SR-74 (Ortega Highway) Widening Project Traffic Study

SR-74 (ORTEGA HIGHWAY) WIDENING PROJECT
Traffic Study

Prepared by:

Austin-Foust Associates, Inc.
2020 North Tustin Avenue
Santa Ana, California 92705-7827
(714) 667-0496
Contact: Mr. Terry Austin

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The report presents traffic forecast data for the Lower SR-74 Widening Project. It has been prepared to provide supporting data for the Project Report/Environmental Determination (PR/ED) being prepared for this section of Ortega Highway.

ORTEGA HIGHWAY IMPROVEMENT PROJECT

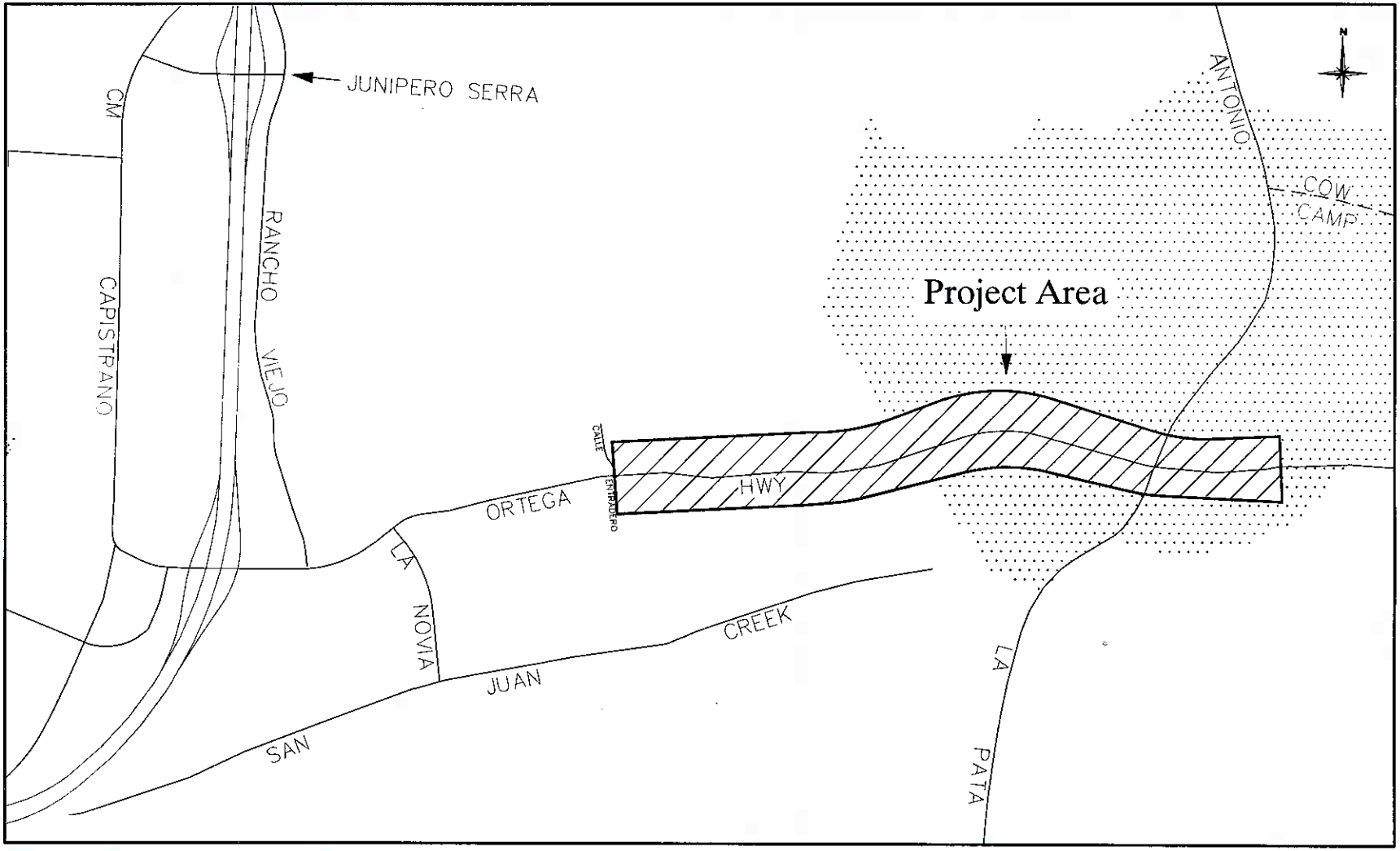
The section of Ortega Highway that is to be improved extends from the current two-lane section within the City of San Juan Capistrano (at the intersection of Calle Entradero) to just east of Antonio Parkway. Figure 1 shows the general extent of the project. The improvements will include widening to four lanes, adding lanes to all four legs of the Antonia/La Pata at Ortega Highway intersection, and adding access intersections within Planning Area 1 (PA1) of the Ranch Plan.

Long-range (2030) traffic volumes for this area were produced using the Ranch Plan Traffic Model (RPTM). This is a fine grained model derived from the South Orange County Sub-Area Model (SCSAM)[1]. It preserves the trip distribution characteristics of the SCSAM parent model while enabling a greater level of detail to be used in preparing traffic forecasts. A discussion of the assumptions used in SCSAM for producing the 2030 volumes can be found in Appendix C. The 2030 volumes in this report are consistent with those being used in the I-5/Ortega Highway Project Study Report (PSR).

EXISTING CONDITIONS

Existing average daily traffic (ADT) volumes and intersection lane controls for the project area are illustrated in Figure 2. Peak hour intersection volumes for the two intersections (Ranch Headquarters and Antonio Parkway/La Pata Area) are illustrated in Figure 3. Intersection capacity utilization (ICU) results and the corresponding levels of service (LOS) for the Antonio/La Pata intersection (the only one of the two existing study area intersections that is currently signalized) are shown in Table 1.

[1] See References at the end of this report.



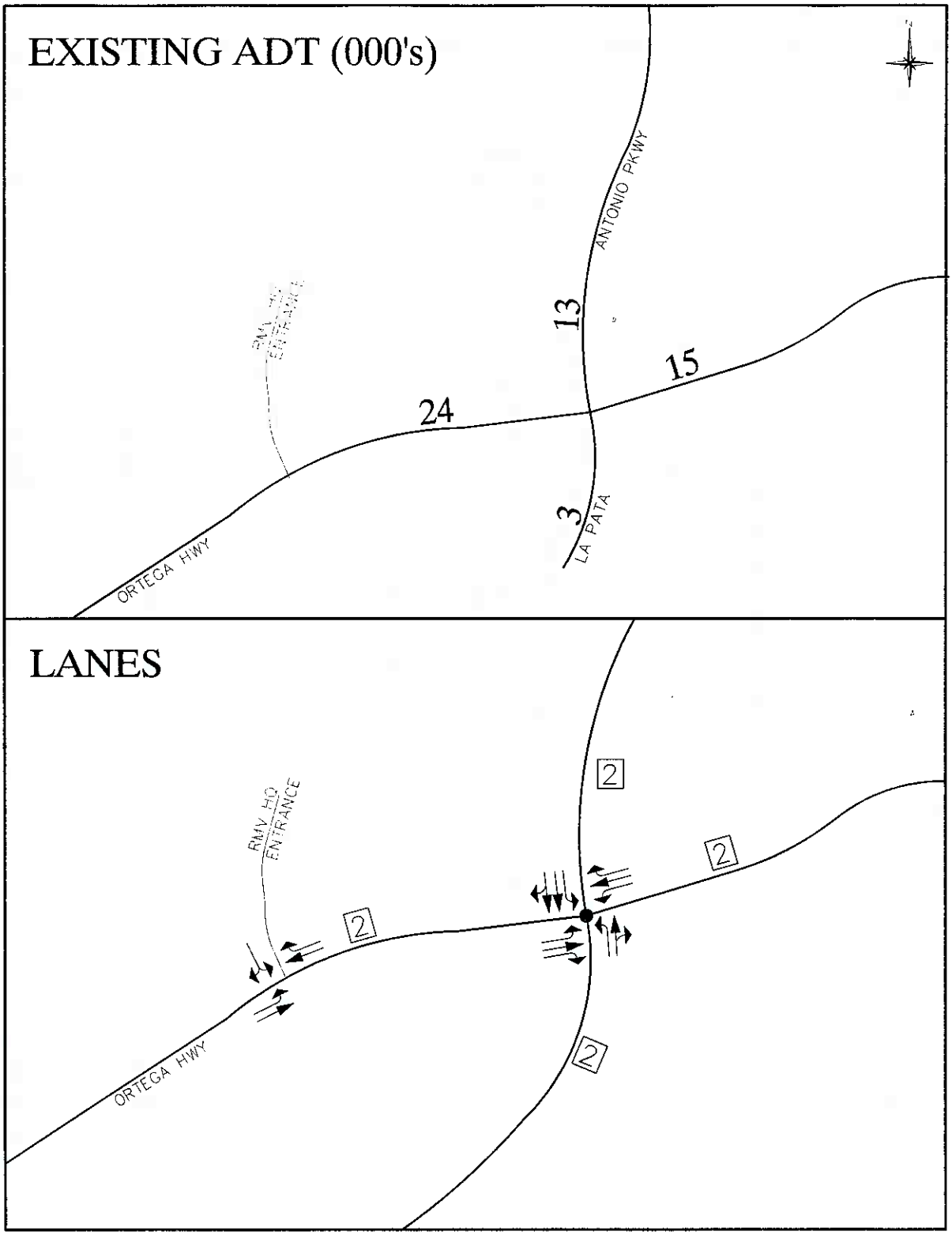
Legend

Planning Area 1 Boundary

Project Area

Figure 1

ORTEGA HIGHWAY PROJECT



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[X] Number of Lanes ● Traffic Signal

Figure 2

EXISTING ADT (000'S) AND INTERSECTION CONTROLS

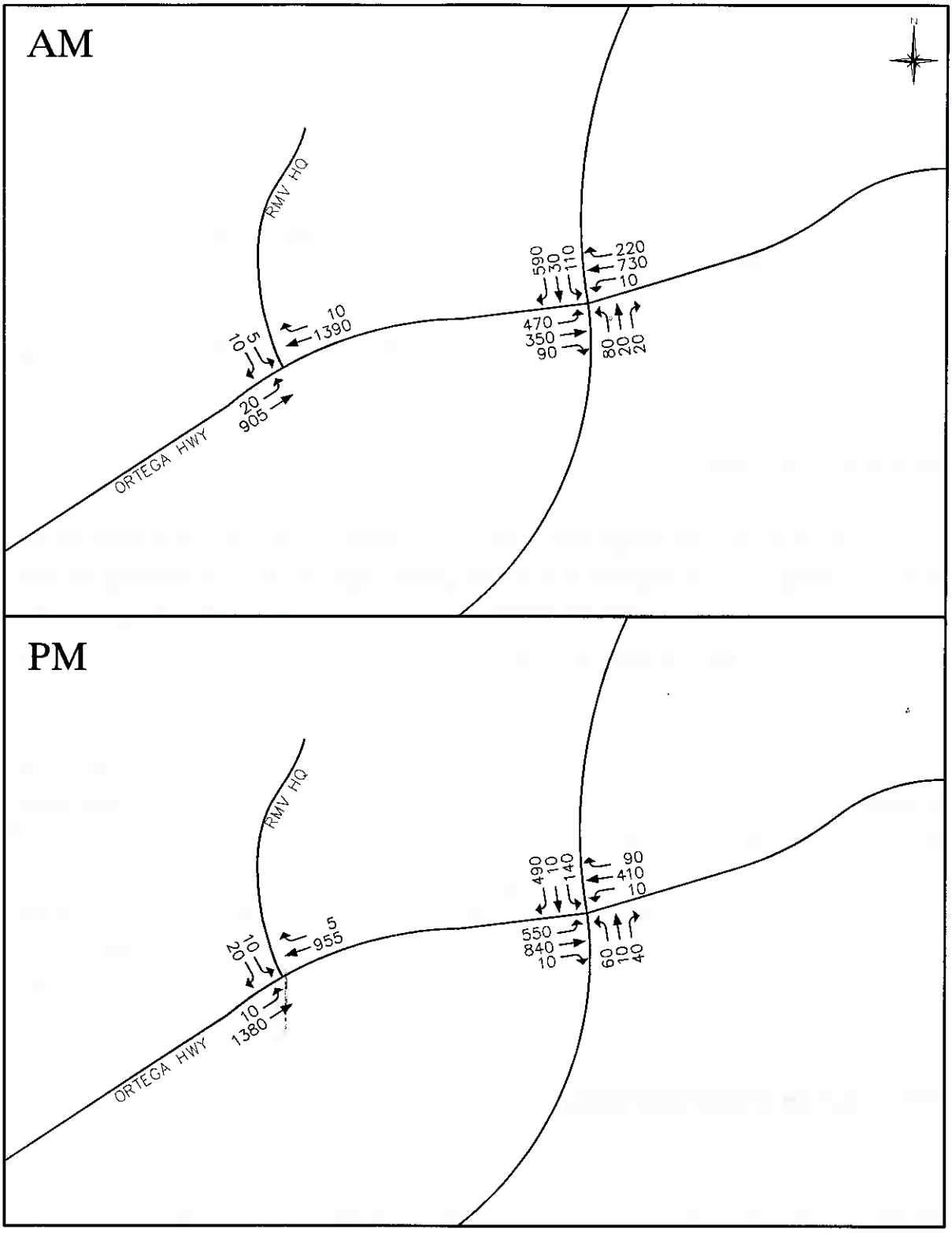


Figure 3

EXISTING (2006) PEAK HOUR VOLUMES

Table 1 EXISTING ICU SUMMARY				
	AM Peak Hour		**PM Peak Hour**	
Intersection	**ICU**	**LOS**	**ICU**	**LOS**
Antonio/La Pata & Ortega	1.16	F	.94	E

As can be seen, the existing conditions do not meet the desired LOS threshold of "D" for this location.

TRAFFIC ANALYSIS

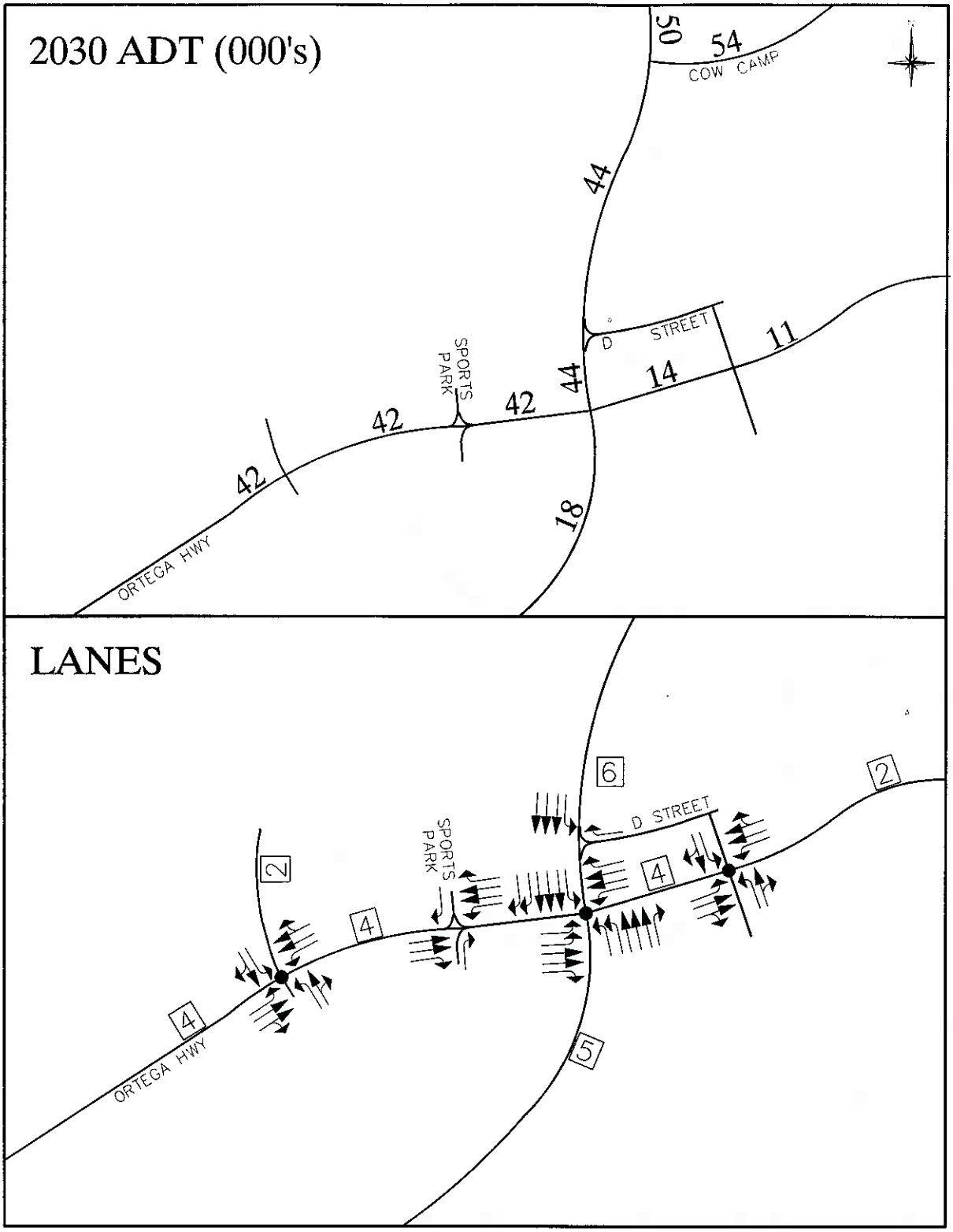
Figure 4 shows 2030 average daily traffic (ADT) volumes for the area under study and the proposed intersection controls within PA1. The corresponding peak hour intersection volumes for these intersections can be seen in Figure 5. These volumes were used to calculate peak ICU values, and in addition, a Highway Capacity Manual (HCM) delay based analysis was carried out to provide information on performance and queue lengths.

Table 2 summarizes intersection performance for the three signalized intersections. For Antonio/La Pata and Ortega, the ICU and HCM results are presented together with recommended pocket lengths for left turn and right turn lanes.

A signal warrant analysis was carried out for the two access intersections proposed for signalization, and worksheets for these can be found in Appendix B. The "A" Street intersection satisfies a signal warrant in the AM peak hour and the "D" Street intersection satisfies a signal warrant in the PM peak hour.

MEASURES OF EFFECTIVENESS

Several measures of effectiveness (MOE's) were used to compare no-project to with-project conditions. These include intersection LOS, travel times and travel speeds for the section of highway being improved. The LOS information was summarized earlier in this report, and information for the



Legend

[X] Number of Lanes ● Traffic Signal

Right-In, Right-Out Access

Figure 4

2030 ADT (000'S) AND INTERSECTION CONTROLS

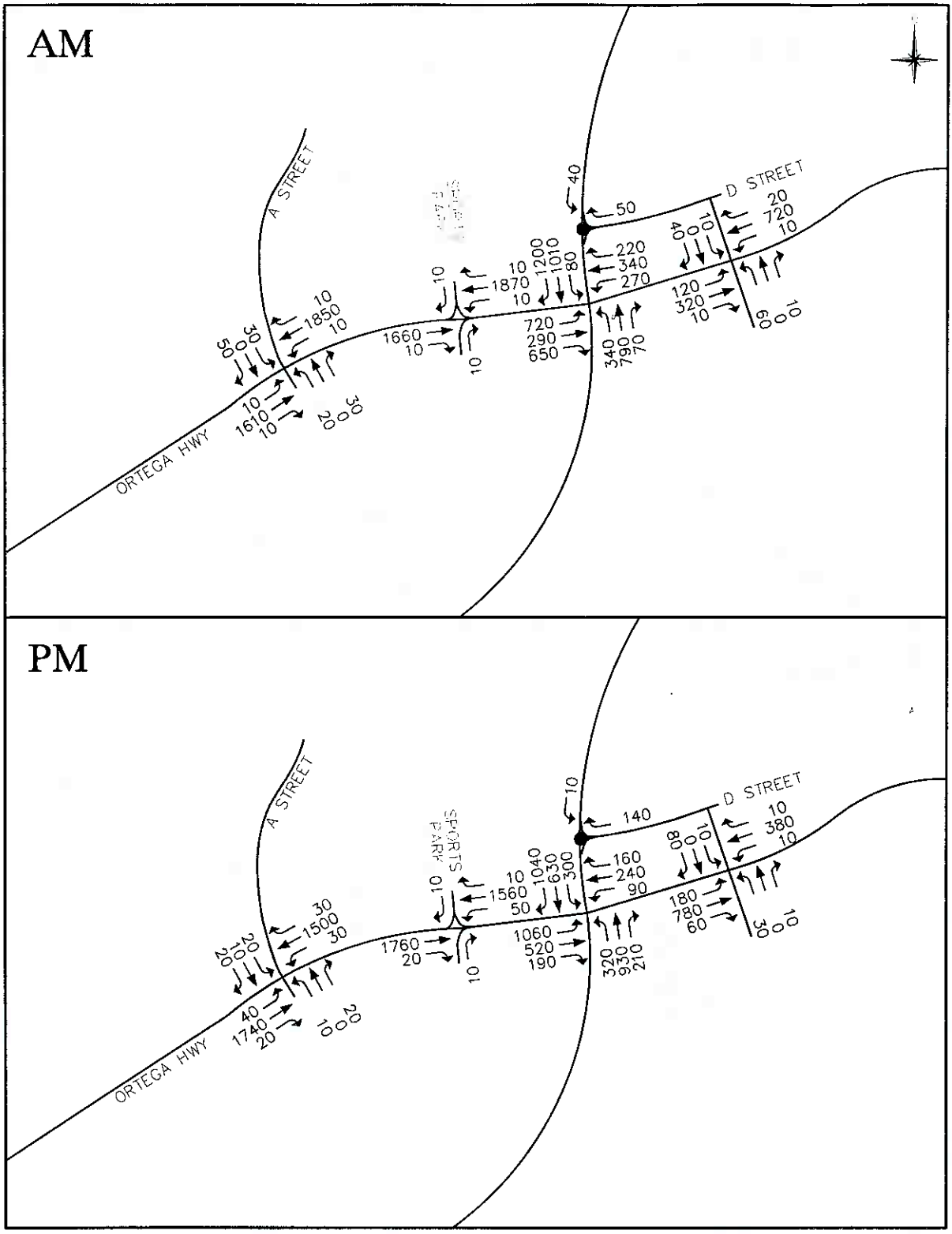


Figure 5

2030 PEAK HOUR VOLUMES

Table 2

2030 INTERSECTION PERFORMANCE SUMMARY

	AM Peak Hour		PM Peak Hour	
Intersection	**ICU**	**LOS**	**ICU**	**LOS**
I. INTERSECTION CAPACITY UTILIZATION RESULTS				
1. A Street & Ortega	.65	B	.62	B
2. La Pata & Ortega	.82	D	.81	D
8. D St & Ortega	.40	A	.38	A
II. HCM DELAY RESULTS	**DELAY (SECS)**	**LOS**	**DELAY (SECS)**	**LOS**
2. La Pata & Ortega	29.6	C	28.3	C
III. TURN POCKET LENGTHS	**VOLUME**	**AM/PM**	**LANES**	**LENGTH (ft)**
La Pata and Ortega				
Southbound Left	300	PM	1	300'
Southbound Right	1,200	AM	2	350'
Northbound Left	340	AM	2	250'
Northbound Right	210	PM	1	250'
Eastbound Left	1,060	PM	2	600'
Eastbound Right	650	AM	1	400'
Westbound Left	270	AM	1	300'
Westbound Right	220	AM	1	250'

other two MOE's for the total network performance was prepared using data from Synchro 6.0 and SIMTRAFFIC. The results are summarized in Table 3.

Table 3

ICU COMPARISON SUMMARY

	Existing (2006)		2030 No Project		2030 With Project	
	AM	**PM**	**AM**	**PM**	**AM**	**PM**
Peak Hour Vehicles Served	2,610	2,676	2,399	2,362	3,220	2,803
Peak Hour Travel Time (hours)	298	213	338	288	136	197
Travel Time/Vehicle (mins)	6.9	4.8	8.5	7.3	2.5	4.2
Average Travel Speed (mph)	12	18	10	11	21	19

For 2030 No Project conditions, the results are hypothetical, since there is inadequate capacity for the demand, and an ever increasing queue would form in the peak direction. Hence, while the 2030 demand is the same as for with-project conditions, the number of vehicles served during each of the peak hours is considerably less. As such, the results shown here only partially account for the actual conditions that might prevail and the extent to which trips would spread to the shoulders of the peak or to other routes has not been analyzed here.

REFERENCES

1. "The Ranch Plan EIR Traffic Report," Austin-Foust Associates, Inc., May 2004.

2. South County Sub-Area Model (SCSAM) Traffic Model Description and Validation," Austin-Foust Associates, Inc., March 2001.

3. South County Sub-Area Model (SCSAM) 2003 Update," Austin-Foust Associates, Inc., January, 2004.

APPENDIX A

ICU CALCULATIONS AND SYNCHRO SUMMARIES

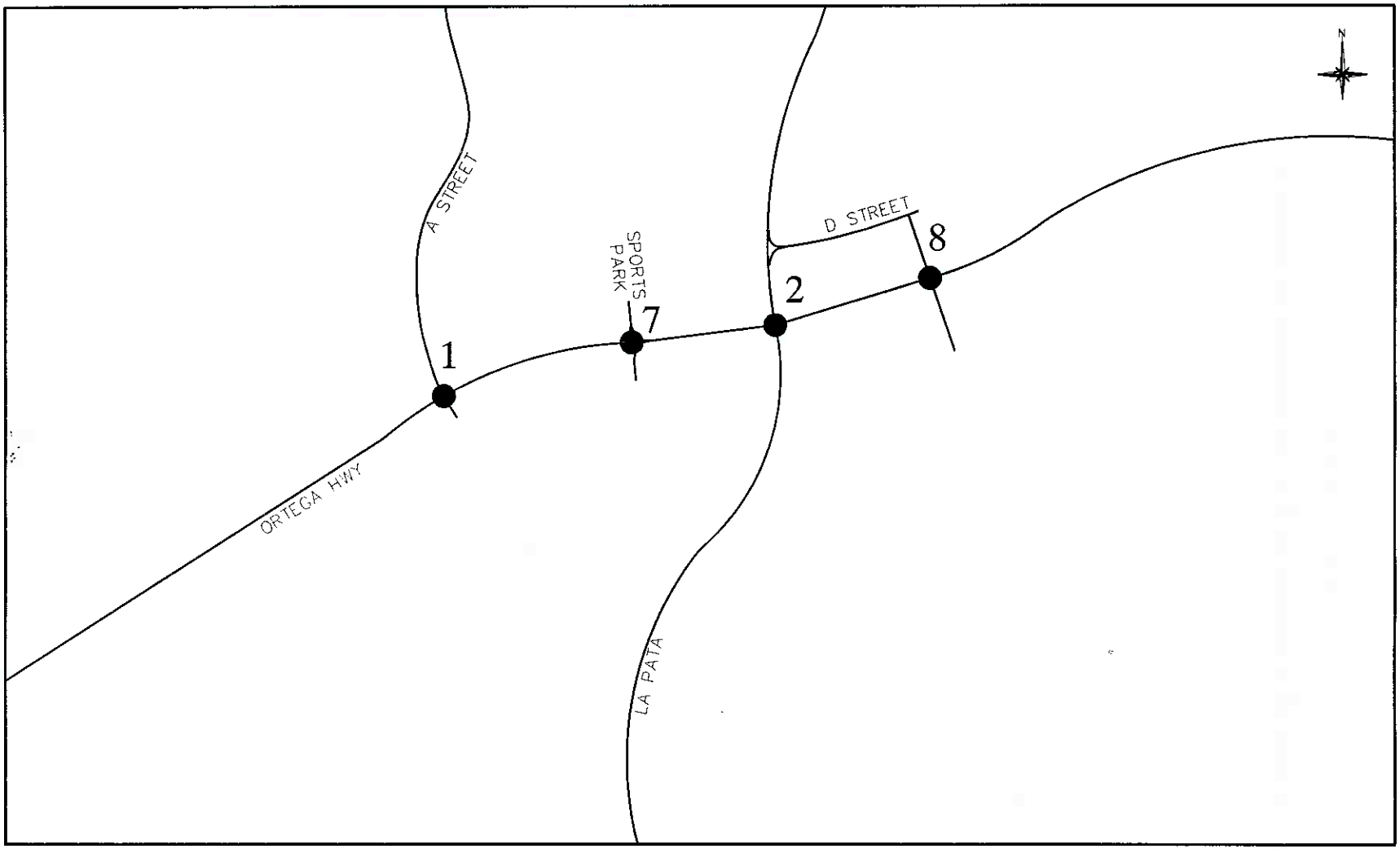


Figure A-1

INTERSECTION LOCATION MAP

1. RMV HQ & Ortega

Existing (2006) Count

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	0	0	0		0	
NBR	0	0	0		0	
SBL	0	0	5		10	
SBT	1	1700	0	.01*	0	.02*
SBR	0	0	10		20	
EBL	1	1700	20	.01*	10	.01
EBT	1	1700	905	.53	1380	.81*
EBR	0	0	0		0	
WBL	0	0	0		0	
WBT	1	1700	1390	.82*	955	.56
WBR	1	1700	10	.01	5	.00
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.89**		**.88**

2. La Pata & Ortega

Existing (2006) Count

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	80	.05	60	.04
NBT	1	1700	20	.02*	10	.03*
NBR	0	0	20		40	
SBL	1	1700	110	.06*	140	.08*
SBT	2	3400	30	.02	10	.01
SBR	0	0	590	.35	490	.29
EBL	1	1700	470	.28*	550	.32*
EBT	1	1700	350	.21	840	.49
EBR	1	1700	90	.05	10	.01
WBL	1	1700	10	.01	10	.01
WBT	1	1700	730	.43*	410	.24*
WBR	1	1700	220	.13	90	.05
Right Turn Adjustment			SBR	.32*	SBR	.22*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**1.16**		**.94**

1. A Street & Ortega

2030 With Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	20	.01*	10	.01*
NBT	1	1700	0	.02	0	.01
NBR	0	0	30		20	
SBL	1	1700	30	.02	20	.01
SBT	1	1700	0	.03*	10	.02*
SBR	0	0	50		20	
EBL	1	1700	10	.01*	40	.02
EBT	2	3400	1610	.48	1740	.52*
EBR	0	0	10		20	
WBL	1	1700	10	.01	30	.02*
WBT	2	3400	1850	.55*	1500	.45
WBR	0	0	10		30	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION **.65** **.62**

2. La Pata & Ortega

2030 Without Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	340	.20*	320	.19
NBT	3	5100	790	.15	930	.18*
NBR	1	1700	70	.04	210	.12
SBL	1	1700	80	.05	300	.18*
SBT	3	5100	1010	.20*	630	.12
SBR	1	1700	1200	.71	1040	.61
EBL	1	1700	720	.42*	1060	.62*
EBT	1	1700	290	.17	520	.31
EBR	1	1700	650	.38	190	.11
WBL	1	1700	270	.16	90	.05
WBT	1	1700	340	.20*	240	.14*
WBR	1	1700	220	.13	160	.09
Right Turn Adjustment			SBR	.09*		
Clearance Interval				.05*		.05*

Note: Assumes Right-Turn Overlap for SBR

TOTAL CAPACITY UTILIZATION **1.16** **1.17**

2030 With Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	340	.10*	320	.09
NBT	3	5100	790	.15	930	.18*
NBR	1	1700	70	.04	210	.12
SBL	1	1700	80	.05	300	.18*
SBT	3	5100	1010	.20*	630	.12
SBR	2	3400	1200	.35	1040	.31
EBL	2	3400	720	.21*	1060	.31*
EBT	2	3400	290	.09	520	.15
EBR	1	1700	650	.38	190	.11
WBL	1	1700	270	.16	90	.05
WBT	2	3400	340	.10*	240	.07*
WBR	1	1700	220	.13	160	.09
Right Turn Adjustment			Multi	.16*	WBR	.02*
Clearance Interval				.05*		.05*

Note: Assumes Right-Turn Overlap for SBR EBR

TOTAL CAPACITY UTILIZATION **.82** **.81**

7. Sports Park & Ortega

2030 With Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	0	0	0		0	
NBR	1	1700	10	.01	10	.01
SBL	0	0	0		0	
SBT	0	0	0		0	
SBR	1	1700	10	.01	10	.01
EBL	0	0	0		0	
EBT	2	3400	1660	.49	1760	.52*
EBR	1	1700	10	.01	20	.01
WBL	1	1700	10	.01	50	.03*
WBT	2	3400	1870	.55*	1560	.46
WBR	1	1700	10	.01	10	.01
Right Turn Adjustment			Multi	.02*	Multi	.02*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.62**		**.62**

8. D St & Ortega

2030 With Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	60	.04*	30	.02*
NBT	1	1700	0	.01	0	.01
NBR	0	0	10		10	
SBL	1	1700	10	.01	10	.01
SBT	1	1700	0	.02*	0	.05*
SBR	0	0	40		80	
EBL	1	1700	120	.07*	180	.11
EBT	2	3400	320	.10	780	.25*
EBR	0	0	10		60	
WBL	1	1700	10	.01	10	.01*
WBT	2	3400	720	.22*	380	.11
WBR	0	0	20		10	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.40**		**.38**

2: Int Performance by approach

Approach	EB	WB	SB	All
Total Delay (hr)	9.5	1.6	0.0	11.1
Delay / Veh (s)	37.3	4.8	6.4	18.7
Stop Delay (hr)	6.3	0.2	0.0	6.5
St Del/Veh (s)	24.8	0.6	6.4	11.0
Total Stops	770	55	16	841
Stop/Veh	0.84	0.05	1.00	0.39
Travel Dist (mi)	217.4	293.5	0.8	511.6
Travel Time (hr)	14.6	8.4	0.1	23.0
Avg Speed (mph)	15	36	12	23
Vehicles Entered	930	1213	16	2159
Denied Entry Before	2	1	0	3
Denied Entry After	2	0	0	2

4: Int Performance by approach

Approach	EB	WB	NB	SB	All
Total Delay (hr)	29.2	156.3	1.4	8.6	195.5
Delay / Veh (s)	118.8	876.3	46.1	41.5	294.9
Stop Delay (hr)	24.2	143.5	1.3	6.8	175.9
St Del/Veh (s)	98.5	804.7	43.0	32.9	265.2
Total Stops	2077	4748	116	996	7937
Stop/Veh	2.35	7.40	1.06	1.33	3.33
Travel Dist (mi)	140.2	326.2	13.9	347.0	827.3
Travel Time (hr)	32.9	164.0	1.8	17.4	216.1
Avg Speed (mph)	4	4	8	20	6
Vehicles Entered	897	681	110	746	2434
Denied Entry Before	0	0	0	0	0
Denied Entry After	1	272	0	0	273

Total Network Performance

Total Delay (hr)	234.9
Delay / Veh (s)	335.0
Stop Delay (hr)	200.2
St Del/Veh (s)	285.5
Total Stops	10647
Stop/Veh	4.22
Travel Dist (mi)	2597.2
Travel Time (hr)	297.6
Avg Speed (mph)	12
Vehicles Entered	2610
Denied Entry Before	3
Denied Entry After	275

2: Int Performance by approach

Approach	EB	WB	SB	All
Total Delay (hr)	72.8	1.2	0.1	74.0
Delay / Veh (s)	220.6	4.0	8.0	115.9
Stop Delay (hr)	64.7	0.1	0.1	64.8
St Del/Veh (s)	195.9	0.4	7.6	101.5
Total Stops	1579	29	26	1634
Stop/Veh	1.33	0.03	0.96	0.71
Travel Dist (mi)	283.3	264.6	1.3	549.2
Travel Time (hr)	79.3	7.2	0.1	86.7
Avg Speed (mph)	11	37	11	16
Vehicles Entered	1205	1085	27	2317
Denied Entry Before	2	0	0	2
Denied Entry After	198	0	0	198

4: Int Performance by approach

Approach	EB	WB	NB	SB	All
Total Delay (hr)	30.2	6.8	1.1	4.3	42.4
Delay / Veh (s)	91.5	46.6	33.3	22.1	60.3
Stop Delay (hr)	22.8	4.9	1.0	3.3	32.0
St Del/Veh (s)	69.1	33.5	31.2	17.0	45.6
Total Stops	2327	581	114	651	3673
Stop/Veh	1.96	1.10	0.99	0.93	1.45
Travel Dist (mi)	195.0	269.2	14.5	323.1	801.8
Travel Time (hr)	35.1	13.1	1.5	12.4	62.1
Avg Speed (mph)	6	21	10	26	13
Vehicles Entered	1197	524	114	701	2536
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

Total Network Performance

Total Delay (hr)	145.2
Delay / Veh (s)	198.1
Stop Delay (hr)	111.2
St Del/Veh (s)	151.7
Total Stops	7105
Stop/Veh	2.69
Travel Dist (mi)	2825.8
Travel Time (hr)	212.7
Avg Speed (mph)	18
Vehicles Entered	2676
Denied Entry Before	2
Denied Entry After	198

2: Ortega Hwy & Antonio
AM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	600		400	300		250	250		250	300		350
Storage Lanes	1		1	1		1	1		1	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	*1.00	*1.00	1.00	1.00	*1.00	1.00	*1.00	*1.00	1.00	1.00	*1.00	*1.00
Frt												
Flt Protected				0.950								
Satd. Flow (prot)	1845	1759	1727	1612	1827	1845	1667	5429	1727	1845	5429	1881
Flt Permitted				0.950								
Satd. Flow (perm)	1845	1759	1727	1612	1827	1845	1667	5429	1727	1845	5429	1881
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			353			220			70			507
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45			45			50			50	
Link Distance (ft)		927			1136			864			2846	
Travel Time (s)		14.0			17.2			11.8			38.8	
Volume (vph)	720	290	650	270	340	220	340	790	70	80	1010	1200
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	8%	10%	12%	4%	3%	14%	5%	10%	3%	5%	1%
Adj. Flow (vph)	720	290	650	270	340	220	340	790	70	80	1010	1200
Lane Group Flow (vph)	720	290	650	270	340	220	340	790	70	80	1010	1200
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phases	7	4	4	3	8	8	5	2	2	1	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	20.0	8.0	10.0	10.0	8.0	20.0	20.0	15.0	18.0	18.0
Total Split (s)	25.0	24.0	24.0	16.0	15.0	15.0	16.0	20.0	20.0	15.0	19.0	19.0
Total Split (%)	33.3%	32.0%	32.0%	21.3%	20.0%	20.0%	21.3%	26.7%	26.7%	20.0%	25.3%	25.3%
Maximum Green (s)	21.0	20.0	20.0	12.0	11.0	11.0	12.0	16.0	16.0	11.0	15.0	15.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	None	None	None	None	None	None	None	None	None
Walk Time (s)		5.0	5.0					5.0	5.0			
Flash Dont Walk (s)		11.0	11.0					11.0	11.0			
Pedestrian Calls (#/hr)		0	0					0	0			
Act Effct Green (s)	21.0	20.0	20.0	12.0	11.0	11.0	12.0	20.5	20.5	8.4	15.0	15.0
Actuated g/C Ratio	0.28	0.27	0.27	0.16	0.15	0.15	0.16	0.27	0.27	0.11	0.20	0.20
v/c Ratio	1.39	0.62	0.90	1.05	1.27	0.48	1.27	0.53	0.13	0.39	0.93	1.53
Control Delay	203.8	29.8	23.0	103.3	177.9	8.5	179.6	25.9	7.5	35.7	45.7	265.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	203.8	29.8	23.0	103.3	177.9	8.5	179.6	25.9	7.5	35.7	45.7	265.1

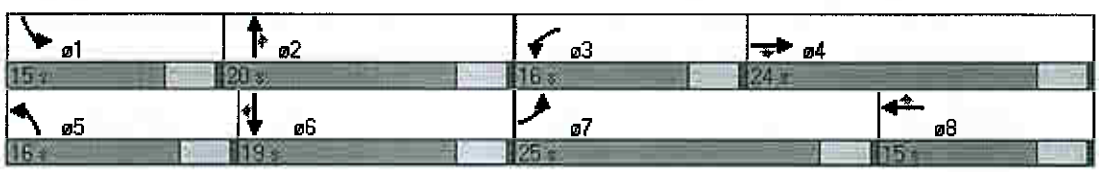
2: Ortega Hwy & Antonio
AM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	F	C	C	F	F	A	F	C	A	D	D	F
Approach Delay		102.6			108.8			68.4			160.3	
Approach LOS		F			F			E			F	
Queue Length 50th (ft)	~471	142	188	~139	~203	0	~204	108	0	35	155	~599
Queue Length 95th (ft)	m#457	m147	m222	#278	#356	56	#357	150	31	73	#227	#838
Internal Link Dist (ft)		847			1056			784			2766	
Turn Bay Length (ft)	600		400	300		250	250		250	300		350
Base Capacity (vph)	517	469	719	258	268	458	267	1484	523	271	1086	782
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.39	0.62	0.90	1.05	1.27	0.48	1.27	0.53	0.13	0.30	0.93	1.53

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 0 (0%), Referenced to phase 4:EBT and 7:EBL, Start of Green
Natural Cycle: 140
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.53
Intersection Signal Delay: 118.7 Intersection LOS: F
Analysis Period (min) 15
* User Entered Value
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Ortega Hwy & Antonio



1: Ortega Hwy & A St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	SBR	All
Total Delay (hr)	0.3	65.3	0.8	0.0	2.1	0.0	0.0	0.1	0.2	0.2	68.9
Delay / Veh (s)	263.4	393.4	460.3	51.4	12.9	10.4	5.3	31.5	51.5	20.3	199.2
Stop Delay (hr)	0.3	58.4	0.7	0.0	0.5	0.0	0.0	0.1	0.2	0.1	60.3
Total Stops	8	1436	14	1	144	2	1	14	11	24	1655
Travel Dist (mi)	0.9	140.2	1.4	0.3	147.0	1.3	0.1	1.1	1.0	2.4	295.8
Travel Time (hr)	0.3	68.5	0.8	0.0	5.4	0.0	0.0	0.2	0.2	0.3	75.8
Avg Speed (mph)	10	8	8	12	27	26	17	6	5	9	12
Fuel Used (gal)	0.2	49.3	0.6	0.0	5.5	0.0	0.0	0.2	0.2	0.2	56.2
Vehicles Entered	4	606	6	1	578	5	2	16	11	27	1256
Vehicles Exited	4	591	6	1	573	5	2	16	11	27	1236
Hourly Exit Rate	8	1182	12	2	1146	10	4	32	22	54	2472
Denied Entry Before	0	4	0	0	0	0	0	0	0	0	4
Denied Entry After	1	235	2	0	0	0	0	0	0	0	238

2: Ortega Hwy & Antonio Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay (hr)	10.7	1.7	2.5	3.6	8.5	1.5	18.2	13.5	1.2	3.2	40.0	82.1
Delay / Veh (s)	157.5	40.8	37.9	129.4	217.7	82.3	464.8	157.1	177.6	393.4	407.9	809.7
Stop Delay (hr)	9.1	1.1	1.6	3.0	7.4	1.1	17.3	12.9	1.2	3.1	38.3	74.5
Total Stops	740	142	310	260	522	167	653	198	13	28	409	3088
Travel Dist (mi)	40.1	21.0	37.0	20.5	28.2	13.5	21.8	47.8	3.9	15.2	188.5	189.4
Travel Time (hr)	11.8	2.1	3.7	4.2	9.1	1.9	18.8	14.7	1.4	3.5	44.1	86.7
Avg Speed (mph)	3	10	10	6	3	7	2	16	28	20	21	4
Fuel Used (gal)	8.3	3.6	6.1	5.1	6.7	1.8	13.5	15.9	2.3	2.9	44.7	60.7
Vehicles Entered	252	151	233	103	147	67	153	309	25	28	357	404
Vehicles Exited	236	144	236	97	133	64	129	309	25	29	349	327
Hourly Exit Rate	472	288	472	194	266	128	258	618	50	58	698	654
Denied Entry Before	0	0	0	0	0	0	1	0	0	1	1	8
Denied Entry After	0	0	0	4	0	0	36	79	11	17	170	190

2: Ortega Hwy & Antonio Performance by movement

Movement	All
Total Delay (hr)	186.5
Delay / Veh (s)	311.9
Stop Delay (hr)	170.6
Total Stops	6530
Travel Dist (mi)	626.9
Travel Time (hr)	202.1
Avg Speed (mph)	6
Fuel Used (gal)	171.5
Vehicles Entered	2229
Vehicles Exited	2078
Hourly Exit Rate	4156
Denied Entry Before	11
Denied Entry After	507

7: Ortega Hwy & Sports Pk Performance by movement

Movement	EBT	EBR	WBL	WBT	NBR	SBR	All
Total Delay (hr)	11.0	0.1	0.2	0.5	0.8	0.0	12.6
Delay / Veh (s)	65.4	51.8	125.7	3.1	712.0	15.9	37.1
Stop Delay (hr)	5.9	0.0	0.2	0.1	0.8	0.0	7.0
Total Stops	768	5	4	0	7	7	791
Travel Dist (mi)	156.2	1.0	1.0	98.0	0.3	0.4	256.9
Travel Time (hr)	14.6	0.1	0.2	3.4	0.8	0.0	19.1
Avg Speed (mph)	11	12	5	29	0	8	14
Fuel Used (gal)	14.0	0.1	0.2	18.7	0.4	0.0	33.4
Vehicles Entered	614	4	6	591	7	7	1229
Vehicles Exited	597	4	5	592	1	6	1205
Hourly Exit Rate	1194	8	10	1184	2	12	2410
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	2	0	0	0	0	0	2

8: Ortega Hwy & D St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	SBR	All
Total Delay (hr)	0.4	0.4	0.0	0.1	20.5	0.7	0.2	0.0	0.0	0.1	22.5
Delay / Veh (s)	32.0	10.9	10.3	120.3	267.3	210.1	32.9	0.9	9.4	12.4	152.6
Stop Delay (hr)	0.3	0.2	0.0	0.1	19.2	0.7	0.2	0.0	0.0	0.1	20.8
Total Stops	46	49	1	10	646	26	23	1	2	13	817
Travel Dist (mi)	8.8	27.4	0.9	0.4	27.2	1.1	1.1	0.1	0.1	0.8	67.9
Travel Time (hr)	0.7	1.1	0.0	0.1	21.2	0.7	0.3	0.0	0.0	0.1	24.3
Avg Speed (mph)	14	24	23	5	3	4	4	17	12	8	6
Fuel Used (gal)	1.0	7.6	0.1	0.1	14.9	0.5	0.2	0.0	0.0	0.1	24.5
Vehicles Entered	45	140	4	4	285	11	27	3	3	18	540
Vehicles Exited	45	140	4	4	268	12	25	3	2	18	521
Hourly Exit Rate	90	280	8	8	536	24	50	6	4	36	1042
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	101	4	0	0	0	0	105

Total Network Performance

Total Delay (hr)	292.9
Delay / Veh (s)	458.9
Stop Delay (hr)	258.6
Total Stops	9793
Travel Dist (mi)	1870.4
Travel Time (hr)	338.3
Avg Speed (mph)	10
Fuel Used (gal)	372.5
Vehicles Entered	2399
Vehicles Exited	2197
Hourly Exit Rate	4394
Denied Entry Before	15
Denied Entry After	852

Intersection: 1: Ortega Hwy & A St

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	30	1279	28	566	29	71	52	54
Average Queue (ft)	6	1189	2	162	2	23	22	33
95th Queue (ft)	26	1493	13	403	14	59	47	64
Link Distance (ft)		1245		1284	376	376		474
Upstream Blk Time (%)		30						
Queuing Penalty (veh)		0						
Storage Bay Dist (ft)	150		150				150	
Storage Blk Time (%)		30		6				
Queuing Penalty (veh)		3		1				

Intersection: 2: Ortega Hwy & Antonio

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	NB	SB
Directions Served	L	T	R	L	T	R	L	T	T	T	R	L
Maximum Queue (ft)	626	918	364	344	1059	276	286	829	822	766	31	86
Average Queue (ft)	614	751	170	184	745	200	276	672	400	117	8	30
95th Queue (ft)	667	1207	300	368	1289	377	288	1040	946	410	26	65
Link Distance (ft)		827			1026			806	806	806		
Upstream Blk Time (%)		25			16			36	0			
Queuing Penalty (veh)		411			131			0	0			
Storage Bay Dist (ft)	600		400	300		250	250				250	300
Storage Blk Time (%)	28			0	57	0	78					
Queuing Penalty (veh)	261			0	281	1	206					

Intersection: 2: Ortega Hwy & Antonio

Movement	SB	SB	SB	SB
Directions Served	T	T	T	R
Maximum Queue (ft)	2819	2819	2800	2548
Average Queue (ft)	1873	2466	2572	525
95th Queue (ft)	3682	3665	3339	1417
Link Distance (ft)	2785	2785	2785	
Upstream Blk Time (%)	0	10	38	
Queuing Penalty (veh)	0	0	0	
Storage Bay Dist (ft)				350
Storage Blk Time (%)				61
Queuing Penalty (veh)				206

Intersection: 7: Ortega Hwy & Sports Pk

Movement	EB	WB	NB	SB
Directions Served	TR	L	R	R
Maximum Queue (ft)	1321	50	134	28
Average Queue (ft)	929	13	39	9
95th Queue (ft)	1785	40	105	31
Link Distance (ft)	1284		284	272
Upstream Blk Time (%)	11			
Queuing Penalty (veh)	186			
Storage Bay Dist (ft)		100		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 8: Ortega Hwy & D St

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	111	137	175	534	135	23	27	66
Average Queue (ft)	53	66	27	499	37	2	4	18
95th Queue (ft)	100	125	123	621	98	11	19	51
Link Distance (ft)		1026		519	208	208	224	224
Upstream Blk Time (%)				49				
Queuing Penalty (veh)				0				
Storage Bay Dist (ft)	150		150					
Storage Blk Time (%)		0		66				
Queuing Penalty (veh)		0		7				

Nework Summary

Network wide Queuing Penalty: 1693

2: Ortega Hwy & Antonio
Lanes, Volumes, Timings

7/17/2006

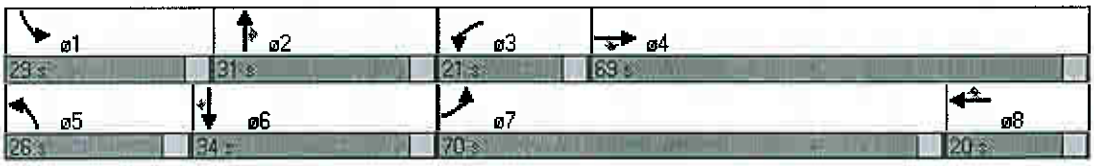
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	600		400	300		250	250		250	300		350
Storage Lanes	1		1	1		1	1		1	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	*1.00	*1.00	1.00	1.00	*1.00	1.00	*1.00	*1.00	1.00	1.00	*1.00	*1.00
Frt												
Flt Protected				0.950								
Satd. Flow (prot)	1845	1759	1727	1612	1827	1845	1667	5429	1727	1845	5429	1881
Flt Permitted				0.950								
Satd. Flow (perm)	1845	1759	1727	1612	1827	1845	1667	5429	1727	1845	5429	1881
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			190			160			210			698
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45			45			50			50	
Link Distance (ft)		927			1136			864			2846	
Travel Time (s)		14.0			17.2			11.8			38.8	
Volume (vph)	1060	520	190	90	240	160	320	930	210	300	630	1040
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	8%	10%	12%	4%	3%	14%	5%	10%	3%	5%	1%
Adj. Flow (vph)	1060	520	190	90	240	160	320	930	210	300	630	1040
Lane Group Flow (vph)	1060	520	190	90	240	160	320	930	210	300	630	1040
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phases	7	4	4	3	8	8	5	2	2	1	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	20.0	8.0	10.0	10.0	8.0	20.0	20.0	15.0	18.0	18.0
Total Split (s)	70.0	69.0	69.0	21.0	20.0	20.0	26.0	31.0	31.0	29.0	34.0	34.0
Total Split (%)	46.7%	46.0%	46.0%	14.0%	13.3%	13.3%	17.3%	20.7%	20.7%	19.3%	22.7%	22.7%
Maximum Green (s)	66.0	65.0	65.0	17.0	16.0	16.0	22.0	27.0	27.0	25.0	30.0	30.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	None	None	None	None	None	None	None	None	None
Walk Time (s)		5.0	5.0					5.0	5.0			
Flash Dont Walk (s)		11.0	11.0					11.0	11.0			
Pedestrian Calls (#/hr)		0	0					0	0			
Act Effct Green (s)	66.0	68.8	68.8	13.2	16.0	16.0	22.0	27.0	27.0	25.0	30.0	30.0
Actuated g/C Ratio	0.44	0.46	0.46	0.09	0.11	0.11	0.15	0.18	0.18	0.17	0.20	0.20
v/c Ratio	1.31	0.64	0.21	0.63	1.23	0.47	1.31	0.95	0.43	0.97	0.58	1.11
Control Delay	175.0	29.9	4.2	85.3	193.2	13.3	214.2	79.8	9.3	106.4	56.8	82.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	175.0	29.9	4.2	85.3	193.2	13.3	214.2	79.8	9.3	106.4	56.8	82.9

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	F	C	A	F	F	B	F	E	A	F	E	F
Approach Delay		114.0			114.7			99.1			78.1	
Approach LOS		F			F			F			E	
Queue Length 50th (ft)	~1327	334	15	86	~289	0	~401	304	0	296	188	~583
Queue Length 95th (ft)	m#1023	m302	m21	145	#470	70	#600	#385	72	#491	229	#850
Internal Link Dist (ft)		847			1056			784			2766	
Turn Bay Length (ft)	600		400	300		250	250		250	300		350
Base Capacity (vph)	812	807	895	183	195	340	244	977	483	308	1086	935
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.31	0.64	0.21	0.49	1.23	0.47	1.31	0.95	0.43	0.97	0.58	1.11

Intersection Summary

Area Type: Other
Cycle Length: 150
Actuated Cycle Length: 150
Offset: 0 (0%), Referenced to phase 4:EBT and 7:EBL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.31
Intersection Signal Delay: 97.8 Intersection LOS: F
Analysis Period (min) 15
* User Entered Value
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Ortega Hwy & Antonio



1: Ortega Hwy & A St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	SBT	SBR	All
Total Delay (hr)	2.5	80.1	1.3	0.1	1.5	0.0	0.1	0.1	0.1	0.1	0.0	85.9
Delay / Veh (s)	603.6	472.9	643.3	32.6	12.9	6.0	35.3	23.6	34.5	35.4	9.8	274.1
Stop Delay (hr)	2.4	73.4	1.2	0.1	0.4	0.0	0.1	0.1	0.1	0.1	0.0	77.8
Total Stops	41	1267	12	10	120	1	7	9	9	8	11	1495
Travel Dist (mi)	3.5	144.2	1.5	3.1	109.4	1.3	0.6	0.6	0.9	0.8	1.3	267.1
Travel Time (hr)	2.6	83.4	1.3	0.2	4.0	0.0	0.1	0.1	0.1	0.1	0.1	92.1
Avg Speed (mph)	7	9	9	15	27	28	6	7	7	8	14	12
Fuel Used (gal)	1.8	59.2	0.9	0.2	4.2	0.0	0.1	0.1	0.1	0.1	0.1	66.7
Vehicles Entered	15	617	8	12	425	5	8	9	10	9	14	1132
Vehicles Exited	15	603	6	13	434	5	7	9	10	8	14	1124
Hourly Exit Rate	30	1206	12	26	868	10	14	18	20	16	28	2248
Denied Entry Before	0	8	0	0	0	0	0	0	0	0	0	8
Denied Entry After	11	254	4	0	0	0	0	0	0	0	0	269

2: Ortega Hwy & Antonio Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay (hr)	8.6	2.4	0.4	2.2	9.1	3.5	19.8	26.1	4.6	6.2	10.2	43.4
Delay / Veh (s)	83.3	41.4	23.7	202.8	368.7	166.0	659.9	268.9	224.5	193.6	136.5	435.1
Stop Delay (hr)	6.7	1.7	0.3	2.0	8.5	3.1	19.1	24.9	4.5	5.8	9.1	39.3
Total Stops	423	144	54	90	235	182	324	409	82	138	254	1102
Travel Dist (mi)	60.9	31.3	10.4	8.1	18.1	14.8	16.2	54.2	11.4	59.5	141.8	186.7
Travel Time (hr)	10.3	3.1	0.7	2.4	9.6	3.9	20.3	27.5	5.0	7.6	13.2	47.9
Avg Speed (mph)	6	10	14	3	2	4	1	5	13	12	18	5
Fuel Used (gal)	7.8	7.1	2.3	2.5	6.3	4.3	13.2	23.6	4.6	6.3	18.0	31.6
Vehicles Entered	374	203	66	42	97	79	121	347	73	111	264	420
Vehicles Exited	367	206	63	37	81	71	96	353	74	118	272	298
Hourly Exit Rate	734	412	126	74	162	142	192	706	148	236	544	596
Denied Entry Before	0	0	0	0	0	1	0	3	1	0	3	6
Denied Entry After	0	0	0	2	1	0	54	144	31	33	60	109

2: Ortega Hwy & Antonio Performance by movement

Movement	All
Total Delay (hr)	136.4
Delay / Veh (s)	232.1
Stop Delay (hr)	124.9
Total Stops	3437
Travel Dist (mi)	613.5
Travel Time (hr)	151.5
Avg Speed (mph)	6
Fuel Used (gal)	127.7
Vehicles Entered	2197
Vehicles Exited	2036
Hourly Exit Rate	4072
Denied Entry Before	14
Denied Entry After	434

7: Ortega Hwy & Sports Pk Performance by movement

Movement	EBT	EBR	WBL	WBT	WBR	NBR	SBR	All
Total Delay (hr)	7.8	0.1	1.3	3.9	0.0	0.2	0.0	13.3
Delay / Veh (s)	45.7	53.5	592.1	30.4	1.4	130.9	5.0	43.6
Stop Delay (hr)	3.4	0.1	1.3	3.5	0.0	0.2	0.0	8.5
Total Stops	403	6	10	29	0	4	3	455
Travel Dist (mi)	157.9	1.8	1.7	76.1	0.2	0.2	0.1	238.0
Travel Time (hr)	11.4	0.2	1.4	6.2	0.0	0.2	0.0	19.3
Avg Speed (mph)	14	11	1	13	25	1	11	13
Fuel Used (gal)	13.2	0.1	0.9	14.7	0.0	0.1	0.0	29.1
Vehicles Entered	615	7	11	474	1	4	2	1114
Vehicles Exited	609	7	5	448	1	6	3	1079
Hourly Exit Rate	1218	14	10	896	2	12	6	2158
Denied Entry Before	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	6	0	0	0	6

8: Ortega Hwy & D St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	SBR	All
Total Delay (hr)	0.8	1.9	0.1	0.0	1.5	0.0	0.0	0.0	0.1	0.3	4.8
Delay / Veh (s)	47.8	21.8	12.7	27.2	31.2	9.9	12.6	7.9	16.2	27.9	26.5
Stop Delay (hr)	0.7	0.9	0.0	0.0	1.2	0.0	0.0	0.0	0.1	0.3	3.2
Total Stops	79	203	17	4	146	1	7	1	9	25	492
Travel Dist (mi)	13.4	63.2	5.0	0.4	17.4	0.3	0.4	0.1	0.5	1.6	102.4
Travel Time (hr)	1.3	3.6	0.3	0.0	2.0	0.0	0.1	0.0	0.1	0.4	7.7
Avg Speed (mph)	11	18	20	10	9	15	7	9	6	5	13
Fuel Used (gal)	2.2	12.6	0.4	0.1	2.5	0.0	0.0	0.0	0.1	0.2	18.2
Vehicles Entered	66	314	24	4	183	3	11	2	12	38	657
Vehicles Exited	63	313	24	4	167	3	11	2	13	33	633
Hourly Exit Rate	126	626	48	8	334	6	22	4	26	66	1266
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0

Total Network Performance

Total Delay (hr)	243.0
Delay / Veh (s)	386.0
Stop Delay (hr)	214.5
Total Stops	5879
Travel Dist (mi)	1881.4
Travel Time (hr)	288.4
Avg Speed (mph)	11
Fuel Used (gal)	329.2
Vehicles Entered	2362
Vehicles Exited	2171
Hourly Exit Rate	4342
Denied Entry Before	22
Denied Entry After	709

Intersection: 1: Ortega Hwy & A St

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	173	1279	50	454	29	52	52	53
Average Queue (ft)	37	1261	17	169	14	17	21	27
95th Queue (ft)	104	1269	46	399	34	49	53	56
Link Distance (ft)		1245		1284	376	376		474
Upstream Blk Time (%)		26						
Queuing Penalty (veh)		0						
Storage Bay Dist (ft)	150		150				150	
Storage Blk Time (%)		27		4				
Queuing Penalty (veh)		11		1				

Intersection: 2: Ortega Hwy & Antonio

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	NB	SB
Directions Served	L	T	R	L	T	R	L	T	T	T	R	L
Maximum Queue (ft)	625	921	90	325	1041	295	294	840	819	520	276	375
Average Queue (ft)	619	795	42	109	813	172	279	735	515	284	107	252
95th Queue (ft)	645	1079	73	296	1188	366	298	956	981	520	274	413
Link Distance (ft)		827			1026			806	806	806		
Upstream Blk Time (%)		20			13			40	0			
Queuing Penalty (veh)		359			65			0	0			
Storage Bay Dist (ft)	600		400	300		250	250				250	300
Storage Blk Time (%)	27			0	76	0	86	9		18	0	2
Queuing Penalty (veh)	195			0	190	0	265	30		37	0	5

Intersection: 2: Ortega Hwy & Antonio

Movement	SB	SB	SB	SB
Directions Served	T	T	T	R
Maximum Queue (ft)	2723	2751	2800	395
Average Queue (ft)	839	1328	1830	377
95th Queue (ft)	2516	3242	3124	385
Link Distance (ft)	2785	2785	2785	
Upstream Blk Time (%)			15	
Queuing Penalty (veh)			0	
Storage Bay Dist (ft)				350
Storage Blk Time (%)				75
Queuing Penalty (veh)				157

Intersection: 7: Ortega Hwy & Sports Pk

Movement	EB	WB	WB	NB	SB
Directions Served	TR	L	TR	R	R
Maximum Queue (ft)	1318	126	841	71	23
Average Queue (ft)	756	64	205	12	5
95th Queue (ft)	1692	149	774	43	19
Link Distance (ft)	1284		827	284	272
Upstream Blk Time (%)	5		19		
Queuing Penalty (veh)	96		308		
Storage Bay Dist (ft)		100			
Storage Blk Time (%)		35			
Queuing Penalty (veh)		542			

Intersection: 8: Ortega Hwy & D St

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	175	301	27	398	46	25	28	132
Average Queue (ft)	95	228	7	165	14	2	14	33
95th Queue (ft)	186	332	26	308	39	12	36	95
Link Distance (ft)		1026		519	208	208	224	224
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	150		150					
Storage Blk Time (%)	1	13		13				
Queuing Penalty (veh)	6	23		1				

Nework Summary

Network wide Queuing Penalty: 2291

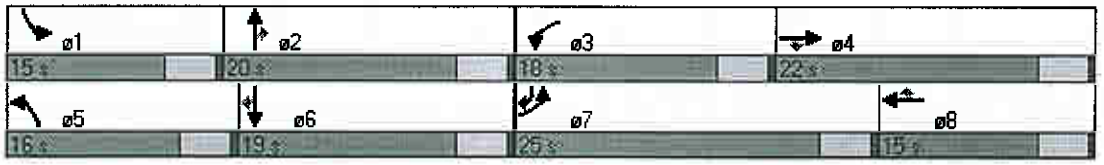
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	600		400	300		250	250		250	300		350
Storage Lanes	2		1	1		1	2		1	1		2
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	*1.00	*1.00	1.00	1.00	*1.00	1.00	*1.00	*1.00	1.00	1.00	*1.00	*1.00
Frt												
Flt Protected				0.950								
Satd. Flow (prot)	3689	3519	1727	1612	3654	1845	3333	5429	1727	1845	5429	3762
Flt Permitted				0.950								
Satd. Flow (perm)	3689	3519	1727	1612	3654	1845	3333	5429	1727	1845	5429	3762
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			357			220			70			112
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45			45			50			50	
Link Distance (ft)		927			1136			864			2846	
Travel Time (s)		14.0			17.2			11.8			38.8	
Volume (vph)	720	290	650	270	340	220	340	790	70	80	1010	1200
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	8%	10%	12%	4%	3%	14%	5%	10%	3%	5%	1%
Adj. Flow (vph)	720	290	650	270	340	220	340	790	70	80	1010	1200
Lane Group Flow (vph)	720	290	650	270	340	220	340	790	70	80	1010	1200
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		pm+ov
Protected Phases	7	4		3	8		5	2		1	6	7
Permitted Phases			4			8			2			6
Detector Phases	7	4	4	3	8	8	5	2	2	1	6	7
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	20.0	8.0	10.0	10.0	8.0	20.0	20.0	15.0	18.0	8.0
Total Split (s)	25.0	22.0	22.0	18.0	15.0	15.0	16.0	20.0	20.0	15.0	19.0	25.0
Total Split (%)	33.3%	29.3%	29.3%	24.0%	20.0%	20.0%	21.3%	26.7%	26.7%	20.0%	25.3%	33.3%
Maximum Green (s)	21.0	18.0	18.0	14.0	11.0	11.0	12.0	16.0	16.0	11.0	15.0	21.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	None	None	None	None	None	None	None	None	C-Max
Walk Time (s)		5.0	5.0					5.0	5.0			
Flash Dont Walk (s)		11.0	11.0					11.0	11.0			
Pedestrian Calls (#/hr)		0	0					0	0			
Act Effct Green (s)	21.1	18.2	18.2	13.9	11.0	11.0	11.3	20.4	20.4	8.4	15.6	40.7
Actuated g/C Ratio	0.28	0.24	0.24	0.19	0.15	0.15	0.15	0.27	0.27	0.11	0.21	0.54
v/c Ratio	0.69	0.34	0.94	0.90	0.63	0.48	0.68	0.53	0.13	0.39	0.89	0.57
Control Delay	24.2	29.8	41.8	65.0	36.1	8.5	37.4	26.0	7.5	35.7	41.1	11.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.2	29.8	41.8	65.0	36.1	8.5	37.4	26.0	7.5	35.7	41.1	11.6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	C	C	D	E	D	A	D	C	A	D	D	B
Approach Delay		32.1			38.2			28.2			25.5	
Approach LOS		C			D			C			C	
Queue Length 50th (ft)	151	70	191	124	75	0	75	108	0	35	155	157
Queue Length 95th (ft)	209	111	#383	#257	115	56	115	150	31	73	#227	212
Internal Link Dist (ft)		847			1056			784			2766	
Turn Bay Length (ft)	600		400	300		250	250		250	300		350
Base Capacity (vph)	1037	852	689	301	536	458	533	1478	521	271	1132	2094
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.69	0.34	0.94	0.90	0.63	0.48	0.64	0.53	0.13	0.30	0.89	0.57

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 0 (0%), Referenced to phase 4:EBT and 7:EBL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.94
Intersection Signal Delay: 29.6 Intersection LOS: C
Analysis Period (min) 15
* User Entered Value
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: Ortega Hwy & Antonio



1: Ortega Hwy & A St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	SBR	All
Total Delay (hr)	0.1	1.3	0.0	0.0	1.5	0.0	0.0	0.0	0.1	0.1	3.1
Delay / Veh (s)	41.0	5.5	2.6	19.0	5.9	3.9	37.3	9.0	35.3	14.8	6.2
Stop Delay (hr)	0.1	0.3	0.0	0.0	0.2	0.0	0.0	0.0	0.1	0.1	0.8
Total Stops	5	89	0	1	106	0	2	14	10	25	252
Travel Dist (mi)	1.2	198.0	1.9	0.3	230.9	1.3	0.1	1.1	1.0	2.4	438.0
Travel Time (hr)	0.1	5.9	0.1	0.0	6.8	0.0	0.0	0.1	0.1	0.2	13.4
Avg Speed (mph)	14	34	31	23	34	32	5	12	7	11	33
Fuel Used (gal)	0.1	9.7	0.1	0.0	9.0	0.0	0.0	0.1	0.1	0.2	19.3
Vehicles Entered	5	837	8	1	898	5	2	16	11	27	1810
Vehicles Exited	5	845	8	1	911	5	2	16	11	27	1831
Hourly Exit Rate	10	1690	16	2	1822	10	4	32	22	54	3662
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0

2: Ortega Hwy & Antonio Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay (hr)	3.7	1.6	9.6	1.7	2.9	0.6	2.9	2.5	0.1	1.2	20.9	10.5
Delay / Veh (s)	35.8	27.8	113.3	42.3	52.5	23.1	55.1	23.5	9.9	99.8	151.9	67.6
Stop Delay (hr)	3.0	1.2	8.1	1.3	2.3	0.4	2.6	1.9	0.1	1.0	17.4	6.6
Total Stops	301	118	724	148	216	83	206	236	27	77	1242	681
Travel Dist (mi)	60.5	30.4	49.4	30.1	39.3	18.4	28.5	59.0	5.4	23.4	274.9	295.6
Travel Time (hr)	5.4	2.3	11.2	2.6	3.8	1.1	3.7	4.0	0.3	1.7	26.8	17.7
Avg Speed (mph)	12	16	5	12	10	16	8	16	27	15	11	19
Fuel Used (gal)	5.0	4.7	9.4	6.3	7.4	1.9	6.1	8.8	1.6	1.6	27.1	21.0
Vehicles Entered	367	212	316	149	201	89	188	387	35	45	524	586
Vehicles Exited	368	208	295	146	199	91	189	388	35	42	466	529
Hourly Exit Rate	736	416	590	292	398	182	378	776	70	84	932	1058
Denied Entry Before	0	0	0	0	0	0	1	0	0	1	1	8
Denied Entry After	3	3	7	0	0	0	1	1	1	0	3	8

2: Ortega Hwy & Antonio Performance by movement

Movement	All
Total Delay (hr)	58.2
Delay / Veh (s)	69.2
Stop Delay (hr)	46.0
Total Stops	4059
Travel Dist (mi)	915.0
Travel Time (hr)	80.8
Avg Speed (mph)	12
Fuel Used (gal)	100.8
Vehicles Entered	3099
Vehicles Exited	2956
Hourly Exit Rate	5912
Denied Entry Before	11
Denied Entry After	27

7: Ortega Hwy & Sports Pk Performance by movement

Movement	EBT	EBR	WBL	WBT	NBR	SBR	All
Total Delay (hr)	1.8	0.0	0.0	0.9	0.1	0.0	2.8
Delay / Veh (s)	7.4	1.4	15.4	3.6	29.9	17.5	5.6
Stop Delay (hr)	0.3	0.0	0.0	0.1	0.1	0.0	0.5
Total Stops	71	0	7	25	7	7	117
Travel Dist (mi)	221.8	1.0	1.2	152.2	0.3	0.3	376.9
Travel Time (hr)	6.8	0.0	0.1	5.5	0.1	0.1	12.5
Avg Speed (mph)	32	46	15	28	5	6	30
Fuel Used (gal)	16.4	0.1	0.2	31.8	0.1	0.0	48.5
Vehicles Entered	870	4	7	911	7	7	1806
Vehicles Exited	863	4	8	919	7	7	1808
Hourly Exit Rate	1726	8	16	1838	14	14	3616
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

8: Ortega Hwy & D St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	SBR	All
Total Delay (hr)	0.6	0.6	0.0	0.0	1.8	0.0	0.1	0.0	0.0	0.0	3.2
Delay / Veh (s)	35.8	11.2	7.7	33.2	17.2	6.8	12.9	4.3	9.2	3.7	16.4
Stop Delay (hr)	0.5	0.3	0.0	0.0	1.2	0.0	0.1	0.0	0.0	0.0	2.2
Total Stops	66	78	4	4	256	10	19	1	2	10	450
Travel Dist (mi)	12.7	39.3	1.3	0.4	38.2	1.5	1.0	0.1	0.1	0.7	95.3
Travel Time (hr)	1.0	1.6	0.1	0.1	2.9	0.1	0.1	0.0	0.0	0.1	5.9
Avg Speed (mph)	13	25	27	9	13	18	7	12	11	13	16
Fuel Used (gal)	1.7	8.2	0.1	0.1	4.8	0.1	0.1	0.0	0.0	0.1	15.2
Vehicles Entered	62	190	6	4	386	15	27	3	3	18	714
Vehicles Exited	62	193	6	4	385	15	26	3	2	18	714
Hourly Exit Rate	124	386	12	8	770	30	52	6	4	36	1428
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0

Total Network Performance

Total Delay (hr)	70.3
Delay / Veh (s)	80.0
Stop Delay (hr)	49.6
Total Stops	4876
Travel Dist (mi)	2708.4
Travel Time (hr)	136.4
Avg Speed (mph)	21
Fuel Used (gal)	291.2
Vehicles Entered	3220
Vehicles Exited	3109
Hourly Exit Rate	6218
Denied Entry Before	11
Denied Entry After	27

Intersection: 1: Ortega Hwy & A St

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	TR
Maximum Queue (ft)	30	158	144	18	172	255	28	71	52	53
Average Queue (ft)	9	95	47	1	53	68	5	19	20	34
95th Queue (ft)	30	173	117	8	132	173	20	51	46	60
Link Distance (ft)		1244	1244		1280	1280	352	352		462
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	150			150					150	
Storage Blk Time (%)		1			0					
Queuing Penalty (veh)		0			0					

Intersection: 2: Ortega Hwy & Antonio

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	L	T	T	R	L	T	T	R	L	L	T
Maximum Queue (ft)	244	257	806	878	445	254	278	308	138	249	245	145
Average Queue (ft)	160	170	424	585	358	179	129	118	75	152	99	89
95th Queue (ft)	225	228	958	1134	555	245	219	233	117	235	213	134
Link Distance (ft)			809	809			1014	1014				786
Upstream Blk Time (%)			0	15								
Queuing Penalty (veh)			1	124								
Storage Bay Dist (ft)	600	600			400	300			250	250	250	
Storage Blk Time (%)			0		43			1		0	0	
Queuing Penalty (veh)			1		63			2		0	1	

Intersection: 2: Ortega Hwy & Antonio

Movement	NB	NB	NB	SB	SB	SB	SB	SB	SB
Directions Served	T	T	R	L	T	T	T	R	R
Maximum Queue (ft)	159	142	29	373	1590	1599	2125	385	350
Average Queue (ft)	91	58	10	87	530	527	583	261	93
95th Queue (ft)	149	115	29	277	1177	1262	1561	390	235
Link Distance (ft)	786	786			2766	2766	2766		
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)			250	300				350	350
Storage Blk Time (%)				0	27		15		0
Queuing Penalty (veh)				0	22		174		0

Intersection: 7: Ortega Hwy & Sports Pk

Movement	EB	EB	WB	NB	SB
Directions Served	T	T	L	R	R
Maximum Queue (ft)	102	374	51	23	48
Average Queue (ft)	19	73	12	8	10
95th Queue (ft)	81	253	41	23	36
Link Distance (ft)	1280	1280		252	242
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			100		
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 8: Ortega Hwy & D St

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	TR
Maximum Queue (ft)	111	108	114	46	220	207	111	22	27	45
Average Queue (ft)	71	54	64	9	135	102	31	2	4	12
95th Queue (ft)	106	95	112	32	209	173	77	11	19	38
Link Distance (ft)		1014	1014		517	517	196	196	212	212
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	150			150						
Storage Blk Time (%)					4					
Queuing Penalty (veh)					0					

Nework Summary

Network wide Queuing Penalty: 389

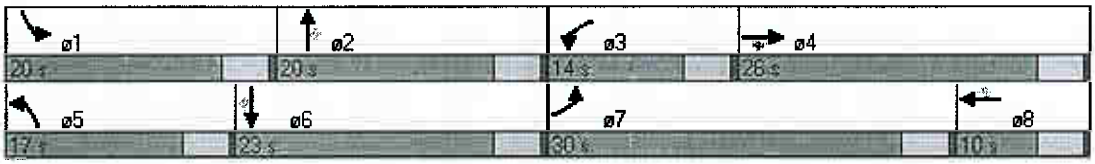
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	600		400	300		250	250		250	300		350
Storage Lanes	2		1	1		1	2		1	1		2
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	*1.00	*1.00	1.00	1.00	*1.00	1.00	*1.00	*1.00	1.00	1.00	*1.00	*1.00
Frt												
Flt Protected				0.950								
Satd. Flow (prot)	3689	3519	1727	1612	3654	1845	3333	5429	1727	1845	5429	3762
Flt Permitted				0.950								
Satd. Flow (perm)	3689	3519	1727	1612	3654	1845	3333	5429	1727	1845	5429	3762
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			190			160			210			1040
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45			45			50			50	
Link Distance (ft)		927			1136			864			2846	
Travel Time (s)		14.0			17.2			11.8			38.8	
Volume (vph)	1060	520	190	90	240	160	320	930	210	300	630	1040
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	8%	10%	12%	4%	3%	14%	5%	10%	3%	5%	1%
Adj. Flow (vph)	1060	520	190	90	240	160	320	930	210	300	630	1040
Lane Group Flow (vph)	1060	520	190	90	240	160	320	930	210	300	630	1040
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phases	7	4	4	3	8	8	5	2	2	1	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	20.0	8.0	10.0	10.0	8.0	20.0	20.0	15.0	18.0	18.0
Total Split (s)	30.0	26.0	26.0	14.0	10.0	10.0	17.0	20.0	20.0	20.0	23.0	23.0
Total Split (%)	37.5%	32.5%	32.5%	17.5%	12.5%	12.5%	21.3%	25.0%	25.0%	25.0%	28.8%	28.8%
Maximum Green (s)	26.0	22.0	22.0	10.0	6.0	6.0	13.0	16.0	16.0	16.0	19.0	19.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	None	None	None	None	None	None	None	None	None
Walk Time (s)		5.0	5.0					5.0	5.0			
Flash Dont Walk (s)		11.0	11.0					11.0	11.0			
Pedestrian Calls (#/hr)		0	0					0	0			
Act Effct Green (s)	26.7	25.9	25.9	8.7	6.0	6.0	11.8	16.0	16.0	15.3	19.5	19.5
Actuated g/C Ratio	0.33	0.32	0.32	0.11	0.08	0.08	0.15	0.20	0.20	0.19	0.24	0.24
v/c Ratio	0.86	0.46	0.28	0.51	0.88	0.56	0.65	0.85	0.41	0.85	0.48	0.61
Control Delay	34.2	24.5	5.0	43.9	69.0	14.7	38.5	40.2	7.0	54.5	27.4	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.2	24.5	5.0	43.9	69.0	14.7	38.5	40.2	7.0	54.5	27.4	3.6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	C	C	A	D	E	B	D	D	A	D	C	A
Approach Delay		28.2			46.6			35.0			18.9	
Approach LOS		C			D			D			B	
Queue Length 50th (ft)	248	109	0	43	60	0	75	150	0	145	90	0
Queue Length 95th (ft)	#358	156	46	88	#123	55	114	#210	53	#272	122	44
Internal Link Dist (ft)		847			1056			784			2766	
Turn Bay Length (ft)	600		400	300		250	250		250	300		350
Base Capacity (vph)	1229	1139	688	202	274	286	542	1089	514	369	1323	1703
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.86	0.46	0.28	0.45	0.88	0.56	0.59	0.85	0.41	0.81	0.48	0.61

Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 0 (0%), Referenced to phase 4:EBT and 7:EBL, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.88
Intersection Signal Delay: 28.3 Intersection LOS: C
Analysis Period (min) 15
* User Entered Value
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: Ortega Hwy & Antonio



1: Ortega Hwy & A St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	SBT	SBR	All
Total Delay (hr)	2.3	72.1	1.1	0.3	7.2	0.1	0.1	0.0	0.1	0.1	0.1	83.6
Delay / Veh (s)	486.2	396.4	448.7	67.0	38.9	41.0	33.9	14.4	40.7	35.2	13.8	210.8
Stop Delay (hr)	2.1	65.2	1.0	0.2	2.2	0.1	0.1	0.0	0.1	0.1	0.1	71.1
Total Stops	42	1087	13	25	581	12	7	8	10	8	11	1804
Travel Dist (mi)	4.1	154.8	2.3	4.5	171.2	3.1	0.5	0.6	0.9	0.8	1.3	344.2
Travel Time (hr)	2.4	75.7	1.2	0.4	11.1	0.2	0.1	0.1	0.1	0.1	0.1	91.5
Avg Speed (mph)	8	10	11	10	15	14	6	9	7	7	12	12
Fuel Used (gal)	1.7	54.9	0.8	0.4	13.6	0.2	0.1	0.0	0.1	0.1	0.1	72.1
Vehicles Entered	18	657	10	18	674	13	8	9	10	9	14	1440
Vehicles Exited	16	653	8	17	661	11	7	9	10	9	14	1415
Hourly Exit Rate	32	1306	16	34	1322	22	14	18	20	18	28	2830
Denied Entry Before	0	8	0	0	0	0	0	0	0	0	0	8
Denied Entry After	8	214	2	0	0	0	0	0	0	0	0	224

2: Ortega Hwy & Antonio Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay (hr)	3.3	1.8	0.1	0.6	2.8	0.7	3.4	6.4	0.8	3.6	5.4	7.8
Delay / Veh (s)	29.2	29.8	6.4	41.3	91.8	26.7	69.8	48.9	28.8	96.4	64.3	56.7
Stop Delay (hr)	2.6	1.4	0.1	0.5	2.5	0.5	3.0	5.2	0.7	3.2	4.6	6.2
Total Stops	314	167	43	46	122	87	202	449	87	169	232	466
Travel Dist (mi)	66.3	34.1	11.0	10.1	21.6	17.5	26.3	73.6	16.0	71.7	164.0	267.5
Travel Time (hr)	5.3	2.6	0.5	0.9	3.3	1.2	4.1	8.2	1.4	5.3	8.9	14.4
Avg Speed (mph)	13	13	24	12	7	15	7	10	15	18	26	27
Fuel Used (gal)	5.4	3.1	1.2	3.1	4.3	3.3	6.5	10.7	2.7	5.2	14.1	17.6
Vehicles Entered	408	221	68	49	107	87	175	491	104	138	310	505
Vehicles Exited	408	223	69	50	111	89	174	456	103	132	299	487
Hourly Exit Rate	816	446	138	100	222	178	348	912	206	264	598	974
Denied Entry Before	0	0	0	0	0	1	0	3	1	0	2	3
Denied Entry After	0	0	0	0	0	0	0	0	0	6	13	21

2: Ortega Hwy & Antonio Performance by movement

Movement	All
Total Delay (hr)	36.8
Delay / Veh (s)	50.3
Stop Delay (hr)	30.7
Total Stops	2384
Travel Dist (mi)	779.7
Travel Time (hr)	56.1
Avg Speed (mph)	17
Fuel Used (gal)	77.2
Vehicles Entered	2663
Vehicles Exited	2601
Hourly Exit Rate	5202
Denied Entry Before	10
Denied Entry After	40

7: Ortega Hwy & Sports Pk Performance by movement

Movement	EBT	EBR	WBL	WBT	WBR	NBR	SBR	All
Total Delay (hr)	0.8	0.0	0.2	9.2	0.0	0.0	0.0	10.2
Delay / Veh (s)	4.3	1.5	49.0	44.5	3.1	11.4	33.3	25.6
Stop Delay (hr)	0.0	0.0	0.2	7.2	0.0	0.0	0.0	7.4
Total Stops	0	0	18	637	0	4	3	662
Travel Dist (mi)	170.7	1.8	2.5	122.9	0.3	0.2	0.1	298.6
Travel Time (hr)	4.7	0.1	0.3	12.9	0.0	0.0	0.0	18.1
Avg Speed (mph)	36	35	9	10	24	8	4	17
Fuel Used (gal)	19.3	0.1	0.3	23.4	0.0	0.0	0.0	43.3
Vehicles Entered	665	7	15	770	2	4	2	1465
Vehicles Exited	664	7	14	717	2	5	2	1411
Hourly Exit Rate	1328	14	28	1434	4	10	4	2822
Denied Entry Before	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0

8: Ortega Hwy & D St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	SBR	All
Total Delay (hr)	0.9	2.7	0.2	0.0	0.9	0.0	0.0	0.0	0.1	0.0	4.9
Delay / Veh (s)	45.6	27.6	24.8	27.3	17.9	15.4	10.8	9.0	15.6	2.4	24.9
Stop Delay (hr)	0.7	1.4	0.1	0.0	0.6	0.0	0.0	0.0	0.1	0.0	2.9
Total Stops	96	293	20	4	130	3	6	1	8	23	584
Travel Dist (mi)	15.6	73.4	5.7	0.4	18.1	0.3	0.4	0.1	0.5	1.6	116.0
Travel Time (hr)	1.4	4.7	0.4	0.0	1.4	0.0	0.1	0.0	0.1	0.1	8.3
Avg Speed (mph)	11	16	16	10	13	12	8	9	6	15	14
Fuel Used (gal)	2.4	18.6	0.6	0.1	2.5	0.0	0.0	0.0	0.1	0.1	24.7
Vehicles Entered	74	361	27	4	183	3	11	2	12	38	715
Vehicles Exited	74	351	26	4	184	3	11	2	13	38	706
Hourly Exit Rate	148	702	52	8	368	6	22	4	26	76	1412
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0

Total Network Performance

Total Delay (hr)	139.1
Delay / Veh (s)	183.3
Stop Delay (hr)	112.2
Total Stops	5434
Travel Dist (mi)	2363.9
Travel Time (hr)	196.7
Avg Speed (mph)	19
Fuel Used (gal)	326.7
Vehicles Entered	2803
Vehicles Exited	2663
Hourly Exit Rate	5326
Denied Entry Before	18
Denied Entry After	264

Intersection: 1: Ortega Hwy & A St

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	93	1272	65	1306	48	52	52	54
Average Queue (ft)	35	1184	20	664	14	15	22	31
95th Queue (ft)	75	1655	50	1333	38	44	54	58
Link Distance (ft)		1245		1280	352	352		474
Upstream Blk Time (%)		21		2				
Queuing Penalty (veh)		0		27				
Storage Bay Dist (ft)	150		150				150	
Storage Blk Time (%)		20		15				
Queuing Penalty (veh)		8		5				

Intersection: 2: Ortega Hwy & Antonio

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	L	T	T	R	L	T	T	R	L	L	T
Maximum Queue (ft)	220	219	169	175	48	108	172	156	176	264	268	289
Average Queue (ft)	171	175	103	94	33	66	102	93	97	146	110	167
95th Queue (ft)	228	221	168	172	54	116	167	153	169	223	199	251
Link Distance (ft)			809	809			1016	1016				786
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	600	600			400	300			250	250	250	
Storage Blk Time (%)										0	1	1
Queuing Penalty (veh)										1	2	2

Intersection: 2: Ortega Hwy & Antonio

Movement	NB	NB	NB	SB	SB	SB	SB	SB	SB
Directions Served	T	T	R	L	T	T	T	R	R
Maximum Queue (ft)	268	227	94	278	142	140	102	318	252
Average Queue (ft)	168	139	65	188	107	86	63	164	84
95th Queue (ft)	248	219	96	262	151	134	106	251	178
Link Distance (ft)	786	786			2766	2766	2766		
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)			250	300				350	350
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 7: Ortega Hwy & Sports Pk

Movement	WB	WB	WB	WB	NB	SB
Directions Served	L	T	T	R	R	R
Maximum Queue (ft)	126	801	878	866	30	23
Average Queue (ft)	43	271	297	152	5	5
95th Queue (ft)	130	765	827	660	20	20
Link Distance (ft)		809	809	809	252	242
Upstream Blk Time (%)		0	2	3		
Queuing Penalty (veh)		1	13	17		
Storage Bay Dist (ft)	100					
Storage Blk Time (%)	0	44				
Queuing Penalty (veh)	0	22				

Intersection: 8: Ortega Hwy & D St

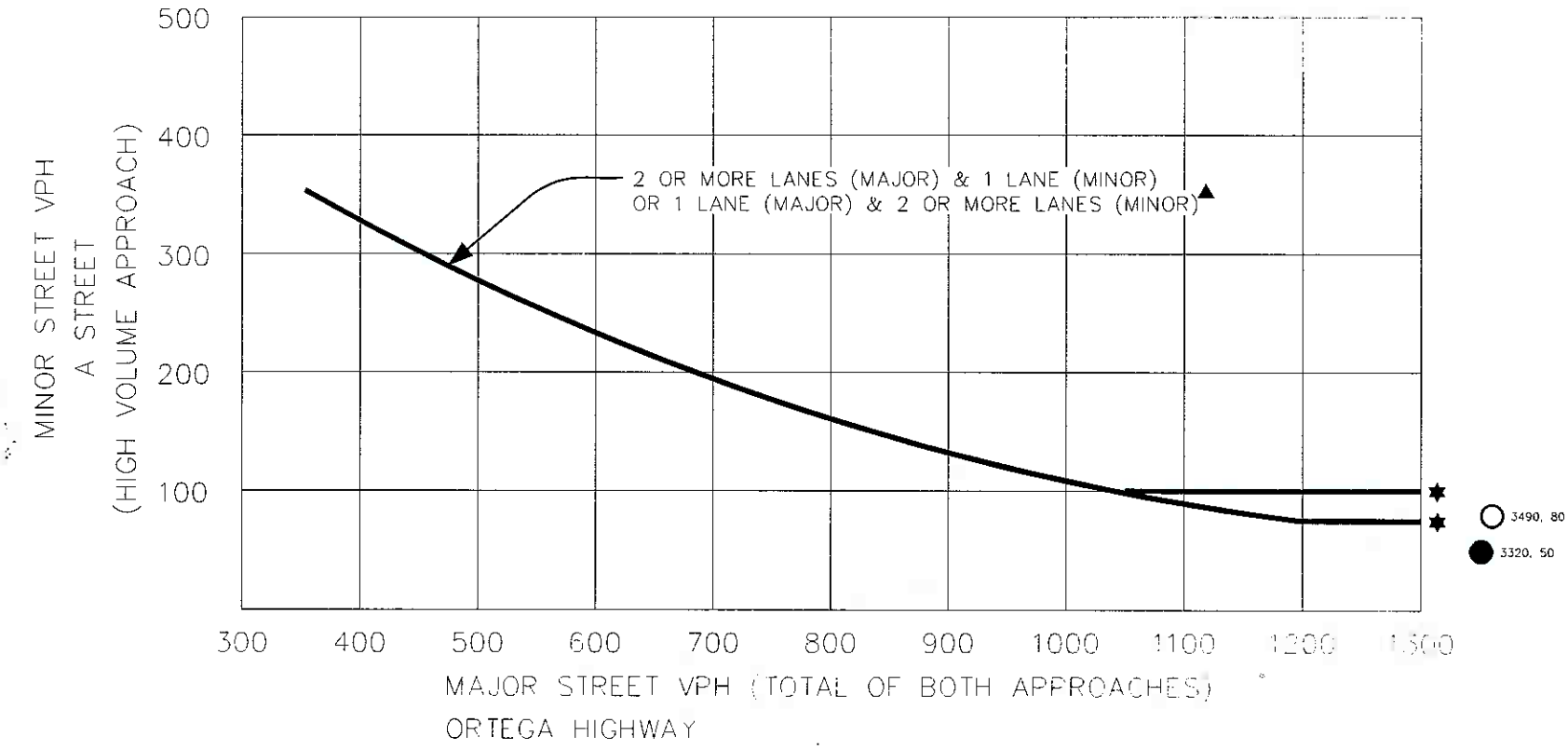
Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	175	463	28	263	46	25	30	54
Average Queue (ft)	100	257	6	124	12	2	13	23
95th Queue (ft)	172	431	24	217	38	12	36	49
Link Distance (ft)		1016		519	208	208	220	220
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	150		150					
Storage Blk Time (%)	0	19		5				
Queuing Penalty (veh)	0	34		1				

Nework Summary

Network wide Queuing Penalty: 133

APPENDIX B

SIGNAL WARRANTS



▲ NOTE: THESE CURVES ARE RECOMMENDED FOR USE IN AREAS OF RURAL CLASSIFICATION (i.e. POSTED SPEED LIMIT ON THE MAJOR STREET IS 70 km/hr OR 40 MPH OR HIGHER OR COMMUNITY LESS THAN 10,000 POPULATION).

✱ NOTE: 100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES, AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH ONE LANE.

Source: MUTCD – Figure 4C–4

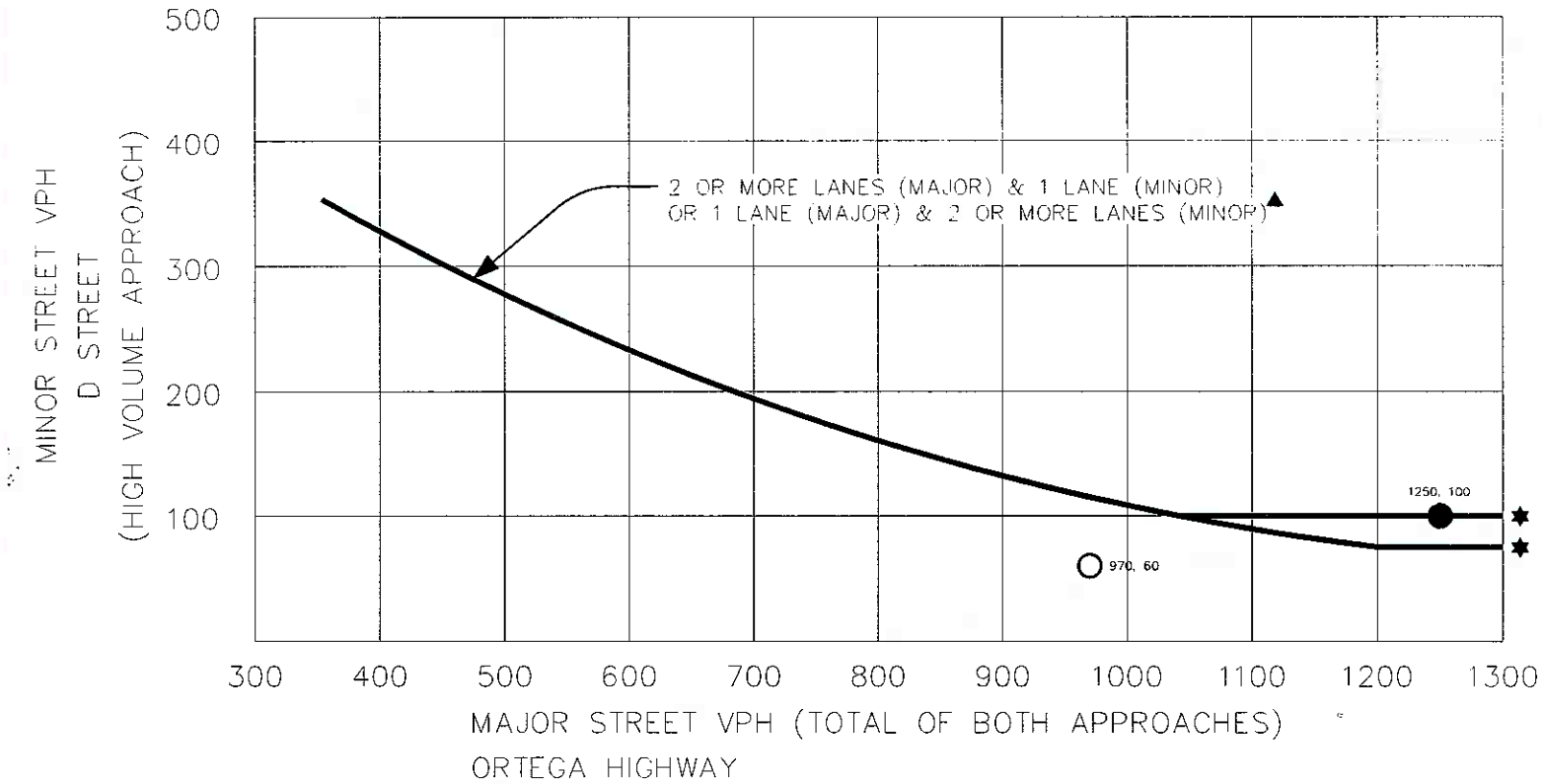
LEGEND

○ AM Peak Hour Volume

● PM Peak Hour Volume

Figure B-1

PEAK HOUR SIGNAL WARRANTS FOR A STREET & ORTEGA HIGHWAY (RURAL AREAS)



▲ NOTE: THESE CURVES ARE RECOMMENDED FOR USE IN AREAS OF RURAL CLASSIFICATION (i.e. POSTED SPEED LIMIT ON THE MAJOR STREET IS 70 km/hr OR 40 MPH OR HIGHER OR COMMUNITY LESS THAN 10,000 POPULATION).

✱ NOTE: 100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES, AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH ONE LANE

Source: MUTCD – Figure 4C-4

LEGEND

○ AM Peak Hour Volume

● PM Peak Hour Volume

Figure B-2

PEAK HOUR SIGNAL WARRANTS FOR
D STREET & ORTEGA HIGHWAY
(RURAL AREAS)

APPENDIX C
2030 TRAFFIC FORECASTS

This appendix describes the assumptions used in preparing 2030 traffic forecasts for The Ranch Plan.

LAND USE AND CIRCULATION

While the traffic data presented here focuses on Planning Areas 1 and 2, the forecasts are based on full buildout of the Ranch Plan land uses. These land uses are referred to collectively as Ranch Plan Alternative B-12, which corresponds to the plan adopted by the County of Orange and subsequently modified in response to the recent settlement agreement and the preferred alignment of the SR-241 extension.

The Ranch Plan land uses that have formed the basis for the traffic forecasts presented here are summarized in Table C-1 together with the corresponding trip generation. Outside the Ranch Plan area, year 2030 demographic forecasts as represented in OCP-2004 are used.

The future roadway configuration for this area is illustrated in Figure C-1. It includes the SR-241 southern extension along the A7C-FEC-M Alignment, which is the adopted alignment for this facility. The southward extension of La Pata Avenue is also assumed in the 2030 network, and a local connection to SR-241 is assumed in Planning Area 5 (the portion of the Ranch Plan area south of Ortega Highway and east of La Pata Avenue), consistent with current plans. Several future roadways on the Master Plan of Arterial Highways (MPAH) that are not committed at this time (i.e., not currently funded or conditioned on development) are not included. Examples are the eastward connections of San Juan Creek Road, Camino Las Ramblas to La Pata Avenue, and the Crown Valley Parkway connection to SR-241. Improvements under the Tier 1 and Tier 2 of OCTA's Long Range Transportation Plan such as the Saddleback connector ramps are assumed in this network.

Table C-1

RANCH PLAN TRIP GENERATION SUMMARY

S/E Category*	Amount		AM Peak Hour			PM Peak Hour			ADT
			In	Out	Total	In	Out	Total	
1. Single Family -Detached	4212	DU	528	2634	3162	2495	1193	3687	38544
2. Single Family -Attached	2808	DU	293	1548	1841	1423	641	2064	21560
3. Senior Housing	5360	DU	330	991	1321	1092	688	1780	18739
4. Senior Apts	640	DU	39	118	158	130	82	213	2237
5. Apartments	980	DU	89	444	534	416	192	608	6335
7. General Commercial	920	TSF	1732	815	2547	1866	2306	4172	41851
8. Specialty Retail	60	TSF	98	45	143	103	130	233	2331
9. R&D/Business Park	3660	TSF	2495	573	3069	1074	2692	3766	35502
10. Office	560	TSF	466	114	581	223	515	739	7013
11. Golf Course	425	ACRE	62	19	80	42	76	118	1148
12. Elem/Mid School	4200	STU	540	52	592	144	249	393	5284
13. High School	900	STU	116	11	127	31	53	84	1132
16. Resort Hotel	250	ROOM	61	18	79	38	74	112	1085
Total			6851	7384	14234	9078	8892	17969	182760

* Socioeconomic Data Category (for traffic forecasting purposes, land use data is converted to socioeconomic data equivalents)

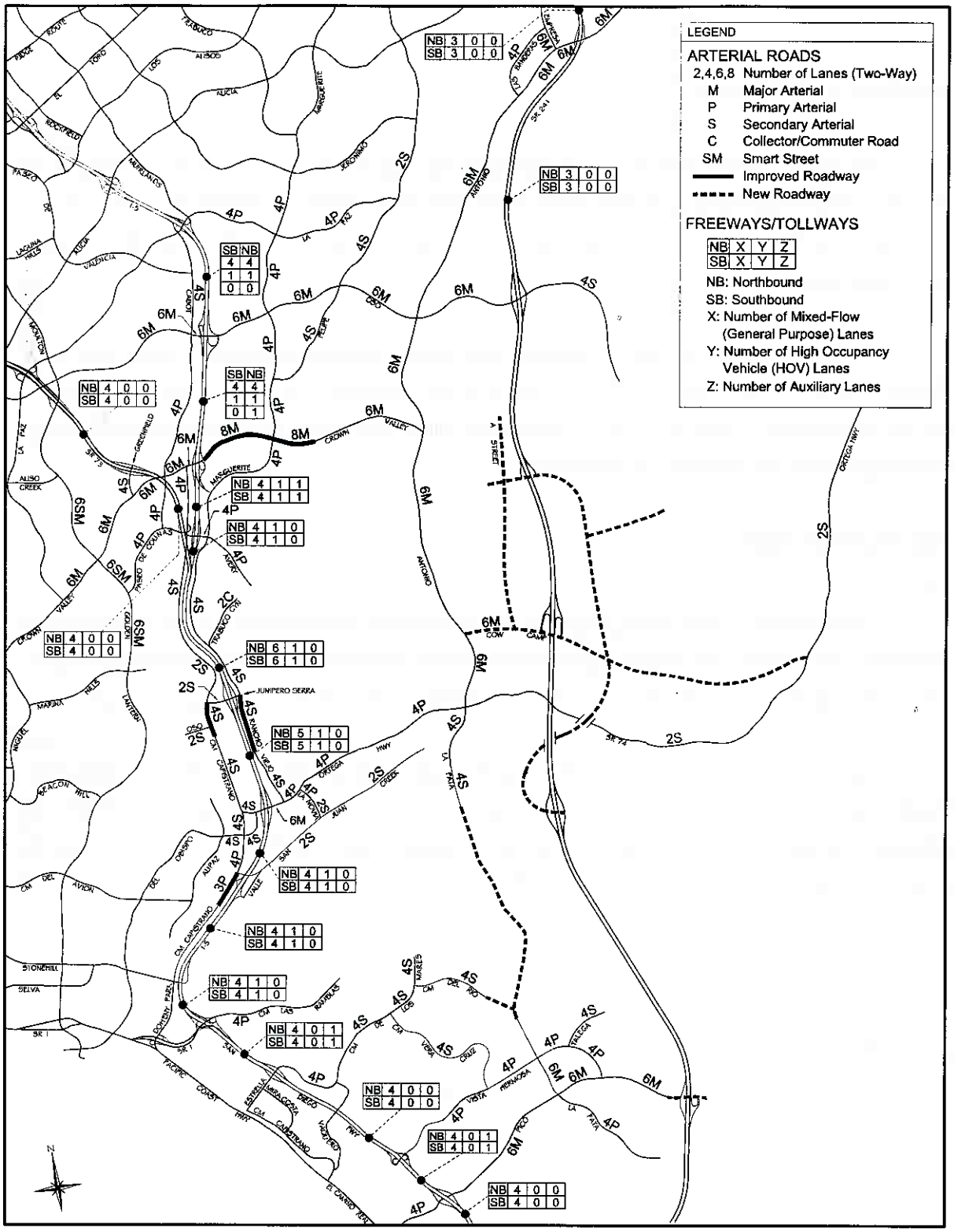


Figure C-1

2030 CIRCULATION SYSTEM

TRAFFIC FORECASTS

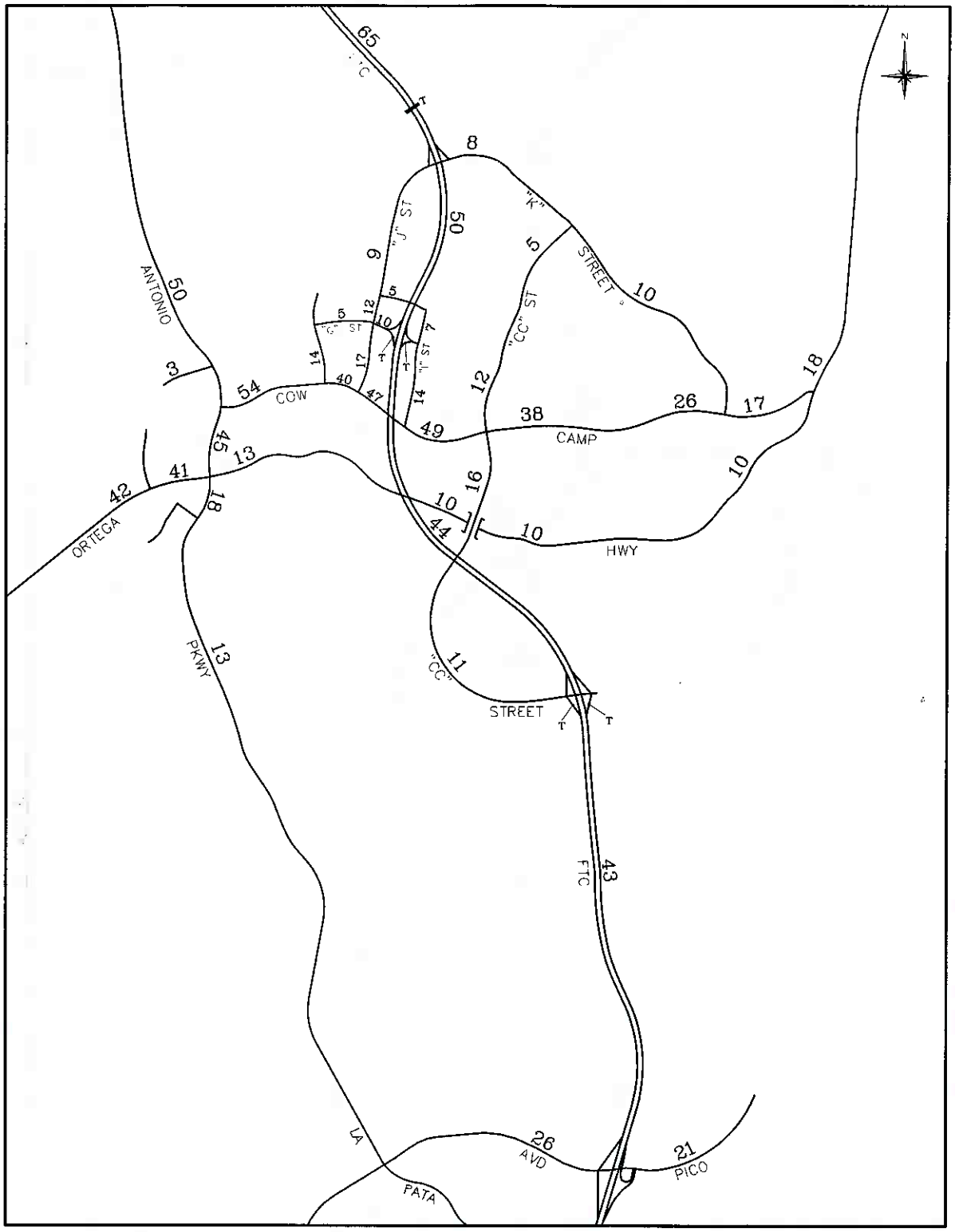
The traffic forecast data was produced using the Ranch Plan Traffic Model, a fine-grained derivation of the South County Sub-Area Model (SCSAM). The SCSAM was derived from OCTAM 3.1 and certified by the Orange County Transportation Commission as meeting the consistency requirements for sub-area modeling in Orange County.

For analysis purposes, traffic forecasts for both toll and toll-free operation of SR-241 have been derived. Figure C-2 shows the 2030 ADT volumes for toll operation of SR-241, and the corresponding toll-free volumes can be seen in Figure C-3. Peak hour volumes for the SR-241 on and off-ramps serving the Ranch Plan area are summarized in Table C-2.

TRUCK VOLUMES

Trucks comprise a substantial proportion of the total traffic volumes in the vicinity of the Antonio Parkway/La Pata Avenue intersection with Ortega Highway. This is related to the Prima Deshecha Land Fill operation on La Pata Avenue and to existing sand and gravel operations along Ortega Highway.

Figure C-4 shows existing and future truck ADT volumes in this vicinity. Table C-3 summarizes the existing and future peak hour turn movements for both the existing and future scenarios. Table C-4 summarizes the peak hour truck percentages by leg. Elsewhere, typical truck volumes for arterial streets have been assumed (two percent).



Legend	
T	Toll booth location

Figure C-2

2030 ADT VOLUMES (000s)
- SR-241 TOLL OPERATION

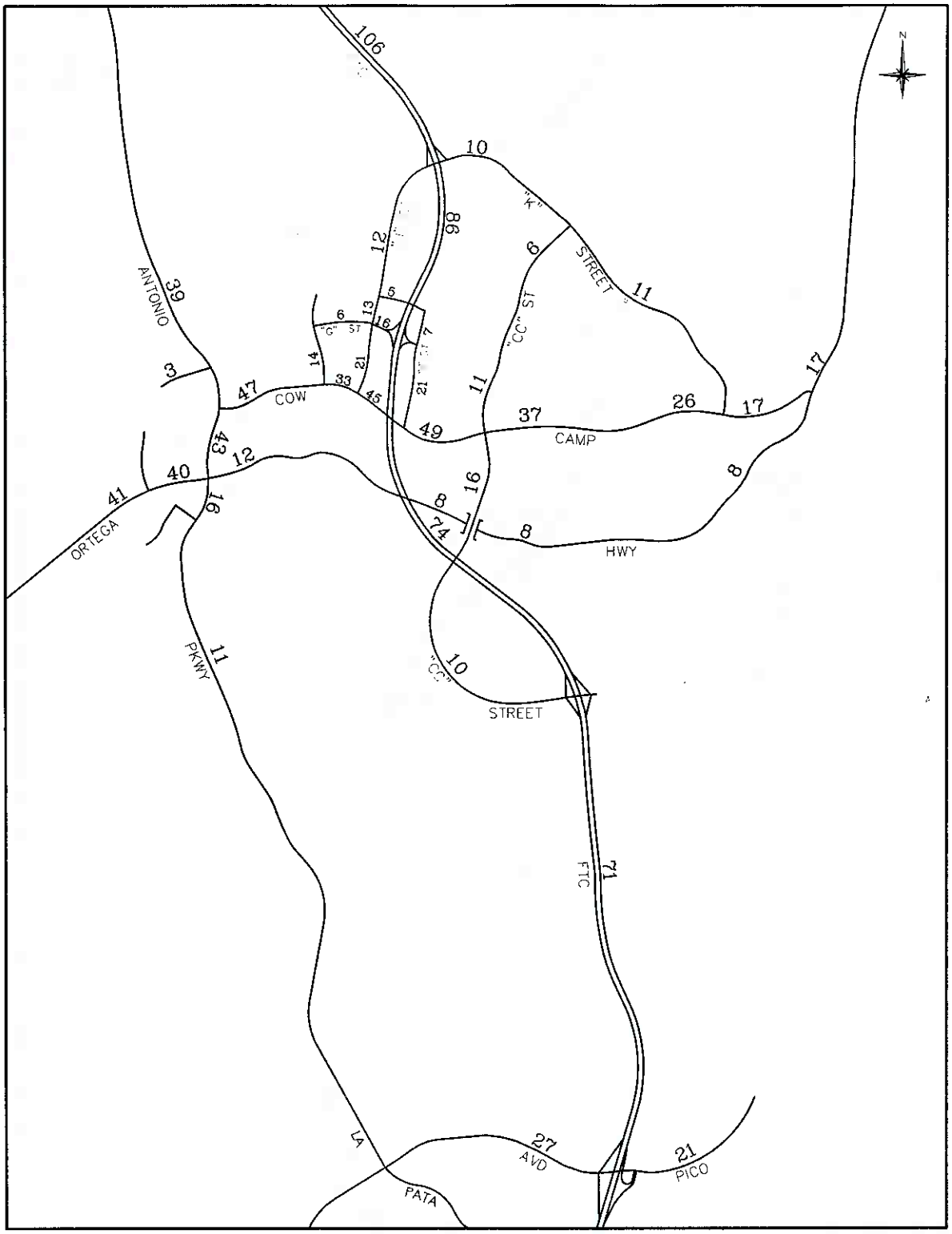


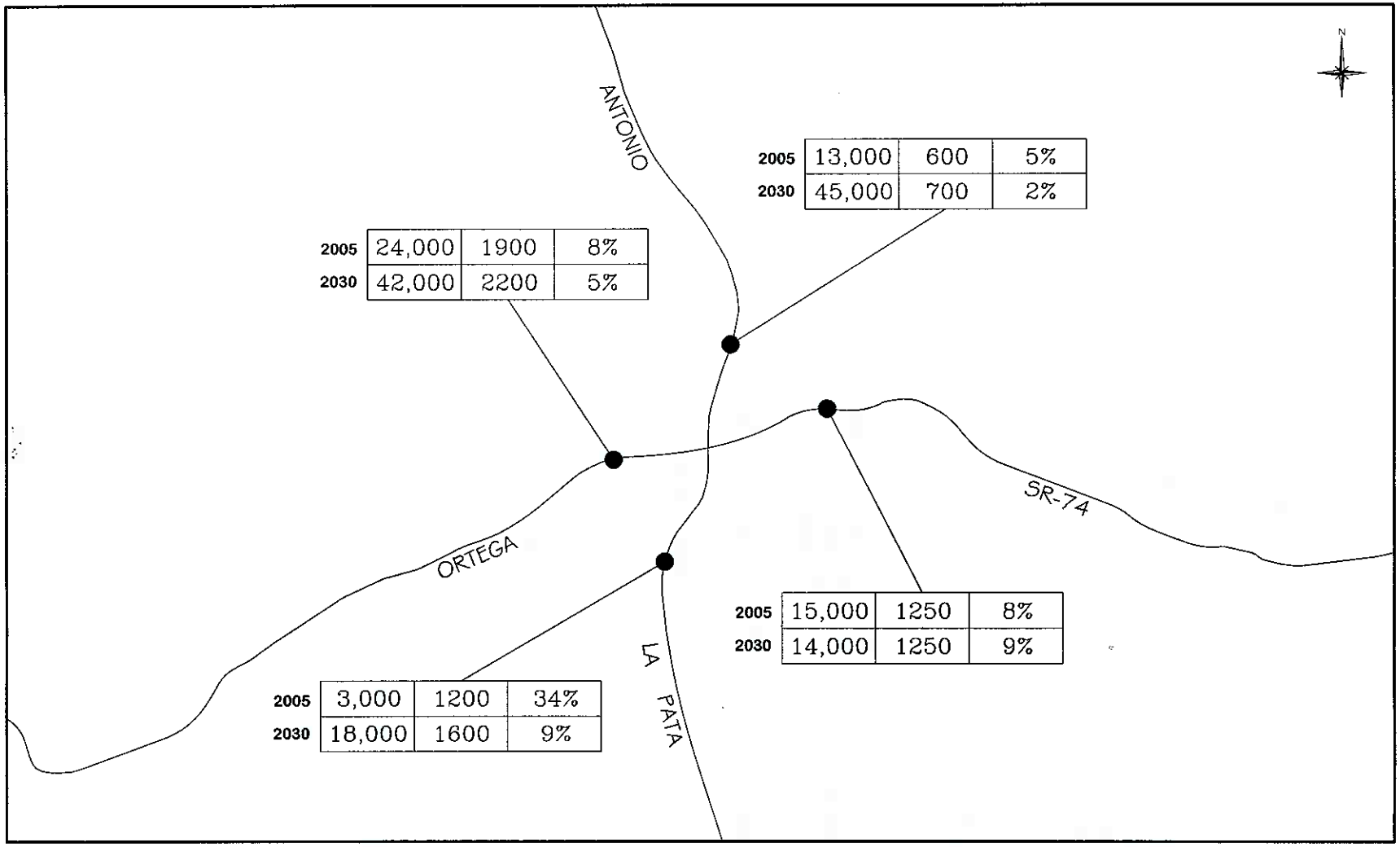
Figure C-3

2030 ADT VOLUMES (000s)
- SR-241 TOLL FREE

Table C-2

SR-241 2030 PEAK HOUR RAMP VOLUMES

	With Toll		Toll Free	
Ramp	**AM**	**PM**	**AM**	**PM**
K Street NB On	930	680	990	760
G Street NB On	680	630	1100	980
CC Street NB On	160	320	220	360
Total NB On	**1,770**	**1,630**	**2,310**	**2,100**
G Street NB Off	210	360	420	460
CC Street NB Off	210	210	10	170
Total NB Off	**420**	**570**	**430**	**630**
G Street SB On	220	330	260	450
CC Street SB On	370	350	350	330
Total SB On	**590**	**680**	**610**	**780**
J Street SB Off	600	860	730	970
G Street SB Off	510	760	760	1,020
CC Street SB Off	320	400	400	450
Total SB Off	**1,430**	**2,020**	**1,890**	**2,440**



Legend

2005	ADT	Truck Volume	% Trucks
2030	ADT	Truck Volume	% Trucks

Figure C-4

2005 AND 2030 ADT VOLUMES (000s)

Table C-3

PEAK HOUR TURN MOVEMENT TRUCK PERCENTAGES
Antonio Parkway/La Pata Avenue and Ortega Highway

	NBL		NBT		NBR		SBL		SBT		SBR		EBL		EBT		EBR		WBL		WBT		WBR	
	Car	Truck	Car	Truck	Car	Truck	Car	Truck	Car	Truck	Car	Truck	Car	Truck	Car	Truck	Car	Truck	Car	Truck	Car	Truck	Car	Truck
2005																								
AM Peak Hour																								
Volume	36	44	11	9	3	17	106	4	17	13	572	18	456	14	319	32	52	38	7	3	694	37	213	7
Truck%		55		44		87		4		44		3		3		9		42		30		5		3
PM Peak Hour																								
Volume	27	33	6	4	5	35	134	6	6	4	475	15	534	17	764	76	6	4	7	3	390	21	87	3
Truck%		55		44		87		4		44		3		3		9		42		30		5		3
2030																								
AM Peak Hour																								
Volume	292	48	751	40	63	7	78	2	960	51	1188	12	698	22	267	23	585	65	238	32	326	14	213	7
Truck%		14		5		10		3		5		1		3		8		10		12		4		3
PM Peak Hour																								
Volume	275	45	884	47	189	21	291	9	599	32	1030	10	1028	32	478	42	171	19	79	11	230	10	155	5
Truck%		14		5		10		3		5		1		3		8		10		12		4		3

Abbreviations: NBL = northbound left, NBT – northbound through, NBR – northbound right, etc. for SBL, EBL, WBL

Table C-4

PEAK HOUR TRUCK PERCENTAGES
Antonio Parkway/La Pata Avenue and Ortega Highway

	North Leg		South Leg		East Leg		West Leg	
	Car	**Truck**	**Car**	**Truck**	**Car**	**Truck**	**Car**	**Truck**
2005								
AM Peak Hour								
Volume	1375	65	126	124	1341	99	2128	182
Truck %		5		50		7		8
PM Peak Hour								
Volume	1242	48	56	84	1388	142	2196	165
Truck %		4		60		9		7
2030								
AM Peak Hour								
Volume	3887	133	2888	242	1185	85	3357	183
Truck %		3		8		7		5
PM Peak Hour								
Volume	3986	134	2196	174	1423	97	3213	157
Truck %		3		7		6		5