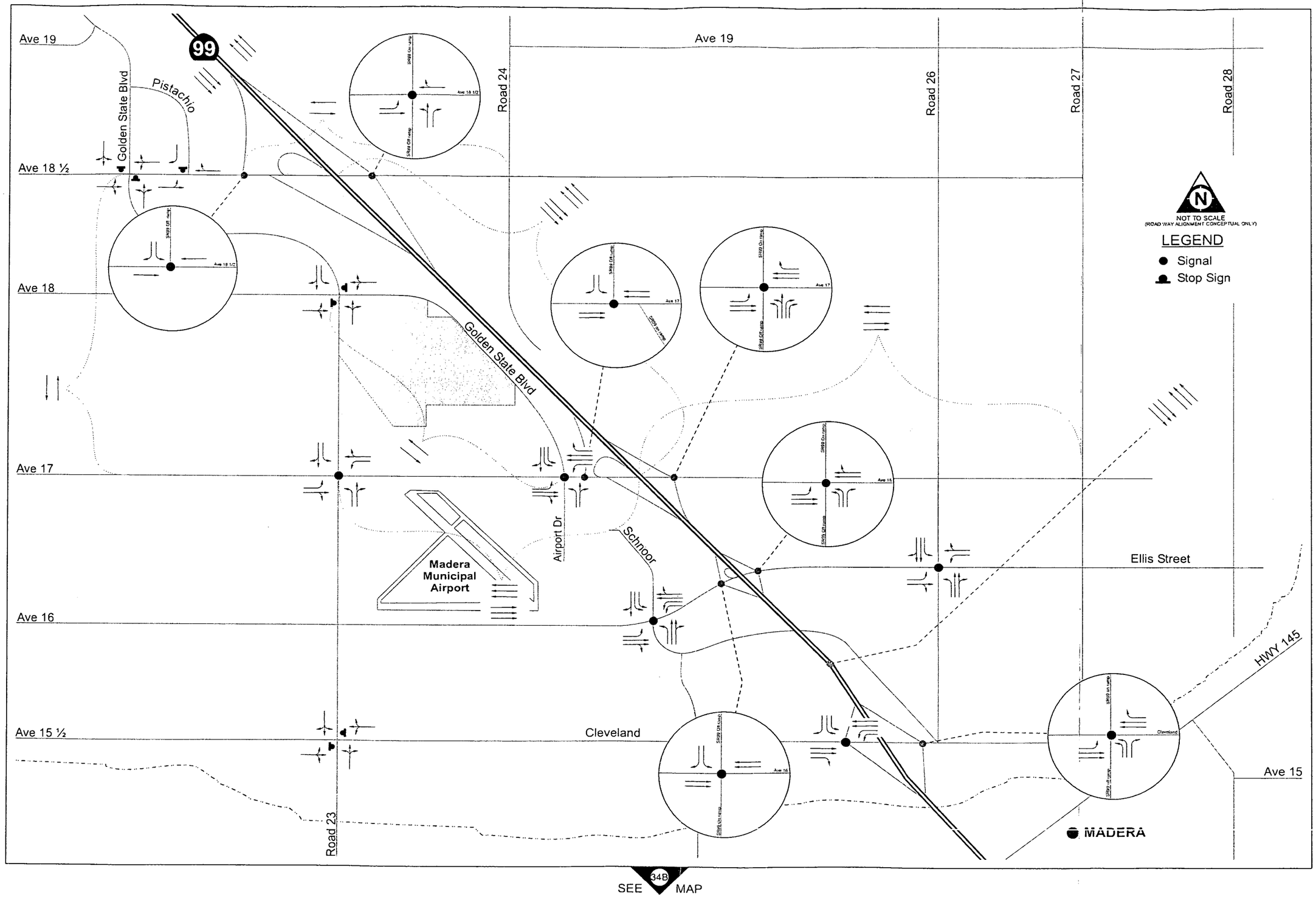
04-837.1

North Fork Casino
Madera County

Figure 33

LEVELS OF SERVICE
2030 Project
Madera Site
(Alternative B)

TPG Consulting



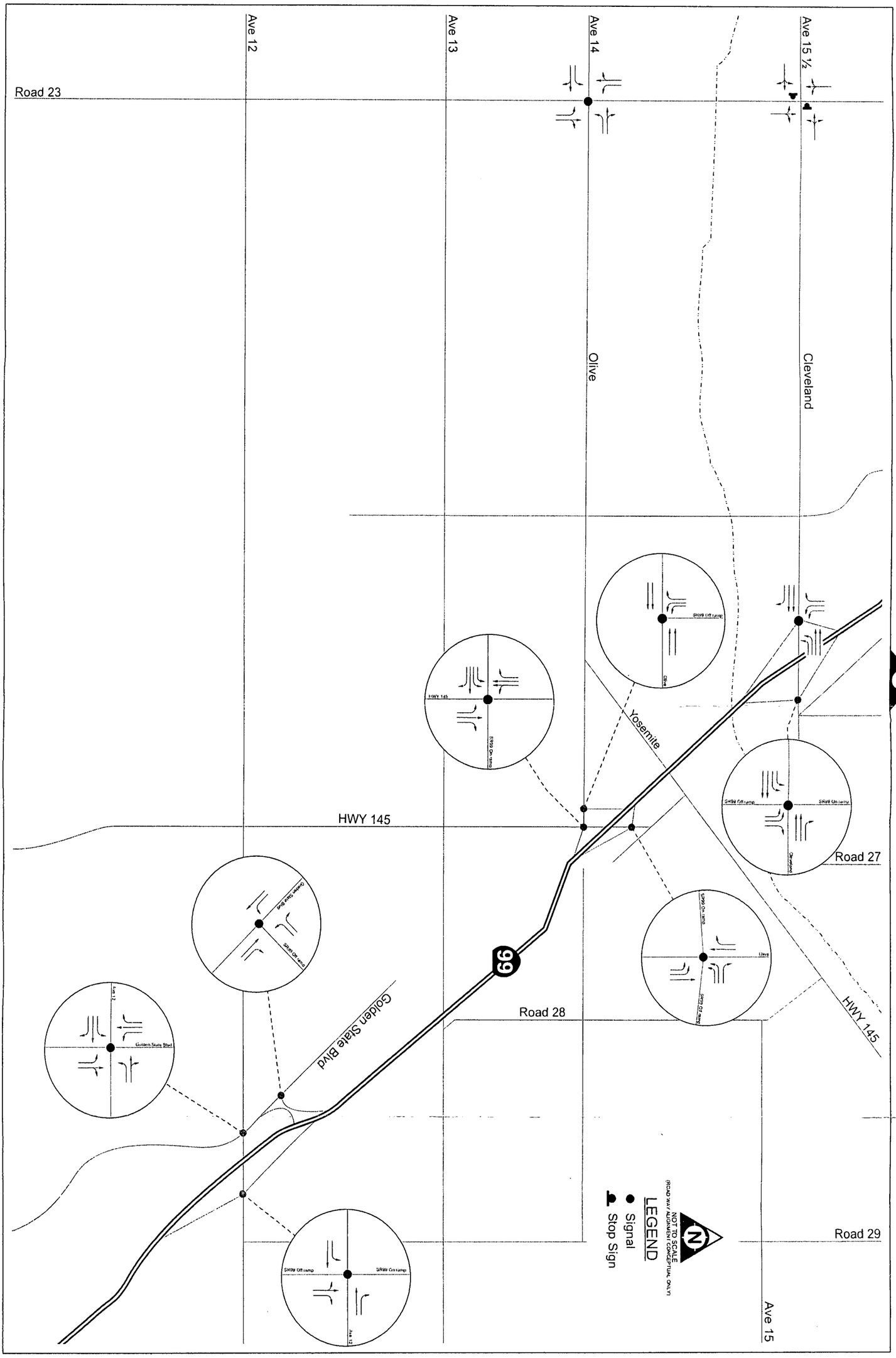
04-837.1

North Fork Casino
Madera County

Figure 34

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

TPG Consulting



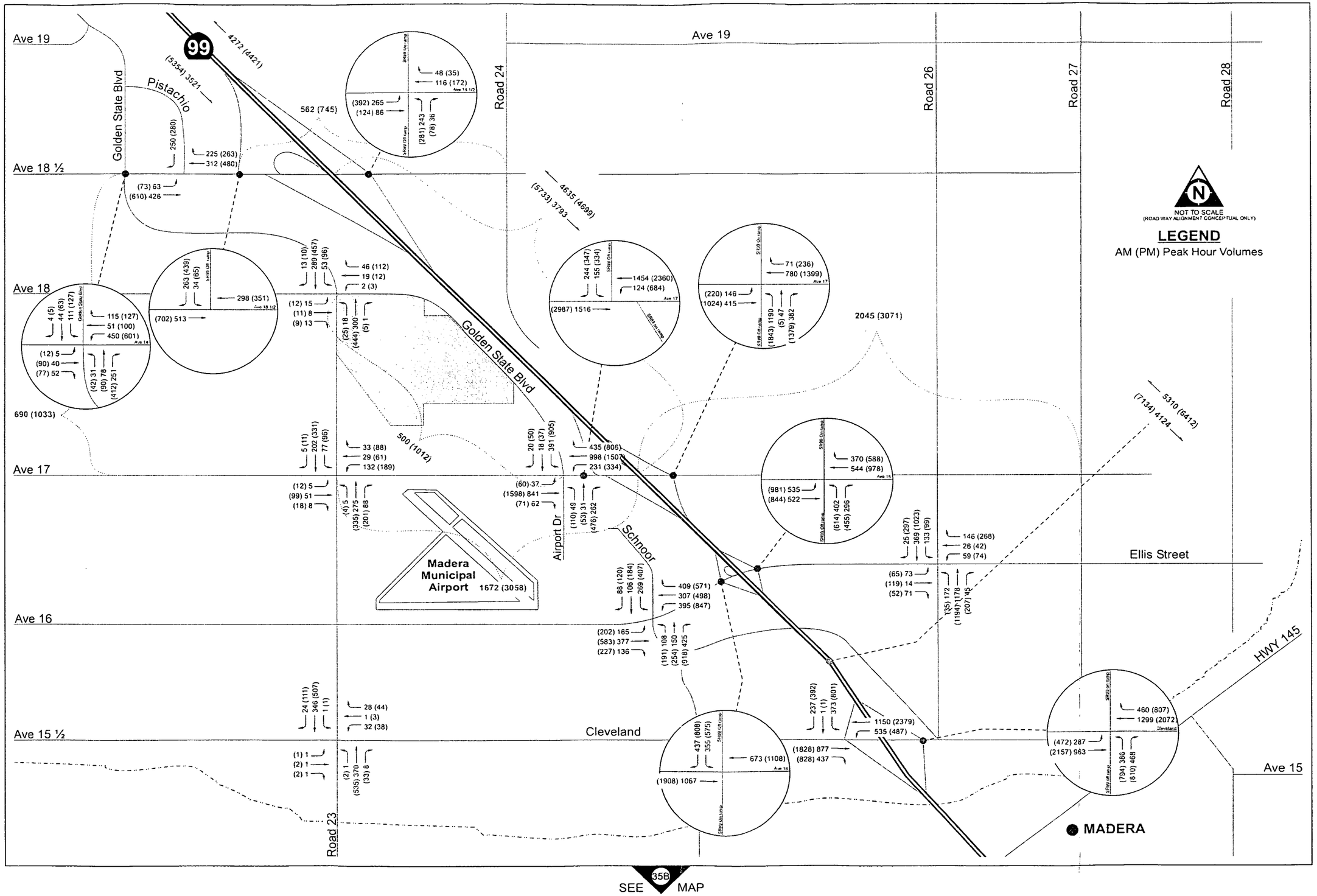
TPG Consulting

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

North Fork Casino
Madera County

04-837.1

Figure 34



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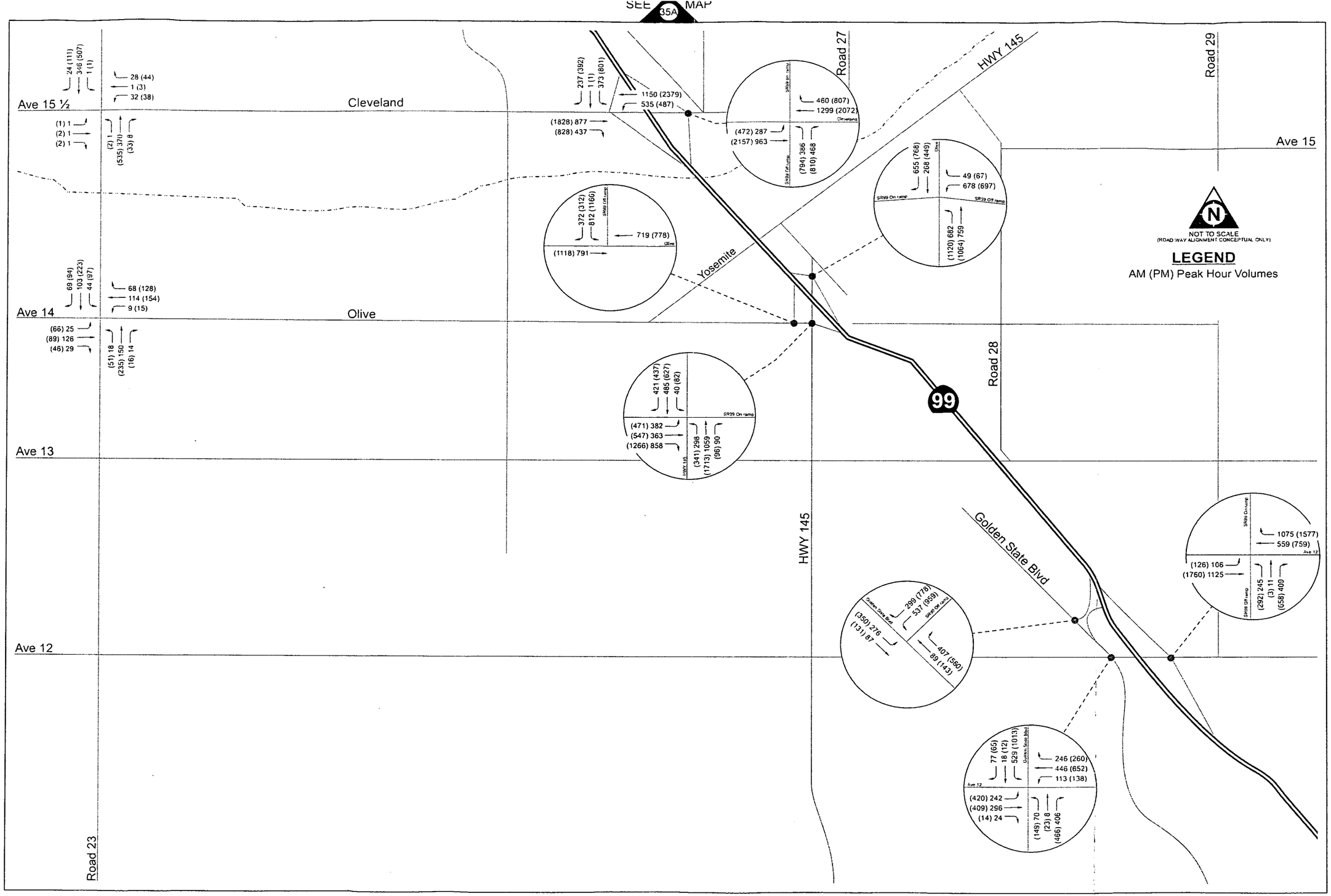
North Fork Casino
Madera County

Figure 35

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

TPG Consulting



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North Fork Casino
Madera County

Figure 35

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

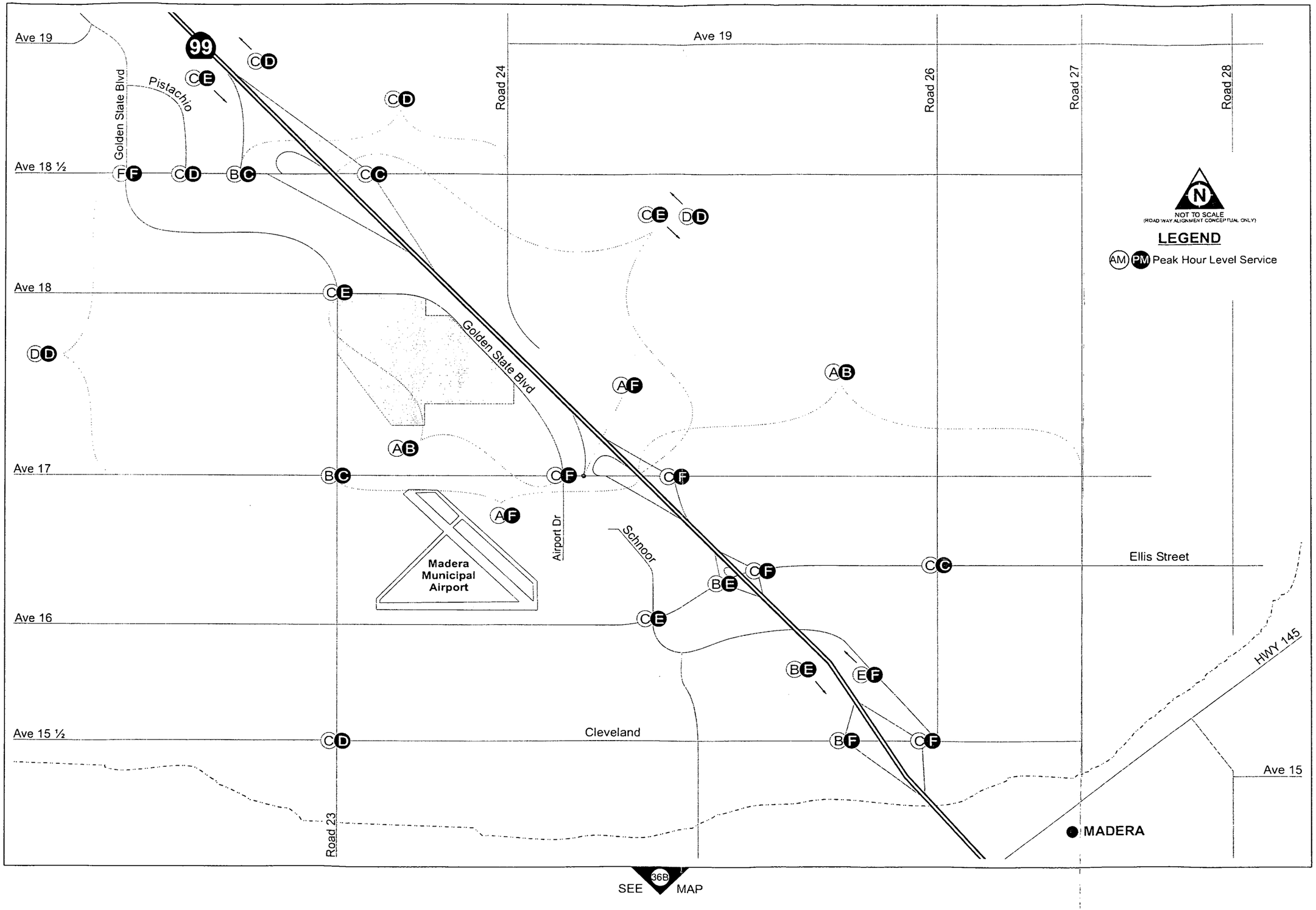
TPG CONSULTING

04-837.1

North Fork Casino
Madera County

Figure 36

LEVELS OF SERVICE
2030 Project
Madera Site
(Alternative C)



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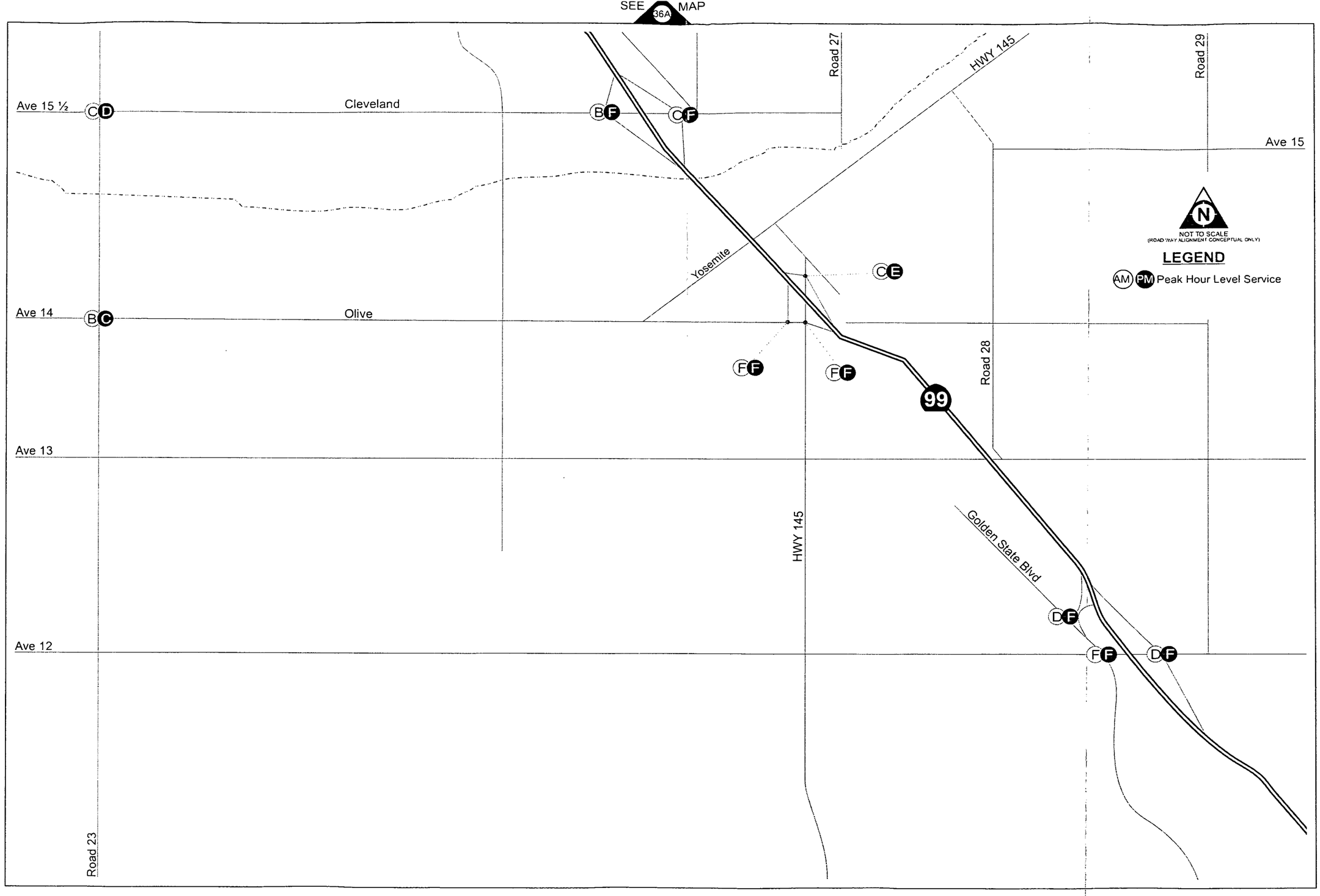

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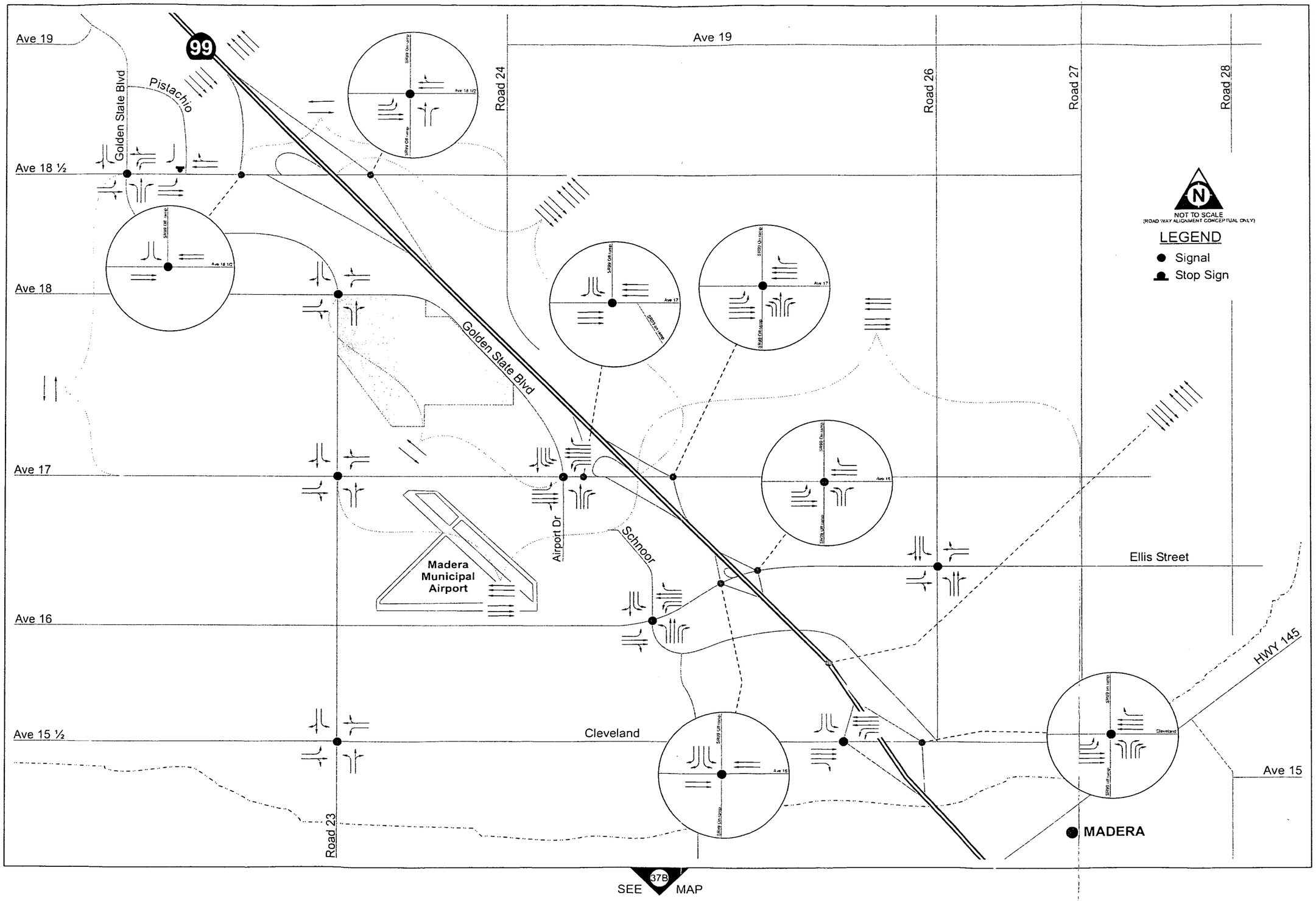
North Fork Casino
Madera County

Figure 36

LEVELS OF SERVICE
2030 Project
Madera Site
(Alternative C)

TPG Consulting



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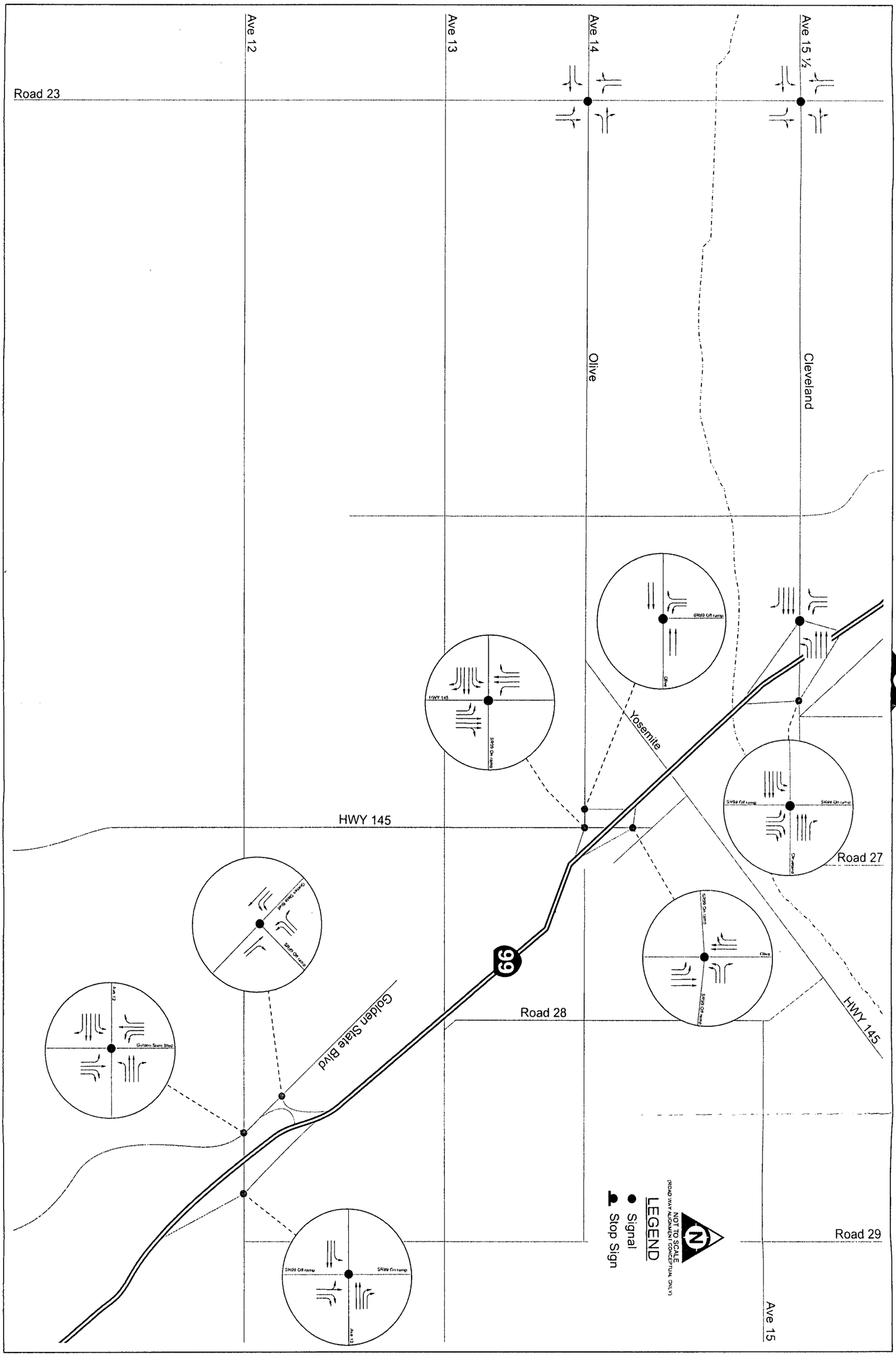
North Fork Casino
Madera County

Figure 37

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

TPG CONSULTING



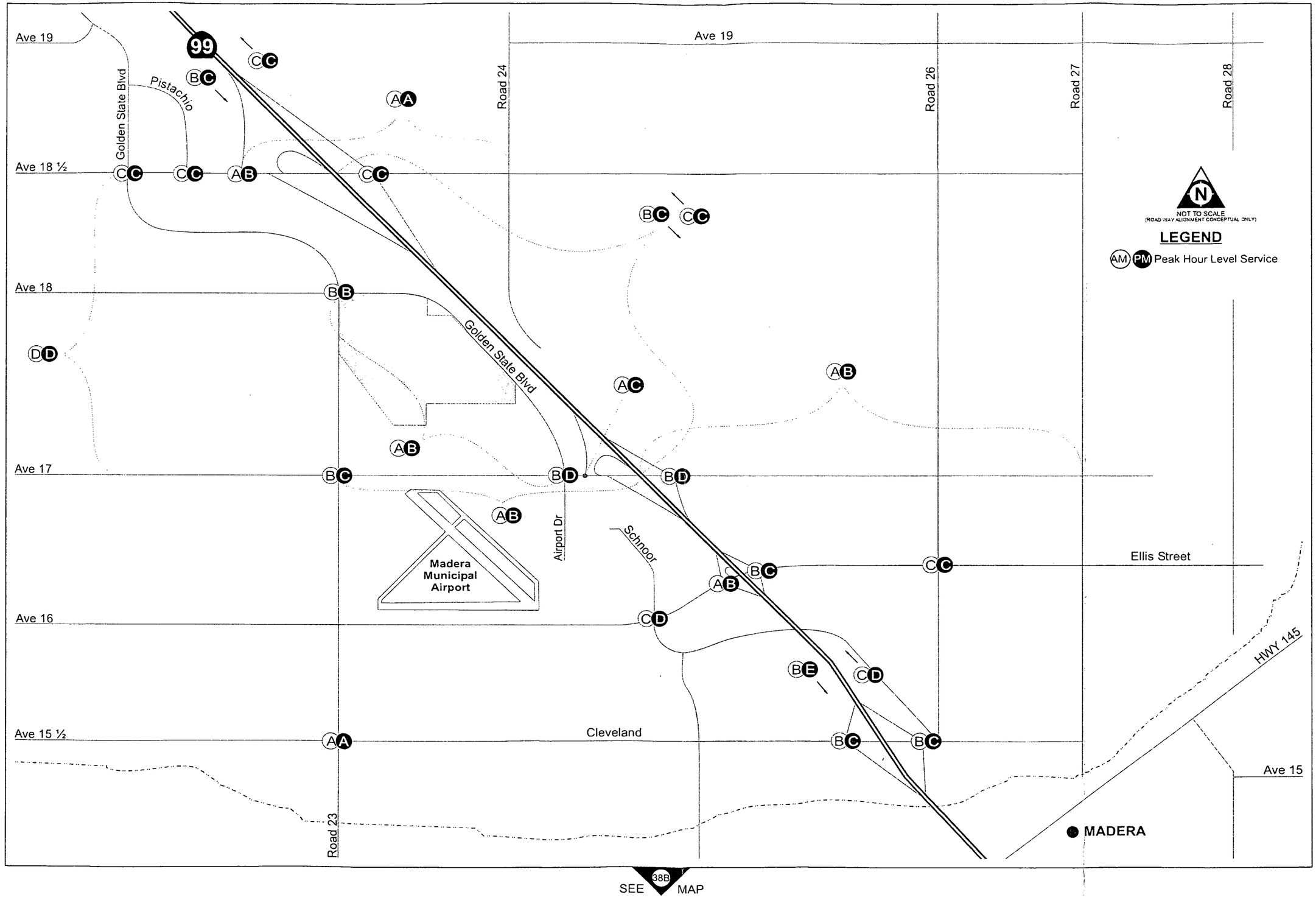
TPG Consulting

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

North Fork Casino
Madera County

04-837.1

Figure 37



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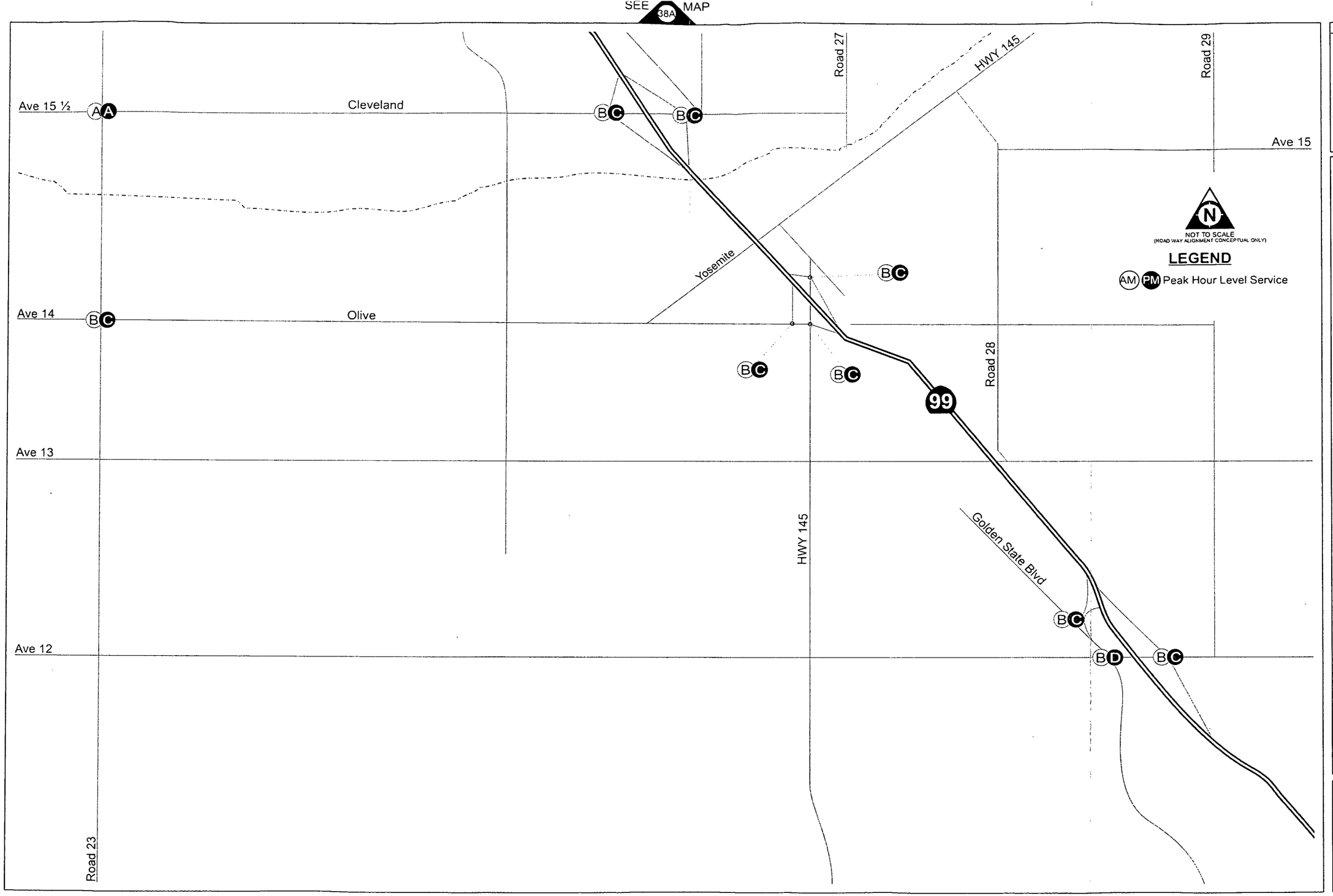
North Fork Casino
Madera County

Figure 38

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

TPG Consulting



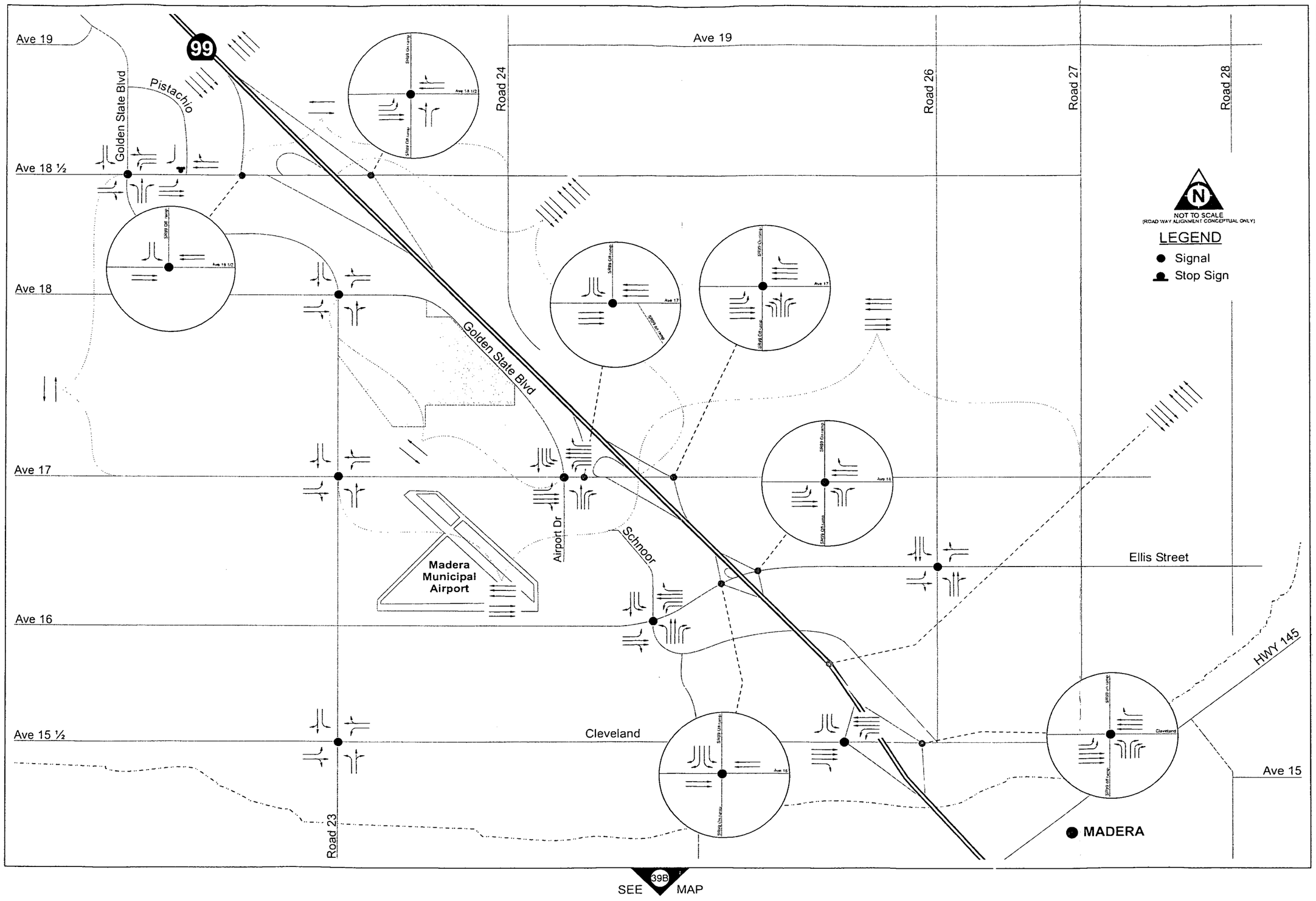
04-837.1

North Fork Casino
Madera County

Figure 38

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

TPG Consulting



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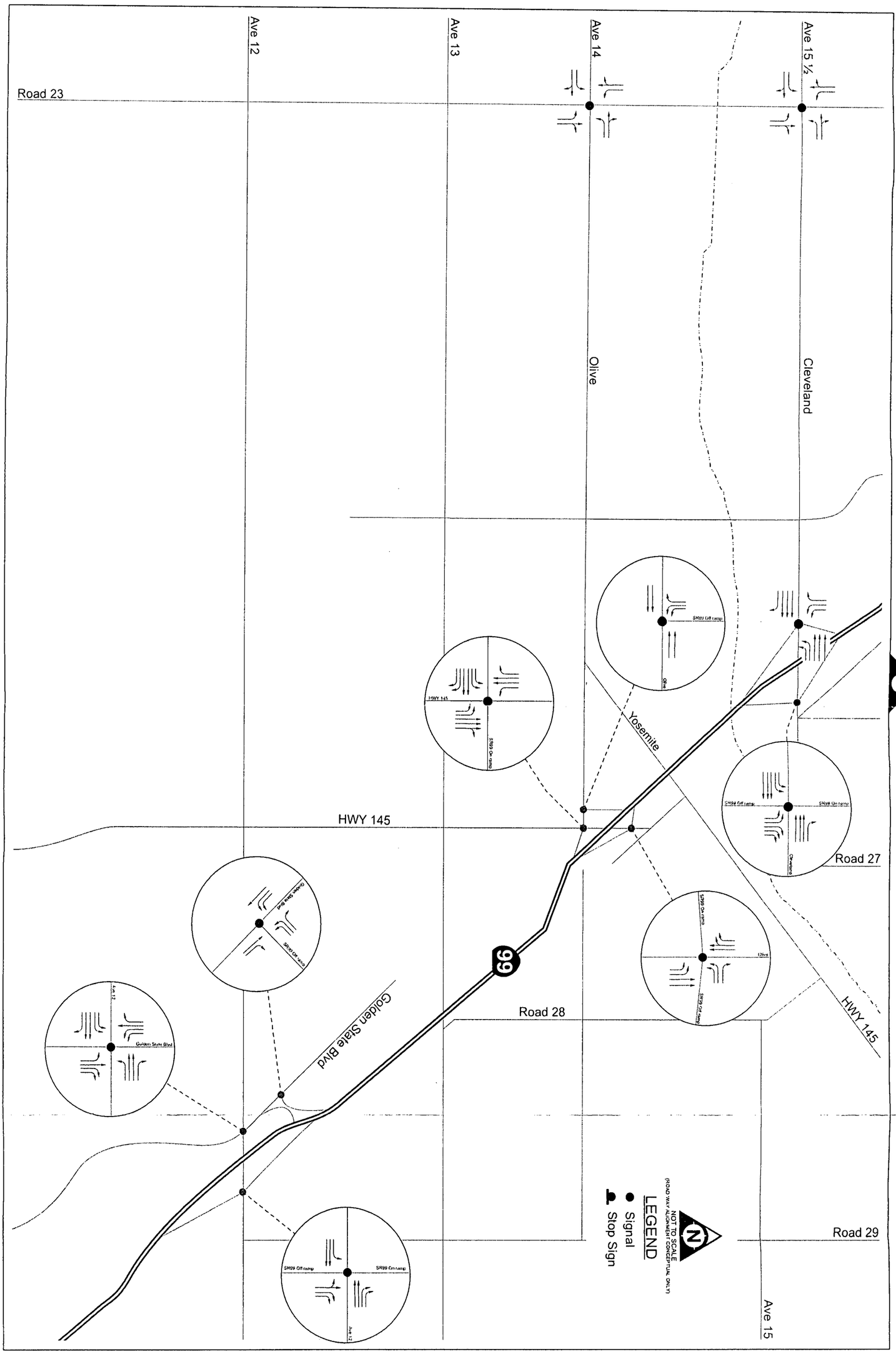
North Fork Casino
Madera County

Figure 39

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

TPG Consulting



TPG Consulting

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

North Fork Casino
Madera County

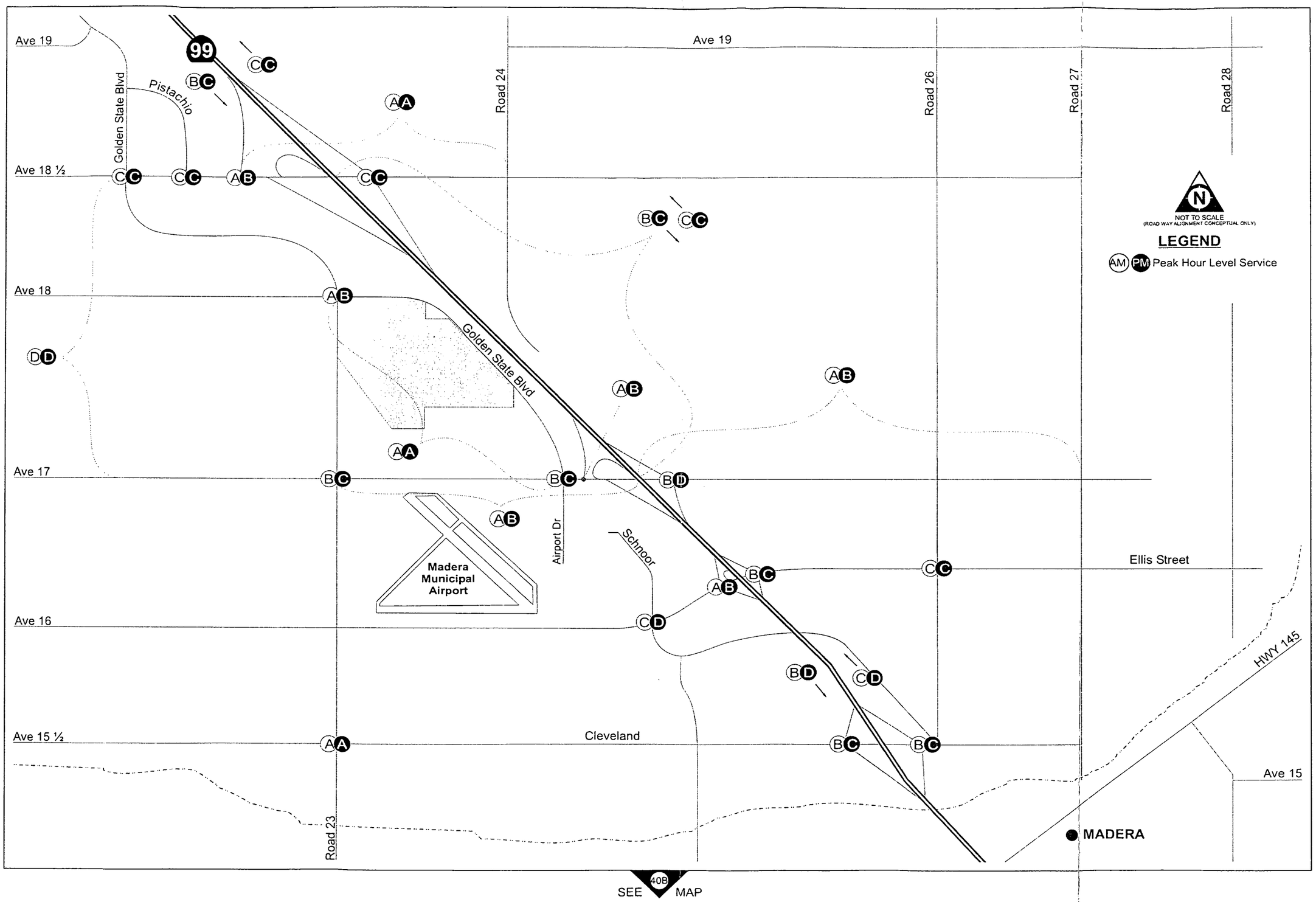
04-837.1

Figure 39

04-837.1

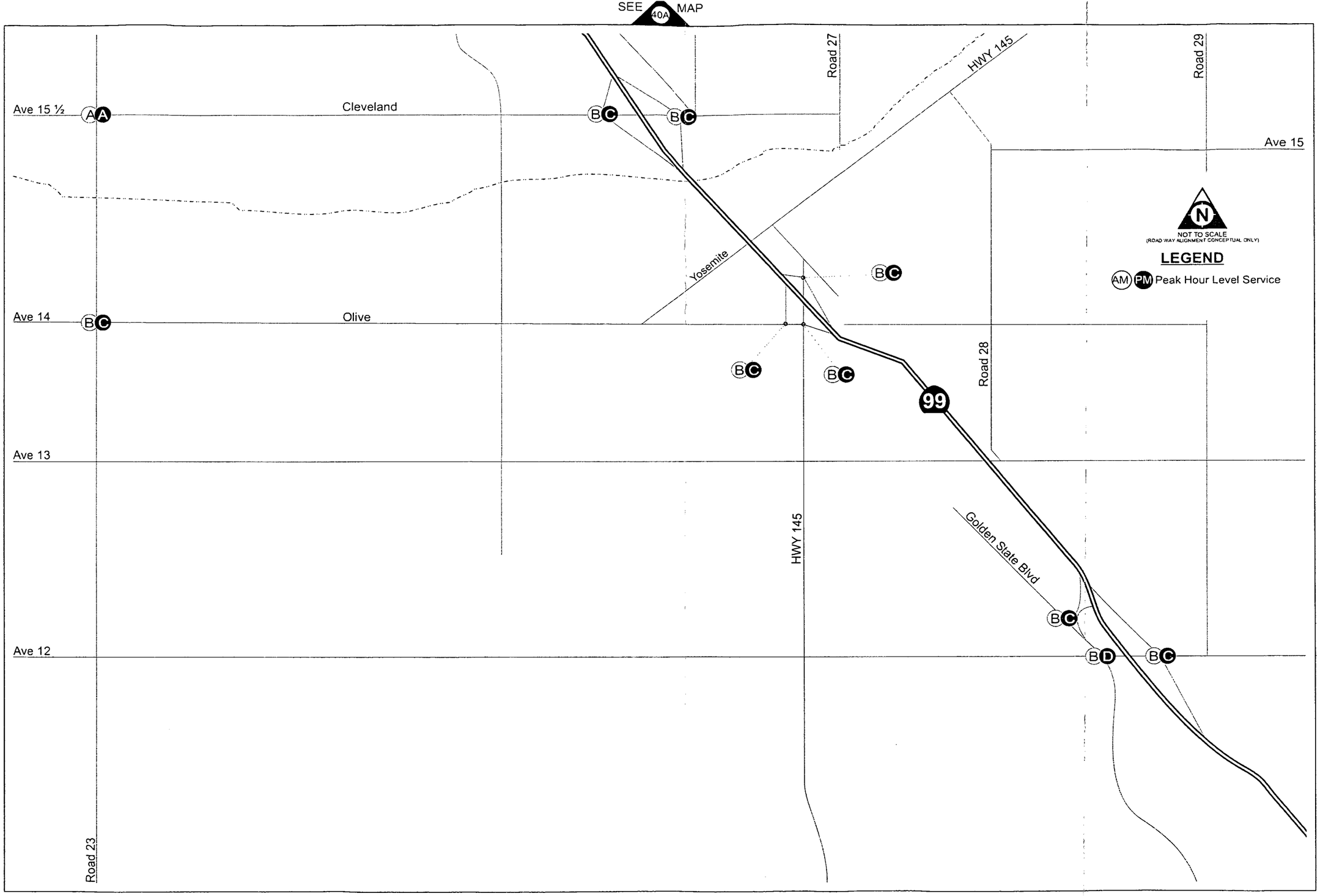
North Fork Casino
Madera County

Figure 40



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

TPG Consulting



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North Fork Casino
Madera County

Figure 40

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

TPG Consulting

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 Forth Site (Alternative D, E)

Existing (2005) Conditions

Figures 43, 44, and 45 show the Existing (2005) lane configurations and intersection control, AM and PM peak hour intersection traffic volumes, and resulting Existing (2005) levels of service for the North Fork Site. The Existing (2005) lane configurations and intersection control are also used in the following analysis scenarios:

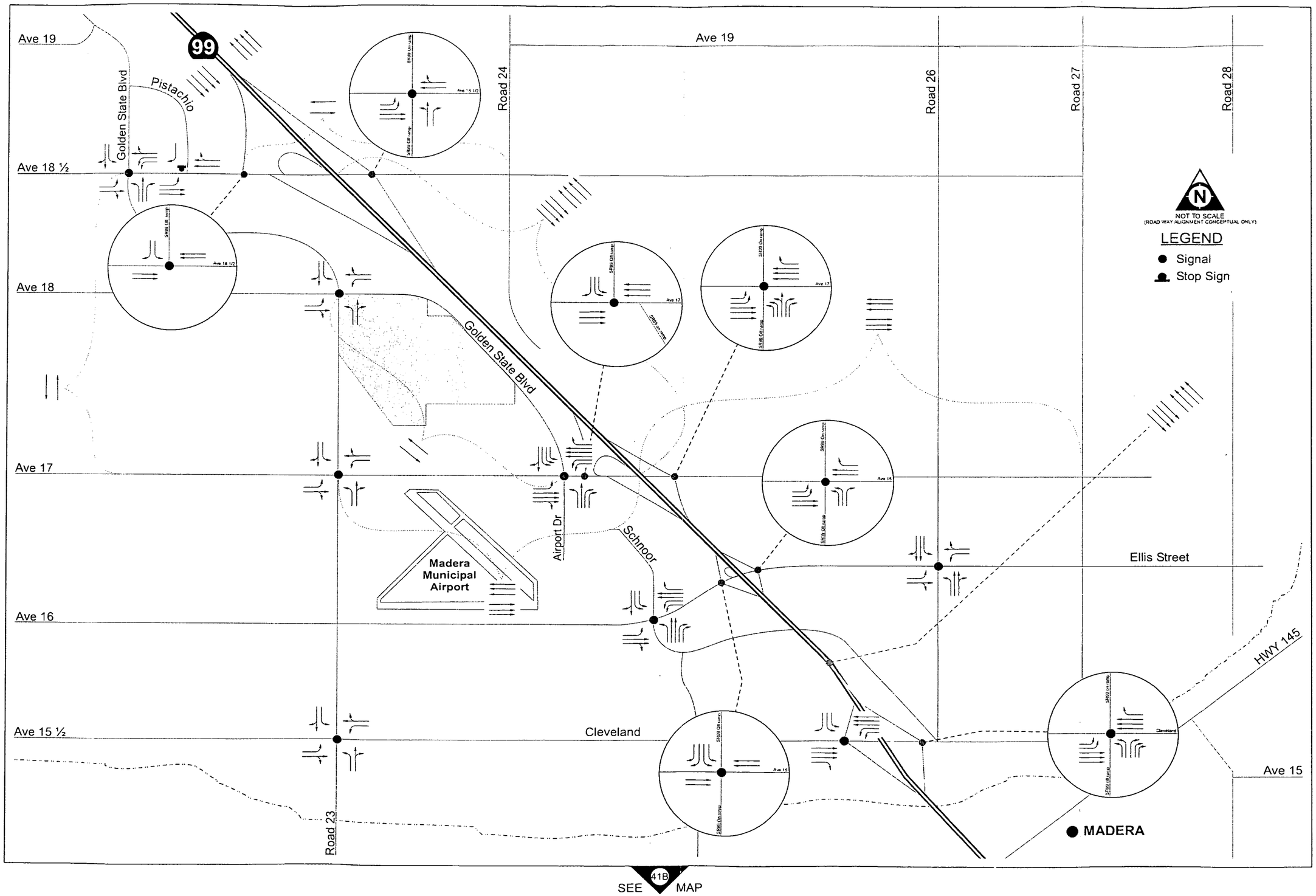
- Opening Day (2008) No Project
- Opening Day (2008) Project
- 2030 No Project

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 (2008) No Project Conditions

Alternative E (No Project Alternative)

Figures 46 and 47 show the Opening Day (2008) No Project Alternative E AM and PM peak hour intersection traffic volumes, and resulting Opening Day (2008) 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.



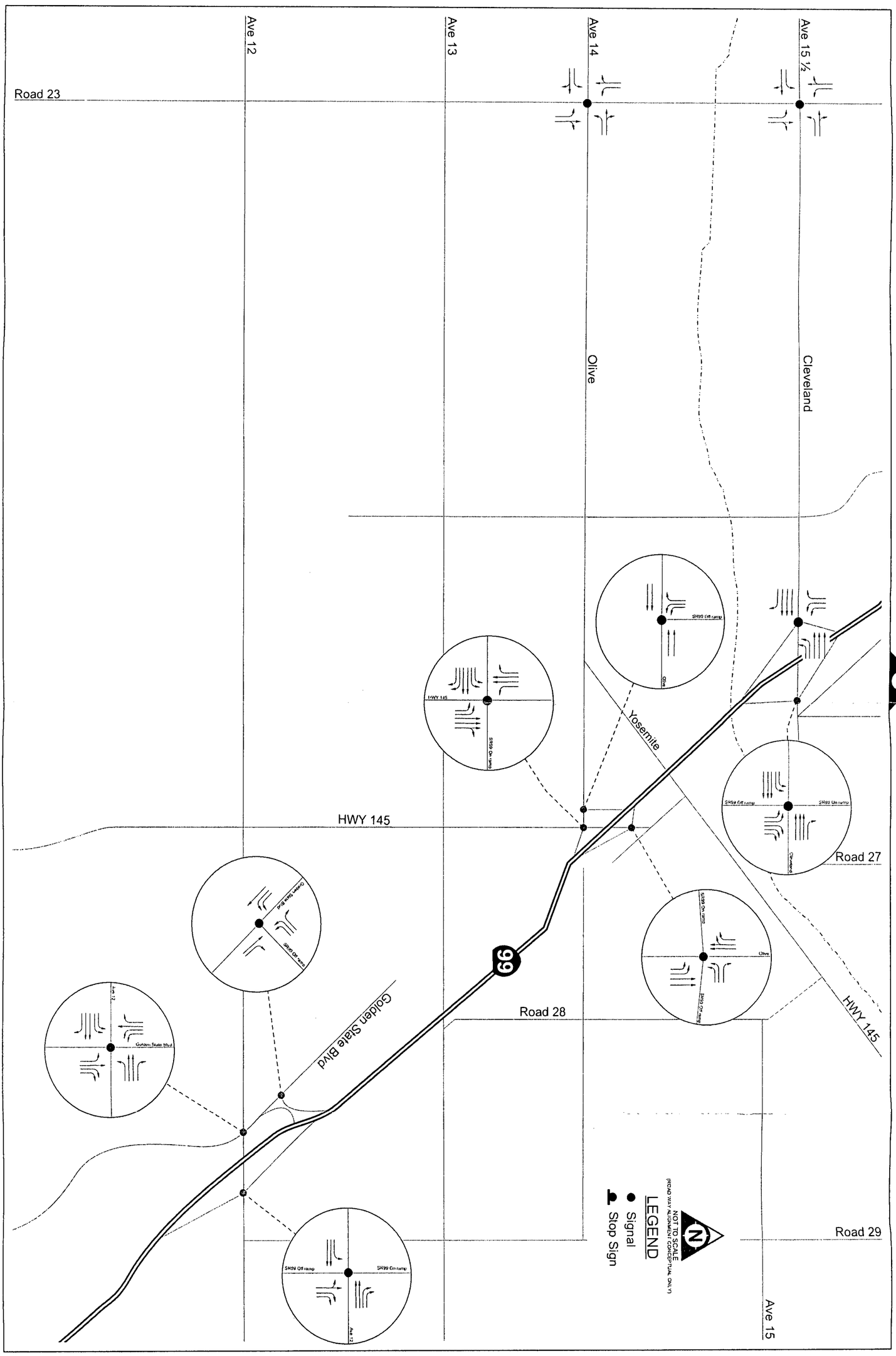
04-837.1

North Fork Casino
Madera County

Figure 41

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

TPG CONSULTING



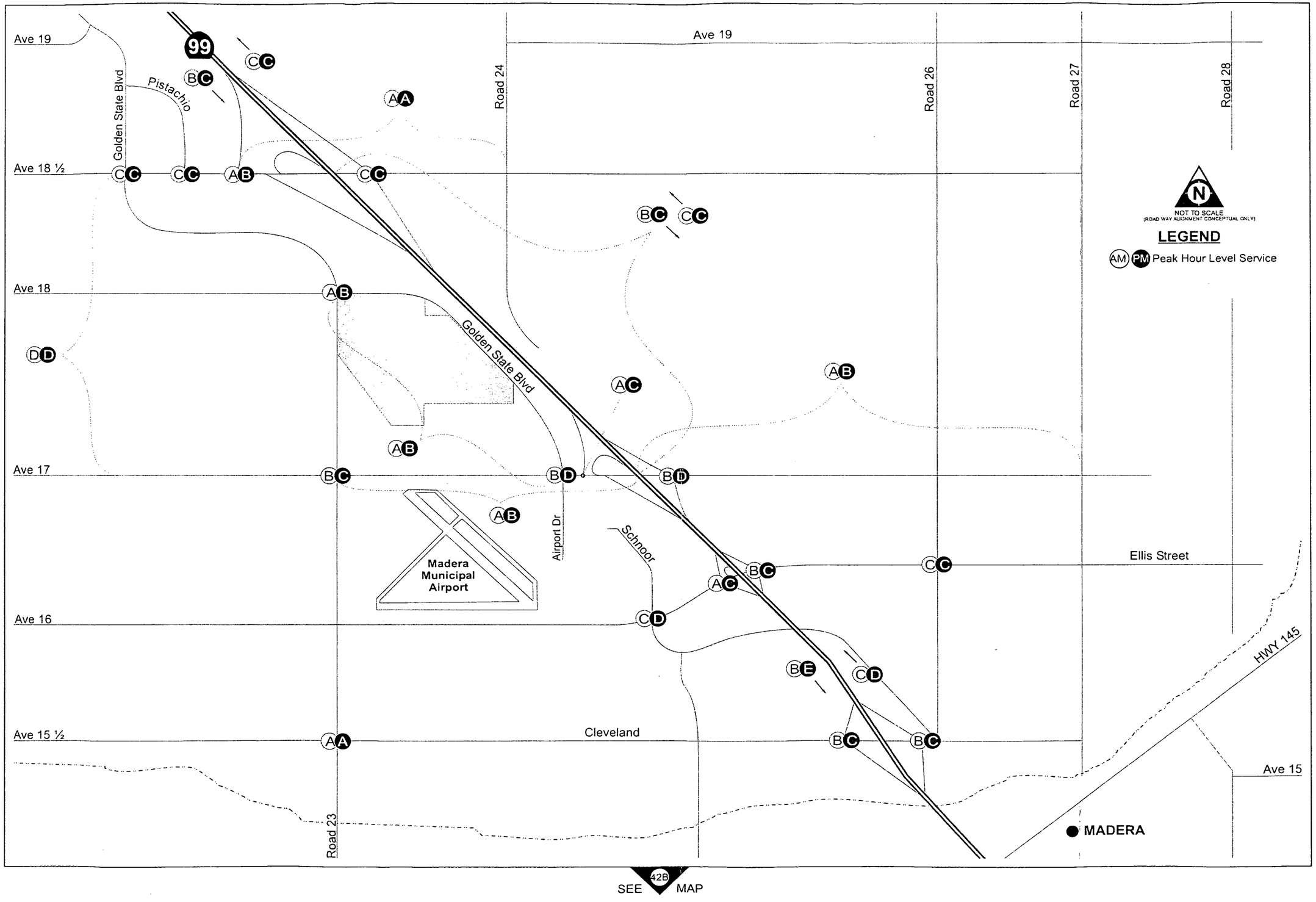
TPG Consulting

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

North Fork Casino
Madera County

04-837.1

Figure 41



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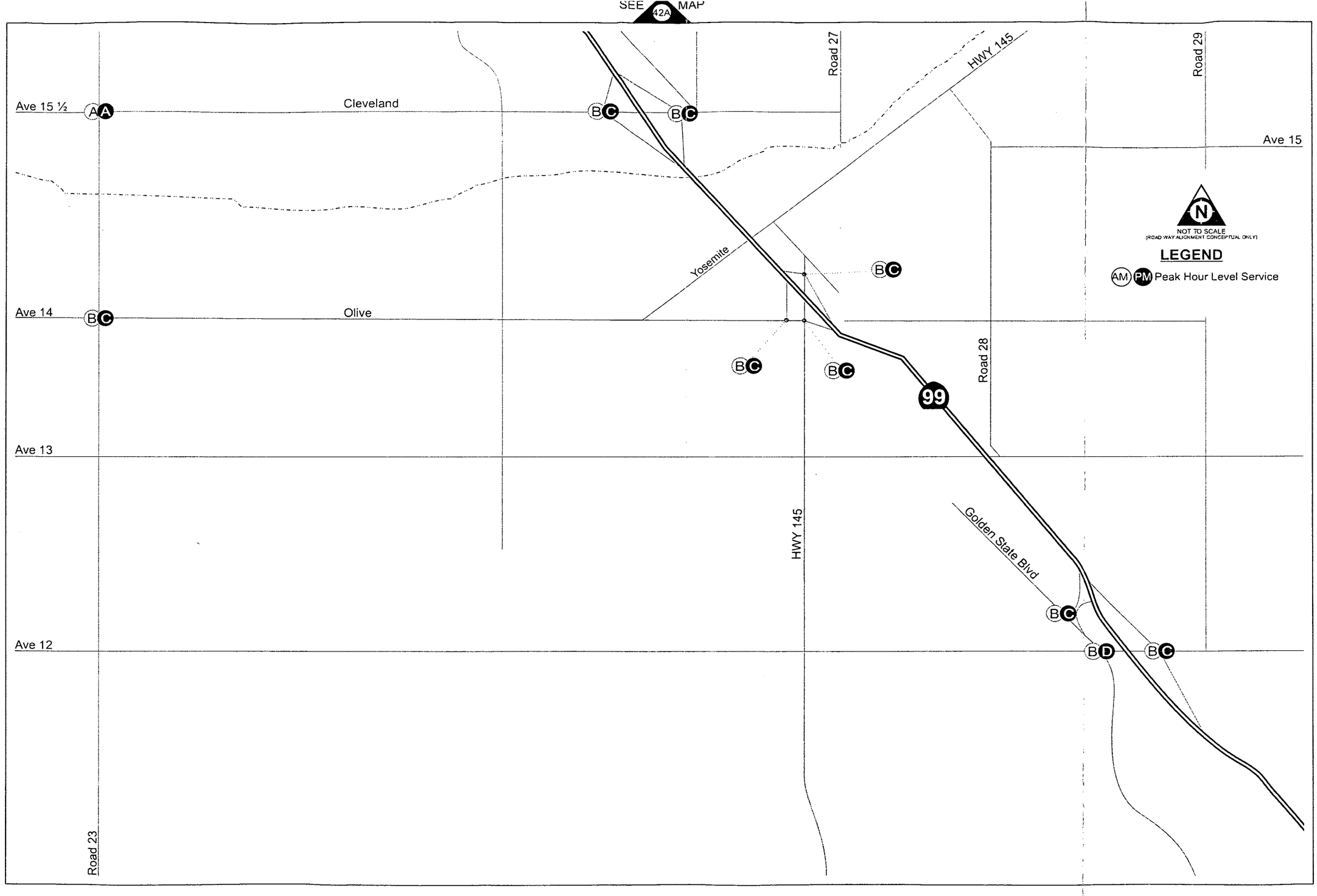
North Fork Casino
Madera County

Figure 42

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

TPG Consulting



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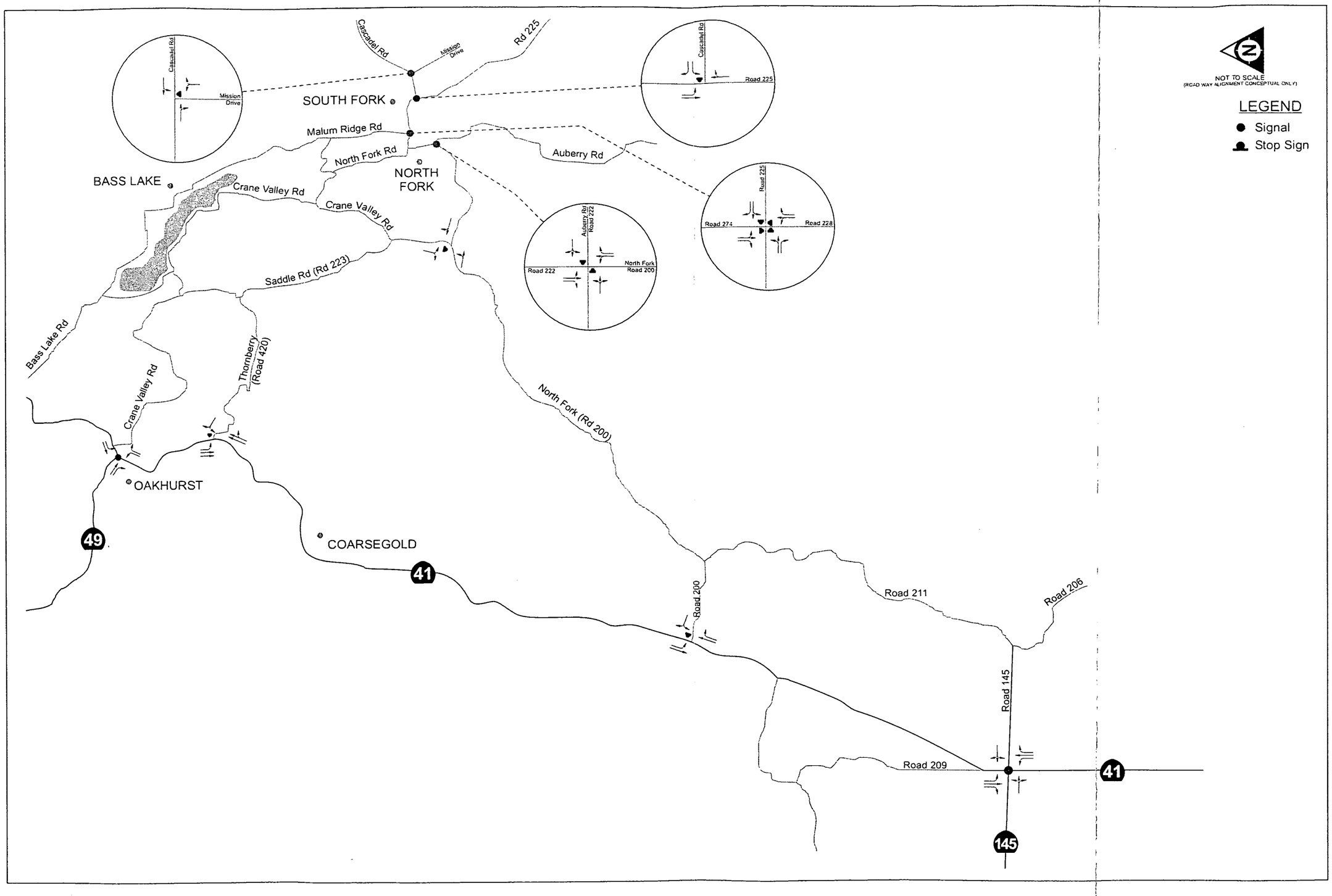
North Fork Casino
Madera County

Figure 42

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

TPG Consulting



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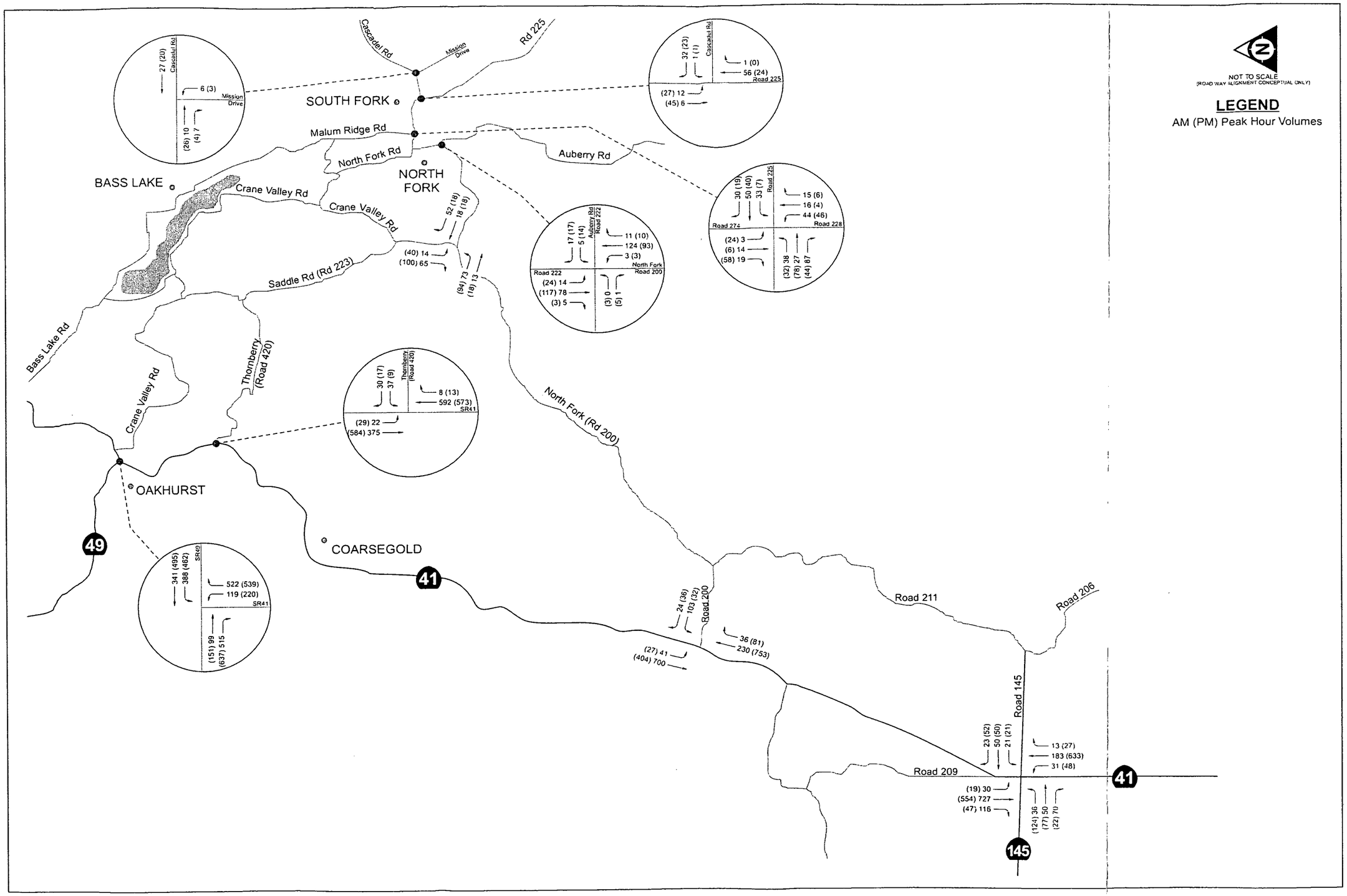
North Fork Casino
Madera County

Figure 43

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

TPG Consulting



04-837.1

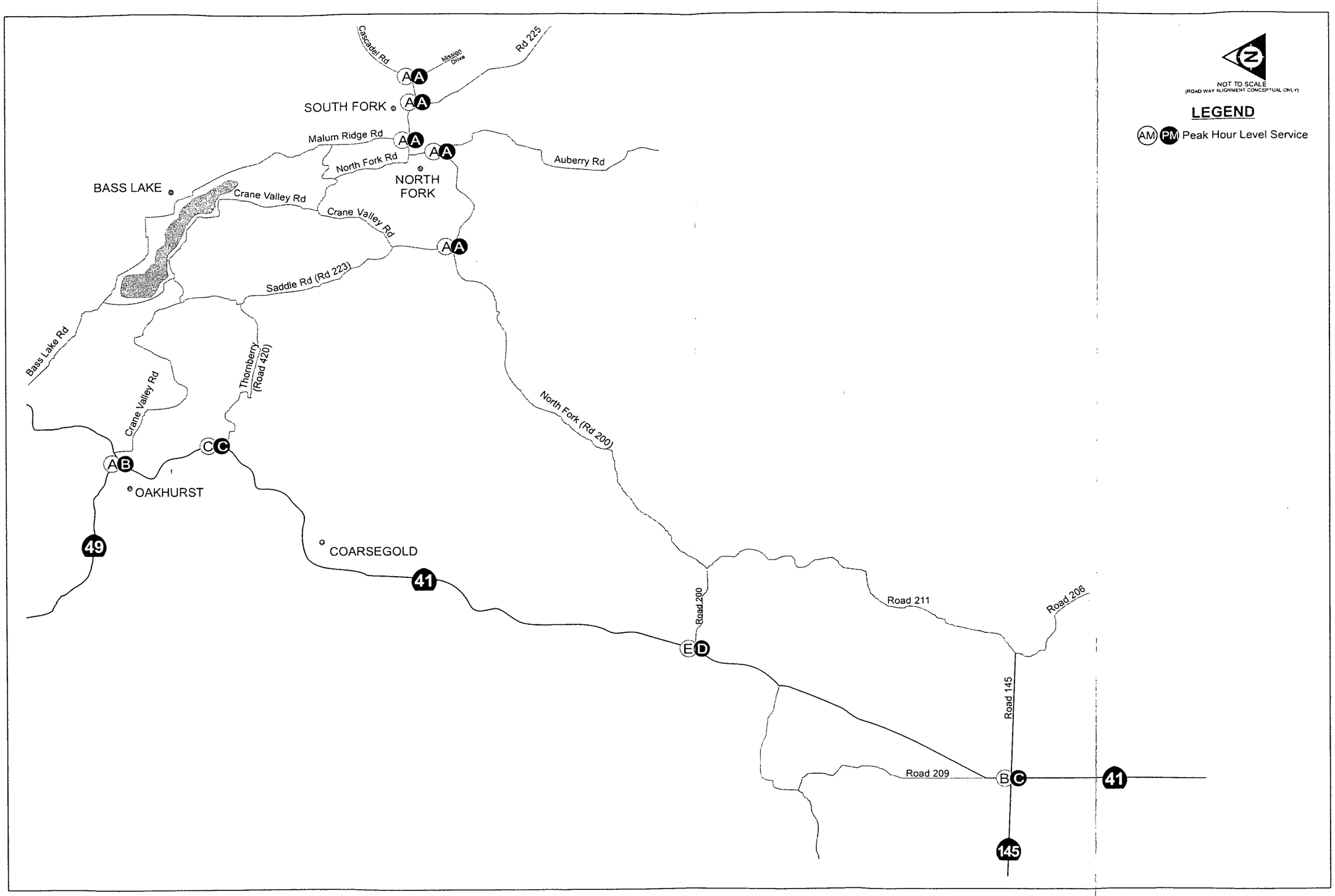
North Fork Casino
Madera County

Figure 44

PEAK HOUR TRAFFIC VOLUMES

Existing
North Fork Site
(Alternative E)

TPG CONSULTING



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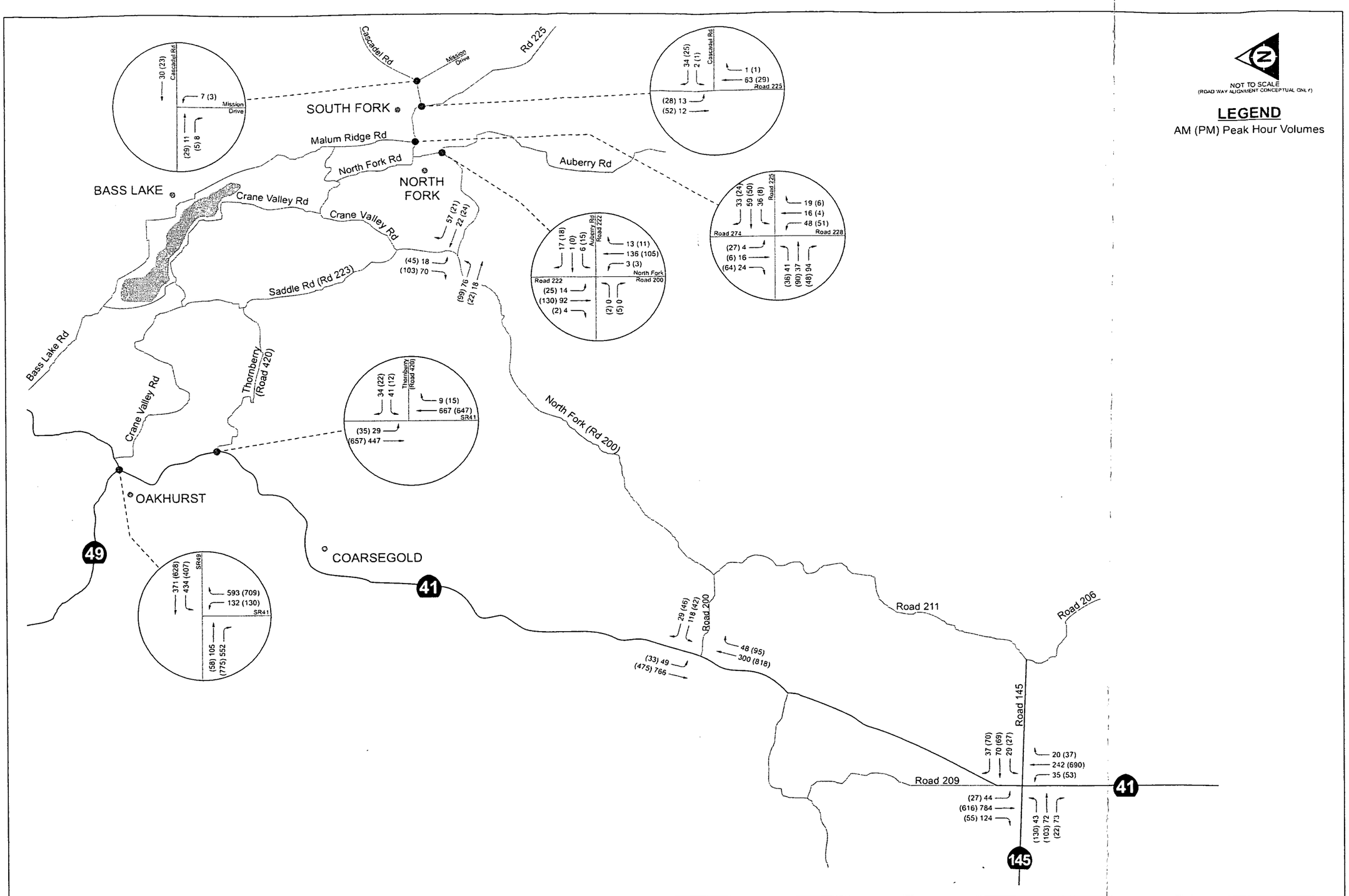
North Fork Casino
Madera County

Figure 45

LEVEL OF SERVICE
Existing
North Fork Site
(Alternative E)

TPG Consulting



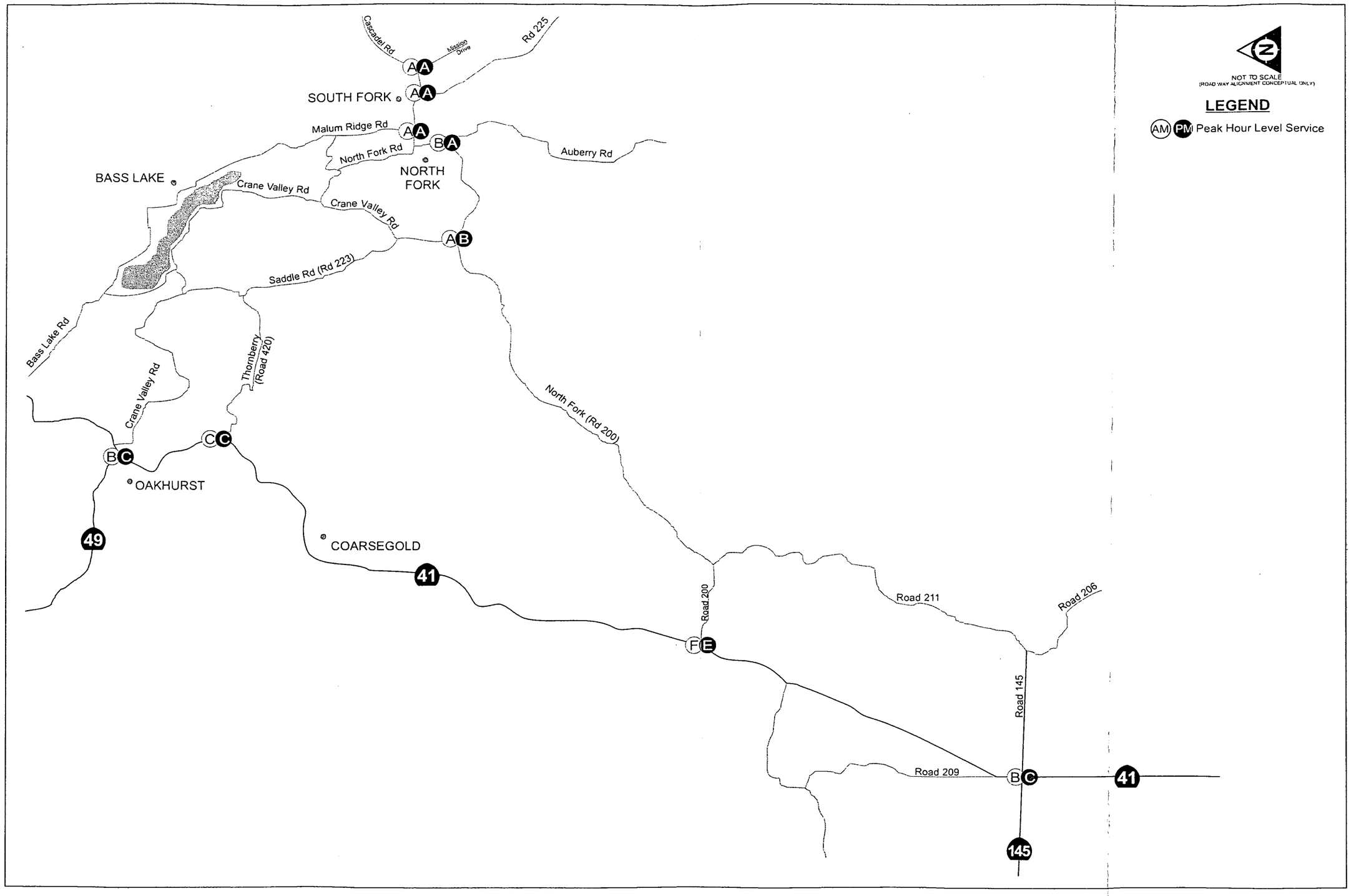
04-837.1

North Fork Casino
Madera County

Figure 46

PEAK HOUR TRAFFIC VOLUMES
2008 No Project
North Fork Site
(Alternative E)

TPG CONSULTING



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North Fork Casino
Madera County

Figure 47

LEVEL OF SERVICE
2008 No Project
North Fork Site
(Alternative E)

TPG Consulting

Opening Day (2008) Project Conditions

Alternative D (Off-site Alternative)

Figures 48 and 49 show the Opening Day (2008) Project Alternative D AM and PM peak hour intersection traffic volumes, and resulting Opening Day (2008) 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.

Mitigated Opening Day (2008) Project Conditions

Alternative D (Off-site Alternative)

Figures 50 and 51 show the Mitigated Opening Day (2008) Project Alternative D lane configurations and intersection control, and resulting Mitigated Opening Day (2008) Project Alternative D 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 No Project Conditions

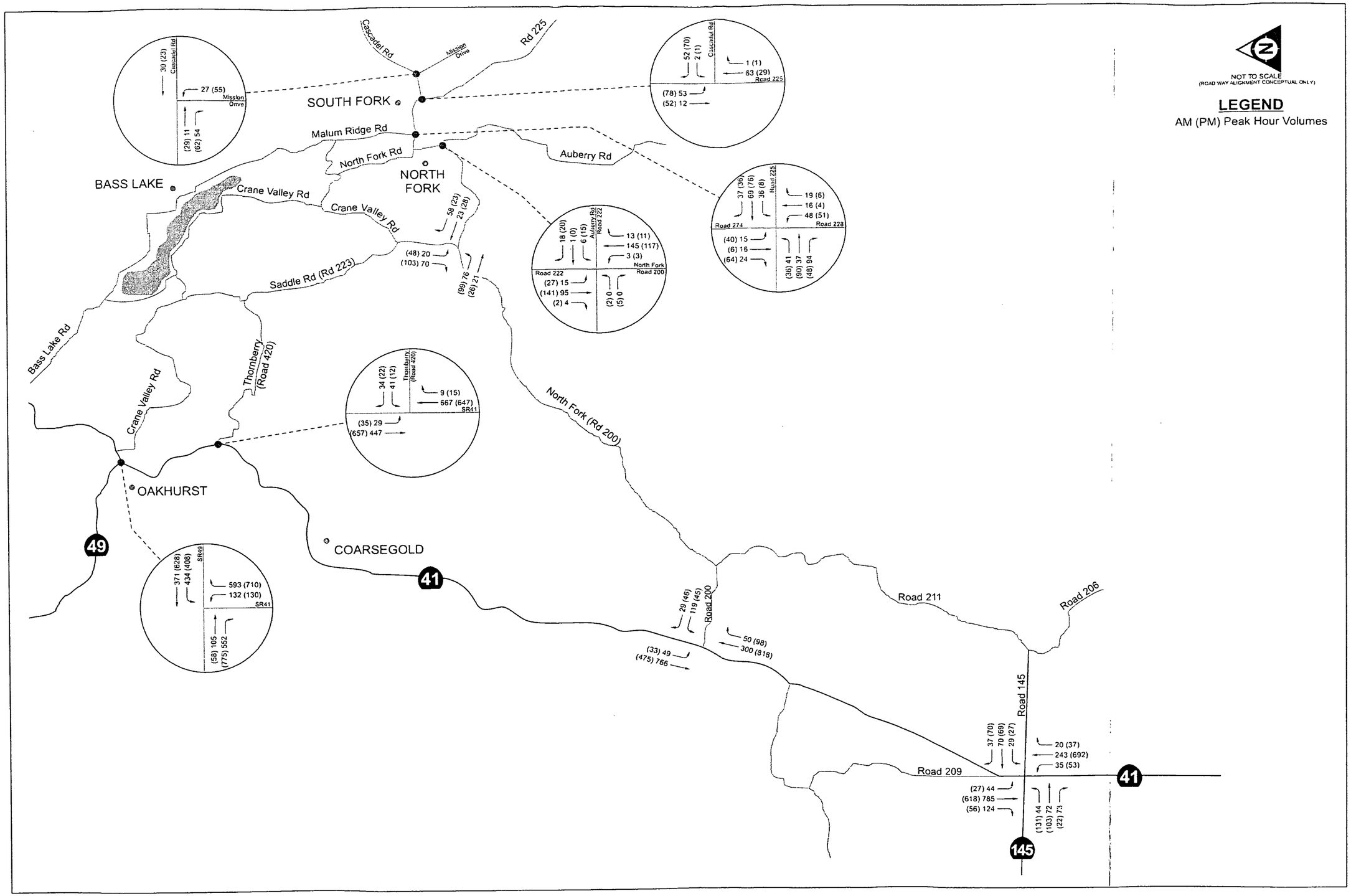
Alternative E (No Project Alternative)

Figures 52 and 53 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 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.

2030 Project Conditions

Alternative D (Off-site Alternative)

Figures 54, 55, and 56 show the 2030 Project Alternative D lane configurations and intersection control, 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 56 are the levels of service for the worst operating movement at that intersection. The signalized and AWSC intersection levels of service shown on Figure 56 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 56.



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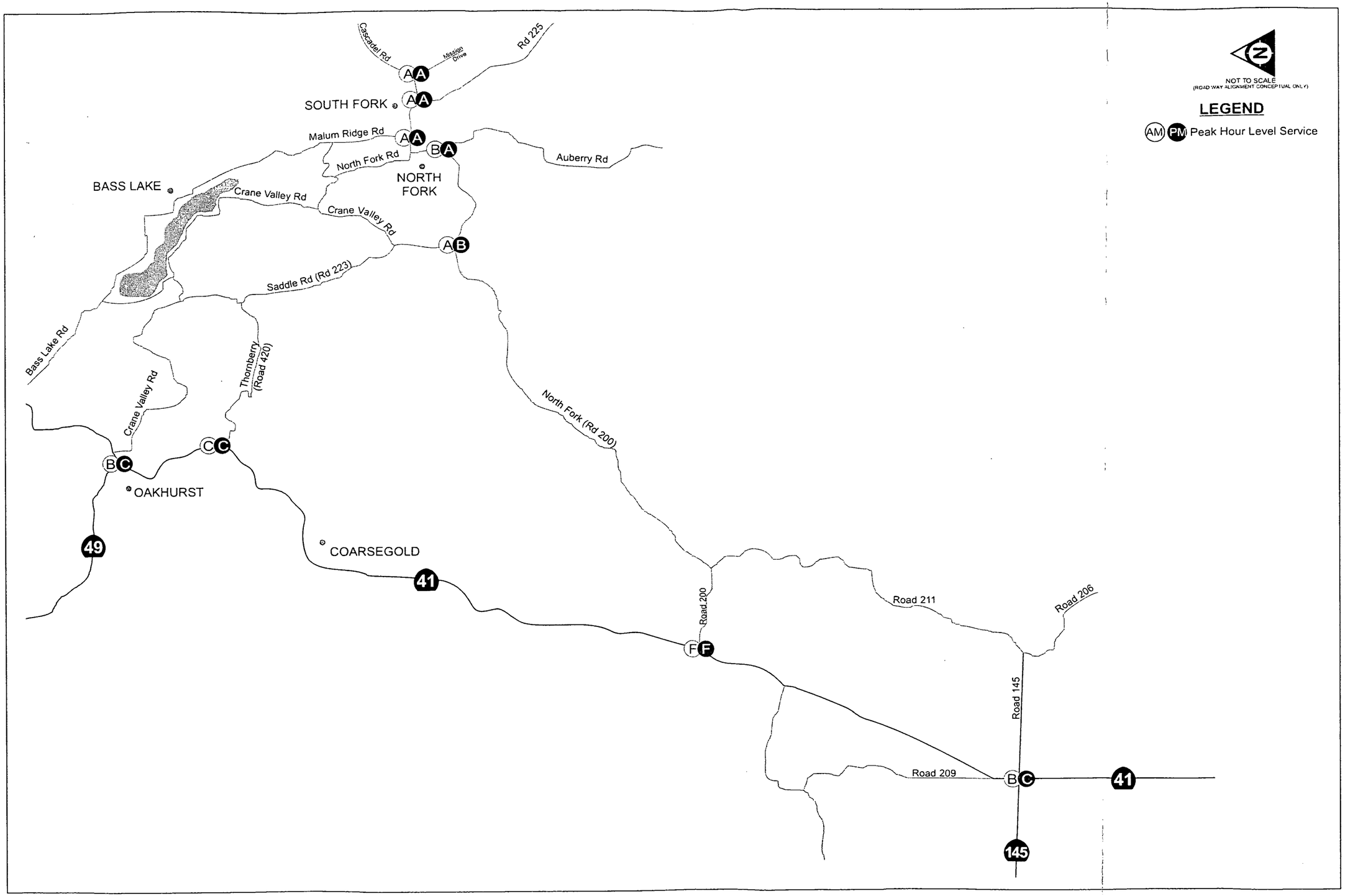
North Fork Casino
Madera County

Figure 48

PEAK HOUR TRAFFIC VOLUMES
2008 Project
North Fork Site
(Alternative D)

TPG
CONSULTING
ENGINEERS



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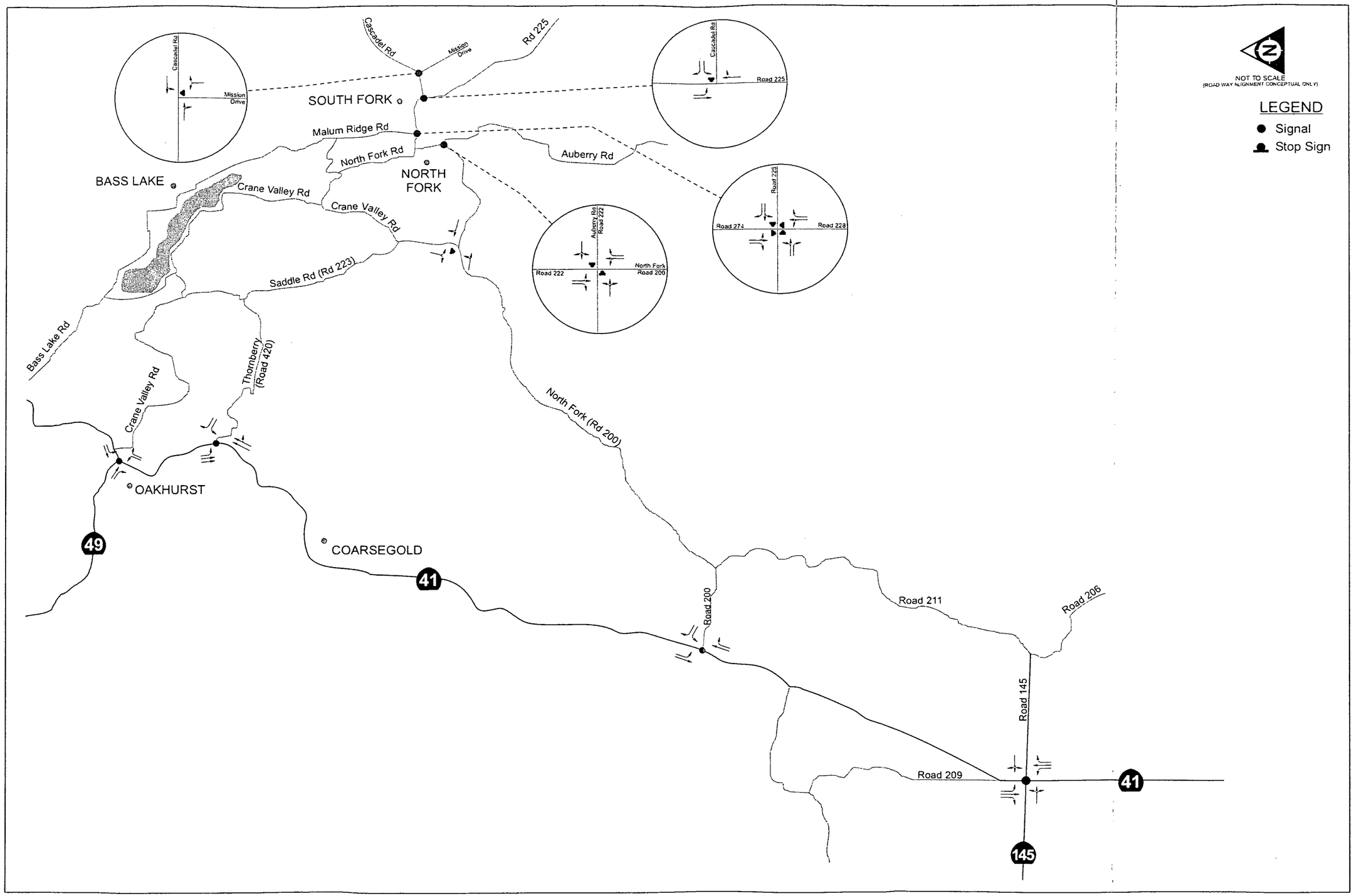
North Fork Casino
Madera County

Figure 49

LEVEL OF SERVICE
2008 Project
North Fork Site
(Alternative D)

TPG Consulting



NOT TO SCALE
(ROAD WAY ALIGNMENT CONCEPTUAL ONLY)

LEGEND

- Signal
- Stop Sign

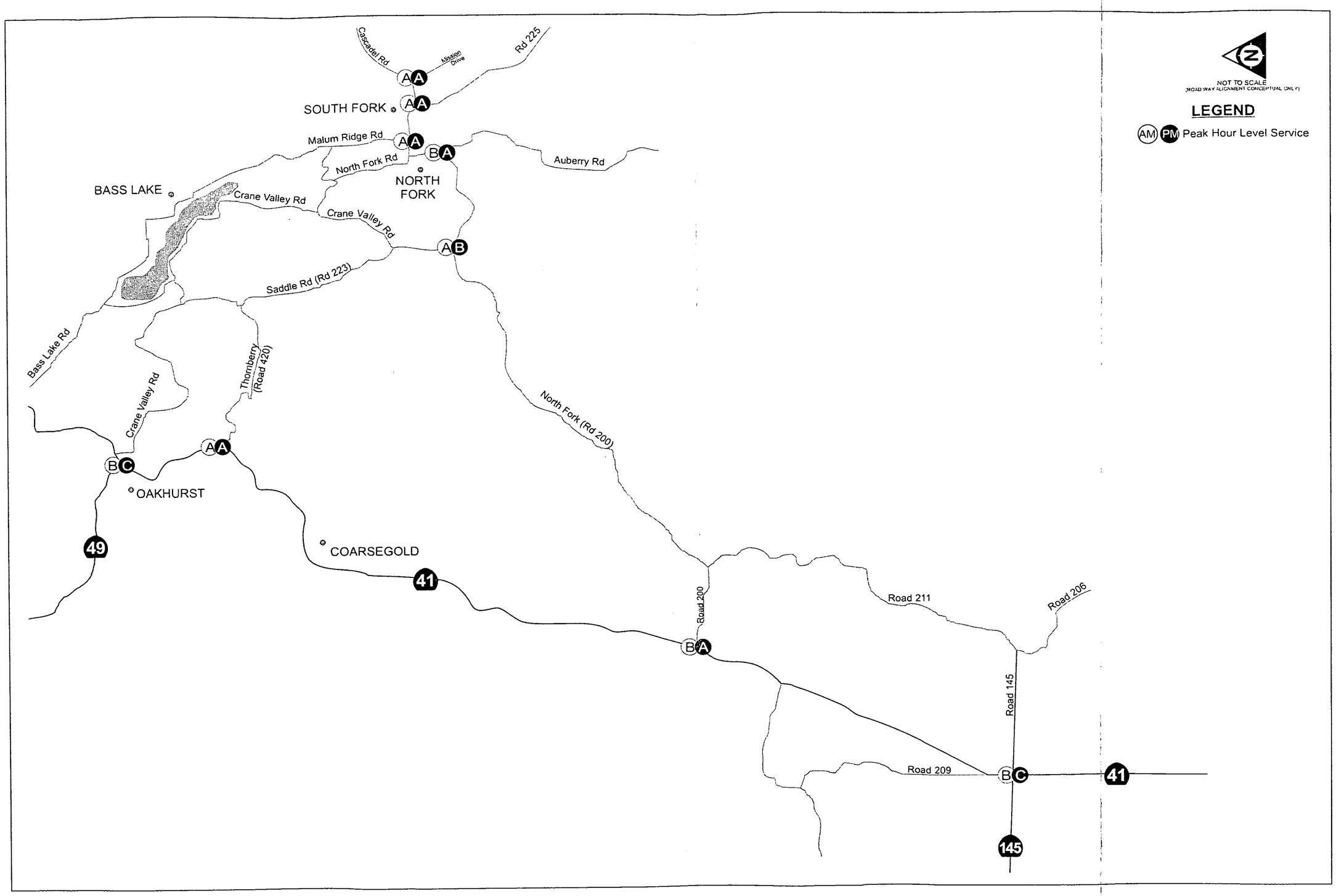
04-837.1

North Fork Casino
Madera County

Figure 50

LANE CONFIGURATION AND INTERSECTION CONTROL
Mitigated 2008 Project
North Fork Site
(Alternative D)

TPG Consulting



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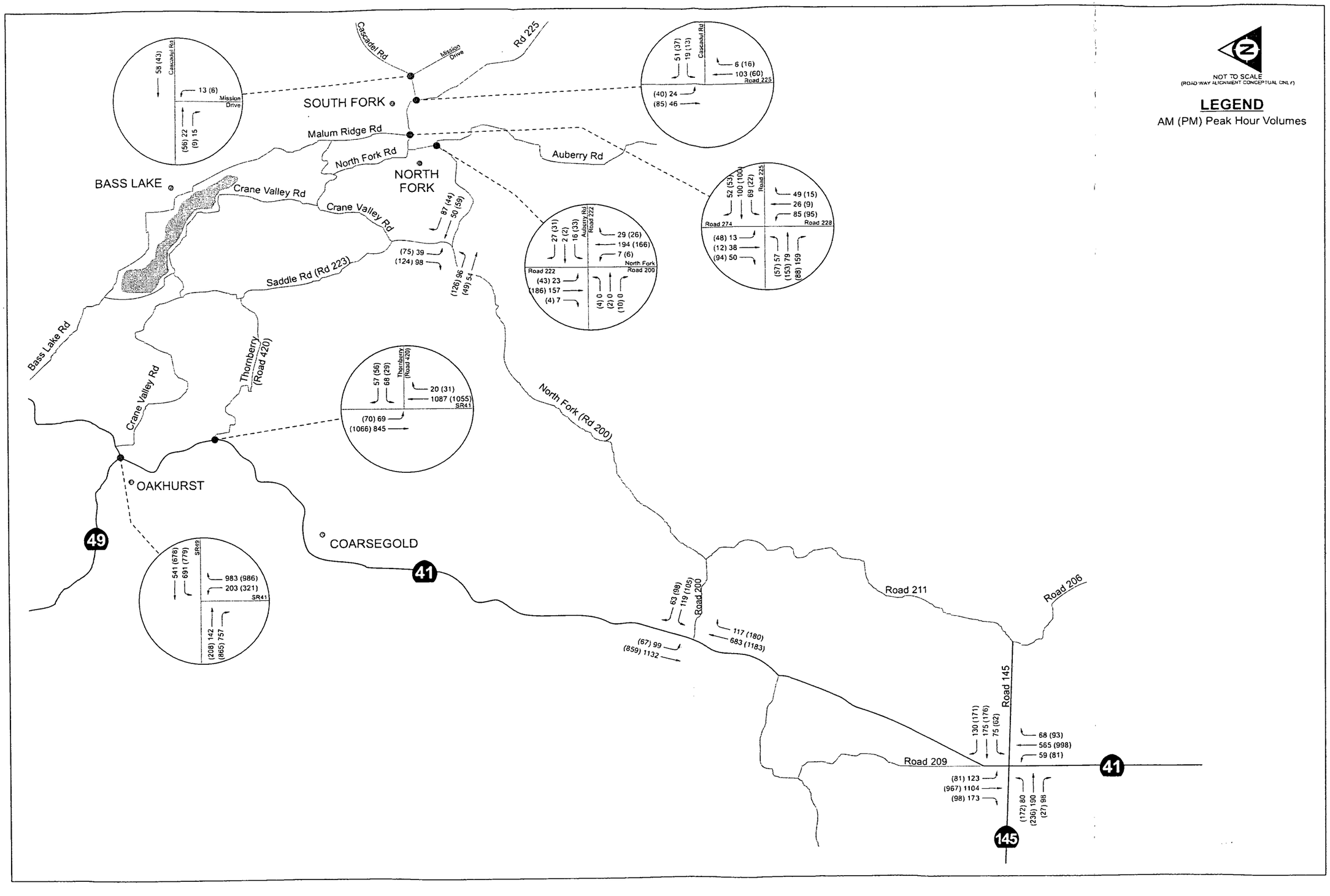
North Fork Casino
Madera County

Figure 51

LEVEL OF SERVICE
Mitigated 2008 Project
North Fork Site
(Alternative D)

TPG CONSULTING



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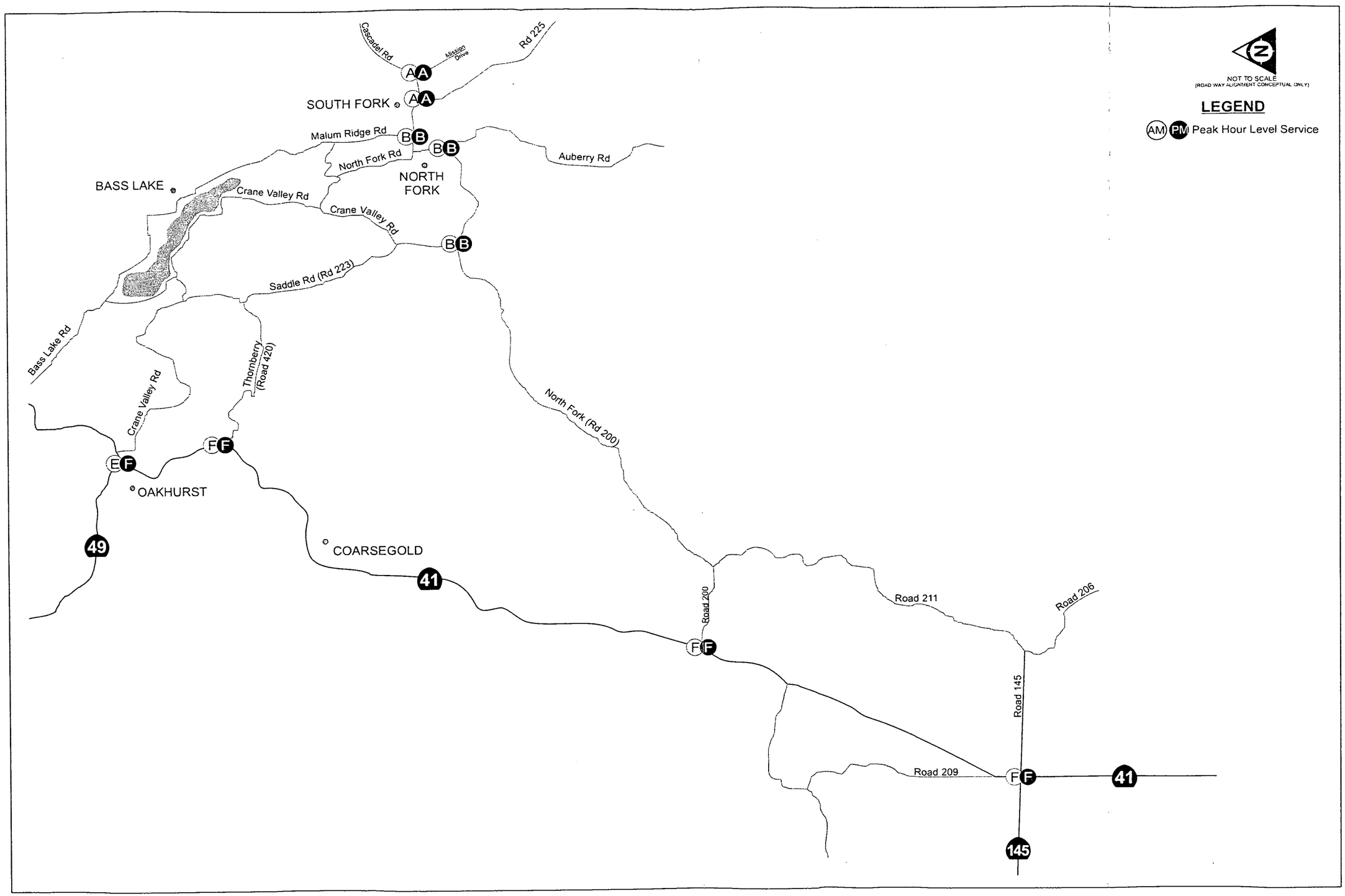
North Fork Casino
Madera County

Figure 52

PEAK HOUR TRAFFIC VOLUMES
2030 No Project
North Fork Site
(Alternative E)

TPG CONSULTING



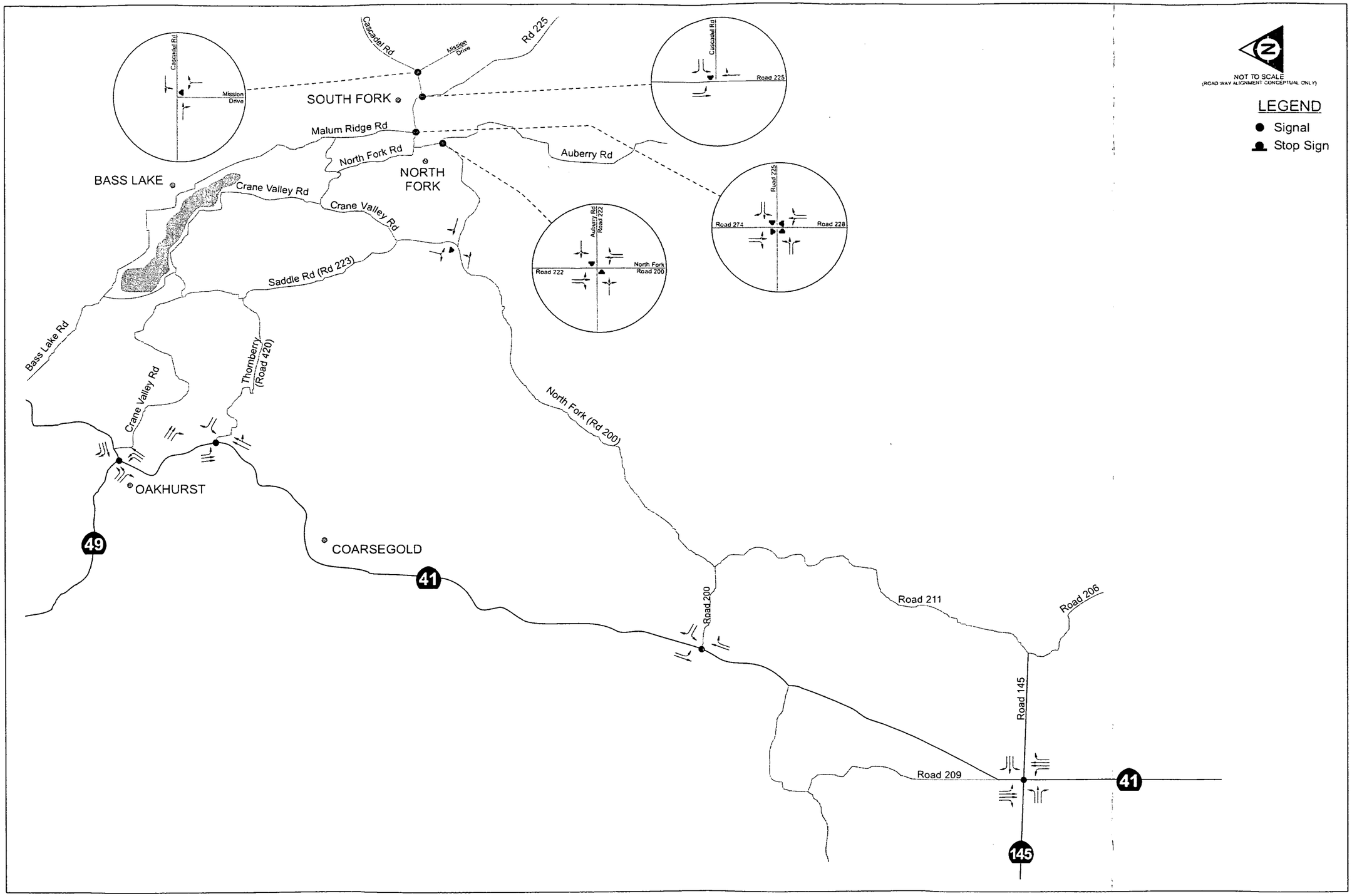
04-837.1

North Fork Casino
Madera County

Figure 53

LEVEL OF SERVICE
2030 No Project
North Fork Site
(Alternative E)

TPG Consulting



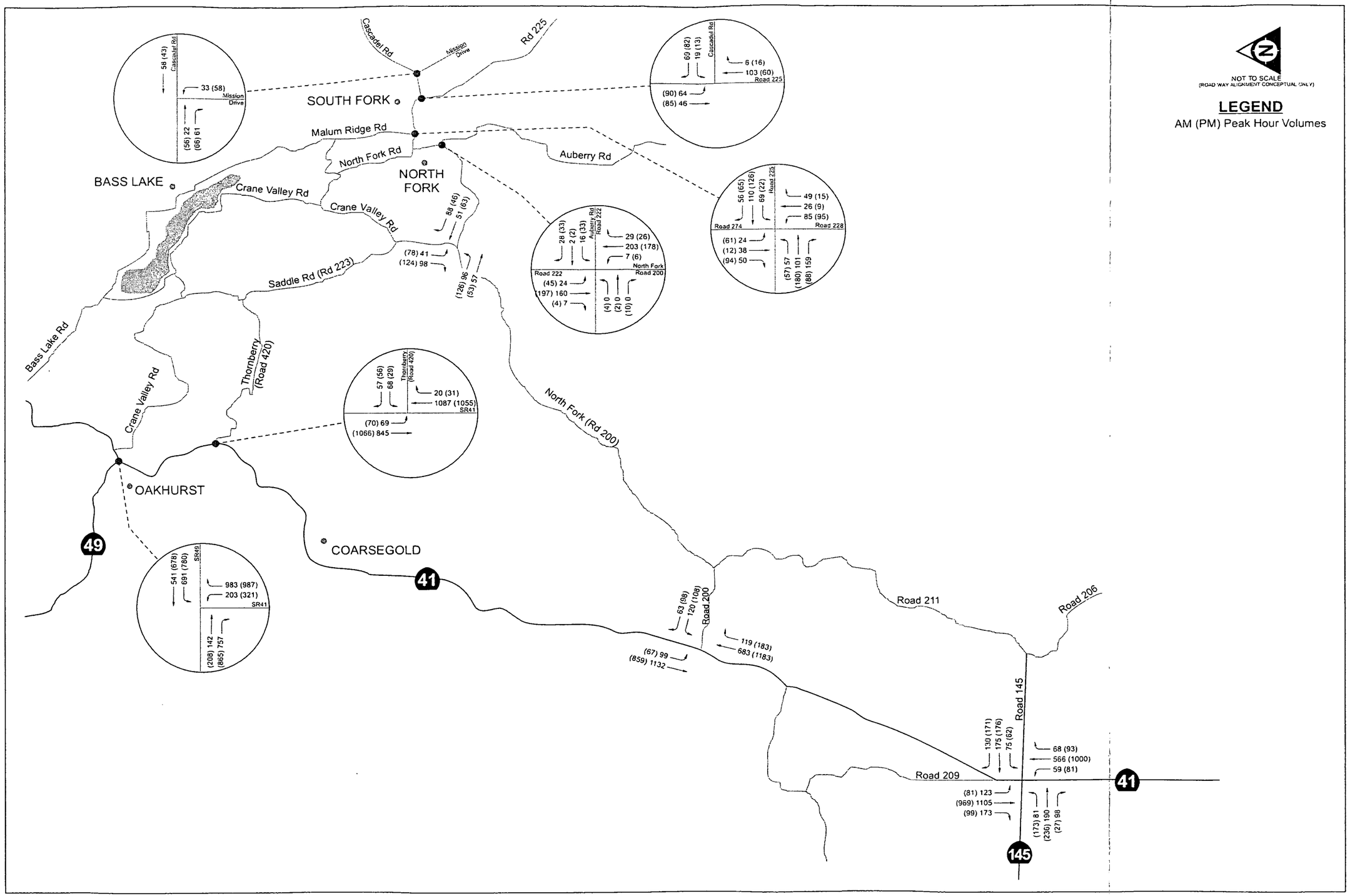
04-837.1

North Fork Casino
Madera County

Figure 54

LANE CONFIGURATION AND INTERSECTION CONTROL
2030 Project
North Fork Site
(Alternative D)

TPG Consulting



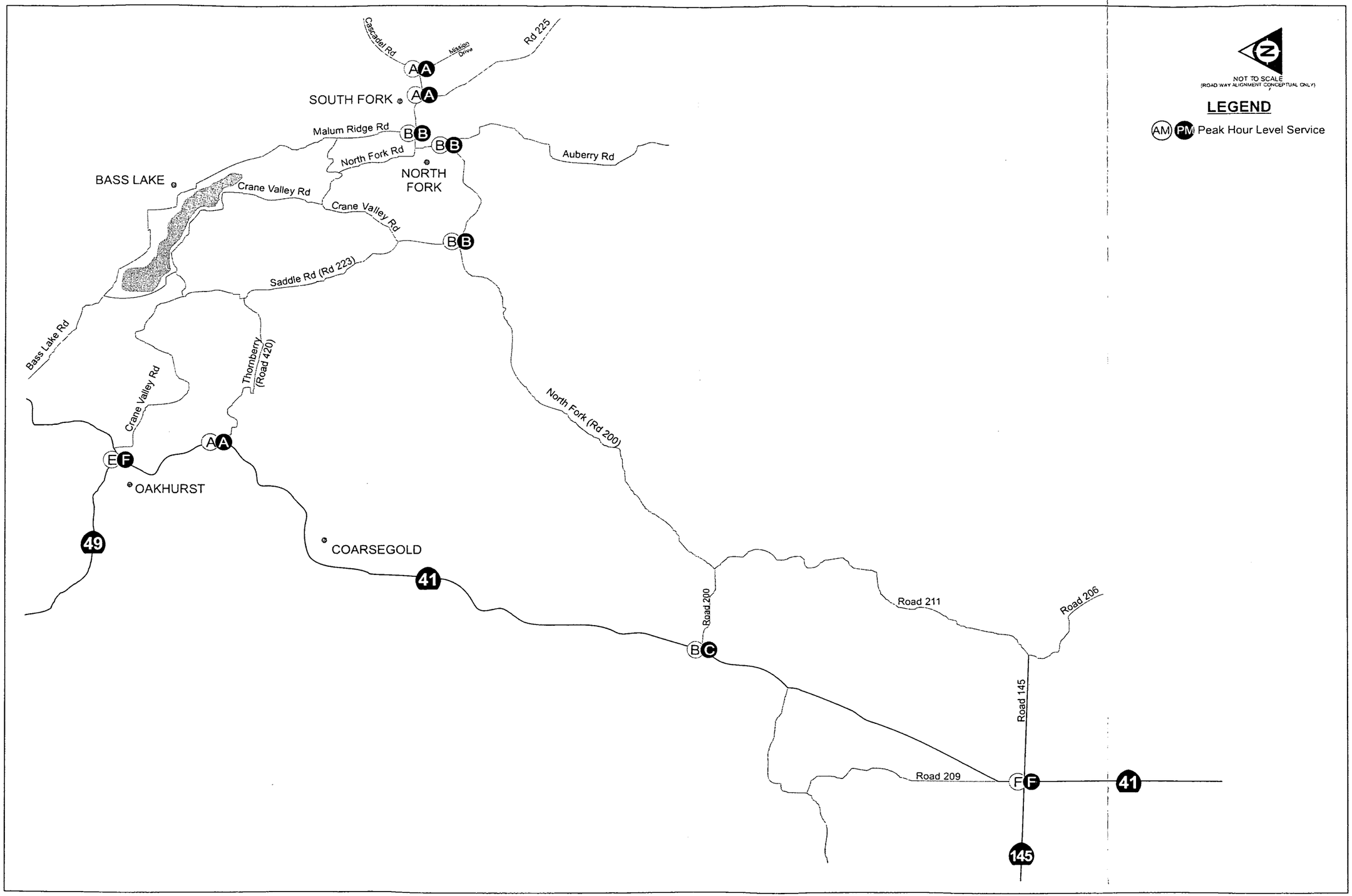
04-837.1

North Fork Casino
Madera County

Figure 55

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

TPG Consulting



04-837.1

North Fork Casino
Madera County

Figure 56

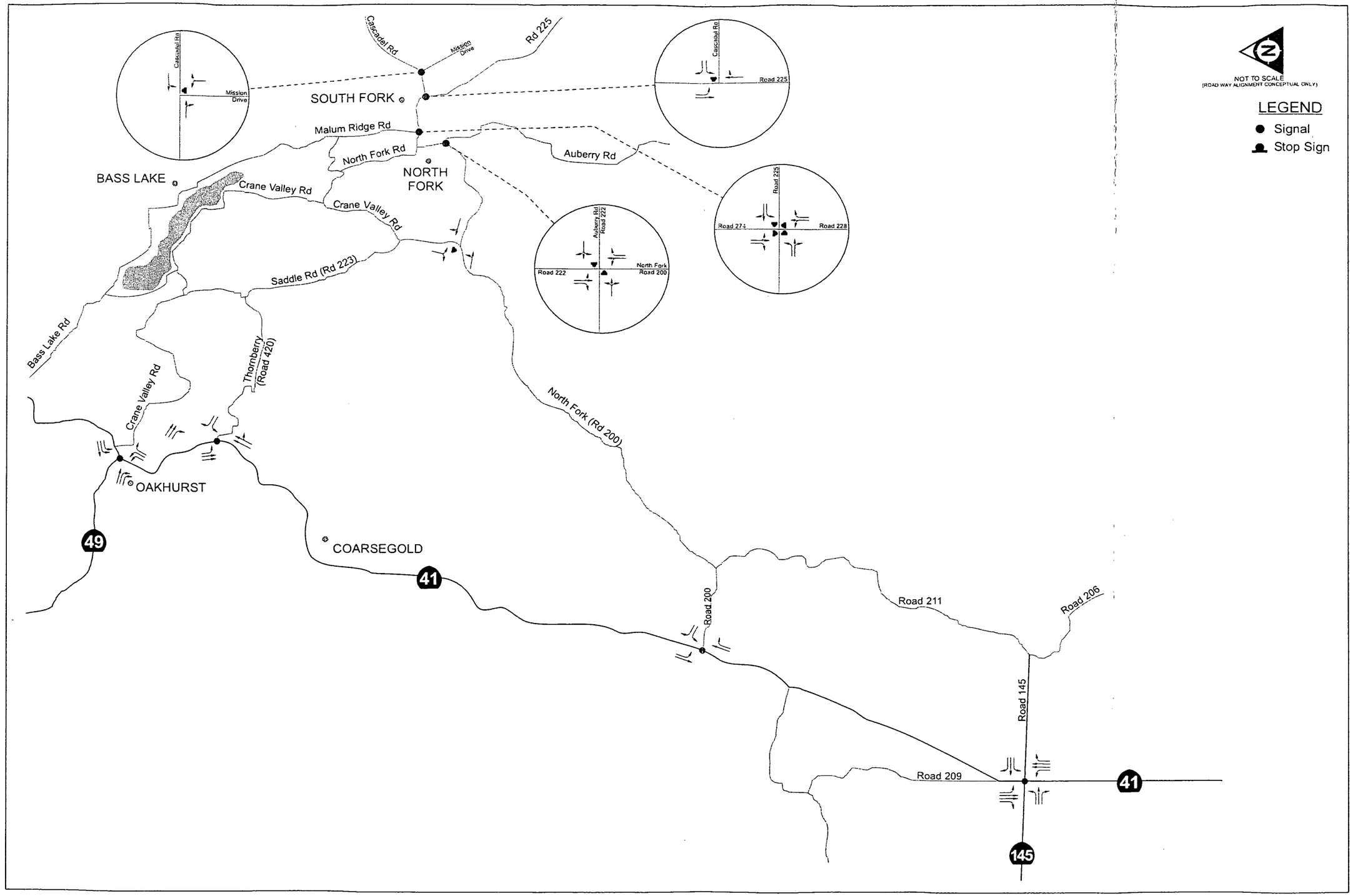
LEVEL OF SERVICE
2030 Project
North Fork Site
(Alternative D)

TPG Consulting

Mitigated 2030 Project Conditions

Alternative D (Off-site Alternative)

Figures 57 and 58 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 58 are the levels of service for the worst operating movement at that intersection. The signalized and AWSC intersection levels of service shown on Figure 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 Figure 58.



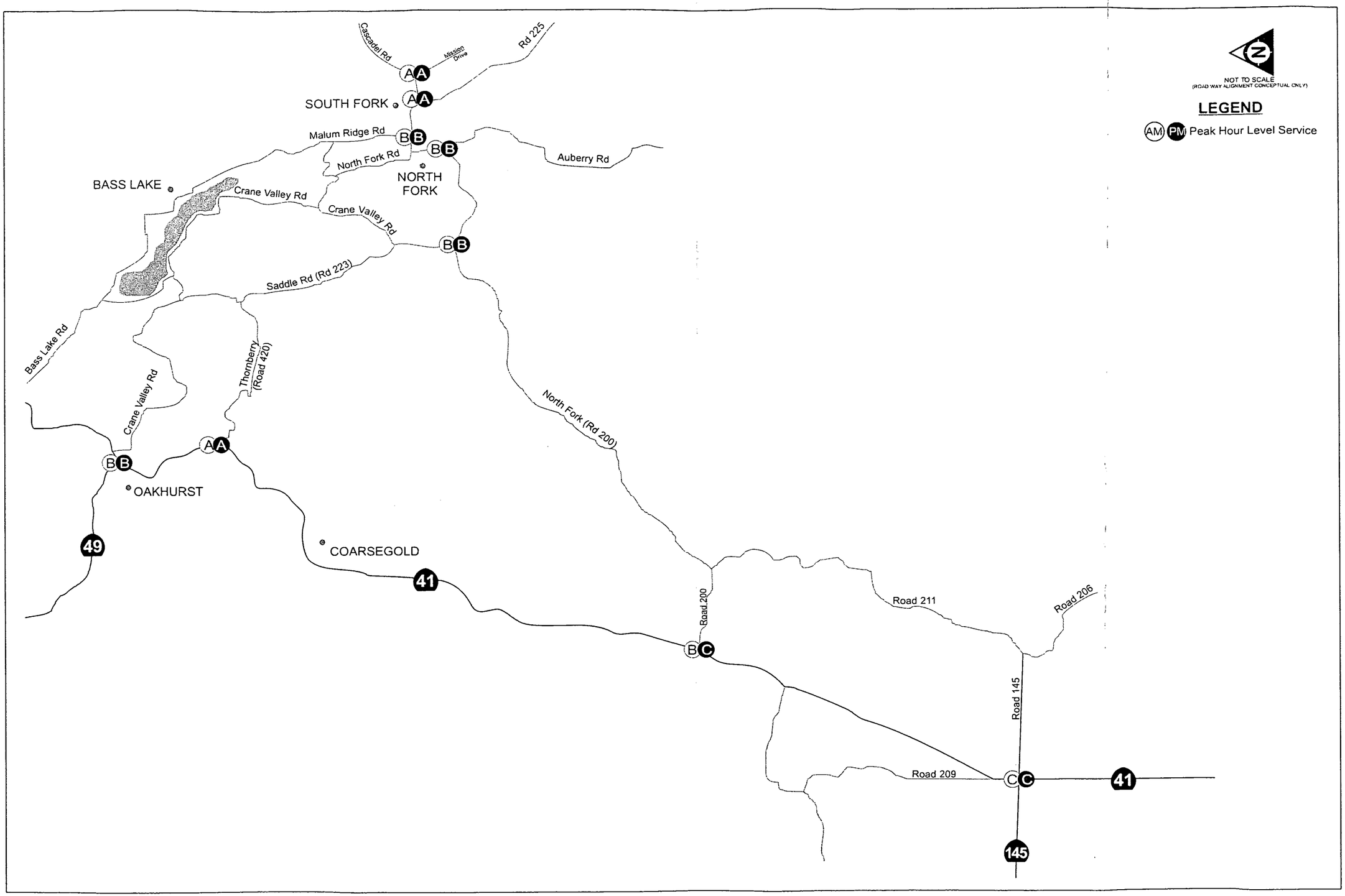
04-837.1

North Fork Casino
Madera County

Figure 57

LANE CONFIGURATION AND INTERSECTION CONTROL
Mitigated 2030 Project
North Fork Site
(Alternative D)

TPG Consulting



04-837.1

North Fork Casino
Madera County

Figure 58

LEVEL OF SERVICE
Mitigated 2030 Project
North Fork Site
(Alternative D)

TPG Consulting

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 Study[1] was based on survey data collected at 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 methodology[2].

The trip generation rates used in the Enterprise Rancheria Casino-Hotel Traffic Impact Study[3] 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 Rate[1]	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.

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 small 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 Rate[1]	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.

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 Rate[1]	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.

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 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 Enter (trips)	AM Peak Exit (trips)	PM Peak Enter (trips)	PM Peak Exit (trips)
Casino (per ksf casino floor area)	268,480 sf	12,163	443	190	559	496

ksf = 1,000 square feet *sf = square feet*

Alternative B (Reduced Intensity Alternative)

Table 28 shows the resulting 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 Enter (trips)	AM Peak Exit (trips)	PM Peak Enter (trips)	PM Peak Exit (trips)
Casino (per ksf casino floor area)	198,990 sf	9,026	328	141	414	368

ksf = 1,000 square feet *sf = square feet*

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 Enter (trips)	AM Peak Exit (trips)	PM Peak Enter (trips)	PM Peak Exit (trips)
Casino (per ksf casino floor area)	26,001 sf	1,545	46	20	57	51

ksf = 1,000 square feet *sf = square feet*

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 software[4]. 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*

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, 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. 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. The 63.5% 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 63.5% 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.

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

TABLE 32:
HOTEL TRIP GENERATION DATA
AVERAGE RATE AND DIRECTIONAL DISTRIBUTION DATA

Land Use	Period	Average Rate[1]	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 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 Enter (trips)	AM Peak Exit (trips)	PM Peak Enter (trips)	PM Peak Exit (trips)
Hotel (per room)	224,530 sf (200 rooms)	600	25	16	23	21

sf = square feet

Alternative C

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 software[5]. 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."
- "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."

[5] *Trip Generation* (software), Version 5, Microtrans, 2003.
[6] *Trip Generation*, 7th edition, Volume 3, ITE, 2003, pages 1173,1675

- "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.

TABLE 35:
ITE TRIP GENERATION DATA
AVERAGE RATE AND DIRECTIONAL DISTRIBUTION DATA

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.

Primary (New) Project Trips (Total)

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

Uses	Size	Daily (trips)	AM Peak Enter (trips)	AM Peak Exit (trips)	PM Peak Enter (trips)	PM Peak Exit (trips)
Casino	268,480 sf	12,163	443	190	559	496
Hotel	224,530 sf/200 Rooms	600	25	16	23	21
Total	**493,010 sf/200 Rooms**	**12,763**	**468**	**206**	**582**	**517**

sf = square feet

It should be noted that no captured or pass-by trip reductions were utilized in this evaluation other than the hotel trips captured by the casino as identified in the San Diego study documents and discussed in the previous section. As such the Alternative A, Proposed Project Alternative, project primary (new) trips should be considered worst case.

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 Enter (trips)	AM Peak Exit (trips)	PM Peak Enter (trips)	PM Peak Exit (trips)
Casino	198,990 sf	9,026	328	141	414	368

sf = square feet

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

Alternative C (Alternative 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, Alternative Land Use Alternative, land use components based on the average rate and distributional data shown in Table 35.

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

Land Use	Size	Daily (trips)	AM Peak Enter (trips)	AM Peak Exit (trips)	PM Peak Enter (trips)	PM Peak Exit (trips)
Free Standing Discount Superstore	125,000 sf	6,151	118	113	238	246
Discount Club	100,000 sf	4,180	40	16	212	212
Fast Food Restaurant w/ drive-thru	3,000 sf	1,488	81	78	54	50
High Turnover (sit-down) Restaurant	4,000 sf	509	24	22	27	17
High Turnover (sit-down) Restaurant	5,000 sf	636	30	38	33	21
Total	**237,000 sf**	**12,964**	**293**	**257**	**564**	**546**

sf = square feet

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

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 Enter (trips)	AM Peak Exit (trips)	PM Peak Enter (trips)	PM Peak 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 DISTIRBUTION AND ASSIGNMENT

Trip distribution for the Project primary (new) trips for the various alternatives was based on Model generated trip distribution data.[7] Basically the 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 Model is one of the most commonly accepted methods for estimating trip distribution[8]. 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 59 shows the Alternative A, Proposed Project, primary (new) trip distribution percentages for both 2008 and 2030. Figures 60 and 61 show the Alternative A primary (new) trip assignment for 2008 and 2030 respectively for the various study intersections.

Alternative B (Reduced Intensity Alternative/Madera Site)

Figure 62 shows the Alternative B, Reduced Intensity Alternative, primary (new) trip distribution percentages for both 2008 and 2030. Figures 63 and 64 show the Alternative B primary (new) trip assignments for 2008 and 2030 respectively for the various study intersections.

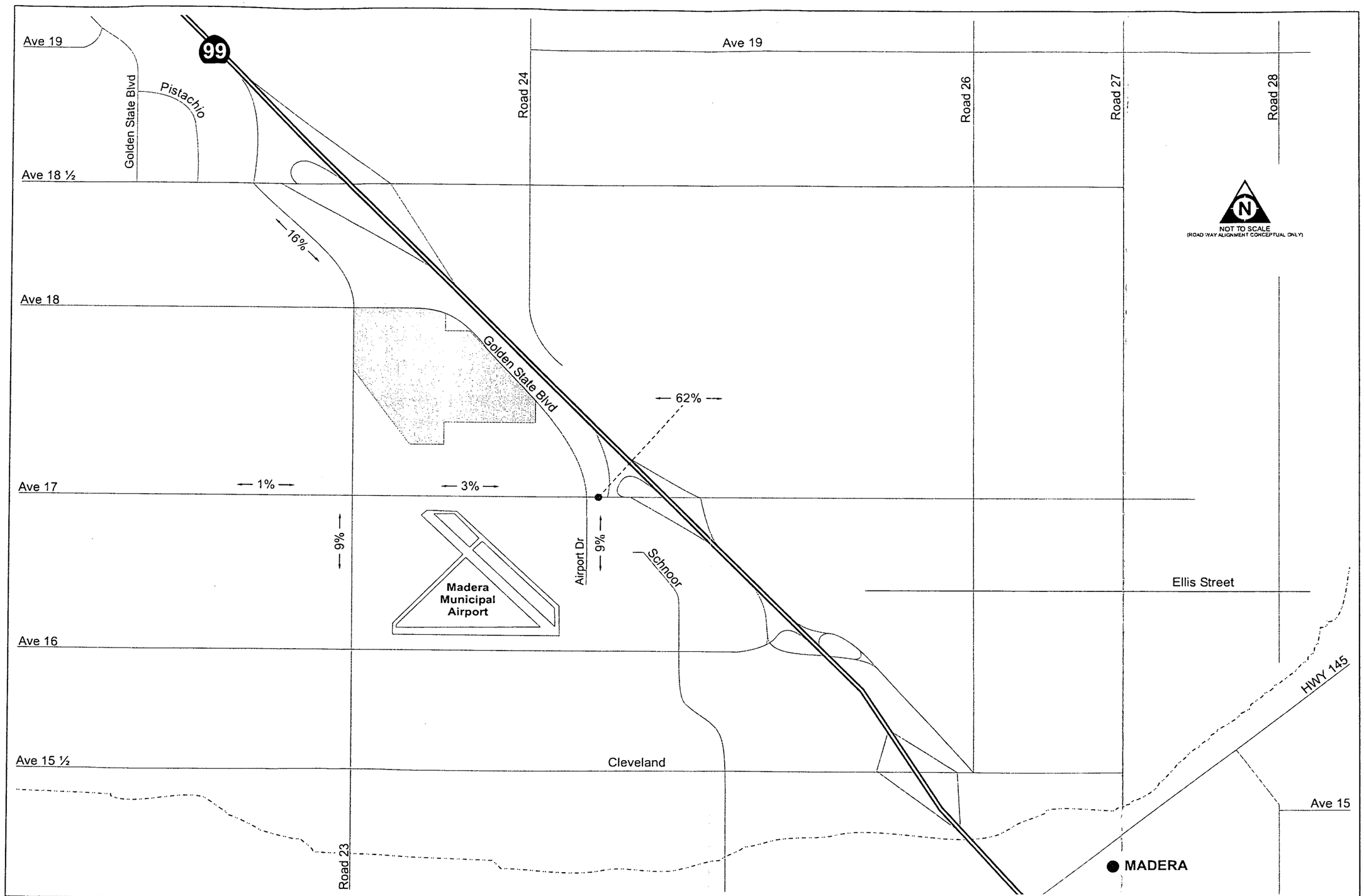
Alternative C (Alternative Land Use Alternative/Madera Site)

Figure 65 shows the Alternative C, Alternate Land Use Alternative, primary (new) trip distribution percentages for both 2008 and 2030. Figures 66 and 67 show the Alternative C primary (new) trip assignments for 2008 and 2030 respectively for the various study intersections.

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

Figures 68 and 69 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.

[7] Project primary (new) trip distribution was based on a MCTC Model select zone analysis utilizing the 2025 network.
[8] *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.



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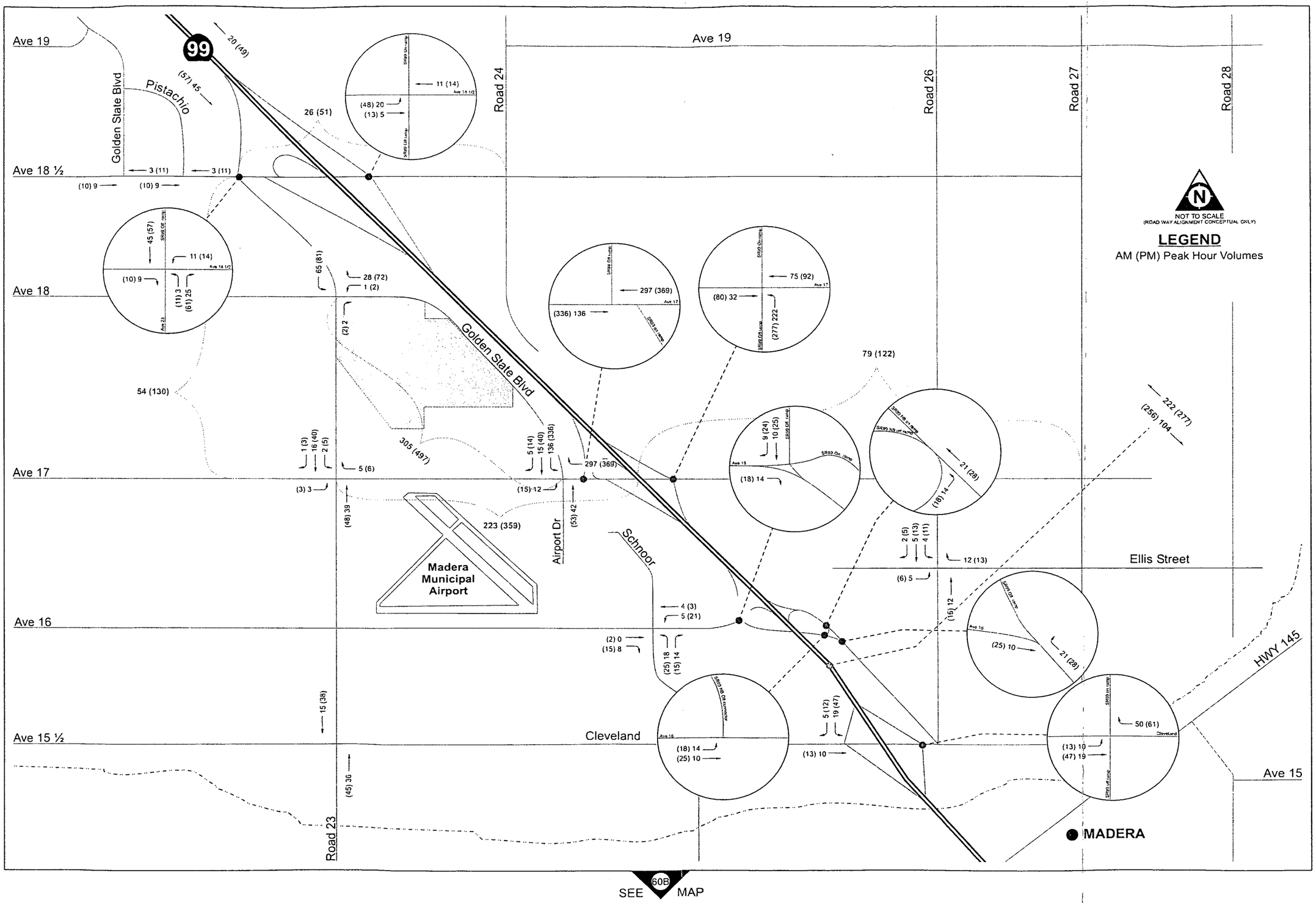
North Fork Casino
Madera County

Figure 59

TRIP DISTRIBUTION PERCENTAGES
Project
Madera Site
(Alternative A)

TPG Consulting



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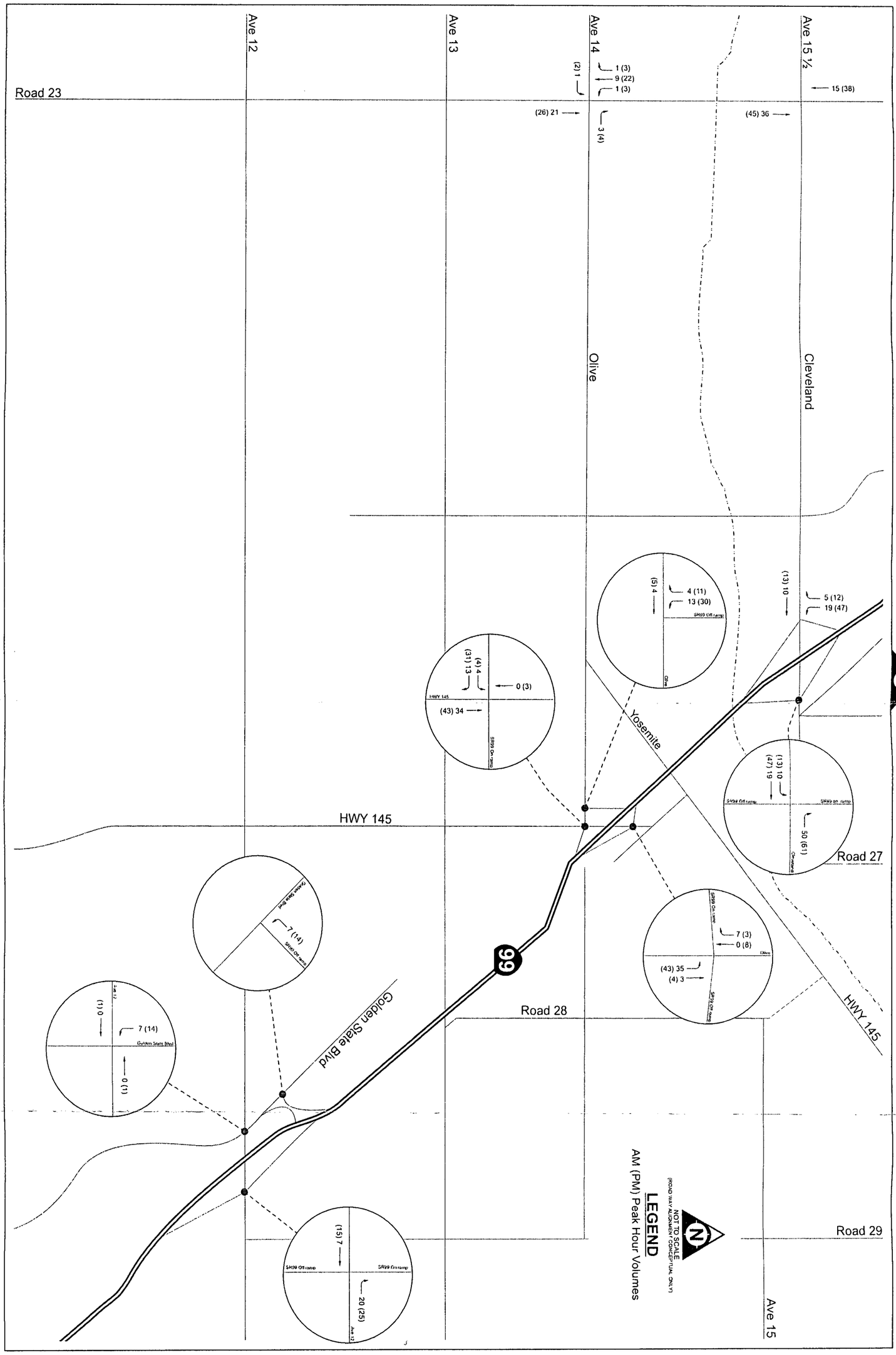
North Fork Casino
Madera County

Figure 60

INTERSECTION TRIP ASSIGNMENT
2008 Project
Madera Site
(Alternative A)

TPG Consulting



TPG Consulting

INTERSECTION TRIP ASSIGNMENT
2008 Project
Madera Site
(Alternative A)

North Fork Casino
Madera County

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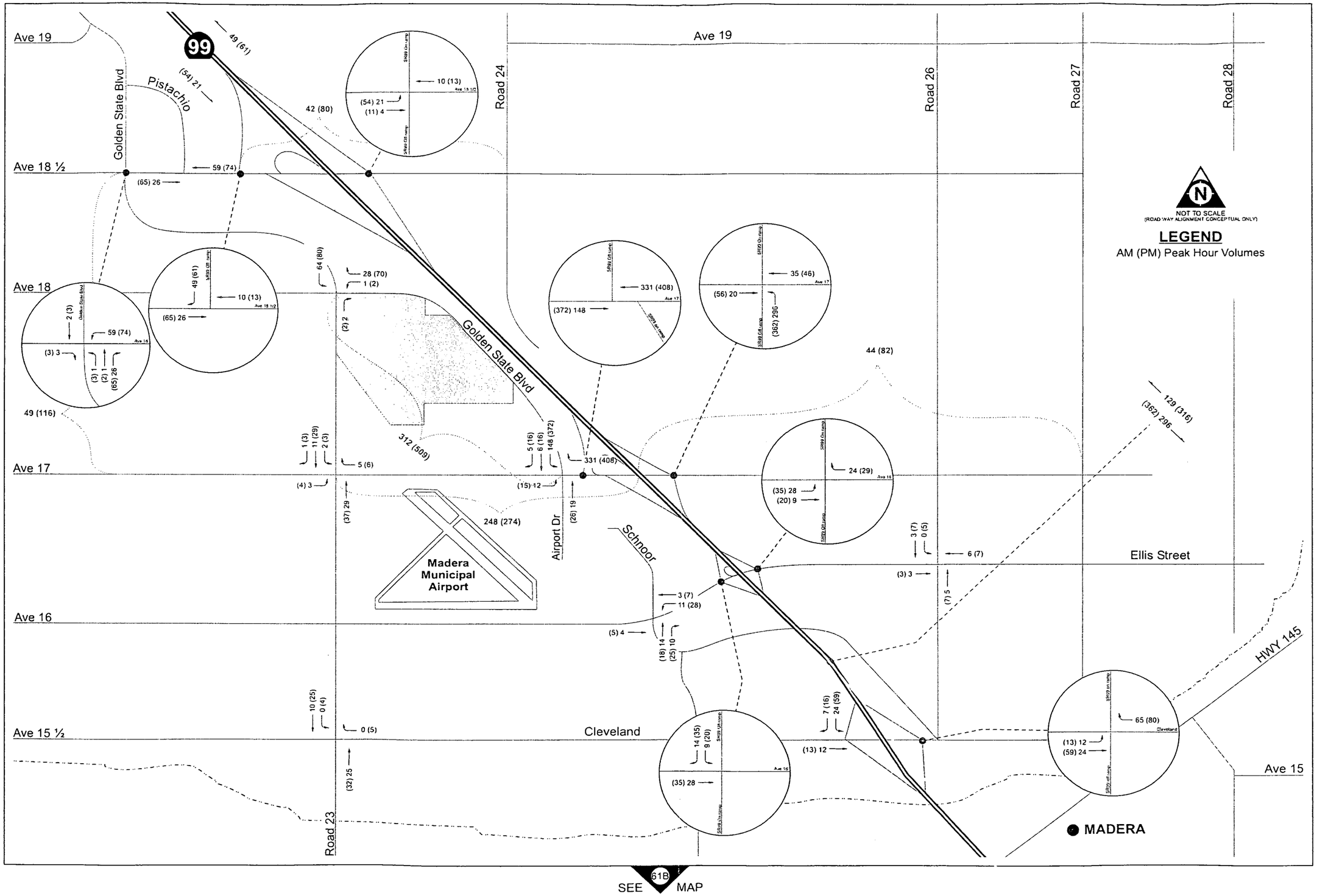
Figure 60



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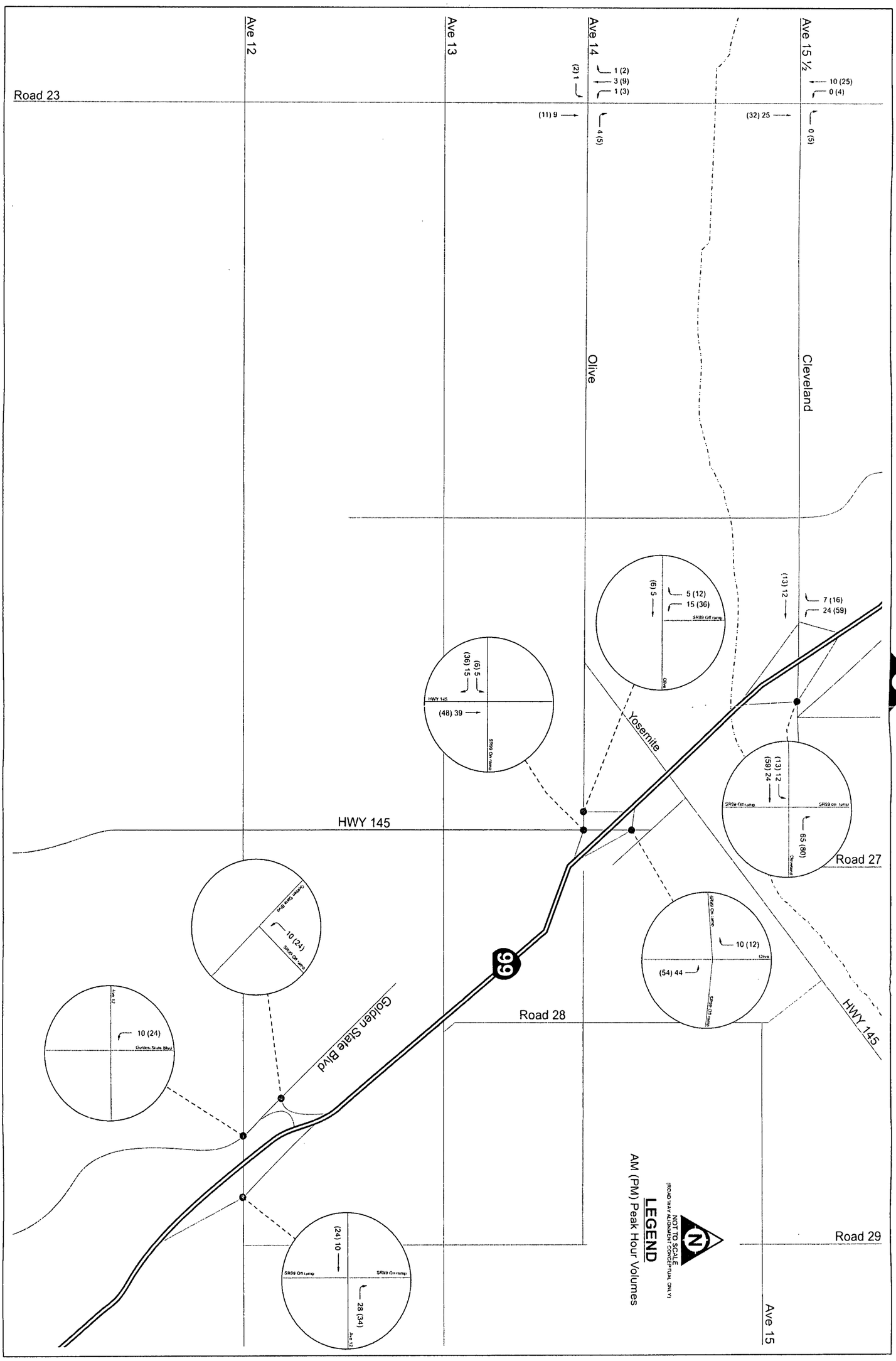
North Fork Casino
Madera County

Figure 61

INTERSECTION TRIP ASSIGNMENT
2030 Project
Madera Site
(Alternative A)

TPG Consulting



TPG Consulting

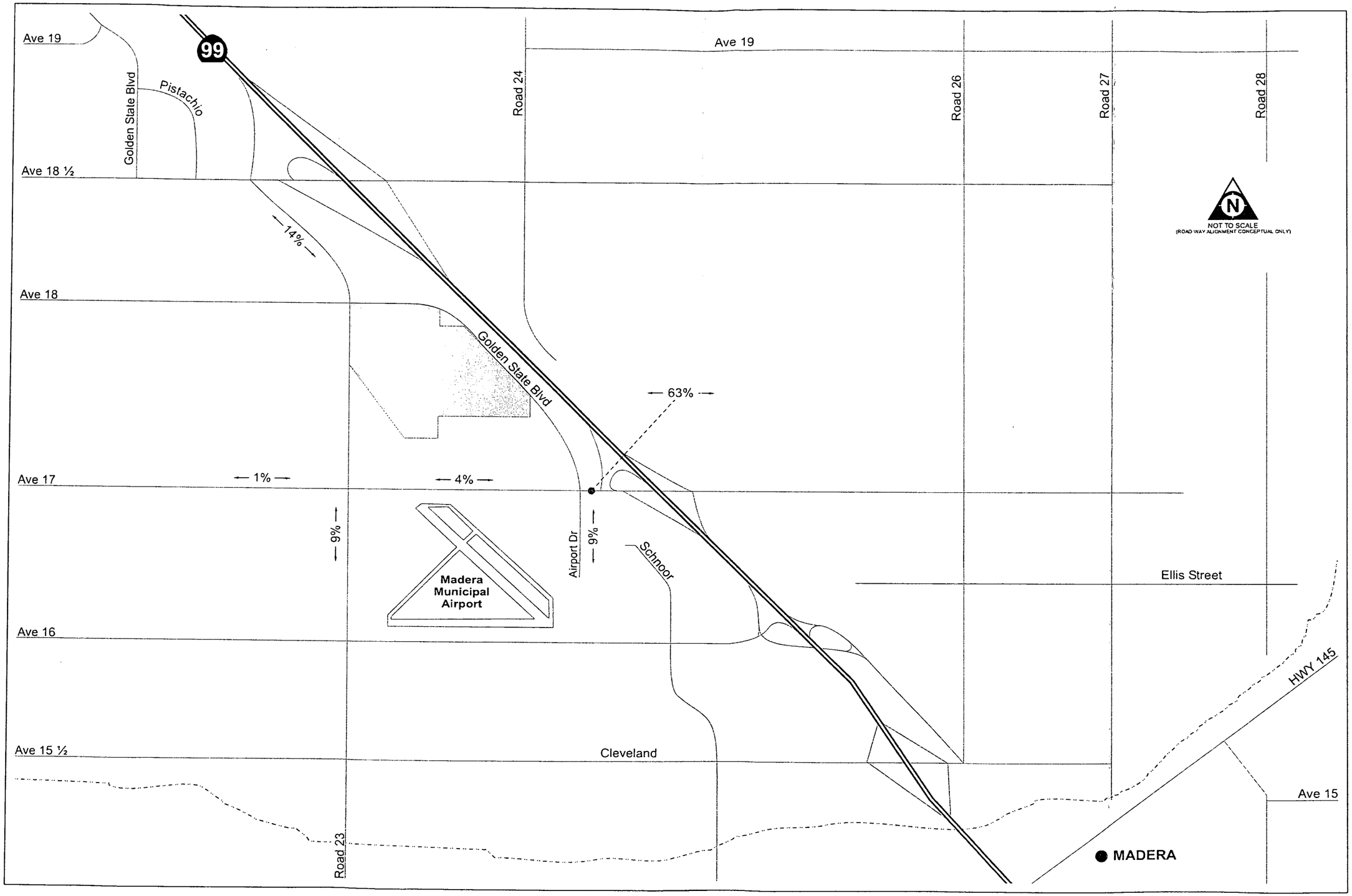
INTERSECTION TRIP ASSIGNMENT

2030 Project
Madera Site
(Alternative A)

North Fork Casino
Madera County

04-837.1

Figure 61



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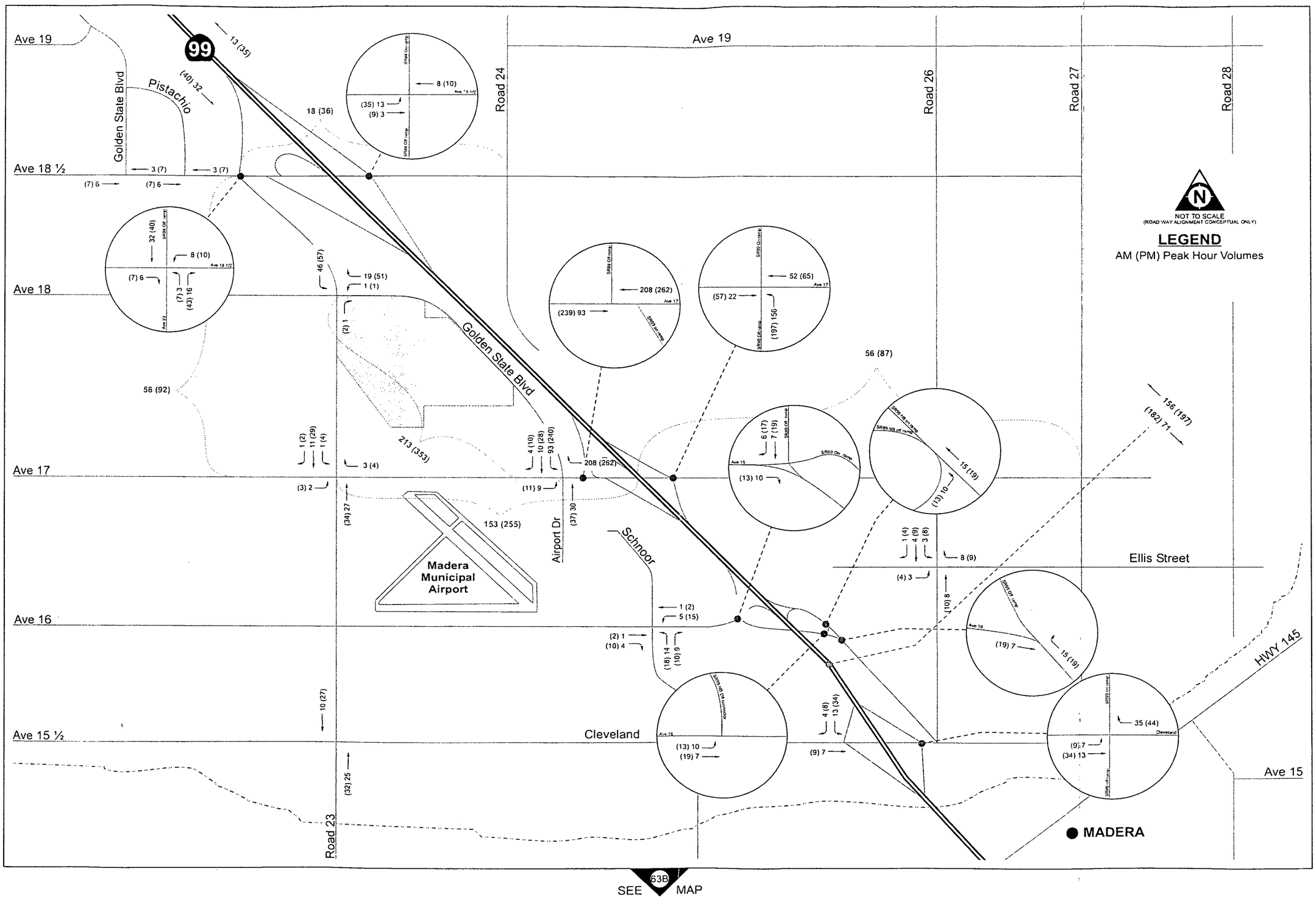
North Fork Casino
Madera County

Figure 62

TRIP DISTRIBUTION PERCENTAGES
Project
Madera Site
(Alternative B)

TPG Consulting



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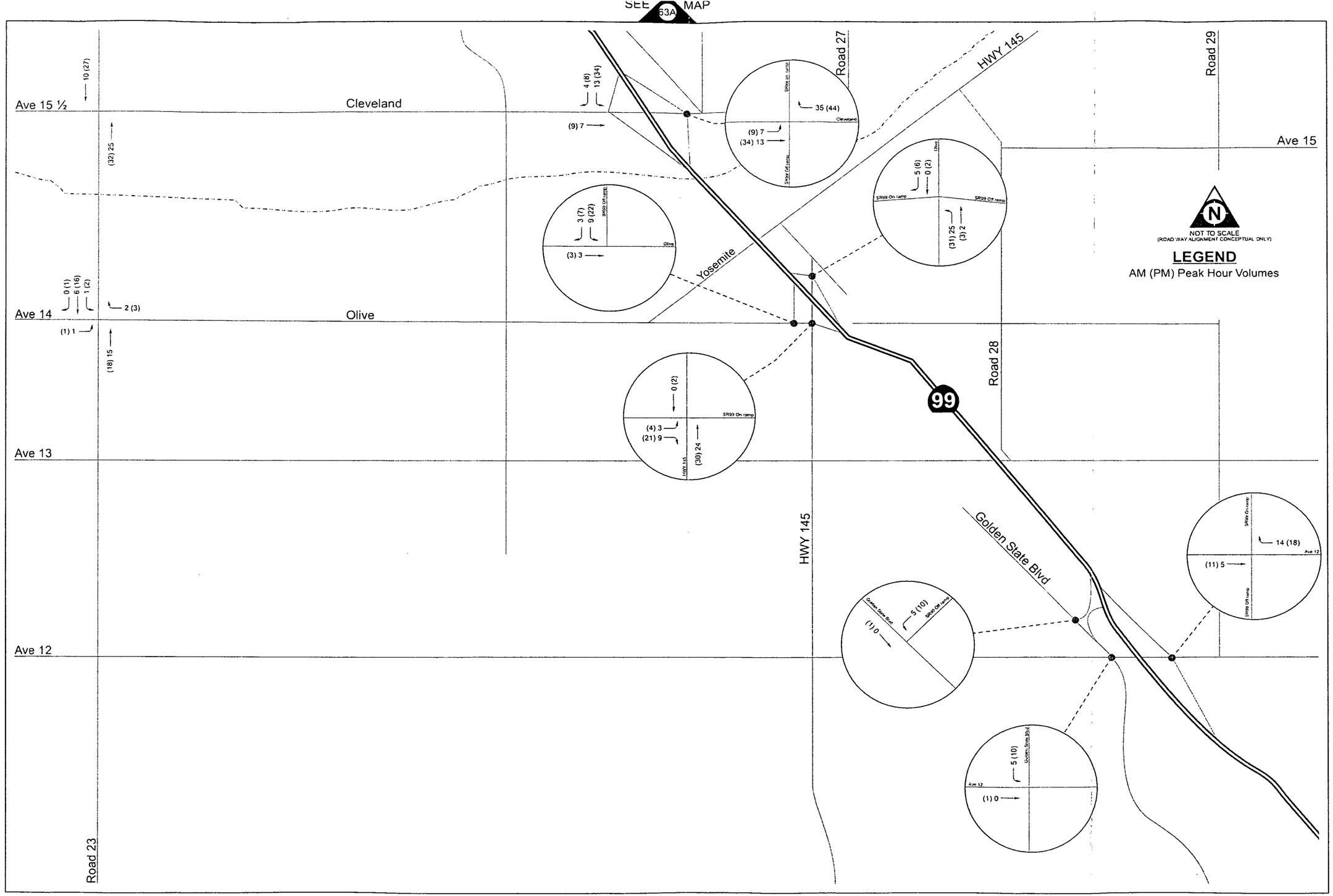
North Fork Casino
Madera County

Figure 63

INTERSECTION TRIP ASSIGNMENT
2008 Project
Madera Site
(Alternative B)

TPG Consulting



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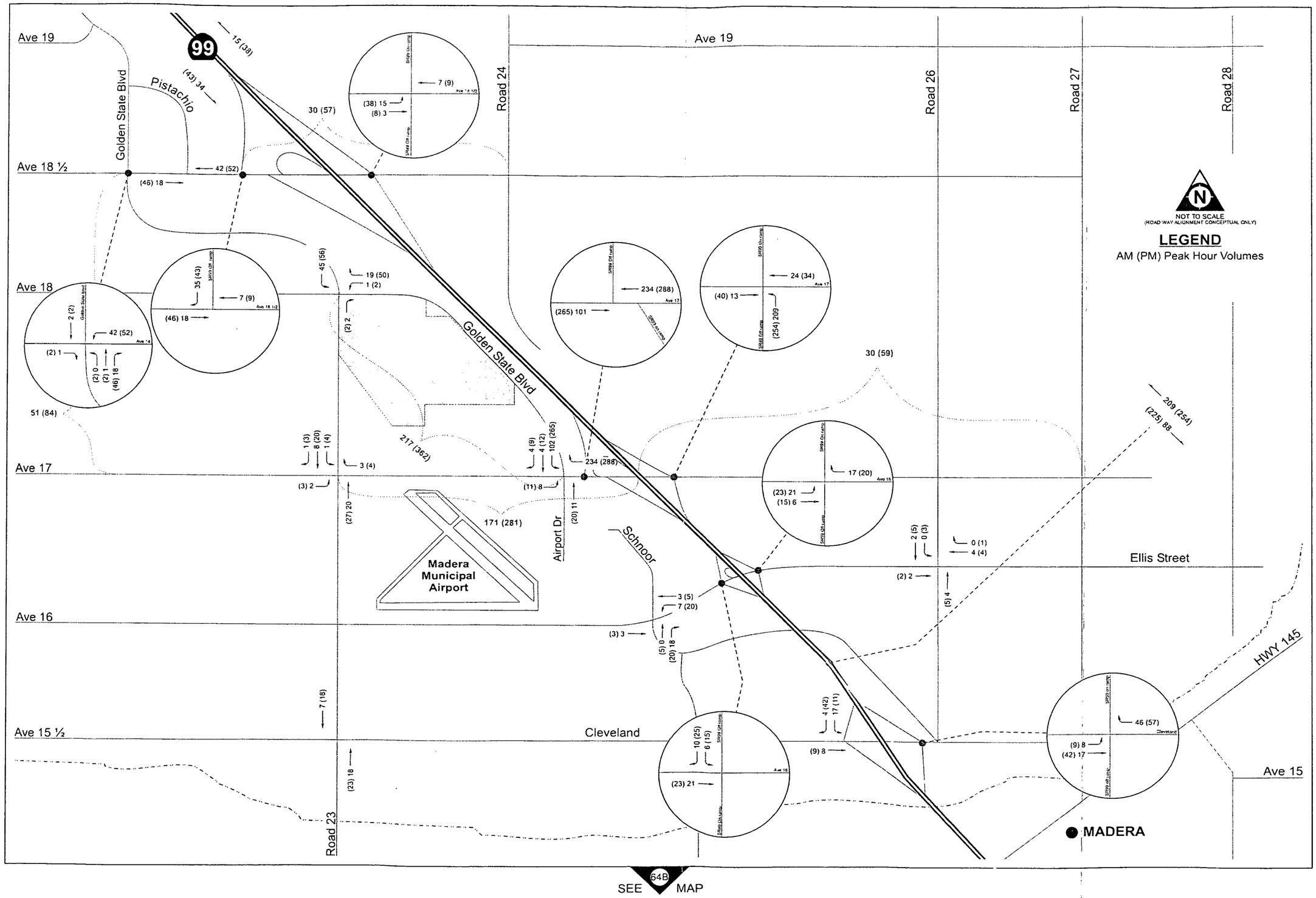
North Fork Casino
Madera County

Figure 63

INTERSECTION TRIP ASSIGNMENT
2008 Project
Madera Site
(Alternative B)

TPG CONSULTING



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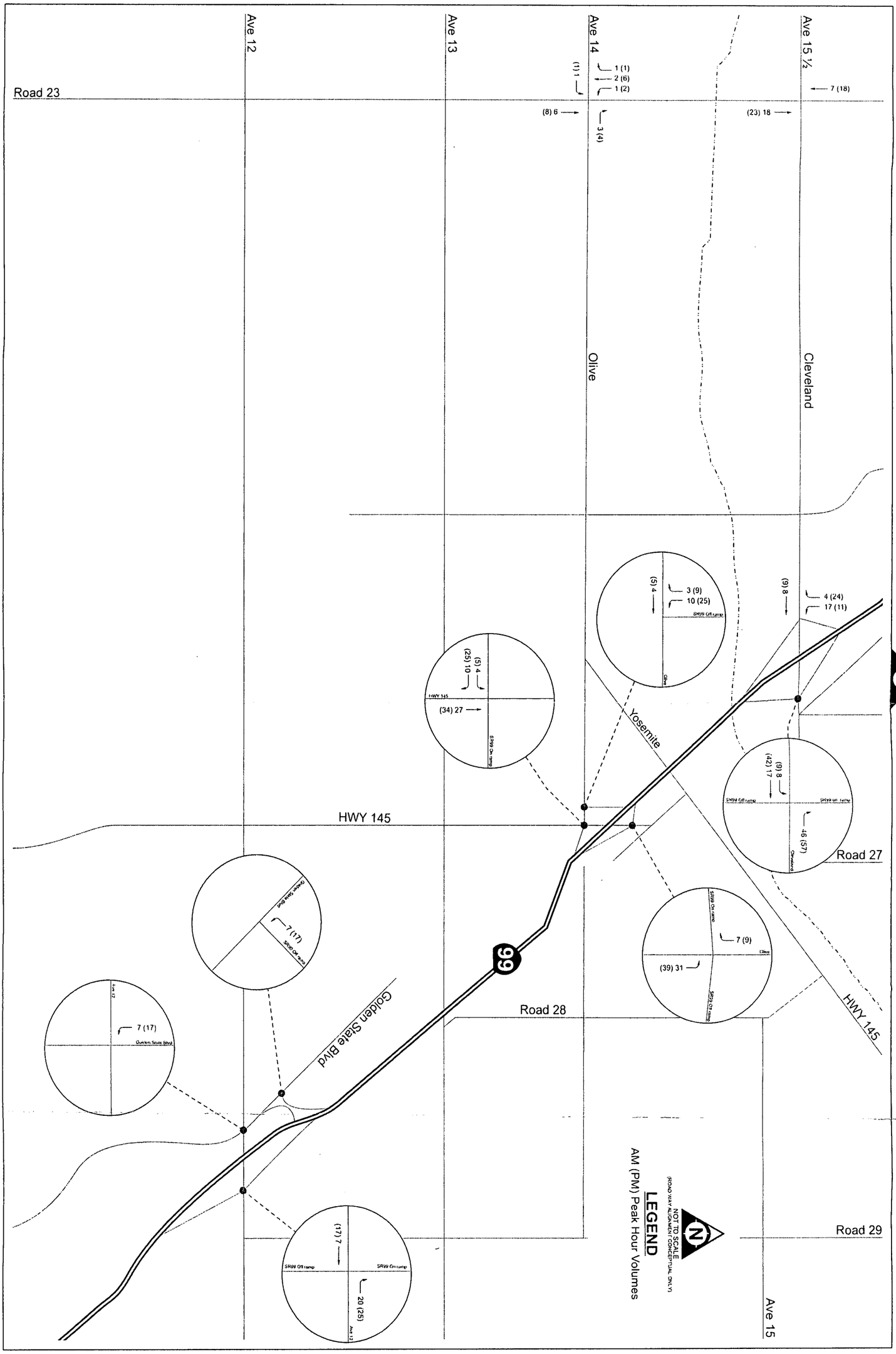
North Fork Casino
Madera County

Figure 64

INTERSECTION TRIP ASSIGNMENT
2030 Project
Madera Site
(Alternative B)

TPG Consulting



SEE MAP 54A

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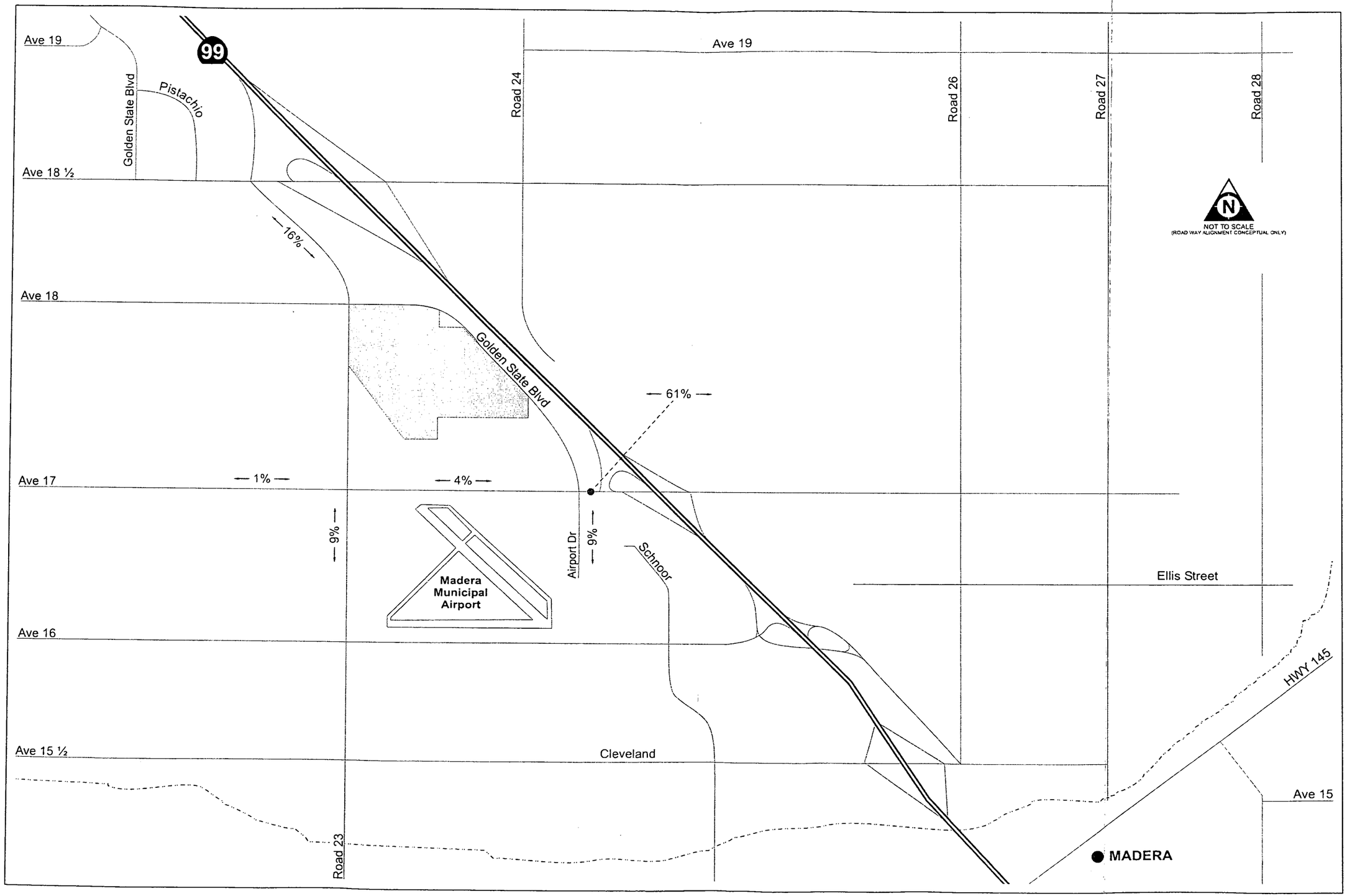
INTERSECTION TRIP ASSIGNMENT
2030 Project
Madera Site
(Alternative B)

North Fork Casino
Madera County

04-837.1

Figure 64



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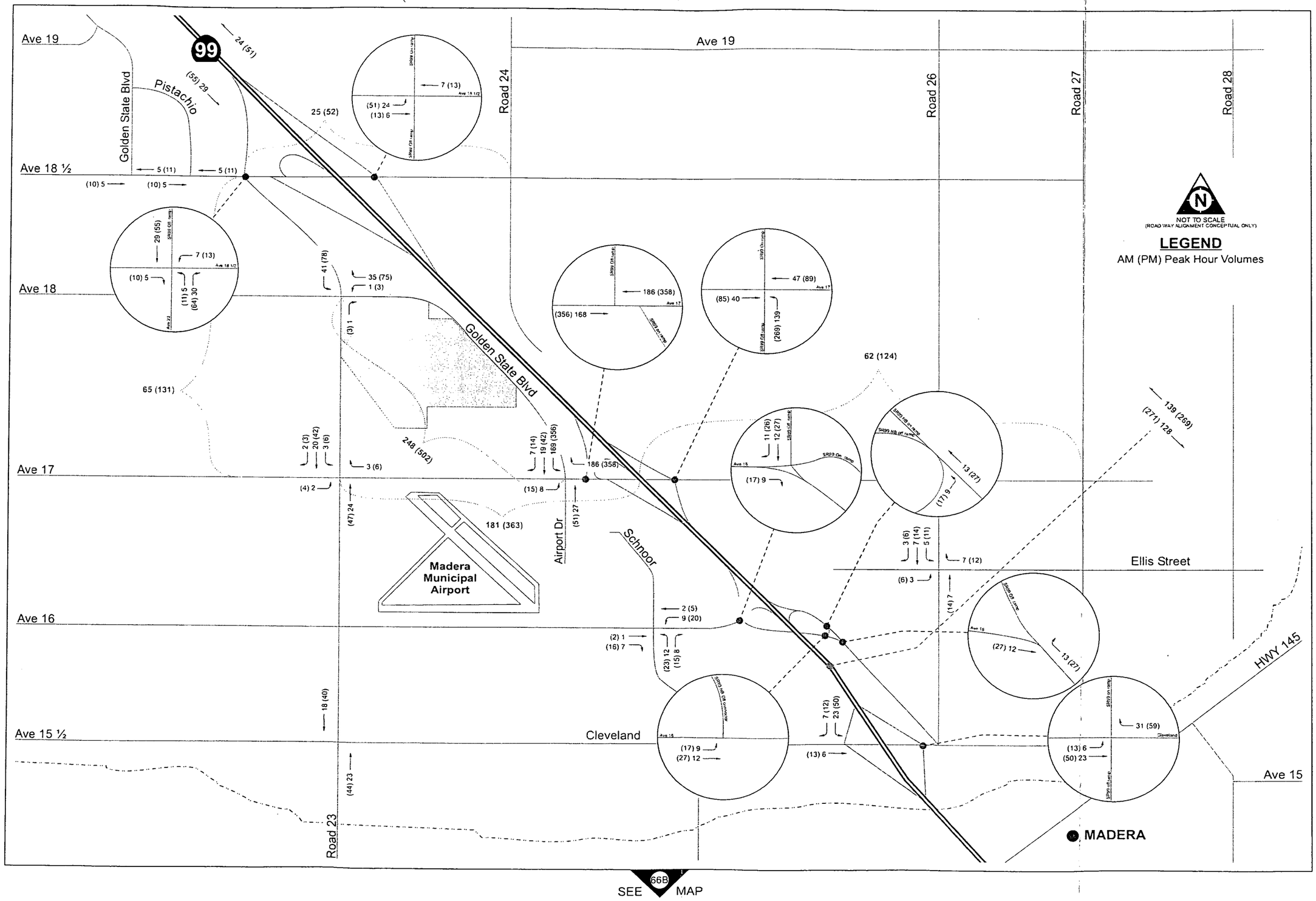
North Fork Casino
Madera County

Figure 65

TRIP DISTRIBUTION PERCENTAGES
Project
Madera Site
(Alternative C)

TPG Consulting



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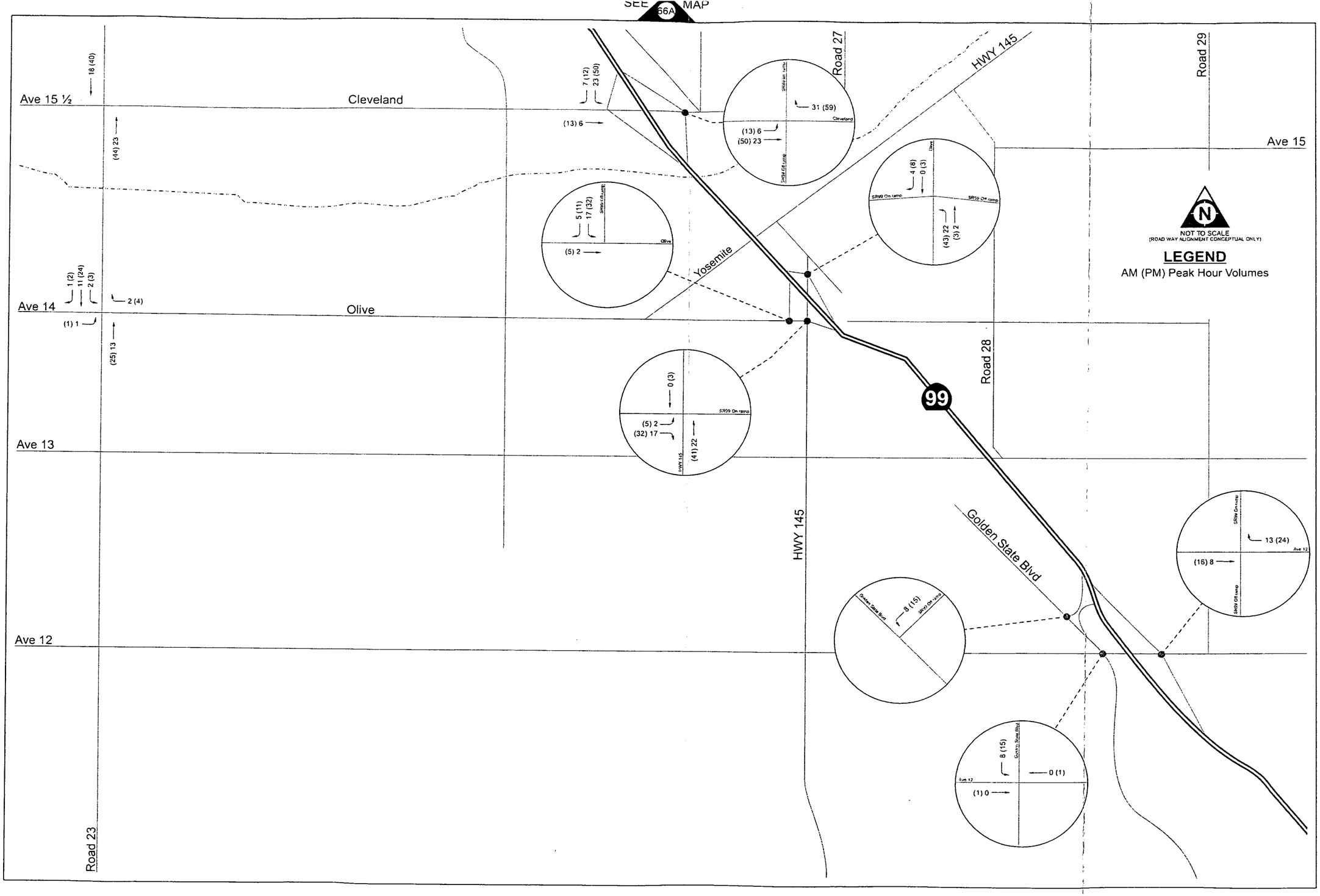
North Fork Casino
Madera County

Figure 66

INTERSECTION TRIP ASSIGNMENT
2008 Project
Madera Site
(Alternative C)

TPG Consulting



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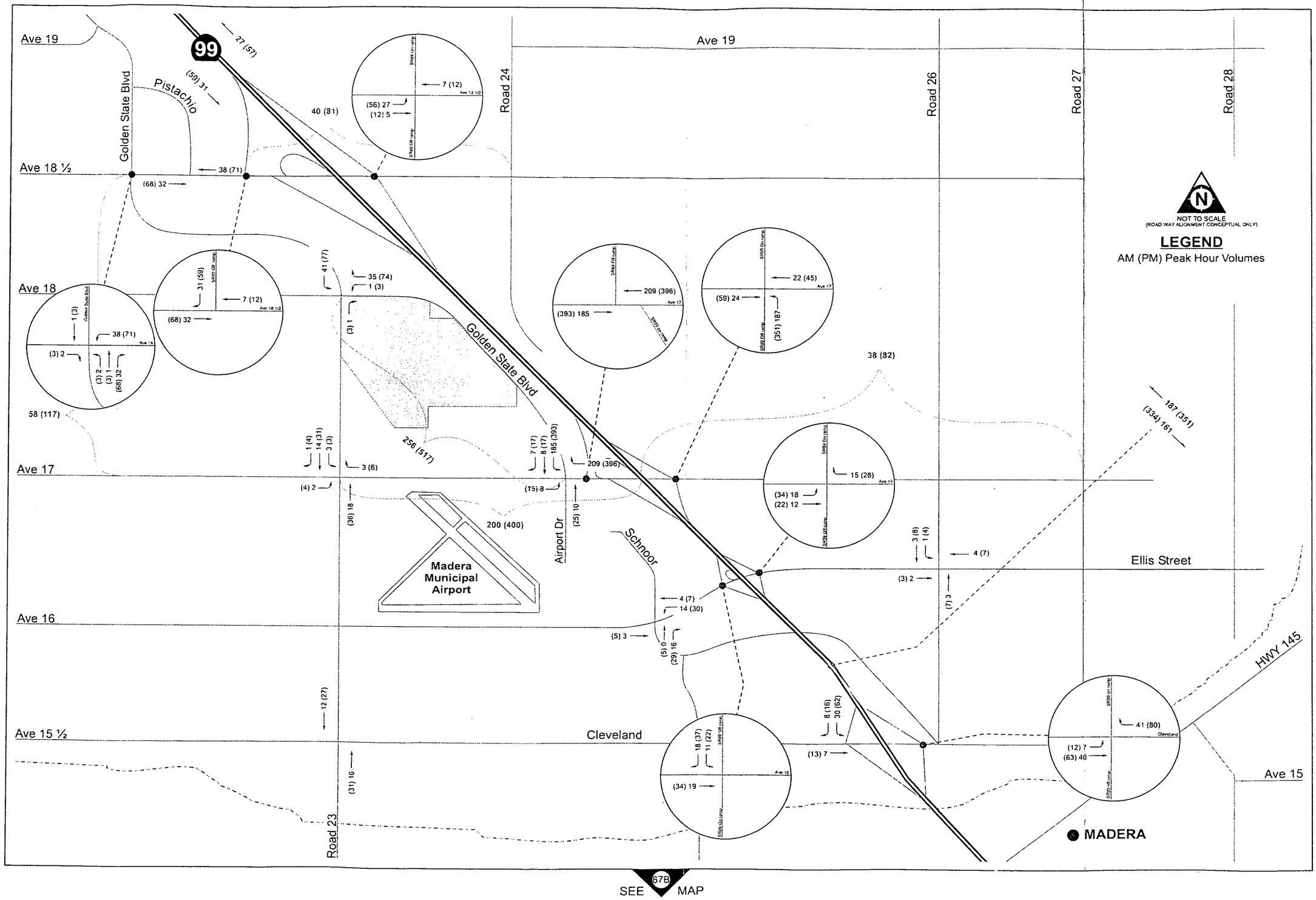
North Fork Casino
Madera County

Figure 66

INTERSECTION TRIP ASSIGNMENT
2008 Project
Madera Site
(Alternative C)

TPG CONSULTING



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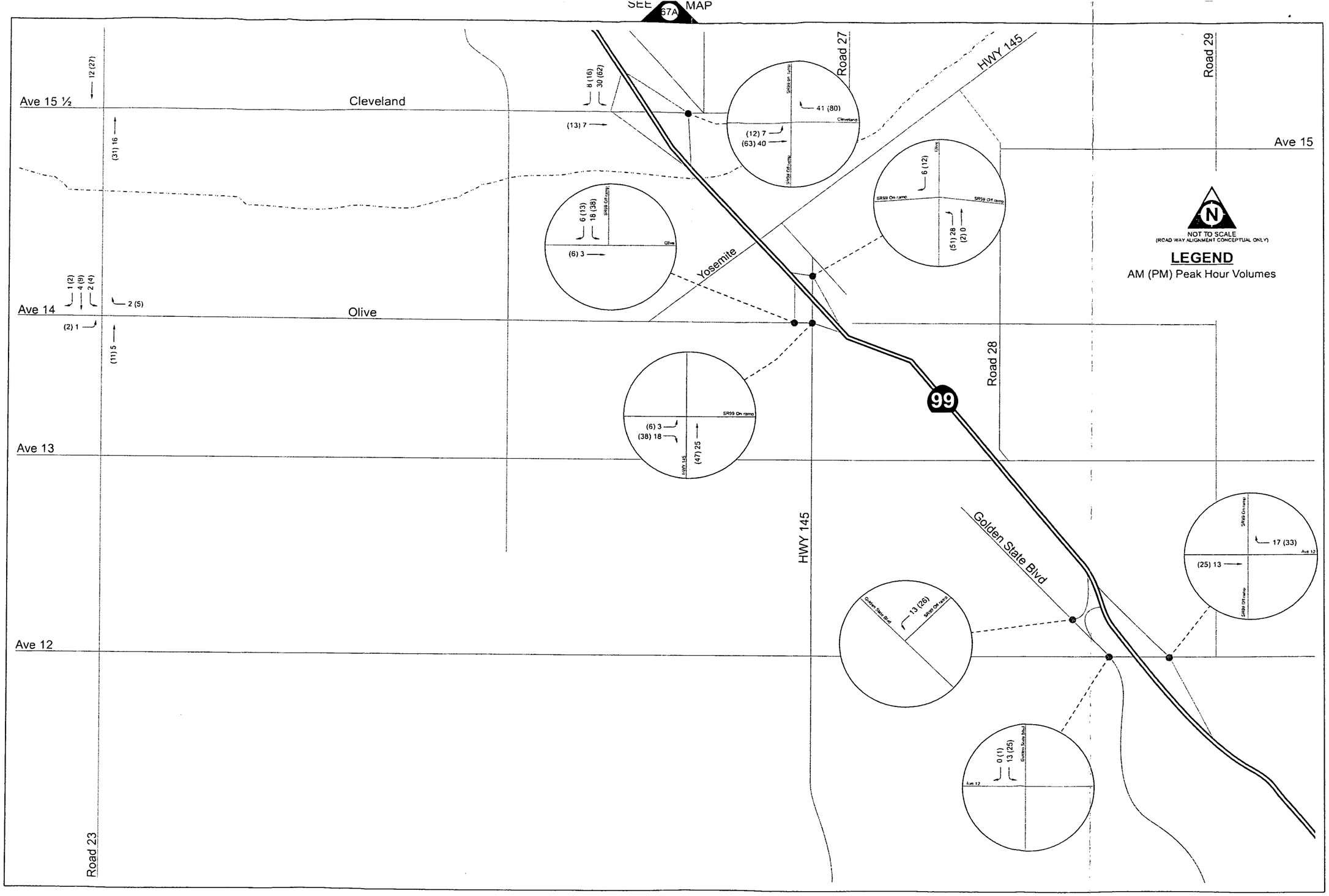
North Fork Casino
Madera County

Figure 67

INTERSECTION TRIP ASSIGNMENT
2030 Project
Madera Site
(Alternative C)

TPG Consulting



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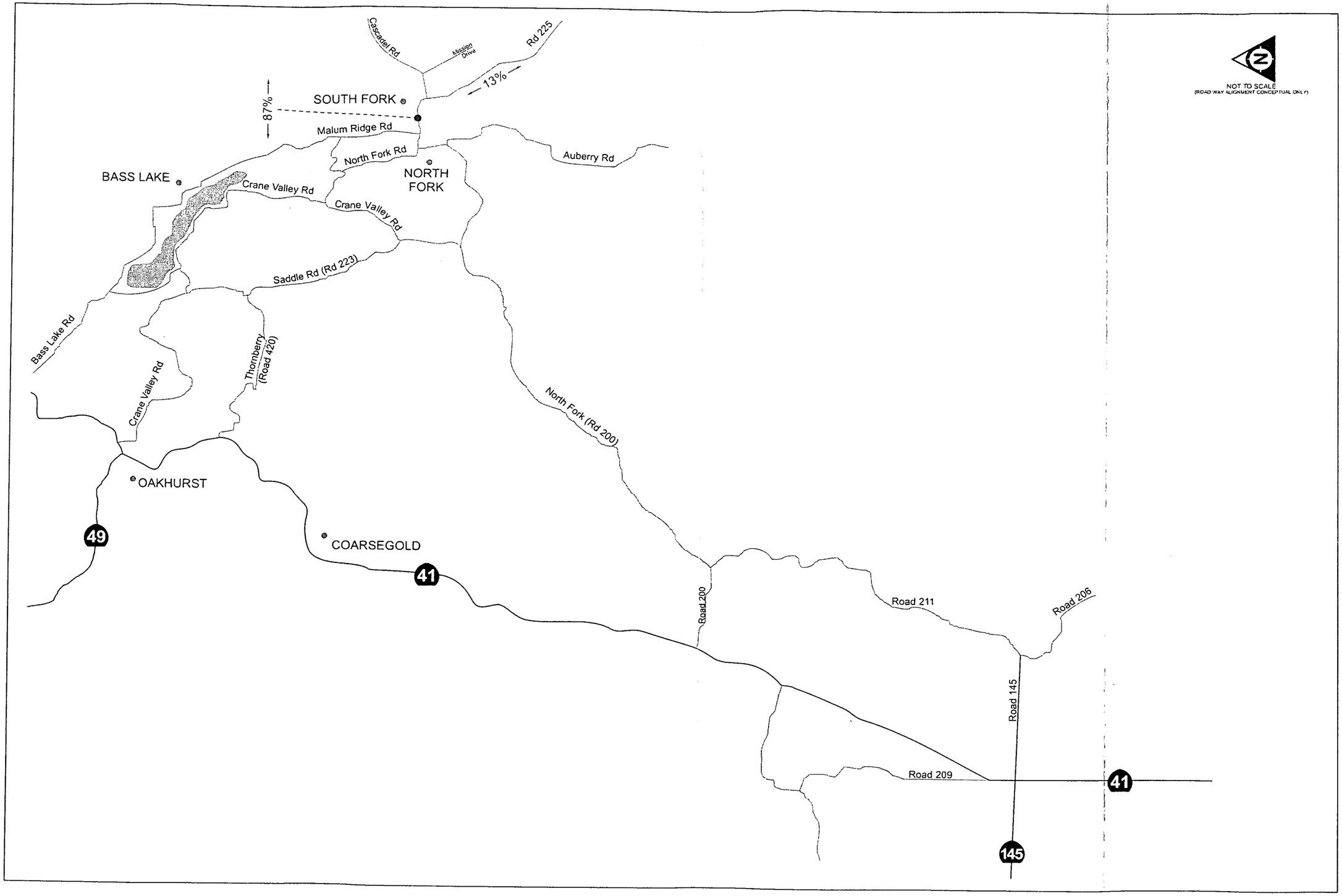
North Fork Casino
Madera County

Figure 67

INTERSECTION TRIP ASSIGNMENT
2030 Project
Madera Site
(Alternative C)

TPG Consulting



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North Fork Casino
Madera County

Figure 68

TRIP DISTRIBUTION PERCENTAGES

Project
North Fork Site
(Alternative D)

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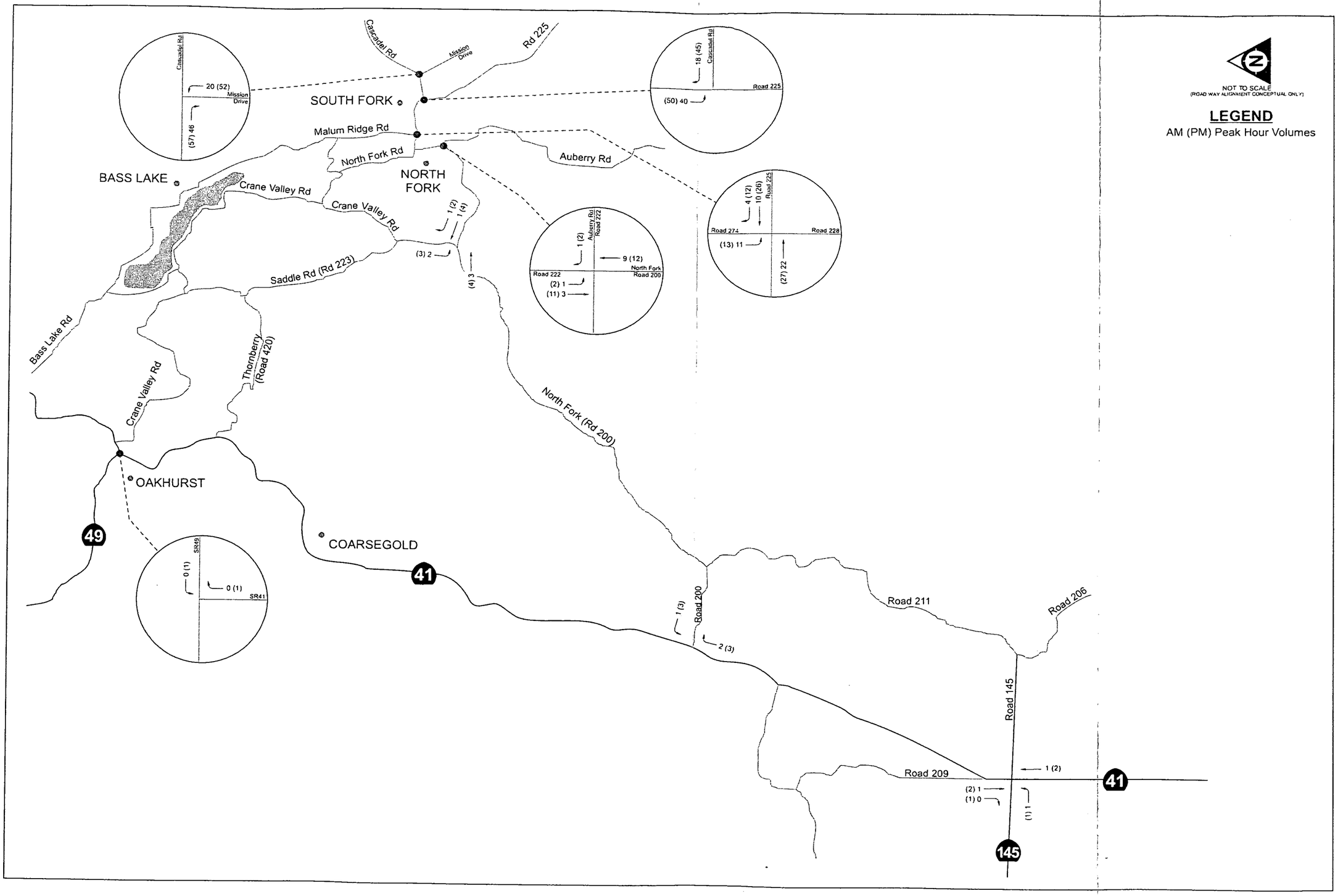

NOT TO SCALE
(ROAD WAY ALIGNMENT CONCEPTUAL ONLY)

LEGEND

AM (PM) Peak Hour Volumes

04-837.1

North Fork Casino
Madera County

Figure 69

INTERSECTION TRIP ASSIGNMENT

Project
North Fork Site
(Alternative D)

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E. LEVELS OF SERVICE AND WARRANT ANALYSES

Madera Site (Alternative A, B, C)

Existing (2005) Conditions

Roadway Levels of Service

Table 40 shows the Existing (2005) 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 (2005) 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 (2005) levels of service.

TABLE 40:
EXISTING (2005) CONDITIONS
COUNTY SEGMENT, FREEWAY SEGMENT, AND INTERSECTION WEEKDAY LEVEL OF SERVICE
MADERA SITE

	AM Peak Hour		PM Peak Hour	
County Segment	**LOS**		**LOS**	
Avenue 18 ½ - Road 24 to Road 23	B		B	
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	**E**		C	
Golden State Boulevard – Avenue 17 to Avenue 18	A		A	
	AM Peak Hour		**PM Peak Hour**	
Freeway Segment	**LOS**	**Density (pc/mi/ln)**	**LOS**	**Density (pc/mi/ln)**
SR 99 north of Avenue 18 ½				
• NB	C	21.5	C	21.0
• **SB**	B	17.6	**D**	**26.5**
SR 99 between Avenue 18 ½ and Avenue 17				
• NB	C	23.8	C	23.2
• **SB**	C	19.3	**D**	**30.1**
SR 99 south of Avenue 17				
• NB	C	22.9	C	22.3
• **SB**	C	18.6	**D**	**28.5**

TABLE 40:
EXISTING (2005) 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 SB ramps/Road 23				
• WB Left-Through	A	8.1	A	8.2
• NB Approach	B	12.1	B	13.2
• SB Approach	B	13.0	C	15.7
Avenue 18 ½ at SR 99 NB ramps				
• EB Left	A	8.3	A	7.8
• NB Approach	C	15.8	C	15.8
Avenue 17 at SR 99 SB ramps				
• SB Approach	B	12.5	B	14.5
Avenue 17 at SR 99 NB ramps				
• EB Left	A	8.7	A	8.0
• NB Approach	C	16.5	C	15.5
Avenue 12/Golden State Boulevard at SR 99 SB ramps				
• SB Left-Through	A	8.3	A	8.7
• **WB Approach**	B	11.3	**E**	**44.9**
Avenue 12 at Golden State Boulevard				
• EB Left	A	8.5	A	8.7
• WB Left	A	8.1	A	8.6
• **NB Approach**	C	20.9	**F**	**279.6**
• **SB Approach**	D	31.9	**F**	**111.1**
Avenue 12 at SR 99 NB ramps				
• EB Left-Through	A	8.9	A	8.9
• **NB Approach**	**E**	**46.9**	**F**	**95.1**
Avenue 18 at Road 23				
• NB Left-Through-Right	A	7.5	A	7.6
• SB Left-Through-Right	A	7.6	A	7.6
• WB Approach	B	10.5	A	9.8
• EB Approach	A	9.8	B	10.2
Avenue 17 at Road 23				
• NB Left-Through-Right	A	7.4	A	7.4
• SB Left-Through-Right	A	7.5	A	7.6
• WB Approach	B	11.2	B	11.5
• EB Approach	B	10.5	B	11.2
Avenue 17 at Golden State Boulevard				
• EB Left-Through-Right	A	7.5	A	7.4
• WB Left-Through-Right	A	7.6	A	7.6
• NB Approach	A	9.5	A	9.7
• SB Approach	B	13.5	B	13.3

TABLE 40:
EXISTING (2005) 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)
Ellis Street at Road 26	B	11.51	C	16.47
Avenue 15 ½ at Road 23				
• NB Left-Through-Right	A	7.6	A	7.8
• SB Left-Through-Right	A	7.6	A	7.6
• WB Approach	B	10.3	A	9.9
• EB Approach	B	10.2	B	11.8
Avenue 14 at Road 23	A	8.72	B	10.03
Avenue 16 at Schnoor Avenue				
• NB Left	A	7.3	A	7.4
• SB Left-Through-Right	A	7.5	A	7.3
• WB Approach	A	9.5	B	11.4
• EB Approach	B	10.3	B	11.7
Avenue 16 at SR 99 SB ramps	A	9.34	B	11.26
Avenue 16/Avenue 16 connector at SR 99 NB ramps				
• EB Left	B	10.1	B	10.6
Avenue 16 at SR 99 NB ramp connector				
• SB Left-Through	A	7.6	A	8.0
• WB Right	A	8.8	A	9.3
Gateway/Avenue 16 at SR 99 NB ramps				
• WB Left	A	9.6	B	10.6
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	B	12.3	B	16.4
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps	B	11.6	B	15.3
SR 145/Madera Avenue at SR 99 NB ramps	C	27.3	C	21.9
Olive Avenue/Avenue 14 at SR 99 SB off-ramp	B	13.9	B	15.3
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	C	25.1	C	34.9
Avenue 18 ½ at Pistachio Drive				
• EB Approach	A	8.3	A	8.4
• SB Approach	B	12.4	B	13.8
Avenue 18 ½ at Golden State Boulevard				
• EB Approach	A	7.6	A	7.7
• SB Approach	B	10.6	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

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 County segments (1), freeway segments (3), and intersections (3) are currently operating or have movements currently operating below the adopted level of service standards in the Existing (2005) scenario:

County Segments

- Avenue 17 – SR 99 to Road 27 – AM peak hour – 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
  - SB – PM peak hour – LOS "D"

Intersections

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

The remaining County segments, freeway segments, and intersections are currently operating at or above the adopted standards in their Existing (2005) scenario.

Signal Warrants

Rural and urban peak hour volume signal warrants were prepared for the following twenty (20) unsignalized intersections:

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

The signal warrant is not met at the remaining fifteen (15) study intersections in the Existing (2005) 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 (2005) conditions queue lengths developed from the level of service analyses for the Madera Site study locations.

TABLE 41:
EXISTING (2005) 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	1,204[1] (770[2])	
• NB Left-Through-Right		37/52
SR 99 SB off-ramp at Avenue 18 ½	1,256[1] (822[2])	
• SB Left-Through-Right		18/43
SR 99 SB off-ramp at Avenue 17	1,341[1] (907[2])	
• SB Left	589[3]	19/37
• SB Right	589[3]	3/4
SR 99 NB off-ramp at Avenue 17	1,060[1] (626[2])	
• NB Left-Through	45[3]	55/13
• NB Right	45[3]	10/88
SR 99 NB off-ramp at Avenue 16	1,150[1] (716[2])	
• WB Left		1/1

TABLE 41:
EXISTING (2005) 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 16	1,020[1] (586[2])	
• SB Left		---
• SB Through		---
• SB Right		---
SR 99 NB off-ramp at Avenue 15 1/2 /Cleveland Avenue	881[1] (447[2])	
• NB Left	353[3]	101/176
• NB Right	353[3]	49/#228
SR 99 SB off-ramp at Avenue 15 1/2/Cleveland Avenue	1,000[1] (566[2])	
• SB Left	65[3]	70/145
• SB Right	65[3]	29/47
SR 99 NB off-ramp at SR 145/Madera Avenue	1,310[1] (876[2])	
• WB Left	90[3]	#323/#221
• WB Right	90[3]	23/25
SR 99 SB off-ramp at Avenue 14/Olive Avenue	1,254[1] (820[2])	
• SB Left	65[3]	241/220
• SB Right	65[3]	44/32
SR 99 SB off-ramp at Avenue 12/Golden State Boulevard	1,431[1] (997[2])	
• WB Left-Right		32/356
SR 99 NB off-ramp at Avenue 12	1,223[1] (789[2])	
• NB Left	49[3]	123/208
• NB Right	49[3]	8/17
Avenue 17 between the SR 99 SB off-ramp and Golden State Boulevard	481	
• WB Left-Through-Right (at Golden State Blvd)		7/4
• EB Through (at SR 99 SB off-ramp)		---

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 (2005) 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 (2005) 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	149/212	N/N	N/N
SR 99 SB off-ramp at Avenue 18 ½	98/176	N/N	N/N
SR 99 SB off-ramp at Avenue 17	126/185	N/N	N/N
SR 99 NB off-ramp at Avenue 17	248/425	N/N	N/N
SR 99 NB off-ramp at Avenue 16	55/97	N/N	N/N
SR 99 SB off-ramp at Avenue 16	186/304	N/N	N/N
SR 99 NB off-ramp at Avenue 15 ½ /Cleveland Avenue	429/768	N/N	N/N
SR 99 SB off-ramp at Avenue 15 ½ /Cleveland Avenue	112/234	N/N	N/N
SR 99 NB off-ramp at SR 145/Madera Avenue	411/279	N/N	N/N
SR 99 SB off-ramp at Avenue 14/Olive Avenue	659/418	N/N	N/N
SR 99 SB off-ramp at Avenue 12/Golden State Boulevard	213/634	N/N	N/N
SR 99 NB off-ramp at Avenue 12	189/227	N/N	N/N

SR = State Route *PCE = Passenger Car Equivalent* *Y = Threshold Met*
N = Threshold Not Met *NB = northbound* *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 (2005) scenario for the Madera Site.

Opening Day (2008) No Project Conditions

Alternative E (No Project Alternative)

Roadway Levels of Service

The 2008 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
- Avenue 12 at Golden State Boulevard
  - Signalize the intersection
  - Restripe/widen the NB approach, south leg, from a shared left-through and a separate right-turn lane, to a separate left-turn lane and a shared through-right
  - Restripe/widen the SB approach, north leg, from a shared left-through and a separate right-turn lane, to a separate left-turn lane, one (1) through lane, and a separate right-turn lane
- 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

Table 43 shows the Opening Day (2008) 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 (2008) 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 (2008) No Project levels of service.

TABLE 43:
OPENING DAY (2008) NO PROJECT CONDITIONS
COUNTY SEGMENT, FREEWAY SEGMENT, AND INTERSECTION WEEKDAY LEVEL OF SERVICE
MADERA SITE (ALTERNATIVE E, NO PROJECT ALTERNATIVE)

	AM Peak Hour		PM Peak Hour	
County Segment	**LOS**		**LOS**	
Avenue 18 ½ - Road 24 to Road 23	B		B	
Road 23 – Avenue 18 ½ to Avenue 17	B		C	
Avenue 17 – Road 23 to SR 99	A		**F**	
Avenue 17 – SR 99 to Road 27	**F**		**F**	
Golden State Boulevard – Avenue 17 to Avenue 18	A		A	
	AM Peak Hour		**PM Peak Hour**	
Freeway Segment	**LOS**	**Density (pc/mi/ln)**	**LOS**	**Density (pc/mi/ln)**
SR 99 north of Avenue 18 ½				
• NB	C	24.1	C	25.7
• **SB**	C	19.9	**D**	**33.6**
SR 99 between Avenue 18 ½ and Avenue 17				
• **NB**	**D**	**26.9**	**D**	**28.2**
• **SB**	C	21.6	**E**	**39.1**

TABLE 43:
OPENING DAY (2008) NO PROJECT CONDITIONS
COUNTY SEGMENT, FREEWAY SEGMENT, AND INTERSECTION WEEKDAY LEVEL OF SERVICE
MADERA SITE (ALTERNATIVE E, NO PROJECT ALTERNATIVE)

	AM Peak Hour		PM Peak Hour	
Freeway Segment	**LOS**	**Density (pc/mi/ln)**	**LOS**	**Density (pc/mi/ln)**
SR 99 south of Avenue 17				
• **NB**	**D**	**31.6**	**F**	**---**
• **SB**	C	23.1	**F**	**---**
	AM Peak Hour		**PM Peak Hour**	
Intersection	**LOS**	**Delay[1] (secs)**	**LOS**	**Delay[1] (secs)**
Avenue 18 ½ at SR 99 SB ramps/Road 23				
• WB Left-Through	A	8.9	A	8.9
• **NB Approach**	**D**	**25.6**	**F**	**63.3**
• **SB Approach**	**D**	**30.0**	**F**	**178.0**
Avenue 18 ½ at SR 99 NB ramps				
• EB Left	A	8.5	A	8.3
• **NB Approach**	**E**	**44.3**	**F**	**144.0**
Avenue 17 at SR 99 SB ramps				
• **SB Approach**	**F**	**153.6**	**F**	**8216**
Avenue 17 at SR 99 NB ramps				
• EB Left	B	10.2	C	15.7
• **NB Approach**	**F**	**738.0**	**F**	**5934**
Avenue 12/Golden State Boulevard at SR 99 SB ramps				
• SB Left-Through	A	8.4	A	9.0
• **WB Approach**	C	15.6	**F**	**303.5**
Avenue 12 at Golden State Boulevard	C	20.9	C	29.8
Avenue 12 at SR 99 NB ramps	B	13.9	B	14.6
Avenue 18 at Road 23				
• NB Left-Through-Right	A	7.7	A	8.0
• SB Left-Through-Right	A	7.8	A	8.0
• WB Approach	B	10.8	B	11.0
• EB Approach	B	11.1	B	13.4
Avenue 17 at Road 23				
• NB Left-Through-Right	A	7.5	A	7.6
• SB Left-Through-Right	A	7.8	A	8.2
• **WB Approach**	B	14.7	**F**	**50.5**
• EB Approach	B	12.5	C	7.0
Avenue 17 at Golden State Boulevard				
• EB Left-Through-Right	A	9.1	B	11.0
• WB Left-Through-Right	A	8.9	B	13.7
• **NB Approach**	**F**	**73.0**	**F**	**---**
• **SB Approach**	**F**	**282.2**	**F**	**---**

TABLE 43:
OPENING DAY (2008) NO PROJECT CONDITIONS
COUNTY SEGMENT, FREEWAY SEGMENT, AND INTERSECTION WEEKDAY LEVEL OF SERVICE
MADERA SITE (ALTERNATIVE E, NO PROJECT ALTERNATIVE)

	AM Peak Hour		PM Peak Hour	
Intersection	**LOS**	**Delay[1] (secs)**	**LOS**	**Delay[1] (secs)**
Ellis Street at Road 26	B	14.62	**F**	**96.48**
Avenue 15 ½ at Road 23				
• NB Left-Through-Right	A	7.8	A	8.5
• SB Left-Through-Right	A	7.9	A	8.2
• WB Approach	B	11.9	B	14.6
• EB Approach	B	12.5	C	16.9
Avenue 14 at Road 23	A	9.77	C	16.62
Avenue 16 at Schnoor Avenue				
• NB Left	A	7.4	A	7.6
• SB Left-Through-Right	A	7.8	A	7.7
• **WB Approach**	B	11.5	**E**	**63.4**
• **EB Approach**	B	14.2	**E**	**49.5**
Avenue 16 at SR 99 SB ramps	B	14.8	C	21.3
Avenue 16/Avenue 16 connector at SR 99 NB ramps				
• **EB Left**	B	12.6	**D**	**26.5**
Avenue 16 at SR 99 NB ramp connector				
• SB Left-Through	A	8.2	A	9.5
• WB Right	A	9.6	B	12.8
Gateway/Avenue 16 at SR 99 NB ramps				
• WB Left	B	11.1	C	15.4
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	B	14.2	**D**	**35.1**
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps	B	13.0	C	34.3
SR 145/Madera Avenue at SR 99 NB ramps	**D**	**36.5**	**D**	**54.8**
Olive Avenue/Avenue 14 at SR 99 SB off-ramp	B	15.4	C	29.8
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	C	26.6	**E**	**61.1**
Avenue 18 ½ at Pistachio Drive				
• EB Approach	A	8.9	A	9.1
• SB Approach	C	22.5	D	25.5
Avenue 18 ½ at Golden State Boulevard				
• EB Approach	A	7.7	A	7.8
• SB Approach	B	11.1	B	12.2

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 segments (2), freeway segments (4), and intersections (13) are projected to operate or have movements projected to operate below the adopted level of service standards in the Opening Day (2008) No Project Alternative E scenario:

County Segments

- Avenue 17 – Road 23 to SR 99 – PM peak hour – LOS "F"
- Avenue 17 – SR 99 to Road 27 – AM/PM peak hours – 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 – AM/PM peak hours – LOS "D"
  - SB – PM peak hour – LOS "E"
- SR 99 south of Avenue 17
  - NB – AM/PM peak hours – LOS "D"/"F"
  - SB – PM peak hours – LOS "F"

Intersections

- Avenue 18 ½ at SR 99 SB ramps/Road 23
  - NB Approach – AM/PM peak hours – LOS "D"/"F"
  - SB Approach – AM/PM peak hours – LOS "E"/"F"
- Avenue 18 at SR 99 NB ramps
  - NB Approach – PM peak hour – LOS "F"
- Avenue 17 at SR 99 SB ramps
  - SB Approach – AM/PM peak hours – LOS "F"
- Avenue 17 at SR 99 NB ramps
  - NB Approach – AM/PM peak hour – LOS "F"
- Avenue 12/Golden State Boulevard at SR 99 SB ramps
  - WB Approach – PM peak hour – LOS "F"
- Avenue 17 at Road 23
  - WB Approach – PM peak hour – LOS "F"
- Avenue 17 at Golden State Boulevard
  - NB Approach – AM/PM peak hours – LOS "F"
  - SB Approach – AM/PM peak hours – LOS "F"
- Ellis Street at Road 26 – PM peak hour – LOS "F"
- Avenue 16 at Schnoor Avenue
  - WB Approach – PM peak hour – LOS "F"
  - EB Approach – PM peak hour – LOS "E"
- Avenue 16/Avenue 16 connector at SR 99 NB ramps
  - EB Left – PM peak hour – LOS "D"
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps – PM peak hour – LOS "D"
- SR 145/Madera Avenue at SR 99 NB ramps – AM/PM peak hours – LOS "D"
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145 – 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 (2008) No Project Alternative E scenario.

Signal Warrants

Rural and urban peak hour volume signal warrants were prepared for the following seventeen (17) unsignalized intersections:

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

Based on the rural and urban peak hour volume warrant, the signal warrant is met at the following eleven (11) locations potentially indicating the need for a traffic signal:

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

The signal warrant is not met at the remaining four (4) study intersections in the Opening Day (2008) 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 (2008) No Project Alternative E conditions queue lengths developed from the level of service analyses for the Madera Site study locations.

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 locations by time period are projected to exceed the allowable storage length in the Opening Day (2008) No Project Alternative E scenario with 95th percentile traffic conditions:

- Avenue 17 at SR 99 SB off-ramp – SB left-turn movement – PM peak hour
- Avenue 17 at SR 99 NB off-ramp – NB left-through and right-turn movements – AM/PM peak hours
- SR 99 SB off-ramp at Avenue 12/Golden State Boulevard – WB left-right turn movements – 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.

All remaining study queue lengths are not projected to exceed the allowable storage lengths in the 95th percentile condition in the Opening Day (2008) No Project Alternative E scenario.

TABLE 44:
OPENING DAY (2008) 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 Avenue 18 ½	1,204[1] (770[2])	
• NB Left-Through-Right		175/399
SR 99 SB off-ramp at Avenue 18 ½	1,256[1] (822[2])	
• SB Left-Through-Right		88/407
SR 99 SB off-ramp at Avenue 17	1,341[1] (907[2])	
• **SB Left**	589[3]	236/**1,030**
• SB Right	589[3]	19/63
SR 99 NB off-ramp at Avenue 17	1,060[1] (626[2])	
• **NB Left-Through**	45[3]	**1,368/2,400**
• **NB Right**	45[3]	52/**2,619**
SR 99 NB off-ramp at Avenue 16	1,150[1] (716[2])	
• WB Left		1/2

TABLE 44:
OPENING DAY (2008) 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 SB off-ramp at Avenue 16	1,020[1] (586[2])	
• SB Left		3/3
• SB Through		87/141
• SB Right		52/80
SR 99 NB off-ramp at Avenue 15 1/2 /Cleveland Avenue	881[1] (447[2])	
• NB Left	353[3]	127/#347
• NB Right	353[3]	51/#338
SR 99 SB off-ramp at Avenue 15 1/2/Cleveland Avenue	1,000[1] (566[2])	
• SB Left-Through	65[3]	130/#424
• SB Right	65[3]	35/174
SR 99 NB off-ramp at SR 145/Madera Avenue	1,310[1] (876[2])	
• WB Left	90[3]	#368/#327
• WB Right	90[3]	23/26
SR 99 SB off-ramp at Avenue 14/Olive Avenue	1,254[1] (820[2])	
• SB Left	65[3]	280/423
• SB Right	65[3]	59/29
SR 99 SB off-ramp at Avenue 12/Golden State Boulevard	1,431[1] (997[2])	
• **WB Left-Right**		64/**1,223**
SR 99 NB off-ramp at Avenue 12	1,223[1] (789[2])	
• NB Left	49[3]	141/153
• NB Right	49[3]	34/43
Avenue 17 between the SR 99 SB off-ramp and Golden State Boulevard	481	
• WB Left-Through-Right (at Golden State Blvd)		12/41
• EBT (at SR 99 SB off-ramp)		---

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 *--- 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*

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 (2008) 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	264/331	N/N	N/N
SR 99 SB off-ramp at Avenue 18 ½	172/300	N/N	N/N
SR 99 SB off-ramp at Avenue 17	197/356	N/N	N/N
SR 99 NB off-ramp at Avenue 17	**780/1,689**	**Y/Y**	**N/Y**
SR 99 NB off-ramp at Avenue 16	139/309	N/N	N/N
SR 99 SB off-ramp at Avenue 16	291/623	N/N	N/N
SR 99 NB off-ramp at Avenue 15 ½ /Cleveland Avenue	528/**1,010**	N/**Y**	N/N
SR 99 SB off-ramp at Avenue 15 ½ /Cleveland Avenue	231/555	N/N	N/N
SR 99 NB off-ramp at SR 145/Madera Avenue	419/288	N/N	N/N
SR 99 SB off-ramp at Avenue 14/Olive Avenue	779/807	N/N	N/N
SR 99 SB off-ramp at Avenue 12/Golden State Boulevard	270/781	N/N	N/N
SR 99 NB off-ramp at Avenue 12	237/306	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 45. As shown in Table 45, the following off-ramps, by time period, are projected to meet the 900 to 1,499 PCE threshold in the Opening Day (2008) No Project Alternative E 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

The following off-ramps are projected to meet the 1,500 PCE threshold:

- Avenue 17 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.

Opening Day (2008) Project Conditions

Alternative A (Proposed Project Alternative)

Roadway Levels of Service

Table 46 show the Opening Day (2008) 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 (2008) 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 (2008) Project Alternative A levels of service.

TABLE 46:
OPENING DAY (2008) PROJECT CONDITIONS
COUNTY SEGMENT, FREEWAY SEGMENT, AND INTERSECTION WEEKDAY LEVEL OF SERVICE
MADERA SITE (ALTERNATIVE A, PROPOSED PROJECT ALTERNATIVE)

County Segment	**AM Peak Hour LOS**		**PM Peak Hour LOS**	
Avenue 18 ½ - Road 24 to Road 23	B		B	
Road 23 – Avenue 18 ½ to Avenue 17	B		C	
Avenue 17 – Road 23 to SR 99	B		**F**	
Avenue 17 – SR 99 to Road 27	**F**		**F**	
Golden State Boulevard – Avenue 17 to Avenue 18	A		A	
Freeway Segment	**AM Peak Hour LOS**	**Density (pc/mi/ln)**	**PM Peak Hour LOS**	**Density (pc/mi/ln)**
SR 99 north of Avenue 18 ½				
• **NB**	C	24.3	**D**	**26.3**
• **SB**	C	20.3	**D**	**34.6**
SR 99 between Avenue 18 ½ and Avenue 17				
• **NB**	**D**	**26.9**	**D**	**28.2**
• **SB**	C	21.6	**E**	**39.1**
SR 99 south of Avenue 17				
• **NB**	**E**	**35.4**	**F**	**---**
• **SB**	C	24.1	**F**	**---**

TABLE 46:
OPENING DAY (2008) 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 18 ½ at SR 99 SB ramps/Road 23				
• WB Left-Through	A	9.0	A	9.0
• **NB Approach**	**E**	**45.1**	**F**	**---**
• **SB Approach**	**F**	**56.6**	**F**	**397.7**
Avenue 18 ½ at SR 99 NB ramps				
• EB Left	A	8.7	A	8.6
• **NB Approach**	**F**	**62.7**	**F**	**284.2**
Avenue 17 at SR 99 SB ramps				
• **SB Approach**	**F**	**564.7**	**F**	**29611**
Avenue 17 at SR 99 NB ramps				
• EB Left	B	10.6	C	16.9
• **NB Approach**	**F**	**1610**	**F**	**13114**
Avenue 12/Golden State Boulevard at SR 99 SB ramps				
• SB Left-Through	A	8.4	A	9.0
• **WB Approach**	C	16.4	**F**	**331.3**
Avenue 12 at Golden State Boulevard	C	22.8	C	30.8
Avenue 12 at SR 99 NB ramps	B	14.8	B	17.5
Avenue 18 at Road 23				
• NB Left-Through-Right	A	7.7	A	8.0
• SB Left-Through-Right	A	8.0	A	8.2
• WB Approach	B	11.0	B	11.7
• EB Approach	B	12.5	C	16.5
Avenue 17 at Road 23				
• NB Left-Through-Right	A	7.5	A	7.7
• SB Left-Through-Right	A	7.9	A	8.4
• **WB Approach**	C	16.2	**F**	**100.9**
• EB Approach	B	13.2	C	20.0
Avenue 17 at Golden State Boulevard				
• EB Left-Through-Right	B	10.5	B	14.1
• WB Left-Through-Right	A	8.9	B	13.7
• **NB Approach**	**F**	**417.0**	**F**	**---**
• **SB Approach**	**F**	**---**	**F**	**---**
Ellis Street at Road 26	C	15.31	**F**	**110.19**
Avenue 15 ½ at Road 23				
• NB Left-Through-Right	A	7.8	A	8.6
• SB Left-Through-Right	A	8.0	A	8.3
• WB Approach	B	12.5	C	15.9
• EB Approach	B	13.1	C	18.4

TABLE 46:
OPENING DAY (2008) 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 14 at Road 23	B	10.09	C	19.49
Avenue 16 at Schnoor Avenue				
• NB Left	A	7.4	A	7.6
• SB Left-Through-Right	A	7.8	A	7.8
• **WB Approach**	B	12.4	**F**	**125.2**
• **EB Approach**	C	15.9	**F**	**84.3**
Avenue 16 at SR 99 SB ramps	B	14.9	C	21.4
Avenue 16/Avenue 16 connector at SR 99 NB ramps				
• **EB Left**	B	13.2	**D**	**32.8**
Avenue 16 at SR 99 NB ramp connector				
• SB Left-Through	A	8.2	A	9.6
• WB Right	A	9.6	B	12.8
Gateway/Avenue 16 at SR 99 NB ramps				
• WB Left	B	11.2	C	16.1
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	B	14.5	**D**	**36.4**
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps	B	13.1	**D**	**41.7**
SR 145/Madera Avenue at SR 99 NB ramps	**D**	**39.4**	**E**	**64.5**
Olive Avenue/Avenue 14 at SR 99 SB off-ramp	B	15.6	C	32.1
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	C	30.2	**E**	**69.5**
Avenue 18 ½ at Pistachio Drive				
• EB Approach	A	8.9	A	9.1
• SB Approach	C	23.3	D	27.0
Avenue 18 ½ at Golden State Boulevard				
• EB Approach	A	7.7	A	7.8
• SB Approach	B	11.3	B	12.5

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

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 segments (2), freeway segments (6), and intersections (14) are projected to operate or have movements projected to operate below the adopted level of service standards in the Opening Day (2008) Project Alternative A scenario:

<u>County Segments</u>

- Avenue 17 – Road 23 to SR 99 – PM peak hour - 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 – PM peak hour – LOS "D"
  - SB – PM peak hour – LOS "D"
- 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 – PM peak hour – LOS "F"

Intersections

- Avenue 18 ½ at SR 99 SB ramps/Road 23
  - NB Approach – AM/PM peak hours – LOS "E"/"F"
  - SB Approach – AM/PM peak hours – LOS "F"
- Avenue 18 at SR 99 NB ramps
  - 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 SR 99 NB ramps
  - NB Approach – AM/PM peak hour – LOS "F"
- Avenue 12/Golden State Boulevard at SR 99 SB ramps
  - WB Approach – PM peak hour – LOS "F"
- Avenue 17 at Road 23
  - WB Approach – PM peak hour – LOS "F"
- Avenue 17 at Golden State Boulevard
  - NB Approach – AM/PM peak hours – LOS "F"
  - SB Approach – AM/PM peak hours – LOS "F"
- Ellis Street at Road 26 – PM peak hour – LOS "F"
- Avenue 16 at Schnoor Avenue
  - WB Approach – PM peak hour – LOS "F"
  - EB Approach – PM peak hour – LOS "E"
- Avenue 16/Avenue 16 connector at SR 99 NB ramps
  - EB Left – PM peak hour – LOS "D"
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps – PM peak hour – LOS "D"
- Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps – PM peak hour – LOS "D"
- SR 145/Madera Avenue at SR 99 NB ramps – AM/PM peak hours – LOS "D"/"E"
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145 – 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 (2008) Project Alternative A scenario.

Signal Warrants

Rural and urban peak hour volume signal warrants were prepared for the following seventeen (17) unsignalized intersections:

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

Based on the rural and urban peak hour volume warrant, the signal warrant is met at the following eleven (11) locations potentially indicating the need for a traffic signal:

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

The signal warrant is not met at the remaining four (4) study intersections in the Opening Day (2008) 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 (2008) Project Alternative A conditions queue lengths developed from the level of service analyses for the Madera Site study locations.

TABLE 47:
OPENING DAY (2008) 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	1,204[1] (770[2])	
• NB Left-Through-Right		217/553
SR 99 SB off-ramp at Avenue 18 ½	1,256[1] (822[2])	
• SB Left-Through-Right		174/685
SR 99 SB off-ramp at Avenue 17	1,341[1] (907[2])	
• **SB Left**	589[3]	379/**1,058**
• SB Right	589[3]	334/128
SR 99 NB off-ramp at Avenue 17	1,060[1] (626[2])	
• **NB Left-Through**	45[3]	**2,228/3,406**
• **NB Right**	45[3]	56/**2,763**
SR 99 NB off-ramp at Avenue 16	1,150[1] (716[2])	
• WB Left		1/2
SR 99 SB off-ramp at Avenue 16	1,020[1] (586[2])	
• SB Left		3/3
• SB Through		93/161
• SB Right		52/83
SR 99 NB off-ramp at Avenue 15 1/2 /Cleveland Avenue	881[1] (447[2])	
• NB Left	353[3]	127/#404
• NB Right	353[3]	51/#394
SR 99 SB off-ramp at Avenue 15 1/2/Cleveland Avenue	1,000[1] (566[2])	
• **SB Left-Through**	65[3]	145/**#547**
• **SB Right**	65[3]	36/**213**
SR 99 NB off-ramp at SR 145/Madera Avenue	1,310[1] (876[2])	
• WB Left	90[3]	#374/327
• WB Right	90[3]	25/30
SR 99 SB off-ramp at Avenue 14/Olive Avenue	1,254[1] (820[2])	
• SB Left	65[3]	285/455
• SB Right	65[3]	62/30

TABLE 47:
OPENING DAY (2008) 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 SB off-ramp at Avenue 12/Golden State Boulevard	1,431[1] (997[2])	
• **WB Left-Right**		70/**1,300**
SR 99 NB off-ramp at Avenue 12	1,223[1] (789[2])	
• NB Left	49[3]	121/153
• NB Right	49[3]	31/43
Avenue 17 between the SR 99 SB off-ramp and Golden State Boulevard	481	
• WB Left-Through-Right (at Golden State Blvd)		12/41
• EB Through (at SR 99 SB off-ramp)		----

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 *--- 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 (2008) Project Alternative A scenario with 95th percentile traffic conditions:

- Avenue 17 at SR 99 SB off-ramp – SB left-turn movement – PM peak hour
- Avenue 17 at SR 99 NB off-ramp – NB left-through and right-turn movements – AM/PM peak hours
- SR 99 SB off-ramp at Cleveland Avenue/Avenue 15 ½ – SB left-turn and right-turn movements – PM peak hour
- SR 99 SB off-ramp at Avenue 12/Golden State Boulevard – WB left-right turn movements – 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.

All remaining study queue lengths are not projected to exceed the allowable storage lengths in the 95th percentile condition in the Opening Day (2008) 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 (2008) 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	264/331	N/N	N/N
SR 99 SB off-ramp at Avenue 18 ½	217/357	N/N	N/N
SR 99 SB off-ramp at Avenue 17	197/356	N/N	N/N
SR 99 NB off-ramp at Avenue 17	**1,002/1,966**	**Y/Y**	**N/Y**
SR 99 NB off-ramp at Avenue 16	139/309	N/N	N/N
SR 99 SB off-ramp at Avenue 16	310/672	N/N	N/N
SR 99 NB off-ramp at Avenue 15 ½ /Cleveland Avenue	528/**1,010**	N/**Y**	N/N
SR 99 SB off-ramp at Avenue 15 ½ /Cleveland Avenue	255/614	N/N	N/N
SR 99 NB off-ramp at SR 145/Madera Avenue	419/288	N/N	N/N
SR 99 SB off-ramp at Avenue 14/Olive Avenue	796/848	N/N	N/N
SR 99 SB off-ramp at Avenue 12/Golden State Boulevard	277/795	N/N	N/N
SR 99 NB off-ramp at Avenue 12	237/306	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 (2008) 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

The following off-ramps are projected to meet the 1,500 PCE threshold:

- Avenue 17 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 (2008) 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 required for left-turning volumes greater than 300 vehicles per hour and that separate right-turn lanes are required for right-turning volumes greater than 300 vehicles per hour. Based on this standard of practice, the following locations and movements will require 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 (2008) PROJECT CONDITIONS
TURN LANE STORAGE CALCULATIONS SUMMARY
ALTERNATIVE A (PROPOSED PROJECT/MADERA SITE)

Intersection	Movement	Existing Storage Length (ft)	2008 Project Storage Length (ft)
Avenue 18 ½ at SR 99 SB ramps/Road 23	NBL	25	75
	NBR	25	200
	WBL	---	75
Avenue 18 ½ at SR 99 NB ramps	EBL	150	275
Avenue 17 at SR 99 NB ramps	EBL	300	50
Avenue 12/Golden State Boulevard at SR 99 SB ramps	NBR	---	n/a
	SBL	---	250
Avenue 12 at Golden State Boulevard	NBL	200	150
	NBR	---	275
	SBL	400	175
	SBR	200	50
	WBL	---	100
	EBL	350	250
	EBR	425	50
Avenue 12 at SR 99 NB ramps	WBR	---	425
	EBL	---	100
Avenue 18 at Road 23	NBL	---	n/a
	SBL	---	125
Avenue 17 at Road 23	NBL	---	n/a
	SBL	---	50
	WBL	---	175
Avenue 17 at Golden State Boulevard	NBL	50	75
	NBR	---	n/a
	SBL	---	265[1]
	WBL	---	200
	WBR	---	550[2]
	EBL	---	50
Ellis Street at Road 26	NBL	---	50
	SBL	---	175
	SBR	---	n/a
	WBL		n/a

TABLE 49:
OPENING DAY (2008) PROJECT CONDITIONS
TURN LANE STORAGE CALCULATIONS SUMMARY
ALTERNATIVE A (PROPOSED PROJECT/MADERA SITE)

Intersection	Movement	Existing Storage Length (ft)	2008 Project Storage Length (ft)
Avenue 16 at Schnoor Avenue	NBL	75	100
	NBR	75	225
	WBL	150	225[1]
	EBL	---	140[1]
Avenue 16 at SR 99 SB ramps	NBL	75	225[1]
	NBR	75	50
	EBR	200	600
Avenue 16 at SR 99 NB ramps	EBL	---	200[1]
	EBR	---	375
Avenue 16/Ellis Street at Golden State Boulevard	NBR	---	n/a
	WBL	200	n/a
	WBR	---	n/a
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	325
	EBL	100	225
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps	WBL	125	165[1]
	EBR	125	500
SR 145/Madera Avenue at SR 99 NB ramps	NBL	---	265[1]
	SBR	---	400
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	NBL	125	150
	NBR	100	25
	SBR	50	225
	EBL	175	150[1]
	EBR	175	625[2]
Avenue 18 ½ at Golden State Boulevard/Road 23	NBL	---	n/a
	NBR	---	n/a
	SBL	---	n/a
	WBL	---	n/a
	EBL	---	n/a

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 (2008) 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 (2008) 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 (2008) Project Alternative B levels of service.

TABLE 50:
OPENING DAY (2008) PROJECT CONDITIONS
COUNTY SEGMENT, FREEWAY SEGMENT, AND INTERSECTION WEEKDAY LEVEL OF SERVICE
MADERA SITE (ALTERNATIVE B, REDUCED INTENSITY ALTERNATIVE)

	AM Peak Hour		PM Peak Hour	
County Segment	**LOS**		**LOS**	
Avenue 18 ½ - Road 24 to Road 23	B		B	
Road 23 – Avenue 18 ½ to Avenue 17	B		C	
Avenue 17 – Road 23 to SR 99	A		**F**	
Avenue 17 – SR 99 to Road 27	**F**		**F**	
Golden State Boulevard – Avenue 17 to Avenue 18	A		A	
	AM Peak Hour		**PM Peak Hour**	
Freeway Segment	**LOS**	**Density (pc/mi/ln)**	**LOS**	**Density (pc/mi/ln)**
SR 99 north of Avenue 18 ½				
• **NB**	C	24.3	**D**	**26.1**
• SB	C	20.2	**D**	**34.3**
SR 99 between Avenue 18 ½ and Avenue 17				
• **NB**	**D**	**26.9**	**D**	**28.2**
• **SB**	C	21.6	**E**	**39.1**
SR 99 south of Avenue 17				
• **NB**	**D**	**34.2**	**F**	**---**
• **SB**	C	23.8	**F**	**---**
	AM Peak Hour		**PM Peak Hour**	
Intersection	**LOS**	**Delay[1] (secs)**	**LOS**	**Delay[1] (secs)**
Avenue 18 ½ at SR 99 SB ramps/Road 23				
• WB Left-Through	A	8.9	A	9.0
• **NB Approach**	**E**	**37.0**	**F**	**458.3**
• **SB Approach**	**E**	**45.9**	**F**	**324.1**

TABLE 50:
OPENING DAY (2008) PROJECT CONDITIONS
COUNTY SEGMENT, FREEWAY SEGMENT, AND INTERSECTION WEEKDAY LEVEL OF SERVICE
MADERA SITE (ALTERNATIVE B, REDUCED INTENSITY ALTERNATIVE)

	AM Peak Hour		PM Peak Hour	
Intersection	**LOS**	**Delay[1] (secs)**	**LOS**	**Delay[1] (secs)**
Avenue 18 ½ at SR 99 NB ramps				
• EB Left	A	8.6	A	8.5
• **NB Approach**	**F**	**55.4**	**F**	**239.1**
Avenue 17 at SR 99 SB ramps				
• **SB Approach**	**F**	**402.7**	**F**	**19627**
Avenue 17 at SR 99 NB ramps				
• EB Left	B	10.5	C	16.5
• **NB Approach**	**F**	**1301**	**F**	**10493**
Avenue 12/Golden State Boulevard at SR 99 SB ramps				
• SB Left-Through	A	8.4	A	9.0
• **WB Approach**	C	16.2	**F**	**323.1**
Avenue 12 at Golden State Boulevard	C	23.1	C	35.1
Avenue 12 at SR 99 NB ramps	B	15.1	B	20.2
Avenue 18 at Road 23				
• NB Left-Through-Right	A	7.7	A	8.0
• SB Left-Through-Right	A	7.9	A	8.2
• WB Approach	B	10.9	B	11.3
• EB Approach	B	12.0	C	15.4
Avenue 17 at Road 23				
• NB Left-Through-Right	A	7.5	A	7.6
• SB Left-Through-Right	A	7.9	A	8.3
• **WB Approach**	C	15.7	**F**	**83.6**
• EB Approach	B	12.9	C	19.2
Avenue 17 at Golden State Boulevard				
• EB Left-Through-Right	B	10.1	B	13.1
• WB Left-Through-Right	A	8.9	B	13.7
• **NB Approach**	**F**	**205.9**	**F**	**---**
• **SB Approach**	**F**	**3462**	**F**	**---**
Ellis Street at Road 26	C	15.09	**F**	**106.43**
Avenue 15 ½ at Road 23				
• NB Left-Through-Right	A	7.8	A	8.6
• SB Left-Through-Right	A	7.9	A	8.3
• WB Approach	B	12.4	C	15.5
• EB Approach	B	12.9	C	17.9
Avenue 14 at Road 23	A	9.99	C	18.41

TABLE 50:
OPENING DAY (2008) 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 at Schnoor Avenue				
• NB Left	A	7.4	A	7.6
• SB Left-Through-Right	A	7.8	A	7.7
• **WB Approach**	B	12.2	**F**	**105.0**
• **EB Approach**	C	15.4	**F**	**72.9**
Avenue 16 at SR 99 SB ramps	B	14.9	C	21.4
Avenue 16/Avenue 16 connector at SR 99 NB ramps				
• **EB Left**	B	12.9	**D**	**30.5**
Avenue 16 at SR 99 NB ramp connector				
• SB Left-Through	A	8.2	A	9.6
• WB Right	A	9.6	B	12.8
Gateway/Avenue 16 at SR 99 NB ramps				
• WB Left	B	11.2	C	15.9
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	B	14.5	**D**	**36.7**
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps	B	13.0	**D**	**40.0**
SR 145/Madera Avenue at SR 99 NB ramps	**D**	**38.5**	**E**	**61.7**
Olive Avenue/Avenue 14 at SR 99 SB off-ramp	B	15.7	C	31.7
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	C	30.1	**E**	**67.2**
Avenue 18 ½ at Pistachio Drive				
• EB Approach	A	8.9	A	9.1
• SB Approach	C	23.0	D	26.5
Avenue 18 ½ at Golden State Boulevard				
• EB Approach	A	7.7	A	7.8
• SB Approach	B	11.2	B	12.4

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

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 segments (2), freeway segments (5), and intersections (14) are projected to operate or have movements projected to operate below the adopted level of service standards in the Opening Day (2008) Project Alternative B scenario:

<u>County Segments</u>

- Avenue 17 – Road 23 to SR 99 – PM peak hour - 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 – PM peak hour – LOS "D"
- 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 "D"/"F"
  - SB – PM peak hour – LOS "F"

Intersections

- Avenue 18 ½ at SR 99 SB ramps/Road 23
  - NB Approach – AM/PM peak hours – LOS "E"/"F"
  - SB Approach – AM/PM peak hours – LOS "E"/"F"
- Avenue 18 at SR 99 NB ramps
  - 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 SR 99 NB ramps
  - NB Approach – AM/PM peak hour – LOS "F"
- Avenue 12/Golden State Boulevard at SR 99 SB ramps
  - WB Approach – PM peak hour – LOS "F"
- Avenue 17 at Road 23
  - WB Approach – PM peak hour – LOS "F"
- Avenue 17 at Golden State Boulevard
  - NB Approach – AM/PM peak hours – LOS "F"
  - SB Approach – AM/PM peak hours – LOS "F"
- Ellis Street at Road 26 – PM peak hour – LOS "F"
- Avenue 16 at Schnoor Avenue
  - WB Approach – PM peak hour – LOS "F"
  - EB Approach – PM peak hour – LOS "E"
- Avenue 16/Avenue 16 connector at SR 99 NB ramps
  - EB Left – PM peak hour – LOS "D"
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps – PM peak hour – LOS "D"
- Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps – PM peak hour – LOS "D"
- SR 145/Madera Avenue at SR 99 NB ramps – AM/PM peak hours – LOS "D"/"E"
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145 – 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 (2008) Project Alternative B scenario.

Signal Warrants

Rural and urban peak hour volume signal warrants were prepared for the following seventeen (17) unsignalized intersections:

- Avenue 18 ½ at SR 99 SB ramps/Road 23 - Urban

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

Based on the rural and urban peak hour volume warrant, the signal warrant is met at the following eleven (11) locations potentially indicating the need for a traffic signal:

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

The signal warrant is not met at the remaining four (4) study intersections in the Opening Day (2008) 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 (2008) Project Alternative B conditions queue lengths developed from the level of service analyses for the Madera Site study locations.

TABLE 51
OPENING DAY (2008) 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	1,204[1] (770[2])	
• NB Left-Through-Right		202/510
SR 99 SB off-ramp at Avenue 18 ½	1,256[1] (822[2])	
• SB Left-Through-Right		144/600
SR 99 SB off-ramp at Avenue 17	1,341[1] (907[2])	
• **SB Left**	589[3]	340/**1,053**
• SB Right	589[3]	28/107
SR 99 NB off-ramp at Avenue 17	1,060[1] (626[2])	
• **NB Left-Through**	45[3]	**1,968/3,116**
• **NB Right**	45[3]	54/**2,703**
SR 99 NB off-ramp at Avenue 16	1,150[1] (716[2])	
• WB Left		1/2
SR 99 SB off-ramp at Avenue 16	1,020[1] (586[2])	
• SB Left		3/3
• SB Through		90/156
• SB Right		51/82
SR 99 NB off-ramp at Avenue 15 ½ /Cleveland Avenue	881[1] (447[2])	
• NB Left	353[3]	127/#408
• NB Right	353[3]	51/#391
SR 99 SB off-ramp at Avenue 15 ½ /Cleveland Avenue	1,000[1] (566[2])	
• **SB Left-Through**	65[3]	140/**#525**
• **SB Right**	65[3]	36/**208**
SR 99 NB off-ramp at SR 145/Madera Avenue	1,310[1] (876[2])	
• WB Left	90[3]	#368/#327
• WB Right	90[3]	25/30
SR 99 SB off-ramp at Avenue 14/Olive Avenue	1,254[1] (820[2])	
• SB Left	65[3]	283/452
• SB Right	65[3]	61/30
SR 99 SB off-ramp at Avenue 12/Golden State Boulevard	1,431[1] (997[2])	
• **WB Left-Right**		69/**1,277**

TABLE 51
OPENING DAY (2008) 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	1,223[1] (789[2])	
• NB Left	49[3]	110/153
• NB Right	49[3]	29/43
Avenue 17 between the SR 99 SB off-ramp and Golden State Boulevard	481	
• WB Left-Through-Right (at Golden State Blvd)		12/41
• EB Through (at SR 99 SB off-ramp)		---

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 *--- 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 (2008) Project Alternative B scenario with 95th percentile traffic conditions:

- Avenue 17 at SR 99 SB off-ramp – SB left-turn movement – PM peak hour
- Avenue 17 at SR 99 NB off-ramp – NB left-through and right-turn movements – AM/PM peak hours
- SR 99 SB off-ramp at Cleveland Avenue/Avenue 15 ½ - SB left-turn and right-turn movements – PM peak hour
- SR 99 SB off-ramp at Avenue 12/Golden State Boulevard – WB left-right turn movements – 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.

All remaining study queue lengths are not projected to exceed the allowable storage lengths in the 95th percentile condition in the Opening Day (2008) 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 (2008) 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	264/331	N/N	N/N
SR 99 SB off-ramp at Avenue 18 ½	204/340	N/N	N/N
SR 99 SB off-ramp at Avenue 17	197/356	N/N	N/N
SR 99 NB off-ramp at Avenue 17	**936/1,886**	**Y/Y**	**N/Y**
SR 99 NB off-ramp at Avenue 16	139/309	N/N	N/N
SR 99 SB off-ramp at Avenue 16	304/659	N/N	N/N
SR 99 NB off-ramp at Avenue 15 ½ /Cleveland Avenue	528/**1,010**	N/**Y**	N/N
SR 99 SB off-ramp at Avenue 15 ½ /Cleveland Avenue	248/597	N/N	N/N
SR 99 NB off-ramp at SR 145/Madera Avenue	419/288	N/N	N/N
SR 99 SB off-ramp at Avenue 14/Olive Avenue	791/836	N/N	N/N
SR 99 SB off-ramp at Avenue 12/Golden State Boulevard	275/791	N/N	N/N
SR 99 NB off-ramp at Avenue 12	237/306	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 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 (2008) Project Alternative B 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

The following off-ramps are projected to meet the 1,500 PCE threshold:

- Avenue 17 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 (2008) 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 required for left-turning volumes greater than 300 vehicles per hour and that separate right-turn lanes are required for right-turning volumes greater than 300 vehicles per hour. Based on this standard of practice, the following locations and movements will require 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 (2008) PROJECT CONDITIONS
TURN LANE STORAGE CALCULATIONS SUMMARY
ALTERNATIVE B (REDUCED INTENSITY/MADERA SITE)

Intersection	Movement	Existing Storage Length (ft)	2008 Project Storage Length (ft)
Avenue 18 ½ at SR 99 SB ramps/Road 23	NBL	25	75
	NBR	25	200
	WBL	---	75
Avenue 18 ½ at SR 99 NB ramps	EBL	150	275
Avenue 17 at SR 99 NB ramps	EBL	300	50
Avenue 12/Golden State Boulevard at SR 99 SB ramps	NBR	---	n/a
	SBL	---	250
Avenue 12 at Golden State Boulevard	NBL	200	150
	NBR	---	275
	SBL	400	175
	SBR	200	50
	WBL	---	100
	EBL	350	250
	EBR	425	50
Avenue 12 at SR 99 NB ramps	WBR	---	425
	EBL	---	100
Avenue 18 at Road 23	NBL	---	n/a
	SBL	---	100
Avenue 17 at Road 23	NBL	---	n/a
	SBL	---	50
	WBL	---	175
Avenue 17 at Golden State Boulevard	NBL	50	75
	NBR	---	n/a
	SBL	---	225
	WBL	---	200
	WBR	---	450
	EBL	---	50
Ellis Street at Road 26	NBL	---	50
	SBL	---	150
	SBR	---	n/a
	WBL		n/a

TABLE 53:
OPENING DAY (2008) PROJECT CONDITIONS
TURN LANE STORAGE CALCULATIONS SUMMARY
ALTERNATIVE B (REDUCED INTENSITY/MADERA SITE)

Intersection	Movement	Existing Storage Length (ft)	2008 Project Storage Length (ft)
Avenue 16 at Schnoor Avenue	NBL	75	100
	NBR	75	200
	WBL	150	225[1]
	EBL	---	140[1]
Avenue 16 at SR 99 SB ramps	NBL	75	225[1]
	NBR	75	50
	EBR	200	575
Avenue 16 at SR 99 NB ramps	EBL	---	200[1]
	EBR	---	375
Avenue 16/Ellis Street at Golden State Boulevard	NBR	---	n/a
	WBL	200	n/a
	WBR	---	n/a
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	300
	EBL	100	225
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps	WBL	125	165[1]
	EBR	125	500
SR 145/Madera Avenue at SR 99 NB ramps	NBL	---	265[1]
	SBR	---	400
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	NBL	125	150
	NBR	100	25
	SBR	50	225
	EBL	175	150[1]
	EBR	175	625[2]
Avenue 18 ½ at Golden State Boulevard/Road 23	NBL	---	n/a
	NBR	---	n/a
	SBL	---	n/a
	WBL	---	n/a
	EBL	---	n/a

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 (Alternative Land Use Alternative)

Roadway Levels of Service

Table 54 shows the Opening Day (2008) 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 (2008) 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 (2008) Project Alternative C levels of service.

TABLE 54
OPENING DAY (2008) PROJECT CONDITIONS
COUNTY SEGMENT, FREEWAY SEGMENT, AND INTERSECTION WEEKDAY LEVEL OF SERVICE
MADERA SITE (ALTERNATIVE C, ALTERNATIVE LAND USE ALTERNATIVE)

	AM Peak Hour		PM Peak Hour	
County Segment	**LOS**		**LOS**	
Avenue 18 ½ - Road 24 to Road 23	B		B	
Road 23 – Avenue 18 ½ to Avenue 17	C		C	
Avenue 17 – Road 23 to SR 99	A		**F**	
Avenue 17 – SR 99 to Road 27	**F**		**F**	
Golden State Boulevard – Avenue 17 to Avenue 18	A		A	
	AM Peak Hour		**PM Peak Hour**	
Freeway Segment	**LOS**	**Density (pc/mi/ln)**	**LOS**	**Density (pc/mi/ln)**
SR 99 north of Avenue 18 ½				
• **NB**	C	24.4	**D**	**26.3**
• **SB**	C	20.2	**D**	**34.6**
SR 99 between Avenue 18 ½ and Avenue 17				
• **NB**	**D**	**26.9**	**D**	**33.9**
• **SB**	C	21.6	**E**	**39.1**
SR 99 south of Avenue 17				
• **NB**	**D**	**33.9**	**F**	**---**
• **SB**	C	24.3	**F**	**---**
	AM Peak Hour		**PM Peak Hour**	
Intersection	**LOS**	**Delay[1] (secs)**	**LOS**	**Delay[1] (secs)**
Avenue 18 ½ at SR 99 SB ramps/Road 23				
• WB Left-Through	A	8.9	A	9.0
• **NB Approach**	**E**	**35.6**	**F**	**---**
• **SB Approach**	**E**	**43.8**	**F**	**387.0**

TABLE 54
OPENING DAY (2008) PROJECT CONDITIONS
COUNTY SEGMENT, FREEWAY SEGMENT, AND INTERSECTION WEEKDAY LEVEL OF SERVICE
MADERA SITE (ALTERNATIVE C, ALTERNATIVE LAND USE ALTERNATIVE)

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	8.7	A	8.6
• **NB Approach**	**F**	**65.3**	**F**	**286.9**
Avenue 17 at SR 99 SB ramps				
• **SB Approach**	**F**	**458.3**	**F**	**29610**
Avenue 17 at SR 99 NB ramps				
• EB Left	B	10.4	C	16.9
• **NB Approach**	**F**	**1294**	**F**	**12966**
Avenue 12/Golden State Boulevard at SR 99 SB ramps				
• SB Left-Through	A	8.4	A	9.0
• **WB Approach**	C	16.5	**F**	**333.5**
Avenue 12 at Golden State Boulevard	C	22.3	C	30.4
Avenue 12 at SR 99 NB ramps	B	15.1	B	17.0
Avenue 18 at Road 23				
• NB Left-Through-Right	A	7.7	A	8.0
• SB Left-Through-Right	A	7.9	A	8.2
• WB Approach	B	10.7	B	11.8
• EB Approach	B	12.0	C	16.7
Avenue 17 at Road 23				
• NB Left-Through-Right	A	7.5	A	7.7
• SB Left-Through-Right	A	7.9	A	8.4
• **WB Approach**	C	16.1	**F**	**104.5**
• EB Approach	B	13.1	C	20.3
Avenue 17 at Golden State Boulevard				
• EB Left-Through-Right	A	9.9	B	14.0
• WB Left-Through-Right	A	8.9	B	13.7
• **NB Approach**	**F**	**224.1**	**F**	**---**
• **SB Approach**	**F**	**4224**	**F**	**---**
Ellis Street at Road 26	C	15.12	**F**	**110.38**
Avenue 15 ½ at Road 23				
• NB Left-Through-Right	A	7.8	A	8.6
• SB Left-Through-Right	A	7.9	A	8.3
• WB Approach	B	12.4	C	16.0
• EB Approach	B	13.0	C	18.4
Avenue 14 at Road 23	B	10.04	C	19.38

TABLE 54
OPENING DAY (2008) PROJECT CONDITIONS
COUNTY SEGMENT, FREEWAY SEGMENT, AND INTERSECTION WEEKDAY LEVEL OF SERVICE
MADERA SITE (ALTERNATIVE C, ALTERNATIVE LAND USE ALTERNATIVE)

Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay[1] (secs)	LOS	Delay[1] (secs)
Avenue 16 at Schnoor Avenue				
• NB Left	A	7.4	A	7.6
• SB Left-Through-Right	A	7.8	A	7.8
• **WB Approach**	B	12.2	**F**	**121.5**
• **EB Approach**	C	15.2	**F**	**82.8**
Avenue 16 at SR 99 SB ramps	B	14.9	C	21.4
Avenue 16/Avenue 16 connector at SR 99 NB ramps				
• **EB Left**	B	13.0	**D**	**32.3**
Avenue 16 at SR 99 NB ramp connector				
• SB Left-Through	A	8.2	A	9.6
• WB Right	A	9.6	B	12.8
Gateway/Avenue 16 at SR 99 NB ramps				
• WB Left	B	11.2	C	16.1
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	B	14.5	**D**	**36.5**
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps	B	13.3	**D**	**42.1**
SR 145/Madera Avenue at SR 99 NB ramps	**D**	**38.0**	**E**	**64.5**
Olive Avenue/Avenue 14 at SR 99 SB off-ramp	B	16.1	C	32.1
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	C	29.7	**E**	**69.8**
Avenue 18 ½ at Pistachio Drive				
• EB Approach	A	8.9	A	9.1
• SB Approach	C	23.1	D	27.0
Avenue 18 ½ at Golden State Boulevard				
• EB Approach	A	7.7	A	7.8
• SB Approach	B	11.2	B	12.5

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

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 (2), freeway segments (6), and intersections (14) are projected to operate or have movements projected to operate below the adopted level of service standards in the Opening Day (2008) Project Alternative C scenario:

<u>County Segments</u>

- Avenue 17 – Road 23 to SR 99 – PM peak hour – 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 – PM peak hour – LOS "D"
  - SB – PM peak hour – LOS "D"
- 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 "D"/"F"
  - SB – PM peak hour – LOS "F"

Intersections

- Avenue 18 ½ at SR 99 SB ramps/Road 23
  - NB Approach – AM/PM peak hours – LOS "E"/"F"
  - SB Approach – AM/PM peak hours – LOS "E"/"F"
- Avenue 18 at SR 99 NB ramps
  - 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 SR 99 NB ramps
  - NB Approach – AM/PM peak hour – LOS "F"
- Avenue 12/Golden State Boulevard at SR 99 SB ramps
  - WB Approach – PM peak hour – LOS "F"
- Avenue 17 at Road 23
  - WB Approach – PM peak hour – LOS "F"
- Avenue 17 at Golden State Boulevard
  - NB Approach – AM/PM peak hours – LOS "F"
  - SB Approach – AM/PM peak hours – LOS "F"
- Ellis Street at Road 26 – PM peak hour – LOS "F"
- Avenue 16 at Schnoor Avenue
  - WB Approach – PM peak hour – LOS "F"
  - EB Approach – PM peak hour – LOS "F"
- Avenue 16/Avenue 16 connector at SR 99 NB ramps
  - EB Left – PM peak hour – LOS "D"
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps – PM peak hour – LOS "D"
- Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps – PM peak hour – LOS "D"
- SR 145/Madera Avenue at SR 99 NB ramps – AM/PM peak hours – LOS "D"/"E"
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145 – 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 (2008) Project Alternative C scenario.

Signal Warrants

Rural and urban peak hour volume signal warrants were prepared for the following seventeen (17) unsignalized intersections:

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

Based on the rural and urban peak hour volume warrant, the signal warrant is met at the following eleven (11) locations potentially indicating the need for a traffic signal:

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

The signal warrant is not met at the remaining four (4) study intersections in the Opening Day (2008) 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 (2008) Project Alternative C conditions queue lengths developed from the level of service analyses for the Madera Site study locations.

TABLE 55:
OPENING DAY (2008) 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	1,204[1] (770[2])	
• NB Left-Through-Right		222/555
SR 99 SB off-ramp at Avenue 18 ½	1,256[1] (822[2])	
• SB Left-Through-Right		137/674
SR 99 SB off-ramp at Avenue 17	1,341[1] (907[2])	
• **SB Left**	589[3]	357/**1,058**
• SB Right	589[3]	26/126
SR 99 NB off-ramp at Avenue 17	1,060[1] (626[2])	
• **NB Left-Through**	45[3]	**1,921/3,378**
• **NB Right**	45[3]	57/**2,742**
SR 99 NB off-ramp at Avenue 16	1,150[1] (716[2])	
• WB Left		1/2
SR 99 SB off-ramp at Avenue 16	1,020[1] (586[2])	
• SB Left		3/3
• SB Through		94/162
• SB Right		52/83
SR 99 NB off-ramp at Avenue 15 1/2 /Cleveland Avenue	881[1] (447[2])	
• **NB Left**	353[3]	127/**#409**
• **NB Right**	353[3]	51/**#394**
SR 99 SB off-ramp at Avenue 15 1/2/Cleveland Avenue	1,000[1] (566[2])	
• **SB Left-Through**	65[3]	148/**#552**
• **SB Right**	65[3]	37/**212**
SR 99 NB off-ramp at SR 145/Madera Avenue	1,310[1] (876[2])	
• WB Left	90[3]	#368/#327
• WB Right	90[3]	25/30
SR 99 SB off-ramp at Avenue 14/Olive Avenue	1,254[1] (820[2])	
• SB Left	65[3]	286/457
• SB Right	65[3]	63/30

TABLE 55:
OPENING DAY (2008) 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	1,431[1] (997[2])	
• **WB Left-Right**		**69/1,306**
SR 99 NB off-ramp at Avenue 12	1,223[1] (789[2])	
• NB Left	49[3]	110/153
• NB Right	49[3]	29/43
Avenue 17 between the SR 99 SB off-ramp and Golden State Boulevard	481	
• WB Left-Through-Right (at Golden State Blvd)		12/41
• EB Through (at SR 99 SB off-ramp)		---

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 *--- 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 (2008) Project Alternative C scenario with 95th percentile traffic conditions:

- Avenue 17 at SR 99 SB off-ramp – SB left-turn movement – PM peak hour
- Avenue 17 at SR 99 NB off-ramp – NB left-through and right-turn movements – AM/PM peak hours
- SR 99 SB off-ramp at Cleveland Avenue/Avenue 15 ½ - NB left-turn and right-turn movements – PM peak hour
- SR 99 SB off-ramp at Cleveland Avenue/Avenue 15 ½ - SB left-turn and right-turn movements – PM peak hour
- SR 99 SB off-ramp at Avenue 12/Golden State Boulevard – WB left-right turn movements – 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.

All remaining study queue lengths are not projected to exceed the allowable storage lengths in the 95th percentile condition in the Opening Day (2008) 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 (2008) 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	264/331	N/N	N/N
SR 99 SB off-ramp at Avenue 18 ½	201/355	N/N	N/N
SR 99 SB off-ramp at Avenue 17	197/356	N/N	N/N
SR 99 NB off-ramp at Avenue 17	**919/1,958**	**Y/Y**	**N/Y**
SR 99 NB off-ramp at Avenue 16	139/309	N/N	N/N
SR 99 SB off-ramp at Avenue 16	314/676	N/N	N/N
SR 99 NB off-ramp at Avenue 15 ½ /Cleveland Avenue	528/**1,010**	**N/Y**	N/N
SR 99 SB off-ramp at Avenue 15 ½ /Cleveland Avenue	261/617	N/N	N/N
SR 99 NB off-ramp at SR 145/Madera Avenue	419/288	N/N	N/N
SR 99 SB off-ramp at Avenue 14/Olive Avenue	801/850	N/N	N/N
SR 99 SB off-ramp at Avenue 12/Golden State Boulevard	278/796	N/N	N/N
SR 99 NB off-ramp at Avenue 12	237/306	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 (2008) Project Alternative C 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

The following off-ramps are projected to meet the 1,500 PCE threshold:

- Avenue 17 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 (2008) 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 required for left-turning volumes greater than 300 vehicles per hour and that separate right-turn lanes are required for right-turning volumes greater than 300 vehicles per hour. Based on this standard of practice, the following locations and movements will require 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 (2008) PROJECT CONDITIONS
TURN LANE STORAGE CALCULATIONS SUMMARY
ALTERNATIVE C (ALTERNATIVE LAND USE/MADERA SITE)

Intersection	Movement	Existing Storage Length (ft)	2008 Project Storage Length (ft)
Avenue 18 ½ at SR 99 SB ramps/Road 23	NBL	25	75
	NBR	25	200
	WBL	---	75
Avenue 18 ½ at SR 99 NB ramps	EBL	150	275
Avenue 17 at SR 99 NB ramps	EBL	300	50
Avenue 12/Golden State Boulevard at SR 99 SB ramps	NBR	---	n/a
	SBL	---	250
Avenue 12 at Golden State Boulevard	NBL	200	150
	NBR	---	275
	SBL	400	175
	SBR	200	50
	WBL	---	100
	EBL	350	250
	EBR	425	50
Avenue 12 at SR 99 NB ramps	WBR	---	425
		---	100
Avenue 18 at Road 23	NBL	---	n/a
	SBL	---	125
Avenue 17 at Road 23	NBL	---	n/a
	SBL	---	50
	WBL	---	175
Avenue 17 at Golden State Boulevard	NBL	50	75
	NBR	---	n/a
	SBL	---	275[1]
	WBL	---	200
	WBR	---	525[2]
	EBL	---	50
Ellis Street at Road 26	NBL	---	50
	SBL	---	175
	SBR	---	n/a
	WBL		n/a

TABLE 57:
OPENING DAY (2008) PROJECT CONDITIONS
TURN LANE STORAGE CALCULATIONS SUMMARY
ALTERNATIVE C (ALTERNATIVE LAND USE/MADERA SITE)

Intersection	Movement	Existing Storage Length (ft)	2008 Project Storage Length (ft)
Avenue 16 at Schnoor Avenue	NBL	75	100
	NBR	75	225
	WBL	150	225[1]
	EBL	---	140[1]
Avenue 16 at SR 99 SB ramps	NBL	75	225[1]
	NBR	75	50
	EBR	200	600
Avenue 16 at SR 99 NB ramps	EBL	---	200[1]
	EBR	---	375
Avenue 16/Ellis Street at Golden State Boulevard	NBR	---	n/a
	WBL	200	n/a
	WBR	---	n/a
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	325
	EBL	100	225
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps	WBL	125	165[1]
	EBR	125	500
SR 145/Madera Avenue at SR 99 NB ramps	NBL	---	265[1]
	SBR	---	400
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	NBL	125	150
	NBR	100	25
	SBR	50	225
	EBL	175	150[1]
	EBR	175	625[2]
Avenue 18 ½ at Golden State Boulevard/Road 23	NBL	---	n/a
	NBR	---	n/a
	SBL	---	n/a
	WBL	---	n/a
	EBL	---	n/a

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 (2008) 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 (2005)

County Segments

- Avenue 17 – SR 99 to Road 27 – AM peak hour – 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
  - SB – PM peak hour – LOS "D"

Intersections

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

Opening Day (2008) No Project - Alternative E

County Segments

- Avenue 17 – Road 23 to SR 99 – PM peak hour – LOS "F"
- Avenue 17 – SR 99 to Road 27 – AM/PM peak hours – 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 – AM/PM peak hours – LOS "D"
  - SB – PM peak hour – LOS "E"

- SR 99 south of Avenue 17
  - NB – AM/PM peak hours – LOS "D"/"F"
  - SB – PM peak hours – LOS "F"

Intersections

- Avenue 18 ½ at SR 99 SB ramps/Road 23
  - NB Approach – AM/PM peak hours – LOS "D"/"F"
  - SB Approach – AM/PM peak hours – LOS "D"/"F"
- Avenue 18 at SR 99 NB ramps
  - NB Approach – AM/PM peak hours – LOS "E"/"F"
- Avenue 17 at SR 99 SB ramps
  - SB Approach – AM/PM peak hours – LOS "F"
- Avenue 17 at SR 99 NB ramps
  - NB Approach – AM/PM peak hour – LOS "F"
- Avenue 12/Golden State Boulevard at SR 99 SB ramps
  - WB Approach – PM peak hour – LOS "F"
- Avenue 17 at Road 23
  - WB Approach – PM peak hour – LOS "F"
- Avenue 17 at Golden State Boulevard
  - NB Approach – AM/PM peak hours – LOS "F"
  - SB Approach – AM/PM peak hours – LOS "F"
- Ellis Street at Road 26 – PM peak hour – LOS "F"
- Avenue 16 at Schnoor Avenue
  - WB Approach – PM peak hour – LOS "F"
  - EB Approach – PM peak hour – LOS "E"
- Avenue 16/Avenue 16 connector at SR 99 NB ramps
  - EB Left – PM peak hour – LOS "D"
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps – PM peak hour – LOS "D"
- SR 145/Madera Avenue at SR 99 NB ramps – AM/PM peak hours – LOS "D"
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145 – PM peak hour – LOS "E"

Opening Day (2008) Project

County Segments

- Avenue 17 – Road 23 to SR 99 – PM peak hour - 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 – PM peak hour – LOS "D"
  - SB – PM peak hour – LOS "D"
- 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 – PM peak hour – LOS "F"

Intersections

- Avenue 18 ½ at SR 99 SB ramps/Road 23
  - NB Approach – AM/PM peak hours – LOS "E"/"F"
  - SB Approach – AM/PM peak hours – LOS "F"
- Avenue 18 at SR 99 NB ramps
  - 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 SR 99 NB ramps
  - NB Approach – AM/PM peak hour – LOS "F"
- Avenue 12/Golden State Boulevard at SR 99 SB ramps
  - WB Approach – PM peak hour – LOS "F"
- Avenue 17 at Road 23
  - WB Approach – PM peak hour – LOS "F"
- Avenue 17 at Golden State Boulevard
  - NB Approach – AM/PM peak hours – LOS "F"
  - SB Approach – AM/PM peak hours – LOS "F"
- Ellis Street at Road 26 – PM peak hour – LOS "F"
- Avenue 16 at Schnoor Avenue
  - WB Approach – PM peak hour – LOS "F"
  - EB Approach – PM peak hour – LOS "E"
- Avenue 16/Avenue 16 connector at SR 99 NB ramps
  - EB Left – PM peak hour – LOS "D"
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps – PM peak hour – LOS "D"
- Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps – PM peak hour – LOS "D"
- SR 145/Madera Avenue at SR 99 NB ramps – AM/PM peak hours – LOS "D"/"E"
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145 – 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 (2005)

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

Opening Day (2008) No Project – Alternative E

- Avenue 18 ½ at SR 99 SB ramps/Road 23 - Urban
- Avenue 17 at SR 99 SB ramps - Rural
- Avenue 17 at SR 99 NB ramps - Rural
- Avenue 12/Golden State Boulevard at SR 99 SB ramps - Urban
- Avenue 17 at Road 23 - Rural
- Avenue 17 at Golden State Boulevard - Rural

- Ellis Street at Road 26 - Urban
- Avenue 14 at Road 23 - Rural
- Avenue 16 at Schnoor Avenue - Rural
- Avenue 16/Avenue 16 connector at SR 99 NB ramps - Urban
- Avenue 16 at SR 99 NB ramp connector - Urban

Opening Day (2008) Project

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

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

Opening Day (2008) No Project – Alternative E

- SR 99 SB off-ramp at Avenue 17 – SB left movement – PM peak hour
- SR 99 NB off-ramp at Avenue 17 – NB left-through and NB Right movements – AM/PM peak hour
- SR 99 SB off-ramp at Avenue 12/Golden State Boulevard – WB left-right movements – PM peak hour

Opening Day (2008) Project

- SR 99 SB off-ramp at Avenue 17 – SB left movement – PM peak hour
- SR 99 NB off-ramp at Avenue 17 – NB left-through and NB Right movements – AM/PM peak hour
- SR 99 SB off-ramp at Avenue 12/Golden State Boulevard – WB left-right movements – PM peak hour

The following locations, by scenario, are also projected to meet the ramp widening/auxiliary lane threshold:

Opening Day (2008) No Project – Alternative E

- Avenue 17 at SR 99 NB off-ramp – AM/PM peak hours

Opening Day (2008) Project

- Avenue 17 at SR 99 NB off-ramp – AM/PM peak hours

The locations that met the left-turn warrant for the Opening Day (2008) 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, by scenario, 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:

Existing (2005)

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

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

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

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

- Avenue 17 at SR 99 NB ramps
  - Signalize the intersection
  - Restripe/widen the NB approach, south leg, from a shared left-through and separate right to a separate left-turn lane, a shared left-through lane, and dual (2) right-turn lanes
  - 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

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

- Avenue 12 at Golden State Boulevard
  - Signalize the intersection
  - Restripe/widen the NB approach, south leg, from a shared left-through lane and one (1) right-turn lane to one (1) left-turn lane and a shared through-right lane
  - Restripe/widen the SB approach, north leg, from a shared left-through lane and one (1) right-turn lane to one (1) left-turn lane, one (1) through lane and one (1) right-turn lane

The signalization and widening of the NB and SB approaches for the Avenue 12 at Golden State Boulevard intersection is part of a current Caltrans project programmed for completion by 2008.

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

The signalization and widening of EB approach for the Avenue 12 at SR 99 NB ramps intersection is part of a current Caltrans project programmed for completion by 2008.

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

Opening Day (2008) No Project – Alternative E

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

- SR 99 north of Avenue 18 ½
  - Restripe/widen the NB 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

- Avenue 18 ½ at SR 99 SB ramps/Road 23
  - Signalize the intersection
  - Restripe/widen the WB approach, east leg, from a shared left-through to a separate left-turn lane and one (1) through lane

- Avenue 18 ½ at SR 99 NB ramps
  - Signalize the intersection
  - Restripe/widen the NB approach, south leg, from a shared left-through-right lane, to a shared left-through lane and a separate right-turn lane

Although the Avenue 18 ½ at SR 99 NB ramps intersection does not meet the peak hour volumes signal warrant, Caltrans will require both the Avenue 18 ½ at SR 99 SB ramps/Road 23 and Avenue 18 ½ at SR 99 NB ramps intersections to be signalized at the same time. If both intersections are left unsignalized, their minor street movements are projected to operate at LOS "E" and "F" for the AM and PM peak hours even with appropriate lane additions.

- 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 SR 99 NB ramps
  - Widen the NB off-ramp to two (2) lanes with a NB auxiliary lane on SR 99
  - Restripe/widen the NB approach, south leg, to allow storage lanes at least 200 feet in length

- Avenue 12/Golden State Boulevard at SR 99 SB off ramps
  - Signalize the intersection

- Avenue 17 at Road 23
  - Signalize the intersection
  - Restripe/widen the NB approach, south leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the SB approach, north leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the EB approach, west leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the WB approach, east leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane

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

- Ellis Street at Road 26
  - Signalize the intersection
  - Restripe/widen the NB approach, south leg, from a shared left-through lane and a shared through-right lane to one (1) left-turn lane, one (1) through lane and a shared through-right lane
  - Restripe/widen the SB approach, north leg, from a shared left-through lane and a shared through-right lane to one (1) left-turn lane, one (1) through lane and a shared through-right lane
  - Restripe/widen the EB approach, west leg, from a shared left-through-right lane to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the EB approach, west leg, from a shared left-through-right lane to a separate left-turn lane and a shared through-right lane

- Avenue 14 at Road 23
  - Signalize the intersection
  - Restripe/widen the NB approach, south leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the SB approach, north leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the EB approach, west leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the WB approach, east leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane

- Avenue 16 at Schnoor Avenue
  - Signalize the intersection
  - Restripe/widen the SB approach, north leg, from a shared left-through-right lane to one (1) left-turn lane and a shared through-right lane
  - Restripe/widen the EB approach, west leg, from a shared left-through-right to dual (2) lefts and a shared through-right lane
  - Restripe/widen the WB approach, east leg, from one (1) left-turn lane and a shared through-right lane to dual (2) left-turn lanes and a shared through-right lane

- Avenue 16 at SR 99 NB ramps
  - Reconfigure/realign the Avenue 16/Avenue 16 connector at SR 99 NB ramps, Avenue 16 at SR 99 NB ramps connector and Gateway/Avenue 16 at SR 99 NB ramps to one (1) intersection
  - Signalize the intersection
  - Restripe/widen the NB approach, south leg, from a shared left-through lane, to a separate left-turn lane and one (1) through lane
  - Restripe/ widen the EB approach, west leg, from a shared left-right, to dual (2) left-turn lanes and a separate right-turn lane

- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps
  - Restripe/widen the EB approach, west leg, from a separate left-turn lane and two (2) through lanes, to dual (2) left-turn lanes and two (2) through lanes
  - Widen the NB off-ramp to two (2) lanes with a NB auxiliary lane on SR 99

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

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

Opening Day (2008) Project

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

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

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

- Avenue 18 at Road 23
  - Restripe/widen the SB approach, north leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane

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

Table 58 shows the Mitigated Opening Day (2008) 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 (2008) 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 (2008) Project Alternative A levels of service.

TABLE 58:
MITIGATED OPENING DAY (2008) PROJECT CONDITIONS
COUNTY SEGMENT, FREEWAY SEGMENT, AND INTERSECTION WEEKDAY LEVEL OF SERVICE
MADERA SITE (ALTERNATIVE A, PROPOSED PROJECT ALTERNATIVE)

	AM Peak Hour		PM Peak Hour	
County Segment	**LOS**		**LOS**	
Avenue 18 ½ - Road 24 to Road 23	B		B	
Road 23 – Avenue 18 ½ to Avenue 17	B		C	
Avenue 17 – Road 23 to SR 99	A		B	
Avenue 17 – SR 99 to Road 27	A		B	
Golden State Boulevard – Avenue 17 to Avenue 18	A		A	
	AM Peak Hour		**PM Peak Hour**	
Freeway Segment	**LOS**	**Density (pc/mi/ln)**	**LOS**	**Density (pc/mi/ln)**
SR 99 north of Avenue 18 ½				
• NB	B	16.0	B	17.0
• SB	B	13.5	C	20.4
SR 99 between Avenue 18 ½ and Avenue 17				
• NB	B	17.3	B	17.9
• SB	B	14.3	C	21.7
SR 99 south of Avenue 17				
• NB	C	20.6	C	25.4
• SB	B	11.9	C	21.2
	AM Peak Hour		**PM Peak Hour**	
Intersection	**LOS**	**Delay[1] (secs)**	**LOS**	**Delay[1] (secs)**
Avenue 18 ½ at SR 99 SB ramps/Road 23	B	19.7	C	22.4
Avenue 18 ½ at SR 99 NB ramps	C	28.8	C	27.6
Avenue 17 at SR 99 SB ramps	A	4.5	A	9.8
Avenue 17 at SR 99 NB ramps	B	17.8	C	34.7
Avenue 12/Golden State Boulevard at SR 99 SB ramps	B	13.1	B	16.8
Avenue 12 at Golden State Boulevard	B	19.6	C	32.4
Avenue 12 at SR 99 NB ramps	A	9.7	B	10.5
Avenue 18 at Road 23				
• NB Left-Through-Right	A	7.7	A	8.0
• SB Left	A	8.0	A	8.2
• WB Approach	B	10.9	B	11.6
• EB Approach	B	12.5	C	16.2
Avenue 17 at Road 23	B	13.2	C	21.3
Avenue 17 at Golden State Boulevard	B	17.4	D	40.7
Ellis Street at Road 26	A	10.0	B	14.5
Avenue 15 ½ at Road 23				
• NB Left-Through-Right	A	7.8	A	8.6
• SB Left-Through-Right	A	8.0	A	8.3
• WB Approach	B	12.5	C	15.9
• EB Approach	B	13.1	C	18.4
Avenue 14 at Road 23	B	15.9	B	19.9

TABLE 58:
MITIGATED OPENING DAY (2008) 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 Schnoor Avenue	C	25.3	B	18.0
Avenue 16 at SR 99 SB ramps	B	11.1	B	14.6
Avenue 16 at SR NB ramps	B	11.4	B	14.5
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	B	11.0	C	27.2
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps	A	8.9	B	19.6
SR 145/Madera Avenue at SR 99 NB ramps	B	13.7	B	13.0
Olive Avenue/Avenue 14 at SR 99 SB off-ramp	B	14.6	C	23.2
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	B	12.0	C	31.8
Avenue 18 ½ at Pistachio Drive				
• EB Approach	A	8.9	A	9.1
• SB Approach	C	23.3	D	27.0
Avenue 18 ½ at Golden State Boulevard				
• EB Approach	A	7.7	A	7.8
• SB Approach	B	11.3	B	12.5

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 (2008) Project Alternative A scenario.

Queue Lengths

Table 59 shows the estimated Mitigated Opening Day (2008) 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 (2008) 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	1,204[1] (770[2])	
• NB Left-Through		#187/#236
• NB Right		17/32

TABLE 59:
MITIGATED OPENING DAY (2008) 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 SB off-ramp at Avenue 18 ½	1,256[1] (822[2])	
• SB Left-Through-Right		#164/#287
SR 99 SB off-ramp at Avenue 17	1,341[1] (907[2])	
• SB Left	589[3]	102/#282
• SB Right	589[3]	31/66
SR 99 NB off-ramp at Avenue 17	1,060[1] (626[2])	
• NB Left	45[3]	236#498
• NB Left-Through		250/#497
• NB Right	45[3]	22/503
SR 99 NB off-ramp at Avenue 16	1,150[1] (716[2])	
• SB Through-Right		37/65
SR 99 SB off-ramp at Avenue 16	1,020[1] (586[2])	
• SB Left		3/3
• SB Through		75/137
• SB Right		47/71
SR 99 NB off-ramp at Avenue 15 1/2 /Cleveland Avenue	881[1] (447[2])	
• NB Left	353[3]	90/#335
• NB Right	353[3]	42/#331
SR 99 SB off-ramp at Avenue 15 1/2/Cleveland Avenue	1,000[1] (566[2])	
• SB Left	65[2]	66/#232
• SB Left-Through		67/#234
• SB Right	65[2]	31/#215
SR 99 NB off-ramp at SR 145/Madera Avenue	1,310[1] (876[2])	
• WB Left	90[3]	97/73
• WB Right	90[3]	20/21
SR 99 SB off-ramp at Avenue 14/Olive Avenue	1,254[1] (820[2])	
• SB Left	65[3]	238/#420
• SB Right	65[3]	54/28

TABLE 59:
MITIGATED OPENING DAY (2008) 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 SB off-ramp at Avenue 12/Golden State Boulevard	1,431[1] (997[2])	
• WB Left		50/120
• WB Right		46/64
SR 99 NB off-ramp at Avenue 12	1,223[1] (789[2])	
• NB Left-Through	49[3]	100/151
• NB Right	49[3]	26/43
Avenue 17 between the SR 99 SB off-ramp and Golden State Boulevard	481	
• WB Left (at Golden State Blvd)		107/m#235
• WB Through		135/232
• WB Right		94/93
• EB Through (at SR 99 SB off-ramp)		31/m81

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

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 (2008) 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 (2005)

County Segments

- Avenue 17 – SR 99 to Road 27 – AM peak hour – 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
  - SB – PM peak hour – LOS "D"

Intersections

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

Opening Day (2008) No Project – Alternative E

County Segments

- Avenue 17 – Road 23 to SR 99 – PM peak hour – LOS "F"
- Avenue 17 – SR 99 to Road 27 – AM/PM peak hours – 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 – AM/PM peak hours – LOS "D"
  - SB – PM peak hour – LOS "E"
- SR 99 south of Avenue 17
  - NB – AM/PM peak hours – LOS "D"/"F"
  - SB – PM peak hours – LOS "F"

Intersections

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

- Avenue 17 at Road 23
  - WB Approach – PM peak hour – LOS "F"
- Avenue 17 at Golden State Boulevard
  - NB Approach – AM/PM peak hours – LOS "F"
  - SB Approach – AM/PM peak hours – LOS "F"
- Ellis Street at Road 26 – PM peak hour – LOS "F"
- Avenue 16 at Schnoor Avenue
  - WB Approach – PM peak hour – LOS "F"
  - EB Approach – PM peak hour – LOS "E"
- Avenue 16/Avenue 16 connector at SR 99 NB ramps
  - EB Left – PM peak hour – LOS "D"
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps – PM peak hour – LOS "D"
- SR 145/Madera Avenue at SR 99 NB ramps – AM/PM peak hours – LOS "D"
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145 – PM peak hour – LOS "E"

Opening Day (2008) Project

County Segments

- Avenue 17 – Road 23 to SR 99 – PM peak hour - 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 – PM peak hour – LOS "D"
- 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 "D"/"F"
  - SB – PM peak hour – LOS "F"

Intersections

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

- Avenue 17 at Golden State Boulevard
  - NB Approach – AM/PM peak hours – LOS "F"
  - SB Approach – AM/PM peak hours – LOS "F"
- Ellis Street at Road 26 – PM peak hour – LOS "F"
- Avenue 16 at Schnoor Avenue
  - WB Approach – PM peak hour – LOS "F"
  - EB Approach – PM peak hour – LOS "E"
- Avenue 16/Avenue 16 connector at SR 99 NB ramps
  - EB Left – PM peak hour – LOS "D"
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps – PM peak hour – LOS "D"
- Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps – PM peak hour – LOS "D"
- SR 145/Madera Avenue at SR 99 NB ramps – AM/PM peak hours – LOS "D"/"E"
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145 – 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 (2005)

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

Opening Day (2008) No Project – Alternative E

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

Opening Day (2008) Project

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

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

Opening Day (2008) No Project – Alternative E

- SR 99 SB off-ramp at Avenue 17 – SB left movement – PM peak hour
- SR 99 NB off-ramp at Avenue 17 – NB left-through and NB Right movements – AM/PM peak hour
- SR 99 SB off-ramp at Avenue 12/Golden State Boulevard – WB left-right movements – PM peak hour

Opening Day (2008) Project

- Avenue 17 at SR 99 SB off-ramp – SB left-turn movement – PM peak hour
- Avenue 17 at SR 99 NB off-ramp – NB left-through and right-turn movements – AM/PM peak hours
- SR 99 SB off-ramp at Cleveland Avenue/Avenue 15 ½ - SB left-turn and right-turn movements – PM peak hour
- SR 99 SB off-ramp at Avenue 12/Golden State Boulevard – WB left-right turn movements – PM peak hour

The following locations, by scenario, are also projected to meet the ramp widening/auxiliary lane threshold:

Opening Day (2008) No Project – Alternative E

- Avenue 17 at SR 99 NB off-ramp – AM/PM peak hours

Opening Day (2008) Project

- Avenue 17 at SR 99 NB off-ramp – AM/PM peak hours

The locations that met the left-turn warrant for the Opening Day (2008) 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, by scenario, 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:

Existing (2005)

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

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

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

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

- Avenue 17 at SR 99 NB ramps
  - Signalize the intersection
  - Restripe/widen the NB approach, south leg, from a shared left-through and separate right to a separate left-turn lane, a shared left-through lane, and dual (2) right-turn lanes
  - 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

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

- Avenue 12 at Golden State Boulevard
  - Signalize the intersection
  - Restripe/widen the NB approach, south leg, from a shared left-through lane and one (1) right-turn lane to one (1) left-turn lane and a shared through-right lane
  - Restripe/widen the SB approach, north leg, from a shared left-through lane and one (1) right-turn lane to one (1) left-turn lane, one (1) through lane and one (1) right-turn lane

The signalization and widening of the NB and SB approaches for the Avenue 12 at Golden State Boulevard intersection is part of a current Caltrans project programmed for completion by 2008.

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

The signalization and widening of EB approach for the Avenue 12 at SR 99 NB ramps intersection is part of a current Caltrans project programmed for completion by 2008.

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

Opening Day (2008) No Project – Alternative E

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

- SR 99 between Avenue 18 ½ and Avenue 17
  - Restripe/widen the NB 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

- Avenue 18 ½ at SR 99 SB ramps/Road 23
  - Signalize the intersection
  - Restripe/widen the WB approach, east leg, from a shared left-through to a separate left-turn lane and one (1) through lane

- Avenue 18 ½ at SR 99 NB ramps
  - Signalize the intersection
  - Restripe/widen the NB approach, south leg, from a shared left-through-right lane, to a shared left-through lane and a separate right-turn lane

Although the Avenue 18 ½ at SR 99 NB ramps intersection does not meet the peak hour volumes signal warrant, Caltrans will require both the Avenue 18 ½ at SR 99 SB ramps/Road 23 and Avenue 18 ½ at SR 99 NB ramps intersections to be signalized at the same time. If both intersections are left unsignalized, their minor street movements are projected to operate at LOS "E" and "F" for the AM and PM peak hours even with appropriate lane additions.

- 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 SR 99 NB ramps
  - Widen the NB off-ramp to two (2) lanes with a NB auxiliary lane on SR 99
  - Restripe/widen the SB approach, north leg, to allow storage lanes at least 75 feet in length

- Avenue 12/Golden State Boulevard at SR 99 SB off ramps
  - Signalize the intersection

- Avenue 17 at Road 23
  - Signalize the intersection
  - Restripe/widen the NB approach, south leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the SB approach, north leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the EB approach, west leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the WB approach, east leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane

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

- Ellis Street at Road 26
  - Signalize the intersection
  - Restripe/widen the NB approach, south leg, from a shared left-through lane and a shared through-right lane to one (1) left-turn lane, one (1) through lane and a shared through-right lane
  - Restripe/widen the SB approach, north leg, from a shared left-through lane and a shared through-right lane to one (1) left-turn lane, one (1) through lane and a shared through-right lane
  - Restripe/widen the EB approach, west leg, from a shared left-through-right lane to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the EB approach, west leg, from a shared left-through-right lane to a separate left-turn lane and a shared through-right lane

- Avenue 14 at Road 23
  - Signalize the intersection
  - Restripe/widen the NB approach, south leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the SB approach, north leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the EB approach, west leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the WB approach, east leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane

- Avenue 16 at Schnoor Avenue
  - Signalize the intersection
  - Restripe/widen the SB approach, north leg, from a shared left-through-right lane to one (1) left-turn lane and a shared through-right lane
  - Restripe/widen the EB approach, west leg, from a shared left-through-right to dual (2) lefts and a shared through-right lane
  - Restripe/widen the WB approach, east leg, from one (1) left-turn lane and a shared through-right lane to dual (2) left-turn lanes and a shared through-right lane

- Avenue 16 at SR 99 NB ramps
  - Reconfigure/realign the Avenue 16/Avenue 16 connector at SR 99 NB ramps, Avenue 16 at SR 99 NB ramps connector and Gateway/Avenue 16 at SR 99 NB ramps to one (1) intersection
  - Signalize the intersection
  - Restripe/widen the NB approach, south leg, from a shared left-through lane, to a separate left-turn lane and one (1) through lane
  - Restripe/ widen the EB approach, west leg, from a shared left-right, to dual (2) left-turn lanes and a separate right-turn lane

- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps
  - Restripe/widen the EB approach, west leg, from a separate left-turn lane and two (2) through lanes, to dual (2) left-turn lanes and two (2) through lanes
  - Widen the NB off-ramp to two (2) lanes with a NB auxiliary lane on SR 99

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

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

Opening Day (2008) Project

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

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

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

- Avenue 18 at Road 23
  - Restripe/widen the SB approach, north leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane

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

Table 60 shows the Mitigated Opening Day (2008) 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 (2008) 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 (2008) Project Alternative B levels of service.

TABLE 60:
MITIGATED OPENING DAY (2008) PROJECT CONDITIONS
COUNTY SEGMENT, FREEWAY SEGMENT, AND INTERSECTION WEEKDAY LEVEL OF SERVICE
MADERA SITE (ALTERNATIVE B, REDUCED INTENSITY ALTERNATIVE)

	AM Peak Hour		PM Peak Hour	
County Segment	**LOS**		**LOS**	
Avenue 18 ½ - Road 24 to Road 23	B		B	
Road 23 – Avenue 18 ½ to Avenue 17	B		C	
Avenue 17 – Road 23 to SR 99	A		A	
Avenue 17 – SR 99 to Road 27	A		B	
Golden State Boulevard – Avenue 17 to Avenue 18	A		A	
	AM Peak Hour		**PM Peak Hour**	
Freeway Segment	**LOS**	**Density (pc/mi/ln)**	**LOS**	**Density (pc/mi/ln)**
SR 99 north of Avenue 18 ½				
• NB	B	16.0	B	16.9
• SB	C	20.2	C	21.8
SR 99 between Avenue 18 ½ and Avenue 17				
• NB	B	17.3	B	17.9
• SB	B	14.3	C	21.7
SR 99 south of Avenue 17				
• NB	C	20.2	C	24.8
• SB	B	11.7	C	20.8

TABLE 60:
MITIGATED OPENING DAY (2008) 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 18 ½ at SR 99 SB ramps/Road 23	B	14.4	C	21.3
Avenue 18 ½ at SR 99 NB ramps	C	28.5	C	27.3
Avenue 17 at SR 99 SB ramps	A	4.4	A	9.4
Avenue 17 at SR 99 NB ramps	B	16.4	C	32.4
Avenue 12/Golden State Boulevard at SR 99 SB ramps	B	13.0	B	16.8
Avenue 12 at Golden State Boulevard	B	19.8	C	32.8
Avenue 12 at SR 99 NB ramps	A	9.7	B	10.5
Avenue 18 at Road 23				
• NB Left-Through-Right	A	7.7	A	8.0
• SB Left	A	7.9	A	8.2
• WB Approach	B	10.9	B	11.3
• EB Approach	B	12.0	C	15.3
Avenue 17 at Road 23	B	13.2	C	21.1
Avenue 17 at Golden State Boulevard	B	17.5	D	35.6
Ellis Street at Road 26	A	9.9	B	15.2
Avenue 15 ½ at Road 23				
• NB Left-Through-Right	A	7.8	A	8.6
• SB Left-Through-Right	A	7.9	A	8.3
• WB Approach	B	12.4	C	15.5
• EB Approach	B	12.9	C	17.9
Avenue 14 at Road 23	B	15.3	B	19.8
Avenue 16 at Schnoor Avenue	C	25.4	B	17.5
Avenue 16 at SR 99 SB ramps	B	11.1	B	14.4
Avenue 16 at SR NB ramps	B	11.5	B	14.6
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	B	11.0	C	27.2
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps	A	8.8	B	19.2
SR 145/Madera Avenue at SR 99 NB ramps	B	13.6	B	13.0
Olive Avenue/Avenue 14 at SR 99 SB off-ramp	B	14.7	C	22.7
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	B	12.2	C	29.5
Avenue 18 ½ at Pistachio Drive				
• EB Approach	A	8.9	A	9.1
• SB Approach	C	23.0	D	26.5
Avenue 18 ½ at Golden State Boulevard				
• EB Approach	A	7.7	A	7.8
• SB Approach	B	11.2	B	12.4

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

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 (2008) Project Alternative B scenario.

Queue Lengths

Table 61 shows the estimated Mitigated Opening Day (2008) 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 (2008) 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	1,204[1] (770[2])	
• NB Left-Through		#187/#236
• NB Right		17/32
SR 99 SB off-ramp at Avenue 18 ½	1,256[1] (822[2])	
• SB Left-Through-Right		118/#275
SR 99 SB off-ramp at Avenue 17	1,341[1] (907[2])	
• SB Left	589[3]	102/271
• SB Right	589[3]	29/61
SR 99 NB off-ramp at Avenue 17	1,060[1] (626[2])	
• NB Left	45[3]	224/406
• NB Left-Through		210/406
• NB Right	45[3]	22/#496
SR 99 NB off-ramp at Avenue 16	1,150[1] (716[2])	
• SB Through-Right		37/65
SR 99 SB off-ramp at Avenue 16	1,020[1] (586[2])	
• SB Left		3/3
• SB Through		74/133
• SB Right		46/71
SR 99 NB off-ramp at Avenue 15 1/2 /Cleveland Avenue	881[1] (447[2])	
• NB Left	353[3]	90/#335
• NB Right	353[3]	41/#330

TABLE 61:
MITIGATED OPENING DAY (2008) 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	1,000[1] (566[2])	
• SB Left	65[2]	65/#223
• SB Left-Through		65/#223
• SB Right	65[2]	31/#208
SR 99 NB off-ramp at SR 145/Madera Avenue	1,310[1] (876[2])	
• WB Left	90[3]	97/73
• WB Right	90[3]	20/21
SR 99 SB off-ramp at Avenue 14/Olive Avenue	1,254[1] (820[2])	
• SB Left	65[3]	234/#413
• SB Right	65[3]	54/28
SR 99 SB off-ramp at Avenue 12/Golden State Boulevard	1,431[1] (997[2])	
• WB Left		49/119
• WB Right		46/64
SR 99 NB off-ramp at Avenue 12	1,223[1] (789[2])	
• NB Left-Through	49[3]	100/151
• NB Right	49[3]	26/43
Avenue 17 between the SR 99 SB off-ramp and Golden State Boulevard	481	
• WB Left (at Golden State Blvd)		101/m#253
• WB Through		141/222
• WB Right		29/52
• EB Through (at SR 99 SB off-ramp)		31/90

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

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 (2008) Project Alternative B scenario.

Alternative C (Alternative 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 (2005)

County Segments

- Avenue 17 – SR 99 to Road 27 – AM peak hour – 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
  - SB – PM peak hour – LOS "D"

Intersections

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

Opening Day (2008) No Project – Alternative E

County Segments

- Avenue 17 – Road 23 to SR 99 – PM peak hour – LOS "F"
- Avenue 17 – SR 99 to Road 27 – AM/PM peak hours – 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 – AM/PM peak hours – LOS "D"
  - SB – PM peak hour – LOS "E"
- SR 99 south of Avenue 17
  - NB – AM/PM peak hours – LOS "D"/"F"
  - SB – PM peak hours – LOS "F"

Intersections

- Avenue 18 ½ at SR 99 SB ramps/Road 23
  - NB Approach – AM/PM peak hours – LOS "D"/"F"
  - SB Approach – AM/PM peak hours – LOS "D"/"F"
- Avenue 18 at SR 99 NB ramps
  - NB Approach – AM/PM peak hours – LOS "E"/"F"
- Avenue 17 at SR 99 SB ramps
  - SB Approach – AM/PM peak hours – LOS "F"
- Avenue 17 at SR 99 NB ramps
  - NB Approach – AM/PM peak hour – LOS "F"
- Avenue 12/Golden State Boulevard at SR 99 SB ramps
  - WB Approach – PM peak hour – LOS "F"
- Avenue 17 at Road 23
  - WB Approach – PM peak hour – LOS "F"
- Avenue 17 at Golden State Boulevard
  - NB Approach – AM/PM peak hours – LOS "F"
  - SB Approach – AM/PM peak hours – LOS "F"
- Ellis Street at Road 26 – PM peak hour – LOS "F"
- Avenue 16 at Schnoor Avenue
  - WB Approach – PM peak hour – LOS "F"
  - EB Approach – PM peak hour – LOS "E"
- Avenue 16/Avenue 16 connector at SR 99 NB ramps
  - EB Left – PM peak hour – LOS "D"
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps – PM peak hour – LOS "D"
- SR 145/Madera Avenue at SR 99 NB ramps – AM/PM peak hours – LOS "D"
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145 – PM peak hour – LOS "E"

Opening Day (2008) Project

County Segments

- Avenue 17 – Road 23 to SR 99 – PM peak hour – 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 – PM peak hour – LOS "D"
  - SB – PM peak hour – LOS "D"
- 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 "D"/"F"
  - SB – PM peak hour – LOS "F"

Intersections

- Avenue 18 ½ at SR 99 SB ramps/Road 23
  - NB Approach – AM/PM peak hours – LOS "E"/"F"
  - SB Approach – AM/PM peak hours – LOS "E"/"F"
- Avenue 18 at SR 99 NB ramps
  - 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 SR 99 NB ramps
  - NB Approach – AM/PM peak hour – LOS "F"
- Avenue 12/Golden State Boulevard at SR 99 SB ramps
  - WB Approach – PM peak hour – LOS "F"
- Avenue 17 at Road 23
  - WB Approach – PM peak hour – LOS "F"
- Avenue 17 at Golden State Boulevard
  - NB Approach – AM/PM peak hours – LOS "F"
  - SB Approach – AM/PM peak hours – LOS "F"
- Ellis Street at Road 26 – PM peak hour – LOS "F"
- Avenue 16 at Schnoor Avenue
  - WB Approach – PM peak hour – LOS "F"
  - EB Approach – PM peak hour – LOS "F"
- Avenue 16/Avenue 16 connector at SR 99 NB ramps
  - EB Left – PM peak hour – LOS "D"
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps – PM peak hour – LOS "D"
- Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps – PM peak hour – LOS "D"
- SR 145/Madera Avenue at SR 99 NB ramps – AM/PM peak hours – LOS "D"/"E"
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145 – 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 (2005)

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

Opening Day (2008) No Project – Alternative E

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

- Avenue 16/Avenue 16 connector at SR 99 NB ramps - Urban
- Avenue 16 at SR 99 NB ramp connector - Urban

Opening Day (2008) Project

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

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

Opening Day (2008) No Project

- SR 99 SB off-ramp at Avenue 17 – SB left movement – PM peak hour
- SR 99 NB off-ramp at Avenue 17 – NB left-through and NB Right movements – AM/PM peak hour
- SR 99 SB off-ramp at Avenue 12/Golden State Boulevard – WB left-right movements – PM peak hour

Opening Day (2008) Project

- Avenue 17 at SR 99 SB off-ramp – SB left-turn movement – PM peak hour
- Avenue 17 at SR 99 NB off-ramp – NB left-through and right-turn movements – AM/PM peak hours
- SR 99 SB off-ramp at Cleveland Avenue/Avenue 15 ½ - NB left-turn and right-turn movements – PM peak hour
- SR 99 SB off-ramp at Cleveland Avenue/Avenue 15 ½ - SB left-turn and right-turn movements – PM peak hour
- SR 99 SB off-ramp at Avenue 12/Golden State Boulevard – WB left-right turn movements – PM peak hour

The following locations, by scenario, are also projected to meet the ramp widening/auxiliary lane threshold:

Opening Day (2008) No Project – Alternative E

- Avenue 17 at SR 99 NB off-ramp – AM/PM peak hours

Opening Day (2008) Project

- Avenue 17 at SR 99 NB off-ramp – AM/PM peak hours

The locations that met the left-turn warrant for the Opening Day (2008) 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

In addition the following locations, by scenario, 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:

Existing (2005)

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

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

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

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

- Avenue 17 at SR 99 NB ramps
  - Signalize the intersection
  - Restripe/widen the NB approach, south leg, from a shared left-through and separate right to a separate left-turn lane, a shared left-through lane, and dual (2) right-turn lanes
  - 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

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

- Avenue 12 at Golden State Boulevard
  - Signalize the intersection
  - Restripe/widen the NB approach, south leg, from a shared left-through lane and one (1) right-turn lane to one (1) left-turn lane and a shared through-right lane
  - Restripe/widen the SB approach, north leg, from a shared left-through lane and one (1) right-turn lane to one (1) left-turn lane, one (1) through lane and one (1) right-turn lane

The signalization and widening of the NB and SB approaches for the Avenue 12 at Golden State Boulevard intersection is part of a current Caltrans project programmed for completion by 2008.

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

The signalization and widening of EB approach for the Avenue 12 at SR 99 NB ramps intersection is part of a current Caltrans project programmed for completion by 2008.

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

Opening Day (2008) No Project – Alternative E

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

- SR 99 between Avenue 18 ½ and Avenue 17
  - Restripe/widen the NB 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

- Avenue 18 ½ at SR 99 SB ramps/Road 23
  - Signalize the intersection
  - Restripe/widen the WB approach, east leg, from a shared left-through to a separate left-turn lane and one (1) through lane

- Avenue 18 ½ at SR 99 NB ramps
  - Signalize the intersection
  - Restripe/widen the NB approach, south leg, from a shared left-through-right lane, to a shared left-through lane and a separate right-turn lane

Although the Avenue 18 ½ at SR 99 NB ramps intersection does not meet the peak hour volumes signal warrant, Caltrans will require both the Avenue 18 ½ at SR 99 SB ramps/Road 23 and Avenue 18 ½ at SR 99 NB ramps intersections to be signalized at the same time. If both intersections are left unsignalized, their minor street movements are projected to operate at LOS "E" and "F" for the AM and PM peak hours even with appropriate lane additions.

- 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 SR 99 NB ramps
  - Widen the NB off-ramp to two (2) lanes with a NB auxiliary lane on SR 99
  - Restripe/widen the NB approach, south leg, to allow storage lanes at least 200 feet in length

- Avenue 12/Golden State Boulevard at SR 99 SB off ramps
  - Signalize the intersection

- Avenue 17 at Road 23
  - Signalize the intersection
  - Restripe/widen the NB approach, south leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the SB approach, north leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the EB approach, west leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the WB approach, east leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane

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

- Ellis Street at Road 26
  - Signalize the intersection
  - Restripe/widen the NB approach, south leg, from a shared left-through lane and a shared through-right lane to one (1) left-turn lane, one (1) through lane and a shared through-right lane
  - Restripe/widen the SB approach, north leg, from a shared left-through lane and a shared through-right lane to one (1) left-turn lane, one (1) through lane and a shared through-right lane
  - Restripe/widen the EB approach, west leg, from a shared left-through-right lane to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the EB approach, west leg, from a shared left-through-right lane to a separate left-turn lane and a shared through-right lane

- Avenue 14 at Road 23
  - Signalize the intersection
  - Restripe/widen the NB approach, south leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the SB approach, north leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the EB approach, west leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the WB approach, east leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane

- Avenue 16 at Schnoor Avenue
  - Signalize the intersection
  - Restripe/widen the SB approach, north leg, from a shared left-through-right lane to one (1) left-turn lane and a shared through-right lane
  - Restripe/widen the EB approach, west leg, from a shared left-through-right to dual (2) lefts and a shared through-right lane
  - Restripe/widen the WB approach, east leg, from one (1) left-turn lane and a shared through-right lane to dual (2) left-turn lanes and a shared through-right lane

- Avenue 16 at SR 99 NB ramps
  - Reconfigure/realign the Avenue 16/Avenue 16 connector at SR 99 NB ramps, Avenue 16 at SR 99 NB ramps connector and Gateway/Avenue 16 at SR 99 NB ramps to one (1) intersection
  - Signalize the intersection
  - Restripe/widen the NB approach, south leg, from a shared left-through lane, to a separate left-turn lane and one (1) through lane
  - Restripe/ widen the EB approach, west leg, from a shared left-right, to dual (2) left-turn lanes and a separate right-turn lane

- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps
  - Restripe/widen the EB approach, west leg, from a separate left-turn lane and two (2) through lanes, to dual (2) left-turn lanes and two (2) through lanes
  - Widen the NB off-ramp to two (2) lanes with a NB auxiliary lane on SR 99

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

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

Opening Day (2008) Project

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

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

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

- Avenue 18 at Road 23
  - Restripe/widen the SB approach, north leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane

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

Table 62 shows the Mitigated Opening Day (2008) 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 (2008) 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 (2008) Project Alternative C levels of service.

TABLE 62:
MITIGATED OPENING DAY (2008) PROJECT CONDITIONS
COUNTY SEGMENT, FREEWAY SEGMENT, AND INTERSECTION WEEKDAY LEVEL OF SERVICE
MADERA SITE (ALTERNATIVE C, ALTERNATE LAND USE ALTERNATIVE)

	AM Peak Hour		PM Peak Hour	
County Segment	**LOS**		**LOS**	
Avenue 18 ½ - Road 24 to Road 23	B		B	
Road 23 – Avenue 18 ½ to Avenue 17	C		C	
Avenue 17 – Road 23 to SR 99	A		B	
Avenue 17 – SR 99 to Road 27	A		B	
Golden State Boulevard – Avenue 17 to Avenue 18	A		A	
	AM Peak Hour		**PM Peak Hour**	
Freeway Segment	**LOS**	**Density (pc/mi/ln)**	**LOS**	**Density (pc/mi/ln)**
SR 99 north of Avenue 18 ½				
• NB	B	16.0	B	17.0
• SB	B	13.4	C	20.4
SR 99 between Avenue 18 ½ and Avenue 17				
• NB	B	17.3	B	17.9
• SB	B	14.3	C	21.7
SR 99 south of Avenue 17				
• NB	C	20.1	C	25.3
• SB	B	12.0	C	21.2
	AM Peak Hour		**PM Peak Hour**	
Intersection	**LOS**	**Delay[1] (secs)**	**LOS**	**Delay[1] (secs)**
Avenue 18 ½ at SR 99 SB ramps/Road 23	B	14.1	C	22.1
Avenue 18 ½ at SR 99 NB ramps	C	30.0	C	27.8
Avenue 17 at SR 99 SB ramps	A	4.2	A	9.8
Avenue 17 at SR 99 NB ramps	B	16.1	C	34.6
Avenue 12/Golden State Boulevard at SR 99 SB ramps	B	13.1	B	16.8
Avenue 12 at Golden State Boulevard	B	19.5	C	32.4
Avenue 12 at SR 99 NB ramps	A	9.7	B	10.5
Avenue 18 at Road 23				
• NB Left-Through-Right	A	7.7	A	8.0
• SB Left	A	7.9	A	8.2
• WB Approach	B	10.6	B	11.5
• EB Approach	B	12.0	C	16.2
Avenue 17 at Road 23	B	14.0	C	21.3
Avenue 17 at Golden State Boulevard	B	19.0	D	42.8
Ellis Street at Road 26	B	10.0	B	15.3
Avenue 15 ½ at Road 23				
• NB Left-Through-Right	A	7.8	A	8.6
• SB Left-Through-Right	A	7.9	A	8.3
• WB Approach	B	12.4	C	16.0
• EB Approach	B	13.0	C	18.4
Avenue 14 at Road 23	B	15.3	B	19.8

TABLE 62:
MITIGATED OPENING DAY (2008) PROJECT CONDITIONS
COUNTY SEGMENT, FREEWAY SEGMENT, AND INTERSECTION WEEKDAY LEVEL OF SERVICE
MADERA SITE (ALTERNATIVE C, ALTERNATE LAND USE ALTERNATIVE)

	AM Peak Hour		PM Peak Hour	
Intersection	**LOS**	**Delay[1] (secs)**	**LOS**	**Delay[1] (secs)**
Avenue 16 at Schnoor Avenue	C	20.1	B	17.7
Avenue 16 at SR 99 SB ramps	B	12.5	B	14.6
Avenue 16 at SR NB ramps	B	15.2	B	14.5
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	B	11.0	C	27.2
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps	A	8.9	B	19.7
SR 145/Madera Avenue at SR 99 NB ramps	B	13.3	B	13.0
Olive Avenue/Avenue 14 at SR 99 SB off-ramp	B	14.9	C	23.4
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	B	12.0	C	32.1
Avenue 18 ½ at Pistachio Drive				
• EB Approach	A	8.9	A	9.1
• SB Approach	C	23.1	D	27.0
Avenue 18 ½ at Golden State Boulevard				
• EB Approach	A	7.7	A	7.8
• SB Approach	B	11.2	B	12.5

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

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 (2008) Project Alternative C scenario.

Queue Lengths

Table 63 shows the estimated Mitigated Opening Day (2008) 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 (2008) 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		
• NB Left-Through	1,204[1] (770[2])	#187/#236
• NB Right		17/32
SR 99 SB off-ramp at Avenue 18 ½		
• SB Left-Through-Right	1,256[1] (822[2])	116/#285

TABLE 63:
MITIGATED OPENING DAY (2008) 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 17	1,341[1] (907[2])	
• SB Left	589[3]	102/#282
• SB Right	589[3]	27/66
SR 99 NB off-ramp at Avenue 17	1,060[1] (626[2])	
• NB Left	45[3]	206/#492
• NB Left-Through		220/#492
• NB Right	45[3]	23/#505
SR 99 NB off-ramp at Avenue 16	1,150[1] (716[2])	
• SB Through-Right		35/65
SR 99 SB off-ramp at Avenue 16	1,020[1] (586[2])	
• SB Left		3/3
• SB Through		88/138
• SB Right		52/72
SR 99 NB off-ramp at Avenue 15 1/2 /Cleveland Avenue	881[1] (447[2])	
• NB Left	353[3]	90/#335
• NB Right	353[3]	43/#331
SR 99 SB off-ramp at Avenue 15 1/2/Cleveland Avenue	1,000[1] (566[2])	
• SB Left	65[2]	67/#236
• SB Left-Through		68/#235
• SB Right	65[2]	32/#215
SR 99 NB off-ramp at SR 145/Madera Avenue	1,310[1] (876[2])	
• WB Left	90[3]	97/73
• WB Right	90[3]	20/21
SR 99 SB off-ramp at Avenue 14/Olive Avenue	1,254[1] (820[2])	
• SB Left	65[3]	240/#423
• SB Right	65[3]	55/28
SR 99 SB off-ramp at Avenue 12/Golden State Boulevard	1,431[1] (997[2])	
• WB Left		51/122
• WB Right		46/64

TABLE 63:
MITIGATED OPENING DAY (2008) 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 12	1,223[1] (789[2])	
• NB Left-Through	49[3]	99/151
• NB Right	49[3]	26/43
Avenue 17 between the SR 99 SB off-ramp and Golden State Boulevard	481	
• WB Left (at Golden State Blvd)		#127/m#240
• WB Through		141/236
• WB Right		40/111
• EB Through (at SR 99 SB off-ramp)		31/m74

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

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 (2008) 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 2004 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

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)

	AM Peak Hour		PM Peak Hour	
County Segment	**LOS**		**LOS**	
Avenue 18 ½ - Road 24 to Road 23	C		D	
Road 23 – Avenue 18 ½ to Avenue 17	D		D	
Avenue 17 – Road 23 to SR 99	A		D	
Avenue 17 – SR 99 to Road 27	B		**E**	
Golden State Boulevard – Avenue 17 to Avenue 18	A		A	
	AM Peak Hour		**PM Peak Hour**	
Freeway Segment	**LOS**	**Density (pc/mi/ln)**	**LOS**	**Density (pc/mi/ln)**
SR 99 north of Avenue 18 ½				
• **NB**	C	25.2	**D**	**26.1**
• **SB**	C	20.3	**E**	**35.2**

TABLE 64:
2030 NO PROJECT CONDITIONS
COUNTY SEGMENT, FREEWAY SEGMENT, AND INTERSECTION WEEKDAY LEVEL OF SERVICE
MADERA SITE (ALTERNATIVE E, NO PROJECT ALTERNATIVE)

	AM Peak Hour		PM Peak Hour	
Freeway Segment	**LOS**	**Density (pc/mi/ln)**	**LOS**	**Density (pc/mi/ln)**
SR 99 between Avenue 18 ½ and Avenue 17				
• **NB**	**D**	**28.3**	**D**	**28.9**
• **SB**	C	22.2	**E**	**41.9**
SR 99 south of Avenue 17				
• **NB**	**D**	**33.1**	**F**	**---**
• **SB**	C	23.3	**F**	**---**
	AM Peak Hour		**PM Peak Hour**	
Intersection	**LOS**	**Delay[1] (secs)**	**LOS**	**Delay[1] (secs)**
Avenue 18 ½ at SR 99 SB ramps/Road 23	A	9.4	B	14.8
Avenue 18 ½ at SR 99 NB ramps	C	27.9	C	30.2
Avenue 17 at SR 99 SB ramps	A	7.9	**F**	**87.5**
Avenue 17 at SR 99 NB ramps	C	26.5	**F**	**113.6**
Avenue 12/Golden State Boulevard at SR 99 SB ramps	**D**	**41.8**	**F**	**245.6**
Avenue 12 at Golden State Boulevard	**F**	**126.8**	**F**	**418.3**
Avenue 12 at SR 99 NB ramps	**D**	**41.7**	**F**	**243.3**
Avenue 18 at Road 23				
• NB Left-Through-Right	A	8.1	A	8.7
• SB Left	A	8.2	A	8.6
• WB Approach	B	14.3	C	15.6
• EB Approach	B	14.8	C	25.0
Avenue 17 at Road 23	B	18.1	C	26.4
Avenue 17 at Golden State Boulevard	C	24.1	**F**	**125.9**
Ellis Street at Road 26	C	22.2	C	24.4
Avenue 15 ½ at Road 23				
• NB Left-Through-Right	A	8.2	A	9.1
• SB Left-Through-Right	A	8.2	A	8.8
• WB Approach	C	15.8	D	25.8
• EB Approach	B	14.6	D	25.3
Avenue 14 at Road 23	B	15.9	C	22.8
Avenue 16/Ellis Street at Golden State Boulevard	C	22.8	**E**	**72.4**
Avenue 16/Ellis Street at SR 99 SB ramps	B	13.7	**E**	**69.9**
Avenue 16/Ellis Street at SR NB ramps	C	27.5	**F**	**153.0**
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	C	24.5	**F**	**177.3**

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)
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps	C	27.1	**F**	**202.0**
SR 145/Madera Avenue at SR 99 NB ramps	C	20.3	**D**	**53.2**
Olive Avenue/Avenue 14 at SR 99 SB off-ramp	**F**	**101.7**	**F**	**273.1**
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	**F**	**102.5**	**F**	**357.7**
Avenue 18 ½ at Pistachio Drive				
• EB Approach	A	9.6	B	10.6
• SB Right	C	17.3	D	25.8
Avenue 18 ½ at Golden State Boulevard				
• NB Left-Through-Right	A	7.7	A	7.8
• SB Left-Through-Right	A	9.6	B	11.5
• **EB Approach**	**F**	**376.2**	**F**	**---**
• **WB Approach**	**F**	**5,021**	**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

County 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 64. As shown in Table 64 and Figure 27, the following County segment (1), freeway segments (6), and intersections (19) 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:

<u>County Segments</u>

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

<u>Freeway Segments</u>

- SR 99 north of Avenue 18 ½
  - NB – 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/PM peak hours – LOS "D"/"F"
  - SB – PM peak hour – LOS "F"

<u>Intersections</u>

- Avenue 17 at SR 99 SB ramps –PM peak hour – LOS "F"
- Avenue 17 at SR 99 NB ramps – PM peak hour – LOS "F"

- Avenue 12/Golden State Boulevard at SR 99 SB ramps – AM/PM peak hours – LOS "D"/"F"
- Avenue 12 at Golden State Boulevard – AM/PM peak hours – LOS "F"
- Avenue 12 at SR 99 NB ramps – AM/PM peak hours – LOS "D"/"F"
- Avenue 17 at Golden State Boulevard – PM peak hour – LOS "F"
- Avenue 16/Ellis Street at Golden State Boulevard – PM peak hour – LOS "E"
- Avenue 16/Ellis Street at SR 99 SB ramps – PM peak hour – LOS "E"
- Avenue 16/Ellis Street at SR 99 NB ramps – PM peak hour – 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 – PM peak hours – LOS "E"
- Olive Avenue/Avenue 14 at SR 99 SB off-ramp – AM/PM peak hours – LOS "F"
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145 – AM/PM peak hours – LOS "F"
- Avenue 18 ½ at Golden State Boulevard/Road 23
  - EB Approach – AM/PM peak hour – LOS "F"
  - WB Approach – AM/PM peak hours – LOS "F"

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 five (5) unsignalized intersections:

- Avenue 18 ½ at SR 99 NB ramps - Urban
- Avenue 18 at Road 23 - Rural
- Avenue 15 ½ at Road 23 - Rural
- Avenue 18 ½ at Pistachio Drive - Urban
- Avenue 18 ½ at Golden State Boulevard/Road 23 - 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 18 ½ at SR 99 NB ramps - Urban
- Avenue 15 ½ at Road 23 - Rural
- Avenue 18 ½ at Pistachio Drive - Urban
- Avenue 18 ½ at Golden State Boulevard/Road 23 - Urban

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	1,204[1] (770[2])	
• NB Left-Through		#214/#250
• NB Right		28/49
SR 99 SB off-ramp at Avenue 18 1/2	1,256[1] (822[2])	
• SB Left-Through-Right		67/#141
SR 99 SB off-ramp at Avenue 17	1,341[1] (907[2])	
• SB Left	589[3]	129/#485
• SB Right	589[3]	182/#526
SR 99 NB off-ramp at Avenue 17	1,060[1] (626[2])	
• **NB Left**	45[3]	**#430/#1,051**
• **NB Left-Through**	45[3]	**#501/#1,057**
• **NB Right**	45[3]	26/**#957**
SR 99 NB off-ramp at Avenue 16/Ellis Avenue	1,150[1] (716[2])	
• NB Left	150[3]	150/#435
• NB Right	150[3]	65/#474
SR 99 SB off-ramp at Avenue 16/Ellis Avenue	1,020[1] (586[2])	
• **SB Left**	225[3]	206/**556**
• **SB Right**	225[3]	212/**#1,020**
SR 99 NB off-ramp at Avenue 15 ½ /Cleveland Avenue	881[1] (447[2])	
• NB Left	353[3]	129/310
• **NB Right**	353[3]	#403/**#1,042**
SR 99 SB off-ramp at Avenue 15 ½ /Cleveland Avenue	1,000[1] (566[2])	
• **SB Left-Through**	65[3]	#359/**#935**
• **SB Right**	65[3]	142/**#402**
SR 99 NB off-ramp at SR 145/Madera Avenue	1,310[1] (876[2])	
• WB Left	90[3]	#262/#322
• WB Right	90[3]	26/32
SR 99 SB off-ramp at Avenue 14/Olive Avenue	1,254[1] (820[2])	
• **SB Left**	65[3]	#700/**#1,112**
• **SB Right**	65[3]	174/139

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	1,431[1] (997[2])	
• **WB Left**		#601/**#1,319**
• **WB Right**		52/**#648**
SR 99 NB off-ramp at Avenue 12	1,223[1] (789[2])	
• **NB Left-Through**	49[3]	273/**312**
• **NB Right**	49[3]	#494/**#1,108**
Avenue 17 between SR 99 SB off-ramp and Golden State Boulevard	481	
• WB Left (at Golden State Boulevard)		m#243/m#382
• **WB Through**		305/**m562**
• WB Right		m20/m33
• EB Through (at SR 99 SB off-ramp)		79/m361

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 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 17 at SR 99 NB off-ramp – NB left-turn, left-through, and right-turn movements – AM/PM peak hours
- SR 99 SB off-ramp at Avenue 16/Ellis Avenue – SB left-turn and right-turn movements – PM peak hour
- SR 99 NB off-ramp at Avenue 15 1/2/Cleveland Avenue – NB right-turn movement – PM peak hour
- SR 99 SB off-ramp at Avenue 15 1/2/Cleveland Avenue – SB left-turn, left-through, and right-turn movements – PM peak hour
- SR 99 SB off-ramp at Avenue 14/Olive Avenue – SB left-turn and right-turn movements – PM peak hour
- SR 99 SB off-ramp at Avenue 12/Golden State Boulevard – WB left-turn and right-turn movements – PM peak hour
- SR 99 NB off-ramp at Avenue 12 – NB left-through and right-turn movements – PM peak hour
- Avenue 17 between the SR 99 SB off-ramp and Golden State Boulevard – WB through (at Golden State Blvd) movement – 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.

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	279/359	N/N	N/N
SR 99 SB off-ramp at Avenue 18 ½	266/445	N/N	N/N
SR 99 SB off-ramp at Avenue 17	399/681	N/N	N/N
SR 99 NB off-ramp at Avenue 17	**1,432/2,876**	**Y/Y**	**Y/Y**
SR 99 NB off-ramp at Avenue 16	698/**1,069**	N/**Y**	N/N
SR 99 SB off-ramp at Avenue 16	763/**1,324**	N/**Y**	N/N
SR 99 NB off-ramp at Avenue 15 ½ /Cleveland Avenue	854/**1,604**	N/**Y**	N/**Y**
SR 99 SB off-ramp at Avenue 15 ½ /Cleveland Avenue	573/**1,116**	N/**Y**	N/N
SR 99 NB off-ramp at SR 145/Madera Avenue	727/764	N/N	N/N
SR 99 SB off-ramp at Avenue 14/Olive Avenue	**1,160/1,427**	**Y/Y**	N/N
SR 99 SB off-ramp at Avenue 12/Golden State Boulevard	823/**1,711**	N/**Y**	N/**Y**
SR 99 NB off-ramp at Avenue 12	665/**953**	N/**Y**	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 NB off-ramp – PM peak hour
- 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 – PM peak hour
- Avenue 12 at SR 99 NB off-ramp – PM peak hour

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

2030 Project Conditions

Alternative A, Proposed Project Alternative

Roadway Levels of Service

The 2030 Project Alternative A scenario lane configurations and intersection control incorporated the recommended improvements identified in the Mitigated Opening Day (2008) Alternative A scenario and the proposed improvements identified by Caltrans and included in the Madera County 2004 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 PROJECT CONDITIONS
COUNTY SEGMENT, FREEWAY SEGMENT, AND INTERSECTION WEEKDAY LEVEL OF SERVICE
MADERA SITE (ALTERNATIVE A, PROPOSED PROJECT ALTERNATIVE)

County Segment	AM Peak Hour LOS	PM Peak Hour LOS
Avenue 18 ½ - Road 24 to Road 23	C	D
Road 23 – Avenue 18 ½ to Avenue 17	D	D
Avenue 17 – Road 23 to SR 99	A	**E**
Avenue 17 – SR 99 to Road 27	A	B
Golden State Boulevard – Avenue 17 to Avenue 18	A	B

Freeway Segment	AM Peak Hour LOS	AM Peak Hour Density (pc/mi/ln)	PM Peak Hour LOS	PM Peak Hour Density (pc/mi/ln)
SR 99 north of Avenue 18 ½				
• **NB**	C	25.4	**D**	**26.5**
• **SB**	C	20.6	**E**	**36.0**
SR 99 between Avenue 18 ½ and Avenue 17				
• **NB**	**D**	**28.3**	**D**	**28.9**
• **SB**	C	22.2	**E**	**41.9**
SR 99 south of Avenue 17				
• **NB**	**E**	**36.8**	**F**	**---**
• **SB**	B	17.9	**E**	**35.7**

Intersection	AM Peak Hour LOS	AM Peak Hour Delay[1] (secs)	PM Peak Hour LOS	PM Peak Hour Delay[1] (secs)
Avenue 18 ½ at SR 99 SB ramps/Road 23	A	10.1	C	20.9
Avenue 18 ½ at SR 99 NB ramps	C	27.8	C	28.3
Avenue 17 at SR 99 SB ramps	A	8.3	**F**	**176.1**
Avenue 17 at SR 99 NB ramps	**D**	**36.1**	**F**	**146.5**
Avenue 12/Golden State Boulevard at SR 99 SB ramps	**D**	**51.2**	**F**	**251.3**
Avenue 12 at Golden State Boulevard	**F**	**126.0**	**F**	**420.3**
Avenue 12 at SR 99 NB ramps	**D**	**44.5**	**F**	**251.7**
Avenue 18 at Road 23				
• NB Left-Through-Right	A	8.1	A	8.7
• SB Left	A	8.4	A	9.0
• WB Approach	B	14.2	C	17.0
• **EB Approach**	C	18.0	**E**	**39.4**
Avenue 17 at Road 23	B	18.5	C	27.7
Avenue 17 at Golden State Boulevard	C	26.2	**F**	**241.8**
Ellis Street at Road 26	C	22.4	C	25.0

TABLE 67:
2030 PROJECT CONDITIONS
COUNTY SEGMENT, FREEWAY SEGMENT, AND INTERSECTION WEEKDAY LEVEL OF SERVICE
MADERA SITE (ALTERNATIVE A, PROPOSED PROJECT ALTERNATIVE)

	AM Peak Hour		PM Peak Hour	
Intersection	**LOS**	**Delay[1] (secs)**	**LOS**	**Delay[1] (secs)**
Avenue 15 ½ at Road 23				
• NB Left-Through-Right	A	8.2	A	9.2
• SB Left-Through-Right	A	8.3	A	8.9
• WB Approach	C	16.5	D	28.8
• EB Approach	C	15.1	D	27.8
Avenue 14 at Road 23	B	18.7	C	23.0
Avenue 16/Ellis Street at Golden State Boulevard	C	22.6	**E**	**78.5**
Avenue 16/Ellis Street at SR 99 SB ramps	B	14.1	**E**	**79.0**
Avenue 16/Ellis Street at SR 99 NB ramps	C	29.5	**F**	**163.6**
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	C	25.4	**F**	**178.2**
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps	B	15.5	**F**	**113.4**
SR 145/Madera Avenue at SR 99 NB ramps	C	21.0	**E**	**59.6**
Olive Avenue/Avenue 14 at SR 99 SB off-ramp	**F**	**103.5**	**F**	**280.1**
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	**F**	**104.1**	**F**	**368.9**
Avenue 18 ½ at Pistachio Drive				
• EB Approach	A	9.9	B	11.1
• SB Right	C	19.8	D	33.4
Avenue 18 ½ at Golden State Boulevard				
• NB Left-Through-Right	A	7.7	A	7.8
• SB Left-Through-Right	B	10.0	B	12.7
• **EB Approach**	**F**	**974.3**	**F**	**---**
• **WB Approach**	**F**	**---**	**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

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 (14) are projected to operate or have movements projected to operate below the adopted level of service standards in the 2030 Project Alternative A scenario:

<u>County Segments</u>

- Avenue 17 – Road 23 to SR 99 – PM peak hour – LOS "E"

Freeway Segments

- SR 99 north of Avenue 18 ½
  - NB – 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/PM peak hours – LOS "E"/"F"
  - SB – PM peak hour – LOS "E"

Intersections

- Avenue 17 at SR 99 SB ramps –PM peak hour – LOS "F"
- Avenue 17 at SR 99 NB ramps – AM/PM peak hours – LOS "D"/"F"
- Avenue 12/Golden State Boulevard at SR 99 SB ramps – AM/PM peak hours – LOS "D"/"F"
- Avenue 12 at Golden State Boulevard – AM/PM peak hours – LOS "F"
- Avenue 12 at SR 99 NB ramps – AM/PM peak hours – LOS "D"/"F"
- Avenue 18 at Road 23
  - EB Approach – PM peak hour – LOS "E"
- Avenue 17 at Golden State Boulevard – PM peak hour – LOS "F"
- Avenue 16/Ellis Street at Golden State Boulevard – PM peak hour – LOS "E"
- Avenue 16/Ellis Street at SR 99 SB ramps – PM peak hour – LOS "E"
- Avenue 16/Ellis Street at SR 99 NB ramps – PM peak hour – 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 – PM peak hour – LOS "E"
- Olive Avenue/Avenue 14 at SR 99 SB off-ramp – AM/PM peak hours – LOS "F"
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145 – AM/PM peak hours – LOS "F"
- Avenue 18 ½ at Golden State Boulevard/Road 23
  - EB Approach – AM/PM peak hours – LOS "F"
  - WB Approach – AM/PM peak hours – LOS "F"

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 A scenario.

Signal Warrants

Rural and urban peak hour volume signal warrants were prepared for the following five (5) unsignalized intersections:

- Avenue 18 ½ at SR 99 NB ramps - Urban
- Avenue 18 at Road 23 - Rural
- Avenue 15 ½ at Road 23 - Rural
- Avenue 18 ½ at Pistachio Drive - Urban
- Avenue 18 ½ at Golden State Boulevard/Road 23 - 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 18 ½ at SR 99 NB ramps - Urban
- Avenue 18 at Road 23 - Rural
- Avenue 15 ½ at Road 23 - Rural
- Avenue 18 ½ at Pistachio Drive - Urban
- Avenue 18 ½ at Golden State Boulevard/Road 23 - Urban

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 Project Alternative A conditions queue lengths developed from the level of service analyses for the Madera Site study locations.

TABLE 68:
2030 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	1,204[1] (770[2])	
• NB Left-Through		#214/#271
• NB Right		28/56
SR 99 SB off-ramp at Avenue 18 1/2	1,256[1] (822[2])	
• SB Left-Through-Right		74/#260
SR 99 SB off-ramp at Avenue 17	1,341[1] (907[2])	
• SB Left	589[3]	135/#496
• SB Right	589[3]	205/#548
SR 99 NB off-ramp at Avenue 17	1,060[1] (626[2])	
• **NB Left**	45[3]	**#634/#1,368**
• **NB Left-Through**	45[3]	**#682/#1,375**
• **NB Right**	45[3]	**23/#943**
SR 99 NB off-ramp at Avenue 16/Ellis Avenue	1,150[1] (716[2])	
• NB Left	150[3]	150/#435
• NB Right	150[3]	65/#487

TABLE 68:
2030 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	1,020[1] (586[2])	
• **SB Left**	225[3]	220/**#602**
• **SB Right**	225[3]	227/**#1,085**
SR 99 NB off-ramp at Avenue 15 ½ /Cleveland Avenue	881[1] (447[2])	
• NB Left	353[3]	129/336
• **NB Right**	353[3]	#408/**#1,126**
SR 99 SB off-ramp at Avenue 15 ½ /Cleveland Avenue	1,000[1] (566[2])	
• **SB Left**	65[3]	158/**#571**
• **SB Left-Through**	65[3]	158/**#570**
• **SB Right**	65[3]	148/**#544**
SR 99 NB off-ramp at SR 145/Madera Avenue	1,310[1] (876[2])	
• WB Left	90[3]	#241/#268
• WB Right	90[3]	24/29
SR 99 SB off-ramp at Avenue 14/Olive Avenue	1,254[1] (820[2])	
• **SB Left**	65[3]	#647/**#1,021**
• **SB Right**	65[3]	162/**132**
SR 99 SB off-ramp at Avenue 12/Golden State Boulevard	1,431[1] (997[2])	
• **WB Left**		#653/**#1,353**
• **WB Right**		72/**#649**
SR 99 NB off-ramp at Avenue 12	1,223[1] (789[2])	
• **NB Left-Through**	49[3]	293/**312**
• **NB Right**	49[3]	#525/**#1,020**
Avenue 17 between SR 99 SB off-ramp and Golden State Boulevard	481	
• WB Left (at Golden State Boulevard)		m#216/m#329
• **WB Through**		282/**m532**
• WB Right		60/m87
• EB Through (at SR 99 SB off-ramp)		73/m353

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-turn, left-through, and right-turn movements – AM/PM peak hours
- SR 99 SB off-ramp at Avenue 16/Ellis Avenue – SB left-turn and right-turn movements – PM peak hour
- SR 99 NB off-ramp at Avenue 15 1/2/Cleveland Avenue – NB right-turn movement – PM peak hour
- SR 99 SB off-ramp at Avenue 15 1/2/Cleveland Avenue – SB left-turn, left-through, and right-turn movements – PM peak hour
- SR 99 SB off-ramp at Avenue 14/Olive Avenue – SB left-turn and right-turn movements – PM peak hour
- SR 99 SB off-ramp at Avenue 12/Golden State Boulevard – WB left-turn and right-turn movements – PM peak hour
- SR 99 NB off-ramp at Avenue 12 – NB left-through and right-turn movements – PM peak hour
- Avenue 17 between the SR 99 SB off-ramp and Golden State Boulevard – WB through (at Golden State Blvd) movement – 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.

All remaining study queue lengths are not projected to exceed the allowable storage lengths in the 95th percentile condition in the 2030 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 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	279/359	N/N	N/N
SR 99 SB off-ramp at Avenue 18 ½	301/488	N/N	N/N
SR 99 SB off-ramp at Avenue 17	305/606	N/N	N/N
SR 99 NB off-ramp at Avenue 17	**1,825/3,412**	**Y/Y**	**Y/Y**
SR 99 NB off-ramp at Avenue 16	697/**1,066**	N/**Y**	N/N
SR 99 SB off-ramp at Avenue 16	765/**1,341**	N/**Y**	N/N
SR 99 NB off-ramp at Avenue 15 ½ /Cleveland Avenue	585/**1,609**	N/**Y**	N/**Y**

TABLE 69:
2030 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 SB off-ramp at Avenue 15 ½ /Cleveland Avenue	616/**1,204**	N/Y	N/N
SR 99 NB off-ramp at SR 145/Madera Avenue	725/759	N/N	N/N
SR 99 SB off-ramp at Avenue 14/Olive Avenue	**1,172/1,460**	**Y/Y**	N/N
SR 99 SB off-ramp at Avenue 12/Golden State Boulevard	828/**1,725**	N/Y	N/Y
SR 99 NB off-ramp at Avenue 12	665/**952**	N/Y	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 Project Alternative A scenario:

- Avenue 17 at SR 99 NB off-ramp – AM/PM peak hours
- Avenue 16 at SR 99 NB off-ramp – PM peak hour
- 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 – PM peak hour
- Avenue 12 at SR 99 NB off-ramp – PM peak hour

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
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB off-ramp – PM peak hour
- 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 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 required for left-turning volumes greater than 300 vehicles per hour and that separate right-turn lanes are required for right-turning volumes greater than 300 vehicles per hour. Based on this standard of practice, 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

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 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	200[1]
Avenue 17 at SR 99 NB ramps	EBL	300	100[1]
Avenue 12/Golden State Boulevard at SR 99 SB ramps	NBR	---	250[3]
	SBL	---	165[1]
Avenue 12 at Golden State Boulevard	NBL	200	150
	NBR	---	425
	SBL	400	465[1]
	SBR	200	75
	WBL	---	125
	EBL	350	190[1]
	EBR	425	50
Avenue 12 at SR 99 NB ramps	WBR	---	700[3]
	EBL	---	125
Avenue 18 at Road 23	NBL	---	50
	SBL	---	125

TABLE 70:
2030 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	---	50
	SBL	---	100
	WBL	---	175
Avenue 17 at Golden State Boulevard	NBL	50	100
	NBR	---	215[3]
	SBL	---	260[4]
	WBL	---	165[1]
	WBR	---	750[2]
	EBL	---	75
Ellis Street at Road 26	NBL	---	150
	SBL	---	175
	SBR	---	275
	WBL		75
Avenue 16 at Schnoor Avenue	NBL	75	n/a
	NBR	75	n/a
	WBL	150	n/a
	EBL	---	n/a
Avenue 16 at SR 99 SB ramps	NBL	75	n/a
	NBR	75	n/a
	EBR	200	n/a
Avenue 16 at SR 99 NB ramps	EBL	---	n/a
	EBR	---	n/a
Avenue 16/Ellis Street at Golden State Boulevard	NBR	---	400[3]
	WBL	200	365[1]
	WBR	---	500
Avenue 16/Ellis Street at SR 99 NB ramps	WBR	---	525
	EBL	300	425[1]
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	WBR	50	700
	EBL	100	215[1]
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps	WBL	125	240[1]
	EBR	125	725
SR 145/Madera Avenue at SR 99 NB ramps	NBL	---	490[1]
	SBR	---	675
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	NBL	125	150[1]
	NBR	100	100
	SBR	25	375
	EBL	175	215[1]
	EBR	175	550[3]

TABLE 70:
2030 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 Golden State Boulevard/Road 23	NBL	---	50
	NBR	---	350
	SBL	---	175
	WBL	---	375[1]
	EBL	---	50

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 Project Alternative B scenario lane configurations and intersection control incorporated the recommended improvements identified in the Mitigated Opening Day (2008) Alternative B scenario and the proposed improvements identified by Caltrans and included in the Madera County 2004 RTP as shown in the 2030 No Project scenario.

Table 71 shows the 2030 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 PROJECT CONDITIONS
COUNTY SEGMENT, FREEWAY SEGMENT, AND INTERSECTION WEEKDAY LEVEL OF SERVICE
MADERA SITE (ALTERNATIVE B, REDUCED INTENSITY ALTERNATIVE)

County Segment	AM Peak Hour LOS	PM Peak Hour LOS
Avenue 18 ½ - Road 24 to Road 23	C	D
Road 23 – Avenue 18 ½ to Avenue 17	D	D
Avenue 17 – Road 23 to SR 99	A	**E**
Avenue 17 – SR 99 to Road 27	A	B

TABLE 71:
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 LOS**		**PM Peak Hour LOS**	
Golden State Boulevard – Avenue 17 to Avenue 18	A		A	
Freeway Segment	**AM Peak Hour LOS**	**AM Peak Hour Density (pc/mi/ln)**	**PM Peak Hour LOS**	**PM Peak Hour Density (pc/mi/ln)**
SR 99 north of Avenue 18 ½				
• **NB**	C	25.3	**D**	**26.4**
• **SB**	C	20.5	**E**	**35.7**
SR 99 between Avenue 18 ½ and Avenue 17				
• **NB**	**D**	**28.3**	**D**	**28.9**
• **SB**	C	22.2	**E**	**41.9**
SR 99 south of Avenue 17				
• **NB**	**E**	**35.6**	**F**	**---**
• **SB**	B	17.7	**D**	**34.8**
Intersection	**AM Peak Hour LOS**	**AM Peak Hour Delay[1] (secs)**	**PM Peak Hour LOS**	**PM Peak Hour Delay[1] (secs)**
Avenue 18 ½ at SR 99 SB ramps/Road 23	A	9.8	B	16.6
Avenue 18 ½ at SR 99 NB ramps	C	27.9	C	31.1
Avenue 17 at SR 99 SB ramps	A	8.1	**F**	**150.0**
Avenue 17 at SR 99 NB ramps	C	32.3	**F**	**135.6**
Avenue 12/Golden State Boulevard at SR 99 SB ramps	**D**	**50.6**	**F**	**251.5**
Avenue 12 at Golden State Boulevard	**F**	**124.9**	**F**	**419.5**
Avenue 12 at SR 99 NB ramps	**D**	**43.8**	**F**	**249.3**
Avenue 18 at Road 23				
• NB Left-Through-Right	A	8.1	A	8.7
• SB Left	A	8.3	A	8.9
• WB Approach	B	14.2	C	16.2
• EB Approach	C	26.9	D	33.5
Avenue 17 at Road 23	B	18.3	C	27.7
Avenue 17 at Golden State Boulevard	C	25.4	**F**	**201.9**
Ellis Street at Road 26	C	22.9	C	24.8
Avenue 15 ½ at Road 23				
• NB Left-Through-Right	A	8.2	A	9.2
• SB Left-Through-Right	A	8.3	A	8.8
• WB Approach	C	16.3	D	27.8
• EB Approach	B	14.9	D	26.8
Avenue 14 at Road 23	B	16.0	C	22.9
Avenue 16/Ellis Street at Golden State Boulevard	C	22.6	**E**	**76.7**

TABLE 71:
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)
Avenue 16/Ellis Street at SR 99 SB ramps	B	13.8	**E**	**76.3**
Avenue 16/Ellis Street at SR NB ramps	C	28.9	**F**	**160.5**
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	C	25.3	**F**	**176.6**
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps	B	15.4	**F**	**109.6**
SR 145/Madera Avenue at SR 99 NB ramps	B	19.9	**E**	**57.3**
Olive Avenue/Avenue 14 at SR 99 SB off-ramp	**F**	**102.8**	**F**	**272.6**
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	**F**	**103.3**	**F**	**361.6**
Avenue 18 ½ at Pistachio Drive				
• EB Approach	A	9.8	B	11.0
• SB Right	C	19.0	D	30.9
Avenue 18 ½ at Golden State Boulevard				
• NB Left-Through-Right	A	7.7	A	7.8
• SB Left-Through-Right	A	9.8	B	12.3
• **EB Approach**	**F**	**687.0**	**F**	**---**
• **WB Approach**	**F**	**---**	**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

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 (14) are projected to operate or have movements projected to operate below the adopted level of service standards in the 2030 Project Alternative B scenario:

<u>County Segments</u>

- Avenue 17 – Road 23 to SR 99 – PM peak hour – LOS "E"

<u>Freeway Segments</u>

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

Intersections

- Avenue 17 at SR 99 SB ramps –PM peak hour – LOS "F"
- Avenue 17 at SR 99 NB ramps – PM peak hour – LOS "F"
- Avenue 12/Golden State Boulevard at SR 99 SB ramps – AM/PM peak hours – LOS "D"/"F"
- Avenue 12 at Golden State Boulevard – AM/PM peak hours – LOS "F"
- Avenue 12 at SR 99 NB ramps – AM/PM peak hours – LOS "D"/"F"
- Avenue 17 at Golden State Boulevard – PM peak hour – LOS "F"
- Avenue 16/Ellis Street at Golden State Boulevard – PM peak hour – LOS "E"
- Avenue 16/Ellis Street at SR 99 SB ramps – PM peak hour – LOS "E"
- Avenue 16/Ellis Street at SR 99 NB ramps – PM peak hour – 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 – PM peak hour – LOS "E"
- Olive Avenue/Avenue 14 at SR 99 SB off-ramp – AM/PM peak hours – LOS "F"
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145 – AM/PM peak hours – LOS "F"
- Avenue 18 ½ at Golden State Boulevard/Road 23
  - EB Approach – AM/PM peak hours – LOS "F"
  - WB Approach – AM/PM peak hours – LOS "F"

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 five (5) unsignalized intersections:

- Avenue 18 ½ at SR 99 NB ramps - Urban
- Avenue 18 at Road 23 - Rural
- Avenue 15 ½ at Road 23 - Rural
- Avenue 18 ½ at Pistachio Drive - Urban
- Avenue 18 ½ at Golden State Boulevard/Road 23 - 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 18 ½ at SR 99 NB ramps - Urban
- Avenue 18 at Road 23 - Rural
- Avenue 15 ½ at Road 23 - Rural
- Avenue 18 ½ at Pistachio Drive - Urban
- Avenue 18 ½ at Golden State Boulevard/Road 23 - Urban

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 Project Alternative B conditions queue lengths developed from the level of service analyses for the Madera Site study locations.

TABLE 72:
2030 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	1,204[1] (770[2])	
• NB Left-Through		#214/#250
• NB Right		28/49
SR 99 SB off-ramp at Avenue 18 1/2	1,256[1] (822[2])	
• SB Left-Through-Right		72/#207
SR 99 SB off-ramp at Avenue 17	1,341[1] (907[2])	
• SB Left	589[3]	134/#496
• SB Right	589[3]	200/#546
SR 99 NB off-ramp at Avenue 17	1,060[1] (626[2])	
• **NB Left**	45[3]	**#581/#1,275**
• **NB Left-Through**	45[3]	**#628/#1,284**
• **NB Right**	45[3]	24/**#948**
SR 99 NB off-ramp at Avenue 16/Ellis Avenue	1,150[1] (716[2])	
• NB Left	150[3]	150/#435
• NB Right	150[3]	65/#484
SR 99 SB off-ramp at Avenue 16/Ellis Avenue	1,020[1] (586[2])	
• **SB Left**	225[3]	215/**#585**
• **SB Right**	225[3]	223/**#1,066**
SR 99 NB off-ramp at Avenue 15 ½ /Cleveland Avenue	881[1] (447[2])	
• NB Left	353[3]	129/336
• **NB Right**	353[3]	#408/**#1,126**
SR 99 SB off-ramp at Avenue 15 ½ /Cleveland Avenue	1,000[1] (566[2])	
• **SB Left**	65[3]	155/**#555**
• **SB Left-Through**	65[3]	155/**#554**
• **SB Right**	65[3]	145/**#537**

TABLE 72:
2030 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 SR 145/Madera Avenue	1,310[1] (876[2])	
• WB Left	90[3]	#241/#268
• WB Right	90[3]	24/29
SR 99 SB off-ramp at Avenue 14/Olive Avenue	1,254[1] (820[2])	
• **SB Left**	65[3]	#643/**#1,020**
• **SB Right**	65[3]	160/**132**
SR 99 SB off-ramp at Avenue 12/Golden State Boulevard	1,431[1] (997[2])	
• **WB Left**		#644/**#1,352**
• **WB Right**		71/**#656**
SR 99 NB off-ramp at Avenue 12	1,223[1] (789[2])	
• **NB Left-Through**	49[3]	293/**312**
• **NB Right**	49[3]	#525/**#1,020**
Avenue 17 between SR 99 SB off-ramp and Golden State Boulevard	481	
• WB Left (at Golden State Boulevard)		m#241/m#353
• **WB Through**		292/**m559**
• WB Right		m49/m79
• EB Through (at SR 99 SB off-ramp)		76/m324

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-turn, left-through, and right-turn movements – AM/PM peak hours
- SR 99 SB off-ramp at Avenue 16/Ellis Avenue – SB left-turn and right-turn movements – PM peak hour
- SR 99 NB off-ramp at Avenue 15 1/2/Cleveland Avenue – NB right-turn movement – PM peak hour
- SR 99 SB off-ramp at Avenue 15 1/2/Cleveland Avenue – SB left-turn, left-through, and right-turn movements – PM peak hour

- SR 99 SB off-ramp at Avenue 14/Olive Avenue – SB left-turn and right-turn movements – PM peak hour
- SR 99 SB off-ramp at Avenue 12/Golden State Boulevard – WB left-turn and right-turn movements – PM peak hour
- SR 99 NB off-ramp at Avenue 12 – NB left-through and right-turn movements – PM peak hour
- Avenue 17 between the SR 99 SB off-ramp and Golden State Boulevard – WB through (at Golden State Blvd) movement – 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.

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 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	279/359	N/N	N/N
SR 99 SB off-ramp at Avenue 18 ½	301/488	N/N	N/N
SR 99 SB off-ramp at Avenue 17	399/681	N/N	N/N
SR 99 NB off-ramp at Avenue 17	**1,641/3,130**	**Y/Y**	**Y/Y**
SR 99 NB off-ramp at Avenue 16	698/**1,069**	N/**Y**	N/N
SR 99 SB off-ramp at Avenue 16	779/**1,364**	N/**Y**	N/N
SR 99 NB off-ramp at Avenue 15 ½ /Cleveland Avenue	854/**1,604**	N/**Y**	N/**Y**
SR 99 SB off-ramp at Avenue 15 ½ /Cleveland Avenue	594/**1,169**	N/**Y**	N/N
SR 99 NB off-ramp at SR 145/Madera Avenue	727/764	N/N	N/N
SR 99 SB off-ramp at Avenue 14/Olive Avenue	**1,173/1,461**	**Y/Y**	N/N
SR 99 SB off-ramp at Avenue 12/Golden State Boulevard	830/**1,728**	N/**Y**	N/**Y**
SR 99 NB off-ramp at Avenue 12	665/**953**	N/**Y**	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 NB off-ramp – PM peak hour
- 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 – PM peak hour
- Avenue 12 at SR 99 NB off-ramp – PM peak hour

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
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB off-ramp – PM peak hour
- 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 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 required for left-turning volumes greater than 300 vehicles per hour and that separate right-turn lanes are required for right-turning volumes greater than 300 vehicles per hour. Based on this standard of practice, 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

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 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	190[1]
Avenue 17 at SR 99 NB ramps	EBL	300	100[1]
Avenue 12/Golden State Boulevard at SR 99 SB ramps	NBR	---	250[3]
	SBL	---	165[1]
Avenue 12 at Golden State Boulevard	NBL	200	150
	NBR	---	425
	SBL	400	450[1]
	SBR	200	75
	WBL	---	125
	EBL	350	190[1]
	EBR	425	50
Avenue 12 at SR 99 NB ramps	WBR	---	690[3]
	EBL	---	125
Avenue 18 at Road 23	NBL	---	50
	SBL	---	100
Avenue 17 at Road 23	NBL	---	50
	SBL	---	100
	WBL	---	175
Avenue 17 at Golden State Boulevard	NBL	50	100
	NBR	---	215[3]
	SBL	---	225[4]
	WBL	---	165[1]
	WBR	---	650[2]
	EBL	---	50
Ellis Street at Road 26	NBL	---	150
	SBL	---	150
	SBR	---	275
	WBL		75
Avenue 16 at Schnoor Avenue	NBL	75	n/a
	NBR	75	n/a
	WBL	150	n/a
	EBL	---	n/a
Avenue 16 at SR 99 SB ramps	NBL	75	n/a
	NBR	75	n/a
	EBR	200	n/a
Avenue 16 at SR 99 NB ramps	EBL	---	n/a
	EBR	---	n/a

TABLE 74:
2030 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 16/Ellis Street at Golden State Boulevard	NBR	---	390[3]
	WBL	200	365[1]
	WBR	---	500
Avenue 16/Ellis Street at SR 99 NB ramps	WBR	---	500
	EBL	300	415[1]
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	WBR	50	675
	EBL	100	200[1]
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps	WBL	125	240[1]
	EBR	125	725
SR 145/Madera Avenue at SR 99 NB ramps	NBL	---	475[1]
	SBR	---	650
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	NBL	125	150[1]
	NBR	100	100
	SBR	25	375
	EBL	175	215[1]
	EBR	175	550[3]
Avenue 18 ½ at Golden State Boulevard/Road 23	NBL	---	50
	NBR	---	325
	SBL	---	175
	WBL	---	365[1]
	EBL	---	50

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 (Alternative Land Use Alternative)

Roadway Levels of Service

The 2030 Project Alternative C scenario lane configurations and intersection control incorporated the recommended improvements identified in the Mitigated Opening Day (2008) Alternative C scenario and the proposed improvements identified by Caltrans and included in the Madera County 2004 RTP as shown in the 2030 No Project scenario.

Table 75 shows the 2030 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 Project Alternative C levels of service.

TABLE 75:
2030 PROJECT CONDITIONS
COUNTY SEGMENT, FREEWAY SEGMENT, AND INTERSECTION WEEKDAY LEVEL OF SERVICE
MADERA SITE (ALTERNATIVE C, ALTERNATE LAND USE ALTERNATIVE)

	AM Peak Hour		PM Peak Hour	
County Segment	**LOS**		**LOS**	
Avenue 18 ½ - Road 24 to Road 23	C		D	
Road 23 – Avenue 18 ½ to Avenue 17	D		D	
Avenue 17 – Road 23 to SR 99	A		**F**	
Avenue 17 – SR 99 to Road 27	A		B	
Golden State Boulevard – Avenue 17 to Avenue 18	A		B	
	AM Peak Hour		**PM Peak Hour**	
Freeway Segment	**LOS**	**Density (pc/mi/ln)**	**LOS**	**Density (pc/mi/ln)**
SR 99 north of Avenue 18 ½				
• NB	C	25.4	**D**	**26.5**
• SB	C	20.5	**E**	**35.9**
SR 99 between Avenue 18 ½ and Avenue 17				
• NB	**D**	**28.3**	**D**	**28.9**
• SB	C	22.2	**E**	**41.9**
SR 99 south of Avenue 17				
• NB	**E**	**35.4**	**F**	**---**
• SB	B	18.0	**E**	**35.9**
	AM Peak Hour		**PM Peak Hour**	
Intersection	**LOS**	**Delay[1] (secs)**	**LOS**	**Delay[1] (secs)**
Avenue 18 ½ at SR 99 SB ramps/Road 23	B	10.1	C	20.7
Avenue 18 ½ at SR 99 NB ramps	C	28.6	C	28.4
Avenue 17 at SR 99 SB ramps	A	8.0	**F**	**174.4**
Avenue 17 at SR 99 NB ramps	C	31.4	**F**	**155.0**
Avenue 12/Golden State Boulevard at SR 99 SB ramps	**D**	**43.3**	**F**	**252.1**
Avenue 12 at Golden State Boulevard	**F**	**134.6**	**F**	**420.5**
Avenue 12 at SR 99 NB ramps	**D**	**43.3**	**F**	**251.7**
Avenue 18 at Road 23				
• NB Left-Through-Right	A	8.1	A	8.7
• SB Left	A	8.3	A	9.0
• WB Approach	B	13.5	C	17.2
• **EB Approach**	C	17.0	**E**	**38.8**
Avenue 17 at Road 23	B	18.4	C	27.7
Avenue 17 at Golden State Boulevard	C	28.5	**F**	**259.6**
Ellis Street at Road 26	C	22.9	C	24.9

TABLE 75:
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	Delay[1] (secs)
Avenue 15 ½ at Road 23				
• NB Left-Through-Right	A	8.2	A	9.2
• SB Left-Through-Right	A	8.3	A	8.9
• WB Approach	C	16.4	D	28.6
• EB Approach	B	15.0	D	27.4
Avenue 14 at Road 23	B	16.0	C	23.0
Avenue 16/Ellis Street at Golden State Boulevard	C	22.6	**E**	**78.7**
Avenue 16/Ellis Street at SR 99 SB ramps	B	14.1	**E**	**79.3**
Avenue 16/Ellis Street at SR NB ramps	C	28.7	**F**	**163.2**
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	C	25.4	**F**	**178.4**
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps	B	15.6	**F**	**113.9**
SR 145/Madera Avenue at SR 99 NB ramps	C	20.7	**E**	**59.4**
Olive Avenue/Avenue 14 at SR 99 SB off-ramp	**F**	**110.5**	**F**	**280.4**
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	**F**	**103.9**	**F**	**369.1**
Avenue 18 ½ at Pistachio Drive				
• EB Approach	A	9.8	B	11.1
• SB Right	C	18.8	D	33.0
Intersection	**AM Peak Hour**		**PM Peak Hour**	
	LOS	**Delay[1] (secs)**	**LOS**	**Delay[1] (secs)**
Avenue 18 ½ at Golden State Boulevard				
• NB Left-Through-Right	A	7.7	A	7.8
• SB Left-Through-Right	A	9.8	B	12.6
• **EB Approach**	**F**	**684.1**	**F**	**---**
• **WB Approach**	**F**	**---**	**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

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 (2), freeways segments (6), and intersections (14) are projected to operate or have movements projected to operate below the adopted level of service standards in the 2030 Project Alternative C scenario:

<u>County Segments</u>

- Avenue 17 – Road 23 to SR 99 – PM peak hour – LOS "F"

Freeway Segments

- SR 99 north of Avenue 18 ½
  - NB – 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/PM peak hours – LOS "E"/"F"
  - SB – PM peak hour – LOS "E"

Intersections

- Avenue 17 at SR 99 SB ramps –PM peak hour – LOS "F"
- Avenue 17 at SR 99 NB ramps – PM peak hour – LOS "F"
- Avenue 12/Golden State Boulevard at SR 99 SB ramps – AM/PM peak hours – LOS "D"/"F"
- Avenue 12 at Golden State Boulevard – AM/PM peak hours – LOS "F"
- Avenue 12 at SR 99 NB ramps – AM/PM peak hours – LOS "D"/"F"
- Avenue 18 at Road 23
  - EB Approach – PM peak hour – LOS "E"
- Avenue 17 at Golden State Boulevard – PM peak hour – LOS "F"
- Avenue 16/Ellis Street at Golden State Boulevard – PM peak hour – LOS "E"
- Avenue 16/Ellis Street at SR 99 SB ramps – PM peak hour – LOS "E"
- Avenue 16/Ellis Street at SR 99 NB ramps – PM peak hour – 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 – PM peak hour – LOS "E"
- Olive Avenue/Avenue 14 at SR 99 SB off-ramp – AM/PM peak hours – LOS "F"
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145 – AM/PM peak hours – LOS "F"
- Avenue 18 ½ at Golden State Boulevard/Road 23
  - EB Approach – AM/PM peak hours – LOS "F"
  - WB Approach – AM/PM peak hours – LOS "F"

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 five (5) unsignalized intersections:

- Avenue 18 ½ at SR 99 NB ramps - Urban
- Avenue 18 at Road 23 - Rural
- Avenue 15 ½ at Road 23 - Rural
- Avenue 18 ½ at Pistachio Drive - Urban
- Avenue 18 ½ at Golden State Boulevard/Road 23 - 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 18 ½ at SR 99 NB ramps - Urban
- Avenue 18 at Road 23 - Rural
- Avenue 15 ½ at Road 23 - Rural
- Avenue 18 ½ at Pistachio Drive - Urban
- Avenue 18 ½ at Golden State Boulevard/Road 23 - Urban

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 Project Alternative C conditions queue lengths developed from the level of service analyses for the Madera Site study locations.

TABLE 76:
2030 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 NB off-ramp at Avenue 18 ½	1,204[1] (770[2])	
• NB Left-Through		#271/#224
• NB Right		56/30
SR 99 SB off-ramp at Avenue 18 1/2	1,256[1] (822[2])	
• SB Left-Through-Right		79/#267
SR 99 SB off-ramp at Avenue 17	1,341[1] (907[2])	
• SB Left	589[3]	137/#496
• SB Right	589[3]	202/#548
SR 99 NB off-ramp at Avenue 17	1,060[1] (626[2])	
• **NB Left**	45[3]	**#564/#1,368**
• **NB Left-Through**	45[3]	**#610/#1,376**
• **NB Right**	45[3]	**24/#951**
SR 99 NB off-ramp at Avenue 16/Ellis Avenue	1,150[1] (716[2])	
• NB Left	150[3]	150/#435
• NB Right	150[3]	65/#488

TABLE 76:
2030 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	1,020[1] (586[2])	
• **SB Left**	225[3]	220/**#607**
• **SB Right**	225[3]	230/**#1,089**
SR 99 NB off-ramp at Avenue 15 ½ /Cleveland Avenue	881[1] (447[2])	
• NB Left	353[3]	129/336
• **NB Right**	353[3]	#410/**#1,126**
SR 99 SB off-ramp at Avenue 15 ½ /Cleveland Avenue	1,000[1] (566[2])	
• **SB Left**	65[3]	161/**#575**
• **SB Left-Through**	65[3]	161/**#574**
• **SB Right**	65[3]	149/**#544**
SR 99 NB off-ramp at SR 145/Madera Avenue	1,310[1] (876[2])	
• WB Left	90[3]	#241/#268
• WB Right	90[3]	24/29
SR 99 SB off-ramp at Avenue 14/Olive Avenue	1,254[1] (820[2])	
• **SB Left**	65[3]	#652/**#1,021**
• **SB Right**	65[3]	163/**132**
SR 99 SB off-ramp at Avenue 12/Golden State Boulevard	1,431[1] (997[2])	
• **WB Left**		#612/**#1,356**
• **WB Right**		54/**#650**
SR 99 NB off-ramp at Avenue 12	1,223[1] (789[2])	
• **NB Left-Through**	49[3]	273/**312**
• **NB Right**	49[3]	#497/**#1,020**
Avenue 17 between SR 99 SB off-ramp and Golden State Boulevard	481	
• WB Left (at Golden State Boulevard)		m#261/m#331
• **WB Through**		312/**m510**
• WB Right		m62/m82
• EB Through (at SR 99 SB off-ramp)		73/m347

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-turn, left-through, and right-turn movements – AM/PM peak hours
- SR 99 SB off-ramp at Avenue 16/Ellis Avenue – SB left-turn and right-turn movements – PM peak hour
- SR 99 NB off-ramp at Avenue 15 1/2/Cleveland Avenue – NB right-turn movement – PM peak hour
- SR 99 SB off-ramp at Avenue 15 1/2/Cleveland Avenue – SB left-turn, left-through, and right-turn movements – PM peak hour
- SR 99 SB off-ramp at Avenue 14/Olive Avenue – SB left-turn and right-turn movements – PM peak hour
- SR 99 SB off-ramp at Avenue 12/Golden State Boulevard – WB left-turn and right-turn movements – PM peak hour
- SR 99 NB off-ramp at Avenue 12 – NB left-through and right-turn movements – PM peak hour
- Avenue 17 between the SR 99 SB off-ramp and Golden State Boulevard – WB through (at Golden State Blvd) movement – 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.

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 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	279/359	N/N	N/N
SR 99 SB off-ramp at Avenue 18 ½	297/504	N/N	N/N
SR 99 SB off-ramp at Avenue 17	399/681	N/N	N/N
SR 99 NB off-ramp at Avenue 17	**1,619/ 3,227**	**Y/Y**	**Y/Y**
SR 99 NB off-ramp at Avenue 16	698/**1,069**	N/Y	N/N
SR 99 SB off-ramp at Avenue 16	792/**1,383**	N/Y	N/N

TABLE 77:
2030 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 15 ½ /Cleveland Avenue	854/**1,604**	N/Y	N/Y
SR 99 SB off-ramp at Avenue 15 ½ /Cleveland Avenue	611/**1,194**	N/Y	N/N
SR 99 NB off-ramp at SR 145/Madera Avenue	727/764	N/N	N/N
SR 99 SB off-ramp at Avenue 14/Olive Avenue	**1,184/ 1,478**	Y/Y	N/N
SR 99 SB off-ramp at Avenue 12/Golden State Boulevard	665/**953**	N/Y	N/Y
SR 99 NB off-ramp at Avenue 12	836/**1,737**	N/Y	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 NB off-ramp – PM peak hour
- 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 – PM peak hour
- Avenue 12 at SR 99 NB off-ramp – PM peak hour

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
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB off-ramp – PM peak hour
- 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 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 required for left-turning volumes greater than 300 vehicles per hour and that separate right-turn lanes are required for right-turning volumes greater than 300 vehicles per hour. Based on this standard of practice, 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

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 PROJECT CONDITIONS
TURN LANE STORAGE CALCULATIONS SUMMARY
ALTERNATIVE C (ALTERNATIVE 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	200[1]
Avenue 17 at SR 99 NB ramps	EBL	300	100[1]
Avenue 12/Golden State Boulevard at SR 99 SB ramps	NBR	---	250[3]
	SBL	---	165[1]
Avenue 12 at Golden State Boulevard	NBL	200	150
	NBR	---	425
	SBL	400	465[1]
	SBR	200	75
	WBL	---	125
	EBL	350	190[1]
	EBR	425	50
Avenue 12 at SR 99 NB ramps	WBR	---	700[3]
	EBL	---	125
Avenue 18 at Road 23	NBL	---	50
	SBL	---	125

TABLE 78:
2030 PROJECT CONDITIONS
TURN LANE STORAGE CALCULATIONS SUMMARY
ALTERNATIVE C (ALTERNATIVE LAND USE/MADERA SITE)

Intersection	Movement	Existing Storage Length (ft)	2030 Project Storage Length (ft)
Avenue 17 at Road 23	NBL	---	50
	SBL	---	100
	WBL	---	175
Avenue 17 at Golden State Boulevard	NBL	50	100
	NBR	---	215[3]
	SBL	---	260[4]
	WBL	---	165[1]
	WBR	---	750[2]
	EBL	---	75
Ellis Street at Road 26	NBL	---	150
	SBL	---	175
	SBR	---	275
	WBL		75
Avenue 16 at Schnoor Avenue	NBL	75	n/a
	NBR	75	n/a
	WBL	150	n/a
	EBL	---	n/a
Avenue 16 at SR 99 SB ramps	NBL	75	n/a
	NBR	75	n/a
	EBR	200	n/a
Avenue 16 at SR 99 NB ramps	EBL	---	n/a
	EBR	---	n/a
Avenue 16/Ellis Street at Golden State Boulevard	NBR	---	400[3]
	WBL	200	365[1]
	WBR	---	500
Avenue 16/Ellis Street at SR 99 NB ramps	WBR	---	500
	EBL	300	425[1]
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	WBR	50	700
	EBL	100	215[1]
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps	WBL	125	240[1]
	EBR	125	725
SR 145/Madera Avenue at SR 99 NB ramps	NBL	---	490[1]
	SBR	---	675
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	NBL	125	150[1]
	NBR	100	100
	SBR	25	375
	EBL	175	215[1]
	EBR	175	550[3]

TABLE 78:
2030 PROJECT CONDITIONS
TURN LANE STORAGE CALCULATIONS SUMMARY
ALTERNATIVE C (ALTERNATIVE LAND USE/MADERA SITE)

Intersection	Movement	Existing Storage Length (ft)	2030 Project Storage Length (ft)
Avenue 18 ½ at Golden State Boulevard/Road 23	NBL	---	50
	NBR	---	350
	SBL	---	175
	WBL	---	375[1]
	EBL	---	50

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 – SR 99 to Road 27 – PM peak hour – LOS "E"

Freeway Segments

- SR 99 north of Avenue 18 ½
  - NB – 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/PM peak hours – LOS "D"/"F"
  - SB – PM peak hour – LOS "F"

Intersections

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

- Avenue 12 at Golden State Boulevard – AM/PM peak hours – LOS "F"
- Avenue 12 at SR 99 NB ramps – AM/PM peak hours – LOS "D"/"F"
- Avenue 17 at Golden State Boulevard – PM peak hour – LOS "F"
- Avenue 16/Ellis Street at Golden State Boulevard – PM peak hour – LOS "E"
- Avenue 16/Ellis Street at SR 99 SB ramps – PM peak hour – LOS "E"
- Avenue 16/Ellis Street at SR 99 NB ramps – PM peak hour – 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 – PM peak hours – LOS "E"
- Olive Avenue/Avenue 14 at SR 99 SB off-ramp – AM/PM peak hours – LOS "F"
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145 – AM/PM peak hours – LOS "F"
- Avenue 18 ½ at Golden State Boulevard/Road 23
  - EB Approach – AM/PM peak hour – LOS "F"
  - WB Approach – AM/PM peak hours – LOS "F"

2030 Project

County Segments

- Avenue 17 – Road 23 to SR 99 – PM peak hour – LOS "E"

Freeway Segments

- SR 99 north of Avenue 18 ½
  - NB – 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/PM peak hours – LOS "E"/"F"
  - SB – PM peak hour – LOS "E"

Intersections

- Avenue 17 at SR 99 SB ramps –PM peak hour – LOS "F"
- Avenue 17 at SR 99 NB ramps – AM/PM peak hours – LOS "D"/"F"
- Avenue 12/Golden State Boulevard at SR 99 SB ramps – AM/PM peak hours – LOS "D"/"F"
- Avenue 12 at Golden State Boulevard – AM/PM peak hours – LOS "F"
- Avenue 12 at SR 99 NB ramps – AM/PM peak hours – LOS "D"/"F"
- Avenue 18 at Road 23
  - EB Approach – PM peak hour – LOS "E"
- Avenue 17 at Golden State Boulevard – PM peak hour – LOS "F"
- Avenue 16/Ellis Street at Golden State Boulevard – PM peak hour – LOS "E"
- Avenue 16/Ellis Street at SR 99 SB ramps – PM peak hour – LOS "E"
- Avenue 16/Ellis Street at SR 99 NB ramps – PM peak hour – 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 – PM peak hour – LOS "E"

- Olive Avenue/Avenue 14 at SR 99 SB off-ramp – AM/PM peak hours – LOS "F"
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145 – AM/PM peak hours – LOS "F"
- Avenue 18 ½ at Golden State Boulevard/Road 23
  - EB Approach – AM/PM peak hours – LOS "F"
  - WB Approach – AM/PM peak hours – LOS "F"

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 NB ramps - Urban
- Avenue 15 ½ at Road 23 - Rural
- Avenue 18 ½ at Pistachio Drive - Urban
- Avenue 18 ½ at Golden State Boulevard/Road 23 - Urban

2030 Project

- Avenue 18 ½ at SR 99 NB ramps - Urban
- Avenue 18 at Road 23 - Rural
- Avenue 15 ½ at Road 23 - Rural
- Avenue 18 ½ at Pistachio Drive - Urban
- Avenue 18 ½ at Golden State Boulevard/Road 23 - Urban

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

2030 No Project

- Avenue 17 at SR 99 NB off-ramp – NB left-turn, left-through, and right-turn movements – AM/PM peak hours
- SR 99 SB off-ramp at Avenue 16/Ellis Avenue – SB left-turn and right-turn movements – PM peak hour
- SR 99 NB off-ramp at Avenue 15 1/2/Cleveland Avenue – NB right-turn movement – PM peak hour
- SR 99 SB off-ramp at Avenue 15 1/2/Cleveland Avenue – SB left-turn, left-through, and right-turn movements – PM peak hour
- SR 99 SB off-ramp at Avenue 14/Olive Avenue – SB left-turn and right-turn movements – PM peak hour
- SR 99 SB off-ramp at Avenue 12/Golden State Boulevard – WB left-turn and right-turn movements – PM peak hour
- SR 99 NB off-ramp at Avenue 12 – NB left-through and right-turn movements – PM peak hour
- Avenue 17 between the SR 99 SB off-ramp and Golden State Boulevard – WB through (at Golden State Blvd) movement – AM/PM peak hours

2030 Project

- Avenue 17 at SR 99 NB off-ramp – NB left-turn, left-through, and right-turn movements – AM/PM peak hours
- SR 99 SB off-ramp at Avenue 16/Ellis Avenue – SB left-turn and right-turn movements – PM peak hour

- SR 99 NB off-ramp at Avenue 15 1/2/Cleveland Avenue – NB right-turn movement – PM peak hour
- SR 99 SB off-ramp at Avenue 15 1/2/Cleveland Avenue – SB left-turn, left-through, and right-turn movements – PM peak hour
- SR 99 SB off-ramp at Avenue 14/Olive Avenue – SB left-turn and right-turn movements – PM peak hour
- SR 99 SB off-ramp at Avenue 12/Golden State Boulevard – WB left-turn and right-turn movements – PM peak hour
- SR 99 NB off-ramp at Avenue 12 – NB left-through and right-turn movements – PM peak hour
- Avenue 17 between the SR 99 SB off-ramp and Golden State Boulevard – WB through (at Golden State Blvd) movement – 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
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB off-ramp – PM peak hour
- Avenue 12/Golden State Boulevard at SR 99 SB off-ramp – PM peak hour

2030 Project

- 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
- 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 No Project

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

- SR 99 north of Avenue 18 ½
  - 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 and 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

- Avenue 18 ½ at SR 99 SB ramps
  - Restripe/widen the SB approach, north leg, from a shared left-right lane to a separate left-turn lane and a separate right-turn lane
  - 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 18 ½ at SR 99 NB ramps
  - Restripe/widen the EB approach, west leg, from a separate left-turn lane and one (1) through lane, to dual (2) left-turn lanes and two (2) through lanes
  - Restripe/widen the WB approach, east leg, from a shared through-right lane, to one through lane and a shared through-right lane

- Avenue 17 at SR 99 SB ramps
  - Restripe/widen the EB approach, west leg, from two (2) through lanes, to three (3) through lanes
  - Restripe/widen the WB approach, east leg, from two (2) through lanes, to three (3) through lanes

- Avenue 17 at SR 99 NB ramps
  - Restripe/widen the NB approach, south leg, from a separate left-turn lane, a shared left-through lane, and dual (2) right-turn lanes, to dual (2) left-turn lanes, a shared left-through lane, and dual (2) right –turn lanes
  - Restripe/widen the EB approach, west leg, from a separate left-turn lane and two (2) through lanes, to dual (2) left-turn lanes and three (3) through lanes
  - Restripe/widen the WB approach, east leg, from two (2) through lanes and a separate right-turn lane, to three (3) through lanes and a separate right-turn lane
  - Lengthen the NB off-ramp by 200 feet to accommodate the projected queues
  - Restripe/widen the NB approach, south leg, to allow storage lanes at least 500 feet in length

- Avenue 12/Golden State Boulevard at SR 99 SB off ramps
  - Restripe/widen the SB approach, north leg, from one (1) left-turn lane and one (1) through lane, to dual (2) left-turn lanes 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 a separate right-turn lane
  - Widen the SB off-ramp to two (2) lanes with a SB auxiliary lane on SR 99

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

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

- Avenue 17 at Golden State Boulevard
  - Restripe/widen the NB approach, south leg, from a separate left-turn lane and a shared through-right lane, to a separate left-turn lane, one (1) through lane, and dual (2) right-turn lanes
  - Restripe/widen the SB approach, north leg, from dual (2) left-turn lanes and a shared through-right lane, to triple (3) left-turn lanes and a shared through-right lane
  - Restripe/widen the EB approach, west leg, from a separate left-turn lane, one (1) though lane, and a shared through-right lane, to a separate left-turn lane, two (2) through lanes, and a 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 dual (2) left-turn lanes, three (3) through lanes, and a separate right-turn lane

- Avenue 15 ½ at Road 23
  - Signalize the intersection
  - Restripe/widen the NB approach, south leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the SB approach, north leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the EB approach, west leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the WB approach, east leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane

- Avenue 16/Ellis Street at Golden State Boulevard
  - Restripe/widen the NB approach, south leg, from a separate left-turn lane, one (1) through lane, and a shared through-right lane, to a separate left-turn lane, two (2) through lanes, and dual (2) right-turn lanes
  - Restripe/widen the WB approach, east leg, from dual (2) left-turn lanes, one (1) through lane, and a shared through-left lane, to dual (2) left-turn lanes, two (2) through lanes, and a separate right-turn lane

- Avenue 16/Ellis Street at SR 99 SB ramps
  - Restripe/widen the SB approach, north leg, from a separate left-turn lane and a separate right-turn lane, to dual (2) left-turn lanes and dual (2) right-turn lanes
  - Widen the SB off-ramp to two (2) lanes with a SB auxiliary lane on SR 99

- Avenue 16/Ellis Street at SR 99 NB ramps
  - Restripe/widen the EB approach, west leg, from a separate left-turn lane and two (2) through lanes, to dual (2) left-turn lanes and two (2) through lanes
  - Restripe/widen the WB approach, east leg from one (1) through lane and a shared through-right lane, to two (2) through lanes and a separate right-turn lane
  - Widen the NB off-ramp to two (2) lanes with a NB auxiliary lane on SR 99

- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps
  - Restripe/widen the NB approach, south leg, from dual (2) left-turn lanes and a separate right-turn lane, to dual (2) left-turn lanes and triple (3) right-turn lanes
  - Restripe/widen the EB approach, west leg, from to dual (2) left-turn lanes and two (2) through lanes, to dual (2) left-turn lanes and three (3) through lanes
  - Restripe/widen the WB approach, east leg, from two (2) through lanes and a separate right-turn lane, to three (3) through lanes and a separate right-turn lane

- Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps
  - Restripe/widen the EB approach, west leg, from a two (2) through lanes and a separate right-turn lane, to three (3) through lanes and a separate right-turn lane
  - Restripe/widen the WB approach, east leg, from dual (2) left-turn lanes and two (2) through lanes to dual (2) left-turn lanes and three (3) through lanes
  - Widen the SB off-ramp to two (2) lanes with a SB auxiliary lane on SR 99
  - Restripe/widen the SB approach, north leg, to allow storage lanes at least 200 feet in length

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

- Olive Avenue/Avenue 14 at SR 99 SB off-ramp
  - Restripe/widen the SB approach, north leg, from a separate left-turn lane and a separate right-turn lane to dual (2) left-turn lanes and a separate right-turn lane
  - Restripe/widen the WB approach, east leg, from one (1) through lane to two (2) through lanes
  - Widen the SB off-ramp to two (2) lanes with a SB auxiliary lane on SR 99

- 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 lane, two (2) through lanes, and a shared through-right lane
  - Restripe/widen the SB approach, north leg, from a shared left-through lane, one (1) through lane, and a separate right-turn lane, to a separate left-turn lane, two (2) through lanes, and a separate right-turn lane
  - Restripe/widen the EB approach, west leg, from dual (2) left-turn lanes, one (1) through lane and one (1) right-turn lane, to dual (2) left-turn lanes, two (2) through lanes, and dual (2) right-turn lanes

- Avenue 18 ½ at Pistachio Drive
  - Restripe/widen the EB approach, west leg, from a shared left-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 one (1) through lane and a shared through-right lane

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 is 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 a shared left-through-right lane, to a separate left-turn lane, one (1) through lane, and a separate right-turn lane
  - Restripe/widen the SB approach, north leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the EB approach, west leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the WB approach, east leg, from a shared left-through-right lane, to dual (2) left-turn lanes and a shared through-right lane

2030 Project

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

- Avenue 18 at Road 23
  - Signalize the intersection
  - Restripe/widen the NB approach, south leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the SB approach, north leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the EB approach, west leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the WB approach, east leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane

Table 79 shows the Mitigated 2030 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 Project Alternative A levels of service.

TABLE 79:
MITIGATED 2030 PROJECT CONDITIONS
COUNTY SEGMENT, FREEWAY SEGMENT, AND INTERSECTION WEEKDAY LEVEL OF SERVICE
MADERA SITE (ALTERNATIVE A, PROPOSED PROJECT)

County Segment	**AM Peak Hour LOS**		**PM Peak Hour LOS**	
Avenue 18 ½ - Road 24 to Road 23	A		A	
Road 23 – Avenue 18 ½ to Avenue 17	D		D	
Avenue 17 – Road 23 to SR 99	A		B	
Avenue 17 – SR 99 to Road 27	A		B	
Golden State Boulevard – Avenue 17 to Avenue 18	A		B	
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	18.6	C	19.3
• SB	B	15.4	C	23.6
SR 99 between Avenue 18 ½ and Avenue 17				
• NB	C	20.2	C	20.5
• SB	B	16.6	C	25.6
SR 99 south of Avenue 17				
• **NB**	C	23.9	**D**	**29.9**
• **SB**	B	17.9	**E**	**35.7**
Intersection	**AM Peak Hour**		**PM Peak Hour**	
	LOS	**Delay[1] (secs)**	**LOS**	**Delay[1] (secs)**
Avenue 18 ½ at SR 99 SB ramps/Road 23	A	8.3	B	13.2
Avenue 18 ½ at SR 99 NB ramps	C	21.7	C	21.6
Avenue 17 at SR 99 SB ramps	A	6.3	C	22.0
Avenue 17 at SR 99 NB ramps	B	17.3	**D**	**49.9**
Avenue 12/Golden State Boulevard at SR 99 SB ramps	B	17.9	C	22.2
Avenue 12 at Golden State Boulevard	B	18.5	D	37.6
Avenue 12 at SR 99 NB ramps	B	11.2	C	21.2
Avenue 18 at Road 23	B	11.3	B	13.9
Avenue 17 at Road 23	B	18.5	C	27.7
Avenue 17 at Golden State Boulevard	B	17.7	D	44.5
Ellis Street at Road 26	C	22.4	C	25.0
Avenue 15 ½ at Road 23	A	6.8	A	9.1
Avenue 14 at Road 23	B	18.7	C	23.0
Avenue 16/Ellis Street at Golden State Boulevard	C	24.4	D	42.9
Avenue 16/Ellis Street at SR 99 SB ramps	A	7.7	B	20.0
Avenue 16/Ellis Street at SR 99 NB ramps	B	16.1	C	34.8
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	B	13.2	C	30.4

TABLE 79:
MITIGATED 2030 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)
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps	B	12.1	C	27.8
SR 145/Madera Avenue at SR 99 NB ramps	B	17.4	C	25.7
Olive Avenue/Avenue 14 at SR 99 SB off-ramp	B	13.4	C	20.8
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	B	11.3	C	32.5
Avenue 18 ½ at Pistachio Drive				
• EB Left	B	10.4	B	11.8
• SB Right	C	15.7	C	19.4
Avenue 18 ½ at Golden State Boulevard	C	29.0	C	23.7

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

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 one (1) intersection 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 "D" and "E" 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 intersection is still projected to operate at a LOS "D" in the PM peak hour. Per discussions with Caltrans staff, widening Avenue 17 to eight (8) lanes is not recommended. If a NB to WB loop off-ramp were constructed, the Avenue 17 at SR 99 NB ramps intersection is projected to continue to operate at a LOS "C" in the PM peak hour, with a delay of 33.1 seconds. However construction of a NB to WB loop off-ramp is not probable due to the proximity of the railroad tracks. 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 Project Alternative A scenario.

Queue Lengths

Table 80 shows the estimated Mitigated 2030 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 80:
MITIGATED 2030 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	1,204[1] (770[2])	
• NB Left-Through		#224/#271
• NB Right		30/56
SR 99 SB off-ramp at Avenue 18 1/2	1,256[1] (822[2])	
• SB Left		26/40
• SB Right		39/164
SR 99 SB off-ramp at Avenue 17	1,341[1] (907[2])	
• SB Left	589[3]	156/145
• SB Right	589[3]	143/#438
SR 99 NB off-ramp at Avenue 17	1,060[1] (626[2])	
• NB Left	45[3]	229/497
• NB Left-Through	45[3]	292/#648
• NB Right	45[3]	21/#756
SR 99 NB off-ramp at Avenue 16/Ellis Avenue	1,150[1] (716[2])	
• NB Left	150[3]	127/#281
• NB Right	150[3]	58/#392
SR 99 SB off-ramp at Avenue 16/Ellis Avenue	1,020[1] (586[2])	
• SB Left	225[3]	103/215
• SB Right	225[3]	63/#386
SR 99 NB off-ramp at Avenue 15 ½ /Cleveland Avenue	881[1] (447[2])	
• NB Left	353[3]	101/#380
• NB Right	353[3]	62/#315
SR 99 SB off-ramp at Avenue 15 ½ /Cleveland Avenue	1,000[1] (566[2])	
• SB Left	65[3]	117/#443
• SB Left-Through	65[3]	117/#443
• SB Right	65[3]	120/#427
SR 99 NB off-ramp at SR 145/Madera Avenue	1,310[1] (876[2])	
• WB Left	90[3]	#189/#332
• WB Right	90[3]	21/34

TABLE 80:
MITIGATED 2030 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 14/Olive Avenue	1,254[1] (820[2])	
• SB Left	65[3]	156/388
• SB Right	65[3]	143/157
SR 99 SB off-ramp at Avenue 12/Golden State Boulevard	1,431[1] (997[2])	
• WB Left		161/354
• WB Right		47/229
SR 99 NB off-ramp at Avenue 12	1,223[1] (789[2])	
• NB Left-Through	49[3]	198/278
• NB Right	49[3]	128/#371
Avenue 17 between SR 99 SB off-ramp and Golden State Boulevard	481	
• WB Left (at Golden State Boulevard)		m#86/m#159
• WB Through		127/m356
• WB Right		14/m419
• EB Through (at SR 99 SB off-ramp)		178/m#123

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

As shown in Table 80, all 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 – SR 99 to Road 27 – PM peak hour – LOS "E"

Freeway Segments

- SR 99 north of Avenue 18 ½
  - NB – 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/PM peak hours – LOS "D"/"F"
  - SB – PM peak hour – LOS "F"

Intersections

- Avenue 17 at SR 99 SB ramps –PM peak hour – LOS "F"
- Avenue 17 at SR 99 NB ramps – PM peak hour – LOS "F"
- Avenue 12/Golden State Boulevard at SR 99 SB ramps – AM/PM peak hours – LOS "D"/"F"
- Avenue 12 at Golden State Boulevard – AM/PM peak hours – LOS "F"
- Avenue 12 at SR 99 NB ramps – AM/PM peak hours – LOS "D"/"F"
- Avenue 17 at Golden State Boulevard – PM peak hour – LOS "F"
- Avenue 16/Ellis Street at Golden State Boulevard – PM peak hour – LOS "E"
- Avenue 16/Ellis Street at SR 99 SB ramps – PM peak hour – LOS "E"
- Avenue 16/Ellis Street at SR 99 NB ramps – PM peak hour – 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 – PM peak hours – LOS "E"
- Olive Avenue/Avenue 14 at SR 99 SB off-ramp – AM/PM peak hours – LOS "F"
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145 – AM/PM peak hours – LOS "F"
- Avenue 18 ½ at Golden State Boulevard/Road 23
  - EB Approach – AM/PM peak hour – LOS "F"
  - WB Approach – AM/PM peak hours – LOS "F"

2030 Project

County Segments

- Avenue 17 – Road 23 to SR 99 – PM peak hour – LOS "E"

Freeway Segments

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

Intersections

- Avenue 17 at SR 99 SB ramps –PM peak hour – LOS "F"
- Avenue 17 at SR 99 NB ramps – AM/PM peak hours – LOS "D"/"F"
- Avenue 12/Golden State Boulevard at SR 99 SB ramps – AM/PM peak hours – LOS "D"/"F"
- Avenue 12 at Golden State Boulevard – AM/PM peak hours – LOS "F"
- Avenue 12 at SR 99 NB ramps – AM/PM peak hours – LOS "D"/"F"
- Avenue 17 at Golden State Boulevard – PM peak hour – LOS "F"
- Avenue 16/Ellis Street at Golden State Boulevard – PM peak hour – LOS "E"
- Avenue 16/Ellis Street at SR 99 SB ramps – PM peak hour – LOS "E"
- Avenue 16/Ellis Street at SR 99 NB ramps – PM peak hour – 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 – PM peak hour – LOS "E"
- Olive Avenue/Avenue 14 at SR 99 SB off-ramp – AM/PM peak hours – LOS "F"
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145 – AM/PM peak hours – LOS "F"
- Avenue 18 ½ at Golden State Boulevard/Road 23
  - EB Approach – AM/PM peak hours – LOS "F"
  - WB Approach – AM/PM peak hours – LOS "F"

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 NB ramps - Urban
- Avenue 15 ½ at Road 23 - Rural
- Avenue 18 ½ at Pistachio Drive - Urban
- Avenue 18 ½ at Golden State Boulevard/Road 23 - Urban

2030 Project

- Avenue 18 ½ at SR 99 NB ramps - Urban
- Avenue 18 at Road 23 - Rural
- Avenue 15 ½ at Road 23 - Rural
- Avenue 18 ½ at Pistachio Drive - Urban
- Avenue 18 ½ at Golden State Boulevard/Road 23 - Urban

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

2030 No Project

- Avenue 17 at SR 99 NB off-ramp – NB left-turn, left-through, and right-turn movements – AM/PM peak hours
- SR 99 SB off-ramp at Avenue 16/Ellis Avenue – SB left-turn and right-turn movements – PM peak hour
- SR 99 NB off-ramp at Avenue 15 1/2/Cleveland Avenue – NB right-turn movement – PM peak hour
- SR 99 SB off-ramp at Avenue 15 1/2/Cleveland Avenue – SB left-turn, left-through, and right-turn movements – PM peak hour

- SR 99 SB off-ramp at Avenue 14/Olive Avenue – SB left-turn and right-turn movements – PM peak hour
- SR 99 SB off-ramp at Avenue 12/Golden State Boulevard – WB left-turn and right-turn movements – PM peak hour
- SR 99 NB off-ramp at Avenue 12 – NB left-through and right-turn movements – PM peak hour
- Avenue 17 between the SR 99 SB off-ramp and Golden State Boulevard – WB through (at Golden State Blvd) movement – AM/PM peak hours

2030 Project

- Avenue 17 at SR 99 NB off-ramp – NB left-turn, left-through, and right-turn movements – AM/PM peak hours
- SR 99 SB off-ramp at Avenue 16/Ellis Avenue – SB left-turn and right-turn movements – PM peak hour
- SR 99 NB off-ramp at Avenue 15 1/2/Cleveland Avenue – NB right-turn movement – PM peak hour
- SR 99 SB off-ramp at Avenue 15 1/2/Cleveland Avenue – SB left-turn, left-through, and right-turn movements – PM peak hour
- SR 99 SB off-ramp at Avenue 14/Olive Avenue – SB left-turn and right-turn movements – PM peak hour
- SR 99 SB off-ramp at Avenue 12/Golden State Boulevard – WB left-turn and right-turn movements – PM peak hour
- SR 99 NB off-ramp at Avenue 12 – NB left-through and right-turn movements – PM peak hour
- Avenue 17 between the SR 99 SB off-ramp and Golden State Boulevard – WB through (at Golden State Blvd) movement – 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
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB off-ramp – PM peak hour
- Avenue 12/Golden State Boulevard at SR 99 SB off-ramp – PM peak hour

2030 Project

- 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
- 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 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 No Project

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

- SR 99 north of Avenue 18 ½
  - 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 and 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

- Avenue 18 ½ at SR 99 SB ramps
  - Restripe/widen the SB approach, north leg, from a shared left-right lane to a separate left-turn lane and a separate right-turn lane
  - 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 18 ½ at SR 99 NB ramps
  - Restripe/widen the EB approach, west leg, from a separate left-turn lane and one (1) through lane, to dual (2) left-turn lanes and two (2) through lanes
  - Restripe/widen the WB approach, east leg, from a shared through-right lane, to one through lane and a shared through-right lane

- Avenue 17 at SR 99 SB ramps
  - Restripe/widen the EB approach, west leg, from two (2) through lanes, to three (3) through lanes
  - Restripe/widen the WB approach, east leg, from two (2) through lanes, to three (3) through lanes

- Avenue 17 at SR 99 NB ramps
  - Restripe/widen the NB approach, south leg, from a separate left-turn lane, a shared left-through lane, and dual (2) right-turn lanes, to dual (2) left-turn lanes, a shared left-through lane, and dual (2) right –turn lanes
  - Restripe/widen the EB approach, west leg, from a separate left-turn lane and two (2) through lanes, to dual (2) left-turn lanes and three (3) through lanes
  - Restripe/widen the WB approach, east leg, from two (2) through lanes and a separate right-turn lane, to three (3) through lanes and a separate right-turn lane
  - Lengthen the NB off-ramp by 250 feet to accommodate the projected queues
  - Restripe/widen the SB approach, north leg, to allow storage lanes at least 500 feet in length

- Avenue 12/Golden State Boulevard at SR 99 SB off ramps
  - Restripe/widen the SB approach, north leg, from one (1) left-turn lane and one (1) through lane, to dual (2) left-turn lanes 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 a separate right-turn lane
  - Widen the SB off-ramp to two (2) lanes with a SB auxiliary lane on SR 99

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

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

- Avenue 17 at Golden State Boulevard
  - Restripe/widen the NB approach, south leg, from a separate left-turn lane and a shared through-right lane, to a separate left-turn lane, one (1) through lane, and dual (2) right-turn lanes
  - Restripe/widen the SB approach, north leg, from dual (2) left-turn lanes and a shared through-right lane, to triple (3) left-turn lanes and a shared through-right lane
  - Restripe/widen the EB approach, west leg, from a separate left-turn lane, one (1) though lane, and a shared through-right lane, to a separate left-turn lane, two (2) through lanes, and a 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 dual (2) left-turn lanes, three (3) through lanes, and a separate right-turn lane

- Avenue 15 ½ at Road 23
  - Signalize the intersection
  - Restripe/widen the NB approach, south leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the SB approach, north leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the EB approach, west leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the WB approach, east leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane

- Avenue 16/Ellis Street at Golden State Boulevard
  - Restripe/widen the NB approach, south leg, from a separate left-turn lane, one (1) through lane, and a shared through-right lane, to a separate left-turn lane, two (2) through lanes, and dual (2) right-turn lanes
  - Restripe/widen the WB approach, east leg, from dual (2) left-turn lanes, one (1) through lane, and a shared through-left lane, to dual (2) left-turn lanes, two (2) through lanes, and a separate right-turn lane

- Avenue 16/Ellis Street at SR 99 SB ramps
  - Restripe/widen the SB approach, north leg, from a separate left-turn lane and a separate right-turn lane, to dual (2) left-turn lanes and dual (2) right-turn lanes
  - Widen the SB off-ramp to two (2) lanes with a SB auxiliary lane on SR 99

- Avenue 16/Ellis Street at SR 99 NB ramps
  - Restripe/widen the EB approach, west leg, from a separate left-turn lane and two (2) through lanes, to dual (2) left-turn lanes and two (2) through lanes
  - Restripe/widen the WB approach, east leg from one (1) through lane and a shared through-right lane, to two (2) through lanes and a separate right-turn lane
  - Widen the NB off-ramp to two (2) lanes with a NB auxiliary lane on SR 99

- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps
  - Restripe/widen the NB approach, south leg, from dual (2) left-turn lanes and a separate right-turn lane, to dual (2) left-turn lanes and triple (3) right-turn lanes
  - Restripe/widen the EB approach, west leg, from to dual (2) left-turn lanes and two (2) through lanes, to dual (2) left-turn lanes and three (3) through lanes
  - Restripe/widen the WB approach, east leg, from two (2) through lanes and a separate right-turn lane, to three (3) through lanes and a separate right-turn lane

- Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps
  - Restripe/widen the EB approach, west leg, from a two (2) through lanes and a separate right-turn lane, to three (3) through lanes and a separate right-turn lane
  - Restripe/widen the WB approach, east leg, from dual (2) left-turn lanes and two (2) through lanes to dual (2) left-turn lanes and three (3) through lanes
  - Widen the SB off-ramp to two (2) lanes with a SB auxiliary lane on SR 99
  - Restripe/widen the SB approach, north leg, to allow storage lanes at least 100 feet in length

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

- Olive Avenue/Avenue 14 at SR 99 SB off-ramp
  - Restripe/widen the SB approach, north leg, from a separate left-turn lane and a separate right-turn lane to dual (2) left-turn lanes and a separate right-turn lane
  - Restripe/widen the WB approach, east leg, from one (1) through lane to two (2) through lanes
  - Widen the SB off-ramp to two (2) lanes with a SB auxiliary lane on SR 99

- 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 lane, two (2) through lanes, and a shared through-right lane
  - Restripe/widen the SB approach, north leg, from a shared left-through lane, one (1) through lane, and a separate right-turn lane, to a separate left-turn lane, two (2) through lanes, and a separate right-turn lane
  - Restripe/widen the EB approach, west leg, from dual (2) left-turn lanes, one (1) through lane and one (1) right-turn lane, to dual (2) left-turn lanes, two (2) through lanes, and dual (2) right-turn lanes

- Avenue 18 ½ at Pistachio Drive
  - Restripe/widen the EB approach, west leg, from a shared left-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 one (1) through lane and a shared through-right lane

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 is 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 a shared left-through-right lane, to a separate left-turn lane, one (1) through lane, and a separate right-turn lane
  - Restripe/widen the SB approach, north leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the EB approach, west leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the WB approach, east leg, from a shared left-through-right lane, to dual (2) left-turn lanes and a shared through-right lane

2030 Project

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

- Avenue 18 at Road 23
  - Signalize the intersection
  - Restripe/widen the NB approach, south leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the SB approach, north leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the EB approach, west leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the WB approach, east leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane

Table 81 shows the Mitigated 2030 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 Project Alternative B levels of service.

TABLE 81:
MITIGATED 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 LOS**		**PM Peak Hour LOS**	
Avenue 18 ½ - Road 24 to Road 23	A		A	
Road 23 – Avenue 18 ½ to Avenue 17	D		D	
Avenue 17 – Road 23 to SR 99	A		B	
Avenue 17 – SR 99 to Road 27	A		B	
Golden State Boulevard – Avenue 17 to Avenue 18	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	18.6	C	19.2
• SB	B	15.4	C	23.5
SR 99 between Avenue 18 ½ and Avenue 17				
• NB	C	20.2	C	20.5
• SB	B	16.6	C	25.6
SR 99 south of Avenue 17				
• **NB**	C	23.5	**D**	**29.2**
• **SB**	B	17.7	**D**	**34.8**
Intersection	**AM Peak Hour**		**PM Peak Hour**	
	LOS	**Delay[1] (secs)**	**LOS**	**Delay[1] (secs)**
Avenue 18 ½ at SR 99 SB ramps/Road 23	A	8.3	B	11.1
Avenue 18 ½ at SR 99 NB ramps	C	21.4	C	21.2
Avenue 17 at SR 99 SB ramps	A	6.0	B	16.9
Avenue 17 at SR 99 NB ramps	B	17.0	**D**	**47.8**
Avenue 12/Golden State Boulevard at SR 99 SB ramps	B	17.9	C	20.7
Avenue 12 at Golden State Boulevard	B	18.4	D	39.4
Avenue 12 at SR 99 NB ramps	B	11.2	C	21.4
Avenue 18 at Road 23	A	9.4	B	12.6
Avenue 17 at Road 23	B	18.3	C	27.7
Avenue 17 at Golden State Boulevard	B	17.8	C	34.2
Ellis Street at Road 26	C	22.9	C	24.8
Avenue 15 ½ at Road 23	A	6.8	A	8.9
Avenue 14 at Road 23	B	16.0	C	22.9
Avenue 16/Ellis Street at Golden State Boulevard	C	24.5	D	42.4
Avenue 16/Ellis Street at SR 99 SB ramps	A	7.6	B	19.2
Avenue 16/Ellis Street at SR 99 NB ramps	B	16.1	C	34.2
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	B	13.2	C	30.8
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps	B	12.0	C	26.7
SR 145/Madera Avenue at SR 99 NB ramps	B	17.3	C	25.0
Olive Avenue/Avenue 14 at SR 99 SB off-ramp	B	13.3	C	20.6
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	B	11.3	C	31.1

TABLE 81:
MITIGATED 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)
Avenue 18 ½ at Pistachio Drive				
• EB Left	B	10.2	B	11.6
• SB Right	C	15.5	C	18.8
Avenue 18 ½ at Golden State Boulevard	C	29.2	C	23.9

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

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 one (1) intersection 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 "D" 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 intersection is projected to operate at a LOS "D" in the PM peak hour. Per discussions with Caltrans staff, widening Avenue 17 to eight (8) lanes is not recommended. If a NB to WB loop off-ramp were constructed, the Avenue 17 at SR 99 NB ramps intersection is projected to operate at a LOS "C" in the PM peak hour, with a delay of 34.0 seconds. However construction of a NB to WB loop off-ramp is not probable due to the proximity of the railroad tracks. 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 Project Alternative B scenario.

Queue Lengths

Table 82 shows the estimated Mitigated 2030 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 82:
MITIGATED 2030 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	1,204[1] (770[2])	
• NB Left-Through		#203/#250
• NB Right		30/49

TABLE 82:
MITIGATED 2030 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 18 1/2	1,256[1] (822[2])	
• SB Left		26/38
• SB Right		38/132
SR 99 SB off-ramp at Avenue 17	1,341[1] (907[2])	
• SB Left	589[3]	43/156
• SB Right	589[3]	147/#457
SR 99 NB off-ramp at Avenue 17	1,060[1] (626[2])	
• NB Left	45[3]	209/481
• NB Left-Through	45[3]	265/570
• NB Right	45[3]	21/#810
SR 99 NB off-ramp at Avenue 16/Ellis Avenue	1,150[1] (716[2])	
• NB Left	150[3]	125/#282
• NB Right	150[3]	57/#390
SR 99 SB off-ramp at Avenue 16/Ellis Avenue	1,020[1] (586[2])	
• SB Left	225[3]	102/213
• SB Right	225[3]	62/#377
SR 99 NB off-ramp at Avenue 15 ½ /Cleveland Avenue	881[1] (447[2])	
• NB Left	353[3]	101/#346
• NB Right	353[3]	62/#289
SR 99 SB off-ramp at Avenue 15 ½ /Cleveland Avenue	1,000[1] (566[2])	
• SB Left	65[3]	114/#394
• SB Left-Through	65[3]	114/#393
• SB Right	65[3]	118/#385
SR 99 NB off-ramp at SR 145/Madera Avenue	1,310[1] (876[2])	
• WB Left	90[3]	#189/#320
• WB Right	90[3]	21/33
SR 99 SB off-ramp at Avenue 14/Olive Avenue	1,254[1] (820[2])	
• SB Left	65[3]	156/381
• SB Right	65[3]	142/155

TABLE 82:
MITIGATED 2030 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 12/Golden State Boulevard	1,431[1] (997[2])	
• WB Left		160/329
• WB Right		47/229
SR 99 NB off-ramp at Avenue 12	1,223[1] (789[2])	
• NB Left-Through	49[3]	198/253
• NB Right	49[3]	128/#342
Avenue 17 between SR 99 SB off-ramp and Golden State Boulevard	481	
• WB Left (at Golden State Boulevard)		m84/m#182
• WB Through		101/m369
• WB Right		21/m202
• EB Through (at SR 99 SB off-ramp)		45/408

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

As shown in Table 82, all 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 (Alternative 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 – SR 99 to Road 27 – PM peak hour – LOS "E"

Freeway Segments

- SR 99 north of Avenue 18 ½
  - NB – 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/PM peak hours – LOS "D"/"F"
  - SB – PM peak hour – LOS "F"

Intersections

- Avenue 17 at SR 99 SB ramps –PM peak hour – LOS "F"
- Avenue 17 at SR 99 NB ramps – PM peak hour – LOS "F"
- Avenue 12/Golden State Boulevard at SR 99 SB ramps – AM/PM peak hours – LOS "D"/"F"
- Avenue 12 at Golden State Boulevard – AM/PM peak hours – LOS "F"
- Avenue 12 at SR 99 NB ramps – AM/PM peak hours – LOS "D"/"F"
- Avenue 17 at Golden State Boulevard – PM peak hour – LOS "F"
- Avenue 16/Ellis Street at Golden State Boulevard – PM peak hour – LOS "E"
- Avenue 16/Ellis Street at SR 99 SB ramps – PM peak hour – LOS "E"
- Avenue 16/Ellis Street at SR 99 NB ramps – PM peak hour – 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 – PM peak hours – LOS "E"
- Olive Avenue/Avenue 14 at SR 99 SB off-ramp – AM/PM peak hours – LOS "F"
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145 – AM/PM peak hours – LOS "F"
- Avenue 18 ½ at Golden State Boulevard/Road 23
  - EB Approach – AM/PM peak hour – LOS "F"
  - WB Approach – AM/PM peak hours – LOS "F"

2030 Project

County Segments

- Avenue 17 – Road 23 to SR 99 – PM peak hour – LOS "F"

Freeway Segments

- SR 99 north of Avenue 18 ½
  - NB – 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/PM peak hours – LOS "E"/"F"
  - SB – PM peak hour – LOS "E"

Intersections

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

- Avenue 12 at Golden State Boulevard – AM/PM peak hours – LOS "F"
- Avenue 12 at SR 99 NB ramps – AM/PM peak hours – LOS "D"/"F"
- Avenue 18 at Road 23
  - EB Approach – PM peak hour – LOS "E"
- Avenue 17 at Golden State Boulevard – PM peak hour – LOS "F"
- Avenue 16/Ellis Street at Golden State Boulevard – PM peak hour – LOS "E"
- Avenue 16/Ellis Street at SR 99 SB ramps – PM peak hour – LOS "E"
- Avenue 16/Ellis Street at SR 99 NB ramps – PM peak hour – 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 – PM peak hour – LOS "E"
- Olive Avenue/Avenue 14 at SR 99 SB off-ramp – AM/PM peak hours – LOS "F"
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145 – AM/PM peak hours – LOS "F"
- Avenue 18 ½ at Golden State Boulevard/Road 23
  - EB Approach – AM/PM peak hours – LOS "F"
  - WB Approach – AM/PM peak hours – LOS "F"

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 NB ramps - Urban
- Avenue 15 ½ at Road 23 - Rural
- Avenue 18 ½ at Pistachio Drive - Urban
- Avenue 18 ½ at Golden State Boulevard/Road 23 - Urban

2030 Project

- Avenue 18 ½ at SR 99 NB ramps - Urban
- Avenue 18 at Road 23 - Rural
- Avenue 15 ½ at Road 23 - Rural
- Avenue 18 ½ at Pistachio Drive - Urban
- Avenue 18 ½ at Golden State Boulevard/Road 23 - Urban

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

2030 No Project

- Avenue 17 at SR 99 NB off-ramp – NB left-turn, left-through, and right-turn movements – AM/PM peak hours
- SR 99 SB off-ramp at Avenue 16/Ellis Avenue – SB left-turn and right-turn movements – PM peak hour
- SR 99 NB off-ramp at Avenue 15 1/2/Cleveland Avenue – NB right-turn movement – PM peak hour
- SR 99 SB off-ramp at Avenue 15 1/2/Cleveland Avenue – SB left-turn, left-through, and right-turn movements – PM peak hour
- SR 99 SB off-ramp at Avenue 14/Olive Avenue – SB left-turn and right-turn movements – PM peak hour

- SR 99 SB off-ramp at Avenue 12/Golden State Boulevard – WB left-turn and right-turn movements – PM peak hour
- SR 99 NB off-ramp at Avenue 12 – NB left-through and right-turn movements – PM peak hour
- Avenue 17 between the SR 99 SB off-ramp and Golden State Boulevard – WB through (at Golden State Blvd) movement – AM/PM peak hours

2030 Project

- Avenue 17 at SR 99 NB off-ramp – NB left-turn, left-through, and right-turn movements – AM/PM peak hours
- SR 99 SB off-ramp at Avenue 16/Ellis Avenue – SB left-turn and right-turn movements – PM peak hour
- SR 99 NB off-ramp at Avenue 15 1/2/Cleveland Avenue – NB right-turn movement – PM peak hour
- SR 99 SB off-ramp at Avenue 15 1/2/Cleveland Avenue – SB left-turn, left-through, and right-turn movements – PM peak hour
- SR 99 SB off-ramp at Avenue 14/Olive Avenue – SB left-turn and right-turn movements – PM peak hour
- SR 99 SB off-ramp at Avenue 12/Golden State Boulevard – WB left-turn and right-turn movements – PM peak hour
- SR 99 NB off-ramp at Avenue 12 – NB left-through and right-turn movements – PM peak hour
- Avenue 17 between the SR 99 SB off-ramp and Golden State Boulevard – WB through (at Golden State Blvd) movement – 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
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB off-ramp – PM peak hour
- Avenue 12/Golden State Boulevard at SR 99 SB off-ramp – PM peak hour

2030 Project

- 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
- 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 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 No Project

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

- SR 99 north of Avenue 18 ½
  - 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 and 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

- Avenue 18 ½ at SR 99 SB ramps
  - Restripe/widen the SB approach, north leg, from a shared left-right lane to a separate left-turn lane and a separate right-turn lane
  - 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 18 ½ at SR 99 NB ramps
  - Restripe/widen the EB approach, west leg, from a separate left-turn lane and one (1) through lane, to dual (2) left-turn lanes and two (2) through lanes
  - Restripe/widen the WB approach, east leg, from a shared through-right lane, to one through lane and a shared through-right lane

- Avenue 17 at SR 99 SB ramps
  - Restripe/widen the EB approach, west leg, from two (2) through lanes, to three (3) through lanes
  - Restripe/widen the WB approach, east leg, from two (2) through lanes, to three (3) through lanes

- Avenue 17 at SR 99 NB ramps
  - Restripe/widen the NB approach, south leg, from a separate left-turn lane, a shared left-through lane, and dual (2) right-turn lanes, to dual (2) left-turn lanes, a shared left-through lane, and dual (2) right –turn lanes
  - Restripe/widen the EB approach, west leg, from a separate left-turn lane and two (2) through lanes, to dual (2) left-turn lanes and three (3) through lanes
  - Restripe/widen the WB approach, east leg, from two (2) through lanes and a separate right-turn lane, to three (3) through lanes and a separate right-turn lane
  - Lengthen the NB off-ramp by 275 feet to accommodate the projected queues
  - Restripe/widen the SB approach, north leg, to allow storage lanes at least 600 feet in length

- Avenue 12/Golden State Boulevard at SR 99 SB off ramps
  - Restripe/widen the SB approach, north leg, from one (1) left-turn lane and one (1) through lane, to dual (2) left-turn lanes 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 a separate right-turn lane
  - Widen the SB off-ramp to two (2) lanes with a SB auxiliary lane on SR 99

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

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

- Avenue 17 at Golden State Boulevard
  - Restripe/widen the NB approach, south leg, from a separate left-turn lane and a shared through-right lane, to a separate left-turn lane, one (1) through lane, and dual (2) right-turn lanes
  - Restripe/widen the SB approach, north leg, from dual (2) left-turn lanes and a shared through-right lane, to triple (3) left-turn lanes and a shared through-right lane
  - Restripe/widen the EB approach, west leg, from a separate left-turn lane, one (1) though lane, and a shared through-right lane, to a separate left-turn lane, two (2) through lanes, and a 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 dual (2) left-turn lanes, three (3) through lanes, and a separate right-turn lane

- Avenue 15 ½ at Road 23
  - Signalize the intersection
  - Restripe/widen the NB approach, south leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the SB approach, north leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the EB approach, west leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the WB approach, east leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane

- Avenue 16/Ellis Street at Golden State Boulevard
  - Restripe/widen the NB approach, south leg, from a separate left-turn lane, one (1) through lane, and a shared through-right lane, to a separate left-turn lane, two (2) through lanes, and dual (2) right-turn lanes
  - Restripe/widen the WB approach, east leg, from dual (2) left-turn lanes, one (1) through lane, and a shared through-left lane, to dual (2) left-turn lanes, two (2) through lanes, and a separate right-turn lane

- Avenue 16/Ellis Street at SR 99 SB ramps
  - Restripe/widen the SB approach, north leg, from a separate left-turn lane and a separate right-turn lane, to dual (2) left-turn lanes and dual (2) right-turn lanes
  - Widen the SB off-ramp to two (2) lanes with a SB auxiliary lane on SR 99

- Avenue 16/Ellis Street at SR 99 NB ramps
  - Restripe/widen the EB approach, west leg, from a separate left-turn lane and two (2) through lanes, to dual (2) left-turn lanes and two (2) through lanes
  - Restripe/widen the WB approach, east leg from one (1) through lane and a shared through-right lane, to two (2) through lanes and a separate right-turn lane
  - Widen the NB off-ramp to two (2) lanes with a NB auxiliary lane on SR 99

- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps
  - Restripe/widen the NB approach, south leg, from dual (2) left-turn lanes and a separate right-turn lane, to dual (2) left-turn lanes and triple (3) right-turn lanes
  - Restripe/widen the EB approach, west leg, from to dual (2) left-turn lanes and two (2) through lanes, to dual (2) left-turn lanes and three (3) through lanes
  - Restripe/widen the WB approach, east leg, from two (2) through lanes and a separate right-turn lane, to three (3) through lanes and a separate right-turn lane

- Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps
  - Restripe/widen the EB approach, west leg, from a two (2) through lanes and a separate right-turn lane, to three (3) through lanes and a separate right-turn lane
  - Restripe/widen the WB approach, east leg, from dual (2) left-turn lanes and two (2) through lanes to dual (2) left-turn lanes and three (3) through lanes
  - Widen the SB off-ramp to two (2) lanes with a SB auxiliary lane on SR 99
  - Restripe/widen the SB approach, north leg, to allow storage lanes at least 200 feet in length

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

- Olive Avenue/Avenue 14 at SR 99 SB off-ramp
  - Restripe/widen the SB approach, north leg, from a separate left-turn lane and a separate right-turn lane to dual (2) left-turn lanes and a separate right-turn lane
  - Restripe/widen the WB approach, east leg, from one (1) through lane to two (2) through lanes
  - Widen the SB off-ramp to two (2) lanes with a SB auxiliary lane on SR 99

- 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 lane, two (2) through lanes, and a shared through-right lane
  - Restripe/widen the SB approach, north leg, from a shared left-through lane, one (1) through lane, and a separate right-turn lane, to a separate left-turn lane, two (2) through lanes, and a separate right-turn lane
  - Restripe/widen the EB approach, west leg, from dual (2) left-turn lanes, one (1) through lane and one (1) right-turn lane, to dual (2) left-turn lanes, two (2) through lanes, and dual (2) right-turn lanes

- Avenue 18 ½ at Pistachio Drive
  - Restripe/widen the EB approach, west leg, from a shared left-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 one (1) through lane and a shared through-right lane

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 is 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 a shared left-through-right lane, to a separate left-turn lane, one (1) through lane, and a separate right-turn lane
  - Restripe/widen the SB approach, north leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the EB approach, west leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the WB approach, east leg, from a shared left-through-right lane, to dual (2) left-turn lanes and a shared through-right lane

2030 Project

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

- Avenue 18 at Road 23
  - Signalize the intersection
  - Restripe/widen the NB approach, south leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the SB approach, north leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the EB approach, west leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane
  - Restripe/widen the WB approach, east leg, from a shared left-through-right lane, to a separate left-turn lane and a shared through-right lane

Table 83 shows the Mitigated 2030 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 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 Project Alternative C levels of service.

TABLE 83:
MITIGATED 2030 PROJECT CONDITIONS
COUNTY SEGMENT, FREEWAY SEGMENT, AND INTERSECTION WEEKDAY LEVEL OF SERVICE
MADERA SITE (ALTERNATIVE C, ALTERNATE LAND USE ALTERNATIVE)

	AM Peak Hour		PM Peak Hour	
County Segment	**LOS**		**LOS**	
Avenue 18 ½ - Road 24 to Road 23	A		A	
Road 23 – Avenue 18 ½ to Avenue 17	D		D	
Avenue 17 – Road 23 to SR 99	A		B	
Avenue 17 – SR 99 to Road 27	A		B	
Golden State Boulevard – Avenue 17 to Avenue 18	A		B	
	AM Peak Hour		**PM Peak Hour**	
Freeway Segment	**LOS**	**Density (pc/mi/ln)**	**LOS**	**Density (pc/mi/ln)**
SR 99 north of Avenue 18 ½				
• NB	C	18.6	C	19.3
• SB	B	15.4	C	23.6
SR 99 between Avenue 18 ½ and Avenue 17				
• NB	C	20.2	C	20.5
• SB	B	16.6	C	25.6
SR 99 south of Avenue 17				
• **NB**	C	23.4	**D**	**29.8**
• **SB**	B	18.0	**E**	**35.9**
	AM Peak Hour		**PM Peak Hour**	
Intersection	**LOS**	**Delay[1] (secs)**	**LOS**	**Delay[1] (secs)**
Avenue 18 ½ at SR 99 SB ramps/Road 23	A	8.4	B	13.0
Avenue 18 ½ at SR 99 NB ramps	C	21.6	C	24.0
Avenue 17 at SR 99 SB ramps	A	6.0	C	20.5
Avenue 17 at SR 99 NB ramps	B	16.9	**D**	**48.6**
Avenue 12/Golden State Boulevard at SR 99 SB ramps	B	18.1	C	22.2
Avenue 12 at Golden State Boulevard	B	18.2	D	37.6
Avenue 12 at SR 99 NB ramps	B	11.2	C	21.2
Avenue 18 at Road 23	A	9.4	B	13.8
Avenue 17 at Road 23	B	18.4	C	27.7
Avenue 17 at Golden State Boulevard	B	18.7	D	42.7
Ellis Street at Road 26	C	22.9	C	24.9
Avenue 15 ½ at Road 23	A	6.7	A	9.0
Avenue 14 at Road 23	B	16.0	C	23.0
Avenue 16/Ellis Street at Golden State Boulevard	C	24.6	D	41.8
Avenue 16/Ellis Street at SR 99 SB ramps	A	7.8	C	20.6
Avenue 16/Ellis Street at SR 99 NB ramps	B	16.0	C	34.8
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	B	13.2	C	30.4
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps	B	12.1	C	27.9
SR 145/Madera Avenue at SR 99 NB ramps	B	17.3	C	25.6
Olive Avenue/Avenue 14 at SR 99 SB off-ramp	B	13.5	C	20.8
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	B	11.4	C	32.6

TABLE 83:
MITIGATED 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	Delay[1] (secs)
Avenue 18 ½ at Pistachio Drive				
• EB Left	B	10.2	B	11.8
• SB Right	C	15.4	C	19.3
Avenue 18 ½ at Golden State Boulevard	C	29.2	C	23.7

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

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 one (1) intersection 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 "D" and "E" 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 intersection is still projected to operate at a LOS "D" in the PM peak hour. Per discussions with Caltrans staff, widening Avenue 17 to eight (8) lanes is not recommended. If a NB to WB loop off-ramp were constructed, the Avenue 17 at SR 99 NB ramps intersection is projected to continue to operate at a LOS "C" in the PM peak hour, but with a delay of 34.2 seconds. However construction of a NB to WB loop off-ramp is not probable due to the proximity of the railroad tracks. 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 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.

TABLE 84
MITIGATED 2030 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 NB off-ramp at Avenue 18 ½	1,204[1] (770[2])	
• NB Left-Through		#224/#271
• NB Right		30/56

TABLE 84
MITIGATED 2030 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 18 1/2	1,256[1] (822[2])	
• SB Left		26/41
• SB Right		38/159
SR 99 SB off-ramp at Avenue 17	1,341[1] (907[2])	
• SB Left	589[3]	44/171
• SB Right	589[3]	146/#499
SR 99 NB off-ramp at Avenue 17	1,060[1] (626[2])	
• NB Left	45[3]	207/575
• NB Left-Through	45[3]	263/678
• NB Right	45[3]	21/#875
SR 99 NB off-ramp at Avenue 16/Ellis Avenue	1,150[1] (716[2])	
• NB Left	150[3]	125/#299
• NB Right	150[3]	57/#420
SR 99 SB off-ramp at Avenue 16/Ellis Avenue	1,020[1] (586[2])	
• SB Left	225[3]	103/238
• SB Right	225[3]	64/#417
SR 99 NB off-ramp at Avenue 15 ½ /Cleveland Avenue	881[1] (447[2])	
• NB Left	353[3]	101/#380
• NB Right	353[3]	63/#315
SR 99 SB off-ramp at Avenue 15 ½ /Cleveland Avenue	1,000[1] (566[2])	
• SB Left	65[3]	120/#446
• SB Left-Through	65[3]	120/#445
• SB Right	65[3]	121/#427
SR 99 NB off-ramp at SR 145/Madera Avenue	1,310[1] (876[2])	
• WB Left	90[3]	#189/#332
• WB Right	90[3]	21/34
SR 99 SB off-ramp at Avenue 14/Olive Avenue	1,254[1] (820[2])	
• SB Left	65[3]	157/388
• SB Right	65[3]	143/158

TABLE 84
MITIGATED 2030 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 12/Golden State Boulevard	1,431[1] (997[2])	
• WB Left		158/355
• WB Right		46/229
SR 99 NB off-ramp at Avenue 12	1,223[1] (789[2])	
• NB Left-Through	49[3]	198/278
• NB Right	49[3]	128/#371
Avenue 17 between SR 99 SB off-ramp and Golden State Boulevard	481	
• WB Left (at Golden State Boulevard)		m#88/m#195
• WB Through		108/m424
• WB Right		20/m480
• EB Through (at SR 99 SB off-ramp)		46/#484

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

As shown in Table 84, all 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 Forth Site (Alternative D)

Existing (2005) Conditions

Roadway Levels of Service

Table 85 show the Existing (2005) 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 (2005) 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 (2005) levels of service.

TABLE 85:
EXISTING (2005) CONDITIONS
INTERSECTION WEEKDAY LEVEL OF SERVICE
NORTH FORK SITE

Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay[1] (secs)	LOS	Delay[1] (secs)
SR 145 at SR 41	B	16.3	C	22.1
SR 41 at Road 200				
• SB Left	A	8.0	B	10.2
• **WB Approach**	**E**	**40.2**	**D**	**29.9**
SR 41 at Road 420 (Thornberry Road)				
• SB Left	A	9.1	A	9.1
• WB Approach	C	18.0	C	15.3
SR 41 at SR 49	A	9.8	B	16.2
Road 274 (Malum Ridge Rd) at Road 225 (Mammoth Pool Rd)	A	8.18	A	8.57
Road 225 (Mammoth Pool Rd) at Cascadel Road				
• SB Left	A	7.4	A	7.3
• WB Approach	A	8.8	A	8.6
Cascadel Road at Mission Drive				
• WB Left-Through	A	7.3	A	7.3
• NB Approach	A	8.7	A	8.7
North Fork Road at Auberry Road				
• NB Left-Through-Right	A	7.4	A	7.5
• SB Left-Through-Right	A	7.6	A	7.5
• WB Approach	A	9.4	A	9.9
• EB Approach	A	10.0	A	9.9
North Fork Road at Crane Valley Road				
• EB Left-Through	A	7.5	A	7.4
• SB Approach	A	9.2	A	9.8

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 85. As shown in Table 85 and in figure 45, the following intersection has movements currently operating below the adopted level of service standard:

- SR 41 at Road 200
  - WB Approach – AM peak hour – LOS "E"
  - WB Approach – PM peak hour – LOS "D"

Signal Warrants

Rural peak hour volume signal warrants were prepared for the following seven (7) unsignalized intersections:

- SR 41 at Road 200

- 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 currently met at the SR 41 at Road 200 intersection in the Existing (2005) scenario potentially indicating the need for a traffic signal. The signal warrant is not met at the remaining six (6) 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 - 42.

Opening Day (2008) No Project Conditions

Alternative E, No Project Alternative

Roadway Levels of Service

Table 86 show the Opening Day (2008) 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 (2008) 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 (2008) No Project levels of service.

TABLE 86:
OPENING DAY (2008) NO PROJECT CONDITIONS
INTERSECTION WEEKDAY LEVEL OF SERVICE
NORTH FORK SITE (ALTERNATIVE E, NO PROJECT ALTERNATIVE)

	AM Peak Hour		PM Peak Hour	
Intersection	**LOS**	**Delay[1] (secs)**	**LOS**	**Delay[1] (secs)**
SR 145 at SR 41	B	19.7	C	25.1
SR 41 at Road 200				
• SB Left	A	8.3	B	10.7
• **WB Approach**	**F**	**87.7**	**E**	**47.5**
SR 41 at Road 420 (Thornberry Road)				
• SB Left	A	9.5	A	9.4
• WB Approach	C	22.2	C	17.7
SR 41 at SR 49	B	16.6	C	24.2
Road 274 (Malum Ridge Rd) at Road 225 (Mammoth Pool Rd)	A	8.36	A	8.85
Road 225 (Mammoth Pool Rd) at Cascadel Road				
• SB Left	A	7.4	A	7.3
• WB Approach	A	8.8	A	8.6

TABLE 86:
OPENING DAY (2008) NO PROJECT CONDITIONS
INTERSECTION WEEKDAY LEVEL OF SERVICE
NORTH FORK SITE (ALTERNATIVE E, NO PROJECT ALTERNATIVE)

Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay[1] (secs)	LOS	Delay[1] (secs)
Cascadel Road at Mission Drive				
• WB Left-Through	A	7.3	A	7.3
• NB Approach	A	8.8	A	8.8
North Fork Road at Auberry Road				
• NB Left-Through-Right	A	7.5	A	7.6
• SB Left-Through-Right	A	7.6	A	7.5
• WB Approach	A	9.6	B	10.1
• EB Approach	B	10.2	A	9.7
North Fork Road at Crane Valley Road				
• EB Left-Through	A	7.5	A	7.5
• SB Approach	A	9.3	B	10.0

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

Intersections within the study area that are projected to operate below the adopted level of service standard are shown bolded in Table 86. As shown in Table 86 and Figure 47, the following intersection is projected to have movements operating below the adopted level of service standard:

- SR 41 at Road 200
  - WB Approach – AM peak hour – LOS "F"
  - WB Approach – PM peak hour – LOS "E"

Signal Warrants

Rural peak hour volume signal warrants were prepared for the following seven (7) unsignalized intersections:

- SR 41 at Road 200
- 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 the SR 41 at Road 200 and the SR 41 at Road 420 intersections in the Opening Day (2008) No Project scenario potentially indicating the need for a traffic signal. The signal 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 - 44.

Opening Day (2008) Project Conditions

Roadway Levels of Service

Table 87 shows the Opening Day (2008) 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 (2008) 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 (2008) Project Alternative D levels of service.

TABLE 87:
OPENING DAY (2008) PROJECT CONDITIONS
INTERSECTION WEEKDAY LEVEL OF SERVICE
NORTH FORK SITE (ALTERNATIVE D, OFF-SITE ALTERNATIVE)

	AM Peak Hour		PM Peak Hour	
Intersection	**LOS**	**Delay[1] (secs)**	**LOS**	**Delay[1] (secs)**
SR 145 at SR 41	B	19.8	C	25.2
SR 41 at Road 200				
• SB Left	A	8.3	B	10.7
• **WB Approach**	**F**	**88.7**	**F**	**50.9**
SR 41 at Road 420 (Thornberry Road)				
• SB Left	A	9.5	A	9.4
• WB Approach	C	22.2	C	17.7
SR 41 at SR 49	B	16.6	C	24.5
Road 274 (Malum Ridge Rd) at Road 225 (Mammoth Pool Rd)	A	8.57	A	8.87
Road 225 (Mammoth Pool Rd) at Cascadel Road				
• SB Left	A	7.5	A	7.4
• WB Approach	A	8.9	A	8.8
Cascadel Road at Mission Drive				
• WB Left-Through	A	7.4	A	7.4
• NB Approach	A	8.9	A	9.0
North Fork Road at Auberry Road				
• NB Left-Through-Right	A	7.5	A	7.6
• SB Left-Through-Right	A	7.6	A	7.6
• WB Approach	A	9.7	B	10.2
• EB Approach	B	10.4	A	9.8
North Fork Road at Crane Valley Road				
• EB Left-Through	A	7.5	A	7.5
• SB Approach	A	9.4	B	10.2

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

Intersections within the study area that are currently operating below the adopted level of service standard are shown bolded in Table 87. As shown in Table 87 and in Figure 49, the following intersection is projected to have movements operating below the adopted level of service standard:

- SR 41 at Road 200
  - WB Approach – AM peak hour – LOS "F"
  - WB Approach – PM peak hour – LOS "F"

Signal Warrants

Rural peak hour volume signal warrants were prepared for the following seven (7) unsignalized intersections:

- SR 41 at Road 200
- 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 the SR 41 at Road 200 and the SR 41 at Road 420 intersections in the Opening Day (2008) Project Alternative D scenario potentially indicating the need for a traffic signal. The signal 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 - 46.

Left-Turn Warrants

Left-turn lane channelization warrants were prepared to determine the need for separate left-turn lanes at three (3) County of Madera intersections that are currently unchannelized. The following intersection movements were analyzed to determine if separate left-turn lanes were warranted:

- Road 274 (Malum Ridge Rd) at Road 225 (Mammoth Pool Rd)
  - NB left-turn
  - SB left-turn
  - EB left-turn
  - WB left-turn
- Cascadel Road at Mission Drive
  - WB left-turn
- North Fork Road at Crane Valley Road
  - EB left-turn

Based on the left-turn warrant analysis, the left-turn warrants are not met at any of the above locations.

Mitigated Opening Day (2008) Project Conditions

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 standard:

Existing (2005)

- SR 41 at Road 200
  - WB Approach – AM peak hour – LOS "E"
  - WB Approach – PM peak hour – LOS "D"

Opening Day (2008) No Project

- SR 41 at Road 200
  - WB Approach – AM peak hour – LOS "F"
  - WB Approach – PM peak hour – LOS "E"

Opening Day (2008) Project

- SR 41 at Road 200
  - WB Approach – AM peak hour – LOS "F"
  - WB Approach – PM peak hour – LOS "E"

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

Existing (2005)

- SR 41 at Road 200

Opening Day (2008) No Project

- SR 41 at Road 200
- SR 41 at Road 420 (Thornberry Road)

Opening Day (2008) Project

- SR 41 at Road 200
- SR 41 at Road 420 (Thornberry Road)

To mitigate the intersections projected to operate below the appropriate adopted level of service standard or meet the rural peak hour volume signal warrant the following improvements are recommended:

Existing (2005)

- SR 41 at Road 200
  - Signalize the intersection
  - Restripe/widen the WB approach, east leg, from a shared left-right to one (1) left-turn lane and one (1) right-turn lane

Opening Day (2008) No Project

- SR 41 at Road 420 (Thornberry Road)
  - Signalize the intersection
  - Restripe/widen the WB approach, east leg, from a shared left-right to one (1) left-turn lane and one (1) right-turn lane

Table 88 show the Mitigated Opening Day (2008) Project Alternative D levels of service for the study intersections for the North Fork Site utilizing Figures 50 (lane configurations) and 48 (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 88. The Mitigated Opening Day (2008) Project Alternative D intersection levels of service calculations for the North Fork Site are included in the Appendix section Attachment VI – C - 47. Figure 51 provides a graphical representation of the resulting Mitigated Opening Day (2008) Project Alternative D levels of service.

TABLE 88:
MITIGATED OPENING DAY (2008) PROJECT CONDITIONS
INTERSECTION WEEKDAY LEVEL OF SERVICE
NORTH FORK SITE (ALTERNATIVE D, OFF-SITE ALTERNATIVE)

	AM Peak Hour		PM Peak Hour	
Intersection	**LOS**	**Delay[1] (secs)**	**LOS**	**Delay[1] (secs)**
SR 145 at SR 41	B	19.8	C	25.2
SR 41 at Road 200	B	11.3	A	9.0
SR 41 at Road 420 (Thornberry Road)	A	6.1	A	4.3
SR 41 at SR 49	B	16.6	C	24.5
Road 274 (Malum Ridge Rd) at Road 225 (Mammoth Pool Rd)	A	8.57	A	8.87
Road 225 (Mammoth Pool Rd) at Cascadel Road				
• SB Left	A	7.5	A	7.4
• WB Approach	A	8.9	A	8.8
Cascadel Road at Mission Drive				
• WB Left-Through	A	7.4	A	7.4
• NB Approach	A	8.9	A	9.0
North Fork Road at Auberry Road				
• NB Left-Through-Right	A	7.5	A	7.6
• SB Left-Through-Right	A	7.6	A	7.6
• WB Approach	A	9.7	B	10.2
• EB Approach	B	10.4	A	9.8
North Fork Road at Crane Valley Road				
• EB Left-Through	A	7.5	A	7.6
• SB Approach	A	9.4	B	10.2

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

As shown in Table 88 and Figure 51, all of the intersections are projected to operate at or above the appropriate level of service standard in the Mitigated Opening Day (2008) Project Alternative D scenario.

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 52 (peak hour volumes) shown previously. The signalized intersection levels of service shown on Table 89 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 53 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 E, NO PROJECT ALTERNATIVE)

	AM Peak Hour		PM Peak Hour	
Intersection	**LOS**	**Delay[1] (secs)**	**LOS**	**Delay[1] (secs)**
SR 145 at SR 41	**F**	**102.3**	**F**	**146.6**
SR 41 at Road 200				
• SB Left	B	10.7	C	15.3
• **WB Approach**	**F**	**1494**	**F**	**1976**
SR 41 at Road 420 (Thornberry Road)				
• SB Left	B	12.7	B	12.5
• **WB Approach**	**F**	**391.7**	**F**	**116.5**
SR 41 at SR 49	**E**	**75.0**	**F**	**104.2**
Road 274 (Malum Ridge Rd) at Road 225 (Mammoth Pool Rd)	B	10.04	B	10.31
Road 225 (Mammoth Pool Rd) at Cascadel Road				
• SB Left	A	7.5	A	7.5
• WB Approach	A	9.4	A	9.2
Cascadel Road at Mission Drive				
• WB Left-Through	A	7.3	A	7.4
• NB Approach	A	9.1	A	9.1
North Fork Road at Auberry Road				
• NB Left-Through-Right	A	7.6	A	7.7
• SB Left-Through-Right	A	7.8	A	7.8
• WB Approach	B	11.0	B	12.2
• EB Approach	B	11.7	B	11.0

TABLE 89:
2030 NO PROJECT CONDITIONS
INTERSECTION WEEKDAY LEVEL OF SERVICE
NORTH FORK SITE (ALTERNATIVE E, NO PROJECT ALTERNATIVE)

Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay[1] (secs)	LOS	Delay[1] (secs)
North Fork Road at Crane Valley Road				
• EB Left-Through	A	7.7	A	7.7
• SB Approach	B	10.6	B	12.1

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

Intersections within the study area that are currently operating below the adopted level of service standard are shown bolded in Table 89. As shown in Table 89 and Figure 53, the following intersections are projected to have movements operating below the adopted level of service standard:

- SR 145 at SR 41 – AM/PM peak hours – LOS "F"
- SR 41 at Road 200
  - WB Approach – AM/PM peak hours – LOS "F"
- SR 41 at Road 420 (Thornberry Road)
  - WB Approach – AM/PM peak hours – LOS "F"
- SR 41 at SR 49
  - AM peak hour – LOS "E"
  - PM peak hour – LOS "F"

Signal Warrants

Rural peak hour volume signal warrants were prepared for the following seven (7) unsignalized intersections:

- SR 41 at Road 200
- 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 the SR 41 at Road 200 and the SR 41 at Road 420 intersections in the 2030 No Project scenario potentially indicating the need for a traffic signal. The signal 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 Project Conditions

Roadway Levels of Service

Table 90 show the 2030 Project Alternative D levels of service for the study intersections for the North Fork Site utilizing Figures 54 (lane configurations) and 55 (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 Project Alternative D intersection levels of service calculations for the North Fork Site are included in the Appendix section Attachment VI – C - 50. Figure 56 provides a graphical representation of the resulting 2030 Project Alternative D levels of service.

TABLE 90:
2030 PROJECT CONDITIONS
INTERSECTION WEEKDAY LEVEL OF SERVICE
NORTH FORK SITE (ALTERNATIVE D, OFF-SITE ALTERNATIVE)

	AM Peak Hour		PM Peak Hour	
Intersection	**LOS**	**Delay[1] (secs)**	**LOS**	**Delay[1] (secs)**
SR 145 at SR 41	**F**	**101.5**	**F**	**150.9**
SR 41 at Road 200	B	18.1	C	23.7
SR 41 at Road 420 (Thornberry Road)	A	9.5	A	8.1
SR 41 at SR 49	**E**	**75.0**	**F**	**104.5**
Road 274 (Malum Ridge Rd) at Road 225 (Mammoth Pool Rd)	B	10.37	B	10.99
Road 225 (Mammoth Pool Rd) at Cascadel Road				
• SB Left	A	7.6	A	7.6
• WB Approach	A	9.6	A	9.4
Cascadel Road at Mission Drive				
• WB Left-Through	A	7.4	A	7.5
• NB Approach	A	9.3	A	9.4
North Fork Road at Auberry Road				
• NB Left-Through-Right	A	7.6	A	7.7
• SB Left-Through-Right	A	8.6	A	7.8
• WB Approach	C	16.9	B	12.5
• EB Approach	C	20.0	B	11.2
North Fork Road at Crane Valley Road				
• EB Left-Through	A	7.7	A	7.7
• SB Approach	B	10.6	B	12.3

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 56, the following intersections are projected to operate below the adopted level of service standard:

- SR 145 at SR 41 – AM/PM peak hours – LOS "F"
- SR 41 at SR 49
  - AM peak hour – LOS "E"
  - PM peak hour – LOS "F"

Signal Warrants

Rural peak hour volume signal warrants were prepared for the following five (5) unsignalized intersections:

- 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 study intersections in the 2030 Project Alternative D conditions 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 - 51.

Left-Turn Warrants

Left-turn lane channelization warrants were prepared to determine the need for separate left-turn lanes at three (3) County of Madera intersections that are currently unchannelized. The following intersection movements were analyzed to determine if separate left-turn lanes were warranted:

- Road 274 (Malum Ridge Rd) at Road 225 (Mammoth Pool Rd)
  - NB left-turn
  - SB left-turn
  - EB left-turn
  - WB left-turn
- Cascadel Road at Mission Drive
  - WB left-turn
- North Fork Road at Crane Valley Road
  - EB left-turn

The locations that met the left-turn warrant and recommended storage lengths for the 2030 Project Alternative D are as follows:

- Road 274 (Malum Ridge Rd) at Road 225 (Mammoth Pool Rd)
  - EB left-turn – 50 ft
  - WB left-turn – 75 ft

Mitigated 2030 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 – AM/PM peak hours – LOS "F"
- SR 41 at Road 200
  - WB Approach – AM/PM peak hours – LOS "F"
- SR 41 at Road 420 (Thornberry Road)
  - WB Approach – AM/PM peak hours – LOS "F"
- SR 41 at SR 49
  - AM peak hour – LOS "E"
  - PM peak hour – LOS "F"

2030 Project

- SR 145 at SR 41 – AM/PM peak hours – LOS "F"
- SR 41 at SR 49
  - AM peak hour – LOS "E"
  - PM peak hour – LOS "F"

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

2030 No Project

- SR 41 at Road 200
- SR 41 at Road 420 (Thornberry Road)

The following locations, by scenario, are also projected to meet left-turn channelization warrants and are projected to need the associated storage lengths:

- Road 274 (Malum Ridge Rd) at Road 225 (Mammoth Pool Rd)
  - EB left-turn – 50 ft
  - WB left-turn – 75 ft

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

- SR 41 at SR 49
  - Restripe/widen the NB approach, south 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
  - Restripe/widen the EB approach, west leg, from one (1) through lane and one (1) right-turn lane to one (1) through lane and dual (2) right-turn lanes
  - Restripe/widen the WB approach, east leg, from one (1) left-turn lane and one (1) through lane to dual (2) left-turn lanes and one (1) through lane

- Road 274 (Malum Ridge Rd) at Road 225 (Mammoth Pool Rd)
  - Restripe/widen the EB approach, west leg, from a shared left-through and a separate right-turn lane to one (1) left-turn lane and a shared through-right
  - Restripe/widen the WB approach, east leg, from a shared left-through and a separate right-turn lane to one (1) left-turn lane and a shared through-right

Table 91 shows the Mitigated 2030 Project Alternative D levels of service for the study intersections for the North Fork Site utilizing Figures 57 (lane configurations) and 55 (peak hour volumes) shown previously. The signalized intersection levels of service shown on Table 91 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 91. The Mitigated 2030 Project Alternative D intersection levels of service calculations for the North Fork Site are included in the Appendix section Attachment VI – C - 52. Figure 58 provides a graphical representation of the resulting levels of service.

TABLE 91:
MITIGATED 2030 PROJECT CONDITIONS
INTERSECTION WEEKDAY LEVEL OF SERVICE
NORTH FORK SITE (ALTERNATIVE D, OFF-SITE ALTERNATIVE)

	AM Peak Hour		PM Peak Hour	
Intersection	**LOS**	**Delay[1] (secs)**	**LOS**	**Delay[1] (secs)**
SR 145 at SR 41	C	23.9	C	29.8
SR 41 at Road 200	B	18.1	C	23.7
SR 41 at Road 420 (Thornberry Road)	A	9.5	A	8.1
SR 41 at SR 49	B	11.5	B	16.0
Road 274 (Malum Ridge Rd) at Road 225 (Mammoth Pool Rd)	B	10.47	B	10.98
Road 225 (Mammoth Pool Rd) at Cascadel Road				
• SB Left	A	7.6	A	7.6
• WB Approach	A	9.6	A	9.4
Cascadel Road at Mission Drive				
• WB Left-Through	A	7.4	A	7.5
• NB Approach	A	9.3	A	9.4
North Fork Road at Auberry Road				
• NB Left-Through-Right	A	7.6	A	7.7
• SB Left-Through-Right	A	8.6	A	7.8
• WB Approach	C	16.9	B	12.5
• EB Approach	C	20.0	B	11.2

TABLE 91:
MITIGATED 2030 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)
North Fork Road at Crane Valley Road				
• SB Left-Through	A	7.7	A	7.7
• WB Approach	B	10.6	B	12.3

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

As shown in Table 91 and Figure 58, 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 92 and 93 compare the Alternative A, Proposed Project, Opening Day (2008) No Project, Opening Day (2008) Project, and Mitigated Opening Day (2008) 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 (2008) No Project, Opening Day (2008) Project, and Mitigated Opening Day (2008) Project Scenarios

County Segments

County segments exceeding the appropriate level of service standard are shown in bold print in Table 92. As can be seen in Table 92, two (2) County segments are projected to operate at a LOS "F" in the Opening Day (2008) No Project scenario and are projected to continue to operate at a LOS "F" in the Opening Day (2008) Project scenario. The County segments are:

- Avenue 17 – Road 23 to SR 99 – PM peak hour – LOS "F"
- Avenue 17 – SR 99 to Road 27 – AM/PM peak hours – 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 (2008) scenarios.

As shown in Table 92, all County segments projected to operate below acceptable levels of service in the Opening Day (2008) No Project and Opening Day (2008) Project scenarios are projected to operate at or above the acceptable levels of service in the Mitigated Opening Day (2008) Project scenario.

Freeway Segments

Freeway segments exceeding the appropriate level of service standard are shown in bold print in Table 92. As can be seen in Table 92, implementation of the Project is projected to cause one (1) new freeway segment operational failure when compared to the Opening Day (2008) No Project scenario. The freeway segment is:

- SR 99 north of Avenue 18 ½
  - NB – PM peak hour – LOS "C" to LOS "D"

TABLE 92:
COMPARISON OF 2008 NO PROJECT, 2008 PROJECT, AND MITIGATED 2008 PROJECT LEVELS OF SERVICE
MADERA SITE (ALTERNATIVE A, PROPOSED PROJECT ALTERNATIVE)

	AM Peak Hour						PM Peak Hour					
	No Project		Project		Mitigated Project		No Project		Project		Mitigated Project	
County Segment	LOS		LOS		LOS		LOS		LOS		LOS	
Avenue 17 – Road 23 to SR 99	A		B		A		F		F		B	
Avenue 17 – SR 99 to Road 27	F		F		A		F		F		B	
	LOS			Density (pc/mi/ln)			LOS			Density (pc/mi/ln)		
Freeway Segment	No Project	Project	Mitigated Project	No Project	Project	Mitigated Project	No Project	Project	Mitigated Project	No Project	Project	Mitigated Project
SR 99 north of Avenue 18 ½												
• **NB**	C	C	B	24.1	24.3	16.0	C	**D**	B	25.7	**26.3**	17.0
• **SB**	C	C	B	19.9	20.3	13.5	**D**	**D**	C	**33.6**	**34.6**	20.4
SR 99 between Avenue 18 ½ and Avenue 17												
• **NB**	**D**	**D**	B	**26.9**	**26.9**	17.3	**D**	**D**	B	**28.2**	**28.2**	17.9
• **SB**	C	C	B	21.6	21.6	14.3	**E**	**E**	C	**39.1**	**39.1**	21.7
SR 99 south of Avenue 17												
• **NB**	**D**	**E**	C	**31.6**	**35.4**	20.6	**F**	**F**	C	---	---	25.4
• **SB**	C	C	B	23.1	24.1	11.9	**F**	**F**	C	---	---	21.2
	LOS			Delay (sec)			LOS			Delay (sec)		
Intersection	No Project	Project	Mitigated Project	No Project	Project	Mitigated Project	No Project	Project	Mitigated Project	No Project	Project	Mitigated Project
Avenue 18 ½ at SR 99 SB ramps/Road 23			B			19.7			C			22.4
• WB Left-Through	A	A		8.9	9.0		A	A		8.9	9.0	
• **NB Approach**	**D**	**E**		**25.6**	**45.1**		**F**	**F**		**63.3**	---	
• **SB Approach**	**D**	**F**		**30.0**	**56.6**		**F**	**F**		**178.0**	**397.7**	
Avenue 18 ½ at SR 99 NB ramps			C			28.8			C			27.6
• EB Left	A	A		8.5	8.7		A	A		8.3	8.6	
• **NB Approach**	**E**	**F**		**44.3**	**62.7**		**F**	**F**		**144.0**	**284.2**	
Avenue 17 at SR 99 SB ramps			A			4.5			A			9.8
• **SB Approach**	**F**	**F**		**153.6**	**564.7**		**F**	**F**		**8216**	**29611**	
Avenue 17 at SR 99 NB ramps			B			17.8			C			34.7
• EB Left	B	B		10.2	10.6		C	C		15.7	16.9	
• **NB Approach**	**F**	**F**		**738.0**	**1610**		**F**	**F**		**5934**	**13114**	
Avenue 12/Golden State Boulevard at SR 99 SB ramps			B			13.1			B			16.8
• SB Left-Through	A	A		8.4	8.4		A	A		9.0	9.0	
• **WB Approach**	C	C		15.6	16.4		**F**	**F**		**303.5**	**331.3**	
Avenue 17 at Road 23			B			13.2			C			21.3
• NB Left-Through-Right	A	A		7.5	7.5		A	A		7.6	7.7	
• SB Left-Through-Right	A	A		7.8	7.9		A	A		8.2	8.4	
• **WB Approach**	B	C		14.7	16.2		**F**	**F**		**50.5**	**100.9**	
• EB Approach	B	B		12.5	13.2		C	C		7.0	20.0	

TABLE 92:
COMPARISON OF 2008 NO PROJECT, 2008 PROJECT, AND MITIGATED 2008 PROJECT LEVELS OF SERVICE
MADERA SITE (ALTERNATIVE A, PROPOSED PROJECT ALTERNATIVE)

	AM Peak Hour						PM Peak Hour					
	LOS			Delay (sec)			LOS			Delay (sec)		
Intersection	**No Project**	**Project**	**Mitigated Project**	**No Project**	**Project**	**Mitigated Project**	**No Project**	**Project**	**Mitigated Project**	**No Project**	**Project**	**Mitigated Project**
Avenue 17 at Golden State Boulevard			B			17.4			D			40.7
• EB Left-Through-Right	A	B		9.1	10.5		B	B		11.0	14.1	
• WB Left-Through-Right	A	A		8.9	8.9		B	B		13.7	13.7	
• **NB Approach**	**F**	**F**		**73.0**	**417.0**		**F**	**F**		**---**	**---**	
• **SB Approach**	**F**	**F**		**282.2**	**---**		**F**	**F**		**---**	**---**	
Ellis Street at Road 26	B	C	A	14.62	15.31	10.0	**F**	**F**	B	**96.48**	**110.19**	14.5
Avenue 16 at Schnoor Avenue			C			25.3			B			18.0
• NB Left	A	A		7.4	7.4		A	A		7.6	7.6	
• SB Left-Through-Right	A	A		7.8	7.8		A	A		7.7	7.8	
• **WB Approach**	B	B		11.5	12.4		**E**	**F**		**63.4**	**125.2**	
• **EB Approach**	B	C		14.2	15.9		**E**	**F**		**49.5**	**84.3**	
Avenue 16/Avenue 16 connector at SR 99 NB ramps			B			11.4			B			14.5
• **EB Left**	B	B		12.6	13.2		**D**	**D**		**26.5**	**32.8**	
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	B	B	B	14.2	14.5	11.0	**D**	**D**	C	**35.1**	**36.4**	27.2
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps	B	B	A	13.0	13.1	8.9	C	**D**	B	34.3	**41.7**	19.6
SR 145/Madera Avenue at SR 99 NB ramps	**D**	**D**	B	**36.5**	**39.4**	13.7	**D**	**E**	B	**54.8**	**64.5**	13.0
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	C	C	B	26.6	30.2	12.0	**E**	**E**	C	**61.1**	**69.5**	31.8

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

TABLE 93:
COMPARISON OF 2030 NO PROJECT, 2030 PROJECT, AND MITIGATED 2030 PROJECT LEVELS OF SERVICE
MADERA SITE (ALTERNATIVE A, PROPOSED PROJECT ALTERNATIVE)

	AM Peak Hour						PM Peak Hour					
	No Project		Project		Mitigated Project		No Project		Project		Mitigated Project	
County Segment	LOS		LOS		LOS		LOS		LOS		LOS	
Avenue 17 – Road 23 to SR 99	A		A		A		D		**E**		B	
Avenue 17 – SR 99 to Road 27	B		A		A		**E**		B		B	
	LOS			Density (pc/mi/ln)			LOS			Density (pc/mi/ln)		
Freeway Segment	No Project	Project	Mitigated Project	No Project	Project	Mitigated Project	No Project	Project	Mitigated Project	No Project	Project	Mitigated Project
SR 99 north of Avenue 18 ½												
• **NB**	C	C	C	25.2	25.4	18.6	**D**	**D**	C	**26.1**	**26.5**	19.3
• **SB**	C	C	B	20.3	20.6	15.4	**E**	**E**	C	**35.2**	**36.0**	23.6
SR 99 between Avenue 18 ½ and Avenue 17												
• **NB**	**D**	**D**	C	**28.3**	**28.3**	20.2	**D**	**D**	C	**28.9**	**28.9**	20.5
• **SB**	C	C	B	22.2	22.2	16.6	**E**	**E**	C	**41.9**	**41.9**	25.6
SR 99 south of Avenue 17												
• **NB**	**D**	**E**	C	**33.1**	**36.8**	23.9	**F**	**F**	**D**	**---**	**---**	**29.9**
• **SB**	C	B	B	23.3	17.9	17.9	**F**	**E**	**E**	**---**	**35.7**	**35.7**
	LOS			Delay (sec)			LOS			Delay (sec)		
Intersection	No Project	Project	Mitigated Project	No Project	Project	Mitigated Project	No Project	Project	Mitigated Project	No Project	Project	Mitigated Project
Avenue 17 at SR 99 SB ramps	A	A	A	7.9	8.3	6.3	**F**	**F**	C	**87.5**	**176.1**	22.0
Avenue 17 at SR 99 NB ramps	C	**D**	B	26.5	**36.1**	17.3	**F**	**F**	**D**	**113.6**	**146.5**	**49.9**
Avenue 12/Golden State Boulevard at SR 99 SB ramps	**D**	**D**	B	**41.8**	**51.2**	17.9	**F**	**F**	C	**245.6**	**251.3**	22.2
Avenue 12 at Golden State Boulevard	**F**	**F**	B	**126.8**	**126.0**	18.5	**F**	**F**	D	**418.3**	**420.3**	37.6
Avenue 12 at SR 99 NB ramps	**D**	**D**	B	**41.7**	**44.5**	11.2	**F**	**F**	C	**243.3**	**251.7**	21.2
Avenue 18 at Road 23			B			11.3			B			13.9
• NB Left-Through-Right	A	A		8.1	8.1		A	A		8.7	8.7	
• SB Left	A	A		8.2	8.4		A	A		8.6	9.0	
• WB Approach	B	B		14.3	14.2		C	C		15.6	17.0	
• **EB Approach**	B	C		14.8	18.0		C	**E**		25.0	**39.4**	
Avenue 17 at Golden State Boulevard	C	C	B	24.1	26.2	17.7	**F**	**F**	D	**125.6**	**241.8**	44.5
Avenue 16/Ellis Street at Golden State Boulevard	C	C	C	22.8	22.6	24.4	**E**	**E**	D	**72.4**	**78.5**	42.9
Avenue 16/Ellis Street at SR 99 SB ramps	B	B	A	13.7	14.1	7.7	**E**	**E**	B	**69.9**	**79.0**	20.0
Avenue 16/Ellis Street at SR 99 NB ramps	C	C	B	27.5	29.5	16.1	**F**	**F**	C	**153.0**	**163.6**	34.8
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	C	C	B	24.5	25.4	13.2	**F**	**F**	C	**177.3**	**178.2**	30.4
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps	C	B	B	27.1	15.5	12.1	**F**	**F**	C	**202.0**	**113.4**	27.8
SR 145/Madera Avenue at SR 99 NB ramps	C	C	B	20.3	21.0	17.4	**D**	**E**	C	**53.2**	**59.6**	25.7
Olive Avenue/Avenue 14 at SR 99 SB off-ramp	**F**	**F**	B	**101.7**	**103.5**	13.4	**F**	**F**	C	**273.1**	**280.1**	20.8
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	**F**	**F**	B	**102.5**	**104.1**	11.3	**F**	**F**	C	**357.7**	**368.9**	32.5

TABLE 93:
COMPARISON OF 2030 NO PROJECT, 2030 PROJECT, AND MITIGATED 2030 PROJECT LEVELS OF SERVICE
MADERA SITE (ALTERNATIVE A, PROPOSED PROJECT ALTERNATIVE)

	AM Peak Hour						PM Peak Hour					
	LOS			Delay (sec)			LOS			Delay (sec)		
Intersection	**No Project**	**Project**	**Mitigated Project**	**No Project**	**Project**	**Mitigated Project**	**No Project**	**Project**	**Mitigated Project**	**No Project**	**Project**	**Mitigated Project**
Avenue 18 ½ at Golden State Boulevard/Road 23			C			29.0			C			23.7
• NB Left-Through-Right	A	A		7.7	7.7		A	A		7.8	7.8	
• SB Left-Through-Right	A	B		9.6	10.0		B	B		11.5	12.7	
• **WB Approach**	**F**	**F**		**376.2**	**974.3**		**F**	**F**		**---**	**---**	
• **EB Approach**	**F**	**F**		**5021**	**---**		**F**	**F**		**---**	**---**	

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

Three (3) freeway segments that are projected to operate at a LOS "D" or "F" in the Opening Day (2008) No Project scenario are projected to continue to operate at a LOS "D" or "F" in the Opening Day (2008) 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 – PM peak hour – LOS "F"
  - SB – PM peak hour – LOS "F"

One (1) freeway segment that is projected to operate at a LOS "D" in the Opening Day (2008) No Project scenario is projected to operate at a LOS "E" in the Opening Day (2008) Project scenario. The freeway segment is:

- SR 99 south of Avenue 17
  - NB – PM peak hour – LOS "D" to 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 Opening Day (2008) scenarios.

As shown in Table 92, all freeway segments projected to operate below acceptable levels of service in the Opening Day (2008) No Project and Opening Day (2008) Project scenarios are projected to operate at or above the acceptable levels of service in the Mitigated Opening Day (2008) Project scenario.

Intersections

Intersections exceeding the appropriate level of service standard are shown in bold print in Table 92. As can be seen in Table 92, implementation of the Project is projected to cause one (1) new intersection operational impact when compared to the 2008 No Project scenario. This one (1) intersection is:

- Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps – PM peak hour – LOS "C" to LOS "D"

Twelve (12) intersections that are projected to operate at a LOS "D", "E" or "F" in the Opening Day (2008) No Project scenario are projected to continue to operate at a LOS "D", "E" or "F" in the Opening Day (2008) Project scenario but are projected to show an increased intersection stopped delay. These twelve (12) intersections are:

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

- Avenue 17 at Golden State Boulevard
  - NB Approach – AM/PM peak hours – LOS "F"
  - SB Approach – AM/PM peak hours – LOS "F"
- Ellis Street at Road 26 – PM peak hour – LOS "F"
- Avenue 16/Avenue 16 Connector at SR 99 NB ramps
  - EB Left – PM peak hour – LOS "D"
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps – PM peak hour – LOS "D"
- SR 145/Madera Avenue at SR 99 NB ramps – AM peak hour – LOS "D"
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145 – PM peak hour – LOS "E"

Four (4) intersections that are projected to operate at a LOS "D", "E", or "F" in the Opening Day (2008) No Project scenario are projected to show an increase in level of service and associated stopped delay in the Opening Day (2008) Project scenario. These four (4) intersections are:

- Avenue 18 ½ at SR 99 SB ramps/Road 23
  - NB Approach – PM peak hour – LOS "D" to LOS "E"
  - SB Approach – PM peak hour – LOS "D" to LOS "F"
- Avenue 18 ½ at SR 99 NB ramps
  - NB Approach – PM peak hour – LOS "E" to LOS "F"
- Avenue 16 at Schnoor Avenue
  - WB Approach – AM/PM peak hours – LOS "E" to LOS "F"
  - EB Approach – AM/PM peak hours – LOS "E" to LOS "F"
- SR 145/Madera Avenue at SR 99 NB ramps – 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 (2008) scenarios.

As shown in Table 92, all intersections projected to operate below acceptable levels of service in the Opening Day (2008) No Project and Opening Day (2008) Project scenarios are projected to operate at or above the acceptable levels of service in the Mitigated Opening Day (2008) 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 93. As can be seen in Table 93, one (1) County segment is projected to fail operationally with the addition of the Project. The County segment is:

- Avenue 17 – Road 23 to SR 99 – PM peak hour – LOS "D" to LOS "E"

Because the mitigations identified in the 2008 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. County segments analyzed with a different number of lanes in the 2030 No Project and 2030 Project scenarios are as follows:

- Avenue 17 – SR 99 to Road 27

This County segment is projected to operate at a LOS "E" in the 2030 No Project scenario and is projected to operate at a LOS "B" in the 2030 Project scenario. The County segment is:

- Avenue 17 – SR 99 to Road 27 – PM peak hours – LOS "E" to LOS "B"

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 93, 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 93. As can be seen in Table 93, 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 four (4) freeway segments are:

- SR 99 north of Avenue 18 ½
  - NB – AM 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 – PM peak hour – LOS "F"

One (1) freeway segment that is projected to operate at a LOS "D" in the 2030 No Project scenario is projected to operate at a LOS "E" in the 2030 Project scenario. The freeway segment is:

- SR 99 between south of Avenue 17
  - NB – AM peak hour – LOS "D" to LOS "E"

Because the mitigations identified in the 2008 Project scenario were used in the 2030 Project scenario, level of service and measures of effectiveness comparisons of some freeway segments between the 2030 No Project scenario and the 2030 Project scenario could not be made due to additional lanes. Freeway segments analyzed with a different number of lanes in the 2030 No Project and 2030 Project scenarios are as follows:

- SR 99 south of Avenue 17 – SB

This freeway segment is projected to operate at a LOS "F" in the 2030 No Project scenario and is projected to operate at a LOS "E" in the 2030 Project scenario. The freeway segment is:

- SR 99 south of Avenue 17
  - SB – PM peak hour – LOS "F" to 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 93, 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 "D" 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.

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 two (2) new intersection operational failures when compared to the 2030 No Project scenario. These two (2) intersections are:

- Avenue 17 at SR 99 NB ramps – AM peak hour – LOS "C" to LOS "D"
- Avenue 18 at Road 23
  - EB Approach – AM/PM peak hours – LOS "C" to LOS "E"

Thirteen (13) 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. They are:

- Avenue 17 at SR 99 SB ramps – PM peak hour – LOS "F"
- Avenue 17 at SR 99 NB ramps – PM peak hour – LOS "F"
- Avenue 12/Golden State Boulevard at SR 99 SB ramps
  - AM peak hour – LOS "D"
  - PM peak hour – LOS "F"
- Avenue 12 at Golden State Boulevard – PM peak hour – LOS "F"
- Avenue 12 at SR 99 NB ramps
  - AM peak hour – LOS "D"
  - PM peak hour – LOS "F"
- Avenue 17 at Golden State Boulevard – PM peak hour – LOS "F"
- Avenue 16/Ellis Street at Golden State Boulevard – PM peak hour – LOS "E"
- Avenue 16/Ellis Street at SR 99 SB ramps – PM peak hour – LOS "E"
- Avenue 16/Ellis Street at SR 99 NB ramps – PM peak hour – LOS "F"
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps – PM peak hours – LOS "F"
- Olive Avenue/Avenue 14 at SR 99 SB off-ramp – AM/PM peak hours – LOS "F"
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145 – AM/PM peak hours – LOS "F"
- Avenue 18 ½ at Golden State Boulevard/Road 23
  - WB Approach – AM/PM peak hours – LOS "F"
  - EB Approach – AM/PM peak hours – LOS "F"

One (1) intersection that is projected to operate at a LOS "D", "E", or "F" in the 2030 No Project scenario is projected to show an increase in level of service and associated stopped delay in the 2030 Project scenario. This one (1) intersection is:

- SR 145/Madera Avenue at SR 99 NB ramps – PM peak hour – LOS "D" to LOS "E"

Because the mitigations identified in the 2008 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:

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

This intersection is projected to operate at a LOS "F" in the 2030 No Project scenario and is projected to continue to operate at a LOS "F" in the 2030 Project scenario but is projected to show a decreased intersection stopped delay. The intersection is:

- Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps – AM 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 one (1) intersection is:

- Avenue 12 at Golden State Boulevard – AM peak hour – LOS "F"

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 93, one (1) intersection is projected to operate below acceptable levels of service in the Mitigated 2030 Project scenario. The Avenue 17 at SR 99 NB ramps intersection is projected to operate at a LOS "D" in the PM peak hour. Per discussions with Caltrans staff, 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.

Alternative B (Madera Site)

Tables 94 and 95 compare the Alternative B, Reduced Intensity Alternative, Opening Day (2008) No Project, Opening Day (2008) Project, and Mitigated Opening Day (2008) 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 (2008) No Project, Opening Day (2008) Project, and Mitigated Opening Day (2008) 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, two (2) County segments are projected to operate at a LOS "F" in the Opening Day (2008) No Project scenario and are projected to continue to operate at a LOS "F" in the Opening Day (2008) Project scenario. The County segments are:

- Avenue 17 – Road 23 to SR 99 – PM peak hour – LOS "F"
- Avenue 17 – SR 99 to Road 27 – AM/PM peak hours – 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 (2008) scenarios.

TABLE 94:
COMPARISON OF 2008 NO PROJECT, 2008 PROJECT, AND MITIGATED 2008 PROJECT LEVELS OF SERVICE
MADERA SITE (ALTERNATIVE B, REDUCED INTENSITY ALTERNATIVE)

	AM Peak Hour						PM Peak Hour					
	No Project		**Project**		**Mitigated Project**		**No Project**		**Project**		**Mitigated Project**	
County Segment	**LOS**		**LOS**		**LOS**		**LOS**		**LOS**			
Avenue 17 – Road 23 to SR 99	A		A		A		**F**		**F**		A	
Avenue 17 – SR 99 to Road 27	**F**		**F**		A		**F**		**F**		B	
	LOS			**Density (pc/mi/ln)**			**LOS**			**Density (pc/mi/ln)**		
Freeway Segment	**No Project**	**Project**	**Mitigated Project**	**No Project**	**Project**	**Mitigated Project**	**No Project**	**Project**	**Mitigated Project**	**No Project**	**Project**	**Mitigated Project**
SR 99 north of Avenue 18 ½												
• **NB**	C	C	B	24.1	24.3	16.0	C	**D**	B	25.7	**26.1**	16.9
• **SB**	C	C	C	19.9	20.2	20.2	**D**	**D**	C	**33.6**	**34.3**	21.8
SR 99 between Avenue 18 ½ and Avenue 17												
• **NB**	**D**	**D**	B	**26.9**	**26.9**	17.3	**D**	**D**	B	**28.2**	**28.2**	17.9
• **SB**	C	C	B	21.6	21.6	14.3	**E**	**E**	C	**39.1**	**39.1**	21.7
SR 99 south of Avenue 17												
• **NB**	**D**	**D**	C	**31.6**	**34.2**	20.2	**F**	**F**	C	---	---	24.8
• **SB**	C	C	B	23.1	23.8	11.7	**F**	**F**	C	---	---	20.8
	LOS			**Delay (sec)**			**LOS**			**Delay (sec)**		
Intersection	**No Project**	**Project**	**Mitigated Project**	**No Project**	**Project**	**Mitigated Project**	**No Project**	**Project**	**Mitigated Project**	**No Project**	**Project**	**Mitigated Project**
Avenue 18 ½ at SR 99 SB ramps/Road 23			B			14.4			C			21.3
• WB Left-Through	A	A		8.9	8.9		A	A		8.9	9.0	
• **NB Approach**	**D**	**E**		**25.6**	**37.0**		**F**	**F**		**63.3**	**458.3**	
• **SB Approach**	**D**	**E**		**30.0**	**45.9**		**F**	**F**		**178.0**	**324.1**	
Avenue 18 ½ at SR 99 NB ramps			C			28.5			C			27.3
• EB Left	A	A		8.5	8.6		A	A		8.3	8.5	
• **NB Approach**	**E**	**F**		**44.3**	**55.4**		**F**	**F**		**144.0**	**239.1**	
Avenue 17 at SR 99 SB ramps			A			4.4			A			9.4
• **SB Approach**	**F**	**F**		**153.6**	**402.7**		**F**	**F**		**8216**	**19627**	
Avenue 17 at SR 99 NB ramps			B			16.4			C			32.4
• EB Left	B	B		10.2	10.5		C	C		15.7	16.5	
• **NB Approach**	**F**	**F**		**738.0**	**1301**		**F**	**F**		**5934**	**10493**	
Avenue 12/Golden State Boulevard at SR 99 SB ramps			B			13.0			B			16.8
• SB Left-Through	A	A		8.4	8.4		A	A		9.0	9.0	
• **WB Approach**	C	C		15.6	16.2		**F**	**F**		**303.5**	**323.1**	
Avenue 17 at Road 23			B			13.2			C			21.1
• NB Left-Through-Right	A	A		7.5	7.5		A	A		7.6	7.6	
• SB Left-Through-Right	A	A		7.8	7.9		A	A		8.2	8.3	
• **WB Approach**	B	C		14.7	15.7		**F**	**F**		**50.5**	**83.6**	
• EB Approach	B	B		12.5	12.9		C	C		7.0	19.2	

TABLE 94:
COMPARISON OF 2008 NO PROJECT, 2008 PROJECT, AND MITIGATED 2008 PROJECT LEVELS OF SERVICE
MADERA SITE (ALTERNATIVE B, REDUCED INTENSITY ALTERNATIVE)

	AM Peak Hour						PM Peak Hour					
	LOS			Delay (sec)			LOS			Delay (sec)		
Intersection	**No Project**	**Project**	**Mitigated Project**	**No Project**	**Project**	**Mitigated Project**	**No Project**	**Project**	**Mitigated Project**	**No Project**	**Project**	**Mitigated Project**
Avenue 17 at Golden State Boulevard			B			17.5			D			35.6
• EB Left-Through-Right	A	B		9.1	10.1		B	B		11.0	13.1	
• WB Left-Through-Right	A	A		8.9	8.9		B	B		13.7	13.7	
• **NB Approach**	**F**	**F**		**73.0**	**205.9**		**F**	**F**		**---**	**---**	
• **SB Approach**	**F**	**F**		**282.2**	**3462**		**F**	**F**		**---**	**---**	
Ellis Street at Road 26	B	C	A	14.62	15.09	9.9	**F**	**F**	B	**96.48**	**106.43**	15.2
Avenue 16 at Schnoor Avenue			C			25.4			B			17.5
• NB Left	A	A		7.4	7.4		A	A		7.6	7.6	
• SB Left-Through-Right	A	A		7.8	7.8		A	A		7.7	7.7	
• **WB Approach**	B	B		11.5	12.2		**E**	**F**		**63.4**	**105.0**	
• **EB Approach**	B	C		14.2	15.4		**E**	**F**		**49.5**	**72.9**	
Avenue 16/Avenue 16 connector at SR 99 NB ramps			B			11.5			B			14.6
• **EB Left**	B	B		12.6	12.9		**D**	**D**		**26.5**	**30.5**	
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	B	B	B	14.2	14.5	11.0	**D**	**D**	C	**35.1**	**36.7**	27.2
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps	B	B	A	13.0	13.0	8.8	C	**D**	B	34.3	**40.0**	19.2
SR 145/Madera Avenue at SR 99 NB ramps	**D**	**D**	B	**36.5**	**38.5**	13.6	**D**	**E**	B	**54.8**	**61.7**	13.0
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	C	C	B	26.6	30.1	12.2	**E**	**E**	C	**61.1**	**67.2**	29.5

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

TABLE 95:
COMPARISON OF 2030 NO PROJECT, 2030 PROJECT, AND MITIGATED 2030 PROJECT LEVELS OF SERVICE
MADERA SITE (ALTERNATIVE B, REDUCED INTENSITY ALTERNATIVE)

	AM Peak Hour						PM Peak Hour					
	No Project		Project		Mitigated Project		No Project		Project		Mitigated Project	
County Segment	LOS		LOS				LOS		LOS			
Avenue 17 – Road 23 to SR 99	A		A		A		D		E		B	
Avenue 17 – SR 99 to Road 27	B		A		A		E		B		B	
	LOS			Density (pc/mi/ln)			LOS			Density (pc/mi/ln)		
Freeway Segment	No Project	Project	Mitigated Project	No Project	Project	Mitigated Project	No Project	Project	Mitigated Project	No Project	Project	Mitigated Project
SR 99 north of Avenue 18 ½												
• **NB**	C	C	C	25.2	25.3	18.6	**D**	**D**	C	**26.1**	**26.4**	19.2
• **SB**	C	C	B	20.3	20.5	15.4	**E**	**E**	C	**35.2**	**35.7**	23.5
SR 99 between Avenue 18 ½ and Avenue 17												
• **NB**	**D**	**D**	C	**28.3**	**28.3**	20.2	**D**	**D**	C	**28.9**	**28.9**	20.5
• **SB**	C	C	B	22.2	22.2	16.6	**E**	**E**	C	**41.9**	**41.9**	25.6
SR 99 south of Avenue 17												
• **NB**	**D**	**E**	C	**33.1**	**35.6**	23.5	**F**	**F**	**D**	**---**	**---**	**29.2**
• **SB**	C	B	B	23.3	17.7	17.7	**F**	**D**	**D**	**---**	**34.8**	**34.8**
	LOS			Delay (sec)			LOS			Delay (sec)		
Intersection	No Project	Project	Mitigated Project	No Project	Project	Mitigated Project	No Project	Project	Mitigated Project	No Project	Project	Mitigated Project
Avenue 17 at SR 99 SB ramps	A	A	A	7.9	8.1	6.0	**F**	**F**	B	**87.5**	**150.0**	16.9
Avenue 17 at SR 99 NB ramps	C	C	B	26.5	32.3	17.0	**F**	**F**	**D**	**113.6**	**135.6**	**47.8**
Avenue 12/Golden State Boulevard at SR 99 SB ramps	**D**	**D**	B	**41.8**	**50.6**	17.9	**F**	**F**	C	**245.6**	**251.5**	20.7
Avenue 12 at Golden State Boulevard	**F**	**F**	B	**126.8**	**124.9**	18.4	**F**	**F**	D	**418.3**	**419.5**	39.4
Avenue 12 at SR 99 NB ramps	**D**	**D**	B	**41.7**	**43.8**	11.2	**F**	**F**	C	**243.3**	**249.3**	21.4
Avenue 17 at Golden State Boulevard	C	C	B	24.1	25.4	17.8	**F**	**F**	C	**125.6**	**201.9**	34.2
Avenue 16/Ellis Street at Golden State Boulevard	C	C	C	22.8	22.6	24.5	**E**	**E**	D	**72.4**	**76.7**	42.4
Avenue 16/Ellis Street at SR 99 SB ramps	B	B	A	13.7	13.8	7.6	**E**	**E**	B	**69.9**	**76.3**	19.2
Avenue 16/Ellis Street at SR NB ramps	C	C	B	27.5	28.9	16.1	**F**	**F**	C	**153.0**	**160.5**	34.2
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	C	C	B	24.5	25.3	13.2	**F**	**F**	C	**177.3**	**176.6**	30.8
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps	C	B	B	27.1	15.4	12.0	**F**	**F**	C	**202.0**	**109.6**	26.7
SR 145/Madera Avenue at SR 99 NB ramps	C	B	B	20.3	19.9	17.3	**D**	**E**	C	**53.2**	**57.3**	25.0
Olive Avenue/Avenue 14 at SR 99 SB off-ramp	**F**	**F**	B	**101.7**	**102.8**	13.3	**F**	**F**	C	**273.1**	**272.6**	20.6
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	**F**	**F**	B	**102.5**	**103.3**	11.3	**F**	**F**	C	**357.7**	**361.6**	31.1
Avenue 18 ½ at Golden State Boulevard/Road 23			C			29.2			C			23.9
• NB Left-Through-Right	A	A		7.7	7.7		A	A		7.8	7.8	
• SB Left-Through-Right	A	A		9.6	9.8		B	B		11.5	12.3	
• **WB Approach**	**F**	**F**		**376.2**	**687.0**		**F**	**F**		**---**	**---**	
• **EB Approach**	**F**	**F**		**5021**	**---**		**F**	**F**		**---**	**---**	

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

As shown in Table 94, all County segments projected to operate below acceptable levels of service in the Opening Day (2008) No Project and Opening Day (2008) Project scenarios are projected to operate at or above the acceptable levels of service in the Mitigated Opening Day (2008) 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, implementation of the Project is projected to cause one (1) new freeway segment operational failure when compared to the Opening Day (2008) No Project scenario. The freeway segment is:

- SR 99 north of Avenue 18 ½
  - NB – PM peak hour – LOS "C" to LOS "D"

Five (5) freeway segments that are projected to operate at a LOS "D", "E", or "F" in the Opening Day (2008) No Project scenario are projected to continue to operate at a LOS "D", "E", or "F" in the Opening Day (2008) 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 between Avenue 18 ½ and Avenue 17
  - NB – AM/PM peak hour – LOS "D"
  - SB – PM peak hour – LOS "E"
- SR 99 south of Avenue 17
  - NB – AM peak hour – LOS "D"
  - NB – PM peak hour – LOS "F"
  - 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 Opening Day (2008) scenarios.

As shown in Table 94, all freeway segments projected to operate below acceptable levels of service in the Opening Day (2008) No Project and Opening Day (2008) Project scenarios are projected to operate at or above the acceptable levels of service in the Mitigated Opening Day (2008) Project scenario.

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 failure when compared to the 2008 No Project scenario. This one (1) intersection is:

- Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps – PM peak hour – LOS "C" to LOS "D"

Twelve (12) intersections that are projected to operate at a LOS "D", "E" or "F" in the Opening Day (2008) No Project scenario are projected to continue to operate at a LOS "D", "E" or "F" in the Opening Day (2008) Project scenario but are projected to show an increased intersection stopped delay. These twelve (12) intersections are:

- Avenue 18 ½ at SR 99 SB ramps/Road 23
  - NB Approach – PM peak hour – LOS "F"
  - SB Approach – PM peak hour – LOS "F"
- Avenue 18 ½ at SR 99 NB ramps
  - NB Approach – PM peak hour – LOS "F"
- Avenue 17 at SR 99 SB ramps
  - SB Approach – AM/PM peak hours – LOS "F"
- Avenue 17 at SR 99 NB ramps
  - SB Approach – AM/PM peak hours – LOS "F"
- Avenue 12/Golden State Boulevard at SR 99 SB ramps
  - WB Approach – PM peak hour – LOS "F"
- Avenue 17 at Road 23
  - WB Approach – PM peak hour – LOS "F"
- Avenue 17 at Golden State Boulevard
  - NB Approach – AM/PM peak hours – LOS "F"
  - SB Approach – AM/PM peak hours – LOS "F"
- Ellis Street at Road 26 – PM peak hour – LOS "F"
- Avenue 16/Avenue 16 Connector at SR 99 NB ramps
  - EB Left – PM peak hour – LOS "D"
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps – PM peak hour – LOS "D"
- SR 145/Madera Avenue at SR 99 NB ramps – AM peak hour – LOS "D"
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145 – PM peak hour – LOS "E"

Four (4) intersections that are projected to operate at a LOS "D", "E", or "F" in the Opening Day (2008) No Project scenario are projected to show an increase in level of service and associated stopped delay in the Opening Day (2008) Project scenario. These four (4) intersections are:

- Avenue 18 ½ at SR 99 SB ramps/Road 23
  - NB Approach – PM peak hour – LOS "D" to LOS "E"
  - SB Approach – PM peak hour – LOS "D" to LOS "E"
- Avenue 18 ½ at SR 99 NB ramps
  - NB Approach – PM peak hour – LOS "E" to LOS "F"
- Avenue 16 at Schnoor Avenue
  - WB Approach – AM/PM peak hours – LOS "E" to LOS "F"
  - EB Approach – AM/PM peak hours – LOS "E" to LOS "F"
- SR 145/Madera Avenue at SR 99 NB ramps – 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 (2008) scenarios.

As shown in Table 94, all intersections projected to operate below acceptable levels of service in the Opening Day (2008) No Project and Opening Day (2008) Project scenarios are projected to operate at or above the acceptable levels of service in the Mitigated Opening Day (2008) 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 95. As can be seen in Table 95, one (1) County segment is projected to fail operationally with the addition of the Project. The County segment is:

- Avenue 17 – Road 23 to SR 99 – PM peak hour – LOS "D" to LOS "E"

Because the mitigations identified in the 2008 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. County segments analyzed with a different number of lanes in the 2030 No Project and 2030 Project scenarios are as follows:

- Avenue 17 – SR 99 to Road 27

This County segment is projected to operate at a LOS "E" in the 2030 No Project scenario and is projected to operate at a LOS "B" in the 2030 Project scenario. The County segment is:

- Avenue 17 – SR 99 to Road 27 – PM peak hours – LOS "E" to LOS "B"

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 95, 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 95. As can be seen in Table 95, 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 four (4) freeway segments are:

- SR 99 north of Avenue 18 ½
  - NB – AM 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 – PM peak hour – LOS "F"

One (1) freeway segment that is projected to operate at a LOS "D" in the 2030 No Project scenario is projected to operate at a LOS "E" in the 2030 Project scenario. The freeway segment is:

- SR 99 between south of Avenue 17
  - NB – AM peak hour – LOS "D" to LOS "D"

Because the mitigations identified in the 2008 Project scenario were used in the 2030 Project scenario, level of service and measures of effectiveness comparisons of some freeway segments between the 2030 No Project scenario and the 2030 Project scenario could not be made due to additional lanes. Freeway segments analyzed with a different number of lanes in the 2030 No Project and 2030 Project scenarios are as follows:

- SR 99 south of Avenue 17 – SB

This freeway segment is projected to operate at a LOS "F" in the 2030 No Project scenario and is projected to operate at a LOS "E" in the 2030 Project scenario. The freeway segment is:

- SR 99 south of Avenue 17
  - SB – PM peak hour – LOS "F" to LOS "E"

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 95, 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 "D" 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.

Intersections

Intersections exceeding the appropriate level of service standard are shown in bold print in Table 95. Twelve (12) 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. They are:

- Avenue 17 at SR 99 SB ramps – PM peak hour – LOS "F"
- Avenue 17 at SR 99 NB ramps – PM peak hour – LOS "F"
- Avenue 12/Golden State Boulevard at SR 99 SB ramps
  - AM peak hour – LOS "D"
  - PM peak hour – LOS "F"
- Avenue 12 at Golden State Boulevard – PM peak hour – LOS "F"
- Avenue 12 at SR 99 NB ramps
  - AM peak hour – LOS "D"
  - PM peak hour – LOS "F"
- Avenue 16/Ellis Street at Golden State Boulevard – PM peak hour – LOS "E"
- Avenue 16/Ellis Street at SR 99 SB ramps – PM peak hour – LOS "E"
- Avenue 16/Ellis Street at SR 99 NB ramps – PM peak hour – LOS "F"
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps – PM peak hours – LOS "F"
- Olive Avenue/Avenue 14 at SR 99 SB off-ramp – AM peak hour – LOS "F"
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145 – AM/PM peak hours – LOS "F"
- Avenue 18 ½ at Golden State Boulevard/Road 23
  - WB Approach – AM/PM peak hours – LOS "F"
  - EB Approach – AM/PM peak hours – LOS "F"

One (1) intersection that is projected to operate at a LOS "D", "E", or "F" in the 2030 No Project scenario is projected to show an increase in level of service and associated stopped delay in the 2030 Project scenario. This one (1) intersection is:

- SR 145/Madera Avenue at SR 99 NB ramps – PM peak hour – LOS "D" to LOS "E"

Because the mitigations identified in the 2008 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:

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

This intersection is projected to operate at a LOS "F" in the 2030 No Project scenario and is projected to continue to operate at a LOS "F" in the 2030 Project scenario but is projected to show a decreased intersection stopped delay. The intersection is:

- Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps – AM 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. Three (3) 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 three (3) intersections are:

- Avenue 12 at Golden State Boulevard – AM peak hour – LOS "F"
- Avenue 17 at Golden State Boulevard – PM peak hour – LOS "F"
- Olive Avenue/Avenue 14 at SR 99 SB off-ramp – PM peak hour – LOS "F"

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 95, one (1) intersection is projected to operate below acceptable levels of service in the Mitigated 2030 Project, Alternative B, scenario. The Avenue 17 at SR 99 NB ramps intersection is projected to operate at a LOS "D" in the PM peak hour. Per discussions with Caltrans staff, widening Avenue 17 to eight (8) lanes is not recommended. 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 96 and 97 compare the Alternative C, Alternative Land Use Alternative, Opening Day (2008) No Project, Opening Day (2008) Project, and Mitigated Opening Day (2008) 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.

TABLE 96:
COMPARISON OF 2008 NO PROJECT, 2008 PROJECT, AND MITIGATED 2008 PROJECT LEVELS OF SERVICE
MADERA SITE (ALTERNATIVE C, ALTERNATIVE LAND USE ALTERNATIVE)

	AM Peak Hour						PM Peak Hour					
	No Project		**Project**		**Mitigated Project**		**No Project**		**Project**		**Mitigated Project**	
County Segment	**LOS**		**LOS**		**LOS**		**LOS**		**LOS**		**LOS**	
Avenue 17 – Road 23 to SR 99	A		A		A		**F**		**F**		B	
Avenue 17 – SR 99 to Road 27	**F**		**F**		A		**F**		**F**		B	
	LOS			**Density (pc/mi/ln)**			**LOS**			**Density (pc/mi/ln)**		
Freeway Segment	**No Project**	**Project**	**Mitigated Project**	**No Project**	**Project**	**Mitigated Project**	**No Project**	**Project**	**Mitigated Project**	**No Project**	**Project**	**Mitigated Project**
SR 99 north of Avenue 18 ½												
• **NB**	C	C	B	24.1	24.4	16.0	C	**D**	B	25.7	**26.3**	17.0
• **SB**	C	C	B	19.9	20.2	13.4	**D**	**D**	C	**33.6**	**34.6**	20.4
SR 99 between Avenue 18 ½ and Avenue 17												
• **NB**	**D**	**D**	B	**26.9**	**26.9**	17.3	**D**	**D**	B	**28.2**	**33.9**	17.9
• **SB**	C	C	B	21.6	21.6	14.3	**E**	**E**	C	**39.1**	**39.1**	21.7
SR 99 south of Avenue 17												
• **NB**	**D**	**D**	C	**31.6**	**33.9**	20.1	**F**	**F**	C	---	---	25.3
• **SB**	C	C	B	23.1	24.3	12.0	**F**	**F**	C	---	---	21.2
	LOS			**Delay (sec)**			**LOS**			**Delay (sec)**		
Intersection	**No Project**	**Project**	**Mitigated Project**	**No Project**	**Project**	**Mitigated Project**	**No Project**	**Project**	**Mitigated Project**	**No Project**	**Project**	**Mitigated Project**
Avenue 18 ½ at SR 99 SB ramps/Road 23			B			14.1			C			22.1
• WB Left-Through	A	A		8.9	8.9		A	A		8.9	9.0	
• **NB Approach**	**D**	**E**		**25.6**	**35.6**		**F**	**F**		**63.3**	---	
• **SB Approach**	**D**	**E**		**30.0**	**43.8**		**F**	**F**		**178.0**	**387.0**	
Avenue 18 ½ at SR 99 NB ramps			C			30.0			C			27.8
• EB Left	A	A		8.5	8.7		A	A		8.3	8.6	
• **NB Approach**	**E**	**F**		**44.3**	**65.3**		**F**	**F**		**144.0**	**286.9**	
Avenue 17 at SR 99 SB ramps			A			4.2			A			9.8
• **SB Approach**	**F**	**F**		**153.6**	**458.3**		**F**	**F**		**8216**	**29610**	
Avenue 17 at SR 99 NB ramps			B			16.1			C			34.6
• EB Left	B	B		10.2	10.4		C	C		15.7	16.9	
• **NB Approach**	**F**	**F**		**738.0**	**1294**		**F**	**F**		**5934**	**12966**	
Avenue 12/Golden State Boulevard at SR 99 SB ramps			B			13.1			B			16.8
• SB Left-Through	A	A		8.4	8.4		A	A		9.0	9.0	
• **WB Approach**	C	C		15.6	16.5		**F**	**F**		**303.5**	**333.5**	
Avenue 17 at Road 23			B			14.0			C			21.3
• NB Left-Through-Right	A	A		7.5	7.5		A	A		7.6	7.7	
• SB Left-Through-Right	A	A		7.8	7.9		A	A		8.2	8.4	
• **WB Approach**	B	C		14.7	16.1		**F**	**F**		**50.5**	**104.5**	
• EB Approach	B	B		12.5	13.1		C	C		7.0	20.3	

TABLE 96:
COMPARISON OF 2008 NO PROJECT, 2008 PROJECT, AND MITIGATED 2008 PROJECT LEVELS OF SERVICE
MADERA SITE (ALTERNATIVE C, ALTERNATIVE LAND USE ALTERNATIVE)

	AM Peak Hour						PM Peak Hour					
	LOS			Delay (sec)			LOS			Delay (sec)		
Intersection	**No Project**	**Project**	**Mitigated Project**	**No Project**	**Project**	**Mitigated Project**	**No Project**	**Project**	**Mitigated Project**	**No Project**	**Project**	**Mitigated Project**
Avenue 17 at Golden State Boulevard			B			19.0			D			42.8
• EB Left-Through-Right	A	A		9.1	9.9		B	B		11.0	14.0	
• WB Left-Through-Right	A	A		8.9	8.9		B	B		13.7	13.7	
• **NB Approach**	**F**	**F**		**73.0**	**224.1**		**F**	**F**		**---**	**---**	
• **SB Approach**	**F**	**F**		**282.2**	**4224**		**F**	**F**		**---**	**---**	
Ellis Street at Road 26	B	C	B	14.62	15.12	10.0	**F**	**F**	B	**96.48**	**110.38**	15.3
Avenue 16 at Schnoor Avenue			C			20.1			B			17.7
• NB Left	A	A		7.4	7.4		A	A		7.6	7.6	
• SB Left-Through-Right	A	A		7.8	7.8		A	A		7.7	7.8	
• **WB Approach**	B	B		11.5	12.2		**E**	**F**		**63.4**	**121.5**	
• **EB Approach**	B	C		14.2	15.2		**E**	**F**		**49.5**	**82.8**	
Avenue 16/Avenue 16 connector at SR 99 NB ramps			B			15.2			B			14.5
• **EB Left**	B	B		12.6	13.0		**D**	**D**		**26.5**	**32.3**	
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	B	B	B	14.2	14.5	11.0	**D**	**D**	C	**35.1**	**36.5**	27.2
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps	B	B	A	13.0	13.3	8.9	C	**D**	B	34.3	**42.1**	19.7
SR 145/Madera Avenue at SR 99 NB ramps	**D**	**D**	B	**36.5**	**38.0**	13.3	**D**	**E**	B	**54.8**	**64.5**	13.0
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	C	C	B	26.6	29.7	12.0	**E**	**E**	C	**61.1**	**69.8**	32.1

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

TABLE 97:
COMPARISON OF 2030 NO PROJECT, 2030 PROJECT, AND MITIGATED 2030 PROJECT LEVELS OF SERVICE
MADERA SITE (ALTERNATIVE C, ALTERNATIVE LAND USE ALTERNATIVE)

	AM Peak Hour						PM Peak Hour					
	No Project		Project		Mitigated Project		No Project		Project		Mitigated Project	
County Segment	LOS		LOS		LOS		LOS		LOS		LOS	
Avenue 17 – Road 23 to SR 99	A		A		A		D		F		B	
Avenue 17 – SR 99 to Road 27	B		A		A		E		B		B	
	LOS			Density (pc/mi/ln)			LOS			Density (pc/mi/ln)		
Freeway Segment	No Project	Project	Mitigated Project	No Project	Project	Mitigated Project	No Project	Project	Mitigated Project	No Project	Project	Mitigated Project
SR 99 north of Avenue 18 ½												
• **NB**	C	C	C	25.2	25.4	18.6	**D**	**D**	C	**26.1**	**26.5**	19.3
• **SB**	C	C	B	20.3	20.5	15.4	**E**	**E**	C	**35.2**	**35.9**	23.6
SR 99 between Avenue 18 ½ and Avenue 17												
• **NB**	**D**	**D**	C	**28.3**	**28.3**	20.2	**D**	**D**	C	**28.9**	**28.9**	20.5
• **SB**	C	C	B	22.2	22.2	16.6	**E**	**E**	C	**41.9**	**41.9**	25.6
SR 99 south of Avenue 17												
• **NB**	**D**	**E**	C	**33.1**	**35.4**	23.4	**F**	**F**	**D**	**---**	**---**	**29.8**
• **SB**	C	B	B	23.3	18.0	18.0	**F**	**E**	**E**	**---**	**35.9**	**35.9**
	LOS			Delay (sec)			LOS			Delay (sec)		
Intersection	No Project	Project	Mitigated Project	No Project	Project	Mitigated Project	No Project	Project	Mitigated Project	No Project	Project	Mitigated Project
Avenue 17 at SR 99 SB ramps	A	A	A	7.9	8.0	6.0	**F**	**F**	C	**87.5**	**174.4**	20.5
Avenue 17 at SR 99 NB ramps	C	C	B	26.5	31.4	16.9	**F**	**F**	**D**	**113.6**	**155.0**	**48.6**
Avenue 12/Golden State Boulevard at SR 99 SB ramps	**D**	**D**	B	**41.8**	**43.3**	18.1	**F**	**F**	C	**245.6**	**252.1**	22.2
Avenue 12 at Golden State Boulevard	**F**	**F**	B	**126.8**	**134.6**	18.2	**F**	**F**	D	**418.3**	**420.5**	37.6
Avenue 12 at SR 99 NB ramps	**D**	**D**	B	**41.7**	**43.3**	11.2	**F**	**F**	C	**243.3**	**251.7**	21.2
Avenue 18 at Road 23												
• NB Left-Through-Right	A	A		8.1	8.1		A	A		8.7	8.7	
• SB Left	A	A		8.2	8.3		A	A		8.6	9.0	
• WB Approach	B	B		14.3	13.5		C	C		15.6	17.2	
• **EB Approach**	B	C		14.8	17.0		C	**E**		25.0	**38.8**	
Avenue 17 at Golden State Boulevard	C	C	B	24.1	28.5	18.7	**F**	**F**	D	**125.6**	**259.6**	42.7
Avenue 16/Ellis Street at Golden State Boulevard	C	C	C	22.8	22.6	24.6	**E**	**E**	D	**72.4**	**78.7**	41.8
Avenue 16/Ellis Street at SR 99 SB ramps	B	B	A	13.7	14.1	7.8	**E**	**E**	C	**69.9**	**79.3**	20.6
Avenue 16/Ellis Street at SR NB ramps	C	C	B	27.5	28.7	16.0	**F**	**F**	C	**153.0**	**163.2**	34.8
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	C	C	B	24.5	25.4	13.2	**F**	**F**	C	**177.3**	**178.4**	30.4
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps	C	B	B	27.1	15.6	12.1	**F**	**F**	C	**202.0**	**113.9**	27.9
SR 145/Madera Avenue at SR 99 NB ramps	C	C	B	20.3	20.7	17.3	**D**	**E**	C	**53.2**	**59.4**	25.6
Olive Avenue/Avenue 14 at SR 99 SB off-ramp	**F**	**F**	B	**101.7**	**110.5**	13.5	**F**	**F**	C	**273.1**	**280.4**	20.8
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	**F**	**F**	B	**102.5**	**103.9**	11.4	**F**	**F**	C	**357.7**	**369.1**	32.6

TABLE 97:
COMPARISON OF 2030 NO PROJECT, 2030 PROJECT, AND MITIGATED 2030 PROJECT LEVELS OF SERVICE
MADERA SITE (ALTERNATIVE C, ALTERNATIVE LAND USE ALTERNATIVE)

	AM Peak Hour						PM Peak Hour					
	LOS			Delay (sec)			LOS			Delay (sec)		
Intersection	**No Project**	**Project**	**Mitigated Project**	**No Project**	**Project**	**Mitigated Project**	**No Project**	**Project**	**Mitigated Project**	**No Project**	**Project**	**Mitigated Project**
Avenue 18 ½ at Golden State Boulevard/Road 23			C			29.2			C			23.7
• NB Left-Through-Right	A	A		7.7	7.7		A	A		7.8	7.8	
• SB Left-Through-Right	A	A		9.6	9.8		B	B		11.5	12.6	
• **WB Approach**	**F**	**F**		**376.2**	**684.1**		**F**	**F**		**---**	**---**	
• **EB Approach**	**F**	**F**		**5021**	**---**		**F**	**F**		**---**	**---**	

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

Comparison of Opening Day (2008) No Project, Opening Day (2008) Project, and Mitigated Opening Day (2008) 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, two (2) County segments are projected to operate at a LOS "F" in the Opening Day (2008) No Project scenario and are projected to continue to operate at a LOS "F" in the Opening Day (2008) Project scenario. The County segments are:

- Avenue 17 – Road 23 to SR 99 – PM peak hour – LOS "F"
- Avenue 17 – SR 99 to Road 27 – AM/PM peak hours – 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 (2008) scenarios.

As shown in Table 96, all County segments projected to operate below acceptable levels of service in the Opening Day (2008) No Project and Opening Day (2008) Project scenarios are projected to operate at or above the acceptable levels of service in the Mitigated Opening Day (2008) Project, Alternative C, 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, implementation of the Project is projected to cause one (1) new freeway segment operational failure when compared to the Opening Day (2008) No Project scenario. The freeway segment is:

- SR 99 north of Avenue 18 ½
  - NB – PM peak hour – LOS "C" to LOS "D"

Five (5) freeway segments that are projected to operate at a LOS "D", "E", or "F" in the Opening Day (2008) No Project scenario are projected to continue to operate at a LOS "D", "E", or "F" in the Opening Day (2008) 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 between Avenue 18 ½ and Avenue 17
  - NB – AM/PM peak hour – LOS "D"
  - SB – PM peak hour – LOS "E"
- SR 99 south of Avenue 17
  - NB – AM peak hour – LOS "D"
  - NB – PM peak hour – LOS "F"
  - 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 Opening Day (2008) scenarios.

As shown in Table 96, all freeway segments projected to operate below acceptable levels of service in the Opening Day (2008) No Project and Opening Day (2008) Project scenarios are projected to operate at or above the acceptable levels of service in the Mitigated Opening Day (2008) Project, Alternative C, scenario.

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 failure when compared to the 2008 No Project scenario. This one (1) intersection is:

- Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps – PM peak hour – LOS "C" to LOS "D"

Twelve (12) intersections that are projected to operate at a LOS "D", "E" or "F" in the Opening Day (2008) No Project scenario are projected to continue to operate at a LOS "D", "E" or "F" in the Opening Day (2008) Project scenario but are projected to show an increased intersection stopped delay. These twelve (12) intersections are:

- Avenue 18 ½ at SR 99 SB ramps/Road 23
  - NB Approach – PM peak hour – LOS "F"
  - SB Approach – PM peak hour – LOS "F"
- Avenue 18 ½ at SR 99 NB ramps
  - NB Approach – PM peak hour – LOS "F"
- Avenue 17 at SR 99 SB ramps
  - SB Approach – AM/PM peak hours – LOS "F"
- Avenue 17 at SR 99 NB ramps
  - SB Approach – AM/PM peak hours – LOS "F"
- Avenue 12/Golden State Boulevard at SR 99 SB ramps
  - WB Approach – PM peak hour – LOS "F"
- Avenue 17 at Road 23
  - WB Approach – PM peak hour – LOS "F"
- Avenue 17 at Golden State Boulevard
  - NB Approach – AM/PM peak hours – LOS "F"
  - SB Approach – AM/PM peak hours – LOS "F"
- Ellis Street at Road 26 – PM peak hour – LOS "F"
- Avenue 16/Avenue 16 Connector at SR 99 NB ramps
  - EB Left – PM peak hour – LOS "D"
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps – PM peak hour – LOS "D"
- SR 145/Madera Avenue at SR 99 NB ramps – AM peak hour – LOS "D"
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145 – PM peak hour – LOS "E"

Four (4) intersections that are projected to operate at a LOS "D", "E", or "F" in the Opening Day (2008) No Project scenario are projected to show an increase in level of service and associated stopped delay in the Opening Day (2008) Project scenario. These two (2) intersections are:

- Avenue 18 ½ at SR 99 SB ramps/Road 23
  - NB Approach – PM peak hour – LOS "D" to LOS "E"
  - SB Approach – PM peak hour – LOS "D" to LOS "E"
- Avenue 18 ½ at SR 99 NB ramps
  - NB Approach – PM peak hour – LOS "E" to LOS "F"

- Avenue 16 at Schnoor Avenue
  - WB Approach – AM/PM peak hours – LOS "E" to LOS "F"
  - EB Approach – AM/PM peak hours – LOS "E" to LOS "F"
- SR 145/Madera Avenue at SR 99 NB ramps – 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 (2008) scenarios.

As shown in Table 96, all intersections projected to operate below acceptable levels of service in the Opening Day (2008) No Project and Opening Day (2008) Project scenarios are projected to operate at or above the acceptable levels of service in the Mitigated Opening Day (2008) 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 97. As can be seen in Table 97, one (1) County segment is projected to fail operationally with the addition of the Project. The County segment is:

- Avenue 17 – Road 23 to SR 99 – PM peak hour – LOS "D" to LOS "E"

Because the mitigations identified in the 2008 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. County segments analyzed with a different number of lanes in the 2030 No Project and 2030 Project scenarios are as follows:

- Avenue 17 – SR 99 to Road 27

This County segment is projected to operate at a LOS "E" in the 2030 No Project scenario and is projected to operate at a LOS "B" in the 2030 Project scenario. The County segment is:

- Avenue 17 – SR 99 to Road 27 – PM peak hours – LOS "E" to LOS "B"

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 97, 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 97. As can be seen in Table 97, 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 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 – PM peak hour – LOS "F"

One (1) freeway segment that is projected to operate at a LOS "D" in the 2030 No Project scenario is projected to operate at a LOS "E" in the 2030 Project scenario. The freeway segment is:

- SR 99 between south of Avenue 17
  - NB – AM peak hour – LOS "D" to LOS "E"

Because the mitigations identified in the 2008 Project scenario were used in the 2030 Project scenario, level of service and measures of effectiveness comparisons of some freeway segments between the 2030 No Project scenario and the 2030 Project scenario could not be made due to additional lanes. Freeway segments analyzed with a different number of lanes in the 2030 No Project and 2030 Project scenarios are as follows:

- SR 99 south of Avenue 17 – SB

This freeway segment is projected to operate at a LOS "F" in the 2030 No Project scenario and is projected to operate at a LOS "E" in the 2030 Project scenario. The freeway segment is:

- SR 99 south of Avenue 17
  - SB – PM peak hour – LOS "F" to LOS "E"

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 97, 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 "D" 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 adopted level of service threshold in the Mitigated 2030 Project, Alternative C, scenario.

<u>Intersections</u>

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 one (1) new intersection operational failure when compared to the 2030 No Project scenario. The one (1) intersection is:

- Avenue 18 at Road 23
  - EB Approach – AM/PM peak hours – LOS "C" to LOS "E"

Thirteen (13) 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. They are:

- Avenue 17 at SR 99 SB ramps – PM peak hour – LOS "F"
- Avenue 17 at SR 99 NB ramps – PM peak hour – LOS "F"
- Avenue 12/Golden State Boulevard at SR 99 SB ramps
  - AM peak hour – LOS "D"
  - PM peak hour – LOS "F"
- Avenue 12 at Golden State Boulevard – AM/PM peak hour – LOS "F"
- Avenue 12 at SR 99 NB ramps
  - AM peak hour – LOS "D"
  - PM peak hour – LOS "F"
- Avenue 17 at Golden State Boulevard – PM peak hour – LOS "F"
- Avenue 16/Ellis Street at Golden State Boulevard – PM peak hour – LOS "E"
- Avenue 16/Ellis Street at SR 99 SB ramps – PM peak hour – LOS "E"
- Avenue 16/Ellis Street at SR 99 NB ramps – PM peak hour – LOS "F"
- Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps – PM peak hours – LOS "F"
- Olive Avenue/Avenue 14 at SR 99 SB off-ramp – AM peak hours – LOS "F"
- Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145 – AM/PM peak hours – LOS "F"
- Avenue 18 ½ at Golden State Boulevard/Road 23
  - WB Approach – AM/PM peak hours – LOS "F"
  - EB Approach – AM/PM peak hours – LOS "F"

One (1) intersection that is projected to operate at a LOS "D", "E", or "F" in the 2030 No Project scenario is projected to show an increase in level of service and associated stopped delay in the 2030 Project scenario. This one (1) intersection is:

- SR 145/Madera Avenue at SR 99 NB ramps – PM peak hour – LOS "D" to LOS "E"

Because the mitigations identified in the 2008 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:

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

This intersection is projected to operate at a LOS "F" in the 2030 No Project scenario and is projected to continue to operate at a LOS "F" in the 2030 Project scenario but is projected to show a decreased intersection stopped delay. The intersection is:

- Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps – AM 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 one (1) intersection is:

- Olive Avenue/Avenue 14 at SR 99 SB off-ramp – PM peak hour – LOS "F"

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 97, one (1) intersection is projected to operate below acceptable levels of service in the Mitigated 2030 Project scenario. The Avenue 17 at SR 99 NB ramps intersection is projected to operate at a LOS "D" in the PM peak hour. Per discussions with Caltrans staff, widening Avenue 17 to eight (8) lanes is not recommended. 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)

Tables 98 and 99 compare the Alternative D, Off-Site Alternative, Opening Day (2008) No Project, Opening Day (2008) Project, and Mitigated Opening Day (2008) Project, and the 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 Opening Day (2008) No Project, Opening Day (2008) Project, and Mitigated Opening Day (2008) Project Scenarios

Intersection movements exceeding the appropriate level of service standard are shown in bold print in Table 98. One (1) intersection that is projected to operate at a LOS "D" or "E" in the 2008 No Project scenario is projected to show an increase in level of service and associated stopped delay in the 2008 Project scenario. This one (1) intersection is:

- SR 145 at Road 200
  - 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 D, Off-Site Alternative, in the Opening Day (2008) scenarios.

As shown in Table 98, all intersections projected to operate below acceptable levels of service in the 2008 No Project and 2008 Project scenarios are projected to operate at or above the acceptable levels of service in the Mitigated 2008 Project, Alternative D, scenario.

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. Two (2) intersections are projected to operate below the appropriate level of service standard in the 2030 No Project scenario and are projected to continue to have operational failures in the 2030 Project scenario but are projected to show an increased intersection stopped delay. They are:

- SR 145 at SR 41 – PM peak hour – LOS "F"
- SR 41 at SR 49 – PM peak hour – LOS "F"

The SR 145 at SR 41 intersection in the AM peak hour is projected to operate at a LOS "F" with or without the Project but the intersection stopped delay is projected to decrease with the Project in the 2030 scenarios.

The SR 41 at SR 49 intersection in the AM peak hour is projected to operate at a LOS "E" with or without the Project but with no increase or decrease in the intersection stopped delay.

TABLE 98:
COMPARISON OF 2008 NO PROJECT, 2008 PROJECT, AND MITIGATED 2008 PROJECT LEVELS OF SERVICE
NORTH FORK SITE (ALTERNATIVE D, OFF-SITE ALTERNATIVE)

	AM Peak Hour						PM Peak Hour					
	LOS			Delay (sec)			LOS			Delay (sec)		
Intersection	**No Project**	**Project**	**Mitigated Project**	**No Project**	**Project**	**Mitigated Project**	**No Project**	**Project**	**Mitigated Project**	**No Project**	**Project**	**Mitigated Project**
SR 41 at Road 200			B			11.3			A			9.0
• SB Left	A	A		8.0	8.3		B	B		10.2	10.7	
• **WB Approach**	**E**	**F**		**40.2**	**87.7**		**D**	**E**		**29.9**	**47.5**	

SR = State Route [1] *Delay per vehicle* *secs = seconds* *SB = southbound* *WB = westbound*
--- = exceeds software parameters *Bolded Text = intersection/movement operates below the appropriate level of service standard*

TABLE 99:
COMPARISON OF 2030 NO PROJECT, 2030 PROJECT, AND MITIGATED 2030 PROJECT LEVELS OF SERVICE
NORTH FORK SITE (ALTERNATIVE D, OFF-SITE ALTERNATIVE)

	AM Peak Hour						PM Peak Hour					
	LOS			Delay (sec)			LOS			Delay (sec)		
Intersection	**No Project**	**Project**	**Mitigated Project**	**No Project**	**Project**	**Mitigated Project**	**No Project**	**Project**	**Mitigated Project**	**No Project**	**Project**	**Mitigated Project**
SR 145 at SR 41	**F**	**F**	C	**102.3**	**101.5**	23.5	**F**	**F**	C	**146.6**	**150.9**	29.8
SR 41 at Road 200		B	B		18.1	18.1		C	C		23.7	23.7
• SB Left	B			10.7			C			15.3		
• **WB Approach**	**F**			**1494**			**F**			**1976**		
SR 41 at Road 420 (Thornberry Rd)		A	A		9.5	9.5		A	A		8.1	8.1
• SB Left	B			12.7			B			12.5		
• **WB Approach**	**F**			**391.7**			**F**			**116.5**		
SR 41 at SR 49	**E**	**E**	B	**75.0**	**75.0**	11.5	**F**	**F**	B	**104.2**	**104.7**	16.0

SR = State Route [1] *Delay per vehicle* *secs = seconds* *SB = southbound* *WB = westbound*
--- = exceeds software parameters *Bolded Text = intersection/movement operates below the appropriate level of service standard*

Because the mitigations identified in the 2008 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:

- SR 41 at Road 200
- SR 41 at Road 420 (Thornberry Road)

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 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 D, scenario.

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:
RECOMMENDED IMPROVEMENT COST ESTIMATES

	Cost Estimates ($)	
	2008 Project	**2030 Project**
Madera Site (Alternatives A, B, & C)[1]		
County Segment		
Avenue 17 – Road 23 to SR 99	2,954,387.00	6,546,381.00
Avenue 17 – SR 99 to Road 27	18,942,223.00	---
Freeway Segment		
SR 99 north of Avenue 18 ½	963,440.00	1,862,460.00
SR 99 between Avenue 18 ½ and Avenue 17	5,230,540.00	5,230,540.00
SR 99 south of Avenue 17	2,698,670.00	953,425.00

TABLE 100:
RECOMMENDED IMPROVEMENT COST ESTIMATES

	Cost Estimates ($)	
	2008 Project	**2030 Project**
Madera Site (Alternatives A, B, & C)[1]		
Intersection		
Avenue 18 ½ at SR 99 SB ramps/Road 23	6,773,515.00	12,332,910.00
Avenue 18 ½ at SR 99 NB ramps	2,247,385.00	4,299,945.00
Avenue 17 at SR 99 SB ramps	200,000.00	316,165.00
Avenue 17 at SR 99 NB ramps	3,342,690.00	1,564,865.00
Avenue 12/Golden State Boulevard at SR 99 SB ramps	448,055.00	379,665.00
Avenue 12 at Golden State Boulevard	---	2,436,125.00
Avenue 12 at SR 99 NB ramps	---	11,351,490.00
Avenue 18 at Road 23	212,710.00	582,045.00
Avenue 17 at Road 23	742,135.00	---
Avenue 17 at Golden State Boulevard	776,800.00	778,920.00
Ellis Street at Road 26	950,890.00	---
Avenue 15 ½ at Road 23	---	945,890.00
Avenue 14 at Road 23	945,890.00	---
Avenue 16 at Schnoor Avenue	1,030,490.00	---
Avenue 16 at SR 99 SB ramps	1,072,140.00	---
Avenue 16 at SR 99 NB ramps	1,180,640.00	---
Ellis Street/Avenue 16 at Golden State Boulevard	---	620,875.00
Ellis Street/Avenue 16 at SR 99 SB ramps	---	3,761,605.00
Ellis Street/Avenue 16 at SR 99 NB ramps	---	4,424,785.00
Cleveland Avenue/Avenue 15 ½ at SR 99 NB ramps	715,135.00	1,123,120.00
Cleveland Avenue/Avenue 15 ½ at SR 99 SB ramps	797,650.00	1,554,915.00
SR 145/Madera Avenue at SR 99 NB ramps	1,310,480.00	2,384,105.00
Olive Avenue/Avenue 14 at SR 99 SB off-ramp	---	1,206,220.00
Olive Avenue/Avenue 14/SR 99 SB on-ramp at SR 145	2,947,650.00	3,032,265.00
Avenue 18 ½ at Pistachio Drive	---	274,820.00
Avenue 18 ½ at Golden State Boulevard	---	3,881,240.00
Subtotal Construction Cost	**56,483,515.00**	**71,844,776.00**
Miscellaneous (3%)	1,694,505.45	2,155,343.28
Contingencies (20%)	11,296,703.00	25,145,671.60
Construction Engineering (5%)	2,824,175.75	3,592,238.80
Plans, Specifications, and Engineering (10%)	5,648,351.50	7,184,477.60
Total Construction Cost	**77,947,250.70**	**109,922,507.28**
Project Study Report (PSR)	1,200,000.00	1,400,000.00
Environmental Impact Report (EIR)	1,200,000.00	1,400,000.00
Total Project Cost	**80,347,250.70**	**112,722,507.28**

TABLE 100:
RECOMMENDED IMPROVEMENT COST ESTIMATES

	Cost Estimates ($)	
	2008 Project	**2030 Project**
North Fork Site (Alternative D)		
Intersection		
SR 145 at SR 41	---	775,650.00
SR 41 at Road 200	368,196.00	---
SR 41 at Road 420 (Thornberry Road)	368,196.00	---
SR 41 at SR 49	---	598,370.00
Road 274 (Malum Ridge Rd) at Road 225 (Mammoth Pool Rd)	---	390,370.00
Subtotal Construction Cost	**736,392.00**	**1,764,390.00**
Miscellaneous (3%)	22,091.76	52,931.70
Contingencies (20%)	147,278.40	617,536.50
Construction Engineering (5%)	36,819.60	88,219.50
Plans, Specifications, and Engineering (10%)	73,639.20	176,439.00
Total Construction Cost	**1,016,220.96**	**2,699,516.70**
Project Study Report (PSR)	---	200,000.00
Environmental Impact Report (EIR)	---	200,000.00
Total Project Cost	**1,016,220.96**	**3,099,516.70**

SR = State Route *1 = Improvement costs are the same for Alternatives A, B, and C*

Financing Plan

To Be Determined

VI. APPENDICES

The following sections provide information on the traffic data collection, study methodology and assumptions, and printouts of the following worksheets:

- Raw traffic count data
- Alternative C trip generation information
- Levels of service
- Signal warrants

A. TRAFFIC DATA

According to the Caltrans Guide for the Preparation of Traffic Impact Studies, one of the common rules for counting vehicular traffic is:

> "Vehicle counts should be conducted on Tuesdays, Wednesdays, or Thursdays during weeks not containing a holiday and conducted in favorable weather conditions."9

Table 101 shows the dates and days the Existing 24-hour segment and peak hour intersection counts were collected for this Project. Prior to conducting these counts it was verified that these were non-holiday weeks. The Appendices section Attachment VI – C - 53 contains copies of all the raw count data collected for this analysis.

TABLE 101:
EXISTING SEGMENT AND INTERSECTION COUNTS
DAYS AND DATES COUNTED

Segments	Day	Date
Madera Site (Alternative A, B, C)		
Avenue 18 ½ - Road 24 to Road 23	Tuesday	11/30/04
Road 23 – Avenue 18 ½ to Avenue 17	Tuesday	3/2/04
Avenue 17 – Road 23 to SR 99	Tuesday	11/30/04
Avenue 17 – SR 99 to Road 27	Wednesday	7/28/04
Golden State Boulevard – Avenue 17 to Avenue 18	Tuesday	3/2/04

Intersections	AM Peak Hour		PM Peak Hour	
	Day	Date	Day	Date
Madera Site (Alternative A, B, C)				
Avenue 18 ½ at SR 99 SB Ramps / Road 23	Wednesday	7/26/06	Wednesday	7/26/06
Avenue 18 ½ at SR 99 NB Ramps	Wednesday	7/26/06	Wednesday	7/26/06
Avenue 17 at SR 99 SB ramps	Tuesday	3/2/04	Tuesday	3/2/04
Avenue 17 at SR 99 NB Ramps	Tuesday	3/2/04	Tuesday	3/2/04
Avenue 12 / Golden State Boulevard at SR 99 SB Ramps	Thursday	12/2/04	Thursday	12/2/04
Avenue 12 at Golden State Boulevard / Road 29	Thursday	12/2/04	Thursday	12/2/04

9 *Guide for the Preparation of Traffic Impact Studies*, State of California Department of Transportation, June 2001, page 4.

TABLE 101:
EXISTING SEGMENT AND INTERSECTION COUNTS
DAYS AND DATES COUNTED

Intersections	AM Peak Hour		PM Peak Hour	
	Day	Date	Day	Date
Madera Site (Alternative A, B, C)				
Avenue 12 at SR 99 NB Ramps	Thursday	12/2/04	Thursday	12/2/04
Avenue 18 at Road 23	Tuesday	3/2/04	Tuesday	3/2/04
Avenue 17 at Road 23	Tuesday	3/2/04	Tuesday	3/2/04
Avenue 17 at Golden State Boulevard / Airport Road	Tuesday	3/2/04	Tuesday	3/2/04
Ellis Street at Road 26	Wednesday	12/1/04	Wednesday	12/1/04
Avenue 15 ½ at Road 23	Wednesday	12/1/04	Wednesday	12/1/04
Avenue 14 at Road 23	Wednesday	12/1/04	Wednesday	12/1/04
Avenue 16 at Schnoor Avenue / Golden State Boulevard	Tuesday	4/5/05	Tuesday	4/5/05
Avenue 16/Avenue 16 connector at SR 99 NB ramps	Tuesday	9/13/05	Wednesday	9/14/05
Avenue 16 at SR 99 NB ramp connector	Tuesday	9/13/05	Wednesday	9/14/05
Gateway/Avenue 16 at SR 99 NB ramps	Tuesday	9/13/05	Wednesday	9/14/05
Avenue 16 at SR 99 SB Ramps	Tuesday	9/13/05	Wednesday	9/14/05
SR 99 NB Ramps at Cleveland Avenue / Avenue 15 ½	Wednesday	12/1/04	Wednesday	12/1/04
SR 99 SB Ramps at Cleveland Avenue / Avenue 15 ½	Wednesday	12/1/04	Wednesday	12/1/04
SR 99 NB Ramps at SR145 / Madera Avenue	Thursday	12/2/04	Thursday	12/2/04
SR 99 SB Off -Ramp at Olive Avenue / Avenue 14	Thursday	12/2/04	Thursday	12/2/04
SR 99 SB On-Ramp / Olive Avenue / Avenue 14 at SR 145	Wednesday	12/1/04	Wednesday	12/1/04
Avenue 18 ½ at Pistachio Drive	Wednesday	7/26/06	Wednesday	7/26/06
Avenue 18 ½ at Golden State Boulevard	Wednesday	7/26/06	Wednesday	7/26/06
North Fork Site (Alternative D)				
SR 41 at SR 145	Tuesday	8/30/05	Tuesday	8/30/05
SR 41 at Road 200	Tuesday	8/30/05	Tuesday	8/30/05
SR 41 at Thornberry Road	Tuesday	8/30/05	Tuesday	8/30/05
SR 41 at SR 49	Wednesday	4/13/05	Wednesday	4/13/05
Road 274 (Malum Ridge Road) at Road 225 (Mammoth Pool Rd)	Wednesday	4/13/05	Wednesday	4/13/05
Road 225 (Mammoth Pool Road) at Cascadel Road	Wednesday	4/13/05	Wednesday	4/13/05
North Fork Road at Auberry Road	Tuesday	4/19/05	Tuesday	4/19/05
North Fork Road at Crane Valley Road	Tuesday	4/19/05	Tuesday	4/19/05
Cascadel Road at Mission Drive (Federal Road 209)	Tuesday	4/19/05	Tuesday	4/19/05

SR = State Route

B. METHODOLOGY AND ASSUMPTIONS

This TIS was prepared to assess the existing and projected traffic conditions resulting from the development of the North Fork Casino Project in Madera County. In order to prepare the traffic evaluation for the Project, a variety of data and technical assumptions had to be developed. This section describes the various data and technical assumptions that were used in this study. The sources used in this study can be found in the Introduction section III – H.

Scenarios

The scenarios that were analyzed for this study include:

- Existing (2005) Traffic Conditions (Without Project)
- Opening Day (2008) No Project Traffic Conditions (Without Project)
- Opening Day (2008) Project Traffic Conditions (With Project)
- Mitigated Opening Day (2008) Project Traffic Conditions (With Project)
- 2030 No Project Traffic Conditions (Without Project)
- 2030 Project Traffic Conditions (With Project)
- Mitigated 2030 Project Traffic Conditions (With Project)

The Opening Day (2008) No Project/Project and 2030 No Project/Project scenarios reflect cumulative conditions analysis.

Study Locations

Madera Site (Alternative A, B, C)

The Madera County Resource Management Agency, Road Department, and the City of Madera initially identified the following study segments and intersections to be analyzed for the Madera Site location:

Segments

County of Madera

- Avenue 18 ½ - Road 24 to Road 23
- Road 23 – Avenue 18 ½ to Avenue 17
- Avenue 17 – Road 23 to SR 99
- Avenue 17 – State Route (SR) 99 to Road 27
- Golden State Boulevard – Avenue 17 to Road 23
- Road 26 – Ellis Street to Avenue 18 ½
- Road 26 – Avenue 18 ½ to Avenue 21
- Avenue 19 – Avenue 18 ½ to Road 24
- Avenue 20 ½ – SR 99 to Road 26
- Road 24 – Avenue 18 ½ to Avenue 19
- Road 24 – Avenue 19 to Avenue 20 ½

City of Madera

- Road 23 – Avenue 12 to Avenue 17
- Avenue 14 – SR 145 to Road 23
- Avenue 13 – SR 145 to Road 23

- Avenue 12 – SR 145 to Road 23

Intersections

County of Madera

- Avenue 20-20 ½ at SR 99 southbound (SB) ramps
- Avenue 20-20 ½ at SR 99 northbound (NB) ramps
- Avenue 18 ½ at SR 99 SB ramps/Road 23
- Avenue 18 ½ at SR 99 NB ramps
- Avenue 17 at SR 99 SB ramps
- Avenue 17 at SR 99 NB ramps
- Avenue 12/Golden State Boulevard at SR 99 SB ramps
- Golden State Boulevard at Avenue 12
- Avenue 12 at SR 99 NB ramps
- Avenue 18 ½ at Road 24
- Avenue 18 ½ at Road 26
- Avenue 18 at Road 23
- Avenue 17 at Road 23
- Avenue 17 at Golden State Boulevard
- Avenue 17 at Road 27
- Ellis Street at Road 26
- Avenue 19 at Road 24
- Avenue 20 ½ at Road 22
- Avenue 20 ½ at Road 24
- Avenue 21 at Road 26
- Avenue 12 at SR 145
- Avenue 7 at SR 145

City of Madera

- Avenue 12 at Road 23
- Avenue 14 at Road 23
- Avenue 15 ½ at Road 23
- SR 145 at Tozer Street/Road 28
- SR 99 NB ramps at Cleveland Avenue/Avenue 15 ½
- SR 99 SB ramps at Cleveland Avenue/Avenue 15 ½
- SR 145 at Olive Avenue/Avenue 14
- SR 99 NB ramps at Olive Avenue/Avenue 14
- SR 99 SB off-ramp at Olive Avenue/Avenue 14
- SR 99 SB on-ramp at SR 145
- SR 145 at Avenue 13
- SR 145 at Avenue 12
- Avenue 16 at Condor Road

Per County direction, "the Traffic Study should be based on the Madera County Regional Transportation Model", and segments and "intersections may be removed from the analysis if trip assignment would reasonably expected to result in a capacity reduction of less than 1 percent". To determine which segments and intersections should be analyzed, TPG ran the MCTC Model and overlaid the Model select zone results with the estimated Project trip generation. Based on the Model

select zone/trip generation results and discussions with County and City of Madera staff, the following City and County segments and intersections were ultimately analyzed for the Madera Site:

Segments

County of Madera

- Avenue 18 ½ - Road 24 to Road 23
- Road 23 – Avenue 18 ½ to Avenue 17
- Avenue 17 – Road 23 to SR 99
- Avenue 17 – SR 99 to Road 27
- Golden State Boulevard – Avenue 17 to Road 23

Intersections

County of Madera

- Avenue 18 ½ at SR 99 SB ramps/Road 23
- Avenue 18 ½ at SR 99 NB ramps
- Avenue 17 at SR 99 SB ramps
- Avenue 17 at SR 99 NB ramps
- Avenue 12/Golden State Boulevard at SR 99 SB ramps
- Avenue 12 at Golden State Boulevard/Road 29
- Avenue 12 at SR 99 NB ramps
- Avenue 18 at Road 23
- Avenue 17 at Road 23
- Avenue 17 at Golden State Boulevard
- Ellis Street at Road 26
- Avenue 18 ½ at Pistachio Drive
- Avenue 18 ½ at Golden State Boulevard/Road 23

City of Madera

- Avenue 15 ½ at Road 23
- Avenue 14 at Road 23
- Avenue 16 at Schnoor Avenue/Golden State Boulevard
- Avenue 16 at SR 99 NB ramps
- Avenue 16 at SR 99 SB ramps
- SR 99 NB ramps at Cleveland Avenue/Avenue 15 ½
- SR 99 SB ramps at Cleveland Avenue/Avenue 15 ½
- SR 99 NB ramps at SR 145/Madera Avenue
- SR 99 SB off-ramp at Olive Avenue/Avenue 14
- SR 99 SB on-ramp/Olive Avenue/Avenue 14 at SR 145
- Avenue 16/Ellis Street at Golden State Boulevard
- Avenue 16 Ellis Street at SR 99 SB ramps
- Avenue 16/Ellis Street at SR 99 NB ramps

Please note that the initial minimum peak hour trip threshold for including an intersection location was 50 peak hour 2-directional trips. Based on discussions with the various commenting agencies, several intersections that were showing less than 50 peak hour 2-directional trips were included in the analysis due to agency concerns.

In addition to the County and City study locations, Caltrans requested that the following freeway locations be analyzed for the Madera Site:

- SR 99 north of Avenue 18 ½
- SR 99 between Avenue 18 ½ and Avenue 17
- SR 99 south of Avenue 17

Queuing analyses were also prepared for the following Madera Site locations based on the level of service calculations:

- SR 99 NB off-ramp at Avenue 18 ½
- SR 99 SB off-ramp at Avenue 18 ½
- SR 99 SB off-ramp at Avenue 17
- SR 99 NB off-ramp at Avenue 17
- SR 99 NB off-ramp at Avenue 16
- SR 99 NB off-ramp at Avenue 16
- SR 99 NB off-ramp at Avenue 15 ½ / Cleveland Avenue
- SR 99 SB off-ramp at Avenue 15 ½ / Cleveland Avenue
- SR 99 NB off-ramp at SR 145/Madera Avenue
- SR 99 SB off-ramp at Avenue 14/Olive Avenue
- SR 99 SB off-ramp at Avenue 12/Golden State Boulevard
- SR 99 NB off-ramp at Avenue 12
- Avenue 17 between the SR 99 SB off-ramp and Golden State Boulevard

North Fork Site (Alternative D)

TPG and AES staff identified the following study intersections to be analyzed for the North Fork Site location with review and approval of the two appropriate commenting agencies (County of Madera, Caltrans):

- SR 145 at SR 41
- SR 41 at Road 200
- SR 41 at Thornberry Road
- SR 41 at SR 49
- Malum Ridge Road at Road 225/Mammoth Pool Road
- Road 225/Mammoth Pool Road at Cascadel Road
- Cascadel Road at Mission Drive/Federal Road 209
- North Fork Road at Auberry Road
- North Fork Road at Crane Valley Road

Analysis Time Periods

According to *Traffic Access and Impact Studies for Site Development*, the overall purpose of a traffic impact study is to determine the project impacts that are likely to occur to the surrounding street system. In order to accomplish this purpose you need to determine what occurs when the peak of the project generated traffic overlays the peak of the street traffic. *Traffic Access and Impact Studies for Site Development* states that "the peak periods [of the adjacent street and highway system] are generally the weekday morning (7-9 a.m.) and evening (4-6 p.m.) peak hours, although local area characteristics occasionally result in other peaks (e.g., at major shopping or recreational centers)", and

that the peaking characteristics of the adjacent street and highway system should be determined from available traffic count data. Per discussions with County of Madera, City of Madera, and Caltrans staff, the following peak of the street traffic times were chosen for analysis:

- 7:00 to 9:00 AM
- 4:00 to 6:00 PM

These are also the standard peak of the street hours typically used for study in the County and City of Madera.

Madera County Traffic Model

Background

According to the Madera County Transportation Commission (MCTC) website, "MCTC is the Regional Comprehensive Planning Agency, Regional Transportation Planning Agency (RTPA), the Metropolitan Planning Organization (MPO), and the Local Transportation Commission for Madera County. MCTC's role is to foster intergovernmental coordination; undertake comprehensive regional planning with an emphasis on transportation issues; provide a forum for citizen input into the planning process; and to provide technical services to its member agencies.

As a RTPA, MCTC is responsible for developing and maintaining a microcomputer-based traffic simulation model that represents Madera County. The current Model was developed to analyze proposed land uses, circulation systems, and air quality and covers the entire Madera County area, as well as portions of Fresno, Merced, and Stanislaus counties.

Project Model Use

The Model was used in this study to develop two pieces of information:

- Project primary (new) trip distribution
- Approved/Proposed Project trip generation/distribution
- Approved/Proposed Project primary (new) trip distribution
- Opening Day (2008) No Project/"0" Project growth increments
- 2030 No Project/"0" Project growth increments

The Project primary (new) trip distributions, the approved project trip generation/distribution data, and the approved project primary (new) trip distribution data were created using the 2025 model year, while the Opening Day (2008) and 2030 growth increments were created using the 2000 and 2025 model years.

Project Model Adjustments (Approved, Proposed Land Use Projects)

Residential dwelling unit and employment adjustments were made to the 2025 No / "0" Project Model land use data to incorporate 30 approved or proposed General Plan Amendments (GPAs) and other projects that were located in the County and City of Madera. The status and size of the 30 approved or proposed General Plan Amendments and other projects are:

County of Madera

- Madera Town Center (Proposed) – located on the north side of Avenue 17 east of SR 99 (APN 33-040-01) – General Plan amendment, Specific Plan amendment and prezoning for approximately 100 acres – included in this analysis as 745,800 sf of retail

- GPA 04-06 (Approved) – approximately 13 acre site converted from low density residential (LDR) to light industrial/business park (LI) – located in Madera County
- GPA 04-03 (Approved) – approximately 25 acre site converted from agriculture exclusive (AE) to agricultural residential (AR) and rural residential (RR) – located in Coarsegold
- GPA 04-02 (Approved) – approximately 0.33 acre site converted from community commercial (CC) to LDR – located in Madera County
- GPA 03-08 (Approved) – approximately 0.6 acre site converted from very low density residential (VLDR)/rural commercial area (RCA) to rural development area (RDA) – located in Madera County
- GPA 03-06 (Approved) – approximately 23 acre site converted from AR to rural estate residential (RER) – located in Madera County
- GPA 02-12 (Approved) – approximately 71 acre site converted from AR and public institutional (PI) to RER – located in Madera County
- GPA 02-09 (Approved) – approximately 76 acre site converted from VLDR to agriculture (A), AR, agriculture exclusive (AE) – located in Madera County
- GPA 02-08 (Approved) – approximately 8 acre site converted from high density residential (HDR) to CC – located near Bass Lake in Madera County
- GPA 02-07 (Approved) – approximately 1 acre site converted from VLDR to PI – located near Childrens Hospital in Madera County
- GPA 02-06 (Approved) – approximately 50 acre site converted from AE to AR – located in Madera County
- GPA 02-04 (Approved) – approximately 321 acre site converted from medium density residential (MDR), LDR, HDR, highway commercial (HC), PI to A – located in Madera County
- GPA 01-03 (Approved) – approximately 19 acre site converted from AE to highway service commercial (HSC) and A – located in Madera County
- GPA 00-09 (Approved) – approximately 220 acre site converted from open space (OS) to A – located near North Fork in Madera County
- GPA 00-07 (Approved) – acreage unknown – conversion of an existing commercial building to an office – located near Bass Lake in Madera County
- GPA 00-06 (Approved) – approximately 3 acre site converted from HDR to LI – located in Oakhurst
- GPA 00-04 (Approved) – approximately 94 acre site converted from A to RER – located in Madera County
- GPA 99-09 (Approved) – approximately 84 acre site converted from heavy industrial (HI) to MDR and OS – located near North Fork in Madera County
- GPA 99-04 (Approved) – approximately 4 acre site converted from A to VLDR – located in Madera County
- GPA 99-03 (Approved) – approximately 9 acre site converted from AR to RER – locate in Madera County near the intersection of Avenue 16 and Road 29 ½

<u>City of Madera</u>

- East Olive Avenue Specific Plan (Approved) – located east and north of SR 99, south of Olive Avenue and west of Road 28 – approximately 143 acre residential and commercial development
- Madera Outlet Mall (Proposed) – located on the north side of Avenue 17 just west of Airport Drive and North Golden State Boulevard (APN 33-040-07 & 33-050-17) – General Plan and Specific Plan amendment and prezoning for approximately 100 acre site from industrial to commercial – included in this analysis as a 750,000 sf outlet mall

- Bratton Highway Commercial Project (Proposed) – located south of Avenue 17 on the west side of Airport Drive (APN 13-010-13) – conceptual plan for construction of a highway commercial project on approximately 8.6 acres – included in this analysis as the following uses:
    - 8,000 sf high-turnover sit-down restaurant
    - 3,000 sf fast-food restaurant with drive-through
    - 24,755 sf of specialty retail
    - 86 room hotel
    - 69 room hotel
    - 12 fueling position service station with convenience market and car was
- Cat 17 Project (Proposed) – located south of Avenue 17 east of SR 99 and the railroad tracks (APN 38-040-02) – Specific Plan amendment and prezoning for approximately 48 acres – included in this analysis as approximately 435,579 sf of retail
- Madera District Fair Board Commercial Project (Proposed) – located on the south side of West Cleveland Avenue west of SR 99 (APN 33-240-04) – Prezoning application for annexation of approximately 35 acres – included in this analysis as approximately 307,279 sf of retail
- Feland/Zinkin Commercial Project (Proposed) – located south of Avenue 16 between North Schnoor Avenue and SR 99 (APN 13-160-06 & 16) – Site plan review application for approximately 20 acres – include din this analysis as approximately 221,000 sf of retail
- Gottschalks Expansion (Proposed) – located south of Avenue 17 and west of Airport Drive (APN 13-010-34) – conceptual project only for approximately 66 acres
- Heritage Homes (Proposed) – located south of Avenue 17 at the east end of Yeager Road (APN 13-010-24, 25, & 26, & 13-170-01) – conceptual project only for approximately 42 acres
- Horizon Enterprises (Proposed) – located north of Avenue 17 on both sides of Golden State Boulevard (APN 13-210-05 & 06) – conceptual project only for approximately 16.7 acres
- Horizon Enterprises/Weil (Proposed – located on the southwest corner of North Schnoor Avenue and Avenue 16, west of the Home Depot Center (APN 13-070-19) – conceptual project only for approximately 2.58 acres

Opening Day (2008) No Project/"0" Project and 2030 No Project/"0" Project Volumes

The Opening Day (2008) No Project/"0" Project and 2030 No Project/"0" Project forecasted volumes were calculated using growth increment/growth rate data developed from the 2000 and the 2025 No Project/"0" Project Model runs. For the City or Caltrans segments and intersections that are showing negative or no growth by Opening Day (2008) or 2030, a 1% growth factor applied to the Existing count data was used to calculate the Opening Day (2008) No Project/"0" Project and 2030 No Project/"0" Project volumes and should be considered a worst-case. For County segments and intersections that are showing negative or no growth by Opening Day (2008) or 2030, a 3% growth factor applied to the Existing count data was used to calculate the Opening Day (2008) No Project/"0" Project and 2030 No Project/"0" Project volumes and should be considered a worst-case.

Intersection Analysis and Volume Adjustments

Intersection heavy vehicle percentages were developed from the Existing conditions count data. A minimum default of 2% heavy vehicles was used on all intersections and in all scenarios. A peak hour factor of either 0.88 or 0.92 as provided in the *HCM 2000* was used in all intersection analyses as appropriate.[10].

[10] *HCM 2000*, Exhibit 9-2, page 9-9.

All signalized intersections within a one-half mile distance were analyzed as actuated coordinated. Actuated signals use vehicle detectors and an actuated controller unit to assign the right of way based on changing traffic demand. Coordination between the signals can either be based on pretimed coordination or hardwire coordination. The signalized intersections were optimized to achieve the greatest reduction in overall intersection delay.

Left-turns at signalized intersections were analyzed as "protected" in the study area. Protected lefts are left-turns that are only allowed to go during their "protected" phase of the signal, and the left-turns are not allowed to go at the same time as the opposing direction through and right-turn movements.

For this study, if an unsignalized intersection was projected to operate below the adopted level of service standard or have movements or approaches that were projected to operate below the adopted level of service standard and did not warrant a signal based on the appropriate peak hour volume warrant, then modifications to the Existing lane configurations were tested to determine if the intersection could be mitigated.

Signal Warrant Analysis

Rural and urban peak hour volume warrants (Warrant 3) were prepared for all unsignalized intersections, as appropriate, based on the methodology presented in the *Manual on Uniform Traffic Control Devices (MUTCD)*, pages 4C-4, 4C-6 and 4C-7 and the *MUTCD California Supplement*, page 4C-1. According to the *Manual on Uniform Traffic Control Devices,* "the satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal." Therefore prior to making a final determination on installation of a proposed signal, a thorough engineering investigation, including collision history, should be conducted.

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Queue Analysis

95th Percentile queues were taken from level of service analysis. Queue lengths for unsignalized intersections were determined using *HCS+*. Queue lengths for signalized intersections were determined using *Synchro 6.0*, which incorporates the *HCM 2000* methodologies.

Ramp Widening Analysis

Caltrans *Highway Design Manual* recommends that when ramp volumes are between 900 to 1,499 passenger car equivalents (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 foot (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 Warrant Analysis

Left-turn warrant analysis was prepared using the left-turn warrant methodology found in *A Policy on Geometric Design of Highways and Streets* by AASHTO. The volumes used in the left-turn warrant analysis were adjusted based on the Existing conditions heavy vehicle percentages. The warrant analysis was limited to peak hour volume only and other conditions may exist that meet other left-turn warrants.

Dual Left-Turn / Separate Right-Turn Lanes

Per *Caltrans Highway Design Manual*, Section 405.2 (3), "double left-turn lanes should be considered if the left-turn demand is 300 vehicles per hour or more." Standard state of the practice dictates that dual left-turn lanes are required for left-turning volumes greater than 300 vehicles per hour and that separate right-turn lanes are required for right-turning volumes greater than 300 vehicles per hour.

Left-Turn Storage Length Analysis

Left-turn Storage lengths were determined for unsignalized and signalized intersections based on the *Caltrans Highway Design Manual*, section 405.2 (2) (e). According to the *Caltrans Highway Design Manual*, "at unsignalized intersections, storage length may be based on the number of turning vehicles likely to arrive in an average 2-minute period during the peak hour" and "at signalized intersections, the storage length may be based on one and one-half to two times the average number of vehicles that would store per signal cycle depending on cycle length, signal phasing, and arrival and departure rates." An average length of 25 feet per vehicle was used to determine the subsequent storage length.

Opening Day (2008) and 2030 Network Configurations

Background roadway and intersection improvements utilized in this study for the various No Project and Project scenarios were based on information derived from the Madera County 2004 RTP and information provided by Caltrans staff. These roadway and intersection improvements, by scenario, include:

Opening Day (2008) No Project/Project, 2030 No Project/Project

- Avenue 16 at SR 99 SB ramps
  - Signalize the intersection
- Avenue 12 at Golden State Boulevard
  - Signalize the intersection
  - Restripe/widen the NB approach, south leg, from a shared left-through and a separate right-turn lane, to a separate left-turn lane and a shared through-right
  - Restripe/widen the SB approach, north leg, from a shared left-through and a separate right-turn lane, to a separate left-turn lane, one (1) through lane, and a separate right-turn lane
- 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

2030 No Project/Project

- SR 99 from Avenue 16 to Avenue 21
  - Restripe/widen from four (4) lanes to six (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

The Avenue 16 at SR 99 interchange will be replaced by the Ellis Street overcrossing interchange. The SR 99 SB and NB ramps at Avenue 16 will be removed and Avenue 16 will be converted to an overpass connecting to Gateway Boulevard. Ellis Street will be extended west over SR 99 and will merge with Avenue 16 near the intersection of Avenue 16 and Golden State Boulevard. NB and SB ramps will be added to the Ellis Street overcrossing, including a WB to SB loop on-ramp and an EB to SB slip on-ramp.

Level of Service Analysis Methods

Freeway segments and unsignalized intersection analyses were completed using *HCS+*, which is an industry standard for calculating freeway segments and unsignalized intersections. County road segments were calculated using the Segment analysis was completed using the *Madera County Capacity Table*. Signalized intersection analyses were completed using *Synchro 6.0*, which incorporates the *HCM 2000* methodologies. *Synchro 6.0* allows for optimization of signals to provide for the greatest reduction in overall intersection delay. This optimization process can result in different signal cycle lengths for both the AM and PM peak hours of a given scenario and across all scenarios. The changing of the signal cycle length somewhat reflects the agency process whereby the agency will adjust intersection signal cycle lengths for differing traffic conditions based on current count data.

Level of Service

For analysis purposes, the *HCM 2000* defines six levels of service for various facility types. The six levels are given letter designations ranging from "A" to "F", with "A" representing the best operating conditions and "F" the worst. Quantifiable measures of effectiveness that best describe the quality of operation on the subject facility type are used to determine the facilities level of service. For signalized and unsignalized intersections, the quantifiable measure of effectiveness is average control delay.[11] For segments, the quantifiable measure of effectiveness is volume-to-capacity ratios. For freeway segments, the quantifiable measure of effectiveness is density (passenger cars/mile/lane).

[11] Control delay, according to the *2000 Highway Capacity Manual*, page 16-1, includes initial acceleration delay, queue move-up time, stopped delay, and final acceleration delay.

Segments

Street segment assessments for Madera County roadways were completed using the Capacity Table developed by Korve Engineering for use with the Madera County Transportation Commission (MCTC) Model. A copy of this table can be found in the Appendices section Attachment VI – C – 54. Levels of service for the segment volume-to-capacity ratios developed in this study were derived from the level of service ranges used in the Model.

Freeway Segments

The freeway segment analysis was completed using *HCS +*. Per Caltrans direction, the rural peak hour factor of 0.88 was used in all scenarios. The driver population factor was left at the *HCS +* default value. The measured free-flow speed used in this study was 70 mph.

Freeway truck percentages were taken from the Caltrans *2004 Annual Average Daily Truck Traffic on the California State Highway System*. The truck percentage used was 24%. A recreational vehicle (RV) percentage of 2% was used for the freeway calculations.

Table 102 shows the six levels of service and their corresponding ranges of density for basic freeway segments. Table 102 also contains a brief traffic flow description for basic freeway segments for each level of service category. Density values at level of service thresholds will have a plus (+) or minus (-) appended to the density value if the calculated density value at full precision is greater (+) or less (-) than the rounded displayed density value.

Intersections

For signalized intersections, "the average control delay per vehicle is estimated for each lane group and aggregated for each approach and for the intersections as a whole".[12] Level of service for the signalized intersection is then based on the aggregated intersection delay. AWSC intersections, which have stop signs on all corners of the intersection and are considered unsignalized, function similarly to a signalized intersection in that control delay per vehicle is estimated for each lane group and aggregated for each approach and for the intersection as a whole. Level of service for the AWSC intersection is likewise based on the aggregated intersection delay. Control delay for TWSC intersections, which have stop signs on only the minor street approaches, is also per vehicle but is computed for the stop-controlled or minor street movements only since theoretically the through movements on the major street are not experiencing any delay. Since there is no aggregation of delay for a TWSC intersection, there is no intersection level of service as a whole, only levels of service for the individual minor movements. The minor movements generally consist of separate lefts on the major street approaches and all movements on both minor street approaches. Delay values at level of service thresholds for TWSC intersections will have a plus (+) or minus (-) appended to the delay value if the calculated delay value at full precision is greater (+) or less (-) than the rounded displayed delay value.

[12] *2000 HCM*, page 16-2.

TABLE 102:
BASIC FREEWAY
LEVEL OF SERVICE DESCRIPTION
(FREE-FLOW SPEED = 65 OR 70 MPH)

Level of Service	Conditions	Description	Density (pc/mi/ln)
"A"	Free Flow	*Free-flow speeds prevail. Vehicles are almost completely unimpeded in their ability to maneuver within the traffic stream. Effects of incidents or point breakdowns are easily absorbed at this level.*	≤ 11
"B"	Stable Operation	*Free-flow speeds are maintained. The ability to maneuver within the traffic stream is slightly restricted. Effects of minor incidents or point breakdowns are still easily absorbed at this level.*	> 11 – 18
"C"	Stable Operation	*Freedom to maneuver within the traffic stream is noticeably restricted, and lane changes require more care and vigilance on the part of the driver. Minor incidents may still be absorbed, but the local deterioration in service will be substantial. Queues may be expected to form behind any significant blockage.*	> 18 – 26
"D"	Approaching Unstable	*Speeds begin to decline slightly with increasing flows and density begins to increase somewhat more quickly. Freedom to maneuver within the traffic stream is more noticeably limited. Even minor incidents can be expected to create queuing, because the traffic stream has little space to absorb disruptions.*	> 26 – 35
"E"	Unstable Operations	*Traffic volumes are at capacity. Any disruption to the traffic stream can establish a disruption wave that propagates throughout the upstream traffic flow. Any incident can be expected to produce extensive queuing.*	> 35 – 45
"F"	Forced Flow	*Traffic volumes exceed the capacity of the freeway and traffic queues develop easily. Stop and go traffic conditions exist.*	> 45

Source: 2000 Highway Capacity Manual, Transportation Research Board.

Table 103 shows the six levels of service and their corresponding ranges of average control delay for both signalized and unsignalized intersections. Table 103 also contains a brief traffic flow description for signalized intersections for each level of service category. The level of service diagrams provided throughout the report show the levels of service for the study intersections. The levels of service shown for signalized intersections are representative of the overall level of service for that intersection. For TWSC intersections, the level of service shown on the maps is the level of service for the worst operating movement at that intersection as opposed to the overall intersection level of service.

TABLE 103: INTERSECTION LEVEL OF SERVICE DESCRIPTION			**Intersections**	
			Signalized	**Unsignalized[1]**
Level of Service	**Conditions**	**Signalized Intersection Description**	**Delay (secs/veh)**	**Delay (secs/veh)**
"A"	Free Flow	*Users experience very low delay. Progression is favorable and most vehicles do not stop at all.*	≤ 10.0	≤ 10.0
"B"	Stable Operations	*Vehicles travel with good progression. Some vehicles stop, causing slight delay.*	> 10.0 to 20.0	> 10.0 to 15.0
"C"	Stable Operations	*Higher delays result from fair progression. A significant number of vehicles stop, although many continue to pass through the intersection without stopping.*	> 20.0 to 35.0	> 15.0 to 25.0
"D"	Approaching Unstable	*Congestion is noticeable. Progression is unfavorable, with more vehicles stopping rather than passing through the intersection.*	> 35.0 to 55.0	> 25.0 to 35.0
"E"	Unstable Operations	*Traffic volumes are at capacity. Users experience poor progression and long delays.*	> 55.0 to 80.0	> 35.0 to 50.0
"F"	Forced Flow	*Intersection's capacity is oversaturated, causing poor progression and unusually long delays.*	> 80.0	> 50.0

Source: 2000 Highway Capacity Manual, Transportation Research Board.
[1] Unsignalized intersections include TWSC and AWSC

Level of Service Standards

The County and City of Madera has adopted a LOS "D" as their standard for traffic impact study purposes.

"Caltrans endeavors to maintain a target LOS at the transition between LOS "C" and LOS "D" on State highway facilities, however, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS. If an existing State highway facility is operating at less than the appropriate target LOS, the existing measures of effectiveness should be maintained."

C. WORKSHEETS