G: Traffic Study

City of Lake Forest

SERRANO SUMMIT (IRWD SITE)

Traffic Study

April 2010

AUSTIN-FOUST ASSOCIATES, INC.

Draft

City of Lake Forest

SERRANO SUMMIT (IRWD SITE)

Traffic Study

Prepared by:

Austin-Foust Associates, Inc.
2223 East Wellington Avenue, Suite 300
Santa Ana, California 92701-3161
(714) 667-0496

April 8, 2010

CONTENTS

Page

Proposed Project Description....3
Proposed Project Land Use and Trip Generation....3
Proposed Project Trip Distribution....7
Proposed Project Access and Circulation....7

Analysis Scope and Traffic Forecasting Methodology....7
Performance Criteria....10

Traffic Volumes and Analysis....10
Existing Volumes....10
Year 2015 (Project Buildout Year) Volumes....10
Year 2030 Volumes....15

Special Issues....27
On-Site Volumes and Analysis....27
Roundabout Dimensions....29

Commercentre Drive Access Analysis....29
Signalization....29
Left-Turn Storage....39

Findings and Conclusions....45

References....45

Appendices:

A: Intersection Capacity Utilization (ICU) Worksheets
B: SIDRA Roundabout Analysis Worksheets
C: Highway Capacity Manual (HCM) Worksheets

LIST OF FIGURES AND TABLES

Page

FIGURES

1 Proposed Project Location....4
2 Proposed Project Site Circulation System....5
3 Project Trip Distribution....8
4 Area Plan....9
5 Existing ADT Volumes (000s)....12
6 Existing Intersection Location Map....14
7 2015 ADT Volumes (000s) – Alternative 7 (No-Project)....16
8 2015 ADT Volumes (000s) – Alternative 7 (With-Project)....17
9 2015 ADT Volumes (000s) – Current General Plan (No-Project)....18
10 2015 ADT Volumes (000s) – Current General Plan (With-Project)....19
11 Intersection Location Map....20
12 2030 ADT Volumes (000s) – Alternative 7 (No-Project)....22
13 2030 ADT Volumes (000s) – Alternative 7 (With-Project)....23
14 2030 ADT Volumes (000s) – Current General Plan (No-Project)....24
15 2030 ADT Volumes (000s) – Current General Plan (With-Project)....25
16 ADT and Peak Hour Volumes – With-Project (On-Site)....28
17 Roundabout at "A" Street and "B" Street....31
18 Roundabout at Indian Ocean Drive and "B" Street....32
19 Truck Turning Diagram....33
20 2015 and 2030 ADT Volumes (000s) – Alternative 7....34
21 2015 and 2030 ADT Volumes (000s) – Current General Plan....35
22 2015 and 2030 Peak Hour Volumes – Alternative 7....36
23 2015 and 2030 Peak Hour Volumes – Current General Plan....37
24 Peak Hour Signal Warrants (Higher Speeds)....38
A-1 Intersection Location Map....A-5

TABLES

1 Land Use and Trip Generation Summary – Current General Plan (Cumulative Conditions Sites 1-7 and 9)....2
2 Project Site Land Use and Trip Generation Summary....6
3 Level of Service Descriptions – Signalized Intersections....11
4 Existing Intersection LOS Summary....13
5 Year 2015 Intersection LOS Summary....21
6 Year 2030 Intersection LOS Summary....26
7 Level of Service Summary – On-Site....30
8 2015 Peak Hour Signal Warrant Summary – Alternative 7....40
9 2015 Peak Hour Signal Warrant Summary – Current General Plan....41
10 2030 Peak Hour Signal Warrant Summary – Alternative 7....42
11 2030 Peak Hour Signal Warrant Summary – Current General Plan....43
12 Left-Turn Storage Length Requirements....44
13 Westbound Left-Turn Length on Commercentre Drive at Indian Ocean Drive....46
14 Signal Warrant Analysis Summary....47

City of Lake Forest
SERRANO SUMMIT (IRWD SITE)
Traffic Study

The Serrano Summit residential development proposed on the Irvine Ranch Water District (IRWD) site is included in the City of Lake Forest's Opportunities Study Area (OSA) which has been the subject of previous traffic analyses with the site being converted to residential from non-residential in July 2005 (OSA Program Environmental Impact Report (PEIR)) and further updated in June 2008 in Alternative 7 with the addition of public facilities on the site (i.e., a Civic Center). The associated improvements under long-range conditions that address any future deficiencies and accommodate future traffic due to the OSA projects and outside traffic have been incorporated in a citywide mitigation program referred to as the Lake Forest Transportation Mitigation (LFTM) Program.

Alternative 7 mentioned above that was adopted in 2008 included five participating landowners in the OSA including the IRWD. One of the five landowners, Site 1 Shea/Baker, has yet to sign a development agreement and is thus not a formal participant in the OSA. For this reason, this traffic study at the request of the City of Lake Forest will present an additional alternative that assumes the current General Plan land uses in Shea/Baker (referred to as "Current General Plan" alternative throughout report) which are mostly business park uses compared to residential use in Alternative 7. The Preferred Plan in the OSA PEIR when compared to the Current General Plan alternative includes 5,078,320 less business park square footage, 3,492 fewer residential units, 608,720 square feet less commercial uses, and 40 fewer acres of parkland. Buildout (2030) land use and trip generation for the OSA sites under cumulative conditions with the Current General Plan including non-participating Sites 1, 4 and 7, are summarized in Table 1 along with Alternative 7 and OSA PEIR Proposed Project/Preferred Plan. As seen in Table 1, the trip generation is the highest under the Current General Plan and lowest under Alternative 7.

The proposed project will be analyzed for Alternative 7 and the Current General Plan alternative under short-range (year 2015) and long-range (year 2030) conditions in a limited impact study area with the focus on major circulation roadways surrounding the project site that will serve the residential project as well as the planned Civic Center. Should the project require mitigation measures, reference will be first made of any LFTM improvement. The land uses and associated trip generation for the residential project analyzed in this report as well as for the Civic Center are first summarized. Traffic volumes and

Table 1

LAND USE AND TRIP GENERATION SUMMARY – CURRENT GENERAL PLAN
(CUMULATIVE CONDITIONS FOR SITES 1-7 AND 9)

Land Use	Units	AM Peak Hour			PM Peak Hour			ADT
		In	Out	Total	In	Out	Total	
City Preferred Plan/PEIR Proposed Project								
Single Family Detached	1,574 DU	298	881	1,179	1,007	582	1,589	15,063
Condominium	2,042 DU	347	1,023	1,370	919	674	1,593	16,642
Apartment	1,799 DU	180	738	918	719	396	1,115	12,090
Commercial (EQ)	448.72 TSF	386	248	634	1,102	1,194	2,296	26,389
Government Facility	88 TSF	173	21	194	77	173	250	2,457
Park	51 Acre	0	0	0	1	1	2	80
Business Park	1,559 TSF	1,871	359	2,230	468	1,543	2,011	19,892
Sports Park	39 Acre	0	0	0	133	160	293	2,098
Total City Preferred Plan		3,255	3,270	6,525	4,426	4,723	9,149	94,711
Alternative 7								
Single Family Detached	1,530 DU	290	857	1,147	994	551	1,545	14,642
Condominium	1,793 DU	304	898	1,202	807	591	1,398	14,613
Apartment	1,415 DU	141	581	722	566	311	877	9,509
Commercial (EQ)	160 TSF	167	107	274	475	515	990	11,388
Community Facility	44 TSF	36	7	43	100	108	208	2,002
Government Facility	44 TSF	87	11	98	39	87	126	1,228
Park	44 Acre	0	0	0	1	1	2	71
Business Park	2,041.7 TSF	2,450	470	2,920	613	2,021	2,634	26,052
Sports Park	63 Acre	1	0	1	214	258	472	3,389
Total Alternative 7		3,476	2,931	6,407	3,809	4,443	8,252	82,894
Current General Plan								
Single Family Detached	641 DU	122	359	481	415	232	647	6,134
Condominium	367 DU	62	184	246	165	121	286	2,991
Apartment	915 DU	91	376	467	366	201	567	6,149
Commercial (EQ)	780.52 TSF	513	328	841	1,464	1,586	3,050	35,062
Community Facility	44 TSF	36	7	43	100	108	208	2,002
Government Facility	44 TSF	87	11	98	39	87	126	1,228
Open Space	15.7 Acre	0	0	0	0	0	0	0
Park	36 Acre	0	0	0	0	0	0	59
Business Park	6,637.32 TSF	7,964	1,526	9,491	1,992	6,571	8,563	84,692
Sports Park	13 Acre	0	0	0	44	53	97	699
Total Current General Plan		8,875	2,791	11,667	4,585	8,959	13,544	139,016

peak performance evaluation results for the locations analyzed are then presented for Alternative 7 and the Current General Plan alternative under short-range (year 2015) and long-range (year 2030) conditions.

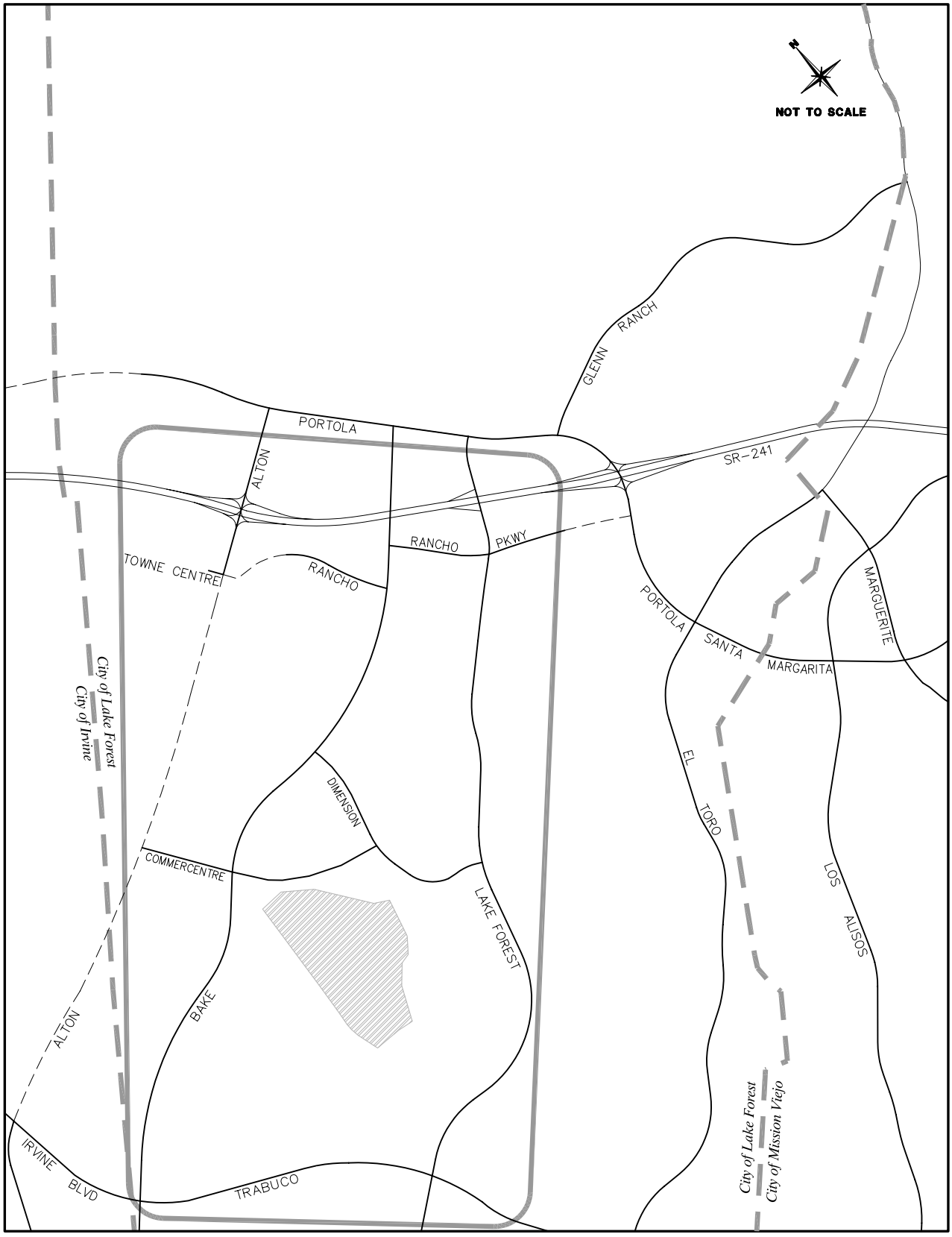
PROPOSED PROJECT DESCRIPTION

Shown in Figure 1 along with the proposed study area, the proposed project is located between Lake Forest Drive and Bake Parkway (both four-lane primary arterials) near Commercentre Drive (a four-lane secondary arterial). Direct access to the proposed project site is illustrated in Figure 2 and is provided along Commercentre Drive at Biscayne Bay Drive and Indian Ocean Drive (both two-lane local roads). Biscayne Bay Drive becomes "A" Street as it enters the project site.

Proposed Project Land Use and Trip Generation

Buildout land use and trip generation for the proposed project and Civic Center are summarized in Table 2. The proposed residential project consists of 150 single family detached homes and 458 for-sale attached homes for a total of 608 dwelling units. The Civic Center includes 114,000 square feet of public facilities (a 44,000-square foot city hall, a 20,000-square foot community center, and 50,000-square foot police center). A park and 1,500 square foot recreation center serving the neighborhood are also planned that would generate nominal vehicle trips. Based on trip rates used in the Lake Forest Traffic Analysis Model (LFTAM), the proposed project and Civic Center generate 8,770 average daily trips (ADT) with seven and ten percent of the ADT occurring in the AM and PM peak hours, respectively. As shown below, the proposed project and Civic Center are consistent with the land uses assumed for the project site in the 2008 approved Alternative 7 traffic analysis. The proposed project trip generation is also similar to that assumed for the land uses in the 2005 approved OSA PEIR.

Land Use	Units	AM Peak Hour			PM Peak Hour			ADT
		In	Out	Total	In	Out	Total	
Previous Project on IRWD Site for Alternative 7								
Apartment	833 DU	83	342	425	333	183	516	5,598
Community Facility	44 TSF	36	7	43	100	108	208	2,002
Government Facility	44 TSF	87	11	98	39	87	126	1,228
Total		206	360	566	472	378	850	8,828
Proposed Project								
Single Family Detached	150 DU	29	84	113	98	54	152	1,436
Condominium	458 DU	78	230	308	206	151	357	3,732
Community Facility	21.5 TSF	17	3	20	49	53	102	978
Government Facility	94 TSF	185	23	208	83	185	268	2,624
Total		309	340	649	436	443	879	8,770
Difference		103	-20	83	-36	65	29	-58



Legend

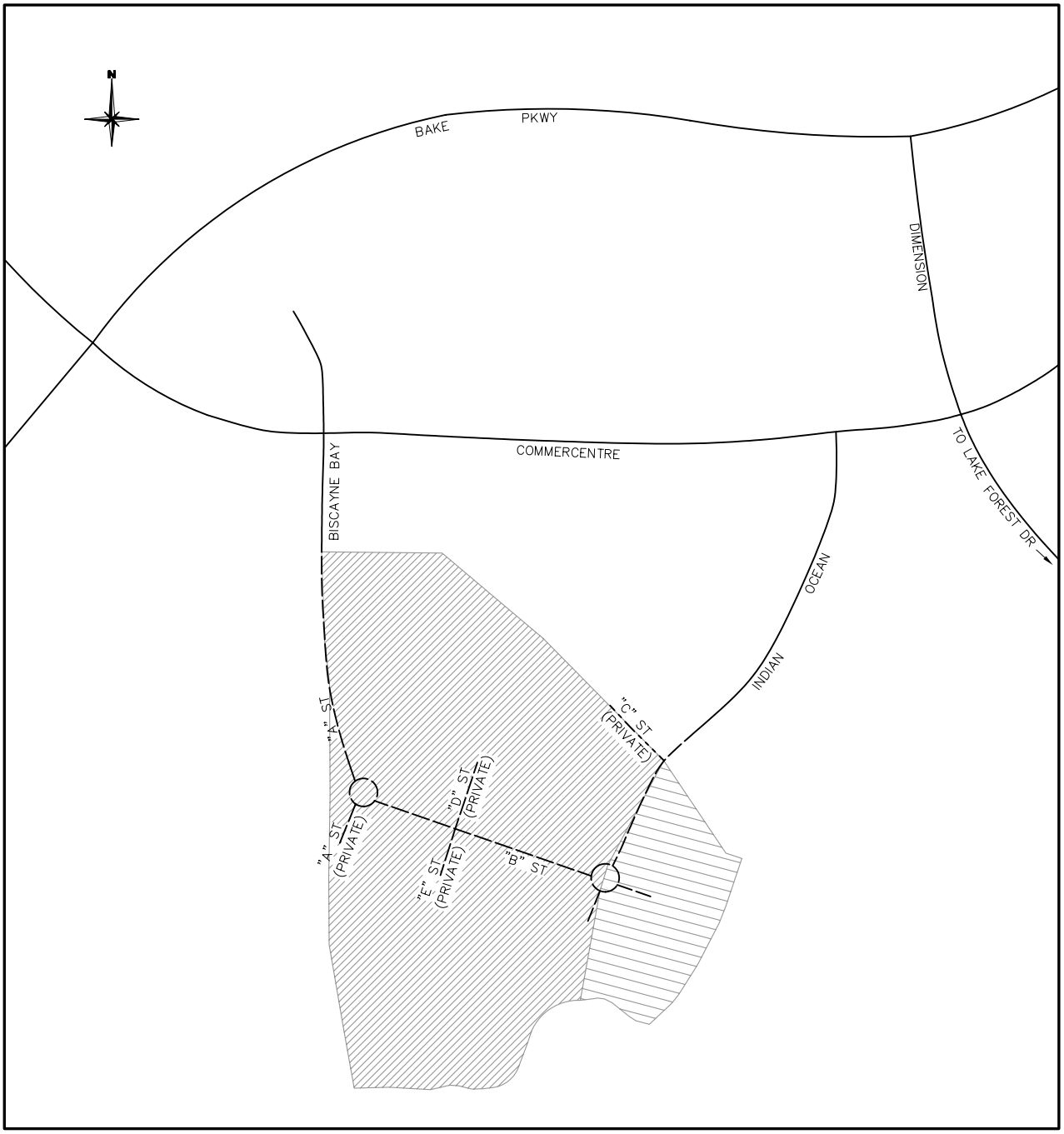
Project Site — City Boundary

Existing Roadway — Study Area

Future Roadway per Orange County MPAH

Figure 1

PROPOSED PROJECT LOCATION



Legend
Residential Project Site
Civic Center Site
Existing ——— With-Project

Figure 2

PROPOSED PROJECT SITE
CIRCULATION SYSTEM

Table 2

PROJECT SITE LAND USE AND TRIP GENERATION SUMMARY

Land Use	Units	AM Peak Hour			PM Peak Hour			ADT
		In	Out	Total	In	Out	Total	
Total Project Site								
Single Family Detached	150 DU	29	84	113	98	54	152	1,436
Condominium	458 DU	78	230	308	206	151	357	3,732
Community Facility	21.5 TSF	17	3	20	49	53	102	978
Government Facility	94 TSF	185	23	208	83	185	268	2,624
Total		309	340	649	436	443	879	8,770
Residential Project								
Single Family Detached	150 DU	29	84	113	98	54	152	1,436
Condominium	458 DU	78	230	308	206	151	357	3,732
Total Residential Project		107	314	421	304	205	509	5,168
Recreation Center								
Community Facility	1.5 TSF	1	0	1	3	4	7	68
Civic Center								
Community Facility	20 TSF	16	3	19	46	49	95	910
Government Facility	94 TSF	185	23	208	83	185	268	2,624
Total Civic Center		201	26	227	129	234	363	3,534
Trip Rates								
Single Family Detached	DU	.19	.56	.75	.64	.37	1.01	9.57
Condominium	DU	.17	.50	.67	.45	.33	.78	8.15
Community Facility	TSF	.82	.17	.99	2.28	2.46	4.74	45.5
Government Facility	TSF	1.97	.24	2.21	.88	1.97	2.85	27.92

Notes:

Note: The trip rates above are used in the LFTAM.

Abbreviations: ADT – average daily trips
DU – dwelling unit
LFTAM – Lake Forest Traffic Analysis Model
TSF – thousand square feet

Proposed Project Trip Distribution

Trip distribution patterns for the proposed project site uses (the proposed residential project and Civic Center) are presented in Figure 3 for Alternative 7 and the Current General Plan alternative under short-range (year 2015) and long-range (year 2030) conditions, and were developed with the LFTAM using daily project traffic as a basis.

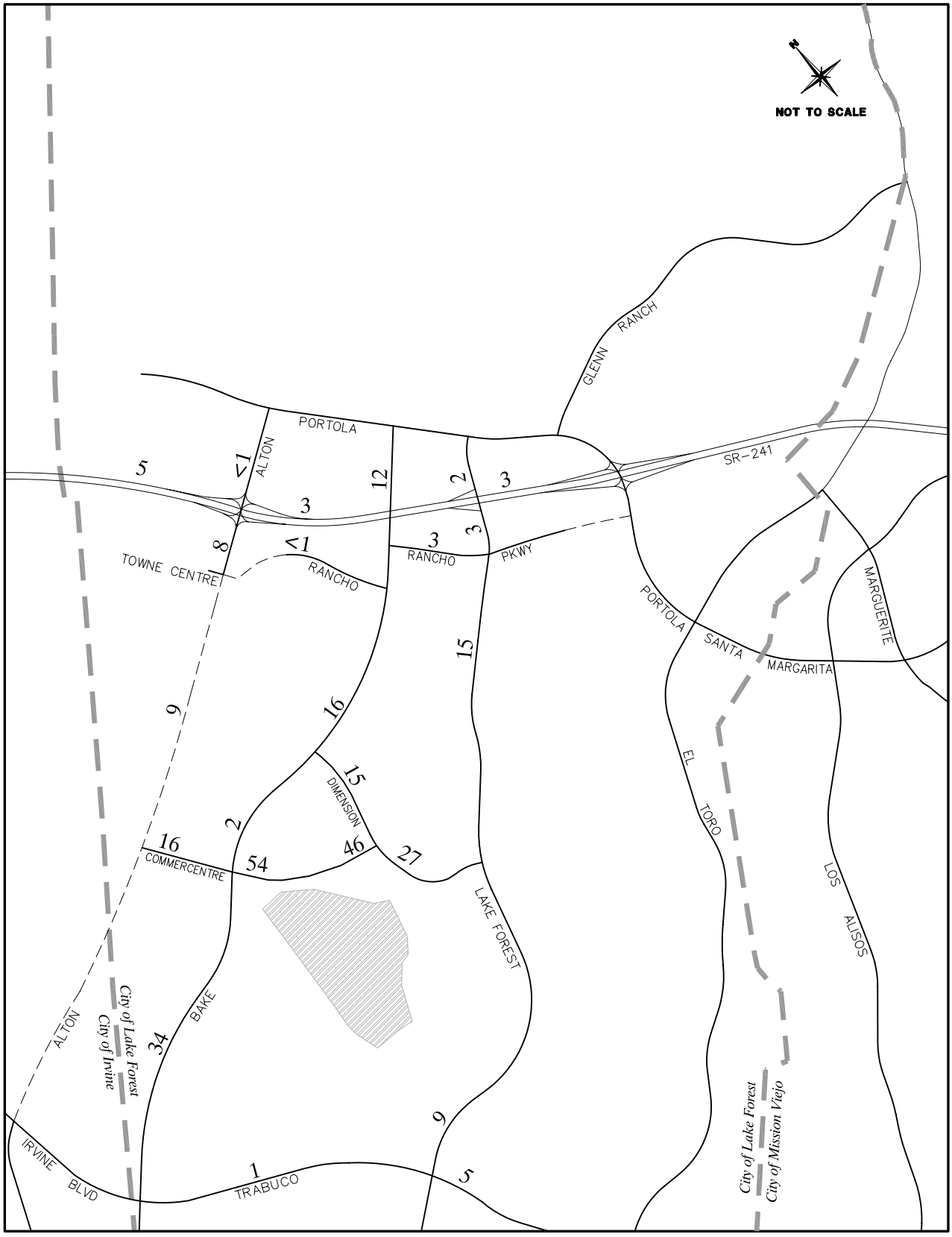
Proposed Project Access and Circulation

A concept plan for the project site is presented in Figure 4. Access to the residential area north of "B" Street is provided on "D" Street (private road) via "B" Street and "C" Street (private road) via Indian Ocean Drive. Access to the residential area south of "B" Street is provided via Indian Ocean Drive, "E" Street (private road) and "A" Street (private road). Two one-lane roundabouts along "B" Street at "A" Street and Indian Ocean Drive are proposed to serve the site. The project access and circulation are analyzed in more detail in the Special Issues section of this report.

ANALYSIS SCOPE AND TRAFFIC FORECASTING METHODOLOGY

The proposed project was analyzed as part of the overall OSA Program that identified an improvement program called the LFTM Program of which the IRWD is a participant. The proposed project is analyzed for off-site impacts under short-range (year 2015) and long-range (year 2030) conditions for a study area that was determined by where an intersection location is no longer deficient as defined in the next section and the difference in the with-project intersection capacity utilization (ICU) value compared to no-project is less than .02 (see study area previously presented in Figure 1). A comparison is made of the levels of service of full project buildout (with-project) conditions to no-project conditions, which assume no land uses on the project site. Since the project is not expected to be fully built until at least year 2015, no existing plus project analysis is presented in this report.

The ADT and peak hour volumes on the circulation system for existing conditions in the project area are first identified, ADT and peak hour forecasts for the proposed project are prepared, and the impacts for Alternative 7 and the Current General Plan alternative under year 2015 and year 2030 conditions are presented. Existing ADT and peak hour counts were conducted in 2008 and 2009. Years 2015 and 2030 forecast volumes used in the analysis are based on the City's LFTAM (traffic model).

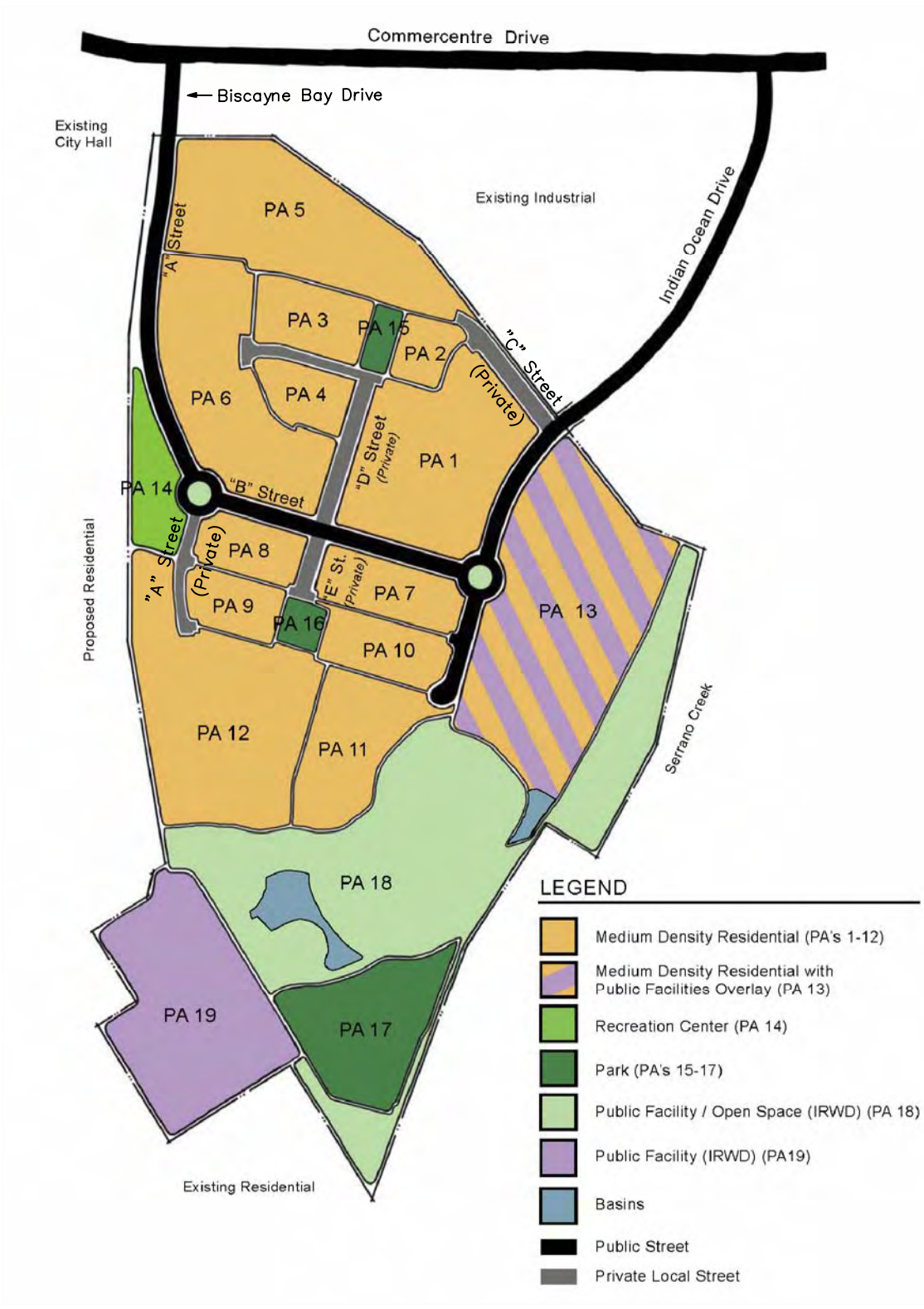


Legend

Existing Roadway
Future Roadway
City Boundary
XX Percent of project distribution
Project Site

Figure 3

PROJECT TRIP DISTRIBUTION



Source: KTGY Group, Inc.

Figure 4

AREA PLAN

Performance Criteria

In this report, a set of performance criteria is utilized to identify future level of service (LOS) deficiencies on the study area circulation system and also to define impacts and peak hour ICU values of significance. Traffic LOS is designated "A" through "F" with LOS "A" representing free flow conditions and LOS "F" representing severe traffic congestion. The intersection criteria involve the use of peak hour ICU values. The ICU ranges that correspond to LOS "A" through "F" are presented in Table 3. By practice, the ICU methodology assumes that intersections are signalized. LOS "D" (ICU not to exceed .90) is the performance standard for the intersections in the study area.

The criteria are based on LOS calculation methodology and performance standard that have been adopted by the City of Lake Forest and by the OCTA as part of the CMP. The performance criteria applied here is the same as used in previous OSA traffic analyses. For ICU greater than the acceptable level of service, mitigation of the project contribution is required to bring intersection back to acceptable level of service or to no-project conditions if project contribution is .02 or greater for all intersections in the study area

TRAFFIC VOLUMES AND ANALYSIS

This section presents the existing and forecast volumes and performance analysis of the study area intersections.

Existing Volumes

Existing ADT volumes for the study area are shown in Figure 5. The existing ICU values for the intersections analyzed in the study area are summarized in Table 4 (see Appendix A for detailed ICU calculations) for the intersections illustrated in Figure 6. As can be seen here, all intersections in the study area are currently operating at LOS "C" or better (i.e., ICU does not exceed .80).

Year 2015 (Project Buildout Year) Volumes

In the year 2015, Alton Parkway is connected between Towne Centre Drive and Irvine Boulevard. Assuming a linear growth of traffic and development between now and year 2030, a growth of 25 percent in the opportunity areas is assumed for cumulative analysis purposes including the land use

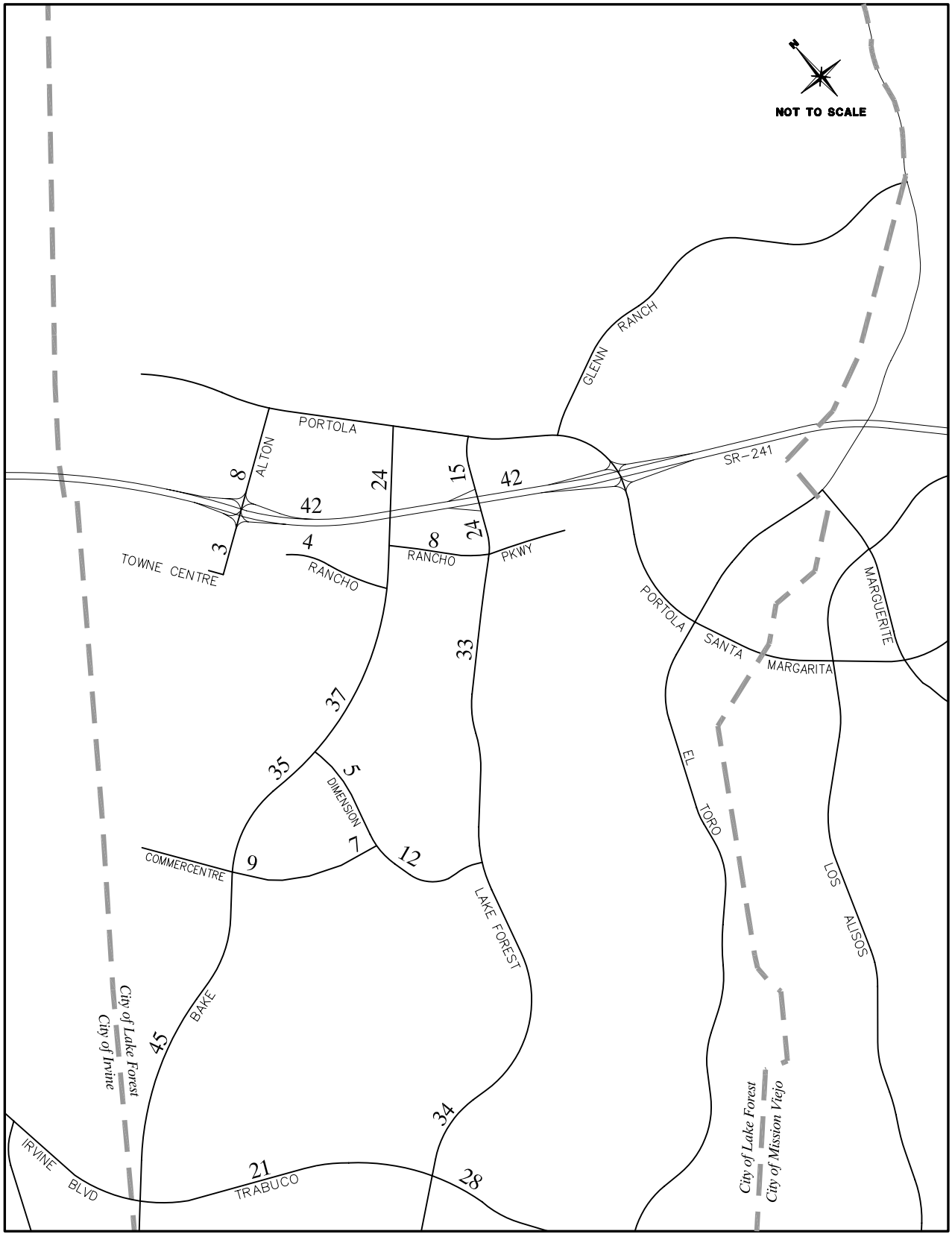
Table 3

LEVEL OF SERVICE DESCRIPTIONS – SIGNALIZED INTERSECTIONS

Levels of service (LOS) for signalized intersections are defined in terms of either average control delay that is measured in seconds (HCM methodology) or intersection capacity utilization (ICU) values as follows:

LOS	Description	Average Delay (sec)[1]	ICU[2]
A	LOS "A" describes operations with low control delay, up to 10 seconds per vehicle. This LOS occurs when progression is extremely favorable and most vehicles arrive during the green phase. Many vehicles do not stop at all. Short cycle lengths may tend to contribute to low delay values.	≤ 10.0	≤ .60
B	LOS "B" describes operations with control delay greater than 10 and up to 20 seconds per vehicle. This level generally occurs with good progression, short cycle lengths, or both. More vehicles stop than the LOS "A," causing higher levels of delay.	10.1 – 20.0	.61 - .70
C	LOS "C" describes operations with control delay greater than 20 and up to 35 seconds per vehicle. These higher delays may result from only fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level. Cycle failure occurs when a given green phase does not serve queued vehicles, and overflows occur. The number of vehicles stopping is significant at this level, though many still pass through the intersection without stopping.	20.1 – 35.0	.71 - .80
D	LOS "D" describes operations with control delay greater than 35 and up to 55 seconds per vehicle. At LOS "D," the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, and high V/C ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.	35.1 – 55.0	.81 - .90
E	LOS "E" describes operations with control delay greater than 55 and up to 80 seconds per vehicle. These high delay values generally indicate poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent.	55.1 – 80.0	.91 – 1.00
F	LOS "F" describes operations with control delay in excess of 80 seconds per vehicle. This level, considered unacceptable to most drivers, often occurs with oversaturation, that is, when arrival flow rates exceed the capacity of lane groups. It may also occur at high V/C ratios with many individual cycle failures. Poor progression and long cycle lengths may also contribute significantly to high delay levels.	> 80.0	> 1.00

[1] Source: *Highway Capacity Manual 2000 (HCM 2000)*, Transportation Research Board, National Research Council.
[2] Source: Orange County Congestion Management Program (CMP).



Legend

Existing Roadway

City Boundary

Figure 5

EXISTING ADT VOLUMES (000s)

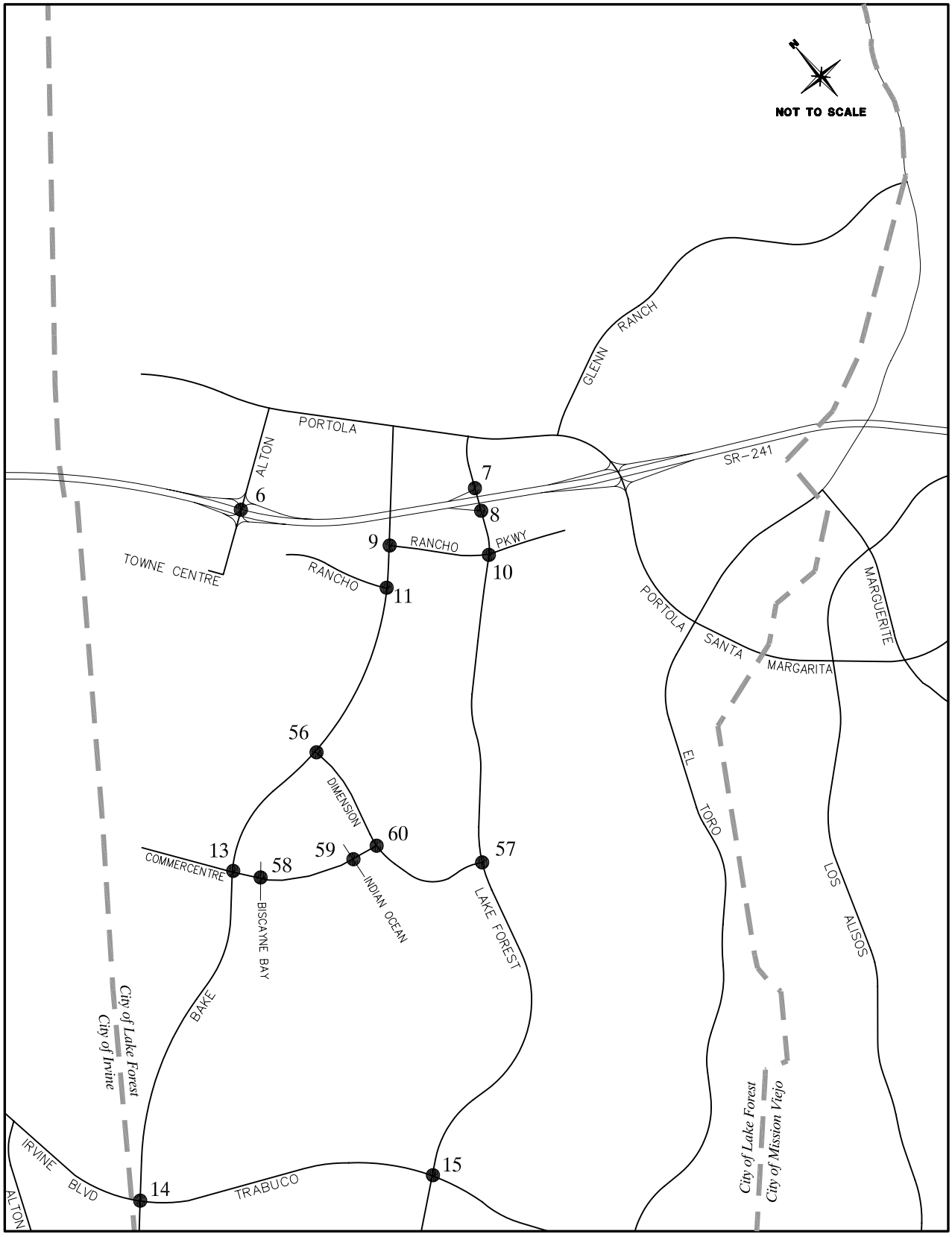
Table 4

EXISTING INTERSECTION LOS SUMMARY

Loc. # North-South (NS) Road & East-West (EW) Road	AM Peak Hour		PM Peak Hour	
	ICU	LOS	ICU	LOS
6. Alton & SR-241 Ramps	.20	A	.26	A
7. Lake Forest & SR-241 NB	.31	A	.38	A
8. Lake Forest & SR-241 SB	.48	A	.45	A
9. Bake & Rancho N	.70	B	.66	B
10. Lake Forest & Rancho	.40	A	.47	A
11. Bake & Rancho S	.60	A	.74	C
13. Bake & Commercentre	.54	A	.74	C
14. Bake & Irvine/Trabuco	.78	C	.76	C
15. Lake Forest & Trabuco	.63	B	.65	B
56. Bake & Dimension	.55	A	.68	B
57. Lake Forest & Dimension	.49	A	.48	A
58. Biscayne Bay & Commercentre	.20	A	.26	A
59. Indian Ocean & Commercentre	.18	A	.20	A
60. Dimension & Commercentre	.40	A	.58	A

Level of service ranges: .00 - .60 A
.61 - .70 B
.71 - .80 C
.81 - .90 D
.91 – 1.00 E
Above 1.00 F

Abbreviations: ICU – intersection capacity utilization
LOS – level of service
N,S – north, south
NB,SB – northbound, southbound



Legend

Existing Roadway

City Boundary

Figure 6

EXISTING INTERSECTION LOCATION MAP

assumptions in the Shea/Baker area for Alternative 7 and the Current General Plan. The proposed project is assumed to be built out under with-project conditions for worst-case analysis purposes.

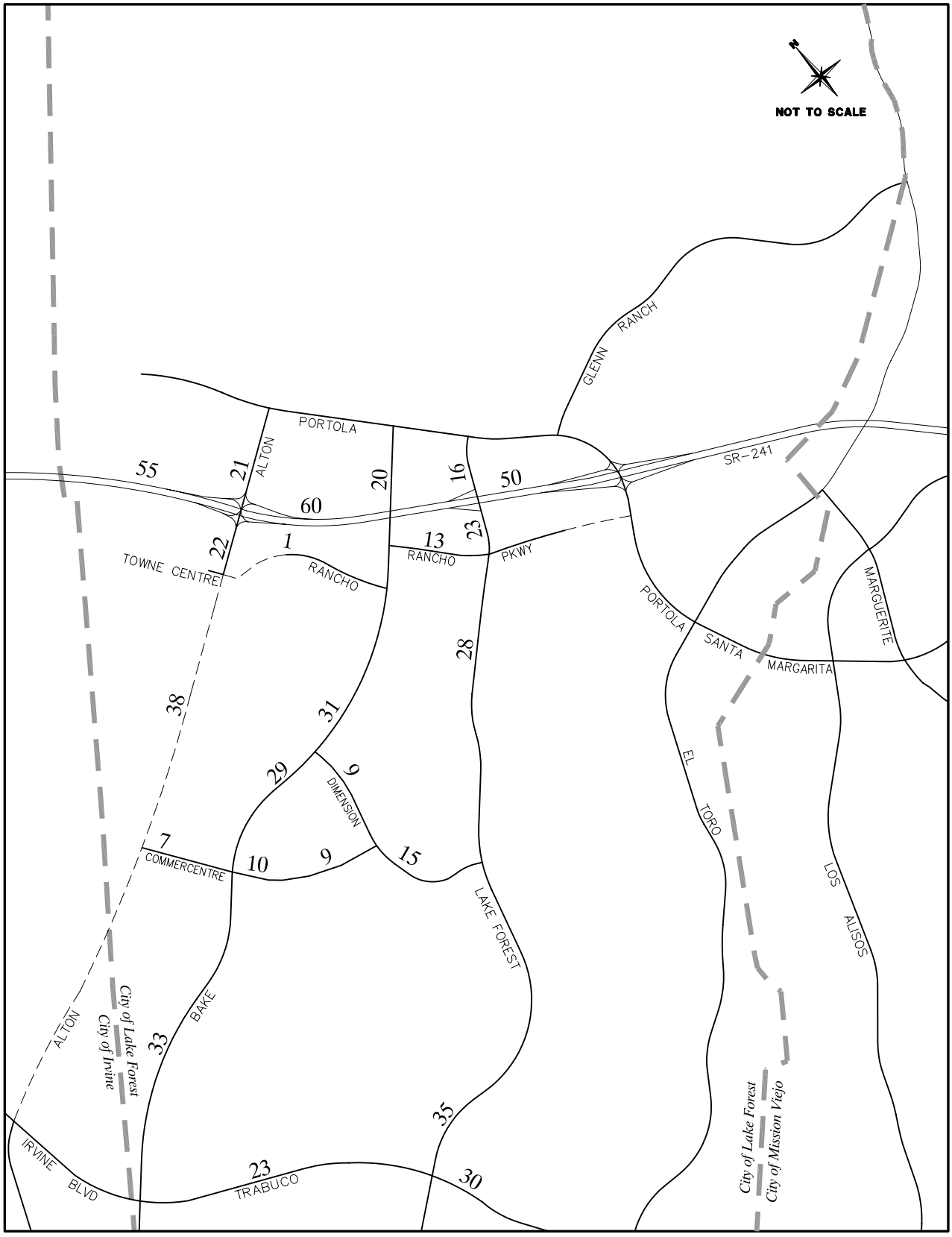
The future year 2015 ADT volumes for Alternative 7 and the Current General Plan under no-project and with-project conditions with buildout of the proposed project (year 2015) are presented in Figures 7 through 10. The future year 2015 ICU values for the intersections illustrated in Figure 11 and analyzed here are summarized in Table 5 (see Appendix A for detailed ICU calculations). As can be seen here, all intersections are expected to operate at LOS "D" or better (i.e., ICU does not exceed .90).

Year 2030 Volumes

Buildout of the City General Plan and neighboring cities are assumed for the long-range analysis and only committed network improvements are assumed to be built. Therefore the Portola Parkway gap and I-5/Ridge Route Overcrossing are not assumed. The future year 2030 ADT volumes for Alternative 7 and the Current General Plan under no-project and with-project conditions with buildout of the proposed project (year 2030) are presented in Figures 12 through 15.

The future year 2030 ICU values for the intersections previously illustrated in Figure 11 and analyzed here are summarized in Table 6 (see Appendix A for detailed ICU calculations). As can be seen here, one intersection, Bake Parkway at Irvine Boulevard/Trabuco Road, is significantly impacted by the proposed project under the Current General Plan alternative based on the performance criteria previously presented for this intersection (no-project PM peak hour ICU of 1.06 increases to 1.08 for with-project). There are no significant project impacts in Alternative 7.

Mitigation measures that were developed for the intersection locations identified as being potentially impacted by OSA development have been incorporated into the LFTM Program. The LFTM Program includes improvements that have been identified and analyzed in previous traffic studies and related CEQA documents for the OSA area including the proposed project. The proposed LFTM Program improvements (add second northbound left, convert third westbound through and westbound right to shared fourth westbound through/westbound right-turn lane and restripe third eastbound through to shared third eastbound through/second eastbound right) mitigate the project impact resulting in an acceptable LOS "D" in the PM peak hour as well as the AM peak hour (AM and PM peak hour ICUs both equal .90). These mitigation measures are not considered new; rather, they are included in the List of LFTM Improvements as fully funded. The project's participation in the LFTM Program fulfills its



Legend

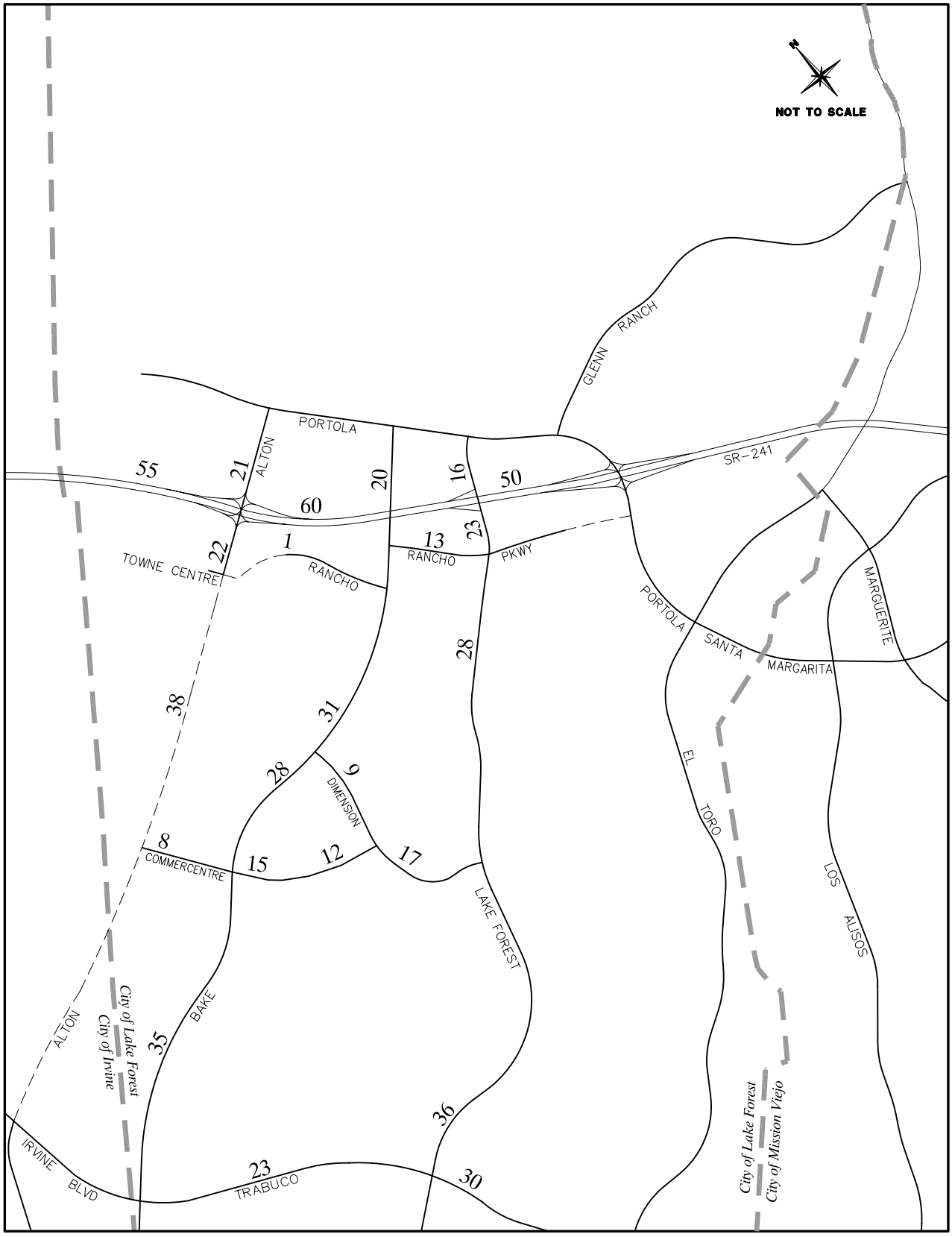
Existing Roadway

Future Roadway

City Boundary

Figure 7

2015 ADT VOLUMES (000s)
- ALTERNATIVE 7
(NO-PROJECT)



Legend

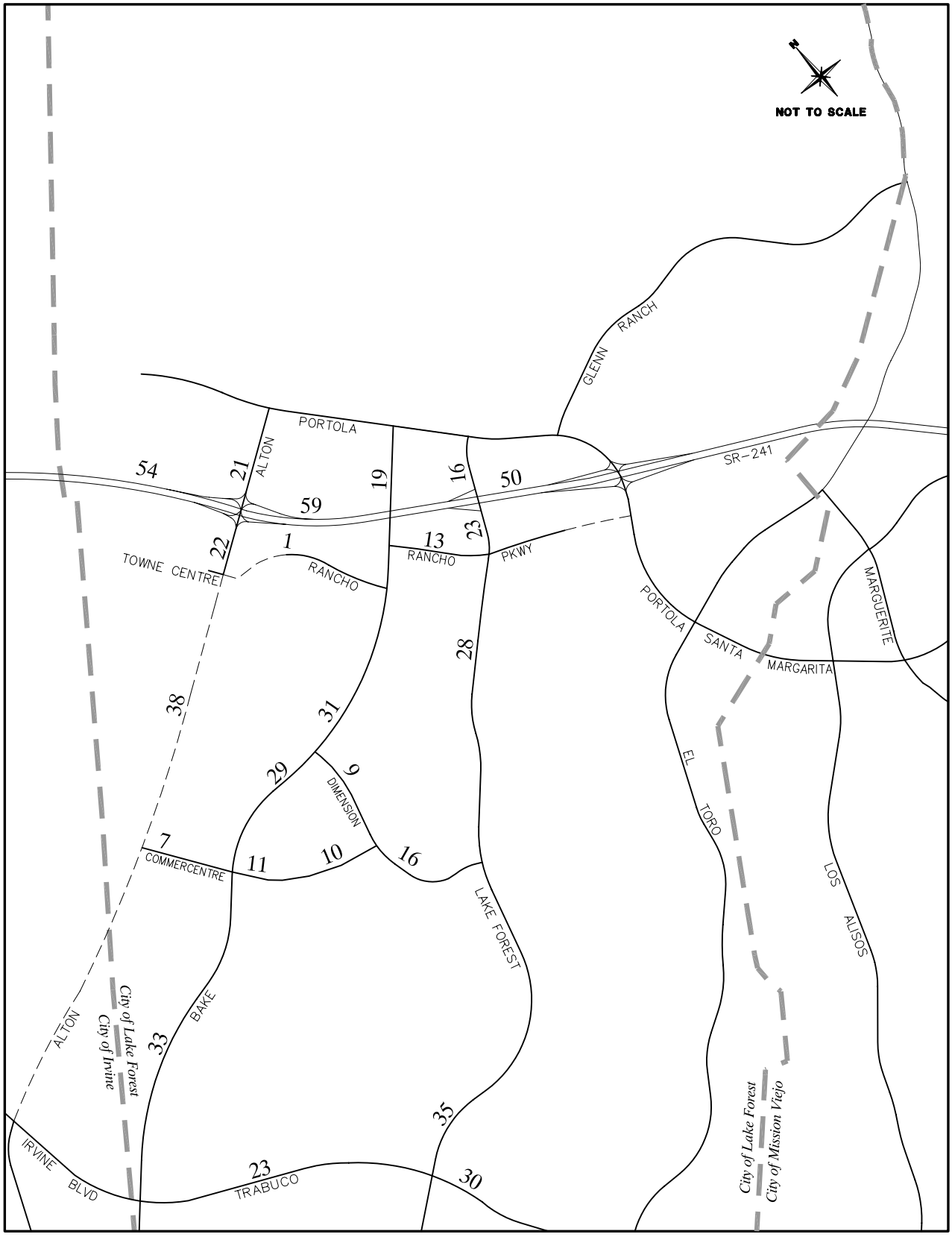
Existing Roadway

Future Roadway

City Boundary

Figure 8

2015 ADT VOLUMES (000s)
- ALTERNATIVE 7
(WITH-PROJECT)



Legend

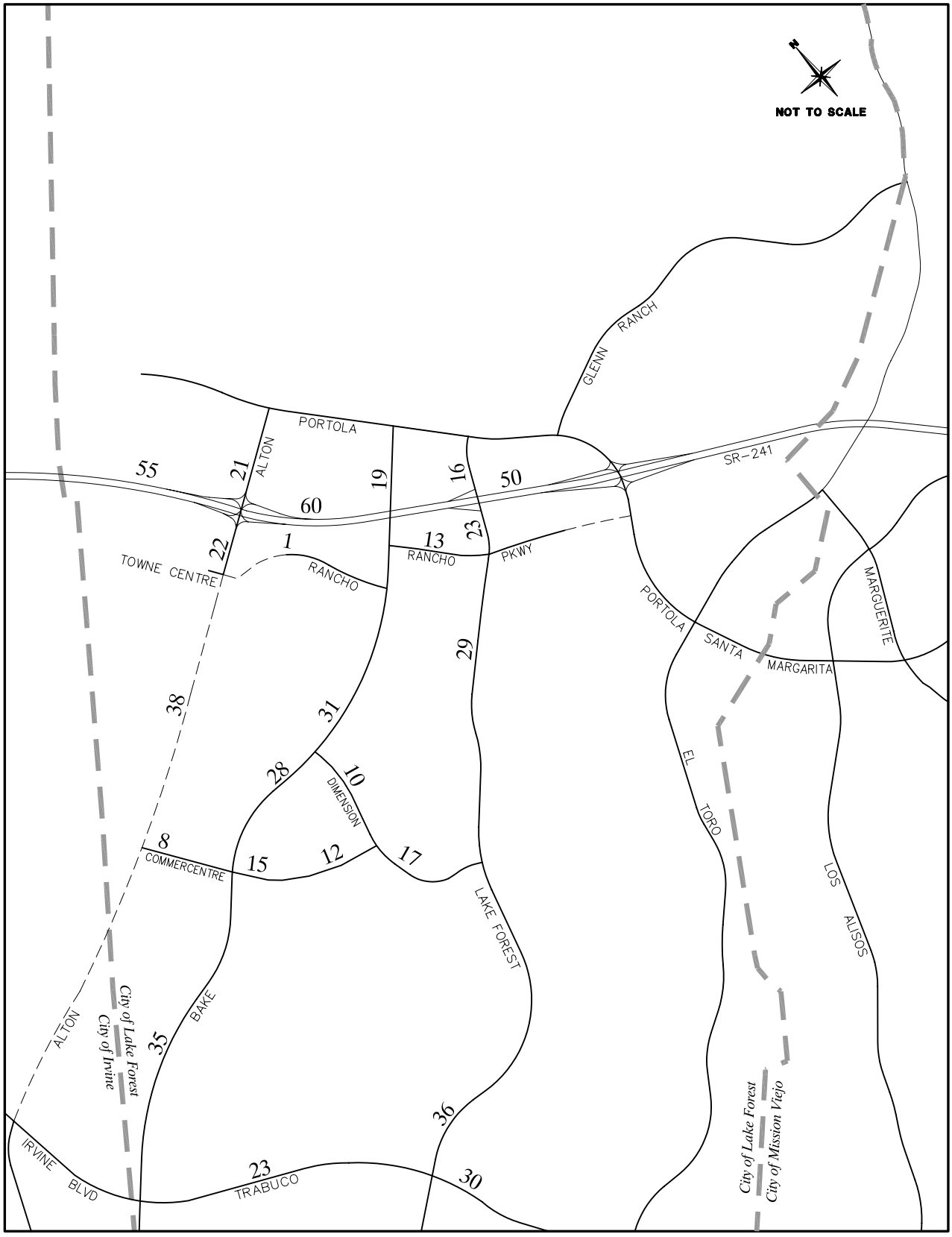
Existing Roadway

Future Roadway

City Boundary

Figure 9

2015 ADT VOLUMES (000s)
- CURRENT GENERAL PLAN
(NO-PROJECT)

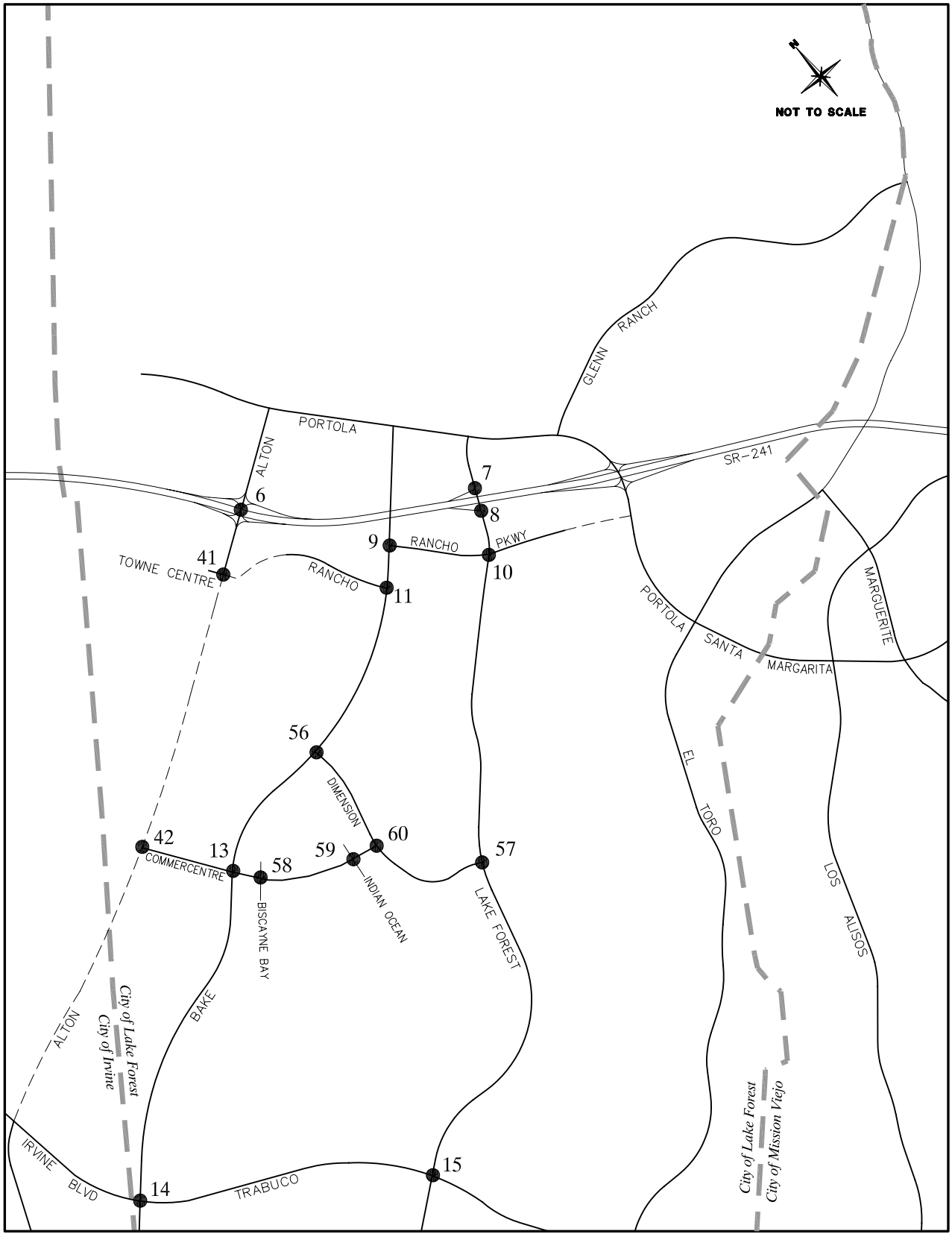


Legend

- Existing Roadway
- Future Roadway
- City Boundary

Figure 10

2015 ADT VOLUMES (000s)
- CURRENT GENERAL PLAN
(WITH-PROJECT)



Legend

Existing Roadway
Future Roadway
City Boundary

Figure 11

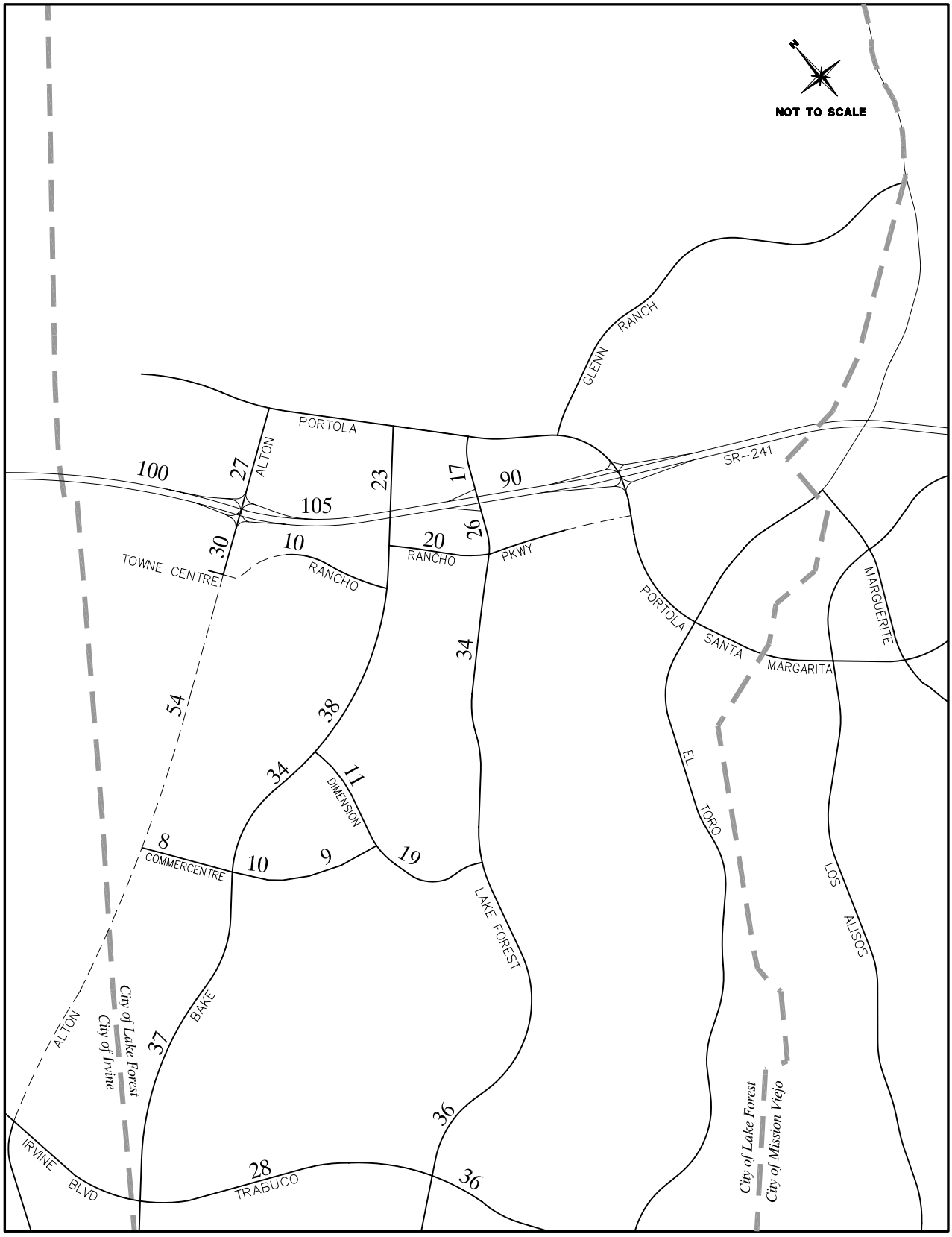
INTERSECTION LOCATION MAP

Table 5

YEAR 2015 INTERSECTION LOS SUMMARY

North-South (NS) Road # & East-West (EW) Road	No-Project				With-Project				Difference	
	AM Pk Hr		PM Pk Hr		AM Pk Hr		PM Pk Hr			
	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	AM	PM
Alternative 7										
6. Alton & SR-241 Ramps	.45	A	.37	A	.44	A	.37	A	-.01	.00
7. Lake Forest & SR-241 NB	.31	A	.36	A	.31	A	.36	A	.00	.00
8. Lake Forest & SR-241 SB	.41	A	.43	A	.41	A	.43	A	.00	.00
9. Bake & Rancho N	.66	B	.74	C	.65	B	.74	C	-.01	.00
10. Lake Forest & Rancho	.55	A	.74	C	.55	A	.74	C	.00	.00
11. Bake & Rancho S	.64	B	.69	B	.63	B	.69	B	-.01	.00
13. Bake & Commercentre	.57	A	.66	B	.59	A	.71	C	.02	.05
14. Bake & Irvine/Trabuco	.88	D	.77	C	.88	D	.77	C	.00	.00
15. Lake Forest & Trabuco	.82	D	.81	D	.81	D	.83	D	-.01	.02
41. Alton & Towne Centre	.65	B	.56	A	.65	B	.56	A	.00	.00
42. Alton & Commercentre	.47	A	.56	A	.49	A	.59	A	.02	.03
56. Bake & Dimension	.59	A	.76	C	.57	A	.77	C	-.02	.01
57. Lake Forest & Dimension	.48	A	.52	A	.49	A	.54	A	.01	.02
58. Biscayne Bay & Commercentre	.25	A	.30	A	.34	A	.43	A	.09	.13
59. Indian Ocean & Commercentre	.21	A	.24	A	.37	A	.46	A	.16	.22
60. Dimension & Commercentre	.43	A	.65	B	.51	A	.75	C	.08	.10
Current General Plan										
6. Alton & SR-241 Ramps	.45	A	.38	A	.45	A	.38	A	.00	.00
7. Lake Forest & SR-241 NB	.31	A	.35	A	.32	A	.36	A	.01	.01
8. Lake Forest & SR-241 SB	.41	A	.42	A	.40	A	.43	A	-.01	.01
9. Bake & Rancho N	.67	B	.73	C	.67	B	.73	C	.00	.00
10. Lake Forest & Rancho	.56	A	.73	C	.56	A	.75	C	.00	.02
11. Bake & Rancho S	.64	B	.69	B	.63	B	.69	B	-.01	.00
13. Bake & Commercentre	.57	A	.66	B	.58	A	.71	C	.01	.05
14. Bake & Irvine/Trabuco	.88	D	.76	C	.89	D	.77	C	.01	.01
15. Lake Forest & Trabuco	.80	C	.82	D	.83	D	.82	D	.03	.00
41. Alton & Towne Centre	.60	A	.60	A	.61	B	.59	A	.01	-.01
42. Alton & Commercentre	.44	A	.57	A	.46	A	.59	A	.02	.02
56. Bake & Dimension	.64	B	.76	C	.62	B	.76	C	-.02	.00
57. Lake Forest & Dimension	.49	A	.53	A	.53	A	.54	A	.04	.01
58. Biscayne Bay & Commercentre	.25	A	.30	A	.34	A	.43	A	.09	.13
59. Indian Ocean & Commercentre	.21	A	.24	A	.37	A	.46	A	.16	.22
60. Dimension & Commercentre	.43	A	.66	B	.52	A	.77	C	.09	.11

Abbreviations: ICU – intersection capacity utilization
LOS – level of service
N,S – north, south
NB,SB – northbound, southbound



Legend

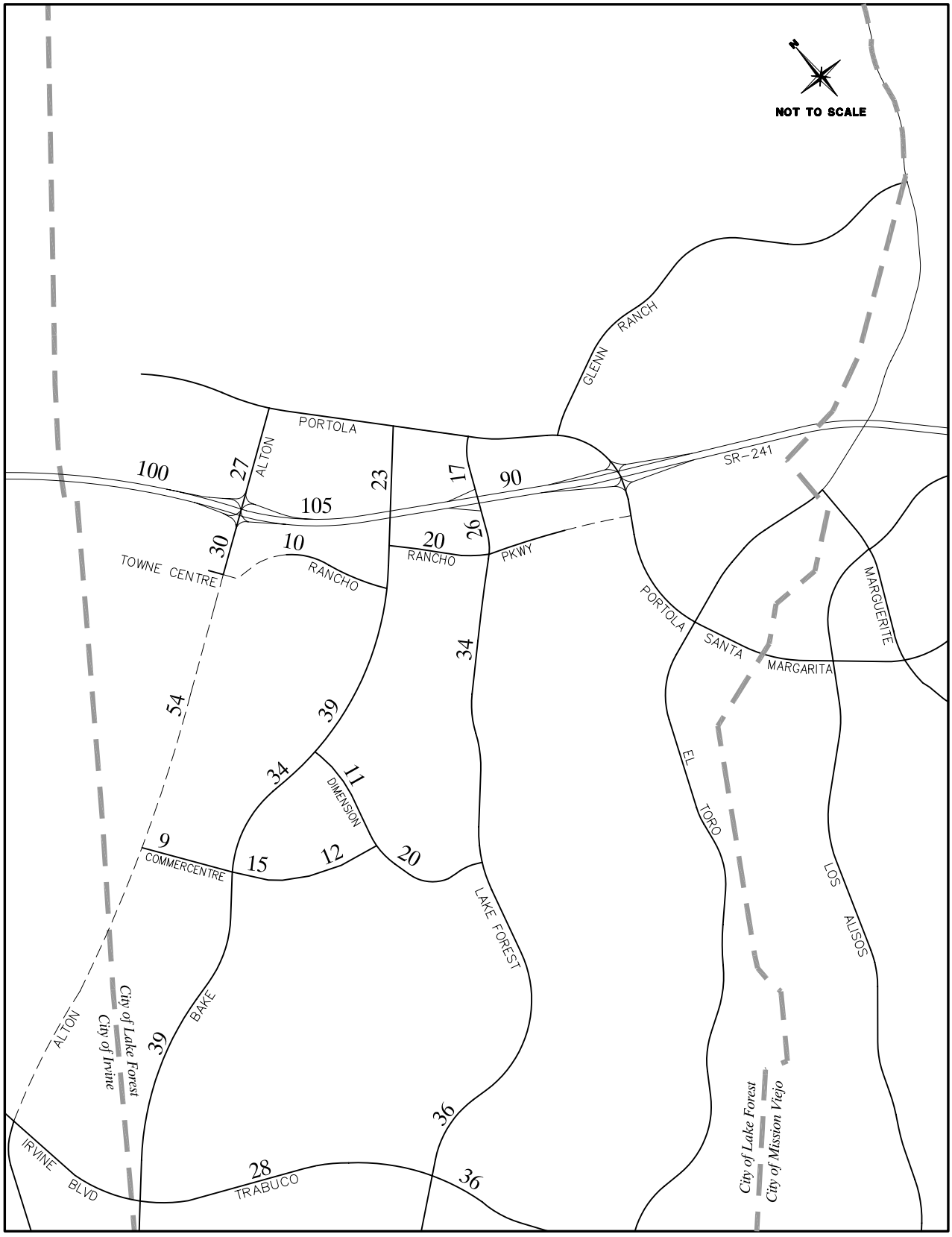
Existing Roadway

Future Roadway

City Boundary

Figure 12

2030 ADT VOLUMES (000s)
- ALTERNATIVE 7
(NO-PROJECT)

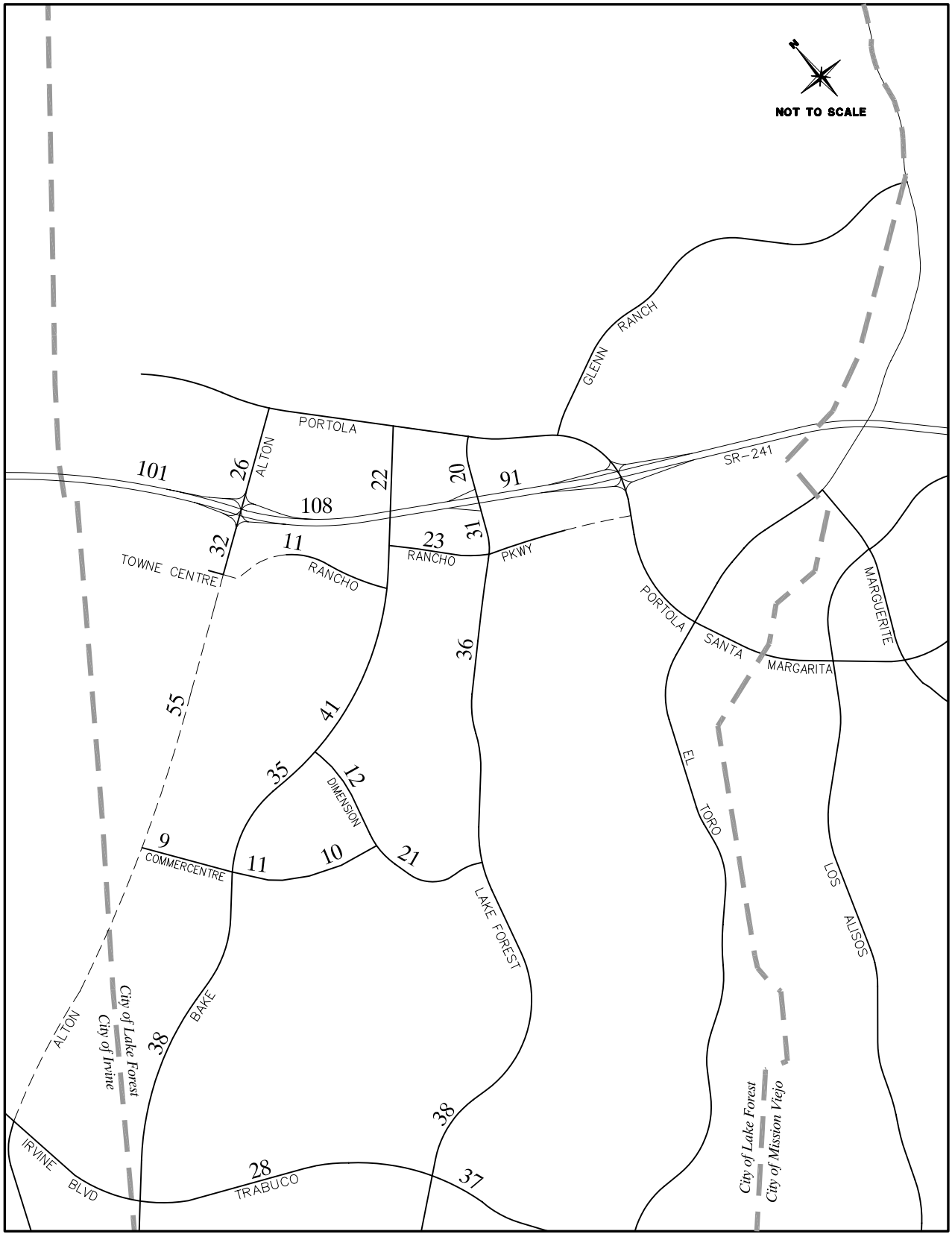


Legend

- Existing Roadway
- Future Roadway
- City Boundary

Figure 13

2030 ADT VOLUMES (000s)
- ALTERNATIVE 7
(WITH-PROJECT)

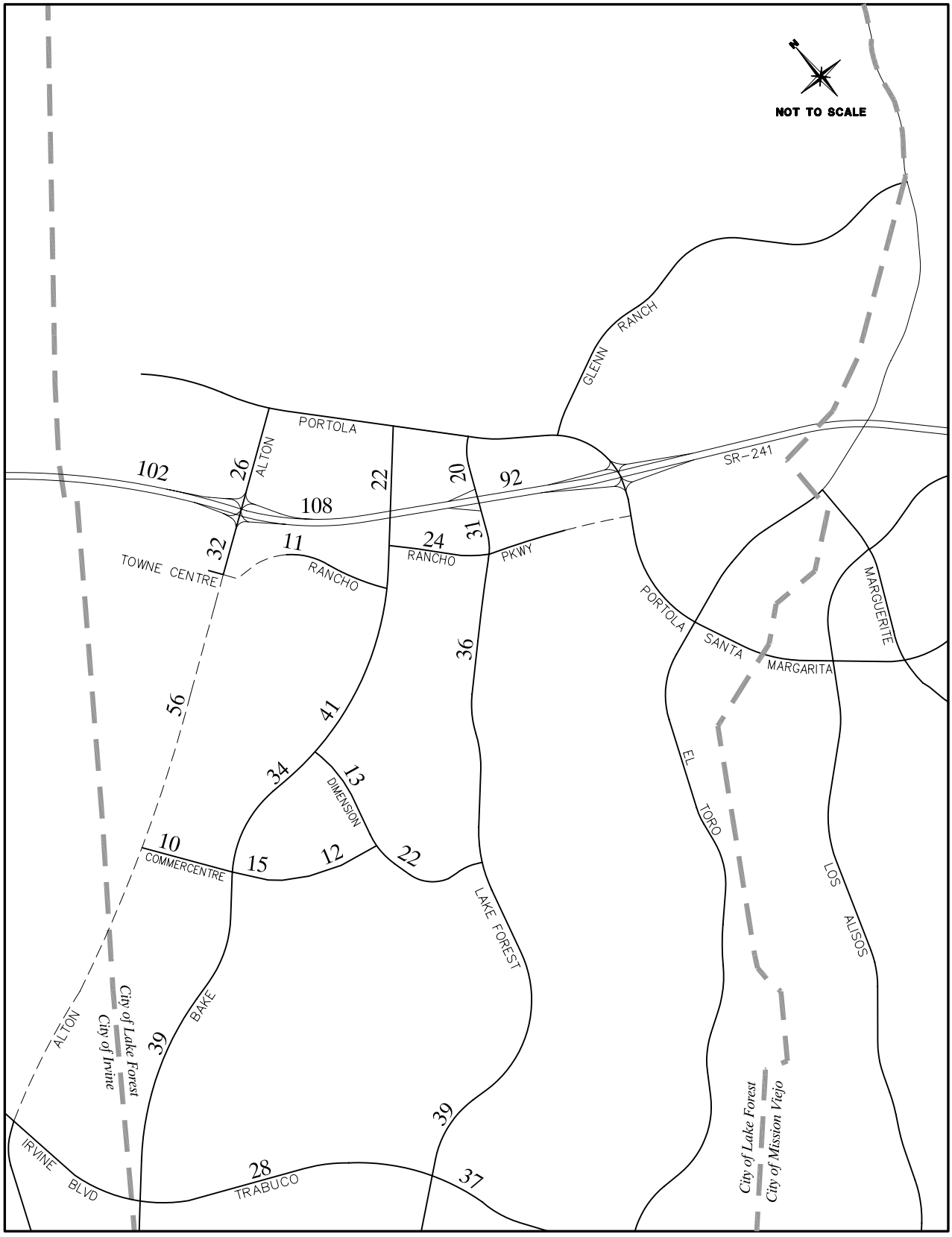


Legend

- Existing Roadway
- Future Roadway
- City Boundary

Figure 14

2030 ADT VOLUMES (000s)
- CURRENT GENERAL PLAN
(NO-PROJECT)



Legend

Existing Roadway

Future Roadway

City Boundary

Figure 15

2030 ADT VOLUMES (000s)
- CURRENT GENERAL PLAN
(WITH-PROJECT)

Table 6

YEAR 2030 INTERSECTION LOS SUMMARY

North-South (NS) Road # & East-West (EW) Road	No-Project				With-Project				Difference	
	AM Pk Hr		PM Pk Hr		AM Pk Hr		PM Pk Hr			
	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	AM	PM
Alternative 7										
6. Alton & SR-241 Ramps	.64	B	.54	A	.64	B	.56	A	.00	.02
7. Lake Forest & SR-241 NB	.33	A	.44	A	.33	A	.44	A	.00	.00
8. Lake Forest & SR-241 SB	.51	A	.50	A	.53	A	.50	A	.02	.00
9. Bake & Rancho N	.71	C	.88	D	.70	B	.87	D	-.01	-.01
10. Lake Forest & Rancho	.90	D	1.18	F	.89	D	1.17	F	-.01	-.01
11. Bake & Rancho S	.75	C	.81	D	.76	C	.81	D	.01	.00
13. Bake & Commercentre	.65	B	.71	C	.68	B	.74	C	.03	.03
14. Bake & Irvine/Trabuco	1.15	F	1.01	F	1.14	F	1.02	F	-.01	.01
15. Lake Forest & Trabuco	.83	D	.90	D	.85	D	.85	D	.02	-.05
41. Alton & Towne Centre	.92	E	.84	D	.92	E	.82	D	.00	-.02
42. Alton & Commercentre	.62	B	.75	C	.64	B	.78	C	.02	.03
56. Bake & Dimension	.72	C	.80	C	.70	B	.78	C	-.02	-.02
57. Lake Forest & Dimension	.55	A	.61	B	.57	A	.63	B	.02	.02
58. Biscayne Bay & Commercentre	.25	A	.30	A	.35	A	.44	A	.10	.14
59. Indian Ocean & Commercentre	.22	A	.24	A	.38	A	.47	A	.16	.23
60. Dimension & Commercentre	.44	A	.67	B	.54	A	.78	C	.10	.11
Current General Plan										
6. Alton & SR-241 Ramps	.65	B	.66	B	.65	B	.68	B	.00	.02
7. Lake Forest & SR-241 NB	.35	A	.50	A	.35	A	.49	A	.00	-.01
8. Lake Forest & SR-241 SB	.68	B	.59	A	.69	B	.59	A	.01	.00
9. Bake & Rancho N	.82	D	.93	E	.80	C	.93	E	-.02	.00
10. Lake Forest & Rancho	.99	E	1.37	F	.99	E	1.38	F	.00	.01
11. Bake & Rancho S	.83	D	.87	D	.81	D	.88	D	-.02	.01
13. Bake & Commercentre	.62	B	.70	B	.65	B	.73	C	.03	.03
14. Bake & Irvine/Trabuco*	1.11	F	1.06	F	1.11	F	1.08	F	.00	.02
15. Lake Forest & Trabuco	.79	C	.89	D	.80	C	.89	D	.01	.00
41. Alton & Towne Centre	.92	E	1.12	F	.92	E	1.11	F	.00	-.01
42. Alton & Commercentre	.55	A	.75	C	.57	A	.77	C	.02	.02
56. Bake & Dimension	.90	D	.82	D	.89	D	.83	D	-.01	.01
57. Lake Forest & Dimension	.62	B	.66	B	.63	B	.67	B	.01	.01
58. Biscayne Bay & Commercentre	.26	A	.30	A	.35	A	.44	A	.09	.14
59. Indian Ocean & Commercentre	.22	A	.25	A	.38	A	.47	A	.16	.22
60. Dimension & Commercentre	.45	A	.76	C	.54	A	.85	D	.09	.09

* Significantly impacted by the project according to the performance criteria.

Abbreviations: ICU – intersection capacity utilization
LOS – level of service
N,S – north, south
NB,SB – northbound, southbound

obligation towards the mitigation measures identified here. The improvements at this location are fully funded by the LFTM Program and Irvine's North Irvine Transportation Mitigation (NITM) Program.

SPECIAL ISSUES

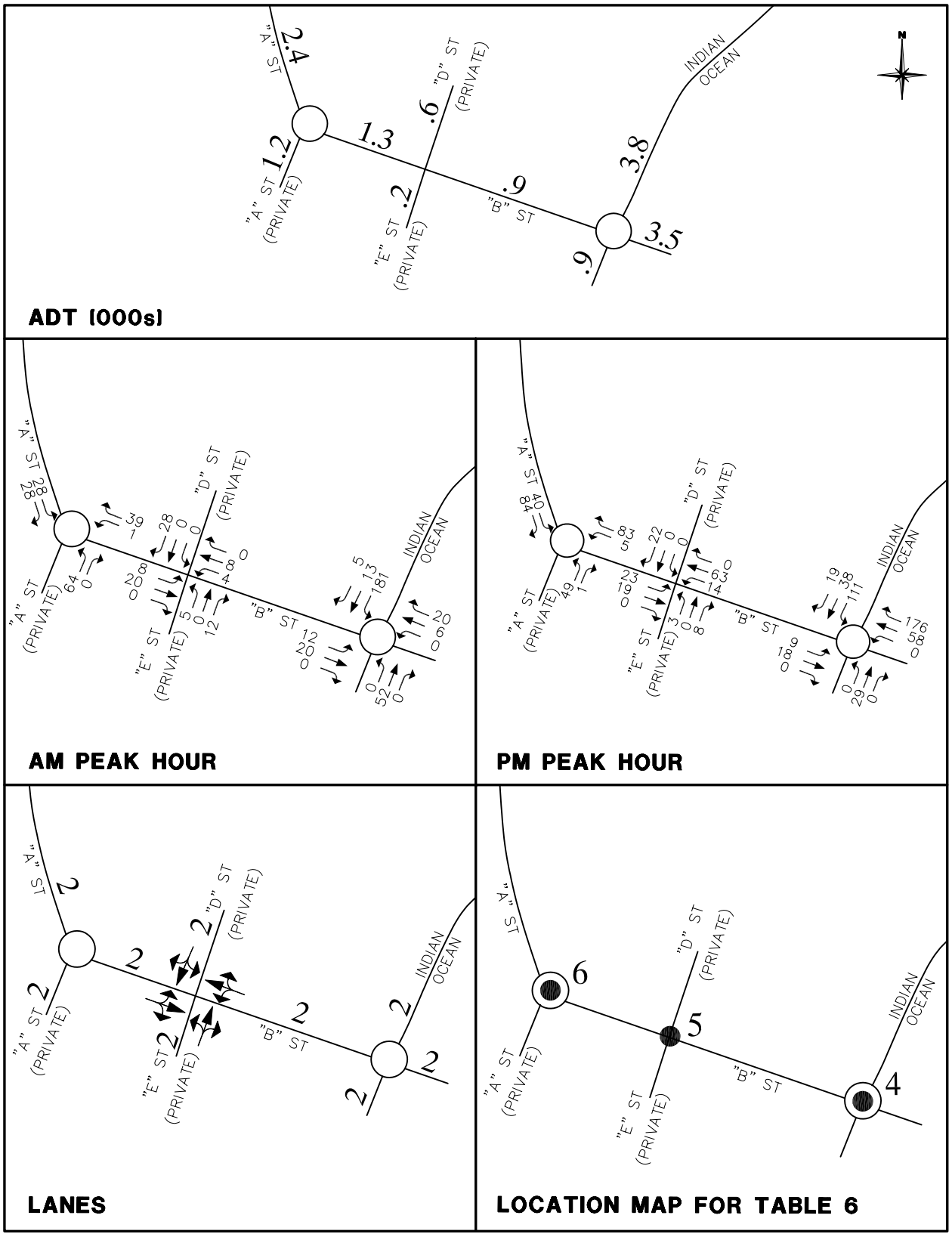
This section includes an analysis of the on-site access and internal circulation providing specific site access information to support the project application and serving as a basis for the design of project level roadways and intersections. The subjects covered include a roundabout analysis, driveway access, lane geometry, left-turn storage requirements, and signalization. First, the volumes on-site, which are the same for Alternative 7 and the Current General Plan under year 2015 and year 2030 conditions, will be presented and analyzed including a roundabout analysis. Then an analysis will be made of Biscayne Bay Drive and Indian Ocean Drive at Commercentre Drive that will determine left-turn storage requirements and signalization.

On-Site Volumes and Analysis

The future on-site ADT and peak hour volumes for conditions with buildout of the proposed project are presented in Figure 16. The lane configurations and a map of intersections analyzed in this section are also presented in Figure 16.

Access to the residential area north of "B" Street is provided on "D" Street (private road) via "B" Street and "C" Street (private road) via Indian Ocean Drive. Access to the residential area south of "B" Street is provided via Indian Ocean Drive, "E" Street (private road) and "A" Street. "B" Street serves as an internal spine road for the project, anchored at each end by roundabouts. The easterly roundabout serves the Civic Center plus the southeast residential area and the westerly roundabout serves the southwest residential area and the community recreation center. A two-way stop-controlled intersection is located about midway between the two roundabouts (with continuous traffic flow on "B" Street and stop signs for "D" Street and "E" Street both of which are private roads).

The performance of the two roundabouts along "B" Street, one at "A" Street and the other at Indian Ocean Drive, is examined using the SIDRA software package. Conditions such as volume levels, turning volume splits, number of approach lanes, and lane widths at the two roundabouts are considered in SIDRA. For the intersection of "D" Street/"E" Street and "B" Street the non-signalized methodology from the Highway Capacity Manual (HCM) was used. The level of service (LOS) results for the



Legend

Roundabout

Figure 16

ADT AND PEAK HOUR VOLUMES
- WITH-PROJECT
(ON-SITE)

roundabouts and intersection analyzed here are summarized in Table 7 (see Appendix B and C for detailed SIDRA and HCM worksheets). As can be seen here, the circulation system planned on "B" Street for the project site consisting of a two-way stop-controlled intersection in between two roundabouts is expected to adequately perform with LOS "B" or better.

Roundabout Dimensions

Figures 17 and 18 show the dimensions, lane widths, entry radii and entry diverters for the two roundabouts along "B" Street at "A" Street and Indian Ocean Drive. The proposed design of the roundabouts in the project is in accordance with FHWA Roundabout Guidelines. Figure 19 presents a truck turning analysis for each roundabout that would enable any sized truck (WB-40 or smaller) to safely navigate the roundabouts. For worst-case analysis purposes a large-sized vehicle is assumed (i.e., a WB-40 5-axle truck), which is an unlikely occurrence since there are no designated truck routes in this area.

COMMERCENTRE DRIVE ACCESS ANALYSIS

The future ADT and peak hour volumes on Commercentre Drive from Bake Parkway to Dimension Drive for Alternative 7 and the Current General Plan under years 2015 and 2030 conditions with buildout of the proposed project are presented in Figures 20 through 23. The intersections were analyzed in previous sections that showed all are operating at LOS "D" or better. Signalization and the left-turn pocket length requirements for left-turns affected by the project are evaluated at Biscayne Bay Drive and Indian Ocean Drive intersections with Commercentre Drive. It should be noted that Biscayne Bay Drive becomes "A" Street as it enters the project site.

Signalization

Traffic signal warrants based on peak hour volumes as adopted by the Federal Highway Administration and Caltrans were used here to determine the need for signalization. In applying this warrant, the volumes of both the major and minor street must meet or exceed those shown on the curves in Figure 24 for conditions when the speed on the major street is 40 (mph) or higher which is experienced by Commercentre Drive (the posted speed limit is 45 mph).

Determining the major street approach for the signal warrant involves calculating the number of vehicles approaching the intersection on both major street legs. The highest total volume for either the

Table 7

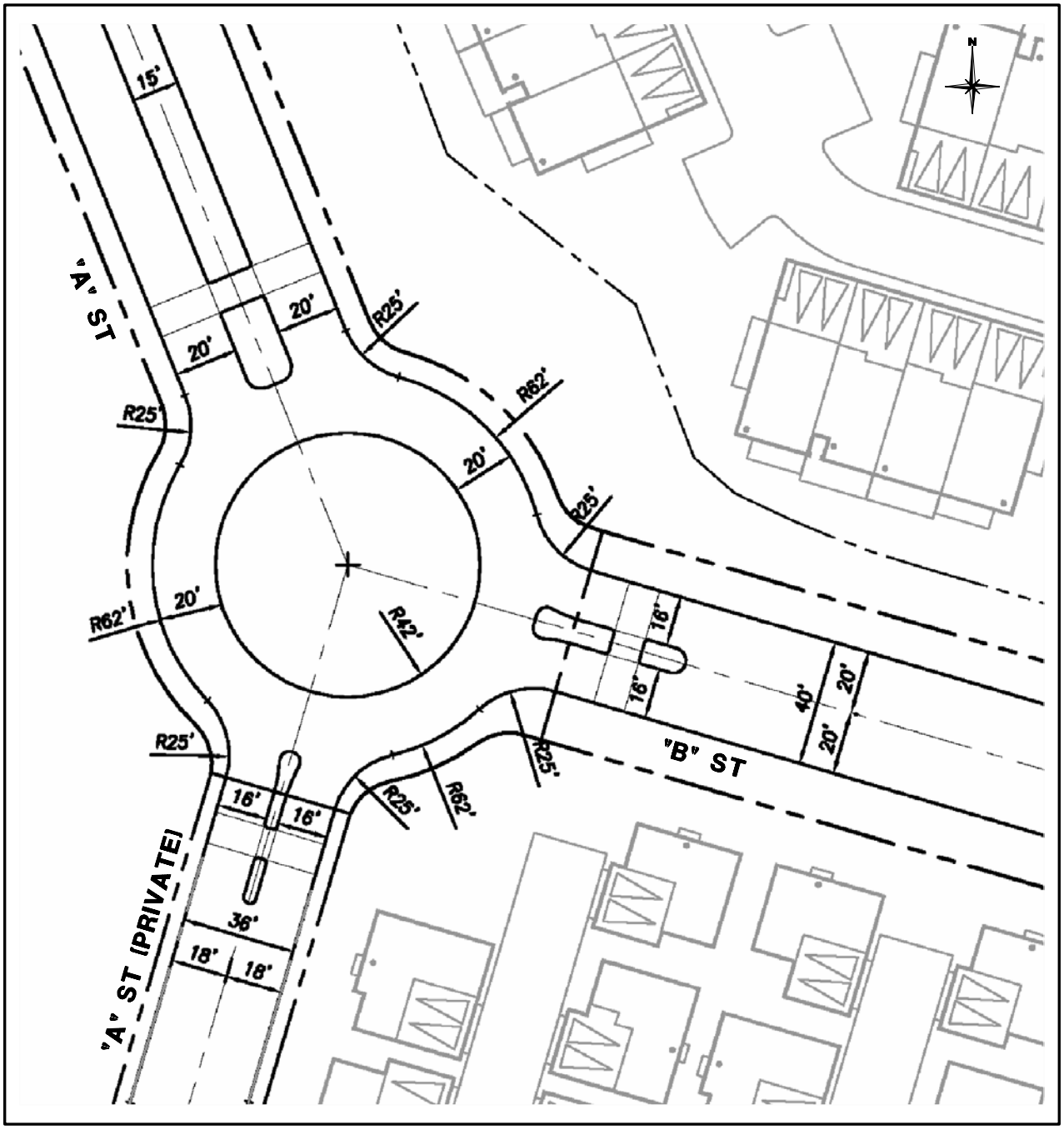
LEVEL OF SERVICE SUMMARY
- ON-SITE

Location (North/South Road & East/West Road)	AM Peak Hour		PM Peak Hour	
	Delay	**LOS**	**Delay**	**LOS**
Roundabout				
4. Indian Ocean Drive & "B" Street	12.9	B	12.6	B
6. "A": Street & "B" Street	12.3	B	12.3	B
Intersection (Unsignalized/Two-Way Stop-Controlled)*				
5. Private "D" Street/Private "E" Street & "B" Street	8.7	A	8.9	A

* Continuous traffic flow on "B" Street and stop signs for "D" Street and "E" Street, both private roads.

Notes: 1) See Figure 16 for location map.
2) The SIDRA software package is used for the roundabout analysis, and the Highway Capacity Manual (HCM) is used for the unsignalized intersection analysis.
3) The level of service (LOS) of the roundabouts and intersection is based on the average delay (in seconds) of the worst movement (in the case of stop control, the worst side street movement).

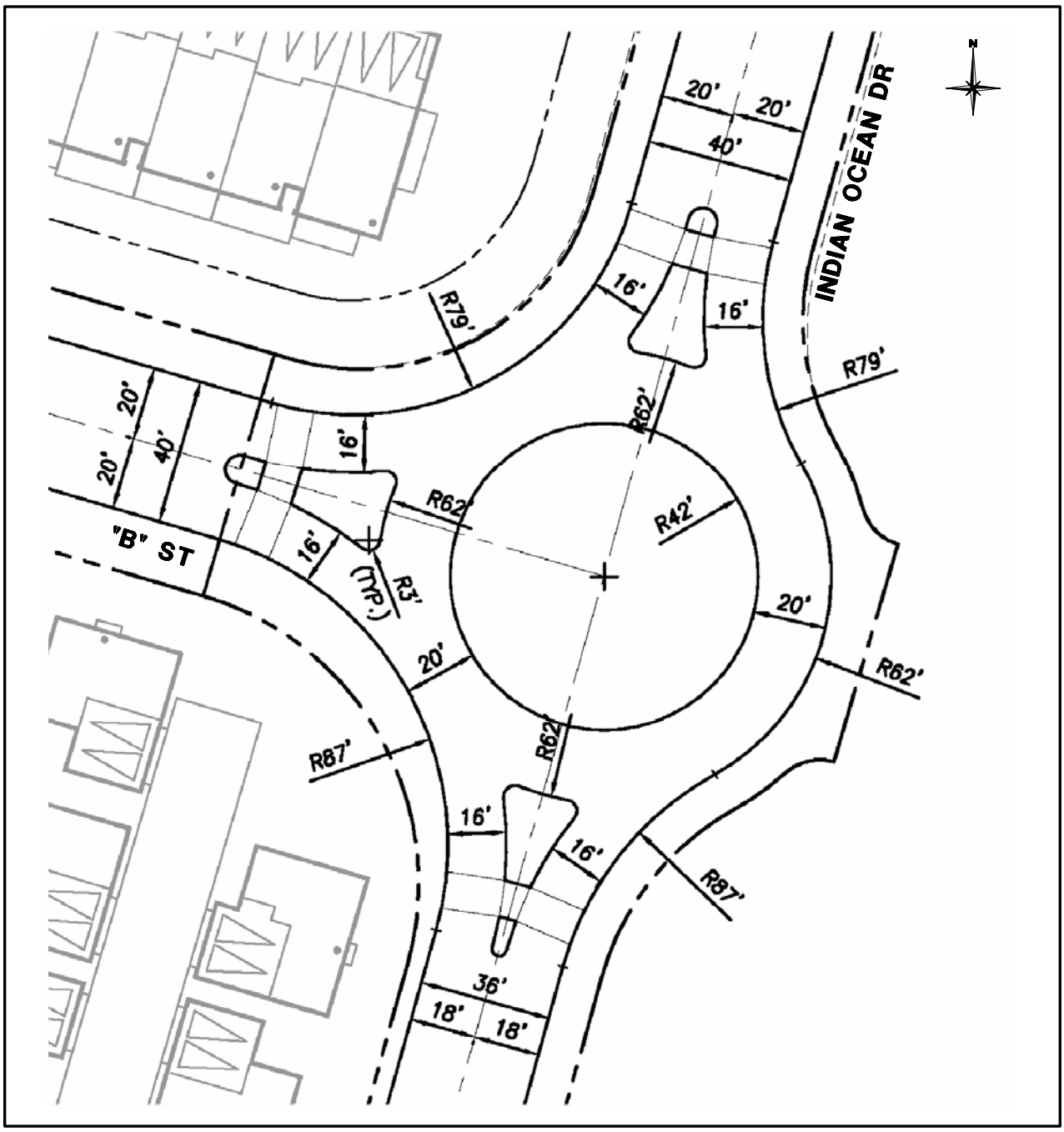
Level of service	**Roundabout**	**Intersection**
A	≤ 10.0	≤ 10.0
B	10.1 – 20.0	10.1 – 15.0
C	20.1 – 35.0	15.1 – 25.0
D	35.1 – 55.0	25.1 – 35.0
E	55.1 – 80.0	35.1 – 50.0
F	> 80.0	> 50.0



Source: FUSCOE

Figure 17

ROUNDABOUT
AT "A" STREET AND "B" STREET



Source: FUSCOE

Figure 18

ROUNDABOUT
AT INDIAN OCEAN DRIVE AND "B" STREET

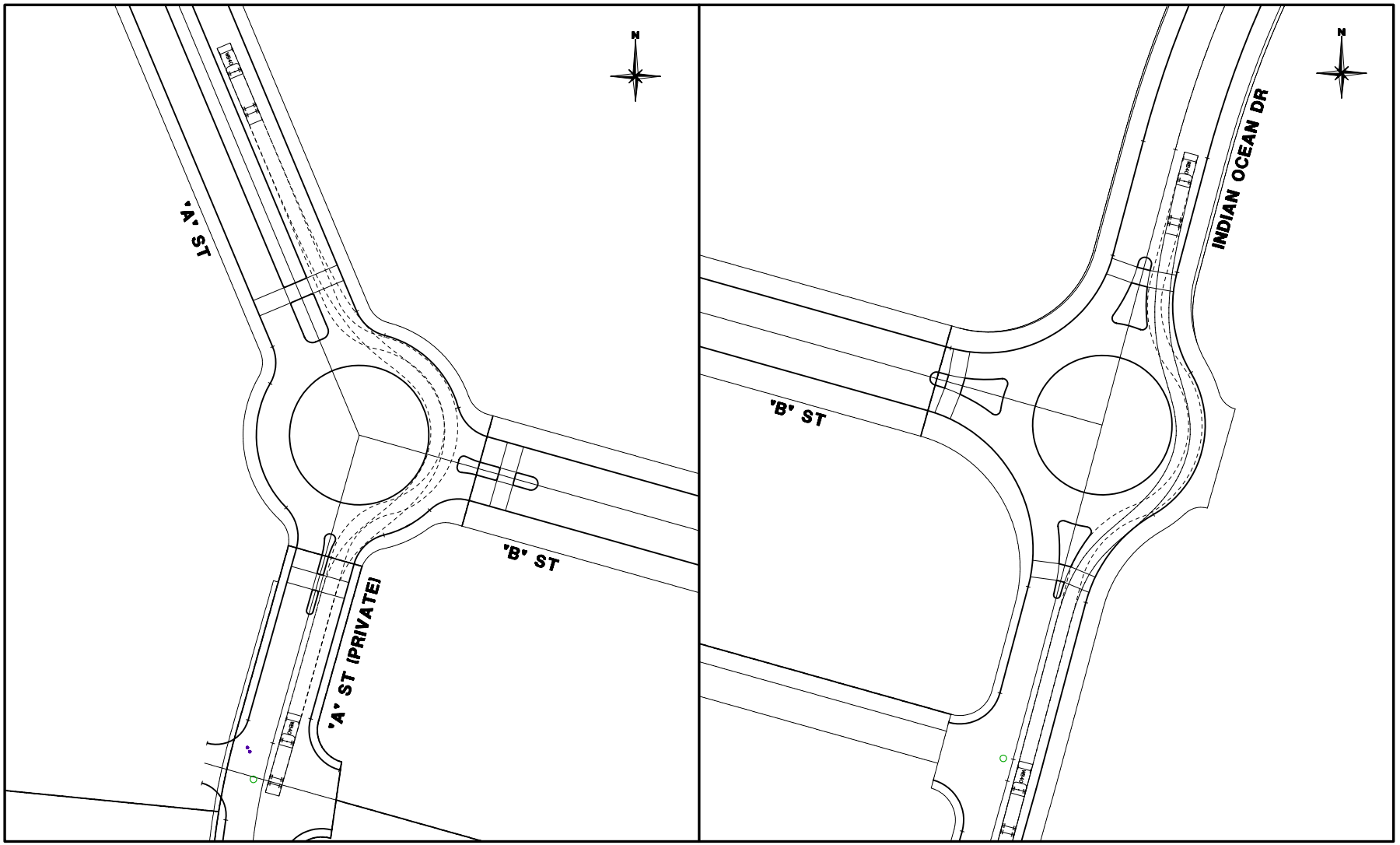


Figure 19

TRUCK TURNING DIAGRAM

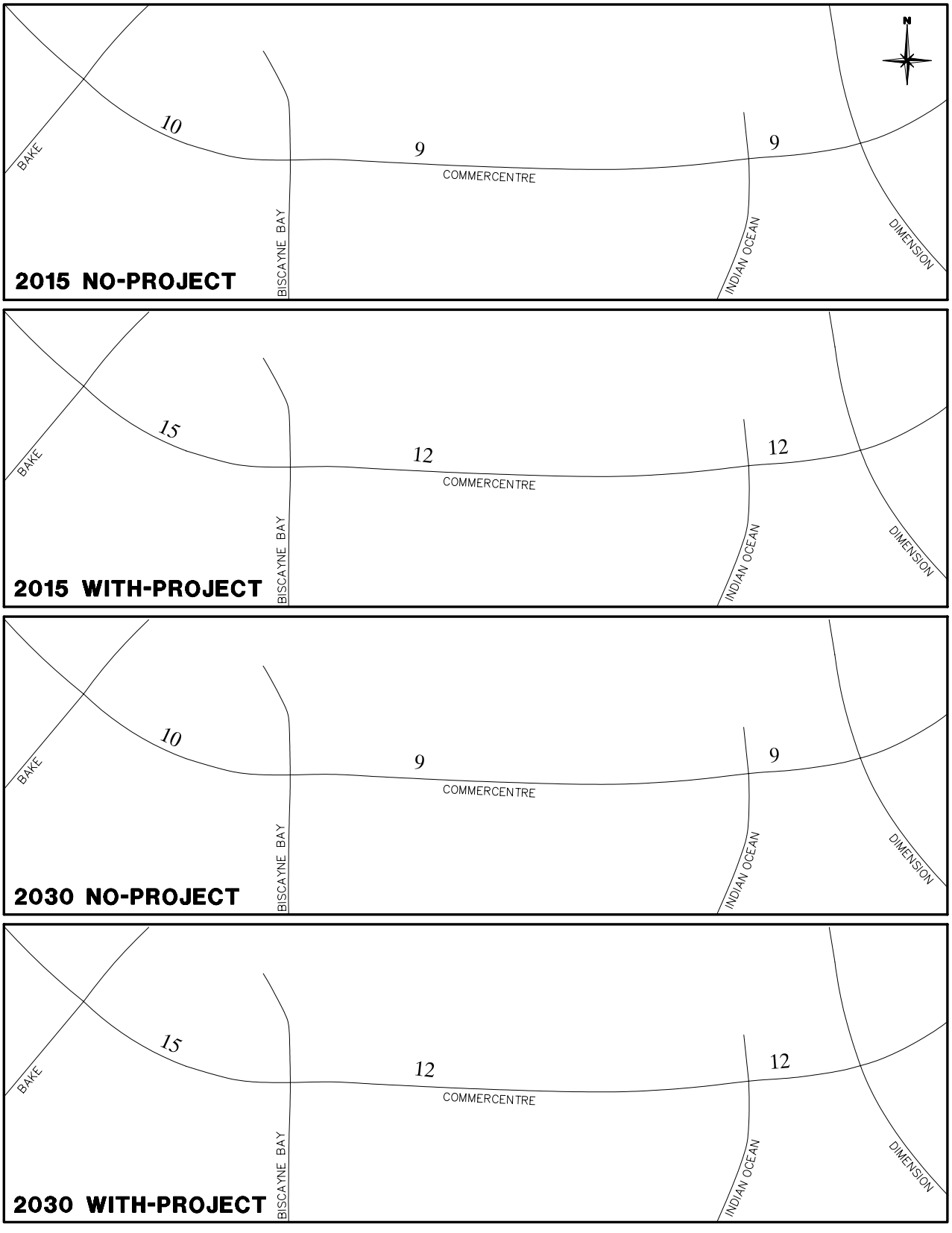


Figure 20

2015 AND 2030 ADT VOLUMES (000s)
- ALTERNATIVE 7

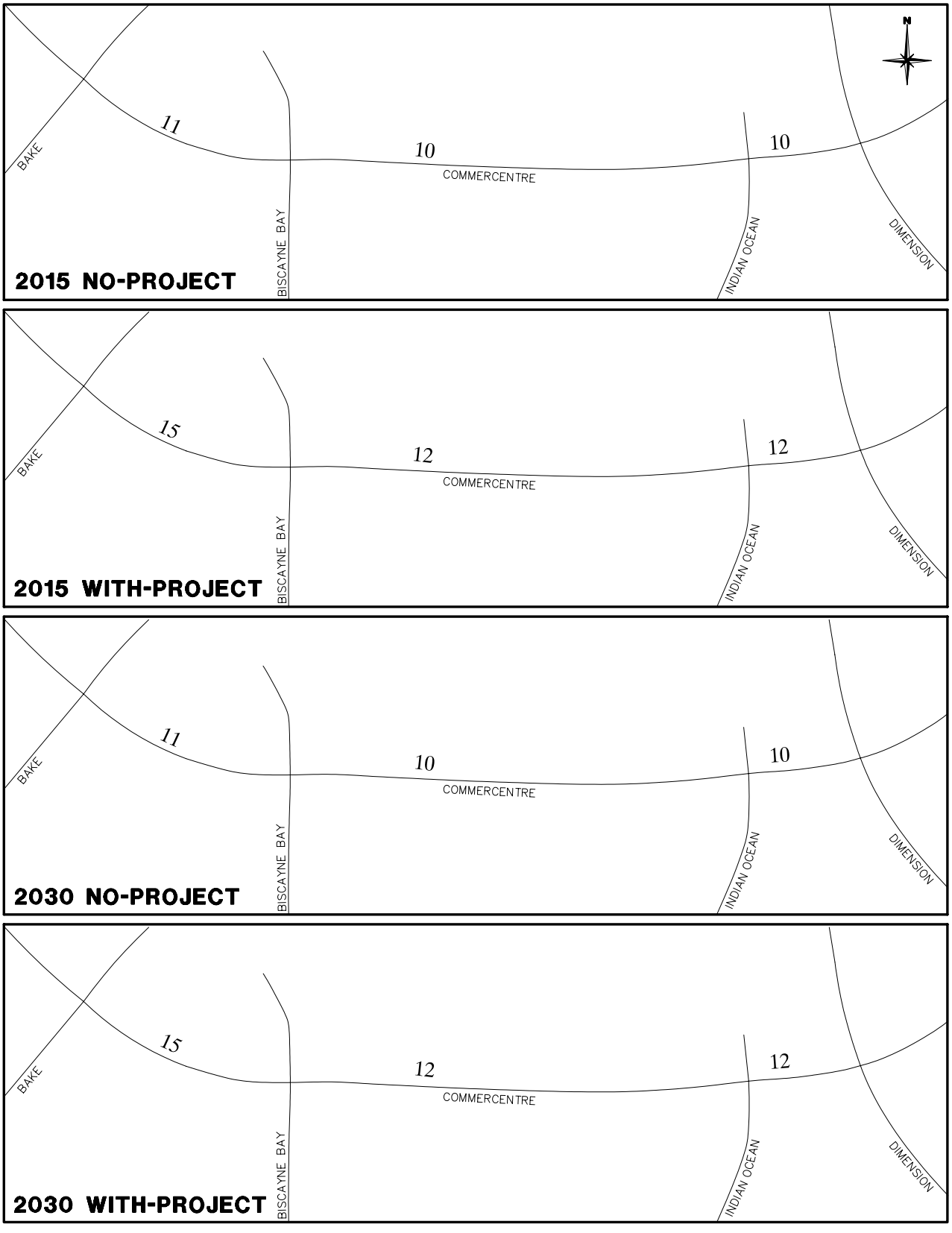
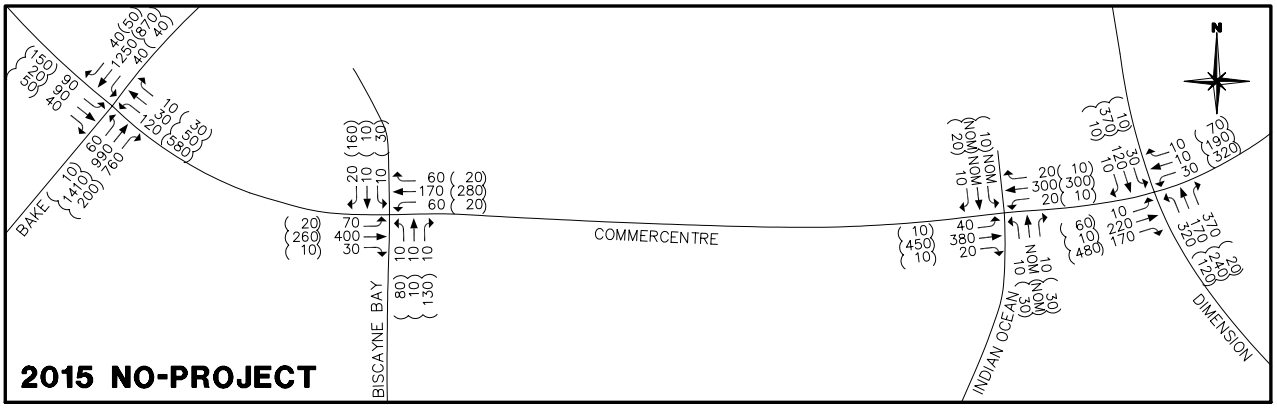
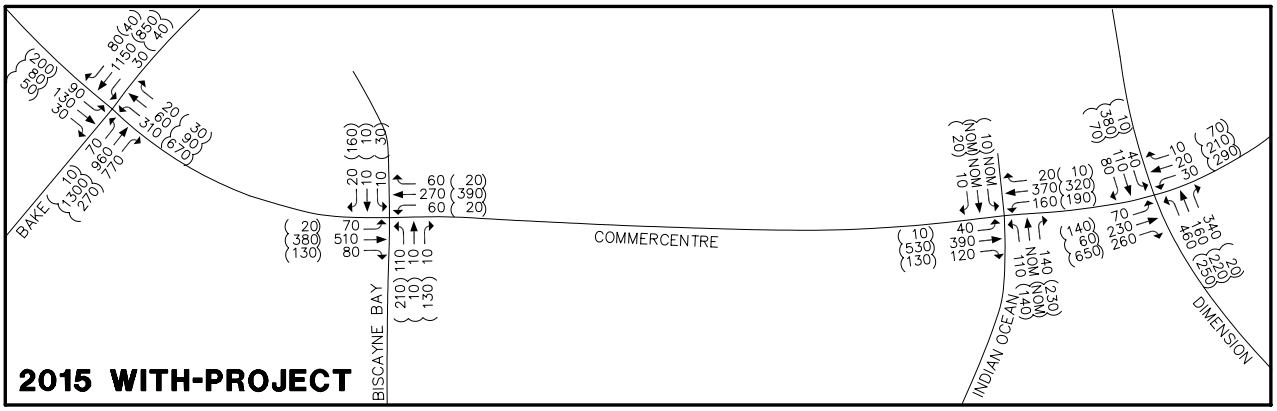
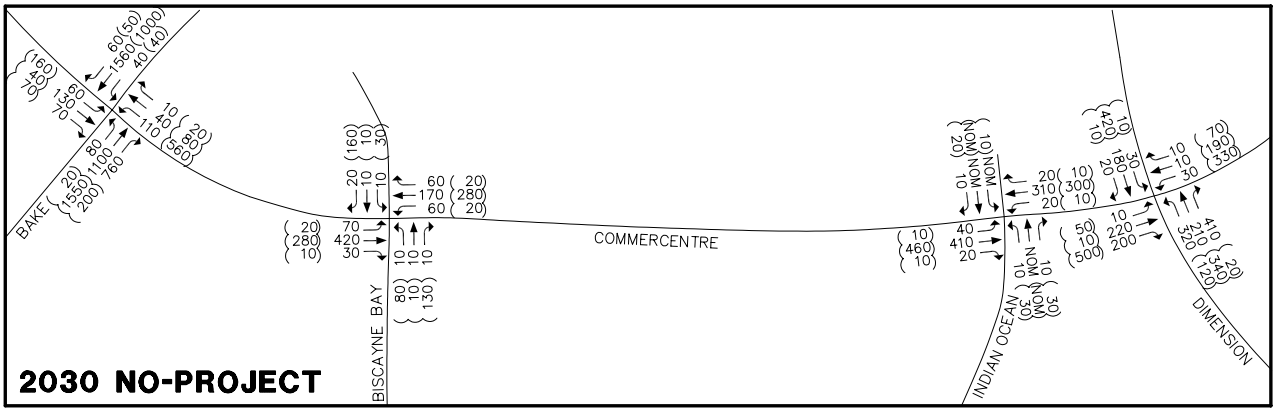


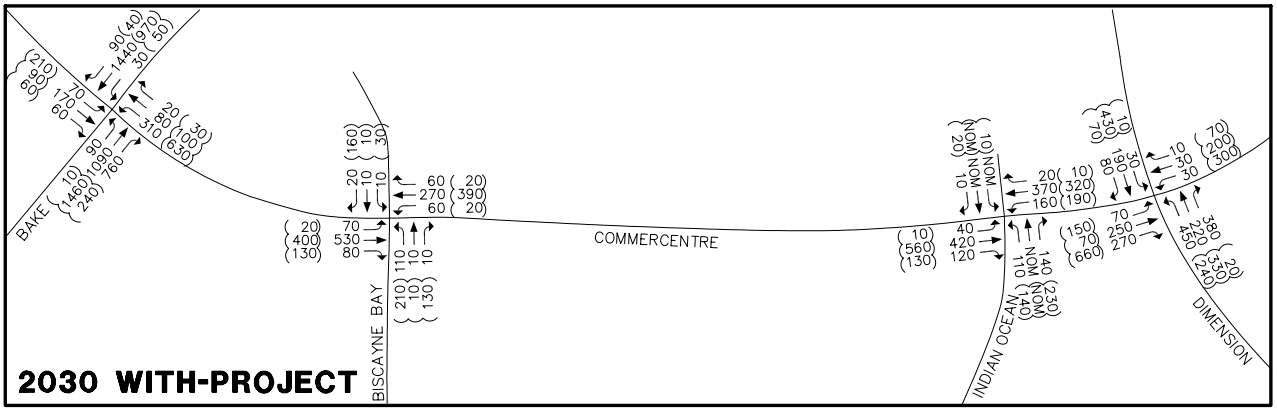
Figure 21

2015 AND 2030 ADT VOLUMES (000s)
- CURRENT GENERAL PLAN





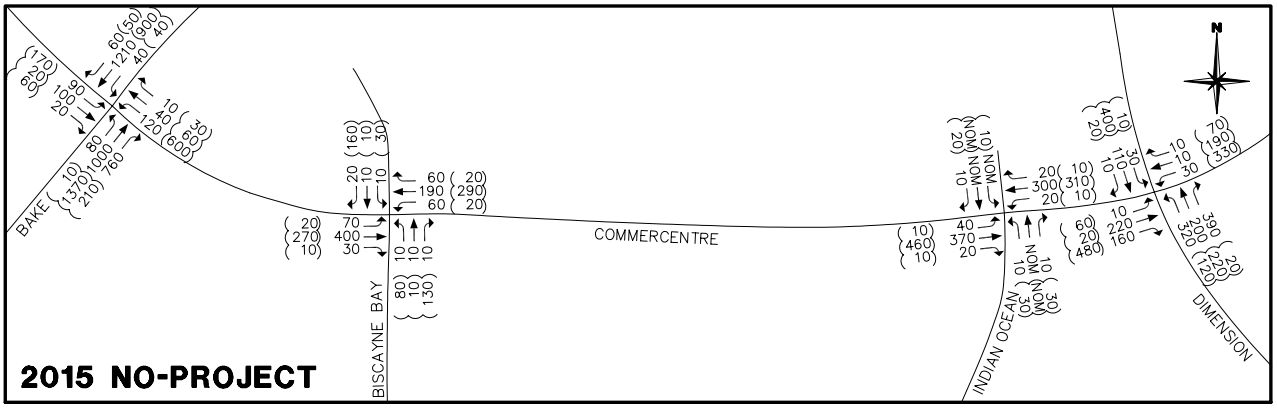


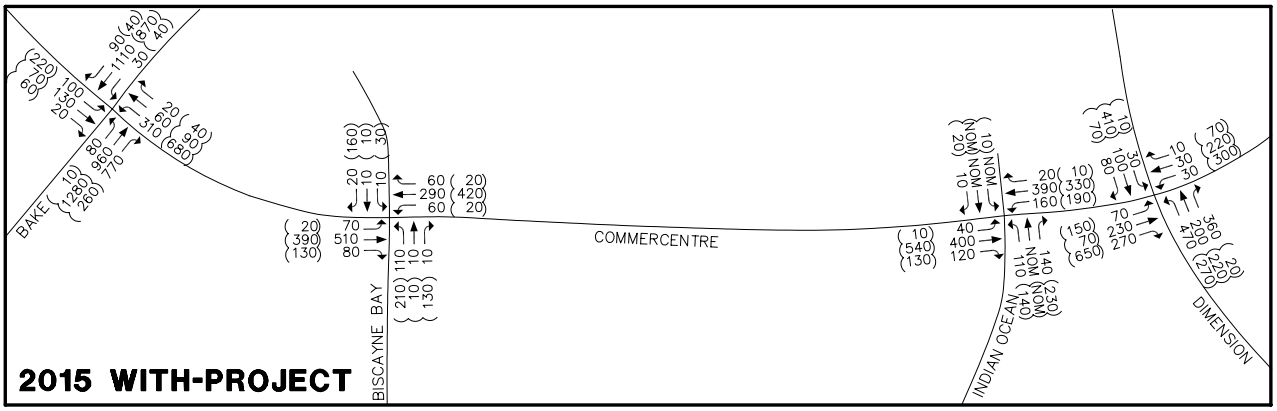


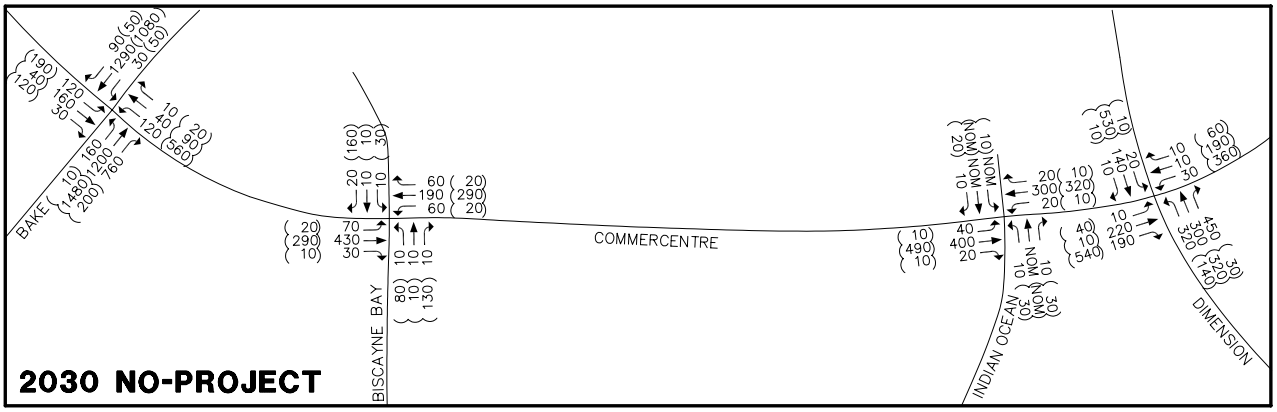
Legend	
XX (YY)	AM (PM) Peak Hour Volumes
NOM	Nominal

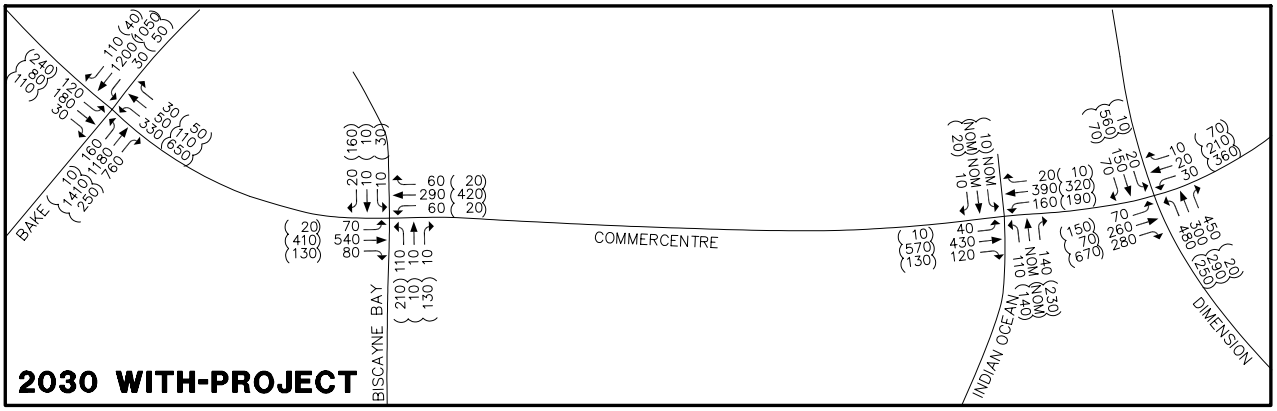
Figure 22

2015 AND 2030 PEAK HOUR VOLUMES
- ALTERNATIVE 7





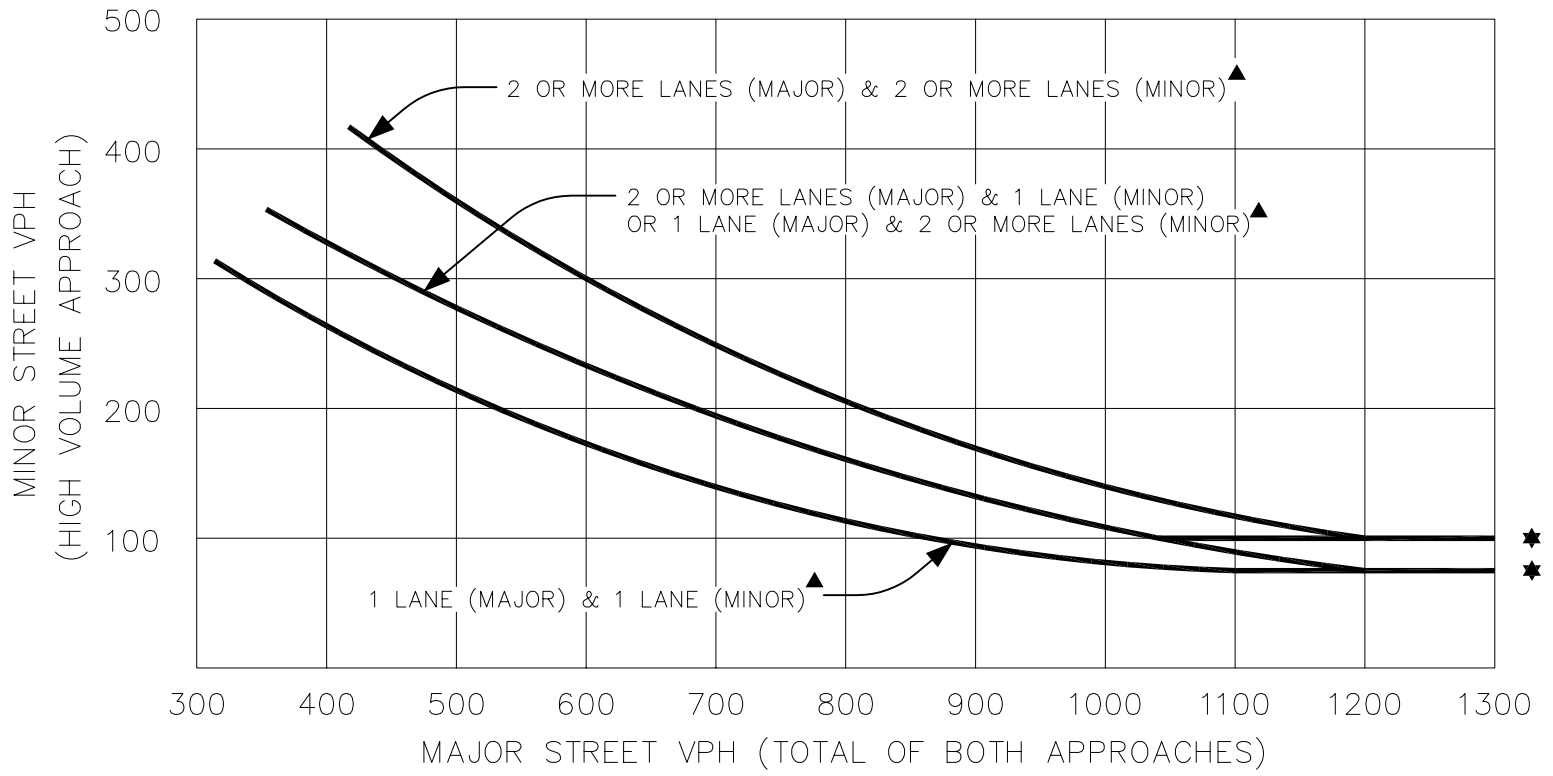




Legend	
XX (YY)	AM (PM) Peak Hour Volumes
NOM	Nominal

Figure 23

2015 AND 2030 PEAK HOUR VOLUMES
- CURRENT GENERAL PLAN



▲ NOTE: THESE CURVES ARE RECOMMENDED FOR USE IN AREAS WHERE THE POSTED SPEED LIMIT ON THE MAJOR STREET IS 40 MPH OR HIGHER.

▲

✸ 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.

Figure 24

PEAK HOUR SIGNAL WARRANTS
(HIGHER SPEEDS)

continuous east and west approach or the north and south approach during either AM and PM is determined to be the major street approach for both peak hours. The minor street peak hour signal warrant volume is the number of peak hour vehicles approaching the intersection on only the highest volume leg. The highest volume for either the AM or PM determines the minor approach for both peak hours.

The signal warrant analysis has been carried out for the intersections of Biscayne Bay Drive and Indian Ocean Drive at Commercentre Drive. The signal warrant analysis for these intersections uses the approach volumes previously presented in Figures 22 and 23. The signal warrant analysis for Alternative 7 and the Current General Plan under years 2015 and 2030 no-project and with project conditions are summarized in Tables 8 through 11. Based on the application of the warrant, traffic signals should be installed at the intersection of Biscayne Bay Drive and Commercentre Drive for the Current General Plan alternative under year 2015 no-project conditions (the warrants are not triggered under Alternative 7 no-project conditions) and at both intersections with the proposed project under years 2015 and 2030 for both Alternative 7 and the Current General Plan. Typically, signals are not installed until signal warrants are met. However, the project developer will adhere to whatever City policy is in place for signal installation requirements.

Left-Turn Storage

Left-turn pocket lengths at Biscayne Bay Drive and Indian Ocean Drive intersections along Commercentre Drive with exclusive left-turn lanes were estimated based on the highest peak hour volume between Alternative 7 and the Current General Plan under years 2015 and 2030 conditions previously presented in Figures 22 and 23. Where pocket lengths exceed the standard 150 feet for public roadways or 90 feet for private roadways, the length is based on one foot per peak hour left-turn volume (highest of AM and PM) and rounded into increments of 10. The worst-case estimated left-turn storage length requirements for the intersections analyzed are summarized in Table 12.

As can be seen from the table, the westbound left-turn pocket of 190 feet on Commercentre Drive at Indian Ocean Drive is required. This is based on vehicle storage requirements, and is thereby exclusive of a transition length (typically, 90 feet). However, the length of back-to-back left-turns is restricted due to the distance between Indian Ocean Drive and Dimension intersections on Commercentre Drive of approximately 430 feet. In order to ensure that the close signal spacing is adequate to accommodate the back-to-back left-turn vehicle storage, a special “Conditional Service” type of left-turn phasing must be

Table 8

2015 PEAK HOUR SIGNAL WARRANT SUMMARY
- ALTERNATIVE 7

Intersection (North/South Rd & East/West Rd)	Direction	AM Peak Hour	PM Peak Hour
Year 2015 No-Project			
58. Biscayne Bay Dr & Commercentre Dr			
Major Approach	Eastbound	500	290
	Westbound	290	320
	Total	790	610
Minor Approach	Southbound	40	--
	Northbound	--	220
Satisfies Warrant (Higher Speeds/Rural)?		No	No
59. Indian Ocean Dr & Commercentre Dr			
Major Approach	Eastbound	440	470
	Westbound	340	320
	Total	780	790
Minor Approach	Northbound	20	60
Satisfies Warrant (Higher Speeds/Rural)?		No	No
Year 2015 With-Project			
58. Biscayne Bay Dr & Commercentre Dr			
Major Approach	Eastbound	660	530
	Westbound	390	430
	Total	1,050	960
Minor Approach	Northbound	130	350
Satisfies Warrant (Higher Speeds/Rural)?		Yes	Yes
59. Indian Ocean Dr & Commercentre Dr			
Major Approach	Eastbound	550	670
	Westbound	550	520
	Total	1,100	1,190
Minor Approach	Northbound	250	370
Satisfies Warrant (Higher Speeds/Rural)?		Yes	Yes

Table 9

2015 PEAK HOUR SIGNAL WARRANT SUMMARY
- CURRENT GENERAL PLAN

Intersection (North/South Rd & East/West Rd)	Direction	AM Peak Hour	PM Peak Hour
Year 2015 No-Project			
58. Biscayne Bay Dr & Commercentre Dr			
Major Approach	Eastbound	500	300
	Westbound	310	330
	Total	810	630
Minor Approach	Southbound	40	--
	Northbound	--	220
Satisfies Warrant (Higher Speeds/Rural)?		No	Yes
59. Indian Ocean Dr & Commercentre Dr			
Major Approach	Eastbound	430	480
	Westbound	340	330
	Total	770	810
Minor Approach	Northbound	20	60
Satisfies Warrant (Higher Speeds/Rural)?		No	No
Year 2015 With-Project			
58. Biscayne Bay Dr & Commercentre Dr			
Major Approach	Eastbound	660	540
	Westbound	410	460
	Total	1,070	1,000
Minor Approach	Northbound	130	350
Satisfies Warrant (Higher Speeds/Rural)?		Yes	Yes
59. Indian Ocean Dr & Commercentre Dr			
Major Approach	Eastbound	560	680
	Westbound	570	530
	Total	1,130	1,210
Minor Approach	Northbound	250	370
Satisfies Warrant (Higher Speeds/Rural)?		Yes	Yes

Table 10

2030 PEAK HOUR SIGNAL WARRANT SUMMARY
- ALTERNATIVE 7

Intersection (North/South Rd & East/West Rd)	Direction	AM Peak Hour	PM Peak Hour
Year 2030 No-Project			
58. Biscayne Bay Dr & Commercentre Dr			
Major Approach	Eastbound	520	310
	Westbound	290	320
	Total	810	630
Minor Approach	Southbound	40	--
	Northbound	--	220
Satisfies Warrant (Higher Speeds/Rural)?		No	Yes
59. Indian Ocean Dr & Commercentre Dr			
Major Approach	Eastbound	470	480
	Westbound	350	320
	Total	820	800
Minor Approach	Northbound	20	60
Satisfies Warrant (Higher Speeds/Rural)?		No	No
Year 2030 With-Project			
58. Biscayne Bay Dr & Commercentre Dr			
Major Approach	Eastbound	680	550
	Westbound	390	430
	Total	1,070	980
Minor Approach	Northbound	130	350
Satisfies Warrant (Higher Speeds/Rural)?		Yes	Yes
59. Indian Ocean Dr & Commercentre Dr			
Major Approach	Eastbound	580	700
	Westbound	550	520
	Total	1,130	1,220
Minor Approach	Northbound	250	370
Satisfies Warrant (Higher Speeds/Rural)?		Yes	Yes

Table 11

2030 PEAK HOUR SIGNAL WARRANT SUMMARY
- CURRENT GENERAL PLAN

Intersection (North/South Rd & East/West Rd)	Direction	AM Peak Hour	PM Peak Hour
Year 2030 No-Project			
58. Biscayne Bay Dr & Commercentre Dr			
Major Approach	Eastbound	530	320
	Westbound	310	330
	Total	840	650
Minor Approach	Southbound	40	--
	Northbound	--	220
Satisfies Warrant (Higher Speeds/Rural)?		No	Yes
59. Indian Ocean Dr & Commercentre Dr			
Major Approach	Eastbound	460	510
	Westbound	340	340
	Total	800	850
Minor Approach	Northbound	20	60
Satisfies Warrant (Higher Speeds/Rural)?		No	No
Year 2030 With-Project			
58. Biscayne Bay Dr & Commercentre Dr			
Major Approach	Eastbound	690	560
	Westbound	410	460
	Total	1,100	1,020
Minor Approach	Northbound	130	350
Satisfies Warrant (Higher Speeds/Rural)?		Yes	Yes
59. Indian Ocean Dr & Commercentre Dr			
Major Approach	Eastbound	590	710
	Westbound	570	520
	Total	1,160	1,230
Minor Approach	Northbound	250	370
Satisfies Warrant (Higher Speeds/Rural)?		Yes	Yes

Table 12

LEFT-TURN STORAGE LENGTH REQUIREMENTS

Intersection (N/S Road & E/W Road)	Movement	Time Frame	Peak Hour	Volume	Lane(s)	Volume Per Lane	Length
58. Biscayne Bay Dr & Commercentre Dr	WBL	2015/2030	AM	60	1	60	150'
	NBL	2015/2030	PM	210	1	210	210'
59. Indian Ocean Dr & Commercentre Dr	WBL	2015/2030	PM	190	1	190	190'
	NBL	2015/2030	PM	140	1	140	140'

Abbreviations: Dr – Drive
E/W – East/West
NBL- Northbound Left-Turn
N/S – North/South
WBL – Westbound Left-Turn

applied at Indian Ocean Drive and Commercentre Drive. The special phasing entails displaying the east-west left-turn phases twice during the cycle rather than once. This is achieved by calling up the left-turn arrows both as a leading and a lagging phase for the associated through movement. As shown in Table 13, this results in a reduced queue length of left-turn vehicle storage than that required for a conventional leading left-turn phasing. There is a small loss in overall capacity of this type of left-turn phasing. However, since it avoids a spillover of vehicles queued up in the left-turn storage lane which would block the adjacent through lane, the net effect is an overall benefit and makes signalization of two closely spaced intersections feasible.

FINDINGS AND CONCLUSIONS

The results of the analysis presented here indicate that the proposed project does not adversely impact any off-site locations with the exception of Bake Parkway and Irvine Boulevard/Trabuco Road intersection in year 2030 under the Current General Plan alternative. The improvements at this location are fully funded by the LFTM Program and Irvine's NITM Program. Since the improvements are included in the LFTM Program, the project's participation in the LFTM Program fulfills its obligation towards the mitigation of the Bake Parkway and Irvine Boulevard/Trabuco Road intersection. Also, the results of the analysis presented in this report show that the access driveways and roundabout designs (which are in accordance with FHWA Roundabout Guidelines) are adequate as designed and will accommodate the proposed residential project and Civic Center with no adverse traffic conditions on the local circulation system. It should be noted that for Current General Plan conditions the signal warrants at Biscayne Bay Drive and Commercentre Drive intersection are met under no-project conditions (see summary in Table 14), and with project causes the signal warrants to be met in all cases at the intersection of Indian Ocean Drive and Commercentre Drive. The project developer will adhere to whatever City policy is in place for signal installation and timing requirements for those locations where the project causes the need for signalization.

REFERENCES

1. "City of Lake Forest Vacant Land Opportunities Phase III Traffic Study," Austin-Foust Associates, Inc., July 8, 2005.

2. "City of Lake Forest Vacant Land Opportunities Phase III Alternative 7 (Hybrid Alternative) Traffic Study," Austin-Foust Associates, Inc., November 7, 2007 (Approved by Lake Forest City Council on June 3, 2008).

Table 13

WESTBOUND LEFT-TURN STORAGE LENGTH ON
COMMERCENTRE DRIVE AT INDIAN OCEAN DRIVE

Scenario	Movement	Time Frame	Peak Hour	Volume	Lane(s)	Volume Per Lane	Queue Length
Alternative 7 With-Project	WBL	2015	AM	160	1	160	82'
			PM	190	1	190	120'
		2030	AM	160	1	160	86'
			PM	190	1	190	119'
Current General Plan With-Project	WBL	2015	AM	160	1	160	86'
			PM	190	1	190	116'
		2030	AM	160	1	160	72'
			PM	190	1	190	120'

Note: 1) Commercentre Drive is oriented east/west, and Indian Ocean Drive is oriented north/south.
2) The queue length is based on the HCM results using Synchro software assuming that the signals at the intersections of Indian Ocean Drive and Dimension Drive on Commercentre Drive are coordinated (see Appendix C for HCM worksheets).

Abbreviation: HCM – Highway Capacity Manual
WBL – Westbound Left-Turn

Table 14

SIGNAL WARRANT ANALYSIS SUMMARY

Intersection (N/S Road & E/W Road)	Scenario	Year 2015		Year 2030	
		No-Project	With-Project	No-Project	With-Project
58. Biscayne Bay Dr & Commercentre Dr	Alternative 7	No	Yes	Yes	Yes
	Current GP	Yes	Yes	Yes	Yes
59. Indian Ocean Dr & Commercentre Dr	Alternative 7	No	Yes	No	Yes
	Current GP	No	Yes	No	Yes

Abbreviations: Dr – Drive
E/W – East/West
GP – General Plan
N/S – North/South

3. “City of Lake Forest Vacant Land Opportunities Phase III Alternative 8 Traffic Study,” Austin-Foust Associates, Inc., September 21, 2009.

4. “Roundabout Guidelines, Chapter 6 (Geometric Design),” FHWA Publication FHWA-RD-00-067.

Appendix A
Intersection Capacity Utilization (ICU) Worksheets

This appendix summarizes information pertaining to the intersection analysis sections of the study.

ICU Calculation Methodology

The intersection capacity utilization (ICU) calculation procedure is based on a critical movement methodology that shows the amount of capacity utilized by each critical movement at an intersection. A capacity of 1,700 vehicles per hour per lane is assumed together with a .05 clearance interval. A "de-facto" right-turn lane is used in the ICU calculation for cases where a curb lane is wide enough to separately serve both through and right-turn traffic (typically with a width of 19 feet or more from curb to outside of through-lane with parking prohibited during peak periods). Such lanes are treated the same as striped right-turn lanes during the ICU calculations, but they are denoted on the ICU calculation worksheets using the letter "d" in place of a numerical entry for right-turn lanes.

The methodology also incorporates a check for right-turn capacity utilization. Both right-turn-on-green (RTOG) and right-turn-on-red (RTOR) capacity availability are calculated and checked against the total right-turn capacity need. If insufficient capacity is available, then an adjustment is made to the total capacity utilization value. The following example shows how this adjustment is made.

Example for Northbound Right

1. Right-Turn-On-Green (RTOG)

If NBT is critical move, then:
RTOG = V/C (NBT)
Otherwise,
RTOG = V/C (NBL) + V/C (SBT) - V/C (SBL)

2. Right-Turn-On-Red (RTOR)

If WBL is critical move, then:
RTOR = V/C (WBL)
Otherwise,
RTOR = V/C (EBL) + V/C (WBT) - V/C (EBT)

3. Right-Turn Overlap Adjustment

If the northbound right is assumed to overlap with the adjacent westbound left, adjustments to the RTOG and RTOR values are made as follows:

RTOG = RTOG + V/C (WBL)
RTOR = RTOR - V/C (WBL)

4. Total Right-Turn Capacity (RTC) Availability For NBR

RTC = RTOG + factor x RTOR
Where factor = RTOR saturation flow factor (0% for County intersections, 75% for intersections in all other jurisdictions within the study area)

Right-turn adjustment is then as follows: Additional ICU = V/C (NBR) – RTC

A zero or negative value indicates that adequate capacity is available and no adjustment is necessary. A positive value indicates that the available RTOR and RTOG capacity does not adequately accommodate the right-turn V/C, therefore the right-turn is essentially considered to be a critical movement. In such cases, the right-turn adjustment is noted on the ICU worksheet and it is included in the total capacity utilization value. When it is determined that a right-turn adjustment is required for more than one right-turn movement, the word "multi" is printed on the worksheet instead of an actual right-turn movement reference, and the right-turn adjustments are cumulatively added to the total capacity utilization value. In such cases, further operational evaluation is typically carried out to determine if under actual operational conditions, the critical right-turns would operate simultaneously, and therefore a right-turn adjustment credit should be applied.

Shared Lane V/C Methodology

For intersection approaches where shared usage of a lane is permitted by more than one turn movement (e.g., left/through, through/right, left/through/right), the individual turn volumes are evaluated to determine whether dedication of the shared lane is warranted to any one given turn movement. The following example demonstrates how this evaluation is carried out:

Example for Shared Left/Through Lane

1. Average Lane Volume (ALV)

$$ALV = \frac{\text{Left-Turn Volume + Through Volume}}{\text{Total Left + Through Approach Lanes (including shared lane)}}$$

2. ALV for Each Approach

$$\text{ALV (Left)} = \frac{\text{Left-Turn Volume}}{\text{Left Approach Lanes (including shared lane)}}$$

$$\text{ALV (Through)} = \frac{\text{Through Volume}}{\text{Through Approach Lanes (including shared lane)}}$$

3. Lane Dedication is Warranted

If ALV (Left) is greater than ALV then full dedication of the shared lane to the left-turn approach is warranted. Left-turn and through V/C ratios for this case are calculated as follows:

$$\text{V/C (Left)} = \frac{\text{Left-Turn Volume}}{\text{Left Approach Capacity (including shared lane)}}$$

$$\text{V/C (Through)} = \frac{\text{Through Volume}}{\text{Through Approach Capacity (excluding shared lane)}}$$

Similarly, if ALV (Through) is greater than ALV then full dedication to the through approach is warranted, and left-turn and through V/C ratios are calculated as follows:

$$\text{V/C (Left)} = \frac{\text{Left-Turn Volume}}{\text{Left Approach Capacity (excluding shared lane)}}$$

$$\text{V/C (Through)} = \frac{\text{Through Volume}}{\text{Through Approach Capacity (including shared lane)}}$$

4. Lane Dedication is not Warranted

If ALV (Left) and ALV (Through) are both less than ALV, the left/through lane is assumed to be truly shared and each left, left/through or through approach lane carries an evenly distributed volume of traffic equal to ALV. A combined left/through V/C ratio is calculated as follows:

$$\text{V/C (Left/Through)} = \frac{\text{Left-Turn Volume + Through Volume}}{\text{Total Left + Through Approach Capacity (including shared lane)}}$$

This V/C (Left/Through) ratio is assigned as the V/C (Through) ratio for the critical movement analysis and ICU summary listing.

If split phasing has not been designated for this approach, the relative proportion of V/C (Through) that is attributed to the left-turn volume is estimated as follows:

If approach has more than one left-turn (including shared lane), then:

V/C (Left) = V/C (Through)

If approach has only one left-turn lane (shared lane), then:

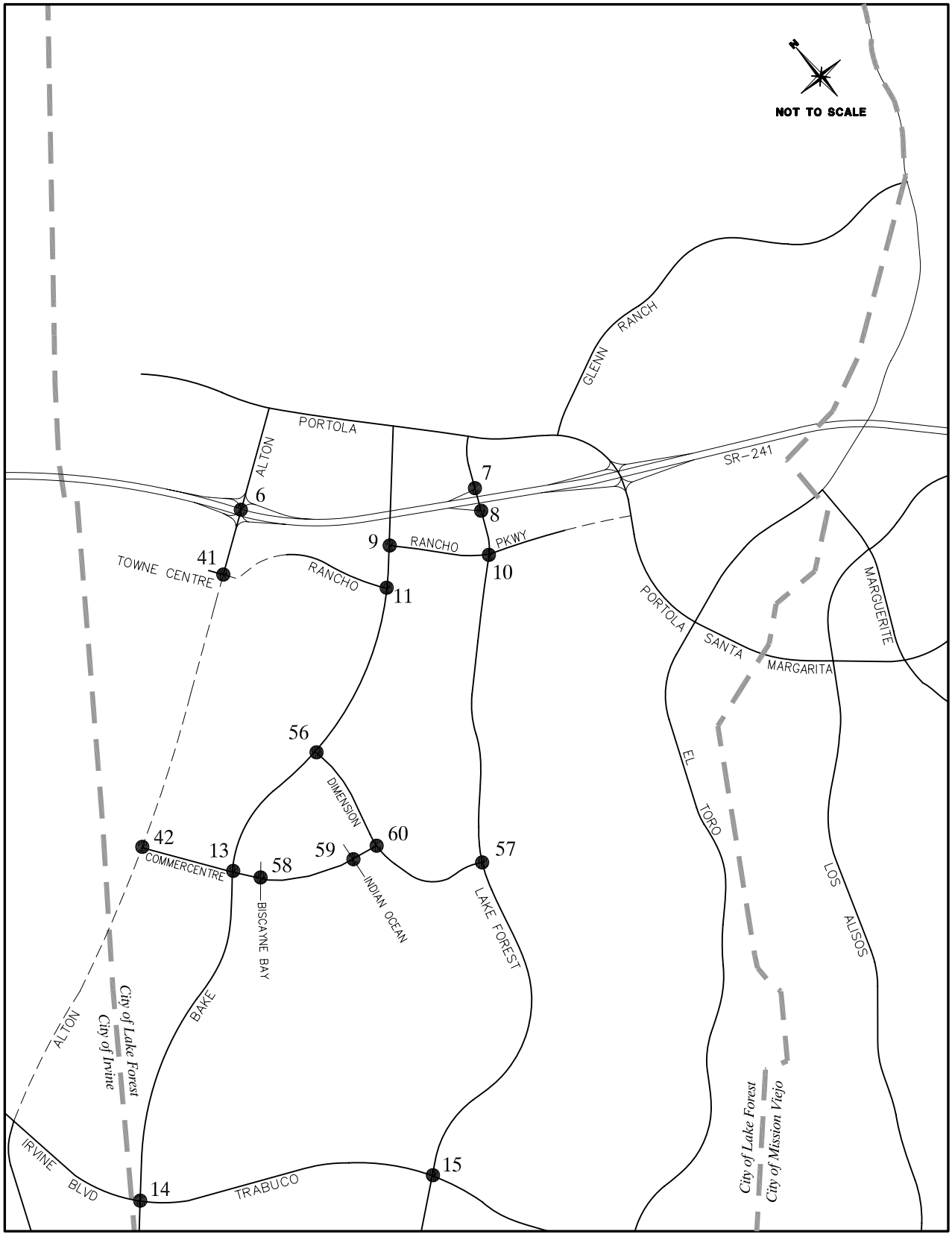
$$\text{V/C (Left)} = \frac{\text{Left-Turn Volume}}{\text{Single Approach Lane Capacity}}$$

If this left-turn movement is determined to be a critical movement, the V/C (Left) value is posted in brackets on the ICU summary printout.

These same steps are carried out for shared through/right lanes. If full dedication of a shared through/right lane to the right-turn movement is warranted, the right-turn V/C value calculated in step three is checked against the RTOR and RTOG capacity. When an approach contains more than one shared lane (e.g., left/through and through/right), steps one and two listed above are carried out for the three turn movements combined. Step four is carried out if dedication is not warranted for either of the shared lanes. If dedication of one of the shared lanes is warranted to one movement or another, step three is carried out for the two movements involved, and then steps one through four are repeated for the two movements involved in the other shared lane.

Figure A-1 illustrates the intersections that were analyzed in this study. This is followed by AM and PM peak hour ICU worksheets for existing and future traffic conditions. The ICU data set is presented according to intersection number. and contains the following scenarios in the order shown:

Existing Counts
2015 Alternative 7 (No-Project)
2015 Alternative 7 (With-Project)
2030 Current General Plan (No-Project)
2030 Current General Plan (With-Project)
2030 Current General Plan (With-Project and LFTM Improvements)



Legend

Existing Roadway
Future Roadway
City Boundary

Figure A-1

INTERSECTION LOCATION MAP

6. Alton & SR-241 Ramps

Existing Counts

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	21	.01	9	.01
NBT	2	3400	13	.00*	21	.01*
NBR	f		21		19	
SBL	1	1700	145	.09*	132	.08*
SBT	2	3400	12	.00	20	.01
SBR	f		431		239	
EBL	2	3400	195	.06*	398	.12*
EBT	0	0	0		0	
EBR	f		49		36	
WBL	2	3400	17	.01	2	.00
WBT	0	0	0		0	
WBR	f		124		131	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.20**		**.26**

2015 Alternative 7 (No-Project)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	30	.02*	160	.09
NBT	3	5100	520	.10	950	.19*
NBR	f		170		590	
SBL	1	1700	130	.08	80	.05*
SBT	3	5100	1090	.21*	710	.14
SBR	f		180		190	
EBL	2	3400	210	.06	190	.06
EBT	0	0	0		0	
EBR	f		180		50	
WBL	2	3400	570	.17*	280	.08*
WBT	0	0	0		0	
WBR	f		130		110	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.45**		**.37**

2015 Alternative 7 (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	30	.02*	170	.10*
NBT	3	5100	530	.10	950	.19
NBR	f		190		560	
SBL	1	1700	130	.08	80	.05
SBT	3	5100	1090	.21*	730	.14*
SBR	f		180		190	
EBL	2	3400	210	.06	190	.06
EBT	0	0	0		0	
EBR	f		200		70	
WBL	2	3400	550	.16*	280	.08*
WBT	0	0	0		0	
WBR	f		130		110	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.44**		**.37**

2015 Current General Plan (No-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*	190	.11*
NBT	3	5100	520	.10	930	.18
NBR	f		150		630	
SBL	1	1700	130	.08	80	.05
SBT	3	5100	1080	.21*	710	.14*
SBR	f		170		190	
EBL	2	3400	230	.07	180	.05
EBT	0	0	0		0	
EBR	f		230		50	
WBL	2	3400	620	.18*	270	.08*
WBT	0	0	0		0	
WBR	f		130		110	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.45**		**.38**

6. Alton & SR-241 Ramps

2015 Current General Plan (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*	190	.11*
NBT	3	5100	510	.10	920	.18
NBR	f		160		620	
SBL	1	1700	130	.08	80	.05
SBT	3	5100	1080	.21*	730	.14*
SBR	f		160		190	
EBL	2	3400	220	.06	200	.06
EBT	0	0	0		0	
EBR	f		230		60	
WBL	2	3400	600	.18*	270	.08*
WBT	0	0	0		0	
WBR	f		130		110	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.45**		**.38**

2030 Alternative 7 (No-Project)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	120	.07*	330	.19*
NBT	3	5100	580	.11	1100	.22
NBR	f		290		990	
SBL	1	1700	140	.08	90	.05
SBT	3	5100	1180	.23*	790	.15*
SBR	f		310		310	
EBL	2	3400	330	.10	300	.09
EBT	0	0	0		0	
EBR	f		420		160	
WBL	2	3400	990	.29*	500	.15*
WBT	0	0	0		0	
WBR	f		90		120	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.64**		**.54**

2030 Alternative 7 (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	140	.08*	340	.20*
NBT	3	5100	580	.11	1070	.21
NBR	f		290		970	
SBL	1	1700	130	.08	90	.05
SBT	3	5100	1170	.23*	810	.16*
SBR	f		310		310	
EBL	2	3400	330	.10	310	.09
EBT	0	0	0		0	
EBR	f		420		160	
WBL	2	3400	940	.28*	500	.15*
WBT	0	0	0		0	
WBR	f		80		120	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.64**		**.56**

2030 Current General Plan (No-Project)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	70	.04*	560	.33*
NBT	3	5100	540	.11	1000	.20
NBR	f		230		1320	
SBL	1	1700	140	.08	90	.05
SBT	3	5100	1140	.22*	780	.15*
SBR	f		270		290	
EBL	2	3400	330	.10	290	.09
EBT	0	0	0		0	
EBR	f		770		110	
WBL	2	3400	1150	.34*	440	.13*
WBT	0	0	0		0	
WBR	f		280		130	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.65**		**.66**

6. Alton & SR-241 Ramps

2030 Current General Plan (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	70	.04*	560	.33*
NBT	3	5100	530	.10	990	.19
NBR	f		260		1310	
SBL	1	1700	140	.08	90	.05
SBT	3	5100	1130	.22*	810	.16*
SBR	f		270		280	
EBL	2	3400	340	.10	300	.09
EBT	0	0	0		0	
EBR	f		770		120	
WBL	2	3400	1150	.34*	470	.14*
WBT	0	0	0		0	
WBR	f		270		130	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.65**		**.68**

7. Lake Forest & SR-241 NB

Existing Counts

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	81	.02*	223	.07
NBT	2	3400	805	.24	1126	.33*
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	818	.24*	776	.23
SBR	1	1700	89	.05	201	.12
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION **.31** **.38**

2015 Alternative 7 (No-Project)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	140	.04	270	.08*
NBT	2	3400	880	.26*	970	.29
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	700	.21	770	.23*
SBR	1	1700	90	.05	300	.18
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION **.31** **.36**

2015 Alternative 7 (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	140	.04	270	.08*
NBT	2	3400	890	.26*	980	.29
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	700	.21	780	.23*
SBR	1	1700	90	.05	310	.18
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION **.31** **.36**

2015 Current General Plan (No-Project)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	130	.04	250	.07*
NBT	2	3400	900	.26*	990	.29
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	700	.21	780	.23*
SBR	1	1700	90	.05	320	.19
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION **.31** **.35**

7. Lake Forest & SR-241 NB

2015 Current General Plan (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	140	.04	270	.08*
NBT	2	3400	910	.27*	990	.29
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	690	.20	790	.23*
SBR	1	1700	90	.05	310	.18
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.32**		**.36**

2030 Alternative 7 (No-Project)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	140	.04	470	.14*
NBT	2	3400	960	.28*	1040	.31
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	520	.15	860	.25*
SBR	1	1700	60	.04	380	.22
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.33**		**.44**

2030 Alternative 7 (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	150	.04	480	.14*
NBT	2	3400	950	.28*	1070	.31
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	550	.16	860	.25*
SBR	1	1700	70	.04	370	.22
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.33**		**.44**

2030 Current General Plan (No-Project)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	150	.04	600	.18*
NBT	2	3400	1030	.30*	1240	.36
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	830	.24	920	.27*
SBR	1	1700	50	.03	430	.25
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.35**		**.50**

7. Lake Forest & SR-241 NB

2030 Current General Plan (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	150	.04	590	.17*
NBT	2	3400	1030	.30*	1250	.37
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	840	.25	920	.27*
SBR	1	1700	50	.03	440	.26
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.35**		**.49**

8. Lake Forest & SR-241 SB

Existing Counts

	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	2	3400	678	.20	1268	.37*
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	822	.24*	771	.23
SBR	0	0	0		0	
EBL	2	3400	215	.06*	88	.03*
EBT	0	0	0		0	
EBR	1	1700	318	.19	124	.07
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Right Turn Adjustment			EBR	.13*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.48**		**.45**

2015 Alternative 7 (No-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	2	3400	740	.22*	1120	.33*
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	700	.21	770	.23
SBR	0	0	0		0	
EBL	2	3400	280	.08*	120	.04*
EBT	0	0	0		0	
EBR	1	1700	250	.15	220	.13
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Right Turn Adjustment			EBR	.06*	EBR	.01*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.41**		**.43**

2015 Alternative 7 (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	2	3400	750	.22*	1130	.33*
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	700	.21	780	.23
SBR	0	0	0		0	
EBL	2	3400	280	.08*	120	.04*
EBT	0	0	0		0	
EBR	1	1700	260	.15	220	.13
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Right Turn Adjustment			EBR	.06*	EBR	.01*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.41**		**.43**

2015 Current General Plan (No-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	2	3400	730	.21	1120	.33*
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	700	.21*	780	.23
SBR	0	0	0		0	
EBL	2	3400	300	.09*	120	.04*
EBT	0	0	0		0	
EBR	1	1700	250	.15	200	.12
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Right Turn Adjustment			EBR	.06*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.41**		**.42**

8. Lake Forest & SR-241 SB

2015 Current General Plan (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	2	3400	740	.22*	1150	.34*
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	690	.20	790	.23
SBR	0	0	0		0	
EBL	2	3400	300	.09*	120	.04*
EBT	0	0	0		0	
EBR	1	1700	260	.15	210	.12
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Right Turn Adjustment			EBR	.04*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.40**		**.43**

2030 Alternative 7 (No-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	2	3400	810	.24*	1350	.40*
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	520	.15	860	.25
SBR	0	0	0		0	
EBL	2	3400	290	.09*	160	.05*
EBT	0	0	0		0	
EBR	1	1700	500	.29	240	.14
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Right Turn Adjustment			EBR	.13*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.51**		**.50**

2030 Alternative 7 (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	2	3400	820	.24*	1370	.40*
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	550	.16	860	.25
SBR	0	0	0		0	
EBL	2	3400	290	.09*	170	.05*
EBT	0	0	0		0	
EBR	1	1700	510	.30	260	.15
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Right Turn Adjustment			EBR	.15*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.53**		**.50**

2030 Current General Plan (No-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	2	3400	850	.25*	1700	.50*
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	830	.24	920	.27
SBR	0	0	0		0	
EBL	2	3400	330	.10*	130	.04*
EBT	0	0	0		0	
EBR	1	1700	670	.39	280	.16
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Right Turn Adjustment			EBR	.28*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.68**		**.59**

8. Lake Forest & SR-241 SB

2030 Current General Plan (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	2	3400	840	.25	1700	.50*
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	840	.25*	920	.27
SBR	0	0	0		0	
EBL	2	3400	340	.10*	130	.04*
EBT	0	0	0		0	
EBR	1	1700	670	.39	290	.17
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Right Turn Adjustment			EBR	.29*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.69**		**.59**

9. Bake & Rancho N

Existing Counts

	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	2	3400	1635	.48*	1067	.31
NBR	d	1700	219	.13	53	.03
SBL	1	1700	265	.16*	49	.03
SBT	2	3400	745	.22	1886	.55*
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	2	3400	35	.01*	199	.06*
WBT	0	0	0		0	
WBR	2	3400	26	.01	158	.05
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.70**		**.66**

2015 Alternative 7 (No-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	2	3400	660	.19	1670	.49*
NBR	d	1700	290	.17	480	.28
SBL	1	1700	60	.04	150	.09*
SBT	2	3400	1470	.43*	800	.24
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	2	3400	600	.18*	360	.11*
WBT	0	0	0		0	
WBR	2	3400	30	.01	180	.05
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.66**		**.74**

2015 Alternative 7 (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	2	3400	670	.20	1670	.49*
NBR	d	1700	310	.18	480	.28
SBL	1	1700	60	.04	150	.09*
SBT	2	3400	1460	.43*	800	.24
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	2	3400	580	.17*	370	.11*
WBT	0	0	0		0	
WBR	2	3400	30	.01	180	.05
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.65**		**.74**

2015 Current General Plan (No-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	2	3400	620	.18	1660	.49*
NBR	d	1700	270	.16	500	.29
SBL	1	1700	60	.04	150	.09*
SBT	2	3400	1490	.44*	770	.23
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	2	3400	610	.18*	340	.10*
WBT	0	0	0		0	
WBR	2	3400	30	.01	190	.06
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.67**		**.73**

9. Bake & Rancho N

2015 Current General Plan (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	2	3400	630	.19	1650	.49*
NBR	d	1700	280	.16	500	.29
SBL	1	1700	60	.04	150	.09*
SBT	2	3400	1480	.44*	780	.23
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	2	3400	610	.18*	350	.10*
WBT	0	0	0		0	
WBR	2	3400	30	.01	180	.05
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.67**		**.73**

2030 Alternative 7 (No-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	2	3400	800	.24	1820	.54*
NBR	d	1700	520	.31	700	.41
SBL	1	1700	100	.06	180	.11*
SBT	2	3400	1690	.50*	920	.27
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	2	3400	560	.16*	620	.18*
WBT	0	0	0		0	
WBR	2	3400	40	.01	250	.07
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.71**		**.88**

2030 Alternative 7 (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	2	3400	830	.24	1820	.54*
NBR	d	1700	540	.32	710	.42
SBL	1	1700	100	.06	170	.10*
SBT	2	3400	1640	.48*	920	.27
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	2	3400	590	.17*	620	.18*
WBT	0	0	0		0	
WBR	2	3400	40	.01	250	.07
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.70**		**.87**

2030 Current General Plan (No-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	2	3400	690	.20	1870	.55*
NBR	d	1700	590	.35	880	.52
SBL	1	1700	100	.06	170	.10*
SBT	2	3400	1830	.54*	810	.24
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	2	3400	770	.23*	770	.23*
WBT	0	0	0		0	
WBR	2	3400	40	.01	240	.07
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.82**		**.93**

9. Bake & Rancho N

2030 Current General Plan (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	2	3400	700	.21	1870	.55*
NBR	d	1700	600	.35	900	.53
SBL	1	1700	100	.06	160	.09*
SBT	2	3400	1800	.53*	810	.24
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	2	3400	760	.22*	800	.24*
WBT	0	0	0		0	
WBR	2	3400	30	.01	230	.07
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.80**		**.93**

10. Lake Forest & Rancho

Existing Counts

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	102	.06*	177	.10
NBT	2	3400	547	.16	870	.26*
NBR	d	1700	90	.05	11	.01
SBL	1	1700	159	.09	87	.05*
SBT	2	3400	852	.25*	691	.20
SBR	d	1700	92	.05	79	.05
EBL	1	1700	40	.02	129	.08*
EBT	1	1700	62	.04*	19	.01
EBR	1	1700	47	.03	159	.09
WBL	1	1700	6	.00	62	.04
WBT	2	3400	10	.00	88	.03*
WBR	1	1700	4	.00	125	.07
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.40**		**.47**

2015 Alternative 7 (No-Project)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	110	.06	250	.15*
NBT	2	3400	700	.21*	1060	.31
NBR	d	1700	260	.15	450	.26
SBL	1	1700	150	.09*	90	.05
SBT	2	3400	810	.24	860	.25*
SBR	d	1700	50	.03	60	.04
EBL	1	1700	10	.01*	30	.02
EBT	2	3400	170	.05	430	.13*
EBR	1	1700	60	.04	100	.06
WBL	1	1700	230	.14	270	.16*
WBT	2	3400	650	.19*	300	.09
WBR	1	1700	50	.03	160	.09
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.55**		**.74**

2015 Alternative 7 (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	100	.06	240	.14*
NBT	2	3400	710	.21*	1070	.31
NBR	d	1700	280	.16	430	.25
SBL	1	1700	150	.09*	100	.06
SBT	2	3400	810	.24	870	.26*
SBR	d	1700	60	.04	50	.03
EBL	1	1700	20	.01*	40	.02
EBT	2	3400	170	.05	440	.13*
EBR	1	1700	60	.04	90	.05
WBL	1	1700	230	.14	270	.16*
WBT	2	3400	630	.19*	320	.09
WBR	1	1700	50	.03	150	.09
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.55**		**.74**

2015 Current General Plan (No-Project)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	110	.06*	250	.15*
NBT	2	3400	690	.20	1060	.31
NBR	d	1700	260	.15	450	.26
SBL	1	1700	140	.08	90	.05
SBT	2	3400	820	.24*	860	.25*
SBR	d	1700	60	.04	60	.04
EBL	1	1700	10	.01*	30	.02
EBT	2	3400	160	.05	450	.13*
EBR	1	1700	60	.04	100	.06
WBL	1	1700	230	.14	260	.15*
WBT	2	3400	670	.20*	290	.09
WBR	1	1700	50	.03	150	.09
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.56**		**.73**

10. Lake Forest & Rancho

2015 Current General Plan (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	100	.06*	240	.14*
NBT	2	3400	700	.21	1080	.32
NBR	d	1700	270	.16	450	.26
SBL	1	1700	140	.08	90	.05
SBT	2	3400	820	.24*	870	.26*
SBR	d	1700	60	.04	70	.04
EBL	1	1700	10	.01*	40	.02
EBT	2	3400	160	.05	460	.14*
EBR	1	1700	60	.04	100	.06
WBL	1	1700	240	.14	270	.16*
WBT	2	3400	670	.20*	300	.09
WBR	1	1700	50	.03	150	.09
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.56**		**.75**

2030 Alternative 7 (No-Project)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	200	.12*	320	.19*
NBT	2	3400	780	.23	1210	.36
NBR	d	1700	270	.16	590	.35
SBL	1	1700	110	.06	70	.04
SBT	2	3400	770	.23*	960	.28*
SBR	d	1700	200	.12	130	.08
EBL	1	1700	30	.02	140	.08
EBT	1	1700	280	.16*	740	.44*
EBR	1	1700	90	.05	180	.11
WBL	1	1700	580	.34*	370	.22*
WBT	2	3400	800	.24	480	.14
WBR	1	1700	30	.02	130	.08
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.90**		**1.18**

2030 Alternative 7 (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	190	.11*	310	.18*
NBT	2	3400	780	.23	1220	.36
NBR	d	1700	310	.18	600	.35
SBL	1	1700	120	.07	70	.04
SBT	2	3400	790	.23*	970	.29*
SBR	d	1700	220	.13	130	.08
EBL	1	1700	40	.02	150	.09
EBT	1	1700	270	.16*	740	.44*
EBR	1	1700	80	.05	170	.10
WBL	1	1700	580	.34*	360	.21*
WBT	2	3400	820	.24	490	.14
WBR	1	1700	30	.02	130	.08
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.89**		**1.17**

2030 Current General Plan (No-Project)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	220	.13	310	.18
NBT	2	3400	710	.21*	1210	.36*
NBR	d	1700	470	.28	630	.37
SBL	1	1700	380	.22*	270	.16*
SBT	2	3400	890	.26	840	.25
SBR	d	1700	300	.18	160	.09
EBL	1	1700	40	.02	230	.14
EBT	1	1700	390	.23*	810	.48*
EBR	1	1700	70	.04	190	.11
WBL	1	1700	470	.28*	550	.32*
WBT	2	3400	900	.26	660	.19
WBR	1	1700	130	.08	390	.23
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.99**		**1.37**

10. Lake Forest & Rancho

2030 Current General Plan (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	210	.12	300	.18
NBT	2	3400	700	.21*	1220	.36*
NBR	d	1700	500	.29	670	.39
SBL	1	1700	360	.21*	270	.16*
SBT	2	3400	890	.26	850	.25
SBR	d	1700	320	.19	150	.09
EBL	1	1700	40	.02	220	.13
EBT	1	1700	400	.24*	800	.47*
EBR	1	1700	70	.04	190	.11
WBL	1	1700	480	.28*	570	.34*
WBT	2	3400	880	.26	670	.20
WBR	1	1700	130	.08	390	.23
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.99**		**1.38**

11. Bake & Rancho S

Existing Counts

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	79	.05	170	.10*
NBT	2	3400	1696	.50*	976	.29
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	699	.21	1838	.54*
SBR	1	1700	94	.06	251	.15
EBL	2	3400	167	.05*	159	.05*
EBT	0	0	0		0	
EBR	1	1700	50	.03	177	.10
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.60**		**.74**

2015 Alternative 7 (No-Project)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	130	.08*	90	.05
NBT	2	3400	780	.23	1830	.54*
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	1520	.45*	940	.28
SBR	1	1700	480	.28	310	.18
EBL	2	3400	210	.06*	340	.10*
EBT	0	0	0		0	
EBR	1	1700	70	.04	160	.09
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.64**		**.69**

2015 Alternative 7 (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	130	.08*	90	.05
NBT	2	3400	800	.24	1820	.54*
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	1500	.44*	950	.28
SBR	1	1700	460	.27	310	.18
EBL	2	3400	220	.06*	350	.10*
EBT	0	0	0		0	
EBR	1	1700	60	.04	150	.09
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.63**		**.69**

2015 Current General Plan (No-Project)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	110	.06*	50	.03
NBT	2	3400	770	.23	1900	.56*
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	1630	.48*	990	.29
SBR	1	1700	400	.24	220	.13
EBL	2	3400	160	.05*	280	.08*
EBT	0	0	0		0	
EBR	1	1700	30	.02	120	.07
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.64**		**.69**

11. Bake & Rancho S

2015 Current General Plan (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	120	.07*	50	.03
NBT	2	3400	800	.24	1900	.56*
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	1610	.47*	1000	.29
SBR	1	1700	400	.24	210	.12
EBL	2	3400	150	.04*	280	.08*
EBT	0	0	0		0	
EBR	1	1700	30	.02	120	.07
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.63**		**.69**

2030 Alternative 7 (No-Project)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	170	.10*	160	.09
NBT	2	3400	1040	.31	2070	.61*
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	1740	.51*	1190	.35
SBR	1	1700	440	.26	450	.26
EBL	2	3400	320	.09*	500	.15*
EBT	0	0	0		0	
EBR	1	1700	130	.08	210	.12
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.75**		**.81**

2030 Alternative 7 (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	180	.11*	160	.09
NBT	2	3400	1090	.32	2060	.61*
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	1720	.51*	1200	.35
SBR	1	1700	440	.26	450	.26
EBL	2	3400	320	.09*	500	.15*
EBT	0	0	0		0	
EBR	1	1700	140	.08	210	.12
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.76**		**.81**

2030 Current General Plan (No-Project)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	170	.10*	90	.05
NBT	2	3400	1050	.31	2310	.68*
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	2040	.60*	1270	.37
SBR	1	1700	490	.29	410	.24
EBL	2	3400	270	.08*	470	.14*
EBT	0	0	0		0	
EBR	1	1700	50	.03	190	.11
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.83**		**.87**

11. Bake & Rancho S

2030 Current General Plan (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	170	.10*	90	.05
NBT	2	3400	1070	.31	2310	.68*
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	1980	.58*	1310	.39
SBR	1	1700	500	.29	410	.24
EBL	2	3400	270	.08*	500	.15*
EBT	0	0	0		0	
EBR	1	1700	50	.03	190	.11
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.81**		**.88**

13. Bake & Commercentre

Existing Counts

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	75	.04*	5	.00
NBT	2	3400	1074	.32	1717	.51*
NBR	d	1700	753	.44	194	.11
SBL	1	1700	33	.02	8	.00
SBT	2	3400	1429	.42*	1244	.37
SBR	d	1700	29	.02	9	.01
EBL	1	1700	14	.01*	60	.04
EBT	2	3400	5	.00	25	.01*
EBR	0	0	14	.01	127	.07
WBL	2	3400	108	.03	565	.17*
WBT	1	1700	27	.02*	7	.03
WBR	0	0	3		37	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.54**		**.74**

2015 Alternative 7 (No-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*	10	.01
NBT	2	3400	990	.29	1410	.41*
NBR	d	1700	760	.45	200	.12
SBL	1	1700	40	.02	40	.02*
SBT	2	3400	1250	.37*	870	.26
SBR	d	1700	40	.02	50	.03
EBL	1	1700	90	.05	150	.09
EBT	2	3400	90	.04*	20	.01*
EBR	0	0	40		50	.03
WBL	2	3400	120	.04*	580	.17*
WBT	1	1700	30	.02	50	.05
WBR	0	0	10		30	
Right Turn Adjustment		NBR	.03*			
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.57**		**.66**

2015 Alternative 7 (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	70	.04*	10	.01
NBT	2	3400	960	.28	1300	.38*
NBR	d	1700	770	.45	270	.16
SBL	1	1700	30	.02	60	.04*
SBT	2	3400	1150	.34*	850	.25
SBR	d	1700	80	.05	40	.02
EBL	1	1700	90	.05	200	.12
EBT	2	3400	130	.05*	80	.04*
EBR	0	0	30		50	
WBL	2	3400	310	.09*	670	.20*
WBT	1	1700	60	.05	90	.07
WBR	0	0	20		30	
Right Turn Adjustment		NBR	.02*			
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.59**		**.71**

2015 Current General Plan (No-Project)

	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*	10	.01
NBT	2	3400	1000	.29	1370	.40*
NBR	d	1700	760	.45	210	.12
SBL	1	1700	40	.02	40	.02*
SBT	2	3400	1210	.36*	900	.26
SBR	d	1700	60	.04	50	.03
EBL	1	1700	90	.05*	170	.10
EBT	2	3400	100	.04	20	.01*
EBR	0	0	20		60	.04
WBL	2	3400	120	.04	600	.18*
WBT	1	1700	40	.03*	60	.05
WBR	0	0	10		30	
Right Turn Adjustment		NBR	.03*			
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.57**		**.66**

13. Bake & Commercentre

2015 Current General Plan (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	80	.05*	10	.01
NBT	2	3400	960	.28	1280	.38*
NBR	d	1700	770	.45	260	.15
SBL	1	1700	30	.02	60	.04*
SBT	2	3400	1110	.33*	870	.26
SBR	d	1700	90	.05	40	.02
EBL	1	1700	100	.06	220	.13
EBT	2	3400	130	.04*	70	.04*
EBR	0	0	20		60	
WBL	2	3400	310	.09*	680	.20*
WBT	1	1700	60	.05	90	.08
WBR	0	0	20		40	
Right Turn Adjustment			NBR	.02*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.58**		**.71**

2030 Alternative 7 (No-Project)

	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*	20	.01
NBT	2	3400	1100	.32	1550	.46*
NBR	d	1700	760	.45	200	.12
SBL	1	1700	40	.02	40	.02*
SBT	2	3400	1560	.46*	1000	.29
SBR	d	1700	60	.04	50	.03
EBL	1	1700	60	.04	160	.09
EBT	2	3400	130	.06*	40	.02*
EBR	0	0	70		70	.04
WBL	2	3400	110	.03*	560	.16*
WBT	1	1700	40	.03	80	.06
WBR	0	0	10		20	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.65**		**.71**

2030 Alternative 7 (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	90	.05*	10	.01
NBT	2	3400	1090	.32	1460	.43*
NBR	d	1700	760	.45	240	.14
SBL	1	1700	30	.02	50	.03*
SBT	2	3400	1440	.42*	970	.29
SBR	d	1700	90	.05	40	.02
EBL	1	1700	70	.04	210	.12
EBT	2	3400	170	.07*	90	.04*
EBR	0	0	60		60	
WBL	2	3400	310	.09*	630	.19*
WBT	1	1700	80	.06	100	.08
WBR	0	0	20		30	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.68**		**.74**

2030 Current General Plan (No-Project)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	160	.09*	10	.01
NBT	2	3400	1200	.35	1480	.44*
NBR	d	1700	760	.45	200	.12
SBL	1	1700	30	.02	50	.03*
SBT	2	3400	1290	.38*	1080	.32
SBR	d	1700	90	.05	50	.03
EBL	1	1700	120	.07*	190	.11
EBT	2	3400	160	.06	40	.02*
EBR	0	0	30		120	.07
WBL	2	3400	120	.04	560	.16*
WBT	1	1700	40	.03*	90	.06
WBR	0	0	10		20	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.62**		**.70**

13. Bake & Commercentre

2030 Current General Plan (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	160	.09*	10	.01
NBT	2	3400	1180	.35	1410	.41*
NBR	d	1700	760	.45	250	.15
SBL	1	1700	30	.02	50	.03*
SBT	2	3400	1200	.35*	1050	.31
SBR	d	1700	110	.06	40	.02
EBL	1	1700	120	.07	240	.14
EBT	2	3400	180	.06*	80	.05*
EBR	0	0	30		110	.06
WBL	2	3400	330	.10*	650	.19*
WBT	1	1700	50	.05	110	.09
WBR	0	0	30		50	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.65**		**.73**

14. Bake & Irvine/Trabuco

Existing Counts

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	221	.13	88	.05
NBT	3	5100	1968	.41*	1215	.36*
NBR	0	0	119		642	.38
SBL	2	3400	46	.01*	273	.08*
SBT	3	5100	1017	.20	1357	.27
SBR	1	1700	404	.24	779	.46
EBL	2	3400	512	.15*	602	.18
EBT	3	5100	144	.03	855	.17*
EBR	1	1700	77	.05	236	.14
WBL	2	3400	631	.19	332	.10*
WBT	3	5100	799	.16*	335	.07
WBR	1	1700	106	.06	95	.06
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.78**		**.76**

2015 Alternative 7 (No-Project)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	600	.18	490	.14*
NBT	2	3400	1420	.42*	1210	.36
NBR	1	1700	230	.14	620	.36
SBL	2	3400	40	.01*	170	.05
SBT	3	5100	1060	.21	1450	.28*
SBR	1	1700	180	.11	280	.16
EBL	2	3400	370	.11	290	.09
EBT	2.5	6800	330	{.07}*	1050	{.21}*
EBR	1.5		440		480	{.18}
WBL	2	3400	1110	.33*	290	.09*
WBT	4	6800	1000	.17	450	.07
WBR	0	0	170		40	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.88**		**.77**

2015 Alternative 7 (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	630	.19	480	.14
NBT	2	3400	1430	.42*	1310	.39*
NBR	1	1700	220	.13	620	.36
SBL	2	3400	40	.01*	180	.05*
SBT	3	5100	1190	.23	1500	.29
SBR	1	1700	150	.09	270	.16
EBL	2	3400	390	.11	250	.07
EBT	2.5	6800	330	{.08}*	1040	{.20}*
EBR	1.5		440		480	{.17}
WBL	2	3400	1100	.32*	280	.08*
WBT	4	6800	1030	.18	460	.07
WBR	0	0	170		40	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.88**		**.77**

2015 Current General Plan (No-Project)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	620	.18	490	.14*
NBT	2	3400	1450	.43*	1170	.34
NBR	1	1700	210	.12	680	.40
SBL	2	3400	40	.01*	180	.05
SBT	3	5100	980	.19	1500	.29*
SBR	1	1700	200	.12	270	.16
EBL	2	3400	400	.12	300	.09
EBT	2.5	6800	320	{.06}*	1030	{.20}*
EBR	1.5		430		510	{.19}
WBL	2	3400	1130	.33*	280	.08*
WBT	4	6800	990	.17	450	.07
WBR	0	0	190		30	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.88**		**.76**

14. Bake & Irvine/Trabuco

2015 Current General Plan (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	610	.18	480	.14*
NBT	2	3400	1500	.44*	1260	.37
NBR	1	1700	210	.12	630	.37
SBL	2	3400	50	.01*	180	.05
SBT	3	5100	1120	.22	1530	.30*
SBR	1	1700	160	.09	260	.15
EBL	2	3400	370	.11	300	.09
EBT	2.5	6800	320	{.07}*	1030	{.20}*
EBR	1.5		440		500	{.19}
WBL	2	3400	1100	.32*	280	.08*
WBT	4	6800	1000	.18	460	.07
WBR	0	0	190		40	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.89**		**.77**

2030 Alternative 7 (No-Project)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	660	.39*	580	.34*
NBT	2	3400	1280	.38	1300	.38
NBR	1	1700	220	.13	740	.44
SBL	2	3400	30	.01	180	.05
SBT	3	5100	1320	.26*	1450	.28*
SBR	1	1700	230	.14	340	.20
EBL	2	3400	520	.15*	320	.09
EBT	3	5100	400	.08	1280	.25*
EBR	1	1700	590	.35	580	.34
WBL	2	3400	970	.29	320	.09*
WBT	3	5100	1510	.30*	600	.12
WBR	1	1700	180	.11	40	.02
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**1.15**		**1.01**

2030 Alternative 7 (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	650	.38*	580	.34*
NBT	2	3400	1330	.39	1380	.41
NBR	1	1700	210	.12	720	.42
SBL	2	3400	40	.01	180	.05
SBT	3	5100	1400	.27*	1480	.29*
SBR	1	1700	210	.12	320	.19
EBL	2	3400	490	.14*	300	.09
EBT	3	5100	410	.08	1300	.25*
EBR	1	1700	580	.34	570	.34
WBL	2	3400	940	.28	310	.09*
WBT	3	5100	1540	.30*	620	.12
WBR	1	1700	180	.11	40	.02
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**1.14**		**1.02**

2030 Current General Plan (No-Project)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	750	.44*	600	.35*
NBT	2	3400	1520	.45	1210	.36
NBR	1	1700	190	.11	710	.42
SBL	2	3400	40	.01	210	.06
SBT	3	5100	1010	.20*	1570	.31*
SBR	1	1700	220	.13	320	.19
EBL	2	3400	440	.13*	360	.11
EBT	3	5100	370	.07	1320	.26*
EBR	1	1700	600	.35	620	.36
WBL	2	3400	1000	.29	300	.09*
WBT	3	5100	1460	.29*	580	.11
WBR	1	1700	220	.13	40	.02
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**1.11**		**1.06**

14. Bake & Irvine/Trabuco

2030 Current General Plan (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	720	.42*	590	.35*
NBT	2	3400	1560	.46	1300	.38
NBR	1	1700	200	.12	670	.39
SBL	2	3400	40	.01	200	.06
SBT	3	5100	1110	.22*	1620	.32*
SBR	1	1700	270	.16	320	.19
EBL	2	3400	420	.12*	300	.09
EBT	3	5100	370	.07	1370	.27*
EBR	1	1700	640	.38	620	.36
WBL	2	3400	920	.27	290	.09*
WBT	3	5100	1520	.30*	600	.12
WBR	1	1700	220	.13	40	.02
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**1.11**		**1.08**

2030 Current General Plan (w/Project and Improvements)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	720	.21	590	.17*
NBT	2	3400	1560	.46*	1300	.38
NBR	1	1700	200	.12	670	.39
SBL	2	3400	40	.01*	200	.06
SBT	3	5100	1110	.22	1620	.32*
SBR	1	1700	270	.16	320	.19
EBL	2	3400	420	.12*	300	.09
EBT	2.5	6800	370	{.10}	1370	{.27}*
EBR	1.5		640		620	{.24}
WBL	2	3400	920	.27	290	.09*
WBT	4	6800	1520	.26*	600	.09
WBR	0	0	220		40	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.90**		**.90**

15. Lake Forest & Trabuco

Existing Counts

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	178	.05*	256	.08*
NBT	3	5100	862	.17	976	.19
NBR	1	1700	100	.06	423	.25
SBL	2	3400	165	.05	341	.10
SBT	3	5100	1227	.28*	1062	.25*
SBR	0	0	221		194	
EBL	2	3400	142	.04*	320	.09
EBT	3	5100	431	.08	1115	.22*
EBR	1	1700	305	.18	146	.09
WBL	2	3400	372	.11	177	.05*
WBT	3	5100	1095	.21*	568	.11
WBR	1	1700	377	.22	272	.16
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.63**		**.65**

2015 Alternative 7 (No-Project)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	260	.08*	280	.08*
NBT	3	5100	860	.17	1060	.21
NBR	1	1700	90	.05	700	.41
SBL	2	3400	250	.07	330	.10
SBT	3	5100	1190	.27*	1040	.23*
SBR	0	0	190		150	
EBL	2	3400	160	.05	230	.07
EBT	3	5100	620	.12*	1170	.23*
EBR	1	1700	440	.26	200	.12
WBL	2	3400	740	.22*	290	.09*
WBT	3	5100	1020	.20	580	.11
WBR	1	1700	380	.22	440	.26
Right Turn Adjustment			EBR	.08*	NBR	.13*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.82**		**.81**

2015 Alternative 7 (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	270	.08*	280	.08*
NBT	3	5100	860	.17	1060	.21
NBR	1	1700	90	.05	740	.44
SBL	2	3400	270	.08	320	.09
SBT	3	5100	1200	.27*	1060	.24*
SBR	0	0	200		150	
EBL	2	3400	170	.05	230	.07
EBT	3	5100	610	.12*	1150	.23*
EBR	1	1700	440	.26	200	.12
WBL	2	3400	720	.21*	280	.08*
WBT	3	5100	1020	.20	570	.11
WBR	1	1700	380	.22	450	.26
Right Turn Adjustment			EBR	.08*	NBR	.15*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.81**		**.83**

2015 Current General Plan (No-Project)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	270	.08*	270	.08*
NBT	3	5100	880	.17	1070	.21
NBR	1	1700	90	.05	700	.41
SBL	2	3400	260	.08	340	.10
SBT	3	5100	1160	.26*	1060	.24*
SBR	0	0	170		150	
EBL	2	3400	160	.05	220	.06
EBT	3	5100	610	.12*	1200	.24*
EBR	1	1700	440	.26	210	.12
WBL	2	3400	720	.21*	290	.09*
WBT	3	5100	1040	.20	570	.11
WBR	1	1700	370	.22	430	.25
Right Turn Adjustment			EBR	.08*	NBR	.12*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.80**		**.82**

15. Lake Forest & Trabuco

2015 Current General Plan (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	260	.08*	270	.08*
NBT	3	5100	880	.17	1090	.21
NBR	1	1700	90	.05	710	.42
SBL	2	3400	260	.08	340	.10
SBT	3	5100	1160	.27*	1070	.24*
SBR	0	0	200		160	
EBL	2	3400	170	.05	240	.07
EBT	3	5100	620	.12*	1150	.23*
EBR	1	1700	440	.26	210	.12
WBL	2	3400	770	.23*	280	.08*
WBT	3	5100	1030	.20	600	.12
WBR	1	1700	380	.22	420	.25
Right Turn Adjustment			EBR	.08*	NBR	.14*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.83**		**.82**

2030 Alternative 7 (No-Project)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	270	.08*	270	.08
NBT	3	5100	890	.17	1160	.23*
NBR	1	1700	110	.06	760	.45
SBL	2	3400	300	.09	340	.10*
SBT	3	5100	1230	.29*	1120	.25
SBR	0	0	270		170	
EBL	2	3400	190	.06	320	.09
EBT	3	5100	700	.14*	1410	.28*
EBR	1	1700	430	.25	200	.12
WBL	2	3400	750	.22*	280	.08*
WBT	3	5100	1300	.25	730	.14
WBR	1	1700	320	.19	410	.24
Right Turn Adjustment			EBR	.05*	NBR	.16*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.83**		**.90**

2030 Alternative 7 (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	270	.08*	270	.08*
NBT	3	5100	880	.17	1150	.23
NBR	1	1700	110	.06	710	.42
SBL	2	3400	310	.09	320	.09
SBT	3	5100	1250	.30*	1140	.25*
SBR	0	0	270		160	
EBL	2	3400	200	.06	330	.10
EBT	3	5100	690	.14*	1400	.27*
EBR	1	1700	440	.26	200	.12
WBL	2	3400	740	.22*	270	.08*
WBT	3	5100	1300	.25	730	.14
WBR	1	1700	340	.20	450	.26
Right Turn Adjustment			EBR	.06*	NBR	.12*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.85**		**.85**

2030 Current General Plan (No-Project)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	270	.08*	250	.07
NBT	3	5100	970	.19	1130	.22*
NBR	1	1700	120	.07	690	.41
SBL	2	3400	260	.08	390	.11*
SBT	3	5100	1140	.27*	1140	.26
SBR	0	0	260		180	
EBL	2	3400	190	.06	330	.10
EBT	3	5100	660	.13*	1490	.29*
EBR	1	1700	420	.25	200	.12
WBL	2	3400	670	.20*	350	.10*
WBT	3	5100	1340	.26	700	.14
WBR	1	1700	510	.30	400	.24
Right Turn Adjustment			EBR	.06*	NBR	.12*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.79**		**.89**

15. Lake Forest & Trabuco

2030 Current General Plan (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	280	.08*	260	.08
NBT	3	5100	950	.19	1100	.22*
NBR	1	1700	130	.08	680	.40
SBL	2	3400	270	.08	410	.12*
SBT	3	5100	1160	.28*	1130	.26
SBR	0	0	250		190	
EBL	2	3400	200	.06	350	.10
EBT	3	5100	680	.13*	1470	.29*
EBR	1	1700	420	.25	200	.12
WBL	2	3400	670	.20*	330	.10*
WBT	3	5100	1330	.26	700	.14
WBR	1	1700	480	.28	400	.24
Right Turn Adjustment			EBR	.06*	NBR	.11*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.80**		**.89**

41. Alton & Towne Centre Dr

2015 Alternative 7 (No-Project)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	120	.04*	140	.04
NBT	3	5100	620	.12	1550	.30*
NBR	1	1700	260	.15	160	.09
SBL	2	3400	110	.03	70	.02*
SBT	3	5100	1700	.33*	890	.17
SBR	1	1700	40	.02	80	.05
EBL	1	1700	60	.04	50	.03
EBT	1	1700	40	.02*	60	.04*
EBR	1	1700	160	.09	130	.08
WBL	1	1700	290	.17*	260	.15*
WBT	1	1700	60	.06	50	.10
WBR	0	0	40		120	
Right Turn Adjustment			EBR	.04*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.65**		**.56**

2015 Alternative 7 (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	110	.03*	150	.04
NBT	3	5100	660	.13	1540	.30*
NBR	1	1700	260	.15	170	.10
SBL	2	3400	120	.04	70	.02*
SBT	3	5100	1690	.33*	930	.18
SBR	1	1700	40	.02	80	.05
EBL	1	1700	50	.03	50	.03
EBT	1	1700	40	.02*	60	.04*
EBR	1	1700	160	.09	130	.08
WBL	1	1700	290	.17*	260	.15*
WBT	1	1700	60	.06	50	.09
WBR	0	0	40		110	
Right Turn Adjustment			EBR	.05*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.65**		**.56**

2015 Current General Plan (No-Project)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	180	.05*	130	.04
NBT	3	5100	620	.12	1560	.31*
NBR	1	1700	290	.17	130	.08
SBL	2	3400	140	.04	60	.02*
SBT	3	5100	1720	.34*	870	.17
SBR	1	1700	60	.04	100	.06
EBL	1	1700	50	.03	60	.04
EBT	1	1700	30	.02*	90	.05*
EBR	1	1700	110	.06	200	.12
WBL	1	1700	230	.14*	290	.17*
WBT	1	1700	100	.07	60	.12
WBR	0	0	20		150	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.60**		**.60**

2015 Current General Plan (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	180	.05*	120	.04
NBT	3	5100	630	.12	1560	.31*
NBR	1	1700	300	.18	140	.08
SBL	2	3400	140	.04	60	.02*
SBT	3	5100	1720	.34*	900	.18
SBR	1	1700	60	.04	100	.06
EBL	1	1700	50	.03	60	.04
EBT	1	1700	30	.02*	80	.05*
EBR	1	1700	120	.07	200	.12
WBL	1	1700	240	.14*	280	.16*
WBT	1	1700	100	.07	60	.12
WBR	0	0	20		140	
Right Turn Adjustment			EBR	.01*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.61**		**.59**

41. Alton & Towne Centre Dr

2030 Alternative 7 (No-Project)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	180	.05*	340	.10
NBT	3	5100	740	.15	2090	.41*
NBR	1	1700	350	.21	360	.21
SBL	2	3400	250	.07	190	.06*
SBT	3	5100	2220	.44*	1150	.23
SBR	1	1700	120	.07	120	.07
EBL	1	1700	130	.08	120	.07
EBT	1	1700	90	.05*	140	.08*
EBR	1	1700	380	.22	240	.14
WBL	1	1700	340	.20*	400	.24*
WBT	1	1700	140	.16	130	.21
WBR	0	0	130		230	
Right Turn Adjustment			EBR	.13*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.92**		**.84**

2030 Alternative 7 (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	190	.06*	360	.11
NBT	3	5100	760	.15	2050	.40*
NBR	1	1700	350	.21	380	.22
SBL	2	3400	240	.07	180	.05*
SBT	3	5100	2180	.43*	1180	.23
SBR	1	1700	120	.07	110	.06
EBL	1	1700	130	.08	140	.08
EBT	1	1700	90	.05*	130	.08*
EBR	1	1700	380	.22	240	.14
WBL	1	1700	350	.21*	400	.24*
WBT	1	1700	140	.16	130	.21
WBR	0	0	130		220	
Right Turn Adjustment			EBR	.12*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.92**		**.82**

2030 Current General Plan (No-Project)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	450	.13*	270	.08
NBT	3	5100	640	.13	2080	.41*
NBR	1	1700	550	.32	300	.18
SBL	2	3400	450	.13	160	.05*
SBT	3	5100	2370	.46*	1060	.21
SBR	1	1700	230	.14	130	.08
EBL	1	1700	140	.08*	350	.21*
EBT	1	1700	100	.06	180	.11
EBR	1	1700	180	.11	510	.30
WBL	1	1700	170	.10	570	.34
WBT	1	1700	270	.20*	200	.40*
WBR	0	0	70		480	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.92**		**1.12**

2030 Current General Plan (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	460	.14*	280	.08
NBT	3	5100	670	.13	2060	.40*
NBR	1	1700	550	.32	320	.19
SBL	2	3400	440	.13	160	.05*
SBT	3	5100	2370	.46*	1100	.22
SBR	1	1700	230	.14	140	.08
EBL	1	1700	130	.08*	340	.20*
EBT	1	1700	100	.06	190	.11
EBR	1	1700	190	.11	510	.30
WBL	1	1700	190	.11	560	.33
WBT	1	1700	260	.19*	200	.41*
WBR	0	0	70		490	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.92**		**1.11**

42. Alton & Commercentre

2015 Alternative 7 (No-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	3	5100	950	.19	1700	.33*
NBR	d	1700	350	.21	170	.10
SBL	1	1700	140	.08	90	.05*
SBT	3	5100	2020	.40*	1190	.23
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	1.5		80	.02*	440	.13*
WBT	0	5100	0		0	
WBR	1.5		50	{.00}	160	.09
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.47**		**.56**

2015 Alternative 7 (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	3	5100	960	.19	1700	.33*
NBR	d	1700	370	.22	270	.16
SBL	1	1700	140	.08	120	.07*
SBT	3	5100	2000	.39*	1200	.24
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	1.5		160	.05*	480	.14*
WBT	0	5100	0		0	
WBR	1.5		60		160	.09
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.49**		**.59**

2015 Current General Plan (No-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	3	5100	1030	.20	1640	.32*
NBR	d	1700	390	.23	150	.09
SBL	1	1700	150	.09	100	.06*
SBT	3	5100	1910	.37*	1260	.25
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	1.5		60	.02*	460	.14*
WBT	0	5100	0		0	
WBR	1.5		50	{.00}	180	.11
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.44**		**.57**

2015 Current General Plan (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	3	5100	1040	.20	1630	.32*
NBR	d	1700	430	.25	240	.14
SBL	1	1700	160	.09	120	.07*
SBT	3	5100	1910	.37*	1280	.25
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	1.5		150	.04*	500	.15*
WBT	0	5100	0		0	
WBR	1.5		60		190	.11
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.46**		**.59**

42. Alton & Commercentre

2030 Alternative 7 (No-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	3	5100	1170	.23	2550	.50*
NBR	d	1700	300	.18	170	.10
SBL	1	1700	230	.14	160	.09*
SBT	3	5100	2710	.53*	1640	.32
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	1.5		140	.04*	390	.11*
WBT	0	5100	0		0	
WBR	1.5		100	{.00}	240	{.07}
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.62**		**.75**

2030 Alternative 7 (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	3	5100	1170	.23	2540	.50*
NBR	d	1700	340	.20	250	.15
SBL	1	1700	230	.14	190	.11*
SBT	3	5100	2680	.53*	1640	.32
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	1.5		220	.06*	420	.12*
WBT	0	5100	0		0	
WBR	1.5		130	{.00}	250	{.06}
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.64**		**.78**

2030 Current General Plan (No-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	3	5100	1550	.30*	2300	.45*
NBR	d	1700	480	.28	110	.06
SBL	1	1700	320	.19*	180	.11*
SBT	3	5100	2410	.47	1960	.38
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	1.5		40	.01*	460	.14*
WBT	0	5100	0		0	
WBR	1.5		90		340	{.12}
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.55**		**.75**

2030 Current General Plan (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	3	5100	1570	.31*	2320	.45*
NBR	d	1700	490	.29	200	.12
SBL	1	1700	330	.19*	200	.12*
SBT	3	5100	2420	.47	1980	.39
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	1.5		70	.02*	510	.15*
WBT	0	5100	0		0	
WBR	1.5		110	{.00}	340	{.11}
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.57**		**.77**

56. Bake & Dimension Dr

Existing Counts

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	51	.02*	202	.06*
NBT	0	0	0		0	
NBR	1	1700	58	.03	143	.08
SBL	0	0	0		0	
SBT	0	0	0		0	
SBR	0	0	0		0	
EBL	1	1700	0	.00	0	.00
EBT	2	3400	909	.32	1657	.50*
EBR	0	0	169		45	
WBL	1	1700	136	.08	111	.07*
WBT	2	3400	1640	.48*	1144	.34
WBR	0	0	0		0	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.55**		**.68**

2015 Alternative 7 (No-Project)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	10	.01*	40	.02
NBT	2	3400	860	.30	1500	.47*
NBR	0	0	170		90	
SBL	1	1700	150	.09	110	.06*
SBT	2	3400	1420	.42*	1020	.31
SBR	0	0	20		40	
EBL	1	1700	40	.02	20	.01
EBT	2	3400	140	.06*	60	.02*
EBR	0	0	50		10	
WBL	1	1700	90	.05*	280	.16*
WBT	2	3400	50	.03	100	.06
WBR	0	0	50		130	.08
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.59**		**.76**

2015 Alternative 7 (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	10	.01*	30	.02
NBT	2	3400	850	.30	1470	.46*
NBR	0	0	160		80	
SBL	1	1700	170	.10	130	.08*
SBT	2	3400	1380	.41*	1000	.31
SBR	0	0	20		40	
EBL	1	1700	50	.03	20	.01
EBT	2	3400	130	.05*	60	.02*
EBR	0	0	40		10	
WBL	1	1700	80	.05*	270	.16*
WBT	2	3400	60	.04	120	.07
WBR	0	0	60		150	.09
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.57**		**.77**

2015 Current General Plan (No-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*	50	.03
NBT	2	3400	840	.30	1480	.46*
NBR	0	0	190		80	
SBL	1	1700	140	.08	80	.05*
SBT	2	3400	1420	.46*	1010	.32
SBR	0	0	150		80	
EBL	1	1700	40	.02	110	.06
EBT	2	3400	120	.04*	110	.05*
EBR	0	0	20		60	
WBL	1	1700	90	.05*	260	.15*
WBT	2	3400	100	.04	120	.07
WBR	0	0	40		120	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.64**		**.76**

56. Bake & Dimension Dr

2015 Current General Plan (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	50	.03*	50	.03
NBT	2	3400	860	.30	1440	.44*
NBR	0	0	160		70	
SBL	1	1700	170	.10	100	.06*
SBT	2	3400	1380	.45*	990	.32
SBR	0	0	140		90	
EBL	1	1700	50	.03	110	.06
EBT	2	3400	120	.04*	110	.05*
EBR	0	0	20		60	
WBL	1	1700	80	.05*	270	.16*
WBT	2	3400	110	.05	130	.08
WBR	0	0	60		140	.08
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.62**		**.76**

2030 Alternative 7 (No-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*	130	.08
NBT	2	3400	1030	.34	1670	.51*
NBR	0	0	140		50	
SBL	1	1700	150	.09	100	.06*
SBT	2	3400	1650	.51*	1240	.41
SBR	0	0	70		140	
EBL	2	3400	170	.05	100	.03
EBT	2	3400	220	.12*	140	.06*
EBR	0	0	200		60	
WBL	1	1700	50	.03*	210	.12*
WBT	2	3400	100	.04	230	.13
WBR	0	0	50		200	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.72**		**.80**

2030 Alternative 7 (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*	130	.08
NBT	2	3400	1050	.35	1630	.49*
NBR	0	0	130		50	
SBL	1	1700	190	.11	120	.07*
SBT	2	3400	1600	.49*	1210	.40
SBR	0	0	70		150	
EBL	2	3400	180	.05	100	.03*
EBT	2	3400	220	.11*	130	.05
EBR	0	0	170		50	
WBL	1	1700	60	.04*	210	.12
WBT	2	3400	100	.05	240	.14*
WBR	0	0	70		220	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.70**		**.78**

2030 Current General Plan (No-Project)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	190	.11*	140	.08
NBT	2	3400	1050	.35	1570	.47*
NBR	0	0	140		40	
SBL	1	1700	110	.06	80	.05*
SBT	2	3400	1500	.60*	1150	.42
SBR	0	0	550		290	
EBL	2	3400	180	.05*	440	.13
EBT	2	3400	200	.08	230	.14*
EBR	0	0	80		230	
WBL	1	1700	60	.04	190	.11*
WBT	2	3400	240	.09*	270	.12
WBR	0	0	50		150	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.90**		**.82**

56. Bake & Dimension Dr

2030 Current General Plan (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	190	.11*	140	.08
NBT	2	3400	1060	.35	1540	.46*
NBR	0	0	140		40	
SBL	1	1700	120	.07	100	.06*
SBT	2	3400	1470	.59*	1140	.42
SBR	0	0	540		300	
EBL	2	3400	180	.05*	440	.13*
EBT	2	3400	200	.08	240	.13
EBR	0	0	80		210	
WBL	1	1700	60	.04	200	.12
WBT	2	3400	240	.09*	270	.13*
WBR	0	0	50		170	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.89**		**.83**

57. Lake Forest & Dimension Dr

Existing Counts

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	195	.11*	83	.05*
NBT	2	3400	663	.20	640	.19
NBR	0	0	8		19	
SBL	1	1700	25	.01	36	.02
SBT	2	3400	479	.26*	695	.24*
SBR	0	0	407		116	
EBL	1.5		203	{.06}*	388	
EBT	0.5	3400	9	.06	9	.12*
EBR	1	1700	108	.06	117	.07
WBL	1	1700	8	.00	34	.02*
WBT	1	1700	4	.01*	9	.01
WBR	0	0	8		11	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.49**		**.48**

2015 Alternative 7 (No-Project)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	140	.08*	60	.04*
NBT	2	3400	660	.20	650	.20
NBR	0	0	10		20	
SBL	1	1700	30	.02	40	.02
SBT	2	3400	460	.27*	680	.26*
SBR	0	0	450		190	
EBL	1.5		240	{.07}*	510	
EBT	0.5	3400	10	.07	10	.15*
EBR	1	1700	100	.06	80	.05
WBL	1	1700	10	.01	30	.02*
WBT	1	1700	10	.01*	10	.01
WBR	0	0	10		10	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.48**		**.52**

2015 Alternative 7 (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	140	.08*	80	.05*
NBT	2	3400	670	.20	640	.19
NBR	0	0	10		20	
SBL	1	1700	30	.02	40	.02
SBT	2	3400	470	.27*	670	.26*
SBR	0	0	460		210	
EBL	1.5		260	{.08}*	520	
EBT	0.5	3400	10	.08	10	.16*
EBR	1	1700	120	.07	90	.05
WBL	1	1700	10	.01	30	.02*
WBT	1	1700	10	.01*	10	.01
WBR	0	0	10		10	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.49**		**.54**

2015 Current General Plan (No-Project)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	170	.10*	60	.04*
NBT	2	3400	670	.20	640	.19
NBR	0	0	10		20	
SBL	1	1700	30	.02	40	.02
SBT	2	3400	450	.26*	690	.26*
SBR	0	0	480	.28	180	
EBL	1.5		230	{.07}*	530	
EBT	0.5	3400	10	.07	10	.16*
EBR	1	1700	100	.06	90	.05
WBL	1	1700	10	.01	30	.02*
WBT	1	1700	10	.01*	10	.01
WBR	0	0	10		10	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.49**		**.53**

57. Lake Forest & Dimension Dr

2015 Current General Plan (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	180	.11*	80	.05*
NBT	2	3400	660	.20	650	.20
NBR	0	0	10		20	
SBL	1	1700	30	.02	40	.02
SBT	2	3400	470	.28*	680	.26*
SBR	0	0	470		200	
EBL	1.5		250	{.08}*	540	
EBT	0.5	3400	10	.08	10	.16*
EBR	1	1700	120	.07	100	.06
WBL	1	1700	10	.01	40	.02*
WBT	1	1700	10	.01*	10	.01
WBR	0	0	10		10	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION **.53** **.54**

2030 Alternative 7 (No-Project)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	110	.06*	60	.04*
NBT	2	3400	740	.22	800	.24
NBR	0	0	10		20	
SBL	1	1700	30	.02	40	.02
SBT	2	3400	580	.34*	760	.31*
SBR	0	0	610	.36	300	
EBL	1.5		310	{.09}*	630	{.19}*
EBT	0.5	3400	10	.09	10	.19
EBR	1	1700	130	.08	70	.04
WBL	1	1700	10	.01	30	.02
WBT	1	1700	10	.01*	10	.02*
WBR	0	0	10		20	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION **.55** **.61**

2030 Alternative 7 (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	130	.08*	80	.05*
NBT	2	3400	730	.22	790	.24
NBR	0	0	10		20	
SBL	1	1700	30	.02	40	.02
SBT	2	3400	560	.33*	750	.32*
SBR	0	0	630	.37	330	
EBL	1.5		330	{.10}*	650	
EBT	0.5	3400	10	.10	10	.19*
EBR	1	1700	160	.09	80	.05
WBL	1	1700	10	.01	30	.02*
WBT	1	1700	10	.01*	10	.01
WBR	0	0	10		10	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION **.57** **.63**

2030 Current General Plan (No-Project)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	200	.12*	60	.04*
NBT	2	3400	870	.26	790	.24
NBR	0	0	10		20	
SBL	1	1700	30	.02	40	.02
SBT	2	3400	530	.31*	860	.34*
SBR	0	0	710	.42	300	
EBL	1.5		290	{.09}*	710	
EBT	0.5	3400	10	.09	10	.21*
EBR	1	1700	100	.06	100	.06
WBL	1	1700	10	.01	30	.02*
WBT	1	1700	10	.01*	10	.01
WBR	0	0	10		10	
Right Turn Adjustment			SBR	.04*		
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION **.62** **.66**

57. Lake Forest & Dimension Dr

2030 Current General Plan (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	210	.12*	80	.05*
NBT	2	3400	860	.26	780	.24
NBR	0	0	10		20	
SBL	1	1700	30	.02	40	.02
SBT	2	3400	520	.31*	850	.34*
SBR	0	0	730	.43	320	
EBL	1.5		330	{.10}*	720	
EBT	0.5	3400	10	.10	10	.21*
EBR	1	1700	120	.07	110	.06
WBL	1	1700	10	.01	30	.02*
WBT	1	1700	10	.01*	10	.01
WBR	0	0	10		10	
Right Turn Adjustment			SBR	.04*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.63**		**.67**

58. Biscayne Bay Dr & Commercentre Dr

Existing Counts

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	3	.00	69	.04*
NBT	1	1700	1	.01	2	.07
NBR	0	0	9		115	
SBL	1	1700	4	.00	27	.02
SBT	1	1700	1	.01*	1	.08*
SBR	0	0	15		141	
EBL	1	1700	59	.03	14	.01*
EBT	2	3400	353	.11*	224	.07
EBR	0	0	25		6	
WBL	1	1700	52	.03*	13	.01
WBT	2	3400	149	.06	268	.08*
WBR	0	0	49		14	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.20**		**.26**

2015 Alternative 7 (No-Project)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	10	.01*	80	.05*
NBT	1	1700	10	.01	10	.08
NBR	0	0	10		130	
SBL	1	1700	10	.01	30	.02
SBT	1	1700	10	.02*	10	.10*
SBR	0	0	20		160	
EBL	1	1700	70	.04	20	.01*
EBT	2	3400	400	.13*	260	.08
EBR	0	0	30		10	
WBL	1	1700	60	.04*	20	.01
WBT	2	3400	170	.07	280	.09*
WBR	0	0	60		20	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.25**		**.30**

2015 Alternative 7 (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	110	.06*	210	.12*
NBT	1	1700	10	.01	10	.08
NBR	0	0	10		130	
SBL	1	1700	10	.01	30	.02
SBT	1	1700	10	.02*	10	.10*
SBR	0	0	20		160	
EBL	1	1700	70	.04	20	.01
EBT	2	3400	510	.17*	380	.15*
EBR	0	0	80		130	
WBL	1	1700	60	.04*	20	.01*
WBT	2	3400	270	.10	390	.12
WBR	0	0	60		20	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.34**		**.43**

2015 Current General Plan (No-Project)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	10	.01*	80	.05*
NBT	1	1700	10	.01	10	.08
NBR	0	0	10		130	
SBL	1	1700	10	.01	30	.02
SBT	1	1700	10	.02*	10	.10*
SBR	0	0	20		160	
EBL	1	1700	70	.04	20	.01*
EBT	2	3400	400	.13*	270	.08
EBR	0	0	30		10	
WBL	1	1700	60	.04*	20	.01
WBT	2	3400	190	.07	290	.09*
WBR	0	0	60		20	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.25**		**.30**

58. Biscayne Bay Dr & Commercentre Dr

2015 Current General Plan (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	110	.06*	210	.12*
NBT	1	1700	10	.01	10	.08
NBR	0	0	10		130	
SBL	1	1700	10	.01	30	.02
SBT	1	1700	10	.02*	10	.10*
SBR	0	0	20		160	
EBL	1	1700	70	.04	20	.01
EBT	2	3400	510	.17*	390	.15*
EBR	0	0	80		130	
WBL	1	1700	60	.04*	20	.01*
WBT	2	3400	290	.10	420	.13
WBR	0	0	60		20	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.34**		**.43**

2030 Alternative 7 (No-Project)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	10	.01*	80	.05*
NBT	1	1700	10	.01	10	.08
NBR	0	0	10		130	
SBL	1	1700	10	.01	30	.02
SBT	1	1700	10	.02*	10	.10*
SBR	0	0	20		160	
EBL	1	1700	70	.04	20	.01*
EBT	2	3400	420	.13*	280	.09
EBR	0	0	30		10	
WBL	1	1700	60	.04*	20	.01
WBT	2	3400	170	.07	280	.09*
WBR	0	0	60		20	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.25**		**.30**

2030 Alternative 7 (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	110	.06*	210	.12*
NBT	1	1700	10	.01	10	.08
NBR	0	0	10		130	
SBL	1	1700	10	.01	30	.02
SBT	1	1700	10	.02*	10	.10*
SBR	0	0	20		160	
EBL	1	1700	70	.04	20	.01
EBT	2	3400	530	.18*	400	.16*
EBR	0	0	80		130	
WBL	1	1700	60	.04*	20	.01*
WBT	2	3400	270	.10	390	.12
WBR	0	0	60		20	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.35**		**.44**

2030 Current General Plan (No-Project)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	10	.01*	80	.05*
NBT	1	1700	10	.01	10	.08
NBR	0	0	10		130	
SBL	1	1700	10	.01	30	.02
SBT	1	1700	10	.02*	10	.10*
SBR	0	0	20		160	
EBL	1	1700	70	.04	20	.01*
EBT	2	3400	430	.14*	290	.09
EBR	0	0	30		10	
WBL	1	1700	60	.04*	20	.01
WBT	2	3400	190	.07	290	.09*
WBR	0	0	60		20	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.26**		**.30**

58. Biscayne Bay Dr & Commercentre Dr

2030 Current General Plan (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	110	.06*	210	.12*
NBT	1	1700	10	.01	10	.08
NBR	0	0	10		130	
SBL	1	1700	10	.01	30	.02
SBT	1	1700	10	.02*	10	.10*
SBR	0	0	20		160	
EBL	1	1700	70	.04	20	.01
EBT	2	3400	540	.18*	410	.16*
EBR	0	0	80		130	
WBL	1	1700	60	.04*	20	.01*
WBT	2	3400	290	.10	420	.13
WBR	0	0	60		20	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.35**		**.44**

59. Indian Ocean Dr & Commercentre Dr

Existing Counts

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	6	.00	23	.01*
NBT	0	0	0		0	
NBR	1	1700	4	.00	29	.02
SBL	0	0	0		8	
SBT	1	1700	0	.00*	0	.01*
SBR	0	0	2		14	
EBL	0.5		39		4	
EBT	1.5	3400	342	.12*	441	.13*
EBR	0		13		5	
WBL	1	1700	16	.01*	6	.00
WBT	2	3400	299	.09	285	.08
WBR	0	0	13		1	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.18**		**.20**

2015 Alternative 7 (No-Project)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	10	.01*	30	.02*
NBT	0	0	1		1	
NBR	1	1700	10	.01	30	.02
SBL	0	0	1		10	
SBT	1	1700	1	.01*	1	.02*
SBR	0	0	10		20	
EBL	0.5		40		10	
EBT	1.5	3400	380	.13*	450	.14*
EBR	0		20		10	
WBL	1	1700	20	.01*	10	.01*
WBT	2	3400	300	.09	300	.09
WBR	0	0	20		10	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.21**		**.24**

2015 Alternative 7 (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	110	.06*	140	.08*
NBT	0	0	1		1	
NBR	1	1700	140	.08	230	.14
SBL	0	0	1		10	
SBT	1	1700	1	.01*	1	.02*
SBR	0	0	10		20	
EBL	0.5		40		10	
EBT	1.5	3400	390	.16*	530	.20*
EBR	0		120		130	
WBL	1	1700	160	.09*	190	.11*
WBT	2	3400	370	.11	320	.10
WBR	0	0	20		10	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.37**		**.46**

2015 Current General Plan (No-Project)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	10	.01*	30	.02*
NBT	0	0	1		1	
NBR	1	1700	10	.01	30	.02
SBL	0	0	1		10	
SBT	1	1700	1	.01*	1	.02*
SBR	0	0	10		20	
EBL	0.5		40		10	
EBT	1.5	3400	370	.13*	460	.14*
EBR	0		20		10	
WBL	1	1700	20	.01*	10	.01*
WBT	2	3400	300	.09	310	.09
WBR	0	0	20		10	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.21**		**.24**

59. Indian Ocean Dr & Commercentre Dr

2015 Current General Plan (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	110	.06*	140	.08*
NBT	0	0	1		1	
NBR	1	1700	140	.08	230	.14
SBL	0	0	1		10	
SBT	1	1700	1	.01*	1	.02*
SBR	0	0	10		20	
EBL	0.5		40		10	
EBT	1.5	3400	400	.16*	540	.20*
EBR	0		120		130	
WBL	1	1700	160	.09*	190	.11*
WBT	2	3400	390	.12	330	.10
WBR	0	0	20		10	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.37**		**.46**

2030 Alternative 7 (No-Project)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	10	.01*	30	.02*
NBT	0	0	1		1	
NBR	1	1700	10	.01	30	.02
SBL	0	0	1		10	
SBT	1	1700	1	.01*	1	.02*
SBR	0	0	10		20	
EBL	0.5		40		10	
EBT	1.5	3400	410	.14*	460	.14*
EBR	0		20		10	
WBL	1	1700	20	.01*	10	.01*
WBT	2	3400	310	.10	300	.09
WBR	0	0	20		10	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.22**		**.24**

2030 Alternative 7 (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	110	.06*	140	.08*
NBT	0	0	1		1	
NBR	1	1700	140	.08	230	.14
SBL	0	0	1		10	
SBT	1	1700	1	.01*	1	.02*
SBR	0	0	10		20	
EBL	0.5		40		10	
EBT	1.5	3400	420	.17*	560	.21*
EBR	0		120		130	
WBL	1	1700	160	.09*	190	.11*
WBT	2	3400	370	.11	320	.10
WBR	0	0	20		10	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.38**		**.47**

2030 Current General Plan (No-Project)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	10	.01*	30	.02*
NBT	0	0	1		1	
NBR	1	1700	10	.01	30	.02
SBL	0	0	1		10	
SBT	1	1700	1	.01*	1	.02*
SBR	0	0	10		20	
EBL	0.5		40		10	
EBT	1.5	3400	400	.14*	490	.15*
EBR	0		20		10	
WBL	1	1700	20	.01*	10	.01*
WBT	2	3400	300	.09	320	.10
WBR	0	0	20		10	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.22**		**.25**

59. Indian Ocean Dr & Commercentre Dr

2030 Current General Plan (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	110	.06*	140	.08*
NBT	0	0	1		1	
NBR	1	1700	140	.08	230	.14
SBL	0	0	1		10	
SBT	1	1700	1	.01*	1	.02*
SBR	0	0	10		20	
EBL	0.5		40		10	
EBT	1.5	3400	430	.17*	570	.21*
EBR	0		120		130	
WBL	1	1700	160	.09*	190	.11*
WBT	2	3400	390	.12	320	.10
WBR	0	0	20		10	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.38**		**.47**

60. Dimension & Commercentre

Existing Counts

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	306	.18*	113	.07*
NBT	2	3400	148	.04	103	.03
NBR	d	1700	341	.20	20	.01
SBL	1	1700	37	.02	15	.01
SBT	2	3400	78	.02*	229	.07*
SBR	d	1700	15	.01	11	.01
EBL	1	1700	7	.00	49	.03*
EBT	1	1700	206	.12*	12	.01
EBR	1	1700	152	.09	470	.28
WBL	1	1700	27	.02*	271	.16
WBT	1	1700	13	.01	183	.15*
WBR	0	0	5		66	
Right Turn Adjustment					EBR	.21*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.39**		**.58**

2015 Alternative 7 (No-Project)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	320	.19*	120	.07*
NBT	2	3400	170	.05	240	.07
NBR	d	1700	370	.22	20	.01
SBL	1	1700	30	.02	10	.01
SBT	2	3400	120	.04*	370	.11*
SBR	d	1700	10	.01	10	.01
EBL	1	1700	10	.01	60	.04
EBT	1	1700	220	.13*	10	.01*
EBR	1	1700	170	.10	480	.28
WBL	1	1700	30	.02*	320	.19*
WBT	1	1700	10	.01	190	.15
WBR	0	0	10		70	
Right Turn Adjustment					EBR	.22*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.43**		**.65**

2015 Alternative 7 (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	460	.27*	250	.15*
NBT	2	3400	160	.05	220	.06
NBR	d	1700	340	.20	20	.01
SBL	1	1700	40	.02	10	.01
SBT	2	3400	110	.03*	380	.11*
SBR	d	1700	80	.05	70	.04
EBL	1	1700	70	.04	140	.08*
EBT	1	1700	230	.14*	60	.04
EBR	1	1700	260	.15	650	.38
WBL	1	1700	30	.02*	290	.17
WBT	1	1700	20	.02	210	.16*
WBR	0	0	10		70	
Right Turn Adjustment					EBR	.20*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.51**		**.75**

2015 Current General Plan (No-Project)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	320	.19*	120	.07*
NBT	2	3400	200	.06	220	.06
NBR	d	1700	390	.23	20	.01
SBL	1	1700	30	.02	10	.01
SBT	2	3400	110	.03*	400	.12*
SBR	d	1700	10	.01	20	.01
EBL	1	1700	10	.01	60	.04
EBT	1	1700	220	.13*	20	.01*
EBR	1	1700	160	.09	480	.28
WBL	1	1700	30	.02*	330	.19*
WBT	1	1700	10	.01	190	.15
WBR	0	0	10		70	
Right Turn Adjustment			NBR	.01*	EBR	.22*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.43**		**.66**

60. Dimension & Commercentre

2015 Current General Plan (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	470	.28*	270	.16*
NBT	2	3400	200	.06	220	.06
NBR	d	1700	360	.21	20	.01
SBL	1	1700	30	.02	10	.01
SBT	2	3400	100	.03*	410	.12*
SBR	d	1700	80	.05	70	.04
EBL	1	1700	70	.04	150	.09*
EBT	1	1700	230	.14*	70	.04
EBR	1	1700	270	.16	650	.38
WBL	1	1700	30	.02*	300	.18
WBT	1	1700	30	.02	220	.17*
WBR	0	0	10		70	
Right Turn Adjustment					EBR	.18*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.52**		**.77**

2030 Alternative 7 (No-Project)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	320	.19*	120	.07*
NBT	2	3400	210	.06	340	.10
NBR	d	1700	410	.24	20	.01
SBL	1	1700	30	.02	10	.01
SBT	2	3400	180	.05*	420	.12*
SBR	d	1700	20	.01	10	.01
EBL	1	1700	10	.01	50	.03
EBT	1	1700	220	.13*	10	.01*
EBR	1	1700	200	.12	500	.29
WBL	1	1700	30	.02*	330	.19*
WBT	1	1700	10	.01	190	.15
WBR	0	0	10		70	
Right Turn Adjustment					EBR	.23*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.44**		**.67**

2030 Alternative 7 (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	450	.26*	240	.14*
NBT	2	3400	220	.06	330	.10
NBR	d	1700	380	.22	20	.01
SBL	1	1700	30	.02	10	.01
SBT	2	3400	190	.06*	430	.13*
SBR	d	1700	80	.05	70	.04
EBL	1	1700	70	.04	150	.09*
EBT	1	1700	250	.15*	70	.04
EBR	1	1700	270	.16	660	.39
WBL	1	1700	30	.02*	300	.18
WBT	1	1700	30	.02	200	.16*
WBR	0	0	10		70	
Right Turn Adjustment					EBR	.21*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.54**		**.78**

2030 Current General Plan (No-Project)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	320	.19*	140	.08*
NBT	2	3400	300	.09	320	.09
NBR	d	1700	450	.26	30	.02
SBL	1	1700	20	.01	10	.01
SBT	2	3400	140	.04*	530	.16*
SBR	d	1700	10	.01	10	.01
EBL	1	1700	10	.01	40	.02
EBT	1	1700	220	.13*	10	.01*
EBR	1	1700	190	.11	540	.32
WBL	1	1700	30	.02*	360	.21*
WBT	1	1700	10	.01	190	.15
WBR	0	0	10		60	
Right Turn Adjustment			NBR	.02*	EBR	.25*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.45**		**.76**

60. Dimension & Commercentre

2030 Current General Plan (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	480	.28*	250	.15*
NBT	2	3400	300	.09	290	.09
NBR	d	1700	450	.26	20	.01
SBL	1	1700	20	.01	10	.01
SBT	2	3400	150	.04*	560	.16*
SBR	d	1700	70	.04	70	.04
EBL	1	1700	70	.04	150	.09*
EBT	1	1700	260	.15*	70	.04
EBR	1	1700	280	.16	670	.39
WBL	1	1700	30	.02*	360	.21
WBT	1	1700	20	.02	210	.16*
WBR	0	0	10		70	
Right Turn Adjustment					EBR	.24*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.54**		**.85**

Appendix B
SIDRA Roundabout Analysis Worksheets

This appendix summarizes the roundabout analysis worksheets applied in the traffic study for the proposed residential and Civic Center project on the Irvine Ranch Water District (IRWD) site in the City of Lake Forest. The roundabout analysis, which is based on the SIDRA level of service (LOS) calculation methodology for roundabouts, was conducted for the roundabouts along "B" Street at "A" Street and Indian Ocean Drive.

SIDRA INTERSECTION

Movement Summary

"A" Street & "B" Street

AM Peak Hour

Roundabout

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
Biscayne Bay										
8T	T	70	1.4	0.059	5.7	LOS A	6	0.08	0.45	33.9
8R	R	1	50.0	0.059	6.8	LOS A	6	0.08	0.53	33.0
Approach		**71**	**2.8**	**0.059**	**5.7**	**LOS A**	**6**	**0.08**	**0.45**	**33.9**
"B" Street										
1L	L	1	50.0	0.041	12.3	LOS B	4	0.14	0.68	29.6
6R	R	42	2.3	0.041	7.0	LOS A	4	0.14	0.52	32.8
Approach		**45**	**4.4**	**0.041**	**7.3**	**LOS A**	**4**	**0.14**	**0.53**	**32.6**
Biscayne Bay										
7L	L	30	3.2	0.040	12.1	LOS B	4	0.01	0.72	30.0
4T	T	30	3.2	0.040	5.6	LOS A	4	0.01	0.46	34.4
Approach		**62**	**3.2**	**0.040**	**8.9**	**LOS A**	**4**	**0.01**	**0.59**	**31.9**
All Vehicles		**178**	**3.4**	**0.059**	**7.2**	**LOS A**	**6**	**0.07**	**0.52**	**32.9**

Symbols which may appear in this table:

Following Degree of Saturation
x = 1.00 for Short Lane with resulting Excess Flow
* x = 1.00 due to minimum capacity

Following LOS
- Based on density for continuous movements

Following Queue
- Density for continuous movement

SIDRA SOLUTIONS

Site: AM Peak Hour

Processed May 21, 2009 04:03:22PM

M0329, Austin-Foust Associates, Inc, Small Office
Produced by SIDRA Intersection 3.2.2.1563
Copyright ©2000-2008 Akcelik and Associates Pty Ltd
www.sidrasolutions.com

SIDRA INTERSECTION

Intersection Summary

"A" Street & "B" Street

AM Peak Hour

Performance Measure	Vehicles
Demand Flows - Total	178 veh/h
Percent Heavy Vehicles	3.4 %
Degree of Saturation	0.059
Effective Intersection Capacity	3016 veh/h
95% Back of Queue (ft)	6 ft
95% Back of Queue (veh)	0.2 veh
Control Delay (Total)	0.36 veh-h/h
Control Delay (Average)	7.2 s/veh
Level of Service	LOS A
Level of Service (Worst Movement)	LOS B
Total Effective Stops	93 veh/h
Effective Stop Rate	0.52 per veh
Proportion Queued	0.07
Travel Distance (Total)	68.3 veh-mi/h
Travel Distance (Average)	2025 ft
Travel Time (Total)	2.1 veh-h/h
Travel Time (Average)	42.0 secs
Travel Speed	32.9 mph
Operating Cost (Total)	35 $/h
Fuel Consumption (Total)	3.3 gal/h
Carbon Dioxide (Total)	30.9 kg/h
Hydrocarbons (Total)	0.050 kg/h
Carbon Monoxide (Total)	2.40 kg/h
NOX (Total)	0.076 kg/h

SIDRA SOLUTIONS

Site: AM Peak Hour

Processed May 21, 2009 04:03:22PM

M0329, Austin-Foust Associates, Inc, Small Office
Produced by SIDRA Intersection 3.2.2.1563
Copyright ©2000-2008 Akcelik and Associates Pty Ltd
www.sidrasolutions.com

SIDRA INTERSECTION

Movement Summary

"A" Street & "B" Street

PM Peak Hour

Roundabout

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
Biscayne Bay										
8T	T	53	1.9	0.048	5.8	LOS A	5	0.11	0.45	33.8
8R	R	1	50.0	0.049	6.9	LOS A	5	0.11	0.53	32.9
Approach		**55**	**3.6**	**0.048**	**5.8**	**LOS A**	**5**	**0.11**	**0.45**	**33.8**
"B" Street										
1L	L	5	16.7	0.082	12.3	LOS B	9	0.13	0.68	29.6
6R	R	90	2.2	0.082	7.0	LOS A	9	0.13	0.53	32.8
Approach		**96**	**3.1**	**0.082**	**7.3**	**LOS A**	**9**	**0.13**	**0.54**	**32.6**
Biscayne Bay										
7L	L	43	2.3	0.092	12.2	LOS B	10	0.03	0.71	29.9
4T	T	91	2.2	0.092	5.6	LOS A	10	0.03	0.46	34.2
Approach		**135**	**2.2**	**0.092**	**7.8**	**LOS A**	**10**	**0.03**	**0.54**	**32.6**
All Vehicles		**286**	**2.8**	**0.092**	**7.2**	**LOS A**	**10**	**0.08**	**0.52**	**32.8**

Symbols which may appear in this table:

Following Degree of Saturation
x = 1.00 for Short Lane with resulting Excess Flow
* x = 1.00 due to minimum capacity

Following LOS
- Based on density for continuous movements

Following Queue
- Density for continuous movement

SIDRA SOLUTIONS

Site: PM Peak Hour

Processed May 21, 2009 04:03:37PM

M0329, Austin-Foust Associates, Inc, Small Office
Produced by SIDRA Intersection 3.2.2.1563
Copyright ©2000-2008 Akcelik and Associates Pty Ltd
www.sidrasolutions.com

SIDRA INTERSECTION

Intersection Summary

"A" Street & "B" Street

PM Peak Hour

Performance Measure	Vehicles
Demand Flows - Total	286 veh/h
Percent Heavy Vehicles	2.8 %
Degree of Saturation	0.092
Effective Intersection Capacity	3114 veh/h
95% Back of Queue (ft)	10 ft
95% Back of Queue (veh)	0.4 veh
Control Delay (Total)	0.57 veh-h/h
Control Delay (Average)	7.2 s/veh
Level of Service	LOS A
Level of Service (Worst Movement)	LOS B
Total Effective Stops	149 veh/h
Effective Stop Rate	0.52 per veh
Proportion Queued	0.08
Travel Distance (Total)	109.6 veh-mi/h
Travel Distance (Average)	2023 ft
Travel Time (Total)	3.3 veh-h/h
Travel Time (Average)	42.0 secs
Travel Speed	32.8 mph
Operating Cost (Total)	57 $/h
Fuel Consumption (Total)	5.3 gal/h
Carbon Dioxide (Total)	49.9 kg/h
Hydrocarbons (Total)	0.080 kg/h
Carbon Monoxide (Total)	3.89 kg/h
NOX (Total)	0.123 kg/h

SIDRA SOLUTIONS

Site: PM Peak Hour

Processed May 21, 2009 04:03:37PM

M0329, Austin-Foust Associates, Inc, Small Office
Produced by SIDRA Intersection 3.2.2.1563
Copyright ©2000-2008 Akcelik and Associates Pty Ltd
www.sidrasolutions.com

SIDRA INTERSECTION

Movement Summary

Indian Ocean & "B" Street

AM Peak Hour

Roundabout

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
Indian Ocean										
3L	L	1	50.0	0.061	12.9	LOS B	7	0.28	0.72	29.2
8T	T	57	1.8	0.061	6.5	LOS A	7	0.28	0.51	32.9
8R	R	1	50.0	0.061	7.6	LOS A	7	0.28	0.58	32.2
Approach		**60**	**5.0**	**0.061**	**6.7**	**LOS A**	**7**	**0.28**	**0.52**	**32.7**
"B" Street										
1L	L	1	50.0	0.029	12.3	LOS B	3	0.15	0.68	29.6
6T	T	7	14.3	0.029	5.9	LOS A	3	0.15	0.46	33.6
6R	R	22	4.5	0.029	7.1	LOS A	3	0.15	0.52	32.7
Approach		**31**	**9.7**	**0.029**	**7.1**	**LOS A**	**3**	**0.15**	**0.51**	**32.7**
Indian Ocean										
7L	L	197	2.0	0.149	12.2	LOS B	17	0.04	0.70	29.9
4T	T	14	6.7	0.149	5.6	LOS A	17	0.04	0.45	34.2
4R	R	5	16.7	0.150	6.8	LOS A	17	0.04	0.53	33.2
Approach		**218**	**2.8**	**0.149**	**11.6**	**LOS B**	**17**	**0.04**	**0.68**	**30.2**
"B" Street										
5L	L	13	7.1	0.038	12.9	LOS B	4	0.27	0.68	29.3
2T	T	22	4.5	0.038	6.4	LOS A	4	0.27	0.49	33.0
2R	R	1	50.0	0.038	7.5	LOS A	4	0.27	0.56	32.2
Approach		**38**	**7.9**	**0.038**	**8.8**	**LOS A**	**4**	**0.27**	**0.57**	**31.4**
All Vehicles		**347**	**4.3**	**0.150**	**10.0**	**LOS B**	**17**	**0.12**	**0.62**	**30.9**

Symbols which may appear in this table:

Following Degree of Saturation
x = 1.00 for Short Lane with resulting Excess Flow
* x = 1.00 due to minimum capacity

Following LOS
- Based on density for continuous movements

SIDRA INTERSECTION

Intersection Summary

Indian Ocean & "B" Street

AM Peak Hour

Performance Measure	Vehicles
Demand Flows - Total	347 veh/h
Percent Heavy Vehicles	4.3 %
Degree of Saturation	0.150
Effective Intersection Capacity	2313 veh/h
95% Back of Queue (ft)	17 ft
95% Back of Queue (veh)	0.7 veh
Control Delay (Total)	0.97 veh-h/h
Control Delay (Average)	10.0 s/veh
Level of Service	LOS B
Level of Service (Worst Movement)	LOS B
Total Effective Stops	216 veh/h
Effective Stop Rate	0.62 per veh
Proportion Queued	0.12
Travel Distance (Total)	136.6 veh-mi/h
Travel Distance (Average)	2079 ft
Travel Time (Total)	4.4 veh-h/h
Travel Time (Average)	45.8 secs
Travel Speed	30.9 mph
Operating Cost (Total)	75 $/h
Fuel Consumption (Total)	6.8 gal/h
Carbon Dioxide (Total)	64.8 kg/h
Hydrocarbons (Total)	0.107 kg/h
Carbon Monoxide (Total)	5.25 kg/h
NOX (Total)	0.160 kg/h

SIDRA SOLUTIONS

Site: AM Peak Hour
C:\Documents and Settings\Charlie\My Documents\Indian&B.aap
Processed May 21, 2009 03:31:52PM

M0329, Austin-Foust Associates, Inc, Small Office
Produced by SIDRA Intersection 3.2.2.1563
Copyright ©2000-2008 Akcelik and Associates Pty Ltd
www.sidrasolutions.com

SIDRA INTERSECTION

Movement Summary

Indian Ocean & "B" Street

PM Peak Hour

Roundabout

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
Indian Ocean										
3L	L	1	50.0	0.036	12.6	LOS B	4	0.23	0.69	29.4
8T	T	32	3.1	0.036	6.2	LOS A	4	0.23	0.47	33.2
8R	R	1	50.0	0.036	7.3	LOS A	4	0.23	0.55	32.4
Approach		**36**	**8.3**	**0.036**	**6.6**	**LOS A**	**4**	**0.23**	**0.49**	**32.9**
"B" Street										
1L	L	1	50.0	0.200	12.2	LOS B	24	0.12	0.69	29.7
6T	T	63	1.6	0.199	5.8	LOS A	24	0.12	0.45	33.8
6R	R	191	2.1	0.199	6.9	LOS A	24	0.12	0.52	32.9
Approach		**256**	**2.3**	**0.199**	**6.7**	**LOS A**	**24**	**0.12**	**0.51**	**33.0**
Indian Ocean										
7L	L	121	1.7	0.151	12.4	LOS B	17	0.15	0.68	29.6
4T	T	41	2.4	0.151	5.8	LOS A	17	0.15	0.46	33.6
4R	R	21	4.8	0.151	7.0	LOS A	17	0.15	0.53	32.7
Approach		**182**	**2.2**	**0.151**	**10.3**	**LOS B**	**17**	**0.15**	**0.61**	**30.7**
"B" Street										
5L	L	10	9.1	0.033	12.7	LOS B	4	0.24	0.68	29.3
2T	T	20	5.0	0.033	6.2	LOS A	4	0.24	0.48	33.2
2R	R	1	50.0	0.033	7.3	LOS A	4	0.24	0.55	32.3
Approach		**33**	**9.1**	**0.033**	**8.4**	**LOS A**	**4**	**0.24**	**0.55**	**31.7**
All Vehicles		**507**	**3.2**	**0.200**	**8.1**	**LOS A**	**24**	**0.15**	**0.55**	**32.0**

Symbols which may appear in this table:

Following Degree of Saturation
x = 1.00 for Short Lane with resulting Excess Flow
* x = 1.00 due to minimum capacity

Following LOS
- Based on density for continuous movements

SIDRA INTERSECTION

Intersection Summary

Indian Ocean & "B" Street

PM Peak Hour

Performance Measure	Vehicles
Demand Flows - Total	507 veh/h
Percent Heavy Vehicles	3.2 %
Degree of Saturation	0.200
Effective Intersection Capacity	2535 veh/h
95% Back of Queue (ft)	24 ft
95% Back of Queue (veh)	1.0 veh
Control Delay (Total)	1.14 veh-h/h
Control Delay (Average)	8.1 s/veh
Level of Service	LOS A
Level of Service (Worst Movement)	LOS B
Total Effective Stops	277 veh/h
Effective Stop Rate	0.55 per veh
Proportion Queued	0.15
Travel Distance (Total)	195.2 veh-mi/h
Travel Distance (Average)	2033 ft
Travel Time (Total)	6.1 veh-h/h
Travel Time (Average)	43.2 secs
Travel Speed	32.0 mph
Operating Cost (Total)	104 $/h
Fuel Consumption (Total)	9.6 gal/h
Carbon Dioxide (Total)	91.0 kg/h
Hydrocarbons (Total)	0.149 kg/h
Carbon Monoxide (Total)	7.28 kg/h
NOX (Total)	0.226 kg/h

SIDRA SOLUTIONS

Site: PM Peak Hour
C:\Documents and Settings\Charlie\My Documents\Indian&B.aap
Processed May 21, 2009 03:45:54PM

M0329, Austin-Foust Associates, Inc, Small Office
Produced by SIDRA Intersection 3.2.2.1563
Copyright ©2000-2008 Akcelik and Associates Pty Ltd
www.sidrasolutions.com

Appendix C
Highway Capacity Manual (HCM) Worksheets

This appendix summarizes the Highway Capacity Manual (HCM) intersection analysis applied in the traffic study for the proposed residential and Civic Center project referred to as Serrano Summit on the Irvine Ranch Water District (IRWD) site in the City of Lake Forest. Included in this section is the intersection analysis based on the HCM methodology that was conducted for the intersection of Private "D" Street/Private "E" Street and "B" Street located between the two roundabouts in the traffic analysis study area. The HCM worksheets showing the queue length results of the "Conditional Service" type of left-turn phasing are also included here.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	8	20	0	4	8	0	5	0	12	0	0	28
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	22	0	4	9	0	5	0	13	0	0	30
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	9			22			87	57	22	70	57	9
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	9			22			87	57	22	70	57	9
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			99	100	99	100	100	97
cM capacity (veh/h)	1611			1594			868	828	1055	905	828	1073

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	30	13	18	30
Volume Left	9	4	5	0
Volume Right	0	0	13	30
cSH	1611	1594	992	1073
Volume to Capacity	0.01	0.00	0.02	0.03
Queue Length 95th (ft)	0	0	1	2
Control Delay (s)	2.1	2.4	8.7	8.5
Lane LOS	A	A	A	A
Approach Delay (s)	2.1	2.4	8.7	8.5
Approach LOS			A	A

Intersection Summary	
Average Delay	5.6
Analysis Period (min)	15

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	23	19	0	14	63	0	3	0	8	0	0	22
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	25	21	0	15	68	0	3	0	9	0	0	24
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	68			21			193	170	21	178	170	68
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	68			21			193	170	21	178	170	68
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			99			100	100	99	100	100	98
cM capacity (veh/h)	1533			1595			733	705	1057	762	705	995

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	46	84	12	24
Volume Left	25	15	3	0
Volume Right	0	0	9	24
cSH	1533	1595	943	995
Volume to Capacity	0.02	0.01	0.01	0.02
Queue Length 95th (ft)	1	1	1	2
Control Delay (s)	4.1	1.4	8.9	8.7
Lane LOS	A	A	A	A
Approach Delay (s)	4.1	1.4	8.9	8.7
Approach LOS			A	A

Intersection Summary	
Average Delay	3.7
Analysis Period (min)	15

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	43	554	174	424	120	152	11
v/c Ratio	0.13	0.74	0.55	0.40	0.28	0.18	0.02
Control Delay	20.2	33.5	20.4	15.6	28.7	0.4	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.2	33.5	20.4	15.6	28.7	0.4	0.1
Queue Length 50th (ft)	13	109	73	104	50	0	0
Queue Length 95th (ft)	m29	162	m82	116	100	0	0
Internal Link Dist (ft)		1899		434		157	153
Turn Bay Length (ft)	100		135		205		
Base Capacity (vph)	332	975	316	1462	424	866	579
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.57	0.55	0.29	0.28	0.18	0.02

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	11	717	207	359	152	250	33
v/c Ratio	0.09	0.88	0.63	0.21	0.41	0.32	0.14
Control Delay	32.8	46.3	21.5	12.5	31.7	1.1	19.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.8	46.3	21.5	12.5	31.7	1.1	19.1
Queue Length 50th (ft)	5	186	69	62	67	0	5
Queue Length 95th (ft)	m15	#271	120	106	122	0	30
Internal Link Dist (ft)		1899		434		157	153
Turn Bay Length (ft)	100		135		205		
Base Capacity (vph)	133	843	332	1726	373	789	228
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.85	0.62	0.21	0.41	0.32	0.14

Intersection Summary

\# 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.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	43	565	174	446	120	152	11
v/c Ratio	0.13	0.65	0.64	0.41	0.30	0.18	0.02
Control Delay	21.7	23.1	24.6	15.5	29.7	0.5	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.7	23.1	24.6	15.5	29.7	0.5	0.1
Queue Length 50th (ft)	12	85	70	110	52	0	0
Queue Length 95th (ft)	m29	116	m#86	121	100	0	0
Internal Link Dist (ft)		1899		434		157	153
Turn Bay Length (ft)	100		135		205		
Base Capacity (vph)	334	974	275	1498	399	849	568
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.58	0.63	0.30	0.30	0.18	0.02

Intersection Summary

\# 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.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	11	728	207	370	152	250	33
v/c Ratio	0.09	0.89	0.63	0.21	0.41	0.32	0.14
Control Delay	32.9	47.4	21.4	12.6	31.8	1.1	19.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.9	47.4	21.4	12.6	31.8	1.1	19.1
Queue Length 50th (ft)	5	191	70	64	67	0	5
Queue Length 95th (ft)	m14	#280	116	112	122	0	30
Internal Link Dist (ft)		1899		434		157	153
Turn Bay Length (ft)	100		135		205		
Base Capacity (vph)	133	842	332	1733	370	786	228
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.86	0.62	0.21	0.41	0.32	0.14

Intersection Summary

\# 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.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	43	587	174	424	120	152	11
v/c Ratio	0.13	0.76	0.56	0.40	0.29	0.18	0.02
Control Delay	19.8	32.6	21.0	16.1	29.0	0.5	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.8	32.6	21.0	16.1	29.0	0.5	0.1
Queue Length 50th (ft)	13	110	73	104	51	0	0
Queue Length 95th (ft)	m28	165	m86	123	100	0	0
Internal Link Dist (ft)		1899		434		157	153
Turn Bay Length (ft)	100		135		205		
Base Capacity (vph)	339	974	312	1473	415	853	579
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.60	0.56	0.29	0.29	0.18	0.02

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	11	750	207	359	152	250	33
v/c Ratio	0.09	0.90	0.63	0.21	0.42	0.32	0.14
Control Delay	32.8	49.5	21.4	12.3	32.0	1.1	19.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.8	49.5	21.4	12.3	32.0	1.1	19.1
Queue Length 50th (ft)	4	198	69	61	67	0	5
Queue Length 95th (ft)	m15	#293	119	105	122	0	30
Internal Link Dist (ft)		1899		434		157	153
Turn Bay Length (ft)	100		135		205		
Base Capacity (vph)	133	842	334	1742	365	781	228
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.89	0.62	0.21	0.42	0.32	0.14

Intersection Summary

\# 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.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	43	597	174	446	120	152	11
v/c Ratio	0.13	0.74	0.57	0.40	0.30	0.18	0.02
Control Delay	29.4	37.4	21.0	14.0	29.3	0.5	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.4	37.4	21.0	14.0	29.3	0.5	0.1
Queue Length 50th (ft)	19	160	67	110	51	0	0
Queue Length 95th (ft)	m43	214	m72	113	100	0	0
Internal Link Dist (ft)		1899		434		157	153
Turn Bay Length (ft)	100		135		205		
Base Capacity (vph)	326	973	304	1500	401	842	568
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.61	0.57	0.30	0.30	0.18	0.02

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	11	761	207	359	152	250	33
v/c Ratio	0.09	0.91	0.63	0.21	0.42	0.32	0.14
Control Delay	32.4	50.9	21.2	12.3	32.1	1.1	19.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.4	50.9	21.2	12.3	32.1	1.1	19.1
Queue Length 50th (ft)	4	202	69	62	67	0	5
Queue Length 95th (ft)	m15	#301	120	106	122	0	30
Internal Link Dist (ft)		1899		434		157	153
Turn Bay Length (ft)	100		135		205		
Base Capacity (vph)	133	841	334	1747	362	779	228
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.90	0.62	0.21	0.42	0.32	0.14

Intersection Summary

\# 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.

AUSTIN-FOUST ASSOCIATES, INC.
TRAFFIC ENGINEERING AND TRANSPORTATION PLANNING

MEMORANDUM

TO: Omar Dandashi, Vice President Engineering, Lewis Operating Corp.

FROM: Krys Saldivar, Austin-Foust Associates, Inc.

DATE: April 13, 2011

SUBJECT: **Lake Forest Serrano Summit All-Residential Project Alternative Analysis**

The attached report presents a traffic evaluation of the all-residential land use alternative for the Serrano Summit project development and the potential impacts of the proposed project under existing conditions.

1012002mm.doc

2223 Wellington Avenue, Suite 300 • Santa Ana, California 92701-3161
Tel: (714) 667-0496 Fax: (714) 667-7952
www.austinfoust.com

City of Lake Forest
SERRANO SUMMIT (IRWD SITE)
Supplemental Traffic Evaluation

The Serrano Summit residential development proposed on the Irvine Ranch Water District (IRWD) site is included in the City of Lake Forest's Opportunities Study Area (OSA) which has been the subject of previous traffic analyses with the site being converted to residential from non-residential in July 2005 (OSA Program Environmental Impact Report (PEIR)). It was then updated in June 2008 with the addition of public facilities on the site (i.e., a Civic Center). In 2010, a traffic study in support of the site plan for the residential and civic center uses was processed. This traffic study mentioned that the Lake Forest Transportation Mitigation (LFTM) Program, a citywide mitigation program in which the proposed project is a participant, is the mechanism to improve future intersection deficiencies under long-range conditions thereby accommodating future traffic due to the OSA projects and outside traffic. The purpose of this report is to provide a traffic evaluation of an all-residential alternative for the proposed Serrano Summit project development. This report will also present an analysis of the proposed project on existing conditions.

PROJECT ALTERNATIVE LAND USE AND TRIP GENERATION

The land uses that have been assumed on the project site in previous reports are summarized in Table 1. Buildout land use and trip generation for the proposed all-residential project alternative without the Civic Center are also summarized in Table 1. The proposed all-residential project alternative consists of 150 single family units, 458 condominiums and 225 apartments. The civic center uses assumed in the proposed project analyzed in the 2010 traffic study are replaced with 225 apartments, resulting in an all-residential project alternative that generates lesser trips than the residential and civic center proposed project. It should be noted that a park and 1,500 square foot recreation center serving the neighborhood are also planned but would generate nominal vehicle trips. Based on trip rates used in the Lake Forest Traffic Analysis Model (LFTAM), the proposed all-residential project generates 6,748 average daily trips (ADT) with eight and ten percent of the ADT occurring in the AM and PM peak hours, respectively, compared to 8,770 average daily trips (ADT) with seven and ten percent of the ADT occurring in the AM and PM peak hours, respectively, for the residential and civic center alternative analyzed in 2010.

Based on the comparative trip generation results shown in Table 1, the proposed all-residential project alternative is within the development thresholds for the project site as presented in the 2008

Table 1

LAND USE AND TRIP GENERATION SUMMARY

Land Use	Units	AM Peak Hour			PM Peak Hour			ADT
		In	Out	Total	In	Out	Total	
Previous Project on IRWD Site for Alternative 7								
Apartment	833 DU	83	342	425	333	183	516	5,598
Community Facility	44 TSF	36	7	43	100	108	208	2,002
Government Facility	44 TSF	87	11	98	39	87	126	1,228
Total		206	360	566	472	378	850	8,828
Proposed Project (Residential with Civic Center)								
Single Family Detached	150 DU	29	84	113	98	54	152	1,436
Condominium	458 DU	78	230	308	206	151	357	3,732
Community Facility	1.50 TSF	1	0	1	3	4	7	68
Community Facility	20 TSF	16	3	20	46	49	95	910
Government Facility	94 TSF	185	23	208	83	185	268	2,624
Total		309	340	649	436	443	879	8,770
Difference (versus Alternative 7)		103	-20	83	-36	65	29	-58
Proposed Project Alternative (Residential without Civic Center)								
Single Family Detached	150 DU	29	84	113	98	54	152	1,436
Condominium	458 DU	78	230	308	206	151	357	3,732
Apartment	225 DU	23	92	115	90	50	140	1,512
Community Facility	1.50 TSF	1	0	1	3	4	7	68
Total		131	406	537	397	259	656	6,748
Difference (versus Proposed Project)		-178	66	-112	-39	-184	-223	-2,022
Trip Rates								
Single Family Detached	DU	.19	.56	.75	.64	.37	1.01	9.57
Condominium	DU	.17	.50	.67	.45	.33	.78	8.15
Apartment	DU	.10	.41	.51	.40	.22	.62	6.72
Community Facility	TSF	.82	.17	.99	2.28	2.46	4.74	45.5
Government Facility	TSF	1.97	.24	2.21	.88	1.97	2.85	27.92

Abbreviations: ADT – Average Daily Trips
DU – Dwelling Unit
TSF – Thousand Square Feet

approved Alternative 7 traffic analysis, the 2005 approved OSA PEIR, and the 2010 traffic study. The analysis of a proposed project of residential and civic center uses that generates more trips compared to a project with residential use only provides the worst-case analysis. Hence, a finding can be made that impacts by an all-residential project alternative will be similar or no worse than presented in the 2010 traffic study that assumed a project with residential and civic center uses.

EXISTING PLUS PROJECT CONDITIONS

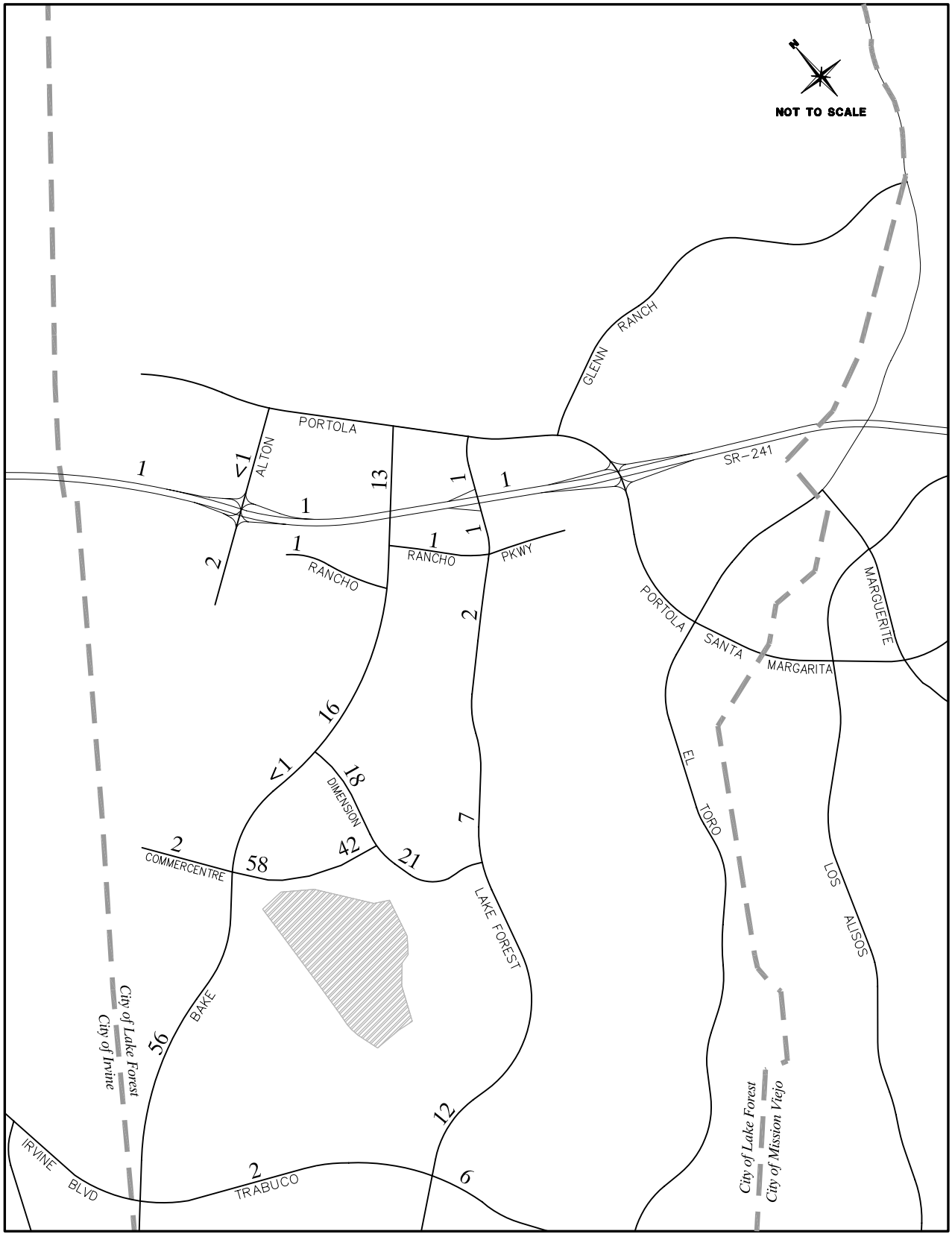
The purpose of the existing plus project analysis is to comply with the California Environmental Quality Act (CEQA), which provides that the baseline for assessing environmental impacts is generally the existing conditions at the time that the environmental document for the project is prepared. The information presented in this section shows the traffic volumes obtained by adding traffic from the worst-case proposed project (i.e., residential with civic center uses as analyzed in 2010) to existing traffic, irrespective of the proposed project's buildout timeframe. Any comparative traffic analysis of full buildout of the proposed project versus existing traffic conditions would be hypothetical because of the actual buildout timeframe of the project (approximately year 2014 or later). Hence the information provided here is intended to satisfy the CEQA requirements by showing the volume comparison arising from this hypothetical scenario.

Traffic Forecasts

The average daily traffic (ADT) forecasts were prepared for a scenario in which traffic generated by the proposed project is added to the existing present-day traffic conditions based on the project trip distribution from the LFTAM that is illustrated in Figure 1. The existing version of the LFTAM was used to determine the effect of the difference between the existing traffic model conditions and the proposed project on existing traffic conditions in the study area and to distribute the traffic associated with the proposed project onto the existing circulation system. Figures 2 and 3 show the ADT volumes for existing and existing plus project conditions. The same study area as the 2010 traffic study is shown here.

Evaluation Context

As noted above, this evaluation of impacts is hypothetical because the proposed project is not a near-term construction project. Occupancy of any of the project site is not anticipated to commence in



Legend

Existing Roadway

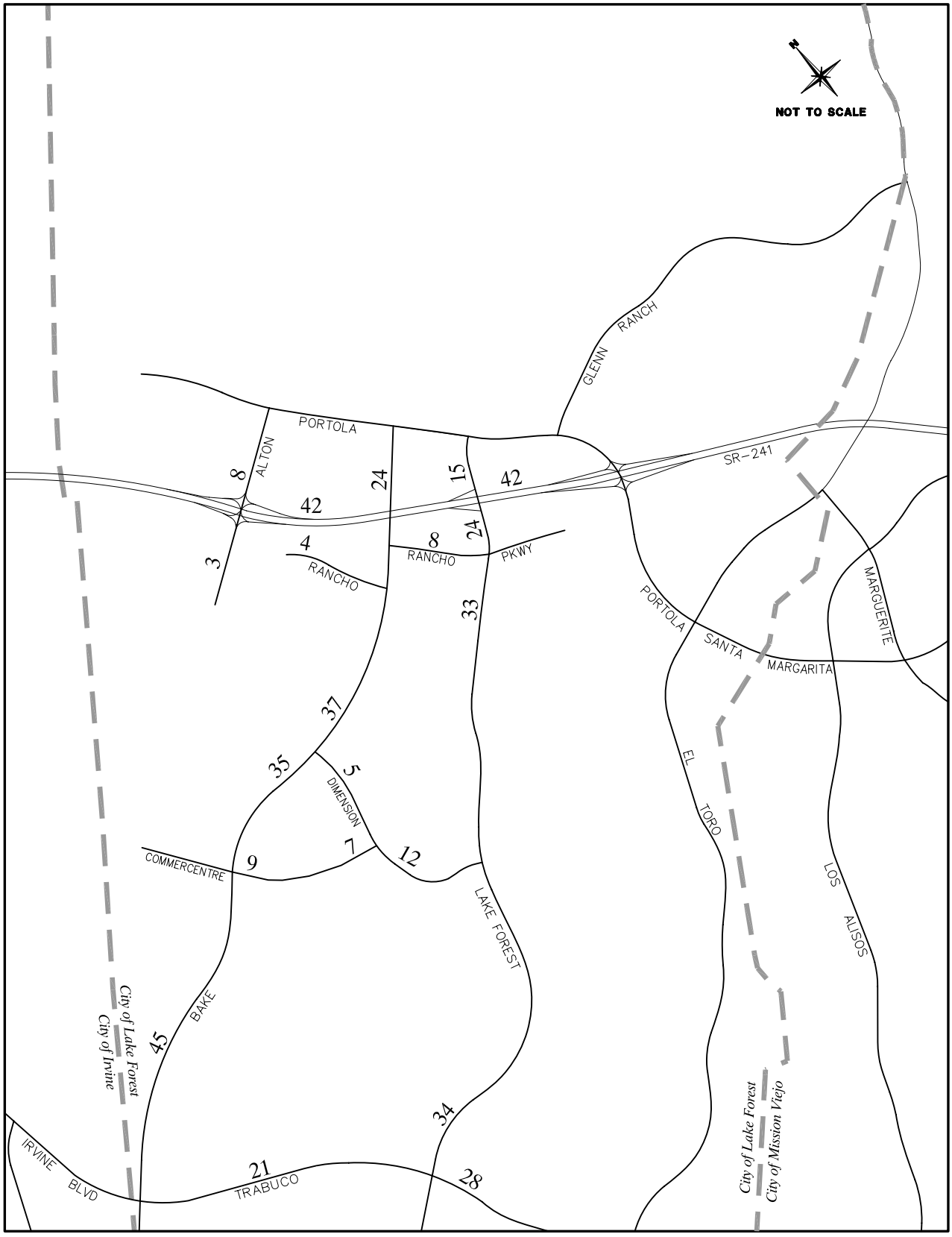
City Boundary

XX Percent of project distribution

Project Site

Figure 1

PROJECT TRIP DISTRIBUTION



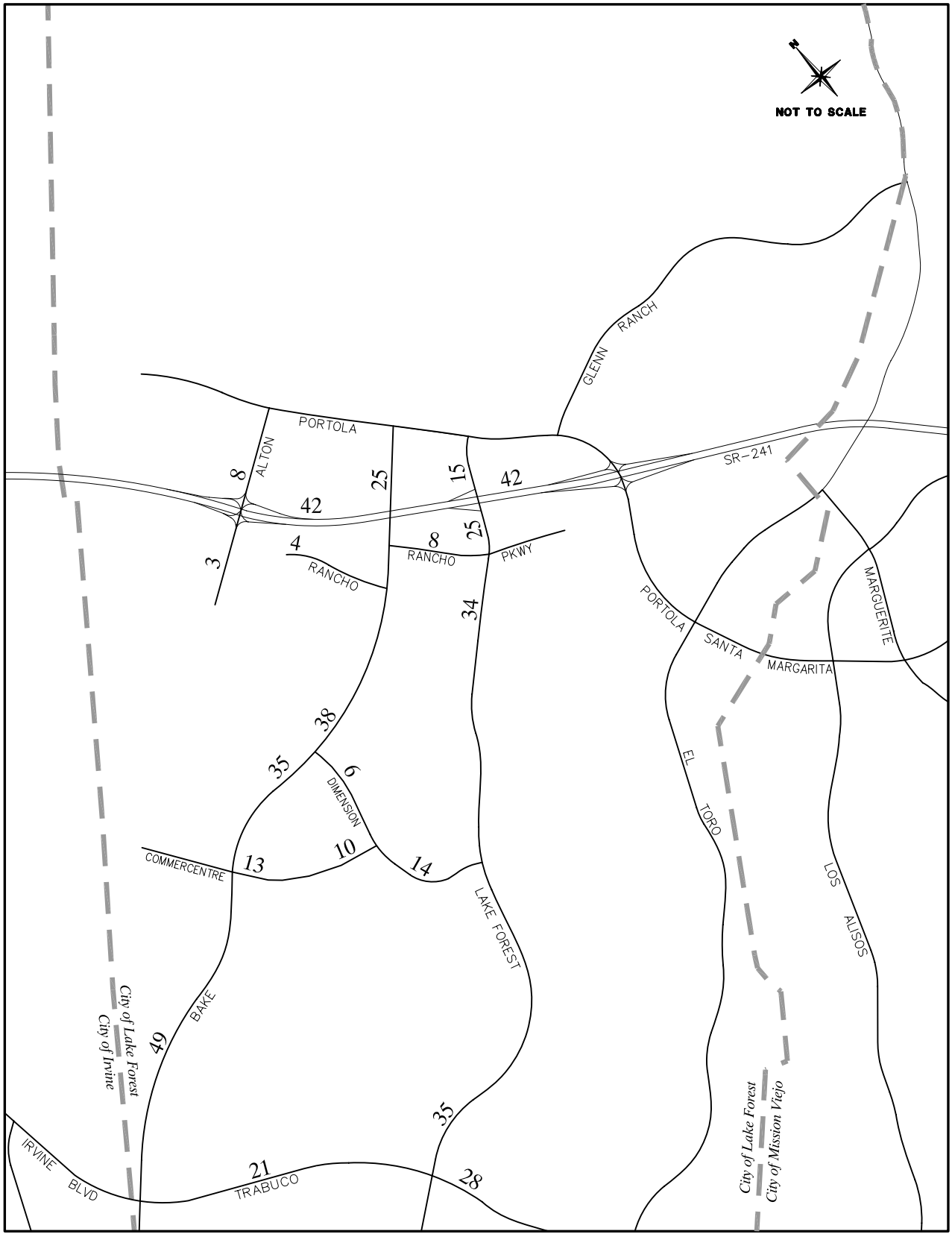
Legend

Existing Roadway

City Boundary

Figure 2

EXISTING ADT VOLUMES (000s)



Legend

Existing Roadway

City Boundary

Figure 3

EXISTING PLUS PROJECT ADT VOLUMES (000s)

year 2011, and buildout of the site is anticipated to occur around year 2014 or later. Therefore, the traffic generated by the proposed project would not be placed on the existing, present day roadway system and existing traffic conditions but would occur with phased improvements as part of project buildout. Also, the existing plus project scenario does not account for future population and development growth in the City of Lake Forest and surrounding areas. These population and development growth projections will add traffic to the existing roadway system, with or without the proposed project, and must be accounted for in the evaluation of the potential traffic impacts of the proposed project. In addition the circulation system is projected to change over time, with or without the proposed project, and these circulation system changes include new roadways and the improvement of existing roadways through established programs such as the Foothill Corridor Phasing Plan (FCPP), the North Irvine Transportation Mitigation (NITM) Program in nearby City of Irvine, and the proposed LFTM Program. For these reasons, the existing plus project scenario is informational in nature and has not been analyzed in the same manner as the actual project scenarios (i.e., in an interim year and long-range context) that were the subject of analysis in the 2010 traffic study report.

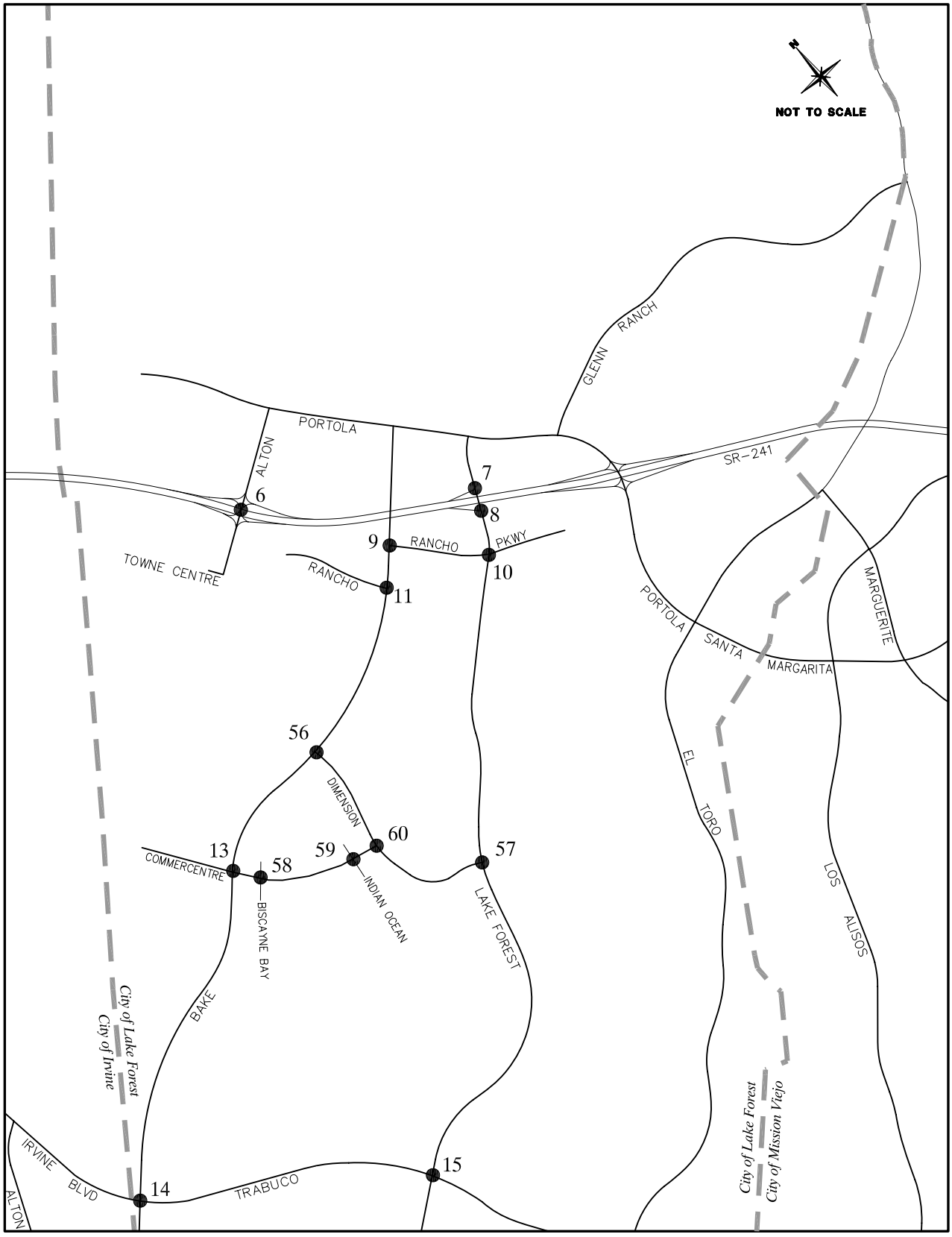
Overall, when comparing the ADT volumes of the proposed project, the ADT volumes under existing plus project conditions are not much higher than existing counts for most of the City's arterial street system surrounding the project.

The existing plus project intersection capacity utilization (ICU) values for the intersections illustrated in Figure 4 and analyzed here are summarized in Table 2 (see Appendix for detailed ICU calculations). As can be seen here, all intersections are expected to operate at LOS "D" or better (i.e., ICU does not exceed .90).

FINDINGS AND CONCLUSIONS

According to the trip generation comparison, an analysis of a proposed project of residential and civic center uses that generates more trips compared to a project with residential use only provides the worst-case analysis. Therefore, the impacts by an all-residential project alternative will be similar or no worse than presented in the 2010 traffic study that assumed a project with residential and civic center uses. All findings and conclusions in the 2010 traffic study would apply to the all-residential project alternative.

The results of the existing plus project analysis presented here for informational purposes only indicate that all intersections are expected to operate at LOS "D" or better (i.e., ICU does not exceed .90).



Legend

Existing Roadway

City Boundary

Figure 4

EXISTING INTERSECTION LOCATION MAP

Table 2

EXISTING PLUS PROJECT INTERSECTION LOS SUMMARY

North-South (NS) Road # & East-West (EW) Road	Existing (No-Project)				Existing Plus Project				Difference	
	AM Pk Hr		PM Pk Hr		AM Pk Hr		PM Pk Hr			
	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	AM	PM
6. Alton & SR-241 Ramps	.20	A	.26	A	.20	A	.26	A	.00	.00
7. Lake Forest & SR-241 NB	.31	A	.38	A	.31	A	.38	A	.00	.00
8. Lake Forest & SR-241 SB	.48	A	.45	A	.48	A	.46	A	.00	.01
9. Bake & Rancho N	.70	B	.66	B	.71	C	.68	B	.01	.02
10. Lake Forest & Rancho	.40	A	.47	A	.40	A	.47	A	.00	.00
11. Bake & Rancho S	.60	A	.74	C	.61	B	.75	C	.01	.01
13. Bake & Commercentre	.54	A	.74	C	.61	B	.80	C	.07	.06
14. Bake & Irvine/Trabuco	.78	C	.76	C	.81	D	.79	C	.03	.03
15. Lake Forest & Trabuco	.63	B	.65	B	.64	B	.65	B	.01	.00
56. Bake & Dimension	.55	A	.67	B	.55	A	.65	B	.00	-.02
57. Lake Forest & Dimension	.49	A	.48	A	.54	A	.51	A	.05	.03
58. Biscayne Bay & Commercentre	.20	A	.26	A	.31	A	.40	A	.11	.14
59. Indian Ocean & Commercentre	.18	A	.20	A	.35	A	.43	A	.17	.23
60. Dimension & Commercentre	.39	A	.58	A	.43	A	.64	B	.04	.06

Abbreviations: ICU – intersection capacity utilization
LOS – level of service
N,S – north, south
NB,SB – northbound, southbound

Appendix

Intersection Capacity Utilization (ICU) Worksheets

6. Alton & SR-241 Ramps

Existing

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	21	.01	9	.01
NBT	2	3400	13	.00*	21	.01*
NBR	f		21		19	
SBL	1	1700	145	.09*	132	.08*
SBT	2	3400	12	.00	20	.01
SBR	f		431		239	
EBL	2	3400	195	.06*	398	.12*
EBT	0	0	0		0	
EBR	f		49		36	
WBL	2	3400	17	.01	2	.00
WBT	0	0	0		0	
WBR	f		124		131	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.20**		**.26**

Existing Plus Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	24	.01	16	.01
NBT	2	3400	13	.00*	22	.01*
NBR	f		22		24	
SBL	1	1700	145	.09*	132	.08*
SBT	2	3400	12	.00	21	.01
SBR	f		431		239	
EBL	2	3400	195	.06*	398	.12*
EBT	0	0	0		0	
EBR	f		54		40	
WBL	2	3400	18	.01	5	.00
WBT	0	0	0		0	
WBR	f		124		131	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.20**		**.26**

7. Lake Forest & SR-241 NB

Existing

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	81	.02*	223	.07
NBT	2	3400	805	.24	1126	.33*
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	818	.24*	776	.23
SBR	1	1700	89	.05	201	.12
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.31**		**.38**

Existing Plus Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	81	.02*	223	.07
NBT	2	3400	805	.24	1134	.33*
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	825	.24*	779	.23
SBR	1	1700	89	.05	201	.12
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.31**		**.38**

8. Lake Forest & SR-241 SB

Existing

	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	2	3400	678	.20	1268	.37*
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	822	.24*	771	.23
SBR	0	0	0		0	
EBL	2	3400	215	.06*	88	.03*
EBT	0	0	0		0	
EBR	1	1700	318	.19	124	.07
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Right Turn Adjustment			EBR	.13*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.48**		**.45**

Existing Plus 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	2	3400	678	.20	1276	.38*
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	829	.24*	774	.23
SBR	0	0	0		0	
EBL	2	3400	215	.06*	88	.03*
EBT	0	0	0		0	
EBR	1	1700	318	.19	124	.07
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Right Turn Adjustment			EBR	.13*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.48**		**.46**

9. Bake & Rancho N

Existing

	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	2	3400	1635	.48*	1067	.31
NBR	d	1700	219	.13	53	.03
SBL	1	1700	265	.16*	49	.03
SBT	2	3400	745	.22	1886	.55*
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	2	3400	35	.01*	199	.06*
WBT	0	0	0		0	
WBR	2	3400	26	.01	158	.05
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.70**		**.66**

Existing Plus 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	2	3400	1658	.49*	1107	.33
NBR	d	1700	222	.13	57	.03
SBL	1	1700	265	.16*	49	.03
SBT	2	3400	771	.23	1926	.57*
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	2	3400	37	.01*	206	.06*
WBT	0	0	0		0	
WBR	2	3400	26	.01	158	.05
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.71**		**.68**

10. Lake Forest & Rancho

Existing

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	102	.06*	177	.10
NBT	2	3400	547	.16	870	.26*
NBR	d	1700	90	.05	11	.01
SBL	1	1700	159	.09	87	.05*
SBT	2	3400	852	.25*	691	.20
SBR	d	1700	92	.05	79	.05
EBL	1	1700	40	.02	129	.08*
EBT	1	1700	62	.04*	19	.01
EBR	1	1700	47	.03	159	.09
WBL	1	1700	6	.00	62	.04
WBT	2	3400	10	.00	88	.03*
WBR	1	1700	4	.00	125	.07
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.40**		**.47**

Existing Plus Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	102	.06*	177	.10
NBT	2	3400	547	.16	878	.26*
NBR	d	1700	92	.05	14	.01
SBL	1	1700	159	.09	87	.05*
SBT	2	3400	859	.25*	694	.20
SBR	d	1700	92	.05	79	.05
EBL	1	1700	40	.02	129	.08*
EBT	1	1700	62	.04*	19	.01
EBR	1	1700	47	.03	159	.09
WBL	1	1700	8	.00	63	.04
WBT	2	3400	10	.00	91	.03*
WBR	1	1700	4	.00	125	.07
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.40**		**.47**

11. Bake & Rancho S

Existing

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	79	.05	170	.10*
NBT	2	3400	1696	.50*	976	.29
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	699	.21	1838	.54*
SBR	1	1700	94	.06	251	.15
EBL	2	3400	167	.05*	159	.05*
EBT	0	0	0		0	
EBR	1	1700	50	.03	177	.10
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.60**		**.74**

Existing Plus Project

	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	172	.10*
NBT	2	3400	1722	.51*	1020	.30
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	726	.21	1885	.55*
SBR	1	1700	94	.06	251	.15
EBL	2	3400	167	.05*	159	.05*
EBT	0	0	0		0	
EBR	1	1700	52	.03	180	.11
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.61**		**.75**

13. Bake & Commercentre

Existing

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	75	.04*	5	.00
NBT	2	3400	1074	.32	1717	.51*
NBR	d	1700	753	.44	194	.11
SBL	1	1700	33	.02	8	.00
SBT	2	3400	1429	.42*	1244	.37
SBR	d	1700	29	.02	9	.01
EBL	1	1700	14	.01*	60	.04
EBT	2	3400	5	.00	25	.01*
EBR	0	0	14	.01	127	.07
WBL	2	3400	108	.03	565	.17*
WBT	1	1700	27	.02*	7	.03
WBR	0	0	3		37	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.54**		**.74**

Existing Plus Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	75	.04*	5	.00
NBT	2	3400	1074	.32	1717	.51*
NBR	d	1700	888	.52	364	.21
SBL	1	1700	33	.02	8	.00
SBT	2	3400	1429	.42*	1244	.37
SBR	d	1700	29	.02	9	.01
EBL	1	1700	14	.01	60	.04
EBT	2	3400	7	.00*	34	.02*
EBR	0	0	14	.01	127	.07
WBL	2	3400	236	.07*	755	.22*
WBT	1	1700	32	.02	12	.03
WBR	0	0	4		40	
Right Turn Adjustment			NBR	.03*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.61**		**.80**

14. Bake & Irvine/Trabuco

Existing

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	221	.13	88	.05
NBT	3	5100	1968	.41*	1215	.36*
NBR	0	0	119		642	.38
SBL	2	3400	46	.01*	273	.08*
SBT	3	5100	1017	.20	1357	.27
SBR	1	1700	404	.24	779	.46
EBL	2	3400	512	.15*	602	.18
EBT	3	5100	144	.03	855	.17*
EBR	1	1700	77	.05	236	.14
WBL	2	3400	631	.19	332	.10*
WBT	3	5100	799	.16*	335	.07
WBR	1	1700	106	.06	95	.06
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.78**		**.76**

Existing Plus Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	221	.13	88	.05
NBT	3	5100	2063	.43*	1339	.39*
NBR	0	0	119		642	
SBL	2	3400	49	.01*	283	.08*
SBT	3	5100	1108	.22	1509	.30
SBR	1	1700	435	.26	801	.47
EBL	2	3400	541	.16*	635	.19
EBT	3	5100	144	.03	855	.17*
EBR	1	1700	77	.05	236	.14
WBL	2	3400	631	.19	332	.10*
WBT	3	5100	799	.16*	335	.07
WBR	1	1700	115	.07	100	.06
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.81**		**.79**

15. Lake Forest & Trabuco

Existing

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	178	.05*	256	.08*
NBT	3	5100	862	.17	976	.19
NBR	1	1700	100	.06	423	.25
SBL	2	3400	165	.05	341	.10
SBT	3	5100	1227	.28*	1062	.25*
SBR	0	0	221		194	
EBL	2	3400	142	.04*	320	.09
EBT	3	5100	431	.08	1115	.22*
EBR	1	1700	305	.18	146	.09
WBL	2	3400	372	.11	177	.05*
WBT	3	5100	1095	.21*	568	.11
WBR	1	1700	377	.22	272	.16
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.63**		**.65**

Existing Plus Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	178	.05*	256	.08*
NBT	3	5100	868	.17	985	.19
NBR	1	1700	100	.06	423	.25
SBL	2	3400	173	.05	359	.11
SBT	3	5100	1234	.29*	1071	.25*
SBR	0	0	221		195	
EBL	2	3400	142	.04*	320	.09
EBT	3	5100	431	.08	1115	.22*
EBR	1	1700	305	.18	146	.09
WBL	2	3400	372	.11	177	.05*
WBT	3	5100	1095	.21*	568	.11
WBR	1	1700	393	.23	291	.17
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.64**		**.65**

56. Bake & Dimension Dr

Existing

	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	2	3400	909	.27	1657	.49*
NBR	d	1700	169	.10	45	.03
SBL	1	1700	136	.08	111	.07*
SBT	2	3400	1640	.48*	1144	.34
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	2	3400	51	.02*	202	.06*
WBT	0	0	0		0	
WBR	1	1700	58	.03	143	.08
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.55**		**.67**

Existing Plus 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	2	3400	888	.26	1594	.47*
NBR	d	1700	152	.09	96	.06
SBL	1	1700	179	.11	143	.08*
SBT	2	3400	1547	.46*	1109	.33
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	2	3400	138	.04*	185	.05*
WBT	0	0	0		0	
WBR	1	1700	98	.06	191	.11
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.55**		**.65**

57. Lake Forest & Dimension Dr

Existing

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	195	.11*	83	.05*
NBT	2	3400	663	.20	640	.19
NBR	0	0	8		19	
SBL	1	1700	25	.01	36	.02
SBT	2	3400	479	.26*	695	.24*
SBR	0	0	407		116	
EBL	1.5		203	{.06}*	388	
EBT	0.5	3400	9	.06	9	.12*
EBR	1	1700	108	.06	117	.07
WBL	1	1700	8	.00	34	.02*
WBT	1	1700	4	.01*	9	.01
WBR	0	0	8		11	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.49**		**.48**

Existing Plus Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	239	.14*	125	.07*
NBT	2	3400	663	.20	640	.19
NBR	0	0	8		19	
SBL	1	1700	25	.01	36	.02
SBT	2	3400	479	.27*	695	.24*
SBR	0	0	434		135	
EBL	1.5		213	{.07}*	421	
EBT	0.5	3400	9	.07	9	.13*
EBR	1	1700	131	.08	170	.10
WBL	1	1700	8	.00	34	.02*
WBT	1	1700	4	.01*	9	.01
WBR	0	0	8		11	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.54**		**.51**

58. Biscayne Bay Dr & Commercentre Dr

Existing

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	3	.00	69	.04*
NBT	1	1700	1	.01	2	.07
NBR	0	0	9		115	
SBL	1	1700	4	.00	27	.02
SBT	1	1700	1	.01*	1	.08*
SBR	0	0	15		141	
EBL	1	1700	59	.03	14	.01*
EBT	2	3400	353	.11*	224	.07
EBR	0	0	25		6	
WBL	1	1700	52	.03*	13	.01
WBT	2	3400	149	.06	268	.08*
WBR	0	0	49		14	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.20**		**.26**

Existing Plus Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	102	.06*	197	.12*
NBT	1	1700	1	.01	2	.07
NBR	0	0	9		115	
SBL	1	1700	4	.00	27	.02
SBT	1	1700	1	.01*	1	.08*
SBR	0	0	15		141	
EBL	1	1700	59	.03	14	.01
EBT	2	3400	473	.16*	350	.14*
EBR	0	0	84		133	
WBL	1	1700	52	.03*	13	.01*
WBT	2	3400	247	.09	397	.12
WBR	0	0	49		14	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.31**		**.40**

59. Indian Ocean Dr & Commercentre Dr

Existing

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	6	.00	23	.01*
NBT	0	0	0		0	
NBR	1	1700	4	.00	29	.02
SBL	0	0	0		8	
SBT	1	1700	0	.00*	0	.01*
SBR	0	0	2		14	
EBL	0.5		39		4	
EBT	1.5	3400	342	.12*	441	.13*
EBR	0		13		5	
WBL	1	1700	16	.01*	6	.00
WBT	2	3400	299	.09	285	.08
WBR	0	0	13		1	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.18**		**.20**

Existing Plus Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	104	.06*	152	.09*
NBT	0	0	0		0	
NBR	1	1700	147	.09	215	.13
SBL	0	0	0		8	
SBT	1	1700	0	.00*	0	.01*
SBR	0	0	2		14	
EBL	0.5		39		4	
EBT	1.5	3400	342	.15*	441	.17*
EBR	0		133		131	
WBL	1	1700	146	.09*	189	.11*
WBT	2	3400	299	.09	285	.08
WBR	0	0	13		1	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.35**		**.43**

60. Dimension & Commercentre

Existing

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	306	.18*	113	.07*
NBT	2	3400	148	.04	103	.03
NBR	d	1700	341	.20	20	.01
SBL	1	1700	37	.02	15	.01
SBT	2	3400	78	.02*	229	.07*
SBR	d	1700	15	.01	11	.01
EBL	1	1700	7	.00	49	.03*
EBT	1	1700	206	.12*	12	.01
EBR	1	1700	152	.09	470	.28
WBL	1	1700	27	.02*	271	.16
WBT	1	1700	13	.01	183	.15*
WBR	0	0	5		66	
Right Turn Adjustment					EBR	.21*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.39**		**.58**

Existing Plus Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	374	.22*	209	.12*
NBT	2	3400	148	.04	103	.03
NBR	d	1700	341	.20	20	.01
SBL	1	1700	37	.02	15	.01
SBT	2	3400	78	.02*	229	.07*
SBR	d	1700	77	.05	98	.06
EBL	1	1700	175	.10	138	.08*
EBT	1	1700	206	.12*	12	.01
EBR	1	1700	227	.13	567	.33
WBL	1	1700	27	.02*	271	.16
WBT	1	1700	13	.01	183	.15*
WBR	0	0	5		66	
Right Turn Adjustment					EBR	.17*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.43**		**.64**