LINSCOTT LAW & GREENSPAN engineers

TRAFFIC IMPACT ANALYSIS REPORT

LATITUDE BUSINESS PARK

Corona, California

September 23, 2019

(Update of the June 12, 2019 Report)

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- The Latitude Business Park Project site is currently vacant and is located on the northwest quadrant of Temescal Canyon Road and Tom Barnes Street. The proposed Project consists of a 1,124,290 square-feet (SF) warehousing, industrial park, and office within fifteen (15) buildings ranging from 253,799 SF to 18,262 SF. The Project is anticipated to be completed by the Year 2022.

- The Project is expected to generate 4,127 daily trips, 471 (382 inbound, 89 outbound) AM peak hour trips, and 480 (102 inbound, 378 outbound) PM peak hour trips. It should be noted that these estimates include the conversion of truck-related trips to passenger car equivalents (PCE).

Study Area

- Twelve (12) key study intersections were designated for evaluation based on City of Corona Traffic Impact Analysis (TIA) criteria and discussions with City staff. The key intersections selected for evaluation in this report provide local and regional access to the study area and are listed as follows:

    1. I-15 SB Ramps at Ontario Avenue
    2. I-15 NB Ramps at Ontario Avenue
    3. State Street at Ontario Avenue
    4. I-15 SB Ramps at El Cerrito Road
    5. I-15 NB Ramps at El Cerrito Road
    6. Ontario Avenue/Temescal Canyon Road at El Cerrito Road
    7. Temescal Canyon Road at Minnesota Road
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    9. I-15 SB Ramps at Cajalco Road
    10. I-15 NB Ramps at Cajalco Road
    11. Temescal Canyon Road at Cajalco Road
    12. Temescal Canyon Road at Dos Lagos Drive

- The study roadway segments listed below are locations that could potentially be impacted by the Project. The five (5) roadway segments listed below were selected based on the arterial network within the study area and discussions with City of Corona staff:

1. El Cerrito Road, between I-15 NB Ramps and Ontario Avenue/Temescal Canyon Road
2. Temescal Canyon Road, between El Cerrito Road and Tom Barnes Street
3. Tom Barnes Street, between Tuscany Street and Temescal Canyon Road
4. Temescal Canyon Road, between Tom Barnes Street and Cajalco Road
5. Cajalco Road, between I-15 NB Ramps and Temescal Canyon Road

Cumulative Projects Description

- The sixteen (16) cumulative projects are expected to generate 39,681 daily trips (one half arriving, one half departing) on a "typical" weekday, with 2,619 trips (1,353 inbound and 1,266 outbound) forecast during the AM peak hour and 3,318 trips (1,605 inbound and 1,713 outbound) forecast during the PM peak hour.

Traffic Impact Analysis

Existing Traffic Conditions

- For the Existing traffic conditions, all twelve (12) key study intersections currently operate at acceptable levels of service during the AM and PM peak hours.

- For the Existing traffic conditions, one (1) of the five (5) key study roadway segments currently operate at unacceptable levels of service on a daily basis when compared to the LOS standards defined in this report. The remaining four (4) key study roadway segments currently operate at acceptable levels of service on daily basis. The roadway segment operating at adverse levels of service is:

		Daily	
Key Roadway Segment	**Volume**	**V/C Ratio**	**LOS**
2. Temescal Canyon Rd, between El Cerrito Rd and Tom Barnes St	19,616	1.509	F

Existing With Project Traffic Conditions

- For the Existing With Project traffic conditions, all twelve (12) key study intersections are forecast to operate at acceptable LOS D or better during the AM and PM peak hours.

- For the Existing With Project traffic conditions, one (1) of the five (5) key study roadway segments are forecast to operate at unacceptable levels of service on a daily basis when compared to the LOS standards defined in this report. The remaining four (4) key study roadway segments are forecast to operate at acceptable levels of service on a daily basis. The roadway segment forecast to operate at an adverse level of service is:

Key Roadway Segment	Volume	Daily V/C Ratio	LOS
2. Temescal Canyon Rd, between El Cerrito Rd and Tom Barnes St	21,103	1.623	F

To determine if the Project creates a significant impact, this adverse roadway segment is further analyzed under peak hour conditions to determine if there are any peak hour deficiencies. This adverse roadway segment is forecast to operate at LOS C or better during the AM and PM peak hours. As a result, the key study roadway segment is not significantly impacted by Existing With Project traffic and therefore no improvements are required

Year 2022 With Project Traffic Conditions

- For the Year 2022 With Project traffic conditions, two (2) of the twelve (12) key study intersections are forecast to operate at unacceptable levels of service during the AM and PM peak hours when compared to the LOS standards defined in this report. The remaining ten (10) key study intersections are forecast to operate at acceptable levels of service during the AM and PM peak hours. The intersections operating at adverse levels of service are:

	AM Peak Hour		PM Peak Hour	
Key Intersection	Delay (s/v)	LOS	Delay (s/v)	LOS
3. State Street at Ontario Avenue	49.5	E	41.3	E
11. Temescal Canyon Road at Cajalco Road	--	--	58.0	E

Two (2) of the twelve (12) key study intersections will have a significant impact under the Year 2022 With Project traffic conditions when compared to the LOS criteria defined in this report. However, the implementation of recommended mitigation measures at the impacted intersections mitigates the impacts of the proposed Project. After implementation of the recommended mitigation measures, all the impacted intersections are forecast to operate at an acceptable LOS based on the LOS standards outlined in this report.

- For the Year 2022 With Project traffic conditions, two (2) of the five (5) key study roadway segment is forecast to operate at unacceptable levels of service on a daily basis when compared to the LOS standards defined in this report. The remaining three (3) key study roadway segments are forecast to operate at acceptable levels of service on a daily basis. The roadway segments operating at adverse levels of service are:

Key Roadway Segment	Volume	Daily V/C Ratio	LOS
2. Temescal Canyon Rd, between El Cerrito Rd and Tom Barnes St	24,380	1.875	F
3. Tom Barnes St, between Tuscany St and Temescal Canyon Rd	10,474	0.806	D

To determine if the Project creates a significant impact, this adverse roadway segment is further analyzed under peak hour conditions to determine if there are any peak hour deficiencies. This adverse roadway segment is forecast to operate at LOS D or better during

the AM and PM peak hours. As a result, the key study roadway segment is not significantly impacted by Year 2022 With Project traffic and therefore no improvements are required.

Year 2040 With Project Traffic Conditions

- For the Year 2040 With Project traffic conditions, three (3) of the twelve (12) key study intersections are forecast to operate at unacceptable levels of service during the AM and PM peak hours when compared to the LOS standards defined in this report. The remaining nine (9) key study intersections are forecast to operate at acceptable levels of service during the AM and PM peak hours. The intersections operating at adverse levels of service are:

	AM Peak Hour		PM Peak Hour	
Key Intersection	**Delay (s/v)**	**LOS**	**Delay (s/v)**	**LOS**
3. State Street at Ontario Avenue	48.1	E	53.9	F
6. Ontario Ave/Temescal Canyon Rd at El Cerrito Road	--	--	75.3	E
11. Temescal Canyon Road at Cajalco Road	73.2	E	82.6	F

Three (3) of the twelve (12) key study intersections will have a significant impact under the Year 2040 With Project traffic conditions when compared to the LOS criteria defined in this report. However, the implementation of recommended mitigation measures at the impacted intersections mitigates the impacts of the proposed Project. After implementation of the recommended mitigation measures, all the impacted intersections are forecast to operate at an acceptable LOS based on the LOS standards outlined in this report.

- For the Year 2040 With Project traffic conditions, two (2) of the five (5) key study roadway segments is forecast to operate at unacceptable levels of service on a daily basis when compared to the LOS standards defined in this report. The remaining three (3) key study roadway segments are forecast to operate at acceptable levels of service on a daily basis. The roadway segment operating at adverse levels of service is:

		Daily	
Key Roadway Segment	**Volume**	**V/C Ratio**	**LOS**
2. Temescal Canyon Rd, between El Cerrito Rd and Tom Barnes St	33,368	0.979	E
3. Tom Barnes St, between Tuscany St and Temescal Canyon Rd	10,474	0.806	D

To determine if the Project creates a significant impact, this adverse roadway segment is further analyzed under peak hour conditions to determine if there are any peak hour deficiencies. This adverse roadway segments is forecast to operate at LOS B or better during the AM and PM peak hours. As a result, the key study roadway segment is not significantly impacted by Year 2040 With Project traffic and therefore no improvements are required.

Planned Improvements

Year 2022 Without Project and Year 2022 With Project Traffic Conditions

- The planned improvements listed below are anticipated to be completed in the Year 2022 and have been assumed in the Year 2022 Without Project and Year 2022 With Project traffic conditions. The Year 2022 network planned improvements for intersections are as follows:
  - Intersection 4. I-15 SB Ramps at El Cerrito Road: Widen and restripe the west leg to provide the eastbound approach with an exclusive right-turn lane. Modify the existing traffic signal.
  - Intersection 9. I-15 SB Ramps at Cajalco Road: Widen and restripe the north leg to provide the southbound approach with a second and third exclusive left-turn lane and a second exclusive right-turn lane. Widen and restripe the northbound departure to provide a second lane. Widen and restripe the west leg to provide the eastbound approach with a second exclusive left-turn and a second through lane. Widen and restripe the westbound departure to provide a second and third lane. Widen and restripe the east leg to provide the westbound approach with a second through lane. Widen and restripe the eastbound departure to provide a second lane. Modify the existing traffic signal. These improvements are in conjunction with the I-15/Cajalco Road Interchange Improvement Project.
  - Intersection 10. I-15 NB Ramps at Cajalco Road: Remove the north leg and realign the on-ramp to the west of the intersection. Widen and restripe the south leg to provide the northbound approach with a second exclusive left-turn lane and a second exclusive right-turn lane. Widen and restripe to provide two southbound departure lanes for the hook on-ramp. Widen and restripe the west leg to provide the eastbound approach with two additional through lanes and an exclusive right-turn lane, and remove the exclusive left-turn lane. Widen and restripe the westbound departure to provide two additional through lanes. Widen and restripe the east leg to provide the westbound approach with three additional through lanes and remove the exclusive right-turn lane. Widen and restripe the eastbound departure to provide a third through lane. Modify the existing traffic signal. These improvements are in conjunction with the I-15/Cajalco Road Interchange Improvement Project.

- The Year 2022 network planned improvements for roadway segments are as follows:
  - Roadway Segment 5. Cajalco Road, *between* I-15 NB Ramps and Temescal Canyon Road: Widen from an urban arterial with five (5) lanes divided to an urban arterial with six (6) lanes divided. This improvement is in conjunction with the I-15/Cajalco Road Interchange Improvement Project.

Year 2040 Without Project and Year 2040 With Project Traffic Conditions

- The planned improvements listed below are anticipated to be completed in the Year 2040 and have been assumed in the Year 2040 Without Project and Year 2040 With Project traffic conditions. The Year 2040 network planned improvements for intersections are as follows:

  - Intersection 1. I-15 SB Ramps at Ontario Avenue: Widen and restripe the west leg to provide the eastbound approach with a third through lane. Widen and restripe the westbound departure to provide a third lane. Widen and restripe the east leg to provide the westbound approach with a third through lane. Widen and restripe the eastbound departure to provide a third lane. Modify the existing traffic signal. These improvements will be implemented in conjunction with the proposed I-15/Ontario Avenue Interchange Improvement Project.
  - Intersection 2. I-15 NB Ramps at Ontario Avenue: Restripe the south leg to provide a shared northbound left-turn/through/right-turn lane. Widen and restripe the west leg to provide the eastbound approach with a second through lane. Widen and restripe the westbound departure to provide a third lane. Widen and restripe the east leg to provide the westbound approach with a third through lane. Restripe the eastbound departure to provide a second lane. Modify the existing traffic signal. These improvements will be implemented in conjunction with the proposed I-15/Ontario Avenue Interchange Improvement Project.
  - Intersection 3. State Street at Ontario Avenue: Widen and restripe the east leg to provide the westbound approach with an exclusive through lane. This improvement is in conjunction with the Temescal Canyon Road Improvement Project.
  - Intersection 6. Ontario Avenue/Temescal Canyon Road at El Cerrito Road: Widen and restripe the south leg to provide the northbound approach with a second through lane. Widen and restripe the southbound departure to provide a second through lane. Widen and restripe the north leg to provide the northbound departure with a second through lane. Modify the existing traffic signal. This improvement is in conjunction with the Temescal Canyon Road Improvement Project.
  - Intersection 7. Temescal Canyon Road at Minnesota Road: Widen and restripe the south leg to provide the northbound approach with a second through lane. Restripe the shared northbound left-turn/through lane to an exclusive northbound left-turn lane. Widen and restripe the southbound departure to provide a second through lane. Widen and restripe the north leg to provide the southbound approach with a second through lane. Widen and restripe the northbound departure with a second through lane. Modify the existing traffic signal. This improvement is in conjunction with the Temescal Canyon Road Improvement Project.
  - Intersection 8. Temescal Canyon Road at Tom Barnes Street: Restripe the south leg to provide the northbound approach with a through lane. Restripe the north leg to provide the northbound departure with a second through lane. Modify the existing

traffic signal. This improvement is in conjunction with the Temescal Canyon Road Improvement Project.

- Intersection 11. Temescal Canyon Road at Cajalco Road: Restripe the south leg to convert the northbound through/right-turn lane to an exclusive right-turn lane. Restripe the north leg to provide the southbound approach with a second exclusive southbound left-turn lane. Restripe the west leg and provide the eastbound approach with a second through lane. Widen and restripe the east leg to provide the westbound approach with a second exclusive westbound left-turn lane and a second westbound departure lane. Modify the existing traffic signal.

- The Year 2040 network planned improvements for roadway segments are as follows:

  - Roadway Segment 2. Temescal Canyon Road, *between* El Cerrito Road and Tom Barnes Street: Widen from a collector with two (2) lanes undivided to a major arterial with four (4) lanes divided. This improvement is in conjunction with the Temescal Canyon Road Improvement Project.

Recommended Improvements

Existing With Project Traffic Conditions

- The results of the roadway segment analyses for Existing With Project traffic conditions indicate that the proposed Project is not forecast to have a significant impact at any of the twelve (12) key study intersections. As there are no significant impacts, no traffic mitigation measures are required under this traffic scenario.

- The results of the roadway segment analyses for Existing With Project traffic conditions indicate that the proposed Project is not forecast to have a significant impact at any of the five (5) key roadway segments. As there are no significant impacts, no traffic mitigation measures are required under this traffic scenario.

Year 2022 With Project Traffic Conditions

- The results of the Year 2022 With Project traffic conditions level of service analyses indicate that the proposed Project will significantly impact two (2) of the of twelve (12) key study intersections. The remaining ten (10) key study intersections are forecast to operate at acceptable levels of service under the Year 2022 With Project traffic conditions. The improvements listed below have been identified to address the traffic impacts at the intersections significantly impacted by the Year 2022 With Project traffic:

  - Intersection 3. State Street at Ontario Avenue: Stripe crosswalks on all legs. Install a traffic signal and design for five-phase operation with protected left-turn phasing on Ontario Avenue. It should be noted that the intersection of State Street at Ontario Avenue is in the City's Fee Program as a master-planned traffic signal to be installed by the City.

- Intersection 11. Temescal Canyon Road at Cajalco Road: Modify the existing traffic signal to install eastbound right-turn overlap phasing.

➢ The results of the roadway segment analyses for Year 2022 With Project traffic conditions indicate that the proposed Project is not forecast to have a significant impact at any of the five (5) key roadway segments. As there are no significant impacts, no traffic mitigation measures are required under this traffic scenario.

Year 2040 With Project Traffic Conditions

➢ The results of the Year 2040 With Project traffic conditions level of service analyses indicate that the proposed Project will significantly impact three (3) of the of twelve (12) key study intersections. The remaining nine (9) key study intersections are forecast to operate at acceptable levels of service under the Year 2040 With Project traffic conditions. The improvements listed below have been identified to address the traffic impacts at the intersections significantly impacted by the Year 2040 With Project traffic:

- Intersection 3. State Street at Ontario Avenue: Stripe crosswalks on all legs. Install a traffic signal and design for five-phase operation with protected left-turn phasing on Ontario Avenue. It should be noted that the intersection of State Street at Ontario Avenue is in the City's Fee Program as a master-planned traffic signal to be installed by the City.
- Intersection 6. Ontario Avenue/Temescal Canyon Road at El Cerrito Road: Modify the existing traffic signal to provide eastbound right-turn overlap phasing.
- Intersection 11. Temescal Canyon Road at Cajalco Road: Restripe the west leg to provide the eastbound approach with a second exclusive eastbound left-turn lane. Modify the existing traffic signal to install eastbound right-turn overlap phasing and northbound right-turn overlap phasing.

➢ The results of the roadway segment analyses for Year 2040 With Project traffic conditions indicate that the proposed Project is not forecast to have a significant impact at any of the five (5) key roadway segments. As there are no significant impacts, no traffic mitigation measures are required under this traffic scenario.

Traffic Signal Warrant Analysis

Year 2022 With Project Traffic Conditions

➢ The results of the peak-hour traffic signal warrant analysis for the Year 2022 With Project traffic conditions indicate that the following one (1) key unsignalized impacted intersection has future traffic conditions that would exceed the volume thresholds of Warrant #3, Part B for the PM peak hour. The analysis and the recommended improvements show that the intersection of State Street at Ontario Avenue in the Year 2022 With Project traffic conditions is recommended to be signalized. With signalization of this intersection, which is

warranted, this intersection is forecast to operate at acceptable service levels during the AM and PM peak hours. Thus, it is concluded that traffic signal is justified at the location.

Year 2040 With Project Traffic Conditions

- The results of the peak-hour traffic signal warrant analysis for the Year 2040 With Project traffic conditions indicate that the following one (1) key unsignalized impacted intersection has future traffic conditions that would exceed the volume thresholds of Warrant #3, Part B for the PM peak hour. The analysis and the recommended improvements show that the intersection of State Street at Ontario Avenue in the Year 2040 With Project traffic conditions is recommended to be signalized. With signalization of this intersection, which is warranted, this intersection is forecast to operate at acceptable service levels during the AM and PM peak hours. Thus, it is concluded that traffic signal is justified at the location.

Project Fair Share Analysis

Existing With Project Traffic Conditions

- None of the twelve (12) key study intersections are forecast to have a significant impact under Existing With Project traffic conditions when compared to the LOS criteria defined in this report. As there are no significant impacts, no Project fair share calculation is needed.

- The results of the roadway segment analyses indicate that the proposed Project is not forecast to have a significant impact at any of the five (5) key roadway segments for the Existing With Project traffic conditions. As there are no significant impacts, no Project fair share calculation is needed.

Year 2022 With Project Traffic Conditions

- The Project fair share percentage (worse time period impacted) for the two (2) impacted intersection for the Year 2022 With Project traffic conditions is shown below:
  - 3. State Street at Ontario Avenue 34.92%
  - 11. Temescal Canyon Road at Cajalco Road 100.00%[1]

- The results of the roadway segment analyses indicate that the proposed Project is not forecast to have a significant impact at any of the five (5) key roadway segments for the Year 2022 With Project traffic conditions. As there are no significant impacts, no Project fair share calculation is needed.

[1] Project Fair Share responsibility greater than 100.00% shown as 100.00%.

Year 2040 With Project Traffic Conditions

- The Project fair share percentages (worse time period impacted) for the three (3) impacted intersections for the Year 2040 With Project traffic conditions are shown below:
  - 3. State Street at Ontario Avenue 24.43%
  - 6. Ontario Ave/Temescal Canyon Rd at El Cerrito Road 21.67%
  - 11. Temescal Canyon Road at Cajalco Road 100.00%[2]

- The results of the roadway segment analyses indicate that the proposed Project is not forecast to have a significant impact at any of the five (5) key roadway segments for the Year 2040 With Project traffic conditions. As there are no significant impacts, no Project fair share calculation is needed.

Site Access and Internal Circulation Evaluation

- The two (2) Project driveways are forecast to operate at acceptable levels of service LOS B or better during the AM and PM peak hours under the Existing With Project traffic conditions.

- The two (2) Project driveways are forecast to operate at acceptable levels of service LOS B or better during the AM and PM peak hours under the Year 2022 With Project traffic conditions.

- The two (2) Project driveways are forecast to operate at acceptable levels of service LOS B or better during the AM and PM peak hours under the Year 2040 With Project traffic conditions.

- The on-site circulation was evaluated by truck turning maneuvers of a large delivery truck (WB-67) design vehicle. In order to accommodate the ingress westbound right-turn turning movement requirements of a WB-67 design truck into the Project site, the Project site plan needs to incorporate a curb return radii of 65 feet on the northeast corner of Project Driveway 1 at Tom Barnes Street and a curb return radii of 60 feet on the northeast corner of Project Driveway 2 at Tom Barnes Street.

Intersection Queue Length Analysis

- Under Existing With Project traffic conditions, the existing eastbound left-turn/through storage of 130 feet is not sufficient in the PM peak hour at the intersection of Temescal Canyon Road at Tom Barnes Street.

- Under Year 2022 With Project traffic conditions, the existing eastbound left-turn/through storage of 130 feet is not sufficient to accommodate the forecast peak queue of 283 feet in

[2] Project Fair Share responsibility greater than 100.00% shown as 100.00%.

the PM peak hour. As a result, it is recommended that the eastbound approach be restriped to extend the existing left-turn/through pocket into the No. 1 eastbound through lane, which will create an eastbound left-turn/through storage of 360 feet.

- Under Year 2040 With Project traffic conditions, the eastbound storage is sufficient for all lanes to accommodate the forecast peak queues with the addition of planned improvements that would create a combined storage of 490 feet for the eastbound left-turn and through movements. These improvements would include to restriping the west leg to provide the eastbound approach with an exclusive eastbound left-turn lane, a shared eastbound left-turn/through lane, and an exclusive eastbound right-turn lane and removing the crosswalk along the south leg. The existing traffic signal is recommended to be modified to include split phasing for the east/west direction.
- It should be noted that at the intersection of Temescal Canyon Road at Cajalco Road the 95th percentile northbound left turn queue can be reduced from approximately 580 feet to 380 feet with the restriping of the northbound approach to provide three left-turn lanes, one through lane, and one northbound exclusive right-turn lane.

TRAFFIC IMPACT ANALYSIS REPORT

LATITUDE BUSINESS PARK

Corona, California

September 23, 2019

(Update of the June 12, 2019 Report)

1.0 INTRODUCTION

This traffic impact analysis evaluates the potential traffic impacts of the proposed Latitude Business Park (hereinafter referred to as Project), on the area traffic circulation. The Project site is currently vacant and is located on the northwest quadrant of Temescal Canyon Road and Tom Barnes Street. The proposed Project consists of a 1,124,290 square-feet (SF) warehousing, industrial park, and office within fifteen (15) buildings ranging from 253,799 SF to 18,262 SF. The Project is anticipated to be completed by the Year 2022.

This report documents the findings and recommendations of a traffic impact analysis conducted by Linscott, Law & Greenspan, Engineers (LLG) to determine the potential traffic impacts that the Project may have on the local and regional transportation network in the vicinity of the Project site. The traffic impact analysis evaluates the operating conditions at twelve (12) existing key study intersections and five (5) existing key roadway segments within the Project vicinity, estimates the trip generation potential of the Project and forecasts future (near-term and long-term) operating conditions without and with the Project.

The Project site has been visited and an inventory of adjacent area roadways and intersections was performed. Existing (i.e. baseline) peak hours and daily traffic information has been collected at twelve (12) key study intersections and five (5) key roadway segments, respectively, on a "typical" weekday for use in the preparation of intersection and roadway segment level of service calculations. This traffic report analyzes existing (i.e. baseline) and future (near-term and long-term) weekday Daily, AM and PM peak hour traffic conditions for Existing (i.e. baseline), Year 2022, and Year 2040 traffic conditions without and with the proposed Project. Peak hour and daily traffic forecasts for the Year 2022 traffic conditions have been projected by increasing existing traffic volumes by an annual growth rate of two percent (2%) per year and adding the traffic from sixteen (16) cumulative projects. Peak hour and daily forecasts for the Buildout (Year 2040) traffic conditions have been projected based on the City of Corona Travel Demand Model, administered by Fehr & Peers.

The work program for this traffic study was developed in conjunction with the City of Corona Public Works Department staff. ***Appendix A*** contains a copy of the approved City of Corona Traffic Impact Study Scoping Agreement.

1.1 Study Area

1.1.1 *Intersections*

Twelve (12) key study intersections were designated for evaluation based on City of Corona Traffic Impact Analysis (TIA) criteria and discussions with City staff. The key intersections selected for evaluation in this report provide local and regional access to the study area and are listed as follows:

1. I-15 SB Ramps at Ontario Avenue
2. I-15 NB Ramps at Ontario Avenue
3. State Street at Ontario Avenue
4. I-15 SB Ramps at El Cerrito Road
5. I-15 NB Ramps at El Cerrito Road
6. Ontario Avenue/Temescal Canyon Road at El Cerrito Road
7. Temescal Canyon Road at Minnesota Road
8. Temescal Canyon Road at Tom Barnes Street
9. I-15 SB Ramps at Cajalco Road
10. I-15 NB Ramps at Cajalco Road
11. Temescal Canyon Road at Cajalco Road
12. Temescal Canyon Road at Dos Lagos Drive

1.1.2 *Roadway Segments*

The study roadway segments listed below are locations that could potentially be impacted by the Project. The five (5) roadway segments listed below were selected based on the arterial network within the study area and discussions with City of Corona staff:

1. El Cerrito Road, between I-15 NB Ramps and Ontario Avenue/Temescal Canyon Road
2. Temescal Canyon Road, between El Cerrito Road and Tom Barnes Street
3. Tom Barnes Street, between Tuscany Street and Temescal Canyon Road
4. Temescal Canyon Road, between Tom Barnes Street and Cajalco Road
5. Cajalco Road, between I-15 NB Ramps and Temescal Canyon Road

1.2 Traffic Impact Analysis Components

The Highway Capacity Manual (HCM) Delay, Volume to Capacity (V/C) ratio and corresponding Level of Service (LOS) calculations at the key study locations were used to evaluate the potential traffic-related impacts associated with area growth, cumulative projects and the Project. When necessary, this report recommends intersection/roadway segment improvements that may be required to accommodate future traffic volumes and restore/maintain an acceptable Level of Service and addresses the impact of the Project.

Included in this Traffic Impact Analysis are:

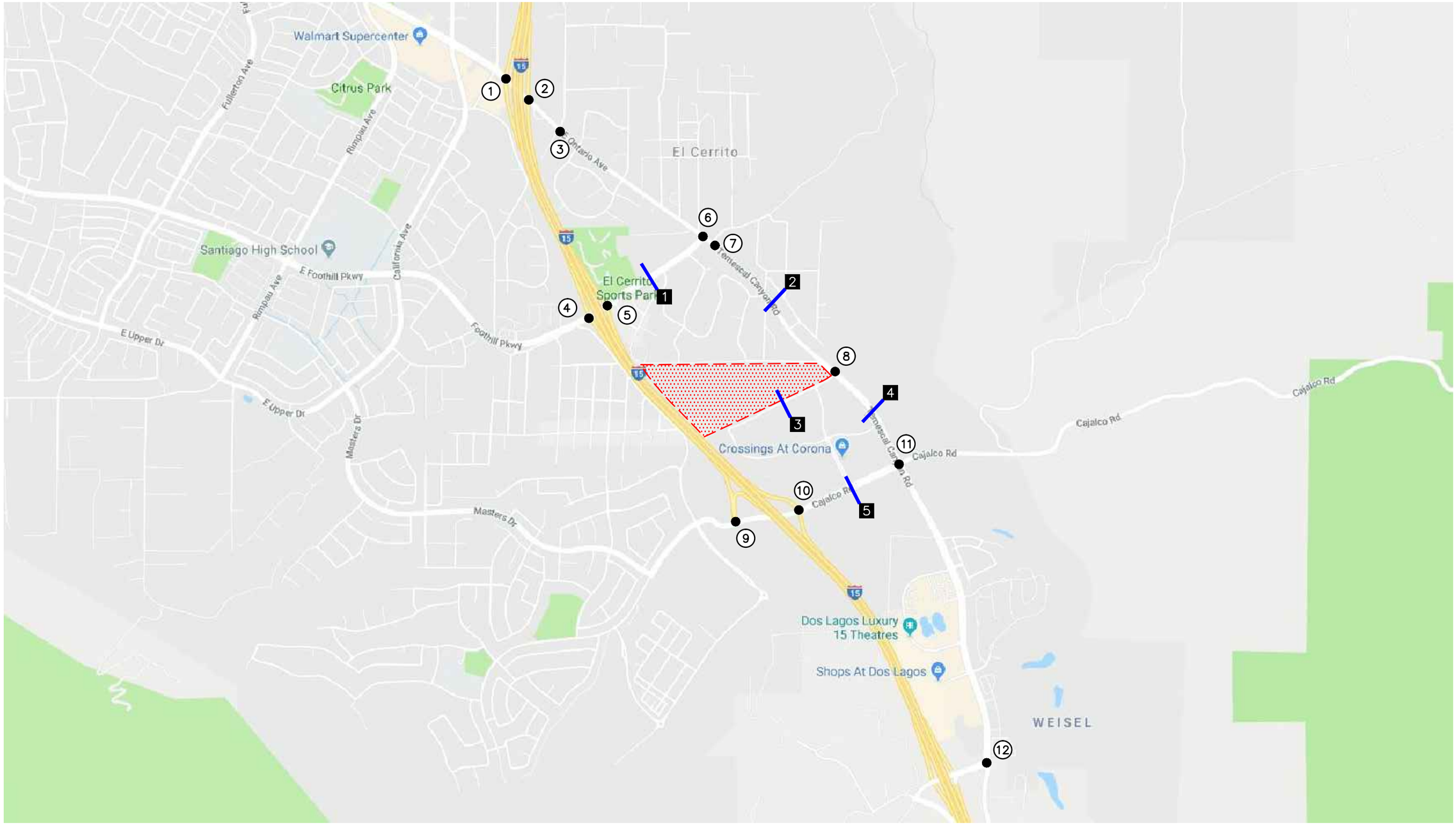
- Existing Traffic Counts,
- Estimated Project trip generation/distribution/assignment,
- Estimated Cumulative projects trip generation/distribution/assignment,
- Daily, AM and PM peak hour LOS analyses for Existing (i.e. Baseline) Conditions,
- Daily, AM and PM peak hour LOS analyses for Existing (i.e. Baseline) Conditions with Project traffic,
- Daily, AM and PM peak hour LOS analyses for Near-Term (Year 2022) Conditions without and with Project traffic,
- Daily, AM and PM peak hour LOS analyses for Long-Term (Year 2040) Conditions without and with Project traffic,
- Planned and Recommended Improvements,
- Traffic Signal Warrant Analysis,
- Site Access and Internal Circulation Evaluation, and
- Intersection Queue Analysis.

Figure 1-1 presents a Vicinity Map, which illustrates the general location of the Project and depicts the study locations and surrounding street system.

1.3 Traffic Impact Analysis Scenarios

The following scenarios are those for which Delay/V/C and corresponding LOS calculations have been performed at the key intersections and key roadway segments for existing, near-term, and long-term traffic conditions:

A. Existing (i.e. Baseline) Traffic Conditions,
B. Existing (i.e. Baseline) With Project Traffic Conditions,
C. Scenario (B) with Recommended Improvements, if any,
D. Year 2022 Without Project Traffic Conditions,
E. Year 2022 With Project Traffic Conditions,
F. Scenario (E) With Recommended Improvements, if any,
G. Year 2040 Without Project Traffic Conditions,
H. Year 2040 With Project Traffic Conditions, and
I. Scenario (H) With Recommended Improvements, if any.



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LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

SOURCE: GOOGLE

KEY

(#) = STUDY INTERSECTION

= DAILY TRAFFIC VOLUMES

= PROJECT SITE

FIGURE 1-1

VICINITY MAP

LATITUDE BUSINESS PARK, CORONA

2.0 PROJECT DESCRIPTION AND LOCATION

The Project site is currently vacant and is located on the northwest quadrant of Temescal Canyon Road and Tom Barnes Street. The proposed Project consists of a 1,124,290 square-feet (SF) warehousing, industrial park, and office within fifteen (15) buildings ranging from 253,799 SF to 18,262 SF. The Project is anticipated to be completed by the Year 2022.

Figure 2-1 presents the existing site for the proposed Project. ***Figure 2-2*** presents the proposed site plan prepared by HPA Architecture.

2.1 Site Access

As seen in *Figure 2-2*, access to the proposed Project site will be provided via one (1) full access driveway at the existing intersection of Grand Oaks at Tom Barnes Street. Twelve (12) full access driveways will be provided along a new public street cul-de-sac in the westerly portion of the Project site that will connect to the existing intersection of Tuscany Street at Tom Barnes Street. As a result of the site access analyses, the Project proposes to convert the two (2) existing intersections along Tom Barnes Street to all-way stop controlled intersections.

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

SOURCE: GOOGLE

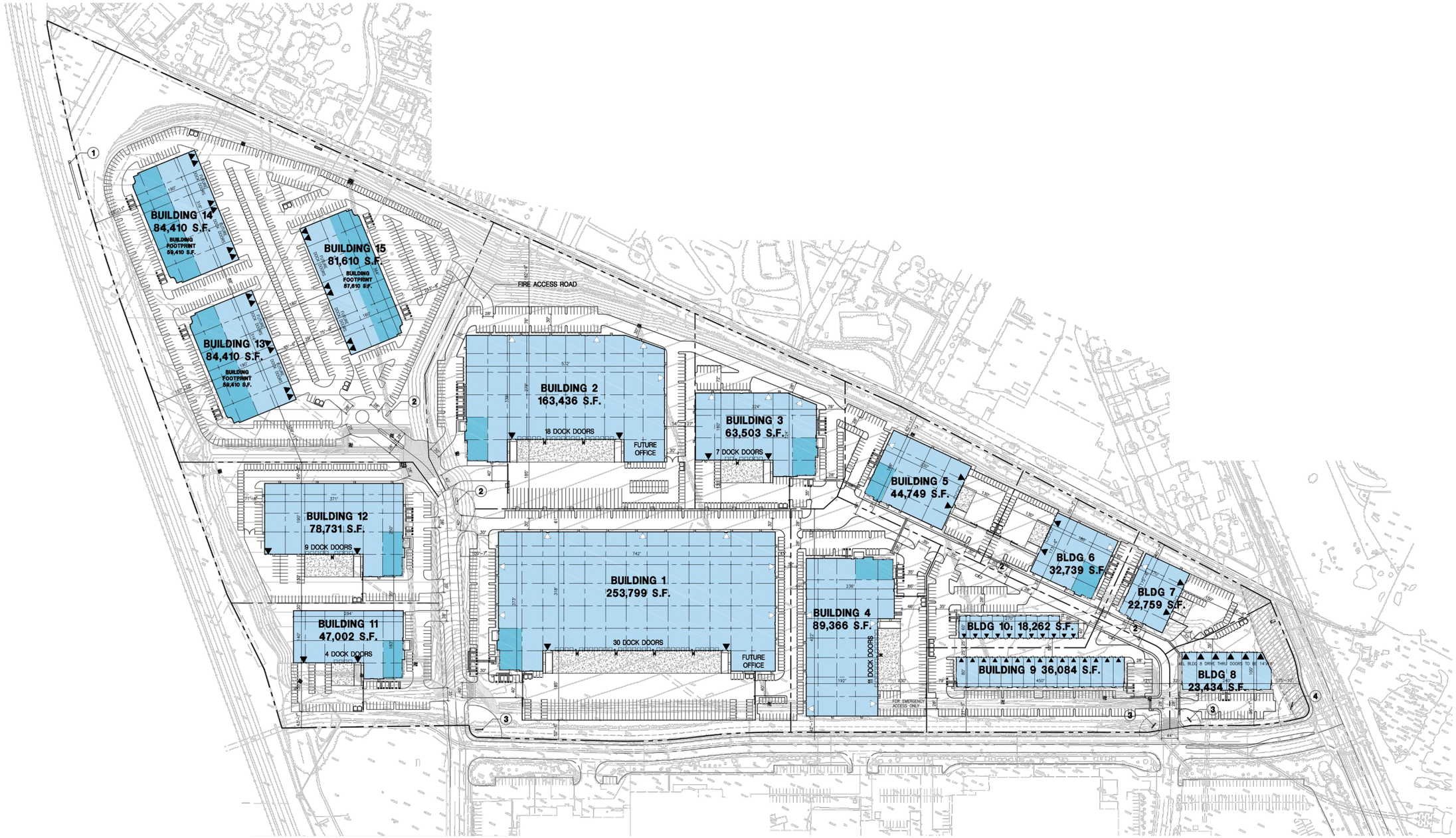
KEY

= PROJECT SITE

FIGURE 2-1

EXISTING SITE AERIAL

LATITUDE BUSINESS PARK, CORONA



n:\4000\2184039 - latitude business park, corona\6 - dwg\4039 f2-2.dwg LDP 15:41:03 03-11-2019 besa

LINSCOTT LAW & GREENSPAN engineers

NO SCALE

SOURCE: HPA ARCHITECTS

FIGURE 2-2

PROPOSED SITE PLAN

LATITUDE BUSINESS PARK, CORONA

3.0 ANALYSIS CONDITIONS AND METHODOLOGY

3.1 Existing Street Network

The I-15 Freeway provides regional access to the Project site. The I-15 is located west of the Project site. The principal local network of streets serving the site consists of Ontario Avenue/Temescal Canyon Road, El Cerrito Road, and Eagle Glen Parkway/Cajalco Road. The following discussion provides a brief synopsis of the key area streets.

Ontario Avenue is a three-lane divided roadway north of El Cerrito Road and a two-lane undivided roadway south of El Cerrito Road. Parking is restricted on both sides of the roadway within the vicinity of the Project. Ontario Avenue has a posted speed limit of 45 miles per hour (mph). The intersections of Ontario Avenue at I-15 SB Ramps, I-15 NB Ramps, and El Cerrito Road are controlled by a traffic signal. The intersection of Ontario Avenue at State Street is stop controlled.

Temescal Canyon Road is a two-lane undivided roadway north of Tom Barnes Street and a four-lane divided roadway located south of Tom Barnes Street. It is located east of the Project site. Parking is restricted on both sides of the roadway within the vicinity of the Project. Temescal Canyon Road has a posted speed limit of 45 mph. The intersections of Temescal Canyon Road at Minnesota Road, Tom Barnes Street, Cajalco Road, and Dos Lagos Drive are controlled by a traffic signal.

El Cerrito Road is a four-lane divided roadway. Parking is restricted on both sides of the roadway. El Cerrito Road has a speed limit of 35 mph east of the I-15. The intersections of El Cerrito Road at I-15 SB Ramps and I-15 NB Ramps are controlled by a traffic signal.

Cajalco Road is a five-lane divided roadway between I-15 and Temescal Canyon Road and a two-lane undivided roadway east of Temescal Canyon Road. Parking is not permitted on either side of the roadway. The posted speed limit on Cajalco Road is 45 mph west of Temescal Canyon Road and 35 mph east of Temescal Canyon Road. The intersections of Cajalco Road at I-15 SB Ramps, I-15 NB Ramps, and Temescal Canyon Road are controlled by a traffic signal.

Figure 3-1 presents an inventory of the existing roadway conditions within the study area evaluated in this report. The number of travel lanes and intersection controls for the key area study intersections and roadway segments are identified. ***Figure 3-2*** shows the current City of Corona General Plan Circulation Element.

3.2 Existing Traffic Volumes

Existing AM and PM peak hour traffic volumes for the twelve (12) key study intersections and five (5) key roadway segments evaluated in this report were collected by *Counts Unlimited* in October 2017 and 2018. ***Appendix B*** contains the existing intersection turning movement and roadway segment traffic count data.

Figures 3-3 and ***3-4*** present the existing AM and PM peak hour traffic volumes, respectively, for the twelve (12) key study intersections. *Figure 3-4* also presents the existing daily traffic volumes for the five (5) key study roadway segments.

3.3 Level Of Service (LOS) Analysis Methodologies

Existing AM and PM peak hour operating conditions for the twelve (12) key study intersections were evaluated using the methodology outlined in *Chapter 19 of the Highway Capacity Manual 6 (HCM 6)* for signalized intersections and the methodology outlined in *Chapter 20 of the HCM 6* for two-way stop-controlled intersections. Daily operating conditions for the five (5) key study roadway segments were analyzed using the *Volume to Capacity (V/C) ratio*.

3.3.1 *Highway Capacity Manual (HCM) Method of Analysis (Signalized Intersections)*

In conformance with City of Corona requirements, AM and PM peak hour operating conditions for the key study intersections were evaluated using the HCM operations method of analysis. Based on the HCM operations method of analysis, level of service for signalized intersections and approaches is defined in terms of control delay, which is a measure of the increase in travel time due to traffic signal control, driver discomfort, and fuel consumption. Control delay includes the delay associated with vehicles slowing in advance of an intersection, the time spent stopped on an intersection approach, the time spent as vehicles move up in the queue, and the time needed for vehicles to accelerate to their desired speed. LOS criteria for traffic signals are stated in terms of the control delay in seconds per vehicle. The LOS thresholds established for the automobile mode at a signalized intersection are shown in ***Table 3-1***.

3.3.2 *Highway Capacity Manual (HCM) Method of Analysis (Unsignalized Intersections)*

The HCM unsignalized methodology for stop-controlled intersections was utilized for the analysis of the unsignalized intersections. LOS criteria for unsignalized intersections differ from LOS criteria for signalized intersections as signalized intersections are designed for heavier traffic and therefore a greater delay. Unsignalized intersections are also associated with more uncertainty for users, as delays are less predictable, which can reduce users' delay tolerance.

Two-way stop-controlled intersections are comprised of a major street, which is uncontrolled, and a minor street, which is controlled by stop signs. Level of service for a two-way stop-controlled intersection is determined by the computed or measured control delay. The control delay by movement, by approach, and for the intersection as a whole is estimated by the computed capacity for each movement. LOS is determined for each minor-street movement (or shared movement) as well as major-street left turns. The worst side street approach delay is reported. LOS is not defined for the intersection as a whole or for major-street approaches, as it is assumed that major-street through vehicles experience zero delay. The HCM control delay value range for two-way stop-controlled intersections is shown in ***Table 3-2***.

All-way stop-controlled intersections require every vehicle to stop at the intersection before proceeding. Because each driver must stop, the decision to proceed into the intersection is a function of traffic conditions on the other approaches. The time between subsequent vehicle departures

depends on the degree of conflict that results between the vehicles and vehicles on the other approaches. This methodology determines the control delay for each lane on the approach, computes a weighted average for the whole approach, and computes a weighted average for the intersection as a whole. Level of service (LOS) at the approach and intersection levels is based solely on control delay. The HCM control delay value range for all-way stop-controlled intersections is shown in *Table 3-2*.

3.3.3 *Volume to Capacity (V/C) Ratio Method of Analysis (Roadway Segments)*

In conformance with the City of Corona requirements, daily operating conditions for the key study roadway segments have been investigated according to the Volume to Capacity (V/C) ratio of each roadway segment. The V/C relationship is used to estimate the LOS of the roadway segment with the volume based on the 24-hour traffic volumes and the capacity based on the City's classification of each roadway. The six qualitative categories of Level of Service have been defined along with the corresponding Volume to Capacity (V/C) value range and are shown in ***Table 3-3***.

The roadway segments' daily capacities of each street classification according to the *City of Corona General Plan Technical Background Report Page 3-27, dated March 2004* and *City of Corona Public Works Department Traffic Impact Study Guidelines Exhibit C, dated July 2006,* are presented in ***Table 3-4.***

Although the arterial segment V/C analysis provides a general assessment of overall system performance, the performance is measured on the ability to serve peak hour traffic demands. To identify deficient arterial segments, the segments that are identified as deficient under daily conditions are evaluated under peak hour conditions to evaluate the capability of serving forecast peak hour throughput. Arterial segments that operate deficiently under peak hour conditions are candidates for mitigation improvements.

3.4 Impact Criteria and Thresholds

3.4.1 *Intersections*

The City of Corona considers LOS D to be the minimum acceptable LOS for all intersections that consist of collector and arterial roadways. In addition, the City of Corona considers LOS C to be the minimum acceptable LOS for local and collector streets in residential and industrial areas.

The *City of Corona General Plan Circulation Element Policy 6.1.6 (adopted March 17, 2004)* states:

- *Maintain Level of Service D or better on arterial streets wherever possible. At some key locations, such as at heavily traveled freeway interchanges, LOS E may be adopted as the acceptable standard, on a case-by-case basis. Locations that may warrant the LOS E standard include Lincoln Avenue at SR-91, Main Street at SR-91, McKinley Avenue at SR-91, Hidden Valley Parkway at I-15, Cajalco Road at I-15 and Weirick Road at I-15. A higher standard such as Level of Service C or better may be adopted for local and collector streets in residential areas.*

In addition, as permitted by the Traffic Impact Analysis Guidelines and based on review of the General Plan Update traffic analysis as well as the fact that the El Cerrito/I-15 Interchange is not planned for any significant improvements, the following additional intersections have been designated LOS E as the acceptable standard:

- 4. I-15 SB Ramps at El Cerrito Road
- 5. I-15 NB Ramps at El Cerrito Road

For all the remaining intersections, LOS D is the minimum acceptable LOS.

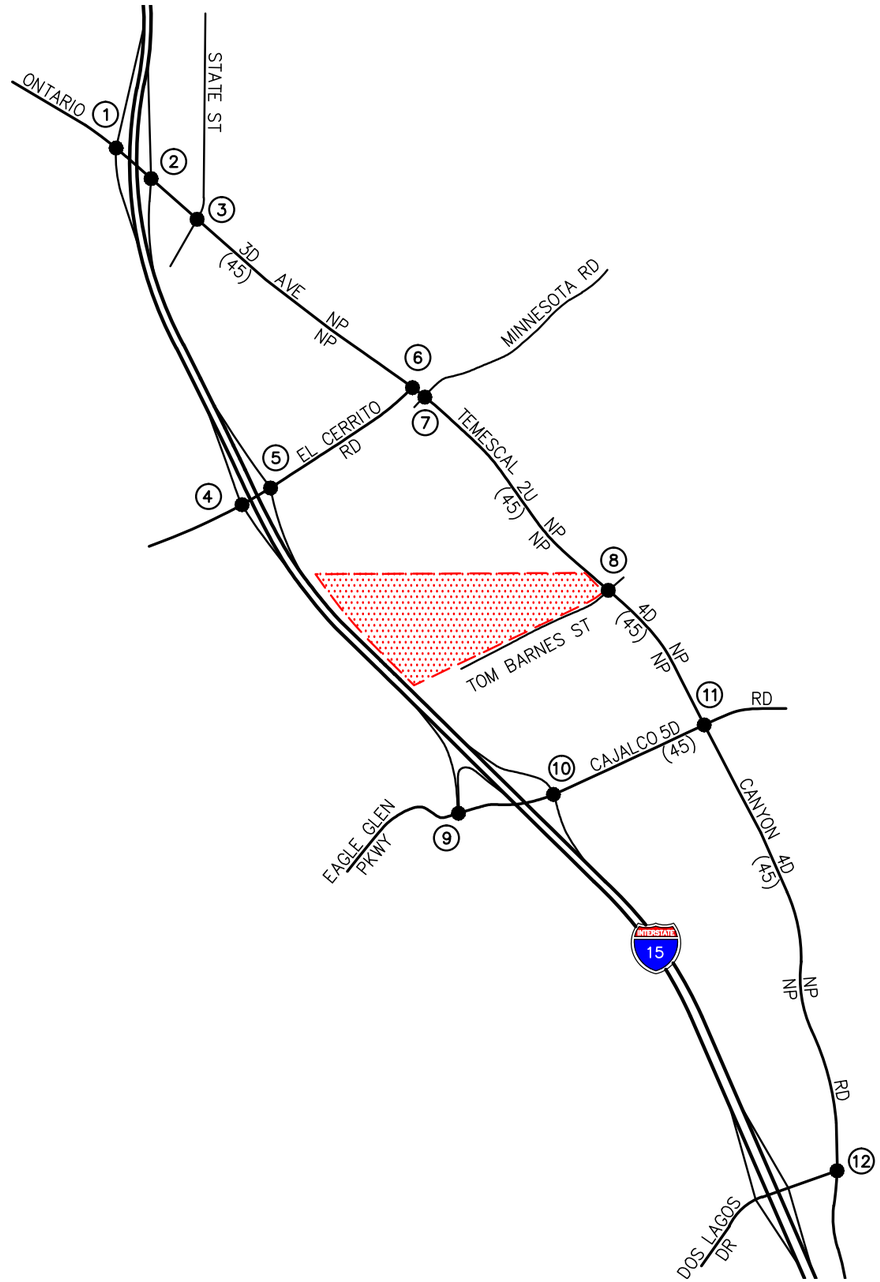
3.4.2 *Roadway Segments*

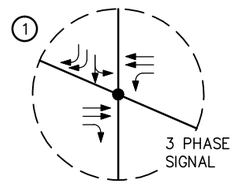
Similar to above, the City of Corona considers LOS D to be the minimum acceptable LOS for all roadway segments that consist of collector and arterial roadways based on the *City of Corona General Plan Circulation Element Policy 6.1.6*. In addition, the City of Corona considers LOS C to be the minimum acceptable LOS for local and collector streets in residential and industrial areas.

The roadway segments where LOS C is the minimum acceptable LOS are listed below:

- 3. Tom Barnes Street, between Tuscany Street and Temescal Canyon Road

For all the remaining roadway segments, LOS D is the minimum acceptable LOS.





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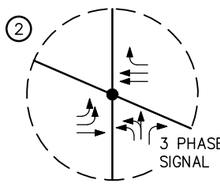

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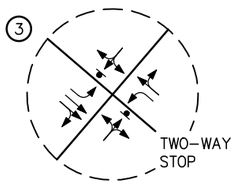

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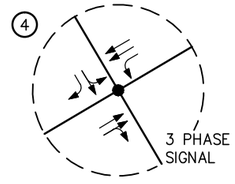
ONTARIO AVE



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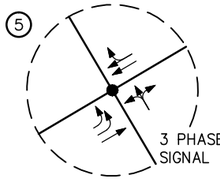

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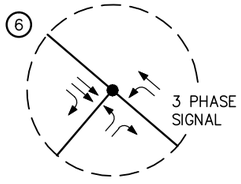
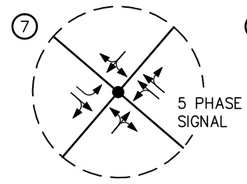


ONTARIO AVE/
TEMESCAL CANYON RD @
EL CERRITO RD



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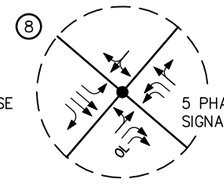
MINNESOTA RD



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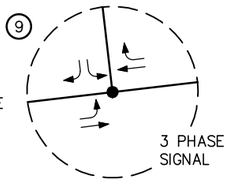

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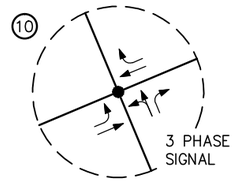
CAJALCO RD



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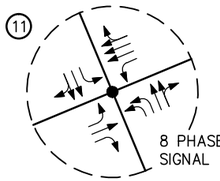
CAJALCO RD



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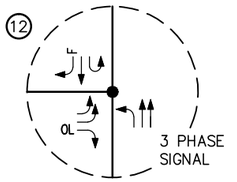
CAJALCO RD



TEMESCAL CANYON RD @
DOS LAGOS DR

LINSCOTT
LAW &
GREENSPAN
engineers

N
NO SCALE

KEY

← = APPROACH LANE ASSIGNMENT
● = TRAFFIC SIGNAL, ▼ = STOP SIGN
P = PARKING, NP = NO PARKING
U = UNDIVIDED, D = DIVIDED
2 = NUMBER OF TRAVEL LANES
(XX)= POSTED SPEED LIMIT (MPH)
OL = OVERLAP
F = FREE–RIGHT
= PROJECT SITE

FIGURE 3–1

EXISTING ROADWAY CONDITIONS AND INTERSECTION CONTROLS

LATITIUDE BUSINESS PARK, CORONA

SOURCE: CITY OF CORONA

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

FIGURE 3-2

CITY OF CORONA GENERAL PLAN CIRCULATION ELEMENT

LATITUDE BUSINESS PARK, CORONA

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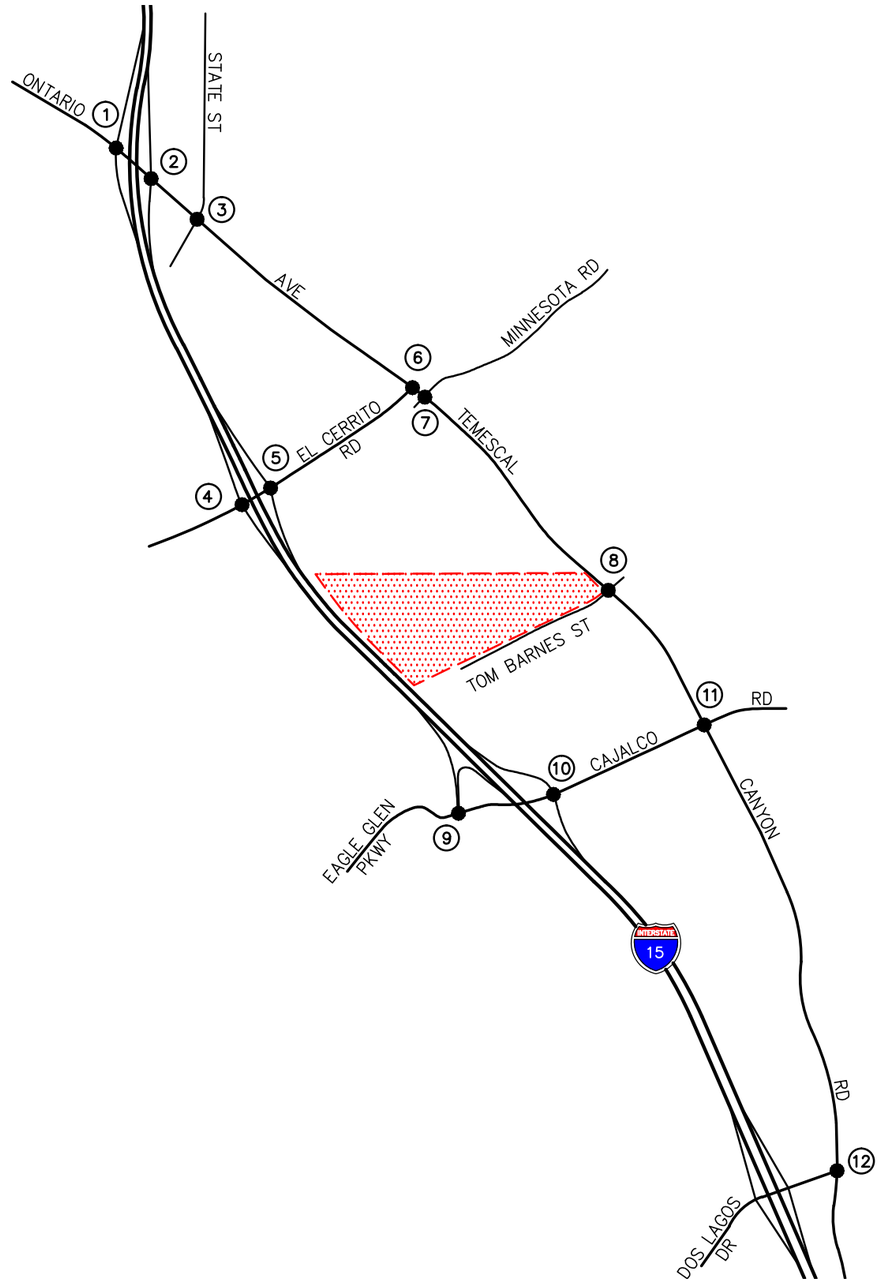

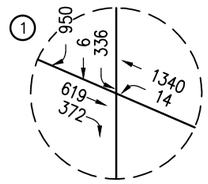

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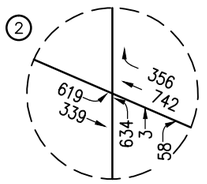

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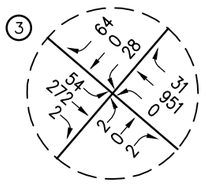

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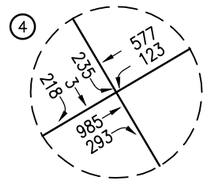
ONTARIO AVE



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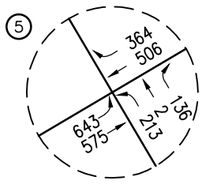

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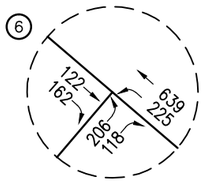

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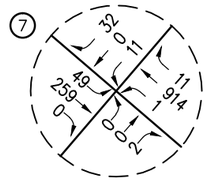
TEMESCAL CANYON RD @
EL CERRITO RD



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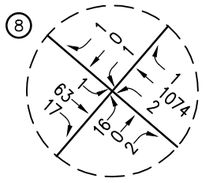
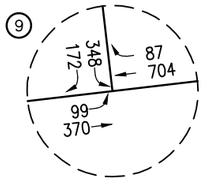
MINNESOTA RD



TEMESCAL CANYON RD @
TOM BARNES ST



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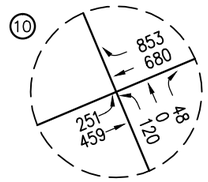

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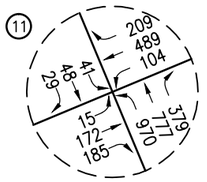

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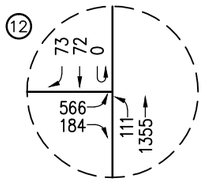

TEMESCAL CANYON RD @
DOS LAGOS DR

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LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

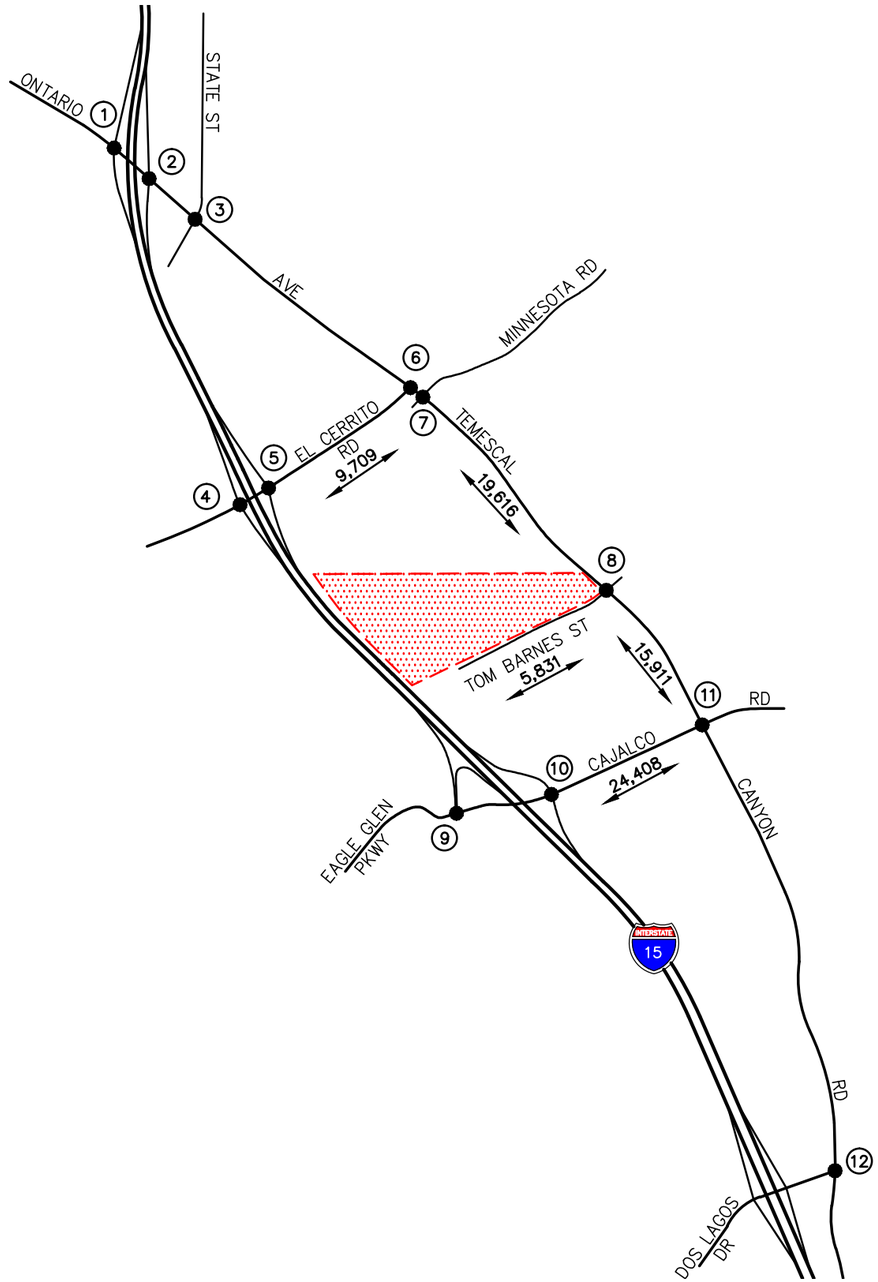
(#) = STUDY INTERSECTION

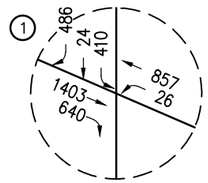
= PROJECT SITE

FIGURE 3–3

EXISTING AM PEAK HOUR TRAFFIC VOLUMES

LATITIUDE BUSINESS PARK, CORONA





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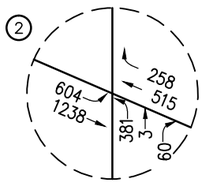

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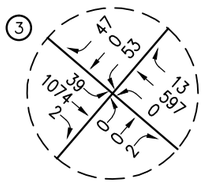
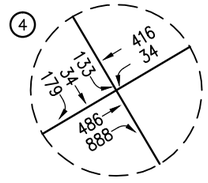


STATE ST @ ONTARIO AVE



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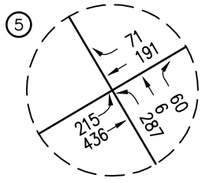

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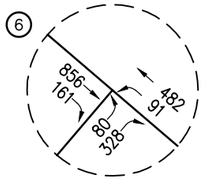
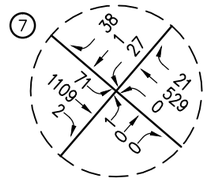


ONTARIO AVE/ TEMESCAL CANYON RD @ EL CERRITO RD



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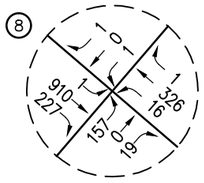
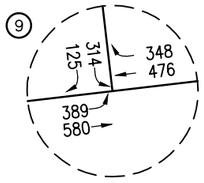
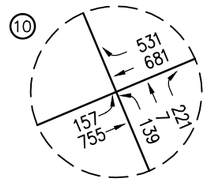


TEMESCAL CANYON RD @ TOM BARNES ST



I–15 SB RAMPS @ CAJALCO RD



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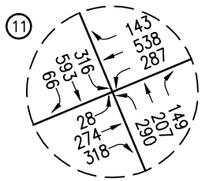
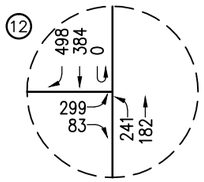


TEMESCAL CANYON RD @ CAJALCO RD



TEMESCAL CANYON RD @ DOS LAGOS DR

n:\4000\2184039 – latitude business park, corona\6 – dwg\4039 f3–4.dwg LDP 12:53:07 01–04–2019 pontepsiripong

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

(#) = STUDY INTERSECTION

XX,XXX = DAILY TRAFFIC VOLUMES

= PROJECT SITE

FIGURE 3–4

EXISTING PM PEAK HOUR AND DAILY TRAFFIC VOLUMES

LATITIUDE BUSINESS PARK, CORONA

TABLE 3-1

LEVEL OF SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS (HCM METHODOLOGY)[3]

Level of Service (LOS)	Control Delay Per Vehicle (seconds/vehicle)	Level of Service Description
A	≤ 10.0	This level of service occurs when progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.
B	> 10.0 and ≤ 20.0	This level generally occurs with good progression, short cycle lengths, or both. More vehicles stop than with LOS A, causing higher levels of average delay.
C	> 20.0 and ≤ 35.0	Average traffic delays. These higher delays may result from fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, though many still pass through the intersection without stopping.
D	> 35.0 and ≤ 55.0	Long traffic delays At level D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high *v/c* ratios. Many vehicles stop and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	> 55.0 and ≤ 80.0	Very long traffic delays This level is considered by many agencies to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths and high *v/c* ratios. Individual cycle failures are frequent occurrences.
F	≥ 80.0	Severe congestion This level, considered to be unacceptable to most drivers, often occurs with over saturation, that is, when arrival flow rates exceed the capacity of the intersection. It may also occur at high *v/c* ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing factors to such delay levels.

[3] Source: *Highway Capacity Manual 6*, Chapter 19: Signalized Intersections.

TABLE 3-2

LEVEL OF SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS (HCM METHODOLOGY)[4,5]

Level of Service (LOS)	Highway Capacity Manual (HCM) Delay Per Vehicle (seconds/vehicle)	Level of Service Description
A	≤ 10.0	Little or no delay
B	> 10.0 and ≤ 15.0	Short traffic delays
C	> 15.0 and ≤ 25.0	Average traffic delays
D	> 25.0 and ≤ 35.0	Long traffic delays
E	> 35.0 and ≤ 50.0	Very long traffic delays
F	> 50.0	Severe congestion

[4] Source: *Highway Capacity Manual 6*, Chapter 20: Two-Way Stop-Controlled Intersections. The LOS criteria apply to each lane on a given approach and to each approach on the minor street. LOS is not calculated for major-street approaches or for the intersection as a whole.

[5] Source: *Highway Capacity Manual 6*, Chapter 21: All-Way Stop-Controlled Intersections. For approaches and intersection-wide assessment, LOS is defined solely by control delay.

TABLE 3-3

LEVEL OF SERVICE CRITERIA FOR ROADWAY SEGMENTS (V/C METHODOLOGY)[6]

Level of Service (LOS)	Volume to Capacity Ratio (V/C)	Level of Service Description
A	≤ 0.600	**EXCELLENT**. Describes primarily free flow operations at average travel speeds, usually about 90% of the free flow speed for the arterial class. Vehicles are completely unimpeded in their ability to maneuver within the traffic stream. Stopped delay at signalized intersections is minimal.
B	0.601 – 0.700	**VERY GOOD**. Represents reasonably unimpeded operations at average travel speeds, usually about 70% of the free flow speed for the arterial class. The ability to maneuver within the traffic stream is only slightly restricted and stopped delays are not bothersome. Drivers are not generally subjected to appreciable tension.
C	0.701 – 0.800	**GOOD**. Represents stable conditions; however, ability to maneuver and change lanes in mid-block location may be more restricted than in LOS B, and longer queues and adverse signal coordination may contribute to lower average travel speeds of about 50% of the average free flow speed for the arterial class. Motorists will experience appreciable tension while driving.
D	0.801 – 0.900	**FAIR**. Borders on a range in which small increases in flow may cause substantial increases in approach delay and, hence, decreases in arterial speed. This may be due to adverse signal progression, inappropriate signal timing, high volumes, or some combination of these. Average travel speeds are about 40% of free flow speed.
E	0.901 – 1.000	**POOR**. Characterized by significant approach delays and average travel speeds of one-third the free flow speed or lower. Such operations are caused by some combination of adverse progression, high signal density, extensive queuing at critical intersections, and inappropriate signal timing.
F	> 1.000	**FAILURE**. Characterizes arterial flow at extremely low speeds below one-third to one-quarter of the free flow speed. Intersection congestion is likely at critical signalized locations, with resultant high approach delays. Adverse progression is frequently a contributor to this condition.

Note:

- **LOS F** applies whenever the flow rate exceeds the segment capacity.

[6] Source: *Transportation Research Board 2000.*

TABLE 3-4

DAILY ROADWAY SEGMENT CAPACITIES[7]

Roadway Classification	Number of Lanes	Maximum Two-Way Traffic Volume (ADT) Level of Service		
		C	D	E
Collector	2-Lanes	10,400	11,700	13,000
Arterial	2-Lanes	14,400	16,200	18,000
Secondary Arterial	4-lanes	20,700	23,300	25,900
Major Arterial	4-lanes	27,300	30,700	34,100
Urban Arterial[8]	5-lanes	--	--	44,000
Urban Arterial	6-lanes	43,100	48,500	53,900

[7] Source: *City of Corona General Plan Technical Background Report Page 3-27, dated March 2004* and *City of Corona Public Works Department Traffic Impact Study Guidelines Exhibit C, dated July 2006.*

[8] Urban Arterial LOS E capacity was interpolated between Major Arterial 4-lane and Urban Arterial 6-lane.

4.0 TRAFFIC FORECASTING METHODOLOGY

In order to estimate the traffic impact characteristics of the Project, a multi-step process has been utilized. The first step is traffic generation, which estimates the total arriving and departing traffic on a peak hour and daily basis. The traffic generation potential is forecast by applying the appropriate vehicle trip generation equations and rates to the Project development tabulation.

The second step of the forecasting process is traffic distribution, which identifies the origins and destinations of inbound and outbound Project traffic. These origins and destinations are typically based on demographics and existing/expected future travel patterns in the study area.

The third step is traffic assignment, which involves the allocation of Project traffic to study area streets and intersections. Traffic assignment is typically based on minimization of travel time, which may or may not involve the shortest route, depending on prevailing operating conditions and travel speeds.

Traffic distribution patterns are indicated by general percentage orientation, while traffic assignment allocates specific volume forecasts to individual roadway segments and intersection turning movements throughout the study area.

With the forecasting process complete and Project traffic assignments developed, the impact of the Project is isolated by comparing operational (LOS) conditions at selected key intersections using expected future traffic volumes with and without forecast Project traffic. If necessary, the need for site-specific and cumulative local area improvements can then be evaluated.

5.0 PROJECT TRAFFIC CHARACTERISTICS

5.1 Project Trip Generation Forecast

Traffic generation is expressed in vehicle trip ends, defined as one-way vehicular movements, either entering or exiting the generating land use. Generation equations and rates used in the traffic forecasting procedure are found in the 10th Edition of *Trip Generation*, published by the Institute of Transportation Engineers (ITE) [Washington D.C., 2017].

Table 5-1 summarizes the trip generation rates used in forecasting the vehicular trips generated by the proposed Project and presents the forecast daily and peak hour traffic volumes for a "typical" weekday. As shown in the upper portion of *Table 5-1*, the trip generation potential for the proposed Project was estimated using the ITE Land Use Code 130: Industrial Park, ITE Land Use Code 150: Warehousing, and ITE Land Use Code 710: General Office Building rates. The middle portion of *Table 5-1* summarizes the trip generation potential used in forecasting the vehicular trips, both autos and trucks, generated by the Project using recommended factors published in the *Truck Trip Generation Study – City of Fontana, August 2003.* Consistent with standard traffic engineering practice, passenger car equivalent (PCE) factors have been utilized due to the expected heavy truck component of the Project uses. A PCE factor of 1.5, 2.0, and 3.0 has been applied to large 2-axle, 3-axle, and 4+-axle trucks, respectively. It should be noted that since the high-cube warehouse use area was separated out from the Industrial Park use area, which would account for the total PCE effect of the Project, and given the relatively low amount of docks associated with Industrial park buildings, no PCE factor was applied to the industrial park base trip generation.

Review of the lower portion of *Table 5-1* shows that the proposed Project is forecast to generate 4,127 daily trips, 471 (382 inbound, 89 outbound) AM peak hour trips, and 480 (102 inbound, 378 outbound) PM peak hour trips. It should be noted that these estimates include the conversion of truck-related trips to passenger car equivalents (PCE).

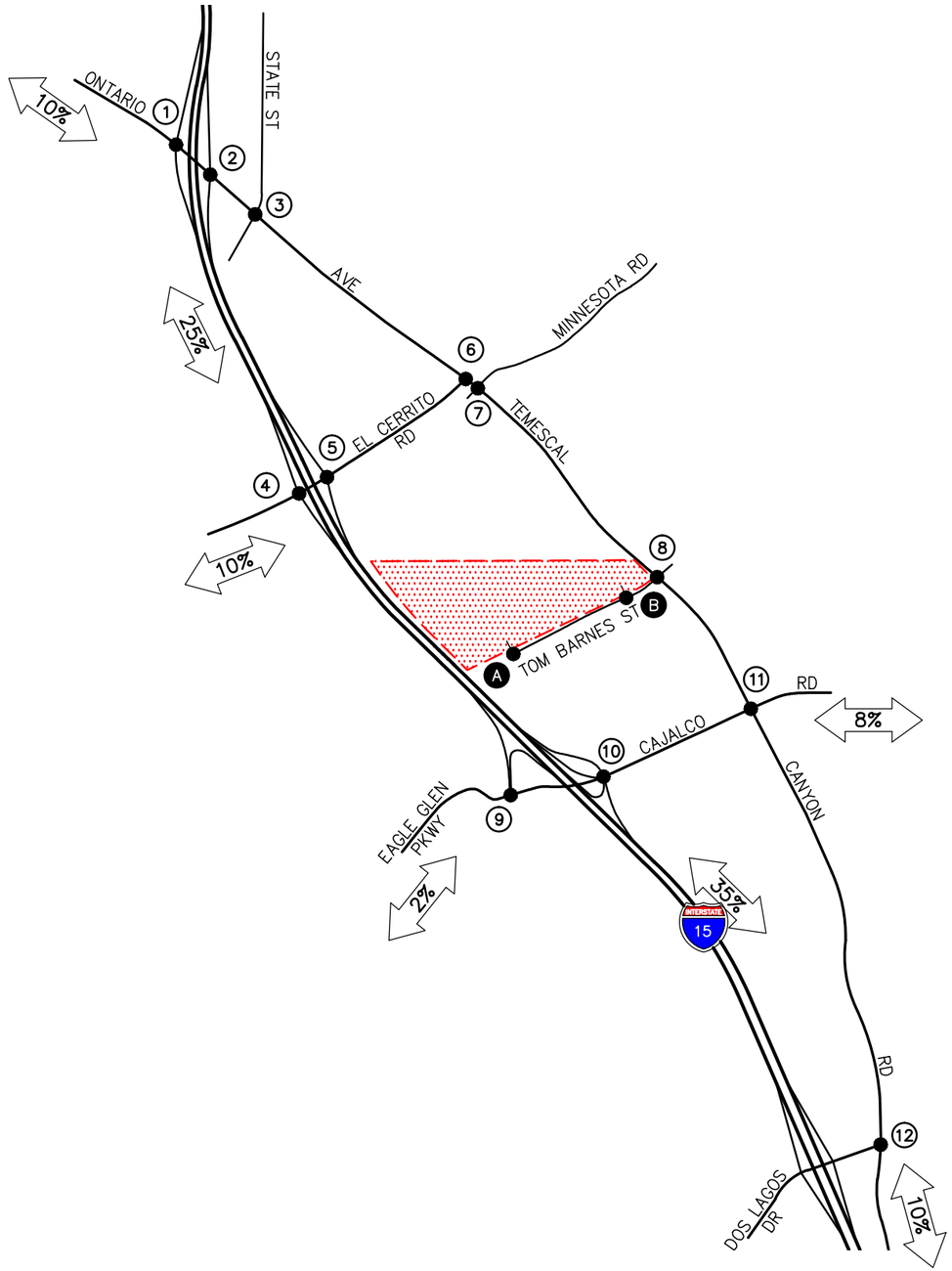
5.2 Project Trip Distribution and Assignment

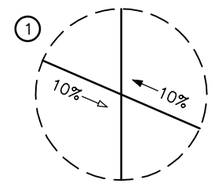
The Project directional trip distribution pattern for passenger cars (employees) and truck components for the Project is presented in ***Figures 5-1*** and ***5-2,*** respectively. Project traffic volumes, both entering and existing the site, have been distributed and assigned to the adjacent street system based on the following considerations:

- the site's proximity to major traffic carriers (i.e. I-15 Freeway, etc.),
- expected localized traffic flow patterns based on adjacent street channelization and presence of traffic signals,
- the traffic-carrying capacity and travel speed available on roadways serving the Project site,
- ingress/egress availability at the Project site, and
- input from City of Corona staff.

The Project trip distribution patterns were submitted to the City staff for their review and approval prior to proceeding with further analyses.

The anticipated AM and PM peak hour Project traffic volumes at the twelve (12) key study intersections are presented in ***Figures 5-3*** and ***5-4***, respectively. *Figure 5-4* also presents the daily Project traffic volumes at the five (5) key study roadway segments. The traffic volume assignment presented in the above mentioned figures reflect the Project trip distribution characteristics shown in *Figures 5-1* and *5-2* and the Project trip generation forecast presented in the *Table 5-1*.





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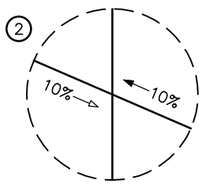

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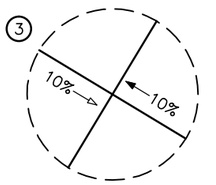

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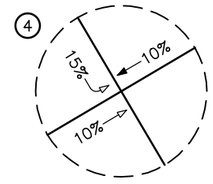

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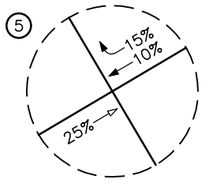

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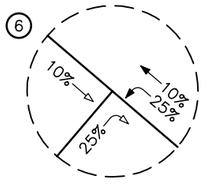
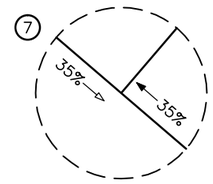


ONTARIO AVE/ TEMESCAL CANYON RD @ EL CERRITO RD



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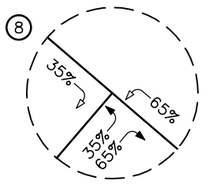

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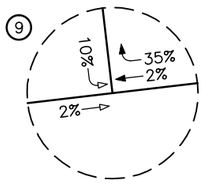

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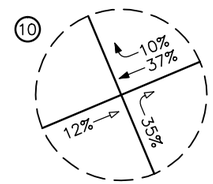

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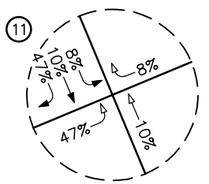

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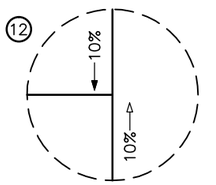

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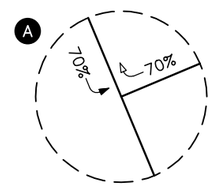

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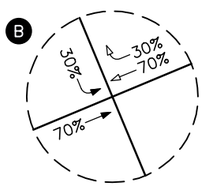


PROJECT DWY NO. 2 @ TOM BARNES ST

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

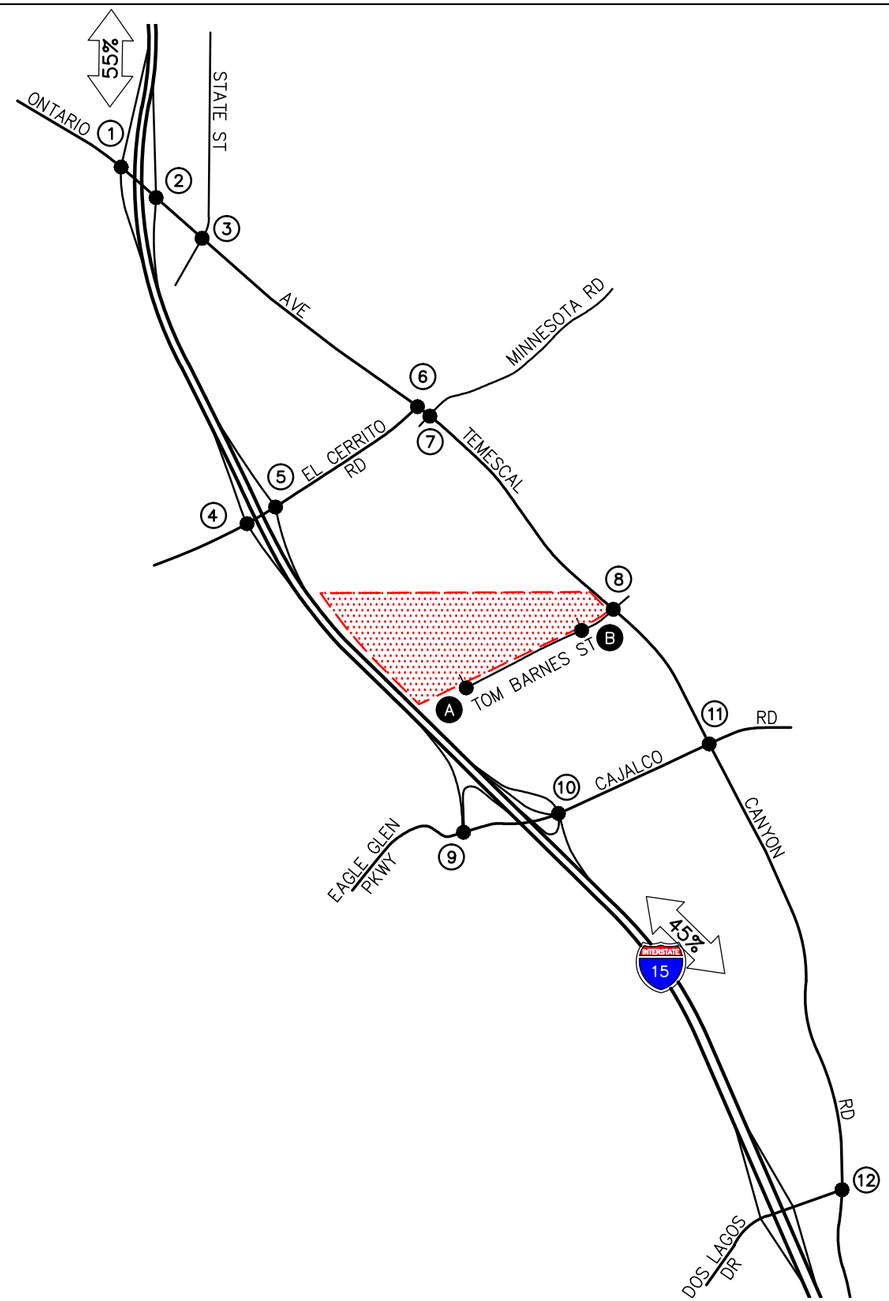
KEY

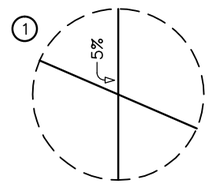
(#) = STUDY INTERSECTION
= INBOUND PERCENTAGE
= OUTBOUND PERCENTAGE
= PROJECT SITE

FIGURE 5–1

PROJECT TRIP DISTRIBUTION PATTERN – EMPLOYEES

LATITIUDE BUSINESS PARK, CORONA





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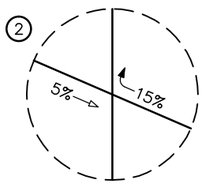

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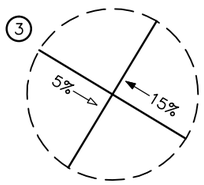
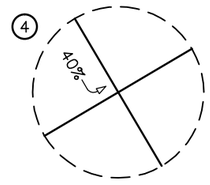


STATE ST @
ONTARIO AVE



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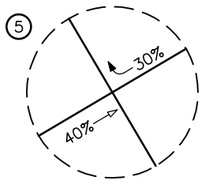

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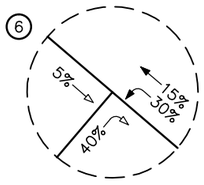
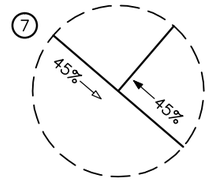


ONTARIO AVE/
TEMESCAL CANYON RD @
EL CERRITO RD



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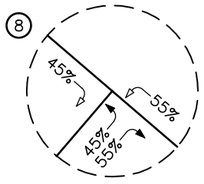
MINNESOTA RD



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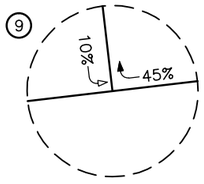

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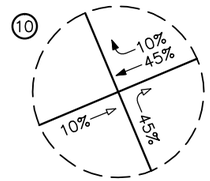

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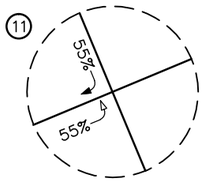

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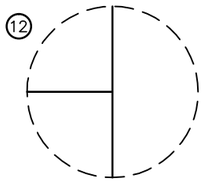

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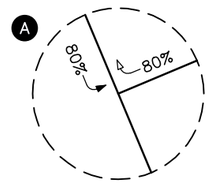
DOS LAGOS DR



PROJECT DWY NO. 1 @
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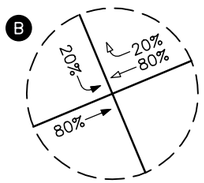


PROJECT DWY NO. 2 @
TOM BARNES ST

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

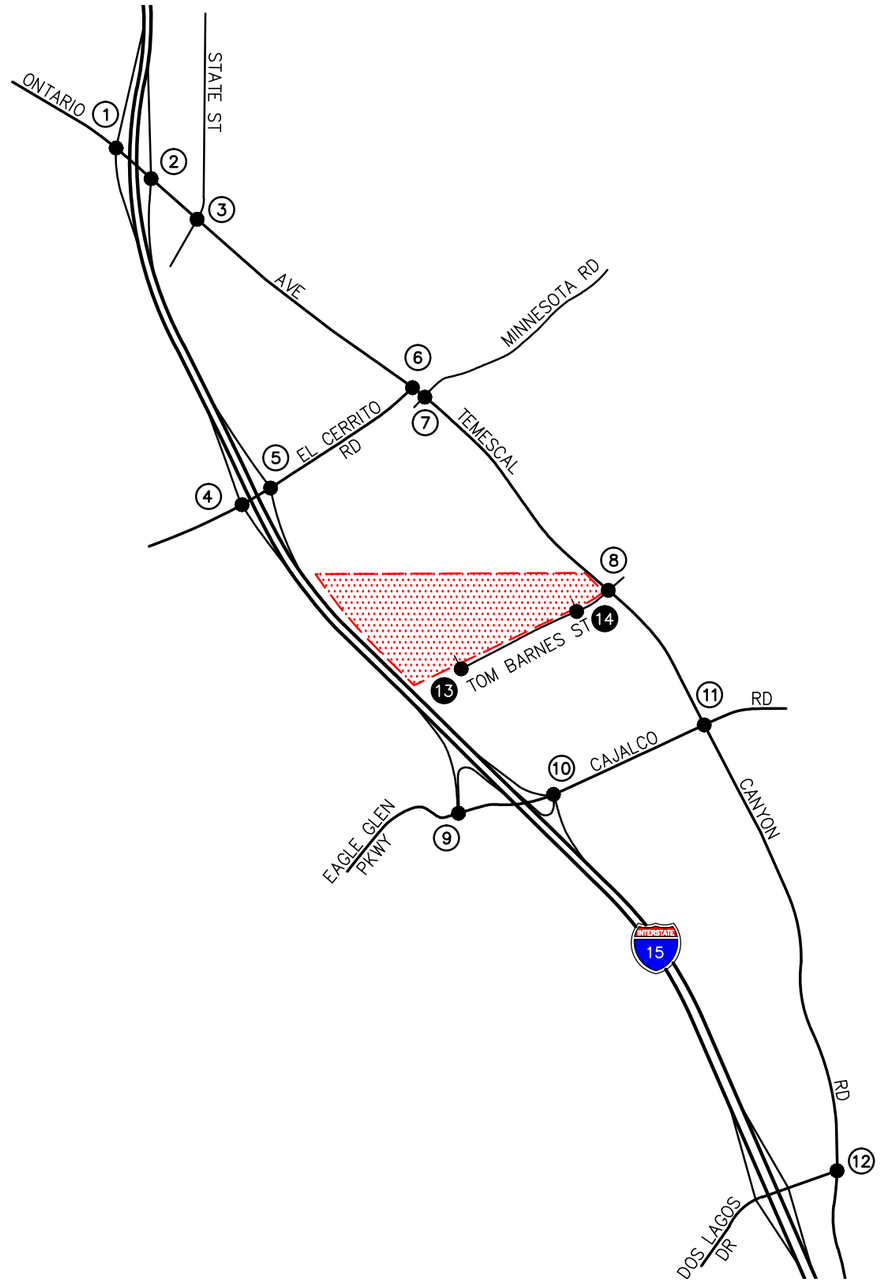
KEY

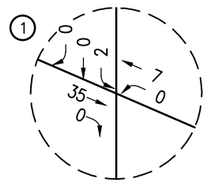
(#) = STUDY INTERSECTION
⟵ = INBOUND PERCENTAGE
⟵ = OUTBOUND PERCENTAGE
▨ = PROJECT SITE

FIGURE 5–2

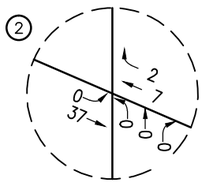
PROJECT TRIP DISTRIBUTION PATTERN – TRUCKS

LATITIUDE BUSINESS PARK, CORONA





1 I–15 SB RAMPS @ ONTARIO AVE



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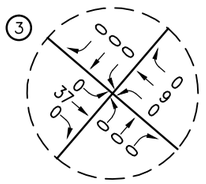

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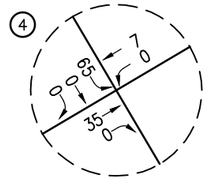

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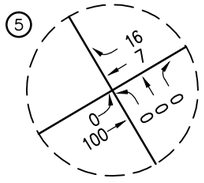

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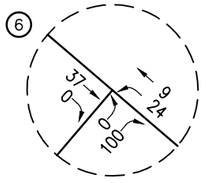
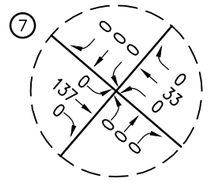
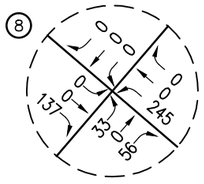


6 ONTARIO AVE/ TEMESCAL CANYON RD @ EL CERRITO RD



7 TEMESCAL CANYON RD @ MINNESOTA RD



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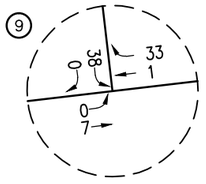

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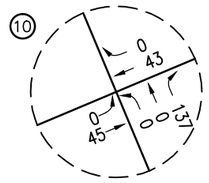

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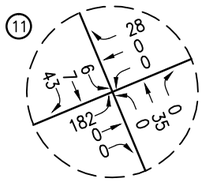

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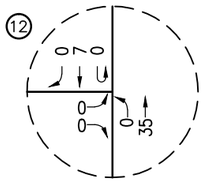

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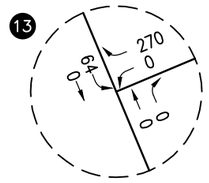

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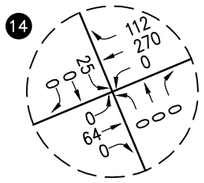

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LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

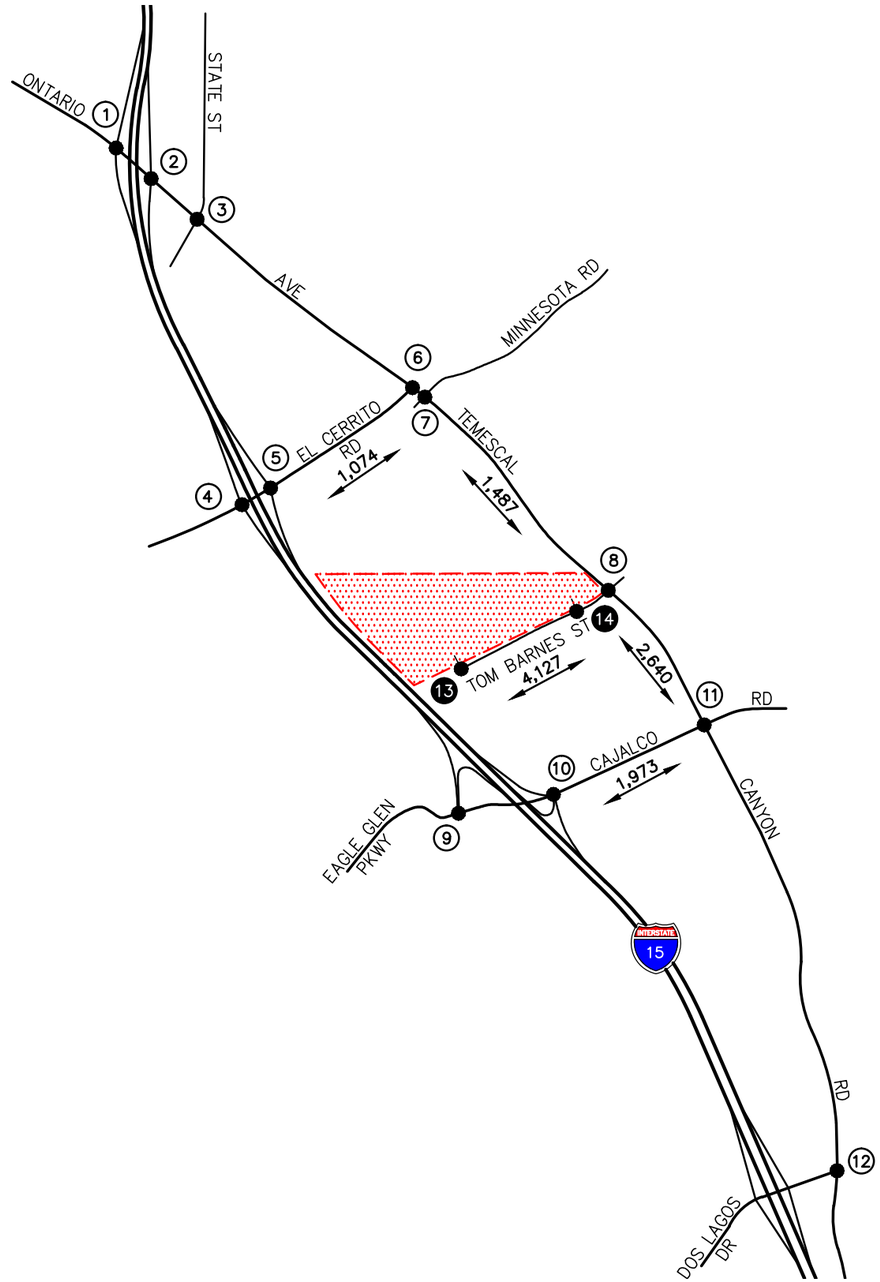
(#) = STUDY INTERSECTION

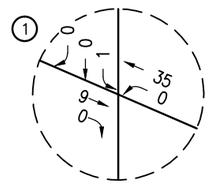
= PROJECT SITE

FIGURE 5–3

AM PEAK HOUR PROJECT TRAFFIC VOLUMES

LATITIUDE BUSINESS PARK, CORONA





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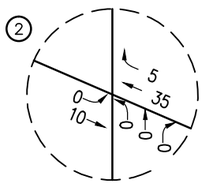

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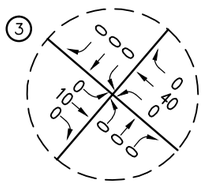

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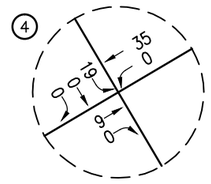

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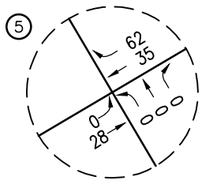

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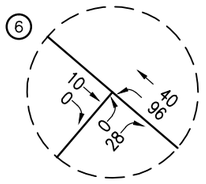
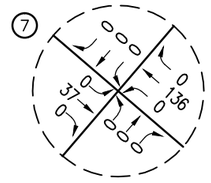


ONTARIO AVE/ TEMESCAL CANYON RD @ EL CERRITO RD



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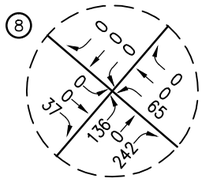

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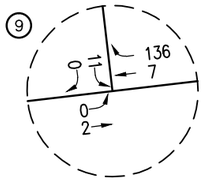

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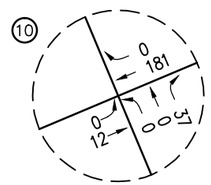

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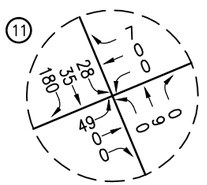

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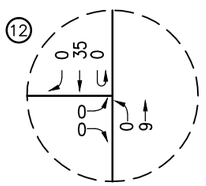
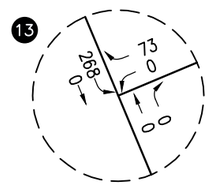
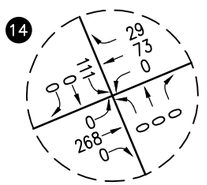


TEMESCAL CANYON RD @ DOS LAGOS DR



PROJECT DWY NO. 1 @ TOM BARNES ST



PROJECT DWY NO. 2 @ TOM BARNES ST

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LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

(#) = STUDY INTERSECTION

XX,XXX = DAILY TRAFFIC VOLUMES

= PROJECT SITE

FIGURE 5–4

PM PEAK HOUR AND DAILY PROJECT TRAFFIC VOLUMES

LATITIUDE BUSINESS PARK, CORONA

TABLE 5-1

PROJECT TRIP GENERATION RATES AND FORECAST[9]

ITE Land Use Code / Project Description	Daily 2-Way	AM Peak Hour			PM Peak Hour		
		Enter	Exit	Total	Enter	Exit	Total
Trip Generation Factors:							
▪ 130: Industrial Park (TE/TSF)	3.37	0.32	0.08	0.40	0.08	0.32	0.40
▪ 150: Warehousing (TE/TSF)	1.74	0.13	0.04	0.17	0.05	0.14	0.19
❑ Passenger Cars – 80.3% of Daily (TE/TSF)	1.40	0.10	0.03	0.13	0.04	0.11	0.15
❑ 2-Axle Trucks – 5.2% Daily (TE/TSF)	0.09	0.01	0.00	0.01	0.00	0.01	0.01
❑ 3-Axle Trucks- 4.5% Daily (TE/TSF)	0.08	0.01	0.00	0.01	0.00	0.01	0.01
❑ 4+ Axle Trucks – 10.0% Daily (TE/TSF)	0.17	0.01	0.01	0.02	0.01	0.01	0.02
▪ 710: General Office Building (TE/TSF)	9.74	1.00	0.16	1.16	0.18	0.97	1.15
Warehousing Trip Generation Forecast:							
150: Warehousing (519,665 SF)							
❑ Passenger Cars	727	53	15	68	22	57	79
❑ 2-Axle Trucks	47	5	0	5	0	5	5
❑ 3-Axle Trucks	42	5	0	5	0	5	5
❑ 4+ Axle Trucks	88	5	5	10	5	5	10
Warehousing Gross Trip Generation Forecast	***904***	***68***	***20***	***88***	***27***	***72***	***99***
PCE[10] Warehousing Trip Generation Forecast:							
150: Warehousing (519,665 SF)							
❑ Passenger Cars	727	53	15	68	22	57	79
❑ 2-Axle Trucks	71	8	0	8	0	8	8
❑ 3-Axle Trucks	84	10	0	10	0	10	10
❑ 4+ Axle Trucks	264	15	15	30	15	15	30
PCE Warehousing Trip Generation Forecast [A]	***1,146***	***86***	***30***	***116***	***37***	***90***	***127***
Industrial Park Trip Generation Forecast:							
130: Industrial Park (456,629) [B]	1,539	148	35	183	38	145	183
Office Trip Generation Forecast:							
710: Office (148,000 SF) [C]	1,442	148	24	172	27	143	170
Project Total Trip Generation Forecast [A+B+C]	**4,127**	**382**	**89**	**471**	**102**	**378**	**480**

Notes:

- TE/TSF = Trip End per 1,000 Square Feet of Gross Floor Area

[9] Source: *Trip Generation*, 10th Edition, Institute of Transportation Engineers (ITE), Washington, D.C. (2017).

[10] All 2-axle, 3-axle and 4+axles trucks converted to passenger car equivalents using a factor of 1.5 vehicles per truck, 2.0 vehicles per truck, and 3.0 vehicles per truck, respectively.

6.0 FUTURE TRAFFIC CONDITIONS

6.1 Existing With Project Traffic Volumes

The estimates of Project generated traffic volumes were added to the Existing traffic conditions to develop traffic projections for the Existing With Project traffic conditions. ***Figures 6-1*** and ***6-2*** present the anticipated AM and PM peak hour Existing With Project traffic volumes, respectively, at the twelve (12) key study intersections. *Figure 6-2* also presents the Existing With Project daily traffic volumes for the five (5) key study roadway segments.

6.2 Year 2022 Without Project Traffic Volumes

6.2.1 *Ambient Growth Traffic*

Near-term horizon year, traffic growth estimates have been calculated using an ambient growth factor. The ambient growth factor is intended to include unknown and future cumulative projects in the study area, as well as account for regular growth in traffic volumes due to the development of projects outside the study area. The application of the two percent (2%) annual growth rate to baseline Year 2018 traffic volumes results in a eight percent (8%) growth in existing baseline volumes at the twelve (12) key study intersections and five (5) key roadway segments to horizon Year 2022.

6.2.2 *Cumulative Projects Traffic*

The City of Corona identified sixteen (16) cumulative projects within the Project study area. Cumulative projects, as defined by Section 15355 of the CEQA Guidelines, are "closely related past, present and reasonably foreseeable probable future projects". The Traffic Impact Analysis assumes that these cumulative projects will be developed and operational when the proposed Project is operational. This is the most conservative, worst-case approach, since the exact timing of each related project is uncertain. In addition, impacts for these cumulative projects would likely be, or have been, subject to mitigation measures, which could reduce potential impacts. Under this analysis, however, those mitigation measures are not considered. The locations of these cumulative projects are presented in ***Figure 6-3***.

Table 6-1 presents the location, description and development totals of the cumulative projects. ***Table 6-2*** presents the resultant trip generation for the cumulative projects. As shown in *Table 6-2*, the cumulative projects are expected to generate 39,681 daily trips (one half arriving, one half departing) on a "typical" weekday, with 2,619 trips (1,353 inbound and 1,266 outbound) forecast during the AM peak hour and 3,318 trips (1,605 inbound and 1,713 outbound) forecast during the PM peak hour.

The anticipated AM and PM peak hour cumulative projects traffic volumes at the twelve (12) key study intersections are presented in ***Figures 6-4*** and ***6-5***, respectively. *Figure 6-5* also presents the daily cumulative projects traffic volumes for the five (5) key study roadway segments.

Figures 6-6 and ***6-7*** present Year 2022 Without Project AM and PM peak hour traffic volumes at the twelve (12) key study intersections, respectively. *Figure 6-7* also presents the Year 2022 Without

Project daily traffic volumes for the five (5) key study roadway segments. It should be noted that the Year 2022 Without Project traffic volumes include ambient traffic growth as well as the traffic from the sixteen (16) cumulative projects.

It should again be emphasized that because this traffic impact analysis utilizes both an ambient growth factor along with a list of cumulative projects approach to analyze cumulative impacts, this traffic impact analysis is highly conservative and would tend to overstate cumulative traffic impacts.

6.3 Year 2022 With Project Traffic Volumes

The estimates of Project generated traffic volumes were added to the Year 2022 Without Project traffic conditions to develop traffic projections for the Year 2022 With Project traffic conditions. ***Figures 6-8*** and ***6-9*** present the anticipated AM and PM peak hour Year 2022 With Project traffic volumes, respectively, at the twelve (12) key study intersections. *Figure 6-9* also presents the daily Year 2022 With Project traffic volumes at the five (5) key study roadway segments.

6.4 Year 2040 Travel Demand Model Methodology

The Year 2040 General Plan Buildout traffic volume forecasts were obtained through utilization of the travel demand model developed by Fehr & Peers Associates for the City of Corona Circulation Element update, based on data from the Revised Travel Demand Model of the City of Corona's General Plan.

6.4.1 *Volume Adjustment*

Using the City of Corona General Plan Buildout transportation model, projected traffic volumes were obtained for each intersection. The model produces peak period and off-peak period volumes (6 AM – 9 AM, 9 AM – 3 PM, 3 PM – 7 PM and 7 PM – 6 AM). Before converting the model peak period link volumes to future turning movement volumes for analysis, the model volumes must be reviewed and adjusted.

The first step is to obtain the approach and departure volumes from the model for each leg of the analyzed intersections. The next step converts the model approach and departure volumes from AM and PM peak period volumes to peak hour volumes. The AM peak hour volumes are calculated by multiplying the AM peak period volumes by 38%. Similarly, the PM peak hour volumes are calculated by multiplying the PM period volumes by 28%. These are the percentages of vehicles that are assumed to occur in the peak hour of the peak period. These factors are derived from SCAG research. The next step is to determine the difference between the base year (2008) peak hour model volumes and the Buildout peak hour model volumes. This "difference" represents the projected growth in traffic on each approach to the Buildout of the General Plan model.

6.4.2 *B-turn Methodology*

The base year turning movement counts (Year 2018) for each intersection must be converted to approach and departure volumes for each leg of the intersection. Once the base counts are in this format, the difference between the Buildout model and base model are then added to the base year counts for each corresponding approach and departure volume. This step provides the adjusted

volumes that will be used to determine the Buildout turning movement volumes. The next process in the forecasting of future turning volumes applies the B-turn methodology. The B-turn methodology is generally described in the *"National Cooperative Highway Research Program Report (NCHRP) 255: Highway Traffic Data for Urbanized Area Project Planning and Design", Chapter 8*. The B-turn method uses the base year turning percentages (from traffic counts) and proceeds through an iterative computational technique to produce a final set of future year turning volumes. The computations involve alternatively balancing the rows (approaches) and the columns (departures) of a turning movement matrix until an acceptable convergence is obtained. Future year link volumes are fixed using this method and the turning movements are adjusted to match. The results must be checked for reasonableness, and manual adjustments are sometimes necessary.

Finally, it should be noted that all provided volumes are from a Citywide General Plan level model that was not specifically developed for analysis of individual intersection turning movements. Therefore each projected volume was reviewed carefully and adjustments were applied as warranted based on local conditions, discussions with City staff, and professional judgment.

Copies of the traffic model post-processing worksheets derivation are contained in ***Appendix C***.

6.5 Year 2040 Without Project Traffic Volumes

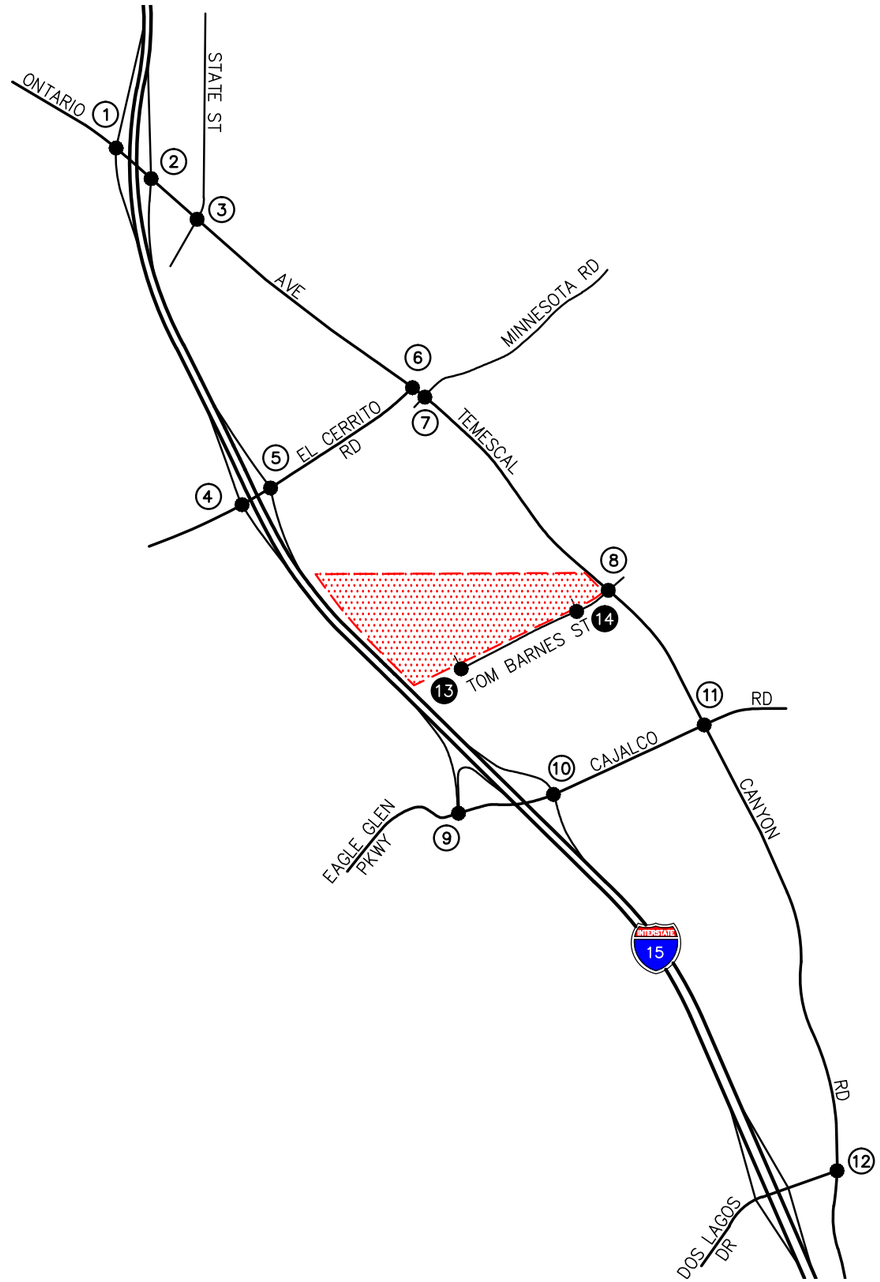
The Year 2040 Without Project traffic volumes were obtained by post-processing the peak hour approach and departure traffic volumes based on the relationship of the base year validation model run output to the base year ground traffic counts and represent the General Plan Buildout traffic conditions. In addition, the preliminary General Plan Update (GPU) 2040 traffic volumes were reviewed for consistency and adjusted accordingly. Specifically, the GPU 2040 traffic volumes for the intersection of Temescal Canyon Road at Cajalco Road were utilized directly given the updated traffic model's improved consistency with current regional improvements. In addition, the developed 2040 traffic volumes were adjusted to ensure that no traffic movement had a difference greater than 500 vehicles.

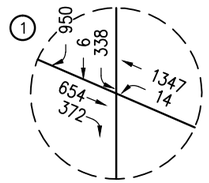
The anticipated Year 2040 Without Project traffic conditions AM and PM peak hour traffic volumes at the twelve (12) key study intersections are presented in ***Figures 6-10*** and ***6-11,*** respectively. *Figure 6-11* also presents the daily Year 2022 With Project traffic volumes at the five (5) key study roadway segments.

6.6 Year 2040 With Project Traffic Volumes

Since the Revised City Travel Demand Model with RTP Projects does not include the proposed Project, the Year 2040 forecast volumes from the City of Corona Model are considered to be the Year 2040 Without Project volumes. Therefore, to obtain the "With" Project volumes, the Project trips were manually superimposed on the Year 2040 Without Project volumes to obtain the Year 2040 With Project volumes.

Figures 6-12 and ***6-13*** present the anticipated AM and PM peak hour Year 2040 With Project traffic volumes, respectively, at the twelve (12) key study intersections. *Figure 6-13* also presents the daily Year 2040 With Project traffic volumes at the five (5) key study roadway segments.





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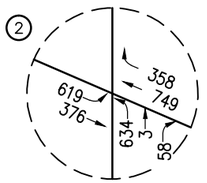

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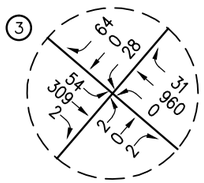

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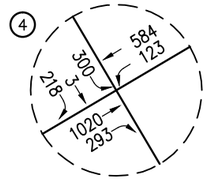

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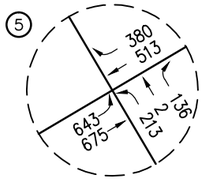
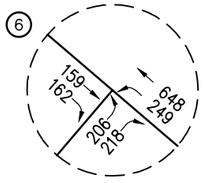
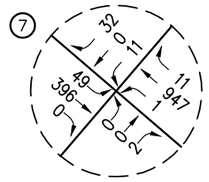


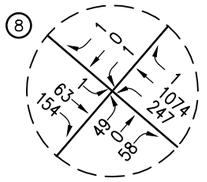
I–15 NB RAMPS @
EL CERRITO RD



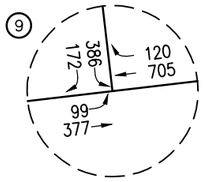
ONTARIO AVE/
TEMESCAL CANYON RD @
EL CERRITO RD



TEMESCAL CANYON RD @
MINNESOTA RD



TEMESCAL CANYON RD @
TOM BARNES ST



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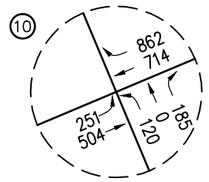
CAJALCO RD



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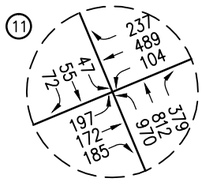
CAJALCO RD



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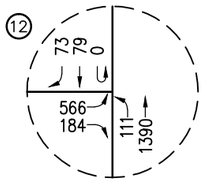
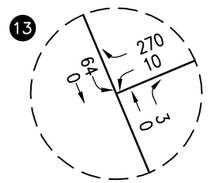
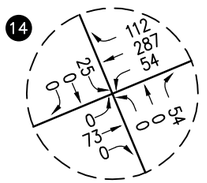
CAJALCO RD



TEMESCAL CANYON RD @
DOS LAGOS DR



PROJECT DWY NO. 1 @
TOM BARNES ST



PROJECT DWY NO. 2 @
TOM BARNES ST

n:\4000\2184039 – latitude business park, corona\6 – dwg\4039 f6–1.dwg LDP 13:21:45 03–21–2019 co

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

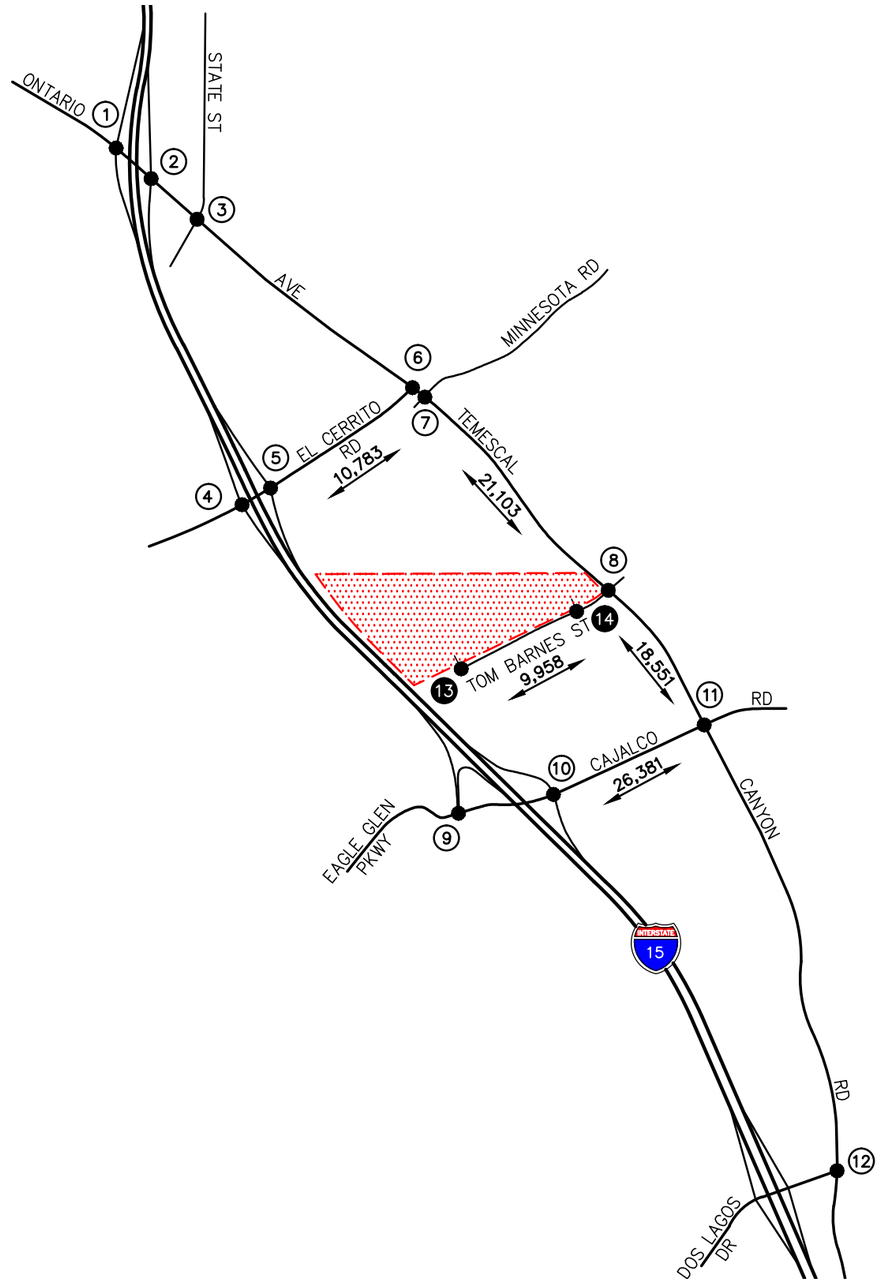
(#) = STUDY INTERSECTION

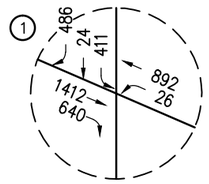
= PROJECT SITE

FIGURE 6–1

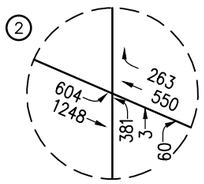
EXISTING WITH PROJECT AM PEAK HOUR TRAFFIC VOLUMES

LATITIUDE BUSINESS PARK, CORONA

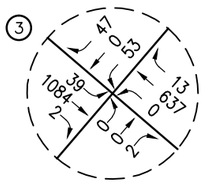




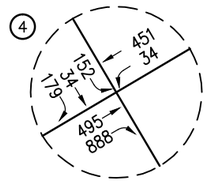
I–15 SB RAMPS @ ONTARIO AVE



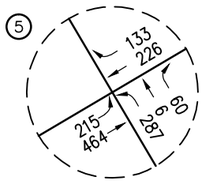
I–15 NB RAMPS @ ONTARIO AVE



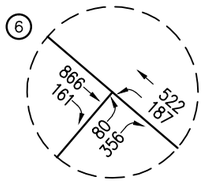
STATE ST @ ONTARIO AVE



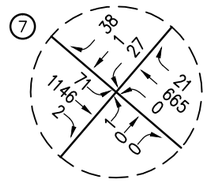
I–15 SB RAMPS @ EL CERRITO RD



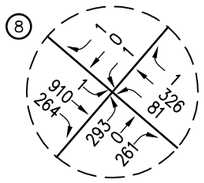
I–15 NB RAMPS @ EL CERRITO RD



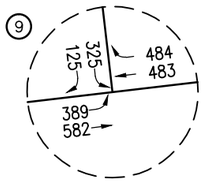
ONTARIO AVE/ TEMESCAL CANYON RD @ EL CERRITO RD



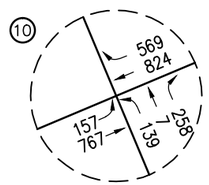
TEMESCAL CANYON RD @ MINNESOTA RD



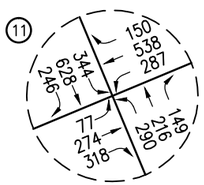
TEMESCAL CANYON RD @ TOM BARNES ST



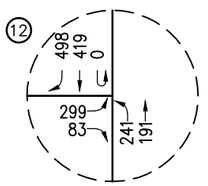
I–15 SB RAMPS @ CAJALCO RD



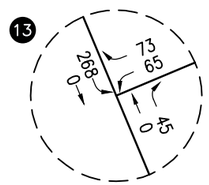
I–15 SB RAMPS @ CAJALCO RD



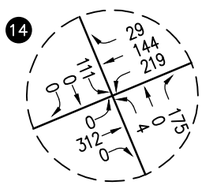
TEMESCAL CANYON RD @ CAJALCO RD



TEMESCAL CANYON RD @ DOS LAGOS DR



PROJECT DWY NO. 1 @ TOM BARNES ST



PROJECT DWY NO. 2 @ TOM BARNES ST

n:\4000\2184039 – latitude business park, corona\6 – dwg\4039 f6–2.dwg LDP 13:27:18 03–21–2019 co

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

(#) = STUDY INTERSECTION

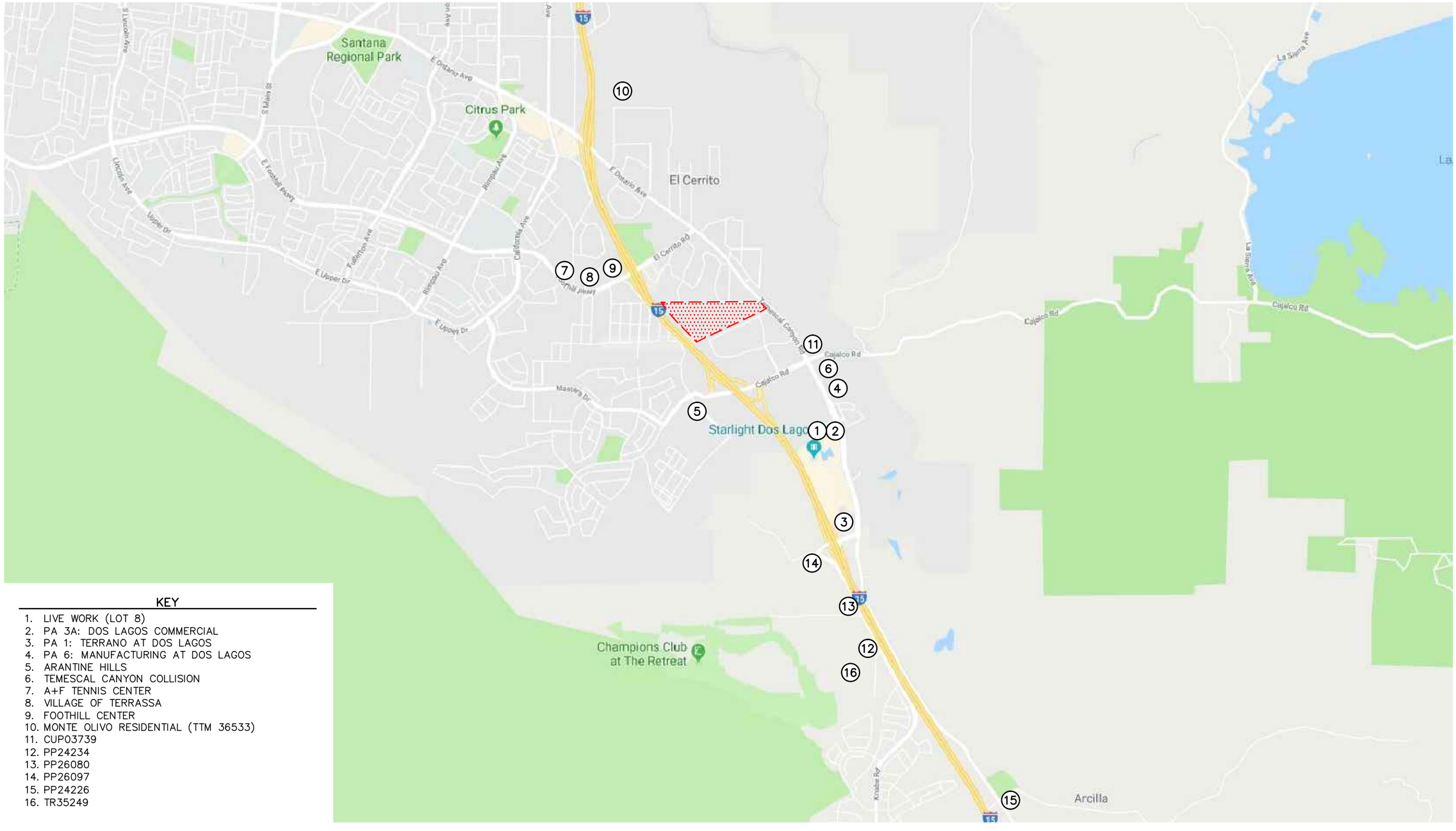
XX,XXX = DAILY TRAFFIC VOLUMES

= PROJECT SITE

FIGURE 6–2

EXISTING WITH PROJECT PM PEAK HOUR AND DAILY TRAFFIC VOLUMES

LATITIUDE BUSINESS PARK, CORONA



KEY

1. LIVE WORK (LOT 8)
2. PA 3A: DOS LAGOS COMMERCIAL
3. PA 1: TERRANO AT DOS LAGOS
4. PA 6: MANUFACTURING AT DOS LAGOS
5. ARANTINE HILLS
6. TEMESCAL CANYON COLLISION
7. A+F TENNIS CENTER
8. VILLAGE OF TERRASSA
9. FOOTHILL CENTER
10. MONTE OLIVO RESIDENTIAL (TTM 36533)
11. CUP03739
12. PP24234
13. PP26080
14. PP26097
15. PP24226
16. TR35249

n:\4000\2184039 - latitude business park, corona\6 - dwg\4039 f6-3.dwg LDP 17:11:05 03-21-2019 besa

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

SOURCE: GOOGLE

KEY

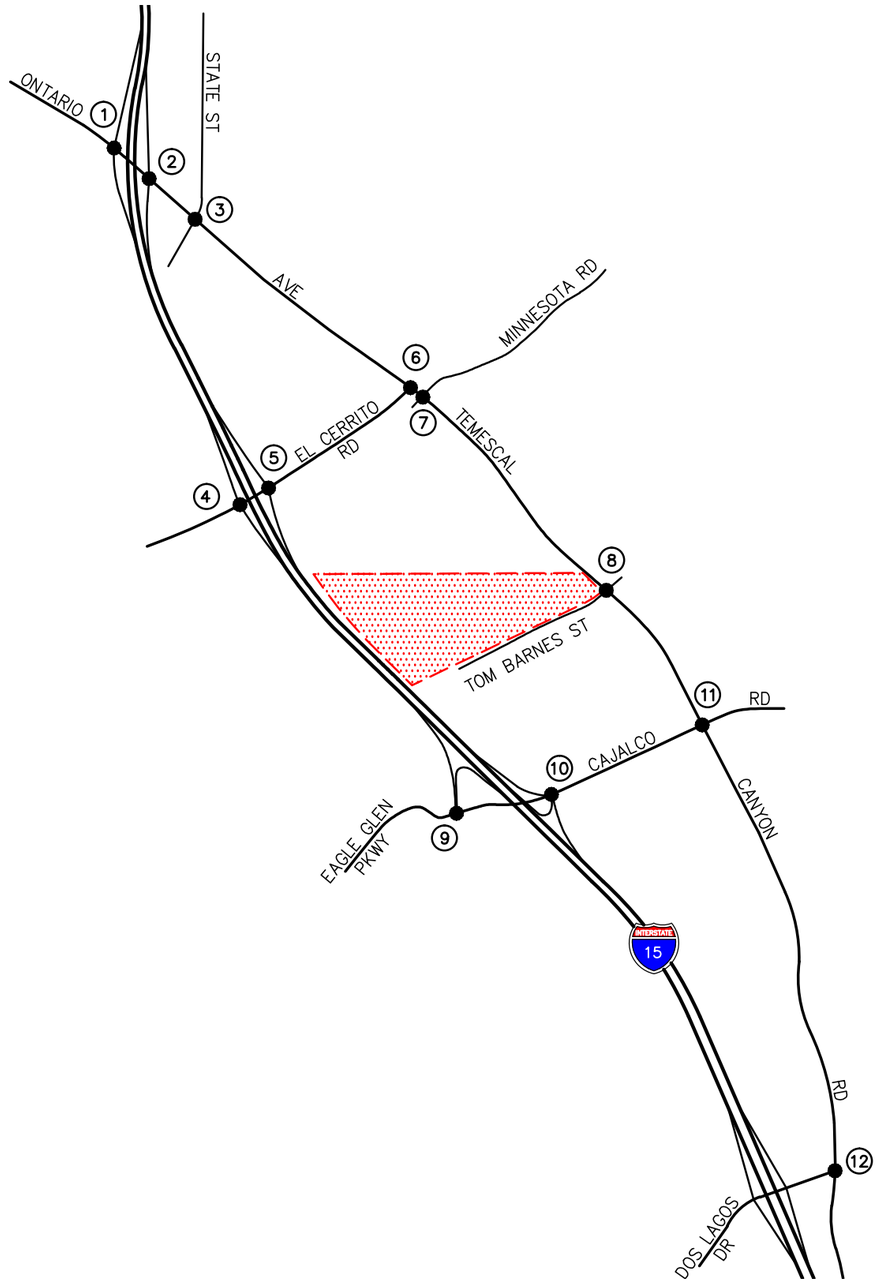
(#) = CUMULATIVE PROJECT LOCATION

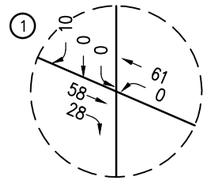
= PROJECT SITE

FIGURE 6-3

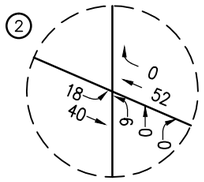
LOCATION OF CUMULATIVE PROJECTS

LATITUDE BUSINESS PARK, CORONA

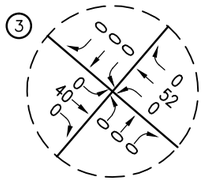




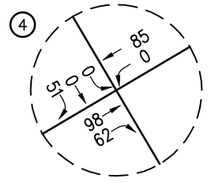
I–15 SB RAMPS @
ONTARIO AVE



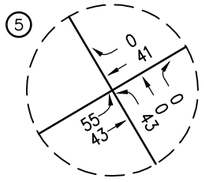
I–15 NB RAMPS @
ONTARIO AVE



STATE ST @
ONTARIO AVE



I–15 SB RAMPS @
EL CERRITO RD



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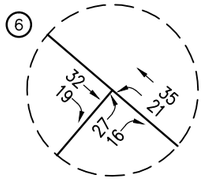
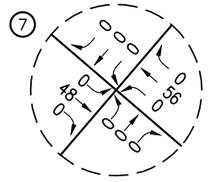
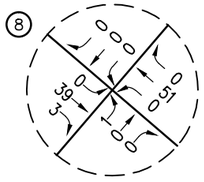
EL CERRITO RD



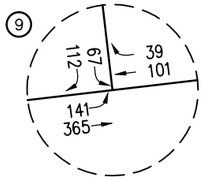
ONTARIO AVE/
TEMESCAL CANYON RD @
EL CERRITO RD



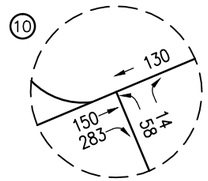
TEMESCAL CANYON RD @
MINNESOTA RD



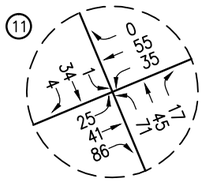
TEMESCAL CANYON RD @
TOM BARNES ST



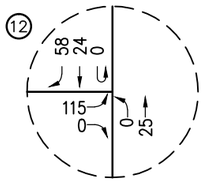
I–15 SB RAMPS @
CAJALCO RD



I–15 SB RAMPS @
CAJALCO RD



TEMESCAL CANYON RD @
CAJALCO RD



TEMESCAL CANYON RD @
DOS LAGOS DR

n:\4000\2184039 – latitude business park, corona\6 – dwg\4039 f6–4.dwg LDP 15:58:17 01–08–2019 besa

LINSCOTT
LAW &
GREENSPAN
engineers

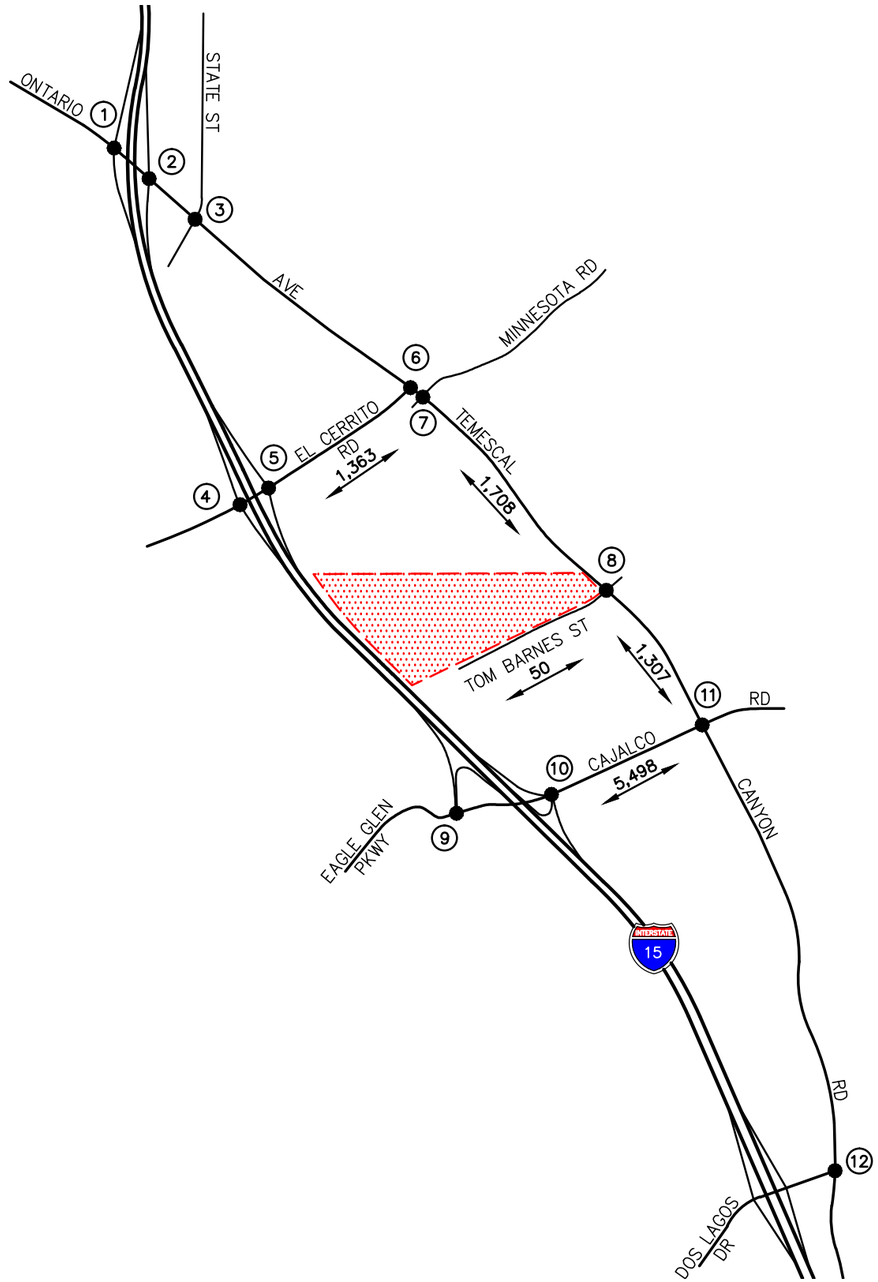
N
NO SCALE

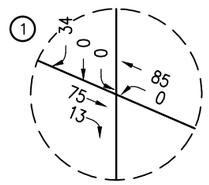
KEY
(#) = STUDY INTERSECTION
= PROJECT SITE

FIGURE 6–4

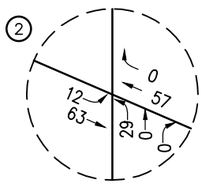
AM PEAK HOUR CUMULATIVE PROJECTS TRAFFIC VOLUMES

LATITIUDE BUSINESS PARK, CORONA

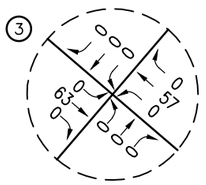




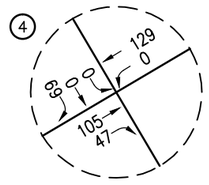
I–15 SB RAMPS @
ONTARIO AVE



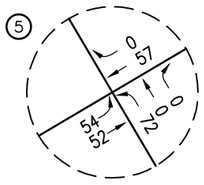
I–15 NB RAMPS @
ONTARIO AVE



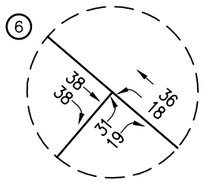
STATE ST @
ONTARIO AVE



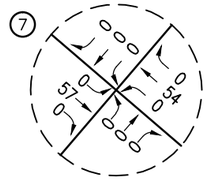
I–15 SB RAMPS @
EL CERRITO RD



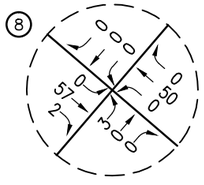
I–15 NB RAMPS @
EL CERRITO RD



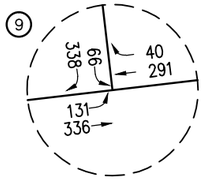
ONTARIO AVE/
TEMESCAL CANYON RD @
EL CERRITO RD



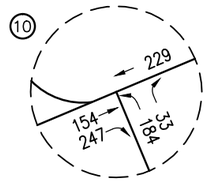
TEMESCAL CANYON RD @
MINNESOTA RD



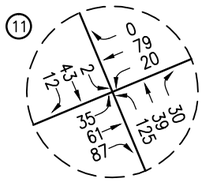
TEMESCAL CANYON RD @
TOM BARNES ST



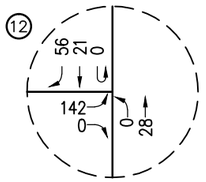
I–15 SB RAMPS @
CAJALCO RD



I–15 SB RAMPS @
CAJALCO RD



TEMESCAL CANYON RD @
CAJALCO RD



TEMESCAL CANYON RD @
DOS LAGOS DR

n:\4000\2184039 – latitude business park, corona\6 – dwg\4039 f6–5.dwg LDP 15:58:57 01–08–2019 besa

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engineers

N
NO SCALE

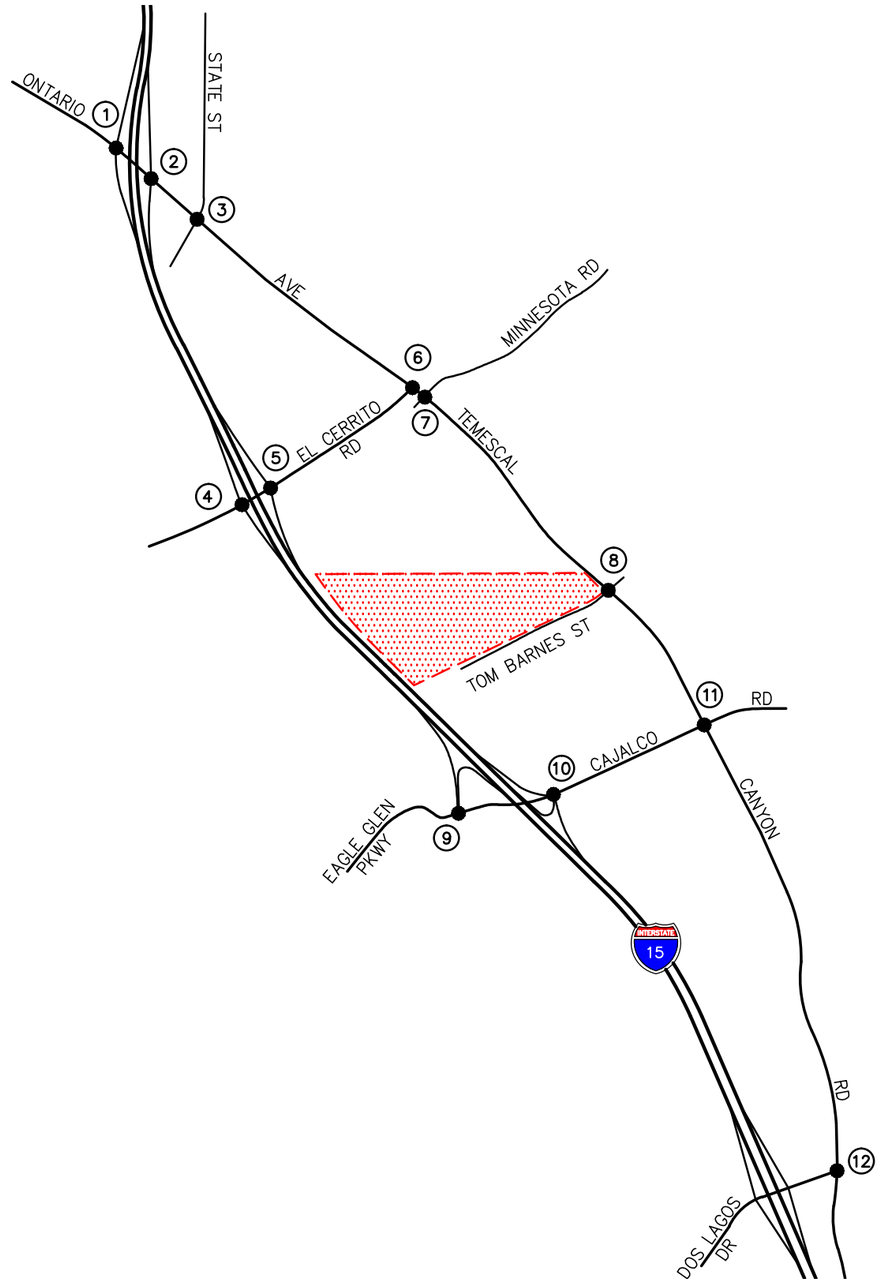
KEY

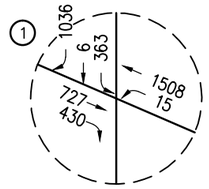
(#) = STUDY INTERSECTION
XX,XXX = DAILY TRAFFIC VOLUMES
= PROJECT SITE

FIGURE 6–5

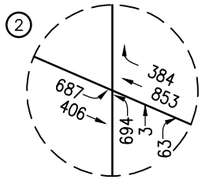
PM PEAK HOUR AND DAILY CUMULATIVE PROJECTS TRAFFIC VOLUMES

LATITIUDE BUSINESS PARK, CORONA

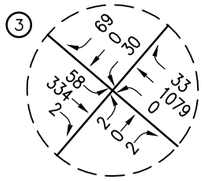




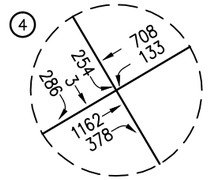
I–15 SB RAMPS @
ONTARIO AVE



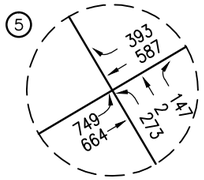
I–15 NB RAMPS @
ONTARIO AVE



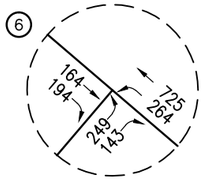
STATE ST @
ONTARIO AVE



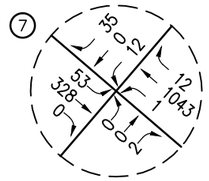
I–15 SB RAMPS @
EL CERRITO RD



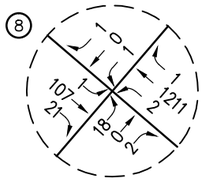
I–15 NB RAMPS @
EL CERRITO RD



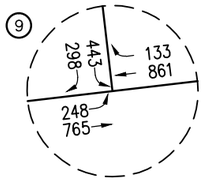
ONTARIO AVE/
TEMESCAL CANYON RD @
EL CERRITO RD



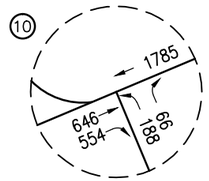
TEMESCAL CANYON RD @
MINNESOTA RD



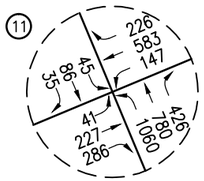
TEMESCAL CANYON RD @
TOM BARNES ST



I–15 SB RAMPS @
CAJALCO RD



I–15 SB RAMPS @
CAJALCO RD



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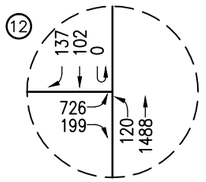
CAJALCO RD



TEMESCAL CANYON RD @
DOS LAGOS DR

n:\4000\2184039 – latitude business park, corona\6 – dwg\4039 f6-6.dwg LDP 09:30:08 03-22-2019 besa

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engineers

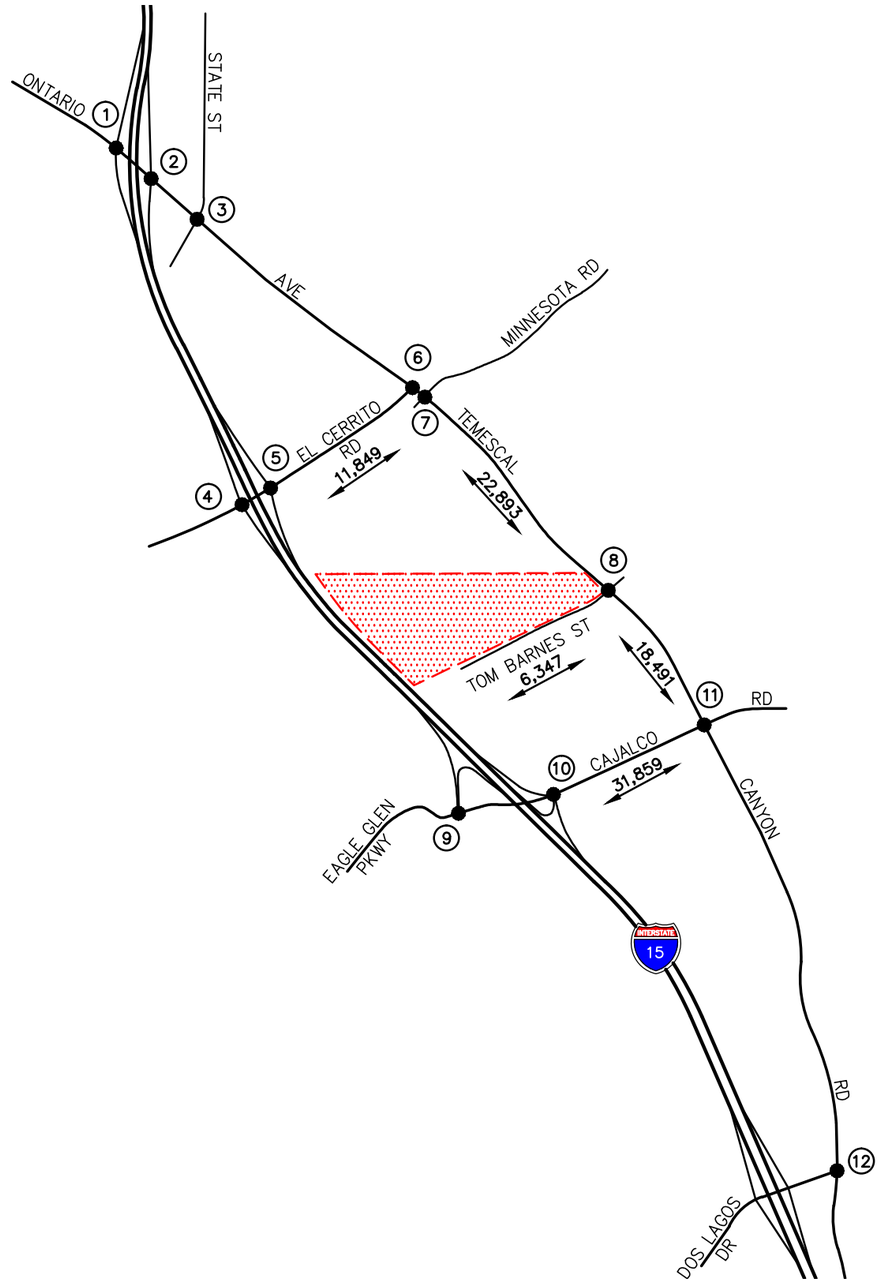
N
NO SCALE

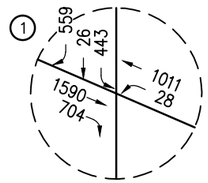
KEY
(#) = STUDY INTERSECTION
= PROJECT SITE

FIGURE 6–6

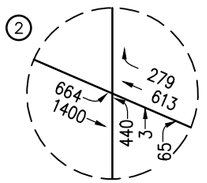
YEAR 2022 WITHOUT PROJECT AM PEAK HOUR TRAFFIC VOLUMES

LATITIUDE BUSINESS PARK, CORONA

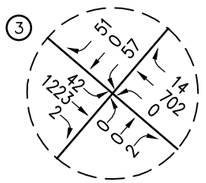




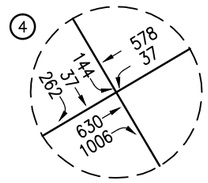
I–15 SB RAMPS @
ONTARIO AVE



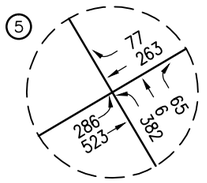
I–15 NB RAMPS @
ONTARIO AVE



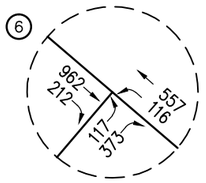
STATE ST @
ONTARIO AVE



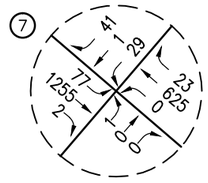
I–15 SB RAMPS @
EL CERRITO RD



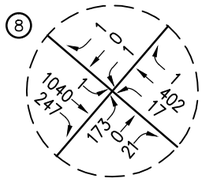
I–15 NB RAMPS @
EL CERRITO RD



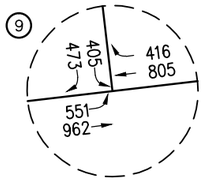
ONTARIO AVE/
TEMESCAL CANYON RD @
EL CERRITO RD



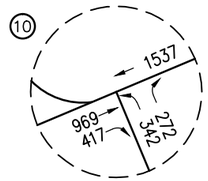
TEMESCAL CANYON RD @
MINNESOTA RD



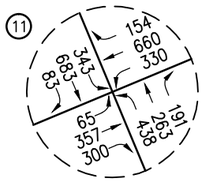
TEMESCAL CANYON RD @
TOM BARNES ST



I–15 SB RAMPS @
CAJALCO RD



I–15 SB RAMPS @
CAJALCO RD



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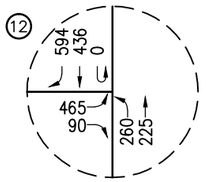
CAJALCO RD



TEMESCAL CANYON RD @
DOS LAGOS DR

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engineers

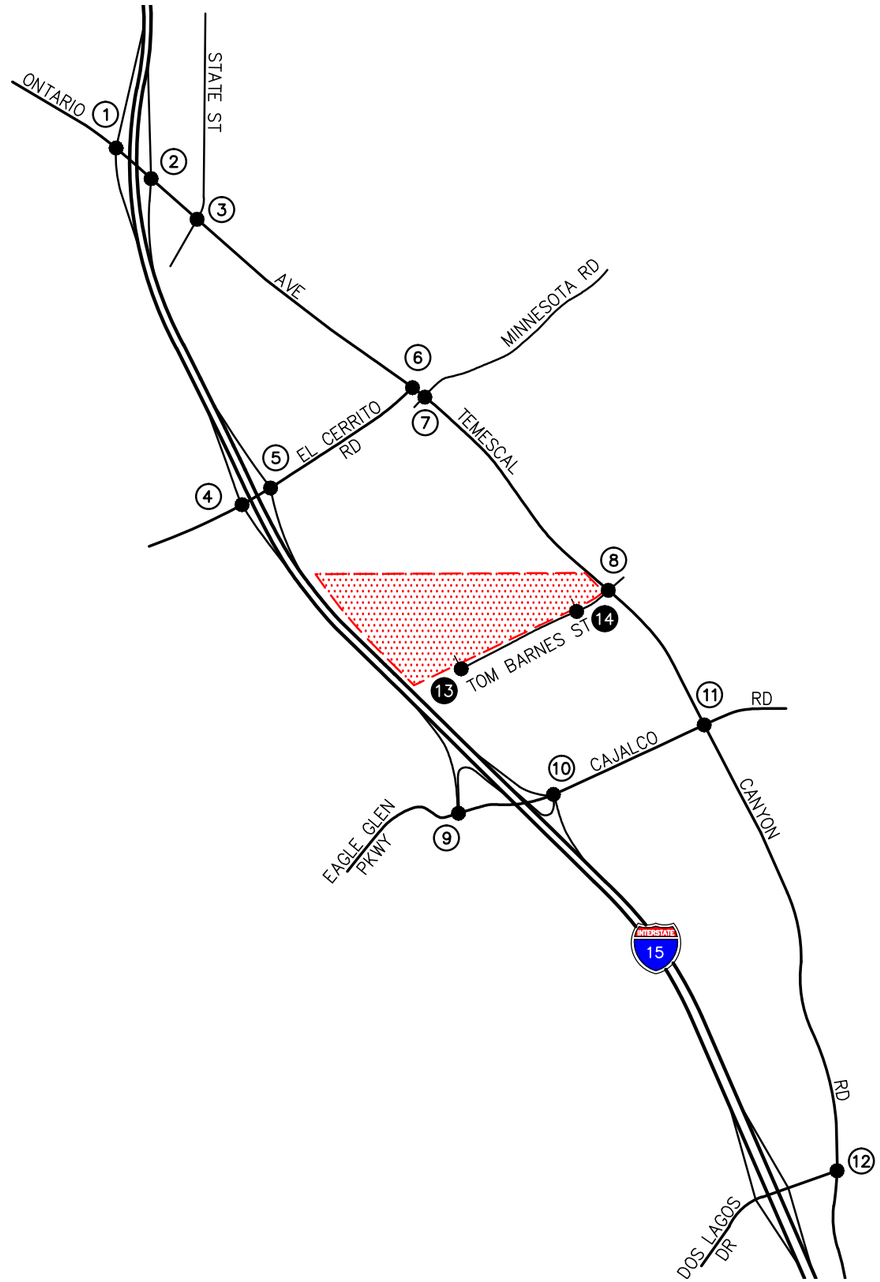
N
NO SCALE

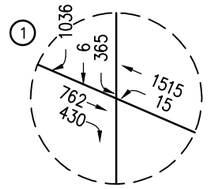
KEY
(#) = STUDY INTERSECTION
XX,XXX = DAILY TRAFFIC VOLUMES
= PROJECT SITE

FIGURE 6–7

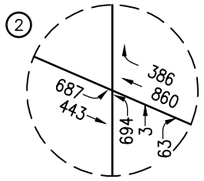
YEAR 2022 WITHOUT PROJECT PM PEAK HOUR AND DAILY TRAFFIC VOLUMES

LATITIUDE BUSINESS PARK, CORONA

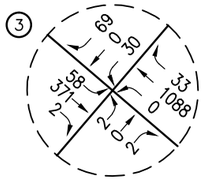




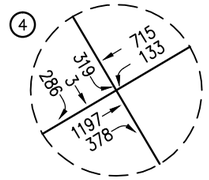
I–15 SB RAMPS @
ONTARIO AVE



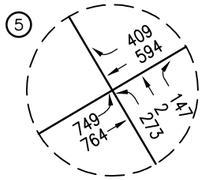
I–15 NB RAMPS @
ONTARIO AVE



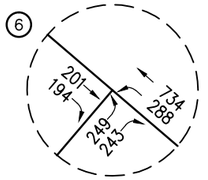
STATE ST @
ONTARIO AVE



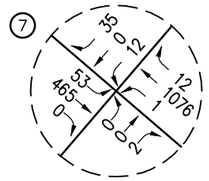
I–15 SB RAMPS @
EL CERRITO RD



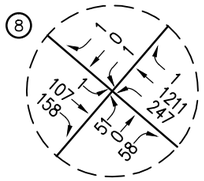
I–15 NB RAMPS @
EL CERRITO RD



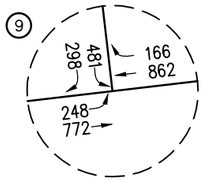
ONTARIO AVE/
TEMESCAL CANYON RD @
EL CERRITO RD



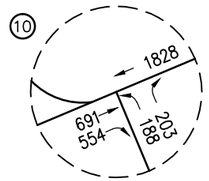
TEMESCAL CANYON RD @
MINNESOTA RD



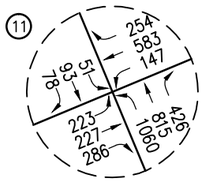
TEMESCAL CANYON RD @
TOM BARNES ST



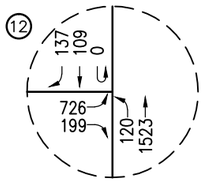
I–15 SB RAMPS @
CAJALCO RD



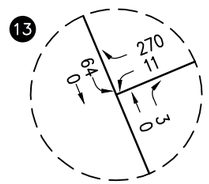
I–15 SB RAMPS @
CAJALCO RD



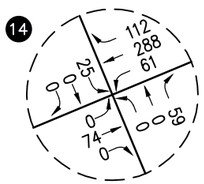
TEMESCAL CANYON RD @
CAJALCO RD



TEMESCAL CANYON RD @
DOS LAGOS DR



PROJECT DWY NO. 1 @
TOM BARNES ST



PROJECT DWY NO. 2 @
TOM BARNES ST

n:\4000\2184039 – latitude business park, corona\6 – dwg\4039 f6–8.dwg LDP 09:32:08 03–22–2019 besa

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

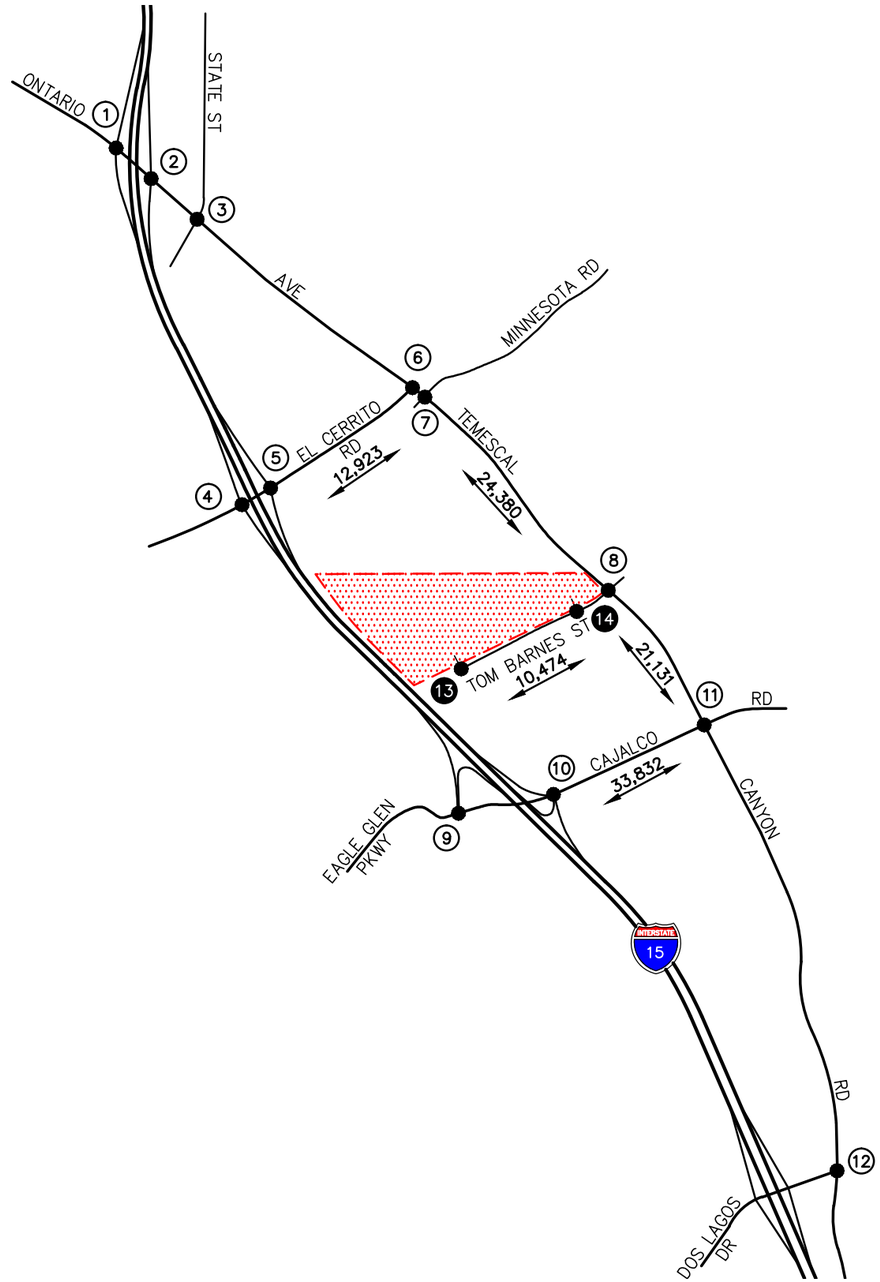
(#) = STUDY INTERSECTION

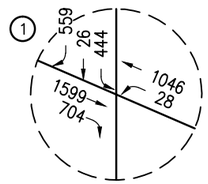
= PROJECT SITE

FIGURE 6–8

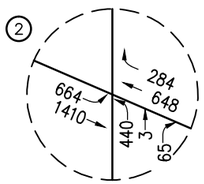
YEAR 2022 WITH PROJECT AM PEAK HOUR TRAFFIC VOLUMES

LATITIUDE BUSINESS PARK, CORONA

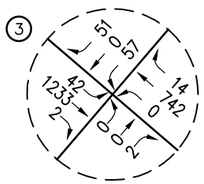




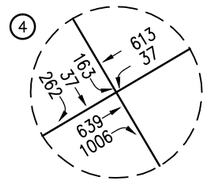
I–15 SB RAMPS @
ONTARIO AVE



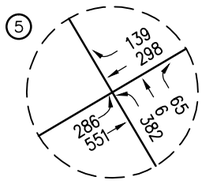
I–15 NB RAMPS @
ONTARIO AVE



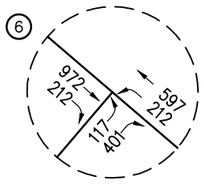
STATE ST @
ONTARIO AVE



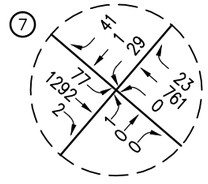
I–15 SB RAMPS @
EL CERRITO RD



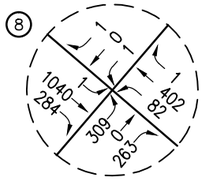
I–15 NB RAMPS @
EL CERRITO RD



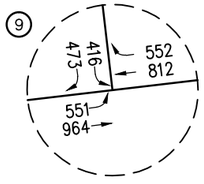
ONTARIO AVE/
TEMESCAL CANYON RD @
EL CERRITO RD



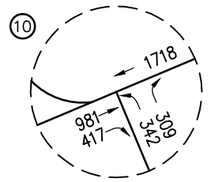
TEMESCAL CANYON RD @
MINNESOTA RD



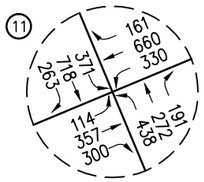
TEMESCAL CANYON RD @
TOM BARNES ST



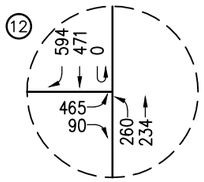
I–15 SB RAMPS @
CAJALCO RD



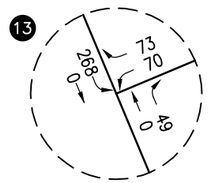
I–15 SB RAMPS @
CAJALCO RD



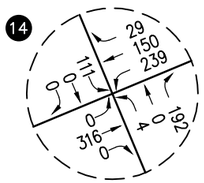
TEMESCAL CANYON RD @
CAJALCO RD



TEMESCAL CANYON RD @
DOS LAGOS DR



PROJECT DWY NO. 1 @
TOM BARNES ST



PROJECT DWY NO. 2 @
TOM BARNES ST

n:\4000\2184039 – latitude business park, corona\6 – dwg\4039 f6–9.dwg LDP 09:33:06 03–22–2019 besa

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

(#) = STUDY INTERSECTION

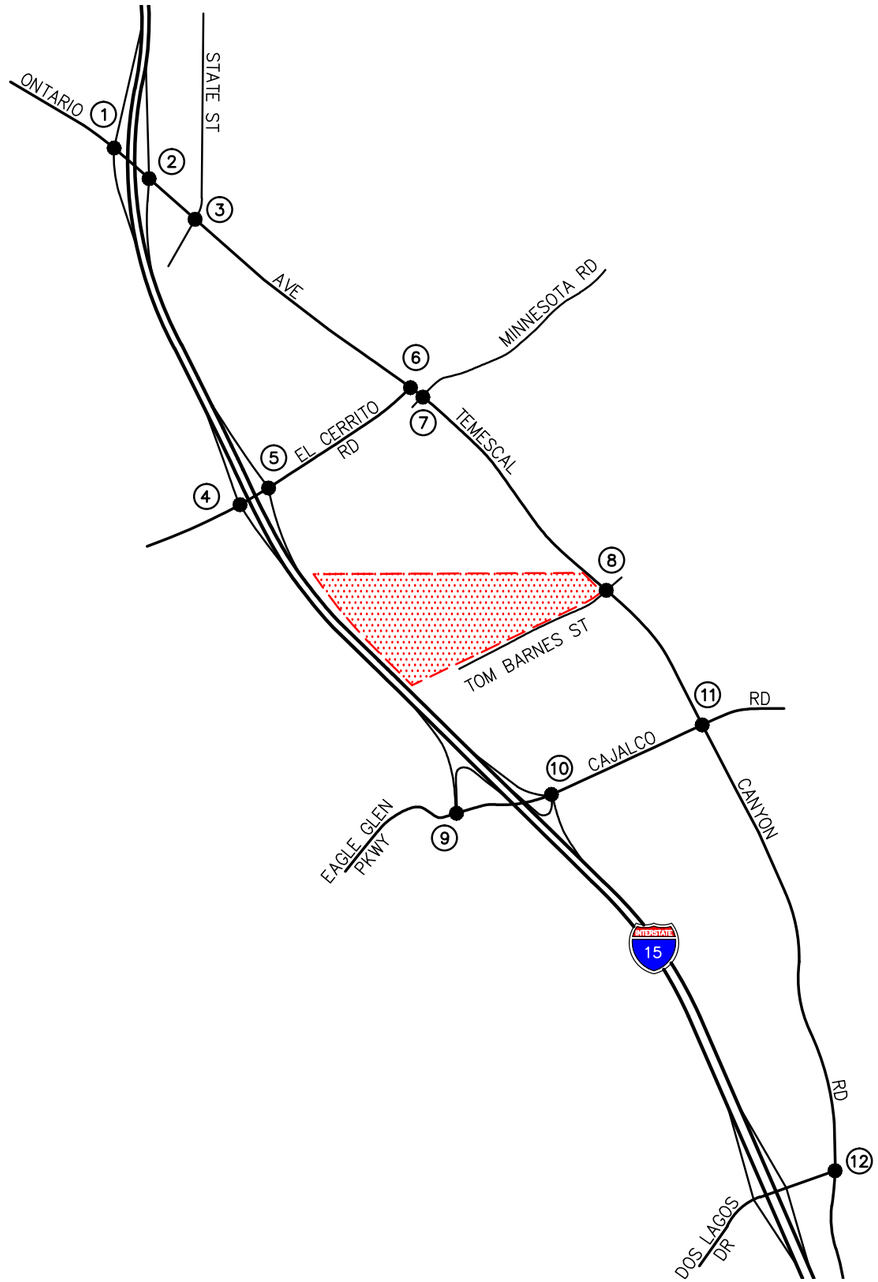
XX,XXX = DAILY TRAFFIC VOLUMES

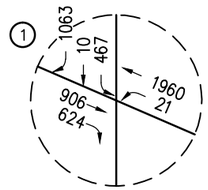
= PROJECT SITE

FIGURE 6–9

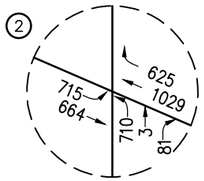
YEAR 2022 WITH PROJECT PM PEAK HOUR AND DAILY TRAFFIC VOLUMES

LATITIUDE BUSINESS PARK, CORONA

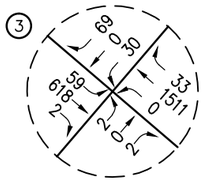




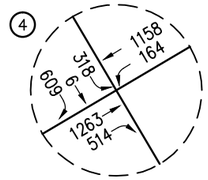
I–15 SB RAMPS @ ONTARIO AVE



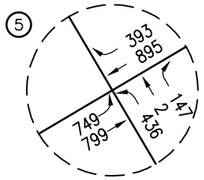
I–15 NB RAMPS @ ONTARIO AVE



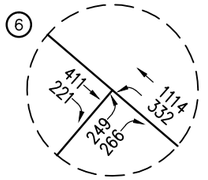
STATE ST @ ONTARIO AVE



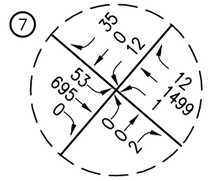
I–15 SB RAMPS @ EL CERRITO RD



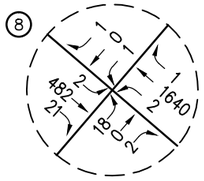
I–15 NB RAMPS @ EL CERRITO RD



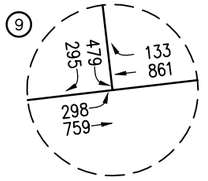
ONTARIO AVE/ TEMESCAL CANYON RD @ EL CERRITO RD



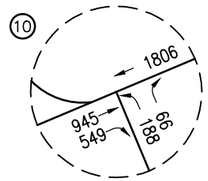
TEMESCAL CANYON RD @ MINNESOTA RD



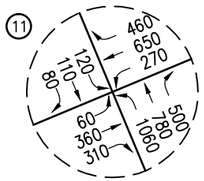
TEMESCAL CANYON RD @ TOM BARNES ST



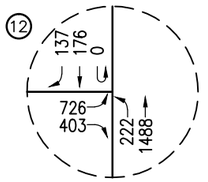
I–15 SB RAMPS @ CAJALCO RD



I–15 SB RAMPS @ CAJALCO RD



TEMESCAL CANYON RD @ CAJALCO RD



TEMESCAL CANYON RD @ DOS LAGOS DR

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LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

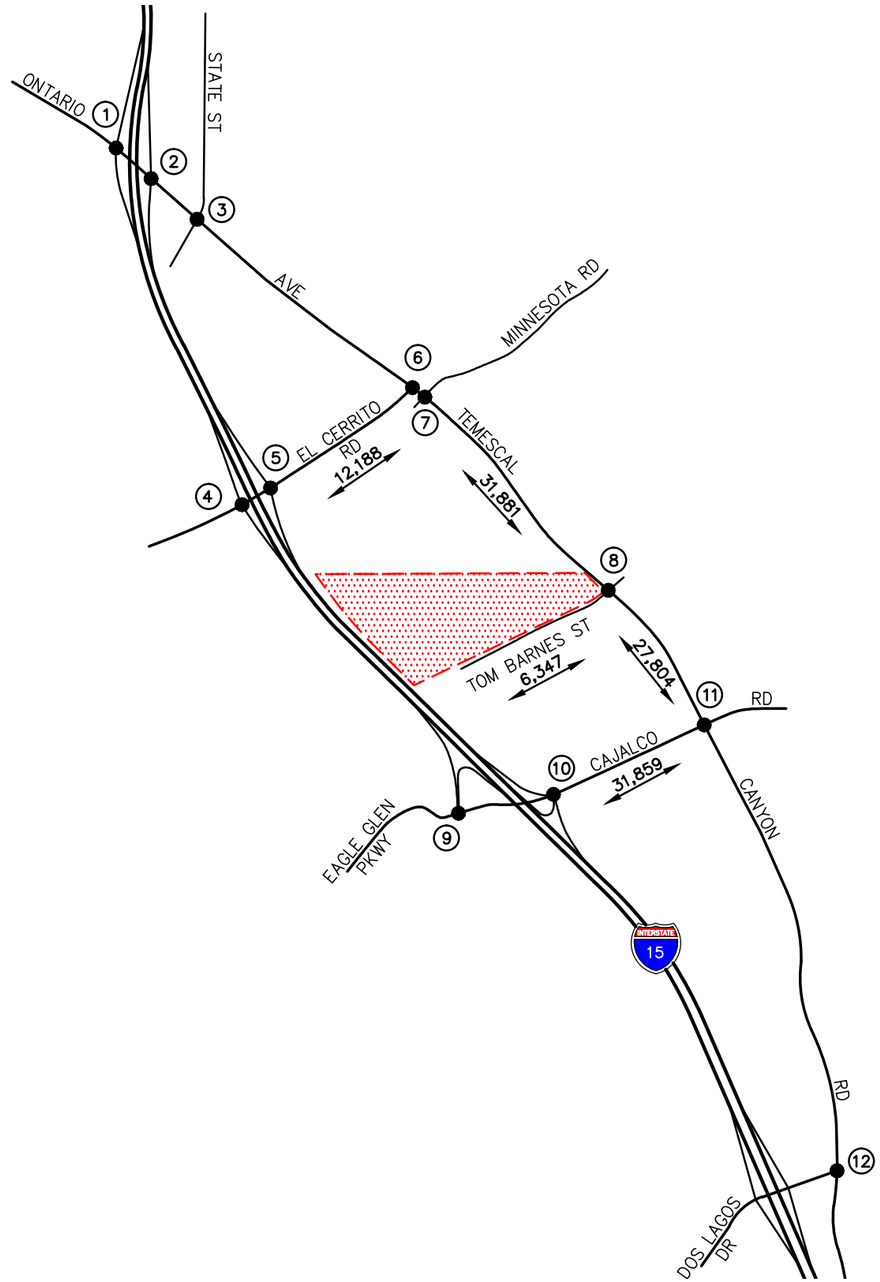
(#) = STUDY INTERSECTION

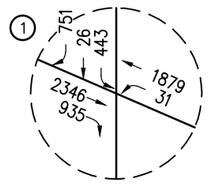
= PROJECT SITE

FIGURE 6–10

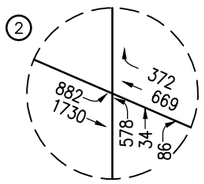
YEAR 2040 WITHOUT PROJECT AM PEAK HOUR TRAFFIC VOLUMES

LATITIUDE BUSINESS PARK, CORONA

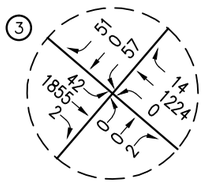




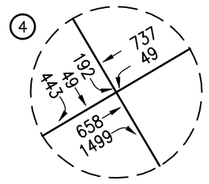
I–15 SB RAMPS @
ONTARIO AVE



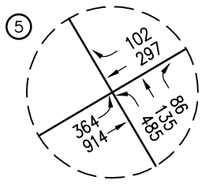
I–15 NB RAMPS @
ONTARIO AVE



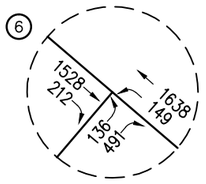
STATE ST @
ONTARIO AVE



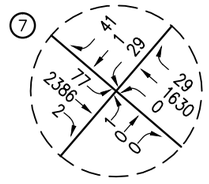
I–15 SB RAMPS @
EL CERRITO RD



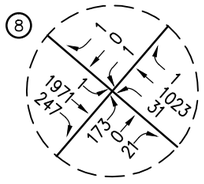
I–15 NB RAMPS @
EL CERRITO RD



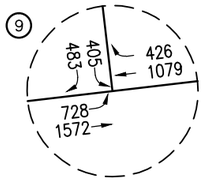
ONTARIO AVE/
TEMESCAL CANYON RD @
EL CERRITO RD



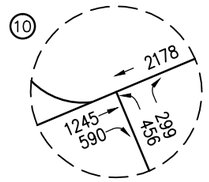
TEMESCAL CANYON RD @
MINNESOTA RD



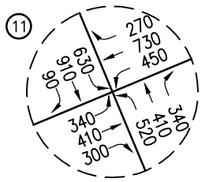
TEMESCAL CANYON RD @
TOM BARNES ST



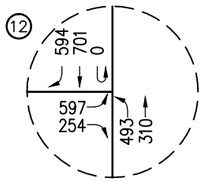
I–15 SB RAMPS @
CAJALCO RD



I–15 SB RAMPS @
CAJALCO RD



TEMESCAL CANYON RD @
CAJALCO RD



TEMESCAL CANYON RD @
DOS LAGOS DR

n:\4000\2184039 – latitude business park, corona\6 – dwg\4039 f6–11.dwg LDP 13:38:36 03–21–2019 co

LINSCOTT LAW & GREENSPAN
engineers

N
NO SCALE

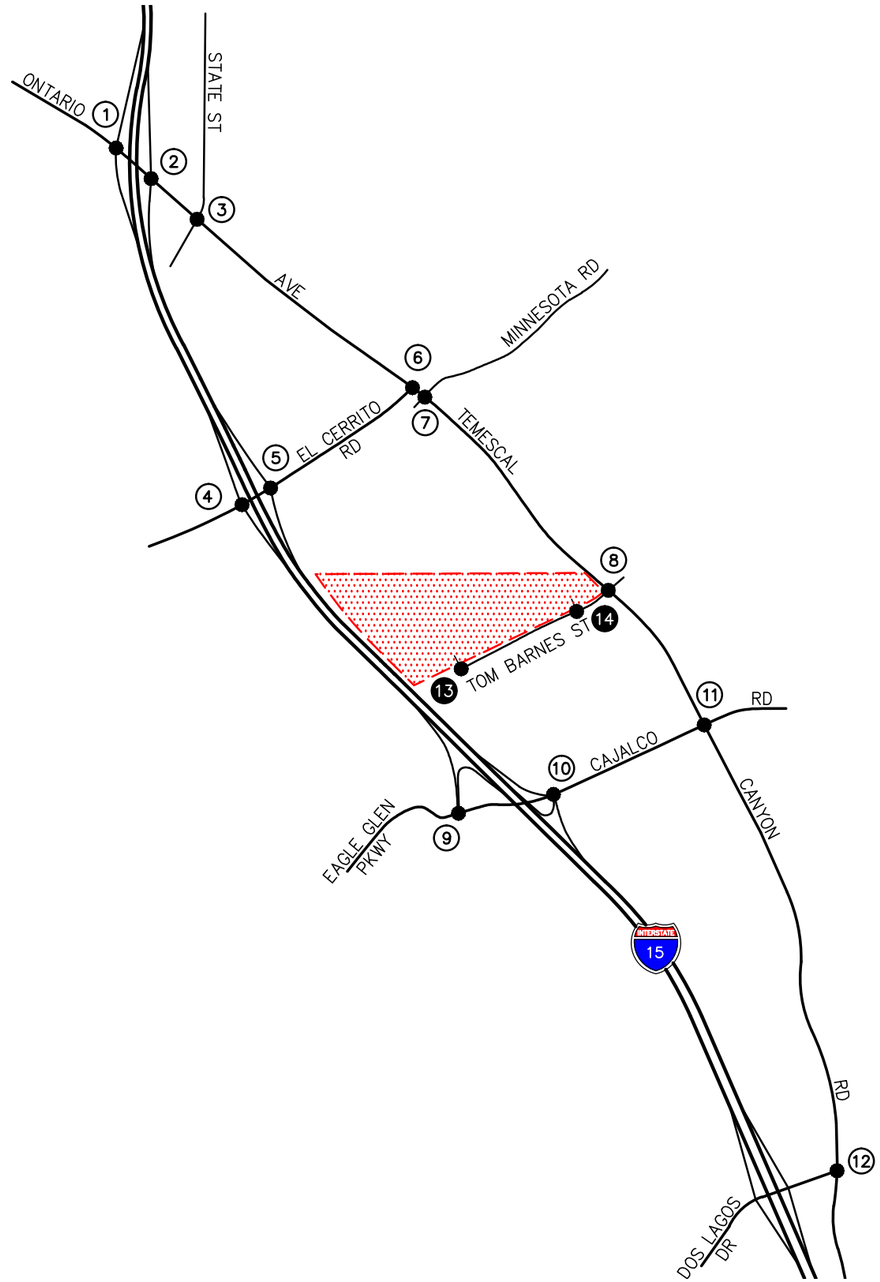
KEY

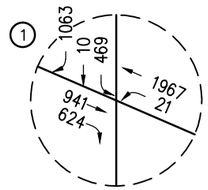
(#) = STUDY INTERSECTION
XX,XXX = DAILY TRAFFIC VOLUMES
= PROJECT SITE

FIGURE 6–11

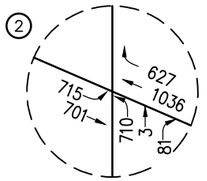
YEAR 2040 WITHOUT PROJECT PM PEAK HOUR AND DAILY TRAFFIC VOLUMES

LATITIUDE BUSINESS PARK, CORONA

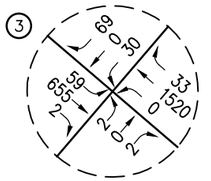




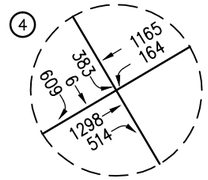
I–15 SB RAMPS @
ONTARIO AVE



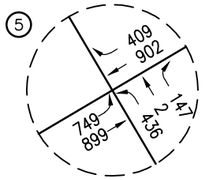
I–15 NB RAMPS @
ONTARIO AVE



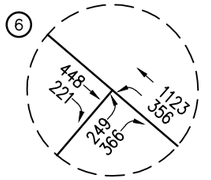
STATE ST @
ONTARIO AVE



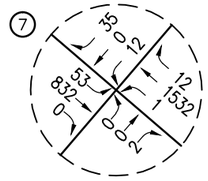
I–15 SB RAMPS @
EL CERRITO RD



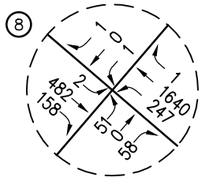
I–15 NB RAMPS @
EL CERRITO RD



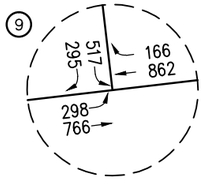
ONTARIO AVE/
TEMESCAL CANYON RD @
EL CERRITO RD



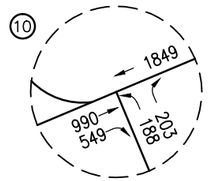
TEMESCAL CANYON RD @
MINNESOTA RD



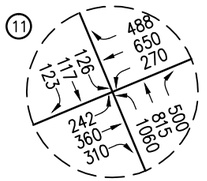
TEMESCAL CANYON RD @
TOM BARNES ST



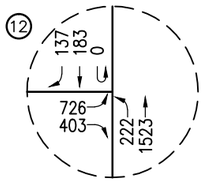
I–15 SB RAMPS @
CAJALCO RD



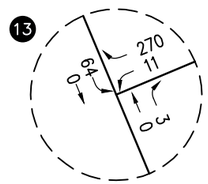
I–15 SB RAMPS @
CAJALCO RD



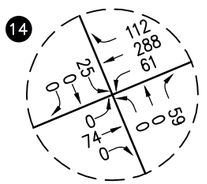
TEMESCAL CANYON RD @
CAJALCO RD



TEMESCAL CANYON RD @
DOS LAGOS DR



PROJECT DWY NO. 1 @
TOM BARNES ST



PROJECT DWY NO. 2 @
TOM BARNES ST

n:\4000\2184039 – latitude business park, corona\6 – dwg\4039 f6–12.dwg LDP 13:38:33 03–21–2019 co

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

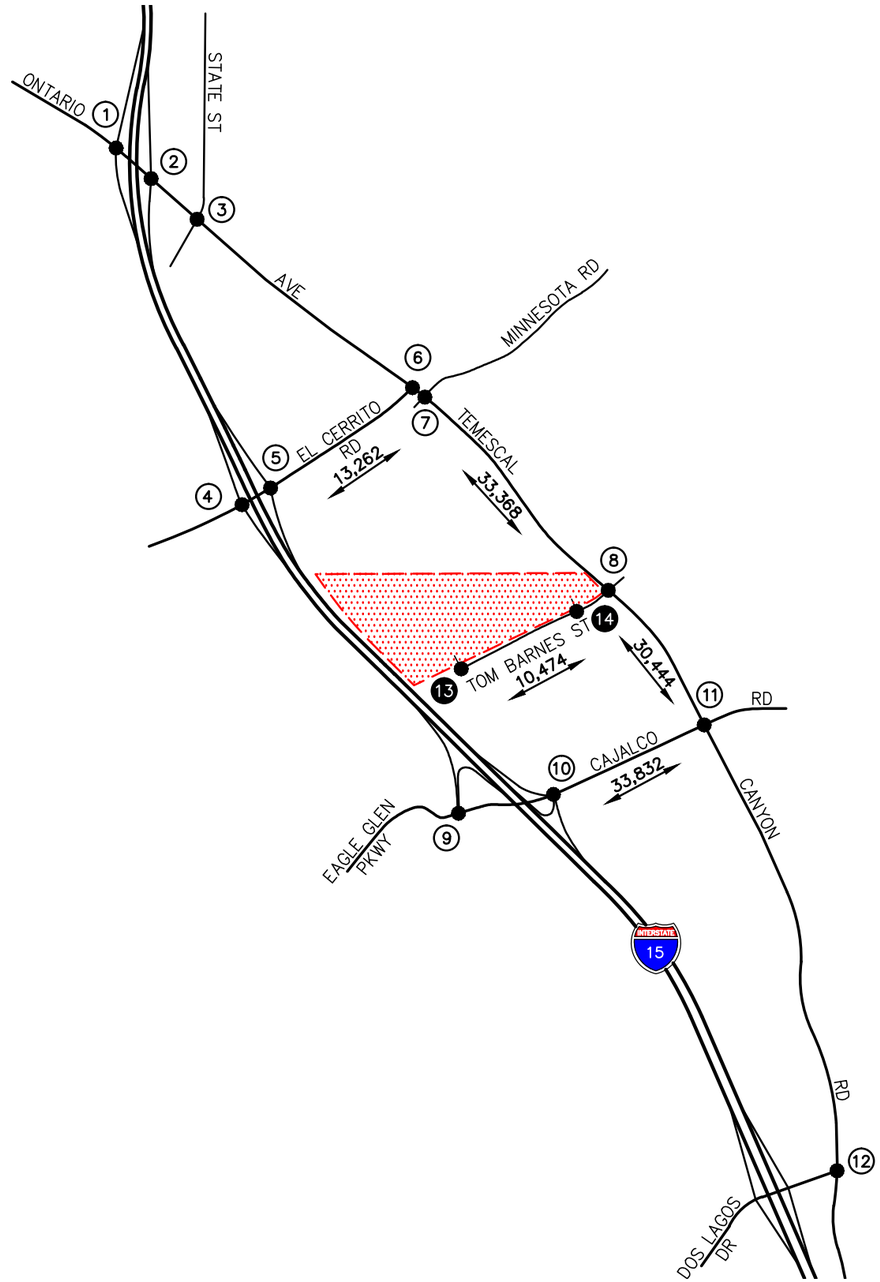
(#) = STUDY INTERSECTION

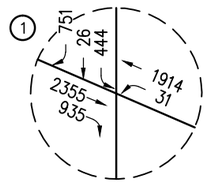
= PROJECT SITE

FIGURE 6–12

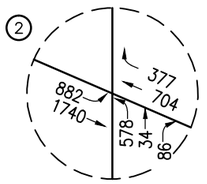
YEAR 2040 WITH PROJECT AM PEAK HOUR TRAFFIC VOLUMES

LATITIUDE BUSINESS PARK, CORONA

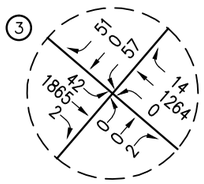




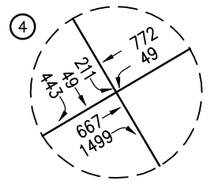
I–15 SB RAMPS @ ONTARIO AVE



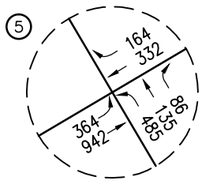
I–15 NB RAMPS @ ONTARIO AVE



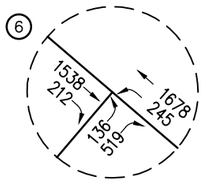
STATE ST @ ONTARIO AVE



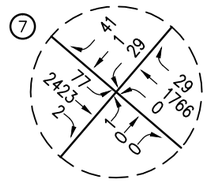
I–15 SB RAMPS @ EL CERRITO RD



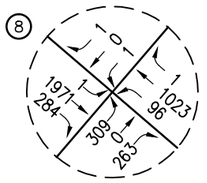
I–15 NB RAMPS @ EL CERRITO RD



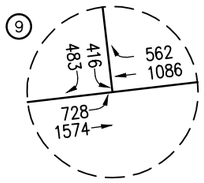
ONTARIO AVE/ TEMESCAL CANYON RD @ EL CERRITO RD



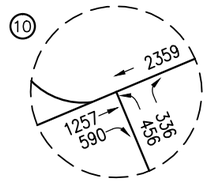
TEMESCAL CANYON RD @ MINNESOTA RD



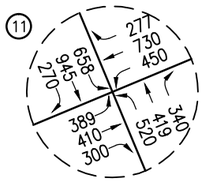
TEMESCAL CANYON RD @ TOM BARNES ST



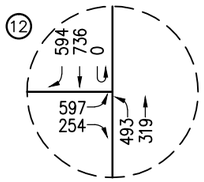
I–15 SB RAMPS @ CAJALCO RD



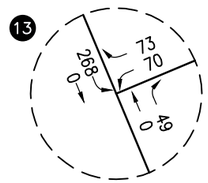
I–15 SB RAMPS @ CAJALCO RD



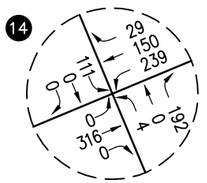
TEMESCAL CANYON RD @ CAJALCO RD



TEMESCAL CANYON RD @ DOS LAGOS DR



PROJECT DWY NO. 1 @ TOM BARNES ST



PROJECT DWY NO. 2 @ TOM BARNES ST

n:\4000\2184039 – latitude business park, corona\6 – dwg\4039 f6–13.dwg LDP 13:39:20 03–21–2019 co

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

(#) = STUDY INTERSECTION

XX,XXX = DAILY TRAFFIC VOLUMES

= PROJECT SITE

FIGURE 6–13

YEAR 2040 WITH PROJECT PM PEAK HOUR AND DAILY TRAFFIC VOLUMES

LATITIUDE BUSINESS PARK, CORONA

TABLE 6-1

LOCATION AND DESCRIPTION OF CUMULATIVE PROJECTS

No.	Cumulative Project	Location/Address	Description
1.	Live Work (Lot 8)	Dos Lagos	75 DU Apartment
2.	PA 3A: Dos Lagos Commercial[11]	South of Pronio Circle, West of Temescal Canyon Road	17,164 SF Office, 4,735 SF Commercial
3.	PA 1: Terrano at Dos Lagos[12]	Northwest corner of Temescal Canyon Road at Dos Lagos Drive	276 DU Apartment, 107 Room Hotel, 6,100 SF Retail, 4,000 SF Quality Restaurant, 6,300 SF High Turnover Sit Down Restaurant, 20 Fueling Positions Gas Station
4.	PA 6: Manufacturing at Dos Lagos[13]	East of Temescal Canyon Road, Between Cajalco Road and Breezy Meadow Lane	67,737 SF Manufacturing
5.	Arantine Hills (TAZ 1 Residential, TAZ 4 Retail) [14]	Arantine Hills, Southeast Corona	421 DU Single Family Detached, 514 DU Apartment, 335 DU Senior Adult Housing – Attached, 135,000 SF Shopping Center
6.	Temescal Canyon Collision[15]	East of Temescal Canyon Road, South of Cajalco Road	25,038 SF Automobile Care Center
7.	A+F Tennis Center[16]	Northwest corner of Foothill Parkway and State Street	11 Tennis Courts
8.	Village of Terrassa	Crossroads Street at Foothill Parkway	146 DU Single Family Housing (50% occupied)
9.	Foothill Center[17]	North of El Cerrito Road, east of I-15 SB Off-Ramp	128 Room Hotel, 15,800 SF Retail, 10,600 SF Quality Restaurant, 10,000 SF High Turnover Sit Down Restaurant, 5,700 SF Fast Food Restaurant, 12 Fueling Positions Gas Station
10.	Monte Olivo Residential (TTM 36533) [18]	East of Laurel Canyon Lane, North of Ontario Avenue	106 DU Single Family Detached
11.	CUP03739	Northeast corner of Temescal Canyon Road at Cajalco Road	10 Fueling Positions Gas Station With Convenience Market and Car Wash
12.	PP24234	Northwest of Knabe Road at Forest Boundary Road	77,231 SF Industrial

11 Source: *PA 3A Dos Lagos Commercial Office Focused Site Traffic Impact Analysis Report,* prepared by LLG Engineers, dated September 16, 2014.

12 Source: *PA1: Terrano at Dos Lagos Traffic Impact Analysis*, prepared by LLG Engineers, dated May 21, 2018.

13 Source: *PA6 – Manufacturing Focused Site Traffic Impact Analysis Report*, prepared by LLG Engineers, dated August 23, 2017.

14 Source: *Arantine Hills Modified Project Traffic Study*, prepared by Urban Crossroads, dated September 11, 2015.

15 Source: *Temescal Canyon Collision Focused Site Traffic Impact Analysis*, prepared by LLG Engineers, dated May 16, 2018.

16 Source: *A+F Tennis Center Focused Site Traffic Impact Analysis,* prepared by LLG Engineers, dated September 28, 2018.

17 Source: *Foothill Center Traffic Impact Analysis*, prepared by LLG Engineers, dated April 28, 2009.

18 Source: *Monte Olivo Residential (TTM 36533) Traffic Impact Analysis*, prepared by LLG Engineers, dated May 16, 2014.

TABLE 6-1 (CONTINUED)

LOCATION AND DESCRIPTION OF CUMULATIVE PROJECTS

No.	Cumulative Project	Location/Address	Description
13.	PP26080	Northwest corner of Knabe Road at Bedford Motor Way	140,000 SF Industrial
14.	PP26097	South corner of Retreat Parkway at Knabe Road	94,000 SF Medical Outpatient Clinic
15.	PP24226	East of Temescal Canyon Road at Dawson Canyon Road	164,421 SF Office Park
16.	TR35249	22395 Forest Boundary Road	51 DU Single Family Detached

Notes:

- DU = Dwelling Units
- TSF = Thousand Square-Feet

TABLE 6-2

CUMULATIVE PROJECTS TRAFFIC GENERATION FORECAST[19]

Cumulative Project Description		Daily 2-Way	AM Peak Hour			PM Peak Hour		
			Enter	Exit	Total	Enter	Exit	Total
1.	Live Work (Lot 8)	549	8	27	35	26	16	42
2.	PA 3A: Dos Lagos Commercial[20]	890	37	12	49	28	49	77
3.	PA 1: Terrano at Dos Lagos[21]	4,775	134	195	329	192	134	326
4.	PA 6: Manufacturing at Dos Lagos[22]	283	40	16	56	20	32	52
5.	Arantine Hills (TAZ 1 Residential, TAZ 4 Retail) [23]	14,968	246	540	786	739	584	1,323
6.	Temescal Canyon Collision[24]	779	37	19	56	37	41	78
7.	A+F Tennis Center[25]	426	7	7	14	21	16	37
8.	Village of Terrassa	689	14	40	54	45	27	72
9.	Foothill Center[26]	6,815	227	198	425	247	208	455
10.	Monte Olivo Residential (TTM 36533) [27]	1,009	20	60	80	67	39	106
11.	CUP03739	1,849	24	23	47	31	31	62
12.	PP24234	383	48	6	54	6	43	49
13.	PP26080	694	86	12	98	11	77	88
14.	PP26097	3,271	204	57	261	91	234	325
15.	PP24226	1,820	211	26	237	12	164	176
16.	TR35249	481	10	28	38	32	18	50
Cumulative Projects Total Trip Generation Potential		**39,681**	**1,353**	**1,266**	**2,619**	**1,605**	**1,713**	**3,318**

19 Source: *Trip Generation, 10th Edition*, Institute of Transportation Engineers, (ITE) [Washington, D.C. (2017)]. Average rates used.

20 Source: *PA 3A Dos Lagos Commercial Office Focused Site Traffic Impact Analysis Report*, prepared by LLG Engineers, dated September 16, 2014.

21 Source: *PA1: Terrano at Dos Lagos Traffic Impact Analysis*, prepared by LLG Engineers, dated May 21, 2018.

22 Source: *PA6 – Manufacturing Focused Site Traffic Impact Analysis Report*, prepared by LLG Engineers, dated August 23, 2017.

23 Source: *Arantine Hills Modified Project Traffic Study*, prepared by Urban Crossroads, dated September 11, 2015.

24 Source: *Temescal Canyon Collision Focused Site Traffic Impact Analysis*, prepared by LLG Engineers, dated May 16, 2018.

25 Source: *A+F Tennis Center Focused Site Traffic Impact Analysis*, prepared by LLG Engineers, dated September 28, 2018.

26 Source: *Foothill Center Traffic Impact Analysis*, prepared by LLG Engineers, dated April 28, 2009.

27 Source: *Monte Olivo Residential (TTM 36533) Traffic Impact Analysis*, prepared by LLG Engineers, dated May 16, 2014.

7.0 EXISTING CONDITIONS TRAFFIC IMPACT ANALYSIS

The existing conditions traffic analysis establishes the basis for the future forecasts for the Project. This analysis was based on existing intersection and roadway segment counts collected in October 2017 and 2018. The existing conditions analysis reflects these counts as well as existing lane configurations for all analyzed intersections and roadway segments.

7.1 Existing Conditions Intersection Capacity Analysis

Table 7-1 summarizes the peak hour Level of Service results at the twelve (12) key study intersections for existing traffic conditions, with and without the Project. The first column (1) of Delay/LOS values in *Table 7-1* presents a summary of Existing AM and PM peak hour traffic conditions. The second column (2) in *Table 7-1* presents forecast Existing With Project traffic conditions. The third column (3) of *Table 7-1* shows whether the traffic associated with the Project will have a significant impact based on the LOS standards and the significance impact criteria defined in this report. The fourth column (4) of *Table 7-1* presents the Level of Service with the implementation of traffic mitigation improvements, if necessary.

7.1.1 *Existing Traffic Conditions*

Review of column (1) of *Table 7-1* indicates that all twelve (12) key study intersections currently operate at acceptable LOS during the AM and PM peak hours.

7.1.2 *Existing With Project Traffic Conditions*

Review of column (2) of *Table 7-1* indicates that for the Existing With Project traffic conditions, all twelve (12) key study intersections are forecast to operate at acceptable LOS during the AM and PM peak hours.

Appendix D contains the Delay/LOS calculation worksheets for the Existing Traffic Conditions.

TABLE 7-1

EXISTING CONDITIONS PEAK HOUR INTERSECTION CAPACITY ANALYSIS SUMMARY[28]

Key Intersection	Minimum Acceptable LOS	Time Period	(1) Existing Traffic Conditions		(2) Existing With Project Traffic Conditions		(3) Significant Impact	(4) Existing With Project With Mitigation	
			Delay (s/v)	LOS	Delay (s/v)	LOS	Yes/No	Delay (s/v)	LOS
1. I-15 SB Ramps at Ontario Avenue	D	AM	22.6	C	22.7	C	No	--	--
		PM	21.3	C	21.4	C	No	--	--
2. I-15 NB Ramps at Ontario Avenue	D	AM	27.0	C	26.7	C	No	--	--
		PM	27.1	C	27.9	C	No	--	--
3. State Street at Ontario Avenue	D	AM	31.3	D	33.5	D	No	--	--
		PM	27.7	D	28.9	D	No	--	--
4. I-15 SB Ramps at El Cerrito Road	E	AM	18.5	B	20.3	C	No	--	--
		PM	19.0	B	19.1	B	No	--	--
5. I-15 NB Ramps at El Cerrito Road	E	AM	27.9	C	27.0	C	No	--	--
		PM	23.7	C	22.7	C	No	--	--
6. Ontario Ave/Temescal Canyon Rd at El Cerrito Road	D	AM	14.7	B	16.7	B	No	--	--
		PM	23.6	C	26.0	C	No	--	--

Notes:

- s/v = seconds per vehicle (delay)
- LOS = Level of Service, please refer to *Tables 3-1* and *3-2* for the LOS definitions
- **Bold Delay/LOS values** indicate adverse service levels based on the LOS standards mentioned in this report

[28] *Appendix D* contains the Delay/LOS calculation worksheets for all study intersections.

TABLE 7-1 (CONTINUED)

EXISTING CONDITIONS PEAK HOUR INTERSECTION CAPACITY ANALYSIS SUMMARY[29]

Key Intersection	Minimum Acceptable LOS	Time Period	(1) Existing Traffic Conditions		(2) Existing With Project Traffic Conditions		(3) Significant Impact	(4) Existing With Project With Mitigation	
			Delay (s/v)	LOS	Delay (s/v)	LOS	Yes/No	Delay (s/v)	LOS
7. Temescal Canyon Road at Minnesota Road	D	AM	5.0	A	4.8	A	No	--	--
		PM	6.4	A	6.5	A	No	--	--
8. Temescal Canyon Road at Tom Barnes Street	D	AM	5.8	A	15.7	B	No	--	--
		PM	11.1	B	21.3	C	No	--	--
9. I-15 SB Ramps at Cajalco Road	E	AM	22.6	C	23.5	C	No	--	--
		PM	26.0	C	28.4	C	No	--	--
10. I-15 NB Ramps at Cajalco Road	E	AM	24.2	C	31.8	C	No	--	--
		PM	18.6	B	22.5	C	No	--	--
11. Temescal Canyon Road at Cajalco Road	D	AM	30.7	C	40.0	D	No	--	--
		PM	37.0	D	42.2	D	No	--	--
12. Temescal Canyon Road at Dos Lagos Drive	D	AM	19.3	B	19.3	B	No	--	--
		PM	28.4	C	27.9	C	No	--	--

Notes:

- s/v = seconds per vehicle (delay)
- LOS = Level of Service, please refer to *Tables 3-1* and *3-2* for the LOS definitions
- **Bold Delay/LOS values** indicate adverse service levels based on the LOS standards mentioned in this report

[29] *Appendix D* contains the Delay/LOS calculation worksheets for all study intersections.

7.2 Existing Conditions Roadway Segment Analysis

Table 7-2 summarizes the daily level of service results at the five (5) key study roadway segments during a "typical" weekday for the existing traffic conditions with and without the Project. The first column (1) of LOS E Capacity values in *Table 8-2* presents the daily roadway segment capacities from the *City of Corona General Plan Technical Background Report Page 3-27, dated March 2004* and *City of Corona Public Works Department Traffic Impact Study Guidelines Exhibit C, dated July 2006*. The second column (2) lists the number of travel lanes and the third column (3) indicates the Existing daily traffic volumes, Volume to Capacity (V/C) ratio and Level of Service (LOS). The fourth column (4) in *Table 7-2* forecasts the Existing With Project traffic conditions. The fifth column (5) of *Table 7-2* presents the increase in the V/C ratio and indicates whether the roadway segment operates at an adverse level of service based on the LOS standards and the impact criteria defined in this report.

7.2.1 *Existing Traffic Conditions*

Review of column (3) of *Table 7-2* indicates that for the Existing traffic conditions, one (1) of the five (5) key study roadway segments currently operates at unacceptable levels of service on a daily basis when compared to the LOS standards defined in this report. The remaining four (4) key study roadway segments currently operate at acceptable levels of service on daily basis. The roadway segment operating at adverse levels of service is:

		Daily	
Key Roadway Segment	**Volume**	**V/C Ratio**	**LOS**
2. Temescal Canyon Rd, between El Cerrito Rd and Tom Barnes St	19,616	1.509	F

7.2.2 *Existing With Project Traffic Conditions*

Review of column (4) of *Table 7-2* indicates that for the Existing With Project traffic conditions, one (1) of the five (5) key study roadway segment is forecast to operate at unacceptable levels of service on a daily basis when compared to the LOS standards defined in this report. The remaining four (4) key study roadway segments are forecast to operate at acceptable levels of service on a daily basis. The roadway segment forecast to operate at an adverse level of service is:

		Daily	
Key Roadway Segment	**Volume**	**V/C Ratio**	**LOS**
2. Temescal Canyon Rd, between El Cerrito Rd and Tom Barnes St	21,103	1.623	F

To determine if the Project creates a significant impact, this adverse roadway segment is further analyzed under peak hour conditions to determine if there are any peak hour deficiencies. As presented in ***Table 7-3***, this study roadway segment is forecast to operate at LOS C or better during the AM and PM peak hours. As a result, the key study roadway segment is not significantly impacted by Existing With Project traffic and therefore no improvements are required.

TABLE 7-2

EXISTING CONDITIONS DAILY ROADWAY SEGMENT CAPACITY ANALYSIS SUMMARY

Key Roadway Segment	Type of Arterial	(1) LOS E Capacity[30] (VPD)	(2) Lanes	(3) Existing Traffic Conditions			(4) Existing With Project Traffic Conditions			(5) Adverse Condition	
				Daily Volume	V/C Ratio	LOS	Daily Volume	V/C Ratio	LOS	V/C Inc.	Yes/ No
1. El Cerrito Road, between I-15 NB Ramps and Ontario Ave/Temescal Canyon Rd	Major Arterial	34,100	4D	9,709	0.285	A	10,783	0.316	A	0.031	No
2. Temescal Canyon Road, between El Cerrito Road and Tom Barnes Street	Collector	13,000	2U	**19,616**	**1.509**	**F**	**21,103**	**1.623**	**F**	**0.114**	**Yes**
3. Tom Barnes Street, between Tuscany Street and Temescal Canyon Road	Collector	13,000	2U	5,831	0.449	A	9,958	0.766	C	0.317	No
4. Temescal Canyon Road, between Tom Barnes Street and Cajalco Road	Major Arterial	34,100	4D	15,911	0.467	A	18,551	0.544	A	0.077	No
5. Cajalco Road, between I-15 NB Ramps and Temescal Canyon Road	Urban Arterial	44,000	5D	24,408	0.555	A	26,381	0.600	B	0.045	No

Notes:

- VPD = Vehicles Per Day
- D = Divided; U = Undivided
- V/C = Volume to Capacity Ratio
- LOS = Level of Service, please refer to *Table 3-3* for the LOS definitions
- **Bold "V/C"/LOS values** indicate adverse service levels based on the LOS standards mentioned in this report

[30] Source: *City of Corona General Plan Technical Background Report Page 3-27, dated March 2004* and *City of Corona Public Works Department Traffic Impact Study Guidelines Exhibit C, dated July 2006.*

TABLE 7-3

EXISTING CONDITIONS PEAK HOUR ROADWAY SEGMENT CAPACITY ANALYSIS SUMMARY

Key Roadway Segment	Type of Arterial	Approach	Time Period	(1) Link Capacity (VPHPL)	(2) Lanes	(3) Total Link Capacity (VPH)	(4) Existing With Project Traffic Conditions		
							Peak Hour Volume	V/C Ratio	LOS
2. Temescal Canyon Road, between El Cerrito Road and Tom Barnes Street	Collector	Northbound	AM	1,600	1	1,600	897	0.561	A
			PM	1,600	1	1,600	709	0.443	A
		Southbound	AM	1,600	1	1,600	377	0.236	A
			PM	1,600	1	1,600	1,222	0.764	C

Notes:

- VPHPL = Vehicles Per Hour Per Lane
- VPH = Vehicles Per Hour
- V/C = Volume to Capacity Ratio
- LOS = Level of Service, please refer to *Table 3-3* for the LOS definitions

8.0 YEAR 2022 CONDITIONS TRAFFIC IMPACT ANALYSIS

The relative impacts of the added Project traffic volumes generated by proposed Project during the AM peak hour, PM peak hour, and Daily conditions was evaluated based on analysis of future Year 2022 operating conditions at the twelve (12) key study intersections and five (5) key roadway segments, with and without the proposed Project. The previously discussed capacity analysis procedures were utilized to investigate the future Delay/V/C relationships and service level characteristics at each study intersection and roadway segment. The significance of the potential impacts of the Project at each key intersection and roadway segment was then evaluated using the traffic impact criteria mentioned in this report.

8.1 Year 2022 Conditions Intersection Capacity Analysis

Table 8-1 summarizes the AM and PM peak hour Level of Service results at the twelve (12) key study intersections for the Year 2022 traffic conditions. The first column (1) of Delay/LOS values in *Table 8-1* presents a summary of existing AM and PM peak hour traffic conditions (which were also presented in *Table 7-1*). The second column (2) presents forecast Year 2022 Without Project traffic conditions and the third column (3) identifies forecast Year 2022 With Project traffic conditions. The fourth column (4) indicates whether the traffic associated with the Project will have a significant impact based on the significant impact criteria mentioned in this report. The fifth column (5) presents the resultant level of service with the inclusion of recommended improvements, where needed, to achieve an acceptable level of service.

Planned improvements, which are discussed in more detail in *Section 10.0* of this report, have been assumed for the "Year 2022 Without and With Project" scenarios for the intersections listed below:

- 4. I-15 SB Ramps at El Cerrito Road
- 9. I-15 SB Ramps at Cajalco Road
- 10. I-15 NB Ramps at Cajalco Road

8.1.1 *Year 2022 Without Project Traffic Conditions*

Review of column (2) of *Table 8-1* indicates that for the Year 2022 Without Project traffic conditions, one (1) of the twelve (12) key study intersection is forecast to operate at an unacceptable level of service during the AM and PM peak hours when compared to the LOS standards defined in this report. The remaining eleven (11) key study intersections are forecast to operate at acceptable levels of service during the AM and PM peak hours. The intersections operating at adverse levels of service area:

	AM Peak Hour		PM Peak Hour	
Key Intersection	**Delay (s/v)**	**LOS**	**Delay (s/v)**	**LOS**
3. State Street at Ontario Avenue	45.8	E	39.1	E

8.1.2 *Year 2022 With Project Traffic Conditions*

Review of column (3) of *Table 8-1* indicates that for the Year 2022 With Project traffic conditions, two (2) of the twelve (12) key study intersections are forecast to operate at unacceptable levels of service during the AM and PM peak hours when compared to the LOS standards defined in this report. The remaining ten (10) key study intersections are forecast to operate at acceptable levels of service during the AM and PM peak hours. The intersections operating at adverse levels of service are:

	AM Peak Hour		**PM Peak Hour**	
Key Intersection	**Delay (s/v)**	**LOS**	**Delay (s/v)**	**LOS**
3. State Street at Ontario Avenue	49.5	E	41.3	E
11. Temescal Canyon Road at Cajalco Road	--	--	58.0	E

Review of column (4) of *Table 8-1* indicates that two (2) of the twelve (12) key study intersections will have a significant impact under the Year 2022 With Project traffic conditions when compared to the LOS criteria defined in this report. However, as shown in column (5) of *Table 8-1*, the implementation of recommended mitigation measures at the impacted intersections mitigates the impacts of the proposed Project. After implementation of the recommended mitigation measures, all the impacted intersections are forecast to operate at an acceptable LOS based on the LOS standards outlined in this report.

Appendix E contains the Delay/LOS calculation worksheets for the Year 2022 Traffic Conditions.

TABLE 8-1

YEAR 2022 CONDITIONS PEAK HOUR INTERSECTION CAPACITY ANALYSIS SUMMARY[31]

Key Intersection	Minimum Acceptable LOS	Time Period	(1) Existing Traffic Conditions		(2) Year 2022 Without Project Traffic Conditions		(3) Year 2022 With Project Traffic Conditions		(4) Significant Impact	(5) Year 2022 With Project With Mitigation	
			Delay (s/v)	LOS	Delay (s/v)	LOS	Delay (s/v)	LOS	Yes/No	Delay (s/v)	LOS
1. I-15 SB Ramps at Ontario Avenue	D	AM	22.6	C	30.7	C	30.8	C	No	--	--
		PM	21.3	C	27.0	C	27.1	C	No	--	--
2. I-15 NB Ramps at Ontario Avenue	D	AM	27.0	C	28.7	C	28.5	C	No	--	--
		PM	27.1	C	36.5	D	37.0	D	No	--	--
3. State Street at Ontario Avenue	D	AM	31.3	D	**45.8**	**E**	**49.5**	**E**	**Yes**	16.2	B
		PM	27.7	D	**39.1**	**E**	**41.3**	**E**	**Yes**	8.6	A
4. I-15 SB Ramps at El Cerrito Road	E	AM	18.5	B	18.5	B	19.4	B	No	--	--
		PM	19.0	B	30.4	C	30.2	C	No	--	--
5. I-15 NB Ramps at El Cerrito Road	E	AM	27.9	C	37.2	D	38.2	D	No	--	--
		PM	23.7	C	25.4	C	24.9	C	No	--	--
6. Ontario Ave/Temescal Canyon Rd at El Cerrito Road	D	AM	14.7	B	16.1	B	17.8	B	No	--	--
		PM	23.6	C	29.1	C	31.1	C	No	--	--

Notes:

- s/v = seconds per vehicle (delay)
- LOS = Level of Service, please refer to *Tables 3-1* and *3-2* for the LOS definitions
- **Bold Delay/LOS values** indicate adverse service levels based on the LOS standards mentioned in this report

[31] *Appendices D* and *E* contain the Delay/LOS calculation worksheets for all study intersections.

TABLE 8-1 (CONTINUED)

YEAR 2022 CONDITIONS PEAK HOUR INTERSECTION CAPACITY ANALYSIS SUMMARY[32]

Key Intersection	Minimum Acceptable LOS	Time Period	(1) Existing Traffic Conditions		(2) Year 2022 Without Project Traffic Conditions		(3) Year 2022 With Project Traffic Conditions		(4) Significant Impact	(5) Year 2022 With Project With Mitigation	
			Delay (s/v)	LOS	Delay (s/v)	LOS	Delay (s/v)	LOS	Yes/No	Delay (s/v)	LOS
7. Temescal Canyon Road at Minnesota Road	D	AM	5.0	A	5.3	A	5.1	A	No	--	--
		PM	6.4	A	8.0	A	8.4	A	No	--	--
8. Temescal Canyon Road at Tom Barnes Street	D	AM	5.8	A	7.6	A	17.5	B	No	--	--
		PM	11.1	B	12.2	B	23.3	C	No	--	--
9. I-15 SB Ramps at Cajalco Road	E	AM	22.6	C	19.1	B	18.5	B	No	--	--
		PM	26.0	C	24.2	C	23.8	C	No	--	--
10. I-15 NB Ramps at Cajalco Road	E	AM	24.2	C	5.3	A	7.0	A	No	--	--
		PM	18.6	B	9.6	A	9.7	A	No	--	--
11. Temescal Canyon Road at Cajalco Road	D	AM	30.7	C	40.1	D	45.0	D	No	41.9	D
		PM	37.0	D	48.7	D	**58.0**	**E**	**Yes**	54.9	D
12. Temescal Canyon Road at Dos Lagos Drive	D	AM	19.3	B	21.8	C	21.9	C	No	--	--
		PM	28.4	C	30.0	C	29.7	C	No	--	--

Notes:

- s/v = seconds per vehicle (delay)
- LOS = Level of Service, please refer to *Tables 3-1* and *3-2* for the LOS definitions
- **Bold Delay/LOS values** indicate adverse service levels based on the LOS standards mentioned in this report

[32] *Appendices D* and *E* contain the Delay/LOS calculation worksheets for all study intersections.

8.2 Year 2022 Conditions Roadway Segment Analysis

Table 8-2 summarizes the daily level of service results at the five (5) key study roadway segments during a "typical" weekday for the Year 2022 traffic conditions. The first column (1) of LOS E Capacity values in *Table 8-2* presents the daily roadway segment capacities from the *City of Corona General Plan Technical Background Report Page 3-27, dated March 2004* and *City of Corona Public Works Department Traffic Impact Study Guidelines Exhibit C, dated July 2006*. The second column (2) lists the number of travel lanes and the third column (3) indicates the Existing daily traffic volumes, Volume to Capacity (V/C) ratio and Level of Service (LOS) (which were also presented in *Table 7-2*). The fourth column (4) forecasts Year 2022 Without Project traffic conditions. The fifth column (5) in *Table 8-2* forecasts the Year 2022 With Project traffic conditions. The sixth column (6) of *Table 8-2* presents the increase in the V/C ratio and indicates whether the roadway segment operates at an adverse level of service based on the LOS standards and the impact criteria defined in this report.

Planned improvements, which are discussed in more detail in *Section 10.0* of this report, have been assumed for the "Year 2022 Without and With Project" scenarios for the roadway segments listed below:

- 5. Cajalco Road, between I-15 NB Ramps and Temescal Canyon Road

8.2.1 *Year 2022 Without Project Traffic Conditions*

Review of column (4) of *Table 8-2* indicates that for the Year 2022 Without Project traffic conditions, one (1) of the five (5) key study roadway segment is forecast to operate at unacceptable levels of service on a daily basis when compared to the LOS standards defined in this report. The remaining four (4) key study roadway segments are forecast to operate at acceptable levels of service on daily basis. The roadway segment operating at adverse levels of service is:

		Daily	
Key Roadway Segment	**Volume**	**V/C Ratio**	**LOS**
2. Temescal Canyon Rd, between El Cerrito Rd and Tom Barnes St	22,893	1.761	F

8.2.2 *Year 2022 With Project Traffic Conditions*

Review of column (5) of *Table 8-2* indicates that for the Year 2022 With Project traffic conditions, two (2) of the five (5) key study roadway segments are forecast to operate at unacceptable levels of service on a daily basis when compared to the LOS standards defined in this report. The remaining three (3) key study roadway segments are forecast to operate at acceptable levels of service on a daily basis. The roadway segments operating at adverse levels of service are:

		Daily	
Key Roadway Segment	**Volume**	**V/C Ratio**	**LOS**
2. Temescal Canyon Rd, between El Cerrito Rd and Tom Barnes St	24,380	1.875	F
3. Tom Barnes St, between Tuscany St and Temescal Canyon Rd	10,474	0.806	D

To determine if the Project creates a significant impact, these adverse roadway segments are further analyzed under peak hour conditions to determine if there are any peak hour deficiencies. As presented in ***Table 8-3***, these adverse roadway segments are forecast to operate at LOS D or better during the AM and PM peak hours. As a result, the key study roadway segments are not significantly impacted by Year 2022 With Project traffic and therefore no improvements are required. It should be noted that while the Project does not significantly impact the roadway segment of Temescal Canyon Road between El Cerrito Road and Tom Barnes Street, the County of Riverside has requested that the Project contribute a fair share towards the proposed Temescal Canyon widening project to be implemented by the County of Riverside. Consequently, the City has indicated that the applicable Project TUMF fees are expected to be applied to the proposed Temescal Canyon widening project.

TABLE 8-2

YEAR 2022 CONDITIONS DAILY ROADWAY SEGMENT CAPACITY ANALYSIS SUMMARY

Key Roadway Segment	Type of Arterial	(1) LOS E Capacity[33] (VPD)	(2) Lanes	(3) Existing Traffic Conditions			(4) Year 2022 Without Project Traffic Conditions			(5) Year 2022 With Project Traffic Conditions			(6) Adverse Condition	
				Daily Volume	V/C Ratio	LOS	Daily Volume	V/C Ratio	LOS	Daily Volume	V/C Ratio	LOS	V/C Inc.	Yes/ No
1. El Cerrito Road, between I-15 NB Ramps and Ontario Ave/Temescal Canyon Rd	Major Arterial	34,100	4D	9,709	0.285	A	11,849	0.347	A	12,923	0.379	A	0.032	No
2. Temescal Canyon Road, between El Cerrito Road and Tom Barnes Street	Collector	13,000	2U	**19,616**	**1.509**	**F**	**22,893**	**1.761**	**F**	**24,380**	**1.875**	**F**	**0.114**	**Yes**
3. Tom Barnes Street, between Tuscany Street and Temescal Canyon Road	Collector	13,000	2U	5,831	0.449	A	6,347	0.488	A	**10,474**	**0.806**	**D**	**0.318**	**Yes**
4. Temescal Canyon Road, between Tom Barnes Street and Cajalco Road	Major Arterial	34,100	4D	15,911	0.467	A	18,491	0.542	A	21,131	0.620	B	0.078	No
5. Cajalco Road, between I-15 NB Ramps and Temescal Canyon Road	Urban Arterial	53,900	6D	24,408	0.555	A	31,859	0.591	A	33,832	0.628	B	0.037	No

Notes:

- VPD = Vehicles Per Day
- D = Divided; U = Undivided
- V/C = Volume to Capacity Ratio
- LOS = Level of Service, please refer to *Table 3-3* for the LOS definitions
- **Bold "V/C"/LOS values** indicate adverse service levels based on the LOS standards mentioned in this report

[33] Source: *City of Corona General Plan Technical Background Report Page 3-27, dated March 2004* and *City of Corona Public Works Department Traffic Impact Study Guidelines Exhibit C, dated July 2006.*

TABLE 8-3

YEAR 2022 CONDITIONS PEAK HOUR ROADWAY SEGMENT CAPACITY ANALYSIS SUMMARY

Key Roadway Segment	Type of Arterial	Approach	Time Period	(1) Link Capacity (VPHPL)	(2) Lanes	(3) Total Link Capacity (VPH)	(4) Year 2022 With Project Traffic Conditions		
							Peak Hour Volume	V/C Ratio	LOS
2. Temescal Canyon Road, between El Cerrito Road and Tom Barnes Street	Collector	Northbound	AM	1,600	1	1,600	1,022	0.639	B
			PM	1,600	1	1,600	809	0.506	A
		Southbound	AM	1,600	1	1,600	444	0.278	A
			PM	1,600	1	1,600	1,373	0.858	D
3. Tom Barnes Street, between Tuscany Street and Temescal Canyon Road	Collector	Eastbound	AM	1,600	1	1,600	109	0.068	A
			PM	1,600	1	1,600	572	0.358	A
		Westbound	AM	1,600	1	1,600	405	0.253	A
			PM	1,600	1	1,600	366	0.229	A

Notes:

- VPHPL = Vehicles Per Hour Per Lane
- VPH = Vehicles Per Hour
- V/C = Volume to Capacity Ratio
- LOS = Level of Service, please refer to *Table 3-3* for the LOS definitions

9.0 YEAR 2040 CONDITIONS TRAFFIC IMPACT ANALYSIS

The relative impacts of the added Project traffic volumes generated by proposed Project during the AM peak hour, PM peak hour, and Daily conditions was evaluated based on analysis of future Year 2040 operating conditions at the twelve (12) key study intersections and five (5) key roadway segments, with and without the proposed Project. The previously discussed capacity analysis procedures were utilized to investigate the future Delay/V/C relationships and service level characteristics at each study intersection and roadway segment. The significance of the potential impacts of the Project at each key intersection and roadway segment was then evaluated using the traffic impact criteria mentioned in this report.

9.1 Year 2040 Conditions Intersection Capacity Analysis

Table 9-1 summarizes the AM and PM peak hour Level of Service results at the twelve (12) key study intersections for the Year 2040 traffic conditions. The first column (1) of Delay/LOS values in *Table 9-1* presents a summary of existing AM and PM peak hour traffic conditions (which were also presented in *Tables 7-1* and *8-1*). The second column (2) presents forecast Year 2040 Without Project traffic conditions and the third column (3) identifies forecast Year 2040 With Project traffic conditions. The fourth column (4) indicates whether the traffic associated with the Project will have a significant impact based on the significant impact criteria mentioned in this report. The fifth column (5) presents the resultant level of service with the inclusion of recommended improvements, where needed, to achieve an acceptable level of service.

Planned improvements, which are discussed in more detail in *Section 10.0* of this report, have been assumed for the "Year 2040 Without and With Project" scenarios for the intersections listed below:

- 1. I-15 SB Ramps at Ontario Avenue
- 2. I-15 NB Ramps at Ontario Avenue
- 3. State Street at Ontario Avenue
- 4. I-15 SB Ramps at El Cerrito Road
- 6. Ontario Avenue/Temescal Canyon Road at El Cerrito Road
- 7. Temescal Canyon Road at Minnesota Road
- 8. Temescal Canyon Road at Tom Barnes Street
- 9. I-15 SB Ramps at Cajalco Road
- 10. I-15 NB Ramps at Cajalco Road
- 11. Temescal Canyon Road at Cajalco Road

9.1.1 *Year 2040 Without Project Traffic Conditions*

Review of column (2) of *Table 9-1* indicates that for the Year 2040 Without Project traffic conditions, three (3) of the twelve (12) key study intersections are forecast to operate at an unacceptable level of service during the AM and PM peak hours when compared to the LOS standards defined in this report. The remaining nine (9) key study intersections are forecast to

operate at acceptable levels of service during the AM and PM peak hours. The intersections operating at adverse levels of service are:

	AM Peak Hour		PM Peak Hour	
Key Intersection	**Delay (s/v)**	**LOS**	**Delay (s/v)**	**LOS**
3. State Street at Ontario Avenue	44.9	E	49.7	E
6. Ontario Ave/Temescal Canyon Rd at El Cerrito Road	--	--	70.9	E
11. Temescal Canyon Road at Cajalco Road	--	--	62.4	E

9.1.2 *Year 2040 With Project Traffic Conditions*

Review of column (3) of *Table 9-1* indicates that for the Year 2040 With Project traffic conditions, three (3) of the twelve (12) key study intersections are forecast to operate at unacceptable levels of service during the AM and PM peak hours when compared to the LOS standards defined in this report. The remaining nine (9) key study intersections are forecast to operate at acceptable levels of service during the AM and PM peak hours. The intersections operating at adverse levels of service are:

	AM Peak Hour		PM Peak Hour	
Key Intersection	**Delay (s/v)**	**LOS**	**Delay (s/v)**	**LOS**
3. State Street at Ontario Avenue	48.1	E	53.9	F
6. Ontario Ave/Temescal Canyon Rd at El Cerrito Road	--	--	75.3	E
11. Temescal Canyon Road at Cajalco Road	73.2	E	82.6	F

Review of column (4) of *Table 9-1* indicates that three (3) of the twelve (12) key study intersections will have a significant impact under the Year 2040 With Project traffic conditions when compared to the LOS criteria defined in this report. However, as shown in column (5) of *Table 9-1*, the implementation of recommended mitigation measures at the impacted intersections mitigates the impacts of the proposed Project. After implementation of the recommended mitigation measures, all the impacted intersections are forecast to operate at an acceptable LOS based on the LOS standards outlined in this report.

Appendix F contains the Delay/LOS calculation worksheets for the Year 2040 Traffic Conditions.

TABLE 9-1

YEAR 2040 CONDITIONS PEAK HOUR INTERSECTION CAPACITY ANALYSIS SUMMARY[34]

Key Intersection	Minimum Acceptable LOS	Time Period	(1) Existing Traffic Conditions		(2) Year 2040 Without Project Traffic Conditions		(3) Year 2040 With Project Traffic Conditions		(4) Significant Impact	(5) Year 2040 With Project With Mitigation	
			Delay (s/v)	LOS	Delay (s/v)	LOS	Delay (s/v)	LOS	Yes/No	Delay (s/v)	LOS
1. I-15 SB Ramps at Ontario Avenue	D	AM	22.6	C	32.0	C	32.0	C	No	--	--
		PM	21.3	C	37.0	D	37.0	D	No	--	--
2. I-15 NB Ramps at Ontario Avenue	D	AM	27.0	C	44.5	D	44.3	D	No	--	--
		PM	27.1	C	25.2	C	25.3	C	No	--	--
3. State Street at Ontario Avenue	D	AM	31.3	D	**44.9**	**E**	**48.1**	**E**	**Yes**	9.4	A
		PM	27.7	D	**49.7**	**E**	**53.9**	**F**	**Yes**	8.9	A
4. I-15 SB Ramps at El Cerrito Road	E	AM	18.5	B	44.8	D	45.2	D	No	--	--
		PM	19.0	B	75.9	E	75.0	E	No	--	--
5. I-15 NB Ramps at El Cerrito Road	E	AM	27.9	C	76.5	E	78.5	E	No	--	--
		PM	23.7	C	54.3	D	58.1	E	No	--	--
6. Ontario Ave/Temescal Canyon Rd at El Cerrito Road	D	AM	14.7	B	16.8	B	20.9	C	No	16.4	B
		PM	23.6	C	**70.9**	**E**	**75.3**	**E**	**Yes**	22.0	C

Notes:

- s/v = seconds per vehicle (delay)
- LOS = Level of Service, please refer to *Tables 3-1* and *3-2* for the LOS definitions
- **Bold Delay/LOS values** indicate adverse service levels based on the LOS standards mentioned in this report

[34] *Appendices D* and *F* contain the Delay/LOS calculation worksheets for all study intersections.

TABLE 9-1 (CONTINUED)

YEAR 2040 CONDITIONS PEAK HOUR INTERSECTION CAPACITY ANALYSIS SUMMARY[35]

Key Intersection	Minimum Acceptable LOS	Time Period	(1) Existing Traffic Conditions		(2) Year 2040 Without Project Traffic Conditions		(3) Year 2040 With Project Traffic Conditions		(4) Significant Impact	(5) Year 2040 With Project With Mitigation	
			Delay (s/v)	LOS	Delay (s/v)	LOS	Delay (s/v)	LOS	Yes/No	Delay (s/v)	LOS
7. Temescal Canyon Road at Minnesota Road	D	AM	5.0	A	5.3	A	5.2	A	No	--	--
		PM	6.4	A	7.5	A	8.1	A	No	--	--
8. Temescal Canyon Road at Tom Barnes Street	D	AM	5.8	A	3.5	A	12.2	B	No	--	--
		PM	11.1	B	19.9	B	20.9	C	No	--	--
9. I-15 SB Ramps at Cajalco Road	E	AM	22.6	C	19.3	B	19.4	B	No	--	--
		PM	26.0	C	24.4	C	28.1	C	No	--	--
10. I-15 NB Ramps at Cajalco Road	E	AM	24.2	C	5.0	A	6.7	A	No	--	--
		PM	18.6	B	10.2	B	10.4	B	No	--	--
11. Temescal Canyon Road at Cajalco Road	D	AM	30.7	C	49.3	D	**73.2**	**E**	**Yes**	54.5	D
		PM	37.0	D	**62.4**	**E**	**82.6**	**F**	**Yes**	51.7	D
12. Temescal Canyon Road at Dos Lagos Drive	D	AM	19.3	B	23.0	C	23.1	C	No	--	--
		PM	28.4	C	50.8	D	54.7	D	No	--	--

Notes:

- s/v = seconds per vehicle (delay)
- LOS = Level of Service, please refer to *Tables 3-1* and *3-2* for the LOS definitions
- **Bold Delay/LOS values** indicate adverse service levels based on the LOS standards mentioned in this report

[35] *Appendices D* and *F* contain the Delay/LOS calculation worksheets for all study intersections.

9.2 Year 2040 Conditions Roadway Segment Analysis

Table 9-2 summarizes the daily level of service results at the five (5) key study roadway segments during a "typical" weekday for the Year 2040 traffic conditions. The first column (1) of LOS E Capacity values in *Table 9-2* presents the daily roadway segment capacities from the *City of Corona General Plan Technical Background Report Page 3-27, dated March 2004* and *City of Corona Public Works Department Traffic Impact Study Guidelines Exhibit C, dated July 2006*. The second column (2) lists the number of travel lanes and the third column (3) indicates the Existing daily traffic volumes, Volume to Capacity (V/C) ratio and Level of Service (LOS) (which were also presented in *Tables 7-2* and *8-2*). The fourth column (4) forecasts Year 2040 Without Project traffic conditions. The fifth column (5) in *Table 9-2* forecasts the Year 2040 With Project traffic conditions. The sixth column (6) of *Table 9-2* presents the increase in the V/C ratio and indicates whether the roadway segment operates at an adverse level of service based on the LOS standards and the impact criteria defined in this report.

Planned improvements, which are discussed in more detail in *Section 10.0* of this report, have been assumed for the "Year 2040 Without and With Project" scenarios for the roadway segments listed below:

- 2. Temescal Canyon Road, between El Cerrito Road and Tom Barnes Street
- 5. Cajalco Road, between I-15 NB Ramps and Temescal Canyon Road

9.2.1 *Year 2040 Without Project Traffic Conditions*

Review of column (4) of *Table 9-2* indicates that for the Year 2040 Without Project traffic conditions, one (1) of the five (5) key study roadway segments is forecast to operate at unacceptable levels of service on a daily basis when compared to the LOS standards defined in this report. The remaining four (4) key study roadway segments are forecast to operate at acceptable levels of service on daily basis. The roadway segment operating at adverse levels of service is:

		Daily	
Key Roadway Segment	**Volume**	**V/C Ratio**	**LOS**
2. Temescal Canyon Rd, between El Cerrito Rd and Tom Barnes St	31,881	0.935	E

9.2.2 *Year 2040 With Project Traffic Conditions*

Review of column (5) of *Table 9-2* indicates that for the Year 2040 With Project traffic conditions, two (2) of the five (5) key study roadway segments are forecast to operate at unacceptable levels of service on a daily basis when compared to the LOS standards defined in this report. The remaining three (3) key study roadway segments are forecast to operate at acceptable levels of service on a daily basis. The roadway segments operating at adverse levels of service are:

		Daily	
Key Roadway Segment	**Volume**	**V/C Ratio**	**LOS**
2. Temescal Canyon Rd, between El Cerrito Rd and Tom Barnes St	33,368	0.979	E
3. Tom Barnes St, between Tuscany St and Temescal Canyon Rd	10,474	0.806	D

To determine if the Project creates a significant impact, these adverse roadway segments are further analyzed under peak hour conditions to determine if there are any peak hour deficiencies. As presented in ***Table 9-3***, these adverse roadway segments are forecast to operate at LOS B or better during the AM and PM peak hours. As a result, the key study roadway segments are not significantly impacted by Year 2040 With Project traffic and therefore no improvements are required. It should be noted that while the Project does not significantly impact the roadway segment of Temescal Canyon Road between El Cerrito Road and Tom Barnes Street, the County of Riverside has requested that the Project contribute a fair share towards the proposed Temescal Canyon widening project to be implemented by the County of Riverside. Consequently, the City has indicated that the applicable Project TUMF fees are expected to be applied to the proposed Temescal Canyon widening project.

TABLE 9-2

YEAR 2040 CONDITIONS DAILY ROADWAY SEGMENT CAPACITY ANALYSIS SUMMARY

Key Roadway Segment	Type of Arterial	(1) LOS E Capacity[36] (VPD)	(2) Lanes	(3) Existing Traffic Conditions			(4) Year 2040 Without Project Traffic Conditions			(5) Year 2040 With Project Traffic Conditions			(6) Adverse Condition	
				Daily Volume	V/C Ratio	LOS	Daily Volume	V/C Ratio	LOS	Daily Volume	V/C Ratio	LOS	V/C Inc.	Yes/ No
1. El Cerrito Road, between I-15 NB Ramps and Ontario Ave/Temescal Canyon Rd	Major Arterial	34,100	4D	9,709	0.285	A	12,188	0.357	A	13,262	0.389	A	0.032	No
2. Temescal Canyon Road, between El Cerrito Road and Tom Barnes Street	Major Arterial	34,100	4D	**19,616**	**1.509**	**F**	**31,881**	**0.935**	**E**	**33,368**	**0.979**	**E**	**0.044**	**Yes**
3. Tom Barnes Street, between Tuscany Street and Temescal Canyon Road	Collector	13,000	2U	5,831	0.449	A	6,347	0.488	A	**10,474**	**0.806**	**D**	**0.318**	**Yes**
4. Temescal Canyon Road, between Tom Barnes Street and Cajalco Road	Major Arterial	34,100	4D	15,911	0.467	A	27,804	0.815	D	30,444	0.893	D	0.078	No
5. Cajalco Road, between I-15 NB Ramps and Temescal Canyon Road	Urban Arterial	53,900	6D	24,408	0.555	A	31,859	0.591	A	33,832	0.628	B	0.037	No

Notes:

- VPD = Vehicles Per Day
- D = Divided; U = Undivided
- V/C = Volume to Capacity Ratio
- LOS = Level of Service, please refer to *Table 3-3* for the LOS definitions
- **Bold "V/C"/LOS values** indicate adverse service levels based on the LOS standards mentioned in this report

[36] Source: *City of Corona General Plan Technical Background Report Page 3-27, dated March 2004* and *City of Corona Public Works Department Traffic Impact Study Guidelines Exhibit C, dated July 2006.*

TABLE 9-3

YEAR 2040 CONDITIONS PEAK HOUR ROADWAY SEGMENT CAPACITY ANALYSIS SUMMARY

Key Roadway Segment	Type of Arterial	Approach	Time Period	(1) Link Capacity (VPHPL)	(2) Lanes	(3) Total Link Capacity (VPH)	(4) Year 2022 With Project Traffic Conditions		
							Peak Hour Volume	V/C Ratio	LOS
2. Temescal Canyon Road, between El Cerrito Road and Tom Barnes Street	Major Arterial	Northbound	AM	1,600	2	3,200	1,479	0.462	A
			PM	1,600	2	3,200	1,923	0.601	B
		Southbound	AM	1,600	2	3,200	814	0.254	A
			PM	1,600	2	3,200	2,057	0.643	B
3. Tom Barnes Street, between Tuscany Street and Temescal Canyon Road	Collector	Eastbound	AM	1,600	1	1,600	109	0.068	A
			PM	1,600	1	1,600	572	0.358	A
		Westbound	AM	1,600	1	1,600	405	0.253	A
			PM	1,600	1	1,600	380	0.238	A

Notes:

- VPHPL = Vehicles Per Hour Per Lane
- VPH = Vehicles Per Hour
- V/C = Volume to Capacity Ratio
- LOS = Level of Service, please refer to *Table 3-3* for the LOS definitions

10.0 RECOMMENDED IMPROVEMENTS

For those intersections and roadway segments where projected traffic volumes are expected to result in significant impacts, this report recommends improvements that change the intersection and roadway segments geometry to increase capacity. These capacity improvements involve roadway widening and re-striping to reconfigure (add lanes) roadways to specific approaches of a key intersection and roadway segments. The identified improvements are expected to:

- Address the impact of existing traffic, Project traffic and future non-project (ambient traffic growth and cumulative projects) traffic, and
- Improve Levels of Service to an acceptable range and to pre-project conditions.

Figures 10-1 and ***10-2*** present the planned and recommended improvements and intersection controls at the key study intersections for the Year 2022 and Year 2040, respectively. These are discussed in more detail in the sections below.

10.1 Planned Improvements

10.1.1 *Year 2022 Planned Improvements*

The planned improvements listed below are anticipated to be completed in Year 2022 and have been assumed in the Year 2022 Without Project and Year 2022 With Project traffic conditions.

10.1.1.1 Intersections

The Year 2022 network planned improvements for intersections are as follows:

- Intersection 4. I-15 SB Ramps at El Cerrito Road: Widen and restripe the west leg to provide the eastbound approach with an exclusive right-turn lane. Modify the existing traffic signal.
- Intersection 9. I-15 SB Ramps at Cajalco Road: Widen and restripe the north leg to provide the southbound approach with a second and third exclusive left-turn lane and a second exclusive right-turn lane. Widen and restripe the northbound departure to provide a second lane. Widen and restripe the west leg to provide the eastbound approach with a second exclusive left-turn and a second through lane. Widen and restripe the westbound departure to provide a second and third lane. Widen and restripe the east leg to provide the westbound approach with a second through lane. Widen and restripe the eastbound departure to provide a second lane. Modify the existing traffic signal. These improvements are in conjunction with the I-15/Cajalco Road Interchange Improvement Project.
- Intersection 10. I-15 NB Ramps at Cajalco Road: Remove the north leg and realign the on-ramp to the west of the intersection. Widen and restripe the south leg to provide the northbound approach with a second exclusive left-turn lane and a second exclusive right-turn lane. Widen and restripe to provide two southbound departure lanes for the hook on-ramp. Widen and restripe the west leg to provide the eastbound approach with two additional through lanes and an exclusive right-turn lane, and

remove the exclusive left-turn lane. Widen and restripe the westbound departure to provide two additional through lanes. Widen and restripe the east leg to provide the westbound approach with three additional through lanes and remove the exclusive right-turn lane. Widen and restripe the eastbound departure to provide a third through lane. Modify the existing traffic signal. These improvements are in conjunction with the I-15/Cajalco Road Interchange Improvement Project.

10.1.1.2 Roadway Segments

The Year 2022 network planned improvements for roadway segments are as follows:

- Roadway Segment 5. Cajalco Road, *between* I-15 NB Ramps and Temescal Canyon Road: Widen from an urban arterial with five (5) lanes divided to an urban arterial with six (6) lanes divided. This improvement is in conjunction with the I-15/Cajalco Road Interchange Improvement Project.

10.1.2 *Year 2040 Planned Improvements*

The planned improvements listed below are anticipated to be completed in Year 2040 and have been assumed in the Year 2040 Without Project and Year 2040 With Project traffic conditions.

10.1.2.1 Intersections

The Year 2040 network planned improvements for intersections are as follows:

- Intersection 1. I-15 SB Ramps at Ontario Avenue: Widen and restripe the west leg to provide the eastbound approach with a third through lane. Widen and restripe the westbound departure to provide a third lane. Widen and restripe the east leg to provide the westbound approach with a third through lane. Widen and restripe the eastbound departure to provide a third lane. Modify the existing traffic signal. These improvements will be implemented in conjunction with the proposed I-15/Ontario Avenue Interchange Improvement Project.
- Intersection 2. I-15 NB Ramps at Ontario Avenue: Restripe the south leg to provide a shared northbound left-turn/through/right-turn lane. Widen and restripe the west leg to provide the eastbound approach with a second through lane. Widen and restripe the westbound departure to provide a third lane. Widen and restripe the east leg to provide the westbound approach with a third through lane. Restripe the eastbound departure to provide a second lane. Modify the existing traffic signal. These improvements will be implemented in conjunction with the proposed I-15/Ontario Avenue Interchange Improvement Project.
- Intersection 3. State Street at Ontario Avenue: Widen and restripe the east leg to provide the westbound approach with an exclusive through lane. This improvement is in conjunction with the Temescal Canyon Road Improvement Project.
- Intersection 6. Ontario Avenue/Temescal Canyon Road at El Cerrito Road: Widen and restripe the south leg to provide the northbound approach with a second through lane. Widen and restripe the southbound departure to provide a second through lane.

Widen and restripe the north leg to provide the northbound departure with a second through lane. Modify the existing traffic signal. This improvement is in conjunction with the Temescal Canyon Road Improvement Project.

- Intersection 7. Temescal Canyon Road at Minnesota Road: Widen and restripe the south leg to provide the northbound approach with a second through lane. Restripe the shared northbound left-turn/through lane to an exclusive northbound left-turn lane. Widen and restripe the southbound departure to provide a second through lane. Widen and restripe the north leg to provide the southbound approach with a second through lane. Widen and restripe the northbound departure with a second through lane. Modify the existing traffic signal. This improvement is in conjunction with the Temescal Canyon Road Improvement Project.
- Intersection 8. Temescal Canyon Road at Tom Barnes Street: Restripe the south leg to provide the northbound approach with a through lane. Restripe the north leg to provide the northbound departure with a second through lane. Modify the existing traffic signal. This improvement is in conjunction with the Temescal Canyon Road Improvement Project.
- Intersection 11. Temescal Canyon Road at Cajalco Road: Restripe the south leg to convert the northbound through/right-turn lane to an exclusive right-turn lane. Restripe the north leg to provide the southbound approach with a second exclusive southbound left-turn lane. Restripe the west leg and provide the eastbound approach with a second through lane. Widen and restripe the east leg to provide the westbound approach with a second exclusive westbound left-turn lane and a second westbound departure lane. Modify the existing traffic signal.

10.1.2.2 Roadway Segments

The Year 2040 network planned improvements for roadway segments are as follows:

- Roadway Segment 2. Temescal Canyon Road, *between* El Cerrito Road and Tom Barnes Street: Widen from a collector with two (2) lanes undivided to a major arterial with four (4) lanes divided. This improvement is in conjunction with the Temescal Canyon Road Improvement Project.

10.2 Recommended Improvements

10.2.1 *Existing With Project Traffic Conditions*

10.2.1.1 Intersections

The results of the roadway segment analyses for Existing With Project traffic conditions indicate that the proposed Project is not forecast to have a significant impact at any of the twelve (12) key study intersections. As there are no significant impacts, no traffic mitigation measures are required under this traffic scenario.

10.2.1.2 Roadway Segments

The results of the roadway segment analyses for Existing With Project traffic conditions indicate that the proposed Project is not forecast to have a significant impact at any of the five (5) key roadway segments. As there are no significant impacts, no traffic mitigation measures are required under this traffic scenario.

10.2.2 *Year 2022 With Project Traffic Conditions*

10.2.2.1 Intersections

The results of the Year 2022 With Project traffic conditions level of service analyses indicate that the proposed Project will significantly impact two (2) of the of twelve (12) key study intersections. The remaining ten (10) key study intersections are forecast to operate at acceptable levels of service under the Year 2022 With Project traffic conditions. The improvements listed below have been identified to address the traffic impacts at the intersections significantly impacted by the Year 2022 With Project traffic:

- Intersection 3. State Street at Ontario Avenue: Stripe crosswalks on all legs. Install a traffic signal and design for five-phase operation with protected left-turn phasing on Ontario Avenue. It should be noted that the intersection of State Street at Ontario Avenue is in the City's Fee Program as a master-planned traffic signal to be installed by the City.
- Intersection 11. Temescal Canyon Road at Cajalco Road: Modify the existing traffic signal to install eastbound right-turn overlap phasing.

10.2.2.2 Roadway Segments

The results of the roadway segment analyses for Year 2022 With Project traffic conditions indicate that the proposed Project is not forecast to have a significant impact at any of the five (5) key roadway segments. As there are no significant impacts, no traffic mitigation measures are required under this traffic scenario.

10.2.3 *Year 2040 With Project Traffic Conditions*

10.2.3.1 Intersections

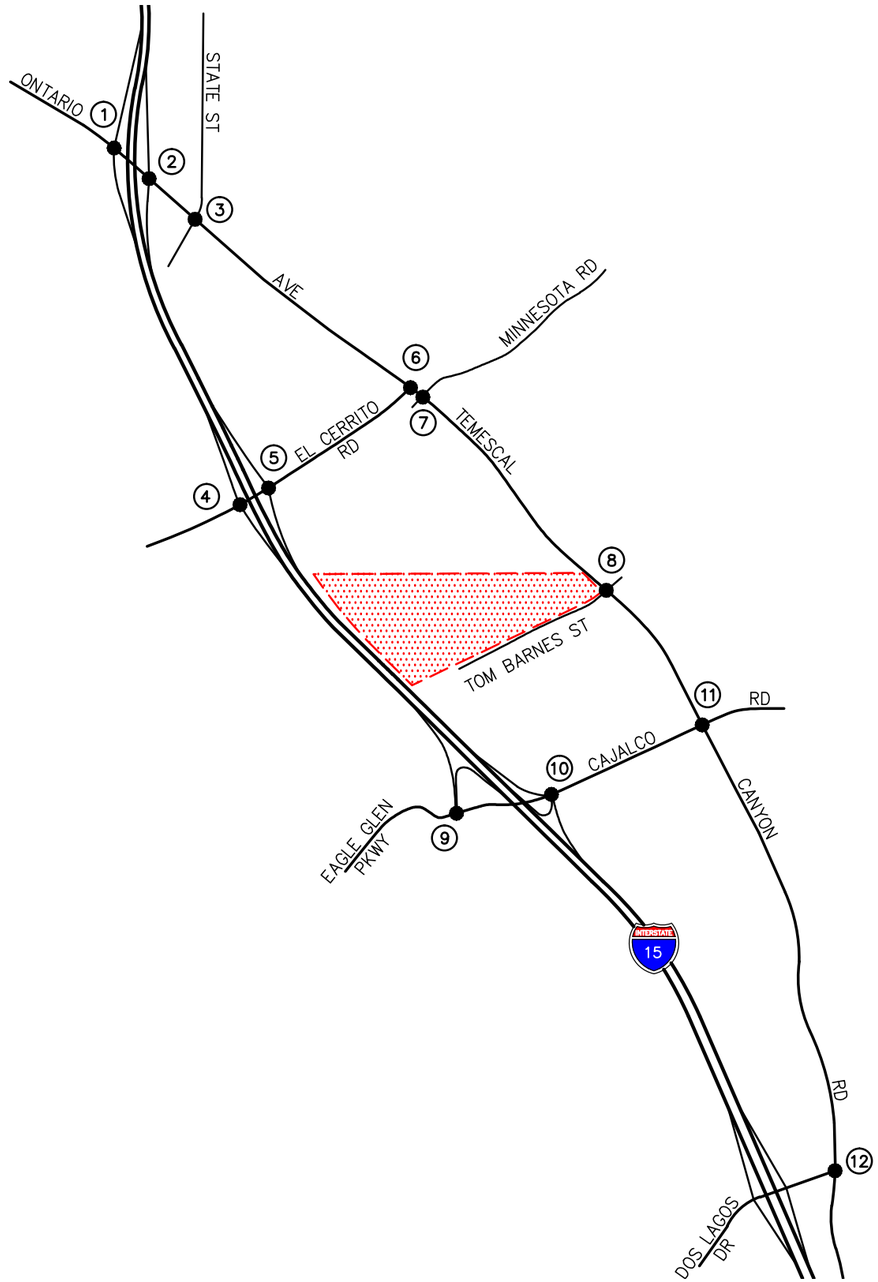
The results of the Year 2040 With Project traffic conditions level of service analyses indicate that the proposed Project will significantly impact three (3) of the of twelve (12) key study intersections. The remaining nine (9) key study intersections are forecast to operate at acceptable levels of service under the Year 2040 With Project traffic conditions. The improvements listed below have been identified to address the traffic impacts at the intersections significantly impacted by the Year 2040 With Project traffic:

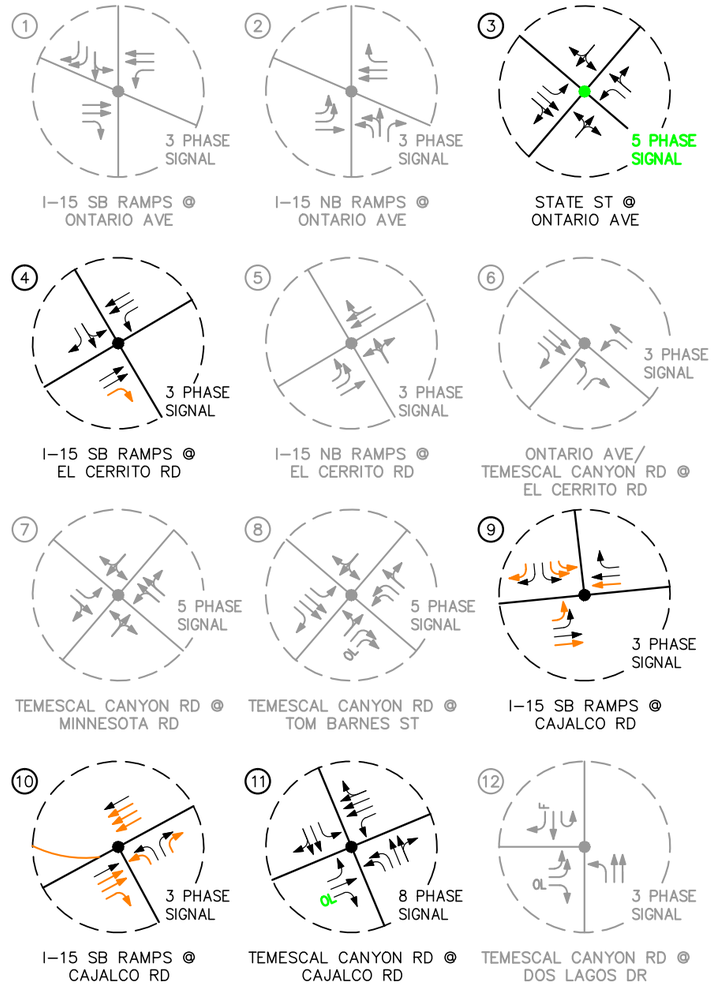
- Intersection 3. State Street at Ontario Avenue: Stripe crosswalks on all legs. Install a traffic signal and design for five-phase operation with protected left-turn phasing on Ontario Avenue. It should be noted that the intersection of State Street at Ontario Avenue is in the City's Fee Program as a master-planned traffic signal to be installed by the City.

- Intersection 6. Ontario Avenue/Temescal Canyon Road at El Cerrito Road: Modify the existing traffic signal to provide eastbound right-turn overlap phasing.
- Intersection 11. Temescal Canyon Road at Cajalco Road: Restripe the west leg to provide the eastbound approach with a second exclusive eastbound left-turn lane. Modify the existing traffic signal to install eastbound right-turn overlap phasing and northbound right-turn overlap phasing.

10.2.3.2 Roadway Segments

The results of the roadway segment analyses for Year 2040 With Project traffic conditions indicate that the proposed Project is not forecast to have a significant impact at any of the five (5) key roadway segments. As there are no significant impacts, no traffic mitigation measures are required under this traffic scenario.





LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

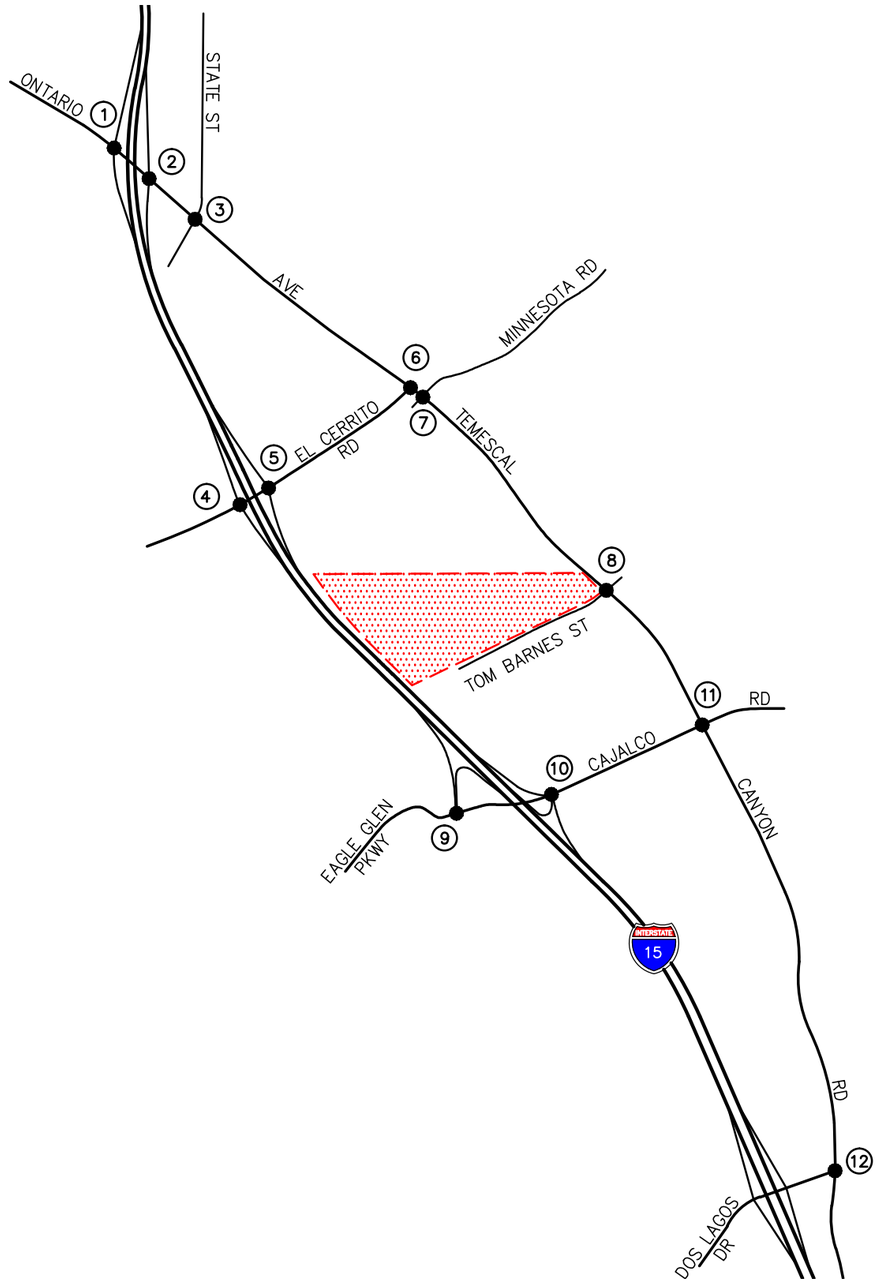
KEY

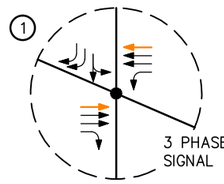
= APPROACH LANE ASSIGNMENT
= YEAR 2022 WITH PROJECT PLANNED IMPROVEMENTS
= YEAR 2022 WITH PROJECT RECOMMENDED IMPROVEMENTS
= TRAFFIC SIGNAL, = STOP SIGN
OL = OVERLAP, F = FREE RIGHT-TURN

FIGURE 10-1

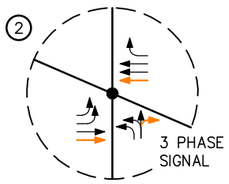
YEAR 2022 WITH PROJECT PLANNED AND RECOMMENDED IMPROVEMENTS

LATITIUDE BUSINESS PARK, CORONA

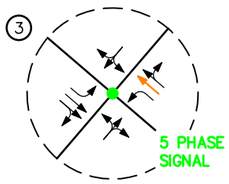




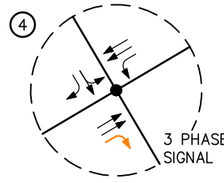
I–15 SB RAMPS @ ONTARIO AVE



I–15 NB RAMPS @ ONTARIO AVE

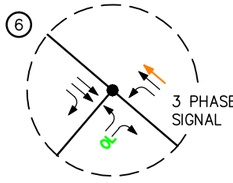


STATE ST @ ONTARIO AVE

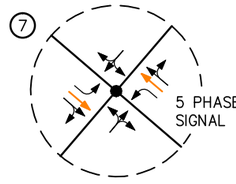


I–15 SB RAMPS @ EL CERRITO RD

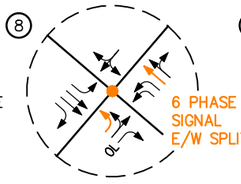
I–15 NB RAMPS @ EL CERRITO RD



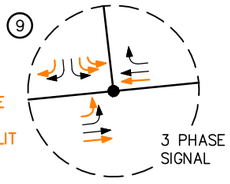
ONTARIO AVE/ TEMESCAL CANYON RD @ EL CERRITO RD



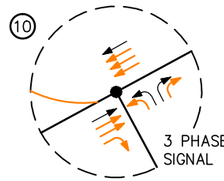
TEMESCAL CANYON RD @ MINNESOTA RD



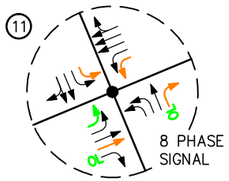
TEMESCAL CANYON RD @ TOM BARNES ST



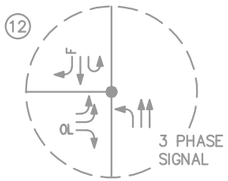
I–15 SB RAMPS @ CAJALCO RD



I–15 SB RAMPS @ CAJALCO RD



TEMESCAL CANYON RD @ CAJALCO RD



TEMESCAL CANYON RD @ DOS LAGOS DR

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

= APPROACH LANE ASSIGNMENT
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= YEAR 2040 WITH PROJECT RECOMMENDED IMPROVEMENTS
= TRAFFIC SIGNAL, = STOP SIGN
OL = OVERLAP, F = FREE RIGHT–TURN

FIGURE 10–2

YEAR 2040 WITH PROJECT PLANNED AND RECOMMENDED IMPROVEMENTS

LATITIUDE BUSINESS PARK, CORONA

11.0 TRAFFIC SIGNAL WARRANT ANALYSIS

The level of service analyses at the key unsignalized impacted study intersections that are recommended to be signalized are supplemented with an assessment of the need for signalization of the intersections. This assessment is made on the basis of signal warrant criteria adopted by Caltrans. For this study, the need for signalization is assessed on the basis of the peak-hour traffic signal warrant. Warrant #3 described in the *California Manual on Uniform Traffic Control Devices (MUTCD).* Warrant #3 has two parts: 1) Part A evaluates peak hour vehicle delay for traffic on the minor street approach with the highest delay and 2) Part B evaluates peak-hour traffic volumes on the major and minor streets. This method provides an indication of whether peak-hour traffic conditions or peak-hour traffic volume levels are, or would be, sufficient to justify installation of a traffic signal. Other traffic signal warrants are available, however, they cannot be checked under future conditions because they rely on data for which forecasts are not available (such as accidents, pedestrian volume, and four- or eight-hour vehicle volumes).

The decision to install a traffic signal should not be based purely on the warrants alone. Instead, the installation of a signal should be considered and further analysis performed when one or more of the warrants are satisfied. Additionally, engineering judgment is exercised on a case-by-case basis to evaluate the effect a traffic signal will have on certain types of accidents and traffic conditions at the subject intersection as well as at adjacent intersections.

11.1 Year 2022 With Project Traffic Conditions

The results of the peak-hour traffic signal warrant analysis for the Year 2022 With Project traffic conditions are summarized in column (1) of *Table 11-1*. The results indicate that the following one (1) key unsignalized impacted intersection has future traffic conditions that would exceed the volume thresholds of Warrant #3, Part B for the PM peak hour:

- 3. State Street at Ontario Avenue

The analysis and the recommended improvements show that the above-mentioned one (1) intersection in the Year 2022 With Project traffic conditions is recommended to be signalized. With signalization of this intersection, which is warranted, this intersection is forecast to operate at acceptable service levels during the AM and PM peak hours. Thus, it is concluded from *Table 11-1* that traffic signal is justified at the location.

The Year 2022 With Project Traffic Conditions Traffic Signal Warrant Analysis worksheets are contained in ***Appendix G***.

11.2 Year 2040 With Project Traffic Conditions

The results of the peak-hour traffic signal warrant analysis for the Year 2040 With Project traffic conditions are summarized in column (2) of *Table 11-1*. The results indicate that the following one (1) key unsignalized impacted intersection has future traffic conditions that would exceed the volume thresholds of Warrant #3, Part B for the PM peak hour:

- 3. State Street at Ontario Avenue

The analysis and the recommended improvements show that the above-mentioned one (1) intersection in the Year 2040 With Project traffic conditions is recommended to be signalized. With signalization of this intersection, which is warranted, this intersection is forecast to operate at acceptable service levels during the AM and PM peak hours. Thus, it is concluded from *Table 11-1* that traffic signal is justified at the location.

The Year 2040 With Project Traffic Conditions Traffic Signal Warrant Analysis worksheets are contained in *Appendix G*.

TABLE 11-1

INTERSECTION TRAFFIC SIGNAL WARRANT ANALYSIS SUMMARY[37]

Key Intersection	Time Period	(1) Year 2022 With Project Traffic Conditions		(2) Year 2040 With Project Traffic Conditions	
		Part A of Warrant 3 Satisfied?	**Part B of Warrant 3 Satisfied?**	**Part A of Warrant 3 Satisfied?**	**Part B of Warrant 3 Satisfied?**
3. State Street at Ontario Avenue	AM	No	**Yes**	No	**Yes**
	PM	No	**Yes**	No	**Yes**

Notes:

- Signal Warrant checks based on Warrant 3, Part A - Peak-Hour Delay Warrant and Part B - Peak-Hour Volume Warrant contained in the *California MUTCD.*

[37] *Appendix G* contains the Traffic Signal Warrant Analysis worksheets for the key unsignalized impacted study intersections.

12.0 PROJECT FAIR SHARE ANALYSIS

The transportation impacts associated with the development of the proposed Project were determined based on the future conditions analysis with and without the proposed Project. The key study locations forecast to operate at adverse levels of service are discussed below. As such, the proposed Project's "fair-share" of the recommended traffic improvements has been calculated for the key study locations that are forecast to operate at adverse levels of service in the Year 2022 and Year 2040 traffic conditions.

12.1 Existing With Project Traffic Conditions

12.1.1 *Intersections*

None of the twelve (12) key study intersections are forecast to have a significant impact under Existing With Project traffic conditions when compared to the LOS criteria defined in this report. As there are no significant impacts, no Project fair share calculation is needed.

12.1.2 *Roadway Segments*

The results of the roadway segment analyses indicate that the proposed Project is not forecast to have a significant impact at any of the five (5) key roadway segments for the Existing With Project traffic conditions. As there are no significant impacts, no Project fair share calculation is needed.

12.2 Year 2022 With Project Traffic Conditions

12.2.1 *Intersections*

Table 12-1 presents the AM and PM peak hour Project fair share percentage at the key study intersections that are forecast to operate at adverse levels of service in the Year 2022 With Project traffic conditions. As presented in *Table 12-1*, the first column (1) presents the increase in intersection delay due to Project traffic only. The second column (2) presents the total intersection delay of the intersection. The third column (3) presents the acceptable LOS delay as defined in *Chapter 19 of the Highway Capacity Manual 6*. The fourth column (4) represents the Project's fair share based on the following formula:

- Project Fair Share (4) = Column (1)/[Column (2) – Column (3)]*100

The Project fair share percentage (worse time period impacted) for the two (2) impacted intersections for the Year 2022 With Project traffic conditions are shown below:

- 3. State Street at Ontario Avenue 34.92%
- 11. Temescal Canyon Road at Cajalco Road 100.00%[38]

12.2.2 *Roadway Segments*

The results of the roadway segment analyses indicate that the proposed Project is not forecast to have a significant impact at any of the five (5) key roadway segments for the Year 2022 With Project traffic conditions. As there are no significant impacts, no Project fair share calculation is needed.

[38] Project Fair Share responsibility greater than 100.00% shown as 100.00%.

12.3 Year 2040 With Project Traffic Conditions

12.3.1 *Intersections*

Table 12-2 presents the AM and PM peak hour Project fair share percentage at the key study intersections that are forecast to operate at adverse levels of service in the Year 2040 With Project traffic conditions and is similar in set up to *Table 12-1*.

The Project fair share percentage (worse time period impacted) for the three (3) impacted intersections for the Year 2040 With Project traffic conditions are shown below:

- 3. State Street at Ontario Avenue 24.43%
- 6. Ontario Ave/Temescal Canyon Rd at El Cerrito Road 21.67%
- 11. Temescal Canyon Road at Cajalco Road 100.00%[39]

12.3.2 *Roadway Segments*

The results of the roadway segment analyses indicate that the proposed Project is not forecast to have a significant impact at any of the five (5) key roadway segments for the Year 2040 With Project traffic conditions. As there are no significant impacts, no Project fair share calculation is needed.

[39] Project Fair Share responsibility greater than 100.00% shown as 100.00%.

TABLE 12-1

YEAR 2022 WITH PROJECT TRAFFIC CONDITIONS INTERSECTION FAIR SHARE CONTRIBUTION

Key Intersection		Impacted Time Period	(1) Project Only Delay Increase (s/v)	(2) Total Delay of Intersection (s/v)	(3) Maximum Acceptable Delay at LOS D (s/v)	(4) Project Fair Share Responsibility
3.	State Street at	AM	3.7	49.5	35.0	25.52%
	Ontario Avenue	PM	2.2	41.3	35.0	**34.92%**
11.	Temescal Canyon Road at	AM	--	--	--	--
	Cajalco Road	PM	9.3	58.0	55.0	**100.00% (310.00%)**[40]

Notes:

- Net Project Percent Increase (4) = Column (1) / [Column (2) – Column (3)]
- **Bold Project Fair Share Responsibility** is based on worse case

[40] Project Fair Share responsibility greater than 100.00% shown as 100.00%.

TABLE 12-2

YEAR 2040 WITH PROJECT TRAFFIC CONDITIONS INTERSECTION FAIR SHARE CONTRIBUTION

Key Intersection		Impacted Time Period	(1) Project Only Delay Increase (s/v)	(2) Total Delay of Intersection (s/v)	(3) Maximum Acceptable Delay at LOS D (s/v)	(4) Project Fair Share Responsibility
3.	State Street at	AM	3.2	48.1	35.0	**24.43%**
	Ontario Avenue	PM	4.2	53.9	35.0	22.22%
6.	Ontario Ave/Temescal Canyon Rd at	AM	--	--	--	--
	El Cerrito Road	PM	4.4	75.3	55.0	**21.67%**
11.	Temescal Canyon Road at	AM	23.9	73.2	55.0	**100.00% (131.32%)**[41]
	Cajalco Road	PM	20.2	82.6	55.0	73.19%

Notes:

- Net Project Percent Increase (4) = Column (1) / [Column (2) – Column (3)]
- **Bold Project Fair Share Responsibility** is based on worse case

[41] Project Fair Share responsibility greater than 100.00% shown as 100.00%.

13.0 SITE ACCESS AND INTERNAL CIRCULATION EVALUATION

13.1 Site Access

As seen in *Figure 2-2*, access to the proposed Project site will be provided via one (1) full access driveway at the existing intersection of Grand Oaks at Tom Barnes Street. Three (3) full access driveways will be provided along a new public street cul-de-sac on the westerly border of the Project site that will connect to the existing intersection of Tuscany Street at Tom Barnes Street. As a result of the site access analyses, the Project proposes to convert the two (2) existing intersections along Tom Barnes Street to all-way stop controlled intersections.

Table 13-1 summarizes the intersection operations at the Project driveways for Existing With Project, Year 2022 With Project, and Year 2040 With Project traffic conditions. The operations analysis for the Project driveways is based on the *Highway Capacity Manual 6th Edition* (HCM 6) methodology for unsignalized intersections.

13.1.1 *Existing With Project Traffic Conditions*

As shown in column (1) of *Table 13-1*, the two (2) Project driveways are forecast to operate at acceptable levels of service LOS B or better during the AM and PM peak hours under the Existing With Project traffic conditions. ***Appendix H*** contains the Delay/LOS calculation worksheets for the Existing With Project Traffic Conditions.

13.1.2 *Year 2022 With Project Traffic Conditions*

As shown in column (2) of *Table 13-1*, the two (2) Project driveways are forecast to operate at acceptable levels of service LOS B or better during the AM and PM peak hours under the Year 2022 With Project traffic conditions. *Appendix H* contains the Delay/LOS calculation worksheets for the Year 2022 With Project Traffic Conditions.

13.1.3 *Year 2040 With Project Traffic Conditions*

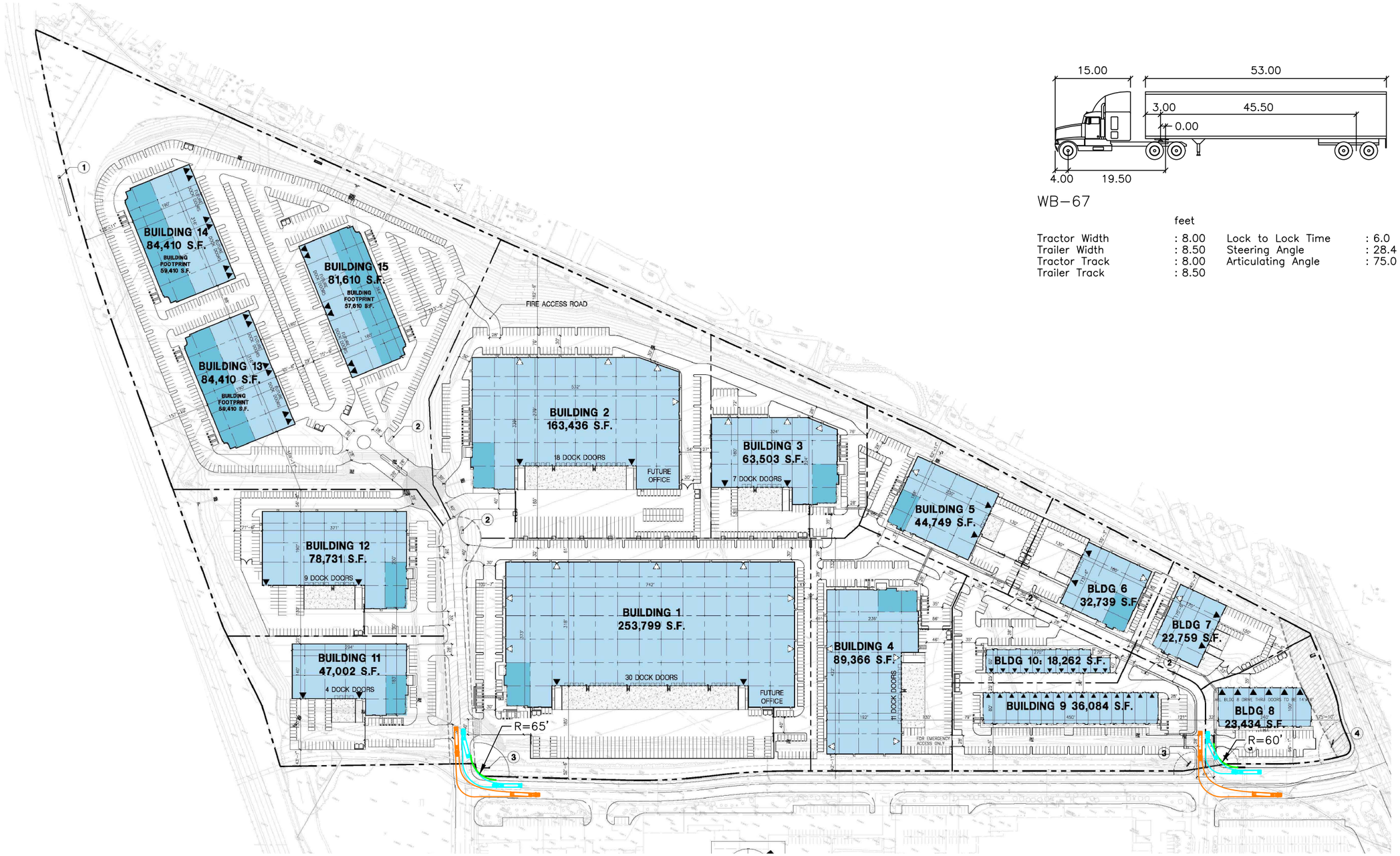
As shown in column (3) of *Table 13-1*, the two (2) Project driveways are forecast to operate at acceptable levels of service LOS B or better during the AM and PM peak hours under the Year 2040 With Project traffic conditions. *Appendix H* contains the Delay/LOS calculation worksheets for the Year 2040 With Project Traffic Conditions.

13.2 Internal Circulation Evaluation

The on-site circulation layout of the proposed Project as illustrated in *Figure 2-2* on an overall basis is adequate. A circulation evaluation was performed using the *Turning Vehicle Templates*, developed by Jack E. Leisch & Associates and *AutoTURN for AutoCAD* computer software that simulates turning maneuvers for various types of vehicles. The turning template was utilized to ensure that a large delivery truck (WB-67) could properly access and circulate through the Project site. ***Figure 13-1*** presents the turning movements required for a WB-67 truck.

In order to accommodate the ingress westbound right-turn turning movement requirements of a WB-67 design truck into the Project site, the Project site plan needs to incorporate a curb return radii of

65 feet on the northeast corner of Project Driveway 1 at Tom Barnes Street and a curb return radii of 60 feet on the northeast corner of Project Driveway 2 at Tom Barnes Street.



WB–67

	feet		
Tractor Width	: 8.00	Lock to Lock Time	: 6.0
Trailer Width	: 8.50	Steering Angle	: 28.4
Tractor Track	: 8.00	Articulating Angle	: 75.0
Trailer Track	: 8.50		

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LINSCOTT LAW & GREENSPAN engineers

NO SCALE

SOURCE: HPA ARCHITECTS

FIGURE 13–1

WB–67 TRUCK TURNING ANALYSIS

LATITUDE BUSINESS PARK, CORONA

TABLE 13-1

PEAK HOUR PROJECT DRIVEWAY CAPACITY ANALYSIS SUMMARY[42]

Key Intersection		Time Period	(1) Existing With Project Traffic Conditions		(2) Year 2022 With Project Traffic Conditions		(3) Year 2040 With Project Traffic Conditions	
			Delay (s/v)	**LOS**	**Delay (s/v)**	**LOS**	**Delay (s/v)**	**LOS**
A.	Project Driveway 1 at Tom Barnes Street	AM	8.0	A	8.0	A	8.0	A
		PM	9.4	A	9.5	A	9.5	A
B.	Project Driveway 2 at Tom Barnes Street	AM	11.4	B	11.4	B	11.4	B
		PM	13.9	B	14.6	B	14.6	B

Notes:

- s/v = seconds per vehicle (delay)
- LOS = Level of Service, please refer to *Table 3-2* for the LOS definitions
- **Bold Delay/LOS values** indicate adverse service levels based on the LOS standards mentioned in this report

[42] *Appendix H* contains the Delay/LOS calculation worksheets for the Project driveways.

14.0 INTERSECTION QUEUE LENGTH ANALYSIS

To address City staff concerns regarding stacking/storage lengths at several locations, a queuing evaluation was prepared for the following movements:

- Temescal Canyon Road at Tom Barnes Street
  - Eastbound Left-Turn/Through
  - Eastbound Right-Turn

Table 14-1 identifies the minimum required stacking/storage lengths for affected left-turn lanes for the study intersections for the Existing With Project, Year 2022 With Project, and Year 2040 traffic conditions. Column (1) shows the existing storage length per lane, in feet. Column (2) shows the queue (in feet per lane) and indicates whether or not the existing storage is sufficient based on the calculated 95th percentile queue for Existing With Project traffic conditions. Column (3) shows the queue (in feet per lane) and indicates whether or not the existing storage is sufficient based on the calculated 95th percentile queue for Year 2022 With Project traffic conditions. Column (4) shows the proposed storage length with planned improvements for Year 2040 With Project traffic conditions, in feet. Column (5) shows the queue (in feet per lane) and indicates whether or not the existing storage is sufficient based on the calculated 95th percentile queue for Year 2040 With Project traffic conditions.

14.1 Existing With Project Intersection Queuing Evaluation

As presented in Column (2) of *Table 14-1* under Existing With Project traffic conditions, the existing eastbound left-turn/through storage of 130 feet is <u>not</u> sufficient in the PM peak hour at the intersection of Temescal Canyon Road at Tom Barnes Street.

14.2 Year 2022 With Project Intersection Queuing Evaluation

As presented in Column (3) of *Table 14-1* under Year 2022 With Project traffic conditions, the existing eastbound left-turn/through storage of 130 feet is <u>not</u> sufficient to accommodate the forecast peak queue of 283 feet in the PM peak hour. As a result, it is recommended that the eastbound approach be restriped to extend the existing left-turn/through pocket into the No. 1 eastbound through lane, which will create an eastbound left-turn/through storage of 360 feet.

14.3 Year 2040 With Project Intersection Queuing Evaluation

As presented in Column (5) of *Table 14-1* under Year 2040 With Project traffic conditions, the eastbound storage is sufficient for all lanes to accommodate the forecast peak queues with the addition of planned improvements that would create a combined storage of 490 feet for the eastbound left-turn and through movements. These improvements would include to restriping the west leg to provide the eastbound approach with an exclusive eastbound left-turn lane, a shared eastbound left-turn/through lane, and an exclusive eastbound right-turn lane and removing the crosswalk along the south leg. The existing traffic signal is recommended to be modified to include split phasing for the east/west direction.

While not specifically included in *Table 14-1*, it should be noted that at the intersection of Temescal Canyon Road at Cajalco Road the 95th percentile northbound left turn queue can be reduced from approximately 580 feet to 380 feet with the restriping of the northbound approach to provide three left-turn lanes, one through lane, and one northbound exclusive right-turn lane.

TABLE 14-1

INTERSECTION QUEUE LENGTH ANALYSIS[43]

Key Intersection	Approach	Time Period	(1) Existing Storage Length Per Lane (ft)	(2) Existing With Project Traffic Conditions		(3) Year 2022 With Project Traffic Conditions		(4) Planned Storage Length (ft)	(5) Year 2040 With Project Traffic Conditions	
				95th Percentile Queue (ft/lane)	Existing Storage Sufficient? (yes/no)	95th Percentile Queue (ft/lane)	Existing Storage Sufficient? (yes/no)		95th Percentile Queue (ft/lane)	Existing Storage Sufficient? (yes/no)
8. Temescal Canyon Road at Tom Barnes Street	EBL/EBT	AM	130’	62’	Yes	75’	Yes	490’	30’	Yes
		PM	130’	**270’**	**No**	**283’**	**No**	490’	220’	Yes
	EBR	AM	360’	29’	Yes	34’	Yes	360’	56’	Yes
		PM	360’	71’	Yes	69’	Yes	360’	343’	Yes

[43] *Appendices D, E* and *F* contain the Delay/LOS calculation worksheets which show the 95th percentile queuing.

15.0 STATE BILL (SB) 743 COMPLIANCE

On September 27, 2013, Governor Brown signed Senate Bill (SB) 743. Under SB 743, the focus of transportation analysis pursuant to CEQA will shift from driver delay, or level of service (LOS), to reduction of vehicle miles traveled (VMT), reduction in greenhouse gas emissions, and creation of multimodal networks and promotion of mixed-use developments. In December 2018, the California Natural Resources Agency certified and adopted amendments to the CEQA Guidelines implementing SB743 with a target implementation date of July 1, 2020.

It is our understanding that the City of Corona is in the process of updating the City's Traffic Impact Analysis Guidelines and CEQA Thresholds, in conjunction with the General Plan Circulation Element Update to comply with and implement SB 743, which will likely lead to the adoption of new VMT-based significance thresholds and its subsequent incorporation into the City's CEQA Threshold Guide in 2019. As the project has filed its entitlement application in December of 2018, which is prior to the City's adoption of a VMT threshold, this transportation analysis utilizes LOS as the Lead Agency's applicable methodology and significance threshold. Nonetheless, a VMT analysis has been completed, for informational purposes, under separate cover by Fehr & Peers (May 24, 2019).