

*******APPENDIX E
TUGBOGE TRAFFIC STUDY**

GENERAL PLAN UPDATE

TRAFFIC ANALYSIS

Submitted to:



CITY OF ORANGE

Prepared by:



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Revised June 2009

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ES EXECUTIVE SUMMARY

The objective of the Circulation Element is to document existing transportation facilities in the Orange General Plan Planning Area, their conditions, and impacts resulting from future land use identified in the City's General Plan. Impact analysis will assist in the determination of the future Master Plan of Arterial Highways (MPAH) throughout the City to serve future forecast traffic demands. The Circulation Element Traffic Analysis describes the existing circulation system, including arterial network and intersections, the public transit system, bicycle paths, recreation facilities, parking, and railroad operations, before evaluating future traffic conditions. Four future alternative land use and circulation system scenarios were evaluated, as described in **Table ES.1**.

Table ES.1 Future Scenarios

Scenario	Land Use Assumption	Circulation Assumption
No Project	2030 Buildout of Existing General Plan	2030 Buildout of Existing MPAH
Project	2030 Buildout of Proposed General Plan	2030 Buildout of Proposed MPAH with the Meats Avenue/SR-55 Interchange
Alternative 1	2030 Buildout of Proposed General Plan	2030 Buildout of Proposed MPAH without the Meats Avenue/SR-55 Interchange
Alternative 2	2030 Reduced Intensity General Plan	2030 Buildout of Proposed MPAH with the Meats Avenue/SR-55 Interchange

A key assumption in the development of future traffic conditions is the underlying roadway network, which assumes buildout of the existing City Master Plan of Arterial Highways (MPAH) and includes the following roadway improvements:

- Cambridge Street, Katella Avenue to South City Limits – improve to 4-lane secondary facility
- Cannon Avenue, Serrano Avenue to Santiago Canyon Road – improve to 6-lane major facility
- Chapman Avenue, Lemon Street to Grand Street – improve to 4-lane primary facility
- Crawford Canyon Road, Chapman Avenue to Newport Avenue – improve to 4-lane secondary facility
- Eckhoff Street, Orangewood Avenue to Collins Avenue – improve to 4-lane secondary facility
- Glassell Street, La Veta Avenue to Collins Avenue – improve to 4-lane secondary facility
- La Veta Avenue, Flower Street to Parker Street – improve to 6-lane major facility
- La Veta Avenue, Glassell Street to Cambridge Street – improve to 4-lane secondary facility
- Lewis Street, Metropolitan Drive to Chapman Avenue – improve to 4-lane primary facility
- Lincoln Avenue, west City Limits to Nohl Ranch Road – improve to 6-lane major facility
- Main Street, La Veta Avenue to Collins Avenue – improve to 6-lane major facility
- Metropolitan Drive, The City Drive to Chapman Avenue – add 4-lane secondary facility
- Orangewood Avenue, Eckhoff Street to Main Street – improve to 6-lane major facility
- Parker Street, South City Limit to La Veta Avenue – improve to 4-lane secondary facility
- Prospect Street, Fairhaven Avenue to La Veta Avenue – improve to 4-lane secondary facility
- Rampart Street, Chapman Avenue to Orangewood Avenue – improve to 4-lane secondary facility
- Santiago Boulevard, north of Lincoln Avenue/Nohl Ranch Road – improve to 6-lane major facility
- Santiago Canyon Road/Villa Park Road, Handy Street to Newport Avenue – improve to 6-lane major facility
- Taft Avenue, west City limits to Tustin Street – improve to 6-lane major facility
- The City Drive, Garden Grove Boulevard to SR-22 – improve to 6-lane major facility
- Walnut Avenue, Main Street to Prospect Street – improve to/add 4-lane secondary facility

While the No Project Alternative, which represents buildout of the Existing General Plan land use scenario, assumes the Existing MPAH as the background roadway system, the remaining alternatives refine the Existing MPAH with minor improvements that define the Proposed MPAH. The Proposed MPAH represents a more realistic future base network and accounts for the following deviations from the Existing MPAH:

- Cambridge Street, Katella Avenue to South City Limits – maintain existing 2-lane configuration
- Chapman Avenue, Lemon Street to Grand Street – maintain existing 2-lane configuration
- Walnut Avenue, Main Street to Prospect Street – maintain existing 2-lane configuration
- Glassell Street, Almond Avenue to Palm Avenue – maintain existing 2-lane configuration
- Implementation of a full-diamond interchange at Meats Avenue/SR-55

These arterial facilities are residential collectors or located in the Orange Plaza; hence, improvements to them are unlikely due to political, historical, residential, right-of-way, and environmental issues, among others. As there are no plans to widen these arterials to four-lane facilities as specified in the Existing City MPAH and that the City desires to retain the existing configurations on these facilities, these deviations define the Proposed MPAH. A full diamond interchange at SR-55 and Meats Avenue was also incorporated into the Project Scenario and Alternative 2. The Meats Avenue interchange with SR-55 has the potential to relieve the congestion experienced at the SR-55 and Lincoln Avenue/Nohl Ranch Road and Katella Avenue interchanges.

Level of service analysis was performed on arterial segments and at key citywide intersections using turning movement volumes forecast by the Orange Traffic Analysis Model. The level of service analysis for both arterial segments and intersections assumes full buildout of the City Master Plan of Arterial Highways (Proposed or Existing, as identified in **Table ES.1**), therefore, intersection lane improvements were incorporated into the intersection analysis.

The future alternative trip generation comparison to existing conditions is presented in **Table ES.2**. The Project Scenario generates approximately 50% more trips than are currently generated within the City. Alternative 2 generates approximately 5% fewer trips than the Project Scenario.

Table ES.2 Trip Generation Summary

Scenario	Daily Trips Generated
Existing	995,000
No Project	1,187,300
Project	1,456,700
Alternative 1	1,456,700
Alternative 2	1,376,100

Source: OTAM

Based on the Proposed Project land use and trip generation, several arterial segments and intersections are forecast to operate at deficient levels of service under daily and peak hour conditions. Mitigation measures for the arterial segments that operate at an unacceptable LOS under daily conditions and intersections that operate at an unacceptable LOS during either A.M. or P.M. peak hours have been identified. Generally, arterial segment performance is dictated by upstream and downstream intersection performance because the capacity of arterial segments is often constricted to what can filter through the intersections during the peak hours. Since arterial segment mitigation may not be warranted based on peak hour intersection performance, mitigation measures are generally applied to intersections to facilitate peak period traffic flow throughout the roadway network.

Although mitigation measures are often tied to intersections, mitigation measures based on the daily performance of arterial segments throughout the City have been recommended. **Table ES.3** presents recommended arterial mitigation measures for the deficient segments within Orange under Project

Buildout conditions. Although Chapman Avenue and Glassell Street through the Historic Orange Plaza operate at deficient levels of service, mitigation is not recommended through the Orange Plaza as capacity enhancements, i.e. widening, of these facilities would be detrimental to preserving the heritage of the Plaza. The significant unavoidable traffic impacts to the arterials through the Orange Plaza are outweighed and found to be acceptable due to the following specific economic, social, and historical benefits:

- The Plaza Historic District achieved California Historic Landmark significance in 1981 and the Plaza Historic District was placed on the National Register of Historic Places on March 19, 1982;
- Old Town Orange became a national historic district and was placed in the National Registry of Historic Places in 1997;
- The Orange Plaza traffic circle is the focal point of the Historic District;
- The City has developed a Historic Preservation Element of the General Plan;
- The mission of the Old Towne Preservation Association is to preserve and enhance the unique Old Towne Orange Area through education, communication, and community development;
- In order to enhance and preserve its heritage, the City established design and development standards for the Old Towne District;
- The character, ambiance, and historical nature of the district could be compromised by four-lane divided facilities through the Orange Plaza; and
- In order to maintain the integrity of the traffic circle, it would be difficult to improve Glassell Street and Chapman Avenue to four-lane divided standards and maintain the capacity of a facility through the circle.

In addition, the circulation system around the Orange Plaza is a dense grid; therefore, it has the capability of providing relief to potential future traffic demands on Glassell Street or Chapman Avenue through additional available capacity on parallel facilities.

Many of the arterial deficiencies occur at freeway interchanges as traffic filters through the City and onto the regional transportation system. Taft Avenue at the west City Limit, east of SR-57, is forecast to operate at LOS E. Coordination of intersections through the Taft Avenue corridor is recommended to accommodate heavy daily traffic demands. Taft Avenue at the west City Limit is not recommended for improvement without detailed peak hour analysis to warrant physical arterial segment widening. In addition, evaluation of this segment must be coordinated with the City of Anaheim as widening of this segment in Orange will necessitate widening in the City of Anaheim to maintain consistency across jurisdictional boundaries. Widening of this segment of Taft Avenue requires widening the bridge over the Santa Ana River and minor impacts to fronting retail/industrial uses.

Chapman Avenue through the SR-55 interchange is also forecast to exceed daily capacity thresholds. Advance Traffic Management System strategies, such as signal coordination, is also recommended for the Chapman Avenue corridor. Chapman Avenue between SR-55 and Yorba Street operates just above the LOS E/F threshold. Due to the issues identified with the baseline improvement identified under No Project conditions, it is not recommended to improve this segment beyond its current configuration. Between Yorba Street and Prospect Street, future forecast volumes specify that an 8-lane facility is required. This improvement would be very costly and have significant retail, office, medical facility, and residential right-of-way impacts. Accessibility to fronting retail could also be impacted by implementation of this improvement measure. Chapman Avenue east of SR-55 should continually be monitored and operational improvements incorporated as appropriate to maintain mobility through this key corridor. The segment of Chapman Avenue to Canyon View Avenue operates at LOS F and improvement to a 6-lane facility would improve the LOS to acceptable levels. Widening this short segment may require earthwork but it is likely that property impacts would be minimal.

No arterial widening improvements are recommended for Glassell Street through the SR-22 interchange to La Veta Avenue. Implementation of widening along this segment would impact the historically designated Hart Park and the historic Morton Bay Fig tree in front of Holy Family Catholic Church. In

addition, fronting residential properties would be significantly impacted by any widening along this segment and on-street parking would likely need to be eliminated.

Batavia Street is recommended to be improved to a 4-lane divided facility for multiple segments between Walnut Avenue and Lincoln Avenue. The segment between Walnut and Collins Avenue could be widened by removal of on-street parking with minimal, if any, right-of-way impacts. On-street parking along this segment is heavily utilized by the fronting industrial uses on a daily basis. The segments between Taft Avenue and Lincoln Avenue, while classified as a 4-lane undivided secondary, actually operates more like a 4-lane divided primary facility because the entire stretch has a two-way left turn lane. The mitigation for this segment would be to reclassify as a primary facility.

Collins Avenue, similar to Batavia Street, is classified as a 4-lane undivided facility. Upgrading to a 4-lane divided configuration would provide for an acceptable LOS. Improvement to a divided facility would require widening, which may impact fronting residential and industrial properties.

Glassell Street between Katella Avenue and Orange Olive Road is recommended to be improved to a 6-lane facility. While this improvement can potentially be implemented with minimal right-of-way acquisition required, on-street parking would be eliminated for fronting business and residential uses.

Several segments of Katella Avenue are forecast to operate at LOS E under future conditions. Widening of Katella Avenue could have significant adverse impacts to fronting retail, office, and industrial uses and therefore is not recommended. Removal of on-street parking, where currently available, would be required under a widening scenario. The intersections along Katella Avenue should be continually monitored to ensure acceptable performance during the peak hours. Utilizing the full capacity of the system may result in acceptable operations through the corridor.

Main Street between Town & County Road and La Veta Avenue is forecast to operate at LOS E. Widening this segment to an 8-lane facility is recommended. This improvement would likely require bridge widening over SR-22 and could potentially impact fronting commercial uses, specifically at the northeast corner of Town & County Road and Main Street.

The implementation of the Meats Avenue interchange with SR-55 requires upgrading Meats Avenue between Tustin Street and the SR-55 Southbound Ramps to a 6-lane facility and the segment between the northbound and southbound ramps to a 6-lane facility. The segment between the northbound ramps and Santiago Boulevard would require an upgrade to a 4-lane divided facility. Even with the improvement of the segment west of the southbound ramps, this segment is forecast to operate at LOS E. Widening to an 8-lane segment is not recommended. Implementation of the interchange would have right-of-way impacts to residential uses on all four quadrants of the interchange, likely displacing several residential units, including trailer park units north of Meats Avenue west of SR-55 in the Orange Mobile Home Park. In addition, the bridge over SR-55 would require widening to ensure appropriate intersection geometry is provided to support the ramp intersections.

Although Prospect Street between Chapman Avenue and Walnut Avenue and Wanda Road between Katella Avenue and Santiago Boulevard are labeled as 4-lane undivided secondary facilities, they operate as a 4-lane divided primary facility since the entirety of the segments either include a two-way left turn lane or a raised median. Typically, improving a facility from a 4-lane undivided configuration to a 4-lane divided configuration involves removal of on-street parking, construction of a raised median or restriping to account for a two-way left turn lane and potential widening to achieve a divided configuration. The classification for these segments could be correctly revised to identify as primary facilities.

Recommended mitigation measures for deficient intersections under Project conditions are presented in **Table ES.4**. Twelve intersections are forecast to operate at a deficient level of service under Future Project conditions. Generally, intersection mitigation measures proposed include the provision of additional turning lane capacity. Under Project conditions, the implementation of the Meats Avenue/SR-55 interchange requires mitigation resulting from increased demand through the intersection as a result of the new interchange.

Table ES.3 Project Future Arterial Mitigation Recommendations

ID	Arterial	From	To	MPAH Lanes	2030 ADT	LOS E Capacity	V/C Ratio	LOS	Mitigation Measure
8	Batavia Street	Walnut Avenue	Collins Avenue	4U	22,300	24,000	0.93	E	Improve to 4-lane divided facility
9	Batavia Street	Collins Avenue	Katella Avenue	4U	23,300	24,000	0.97	E	
11	Batavia Street	Taft Avenue	Fletcher Avenue	4U	21,800	24,000	0.91	E	
12	Batavia Street	Fletcher Avenue	Lincoln Avenue	4U	22,900	24,000	0.95	E	
311	Chapman Avenue	Lemon Street	Glassell Street	2U	12,500	12,000	1.04	F	No mitigation recommended through Historic Orange Plaza
312	Chapman Avenue	Glassell Street	Grand Street	2U	12,600	12,000	1.05	F	
35	Chapman Avenue	SR-55	Yorba Street	8D	75,300	75,000	1.00	F	Monitor segment and evaluate intersections along Chapman Avenue between Tustin Street and Prospect Street to maximize throughput.
36	Chapman Avenue	Yorba Street	Prospect Street	6D	63,600	56,300	1.13	F	Widen to 8-lane facility
40	Chapman Avenue	Crawford Cyn Rd.	Canyon View Avenue	4D	39,700	37,500	1.06	F	Widen to 6-lane facility
47	Collins Avenue	Batavia Street	Glassell Street	4U	23,000	24,000	0.96	E	Improve to 4-lane divided facility
49	Collins Avenue	Cambridge Street	Tustin Street	4U	22,900	24,000	0.95	E	Improve to 4-lane divided facility
72	Glassell Street	SR-22	La Veta Avenue	4D	34,600	37,500	0.92	E	No mitigation recommended
74	Glassell Street	Chapman Avenue	Palm Avenue	2U	11,900	12,000	0.99	E	No mitigation recommended through Historic Orange Plaza
77	Glassell Street	Katella Avenue	Orange Olive Road	4D	37,700	37,500	1.01	F	Improve to 6-lane divided facility
89	Katella Avenue	Struck Avenue	Main Street	6D	56,500	59,115	0.96	E	Monitor upstream and downstream intersections to evaluate need for widening segment.
90	Katella Avenue	Main Street	Batavia Street	6D	55,100	59,115	0.93	E	
91	Katella Avenue	Batavia Street	Glassell Street	6D	53,700	59,115	0.91	E	
92	Katella Avenue	Glassell Street	Cambridge Street	6D	54,500	59,115	0.92	E	
117	Main Street	Town & Country Road	La Veta Avenue	6D	55,500	56,300	0.99	E	Widen to 8-lane facility
127	Meats Avenue	Tustin Street	SR-55 SB Ramps	4U	53,200	24,000	2.22	F	Improve to 6-lane divided facility
1271	Meats Avenue	SR-55 SB Ramps	SR-55 NB Ramps	4U	45,500	24,000	1.90	F	Improve to 6-lane divided facility
1272	Meats Avenue	SR-55 NB Ramps	Santiago Boulevard	4U	31,900	24,000	1.27	F	Improve to 4-lane divided facility
153	Prospect Street	Chapman Avenue	Spring Street	4U	23,000	24,000	0.96	E	Improve to 4-lane divided facility
154	Prospect Street	Spring Street	Walnut Avenue	4U	22,100	24,000	0.92	E	Improve to 4-lane divided facility
177	Taft Avenue	West City Limit	Main Street	6D	56,400	56,300	1.00	F	Monitor upstream and downstream intersections to evaluate need for widening segment.
210	Wanda Road	Katella Avenue	Santiago Boulevard (VP)	4U	27,800	24,000	1.16	F	Improve to 4-lane divided facility

Deficient Segment, LOS E

Deficient Segment, LOS F

Arterial Segment Level of Service With Mitigation Measure Implementation									
8	Batavia Street	Walnut Avenue	Collins Avenue	4D	22,300	37,500	0.59	A	
9	Batavia Street	Collins Avenue	Katella Avenue	4D	23,300	37,500	0.62	B	
11	Batavia Street	Taft Avenue	Fletcher Avenue	4D	21,800	37,500	0.58	A	
12	Batavia Street	Fletcher Avenue	Lincoln Avenue	4D	22,900	37,500	0.61	B	
311	Chapman Avenue	Lemon Street	Glassell Street	2U	12,500	12,000	1.04	F	
312	Chapman Avenue	Glassell Street	Grand Street	2U	12,600	12,000	1.05	F	
35	Chapman Avenue	SR-55	Yorba Street	8D	75,300	75,000	1.00	F	
36	Chapman Avenue	Yorba Street	Prospect Street	8D	63,600	75,000	0.85	D	
40	Chapman Avenue	Crawford Cyn Rd.	Canyon View Avenue	6D	39,700	56,300	0.71	C	
47	Collins Avenue	Batavia Street	Glassell Street	4D	23,000	37,500	0.61	B	
49	Collins Avenue	Cambridge Street	Tustin Street	4D	22,900	37,500	0.61	B	
72	Glassell Street	SR-22	La Veta Avenue	6D	34,600	56,300	0.61	B	
74	Glassell Street	Chapman Avenue	Palm Avenue	2U	11,900	12,000	0.99	E	
77	Glassell Street	Katella Avenue	Orange Olive Road	6D	37,700	56,300	0.67	B	
89	Katella Avenue	Struck Avenue	Main Street	6D	56,500	59,115	0.96	E	
90	Katella Avenue	Main Street	Batavia Street	6D	55,100	59,115	0.93	E	
91	Katella Avenue	Batavia Street	Glassell Street	6D	53,700	59,115	0.91	E	
92	Katella Avenue	Glassell Street	Cambridge Street	6D	54,500	59,115	0.92	E	
117	Main Street	Town & Country Road	La Veta Avenue	8D	55,500	75,000	0.74	C	
127	Meats Avenue	Tustin Street	SR-55 SB Ramps	6D	53,200	56,300	0.94	E	
1271	Meats Avenue	SR-55 SB Ramps	SR-55 NB Ramps	6D	45,500	56,300	0.81	D	
1272	Meats Avenue	SR-55 NB Ramps	Santiago Boulevard	4D	31,900	37,500	0.85	D	
153	Prospect Street	Chapman Avenue	Spring Street	4D	23,000	37,500	0.59	A	
154	Prospect Street	Spring Street	Walnut Avenue	4D	22,100	37,500	0.61	B	
177	Taft Avenue	West City Limit	Main Street	6D	56,400	56,300	1.00	F	
210	Wanda Road	Katella Avenue	Santiago Boulevard (VP)	4D	27,800	37,500	0.74	C	

Typical intersection mitigation measures include intersection widening to add capacity through additional turn or through lanes. Additional mitigation measures for intersections include re-striping the existing turn movement configuration to allow for more capacity for critical movements. Critical movements are the movements on the intersection approaches that generally have high volumes and result in deficient intersection operations. Advanced Transportation Management Systems (ATMS) are components that are implemented to maximize intersection capacity without physical capacity to intersections. ATMS strategies typically include revised signalization and signal coordination to increase throughput through a corridor. ATMS strategies generally increase capacity by five percent, therefore a 0.05 V/C ratio credit will be applied to intersections where these strategies may be recommended.

Since the Cannon Street @ Santiago Canyon Road intersection operates just above the allowable threshold, it is recommended to apply ATMS strategies at this location to maximize operational capacity and throughput of the intersection. The recommended improvement for the Cannon Street @ Serrano Avenue intersection requires reconstruction of the westbound approach of Serrano Avenue to provide for triple westbound left turns. However, this improvement requires Cannon Street to be widened in the southbound direction to accommodate a triple left turn lane. Impacts to residences would be required to implement this improvement measure.

Forecast volumes at Jamboree Road @ Chapman Avenue require a 3rd northbound left turn lane. Based on the current configuration and the vacant property in the southeast corner of this intersection, this improvement appears feasible.

The recommended improvement to add a second westbound left turn lane for the Katella Avenue @ SR-55 southbound ramps intersection may result in impacts and potential bridge reconstruction to provide an additional turn lane onto southbound SR-55 under the existing freeway. The cost and construction impacts may be prohibitive to implementation of this improvement measure.

The intersection of Main Street @ La Veta Avenue is forecast to operate at LOS E. Application of ATMS strategies at this location are recommended to achieve acceptable operations. Widening this intersection beyond its buildout configuration may result in significant right-of-way impacts due to directly adjacent major office building structures.

The intersection of Santiago Boulevard @ Meats Avenue operates at LOS E under Project conditions during the A.M. peak hour. Due to the implementation of the Meats Avenue/SR-55 interchange, additional capacity is required at this intersection. An exclusive right turn lane could be implemented, although right-of-way and potential residential property impacts may result. Another alternative is to incorporate ATMS strategies at this location, although capacity enhancements to account for the new interchange would likely result in more efficient operations.

The ramp intersections of Meats Avenue with SR-55 were evaluated under peak hour conditions to identify potential deficiencies associated with the proposed interchange. In order to obtain acceptable peak hour operations at the southbound SR-55 intersection with Meats Avenue, the southbound off-ramp should include an exclusive left turn lane, an exclusive right turn lane, and a shared left turn-right turn lane. Although the intersection operates at LOS C during the peak hours, the westbound left turn volume of approximately 500 vehicles during the A.M. peak hour suggests a second westbound left turn lane might be necessary to ensure there are no queuing issues with the west turn traffic onto southbound SR-55 on the Meats Avenue overcrossing bridge. Both intersections assume 2 through lanes in each direction and an exclusive right turn lane to access the SR-55 ramps. For the northbound SR-55 intersection with Meats Avenue, dual northbound left turn lanes are required to satisfy forecast demands. In addition, dual eastbound left turn lanes are required on the overcrossing bridge to support the high P.M. peak hour volumes accessing SR-55 northbound.

The Wanda Road @ Villa Park Road requires additional capacity for the westbound and northbound movements. This is currently a very tight intersection with little room for future expansion. Increased capacity in the westbound direction would likely impact fronting single and multi-family residences located adjacent to the right-of-way.

Table ES.4 Project Future Intersection Mitigation Recommendations

ID	Intersection Location	A.M. Peak Hour		P.M. Peak Hour		Mitigation Measure
		ICU	LOS	ICU	LOS	
7	Cannon Street @ Santiago Canyon Road	0.94	E	0.93	E	Apply ATMS to enhance capacity
8	Cannon Street @ Serrano Avenue	0.99	E	0.88	D	Add 3 rd Westbound Left Turn Lane
12	Jamboree Road @ Chapman Avenue	0.94	E	0.90	D	Add 3 rd Northbound Left Turn Lane
27	Southbound SR-55 Ramps @ Katella Avenue	0.97	E	0.87	D	Add 2 nd Westbound Left Turn Lane
30	Main Street @ La Veta Avenue	0.82	D	0.95	E	Apply ATMS applications to enhance capacity
40	Santiago Boulevard @ Meats Avenue	0.91	E	0.77	C	Restripe shared Westbound Through Right Lane to 2nd Through Lane, Add Westbound Right Turn Lane
41	Wanda Road @ Villa Park Road	1.18	F	0.97	E	Add 3rd Westbound Through Lane, Add 2nd Southbound Left Turn Lane
48	Tustin Street @ Lincoln Avenue	0.93	E	1.01	F	Add 3rd Eastbound Through Lane and 2nd Eastbound Right Turn Lane
56	Main Street @ Struck Avenue	1.08	F	0.70	B	Add 2nd Eastbound and 2nd Westbound Through lanes
57	Main Street @ Collin Avenue	0.92	E	1.18	F	Add one Northbound and Eastbound Right Turn Lane, Restripe Westbound approach to 2 Left Turn Lanes and 1 Through Lane
58	SR-57 SB Ramps @ Orangewood Avenue	0.97	E	0.94	E	Convert Eastbound Right Turn Lane to 3rd Through Lane, Add 2nd Westbound Left Turn Lane
64	SR-57 SB Ramps @ Chapman Avenue	0.76	C	0.92	E	Convert Northbound and Southbound Right Turn Lane to Through Lane, Convert Northbound and Southbound shared Left and Through lane to Left-Turn only lane; Alternate mitigation – Apply ATMS

 Deficient Intersection, LOS E
 Deficient Intersection, LOS F

Intersection Level of Service with Mitigation Measure Implementation					
ID	Intersection Location	A.M. Peak Hour		P.M. Peak Hour	
		ICU	LOS	ICU	LOS
7	Cannon Street @ Santiago Canyon Road	0.89	D	0.88	D
8	Cannon Street @ Serrano Avenue	0.86	D	0.88	D
12	Jamboree Road @ Chapman Avenue	0.88	D	0.90	D
27	Southbound SR-55 Ramps @ Katella Avenue	0.74	C	0.76	C
30	Main Street @ La Veta Avenue	0.77	C	0.90	D
40	Santiago Boulevard @ Meats Avenue	0.87	D	0.77	C
41	Wanda Road @ Villa Park Road	0.88	D	0.86	D
48	Tustin Street @ Lincoln Avenue	0.74	C	0.90	D
56	Main Street @ Struck Avenue	0.79	C	0.63	B
57	Main Street @ Collin Avenue	0.83	D	0.86	D
58	SR-57 SB Ramps @ Orangewood Avenue	0.74	C	0.71	C
64	SR-57 SB Ramps @ Chapman Avenue	0.80	C	0.89	D
		0.71	C	0.71	C

The Tustin Street @ Lincoln Avenue intersection is constrained by restaurant and gas station/retail uses fronting on the western side of the intersection and the SR-55 under-crossing on the eastern side of the intersection. Even with implementation of the Meats Avenue interchange, this intersection is forecast to operate at unacceptable levels of service. This improvement would potentially require significant right-of-way acquisition and bridge replacement/construction costs and, as a result, may be considered infeasible.

The intersection of Main Street @ Struck Avenue operates at LOS F under Project conditions during the A.M. peak hour. Addition of a second eastbound and westbound through lane along Struck Avenue is required to bring this intersection to perform with acceptable LOS. Located within an existing commercial and industrial area, it is feasible that these improvements can be implemented although the through lane needs to be carried through the intersection prior to transitioning back to 2 lanes.

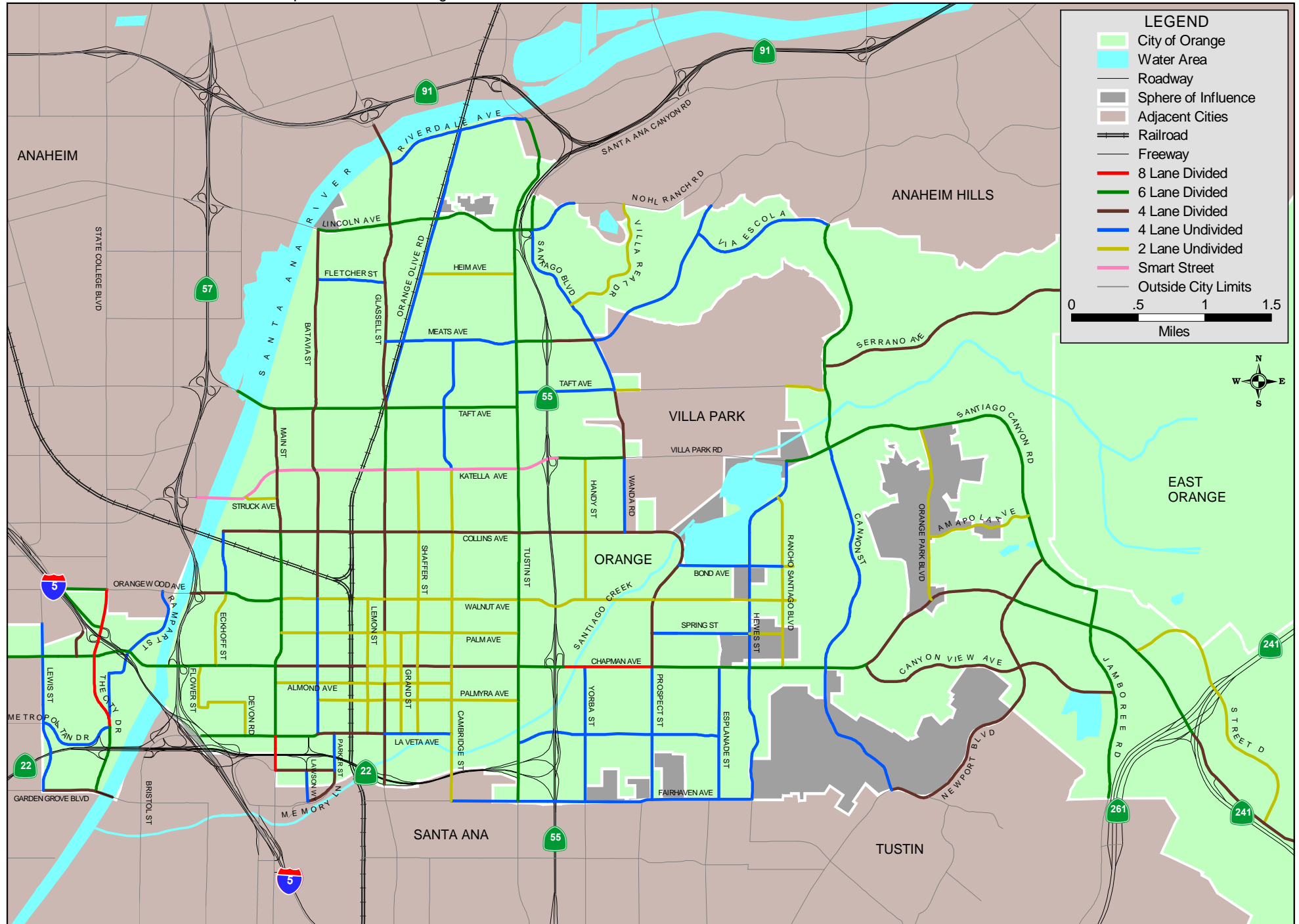
The intersection of Main Street @ Collins Avenue operates at LOS E and LOS F under Project conditions during the A.M. and P.M. peak hour, respectively. Addition of a northbound and an eastbound right-turn lanes as well as restriping the westbound approach from one left-turn, two through lanes to two left-turn lanes and one through lane are recommended to bring the intersection within the acceptable LOS D threshold. The addition of the northbound right-turn lane has been recommended as part of the *City of Anaheim Platinum Triangle Traffic Study*. Similar to the intersection of Main Street @ Struck Avenue, this intersection is located in a predominantly industrial area although implementation of these improvements will potentially require right-of-way.

The intersection of Southbound SR-57 Ramps @ Orangewood Avenue operates at LOS E under Project conditions for both peak hours. Improvements recommended at this location in the *City of Anaheim Platinum Triangle Traffic Study* include the conversion of the eastbound right-turn lane to a third eastbound through lane and the addition of a second westbound left-turn lane. These improvements bring the intersection within the acceptable LOS threshold.

The intersection of Southbound SR-57 Ramps @ Chapman Avenue operates at LOS E under Project conditions for P.M. peak hour. Conversion of the north and south right-turn lane into a through lane and the conversion of the shared northbound and southbound left and through lane to a left-turn only lane are adequate to improve the intersection to perform within acceptable LOS D. Since this intersection is forecast to perform marginally above the recommended threshold, an alternative mitigation measure is to apply ATMS strategies at this location to improve traffic flow.

The other three future arterials experience similar daily and peak hour deficiencies throughout the city's circulation system. Recommended mitigation or improvement measures between the alternatives are generally consistent. Alternative 1, which is consistent with the Project Scenario with the exception of the Meats Avenue interchange at SR-55, does not reveal significant impacts to the circulation system along the SR-55 corridor. The implementation of an interchange at Meats provides additional regional accessibility and provides relief to adjacent interchanges that experience congestion, although minor impacts are expected to the local system with implementation of an interchange. The intersection of Santiago Boulevard @ Meats Avenue deteriorates, as would be expected, with a Meats Avenue interchange. Meats Avenue would need to be upgraded to satisfy future demands for traffic accessing SR-55. **Figure ES.1** presents the recommended City Master Plan of Arterial Highways.

ES.1 - Future MPAH with General Plan Implementation and Mitigation



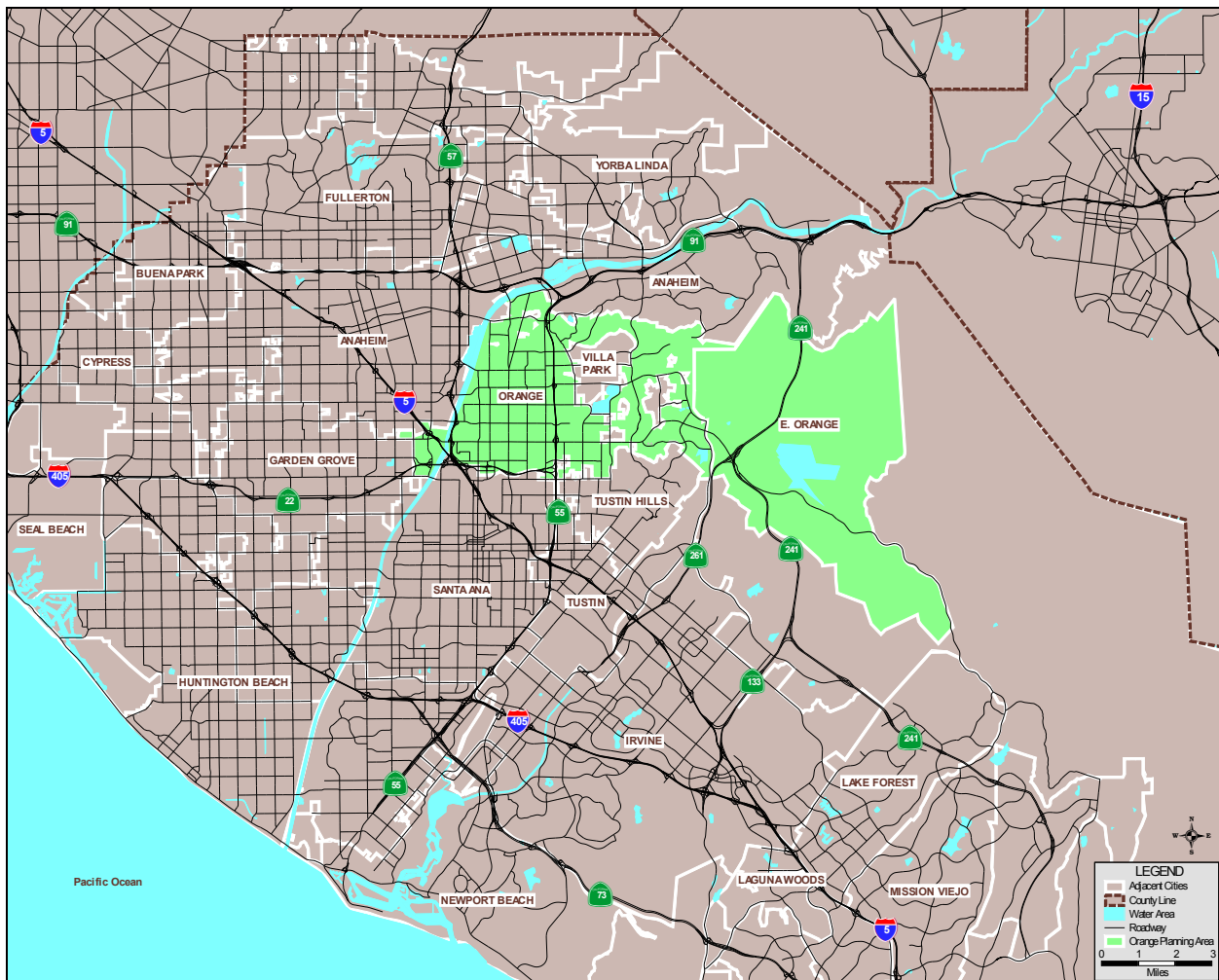
1.0 INTRODUCTION

The objective of the Circulation Element is to document existing transportation facilities in the Orange General Plan Planning Area, their condition, and impacts resulting from future land use identified in the City's General Plan. It describes the existing circulation system including arterial network and intersections, the public transit system, bicycle paths, recreation facilities, parking, railroad operations and includes a chapter on the future traffic conditions.

1.1 Analysis Area

The analysis area for the City of Orange Circulation Study is illustrated in **Figure 1.1**. The City is located in the central part of Orange County, California, bounded by the City of Anaheim on the north-westerly side, unincorporated county on the east, and the cities of Santa Ana and Tustin on the south. The City envelopes the City of Villa Park located in the north-east portion of the analysis area.

Figure 1.1 Analysis Area



2.0 ELEMENTS OF THE CIRCULATION SYSTEM

This chapter documents the existing circulation system in the City of Orange. The City's circulation network includes an extensive network of roadways, bus transit service, commuter rail and freight rail. This chapter also includes the City's current bikeway system, recreational trail system and parking facility inventory.

2.1 Freeways

The City's roadway network can be broadly classified as a limited access freeway system and arterial system. The City's freeway and arterial system is shown in **Figure 2.1**. Interstate and regional access to the City is provided predominantly by Interstate 5 (Santa Ana Freeway). In addition, connections to the City from northern Orange County, San Diego County, Los Angeles County, Riverside County, and San Bernardino County are provided by State Route 57 (Orange Freeway), State Route 55 (Costa Mesa Freeway) and State Route 22 (Garden Grove Freeway). State Route 91 (Riverside Freeway) traverses just outside the northern edge of the City providing additional freeway access to the City. State Route 241 (Eastern Transportation Corridor) is a toll facility that directly serves the easternmost portion of the Planning Area and provides additional access to the City. Caltrans is responsible for maintenance and improvements to non-toll freeways while the Transportation Corridor Agency (TCA) is responsible for the Eastern Transportation Corridor toll facility.

The Santa Ana Freeway (Interstate 5) is a northwest-southeast freeway traversing through the south-west corner of the City providing direct access to Los Angeles County to the north and San Diego County to the south. This facility is comprised of six general purpose lanes and one high-occupancy-vehicle (HOV) lane in each direction for its entire length of approximately two miles through the City. Interstate 5 (I-5) has two interchanges within the City limits - one located at its junction with State Route 57 (SR-57) and SR-22, commonly known as the Orange Crush, and the other at State College Boulevard.

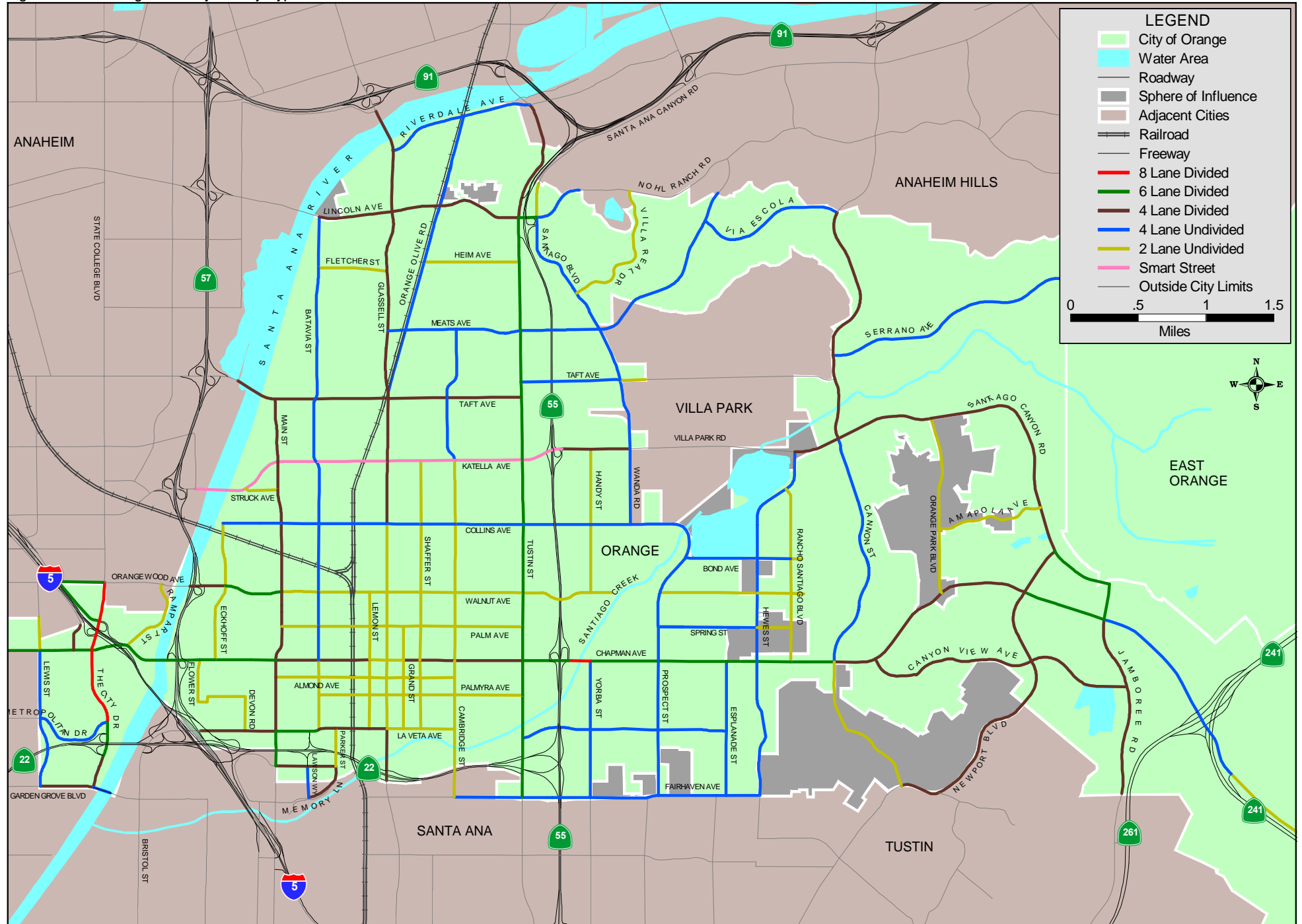
The Orange Freeway (SR-57) is a north-south freeway originating at the junction of I-5 and SR-22 extending to San Dimas in Los Angeles County. It provides access for the most part to the central and northern parts of Orange County, and eastern parts of Los Angeles County. The facility has five general purpose lanes and one HOV lane in each direction. There are three interchanges along its length of approximately one and a half miles through the City. They are located at the junctions of I-5 and SR-22, Chapman Avenue, and Orangewood Avenue.

The Costa Mesa Freeway (SR-55) is a north-south freeway, passing through the center of the City providing access to the coastal communities of Orange County (i.e. Costa Mesa, Huntington Beach, and Newport Beach). The freeway is a ten-lane facility with four general purpose lanes and one HOV lane in each direction. It extends approximately four miles across the City with four interchanges. These interchanges are located at Lincoln Avenue, Katella Avenue, Chapman Avenue, and the SR-22 junction.

The Garden Grove Freeway (SR-22) is an east-west freeway that traverses through the southern portion of the City. The facility is currently being improved to include an HOV lane and additional general purpose lanes. Through the City of Orange, SR-22 will include three general purpose lanes and one HOV lane. It extends approximately four miles across the City with five interchanges. These interchanges are located at Tustin Street, Glassell Street, Main Street/La Veta Avenue, I-5/SR-57/Bristol Street, and The City Drive.

The Riverside Freeway (SR-91) is an east-west freeway that traverses just north of the City. SR-91 provides access to key arterial facilities in Orange including interchanges at Tustin Street and Glassell Street. Additionally, SR-91 provides regional access through interchanges with SR-55 and SR-57 and the Eastern Transportation Corridor.

Figure 2.1 - Existing Roadway Facility Types



Source File: Fig2-1-y04-Exist-Facility-061109.map

The Eastern Transportation Corridor (SR-241) is a north-south toll facility on the eastern edge of the City. This facility provides direct access to the East Orange Planning Area. SR-241 has three toll lanes in each direction and provides regional access through an interchange at Santiago Canyon Road.

2.2 Arterials

The arterials on the western side of SR-55 generally follow north-south and east-west orientation. On the eastern side of the freeway, the arterials are characterized by curvilinear streets due to undulating geographical surroundings. Key existing north-south arterials include Tustin Street, Glassell Street, Main Street, and The City Drive while the east-west arterials include Lincoln Avenue, Taft Avenue, Katella Avenue, Chapman Avenue, and parts of La Veta Avenue.

Table 2.1 lists the existing roadway facility types in the City, along with their description and classification as specified in the Orange County Master Plan of Arterial Highways (MPAH). The MPAH generally defines a divided roadway as a facility that contains a physical barrier or a buffer between each direction of travel such as a raised median or a median that contains a continuous two-way left turn lane. A divided roadway removes vehicles making a left turn from the travel lanes so as not to impede through traffic and constrict roadway capacity. Undivided arterials refer to roadways that do not contain a sufficient buffer between each direction of travel, therefore traffic making a left turn will impede through traffic. Undivided arterials may provide turn movement pockets at intersections.

Table 2.1 Roadway Facility Types

Facility Type	MPAH Classification	Characteristics
8-Lane Divided	Principal	Primarily serves through traffic with limited local access
6-Lane Divided	Major	Serves mostly through traffic with some local access allowed
4-Lane Divided	Primary	Serves through and local traffic
4-Lane Undivided	Secondary	Serves mostly local traffic
2-Lane Divided/ Undivided	Minor Arterial/Collector/Commuter/Local/Residential	Serves local traffic
Smart Street	Smart Street	4-8 lane divided, with possible signal coordination, intersection capacity improvements and/or grade separation

Source: Orange County Transportation Authority

The description of each class is briefly described below with a daily capacity that represents the Level of Service (LOS) E capacity. While The City of Orange daily arterial LOS standard is D, the LOS E threshold is most commonly used to represent the maximum capacity available on a facility before traffic operations severely break down.

Principal Arterials are 8-lane divided roadways that accommodate up to 75,000 vehicles on an average weekday. They connect directly to freeways and do not allow for on-street, curbside parking.

Major Arterials are 6-lane divided roadways that accommodate up to 56,300 vehicles on an average weekday. They facilitate traffic circulation, and similar to principal arterials do not allow for on-street, curbside parking.

Primary Arterials are 4-lane divided roadways that accommodate up to 37,500 vehicles on an average weekday. They provide for easy circulation and allow for limited on-street, curbside parking.

Secondary Arterials are 4-lane undivided roadways that accommodate up to 24,000 vehicles on an average weekday and allow for on-street parking.

Minor Arterials, collectors, commuters, local and residential facilities are 2-lane divided or undivided roadways that accommodate up to 12,000 vehicles per average weekday. Similar to the Secondary arterials, these facilities generally allow for on-street parking. Several types of 2-lane facilities currently exist within the City and may serve slightly different purposes. Generally, they collect and distribute traffic to higher-capacity arterials. Minor Arterials and collectors/commuters may provide through access while serving abutting land uses. They distribute traffic from the localized system onto the citywide circulation system and typically accommodate between 3,000 – 12,000 vehicles per average weekday. Local facilities generally serve the immediately surrounding land uses and can accommodate up to 6,000 vehicles per average weekday. Residential facilities are the lowest classification of 2-lane facility and serve as access to abutting residential uses. Residential facilities serve up to 2,000 vehicles per average weekday. Each serve slightly different purposes and may have different capacity thresholds based on various factors.

The City of Orange Standard Plans and Specifications (January 2007) specifies plans for various types of 2 lane facilities. Although there has been discussion regarding potential sub-categorization of 2-lane facilities, such differentiation of specific characteristics of 2-lane facilities is not necessary at this time. Facility specifications are determined on several factors on a case-by-case basis and include traffic volumes, adjacent land uses, etc. Since sub-categorization of 2-lane facilities would only be required if policy level decisions are based on facility classifications and decisions including right-of-way widths and traffic calming measures are evaluated on a case-by-case basis dependent upon several factors, the sub-categories of 2-lane facilities is not necessary.

In 2001 (subsequently updated in February 2006), the City of Orange adopted the Residential Neighborhood Traffic Management Program which identified specific criteria for establishing potential traffic management/calming strategies. The program specifies candidate facilities must be no more than one lane in each direction, which encompasses all Minor Arterials, and additional requirements including maximum width, daily volumes, accident rates and 85th percentile speeds. Since the requirements are not specific to a particular characteristic of Minor Arterials it is not recommended that sub-categories be defined for 2-lane facilities.

Smart Streets are 4- to 8-lane divided arterials with improved features such as synchronized traffic signals, bus bays, consolidated driveways, etc. Consistent with the Orange County Transportation Analysis Model (OCTAM 3.2), Smart Street speeds and capacities are assumed to be five percent greater than those assumed for Principal or Major facilities.

Figure 2.1 reflecting the existing arterial classifications, shows that a portion of The City Drive is categorized as a principal arterial which provides direct access to I-5 in the north and SR-22 in the south. Main Street, Tustin Street and Chapman Avenue (east of Tustin Street) are all designated as major arterials. Primary arterials include Glassell Street, La Veta Avenue, Taft Avenue, and Chapman Avenue (west of Tustin Street). Katella Avenue is designated as a 6-lane smart street.

2.3 Public Transportation

Public transportation in the City is primarily provided by Orange County Transportation Authority (OCTA). A total of 18 OCTA bus routes serve various activity centers located throughout the City. In addition, the Riverside Transit Authority (RTA) provides long-distance express commuter service between The Village at Orange and the Downtown Terminal in Riverside. **Table 2.2** lists the bus routes that serve the City.

Table 2.2 Existing Bus Routes

Route #	Route Type	Route Service	Service Corridors	Key Orange Activity Centers Served
24	Local	Fullerton - Orange	Malvern Ave. / Chapman Ave. / Tustin St.	The Village at Orange Lincoln Park and Ride
42	Local	Orange - Seal Beach	Lincoln Ave. / Los Alamitos Blvd. / Seal Beach Blvd.	The Village at Orange Lincoln Park and Ride

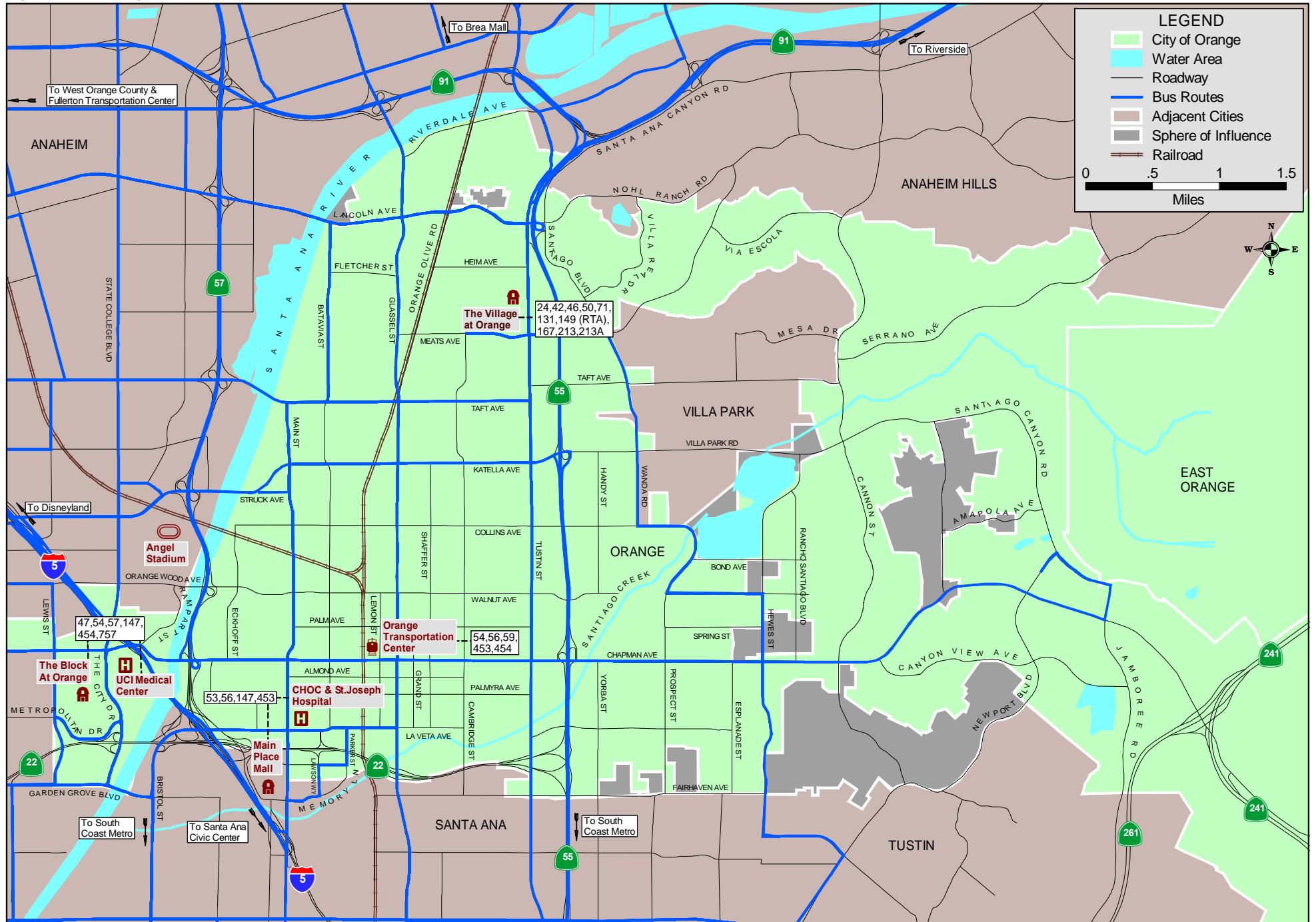
Table 2.2 – Existing Bus Routes (Continued)

Route #	Route Type	Route Service	Service Corridors	Key Orange Activity Centers Served
46	Local	Los Alamitos - Orange	Ball Rd. / Taft Ave.	The Village at Orange Lincoln Park and Ride
47	Local	Brea - Newport Beach	Brea Blvd. / Anaheim Blvd. / Fairview St.	Theo Lacy Jail Orangewood Children's Home UCI Medical Center The Block at Orange
50	Local	Long Beach - Orange	Katella Ave.	The Village at Orange Lincoln Park and Ride
53	Local	Brea - Irvine	Main St.	Batavia Industrial Parks Children's Hospital - CHOC St. Joseph's Hospital OCTA Offices
54	Local	Garden Grove - Orange	Chapman Ave.	Orange Civic Center Orange Transportation Center The Plaza UCI Medical Center The Block at Orange
56	Local	Garden Grove - Orange	Garden Grove Blvd.	Orange Transportation Center OCTA Offices Children's Hospital - CHOC St. Joseph's Hospital
57	Local	Brea - Newport Beach	State College Blvd. / Bristol St.	The Block at Orange UCI Medical Center Theo Lacy Jail Orangewood Children's Home
59	Local	Brea - Irvine	Kraemer Blvd. / Glassell St. / Grand Ave. / Von Karman Ave.	Orange Transportation Center Chapman University Orange Plaza
71	Local	Yorba Linda - Balboa	Tustin St. / Red Hill Ave. / Newport Blvd.	The Village at Orange Lincoln Park and Ride
131	Community	Yorba Linda - Orange	Lakeview Ave. / Riverdale Ave. / Tustin St.	The Village at Orange Lincoln Park and Ride
147	Community	Brea - Santa Ana	Raiit St. / Greenville St. / Fairview St.	UCI Medical Center The Block at Orange OCTA Offices St. Joseph's Hospital Children's Hospital - CHOC
167	Community	Anaheim - Irvine	Santiago Blvd. / Hewes St. / Bryan Ave.	The Village at Orange Lincoln Park and Ride
213	Intra County	Brea - Irvine Express	SR-55	Lincoln Park and Ride The Village at Orange
453	Station Link	Orange Transportation Center -St. Joseph's Hospital	Chapman Ave. / Main St. / La Veta Ave.	Orange Transportation Center Children's Hospital - CHOC St. Joseph's Hospital OCTA Offices
454	Station Link	Orange Transportation Center -The Block at Orange	Chapman Ave. / Metropolitan Dr.	Orange Transportation Center UCI Medical Center The Block at Orange Bergen Brunswig Nexus
757	Inter County	Diamond Bar - Santa Ana Express	SR-57	UCI Medical Center The Block at Orange
RTA 149	Inter County	Riverside Downtown Terminal - The Village at Orange	SR-91	The Village at Orange

Source: Orange County Transportation Authority, Riverside Transit Agency

Figure 2.2 illustrates the existing bus routes within the City as well as peripheral routes outside the City of Orange limits.

Figure 2.2 - Existing Public Transportation



OCTA operates several fixed bus routes that directly serve the City. Fixed routes offered by OCTA include local bus routes, express bus routes and station link shuttles. Local bus routes provide shuttle service to various cities of Orange County, while express bus routes provide faster connections to places both within and outside the County of Orange. Station link shuttles offer service between the Orange Transportation Center and The Block at Orange, a major shopping and entertainment hub in the City, St. Joseph's Hospital and Mainplace Mall. Express bus and station link routes only operate during peak commuter periods. There are 11 local routes serving the City. Of these 11 routes, routes # 42, 53, 57 and 59 have route variations, thereby offering additional transit flexibility.

There are two OCTA express routes serving the City – one intra-county, connecting the City of Orange with the City of Irvine, and one inter-county, providing connection with the City of Diamond Bar. A Riverside Transit Agency express route connects Riverside with the Village at Orange.

OCTA also offers specialized community transportation services, such as standard service (curb-to-curb service), door-to-door service, subscription service, and same-day taxi service. Some of these services cater to senior citizens and people with disabilities residing in the City.

2.4 Railroad Operations

The railroad operations in the City are categorized into three types: commuter rail, passenger rail, and freight rail. Metrolink, the commuter rail service for the City of Orange is provided by the Southern California Regional Rail Authority (SCRRA) and OCTA. The passenger rail service is offered by AMTRAK while the freight rail is provided by Union Pacific Railroad and Burlington Northern Santa Fe (BNSF). **Figure 2.3** shows the rail routes traversing the City.

Metrolink operates two commuter rail lines which connect the City, via the Orange Transportation Center, to other important destinations in the region. The two lines are The Orange County Line and Inland Empire-Orange County Line. The Orange County Line offers direct connections to Los Angeles Union Station to the north and Oceanside to the south. The existing number of weekday trips on the Orange County Line is as follows:

- Orange to Union Station (Northbound) – Ten
- Union Station to Orange (Southbound) – Nine
- Orange to Oceanside (Southbound) – Six
- Oceanside to Orange (Northbound) – Six

The Inland Empire-Orange County Line offers direct connections to Riverside /San Bernardino to the east and Oceanside to the south. The existing number of weekday trips on this line is as follows:

- Orange to Riverside/San Bernardino (Eastbound) – Six
- Riverside/San Bernardino to Orange (Westbound) – Six
- Orange to Oceanside (Southbound) – Six
- Oceanside to Orange (Northbound) – Six

AMTRAK operates the Pacific Surfliner passenger rail between San Diego and Paso Robles which also connects several coastline communities along its route. It makes one stop daily at the Orange Transportation Center with the southbound train departing Los Angeles Union Station at 2:00 P.M. OCTA has continued to lobby for additional access for rail service within Orange County and while Amtrak does not recognize the Orange Transportation Center as a stop, agreed to the stop to serve southbound users during the mid-day. Union Pacific Railroad and BNSF operate freight rail services through the City of Orange. The services offered include transporting containers, trailers, and chemical/oil tankers. The major inter-modal cargo loading facilities are located in ports of San Diego, Long Beach, and Los Angeles.

Figure 2.3 - Existing Railroad



2.5 Bikeway System

The City of Orange Bikeways Master Plan identifies 32 miles of bikeways within the City. Bikeways are used by a wide variety of people for many purposes including children on their way to school, commuters riding to work, exercise, recreation, etc. A bikeway system is an integral part to the overall circulation system even though it may carry a relatively small part of trip activity. A comprehensive bikeway system provides enhances quality of life through additional connectivity and mobility contributing to a balanced transportation system. A safe bikeway system encourages use for commuting and recreational purposes. The Orange Bikeways Master Plan classifies bikeways into three types:

- Class I Bike Path – Provides for bicycle travel on a right-of-way completely separated from the street
- Class II Bike Lane – Provides a striped lane for one-way travel within the street
- Class III Bike Routes – Provides routes which are signed but not striped

The development of the Orange Bikeways Master Plan included the evaluation of the OCTA Commuter Bikeways Strategic Plan (CBSP) and incorporation of information where appropriate to ensure consistency. In 2001, OCTA adopted the Commuter Bikeways Strategic Plan an prioritization of proposed bikeways was based on input from cities and the County, gap closure in the existing network and connectivity to other transportation modes. Multi-modal connections exist at all park and ride facilities. Bicycle racks and lockers are available at various locations throughout the City including multi-modal connections, community facilities, hospitals and community parks. **Figure 2.4** illustrates the existing system of bikeways in the City which includes 10.6 miles of Class I bike paths, 20.8 miles of Class II bike lanes, and 3.3 miles of Class III bike routes.

The City recognizes the need for the City of Orange Bikeway Master Plan consistency with the CBSP since OCTA is the main funding conduit for bikeway funds for the City of Orange. In addition, the California Bicycle Transportation Act of 1994 suggest all cities and counties adopt a bicycle master plan with specific elements such as land use, population density, existing and proposed bikeways, parking facilities, multi-modal connections, etc.

2.6 Recreation Trails

The City of Orange currently provides over 15 miles of recreation trails connecting a large number of neighborhood and community parks. The City has developed a Recreation Trail Master Plan, which presents an in depth analysis of existing and proposed trails; and recreation facilities. The Master Plan serves as a guide to the City in implementing a diverse trail system and enhancing the recreational opportunities for the community. Trail segments are designated as Type-A trails and Type-B trails. The Type-A trails are designated for use by equestrians, trail bicyclists and hikers, while Type-B trails are meant for use by trail bicyclists and hikers only. Similar to bikeways, recreational trails are a component of a balanced transportation system.

The County of Orange has developed Master Plan of Regional Riding and Hiking Trails as well as developing a Recreation Element to their General Plan. The County notes that close collaboration with cities is essential in maximizing recreational uses throughout the County. The Santa Ana River trail and Santiago Oaks trails and recreational amenities are among those specified in the County's Regional Riding and Hiking Trails plan and the Master Plan of Regional Recreation Facilities and both interface directly with the City of Orange.

2.7 Parking

Parking availability can impact circulation system activity. Parking impacts arterial capacity, access to local businesses, access to multi-modal transportation centers. While building code requirements dictate the amount of parking for development projects, parking policies are often required to manage supply and

demand for key destinations such as the Orange Plaza. The Orange Transportation Center, a key component of Downtown Orange, must provide adequate parking to meet commuter parking supply needs, otherwise users may be discouraged from taking alternative modes of transportation. Currently, according to OCTA analysis, excess parking supply exists to meet daily commuter needs at the Orange Transportation Center. The current General Plan includes a goal to consider the parking needs of the community in all land use planning efforts. In support of this goal, it is noted that off-street public parking should specifically be provided in the Old Town eight block Downtown Core.

Figure 2.5 shows the location of existing public parking lots in Downtown Orange. Some parking lots such as the Metrolink station parking located off Chapman Avenue have no time limit. The remaining parking lots have a maximum time limit of three hours with or without permit. Public lots with wheel stops that are painted yellow allow for unlimited parking for vehicles with a City parking permit.

2.8 Truck Routes

Figure 2.6 presents truck routes approved by the City. The routes predominantly traverse the general industrial area located in the western part of the City, as indicated in the figure as well as the higher capacity facilities that traverse the City. Truck routes are identified for purposes including safety, roadway maintenance and traffic operations, among others. The Orange Municipal Code identifies trucks as motor vehicles designed, used or maintained primarily for the transportation of property having an unladen weight of six thousand pounds or more. The truck routes include the following major arterials:

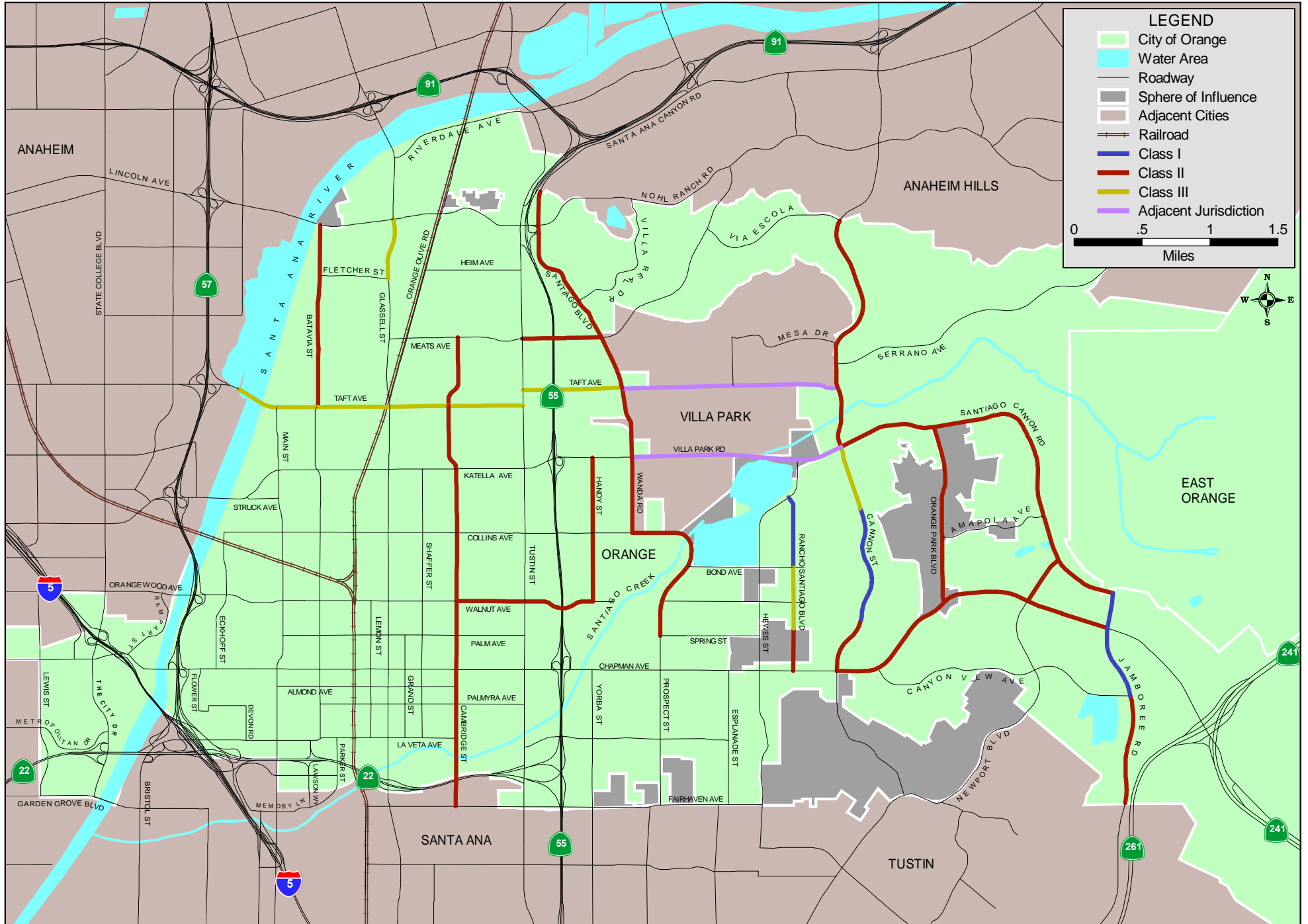
- Tustin Street
- Katella Avenue
- Chapman Avenue
- The City Drive
- Main Street (north of Collins Avenue and south of Chapman Avenue)
- Glassell Street (north of Collins Avenue)
- Batavia Street (between Chapman Avenue and Lincoln Avenue)
- Oranewood Avenue (west of Eckhoff Street)
- Eckhoff Street (north of Oranewood Avenue)
- Lincoln Avenue (west of Santiago Boulevard)
- Jamboree Road
- La Veta Avenue
- Town & Country Road

Chapman Avenue is a limited truck route between Batavia Street and Tustin Street. Between these extents on Chapman Avenue, vehicles over twenty-six thousand pounds gross weight are prohibited.

2.9 Emergency Response Routes

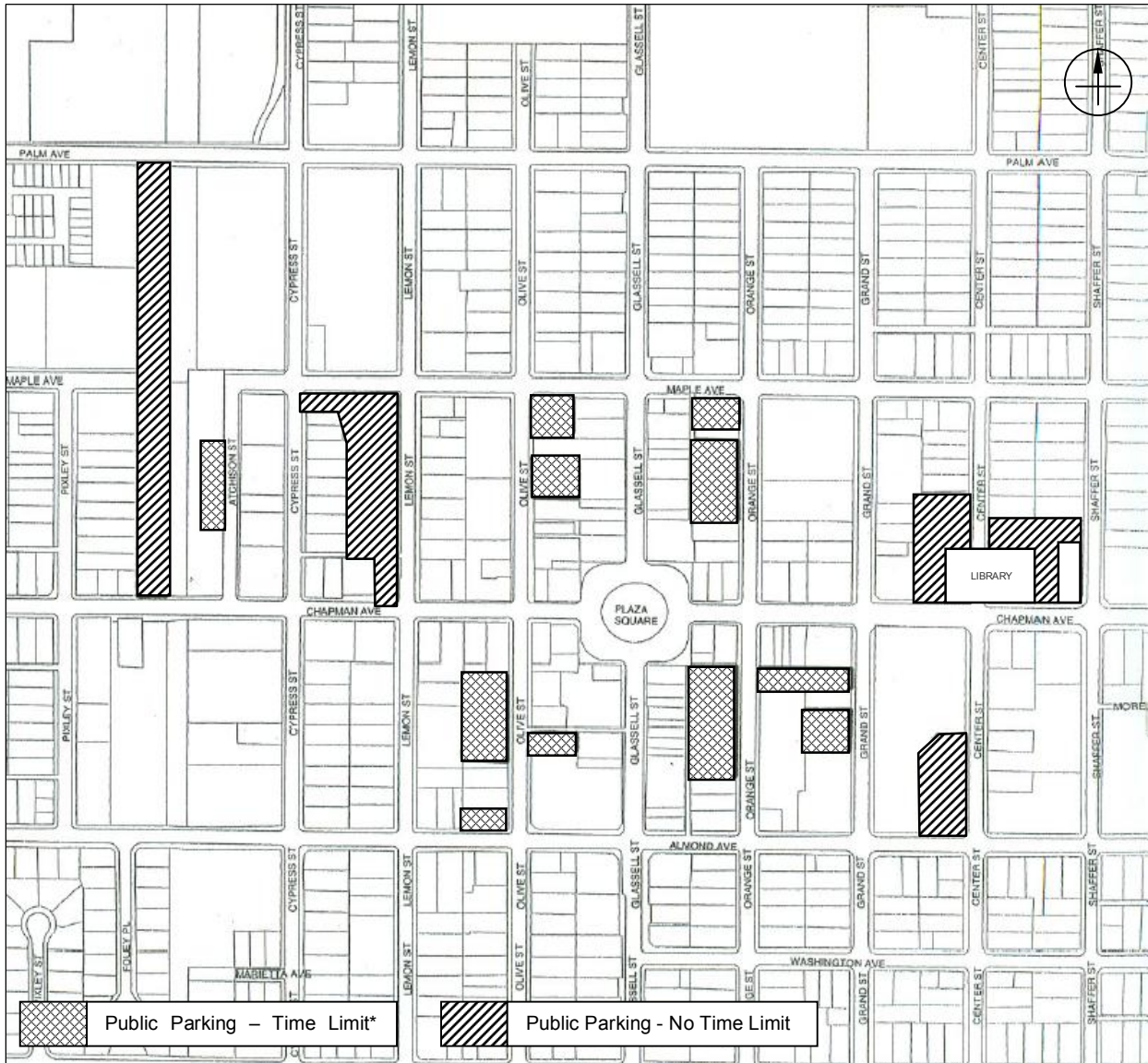
All City of Orange arterials are recognized as primary emergency response routes. In addition, non-arterials can be secondary emergency response routes. The Residential Neighborhood Traffic Management Program (February 2006), which identifies a “tool box” of traffic management and traffic calming measures, notes that emergency vehicle access should be accommodated consistent with response standards with implementation of appropriate traffic management measures. Additionally, if current emergency vehicle access does not meet existing response standards, traffic calming efforts should not further degrade the response time.

Figure 2.4 - Existing Bikeways



Source File: Fig2-4-Exist-Bikeways-052709.map

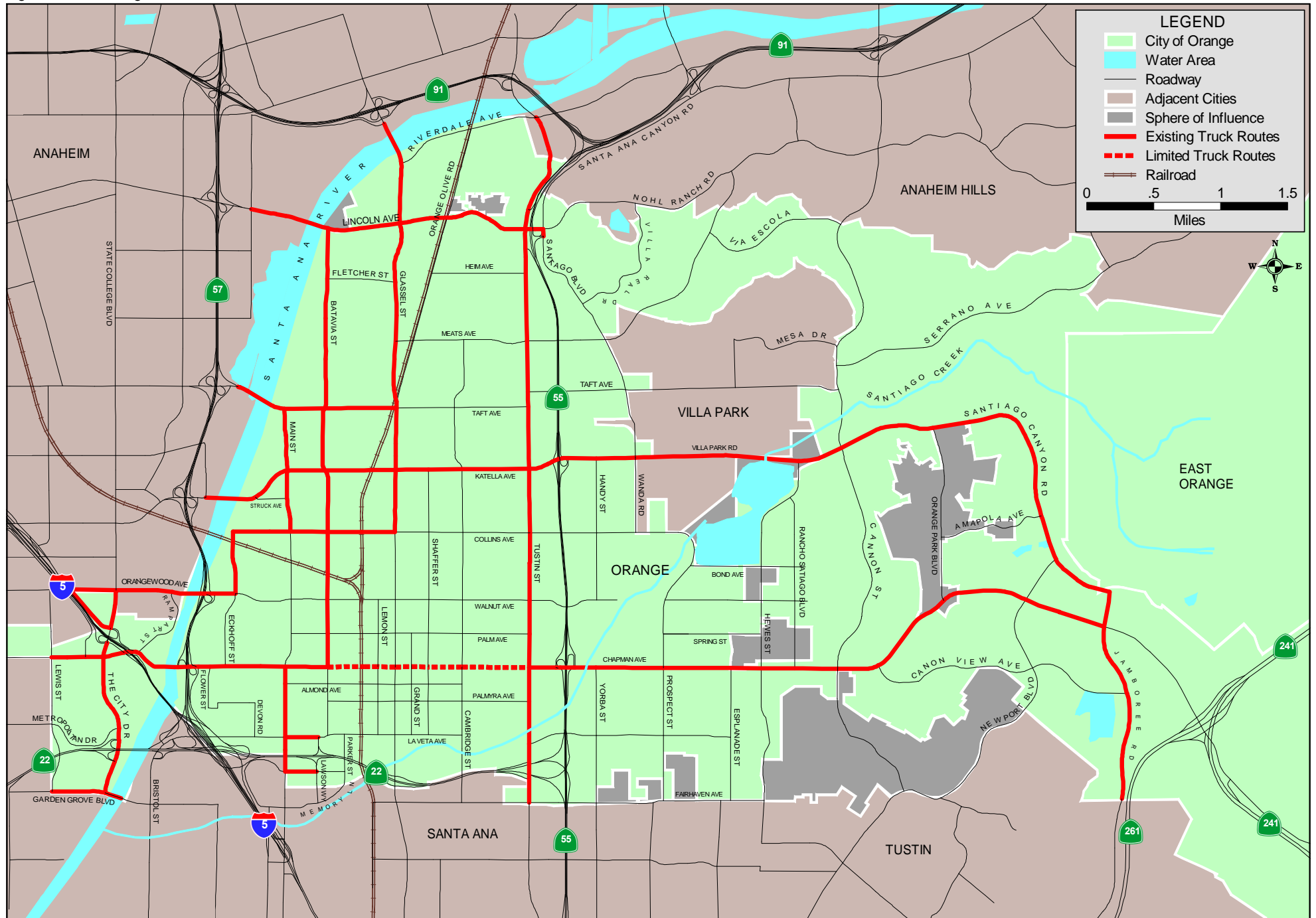
Figure 2.5 Existing Public Parking Lots



Source: City of Orange

*Note: Possession of City issued parking permit enables holder to exceed specified time limit

Figure 2.6 - Existing Truck Routes



Source File: Fig2-6-y04-Exist-TruckRte-052709.map

3.0 EXISTING TRAFFIC CONDITIONS

This chapter presents an analysis of existing traffic conditions based on the existing arterial segment counts and peak hour (A.M. and P.M.) intersection turning movement volumes on selected City intersections. Level of Service (LOS) analysis is performed both on arterial segment volumes and intersection turning movements. Existing conditions are defined to evaluate future impacts of development on the transportation infrastructure. The chapter also includes a brief description of the LOS definitions and the assumptions made for intersection capacity utilization (ICU) calculations.

3.1 LOS Definitions

Level of service is a qualitative measure that characterizes traffic congestion on a scale of A to F with LOS A representing free-flow condition and LOS F representing extreme congestion. It represents the ability of a roadway or an intersection to accommodate traffic. The LOS definition is based on a volume to capacity (V/C) ratio and provides a more quantitative description of traffic conditions. **Table 3.1** presents levels of service based on traffic volumes and the design capacity of roadways or intersections. LOS D has been adopted by the City as the acceptable level of service threshold for the roadway network which includes arterial segments and intersections. The policy standard of LOS D will be maintained as the goal for acceptable circulation system performance throughout the City. Although roadway capacity is generally a function of peak hour intersection performance and the corresponding peak hour volumes, daily arterial segment capacities provide a measure of the overall LOS of the arterial system. Generally, traffic impact mitigation focuses on peak hour intersection performance since system performance, as noted, is typically a function of intersection throughput. Although mitigation generally focuses on intersections, the existing General Plan specifies the analysis of arterials through the daily V/C ratio methodology, therefore the arterial analysis as well as intersection analysis is performed throughout the City under existing and future conditions. **Table 3.2** presents the adopted City thresholds for LOS D and LOS E arterial daily capacity.

Table 3.1 Level of Service Definitions

V/C Ratio	Level of Service
0.00 – 0.60	A
0.61 – 0.70	B
0.71 – 0.80	C
0.81 – 0.90	D
0.91 – 1.00	E
> 1.00	F

Table 3.2 Arterial Daily Capacity Threshold Assumptions

Facility Type	Daily Capacity	
	LOS D	LOS E
Principal – 8-lane divided	67,500	75,000
Major – 6-lane divided	50,700	56,300
Primary – 4-lane divided	33,750	37,500
Secondary – 4-lane undivided	21,600	24,000
Commuter – 2-lane undivided	10,800	12,000

Source: City of Orange General Plan Circulation Element Technical Report, 1989

3.2 ICU Analysis

ICU is a methodology to quantify LOS for intersections. The methodology calculates the ratio of the sum of the critical turning movement volumes to saturated flow rates. The ICU output is analogous to the intersection's V/C ratio and ranges presented in **Table 3.1**.

The following assumptions, consistent with the countywide Congestion Management Program (CMP) assumptions, were incorporated into the ICU computations:

- 1,700 vehicles per hour of green time in through lanes
- 1,700 vehicles per hour of green time in turn lanes
- 5 percent of total intersection capacity lost due to the clearance interval

3.3 Existing Daily Conditions

As part of the existing condition analysis, 24-hour traffic counts were collected throughout the City. Vehicle counts at these locations are reported in **Table 3.3** with corresponding daily V/C ratio and LOS. **Figure 3.1** presents the existing average daily traffic (ADT).

Table 3.2 indicates that most of the traffic flow within the City is in an east-west direction. The most heavily traveled east-west arterials include Chapman Avenue, Katella Avenue and Taft Avenue. North-south arterials such as Tustin Street, Main Street and The City Drive also exhibit some of the highest traffic volumes. **Figure 3.2** presents the existing arterial level of service.

Table 3.3 Existing Arterial Daily Level of Service

ID	Arterial	From	To	Lanes	ADT	LOS E Capacity	V/C Ratio	LOS
1	Almond Avenue	Main Street	Batavia Street	2U	5,200	12,000	0.43	A
2	Almond Avenue	Batavia Street	Glassell Street	2U	5,000	12,000	0.42	A
3	Almond Avenue	Glassell Street	Grand Street	2U	5,600	12,000	0.47	A
4	Almond Avenue	Grand Street	Cambridge Street	2U	3,100	12,000	0.26	A
5	Batavia Street	La Veta Avenue	Almond Avenue	2U	7,600	12,000	0.63	B
6	Batavia Street	Almond Avenue	Chapman Avenue	2U	9,800	12,000	0.82	D
7	Batavia Street	Chapman Avenue	Walnut Avenue	4U	13,400	24,000	0.56	A
8	Batavia Street	Walnut Avenue	Collins Avenue	4U	12,500	24,000	0.52	A
9	Batavia Street	Collins Avenue	Katella Avenue	4U	12,900	24,000	0.54	A
10	Batavia Street	Katella Avenue	Taft Avenue	4U	12,000	24,000	0.50	A
11	Batavia Street	Taft Avenue	Fletcher Avenue	4U	12,200	24,000	0.51	A
12	Batavia Street	Fletcher Avenue	Lincoln Avenue	4U	13,600	24,000	0.57	A
13	Bond Avenue	Prospect Street	Hewes Street	4U	6,400	24,000	0.27	A
14	Cambridge Street	South City Limits	Palmyra Avenue	2U	7,000	12,000	0.58	A
15	Cambridge Street	Palmyra Avenue	Chapman Avenue	2U	7,800	12,000	0.65	B
16	Cambridge Street	Chapman Avenue	Palm Avenue	2U	7,600	12,000	0.63	B
17	Cambridge Street	Palm Avenue	Walnut Avenue	2U	7,000	12,000	0.58	A
18	Cambridge Street	Walnut Avenue	Collins Avenue	2U	7,300	12,000	0.61	B
19	Cambridge Street	Collins Avenue	Katella Avenue	2U	7,600	12,000	0.63	B
20	Cambridge Street	Katella Avenue	Taft Avenue	4U	11,000	24,000	0.46	A
21	Cambridge Street	Taft Avenue	Meats Avenue	4U	7,200	24,000	0.30	A
22	Canyon View Avenue	Chapman Avenue	Outrider Street	4D	5,800	37,500	0.17	A
23	Canyon View Avenue	Outrider Street	Newport Boulevard	4D	5,600	37,500	0.17	A
24	Canyon View Avenue	Newport Boulevard	Jamboree Road	4D	5,200	37,500	0.15	A
25	Chapman Avenue	Haster Street	Lewis Street	5D	29,600	46,000	0.64	B
26	Chapman Avenue	Lewis Street	Manchester Avenue	6D	34,500	56,300	0.61	B
27	Chapman Avenue	Manchester Avenue	The City Drive	6D	37,200	56,300	0.66	B
28	Chapman Avenue	The City Drive	Eckhoff Street	6D	33,000	56,300	0.59	A
29	Chapman Avenue	Eckhoff Street	Main Street	6D	28,600	56,300	0.51	A
30	Chapman Avenue	Main Street	Batavia Street	4D	21,600	37,500	0.58	A



-  Deficient Segment, LOS E
-  Deficient Segment, LOS F

Table 3.3 Existing Arterial Daily Level of Service (Continued)

ID	Arterial	From	To	Lanes	ADT	LOS E Capacity	V/C Ratio	LOS
31	Chapman Avenue	Batavia Street	Plaza / Glassell	4D	18,800	37,500	0.50	A
32	Chapman Avenue	Plaza / Glassell	Cambridge Street	4D	23,000	37,500	0.61	B
33	Chapman Avenue	Cambridge Street	Tustin Street	4D	27,300	37,500	0.73	C
34	Chapman Avenue	Tustin Street	SR-55	6D	44,500	56,300	0.79	C
35	Chapman Avenue	SR-55	Yorba Street	8D	62,700	75,000	0.84	D
36	Chapman Avenue	Yorba Street	Prospect Street	6D	53,500	56,300	0.95	E
37	Chapman Avenue	Prospect Street	Esplanade Street	6D	43,600	56,300	0.77	C
38	Chapman Avenue	Esplanade Street	Hewes Street	6D	39,100	56,300	0.69	B
39	Chapman Avenue	Hewes Street	Crawford Canyon Road	6D	34,600	56,300	0.61	B
40	Chapman Avenue	Crawford Canyon Road	Canyon View Avenue	4D	26,900	37,500	0.72	C
41	Chapman Avenue	Canyon View Avenue	Orange Park Boulevard	4D	18,000	37,500	0.48	A
42	Chapman Avenue	Orange Park Boulevard	Newport Boulevard	4D	16,000	37,500	0.43	A
43	Chapman Avenue	Newport Boulevard	Jamboree Road	6D	15,200	56,300	0.27	A
44	Chapman Avenue	Jamboree Road	City Limit	4U	16,200	24,000	0.68	B
45	Collins Avenue	Eckhoff Street	Main Street	4U	7,400	24,000	0.31	A
46	Collins Avenue	Main Street	Batavia Street	4U	11,200	24,000	0.47	A
47	Collins Avenue	Batavia Street	Glassell Street	4U	15,600	24,000	0.65	B
48	Collins Avenue	Glassell Street	Cambridge Street	4U	15,100	24,000	0.63	B
49	Collins Avenue	Cambridge Street	Tustin Street	4U	14,800	24,000	0.62	B
50	Collins Avenue	Tustin Street	Handy Street	4U	13,000	24,000	0.54	A
51	Collins Avenue	Handy Street	Wanda Road	4U	13,100	24,000	0.55	A
52	Collins Avenue	Wanda Road	Prospect Street	4U	16,200	24,000	0.68	B
53	Crawford Canyon Road	Barrett Avenue	Chapman Avenue	2U	8,600	12,000	0.72	C
54	Cannon Street	Chapman Avenue	Creekside Avenue	4U	8,500	24,000	0.35	A
55	Cannon Street	Creekside Avenue	Patria Court	4U	4,700	24,000	0.20	A
56	Cannon Street	Patria Court	Santiago Canyon Road	4U	4,300	24,000	0.18	A
57	Cannon Street	Santiago Canyon Road	Taft Avenue	4D	22,200	37,500	0.59	A
58	Cannon Street	Taft Avenue	Via Escola	4D	19,500	37,500	0.52	A
59	Eckhoff Street	Chapman Avenue	Sycamore Avenue	2U	4,300	12,000	0.36	A
60	Eckhoff Street	Orangewood Avenue	Collins Avenue	2U	10,000	12,000	0.83	D
61	Esplanade Street	Fairhaven Avenue	La Veta Avenue	4U	3,000	24,000	0.13	A
62	Esplanade Street	La Veta Avenue	Chapman Avenue	4U	6,400	24,000	0.27	A
63	Fairhaven Avenue	Glassell Street	Cambridge Street	4U	9,300	24,000	0.39	A
64	Fairhaven Avenue	Cambridge Street	Tustin Street	4U	9,500	24,000	0.40	A
65	Fairhaven Avenue	Tustin Street	Yorba Street	4U	14,200	24,000	0.59	A
66	Fairhaven Avenue	Yorba Street	Prospect Street	4U	13,400	24,000	0.56	A
67	Fairhaven Avenue	Prospect Street	Esplanade Street	4U	12,300	24,000	0.51	A
68	Fairhaven Avenue	Esplanade Street	Hewes Street	4U	10,900	24,000	0.45	A
69	Fletcher Avenue	Batavia Street	Glassell Street	2U	4,100	12,000	0.34	A
70	Garden Grove Boulevard	The City Drive	Lewis Street	4D	21,700	37,500	0.58	A
72	Glassell Street	SR-22	La Veta Avenue	4D	30,400	37,500	0.81	D
73	Glassell Street	La Veta Avenue	Almond Avenue	2U	16,000	12,000	1.33	F
74	Glassell Street	Chapman Avenue	Palm Avenue	2U	12,000	12,000	1.00	F
75	Glassell Street	Walnut Avenue	Collins Avenue	2U	11,100	12,000	0.93	E
76	Glassell Street	Collins Avenue	Katella Avenue	4D	17,500	37,500	0.47	A
77	Glassell Street	Katella Avenue	Orange Olive Road	4D	23,600	37,500	0.63	B
78	Glassell Street	Orange Olive Road	Grove Avenue	4D	13,700	37,500	0.37	A
79	Glassell Street	Grove Avenue	Lincoln Avenue	4D	19,700	37,500	0.53	A



 Deficient Segment, LOS E
 Deficient Segment, LOS F

Table 3.3 Existing Arterial Daily Level of Service (Continued)

ID	Arterial	From	To	Lanes	ADT	LOS E Capacity	V/C Ratio	LOS
80	Glassell Street	Lincoln Avenue	Santa Ana River	4D	21,800	37,500	0.58	A
81	Grand Street	Chapman Avenue	Maple Avenue	2U	4,300	12,000	0.36	A
82	Hewes Street	Fairhaven Avenue	Washington Avenue	4U	6,200	24,000	0.26	A
83	Hewes Street	Washington Avenue	Chapman Avenue	4U	9,600	24,000	0.40	A
84	Hewes Street	Chapman Avenue	Walnut Avenue	4U	9,500	24,000	0.40	A
85	Hewes Street	Bond Avenue	Santiago Canyon Road	4U	8,500	24,000	0.35	A
86	Jamboree Road	Santiago Canyon Road	Chapman Avenue	6D	17,300	56,300	0.31	A
87	Jamboree Road	Chapman Avenue	Canyon View Avenue	6D	14,600	56,300	0.26	A
88	Jamboree Road	Canyon View Avenue	South City Limit	6D	17,600	56,300	0.31	A
89	Katella Avenue	Struck Avenue	Main Street	6D	36,000	59,115	0.61	B
90	Katella Avenue	Main Street	Batavia Street	6D	29,900	59,115	0.51	A
91	Katella Avenue	Batavia Street	Glassell Street	6D	33,500	59,115	0.57	A
92	Katella Avenue	Glassell Street	Cambridge Street	6D	34,600	59,115	0.59	A
93	Katella Avenue	Cambridge Street	Tustin Street	6D	38,000	59,115	0.64	B
94	Katella Avenue	Tustin Street	SR-55	7D	48,400	68,250	0.71	C
95	Katella Avenue	SR-55	Handy Street	5D	36,800	46,000	0.80	C
96	Katella Avenue	Handy Street	Wanda Road	4D	33,600	37,500	0.90	D
97	Katella Avenue	Wanda Road	Center Drive	4D	23,200	37,500	0.62	B
98	Katella Avenue	Center Drive	Santiago Canyon Road	4D	20,800	37,500	0.55	A
99	La Veta Avenue	Flower Street	Devon Street	4D	17,600	37,500	0.47	A
100	La Veta Avenue	Devon Street	Main Street	4D	17,600	37,500	0.47	A
101	La Veta Avenue	Main Street	Batavia Street	6D	25,200	56,300	0.45	A
102	La Veta Avenue	Batavia Street	Glassell Street	4U	15,400	24,000	0.64	B
103	La Veta Avenue	Glassell Street	Shaffer Street	2U	8,700	12,000	0.73	C
104	La Veta Avenue	Shaffer Street	Cambridge Street	2U	6,200	12,000	0.52	A
105	La Veta Avenue	Tustin Street	Yorba Street	4U	8,800	24,000	0.37	A
106	La Veta Avenue	Yorba Street	Prospect Street	4U	10,200	24,000	0.43	A
107	La Veta Avenue	Prospect Street	Esplanade Street	4U	6,900	12,000	0.29	A
108	Lemon Street	Chapman Avenue	Maple Avenue	2U	5,600	12,000	0.47	A
109	Lewis Street	Garden Grove Avenue	Metropolitan Drive	4U	12,600	24,000	0.53	A
110	Lewis Street	Metropolitan Drive	Chapman Avenue	4U	13,400	24,000	0.56	A
111	Lewis Street	Chapman Avenue	Sirius Avenue	2U	8,900	12,000	0.74	C
112	Lincoln Avenue	West City Limit	Batavia Street	4D	24,400	37,500	0.65	B
113	Lincoln Avenue	Batavia Street	Glassell Street	4D	20,200	37,500	0.54	A
114	Lincoln Avenue	Glassell Street	Orange Olive Road	4D	20,700	37,500	0.55	A
115	Lincoln Avenue	Orange Olive Road	Tustin Street	4D	30,400	37,500	0.81	D
116	Lincoln Avenue	Tustin Street	Santiago Boulevard	6D	41,200	56,300	0.73	C
117	Main Street	SR-22	La Veta Avenue	6D	39,600	56,300	0.70	C
118	Main Street	La Veta Avenue	Chapman Avenue	4D	32,600	37,500	0.87	D
119	Main Street	Chapman Avenue	Sycamore Avenue	4D	21,000	37,500	0.56	A
120	Main Street	Sycamore Avenue	Collins Avenue	4D	17,300	37,500	0.46	A
121	Main Street	Collins Avenue	Struck Avenue	4D	19,400	37,500	0.52	A
122	Main Street	Struck Avenue	Katella Avenue	4D	16,600	37,500	0.44	A
123	Main Street	Katella Avenue	Taft Avenue	4D	13,000	37,500	0.35	A
124	Meats Avenue	Glassell Street	Orange Olive Road	4U	8,600	24,000	0.36	A
125	Meats Avenue	Orange Olive Road	Cambridge Street	4U	10,900	24,000	0.45	A
126	Meats Avenue	Cambridge Street	Tustin Street	4U	13,400	24,000	0.56	A

 Deficient Segment, LOS E


 Deficient Segment, LOS F

Table 3.3 Existing Arterial Daily Level of Service (Continued)

ID	Arterial	From	To	Lanes	ADT	LOS E Capacity	V/C Ratio	LOS
127	Meats Avenue	Tustin Street	Santiago Boulevard	4U	14,600	24,000	0.61	B
128	Meats Avenue	Santiago Boulevard	Featherhill Road	4U	11,000	24,000	0.46	A
129	Meats Avenue	Featherhill Road	Via Escala	4U	8,900	24,000	0.37	A
130	Metropolitan Drive	Lewis Street	SR-22 Westbound Ramps	4U	6,500	24,000	0.27	A
131	Metropolitan Drive	SR-22 Westbound Ramps	The City Drive	4U	11,800	24,000	0.49	A
132	Manchester Avenue	Chapman Avenue	Compton Avenue	4D	4,372	37,500	0.12	A
133	Newport Boulevard	South City Limits	Canyon View Avenue	4D	8,200	37,500	0.22	A
134	Newport Boulevard	Canyon View Avenue	Chapman Avenue	4D	7,100	37,500	0.19	A
135	Newport Boulevard	Chapman Avenue	Santiago Canyon Road	4D	5,600	37,500	0.15	A
136	Nohl Ranch Road	Santiago Boulevard	East City Limit	4U	9,800	24,000	0.41	A
137	Orange Olive Road	Glassell Street	Meats Avenue	4U	12,200	24,000	0.51	A
138	Orange Olive Road	Meats Avenue	Lincoln Avenue	4U	12,100	24,000	0.50	A
139	Orange Olive Road	Lincoln Avenue	Santa Ana Canyon Road	4U	8,600	24,000	0.36	A
140	Orange Olive Road	Santa Ana Canyon Road	Riverdale Avenue	4U	5,900	24,000	0.25	A
141	Orangewood Avenue	Eckhoff Street	Main Street	4D	28,300	37,500	0.75	C
142	Palm Avenue	Main Street	Batavia Street	2U	3,500	12,000	0.29	A
143	Palm Avenue	Batavia Street	Cypress Street	2U	4,200	12,000	0.35	A
144	Palm Avenue	Cypress Street	Glassell Street	2U	4,000	12,000	0.33	A
145	Palm Avenue	Glassell Street	Cambridge Street	2U	3,600	12,000	0.30	A
146	Palm Avenue	Cambridge Street	Tustin Street	2U	4,200	12,000	0.35	A
147	Palmyra Avenue	Batavia Street	Glassell Street	2U	2,090	12,000	0.17	A
148	Palmyra Avenue	Glassell Street	Cambridge Street	2U	1,800	12,000	0.15	A
149	Palmyra Avenue	Cambridge Street	Tustin Street	2U	5,000	12,000	0.42	A
150	Parker Street	La Veta Avenue	Town & Country Road	2U	13,300	12,000	1.11	F
151	Prospect Street	Fairhaven Avenue	La Veta Avenue	2U	6,000	12,000	0.50	A
152	Prospect Street	La Veta Avenue	Chapman Avenue	4U	10,300	24,000	0.43	A
153	Prospect Street	Chapman Avenue	Spring Street	4U	20,900	24,000	0.87	D
154	Prospect Street	Spring Street	Walnut Avenue	4U	16,400	24,000	0.68	B
155	Prospect Street	Walnut Avenue	Bond Avenue	4U	15,300	24,000	0.64	B
156	Rampart Street	Chapman Avenue	Orangewood Avenue	2U	3,600	12,000	0.30	A
157	Rancho Santiago Boulevard	Chapman Avenue	Walnut Avenue	2U	7,400	12,000	0.62	B
158	Rancho Santiago Boulevard	Hewes Street	Bond Avenue	2U	2,800	12,000	0.23	A
159	Riverdale Avenue	Glassell Street	Orange Olive Road	4U	5,400	24,000	0.23	A
160	Riverdale Avenue	Orange Olive Road	Tustin Street	4U	7,400	24,000	0.31	A
161	Santiago Boulevard	North City Limit	Nohl Ranch Road	2U	10,500	12,000	0.88	D
162	Santiago Boulevard	Wanda Road	Taft Avenue	4U	11,500	24,000	0.48	A
163	Santiago Boulevard	Taft Avenue	Villa Real Drive	4U	11,200	24,000	0.47	A
164	Santiago Boulevard	Villa Real Drive	Lincoln Avenue	4U	12,600	24,000	0.53	A
165	Santiago Canyon Road	Hewes Street	Cannon Street	4D	21,700	37,500	0.58	A
166	Santiago Canyon Road	Cannon Street	Orange Park Boulevard	4D	23,000	37,500	0.61	B
167	Santiago Canyon Road	Orange Park Boulevard	Meads Avenue	4D	20,000	37,500	0.53	A
168	Santiago Canyon Road	Meads Avenue	Newport Boulevard	4D	18,700	37,500	0.50	A
169	Santiago Canyon Road	Newport Boulevard	Jamboree Road	6D	17,000	56,300	0.30	A
170	Santiago Canyon Road	Jamboree Road	SR-241	4U	16,200	24,000	0.68	B
213	Santiago Canyon Road	East of SR-241		2U	8,000	24,000	0.67	B
171	Serrano Avenue	Cannon Street	Orange Park Boulevard	4D	16,900	37,500	0.45	A
172	Serrano Avenue	Orange Park Boulevard	Apache Creek	4D	8,100	37,500	0.22	A
173	Serrano Avenue	Apache Creek	East City Limit	4D	5,400	37,500	0.14	A



 Deficient Segment, LOS E
 Deficient Segment, LOS F

Table 3.3 Existing Arterial Daily Level of Service (continued)

ID	Arterial	From	To	Lanes	ADT	LOS E Capacity	V/C Ratio	LOS
174	Shaffer Street	Chapman Avenue	Maple Avenue	2U	4,500	12,000	0.38	A
175	Spring Street	Prospect Street	Olympia Way	4U	8,000	24,000	0.33	A
176	Struck Avenue	Katella Avenue	Main Street	2U	8,300	12,000	0.69	B
177	Taft Avenue	West City Limit	Main Street	4D	35,400	37,500	0.94	E
178	Taft Avenue	Main Street	Batavia Street	4D	26,400	37,500	0.70	B
179	Taft Avenue	Batavia Street	Glassell Street	4D	26,000	37,500	0.69	B
180	Taft Avenue	Glassell Street	Cambridge Street	4D	15,800	37,500	0.42	A
181	Taft Avenue	Cambridge Street	Tustin Street	4D	14,000	37,500	0.37	A
182	Taft Avenue	Tustin Street	Santiago Boulevard	4U	10,400	24,000	0.43	A
183	Taft Avenue	Cannon Street	Yurok Street	2U	5,400	12,000	0.45	A
184	The City Drive	Garden Grove Boulevard	SR-22	4D	23,100	37,500	0.62	B
185	The City Drive	SR-22	Metropolitan	6D	41,500	56,300	0.74	C
186	The City Drive	Metropolitan	Chapman Avenue	8D	26,700	75,000	0.36	A
187	The City Drive	Chapman Avenue	North City Limits	8D	30,200	75,000	0.40	A
188	Town & Country Road	Main Street	SR-22	4D	20,700	37,500	0.55	A
189	Town & Country Road	SR-22	Parker Street	4D	10,000	37,500	0.27	A
190	Tustin Street	Fairhaven Avenue	La Veta Avenue	6D	33,800	56,300	0.60	A
191	Tustin Street	La Veta Avenue	Palmyra Avenue	6D	27,300	56,300	0.48	A
192	Tustin Street	Palmyra Avenue	Chapman Avenue	6D	28,800	56,300	0.51	A
193	Tustin Street	Chapman Avenue	Walnut Avenue	6D	42,900	56,300	0.76	C
194	Tustin Street	Walnut Avenue	Mayfair Avenue	6D	35,000	56,300	0.62	B
195	Tustin Street	Mayfair Avenue	Collins Avenue	6D	34,400	56,300	0.61	B
196	Tustin Street	Collins Avenue	Katella Avenue	6D	37,100	56,300	0.66	B
197	Tustin Street	Katella Avenue	Taft Avenue	6D	38,500	56,300	0.68	B
198	Tustin Street	Taft Avenue	Meats Avenue	6D	34,500	56,300	0.61	B
199	Tustin Street	Meats Avenue	Lincoln Avenue	6D	33,600	56,300	0.60	A
200	Tustin Street	Lincoln Avenue	Riverdale Avenue	5D	24,500	46,000	0.53	A
201	Via Escola	Meats Avenue	Cannon Street	4U	4,000	24,000	0.17	A
202	Villa Real Drive	Santiago Boulevard	Chapel Hill	2U	1,800	12,000	0.15	A
203	Walnut Avenue	Main Street	Batavia Street	2U	7,900	12,000	0.66	B
204	Walnut Avenue	Batavia Street	Cypress Street	2U	8,500	12,000	0.71	C
205	Walnut Avenue	Cypress Street	Glassell Street	2U	7,800	12,000	0.65	B
206	Walnut Avenue	Glassell Street	Cambridge Street	2U	7,500	12,000	0.63	B
207	Walnut Avenue	Cambridge Street	Tustin Street	2U	7,800	12,000	0.65	B
208	Walnut Avenue	Tustin Street	Handy Street	2U	7,800	12,000	0.65	B
209	Wanda Road	Collins Avenue	Katella Avenue	4U	11,600	24,000	0.48	A
210	Wanda Road	Katella Avenue	Santiago Boulevard (VP)	4U	19,000	24,000	0.79	C
211	Yorba Street	Fairhaven Avenue	La Veta Avenue	4U	6,500	24,000	0.27	A
212	Yorba Street	La Veta Avenue	Chapman Avenue	4U	10,200	24,000	0.43	A

 Deficient Segment, LOS E

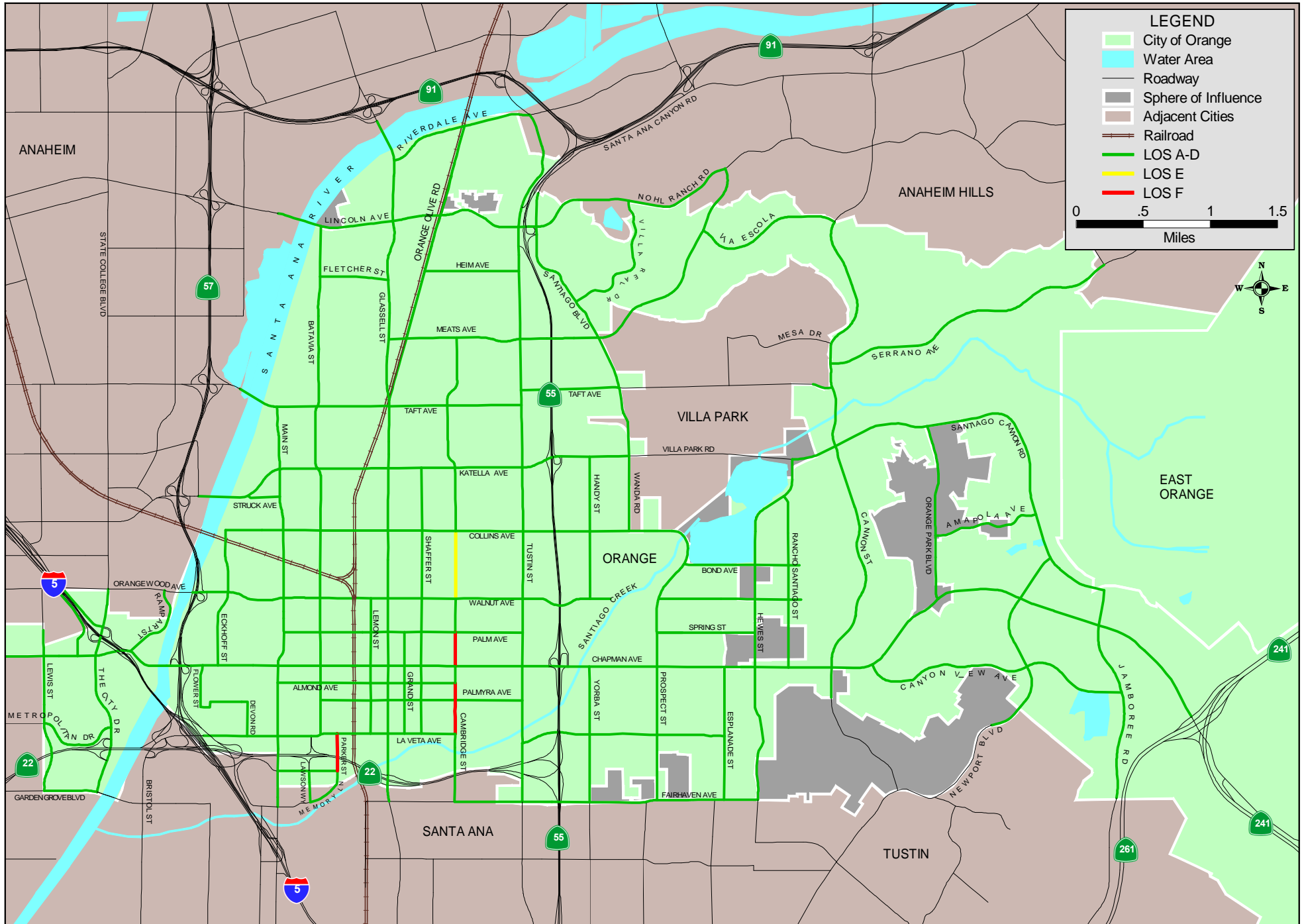
 Deficient Segment, LOS F

Source: City of Orange

Arterial segments located near freeway interchanges generally attract excess volumes. For example, Chapman Avenue between Yorba Street and SR-55 attracts 62,700 daily vehicles while Katella Avenue between Tustin Street and SR-55 attracts 48,400 daily vehicles. **Figure 3.2** illustrates the daily LOS results for the major study arterials. Under the existing conditions, a total of three segments exhibit LOS E and three segments exhibit LOS F (highlighted in red in the table):

- Chapman Avenue: Yorba Street to Prospect Street – LOS E

Figure 3.2 - Existing Arterial Daily Level of Service



Source File: Fig3-2-y04-Exist-Art-LOS-052709.map

- Glassell Street: La Veta Avenue to Almond Avenue – LOS F
- Glassell Street: Chapman Avenue to Palm Avenue – LOS F
- Glassell Street: Walnut Avenue to Collins Avenue – LOS E
- Parker Street: La Veta Avenue to Town and Country Road – LOS F
- Taft Avenue: West City Limit to Main Street – LOS E

3.4 Existing Intersection Peak Hour Conditions



Table 3.4 presents existing ICU and LOS results for turning movement volumes at the 52 critical intersections during morning (A.M.) peak hour and evening (P.M.) peak hour time periods. Traffic counts were collected from 7:00 A.M. to 9:00 A.M. and 4:00 P.M. to 6:00 P.M. **Figure 3.3** illustrates peak hour intersection levels of service. Overall, most intersections operate at LOS D or better. However, there are three intersections that operate at unacceptable conditions, two in the A.M. peak and one in the P.M. peak. Tustin Street at Fairhaven Avenue and Santiago Boulevard at Meats Avenue exhibit LOS E and F, respectively, during the A.M. peak hour, while Glassell Street at Lincoln Avenue exhibits LOS E during the P.M. peak hour. **Appendix A** and **Appendix B** present existing lane geometrics and ICU worksheets for each intersection under existing conditions.

Table 3.4 Existing Intersections Level of Service

ID	Intersection Location	A.M. Peak Hour		P.M. Peak Hour	
		ICU	LOS	ICU	LOS
1	Batavia Street @ Collins Avenue	0.58	A	0.69	B
2	Batavia Street @ Katella Avenue	0.48	A	0.60	A
3	Batavia Street @ Lincoln Avenue	0.63	B	0.60	A
4	Batavia Street @ Taft Avenue	0.66	B	0.60	A
5	Batavia Street @ Walnut Avenue	0.46	A	0.44	A
6	Cambridge Street @ Katella Avenue	0.53	A	0.67	B
7	Cannon Street @ Santiago Canyon Road	0.83	D	0.90	D
8	Cannon Street @ Serrano Avenue	0.69	B	0.52	A
9	Cannon Street/ Crawford Canyon @ Chapman Avenue	0.63	B	0.58	A
10	Yorba Street @ Chapman Avenue	0.65	B	0.66	B
11	Canyon View Avenue @ Chapman Avenue	0.47	A	0.41	A
12	Jamboree Road @ Chapman Avenue	0.43	A	0.70	B
13	Northbound SR-55 Ramps @ Chapman Avenue	0.61	B	0.60	A
14	Southbound SR-55 Ramps @ Chapman Avenue	0.44	A	0.54	A
15	Lewis Street @ Chapman Avenue	0.64	B	0.84	D
16	The City Drive @ Chapman Avenue	0.60	A	0.81	D
17	The City Drive @ Eastbound SR-22 Ramps	0.46	A	0.58	A
18	The City Drive @ Metropolitan Drive	0.36	A	0.44	A
19	Glassell Street @ Collins Avenue	0.64	B	0.56	A
20	Glassell Street @ Katella Avenue	0.49	A	0.62	B
21	Glassell Street @ La Veta Avenue	0.68	B	0.78	C
22	Glassell Street @ Lincoln Avenue	0.56	A	0.98	E
23	Glassell Street @ Taft Avenue	0.64	B	0.63	B
24	Glassell Street @ Walnut Avenue	0.75	C	0.86	D
25	Hewes Street @ Chapman Avenue	0.63	B	0.64	B
26	Northbound SR-55 Ramps @ Katella Avenue	0.73	C	0.78	C
27	Southbound SR-55 Ramps @ Katella Avenue	0.87	D	0.79	C
28	Main Street @ Chapman Avenue	0.63	B	0.81	D
29	Main Street @ Katella Avenue	0.52	A	0.64	B
30	Main Street @ La Veta Avenue	0.55	A	0.88	D
31	Main Street @ Orangewood Avenue	0.60	A	0.57	A
32	Main Street @ Taft Avenue	0.69	B	0.73	C
33	Main Street @ Town & Country Road	0.38	A	0.62	B
34	Newport Boulevard @ Chapman Avenue	0.32	A	0.36	A
35	Santiago Boulevard @ Nohl Ranch Road	0.69	B	0.60	A
36	Eckhoff Street @ Orangewood Avenue	0.56	A	0.72	C

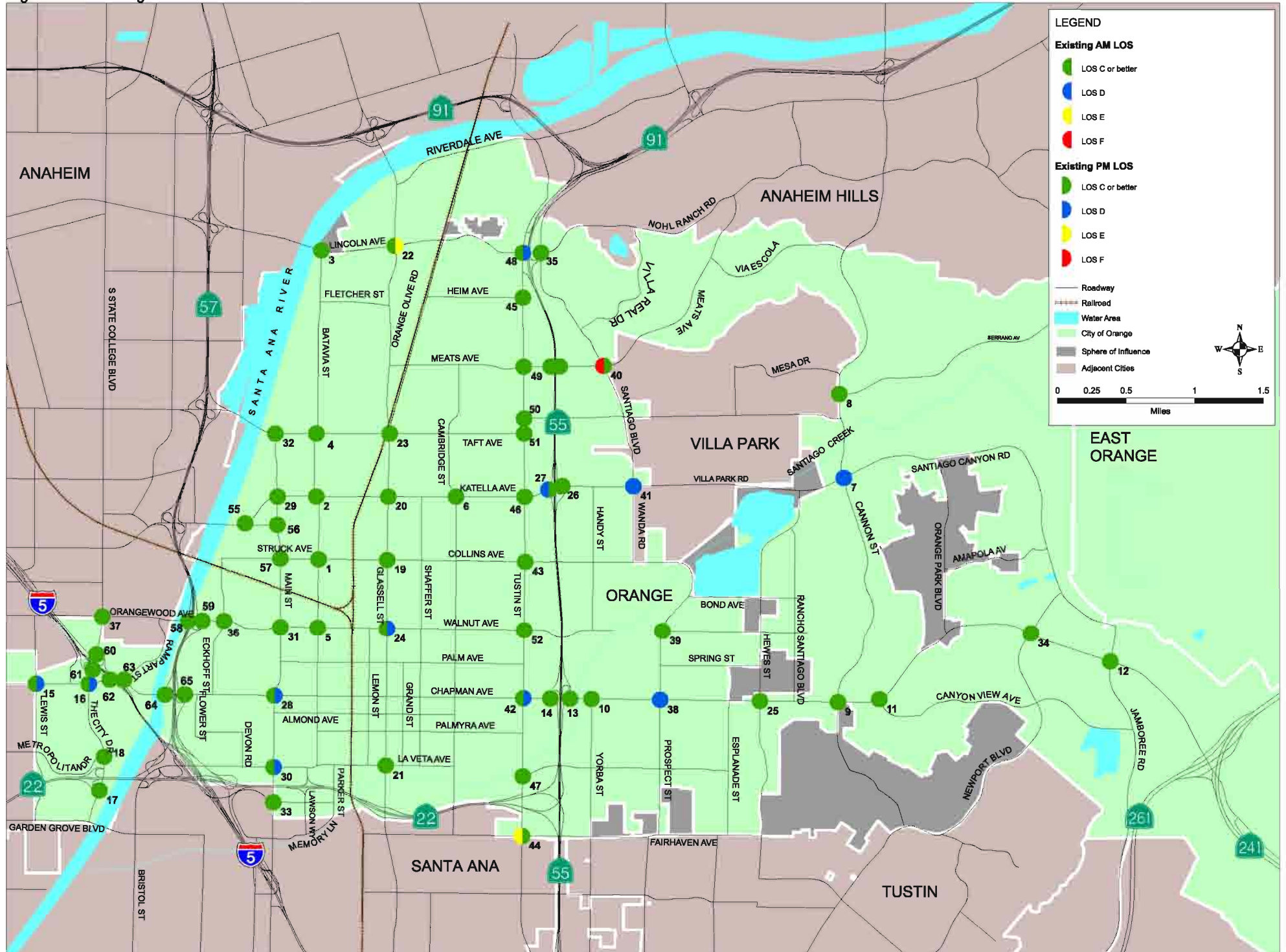
Table 3.4 Existing Intersections Level of Service (continued)

ID	Intersection Location	A.M. Peak Hour		P.M. Peak Hour	
		ICU	LOS	ICU	LOS
37	State College Boulevard @ Orangewood Avenue	0.47	A	0.59	A
38	Prospect Street @ Chapman Avenue	0.87	D	0.81	D
39	Prospect Street @ Walnut Avenue	0.42	A	0.37	A
40	Santiago Boulevard @ Meats Avenue	1.02	F	0.75	C
41	Wanda Road @ Villa Park Road	0.83	D	0.84	D
42	Tustin Street @ Chapman Avenue	0.79	C	0.84	D
43	Tustin Street @ Collins Avenue	0.53	A	0.67	B
44	Tustin Street @ Fairhaven Avenue	0.99	E	0.76	C
45	Tustin Street @ Heim Avenue	0.45	A	0.70	B
46	Tustin Street @ Katella Avenue	0.51	A	0.70	B
47	Tustin Street @ La Veta Avenue	0.55	A	0.49	A
48	Tustin Street @ Lincoln Avenue	0.63	B	0.88	D
49	Tustin Street @ Meats Avenue	0.44	A	0.74	C
50	Tustin Street @ Taft Avenue (North)	0.49	A	0.69	B
51	Tustin Street @ Taft Avenue (South)	0.62	B	0.75	C
52	Tustin Street @ Walnut Avenue	0.54	A	0.59	A
55	Struck Avenue @ Katella Avenue	0.28	A	0.34	A
56	Main Street @ Struck Avenue	0.79	C	0.48	A
57	Main Street @ Collins Avenue	0.44	A	0.57	A
58	Southbound SR-57 Ramps @ Orangewood Avenue	0.51	A	0.63	B
59	Northbound SR-57 Ramps @ Orangewood Avenue	0.49	A	0.35	A
60	State College Boulevard @ NB I-5 Ramps/Anaheim Way	0.36	A	0.29	A
61	State College Boulevard @ Southbound I-5 Ramps	0.36	A	0.28	A
62	Southbound I-5 Ramps @ Chapman Avenue	0.47	A	0.51	A
63	Rampart Street @ Chapman Ave./ Northbound I-5 Ramps	0.31	A	0.35	A
64	Southbound SR-57 Ramps @ Chapman Avenue	0.53	A	0.62	B
65	Northbound SR-57 Ramps @ Chapman Avenue	0.40	A	0.43	A

 Deficient Intersection, LOS E
 Deficient Intersection, LOS F

Source: City of Orange

Figure 3.3 - Existing Intersection Level of Service



Source File: V:\11959-OrangeGeneralPlan\OTAM-2004\CirculationElement\Graphics-Update-May09\Fig3-3-y04-Exist-Isec-LOS-052909.mxd

4.0 FUTURE CONDITIONS

This chapter presents an analysis of future traffic conditions based on forecast year 2030 post-model adjusted arterial segment volumes and peak hour (A.M. and P.M.) intersection turning movement volumes for selected City intersections. The Orange Traffic Analysis Model (OTAM) was updated for this General Plan Update traffic analysis by incorporating the most recent adopted demographic forecast data external to the City of Orange and recertified as consistent with the Orange County Transportation Analysis Model (OCTAM 3.2).

Land Use and Trip Generation

The 2030 traffic conditions are based on the City's Proposed General Plan Buildout land use assumptions. No Project conditions, however, are based on the current General Plan Buildout land use assumptions. Additionally, as noted above, the external City of Orange demographic data was updated to reflect the adopted Orange County Projections 2004 data. **Table 4.1** identifies the future alternative trip generation in comparison to the existing trip generation within the City. The Project Scenario generates approximately 50% more trips than are currently generated within the City. Alternative 2 generates approximately 5% fewer trips than the Project Scenario.

Table 4.1 Trip Generation Summary

Scenario	Daily Trips Generated
Existing	995,000
No Project	1,187,300
Project	1,456,700
Alternative 1	1,456,700
Alternative 2	1,376,100

Source: OTAM

Public Transportation

Public transportation plays a key role in future land use development and mobility. As the roadway system reaches capacity, alternative modes of transportation provide additional capacity as well as an enhanced degree of mobility for residents, workers, and visitors. As noted, OCTA and RTA provide bus service to the City while Metrolink and Amtrak provide rail service. Existing services are expected to continue while enhancements, many of them currently in the planning stages, will increase the viability of alternative modes of travel. The integration of alternative modes of transportation such as bus, rail, bicycle and pedestrian into the roadway system are essential to maximizing mobility opportunities for residents, workers and visitors.

OCTA has forecast bus ridership to increase by approximately 75 percent by 2030. While much of this ridership increase is the result of enhanced services including express bus routes and introduction of bus rapid transit service, increased arterial and freeway congestion levels in conjunction with improved local bus service is expected to continue to attract new riders. OCTA is planning to introduce bus rapid transit services by 2011 on the Harbor Boulevard, Westminster Avenue and State College Boulevard/Bristol Street corridors with planned stops in Orange on The City Drive and State College Boulevard. With the projected success of this service, similar to the Los Angeles Metro Rapid service, it is likely that bus rapid transit will be implemented on other key corridors.

In addition to bus rapid transit service, OCTA has focused on improving connection between all modes of transportation. Many cities have already begun development intensification surrounding Metrolink stations, notably Fullerton, while other cities have begun planning for increasing densities surrounding

Metrolink stations, including Anaheim, Irvine, and Santa Ana. Density intensification around alternative transportation facilities provide people with enhanced commuting opportunities. As the suburban landscape of Orange County matures, it is expected that the trend of development intensification surrounding alternative transportation facilities such as existing Metrolink stations will continue.

Another alternative transportation improvement expected to occur by 2011 is 30-minute intra-county rail service through the core transit corridor through Orange County. This service, which will be provided by Metrolink on behalf of OCTA, is an attempt to serve intra-county trips with a high degree of reliability. This 30-minute service is planned to operate between the Irvine Transportation Center (and possibly Laguna Niguel) and the Fullerton Transportation Center. The service will shift the existing markets served by Metrolink. Metrolink is currently a peak period commuter service, however, the improved service will be reliable rail service throughout the day serving travel markets not previously served by Metrolink. Recent analysis of ridership activity at each of the intra-county stations forecast approximately 1,000 daily trips expected to use the Orange Transportation Center as part of this intra-county service.

As noted, the Go Local program is specifically targeted at improving local access to the regional local bus, express bus, bus rapid transit, and rail networks. As the 30-minute service is implemented and matures, it is likely that increased development intensities will be realized surrounding the county's rail stations and transit corridors.

Bicycle/Trail Network

The City of Orange developed an update to their Bikeways Master Plan in 2001. The Recreational Trails Master Plan, developed in 1993, is a comprehensive long range planning document that guides the identification of recreational trails and their implementation. As noted above, recreational trails serve an important function in the overall transportation system. Quality trail systems enhance the quality of life and provide additional accessibility, connectivity, and mobility.

The objective of the Bicycle Master Plan is to encourage the development of a unified bicycle system throughout the City of Orange with connections to other regional bike and pedestrian system. As a part of the development of the Bicycle Master Plan Update in 2001, it was determined that deficiencies exist in system continuity, linkage to regional destinations and safety concerns exist. The update recommended the development of an integrated and comprehensive network of bicycle facilities and bicycle programs. The system is expected to serve all Orange neighborhoods and provide linkages to schools, parks, shopping areas, work centers, and other destinations.

Bicycle related amenities include bicycle lockers and racks to encourage bicycle commuters. Safety of bicycle paths is also a key factor in encouraging use of bicycles as a viable alternative to the automobile. Detailed analysis during the development of the plan revealed that more people would commute by bike if safe bicycle-friendly transportation systems existed. As development intensifies and congestion increases, bicycles could become a realistic alternative to the automobile, hence the integration of safe and efficient bicycle facilities into the transportation system infrastructure cannot be ignored. **Figure 4.1** presents the proposed routes identified in the OCTA Commuter Bikeway Strategic Plan.

Roadway Network

A key assumption in the development of future traffic conditions is the underlying roadway network, which assumes buildout of the existing City Master Plan of Arterial Highways (MPAH) and includes the following roadway improvements:

- Cambridge Street, Katella Avenue to South City Limits – improve to 4-lane secondary facility
- Cannon Avenue, Serrano Avenue to Santiago Canyon Road – improve to 6-lane major facility
- Chapman Avenue, Lemon Street to Grand Street – improve to 4-lane primary facility
- Crawford Canyon Road, Chapman Avenue to Newport Avenue – improve to 4-lane secondary facility
- Eckhoff Street, Sycamore Avenue to Collins Avenue – improve to 4-lane secondary facility

- Glassell Street, La Veta Avenue to Collins Avenue – improve to 4-lane secondary facility
- La Veta Avenue, Flower Street to Parker Street – improve to 6-lane major facility
- La Veta Avenue, Glassell Street to Cambridge Street – improve to 4-lane secondary facility
- Lewis Street, Metropolitan Drive to Chapman Avenue – improve to 4-lane primary facility
- Lincoln Avenue, west City Limits to Nohl Ranch Road - improve to 6-lane major facility
- Main Street, La Veta Avenue to Collins Avenue – improve to 6-lane major facility
- Metropolitan Drive, The City Drive to Chapman Avenue – add 4-lane secondary facility
- Orangewood Avenue, Eckhoff Street to Main Street – improve to 6-lane major facility
- Parker Street, South City Limit to La Veta Avenue – improve to 4-lane secondary facility
- Prospect Street, Fairhaven Avenue to La Veta Avenue – improve to 4-lane secondary facility
- Rampart Street, Chapman Avenue to Orangewood Avenue – improve to 4-lane secondary facility
- Santiago Boulevard, north of Lincoln Avenue/Nohl Ranch Road – improve to 6-lane major facility
- Santiago Canyon Road/Villa Park Road, Handy Street to Newport Avenue – improve to 6-lane major facility
- Taft Avenue, west City limits to Tustin Street – improve to 6-lane major facility
- The City Drive, Garden Grove Boulevard to SR-22 – improve to 6-lane major facility
- Walnut Avenue, Main Street to Prospect Street – improve to/add 4-lane secondary facility

While the No Project Alternative assumes the Existing MPAH as the background roadway system, the remaining alternatives refine the Existing MPAH with minor improvements which define the Proposed MPAH. The Proposed MPAH represents a more realistic future base network and accounts for the following deviations from the Existing MPAH:

- Cambridge Street, Katella Avenue to South City Limits – maintain existing 2-lane configuration
- Chapman Avenue, Lemon Street to Grand Street – maintain existing 2-lane configuration
- Walnut Avenue, Main Street to Prospect Street – maintain existing 2-lane configuration
- Glassell Street, Almond Avenue to Palm Avenue – maintain existing 2-lane configuration
- Implementation of a full-diamond interchange at Meats Avenue/SR-55

These arterial facilities are residential collectors or located in the Orange Plaza; hence, improvements to them are unlikely due to political, historical, residential, right-of-way, and environmental issues, among others. As there are no plans to widen these arterials to four-lane facilities as specified in the Existing City MPAH and the City desires to retain the existing configurations on these facilities, these deviations define the Proposed MPAH. A full diamond interchange at SR-55 and Meats Avenue was also incorporated into the Project Scenario and Alternative 2. The Meats Avenue interchange with SR-55 has the potential to relieve the congestion experienced at the SR-55 and Lincoln Avenue/Nohl Ranch Road and Katella Avenue interchanges.

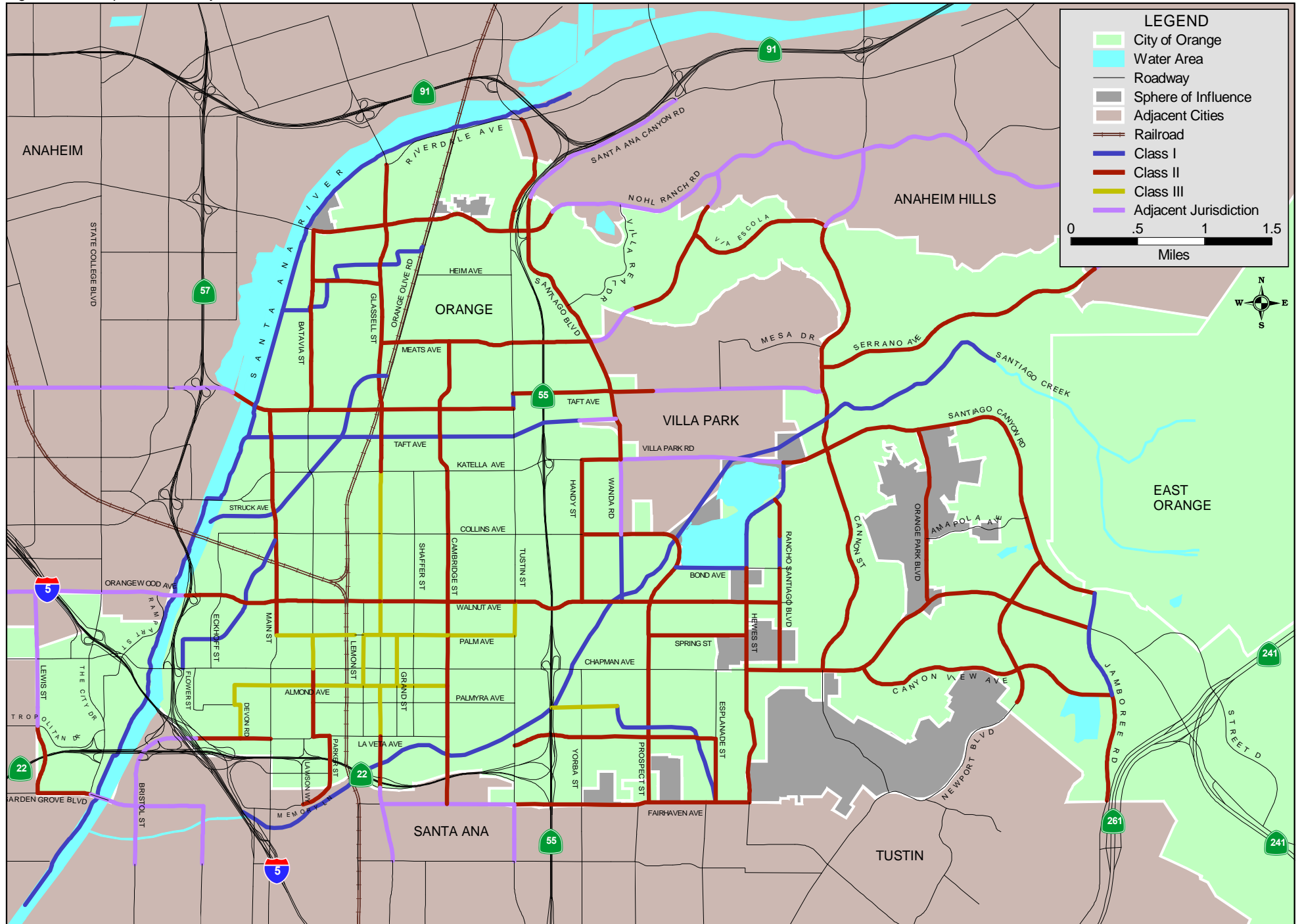
Level of service analysis is performed on arterial segments and at intersections using turning movement volumes forecast by OTAM. The level of service analysis for both arterial segments and intersections assumes full buildout of the City Master Plan of Arterial Highways, therefore intersection lane improvements have been incorporated into the intersection analysis.

Table 4.2 identifies the four future alternative scenarios that are evaluated under future traffic conditions.

Table 4.2 Future Scenarios

Scenario	Land Use Assumption	Circulation Assumption
No Project	2030 Buildout of Existing General Plan	2030 Buildout of Existing MPAH
Project	2030 Buildout of Proposed General Plan	2030 Buildout of Proposed MPAH with the Meats Avenue/SR-55 Interchange
Alternative 1	2030 Buildout of Proposed General Plan	2030 Buildout of Proposed MPAH without the Meats Avenue/SR-55 Interchange
Alternative 2	2030 Reduced Intensity General Plan	2030 Buildout of Proposed MPAH with the Meats Avenue/SR-55 Interchange

Figure 4.1 - Proposed Bikeways



Source File: Fig4-1-y30-Prop-Bikeways-052709.map

4.1 Future Traffic Volume Post-Processing Methodology

A post-processing methodology, consistent with OCTAM methodology, is applied to model outputs to achieve future forecasts which reflect appropriate growth in comparison to existing traffic volumes. Post-processing is common among traffic models since the procedure pivots off of a known value, i.e. a traffic count volume, to generate future forecast volumes. The post-processor applies the model's projected growth to existing daily arterial and A.M. and P.M. peak hour turning movement count data to develop forecast future turning movement volumes. The arterial post-model adjustment methodology uses a growth ratio, i.e. applying the model forecast ADT growth between 2000 and 2030 to the base year count volume, or an incremental growth method, i.e. applying the model forecast ADT ratio between 2000 and 2030 to the base year count volume, dependent upon whether the base year model volume is greater or less than the existing count volume. For intersections, the post-processing methodology is similar to the arterial segment post-processor and applies a ratio or increment growth. This methodology is based on procedures developed by the Federal Highway Administration.

4.2 No Project Future Daily Conditions

The No Project scenario represents buildout of the existing MPAH and assumes buildout of the existing General Plan land use. Future No Project post-processed 2030 forecast volumes with corresponding daily V/C ratio and LOS are presented in **Table 4.3**. **Table 4.3** indicates that traffic worsens throughout the City, with several arterial segments operating below the acceptable LOS D threshold.

Though the traffic model assumes buildout of the existing MPAH for the forecast year, the deficient segments listed below maintain their existing lane configuration and classification. Listed below are specific locations that will operate at an unacceptable LOS in 2030 under No Project Conditions:

- Chapman Avenue
 - SR-55 to Yorba Street
 - Yorba Street to Prospect Street (LOS E under existing conditions)
 - Prospect Street to Esplanade Street
 - Crawford Canyon Road to Canyon View Road
- Lincoln Avenue
 - Tustin Street to Santiago Boulevard
- Prospect Street
 - Chapman Avenue to Spring Street
 - Spring Street to Walnut Avenue
- Wanda Road
 - Katella Avenue to Santiago Boulevard

Close scrutiny of **Table 4.3** will also show that there are a few arterial segments that are forecast to improve to acceptable levels of service from existing conditions:

- Glassell Avenue
 - La Veta Avenue to Almond Avenue
 - Chapman Avenue to Palm Avenue
 - Palm Avenue to Collins Avenue
- Parker Street
 - La Veta Street to Town & Country Road

The improvements are the result of capacity increases that are assumed under MPAH buildout conditions. Glassell Street is assumed to be improved from a two-lane undivided to a four-lane divided arterial through the Orange Plaza. Likewise, Parker Street has been assumed at MPAH buildout as a four-lane undivided facility, improved from a two-lane undivided facility. Traffic on these segments has been forecast to increase considerably, and should the existing MPAH buildout be not achieved by the forecast year, these segments will experience traffic congestion in 2030.

Table 4.3 No Project Existing MPAH Arterial Daily Level of Service

ID	Arterial	From	To	MPAH Lanes	2030 ADT	LOS E Capacity	V/C Ratio	LOS
1	Almond Avenue	Main Street	Batavia Street	2U	5,700	12,000	0.48	A
2	Almond Avenue	Batavia Street	Glassell Street	2U	5,500	12,000	0.46	A
3	Almond Avenue	Glassell Street	Grand Street	2U	6,200	12,000	0.52	A
4	Almond Avenue	Grand Street	Cambridge Street	2U	3,400	12,000	0.28	A
5	Batavia Street	La Veta Avenue	Almond Avenue	4U	10,600	24,000	0.44	A
6	Batavia Street	Almond Avenue	Chapman Avenue	4U	14,300	24,000	0.60	A
7	Batavia Street	Chapman Avenue	Walnut Avenue	4U	19,900	24,000	0.83	D
8	Batavia Street	Walnut Avenue	Collins Avenue	4U	16,900	24,000	0.70	B
9	Batavia Street	Collins Avenue	Katella Avenue	4U	18,100	24,000	0.75	C
10	Batavia Street	Katella Avenue	Taft Avenue	4U	15,800	24,000	0.66	B
11	Batavia Street	Taft Avenue	Fletcher Avenue	4U	17,500	24,000	0.73	C
12	Batavia Street	Fletcher Avenue	Lincoln Avenue	4U	17,700	24,000	0.74	C
13	Bond Avenue	Prospect Street	Hewes Street	4U	8,100	24,000	0.34	A
14	Cambridge Street	South City Limits	Palmyra Avenue	4U	7,700	24,000	0.32	A
15	Cambridge Street	Palmyra Avenue	Chapman Avenue	4U	8,600	24,000	0.36	A
16	Cambridge Street	Chapman Avenue	Palm Avenue	4U	7,700	24,000	0.32	A
17	Cambridge Street	Palm Avenue	Walnut Avenue	4U	7,700	24,000	0.32	A
18	Cambridge Street	Walnut Avenue	Collins Avenue	4U	8,000	24,000	0.33	A
19	Cambridge Street	Collins Avenue	Katella Avenue	4U	8,400	24,000	0.35	A
20	Cambridge Street	Katella Avenue	Taft Avenue	4U	11,800	24,000	0.49	A
21	Cambridge Street	Taft Avenue	Meats Avenue	4U	8,400	24,000	0.35	A
22	Canyon View Avenue	Chapman Avenue	Outrider Street	4D	6,400	37,500	0.17	A
23	Canyon View Avenue	Outrider Street	Newport Boulevard	4D	6,200	37,500	0.17	A
24	Canyon View Avenue	Newport Boulevard	Jamboree Road	4D	5,700	37,500	0.15	A
25	Chapman Avenue	Haster Street	Lewis Street	5D	32,600	46,000	0.71	C
26	Chapman Avenue	Lewis Street	Manchester Avenue	6D	38,000	56,300	0.67	B
27	Chapman Avenue	Manchester Avenue	The City Drive	6D	40,900	56,300	0.73	C
28	Chapman Avenue	The City Drive	Eckhoff Street	6D	35,500	56,300	0.63	B
29	Chapman Avenue	Eckhoff Street	Main Street	6D	31,500	56,300	0.56	A
30	Chapman Avenue	Main Street	Batavia Street	4D	22,500	37,500	0.60	A
31	Chapman Avenue	Batavia Street	Lemon Street	4D	21,600	37,500	0.58	A
311	Chapman Avenue	Lemon Street	Glassell Street	4D	23,200	37,500	0.62	B
312	Chapman Avenue	Glassell Street	Grand Street	4D	24,700	37,500	0.66	B
32	Chapman Avenue	Grand Street	Cambridge Street	4D	26,200	37,500	0.70	B
33	Chapman Avenue	Cambridge Street	Tustin Street	4D	30,500	37,500	0.81	D
34	Chapman Avenue	Tustin Street	SR-55	6D	49,800	56,300	0.88	D
35	Chapman Avenue	SR-55	Yorba Street	8D	78,700	75,000	1.05	F
36	Chapman Avenue	Yorba Street	Prospect Street	6D	65,100	56,300	1.16	F
37	Chapman Avenue	Prospect Street	Esplanade Street	6D	51,100	56,300	0.91	E
38	Chapman Avenue	Esplanade Street	Hewes Street	6D	48,200	56,300	0.86	D
39	Chapman Avenue	Hewes Street	Crawford Canyon Road	6D	41,000	56,300	0.73	C
40	Chapman Avenue	Crawford Canyon Road	Canyon View Avenue	4D	38,300	37,500	1.02	F
41	Chapman Avenue	Canyon View Avenue	Orange Park Boulevard	4D	28,900	37,500	0.77	C
42	Chapman Avenue	Orange Park Boulevard	Newport Boulevard	4D	23,600	37,500	0.63	B
43	Chapman Avenue	Newport Boulevard	Jamboree Road	6D	41,800	56,300	0.74	C
44	Chapman Avenue	Jamboree Road	City Limit	6D	38,600	56,300	0.69	B
45	Collins Avenue	Eckhoff Street	Main Street	4U	7,800	24,000	0.33	A
46	Collins Avenue	Main Street	Batavia Street	4U	13,300	24,000	0.55	A
47	Collins Avenue	Batavia Street	Glassell Street	4U	16,000	24,000	0.67	B
48	Collins Avenue	Glassell Street	Cambridge Street	4U	16,600	24,000	0.69	B
49	Collins Avenue	Cambridge Street	Tustin Street	4U	16,200	24,000	0.68	B
50	Collins Avenue	Tustin Street	Handy Street	4U	15,100	24,000	0.63	B



 Deficient Segment, LOS E
 Deficient Segment, LOS F

Table 4.3 No Project Existing MPAH Arterial Daily Level of Service (continued)

ID	Arterial	From	To	MPAH Lanes	2030 ADT	LOS E Capacity	V/C Ratio	LOS
51	Collins Avenue	Handy Street	Wanda Road	4U	14,600	24,000	0.61	B
52	Collins Avenue	Wanda Road	Prospect Street	4U	18,800	24,000	0.78	C
53	Crawford Canyon Road	Barrett Avenue	Chapman Avenue	4U	17,400	24,000	0.73	C
54	Cannon Street	Chapman Avenue	Creekside Avenue	4U	14,200	24,000	0.59	A
55	Cannon Street	Creekside Avenue	Patria Court	4U	9,500	24,000	0.40	A
56	Cannon Street	Patria Court	Santiago Canyon Road	4U	9,200	24,000	0.38	A
57	Cannon Street	Santiago Canyon Road	Taft Avenue	6D	48,900	56,300	0.87	D
58	Cannon Street	Taft Avenue	Via Escola	6D	34,900	56,300	0.62	B
59	Eckhoff Street	Chapman Avenue	Sycamore Avenue	2U	7,700	12,000	0.64	B
60	Eckhoff Street	Orangewood Avenue	Collins Avenue	4U	10,500	24,000	0.44	A
61	Esplanade Street	Fairhaven Avenue	La Veta Avenue	4U	3,400	24,000	0.14	A
62	Esplanade Street	La Veta Avenue	Chapman Avenue	4U	7,100	24,000	0.30	A
63	Fairhaven Avenue	Glassell Street	Cambridge Street	4U	10,200	24,000	0.43	A
64	Fairhaven Avenue	Cambridge Street	Tustin Street	4U	10,100	24,000	0.42	A
65	Fairhaven Avenue	Tustin Street	Yorba Street	4U	14,300	24,000	0.60	A
66	Fairhaven Avenue	Yorba Street	Prospect Street	4U	14,700	24,000	0.61	B
67	Fairhaven Avenue	Prospect Street	Esplanade Street	4U	13,500	24,000	0.56	A
68	Fairhaven Avenue	Esplanade Street	Hewes Street	4U	10,900	24,000	0.45	A
69	Fletcher Avenue	Batavia Street	Glassell Street	4U	4,500	24,000	0.19	A
70	Garden Grove Boulevard	The City Drive	Lewis Street	4D	23,900	37,500	0.64	B
72	Glassell Street	SR-22	La Veta Avenue	4D	32,200	37,500	0.86	D
73	Glassell Street	La Veta Avenue	Almond Avenue	4D	17,600	37,500	0.47	A
731	Glassell Street	Almond Avenue	Chapman Avenue	4D	15,800	37,500	0.42	A
74	Glassell Street	Chapman Avenue	Palm Avenue	4D	13,600	37,500	0.36	A
75	Glassell Street	Palm Avenue	Collins Avenue	4D	14,300	37,500	0.38	A
76	Glassell Street	Collins Avenue	Katella Avenue	4D	22,600	37,500	0.60	A
77	Glassell Street	Katella Avenue	Orange Olive Road	4D	30,300	37,500	0.81	D
78	Glassell Street	Orange Olive Road	Grove Avenue	4D	14,700	37,500	0.39	A
79	Glassell Street	Grove Avenue	Lincoln Avenue	4D	23,700	37,500	0.63	B
80	Glassell Street	Lincoln Avenue	Santa Ana River	4D	28,700	37,500	0.77	C
811	Grand Street	La Veta Avenue	Palmyra Avenue	2U	3,500	12,000	0.29	A
812	Grand Street	Almond Avenue	Chapman Avenue	2U	3,700	12,000	0.31	A
81	Grand Street	Chapman Avenue	Maple Avenue	4D	4,800	37,500	0.40	A
82	Hewes Street	Fairhaven Avenue	Washington Avenue	2U	7,400	12,000	0.31	A
83	Hewes Street	Washington Avenue	Chapman Avenue	4U	10,800	24,000	0.45	A
84	Hewes Street	Chapman Avenue	Walnut Avenue	4U	12,700	24,000	0.53	A
85	Hewes Street	Walnut Avenue	Santiago Canyon Road	4U	12,500	24,000	0.52	A
86	Jamboree Road	Santiago Canyon Road	Chapman Avenue	4U	28,600	24,000	0.51	A
87	Jamboree Road	Chapman Avenue	Canyon View Avenue	6D	26,400	56,300	0.47	A
88	Jamboree Road	Canyon View Avenue	SR-241	6D	30,100	56,300	0.53	A
89	Katella Avenue*	Struck Avenue	Main Street	6D SS	46,700	59,115	0.79	C
90	Katella Avenue*	Main Street	Batavia Street	6D SS	43,900	59,115	0.74	C
91	Katella Avenue*	Batavia Street	Glassell Street	6D SS	45,600	59,115	0.77	C
92	Katella Avenue*	Glassell Street	Cambridge Street	6D SS	46,200	59,115	0.78	C
93	Katella Avenue*	Cambridge Street	Tustin Street	6D SS	45,800	59,115	0.77	C
94	Katella Avenue*	Tustin Street	SR-55	7D SS	54,200	68,250	0.79	C
95	Katella Avenue	SR-55	Handy Street	6D	50,500	56,300	0.90	D
96	Katella Avenue	Handy Street	Wanda Road	6D	48,300	56,300	0.86	D
97	Katella Avenue	Wanda Road	Center Drive	6D	40,200	56,300	0.71	C
98	Katella Avenue	Center Drive	Santiago Canyon Road	6D	38,000	56,300	0.67	B
99	La Veta Avenue	Flower Street	Devon Street	6D	24,500	56,300	0.44	A



 Deficient Segment, LOS E
 Deficient Segment, LOS F

Table 4.3 No Project Existing MPAH Arterial Daily Level of Service (continued)

ID	Arterial	From	To	MPAH Lanes	2030 ADT	LOS E Capacity	V/C Ratio	LOS
100	La Veta Avenue	Devon Street	Main Street	6D	19,400	56,300	0.34	A
101	La Veta Avenue	Main Street	Batavia Street	6D	30,200	56,300	0.54	A
102	La Veta Avenue	Batavia Street	Glassell Street	4D	16,400	37,500	0.44	A
103	La Veta Avenue	Glassell Street	Shaffer Street	4U	10,200	24,000	0.43	A
104	La Veta Avenue	Shaffer Street	Cambridge Street	4U	7,600	24,000	0.32	A
105	La Veta Avenue	Tustin Street	Yorba Street	4U	11,900	24,000	0.50	A
106	La Veta Avenue	Yorba Street	Prospect Street	4U	11,100	24,000	0.46	A
107	La Veta Avenue	Prospect Street	Esplanade Street	4U	9,300	24,000	0.39	A
1081	Lemon Street	La Veta Avenue	Palmyra Avenue	2U	8,500	12,000	0.71	C
108	Lemon Street	Chapman Avenue	Maple Avenue	2U	7,800	12,000	0.65	B
1082	Lemon Street	Maple Avenue	Walnut Avenue	2U	2,300	12,000	0.19	A
109	Lewis Street	Garden Grove Avenue	Metropolitan Drive	4U	14,300	24,000	0.60	A
110	Lewis Street	Metropolitan Drive	Chapman Avenue	4U	18,400	24,000	0.77	C
111	Lewis Street	Chapman Avenue	Sirius Avenue	4U	10,800	24,000	0.45	A
112	Lincoln Avenue	West City Limit	Batavia Street	6D	34,800	56,300	0.62	B
113	Lincoln Avenue	Batavia Street	Glassell Street	6D	31,700	56,300	0.56	A
114	Lincoln Avenue	Glassell Street	Orange Olive Road	6D	34,300	56,300	0.61	B
115	Lincoln Avenue	Orange Olive Road	Tustin Street	6D	47,100	56,300	0.84	D
116	Lincoln Avenue	Tustin Street	Santiago Boulevard	6D	51,500	56,300	0.91	E
117	Main Street	Town & Country Road	La Veta Avenue	6D	48,100	56,300	0.85	D
118	Main Street	La Veta Avenue	Chapman Avenue	6D	43,800	56,300	0.78	C
119	Main Street	Chapman Avenue	Sycamore Avenue	6D	31,300	56,300	0.56	A
120	Main Street	Sycamore Avenue	Collins Avenue	6D	25,200	56,300	0.45	A
121	Main Street	Collins Avenue	Struck Avenue	4D	21,300	37,500	0.57	A
122	Main Street	Struck Avenue	Katella Avenue	4D	18,500	37,500	0.49	A
123	Main Street	Katella Avenue	Taft Avenue	4D	20,700	37,500	0.55	A
124	Meats Avenue	Glassell Street	Orange Olive Road	4U	9,500	24,000	0.40	A
125	Meats Avenue	Orange Olive Road	Cambridge Street	4U	12,000	24,000	0.50	A
126	Meats Avenue	Cambridge Street	Tustin Street	4U	14,700	24,000	0.61	B
127	Meats Avenue	Tustin Street	Santiago Boulevard	4U	16,700	24,000	0.70	B
128	Meats Avenue	Santiago Boulevard	Featherhill Road	4U	13,100	24,000	0.55	A
129	Meats Avenue	Featherhill Road	Via Escola	4U	6,800	24,000	0.28	A
130	Metropolitan Drive	Lewis Street	SR-22 Westbound Ramps	4U	6,500	24,000	0.27	A
131	Metropolitan Drive	SR-22 Westbound Ramps	The City Drive	4U	14,000	24,000	0.58	A
1311	Metropolitan Drive	The City Drive	Chapman Avenue	4U	13,800	24,000	0.58	A
132	Manchester Avenue	Chapman Avenue	Compton Avenue	4D	7,800	37,500	0.21	A
133	Newport Boulevard	South City Limits	Canyon View Avenue	4D	9,000	37,500	0.24	A
134	Newport Boulevard	Canyon View Avenue	Chapman Avenue	4D	7,800	37,500	0.21	A
135	Newport Boulevard	Chapman Avenue	Santiago Canyon Road	4D	13,100	37,500	0.35	A
136	Nohl Ranch Road	Santiago Boulevard	East City Limit	4U	14,200	37,500	0.59	A
137	Orange Olive Road	Glassell Street	Meats Avenue	4U	17,800	24,000	0.74	C
138	Orange Olive Road	Meats Avenue	Lincoln Avenue	4U	17,000	24,000	0.71	C
139	Orange Olive Road	Lincoln Avenue	Santa Ana Canyon Road	4U	14,700	24,000	0.61	B
140	Orange Olive Road	Santa Ana Canyon Road	Riverdale Avenue	4U	9,800	24,000	0.41	A
141	Orangewood Avenue	Eckhoff Street	Main Street	6D	33,900	24,000	0.60	A
142	Palm Avenue	Main Street	Batavia Street	2U	3,900	56,300	0.33	A
143	Palm Avenue	Batavia Street	Cypress Street	2U	4,600	12,000	0.38	A
144	Palm Avenue	Cypress Street	Glassell Street	2U	4,400	12,000	0.37	A
145	Palm Avenue	Glassell Street	Cambridge Street	2U	4,000	12,000	0.33	A
146	Palm Avenue	Cambridge Street	Tustin Street	2U	7,200	12,000	0.60	A
147	Palmyra Avenue	Batavia Street	Glassell Street	2U	2,600	12,000	0.22	A



 Deficient Segment, LOS E
 Deficient Segment, LOS F

Table 4.3 No Project Existing MPAH Arterial Daily Level of Service (continued)

ID	Arterial	From	To	MPAH Lanes	2030 ADT	LOS E Capacity	V/C Ratio	LOS
148	Palmyra Avenue	Glassell Street	Cambridge Street	2U	2,000	12,000	0.17	A
149	Palmyra Avenue	Cambridge Street	Tustin Street	2U	5,200	12,000	0.43	A
150	Parker Street	La Veta Avenue	Town & Country Road	4U	15,700	24,000	0.65	B
151	Prospect Street	Fairhaven Avenue	La Veta Avenue	4U	10,000	24,000	0.42	A
152	Prospect Street	La Veta Avenue	Chapman Avenue	4U	13,400	24,000	0.56	A
153	Prospect Street	Chapman Avenue	Spring Street	4U	24,400	24,000	1.02	F
154	Prospect Street	Spring Street	Walnut Avenue	4U	23,400	24,000	0.98	E
155	Prospect Street	Walnut Avenue	Bond Avenue	4U	17,500	24,000	0.73	C
156	Rampart Street	Chapman Avenue	Orangewood Avenue	4U	8,300	24,000	0.35	A
157	Rancho Santiago Boulevard	Chapman Avenue	Walnut Avenue	2U	8,100	12,000	0.68	B
158	Rancho Santiago Boulevard	Hewes Street	Bond Avenue	2U	3,100	12,000	0.26	A
159	Riverdale Avenue	Glassell Street	Orange Olive Road	4U	6,000	24,000	0.25	A
160	Riverdale Avenue	Orange Olive Road	Tustin Street	4U	8,300	24,000	0.35	A
161	Santa Ana Canyon Road	Lincoln Avenue	Nohl Ranch Road	6D	16,600	56,300	0.29	A
162	Santiago Boulevard	Wanda Road	Taft Avenue	4U	16,000	24,000	0.67	B
163	Santiago Boulevard	Taft Avenue	Villa Real Drive	4U	16,300	24,000	0.68	B
164	Santiago Boulevard	Villa Real Drive	Lincoln Avenue	4U	18,400	24,000	0.77	C
165	Santiago Canyon Road	Hewes Street	Cannon Street	6D	42,100	56,300	0.75	C
166	Santiago Canyon Road	Cannon Street	Orange Park Boulevard	6D	47,900	56,300	0.85	D
167	Santiago Canyon Road	Orange Park Boulevard	Meads Avenue	6D	38,900	56,300	0.69	B
168	Santiago Canyon Road	Meads Avenue	Newport Boulevard	6D	37,700	56,300	0.67	B
169	Santiago Canyon Road	Newport Boulevard	Jamboree Road	6D	28,600	56,300	0.51	A
170	Santiago Canyon Road	Jamboree Road	Street D	6D	38,600	56,300	0.69	B
214	Santiago Canyon Road	Street D	SR-241	6D	26,000	56,300	0.46	A
213	Santiago Canyon Road	East of SR-241		4D	24,000	37,500	0.64	B
171	Serrano Avenue	Cannon Street	Orange Park Boulevard	4D	23,600	37,500	0.63	B
172	Serrano Avenue	Orange Park Boulevard	Apache Creek	4D	20,500	37,500	0.55	A
173	Serrano Avenue	Apache Creek	East City Limit	4D	12,100	37,500	0.32	A
1741	Shaffer Street	La Veta Avenue	Palmyra Avenue	2U	1,900	12,000	0.16	A
174	Shaffer Street	Chapman Avenue	Maple Avenue	2U	5,000	12,000	0.42	A
1742	Shaffer Street	Palm Avenue	Walnut Avenue	2U	4,900	12,000	0.41	A
1743	Shaffer Street	Walnut Avenue	Collins Avenue	2U	10,300	12,000	0.86	D
1744	Shaffer Street	Collins Avenue	Katella Avenue	2U	5,900	12,000	0.49	A
175	Spring Street	Prospect Street	Olympia Way	4U	17,100	24,000	0.71	C
176	Struck Avenue	Katella Avenue	Main Street	2U	9,100	12,000	0.76	C
177	Taft Avenue	West City Limit	Main Street	6D	49,100	56,300	0.87	D
178	Taft Avenue	Main Street	Batavia Street	6D	28,900	56,300	0.51	A
179	Taft Avenue	Batavia Street	Glassell Street	6D	33,000	56,300	0.59	A
180	Taft Avenue	Glassell Street	Cambridge Street	6D	22,200	56,300	0.39	A
181	Taft Avenue	Cambridge Street	Tustin Street	6D	18,300	56,300	0.33	A
182	Taft Avenue	Tustin Street	Santiago Boulevard	4U	14,200	24,000	0.59	A
183	Taft Avenue	Cannon Street	Yurok Street	2U	8,800	12,000	0.73	C
184	The City Drive	Garden Grove Boulevard	SR-22	6D	26,400	56,300	0.47	A
185	The City Drive	SR-22	Metropolitan	6D	45,700	56,300	0.81	D
186	The City Drive	Metropolitan	Chapman Avenue	8D	26,800	75,000	0.36	A
187	The City Drive	Chapman Avenue	North City Limits	8D	33,200	75,000	0.44	A
188	Town & Country Road	Main Street	SR-22	4D	25,000	37,500	0.67	B
189	Town & Country Road	SR-22	Parker Street	4D	10,900	37,500	0.29	A
190	Tustin Street	Fairhaven Avenue	La Veta Avenue	6D	37,800	56,300	0.67	B
191	Tustin Street	La Veta Avenue	Palmyra Avenue	6D	30,900	56,300	0.55	A
192	Tustin Street	Palmyra Avenue	Chapman Avenue	6D	32,300	56,300	0.57	A
193	Tustin Street	Chapman Avenue	Walnut Avenue	6D	48,500	56,300	0.86	D
194	Tustin Street	Walnut Avenue	Mayfair Avenue	6D	44,600	56,300	0.79	C





 Deficient Segment, LOS E
 Deficient Segment, LOS F

Table 4.3 No Project Existing MPAH Arterial Daily Level of Service (continued)

ID	Arterial	From	To	MPAH Lanes	2030 ADT	LOS E Capacity	V/C Ratio	LOS
195	Tustin Street	Mayfair Avenue	Collins Avenue	6D	41,100	56,300	0.73	C
196	Tustin Street	Collins Avenue	Katella Avenue	6D	48,400	56,300	0.86	D
197	Tustin Street	Katella Avenue	Taft Avenue	6D	47,300	56,300	0.84	D
198	Tustin Street	Taft Avenue	Meats Avenue	6D	39,800	56,300	0.71	C
199	Tustin Street	Meats Avenue	Lincoln Avenue	6D	36,100	56,300	0.64	B
200	Tustin Street	Lincoln Avenue	Santa Ana Canyon Road	6D	29,300	56,300	0.52	A
201	Via Escola	Meats Avenue	Cannon Street	4U	5,300	24,000	0.22	A
202	Villa Real Drive	Santiago Boulevard	Chapel Hill	2U	1,700	12,000	0.14	A
203	Walnut Avenue	Main Street	Batavia Street	4U	11,100	24,000	0.46	A
204	Walnut Avenue	Batavia Street	Cypress Street	4U	11,200	24,000	0.47	A
205	Walnut Avenue	Cypress Street	Glassell Street	4U	10,600	24,000	0.44	A
206	Walnut Avenue	Glassell Street	Cambridge Street	4U	8,300	24,000	0.35	A
207	Walnut Avenue	Cambridge Street	Tustin Street	4U	8,100	24,000	0.34	A
208	Walnut Avenue	Tustin Street	Handy Street	4U	11,800	24,000	0.49	A
209	Wanda Road	Collins Avenue	Katella Avenue	4U	14,800	24,000	0.62	B
210	Wanda Road	Katella Avenue	Santiago Boulevard (VP)	4U	25,800	24,000	1.08	F
211	Yorba Street	Fairhaven Avenue	La Veta Avenue	4U	8,200	24,000	0.34	A
212	Yorba Street	La Veta Avenue	Chapman Avenue	4U	12,400	24,000	0.52	A

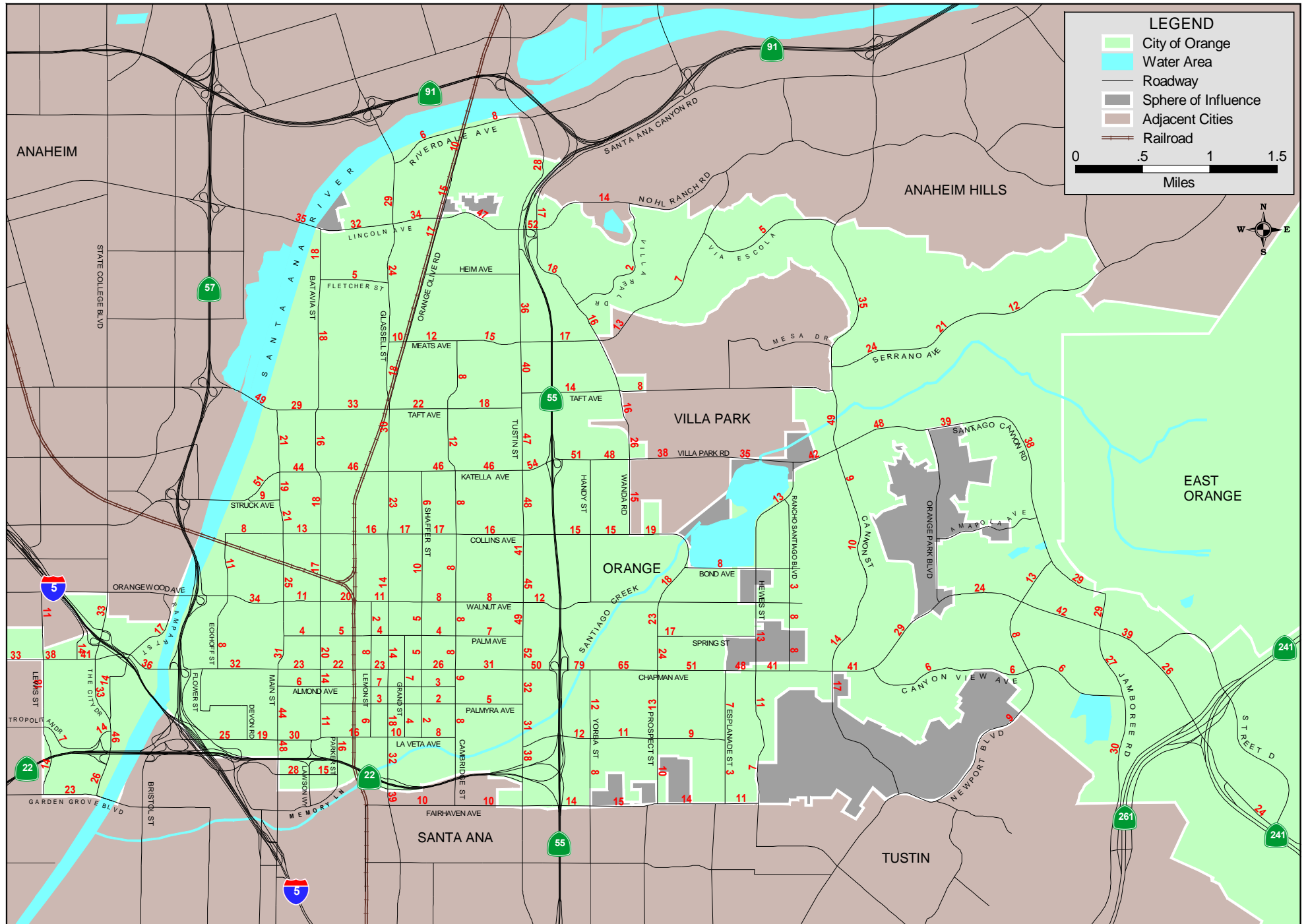
 Deficient Segment, LOS E

 Deficient Segment, LOS F

Note: * Katella Avenue capacity has been increased by 5% due to classification as a Smart Street.
Source: Orange Traffic Analysis Model (OTAM 2004)

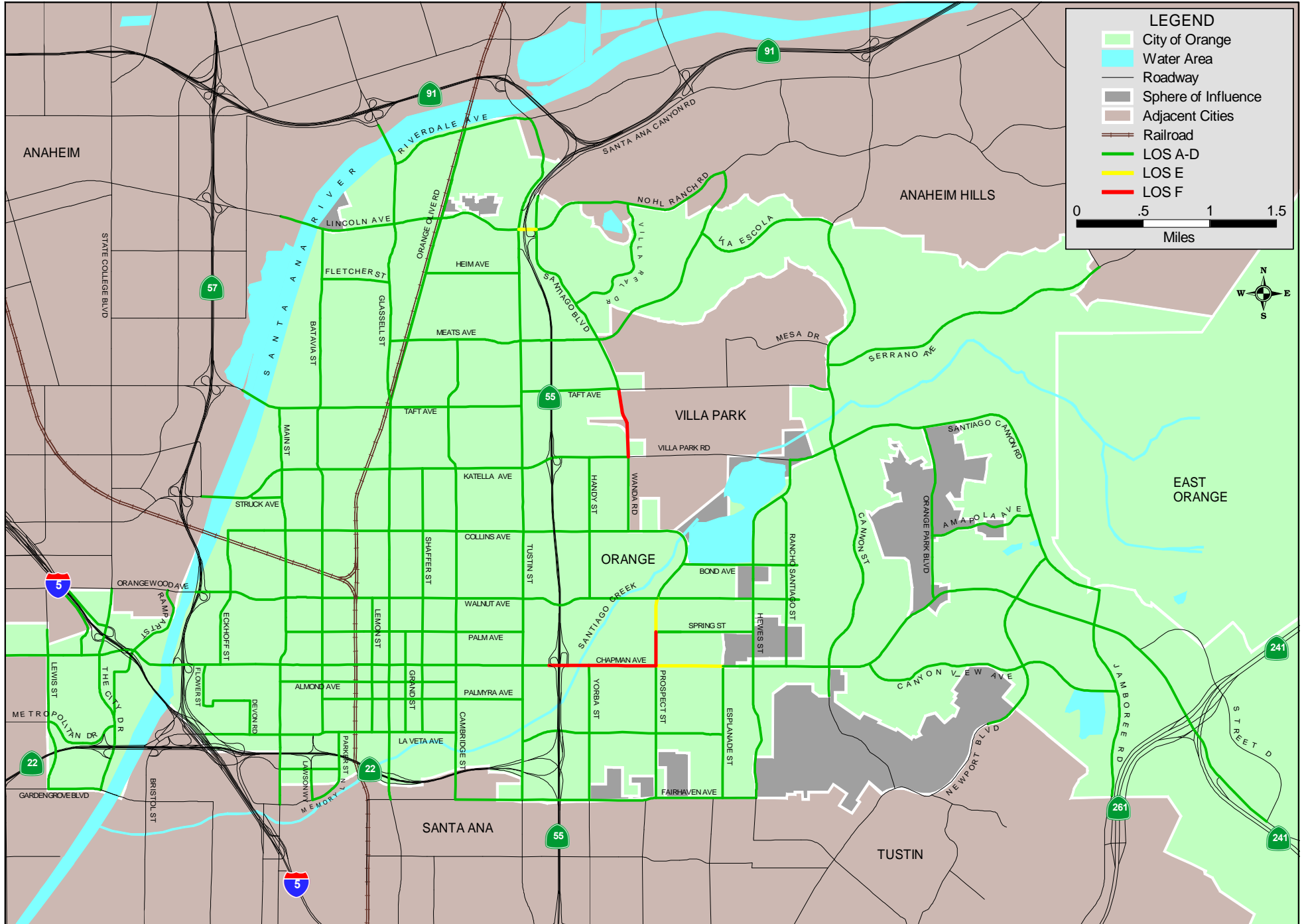
Figure 4.2 presents the No Project forecast average daily traffic (ADT) volumes for arterial segments and the forecast year 2030 arterial level of service is presented in **Figure 4.3**.

Figure 4.2 - No Project Future Average Daily Traffic on Arterial Segments (in Thousands)



Source File: Fig4-2-y30-NoProj-Art-ADT-052709.map

Figure 4.3 - No Project Future Arterial Daily Level of Service



4.3 No Project Future Intersection Peak Hour Conditions

Table 4.4 presents No Project 2030 forecast ICU and LOS results for turning movement volumes at the critical intersections during the morning (A.M.) and evening (P.M.) peak hours. Similar to the arterial segment volume forecast, turning movements for the intersections were post-processed from OTAM forecast volumes. **Figure 4.4** illustrates No Project peak hour levels of service.

The incorporation of existing MPAH improvement assumptions at arterials and ultimate intersection configurations at the critical intersections results in five study intersections forecast to operate at an unacceptable LOS in either the A.M. or the P.M. peak hour under No Project conditions. Of these, two intersections fail in both the A.M. as well as the P.M. peak hour:

- Cannon Street at Santiago Canyon Road
- Wanda Road at Villa Park Road

Among the above listed intersections that are deficient, neither were deficient under existing conditions. Four of the five intersections that are deficient in either the A.M. or P.M. peak hour under No Project conditions operated at LOS D under existing conditions and hence had the potential of deteriorating to a deficient intersection in the future:

- Cannon Street at Santiago Canyon Road (LOS E in A.M. and P.M. peak hour)
- Southbound SR-55 Ramps at Katella Avenue (LOS E in A.M. peak hour)
- Wanda Road at Villa Park Road (LOS F in A.M. and LOS E in P.M. peak hour)
- Tustin Street at Lincoln Avenue (LOS F in P.M. peak hour)

Appendix A and **Appendix B** present future lane geometrics and Existing and No Project ICU worksheets for the study intersections.

4.4 No Project Future Baseline Improvements

This section presents No Project baseline improvement measures for the arterial segments that operate at an unacceptable LOS under daily conditions, and intersections that operate at an unacceptable LOS during either A.M. or P.M. peak hours. Generally, arterial segment performance is dictated by upstream and downstream intersection performance because the capacity of arterial segments is often constricted to what can filter through the intersections during the peak hours, therefore, mitigation is not necessarily proposed for each deficient arterial segment. Since arterial segment mitigation may not be warranted based on peak hour intersection operations, mitigation measures are generally applied to intersections to facilitate traffic flow throughout the roadway network during peak periods.

An arterial that experiences LOS F likely warrants arterial capacity enhancement to ensure acceptable operations, however an arterial at LOS E is likely to operate at an acceptable LOS with acceptable operations of the upstream and downstream intersections. Therefore, for segments at the threshold of deficient operations, continued monitoring of the segment and adjacent intersections is recommended to identify if arterial capacity enhancements are required and immediate improvement measures are not proposed that result in a LOS that meets the LOS D threshold.

A monitoring program would require evaluation at regular intervals, generally 3 – 5 years. The monitoring program would include collecting traffic count data for the arterial segment that has been identified as deficient under daily LOS conditions as well as peak hour intersection turning movement data at the major intersections at the endpoints and along the segment. Intersection ICU analysis must be performed to evaluate traffic performance in relation to the adopted LOS D threshold. Segment LOS should continue to be evaluated on a daily basis, but if intersection peak hour LOS is determined to meet City thresholds, arterial improvement is not recommended. If intersections are found to be deficient during peak hour conditions, intersection and/or segment improvement is warranted.

Table 4.4 No Project Intersection Level of Service

ID	Intersection Location	A.M. Peak Hour		P.M. Peak Hour	
		ICU	LOS	ICU	LOS
1	Batavia Street @ Collins Avenue	0.56	A	0.76	C
2	Batavia Street @ Katella Avenue	0.65	B	0.72	C
3	Batavia Street @ Lincoln Avenue	0.59	A	0.73	C
4	Batavia Street @ Taft Avenue	0.68	B	0.71	C
5	Batavia Street @ Walnut Avenue	0.62	B	0.55	A
6	Cambridge Street @ Katella Avenue	0.59	A	0.71	C
7	Cannon Street @ Santiago Canyon Road	0.92	E	0.96	E
8	Cannon Street @ Serrano Avenue	0.97	E	0.89	D
9	Cannon Street/ Crawford Canyon @ Chapman Avenue	0.75	C	0.70	B
10	Yorba Street @ Chapman Avenue	0.76	C	0.67	B
11	Canyon View Avenue @ Chapman Avenue	0.62	B	0.46	A
12	Jamboree Road @ Chapman Avenue	0.85	D	0.87	D
13	Northbound SR-55 Ramps @ Chapman Avenue	0.74	C	0.67	B
14	Southbound SR-55 Ramps @ Chapman Avenue	0.66	B	0.62	B
15	Lewis Street @ Chapman Avenue	0.59	A	0.65	B
16	The City Drive @ Chapman Avenue	0.65	B	0.80	C
17	The City Drive @ Eastbound SR-22 Ramps	0.63	B	0.70	B
18	The City Drive @ Westbound SR-22 Ramps	0.25	A	0.32	A
19	Glassell Street @ Collins Avenue	0.63	B	0.68	B
20	Glassell Street @ Katella Avenue	0.59	A	0.77	C
21	Glassell Street @ La Veta Avenue	0.78	C	0.75	C
22	Glassell Street @ Lincoln Avenue	0.59	A	0.86	D
23	Glassell Street @ Taft Avenue	0.68	B	0.72	C
24	Glassell Street @ Walnut Avenue	0.43	A	0.53	A
25	Hewes Street @ Chapman Avenue	0.77	C	0.70	B
26	Northbound SR-55 Ramps @ Katella Avenue	0.75	C	0.86	D
27	Southbound SR-55 Ramps @ Katella Avenue	0.96	E	0.89	D
28	Main Street @ Chapman Avenue	0.59	A	0.71	C
29	Main Street @ Katella Avenue	0.55	A	0.67	B
30	Main Street @ La Veta Avenue	0.60	A	0.78	C
31	Main Street @ Orangewood Avenue	0.58	A	0.53	A
32	Main Street @ Taft Avenue	0.55	A	0.70	B
33	Main Street @ Town & Country Road	0.45	A	0.80	C
34	Newport Boulevard @ Chapman Avenue	0.74	C	0.90	D
35	Santiago Boulevard @ Nohl Ranch Road	0.70	B	0.75	C
36	Eckhoff Street @ Orangewood Avenue	0.44	A	0.51	A
37	State College Boulevard @ Orangewood Avenue	0.52	A	0.63	B
38	Prospect Street @ Chapman Avenue	0.88	D	0.85	D
39	Prospect Street @ Walnut Avenue	0.85	D	0.85	D
40	Santiago Boulevard @ Meats Avenue	0.85	D	0.70	B
41	Wanda Road @ Villa Park Road	1.13	F	0.93	E
42	Tustin Street @ Chapman Avenue	0.71	C	0.89	D
43	Tustin Street @ Collins Avenue	0.52	A	0.60	A
44	Tustin Street @ Fairhaven Avenue	0.85	D	0.71	C
45	Tustin Street @ Heim Avenue	0.56	A	0.84	D
46	Tustin Street @ Katella Avenue	0.65	B	0.87	D
47	Tustin Street @ La Veta Avenue	0.70	B	0.57	A
48	Tustin Street @ Lincoln Avenue	0.89	D	1.04	F
49	Tustin Street @ Meats Avenue	0.45	A	0.68	B
50	Tustin Street @ Taft Avenue (North)	0.57	A	0.76	C
51	Tustin Street @ Taft Avenue (South)	0.69	B	0.79	C
52	Tustin Street @ Walnut Avenue	0.67	B	0.74	C
55	Struck Avenue @ Katella Avenue	0.30	A	0.37	A
56	Main Street @ Struck Avenue	0.87	D	0.53	A
57	Main Street @ Collins Avenue	0.63	B	0.88	D

Figure 4.4 - No Project Intersection Level of Service

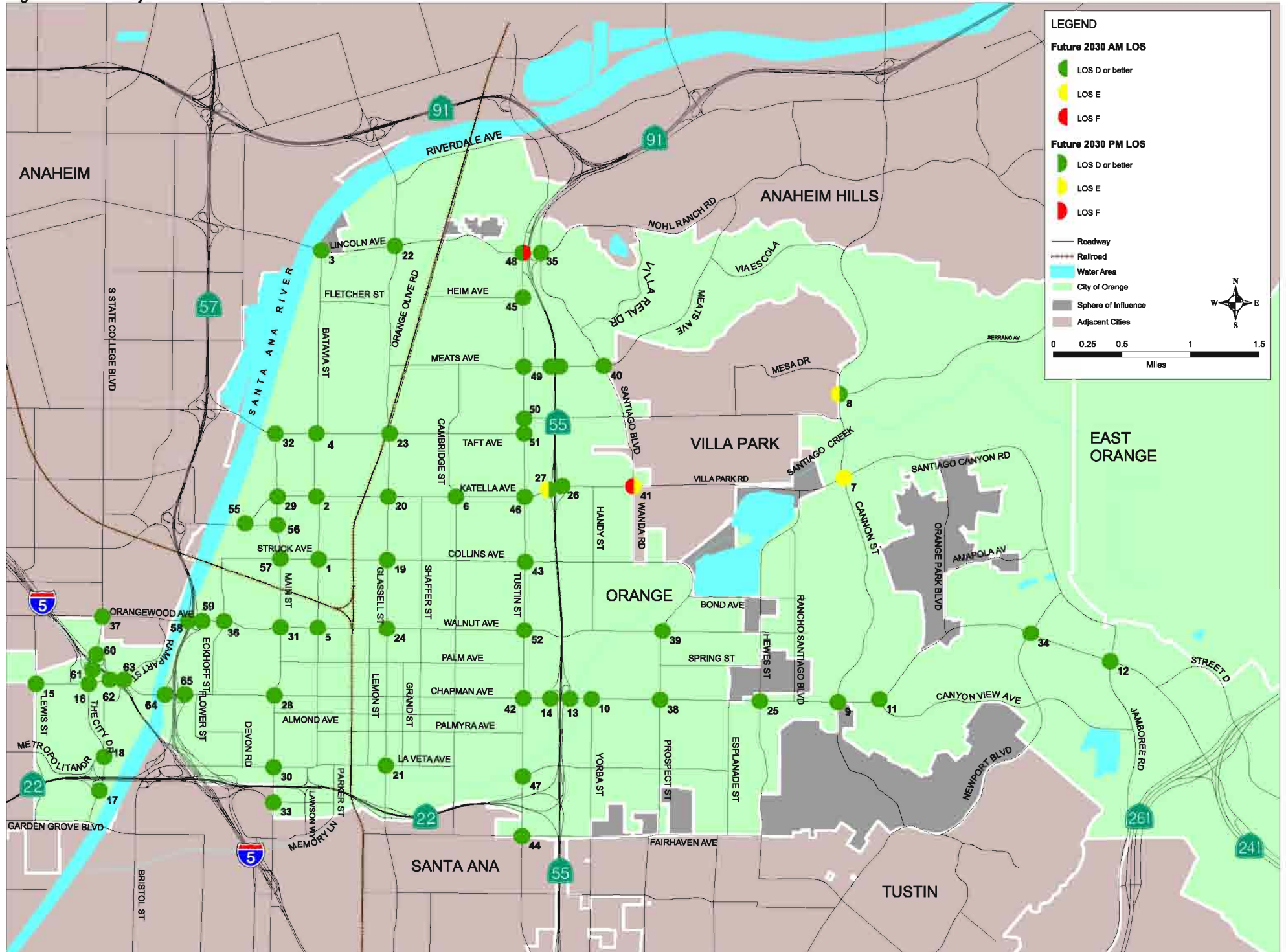




Table 4.4 No Project Intersection Level of Service (continued)

ID	Intersection Location	A.M. Peak Hour		P.M. Peak Hour	
		ICU	LOS	ICU	LOS
58	Southbound SR-57 Ramps @ Orangewood Avenue	0.70	B	0.74	C
59	Northbound SR-57 Ramps @ Orangewood Avenue	0.41	A	0.37	A
60	State College Boulevard @ NB I-5 Ramps/Anaheim Way	0.42	A	0.34	A
61	State College Boulevard @ Southbound I-5 Ramps	0.44	A	0.30	A
62	Southbound I-5 Ramps @ Chapman Avenue	0.49	A	0.53	A
63	Rampart Street @ Chapman Ave./ NB I-5 Ramps	0.51	A	0.50	A
64	Southbound SR-57 Ramps @ Chapman Avenue	0.57	A	0.72	C
65	Northbound SR-57 Ramps @ Chapman Avenue	0.43	A	0.46	A

 Deficient Intersection, LOS E

 Deficient Intersection, LOS F

Source: Orange Traffic Analysis Model (OTAM 2004)

Improvement measures are intended to ensure acceptable operations of deficient segments or intersections. Typical improvement measures for arterial segments include widening or lane/median re-striping to allow for additional capacity to serve future traffic demands. Removal of on-street parking may be another strategy to increase capacity, although this particular strategy often may not be feasible for policy-related reasons.

Typical intersection improvement measures include intersection widening to add capacity through additional turn or through lanes. Additional improvement measures for intersections include re-striping existing turning movement configurations to allow for more capacity for critical movements. Critical movements are the movements on the intersection approaches that generally have high volumes and result in deficient intersection operations. Advanced Transportation Management Systems (ATMS) are components that are implemented to maximize intersection capacity without physical capacity to intersections. ATMS strategies typically include revised signalization and signal coordination to increase throughput through a corridor. ATMS strategies generally increase capacity by five percent, therefore, a 0.05 V/C ratio credit will be applied to intersections where these strategies may be recommended.

Application of the arterial and intersection improvement measures can potentially result in the following adverse impacts to the local community:

- Right-of-way acquisition requirements
- Right-of-way impacts
- Structure impacts
- Residential impacts and potential displacement
- Commercial impacts and potential displacement
- Local circulation access impacts
- Construction-related impacts
- Bridge and structure widening
- Historic feature disturbance
- Pedestrian and bicycle path displacement
- Transit operations impacts
- Earthwork requirements

Specific evaluation of each proposed improvement measure is required prior to implementation to ensure the improvement is appropriate and commensurate with the expected adverse community impacts associated with implementation. **Table 4.5** presents recommended arterial improvement measures for the deficient segments within Orange under No Project MPAH 2030 Buildout conditions. Many of the arterial deficiencies occur at freeway interchanges as traffic filters through the City and onto the regional transportation system. Chapman Avenue through the SR-55 interchange is forecast to exceed daily capacity thresholds. Advance Traffic Management System strategies, such as signal coordination, is also recommended for the Chapman Avenue corridor.

Chapman Avenue between SR-55 and Yorba Street is recommended to be improved to a 10-lane facility based on forecast future traffic volumes. This is a very short segment and from an operational perspective currently has a 9-lane cross-section. From a planning perspective, the eastbound auxiliary lane is not considered as a through lane, hence the 8-lane segment is forecast to operate at LOS F. Widening this segment may impact the school property along the southern portion of this short segment and the hospital parking along the northern portion of this segment. Intersection improvements at Chapman Avenue and Yorba Street would also likely be required for this improvement. Between Yorba Street and Prospect Street, future forecast volumes specify an 8-lane facility is required. This improvement would be very costly and have significant retail, office, medical facility, and residential right-of-way impacts. Accessibility to fronting retail could also be impacted by implementation of this improvement measure. Between Prospect Street and Esplanade Street, a geometric improvement is not recommended. The future forecast LOS is right at the deficient threshold and, as noted previously, improved intersection operations along this segment would likely lead to acceptable performance levels along the segment. Chapman Avenue east of SR-55 should continually be monitored and operational improvements incorporated as appropriate to maintain mobility through this key corridor. The segment of Chapman Avenue to Canyon View Avenue operates at LOS F and improvement to a 6-lane facility would improve the LOS to acceptable levels. Widening this short segment may require earthwork but it is likely that property impacts would be minimal.

Lincoln Avenue between Tustin Street and Santiago Boulevard is forecast to operate just over the deficient threshold. As a result of the LOS and the significant cost to add capacity under SR-55, it is not recommended to implement mitigation measures for this arterial segment.

Although Prospect Street between Chapman Avenue and Walnut Avenue and Wanda Road between Katella Avenue and Santiago Boulevard are labeled as 4-lane undivided secondary facilities, they operate as a 4-lane divided primary facility since the entirety of the segments either include a two-way left turn lane or a raised median. The classification for these segments could be correctly revised to identify as primary facilities.

Table 4.5 No Project Future Arterial Baseline Improvement Recommendations

ID	Arterial	From	To	MPAH Lanes	2030 ADT	LOS E Capacity	V/C Ratio	LOS	Improvement Measure
35	Chapman Avenue	SR-55	Yorba Street	8D	78,700	75,000	1.05	F	Widen to 10-lane facility
36	Chapman Avenue	Yorba Street	Prospect Street	6D	65,100	56,300	1.16	F	Widen to 8-lane facility
37	Chapman Avenue	Prospect Street	Esplanade Street	6D	51,100	56,300	0.91	E	Monitor upstream and downstream intersections to evaluate need for widening segment
40	Chapman Avenue	Crawford Cyn Rd.	Canyon View Avenue	4D	38,300	37,500	1.02	F	Widen to 6-lane facility
116	Lincoln Avenue	Tustin Street	Santiago Boulevard	6D	51,500	56,300	0.91	E	Monitor upstream and downstream intersections to evaluate need for widening segment
153	Prospect Street	Chapman Avenue	Spring Street	4U	24,400	24,000	1.02	F	Classify as 4-lane divided facility
154	Prospect Street	Spring Street	Walnut Avenue	4U	23,400	24,000	0.98	E	Classify as 4-lane divided facility
210	Wanda Road	Katella Avenue	Santiago Boulevard	4U	25,800	24,000	1.08	F	Classify as 4-lane divided facility

Deficient Segment, LOS E
 Deficient Segment, LOS F

Arterial Segment Level of Service With Improvement Measure Implementation								
35	Chapman Avenue	SR-55	Yorba Street	10D	78,700	94,000	0.84	D
36	Chapman Avenue	Yorba Street	Prospect Street	8D	65,100	75,000	0.87	D
37	Chapman Avenue	Prospect Street	Esplanade Street	6D	51,100	56,300	0.91	E
40	Chapman Avenue	Crawford Cyn Rd.	Canyon View Avenue	6D	38,300	56,300	0.68	B
116	Lincoln Avenue	Tustin Street	Santiago Boulevard	6D	51,500	56,300	0.91	E
153	Prospect Street	Chapman Avenue	Spring Street	4D	24,400	37,500	0.65	B
154	Prospect Street	Spring Street	Walnut Avenue	4D	23,400	37,500	0.62	B
210	Wanda Road	Katella Avenue	Santiago Boulevard	4D	25,800	37,500	0.69	B

Recommended improvement measures for deficient intersections within Orange are presented in **Table 4.6**. Five intersections are forecast to operate at a deficient level of service under Future No Project conditions. Generally, intersection improvement measures proposed include capacity enhancements and

application of ATMS measures to allow traffic to flow through the intersection more efficiently. ICU worksheets for the recommended No Project improvement measures are included in **Appendix C**.

Since the Cannon Street @ Santiago Canyon Road intersection operates just above the allowable threshold, it is recommended to apply ATMS strategies at this location to maximize operational capacity and throughput of the intersection. The recommended improvement for the Cannon Street @ Serrano Avenue intersection requires minimal work on the westbound approach of Serrano Avenue but requires Cannon Street to be widened in the southbound direction to accommodate a triple left turn lane. Impacts to residences would be required to implement this improvement measure.

The recommended improvement to add a second westbound left turn lane for the Katella Avenue @ SR-55 southbound ramps intersection may result in impacts and potential bridge reconstruction to provide an additional turn lane onto southbound SR-55 under the existing freeway. The cost and construction impacts may be prohibitive to implementation of this improvement measure.

The Wanda Road @ Villa Park Road requires additional capacity for the westbound and northbound movements. This is currently a very tight intersection with little room for future expansion. The northbound right turn lane could potentially be implemented, although right-of-way acquisition and significant earthwork may be required. Increased capacity in the westbound direction would likely impact fronting single and multi-family residences located adjacent to the right-of-way.

The Tustin Street @ Lincoln Avenue intersection is constrained by restaurant and gas station/retail uses fronting on the western side of the intersection and the SR-55 under-crossing on the eastern side of the intersection. This improvement would potentially require significant right-of-way acquisition and bridge replacement/construction costs and, as a result, may be considered infeasible.

Table 4.6 No Project Future Intersection Baseline Improvement Recommendations

ID	Intersection Location	A.M. Peak Hour		P.M. Peak Hour		Improvement Measure
		ICU	LOS	ICU	LOS	
7	Cannon Street @ Santiago Canyon Road	0.92	E	0.96	E	Apply ATMS to enhance capacity
8	Cannon Street @ Serrano Avenue	0.97	E	0.89	D	Restripe Westbound Approach to 2 Left Turn Lanes and 1 shared Left-Right Lane
27	Southbound SR-55 Ramps @ Katella Avenue	0.96	E	0.89	D	Add 2 nd Westbound Left Turn Lane
41	Wanda Road @ Villa Park Road	1.13	F	0.93	E	Add 3 rd Westbound Through Lane, Add Northbound Right Turn Lane, Apply ATMS to enhance capacity
48	Tustin Street @ Lincoln Avenue	0.89	D	1.04	F	Add 3 rd Eastbound and Westbound Through Lane, Add 2 nd Eastbound Right Turn Lane

 Deficient Intersection, LOS E
 Deficient Intersection, LOS F

Intersection Level of Service with Improvement Measure Implementation					
ID	Intersection Location	A.M. Peak Hour		P.M. Peak Hour	
		ICU	LOS	ICU	LOS
7	Cannon Street @ Santiago Canyon Road	0.87	D	0.90	D
8	Cannon Street @ Serrano Avenue	0.90	D	0.89	D
27	Southbound SR-55 Ramps @ Katella Avenue	0.74	C	0.77	C
41	Wanda Road @ Villa Park Road	0.88	D	0.80	C
48	Tustin Street @ Lincoln Avenue	0.67	B	0.84	D

4.5 Project Future Daily Conditions

Sections 4.5 and 4.6 present 2030 traffic conditions under buildout of the existing City MPAH with minor circulation system improvements assuming buildout of the proposed General Plan land uses. This scenario, referred to as the Project Scenario, represents a more realistic future base network as it incorporates the following deviations from the Existing MPAH:

- Cambridge Street, Katella Avenue to South City Limits – maintain existing 2-lane configuration
- Chapman Avenue, Lemon Street to Grand Street – maintain existing 2-lane configuration
- Walnut Avenue, Main Street to Prospect Street – maintain existing 2-lane configuration
- Glassell Street, Almond Avenue to Palm Avenue – maintain existing 2-lane configuration
- Implementation of a full-diamond interchange at Meats Avenue/SR-55

These arterial facilities are residential collectors or located in the Orange Plaza; hence, improvements to them are unlikely due to political, historical, residential, right-of-way, and environmental issues, among others. As there are no plans to widen these arterials to four-lane facilities as specified in the current City MPAH and the City desires to retain the existing configurations on these facilities, the Project Scenario incorporates these network revisions. One caveat to the future roadway network is that even though the analysis shows the current two-lane configuration for Chapman Avenue and Glassell Street through the Orange Plaza the City and County MPAH will continue to maintain the four-lane classification for these segments. A full diamond interchange at SR-55 and Meats Avenue was also incorporated into the Project Scenario and Alternative 2. The Meats Avenue interchange with SR-55 has the potential to relieve the congestion experienced at the SR-55 and Lincoln Avenue/Nohl Ranch Road and Katella Avenue interchanges.

Post-processed year 2030 forecast daily arterial volumes for the Project are reported in **Table 4.7** with corresponding daily V/C ratio and LOS. Listed below are arterial segments that are forecast to operate at an unacceptable LOS in 2030 under Project conditions:

- Batavia Street
 - Walnut Avenue to Collins Avenue
 - Collins Avenue to Katella Avenue
 - Taft Avenue to Fletcher Avenue
 - Fletcher Avenue to Lincoln Avenue
- Chapman Avenue
 - Lemon Street to Glassell Street
 - Glassell Street to Grand Street
 - SR-55 to Yorba Street
 - Yorba Street to Prospect Street (LOS E under existing conditions)
 - Crawford Canyon Road/Cannon Street to Canyon View Avenue
- Collins Avenue
 - Batavia Street to Glassell Street
 - Cambridge Street to Tustin Street
- Glassell Street
 - SR-22 to La Veta Avenue
 - Chapman Avenue to Palm Avenue (LOS F under existing conditions)
 - Katella Avenue to Orange Olive Road
- Katella Avenue
 - Struck Avenue to Main Street
 - Main Street to Batavia Street
 - Batavia Street to Glassell Street
 - Glassell Street to Cambridge Street
- Main Street
 - Town & Country Road to La Veta Avenue
- Meats Avenue

- Tustin Street to SR-55
 - SR-55 to Santiago Boulevard
- Prospect Street
 - Chapman Avenue to Spring Street
 - Spring Street to Walnut Avenue
- Taft Avenue
 - West City Limit to Main Street (LOS E under existing conditions)
- Wanda Road
 - Katella Avenue to Santiago Boulevard

The evaluation of Chapman Avenue and Glassell Street at their existing classifications as two-lane undivided facilities rather than the existing MPAH buildout conditions of four-lane divided facilities through the Orange Plaza results in these segments operating at unacceptable daily LOS. However, the reduction of Walnut Avenue and Cambridge Street to two-lane facilities does not result in any deterioration of the level of service as traffic demands have shifted to parallel facilities with excess capacity.

Figure 4.5 presents 2030 Project post-processed forecast average daily traffic (ADT) volumes for arterial segments and the 2030 Project arterial level of service is presented in **Figure 4.6**.

Table 4.7 indicates that the Meats Avenue interchange increases forecast traffic activity along Meats Avenue, resulting in an unacceptable daily LOS. Meats Avenue is currently classified as a four-lane undivided facility and improving Meats Avenue would be required to ensure acceptable operations. Implementation of the Meats Avenue interchange improves operations at the Chapman Avenue/SR-55 interchange and the surrounding arterial segments and intersections. Specifically, the southbound left turn volume and corresponding westbound right turn volumes at Tustin Street/Katella Avenue experience a reduction with the implementation of the Meats Avenue interchange.

Table 4.7 Project Future Arterial Daily Level of Service

ID	Arterial	From	To	MPAH Lanes	2030 ADT	LOS E Capacity	V/C Ratio	LOS
1	Almond Avenue	Main Street	Batavia Street	2U	7,200	12,000	0.60	A
2	Almond Avenue	Batavia Street	Glassell Street	2U	5,500	12,000	0.46	A
3	Almond Avenue	Glassell Street	Grand Street	2U	6,200	12,000	0.52	A
4	Almond Avenue	Grand Street	Cambridge Street	2U	3,400	12,000	0.28	A
5	Batavia Street	La Veta Avenue	Almond Avenue	4U	12,300	24,000	0.51	A
6	Batavia Street	Almond Avenue	Chapman Avenue	4U	15,500	24,000	0.65	B
7	Batavia Street	Chapman Avenue	Walnut Avenue	4U	20,300	24,000	0.85	D
8	Batavia Street	Walnut Avenue	Collins Avenue	4U	22,300	24,000	0.93	E
9	Batavia Street	Collins Avenue	Katella Avenue	4U	23,300	24,000	0.97	E
10	Batavia Street	Katella Avenue	Taft Avenue	4U	21,500	24,000	0.90	D
11	Batavia Street	Taft Avenue	Fletcher Avenue	4U	21,800	24,000	0.91	E
12	Batavia Street	Fletcher Avenue	Lincoln Avenue	4U	22,900	24,000	0.95	E
13	Bond Avenue	Prospect Street	Hewes Street	4U	8,200	24,000	0.34	A
14	Cambridge Street	South City Limits	Palmyra Avenue	2U	7,700	12,000	0.64	B
15	Cambridge Street	Palmyra Avenue	Chapman Avenue	2U	8,600	12,000	0.72	C
16	Cambridge Street	Chapman Avenue	Palm Avenue	2U	8,400	12,000	0.70	B
17	Cambridge Street	Palm Avenue	Walnut Avenue	2U	7,700	12,000	0.64	B
18	Cambridge Street	Walnut Avenue	Collins Avenue	2U	8,000	12,000	0.67	B
19	Cambridge Street	Collins Avenue	Katella Avenue	2U	8,400	12,000	0.70	B
20	Cambridge Street	Katella Avenue	Taft Avenue	4U	11,800	24,000	0.49	A
21	Cambridge Street	Taft Avenue	Meats Avenue	4U	7,300	24,000	0.30	A
22	Canyon View Avenue	Chapman Avenue	Outrider Street	4D	6,400	37,500	0.27	A
23	Canyon View Avenue	Outrider Street	Newport Boulevard	4D	6,200	37,500	0.26	A
24	Canyon View Avenue	Newport Boulevard	Jamboree Road	4D	5,700	37,500	0.24	A
25	Chapman Avenue	Haster Street	Lewis Street	5D	32,600	46,000	0.71	C
26	Chapman Avenue	Lewis Street	Manchester Avenue	6D	35,700	56,300	0.63	B
27	Chapman Avenue	Manchester Avenue	The City Drive	6D	40,200	56,300	0.71	C
28	Chapman Avenue	The City Drive	Eckhoff Street	6D	42,600	56,300	0.76	C
29	Chapman Avenue	Eckhoff Street	Main Street	6D	34,700	56,300	0.62	B
30	Chapman Avenue	Main Street	Batavia Street	4D	23,800	37,500	0.63	B
31	Chapman Avenue	Batavia Street	Lemon Street	4D	20,700	37,500	0.55	A
311	Chapman Avenue	Lemon Street	Glassell Street	2U	12,500	12,000	1.04	F
312	Chapman Avenue	Glassell Street	Grand Street	2U	12,600	12,000	1.05	F
32	Chapman Avenue	Grand Street	Cambridge Street	4D	25,300	37,500	0.67	B
33	Chapman Avenue	Cambridge Street	Tustin Street	4D	28,400	37,500	0.76	C
34	Chapman Avenue	Tustin Street	SR-55	6D	50,300	56,300	0.89	D
35	Chapman Avenue	SR-55	Yorba Street	8D	75,300	75,000	1.00	F
36	Chapman Avenue	Yorba Street	Prospect Street	6D	63,600	56,300	1.13	F
37	Chapman Avenue	Prospect Street	Esplanade Street	6D	50,900	56,300	0.90	D
38	Chapman Avenue	Esplanade Street	Hewes Street	6D	47,100	56,300	0.84	D
39	Chapman Avenue	Hewes Street	Crawford Canyon Road	6D	41,100	56,300	0.73	C
40	Chapman Avenue	Crawford Canyon Road	Canyon View Avenue	4D	39,700	37,500	1.06	F
41	Chapman Avenue	Canyon View Avenue	Orange Park Boulevard	4D	31,400	37,500	0.84	D
42	Chapman Avenue	Orange Park Boulevard	Newport Boulevard	4D	27,600	37,500	0.74	C
43	Chapman Avenue	Newport Boulevard	Jamboree Road	6D	48,300	56,300	0.86	D
44	Chapman Avenue	Jamboree Road	City Limit	6D	42,600	56,300	0.76	C
45	Collins Avenue	Eckhoff Street	Main Street	4U	14,900	24,000	0.62	B
46	Collins Avenue	Main Street	Batavia Street	4U	18,200	24,000	0.76	C
47	Collins Avenue	Batavia Street	Glassell Street	4U	23,000	24,000	0.96	E
48	Collins Avenue	Glassell Street	Cambridge Street	4U	17,800	24,000	0.74	C

Deficient Segment, LOS E
 Deficient Segment, LOS F

Table 4.7 Project Future Arterial Daily Level of Service (continued)

ID	Arterial	From	To	MPAH Lanes	2030 ADT	LOS E Capacity	V/C Ratio	LOS
49	Collins Avenue	Cambridge Street	Tustin Street	4U	22,900	24,000	0.95	E
50	Collins Avenue	Tustin Street	Handy Street	4U	16,000	24,000	0.67	B
51	Collins Avenue	Handy Street	Wanda Road	4U	15,300	24,000	0.64	B
52	Collins Avenue	Wanda Road	Prospect Street	4U	20,300	24,000	0.85	D
53	Crawford Canyon Road	Barrett Avenue	Chapman Avenue	4U	17,300	24,000	0.72	C
54	Cannon Street	Chapman Avenue	Creekside Avenue	4U	13,000	24,000	0.54	A
55	Cannon Street	Creekside Avenue	Patria Court	4U	8,700	24,000	0.36	A
56	Cannon Street	Patria Court	Santiago Canyon Road	4U	8,500	24,000	0.35	A
57	Cannon Street	Santiago Canyon Road	Taft Avenue	6D	46,600	56,300	0.83	D
58	Cannon Street	Taft Avenue	Via Escola	6D	33,000	56,300	0.59	A
59	Eckhoff Street	Chapman Avenue	Sycamore Avenue	2U	5,500	12,000	0.46	A
60	Eckhoff Street	Orangewood Avenue	Collins Avenue	4U	19,500	24,000	0.81	D
61	Esplanade Street	Fairhaven Avenue	La Veta Avenue	4U	3,500	24,000	0.15	A
62	Esplanade Street	La Veta Avenue	Chapman Avenue	4U	7,500	24,000	0.31	A
63	Fairhaven Avenue	Glassell Street	Cambridge Street	4U	10,200	24,000	0.43	A
64	Fairhaven Avenue	Cambridge Street	Tustin Street	4U	10,000	24,000	0.42	A
65	Fairhaven Avenue	Tustin Street	Yorba Street	4U	15,600	24,000	0.65	B
66	Fairhaven Avenue	Yorba Street	Prospect Street	4U	14,700	24,000	0.61	B
67	Fairhaven Avenue	Prospect Street	Esplanade Street	4U	13,500	24,000	0.56	A
68	Fairhaven Avenue	Esplanade Street	Hewes Street	4U	12,000	24,000	0.50	A
69	Fletcher Avenue	Batavia Street	Glassell Street	4U	7,600	24,000	0.32	A
70	Garden Grove Boulevard	The City Drive	Lewis Street	4D	22,000	37,500	0.59	A
72	Glassell Street	SR-22	La Veta Avenue	4D	34,600	37,500	0.92	E
73	Glassell Street	La Veta Avenue	Almond Avenue	4D	17,600	37,500	0.47	A
731	Glassell Street	Almond Avenue	Chapman Avenue	2U	10,000	12,000	0.83	D
74	Glassell Street	Chapman Avenue	Palm Avenue	2U	11,900	12,000	0.99	E
75	Glassell Street	Palm Avenue	Collins Avenue	4D	16,700	37,500	0.45	A
76	Glassell Street	Collins Avenue	Katella Avenue	4D	25,000	37,500	0.67	B
77	Glassell Street	Katella Avenue	Orange Olive Road	4D	37,700	37,500	1.01	F
78	Glassell Street	Orange Olive Road	Grove Avenue	4D	21,500	37,500	0.57	A
79	Glassell Street	Grove Avenue	Lincoln Avenue	4D	29,600	37,500	0.79	C
80	Glassell Street	Lincoln Avenue	Santa Ana River	4D	29,500	37,500	0.79	C
811	Grand Street	La Veta Avenue	Palmyra Avenue	2U	9,000	12,000	0.75	C
812	Grand Street	Almond Avenue	Chapman Avenue	2U	10,000	12,000	0.83	D
81	Grand Street	Chapman Avenue	Maple Avenue	2U	5,700	12,000	0.48	A
82	Hewes Street	Fairhaven Avenue	Washington Avenue	4U	7,500	24,000	0.31	A
83	Hewes Street	Washington Avenue	Chapman Avenue	4U	11,000	24,000	0.46	A
84	Hewes Street	Chapman Avenue	Walnut Avenue	4U	12,600	24,000	0.53	A
85	Hewes Street	Bond Avenue	Santiago Canyon Road	4U	10,300	24,000	0.43	A
86	Jamboree Road	Santiago Canyon Road	Chapman Avenue	6D	30,500	56,300	0.54	A
87	Jamboree Road	Chapman Avenue	Canyon View Avenue	6D	30,500	56,300	0.54	A
88	Jamboree Road	Canyon View Avenue	South City Limit	6D	34,100	56,300	0.61	B
89	Katella Avenue*	Struck Avenue	Main Street	6D SS	56,500	59,115	0.96	E
90	Katella Avenue*	Main Street	Batavia Street	6D SS	55,100	59,115	0.93	E
91	Katella Avenue*	Batavia Street	Glassell Street	6D SS	53,700	59,115	0.91	E
92	Katella Avenue*	Glassell Street	Cambridge Street	6D SS	54,500	59,115	0.92	E
93	Katella Avenue*	Cambridge Street	Tustin Street	6D SS	49,900	59,115	0.84	D
94	Katella Avenue*	Tustin Street	SR-55	7D SS	54,600	68,250	0.80	C
95	Katella Avenue	SR-55	Handy Street	6D	47,300	56,300	0.84	D
96	Katella Avenue	Handy Street	Wanda Road	6D	43,900	56,300	0.78	C



 Deficient Segment, LOS E
 Deficient Segment, LOS F

Table 4.7 Project Future Arterial Daily Level of Service (continued)

ID	Arterial	From	To	MPAH Lanes	2030 ADT	LOS E Capacity	V/C Ratio	LOS
97	Katella Avenue	Wanda Road	Center Drive	6D	40,300	56,300	0.72	C
98	Katella Avenue	Center Drive	Santiago Canyon Road	6D	38,200	56,300	0.68	B
99	La Veta Avenue	Flower Street	Devon Street	6D	33,000	56,300	0.59	A
100	La Veta Avenue	Devon Street	Main Street	6D	29,600	56,300	0.53	A
101	La Veta Avenue	Main Street	Batavia Street	6D	37,700	56,300	0.67	B
102	La Veta Avenue	Batavia Street	Glassell Street	4D	20,600	37,500	0.55	A
103	La Veta Avenue	Glassell Street	Shaffer Street	4U	11,200	24,000	0.47	A
104	La Veta Avenue	Shaffer Street	Cambridge Street	4U	8,400	24,000	0.35	A
105	La Veta Avenue	Tustin Street	Yorba Street	4U	11,000	24,000	0.46	A
106	La Veta Avenue	Yorba Street	Prospect Street	4U	10,400	24,000	0.43	A
107	La Veta Avenue	Prospect Street	Esplanade Street	4U	8,500	24,000	0.35	A
1081	Lemon Street	La Veta Avenue	Palmyra Avenue	2U	8,000	12,000	0.67	B
108	Lemon Street	Chapman Avenue	Maple Avenue	2U	8,400	12,000	0.70	B
1082	Lemon Street	Maple Avenue	Walnut Avenue	2U	2,000	12,000	0.17	A
109	Lewis Street	Garden Grove Avenue	Metropolitan Drive	4U	17,100	24,000	0.71	C
110	Lewis Street	Metropolitan Drive	Chapman Avenue	4U	18,600	24,000	0.78	C
111	Lewis Street	Chapman Avenue	Sirius Avenue	4U	12,400	24,000	0.52	A
112	Lincoln Avenue	West City Limit	Batavia Street	6D	40,200	56,300	0.71	C
113	Lincoln Avenue	Batavia Street	Glassell Street	6D	32,000	56,300	0.57	A
114	Lincoln Avenue	Glassell Street	Orange Olive Road	6D	32,500	56,300	0.58	A
115	Lincoln Avenue	Orange Olive Road	Tustin Street	6D	45,000	56,300	0.80	C
116	Lincoln Avenue	Tustin Street	Santiago Boulevard	6D	42,900	56,300	0.76	C
117	Main Street	Town & Country Road	La Veta Avenue	6D	55,500	56,300	0.99	E
118	Main Street	La Veta Avenue	Chapman Avenue	6D	48,500	56,300	0.86	D
119	Main Street	Chapman Avenue	Sycamore Avenue	6D	36,400	56,300	0.65	B
120	Main Street	Sycamore Avenue	Collins Avenue	6D	39,900	56,300	0.71	C
121	Main Street	Collins Avenue	Struck Avenue	4D	25,300	37,500	0.67	B
122	Main Street	Struck Avenue	Katella Avenue	4D	26,800	37,500	0.71	C
123	Main Street	Katella Avenue	Taft Avenue	4D	22,500	37,500	0.60	A
124	Meats Avenue	Glassell Street	Orange Olive Road	4U	12,800	24,000	0.53	A
125	Meats Avenue	Orange Olive Road	Cambridge Street	4U	18,200	24,000	0.76	C
126	Meats Avenue	Cambridge Street	Tustin Street	4U	21,500	24,000	0.90	D
127	Meats Avenue	Tustin Street	SR-55 SB Ramps	4U	53,200	24,000	2.22	F
1271	Meats Avenue	SR-55 SB Ramps	SR-55 NB Ramps	4U	45,500	24,000	1.90	F
1272	Meats Avenue	SR-55 NB Ramps	Santiago Boulevard	4U	31,900	24,000	1.27	F
128	Meats Avenue	Santiago Boulevard	Featherhill Road	4U	15,700	24,000	0.65	B
129	Meats Avenue	Featherhill Road	Via Escola	4U	8,200	24,000	0.34	A
130	Metropolitan Drive	Lewis Street	SR-22 Westbound Ramps	4U	9,400	24,000	0.39	A
131	Metropolitan Drive	SR-22 Westbound Ramps	The City Drive	4U	19,200	24,000	0.80	C
1311	Metropolitan Drive	The City Drive	Chapman Avenue	4U	21,100	24,000	0.88	D
132	Manchester Avenue	Chapman Avenue	Compton Avenue	4D	10,900	37,500	0.29	A
133	Newport Boulevard	South City Limits	Canyon View Avenue	4D	9,000	37,500	0.24	A
134	Newport Boulevard	Canyon View Avenue	Chapman Avenue	4D	7,800	37,500	0.21	A
135	Newport Boulevard	Chapman Avenue	Santiago Canyon Road	4D	14,700	37,500	0.39	A
136	Nohl Ranch Road	Santiago Boulevard	East City Limit	4U	11,100	24,000	0.46	A
137	Orange Olive Road	Glassell Street	Meats Avenue	4U	19,500	24,000	0.81	D
138	Orange Olive Road	Meats Avenue	Lincoln Avenue	4U	17,000	24,000	0.71	C
139	Orange Olive Road	Lincoln Avenue	Santa Ana Canyon Road	4U	15,200	24,000	0.63	B
140	Orange Olive Road	Santa Ana Canyon Road	Riverdale Avenue	4U	11,000	24,000	0.46	A
141	Orangewood Avenue	Eckhoff Street	Main Street	6D	40,500	56,300	0.72	C
142	Palm Avenue	Main Street	Batavia Street	2U	4,600	12,000	0.38	A
143	Palm Avenue	Batavia Street	Cypress Street	2U	7,800	12,000	0.65	B
144	Palm Avenue	Cypress Street	Glassell Street	2U	7,400	12,000	0.62	B



 Deficient Segment, LOS E
 Deficient Segment, LOS F

Table 4.7 Project Future Arterial Daily Level of Service (continued)


ID	Arterial	From	To	MPAH Lanes	2030 ADT	LOS E Capacity	V/C Ratio	LOS
145	Palm Avenue	Glassell Street	Cambridge Street	2U	5,100	12,000	0.43	A
146	Palm Avenue	Cambridge Street	Tustin Street	2U	7,800	12,000	0.65	B
147	Palmyra Avenue	Batavia Street	Glassell Street	2U	3,000	12,000	0.25	A
148	Palmyra Avenue	Glassell Street	Cambridge Street	2U	1,900	12,000	0.16	A
149	Palmyra Avenue	Cambridge Street	Tustin Street	2U	5,400	12,000	0.45	A
150	Parker Street	La Veta Avenue	Town & Country Road	4U	19,500	24,000	0.81	D
151	Prospect Street	Fairhaven Avenue	La Veta Avenue	4U	10,700	24,000	0.45	A
152	Prospect Street	La Veta Avenue	Chapman Avenue	4U	13,400	24,000	0.56	A
153	Prospect Street	Chapman Avenue	Spring Street	4U	23,000	24,000	0.96	E
154	Prospect Street	Spring Street	Walnut Avenue	4U	22,100	24,000	0.92	E
155	Prospect Street	Walnut Avenue	Bond Avenue	4U	17,400	24,000	0.73	C
156	Rampart Street	Chapman Avenue	Orangewood Avenue	4U	19,200	24,000	0.80	C
157	Rancho Santiago Boulevard	Chapman Avenue	Walnut Avenue	2U	8,100	12,000	0.68	B
158	Rancho Santiago Boulevard	Hewes Street	Bond Avenue	2U	3,100	12,000	0.26	A
159	Riverdale Avenue	Glassell Street	Orange Olive Road	4U	6,000	24,000	0.25	A
160	Riverdale Avenue	Orange Olive Road	Tustin Street	4U	8,900	24,000	0.37	A
161	Santiago Boulevard	North City Limit	Nohl Ranch Road	6D	17,600	56,300	0.31	A
162	Santiago Boulevard	Wanda Road	Taft Avenue	4U	17,300	24,000	0.72	C
163	Santiago Boulevard	Taft Avenue	Villa Real Drive	4U	12,300	24,000	0.51	A
164	Santiago Boulevard	Villa Real Drive	Lincoln Avenue	4U	13,900	24,000	0.58	A
165	Santiago Canyon Road	Hewes Street	Cannon Street	6D	40,500	56,300	0.72	C
166	Santiago Canyon Road	Cannon Street	Orange Park Boulevard	6D	48,600	56,300	0.86	D
167	Santiago Canyon Road	Orange Park Boulevard	Meads Avenue	6D	42,000	56,300	0.75	C
168	Santiago Canyon Road	Meads Avenue	Newport Boulevard	6D	41,100	56,300	0.73	C
169	Santiago Canyon Road	Newport Boulevard	Jamboree Road	6D	30,200	56,300	0.54	A
170	Santiago Canyon Road	Jamboree Road	Street D	6D	42,600	56,300	0.76	C
214	Santiago Canyon Road	Street D	SR-241	6D	27,000	56,300	0.48	A
213	Santiago Canyon Road	East of SR-241		4D	24,000	37,500	0.64	B
171	Serrano Avenue	Cannon Street	Orange Park Boulevard	4D	23,100	37,500	0.62	B
172	Serrano Avenue	Orange Park Boulevard	Apache Creek	4D	20,000	37,500	0.53	A
173	Serrano Avenue	Apache Creek	East City Limit	4D	11,800	37,500	0.31	A
1741	Shaffer Street	La Veta Avenue	Palmyra Avenue	2U	2,000	12,000	0.17	A
174	Shaffer Street	Chapman Avenue	Maple Avenue	2U	5,700	12,000	0.48	A
1742	Shaffer Street	Palm Avenue	Walnut Avenue	2U	7,000	12,000	0.58	A
1743	Shaffer Street	Walnut Avenue	Collins Avenue	2U	10,600	12,000	0.88	D
1744	Shaffer Street	Collins Avenue	Katella Avenue	2U	7,000	12,000	0.58	A
175	Spring Street	Prospect Street	Olympia Way	4U	14,000	24,000	0.58	A
176	Struck Avenue	Katella Avenue	Main Street	2U	9,100	12,000	0.76	C
177	Taft Avenue	West City Limit	Main Street	6D	56,400	56,300	1.00	F
178	Taft Avenue	Main Street	Batavia Street	6D	36,700	56,300	0.65	B
179	Taft Avenue	Batavia Street	Glassell Street	6D	34,200	56,300	0.61	B
180	Taft Avenue	Glassell Street	Cambridge Street	6D	25,200	56,300	0.45	A
181	Taft Avenue	Cambridge Street	Tustin Street	6D	21,600	56,300	0.38	A
182	Taft Avenue	Tustin Street	Santiago Boulevard	4U	15,000	24,000	0.63	B
183	Taft Avenue	Cannon Street	Yurok Street	2U	8,300	12,000	0.69	B
184	The City Drive	Garden Grove Boulevard	SR-22	6D	36,000	56,300	0.64	B
185	The City Drive	SR-22	Metropolitan	6D	46,400	56,300	0.82	D
186	The City Drive	Metropolitan	Chapman Avenue	8D	35,600	75,000	0.47	A
187	The City Drive	Chapman Avenue	North City Limits	8D	35,500	75,000	0.47	A
188	Town & Country Road	Main Street	SR-22	4D	27,700	37,500	0.74	C
189	Town & Country Road	SR-22	Parker Street	4D	15,100	37,500	0.40	A
190	Tustin Street	Fairhaven Avenue	La Veta Avenue	6D	38,400	56,300	0.68	B
191	Tustin Street	La Veta Avenue	Palmyra Avenue	6D	32,500	56,300	0.58	A
192	Tustin Street	Palmyra Avenue	Chapman Avenue	6D	34,000	56,300	0.60	A

Deficient Segment, LOS E
 Deficient Segment, LOS F

Table 4.7 Project Future Arterial Daily Level of Service (continued)

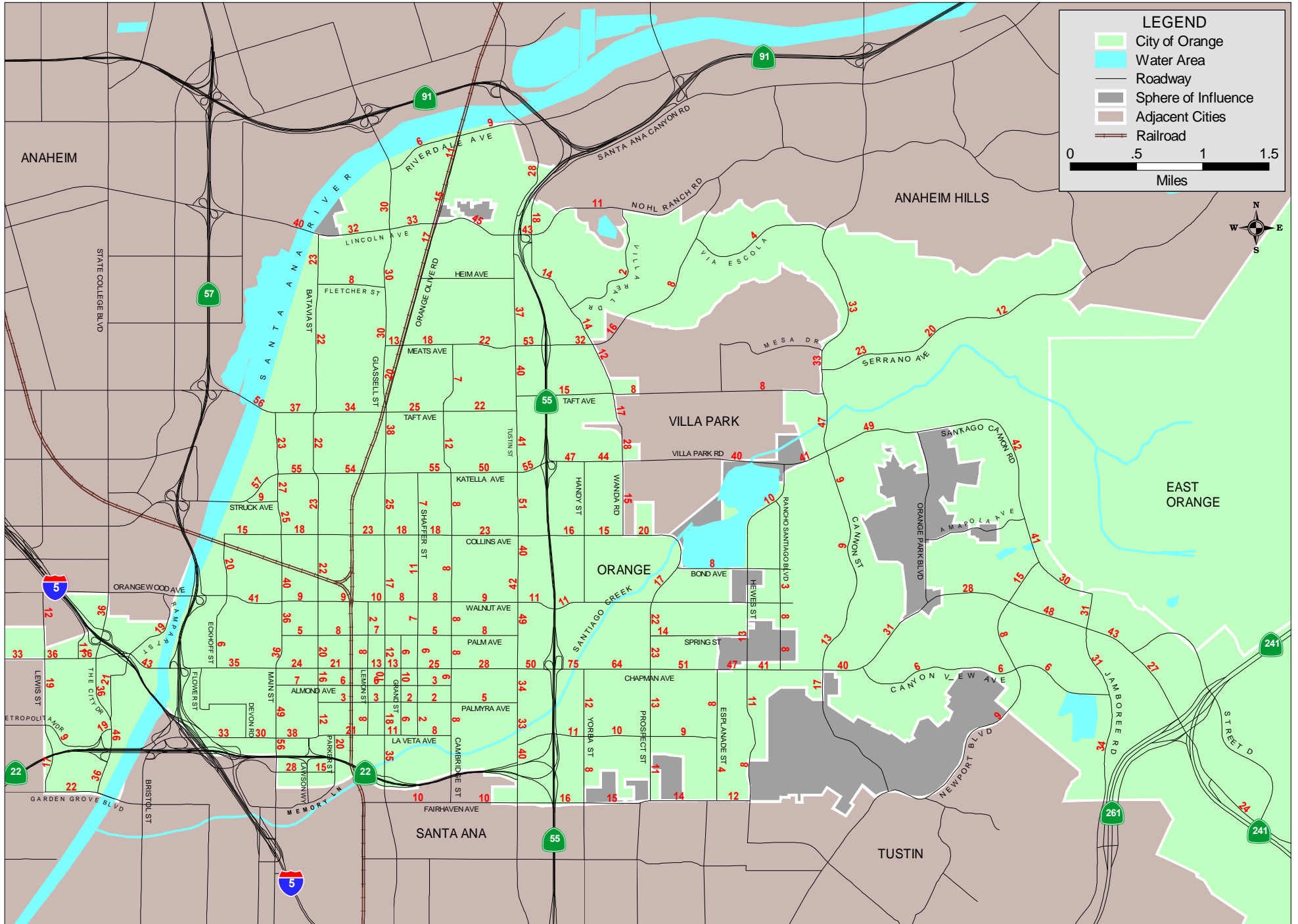
ID	Arterial	From	To	MPAH Lanes	2030 ADT	LOS E Capacity	V/C Ratio	LOS
193	Tustin Street	Chapman Avenue	Walnut Avenue	6D	49,100	56,300	0.87	D
194	Tustin Street	Walnut Avenue	Mayfair Avenue	6D	41,700	56,300	0.74	C
195	Tustin Street	Mayfair Avenue	Collins Avenue	6D	40,300	56,300	0.72	C
196	Tustin Street	Collins Avenue	Katella Avenue	6D	50,900	56,300	0.90	D
197	Tustin Street	Katella Avenue	Taft Avenue	6D	41,000	56,300	0.73	C
198	Tustin Street	Taft Avenue	Meats Avenue	6D	39,900	56,300	0.71	C
199	Tustin Street	Meats Avenue	Lincoln Avenue	6D	37,000	56,300	0.66	B
200	Tustin Street	Lincoln Avenue	Santa Ana Canyon Road	6D	28,400	56,300	0.50	A
201	Via Escola	Meats Avenue	Cannon Street	4U	4,100	24,000	0.17	A
202	Villa Real Drive	Santiago Boulevard	Chapel Hill	2U	1,800	12,000	0.15	A
203	Walnut Avenue	Main Street	Batavia Street	2U	8,700	12,000	0.73	C
204	Walnut Avenue	Batavia Street	Cypress Street	2U	9,400	12,000	0.78	C
205	Walnut Avenue	Cypress Street	Glassell Street	2U	9,600	12,000	0.80	C
206	Walnut Avenue	Glassell Street	Cambridge Street	2U	8,100	12,000	0.68	B
207	Walnut Avenue	Cambridge Street	Tustin Street	2U	9,200	12,000	0.77	C
208	Walnut Avenue	Tustin Street	Handy Street	2U	10,500	12,000	0.88	D
209	Wanda Road	Collins Avenue	Katella Avenue	4U	15,300	24,000	0.64	B
210	Wanda Road	Katella Avenue	Santiago Boulevard (VP)	4U	27,800	24,000	1.16	F
211	Yorba Street	Fairhaven Avenue	La Veta Avenue	4U	7,800	24,000	0.33	A
212	Yorba Street	La Veta Avenue	Chapman Avenue	4U	11,900	24,000	0.50	A

 Deficient Segment, LOS E

 Deficient Segment, LOS F

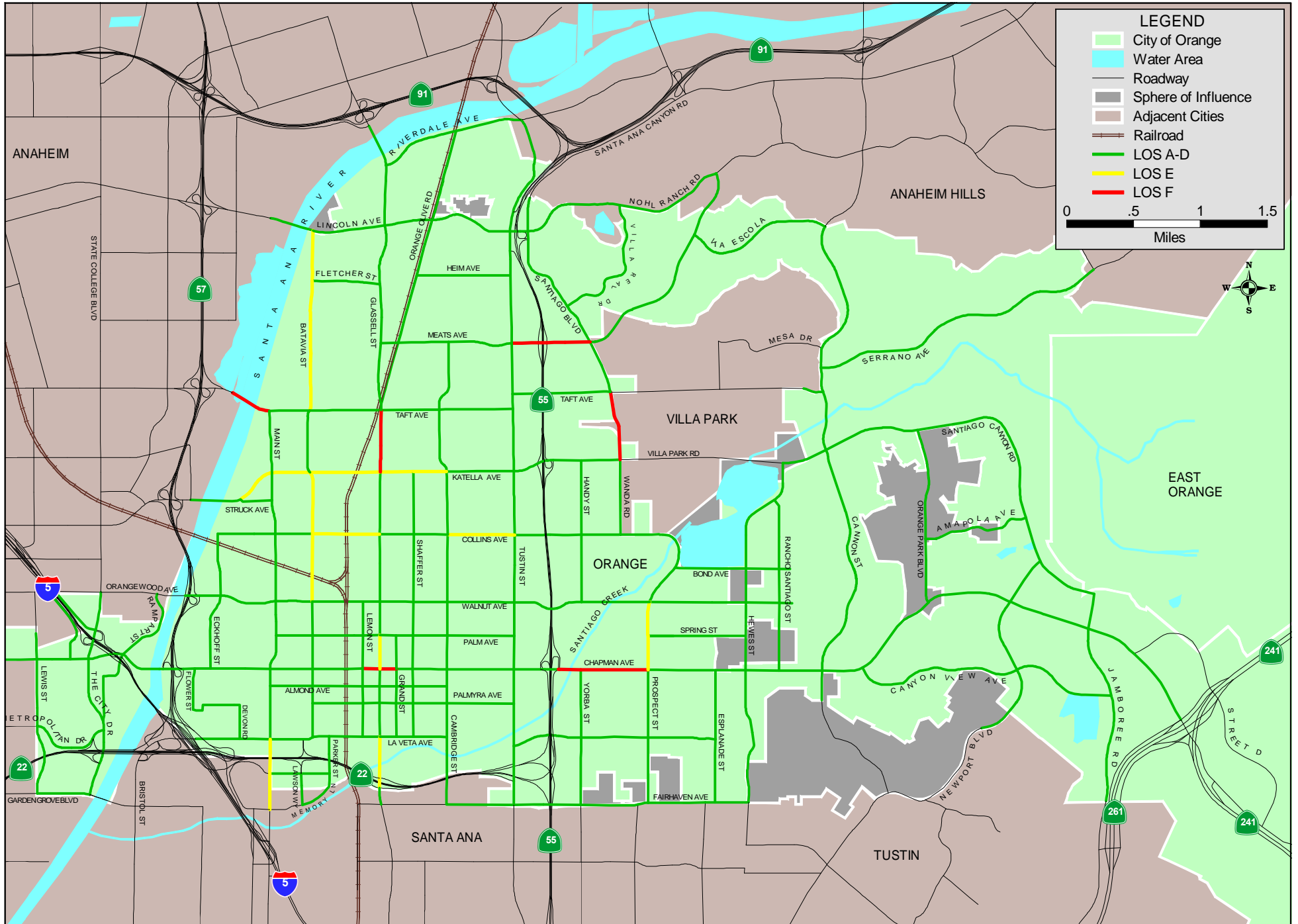
Note: * Katella Avenue capacity has been increased by 5% due to classification as a Smart Street.
Source: Orange Traffic Analysis Model (OTAM 2004)

Figure 4.5 - Project Future Average Daily Traffic on Arterial Segments (in Thousands)



Source File: Fig4-5-y30-Proj-Artl-ADT-052709.map

Figure 4.6 - Project Future Arterial Daily Level of Service



Source File: Fig4-6-y30-Proj-Artr-LOS-052709.map

4.6 Project Future Intersection Peak Hour Conditions

Table 4.8 presents Project forecast year 2030 ICU and LOS results for turning movement volumes at the critical analysis intersections during the morning (A.M.) and evening (P.M.) peak hours. Similar to the arterial segment volume forecast, turning movements for the intersections were post-processed from OTAM forecast volumes. **Figure 4.7** illustrates peak hour levels of service.

The addition of the Meats Avenue interchange with SR-55 reduces volumes through the intersections of Santiago Boulevard at Nohl Ranch Road and Tustin Street at Lincoln Avenue, although Tustin Street at Lincoln Avenue experiences an unacceptable level of service. The intersection of Santiago Boulevard at Meats Avenue deteriorates to unacceptable A.M. peak hour performance. Intersection improvements would be required to ensure efficient operation of this intersection with the addition of an interchange at Meats Avenue. It should be noted that this intersection operates at an unacceptable LOS F under existing conditions for the A.M. peak hour and buildout geometrics improve the level of service at this intersection.

The ramp intersections of Meats Avenue with SR-55 were evaluated under peak hour conditions to identify potential deficiencies associated with the proposed interchange. In order to obtain acceptable peak hour operations at the southbound SR-55 intersection with Meats Avenue, the southbound off-ramp should include an exclusive left turn lane, an exclusive right turn lane and a shared left turn-right turn lane. Although the intersection operates at LOS C during the peak hours, the westbound left turn volume of approximately 500 vehicles during the A.M. peak hour suggests a second westbound left turn lane might be necessary to ensure there are no queuing issues with the west turn traffic onto southbound SR-55 on the Meats Avenue overcrossing bridge. Both intersections assume 2 through lanes in each direction and an exclusive right turn lane to access the SR-55 ramps. For the northbound SR-55 ramps intersection with Meats Avenue, dual northbound left turn lanes are required to satisfy forecast demands. In addition, dual eastbound left turn lanes are required on the overcrossing bridge to support the high P.M. peak hour volumes accessing SR-55 northbound.

Even with the Project roadway network improvement assumptions including buildout intersection geometrics for critical intersections, twelve study intersections are forecast to operate at an unacceptable LOS in either the A.M. or the P.M. peak hour:

- Cannon Street at Santiago Canyon Road (LOS E in A.M. peak hour, LOS E in P.M. peak hour)
- Cannon Street at Serrano Avenue (LOS E in A.M. peak hour)
- Jamboree Road at Chapman Avenue (LOS E in A.M. peak hour)
- Southbound SR-55 Ramps at Katella Avenue (LOS E in A.M. peak hour)
- Main Street at La Veta Avenue (LOS E in P.M. peak hour)
- Santiago Boulevard at Meats Avenue (LOS E in A.M. peak hour)
- Wanda Road at Villa Park Road (LOS F in A.M. peak hour, LOS E in P.M. peak hour)
- Tustin Street at Lincoln Avenue (LOS E in A.M. peak hour, LOS F in P.M. peak hour)
- Main Street at Struck Avenue (LOS F in A.M. peak hour)
- Main Street at Collins Avenue (LOS E in A.M. peak hour, LOS F in P.M. peak hour)
- Southbound SR-57 Ramps at Orangewood Avenue (LOS E in both A.M. and P.M. peak hour)
- Southbound SR-57 Ramps at Chapman Avenue (LOS E in P.M. peak hour)

Three of the eight intersections that are deficient in either the A.M. or P.M. peak hour under Project conditions operated at LOS D under existing conditions and hence had the potential of deteriorating to deficient conditions in the future:

- Cannon Street at Santiago Canyon Road (LOS E in A.M. peak hour, LOS E in P.M. peak hour)
- Southbound SR-55 Ramps at Katella Avenue (LOS E in A.M. peak hour)
- Wanda Road at Villa Park Road (LOS F in A.M. peak hour, LOS E in P.M. peak hour)

Santiago Boulevard at Meats Avenue operated at LOS F under existing conditions.

Appendix D presents the future No Project and Project lane geometrics and **Appendix E** presents Project ICU worksheets for each intersection.

Table 4.8 Project Future Intersection Level of Service

ID	Intersection Location	A.M. Peak Hour		P.M. Peak Hour	
		ICU	LOS	ICU	LOS
1	Batavia Street @ Collins Avenue	0.79	C	0.90	D
2	Batavia Street @ Katella Avenue	0.83	D	0.79	C
3	Batavia Street @ Lincoln Avenue	0.77	C	0.72	C
4	Batavia Street @ Taft Avenue	0.80	C	0.74	C
5	Batavia Street @ Walnut Avenue	0.66	B	0.73	C
6	Cambridge Street @ Katella Avenue	0.71	C	0.86	D
7	Cannon Street @ Santiago Canyon Road	0.94	E	0.93	E
8	Cannon Street @ Serrano Avenue	0.99	E	0.88	D
9	Cannon Street/ Crawford Canyon @ Chapman Avenue	0.75	C	0.69	B
10	Yorba Street @ Chapman Avenue	0.73	C	0.62	B
11	Canyon View Avenue @ Chapman Avenue	0.61	B	0.46	A
12	Jamboree Road @ Chapman Avenue	0.94	E	0.90	D
13	Northbound SR-55 Ramps @ Chapman Avenue	0.71	C	0.67	B
14	Southbound SR-55 Ramps @ Chapman Avenue	0.56	A	0.57	A
15	Lewis Street @ Chapman Avenue	0.63	B	0.68	B
16	The City Drive @ Chapman Avenue	0.69	B	0.86	D
17	The City Drive @ Eastbound SR-22 Ramps	0.76	C	0.82	D
18	The City Drive @ Westbound SR-22 Ramps	0.33	A	0.43	A
19	Glassell Street @ Collins Avenue	0.79	C	0.75	C
20	Glassell Street @ Katella Avenue	0.65	B	0.89	D
21	Glassell Street @ La Veta Avenue	0.90	D	0.76	C
22	Glassell Street @ Lincoln Avenue	0.72	C	0.87	D
23	Glassell Street @ Taft Avenue	0.83	D	0.78	C
24	Glassell Street @ Walnut Avenue	0.61	B	0.69	B
25	Hewes Street @ Chapman Avenue	0.79	C	0.69	B
26	Northbound SR-55 Ramps @ Katella Avenue	0.75	C	0.86	D
27	Southbound SR-55 Ramps @ Katella Avenue	0.97	E	0.87	D
28	Main Street @ Chapman Avenue	0.81	D	0.90	D
29	Main Street @ Katella Avenue	0.74	C	0.85	D
30	Main Street @ La Veta Avenue	0.82	D	0.95	E
31	Main Street @ Orangewood Avenue	0.70	B	0.62	B
32	Main Street @ Taft Avenue	0.64	B	0.89	D
33	Main Street @ Town & Country Road	0.51	A	0.84	D
34	Newport Boulevard @ Chapman Avenue	0.76	C	0.82	D
35	Santiago Boulevard @ Nohl Ranch Road	0.63	B	0.66	B
36	Eckhoff Street @ Orangewood Avenue	0.60	A	0.69	B
37	State College Boulevard @ Orangewood Avenue	0.70	B	0.68	B
38	Prospect Street @ Chapman Avenue	0.82	D	0.86	D
39	Prospect Street @ Walnut Avenue	0.79	C	0.77	C
40	Santiago Boulevard @ Meats Avenue	0.91	E	0.77	C
41	Wanda Road @ Villa Park Road	1.18	F	0.97	E
42	Tustin Street @ Chapman Avenue	0.76	C	0.87	D
43	Tustin Street @ Collins Avenue	0.58	A	0.65	B
44	Tustin Street @ Fairhaven Avenue	0.85	D	0.74	C
45	Tustin Street @ Heim Avenue	0.57	A	0.76	C
46	Tustin Street @ Katella Avenue	0.68	B	0.85	D
47	Tustin Street @ La Veta Avenue	0.69	B	0.58	A
48	Tustin Street @ Lincoln Avenue	0.93	E	1.01	F
49	Tustin Street @ Meats Avenue	0.59	A	0.83	D
50	Tustin Street @ Taft Avenue (North)	0.64	B	0.78	C
51	Tustin Street @ Taft Avenue (South)	0.70	B	0.86	D
52	Tustin Street @ Walnut Avenue	0.64	B	0.76	C
53	Southbound SR-55 Ramps @ Meats Avenue	0.76	C	0.71	C
54	Northbound SR-55 Ramps @ Meats Avenue	0.58	A	0.74	C
55	Struck Avenue @ Katella Avenue	0.40	A	0.45	A

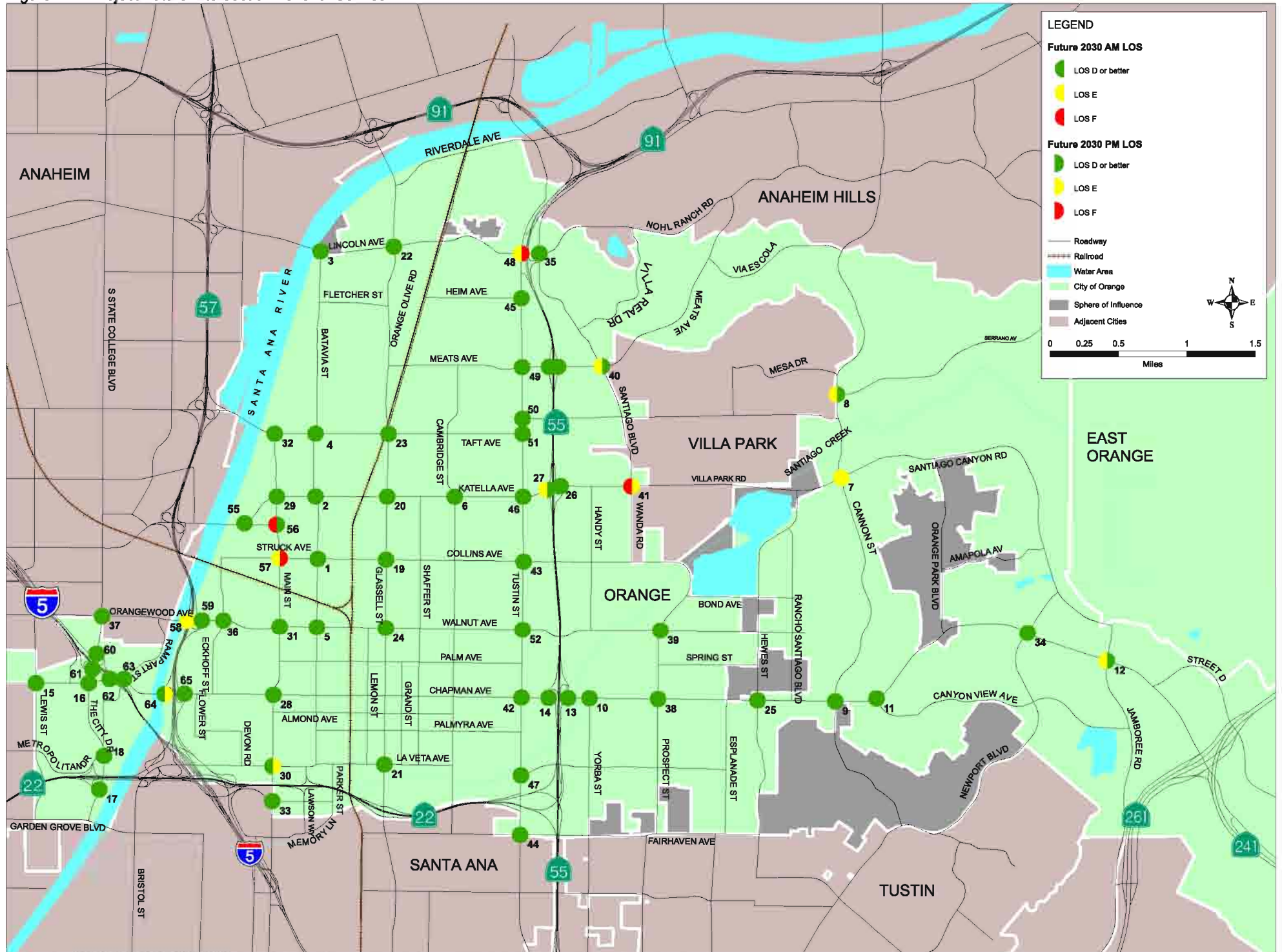
Table 4.8 Project Future Intersection Level of Service (continued)

ID	Intersection Location	A.M. Peak Hour		P.M. Peak Hour	
		ICU	LOS	ICU	LOS
56	Main Street @ Struck Avenue	1.08	F	0.70	B
57	Main Street @ Collins Avenue	0.92	E	1.18	F
58	Southbound SR-57 Ramps @ Orangewood Avenue	0.97	E	0.94	E
59	Northbound SR-57 Ramps @ Orangewood Avenue	0.60	A	0.48	A
60	State College Boulevard @ NB I-5 Ramps/Anaheim Way	0.50	A	0.41	A
61	State College Boulevard @ Southbound I-5 Ramps	0.53	A	0.34	A
62	Southbound I-5 Ramps @ Chapman Avenue	0.50	A	0.55	A
63	Rampart Street @ Chapman Ave./Northbound I-5 Ramps	0.84	D	0.87	D
64	Southbound SR-57 Ramps @ Chapman Avenue	0.76	C	0.92	E
65	Northbound SR-57 Ramps @ Chapman Avenue	0.46	A	0.55	A

Deficient Intersection, LOS E
 Deficient Intersection, LOS F

Source: Orange Traffic Analysis Model (OTAM 2004)

Figure 4.7 - Project Future Intersection Level of Service



4.7 Project Future Mitigation

This section presents Project mitigation measures for the arterial segments that operate at an unacceptable LOS under daily conditions and intersections that operate at an unacceptable LOS during either A.M. or P.M. peak hours. Generally, arterial segment performance is dictated by upstream and downstream intersection performance because the capacity of arterial segments is often constricted to what can filter through the intersections during the peak hours. Since arterial segment mitigation may not be warranted based on peak hour intersection performance, mitigation measures are generally applied to intersections to facilitate peak period traffic flow throughout the roadway network.

Although mitigation measures are often tied to intersections, mitigation measures based on the daily performance of arterial segments throughout the City have been recommended. **Table 4.9** presents recommended arterial mitigation measures for the deficient segments within Orange under Project MPAH 2030 Buildout conditions. Mitigation is not recommended for Chapman Avenue and Glassell Street through the historic Orange Plaza as capacity enhancements, i.e. widening, to these facilities would be detrimental to preserving the heritage of the historical Orange Plaza. The significant unavoidable traffic impacts to the arterials through the Orange Plaza are outweighed and found to be acceptable due to the following specific economic, social and historical benefits:

- The Plaza Historic District achieved California Historic Landmark significance in 1981 and the Plaza Historic District was placed on the National Register of Historic Places on March 19, 1982;
- Old Town Orange became a national historic district and was placed in the National Registry of Historic Places in 1997;
- The Orange Plaza traffic circle is the focal point of the Historic District;
- The City has developed a Historic Preservation Element of the General Plan;
- The mission of the Old Towne Preservation Association is to preserve and enhance the unique Old Towne Orange Area through education, communication and community development;
- In order to enhance and preserve its heritage, the City established design and development standards for the Old Towne District;
- The character, ambiance and historical nature of the district could be compromised by four-lane divided facilities through the Orange Plaza; and
- In order to maintain the integrity of the traffic circle, it would be difficult to improve Glassell Street and Chapman Avenue to four-lane divided standards and maintain the capacity of a facility following the circle.

In addition, the circulation system around the Orange Plaza is a dense grid, therefore, it has the capability of providing relief to potential future traffic demands on Glassell Street or Chapman Avenue through additional available capacity on parallel facilities.

Many of the arterial deficiencies occur at freeway interchanges as traffic filters through the City and onto the regional transportation system. Taft Avenue at the west City Limit, east of SR-57, is forecast to operate at LOS E. Coordination of intersections through the Taft Avenue corridor is recommended to accommodate heavy daily traffic demands. Taft Avenue at the west City Limit is not recommended for improvement without detailed peak hour analysis to warrant physical arterial segment widening. In addition, evaluation of this segment must be coordinated with the City of Anaheim as widening of this segment in Orange will necessitate widening in the City of Anaheim to maintain consistency across jurisdictional boundaries. Widening of this segment of Taft Avenue requires widening the bridge over the Santa Ana River and minor impacts to fronting retail/industrial uses.

Chapman Avenue through the SR-55 interchange is also forecast to exceed daily capacity thresholds. Advance Traffic Management System strategies, such as signal coordination, is also recommended for the Chapman Avenue corridor. Chapman Avenue between SR-55 and Yorba Street operates just above the LOS E/F threshold. Due to the issues identified with the baseline improvement identified under No Project conditions, it is not recommended to improve this segment beyond its current configuration. Between Yorba Street and Prospect Street, future forecast volumes specify an 8-lane facility is required.

This improvement would be costly and have significant retail, office, medical facility, and residential right-of-way impacts. Accessibility to fronting retail could be impacted by implementation of this improvement measure. Chapman Avenue east of SR-55 should continually be monitored and operational improvements incorporated as appropriate to maintain mobility through this key corridor. The segment of Chapman Avenue to Canyon View Avenue operates at LOS F and improvement to a 6-lane facility would improve the LOS to acceptable levels. Widening this short segment may require earthwork but it is likely that property impacts would be minimal.

No arterial widening improvements are recommended for Glassell Street through the SR-22 interchange to La Veta Avenue. Implementation of widening along this segment would impact the historically designated Hart Park and the historic Morton Bay Fig tree in front of Holy Family Catholic Church that is protected by the City's tree preservation program. In addition, fronting residential properties would be significantly impacted by any widening along this segment and on-street parking would likely need to be eliminated.

Batavia Street is recommended to be improved to a 4-lane divided facility for multiple segments between Walnut Avenue and Lincoln Avenue. The segment between Walnut and Collins Avenue could be widened by removal of on-street parking with minimal, if any, right-of-way impacts. On-street parking along this segment is heavily utilized by the fronting industrial uses on a daily basis. The segments between Taft Avenue and Lincoln Avenue, while classified as a 4-lane undivided secondary, actually operates more like a 4-lane divided primary facility because the entire stretch has a two-way left turn lane. The mitigation for this segment would be to reclassify as a primary facility.

Collins Avenue, similar to Batavia Street, is classified as a 4-lane undivided facility. Upgrading to a 4-lane divided configuration would provide for an acceptable LOS. Improvement to a divided facility would require widening, which may impact fronting residential and industrial properties.

Glassell Street between Katella Avenue and Orange Olive Road is recommended to be improved to a 6-lane facility to serve future forecast traffic demands. While this improvement can potentially be implemented with minimal right-of-way acquisition required, on-street parking would be eliminated for fronting business and residential uses.

Several segments of Katella Avenue are forecast to operate at LOS E under future conditions. As many of these segments are on the threshold of deficient operations, widening of Katella Avenue is not recommended. Widening of Katella Avenue could have significant adverse impacts to fronting retail, office, and industrial uses. Removal of on-street parking, where currently available, would be required under a widening scenario. The intersections along Katella Avenue should be continually monitored to ensure acceptable performance during the peak hours. Utilizing the full capacity of the system may result in acceptable operations through the corridor.

Main Street between Town & County Road and La Veta Avenue is forecast to operate at LOS E. Widening this segment to an 8-lane facility is recommended. This improvement would likely require bridge widening over SR-22 and could potentially impact fronting commercial uses, specifically at the northeast corner of Town & County Road and Main Street.

The implementation of the Meats Avenue interchange with SR-55 requires upgrading Meats Avenue between Tustin Street and the SR-55 Southbound Ramps to a 6-lane facility and the segment between the northbound and southbound ramps to a 6-lane facility. The segment between the northbound ramps and Santiago Boulevard would require an upgrade to a 4-lane divided facility. Even with the improvement of the segment west of the southbound ramps, this segment is forecast to operate at LOS E. Widening to an 8-lane segment is not recommended. Implementation of the interchange would have right-of-way impacts to residential uses on all four quadrants of the interchange, likely displacing several residential units, including trailer park units north of Meats Avenue west of SR-55 in the Orange Mobile Home Park. In addition, the bridge over SR-55 would require widening to ensure appropriate intersection geometry is provided to support the ramp intersections.

Table 4.9 Project Future Arterial Mitigation Recommendations

ID	Arterial	From	To	MPAH Lanes	2030 ADT	LOS E Capacity	V/C Ratio	LOS	Mitigation Measure
8	Batavia Street	Walnut Avenue	Collins Avenue	4U	22,300	24,000	0.93	E	Improve to 4-lane divided facility
9	Batavia Street	Collins Avenue	Katella Avenue	4U	23,300	24,000	0.97	E	
11	Batavia Street	Taft Avenue	Fletcher Avenue	4U	21,800	24,000	0.91	E	
12	Batavia Street	Fletcher Avenue	Lincoln Avenue	4U	22,900	24,000	0.95	E	
311	Chapman Avenue	Lemon Street	Glassell Street	2U	12,500	12,000	1.04	F	No mitigation recommended through Historic Orange Plaza
312	Chapman Avenue	Glassell Street	Grand Street	2U	12,600	12,000	1.05	F	
35	Chapman Avenue	SR-55	Yorba Street	8D	75,300	75,000	1.00	F	Monitor segment and evaluate intersections along Chapman Avenue between Tustin Street and Prospect Street to maximize throughput.
36	Chapman Avenue	Yorba Street	Prospect Street	6D	63,600	56,300	1.13	F	Widen to 8-lane facility
40	Chapman Avenue	Crawford Cyn Rd.	Canyon View Avenue	4D	39,700	37,500	1.06	F	Widen to 6-lane facility
47	Collins Avenue	Batavia Street	Glassell Street	4U	23,000	24,000	0.96	E	Improve to 4-lane divided facility
49	Collins Avenue	Cambridge Street	Tustin Street	4U	22,900	24,000	0.95	E	Improve to 4-lane divided facility
72	Glassell Street	SR-22	La Veta Avenue	4D	34,600	37,500	0.92	E	No mitigation recommended
74	Glassell Street	Chapman Avenue	Palm Avenue	2U	11,900	12,000	0.99	E	No mitigation recommended through Historic Orange Plaza
77	Glassell Street	Katella Avenue	Orange Olive Road	4D	37,700	37,500	1.01	F	Improve to 6-lane divided facility
89	Katella Avenue	Struck Avenue	Main Street	6D	56,500	59,115	0.96	E	Monitor upstream and downstream intersections to evaluate need for widening segment.
90	Katella Avenue	Main Street	Batavia Street	6D	55,100	59,115	0.93	E	
91	Katella Avenue	Batavia Street	Glassell Street	6D	53,700	59,115	0.91	E	
92	Katella Avenue	Glassell Street	Cambridge Street	6D	54,500	59,115	0.92	E	
117	Main Street	Town & Country Road	La Veta Avenue	6D	55,500	56,300	0.99	E	Widen to 8-lane facility
127	Meats Avenue	Tustin Street	SR-55 SB Ramps	4U	53,200	24,000	2.22	F	Improve to 6-lane divided facility
1271	Meats Avenue	SR-55 SB Ramps	SR-55 NB Ramps	4U	45,500	24,000	1.90	F	Improve to 6-lane divided facility
1272	Meats Avenue	SR-55 NB Ramps	Santiago Boulevard	4U	31,900	24,000	1.27	F	Improve to 4-lane divided facility
153	Prospect Street	Chapman Avenue	Spring Street	4U	23,000	24,000	0.96	E	Improve to 4-lane divided facility
154	Prospect Street	Spring Street	Walnut Avenue	4U	22,100	24,000	0.92	E	Improve to 4-lane divided facility
177	Taft Avenue	West City Limit	Main Street	6D	56,400	56,300	1.00	F	Monitor upstream and downstream intersections to evaluate need for widening segment.
210	Wanda Road	Katella Avenue	Santiago Boulevard (VP)	4U	27,800	24,000	1.16	F	Improve to 4-lane divided facility

Deficient Segment, LOS E

Deficient Segment, LOS F

Arterial Segment Level of Service With Mitigation Measure Implementation									
8	Batavia Street	Walnut Avenue	Collins Avenue	4D	22,300	37,500	0.59	A	
9	Batavia Street	Collins Avenue	Katella Avenue	4D	23,300	37,500	0.62	B	
11	Batavia Street	Taft Avenue	Fletcher Avenue	4D	21,800	37,500	0.58	A	
12	Batavia Street	Fletcher Avenue	Lincoln Avenue	4D	22,900	37,500	0.61	B	
311	Chapman Avenue	Lemon Street	Glassell Street	2U	12,500	12,000	1.04	F	
312	Chapman Avenue	Glassell Street	Grand Street	2U	12,600	12,000	1.05	F	
35	Chapman Avenue	SR-55	Yorba Street	8D	75,300	75,000	1.00	F	
36	Chapman Avenue	Yorba Street	Prospect Street	8D	63,600	75,000	0.85	D	
40	Chapman Avenue	Crawford Cyn Rd.	Canyon View Avenue	6D	39,700	56,300	0.71	C	
47	Collins Avenue	Batavia Street	Glassell Street	4D	23,000	37,500	0.61	B	
49	Collins Avenue	Cambridge Street	Tustin Street	4D	22,900	37,500	0.61	B	
72	Glassell Street	SR-22	La Veta Avenue	6D	34,600	56,300	0.61	B	
74	Glassell Street	Chapman Avenue	Palm Avenue	2U	11,900	12,000	0.99	E	
77	Glassell Street	Katella Avenue	Orange Olive Road	6D	37,700	56,300	0.67	B	
89	Katella Avenue	Struck Avenue	Main Street	6D	56,500	59,115	0.96	E	
90	Katella Avenue	Main Street	Batavia Street	6D	55,100	59,115	0.93	E	
91	Katella Avenue	Batavia Street	Glassell Street	6D	53,700	59,115	0.91	E	
92	Katella Avenue	Glassell Street	Cambridge Street	6D	54,500	59,115	0.92	E	
117	Main Street	Town & Country Road	La Veta Avenue	8D	55,500	75,000	0.74	C	
127	Meats Avenue	Tustin Street	SR-55 SB Ramps	6D	53,200	56,300	0.94	E	
1271	Meats Avenue	SR-55 SB Ramps	SR-55 NB Ramps	6D	45,500	56,300	0.81	D	
1272	Meats Avenue	SR-55 NB Ramps	Santiago Boulevard	4D	31,900	37,500	0.85	D	
153	Prospect Street	Chapman Avenue	Spring Street	4D	23,000	37,500	0.59	A	
154	Prospect Street	Spring Street	Walnut Avenue	4D	22,100	37,500	0.61	B	
177	Taft Avenue	West City Limit	Main Street	6D	56,400	56,300	1.00	F	
210	Wanda Road	Katella Avenue	Santiago Boulevard (VP)	4D	27,800	37,500	0.74	C	

Although Prospect Street between Chapman Avenue and Walnut Avenue and Wanda Road between Katella Avenue and Santiago Boulevard are labeled as 4-lane undivided secondary facilities, they operate as a 4-lane divided primary facility since the entirety of the segments either include a two-way left turn lane or a raised median. Typically, improving a facility from a 4-lane undivided configuration to a 4-lane divided configuration involves removal of on-street parking, construction of a raised median, or restriping to account for a two-way left turn lane and potential widening to achieve a divided configuration. The classification for these segments could be correctly revised to identify as primary facilities.

Recommended mitigation measures for deficient intersections under Project conditions are presented in **Table 4.10**. Twelve intersections are forecast to operate at a deficient level of service under Future Project conditions. Generally, intersection mitigation measures proposed include the provision of additional turning lane capacity. ICU worksheets for the recommended mitigation measures are included in **Appendix F**. Under Project conditions, the implementation of the Meats Avenue/SR-55 interchange requires mitigation resulting from increased demand through the intersection as a result of the new interchange.

Typical intersection mitigation measures include intersection widening to add capacity through additional turn or through lanes. Additional mitigation measures for intersections include re-striping the existing turn movement configuration to allow for more capacity for critical movements. Critical movements are the movements on the intersection approaches that generally have high volumes and result in deficient intersection operations. Advanced Transportation Management Systems (ATMS) are components that are implemented to maximize intersection capacity without physical capacity to intersections. ATMS strategies typically include revised signalization and signal coordination to increase throughput through a corridor. ATMS strategies generally increase capacity by five percent, therefore, a 0.05 V/C ratio credit will be applied to intersections where these strategies may be recommended.

Since the Cannon Street @ Santiago Canyon Road intersection operates just above the allowable threshold, it is recommended to apply ATMS strategies at this location to maximize operational capacity and throughput of the intersection. The recommended improvement for the Cannon Street @ Serrano Avenue intersection requires reconstruction of the westbound approach of Serrano Avenue to provide for triple westbound left turns. However, this improvement requires Cannon Street to be widened in the southbound direction to accommodate a triple left turn lane. Impacts to residences would be required to implement this improvement measure.

Forecast volumes at Jamboree Road @ Chapman Avenue require a 3rd northbound left turn lane. Based on the current configuration and the vacant property in the southeast corner of this intersection, this improvement appears feasible.

The recommended improvement to add a second westbound left turn lane for the Katella Avenue @ SR-55 southbound ramps intersection may result in impacts and potential bridge reconstruction to provide an additional turn lane onto southbound SR-55 under the existing freeway. The cost and construction impacts may be prohibitive to implementation of this improvement measure.

The intersection of Main Street @ La Veta Avenue is forecast to operate at LOS E. Application of ATMS strategies at this location are recommended to achieve acceptable operations. Widening this intersection beyond its buildout configuration may result in significant right-of-way impacts due to directly adjacent major office building structures.

The intersection of Santiago Boulevard @ Meats Avenue operates at LOS E under Project conditions during the A.M. peak hour. Due to the implementation of the Meats Avenue/SR-55 interchange, additional capacity is required at this intersection. An exclusive right turn lane could be implemented, although right-of-way and potential residential property impacts may result. Another alternative is to incorporate ATMS strategies at this location, although capacity enhancements to account for the new interchange would likely result in more efficient operations.

The Wanda Road @ Villa Park Road requires additional capacity for the westbound and northbound movements. This is currently a very tight intersection with little room for future expansion. Increased capacity in the westbound direction would likely impact fronting single and multi-family residences located adjacent to the right-of-way.

The Tustin Street @ Lincoln Avenue intersection is constrained by restaurant and gas station/retail uses fronting on the western side of the intersection and the SR-55 under-crossing on the eastern side of the intersection. Even with implementation of the Meats Avenue interchange, this intersection is forecast to operate at unacceptable levels of service. This improvement would potentially require significant right-of-way acquisition and bridge replacement/construction costs and, as a result, may be considered infeasible.

The intersection of Main Street @ Struck Avenue operates at LOS F under Project conditions during the A.M. peak hour. Addition of a second eastbound and westbound through lane along Struck Avenue is required to bring this intersection to perform with acceptable LOS. Located within an existing commercial and industrial area, it is feasible that these improvements can be implemented although the through lane needs to be carried through the intersection prior to transitioning back to 2 lanes.

The intersection of Main Street @ Collins Avenue operates at LOS E and LOS F under Project conditions during the A.M. and P.M. peak hour, respectively. Addition of a northbound and an eastbound right-turn lanes as well as restriping the westbound approach from one left-turn, two through lanes to two left-turn lanes and one through lane are recommended to bring the intersection within the acceptable LOS D threshold. The addition of the northbound right-turn lane has been recommended as part of the *City of Anaheim Platinum Triangle Traffic Study*. Similar to the intersection of Main Street @ Struck Avenue, this intersection is located in a predominantly industrial area although implementation of these improvements will potentially require right-of-way.

The intersection of Southbound SR-57 Ramps @ Orangewood Avenue operates at LOS E under Project conditions for both peak hours. Improvements recommended at this location in the *City of Anaheim Platinum Triangle Traffic Study* include the conversion of the eastbound right-turn lane to a third eastbound through lane and the addition of a second westbound left-turn lane. These improvements bring the intersection within the acceptable LOS threshold.

The intersection of Southbound SR-57 Ramps @ Chapman Avenue operates at LOS E under Project conditions for P.M. peak hour. Conversion of the north and south right-turn lane into a through lane and the conversion of the shared northbound and southbound left and through lane to a left-turn only lane are adequate to improve the intersection to perform within acceptable LOS D. Since this intersection is forecast to perform marginally above the recommended threshold, an alternative mitigation measure is to apply ATMS strategies at this location to improve traffic flow.

Table 4.10 Project Future Intersection Mitigation Recommendations

ID	Intersection Location	A.M. Peak Hour		P.M. Peak Hour		Mitigation Measure
		ICU	LOS	ICU	LOS	
7	Cannon Street @ Santiago Canyon Road	0.94	E	0.93	E	Apply ATMS to enhance capacity
8	Cannon Street @ Serrano Avenue	0.99	E	0.88	D	Add 3 rd Westbound Left Turn Lane
12	Jamboree Road @ Chapman Avenue	0.94	E	0.90	D	Add 3 rd Northbound Left Turn Lane
27	Southbound SR-55 Ramps @ Katella Avenue	0.97	E	0.87	D	Add 2 nd Westbound Left Turn Lane
30	Main Street @ La Veta Avenue	0.82	D	0.95	E	Apply ATMS applications to enhance capacity
40	Santiago Boulevard @ Meats Avenue	0.91	E	0.77	C	Restripe shared Westbound Through Right Lane to 2 nd Through Lane, Add Westbound Right Turn Lane
41	Wanda Road @ Villa Park Road	1.18	F	0.97	E	Add 3 rd Westbound Through Lane, Add 2 nd Southbound Left Turn Lane
48	Tustin Street @ Lincoln Avenue	0.93	E	1.01	F	Add 3 rd Eastbound Through Lane and 2 nd Eastbound Right Turn Lane
56	Main Street @ Struck Avenue	1.08	F	0.70	B	Add 2 nd Eastbound and 2 nd Westbound Through lanes

Table 4.10 Project Future Intersection Mitigation Recommendations (continued)

ID	Intersection Location	A.M. Peak Hour		P.M. Peak Hour		Mitigation Measure
		ICU	LOS	ICU	LOS	
57	Main Street @ Collins Avenue	0.92	E	1.18	F	Add one Northbound and Eastbound Right Turn Lane, Restripe Westbound approach to 2 Left Turn Lanes and 1 Through Lane
58	Southbound SR-57 Ramps @ Orangewood Avenue	0.97	E	0.94	E	Convert Eastbound Right Turn Lane to 3 rd Through Lane, Add 2 nd Westbound Left Turn Lane
64	Southbound SR-57 Ramps @ Chapman Avenue	0.76	C	0.92	E	Convert Northbound and Southbound Right Turn Lane to Through Lane, Convert Northbound and Southbound shared Left and Through lane to Left-Turn only lane; Alternate mitigation – Apply ATMS

 Deficient Intersection, LOS E
 Deficient Intersection, LOS F

Intersection Level of Service with Mitigation Measure Implementation					
ID	Intersection Location	A.M. Peak Hour		P.M. Peak Hour	
		ICU	LOS	ICU	LOS
7	Cannon Street @ Santiago Canyon Road	0.89	D	0.88	D
8	Cannon Street @ Serrano Avenue	0.86	D	0.88	D
12	Jamboree Road @ Chapman Avenue	0.88	D	0.90	D
27	Southbound SR-55 Ramps @ Katella Avenue	0.74	C	0.76	C
30	Main Street @ La Veta Avenue	0.77	C	0.90	D
40	Santiago Boulevard @ Meats Avenue	0.87	D	0.77	C
41	Wanda Road @ Villa Park Road	0.88	D	0.86	D
48	Tustin Street @ Lincoln Avenue	0.74	C	0.90	D
56	Main Street @ Struck Avenue	0.79	C	0.63	B
57	Main Street @ Collins Avenue	0.83	D	0.86	D
58	Southbound SR-57 Ramps @ Orangewood Avenue	0.74	C	0.71	C
64	Southbound SR-57 Ramps @ Chapman Avenue	0.80	C	0.89	D
		0.71	C	0.87	D

4.8 Alternative 1 Future Daily Conditions

Alternative 1 assumes buildout of the proposed General Plan land use and buildout of the proposed MPAH as defined under the Project Scenario without incorporation of the Meats Avenue/SR-55 interchange. Post-processed OTAM year 2030 forecast daily arterial volumes representing the Alternative 1 conditions are reported in **Table 4.11** with corresponding daily V/C ratio and LOS.

Table 4.11 Alternative 1 Future Arterial Daily Level of Service

ID	Arterial	From	To	MPAH Lanes	2030 ADT	LOS E Capacity	V/C Ratio	LOS
1	Almond Avenue	Main Street	Batavia Street	2U	7,300	12,000	0.61	B
2	Almond Avenue	Batavia Street	Glassell Street	2U	5,500	12,000	0.46	A
3	Almond Avenue	Glassell Street	Grand Street	2U	6,200	12,000	0.52	A
4	Almond Avenue	Grand Street	Cambridge Street	2U	3,400	12,000	0.28	A
5	Batavia Street	La Veta Avenue	Almond Avenue	4U	12,500	24,000	0.52	A
6	Batavia Street	Almond Avenue	Chapman Avenue	4U	15,900	24,000	0.66	B
7	Batavia Street	Chapman Avenue	Walnut Avenue	4U	21,200	24,000	0.88	D
8	Batavia Street	Walnut Avenue	Collins Avenue	4U	22,700	24,000	0.95	E
9	Batavia Street	Collins Avenue	Katella Avenue	4U	23,600	24,000	0.98	E
10	Batavia Street	Katella Avenue	Taft Avenue	4U	21,300	24,000	0.89	D
11	Batavia Street	Taft Avenue	Fletcher Avenue	4U	22,000	24,000	0.92	E
12	Batavia Street	Fletcher Avenue	Lincoln Avenue	4U	23,300	24,000	0.97	E
13	Bond Avenue	Prospect Street	Hewes Street	4U	8,400	24,000	0.35	A
14	Cambridge Street	South City Limits	Palmyra Avenue	2U	7,100	12,000	0.59	A
15	Cambridge Street	Palmyra Avenue	Chapman Avenue	2U	8,600	12,000	0.72	C
16	Cambridge Street	Chapman Avenue	Palm Avenue	2U	8,400	12,000	0.70	B
17	Cambridge Street	Palm Avenue	Walnut Avenue	2U	7,700	12,000	0.64	B
18	Cambridge Street	Walnut Avenue	Collins Avenue	2U	8,000	12,000	0.67	B
19	Cambridge Street	Collins Avenue	Katella Avenue	2U	8,400	12,000	0.70	B
20	Cambridge Street	Katella Avenue	Taft Avenue	4U	11,800	24,000	0.49	A
21	Cambridge Street	Taft Avenue	Meats Avenue	4U	9,700	24,000	0.40	A
22	Canyon View Avenue	Chapman Avenue	Outrider Street	4D	6,400	37,500	0.27	A
23	Canyon View Avenue	Outrider Street	Newport Boulevard	4D	6,200	37,500	0.26	A
24	Canyon View Avenue	Newport Boulevard	Jamboree Road	4D	5,200	37,500	0.22	A
25	Chapman Avenue	Haster Street	Lewis Street	5D	32,600	46,000	0.71	C
26	Chapman Avenue	Lewis Street	Manchester Avenue	6D	35,700	56,300	0.63	B
27	Chapman Avenue	Manchester Avenue	The City Drive	6D	40,200	56,300	0.71	C
28	Chapman Avenue	The City Drive	Eckhoff Street	6D	42,800	56,300	0.76	C
29	Chapman Avenue	Eckhoff Street	Main Street	6D	34,600	56,300	0.61	B
30	Chapman Avenue	Main Street	Batavia Street	4D	23,800	37,500	0.63	B
31	Chapman Avenue	Batavia Street	Lemon Street	4D	20,700	37,500	0.55	A
311	Chapman Avenue	Lemon Street	Glassell Street	2U	12,300	12,000	1.03	F
312	Chapman Avenue	Glassell Street	Grand Street	2U	12,500	12,000	1.04	F
32	Chapman Avenue	Grand Street	Cambridge Street	4D	25,300	37,500	0.67	B
33	Chapman Avenue	Cambridge Street	Tustin Street	4D	28,200	37,500	0.75	C
34	Chapman Avenue	Tustin Street	SR-55	6D	51,800	56,300	0.92	E
35	Chapman Avenue	SR-55	Yorba Street	8D	76,700	75,000	1.02	F
36	Chapman Avenue	Yorba Street	Prospect Street	6D	65,100	56,300	1.16	F
37	Chapman Avenue	Prospect Street	Esplanade Street	6D	51,500	56,300	0.91	E
38	Chapman Avenue	Esplanade Street	Hewes Street	6D	47,900	56,300	0.85	D
39	Chapman Avenue	Hewes Street	Crawford Canyon Road	6D	41,900	56,300	0.74	C
40	Chapman Avenue	Crawford Canyon Road	Canyon View Avenue	4D	40,700	37,500	1.09	F
41	Chapman Avenue	Canyon View Avenue	Orange Park Boulevard	4D	32,300	37,500	0.86	D
42	Chapman Avenue	Orange Park Boulevard	Newport Boulevard	4D	28,400	37,500	0.76	C
43	Chapman Avenue	Newport Boulevard	Jamboree Road	6D	48,800	56,300	0.87	D
44	Chapman Avenue	Jamboree Road	City Limit	6D	42,600	56,300	0.76	C
45	Collins Avenue	Eckhoff Street	Main Street	4U	15,000	24,000	0.63	B
46	Collins Avenue	Main Street	Batavia Street	4U	18,700	24,000	0.78	C
47	Collins Avenue	Batavia Street	Glassell Street	4U	23,900	24,000	1.00	E
48	Collins Avenue	Glassell Street	Cambridge Street	4U	17,800	24,000	0.74	C



 Deficient Segment, LOS E
 Deficient Segment, LOS F

Table 4.11 Alternative 1 Future Arterial Daily Level of Service (continued)

ID	Arterial	From	To	MPAH Lanes	2030 ADT	LOS E Capacity	V/C Ratio	LOS
49	Collins Avenue	Cambridge Street	Tustin Street	4U	22,700	24,000	0.95	E
50	Collins Avenue	Tustin Street	Handy Street	4U	16,500	24,000	0.69	B
51	Collins Avenue	Handy Street	Wanda Road	4U	15,500	24,000	0.65	B
52	Collins Avenue	Wanda Road	Prospect Street	4U	20,900	24,000	0.87	D
53	Crawford Canyon Road	Barrett Avenue	Chapman Avenue	4U	17,500	24,000	0.73	C
54	Cannon Street	Chapman Avenue	Creekside Avenue	4U	13,100	24,000	0.55	A
55	Cannon Street	Creekside Avenue	Patria Court	4U	8,700	24,000	0.36	A
56	Cannon Street	Patria Court	Santiago Canyon Road	4U	8,400	24,000	0.35	A
57	Cannon Street	Santiago Canyon Road	Taft Avenue	6D	46,700	56,300	0.83	D
58	Cannon Street	Taft Avenue	Via Escala	6D	33,500	56,300	0.60	A
59	Eckhoff Street	Chapman Avenue	Sycamore Avenue	2U	5,500	12,000	0.46	A
60	Eckhoff Street	Orangewood Avenue	Collins Avenue	4U	19,700	24,000	0.82	D
61	Esplanade Street	Fairhaven Avenue	La Veta Avenue	4U	3,500	24,000	0.15	A
62	Esplanade Street	La Veta Avenue	Chapman Avenue	4U	7,500	24,000	0.31	A
63	Fairhaven Avenue	Glassell Street	Cambridge Street	4U	10,200	24,000	0.43	A
64	Fairhaven Avenue	Cambridge Street	Tustin Street	4U	9,900	24,000	0.41	A
65	Fairhaven Avenue	Tustin Street	Yorba Street	4U	15,600	24,000	0.65	B
66	Fairhaven Avenue	Yorba Street	Prospect Street	4U	14,700	24,000	0.61	B
67	Fairhaven Avenue	Prospect Street	Esplanade Street	4U	13,500	24,000	0.56	A
68	Fairhaven Avenue	Esplanade Street	Hewes Street	4U	11,000	24,000	0.46	A
69	Fletcher Avenue	Batavia Street	Glassell Street	4U	7,600	24,000	0.32	A
70	Garden Grove Boulevard	The City Drive	Lewis Street	4D	22,100	37,500	0.59	A
72	Glassell Street	SR-22	La Veta Avenue	4D	35,200	37,500	0.94	E
73	Glassell Street	La Veta Avenue	Almond Avenue	4D	17,600	37,500	0.47	A
731	Glassell Street	Almond Avenue	Chapman Avenue	2U	10,700	12,000	0.89	D
74	Glassell Street	Chapman Avenue	Palm Avenue	2U	12,600	12,000	1.05	F
75	Glassell Street	Palm Avenue	Collins Avenue	4D	17,400	37,500	0.46	A
76	Glassell Street	Collins Avenue	Katella Avenue	4D	26,100	37,500	0.70	B
77	Glassell Street	Katella Avenue	Orange Olive Road	4D	40,100	37,500	1.07	F
78	Glassell Street	Orange Olive Road	Grove Avenue	4D	22,200	37,500	0.59	A
79	Glassell Street	Grove Avenue	Lincoln Avenue	4D	31,300	37,500	0.83	D
80	Glassell Street	Lincoln Avenue	Santa Ana River	4D	31,200	37,500	0.83	D
811	Grand Street	La Veta Avenue	Palmyra Avenue	2U	9,000	12,000	0.75	C
812	Grand Street	Almond Avenue	Chapman Avenue	2U	10,000	12,000	0.83	D
81	Grand Street	Chapman Avenue	Maple Avenue	2U	5,500	12,000	0.46	A
82	Hewes Street	Fairhaven Avenue	Washington Avenue	4U	7,600	24,000	0.32	A
83	Hewes Street	Washington Avenue	Chapman Avenue	4U	11,100	24,000	0.46	A
84	Hewes Street	Chapman Avenue	Walnut Avenue	4U	13,100	24,000	0.55	A
85	Hewes Street	Walnut Avenue	Santiago Canyon Road	4U	11,300	24,000	0.47	A
86	Jamboree Road	Santiago Canyon Road	Chapman Avenue	6D	30,100	56,300	0.53	A
87	Jamboree Road	Chapman Avenue	Canyon View Avenue	6D	30,500	56,300	0.54	A
88	Jamboree Road	Canyon View Avenue	SR-241	6D	34,300	56,300	0.61	B
89	Katella Avenue*	Struck Avenue	Main Street	6D SS	59,115	56,300	0.97	E
90	Katella Avenue*	Main Street	Batavia Street	6D SS	59,115	56,300	0.95	E
91	Katella Avenue*	Batavia Street	Glassell Street	6D SS	59,115	56,300	0.91	E
92	Katella Avenue*	Glassell Street	Cambridge Street	6D SS	59,115	56,300	0.92	E
93	Katella Avenue*	Cambridge Street	Tustin Street	6D SS	59,115	56,300	0.83	D
94	Katella Avenue*	Tustin Street	SR-55	7D SS	68,250	65,000	0.86	D
95	Katella Avenue	SR-55	Handy Street	6D	49,100	56,300	0.87	D
96	Katella Avenue	Handy Street	Wanda Road	6D	46,100	56,300	0.82	D
97	Katella Avenue	Wanda Road	Center Drive	6D	38,500	56,300	0.68	B



 Deficient Segment, LOS E
 Deficient Segment, LOS F

Table 4.11 Alternative 1 Future Arterial Daily Level of Service (continued)

ID	Arterial	From	To	MPAH Lanes	2030 ADT	LOS E Capacity	V/C Ratio	LOS
98	Katella Avenue	Center Drive	Santiago Canyon Road	6D	36,400	56,300	0.65	B
99	La Veta Avenue	Flower Street	Devon Street	6D	33,100	56,300	0.59	A
100	La Veta Avenue	Devon Street	Main Street	6D	29,700	56,300	0.53	A
101	La Veta Avenue	Main Street	Batavia Street	6D	37,300	56,300	0.66	B
102	La Veta Avenue	Batavia Street	Glassell Street	4D	20,600	37,500	0.55	A
103	La Veta Avenue	Glassell Street	Shaffer Street	4U	11,300	24,000	0.47	A
104	La Veta Avenue	Shaffer Street	Cambridge Street	4U	8,400	24,000	0.35	A
105	La Veta Avenue	Tustin Street	Yorba Street	4U	11,500	24,000	0.48	A
106	La Veta Avenue	Yorba Street	Prospect Street	4U	10,500	24,000	0.44	A
107	La Veta Avenue	Prospect Street	Esplanade Street	4U	8,600	24,000	0.36	A
1081	Lemon Street	La Veta Avenue	Palmyra Avenue	2U	8,000	12,000	0.67	B
108	Lemon Street	Chapman Avenue	Maple Avenue	2U	8,400	12,000	0.70	B
1082	Lemon Street	Maple Avenue	Walnut Avenue	2U	2,000	12,000	0.17	A
109	Lewis Street	Garden Grove Avenue	Metropolitan Drive	4U	17,100	24,000	0.71	C
110	Lewis Street	Metropolitan Drive	Chapman Avenue	4U	18,300	24,000	0.76	C
111	Lewis Street	Chapman Avenue	Sirius Avenue	4U	12,300	24,000	0.51	A
112	Lincoln Avenue	West City Limit	Batavia Street	6D	40,800	56,300	0.72	C
113	Lincoln Avenue	Batavia Street	Glassell Street	6D	32,800	56,300	0.58	A
114	Lincoln Avenue	Glassell Street	Orange Olive Road	6D	35,100	56,300	0.62	B
115	Lincoln Avenue	Orange Olive Road	Tustin Street	6D	49,100	56,300	0.87	D
116	Lincoln Avenue	Tustin Street	Santiago Boulevard	6D	50,600	56,300	0.90	D
117	Main Street	Town & Country Road	La Veta Avenue	6D	55,400	56,300	0.98	E
118	Main Street	La Veta Avenue	Chapman Avenue	6D	48,700	56,300	0.87	D
119	Main Street	Chapman Avenue	Sycamore Avenue	6D	37,300	56,300	0.66	B
120	Main Street	Sycamore Avenue	Collins Avenue	6D	40,700	56,300	0.72	C
121	Main Street	Collins Avenue	Struck Avenue	4D	25,200	37,500	0.67	B
122	Main Street	Struck Avenue	Katella Avenue	4D	26,600	37,500	0.71	C
123	Main Street	Katella Avenue	Taft Avenue	4D	22,900	37,500	0.61	B
124	Meats Avenue	Glassell Street	Orange Olive Road	4U	11,100	24,000	0.46	A
125	Meats Avenue	Orange Olive Road	Cambridge Street	4U	13,500	24,000	0.56	A
126	Meats Avenue	Cambridge Street	Tustin Street	4U	16,600	24,000	0.69	B
127	Meats Avenue	Tustin Street	Santiago Boulevard	4U	17,500	24,000	0.73	C
128	Meats Avenue	Santiago Boulevard	Featherhill Road	4U	12,300	24,000	0.51	A
129	Meats Avenue	Featherhill Road	Via Escola	4U	6,500	24,000	0.27	A
130	Metropolitan Drive	Lewis Street	SR-22 Westbound Ramps	4U	9,400	24,000	0.39	A
131	Metropolitan Drive	SR-22 Westbound Ramps	The City Drive	4U	19,100	24,000	0.80	C
1311	Metropolitan Drive	The City Drive	Chapman Avenue	4U	20,800	24,000	0.87	D
132	Manchester Avenue	Chapman Avenue	Compton Avenue	4D	10,900	37,500	0.29	A
133	Newport Boulevard	South City Limits	Canyon View Avenue	4D	9,000	37,500	0.24	A
134	Newport Boulevard	Canyon View Avenue	Chapman Avenue	4D	7,800	37,500	0.21	A
135	Newport Boulevard	Chapman Avenue	Santiago Canyon Road	4D	14,300	37,500	0.38	A
136	Nohl Ranch Road	Santiago Boulevard	East City Limit	4U	13,000	24,000	0.54	A
137	Orange Olive Road	Glassell Street	Meats Avenue	4U	20,800	24,000	0.87	D
138	Orange Olive Road	Meats Avenue	Lincoln Avenue	4U	20,000	24,000	0.83	D
139	Orange Olive Road	Lincoln Avenue	Santa Ana Canyon Road	4U	16,100	24,000	0.67	B
140	Orange Olive Road	Santa Ana Canyon Road	Riverdale Avenue	4U	11,800	24,000	0.49	A
141	Orangewood Avenue	Eckhoff Street	Main Street	6D	40,900	56,300	0.73	C
142	Palm Avenue	Main Street	Batavia Street	2U	4,600	12,000	0.38	A
143	Palm Avenue	Batavia Street	Cypress Street	2U	8,100	12,000	0.68	B
144	Palm Avenue	Cypress Street	Glassell Street	2U	7,500	12,000	0.63	B



 Deficient Segment, LOS E
 Deficient Segment, LOS F

Table 4.11 Alternative 1 Future Arterial Daily Level of Service (continued)

ID	Arterial	From	To	MPAH Lanes	2030 ADT	LOS E Capacity	V/C Ratio	LOS
145	Palm Avenue	Glassell Street	Cambridge Street	2U	5,300	12,000	0.44	A
146	Palm Avenue	Cambridge Street	Tustin Street	2U	8,000	12,000	0.67	B
147	Palmyra Avenue	Batavia Street	Glassell Street	2U	3,000	12,000	0.25	A
148	Palmyra Avenue	Glassell Street	Cambridge Street	2U	2,000	12,000	0.17	A
149	Palmyra Avenue	Cambridge Street	Tustin Street	2U	5,400	12,000	0.45	A
150	Parker Street	La Veta Avenue	Town & Country Road	4U	19,600	24,000	0.82	D
151	Prospect Street	Fairhaven Avenue	La Veta Avenue	4U	10,800	24,000	0.45	A
152	Prospect Street	La Veta Avenue	Chapman Avenue	4U	13,600	24,000	0.57	A
153	Prospect Street	Chapman Avenue	Spring Street	4U	24,300	24,000	1.01	F
154	Prospect Street	Spring Street	Walnut Avenue	4U	23,700	24,000	0.99	E
155	Prospect Street	Walnut Avenue	Bond Avenue	4U	18,200	24,000	0.76	C
156	Rampart Street	Chapman Avenue	Orangewood Avenue	4U	19,100	24,000	0.80	C
157	Rancho Santiago Boulevard	Chapman Avenue	Walnut Avenue	2U	8,100	12,000	0.68	B
158	Rancho Santiago Boulevard	Hewes Street	Bond Avenue	2U	3,100	12,000	0.26	A
159	Riverdale Avenue	Glassell Street	Orange Olive Road	4U	6,000	24,000	0.25	A
160	Riverdale Avenue	Orange Olive Road	Tustin Street	4U	9,600	24,000	0.40	A
161	Santa Ana Canyon Road	Lincoln Avenue	Nohl Ranch Road	6D	17,300	56,300	0.31	A
162	Santiago Boulevard	Wanda Road	Taft Avenue	4U	16,700	24,000	0.70	B
163	Santiago Boulevard	Taft Avenue	Villa Real Drive	4U	15,700	24,000	0.65	B
164	Santiago Boulevard	Villa Real Drive	Lincoln Avenue	4U	17,600	24,000	0.73	C
165	Santiago Canyon Road	Hewes Street	Cannon Street	6D	39,500	56,300	0.70	B
166	Santiago Canyon Road	Cannon Street	Orange Park Boulevard	6D	47,700	56,300	0.85	D
167	Santiago Canyon Road	Orange Park Boulevard	Meads Avenue	6D	41,400	56,300	0.74	C
168	Santiago Canyon Road	Meads Avenue	Newport Boulevard	6D	40,400	56,300	0.72	C
169	Santiago Canyon Road	Newport Boulevard	Jamboree Road	6D	29,700	56,300	0.53	A
170	Santiago Canyon Road	Jamboree Road	Street D	6D	42,600	56,300	0.76	C
214	Santiago Canyon Road	Street D	SR-241	6D	26,000	56,300	0.46	A
213	Santiago Canyon Road	East of SR-241		4D	24,000	37,500	0.64	B
171	Serrano Avenue	Cannon Street	Orange Park Boulevard	4D	22,900	37,500	0.61	B
172	Serrano Avenue	Orange Park Boulevard	Apache Creek	4D	19,700	37,500	0.53	A
173	Serrano Avenue	Apache Creek	East City Limit	4D	11,900	37,500	0.32	A
1741	Shaffer Street	La Veta Avenue	Palmyra Avenue	2U	2,000	12,000	0.17	A
174	Shaffer Street	Chapman Avenue	Maple Avenue	2U	6,100	12,000	0.51	A
1742	Shaffer Street	Palm Avenue	Walnut Avenue	2U	7,000	12,000	0.58	A
1743	Shaffer Street	Walnut Avenue	Collins Avenue	2U	10,600	12,000	0.88	D
1744	Shaffer Street	Collins Avenue	Katella Avenue	2U	7,000	12,000	0.58	A
175	Spring Street	Prospect Street	Olympia Way	4U	14,800	24,000	0.62	B
176	Struck Avenue	Katella Avenue	Main Street	2U	9,100	12,000	0.76	C
177	Taft Avenue	West City Limit	Main Street	6D	57,800	56,300	1.03	F
178	Taft Avenue	Main Street	Batavia Street	6D	37,400	56,300	0.66	B
179	Taft Avenue	Batavia Street	Glassell Street	6D	35,000	56,300	0.62	B
180	Taft Avenue	Glassell Street	Cambridge Street	6D	25,900	56,300	0.46	A
181	Taft Avenue	Cambridge Street	Tustin Street	6D	22,100	56,300	0.39	A
182	Taft Avenue	Tustin Street	Santiago Boulevard	4U	14,600	24,000	0.61	B
183	Taft Avenue	Cannon Street	Yurok Street	2U	8,200	12,000	0.68	B
184	The City Drive	Garden Grove Boulevard	SR-22	6D	35,900	56,300	0.64	B
185	The City Drive	SR-22	Metropolitan	6D	46,200	56,300	0.82	D
186	The City Drive	Metropolitan	Chapman Avenue	8D	35,600	75,000	0.47	A
187	The City Drive	Chapman Avenue	North City Limits	8D	35,700	75,000	0.48	A
188	Town & Country Road	Main Street	SR-22	4D	27,700	37,500	0.74	C
189	Town & Country Road	SR-22	Parker Street	4D	15,300	37,500	0.41	A
190	Tustin Street	Fairhaven Avenue	La Veta Avenue	6D	39,700	56,300	0.71	C
191	Tustin Street	La Veta Avenue	Palmyra Avenue	6D	35,000	56,300	0.62	B





 Deficient Segment, LOS E
 Deficient Segment, LOS F

Table 4.11 Alternative 1 Future Arterial Daily Level of Service (continued)

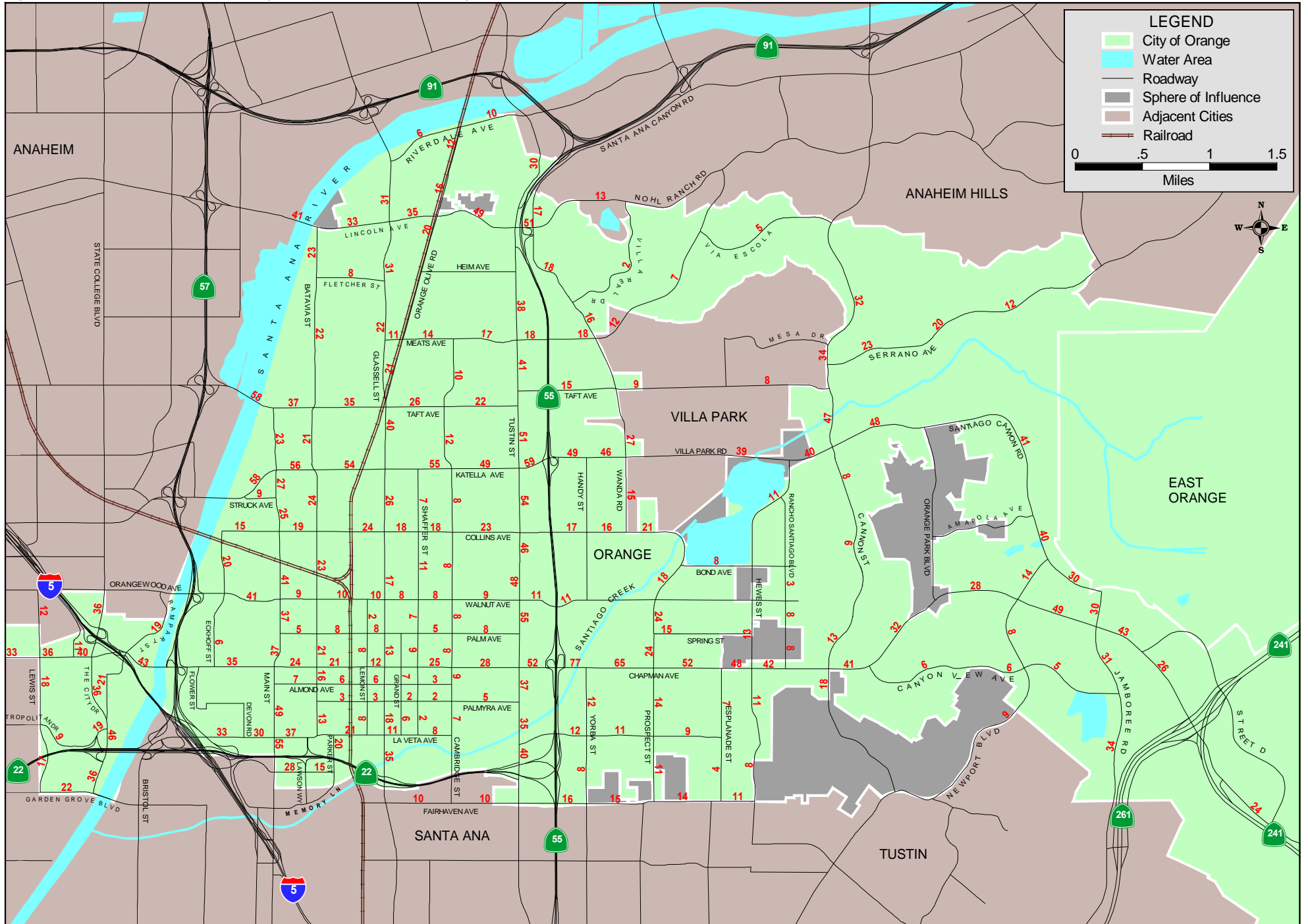
ID	Arterial	From	To	MPAH Lanes	2030 ADT	LOS E Capacity	V/C Ratio	LOS
192	Tustin Street	Palmyra Avenue	Chapman Avenue	6D	36,500	56,300	0.65	B
193	Tustin Street	Chapman Avenue	Walnut Avenue	6D	54,800	56,300	0.97	E
194	Tustin Street	Walnut Avenue	Mayfair Avenue	6D	47,600	56,300	0.85	D
195	Tustin Street	Mayfair Avenue	Collins Avenue	6D	45,900	56,300	0.82	D
196	Tustin Street	Collins Avenue	Katella Avenue	6D	53,600	56,300	0.95	E
197	Tustin Street	Katella Avenue	Taft Avenue	6D	51,200	56,300	0.91	E
198	Tustin Street	Taft Avenue	Meats Avenue	6D	41,200	56,300	0.73	C
199	Tustin Street	Meats Avenue	Lincoln Avenue	6D	38,000	56,300	0.67	B
200	Tustin Street	Lincoln Avenue	Santa Ana Canyon Road	6D	29,700	56,300	0.53	A
201	Via Escola	Meats Avenue	Cannon Street	4U	4,700	24,000	0.20	A
202	Villa Real Drive	Santiago Boulevard	Chapel Hill	2U	1,800	12,000	0.15	A
203	Walnut Avenue	Main Street	Batavia Street	2U	8,700	12,000	0.73	C
204	Walnut Avenue	Batavia Street	Cypress Street	2U	9,600	12,000	0.80	C
205	Walnut Avenue	Cypress Street	Glassell Street	2U	9,900	12,000	0.83	D
206	Walnut Avenue	Glassell Street	Cambridge Street	2U	8,300	12,000	0.69	B
207	Walnut Avenue	Cambridge Street	Tustin Street	2U	8,900	12,000	0.74	C
208	Walnut Avenue	Tustin Street	Handy Street	2U	10,700	12,000	0.89	D
209	Wanda Road	Collins Avenue	Katella Avenue	4U	16,500	24,000	0.69	B
210	Wanda Road	Katella Avenue	Santiago Boulevard (VP)	4U	27,000	24,000	1.13	F
211	Yorba Street	Fairhaven Avenue	La Veta Avenue	4U	8,200	24,000	0.34	A
212	Yorba Street	La Veta Avenue	Chapman Avenue	4U	11,900	24,000	0.50	A

 Deficient Segment, LOS E
 Deficient Segment, LOS F

Note: * Katella Avenue capacity has been increased by 5% due to classification as a Smart Street.
 Source: Orange Traffic Analysis Model (OTAM 2004)

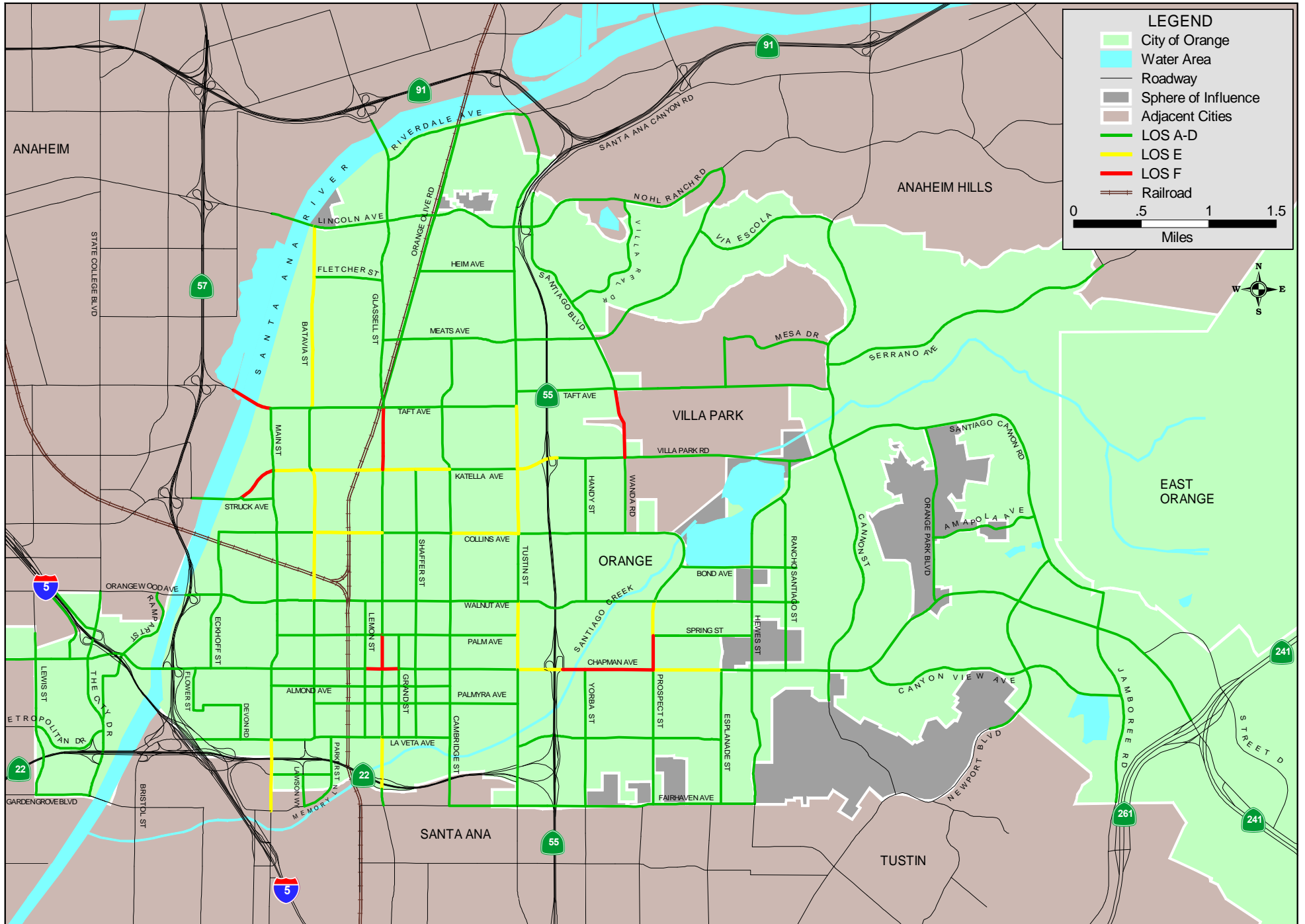
The improvements are due to minor reductions in the daily forecast volumes and the shifting of volumes to parallel facilities with available capacity. **Figure 4.8** presents the Alternative 1 forecast average daily traffic (ADT) volumes for arterial segments and the forecast year 2030 arterial level of service is presented in **Figure 4.9**.

Figure 4.8 - Alternative 1 Future Average Daily Traffic on Arterial Segments (in Thousands)



Source File: Fig4-8-y30-Alt1-Art1-ADT-052709.map

Figure 4.9 - Alternative 1 Future Arterial Daily Level of Service



Source File: Fig4-9-y30-Alt1-Arti-LOS-052709.map

4.9 Alternative 1 Future Intersection Peak Hour Conditions

Table 4.12 presents forecast year 2030 ICU and LOS results for turning movement volumes at the critical intersections during the morning (A.M.) and evening (P.M.) peak hours for Alternative 1. The intersection geometrics are consistent with the Project Scenario assumptions presented in **Appendix D**. Consistent with the arterial segment volume forecasts, turning movements for the intersections were post-processed. **Figure 4.10** illustrates peak hour intersection levels of service.

Alternative 1 results in twelve study intersections forecast to operate at an unacceptable LOS in either the A.M. or P.M. peak hour:

- Cannon Street at Santiago Canyon Road (LOS E in both A.M. and P.M. peak hour)
- Cannon Street at Serrano Avenue (LOS E in A.M. peak hour)
- Jamboree Road at Chapman Avenue (LOS E in A.M. peak hour)
- Southbound SR-55 Ramps at Katella Avenue (LOS E in A.M. peak hour)
- Main Street at La Veta Avenue (LOS E in P.M. peak hour)
- Wanda Road at Villa Park Road (LOS F in A.M. peak hour, LOS E in P.M. peak hour)
- Tustin Street at Katella Avenue (LOS E in P.M. peak hour)
- Tustin Street at Lincoln Avenue (LOS E in A.M. peak hour, LOS F in P.M. peak hour)
- Main Street at Struck Avenue (LOS F in A.M. peak hour)
- Main Street at Collins Avenue (LOS E in A.M. peak hour, LOS F in P.M. peak hour)
- Southbound SR-57 Ramps at Orangewood Avenue (LOS E in both A.M. and P.M. peak hour)
- Southbound SR-57 Ramps at Chapman Avenue (LOS E in P.M. peak hour)

The remaining intersections operate consistently with Project Scenario conditions. **Appendix E** presents future Alternative 1 ICU worksheets for each intersection.

4.10 Alternative 1 Future Mitigation

Specific arterial mitigation measures for Alternative 1 are consistent with those developed for the Project Scenario (refer to **Section 4.7**), with the exception of improving Meats Avenue as a result of the implementation of an interchange at Meats Avenue at SR-55 in the Project Alternative. **Table 4.13** presents Alternative 1 arterial mitigation.

Recommended mitigation measures for deficient Alternative 1 intersections are presented in **Table 4.14**. Twelve intersections are forecast to operate at a deficient level of service under Future Alternative 1 conditions. Generally, intersection mitigation measures proposed include the provision of additional turning lane capacity. Specific intersection mitigation measures are generally consistent with those developed for the Project Scenario and documented in **Section 4.7**. The intersection of Tustin Street @ Katella Avenue operates at an unacceptable LOS under Alternative 1 conditions, partly due to the fact that the Meats Avenue interchange is not incorporated into this alternative. Application of ATMS strategies at this location will bring this intersection to within acceptable performance levels. ICU worksheets for the recommended mitigation measures are included in **Appendix G**. Under Alternative 1 conditions, no mitigation is required from ultimate geometric configurations at Santiago Boulevard at Meats Avenue.

Table 4.12 Alternative 1 Future Intersection Level of Service

ID	Intersection Location	A.M. Peak Hour		P.M. Peak Hour	
		ICU	LOS	ICU	LOS
1	Batavia Street @ Collins Avenue	0.81	C	0.90	D
2	Batavia Street @ Katella Avenue	0.84	D	0.79	C
3	Batavia Street @ Lincoln Avenue	0.76	C	0.72	C
4	Batavia Street @ Taft Avenue	0.79	C	0.75	C
5	Batavia Street @ Walnut Avenue	0.67	B	0.75	C
6	Cambridge Street @ Katella Avenue	0.72	C	0.85	D
7	Cannon Street @ Santiago Canyon Road	0.92	E	0.93	E

Table 4.12 Alternative 1 Future Intersection Level of Service (continued)

ID	Intersection Location	A.M. Peak Hour		P.M. Peak Hour	
		ICU	LOS	ICU	LOS
8	Cannon Street @ Serrano Avenue	0.98	E	0.87	D
9	Cannon Street/ Crawford Canyon @ Chapman Avenue	0.74	C	0.70	B
10	Yorba Street @ Chapman Avenue	0.74	C	0.63	B
11	Canyon View Avenue @ Chapman Avenue	0.61	B	0.47	A
12	Jamboree Road @ Chapman Avenue	0.95	E	0.90	D
13	Northbound SR-55 Ramps @ Chapman Avenue	0.74	C	0.70	B
14	Southbound SR-55 Ramps @ Chapman Avenue	0.64	B	0.58	A
15	Lewis Street @ Chapman Avenue	0.62	B	0.68	B
16	The City Drive @ Chapman Avenue	0.70	B	0.84	D
17	The City Drive @ Eastbound SR-22 Ramps	0.76	C	0.82	D
18	The City Drive @ Westbound SR-22 Ramps	0.33	A	0.41	A
19	Glassell Street @ Collins Avenue	0.84	D	0.78	C
20	Glassell Street @ Katella Avenue	0.66	B	0.90	D
21	Glassell Street @ La Veta Avenue	0.89	D	0.79	C
22	Glassell Street @ Lincoln Avenue	0.74	C	0.89	D
23	Glassell Street @ Taft Avenue	0.78	C	0.80	C
24	Glassell Street @ Walnut Avenue	0.64	B	0.71	C
25	Hewes Street @ Chapman Avenue	0.81	D	0.70	B
26	Northbound SR-55 Ramps @ Katella Avenue	0.76	C	0.85	D
27	Southbound SR-55 Ramps @ Katella Avenue	0.97	E	0.90	D
28	Main Street @ Chapman Avenue	0.80	C	0.90	D
29	Main Street @ Katella Avenue	0.75	C	0.85	D
30	Main Street @ La Veta Avenue	0.83	D	0.95	E
31	Main Street @ Oranewood Avenue	0.71	C	0.62	B
32	Main Street @ Taft Avenue	0.65	B	0.90	D
33	Main Street @ Town & Country Road	0.52	A	0.83	D
34	Newport Boulevard @ Chapman Avenue	0.75	C	0.84	D
35	Santiago Boulevard @ Nohl Ranch Road	0.69	B	0.76	C
36	Eckhoff Street @ Oranewood Avenue	0.60	A	0.69	B
37	State College Boulevard @ Oranewood Avenue	0.70	B	0.69	B
38	Prospect Street @ Chapman Avenue	0.83	D	0.89	D
39	Prospect Street @ Walnut Avenue	0.81	D	0.80	C
40	Santiago Boulevard @ Meats Avenue	0.81	D	0.70	B
41	Wanda Road @ Villa Park Road	1.15	F	0.92	E
42	Tustin Street @ Chapman Avenue	0.79	C	0.89	D
43	Tustin Street @ Collins Avenue	0.60	A	0.69	B
44	Tustin Street @ Fairhaven Avenue	0.86	D	0.73	C
45	Tustin Street @ Heim Avenue	0.60	A	0.85	D
46	Tustin Street @ Katella Avenue	0.70	B	0.92	E
47	Tustin Street @ La Veta Avenue	0.70	B	0.63	B
48	Tustin Street @ Lincoln Avenue	0.93	E	1.06	F
49	Tustin Street @ Meats Avenue	0.52	A	0.71	C
50	Tustin Street @ Taft Avenue (North)	0.63	B	0.79	C
51	Tustin Street @ Taft Avenue (South)	0.72	C	0.90	D
52	Tustin Street @ Walnut Avenue	0.67	B	0.79	C
55	Struck Avenue @ Katella Avenue	0.41	A	0.46	A
56	Main Street @ Struck Avenue	1.10	F	0.70	B
57	Main Street @ Collins Avenue	0.96	E	1.19	F
58	Southbound SR-57 Ramps @ Oranewood Avenue	0.97	E	0.96	E
59	Northbound SR-57 Ramps @ Oranewood Avenue	0.60	A	0.49	A
60	State College Boulevard @ NB I-5 Ramps/Anaheim Way	0.50	A	0.40	A
61	State College Boulevard @ Southbound I-5 Ramps	0.53	A	0.34	A
62	Southbound I-5 Ramps @ Chapman Avenue	0.50	A	0.57	A
63	Rampart Street @ Chapman Ave./Northbound I-5 Ramps	0.85	D	0.85	D
64	Southbound SR-57 Ramps @ Chapman Avenue	0.75	C	0.93	E
65	Northbound SR-57 Ramps @ Chapman Avenue	0.47	A	0.55	A

Deficient Intersection, LOS E

Deficient Intersection, LOS F

Source: Orange Traffic Analysis Model (OTAM 2004)

Figure 4.10 - Alternative 1 Intersection Level of Service

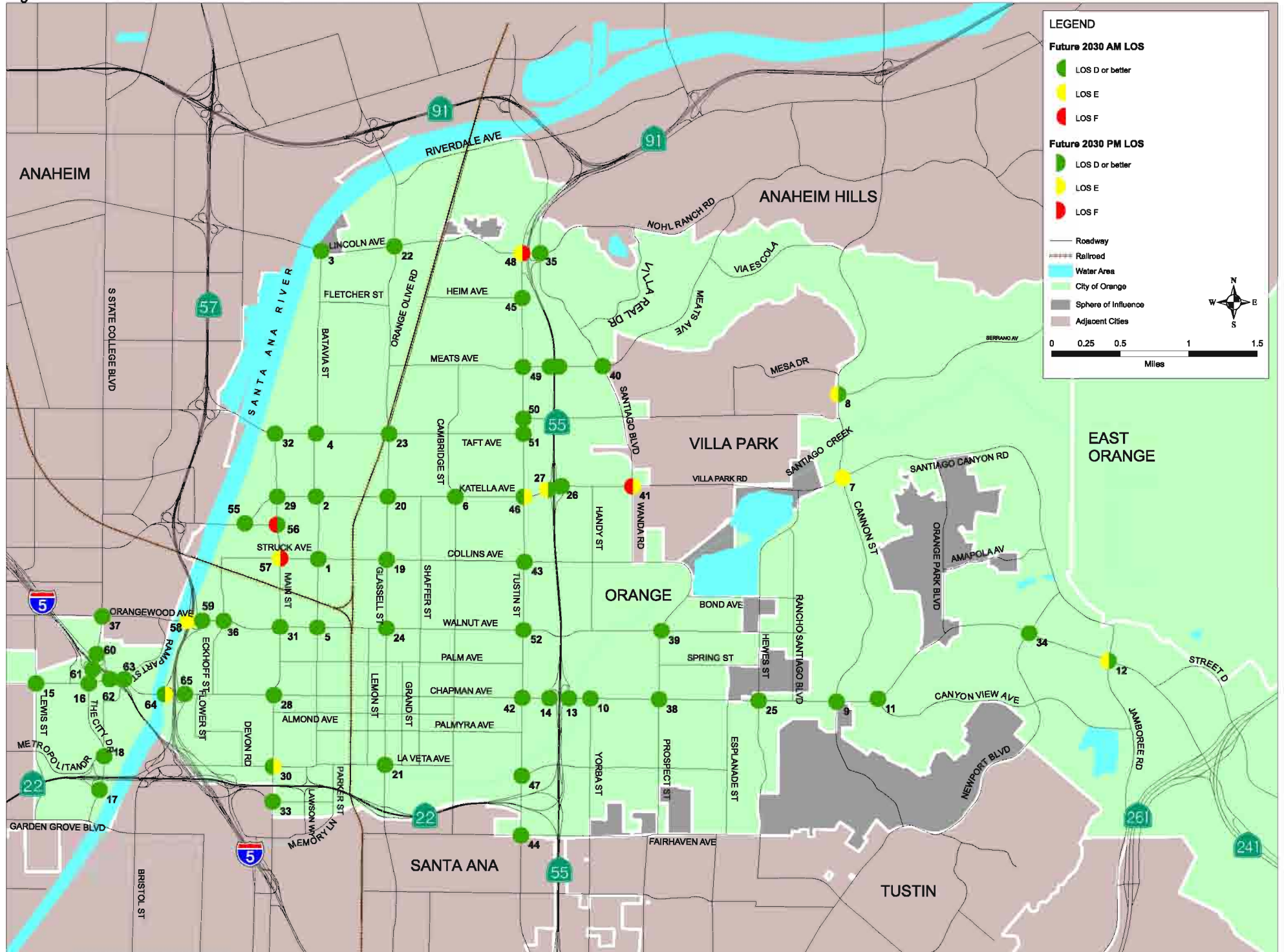


Table 4.13 Alternative 1 Future Arterial Mitigation Recommendations

ID	Arterial	From	To	MPAH Lanes	2030 ADT	LOS E Capacity	V/C Ratio	LOS	Mitigation Measure
8	Batavia Street	Walnut Avenue	Collins Avenue	4U	22,700	24,000	0.95	E	Improve to 4-lane divided facility
9	Batavia Street	Collins Avenue	Katella Avenue	4U	23,600	24,000	0.98	E	
11	Batavia Street	Taft Avenue	Fletcher Avenue	4U	22,000	24,000	0.92	E	
12	Batavia Street	Fletcher Avenue	Lincoln Avenue	4U	23,300	24,000	0.97	E	
311	Chapman Avenue	Lemon Street	Glassell Street	2U	12,300	12,000	1.03	F	No mitigation recommended through Historic Orange Plaza
312	Chapman Avenue	Glassell Street	Grand Street	2U	12,500	12,000	1.04	F	
34	Chapman Avenue	Tustin Street	SR-55	6D	51,800	56,300	0.92	E	Monitor segment and evaluate intersections along Chapman Avenue between Tustin Street and Prospect Street to maximize throughput.
35	Chapman Avenue	SR-55	Yorba Street	8D	76,700	75,000	1.02	F	
36	Chapman Avenue	Yorba Street	Prospect Street	6D	65,100	56,300	1.16	F	Widen to 8-lane facility
37	Chapman Avenue	Prospect Street	Esplanade Street	6D	51,500	56,300	0.91	E	Monitor segment and evaluate intersections along Chapman Avenue to maximize throughput.
40	Chapman Avenue	Crawford Canyon Road	Canyon View Avenue	4D	40,700	37,500	1.09	F	Widen to 6-lane facility
47	Collins Avenue	Batavia Street	Glassell Street	4U	23,900	24,000	1.00	E	Improve to 4-lane divided facility
49	Collins Avenue	Cambridge Street	Tustin Street	4U	22,700	24,000	0.95	E	Improve to 4-lane divided facility
72	Glassell Street	SR-22	La Veta Avenue	4D	35,200	37,500	0.94	E	Widen to 6-lane facility
74	Glassell Street	Chapman Avenue	Palm Avenue	2U	12,600	12,000	1.05	F	No mitigation recommended through Historic Orange Plaza
77	Glassell Street	Katella Avenue	Orange Olive Road	4D	40,100	37,500	1.07	F	Improve to 6-lane divided facility
89	Katella Avenue	Struck Avenue	Main Street	6D	59,115	56,300	0.97	E	Monitor upstream and downstream intersections to evaluate need for widening segment.
90	Katella Avenue	Main Street	Batavia Street	6D	59,115	56,300	0.95	E	
91	Katella Avenue	Batavia Street	Glassell Street	6D	59,115	56,300	0.91	E	
92	Katella Avenue	Glassell Street	Cambridge Street	6D	59,115	56,300	0.92	E	
117	Main Street	Town & Country Road	La Veta Avenue	6D	55,400	56,300	0.98	E	Widen to 8-lane facility
153	Prospect Street	Chapman Avenue	Spring Street	4U	24,300	24,000	1.01	F	Improve to 4-lane divided facility
154	Prospect Street	Spring Street	Walnut Avenue	4U	23,700	24,000	0.99	E	Improve to 4-lane divided facility
177	Taft Avenue	West City Limit	Main Street	6D	57,800	56,300	1.03	F	Monitor upstream and downstream intersections to evaluate need for widening segment.
193	Tustin Street	Chapman Avenue	Walnut Avenue	6D	54,800	56,300	0.97	E	Monitor upstream and downstream intersections to evaluate need for widening segment.
196	Tustin Street	Collins Avenue	Katella Avenue	6D	53,600	56,300	0.95	E	
197	Tustin Street	Katella Avenue	Taft Avenue	6D	51,200	56,300	0.91	E	
210	Wanda Road	Katella Avenue	Santiago Boulevard (VP)	4U	27,000	24,000	1.13	F	Improve to 4-lane divided facility



 Deficient Segment, LOS E
 Deficient Segment, LOS F

Table 4.13 Alternative 1 Future Arterial Mitigation Recommendations (continued)

Arterial Segment Level of Service With Mitigation Measure Implementation								
8	Batavia Street	Walnut Avenue	Collins Avenue	4D	22,700	37,500	0.57	A
9	Batavia Street	Collins Avenue	Katella Avenue	4D	23,600	37,500	0.61	B
11	Batavia Street	Taft Avenue	Fletcher Avenue	4D	22,000	37,500	0.63	B
12	Batavia Street	Fletcher Avenue	Lincoln Avenue	4D	23,300	37,500	0.59	A
311	Chapman Avenue	Lemon Street	Glassell Street	2U	12,300	12,000	1.03	F
312	Chapman Avenue	Glassell Street	Grand Street	2U	12,500	12,000	1.04	F
34	Chapman Avenue	Tustin Street	SR-55	6D	51,800	56,300	0.92	E
35	Chapman Avenue	SR-55	Yorba Street	8D	76,700	75,000	1.02	F
36	Chapman Avenue	Yorba Street	Prospect Street	8D	65,100	75,000	0.87	D
37	Chapman Avenue	Prospect Street	Esplanade Street	6D	51,500	56,300	0.91	E
40	Chapman Avenue	Crawford Canyon Road	Canyon View Avenue	4D	40,700	37,500	0.72	C
47	Collins Avenue	Batavia Street	Glassell Street	4D	23,900	37,500	0.64	B
49	Collins Avenue	Cambridge Street	Tustin Street	4D	22,700	37,500	0.61	B
72	Glassell Street	SR-22	La Veta Avenue	6D	35,200	56,300	0.63	B
74	Glassell Street	Chapman Avenue	Palm Avenue	2U	12,600	12,000	1.05	F
77	Glassell Street	Katella Avenue	Orange Olive Road	6D	40,100	56,300	0.71	C
89	Katella Avenue	Struck Avenue	Main Street	6D	59,115	56,300	0.97	E
90	Katella Avenue	Main Street	Batavia Street	6D	59,115	56,300	0.95	E
91	Katella Avenue	Batavia Street	Glassell Street	6D	59,115	56,300	0.91	E
92	Katella Avenue	Glassell Street	Cambridge Street	6D	59,115	56,300	0.92	E
117	Main Street	Town & Country Road	La Veta Avenue	8D	55,400	75,000	0.74	C
153	Prospect Street	Chapman Avenue	Spring Street	4D	24,300	37,500	0.65	B
154	Prospect Street	Spring Street	Walnut Avenue	4D	23,700	37,500	0.63	B
177	Taft Avenue	West City Limit	Main Street	6D	57,800	56,300	1.03	F
193	Tustin Street	Chapman Avenue	Walnut Avenue	6D	54,800	56,300	0.97	E
196	Tustin Street	Collins Avenue	Katella Avenue	6D	53,600	56,300	0.95	E
197	Tustin Street	Katella Avenue	Taft Avenue	6D	51,200	56,300	0.91	E
210	Wanda Road	Katella Avenue	Santiago Boulevard (VP)	4D	27,000	37,500	0.72	C

Table 4.14 Alternative 1 Future Intersection Mitigation Recommendations

ID	Intersection Location	A.M. Peak Hour		P.M. Peak Hour		Mitigation Measure
		ICU	LOS	ICU	LOS	
7	Cannon Street @ Santiago Canyon Road	0.92	E	0.93	E	Apply ATMS to enhance capacity
8	Cannon Street @ Serrano Avenue	0.98	E	0.87	D	Restripe Westbound Approach to 2 Left Turn Lanes and 1 shared Left-Right Lane
12	Jamboree Road @ Chapman Avenue	0.95	E	0.90	D	Add 3 rd Northbound Left Turn Lane
27	Southbound SR-55 Ramps @ Katella Avenue	0.97	E	0.90	D	Add 2 nd Westbound Left Turn Lane
30	Main Street @ La Veta Avenue	0.83	D	0.95	E	Apply ATMS applications to enhance capacity
41	Wanda Road @ Villa Park Road	1.15	F	0.92	E	Add 3 rd Westbound Through Lane, Re-stripe Southbound Approach to 1.5 Through, 1.5 Right, Add 2 nd Southbound Left Turn Lane
46	Tustin Street @ Katella Avenue	0.70	B	0.92	E	Apply ATMS applications to enhance capacity
48	Tustin Street @ Lincoln Avenue	0.93	E	1.06	F	Add 3 rd Eastbound and Westbound Through Lane, Add 2 nd Eastbound Right Turn Lane
56	Main Street @ Struck Avenue	1.10	F	0.70	B	Add 2 nd Eastbound and 2 nd Westbound Through lanes
57	Main Street @ Collins Avenue	0.96	E	1.19	F	Add one Northbound and Eastbound Right Turn Lane, Restripe Westbound approach to 2 Left Turn Lanes and 1 Through Lane
58	Southbound SR-57 Ramps @ Orangewood Avenue	0.97	E	0.96	E	Convert Eastbound Right Turn Lane to 3 rd Through Lane, Add 2 nd Westbound Left Turn Lane
64	Southbound SR-57 Ramps @ Chapman Avenue	0.75	C	0.93	E	Convert Northbound and Southbound Right Turn Lane to Through Lane, Convert Northbound and Southbound shared Left and Through lane to Left-Turn only lane; Alternate mitigation – Apply ATMS

Deficient Intersection, LOS E
 Deficient Intersection, LOS F

Table 4.14 Alternative 1 Future Intersection Mitigation Recommendations (continued)

Intersection Level of Service with Mitigation Measure Implementation					
ID	Intersection Location	A.M. Peak Hour		P.M. Peak Hour	
		ICU	LOS	ICU	LOS
7	Cannon Street @ Santiago Canyon Road	0.87	D	0.88	D
8	Cannon Street @ Serrano Avenue	0.90	D	0.87	D
12	Jamboree Road @ Chapman Avenue	0.88	D	0.89	D
27	Southbound SR-55 Ramps @ Katella Avenue	0.75	C	0.80	C
30	Main Street @ La Veta Avenue	0.78	C	0.90	D
41	Wanda Road @ Villa Park Road	0.85	D	0.84	D
46	Tustin Street @ Katella Avenue	0.65	B	0.87	D
48	Tustin Street @ Lincoln Avenue	0.70	B	0.85	D
56	Main Street @ Struck Avenue	0.80	C	0.62	B
57	Main Street @ Collins Avenue	0.85	D	0.86	D
58	Southbound SR-57 Ramps @ Orangewood Avenue	0.74	C	0.72	C
64	Southbound SR-57 Ramps @ Chapman Avenue	0.79	C	0.90	D
		0.70	B	0.88	D

4.11 Alternative 2 Future Daily Conditions

A reduced intensity land use scenario was developed from the Project Alternative to evaluate potential reductions in traffic impacts associated with a lesser intensity of proposed buildout development. A full diamond interchange at SR-55 and Meats Avenue, incorporated into the Project Scenario, was also incorporated into the reduced intensity scenario to ensure consistency in the network assumptions between the two alternatives. Alternative 2 assumes buildout of the proposed General Plan land use and buildout of the proposed MPAH as defined under the Project Scenario. The Meats Avenue interchange with SR-55 has the potential to relieve the congestion experienced at the SR-55 and Lincoln Avenue/Nohl Ranch Road and Katella Avenue interchanges. Post-processed OTAM year 2030 forecast arterial volumes representing the Alternative 2 conditions are reported in **Table 4.15** with corresponding daily V/C ratio and LOS.

Table 4.15 indicates that the Meats Avenue interchange slightly reduces traffic at the Lincoln Avenue/Nohl Ranch Road interchange but increases traffic activity along Meats Avenue, resulting in an unacceptable daily LOS. Meats Avenue is currently classified as a four-lane undivided facility. Improving Meats to a four-lane divided facility results in acceptable levels of service along Meats with an interchange at SR-55. Implementation of the Meats Avenue interchange also improves operations at the Chapman Avenue/SR-55 interchange and the surrounding arterial segments and intersections. Specifically, the southbound left turn volume and corresponding westbound right turn volumes at Tustin Street/Katella Avenue experience a reduction with the implementation of the Meats Avenue interchange.

Close scrutiny of **Table 4.15** will also show that there are many arterial segments that improve from the Project base scenario LOS. **Figure 4.11** presents the Alternative 2 forecast average daily traffic (ADT) volumes for arterial segments and the forecast year 2030 arterial level of service is presented in **Figure 4.12**.

Table 4.15 Alternative 2 Future Arterial Daily Level of Service

ID	Arterial	From	To	MPAH Lanes	2030 ADT	LOS E Capacity	V/C Ratio	LOS
1	Almond Avenue	Main Street	Batavia Street	2U	7,300	12,000	0.61	B
2	Almond Avenue	Batavia Street	Glassell Street	2U	6,800	12,000	0.57	A
3	Almond Avenue	Glassell Street	Grand Street	2U	6,900	12,000	0.58	A
4	Almond Avenue	Grand Street	Cambridge Street	2U	3,700	12,000	0.31	A
5	Batavia Street	La Veta Avenue	Almond Avenue	4U	12,500	24,000	0.52	A
6	Batavia Street	Almond Avenue	Chapman Avenue	4U	14,800	24,000	0.62	B
7	Batavia Street	Chapman Avenue	Walnut Avenue	4U	19,100	24,000	0.80	C
8	Batavia Street	Walnut Avenue	Collins Avenue	4U	19,300	24,000	0.80	C
9	Batavia Street	Collins Avenue	Katella Avenue	4U	19,800	24,000	0.83	D
10	Batavia Street	Katella Avenue	Taft Avenue	4U	20,300	24,000	0.85	D
11	Batavia Street	Taft Avenue	Fletcher Avenue	4U	19,800	24,000	0.83	D
12	Batavia Street	Fletcher Avenue	Lincoln Avenue	4U	20,300	24,000	0.85	D
13	Bond Avenue	Prospect Street	Hewes Street	4U	7,100	24,000	0.30	A
14	Cambridge Street	South City Limits	Palmyra Avenue	2U	7,700	12,000	0.64	B
15	Cambridge Street	Palmyra Avenue	Chapman Avenue	2U	8,600	12,000	0.72	C
16	Cambridge Street	Chapman Avenue	Palm Avenue	2U	8,400	12,000	0.70	B
17	Cambridge Street	Palm Avenue	Walnut Avenue	2U	7,700	12,000	0.64	B
18	Cambridge Street	Walnut Avenue	Collins Avenue	2U	8,000	12,000	0.67	B
19	Cambridge Street	Collins Avenue	Katella Avenue	2U	8,400	12,000	0.70	B
20	Cambridge Street	Katella Avenue	Taft Avenue	4U	11,800	24,000	0.49	A
21	Cambridge Street	Taft Avenue	Meats Avenue	4U	7,900	24,000	0.33	A
22	Canyon View Avenue	Chapman Avenue	Outrider Street	4D	6,400	37,500	0.27	A
23	Canyon View Avenue	Outrider Street	Newport Boulevard	4D	6,200	37,500	0.26	A
24	Canyon View Avenue	Newport Boulevard	Jamboree Road	4D	5,700	37,500	0.24	A
25	Chapman Avenue	Haster Street	Lewis Street	5D	32,600	46,000	0.71	C
26	Chapman Avenue	Lewis Street	Manchester Avenue	6D	35,500	56,300	0.63	B
27	Chapman Avenue	Manchester Avenue	The City Drive	6D	39,900	56,300	0.71	C
28	Chapman Avenue	The City Drive	Eckhoff Street	6D	41,800	56,300	0.74	C
29	Chapman Avenue	Eckhoff Street	Main Street	6D	34,300	56,300	0.61	B
30	Chapman Avenue	Main Street	Batavia Street	4D	22,200	37,500	0.59	A
31	Chapman Avenue	Batavia Street	Lemon Street	4D	20,700	37,500	0.55	A
311	Chapman Avenue	Lemon Street	Glassell Street	2U	14,900	12,000	1.24	F
312	Chapman Avenue	Glassell Street	Grand Street	2U	15,300	12,000	1.28	F
32	Chapman Avenue	Grand Street	Cambridge Street	4D	24,400	37,500	0.65	B
33	Chapman Avenue	Cambridge Street	Tustin Street	4D	31,500	37,500	0.84	D
34	Chapman Avenue	Tustin Street	SR-55	6D	50,300	56,300	0.89	D
35	Chapman Avenue	SR-55	Yorba Street	8D	73,700	75,000	0.98	E
36	Chapman Avenue	Yorba Street	Prospect Street	6D	60,500	56,300	1.07	F
37	Chapman Avenue	Prospect Street	Esplanade Street	6D	47,700	56,300	0.85	D
38	Chapman Avenue	Esplanade Street	Hewes Street	6D	43,800	56,300	0.78	C
39	Chapman Avenue	Hewes Street	Crawford Canyon Road	6D	38,300	56,300	0.68	B
40	Chapman Avenue	Crawford Canyon Road	Canyon View Avenue	4D	35,800	37,500	0.95	E
41	Chapman Avenue	Canyon View Avenue	Orange Park Boulevard	4D	27,700	37,500	0.74	C
42	Chapman Avenue	Orange Park Boulevard	Newport Boulevard	4D	24,900	37,500	0.66	B
43	Chapman Avenue	Newport Boulevard	Jamboree Road	6D	44,100	56,300	0.78	C
44	Chapman Avenue	Jamboree Road	City Limit	6D	39,400	56,300	0.70	B
45	Collins Avenue	Eckhoff Street	Main Street	4U	15,200	24,000	0.63	B
46	Collins Avenue	Main Street	Batavia Street	4U	16,100	24,000	0.67	B
47	Collins Avenue	Batavia Street	Glassell Street	4U	20,300	24,000	0.85	D
48	Collins Avenue	Glassell Street	Cambridge Street	4U	17,000	24,000	0.71	C



 Deficient Segment, LOS E
 Deficient Segment, LOS F

Table 4.15 Alternative 2 Future Arterial Daily Level of Service (continued)

ID	Arterial	From	To	MPAH Lanes	2030 ADT	LOS E Capacity	V/C Ratio	LOS
49	Collins Avenue	Cambridge Street	Tustin Street	4U	21,400	24,000	0.89	D
50	Collins Avenue	Tustin Street	Handy Street	4U	14,500	24,000	0.60	A
51	Collins Avenue	Handy Street	Wanda Road	4U	14,000	24,000	0.58	A
52	Collins Avenue	Wanda Road	Prospect Street	4U	18,700	24,000	0.78	C
53	Crawford Canyon Road	Barrett Avenue	Chapman Avenue	4U	16,600	24,000	0.69	B
54	Cannon Street	Chapman Avenue	Creekside Avenue	4U	12,600	24,000	0.53	A
55	Cannon Street	Creekside Avenue	Patria Court	4U	8,400	24,000	0.35	A
56	Cannon Street	Patria Court	Santiago Canyon Road	4U	8,200	24,000	0.34	A
57	Cannon Street	Santiago Canyon Road	Taft Avenue	6D	45,300	56,300	0.80	C
58	Cannon Street	Taft Avenue	Via Escola	6D	32,200	56,300	0.57	A
59	Eckhoff Street	Chapman Avenue	Sycamore Avenue	2U	5,000	12,000	0.42	A
60	Eckhoff Street	Orangewood Avenue	Collins Avenue	4U	20,000	24,000	0.83	D
61	Esplanade Street	Fairhaven Avenue	La Veta Avenue	4U	3,300	24,000	0.14	A
62	Esplanade Street	La Veta Avenue	Chapman Avenue	4U	6,900	24,000	0.29	A
63	Fairhaven Avenue	Glassell Street	Cambridge Street	4U	10,200	24,000	0.43	A
64	Fairhaven Avenue	Cambridge Street	Tustin Street	4U	9,600	24,000	0.40	A
65	Fairhaven Avenue	Tustin Street	Yorba Street	4U	15,600	24,000	0.65	B
66	Fairhaven Avenue	Yorba Street	Prospect Street	4U	14,700	24,000	0.61	B
67	Fairhaven Avenue	Prospect Street	Esplanade Street	4U	13,500	24,000	0.56	A
68	Fairhaven Avenue	Esplanade Street	Hewes Street	4U	12,000	24,000	0.50	A
69	Fletcher Avenue	Batavia Street	Glassell Street	4U	5,600	24,000	0.23	A
70	Garden Grove Boulevard	The City Drive	Lewis Street	4D	22,000	37,500	0.59	A
72	Glassell Street	SR-22	La Veta Avenue	4D	38,500	37,500	1.03	F
73	Glassell Street	La Veta Avenue	Almond Avenue	4D	17,200	37,500	0.46	A
731	Glassell Street	Almond Avenue	Chapman Avenue	2U	10,900	12,000	0.91	E
74	Glassell Street	Chapman Avenue	Palm Avenue	2U	11,500	12,000	0.96	E
75	Glassell Street	Palm Avenue	Collins Avenue	4D	17,200	37,500	0.46	A
76	Glassell Street	Collins Avenue	Katella Avenue	4D	24,000	37,500	0.64	B
77	Glassell Street	Katella Avenue	Orange Olive Road	4D	33,400	37,500	0.89	D
78	Glassell Street	Orange Olive Road	Grove Avenue	4D	19,300	37,500	0.51	A
79	Glassell Street	Grove Avenue	Lincoln Avenue	4D	25,700	37,500	0.69	B
80	Glassell Street	Lincoln Avenue	Santa Ana River	4D	26,800	37,500	0.71	C
811	Grand Street	La Veta Avenue	Palmyra Avenue	2U	9,000	12,000	0.75	C
812	Grand Street	Almond Avenue	Chapman Avenue	2U	10,000	12,000	0.83	D
81	Grand Street	Chapman Avenue	Maple Avenue	2U	6,900	12,000	0.58	A
82	Hewes Street	Fairhaven Avenue	Washington Avenue	4U	6,900	24,000	0.29	A
83	Hewes Street	Washington Avenue	Chapman Avenue	4U	10,300	24,000	0.43	A
84	Hewes Street	Chapman Avenue	Walnut Avenue	4U	11,200	24,000	0.47	A
85	Hewes Street	Walnut Avenue	Santiago Canyon Road	4U	9,200	24,000	0.38	A
86	Jamboree Road	Santiago Canyon Road	Chapman Avenue	6D	28,500	56,300	0.51	A
87	Jamboree Road	Chapman Avenue	Canyon View Avenue	6D	27,900	56,300	0.50	A
88	Jamboree Road	Canyon View Avenue	SR-241	6D	31,500	56,300	0.56	A
89	Katella Avenue*	Struck Avenue	Main Street	6D SS	49,900	59,115	0.84	D
90	Katella Avenue*	Main Street	Batavia Street	6D SS	51,300	59,115	0.87	D
91	Katella Avenue*	Batavia Street	Glassell Street	6D SS	49,800	59,115	0.84	D
92	Katella Avenue*	Glassell Street	Cambridge Street	6D SS	52,100	59,115	0.88	D
93	Katella Avenue*	Cambridge Street	Tustin Street	6D SS	46,200	59,115	0.78	C
94	Katella Avenue*	Tustin Street	SR-55	7D SS	50,000	68,250	0.73	C
95	Katella Avenue	SR-55	Handy Street	6D	47,000	56,300	0.83	D
96	Katella Avenue	Handy Street	Wanda Road	6D	43,200	56,300	0.77	C
97	Katella Avenue	Wanda Road	Center Drive	6D	37,800	56,300	0.67	B

Deficient Segment, LOS E

Deficient Segment, LOS F

Table 4.15 Alternative 2 Future Arterial Daily Level of Service (continued)

ID	Arterial	From	To	MPAH Lanes	2030 ADT	LOS E Capacity	V/C Ratio	LOS
98	Katella Avenue	Center Drive	Santiago Canyon Road	6D	35,300	56,300	0.63	B
99	La Veta Avenue	Flower Street	Devon Street	6D	32,900	56,300	0.58	A
100	La Veta Avenue	Devon Street	Main Street	6D	29,400	56,300	0.52	A
101	La Veta Avenue	Main Street	Batavia Street	6D	38,100	56,300	0.68	B
102	La Veta Avenue	Batavia Street	Glassell Street	4D	21,600	37,500	0.58	A
103	La Veta Avenue	Glassell Street	Shaffer Street	4U	11,700	24,000	0.49	A
104	La Veta Avenue	Shaffer Street	Cambridge Street	4U	8,900	24,000	0.37	A
105	La Veta Avenue	Tustin Street	Yorba Street	4U	10,500	24,000	0.44	A
106	La Veta Avenue	Yorba Street	Prospect Street	4U	11,200	24,000	0.47	A
107	La Veta Avenue	Prospect Street	Esplanade Street	4U	8,100	24,000	0.34	A
1081	Lemon Street	La Veta Avenue	Palmyra Avenue	2U	8,000	12,000	0.67	B
108	Lemon Street	Chapman Avenue	Maple Avenue	2U	8,400	12,000	0.70	B
1082	Lemon Street	Maple Avenue	Walnut Avenue	2U	2,000	12,000	0.17	A
109	Lewis Street	Garden Grove Avenue	Metropolitan Drive	4U	16,800	24,000	0.70	B
110	Lewis Street	Metropolitan Drive	Chapman Avenue	4U	18,300	24,000	0.76	C
111	Lewis Street	Chapman Avenue	Sirius Avenue	4U	11,700	24,000	0.49	A
112	Lincoln Avenue	West City Limit	Batavia Street	6D	35,900	56,300	0.64	B
113	Lincoln Avenue	Batavia Street	Glassell Street	6D	29,900	56,300	0.53	A
114	Lincoln Avenue	Glassell Street	Orange Olive Road	6D	29,700	56,300	0.53	A
115	Lincoln Avenue	Orange Olive Road	Tustin Street	6D	41,500	56,300	0.74	C
116	Lincoln Avenue	Tustin Street	Santiago Boulevard	6D	45,300	56,300	0.80	C
117	Main Street	Town & Country Road	La Veta Avenue	6D	54,600	56,300	0.97	E
118	Main Street	La Veta Avenue	Chapman Avenue	6D	46,400	56,300	0.82	D
119	Main Street	Chapman Avenue	Sycamore Avenue	6D	35,600	56,300	0.63	B
120	Main Street	Sycamore Avenue	Collins Avenue	6D	36,700	56,300	0.65	B
121	Main Street	Collins Avenue	Struck Avenue	4D	32,900	37,500	0.88	D
122	Main Street	Struck Avenue	Katella Avenue	4D	33,800	37,500	0.90	D
123	Main Street	Katella Avenue	Taft Avenue	4D	24,600	37,500	0.66	B
124	Meats Avenue	Glassell Street	Orange Olive Road	4U	10,800	24,000	0.45	A
125	Meats Avenue	Orange Olive Road	Cambridge Street	4U	15,100	24,000	0.63	B
126	Meats Avenue	Cambridge Street	Tustin Street	4U	18,400	24,000	0.77	C
127	Meats Avenue	Tustin Street	SR-55 SB Ramps	4U	51,800	24,000	2.16	F
1271	Meats Avenue	SR-55 SB Ramps	SR-55 NB Ramps	4U	43,300	24,000	1.80	F
1272	Meats Avenue	SR-55 NB Ramps	Santiago Boulevard	4U	29,600	24,000	1.23	F
128	Meats Avenue	Santiago Boulevard	Featherhill Road	4U	15,100	24,000	0.63	B
129	Meats Avenue	Featherhill Road	Via Escola	4U	7,900	24,000	0.33	A
130	Metropolitan Drive	Lewis Street	SR-22 Westbound Ramps	4U	9,200	24,000	0.38	A
131	Metropolitan Drive	SR-22 Westbound Ramps	The City Drive	4U	18,800	24,000	0.78	C
1311	Metropolitan Drive	The City Drive	Chapman Avenue	4U	20,300	24,000	0.85	D
132	Manchester Avenue	Chapman Avenue	Compton Avenue	4D	11,000	37,500	0.29	A
133	Newport Boulevard	South City Limits	Canyon View Avenue	4D	9,000	37,500	0.24	A
134	Newport Boulevard	Canyon View Avenue	Chapman Avenue	4D	7,800	37,500	0.21	A
135	Newport Boulevard	Chapman Avenue	Santiago Canyon Road	4D	14,100	37,500	0.38	A
136	Nohl Ranch Road	Santiago Boulevard	East City Limit	4U	12,100	24,000	0.50	A
137	Orange Olive Road	Glassell Street	Meats Avenue	4U	17,600	24,000	0.73	C
138	Orange Olive Road	Meats Avenue	Lincoln Avenue	4U	15,900	24,000	0.66	B
139	Orange Olive Road	Lincoln Avenue	Santa Ana Canyon Road	4U	13,700	24,000	0.57	A
140	Orange Olive Road	Santa Ana Canyon Road	Riverdale Avenue	4U	10,000	24,000	0.42	A
141	Orangewood Avenue	Eckhoff Street	Main Street	6D	35,800	56,300	0.64	B
142	Palm Avenue	Main Street	Batavia Street	2U	5,300	12,000	0.44	A
143	Palm Avenue	Batavia Street	Cypress Street	2U	10,100	12,000	0.84	D
144	Palm Avenue	Cypress Street	Glassell Street	2U	8,700	12,000	0.73	C




 Deficient Segment, LOS E
 Deficient Segment, LOS F

Table 4.15 Alternative 2 Future Arterial Daily Level of Service (continued)

ID	Arterial	From	To	MPAH Lanes	2030 ADT	LOS E Capacity	V/C Ratio	LOS
145	Palm Avenue	Glassell Street	Cambridge Street	2U	6,100	12,000	0.51	A
146	Palm Avenue	Cambridge Street	Tustin Street	2U	8,200	12,000	0.68	B
147	Palmyra Avenue	Batavia Street	Glassell Street	2U	3,500	12,000	0.29	A
148	Palmyra Avenue	Glassell Street	Cambridge Street	2U	2,700	12,000	0.23	A
149	Palmyra Avenue	Cambridge Street	Tustin Street	2U	5,500	12,000	0.46	A
150	Parker Street	La Veta Avenue	Town & Country Road	4U	20,200	24,000	0.84	D
151	Prospect Street	Fairhaven Avenue	La Veta Avenue	4U	9,700	24,000	0.40	A
152	Prospect Street	La Veta Avenue	Chapman Avenue	4U	12,400	24,000	0.52	A
153	Prospect Street	Chapman Avenue	Spring Street	4U	21,700	24,000	0.90	D
154	Prospect Street	Spring Street	Walnut Avenue	4U	21,300	24,000	0.89	D
155	Prospect Street	Walnut Avenue	Bond Avenue	4U	16,500	24,000	0.69	B
156	Rampart Street	Chapman Avenue	Orangewood Avenue	4U	18,900	24,000	0.79	C
157	Rancho Santiago Boulevard	Chapman Avenue	Walnut Avenue	2U	8,100	12,000	0.68	B
158	Rancho Santiago Boulevard	Hewes Street	Bond Avenue	2U	3,100	12,000	0.26	A
159	Riverdale Avenue	Glassell Street	Orange Olive Road	4U	6,000	24,000	0.25	A
160	Riverdale Avenue	Orange Olive Road	Tustin Street	4U	8,200	24,000	0.34	A
161	Santa Ana Canyon Road	Lincoln Avenue	Nohl Ranch Road	6D	15,700	56,300	0.28	A
162	Santiago Boulevard	Wanda Road	Taft Avenue	4U	15,300	24,000	0.64	B
163	Santiago Boulevard	Taft Avenue	Villa Real Drive	4U	12,300	24,000	0.51	A
164	Santiago Boulevard	Villa Real Drive	Lincoln Avenue	4U	13,900	24,000	0.58	A
165	Santiago Canyon Road	Hewes Street	Cannon Street	6D	37,000	56,300	0.66	B
166	Santiago Canyon Road	Cannon Street	Orange Park Boulevard	6D	44,500	56,300	0.79	C
167	Santiago Canyon Road	Orange Park Boulevard	Meads Avenue	6D	40,500	56,300	0.72	C
168	Santiago Canyon Road	Meads Avenue	Newport Boulevard	6D	38,800	56,300	0.69	B
169	Santiago Canyon Road	Newport Boulevard	Jamboree Road	6D	28,200	56,300	0.50	A
170	Santiago Canyon Road	Jamboree Road	Street D	6D	39,400	56,300	0.70	B
214	Santiago Canyon Road	Street D	SR-241	6D	27,000	56,300	0.48	A
213	Santiago Canyon Road	East of SR-241		4D	24,000	37,500	0.64	B
171	Serrano Avenue	Cannon Street	Orange Park Boulevard	4D	22,900	37,500	0.61	B
172	Serrano Avenue	Orange Park Boulevard	Apache Creek	4D	19,800	37,500	0.53	A
173	Serrano Avenue	Apache Creek	East City Limit	4D	12,000	37,500	0.32	A
1741	Shaffer Street	La Veta Avenue	Palmyra Avenue	2U	2,000	12,000	0.17	A
174	Shaffer Street	Chapman Avenue	Maple Avenue	2U	5,400	12,000	0.45	A
1742	Shaffer Street	Palm Avenue	Walnut Avenue	2U	7,000	12,000	0.58	A
1743	Shaffer Street	Walnut Avenue	Collins Avenue	2U	10,600	12,000	0.88	D
1744	Shaffer Street	Collins Avenue	Katella Avenue	2U	7,000	12,000	0.58	A
175	Spring Street	Prospect Street	Olympia Way	4U	13,500	24,000	0.56	A
176	Struck Avenue	Katella Avenue	Main Street	2U	9,400	12,000	0.78	C
177	Taft Avenue	West City Limit	Main Street	6D	54,200	56,300	0.96	E
178	Taft Avenue	Main Street	Batavia Street	6D	35,400	56,300	0.63	B
179	Taft Avenue	Batavia Street	Glassell Street	6D	32,500	56,300	0.58	A
180	Taft Avenue	Glassell Street	Cambridge Street	6D	23,200	56,300	0.41	A
181	Taft Avenue	Cambridge Street	Tustin Street	6D	19,600	56,300	0.35	A
182	Taft Avenue	Tustin Street	Santiago Boulevard	4U	13,300	24,000	0.55	A
183	Taft Avenue	Cannon Street	Yurok Street	2U	8,000	12,000	0.67	B
184	The City Drive	Garden Grove Boulevard	SR-22	6D	35,800	56,300	0.64	B
185	The City Drive	SR-22	Metropolitan	6D	45,900	56,300	0.82	D
186	The City Drive	Metropolitan	Chapman Avenue	8D	35,100	75,000	0.47	A
187	The City Drive	Chapman Avenue	North City Limits	8D	34,200	75,000	0.46	A
188	Town & Country Road	Main Street	SR-22	4D	27,500	37,500	0.73	C
189	Town & Country Road	SR-22	Parker Street	4D	15,300	37,500	0.41	A
190	Tustin Street	Fairhaven Avenue	La Veta Avenue	6D	36,800	56,300	0.65	B
191	Tustin Street	La Veta Avenue	Palmyra Avenue	6D	29,400	56,300	0.52	A


 Deficient Segment, LOS E

 Deficient Segment, LOS F

Table 4.15 Alternative 2 Future Arterial Daily Level of Service (continued)

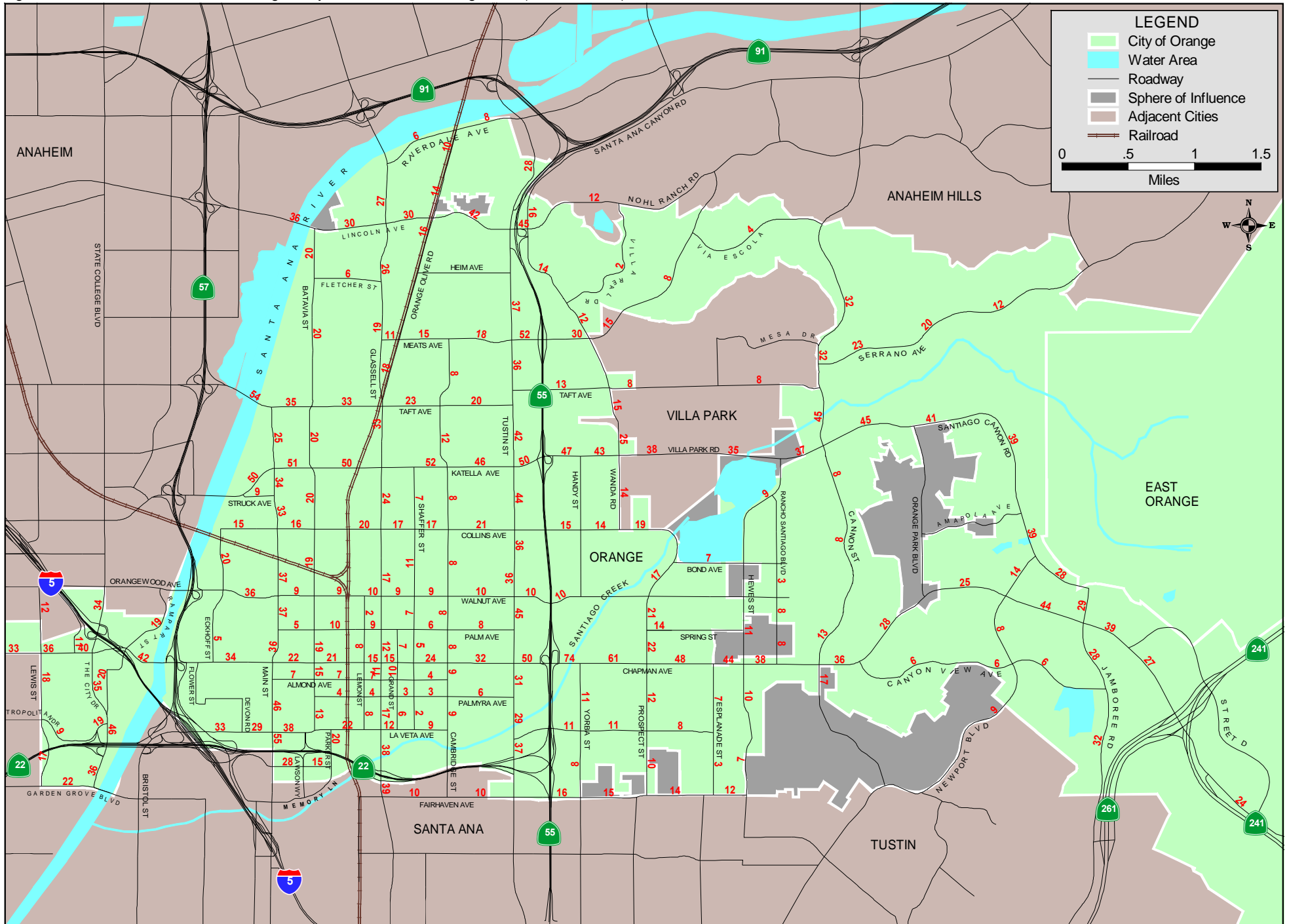
ID	Arterial	From	To	MPAH Lanes	2030 ADT	LOS E Capacity	V/C Ratio	LOS
192	Tustin Street	Palmyra Avenue	Chapman Avenue	6D	30,800	56,300	0.55	A
193	Tustin Street	Chapman Avenue	Walnut Avenue	6D	44,600	56,300	0.79	C
194	Tustin Street	Walnut Avenue	Mayfair Avenue	6D	36,400	56,300	0.65	B
195	Tustin Street	Mayfair Avenue	Collins Avenue	6D	35,700	56,300	0.63	B
196	Tustin Street	Collins Avenue	Katella Avenue	6D	43,700	56,300	0.78	C
197	Tustin Street	Katella Avenue	Taft Avenue	6D	42,400	56,300	0.75	C
198	Tustin Street	Taft Avenue	Meats Avenue	6D	36,000	56,300	0.64	B
199	Tustin Street	Meats Avenue	Lincoln Avenue	6D	37,000	56,300	0.66	B
200	Tustin Street	Lincoln Avenue	Santa Ana Canyon Road	6D	27,700	56,300	0.49	A
201	Via Escola	Meats Avenue	Cannon Street	4U	4,100	24,000	0.17	A
202	Villa Real Drive	Santiago Boulevard	Chapel Hill	2U	1,700	12,000	0.14	A
203	Walnut Avenue	Main Street	Batavia Street	2U	8,700	12,000	0.73	C
204	Walnut Avenue	Batavia Street	Cypress Street	2U	9,100	12,000	0.76	C
205	Walnut Avenue	Cypress Street	Glassell Street	2U	9,700	12,000	0.81	D
206	Walnut Avenue	Glassell Street	Cambridge Street	2U	8,500	12,000	0.71	C
207	Walnut Avenue	Cambridge Street	Tustin Street	2U	9,500	12,000	0.79	C
208	Walnut Avenue	Tustin Street	Handy Street	2U	10,400	12,000	0.87	D
209	Wanda Road	Collins Avenue	Katella Avenue	4U	14,100	24,000	0.59	A
210	Wanda Road	Katella Avenue	Santiago Boulevard (VP)	4U	24,800	24,000	1.03	F
211	Yorba Street	Fairhaven Avenue	La Veta Avenue	4U	7,700	24,000	0.32	A
212	Yorba Street	La Veta Avenue	Chapman Avenue	4U	11,200	24,000	0.47	A

 Deficient Segment, LOS E

 Deficient Segment, LOS F

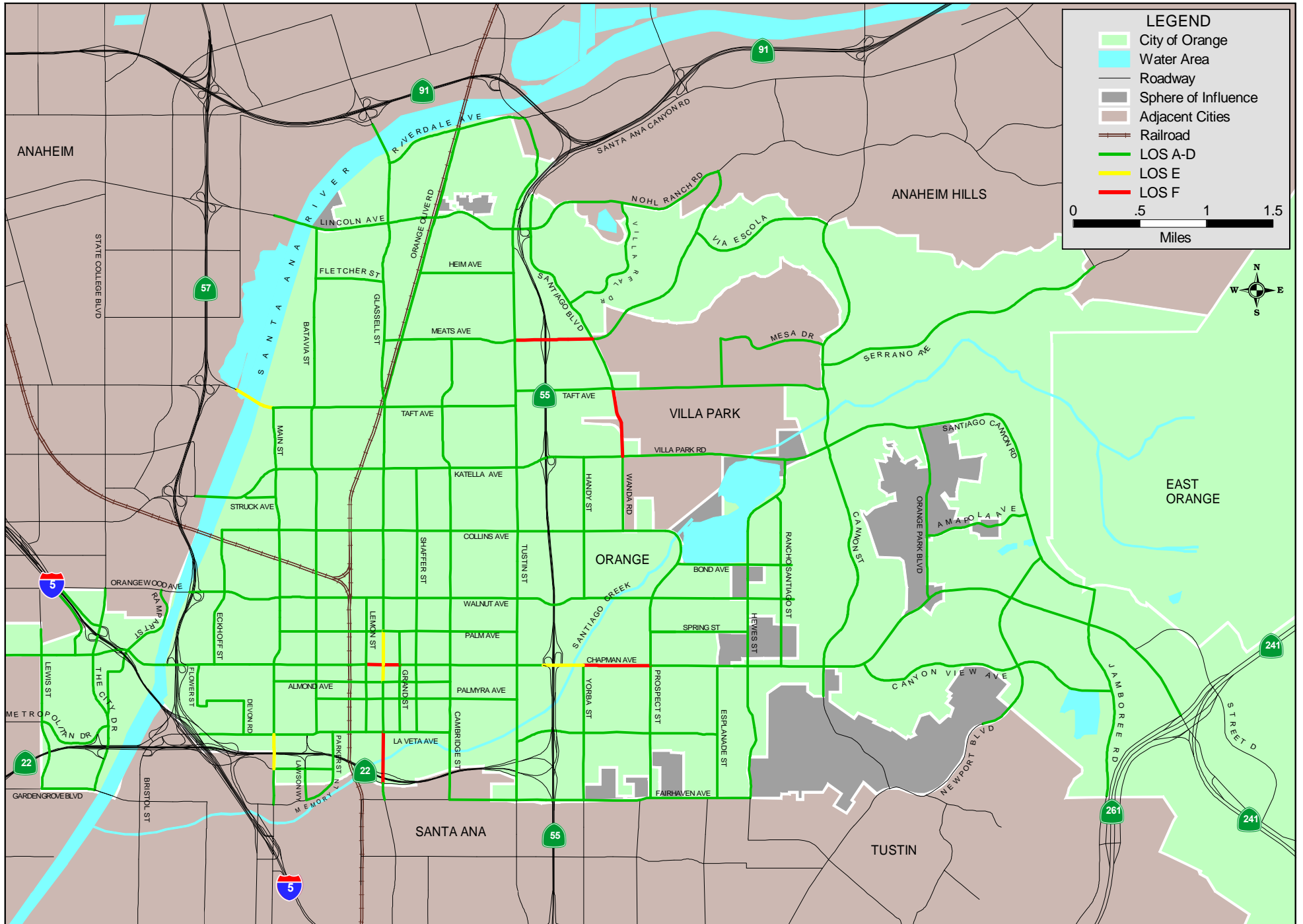
Note: * Katella Avenue capacity has been increased by 5% due to classification as a Smart Street.
Source: Orange Traffic Analysis Model (OTAM 2004)

Figure 4.11 - Alternative 2 Future Average Daily Traffic on Arterial Segments (in Thousands)



Source File: Fig4-11-y30-Alt2-Art1-ADT-052709.map

Figure 4.12 - Alternative 2 Future Arterial Daily Level of Service



4.12 Alternative 2 Future Intersection Peak Hour Conditions

Table 4.16 presents forecast year 2030 ICU and LOS results for turning movement volumes at the critical intersections during the morning (A.M.) and evening (P.M.) peak hours for Alternative 2. The intersection geometrics are consistent with the Project Scenario assumptions presented in **Appendix D**. Consistent with the arterial segment volume forecasts, turning movements for the intersections were post-processed. **Figure 4.13** illustrates peak hour levels of service.

Alternative 2 results in ten study intersections forecast to operate at an unacceptable LOS in either the A.M. or the P.M. peak hour:

- Cannon Street at Serrano Avenue (LOS E in A.M. peak hour)
- Southbound SR-55 Ramps at Katella Avenue (LOS E in A.M. peak hour)
- Main Street at La Veta Avenue (LOS E in P.M. peak hour)
- Santiago Boulevard at Meats Avenue (LOS E in A.M. peak hour)
- Wanda Road at Villa Park Road (LOS F in A.M. peak hour, LOS E in P.M. peak hour)
- Tustin Street at Lincoln Avenue (LOS E in P.M. peak hour)
- Main Street at Struck Avenue (LOS F in A.M. peak hour)
- Main Street at Collins Avenue (LOS E in A.M. peak hour, LOS F in P.M. peak hour)
- Southbound SR-57 Ramps at Orangewood Avenue (LOS E in both A.M. and P.M. peak hour)
- Southbound SR-57 Ramps at Chapman Avenue (LOS E in P.M. peak hour)

The addition of the Meats Avenue interchange with SR-55 reduces volumes through the intersections of Santiago Boulevard at Nohl Ranch Road and Tustin Street at Lincoln Avenue, although Tustin Street at Lincoln Avenue continues to experience an unacceptable level of service. The intersection of Santiago Boulevard at Meats Avenue deteriorates to unacceptable A.M. peak hour performance. Intersection improvements would be required to ensure efficient operation of this intersection with the addition of an interchange at Meats Avenue. It should be noted that this intersection operates at an unacceptable LOS F under existing conditions for the A.M. peak hour and buildout geometrics improve the level of service at this intersection. **Appendix E** presents future Alternative 2 ICU worksheets for each intersection.

4.13 Alternative 2 Future Mitigation

Specific arterial mitigation measures for Alternative 2 are generally consistent with those developed for the Project (refer to **Section 4.7**). **Table 4.17** presents Alternative 2 arterial mitigation. While fewer segments operate at deficient levels of service under Alternative 2 conditions than Project conditions, the segments that fail under Alternative 2 conditions also fail under Project conditions.

Recommended mitigation measures for deficient Alternative 2 intersections are presented in **Table 4.18**. Six intersections are forecast to operate at a deficient level of service under Future Alternative 2 conditions. Generally, intersection mitigation measures proposed include the provision of additional turning lane capacity. The recommended mitigation measures are generally consistent with those developed under Project conditions and can be referenced in **Section 4.7**. ICU worksheets for the recommended mitigation measures are included in **Appendix H**. Under Alternative 2 conditions, improvements are not required from ultimate configurations at the Santiago Boulevard @ Meats Avenue interchange, even with implementation of the Meats Avenue/SR-55 interchange.

The ramp intersections of Meats Avenue with SR-55 were evaluated under peak hour conditions to identify potential deficiencies associated with the proposed interchange. In order to obtain acceptable peak hour operations at the southbound SR-55 intersection with Meats Avenue, the southbound off-ramp should include an exclusive left turn lane, an exclusive right turn lane, and a shared left turn-right turn lane. Although the intersection operates at LOS C during the peak hours, the westbound left turn volume of approximately 500 vehicles during the A.M. peak hour suggests a second westbound left turn lane might be necessary to ensure there are no queuing issues with the west turn traffic onto southbound SR-

55 on the Meats Avenue overcrossing bridge. Both intersections assume 2 through lanes in each direction and an exclusive right turn lane to access the SR-55 ramps. For the northbound SR-55 intersection with Meats Avenue, dual northbound left turn lanes are required to satisfy forecast demands. In addition, dual eastbound left turn lanes are required on the overcrossing bridge to support the high P.M. peak hour volumes accessing SR-55 northbound.

Table 4.16 Alternative 2 Future Intersection Level of Service

ID	Intersection Location	A.M. Peak Hour		P.M. Peak Hour	
		ICU	LOS	ICU	LOS
1	Batavia Street @ Collins Avenue	0.68	B	0.88	D
2	Batavia Street @ Katella Avenue	0.65	B	0.80	C
3	Batavia Street @ Lincoln Avenue	0.69	B	0.68	B
4	Batavia Street @ Taft Avenue	0.80	C	0.72	C
5	Batavia Street @ Walnut Avenue	0.70	B	0.64	B
6	Cambridge Street @ Katella Avenue	0.68	B	0.82	D
7	Cannon Street @ Santiago Canyon Road	0.91	E	0.90	D
8	Cannon Street @ Serrano Avenue	0.97	E	0.87	D
9	Cannon Street/ Crawford Canyon @ Chapman Avenue	0.70	B	0.65	B
10	Yorba Street @ Chapman Avenue	0.73	C	0.77	C
11	Canyon View Avenue @ Chapman Avenue	0.56	A	0.41	A
12	Jamboree Road @ Chapman Avenue	0.88	D	0.90	D
13	Northbound SR-55 Ramps @ Chapman Avenue	0.72	C	0.67	B
14	Southbound SR-55 Ramps @ Chapman Avenue	0.58	A	0.62	B
15	Lewis Street @ Chapman Avenue	0.62	B	0.67	B
16	The City Drive @ Chapman Avenue	0.73	C	0.83	D
17	The City Drive @ Eastbound SR-22 Ramps	0.76	C	0.83	D
18	The City Drive @ Westbound SR-22 Ramps	0.31	A	0.46	A
19	Glassell Street @ Collins Avenue	0.75	C	0.70	B
20	Glassell Street @ Katella Avenue	0.65	B	0.84	D
21	Glassell Street @ La Veta Avenue	0.90	D	0.79	C
22	Glassell Street @ Lincoln Avenue	0.69	B	0.84	D
23	Glassell Street @ Taft Avenue	0.77	C	0.75	C
24	Glassell Street @ Walnut Avenue	0.77	C	0.77	C
25	Hewes Street @ Chapman Avenue	0.73	C	0.64	B
26	Northbound SR-55 Ramps @ Katella Avenue	0.76	C	0.84	D
27	Southbound SR-55 Ramps @ Katella Avenue	0.98	E	0.83	D
28	Main Street @ Chapman Avenue	0.79	C	0.90	D
29	Main Street @ Katella Avenue	0.73	C	0.86	D
30	Main Street @ La Veta Avenue	0.79	C	0.92	E
31	Main Street @ Orangewood Avenue	0.64	B	0.58	A
32	Main Street @ Taft Avenue	0.68	B	0.80	C
33	Main Street @ Town & Country Road	0.51	A	0.84	D
34	Newport Boulevard @ Chapman Avenue	0.74	C	0.85	D
35	Santiago Boulevard @ Nohl Ranch Road	0.60	A	0.63	B
36	Eckhoff Street @ Orangewood Avenue	0.58	A	0.63	B
37	State College Boulevard @ Orangewood Avenue	0.69	B	0.67	B
38	Prospect Street @ Chapman Avenue	0.82	D	0.80	C
39	Prospect Street @ Walnut Avenue	0.74	C	0.71	C
40	Santiago Boulevard @ Meats Avenue	0.88	D	0.76	C
41	Wanda Road @ Villa Park Road	1.17	F	0.91	E
42	Tustin Street @ Chapman Avenue	0.73	C	0.88	D
43	Tustin Street @ Collins Avenue	0.55	A	0.60	A
44	Tustin Street @ Fairhaven Avenue	0.84	D	0.74	C
45	Tustin Street @ Heim Avenue	0.57	A	0.69	B
46	Tustin Street @ Katella Avenue	0.64	B	0.79	C
47	Tustin Street @ La Veta Avenue	0.69	B	0.56	A
48	Tustin Street @ Lincoln Avenue	0.87	D	0.95	E
49	Tustin Street @ Meats Avenue	0.54	A	0.78	C
50	Tustin Street @ Taft Avenue (North)	0.61	B	0.72	C
51	Tustin Street @ Taft Avenue (South)	0.68	B	0.77	C
52	Tustin Street @ Walnut Avenue	0.64	B	0.71	C

Figure 4.13 - Alternative 2 Intersection Level of Service

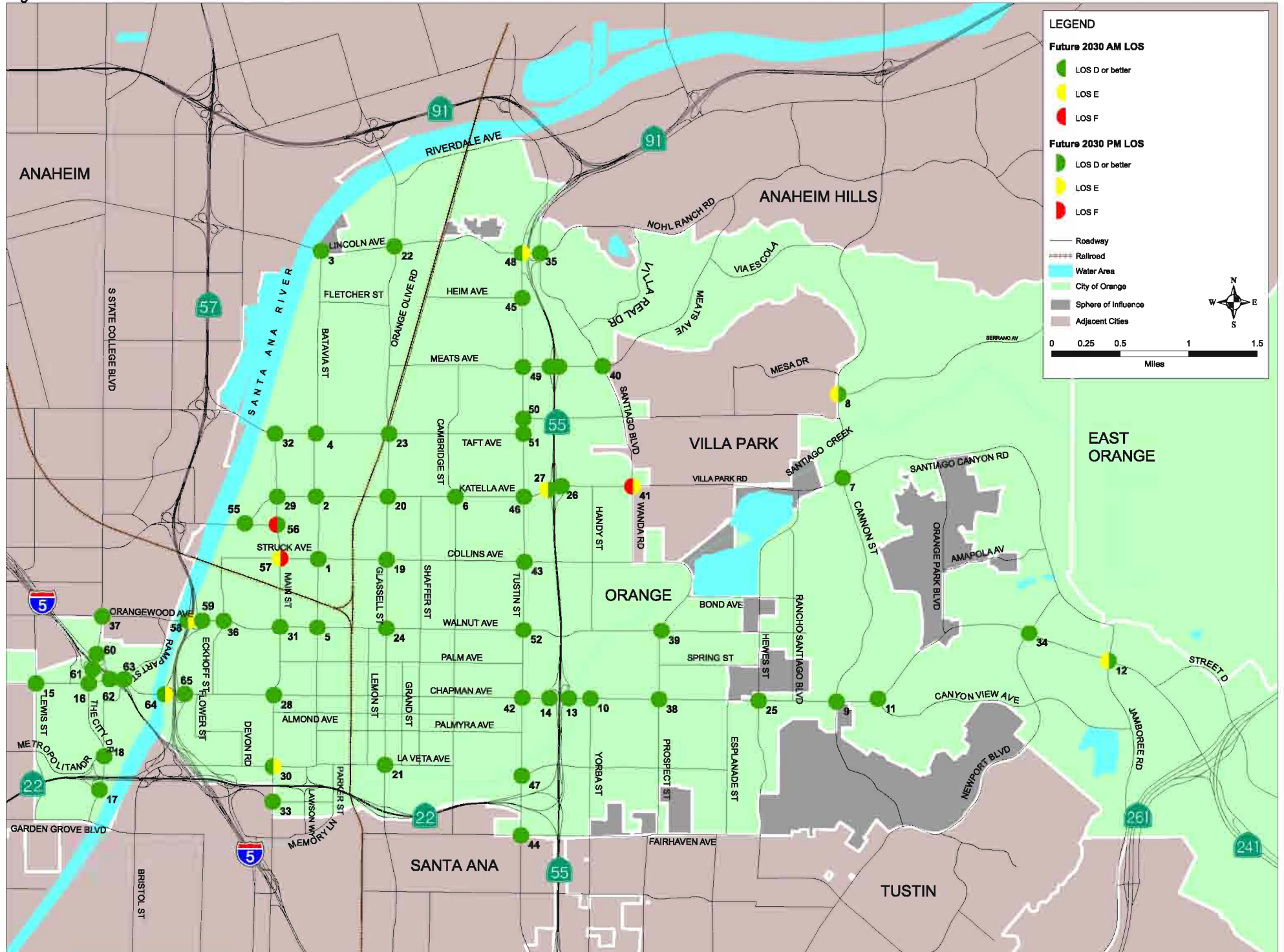


Table 4.16 Alternative 2 Future Intersection Level of Service (continued)

ID	Intersection Location	A.M. Peak Hour		P.M. Peak Hour	
		ICU	LOS	ICU	LOS
53	Southbound SR-55 Ramps @ Meats Avenue	0.73	C	0.70	B
54	Northbound SR-55 Ramps @ Meats Avenue	0.56	A	0.73	C
55	Struck Avenue @ Katella Avenue	0.35	A	0.45	A
56	Main Street @ Struck Avenue	1.16	F	0.81	D
57	Main Street @ Collins Avenue	0.93	E	1.14	F
58	Southbound SR-57 Ramps @ Orangewood Avenue	0.90	D	0.94	E
59	Northbound SR-57 Ramps @ Orangewood Avenue	0.54	A	0.44	A
60	State College Boulevard @ NB I-5 Ramps/Anaheim Way	0.49	A	0.41	A
61	State College Boulevard @ Southbound I-5 Ramps	0.54	A	0.34	A
62	Southbound I-5 Ramps @ Chapman Avenue	0.49	A	0.54	A
63	Rampart Street @ Chapman Ave./Northbound I-5 Ramps	0.81	D	0.85	D
64	Southbound SR-57 Ramps @ Chapman Avenue	0.74	C	0.91	E
65	Northbound SR-57 Ramps @ Chapman Avenue	0.45	A	0.53	A

 Deficient Intersection, LOS E
 Deficient Intersection, LOS F
 Source: Orange Traffic Analysis Model (OTAM 2004)

Table 4.17 Alternative 2 Future Arterial Mitigation Recommendations

ID	Arterial	From	To	MPAH Lanes	2030 ADT	LOS E Capacity	V/C Ratio	LOS	Mitigation Measure
311	Chapman Avenue	Lemon Street	Glassell Street	2U	14,900	12,000	1.24	F	No mitigation recommended through Historic Orange Plaza, segment will retain 4-lane divided classification on MPAH
312	Chapman Avenue	Glassell Street	Grand Street	2U	15,300	12,000	1.28	F	
35	Chapman Avenue	SR-55	Yorba Street	8D	73,500	75,000	0.98	E	Monitor segment and evaluate intersections along Chapman Avenue between Tustin Street and Prospect Street to maximize throughput.
36	Chapman Avenue	Yorba Street	Prospect Street	6D	60,200	56,300	1.07	F	Widen to 8-lane facility
40	Chapman Avenue	Crawford Canyon Road	Canyon View Avenue	4D	35,800	37,500	0.95	E	Widen to 6-lane facility
72	Glassell Street	SR-22	La Veta Avenue	4D	38,300	37,500	1.02	F	No mitigation recommended
74	Glassell Street	Chapman Avenue	Palm Avenue	2U	11,200	12,000	0.93	E	No mitigation recommended through Historic Orange Plaza, segment will retain 4-lane divided classification on MPAH
77	Glassell Street	Katella Avenue	Orange Olive Road	4D	34,200	37,500	0.91	E	Monitor upstream and downstream intersections to evaluate need for widening segment.
117	Main Street	Town & Country Road	La Veta Avenue	6D	54,700	56,300	0.97	E	
127	Meats Avenue	Tustin Street	SR-55 SB Ramps	4U	51,800	24,000	2.16	F	Improve to 6-lane divided facility
1271	Meats Avenue	SR-55 SB Ramps	SR-55 NB Ramps	4U	43,300	24,000	1.80	F	Improve to 6-lane divided facility
1272	Meats Avenue	SR-55 NB Ramps	Santiago Boulevard	4U	29,600	24,000	1.23	F	Improve to 4-lane divided facility
177	Taft Avenue	West City Limit	Main Street	6D	54,600	56,300	0.97	E	Monitor upstream and downstream intersections to evaluate need for widening segment.
210	Wanda Road	Katella Avenue	Santiago Boulevard	4U	25,800	24,000	1.08	F	Improve to 4-lane divided facility

 Deficient Segment, LOS E
 Deficient Segment, LOS F

Arterial Segment Level of Service With Mitigation Measure Implementation									
311	Chapman Avenue	Lemon Street	Glassell Street	2U	14,900	12,000	1.24	F	
312	Chapman Avenue	Glassell Street	Grand Street	2U	15,300	12,000	1.28	F	
35	Chapman Avenue	SR-55	Yorba Street	8D	73,500	75,000	0.98	E	
36	Chapman Avenue	Yorba Street	Prospect Street	8D	60,200	75,000	0.80	D	
40	Chapman Avenue	Crawford Canyon Road	Canyon View Avenue	4D	35,800	37,500	0.64	B	
72	Glassell Street	SR-22	La Veta Avenue	6D	38,300	56,300	0.68	B	
74	Glassell Street	Chapman Avenue	Palm Avenue	2U	11,200	12,000	0.93	E	
77	Glassell Street	Katella Avenue	Orange Olive Road	4D	34,200	37,500	0.91	E	
117	Main Street	Town & Country Road	La Veta Avenue	6D	54,700	56,300	0.97	E	
127	Meats Avenue	Tustin Street	SR-55 SB Ramps	6D	51,800	56,300	0.92	E	
1271	Meats Avenue	SR-55 SB Ramps	SR-55 NB Ramps	6D	43,300	56,300	0.77	C	

Table 4.17 Alternative 2 Future Arterial Mitigation Recommendations (continued)

Arterial Segment Level of Service With Mitigation Measure Implementation								
1272	Meats Avenue	SR-55 NB Ramps	Santiago Boulevard	4D	29,600	37,500	0.79	C
177	Taft Avenue	West City Limit	Main Street	6D	54,600	56,300	0.97	E
210	Wanda Road	Katella Avenue	Santiago Boulevard	4D	25,800	37,500	0.69	B

Table 4.18 Alternative 2 Future Intersection Mitigation Recommendations

ID	Intersection Location	A.M. Peak Hour		P.M. Peak Hour		Mitigation Measure
		ICU	LOS	ICU	LOS	
7	Cannon Street @ Santiago Canyon Road	0.91	E	0.90	D	Apply ATMS
8	Cannon Street @ Serrano Avenue	0.97	E	0.87	D	Restripe Westbound Approach to 2 Left Turn Lanes and 1 shared Left-Right Lane
27	Southbound SR-55 Ramps @ Katella Avenue	0.98	E	0.83	D	Add 2 nd Westbound Left Turn Lane
30	Main Street @ La Veta Avenue	0.79	C	0.92	E	Apply ATMS applications to enhance capacity
41	Wanda Road @ Villa Park Road	1.17	F	0.91	E	Add 3 rd Westbound Through Lane, Re-stripe Southbound Approach to 1.5 Through, 1.5 Right, Add 2 nd Southbound Left Turn Lane
48	Tustin Street @ Lincoln Avenue	0.87	D	0.95	E	Add 3 rd Eastbound and Westbound Through Lane
56	Main Street @ Struck Avenue	1.16	F	0.81	D	Add 2 nd Eastbound and 2 nd Westbound Through
57	Main Street @ Collins Avenue	0.93	E	1.14	F	Add one Northbound and Eastbound Right Turn Lane, Restripe Westbound approach to 2 Left Turn Lanes and 1 Though Lane
58	Southbound SR-57 Ramps @ Orangewood Avenue	0.90	D	0.94	E	Convert Eastbound Right Turn Lane to 3 rd Through Lane, Add 2 nd Westbound Left Turn Lane
64	Southbound SR-57 Ramps @ Chapman Avenue	0.74	C	0.91	E	Convert Northbound and Southbound Right Turn Lane to Through Lane, Convert Northbound and Southbound shared Left and Through lane to Left-Turn only lane; Alternate mitigation – Apply ATMS

Deficient Intersection, LOS E
 Deficient Intersection, LOS F

Intersection Level of Service with Mitigation Measure Implementation					
ID	Intersection Location	A.M. Peak Hour		P.M. Peak Hour	
		ICU	LOS	ICU	LOS
7	Cannon Street @ Santiago Canyon Road	0.86	D	0.85	D
8	Cannon Street @ Serrano Avenue	0.86	D	0.85	D
27	Southbound SR-55 Ramps @ Katella Avenue	0.73	C	0.75	C
30	Main Street @ La Veta Avenue	0.75	C	0.87	D
41	Wanda Road @ Villa Park Road	0.80	D	0.83	D
48	Tustin Street @ Lincoln Avenue	0.83	D	0.88	D
56	Main Street @ Struck Avenue	0.88	D	0.71	C
57	Main Street @ Collins Avenue	0.87	D	0.86	D
58	Southbound SR-57 Ramps @ Orangewood Avenue	0.69	B	0.71	C
64	Southbound SR-57 Ramps @ Chapman Avenue	0.80	C	0.88	D
		0.69	B	0.86	D

4.14 Future Traffic Analysis Summary

Table 4.19 presents a comparison of the four alternative roadway segment performance and **Table 4.20** presents the intersection performance comparison prior to implementation of mitigation. **Table 4.19** is structured so that the alternatives with similar circulation system assumptions are grouped together, i.e. the Project, Alternative 1 and Alternative 2 are grouped since they assume buildout of the Proposed MPAH. The tables provide a visual comparative summary between each of the four alternatives prior to applying arterial mitigation measures. The assumed future intersection geometrics, including pocket lengths, prior to implementation of mitigation measures for the key City intersections are included in **Appendix I**.

Table 4.19 Alternative Future Arterial Daily Level of Service Summary

ID	Arterial	From	To	No Project			Project			Alternative 1		Alt 2	
				Lanes	ADT	LOS	Lanes	ADT	LOS	ADT	LOS	ADT	LOS
1	Almond Avenue	Main Street	Batavia Street	2U	5,700	A	2U	7,200	A	7,300	B	7,300	A
2	Almond Avenue	Batavia Street	Glassell Street	2U	5,500	A	2U	5,500	A	5,500	A	6,800	A
3	Almond Avenue	Glassell Street	Grand Street	2U	6,200	A	2U	6,200	A	6,200	A	6,900	A
4	Almond Avenue	Grand Street	Cambridge Street	2U	3,400	A	2U	3,400	A	3,400	A	3,700	A
5	Batavia Street	La Veta Avenue	Almond Avenue	4U	10,600	A	4U	12,300	A	12,500	A	12,500	A
6	Batavia Street	Almond Avenue	Chapman Avenue	4U	14,300	A	4U	15,500	B	15,900	B	14,800	B
7	Batavia Street	Chapman Avenue	Walnut Avenue	4U	19,900	D	4U	20,300	D	21,200	D	19,100	D
8	Batavia Street	Walnut Avenue	Collins Avenue	4U	16,900	B	4U	22,300	E	22,700	E	19,300	C
9	Batavia Street	Collins Avenue	Katella Avenue	4U	18,100	C	4U	23,300	E	23,600	E	19,800	D
10	Batavia Street	Katella Avenue	Taft Avenue	4U	15,800	B	4U	21,500	D	21,300	D	20,300	D
11	Batavia Street	Taft Avenue	Fletcher Avenue	4U	17,500	C	4U	21,800	E	22,000	E	19,800	D
12	Batavia Street	Fletcher Avenue	Lincoln Avenue	4U	17,700	C	4U	22,900	E	23,300	E	20,300	D
13	Bond Avenue	Prospect Street	Hewes Street	4U	8,100	A	4U	8,200	A	8,400	A	7,100	A
14	Cambridge Street	South City Limits	Palmyra Avenue	4U	7,700	A	2U	7,700	B	7,100	A	7,700	B
15	Cambridge Street	Palmyra Avenue	Chapman Avenue	4U	8,600	A	2U	8,600	C	8,600	C	8,600	C
16	Cambridge Street	Chapman Avenue	Palm Avenue	4U	7,700	A	2U	8,400	B	8,400	B	8,400	B
17	Cambridge Street	Palm Avenue	Walnut Avenue	4U	7,700	A	2U	7,700	B	7,700	B	7,700	B
18	Cambridge Street	Walnut Avenue	Collins Avenue	4U	8,000	A	2U	8,000	B	8,000	B	8,000	B
19	Cambridge Street	Collins Avenue	Katella Avenue	4U	8,400	A	2U	8,400	B	8,400	B	8,400	B
20	Cambridge Street	Katella Avenue	Taft Avenue	4U	11,800	A	4U	11,800	A	11,800	A	11,800	A
21	Cambridge Street	Taft Avenue	Meats Avenue	4U	8,400	A	4U	7,300	A	9,700	A	7,900	A
22	Canyon View Avenue	Chapman Avenue	Outrider Street	4D	6,400	A	4D	6,400	A	6,400	A	6,400	A
23	Canyon View Avenue	Outrider Street	Newport Boulevard	4D	6,200	A	4D	6,200	A	6,200	A	6,200	A
24	Canyon View Avenue	Newport Boulevard	Jamboree Road	4D	5,700	A	4D	5,700	A	5,200	A	5,700	A
25	Chapman Avenue	Haster Street	Lewis Street	5D	32,600	C	5D	32,600	C	32,600	C	32,600	C
26	Chapman Avenue	Lewis Street	Manchester Avenue	6D	38,000	B	6D	35,700	B	35,700	B	35,500	B
27	Chapman Avenue	Manchester Avenue	The City Drive	6D	40,900	C	6D	40,200	C	40,200	C	39,900	C
28	Chapman Avenue	The City Drive	Eckhoff Street	6D	35,500	B	6D	42,600	C	42,800	C	41,800	C
29	Chapman Avenue	Eckhoff Street	Main Street	6D	31,500	A	6D	34,700	B	34,600	B	34,300	B
30	Chapman Avenue	Main Street	Batavia Street	4D	22,500	A	4D	23,800	B	23,800	B	22,200	A
31	Chapman Avenue	Batavia Street	Plaza / Glassell	4D	21,600	A	4D	20,700	A	20,700	A	20,700	A
311	Chapman Avenue	Lemon Street	Glassell Street	4D	23,200	B	2U	12,500	F	12,300	F	14,900	F
312	Chapman Avenue	Glassell Street	Grand Street	4D	24,700	B	2U	12,600	F	12,500	F	15,300	F
32	Chapman Avenue	Plaza / Glassell	Cambridge Street	4D	26,200	B	4D	25,300	B	25,300	B	24,400	B
33	Chapman Avenue	Cambridge Street	Tustin Street	4D	30,500	D	4D	28,400	C	28,200	C	31,500	D
34	Chapman Avenue	Tustin Street	SR-55	6D	49,800	D	6D	50,300	D	51,800	E	50,300	D



 Deficient Segment, LOS E
 Deficient Segment, LOS F

Table 4.19 Alternative Future Arterial Daily Level of Service Summary (continued)

ID	Arterial	From	To	No Project			Project			Alternative 1		Alternative 2	
				Lanes	ADT	LOS	Lanes	ADT	LOS	ADT	LOS	ADT	ADT
35	Chapman Avenue	SR-55	Yorba Street	8D	78,700	F	8D	75,300	F	76,700	F	73,700	E
36	Chapman Avenue	Yorba Street	Prospect Street	6D	65,100	F	6D	63,600	F	65,100	F	60,500	F
37	Chapman Avenue	Prospect Street	Esplanade Street	6D	51,100	E	6D	50,900	D	51,500	E	47,700	D
38	Chapman Avenue	Esplanade Street	Hewes Street	6D	48,200	D	6D	47,100	D	47,900	D	43,800	C
39	Chapman Avenue	Hewes Street	Crawford Canyon Road	6D	41,000	C	6D	41,100	C	41,900	C	38,300	B
40	Chapman Avenue	Crawford Canyon Road	Canyon View Avenue	4D	38,300	F	4D	39,700	F	40,700	F	35,800	E
41	Chapman Avenue	Canyon View Avenue	Orange Park Boulevard	4D	28,900	C	4D	31,400	D	32,300	D	27,700	C
42	Chapman Avenue	Orange Park Boulevard	Newport Boulevard	4D	23,600	B	4D	27,600	C	28,400	C	24,900	B
43	Chapman Avenue	Newport Boulevard	Jamboree Road	6D	41,800	C	6D	48,300	D	48,800	D	44,100	C
44	Chapman Avenue	Jamboree Road	City Limit	6D	38,600	B	6D	42,600	C	42,600	C	39,400	B
45	Collins Avenue	Eckhoff Street	Main Street	4U	7,800	A	4U	14,900	B	15,000	B	15,200	B
46	Collins Avenue	Main Street	Batavia Street	4U	13,300	A	4U	18,200	C	18,700	C	16,100	B
47	Collins Avenue	Batavia Street	Glassell Street	4U	16,000	B	4U	23,000	E	23,900	E	20,300	D
48	Collins Avenue	Glassell Street	Cambridge Street	4U	16,600	B	4U	17,800	C	17,800	C	17,000	B
49	Collins Avenue	Cambridge Street	Tustin Street	4U	16,200	B	4U	22,900	E	22,700	E	21,400	D
50	Collins Avenue	Tustin Street	Handy Street	4U	15,100	B	4U	16,000	B	16,500	B	14,500	B
51	Collins Avenue	Handy Street	Wanda Road	4U	14,600	B	4U	15,300	B	15,500	B	14,000	A
52	Collins Avenue	Wanda Road	Prospect Street	4U	18,800	C	4U	20,300	D	20,900	D	18,700	C
53	Crawford Canyon Road	Barrett Avenue	Chapman Avenue	4U	17,400	C	4U	17,300	C	17,500	C	16,600	B
54	Cannon Street	Chapman Avenue	Creekside Avenue	4U	14,200	A	4U	13,000	A	13,100	A	12,600	A
55	Cannon Street	Creekside Avenue	Patria Court	4U	9,500	A	4U	8,700	A	8,700	A	8,400	A
56	Cannon Street	Patria Court	Santiago Canyon Road	4U	9,200	A	4U	8,500	A	8,400	A	8,200	A
57	Cannon Street	Santiago Canyon Road	Taft Avenue	6D	48,900	D	6D	46,600	D	46,700	D	45,300	C
58	Cannon Street	Taft Avenue	Via Escola	6D	34,900	B	6D	33,000	A	33,500	A	32,200	A
59	Eckhoff Street	Chapman Avenue	Sycamore Avenue	2U	7,700	B	2U	5,500	A	5,500	A	5,000	A
60	Eckhoff Street	Orangewood Avenue	Collins Avenue	4U	10,500	A	4U	19,500	D	19,700	D	20,000	D
61	Esplanade Street	Fairhaven Avenue	La Veta Avenue	4U	3,400	A	4U	3,500	A	3,500	A	3,300	A
62	Esplanade Street	La Veta Avenue	Chapman Avenue	4U	7,100	A	4U	7,500	A	7,500	A	6,900	A
63	Fairhaven Avenue	Glassell Street	Cambridge Street	4U	10,200	A	4U	10,200	A	10,200	A	10,200	A
64	Fairhaven Avenue	Cambridge Street	Tustin Street	4U	10,100	A	4U	10,000	A	9,900	A	9,600	A
65	Fairhaven Avenue	Tustin Street	Yorba Street	4U	14,300	A	4U	15,600	B	15,600	B	15,600	B
66	Fairhaven Avenue	Yorba Street	Prospect Street	4U	14,700	B	4U	14,700	B	14,700	B	14,700	B
67	Fairhaven Avenue	Prospect Street	Esplanade Street	4U	13,500	A	4U	13,500	A	13,500	A	13,500	A
68	Fairhaven Avenue	Esplanade Street	Hewes Street	4U	10,900	A	4U	12,000	A	11,000	A	12,000	A
69	Fletcher Avenue	Batavia Street	Glassell Street	4U	4,500	A	4U	7,600	A	7,600	A	5,600	A
70	Garden Grove Boulevard	The City Drive	Lewis Street	4D	23,900	B	4D	22,000	A	22,100	A	22,000	A
72	Glassell Street	SR-22	La Veta Avenue	4D	32,200	D	4D	34,600	E	35,200	E	38,500	F



 Deficient Segment, LOS E
 Deficient Segment, LOS F

Table 4.19 Alternative Future Arterial Daily Level of Service Summary (continued)

ID	Arterial	From	To	No Project			Project			Alternative 1		Alternative 2	
				Lanes	ADT	LOS	Lanes	ADT	LOS	ADT	LOS	ADT	ADT
73	Glassell Street	La Veta Avenue	Almond Avenue	4D	17,600	A	4D	17,600	A	17,600	A	17,200	A
731	Glassell Street	Almond Avenue	Chapman Avenue	4D	15,800	A	2U	10,000	D	10,700	D	10,900	D
74	Glassell Street	Chapman Avenue	Palm Avenue	4D	13,600	A	2U	11,900	E	12,600	F	11,500	E
75	Glassell Street	Palm Avenue	Collins Avenue	4D	14,300	A	4D	16,700	A	17,400	A	17,200	A
76	Glassell Street	Collins Avenue	Katella Avenue	4D	22,600	A	4D	25,000	B	26,100	B	24,000	B
77	Glassell Street	Katella Avenue	Orange Olive Road	4D	30,300	D	4D	37,700	F	40,100	F	33,400	E
78	Glassell Street	Orange Olive Road	Grove Avenue	4D	14,700	A	4D	21,500	A	22,200	A	19,300	A
79	Glassell Street	Grove Avenue	Lincoln Avenue	4D	23,700	B	4D	29,600	C	31,300	D	25,700	B
80	Glassell Street	Lincoln Avenue	Santa Ana River	4D	28,700	C	4D	29,500	C	31,200	D	26,800	C
811	Grand Street	La Veta Avenue	Palmyra Avenue	2U	3,500	A	2U	9,000	C	9,000	C	9,000	C
812	Grand Street	Almond Avenue	Chapman Avenue	2U	3,700	A	2U	10,000	D	10,000	D	10,000	D
81	Grand Street	Chapman Avenue	Maple Avenue	4D	4,800	A	2U	5,700	A	5,500	A	6,900	A
82	Hewes Street	Fairhaven Avenue	Washington Avenue	2U	7,400	A	4U	7,500	A	7,600	A	6,900	A
83	Hewes Street	Washington Avenue	Chapman Avenue	4U	10,800	A	4U	11,000	A	11,100	A	10,300	A
84	Hewes Street	Chapman Avenue	Walnut Avenue	4U	12,700	A	4U	12,600	A	13,100	A	11,200	A
85	Hewes Street	Walnut Avenue	Santiago Canyon Road	4U	12,500	A	4U	10,300	A	11,300	A	9,200	A
86	Jamboree Road	Santiago Canyon Road	Chapman Avenue	4U	28,600	A	6D	30,500	A	30,100	A	28,500	A
87	Jamboree Road	Chapman Avenue	Canyon View Avenue	6D	26,400	A	6D	30,500	A	30,500	A	27,900	A
88	Jamboree Road	Canyon View Avenue	SR-241	6D	30,100	A	6D	34,100	B	34,300	B	31,500	A
89	Katella Avenue*	Struck Avenue	Main Street	6D SS	46,700	C	6D	56,500	E	57,600	E	49,900	D
90	Katella Avenue*	Main Street	Batavia Street	6D SS	43,900	C	6D	55,100	E	56,200	E	51,300	D
91	Katella Avenue*	Batavia Street	Glassell Street	6D SS	45,600	C	6D	53,700	E	53,900	E	49,800	D
92	Katella Avenue*	Glassell Street	Cambridge Street	6D SS	46,200	C	6D	54,500	E	54,500	E	52,100	D
93	Katella Avenue*	Cambridge Street	Tustin Street	6D SS	45,800	C	6D	49,900	D	49,100	D	46,200	C
94	Katella Avenue*	Tustin Street	SR-55	7D SS	54,200	C	7D	54,600	C	58,900	D	50,000	C
95	Katella Avenue	SR-55	Handy Street	7D	50,500	D	6D	47,300	D	49,100	D	47,000	D
96	Katella Avenue	Handy Street	Wanda Road	6D	48,300	D	6D	43,900	C	46,100	D	43,200	C
97	Katella Avenue	Wanda Road	Center Drive	6D	40,200	C	6D	40,300	C	38,500	B	37,800	B
98	Katella Avenue	Center Drive	Santiago Canyon Road	6D	38,000	B	6D	38,200	B	36,400	B	35,300	B
99	La Veta Avenue	Flower Street	Devon Street	6D	24,500	A	6D	33,000	A	33,100	A	32,900	A
100	La Veta Avenue	Devon Street	Main Street	6D	19,400	A	6D	29,600	A	29,700	A	29,400	A
101	La Veta Avenue	Main Street	Batavia Street	6D	30,200	A	6D	37,700	B	37,300	B	38,100	B
102	La Veta Avenue	Batavia Street	Glassell Street	4D	16,400	A	4D	20,600	A	20,600	A	21,600	A
103	La Veta Avenue	Glassell Street	Shaffer Street	4U	10,200	A	4U	11,200	A	11,300	A	11,700	A
104	La Veta Avenue	Shaffer Street	Cambridge Street	4U	7,600	A	4U	8,400	A	8,400	A	8,900	A
105	La Veta Avenue	Tustin Street	Yorba Street	4U	11,900	A	4U	11,000	A	11,500	A	10,500	A



 Deficient Segment, LOS E
 Deficient Segment, LOS F

Table 4.19 Alternative Future Arterial Daily Level of Service Summary (continued)

ID	Arterial	From	To	No Project			Project			Alternative 1		Alternative 2	
				Lanes	ADT	LOS	Lanes	ADT	LOS	ADT	LOS	ADT	ADT
106	La Veta Avenue	Yorba Street	Prospect Street	4U	11,100	A	4U	10,400	A	10,500	A	11,200	A
107	La Veta Avenue	Prospect Street	Esplanade Street	4U	9,300	A	4U	8,500	A	8,600	A	8,100	A
1081	Lemon Street	La Veta Avenue	Palmyra Avenue	2U	8,500	C	2U	8,000	B	8,000	B	8,000	B
108	Lemon Street	Chapman Avenue	Maple Avenue	2U	7,800	B	2U	8,400	B	8,400	B	8,400	B
1082	Lemon Street	Maple Avenue	Walnut Avenue	2U	2,300	A	2U	2,000	A	2,000	A	2,000	A
109	Lewis Street	Garden Grove Avenue	Metropolitan Drive	4U	14,300	A	4U	17,100	C	17,100	C	16,800	B
110	Lewis Street	Metropolitan Drive	Chapman Avenue	4U	18,400	C	4U	18,600	C	18,300	C	18,300	C
111	Lewis Street	Chapman Avenue	Sirius Avenue	4U	10,800	A	4U	12,400	A	12,300	A	11,700	A
112	Lincoln Avenue	West City Limit	Batavia Street	6D	34,800	B	6D	40,200	C	40,800	C	35,900	B
113	Lincoln Avenue	Batavia Street	Glassell Street	6D	31,700	A	6D	32,000	A	32,800	A	29,900	A
114	Lincoln Avenue	Glassell Street	Orange Olive Road	6D	34,300	B	6D	32,500	A	35,100	B	29,700	A
115	Lincoln Avenue	Orange Olive Road	Tustin Street	6D	47,100	D	6D	45,000	C	49,100	D	41,500	C
116	Lincoln Avenue	Tustin Street	Santiago Boulevard	6D	51,500	E	6D	42,900	C	50,600	D	45,300	C
117	Main Street	Town & Country Road	La Veta Avenue	6D	48,100	D	6D	55,500	E	55,400	E	54,600	E
118	Main Street	La Veta Avenue	Chapman Avenue	6D	43,800	C	6D	48,500	D	48,700	D	46,400	D
119	Main Street	Chapman Avenue	Sycamore Avenue	6D	31,300	A	6D	36,400	B	37,300	B	35,600	B
120	Main Street	Sycamore Avenue	Collins Avenue	6D	25,200	A	6D	39,900	C	40,700	C	36,700	B
121	Main Street	Collins Avenue	Struck Avenue	4D	21,300	A	4D	25,300	B	25,200	B	32,900	D
122	Main Street	Struck Avenue	Katella Avenue	4D	18,500	A	4D	26,800	C	26,600	C	33,800	D
123	Main Street	Katella Avenue	Taft Avenue	4D	20,700	A	4D	22,500	A	22,900	B	24,600	B
124	Meats Avenue	Glassell Street	Orange Olive Road	4U	9,500	A	4U	12,800	A	11,100	A	10,800	A
125	Meats Avenue	Orange Olive Road	Cambridge Street	4U	12,000	A	4U	18,200	C	13,500	A	15,100	A
126	Meats Avenue	Cambridge Street	Tustin Street	4U	14,700	B	4U	21,500	D	16,600	B	18,400	B
127	Meats Avenue	Tustin Street	SR-55 SB Ramps	4U	16,700	B	4U	53,200	F	17,500	C	51,800	F
1271	Meats Avenue	SR-55 SB Ramps	SR-55 NB Ramps	4U	16,700	B	4U	45,500	F	17,500	C	43,300	F
1272	Meats Avenue	SR-55 NB Ramps	Santiago Boulevard	4U	16,700	B	4U	31,900	F	17,500	C	29,600	F
128	Meats Avenue	Santiago Boulevard	Featherhill Road	4U	13,100	A	4U	15,700	B	12,300	A	15,100	B
129	Meats Avenue	Featherhill Road	Via Escola	4U	6,800	A	4U	8,200	A	6,500	A	7,900	A
130	Metropolitan Drive	Lewis Street	SR-22 Westbound Ramps	4U	6,500	A	4U	9,400	A	9,400	A	9,200	A
131	Metropolitan Drive	SR-22 Westbound Ramps	The City Drive	4U	14,000	A	4U	19,200	C	19,100	C	18,800	C
1311	Metropolitan Drive	The City Drive	Chapman Avenue	4U	13,800	A	4U	21,100	D	20,800	D	20,300	D
132	Manchester Avenue	Chapman Avenue	Compton Avenue	4D	7,800	A	4D	10,900	A	10,900	A	11,000	A
133	Newport Boulevard	South City Limits	Canyon View Avenue	4D	9,000	A	4D	9,000	A	9,000	A	9,000	A
134	Newport Boulevard	Canyon View Avenue	Chapman Avenue	4D	7,800	A	4D	7,800	A	7,800	A	7,800	A
135	Newport Boulevard	Chapman Avenue	Santiago Canyon Road	4D	13,100	A	4D	14,700	A	14,300	A	14,100	A
136	Nohl Ranch Road	Santiago Boulevard	East City Limit	4U	14,200	A	4U	11,100	A	13,000	A	12,100	A
137	Orange Olive Road	Glassell Street	Meats Avenue	4U	17,800	C	4U	19,500	D	20,800	D	17,600	C



 Deficient Segment, LOS E
 Deficient Segment, LOS F

Table 4.19 Alternative Future Arterial Daily Level of Service Summary (continued)

ID	Arterial	From	To	No Project			Project			Alternative 1		Alternative 2	
				Lanes	ADT	LOS	Lanes	ADT	LOS	ADT	LOS	ADT	ADT
138	Orange Olive Road	Meats Avenue	Lincoln Avenue	4U	17,000	C	4U	17,000	C	20,000	D	15,900	C
139	Orange Olive Road	Lincoln Avenue	Santa Ana Canyon Road	4U	14,700	B	4U	15,200	B	16,100	B	13,700	A
140	Orange Olive Road	Santa Ana Canyon Road	Riverdale Avenue	4U	9,800	A	4U	11,000	A	11,800	A	10,000	A
141	Orangewood Avenue	Eckhoff Street	Main Street	6D	33,900	A	6D	40,500	C	40,900	C	35,800	B
142	Palm Avenue	Main Street	Batavia Street	2U	3,900	A	2U	4,600	A	4,600	A	5,300	A
143	Palm Avenue	Batavia Street	Cypress Street	2U	4,600	A	2U	7,800	B	8,100	B	10,100	D
144	Palm Avenue	Cypress Street	Glassell Street	2U	4,400	A	2U	7,400	B	7,500	B	8,700	C
145	Palm Avenue	Glassell Street	Cambridge Street	2U	4,000	A	2U	5,100	A	5,300	A	6,100	A
146	Palm Avenue	Cambridge Street	Tustin Street	2U	7,200	A	2U	7,800	B	8,000	B	8,200	B
147	Palmyra Avenue	Batavia Street	Glassell Street	2U	2,600	A	2U	3,000	A	3,000	A	3,500	A
148	Palmyra Avenue	Glassell Street	Cambridge Street	2U	2,000	A	2U	1,900	A	2,000	A	2,700	A
149	Palmyra Avenue	Cambridge Street	Tustin Street	2U	5,200	A	2U	5,400	A	5,400	A	5,500	A
150	Parker Street	La Veta Avenue	Town & Country Road	4U	15,700	B	4U	19,500	D	19,600	D	20,200	D
151	Prospect Street	Fairhaven Avenue	La Veta Avenue	4U	10,000	A	4U	10,700	A	10,800	A	9,700	A
152	Prospect Street	La Veta Avenue	Chapman Avenue	4U	13,400	A	4U	13,400	A	13,600	A	12,400	A
153	Prospect Street	Chapman Avenue	Spring Street	4U	24,400	F	4U	23,000	E	24,300	F	21,700	D
154	Prospect Street	Spring Street	Walnut Avenue	4U	23,400	E	4U	22,100	E	23,700	E	21,300	D
155	Prospect Street	Walnut Avenue	Bond Avenue	4U	17,500	C	4U	17,400	C	18,200	C	16,500	B
156	Rampart Street	Chapman Avenue	Orangewood Avenue	4U	8,300	A	4U	19,200	C	19,100	C	18,900	C
157	Rancho Santiago Boulevard	Chapman Avenue	Walnut Avenue	2U	8,100	B	2U	8,100	B	8,100	B	8,100	B
158	Rancho Santiago Boulevard	Hewes Street	Bond Avenue	2U	3,100	A	2U	3,100	A	3,100	A	3,100	A
159	Riverdale Avenue	Glassell Street	Orange Olive Road	4U	6,000	A	4U	6,000	A	6,000	A	6,000	A
160	Riverdale Avenue	Orange Olive Road	Tustin Street	4U	8,300	A	4U	8,900	A	9,600	A	8,200	A
161	Santa Ana Canyon Road	Lincoln Avenue	Nohl Ranch Road	6D	16,600	A	6D	17,600	A	17,300	A	15,700	A
162	Santiago Boulevard	Wanda Road	Taft Avenue	4U	16,000	B	4U	17,300	C	16,700	B	15,300	B
163	Santiago Boulevard	Taft Avenue	Villa Real Drive	4U	16,300	B	4U	12,300	A	15,700	B	12,300	A
164	Santiago Boulevard	Villa Real Drive	Lincoln Avenue	4U	18,400	C	4U	13,900	A	17,600	C	13,900	A
165	Santiago Canyon Road	Hewes Street	Cannon Street	6D	42,100	C	6D	40,500	C	39,500	B	37,000	B
166	Santiago Canyon Road	Cannon Street	Orange Park Boulevard	6D	47,900	D	6D	48,600	D	47,700	D	44,500	C
167	Santiago Canyon Road	Orange Park Boulevard	Meads Avenue	6D	38,900	B	6D	42,000	C	41,400	C	40,500	C
168	Santiago Canyon Road	Meads Avenue	Newport Boulevard	6D	37,700	B	6D	41,100	C	40,400	C	38,800	B
169	Santiago Canyon Road	Newport Boulevard	Jamboree Road	6D	28,600	A	6D	30,200	A	29,700	A	28,200	A
170	Santiago Canyon Road	Jamboree Road	Street D	6D	38,600	B	6D	42,600	C	42,600	C	39,400	B
214	Santiago Canyon Road	Street D	SR-241	6D	26,000	A	6D	27,000	A	26,000	A	27,000	A
213	Santiago Canyon Road	East of SR-241		4D	24,000	B	4D	24,000	B	24,000	B	24,000	B
171	Serrano Avenue	Cannon Street	Orange Park Boulevard	4D	23,600	B	4D	23,100	B	22,900	B	22,900	B
172	Serrano Avenue	Orange Park Boulevard	Apache Creek	4D	20,500	A	4D	20,000	A	19,700	A	19,800	A
173	Serrano Avenue	Apache Creek	East City Limit	4D	12,100	A	4D	11,800	A	11,900	A	12,000	A



 Deficient Segment, LOS E
 Deficient Segment, LOS F

Table 4.19 Alternative Future Arterial Daily Level of Service Summary (continued)

ID	Arterial	From	To	No Project			Project			Alternative 1		Alternative 2	
				Lanes	ADT	LOS	Lanes	ADT	LOS	ADT	LOS	ADT	ADT
1741	Shaffer Street	La Veta Avenue	Palmyra Avenue	2U	1,900	A	2U	2,000	A	2,000	A	2,000	A
174	Shaffer Street	Chapman Avenue	Maple Avenue	2U	5,000	A	2U	5,700	A	6,100	A	5,400	A
1742	Shaffer Street	Palm Avenue	Walnut Avenue	2U	4,900	A	2U	7,000	A	7,000	A	7,000	A
1743	Shaffer Street	Walnut Avenue	Collins Avenue	2U	10,300	D	2U	10,600	D	10,600	D	10,600	D
1744	Shaffer Street	Collins Avenue	Katella Avenue	2U	5,900	A	2U	7,000	A	7,000	A	7,000	A
175	Spring Street	Prospect Street	Olympia Way	4U	17,100	C	4U	14,000	A	14,800	B	13,500	A
176	Struck Avenue	Katella Avenue	Main Street	2U	9,100	C	2U	9,100	C	9,100	C	9,400	C
177	Taft Avenue	West City Limit	Main Street	6D	49,100	D	6D	56,400	F	57,800	F	54,200	E
178	Taft Avenue	Main Street	Batavia Street	6D	28,900	A	6D	36,700	B	37,400	B	35,400	B
179	Taft Avenue	Batavia Street	Glassell Street	6D	33,000	A	6D	34,200	B	35,000	B	32,500	A
180	Taft Avenue	Glassell Street	Cambridge Street	6D	22,200	A	6D	25,200	A	25,900	A	23,200	A
181	Taft Avenue	Cambridge Street	Tustin Street	6D	18,300	A	6D	21,600	A	22,100	A	19,600	A
182	Taft Avenue	Tustin Street	Santiago Boulevard	4U	14,200	A	4U	15,000	B	14,600	B	13,300	B
183	Taft Avenue	Cannon Street	Yurok Street	2U	8,800	C	2U	8,300	B	8,200	B	8,000	C
184	The City Drive	Garden Grove Boulevard	SR-22	6D	26,400	A	6D	36,000	B	35,900	B	35,800	B
185	The City Drive	SR-22	Metropolitan	6D	45,700	D	6D	46,400	D	46,200	D	45,900	D
186	The City Drive	Metropolitan	Chapman Avenue	8D	26,800	A	8D	35,600	A	35,600	A	35,100	A
187	The City Drive	Chapman Avenue	North City Limits	8D	33,200	A	8D	35,500	A	35,700	A	34,200	A
188	Town & Country Road	Main Street	SR-22	4D	25,000	B	4D	27,700	C	27,700	C	27,500	C
189	Town & Country Road	SR-22	Parker Street	4D	10,900	A	4D	15,100	A	15,300	A	15,300	A
190	Tustin Street	Fairhaven Avenue	La Veta Avenue	6D	37,800	B	6D	38,400	B	39,700	C	36,800	B
191	Tustin Street	La Veta Avenue	Palmyra Avenue	6D	30,900	A	6D	32,500	A	35,000	B	29,400	A
192	Tustin Street	Palmyra Avenue	Chapman Avenue	6D	32,300	A	6D	34,000	A	36,500	B	30,800	A
193	Tustin Street	Chapman Avenue	Walnut Avenue	6D	48,500	D	6D	49,100	D	54,800	E	44,600	C
194	Tustin Street	Walnut Avenue	Mayfair Avenue	6D	44,600	C	6D	41,700	C	47,600	D	36,400	B
195	Tustin Street	Mayfair Avenue	Collins Avenue	6D	41,100	C	6D	40,300	C	45,900	D	35,700	B
196	Tustin Street	Collins Avenue	Katella Avenue	6D	48,400	D	6D	50,900	D	53,600	E	43,700	C
197	Tustin Street	Katella Avenue	Taft Avenue	6D	47,300	D	6D	41,000	C	51,200	E	42,400	C
198	Tustin Street	Taft Avenue	Meats Avenue	6D	39,800	C	6D	39,900	C	41,200	C	36,000	B
199	Tustin Street	Meats Avenue	Lincoln Avenue	6D	36,100	B	6D	37,000	B	38,000	B	37,000	B
200	Tustin Street	Lincoln Avenue	Santa Ana Canyon Road	6D	29,300	A	6D	28,400	A	29,700	A	27,700	A
201	Via Escola	Meats Avenue	Cannon Street	4U	5,300	A	4U	4,100	A	4,700	A	4,100	A
202	Villa Real Drive	Santiago Boulevard	Chapel Hill	2U	1,700	A	2U	1,800	A	1,800	A	1,700	A
203	Walnut Avenue	Main Street	Batavia Street	4U	11,100	A	2U	8,700	C	8,700	C	8,700	C
204	Walnut Avenue	Batavia Street	Cypress Street	4U	11,200	A	2U	9,400	C	9,600	C	9,100	C
205	Walnut Avenue	Cypress Street	Glassell Street	4U	10,600	A	2U	9,600	C	9,900	D	9,700	D



 Deficient Segment, LOS E
 Deficient Segment, LOS F

Table 4.19 Alternative Future Arterial Daily Level of Service Summary (continued)

ID	Arterial	From	To	No Project			Project			Alternative 1		Alternative 2	
				Lanes	ADT	LOS	Lanes	ADT	LOS	ADT	LOS	ADT	ADT
206	Walnut Avenue	Glassell Street	Cambridge Street	4U	8,300	A	2U	8,100	B	8,300	B	8,500	C
207	Walnut Avenue	Cambridge Street	Tustin Street	4U	8,100	A	2U	9,200	C	8,900	C	9,500	C
208	Walnut Avenue	Tustin Street	Handy Street	4U	11,800	A	2U	10,500	D	10,700	D	10,400	D
209	Wanda Road	Collins Avenue	Katella Avenue	4U	14,800	B	4U	15,300	B	16,500	B	14,100	A
210	Wanda Road	Katella Avenue	Santiago Boulevard (VP)	4U	25,800	F	4U	27,800	F	27,000	F	24,800	F
211	Yorba Street	Fairhaven Avenue	La Veta Avenue	4U	8,200	A	4U	7,800	A	8,200	A	7,700	A
212	Yorba Street	La Veta Avenue	Chapman Avenue	4U	12,400	A	4U	11,900	A	11,900	A	11,200	A



 Deficient Segment, LOS E
 Deficient Segment, LOS F

Table 4.20 Alternative Intersection Level of Service Summary

ID	Intersection Location	No Project				Project				Alternative 1				Alternative 2			
		A.M.		P.M.		A.M.		P.M.		A.M.		P.M.		A.M.		P.M.	
		ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS
1	Batavia Street @ Collins Avenue	0.56	A	0.76	C	0.79	C	0.90	D	0.81	C	0.90	D	0.66	B	0.87	D
2	Batavia Street @ Katella Avenue	0.65	B	0.72	C	0.83	D	0.79	C	0.84	D	0.79	C	0.66	B	0.81	D
3	Batavia Street @ Lincoln Avenue	0.59	A	0.73	C	0.77	C	0.72	C	0.76	C	0.72	C	0.71	C	0.68	B
4	Batavia Street @ Taft Avenue	0.68	B	0.71	C	0.80	C	0.74	C	0.79	C	0.75	C	0.81	C	0.72	C
5	Batavia Street @ Walnut Avenue	0.62	B	0.55	A	0.66	B	0.73	C	0.67	B	0.75	C	0.69	B	0.64	B
6	Cambridge Street @ Katella Avenue	0.59	A	0.71	C	0.71	C	0.86	D	0.72	C	0.85	D	0.69	B	0.82	D
7	Cannon Street @ Santiago Canyon Road	0.92	E	0.96	E	0.94	E	0.93	E	0.92	E	0.93	E	0.90	D	0.88	D
8	Cannon Street @ Serrano Avenue	0.97	E	0.89	D	0.99	E	0.88	D	0.98	E	0.87	D	0.96	E	0.87	D
9	Cannon Street/Crawford Canyon @ Chapman Avenue	0.75	C	0.70	B	0.75	C	0.69	B	0.74	C	0.70	B	0.69	B	0.65	B
10	Yorba Street @ Chapman Avenue	0.76	C	0.67	B	0.73	C	0.62	B	0.74	C	0.63	B	0.73	C	0.64	B
11	Canyon View Avenue @ Chapman Avenue	0.62	B	0.46	A	0.61	B	0.46	A	0.61	B	0.47	A	0.55	A	0.41	A
12	Jamboree Road @ Chapman Avenue	0.85	D	0.87	D	0.94	E	0.90	D	0.95	E	0.90	D	0.86	D	0.90	D
13	Northbound SR-55 Ramps @ Chapman Avenue	0.74	C	0.67	B	0.71	C	0.67	B	0.74	C	0.70	B	0.70	B	0.66	B
14	Southbound SR-55 Ramps @ Chapman Avenue	0.66	B	0.62	B	0.56	A	0.57	A	0.64	B	0.58	A	0.58	A	0.60	A
15	Lewis Street @ Chapman Avenue	0.59	A	0.65	B	0.63	B	0.68	B	0.62	B	0.68	B	0.62	B	0.68	B
16	The City Drive @ Chapman Avenue	0.65	B	0.80	C	0.69	B	0.86	D	0.70	B	0.84	D	0.73	C	0.83	D
17	The City Drive @ Eastbound SR-22 Ramps	0.63	B	0.70	B	0.76	C	0.82	D	0.76	C	0.82	D	0.75	C	0.83	D
18	The City Drive @ Metropolitan Drive	0.25	A	0.32	A	0.33	A	0.43	A	0.33	A	0.41	A	0.31	A	0.46	A
19	Glassell Street @ Collins Avenue	0.63	B	0.68	B	0.79	C	0.75	C	0.84	D	0.78	C	0.76	C	0.67	B
20	Glassell Street @ Katella Avenue	0.59	A	0.77	C	0.65	B	0.89	D	0.66	B	0.90	D	0.65	B	0.84	D
21	Glassell Street @ La Veta Avenue	0.78	C	0.75	C	0.90	D	0.76	C	0.89	D	0.79	C	0.90	D	0.80	C
22	Glassell Street @ Lincoln Avenue	0.59	A	0.86	D	0.72	C	0.87	D	0.74	C	0.89	D	0.67	B	0.85	D
23	Glassell Street @ Taft Avenue	0.68	B	0.72	C	0.83	D	0.78	C	0.78	C	0.80	C	0.78	C	0.74	C
24	Glassell Street @ Walnut Avenue	0.43	A	0.53	A	0.61	B	0.69	B	0.64	B	0.71	C	0.77	C	0.75	C
25	Hewes Street @ Chapman Avenue	0.77	C	0.70	B	0.79	C	0.69	B	0.81	D	0.70	B	0.74	C	0.64	B
26	Northbound SR-55 Ramps @ Katella Avenue	0.75	C	0.86	D	0.75	C	0.86	D	0.76	C	0.85	D	0.74	C	0.85	D
27	Southbound SR-55 Ramps @ Katella Avenue	0.96	E	0.89	D	0.97	E	0.87	D	0.97	E	0.90	D	0.95	E	0.85	D



 Deficient Intersection, LOS E
 Deficient Intersection, LOS F

Table 4.20 Alternative Intersection Level of Service Summary (continued)

ID	Intersection Location	No Project				Project				Alternative 1				Alternative 2			
		A.M.		P.M.		A.M.		P.M.		A.M.		P.M.		A.M.		P.M.	
		ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS
28	Main Street @ Chapman Avenue	0.59	A	0.71	C	0.81	D	0.90	D	0.80	C	0.90	D	0.81	D	0.90	D
29	Main Street @ Katella Avenue	0.55	A	0.67	B	0.74	C	0.85	D	0.75	C	0.85	D	0.73	C	0.86	D
30	Main Street @ La Veta Avenue	0.60	A	0.78	C	0.82	D	0.95	E	0.83	D	0.95	E	0.80	C	0.92	E
31	Main Street @ Orangewood Avenue	0.58	A	0.53	A	0.70	B	0.62	B	0.71	C	0.62	B	0.65	B	0.58	A
32	Main Street @ Taft Avenue	0.55	A	0.70	B	0.64	B	0.89	D	0.65	B	0.90	D	0.66	B	0.81	D
33	Main Street @ Town & Country Road	0.45	A	0.80	C	0.51	A	0.84	D	0.52	A	0.83	D	0.52	A	0.84	D
34	Newport Boulevard @ Chapman Avenue	0.74	C	0.90	D	0.76	C	0.82	D	0.75	C	0.84	D	0.74	C	0.88	D
35	Santiago Boulevard @ Nohl Ranch Road	0.70	B	0.75	C	0.63	B	0.66	B	0.69	B	0.76	C	0.63	B	0.67	B
36	Eckhoff Street @ Orangewood Avenue	0.44	A	0.51	A	0.60	A	0.69	B	0.60	A	0.69	B	0.58	A	0.64	B
37	State College Boulevard @ Orangewood Avenue	0.52	A	0.63	B	0.70	B	0.68	B	0.70	B	0.69	B	0.69	B	0.67	B
38	Prospect Street @ Chapman Avenue	0.88	D	0.85	D	0.82	D	0.86	D	0.83	D	0.89	D	0.81	D	0.81	D
39	Prospect Street @ Walnut Avenue	0.85	D	0.85	D	0.79	C	0.77	C	0.81	D	0.80	C	0.74	C	0.72	C
40	Santiago Boulevard @ Meats Avenue	0.85	D	0.70	B	0.91	E	0.77	C	0.81	D	0.70	B	0.88	D	0.81	D
41	Wanda Road @ Villa Park Road	1.13	F	0.93	E	1.18	F	0.97	E	1.15	F	0.92	E	1.16	F	0.92	E
42	Tustin Street @ Chapman Avenue	0.71	C	0.89	D	0.76	C	0.87	D	0.79	C	0.89	D	0.75	C	0.88	D
43	Tustin Street @ Collins Avenue	0.52	A	0.60	A	0.58	A	0.65	B	0.60	A	0.69	B	0.57	A	0.60	A
44	Tustin Street @ Fairhaven Avenue	0.85	D	0.71	C	0.85	D	0.74	C	0.86	D	0.73	C	0.86	D	0.73	C
45	Tustin Street @ Heim Avenue	0.56	A	0.84	D	0.57	A	0.76	C	0.60	A	0.85	D	0.60	A	0.72	C
46	Tustin Street @ Katella Avenue	0.65	B	0.87	D	0.68	B	0.85	D	0.70	B	0.92	E	0.64	B	0.81	D
47	Tustin Street @ La Veta Avenue	0.70	B	0.57	A	0.69	B	0.58	A	0.70	B	0.63	B	0.73	C	0.56	A
48	Tustin Street @ Lincoln Avenue	0.89	D	1.04	F	0.93	E	1.01	F	0.93	E	1.06	F	0.87	D	1.00	E
49	Tustin Street @ Meats Avenue	0.45	A	0.68	B	0.59	A	0.83	D	0.52	A	0.71	C	0.48	A	0.68	B
50	Tustin Street @ Taft Avenue (North)	0.57	A	0.76	C	0.64	B	0.78	C	0.63	B	0.79	C	0.62	B	0.75	C
51	Tustin Street @ Taft Avenue (South)	0.69	B	0.79	C	0.70	B	0.86	D	0.72	C	0.90	D	0.68	B	0.76	C
52	Tustin Street @ Walnut Avenue	0.67	B	0.74	C	0.81	D	0.90	D	0.67	B	0.79	C	0.64	B	0.71	C
53	SB SR-55 Ramps @ Meats Avenue					0.76	C	0.71	C					0.73	C	0.70	B
54	NB SR-55 Ramps @ Meats Avenue					0.58	A	0.74	C					0.56	A	0.73	C





 Deficient Intersection, LOS E
 Deficient Intersection, LOS F

Table 4.20 Alternative Intersection Level of Service Summary (continued)

ID	Intersection Location	No Project				Project				Alternative 1				Alternative 2			
		A.M.		P.M.		A.M.		P.M.		A.M.		P.M.		A.M.		P.M.	
		ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS
55	Struck Ave. @ Katella Ave.	0.30	A	0.37	A	0.40	A	0.45	A	0.41	A	0.46	A	0.35	A	0.45	A
56	Main St. @ Struck Ave.	0.87	D	0.53	A	1.08	F	0.70	B	1.10	F	0.70	B	1.16	F	0.81	D
57	Main St. @ Collins Ave.	0.63	B	0.88	D	0.92	E	1.18	F	0.96	E	1.19	F	0.93	E	1.14	F
58	Southbound SR-57 Ramps @ Orangewood Ave.	0.70	B	0.74	C	0.97	E	0.94	E	0.97	E	0.96	E	0.90	D	0.94	E
59	Northbound SR-57 Ramps @ Orangewood Ave.	0.41	A	0.37	A	0.60	A	0.48	A	0.60	A	0.49	A	0.54	A	0.44	A
60	The City Drive @ NB I-5 Ramps/Anaheim Wy.	0.42	A	0.34	A	0.50	A	0.41	A	0.50	A	0.40	A	0.49	A	0.41	A
61	The City Drive @ Southbound I-5 Ramps	0.44	A	0.30	A	0.53	A	0.34	A	0.53	A	0.34	A	0.54	A	0.34	A
62	Southbound I-5 Ramps @ Chapman Ave.	0.49	A	0.53	A	0.50	A	0.55	A	0.50	A	0.57	A	0.49	A	0.54	A
63	Rampart St. @ Chapman Ave./NB I-5 Ramps	0.69	B	0.81	D	0.84	D	0.87	D	0.85	D	0.85	D	0.81	D	0.85	D
64	Southbound SR-57 Ramps @ Chapman Ave.	0.60	A	0.72	C	0.76	C	0.92	E	0.75	C	0.93	E	0.74	C	0.91	E
65	Northbound SR-57 Ramps @ Chapman Ave.	0.43	A	0.46	A	0.46	A	0.55	A	0.47	A	0.55	A	0.45	A	0.53	A

 Deficient Intersection, LOS E
 Deficient Intersection, LOS F

MPAH Amendment Process

A key component of the Project Scenario is the reclassification, or downgrade, of Cambridge Street and Walnut Avenue to two-lane facilities from the City and Orange County MPAH four-lane classification. The City MPAH must maintain consistency with the Orange County MPAH to be eligible for the Orange County Combined Transportation Funding Programs, therefore, in order to reclassify these facilities on the City MPAH, the City must initiate the formal process to update the Orange County MPAH.

The Orange County MPAH establishes a countywide roadway network intended to ensure coordinated transportation system development among local jurisdictions. The purpose of the MPAH is to describe an arterial highway system that effectively serves existing and adopted future land uses in both incorporated and unincorporated areas of Orange County. The MPAH process is documented in **Appendix J**.

The key policy to amending the MPAH is that any proposed changes to the MPAH shall not result in any significant adverse impacts to the MPAH system in terms of capacity and level of service. Documentation that the proposed change does not result in adverse impacts is required. Prior to OCTA amending the MPAH, the City must amend its General Plan Circulation Element. In 1998 a policy change was approved by the OCTA Board of Directors regarding deletions and downgrades specifying that deletions and downgrades may be allowed if they do not result in the unmitigated intersection LOS exceeding LOS D or the General Plan standard adopted by the respective jurisdiction if impacts are likely to adjacent jurisdictions. An affected jurisdiction is defined as a neighboring jurisdiction or any jurisdiction where an appreciable impact is likely to occur due to the proposed downgrade or deletion. A change in the LOS or an increase in the ICU value of 0.01 constitutes an appreciable impact.

To initiate the MPAH amendment process, a local agency must submit a written request to OCTA describing the amendment requested and provide documentation to support the basis for the request. A copy of the request shall be submitted concurrently to the City Managers of adjoining cities. For the facilities under consideration, this would require letters to be forwarded to Santa Ana and Anaheim.

Once the initial request is forwarded to OCTA, a conference between Orange, OCTA, and potential affected jurisdictions is held to determine whether mutual agreement exists for the MPAH amendment. If mutual agreement exists, then Orange is expected to proceed with adopting the revised General Plan Circulation Element. Once the Orange General Plan Update is adopted, Orange would submit the Circulation Element to OCTA and request Board approval of the Orange County MPAH amendment.

The specific traffic analysis that OCTA would require to take action on the downgrade amendments should be included in the Project Scenario ADT and LOS tables and figures. The downgrade of Walnut Avenue to a two-lane facility results in fewer daily trips filtering through Walnut Avenue onto Orangewood Avenue, therefore, the direct impact on Orangewood Avenue, and potentially on the neighboring jurisdiction of Anaheim, is a reduction of traffic activity on Orangewood. In addition, surrounding facilities entering Anaheim are not degraded by traffic shifting away from Walnut Avenue. When Walnut Avenue is evaluated as a four-lane facility, it attracts east-west traffic from Collins Avenue and Palm Avenue, however, when evaluated as a two-lane facility, the traffic returns to the parallel east-west facilities as they all have excess capacity and maintain acceptable levels of service.

Cambridge Street future forecast volumes change very little whether it is coded as a two-lane or four-lane undivided facility. This is predominantly due to the localized nature of Cambridge Street and the fact that the character of this facility is not expected to change through the life of the General Plan horizon, in other words, it will always serve fronting residential uses to access the regional circulation system. Cambridge Street operates at acceptable levels of service as a two-lane facility.

Eligible cities may participate in the Measure M Streets and Roads Funding Programs and federal funding programs included in the Combined Transportation Funding Programs (CTFP). To be declared eligible to receive Measure M turnback funds, the agency's General Plan Circulation Element must be consistent with the Master Plan of Arterial Highways. Hence, the MPAH amendment process is a critical step for the

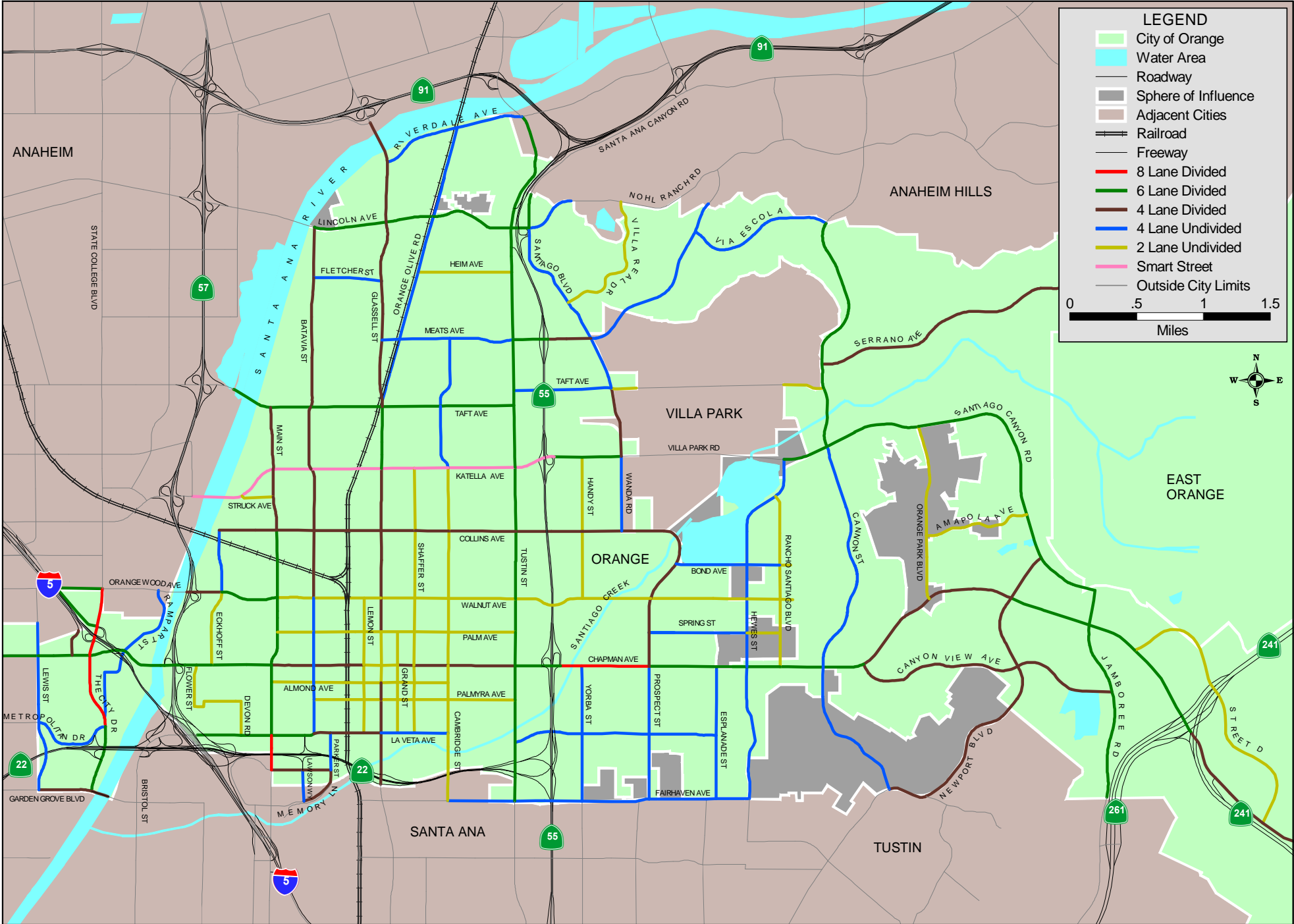
City to consider prior to downgrading the facilities identified. A city downgrade to a county MPAH facility would compromise eligibility for funding. The City must coordinate with OCTA on the potential downgrade to local facilities to amend the county MPAH to ensure eligibility issues are not encountered as a result of the downgrade. The following funding programs are outlined in the Orange County Transportation Authority *Combined Transportation Funding Programs 2004 Guidelines*:

- Measure M Streets and Roads Programs
 - Smart Streets Program
 - Regional Interchange Program
 - Intersection Improvement Program
 - Signal Improvement Program
 - Transportation Demand Management Program
 - Master Plan of Arterial Highways Program

- Reauthorized Federal Transportation Equity Act
 - Arterial Highway Rehabilitation Program
 - Regional Surface Transportation Program

Figure 4.14 presents the Proposed Orange Master Plan of Arterial Highways taking into consideration the Project Scenario recommended mitigation measures.

Figure 4.14 - Future MPAH with General Plan Implementation and Mitigation



Source File: Fig4-14-y30-Prop-Facility-061109.map

Appendix A Existing and Future No Project (MPAH) Intersection Lane
Geometry

APPENDIX A: EXISTING AND FUTURE NO PROJECT (MPAH) INTERSECTION LANE GEOMETRY

ID	Intersection	Year	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
1	Batavia St. @ Collins Ave.	Existing	0.5	1	0.5	0.5	1	0.5	1	1.5	0.5	1	1.5	0.5
		No Project	1	1.5	0.5	1	1.5	0.5	1	1.5	0.5	1	1.5	0.5
2	Batavia St. @ Katella Ave.	Existing	1	2	1	1	2	1	1	2.5	0.5	1	2.5	0.5
		No Project	1	2	1	1	2	1	2	3	1	2	3	1
3	Batavia St. @ Lincoln Ave.	Existing	1.5	0.5	1	1	0.5	0.5	1	1.5	0.5	1	1.5	0.5
		No Project	2	1	1	1	2	1	2	3	1	2	2.5	0.5
4	Batavia St. @ Taft Ave.	Existing	1	1.5	0.5	1	1.5	0.5	1	2	1	1	2	1
		No Project	2	1.5	0.5	1	1.5	0.5	2	3	1	2	3	1
5	Batavia St. @ Walnut Ave.	Existing	1	1.5	0.5	1	1.5	0.5	1	0.5	0.5	1	0.5	0.5
		No Project	1	1.5	0.5	1	1.5	0.5	1	2	1	1	2	1
6	Cambridge St. @ Katella Ave.	Existing	1	1	1	1	1	1	1	2.5	0.5	1	2.5	0.5
		No Project	1	2	1	1	2	1	1	2.5	0.5	1	2.5	0.5
7	Cannon St. @ Santiago Canyon Rd.	Existing	1	0.5	0.5	1.5	0.5	1	2	1.5	0.5	1	2	1
		No Project	2	1.5	0.5	3	3	f	2	3	1	2	3	f
8	Cannon St. @ Serrano Ave.	Existing	0	2	1	1	2	0	0	0	0	2	0	1
		No Project	0	3	1	1	3	0	0	0	0	2	0	1
9	Cannon St./ Crawford Canyon @ Chapman Ave.	Existing	1	0.5	0.5	1	1	1	1	2	1	1	2.5	0.5
		No Project	2	1.5	0.5	1	2	1	2	3	1	2	3	1
10	Yorba St. @ Chapman Ave.	Existing	2	1.5	0.5	1	1.5	0.5	1	3	1	1	3	1
		No Project	2	1.5	0.5	1	1.5	0.5	1	4	1	1	3	1
11	Canyon View Ave. @ Chapman Ave.	Existing	2	0	1	0	0	0	0	2	1	1	2	0
		No Project	2	0	1	0	0	0	0	3	1	1	3	0
12	Jamboree Rd. @ Chapman Ave.	Existing	2	2	2	2	3	1	2	3	1	2	3	1
		No Project	2	3	1	2	3	1	2	3	1	2	3	1
13	N/B SR-55 Ramps @ Chapman Ave.	Existing	0	0	2	0	0	2	2	2	0	0	3.5	1.5
		No Project	0	0	2	0	0	2	2	3	0	0	3.5	1.5
14	S/B SR-55 Ramps @ Chapman Ave.	Existing	0	0	0	2	0	2	0	3	f	0	3	f
		No Project	0	0	0	2	0	2	0	3	f	0	3	f
15	Lewis Street @ Chapman Ave	Existing	1	1	1	1	1.5	0.5	1	2.5	0.5	1	2	1
		No Project	1	2	1	1	1.5	0.5	2	3	1	2	3	1
16	The City Drive @ Chapman Ave.	Existing	2	4	1	2	3	1	2	3	1	2	3	1
		No Project	2	4	1	2	4	1	2	3	1	2	3	1
17	The City Drive @ E/B SR-22 on/off Ramps	Existing	1	3	0	1	3	f	1.5	0.5	1	0.5	0.5	1
		No Project	1	3	0	1	3	f	1.5	0.5	1	0.5	0.5	1
18	The City Drive @ W/B SR-22 on/off Ramps	Existing	1	3	0	0	3	f	1.5	0	1.5	0	0	0
		No Project	2	4	1	1	3	2	2	2	2	1	2	2
19	Glassell St. @ Collins Ave.	Existing	1	1.5	0.5	1	1	1	1	1.5	0.5	1	1.5	0.5
		No Project	1	2	1	1	2	1	2	1.5	0.5	1	1.5	0.5
20	Glassell St. @ Katella Ave.	Existing	1	2	1	1	2	1	2	2.5	0.5	2	2.5	0.5
		No Project	2	2	1	2	2	1	2	3	1	2	3	1
21	Glassell St. @ La Veta Ave.	Existing	2	1	1	1	1.5	0.5	1	1	1	1	1.5	0.5
		No Project	2	2	1	1	1.5	0.5	1	2	1	1	1.5	0.5
22	Glassell St. @ Lincoln Ave.	Existing	1	2	1	1	2	1	1	2	1	1	2	1
		No Project	2	3	1	2	2	1	2	3	1	2	3	1
23	Glassell St. @ Taft Ave.	Existing	1	2.5	0.5	1	2	1	1	1.5	0.5	1	2	1
		No Project	1	3	1	1	3	1	2	3	1	1	3	1
24	Glassell St. @ Walnut Ave.	Existing	0.33	0.33	0.33	0.33	0.33	0.33	0.5	0.5	1	0.33	0.33	0.33
		No Project	1	1.5	0.5	1	1.5	0.5	1	1.5	0.5	1	1.5	0.5
25	Hewes St. @ Chapman Ave.	Existing	1	1.5	0.5	1	1.5	0.5	1	2.5	0.5	1	2.5	0.5
		No Project	1	1.5	0.5	1	2	1	2	2.5	0.5	2	2.5	0.5
26	N/B SR-55 Ramps @ Katella Ave.	Existing	2	0	1	0	0	1	0	2	f	1	3	0
		No Project	2	0	1	0	0	1	0	3	f	1	3	0
27	S/B SR-55 Ramps @ Katella Ave.	Existing	0	0	0	2	0	1	0	2.5	1.5	1	3	0
		No Project	0	0	0	2	0	1	0	2.5	1.5	1	3	0
28	Main Street @ Chapman Ave.	Existing	2	2	1	1	2	1	1	2	1	1	2	1
		No Project	2	3	1	2	3	1	2	3	1	2	3	1
29	Main Street @ Katella Ave.	Existing	2	2	1	1	2	1	1	3	1	1	2.5	0.5
		No Project	2	2	1	2	2	1	2	3	1	2	3	1
30	Main Street @ La Veta Ave.	Existing	2	2	1	2	2.5	0.5	2	2	1	2	1.5	0.5
		No Project	2	3	1	2	3	1	2	3	1	2	3	1
31	Main Street @ Orangewood Ave.	Existing	1	1.5	0.5	1	1.5	0.5	1	1	1	1	0.5	0.5
		No Project	1	3	1	1	3	1	2	3	1	1	1.5	0.5
32	Main Street @ Taft Ave	Existing	1.5	0.5	1	1	0.5	0.5	1	1.5	0.5	1	1.5	0.5
		No Project	2.5	0.5	1	1	1	1	2	3	1	2	3	1

APPENDIX A: EXISTING AND FUTURE NO PROJECT (MPAH) INTERSECTION LANE GEOMETRY

ID	Intersection	Year	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
33	Main Street @ Town & Country Rd.	Existing	2	3	1	2	3	1	1.5	1	0.5	1.5	1.5	2
		No Project	2	3	1	2	3	1	1.5	1	0.5	1.5	1.5	2
34	Newport Blvd. @ Chapman Ave.	Existing	2	1.5	0.5	2	2	1	2	2	1	2	2	1
		No Project	2	1.5	0.5	2	2	1	2	3	1	2	3	1
35	Santiago Blvd. @ Nohl Ranch Rd.	Existing	2	1	1	1	2	1	1	2	1	1	1.5	0.5
		No Project	2	1	1	1	3	f	2	3	1	1	1.5	0.5
36	Eckhoff St. @ Orangewood Ave.	Existing	1	0.5	0.5	1	1	1	1	2	1	1	1.5	0.5
		No Project	1	1.5	0.5	1	1	f	2	2	1	2	2.5	0.5
37	State College Blvd. @ Orangewood Ave.	Existing	2	3	1	2	3.5	0.5	2	2.5	0.5	2	2	1
		No Project	2	4	1	2	4	1	2	3	1	2	2	1
38	Prospect St. @ Chapman Ave.	Existing	1	1.5	0.5	1	1.5	0.5	1	2.5	0.5	1	2.5	0.5
		No Project	1	2	1	1	2	1	2	3	1	2	3	1
39	Prospect St. @ Walnut Ave.	Existing	1	1.5	0.5	1	1.5	0.5	1	0.5	0.5	1	0.5	0.5
		No Project	1	1.5	0.5	1	1.5	0.5	1	1.5	0.5	1	1.5	0.5
40	Santiago Blvd. @ Meats Ave.	Existing	1	1.5	0.5	1	1.5	0.5	1	1.5	0.5	1	1.5	0.5
		No Project	2	2	1	2	1.5	0.5	1	1.5	1.5	2	1.5	0.5
41	Wanda Rd. @ Villa Park Rd.	Existing	1	1.5	0.5	1	1	1	1	2	1	1	1.5	0.5
		No Project	1	1.5	0.5	1	2	1	2	2	1	1	2	1
42	Tustin St. @ Chapman Ave.	Existing	2	2.5	0.5	2	2.5	0.5	2	1.5	0.5	2	2	1
		No Project	2	3	1	2	3	1	2	3	1	2	3	1
43	Tustin St. @ Collins Ave.	Existing	1	2.5	0.5	2	2.5	0.5	1	1.5	0.5	1	1.5	0.5
		No Project	2	3	1	2	3	1	2	2.5	0.5	2	2.5	0.5
44	Tustin St. @ Fairhaven Ave.	Existing	2	2.5	0.5	2	2.5	0.5	1	1.5	0.5	1	1.5	0.5
		No Project	2	3	1	2	3	1	1	1.5	1.5	2	1.5	1.5
45	Tustin St. @ Heim Ave.	Existing	1	2.5	0.5	1	2.5	0.5	1	0.5	0.5	1	0.5	0.5
		No Project	1	3	1	1	3	1	1	1	1	1	0.5	0.5
46	Tustin St. @ Katella Ave.	Existing	2	3	1	2	2.5	0.5	2	3	1	2	3	1
		No Project	2	3	1	2	3	1	2	3	1	2	3	1
47	Tustin St. @ La Veta Ave.	Existing	1	2.5	0.5	1	2.5	0.5	1	1.5	0.5	1.5	0.5	1
		No Project	1	3	1	1	3	1	1	1.5	0.5	1.5	0.5	1
48	Tustin St. @ Lincoln Ave.	Existing	1	2	1	1	3	1	1.5	1.5	1	1.5	1.5	1
		No Project	2	3	2	2	3	1	2	2	1	2	2	1
49	Tustin St. @ Meats Ave.	Existing	2	2.5	0.5	2	2.5	0.5	1	1.5	0.5	1	2	1
		No Project	2	3	1	2	3	1	2	2	1	2	2	1
50	Tustin St. @ Taft Ave. (North)	Existing	1	2.5	0.5	2	2.5	0.5	1	0	1	2	0	1
		No Project	1	3	1	2	2.5	0.5	1	0	1	2	0	1
51	Tustin St. @ Taft Ave. (South)	Existing	1	3	0	0	2.5	0.5	2	0	1	0	0	0
		No Project	2	3	1	0	3	1	2	0	1	0	0	0
52	Tustin St. @ Walnut Ave.	Existing	1	2.5	0.5	1	2.5	0.5	1	1	1	1	1	1
		No Project	1	3	1	1	3	1	1	2	1	1	2	1
55	Struck Ave. @ Katella Ave.	Existing	1.5	0	0.5	0	0	0	0	3	1	1	3	0
		No Project	1.5	0	0.5	0	0	0	0	3	1	1	3	0
56	Main St. @ Struck Ave.	Existing	1	2	0	1	2	0	1	1	0	1	1	0
		No Project	1	2	0	1	2	0	1	1	0	1	1	0
57	Main St. @ Collins Ave.	Existing	1	2	0	1	2	0	1	2	0	1	2	0
		No Project	1	2	0	1	2	0	1	2	0	1	2	0
58	S/B SR-57 Ramps @ Orangewood Ave.	Existing	0	0	0	1.5	0	1.5	0	1.5	1.5	1	2	0
		No Project	0	0	0	1.5	0	1.5	0	2	1	1	2	0
59	N/B SR-57 Ramps @ Orangewood Ave.	Existing	1.5	0	1.5	0	0	0	0	2	f	0	3	1
		No Project	1.5	0	1.5	0	0	0	0	3	f	0	3	1
60	The City Drive @ N/B I-5 Ramps/Anaheim Wy.	Existing	2	4	f	1	4	1	0	0	0	1.5	1.5	2
		No Project	2	4	f	1	4	1	0	0	0	1.5	1.5	2
61	The City Drive @ S/B I-5 Ramps	Existing	0	4.5	0.5	0	4	f	0.5	1.5	2	0	0	0
		No Project	0	5	0	0	4	f	0.5	1.5	2	0	0	0
62	S/B I-5 Ramps @ Chapman Ave.	Existing	2	0	1	2	0	1	0	3.5	1.5	2	3	0
		No Project	2	0	1	2	0	1	0	3.5	1.5	2	3	0
63	Rampart St. @ Chapman Ave./ N/B I-5 Ramps	Existing	0	0	0	1	0	1	1	3	0	0	4	0
		No Project	1	2	1	1	2	1	2	3	0	1	3	2
64	S/B SR-57 Ramps @ Chapman Ave.	Existing	0.5	0.5	1	0.5	0.5	1	1	3	0	1	2	f
		No Project	0.5	0.5	1	0.5	0.5	1	1	3	0	1	2	f
65	N/B SR-57 Ramps @ Chapman Ave.	Existing	1	0	1	0	0	1	1	2	f	0	3	0
		No Project	1	0	1	0	0	1	1	2	f	0	3	0

Appendix B Existing and Future No Project Intersection ICU Worksheets

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Existing							
INTERSECTION:		1 Batavia St. @ Collins Ave.							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	0.5	459	63	0.14 *	190	42	0.22 *		
NBT	1	2,315	318	0.14	2,297	508	0.22		
NBR	0.5	626	86	0.14	913	202	0.22		
SBL	0.5	383	70	0.18 *	989	158	0.16 *		
SBT	1	2,662	487	0.18	2,148	343	0.16		
SBR	0.5	355	65	0.18	263	42	0.16		
EBL	1	1,700	40	0.02 *	1,700	56	0.03		
EBT	1.5	2,831	214	0.08	3,191	610	0.19 *		
EBR	0.5	569	43	0.08	209	40	0.19		
WBL	1	1,700	190	0.11	1,700	114	0.07 *		
WBT	1.5	2,818	513	0.18 *	2,757	390	0.14		
WBR	0.5	582	106	0.18	643	91	0.14		
split phasing		N/S Movements		0.32			0.38		
		E/W Movements		0.21			0.26		
		Rt. Turn Component		0.00			0.00		
		Yellow Clearance		0.05			0.05		
TOTAL CAPACITY UTILIZATION				0.58				0.69	
LEVEL OF SERVICE (LOS)				A				B	

PROJECT:		City of Orange General Plan Update							
SCENARIO:		No Project							
INTERSECTION:		1 Batavia St. @ Collins Ave.							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	1	1,700	94	0.06 *	1,700	43	0.03		
NBT	1.5	2,872	490	0.17	2,548	634	0.25 *		
NBR	0.5	528	90	0.17	852	212	0.25		
SBL	1	1,700	74	0.04	1,700	166	0.10 *		
SBT	1.5	3,024	668	0.22 *	3,150	555	0.18		
SBR	0.5	376	83	0.22	250	44	0.18		
EBL	1	1,700	79	0.05 *	1,700	97	0.06		
EBT	1.5	2,569	272	0.11	3,027	714	0.24 *		
EBR	0.5	831	88	0.11	373	88	0.24		
WBL	1	1,700	211	0.12	1,700	218	0.13 *		
WBT	1.5	2,800	527	0.19 *	2,644	483	0.18		
WBR	0.5	600	113	0.19	756	138	0.18		
		N/S Movements		0.28			0.35		
		E/W Movements		0.23			0.36		
		Rt. Turn Component		0.00			0.00		
		Yellow Clearance		0.05			0.05		
TOTAL CAPACITY UTILIZATION				0.56				0.76	
LEVEL OF SERVICE (LOS)				A				C	

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Existing						
INTERSECTION:		2 Batavia St. @ Katella Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	72	0.04 *	1,700	67	0.04	
NBT	2	3,400	178	0.05	3,400	322	0.09 *	
NBR	1	1,700	189	0.11	1,700	297	0.17 *	
SBL	1	1,700	101	0.06	1,700	175	0.10 *	
SBT	2	3,400	323	0.10 *	3,400	268	0.08	
SBR	1	1,700	97	0.06	1,700	125	0.07	
EBL	1	1,700	78	0.05	1,700	159	0.09	
EBT	2.5	4,891	1,006	0.21 *	4,873	1,331	0.27 *	
EBR	0.5	209	43	0.21	227	62	0.27	
WBL	1	1,700	145	0.09 *	1,700	107	0.06 *	
WBT	2.5	4,763	947	0.20	4,590	1,017	0.22	
WBR	0.5	337	67	0.20	510	113	0.22	
N/S Movements				0.14	0.20			
E/W Movements				0.29	0.34			
Rt. Turn Component				0.00	0.02			
Yellow Clearance				0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.48	0.60			
LEVEL OF SERVICE (LOS)				A	A			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		2 Batavia St. @ Katella Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	130	0.08 *	1,700	100	0.06	
NBT	2	3,400	242	0.07	3,400	551	0.16 *	
NBR	1	1,700	247	0.15 *	1,700	339	0.20 *	
SBL	1	1,700	105	0.06	1,700	283	0.17 *	
SBT	2	3,400	479	0.14 *	3,400	434	0.13	
SBR	1	1,700	139	0.08	1,700	264	0.16	
EBL	2	3,400	126	0.04	3,400	267	0.08 *	
EBT	3	5,100	1,567	0.31 *	5,100	1,490	0.29	
EBR	1	1,700	96	0.06	1,700	70	0.04	
WBL	2	3,400	181	0.05 *	3,400	112	0.03	
WBT	3	5,100	1,139	0.22	5,100	1,311	0.26 *	
WBR	1	1,700	70	0.04	1,700	167	0.10	
N/S Movements				0.22	0.33			
E/W Movements				0.36	0.34			
Rt. Turn Component				0.02	0.00			
Yellow Clearance				0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.65	0.72			
LEVEL OF SERVICE (LOS)				B	C			

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update					
SCENARIO:		Existing					
INTERSECTION:		3 Batavia St. @ Lincoln Ave.					
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR		
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C
NBL	1.5	3,332	245	0.07	3,395	754	0.22 *
NBT	0.5	68	5	0.07	5	1	0.22
NBR	1	1,700	149	0.09 *	1,700	443	0.26
SBL	1	1,700	21	0.01 *	1,700	10	0.01 *
SBT	0.5	189	1	0.01	680	2	0.00
SBR	0.5	1,511	8	0.01	1,020	3	0.00
EBL	1	1,700	16	0.01	1,700	5	0.00
EBT	1.5	1,630	535	0.33 *	2,672	672	0.25 *
EBR	0.5	1,770	581	0.33	728	183	0.25
WBL	1	1,700	289	0.17 *	1,700	113	0.07 *
WBT	1.5	3,250	565	0.17	3,381	725	0.21
WBR	0.5	150	26	0.17	19	4	0.21
split phasing		N/S Movements		0.09			0.23
		E/W Movements		0.50			0.32
		Rt. Turn Component		0.00			0.00
		Yellow Clearance		0.05			0.05
TOTAL CAPACITY UTILIZATION				0.63	0.60		
LEVEL OF SERVICE (LOS)				B	A		

PROJECT:		City of Orange General Plan Update					
SCENARIO:		No Project					
INTERSECTION:		3 Batavia St. @ Lincoln Ave.					
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR		
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C
NBL	2	3,400	257	0.08	3,400	853	0.25 *
NBT	1	1,700	5	0.00	1,700	1	0.00
NBR	1	1,700	248	0.15 *	1,700	747	0.44 *
SBL	1	1,700	26	0.02 *	1,700	15	0.01 *
SBT	2	3,400	1	0.00	3,400	2	0.00
SBR	1	1,700	8	0.00	1,700	3	0.00
EBL	2	3,400	17	0.01	3,400	5	0.00 *
EBT	3	5,100	1,106	0.22 *	5,100	1,137	0.22
EBR	1	1,700	653	0.38 *	1,700	196	0.12
WBL	2	3,400	487	0.14 *	3,400	222	0.07
WBT	2.5	4,929	952	0.19	5,080	1,514	0.30 *
WBR	0.5	171	33	0.19	20	6	0.30
split phasing		N/S Movements		0.09			0.26
		E/W Movements		0.36			0.30
		Rt. Turn Component		0.09			0.12
		Yellow Clearance		0.05			0.05
TOTAL CAPACITY UTILIZATION				0.59	0.73		
LEVEL OF SERVICE (LOS)				A	C		

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Existing							
INTERSECTION:		4 Batavia St. @ Taft Ave.							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	1	1,700	53	0.03 *	1,700	128	0.08 *		
NBT	1.5	2,604	180	0.07	3,052	552	0.18		
NBR	0.5	796	55	0.07	348	63	0.18		
SBL	1	1,700	70	0.04	1,700	48	0.03		
SBT	1.5	1,700	420	0.25 *	2,045	308	0.15 *		
SBR	0.5	1,700	613	0.36 *	1,355	204	0.15		
EBL	1	1,700	160	0.09 *	1,700	203	0.12 *		
EBT	2	3,400	552	0.16	3,400	918	0.27		
EBR	1	1,700	96	0.06	1,700	59	0.03		
WBL	1	1,700	97	0.06	1,700	54	0.03		
WBT	2	3,400	731	0.22 *	3,400	697	0.21 *		
WBR	1	1,700	46	0.03	1,700	68	0.04		
		N/S Movements		0.28			0.23		
		E/W Movements		0.31			0.32		
		Rt. Turn Component		0.02			0.00		
		Yellow Clearance		0.05			0.05		
TOTAL CAPACITY UTILIZATION				0.66				0.60	
LEVEL OF SERVICE (LOS)				B				A	

PROJECT:		City of Orange General Plan Update							
SCENARIO:		No Project							
INTERSECTION:		4 Batavia St. @ Taft Ave.							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	2	3,400	60	0.02 *	3,400	263	0.08		
NBT	1.5	2,453	202	0.08	2,522	753	0.30 *		
NBR	0.5	947	78	0.08	878	262	0.30		
SBL	1	1,700	76	0.04	1,700	56	0.03 *		
SBT	1.5	1,700	559	0.33 *	2,247	417	0.19		
SBR	0.5	1,700	644	0.38 *	1,153	214	0.19		
EBL	2	3,400	168	0.05 *	3,400	213	0.06		
EBT	3	5,100	590	0.12	5,100	1,447	0.28 *		
EBR	1	1,700	127	0.07	1,700	109	0.06		
WBL	2	3,400	249	0.07	3,400	157	0.05 *		
WBT	3	5,100	1,205	0.24 *	5,100	859	0.17		
WBR	1	1,700	75	0.04	1,700	71	0.04		
		N/S Movements		0.35			0.33		
		E/W Movements		0.29			0.33		
		Rt. Turn Component		0.00			0.00		
		Yellow Clearance		0.05			0.05		
TOTAL CAPACITY UTILIZATION				0.68				0.71	
LEVEL OF SERVICE (LOS)				B				C	

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Existing						
INTERSECTION:		5 Batavia St. @ Walnut Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	37	0.02 *	1,700	35	0.02 *	
NBT	1.5	3,066	321	0.10	3,184	502	0.16	
NBR	0.5	334	35	0.10	216	34	0.16	
SBL	1	1,700	26	0.02	1,700	35	0.02	
SBT	1.5	3,127	527	0.17 *	2,849	533	0.19 *	
SBR	0.5	273	46	0.17	551	103	0.19	
EBL	1	1,700	136	0.08	1,700	63	0.04 *	
EBT	0.5	1,474	268	0.18 *	1,443	208	0.14	
EBR	0.5	226	41	0.18	257	37	0.14	
WBL	1	1,700	67	0.04 *	1,700	38	0.02	
WBT	0.5	1,466	175	0.12	1,404	199	0.14 *	
WBR	0.5	234	28	0.12	296	42	0.14	
N/S Movements				0.19			0.21	
E/W Movements				0.22			0.18	
Rt. Turn Component				0.00			0.00	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.46			0.44	
LEVEL OF SERVICE (LOS)				A			A	

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		5 Batavia St. @ Walnut Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	46	0.03 *	1,700	39	0.02 *	
NBT	1.5	3,140	446	0.14	3,185	577	0.18	
NBR	0.5	260	37	0.14	215	39	0.18	
SBL	1	1,700	27	0.02	1,700	71	0.04	
SBT	1.5	3,156	763	0.24 *	2,774	895	0.32 *	
SBR	0.5	244	59	0.24	626	202	0.32	
EBL	1	1,700	297	0.17 *	1,700	122	0.07 *	
EBT	2	3,400	312	0.09	3,400	400	0.12	
EBR	1	1,700	90	0.05	1,700	59	0.03	
WBL	1	1,700	180	0.11	1,700	46	0.03	
WBT	2	3,400	417	0.12 *	3,400	279	0.08 *	
WBR	1	1,700	75	0.04	1,700	61	0.04	
N/S Movements				0.27			0.35	
E/W Movements				0.30			0.15	
Rt. Turn Component				0.00			0.00	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.62			0.55	
LEVEL OF SERVICE (LOS)				B			A	

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Existing						
INTERSECTION:		6 Cambridge St. @ Katella Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	97	0.06 *	1,700	68	0.04	
NBT	1	1,700	136	0.08	1,700	293	0.17 *	
NBR	1	1,700	71	0.04	1,700	92	0.05	
SBL	1	1,700	139	0.08	1,700	135	0.08 *	
SBT	1	1,700	240	0.14 *	1,700	209	0.12	
SBR	1	1,700	135	0.08	1,700	45	0.03	
EBL	1	1,700	51	0.03 *	1,700	128	0.08	
EBT	2.5	4,748	621	0.13	4,878	1,563	0.32 *	
EBR	0.5	352	46	0.13	222	71	0.32	
WBL	1	1,700	47	0.03	1,700	77	0.05 *	
WBT	2.5	4,821	1,193	0.25 *	4,331	1,160	0.27	
WBR	0.5	279	69	0.25	769	206	0.27	
		N/S Movements		0.20			0.25	
		E/W Movements		0.28			0.37	
		Rt. Turn Component		0.00			0.00	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.53	0.67			
LEVEL OF SERVICE (LOS)				A	B			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		6 Cambridge St. @ Katella Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	138	0.08 *	1,700	79	0.05	
NBT	2	3,400	143	0.04	3,400	308	0.09 *	
NBR	1	1,700	75	0.04	1,700	101	0.06	
SBL	1	1,700	146	0.09	1,700	147	0.09 *	
SBT	2	3,400	252	0.07 *	3,400	211	0.06	
SBR	1	1,700	197	0.12	1,700	52	0.03	
EBL	1	1,700	78	0.05 *	1,700	155	0.09	
EBT	2.5	4,656	744	0.16	4,895	2,105	0.43 *	
EBR	0.5	444	71	0.16	205	88	0.43	
WBL	1	1,700	49	0.03	1,700	85	0.05 *	
WBT	2.5	4,887	1,650	0.34 *	4,429	1,465	0.33	
WBR	0.5	213	72	0.34	671	222	0.33	
		N/S Movements		0.16			0.18	
		E/W Movements		0.38			0.48	
		Rt. Turn Component		0.00			0.00	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.59	0.71			
LEVEL OF SERVICE (LOS)				A	C			

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Existing							
INTERSECTION:		7 Cannon St. @ Santiago Canyon Rd.							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	1	1,700	147	0.09	1,700	79	0.05		
NBT	0.5	1,432	123	0.09	1,641	167	0.10	*	
NBR	0.5	268	23	0.09	59	6	0.10		
SBL	1.5	2,980	1,249	0.42	2,523	446	0.18	*	
SBT	0.5	420	176	0.42	877	155	0.18		
SBR	1	1,700	627	0.37	1,700	286	0.17		
EBL	2	3,400	243	0.07	3,400	339	0.10	*	
EBT	1.5	3,067	644	0.21	2,726	542	0.20		
EBR	0.5	333	70	0.21	674	134	0.20		
WBL	1	1,700	7	0.00	1,700	11	0.01		
WBT	2	3,400	689	0.20	3,400	715	0.21	*	
WBR	1	1,700	456	0.27	1,700	1,112	0.65	*	
split phasing		N/S Movements		0.51			0.28		
		E/W Movements		0.27			0.31		
		Rt. Turn Component		0.00			0.26		
		Yellow Clearance		0.05			0.05		
TOTAL CAPACITY UTILIZATION				0.83				0.90	
LEVEL OF SERVICE (LOS)				D				D	

PROJECT:		City of Orange General Plan Update							
SCENARIO:		No Project							
INTERSECTION:		7 Cannon St. @ Santiago Canyon Rd.							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	2	3,400	299	0.09	3,400	202	0.06		
NBT	1.5	2,930	268	0.09	3,288	588	0.18	*	
NBR	0.5	470	43	0.09	112	20	0.18		
SBL	3	5,100	1,962	0.38	5,100	1,364	0.27	*	
SBT	3	5,100	476	0.09	5,100	365	0.07		
SBR(free)	f		1,399			681			
EBL	2	3,400	385	0.11	3,400	835	0.25	*	
EBT	3	5,100	960	0.19	5,100	1,247	0.24		
EBR	1	1,700	134	0.08	1,700	237	0.14		
WBL	2	3,400	20	0.01	3,400	17	0.01		
WBT	3	5,100	1,442	0.28	5,100	1,129	0.22	*	
SBR(free)	f		1,162			1,815			
split phasing		N/S Movements		0.48			0.45		
		E/W Movements		0.40			0.47		
		Rt. Turn Component		0.00			0.00		
		Yellow Clearance		0.05			0.05		
TOTAL CAPACITY UTILIZATION				0.92				0.96	
LEVEL OF SERVICE (LOS)				E				E	

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update					
SCENARIO:		Existing					
INTERSECTION:		8 Cannon St. @ Serrano Ave.					
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR		
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C
NBL	0		0			0	
NBT	2	3,400	588	0.17	3,400	1,218	0.36 *
NBR	1	1,700	135	0.08	1,700	316	0.19
SBL	1	1,700	78	0.05	1,700	117	0.07 *
SBT	2	3,400	1,691	0.50 *	3,400	641	0.19
SBR	0		0			0	
EBL	0		0			0	
EBT	0		0	0.00		0	0.00
EBR	0		0			0	
WBL	2	3,400	469	0.14 *	3,400	148	0.04 *
WBT	0		0	0.00		0	0.00
WBR	1	1,700	160	0.09	1,700	64	0.04
		N/S Movements		0.50			0.43
		E/W Movements		0.14			0.04
		Rt. Turn Component		0.00			0.00
		Yellow Clearance		0.05			0.05
TOTAL CAPACITY UTILIZATION				0.69			0.52
LEVEL OF SERVICE (LOS)				B			A

PROJECT:		City of Orange General Plan Update					
SCENARIO:		No Project					
INTERSECTION:		8 Cannon St. @ Serrano Ave.					
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR		
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C
NBL	0		0			0	
NBT	3	5,100	1,530	0.30	5,100	2,406	0.47 *
NBR	1	1,700	319	0.19	1,700	1,227	0.72 *
SBL	1	1,700	82	0.05	1,700	199	0.12 *
SBT	3	5,100	2,824	0.55 *	5,100	1,609	0.32
SBR	0		0			0	
EBL	0		0			0	
EBT	0		0	0.00		0	0.00
EBR	0		0			0	
WBL	2	3,400	1,256	0.37 *	3,400	530	0.16 *
WBT	0		0	0.00		0	0.00
WBR	1	1,700	250	0.15	1,700	79	0.05
		N/S Movements		0.55			0.59
		E/W Movements		0.37			0.16
		Rt. Turn Component		0.00			0.09
		Yellow Clearance		0.05			0.05
TOTAL CAPACITY UTILIZATION				0.97			0.89
LEVEL OF SERVICE (LOS)				E			D

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Existing						
INTERSECTION:		9 Cannon St./ Crawford Canyon @ Chapman Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	197	0.12 *	1,700	172	0.10	
NBT	0.5	786	74	0.09	1,238	161	0.13 *	
NBR	0.5	914	86	0.09	462	60	0.13	
SBL	1	1,700	107	0.06	1,700	51	0.03 *	
SBT	1	1,700	213	0.13 *	1,700	92	0.05	
SBR	1	1,700	276	0.16	1,700	101	0.06	
EBL	1	1,700	77	0.05	1,700	239	0.14 *	
EBT	2	3,400	951	0.28 *	3,400	997	0.29	
EBR	1	1,700	213	0.13	1,700	192	0.11	
WBL	1	1,700	92	0.05 *	1,700	54	0.03	
WBT	2.5	4,904	1,203	0.25	4,672	1,060	0.23 *	
WBR	0.5	196	48	0.25	428	97	0.23	
		N/S Movements		0.24			0.16	
		E/W Movements		0.33			0.37	
		Rt. Turn Component		0.00			0.00	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.63	0.58			
LEVEL OF SERVICE (LOS)				B	A			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		9 Cannon St./ Crawford Canyon @ Chapman Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	307	0.09 *	3,400	371	0.11	
NBT	1.5	1,700	158	0.09	2,318	557	0.24 *	
NBR	0.5	1,700	172	0.10	1,082	260	0.24	
SBL	1	1,700	169	0.10	1,700	103	0.06 *	
SBT	2	3,400	583	0.17 *	3,400	247	0.07	
SBR	1	1,700	339	0.20 *	1,700	101	0.06	
EBL	2	3,400	89	0.03 *	3,400	296	0.09	
EBT	3	5,100	1,038	0.20	5,100	1,548	0.30 *	
EBR	1	1,700	402	0.24	1,700	396	0.23	
WBL	2	3,400	354	0.10	3,400	166	0.05 *	
WBT	3	5,100	2,075	0.41 *	5,100	1,217	0.24	
WBR	1	1,700	113	0.07	1,700	179	0.11	
		N/S Movements		0.26			0.30	
		E/W Movements		0.43			0.35	
		Rt. Turn Component		0.00			0.00	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.75	0.70			
LEVEL OF SERVICE (LOS)				C	B			

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Existing							
INTERSECTION:		10 Yorba St. @ Chapman Ave.							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	2	3,400	265	0.08 *	3,400	380	0.11 *		
NBT	1.5	1,700	22	0.01	1,700	14	0.01		
NBR	0.5	1,700	34	0.02	1,700	118	0.07		
SBL	1	1,700	23	0.01	1,700	52	0.03		
SBT	1.5	1,700	8	0.00	1,700	20	0.01		
SBR	0.5	1,700	37	0.02	1,700	98	0.06 *		
EBL	1	1,700	187	0.11 *	1,700	90	0.05		
EBT	3	5,100	1,111	0.22	5,100	2,129	0.42 *		
EBR	1	1,700	158	0.09	1,700	341	0.20		
WBL	1	1,700	68	0.04	1,700	82	0.05 *		
WBT	3	5,100	2,027	0.40 *	5,100	1,419	0.28		
WBR	1	1,700	25	0.01	1,700	24	0.01		
split phasing		N/S Movements		0.09			0.14		
		E/W Movements		0.51			0.47		
		Rt. Turn Component		0.00			0.00		
		Yellow Clearance		0.05			0.05		
TOTAL CAPACITY UTILIZATION				0.65				0.66	
LEVEL OF SERVICE (LOS)				B				B	

PROJECT:		City of Orange General Plan Update							
SCENARIO:		No Project							
INTERSECTION:		10 Yorba St. @ Chapman Ave.							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	2	3,400	317	0.09 *	3,400	399	0.12 *		
NBT	1.5	1,700	23	0.01	1,700	16	0.01		
NBR	0.5	1,700	35	0.02	1,700	163	0.10		
SBL	1	1,700	24	0.01	1,700	68	0.04		
SBT	1.5	1,700	11	0.01	1,700	25	0.01		
SBR	0.5	1,700	39	0.02 *	1,700	103	0.06 *		
EBL	1	1,700	201	0.12 *	1,700	91	0.05		
EBT	3	5,100	1,358	0.27	5,100	2,625	0.51 *		
EBR	1	1,700	289	0.17	1,700	403	0.24		
WBL	1	1,700	107	0.06	1,700	135	0.08 *		
WBT	3	5,100	2,481	0.49 *	5,100	1,667	0.33		
WBR	1	1,700	26	0.02	1,700	34	0.02		
split phasing		N/S Movements		0.11			0.16		
		E/W Movements		0.60			0.59		
		Rt. Turn Component		0.00			0.00		
		Yellow Clearance		0.05			0.05		
TOTAL CAPACITY UTILIZATION				0.76				0.80	
LEVEL OF SERVICE (LOS)				C				C	

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Existing						
INTERSECTION:		11 Canyon View Ave. @ Chapman Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	520	0.15 *	3,400	223	0.07 *	
NBT	0		0	0.00		0	0.00	
NBR	1	1,700	29	0.02	1,700	5	0.00	
SBL	0		0			0		
SBT	0		0	0.00		0	0.00	
SBR	0		0			0		
EBL	0		0			0		
EBT	2	3,400	846	0.25	3,400	821	0.24	
EBR	1	1,700	291	0.17	1,700	283	0.17	
WBL	1	1,700	7	0.00	1,700	10	0.01	
WBT	2	3,400	891	0.26 *	3,400	996	0.29 *	
WBR	0		0			0		
		N/S Movements		0.15			0.07	
		E/W Movements		0.26			0.29	
		Rt. Turn Component		0.00			0.00	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.47	0.41			
LEVEL OF SERVICE (LOS)				A	A			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		11 Canyon View Ave. @ Chapman Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	544	0.16 *	3,400	224	0.07 *	
NBT	0		0	0.00		0	0.00	
NBR	1	1,700	37	0.02	1,700	9	0.01	
SBL	0		0			0		
SBT	0		0	0.00		0	0.00	
SBR	0		0			0		
EBL	0		0			0		
EBT	3	5,100	1,103	0.22	5,100	1,691	0.33 *	
EBR	1	1,700	294	0.17	1,700	327	0.19	
WBL	1	1,700	16	0.01	1,700	13	0.01 *	
WBT	3	5,100	2,066	0.41 *	5,100	1,336	0.26	
WBR	0		0			0		
		N/S Movements		0.16			0.07	
		E/W Movements		0.41			0.34	
		Rt. Turn Component		0.00			0.00	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.62	0.46			
LEVEL OF SERVICE (LOS)				B	A			

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update					
SCENARIO:		Existing					
INTERSECTION:		12 Jamboree Rd. @ Chapman Ave.					
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR		
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C
NBL	2	3,400	76	0.02	3,400	391	0.12
NBT	2	3,400	192	0.06 *	3,400	980	0.29 *
NBR	2	3,400	187	0.06	3,400	147	0.04
SBL	2	3,400	560	0.16 *	3,400	335	0.10 *
SBT	3	5,100	958	0.19	5,100	237	0.05
SBR	1	1,700	42	0.02	1,700	55	0.03
EBL	2	3,400	41	0.01	3,400	62	0.02 *
EBT	3	5,100	445	0.09 *	5,100	368	0.07
EBR	1	1,700	217	0.13 *	1,700	154	0.09
WBL	2	3,400	181	0.05 *	3,400	127	0.04
WBT	3	5,100	419	0.08	5,100	525	0.10 *
WBR	1	1,700	399	0.23	1,700	582	0.34 *
N/S Movements				0.22			0.39
E/W Movements				0.14			0.12
Rt. Turn Component				0.02			0.14
Yellow Clearance				0.05			0.05
TOTAL CAPACITY UTILIZATION				0.43			0.70
LEVEL OF SERVICE (LOS)				A			B

PROJECT:		City of Orange General Plan Update					
SCENARIO:		No Project					
INTERSECTION:		12 Jamboree Rd. @ Chapman Ave.					
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR		
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C
NBL	2	3,400	375	0.11 *	3,400	1,043	0.31 *
NBT	3	5,100	193	0.04	5,100	1,128	0.22
NBR	1	1,700	207	0.12 *	1,700	154	0.09
SBL	2	3,400	828	0.24	3,400	444	0.13
SBT	3	5,100	1,298	0.25 *	5,100	249	0.05 *
SBR	1	1,700	277	0.16	1,700	229	0.13
EBL	2	3,400	135	0.04 *	3,400	349	0.10 *
EBT	3	5,100	1,615	0.32	5,100	1,527	0.30
EBR	1	1,700	778	0.46 *	1,700	506	0.30
WBL	2	3,400	190	0.06	3,400	133	0.04
WBT	3	5,100	1,718	0.34 *	5,100	1,761	0.35 *
WBR	1	1,700	419	0.25	1,700	843	0.50 *
N/S Movements				0.36			0.36
E/W Movements				0.38			0.45
Rt. Turn Component				0.06			0.02
Yellow Clearance				0.05			0.05
TOTAL CAPACITY UTILIZATION				0.85			0.87
LEVEL OF SERVICE (LOS)				D			D

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update					
SCENARIO:		Existing					
INTERSECTION:		13 N/B SR-55 Ramps @ Chapman Ave.					
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR		
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C
NBL	0		0		0		
NBT	0		0	0.00	0	0.00	
NBR	2	3,400	732	0.22 *	3,400	1,240	0.36 *
SBL	0		0		0		
SBT	0		0	0.00	0	0.00	
SBR	2	3,400	672	0.20 *	3,400	725	0.21 *
EBL	2	3,400	281	0.08 *	3,400	338	0.10
EBT	2	3,400	1,058	0.31	3,400	1,426	0.42 *
EBR	0		0		0		
WBL	0		0		0		*
WBT	3.5	6,179	1,741	0.28 *	6,328	1,471	0.23
WBR	1.5	2,321	654	0.28	2,172	505	0.23
SB critical only		N/S Movements		0.20			0.21
EB through excluded		E/W Movements		0.36			0.33
only WB right		Rt. Turn Component		0.00			0.00
		Yellow Clearance		0.05			0.05
TOTAL CAPACITY UTILIZATION				0.61	0.60		
LEVEL OF SERVICE (LOS)				B	A		

PROJECT:		City of Orange General Plan Update					
SCENARIO:		No Project					
INTERSECTION:		13 N/B SR-55 Ramps @ Chapman Ave.					
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR		
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C
NBL	0		0		0		
NBT	0		0	0.00	0	0.00	
NBR	2	3,400	907	0.27 *	3,400	1,335	0.39 *
SBL	0		0		0		
SBT	0		0	0.00	0	0.00	
SBR	2	3,400	869	0.26 *	3,400	899	0.26 *
EBL	2	3,400	329	0.10 *	3,400	355	0.10
EBT	3	5,100	1,393	0.27	5,100	1,875	0.37 *
EBR	0		0		0		
WBL	0		0		0		*
WBT	3.5	6,212	2,121	0.34 *	6,095	1,541	0.25
WBR	1.5	2,288	781	0.34	2,405	608	0.25
SB critical only		N/S Movements		0.26			0.26
EB through excluded		E/W Movements		0.44			0.36
only WB right		Rt. Turn Component		0.00			0.00
		Yellow Clearance		0.05			0.05
TOTAL CAPACITY UTILIZATION				0.74	0.67		
LEVEL OF SERVICE (LOS)				C	B		

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Existing						
INTERSECTION:		14 S/B SR-55 Ramps @ Chapman Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	0		0		0			
NBT	0		0	0.00	0	0.00		
NBR	0		0		0			
SBL	2	3,400	353	0.10 *	3,400	619	0.18 *	
SBT	0		0	0.00		0	0.00	
SBR	2	3,400	416	0.12 *	3,400	368	0.11 *	
EBL	0		0			0		
EBT	3	5,100	839	0.16	5,100	1,196	0.23	
EBR (free)	f		667			509		
WBL	0		0			0		
WBT	3	5,100	1,355	0.27 *	5,100	1,569	0.31 *	
WBR (free)	f		1,010			740		
		N/S Movements		0.10		0.18		
		E/W Movements		0.27		0.31		
		Rt. Turn Component		0.02		0.00		
		Yellow Clearance		0.05		0.05		
TOTAL CAPACITY UTILIZATION				0.44	0.54			
LEVEL OF SERVICE (LOS)				A	A			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		14 S/B SR-55 Ramps @ Chapman Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	0		0		0			
NBT	0		0	0.00		0	0.00	
NBR	0		0			0		
SBL	2	3,400	698	0.21 *	3,400	740	0.22 *	
SBT	0		0	0.00		0	0.00	
SBR	2	3,400	437	0.13 *	3,400	440	0.13 *	
EBL	0		0			0		
EBT	3	5,100	903	0.18	5,100	1,460	0.29	
EBR (free)	f		811			550		
WBL	0		0			0		
WBT	3	5,100	2,087	0.41 *	5,100	1,790	0.35 *	
WBR (free)	f		1,131			780		
		N/S Movements		0.21		0.22		
		E/W Movements		0.41		0.35		
		Rt. Turn Component		0.00		0.00		
		Yellow Clearance		0.05		0.05		
TOTAL CAPACITY UTILIZATION				0.66	0.62			
LEVEL OF SERVICE (LOS)				B	B			

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Existing						
INTERSECTION:		15 Lewis Street @ Chapman Ave						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	96	0.06 *	1,700	139	0.08	
NBT	1	1,700	164	0.10	1,700	353	0.21 *	
NBR	1	1,700	251	0.15	1,700	315	0.19	
SBL	1	1,700	53	0.03	1,700	95	0.06 *	
SBT	1.5	3,142	329	0.10 *	2,550	332	0.13	
SBR	0.5	258	27	0.10	850	71	0.08	
EBL	1	1,700	44	0.03	1,700	77	0.05 *	
EBT	2.5	4,259	1,144	0.27 *	4,250	914	0.22	
EBR	0.5	841	226	0.27	850	142	0.17	
WBL	1	1,700	274	0.16 *	1,700	401	0.24	
WBT	2	3,400	420	0.12	3,400	1,636	0.48 *	
WBR	1	1,700	49	0.03	1,700	166	0.10	
N/S Movements				0.16	0.26			
E/W Movements				0.43	0.53			
Rt. Turn Component				0.00	0.00			
Yellow Clearance				0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.64	0.84			
LEVEL OF SERVICE (LOS)				B	D			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		15 Lewis Street @ Chapman Ave						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	108	0.06 *	1,700	153	0.09 *	
NBT	2	3,400	225	0.07	3,400	380	0.11	
NBR	1	1,700	260	0.15	1,700	337	0.20	
SBL	1	1,700	56	0.03	1,700	115	0.07	
SBT	1.5	3,179	403	0.13 *	2,820	428	0.15 *	
SBR	0.5	221	28	0.13	580	88	0.15	
EBL	2	3,400	62	0.02	3,400	81	0.02 *	
EBT	3	5,100	1,225	0.24 *	5,100	951	0.19	
EBR	1	1,700	348	0.20	1,700	158	0.09	
WBL	2	3,400	379	0.11 *	3,400	437	0.13	
WBT	3	5,100	437	0.09	5,100	1,713	0.34 *	
WBR	1	1,700	62	0.04	1,700	170	0.10	
N/S Movements				0.19	0.24			
E/W Movements				0.35	0.36			
Rt. Turn Component				0.00	0.00			
Yellow Clearance				0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.59	0.65			
LEVEL OF SERVICE (LOS)				A	B			

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Existing						
INTERSECTION:		16 The City Drive @ Chapman Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	127	0.04 *	3,400	182	0.05 *	
NBT	4	6,800	483	0.07	6,800	1,078	0.16	
NBR	1	1,700	174	0.10	1,700	661	0.39	
SBL	2	3,400	169	0.05	3,400	114	0.03	
SBT	3	5,100	867	0.17 *	5,100	1,209	0.24 *	
SBR	1	1,700	423	0.25	1,700	570	0.34	
EBL	2	3,400	267	0.08	3,400	443	0.13 *	
EBT	3	5,100	1,194	0.23 *	5,100	1,195	0.23	
EBR	1	1,700	163	0.10	1,700	162	0.10	
WBL	2	3,400	365	0.11 *	3,400	476	0.14	
WBT	3	5,100	782	0.15	5,100	1,288	0.25 *	
WBR	1	1,700	56	0.03	1,700	79	0.05	
N/S Movements				0.21			0.29	
E/W Movements				0.34			0.38	
Rt. Turn Component				0.00			0.09	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.60			0.81	
LEVEL OF SERVICE (LOS)				A			D	

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		16 The City Drive @ Chapman Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	133	0.04 *	3,400	204	0.06 *	
NBT	4	6,800	553	0.08	6,800	1,163	0.17	
NBR	1	1,700	183	0.11	1,700	703	0.41	
SBL	2	3,400	219	0.06	3,400	120	0.04	
SBT	4	6,800	1,075	0.16 *	6,800	1,341	0.20 *	
SBR	1	1,700	497	0.29	1,700	585	0.34 *	
EBL	2	3,400	323	0.10	3,400	476	0.14	
EBT	3	5,100	1,240	0.24 *	5,100	1,266	0.25 *	
EBR	1	1,700	171	0.10	1,700	196	0.12	
WBL	2	3,400	394	0.12 *	3,400	544	0.16 *	
WBT	3	5,100	800	0.16	5,100	1,361	0.27	
WBR	1	1,700	74	0.04	1,700	80	0.05	
N/S Movements				0.20			0.26	
E/W Movements				0.36			0.41	
Rt. Turn Component				0.04			0.09	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.65			0.80	
LEVEL OF SERVICE (LOS)				B			C	

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update					
SCENARIO:		Existing					
INTERSECTION:		17 The City Drive @ E/B SR-22 on/off Ramps					
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR		
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C
NBL	1	1,700	77	0.05	1,700	55	0.03
NBT	3	5,100	878	0.21 *	5,100	921	0.28 *
NBR	0		209			499	
SBL	1	1,700	185	0.11 *	1,700	257	0.15 *
SBT	3	5,100	564	0.11	5,100	660	0.13
SBR(free)	f		503			567	
EBL	1.5	3,333	299	0.09 *	3,383	205	0.06 *
EBT	0.5	67	6	0.09	17	1	0.06
EBR	1	1,700	33	0.02	1,700	26	0.02
WBL	0.5	1,275	3	0.00 *	106	4	0.04 *
WBT	0.5	425	1	0.00	1,594	60	0.04
WBR	1	1,700	2	0.00	1,700	21	0.01
split phasing	N/S Movements			0.32	0.43		
	E/W Movements			0.09	0.10		
	Rt. Turn Component			0.00	0.00		
	Yellow Clearance			0.05	0.05		
TOTAL CAPACITY UTILIZATION				0.46	0.58		
LEVEL OF SERVICE (LOS)				A	A		

PROJECT:		City of Orange General Plan Update					
SCENARIO:		No Project					
INTERSECTION:		17 The City Drive @ E/B SR-22 on/off Ramps					
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR		
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C
NBL	1	1,700	81	0.05	1,700	58	0.03
NBT	3	5,100	1,137	0.27 *	5,100	1,360	0.37 *
NBR	0		219			504	
SBL	1	1,700	293	0.17 *	1,700	295	0.17 *
SBT	3	5,100	1,035	0.32	5,100	921	0.30
SBR(free)	f		576			592	
EBL	1.5	2,550	358	0.14 *	3,385	222	0.07
EBT	0.5	850	6	0.01	15	1	0.07 *
EBR	1	1,700	35	0.02	1,700	27	0.02
WBL	0.5	850	4	0.00 *	138	6	0.04 *
WBT	0.5	850	1	0.00	1,562	68	0.04
WBR	1	1,700	5	0.00	1,700	38	0.02
split phasing	N/S Movements			0.44	0.54		
	E/W Movements			0.15	0.11		
	Rt. Turn Component			0.00	0.00		
	Yellow Clearance			0.05	0.05		
TOTAL CAPACITY UTILIZATION				0.63	0.70		
LEVEL OF SERVICE (LOS)				B	B		

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Existing						
INTERSECTION:		18 The City Drive @ WB SR-22 on/off Ramps						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	39	0.02 *	1,700	107	0.06 *	
NBT	3	5,100	816	0.16	5,100	838	0.16	
NBR	0		0			0		
SBL	0		0			0		
SBT	3	5,100	827	0.16 *	5,100	1,246	0.24 *	
SBR (free)	f		186			755		
EBL	1.5	3,112	734	0.24 *	2,656	226	0.09 *	
EBT	0		0	0.00		0	0.00	
EBR	1.5	1,988	469	0.24	2,444	208		
WBL	0		0			0		
WBT	0		0	0.00		0	0.00	
WBR	0		0			0		
		N/S Movements		0.19			0.31	
		E/W Movements		0.24			0.09	
		Rt. Turn Component		0.00			0.00	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.47	0.44			
LEVEL OF SERVICE (LOS)				A	A			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		18 The City Drive @ WB SR-22 on/off Ramps						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	0		0			0		
NBT	3	5,100	1,053	0.21	5,100	1,044	0.20	
NBR	0		0			0		
SBL	0		0			0		
SBT	3	5,100	1,586	0.31 *	5,100	1,522	0.30 *	
SBR (free)	0		0			0		
EBL	0		0	0.00		0	0.00	
EBT	0		0	0.00		0	0.00	
EBR	0		0	0.00		0	0.00	
WBL	0		0			0		
WBT	0		0	0.00		0	0.00	
WBR	0		0			0		
		N/S Movements		0.00			0.00	
		E/W Movements		0.00			0.00	
		Rt. Turn Component		0.00			0.00	
		Yellow Clearance		0.00			0.00	
TOTAL CAPACITY UTILIZATION				0.00	0.00			
LEVEL OF SERVICE (LOS)								

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Existing						
INTERSECTION:		19 Glassell St. @ Collins Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	31	0.02 *	1,700	30	0.02 *	
NBT	1.5	2,984	237	0.08	3,191	458	0.14	
NBR	0.5	416	33	0.08	209	30	0.14	
SBL	1	1,700	78	0.05	1,700	74	0.04	
SBT	1	1,700	446	0.26 *	1,700	335	0.20 *	
SBR	1	1,700	372	0.22	1,700	207	0.12	
EBL	1	1,700	85	0.05 *	1,700	276	0.16 *	
EBT	1.5	3,195	342	0.11	3,277	775	0.24	
EBR	0.5	205	22	0.11	123	29	0.24	
WBL	1	1,700	35	0.02	1,700	30	0.02	
WBT	1.5	3,128	815	0.26 *	2,989	407	0.14 *	
WBR	0.5	272	71	0.26	411	56	0.14	
N/S Movements				0.28			0.21	
E/W Movements				0.31			0.30	
Rt. Turn Component				0.00			0.00	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.64			0.56	
LEVEL OF SERVICE (LOS)				B			A	

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		19 Glassell St. @ Collins Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	32	0.02 *	1,700	39	0.02	
NBT	2	3,400	341	0.10	3,400	954	0.28 *	
NBR	1	1,700	38	0.02	1,700	41	0.02	
SBL	1	1,700	115	0.07	1,700	136	0.08 *	
SBT	2	3,400	777	0.23 *	3,400	566	0.17	
SBR	1	1,700	488	0.29	1,700	367	0.22	
EBL	2	3,400	105	0.03 *	3,400	407	0.12 *	
EBT	1.5	3,170	359	0.11	3,279	814	0.25	
EBR	0.5	230	26	0.11	121	30	0.25	
WBL	1	1,700	47	0.03	1,700	32	0.02	
WBT	1.5	3,032	823	0.27 *	2,814	427	0.15 *	
WBR	0.5	368	100	0.27	586	89	0.15	
N/S Movements				0.25			0.36	
E/W Movements				0.30			0.27	
Rt. Turn Component				0.03			0.00	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.63			0.68	
LEVEL OF SERVICE (LOS)				B			B	

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Existing						
INTERSECTION:		20 Glassell St. @ Katella Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	126	0.07 *	1,700	108	0.06	
NBT	2	3,400	347	0.10	3,400	413	0.12 *	
NBR	1	1,700	57	0.03	1,700	99	0.06	
SBL	1	1,700	161	0.09	1,700	220	0.13 *	
SBT	2	3,400	548	0.16 *	3,400	546	0.16	
SBR	1	1,700	171	0.10	1,700	177	0.10	
EBL	2	3,400	104	0.03 *	3,400	182	0.05	
EBT	2.5	4,210	473	0.11	4,744	1,241	0.26 *	
EBR	0.5	890	100	0.11	356	93	0.26	
WBL	2	3,400	163	0.05	3,400	208	0.06 *	
WBT	2.5	4,512	783	0.17 *	4,419	883	0.20	
WBR	0.5	588	102	0.17	681	136	0.20	
N/S Movements				0.24	0.25			
E/W Movements				0.20	0.32			
Rt. Turn Component				0.00	0.00			
Yellow Clearance				0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.49	0.62			
LEVEL OF SERVICE (LOS)				A	B			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		20 Glassell St. @ Katella Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	156	0.05 *	3,400	258	0.08 *	
NBT	2	3,400	446	0.13	3,400	805	0.24	
NBR	1	1,700	75	0.04	1,700	217	0.13	
SBL	2	3,400	215	0.06	3,400	305	0.09	
SBT	2	3,400	862	0.25 *	3,400	918	0.27 *	
SBR	1	1,700	216	0.13	1,700	268	0.16	
EBL	2	3,400	151	0.04 *	3,400	191	0.06	
EBT	3	5,100	700	0.14	5,100	1,464	0.29 *	
EBR	1	1,700	174	0.10	1,700	133	0.08	
WBL	2	3,400	254	0.07	3,400	302	0.09 *	
WBT	3	5,100	978	0.19 *	5,100	1,154	0.23	
WBR	1	1,700	132	0.08	1,700	145	0.09	
N/S Movements				0.30	0.35			
E/W Movements				0.24	0.38			
Rt. Turn Component				0.00	0.00			
Yellow Clearance				0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.59	0.77			
LEVEL OF SERVICE (LOS)				A	C			

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Existing						
INTERSECTION:		21 Glassell St. @ La Veta Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	230	0.07 *	3,400	309	0.09	
NBT	1	1,700	396	0.23	1,700	643	0.38 *	
NBR	1	1,700	146	0.09	1,700	354	0.21	
SBL	1	1,700	14	0.01	1,700	26	0.02 *	
SBT	1.5	3,328	737	0.22 *	3,076	436	0.14	
SBR	0.5	72	16	0.22	324	46	0.14	
EBL	1	1,700	51	0.03	1,700	78	0.05	
EBT	1	1,700	173	0.10 *	1,700	449	0.26 *	
EBR	1	1,700	386	0.23 *	1,700	559	0.33	
WBL	1	1,700	307	0.18 *	1,700	124	0.07 *	
WBT	1.5	3,291	362	0.11	3,249	215	0.07	
WBR	0.5	109	12	0.11	151	10	0.07	
N/S Movements				0.29	0.39			
E/W Movements				0.28	0.34			
Rt. Turn Component				0.06	0.00			
Yellow Clearance				0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.68	0.78			
LEVEL OF SERVICE (LOS)				B	C			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		21 Glassell St. @ La Veta Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	295	0.09 *	3,400	324	0.10	
NBT	2	3,400	401	0.12	3,400	931	0.27 *	
NBR	1	1,700	153	0.09	1,700	372	0.22	
SBL	1	1,700	22	0.01	1,700	39	0.02 *	
SBT	1.5	3,286	1,038	0.32 *	2,943	579	0.20	
SBR	0.5	114	36	0.32	457	90	0.20	
EBL	1	1,700	65	0.04	1,700	222	0.13	
EBT	2	3,400	197	0.06 *	3,400	647	0.19 *	
EBR	1	1,700	389	0.23 *	1,700	709	0.42 *	
WBL	1	1,700	322	0.19 *	1,700	130	0.08 *	
WBT	1.5	3,311	519	0.16	3,174	253	0.08	
WBR	0.5	89	14	0.16	226	18	0.08	
N/S Movements				0.40	0.30			
E/W Movements				0.25	0.27			
Rt. Turn Component				0.08	0.13			
Yellow Clearance				0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.78	0.75			
LEVEL OF SERVICE (LOS)				C	C			

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Existing							
INTERSECTION:		22 Glassell St. @ Lincoln Ave.							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	1	1,700	89	0.05	1,700	110	0.06	*	
NBT	2	3,400	384	0.11	3,400	1,750	0.51	*	
NBR	1	1,700	125	0.07	1,700	226	0.13		
SBL	1	1,700	90	0.05	1,700	184	0.11	*	
SBT	2	3,400	744	0.22	3,400	475	0.14	*	
SBR	1	1,700	241	0.14	1,700	143	0.08		
EBL	1	1,700	139	0.08	1,700	252	0.15	*	
EBT	2	3,400	409	0.12	3,400	671	0.20	*	
EBR	1	1,700	169	0.10	1,700	108	0.06		
WBL	1	1,700	206	0.12	1,700	117	0.07	*	
WBT	2	3,400	517	0.15	3,400	524	0.15	*	
WBR	1	1,700	122	0.07	1,700	148	0.09		
N/S Movements				0.27				0.62	
E/W Movements				0.24				0.30	
Rt. Turn Component				0.00				0.00	
Yellow Clearance				0.05				0.05	
TOTAL CAPACITY UTILIZATION				0.56				0.98	
LEVEL OF SERVICE (LOS)				A				E	

PROJECT:		City of Orange General Plan Update							
SCENARIO:		No Project							
INTERSECTION:		22 Glassell St. @ Lincoln Ave.							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	2	3,400	104	0.03	3,400	151	0.04	*	
NBT	3	5,100	495	0.10	5,100	1,988	0.39	*	
NBR	1	1,700	141	0.08	1,700	344	0.20		
SBL	2	3,400	104	0.03	3,400	322	0.09	*	
SBT	2	3,400	775	0.23	3,400	499	0.15	*	
SBR	1	1,700	291	0.17	1,700	225	0.13		
EBL	2	3,400	283	0.08	3,400	371	0.11	*	
EBT	3	5,100	727	0.14	5,100	1,324	0.26	*	
EBR	1	1,700	270	0.16	1,700	119	0.07		
WBL	2	3,400	352	0.10	3,400	155	0.05	*	
WBT	3	5,100	1,022	0.20	5,100	1,114	0.22	*	
WBR	1	1,700	266	0.16	1,700	261	0.15		
N/S Movements				0.26				0.48	
E/W Movements				0.28				0.33	
Rt. Turn Component				0.00				0.00	
Yellow Clearance				0.05				0.05	
TOTAL CAPACITY UTILIZATION				0.59				0.86	
LEVEL OF SERVICE (LOS)				A				D	

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Existing						
INTERSECTION:		23 Glassell St. @ Taft Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	142	0.08 *	1,700	78	0.05	
NBT	2.5	4,531	557	0.12	4,696	1,349	0.29 *	
NBR	0.5	569	70	0.12	404	116	0.29	
SBL	1	1,700	66	0.04	1,700	52	0.03 *	
SBT	2	3,400	1,006	0.30 *	3,400	708	0.21	
SBR	1	1,700	281	0.17	1,700	221	0.13	
EBL	1	1,700	115	0.07 *	1,700	253	0.15 *	
EBT	1.5	2,686	365	0.14	2,931	594	0.20	
EBR	0.5	714	97	0.14	469	95	0.20	
WBL	1	1,700	114	0.07	1,700	55	0.03	
WBT	2	3,400	486	0.14 *	3,400	371	0.11 *	
WBR	1	1,700	101	0.06	1,700	110	0.06	
N/S Movements				0.38			0.32	
E/W Movements				0.21			0.26	
Rt. Turn Component				0.00			0.00	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.64			0.63	
LEVEL OF SERVICE (LOS)				B			B	

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		23 Glassell St. @ Taft Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	239	0.14 *	1,700	111	0.07	
NBT	3	5,100	606	0.12	5,100	1,790	0.35 *	
NBR	1	1,700	124	0.07	1,700	186	0.11	
SBL	1	1,700	115	0.07	1,700	55	0.03 *	
SBT	3	5,100	1,410	0.28 *	5,100	986	0.19	
SBR	1	1,700	466	0.27	1,700	232	0.14	
EBL	2	3,400	121	0.04 *	3,400	351	0.10	
EBT	3	5,100	481	0.09	5,100	993	0.19 *	
EBR	1	1,700	103	0.06	1,700	223	0.13	
WBL	1	1,700	177	0.10	1,700	151	0.09 *	
WBT	3	5,100	895	0.18 *	5,100	645	0.13	
WBR	1	1,700	120	0.07	1,700	179	0.11	
N/S Movements				0.42			0.38	
E/W Movements				0.21			0.28	
Rt. Turn Component				0.00			0.00	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.68			0.72	
LEVEL OF SERVICE (LOS)				B			C	

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Existing							
INTERSECTION:		24 Glassell St. @ Walnut Ave.							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	0.33	157	26	0.17 *	111	36	0.32	*	
NBT	0.33	1,314	217	0.17	1,290	417	0.32		
NBR	0.33	212	35	0.17	282	91	0.32		
SBL	0.33	105	23	0.22	185	41	0.22		
SBT	0.33	1,392	306	0.22 *	1,366	302	0.22	*	
SBR	0.33	186	41	0.22	131	29	0.22		
EBL	0.5	221	30	0.14 *	451	60	0.13	*	
EBT	0.5	1,479	201	0.14	1,249	166	0.13		
EBR	1	1,700	25	0.01	1,700	36	0.02		
WBL	0.33	297	52	0.18	347	47	0.14		
WBT	0.33	1,209	212	0.18 *	974	132	0.14	*	
WBR	0.33	177	31	0.18	362	49	0.14		
		N/S Movements		0.39			0.54		
		E/W Movements		0.31			0.27		
		Rt. Turn Component		0.00			0.00		
		Yellow Clearance		0.05			0.05		
TOTAL CAPACITY UTILIZATION				0.75				0.86	
LEVEL OF SERVICE (LOS)				C				D	

PROJECT:		City of Orange General Plan Update							
SCENARIO:		No Project							
INTERSECTION:		24 Glassell St. @ Walnut Ave.							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	1	1,700	38	0.02 *	1,700	55	0.03		
NBT	1.5	3,016	291	0.10	2,933	786	0.27	*	
NBR	0.5	384	37	0.10	467	125	0.27		
SBL	1	1,700	36	0.02	1,700	80	0.05	*	
SBT	1.5	2,591	474	0.18 *	3,001	474	0.16		
SBR	0.5	809	148	0.18	399	63	0.16		
EBL	1	1,700	72	0.04 *	1,700	142	0.08	*	
EBT	1.5	3,030	229	0.08	2,893	285	0.10		
EBR	0.5	370	28	0.08	507	50	0.10		
WBL	1	1,700	55	0.03	1,700	49	0.03		
WBT	1.5	2,998	388	0.13 *	2,340	181	0.08	*	
WBR	0.5	402	52	0.13	1,060	82	0.08		
		N/S Movements		0.21			0.32		
		E/W Movements		0.17			0.16		
		Rt. Turn Component		0.00			0.00		
		Yellow Clearance		0.05			0.05		
TOTAL CAPACITY UTILIZATION				0.43				0.53	
LEVEL OF SERVICE (LOS)				A				A	

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Existing							
INTERSECTION:		25 Hewes St. @ Chapman Ave.							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR				
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	1	1,700	79	0.05	1,700	135	0.08	*	
NBT	1.5	2,627	248	0.09	2,429	235	0.10		
NBR	0.5	773	73	0.09	971	94	0.10		
SBL	1	1,700	174	0.10	1,700	105	0.06	*	
SBT	1.5	1,700	224	0.13	1,883	154	0.08	*	
SBR	0.5	1,700	242	0.14	1,517	124	0.08		
EBL	1	1,700	161	0.09	1,700	253	0.15	*	
EBT	2.5	4,717	1,122	0.24	4,725	1,499	0.32		
EBR	0.5	383	91	0.24	375	119	0.32		
WBL	1	1,700	193	0.11	1,700	103	0.06		
WBT	2.5	4,850	1,399	0.29	4,828	1,366	0.28	*	
WBR	0.5	250	72	0.29	272	77	0.28		
N/S Movements				0.20				0.16	
E/W Movements				0.38				0.43	
Rt. Turn Component				0.00				0.00	
Yellow Clearance				0.05				0.05	
TOTAL CAPACITY UTILIZATION				0.63				0.64	
LEVEL OF SERVICE (LOS)				B				B	

PROJECT:		City of Orange General Plan Update							
SCENARIO:		No Project							
INTERSECTION:		25 Hewes St. @ Chapman Ave.							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR				
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	1	1,700	84	0.05	1,700	136	0.08		
NBT	1.5	2,648	271	0.10	2,537	291	0.11	*	
NBR	0.5	752	77	0.10	863	99	0.11		
SBL	1	1,700	240	0.14	1,700	160	0.09	*	
SBT	2	3,400	435	0.13	3,400	218	0.06		
SBR	1	1,700	406	0.24	1,700	192	0.11		
EBL	2	3,400	206	0.06	3,400	410	0.12		
EBT	2.5	4,578	1,149	0.25	4,751	1,947	0.41	*	
EBR	0.5	522	131	0.25	349	143	0.41		
WBL	2	3,400	285	0.08	3,400	108	0.03	*	
WBT	2.5	4,845	1,785	0.37	4,772	1,441	0.30		
WBR	0.5	255	94	0.37	328	99	0.30		
N/S Movements				0.24				0.21	
E/W Movements				0.43				0.44	
Rt. Turn Component				0.05				0.00	
Yellow Clearance				0.05				0.05	
TOTAL CAPACITY UTILIZATION				0.77				0.70	
LEVEL OF SERVICE (LOS)				C				B	

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Existing						
INTERSECTION:		26 N/B SR-55 Ramps @ Katella Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	630	0.19 *	3,400	819	0.24 *	
NBT	0		0	0.00		4	0.00	
NBR	1	1,700	304	0.18	1,700	632	0.37	
SBL	0		0			0		
SBT	0		0	0.00		0	0.00	
SBR	1	1,700	44	0.03 *	1,700	33	0.02 *	
EBL	0		0			0		
EBT	2	3,400	558	0.16 *	3,400	1,004	0.30 *	
EBR (free)	f		216			487		
WBL	1	1,700	514	0.30 *	1,700	301	0.18 *	
WBT	3	5,100	1,241	0.24	5,100	831	0.16	
WBR	0	0	0		0	0		
split phasing		N/S Movements		0.19		0.24		
		E/W Movements		0.47		0.47		
		Rt. Turn Component		0.03		0.02		
		Yellow Clearance		0.05		0.05		
TOTAL CAPACITY UTILIZATION				0.73	0.78			
LEVEL OF SERVICE (LOS)				C	C			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		26 N/B SR-55 Ramps @ Katella Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	665	0.20 *	3,400	860	0.25 *	
NBT	0		0	0.00		10	0.00	
NBR	1	1,700	315	0.19	1,700	792	0.47	
SBL	0		0			0		
SBT	0		0	0.00 *		0	0.00	
SBR	1	1,700	46	0.03 *	1,700	35	0.02 *	
EBL	0		0			0		
EBT	3	5,100	659	0.13 *	5,100	1,653	0.32 *	
EBR (free)	f		227			498		
WBL	1	1,700	598	0.35 *	1,700	351	0.21 *	
WBT	3	5,100	1,962	0.38	5,100	1,167	0.23	
WBR	0	0	0		0	0		
split phasing		N/S Movements		0.20		0.25		
		E/W Movements		0.48		0.53		
		Rt. Turn Component		0.03		0.03		
		Yellow Clearance		0.05		0.05		
TOTAL CAPACITY UTILIZATION				0.75	0.86			
LEVEL OF SERVICE (LOS)				C	D			

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Existing						
INTERSECTION:		27 S/B SR-55 Ramps @ Katella Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	0		0			0		
NBT	0		0	0.00		0	0.00	
NBR	0		0			0		
SBL	2	3,400	210	0.06 *	3,400	367	0.11 *	
SBT	0		0	0.00		0	0.00	
SBR	1	1,700	444	0.26 *	1,700	403	0.24 *	
EBL	0		0			0		
EBT	2.5	3,400	569	0.17 *	3,605	1,073	0.30 *	
EBR	1.5	3,400	588	0.17	3,195	951	0.30	
WBL	1	1,700	663	0.39 *	1,700	341	0.20 *	
WBT	3	5,100	1,271	0.25	5,100	1,321	0.26	
WBR	0		0			0		
split phasing		N/S Movements		0.06			0.11	
		E/W Movements		0.56			0.50	
		Rt. Turn Component		0.21			0.13	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.87			0.79	
LEVEL OF SERVICE (LOS)				D			C	

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		27 S/B SR-55 Ramps @ Katella Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	0		0			0		
NBT	0		0	0.00		0	0.00	
NBR	0		0			0		
SBL	2	3,400	221	0.07 *	3,400	447	0.13 *	
SBT	0		0	0.00		0	0.00	
SBR	1	1,700	478	0.28 *	1,700	423	0.25 *	
EBL	0		0			0		
EBT	2.5	3,457	638	0.18 *	4,052	1,432	0.35 *	
EBR	1.5	3,343	617	0.18	2,748	971	0.35	
WBL	1	1,700	761	0.45 *	1,700	400	0.24 *	
WBT	3	5,100	1,849	0.36	5,100	1,496	0.29	
WBR	0		0			0		
split phasing		N/S Movements		0.07			0.13	
		E/W Movements		0.63			0.59	
		Rt. Turn Component		0.22			0.12	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.96			0.89	
LEVEL OF SERVICE (LOS)				E			D	

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Existing						
INTERSECTION:		28 Main Street @ Chapman Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	161	0.05 *	3,400	503	0.15 *	
NBT	2	3,400	498	0.15	3,400	792	0.23	
NBR	1	1,700	132	0.08	1,700	213	0.13	
SBL	1	1,700	84	0.05	1,700	146	0.09	
SBT	2	3,400	780	0.23 *	3,400	812	0.24 *	
SBR	1	1,700	114	0.07	1,700	129	0.08	
EBL	1	1,700	127	0.07	1,700	213	0.13	
EBT	2	3,400	549	0.16 *	3,400	741	0.22 *	
EBR	1	1,700	310	0.18	1,700	131	0.08	
WBL	1	1,700	239	0.14 *	1,700	258	0.15 *	
WBT	2	3,400	558	0.16	3,400	800	0.24	
WBR	1	1,700	51	0.03	1,700	54	0.03	
		N/S Movements		0.28			0.39	
		E/W Movements		0.30			0.37	
		Rt. Turn Component		0.00			0.00	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.63	0.81			
LEVEL OF SERVICE (LOS)				B	D			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		28 Main Street @ Chapman Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	251	0.07 *	3,400	472	0.14 *	
NBT	3	5,100	698	0.14	5,100	1,301	0.26	
NBR	1	1,700	162	0.10	1,700	266	0.16	
SBL	2	3,400	102	0.03	3,400	174	0.05	
SBT	3	5,100	1,138	0.22 *	5,100	1,250	0.25 *	
SBR	1	1,700	176	0.10	1,700	146	0.09	
EBL	2	3,400	144	0.04	3,400	273	0.08	
EBT	3	5,100	576	0.11 *	5,100	778	0.15 *	
EBR	1	1,700	369	0.22 *	1,700	164	0.10	
WBL	2	3,400	333	0.10 *	3,400	406	0.12 *	
WBT	3	5,100	823	0.16	5,100	927	0.18	
WBR	1	1,700	68	0.04	1,700	87	0.05	
		N/S Movements		0.30			0.38	
		E/W Movements		0.21			0.27	
		Rt. Turn Component		0.03			0.00	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.59	0.71			
LEVEL OF SERVICE (LOS)				A	C			

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Existing						
INTERSECTION:		29 Main Street @ Katella Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	67	0.02 *	3,400	206	0.06	
NBT	2	3,400	218	0.06	3,400	537	0.16 *	
NBR	1	1,700	143	0.08	1,700	227	0.13	
SBL	1	1,700	80	0.05	1,700	80	0.05 *	
SBT	2	3,400	326	0.10 *	3,400	271	0.08	
SBR	1	1,700	75	0.04	1,700	151	0.09	
EBL	1	1,700	90	0.05	1,700	65	0.04	
EBT	3	5,100	768	0.15 *	5,100	1,234	0.24 *	
EBR	1	1,700	91	0.05	1,700	75	0.04	
WBL	1	1,700	345	0.20 *	1,700	244	0.14 *	
WBT	2.5	4,712	766	0.16	4,590	990	0.22	
WBR	0.5	388	63	0.16	510	110	0.22	
N/S Movements				0.12			0.21	
E/W Movements				0.35			0.39	
Rt. Turn Component				0.00			0.00	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.52			0.64	
LEVEL OF SERVICE (LOS)				A			B	

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		29 Main Street @ Katella Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	106	0.03 *	3,400	232	0.07	
NBT	2	3,400	309	0.09	3,400	677	0.20 *	
NBR	1	1,700	205	0.12	1,700	238	0.14	
SBL	2	3,400	140	0.04	3,400	90	0.03 *	
SBT	2	3,400	405	0.12 *	3,400	446	0.13	
SBR	1	1,700	145	0.09	1,700	250	0.15	
EBL	2	3,400	141	0.04	3,400	132	0.04	
EBT	3	5,100	1,217	0.24 *	5,100	1,526	0.30 *	
EBR	1	1,700	102	0.06	1,700	136	0.08	
WBL	2	3,400	362	0.11 *	3,400	338	0.10 *	
WBT	3	5,100	1,048	0.21	5,100	1,378	0.27	
WBR	1	1,700	77	0.05	1,700	171	0.10	
N/S Movements				0.15			0.23	
E/W Movements				0.35			0.40	
Rt. Turn Component				0.00			0.00	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.55			0.67	
LEVEL OF SERVICE (LOS)				A			B	

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Existing						
INTERSECTION:		30 Main Street @ La Veta Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	140	0.04 *	3,400	364	0.11 *	
NBT	2	3,400	649	0.19	3,400	1,092	0.32	
NBR	1	1,700	307	0.18	1,700	643	0.38	
SBL	2	3,400	175	0.05	3,400	243	0.07	
SBT	2.5	4,380	918	0.21 *	4,071	1,179	0.29 *	
SBR	0.5	720	151	0.21	1,029	298	0.29	
EBL	2	3,400	381	0.11 *	3,400	441	0.13 *	
EBT	2	3,400	422	0.12	3,648	407	0.11	
EBR	1	1,700	107	0.06	1,452	162	0.11	
WBL	2	3,400	338	0.10	3,400	499	0.15	
WBT	1.5	2,058	276	0.13 *	2,550	773	0.30 *	
WBR	0.5	1,342	180	0.13	850	275	0.32	
		N/S Movements		0.25			0.40	
		E/W Movements		0.25			0.43	
		Rt. Turn Component		0.00			0.00	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.55				0.88
LEVEL OF SERVICE (LOS)				A				D

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		30 Main Street @ La Veta Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	160	0.05 *	3,400	382	0.11 *	
NBT	3	5,100	801	0.16	5,100	1,572	0.31	
NBR	1	1,700	322	0.19	1,700	650	0.38	
SBL	2	3,400	249	0.07	3,400	416	0.12	
SBT	3	5,100	1,328	0.26 *	5,100	1,712	0.34 *	
SBR	1	1,700	293	0.17	1,700	459	0.27	
EBL	2	3,400	594	0.17 *	3,400	409	0.12 *	
EBT	3	5,100	445	0.09	5,100	427	0.08	
EBR	1	1,700	115	0.07	1,700	170	0.10	
WBL	2	3,400	355	0.10	3,400	524	0.15	
WBT	3	5,100	347	0.07 *	5,100	812	0.16 *	
WBR	1	1,700	245	0.14	1,700	425	0.25	
		N/S Movements		0.31			0.45	
		E/W Movements		0.24			0.28	
		Rt. Turn Component		0.00			0.00	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.60				0.78
LEVEL OF SERVICE (LOS)				A				C

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Existing						
INTERSECTION:		31 Main Street @ Orangewood Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	152	0.09 *	1,700	126	0.07 *	
NBT	1.5	2,864	385	0.13	3,130	650	0.21	
NBR	0.5	536	72	0.13	270	56	0.21	
SBL	1	1,700	13	0.01	1,700	29	0.02	
SBT	1.5	2,600	543	0.21 *	2,736	618	0.23 *	
SBR	0.5	800	167	0.21	664	150	0.23	
EBL	1	1,700	210	0.12 *	1,700	131	0.08	
EBT	1	1,700	277	0.16	1,700	299	0.18 *	
EBR	1	1,700	160	0.09	1,700	229	0.13	
WBL	1	1,700	109	0.06	1,700	69	0.04 *	
WBT	0.5	1,582	202	0.13 *	1,500	203	0.14	
WBR	0.5	118	15	0.13	200	27	0.14	
N/S Movements				0.30	0.30			
E/W Movements				0.25	0.22			
Rt. Turn Component				0.00	0.00			
Yellow Clearance				0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.60	0.57			
LEVEL OF SERVICE (LOS)				A	A			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		31 Main Street @ Orangewood Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	212	0.12 *	1,700	311	0.18 *	
NBT	3	5,100	602	0.12	5,100	1,064	0.21	
NBR	1	1,700	114	0.07	1,700	187	0.11	
SBL	1	1,700	17	0.01	1,700	45	0.03	
SBT	3	5,100	833	0.16 *	5,100	948	0.19 *	
SBR	1	1,700	190	0.11	1,700	173	0.10	
EBL	2	3,400	307	0.09	3,400	138	0.04	
EBT	3	5,100	409	0.08 *	5,100	504	0.10 *	
EBR	1	1,700	282	0.17	1,700	380	0.22	
WBL	1	1,700	276	0.16 *	1,700	124	0.07 *	
WBT	1.5	3,135	379	0.12	3,084	273	0.09	
WBR	0.5	265	32	0.12	316	28	0.09	
N/S Movements				0.29	0.37			
E/W Movements				0.24	0.17			
Rt. Turn Component				0.00	-0.06			
Yellow Clearance				0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.58	0.53			
LEVEL OF SERVICE (LOS)				A	A			

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Existing							
INTERSECTION:		32 Main Street @ Taft Ave							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	1.5	2,792	179	0.06 *	3,187	554	0.17 *		
NBT	0.5	608	39	0.06	213	37	0.17		
NBR	1	1,700	126	0.07	1,700	282	0.17		
SBL	1	1,700	6	0.00	1,700	12	0.01		
SBT	0.5	735	48	0.07 *	397	43	0.11 *		
SBR	0.5	965	63	0.07	1,303	141	0.11		
EBL	1	1,700	122	0.07	1,700	48	0.03		
EBT	1.5	2,427	898	0.37 *	2,900	933	0.32 *		
EBR	0.5	973	360	0.37	500	161	0.32		
WBL	1	1,700	231	0.14 *	1,700	130	0.08 *		
WBT	1.5	3,325	709	0.21	3,366	989	0.29		
WBR	0.5	75	16	0.21	34	10	0.29		
split phasing		N/S Movements		0.13			0.28		
		E/W Movements		0.51			0.40		
		Rt. Turn Component		0.00			0.00		
		Yellow Clearance		0.05			0.05		
TOTAL CAPACITY UTILIZATION				0.69				0.73	
LEVEL OF SERVICE (LOS)				B				C	

PROJECT:		City of Orange General Plan Update							
SCENARIO:		No Project							
INTERSECTION:		32 Main Street @ Taft Ave							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	2.5	3,229	183	0.06 *	4,274	714	0.17 *		
NBT	0.5	1,871	106	0.06	826	138	0.17		
NBR	1	1,700	144	0.08	1,700	398	0.13		
SBL	1	1,700	18	0.01	1,700	35	0.02		
SBT	1	1,700	165	0.10 *	1,700	114	0.07 *		
SBR	1	1,700	169	0.10	1,700	371	0.22 *		
EBL	2	3,400	365	0.11	3,400	164	0.05 *		
EBT	3	5,100	1,128	0.22 *	5,100	1,207	0.24		
EBR	1	1,700	519	0.31 *	1,700	191	0.11		
WBL	2	3,400	346	0.10 *	3,400	175	0.05		
WBT	3	5,100	829	0.16	5,100	1,325	0.26 *		
WBR	1	1,700	50	0.03	1,700	39	0.02		
split phasing		N/S Movements		0.15			0.23		
		E/W Movements		0.32			0.31		
		Rt. Turn Component		0.03			0.10		
		Yellow Clearance		0.05			0.05		
TOTAL CAPACITY UTILIZATION				0.55				0.70	
LEVEL OF SERVICE (LOS)				A				B	

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Existing						
INTERSECTION:		33 Main Street @ Town & Country Rd.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	31	0.01	3,400	54	0.02	
NBT	3	5,100	815	0.16 *	5,100	1,124	0.22 *	
NBR	1	1,700	103	0.06	1,700	231	0.14	
SBL	2	3,400	304	0.09 *	3,400	446	0.13 *	
SBT	3	5,100	1,005	0.20	5,100	1,118	0.22	
SBR	1	1,700	27	0.02	1,700	153	0.09	
EBL	1.5	1,467	22	0.02	1,746	184	0.11	
EBT	1	967	29	0.03 *	1,781	264	0.15 *	
EBR	0.5	733	22	0.03	769	114	0.15	
WBL	1.5	3,400	187	0.06 *	3,109	214	0.07 *	
WBT	1.5	1,700	48	0.03	1,991	137	0.07	
WBR	2	3,400	436	0.13	3,400	499	0.15	
split phasing	N/S Movements			0.25	0.35			
	E/W Movements			0.09	0.22			
	Rt. Turn Component			0.00	0.00			
	Yellow Clearance			0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.38	0.62			
LEVEL OF SERVICE (LOS)				A	B			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		33 Main Street @ Town & Country Rd.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	72	0.02 *	3,400	168	0.05	
NBT	3	5,100	829	0.16	5,100	1,559	0.31 *	
NBR	1	1,700	108	0.06	1,700	341	0.20	
SBL	2	3,400	330	0.10	3,400	468	0.14 *	
SBT	3	5,100	1,269	0.25 *	5,100	1,405	0.28	
SBR	1	1,700	71	0.04	1,700	310	0.18	
EBL	1.5	1,524	39	0.03	1,679	222	0.13	
EBT	1	897	48	0.05 *	1,630	340	0.21 *	
EBR	0.5	803	43	0.05	920	192	0.21	
WBL	1.5	3,400	257	0.08 *	2,509	244	0.10 *	
WBT	1.5	1,700	137	0.08	2,591	252	0.10	
WBR	2	3,400	545	0.16	3,400	524	0.15	
split phasing	N/S Movements			0.27	0.44			
	E/W Movements			0.13	0.31			
	Rt. Turn Component			0.00	0.00			
	Yellow Clearance			0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.45	0.80			
LEVEL OF SERVICE (LOS)				A	C			

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update					
SCENARIO:		Existing					
INTERSECTION:		34 Newport Blvd. @ Chapman Ave.					
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR		
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C
NBL	2	3,400	89	0.03	3,400	86	0.03
NBT	1.5	2,086	146	0.07 *	1,700	113	0.07 *
NBR	0.5	1,314	92	0.07	1,700	118	0.07
SBL	2	3,400	26	0.01 *	3,400	52	0.02 *
SBT	2	3,400	125	0.04	3,400	137	0.04
SBR	1	1,700	41	0.02	1,700	72	0.04
EBL	2	3,400	129	0.04	3,400	114	0.03 *
EBT	2	3,400	567	0.17 *	3,400	514	0.15
EBR	1	1,700	182	0.11	1,700	87	0.05
WBL	2	3,400	99	0.03 *	3,400	88	0.03
WBT	2	3,400	496	0.15	3,400	663	0.20 *
WBR	1	1,700	57	0.03	1,700	67	0.04
		N/S Movements		0.08			0.08
		E/W Movements		0.20			0.23
		Rt. Turn Component		0.00			0.00
		Yellow Clearance		0.05			0.05
TOTAL CAPACITY UTILIZATION				0.32			0.36
LEVEL OF SERVICE (LOS)				A			A

PROJECT:		City of Orange General Plan Update					
SCENARIO:		No Project					
INTERSECTION:		34 Newport Blvd. @ Chapman Ave.					
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR		
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C
NBL	2	3,400	93	0.03	3,400	90	0.03
NBT	1.5	2,364	235	0.10 *	1,891	183	0.10 *
NBR	0.5	1,036	103	0.10	1,509	146	0.10
SBL	2	3,400	823	0.24 *	3,400	1,137	0.33 *
SBT	2	3,400	473	0.14	3,400	239	0.07
SBR	1	1,700	162	0.10	1,700	175	0.10
EBL	2	3,400	284	0.08 *	3,400	313	0.09 *
EBT	3	5,100	867	0.17	5,100	1,081	0.21
EBR	1	1,700	191	0.11	1,700	91	0.05
WBL	2	3,400	202	0.06	3,400	88	0.03
WBT	3	5,100	1,339	0.26 *	5,100	927	0.18 *
WBR	1	1,700	1,774	1.04 *	1,700	1,120	0.66 *
		N/S Movements		0.34			0.43
		E/W Movements		0.35			0.27
		Rt. Turn Component		0.00			0.14
		Yellow Clearance		0.05			0.05
TOTAL CAPACITY UTILIZATION				0.74			0.90
LEVEL OF SERVICE (LOS)				C			D

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Existing							
INTERSECTION:		35 Santiago Blvd. @ Nohl Ranch Rd.							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	2	3,400	597	0.18	*	3,400	815	0.24	*
NBT	1	1,700	108	0.06		1,700	220	0.13	
NBR	1	1,700	103	0.06		1,700	189	0.11	
SBL	1	1,700	4	0.00		1,700	4	0.00	
SBT	2	3,400	249	0.07	*	3,400	206	0.06	*
SBR	1	1,700	516	0.30	*	1,700	334	0.20	
EBL	1	1,700	137	0.08	*	1,700	268	0.16	*
EBT	2	3,400	121	0.04		3,400	453	0.13	
EBR	1	1,700	388	0.23		1,700	251	0.15	
WBL	1	1,700	174	0.10		1,700	89	0.05	
WBT	1.5	3,306	459	0.14	*	3,279	298	0.09	*
WBR	0.5	94	13	0.14		121	11	0.09	
N/S Movements				0.25				0.30	
E/W Movements				0.22				0.25	
Rt. Turn Component				0.17				0.00	
Yellow Clearance				0.05				0.05	
TOTAL CAPACITY UTILIZATION				0.69				0.60	
LEVEL OF SERVICE (LOS)				B				A	

PROJECT:		City of Orange General Plan Update							
SCENARIO:		No Project							
INTERSECTION:		35 Santiago Blvd. @ Nohl Ranch Rd.							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	2	3,400	1,013	0.30	*	3,400	1,069	0.31	*
NBT	1	1,700	190	0.11		1,700	336	0.20	
NBR	1	1,700	174	0.10		1,700	206	0.12	
SBL	1	1,700	9	0.01		1,700	7	0.00	
SBT	3	5,100	535	0.10	*	5,100	391	0.08	*
SBR(free)	f		1,124				704		
EBL	2	3,400	161	0.05	*	3,400	512	0.15	*
EBT	3	5,100	137	0.03		5,100	617	0.12	
EBR	1	1,700	434	0.26		1,700	372	0.22	
WBL	1	1,700	241	0.14		1,700	137	0.08	
WBT	1.5	3,303	644	0.20	*	3,259	508	0.16	*
WBR	0.5	97	19	0.20		141	22	0.16	
N/S Movements				0.40				0.39	
E/W Movements				0.24				0.31	
Rt. Turn Component				0.00				0.00	
Yellow Clearance				0.05				0.05	
TOTAL CAPACITY UTILIZATION				0.70				0.75	
LEVEL OF SERVICE (LOS)				B				C	

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Existing							
INTERSECTION:		36 Eckhoff St. @ Orangewood Ave.							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	1	1,700	66	0.04 *	1,700	94	0.06 *		
NBT	0.5	1,117	69	0.06	1,052	73	0.07		
NBR	0.5	583	36	0.06	648	45	0.07		
SBL	1	1,700	12	0.01	1,700	58	0.03		
SBT	1	1,700	62	0.04 *	1,700	116	0.07 *		
SBR	1	1,700	296	0.17	1,700	714	0.42 *		
EBL	1	1,700	544	0.32 *	1,700	265	0.16 *		
EBT	2	3,400	761	0.22	3,400	619	0.18		
EBR	1	1,700	74	0.04	1,700	159	0.09		
WBL	1	1,700	17	0.01	1,700	31	0.02		
WBT	1.5	3,106	370	0.12 *	3,216	612	0.19 *		
WBR	0.5	294	35	0.12	184	35	0.19		
		N/S Movements		0.08			0.12		
		E/W Movements		0.44			0.35		
		Rt. Turn Component		0.00			0.20		
		Yellow Clearance		0.05			0.05		
TOTAL CAPACITY UTILIZATION				0.56				0.72	
LEVEL OF SERVICE (LOS)				A				C	

PROJECT:		City of Orange General Plan Update							
SCENARIO:		No Project							
INTERSECTION:		36 Eckhoff St. @ Orangewood Ave.							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	1	1,700	69	0.04 *	1,700	99	0.06 *		
NBT	1.5	2,176	96	0.04	1,765	81	0.05		
NBR	0.5	1,224	54	0.04	1,635	75	0.05		
SBL	1	1,700	22	0.01	1,700	125	0.07		
SBT	1	1,700	85	0.05 *	1,700	211	0.12 *		
SBR(free)	f		311	0.00		750	0.01 *		
EBL	2	3,400	624	0.18 *	3,400	278	0.08		
EBT	2	3,400	933	0.27	3,400	860	0.25 *		
EBR	1	1,700	78	0.05	1,700	187	0.11		
WBL	2	3,400	32	0.01	3,400	72	0.02 *		
WBT	2.5	4,355	485	0.11 *	4,716	785	0.17		
WBR	0.5	745	83	0.11	384	64	0.17		
		N/S Movements		0.09			0.18		
		E/W Movements		0.29			0.27		
		Rt. Turn Component		0.00			0.00		
		Yellow Clearance		0.05			0.05		
TOTAL CAPACITY UTILIZATION				0.44				0.51	
LEVEL OF SERVICE (LOS)				A				A	

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update					
SCENARIO:		Existing					
INTERSECTION:		37 State College Blvd. @ Orangewood Ave.					
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR		
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C
NBL	2	3,400	89	0.03	3,400	43	0.01 *
NBT	3	5,100	625	0.12 *	5,100	761	0.15
NBR	1	1,700	228	0.13	1,700	207	0.12
SBL	2	3,400	167	0.05 *	3,400	184	0.05
SBT	3.5	5,288	731	0.14	5,378	1,044	0.19 *
SBR	0.5	1,512	209	0.14	1,422	276	0.19
EBL	2	3,400	283	0.08	3,400	171	0.05 *
EBT	2.5	4,942	907	0.18 *	4,574	417	0.09
EBR	0.5	158	29	0.18	526	48	0.09
WBL	2	3,400	217	0.06 *	3,400	318	0.09
WBT	2	3,400	454	0.13	3,400	976	0.29 *
WBR	1	1,700	149	0.09	1,700	348	0.20
N/S Movements				0.17			0.21
E/W Movements				0.25			0.34
Rt. Turn Component				0.00			0.00
Yellow Clearance				0.05			0.05
TOTAL CAPACITY UTILIZATION				0.47			0.59
LEVEL OF SERVICE (LOS)				A			A

PROJECT:		City of Orange General Plan Update					
SCENARIO:		No Project					
INTERSECTION:		37 State College Blvd. @ Orangewood Ave.					
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR		
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C
NBL	2	3,400	94	0.03 *	3,400	46	0.01 *
NBT	4	6,800	648	0.10	6,800	798	0.12
NBR	1	1,700	279	0.16	1,700	215	0.13
SBL	2	3,400	288	0.08	3,400	193	0.06
SBT	4	6,800	1,061	0.16 *	6,800	1,159	0.17 *
SBR	1	1,700	310	0.18	1,700	290	0.17
EBL	2	3,400	297	0.09	3,400	213	0.06 *
EBT	3	5,100	992	0.19 *	5,100	516	0.10
EBR	1	1,700	30	0.02	1,700	71	0.04
WBL	2	3,400	300	0.09 *	3,400	427	0.13
WBT	2	3,400	642	0.19	3,400	1,119	0.33 *
WBR	1	1,700	207	0.12	1,700	394	0.23
N/S Movements				0.18			0.18
E/W Movements				0.28			0.39
Rt. Turn Component				0.00			0.00
Yellow Clearance				0.05			0.05
TOTAL CAPACITY UTILIZATION				0.52			0.63
LEVEL OF SERVICE (LOS)				A			B

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Existing						
INTERSECTION:		38 Prospect St. @ Chapman Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	124	0.07 *	1,700	115	0.07	
NBT	1.5	2,914	396	0.14	2,897	369	0.13 *	
NBR	0.5	486	66	0.14	503	64	0.13	
SBL	1	1,700	169	0.10	1,700	190	0.11 *	
SBT	1.5	1,446	399	0.28 *	1,314	216	0.16	
SBR	0.5	1,954	539	0.28	2,086	343	0.16	
EBL	1	1,700	282	0.17 *	1,700	395	0.23 *	
EBT	2.5	4,566	924	0.20	4,751	1,810	0.38	
EBR	0.5	534	108	0.20	349	133	0.38	
WBL	1	1,700	114	0.07	1,700	105	0.06	
WBT	2.5	4,765	1,464	0.31 *	4,282	1,256	0.29 *	
WBR	0.5	335	103	0.31	818	240	0.29	
N/S Movements				0.35	0.24			
E/W Movements				0.47	0.53			
Rt. Turn Component				0.00	0.00			
Yellow Clearance				0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.87	0.81			
LEVEL OF SERVICE (LOS)				D	D			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		38 Prospect St. @ Chapman Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	130	0.08	1,700	163	0.10	
NBT	2	3,400	438	0.13 *	3,400	505	0.15 *	
NBR	1	1,700	69	0.04	1,700	105	0.06	
SBL	1	1,700	199	0.12 *	1,700	295	0.17 *	
SBT	2	3,400	559	0.16	3,400	282	0.08	
SBR	1	1,700	643	0.38 *	1,700	458	0.27 *	
EBL	2	3,400	346	0.10 *	3,400	408	0.12	
EBT	3	5,100	970	0.19	5,100	2,250	0.44 *	
EBR	1	1,700	135	0.08	1,700	139	0.08	
WBL	2	3,400	174	0.05	3,400	109	0.03 *	
WBT	3	5,100	1,902	0.37 *	5,100	1,339	0.26	
WBR	1	1,700	154	0.09	1,700	247	0.15	
N/S Movements				0.25	0.32			
E/W Movements				0.47	0.47			
Rt. Turn Component				0.11	0.00			
Yellow Clearance				0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.88	0.85			
LEVEL OF SERVICE (LOS)				D	D			

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Existing						
INTERSECTION:		39 Prospect St. @ Walnut Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	14	0.01 *	1,700	42	0.02	
NBT	1.5	2,969	379	0.13	3,090	579	0.19 *	
NBR	0.5	431	55	0.13	310	58	0.19	
SBL	1	1,700	70	0.04	1,700	120	0.07 *	
SBT	1.5	3,375	816	0.24 *	3,345	725	0.22	
SBR	0.5	25	6	0.24	55	12	0.22	
EBL	1	1,700	4	0.00	1,700	5	0.00	
EBT	0.5	62	3	0.05 *	100	3	0.03 *	
EBR	0.5	1,638	79	0.05	1,600	48	0.03	
WBL	1	1,700	120	0.07 *	1,700	50	0.03 *	
WBT	0.5	34	2	0.06	75	3	0.04	
WBR	0.5	1,666	97	0.06	1,625	65	0.04	
		N/S Movements		0.25			0.26	
		E/W Movements		0.12			0.06	
		Rt. Turn Component		0.00			0.00	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.42	0.37			
LEVEL OF SERVICE (LOS)				A	A			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		39 Prospect St. @ Walnut Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	349	0.21 *	1,700	157	0.09	
NBT	1.5	2,633	398	0.15	2,426	608	0.25 *	
NBR	0.5	767	116	0.15	974	244	0.25	
SBL	1	1,700	194	0.11	1,700	401	0.24 *	
SBT	1.5	2,767	857	0.31 *	3,246	761	0.23	
SBR	0.5	633	196	0.31	154	36	0.23	
EBL	1	1,700	7	0.00	1,700	61	0.04	
EBT	1.5	1,700	21	0.01 *	814	165	0.20 *	
EBR	0.5	1,700	182	0.11	2,586	524	0.20	
WBL	1	1,700	468	0.28 *	1,700	188	0.11 *	
WBT	1.5	1,658	274	0.17	528	50	0.09	
WBR	0.5	1,742	288	0.17	2,872	272	0.09	
		N/S Movements		0.52			0.49	
		E/W Movements		0.29			0.31	
		Rt. Turn Component		0.00			0.00	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.85	0.85			
LEVEL OF SERVICE (LOS)				D	D			

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update					
SCENARIO:		Existing					
INTERSECTION:		40 Santiago Blvd. @ Meats Ave.					
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR		
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C
NBL	1	1,700	57	0.03	1,700	308	0.18 *
NBT	1.5	2,564	629	0.25 *	1,718	419	0.24
NBR	0.5	836	205	0.25	1,682	410	0.24
SBL	1	1,700	406	0.24 *	1,700	53	0.03
SBT	1.5	2,574	536	0.21	2,886	376	0.13 *
SBR	0.5	826	172	0.21	514	67	0.13
EBL	1	1,700	89	0.05	1,700	94	0.06
EBT	1.5	1,700	96	0.06 *	2,095	618	0.30 *
EBR	0.5	1,700	516	0.30 *	1,305	385	0.30
WBL	1	1,700	368	0.22 *	1,700	154	0.09 *
WBT	1.5	2,721	537	0.20	3,072	225	0.07
WBR	0.5	679	134	0.20	328	24	0.07
		N/S Movements		0.48			0.31
		E/W Movements		0.27			0.39
		Rt. Turn Component		0.21			0.00
		Yellow Clearance		0.05			0.05
TOTAL CAPACITY UTILIZATION				1.02	0.75		
LEVEL OF SERVICE (LOS)				F	C		

PROJECT:		City of Orange General Plan Update					
SCENARIO:		No Project					
INTERSECTION:		40 Santiago Blvd. @ Meats Ave.					
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR		
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C
NBL	2	3,400	72	0.02	3,400	368	0.11 *
NBT	2	3,400	999	0.29 *	3,400	636	0.19
NBR	1	1,700	210	0.12	1,700	496	0.29 *
SBL	2	3,400	470	0.14 *	3,400	86	0.03
SBT	1.5	2,691	926	0.34	2,930	667	0.23 *
SBR	0.5	709	244	0.34	470	107	0.23
EBL	1	1,700	102	0.06 *	1,700	121	0.07
EBT	1.5	1,753	101	0.06	3,028	634	0.21 *
EBR	1.5	3,347	567	0.17 *	2,072	434	0.21
WBL	2	3,400	446	0.13	3,400	205	0.06 *
WBT	1.5	2,616	564	0.22 *	2,999	269	0.09
WBR	0.5	784	169	0.22	401	36	0.09
		N/S Movements		0.43			0.34
		E/W Movements		0.28			0.27
		Rt. Turn Component		0.09			0.04
		Yellow Clearance		0.05			0.05
TOTAL CAPACITY UTILIZATION				0.85	0.70		
LEVEL OF SERVICE (LOS)				D	B		

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Existing						
INTERSECTION:		41 Wanda Rd. @ Villa Park Rd.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	230	0.14 *	1,700	111	0.07 *	
NBT	1.5	2,826	409	0.14	2,858	390	0.14	
NBR	0.5	574	83	0.14	542	74	0.14	
SBL	1	1,700	153	0.09	1,700	130	0.08	
SBT	1	1,700	334	0.20 *	1,700	414	0.24 *	
SBR	1	1,700	450	0.26	1,700	325	0.19	
EBL	1	1,700	261	0.15 *	1,700	409	0.24 *	
EBT	2	3,400	622	0.18	3,400	722	0.21	
EBR	1	1,700	155	0.09	1,700	235	0.14	
WBL	1	1,700	70	0.04	1,700	84	0.05	
WBT	1.5	3,016	880	0.29 *	2,550	605	0.24 *	
WBR	0.5	384	112	0.29	850	183	0.22	
		N/S Movements		0.33			0.31	
		E/W Movements		0.45			0.48	
		Rt. Turn Component		0.00			0.00	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.83				0.84
LEVEL OF SERVICE (LOS)				D				D

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		41 Wanda Rd. @ Villa Park Rd.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	242	0.14	1,700	120	0.07	
NBT	1.5	2,796	532	0.19 *	2,671	550	0.21 *	
NBR	0.5	604	115	0.19	729	150	0.21	
SBL	1	1,700	375	0.22 *	1,700	309	0.18 *	
SBT	2	3,400	668	0.20	3,400	617	0.18	
SBR	1	1,700	639	0.38 *	1,700	414	0.24	
EBL	2	3,400	300	0.09 *	3,400	534	0.16	
EBT	2	3,400	760	0.22	3,400	1,352	0.40 *	
EBR	1	1,700	163	0.10	1,700	276	0.16	
WBL	1	1,700	188	0.11	1,700	159	0.09 *	
WBT	2	3,400	1,677	0.49 *	3,400	976	0.29	
WBR	1	1,700	347	0.20	1,700	384	0.23	
		N/S Movements		0.41			0.39	
		E/W Movements		0.58			0.49	
		Rt. Turn Component		0.09			0.00	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				1.13				0.93
LEVEL OF SERVICE (LOS)				F				E

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update					
SCENARIO:		Existing					
INTERSECTION:		42 Tustin St. @ Chapman Ave.					
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR		
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C
NBL	2	3,400	56	0.02	3,400	79	0.02
NBT	2.5	3,983	556	0.14 *	4,035	921	0.23 *
NBR	0.5	1,117	156	0.14	1,065	243	0.23
SBL	2	3,400	640	0.19 *	3,400	516	0.15 *
SBT	2.5	4,478	1,246	0.28	4,162	683	0.16
SBR	0.5	622	173	0.28	938	154	0.16
EBL	2	3,400	224	0.07 *	3,400	267	0.08
EBT	1.5	3,033	875	0.29	3,157	768	0.24 *
EBR	0.5	367	106	0.29	243	59	0.24
WBL	2	3,400	264	0.08	3,400	292	0.09 *
WBT	2	3,400	1,186	0.35 *	3,400	767	0.23
WBR	1	1,700	265	0.16	1,700	781	0.46 *
N/S Movements				0.33			0.38
E/W Movements				0.41			0.33
Rt. Turn Component				0.00			0.08
Yellow Clearance				0.05			0.05
TOTAL CAPACITY UTILIZATION				0.79			0.84
LEVEL OF SERVICE (LOS)				C			D

PROJECT:		City of Orange General Plan Update					
SCENARIO:		No Project					
INTERSECTION:		42 Tustin St. @ Chapman Ave.					
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR		
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C
NBL	2	3,400	57	0.02	3,400	97	0.03
NBT	3	5,100	649	0.13 *	5,100	968	0.19 *
NBR	1	1,700	203	0.12	1,700	383	0.23
SBL	2	3,400	672	0.20 *	3,400	635	0.19 *
SBT	3	5,100	1,422	0.28	5,100	831	0.16
SBR	1	1,700	182	0.11	1,700	162	0.10
EBL	2	3,400	235	0.07 *	3,400	280	0.08
EBT	3	5,100	970	0.19	5,100	902	0.18 *
EBR	1	1,700	139	0.08	1,700	68	0.04
WBL	2	3,400	464	0.14	3,400	501	0.15 *
WBT	3	5,100	1,381	0.27 *	5,100	1,036	0.20
WBR	1	1,700	353	0.21	1,700	903	0.53 *
N/S Movements				0.32			0.38
E/W Movements				0.34			0.32
Rt. Turn Component				0.00			0.14
Yellow Clearance				0.05			0.05
TOTAL CAPACITY UTILIZATION				0.71			0.89
LEVEL OF SERVICE (LOS)				C			D

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Existing							
INTERSECTION:		43 Tustin St. @ Collins Ave.							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR				
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	1	1,700	116	0.07 *	1,700	178	0.10 *		
NBT	2.5	4,590	531	0.12	4,414	1,003	0.23		
NBR	0.5	510	59	0.12	686	156	0.23		
SBL	2	3,400	73	0.02	3,400	234	0.07		
SBT	2.5	4,499	899	0.20 *	4,473	942	0.21 *		
SBR	0.5	601	120	0.20	627	132	0.21		
EBL	1	1,700	155	0.09 *	1,700	291	0.17 *		
EBT	1.5	1,838	147	0.08	2,613	538	0.21		
EBR	0.5	1,563	125	0.08	787	162	0.21		
WBL	1	1,700	160	0.09	1,700	163	0.10		
WBT	1.5	2,438	289	0.12 *	2,373	321	0.14 *		
WBR	0.5	962	114	0.12	1,027	139	0.14		
		N/S Movements		0.27			0.32		
		E/W Movements		0.21			0.31		
		Rt. Turn Component		0.00			0.00		
		Yellow Clearance		0.05			0.05		
TOTAL CAPACITY UTILIZATION				0.53				0.67	
LEVEL OF SERVICE (LOS)				A				B	

PROJECT:		City of Orange General Plan Update							
SCENARIO:		No Project							
INTERSECTION:		43 Tustin St. @ Collins Ave.							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR				
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	2	3,400	151	0.04 *	3,400	210	0.06 *		
NBT	3	5,100	792	0.16	5,100	1,274	0.25		
NBR	1	1,700	62	0.04	1,700	164	0.10		
SBL	2	3,400	116	0.03	3,400	272	0.08		
SBT	3	5,100	1,296	0.25 *	5,100	1,509	0.30 *		
SBR	1	1,700	304	0.18	1,700	194	0.11		
EBL	2	3,400	241	0.07 *	3,400	450	0.13 *		
EBT	2.5	3,400	154	0.05	3,604	612	0.17		
EBR	0.5	1,700	131	0.08	1,496	254	0.17		
WBL	2	3,400	168	0.05	3,400	197	0.06		
WBT	2.5	3,513	436	0.12 *	3,478	356	0.10 *		
WBR	0.5	1,587	197	0.12	1,622	166	0.10		
		N/S Movements		0.30			0.36		
		E/W Movements		0.20			0.23		
		Rt. Turn Component		0.00			0.00		
		Yellow Clearance		0.05			0.05		
TOTAL CAPACITY UTILIZATION				0.54				0.64	
LEVEL OF SERVICE (LOS)				A				B	

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Existing						
INTERSECTION:		44 Tustin St. @ Fairhaven Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	108	0.03 *	3,400	249	0.07	
NBT	2.5	4,506	1,062	0.24	4,539	1,464	0.32 *	
NBR	0.5	594	140	0.24	561	181	0.32	
SBL	2	3,400	166	0.05	3,400	385	0.11 *	
SBT	2.5	4,910	1,987	0.40 *	4,450	1,041	0.23	
SBR	0.5	190	77	0.40	650	152	0.23	
EBL	1	1,700	106	0.06	1,700	103	0.06	
EBT	1.5	1,700	237	0.14 *	2,178	394	0.18 *	
EBR	0.5	1,700	343	0.20 *	1,222	221	0.18	
WBL	1	1,700	313	0.18 *	1,700	156	0.09 *	
WBT	1.5	1,700	375	0.22	1,731	281	0.16	
WBR	0.5	1,700	545	0.32 *	1,669	271	0.16	
N/S Movements				0.44	0.44			
E/W Movements				0.32	0.27			
Rt. Turn Component				0.18	0.00			
Yellow Clearance				0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.99	0.76			
LEVEL OF SERVICE (LOS)				E	C			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		44 Tustin St. @ Fairhaven Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	216	0.06 *	3,400	396	0.12	
NBT	3	5,100	1,377	0.27	5,100	1,660	0.33 *	
NBR	1	1,700	216	0.13	1,700	299	0.18	
SBL	2	3,400	174	0.05	3,400	387	0.11 *	
SBT	3	5,100	2,374	0.47 *	5,100	1,509	0.30	
SBR	1	1,700	97	0.06	1,700	160	0.09	
EBL	1	1,700	111	0.07 *	1,700	108	0.06	
EBT	1.5	1,895	249	0.13	2,819	424	0.15 *	
EBR	1.5	3,205	421	0.13 *	2,281	343	0.15	
WBL	2	3,400	393	0.12	3,400	248	0.07 *	
WBT	1.5	2,273	460	0.20 *	2,603	297	0.11	
WBR	1.5	2,827	572	0.20 *	2,497	285	0.11	
N/S Movements				0.53	0.44			
E/W Movements				0.27	0.22			
Rt. Turn Component				0.00	0.00			
Yellow Clearance				0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.85	0.71			
LEVEL OF SERVICE (LOS)				D	C			

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Existing						
INTERSECTION:		45 Tustin St. @ Heim Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	105	0.06 *	1,700	185	0.11 *	
NBT	2.5	4,905	729	0.15	4,841	1,535	0.32	
NBR	0.5	195	29	0.15	259	82	0.32	
SBL	1	1,700	53	0.03	1,700	94	0.06	
SBT	2.5	4,600	984	0.21 *	4,576	1,327	0.29 *	
SBR	0.5	500	107	0.21	524	152	0.29	
EBL	1	1,700	139	0.08	1,700	275	0.16 *	
EBT	0.5	253	25	0.10 *	581	55	0.09	
EBR	0.5	1,447	143	0.10	1,119	106	0.09	
WBL	1	1,700	51	0.03 *	1,700	119	0.07	
WBT	0.5	305	14	0.05	456	40	0.09 *	
WBR	0.5	1,395	64	0.05	1,244	109	0.09	
		N/S Movements		0.28			0.40	
		E/W Movements		0.13			0.25	
		Rt. Turn Component		0.00			0.00	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.45				0.70
LEVEL OF SERVICE (LOS)				A				B

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		45 Tustin St. @ Heim Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	182	0.11 *	1,700	199	0.12 *	
NBT	3	5,100	947	0.19	5,100	1,658	0.33	
NBR	1	1,700	52	0.03	1,700	86	0.05	
SBL	1	1,700	70	0.04	1,700	99	0.06	
SBT	3	5,100	1,373	0.27 *	5,100	1,440	0.28 *	
SBR	1	1,700	136	0.08	1,700	176	0.10	
EBL	1	1,700	146	0.09 *	1,700	491	0.29 *	
EBT	1	1,700	30	0.02	1,700	83	0.05	
EBR	1	1,700	181	0.11 *	1,700	177	0.10	
WBL	1	1,700	66	0.04	1,700	124	0.07	
WBT	0.5	344	17	0.05 *	458	45	0.10 *	
WBR	0.5	1,356	67	0.05	1,242	122	0.10	
		N/S Movements		0.38			0.40	
		E/W Movements		0.14			0.39	
		Rt. Turn Component		0.00			0.00	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.56				0.84
LEVEL OF SERVICE (LOS)				A				D

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Existing							
INTERSECTION:		46 Tustin St. @ Katella Ave.							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	2	3,400	203	0.06	3,400	296	0.09	*	
NBT	3	5,100	415	0.08	5,100	913	0.18	*	
NBR	1	1,700	227	0.13	1,700	371	0.22		
SBL	2	3,400	357	0.11	3,400	487	0.14	*	
SBT	2.5	3,833	611	0.16	4,249	879	0.21	*	
SBR	0.5	1,267	202	0.16	851	176	0.21		
EBL	2	3,400	144	0.04	3,400	265	0.08	*	
EBT	3	5,100	667	0.13	5,100	1,192	0.23	*	
EBR	1	1,700	214	0.13	1,700	304	0.18		
WBL	2	3,400	249	0.07	3,400	309	0.09	*	
WBT	3	5,100	1,020	0.20	5,100	930	0.18	*	
WBR	1	1,700	334	0.20	1,700	414	0.24		
N/S Movements				0.22				0.32	
E/W Movements				0.24				0.32	
Rt. Turn Component				0.00				0.00	
Yellow Clearance				0.05				0.05	
TOTAL CAPACITY UTILIZATION				0.51				0.70	
LEVEL OF SERVICE (LOS)				A				B	

PROJECT:		City of Orange General Plan Update							
SCENARIO:		No Project							
INTERSECTION:		46 Tustin St. @ Katella Ave.							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	2	3,400	278	0.08	3,400	397	0.12	*	
NBT	3	5,100	658	0.13	5,100	1,319	0.26	*	
NBR	1	1,700	244	0.14	1,700	410	0.24		
SBL	2	3,400	434	0.13	3,400	617	0.18	*	
SBT	3	5,100	1,009	0.20	5,100	1,326	0.26	*	
SBR	1	1,700	312	0.18	1,700	271	0.16		
EBL	2	3,400	201	0.06	3,400	417	0.12	*	
EBT	3	5,100	700	0.14	5,100	1,433	0.28	*	
EBR	1	1,700	276	0.16	1,700	435	0.26		
WBL	2	3,400	345	0.10	3,400	329	0.10	*	
WBT	3	5,100	1,320	0.26	5,100	1,011	0.20	*	
WBR	1	1,700	501	0.29	1,700	484	0.28		
N/S Movements				0.28				0.44	
E/W Movements				0.32				0.38	
Rt. Turn Component				0.00				0.00	
Yellow Clearance				0.05				0.05	
TOTAL CAPACITY UTILIZATION				0.65				0.87	
LEVEL OF SERVICE (LOS)				B				D	

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Existing						
INTERSECTION:		47 Tustin St. @ La Veta Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	14	0.01 *	1,700	60	0.04	
NBT	2.5	3,648	437	0.12	3,833	1,029	0.27 *	
NBR	0.5	1,452	174	0.12	1,267	340	0.27	
SBL	1	1,700	146	0.09	1,700	160	0.09 *	
SBT	2.5	5,028	1,326	0.26 *	4,918	974	0.20	
SBR	0.5	72	19	0.26	182	36	0.20	
EBL	1	1,700	23	0.01	1,700	20	0.01	
EBT	1.5	1,700	16	0.01 *	1,700	13	0.01	
EBR	0.5	1,700	81	0.05 *	1,700	33	0.02 *	
WBL	1.5	3,357	630	0.19 *	3,164	201	0.06	
WBT	0.5	43	8	0.19	236	15	0.06	
WBR	1	1,700	177	0.10	1,700	133	0.08 *	
split phasing	N/S Movements			0.27	0.36			
	E/W Movements			0.20	0.08			
	Rt. Turn Component			0.03	0.00			
	Yellow Clearance			0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.55	0.49			
LEVEL OF SERVICE (LOS)				A	A			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		47 Tustin St. @ La Veta Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	15	0.01 *	1,700	63	0.04	
NBT	3	5,100	489	0.10	5,100	1,068	0.21 *	
NBR	1	1,700	183	0.11	1,700	399	0.23	
SBL	1	1,700	189	0.11	1,700	335	0.20 *	
SBT	3	5,100	1,571	0.31 *	5,100	1,341	0.26	
SBR	1	1,700	20	0.01	1,700	50	0.03	
EBL	1	1,700	31	0.02	1,700	24	0.01	
EBT	1.5	1,700	18	0.01 *	1,700	17	0.01	
EBR	0.5	1,700	82	0.05 *	1,700	35	0.02 *	
WBL	1.5	3,362	971	0.29 *	3,158	326	0.10	
WBT	0.5	38	11	0.29	242	25	0.10	
WBR	1	1,700	359	0.21	1,700	290	0.17 *	
split phasing	N/S Movements			0.32	0.41			
	E/W Movements			0.31	0.12			
	Rt. Turn Component			0.02	0.00			
	Yellow Clearance			0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.70	0.57			
LEVEL OF SERVICE (LOS)				B	A			

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Existing						
INTERSECTION:		48 Tustin St. @ Lincoln Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	116	0.07 *	1,700	296	0.17	
NBT	2	3,400	167	0.05	3,400	613	0.18 *	
NBR	1	1,700	243	0.14	1,700	785	0.46 *	
SBL	1	1,700	148	0.09	1,700	324	0.19 *	
SBT	3	5,100	679	0.13 *	5,100	961	0.19	
SBR	1	1,700	255	0.15	1,700	244	0.14	
EBL	1.5	1,700	54	0.03	1,700	186	0.11	
EBT	1.5	3,400	235	0.07 *	3,400	592	0.17 *	
EBR	1	1,700	409	0.24 *	1,700	526	0.31 *	
WBL	1.5	2,757	566	0.21 *	2,769	607	0.22 *	
WBT	1.5	2,343	481	0.21	2,331	511	0.22	
WBR	1	1,700	104	0.06	1,700	205	0.12	
split phasing	N/S Movements			0.20	0.37			
	E/W Movements			0.27	0.39			
	Rt. Turn Component			0.10	0.06			
	Yellow Clearance			0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.63	0.88			
LEVEL OF SERVICE (LOS)				B	D			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		48 Tustin St. @ Lincoln Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	190	0.06 *	3,400	446	0.13 *	
NBT	3	5,100	209	0.04	5,100	701	0.14	
NBR	2	3,400	266	0.08	3,400	972	0.29 *	
SBL	2	3,400	155	0.05	3,400	394	0.12	
SBT	3	5,100	721	0.14 *	5,100	1,009	0.20 *	
SBR	1	1,700	381	0.22	1,700	362	0.21	
EBL	2	3,400	81	0.02	3,400	352	0.10	
EBT	2	3,400	307	0.09 *	3,400	1,214	0.36 *	
EBR	1	1,700	570	0.34 *	1,700	834	0.49 *	
WBL	2	3,400	859	0.25	3,400	762	0.22	
WBT	2	3,400	1,028	0.30 *	3,400	1,011	0.30 *	
WBR	1	1,700	170	0.10	1,700	308	0.18	
split phasing	N/S Movements			0.20	0.33			
	E/W Movements			0.39	0.65			
	Rt. Turn Component			0.25	0.00			
	Yellow Clearance			0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.89	1.04			
LEVEL OF SERVICE (LOS)				D	F			

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Existing						
INTERSECTION:		49 Tustin St. @ Meats Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	111	0.03 *	3,400	319	0.09	
NBT	2.5	4,414	502	0.11	4,155	1,240	0.30 *	
NBR	0.5	686	78	0.11	945	282	0.30	
SBL	2	3,400	69	0.02	3,400	243	0.07 *	
SBT	2.5	4,555	677	0.15 *	4,448	934	0.21	
SBR	0.5	545	81	0.15	652	137	0.21	
EBL	1	1,700	99	0.06	1,700	172	0.10	
EBT	1.5	1,609	115	0.07 *	2,194	402	0.18 *	
EBR	0.5	1,791	128	0.07	1,206	221	0.18	
WBL	1	1,700	231	0.14 *	1,700	228	0.13 *	
WBT	2	3,400	352	0.10	3,400	270	0.08	
WBR	1	1,700	180	0.11	1,700	191	0.11	
N/S Movements				0.18			0.37	
E/W Movements				0.21			0.32	
Rt. Turn Component				0.00			0.00	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.44			0.74	
LEVEL OF SERVICE (LOS)				A			C	

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		49 Tustin St. @ Meats Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	162	0.05 *	3,400	372	0.11	
NBT	3	5,100	714	0.14	5,100	1,754	0.34 *	
NBR	1	1,700	84	0.05	1,700	329	0.19	
SBL	2	3,400	82	0.02	3,400	264	0.08 *	
SBT	3	5,100	1,037	0.20 *	5,100	1,368	0.27	
SBR	1	1,700	131	0.08	1,700	149	0.09	
EBL	2	3,400	118	0.03 *	3,400	201	0.06	
EBT	2	3,400	121	0.04	3,400	422	0.12 *	
EBR	1	1,700	148	0.09	1,700	287	0.17	
WBL	2	3,400	235	0.07	3,400	285	0.08 *	
WBT	2	3,400	377	0.11 *	3,400	284	0.08	
WBR	1	1,700	188	0.11	1,700	215	0.13	
N/S Movements				0.25			0.42	
E/W Movements				0.15			0.21	
Rt. Turn Component				0.00			0.00	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.45			0.68	
LEVEL OF SERVICE (LOS)				A			B	

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Existing						
INTERSECTION:		50 Tustin St. @ Taft Ave. (North)						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	10	0.01	1,700	29	0.02	
NBT	2.5	3,213	567	0.18 *	4,165	1,804	0.43 *	
NBR	0.5	1,887	333	0.18	935	405	0.43	
SBL	2	3,400	251	0.07 *	3,400	155	0.05 *	
SBT	2.5	5,005	1,051	0.21	4,939	1,411	0.29	
SBR	0.5	95	20	0.21	161	46	0.29	
EBL	1	1,700	24	0.01 *	1,700	50	0.03 *	
EBT	0		0			0		
EBR	1	1,700	7	0.00	1,700	26	0.02	
WBL	2	3,400	586	0.17 *	3,400	439	0.13 *	
WBT	0		0			0		
WBR	1	1,700	215	0.13	1,700	120	0.07	
split phasing	N/S Movements			0.25	0.48			
	E/W Movements			0.19	0.16			
	Rt. Turn Component			0.00	0.00			
	Yellow Clearance			0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.49	0.69			
LEVEL OF SERVICE (LOS)				A	B			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		50 Tustin St. @ Taft Ave. (North)						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	11	0.01 *	1,700	30	0.02	
NBT	3	5,100	659	0.13	5,100	2,249	0.44 *	
NBR	1	1,700	334	0.20	1,700	565	0.33	
SBL	2	3,400	400	0.12	3,400	285	0.08 *	
SBT	2.5	5,011	1,346	0.27 *	4,952	1,802	0.36	
SBR	0.5	89	24	0.27	148	54	0.36	
EBL	1	1,700	25	0.01 *	1,700	57	0.03 *	
EBT	0		0			0		
EBR	1	1,700	7	0.00	1,700	27	0.02	
WBL	2	3,400	778	0.23	3,400	525	0.15 *	
WBT	0		0			0		
WBR	1	1,700	412	0.24 *	1,700	184	0.11	
split phasing	N/S Movements			0.28	0.52			
	E/W Movements			0.24	0.19			
	Rt. Turn Component			0.00	0.00			
	Yellow Clearance			0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.57	0.76			
LEVEL OF SERVICE (LOS)				A	C			

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Existing						
INTERSECTION:		51 Tustin St. @ Taft Ave. (South)						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	284	0.17 *	1,700	320	0.19 *	
NBT	3	5,100	682	0.13	5,100	1,713	0.34	
NBR	0		0			0		
SBL	0		0			0		
SBT	2.5	3,667	1,146	0.31 *	3,993	1,393	0.35 *	
SBR	0.5	1,433	448	0.31	1,107	386	0.35	
EBL	2	3,400	308	0.09 *	3,400	545	0.16 *	
EBT	0		0			0		
EBR	1	1,700	310	0.18	1,700	26	0.02	
WBL	0		0			0		
WBT	0		0			0		
WBR	0		0			0		
split phasing		N/S Movements		0.48			0.54	
		E/W Movements		0.09			0.16	
		Rt. Turn Component		0.00			0.00	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.62			0.75	
LEVEL OF SERVICE (LOS)				B			C	

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		51 Tustin St. @ Taft Ave. (South)						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	597	0.18 *	3,400	558	0.16 *	
NBT	3	5,100	848	0.17	5,100	2,148	0.42	
NBR	1	1,700	0	0.00	1,700	0	0.00	
SBL	0		0			0		
SBT	3	5,100	1,570	0.31 *	5,100	1,899	0.37 *	
SBR	1	1,700	453	0.27	1,700	402	0.24	
EBL	2	3,400	323	0.10 *	3,400	702	0.21 *	
EBT	0		0			0		
EBR	1	1,700	560	0.33	1,700	61	0.04	
WBL	0		0			0		
WBT	0		0			0		
WBR	0		0			0		
split phasing		N/S Movements		0.48			0.54	
		E/W Movements		0.10			0.21	
		Rt. Turn Component		0.06			0.00	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.69			0.79	
LEVEL OF SERVICE (LOS)				B			C	

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Existing						
INTERSECTION:		52 Tustin St. @ Walnut Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	70	0.04 *	1,700	184	0.11 *	
NBT	2.5	4,590	684	0.15	4,352	1,233	0.28	
NBR	0.5	510	76	0.15	748	212	0.28	
SBL	1	1,700	37	0.02	1,700	78	0.05	
SBT	2.5	4,734	1,216	0.26 *	4,564	1,175	0.26 *	
SBR	0.5	366	94	0.26	536	138	0.26	
EBL	1	1,700	69	0.04	1,700	126	0.07	
EBT	1	1,700	79	0.05 *	1,700	147	0.09 *	
EBR	1	1,700	149	0.09	1,700	173	0.10	
WBL	1	1,700	246	0.14 *	1,700	157	0.09 *	
WBT	1	1,700	159	0.09	1,700	74	0.04	
WBR	1	1,700	86	0.05	1,700	99	0.06	
N/S Movements				0.30	0.37			
E/W Movements				0.19	0.18			
Rt. Turn Component				0.00	0.00			
Yellow Clearance				0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.54	0.59			
LEVEL OF SERVICE (LOS)				A	A			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		52 Tustin St. @ Walnut Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	117	0.07 *	1,700	193	0.11 *	
NBT	3	5,100	898	0.18	5,100	1,382	0.27	
NBR	1	1,700	80	0.05	1,700	354	0.21	
SBL	1	1,700	52	0.03	1,700	241	0.14	
SBT	3	5,100	1,462	0.29 *	5,100	1,706	0.33 *	
SBR	1	1,700	240	0.14	1,700	196	0.12	
EBL	1	1,700	100	0.06	1,700	257	0.15	
EBT	2	3,400	81	0.02 *	3,400	447	0.13 *	
EBR	1	1,700	156	0.09	1,700	247	0.15	
WBL	1	1,700	410	0.24 *	1,700	191	0.11 *	
WBT	2	3,400	562	0.17	3,400	88	0.03	
WBR	1	1,700	238	0.14	1,700	172	0.10	
N/S Movements				0.36	0.45			
E/W Movements				0.27	0.24			
Rt. Turn Component				0.00	0.00			
Yellow Clearance				0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.67	0.74			
LEVEL OF SERVICE (LOS)				B	C			

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Existing						
INTERSECTION:		55 Struck Ave. @ Katella Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1.5	3,106	116	0.04 *	3,219	356	0.11 *	
NBT	0	0	0		0	0		
NBR	0.5	294	11	0.04 *	181	20	0.11 *	
SBL	0		0			0		
SBT	0		0	0.00		0	0.00	
SBR	0		0			0		
EBL	0		0			0		
EBT	3	5,100	914	0.18 *	5,100	861	0.17	
EBR	1	1,700	264	0.16	1,700	208	0.12	
WBL	1	1,700	23	0.01 *	1,700	7	0.00	
WBT	3	5,071	705	0.14	5,100	933	0.18 *	
WBR	0	29	4	0.14	0	0	0.00	
		N/S Movements		0.04			0.11	
		E/W Movements		0.19			0.18	
		Rt. Turn Component		0.00			0.00	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.28	0.34			
LEVEL OF SERVICE (LOS)				A	A			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		55 Struck Ave. @ Katella Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1.5	3,033	124	0.04 *	3,159	367	0.12 *	
NBT	0	0	0		0	0		
NBR	0.5	367	15	0.04 *	241	28	0.12 *	
SBL	0		0			0		
SBT	0		0	0.00		0	0.00	
SBR	0		0			0		
EBL	0		0			0		
EBT	3	5,100	995	0.20 *	5,100	918	0.18	
EBR	1	1,700	271	0.16	1,700	225	0.13	
WBL	1	1,700	29	0.02 *	1,700	11	0.01	
WBT	3	5,072	736	0.15	5,100	1,052	0.21 *	
WBR	0	28	4	0.15	0	0	0.00	
		N/S Movements		0.04			0.12	
		E/W Movements		0.21			0.21	
		Rt. Turn Component		0.00			0.00	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.30	0.37			
LEVEL OF SERVICE (LOS)				A	A			

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Existing						
INTERSECTION:		56 Main St. @ Struck Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	47	0.03 *	1,700	156	0.09	
NBT	2	2,040	216	0.11	3,299	911	0.28 *	
NBR	0	1,360	144	0.11	101	28	0.28	
SBL	1	1,700	45	0.03	1,700	26	0.02 *	
SBT	2	2,906	418	0.14 *	3,222	508	0.16	
SBR	0	494	71	0.14	178	28	0.16	
EBL	1	1,700	109	0.06	1,700	45	0.03	
EBT	1	1,511	537	0.36 *	496	66	0.13 *	
EBR	0	189	67	0.36	1,204	160	0.13	
WBL	1	1,700	355	0.21 *	1,700	15	0.01 *	
WBT	1	1,573	780	0.50	1,082	84	0.08	
WBR	0	127	63	0.50	618	48	0.08	
N/S Movements				0.17	0.29			
E/W Movements				0.56	0.14			
Rt. Turn Component				0.00	0.00			
Yellow Clearance				0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.79	0.48			
LEVEL OF SERVICE (LOS)				C	A			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		56 Main St. @ Struck Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	49	0.03 *	1,700	164	0.10	
NBT	2	2,198	276	0.13	3,304	998	0.30 *	
NBR	0	1,202	151	0.13	96	29	0.30	
SBL	1	1,700	59	0.03	1,700	46	0.03 *	
SBT	2	2,906	447	0.15 *	3,183	733	0.23	
SBR	0	494	76	0.15	217	50	0.23	
EBL	1	1,700	155	0.09 *	1,700	61	0.04	
EBT	1	1,515	573	0.38	515	73	0.14 *	
EBR	0	185	70	0.38	1,185	168	0.14	
WBL	1	1,700	374	0.22	1,700	16	0.01 *	
WBT	1	1,502	827	0.55 *	998	98	0.10	
WBR	0	198	109	0.55	702	69	0.10	
N/S Movements				0.18	0.33			
E/W Movements				0.64	0.15			
Rt. Turn Component				0.00	0.00			
Yellow Clearance				0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.87	0.53			
LEVEL OF SERVICE (LOS)				D	A			

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Existing							
INTERSECTION:		57 Main St. @ Collins Ave.							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	1	1,700	30	0.02	1,700	14	0.01	*	
NBT	2	2,402	301	0.13	2,705	736	0.27	*	
NBR	0	998	125	0.13	695	189	0.27		
SBL	1	1,700	74	0.04	1,700	129	0.08	*	
SBT	2	2,515	568	0.23	2,990	569	0.19		
SBR	0	885	200	0.23	410	78	0.19		
EBL	1	1,700	54	0.03	1,700	139	0.08	*	
EBT	2	2,675	96	0.04	2,982	271	0.09	*	
EBR	0	725	26	0.04	418	38	0.09		
WBL	1	1,700	133	0.08	1,700	137	0.08	*	
WBT	2	2,221	258	0.12	1,838	160	0.09		
WBR	0	1,179	137	0.12	1,562	136	0.09		
N/S Movements				0.24				0.35	
E/W Movements				0.15				0.17	
Rt. Turn Component				0.00				0.00	
Yellow Clearance				0.05				0.05	
TOTAL CAPACITY UTILIZATION				0.44				0.57	
LEVEL OF SERVICE (LOS)				A				A	

PROJECT:		City of Orange General Plan Update							
SCENARIO:		No Project							
INTERSECTION:		57 Main St. @ Collins Ave.							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	1	1,700	135	0.08	1,700	76	0.04	*	
NBT	2	1,875	445	0.24	2,407	946	0.39	*	
NBR	0	1,525	362	0.24	993	390	0.39		
SBL	1	1,700	78	0.05	1,700	135	0.08	*	
SBT	2	2,649	741	0.28	3,098	842	0.27		
SBR	0	751	210	0.28	302	82	0.27		
EBL	1	1,700	57	0.03	1,700	146	0.09		
EBT	2	1,803	96	0.05	2,019	285	0.14	*	
EBR	0	1,597	85	0.05	1,381	195	0.14		
WBL	1	1,700	281	0.17	1,700	364	0.21	*	
WBT	2	2,185	259	0.12	1,949	192	0.10		
WBR	0	1,215	144	0.12	1,451	143	0.10		
N/S Movements				0.36				0.47	
E/W Movements				0.22				0.36	
Rt. Turn Component				0.00				0.00	
Yellow Clearance				0.05				0.05	
TOTAL CAPACITY UTILIZATION				0.63				0.88	
LEVEL OF SERVICE (LOS)				B				D	

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Existing						
INTERSECTION:		58 S/B SR-57 Ramps @ Orangewood Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	0		0		0			
NBT	0		0	0.00	0	0.00		
NBR	0		0		0			
SBL	1.5	2,207	306	0.14 *	1,719	245	0.14 *	
SBT	0	0	0		0	0		
SBR	1.5	2,893	401	0.14 *	3,381	482	0.14 *	
EBL	0	0	0		0	0		
EBT	1.5	4,919	1,116	0.23 *	4,431	748	0.17 *	
EBR	1.5	181	41	0.23	669	113	0.17	
WBL	1	1,700	163	0.10 *	1,700	455	0.27 *	
WBT	2	3,400	495	0.15	3,400	881	0.26	
WBR	0	0	0		0	0		
		N/S Movements		0.14		0.14		
		E/W Movements		0.32		0.44		
		Rt. Turn Component		0.00		0.00		
		Yellow Clearance		0.05		0.05		
TOTAL CAPACITY UTILIZATION				0.51	0.63			
LEVEL OF SERVICE (LOS)				A	B			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		58 S/B SR-57 Ramps @ Orangewood Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	0		0		0			
NBT	0		0	0.00	0	0.00		
NBR	0		0		0			
SBL	1.5	1,632	321	0.20 *	1,392	267	0.19 *	
SBT	0	0	0		0	0		
SBR	1.5	3,468	682	0.20 *	3,708	711	0.19 *	
EBL	0		0		0	0		
EBT	2	3,400	1,206	0.35 *	3,400	773	0.23 *	
EBR	1	1,700	61	0.04	1,700	142	0.08	
WBL	1	1,700	171	0.10 *	1,700	458	0.27 *	
WBT	2	3,400	578	0.17	3,400	989	0.29	
WBR	0	0	0		0	0		
		N/S Movements		0.20		0.19		
		E/W Movements		0.46		0.50		
		Rt. Turn Component		0.00		0.00		
		Yellow Clearance		0.05		0.05		
TOTAL CAPACITY UTILIZATION				0.70	0.74			
LEVEL OF SERVICE (LOS)				B	C			

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Existing						
INTERSECTION:		59 N/B SR-57 Ramps @ Orangewood Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1.5	955	118	0.12 *	1,183	64	0.05 *	
NBT	0	0	0		0	0	0.00	
NBR	1.5	4,145	512	0.12 *	3,917	212	0.05 *	
SBL	0		0			0		
SBT	0		0			0		
SBR	0		0			0		
EBL	0		0			0		
EBT	2	3,400	1,086	0.32 *	3,400	696	0.20	
EBR (free)	f		274			273		
WBL	0		0			0		
WBT	3	5,100	605	0.12	5,100	1,274	0.25 *	
WBR	1	1,700	155	0.09	1,700	278	0.16	
		N/S Movements		0.12			0.05	
		E/W Movements		0.32			0.25	
		Rt. Turn Component		0.00			0.00	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.49				0.35
LEVEL OF SERVICE (LOS)				A				A

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		59 N/B SR-57 Ramps @ Orangewood Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1.5	983	127	0.13 *	1,533	92	0.06 *	
NBT	0	0	0		0	0	0.00	
NBR	1.5	4,117	532	0.13 *	3,567	214	0.06 *	
SBL	0		0			0		
SBT	0		0			0		
SBR	0		0			0		
EBL	0		0			0		
EBT	3	5,100	1,158	0.23 *	5,100	746	0.15	
EBR (free)	f		280			280		
WBL	0		0			0		
WBT	3	5,100	633	0.12	5,100	1,328	0.26 *	
WBR	1	1,700	170	0.10	1,700	400	0.24	
		N/S Movements		0.13			0.06	
		E/W Movements		0.23			0.26	
		Rt. Turn Component		0.00			0.00	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.41				0.37
LEVEL OF SERVICE (LOS)				A				A

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Existing						
INTERSECTION:		60 The City Drive @ N/B I-5 Ramps/Anaheim Wy.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	8	0.00 *	3,400	80	0.02	
NBT	4	6,800	565	0.08	6,800	810	0.17 *	
NBR (free)	f		191			358		
SBL	1	1,700	16	0.01	1,700	32	0.02 *	
SBT	4	6,800	1,433	0.21 *	6,800	1,087	0.16	
SBR	1	1,700	11	0.01	1,700	37	0.02	
EBL	0		0			0		
EBT	0		0			0		
EBR	0		0			0		
WBL	1.5	3,314	167	0.05	2,970	152	0.05	
WBT	1.5	1,786	90	0.05	2,130	109	0.05 *	
WBR	2	3,400	259	0.08 *	3,387	144	0.04	
		N/S Movements		0.21			0.19	
		E/W Movements		0.08			0.05	
		Rt. Turn Component		0.02			0.00	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.36				0.29
LEVEL OF SERVICE (LOS)				A				A

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		60 The City Drive @ N/B I-5 Ramps/Anaheim Wy.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	20	0.01 *	3,400	159	0.05 *	
NBT	4	6,800	676	0.10	6,800	941	0.20	
NBR (free)	f		211			409		
SBL	1	1,700	17	0.01	1,700	34	0.02	
SBT	4	6,800	1,896	0.28 *	6,800	1,203	0.18 *	
SBR	1	1,700	18	0.01	1,700	44	0.03	
EBL	0		0			0		
EBT	0		0			0		
EBR	0		0			0		
WBL	1.5	3,028	209	0.07	2,875	186	0.06	
WBT	1.5	2,072	143	0.07	2,225	144	0.07 *	
WBR	2	3,400	272	0.08 *	3,400	151	0.04	
		N/S Movements		0.28			0.22	
		E/W Movements		0.08			0.07	
		Rt. Turn Component		0.00			0.00	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.42				0.34
LEVEL OF SERVICE (LOS)				A				A

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Existing						
INTERSECTION:		61 The City Drive @ S/B I-5 Ramps						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	0		0			0		
NBT	4.5	8,407	721	0.09	8,298	1,109	0.13	
NBR	0.5	93	8	0.09 *	202	27	0.13	
SBL	0		0			0		
SBT	4	6,800	1,422	0.21 *	6,800	937	0.14 *	
SBR (free)	f		165			293		
EBL	0.5	611	64	0.10	1,611	144	0.09 *	
EBT	1.5	2,789	292	0.10	1,789	160	0.09	
EBR	2	3,400	348	0.10	3,400	317	0.09 *	
WBL	0		0			0		
WBT	0		0			0		
WBR	0		0			0		
		N/S Movements		0.21			0.14	
		E/W Movements		0.10			0.09	
		Rt. Turn Component		0.00			0.00	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.36	0.28			
LEVEL OF SERVICE (LOS)				A	A			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		61 The City Drive @ S/B I-5 Ramps						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	0		0			0		
NBT	5	8,500	880	0.10	8,500	1,223	0.14	
NBR	0		8			28		
SBL	0		0			0		
SBT	4	6,800	1,873	0.28 *	6,800	994	0.15 *	
SBR (free)	f		180			300		
EBL	0.5	759	90	0.12	1,675	167	0.10	
EBT	1.5	2,641	313	0.12	1,725	172	0.10	
EBR	2	3,400	365	0.11	3,400	333	0.10	
WBL	0		0			0		
WBT	0		0			0		
WBR	0		0			0		
		N/S Movements		0.28			0.15	
		E/W Movements		0.12			0.10	
		Rt. Turn Component		0.00			0.00	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.44	0.30			
LEVEL OF SERVICE (LOS)				A	A			

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Existing							
INTERSECTION:		62 S/B I-5 Ramps @ Chapman Ave.							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	2	3,400	609	0.18 *	3,400	660	0.19 *		
NBT	0		0			0			
NBR	1	1,700	35	0.02	1,700	73	0.04 *		
SBL	2	3,400	211	0.06	3,400	151	0.04		
SBT	0		0			0			
SBR	1	1,700	0	0.00	1,700	3	0.00 *		
EBL	0		0			0			
EBT	3.5	4,138	866	0.21 *	4,160	952	0.23 *		
EBR	1.5	4,362	913	0.21	4,340	993	0.23		
WBL	2	3,400	96	0.03 *	3,400	113	0.03 *		
WBT	3	5,100	829	0.16	5,100	979	0.19		
WBR	0	0	0		0	0			
		N/S Movements		0.18			0.19		
		E/W Movements		0.24			0.26		
		Rt. Turn Component		0.00			0.00		
		Yellow Clearance		0.05			0.05		
TOTAL CAPACITY UTILIZATION				0.47					0.51
LEVEL OF SERVICE (LOS)				A					A

PROJECT:		City of Orange General Plan Update							
SCENARIO:		No Project							
INTERSECTION:		62 S/B I-5 Ramps @ Chapman Ave.							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	2	3,400	636	0.19 *	3,400	698	0.21 *		
NBT	0		0			0			
NBR	1	1,700	35	0.02	1,700	75	0.04 *		
SBL	2	3,400	220	0.06	3,400	157	0.05		
SBT	0		0			0			
SBR	1	1,700	0	0.00	1,700	3	0.00 *		
EBL	0		0			0			
EBT	3.5	4,144	915	0.22 *	4,153	1,008	0.24 *		
EBR	1.5	4,356	962	0.22	4,347	1,055	0.24		
WBL	2	3,400	98	0.03 *	3,400	115	0.03 *		
WBT	3	5,100	884	0.17	5,100	1,029	0.20		
WBR	0	0	0		0	0			
		N/S Movements		0.19			0.21		
		E/W Movements		0.25			0.28		
		Rt. Turn Component		0.00			0.00		
		Yellow Clearance		0.05			0.05		
TOTAL CAPACITY UTILIZATION				0.49					0.53
LEVEL OF SERVICE (LOS)				A					A

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Existing						
INTERSECTION:		63 Rampart St. @ Chapman Ave./ N/B I-5 Ramps						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	0							
NBT	0						0.00	
NBR	0							
SBL	1	1,700	41	0.02 *	1,700	53	0.03 *	
SBT	0					1	0.00	
SBR	1	1,700	143	0.08 *	1,700	136	0.08 *	
EBL	1	1,700	104	0.06 *	1,700	60	0.02	
EBT	3	5,100	977	0.19	5,100	1,066	0.21 *	
EBR	0					1	0.00	
WBL	0					1	0.00	
WBT	4	5,836	1,011	0.17 *	5,867	1,031	0.18	
WBR	0	964	167	0.17	933	164	0.18	
		N/S Movements		0.02			0.03	
		E/W Movements		0.23			0.21	
		Rt. Turn Component		0.00			0.03	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.31				0.32
LEVEL OF SERVICE (LOS)				A				A

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		63 Rampart St. @ Chapman Ave./ N/B I-5 Ramps						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	176	0.10 *	1,700	278	0.16 *	
NBT	2	3,400	278	0.08	3,400	300	0.09	
NBR	1	1,700	194	0.11	1,700	322	0.19	
SBL	1	1,700	56	0.03	1,700	64	0.04	
SBT	2	3,400	405	0.12 *	3,400	415	0.12 *	
SBR	1	1,700	176	0.10	1,700	141	0.08	
EBL	2	3,400	125	0.04	3,400	63	0.02	
EBT	3	4,098	1,026	0.25 *	4,079	1,119	0.27 *	
EBR	0	1,002	251	0.25	1,021	280	0.28	
WBL	1	1,700	283	0.17 *	1,700	343	0.20 *	
WBT	3	5,100	1,062	0.21	5,100	1,083	0.21	
WBR	2	3,400	227	0.07	3,400	172	0.05	
		N/S Movements		0.22			0.29	
		E/W Movements		0.42			0.47	
		Rt. Turn Component		0.00			0.00	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.69				0.81
LEVEL OF SERVICE (LOS)				B				D

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Existing						
INTERSECTION:		64 S/B SR-57 Ramps @ Chapman Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	0.5	1,314	17	0.01	1,392	140	0.10	
NBT	0.5	386	5	0.01	308	31	0.10	
NBR	1	1,700	16	0.01	1,700	106	0.06	
SBL	0.5	1,386	260	0.19	1,619	160	0.10	
SBT	0.5	314	59	0.19	81	8	0.10	
SBR	1	1,700	360	0.21 *	1,700	276	0.16 *	
EBL	1	1,700	3	0.00	1,700	1	0.00 *	
EBT	3	5,100	1,032	0.20 *	5,100	989	0.19	
EBR	0		143			19		
WBL	1	1,700	86	0.05 *	1,700	23	0.01	
WBT	2	3,400	626	0.18	3,400	1,053	0.31 *	
WBR (free)	f		152			161		
		N/S Movements		0.20			0.20	
		E/W Movements		0.25			0.31	
		Rt. Turn Component		0.02			0.06	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.53			0.62	
LEVEL OF SERVICE (LOS)				A			B	

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		64 S/B SR-57 Ramps @ Chapman Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	0.5	1,292	19	0.01	1,419	172	0.12	
NBT	0.5	408	6	0.01	281	34	0.12	
NBR	1	1,700	16	0.01	1,700	111	0.07	
SBL	0.5	1,385	264	0.19	1,623	168	0.10	
SBT	0.5	315	60	0.19	77	8	0.10	
SBR	1	1,700	404	0.24 *	1,700	331	0.19 *	
EBL	1	1,700	3	0.00	1,700	1	0.00 *	
EBT	3	5,100	1,110	0.22 *	5,100	1,078	0.21	
EBR	0		155			22		
WBL	1	1,700	90	0.05 *	1,700	24	0.01	
WBT	2	3,400	677	0.20	3,400	1,187	0.35 *	
WBR (free)	f		161			164		
		N/S Movements		0.21			0.22	
		E/W Movements		0.27			0.35	
		Rt. Turn Component		0.05			0.09	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.57			0.72	
LEVEL OF SERVICE (LOS)				A			C	

APPENDIX B: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Existing							
INTERSECTION:		65 N/B SR-57 Ramps @ Chapman Ave.							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	1	1,700	42	0.02 *	1,700	29	0.02 *		
NBT	0		0			0			
NBR	1	1,700	108	0.06 *	1,700	151	0.09 *		
SBL	0		0			0			
SBT	0		0			0			
SBR	1	1,700	0	0.00	1,700	0	0.00		
EBL	1	1,700	0	0.00	1,700	0	0.00 *		
EBT	2	3,400	984	0.29 *	3,400	851	0.25		
EBR (free)	f		345			415			
WBL	0		0			0			
WBT	3	3,833	820	0.21	4,141	1,218	0.29 *		
WBR	0	1,267	271	0.21	959	282	0.29		
		N/S Movements		0.02			0.02		
		E/W Movements		0.29			0.29		
		Rt. Turn Component		0.04			0.07		
		Yellow Clearance		0.05			0.05		
TOTAL CAPACITY UTILIZATION				0.40				0.43	
LEVEL OF SERVICE (LOS)				A				A	

PROJECT:		City of Orange General Plan Update							
SCENARIO:		No Project							
INTERSECTION:		65 N/B SR-57 Ramps @ Chapman Ave.							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	1	1,700	44	0.03 *	1,700	30	0.02 *		
NBT	0		0			0			
NBR	1	1,700	119	0.07 *	1,700	164	0.10 *		
SBL	0		0			0			
SBT	0		0			0			
SBR	1	1,700	0	0.00	1,700	0	0.00		
EBL	1	1,700	0	0.00	1,700	0	0.00 *		
EBT	2	3,400	1,041	0.31 *	3,400	899	0.26		
EBR (free)	f		377			446			
WBL	0		0			0			
WBT	3	3,717	876	0.24	4,159	1,300	0.31 *		
WBR	0	1,383	326	0.24	941	294	0.31		
		N/S Movements		0.03			0.02		
		E/W Movements		0.31			0.31		
		Rt. Turn Component		0.04			0.08		
		Yellow Clearance		0.05			0.05		
TOTAL CAPACITY UTILIZATION				0.43				0.46	
LEVEL OF SERVICE (LOS)				A				A	

Appendix C Future No Project Mitigated Intersection ICU Worksheets

APPENDIX C: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update					
SCENARIO:		No Project - Mitigation					
INTERSECTION:		7 Cannon St. @ Santiago Canyon Rd.					
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR		
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C
NBL	2	3,400	299	0.09	3,400	202	0.06
NBT	1.5	2,930	268	0.09	3,288	588	0.18
NBR	0.5	470	43	0.09	112	20	0.18
SBL	3	5,100	1,962	0.38	5,100	1,314	0.26
SBT	3	5,100	476	0.09	5,100	365	0.07
SBR(free)	f		1,399			681	
EBL	2	3,400	385	0.11	3,400	835	0.25
EBT	3	5,100	960	0.19	5,100	1,247	0.24
EBR	1	1,700	134	0.08	1,700	237	0.14
WBL	2	3,400	20	0.01	3,400	17	0.01
WBT	3	5,100	1,442	0.28	5,100	1,129	0.22
SBR(free)	f		1,162			1,815	
split phasing		N/S Movements		0.48			0.44
		E/W Movements		0.40			0.47
		Rt. Turn Component		0.00			0.00
		Yellow Clearance		0.05			0.05
		ATMS Credit		-0.05			-0.05
TOTAL CAPACITY UTILIZATION				0.87			
LEVEL OF SERVICE (LOS)				D			

APPENDIX C: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update					
SCENARIO:		No Project - Mitigation					
INTERSECTION:		8 Cannon St. @ Serrano Ave.					
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR		
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C
NBL	0		0			0	
NBT	3	5,100	1,530	0.30	5,100	2,406	0.47 *
NBR	1	1,700	319	0.19	1,700	1,227	0.72 *
SBL	1	1,700	82	0.05	1,700	199	0.12 *
SBT	3	5,100	2,824	0.55 *	5,100	1,609	0.32
SBR	0		0			0	
EBL	0		0			0	
EBT	0		0	0.00		0	0.00
EBR	0		0			0	
WBL	2.5	4,253	1,256	0.30 *	4,250	530	0.12 *
WBT	0		0	0.00		0	0.00
WBR	0.5	847	250	0.30	850	79	0.09
		N/S Movements		0.55			0.59
		E/W Movements		0.30			0.12
		Rt. Turn Component		0.00			0.13
		Yellow Clearance		0.05			0.05
TOTAL CAPACITY UTILIZATION				0.90			
LEVEL OF SERVICE (LOS)				D	0.89		
					D		

APPENDIX C: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update					
SCENARIO:		No Project - Mitigation					
INTERSECTION:		27 S/B SR-55 Ramps @ Katella Ave.					
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR		
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C
NBL	0		0			0	
NBT	0		0	0.00		0	0.00
NBR	0		0			0	
SBL	2	3,400	221	0.07 *	3,400	447	0.13 *
SBT	0		0	0.00		0	0.00
SBR	1	1,700	478	0.28 *	1,700	423	0.25 *
EBL	0		0			0	
EBT	2.5	3,457	638	0.18 *	4,052	1,432	0.35 *
EBR	1.5	3,343	617	0.18	2,748	971	0.35
WBL	2	3,400	761	0.22 *	3,400	400	0.12 *
WBT	3	5,100	1,849	0.36	5,100	1,496	0.29
WBR	0		0			0	
split phasing		N/S Movements		0.07			0.13
		E/W Movements		0.41			0.47
		Rt. Turn Component		0.22			0.12
		Yellow Clearance		0.05			0.05
TOTAL CAPACITY UTILIZATION				0.74			
LEVEL OF SERVICE (LOS)				C			
					0.77		
					C		

APPENDIX C: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update					
SCENARIO:		No Project - Mitigation					
INTERSECTION:		41 Wanda Rd. @ Villa Park Rd.					
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR		
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C
NBL	1	1,700	242	0.14	1,700	120	0.07
NBT	2	3,400	532	0.16 *	3,400	550	0.16 *
NBR	1	1,700	115	0.07	1,700	150	0.09
SBL	1	1,700	375	0.22 *	1,700	309	0.18 *
SBT	2	3,400	668	0.20	3,052	617	0.20
SBR	1	1,700	639	0.38 *	2,048	414	0.20
EBL	1	1,700	300	0.18 *	1,700	534	0.31 *
EBT	2	3,400	760	0.22	3,400	1,352	0.40
EBR	1	1,700	163	0.10	1,700	276	0.16
WBL	1	1,700	188	0.11	1,700	159	0.09
WBT	3	5,100	1,677	0.33 *	5,100	976	0.19 *
WBR	1	1,700	347	0.20	1,700	384	0.23
		N/S Movements		0.38		0.34	
		E/W Movements		0.51		0.51	
		Rt. Turn Component		0.00		0.00	
		Yellow Clearance		0.05		0.05	
		ATMS Credit		-0.05		-0.05	
TOTAL CAPACITY UTILIZATION				0.89		0.85	
LEVEL OF SERVICE (LOS)				D		D	

APPENDIX C: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project - Mitigation						
INTERSECTION:		48 Tustin St. @ Lincoln Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	190	0.06 *	3,400	446	0.13 *	
NBT	3	5,100	209	0.04	5,100	701	0.14	
NBR	2	3,400	266	0.08	3,400	972	0.29	
SBL	2	3,400	155	0.05	3,400	394	0.12	
SBT	3	5,100	721	0.14 *	5,100	1,009	0.20 *	
SBR	1	1,700	381	0.22	1,700	362	0.21	
EBL	2	3,400	81	0.02	3,400	352	0.10	
EBT	3	5,100	307	0.06 *	5,100	1,214	0.24 *	
EBR	2	3,400	570	0.17 *	3,400	834	0.25 *	
WBL	2	3,400	859	0.25 *	3,400	762	0.22 *	
WBT	3	5,100	1,028	0.20	5,100	1,011	0.20	
WBR	1	1,700	170	0.10	1,700	308	0.18	
split phasing		N/S Movements		0.20			0.33	
		E/W Movements		0.31			0.46	
		Rt. Turn Component		0.11			0.00	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.67	0.84			
LEVEL OF SERVICE (LOS)				B	D			

Appendix D Future No Project (MPAH) and Project (Revised MPAH)
Intersection Lane Geometry

APPENDIX D: FUTURE NO PROJECT (EXISTING MPAH) AND PROJECT (PROPOSED MPAH) INTERSECTION LANE GEOMETRY

ID	Intersection	Year	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
1	Batavia St. @ Collins Ave.	No Project	1	1.5	0.5	1	1.5	0.5	1	1.5	0.5	1	1.5	0.5
		Project	1	1.5	0.5	1	1.5	0.5	1	1.5	0.5	1	1.5	0.5
2	Batavia St. @ Katella Ave.	No Project	1	2	1	1	2	1	2	3	1	2	3	1
		Project	1	2	1	1	2	1	2	3	1	2	3	1
3	Batavia St. @ Lincoln Ave.	No Project	2	1	1	1	2	1	2	3	1	2	2.5	0.5
		Project	2	1	1	1	2	1	2	3	1	2	2.5	0.5
4	Batavia St. @ Taft Ave.	No Project	2	1.5	0.5	1	1.5	0.5	2	3	1	2	3	1
		Project	2	1.5	0.5	1	1.5	0.5	2	3	1	2	3	1
5	Batavia St. @ Walnut Ave.	No Project	1	1.5	0.5	1	1.5	0.5	1	2	1	1	2	1
		Project	1	1.5	0.5	1	1.5	0.5	1	0.5	0.5	1	0.5	0.5
6	Cambridge St. @ Katella Ave.	No Project	1	2	1	1	2	1	1	2.5	0.5	1	2.5	0.5
		Project	1	1	1	1	1	1	1	2.5	0.5	1	2.5	0.5
7	Cannon St. @ Santiago Canyon Rd.	No Project	2	1.5	0.5	3	3	f	2	3	1	2	3	f
		Project	2	1.5	0.5	3	3	f	2	3	1	2	3	f
8	Cannon St. @ Serrano Ave.	No Project	0	3	1	1	3	0	0	0	0	2	0	1
		Project	0	3	1	1	3	0	0	0	0	2	0	1
9	Cannon St./ Crawford Canyon @ Chapman Ave.	No Project	2	1.5	0.5	1	2	1	2	3	1	2	3	1
		Project	2	1.5	0.5	1	2	1	2	3	1	2	3	1
10	Yorba St. @ Chapman Ave.	No Project	2	1.5	0.5	1	1.5	0.5	1	4	1	1	3	1
		Project	2	1.5	0.5	1	1.5	0.5	1	4	1	1	3	1
11	Canyon View Ave. @ Chapman Ave.	No Project	2	0	1	0	0	0	0	3	1	1	3	0
		Project	2	0	1	0	0	0	0	3	1	1	3	0
12	Jamboree Rd. @ Chapman Ave.	No Project	2	3	1	2	3	1	2	3	1	2	3	1
		Project	2	3	1	2	3	1	2	3	1	2	3	1
13	N/B SR-55 Ramps @ Chapman Ave.	No Project	0	0	2	0	0	2	2	3	0	0	3.5	1.5
		Project	0	0	2	0	0	2	2	3	0	0	3.5	1.5
14	S/B SR-55 Ramps @ Chapman Ave.	No Project	0	0	0	2	0	2	0	3	f	0	3	f
		Project	0	0	0	2	0	2	0	3	f	0	3	f
15	Lewis Street @ Chapman Ave	No Project	1	2	1	1	1.5	0.5	2	3	1	2	3	1
		Project	1	2	1	1	1.5	0.5	2	3	1	2	3	1
16	The City Drive @ Chapman Ave.	No Project	2	4	1	2	4	1	2	3	1	2	3	1
		Project	2	4	1	2	4	1	2	3	1	2	3	1
17	The City Drive @ E/B SR-22 on/off Ramps	No Project	1	3	0	1	3	f	1.5	0.5	1	0.5	0.5	1
		Project	1	3	0	1	3	f	1.5	0.5	1	0.5	0.5	1
18	The City Drive @ Metropolitan Dr.	No Project	2	4	1	1	3	2	2	2	2	1	2	2
		Project	2	4	1	1	3	2	2	2	2	1	2	2
19	Glassell St. @ Collins Ave.	No Project	1	2	1	1	2	1	2	1.5	0.5	1	1.5	0.5
		Project	1	2	1	1	2	1	2	1.5	0.5	1	1.5	0.5
20	Glassell St. @ Katella Ave.	No Project	2	2	1	2	2	1	2	3	1	2	3	1
		Project	2	2	1	2	2	1	2	3	1	2	3	1
21	Glassell St. @ La Veta Ave.	No Project	2	2	1	1	1.5	0.5	1	2	1	1	1.5	0.5
		Project	2	2	1	1	1.5	0.5	1	2	1	1	1.5	0.5
22	Glassell St. @ Lincoln Ave.	No Project	2	3	1	2	2	1	2	3	1	2	3	1
		Project	2	3	1	2	2	1	2	3	1	2	3	1
23	Glassell St. @ Taft Ave.	No Project	1	3	1	1	3	1	2	3	1	1	3	1
		Project	1	3	1	1	3	1	2	3	1	1	3	1
24	Glassell St. @ Walnut Ave.	No Project	1	1.5	0.5	1	1.5	0.5	1	1.5	0.5	1	1.5	0.5
		Project	1	1.5	0.5	1	1.5	0.5	0.5	0.5	1	0.33	0.33	0.33
25	Hewes St. @ Chapman Ave.	No Project	1	1.5	0.5	1	2	1	2	2.5	0.5	2	2.5	0.5
		Project	1	1.5	0.5	1	2	1	2	2.5	0.5	2	2.5	0.5
26	N/B SR-55 Ramps @ Katella Ave.	No Project	2	0	1	0	0	1	0	3	f	1	3	0
		Project	2	0	1	0	0	1	0	3	f	1	3	0
27	S/B SR-55 Ramps @ Katella Ave.	No Project	0	0	0	2	0	1	0	2.5	1.5	1	3	0
		Project	0	0	0	2	0	1	0	2.5	1.5	1	3	0
28	Main Street @ Chapman Ave.	No Project	2	3	1	2	3	1	2	3	1	2	3	1
		Project	2	3	1	2	3	1	2	3	1	2	3	1
29	Main Street @ Katella Ave.	No Project	2	2	1	2	2	1	2	3	1	2	3	1
		Project	2	2	1	2	2	1	2	3	1	2	3	1
30	Main Street @ La Veta Ave.	No Project	2	3	1	2	3	1	2	3	1	2	3	1
		Project	2	3	1	2	3	1	2	3	1	2	3	1
31	Main Street @ Orangewood Ave.	No Project	1	3	1	1	3	1	2	3	1	1	1.5	0.5
		Project	1	3	1	1	3	1	2	3	1	1	1.5	0.5
32	Main Street @ Taft Ave	No Project	2.5	0.5	1	1	1	1	2	3	1	2	3	1
		Project	2.5	0.5	1	1	1	1	2	3	1	2	3	1

APPENDIX D: FUTURE NO PROJECT (EXISTING MPAH) AND PROJECT (PROPOSED MPAH) INTERSECTION LANE GEOMETRY

ID	Intersection	Year	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
33	Main Street @ Town & Country Rd.	No Project	2	3	1	2	3	1	1.5	1	0.5	1.5	1.5	2
		Project	2	3	1	2	3	1	1.5	1	0.5	1.5	1.5	2
34	Newport Blvd. @ Chapman Ave.	No Project	2	1.5	0.5	2	2	1	2	3	1	2	3	1
		Project	2	1.5	0.5	2	2	1	2	3	1	2	3	1
35	Santiago Blvd. @ Nohl Ranch Rd.	No Project	2	1	1	1	3	f	2	3	1	1	1.5	0.5
		Project	2	1	1	1	3	f	2	3	1	1	1.5	0.5
36	Eckhoff St. @ Orangewood Ave.	No Project	1	1.5	0.5	1	1	f	2	2	1	2	2.5	0.5
		Project	1	1.5	0.5	1	1	f	2	2	1	2	2.5	0.5
37	State College Blvd. @ Orangewood Ave.	No Project	2	4	1	2	4	1	2	3	1	2	2	1
		Project	2	4	1	2	4	1	2	3	1	2	2	1
38	Prospect St. @ Chapman Ave.	No Project	1	2	1	1	2	1	2	3	1	2	3	1
		Project	1	2	1	1	2	1	2	3	1	2	3	1
39	Prospect St. @ Walnut Ave.	No Project	1	1.5	0.5	1	1.5	0.5	1	1.5	0.5	1	1.5	0.5
		Project	1	1.5	0.5	1	1.5	0.5	1	1.5	0.5	1	1.5	0.5
40	Santiago Blvd. @ Meats Ave.	No Project	2	2	1	2	1.5	0.5	1	1.5	1.5	2	1.5	0.5
		Project	2	2	1	2	1.5	0.5	1	1.5	1.5	2	1.5	0.5
41	Wanda Rd. @ Villa Park Rd.	No Project	1	1.5	0.5	1	2	1	2	2	1	1	2	1
		Project	1	1.5	0.5	1	2	1	2	2	1	1	2	1
42	Tustin St. @ Chapman Ave.	No Project	2	3	1	2	3	1	2	3	1	2	3	1
		Project	2	3	1	2	3	1	2	3	1	2	3	1
43	Tustin St. @ Collins Ave.	No Project	2	3	1	2	3	1	2	2.5	0.5	2	2.5	0.5
		Project	2	3	1	2	3	1	2	2.5	0.5	2	2.5	0.5
44	Tustin St. @ Fairhaven Ave.	No Project	2	3	1	2	3	1	1	1.5	1.5	2	1.5	1.5
		Project	2	3	1	2	3	1	1	1.5	1.5	2	1.5	1.5
45	Tustin St. @ Heim Ave.	No Project	1	3	1	1	3	1	1	1	1	1	0.5	0.5
		Project	1	3	1	1	3	1	1	1	1	1	0.5	0.5
46	Tustin St. @ Katella Ave.	No Project	2	3	1	2	3	1	2	3	1	2	3	1
		Project	2	3	1	2	3	1	2	3	1	2	3	1
47	Tustin St. @ La Veta Ave.	No Project	1	3	1	1	3	1	1	1.5	0.5	1.5	0.5	1
		Project	1	3	1	1	3	1	1	1.5	0.5	1.5	0.5	1
48	Tustin St. @ Lincoln Ave.	No Project	2	3	2	2	3	1	2	2	1	2	2	1
		Project	2	3	2	2	3	1	2	2	1	2	2	1
49	Tustin St. @ Meats Ave.	No Project	2	3	1	2	3	1	2	2	1	2	2	1
		Project	2	3	1	2	3	1	2	2	1	2	2	1
50	Tustin St. @ Taft Ave. (North)	No Project	1	3	1	2	2.5	0.5	1	0	1	2	0	1
		Project	1	3	1	2	2.5	0.5	1	0	1	2	0	1
51	Tustin St. @ Taft Ave. (South)	No Project	2	3	0	0	3	1	2	0	1	0	0	0
		Project	2	3	0	0	3	1	2	0	1	0	0	0
52	Tustin St. @ Walnut Ave.	No Project	1	3	1	1	3	1	1	2	1	1	2	1
		Project	1	3	1	1	3	1	1	1	1	1	1	1
55	Struck Ave. @ Katella Ave.	No Project	1.5	0	0.5	0	0	0	0	3	1	1	3	0
		Project	1.5	0	0.5	0	0	0	0	3	1	1	3	0
56	Main St. @ Struck Ave.	No Project	1	2	0	1	2	0	1	1	0	1	1	0
		Project	1	2	0	1	2	0	1	1	0	1	1	0
57	Main St. @ Collins Ave.	No Project	1	2	0	1	2	0	1	2	0	1	2	0
		Project	1	2	0	1	2	0	1	2	0	1	2	0
58	S/B SR-57 Ramps @ Orangewood Ave.	No Project	0	0	0	1.5	0	1.5	0	2	1	1	2	0
		Project	0	0	0	1.5	0	1.5	0	2	1	1	2	0
59	N/B SR-57 Ramps @ Orangewood Ave.	No Project	1.5	0	1.5	0	0	0	0	3	f	0	3	1
		Project	1.5	0	1.5	0	0	0	0	3	f	0	3	1
60	The City Drive @ N/B I-5 Ramps/Anaheim Wy.	No Project	2	4	f	1	4	1	0	0	0	1.5	1.5	2
		Project	2	4	f	1	4	1	0	0	0	1.5	1.5	2
61	The City Drive @ S/B I-5 Ramps	No Project	0	5	0	0	4	f	0.5	1.5	2	0	0	0
		Project	0	5	0	0	4	f	0.5	1.5	2	0	0	0
62	S/B I-5 Ramps @ Chapman Ave.	No Project	2	0	1	2	0	1	0	3.5	1.5	2	3	0
		Project	2	0	1	2	0	1	0	3.5	1.5	2	3	0
63	Rampart St. @ Chapman Ave./ N/B I-5 Ramps	No Project	1	2	1	1	2	1	2	3	0	1	3	2
		Project	1	2	1	1	2	1	2	3	0	1	3	2
64	S/B SR-57 Ramps @ Chapman Ave.	No Project	0.5	0.5	1	0.5	0.5	1	1	3	0	1	2	f
		Project	0.5	0.5	1	0.5	0.5	1	1	3	0	1	2	f
65	N/B SR-57 Ramps @ Chapman Ave.	No Project	0	0	1	1	0	0	1	0	1	f	0	0
		Project	0	0	1	1	0	0	1	0	1	f	0	0

Appendix E Future No Project, Project, Alternative 1 and Alternative 2
Intersection ICU Worksheets

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		1 Batavia St. @ Collins Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	94	0.06	1,700	43	0.03	
NBT	1.5	2,872	490	0.17	2,548	634	0.25	
NBR	0.5	528	90	0.17	852	212	0.25	
SBL	1	1,700	74	0.04	1,700	166	0.10	
SBT	1.5	3,024	668	0.22	3,150	555	0.18	
SBR	0.5	376	83	0.22	250	44	0.18	
EBL	1	1,700	79	0.05	1,700	97	0.06	
EBT	1.5	2,569	272	0.11	3,027	714	0.24	
EBR	0.5	831	88	0.11	373	88	0.24	
WBL	1	1,700	211	0.12	1,700	218	0.13	
WBT	1.5	2,800	527	0.19	2,644	483	0.18	
WBR	0.5	600	113	0.19	756	138	0.18	
N/S Movements				0.28			0.35	
E/W Movements				0.23			0.36	
Rt. Turn Component				0.00			0.00	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.56			0.76	
LEVEL OF SERVICE (LOS)				A			C	

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Project - With Meats Interchange						
INTERSECTION:		1 Batavia St. @ Collins Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	120	0.07	1,700	52	0.03	
NBT	1.5	2,470	579	0.23	2,282	710	0.31	
NBR	0.5	930	218	0.23	1,118	348	0.31	
SBL	1	1,700	106	0.06	1,700	194	0.11	
SBT	1.5	3,135	876	0.28	3,171	610	0.19	
SBR	0.5	265	74	0.28	229	44	0.19	
EBL	1	1,700	61	0.04	1,700	69	0.04	
EBT	1.5	2,744	456	0.17	3,103	868	0.28	
EBR	0.5	656	109	0.17	297	83	0.28	
WBL	1	1,700	385	0.23	1,700	245	0.14	
WBT	1.5	2,838	656	0.23	2,652	667	0.25	
WBR	0.5	562	130	0.23	748	188	0.25	
N/S Movements				0.35			0.43	
E/W Movements				0.39			0.42	
Rt. Turn Component				0.00			0.00	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.79			0.90	
LEVEL OF SERVICE (LOS)				C			D	

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 1 - Project Without Meats Interchange						
INTERSECTION:		1 Batavia St. @ Collins Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	122	0.07	1,700	49	0.03	
NBT	1.5	2,480	588	0.24	2,275	716	0.31	
NBR	0.5	920	218	0.24	1,125	354	0.31	
SBL	1	1,700	104	0.06	1,700	192	0.11	
SBT	1.5	3,130	857	0.27	3,169	605	0.19	
SBR	0.5	270	74	0.27	231	44	0.19	
EBL	1	1,700	65	0.04	1,700	69	0.04	
EBT	1.5	2,745	478	0.17	3,103	877	0.28	
EBR	0.5	655	114	0.17	297	84	0.28	
WBL	1	1,700	400	0.24	1,700	232	0.14	
WBT	1.5	2,840	695	0.24	2,618	683	0.26	
WBR	0.5	560	137	0.24	782	204	0.26	
N/S Movements				0.35			0.43	
E/W Movements				0.41			0.42	
Rt. Turn Component				0.00			0.00	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.81			0.90	
LEVEL OF SERVICE (LOS)				C			D	

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC						
INTERSECTION:		1 Batavia St. @ Collins Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	94	0.06	1,700	49	0.03	
NBT	1.5	2,814	456	0.16	2,507	727	0.29	
NBR	0.5	586	95	0.16	893	259	0.29	
SBL	1	1,700	71	0.04	1,700	175	0.10	
SBT	1.5	3,060	809	0.26	3,143	538	0.17	
SBR	0.5	340	90	0.26	257	44	0.17	
EBL	1	1,700	79	0.05	1,700	89	0.05	
EBT	1.5	2,556	324	0.13	3,109	866	0.28	
EBR	0.5	844	107	0.13	291	81	0.28	
WBL	1	1,700	305	0.18	1,700	262	0.15	
WBT	1.5	2,841	686	0.24	2,640	570	0.22	
WBR	0.5	559	135	0.24	760	164	0.22	
N/S Movements				0.32			0.39	
E/W Movements				0.31			0.43	
Rt. Turn Component				0.00			0.00	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.68			0.88	
LEVEL OF SERVICE (LOS)				B			D	

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		2 Batavia St. @ Katella Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	130	0.08	1,700	100	0.06	
NBT	2	3,400	242	0.07	3,400	551	0.16	
NBR	1	1,700	247	0.15	1,700	339	0.20	
SBL	1	1,700	105	0.06	1,700	283	0.17	
SBT	2	3,400	479	0.14	3,400	434	0.13	
SBR	1	1,700	139	0.08	1,700	264	0.16	
EBL	2	3,400	126	0.04	3,400	267	0.08	
EBT	3	5,100	1,567	0.31	5,100	1,490	0.29	
EBR	1	1,700	96	0.06	1,700	70	0.04	
WBL	2	3,400	181	0.05	3,400	112	0.03	
WBT	3	5,100	1,139	0.22	5,100	1,311	0.26	
WBR	1	1,700	70	0.04	1,700	167	0.10	
N/S Movements				0.22	0.33			
E/W Movements				0.36	0.34			
Rt. Turn Component				0.02	0.00			
Yellow Clearance				0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.65	0.72			
LEVEL OF SERVICE (LOS)				B	C			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Project - With Meats Interchange						
INTERSECTION:		2 Batavia St. @ Katella Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	251	0.15	1,700	203	0.12	
NBT	2	3,400	364	0.11	3,400	700	0.21	
NBR	1	1,700	223	0.13	1,700	392	0.23	
SBL	1	1,700	106	0.06	1,700	232	0.14	
SBT	2	3,400	659	0.19	3,400	571	0.17	
SBR	1	1,700	230	0.14	1,700	382	0.22	
EBL	2	3,400	267	0.08	3,400	352	0.10	
EBT	3	5,100	1,988	0.39	5,100	1,787	0.35	
EBR	1	1,700	215	0.13	1,700	134	0.08	
WBL	2	3,400	176	0.05	3,400	109	0.03	
WBT	3	5,100	1,340	0.26	5,100	1,490	0.29	
WBR	1	1,700	70	0.04	1,700	118	0.07	
N/S Movements				0.34	0.34			
E/W Movements				0.44	0.40			
Rt. Turn Component				0.00	0.00			
Yellow Clearance				0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.83	0.79			
LEVEL OF SERVICE (LOS)				D	C			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 1 - Project Without Meats Interchange						
INTERSECTION:		2 Batavia St. @ Katella Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	266	0.16	1,700	210	0.12	
NBT	2	3,400	361	0.11	3,400	705	0.21	
NBR	1	1,700	222	0.13	1,700	380	0.22	
SBL	1	1,700	106	0.06	1,700	233	0.14	
SBT	2	3,400	636	0.19	3,400	567	0.17	
SBR	1	1,700	229	0.13	1,700	406	0.24	
EBL	2	3,400	269	0.08	3,400	367	0.11	
EBT	3	5,100	2,013	0.39	5,100	1,800	0.35	
EBR	1	1,700	225	0.13	1,700	133	0.08	
WBL	2	3,400	172	0.05	3,400	112	0.03	
WBT	3	5,100	1,349	0.26	5,100	1,473	0.29	
WBR	1	1,700	70	0.04	1,700	114	0.07	
N/S Movements				0.34	0.34			
E/W Movements				0.45	0.40			
Rt. Turn Component				0.00	0.00			
Yellow Clearance				0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.84	0.79			
LEVEL OF SERVICE (LOS)				D	C			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC						
INTERSECTION:		2 Batavia St. @ Katella Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	143	0.08	1,700	97	0.06	
NBT	2	3,400	291	0.09	3,400	620	0.18	
NBR	1	1,700	198	0.12	1,700	301	0.18	
SBL	1	1,700	137	0.08	1,700	327	0.19	
SBT	2	3,400	570	0.17	3,400	459	0.14	
SBR	1	1,700	268	0.16	1,700	334	0.20	
EBL	2	3,400	201	0.06	3,400	401	0.12	
EBT	3	5,100	1,541	0.30	5,100	1,769	0.35	
EBR	1	1,700	86	0.05	1,700	75	0.04	
WBL	2	3,400	152	0.04	3,400	112	0.03	
WBT	3	5,100	1,418	0.28	5,100	1,304	0.26	
WBR	1	1,700	83	0.05	1,700	192	0.11	
N/S Movements				0.25	0.37			
E/W Movements				0.35	0.38			
Rt. Turn Component				0.00	0.00			
Yellow Clearance				0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.65	0.80			
LEVEL OF SERVICE (LOS)				B	C			

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		3 Batavia St. @ Lincoln Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	257	0.08	3,400	853	0.25	*
NBT	1	1,700	5	0.00	1,700	1	0.00	
NBR	1	1,700	248	0.15	1,700	747	0.44	*
SBL	1	1,700	26	0.02	1,700	15	0.01	
SBT	2	3,400	1	0.00	3,400	2	0.00	
SBR	1	1,700	8	0.00	1,700	3	0.00	
EBL	2	3,400	17	0.01	3,400	5	0.00	*
EBT	3	5,100	1,106	0.22	5,100	1,137	0.22	
EBR	1	1,700	653	0.38	1,700	196	0.12	
WBL	2	3,400	487	0.14	3,400	222	0.07	
WBT	2.5	4,929	952	0.19	5,080	1,514	0.30	*
WBR	0.5	171	33	0.19	20	6	0.30	
split phasing		N/S Movements		0.09			0.26	
		E/W Movements		0.36			0.30	
		Rt. Turn Component		0.09			0.12	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.59				0.73
LEVEL OF SERVICE (LOS)				A				C

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Project - With Meats Interchange						
INTERSECTION:		3 Batavia St. @ Lincoln Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	338	0.10	3,400	1,185	0.35	*
NBT	1	1,700	5	0.00	1,700	1	0.00	
NBR	1	1,700	264	0.16	1,700	737	0.43	*
SBL	1	1,700	23	0.01	1,700	14	0.01	*
SBT	2	3,400	1	0.00	3,400	2	0.00	
SBR	1	1,700	8	0.00	1,700	4	0.00	
EBL	2	3,400	17	0.01	3,400	5	0.00	*
EBT	3	5,100	1,163	0.23	5,100	1,140	0.22	
EBR	1	1,700	961	0.57	1,700	273	0.16	
WBL	2	3,400	488	0.14	3,400	215	0.06	
WBT	2.5	4,958	975	0.20	5,083	1,481	0.29	*
WBR	0.5	142	28	0.20	17	5	0.29	
split phasing		N/S Movements		0.11			0.36	
		E/W Movements		0.37			0.29	
		Rt. Turn Component		0.24			0.02	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.77				0.72
LEVEL OF SERVICE (LOS)				C				C

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 1 - Project Without Meats Interchange						
INTERSECTION:		3 Batavia St. @ Lincoln Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	334	0.10	3,400	1,191	0.35	*
NBT	1	1,700	5	0.00	1,700	1	0.00	
NBR	1	1,700	280	0.16	1,700	741	0.44	*
SBL	1	1,700	24	0.01	1,700	14	0.01	*
SBT	2	3,400	1	0.00	3,400	3	0.00	
SBR	1	1,700	8	0.00	1,700	4	0.00	
EBL	2	3,400	17	0.01	3,400	5	0.00	*
EBT	3	5,100	1,196	0.23	5,100	1,135	0.22	
EBR	1	1,700	943	0.55	1,700	288	0.17	
WBL	2	3,400	496	0.15	3,400	230	0.07	
WBT	2.5	4,952	969	0.20	5,083	1,496	0.29	*
WBR	0.5	148	29	0.20	17	5	0.29	
split phasing		N/S Movements		0.11			0.36	
		E/W Movements		0.38			0.30	
		Rt. Turn Component		0.22			0.02	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.76				0.72
LEVEL OF SERVICE (LOS)				C				C

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC						
INTERSECTION:		3 Batavia St. @ Lincoln Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	301	0.09	3,400	1,093	0.32	*
NBT	1	1,700	5	0.00	1,700	1	0.00	
NBR	1	1,700	239	0.14	1,700	689	0.41	*
SBL	1	1,700	23	0.01	1,700	14	0.01	*
SBT	2	3,400	1	0.00	3,400	2	0.00	
SBR	1	1,700	8	0.00	1,700	4	0.00	
EBL	2	3,400	17	0.01	3,400	5	0.00	
EBT	3	5,100	998	0.20	5,100	1,097	0.22	*
EBR	1	1,700	815	0.48	1,700	256	0.15	
WBL	2	3,400	484	0.14	3,400	192	0.06	*
WBT	2.5	4,946	963	0.19	5,085	1,343	0.26	
WBR	0.5	154	30	0.19	15	4	0.26	
split phasing		N/S Movements		0.10			0.33	
		E/W Movements		0.34			0.27	
		Rt. Turn Component		0.20			0.03	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.69				0.68
LEVEL OF SERVICE (LOS)				B				B

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		4 Batavia St. @ Taft Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	60	0.02	3,400	263	0.08	
NBT	1.5	2,453	202	0.08	2,522	753	0.30	
NBR	0.5	947	78	0.08	878	262	0.30	
SBL	1	1,700	76	0.04	1,700	56	0.03	
SBT	1.5	1,700	559	0.33	2,247	417	0.19	
SBR	0.5	1,700	644	0.38	1,153	214	0.19	
EBL	2	3,400	168	0.05	3,400	213	0.06	
EBT	3	5,100	590	0.12	5,100	1,447	0.28	
EBR	1	1,700	127	0.07	1,700	109	0.06	
WBL	2	3,400	249	0.07	3,400	157	0.05	
WBT	3	5,100	1,205	0.24	5,100	859	0.17	
WBR	1	1,700	75	0.04	1,700	71	0.04	
N/S Movements				0.35	0.33			
E/W Movements				0.29	0.33			
Rt. Turn Component				0.00	0.00			
Yellow Clearance				0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.68	0.71			
LEVEL OF SERVICE (LOS)				B	C			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Project - With Meats Interchange						
INTERSECTION:		4 Batavia St. @ Taft Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	135	0.04	3,400	410	0.12	
NBT	1.5	2,556	318	0.12	2,833	884	0.31	
NBR	0.5	844	105	0.12	567	177	0.31	
SBL	1	1,700	74	0.04	1,700	50	0.03	
SBT	1.5	1,725	663	0.38	2,400	535	0.22	
SBR	0.5	1,675	644	0.38	1,000	223	0.22	
EBL	2	3,400	178	0.05	3,400	213	0.06	
EBT	3	5,100	665	0.13	5,100	1,577	0.31	
EBR	1	1,700	212	0.12	1,700	183	0.11	
WBL	2	3,400	315	0.09	3,400	121	0.04	
WBT	3	5,100	1,399	0.27	5,100	986	0.19	
WBR	1	1,700	75	0.04	1,700	71	0.04	
N/S Movements				0.42	0.34			
E/W Movements				0.33	0.34			
Rt. Turn Component				0.00	0.00			
Yellow Clearance				0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.80	0.74			
LEVEL OF SERVICE (LOS)				C	C			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 1 - Project Without Meats Interchange						
INTERSECTION:		4 Batavia St. @ Taft Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	147	0.04	3,400	391	0.12	
NBT	1.5	2,546	316	0.12	2,820	894	0.32	
NBR	0.5	854	106	0.12	580	184	0.32	
SBL	1	1,700	74	0.04	1,700	50	0.03	
SBT	1.5	1,684	632	0.38	2,415	549	0.23	
SBR	0.5	1,716	644	0.38	985	224	0.23	
EBL	2	3,400	179	0.05	3,400	213	0.06	
EBT	3	5,100	679	0.13	5,100	1,613	0.32	
EBR	1	1,700	228	0.13	1,700	176	0.10	
WBL	2	3,400	290	0.09	3,400	129	0.04	
WBT	3	5,100	1,357	0.27	5,100	1,022	0.20	
WBR	1	1,700	65	0.04	1,700	71	0.04	
N/S Movements				0.42	0.35			
E/W Movements				0.32	0.35			
Rt. Turn Component				0.00	0.00			
Yellow Clearance				0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.79	0.75			
LEVEL OF SERVICE (LOS)				C	C			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC						
INTERSECTION:		4 Batavia St. @ Taft Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	130	0.04	3,400	420	0.12	
NBT	1.5	2,575	262	0.10	2,923	846	0.29	
NBR	0.5	825	84	0.10	477	138	0.29	
SBL	1	1,700	74	0.04	1,700	50	0.03	
SBT	1.5	1,654	632	0.38	2,205	461	0.21	
SBR	0.5	1,746	667	0.38	1,195	250	0.21	
EBL	2	3,400	171	0.05	3,400	243	0.07	
EBT	3	5,100	618	0.12	5,100	1,572	0.31	
EBR	1	1,700	193	0.11	1,700	184	0.11	
WBL	2	3,400	266	0.08	3,400	85	0.03	
WBT	3	5,100	1,448	0.28	5,100	900	0.18	
WBR	1	1,700	67	0.04	1,700	71	0.04	
N/S Movements				0.42	0.33			
E/W Movements				0.33	0.33			
Rt. Turn Component				0.00	0.00			
Yellow Clearance				0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.80	0.72			
LEVEL OF SERVICE (LOS)				C	C			

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update								
SCENARIO:		No Project								
INTERSECTION:		5 Batavia St. @ Walnut Ave.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	1	1,700	46	0.03	1,700	39	0.02	*	*	
NBT	1.5	3,140	446	0.14	3,185	577	0.18			
NBR	0.5	260	37	0.14	215	39	0.18			
SBL	1	1,700	27	0.02	1,700	71	0.04			
SBT	1.5	3,156	763	0.24	2,774	895	0.32	*	*	
SBR	0.5	244	59	0.24	626	202	0.32			
EBL	1	1,700	297	0.17	1,700	122	0.07	*	*	
EBT	2	3,400	312	0.09	3,400	400	0.12			
EBR	1	1,700	90	0.05	1,700	59	0.03			
WBL	1	1,700	180	0.11	1,700	46	0.03			
WBT	2	3,400	417	0.12	3,400	279	0.08	*	*	
WBR	1	1,700	75	0.04	1,700	61	0.04			
N/S Movements				0.27					0.35	
E/W Movements				0.30					0.15	
Rt. Turn Component				0.00					0.00	
Yellow Clearance				0.05					0.05	
TOTAL CAPACITY UTILIZATION				0.62					0.55	
LEVEL OF SERVICE (LOS)				B					A	

PROJECT:		City of Orange General Plan Update								
SCENARIO:		Project - With Meats Interchange								
INTERSECTION:		5 Batavia St. @ Walnut Ave.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	1	1,700	43	0.03	1,700	37	0.02	*	*	
NBT	1.5	3,224	753	0.23	3,227	673	0.21			
NBR	0.5	176	41	0.23	173	36	0.21			
SBL	1	1,700	27	0.02	1,700	59	0.03			
SBT	1.5	3,222	869	0.27	2,921	1,225	0.42	*	*	
SBR	0.5	178	48	0.27	479	201	0.42			
EBL	1	1,700	285	0.17	1,700	106	0.06	*	*	
EBT	0.5	1,348	283	0.21	1,366	213	0.16			
EBR	0.5	352	74	0.21	334	52	0.16			
WBL	1	1,700	127	0.07	1,700	53	0.03			
WBT	0.5	1,287	193	0.15	1,307	236	0.18	*	*	
WBR	0.5	413	62	0.15	393	71	0.18			
N/S Movements				0.30					0.44	
E/W Movements				0.32					0.24	
Rt. Turn Component				0.00					0.00	
Yellow Clearance				0.05					0.05	
TOTAL CAPACITY UTILIZATION				0.66					0.73	
LEVEL OF SERVICE (LOS)				B					C	

PROJECT:		City of Orange General Plan Update								
SCENARIO:		Alternative 1 - Project Without Meats Interchange								
INTERSECTION:		5 Batavia St. @ Walnut Ave.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	1	1,700	44	0.03	1,700	37	0.02	*	*	
NBT	1.5	3,217	756	0.24	3,231	688	0.21			
NBR	0.5	183	43	0.24	169	36	0.21			
SBL	1	1,700	27	0.02	1,700	60	0.04			
SBT	1.5	3,222	871	0.27	2,913	1,245	0.43	*	*	
SBR	0.5	178	48	0.27	487	208	0.43			
EBL	1	1,700	293	0.17	1,700	115	0.07	*	*	
EBT	0.5	1,334	303	0.23	1,368	214	0.16			
EBR	0.5	366	83	0.23	332	52	0.16			
WBL	1	1,700	136	0.08	1,700	53	0.03			
WBT	0.5	1,293	194	0.15	1,287	240	0.19	*	*	
WBR	0.5	407	61	0.15	413	77	0.19			
N/S Movements				0.30					0.45	
E/W Movements				0.32					0.25	
Rt. Turn Component				0.00					0.00	
Yellow Clearance				0.05					0.05	
TOTAL CAPACITY UTILIZATION				0.67					0.75	
LEVEL OF SERVICE (LOS)				B					C	

PROJECT:		City of Orange General Plan Update								
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC								
INTERSECTION:		5 Batavia St. @ Walnut Ave.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	1	1,700	42	0.02	1,700	42	0.02	*	*	
NBT	1.5	3,160	526	0.17	3,238	738	0.23			
NBR	0.5	240	40	0.17	162	37	0.23			
SBL	1	1,700	27	0.02	1,700	45	0.03			
SBT	1.5	3,240	975	0.30	2,990	1,064	0.36	*	*	
SBR	0.5	160	48	0.30	410	146	0.36			
EBL	1	1,700	211	0.12	1,700	84	0.05	*	*	
EBT	0.5	1,260	289	0.23	1,348	218	0.16			
EBR	0.5	440	101	0.23	352	57	0.16			
WBL	1	1,700	165	0.10	1,700	60	0.04	*	*	
WBT	0.5	1,380	190	0.14	1,353	222	0.16	*	*	
WBR	0.5	320	44	0.14	347	57	0.16			
N/S Movements				0.33					0.38	
E/W Movements				0.33					0.21	
Rt. Turn Component				0.00					0.00	
Yellow Clearance				0.05					0.05	
TOTAL CAPACITY UTILIZATION				0.70					0.64	
LEVEL OF SERVICE (LOS)				B					B	

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		6 Cambridge St. @ Katella Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	138	0.08	1,700	79	0.05	
NBT	2	3,400	143	0.04	3,400	308	0.09	
NBR	1	1,700	75	0.04	1,700	101	0.06	
SBL	1	1,700	146	0.09	1,700	147	0.09	
SBT	2	3,400	252	0.07	3,400	211	0.06	
SBR	1	1,700	197	0.12	1,700	52	0.03	
EBL	1	1,700	78	0.05	1,700	155	0.09	
EBT	2.5	4,656	744	0.16	4,895	2,105	0.43	
EBR	0.5	444	71	0.16	205	88	0.43	
WBL	1	1,700	49	0.03	1,700	85	0.05	
WBT	2.5	4,887	1,650	0.34	4,429	1,465	0.33	
WBR	0.5	213	72	0.34	671	222	0.33	
N/S Movements				0.16			0.18	
E/W Movements				0.38			0.48	
Rt. Turn Component				0.00			0.00	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.59			0.71	
LEVEL OF SERVICE (LOS)				A			C	

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Project - With Meats Interchange						
INTERSECTION:		6 Cambridge St. @ Katella Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	128	0.08	1,700	78	0.05	
NBT	1	1,700	138	0.08	1,700	308	0.18	
NBR	1	1,700	75	0.04	1,700	115	0.07	
SBL	1	1,700	146	0.09	1,700	161	0.09	
SBT	1	1,700	252	0.15	1,700	219	0.13	
SBR	1	1,700	189	0.11	1,700	49	0.03	
EBL	1	1,700	91	0.05	1,700	144	0.08	
EBT	2.5	4,676	828	0.18	4,920	2,328	0.47	
EBR	0.5	424	75	0.18	180	85	0.47	
WBL	1	1,700	53	0.03	1,700	97	0.06	
WBT	2.5	4,883	1,890	0.39	4,446	1,653	0.37	
WBR	0.5	217	84	0.39	654	243	0.37	
N/S Movements				0.22			0.28	
E/W Movements				0.44			0.53	
Rt. Turn Component				0.00			0.00	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.71			0.86	
LEVEL OF SERVICE (LOS)				C			D	

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 1 - Project Without Meats Interchange						
INTERSECTION:		6 Cambridge St. @ Katella Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	128	0.08	1,700	87	0.05	
NBT	1	1,700	142	0.08	1,700	308	0.18	
NBR	1	1,700	75	0.04	1,700	102	0.06	
SBL	1	1,700	146	0.09	1,700	152	0.09	
SBT	1	1,700	252	0.15	1,700	219	0.13	
SBR	1	1,700	201	0.12	1,700	58	0.03	
EBL	1	1,700	109	0.06	1,700	168	0.10	
EBT	2.5	4,675	881	0.19	4,908	2,346	0.48	
EBR	0.5	425	80	0.19	192	92	0.48	
WBL	1	1,700	49	0.03	1,700	84	0.05	
WBT	2.5	4,876	1,850	0.38	4,491	1,675	0.37	
WBR	0.5	224	85	0.38	609	227	0.37	
N/S Movements				0.22			0.27	
E/W Movements				0.44			0.53	
Rt. Turn Component				0.00			0.00	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.72			0.85	
LEVEL OF SERVICE (LOS)				C			D	

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC						
INTERSECTION:		6 Cambridge St. @ Katella Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	129	0.08	1,700	77	0.05	
NBT	1	1,700	143	0.08	1,700	308	0.18	
NBR	1	1,700	75	0.04	1,700	109	0.06	
SBL	1	1,700	146	0.09	1,700	155	0.09	
SBT	1	1,700	240	0.14	1,700	219	0.13	
SBR	1	1,700	181	0.11	1,700	50	0.03	
EBL	1	1,700	67	0.04	1,700	147	0.09	
EBT	2.5	4,690	710	0.15	4,909	2,186	0.45	
EBR	0.5	410	62	0.15	191	85	0.45	
WBL	1	1,700	54	0.03	1,700	89	0.05	
WBT	2.5	4,895	1,841	0.38	4,424	1,493	0.34	
WBR	0.5	205	77	0.38	676	228	0.34	
N/S Movements				0.22			0.27	
E/W Movements				0.42			0.50	
Rt. Turn Component				0.00			0.00	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.68			0.82	
LEVEL OF SERVICE (LOS)				B			D	

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		7 Cannon St. @ Santiago Canyon Rd.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	299	0.09	3,400	202	0.06	
NBT	1.5	2,930	268	0.09	3,288	588	0.18	
NBR	0.5	470	43	0.09	112	20	0.18	
SBL	3	5,100	1,962	0.38	5,100	1,364	0.27	
SBT	3	5,100	476	0.09	5,100	365	0.07	
SBR(free)	f		1,399			681		
EBL	2	3,400	385	0.11	3,400	835	0.25	
EBT	3	5,100	960	0.19	5,100	1,247	0.24	
EBR	1	1,700	134	0.08	1,700	237	0.14	
WBL	2	3,400	20	0.01	3,400	17	0.01	
WBT	3	5,100	1,442	0.28	5,100	1,129	0.22	
SBR(free)	f		1,162			1,815		
split phasing		N/S Movements		0.48			0.45	
		E/W Movements		0.40			0.47	
		Rt. Turn Component		0.00			0.00	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.92	0.96			
LEVEL OF SERVICE (LOS)				E	E			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Project - With Meats Interchange						
INTERSECTION:		7 Cannon St. @ Santiago Canyon Rd.						
MOVEMENT	LANES	lanes for cap cal	AM PEAK HOUR			PM PEAK HOUR		
			CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C
NBL	2	2	3,400	274	0.08	3,400	197	0.06
NBT	1.5	1.5	2,837	237	0.08	3,275	552	0.17
NBR	0.5	0.5	563	47	0.08	125	21	0.17
SBL	3	3	5,100	2,144	0.42	5,100	1,324	0.26
SBT	3	3	5,100	511	0.10	5,100	323	0.06
SBR(free)	50	f		1,244			613	
EBL	2	2	3,400	355	0.10	3,400	750	0.22
EBT	3	3	5,100	1,104	0.22	5,100	1,253	0.25
EBR	1	1	1,700	155	0.09	1,700	218	0.13
WBL	2	2	3,400	24	0.01	3,400	18	0.01
WBT	3	3	5,100	1,443	0.28	5,100	1,187	0.23
SBR(free)	50	f		1,123			1,845	
split phasing			N/S Movements		0.50			0.43
			E/W Movements		0.39			0.45
			Rt. Turn Component		0.00			0.00
			Yellow Clearance		0.05			0.05
TOTAL CAPACITY UTILIZATION				0.94	0.93			
LEVEL OF SERVICE (LOS)				E	E			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 1 - Project Without Meats Interchange						
INTERSECTION:		7 Cannon St. @ Santiago Canyon Rd.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	268	0.08	3,400	197	0.06	
NBT	1.5	2,807	232	0.08	3,283	563	0.17	
NBR	0.5	593	49	0.08	117	20	0.17	
SBL	3	5,100	2,096	0.41	5,100	1,309	0.26	
SBT	3	5,100	491	0.10	5,100	328	0.06	
SBR(free)	f		1,166			633		
EBL	2	3,400	319	0.09	3,400	757	0.22	
EBT	3	5,100	1,050	0.21	5,100	1,191	0.23	
EBR	1	1,700	144	0.08	1,700	212	0.12	
WBL	2	3,400	25	0.01	3,400	17	0.01	
WBT	3	5,100	1,446	0.28	5,100	1,173	0.23	
SBR(free)	f		1,124			1,860		
split phasing		N/S Movements		0.49			0.43	
		E/W Movements		0.38			0.45	
		Rt. Turn Component		0.00			0.00	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.92	0.93			
LEVEL OF SERVICE (LOS)				E	E			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC						
INTERSECTION:		7 Cannon St. @ Santiago Canyon Rd.						
MOVEMENT	LANES	lanes for cap cal	AM PEAK HOUR			PM PEAK HOUR		
			CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C
NBL	2	2	3,400	266	0.08	3,400	175	0.05
NBT	1.5	1.5	2,863	245	0.09	3,290	538	0.16
NBR	0.5	0.5	537	46	0.09	110	18	0.16
SBL	3	3	5,100	2,077	0.41	5,100	1,301	0.26
SBT	3	3	5,100	490	0.10	5,100	326	0.06
SBR(free)	50	f		1,217			623	
EBL	2	2	3,400	369	0.11	3,400	746	0.22
EBT	3	3	5,100	1,072	0.21	5,100	1,098	0.22
EBR	1	1	1,700	148	0.09	1,700	196	0.12
WBL	2	2	3,400	22	0.01	3,400	16	0.00
WBT	3	3	5,100	1,307	0.26	5,100	1,071	0.21
SBR(free)	50	f		1,100			1,824	
split phasing			N/S Movements		0.49			0.42
			E/W Movements		0.36			0.43
			Rt. Turn Component		0.00			0.00
			Yellow Clearance		0.05			0.05
TOTAL CAPACITY UTILIZATION				0.91	0.90			
LEVEL OF SERVICE (LOS)				E	D			

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		8 Cannon St. @ Serrano Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	0		0			0		
NBT	3	5,100	1,530	0.30	5,100	2,406	0.47 *	
NBR	1	1,700	319	0.19	1,700	1,227	0.72 *	
SBL	1	1,700	82	0.05	1,700	199	0.12 *	
SBT	3	5,100	2,824	0.55 *	5,100	1,609	0.32	
SBR	0		0			0		
EBL	0		0			0		
EBT	0		0	0.00		0	0.00	
EBR	0		0			0		
WBL	2	3,400	1,256	0.37 *	3,400	530	0.16 *	
WBT	0		0	0.00		0	0.00	
WBR	1	1,700	250	0.15	1,700	79	0.05	
N/S Movements				0.55			0.59	
E/W Movements				0.37			0.16	
Rt. Turn Component				0.00			0.09	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.97			0.89	
LEVEL OF SERVICE (LOS)				E			D	

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Project - With Meats Interchange						
INTERSECTION:		8 Cannon St. @ Serrano Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	0		0			0		
NBT	3	5,100	1,421	0.28	5,100	2,288	0.45 *	
NBR	1	1,700	292	0.17	1,700	1,227	0.72 *	
SBL	1	1,700	82	0.05	1,700	185	0.11 *	
SBT	3	5,100	2,821	0.55 *	5,100	1,482	0.29	
SBR	0		0			0		
EBL	0		0			0		
EBT	0		0	0.00		0	0.00	
EBR	0		0			0		
WBL	2	3,400	1,309	0.39 *	3,400	479	0.14 *	
WBT	0		0	0.00		0	0.00	
WBR	1	1,700	249	0.15	1,700	69	0.04	
N/S Movements				0.55			0.56	
E/W Movements				0.39			0.14	
Rt. Turn Component				0.00			0.13	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.99			0.88	
LEVEL OF SERVICE (LOS)				E			D	

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 1 - Project Without Meats Interchange						
INTERSECTION:		8 Cannon St. @ Serrano Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	0		0			0		
NBT	3	5,100	1,404	0.28	5,100	2,321	0.46 *	
NBR	1	1,700	283	0.17	1,700	1,214	0.71 *	
SBL	1	1,700	82	0.05	1,700	183	0.11 *	
SBT	3	5,100	2,816	0.55 *	5,100	1,484	0.29	
SBR	0		0			0		
EBL	0		0			0		
EBT	0		0	0.00		0	0.00	
EBR	0		0			0		
WBL	2	3,400	1,294	0.38 *	3,400	469	0.14 *	
WBT	0		0	0.00		0	0.00	
WBR	1	1,700	246	0.14	1,700	68	0.04	
N/S Movements				0.55			0.56	
E/W Movements				0.38			0.14	
Rt. Turn Component				0.00			0.12	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.98			0.87	
LEVEL OF SERVICE (LOS)				E			D	

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC						
INTERSECTION:		8 Cannon St. @ Serrano Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	0		0			0		
NBT	3	5,100	1,416	0.28	5,100	2,309	0.45 *	
NBR	1	1,700	293	0.17	1,700	1,209	0.71 *	
SBL	1	1,700	82	0.05	1,700	192	0.11 *	
SBT	3	5,100	2,760	0.54 *	5,100	1,513	0.30	
SBR	0		0			0		
EBL	0		0			0		
EBT	0		0	0.00		0	0.00	
EBR	0		0			0		
WBL	2	3,400	1,280	0.38 *	3,400	458	0.13 *	
WBT	0		0	0.00		0	0.00	
WBR	1	1,700	244	0.14	1,700	68	0.04	
N/S Movements				0.54			0.57	
E/W Movements				0.38			0.13	
Rt. Turn Component				0.00			0.12	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.97			0.87	
LEVEL OF SERVICE (LOS)				E			D	

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		9 Cannon St./ Crawford Canyon @ Chapman Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	307	0.09	3,400	371	0.11	
NBT	1.5	1,628	158	0.10	2,318	557	0.24	
NBR	0.5	1,772	172	0.10	1,082	260	0.24	
SBL	1	1,700	169	0.10	1,700	103	0.06	
SBT	2	3,400	583	0.17	3,400	247	0.07	
SBR	1	1,700	339	0.20	1,700	101	0.06	
EBL	2	3,400	89	0.03	3,400	296	0.09	
EBT	3	5,100	1,038	0.20	5,100	1,548	0.30	
EBR	1	1,700	402	0.24	1,700	396	0.23	
WBL	2	3,400	354	0.10	3,400	166	0.05	
WBT	3	5,100	2,075	0.41	5,100	1,217	0.24	
WBR	1	1,700	113	0.07	1,700	179	0.11	
N/S Movements				0.26	0.30			
E/W Movements				0.43	0.35			
Rt. Turn Component				0.00	0.00			
Yellow Clearance				0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.75	0.70			
LEVEL OF SERVICE (LOS)				C	B			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Project - With Meats Interchange						
INTERSECTION:		9 Cannon St./ Crawford Canyon @ Chapman Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	341	0.10	3,400	370	0.11	
NBT	1.5	1,349	154	0.11	2,304	528	0.23	
NBR	0.5	2,051	234	0.11	1,096	251	0.23	
SBL	1	1,700	206	0.12	1,700	94	0.06	
SBT	2	3,400	582	0.17	3,400	230	0.07	
SBR	1	1,700	337	0.20	1,700	106	0.06	
EBL	2	3,400	78	0.02	3,400	274	0.08	
EBT	3	5,100	1,260	0.25	5,100	1,458	0.29	
EBR	1	1,700	401	0.24	1,700	379	0.22	
WBL	2	3,400	346	0.10	3,400	187	0.06	
WBT	3	5,100	2,022	0.40	5,100	1,398	0.27	
WBR	1	1,700	97	0.06	1,700	195	0.11	
N/S Movements				0.27	0.28			
E/W Movements				0.42	0.35			
Rt. Turn Component				0.00	0.00			
Yellow Clearance				0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.75	0.69			
LEVEL OF SERVICE (LOS)				C	B			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 1 - Project Without Meats Interchange						
INTERSECTION:		9 Cannon St./ Crawford Canyon @ Chapman Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	343	0.10	3,400	377	0.11	
NBT	1.5	1,324	153	0.12	2,277	537	0.24	
NBR	0.5	2,076	240	0.12	1,123	265	0.24	
SBL	1	1,700	206	0.12	1,700	96	0.06	
SBT	2	3,400	564	0.17	3,400	230	0.07	
SBR	1	1,700	331	0.19	1,700	106	0.06	
EBL	2	3,400	80	0.02	3,400	277	0.08	
EBT	3	5,100	1,334	0.26	5,100	1,526	0.30	
EBR	1	1,700	412	0.24	1,700	388	0.23	
WBL	2	3,400	344	0.10	3,400	189	0.06	
WBT	3	5,100	2,036	0.40	5,100	1,396	0.27	
WBR	1	1,700	97	0.06	1,700	195	0.11	
N/S Movements				0.27	0.29			
E/W Movements				0.42	0.36			
Rt. Turn Component				0.01	0.00			
Yellow Clearance				0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.74	0.70			
LEVEL OF SERVICE (LOS)				C	B			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC						
INTERSECTION:		9 Cannon St./ Crawford Canyon @ Chapman Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	324	0.10	3,400	362	0.11	
NBT	1.5	1,453	156	0.11	2,380	523	0.22	
NBR	0.5	1,947	209	0.11	1,020	224	0.22	
SBL	1	1,700	189	0.11	1,700	87	0.05	
SBT	2	3,400	566	0.17	3,400	227	0.07	
SBR	1	1,700	330	0.19	1,700	106	0.06	
EBL	2	3,400	81	0.02	3,400	275	0.08	
EBT	3	5,100	1,142	0.22	5,100	1,322	0.26	
EBR	1	1,700	385	0.23	1,700	371	0.22	
WBL	2	3,400	308	0.09	3,400	168	0.05	
WBT	3	5,100	1,815	0.36	5,100	1,275	0.25	
WBR	1	1,700	93	0.05	1,700	180	0.11	
N/S Movements				0.26	0.27			
E/W Movements				0.38	0.33			
Rt. Turn Component				0.00	0.00			
Yellow Clearance				0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.70	0.65			
LEVEL OF SERVICE (LOS)				B	B			

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		10 Yorba St. @ Chapman Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	317	0.09	3,400	399	0.12	
NBT	1.5	1,348	23	0.02	304	16	0.05	
NBR	0.5	2,052	35	0.02	3,096	163	0.05	
SBL	1	1,700	24	0.01	1,700	68	0.04	
SBT	1.5	748	11	0.01	664	25	0.04	
SBR	0.5	2,652	39	0.01	2,736	103	0.04	
EBL	1	1,700	201	0.12	1,700	91	0.05	
EBT	3	5,100	1,358	0.27	5,100	2,625	0.51	
EBR	1	1,700	289	0.17	1,700	403	0.24	
WBL	1	1,700	107	0.06	1,700	135	0.08	
WBT	3	5,100	2,481	0.49	5,100	1,667	0.33	
WBR	1	1,700	26	0.02	1,700	34	0.02	
split phasing		N/S Movements		0.11			0.16	
		E/W Movements		0.60			0.59	
		Rt. Turn Component		0.00			0.00	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.76	0.80			
LEVEL OF SERVICE (LOS)				C	C			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Project - With Meats Interchange						
INTERSECTION:		10 Yorba St. @ Chapman Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	298	0.09	3,400	391	0.12	
NBT	1.5	1,325	23	0.02	340	15	0.04	
NBR	0.5	2,075	36	0.02	3,060	135	0.04	
SBL	1	1,700	24	0.01	1,700	59	0.03	
SBT	1.5	667	10	0.02	613	22	0.04	
SBR	0.5	2,733	41	0.02	2,787	100	0.04	
EBL	1	1,700	208	0.12	1,700	98	0.06	
EBT	3	5,100	1,310	0.26	5,100	2,496	0.49	
EBR	1	1,700	305	0.18	1,700	385	0.23	
WBL	1	1,700	92	0.05	1,700	94	0.06	
WBT	3	5,100	2,342	0.46	5,100	1,510	0.30	
WBR	1	1,700	26	0.02	1,700	27	0.02	
split phasing		N/S Movements		0.10			0.15	
		E/W Movements		0.58			0.54	
		Rt. Turn Component		0.00			0.00	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.73	0.75			
LEVEL OF SERVICE (LOS)				C	C			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 1 - Project Without Meats Interchange						
INTERSECTION:		10 Yorba St. @ Chapman Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	299	0.09	3,400	381	0.11	
NBT	1.5	1,325	23	0.02	325	15	0.05	
NBR	0.5	2,075	36	0.02	3,075	142	0.05	
SBL	1	1,700	24	0.01	1,700	61	0.04	
SBT	1.5	667	10	0.02	598	22	0.04	
SBR	0.5	2,733	41	0.02	2,802	103	0.04	
EBL	1	1,700	210	0.12	1,700	97	0.06	
EBT	3	5,100	1,394	0.27	5,100	2,556	0.50	
EBR	1	1,700	317	0.19	1,700	380	0.22	
WBL	1	1,700	91	0.05	1,700	98	0.06	
WBT	3	5,100	2,366	0.46	5,100	1,523	0.30	
WBR	1	1,700	26	0.02	1,700	28	0.02	
split phasing		N/S Movements		0.10			0.15	
		E/W Movements		0.59			0.56	
		Rt. Turn Component		0.00			0.00	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.74	0.76			
LEVEL OF SERVICE (LOS)				C	C			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC						
INTERSECTION:		10 Yorba St. @ Chapman Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	290	0.09	3,400	399	0.12	
NBT	1.5	1,325	23	0.02	316	17	0.05	
NBR	0.5	2,075	36	0.02	3,084	166	0.05	
SBL	1	1,700	24	0.01	1,700	69	0.04	
SBT	1.5	763	11	0.01	643	24	0.04	
SBR	0.5	2,637	38	0.01	2,757	103	0.04	
EBL	1	1,700	204	0.12	1,700	95	0.06	
EBT	3	5,100	1,303	0.26	5,100	2,481	0.49	
EBR	1	1,700	293	0.17	1,700	357	0.21	
WBL	1	1,700	107	0.06	1,700	124	0.07	
WBT	3	5,100	2,370	0.46	5,100	1,578	0.31	
WBR	1	1,700	26	0.02	1,700	35	0.02	
split phasing		N/S Movements		0.10			0.16	
		E/W Movements		0.58			0.56	
		Rt. Turn Component		0.00			0.00	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.73	0.77			
LEVEL OF SERVICE (LOS)				C	C			

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update							
SCENARIO:		No Project							
INTERSECTION:		11 Canyon View Ave. @ Chapman Ave.							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	2	3,400	544	0.16	3,400	224	0.07	*	*
NBT	0		0	0.00		0	0.00		
NBR	1	1,700	37	0.02	1,700	9	0.01		
SBL	0		0			0			
SBT	0		0	0.00		0	0.00		
SBR	0		0			0			
EBL	0		0			0			
EBT	3	5,100	1,103	0.22	5,100	1,691	0.33	*	*
EBR	1	1,700	294	0.17	1,700	327	0.19		
WBL	1	1,700	16	0.01	1,700	13	0.01	*	*
WBT	3	5,100	2,066	0.41	5,100	1,336	0.26	*	*
WBR	0		0			0			
N/S Movements				0.16				0.07	
E/W Movements				0.41				0.34	
Rt. Turn Component				0.00				0.00	
Yellow Clearance				0.05				0.05	
TOTAL CAPACITY UTILIZATION				0.62				0.46	
LEVEL OF SERVICE (LOS)				B				A	

no mitigation required as it is on an CMP arterial

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Project - With Meats Interchange							
INTERSECTION:		11 Canyon View Ave. @ Chapman Ave.							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	2	3,400	546	0.16	3,400	234	0.07	*	*
NBT	0		0	0.00		0	0.00		
NBR	1	1,700	59	0.03	1,700	12	0.01		
SBL	0		0			0			
SBT	0		0	0.00		0	0.00		
SBR	0		0			0			
EBL	0		0			0			
EBT	3	5,100	1,469	0.29	5,100	1,658	0.33	*	*
EBR	1	1,700	296	0.17	1,700	297	0.17		
WBL	1	1,700	19	0.01	1,700	19	0.01	*	*
WBT	3	5,100	2,028	0.40	5,100	1,571	0.31	*	*
WBR	0		0			0			
N/S Movements				0.16				0.07	
E/W Movements				0.40				0.34	
Rt. Turn Component				0.00				0.00	
Yellow Clearance				0.05				0.05	
TOTAL CAPACITY UTILIZATION				0.61				0.46	
LEVEL OF SERVICE (LOS)				B				A	

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Alternative 1 - Project Without Meats Interchange							
INTERSECTION:		11 Canyon View Ave. @ Chapman Ave.							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	2	3,400	546	0.16	3,400	234	0.07	*	*
NBT	0		0	0.00		0	0.00		
NBR	1	1,700	60	0.04	1,700	11	0.01		
SBL	0		0			0			
SBT	0		0	0.00		0	0.00		
SBR	0		0			0			
EBL	0		0			0			
EBT	3	5,100	1,545	0.30	5,100	1,719	0.34	*	*
EBR	1	1,700	296	0.17	1,700	297	0.17		
WBL	1	1,700	19	0.01	1,700	17	0.01	*	*
WBT	3	5,100	2,044	0.40	5,100	1,581	0.31	*	*
WBR	0		0			0			
N/S Movements				0.16				0.07	
E/W Movements				0.40				0.35	
Rt. Turn Component				0.00				0.00	
Yellow Clearance				0.05				0.05	
TOTAL CAPACITY UTILIZATION				0.61				0.47	
LEVEL OF SERVICE (LOS)				B				A	

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC							
INTERSECTION:		11 Canyon View Ave. @ Chapman Ave.							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	2	3,400	546	0.16	3,400	234	0.07	*	*
NBT	0		0	0.00		0	0.00		
NBR	1	1,700	55	0.03	1,700	11	0.01		
SBL	0		0			0			
SBT	0		0	0.00		0	0.00		
SBR	0		0			0			
EBL	0		0			0			
EBT	3	5,100	1,295	0.25	5,100	1,439	0.28	*	*
EBR	1	1,700	297	0.17	1,700	297	0.17		
WBL	1	1,700	18	0.01	1,700	18	0.01	*	*
WBT	3	5,100	1,763	0.35	5,100	1,410	0.28	*	*
WBR	0		0			0			
N/S Movements				0.16				0.07	
E/W Movements				0.35				0.29	
Rt. Turn Component				0.00				0.00	
Yellow Clearance				0.05				0.05	
TOTAL CAPACITY UTILIZATION				0.56				0.41	
LEVEL OF SERVICE (LOS)				A				A	

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update								
SCENARIO:		No Project								
INTERSECTION:		12 Jamboree Rd. @ Chapman Ave.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	2	3,400	375	0.11	3,400	1,043	0.31	*		
NBT	3	5,100	193	0.04	5,100	1,128	0.22			
NBR	1	1,700	207	0.12	1,700	154	0.09			
SBL	2	3,400	828	0.24	3,400	444	0.13			
SBT	3	5,100	1,298	0.25	5,100	249	0.05	*		
SBR	1	1,700	277	0.16	1,700	229	0.13			
EBL	2	3,400	135	0.04	3,400	349	0.10	*		
EBT	3	5,100	1,615	0.32	5,100	1,527	0.30			
EBR	1	1,700	778	0.46	1,700	506	0.30			
WBL	2	3,400	190	0.06	3,400	133	0.04			
WBT	3	5,100	1,718	0.34	5,100	1,761	0.35	*		
WBR	1	1,700	419	0.25	1,700	843	0.50	*		
		N/S Movements		0.36			0.36			
		E/W Movements		0.38			0.45			
		Rt. Turn Component		0.06			0.02			
		Yellow Clearance		0.05			0.05			
TOTAL CAPACITY UTILIZATION				0.85					0.87	
LEVEL OF SERVICE (LOS)				D					D	

PROJECT:		City of Orange General Plan Update								
SCENARIO:		Project - With Meats Interchange								
INTERSECTION:		12 Jamboree Rd. @ Chapman Ave.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	2	3,400	693	0.20	3,400	1,029	0.30	*		
NBT	3	5,100	402	0.08	5,100	1,136	0.22	*		
NBR	1	1,700	289	0.17	1,700	154	0.09			
SBL	2	3,400	749	0.22	3,400	514	0.15	*		
SBT	3	5,100	1,193	0.23	5,100	356	0.07			
SBR	1	1,700	332	0.20	1,700	252	0.15			
EBL	2	3,400	194	0.06	3,400	368	0.11	*		
EBT	3	5,100	1,552	0.30	5,100	1,664	0.33			
EBR	1	1,700	764	0.45	1,700	682	0.40			
WBL	2	3,400	190	0.06	3,400	143	0.04			
WBT	3	5,100	1,936	0.38	5,100	1,799	0.35	*		
WBR	1	1,700	424	0.25	1,700	878	0.52	*		
		N/S Movements		0.44			0.37			
		E/W Movements		0.44			0.46			
		Rt. Turn Component		0.02			0.01			
		Yellow Clearance		0.05			0.05			
TOTAL CAPACITY UTILIZATION				0.94					0.90	
LEVEL OF SERVICE (LOS)				E					D	

PROJECT:		City of Orange General Plan Update								
SCENARIO:		Alternative 1 - Project Without Meats Interchange								
INTERSECTION:		12 Jamboree Rd. @ Chapman Ave.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	2	3,400	715	0.21	3,400	1,074	0.32	*		
NBT	3	5,100	396	0.08	5,100	1,117	0.22			
NBR	1	1,700	294	0.17	1,700	154	0.09			
SBL	2	3,400	737	0.22	3,400	528	0.16			
SBT	3	5,100	1,174	0.23	5,100	362	0.07	*		
SBR	1	1,700	331	0.19	1,700	262	0.15			
EBL	2	3,400	187	0.06	3,400	348	0.10	*		
EBT	3	5,100	1,549	0.30	5,100	1,648	0.32			
EBR	1	1,700	763	0.45	1,700	667	0.39			
WBL	2	3,400	190	0.06	3,400	142	0.04			
WBT	3	5,100	1,953	0.38	5,100	1,834	0.36	*		
WBR	1	1,700	407	0.24	1,700	844	0.50			
		N/S Movements		0.44			0.39			
		E/W Movements		0.44			0.46			
		Rt. Turn Component		0.02			0.00			
		Yellow Clearance		0.05			0.05			
TOTAL CAPACITY UTILIZATION				0.95					0.90	
LEVEL OF SERVICE (LOS)				E					D	

PROJECT:		City of Orange General Plan Update								
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC								
INTERSECTION:		12 Jamboree Rd. @ Chapman Ave.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	2	3,400	558	0.16	3,400	1,029	0.30	*		
NBT	3	5,100	351	0.07	5,100	1,090	0.21	*		
NBR	1	1,700	266	0.16	1,700	154	0.09			
SBL	2	3,400	763	0.22	3,400	605	0.18	*		
SBT	3	5,100	1,194	0.23	5,100	298	0.06			
SBR	1	1,700	295	0.17	1,700	248	0.15			
EBL	2	3,400	182	0.05	3,400	377	0.11	*		
EBT	3	5,100	1,541	0.30	5,100	1,595	0.31			
EBR	1	1,700	746	0.44	1,700	618	0.36			
WBL	2	3,400	190	0.06	3,400	133	0.04			
WBT	3	5,100	1,806	0.35	5,100	1,765	0.35	*		
WBR	1	1,700	427	0.25	1,700	827	0.49			
		N/S Movements		0.40			0.39			
		E/W Movements		0.41			0.46			
		Rt. Turn Component		0.02			0.00			
		Yellow Clearance		0.05			0.05			
TOTAL CAPACITY UTILIZATION				0.88					0.90	
LEVEL OF SERVICE (LOS)				D					D	

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update					
SCENARIO:		No Project					
INTERSECTION:		13 N/B SR-55 Ramps @ Chapman Ave.					
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR		
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C
NBL	0		0			0	
NBT	0		0	0.00		0	0.00
NBR	2	3,400	907	0.27 *	3,400	1,335	0.39 *
SBL	0		0			0	
SBT	0		0	0.00		0	0.00
SBR	2	3,400	869	0.26 *	3,400	899	0.26 *
EBL	2	3,400	329	0.10 *	3,400	355	0.10 *
EBT	3	5,100	1,393	0.27	5,100	1,875	0.37 *
EBR	0		0			0	
WBL	0		0			0	*
WBT	3.5	6,212	2,121	0.34 *	6,095	1,541	0.25
WBR	1.5	2,288	781	0.34	2,405	608	0.25
SB critical only		N/S Movements		0.26			0.26
EB through excluded		E/W Movements		0.44			0.36
only WB right		Rt. Turn Component		0.00			0.00
		Yellow Clearance		0.05			0.05
TOTAL CAPACITY UTILIZATION				0.74	0.67		
LEVEL OF SERVICE (LOS)				C	B		

PROJECT:		City of Orange General Plan Update					
SCENARIO:		Project - With Meats Interchange					
INTERSECTION:		13 N/B SR-55 Ramps @ Chapman Ave.					
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR		
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C
NBL	0		0			0	
NBT	0		0	0.00		0	0.00
NBR	2	3,400	813	0.24 *	3,400	1,321	0.39 *
SBL	0		0			0	
SBT	0		0	0.00		0	0.00
SBR	2	3,400	859	0.25 *	3,400	903	0.27 *
EBL	2	3,400	295	0.09 *	3,400	348	0.10 *
EBT	3	5,100	1,457	0.29	5,100	1,788	0.35
EBR	0		0			0	
WBL	0		0			0	
WBT	3.5	5,957	1,911	0.32 *	6,120	1,545	0.25 *
WBR	1.5	2,543	816	0.32	2,380	601	0.25
SB critical only		N/S Movements		0.25			0.27
EB through excluded		E/W Movements		0.41			0.35
only WB right		Rt. Turn Component		0.00			0.00
		Yellow Clearance		0.05			0.05
TOTAL CAPACITY UTILIZATION				0.71	0.67		
LEVEL OF SERVICE (LOS)				C	B		

PROJECT:		City of Orange General Plan Update					
SCENARIO:		Alternative 1 - Project Without Meats Interchange					
INTERSECTION:		13 N/B SR-55 Ramps @ Chapman Ave.					
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR		
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C
NBL	0		0			0	
NBT	0		0	0.00		0	0.00
NBR	2	3,400	924	0.27 *	3,400	1,338	0.39 *
SBL	0		0			0	
SBT	0		0	0.00		0	0.00
SBR	2	3,400	922	0.27 *	3,400	991	0.29 *
EBL	2	3,400	329	0.10 *	3,400	355	0.10 *
EBT	3	5,100	1,466	0.29	5,100	1,822	0.36
EBR	0		0			0	
WBL	0		0			0	
WBT	3.5	6,209	2,008	0.32 *	6,057	1,545	0.26 *
WBR	1.5	2,291	741	0.32	2,443	623	0.26
SB critical only		N/S Movements		0.27			0.29
EB through excluded		E/W Movements		0.42			0.36
only WB right		Rt. Turn Component		0.00			0.00
		Yellow Clearance		0.05			0.05
TOTAL CAPACITY UTILIZATION				0.74	0.70		
LEVEL OF SERVICE (LOS)				C	B		

PROJECT:		City of Orange General Plan Update					
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC					
INTERSECTION:		13 N/B SR-55 Ramps @ Chapman Ave.					
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR		
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C
NBL	0		0			0	
NBT	0		0	0.00		0	0.00
NBR	2	3,400	853	0.25 *	3,400	1,309	0.39 *
SBL	0		0			0	
SBT	0		0	0.00		0	0.00
SBR	2	3,400	829	0.24 *	3,400	903	0.27 *
EBL	2	3,400	348	0.10 *	3,400	368	0.11 *
EBT	3	5,100	1,367	0.27	5,100	1,764	0.35
EBR	0		0			0	
WBL	0		0			0	
WBT	3.5	6,170	1,991	0.32 *	6,270	1,532	0.24 *
WBR	1.5	2,330	752	0.32	2,230	545	0.24
SB critical only		N/S Movements		0.24			0.27
EB through excluded		E/W Movements		0.43			0.35
only WB right		Rt. Turn Component		0.00			0.00
		Yellow Clearance		0.05			0.05
TOTAL CAPACITY UTILIZATION				0.72	0.67		
LEVEL OF SERVICE (LOS)				C	B		

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		14 S/B SR-55 Ramps @ Chapman Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	0		0			0		
NBT	0		0	0.00		0	0.00	
NBR	0		0			0		
SBL	2	3,400	698	0.21 *	3,400	740	0.22 *	
SBT	0		0	0.00		0	0.00	
SBR	2	3,400	437	0.13 *	3,400	440	0.13 *	
EBL	0		0			0		
EBT	3	5,100	903	0.18	5,100	1,460	0.29	
EBR (free)	f		811			550		
WBL	0		0			0		
WBT	3	5,100	2,087	0.41 *	5,100	1,790	0.35 *	
WBR (free)	f		1,131			780		
		N/S Movements		0.21			0.22	
		E/W Movements		0.41			0.35	
		Rt. Turn Component		0.00			0.00	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.66				
LEVEL OF SERVICE (LOS)				B				

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Project - With Meats Interchange						
INTERSECTION:		14 S/B SR-55 Ramps @ Chapman Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	0		0			0		
NBT	0		0	0.00		0	0.00	
NBR	0		0			0		
SBL	2	3,400	432	0.13 *	3,400	639	0.19 *	
SBT	0		0	0.00		0	0.00	
SBR	2	3,400	507	0.15 *	3,400	449	0.13 *	
EBL	0		0			0		
EBT	3	5,100	1,058	0.21	5,100	1,541	0.30	
EBR (free)	f		700			540		
WBL	0		0			0		
WBT	3	5,100	1,833	0.36 *	5,100	1,701	0.33 *	
WBR (free)	f		1,060			780		
		N/S Movements		0.13			0.19	
		E/W Movements		0.36			0.33	
		Rt. Turn Component		0.02			0.00	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.56				
LEVEL OF SERVICE (LOS)				A				

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 1 - Project Without Meats Interchange						
INTERSECTION:		14 S/B SR-55 Ramps @ Chapman Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	0		0			0		
NBT	0		0	0.00		0	0.00	
NBR	0		0			0		
SBL	2	3,400	567	0.17 *	3,400	652	0.19 *	
SBT	0		0	0.00		0	0.00	
SBR	2	3,400	437	0.13 *	3,400	509	0.15 *	
EBL	0		0			0		
EBT	3	5,100	1,070	0.21	5,100	1,488	0.29	
EBR (free)	f		777			540		
WBL	0		0			0		
WBT	3	5,100	2,137	0.42 *	5,100	1,711	0.34 *	
WBR (free)	f		1,098			780		
		N/S Movements		0.17			0.19	
		E/W Movements		0.42			0.34	
		Rt. Turn Component		0.00			0.00	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.64				
LEVEL OF SERVICE (LOS)				B				

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC						
INTERSECTION:		14 S/B SR-55 Ramps @ Chapman Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	0		0			0		
NBT	0		0	0.00		0	0.00	
NBR	0		0			0		
SBL	2	3,400	522	0.15 *	3,400	729	0.21 *	
SBT	0		0	0.00		0	0.00	
SBR	2	3,400	437	0.13 *	3,400	386	0.11 *	
EBL	0		0			0		
EBT	3	5,100	968	0.19	5,100	1,461	0.29	
EBR (free)	f		700			540		
WBL	0		0			0		
WBT	3	5,100	1,914	0.38 *	5,100	1,797	0.35 *	
WBR (free)	f		1,060			780		
		N/S Movements		0.15			0.21	
		E/W Movements		0.38			0.35	
		Rt. Turn Component		0.00			0.00	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.58				
LEVEL OF SERVICE (LOS)				A				

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update								
SCENARIO:		No Project								
INTERSECTION:		15 Lewis Street @ Chapman Ave								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	1	1,700	108	0.06	1,700	153	0.09	*	*	
NBT	2	3,400	225	0.07	3,400	380	0.11			
NBR	1	1,700	260	0.15	1,700	337	0.20			
SBL	1	1,700	56	0.03	1,700	115	0.07			
SBT	1.5	3,179	403	0.13	2,820	428	0.15	*	*	
SBR	0.5	221	28	0.13	580	88	0.15			
EBL	2	3,400	62	0.02	3,400	81	0.02	*	*	
EBT	3	5,100	1,225	0.24	5,100	951	0.19	*	*	
EBR	1	1,700	348	0.20	1,700	158	0.09			
WBL	2	3,400	379	0.11	3,400	437	0.13	*	*	
WBT	3	5,100	437	0.09	5,100	1,713	0.34	*	*	
WBR	1	1,700	62	0.04	1,700	170	0.10			
N/S Movements				0.19				0.24		
E/W Movements				0.35				0.36		
Rt. Turn Component				0.00				0.00		
Yellow Clearance				0.05				0.05		
TOTAL CAPACITY UTILIZATION				0.59				0.65		
LEVEL OF SERVICE (LOS)				A				B		

PROJECT:		City of Orange General Plan Update								
SCENARIO:		Project - With Meats Interchange								
INTERSECTION:		15 Lewis Street @ Chapman Ave								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	1	1,700	101	0.06	1,700	146	0.09	*	*	
NBT	2	3,400	229	0.07	3,400	391	0.12			
NBR	1	1,700	260	0.15	1,700	339	0.20			
SBL	1	1,700	57	0.03	1,700	138	0.08			
SBT	1.5	3,215	486	0.15	2,915	499	0.17	*	*	
SBR	0.5	185	28	0.15	485	83	0.17			
EBL	2	3,400	63	0.02	3,400	83	0.02	*	*	
EBT	3	5,100	1,212	0.24	5,100	956	0.19	*	*	
EBR	1	1,700	326	0.19	1,700	154	0.09			
WBL	2	3,400	438	0.13	3,400	564	0.17	*	*	
WBT	3	5,100	452	0.09	5,100	1,791	0.35	*	*	
WBR	1	1,700	78	0.05	1,700	232	0.14			
N/S Movements				0.21				0.26		
E/W Movements				0.37				0.38		
Rt. Turn Component				0.00				0.00		
Yellow Clearance				0.05				0.05		
TOTAL CAPACITY UTILIZATION				0.63				0.68		
LEVEL OF SERVICE (LOS)				B				B		

PROJECT:		City of Orange General Plan Update								
SCENARIO:		Alternative 1 - Project Without Meats Interchange								
INTERSECTION:		15 Lewis Street @ Chapman Ave								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	1	1,700	101	0.06	1,700	146	0.09	*	*	
NBT	2	3,400	229	0.07	3,400	386	0.11			
NBR	1	1,700	258	0.15	1,700	344	0.20			
SBL	1	1,700	58	0.03	1,700	133	0.08			
SBT	1.5	3,220	483	0.15	2,918	478	0.16	*	*	
SBR	0.5	180	27	0.15	482	79	0.16			
EBL	2	3,400	63	0.02	3,400	81	0.02	*	*	
EBT	3	5,100	1,213	0.24	5,100	958	0.19	*	*	
EBR	1	1,700	321	0.19	1,700	153	0.09			
WBL	2	3,400	426	0.13	3,400	568	0.17	*	*	
WBT	3	5,100	451	0.09	5,100	1,799	0.35	*	*	
WBR	1	1,700	77	0.05	1,700	230	0.14			
N/S Movements				0.21				0.25		
E/W Movements				0.36				0.38		
Rt. Turn Component				0.00				0.00		
Yellow Clearance				0.05				0.05		
TOTAL CAPACITY UTILIZATION				0.62				0.68		
LEVEL OF SERVICE (LOS)				B				B		

PROJECT:		City of Orange General Plan Update								
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC								
INTERSECTION:		15 Lewis Street @ Chapman Ave								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	1	1,700	100	0.06	1,700	146	0.09	*	*	
NBT	2	3,400	223	0.07	3,400	385	0.11			
NBR	1	1,700	265	0.16	1,700	346	0.20			
SBL	1	1,700	56	0.03	1,700	129	0.08			
SBT	1.5	3,211	476	0.15	2,922	465	0.16	*	*	
SBR	0.5	189	28	0.16	478	76	0.16			
EBL	2	3,400	60	0.02	3,400	80	0.02	*	*	
EBT	3	5,100	1,212	0.24	5,100	959	0.19	*	*	
EBR	1	1,700	348	0.20	1,700	153	0.09			
WBL	2	3,400	426	0.13	3,400	581	0.17	*	*	
WBT	3	5,100	443	0.09	5,100	1,803	0.35	*	*	
WBR	1	1,700	67	0.04	1,700	232	0.14			
N/S Movements				0.21				0.25		
E/W Movements				0.36				0.38		
Rt. Turn Component				0.00				0.00		
Yellow Clearance				0.05				0.05		
TOTAL CAPACITY UTILIZATION				0.62				0.67		
LEVEL OF SERVICE (LOS)				B				B		

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update								
SCENARIO:		No Project								
INTERSECTION:		16 The City Drive @ Chapman Ave.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	2	3,400	133	0.04	3,400	204	0.06	*	*	
NBT	4	6,800	553	0.08	6,800	1,163	0.17			
NBR	1	1,700	183	0.11	1,700	703	0.41			
SBL	2	3,400	219	0.06	3,400	120	0.04			
SBT	4	6,800	1,075	0.16	6,800	1,341	0.20	*	*	
SBR	1	1,700	497	0.29	1,700	585	0.34	*	*	
EBL	2	3,400	323	0.10	3,400	476	0.14			
EBT	3	5,100	1,240	0.24	5,100	1,266	0.25	*	*	
EBR	1	1,700	171	0.10	1,700	196	0.12			
WBL	2	3,400	394	0.12	3,400	544	0.16	*	*	
WBT	3	5,100	800	0.16	5,100	1,361	0.27			
WBR	1	1,700	74	0.04	1,700	80	0.05			
N/S Movements				0.20					0.26	
E/W Movements				0.36					0.41	
Rt. Turn Component				0.04					0.09	
Yellow Clearance				0.05					0.05	
TOTAL CAPACITY UTILIZATION				0.65					0.80	
LEVEL OF SERVICE (LOS)				B					C	

PROJECT:		City of Orange General Plan Update								
SCENARIO:		Project - With Meats Interchange								
INTERSECTION:		16 The City Drive @ Chapman Ave.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	2	3,400	181	0.05	3,400	191	0.06	*	*	
NBT	4	6,800	719	0.11	6,800	1,533	0.23			
NBR	1	1,700	191	0.11	1,700	699	0.41			
SBL	2	3,400	177	0.05	3,400	120	0.04			
SBT	4	6,800	1,294	0.19	6,800	1,546	0.23	*	*	
SBR	1	1,700	469	0.28	1,700	599	0.35			
EBL	2	3,400	394	0.12	3,400	641	0.19			
EBT	3	5,100	1,296	0.25	5,100	1,285	0.25	*	*	
EBR	1	1,700	310	0.18	1,700	264	0.16			
WBL	2	3,400	476	0.14	3,400	920	0.27	*	*	
WBT	3	5,100	821	0.16	5,100	1,525	0.30			
WBR	1	1,700	57	0.03	1,700	136	0.08			
N/S Movements				0.24					0.28	
E/W Movements				0.39					0.52	
Rt. Turn Component				0.00					0.00	
Yellow Clearance				0.05					0.05	
TOTAL CAPACITY UTILIZATION				0.69					0.86	
LEVEL OF SERVICE (LOS)				B					D	

PROJECT:		City of Orange General Plan Update								
SCENARIO:		Alternative 1 - Project Without Meats Interchange								
INTERSECTION:		16 The City Drive @ Chapman Ave.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	2	3,400	179	0.05	3,400	191	0.06	*	*	
NBT	4	6,800	722	0.11	6,800	1,563	0.23			
NBR	1	1,700	188	0.11	1,700	701	0.41			
SBL	2	3,400	177	0.05	3,400	120	0.04			
SBT	4	6,800	1,327	0.20	6,800	1,524	0.22	*	*	
SBR	1	1,700	472	0.28	1,700	599	0.35			
EBL	2	3,400	401	0.12	3,400	648	0.19			
EBT	3	5,100	1,297	0.25	5,100	1,280	0.25	*	*	
EBR	1	1,700	317	0.19	1,700	252	0.15			
WBL	2	3,400	486	0.14	3,400	894	0.26	*	*	
WBT	3	5,100	821	0.16	5,100	1,521	0.30			
WBR	1	1,700	57	0.03	1,700	139	0.08			
N/S Movements				0.25					0.28	
E/W Movements				0.40					0.51	
Rt. Turn Component				0.00					0.00	
Yellow Clearance				0.05					0.05	
TOTAL CAPACITY UTILIZATION				0.70					0.84	
LEVEL OF SERVICE (LOS)				B					D	

PROJECT:		City of Orange General Plan Update								
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC								
INTERSECTION:		16 The City Drive @ Chapman Ave.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	2	3,400	133	0.04	3,400	191	0.06	*	*	
NBT	4	6,800	644	0.09	6,800	1,501	0.22			
NBR	1	1,700	203	0.12	1,700	676	0.40			
SBL	2	3,400	276	0.08	3,400	128	0.04			
SBT	4	6,800	1,583	0.23	6,800	1,668	0.25	*	*	
SBR	1	1,700	580	0.34	1,700	599	0.35			
EBL	2	3,400	354	0.10	3,400	644	0.19			
EBT	3	5,100	1,385	0.27	5,100	1,276	0.25	*	*	
EBR	1	1,700	212	0.12	1,700	213	0.13			
WBL	2	3,400	456	0.13	3,400	790	0.23	*	*	
WBT	3	5,100	821	0.16	5,100	1,457	0.29			
WBR	1	1,700	71	0.04	1,700	145	0.09			
N/S Movements				0.27					0.30	
E/W Movements				0.41					0.48	
Rt. Turn Component				0.00					0.00	
Yellow Clearance				0.05					0.05	
TOTAL CAPACITY UTILIZATION				0.73					0.83	
LEVEL OF SERVICE (LOS)				C					D	

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		17 The City Drive @ E/B SR-22 on/off Ramps						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	81	0.05	1,700	58	0.03	
NBT	3	5,100	1,137	0.27 *	5,100	1,360	0.37 *	
NBR	0		219			504		
SBL	1	1,700	293	0.17 *	1,700	295	0.17 *	
SBT	3	5,100	1,035	0.32	5,100	921	0.30	
SBR(free)	f		576			592		
EBL	1.5	2,550	358	0.14	3,385	222	0.07	
EBT	0.5	850	6	0.01	15	1	0.07	
EBR	1	1,700	35	0.02	1,700	27	0.02	
WBL	0.5	850	4	0.00 *	138	6	0.04	
WBT	0.5	850	1	0.00	1,562	68	0.04	
WBR	1	1,700	5	0.00	1,700	38	0.02	
split phasing	N/S Movements			0.44	0.54			
	E/W Movements			0.15	0.11			
	Rt. Turn Component			0.00	0.00			
	Yellow Clearance			0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.63	0.70			
LEVEL OF SERVICE (LOS)				B	B			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Project - With Meats Interchange						
INTERSECTION:		17 The City Drive @ E/B SR-22 on/off Ramps						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	81	0.05	1,700	58	0.03	
NBT	3	5,100	1,574	0.35 *	5,100	1,741	0.44 *	
NBR	0		219			524		
SBL	1	1,700	346	0.20 *	1,700	378	0.22 *	
SBT	3	5,100	1,277	0.37	5,100	1,314	0.39	
SBR(free)	f		593			650		
EBL	1.5	2,550	389	0.15 *	3,385	223	0.07 *	
EBT	0.5	850	6	0.01	15	1	0.07	
EBR	1	1,700	35	0.02	1,700	27	0.02	
WBL	0.5	850	3	0.00	165	7	0.04 *	
WBT	0.5	850	1	0.00	1,535	65	0.04	
WBR	1	1,700	8	0.00 *	1,700	58	0.03	
split phasing	N/S Movements			0.56	0.67			
	E/W Movements			0.16	0.11			
	Rt. Turn Component			0.00	0.00			
	Yellow Clearance			0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.76	0.82			
LEVEL OF SERVICE (LOS)				C	D			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 1 - Project Without Meats Interchange						
INTERSECTION:		17 The City Drive @ E/B SR-22 on/off Ramps						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	81	0.05	1,700	58	0.03	
NBT	3	5,100	1,563	0.35 *	5,100	1,738	0.44 *	
NBR	0		219			524		
SBL	1	1,700	345	0.20 *	1,700	374	0.22 *	
SBT	3	5,100	1,267	0.36	5,100	1,301	0.38	
SBR(free)	f		592			648		
EBL	1.5	2,550	389	0.15 *	3,385	223	0.07 *	
EBT	0.5	850	6	0.01	15	1	0.07	
EBR	1	1,700	35	0.02	1,700	27	0.02	
WBL	0.5	850	3	0.00	165	7	0.04 *	
WBT	0.5	850	1	0.00	1,535	65	0.04	
WBR	1	1,700	8	0.00 *	1,700	57	0.03	
split phasing	N/S Movements			0.55	0.66			
	E/W Movements			0.16	0.11			
	Rt. Turn Component			0.00	0.00			
	Yellow Clearance			0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.76	0.82			
LEVEL OF SERVICE (LOS)				C	D			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC						
INTERSECTION:		17 The City Drive @ E/B SR-22 on/off Ramps						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	81	0.05	1,700	58	0.03	
NBT	3	5,100	1,563	0.35 *	5,100	1,739	0.44 *	
NBR	0		219			524		
SBL	1	1,700	341	0.20 *	1,700	396	0.23 *	
SBT	3	5,100	1,237	0.36	5,100	1,345	0.39	
SBR(free)	f		591			659		
EBL	1.5	2,550	390	0.15	3,385	224	0.07	
EBT	0.5	850	6	0.01	15	1	0.07	
EBR	1	1,700	35	0.02	1,700	27	0.02	
WBL	0.5	850	3	0.00	170	7	0.04	
WBT	0.5	850	1	0.00	1,530	63	0.04	
WBR	1	1,700	7	0.00	1,700	60	0.04	
split phasing	N/S Movements			0.55	0.68			
	E/W Movements			0.16	0.11			
	Rt. Turn Component			0.00	0.00			
	Yellow Clearance			0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.76	0.83			
LEVEL OF SERVICE (LOS)				C	D			

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		18 The City Drive @ Metropolitan Dr.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	322	0.09 *	3,400	416	0.12 *	
NBT	4	6,800	765	0.11	6,800	1,150	0.17	
NBR	1	1,700	294	0.17	1,700	329	0.19	
SBL	1	1,700	25	0.01	1,700	36	0.02	
SBT	3	5,100	792	0.16 *	5,100	631	0.12 *	
SBR	2	3,400	338	0.10	3,400	646	0.19 *	
EBL	2	3,400	289	0.09 *	3,400	199	0.06	
EBT	2	3,400	119	0.04	3,400	324	0.10 *	
EBR	2	3,400	600	0.18	3,400	549	0.16	
WBL	1	1,700	264	0.16	1,700	289	0.17 *	
WBT	2	3,400	393	0.12 *	3,400	482	0.14	
WBR	2	3,400	35	0.01	3,400	28	0.01	
N/S Movements				0.00	0.00			
E/W Movements				0.20	0.27			
Rt. Turn Component				0.00	0.01			
Yellow Clearance				0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.25	0.32			
LEVEL OF SERVICE (LOS)				A	A			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Project - With Meats Interchange						
INTERSECTION:		18 The City Drive @ Metropolitan Dr.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	433	0.13 *	3,400	605	0.18 *	
NBT	4	6,800	902	0.13	6,800	1,154	0.17	
NBR	1	1,700	453	0.27	1,700	415	0.24	
SBL	1	1,700	35	0.02	1,700	54	0.03	
SBT	3	5,100	861	0.17	5,100	702	0.14	
SBR	2	3,400	306	0.09	3,400	538	0.16	
EBL	2	3,400	206	0.06	3,400	196	0.06	
EBT	2	3,400	284	0.08 *	3,400	546	0.16 *	
EBR	2	3,400	773	0.23	3,400	810	0.24	
WBL	1	1,700	260	0.15 *	1,700	364	0.21 *	
WBT	2	3,400	493	0.14	3,400	664	0.20	
WBR	2	3,400	33	0.01	3,400	36	0.01	
N/S Movements				0.00	0.00			
E/W Movements				0.24	0.37			
Rt. Turn Component				0.04	0.00			
Yellow Clearance				0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.33	0.43			
LEVEL OF SERVICE (LOS)				A	A			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 1 - Project Without Meats Interchange						
INTERSECTION:		18 The City Drive @ Metropolitan Dr.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	428	0.13 *	3,400	606	0.18 *	
NBT	4	6,800	893	0.13	6,800	1,153	0.17	
NBR	1	1,700	456	0.27	1,700	415	0.24	
SBL	1	1,700	36	0.02	1,700	54	0.03	
SBT	3	5,100	852	0.17	5,100	686	0.13	
SBR	2	3,400	317	0.09	3,400	558	0.16	
EBL	2	3,400	202	0.06	3,400	195	0.06	
EBT	2	3,400	279	0.08 *	3,400	481	0.14 *	
EBR	2	3,400	778	0.23	3,400	805	0.24	
WBL	1	1,700	256	0.15 *	1,700	364	0.21 *	
WBT	2	3,400	465	0.14	3,400	705	0.21	
WBR	2	3,400	33	0.01	3,400	36	0.01	
N/S Movements				0.00	0.00			
E/W Movements				0.23	0.36			
Rt. Turn Component				0.04	0.00			
Yellow Clearance				0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.33	0.41			
LEVEL OF SERVICE (LOS)				A	A			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC						
INTERSECTION:		18 The City Drive @ Metropolitan Dr.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	427	0.13 *	3,400	599	0.18 *	
NBT	4	6,800	861	0.13	6,800	1,169	0.17	
NBR	1	1,700	472	0.28 *	1,700	406	0.24	
SBL	1	1,700	35	0.02	1,700	55	0.03	
SBT	3	5,100	858	0.17	5,100	706	0.14	
SBR	2	3,400	330	0.10	3,400	607	0.18	
EBL	2	3,400	206	0.06	3,400	194	0.06	
EBT	2	3,400	258	0.08 *	3,400	553	0.16 *	
EBR	2	3,400	734	0.22	3,400	821	0.24	
WBL	1	1,700	231	0.14 *	1,700	403	0.24 *	
WBT	2	3,400	509	0.15	3,400	567	0.17	
WBR	2	3,400	33	0.01	3,400	36	0.01	
N/S Movements				0.00	0.00			
E/W Movements				0.21	0.40			
Rt. Turn Component				0.05	0.01			
Yellow Clearance				0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.31	0.46			
LEVEL OF SERVICE (LOS)				A	A			

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		19 Glassell St. @ Collins Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	32	0.02	1,700	39	0.02	
NBT	2	3,400	341	0.10	3,400	954	0.28	
NBR	1	1,700	38	0.02	1,700	41	0.02	
SBL	1	1,700	115	0.07	1,700	136	0.08	
SBT	2	3,400	777	0.23	3,400	566	0.17	
SBR	1	1,700	488	0.29	1,700	367	0.22	
EBL	2	3,400	105	0.03	3,400	407	0.12	
EBT	1.5	3,170	359	0.11	3,279	814	0.25	
EBR	0.5	230	26	0.11	121	30	0.25	
WBL	1	1,700	47	0.03	1,700	32	0.02	
WBT	1.5	3,032	823	0.27	2,814	427	0.15	
WBR	0.5	368	100	0.27	586	89	0.15	
N/S Movements				0.25			0.36	
E/W Movements				0.30			0.27	
Rt. Turn Component				0.03			0.00	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.63			0.68	
LEVEL OF SERVICE (LOS)				B			B	

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Project - With Meats Interchange						
INTERSECTION:		19 Glassell St. @ Collins Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	33	0.02	1,700	66	0.04	
NBT	2	3,400	427	0.13	3,400	858	0.25	
NBR	1	1,700	35	0.02	1,700	33	0.02	
SBL	1	1,700	88	0.05	1,700	117	0.07	
SBT	2	3,400	750	0.22	3,400	592	0.17	
SBR	1	1,700	689	0.41	1,700	646	0.38	
EBL	2	3,400	346	0.10	3,400	546	0.16	
EBT	1.5	3,105	463	0.15	3,264	912	0.28	
EBR	0.5	295	44	0.15	136	38	0.28	
WBL	1	1,700	36	0.02	1,700	32	0.02	
WBT	1.5	2,932	920	0.31	3,043	511	0.17	
WBR	0.5	468	147	0.31	357	60	0.17	
N/S Movements				0.24			0.32	
E/W Movements				0.42			0.33	
Rt. Turn Component				0.08			0.05	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.79			0.75	
LEVEL OF SERVICE (LOS)				C			C	

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 1 - Project Without Meats Interchange						
INTERSECTION:		19 Glassell St. @ Collins Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	33	0.02	1,700	68	0.04	
NBT	2	3,400	492	0.14	3,400	896	0.26	
NBR	1	1,700	35	0.02	1,700	34	0.02	
SBL	1	1,700	92	0.05	1,700	122	0.07	
SBT	2	3,400	781	0.23	3,400	649	0.19	
SBR	1	1,700	754	0.44	1,700	684	0.40	
EBL	2	3,400	415	0.12	3,400	566	0.17	
EBT	1.5	3,103	459	0.15	3,257	910	0.28	
EBR	0.5	297	44	0.15	143	40	0.28	
WBL	1	1,700	37	0.02	1,700	32	0.02	
WBT	1.5	2,870	936	0.33	3,037	544	0.18	
WBR	0.5	530	173	0.33	363	65	0.18	
N/S Movements				0.25			0.34	
E/W Movements				0.45			0.35	
Rt. Turn Component				0.09			0.05	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.84			0.78	
LEVEL OF SERVICE (LOS)				D			C	

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC						
INTERSECTION:		19 Glassell St. @ Collins Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	31	0.02	1,700	46	0.03	
NBT	2	3,400	378	0.11	3,400	899	0.26	
NBR	1	1,700	35	0.02	1,700	38	0.02	
SBL	1	1,700	107	0.06	1,700	131	0.08	
SBT	2	3,400	861	0.25	3,400	591	0.17	
SBR	1	1,700	612	0.36	1,700	443	0.26	
EBL	2	3,400	162	0.05	3,400	494	0.15	
EBT	1.5	3,120	345	0.11	3,279	896	0.27	
EBR	0.5	280	31	0.11	121	33	0.27	
WBL	1	1,700	48	0.03	1,700	32	0.02	
WBT	1.5	2,990	947	0.32	2,889	475	0.16	
WBR	0.5	410	130	0.32	511	84	0.16	
N/S Movements				0.27			0.34	
E/W Movements				0.36			0.31	
Rt. Turn Component				0.06			0.00	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.75			0.70	
LEVEL OF SERVICE (LOS)				C			B	

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update								
SCENARIO:		No Project								
INTERSECTION:		20 Glassell St. @ Katella Ave.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	2	3,400	156	0.05	3,400	258	0.08	*	*	
NBT	2	3,400	446	0.13	3,400	805	0.24			
NBR	1	1,700	75	0.04	1,700	217	0.13			
SBL	2	3,400	215	0.06	3,400	305	0.09			
SBT	2	3,400	862	0.25	3,400	918	0.27	*	*	
SBR	1	1,700	216	0.13	1,700	268	0.16			
EBL	2	3,400	151	0.04	3,400	191	0.06	*	*	
EBT	3	5,100	700	0.14	5,100	1,464	0.29	*	*	
EBR	1	1,700	174	0.10	1,700	133	0.08			
WBL	2	3,400	254	0.07	3,400	302	0.09	*	*	
WBT	3	5,100	978	0.19	5,100	1,154	0.23	*	*	
WBR	1	1,700	132	0.08	1,700	145	0.09			
N/S Movements				0.30					0.35	
E/W Movements				0.24					0.38	
Rt. Turn Component				0.00					0.00	
Yellow Clearance				0.05					0.05	
TOTAL CAPACITY UTILIZATION				0.59					0.77	
LEVEL OF SERVICE (LOS)				A					C	

PROJECT:		City of Orange General Plan Update								
SCENARIO:		Project - With Meats Interchange								
INTERSECTION:		20 Glassell St. @ Katella Ave.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	2	3,400	208	0.06	3,400	228	0.07	*	*	
NBT	2	3,400	762	0.22	3,400	838	0.25			
NBR	1	1,700	107	0.06	1,700	225	0.13			
SBL	2	3,400	204	0.06	3,400	429	0.13			
SBT	2	3,400	884	0.26	3,400	1,121	0.33	*	*	
SBR	1	1,700	192	0.11	1,700	320	0.19			
EBL	2	3,400	196	0.06	3,400	230	0.07	*	*	
EBT	3	5,100	759	0.15	5,100	1,755	0.34	*	*	
EBR	1	1,700	204	0.12	1,700	145	0.09			
WBL	2	3,400	332	0.10	3,400	346	0.10	*	*	
WBT	3	5,100	1,110	0.22	5,100	1,240	0.24	*	*	
WBR	1	1,700	192	0.11	1,700	184	0.11			
N/S Movements				0.32					0.40	
E/W Movements				0.28					0.45	
Rt. Turn Component				0.00					0.00	
Yellow Clearance				0.05					0.05	
TOTAL CAPACITY UTILIZATION				0.65					0.89	
LEVEL OF SERVICE (LOS)				B					D	

PROJECT:		City of Orange General Plan Update								
SCENARIO:		Alternative 1 - Project Without Meats Interchange								
INTERSECTION:		20 Glassell St. @ Katella Ave.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	2	3,400	251	0.07	3,400	237	0.07	*	*	
NBT	2	3,400	846	0.25	3,400	866	0.25			
NBR	1	1,700	138	0.08	1,700	246	0.14			
SBL	2	3,400	206	0.06	3,400	413	0.12			
SBT	2	3,400	933	0.27	3,400	1,113	0.33	*	*	
SBR	1	1,700	179	0.11	1,700	294	0.17			
EBL	2	3,400	171	0.05	3,400	219	0.06	*	*	
EBT	3	5,100	776	0.15	5,100	1,765	0.35	*	*	
EBR	1	1,700	219	0.13	1,700	157	0.09			
WBL	2	3,400	368	0.11	3,400	356	0.10	*	*	
WBT	3	5,100	1,089	0.21	5,100	1,224	0.24	*	*	
WBR	1	1,700	173	0.10	1,700	180	0.11			
N/S Movements				0.35					0.40	
E/W Movements				0.26					0.45	
Rt. Turn Component				0.00					0.00	
Yellow Clearance				0.05					0.05	
TOTAL CAPACITY UTILIZATION				0.66					0.90	
LEVEL OF SERVICE (LOS)				B					D	

PROJECT:		City of Orange General Plan Update								
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC								
INTERSECTION:		20 Glassell St. @ Katella Ave.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	2	3,400	173	0.05	3,400	226	0.07	*	*	
NBT	2	3,400	581	0.17	3,400	835	0.25			
NBR	1	1,700	80	0.05	1,700	238	0.14			
SBL	2	3,400	197	0.06	3,400	386	0.11			
SBT	2	3,400	938	0.28	3,400	1,004	0.30	*	*	
SBR	1	1,700	204	0.12	1,700	270	0.16			
EBL	2	3,400	167	0.05	3,400	208	0.06	*	*	
EBT	3	5,100	642	0.13	5,100	1,690	0.33	*	*	
EBR	1	1,700	190	0.11	1,700	133	0.08			
WBL	2	3,400	342	0.10	3,400	329	0.10	*	*	
WBT	3	5,100	1,144	0.22	5,100	1,158	0.23	*	*	
WBR	1	1,700	182	0.11	1,700	172	0.10			
N/S Movements				0.33					0.36	
E/W Movements				0.27					0.43	
Rt. Turn Component				0.00					0.00	
Yellow Clearance				0.05					0.05	
TOTAL CAPACITY UTILIZATION				0.65					0.84	
LEVEL OF SERVICE (LOS)				B					D	

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		21 Glassell St. @ La Veta Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	295	0.09	3,400	324	0.10	
NBT	2	3,400	401	0.12	3,400	931	0.27	
NBR	1	1,700	153	0.09	1,700	372	0.22	
SBL	1	1,700	22	0.01	1,700	39	0.02	
SBT	1.5	3,286	1,038	0.32	2,943	579	0.20	
SBR	0.5	114	36	0.32	457	90	0.20	
EBL	1	1,700	65	0.04	1,700	222	0.13	
EBT	2	3,400	197	0.06	3,400	647	0.19	
EBR	1	1,700	389	0.23	1,700	709	0.42	
WBL	1	1,700	322	0.19	1,700	130	0.08	
WBT	1.5	3,311	519	0.16	3,174	253	0.08	
WBR	0.5	89	14	0.16	226	18	0.08	
		N/S Movements		0.40			0.30	
		E/W Movements		0.25			0.27	
		Rt. Turn Component		0.08			0.13	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.78	0.75			
LEVEL OF SERVICE (LOS)				C	C			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Project - With Meats Interchange						
INTERSECTION:		21 Glassell St. @ La Veta Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	389	0.11	3,400	417	0.12	
NBT	2	3,400	410	0.12	3,400	675	0.20	
NBR	1	1,700	148	0.09	1,700	364	0.21	
SBL	1	1,700	14	0.01	1,700	50	0.03	
SBT	1.5	3,307	957	0.29	2,806	553	0.20	
SBR	0.5	93	27	0.29	594	117	0.20	
EBL	1	1,700	56	0.03	1,700	149	0.09	
EBT	2	3,400	188	0.06	3,400	914	0.27	
EBR	1	1,700	497	0.29	1,700	746	0.44	
WBL	1	1,700	451	0.27	1,700	130	0.08	
WBT	1.5	3,332	684	0.21	3,287	348	0.11	
WBR	0.5	68	14	0.21	113	12	0.11	
		N/S Movements		0.40			0.32	
		E/W Movements		0.32			0.35	
		Rt. Turn Component		0.12			0.05	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.90	0.76			
LEVEL OF SERVICE (LOS)				D	C			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 1 - Project Without Meats Interchange						
INTERSECTION:		21 Glassell St. @ La Veta Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	391	0.12	3,400	416	0.12	
NBT	2	3,400	415	0.12	3,400	675	0.20	
NBR	1	1,700	154	0.09	1,700	372	0.22	
SBL	1	1,700	17	0.01	1,700	54	0.03	
SBT	1.5	3,300	1,051	0.32	2,799	605	0.22	
SBR	0.5	100	32	0.32	601	130	0.22	
EBL	1	1,700	56	0.03	1,700	156	0.09	
EBT	2	3,400	192	0.06	3,400	910	0.27	
EBR	1	1,700	487	0.29	1,700	753	0.44	
WBL	1	1,700	403	0.24	1,700	130	0.08	
WBT	1.5	3,333	645	0.19	3,289	357	0.11	
WBR	0.5	67	13	0.19	111	12	0.11	
		N/S Movements		0.43			0.34	
		E/W Movements		0.29			0.34	
		Rt. Turn Component		0.12			0.05	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.89	0.79			
LEVEL OF SERVICE (LOS)				D	C			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC						
INTERSECTION:		21 Glassell St. @ La Veta Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	397	0.12	3,400	379	0.11	
NBT	2	3,400	428	0.13	3,400	785	0.23	
NBR	1	1,700	164	0.10	1,700	398	0.23	
SBL	1	1,700	16	0.01	1,700	60	0.04	
SBT	1.5	3,311	1,007	0.30	2,894	663	0.23	
SBR	0.5	89	27	0.30	506	116	0.23	
EBL	1	1,700	52	0.03	1,700	173	0.10	
EBT	2	3,400	184	0.05	3,400	917	0.27	
EBR	1	1,700	469	0.28	1,700	749	0.44	
WBL	1	1,700	459	0.27	1,700	125	0.07	
WBT	1.5	3,329	707	0.21	3,246	359	0.11	
WBR	0.5	71	15	0.21	154	17	0.11	
		N/S Movements		0.42			0.34	
		E/W Movements		0.32			0.34	
		Rt. Turn Component		0.11			0.06	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.90	0.79			
LEVEL OF SERVICE (LOS)				D	C			

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update								
SCENARIO:		No Project								
INTERSECTION:		22 Glassell St. @ Lincoln Ave.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	2	3,400	104	0.03	3,400	151	0.04	*		
NBT	3	5,100	495	0.10	5,100	1,988	0.39	*		
NBR	1	1,700	141	0.08	1,700	344	0.20			
SBL	2	3,400	104	0.03	3,400	322	0.09	*		
SBT	2	3,400	775	0.23	3,400	499	0.15			
SBR	1	1,700	291	0.17	1,700	225	0.13			
EBL	2	3,400	283	0.08	3,400	371	0.11	*		
EBT	3	5,100	727	0.14	5,100	1,324	0.26			
EBR	1	1,700	270	0.16	1,700	119	0.07			
WBL	2	3,400	352	0.10	3,400	155	0.05			
WBT	3	5,100	1,022	0.20	5,100	1,114	0.22	*		
WBR	1	1,700	266	0.16	1,700	261	0.15			
N/S Movements				0.26					0.48	
E/W Movements				0.28					0.33	
Rt. Turn Component				0.00					0.00	
Yellow Clearance				0.05					0.05	
TOTAL CAPACITY UTILIZATION				0.59					0.86	
LEVEL OF SERVICE (LOS)				A					D	

PROJECT:		City of Orange General Plan Update								
SCENARIO:		Project - With Meats Interchange								
INTERSECTION:		22 Glassell St. @ Lincoln Ave.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	2	3,400	135	0.04	3,400	214	0.06	*		
NBT	3	5,100	488	0.10	5,100	2,201	0.43	*		
NBR	1	1,700	146	0.09	1,700	402	0.24			
SBL	2	3,400	95	0.03	3,400	229	0.07	*		
SBT	2	3,400	940	0.28	3,400	488	0.14			
SBR	1	1,700	280	0.16	1,700	194	0.11			
EBL	2	3,400	279	0.08	3,400	330	0.10	*		
EBT	3	5,100	758	0.15	5,100	1,244	0.24			
EBR	1	1,700	442	0.26	1,700	165	0.10			
WBL	2	3,400	433	0.13	3,400	190	0.06			
WBT	3	5,100	1,000	0.20	5,100	1,126	0.22	*		
WBR	1	1,700	197	0.12	1,700	206	0.12			
N/S Movements				0.32					0.50	
E/W Movements				0.28					0.32	
Rt. Turn Component				0.07					0.00	
Yellow Clearance				0.05					0.05	
TOTAL CAPACITY UTILIZATION				0.72					0.87	
LEVEL OF SERVICE (LOS)				C					D	

PROJECT:		City of Orange General Plan Update								
SCENARIO:		Alternative 1 - Project Without Meats Interchange								
INTERSECTION:		22 Glassell St. @ Lincoln Ave.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	2	3,400	143	0.04	3,400	207	0.06	*		
NBT	3	5,100	522	0.10	5,100	2,232	0.44	*		
NBR	1	1,700	165	0.10	1,700	439	0.26			
SBL	2	3,400	95	0.03	3,400	265	0.08	*		
SBT	2	3,400	964	0.28	3,400	516	0.15			
SBR	1	1,700	273	0.16	1,700	199	0.12			
EBL	2	3,400	279	0.08	3,400	314	0.09	*		
EBT	3	5,100	793	0.16	5,100	1,272	0.25			
EBR	1	1,700	458	0.27	1,700	154	0.09			
WBL	2	3,400	455	0.13	3,400	202	0.06			
WBT	3	5,100	997	0.20	5,100	1,158	0.23	*		
WBR	1	1,700	199	0.12	1,700	222	0.13			
N/S Movements				0.33					0.52	
E/W Movements				0.29					0.32	
Rt. Turn Component				0.07					0.00	
Yellow Clearance				0.05					0.05	
TOTAL CAPACITY UTILIZATION				0.74					0.89	
LEVEL OF SERVICE (LOS)				C					D	

PROJECT:		City of Orange General Plan Update								
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC								
INTERSECTION:		22 Glassell St. @ Lincoln Ave.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	2	3,400	118	0.03	3,400	180	0.05	*		
NBT	3	5,100	449	0.09	5,100	2,083	0.41	*		
NBR	1	1,700	131	0.08	1,700	367	0.22			
SBL	2	3,400	95	0.03	3,400	247	0.07	*		
SBT	2	3,400	887	0.26	3,400	499	0.15			
SBR	1	1,700	290	0.17	1,700	194	0.11			
EBL	2	3,400	290	0.09	3,400	329	0.10	*		
EBT	3	5,100	662	0.13	5,100	1,195	0.23			
EBR	1	1,700	397	0.23	1,700	133	0.08			
WBL	2	3,400	384	0.11	3,400	164	0.05			
WBT	3	5,100	974	0.19	5,100	1,066	0.21	*		
WBR	1	1,700	203	0.12	1,700	218	0.13			
N/S Movements				0.30					0.48	
E/W Movements				0.28					0.31	
Rt. Turn Component				0.07					0.00	
Yellow Clearance				0.05					0.05	
TOTAL CAPACITY UTILIZATION				0.69					0.84	
LEVEL OF SERVICE (LOS)				B					D	

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		23 Glassell St. @ Taft Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	239	0.14	1,700	111	0.07	
NBT	3	5,100	606	0.12	5,100	1,790	0.35	
NBR	1	1,700	124	0.07	1,700	186	0.11	
SBL	1	1,700	115	0.07	1,700	55	0.03	
SBT	3	5,100	1,410	0.28	5,100	986	0.19	
SBR	1	1,700	466	0.27	1,700	232	0.14	
EBL	2	3,400	121	0.04	3,400	351	0.10	
EBT	3	5,100	481	0.09	5,100	993	0.19	
EBR	1	1,700	103	0.06	1,700	223	0.13	
WBL	1	1,700	177	0.10	1,700	151	0.09	
WBT	3	5,100	895	0.18	5,100	645	0.13	
WBR	1	1,700	120	0.07	1,700	179	0.11	
N/S Movements				0.42			0.38	
E/W Movements				0.21			0.28	
Rt. Turn Component				0.00			0.00	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.68			0.72	
LEVEL OF SERVICE (LOS)				B			C	

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Project - With Meats Interchange						
INTERSECTION:		23 Glassell St. @ Taft Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	292	0.17	1,700	136	0.08	
NBT	3	5,100	980	0.19	5,100	1,967	0.39	
NBR	1	1,700	133	0.08	1,700	194	0.11	
SBL	1	1,700	120	0.07	1,700	68	0.04	
SBT	3	5,100	1,518	0.30	5,100	1,295	0.25	
SBR	1	1,700	601	0.35	1,700	304	0.18	
EBL	2	3,400	156	0.05	3,400	433	0.13	
EBT	3	5,100	536	0.11	5,100	1,167	0.23	
EBR	1	1,700	118	0.07	1,700	259	0.15	
WBL	1	1,700	177	0.10	1,700	136	0.08	
WBT	3	5,100	1,069	0.21	5,100	690	0.14	
WBR	1	1,700	175	0.10	1,700	171	0.10	
N/S Movements				0.47			0.43	
E/W Movements				0.26			0.31	
Rt. Turn Component				0.06			0.00	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.83			0.78	
LEVEL OF SERVICE (LOS)				D			C	

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 1 - Project Without Meats Interchange						
INTERSECTION:		23 Glassell St. @ Taft Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	272	0.16	1,700	135	0.08	
NBT	3	5,100	1,018	0.20	5,100	1,977	0.39	
NBR	1	1,700	136	0.08	1,700	200	0.12	
SBL	1	1,700	117	0.07	1,700	82	0.05	
SBT	3	5,100	1,527	0.30	5,100	1,336	0.26	
SBR	1	1,700	535	0.31	1,700	351	0.21	
EBL	2	3,400	159	0.05	3,400	441	0.13	
EBT	3	5,100	539	0.11	5,100	1,218	0.24	
EBR	1	1,700	122	0.07	1,700	233	0.14	
WBL	1	1,700	199	0.12	1,700	121	0.07	
WBT	3	5,100	1,067	0.21	5,100	684	0.13	
WBR	1	1,700	194	0.11	1,700	171	0.10	
N/S Movements				0.46			0.44	
E/W Movements				0.26			0.31	
Rt. Turn Component				0.02			0.00	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.78			0.80	
LEVEL OF SERVICE (LOS)				C			C	

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC						
INTERSECTION:		23 Glassell St. @ Taft Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	274	0.16	1,700	116	0.07	
NBT	3	5,100	794	0.16	5,100	1,932	0.38	
NBR	1	1,700	136	0.08	1,700	184	0.11	
SBL	1	1,700	118	0.07	1,700	59	0.03	
SBT	3	5,100	1,487	0.29	5,100	1,152	0.23	
SBR	1	1,700	546	0.32	1,700	237	0.14	
EBL	2	3,400	121	0.04	3,400	407	0.12	
EBT	3	5,100	482	0.09	5,100	1,057	0.21	
EBR	1	1,700	106	0.06	1,700	241	0.14	
WBL	1	1,700	180	0.11	1,700	127	0.07	
WBT	3	5,100	1,008	0.20	5,100	567	0.11	
WBR	1	1,700	142	0.08	1,700	161	0.09	
N/S Movements				0.45			0.41	
E/W Movements				0.23			0.28	
Rt. Turn Component				0.03			0.00	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.77			0.75	
LEVEL OF SERVICE (LOS)				C			C	

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		24 Glassell St. @ Walnut Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	38	0.02	1,700	55	0.03	
NBT	1.5	3,016	291	0.10	2,933	786	0.27	
NBR	0.5	384	37	0.10	467	125	0.27	
SBL	1	1,700	36	0.02	1,700	80	0.05	
SBT	1.5	2,591	474	0.18	3,001	474	0.16	
SBR	0.5	809	148	0.18	399	63	0.16	
EBL	1	1,700	72	0.04	1,700	142	0.08	
EBT	1.5	3,030	229	0.08	2,893	285	0.10	
EBR	0.5	370	28	0.08	507	50	0.10	
WBL	1	1,700	55	0.03	1,700	49	0.03	
WBT	1.5	2,998	388	0.13	2,340	181	0.08	
WBR	0.5	402	52	0.13	1,060	82	0.08	
		N/S Movements		0.21			0.32	
		E/W Movements		0.17			0.16	
		Rt. Turn Component		0.00			0.00	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.43	0.53			
LEVEL OF SERVICE (LOS)				A	A			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Project - With Meats Interchange						
INTERSECTION:		24 Glassell St. @ Walnut Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	27	0.02	1,700	56	0.03	
NBT	1.5	3,130	464	0.15	2,984	876	0.29	
NBR	0.5	270	40	0.15	416	122	0.29	
SBL	1	1,700	49	0.03	1,700	70	0.04	
SBT	1.5	3,081	628	0.20	3,125	659	0.21	
SBR	0.5	319	65	0.20	275	58	0.21	
EBL	0.5	370	66	0.18	549	83	0.15	
EBT	0.5	1,330	237	0.18	1,151	174	0.15	
EBR	1	269	28	0.10	477	40	0.08	
WBL	0.33	561	70	0.12	561	60	0.11	
WBT	0.33	819	219	0.27	746	153	0.20	
WBR	0.33	303	81	0.27	376	77	0.20	
		N/S Movements		0.22			0.33	
		E/W Movements		0.45			0.36	
		Rt. Turn Component		0.00			0.00	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.72	0.74			
LEVEL OF SERVICE (LOS)				C	C			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 1 - Project Without Meats Interchange						
INTERSECTION:		24 Glassell St. @ Walnut Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	27	0.02	1,700	58	0.03	
NBT	1.5	3,152	509	0.16	2,957	934	0.32	
NBR	0.5	248	40	0.16	443	140	0.32	
SBL	1	1,700	58	0.03	1,700	79	0.05	
SBT	1.5	3,050	637	0.21	3,139	710	0.23	
SBR	0.5	350	73	0.21	261	59	0.23	
EBL	0.5	397	72	0.18	531	79	0.15	
EBT	0.5	1,303	236	0.18	1,169	174	0.15	
EBR	1	253	26	0.10	477	40	0.08	
WBL	0.33	561	61	0.11	561	62	0.11	
WBT	0.33	802	223	0.28	741	150	0.20	
WBR	0.33	320	89	0.28	381	77	0.20	
		N/S Movements		0.22			0.36	
		E/W Movements		0.46			0.35	
		Rt. Turn Component		0.00			0.00	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.73	0.76			
LEVEL OF SERVICE (LOS)				C	C			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC						
INTERSECTION:		24 Glassell St. @ Walnut Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	27	0.02	1,700	60	0.04	
NBT	1.5	3,130	406	0.13	2,984	917	0.31	
NBR	0.5	270	35	0.13	416	128	0.31	
SBL	1	1,700	83	0.05	1,700	75	0.04	
SBT	1.5	2,958	683	0.23	3,085	617	0.20	
SBR	0.5	442	102	0.23	315	63	0.20	
EBL	0.5	373	71	0.19	558	85	0.15	
EBT	0.5	1,327	253	0.19	1,142	174	0.15	
EBR	1	238	26	0.11	437	36	0.08	
WBL	0.33	561	55	0.10	561	53	0.09	
WBT	0.33	805	229	0.28	753	159	0.21	
WBR	0.33	317	90	0.28	369	78	0.21	
		N/S Movements		0.25			0.35	
		E/W Movements		0.47			0.36	
		Rt. Turn Component		0.00			0.00	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.77	0.77			
LEVEL OF SERVICE (LOS)				C	C			

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		25 Hewes St. @ Chapman Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	84	0.05	1,700	136	0.08	
NBT	1.5	2,648	271	0.10 *	2,537	291	0.11 *	
NBR	0.5	752	77	0.10	863	99	0.11	
SBL	1	1,700	240	0.14 *	1,700	160	0.09 *	
SBT	2	3,400	435	0.13	3,400	218	0.06	
SBR	1	1,700	406	0.24 *	1,700	192	0.11	
EBL	2	3,400	206	0.06 *	3,400	410	0.12	
EBT	2.5	4,578	1,149	0.25	4,751	1,947	0.41 *	
EBR	0.5	522	131	0.25	349	143	0.41	
WBL	2	3,400	285	0.08	3,400	108	0.03 *	
WBT	2.5	4,845	1,785	0.37 *	4,772	1,441	0.30	
WBR	0.5	255	94	0.37	328	99	0.30	
N/S Movements				0.24			0.21	
E/W Movements				0.43			0.44	
Rt. Turn Component				0.05			0.00	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.77			0.70	
LEVEL OF SERVICE (LOS)				C			B	

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Project - With Meats Interchange						
INTERSECTION:		25 Hewes St. @ Chapman Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	92	0.05	1,700	143	0.08	
NBT	1.5	2,698	296	0.11 *	2,571	307	0.12 *	
NBR	0.5	702	77	0.11	829	99	0.12	
SBL	1	1,700	247	0.15 *	1,700	132	0.08 *	
SBT	2	3,400	418	0.12	3,400	203	0.06	
SBR	1	1,700	407	0.24 *	1,700	175	0.10	
EBL	2	3,400	210	0.06 *	3,400	431	0.13 *	
EBT	2.5	4,609	1,210	0.26	4,708	1,852	0.39	
EBR	0.5	491	129	0.26	392	154	0.39	
WBL	2	3,400	273	0.08	3,400	104	0.03	
WBT	2.5	4,844	1,781	0.37 *	4,769	1,485	0.31 *	
WBR	0.5	256	94	0.37	331	103	0.31	
N/S Movements				0.26			0.20	
E/W Movements				0.43			0.44	
Rt. Turn Component				0.05			0.00	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.79			0.69	
LEVEL OF SERVICE (LOS)				C			B	

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 1 - Project Without Meats Interchange						
INTERSECTION:		25 Hewes St. @ Chapman Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	93	0.05	1,700	144	0.08	
NBT	1.5	2,696	295	0.11 *	2,585	314	0.12 *	
NBR	0.5	704	77	0.11	815	99	0.12	
SBL	1	1,700	265	0.16 *	1,700	141	0.08 *	
SBT	2	3,400	446	0.13	3,400	207	0.06	
SBR	1	1,700	440	0.26 *	1,700	182	0.11	
EBL	2	3,400	223	0.07 *	3,400	445	0.13 *	
EBT	2.5	4,612	1,286	0.28	4,724	1,920	0.41	
EBR	0.5	488	136	0.28	376	153	0.41	
WBL	2	3,400	269	0.08	3,400	108	0.03	
WBT	2.5	4,847	1,782	0.37 *	4,765	1,494	0.31 *	
WBR	0.5	253	93	0.37	335	105	0.31	
N/S Movements				0.27			0.20	
E/W Movements				0.43			0.44	
Rt. Turn Component				0.06			0.00	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.81			0.70	
LEVEL OF SERVICE (LOS)				D			B	

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC						
INTERSECTION:		25 Hewes St. @ Chapman Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	86	0.05	1,700	140	0.08	
NBT	1.5	2,639	267	0.10 *	2,510	279	0.11 *	
NBR	0.5	761	77	0.11	890	99	0.12	
SBL	1	1,700	228	0.13 *	1,700	124	0.07 *	
SBT	2	3,400	367	0.11	3,400	181	0.05	
SBR	1	1,700	361	0.21 *	1,700	155	0.09	
EBL	2	3,400	187	0.06 *	3,400	362	0.11 *	
EBT	2.5	4,630	1,152	0.25	4,726	1,757	0.37	
EBR	0.5	470	117	0.24	374	139	0.37	
WBL	2	3,400	256	0.08	3,400	108	0.03	
WBT	2.5	4,852	1,684	0.35 *	4,789	1,446	0.30 *	
WBR	0.5	248	86	0.34	311	94	0.28	
N/S Movements				0.23			0.18	
E/W Movements				0.40			0.41	
Rt. Turn Component				0.05			0.00	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.73			0.64	
LEVEL OF SERVICE (LOS)				C			B	

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update								
SCENARIO:		No Project								
INTERSECTION:		26 N/B SR-55 Ramps @ Katella Ave.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	2	3,400	665	0.20	3,400	860	0.25	*	*	
NBT	0		0	0.00		10	0.00			
NBR	1	1,700	315	0.19	1,700	792	0.47			
SBL	0		0			0				
SBT	0		0	0.00		0	0.00	*	*	
SBR	1	1,700	46	0.03	1,700	35	0.02	*	*	
EBL	0		0			0				
EBT	3	5,100	659	0.13	5,100	1,653	0.32	*	*	
EBR (free)	f		227			498				
WBL	1	1,700	598	0.35	1,700	351	0.21	*	*	
WBT	3	5,100	1,962	0.38	5,100	1,167	0.23			
WBR	0	0	0		0	0				
split phasing		N/S Movements		0.20			0.25			
		E/W Movements		0.48			0.53			
		Rt. Turn Component		0.03			0.03			
		Yellow Clearance		0.05			0.05			
TOTAL CAPACITY UTILIZATION				0.75					0.86	
LEVEL OF SERVICE (LOS)				C					D	

PROJECT:		City of Orange General Plan Update								
SCENARIO:		Project - With Meats Interchange								
INTERSECTION:		26 N/B SR-55 Ramps @ Katella Ave.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	2	3,400	681	0.20	3,400	860	0.25	*	*	
NBT	0		0	0.00		10	0.00			
NBR	1	1,700	319	0.19	1,700	811	0.48			
SBL	0		0			0				
SBT	0		0	0.00		0	0.00	*	*	
SBR	1	1,700	46	0.03	1,700	35	0.02	*	*	
EBL	0		0			0				
EBT	3	5,100	626	0.12	5,100	1,590	0.31	*	*	
EBR (free)	f		227			492				
WBL	1	1,700	598	0.35	1,700	363	0.21	*	*	
WBT	3	5,100	1,983	0.39	5,100	1,075	0.21			
WBR	0	0	0		0	0				
split phasing		N/S Movements		0.20			0.25			
		E/W Movements		0.47			0.53			
		Rt. Turn Component		0.03			0.03			
		Yellow Clearance		0.05			0.05			
TOTAL CAPACITY UTILIZATION				0.75					0.86	
LEVEL OF SERVICE (LOS)				C					D	

PROJECT:		City of Orange General Plan Update								
SCENARIO:		Alternative 1 - Project Without Meats Interchange								
INTERSECTION:		26 N/B SR-55 Ramps @ Katella Ave.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	2	3,400	721	0.21	3,400	860	0.25	*	*	
NBT	0		0	0.00		10	0.00			
NBR	1	1,700	319	0.19	1,700	766	0.45			
SBL	0		0			0				
SBT	0		0	0.00		0	0.00	*	*	
SBR	1	1,700	46	0.03	1,700	35	0.02	*	*	
EBL	0		0			0				
EBT	3	5,100	615	0.12	5,100	1,674	0.33	*	*	
EBR (free)	f		227			517				
WBL	1	1,700	588	0.35	1,700	334	0.20	*	*	
WBT	3	5,100	2,023	0.40	5,100	1,145	0.22			
WBR	0	0	0		0	0				
split phasing		N/S Movements		0.21			0.25			
		E/W Movements		0.47			0.52			
		Rt. Turn Component		0.03			0.02			
		Yellow Clearance		0.05			0.05			
TOTAL CAPACITY UTILIZATION				0.76					0.85	
LEVEL OF SERVICE (LOS)				C					D	

PROJECT:		City of Orange General Plan Update								
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC								
INTERSECTION:		26 N/B SR-55 Ramps @ Katella Ave.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	2	3,400	661	0.19	3,400	860	0.25	*	*	
NBT	0		0	0.00		4	0.00			
NBR	1	1,700	319	0.19	1,700	813	0.48			
SBL	0		0			0				
SBT	0		0	0.00		0	0.00	*	*	
SBR	1	1,700	46	0.03	1,700	35	0.02	*	*	
EBL	0		0			0				
EBT	3	5,100	625	0.12	5,100	1,509	0.30	*	*	
EBR (free)	f		227			511				
WBL	1	1,700	614	0.36	1,700	363	0.21	*	*	
WBT	3	5,100	1,936	0.38	5,100	1,046	0.21			
WBR	0	0	0		0	0				
split phasing		N/S Movements		0.19			0.25			
		E/W Movements		0.48			0.51			
		Rt. Turn Component		0.03			0.03			
		Yellow Clearance		0.05			0.05			
TOTAL CAPACITY UTILIZATION				0.76					0.84	
LEVEL OF SERVICE (LOS)				C					D	

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		27 S/B SR-55 Ramps @ Katella Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	0		0			0		
NBT	0		0	0.00		0	0.00	
NBR	0		0			0		
SBL	2	3,400	221	0.07 *	3,400	447	0.13 *	
SBT	0		0	0.00		0	0.00	
SBR	1	1,700	478	0.28	1,700	423	0.25	
EBL	0		0			0		
EBT	2.5	3,457	638	0.18 *	4,052	1,432	0.35 *	
EBR	1.5	3,343	617	0.18	2,748	971	0.35	
WBL	1	1,700	761	0.45 *	1,700	400	0.24 *	
WBT	3	5,100	1,849	0.36	5,100	1,496	0.29	
WBR	0		0			0		
split phasing		N/S Movements		0.07			0.13	
		E/W Movements		0.63			0.59	
		Rt. Turn Component		0.22			0.12	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.96	0.89			
LEVEL OF SERVICE (LOS)				E	D			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Project - With Meats Interchange						
INTERSECTION:		27 S/B SR-55 Ramps @ Katella Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	0		0			0		
NBT	0		0	0.00		0	0.00	
NBR	0		0			0		
SBL	2	3,400	221	0.07 *	3,400	397	0.12 *	
SBT	0		0	0.00		0	0.00	
SBR	1	1,700	478	0.28	1,700	413	0.24	
EBL	0		0			0		
EBT	2.5	3,462	640	0.18 *	3,934	1,434	0.36 *	
EBR	1.5	3,338	617	0.18	2,866	1,045	0.36	
WBL	1	1,700	767	0.45 *	1,700	358	0.21 *	
WBT	3	5,100	1,884	0.37	5,100	1,429	0.28	
WBR	0		0			0		
split phasing		N/S Movements		0.07			0.12	
		E/W Movements		0.64			0.58	
		Rt. Turn Component		0.22			0.13	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.97	0.87			
LEVEL OF SERVICE (LOS)				E	D			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 1 - Project Without Meats Interchange						
INTERSECTION:		27 S/B SR-55 Ramps @ Katella Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	0		0			0		
NBT	0		0	0.00		0	0.00	
NBR	0		0			0		
SBL	2	3,400	221	0.07 *	3,400	386	0.11 *	
SBT	0		0	0.00		0	0.00	
SBR	1	1,700	517	0.30 *	1,700	444	0.26 *	
EBL	0		0			0		
EBT	2.5	3,536	639	0.18 *	4,019	1,535	0.38 *	
EBR	1.5	3,264	590	0.18	2,781	1,062	0.38	
WBL	1	1,700	740	0.44 *	1,700	358	0.21 *	
WBT	3	5,100	2,011	0.39	5,100	1,587	0.31	
WBR	0		0			0		
split phasing		N/S Movements		0.07			0.11	
		E/W Movements		0.62			0.59	
		Rt. Turn Component		0.24			0.15	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.97	0.90			
LEVEL OF SERVICE (LOS)				E	D			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC						
INTERSECTION:		27 S/B SR-55 Ramps @ Katella Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	0		0			0		
NBT	0		0	0.00		0	0.00	
NBR	0		0			0		
SBL	2	3,400	219	0.06 *	3,400	400	0.12 *	
SBT	0		0	0.00		0	0.00	
SBR	1	1,700	461	0.27	1,700	411	0.24	
EBL	0		0			0		
EBT	2.5	3,470	643	0.19 *	3,809	1,280	0.34 *	
EBR	1.5	3,330	617	0.19	2,991	1,005	0.34	
WBL	1	1,700	801	0.47 *	1,700	345	0.20 *	
WBT	3	5,100	1,759	0.34	5,100	1,409	0.28	
WBR	0		0			0		
split phasing		N/S Movements		0.06			0.12	
		E/W Movements		0.66			0.54	
		Rt. Turn Component		0.21			0.12	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.98	0.83			
LEVEL OF SERVICE (LOS)				E	D			

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update							
SCENARIO:		No Project							
INTERSECTION:		28 Main Street @ Chapman Ave.							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	2	3,400	251	0.07	3,400	472	0.14	*	*
NBT	3	5,100	698	0.14	5,100	1,301	0.26		
NBR	1	1,700	162	0.10	1,700	266	0.16		
SBL	2	3,400	102	0.03	3,400	174	0.05		
SBT	3	5,100	1,138	0.22	5,100	1,250	0.25	*	*
SBR	1	1,700	176	0.10	1,700	146	0.09		
EBL	2	3,400	144	0.04	3,400	273	0.08		
EBT	3	5,100	576	0.11	5,100	778	0.15	*	*
EBR	1	1,700	369	0.22	1,700	164	0.10	*	*
WBL	2	3,400	333	0.10	3,400	406	0.12	*	*
WBT	3	5,100	823	0.16	5,100	927	0.18		
WBR	1	1,700	68	0.04	1,700	87	0.05		
N/S Movements				0.30				0.38	
E/W Movements				0.21				0.27	
Rt. Turn Component				0.03				0.00	
Yellow Clearance				0.05				0.05	
TOTAL CAPACITY UTILIZATION				0.59				0.71	
LEVEL OF SERVICE (LOS)				A				C	

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Project - With Meats Interchange							
INTERSECTION:		28 Main Street @ Chapman Ave.							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	2	3,400	486	0.14	3,400	796	0.23	*	*
NBT	3	5,100	912	0.18	5,100	1,228	0.24		
NBR	1	1,700	143	0.08	1,700	224	0.13		
SBL	2	3,400	88	0.03	3,400	153	0.05		
SBT	3	5,100	1,206	0.24	5,100	1,460	0.29	*	*
SBR	1	1,700	256	0.15	1,700	256	0.15		
EBL	2	3,400	235	0.07	3,400	455	0.13	*	*
EBT	3	5,100	600	0.12	5,100	866	0.17		
EBR	1	1,700	651	0.38	1,700	348	0.20	*	*
WBL	2	3,400	283	0.08	3,400	295	0.09		
WBT	3	5,100	959	0.19	5,100	1,007	0.20	*	*
WBR	1	1,700	53	0.03	1,700	57	0.03		
N/S Movements				0.38				0.52	
E/W Movements				0.26				0.33	
Rt. Turn Component				0.12				0.00	
Yellow Clearance				0.05				0.05	
TOTAL CAPACITY UTILIZATION				0.81				0.90	
LEVEL OF SERVICE (LOS)				D				D	

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Alternative 1 - Project Without Meats Interchange							
INTERSECTION:		28 Main Street @ Chapman Ave.							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	2	3,400	487	0.14	3,400	757	0.22	*	*
NBT	3	5,100	925	0.18	5,100	1,228	0.24		
NBR	1	1,700	140	0.08	1,700	224	0.13		
SBL	2	3,400	88	0.03	3,400	153	0.05		
SBT	3	5,100	1,230	0.24	5,100	1,486	0.29	*	*
SBR	1	1,700	272	0.16	1,700	263	0.15		
EBL	2	3,400	244	0.07	3,400	458	0.13	*	*
EBT	3	5,100	600	0.12	5,100	865	0.17		
EBR	1	1,700	642	0.38	1,700	335	0.20	*	*
WBL	2	3,400	258	0.08	3,400	300	0.09		
WBT	3	5,100	911	0.18	5,100	1,038	0.20	*	*
WBR	1	1,700	51	0.03	1,700	57	0.03		
N/S Movements				0.38				0.51	
E/W Movements				0.25				0.34	
Rt. Turn Component				0.12				0.00	
Yellow Clearance				0.05				0.05	
TOTAL CAPACITY UTILIZATION				0.80				0.90	
LEVEL OF SERVICE (LOS)				C				D	

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC							
INTERSECTION:		28 Main Street @ Chapman Ave.							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	2	3,400	465	0.14	3,400	798	0.23	*	*
NBT	3	5,100	831	0.16	5,100	1,261	0.25		
NBR	1	1,700	139	0.08	1,700	224	0.13		
SBL	2	3,400	88	0.03	3,400	153	0.05		
SBT	3	5,100	1,181	0.23	5,100	1,411	0.28	*	*
SBR	1	1,700	270	0.16	1,700	236	0.14		
EBL	2	3,400	241	0.07	3,400	469	0.14	*	*
EBT	3	5,100	613	0.12	5,100	869	0.17		
EBR	1	1,700	653	0.38	1,700	341	0.20	*	*
WBL	2	3,400	245	0.07	3,400	313	0.09		
WBT	3	5,100	895	0.18	5,100	1,022	0.20	*	*
WBR	1	1,700	54	0.03	1,700	55	0.03		
N/S Movements				0.37				0.51	
E/W Movements				0.25				0.34	
Rt. Turn Component				0.13				0.00	
Yellow Clearance				0.05				0.05	
TOTAL CAPACITY UTILIZATION				0.79				0.90	
LEVEL OF SERVICE (LOS)				C				D	

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		29 Main Street @ Katella Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	106	0.03	3,400	232	0.07	
NBT	2	3,400	309	0.09	3,400	677	0.20	
NBR	1	1,700	205	0.12	1,700	238	0.14	
SBL	2	3,400	140	0.04	3,400	90	0.03	
SBT	2	3,400	405	0.12	3,400	446	0.13	
SBR	1	1,700	145	0.09	1,700	250	0.15	
EBL	2	3,400	141	0.04	3,400	132	0.04	
EBT	3	5,100	1,217	0.24	5,100	1,526	0.30	
EBR	1	1,700	102	0.06	1,700	136	0.08	
WBL	2	3,400	362	0.11	3,400	338	0.10	
WBT	3	5,100	1,048	0.21	5,100	1,378	0.27	
WBR	1	1,700	77	0.05	1,700	171	0.10	
N/S Movements				0.15	0.23			
E/W Movements				0.35	0.40			
Rt. Turn Component				0.00	0.00			
Yellow Clearance				0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.55	0.67			
LEVEL OF SERVICE (LOS)				A	B			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Project - With Meats Interchange						
INTERSECTION:		29 Main Street @ Katella Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	145	0.04	3,400	373	0.11	
NBT	2	3,400	507	0.15	3,400	871	0.26	
NBR	1	1,700	370	0.22	1,700	355	0.21	
SBL	2	3,400	204	0.06	3,400	111	0.03	
SBT	2	3,400	594	0.17	3,400	597	0.18	
SBR	1	1,700	160	0.09	1,700	243	0.14	
EBL	2	3,400	182	0.05	3,400	96	0.03	
EBT	3	5,100	1,727	0.34	5,100	1,753	0.34	
EBR	1	1,700	146	0.09	1,700	169	0.10	
WBL	2	3,400	458	0.13	3,400	554	0.16	
WBT	3	5,100	1,191	0.23	5,100	1,643	0.32	
WBR	1	1,700	106	0.06	1,700	163	0.10	
N/S Movements				0.22	0.29			
E/W Movements				0.47	0.51			
Rt. Turn Component				0.00	0.00			
Yellow Clearance				0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.74	0.85			
LEVEL OF SERVICE (LOS)				C	D			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 1 - Project Without Meats Interchange						
INTERSECTION:		29 Main Street @ Katella Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	148	0.04	3,400	348	0.10	
NBT	2	3,400	515	0.15	3,400	866	0.25	
NBR	1	1,700	379	0.22	1,700	327	0.19	
SBL	2	3,400	206	0.06	3,400	115	0.03	
SBT	2	3,400	602	0.18	3,400	587	0.17	
SBR	1	1,700	161	0.09	1,700	255	0.15	
EBL	2	3,400	183	0.05	3,400	107	0.03	
EBT	3	5,100	1,753	0.34	5,100	1,817	0.36	
EBR	1	1,700	149	0.09	1,700	166	0.10	
WBL	2	3,400	466	0.14	3,400	527	0.16	
WBT	3	5,100	1,203	0.24	5,100	1,667	0.33	
WBR	1	1,700	106	0.06	1,700	177	0.10	
N/S Movements				0.22	0.29			
E/W Movements				0.48	0.51			
Rt. Turn Component				0.00	0.00			
Yellow Clearance				0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.75	0.85			
LEVEL OF SERVICE (LOS)				C	D			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC						
INTERSECTION:		29 Main Street @ Katella Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	141	0.04	3,400	322	0.09	
NBT	2	3,400	527	0.16	3,400	933	0.27	
NBR	1	1,700	358	0.21	1,700	582	0.34	
SBL	2	3,400	138	0.04	3,400	142	0.04	
SBT	2	3,400	719	0.21	3,400	714	0.21	
SBR	1	1,700	109	0.06	1,700	164	0.10	
EBL	2	3,400	125	0.04	3,400	68	0.02	
EBT	3	5,100	1,105	0.22	5,100	1,506	0.30	
EBR	1	1,700	168	0.10	1,700	135	0.08	
WBL	2	3,400	713	0.21	3,400	691	0.20	
WBT	3	5,100	1,040	0.20	5,100	1,155	0.23	
WBR	1	1,700	98	0.06	1,700	143	0.08	
N/S Movements				0.25	0.32			
E/W Movements				0.43	0.50			
Rt. Turn Component				0.00	0.00			
Yellow Clearance				0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.73	0.86			
LEVEL OF SERVICE (LOS)				C	D			

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update								
SCENARIO:		No Project								
INTERSECTION:		30 Main Street @ La Veta Ave.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	2	3,400	160	0.05	3,400	382	0.11	*	*	
NBT	3	5,100	801	0.16	5,100	1,572	0.31			
NBR	1	1,700	322	0.19	1,700	650	0.38			
SBL	2	3,400	249	0.07	3,400	416	0.12			
SBT	3	5,100	1,328	0.26	5,100	1,712	0.34	*	*	
SBR	1	1,700	293	0.17	1,700	459	0.27			
EBL	2	3,400	594	0.17	3,400	409	0.12	*	*	
EBT	3	5,100	445	0.09	5,100	427	0.08			
EBR	1	1,700	115	0.07	1,700	170	0.10			
WBL	2	3,400	355	0.10	3,400	524	0.15			
WBT	3	5,100	347	0.07	5,100	812	0.16	*	*	
WBR	1	1,700	245	0.14	1,700	425	0.25			
N/S Movements				0.31					0.45	
E/W Movements				0.24					0.28	
Rt. Turn Component				0.00					0.00	
Yellow Clearance				0.05					0.05	
TOTAL CAPACITY UTILIZATION				0.60					0.78	
LEVEL OF SERVICE (LOS)				A					C	

PROJECT:		City of Orange General Plan Update								
SCENARIO:		Project - With Meats Interchange								
INTERSECTION:		30 Main Street @ La Veta Ave.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	2	3,400	337	0.10	3,400	477	0.14	*	*	
NBT	3	5,100	882	0.17	5,100	1,641	0.32			
NBR	1	1,700	322	0.19	1,700	798	0.47			
SBL	2	3,400	184	0.05	3,400	330	0.10			
SBT	3	5,100	1,473	0.29	5,100	1,854	0.36	*	*	
SBR	1	1,700	430	0.25	1,700	581	0.34			
EBL	2	3,400	920	0.27	3,400	609	0.18	*	*	
EBT	3	5,100	564	0.11	5,100	577	0.11			
EBR	1	1,700	258	0.15	1,700	266	0.16			
WBL	2	3,400	389	0.11	3,400	581	0.17			
WBT	3	5,100	563	0.11	5,100	1,116	0.22	*	*	
WBR	1	1,700	208	0.12	1,700	380	0.22			
N/S Movements				0.39					0.50	
E/W Movements				0.38					0.40	
Rt. Turn Component				0.00					0.00	
Yellow Clearance				0.05					0.05	
TOTAL CAPACITY UTILIZATION				0.82					0.95	
LEVEL OF SERVICE (LOS)				D					E	

PROJECT:		City of Orange General Plan Update								
SCENARIO:		Alternative 1 - Project Without Meats Interchange								
INTERSECTION:		30 Main Street @ La Veta Ave.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	2	3,400	346	0.10	3,400	478	0.14	*	*	
NBT	3	5,100	885	0.17	5,100	1,614	0.32			
NBR	1	1,700	322	0.19	1,700	774	0.46			
SBL	2	3,400	184	0.05	3,400	324	0.10			
SBT	3	5,100	1,471	0.29	5,100	1,859	0.36	*	*	
SBR	1	1,700	447	0.26	1,700	593	0.35			
EBL	2	3,400	927	0.27	3,400	609	0.18	*	*	
EBT	3	5,100	563	0.11	5,100	577	0.11			
EBR	1	1,700	255	0.15	1,700	271	0.16			
WBL	2	3,400	383	0.11	3,400	570	0.17			
WBT	3	5,100	578	0.11	5,100	1,114	0.22	*	*	
WBR	1	1,700	208	0.12	1,700	372	0.22			
N/S Movements				0.39					0.51	
E/W Movements				0.39					0.40	
Rt. Turn Component				0.00					0.00	
Yellow Clearance				0.05					0.05	
TOTAL CAPACITY UTILIZATION				0.83					0.95	
LEVEL OF SERVICE (LOS)				D					E	

PROJECT:		City of Orange General Plan Update								
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC								
INTERSECTION:		30 Main Street @ La Veta Ave.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	2	3,400	356	0.10	3,400	457	0.13	*	*	
NBT	3	5,100	837	0.16	5,100	1,575	0.31			
NBR	1	1,700	322	0.19	1,700	812	0.48			
SBL	2	3,400	184	0.05	3,400	325	0.10			
SBT	3	5,100	1,419	0.28	5,100	1,806	0.35	*	*	
SBR	1	1,700	416	0.24	1,700	561	0.33			
EBL	2	3,400	858	0.25	3,400	560	0.16	*	*	
EBT	3	5,100	568	0.11	5,100	598	0.12			
EBR	1	1,700	267	0.16	1,700	272	0.16			
WBL	2	3,400	384	0.11	3,400	592	0.17			
WBT	3	5,100	558	0.11	5,100	1,127	0.22	*	*	
WBR	1	1,700	185	0.11	1,700	375	0.22			
N/S Movements				0.38					0.49	
E/W Movements				0.36					0.39	
Rt. Turn Component				0.00					0.00	
Yellow Clearance				0.05					0.05	
TOTAL CAPACITY UTILIZATION				0.79					0.92	
LEVEL OF SERVICE (LOS)				C					E	

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update								
SCENARIO:		No Project								
INTERSECTION:		31 Main Street @ Orangewood Ave.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	1	1,700	212	0.12	1,700	311	0.18	*		
NBT	3	5,100	602	0.12	5,100	1,064	0.21			
NBR	1	1,700	114	0.07	1,700	187	0.11			
SBL	1	1,700	17	0.01	1,700	45	0.03			
SBT	3	5,100	833	0.16	5,100	948	0.19	*		
SBR	1	1,700	190	0.11	1,700	173	0.10			
EBL	2	3,400	307	0.09	3,400	138	0.04			
EBT	3	5,100	409	0.08	5,100	504	0.10	*		
EBR	1	1,700	282	0.17	1,700	380	0.22			
WBL	1	1,700	276	0.16	1,700	124	0.07	*		
WBT	1.5	3,135	379	0.12	3,084	273	0.09			
WBR	0.5	265	32	0.12	316	28	0.09			
N/S Movements				0.29					0.37	
E/W Movements				0.24					0.17	
Rt. Turn Component				0.00					-0.06	
Yellow Clearance				0.05					0.05	
TOTAL CAPACITY UTILIZATION				0.58					0.53	
LEVEL OF SERVICE (LOS)				A					A	

PROJECT:		City of Orange General Plan Update								
SCENARIO:		Project - With Meats Interchange								
INTERSECTION:		31 Main Street @ Orangewood Ave.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	1	1,700	274	0.16	1,700	149	0.09	*		
NBT	3	5,100	941	0.18	5,100	1,170	0.23			
NBR	1	1,700	76	0.04	1,700	59	0.03			
SBL	1	1,700	16	0.01	1,700	51	0.03			
SBT	3	5,100	1,028	0.20	5,100	1,349	0.26	*		
SBR	1	1,700	413	0.24	1,700	514	0.30			
EBL	2	3,400	711	0.21	3,400	425	0.13	*		
EBT	3	5,100	354	0.07	5,100	326	0.06			
EBR	1	1,700	306	0.18	1,700	312	0.18	*		
WBL	1	1,700	114	0.07	1,700	72	0.04			
WBT	1.5	3,092	231	0.07	2,827	227	0.08	*		
WBR	0.5	308	23	0.07	573	46	0.08			
N/S Movements				0.36					0.35	
E/W Movements				0.28					0.21	
Rt. Turn Component				0.00					0.01	
Yellow Clearance				0.05					0.05	
TOTAL CAPACITY UTILIZATION				0.70					0.62	
LEVEL OF SERVICE (LOS)				B					B	

PROJECT:		City of Orange General Plan Update								
SCENARIO:		Alternative 1 - Project Without Meats Interchange								
INTERSECTION:		31 Main Street @ Orangewood Ave.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	1	1,700	264	0.16	1,700	157	0.09	*		
NBT	3	5,100	986	0.19	5,100	1,184	0.23			
NBR	1	1,700	72	0.04	1,700	59	0.03			
SBL	1	1,700	19	0.01	1,700	50	0.03			
SBT	3	5,100	1,115	0.22	5,100	1,360	0.27	*		
SBR	1	1,700	413	0.24	1,700	507	0.30			
EBL	2	3,400	715	0.21	3,400	422	0.12	*		
EBT	3	5,100	370	0.07	5,100	335	0.07			
EBR	1	1,700	307	0.18	1,700	330	0.19	*		
WBL	1	1,700	114	0.07	1,700	72	0.04			
WBT	1.5	3,059	224	0.07	2,846	226	0.08	*		
WBR	0.5	341	25	0.07	554	44	0.08			
N/S Movements				0.37					0.36	
E/W Movements				0.28					0.20	
Rt. Turn Component				0.00					0.01	
Yellow Clearance				0.05					0.05	
TOTAL CAPACITY UTILIZATION				0.71					0.62	
LEVEL OF SERVICE (LOS)				C					B	

PROJECT:		City of Orange General Plan Update								
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC								
INTERSECTION:		31 Main Street @ Orangewood Ave.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	1	1,700	250	0.15	1,700	187	0.11	*		
NBT	3	5,100	884	0.17	5,100	1,282	0.25			
NBR	1	1,700	76	0.04	1,700	59	0.03			
SBL	1	1,700	17	0.01	1,700	45	0.03			
SBT	3	5,100	1,039	0.20	5,100	1,299	0.25	*		
SBR	1	1,700	372	0.22	1,700	398	0.23			
EBL	2	3,400	582	0.17	3,400	308	0.09	*		
EBT	3	5,100	316	0.06	5,100	311	0.06			
EBR	1	1,700	273	0.16	1,700	322	0.19	*		
WBL	1	1,700	114	0.07	1,700	72	0.04			
WBT	1.5	3,082	223	0.07	2,887	214	0.08	*		
WBR	0.5	318	23	0.07	513	38	0.07			
N/S Movements				0.35					0.36	
E/W Movements				0.24					0.17	
Rt. Turn Component				0.00					0.00	
Yellow Clearance				0.05					0.05	
TOTAL CAPACITY UTILIZATION				0.64					0.58	
LEVEL OF SERVICE (LOS)				B					A	

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update							
SCENARIO:		No Project							
INTERSECTION:		32 Main Street @ Taft Ave							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	2.5	3,229	183	0.06	*	4,274	714	0.17	*
NBT	0.5	1,871	106	0.06		826	138	0.17	
NBR	1	1,700	144	0.08		1,700	398	0.13	
SBL	1	1,700	18	0.01		1,700	35	0.02	
SBT	1	1,700	165	0.10	*	1,700	114	0.07	*
SBR	1	1,700	169	0.10		1,700	371	0.22	*
EBL	2	3,400	365	0.11		3,400	164	0.05	*
EBT	3	5,100	1,128	0.22	*	5,100	1,207	0.24	*
EBR	1	1,700	519	0.31	*	1,700	191	0.11	
WBL	2	3,400	346	0.10	*	3,400	175	0.05	
WBT	3	5,100	829	0.16		5,100	1,325	0.26	*
WBR	1	1,700	50	0.03		1,700	39	0.02	
split phasing		N/S Movements		0.15				0.23	
		E/W Movements		0.32				0.31	
		Rt. Turn Component		0.03				0.10	
		Yellow Clearance		0.05				0.05	
TOTAL CAPACITY UTILIZATION				0.55				0.70	
LEVEL OF SERVICE (LOS)				A				B	

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Project - With Meats Interchange							
INTERSECTION:		32 Main Street @ Taft Ave							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	2.5	2,779	231	0.08	*	3,841	647	0.17	*
NBT	0.5	2,321	193	0.08		1,259	212	0.17	
NBR	1	1,700	191	0.11		1,700	482	0.17	
SBL	1	1,700	26	0.02		1,700	75	0.04	
SBT	1	1,700	230	0.14	*	1,700	170	0.10	*
SBR	1	1,700	235	0.14		1,700	603	0.35	*
EBL	2	3,400	600	0.18		3,400	230	0.07	*
EBT	3	5,100	1,353	0.27	*	5,100	1,333	0.26	*
EBR	1	1,700	591	0.35		1,700	169	0.10	
WBL	2	3,400	369	0.11	*	3,400	198	0.06	
WBT	3	5,100	884	0.17		5,100	1,635	0.32	*
WBR	1	1,700	77	0.05		1,700	81	0.05	
split phasing		N/S Movements		0.22				0.27	
		E/W Movements		0.37				0.39	
		Rt. Turn Component		0.00				0.19	
		Yellow Clearance		0.05				0.05	
TOTAL CAPACITY UTILIZATION				0.64				0.89	
LEVEL OF SERVICE (LOS)				B				D	

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Alternative 1 - Project Without Meats Interchange							
INTERSECTION:		32 Main Street @ Taft Ave							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	2.5	2,755	228	0.08	*	3,888	661	0.17	*
NBT	0.5	2,345	194	0.08		1,212	206	0.17	
NBR	1	1,700	193	0.11		1,700	484	0.17	
SBL	1	1,700	27	0.02		1,700	73	0.04	
SBT	1	1,700	229	0.13	*	1,700	168	0.10	*
SBR	1	1,700	236	0.14		1,700	597	0.35	*
EBL	2	3,400	617	0.18		3,400	229	0.07	*
EBT	3	5,100	1,400	0.27	*	5,100	1,376	0.27	*
EBR	1	1,700	593	0.35		1,700	169	0.10	
WBL	2	3,400	368	0.11	*	3,400	203	0.06	
WBT	3	5,100	886	0.17		5,100	1,672	0.33	*
WBR	1	1,700	78	0.05		1,700	79	0.05	
split phasing		N/S Movements		0.22				0.27	
		E/W Movements		0.38				0.40	
		Rt. Turn Component		0.00				0.19	
		Yellow Clearance		0.05				0.05	
TOTAL CAPACITY UTILIZATION				0.65				0.90	
LEVEL OF SERVICE (LOS)				B				D	

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC							
INTERSECTION:		32 Main Street @ Taft Ave							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	2.5	2,863	201	0.07	*	3,956	712	0.18	*
NBT	0.5	2,237	157	0.07		1,144	206	0.18	
NBR	1	1,700	186	0.11		1,700	532	0.18	
SBL	1	1,700	24	0.01		1,700	58	0.03	
SBT	1	1,700	235	0.14	*	1,700	157	0.09	*
SBR	1	1,700	193	0.11		1,700	464	0.27	*
EBL	2	3,400	461	0.14		3,400	198	0.06	*
EBT	3	5,100	1,249	0.24	*	5,100	1,307	0.26	*
EBR	1	1,700	607	0.36	*	1,700	171	0.10	
WBL	2	3,400	468	0.14	*	3,400	224	0.07	
WBT	3	5,100	897	0.18		5,100	1,534	0.30	*
WBR	1	1,700	73	0.04		1,700	67	0.04	
split phasing		N/S Movements		0.21				0.27	
		E/W Movements		0.38				0.36	
		Rt. Turn Component		0.04				0.12	
		Yellow Clearance		0.05				0.05	
TOTAL CAPACITY UTILIZATION				0.68				0.80	
LEVEL OF SERVICE (LOS)				B				C	

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		33 Main Street @ Town & Country Rd.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	72	0.02	3,400	168	0.05	
NBT	3	5,100	829	0.16	5,100	1,559	0.31	
NBR	1	1,700	108	0.06	1,700	341	0.20	
SBL	2	3,400	330	0.10	3,400	468	0.14	
SBT	3	5,100	1,269	0.25	5,100	1,405	0.28	
SBR	1	1,700	71	0.04	1,700	310	0.18	
EBL	1.5	1,524	39	0.03	1,679	222	0.13	
EBT	1	897	48	0.05	1,630	340	0.21	
EBR	0.5	803	43	0.05	920	192	0.21	
WBL	1.5	3,400	257	0.08	2,509	244	0.10	
WBT	1.5	1,700	137	0.08	2,591	252	0.10	
WBR	2	3,400	545	0.16	3,400	524	0.15	
split phasing	N/S Movements			0.27	0.44			
	E/W Movements			0.13	0.31			
	Rt. Turn Component			0.00	0.00			
	Yellow Clearance			0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.45	0.80			
LEVEL OF SERVICE (LOS)				A	C			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Project - With Meats Interchange						
INTERSECTION:		33 Main Street @ Town & Country Rd.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	57	0.02	3,400	187	0.06	
NBT	3	5,100	1,077	0.21	5,100	1,694	0.33	
NBR	1	1,700	108	0.06	1,700	331	0.19	
SBL	2	3,400	370	0.11	3,400	542	0.16	
SBT	3	5,100	1,433	0.28	5,100	1,573	0.31	
SBR	1	1,700	62	0.04	1,700	450	0.26	
EBL	1.5	1,733	53	0.03	1,799	240	0.13	
EBT	1	894	51	0.06	1,698	327	0.19	
EBR	0.5	806	46	0.06	852	164	0.19	
WBL	1.5	3,400	242	0.07	2,176	233	0.11	
WBT	1.5	1,700	101	0.06	2,924	313	0.11	
WBR	2	3,400	659	0.19	3,400	524	0.15	
split phasing	N/S Movements			0.32	0.49			
	E/W Movements			0.13	0.30			
	Rt. Turn Component			0.01	0.00			
	Yellow Clearance			0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.51	0.84			
LEVEL OF SERVICE (LOS)				A	D			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 1 - Project Without Meats Interchange						
INTERSECTION:		33 Main Street @ Town & Country Rd.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	57	0.02	3,400	188	0.06	
NBT	3	5,100	1,092	0.21	5,100	1,642	0.32	
NBR	1	1,700	108	0.06	1,700	322	0.19	
SBL	2	3,400	369	0.11	3,400	548	0.16	
SBT	3	5,100	1,432	0.28	5,100	1,550	0.30	
SBR	1	1,700	62	0.04	1,700	468	0.28	
EBL	1.5	1,749	54	0.03	1,794	241	0.13	
EBT	1	894	51	0.06	1,714	330	0.19	
EBR	0.5	806	46	0.06	836	161	0.19	
WBL	1.5	3,400	242	0.07	2,114	230	0.11	
WBT	1.5	1,700	101	0.06	2,986	325	0.11	
WBR	2	3,400	664	0.20	3,400	524	0.15	
split phasing	N/S Movements			0.32	0.48			
	E/W Movements			0.13	0.30			
	Rt. Turn Component			0.02	0.00			
	Yellow Clearance			0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.52	0.83			
LEVEL OF SERVICE (LOS)				A	D			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC						
INTERSECTION:		33 Main Street @ Town & Country Rd.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	56	0.02	3,400	174	0.05	
NBT	3	5,100	1,054	0.21	5,100	1,638	0.32	
NBR	1	1,700	108	0.06	1,700	313	0.18	
SBL	2	3,400	367	0.11	3,400	546	0.16	
SBT	3	5,100	1,402	0.27	5,100	1,557	0.31	
SBR	1	1,700	64	0.04	1,700	447	0.26	
EBL	1.5	1,764	55	0.03	1,820	263	0.14	
EBT	1	903	51	0.06	1,711	351	0.21	
EBR	0.5	797	45	0.06	839	172	0.21	
WBL	1.5	3,400	231	0.07	2,176	230	0.11	
WBT	1.5	1,700	101	0.06	2,924	309	0.11	
WBR	2	3,400	660	0.19	3,400	508	0.15	
split phasing	N/S Movements			0.31	0.48			
	E/W Movements			0.12	0.31			
	Rt. Turn Component			0.02	0.00			
	Yellow Clearance			0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.51	0.84			
LEVEL OF SERVICE (LOS)				A	D			

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		34 Newport Blvd. @ Chapman Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	93	0.03	3,400	90	0.03	
NBT	1.5	2,364	235	0.10 *	1,891	183	0.10 *	
NBR	0.5	1,036	103	0.10	1,509	146	0.10	
SBL	2	3,400	823	0.24 *	3,400	1,137	0.33 *	
SBT	2	3,400	473	0.14	3,400	239	0.07	
SBR	1	1,700	162	0.10	1,700	175	0.10	
EBL	2	3,400	284	0.08 *	3,400	313	0.09 *	
EBT	3	5,100	867	0.17	5,100	1,081	0.21	
EBR	1	1,700	191	0.11	1,700	91	0.05	
WBL	2	3,400	202	0.06	3,400	88	0.03	
WBT	3	5,100	1,339	0.26 *	5,100	927	0.18 *	
WBR	1	1,700	1,774	1.04 *	1,700	1,120	0.66 *	
N/S Movements				0.34	0.43			
E/W Movements				0.35	0.27			
Rt. Turn Component				0.00	0.14			
Yellow Clearance				0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.74	0.90			
LEVEL OF SERVICE (LOS)				C	D			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Project - With Meats Interchange						
INTERSECTION:		34 Newport Blvd. @ Chapman Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	93	0.03	3,400	90	0.03	
NBT	1.5	1,983	196	0.10 *	1,638	158	0.10 *	
NBR	0.5	1,417	140	0.10	1,762	170	0.10	
SBL	2	3,400	812	0.24 *	3,400	1,003	0.30 *	
SBT	2	3,400	354	0.10	3,400	251	0.07	
SBR	1	1,700	138	0.08	1,700	162	0.10	
EBL	2	3,400	249	0.07 *	3,400	257	0.08 *	
EBT	3	5,100	1,235	0.24	5,100	1,201	0.24	
EBR	1	1,700	191	0.11	1,700	91	0.05	
WBL	2	3,400	254	0.07	3,400	128	0.04	
WBT	3	5,100	1,512	0.30 *	5,100	1,182	0.23 *	
WBR	1	1,700	1,430	0.84 *	1,700	1,014	0.60 *	
N/S Movements				0.34	0.39			
E/W Movements				0.37	0.31			
Rt. Turn Component				0.00	0.07			
Yellow Clearance				0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.76	0.82			
LEVEL OF SERVICE (LOS)				C	D			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 1 - Project Without Meats Interchange						
INTERSECTION:		34 Newport Blvd. @ Chapman Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	93	0.03	3,400	90	0.03	
NBT	1.5	1,993	197	0.10 *	1,602	155	0.10 *	
NBR	0.5	1,407	139	0.10	1,798	174	0.10	
SBL	2	3,400	763	0.22 *	3,400	876	0.26 *	
SBT	2	3,400	349	0.10	3,400	234	0.07	
SBR	1	1,700	132	0.08	1,700	137	0.08	
EBL	2	3,400	265	0.08 *	3,400	262	0.08 *	
EBT	3	5,100	1,297	0.25	5,100	1,268	0.25	
EBR	1	1,700	191	0.11	1,700	91	0.05	
WBL	2	3,400	267	0.08	3,400	143	0.04	
WBT	3	5,100	1,541	0.30 *	5,100	1,205	0.24 *	
WBR	1	1,700	1,448	0.85 *	1,700	1,051	0.62 *	
N/S Movements				0.32	0.35			
E/W Movements				0.38	0.31			
Rt. Turn Component				0.00	0.12			
Yellow Clearance				0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.75	0.84			
LEVEL OF SERVICE (LOS)				C	D			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC						
INTERSECTION:		34 Newport Blvd. @ Chapman Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	93	0.03	3,400	90	0.03	
NBT	1.5	2,196	217	0.10 *	1,690	163	0.10 *	
NBR	0.5	1,204	119	0.10	1,710	165	0.10	
SBL	2	3,400	813	0.24 *	3,400	1,086	0.32 *	
SBT	2	3,400	328	0.10	3,400	230	0.07	
SBR	1	1,700	159	0.09	1,700	170	0.10	
EBL	2	3,400	279	0.08 *	3,400	255	0.08 *	
EBT	3	5,100	1,064	0.21	5,100	1,114	0.22	
EBR	1	1,700	191	0.11	1,700	91	0.05	
WBL	2	3,400	189	0.06	3,400	103	0.03	
WBT	3	5,100	1,399	0.27 *	5,100	1,086	0.21 *	
WBR	1	1,700	1,499	0.88 *	1,700	1,068	0.63 *	
N/S Movements				0.34	0.42			
E/W Movements				0.36	0.29			
Rt. Turn Component				0.00	0.10			
Yellow Clearance				0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.74	0.85			
LEVEL OF SERVICE (LOS)				C	D			

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update								
SCENARIO:		No Project								
INTERSECTION:		35 Santiago Blvd. @ Nohl Ranch Rd.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	2	3,400	1,013	0.30	3,400	1,069	0.31	*		
NBT	1	1,700	190	0.11	1,700	336	0.20			
NBR	1	1,700	174	0.10	1,700	206	0.12			
SBL	1	1,700	9	0.01	1,700	7	0.00			
SBT	3	5,100	535	0.10	5,100	391	0.08	*		
SBR(free)	f		1,124			704				
EBL	2	3,400	161	0.05	3,400	512	0.15	*		
EBT	3	5,100	137	0.03	5,100	617	0.12			
EBR	1	1,700	434	0.26	1,700	372	0.22			
WBL	1	1,700	241	0.14	1,700	137	0.08			
WBT	1.5	3,303	644	0.20	3,259	508	0.16	*		
WBR	0.5	97	19	0.20	141	22	0.16			
N/S Movements				0.40					0.39	
E/W Movements				0.24					0.31	
Rt. Turn Component				0.00					0.00	
Yellow Clearance				0.05					0.05	
TOTAL CAPACITY UTILIZATION				0.70					0.75	
LEVEL OF SERVICE (LOS)				B					C	

PROJECT:		City of Orange General Plan Update								
SCENARIO:		Project - With Meats Interchange								
INTERSECTION:		35 Santiago Blvd. @ Nohl Ranch Rd.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	2	3,400	884	0.26	3,400	960	0.28	*		
NBT	1	1,700	141	0.08	1,700	337	0.20			
NBR	1	1,700	115	0.07	1,700	198	0.12			
SBL	1	1,700	8	0.00	1,700	7	0.00			
SBT	3	5,100	531	0.10	5,100	323	0.06	*		
SBR(free)	f		1,352			697				
EBL	2	3,400	156	0.05	3,400	473	0.14	*		
EBT	3	5,100	127	0.02	5,100	545	0.11			
EBR	1	1,700	406	0.24	1,700	255	0.15			
WBL	1	1,700	178	0.10	1,700	92	0.05			
WBT	1.5	3,319	577	0.17	3,243	413	0.13	*		
WBR	0.5	81	14	0.17	157	20	0.13			
N/S Movements				0.36					0.35	
E/W Movements				0.22					0.27	
Rt. Turn Component				0.00					0.00	
Yellow Clearance				0.05					0.05	
TOTAL CAPACITY UTILIZATION				0.63					0.66	
LEVEL OF SERVICE (LOS)				B					B	

PROJECT:		City of Orange General Plan Update								
SCENARIO:		Alternative 1 - Project Without Meats Interchange								
INTERSECTION:		35 Santiago Blvd. @ Nohl Ranch Rd.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	2	3,400	983	0.29	3,400	1,130	0.33	*		
NBT	1	1,700	192	0.11	1,700	359	0.21			
NBR	1	1,700	153	0.09	1,700	198	0.12			
SBL	1	1,700	8	0.00	1,700	6	0.00			
SBT	3	5,100	629	0.12	5,100	371	0.07	*		
SBR(free)	f		1,209			700				
EBL	2	3,400	161	0.05	3,400	550	0.16	*		
EBT	3	5,100	127	0.02	5,100	566	0.11			
EBR	1	1,700	455	0.27	1,700	376	0.22			
WBL	1	1,700	236	0.14	1,700	123	0.07			
WBT	1.5	3,297	578	0.18	3,257	480	0.15	*		
WBR	0.5	103	18	0.18	143	21	0.15			
N/S Movements				0.41					0.41	
E/W Movements				0.22					0.31	
Rt. Turn Component				0.00					0.00	
Yellow Clearance				0.05					0.05	
TOTAL CAPACITY UTILIZATION				0.69					0.76	
LEVEL OF SERVICE (LOS)				B					C	

PROJECT:		City of Orange General Plan Update								
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC								
INTERSECTION:		35 Santiago Blvd. @ Nohl Ranch Rd.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	2	3,400	880	0.26	3,400	960	0.28	*		
NBT	1	1,700	130	0.08	1,700	307	0.18			
NBR	1	1,700	113	0.07	1,700	198	0.12			
SBL	1	1,700	7	0.00	1,700	6	0.00			
SBT	3	5,100	465	0.09	5,100	291	0.06	*		
SBR(free)	f		1,178			634				
EBL	2	3,400	148	0.04	3,400	416	0.12	*		
EBT	3	5,100	127	0.02	5,100	497	0.10			
EBR	1	1,700	420	0.25	1,700	264	0.16			
WBL	1	1,700	183	0.11	1,700	93	0.05			
WBT	1.5	3,313	532	0.16	3,262	377	0.12	*		
WBR	0.5	87	14	0.14	138	16	0.11			
N/S Movements				0.35					0.34	
E/W Movements				0.20					0.24	
Rt. Turn Component				0.00					0.00	
Yellow Clearance				0.05					0.05	
TOTAL CAPACITY UTILIZATION				0.60					0.63	
LEVEL OF SERVICE (LOS)				A					B	

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update								
SCENARIO:		No Project								
INTERSECTION:		36 Eckhoff St. @ Orangewood Ave.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	1	1,700	69	0.04	1,700	99	0.06	*		
NBT	1.5	2,176	96	0.04	1,765	81	0.05			
NBR	0.5	1,224	54	0.04	1,635	75	0.05			
SBL	1	1,700	22	0.01	1,700	125	0.07			
SBT	1	1,700	85	0.05	1,700	211	0.12	*		
SBR(free)	f		311			750				
EBL	2	3,400	624	0.18	3,400	278	0.08			
EBT	2	3,400	933	0.27	3,400	860	0.25	*		
EBR	1	1,700	78	0.05	1,700	187	0.11			
WBL	2	3,400	32	0.01	3,400	72	0.02	*		
WBT	2.5	4,355	485	0.11	4,716	785	0.17			
WBR	0.5	745	83	0.11	384	64	0.17			
		N/S Movements		0.09			0.18			
		E/W Movements		0.29			0.27			
		Rt. Turn Component		0.00			0.00			
		Yellow Clearance		0.05			0.05			
TOTAL CAPACITY UTILIZATION				0.44					0.51	
LEVEL OF SERVICE (LOS)				A					A	

PROJECT:		City of Orange General Plan Update								
SCENARIO:		Project - With Meats Interchange								
INTERSECTION:		36 Eckhoff St. @ Orangewood Ave.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	1	1,700	147	0.09	1,700	219	0.13	*		
NBT	1.5	2,285	209	0.09	1,808	126	0.07			
NBR	0.5	1,115	102	0.09	1,592	111	0.07			
SBL	1	1,700	15	0.01	1,700	97	0.06			
SBT	1	1,700	84	0.05	1,700	353	0.21	*		
SBR(free)	f		311	0.00		1,132				
EBL	2	3,400	956	0.28	3,400	283	0.08			
EBT	2	3,400	1,253	0.37	3,400	942	0.28	*		
EBR	1	1,700	130	0.08	1,700	441	0.26			
WBL	2	3,400	36	0.01	3,400	96	0.03	*		
WBT	2.5	4,514	578	0.13	4,892	989	0.20			
WBR	0.5	586	75	0.13	208	42	0.20			
		N/S Movements		0.14			0.34			
		E/W Movements		0.41			0.31			
		Rt. Turn Component		0.00			0.00			
		Yellow Clearance		0.05			0.05			
TOTAL CAPACITY UTILIZATION				0.60					0.69	
LEVEL OF SERVICE (LOS)				A					B	

PROJECT:		City of Orange General Plan Update								
SCENARIO:		Alternative 1 - Project Without Meats Interchange								
INTERSECTION:		36 Eckhoff St. @ Orangewood Ave.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	1	1,700	157	0.09	1,700	211	0.12	*		
NBT	1.5	2,291	223	0.10	1,831	126	0.07			
NBR	0.5	1,109	108	0.10	1,569	108	0.07			
SBL	1	1,700	15	0.01	1,700	101	0.06			
SBT	1	1,700	84	0.05	1,700	351	0.21	*		
SBR(free)	f		311			1,161				
EBL	2	3,400	974	0.29	3,400	300	0.09			
EBT	2	3,400	1,257	0.37	3,400	972	0.29	*		
EBR	1	1,700	131	0.08	1,700	435	0.26			
WBL	2	3,400	35	0.01	3,400	94	0.03	*		
WBT	2.5	4,519	568	0.13	4,885	999	0.20			
WBR	0.5	581	73	0.13	215	44	0.20			
		N/S Movements		0.14			0.33			
		E/W Movements		0.41			0.31			
		Rt. Turn Component		0.00			0.00			
		Yellow Clearance		0.05			0.05			
TOTAL CAPACITY UTILIZATION				0.60					0.69	
LEVEL OF SERVICE (LOS)				A					B	

PROJECT:		City of Orange General Plan Update								
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC								
INTERSECTION:		36 Eckhoff St. @ Orangewood Ave.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	1	1,700	126	0.07	1,700	192	0.11	*		
NBT	1.5	2,421	188	0.08	2,055	133	0.06			
NBR	0.5	979	76	0.08	1,345	87	0.06			
SBL	1	1,700	13	0.01	1,700	85	0.05			
SBT	1	1,700	88	0.05	1,700	333	0.20	*		
SBR(free)	f		298			1,104				
EBL	2	3,400	959	0.28	3,400	335	0.10	*		
EBT	2	3,400	1,031	0.30	3,400	829	0.24			
EBR	1	1,700	128	0.08	1,700	419	0.25			
WBL	2	3,400	35	0.01	3,400	78	0.02			
WBT	2.5	4,489	536	0.12	4,850	835	0.17	*		
WBR	0.5	611	73	0.12	250	43	0.17			
		N/S Movements		0.13			0.31			
		E/W Movements		0.40			0.27			
		Rt. Turn Component		0.00			0.00			
		Yellow Clearance		0.05			0.05			
TOTAL CAPACITY UTILIZATION				0.58					0.63	
LEVEL OF SERVICE (LOS)				A					B	

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update								
SCENARIO:		No Project								
INTERSECTION:		37 State College Blvd. @ Orangewood Ave.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	2	3,400	94	0.03	3,400	46	0.01	*	*	
NBT	4	6,800	648	0.10	6,800	798	0.12			
NBR	1	1,700	279	0.16	1,700	215	0.13			
SBL	2	3,400	288	0.08	3,400	193	0.06			
SBT	4	6,800	1,061	0.16	6,800	1,159	0.17	*	*	
SBR	1	1,700	310	0.18	1,700	290	0.17			
EBL	2	3,400	297	0.09	3,400	213	0.06	*	*	
EBT	3	5,100	992	0.19	5,100	516	0.10			
EBR	1	1,700	30	0.02	1,700	71	0.04			
WBL	2	3,400	300	0.09	3,400	427	0.13	*	*	
WBT	2	3,400	642	0.19	3,400	1,119	0.33	*	*	
WBR	1	1,700	207	0.12	1,700	394	0.23			
N/S Movements				0.18					0.18	
E/W Movements				0.28					0.39	
Rt. Turn Component				0.00					0.00	
Yellow Clearance				0.05					0.05	
TOTAL CAPACITY UTILIZATION				0.52					0.63	
LEVEL OF SERVICE (LOS)				A					B	

PROJECT:		City of Orange General Plan Update								
SCENARIO:		Project - With Meats Interchange								
INTERSECTION:		37 State College Blvd. @ Orangewood Ave.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	2	3,400	93	0.03	3,400	45	0.01			
NBT	4	6,800	721	0.11	6,800	858	0.13	*	*	
NBR	1	1,700	447	0.26	1,700	254	0.15	*	*	
SBL	2	3,400	521	0.15	3,400	294	0.09	*	*	
SBT	4	6,800	1,358	0.20	6,800	1,257	0.18			
SBR	1	1,700	310	0.18	1,700	290	0.17			
EBL	2	3,400	297	0.09	3,400	227	0.07	*	*	
EBT	3	5,100	1,193	0.23	5,100	602	0.12			
EBR	1	1,700	30	0.02	1,700	52	0.03			
WBL	2	3,400	369	0.11	3,400	517	0.15	*	*	
WBT	2	3,400	617	0.18	3,400	1,181	0.35	*	*	
WBR	1	1,700	250	0.15	1,700	691	0.41			
N/S Movements				0.26					0.21	
E/W Movements				0.34					0.41	
Rt. Turn Component				0.05					0.00	
Yellow Clearance				0.05					0.05	
TOTAL CAPACITY UTILIZATION				0.70					0.68	
LEVEL OF SERVICE (LOS)				B					B	

PROJECT:		City of Orange General Plan Update								
SCENARIO:		Alternative 1 - Project Without Meats Interchange								
INTERSECTION:		37 State College Blvd. @ Orangewood Ave.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	2	3,400	93	0.03	3,400	45	0.01			
NBT	4	6,800	720	0.11	6,800	868	0.13	*	*	
NBR	1	1,700	448	0.26	1,700	254	0.15	*	*	
SBL	2	3,400	528	0.16	3,400	303	0.09	*	*	
SBT	4	6,800	1,367	0.20	6,800	1,280	0.19			
SBR	1	1,700	314	0.18	1,700	290	0.17			
EBL	2	3,400	297	0.09	3,400	234	0.07	*	*	
EBT	3	5,100	1,193	0.23	5,100	614	0.12			
EBR	1	1,700	30	0.02	1,700	53	0.03			
WBL	2	3,400	371	0.11	3,400	517	0.15	*	*	
WBT	2	3,400	623	0.18	3,400	1,195	0.35	*	*	
WBR	1	1,700	252	0.15	1,700	707	0.42			
N/S Movements				0.26					0.22	
E/W Movements				0.34					0.42	
Rt. Turn Component				0.05					0.00	
Yellow Clearance				0.05					0.05	
TOTAL CAPACITY UTILIZATION				0.70					0.69	
LEVEL OF SERVICE (LOS)				B					B	

PROJECT:		City of Orange General Plan Update								
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC								
INTERSECTION:		37 State College Blvd. @ Orangewood Ave.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	2	3,400	93	0.03	3,400	45	0.01			
NBT	4	6,800	665	0.10	6,800	840	0.12	*	*	
NBR	1	1,700	431	0.25	1,700	275	0.16	*	*	
SBL	2	3,400	555	0.16	3,400	332	0.10	*	*	
SBT	4	6,800	1,325	0.19	6,800	1,123	0.17			
SBR	1	1,700	308	0.18	1,700	290	0.17			
EBL	2	3,400	297	0.09	3,400	211	0.06	*	*	
EBT	3	5,100	1,144	0.22	5,100	618	0.12			
EBR	1	1,700	30	0.02	1,700	50	0.03			
WBL	2	3,400	345	0.10	3,400	471	0.14	*	*	
WBT	2	3,400	587	0.17	3,400	1,139	0.34	*	*	
WBR	1	1,700	244	0.14	1,700	719	0.42			
N/S Movements				0.26					0.22	
E/W Movements				0.33					0.40	
Rt. Turn Component				0.05					0.00	
Yellow Clearance				0.05					0.05	
TOTAL CAPACITY UTILIZATION				0.69					0.67	
LEVEL OF SERVICE (LOS)				B					B	

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		38 Prospect St. @ Chapman Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	130	0.08	1,700	163	0.10	
NBT	2	3,400	438	0.13 *	3,400	505	0.15 *	
NBR	1	1,700	69	0.04	1,700	105	0.06	
SBL	1	1,700	199	0.12 *	1,700	295	0.17 *	
SBT	2	3,400	559	0.16	3,400	282	0.08	
SBR	1	1,700	643	0.38 *	1,700	458	0.27 *	
EBL	2	3,400	346	0.10 *	3,400	408	0.12	
EBT	3	5,100	970	0.19	5,100	2,250	0.44 *	
EBR	1	1,700	135	0.08	1,700	139	0.08	
WBL	2	3,400	174	0.05	3,400	109	0.03 *	
WBT	3	5,100	1,902	0.37 *	5,100	1,339	0.26	
WBR	1	1,700	154	0.09	1,700	247	0.15	
N/S Movements				0.25			0.32	
E/W Movements				0.47			0.47	
Rt. Turn Component				0.11			0.00	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.88			0.85	
LEVEL OF SERVICE (LOS)				D			D	

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Project - With Meats Interchange						
INTERSECTION:		38 Prospect St. @ Chapman Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	133	0.08 *	1,700	160	0.09	
NBT	2	3,400	447	0.13	3,400	505	0.15 *	
NBR	1	1,700	71	0.04	1,700	115	0.07	
SBL	1	1,700	184	0.11	1,700	283	0.17 *	
SBT	2	3,400	569	0.17 *	3,400	290	0.09	
SBR	1	1,700	587	0.35 *	1,700	397	0.23 *	
EBL	2	3,400	329	0.10 *	3,400	415	0.12	
EBT	3	5,100	1,024	0.20	5,100	2,195	0.43 *	
EBR	1	1,700	157	0.09	1,700	145	0.09	
WBL	2	3,400	181	0.05	3,400	127	0.04 *	
WBT	3	5,100	1,769	0.35 *	5,100	1,312	0.26	
WBR	1	1,700	131	0.08	1,700	246	0.14	
N/S Movements				0.25			0.32	
E/W Movements				0.44			0.47	
Rt. Turn Component				0.08			0.03	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.82			0.86	
LEVEL OF SERVICE (LOS)				D			D	

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 1 - Project Without Meats Interchange						
INTERSECTION:		38 Prospect St. @ Chapman Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	130	0.08	1,700	163	0.10	
NBT	2	3,400	459	0.14 *	3,400	529	0.16 *	
NBR	1	1,700	69	0.04	1,700	110	0.06	
SBL	1	1,700	200	0.12 *	1,700	289	0.17 *	
SBT	2	3,400	587	0.17	3,400	300	0.09	
SBR	1	1,700	604	0.36 *	1,700	432	0.25 *	
EBL	2	3,400	371	0.11 *	3,400	408	0.12	
EBT	3	5,100	1,091	0.21	5,100	2,231	0.44 *	
EBR	1	1,700	159	0.09	1,700	149	0.09	
WBL	2	3,400	181	0.05	3,400	121	0.04 *	
WBT	3	5,100	1,771	0.35 *	5,100	1,315	0.26	
WBR	1	1,700	146	0.09	1,700	254	0.15	
N/S Movements				0.25			0.33	
E/W Movements				0.46			0.47	
Rt. Turn Component				0.07			0.05	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.83			0.89	
LEVEL OF SERVICE (LOS)				D			D	

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC						
INTERSECTION:		38 Prospect St. @ Chapman Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	134	0.08	1,700	142	0.08	
NBT	2	3,400	415	0.12 *	3,400	443	0.13 *	
NBR	1	1,700	71	0.04	1,700	95	0.06	
SBL	1	1,700	185	0.11 *	1,700	255	0.15 *	
SBT	2	3,400	512	0.15	3,400	253	0.07	
SBR	1	1,700	593	0.35 *	1,700	381	0.22 *	
EBL	2	3,400	289	0.09 *	3,400	415	0.12	
EBT	3	5,100	968	0.19	5,100	2,100	0.41 *	
EBR	1	1,700	133	0.08	1,700	135	0.08	
WBL	2	3,400	158	0.05	3,400	117	0.03 *	
WBT	3	5,100	1,743	0.34 *	5,100	1,323	0.26	
WBR	1	1,700	119	0.07	1,700	247	0.15	
N/S Movements				0.23			0.28	
E/W Movements				0.43			0.45	
Rt. Turn Component				0.11			0.03	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.82			0.80	
LEVEL OF SERVICE (LOS)				D			C	

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		39 Prospect St. @ Walnut Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	349	0.21	1,700	157	0.09	
NBT	1.5	2,633	398	0.15	2,426	608	0.25	
NBR	0.5	767	116	0.15	974	244	0.25	
SBL	1	1,700	194	0.11	1,700	401	0.24	
SBT	1.5	2,767	857	0.31	3,246	761	0.23	
SBR	0.5	633	196	0.31	154	36	0.23	
EBL	1	1,700	7	0.00	1,700	61	0.04	
EBT	1.5	1,700	21	0.01	814	165	0.20	
EBR	0.5	1,700	182	0.11	2,586	524	0.20	
WBL	1	1,700	468	0.28	1,700	188	0.11	
WBT	1.5	1,658	274	0.17	528	50	0.09	
WBR	0.5	1,742	288	0.17	2,872	272	0.09	
N/S Movements				0.52	0.49			
E/W Movements				0.29	0.31			
Rt. Turn Component				0.00	0.00			
Yellow Clearance				0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.85	0.85			
LEVEL OF SERVICE (LOS)				D	D			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Project - With Meats Interchange						
INTERSECTION:		39 Prospect St. @ Walnut Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	197	0.12	1,700	197	0.12	
NBT	1.5	2,592	398	0.15	2,657	608	0.23	
NBR	0.5	808	124	0.15	743	170	0.23	
SBL	1	1,700	174	0.10	1,700	296	0.17	
SBT	1.5	3,073	873	0.28	3,198	761	0.24	
SBR	0.5	327	93	0.28	202	48	0.24	
EBL	1	1,700	11	0.01	1,700	31	0.02	
EBT	0.5	140	23	0.16	263	57	0.22	
EBR	0.5	1,560	256	0.16	1,437	312	0.22	
WBL	1	1,700	291	0.17	1,700	166	0.10	
WBT	0.5	442	70	0.16	308	46	0.15	
WBR	0.5	1,258	199	0.16	1,392	208	0.15	
N/S Movements				0.40	0.40			
E/W Movements				0.34	0.31			
Rt. Turn Component				0.00	0.00			
Yellow Clearance				0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.79	0.77			
LEVEL OF SERVICE (LOS)				C	C			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 1 - Project Without Meats Interchange						
INTERSECTION:		39 Prospect St. @ Walnut Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	201	0.12	1,700	202	0.12	
NBT	1.5	2,497	398	0.16	2,548	598	0.23	
NBR	0.5	903	144	0.16	852	200	0.23	
SBL	1	1,700	192	0.11	1,700	306	0.18	
SBT	1.5	3,094	911	0.29	3,218	761	0.24	
SBR	0.5	306	90	0.29	182	43	0.24	
EBL	1	1,700	11	0.01	1,700	28	0.02	
EBT	0.5	146	24	0.16	256	56	0.22	
EBR	0.5	1,554	256	0.16	1,444	316	0.22	
WBL	1	1,700	303	0.18	1,700	196	0.12	
WBT	0.5	414	68	0.16	303	47	0.16	
WBR	0.5	1,286	211	0.16	1,397	217	0.16	
N/S Movements				0.41	0.41			
E/W Movements				0.34	0.33			
Rt. Turn Component				0.00	0.00			
Yellow Clearance				0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.81	0.80			
LEVEL OF SERVICE (LOS)				D	C			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC						
INTERSECTION:		39 Prospect St. @ Walnut Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	176	0.10	1,700	179	0.11	
NBT	1.5	2,587	398	0.15	2,706	608	0.24	
NBR	0.5	813	125	0.15	694	156	0.18	
SBL	1	1,700	173	0.10	1,700	252	0.15	
SBT	1.5	3,094	829	0.27	3,230	761	0.24	
SBR	0.5	306	82	0.27	170	40	0.22	
EBL	1	1,700	10	0.01	1,700	25	0.01	
EBT	0.5	143	22	0.15	230	44	0.17	
EBR	0.5	1,557	239	0.15	1,470	281	0.19	
WBL	1	1,700	273	0.16	1,700	175	0.10	
WBT	0.5	416	61	0.15	304	42	0.14	
WBR	0.5	1,284	188	0.15	1,396	193	0.14	
N/S Movements				0.37	0.39			
E/W Movements				0.31	0.27			
Rt. Turn Component				0.00	0.00			
Yellow Clearance				0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.74	0.71			
LEVEL OF SERVICE (LOS)				C	C			

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update							
SCENARIO:		No Project							
INTERSECTION:		40 Santiago Blvd. @ Meats Ave.							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	2	3,400	72	0.02	3,400	368	0.11	*	
NBT	2	3,400	999	0.29	3,400	636	0.19		
NBR	1	1,700	210	0.12	1,700	496	0.29	*	
SBL	2	3,400	470	0.14	3,400	86	0.03		
SBT	1.5	2,691	926	0.34	2,930	667	0.23	*	
SBR	0.5	709	244	0.34	470	107	0.23		
EBL	1	1,700	102	0.06	1,700	121	0.07		
EBT	1.5	1,753	101	0.06	3,028	634	0.21	*	
EBR	1.5	3,347	567	0.17	2,072	434	0.21		
WBL	2	3,400	446	0.13	3,400	205	0.06	*	
WBT	1.5	2,616	564	0.22	2,999	269	0.09		
WBR	0.5	784	169	0.22	401	36	0.09		
N/S Movements				0.43				0.34	
E/W Movements				0.28				0.27	
Rt. Turn Component				0.09				0.04	
Yellow Clearance				0.05				0.05	
TOTAL CAPACITY UTILIZATION				0.85				0.70	
LEVEL OF SERVICE (LOS)				D				B	

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Project - With Meats Interchange							
INTERSECTION:		40 Santiago Blvd. @ Meats Ave.							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	2	3,400	127	0.04	3,400	476	0.14	*	
NBT	2	3,400	964	0.28	3,400	718	0.21		
NBR	1	1,700	333	0.20	1,700	525	0.31	*	
SBL	2	3,400	426	0.13	3,400	56	0.02		
SBT	1.5	2,732	884	0.32	3,025	573	0.19	*	
SBR	0.5	668	216	0.32	375	71	0.19		
EBL	1	1,700	98	0.06	1,700	145	0.09		
EBT	1.5	1,460	112	0.08	2,452	714	0.29	*	
EBR	1.5	3,640	1,082	0.30	2,648	771	0.29		
WBL	2	3,400	517	0.15	3,400	262	0.08	*	
WBT	1.5	2,730	575	0.21	3,035	266	0.09		
WBR	0.5	670	141	0.21	365	32	0.09		
N/S Movements				0.41				0.33	
E/W Movements				0.27				0.37	
Rt. Turn Component				0.18				0.02	
Yellow Clearance				0.05				0.05	
TOTAL CAPACITY UTILIZATION				0.91				0.77	
LEVEL OF SERVICE (LOS)				E				C	

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Alternative 1 - Project Without Meats Interchange							
INTERSECTION:		40 Santiago Blvd. @ Meats Ave.							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	2	3,400	108	0.03	3,400	410	0.12	*	
NBT	2	3,400	983	0.29	3,400	624	0.18		
NBR	1	1,700	274	0.16	1,700	466	0.27	*	
SBL	2	3,400	418	0.12	3,400	68	0.02		
SBT	1.5	2,740	1,043	0.38	2,926	630	0.22	*	
SBR	0.5	660	251	0.38	474	102	0.22		
EBL	1	1,700	93	0.05	1,700	123	0.07		
EBT	1.5	1,701	101	0.06	2,883	649	0.23	*	
EBR	1.5	3,399	615	0.18	2,217	499	0.23		
WBL	2	3,400	471	0.14	3,400	194	0.06	*	
WBT	1.5	2,720	564	0.21	3,033	256	0.08		
WBR	0.5	680	141	0.21	367	31	0.08		
N/S Movements				0.41				0.34	
E/W Movements				0.26				0.28	
Rt. Turn Component				0.09				0.03	
Yellow Clearance				0.05				0.05	
TOTAL CAPACITY UTILIZATION				0.81				0.70	
LEVEL OF SERVICE (LOS)				D				B	

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC							
INTERSECTION:		40 Santiago Blvd. @ Meats Ave.							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	2	3,400	88	0.03	3,400	480	0.14	*	
NBT	2	3,400	912	0.27	3,400	693	0.20		
NBR	1	1,700	273	0.16	1,700	506	0.30	*	
SBL	2	3,400	426	0.13	3,400	56	0.02		
SBT	1.5	2,735	819	0.30	3,015	572	0.19	*	
SBR	0.5	665	199	0.30	385	73	0.19		
EBL	1	1,700	144	0.08	1,700	141	0.08		
EBT	1.5	1,700	121	0.07	2,426	694	0.29	*	
EBR	1.5	3,400	997	0.29	2,674	765	0.29		
WBL	2	3,400	474	0.14	3,400	259	0.08	*	
WBT	1.5	2,708	564	0.21	3,050	270	0.09		
WBR	0.5	692	144	0.21	350	31	0.09		
N/S Movements				0.39				0.33	
E/W Movements				0.29				0.36	
Rt. Turn Component				0.14				0.02	
Yellow Clearance				0.05				0.05	
TOTAL CAPACITY UTILIZATION				0.88				0.76	
LEVEL OF SERVICE (LOS)				D				C	

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		41 Wanda Rd. @ Villa Park Rd.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	242	0.14	1,700	120	0.07	
NBT	1.5	2,796	532	0.19 *	2,671	550	0.21 *	
NBR	0.5	604	115	0.19	729	150	0.21	
SBL	1	1,700	375	0.22 *	1,700	309	0.18 *	
SBT	2	3,400	668	0.20	3,400	617	0.18	
SBR	1	1,700	639	0.38 *	1,700	414	0.24	
EBL	2	3,400	300	0.09 *	3,400	534	0.16	
EBT	2	3,400	760	0.22	3,400	1,352	0.40 *	
EBR	1	1,700	163	0.10	1,700	276	0.16	
WBL	1	1,700	188	0.11	1,700	159	0.09 *	
WBT	2	3,400	1,677	0.49 *	3,400	976	0.29	
WBR	1	1,700	347	0.20	1,700	384	0.23	
N/S Movements				0.41			0.39	
E/W Movements				0.58			0.49	
Rt. Turn Component				0.09			0.00	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				1.13			0.93	
LEVEL OF SERVICE (LOS)				F			E	

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Project - With Meats Interchange						
INTERSECTION:		41 Wanda Rd. @ Villa Park Rd.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	242	0.14	1,700	117	0.07	
NBT	1.5	2,706	585	0.22 *	2,644	577	0.22 *	
NBR	0.5	694	150	0.22	756	165	0.22	
SBL	1	1,700	474	0.28 *	1,700	373	0.22 *	
SBT	2	3,400	701	0.21	3,400	682	0.20	
SBR	1	1,700	603	0.35 *	1,700	405	0.24	
EBL	2	3,400	264	0.08 *	3,400	486	0.14	
EBT	2	3,400	796	0.23	3,400	1,294	0.38 *	
EBR	1	1,700	163	0.10	1,700	242	0.14	
WBL	1	1,700	204	0.12	1,700	169	0.10 *	
WBT	2	3,400	1,637	0.48 *	3,400	924	0.27	
WBR	1	1,700	381	0.22	1,700	426	0.25	
N/S Movements				0.50			0.44	
E/W Movements				0.56			0.48	
Rt. Turn Component				0.07			0.00	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				1.18			0.97	
LEVEL OF SERVICE (LOS)				F			E	

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 1 - Project Without Meats Interchange						
INTERSECTION:		41 Wanda Rd. @ Villa Park Rd.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	230	0.14	1,700	132	0.08	
NBT	1.5	2,757	656	0.24 *	2,677	589	0.22 *	
NBR	0.5	643	153	0.24	723	159	0.22	
SBL	1	1,700	386	0.23 *	1,700	287	0.17 *	
SBT	2	3,400	715	0.21	3,400	705	0.21	
SBR	1	1,700	617	0.36 *	1,700	398	0.23	
EBL	2	3,400	278	0.08 *	3,400	507	0.15	
EBT	2	3,400	761	0.22	3,400	1,274	0.37 *	
EBR	1	1,700	161	0.09	1,700	320	0.19	
WBL	1	1,700	204	0.12	1,700	180	0.11 *	
WBT	2	3,400	1,643	0.48 *	3,400	932	0.27	
WBR	1	1,700	336	0.20	1,700	357	0.21	
N/S Movements				0.47			0.39	
E/W Movements				0.57			0.48	
Rt. Turn Component				0.07			0.00	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				1.15			0.92	
LEVEL OF SERVICE (LOS)				F			E	

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC						
INTERSECTION:		41 Wanda Rd. @ Villa Park Rd.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	242	0.14	1,700	117	0.07	
NBT	1.5	2,659	542	0.20 *	2,653	511	0.19 *	
NBR	0.5	741	151	0.20	747	144	0.19	
SBL	1	1,700	474	0.28 *	1,700	351	0.21 *	
SBT	2	3,400	616	0.18	3,400	632	0.19	
SBR	1	1,700	581	0.34 *	1,700	387	0.23	
EBL	2	3,400	274	0.08 *	3,400	472	0.14	
EBT	2	3,400	804	0.24	3,400	1,241	0.37 *	
EBR	1	1,700	163	0.10	1,700	247	0.15	
WBL	1	1,700	185	0.11	1,700	158	0.09 *	
WBT	2	3,400	1,625	0.48 *	3,400	890	0.26	
WBR	1	1,700	362	0.21	1,700	410	0.24	
N/S Movements				0.48			0.40	
E/W Movements				0.56			0.46	
Rt. Turn Component				0.08			0.00	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				1.17			0.91	
LEVEL OF SERVICE (LOS)				F			E	

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		42 Tustin St. @ Chapman Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	57	0.02	3,400	97	0.03	
NBT	3	5,100	649	0.13 *	5,100	968	0.19 *	
NBR	1	1,700	203	0.12	1,700	383	0.23	
SBL	2	3,400	672	0.20 *	3,400	635	0.19 *	
SBT	3	5,100	1,422	0.28	5,100	831	0.16	
SBR	1	1,700	182	0.11	1,700	162	0.10	
EBL	2	3,400	235	0.07 *	3,400	280	0.08	
EBT	3	5,100	970	0.19	5,100	902	0.18 *	
EBR	1	1,700	139	0.08	1,700	68	0.04	
WBL	2	3,400	464	0.14	3,400	501	0.15 *	
WBT	3	5,100	1,381	0.27 *	5,100	1,036	0.20	
WBR	1	1,700	353	0.21	1,700	903	0.53 *	
N/S Movements				0.32			0.38	
E/W Movements				0.34			0.32	
Rt. Turn Component				0.00			0.14	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.71			0.89	
LEVEL OF SERVICE (LOS)				C			D	

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Project - With Meats Interchange						
INTERSECTION:		42 Tustin St. @ Chapman Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	59	0.02	3,400	104	0.03	
NBT	3	5,100	697	0.14 *	5,100	1,016	0.20 *	
NBR	1	1,700	250	0.15	1,700	382	0.22	
SBL	2	3,400	713	0.21 *	3,400	617	0.18 *	
SBT	3	5,100	1,344	0.26	5,100	866	0.17	
SBR	1	1,700	182	0.11	1,700	154	0.09	
EBL	2	3,400	235	0.07 *	3,400	280	0.08	
EBT	3	5,100	1,078	0.21	5,100	1,002	0.20 *	
EBR	1	1,700	126	0.07	1,700	82	0.05	
WBL	2	3,400	489	0.14	3,400	462	0.14 *	
WBT	3	5,100	1,503	0.29 *	5,100	961	0.19	
WBR	1	1,700	397	0.23	1,700	819	0.48 *	
N/S Movements				0.35			0.38	
E/W Movements				0.36			0.33	
Rt. Turn Component				0.00			0.11	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.76			0.87	
LEVEL OF SERVICE (LOS)				C			D	

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 1 - Project Without Meats Interchange						
INTERSECTION:		42 Tustin St. @ Chapman Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	59	0.02	3,400	104	0.03	
NBT	3	5,100	793	0.16 *	5,100	1,031	0.20 *	
NBR	1	1,700	268	0.16	1,700	402	0.24	
SBL	2	3,400	766	0.23 *	3,400	619	0.18 *	
SBT	3	5,100	1,358	0.27	5,100	942	0.18	
SBR	1	1,700	182	0.11	1,700	162	0.10	
EBL	2	3,400	227	0.07	3,400	280	0.08	
EBT	3	5,100	1,066	0.21 *	5,100	949	0.19 *	
EBR	1	1,700	118	0.07	1,700	84	0.05	
WBL	2	3,400	525	0.15 *	3,400	524	0.15 *	
WBT	3	5,100	1,504	0.29	5,100	950	0.19	
WBR	1	1,700	481	0.28	1,700	826	0.49 *	
N/S Movements				0.38			0.38	
E/W Movements				0.36			0.34	
Rt. Turn Component				0.00			0.12	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.79			0.89	
LEVEL OF SERVICE (LOS)				C			D	

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC						
INTERSECTION:		42 Tustin St. @ Chapman Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	59	0.02	3,400	101	0.03	
NBT	3	5,100	573	0.11 *	5,100	981	0.19 *	
NBR	1	1,700	202	0.12	1,700	364	0.21	
SBL	2	3,400	673	0.20 *	3,400	583	0.17 *	
SBT	3	5,100	1,362	0.27	5,100	787	0.15	
SBR	1	1,700	182	0.11	1,700	162	0.10	
EBL	2	3,400	235	0.07 *	3,400	280	0.08	
EBT	3	5,100	1,024	0.20	5,100	1,013	0.20 *	
EBR	1	1,700	129	0.08	1,700	79	0.05	
WBL	2	3,400	479	0.14	3,400	454	0.13 *	
WBT	3	5,100	1,550	0.30 *	5,100	1,000	0.20	
WBR	1	1,700	368	0.22	1,700	848	0.50 *	
N/S Movements				0.31			0.36	
E/W Movements				0.37			0.33	
Rt. Turn Component				0.00			0.13	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.73			0.88	
LEVEL OF SERVICE (LOS)				C			D	

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update								
SCENARIO:		No Project								
INTERSECTION:		43 Tustin St. @ Collins Ave.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	2	3,400	151	0.04	3,400	210	0.06	*		
NBT	3	5,100	792	0.16	5,100	1,274	0.25			
NBR	1	1,700	62	0.04	1,700	164	0.10			
SBL	2	3,400	116	0.03	3,400	272	0.08			
SBT	3	5,100	1,296	0.25	5,100	1,509	0.30	*		
SBR	1	1,700	304	0.18	1,700	194	0.11			
EBL	2	3,400	241	0.07	3,400	450	0.13	*		
EBT	2.5	3,400	154	0.05	3,604	612	0.17			
EBR	0.5	1,700	131	0.08	1,496	254	0.17			
WBL	2	3,400	168	0.05	3,400	197	0.06			
WBT	2.5	3,513	436	0.12	3,478	356	0.10	*		
WBR	0.5	1,587	197	0.12	1,622	166	0.10			
N/S Movements				0.30					0.36	
E/W Movements				0.20					0.23	
Rt. Turn Component				0.00					0.00	
Yellow Clearance				0.05					0.05	
TOTAL CAPACITY UTILIZATION				0.54					0.64	
LEVEL OF SERVICE (LOS)				A					B	

PROJECT:		City of Orange General Plan Update								
SCENARIO:		Project - With Meats Interchange								
INTERSECTION:		43 Tustin St. @ Collins Ave.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	2	3,400	185	0.05	3,400	233	0.07	*		
NBT	3	5,100	749	0.15	5,100	1,213	0.24			
NBR	1	1,700	62	0.04	1,700	182	0.11			
SBL	2	3,400	107	0.03	3,400	291	0.09			
SBT	3	5,100	1,300	0.25	5,100	1,397	0.27	*		
SBR	1	1,700	315	0.19	1,700	183	0.11			
EBL	2	3,400	319	0.09	3,400	396	0.12	*		
EBT	2.5	3,400	191	0.06	3,752	707	0.19	*		
EBR	0.5	1,700	160	0.09	1,348	254	0.19			
WBL	2	3,400	168	0.05	3,400	219	0.06	*		
WBT	2.5	3,783	491	0.13	3,640	404	0.11			
WBR	0.5	1,317	171	0.13	1,460	162	0.11			
N/S Movements				0.31					0.34	
E/W Movements				0.22					0.25	
Rt. Turn Component				0.00					0.00	
Yellow Clearance				0.05					0.05	
TOTAL CAPACITY UTILIZATION				0.58					0.65	
LEVEL OF SERVICE (LOS)				A					B	

PROJECT:		City of Orange General Plan Update								
SCENARIO:		Alternative 1 - Project Without Meats Interchange								
INTERSECTION:		43 Tustin St. @ Collins Ave.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	2	3,400	219	0.06	3,400	227	0.07	*		
NBT	3	5,100	926	0.18	5,100	1,360	0.27			
NBR	1	1,700	71	0.04	1,700	204	0.12			
SBL	2	3,400	111	0.03	3,400	302	0.09			
SBT	3	5,100	1,412	0.28	5,100	1,593	0.31	*		
SBR	1	1,700	286	0.17	1,700	166	0.10			
EBL	2	3,400	275	0.08	3,400	371	0.11	*		
EBT	2.5	3,400	179	0.05	3,657	664	0.18	*		
EBR	0.5	1,700	158	0.09	1,443	262	0.18			
WBL	2	3,400	170	0.05	3,400	265	0.08	*		
WBT	2.5	3,735	465	0.12	3,493	387	0.11			
WBR	0.5	1,365	170	0.12	1,607	178	0.11			
N/S Movements				0.34					0.38	
E/W Movements				0.21					0.26	
Rt. Turn Component				0.00					0.00	
Yellow Clearance				0.05					0.05	
TOTAL CAPACITY UTILIZATION				0.60					0.69	
LEVEL OF SERVICE (LOS)				A					B	

PROJECT:		City of Orange General Plan Update								
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC								
INTERSECTION:		43 Tustin St. @ Collins Ave.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	2	3,400	170	0.05	3,400	256	0.08	*		
NBT	3	5,100	596	0.12	5,100	1,131	0.22			
NBR	1	1,700	62	0.04	1,700	164	0.10			
SBL	2	3,400	88	0.03	3,400	250	0.07			
SBT	3	5,100	1,207	0.24	5,100	1,224	0.24	*		
SBR	1	1,700	344	0.20	1,700	219	0.13			
EBL	2	3,400	317	0.09	3,400	442	0.13	*		
EBT	2.5	3,400	165	0.05	3,732	674	0.18			
EBR	0.5	1,700	157	0.09	1,368	247	0.18			
WBL	2	3,400	168	0.05	3,400	171	0.05			
WBT	2.5	3,918	487	0.12	3,671	375	0.10	*		
WBR	0.5	1,182	147	0.12	1,429	146	0.10			
N/S Movements				0.29					0.32	
E/W Movements				0.22					0.23	
Rt. Turn Component				0.00					0.00	
Yellow Clearance				0.05					0.05	
TOTAL CAPACITY UTILIZATION				0.55					0.60	
LEVEL OF SERVICE (LOS)				A					A	

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		44 Tustin St. @ Fairhaven Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	216	0.06	3,400	396	0.12	
NBT	3	5,100	1,377	0.27	5,100	1,660	0.33	
NBR	1	1,700	216	0.13	1,700	299	0.18	
SBL	2	3,400	174	0.05	3,400	387	0.11	
SBT	3	5,100	2,374	0.47	5,100	1,509	0.30	
SBR	1	1,700	97	0.06	1,700	160	0.09	
EBL	1	1,700	111	0.07	1,700	108	0.06	
EBT	1.5	1,895	249	0.13	2,819	424	0.15	
EBR	1.5	3,205	421	0.13	2,281	343	0.15	
WBL	2	3,400	393	0.12	3,400	248	0.07	
WBT	1.5	2,273	460	0.20	2,603	297	0.11	
WBR	1.5	2,827	572	0.20	2,497	285	0.11	
N/S Movements				0.53			0.44	
E/W Movements				0.27			0.22	
Rt. Turn Component				0.00			0.00	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.85			0.71	
LEVEL OF SERVICE (LOS)				D			C	

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Project - With Meats Interchange						
INTERSECTION:		44 Tustin St. @ Fairhaven Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	223	0.07	3,400	354	0.10	
NBT	3	5,100	1,422	0.28	5,100	1,699	0.33	
NBR	1	1,700	232	0.14	1,700	290	0.17	
SBL	2	3,400	174	0.05	3,400	404	0.12	
SBT	3	5,100	2,385	0.47	5,100	1,530	0.30	
SBR	1	1,700	92	0.05	1,700	160	0.09	
EBL	1	1,700	111	0.07	1,700	108	0.06	
EBT	1.5	1,879	249	0.13	2,704	431	0.16	
EBR	1.5	3,221	427	0.13	2,396	382	0.16	
WBL	2	3,400	411	0.12	3,400	267	0.08	
WBT	1.5	2,248	451	0.20	2,594	295	0.11	
WBR	1.5	2,852	572	0.20	2,506	285	0.11	
N/S Movements				0.53			0.45	
E/W Movements				0.27			0.24	
Rt. Turn Component				0.00			0.00	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.85			0.74	
LEVEL OF SERVICE (LOS)				D			C	

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 1 - Project Without Meats Interchange						
INTERSECTION:		44 Tustin St. @ Fairhaven Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	223	0.07	3,400	357	0.11	
NBT	3	5,100	1,440	0.28	5,100	1,716	0.34	
NBR	1	1,700	234	0.14	1,700	282	0.17	
SBL	2	3,400	174	0.05	3,400	402	0.12	
SBT	3	5,100	2,430	0.48	5,100	1,585	0.31	
SBR	1	1,700	93	0.05	1,700	160	0.09	
EBL	1	1,700	111	0.07	1,700	108	0.06	
EBT	1.5	1,884	249	0.13	2,805	418	0.15	
EBR	1.5	3,216	425	0.13	2,295	342	0.15	
WBL	2	3,400	410	0.12	3,400	247	0.07	
WBT	1.5	2,240	448	0.20	2,594	295	0.11	
WBR	1.5	2,860	572	0.20	2,506	285	0.11	
N/S Movements				0.54			0.45	
E/W Movements				0.27			0.22	
Rt. Turn Component				0.00			0.00	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.86			0.73	
LEVEL OF SERVICE (LOS)				D			C	

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC						
INTERSECTION:		44 Tustin St. @ Fairhaven Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	191	0.06	3,400	344	0.10	
NBT	3	5,100	1,332	0.26	5,100	1,690	0.33	
NBR	1	1,700	198	0.12	1,700	280	0.16	
SBL	2	3,400	170	0.05	3,400	404	0.12	
SBT	3	5,100	2,380	0.47	5,100	1,455	0.29	
SBR	1	1,700	99	0.06	1,700	160	0.09	
EBL	1	1,700	111	0.07	1,700	108	0.06	
EBT	1.5	1,930	249	0.13	2,666	424	0.16	
EBR	1.5	3,170	409	0.13	2,434	387	0.16	
WBL	2	3,400	378	0.11	3,400	269	0.08	
WBT	1.5	2,240	448	0.20	2,594	295	0.11	
WBR	1.5	2,860	572	0.20	2,506	285	0.11	
N/S Movements				0.52			0.45	
E/W Movements				0.27			0.24	
Rt. Turn Component				0.00			0.00	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.84			0.74	
LEVEL OF SERVICE (LOS)				D			C	

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update							
SCENARIO:		No Project							
INTERSECTION:		45 Tustin St. @ Heim Ave.							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	1	1,700	182	0.11	1,700	199	0.12	*	*
NBT	3	5,100	947	0.19	5,100	1,658	0.33		
NBR	1	1,700	52	0.03	1,700	86	0.05		
SBL	1	1,700	70	0.04	1,700	99	0.06		
SBT	3	5,100	1,373	0.27	5,100	1,440	0.28	*	*
SBR	1	1,700	136	0.08	1,700	176	0.10		
EBL	1	1,700	146	0.09	1,700	491	0.29	*	*
EBT	1	1,700	30	0.02	1,700	83	0.05		
EBR	1	1,700	181	0.11	1,700	177	0.10		
WBL	1	1,700	66	0.04	1,700	124	0.07		
WBT	0.5	344	17	0.05	458	45	0.10	*	*
WBR	0.5	1,356	67	0.05	1,242	122	0.10		
N/S Movements				0.38		0.40			
E/W Movements				0.14		0.39			
Rt. Turn Component				0.00		0.00			
Yellow Clearance				0.05		0.05			
TOTAL CAPACITY UTILIZATION				0.56		0.84			
LEVEL OF SERVICE (LOS)				A		D			

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Project - With Meats Interchange							
INTERSECTION:		45 Tustin St. @ Heim Ave.							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	1	1,700	181	0.11	1,700	278	0.16	*	*
NBT	3	5,100	806	0.16	6,434	1,617	0.25		
NBR	1	1,700	51	0.03	366	92	0.25		
SBL	1	1,700	76	0.04	1,700	99	0.06		
SBT	3	5,100	1,415	0.28	5,929	1,369	0.23	*	*
SBR	1	1,700	149	0.09	871	201	0.23		
EBL	1	1,700	146	0.09	1,700	365	0.21	*	*
EBT	1	1,700	33	0.02	1,129	78	0.07		
EBR	1	1,700	190	0.11	2,271	157	0.07		
WBL	1	1,700	75	0.04	1,700	129	0.08		
WBT	0.5	391	20	0.05	553	55	0.10	*	*
WBR	0.5	1,309	67	0.05	1,147	114	0.10		
N/S Movements				0.38		0.39			
E/W Movements				0.14		0.31			
Rt. Turn Component				0.00		0.00			
Yellow Clearance				0.05		0.05			
TOTAL CAPACITY UTILIZATION				0.57		0.76			
LEVEL OF SERVICE (LOS)				A		C			

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Alternative 1 - Project Without Meats Interchange							
INTERSECTION:		45 Tustin St. @ Heim Ave.							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	1	1,700	184	0.11	1,700	234	0.14	*	*
NBT	3	5,100	964	0.19	6,489	1,796	0.28		
NBR	1	1,700	47	0.03	311	86	0.28		
SBL	1	1,700	59	0.03	1,700	99	0.06		
SBT	3	5,100	1,556	0.31	6,004	1,494	0.25	*	*
SBR	1	1,700	130	0.08	796	198	0.25		
EBL	1	1,700	146	0.09	1,700	534	0.31	*	*
EBT	1	1,700	26	0.02	1,040	85	0.08		
EBR	1	1,700	196	0.12	2,360	193	0.08		
WBL	1	1,700	77	0.05	1,700	123	0.07		
WBT	0.5	328	16	0.05	486	48	0.10	*	*
WBR	0.5	1,372	67	0.05	1,214	120	0.10		
N/S Movements				0.41		0.39			
E/W Movements				0.13		0.41			
Rt. Turn Component				0.00		0.00			
Yellow Clearance				0.05		0.05			
TOTAL CAPACITY UTILIZATION				0.60		0.85			
LEVEL OF SERVICE (LOS)				A		D			

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC							
INTERSECTION:		45 Tustin St. @ Heim Ave.							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	1	1,700	149	0.09	1,700	231	0.14	*	*
NBT	3	5,100	803	0.16	6,429	1,613	0.25		
NBR	1	1,700	45	0.03	371	93	0.25		
SBL	1	1,700	66	0.04	1,700	101	0.06		
SBT	3	5,100	1,469	0.29	6,019	1,388	0.23	*	*
SBR	1	1,700	124	0.07	781	180	0.23		
EBL	1	1,700	146	0.09	1,700	304	0.18	*	*
EBT	1	1,700	29	0.02	1,187	66	0.06		
EBR	1	1,700	201	0.12	2,213	123	0.06		
WBL	1	1,700	80	0.05	1,700	129	0.08		
WBT	0.5	344	17	0.05	514	49	0.10	*	*
WBR	0.5	1,356	67	0.05	1,186	113	0.10		
N/S Movements				0.38		0.37			
E/W Movements				0.14		0.27			
Rt. Turn Component				0.01		0.00			
Yellow Clearance				0.05		0.05			
TOTAL CAPACITY UTILIZATION				0.57		0.69			
LEVEL OF SERVICE (LOS)				A		B			

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		46 Tustin St. @ Katella Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	278	0.08	3,400	397	0.12	
NBT	3	5,100	658	0.13	5,100	1,319	0.26	
NBR	1	1,700	244	0.14	1,700	410	0.24	
SBL	2	3,400	434	0.13	3,400	617	0.18	
SBT	3	5,100	1,009	0.20	5,100	1,326	0.26	
SBR	1	1,700	312	0.18	1,700	271	0.16	
EBL	2	3,400	201	0.06	3,400	417	0.12	
EBT	3	5,100	700	0.14	5,100	1,433	0.28	
EBR	1	1,700	276	0.16	1,700	435	0.26	
WBL	2	3,400	345	0.10	3,400	329	0.10	
WBT	3	5,100	1,320	0.26	5,100	1,011	0.20	
WBR	1	1,700	501	0.29	1,700	484	0.28	
N/S Movements				0.28	0.44			
E/W Movements				0.32	0.38			
Rt. Turn Component				0.00	0.00			
Yellow Clearance				0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.65	0.87			
LEVEL OF SERVICE (LOS)				B	D			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Project - With Meats Interchange						
INTERSECTION:		46 Tustin St. @ Katella Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	361	0.11	3,400	478	0.14	
NBT	3	5,100	635	0.12	5,100	1,191	0.23	
NBR	1	1,700	271	0.16	1,700	394	0.23	
SBL	2	3,400	378	0.11	3,400	586	0.17	
SBT	3	5,100	977	0.19	5,100	1,343	0.26	
SBR	1	1,700	319	0.19	1,700	322	0.19	
EBL	2	3,400	183	0.05	3,400	418	0.12	
EBT	3	5,100	700	0.14	5,100	1,530	0.30	
EBR	1	1,700	320	0.19	1,700	495	0.29	
WBL	2	3,400	353	0.10	3,400	324	0.10	
WBT	3	5,100	1,430	0.28	5,100	1,089	0.21	
WBR	1	1,700	403	0.24	1,700	435	0.26	
N/S Movements				0.30	0.41			
E/W Movements				0.33	0.40			
Rt. Turn Component				0.00	0.00			
Yellow Clearance				0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.68	0.85			
LEVEL OF SERVICE (LOS)				B	D			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 1 - Project Without Meats Interchange						
INTERSECTION:		46 Tustin St. @ Katella Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	305	0.09	3,400	418	0.12	
NBT	3	5,100	799	0.16	5,100	1,342	0.26	
NBR	1	1,700	251	0.15	1,700	431	0.25	
SBL	2	3,400	444	0.13	3,400	681	0.20	
SBT	3	5,100	1,054	0.21	5,100	1,469	0.29	
SBR	1	1,700	341	0.20	1,700	300	0.18	
EBL	2	3,400	251	0.07	3,400	433	0.13	
EBT	3	5,100	700	0.14	5,100	1,538	0.30	
EBR	1	1,700	296	0.17	1,700	469	0.28	
WBL	2	3,400	350	0.10	3,400	363	0.11	
WBT	3	5,100	1,404	0.28	5,100	1,112	0.22	
WBR	1	1,700	590	0.35	1,700	515	0.30	
N/S Movements				0.30	0.46			
E/W Movements				0.35	0.41			
Rt. Turn Component				0.00	0.00			
Yellow Clearance				0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.70	0.92			
LEVEL OF SERVICE (LOS)				B	E			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC						
INTERSECTION:		46 Tustin St. @ Katella Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	325	0.10	3,400	423	0.12	
NBT	3	5,100	526	0.10	5,100	1,079	0.21	
NBR	1	1,700	254	0.15	1,700	379	0.22	
SBL	2	3,400	395	0.12	3,400	516	0.15	
SBT	3	5,100	899	0.18	5,100	1,164	0.23	
SBR	1	1,700	321	0.19	1,700	260	0.15	
EBL	2	3,400	162	0.05	3,400	375	0.11	
EBT	3	5,100	700	0.14	5,100	1,459	0.29	
EBR	1	1,700	282	0.17	1,700	465	0.27	
WBL	2	3,400	309	0.09	3,400	311	0.09	
WBT	3	5,100	1,364	0.27	5,100	1,045	0.20	
WBR	1	1,700	353	0.21	1,700	435	0.26	
N/S Movements				0.27	0.36			
E/W Movements				0.32	0.38			
Rt. Turn Component				0.00	0.00			
Yellow Clearance				0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.64	0.79			
LEVEL OF SERVICE (LOS)				B	C			

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		47 Tustin St. @ La Veta Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	15	0.01	1,700	63	0.04	
NBT	3	5,100	489	0.10	5,100	1,068	0.21	
NBR	1	1,700	183	0.11	1,700	399	0.23	
SBL	1	1,700	189	0.11	1,700	335	0.20	
SBT	3	5,100	1,571	0.31	5,100	1,341	0.26	
SBR	1	1,700	20	0.01	1,700	50	0.03	
EBL	1	1,700	31	0.02	1,700	24	0.01	
EBT	1.5	1,700	18	0.01	1,700	17	0.01	
EBR	0.5	1,700	82	0.05	1,700	35	0.02	
WBL	1.5	3,362	971	0.29	3,158	326	0.10	
WBT	0.5	38	11	0.29	242	25	0.10	
WBR	1	1,700	359	0.21	1,700	290	0.17	
split phasing	N/S Movements				0.32		0.41	
	E/W Movements				0.31		0.12	
	Rt. Turn Component				0.02		0.00	
	Yellow Clearance				0.05		0.05	
TOTAL CAPACITY UTILIZATION				0.70		0.57		
LEVEL OF SERVICE (LOS)				B		A		

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Project - With Meats Interchange						
INTERSECTION:		47 Tustin St. @ La Veta Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	15	0.01	1,700	63	0.04	
NBT	3	5,100	555	0.11	5,100	1,117	0.22	
NBR	1	1,700	183	0.11	1,700	355	0.21	
SBL	1	1,700	182	0.11	1,700	340	0.20	
SBT	3	5,100	1,608	0.32	5,100	1,361	0.27	
SBR	1	1,700	20	0.01	1,700	53	0.03	
EBL	1	1,700	32	0.02	1,700	26	0.02	
EBT	1.5	1,700	17	0.01	1,700	16	0.01	
EBR	0.5	1,700	82	0.05	1,700	35	0.02	
WBL	1.5	3,363	917	0.27	3,153	306	0.10	
WBT	0.5	37	10	0.27	247	24	0.10	
WBR	1	1,700	353	0.21	1,700	320	0.19	
split phasing	N/S Movements				0.32		0.42	
	E/W Movements				0.29		0.11	
	Rt. Turn Component				0.02		0.00	
	Yellow Clearance				0.05		0.05	
TOTAL CAPACITY UTILIZATION				0.69		0.58		
LEVEL OF SERVICE (LOS)				B		A		

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 1 - Project Without Meats Interchange						
INTERSECTION:		47 Tustin St. @ La Veta Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	15	0.01	1,700	63	0.04	
NBT	3	5,100	634	0.12	5,100	1,171	0.23	
NBR	1	1,700	183	0.11	1,700	374	0.22	
SBL	1	1,700	185	0.11	1,700	409	0.24	
SBT	3	5,100	1,653	0.32	5,100	1,520	0.30	
SBR	1	1,700	20	0.01	1,700	56	0.03	
EBL	1	1,700	35	0.02	1,700	27	0.02	
EBT	1.5	1,700	17	0.01	1,700	17	0.01	
EBR	0.5	1,700	85	0.05	1,700	35	0.02	
WBL	1.5	3,364	935	0.28	3,167	313	0.10	
WBT	0.5	36	10	0.28	233	23	0.10	
WBR	1	1,700	405	0.24	1,700	352	0.21	
split phasing	N/S Movements				0.33		0.47	
	E/W Movements				0.30		0.11	
	Rt. Turn Component				0.02		0.00	
	Yellow Clearance				0.05		0.05	
TOTAL CAPACITY UTILIZATION				0.70		0.63		
LEVEL OF SERVICE (LOS)				B		B		

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC						
INTERSECTION:		47 Tustin St. @ La Veta Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	15	0.01	1,700	63	0.04	
NBT	3	5,100	480	0.09	5,100	1,095	0.21	
NBR	1	1,700	183	0.11	1,700	380	0.22	
SBL	1	1,700	178	0.10	1,700	314	0.18	
SBT	3	5,100	1,662	0.33	5,100	1,322	0.26	
SBR	1	1,700	20	0.01	1,700	49	0.03	
EBL	1	1,700	27	0.02	1,700	24	0.01	
EBT	1.5	1,700	17	0.01	1,700	17	0.01	
EBR	0.5	1,700	86	0.05	1,700	35	0.02	
WBL	1.5	3,366	879	0.26	3,162	319	0.10	
WBT	0.5	34	9	0.26	238	24	0.10	
WBR	1	1,700	272	0.16	1,700	290	0.17	
split phasing	N/S Movements				0.33		0.40	
	E/W Movements				0.28		0.12	
	Rt. Turn Component				0.03		0.00	
	Yellow Clearance				0.05		0.05	
TOTAL CAPACITY UTILIZATION				0.69		0.56		
LEVEL OF SERVICE (LOS)				B		A		

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update									
SCENARIO:		No Project									
INTERSECTION:		48 Tustin St. @ Lincoln Ave.									
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C		
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C				
NBL	2	3,400	190	0.06	3,400	446	0.13	*	*		
NBT	3	5,100	209	0.04	5,100	701	0.14				
NBR	2	3,400	266	0.08	3,400	972	0.29				
SBL	2	3,400	155	0.05	3,400	394	0.12				
SBT	3	5,100	721	0.14	5,100	1,009	0.20	*	*		
SBR	1	1,700	381	0.22	1,700	362	0.21				
EBL	2	3,400	81	0.02	3,400	352	0.10				
EBT	2	3,400	307	0.09	3,400	1,214	0.36	*	*		
EBR	1	1,700	570	0.34	1,700	834	0.49	*	*		
WBL	2	3,400	859	0.25	3,400	762	0.22	*			
WBT	2	3,400	1,028	0.30	3,400	1,011	0.30				
WBR	1	1,700	170	0.10	1,700	308	0.18				
split phasing	N/S Movements						0.20			0.33	
	E/W Movements						0.39			0.65	
	Rt. Turn Component						0.25			0.00	
	Yellow Clearance						0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.89				1.04			
LEVEL OF SERVICE (LOS)				D				F			

PROJECT:		City of Orange General Plan Update									
SCENARIO:		Project - With Meats Interchange									
INTERSECTION:		48 Tustin St. @ Lincoln Ave.									
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C		
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C				
NBL	2	3,400	169	0.05	3,400	464	0.14	*	*		
NBT	3	5,100	183	0.04	5,100	698	0.14				
NBR	2	3,400	255	0.08	3,400	888	0.26				
SBL	2	3,400	155	0.05	3,400	379	0.11				
SBT	3	5,100	739	0.14	5,100	1,009	0.20	*	*		
SBR	1	1,700	388	0.23	1,700	395	0.23				
EBL	2	3,400	89	0.03	3,400	363	0.11				
EBT	2	3,400	311	0.09	3,400	1,149	0.34	*	*		
EBR	1	1,700	641	0.38	1,700	768	0.44	*	*		
WBL	2	3,400	870	0.26	3,400	630	0.19				
WBT	2	3,400	1,033	0.30	3,400	976	0.29				
WBR	1	1,700	168	0.10	1,700	285	0.17				
split phasing	N/S Movements						0.19			0.33	
	E/W Movements						0.40			0.63	
	Rt. Turn Component						0.29			0.00	
	Yellow Clearance						0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.93				1.01			
LEVEL OF SERVICE (LOS)				E				F			

PROJECT:		City of Orange General Plan Update									
SCENARIO:		Alternative 1 - Project Without Meats Interchange									
INTERSECTION:		48 Tustin St. @ Lincoln Ave.									
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C		
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C				
NBL	2	3,400	188	0.06	3,400	507	0.15	*	*		
NBT	3	5,100	203	0.04	5,100	723	0.14				
NBR	2	3,400	284	0.08	3,400	1,030	0.30				
SBL	2	3,400	164	0.05	3,400	394	0.12				
SBT	3	5,100	785	0.15	5,100	1,009	0.20	*	*		
SBR	1	1,700	392	0.23	1,700	388	0.23				
EBL	2	3,400	85	0.03	3,400	336	0.10				
EBT	2	3,400	353	0.10	3,400	1,187	0.35	*	*		
EBR	1	1,700	641	0.38	1,700	838	0.48	*	*		
WBL	2	3,400	884	0.26	3,400	763	0.22				
WBT	2	3,400	1,000	0.29	3,400	1,056	0.31	*	*		
WBR	1	1,700	162	0.10	1,700	292	0.17				
split phasing	N/S Movements						0.21			0.35	
	E/W Movements						0.40			0.66	
	Rt. Turn Component						0.27			0.00	
	Yellow Clearance						0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.93				1.06			
LEVEL OF SERVICE (LOS)				E				F			

PROJECT:		City of Orange General Plan Update									
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC									
INTERSECTION:		48 Tustin St. @ Lincoln Ave.									
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C		
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C				
NBL	2	3,400	163	0.05	3,400	437	0.13	*	*		
NBT	3	5,100	183	0.04	5,100	665	0.13				
NBR	2	3,400	255	0.08	3,400	808	0.24				
SBL	2	3,400	155	0.05	3,400	365	0.11				
SBT	3	5,100	701	0.14	5,100	1,009	0.20	*	*		
SBR	1	1,700	370	0.22	1,700	394	0.23				
EBL	2	3,400	86	0.03	3,400	345	0.10				
EBT	2	3,400	306	0.09	3,400	1,040	0.31	*	*		
EBR	1	1,700	594	0.35	1,700	735	0.42	*	*		
WBL	2	3,400	794	0.23	3,400	637	0.19				
WBT	2	3,400	948	0.28	3,400	921	0.27				
WBR	1	1,700	160	0.09	1,700	272	0.16				
split phasing	N/S Movements						0.19			0.33	
	E/W Movements						0.37			0.58	
	Rt. Turn Component						0.27			0.00	
	Yellow Clearance						0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.87				0.95			
LEVEL OF SERVICE (LOS)				D				E			

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		49 Tustin St. @ Meats Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	162	0.05	3,400	372	0.11	
NBT	3	5,100	714	0.14	5,100	1,754	0.34	
NBR	1	1,700	84	0.05	1,700	329	0.19	
SBL	2	3,400	82	0.02	3,400	264	0.08	
SBT	3	5,100	1,037	0.20	5,100	1,368	0.27	
SBR	1	1,700	131	0.08	1,700	149	0.09	
EBL	2	3,400	118	0.03	3,400	201	0.06	
EBT	2	3,400	121	0.04	3,400	422	0.12	
EBR	1	1,700	148	0.09	1,700	287	0.17	
WBL	2	3,400	235	0.07	3,400	285	0.08	
WBT	2	3,400	377	0.11	3,400	284	0.08	
WBR	1	1,700	188	0.11	1,700	215	0.13	
N/S Movements				0.25			0.42	
E/W Movements				0.15			0.21	
Rt. Turn Component				0.00			0.00	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.45			0.68	
LEVEL OF SERVICE (LOS)				A			B	

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Project - With Meats Interchange						
INTERSECTION:		49 Tustin St. @ Meats Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	200	0.06	3,400	417	0.12	
NBT	3	5,100	580	0.11	5,100	1,801	0.35	
NBR	1	1,700	128	0.08	1,700	357	0.21	
SBL	2	3,400	199	0.06	3,400	245	0.07	
SBT	3	5,100	1,099	0.22	5,100	1,259	0.25	
SBR	1	1,700	257	0.15	1,700	143	0.08	
EBL	2	3,400	153	0.05	3,400	274	0.08	
EBT	2	3,400	253	0.07	3,400	558	0.16	
EBR	1	1,700	158	0.09	1,700	410	0.24	
WBL	2	3,400	253	0.07	3,400	590	0.17	
WBT	2	3,400	753	0.22	3,400	540	0.16	
WBR	1	1,700	247	0.15	1,700	425	0.25	
N/S Movements				0.27			0.43	
E/W Movements				0.27			0.34	
Rt. Turn Component				0.00			0.02	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.59			0.83	
LEVEL OF SERVICE (LOS)				A			D	

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 1 - Project Without Meats Interchange						
INTERSECTION:		49 Tustin St. @ Meats Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	198	0.06	3,400	334	0.10	
NBT	3	5,100	686	0.13	5,100	1,831	0.36	
NBR	1	1,700	82	0.05	1,700	290	0.17	
SBL	2	3,400	125	0.04	3,400	275	0.08	
SBT	3	5,100	1,136	0.22	5,100	1,353	0.27	
SBR	1	1,700	268	0.16	1,700	158	0.09	
EBL	2	3,400	143	0.04	3,400	273	0.08	
EBT	2	3,400	119	0.04	3,400	445	0.13	
EBR	1	1,700	134	0.08	1,700	312	0.18	
WBL	2	3,400	243	0.07	3,400	305	0.09	
WBT	2	3,400	514	0.15	3,400	287	0.08	
WBR	1	1,700	201	0.12	1,700	286	0.17	
N/S Movements				0.28			0.44	
E/W Movements				0.19			0.22	
Rt. Turn Component				0.00			0.00	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.52			0.71	
LEVEL OF SERVICE (LOS)				A			C	

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC						
INTERSECTION:		49 Tustin St. @ Meats Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	154	0.05	3,400	375	0.11	
NBT	3	5,100	527	0.10	5,100	1,660	0.33	
NBR	1	1,700	120	0.07	1,700	349	0.21	
SBL	2	3,400	232	0.07	3,400	255	0.08	
SBT	3	5,100	1,117	0.22	5,100	1,053	0.21	
SBR	1	1,700	245	0.14	1,700	144	0.08	
EBL	2	3,400	140	0.04	3,400	232	0.07	
EBT	2	3,400	258	0.08	3,400	500	0.15	
EBR	1	1,700	141	0.08	1,700	340	0.20	
WBL	2	3,400	243	0.07	3,400	557	0.16	
WBT	2	3,400	621	0.18	3,400	507	0.15	
WBR	1	1,700	223	0.13	1,700	408	0.24	
N/S Movements				0.26			0.40	
E/W Movements				0.22			0.31	
Rt. Turn Component				0.00			0.02	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.54			0.78	
LEVEL OF SERVICE (LOS)				A			C	

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update							
SCENARIO:		No Project							
INTERSECTION:		50 Tustin St. @ Taft Ave. (North)							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	1	1,700	11	0.01	1,700	30	0.02	*	
NBT	3	5,100	659	0.13	5,100	2,249	0.44	*	
NBR	1	1,700	334	0.20	1,700	565	0.33		
SBL	2	3,400	400	0.12	3,400	285	0.08	*	
SBT	2.5	5,011	1,346	0.27	4,952	1,802	0.36	*	
SBR	0.5	89	24	0.27	148	54	0.36		
EBL	1	1,700	25	0.01	1,700	57	0.03	*	
EBT	0		0			0			
EBR	1	1,700	7	0.00	1,700	27	0.02		
WBL	2	3,400	778	0.23	3,400	525	0.15	*	
WBT	0		0			0			
WBR	1	1,700	412	0.24	1,700	184	0.11		
split phasing	N/S Movements			0.28				0.52	
	E/W Movements			0.24				0.19	
	Rt. Turn Component			0.00				0.00	
	Yellow Clearance			0.05				0.05	
TOTAL CAPACITY UTILIZATION				0.57					0.76
LEVEL OF SERVICE (LOS)				A					C

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Project - With Meats Interchange							
INTERSECTION:		50 Tustin St. @ Taft Ave. (North)							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	1	1,700	11	0.01	1,700	30	0.02	*	
NBT	3	5,100	595	0.12	5,100	2,215	0.43	*	
NBR	1	1,700	404	0.24	1,700	583	0.34		
SBL	2	3,400	403	0.12	3,400	353	0.10	*	
SBT	2.5	5,015	1,354	0.27	4,937	1,761	0.36	*	
SBR	0.5	85	23	0.27	163	58	0.36		
EBL	1	1,700	25	0.01	1,700	60	0.04	*	
EBT	0		0			0			
EBR	1	1,700	7	0.00	1,700	27	0.02		
WBL	2	3,400	1,026	0.30	3,400	545	0.16		
WBT	0		0			0			
WBR	1	1,700	374	0.22	1,700	232	0.14		
split phasing	N/S Movements			0.28				0.54	
	E/W Movements			0.32				0.20	
	Rt. Turn Component			0.00				0.00	
	Yellow Clearance			0.05				0.05	
TOTAL CAPACITY UTILIZATION				0.64					0.78
LEVEL OF SERVICE (LOS)				B					C

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Alternative 1 - Project Without Meats Interchange							
INTERSECTION:		50 Tustin St. @ Taft Ave. (North)							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	1	1,700	10	0.01	1,700	29	0.02	*	
NBT	3	5,100	757	0.15	5,100	2,419	0.47	*	
NBR	1	1,700	422	0.25	1,700	604	0.36		
SBL	2	3,400	326	0.10	3,400	256	0.08	*	
SBT	2.5	5,028	1,474	0.29	4,967	1,911	0.38	*	
SBR	0.5	72	21	0.29	133	51	0.38		
EBL	1	1,700	25	0.01	1,700	54	0.03	*	
EBT	0		0			0			
EBR	1	1,700	7	0.00	1,700	27	0.02		
WBL	2	3,400	899	0.26	3,400	523	0.15	*	
WBT	0		0			0			
WBR	1	1,700	321	0.19	1,700	157	0.09		
split phasing	N/S Movements			0.30				0.55	
	E/W Movements			0.28				0.19	
	Rt. Turn Component			0.00				0.00	
	Yellow Clearance			0.05				0.05	
TOTAL CAPACITY UTILIZATION				0.63					0.79
LEVEL OF SERVICE (LOS)				B					C

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC							
INTERSECTION:		50 Tustin St. @ Taft Ave. (North)							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	1	1,700	11	0.01	1,700	30	0.02	*	
NBT	3	5,100	595	0.12	5,100	2,025	0.40	*	
NBR	1	1,700	411	0.24	1,700	549	0.32		
SBL	2	3,400	393	0.12	3,400	306	0.09	*	
SBT	2.5	5,017	1,324	0.26	4,916	1,493	0.30	*	
SBR	0.5	83	22	0.26	184	56	0.30		
EBL	1	1,700	25	0.01	1,700	60	0.04	*	
EBT	0		0			0			
EBR	1	1,700	7	0.00	1,700	27	0.02		
WBL	2	3,400	925	0.27	3,400	518	0.15		
WBT	0		0			0			
WBR	1	1,700	325	0.19	1,700	218	0.13		
split phasing	N/S Movements			0.27				0.49	
	E/W Movements			0.29				0.19	
	Rt. Turn Component			0.00				0.00	
	Yellow Clearance			0.05				0.05	
TOTAL CAPACITY UTILIZATION				0.61					0.72
LEVEL OF SERVICE (LOS)				B					C

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update							
SCENARIO:		No Project							
INTERSECTION:		51 Tustin St. @ Taft Ave. (South)							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	2	3,400	597	0.18 *	3,400	558	0.16 *		
NBT	3	5,100	848	0.17	5,100	2,148	0.42		
NBR	0		0			0			
SBL	0		0			0			
SBT	3	5,100	1,570	0.31 *	5,100	1,899	0.37 *		
SBR	1	1,700	453	0.27	1,700	402	0.24		
EBL	2	3,400	323	0.10 *	3,400	702	0.21 *		
EBT	0		0			0			
EBR	1	1,700	560	0.33	1,700	61	0.04		
WBL	0		0			0			
WBT	0		0			0			
WBR	0		0			0			
split phasing	N/S Movements		0.48				0.54		
	E/W Movements		0.10				0.21		
	Rt. Turn Component		0.06				0.00		
	Yellow Clearance		0.05				0.05		
TOTAL CAPACITY UTILIZATION				0.69		0.79			
LEVEL OF SERVICE (LOS)				B		C			

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Project - With Meats Interchange							
INTERSECTION:		51 Tustin St. @ Taft Ave. (South)							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	2	3,400	623	0.18 *	3,400	597	0.18 *		
NBT	3	5,100	732	0.14	5,100	1,973	0.39		
NBR	0		0			0			
SBL	0		0			0			
SBT	3	5,100	1,565	0.31 *	5,100	1,975	0.39 *		
SBR	1	1,700	687	0.40 *	1,700	405	0.24		
EBL	2	3,400	308	0.09 *	3,400	847	0.25		
EBT	0		0			0			
EBR	1	1,700	565	0.33	1,700	105	0.06		
WBL	0		0			0			
WBT	0		0			0			
WBR	0		0			0			
split phasing	N/S Movements		0.49				0.56		
	E/W Movements		0.09				0.25		
	Rt. Turn Component		0.07				0.00		
	Yellow Clearance		0.05				0.05		
TOTAL CAPACITY UTILIZATION				0.70		0.86			
LEVEL OF SERVICE (LOS)				B		D			

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Alternative 1 - Project Without Meats Interchange							
INTERSECTION:		51 Tustin St. @ Taft Ave. (South)							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	2	3,400	748	0.22 *	3,400	635	0.19 *		
NBT	3	5,100	1,013	0.20	5,100	2,181	0.43		
NBR	0		0			0			
SBL	0		0			0			
SBT	3	5,100	1,689	0.33 *	5,100	2,089	0.41 *		
SBR	1	1,700	582	0.34	1,700	405	0.24		
EBL	2	3,400	323	0.10 *	3,400	879	0.26 *		
EBT	0		0			0			
EBR	1	1,700	581	0.34	1,700	101	0.06		
WBL	0		0			0			
WBT	0		0			0			
WBR	0		0			0			
split phasing	N/S Movements		0.55				0.60		
	E/W Movements		0.10				0.26		
	Rt. Turn Component		0.03				0.00		
	Yellow Clearance		0.05				0.05		
TOTAL CAPACITY UTILIZATION				0.72		0.90			
LEVEL OF SERVICE (LOS)				C		D			

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC							
INTERSECTION:		51 Tustin St. @ Taft Ave. (South)							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	2	3,400	499	0.15 *	3,400	521	0.15 *		
NBT	3	5,100	716	0.14	5,100	1,813	0.36		
NBR	0		0			0			
SBL	0		0			0			
SBT	3	5,100	1,475	0.29 *	5,100	1,688	0.33 *		
SBR	1	1,700	741	0.44 *	1,700	405	0.24		
EBL	2	3,400	364	0.11 *	3,400	787	0.23		
EBT	0		0			0			
EBR	1	1,700	505	0.30	1,700	82	0.05		
WBL	0		0			0			
WBT	0		0			0			
WBR	0		0			0			
split phasing	N/S Movements		0.44				0.48		
	E/W Movements		0.11				0.23		
	Rt. Turn Component		0.08				0.00		
	Yellow Clearance		0.05				0.05		
TOTAL CAPACITY UTILIZATION				0.68		0.77			
LEVEL OF SERVICE (LOS)				B		C			

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update								
SCENARIO:		No Project								
INTERSECTION:		52 Tustin St. @ Walnut Ave.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	1	1,700	117	0.07	1,700	193	0.11	*	*	
NBT	3	5,100	898	0.18	5,100	1,382	0.27			
NBR	1	1,700	80	0.05	1,700	354	0.21			
SBL	1	1,700	52	0.03	1,700	241	0.14			
SBT	3	5,100	1,462	0.29	5,100	1,706	0.33	*	*	
SBR	1	1,700	240	0.14	1,700	196	0.12			
EBL	1	1,700	100	0.06	1,700	257	0.15			
EBT	2	3,400	81	0.02	3,400	447	0.13	*	*	
EBR	1	1,700	156	0.09	1,700	247	0.15			
WBL	1	1,700	410	0.24	1,700	191	0.11	*	*	
WBT	2	3,400	562	0.17	3,400	88	0.03			
WBR	1	1,700	238	0.14	1,700	172	0.10			
N/S Movements				0.36					0.45	
E/W Movements				0.27					0.24	
Rt. Turn Component				0.00					0.00	
Yellow Clearance				0.05					0.05	
TOTAL CAPACITY UTILIZATION				0.67					0.74	
LEVEL OF SERVICE (LOS)				B					C	

PROJECT:		City of Orange General Plan Update								
SCENARIO:		Project - With Meats Interchange								
INTERSECTION:		52 Tustin St. @ Walnut Ave.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	1	1,700	95	0.06	1,700	193	0.11	*	*	
NBT	3	5,100	925	0.18	5,100	1,396	0.27			
NBR	1	1,700	105	0.06	1,700	289	0.17			
SBL	1	1,700	73	0.04	1,700	185	0.11			
SBT	3	5,100	1,534	0.30	5,100	1,681	0.33	*	*	
SBR	1	1,700	183	0.11	1,700	186	0.11			
EBL	1	1,700	87	0.05	1,700	171	0.10			
EBT	1	1,700	102	0.06	1,700	240	0.14	*	*	
EBR	1	1,700	156	0.09	1,700	182	0.11			
WBL	1	1,700	293	0.17	1,700	212	0.12	*	*	
WBT	1	1,700	292	0.17	1,700	94	0.06			
WBR	1	1,700	158	0.09	1,700	184	0.11			
N/S Movements				0.36					0.44	
E/W Movements				0.23					0.27	
Rt. Turn Component				0.00					0.00	
Yellow Clearance				0.05					0.05	
TOTAL CAPACITY UTILIZATION				0.64					0.76	
LEVEL OF SERVICE (LOS)				B					C	

PROJECT:		City of Orange General Plan Update								
SCENARIO:		Alternative 1 - Project Without Meats Interchange								
INTERSECTION:		52 Tustin St. @ Walnut Ave.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	1	1,700	98	0.06	1,700	193	0.11	*	*	
NBT	3	5,100	1,129	0.22	5,100	1,558	0.31			
NBR	1	1,700	109	0.06	1,700	303	0.18			
SBL	1	1,700	75	0.04	1,700	207	0.12			
SBT	3	5,100	1,673	0.33	5,100	1,908	0.37	*	*	
SBR	1	1,700	187	0.11	1,700	194	0.11			
EBL	1	1,700	96	0.06	1,700	156	0.09			
EBT	1	1,700	96	0.06	1,700	206	0.12	*	*	
EBR	1	1,700	156	0.09	1,700	182	0.11			
WBL	1	1,700	295	0.17	1,700	220	0.13	*	*	
WBT	1	1,700	275	0.16	1,700	90	0.05			
WBR	1	1,700	175	0.10	1,700	200	0.12			
N/S Movements				0.39					0.49	
E/W Movements				0.23					0.25	
Rt. Turn Component				0.00					0.00	
Yellow Clearance				0.05					0.05	
TOTAL CAPACITY UTILIZATION				0.67					0.79	
LEVEL OF SERVICE (LOS)				B					C	

PROJECT:		City of Orange General Plan Update								
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC								
INTERSECTION:		52 Tustin St. @ Walnut Ave.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	1	1,700	107	0.06	1,700	193	0.11	*	*	
NBT	3	5,100	733	0.14	5,100	1,331	0.26			
NBR	1	1,700	82	0.05	1,700	281	0.17			
SBL	1	1,700	51	0.03	1,700	150	0.09			
SBT	3	5,100	1,455	0.29	5,100	1,439	0.28	*	*	
SBR	1	1,700	183	0.11	1,700	177	0.10			
EBL	1	1,700	94	0.06	1,700	168	0.10			
EBT	1	1,700	108	0.06	1,700	241	0.14	*	*	
EBR	1	1,700	178	0.10	1,700	181	0.11			
WBL	1	1,700	298	0.18	1,700	204	0.12	*	*	
WBT	1	1,700	313	0.18	1,700	101	0.06			
WBR	1	1,700	119	0.07	1,700	165	0.10			
N/S Movements				0.35					0.40	
E/W Movements				0.24					0.26	
Rt. Turn Component				0.00					0.00	
Yellow Clearance				0.05					0.05	
TOTAL CAPACITY UTILIZATION				0.64					0.71	
LEVEL OF SERVICE (LOS)				B					C	

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Project - With Meats Interchange						
INTERSECTION:		53 S/B SR-55 Ramps @ Meats Avenue						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	0		0			0		
NBT	0		0			0		
NBR	0		0			0		
SBL	1.5	1,483	283	0.19	*	2,677	601	0.22
SBT	0	0	0			0	0	
SBR	1.5	3,617	691	0.19	*	2,423	543	0.22
EBL	0		0				0	
EBT	2	3,400	792	0.23	*	3,400	682	0.20
EBR	1	1,700	317	0.19		1,700	530	0.31
WBL	1	1,700	493	0.29	*	1,700	214	0.13
WBT	2	3,400	880	0.26		3,400	1,244	0.37
WBR	0		0				0	
		N/S Movements		0.19				0.22
		E/W Movements		0.52				0.37
		Rt. Turn Component		0.00				0.07
		Yellow Clearance		0.05				0.05
TOTAL CAPACITY UTILIZATION				0.76				0.71
LEVEL OF SERVICE (LOS)				C				C

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC						
INTERSECTION:		53 S/B SR-55 Ramps @ Meats Avenue						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	0		0				0	
NBT	0		0				0	
NBR	0		0				0	
SBL	1.5	1,475	251	0.17	*	2,713	557	0.21
SBT	0	0	0			0	0	
SBR	1.5	3,625	618	0.17	*	2,387	490	0.21
EBL	0		0				0	
EBT	2	3,400	808	0.24	*	3,400	636	0.19
EBR	1	1,700	404	0.24		1,700	513	0.30
WBL	1	1,700	469	0.28	*	1,700	240	0.14
WBT	2	3,400	882	0.26		3,400	1,263	0.37
WBR	0		0				0	
		N/S Movements		0.17				0.21
		E/W Movements		0.51				0.37
		Rt. Turn Component		0.00				0.07
		Yellow Clearance		0.05				0.05
TOTAL CAPACITY UTILIZATION				0.73				0.70
LEVEL OF SERVICE (LOS)				C				B

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Project - With Meats Interchange							
INTERSECTION:		54 N/B SR-55 Ramps @ Meats Avenue							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR				
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	2	3,400	949	0.28	*	3,400	762	0.22	*
NBT	0		0				0		
NBR	1	1,700	185	0.11		1,700	479	0.28	*
SBL	0		0				0		
SBT	0		0				0		
SBR	0		0				0		
EBL	2	3,400	286	0.08		3,400	691	0.20	*
EBT	2	3,400	863	0.25	*	3,400	636	0.19	
EBR	0		0				0		
WBL	0		0				0		
WBT	2	3,400	472	0.14		3,400	712	0.21	*
WBR	1	1,700	387	0.23	*	1,700	94	0.06	
		N/S Movements		0.28				0.22	
		E/W Movements		0.25				0.41	
		Rt. Turn Component		0.00				0.06	
		Yellow Clearance		0.05				0.05	
TOTAL CAPACITY UTILIZATION				0.58				0.74	
LEVEL OF SERVICE (LOS)				A				C	

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC							
INTERSECTION:		54 N/B SR-55 Ramps @ Meats Avenue							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR				
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	2	3,400	921	0.27	*	3,400	801	0.24	*
NBT	0		0				0		
NBR	1	1,700	189	0.11		1,700	462	0.27	*
SBL	0		0				0		
SBT	0		0				0		
SBR	0		0				0		
EBL	2	3,400	311	0.09		3,400	655	0.19	*
EBT	2	3,400	815	0.24	*	3,400	618	0.18	
EBR	0		0				0		
WBL	0		0				0		
WBT	2	3,400	471	0.14		3,400	718	0.21	*
WBR	1	1,700	238	0.14	*	1,700	93	0.05	
		N/S Movements		0.27				0.24	
		E/W Movements		0.24				0.40	
		Rt. Turn Component		0.00				0.04	
		Yellow Clearance		0.05				0.05	
TOTAL CAPACITY UTILIZATION				0.56				0.73	
LEVEL OF SERVICE (LOS)				A				C	

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update							
SCENARIO:		No Project							
INTERSECTION:		55 Struck Ave. @ Katella Ave.							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	1.5	3,033	124	0.04	*	3,159	367	0.12	*
NBT	0	0	0			0	0		
NBR	0.5	367	15	0.04	*	241	28	0.12	*
SBL	0		0				0		
SBT	0		0				0		
SBR	0		0				0		
EBL	0		0				0		
EBT	3	5,100	995	0.20	*	5,100	918	0.18	
EBR	1	1,700	271	0.16		1,700	225	0.13	
WBL	1	1,700	29	0.02	*	1,700	11	0.01	
WBT	3	5,072	736	0.15		5,100	1,052	0.21	*
WBR	0	28	4	0.15		0	0		
N/S Movements				0.04		0.12			
E/W Movements				0.21		0.21			
Rt. Turn Component				0.00		0.00			
Yellow Clearance				0.05		0.05			
TOTAL CAPACITY UTILIZATION				0.30		0.37			
LEVEL OF SERVICE (LOS)				A		A			

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Project - With Meats Interchange							
INTERSECTION:		55 Struck Ave. @ Katella Ave.							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	1.5	2,822	122	0.04	*	3,078	402	0.13	*
NBT	0	0	0			0	0		
NBR	0.5	578	25	0.04	*	322	42	0.13	*
SBL	0		0				0		
SBT	0		0				0		
SBR	0		0				0		
EBL	0		0				0		
EBT	3	5,100	1,436	0.28	*	5,100	978	0.19	
EBR	1	1,700	317	0.19		1,700	231	0.14	
WBL	1	1,700	46	0.03	*	1,700	19	0.01	
WBT	3	5,073	758	0.15		5,100	1,358	0.27	*
WBR	0	27	4	0.15		0	0		
N/S Movements				0.04		0.13			
E/W Movements				0.31		0.27			
Rt. Turn Component				0.00		0.00			
Yellow Clearance				0.05		0.05			
TOTAL CAPACITY UTILIZATION				0.40		0.45			
LEVEL OF SERVICE (LOS)				A		A			

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Alternative 1 - Project Without Meats Interchange							
INTERSECTION:		55 Struck Ave. @ Katella Ave.							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	1.5	2,803	122	0.04	*	3,096	418	0.14	*
NBT	0	0	0			0	0		
NBR	0.5	597	26	0.04	*	304	41	0.14	*
SBL	0		0				0		
SBT	0		0				0		
SBR	0		0				0		
EBL	0		0				0		
EBT	3	5,100	1,466	0.29	*	5,100	1,019	0.20	
EBR	1	1,700	319	0.19		1,700	233	0.14	
WBL	1	1,700	47	0.03	*	1,700	17	0.01	
WBT	3	5,073	765	0.15		5,100	1,382	0.27	*
WBR	0	27	4	0.15		0	0		
N/S Movements				0.04		0.14			
E/W Movements				0.32		0.27			
Rt. Turn Component				0.00		0.00			
Yellow Clearance				0.05		0.05			
TOTAL CAPACITY UTILIZATION				0.41		0.46			
LEVEL OF SERVICE (LOS)				A		A			

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC							
INTERSECTION:		55 Struck Ave. @ Katella Ave.							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	1.5	3,126	137	0.04	*	3,260	488	0.15	*
NBT	0	0	0			0	0		
NBR	0.5	274	12	0.04	*	140	21	0.15	*
SBL	0		0				0		
SBT	0		0				0		
SBR	0		0				0		
EBL	0		0				0		
EBT	3	5,100	1,234	0.24	*	5,100	906	0.18	
EBR	1	1,700	383	0.23		1,700	284	0.17	
WBL	1	1,700	24	0.01	*	1,700	7	0.00	
WBT	3	5,074	792	0.16		5,100	1,262	0.25	*
WBR	0	26	4	0.16		0	0		
N/S Movements				0.04		0.15			
E/W Movements				0.26		0.25			
Rt. Turn Component				0.00		0.00			
Yellow Clearance				0.05		0.05			
TOTAL CAPACITY UTILIZATION				0.35		0.45			
LEVEL OF SERVICE (LOS)				A		A			

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		56 Main St. @ Struck Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	49	0.03	1,700	164	0.10	
NBT	2	2,198	276	0.13	3,304	998	0.30	
NBR	0	1,202	151	0.13	96	29	0.30	
SBL	1	1,700	59	0.03	1,700	46	0.03	
SBT	2	2,906	447	0.15	3,183	733	0.23	
SBR	0	494	76	0.15	217	50	0.23	
EBL	1	1,700	155	0.09	1,700	61	0.04	
EBT	1	1,515	573	0.38	515	73	0.14	
EBR	0	185	70	0.38	1,185	168	0.14	
WBL	1	1,700	374	0.22	1,700	16	0.01	
WBT	1	1,502	827	0.55	998	98	0.10	
WBR	0	198	109	0.55	702	69	0.10	
N/S Movements				0.18			0.33	
E/W Movements				0.64			0.15	
Rt. Turn Component				0.00			0.00	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.87			0.53	
LEVEL OF SERVICE (LOS)				D			A	

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Project - With Meats Interchange						
INTERSECTION:		56 Main St. @ Struck Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	49	0.03	1,700	174	0.10	
NBT	2	2,586	480	0.19	3,283	1,464	0.45	
NBR	0	814	151	0.19	117	52	0.45	
SBL	1	1,700	85	0.05	1,700	50	0.03	
SBT	2	2,956	798	0.27	3,305	1,145	0.35	
SBR	0	444	120	0.27	95	33	0.35	
EBL	1	1,700	267	0.16	1,700	47	0.03	
EBT	1	1,511	567	0.38	446	69	0.15	
EBR	0	189	71	0.38	1,254	194	0.15	
WBL	1	1,700	401	0.24	1,700	39	0.02	
WBT	1	1,418	819	0.58	935	115	0.12	
WBR	0	282	163	0.58	765	94	0.12	
N/S Movements				0.30			0.48	
E/W Movements				0.73			0.18	
Rt. Turn Component				0.00			0.00	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				1.08			0.70	
LEVEL OF SERVICE (LOS)				F			B	

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 1 - Project Without Meats Interchange						
INTERSECTION:		56 Main St. @ Struck Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	49	0.03	1,700	175	0.10	
NBT	2	2,600	491	0.19	3,279	1,441	0.44	
NBR	0	800	151	0.19	121	53	0.44	
SBL	1	1,700	96	0.06	1,700	49	0.03	
SBT	2	2,952	818	0.28	3,305	1,118	0.34	
SBR	0	448	124	0.28	95	32	0.34	
EBL	1	1,700	264	0.16	1,700	47	0.03	
EBT	1	1,514	571	0.38	446	69	0.15	
EBR	0	186	70	0.38	1,254	194	0.15	
WBL	1	1,700	397	0.23	1,700	40	0.02	
WBT	1	1,401	819	0.58	944	116	0.12	
WBR	0	299	175	0.58	756	93	0.12	
N/S Movements				0.31			0.47	
E/W Movements				0.74			0.18	
Rt. Turn Component				0.00			0.00	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				1.10			0.70	
LEVEL OF SERVICE (LOS)				F			B	

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC						
INTERSECTION:		56 Main St. @ Struck Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	48	0.03	1,700	229	0.13	
NBT	2	2,658	541	0.20	3,312	1,727	0.52	
NBR	0	742	151	0.20	88	46	0.52	
SBL	1	1,700	86	0.05	1,700	32	0.02	
SBT	2	2,993	1,044	0.35	3,323	1,338	0.40	
SBR	0	407	142	0.35	77	31	0.40	
EBL	1	1,700	280	0.16	1,700	47	0.03	
EBT	1	1,463	542	0.37	343	69	0.20	
EBR	0	237	88	0.37	1,357	273	0.20	
WBL	1	1,700	427	0.25	1,700	31	0.02	
WBT	1	1,440	819	0.57	1,054	88	0.08	
WBR	0	260	148	0.57	646	54	0.08	
N/S Movements				0.38			0.54	
E/W Movements				0.73			0.22	
Rt. Turn Component				0.00			0.00	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				1.16			0.81	
LEVEL OF SERVICE (LOS)				F			D	

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		57 Main St. @ Collins Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	135	0.08	1,700	76	0.04	
NBT	2	1,875	445	0.24	2,407	946	0.39	
NBR	0	1,525	362	0.24	993	390	0.39	
SBL	1	1,700	78	0.05	1,700	135	0.08	
SBT	2	2,649	741	0.28	3,098	842	0.27	
SBR	0	751	210	0.28	302	82	0.27	
EBL	1	1,700	57	0.03	1,700	146	0.09	
EBT	2	1,803	96	0.05	2,019	285	0.14	
EBR	0	1,597	85	0.05	1,381	195	0.14	
WBL	1	1,700	281	0.17	1,700	364	0.21	
WBT	2	2,185	259	0.12	1,949	192	0.10	
WBR	0	1,215	144	0.12	1,451	143	0.10	
N/S Movements				0.36	0.47			
E/W Movements				0.22	0.36			
Rt. Turn Component				0.00	0.00			
Yellow Clearance				0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.63	0.88			
LEVEL OF SERVICE (LOS)				B	D			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Project - With Meats Interchange						
INTERSECTION:		57 Main St. @ Collins Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	360	0.21	1,700	288	0.17	
NBT	2	1,552	468	0.30	2,143	1,007	0.47	
NBR	0	1,848	557	0.30	1,257	591	0.47	
SBL	1	1,700	78	0.05	1,700	135	0.08	
SBT	2	2,691	797	0.30	3,118	908	0.29	
SBR	0	709	210	0.30	282	82	0.29	
EBL	1	1,700	57	0.03	1,700	146	0.09	
EBT	2	1,049	120	0.11	1,220	285	0.23	
EBR	0	2,351	269	0.11	2,180	509	0.23	
WBL	1	1,700	423	0.25	1,700	584	0.34	
WBT	2	2,212	268	0.12	2,064	221	0.11	
WBR	0	1,188	144	0.12	1,336	143	0.11	
N/S Movements				0.51	0.55			
E/W Movements				0.36	0.58			
Rt. Turn Component				0.00	0.00			
Yellow Clearance				0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.92	1.18			
LEVEL OF SERVICE (LOS)				E	F			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 1 - Project Without Meats Interchange						
INTERSECTION:		57 Main St. @ Collins Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	371	0.22	1,700	291	0.17	
NBT	2	1,517	472	0.31	2,119	1,008	0.48	
NBR	0	1,883	586	0.31	1,281	609	0.48	
SBL	1	1,700	78	0.05	1,700	135	0.08	
SBT	2	2,701	812	0.30	3,120	914	0.29	
SBR	0	699	210	0.30	280	82	0.29	
EBL	1	1,700	57	0.03	1,700	146	0.09	
EBT	2	969	112	0.12	1,231	285	0.23	
EBR	0	2,431	281	0.12	2,169	502	0.23	
WBL	1	1,700	467	0.27	1,700	604	0.36	
WBT	2	2,220	271	0.12	2,093	229	0.11	
WBR	0	1,180	144	0.12	1,307	143	0.11	
N/S Movements				0.52	0.56			
E/W Movements				0.39	0.59			
Rt. Turn Component				0.00	0.00			
Yellow Clearance				0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.96	1.19			
LEVEL OF SERVICE (LOS)				E	F			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC						
INTERSECTION:		57 Main St. @ Collins Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	395	0.23	1,700	302	0.18	
NBT	2	1,732	484	0.28	2,165	1,006	0.46	
NBR	0	1,668	466	0.28	1,235	574	0.46	
SBL	1	1,700	78	0.05	1,700	135	0.08	
SBT	2	2,689	794	0.30	3,114	893	0.29	
SBR	0	711	210	0.30	286	82	0.29	
EBL	1	1,700	57	0.03	1,700	146	0.09	
EBT	2	998	101	0.10	1,156	285	0.25	
EBR	0	2,402	243	0.10	2,244	553	0.25	
WBL	1	1,700	423	0.25	1,700	504	0.30	
WBT	2	2,267	288	0.13	1,970	197	0.10	
WBR	0	1,133	144	0.13	1,430	143	0.10	
N/S Movements				0.53	0.54			
E/W Movements				0.35	0.54			
Rt. Turn Component				0.00	0.00			
Yellow Clearance				0.05	0.05			
TOTAL CAPACITY UTILIZATION				0.93	1.14			
LEVEL OF SERVICE (LOS)				E	F			

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		58 S/B SR-57 Ramps @ Orangewood Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	0		0			0		
NBT	0		0			0		
NBR	0		0			0		
SBL	1.5	1,632	321	0.20 *	1,392	267	0.19 *	
SBT	0	0	0		0	0		
SBR	1.5	3,468	682	0.20 *	3,708	711	0.19 *	
EBL	0		0			0		
EBT	2	3,400	1,206	0.35 *	3,400	773	0.23 *	
EBR	1	1,700	61	0.04	1,700	142	0.08	
WBL	1	1,700	171	0.10 *	1,700	458	0.27 *	
WBT	2	3,400	578	0.17	3,400	989	0.29	
WBR	0	0	0		0	0		
N/S Movements				0.20			0.19	
E/W Movements				0.46			0.50	
Rt. Turn Component				0.00			0.00	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.70			0.74	
LEVEL OF SERVICE (LOS)				B			C	

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Project - With Meats Interchange						
INTERSECTION:		58 S/B SR-57 Ramps @ Orangewood Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	0		0			0		
NBT	0		0			0		
NBR	0		0			0		
SBL	1.5	2,189	555	0.25 *	1,161	256	0.22 *	
SBT	0	0	0		0	0		
SBR	1.5	2,911	738	0.25 *	3,939	869	0.22 *	
EBL	0		0			0		
EBT	2	3,400	1,925	0.57 *	3,400	1,334	0.39 *	
EBR	1	1,700	47	0.03	1,700	188	0.11	
WBL	1	1,700	163	0.10 *	1,700	478	0.28 *	
WBT	2	3,400	762	0.22	3,400	1,471	0.43	
WBR	0	0	0		0	0		
N/S Movements				0.25			0.22	
E/W Movements				0.66			0.67	
Rt. Turn Component				0.00			0.00	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.97			0.94	
LEVEL OF SERVICE (LOS)				E			E	

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 1 - Project Without Meats Interchange						
INTERSECTION:		58 S/B SR-57 Ramps @ Orangewood Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	0		0			0		
NBT	0		0			0		
NBR	0		0			0		
SBL	1.5	2,216	570	0.26 *	1,213	276	0.23 *	
SBT	0	0	0		0	0		
SBR	1.5	2,884	742	0.26 *	3,887	884	0.23 *	
EBL	0		0			0		
EBT	2	3,400	1,930	0.57 *	3,400	1,354	0.40 *	
EBR	1	1,700	46	0.03	1,700	193	0.11	
WBL	1	1,700	164	0.10 *	1,700	478	0.28 *	
WBT	2	3,400	768	0.23	5,040	1,466	0.29	
WBR	0	0	0		0	0		
N/S Movements				0.26			0.23	
E/W Movements				0.66			0.68	
Rt. Turn Component				0.00			0.00	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.97			0.96	
LEVEL OF SERVICE (LOS)				E			E	

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC						
INTERSECTION:		58 S/B SR-57 Ramps @ Orangewood Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	0		0			0		
NBT	0		0			0		
NBR	0		0			0		
SBL	1.5	1,816	444	0.24 *	1,143	257	0.22 *	
SBT	0	0	0		0	0		
SBR	1.5	3,284	803	0.24 *	3,957	890	0.22 *	
EBL	0		0			0		
EBT	2	3,400	1,716	0.50 *	3,400	1,289	0.38 *	
EBR	1	1,700	55	0.03	1,700	211	0.12	
WBL	1	1,700	171	0.10 *	1,700	478	0.28 *	
WBT	2	3,333	747	0.22	3,005	1,300	0.43	
WBR	0	0	0		0	0		
N/S Movements				0.24			0.22	
E/W Movements				0.61			0.66	
Rt. Turn Component				0.00			0.00	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.90			0.94	
LEVEL OF SERVICE (LOS)				D			E	

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update								
SCENARIO:		No Project								
INTERSECTION:		59 N/B SR-57 Ramps @ Orangewood Ave.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	1.5	983	127	0.13	1,533	92	0.06	*	*	
NBT	0	0	0		0	0				
NBR	1.5	4,117	532	0.13	3,567	214	0.06	*	*	
SBL	0		0			0				
SBT	0		0			0				
SBR	0		0			0				
EBL	0		0			0				
EBT	3	5,100	1,158	0.23	5,100	746	0.15			
EBR (free)	f		280			280				
WBL	0		0			0				
WBT	3	5,100	633	0.12	5,100	1,328	0.26	*	*	
WBR	1	1,700	170	0.10	1,700	400	0.24			
N/S Movements				0.13					0.06	
E/W Movements				0.23					0.26	
Rt. Turn Component				0.00					0.00	
Yellow Clearance				0.05					0.05	
TOTAL CAPACITY UTILIZATION				0.41					0.37	
LEVEL OF SERVICE (LOS)				A					A	

PROJECT:		City of Orange General Plan Update								
SCENARIO:		Project - With Meats Interchange								
INTERSECTION:		59 N/B SR-57 Ramps @ Orangewood Ave.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	1.5	1,455	214	0.15	1,372	85	0.06	*	*	
NBT	0	0	0		0	0				
NBR	1.5	3,645	536	0.15	3,728	231	0.06	*	*	
SBL	0		0			0				
SBT	0		0			0				
SBR	0		0			0				
EBL	0		0			0				
EBT	3	5,100	2,040	0.40	5,100	1,131	0.22			
EBR (free)	f		329			386				
WBL	0		0			0				
WBT	3	5,100	771	0.15	5,100	1,867	0.37	*	*	
WBR	1	1,700	180	0.11	1,700	569	0.33			
N/S Movements				0.15					0.06	
E/W Movements				0.40					0.37	
Rt. Turn Component				0.00					0.00	
Yellow Clearance				0.05					0.05	
TOTAL CAPACITY UTILIZATION				0.60					0.48	
LEVEL OF SERVICE (LOS)				A					A	

PROJECT:		City of Orange General Plan Update								
SCENARIO:		Alternative 1 - Project Without Meats Interchange								
INTERSECTION:		59 N/B SR-57 Ramps @ Orangewood Ave.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	1.5	1,428	210	0.15	1,453	90	0.06	*	*	
NBT	0	0	0		0	0				
NBR	1.5	3,672	540	0.15	3,647	226	0.06	*	*	
SBL	0		0			0				
SBT	0		0			0				
SBR	0		0			0				
EBL	0		0			0				
EBT	3	5,100	2,079	0.41	5,100	1,171	0.23			
EBR (free)	f		330			387				
WBL	0		0			0				
WBT	3	5,100	780	0.15	5,100	1,908	0.37	*	*	
WBR	1	1,700	181	0.11	1,700	569	0.33			
N/S Movements				0.15					0.06	
E/W Movements				0.41					0.37	
Rt. Turn Component				0.00					0.00	
Yellow Clearance				0.05					0.05	
TOTAL CAPACITY UTILIZATION				0.60					0.49	
LEVEL OF SERVICE (LOS)				A					A	

PROJECT:		City of Orange General Plan Update								
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC								
INTERSECTION:		59 N/B SR-57 Ramps @ Orangewood Ave.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	1.5	1,417	207	0.15	1,279	77	0.06	*	*	
NBT	0	0	0		0	0				
NBR	1.5	3,683	538	0.15	3,821	230	0.06	*	*	
SBL	0		0			0				
SBT	0		0			0				
SBR	0		0			0				
EBL	0		0			0				
EBT	3	5,100	1,750	0.34	5,100	1,078	0.21			
EBR (free)	f		320			389				
WBL	0		0			0				
WBT	3	5,100	734	0.14	5,100	1,663	0.33	*	*	
WBR	1	1,700	176	0.10	1,700	551	0.32			
N/S Movements				0.15					0.06	
E/W Movements				0.34					0.33	
Rt. Turn Component				0.00					0.00	
Yellow Clearance				0.05					0.05	
TOTAL CAPACITY UTILIZATION				0.54					0.44	
LEVEL OF SERVICE (LOS)				A					A	

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update								
SCENARIO:		No Project								
INTERSECTION:		60 The City Drive @ N/B I-5 Ramps/Anaheim Wy.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	2	3,400	20	0.01	3,400	159	0.05	*		
NBT	4	6,800	676	0.10	6,800	941	0.14			
NBR (free)	f		211			409				
SBL	1	1,700	17	0.01	1,700	34	0.02			
SBT	4	6,800	1,896	0.28	6,800	1,203	0.18	*		
SBR	1	1,700	18	0.01	1,700	44	0.03			
EBL	0		0			0				
EBT	0		0			0				
EBR	0		0			0				
WBL	1.5	3,028	209	0.07	2,875	186	0.06			
WBT	1.5	2,072	143	0.07	2,225	144	0.06			
WBR	2	3,400	272	0.08	3,400	151	0.04			
		N/S Movements		0.28			0.22			
		E/W Movements		0.08			0.06			
		Rt. Turn Component		0.00			0.00			
		Yellow Clearance		0.05			0.05			
TOTAL CAPACITY UTILIZATION				0.42					0.34	
LEVEL OF SERVICE (LOS)				A					A	

PROJECT:		City of Orange General Plan Update								
SCENARIO:		Project - With Meats Interchange								
INTERSECTION:		60 The City Drive @ N/B I-5 Ramps/Anaheim Wy.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	2	3,400	23	0.01	3,400	242	0.07	*		
NBT	4	6,800	758	0.11	6,800	1,158	0.23			
NBR (free)	f		216			439				
SBL	1	1,700	17	0.01	1,700	34	0.02			
SBT	4	6,800	2,450	0.36	6,800	1,351	0.20	*		
SBR	1	1,700	17	0.01	1,700	41	0.02			
EBL	0		0			0				
EBT	0		0			0				
EBR	0		0			0				
WBL	1.5	3,440	257	0.07	3,106	232	0.07			
WBT	1.5	1,660	124	0.07	1,994	149	0.09	*		
WBR	2	3,400	272	0.08	3,400	151	0.04			
		N/S Movements		0.37			0.27			
		E/W Movements		0.08			0.09			
		Rt. Turn Component		0.00			0.00			
		Yellow Clearance		0.05			0.05			
TOTAL CAPACITY UTILIZATION				0.50					0.41	
LEVEL OF SERVICE (LOS)				A					A	

PROJECT:		City of Orange General Plan Update								
SCENARIO:		Alternative 1 - Project Without Meats Interchange								
INTERSECTION:		60 The City Drive @ N/B I-5 Ramps/Anaheim Wy.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	2	3,400	23	0.01	3,400	232	0.07	*		
NBT	4	6,800	757	0.11	6,800	1,182	0.17			
NBR (free)	f		216			441				
SBL	1	1,700	17	0.01	1,700	34	0.02			
SBT	4	6,800	2,482	0.37	6,800	1,379	0.20	*		
SBR	1	1,700	17	0.01	1,700	38	0.02			
EBL	0		0			0				
EBT	0		0			0				
EBR	0		0			0				
WBL	1.5	3,458	259	0.07	3,226	241	0.07			
WBT	1.5	1,642	123	0.07	1,874	140	0.07			
WBR	2	3,400	272	0.08	3,400	151	0.04			
		N/S Movements		0.37			0.27			
		E/W Movements		0.08			0.07			
		Rt. Turn Component		0.00			0.00			
		Yellow Clearance		0.05			0.05			
TOTAL CAPACITY UTILIZATION				0.50					0.40	
LEVEL OF SERVICE (LOS)				A					A	

PROJECT:		City of Orange General Plan Update								
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC								
INTERSECTION:		60 The City Drive @ N/B I-5 Ramps/Anaheim Wy.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	2	3,400	19	0.01	3,400	264	0.08	*		
NBT	4	6,800	697	0.10	6,800	1,171	0.24			
NBR (free)	f		213			447				
SBL	1	1,700	17	0.01	1,700	34	0.02			
SBT	4	6,800	2,428	0.36	6,800	1,332	0.20	*		
SBR	1	1,700	16	0.01	1,700	39	0.02			
EBL	0		0			0				
EBT	0		0			0				
EBR	0		0			0				
WBL	1.5	3,465	250	0.07	3,159	236	0.07			
WBT	1.5	1,635	118	0.07	1,941	145	0.09	*		
WBR	2	3,400	272	0.08	3,400	151	0.04			
		N/S Movements		0.36			0.27			
		E/W Movements		0.08			0.09			
		Rt. Turn Component		0.00			0.00			
		Yellow Clearance		0.05			0.05			
TOTAL CAPACITY UTILIZATION				0.49					0.41	
LEVEL OF SERVICE (LOS)				A					A	

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		61 The City Drive @ S/B I-5 Ramps						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	0		0			0		
NBT	5	8,500	880	0.10	8,500	1,223	0.14	
NBR	0		8			28		
SBL	0		0			0		
SBT	4	6,800	1,873	0.28 *	6,800	994	0.15 *	
SBR (free)	f		180			300		
EBL	0.5	759	90	0.12	1,675	167	0.10	
EBT	1.5	2,641	313	0.12	1,725	172	0.10	
EBR	2	3,400	365	0.11	3,400	333	0.10	
WBL	0		0			0		
WBT	0		0			0		
WBR	0		0			0		
				N/S Movements			0.15	
				E/W Movements			0.10	
				Rt. Turn Component			0.00	
				Yellow Clearance			0.05	
TOTAL CAPACITY UTILIZATION						0.44	0.30	
LEVEL OF SERVICE (LOS)						A	A	

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Project - With Meats Interchange						
INTERSECTION:		61 The City Drive @ S/B I-5 Ramps						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	0		0			0		
NBT	5	8,500	1,065	0.13	8,500	1,587	0.19 *	
NBR	0		10			35		
SBL	0		0			0		
SBT	4	6,800	2,434	0.36 *	6,800	1,144	0.17	
SBR (free)	f		183			300		
EBL	0.5	709	83	0.12	1,690	163	0.10	
EBT	1.5	2,691	315	0.12	1,710	165	0.10	
EBR	2	3,400	391	0.12	3,400	336	0.10 *	
WBL	0		0			0		
WBT	0		0			0		
WBR	0		0			0		
				N/S Movements			0.19	
				E/W Movements			0.10	
				Rt. Turn Component			0.00	
				Yellow Clearance			0.05	
TOTAL CAPACITY UTILIZATION						0.53	0.34	
LEVEL OF SERVICE (LOS)						A	A	

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 1 - Project Without Meats Interchange						
INTERSECTION:		61 The City Drive @ S/B I-5 Ramps						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	0		0			0		
NBT	5	8,500	1,069	0.13	8,500	1,605	0.19 *	
NBR	0		10			35		
SBL	0		0			0		
SBT	4	6,800	2,460	0.36 *	6,800	1,169	0.17	
SBR (free)	f		182			300		
EBL	0.5	729	86	0.12	1,700	165	0.10	
EBT	1.5	2,671	315	0.12	1,700	165	0.10	
EBR	2	3,400	388	0.11	3,400	331	0.10 *	
WBL	0		0			0		
WBT	0		0			0		
WBR	0		0			0		
				N/S Movements			0.19	
				E/W Movements			0.10	
				Rt. Turn Component			0.00	
				Yellow Clearance			0.05	
TOTAL CAPACITY UTILIZATION						0.53	0.34	
LEVEL OF SERVICE (LOS)						A	A	

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC						
INTERSECTION:		61 The City Drive @ S/B I-5 Ramps						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	0		0			0		
NBT	5	8,500	970	0.11	8,500	1,619	0.19 *	
NBR	0		10			34		
SBL	0		0			0		
SBT	4	6,800	2,447	0.36 *	6,800	1,126	0.17	
SBR (free)	f		180			300		
EBL	0.5	626	70	0.11	1,725	171	0.10 *	
EBT	1.5	2,774	310	0.11	1,675	166	0.10	
EBR	2	3,400	403	0.12 *	3,400	334	0.10 *	
WBL	0		0			0		
WBT	0		0			0		
WBR	0		0			0		
				N/S Movements			0.19	
				E/W Movements			0.10	
				Rt. Turn Component			0.01	
				Yellow Clearance			0.05	
TOTAL CAPACITY UTILIZATION						0.54	0.34	
LEVEL OF SERVICE (LOS)						A	A	

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update								
SCENARIO:		No Project								
INTERSECTION:		62 S/B I-5 Ramps @ Chapman Ave.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	V/C
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	2	3,400	636	0.19	*	3,400	698	0.21	*	
NBT	0		0				0			
NBR	1	1,700	35	0.02		1,700	75	0.04	*	
SBL	2	3,400	220	0.06		3,400	157	0.05		
SBT	0		0				0			
SBR (free)	1	1,700	0	0.00		1,700	3	0.00	*	
EBL	0		0				0			
EBT	3.5	4,144	915	0.22	*	4,153	1,008	0.24	*	
EBR	1.5	4,356	962	0.22		4,347	1,055	0.24		
WBL	2	3,400	98	0.03	*	3,400	115	0.03	*	
WBT	3	5,100	884	0.17		5,100	1,029	0.20		
WBR	0	0	0			0	0			
N/S Movements				0.19				0.21		
E/W Movements				0.25				0.28		
Rt. Turn Component				0.00				0.00		
Yellow Clearance				0.05				0.05		
TOTAL CAPACITY UTILIZATION				0.49				0.53		
LEVEL OF SERVICE (LOS)				A				A		

PROJECT:		City of Orange General Plan Update								
SCENARIO:		Project - With Meats Interchange								
INTERSECTION:		62 S/B I-5 Ramps @ Chapman Ave.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	V/C
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	2	3,400	652	0.19	*	3,400	662	0.19	*	
NBT	0		0				0			
NBR	1	1,700	37	0.02		1,700	102	0.06	*	
SBL	2	3,400	316	0.09		3,400	169	0.05		
SBT	0		0				0			
SBR (free)	1	1,700	0	0.00		1,700	3	0.00	*	
EBL	0		0				0			
EBT	3.5	4,041	909	0.22	*	4,252	1,039	0.24	*	
EBR	1.5	4,459	1,003	0.22		4,248	1,038	0.24		
WBL	2	3,400	101	0.03	*	3,400	198	0.06	*	
WBT	3	5,100	908	0.18		5,100	1,280	0.25		
WBR	0	0	0			0	0			
N/S Movements				0.19				0.19		
E/W Movements				0.25				0.30		
Rt. Turn Component				0.00				0.00		
Yellow Clearance				0.05				0.05		
TOTAL CAPACITY UTILIZATION				0.50				0.55		
LEVEL OF SERVICE (LOS)				A				A		

PROJECT:		City of Orange General Plan Update								
SCENARIO:		Alternative 1 - Project Without Meats Interchange								
INTERSECTION:		62 S/B I-5 Ramps @ Chapman Ave.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	V/C
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	2	3,400	651	0.19	*	3,400	693	0.20	*	
NBT	0		0				0			
NBR	1	1,700	37	0.02		1,700	104	0.06	*	
SBL	2	3,400	307	0.09		3,400	159	0.05		
SBT	0		0				0			
SBR (free)	1	1,700	0	0.00		1,700	3	0.00	*	
EBL	0		0				0			
EBT	3.5	4,050	909	0.22	*	4,270	1,044	0.26	*	
EBR	1.5	4,450	999	0.22		4,230	1,034	0.23		
WBL	2	3,400	101	0.03	*	3,400	199	0.06	*	
WBT	3	5,100	906	0.18		5,100	1,268	0.25		
WBR	0	0	0			0	0			
N/S Movements				0.19				0.20		
E/W Movements				0.25				0.32		
Rt. Turn Component				0.00				0.00		
Yellow Clearance				0.05				0.05		
TOTAL CAPACITY UTILIZATION				0.50				0.57		
LEVEL OF SERVICE (LOS)				A				A		

PROJECT:		City of Orange General Plan Update								
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC								
INTERSECTION:		62 S/B I-5 Ramps @ Chapman Ave.								
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C	V/C
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C			
NBL	2	3,400	649	0.19	*	3,400	661	0.19	*	
NBT	0		0				0			
NBR	1	1,700	37	0.02		1,700	102	0.06	*	
SBL	2	3,400	297	0.09		3,400	159	0.05		
SBT	0		0				0			
SBR (free)	1	1,700	0	0.00		1,700	3	0.00	*	
EBL	0		0				0			
EBT	3.5	3,963	869	0.22	*	4,256	1,040	0.24	*	
EBR	1.5	4,537	995	0.22		4,244	1,037	0.24		
WBL	2	3,400	101	0.03	*	3,400	191	0.06	*	
WBT	3	5,100	903	0.18		5,100	1,237	0.24		
WBR	0	0	0			0	0			
N/S Movements				0.19				0.19		
E/W Movements				0.25				0.30		
Rt. Turn Component				0.00				0.00		
Yellow Clearance				0.05				0.05		
TOTAL CAPACITY UTILIZATION				0.49				0.54		
LEVEL OF SERVICE (LOS)				A				A		

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update							
SCENARIO:		No Project							
INTERSECTION:		63 Rampart St. @ Chapman Ave./ N/B I-5 Ramps							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	1	1,700	176	0.10	1,700	278	0.16	*	
NBT	2	3,400	278	0.08	3,400	300	0.09		
NBR	1	1,700	194	0.11	1,700	322	0.19		
SBL	1	1,700	56	0.03	1,700	64	0.04		
SBT	2	3,400	405	0.12	3,400	415	0.12	*	
SBR	1	1,700	176	0.10	1,700	141	0.08		
EBL	2	3,400	125	0.04	3,400	63	0.02		
EBT	3	4,098	1,026	0.25	4,079	1,119	0.27	*	
EBR	0	1,002	251	0.25	1,021	280	0.27		
WBL	1	1,700	283	0.17	1,700	343	0.20	*	
WBT	3	5,100	1,062	0.21	5,100	1,083	0.21		
WBR	2	3,400	227	0.07	3,400	172	0.05		
N/S Movements				0.22				0.29	
E/W Movements				0.42				0.48	
Rt. Turn Component				0.00				0.00	
Yellow Clearance				0.05				0.05	
TOTAL CAPACITY UTILIZATION				0.69				0.81	
LEVEL OF SERVICE (LOS)				B				D	

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Project - With Meats Interchange							
INTERSECTION:		63 Rampart St. @ Chapman Ave./ N/B I-5 Ramps							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	1	1,700	87	0.05	1,700	165	0.10		
NBT	2	3,400	951	0.28	3,400	951	0.28	*	
NBR	1	1,700	174	0.10	1,700	225	0.13		
SBL	1	1,700	313	0.18	1,700	306	0.18	*	
SBT	2	3,400	915	0.27	3,400	978	0.29		
SBR	1	1,700	544	0.32	1,700	575	0.34		
EBL	2	3,400	402	0.12	3,400	203	0.06		
EBT	3	4,710	1,026	0.22	4,551	1,119	0.25	*	
EBR	0	390	85	0.22	549	135	0.25		
WBL	1	1,700	140	0.08	1,700	187	0.11	*	
WBT	3	5,100	1,062	0.21	5,100	1,083	0.21		
WBR	2	3,400	1,067	0.31	3,400	767	0.23		
N/S Movements				0.46				0.46	
E/W Movements				0.33				0.36	
Rt. Turn Component				0.00				0.00	
Yellow Clearance				0.05				0.05	
TOTAL CAPACITY UTILIZATION				0.84				0.87	
LEVEL OF SERVICE (LOS)				D				D	

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Alternative 1 - Project Without Meats Interchange							
INTERSECTION:		63 Rampart St. @ Chapman Ave./ N/B I-5 Ramps							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	1	1,700	86	0.05	1,700	149	0.09		
NBT	2	3,400	949	0.28	3,400	892	0.26	*	
NBR	1	1,700	170	0.10	1,700	205	0.12		
SBL	1	1,700	322	0.19	1,700	298	0.18	*	
SBT	2	3,400	883	0.26	3,400	1,002	0.29		
SBR	1	1,700	569	0.33	1,700	559	0.33		
EBL	2	3,400	407	0.12	3,400	208	0.06		
EBT	3	4,735	1,026	0.22	4,529	1,119	0.25	*	
EBR	0	365	79	0.22	571	141	0.25		
WBL	1	1,700	128	0.08	1,700	197	0.12	*	
WBT	3	5,100	1,062	0.21	5,100	1,083	0.21		
WBR	2	3,400	1,063	0.31	3,400	790	0.23		
N/S Movements				0.47				0.44	
E/W Movements				0.33				0.36	
Rt. Turn Component				0.00				0.00	
Yellow Clearance				0.05				0.05	
TOTAL CAPACITY UTILIZATION				0.85				0.85	
LEVEL OF SERVICE (LOS)				D				D	

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC							
INTERSECTION:		63 Rampart St. @ Chapman Ave./ N/B I-5 Ramps							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	1	1,700	90	0.05	1,700	90	0.05		
NBT	2	3,400	911	0.27	3,400	909	0.27	*	
NBR	1	1,700	165	0.10	1,700	228	0.13		
SBL	1	1,700	273	0.16	1,700	313	0.18	*	
SBT	2	3,400	855	0.25	3,400	945	0.28		
SBR	1	1,700	520	0.31	1,700	572	0.34	*	
EBL	2	3,400	405	0.12	3,400	194	0.06		
EBT	3	4,685	1,026	0.22	4,569	1,119	0.24	*	
EBR	0	415	91	0.22	531	130	0.24		
WBL	1	1,700	144	0.08	1,700	178	0.10	*	
WBT	3	5,100	1,062	0.21	5,100	1,083	0.21		
WBR	2	3,400	1,033	0.30	3,400	726	0.21		
N/S Movements				0.43				0.45	
E/W Movements				0.33				0.35	
Rt. Turn Component				0.00				0.00	
Yellow Clearance				0.05				0.05	
TOTAL CAPACITY UTILIZATION				0.81				0.85	
LEVEL OF SERVICE (LOS)				D				D	

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		64 S/B SR-57 Ramps @ Chapman Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	0.5	1,292	19	0.01	1,419	172	0.12	
NBT	0.5	408	6	0.01	281	34	0.12	
NBR	1	1,700	16	0.01	1,700	111	0.07	
SBL	0.5	1,385	264	0.19	1,623	168	0.10	
SBT	0.5	315	60	0.19	77	8	0.10	
SBR	1	1,700	404	0.24	1,700	331	0.19	
EBL	1	1,700	3	0.00	1,700	1	0.00	
EBT	3	4,475	1,110	0.25	4,998	1,078	0.22	
EBR	0	625	155	0.25	102	22	0.22	
WBL	1	1,700	90	0.05	1,700	24	0.01	
WBT	2	3,400	677	0.20	3,400	1,187	0.35	
WBR (free)	f		161			164		
		N/S Movements		0.21			0.22	
		E/W Movements		0.30			0.35	
		Rt. Turn Component		0.05			0.09	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.60	0.72			
LEVEL OF SERVICE (LOS)				A	C			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Project - With Meats Interchange						
INTERSECTION:		64 S/B SR-57 Ramps @ Chapman Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	0.5	1,265	61	0.05	1,435	292	0.20	
NBT	0.5	435	21	0.05	265	54	0.20	
NBR	1	1,700	33	0.02	1,700	115	0.07	
SBL	0.5	1,286	273	0.21	1,587	168	0.11	
SBT	0.5	414	88	0.21	113	12	0.11	
SBR	1	1,700	535	0.31	1,700	368	0.22	
EBL	1	1,700	7	0.00	1,700	2	0.00	
EBT	3	4,108	1,135	0.28	4,892	1,153	0.24	
EBR	0	992	274	0.28	208	49	0.24	
WBL	1	1,700	119	0.07	1,700	38	0.02	
WBT	2	3,400	864	0.25	3,400	1,519	0.45	
WBR (free)	f		243			194		
		N/S Movements		0.26			0.31	
		E/W Movements		0.35			0.45	
		Rt. Turn Component		0.10			0.11	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.76	0.92			
LEVEL OF SERVICE (LOS)				C	E			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 1 - Project Without Meats Interchange						
INTERSECTION:		64 S/B SR-57 Ramps @ Chapman Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	0.5	1,265	61	0.05	1,445	295	0.20	
NBT	0.5	435	21	0.05	255	52	0.20	
NBR	1	1,700	33	0.02	1,700	116	0.07	
SBL	0.5	1,289	273	0.21	1,587	168	0.11	
SBT	0.5	411	87	0.21	113	12	0.11	
SBR	1	1,700	526	0.31	1,700	369	0.22	
EBL	1	1,700	7	0.00	1,700	2	0.00	
EBT	3	4,112	1,136	0.28	4,891	1,144	0.23	
EBR	0	988	273	0.28	209	49	0.23	
WBL	1	1,700	120	0.07	1,700	39	0.02	
WBT	2	3,400	863	0.25	3,400	1,546	0.45	
WBR (free)	f		243			187		
		N/S Movements		0.26			0.31	
		E/W Movements		0.35			0.46	
		Rt. Turn Component		0.09			0.11	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.75	0.93			
LEVEL OF SERVICE (LOS)				C	E			

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC						
INTERSECTION:		64 S/B SR-57 Ramps @ Chapman Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	0.5	1,317	55	0.04	1,441	312	0.22	
NBT	0.5	383	16	0.04	259	56	0.22	
NBR	1	1,700	35	0.02	1,700	133	0.08	
SBL	0.5	1,241	273	0.22	1,578	168	0.11	
SBT	0.5	459	101	0.22	122	13	0.11	
SBR	1	1,700	508	0.30	1,700	354	0.21	
EBL	1	1,700	5	0.00	1,700	2	0.00	
EBT	3	4,093	1,105	0.27	4,895	1,168	0.24	
EBR	0	1,007	272	0.27	205	49	0.24	
WBL	1	1,700	148	0.09	1,700	39	0.02	
WBT	2	3,400	888	0.26	3,400	1,465	0.43	
WBR (free)	f		219			183		
		N/S Movements		0.26			0.32	
		E/W Movements		0.36			0.43	
		Rt. Turn Component		0.08			0.10	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.74	0.91			
LEVEL OF SERVICE (LOS)				C	E			

APPENDIX E: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update						
SCENARIO:		No Project						
INTERSECTION:		65 N/B SR-57 Ramps @ Chapman Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	44	0.03	1,700	30	0.02	
NBT	0		0			0		
NBR	1	1,700	119	0.07	1,700	164	0.10	
SBL	0		0			0		
SBT	0		0			0		
SBR	1	1,700	0	0.00	1,700	0	0.00	
EBL	1	1,700	0	0.00	1,700	0	0.00	
EBT	2	3,400	1,041	0.31	3,400	899	0.26	
EBR (free)	f		377			446		
WBL	0		0			0		
WBT	3	3,717	876	0.24	4,159	1,300	0.31	
WBR	0	1,383	326	0.24	941	294	0.31	
N/S Movements				0.03			0.02	
E/W Movements				0.31			0.31	
Rt. Turn Component				0.04			0.08	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.43			0.46	
LEVEL OF SERVICE (LOS)				A			A	

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Project - With Meats Interchange						
INTERSECTION:		65 N/B SR-57 Ramps @ Chapman Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	63	0.04	1,700	34	0.02	
NBT	0		0			0		
NBR	1	1,700	116	0.07	1,700	176	0.10	
SBL	0		0			0		
SBT	0		0			0		
SBR	1	1,700	0	0.00	1,700	0	0.00	
EBL	1	1,700	0	0.00	1,700	0	0.00	
EBT	2	3,400	1,162	0.34	3,400	940	0.28	
EBR (free)	f		378			442		
WBL	0		0			0		
WBT	3	3,893	1,123	0.29	4,336	1,715	0.40	
WBR	0	1,207	348	0.29	764	302	0.40	
N/S Movements				0.04			0.02	
E/W Movements				0.34			0.40	
Rt. Turn Component				0.03			0.08	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.46			0.55	
LEVEL OF SERVICE (LOS)				A			A	

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 1 - Project Without Meats Interchange						
INTERSECTION:		65 N/B SR-57 Ramps @ Chapman Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	61	0.04	1,700	32	0.02	
NBT	0		0			0		
NBR	1	1,700	118	0.07	1,700	169	0.10	
SBL	0		0			0		
SBT	0		0			0		
SBR	1	1,700	0	0.00	1,700	0	0.00	
EBL	1	1,700	0	0.00	1,700	0	0.00	
EBT	2	3,400	1,176	0.35	3,400	944	0.28	
EBR (free)	f		377			441		
WBL	0		0			0		
WBT	3	3,897	1,121	0.29	4,324	1,733	0.40	
WBR	0	1,203	346	0.29	776	311	0.40	
N/S Movements				0.04			0.02	
E/W Movements				0.35			0.40	
Rt. Turn Component				0.03			0.08	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.47			0.55	
LEVEL OF SERVICE (LOS)				A			A	

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC						
INTERSECTION:		65 N/B SR-57 Ramps @ Chapman Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	61	0.04	1,700	35	0.02	
NBT	0		0			0		
NBR	1	1,700	108	0.06	1,700	165	0.10	
SBL	0		0			0		
SBT	0		0			0		
SBR	1	1,700	0	0.00	1,700	0	0.00	
EBL	1	1,700	0	0.00	1,700	0	0.00	
EBT	2	3,400	1,140	0.34	3,400	952	0.28	
EBR (free)	f		378			442		
WBL	0		0			0		
WBT	3	3,960	1,136	0.29	4,339	1,665	0.38	
WBR	0	1,140	327	0.29	761	292	0.38	
N/S Movements				0.04			0.02	
E/W Movements				0.34			0.38	
Rt. Turn Component				0.03			0.08	
Yellow Clearance				0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.45			0.53	
LEVEL OF SERVICE (LOS)				A			A	

Appendix F Future Project Mitigated Intersection ICU Worksheets

APPENDIX F: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Project - With Meats Interchange Mitigated						
INTERSECTION:		7 Cannon St. @ Santiago Canyon Rd.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	274	0.08	3,400	197	0.06	
NBT	1.5	2,837	237	0.08	3,275	552	0.17	
NBR	0.5	563	47	0.08	125	21	0.17	
SBL	3	5,100	2,144	0.42	5,100	1,324	0.26	
SBT	3	5,100	511	0.10	5,100	323	0.06	
SBR(free)	f		1,244			613		
EBL	2	3,400	355	0.10	3,400	750	0.22	
EBT	3	5,100	1,104	0.22	5,100	1,253	0.25	
EBR	1	1,700	155	0.09	1,700	218	0.13	
WBL	2	3,400	24	0.01	3,400	18	0.01	
WBT	3	5,100	1,443	0.28	5,100	1,187	0.23	
SBR(free)	f		1,123			1,845		
split phasing		N/S Movements		0.50			0.43	
		E/W Movements		0.39			0.45	
		Rt. Turn Component		0.00			0.00	
		Yellow Clearance		0.05			0.05	
		Apply ATMS		-0.05			-0.05	
TOTAL CAPACITY UTILIZATION				0.89			0.88	
LEVEL OF SERVICE (LOS)				D			D	

APPENDIX F: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update					
SCENARIO:		Project - With Meats Interchange					
INTERSECTION:		8 Cannon St. @ Serrano Ave.					
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR		
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C
NBL	0		0		0		
NBT	3	5,100	1,421	0.28	5,100	2,288	0.45 *
NBR	1	1,700	292	0.17	1,700	1,227	0.72 *
SBL	1	1,700	82	0.05	1,700	185	0.11 *
SBT	3	5,100	2,821	0.55 *	5,100	1,482	0.29
SBR	0		0			0	
EBL	0		0			0	
EBT	0		0	0.00		0	0.00
EBR	0		0			0	
WBL	3	5,100	1,309	0.26 *	5,100	479	0.09 *
WBT	0		0	0.00		0	0.00
WBR	1	1,700	249	0.15	1,700	69	0.04
		N/S Movements		0.55			0.56
		E/W Movements		0.26			0.09
		Rt. Turn Component		0.00			0.18
		Yellow Clearance		0.05			0.05
TOTAL CAPACITY UTILIZATION				0.86	0.88		
LEVEL OF SERVICE (LOS)				D	D		

APPENDIX F: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Project - With Meats Interchange						
INTERSECTION:		12 Jamboree Rd. @ Chapman Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	3	5,100	693	0.14	*	5,100	1,029	0.20
NBT	3	5,100	402	0.08		5,100	1,136	0.22
NBR	1	1,700	289	0.17	*	1,700	154	0.09
SBL	2	3,400	749	0.22		3,400	514	0.15
SBT	3	5,100	1,193	0.23	*	5,100	356	0.07
SBR	1	1,700	332	0.20		1,700	252	0.15
EBL	2	3,400	194	0.06	*	3,400	368	0.11
EBT	3	5,100	1,552	0.30		5,100	1,664	0.33
EBR	1	1,700	764	0.45	*	1,700	682	0.40
WBL	2	3,400	190	0.06		3,400	143	0.04
WBT	3	5,100	1,936	0.38	*	5,100	1,799	0.35
WBR	1	1,700	424	0.25		1,700	878	0.52
		N/S Movements		0.37				0.37
		E/W Movements		0.44				0.46
		Rt. Turn Component		0.02				0.01
		Yellow Clearance		0.05				0.05
TOTAL CAPACITY UTILIZATION				0.88				0.90
LEVEL OF SERVICE (LOS)				D				D

APPENDIX F: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update					
SCENARIO:		Project - With Meats Interchange					
INTERSECTION:		27 S/B SR-55 Ramps @ Katella Ave.					
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR		
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C
NBL	0		0			0	
NBT	0		0	0.00		0	0.00
NBR	0		0			0	
SBL	2	3,400	221	0.07 *	3,400	397	0.12 *
SBT	0		0	0.00 *		0	0.00
SBR	1	1,700	478	0.28	1,700	413	0.24 *
EBL	0		0			0	
EBT	2.5	3,462	640	0.18 *	3,934	1,434	0.36 *
EBR	1.5	3,338	617	0.18	2,866	1,045	0.36
WBL	2	3,400	767	0.23 *	3,400	358	0.11 *
WBT	3	5,100	1,884	0.37	5,100	1,429	0.28
WBR	0		0			0	
split phasing		N/S Movements		0.07			0.12
		E/W Movements		0.41			0.47
		Rt. Turn Component		0.22			0.13
		Yellow Clearance		0.05			0.05
TOTAL CAPACITY UTILIZATION				0.74			
LEVEL OF SERVICE (LOS)				C			
					0.76		
					C		

APPENDIX F: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Project - With Meats Interchange							
INTERSECTION:		30 Main Street @ La Veta Ave.							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR				
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	2	3,400	337	0.10	*	3,400	477	0.14	*
NBT	3	5,100	882	0.17		5,100	1,641	0.32	
NBR	1	1,700	322	0.19		1,700	798	0.47	
SBL	2	3,400	184	0.05		3,400	330	0.10	
SBT	3	5,100	1,473	0.29	*	5,100	1,854	0.36	*
SBR	1	1,700	430	0.25		1,700	581	0.34	
EBL	2	3,400	920	0.27	*	3,400	609	0.18	*
EBT	3	5,100	564	0.11		5,100	577	0.11	
EBR	1	1,700	258	0.15		1,700	266	0.16	
WBL	2	3,400	389	0.11		3,400	581	0.17	
WBT	3	5,100	563	0.11	*	5,100	1,116	0.22	*
WBR	1	1,700	208	0.12		1,700	380	0.22	
		N/S Movements		0.39				0.50	
		E/W Movements		0.38				0.40	
		Rt. Turn Component		0.00				0.00	
		Yellow Clearance		0.05				0.05	
		Apply ATMS		-0.05				-0.05	
TOTAL CAPACITY UTILIZATION				0.77				0.90	
LEVEL OF SERVICE (LOS)				C				D	

APPENDIX F: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Project - With Meats Interchange						
INTERSECTION:		40 Santiago Blvd. @ Meats Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	127	0.04	3,400	476	0.14	*
NBT	2	3,400	964	0.28	3,400	718	0.21	*
NBR	1	1,700	333	0.20	1,700	525	0.31	*
SBL	2	3,400	426	0.13	3,400	56	0.02	*
SBT	1.5	2,732	884	0.32	3,025	573	0.19	*
SBR	0.5	668	216	0.32	375	71	0.19	*
EBL	1	1,700	98	0.06	1,700	145	0.09	*
EBT	1.5	1,460	112	0.08	2,452	714	0.29	*
EBR	1.5	3,640	1,082	0.30	2,648	771	0.29	*
WBL	2	3,400	517	0.15	3,400	262	0.08	*
WBT	2	3,400	575	0.17	3,400	266	0.08	*
WBR	1	1,700	141	0.08	1,700	32	0.02	*
		N/S Movements		0.41			0.33	
		E/W Movements		0.23			0.37	
		Rt. Turn Component		0.18			0.02	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.87				0.77
LEVEL OF SERVICE (LOS)				D				C

APPENDIX F: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Project - With Meats Interchange						
INTERSECTION:		41 Wanda Rd. @ Villa Park Rd.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	242	0.14	1,700	117	0.07	
NBT	1.5	2,706	585	0.22	2,644	577	0.22	
NBR	0.5	694	150	0.22	756	165	0.22	
SBL	2	3,400	474	0.14	3,400	373	0.11	
SBT	2	3,400	701	0.21	3,400	682	0.20	
SBR	1	1,700	603	0.35	1,700	405	0.24	
EBL	2	3,400	264	0.08	3,400	486	0.14	
EBT	2	3,400	796	0.23	3,400	1,294	0.38	
EBR	1	1,700	163	0.10	1,700	242	0.14	
WBL	1	1,700	204	0.12	1,700	169	0.10	
WBT	3	5,100	1,637	0.32	5,100	924	0.18	
WBR	1	1,700	381	0.22	1,700	426	0.25	
		N/S Movements		0.36			0.33	
		E/W Movements		0.40			0.48	
		Rt. Turn Component		0.07			0.00	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.88				
LEVEL OF SERVICE (LOS)				D	0.86			
					D			

APPENDIX F: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Project - With Meats Interchange							
INTERSECTION:		48 Tustin St. @ Lincoln Ave.							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR				
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	2	3,400	169	0.05	*	3,400	464	0.14	*
NBT	3	5,100	183	0.04		5,100	698	0.14	
NBR	2	3,400	255	0.08		3,400	888	0.26	
SBL	2	3,400	155	0.05		3,400	379	0.11	
SBT	3	5,100	739	0.14	*	5,100	1,009	0.20	*
SBR	1	1,700	388	0.23	*	1,700	395	0.23	
EBL	2	3,400	89	0.03	*	3,400	363	0.11	
EBT	3	5,100	311	0.06		5,100	1,149	0.23	*
EBR	2	3,400	641	0.19	*	3,400	768	0.22	
WBL	2	3,400	870	0.26		3,400	630	0.19	*
WBT	2	3,400	1,033	0.30	*	3,400	976	0.29	
WBR	1	1,700	168	0.10		1,700	285	0.17	
split phasing		N/S Movements		0.19				0.33	
		E/W Movements		0.36				0.51	
		Rt. Turn Component		0.14				0.00	
		Yellow Clearance		0.05				0.05	
TOTAL CAPACITY UTILIZATION				0.74				0.90	
LEVEL OF SERVICE (LOS)				C				D	

APPENDIX F: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Project - With Meats Interchange (after Mit)						
INTERSECTION:		56	Main St. @ Struck Ave.					
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	49	0.03	*	1,700	174	0.10
NBT	2	2,586	480	0.19		3,283	1,464	0.45
NBR	0	814	151	0.19		117	52	0.45
SBL	1	1,700	85	0.05		1,700	50	0.03
SBT	2	2,956	798	0.27	*	3,305	1,145	0.35
SBR	0	444	120	0.27		95	33	0.35
EBL	1	1,700	267	0.16	*	1,700	47	0.03
EBT	2	3,022	567	0.19		892	69	0.08
EBR	0	378	71	0.19		2,508	194	0.08
WBL	1	1,700	401	0.24		1,700	39	0.02
WBT	2	2,836	819	0.29	*	1,871	115	0.06
WBR	0	564	163	0.29		1,529	94	0.06
		N/S Movements		0.30				0.48
		E/W Movements		0.45				0.10
		Rt. Turn Component		0.00				0.00
		Yellow Clearance		0.05				0.05
TOTAL CAPACITY UTILIZATION				0.79				0.63
LEVEL OF SERVICE (LOS)				C				B

Recommended Mitigation

Future Lane Geometry from

V:\174634A-OrangeGPUUpdate\OrngGenPlanUpd-y25-ICU-WrkShts-050609.xls

APPENDIX F: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Project - With Meats Interchange (after Mit)							
INTERSECTION:		57 Main St. @ Collins Ave.							
MOVEMENT	LANES	AM PEAK HOUR				PM PEAK HOUR			
		CAPACITY	VOLUME	V/C		CAPACITY	VOLUME	V/C	
NBL	1	1,700	360	0.21	*	1,700	288	0.17	*
NBT	2	3,400	468	0.14		3,400	1,007	0.30	
NBR	1	1,700	557	0.33	*	1,700	591	0.35	
SBL	1	1,700	78	0.05		1,700	135	0.08	
SBT	2	2,691	797	0.30	*	3,118	908	0.29	*
SBR	0	709	210	0.30		282	82	0.29	
EBL	1	1,700	57	0.03	*	1,700	146	0.09	*
EBT	2	3,400	120	0.04		3,400	285	0.08	
EBR	1	1,700	269	0.16		1,700	509	0.30	*
WBL	2	3,400	423	0.12		3,400	584	0.17	
WBT	1	1,106	268	0.24	*	1,032	221	0.21	*
WBR	0	594	144	0.24		668	143	0.21	
N/S Movements				0.51				0.46	
E/W Movements				0.28				0.30	
Rt. Turn Component				0.00				0.05	
Yellow Clearance				0.05				0.05	
TOTAL CAPACITY UTILIZATION				0.83				0.86	
LEVEL OF SERVICE (LOS)				D				D	

Recommended Mitigation

Future Lane Geometry from

V:\174634A-OrangeGPUUpdate\OrngGenPlanUpd-y25-ICU-WrkShts-050609.xls

APPENDIX F: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Project - With Meats Interchange (after Mit)							
INTERSECTION:		58 S/B SR-57 Ramps @ Orangewood Ave.							
MOVEMENT	LANES	AM PEAK HOUR				PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	0		0			0			
NBT	0		0			0			
NBR	0		0			0			
SBL	1.5	2,189	555	0.25	*	1,161	256	0.22	*
SBT	0	0	0			0	0		
SBR	1.5	2,911	738	0.25	*	3,939	869	0.22	*
EBL	0		0				0		
EBT	3	4,978	1,925	0.39	*	4,470	1,334	0.30	*
EBR	0	122	47	0.39		630	188	0.30	
WBL	2	3,400	163	0.05	*	3,400	478	0.14	*
WBT	2	3,400	762	0.22		3,400	1,471	0.43	
WBR	0	0	0			0	0		
		N/S Movements		0.25				0.22	
		E/W Movements		0.43				0.44	
		Rt. Turn Component		0.00				0.00	
		Yellow Clearance		0.05				0.05	
TOTAL CAPACITY UTILIZATION				0.74				0.71	
LEVEL OF SERVICE (LOS)				C				C	

Recommended Mitigation

Future Lane Geometry from

V:\174634A-OrangeGPUUpdate\OrngGenPlanUpd-y25-ICU-WrkShts-050609.xls

APPENDIX F: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Project - With Meats Interchange							
INTERSECTION:		64	S/B SR-57 Ramps @ Chapman Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR				
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	1	1,700	61	0.04	*	1,700	292	0.17	*
NBT	1	661	21	0.03		543	54	0.10	
NBR	0	1,039	33	0.03		1,157	115	0.10	
SBL	1	1,700	273	0.16		1,700	168	0.10	
SBT	1	240	88	0.37	*	54	12	0.22	*
SBR	0	1,460	535	0.37		1,646	368	0.22	
EBL	1	1,700	7	0.00		1,700	2	0.00	*
EBT	3	4,108	1,135	0.28	*	4,892	1,153	0.24	
EBR	0	992	274	0.28		208	49	0.24	
WBL	1	1,700	119	0.07	*	1,700	38	0.02	
WBT	2	3,400	864	0.25		3,400	1,519	0.45	*
WBR (free)	f		243				194		
		N/S Movements		0.40				0.40	
		E/W Movements		0.35				0.45	
		Rt. Turn Component		0.00				0.00	
		Yellow Clearance		0.05				0.05	
TOTAL CAPACITY UTILIZATION				0.80				0.89	
LEVEL OF SERVICE (LOS)				C				D	

Recommended Mitigation

Future Lane Geometry from

V:\174634A-OrangeGPUUpdate\OrngGenPlanUpd-y25-ICU-WrkShts-050609.xls

Appendix G Future Alternative 1 Mitigated Intersection ICU Worksheets

APPENDIX G: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 1 - Project W/O Meats I/C Mitigated						
INTERSECTION:		7 Cannon St. @ Santiago Canyon Rd.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	268	0.08	3,400	197	0.06	
NBT	1.5	2,807	232	0.08	3,283	563	0.17	
NBR	0.5	593	49	0.08	117	20	0.17	
SBL	3	5,100	2,096	0.41	5,100	1,309	0.26	
SBT	3	5,100	491	0.10	5,100	328	0.06	
SBR(free)	f		1,166			633		
EBL	2	3,400	319	0.09	3,400	757	0.22	
EBT	3	5,100	1,050	0.21	5,100	1,191	0.23	
EBR	1	1,700	144	0.08	1,700	212	0.12	
WBL	2	3,400	25	0.01	3,400	17	0.01	
WBT	3	5,100	1,446	0.28	5,100	1,173	0.23	
SBR(free)	f		1,124			1,860		
split phasing		N/S Movements		0.49			0.43	
		E/W Movements		0.38			0.45	
		Rt. Turn Component		0.00			0.00	
		Yellow Clearance		0.05			0.05	
		Apply ATMS		-0.05			-0.05	
TOTAL CAPACITY UTILIZATION				0.87			0.88	
LEVEL OF SERVICE (LOS)				D			D	

APPENDIX G: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 1 - Project W/O Meats I/C Mitigated						
INTERSECTION:		8 Cannon St. @ Serrano Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	0		0			0		
NBT	3	5,100	1,404	0.28	5,100	2,321	0.46 *	
NBR	1	1,700	283	0.17	1,700	1,214	0.71 *	
SBL	1	1,700	82	0.05	1,700	183	0.11 *	
SBT	3	5,100	2,816	0.55 *	5,100	1,484	0.29	
SBR	0		0			0		
EBL	0		0			0		
EBT	0		0	0.00		0	0.00	
EBR	0		0			0		
WBL	2.5	4,285	1,294	0.30 *	4,454	469	0.11 *	
WBT	0	0	0	0.00	0	0	0.00	
WBR	0.5	815	246	0.30	646	68	0.08	
		N/S Movements		0.55			0.56	
		E/W Movements		0.30			0.11	
		Rt. Turn Component		0.00			0.15	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.90				
LEVEL OF SERVICE (LOS)				D				
					0.87			
					D			

APPENDIX G: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 1 - Project W/O Meats I/C Mitigated						
INTERSECTION:		12	Jamboree Rd. @ Chapman Ave.					
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	3	5,100	715	0.14	*	5,100	1,074	0.21
NBT	3	5,100	396	0.08		5,100	1,117	0.22
NBR	1	1,700	294	0.17	*	1,700	154	0.09
SBL	2	3,400	737	0.22		3,400	528	0.16
SBT	3	5,100	1,174	0.23	*	5,100	362	0.07
SBR	1	1,700	331	0.19		1,700	262	0.15
EBL	2	3,400	187	0.06	*	3,400	348	0.10
EBT	3	5,100	1,549	0.30		5,100	1,648	0.32
EBR	1	1,700	763	0.45	*	1,700	667	0.39
WBL	2	3,400	190	0.06		3,400	142	0.04
WBT	3	5,100	1,953	0.38	*	5,100	1,834	0.36
WBR	1	1,700	407	0.24		1,700	844	0.50
		N/S Movements		0.37				0.37
		E/W Movements		0.44				0.46
		Rt. Turn Component		0.02				0.00
		Yellow Clearance		0.05				0.05
TOTAL CAPACITY UTILIZATION				0.88				0.89
LEVEL OF SERVICE (LOS)				D				D

APPENDIX G: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 1 - Project W/O Meats I/C Mitigated						
INTERSECTION:		27 S/B SR-55 Ramps @ Katella Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	0		0			0		
NBT	0		0	0.00		0	0.00	
NBR	0		0			0		
SBL	2	3,400	221	0.07 *	3,400	386	0.11 *	
SBT	0		0	0.00 *		0	0.00	
SBR	1	1,700	517	0.30	1,700	444	0.26 *	
EBL	0		0			0		
EBT	2.5	3,536	639	0.18 *	4,019	1,535	0.38 *	
EBR	1.5	3,264	590	0.18	2,781	1,062	0.38	
WBL	2	3,400	740	0.22 *	3,400	358	0.11 *	
WBT	3	5,100	2,011	0.39	5,100	1,587	0.31	
WBR	0		0			0		
split phasing		N/S Movements		0.07			0.11	
		E/W Movements		0.40			0.49	
		Rt. Turn Component		0.24			0.15	
		Yellow Clearance		0.05			0.05	
TOTAL CAPACITY UTILIZATION				0.75	0.80			
LEVEL OF SERVICE (LOS)				C	C			

APPENDIX G: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Alternative 1 - Project W/O Meats I/C Mitigated							
INTERSECTION:		30 Main Street @ La Veta Ave.							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR				
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	2	3,400	346	0.10	*	3,400	478	0.14	*
NBT	3	5,100	885	0.17		5,100	1,614	0.32	
NBR	1	1,700	322	0.19		1,700	774	0.46	
SBL	2	3,400	184	0.05		3,400	324	0.10	
SBT	3	5,100	1,471	0.29	*	5,100	1,859	0.36	*
SBR	1	1,700	447	0.26		1,700	593	0.35	
EBL	2	3,400	927	0.27	*	3,400	609	0.18	*
EBT	3	5,100	563	0.11		5,100	577	0.11	
EBR	1	1,700	255	0.15		1,700	271	0.16	
WBL	2	3,400	383	0.11		3,400	570	0.17	
WBT	3	5,100	578	0.11	*	5,100	1,114	0.22	*
WBR	1	1,700	208	0.12		1,700	372	0.22	
		N/S Movements		0.39				0.51	
		E/W Movements		0.39				0.40	
		Rt. Turn Component		0.00				0.00	
		Yellow Clearance		0.05				0.05	
		Apply ATMS		-0.05				-0.05	
TOTAL CAPACITY UTILIZATION				0.78				0.90	
LEVEL OF SERVICE (LOS)				C				D	

APPENDIX G: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Alternative 1 - Project W/O Meats I/C Mitigated							
INTERSECTION:		41 Wanda Rd. @ Villa Park Rd.							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR				
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	1	1,700	230	0.14	*	1,700	132	0.08	
NBT	1.5	2,757	656	0.24		2,677	589	0.22	
NBR	0.5	643	153	0.24		723	159	0.22	
SBL	2	3,400	386	0.11		3,400	287	0.08	
SBT	1.5	2,738	715	0.26	*	3,260	705	0.22	
SBR	1.5	2,362	617	0.26		1,840	398	0.22	
EBL	2	3,400	278	0.08	*	3,400	507	0.15	
EBT	2	3,400	761	0.22		3,400	1,274	0.37	
EBR	1	1,700	161	0.09		1,700	320	0.19	
WBL	1	1,700	204	0.12		1,700	180	0.11	
WBT	3	5,100	1,643	0.32	*	5,100	932	0.18	
WBR	1	1,700	336	0.20		1,700	357	0.21	
		N/S Movements		0.40			0.30		
		E/W Movements		0.40			0.48		
		Rt. Turn Component		0.00			0.00		
		Yellow Clearance		0.05			0.05		
TOTAL CAPACITY UTILIZATION				0.85		0.84			
LEVEL OF SERVICE (LOS)				D		D			

APPENDIX G: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Alternative 1 - Project W/O Meats I/C Mitigated							
INTERSECTION:		46	Tustin St. @ Katella Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR				
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	2	3,400	305	0.09	*	3,400	418	0.12	
NBT	3	5,100	799	0.16		5,100	1,342	0.26	*
NBR	1	1,700	251	0.15		1,700	431	0.25	
SBL	2	3,400	444	0.13		3,400	681	0.20	*
SBT	3	5,100	1,054	0.21	*	5,100	1,469	0.29	
SBR	1	1,700	341	0.20		1,700	300	0.18	
EBL	2	3,400	251	0.07	*	3,400	433	0.13	
EBT	3	5,100	700	0.14		5,100	1,538	0.30	*
EBR	1	1,700	296	0.17		1,700	469	0.28	
WBL	2	3,400	350	0.10		3,400	363	0.11	*
WBT	3	5,100	1,404	0.28	*	5,100	1,112	0.22	
WBR	1	1,700	590	0.35		1,700	515	0.30	
		N/S Movements		0.30				0.46	
		E/W Movements		0.35				0.41	
		Rt. Turn Component		0.00				0.00	
		Yellow Clearance		0.05				0.05	
		Apply ATMS		-0.05				-0.05	
TOTAL CAPACITY UTILIZATION				0.65				0.87	
LEVEL OF SERVICE (LOS)				B				D	

APPENDIX G: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Alternative 1 - Project W/O Meats I/C Mitigated							
INTERSECTION:		48 Tustin St. @ Lincoln Ave.							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR				
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	2	3,400	188	0.06	*	3,400	507	0.15	*
NBT	3	5,100	203	0.04		5,100	723	0.14	
NBR	2	3,400	284	0.08		3,400	1,030	0.30	
SBL	2	3,400	164	0.05		3,400	394	0.12	
SBT	3	5,100	785	0.15	*	5,100	1,009	0.20	*
SBR	1	1,700	392	0.23		1,700	388	0.23	
EBL	2	3,400	85	0.03		3,400	336	0.10	
EBT	3	5,100	353	0.07	*	5,100	1,187	0.23	*
EBR	2	3,400	641	0.19	*	3,400	838	0.24	*
WBL	2	3,400	884	0.26	*	3,400	763	0.22	*
WBT	3	5,100	1,000	0.20		5,100	1,056	0.21	
WBR	1	1,700	162	0.10		1,700	292	0.17	
split phasing		N/S Movements		0.21				0.35	
		E/W Movements		0.33				0.46	
		Rt. Turn Component		0.12				0.00	
		Yellow Clearance		0.05				0.05	
TOTAL CAPACITY UTILIZATION				0.70				0.85	
LEVEL OF SERVICE (LOS)				B				D	

APPENDIX G: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Alternative 1 - Project Without Meats Interchange (after Mit)							
INTERSECTION:		56 Main St. @ Struck Ave.							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR				
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	1	1,700	49	0.03	*	1,700	175	0.10	
NBT	2	2,600	491	0.19		3,279	1,441	0.44	*
NBR	0	800	151	0.19		121	53	0.44	
SBL	1	1,700	96	0.06		1,700	49	0.03	*
SBT	2	2,952	818	0.28	*	3,305	1,118	0.34	
SBR	0	448	124	0.28		95	32	0.34	
EBL	1	1,700	264	0.16	*	1,700	47	0.03	
EBT	2	3,029	571	0.19		892	69	0.08	*
EBR	0	371	70	0.19		2,508	194	0.08	
WBL	1	1,700	397	0.23		1,700	40	0.02	*
WBT	2	2,801	819	0.29	*	1,887	116	0.06	
WBR	0	599	175	0.29		1,513	93	0.06	
N/S Movements				0.31				0.47	
E/W Movements				0.45				0.10	
Rt. Turn Component				0.00				0.00	
Yellow Clearance				0.05				0.05	
TOTAL CAPACITY UTILIZATION				0.80				0.62	
LEVEL OF SERVICE (LOS)				C				B	

Recommended Mitigation

Future Lane Geometry from

V:\174634A-OrangeGPUUpdate\OrngGenPlanUpd-y25-ICU-WrkShts-050609.xls

APPENDIX G: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Alternative 1 - Project Without Meats Interchange (after Mit)							
INTERSECTION:		57 Main St. @ Collins Ave.							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	1	1,700	371	0.22	*	1,700	291	0.17	*
NBT	2	3,400	472	0.14		3,400	1,008	0.30	
NBR	1	1,700	586	0.34	*	1,700	609	0.36	
SBL	1	1,700	78	0.05		1,700	135	0.08	
SBT	2	2,701	812	0.30	*	3,120	914	0.29	*
SBR	0	699	210	0.30		280	82	0.29	
EBL	1	1,700	57	0.03	*	1,700	146	0.09	*
EBT	2	3,400	112	0.03		3,400	285	0.08	
EBR	1	1,700	281	0.17		1,700	502	0.30	*
WBL	2	3,400	467	0.14		3,400	604	0.18	
WBT	1	1,110	271	0.24	*	1,047	229	0.22	*
WBR	0	590	144	0.24		653	143	0.22	
N/S Movements				0.52				0.46	
E/W Movements				0.28				0.30	
Rt. Turn Component				0.00				0.04	
Yellow Clearance				0.05				0.05	
TOTAL CAPACITY UTILIZATION				0.85				0.86	
LEVEL OF SERVICE (LOS)				D				D	

Recommended Mitigation

Future Lane Geometry from

V:\174634A-OrangeGPUUpdate\OrngGenPlanUpd-y25-ICU-WrkShts-050609.xls

APPENDIX G: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Alternative 1 - Project Without Meats Interchange (after Mit)							
INTERSECTION:		58 S/B SR-57 Ramps @ Orangewood Ave.							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	0		0			0			
NBT	0		0			0			
NBR	0		0			0			
SBL	1.5	2,216	570	0.26 *	1,213	276	0.23	*	
SBT	0	0	0		0	0			
SBR	1.5	2,884	742	0.26 *	3,887	884	0.23	*	
EBL	0		0			0			
EBT	3	4,981	1,930	0.39 *	4,464	1,354	0.30	*	
EBR	0	119	46	0.39	636	193	0.30		
WBL	2	3,400	164	0.05 *	3,400	478	0.14	*	
WBT	2	3,400	768	0.23	3,400	1,466	0.43		
WBR	0	0	0		0	0			
		N/S Movements		0.26			0.23		
		E/W Movements		0.44			0.44		
		Rt. Turn Component		0.00			0.00		
		Yellow Clearance		0.05			0.05		
TOTAL CAPACITY UTILIZATION				0.74			0.72		
LEVEL OF SERVICE (LOS)				C			C		

Recommended Mitigation

Future Lane Geometry from

V:\174634A-OrangeGPUUpdate\OrngGenPlanUpd-y25-ICU-WrkShts-050609.xls

APPENDIX G: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Alternative 1 - Project Without Meats Interchange							
INTERSECTION:		64 S/B SR-57 Ramps @ Chapman Ave.							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	1	1,700	61	0.04	*	1,700	295	0.17	*
NBT	1	661	21	0.03		526	52	0.10	
NBR	0	1,039	33	0.03		1,174	116	0.10	
SBL	1	1,700	273	0.16		1,700	168	0.10	
SBT	1	241	87	0.36	*	54	12	0.22	*
SBR	0	1,459	526	0.36		1,646	369	0.22	
EBL	1	1,700	7	0.00		1,700	2	0.00	*
EBT	3	4,112	1,136	0.28	*	4,891	1,144	0.23	
EBR	0	988	273	0.28		209	49	0.23	
WBL	1	1,700	120	0.07	*	1,700	39	0.02	
WBT	2	3,400	863	0.25		3,400	1,546	0.45	*
WBR (free)	f		243				187		
		N/S Movements		0.40				0.40	
		E/W Movements		0.35				0.46	
		Rt. Turn Component		0.00				0.00	
		Yellow Clearance		0.05				0.05	
TOTAL CAPACITY UTILIZATION				0.79				0.90	
LEVEL OF SERVICE (LOS)				C				D	

Recommended Mitigation

Future Lane Geometry from

V:\174634A-OrangeGPUUpdate\OrngGenPlanUpd-y25-ICU-WrkShts-050609.xls

Appendix H Future Alternative 2 Mitigated Intersection ICU Worksheets

APPENDIX H: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 2 - Mitigated						
INTERSECTION:		7 Cannon St. @ Santiago Canyon Rd.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	2	3,400	266	0.08	3,400	175	0.05	
NBT	1.5	2,863	245	0.09	3,290	538	0.16	*
NBR	0.5	537	46	0.09	110	18	0.16	
SBL	3	5,100	2,077	0.41	5,100	1,301	0.26	*
SBT	3	5,100	490	0.10	5,100	326	0.06	
SBR	f		1,217			623		
EBL	2	3,400	369	0.11	3,400	746	0.22	*
EBT	3	5,100	1,072	0.21	5,100	1,098	0.22	
EBR	1	1,700	148	0.09	1,700	196	0.12	
WBL	2	3,400	22	0.01	3,400	16	0.00	
WBT	3	5,100	1,307	0.26	5,100	1,071	0.21	*
WBR	f		1,100			1,824		
split phasing		N/S Movements		0.49			0.42	
		E/W Movements		0.36			0.43	
		Rt. Turn Component		0.00			0.00	
		Yellow Clearance		0.05			0.05	
		ATMS Credit		-0.05			-0.05	
TOTAL CAPACITY UTILIZATION				0.86			0.85	
LEVEL OF SERVICE (LOS)				D			D	

APPENDIX H: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update					
SCENARIO:		Alternative 2 - Mitigated					
INTERSECTION:		8 Cannon St. @ Serrano Ave.					
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR		
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C
NBL	0		0			0	
NBT	3	5,100	1,416	0.28	5,100	2,309	0.45 *
NBR	1	1,700	293	0.17	1,700	1,209	0.71 *
SBL	1	1,700	82	0.05	1,700	192	0.11 *
SBT	3	5,100	2,760	0.54 *	5,100	1,513	0.30
SBR	0		0			0	
EBL	0		0			0	
EBT	0		0	0.00		0	0.00
EBR	0		0			0	
WBL	2.5	4,283	1,280	0.30 *	4,441	458	0.10 *
WBT	0		0	0.00		0	0.00
WBR	0.5	817	244	0.30	659	68	0.10
		N/S Movements		0.54			0.57
		E/W Movements		0.30			0.10
		Rt. Turn Component		0.00			0.16
		Yellow Clearance		0.05			0.05
TOTAL CAPACITY UTILIZATION				0.89			
LEVEL OF SERVICE (LOS)				D	0.87		
					D		

APPENDIX H: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update					
SCENARIO:		Alternative 2 - Mitigated					
INTERSECTION:		27 S/B SR-55 Ramps @ Katella Ave.					
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR		
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C
NBL	0		0			0	
NBT	0		0	0.00		0	0.00
NBR	0		0			0	
SBL	2	3,400	219	0.06 *	3,400	400	0.12 *
SBT	0		0	0.00		0	0.00
SBR	1	1,700	461	0.27	1,700	411	0.24
EBL	0		0			0	
EBT	2.5	3,470	643	0.19 *	3,809	1,280	0.34 *
EBR	1.5	3,330	617	0.19	2,991	1,005	0.34
WBL	2	3,400	801	0.24 *	3,400	345	0.10 *
WBT	3	5,100	1,759	0.34	5,100	1,409	0.28
WBR	0		0			0	
split phasing	N/S Movements		0.06				0.12
	E/W Movements		0.42				0.44
	Rt. Turn Component		0.21				0.12
	Yellow Clearance		0.05				0.05
TOTAL CAPACITY UTILIZATION				0.74			0.73
LEVEL OF SERVICE (LOS)				C			C

APPENDIX H: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Alternative 2 - Mitigated							
INTERSECTION:		30 Main Street @ La Veta Ave.							
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	2	3,400	356	0.10	*	3,400	457	0.13	*
NBT	3	5,100	837	0.16		5,100	1,575	0.31	
NBR	1	1,700	322	0.19		1,700	812	0.48	
SBL	2	3,400	184	0.05		3,400	325	0.10	
SBT	3	5,100	1,419	0.28	*	5,100	1,806	0.35	*
SBR	1	1,700	416	0.24		1,700	561	0.33	
EBL	2	3,400	858	0.25	*	3,400	575	0.17	*
EBT	3	5,100	568	0.11		5,100	598	0.12	
EBR	1	1,700	267	0.16		1,700	272	0.16	
WBL	2	3,400	384	0.11		3,400	592	0.17	
WBT	3	5,100	558	0.11	*	5,100	1,127	0.22	*
WBR	1	1,700	185	0.11		1,700	375	0.22	
		N/S Movements		0.38				0.49	
		E/W Movements		0.36				0.39	
		Rt. Turn Component		0.00				0.00	
		Yellow Clearance		0.05				0.05	
		ATMS Credit		-0.05				-0.05	
TOTAL CAPACITY UTILIZATION				0.74				0.88	
LEVEL OF SERVICE (LOS)				C				D	

APPENDIX H: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update						
SCENARIO:		Alternative 2 - Mitigated						
INTERSECTION:		41 Wanda Rd. @ Villa Park Rd.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C	
NBL	1	1,700	242	0.14	*	1,700	117	0.07
NBT	1.5	2,659	542	0.20		2,653	511	0.19
NBR	0.5	741	151	0.20		747	144	0.19
SBL	2	3,400	474	0.14		3,400	351	0.10
SBT	1.5	2,625	616	0.23	*	3,163	632	0.20
SBR	1.5	2,475	581	0.23		1,937	387	0.20
EBL	2	3,400	274	0.08	*	3,400	472	0.14
EBT	2	3,400	804	0.24		3,400	1,241	0.37
EBR	1	1,700	163	0.10		1,700	247	0.15
WBL	1	1,700	185	0.11		1,700	158	0.09
WBT	3	5,100	1,625	0.32	*	5,100	890	0.17
WBR	1	1,700	362	0.21		1,700	410	0.24
		N/S Movements		0.38				0.30
		E/W Movements		0.40				0.46
		Rt. Turn Component		0.00				0.00
		Yellow Clearance		0.05				0.05
TOTAL CAPACITY UTILIZATION				0.83				0.80
LEVEL OF SERVICE (LOS)				D				C

APPENDIX H: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEET

PROJECT:		City of Orange General Plan Update								
SCENARIO:		Alternative 2 - Mitigated								
INTERSECTION:		48 Tustin St. @ Lincoln Ave.								
MOVEMENT	lanes for cap cal	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	V/C
			CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	2	2	3,400	163	0.05	*	3,400	437	0.13	*
NBT	3	3	5,100	183	0.04		5,100	665	0.13	
NBR	2	2	3,400	255	0.08		3,400	808	0.24	
SBL	2	2	3,400	155	0.05		3,400	365	0.11	
SBT	3	3	5,100	701	0.14	*	5,100	1,009	0.20	*
SBR	1	1	1,700	370	0.22		1,700	394	0.23	
EBL	2	2	3,400	86	0.03		3,400	345	0.10	
EBT	3	3	5,100	306	0.06	*	5,100	1,040	0.20	*
EBR	1	1	1,700	594	0.35	*	1,700	735	0.43	*
WBL	2	2	3,400	794	0.23	*	3,400	637	0.19	
WBT	3	3	5,100	948	0.19		5,100	921	0.18	*
WBR	1	1	1,700	160	0.09		1,700	272	0.16	
split phasing		N/S Movements		0.19				0.33		
		E/W Movements		0.29				0.39		
		Rt. Turn Component		0.30				0.10		
		Yellow Clearance		0.05				0.05		
TOTAL CAPACITY UTILIZATION					0.83				0.87	
LEVEL OF SERVICE (LOS)					D				D	

APPENDIX H: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC (after Mit)							
INTERSECTION:		56	Main St. @ Struck Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR				
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	1	1,700	48	0.03	*	1,700	229	0.13	
NBT	2	2,658	541	0.20		3,312	1,727	0.52	*
NBR	0	742	151	0.20		88	46	0.52	
SBL	1	1,700	86	0.05		1,700	32	0.02	*
SBT	2	2,993	1,044	0.35	*	3,323	1,338	0.40	
SBR	0	407	142	0.35		77	31	0.40	
EBL	1	1,700	280	0.16	*	1,700	47	0.03	
EBT	2	2,925	542	0.19		686	69	0.10	*
EBR	0	475	88	0.19		2,714	273	0.10	
WBL	1	1,700	427	0.25		1,700	31	0.02	*
WBT	2	2,880	819	0.28	*	2,107	88	0.04	
WBR	0	520	148	0.28		1,293	54	0.04	
		N/S Movements		0.38				0.54	
		E/W Movements		0.45				0.12	
		Rt. Turn Component		0.00				0.00	
		Yellow Clearance		0.05				0.05	
TOTAL CAPACITY UTILIZATION				0.88				0.71	
LEVEL OF SERVICE (LOS)				D				C	

Recommended Mitigation

Future Lane Geometry from

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APPENDIX H: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC (after Mit)							
INTERSECTION:		57	Main St. @ Collins Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR				
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	1	1,700	395	0.23	*	1,700	302	0.18	*
NBT	2	3,400	484	0.14		3,400	1,006	0.30	
NBR	1	1,700	466	0.27	*	1,700	574	0.34	
SBL	1	1,700	78	0.05		1,700	135	0.08	
SBT	2	2,689	794	0.30	*	3,114	893	0.29	*
SBR	0	711	210	0.30		286	82	0.29	
EBL	1	1,700	57	0.03	*	1,700	146	0.09	*
EBT	2	3,400	101	0.03		3,400	285	0.08	
EBR	1	1,700	243	0.14		1,700	553	0.33	*
WBL	2	3,400	423	0.12		3,400	504	0.15	
WBT	1	1,133	288	0.25	*	985	197	0.20	*
WBR	0	567	144	0.25		715	143	0.20	
N/S Movements				0.53				0.46	
E/W Movements				0.29				0.29	
Rt. Turn Component				0.00				0.06	
Yellow Clearance				0.05				0.05	
TOTAL CAPACITY UTILIZATION				0.87				0.86	
LEVEL OF SERVICE (LOS)				D				D	

Recommended Mitigation

Future Lane Geometry from

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APPENDIX H: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC (after Mit)							
INTERSECTION:		58 S/B SR-57 Ramps @ Orangewood Ave.							
MOVEMENT	LANES	AM PEAK HOUR				PM PEAK HOUR			
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	0		0			0			
NBT	0		0			0			
NBR	0		0			0			
SBL	1.5	1,816	444	0.24	*	1,143	257	0.22	*
SBT	0	0	0			0	0		
SBR	1.5	3,284	803	0.24	*	3,957	890	0.22	*
EBL	0		0				0		
EBT	3	4,942	1,716	0.35	*	4,383	1,289	0.29	*
EBR	0	158	55	0.35		717	211	0.29	
WBL	2	3,400	171	0.05	*	3,400	478	0.14	*
WBT	2	3,400	747	0.22		3,400	1,300	0.38	
WBR	0	0	0			0	0		
N/S Movements				0.24				0.22	
E/W Movements				0.40				0.43	
Rt. Turn Component				0.00				0.00	
Yellow Clearance				0.05				0.05	
TOTAL CAPACITY UTILIZATION				0.69				0.71	
LEVEL OF SERVICE (LOS)				B				C	

Recommended Mitigation

Future Lane Geometry from

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APPENDIX H: INTERSECTION CAPACITY UTILIZATION CALCULATION WORKSHEETS

PROJECT:		City of Orange General Plan Update							
SCENARIO:		Alternative 2 - Reduced Intensity Project With Meats IC							
INTERSECTION:		64	S/B SR-57 Ramps @ Chapman Ave.						
MOVEMENT	LANES	AM PEAK HOUR			PM PEAK HOUR			V/C	
		CAPACITY	VOLUME	V/C	CAPACITY	VOLUME	V/C		
NBL	1	1,700	55	0.03	*	1,700	312	0.18	*
NBT	1	533	16	0.03		504	56	0.11	
NBR	0	1,167	35	0.03		1,196	133	0.11	
SBL	1	1,700	273	0.16		1,700	168	0.10	
SBT	1	282	101	0.36	*	60	13	0.22	*
SBR	0	1,418	508	0.36		1,640	354	0.22	
EBL	1	1,700	5	0.00		1,700	2	0.00	*
EBT	3	4,093	1,105	0.27	*	4,895	1,168	0.24	
EBR	0	1,007	272	0.27		205	49	0.24	
WBL	1	1,700	148	0.09	*	1,700	39	0.02	
WBT	2	3,400	888	0.26		3,400	1,465	0.43	*
WBR (free)	f		219				183		
		N/S Movements		0.39				0.40	
		E/W Movements		0.36				0.43	
		Rt. Turn Component		0.00				0.00	
		Yellow Clearance		0.05				0.05	
TOTAL CAPACITY UTILIZATION				0.80				0.88	
LEVEL OF SERVICE (LOS)				C				D	

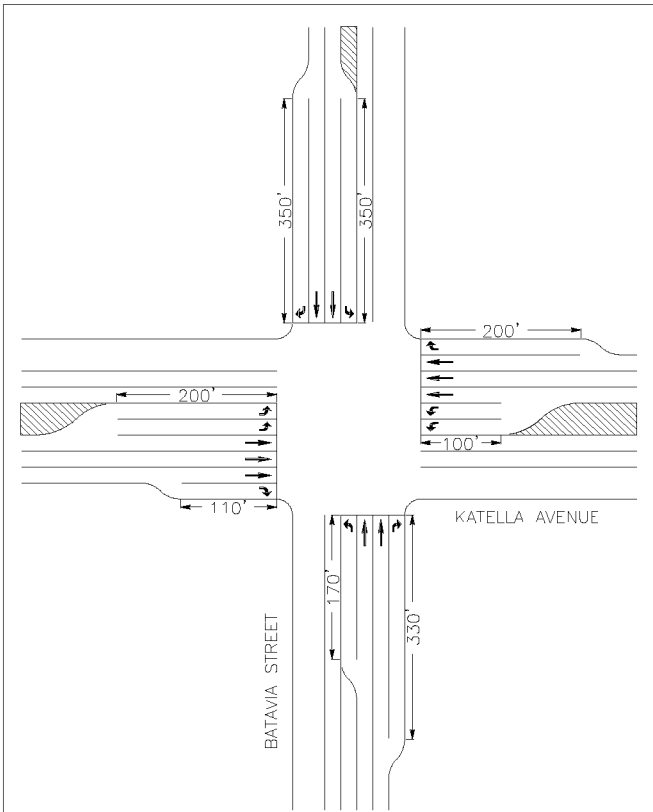
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Future Lane Geometry from

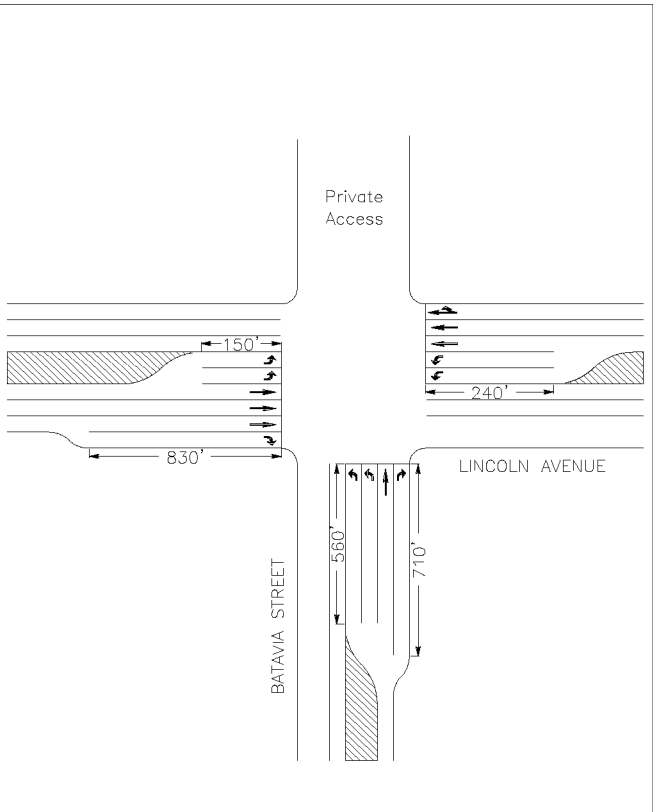
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Appendix I Key City Intersection Geometric Diagrams

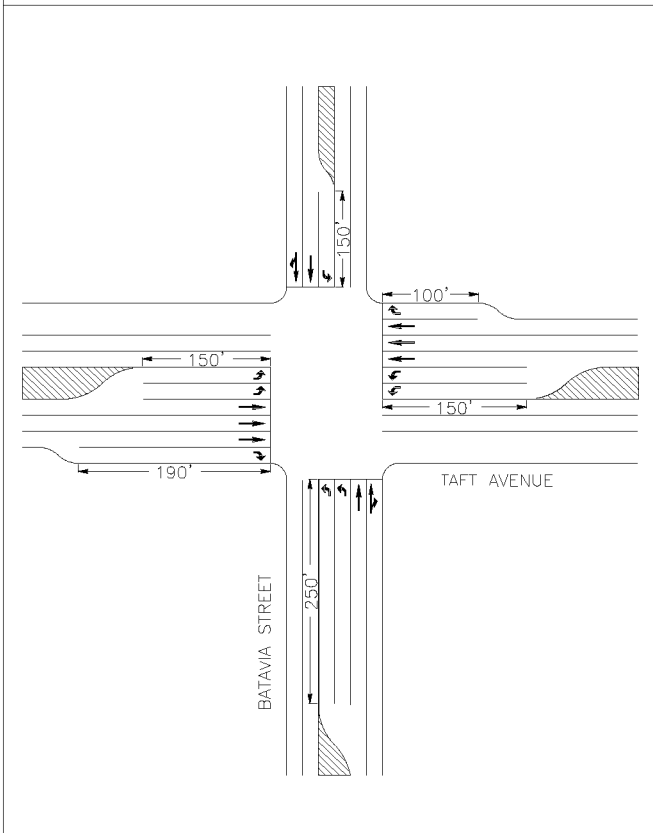
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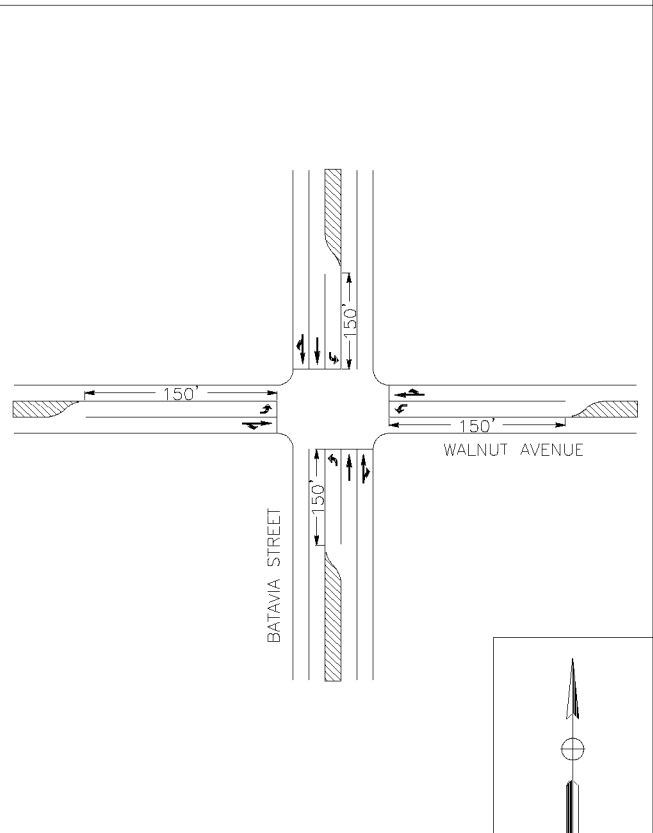
INTERSECTION #2
 BATAVIA STREET @ KATELLA AVENUE



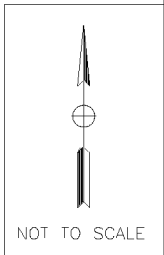
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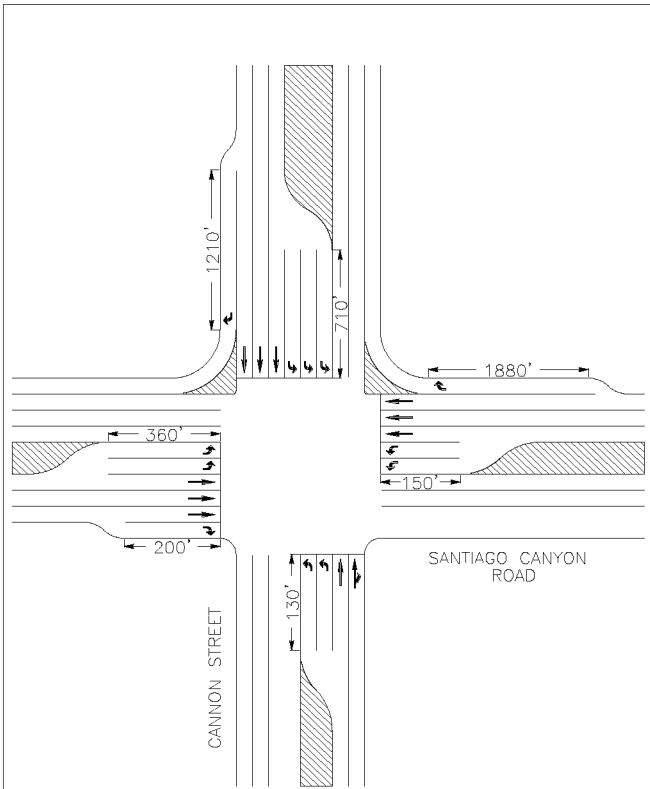
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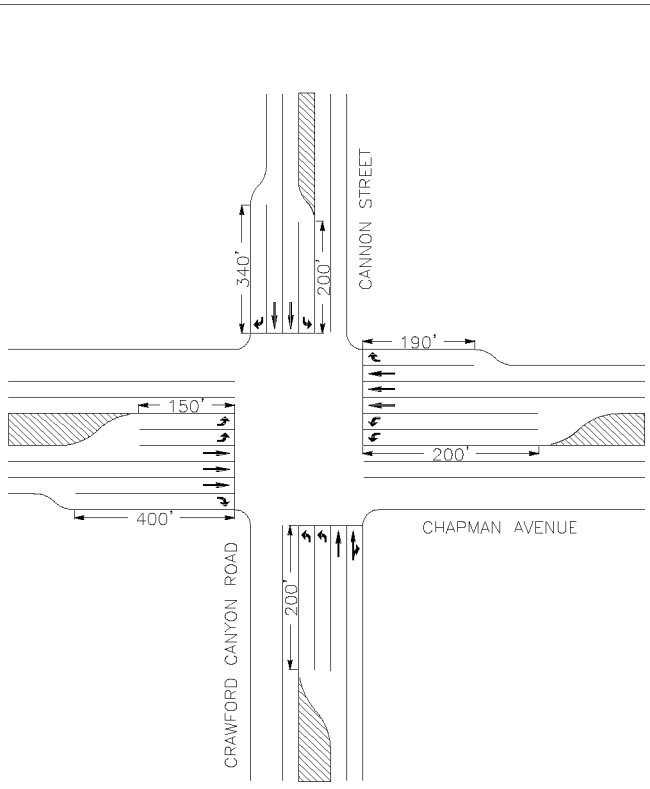
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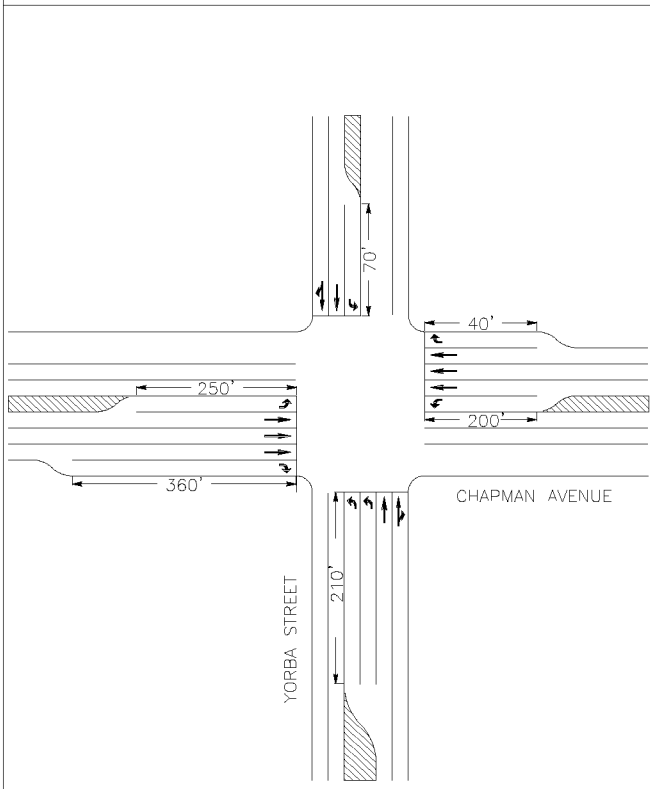
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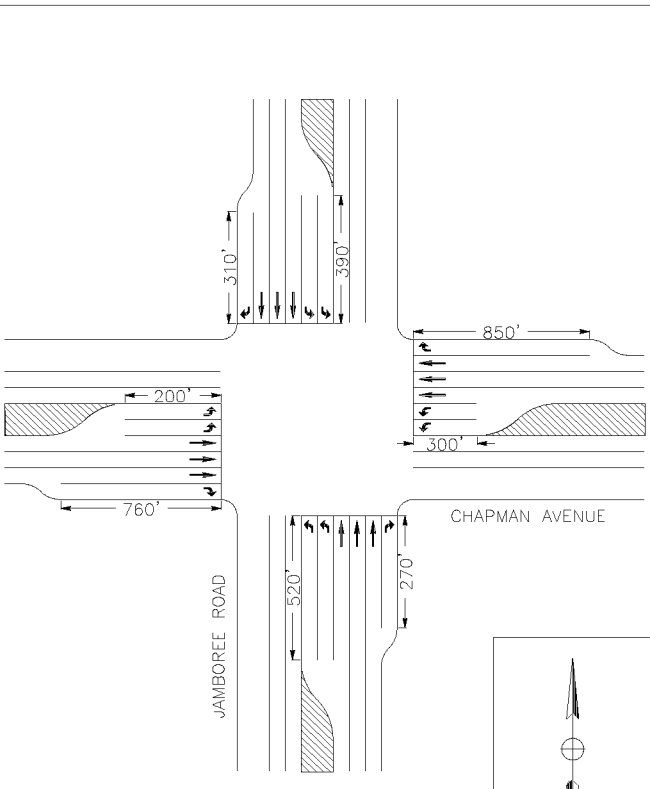
INTERSECTION #7
 CANNON STREET @ SANTIAGO CANYON ROAD



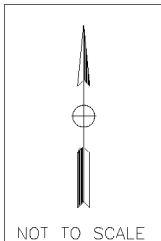
INTERSECTION #9
 CANNON STREET/CRAWFORD CANYON ROAD @ CHAPMAN AVENUE



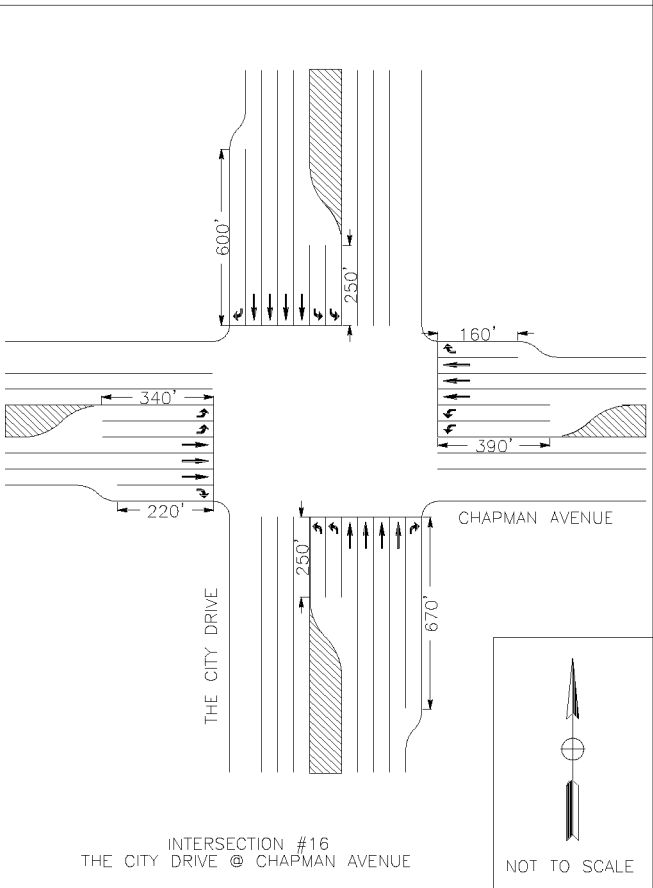
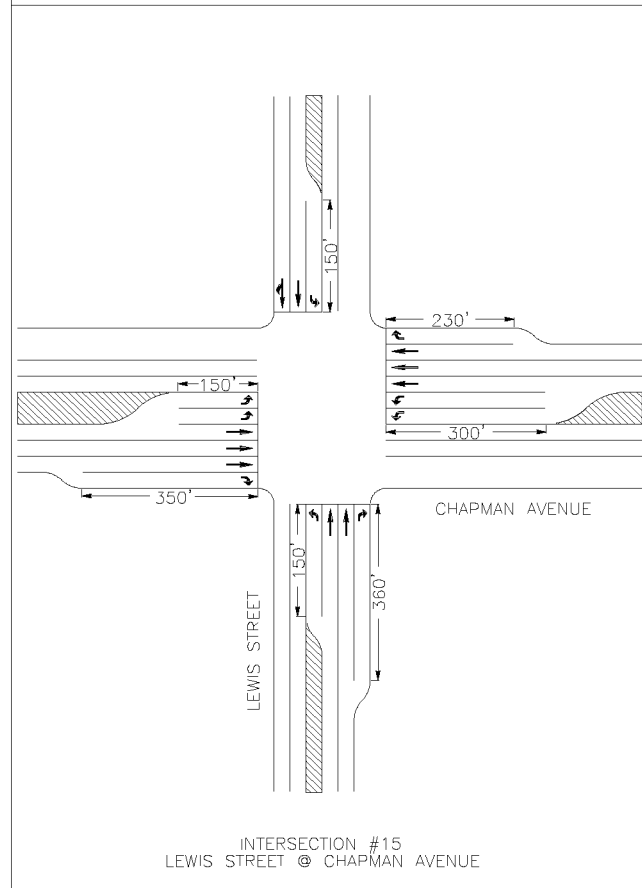
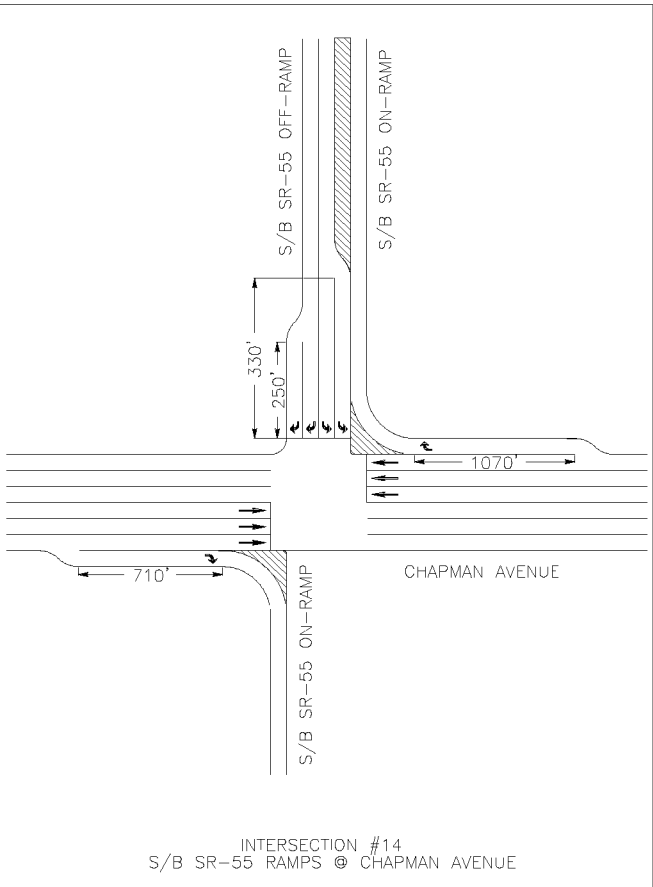
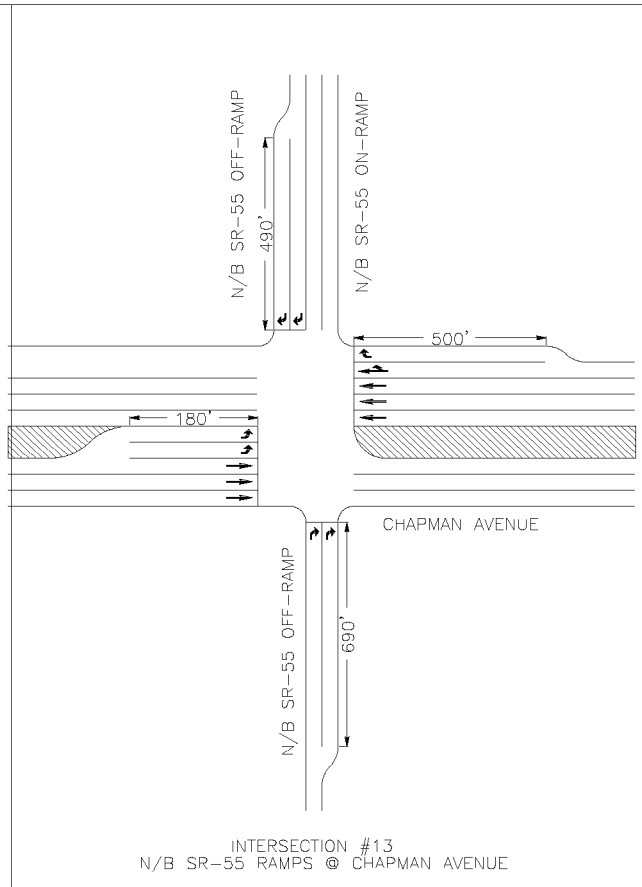
INTERSECTION #10
 YORBA STREET @ CHAPMAN AVENUE



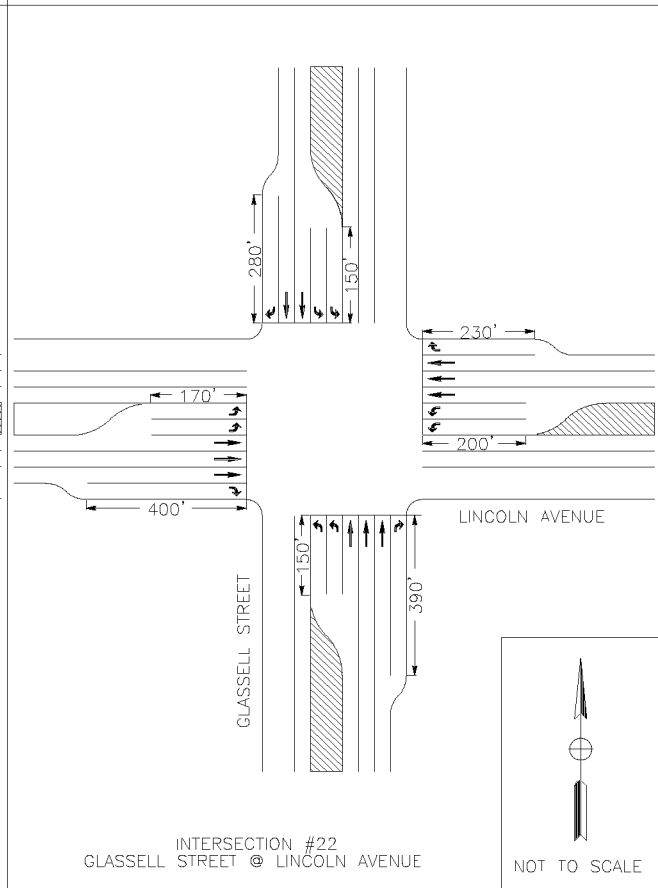
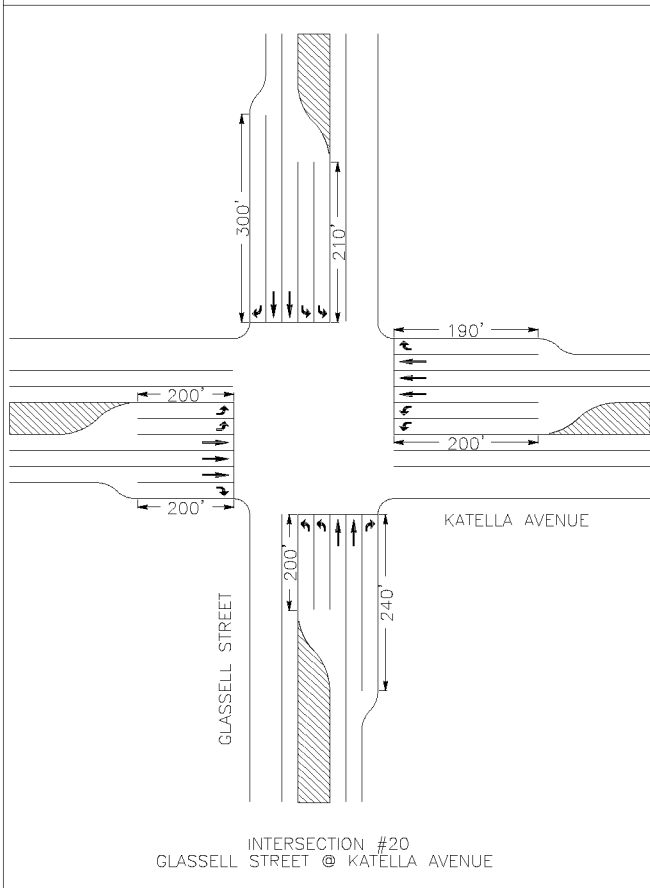
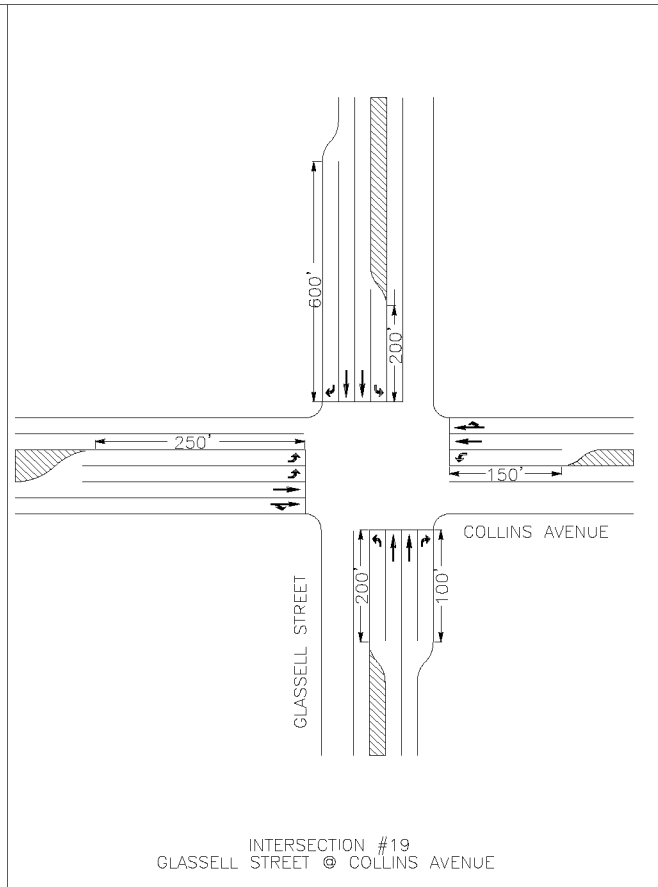
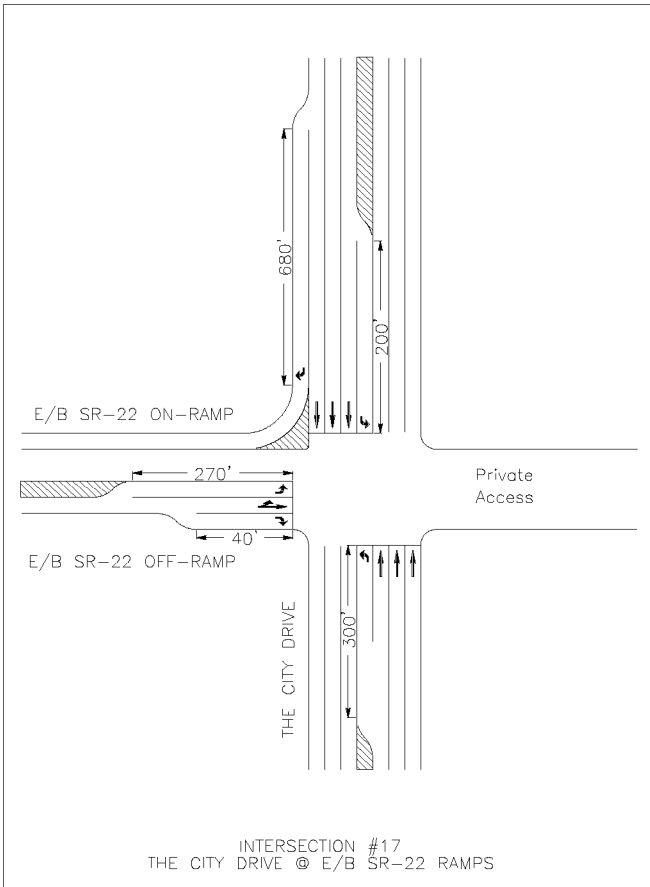
INTERSECTION #12
 JAMBOREE ROAD @ CHAPMAN AVENUE



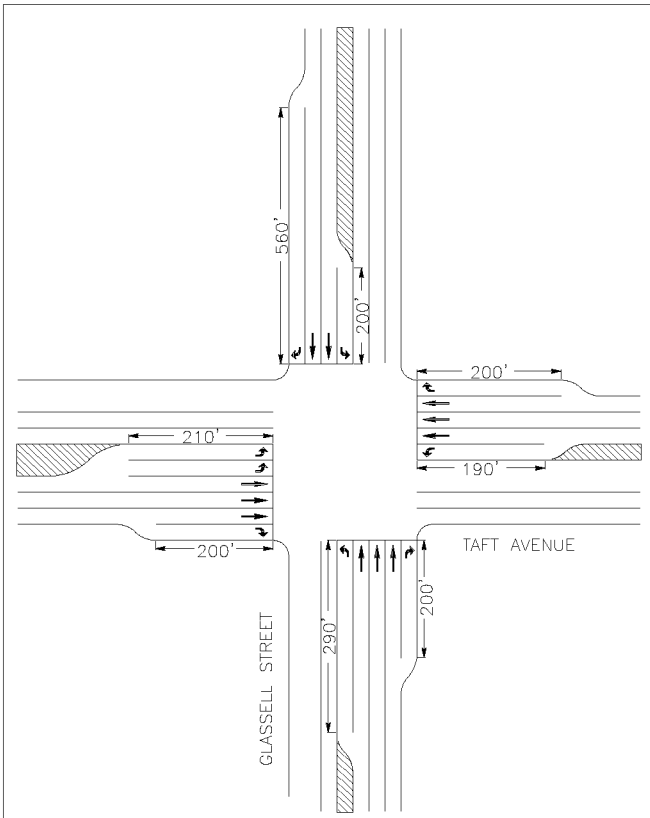
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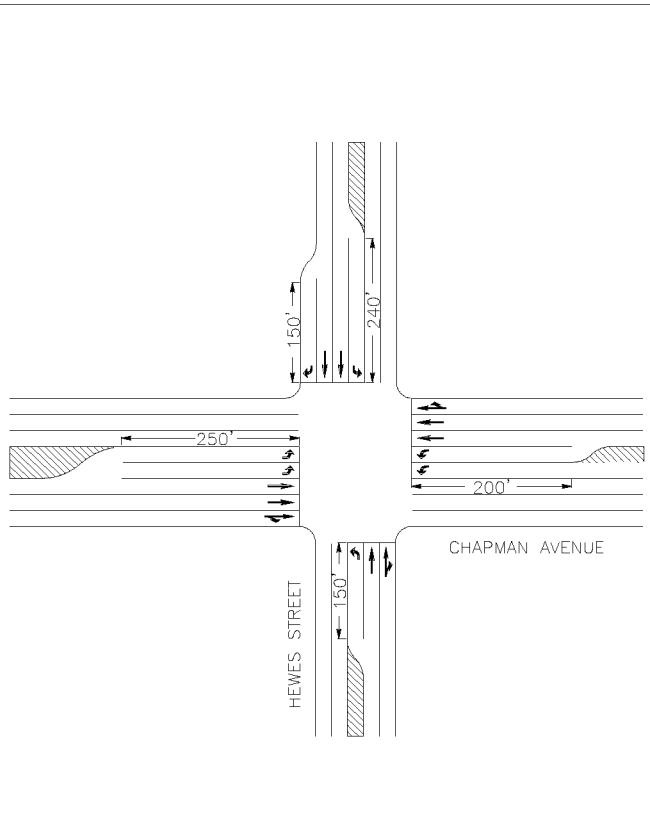
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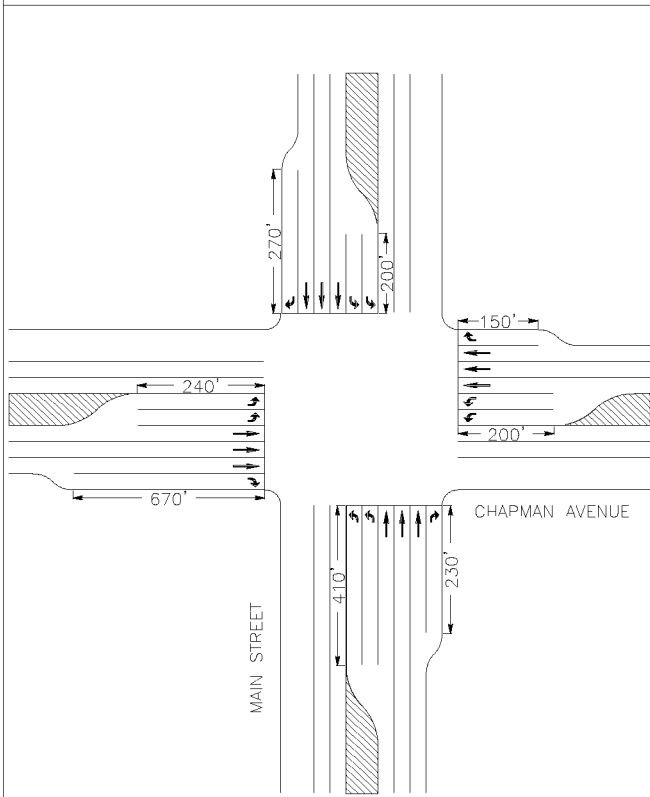
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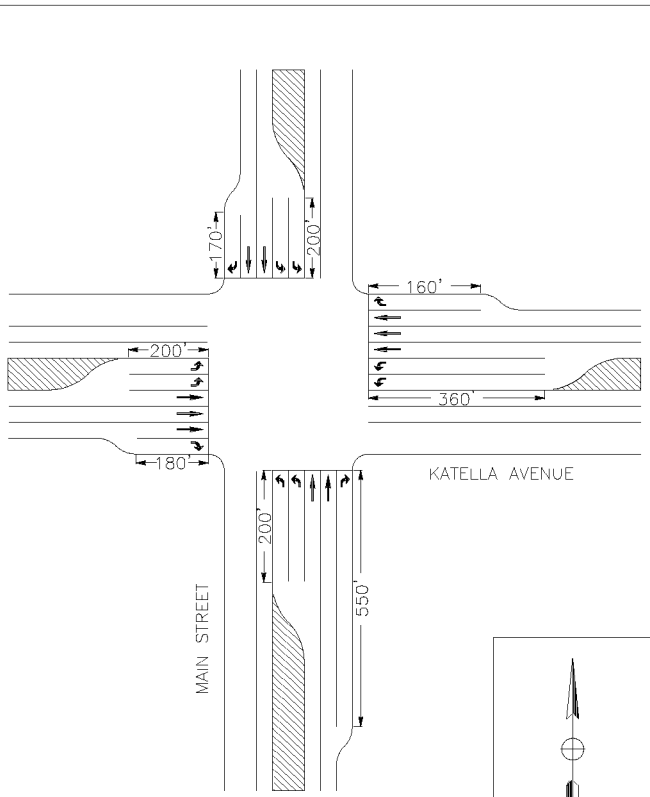
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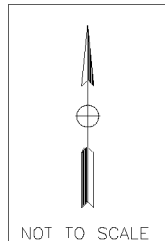
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 HEWES STREET @ CHAPMAN AVENUE



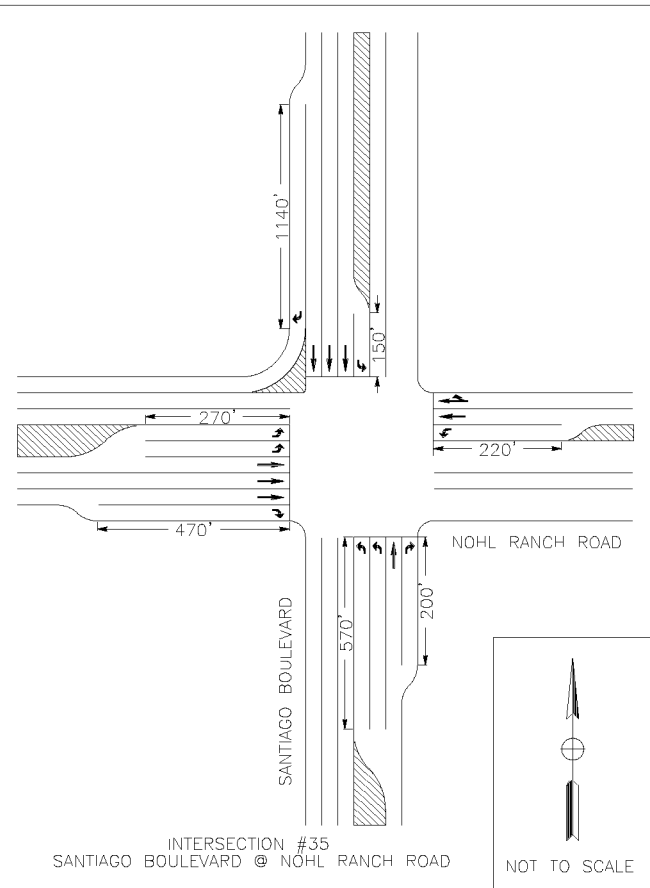
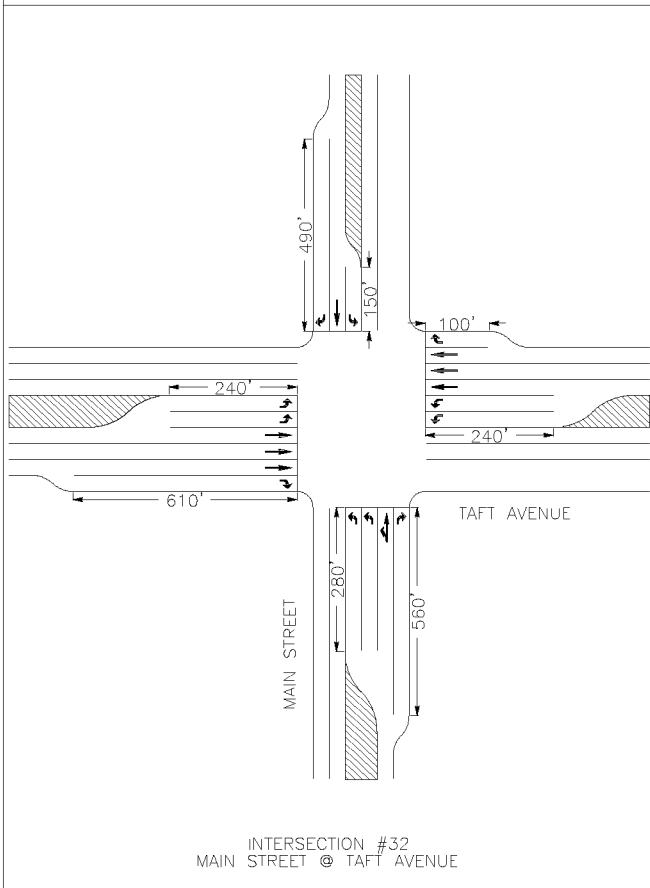
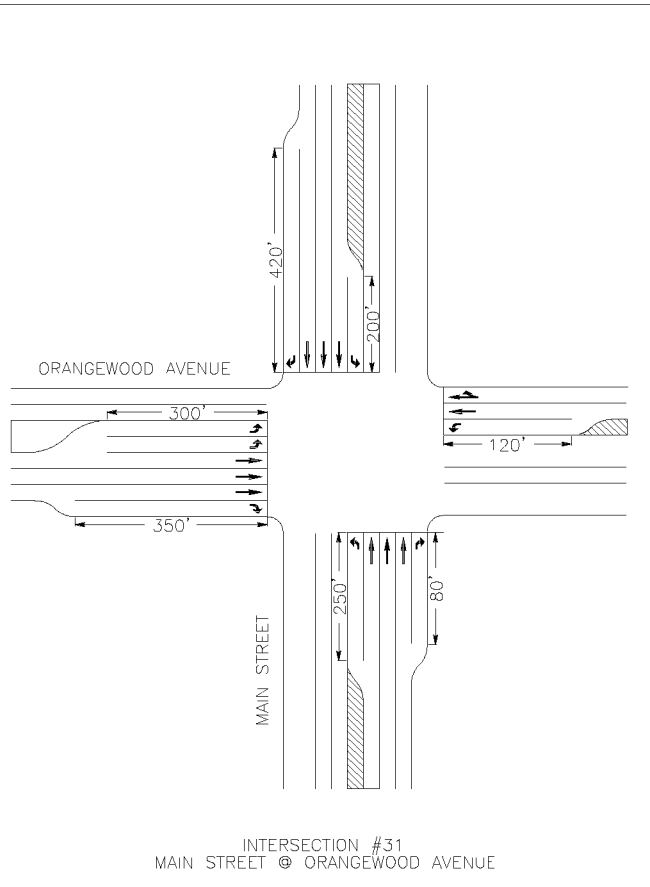
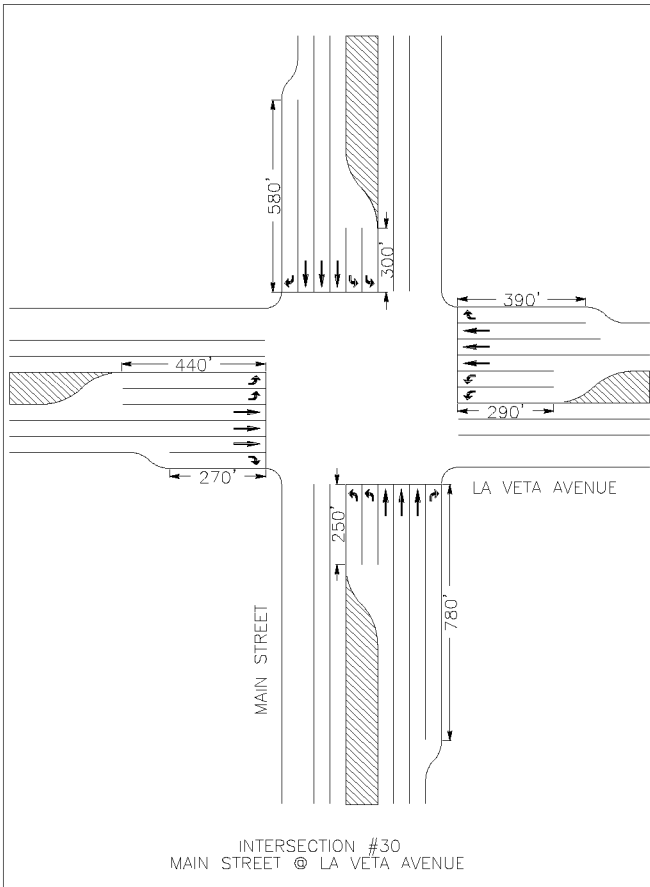
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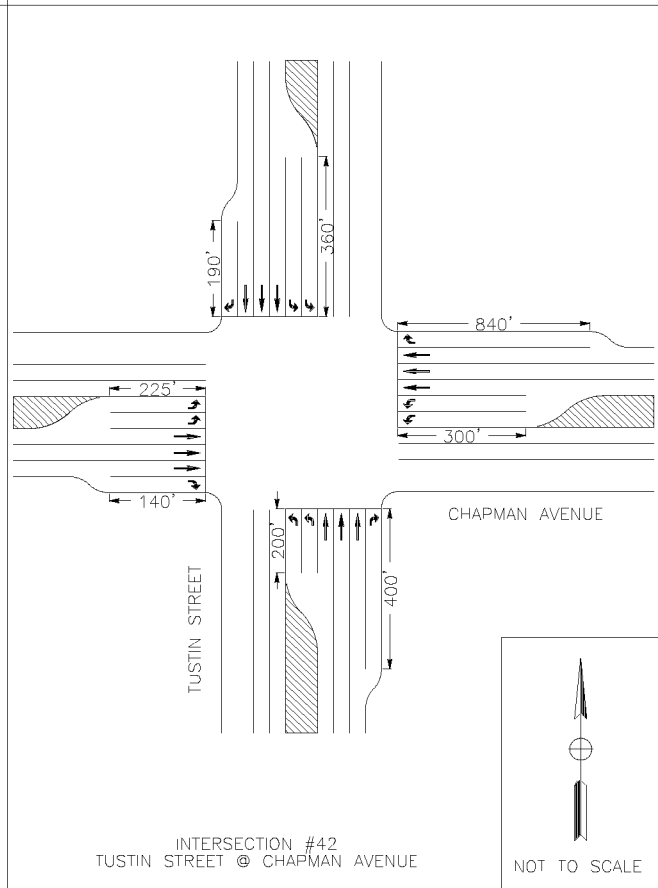
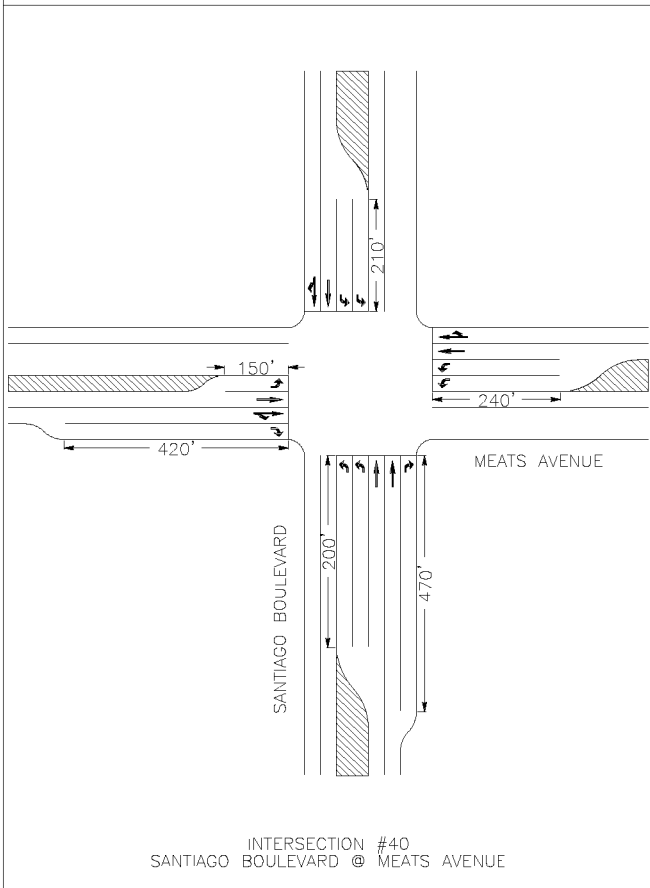
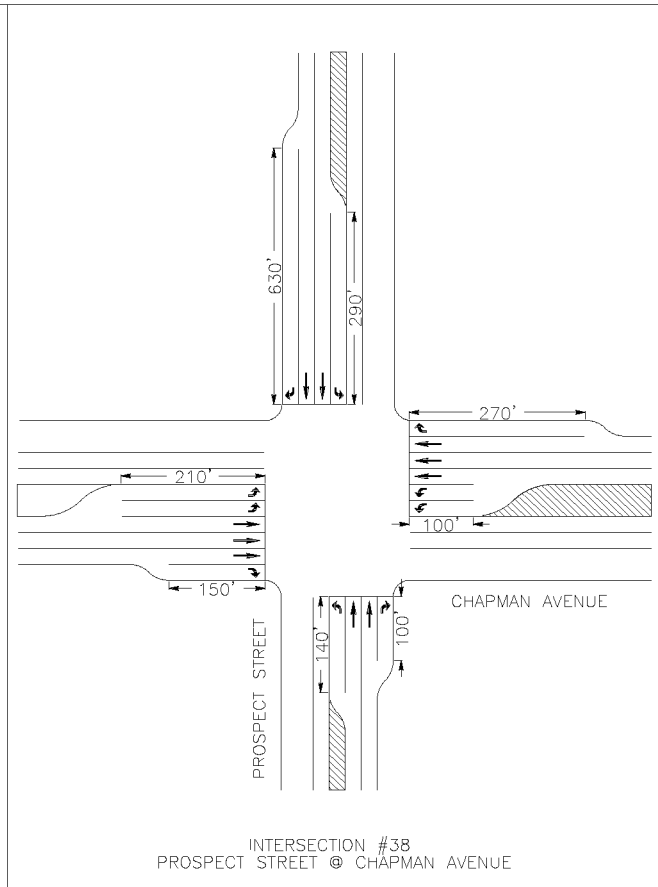
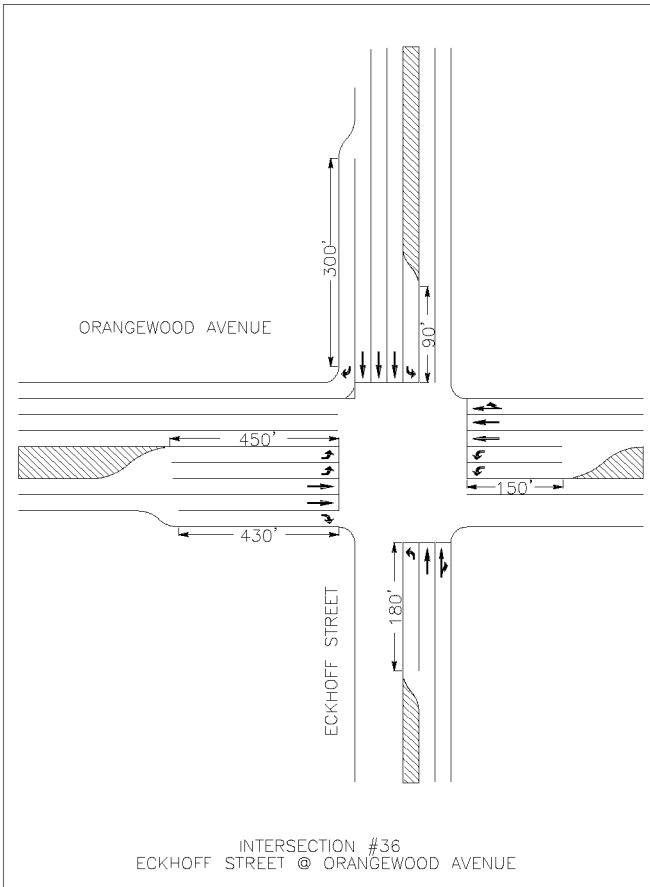
INTERSECTION #29
 MAIN STREET @ KATELLA AVENUE



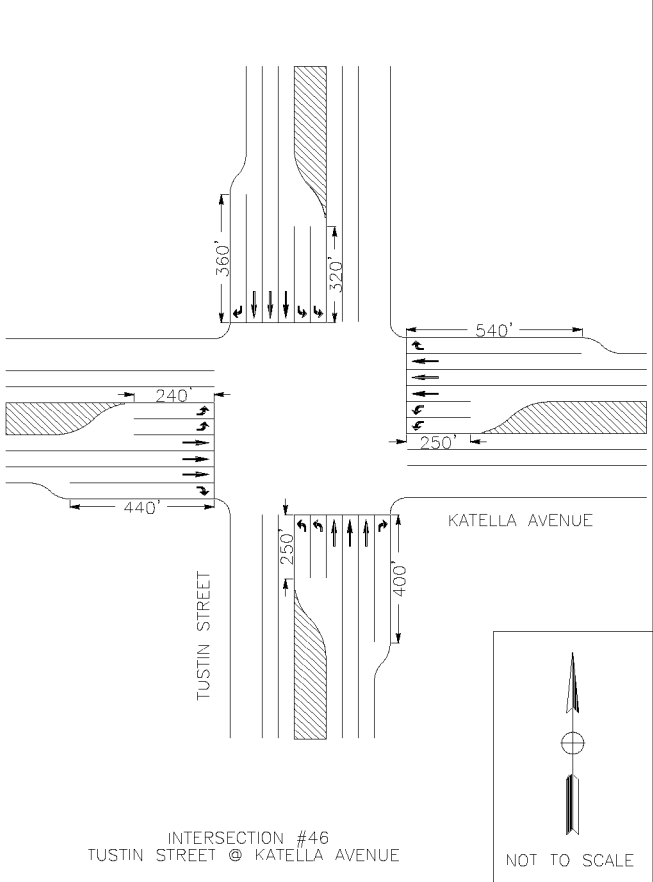
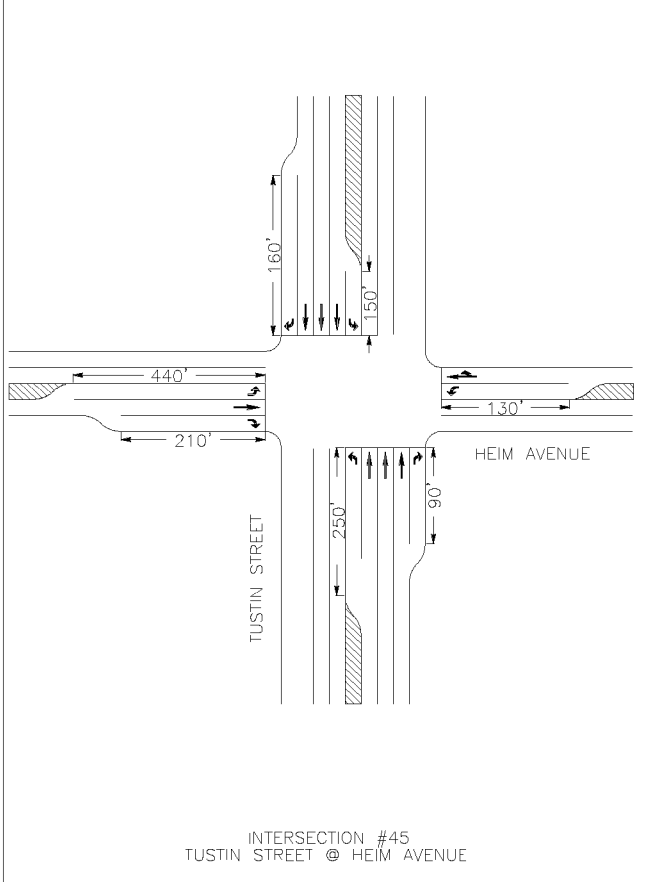
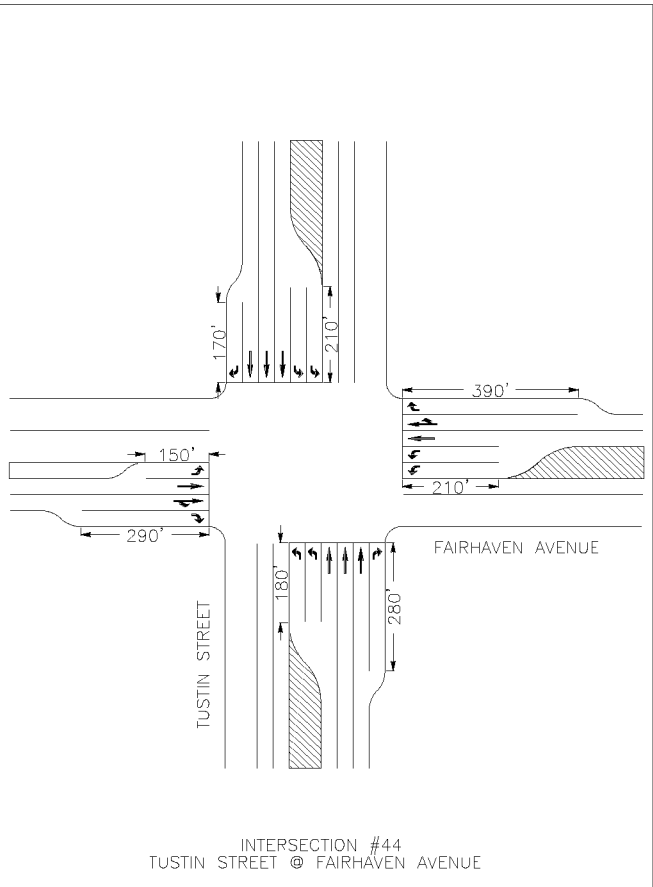
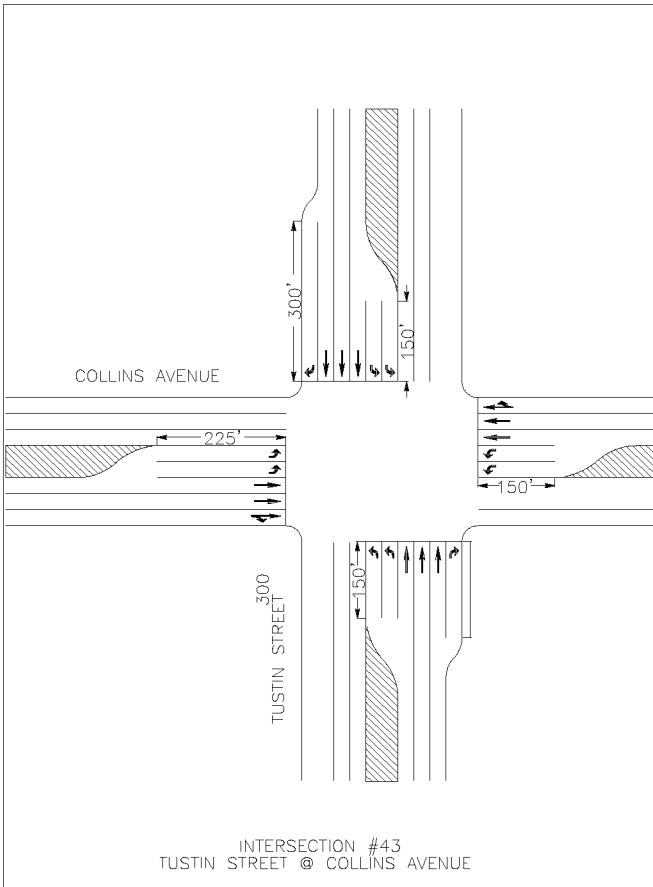
CITY OF ORANGE
 CRITICAL INTERSECTION FUTURE CONFIGURATION ANALYSIS



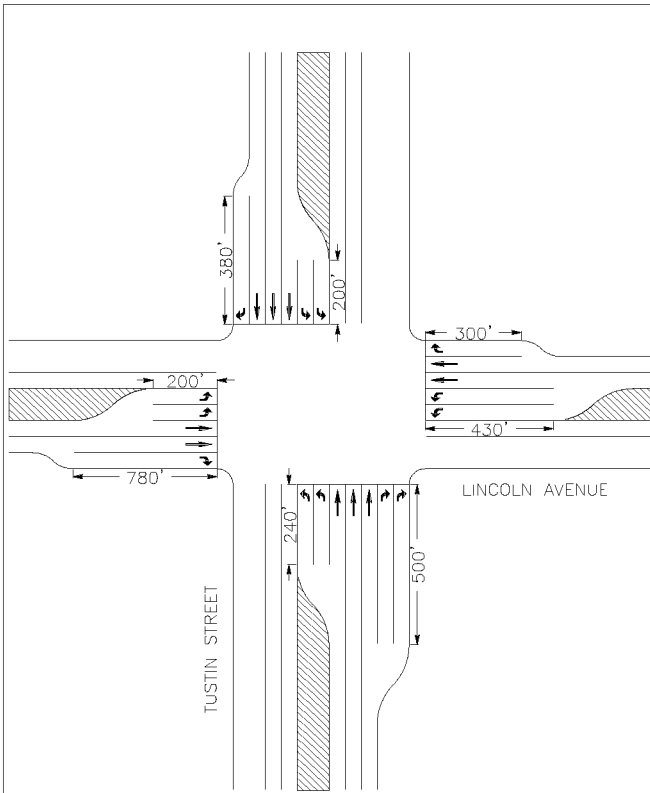
CITY OF ORANGE
 CRITICAL INTERSECTION FUTURE CONFIGURATION ANALYSIS



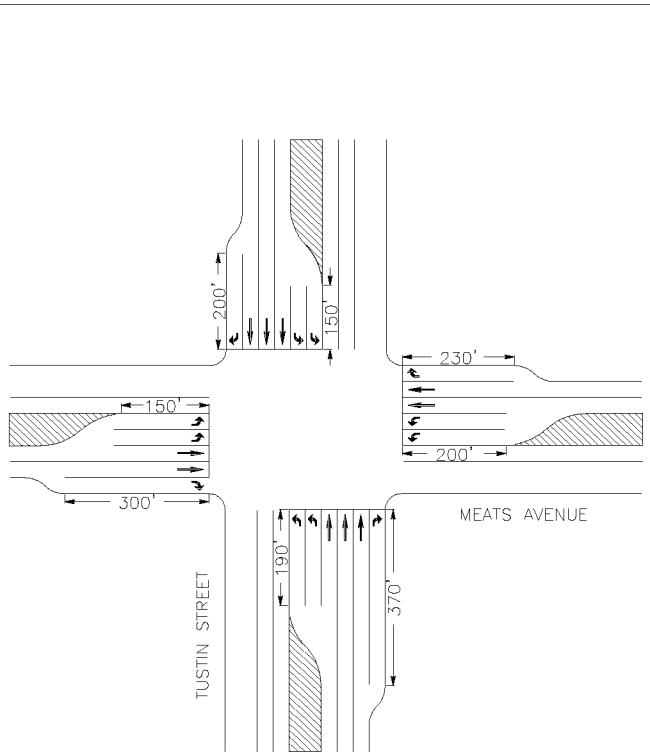
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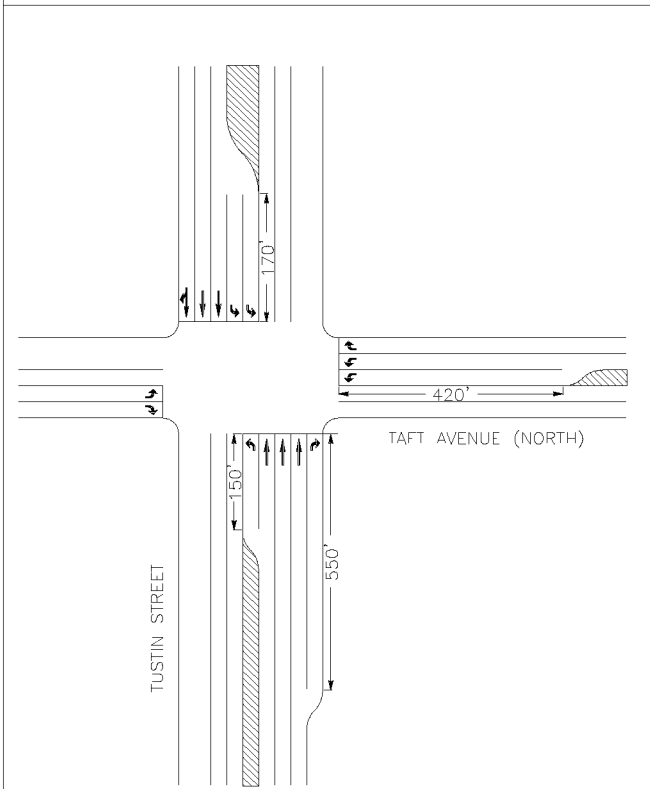
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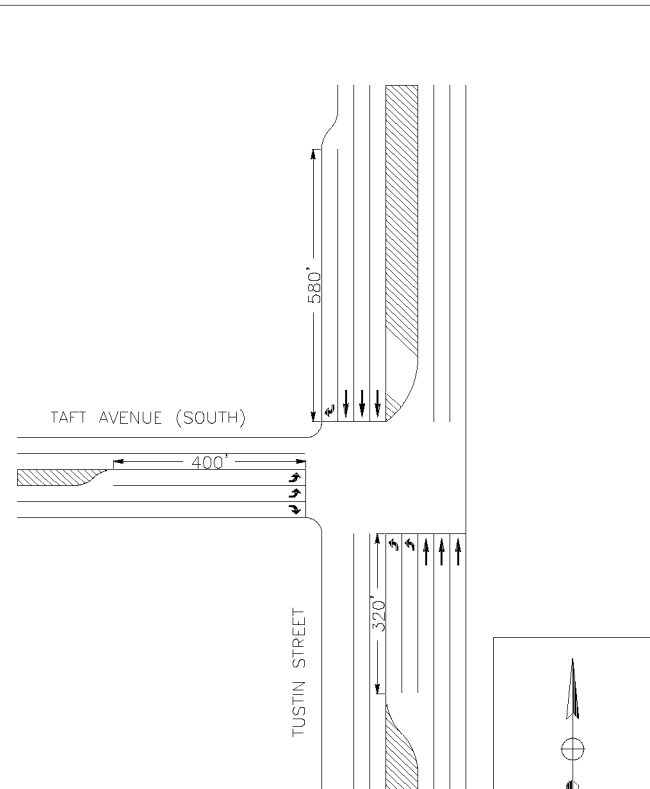
INTERSECTION #48
 TUSTIN STREET @ LINCOLN AVENUE



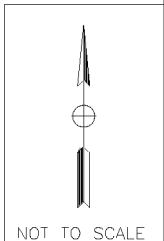
INTERSECTION #49
 TUSTIN STREET @ MEATS AVENUE



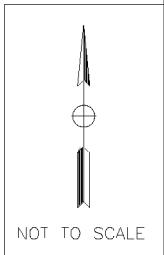
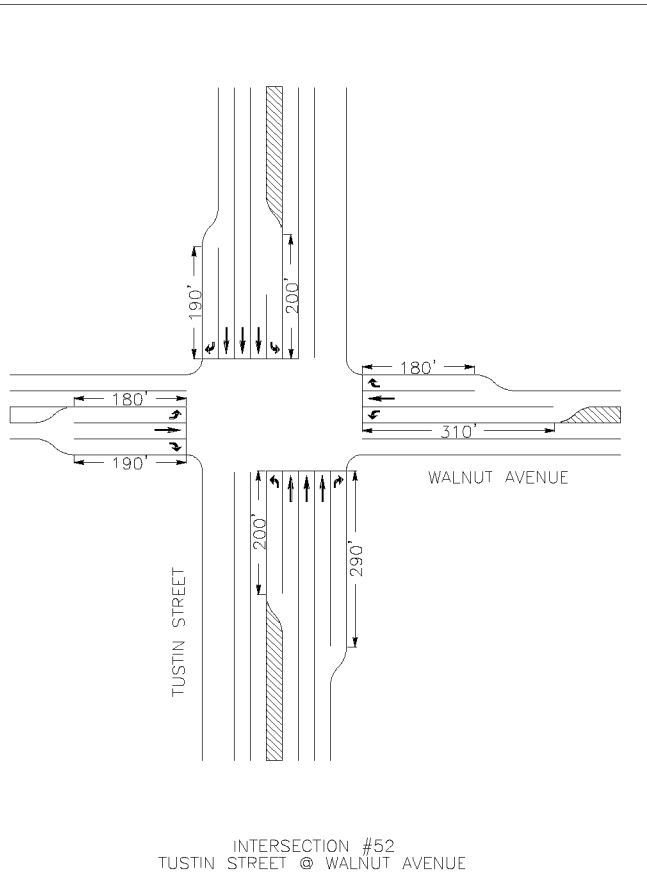
INTERSECTION #50
 TUSTIN STREET @ TAFT AVENUE (NORTH)



INTERSECTION #51
 TUSTIN STREET @ TAFT AVENUE (SOUTH)



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Appendix J Orange County MPAH Amendment Process

Taken as an Excerpt from the Guidance for the Administration
of the Orange County Master Plan of Arterial Highways,
Amended April 1998

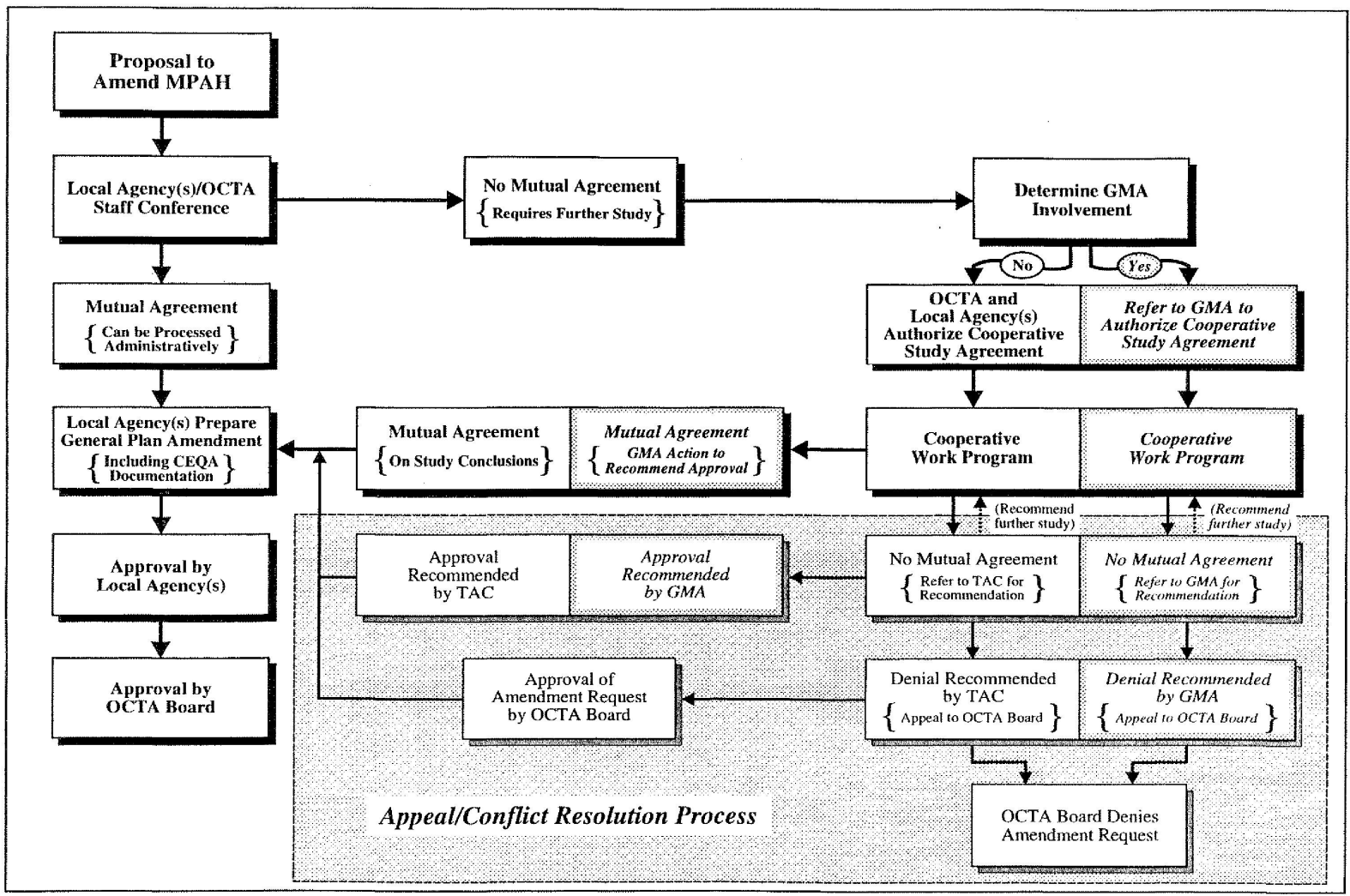
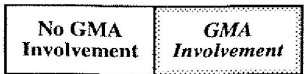


Figure 1



Note: Where a split box is shown, the right side applies when a GMA is involved in the process.

MPAH Amendment Process

