

Appendix D

Traffic Impact Analysis Study



TRAFFIC IMPACT ANALYSIS
SHORELINE GATEWAY EAST TOWER
Long Beach, California
October 3, 2016

Prepared for:
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EXECUTIVE SUMMARY

Project Description

- Shoreline Gateway is generally located north of Ocean Boulevard, between Broadway Court and Alamitos Avenue in the City of Long Beach, California. The West Tower site is located on the northeast corner of Broadway Court and Ocean Boulevard at 707 E. Ocean Boulevard. The East Tower (Project) site, which is currently developed as a parking lot, is located on the northwest corner of Alamitos Avenue and Ocean Boulevard at 777 E. Ocean Boulevard.
- The Shoreline Gateway Master Plan, as originally evaluated in the *City of Long Beach Shoreline Gateway EIR Traffic Impact Study, dated May 2006 (revised June 2006), prepared by MMA/Iteris*, consisted of the development of three (3) residential towers with a total of 358 units and 13,561 square-feet (SF) of retail/restaurant floor area. In October 2007, the Supplemental EIR that was prepared for the Shoreline Gateway Master Plan was certified which allowed one of the buildings to be 35-stories tall, with the total unit count remaining at 358 units. The Shoreline Gateway Master Plan was approved in November 2007 by the Planning Commission with approval of a 35-story East Tower, with 221 units, in accordance with the Shoreline Gateway Supplemental EIR completed in October 2007. With the Shoreline Gateway site located within the Downtown Plan planning area, the master plan site was again evaluated in the *Long Beach Downtown Community Plan EIR Traffic Impact Analysis, dated February 4, 2010, prepared by MMA/Iteris*, but with an assumed development total of 365 units and 12,630 SF of retail/restaurant floor area. In May 2013, the City's Planning Commission approved the 17-story West Tower, with 224 units with 9,182 SF of retail/restaurant space, with a finding of "previously assessed" in accordance with the Shoreline Gateway Supplemental EIR and the Downtown Plan Program EIR (the West Tower is now complete, but only 223 units, with 6,502 SF of 9,182 SF of approved retail/restaurant space, was constructed). This changed the overall development total for Shoreline Gateway from 358 to 445 units, an increase of 87 units, or 24% from what was previously analyzed.
- The 35-story East Tower, as now proposed, will include 315 units and 6,711 SF of retail/restaurant space, consisting of 5,731 SF of café/restaurant space and 1,380 SF of retail space. The proposed East Tower unit count of 315 represents an increase of 94 units and 344 SF of retail/restaurant space over the Approved Development of 221 units with 6,367 SF of retail/restaurant floor area. When the proposed modifications to the East Tower are combined with that of the approved West Tower, the Shoreline Gateway Master Plan will have an amended development total of 539 units and 15,893 SF of retail/restaurant floor area.
- Parking for the East Tower is proposed to be provided within a 5-level parking structure with a total of 458 vehicular spaces. Vehicular access to the proposed subterranean garage will be provided via Medio Street.

- The proposed Project is forecast to generate 3,105 daily trips (one half arriving and one half departing), with 181 trips (48 inbound, 133 outbound) produced in the AM peak hour and 278 trips (165 inbound, 113 outbound) produced in the PM peak hour on a “typical” weekday.
- For comparison purposes, the “Approved Development” is forecast to generate 2,474 daily trips (one half arriving and one half departing), with 135 trips (39 inbound, 96 outbound) produced in the AM peak hour and 220 trips (128 inbound, 92 outbound) produced in the PM peak hour on a “typical” weekday.
- When the proposed Project is compared to the “Approved Development”, the proposed Project is forecast to generate 631 more daily trips, 46 more AM peak hour trips and 58 more PM peak hour trips.

Study Area

- The thirty (30) key study intersections selected for evaluation in this report provide local access within the project study area. They consist of the following:
 1. Long Beach Boulevard at 7th Street
 2. Atlantic Avenue at 7th Street
 3. Martin Luther King Jr Ave at 7th Street
 4. Alamitos Avenue at 7th Street
 5. Atlantic Avenue at 6th Street
 6. Alamitos Avenue at 6th Street
 7. Atlantic Avenue at 5th Street
 8. Atlantic Avenue at 4th Street
 9. Atlantic Avenue at 3rd Street
 10. Alamitos Avenue at 3rd Street
 11. Magnolia Avenue at Broadway
 12. Pacific Avenue at Broadway
 13. Pine Avenue at Broadway
 14. Long Beach Boulevard at Broadway
 15. Atlantic Avenue at Broadway
 16. Lime Avenue at Broadway
 17. Alamitos Avenue at Broadway
 18. Atlantic Avenue at 1st Street
 19. Lime Avenue at 1st Street
 20. Alamitos Avenue at 1st Street
 21. Alamitos Avenue at Medio Street
 22. Magnolia Avenue at Ocean Boulevard
 23. Pacific Avenue at Ocean Boulevard
 24. Pine Avenue at Ocean Boulevard
 25. Long Beach Boulevard at Ocean Boulevard
 26. Atlantic Avenue at Ocean Boulevard
 27. Broadway Court at Ocean Boulevard
 28. Alamitos Avenue/Shoreline Drive at Ocean Boulevard
 29. Orange Avenue at Ocean Boulevard
 30. Pine Avenue at Shoreline Drive

Related Projects Description

- The twenty-five (25) cumulative projects are expected to generate a combined total of 41,040 daily trips, 3,157 AM peak hour trips (1,349 inbound and 1,808 outbound) and 3,367 PM peak hour trips (1,793 inbound and 1,574 outbound) on a typical weekday.

Year 2020 Roadway Network Improvements

- Based on information obtained from the City of Long Beach, roadway network changes in the downtown area were applied to the Year 2020 cumulative background setting. The roadway network changes include the conversion of 7th Street and 6th Street to a two-way roadway west of Atlantic Avenue; the conversion of these two streets from one-way flow to two-way traffic flow west to Alamitos Avenue was recently completed by the City over the past year or so.

Traffic Impact Analysis

Existing Traffic Conditions

- For the Existing traffic conditions, all thirty (30) key study intersections currently operate at an acceptable level of service (LOS D or better) during the AM and PM peak hours.

Existing With Project Traffic Conditions

- For the Existing Plus Project traffic conditions, the traffic associated with the proposed Project ***will not*** significantly impact any of the thirty (30) key study intersections. The thirty (30) key study intersections will continue to operate at acceptable LOS D or better during the AM and PM peak hours with the addition of Project generated traffic to existing traffic.

Year 2020 Cumulative Traffic Conditions

- For the Year 2020 Cumulative traffic conditions, the addition of ambient traffic growth and cumulative project traffic, and/or planned roadway network improvements, will cumulatively impact seven (7) of the thirty (30) key study intersections. The remaining intersections are forecast to operate at acceptable service levels in the AM and PM peak hours. The intersections forecast to operate at an adverse level of service in the Year 2020 Cumulative Traffic Conditions during the AM peak hour and/or PM peak hour are as follows:

<u>Key Intersection</u>	<u>AM Peak Hour</u>		<u>PM Peak Hour</u>	
	<u>ICU/HCM</u>	<u>LOS</u>	<u>ICU/HCM</u>	<u>LOS</u>
1. Long Beach Boulevard at 7 th Street	0.950	E	--	--
4. Alamitos Avenue at 7 th Street	0.995	E	1.226	F
10. Alamitos Avenue at 3 rd Street	1.006	F	--	--
17. Alamitos Avenue at Broadway	--	--	0.980	E
22. Magnolia Avenue at Ocean Boulevard	0.944	E	--	--
24. Pine Avenue at Ocean Boulevard	--	--	0.952	E
28. Alamitos Avenue/Shoreline Drive at Ocean Boulevard	0.948	E	0.969	E

Year 2020 Cumulative Plus Project Traffic Conditions

- For the Year 2020 Cumulative Plus Project traffic conditions, the traffic associated with the proposed Project will significantly impact one (1) of the thirty (30) key study intersections. While the intersections of Long Beach Boulevard/7th Street, Alamitos Avenue/3rd Street, Alamitos Avenue/Broadway, Magnolia Avenue/Ocean Boulevard, Pine Avenue/Ocean Boulevard, and Alamitos Avenue/Shoreline Drive/Ocean Boulevard are all forecast to operate at unacceptable service levels in the AM and/or PM peak hours, the proposed Project is expected to add less than 0.020 to the ICU value. The remaining intersections are forecast to operate at acceptable service levels in the AM and PM peak hours. The intersection significantly impacted by the proposed Project under Year 2020 Cumulative traffic conditions is:

<u>Key Intersection</u>	<u>AM Peak Hour</u>		<u>PM Peak Hour</u>	
	<u>ICU/HCM</u>	<u>LOS</u>	<u>ICU/HCM</u>	<u>LOS</u>
4. Alamitos Avenue at 7 th Street	1.004	F	1.253	F

- An evaluation of Alamitos/7th Street indicate that there are no feasible mitigation measures that would mitigate the Project’s impact and therefore are considered significant and unavoidable. This finding is consistent with findings of the prior June 2006 TIS as the “Approved Development” was determined to have a significant and unavoidable impact at this location as well.

Year 2020 Planned Improvements

- Based on information obtained from the City of Long Beach, roadway network changes in the downtown area were applied to the Year 2020 cumulative background setting. The roadway network changes include the conversion of 7th Street and 6th Street from a one-way roadway to a two-way roadway west of Atlantic Avenue. As such, the following improvements listed below have been identified as part of the roadway network changes and are subject to review and confirmation by the City of Long Beach:
 - **No. 1 – Long Beach Boulevard at 7th Street:** Restripe the east-west direction to provide two way flow. Restripe the east leg to include an exclusive left-turn lane, a through lane, a shared through-right lane, and two departure lanes. Restripe the west leg to include an exclusive left-turn lane, a through lane, a shared through-right lane, and two departure lanes. Modify the existing traffic signal to include permissive phasing in the east-west direction. The installation of these improvements is subject to the approval of the City of Long Beach.
 - **No. 2 – Atlantic Avenue at 7th Street:** Restripe the west leg to include an exclusive left-turn lane, a through lane, a shared through-right lane, and two departure lanes. Modify

the existing traffic signal to include permissive phasing in the east-west direction. The installation of these improvements is subject to the approval of the City of Long Beach.

- **No. 5 – Atlantic Avenue at 6th Street:** Restripe the south leg to include an exclusive left-turn lane. Restripe the east leg to a shared left/through/right turn lane. On the west leg, remove the exclusive left-turn lane, restripe the through lane into a shared left-through lane, and restripe to include a departure lane. Modify the existing traffic signal to include protected-permissive phasing in the north-south directions and split phasing in the east-west direction. The installation of these improvements is subject to the approval of the City of Long Beach.
- **No. 6 – Alamitos Avenue at 6th Street:** Restripe the south leg approach to include an exclusive left-turn lane. Restripe the east leg to into a shared left/through/right turn lane. On the west leg, restripe the exclusive right-turn line into a shared through-right turn lane and widen the leg to include a departure lane. Modify the existing traffic signal to include permissive phasing in the northbound direction and permissive-protected phasing in the eastbound direction. The installation of these improvements is subject to the approval of the City of Long Beach.

Recommended Improvements

Existing Plus Project Traffic Conditions

- The proposed Project will not significantly impact any of the thirty (30) key study intersections under the “Existing Plus Project” traffic scenario. Given that there are no significant project impacts, no improvements are required under this traffic scenario.

Year 2020 Cumulative Plus Project Traffic Conditions

- The proposed Project will significantly impact the intersection of Alamitos Avenue/7th Street under the “Year 2020 Cumulative Plus Project” traffic scenario.

Analysis of this location indicates that there are no feasible mitigation measures that could be developed at this intersection that would mitigate the Project’s impact. Therefore, the impact at this intersection would be considered significant and unavoidable. This finding is consistent with findings of the prior June 2006 TIS as the “Approved Development” was determined to have a significant and unavoidable impact at this location as well.

Transportation Improvement Fee

- Based on a total Project development of 315 DU of residential and 6,711 DU of commercial/retail space, the proposed Project can be expected to pay up to **\$384,574.50** in Transportation Improvement Fees. The precise fee will be determined by the City upon issuance of project building permits.

Site Access Evaluation

- Access to the project site will be provided via one stop-controlled full access driveway located on Medio Street, with the intersections of Lime Avenue at 1st Street (study location no. 19) and Alamitos Avenue at Medio Street (study location no. 21) providing vehicular access to the property from the adjacent street system. The driveway will connect to the proposed 5-level subterranean parking structure with a total of 458 vehicular spaces. Based on our evaluation, of the project driveway traffic volumes and forecast acceptable service levels at the two intersections identified above, site access will be adequate. Motorists entering and exiting the Project site will be able to do so comfortably, safely, and without undue congestion.
- To ensure adequate access and egress to the site is provided, it is recommended to install a “STOP” sign and bar at the proposed Project driveway, along with all appropriate striping, signage and/or pavement legends per City of Long Beach standards/requirements.

Congestion Management Program Compliance Assessment

- Based on the proposed Project’s trip generation potential, trip distribution and trip assignment, the Project will add 50 or more trips at the identified CMP intersections during the weekday AM peak hour or PM peak hour. Therefore a CMP intersection traffic impact analysis is required.
 - Alamitos Avenue/Shoreline Drive at Ocean Boulevard – Based on the results of a detailed analysis of project added trips to the CMP system, approximately 84 trips during the AM peak hour and 115 trips during the PM peak hour will be added by the project at this location. Per CMP TIA guidelines, intersection level of service analysis is therefore required. The analysis indicates that the Project will not significantly impact this intersection based on the City’s standards and the significant impact criteria noted above.
 - Alamitos Avenue at 7th Street – Based on the results of a detailed analysis of project added trips to the CMP system, approximately 48 trips during the AM peak hour and 74 trips during the PM peak hour will be added by the project at this location. Per CMP TIA guidelines, intersection level of service analysis is therefore required. The analysis indicates that the Project will increase demand at this key intersection by two percent (0.020) during the PM peak hour and cause a significant impact. However, there are no feasible mitigation measures that could be developed at this intersection that would mitigate the Project’s impact. Therefore, the impact at this intersection would be considered significant and unavoidable. This finding is consistent with findings of the prior June 2006 TIS as the “Approved Development” was determined to have a significant and unavoidable impact at this location as well.
 - CMP TIA guidelines require that freeway monitoring locations must be examined if the proposed Project will add 150 or more trips (in either direction) during either the AM or PM weekday peak periods. Based on the project’s trip generation potential and distribution pattern, the proposed Project will not add more than 150 trips during the AM

or PM peak hour at this CMP mainline freeway-monitoring location. Therefore, a CMP freeway traffic impact analysis is not required.

Comparative Traffic Impact Assessment

Existing Plus Approved Development vs. Existing Plus Project

- The thirty (30) key study intersections are forecast to operate at acceptable LOS D or better during the AM and PM peak hours for both the Approved Development and proposed Project traffic conditions. In addition, the proposed Project will have similar service levels to that of the Approved Development. Hence, it is concluded that the proposed Project will not create additional impacts when compared to the Approved Development.

Year 2020 Cumulative Plus Approved Development vs. Year 2020 Cumulative Plus project

- The proposed Project will not increase services levels by more than 2.0% beyond that of the Approved Development. Therefore, the proposed Project will have similar service levels to that of the Approved Development.
- While the intersections of Long Beach Boulevard/7th Street, Alamitos Avenue/7th Street, Alamitos Avenue/3rd Street, Alamitos Avenue/Broadway, Magnolia Avenue/Ocean Boulevard, Pine Avenue/Ocean Boulevard, and Alamitos Avenue/Shoreline Drive/Ocean Boulevard are all forecast to operate at unacceptable service levels in the AM and/or PM peak hours, with the Approved Development and with the proposed Project, the ICU increment (difference) between the two is less than 0.020.

Construction Assessment

- The thirty (30) key study intersections will continue to operate at acceptable LOS D or better during the AM and PM peak hours with the addition of project construction traffic. Therefore, aside from the nuisance traffic that will occur as a result of construction-related traffic (e.g., construction materials, construction workers, etc.); impacts resulting from construction traffic would be less than significant.

TRAFFIC IMPACT ANALYSIS
SHORELINE GATEWAY EAST TOWER

Long Beach, California
October 3, 2016

1.0 INTRODUCTION

This Traffic Impact Analysis report addresses the potential traffic impacts and circulation needs associated with a proposed modification to the approved development plan of the Shoreline Gateway East Tower (hereinafter referred to as Project). The construction of the West Tower (now known as The Current) was recently completed in April 2016. The Shoreline Gateway site is generally located north of Ocean Boulevard, between Broadway Court and Alamitos Avenue. The West Tower site is located on the northeast corner of Broadway Court and Ocean Boulevard at 707 E. Ocean Boulevard. The East Tower site, which is currently developed as a parking lot, is located on the northwest corner of Alamitos Avenue and Ocean Boulevard at 777 E. Ocean Boulevard.

The Project was originally evaluated as a part of the Shoreline Gateway Master Plan project in the *City of Long Beach Shoreline Gateway EIR Traffic Impact Study, dated May 2006 (revised June 2006), prepared by MMA/Iteris*. At the time, the Shoreline Gateway Master Plan consisted of the development of three (3) residential towers with a total of 358 units and 13,561 square-feet (SF) of retail/restaurant floor area. Subsequent approvals by the City of Long Beach resulted in an approved development total of 445 units, an increase of 87 units, or 24% from what was previously analyzed, of which 221 units with 6,367 SF of retail/restaurant floor area were approved for the 35-story East Tower. The West Tower was approved as a 17-story residential development with 224 units and 9,182 SF of retail/restaurant spaces (the West Tower is now complete, but only 223 units, with 6,502 SF of the approved retail/restaurant space, was constructed). The East Tower, as now proposed, will include 315 units and 6,711 SF of retail/restaurant space.

This Traffic Impact Analysis will serve as an addendum to the prior June 2006 TIS, and include a comparison of the proposed Project's potential traffic impact impacts to that of the "Approved Development" for the East Tower.

1.1 Scope of Work

This report documents the findings and recommendations of a traffic impact analysis, conducted by Linscott, Law & Greenspan, Engineers (LLG) to determine the potential impacts associated with the proposed Project's East Tower. The traffic analysis evaluates the existing operating conditions at thirty (30) key study intersections within the project vicinity, estimates the trip generation potential of the proposed Project, and forecasts future operating conditions without and with the Project. Where necessary, intersection improvements/mitigation measures are identified to offset the impact of the proposed Project.

This traffic report satisfies the traffic impact requirements of the City of Long Beach and is consistent with the requirements and procedures outlined in the most current *Congestion*

Management Program (CMP) for Los Angeles County. The Scope of Work for this traffic study, which is included in **Appendix A**, was developed in conjunction with City of Long Beach Engineering Division staff.

The Project site has been visited and an inventory of adjacent area roadways and intersections was performed. Existing peak hour traffic information has been collected at the thirty (30) key study locations on a “typical” weekday for use in the preparation of intersection level of service calculations. Information concerning cumulative projects (planned and/or approved) in the vicinity of the project has been researched at the City of Long Beach. Based on our research, twenty-five (25) cumulative projects were considered in the cumulative traffic analysis for this project.

Based on City of Long Beach requirement’s, this traffic report analyzes existing and future (near-term) weekday AM and PM peak hour traffic conditions for existing and Year 2020 traffic conditions without and with the proposed Project. Peak hour traffic forecasts for the Year 2020 horizon year have been projected by increasing existing traffic volumes by an annual growth rate of one percent (1.0%) per year and adding traffic volumes generated by twenty-five (25) cumulative projects.

1.2 Study Area

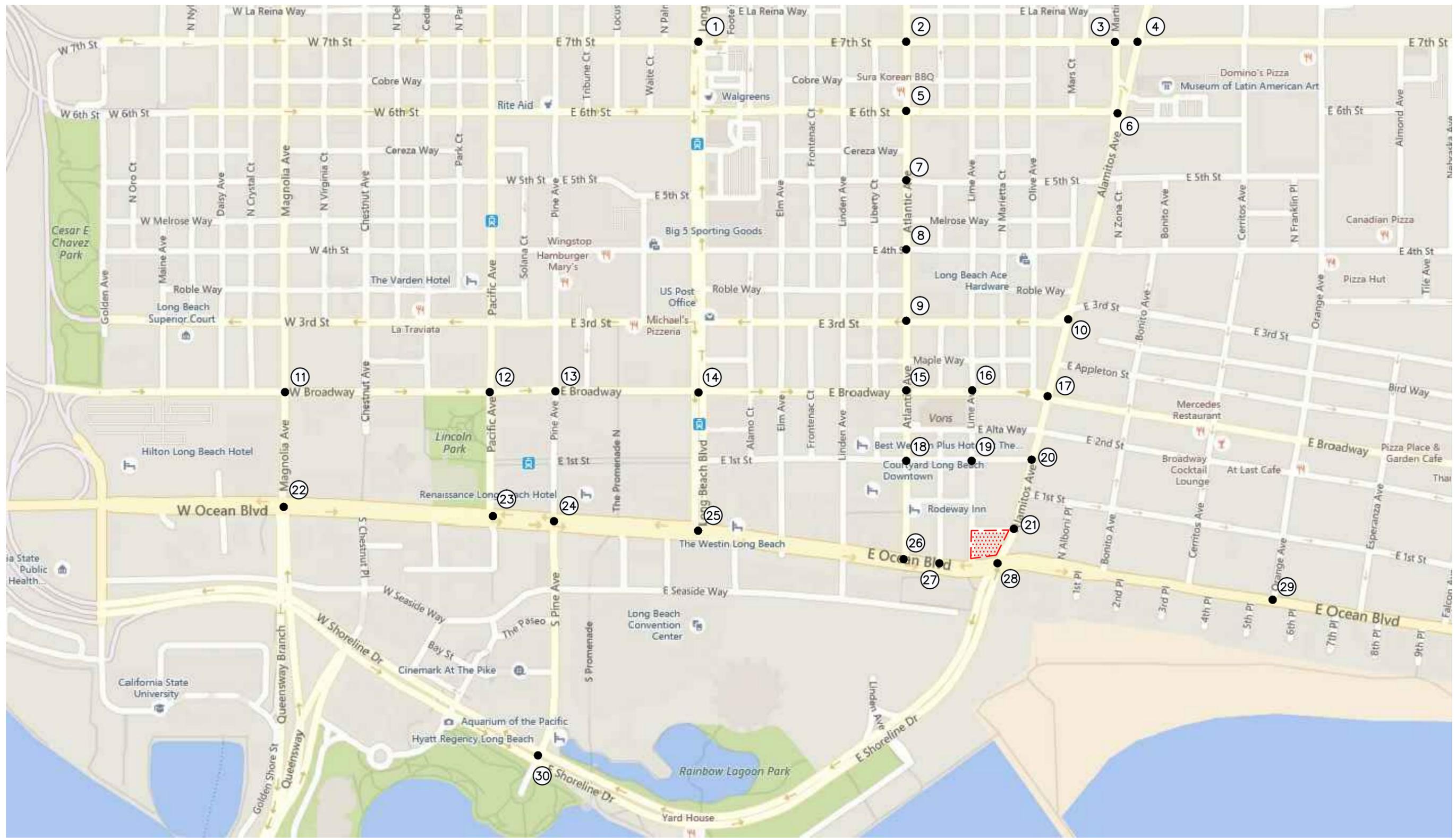
The thirty (30) key study intersections selected for evaluation in this report provide local access within the project study area. They consist of the following:

- | | |
|---|--|
| 2. Long Beach Boulevard at 7 th Street | 31. Lime Avenue at Broadway |
| 3. Atlantic Avenue at 7 th Street | 32. Alamitos Avenue at Broadway |
| 16. Martin Luther King Jr Ave at 7 th Street | 33. Atlantic Avenue at 1 st Street |
| 17. Alamitos Avenue at 7 th Street | 34. Lime Avenue at 1 st Street |
| 18. Atlantic Avenue at 6 th Street | 35. Alamitos Avenue at 1 st Street |
| 19. Alamitos Avenue at 6 th Street | 36. Alamitos Avenue at Medio Street |
| 20. Atlantic Avenue at 5 th Street | 37. Magnolia Avenue at Ocean Boulevard |
| 21. Atlantic Avenue at 4 th Street | 38. Pacific Avenue at Ocean Boulevard |
| 22. Atlantic Avenue at 3 rd Street | 39. Pine Avenue at Ocean Boulevard |
| 23. Alamitos Avenue at 3 rd Street | 40. Long Beach Boulevard at Ocean Boulevard |
| 24. Magnolia Avenue at Broadway | 41. Atlantic Avenue at Ocean Boulevard |
| 25. Pacific Avenue at Broadway | 42. Broadway Court at Ocean Boulevard |
| 26. Pine Avenue at Broadway | 43. Alamitos Avenue/Shoreline Drive at Ocean Boulevard |
| 27. Long Beach Boulevard at Broadway | 44. Orange Avenue at Ocean Boulevard |
| 28. Atlantic Avenue at Broadway | 45. Pine Avenue at Shoreline Drive |

Figure 1-1 presents a Vicinity Map, which illustrates the general location of the project and depicts the study locations and surrounding street system. The Volume-Capacity (V/C) and Level of Service (LOS) investigations at these key locations were used to evaluate the potential traffic-related impacts associated with the proposed Project.

Included in this traffic study report are:

- Existing traffic counts,
- Estimated project traffic generation/distribution/assignment,
- Estimated cumulative project traffic generation/distribution/assignment,
- AM and PM peak hour capacity analyses for existing conditions,
- AM and PM peak hour capacity analyses for existing plus project conditions,
- AM and PM peak hour capacity analyses for future (Year 2020) conditions without and with project traffic,
- Recommended Improvements,
- Comparative LOS calculations with the Approved Development
- Construction Assessment, and
- Congestion Management Program Compliance Assessment.



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SOURCE: BING

KEY

- ⊕ = STUDY INTERSECTION
- ▨ = PROJECT SITE



FIGURE 1-1

VICINITY MAP
SHORELINE GATEWAY EAST TOWER, LONG BEACH

2.0 PROJECT DESCRIPTION

Shoreline Gateway is generally located north of Ocean Boulevard, between Broadway Court and Alamitos Avenue in the City of Long Beach, California. The West Tower site is located on the northeast corner of Broadway Court and Ocean Boulevard at 707 E. Ocean Boulevard. The East Tower (Project) site, which is currently developed as a parking lot, is located on the northwest corner of Alamitos Avenue and Ocean Boulevard at 777 E. Ocean Boulevard. **Figure 2-1** presents an aerial depiction of the East Tower site, as well as the West Tower site.

2.1 Background and Prior Approvals

The Shoreline Gateway Master Plan, as originally evaluated in the *City of Long Beach Shoreline Gateway EIR Traffic Impact Study, dated May 2006 (revised June 2006), prepared by MMA/Iteris*, consisted of the development of three (3) residential towers with a total of 358 units and 13,561 square-feet (SF) of retail/restaurant floor area. In October 2007, the Supplemental EIR that was prepared for the Shoreline Gateway Master Plan was certified which allowed one of the buildings to be 35-stories tall, with the total unit count remaining at 358 units. The Shoreline Gateway Master Plan was approved in November 2007 by the Planning Commission with approval of a 35-story East Tower, with 221 units, in accordance with the Shoreline Gateway Supplemental EIR completed in October 2007.

With the Shoreline Gateway site located within the Downtown Plan planning area, the master plan site was again evaluated in the *Long Beach Downtown Community Plan EIR Traffic Impact Analysis, dated February 4, 2010, prepared by MMA/Iteris*, but with an assumed development total of 365 units and 12,630 SF of retail/restaurant floor area.

In May 2013, the City's Planning Commission approved the 17-story West Tower, with 224 units with 9,182 SF of retail/restaurant space, with a finding of "previously assessed" in accordance with the Shoreline Gateway Supplemental EIR and the Downtown Plan Program EIR (the West Tower is now complete, but only 223 units, with 6,502 SF of retail/restaurant space, was constructed). This changed the overall development total for Shoreline Gateway from 358 to 445 units, an increase of 87 units, or 24% from what was previously analyzed.

2.2 Proposed East Tower Project

The 35-story East Tower, as now proposed, will include 315 units and 6,711 SF of retail/restaurant space, consisting of 5,731 SF of café/restaurant space and 1,380 SF of retail space. The proposed East Tower unit count of 315 represents an increase of 94 units and 344 SF of retail/restaurant space over the Approved Development of 221 units with 6,367 SF of retail/restaurant floor area. When the proposed modifications to the East Tower are combined with that of the approved West Tower, the Shoreline Gateway Master Plan will have an amended development total of 539 units and 15,893 SF of retail/restaurant floor area.

Parking for the East Tower is proposed to be provided within a 5-level parking structure with a total of 458 vehicular spaces. Vehicular access to the proposed subterranean garage will be provided via

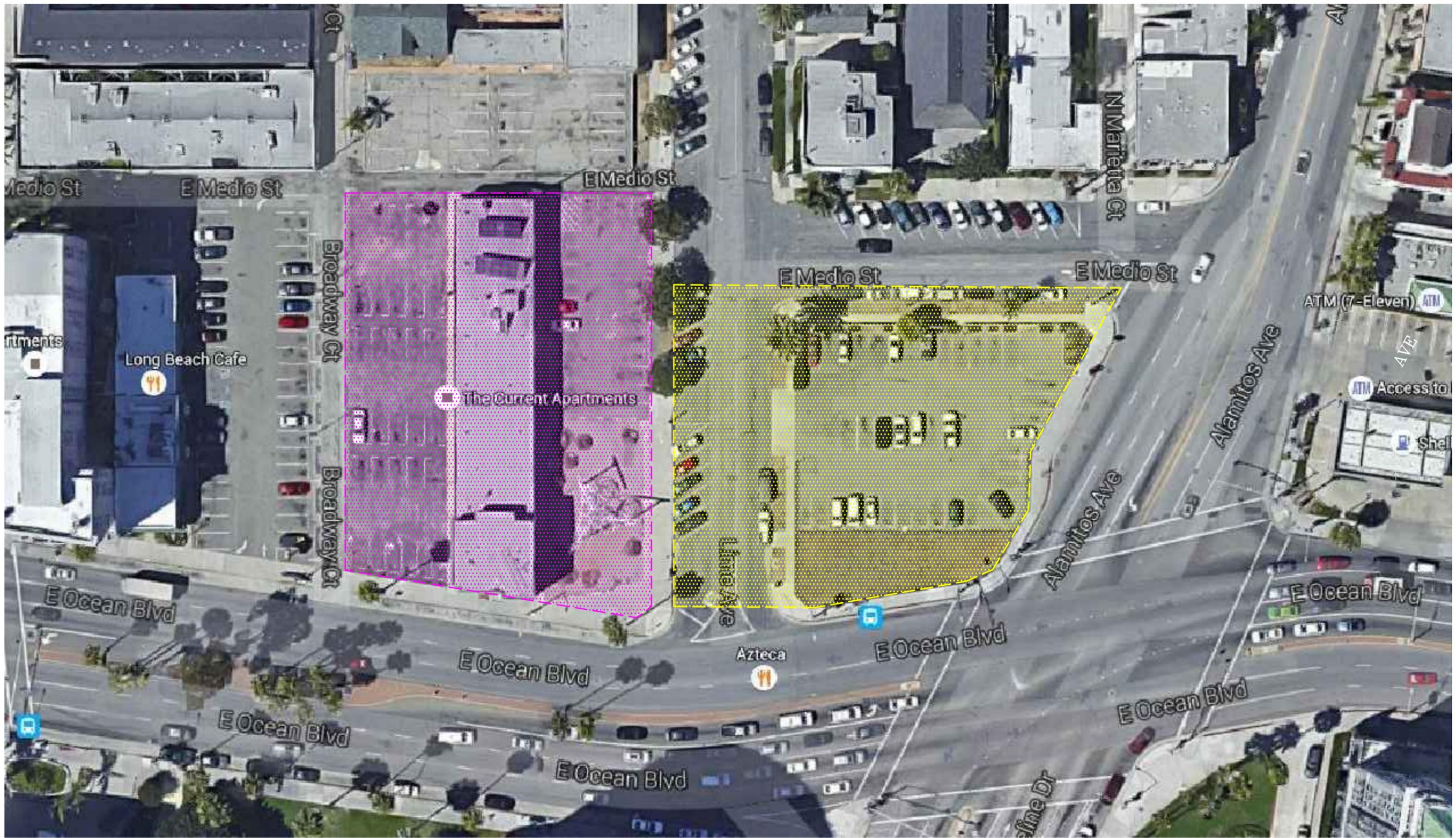
Medio Street. **Figure 2-2** illustrates the proposed site plan for the Project, as prepared by Rockefeller Partners Architects.

The proposed Project is expected to be constructed over the several years by 2019, but is dependent on several factors, including the project funding and market conditions. Hence, to provide a conservative assessment, Year 2020 has been utilized to assess the Project's potential opening year (full buildout/occupancy) traffic impacts within a near-term cumulative traffic setting.

2.3 Approved West Tower Development

As noted previously, the construction of the 17-story West Tower was recently completed and includes 223 units (one less than approved) and 6,502 SF of retail/restaurant space (2,680 SF less than approved). The original approval had a retail/restaurant mix consisting of 2,636 SF of retail space and 6,546 SF of café/restaurant space. Parking for the West Tower is provided within a 5-level parking structure with a total of 275 spaces. Vehicular access to the on-site garage is provided via Broadway Court. **Figure 2-3** illustrates the approved site plan for the West Tower, as prepared by BAR Architects.

It is noted that the potential traffic impacts associated with the approved West Tower (i.e. 223 units and 6,502 SF of retail/restaurant space) is considered within the cumulative traffic setting as this development project has been identified by the City of Long Beach as one of the cumulative projects to be considered in the cumulative traffic analysis for this Project.



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SOURCE: GOOGLE

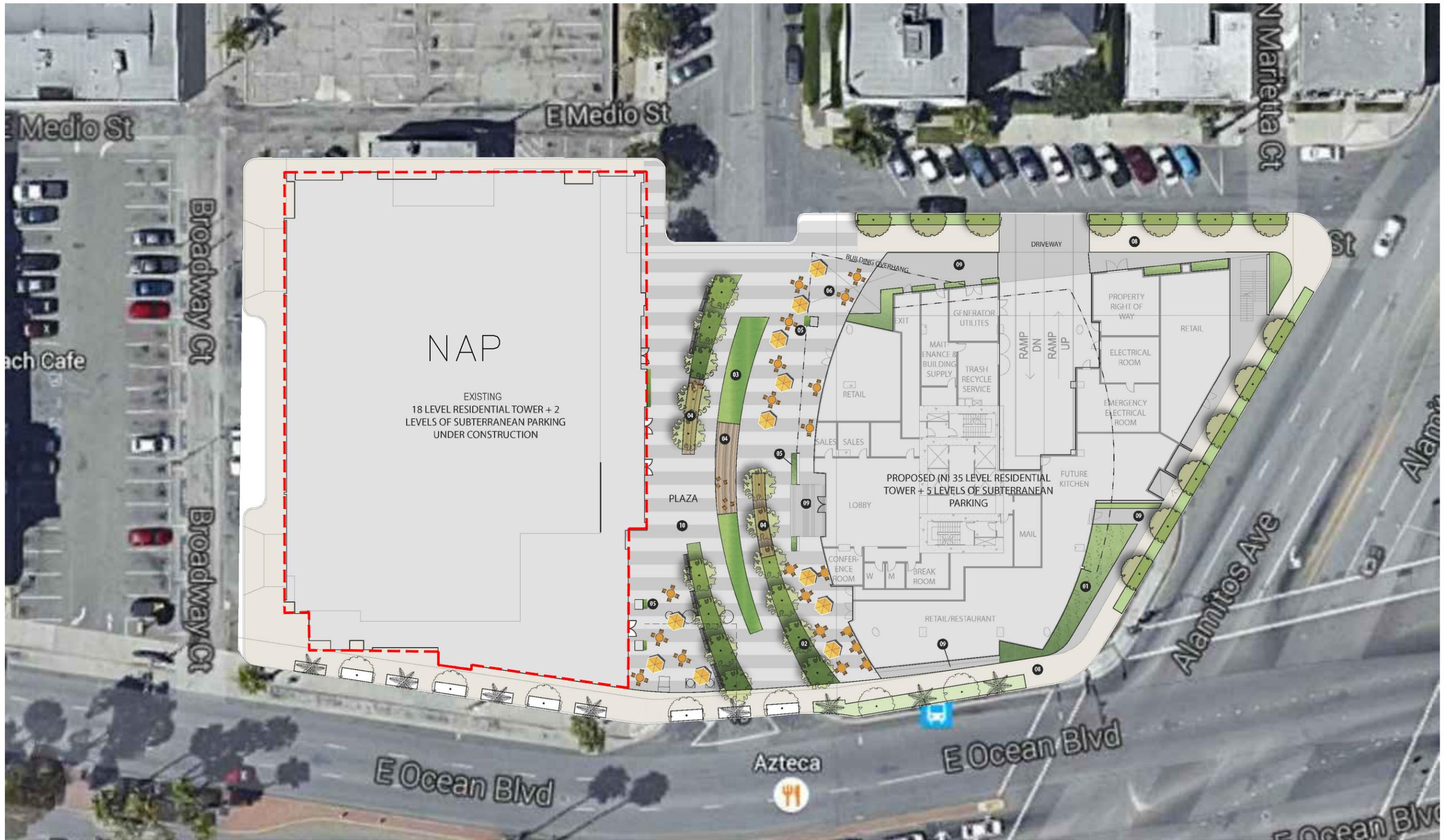
KEY

- = PROPOSED SHORELINE GATEWAY EAST TOWER
- = EXISTING SHORELINE GATEWAY WEST TOWER (THE CURRENT)

FIGURE 2-1

EXISTING AERIAL
SHORELINE GATEWAY EAST TOWER, LONG BEACH





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SOURCE: ROCKEFELLER PARTNERS ARCHITECTS

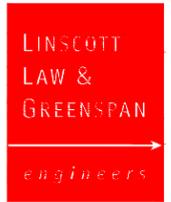
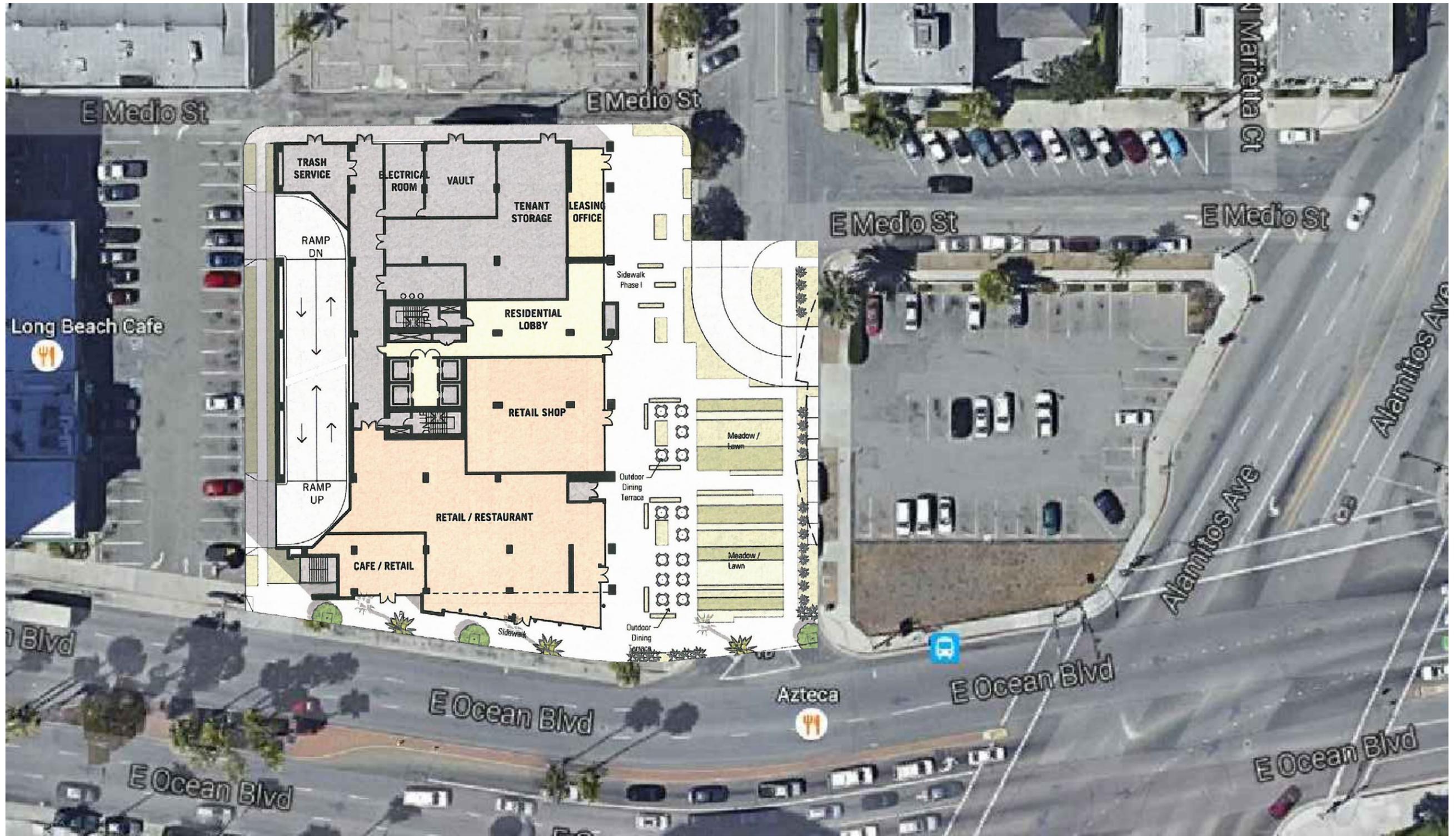


FIGURE 2-2

EAST TOWER PROPOSED SITE PLAN
SHORELINE GATEWAY EAST TOWER, LONG BEACH



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SOURCE: BAR ARCHITECTS

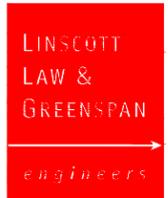


FIGURE 2-3

WEST TOWER APPROVED SITE PLAN
SHORELINE GATEWAY EAST TOWER, LONG BEACH

3.0 EXISTING CONDITIONS

3.1 Existing Street System

The principal local network of streets serving the project site includes 7th Street, 6th Street, Broadway, Ocean Boulevard, Shoreline Drive, Pacific Avenue, Long Beach Boulevard, Atlantic Avenue, and Alamitos Avenue. The following discussion provides a brief synopsis of these key area streets. The descriptions are based on an inventory of existing roadway conditions.

7th Street is a three-lane, one-way roadway (westbound travel only) west of Atlantic Avenue, and a four-lane divided roadway east of Atlantic Avenue, oriented in the east-west direction. Parking is generally permitted on both sides of the roadway. The posted speed limit is 30 mph. The intersections of 7th Street at Long Beach Boulevard, Atlantic Avenue, Martin Luther King Jr. Avenue, and Alamitos Avenue are controlled by traffic signals.

6th Street is a three-lane, one-way roadway (eastbound travel only) west of Atlantic Avenue, and a two-lane divided roadway east of Atlantic Avenue, oriented in the east-west direction. Parking is generally permitted on both sides of the roadway. The posted speed limit is 25 mph. The intersections of 6th Street at Atlantic Avenue and Alamitos Avenue are controlled by traffic signals.

Broadway is a two-lane, one-way divided roadway (eastbound travel only) oriented in the east-west direction. West of Magnolia Avenue, parking is restricted on both the north and south side of the roadway. West of Pine Avenue, parking is generally permitted on the south side of the Broadway and restricted on the north side. East of Pine Avenue, parking is permitted on both sides of the roadway. The posted speed limit on Broadway is 30 mph. The intersections of Broadway at Magnolia Avenue, Pacific Avenue, Pine Avenue, Long Beach Boulevard, Atlantic Avenue, Lime Avenue, and Alamitos Avenue are controlled by traffic signals.

Ocean Boulevard is a primarily a six-lane, divided roadway oriented in the east-west direction. West of Magnolia Avenue, Ocean Boulevard is a seven-lane, divided roadway, with three travel lanes in the eastbound direction and four travel lanes in the westbound direction. Parking is permitted on both sides of the roadway. The posted speed limit on Ocean Boulevard is 30 mph. The intersections of Ocean Boulevard at Magnolia Avenue, Pacific Avenue, Pine Avenue, Long Beach Boulevard, Atlantic Avenue, Alamitos Avenue/Shoreline Drive, and Orange Avenue are controlled by traffic signals.

Shoreline Drive is a six-lane divided roadway that extends in the east-west direction. Parking is generally not permitted on either side of this roadway within the vicinity of the project. The posted speed limit on Shoreline Drive is 40 mph. The intersection of Shoreline Drive at Pine Avenue is controlled by a traffic signal.

Pacific Avenue is primarily a four-lane, divided roadway oriented in the north-south direction. South of Ocean Boulevard, Pacific Avenue is a two-lane, undivided roadway. Parking is not permitted on either side of the roadway within the vicinity of the Project site. The posted speed limit on Pacific Avenue is 25 mph.

Long Beach Boulevard is a four-lane, divided roadway oriented in the north-south direction. Parking is permitted south of 1st Street, parking is permitted on both sides of the roadway; north of 1st Street, parking is permitted only on the east side of the roadway within the vicinity of the project. The posted speed limit on Long Beach Boulevard is 30 mph.

Atlantic Avenue is a four-lane, divided roadway oriented in the north-south direction. Parking is permitted on both sides of the roadway within the vicinity of the project. The posted speed limit on Atlantic Avenue is 30 mph.

Alamitos Avenue is a four-lane, divided roadway that extends in the north-south direction. Parking is generally permitted on both sides of the roadway within the vicinity of the project. The posted speed limit on Alamitos Avenue is 30 mph. Alamitos Avenue is currently classified as a Class III bike facility.

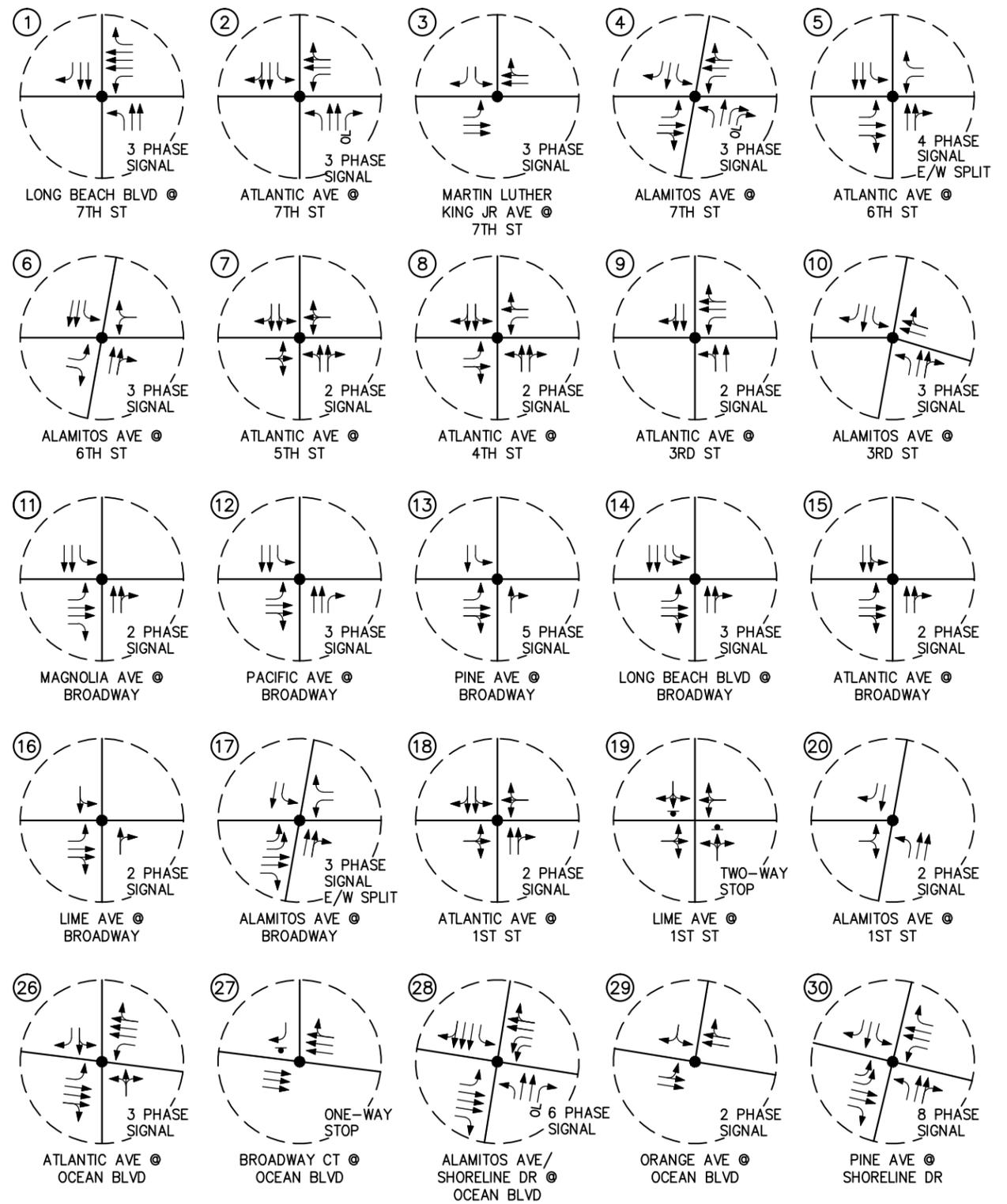
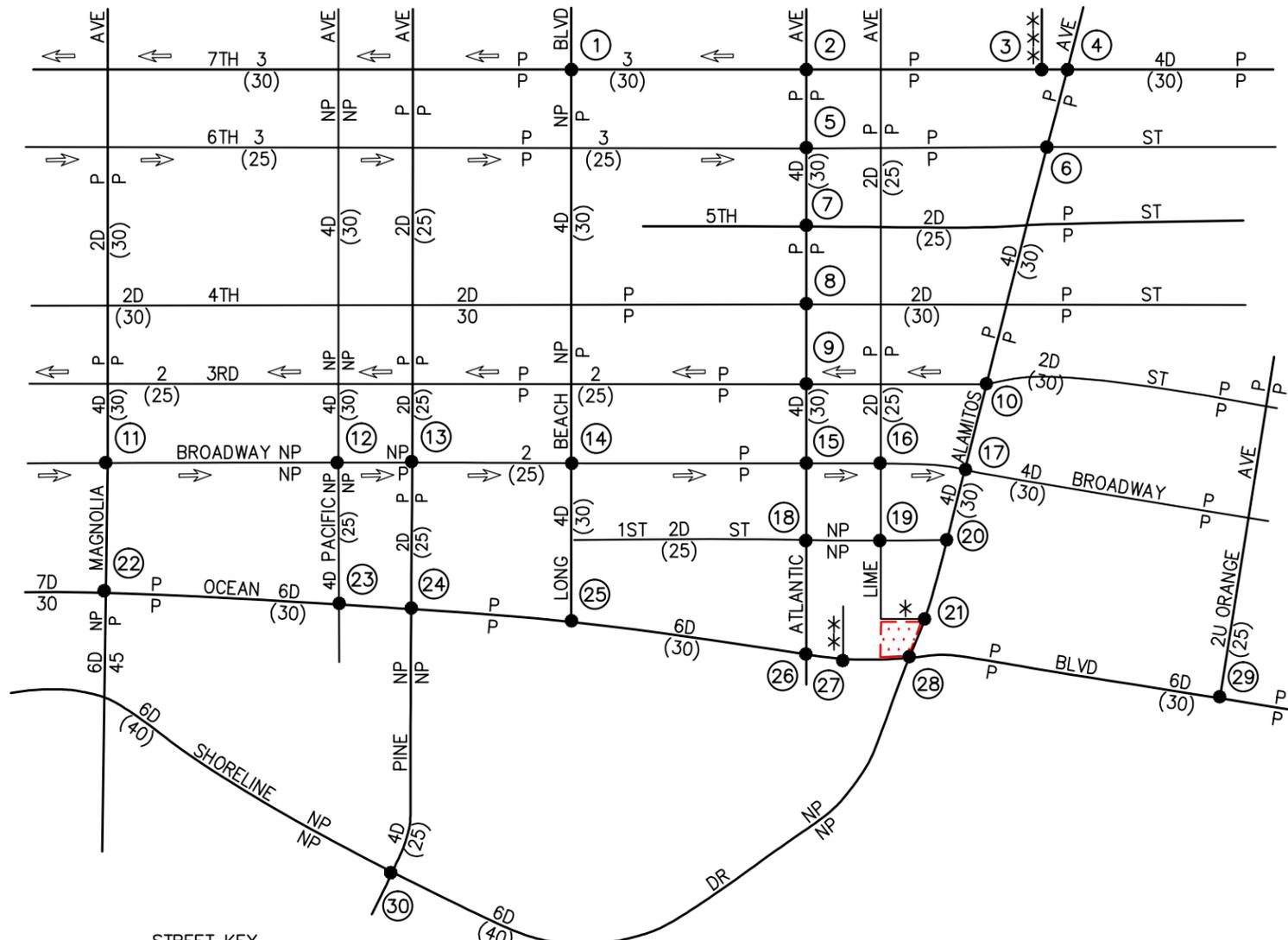
Figure 3-1 presents an inventory of the existing roadway conditions for the arterials and intersections evaluated in this report. The number of travel lanes and intersection controls for the key area intersections are identified.

3.2 Existing Traffic Volumes

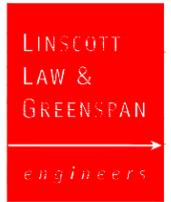
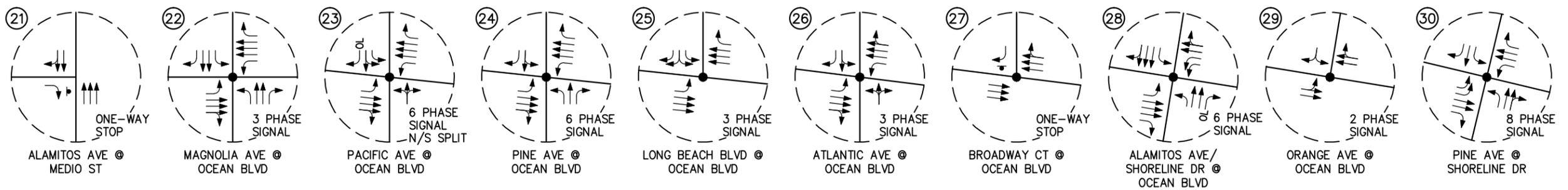
Thirty (30) key study intersections have been identified as the locations at which to evaluate existing and future traffic operating conditions. Some portion of potential project-related traffic will pass through each of these intersections, and their analysis will reveal the expected impact associated with the proposed Project.

Existing weekday peak hour traffic volumes for the thirty (30) key study intersections evaluated in this report were obtained from manual turning movement counts conducted by AimTD LLC in May 2016.

Figures 3-2 and *3-3* illustrate the existing weekday AM and PM peak hour traffic volumes at the thirty (30) key study intersections evaluated in this report, respectively. *Appendix B* contains the detailed peak hour count sheets for the key intersections evaluated in this report.



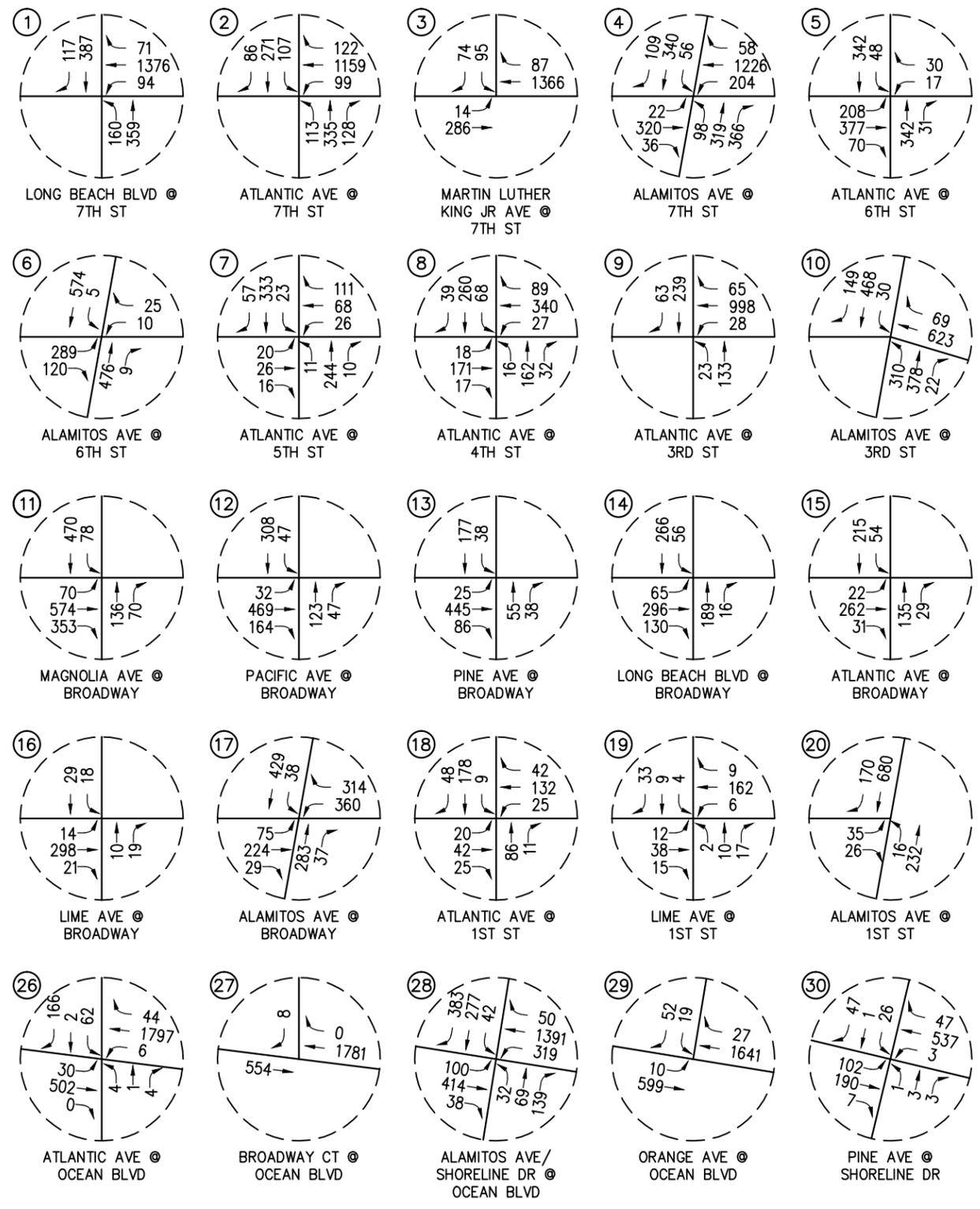
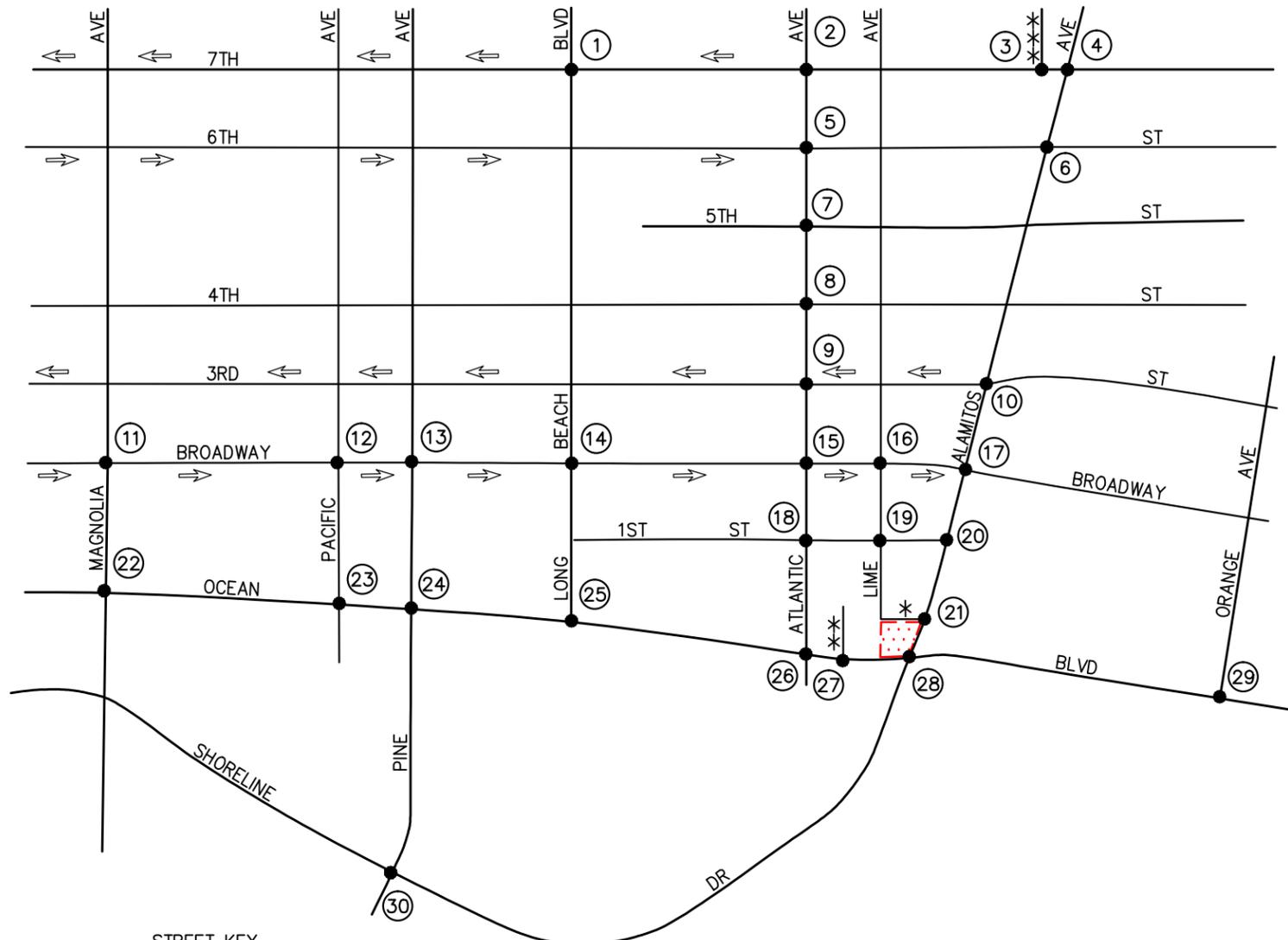
STREET KEY
 * = MEDIO ST
 ** = BROADWAY CT
 *** = MARTIN LUTHER KING JR. AVE



KEY
 (#) = STUDY INTERSECTION
 ← = 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
 [Red Hatched Box] = PROJECT SITE

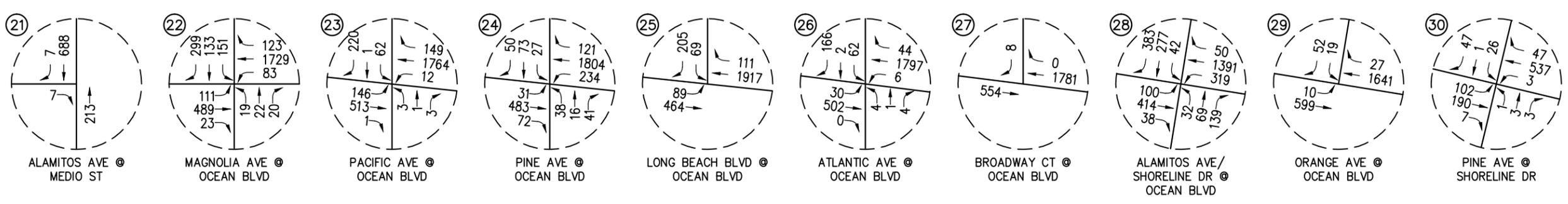
FIGURE 3-1
EXISTING ROADWAY CONDITIONS AND INTERSECTION CONTROLS
 SHORELINE GATEWAY EAST TOWER, LONG BEACH

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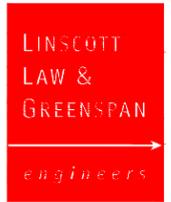


STREET KEY

- * = MEDIO ST
- ** = BROADWAY CT
- *** = MARTIN LUTHER KING JR. AVE



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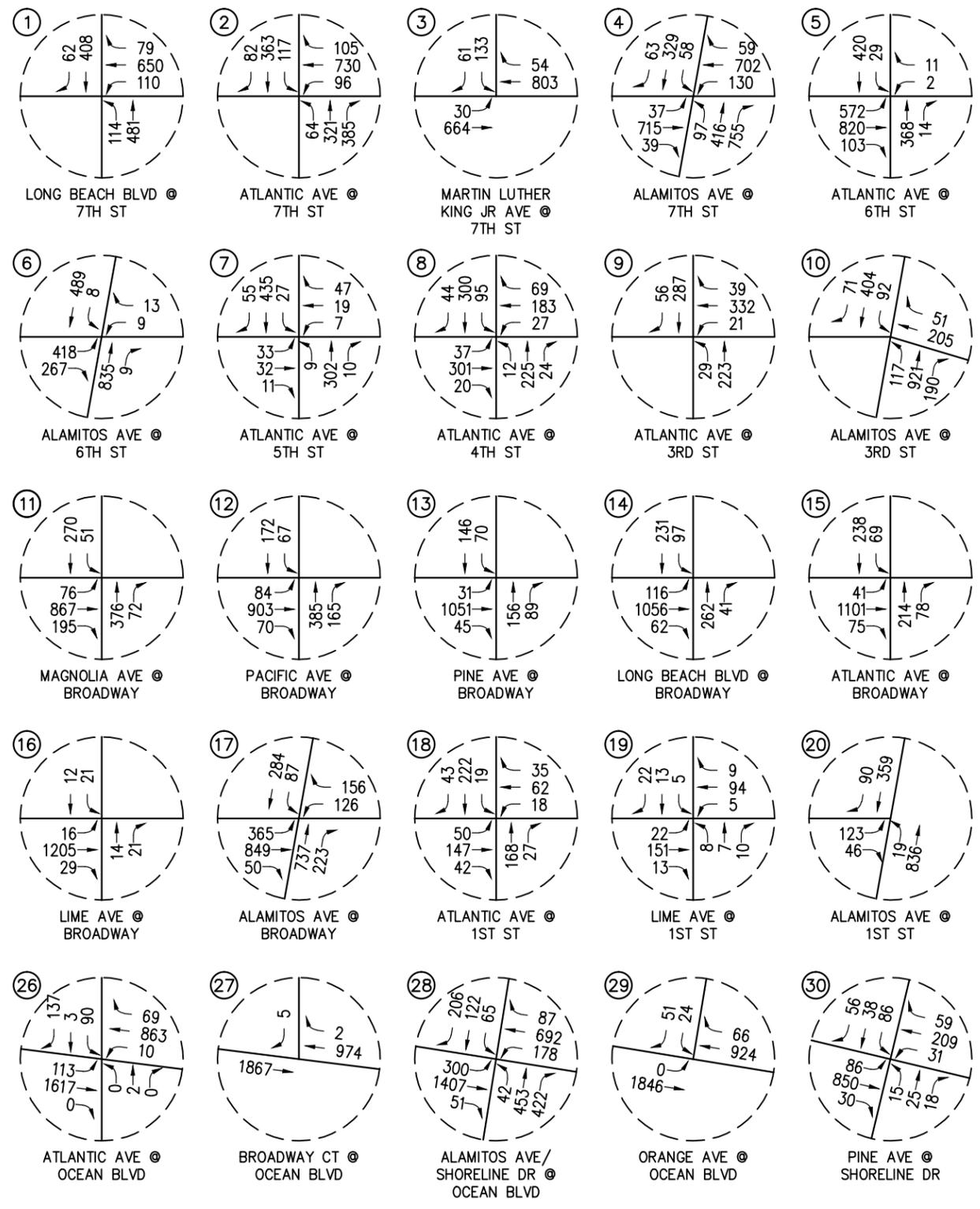
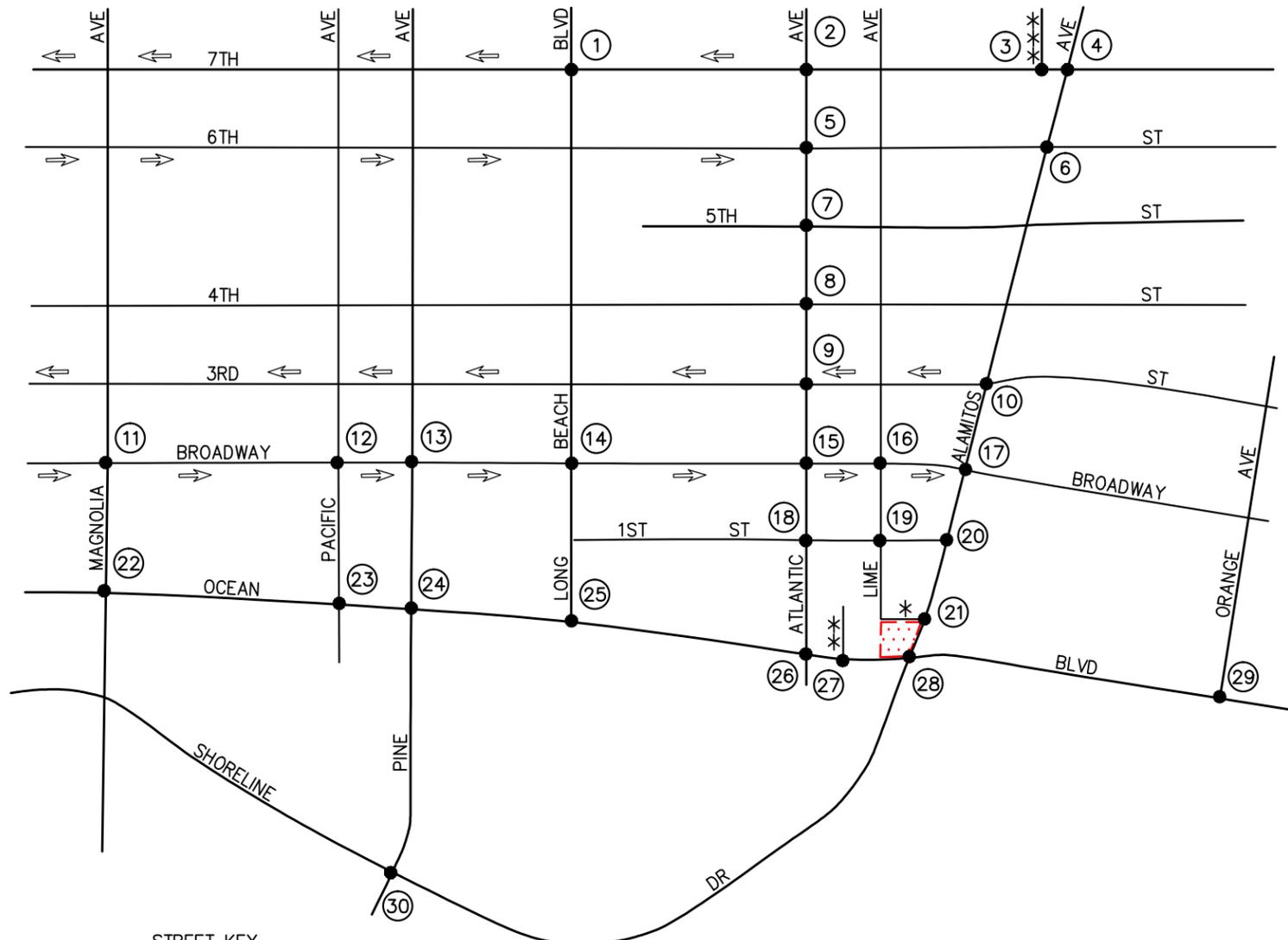


KEY

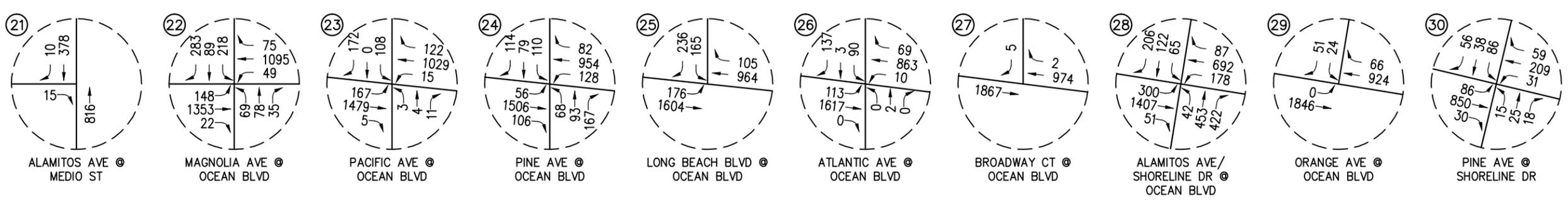
- ⊕ = STUDY INTERSECTION
- ▨ = PROJECT SITE

FIGURE 3-2

EXISTING AM PEAK HOUR TRAFFIC VOLUMES
SHORELINE GATEWAY EAST TOWER, LONG BEACH



STREET KEY
 * = MEDIO ST
 ** = BROADWAY CT
 *** = MARTIN LUTHER KING JR. AVE



KEY
 # = STUDY INTERSECTION
 [Red Hatched Box] = PROJECT SITE

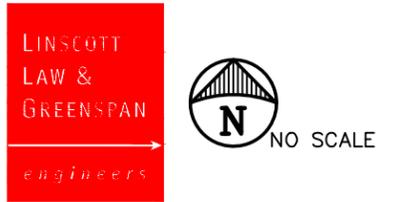


FIGURE 3-3
 EXISTING PM PEAK HOUR TRAFFIC VOLUMES
 SHORELINE GATEWAY EAST TOWER, LONG BEACH

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3.3 Existing Public Transit

The Los Angeles County Metropolitan Transportation Authority and Long Beach Transit (LBT) provide public transit services in the vicinity of the proposed Project. In the vicinity of the Project, the Metro Blue Line currently serves Long Beach Boulevard, 1st Street, and Pacific Avenue. The Los Angeles Department of Transportation (LADOT) Commuter Express 142 currently serves Ocean Boulevard. In addition to the Metro routes, LBT Passport Route serves Ocean Boulevard, Shoreline Drive, 3rd Street and Pacific Avenue; LBT Route 1 serves 6th Street and Long Beach Boulevard; LBT Route 3 serves Pacific Avenue and Long Beach Boulevard; LBT Routes 21, 22, and 121 serve Ocean Boulevard and Long Beach Boulevard; LBT Routes 51 and 52 serve Pacific Avenue; Route 61 serves Ocean Boulevard, Broadway, 6th Street, Long Beach Boulevard, and Atlantic Avenue; LBT Routes 71 and 72 serve Ocean Boulevard, Broadway and Alamitos Avenue; LBT Route 81 serves Pacific Avenue and Long Beach Boulevard; LBT Routes 91, 92, 93, and 94 serve 6th Street, 7th Street, and Pacific Avenue; LBT Routes 111 and 112 serve Broadway; LBT Route 151 serves Ocean Boulevard, 3rd Street, 4th Street, Pacific Avenue, Broadway, Long Beach Boulevard, Atlantic Avenue and Alamitos Avenue; LBT Routes 172, 173, 174 and 182 serve Pacific Avenue; LBT Routes 181, 191, and 192 serve Broadway, 3rd Street, Magnolia Boulevard, and Pacific Avenue; and LBT Routes 46, 60 and 232 serve Long Beach Boulevard. **Figure 3-4** graphically illustrates the transit routes of Long Beach Transit within the vicinity of the Project site. **Figure 3-5** identifies the location of the existing LBT bus stops in proximity to the Project site.

3.4 Existing Bicycle Master Plan

The City of Long Beach promotes bicycling as a means of mobility and a way in which to improve the quality of life within its community. The Bicycle Master Plan recognizes the needs of bicycle users and aims to create a complete and safe bicycle network throughout the City. The City of Long Beach Bicycle Facilities in the vicinity of the Project site (existing and proposed) is shown on **Figure 3-6**.

Legend

- Bus Routes
- - - AquaBus
- AquaLink
- End of Route(s)
- Direction of bus travel
- Point of interest
- M Metro Light Rail Station

Long Beach Transit Gallery

Bike Station

METRO STATION

FIRST STREET TRANSIT GALLERY 1ST ST

PACIFIC AVE

PINE AVE

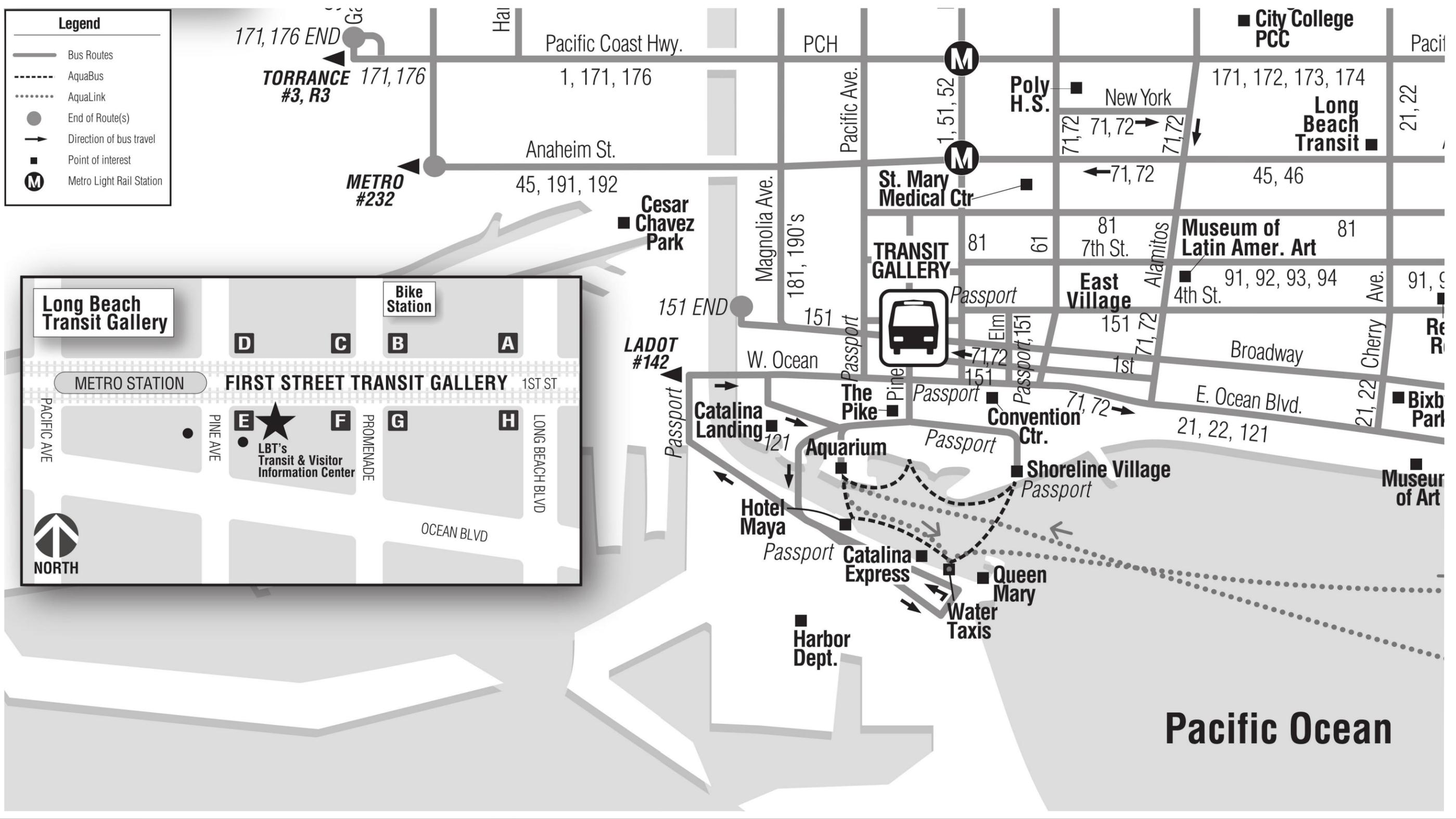
LBT's Transit & Visitor Information Center

PROMENADE

LONG BEACH BLVD

OCEAN BLVD

NORTH



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SOURCE: CITY OF LONG BEACH

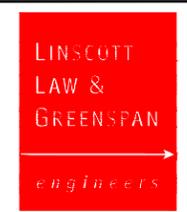
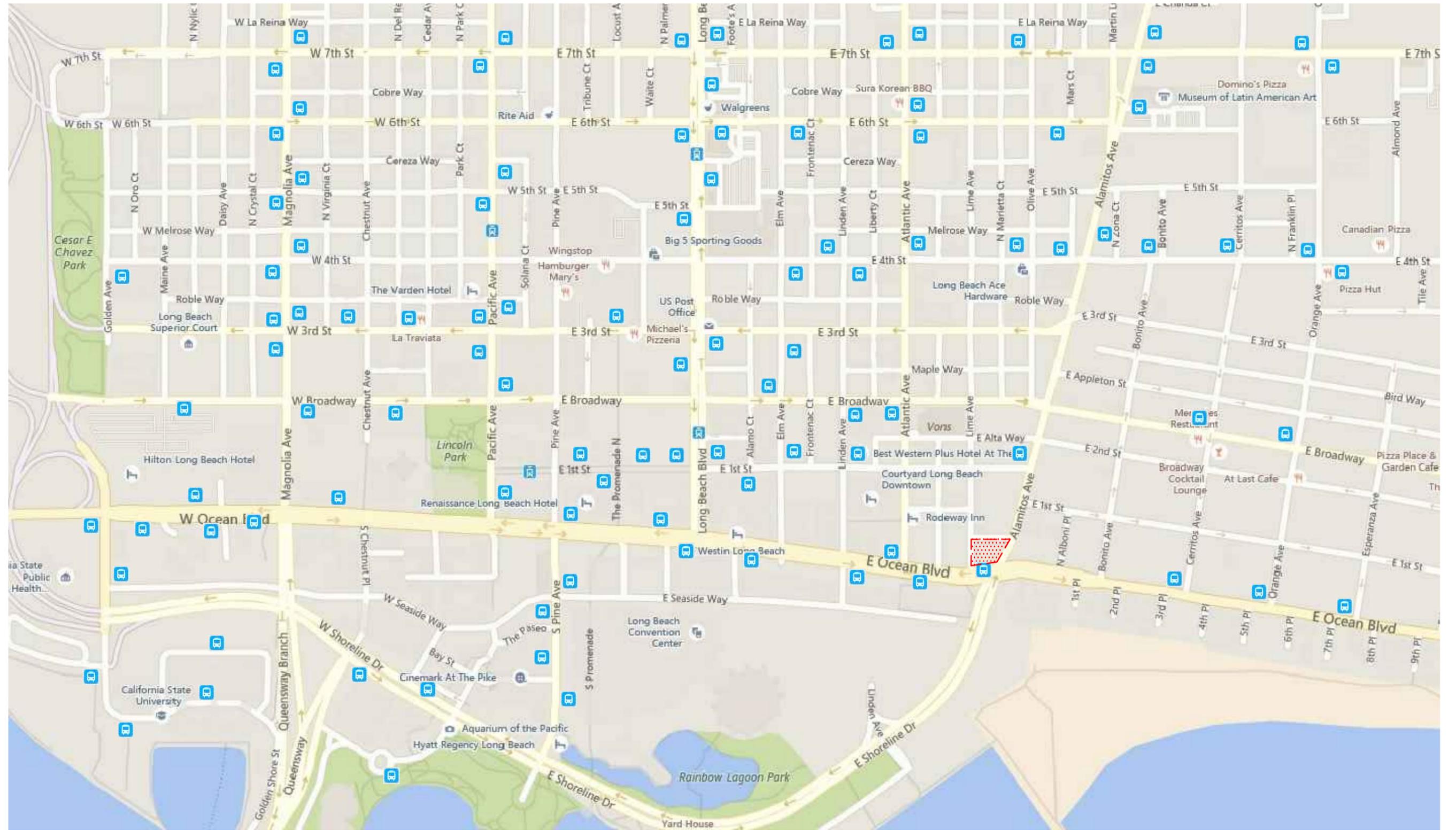


FIGURE 3-4

LONG BEACH TRANSIT MAP
SHORELINE GATEWAY EAST TOWER, LONG BEACH



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- SOURCE: GOOGLE
- KEY
-  = PROJECT SITE
 -  = TRANSIT STOP

FIGURE 3-5

TRANSIT STOP LOCATIONS
SHORELINE GATEWAY EAST TOWER, LONG BEACH

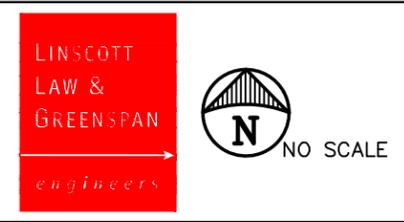


SOURCE: CITY OF LONG BEACH

KEY
 = PROJECT SITE

FIGURE 3-6

LONG BEACH BIKEWAY FACILITIES
 SHORELINE GATEWAY EAST TOWER, LONG BEACH



3.5 Existing Intersection Conditions

Existing AM and PM peak hour operating conditions for the key signalized study intersections were evaluated using the *Intersection Capacity Utilization* (ICU) methodology for signalized intersections.

3.5.1 *Intersection Capacity Utilization (ICU) Method of Analysis*

In conformance with City of Long Beach and LA County CMP requirements, existing weekday peak hour operating conditions for the key signalized study intersections were evaluated using the Intersection Capacity Utilization (ICU) method. The ICU technique is intended for signalized intersection analysis and estimates the volume to capacity (V/C) relationship for an intersection based on the individual V/C ratios for key conflicting traffic movements. The ICU numerical value represents the percent signal (green) time, and thus capacity, required by existing and/or future traffic. It should be noted that the ICU methodology assumes uniform traffic distribution per intersection approach lane and optimal signal timing.

Per LA County CMP requirements, the ICU calculations use a lane capacity of 1,600 vehicles per hour (vph) for left-turn, through, and right-turn lanes, and dual left turn capacity of 2,880 vph. A clearance interval is also added to each Level of Service calculation. Per City of Long Beach requirements, clearance intervals are based on the number of phases in the intersection and whether the left turning movements are all fully protected or whether some of them are permitted with other left-turn movements being protected. **Table 3-1** shows the clearance intervals used in the analysis of the key study intersections within the City of Long Beach.

The ICU value translates to a Level of Service (LOS) estimate, which is a relative measure of the intersection performance. The six qualitative categories of Level of Service have been defined along with the corresponding ICU value range and are shown in **Table 3-2**. The ICU value is the sum of the critical volume to capacity ratios at an intersection; it is not intended to be indicative of the LOS of each of the individual turning movements.

3.5.1 *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. This methodology estimates the average control delay for each of the subject movements and determines the level of service for each movement. For all-way stop controlled intersections, the overall average control delay measured in seconds per vehicle, and level of service is then calculated for the entire intersection. For one-way and two-way stop-controlled (minor street stop-controlled) intersections, this methodology estimates the worst side street delay, measured in seconds per vehicle and determines the level of service for that approach. The HCM control delay value translates to a Level of Service (LOS) estimate, which is a relative measure of the intersection performance. The six qualitative categories of Level of Service have been defined along with the corresponding HCM control delay value range, as shown in **Table 3-3**.

3.5.2 *Level of Service Criteria*

According to the City of Long Beach, LOS D is the minimum acceptable condition that should be maintained during the peak commute hours, or the current LOS if the existing LOS is worse than LOS D (i.e. LOS E or F).

3.6 Existing Level of Service Results

Table 3-4 summarizes the existing peak hour service level calculations for the thirty (30) key study intersections based on existing traffic volumes and current street geometrics. Review of **Table 3-4** indicates that all thirty (30) key study intersections currently operate at LOS D or better during the weekday AM and PM peak hours.

Appendix C contains the detailed peak hour level of service worksheets for the key intersections evaluated in this report

TABLE 3-1
CITY OF LONG BEACH CLEARANCE INTERVALS¹

Number of Signal Phases	Left-turn Phasing Type	Clearance Interval (Percent)
2	Permitted	10%
3	Protected and Permitted	12%
3	Fully Protected	15%
4	Protected and Permitted	14%
4	Fully Protected	18%

¹ Source: *City of Long Beach Guidelines for Signalized Intersection Analysis, 2004.*

TABLE 3-2
LEVEL OF SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS

Level of Service (LOS)	Intersection Capacity Utilization Value (V/C)	Level of Service Description
A	≤ 0.600	EXCELLENT. No vehicle waits longer than one red light, and no approach phase is fully used.
B	0.601 – 0.700	VERY GOOD. An occasional approach phase is fully utilized; many drivers begin to feel somewhat restricted within groups of vehicles.
C	0.701 – 0.800	GOOD. Occasionally drivers may have to wait through more than one red light; backups may develop behind turning vehicles.
D	0.801 – 0.900	FAIR. Delays may be substantial during portions of the rush hours, but enough lower volume periods occur to permit clearing of developing lines, preventing excessive backups.
E	0.901 – 1.000	POOR. Represents the most vehicles intersection approaches can accommodate; may be long lines of waiting vehicles through several signal cycles.
F	> 1.000	FAILURE. Backups from nearby locations or on cross streets may restrict or prevent movement of vehicles out of the intersection approaches. Potentially very long delays with continuously increasing queue lengths.

TABLE 3-3
LEVEL OF SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS²

Level of Service (LOS)	Highway Capacity Manual Delay Value (sec/veh)	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

² Source: *Highway Capacity Manual 2010*, Chapter 19 (Unsignalized Intersections).

TABLE 3-4
EXISTING (YEAR 2016) PEAK HOUR INTERSECTION CAPACITY ANALYSIS

Key Intersections		Time Period	Control Type	ICU/HCM	LOS
1.	Long Beach Boulevard at 7 th Street	AM	3Ø Traffic	0.658	B
		PM	Signal	0.484	A
2.	Atlantic Avenue at 7 th Street	AM	3Ø Traffic	0.703	C
		PM	Signal	0.434	A
3.	Martin Luther King Jr Ave at 7 th Street	AM	3Ø Traffic	0.672	B
		PM	Signal	0.520	A
4.	Alamitos Avenue at 7 th Street	AM	3Ø Traffic	0.825	D
		PM	Signal	0.763	C
5.	Atlantic Avenue at 6 th Street	AM	4Ø Traffic	0.445	A
		PM	Signal	0.642	B
6.	Alamitos Avenue at 6 th Street	AM	3Ø Traffic	0.502	A
		PM	Signal	0.664	B
7.	Atlantic Avenue at 5 th Street	AM	2Ø Traffic	0.377	A
		PM	Signal	0.333	A
8.	Atlantic Avenue at 4 th Street	AM	2Ø Traffic	0.504	A
		PM	Signal	0.462	A
9.	Atlantic Avenue at 3 rd Street	AM	2Ø Traffic	0.541	A
		PM	Signal	0.341	A
10.	Alamitos Avenue at 3 rd Street	AM	3Ø Traffic	0.853	D
		PM	Signal	0.577	A
11.	Magnolia Avenue at Broadway	AM	2Ø Traffic	0.468	A
		PM	Signal	0.543	A
12.	Pacific Avenue at Broadway	AM	3Ø Traffic	0.444	A
		PM	Signal	0.616	B
13.	Pine Avenue at Broadway	AM	5Ø Traffic	0.397	A
		PM	Signal	0.659	B

Notes:

- ICU = Intersection Capacity Utilization
- s/v = seconds per vehicle (delay)
- LOS = Level of Service, please refer to *Tables 3-2* and *3-3* for the LOS definitions
- Ø = Phase

TABLE 3-4 (CONTINUED)
EXISTING (YEAR 2016) PEAK HOUR INTERSECTION CAPACITY ANALYSIS

Key Intersections	Time Period	Control Type	ICU/HCM	LOS
14. Long Beach Boulevard at Broadway	AM	3Ø Traffic	0.367	A
	PM	Signal	0.628	B
15. Atlantic Avenue at Broadway	AM	2Ø Traffic	0.277	A
	PM	Signal	0.602	B
16. Lime Avenue at Broadway	AM	2Ø Traffic	0.229	A
	PM	Signal	0.521	A
17. Alamitos Avenue at Broadway	AM	3Ø Traffic	0.713	C
	PM	Signal	0.867	D
18. Atlantic Avenue at 1 st Street	AM	2Ø Traffic	0.310	A
	PM	Signal	0.349	A
19. Lime Avenue at 1 st Street	AM	Two-Way	9.8 s/v	A
	PM	Stop	10.5 s/v	B
20. Alamitos Avenue at 1 st Street	AM	2Ø Traffic	0.573	A
	PM	Signal	0.467	A
21. Alamitos Avenue at Medio Street	AM	One-Way	10.6 s/v	B
	PM	Stop	9.5 s/v	A
22. Magnolia Avenue at Ocean Boulevard	AM	3Ø Traffic	0.748	C
	PM	Signal	0.661	B
23. Pacific Avenue at Ocean Boulevard	AM	6Ø Traffic	0.649	B
	PM	Signal	0.504	A
24. Pine Avenue at Ocean Boulevard	AM	6Ø Traffic	0.623	B
	PM	Signal	0.778	C
25. Long Beach Boulevard at Ocean Boulevard	AM	3Ø Traffic	0.639	B
	PM	Signal	0.538	A
26. Atlantic Avenue at Ocean Boulevard	AM	3Ø Traffic	0.659	B
	PM	Signal	0.573	A

Notes:

- ICU = Intersection Capacity Utilization
- s/v = seconds per vehicle (delay)
- LOS = Level of Service, please refer to *Tables 3-2* and *3-3* for the LOS definitions
- Ø = Phase

TABLE 3-4 (CONTINUED)
EXISTING (YEAR 2016) PEAK HOUR INTERSECTION CAPACITY ANALYSIS

Key Intersections		Time Period	Control Type	ICU/HCM	LOS
27.	Broadway Court at	AM	One-Way	20.2 s/v	C
	Ocean Boulevard	PM	Stop	13.1 s/v	B
28.	Alamitos Avenue/Shoreline Drive at Ocean Boulevard	AM	6Ø Traffic	0.779	C
		PM	Signal	0.854	D
29.	Orange Avenue at Ocean Boulevard	AM	2Ø Traffic	0.672	B
		PM	Signal	0.724	C
30.	Pine Avenue at Shoreline Drive	AM	8Ø Traffic	0.373	A
		PM	Signal	0.492	A

Notes:

- ICU = Intersection Capacity Utilization
- s/v = seconds per vehicle (delay)
- LOS = Level of Service, please refer to *Tables 3-2* and *3-3* for the LOS definitions
- Ø = Phase

4.0 TRAFFIC FORECASTING METHODOLOGY

In order to estimate the traffic impact characteristics of the proposed 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 or 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 links 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. The need for site-specific and/or cumulative local area traffic improvements can then be evaluated.

5.0 PROJECT TRAFFIC CHARACTERISTICS

5.1 Project Traffic Generation

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/or rates used in the traffic forecasting procedure are found in the Ninth Edition of *Trip Generation*, published by the Institute of Transportation Engineers (ITE) [Washington D.C., 2012].

Table 5-1 summarizes the trip generation rates used in forecasting the vehicular trips generated by the proposed Project and also presents the project's forecast peak hour and daily traffic volumes. As shown, the trip generation potential of the proposed Project was estimated using trip rates for ITE Land Use 220: Apartments and ITE Land Use 820: Shopping Center.

5.1.1 Proposed Project

Review of *Table 5-1* shows that the proposed Project is forecast to generate 3,105 daily trips (one half arriving and one half departing), with 181 trips (48 inbound, 133 outbound) produced in the AM peak hour and 278 trips (165 inbound, 113 outbound) produced in the PM peak hour on a "typical" weekday. The potential traffic impact of these Project trips are assessed in the Section 8.0 of this TIA.

5.1.2 Approved Development Trip Generation Comparison

For comparison purposes, the trip generation potential of the "Approved Development" as evaluated in the June 2006 TIS is included on *Table 5-1*. As shown the "Approved Development" is forecast to generate 2,474 daily trips (one half arriving and one half departing), with 135 trips (39 inbound, 96 outbound) produced in the AM peak hour and 220 trips (128 inbound, 92 outbound) produced in the PM peak hour on a "typical" weekday. Please note that the trip generation has been updated using the *Trip Generation, 9th Edition* and assuming "apartments" in place of "condominiums" as originally evaluated.

When the proposed Project is compared to the "Approved Development", the proposed Project is forecast to generate 631 more daily trips, 46 more AM peak hour trips and 58 more PM peak hour trips (see last row of *Table 5-1*).

A comparison of the proposed Project's traffic impacts to that of the "Approved Development" is included in Section 12.0 of this TIA.

TABLE 5-1
PROJECT TRIP GENERATION FORECAST ³

ITE Land Use Code / Project Description	Daily 2-Way	AM Peak Hour			PM Peak Hour		
		Enter	Exit	Total	Enter	Exit	Total
Generation Rates:							
▪ 220: Apartments (TE/DU)	6.65	20%	80%	0.51	65%	35%	0.62
▪ 820: Shopping Center (TE/1000 SF)	[a]	62%	38%	[a]	48%	52%	[a]
Generation Forecasts:							
<u>Proposed Project</u>							
▪ East Tower – Shoreline Gateway (315 DU)	2,095	32	129	161	127	68	195
▪ Retail/Restaurant (6,711 SF)	<u>1,173</u>	<u>19</u>	<u>11</u>	<u>30</u>	<u>47</u>	<u>51</u>	<u>98</u>
Subtotal	3,268	51	140	191	174	119	293
Non-Auto Trip Adjustment (5%)	<u>-163</u>	<u>-3</u>	<u>-7</u>	<u>-10</u>	<u>-9</u>	<u>-6</u>	<u>-15</u>
Net Trip Generation Potential	3,105	48	133	181	165	113	278
<u>Approved Development Totals</u>							
▪ East Tower – Shoreline Gateway (221 DU)	1,470	23	90	113	89	48	137
▪ Retail/Restaurant (6,367 SF)	<u>1,134</u>	<u>18</u>	<u>11</u>	<u>29</u>	<u>46</u>	<u>49</u>	<u>95</u>
Subtotal	2,604	41	101	142	135	97	232
Non-Auto Trip Adjustment (5%)	<u>-130</u>	<u>-2</u>	<u>-5</u>	<u>-7</u>	<u>-7</u>	<u>-5</u>	<u>-12</u>
Net Trip Generation Potential	2,474	39	96	135	128	92	220
Net Difference: Proposed Project versus Approved Development	+631	+9	+37	+46	+37	+21	+58

Notes:

TE/DU = Trip end per dwelling unit

[a] = Shopping Center equations was used.

Daily: $\text{Ln}(T) = 0.65\text{Ln}(X) + 5.83$

AM Peak Hour: $\text{Ln}(T) = 0.61\text{Ln}(X) + 2.24$

PM Peak Hour: $\text{Ln}(T) = 0.67\text{Ln}(X) + 3.31$

³ Source: *Trip Generation, 9th Edition, Institute of Transportation Engineers (ITE), Washington, D.C. (2012)*. Trip Generation forecast based on the approach published in the *City of Long Beach Shoreline Gateway EIR Traffic Impact Study, June 2006, prepared by MMA*.

5.2 Project Traffic Distribution and Assignment

Figure 5-1 illustrates the general, directional traffic distribution pattern for the proposed Project. Project traffic volumes both entering and exiting the project site have been distributed and assigned to the adjacent street system based on the following considerations:

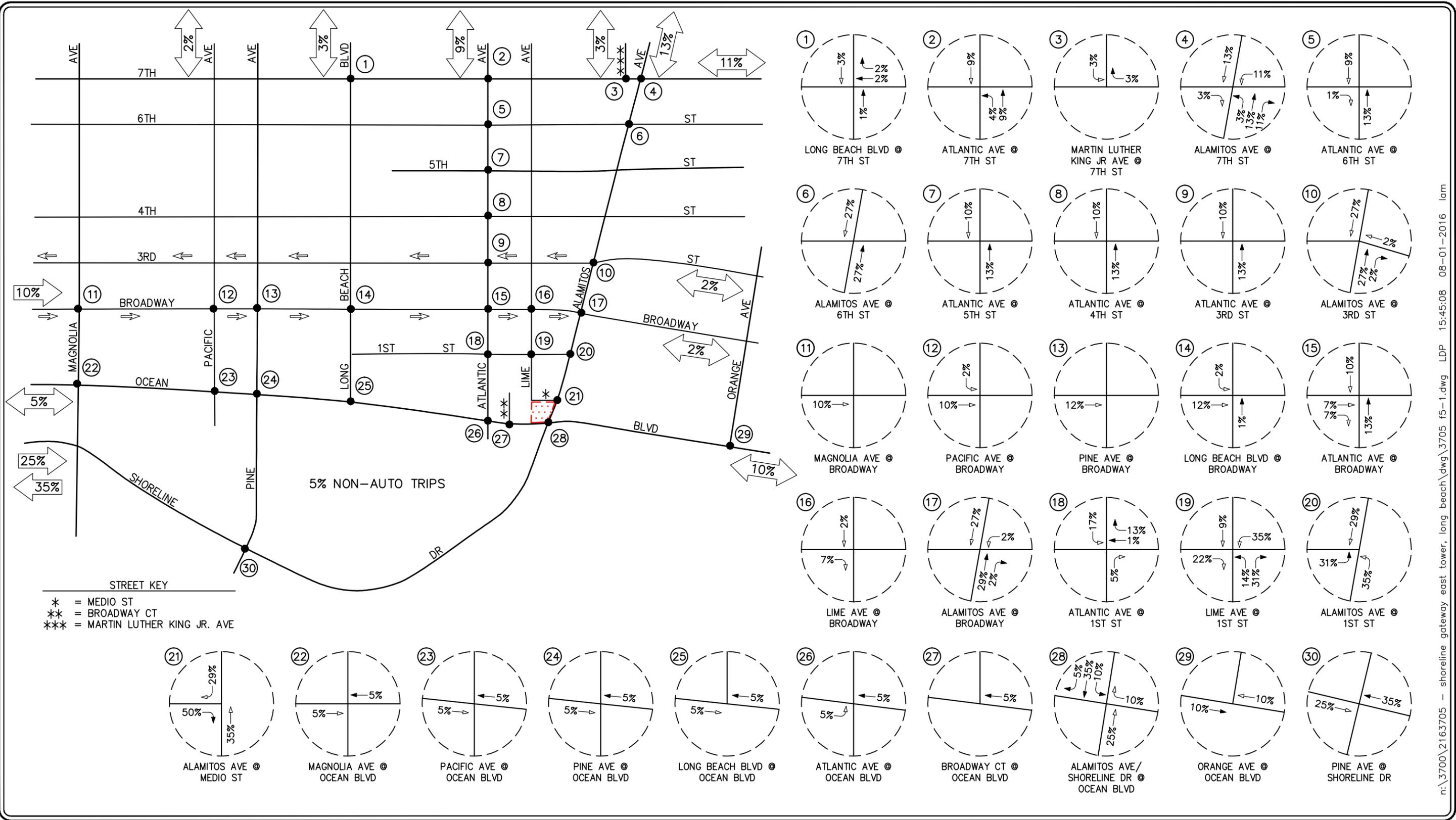
- the site's proximity to major traffic carriers and regional access routes,
- physical characteristics of the circulation system such as lane channelization and presence of traffic signals that affect travel patterns,
- presence of traffic congestion in the surrounding vicinity,
- ingress/egress availability at the Project site,
- input from City staff, and
- trip distribution pattern contained in the Shoreline Gateway EIR Traffic Impact Study.

The anticipated AM and PM peak hour traffic volumes associated with the proposed Project are presented in **Figures 5-2** and **5-3**, respectively. The traffic volume assignments presented in **Figures 5-2** and **5-3** reflect the traffic distribution characteristics shown in **Figure 5-1** and the traffic generation forecast presented in **Table 5-1**.

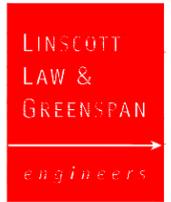
5.3 Existing Plus Project Traffic Conditions

The existing plus project traffic conditions have been generated based upon existing conditions and the estimated project traffic. These forecast traffic conditions have been prepared pursuant to the California Environmental Quality Act (CEQA) guidelines, which require that the potential impacts of a Project be evaluated upon the circulation system as it currently exists. This traffic volume scenario and the related intersection capacity analyses will identify the roadway improvements necessary to mitigate the direct traffic impacts of the Project, if any.

Figures 5-4 and **5-5** present projected AM and PM peak hour traffic volumes at the thirty (30) key study intersections with the addition of the trips generated by the proposed Project to existing traffic volumes, respectively.



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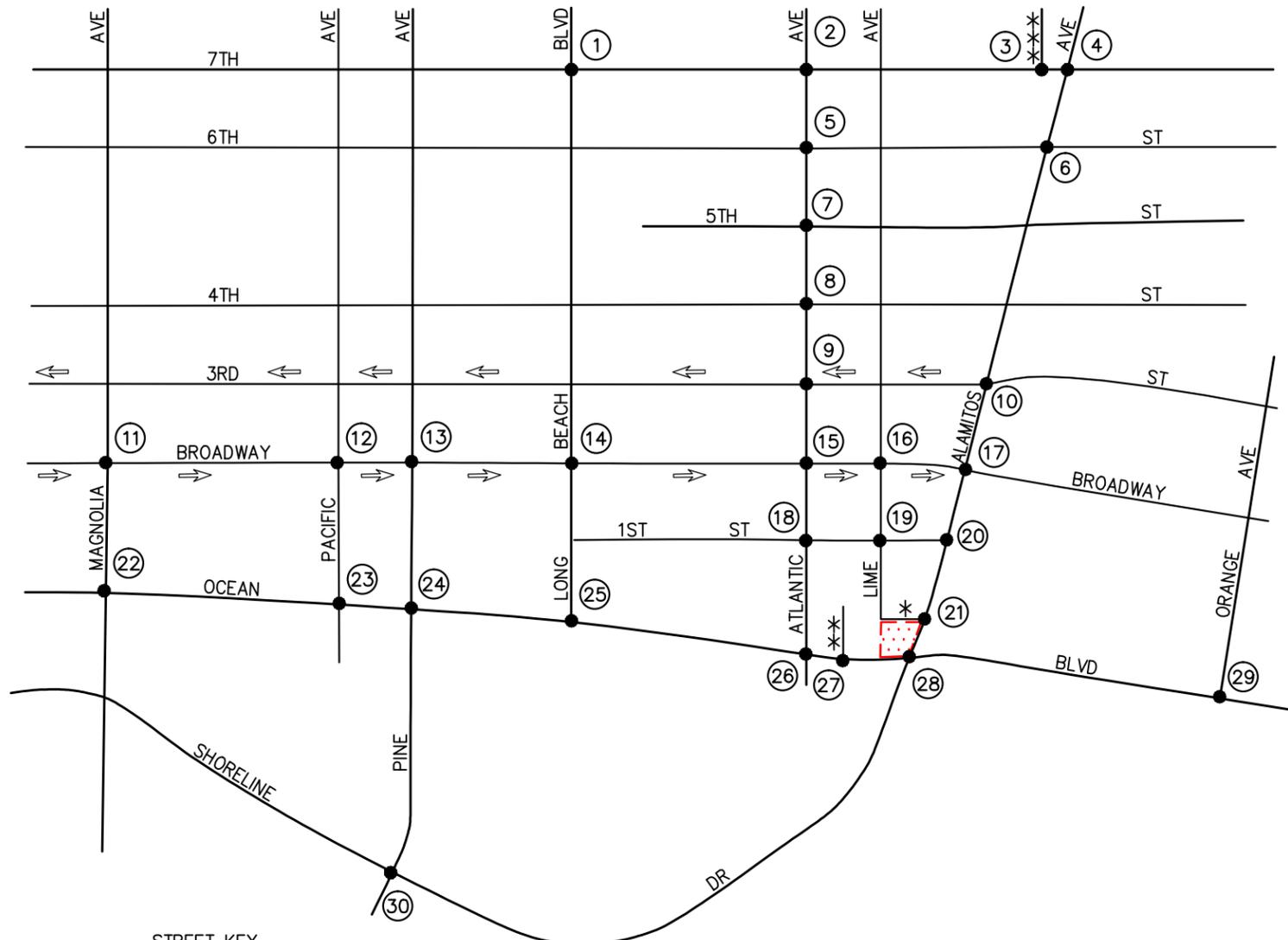


KEY

- # = STUDY INTERSECTION
- ← = INBOUND PERCENTAGE
- = OUTBOUND PERCENTAGE
- [Red Hatched Box] = PROJECT SITE

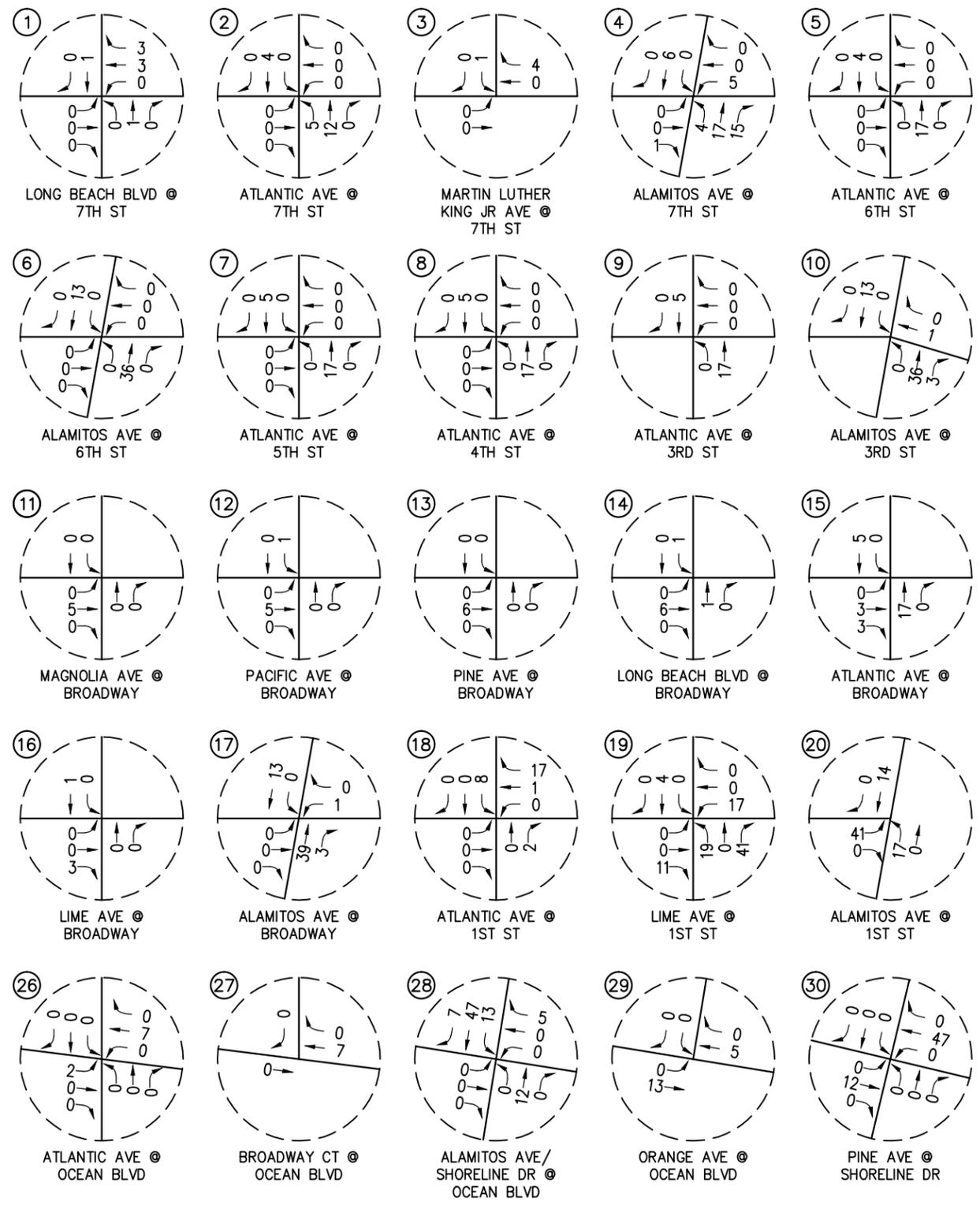
FIGURE 5-1

PROJECT TRAFFIC DISTRIBUTION PATTERN
SHORELINE GATEWAY EAST TOWER, LONG BEACH



STREET KEY

- * = MEDIO ST
- ** = BROADWAY CT
- *** = MARTIN LUTHER KING JR. AVE



KEY

- # = STUDY INTERSECTION
- [Red Hatched Box] = PROJECT SITE

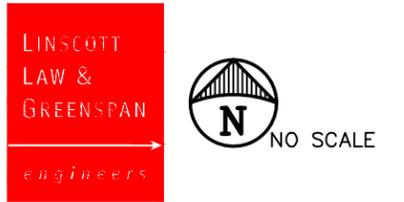
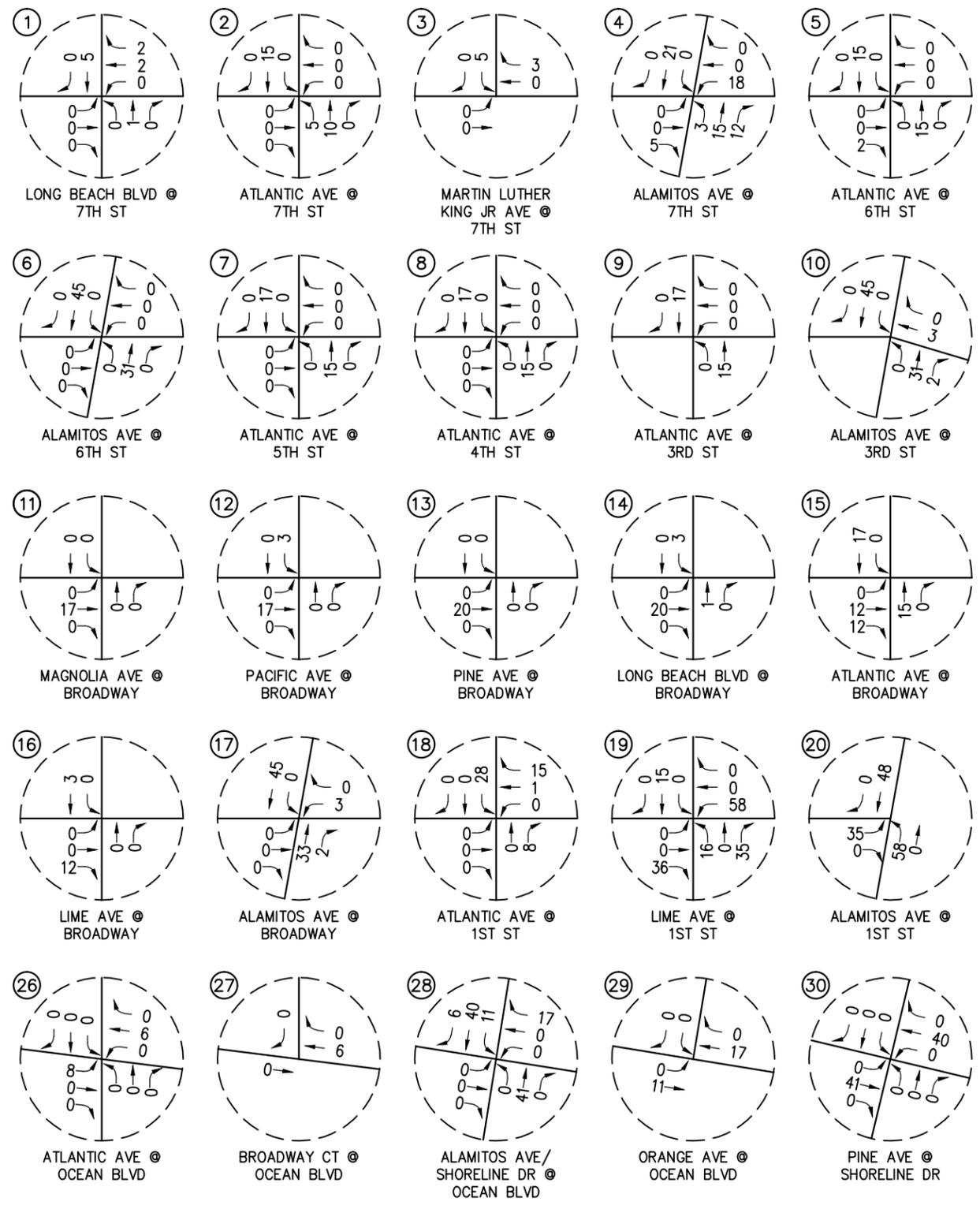
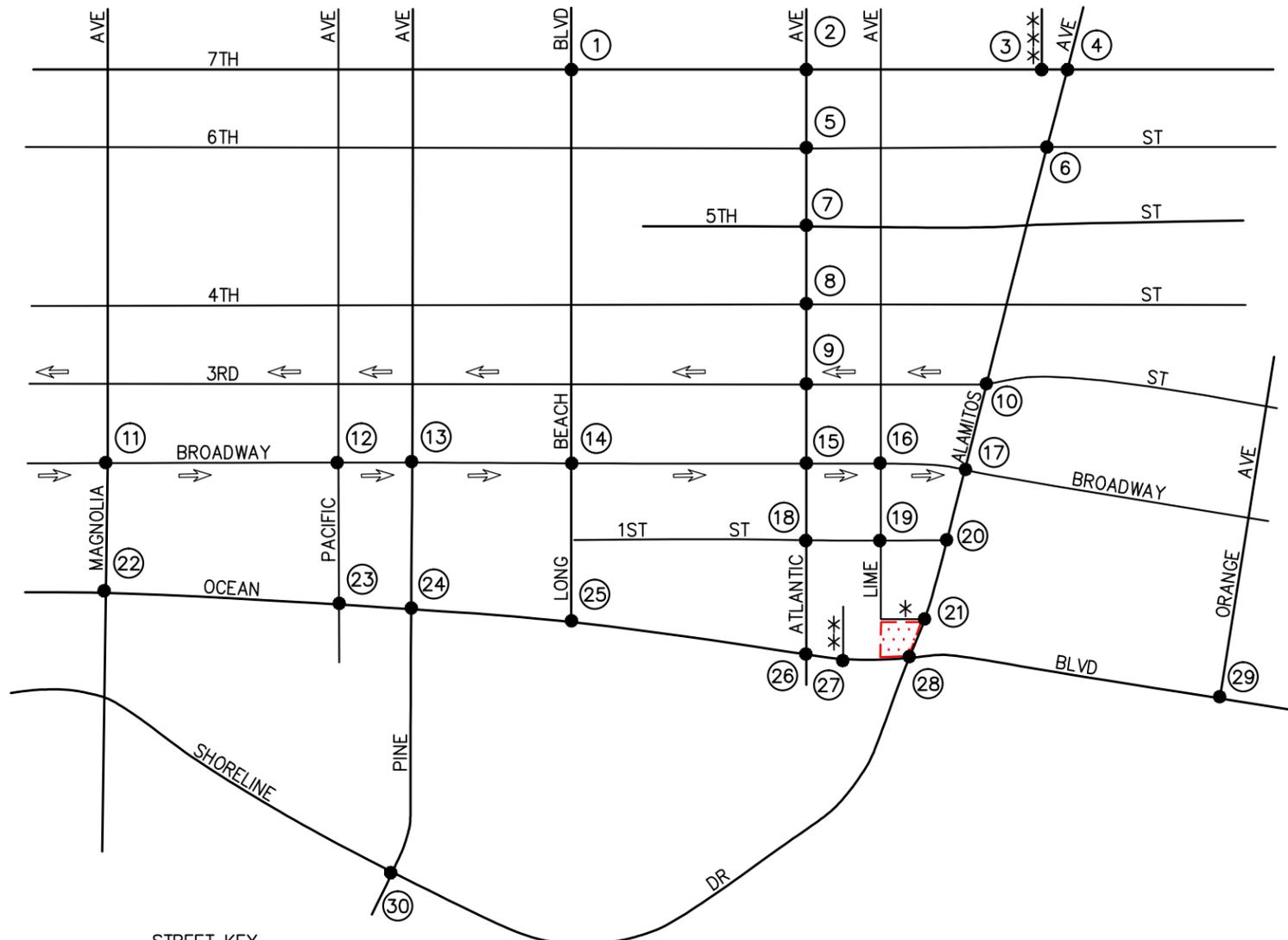


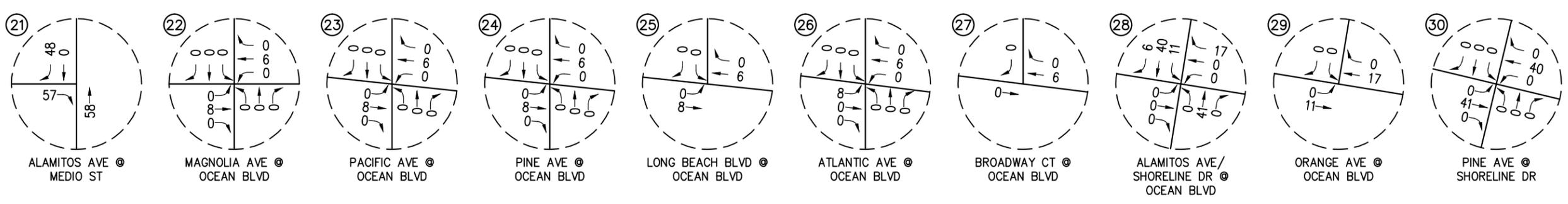
FIGURE 5-2

AM PEAK HOUR PROJECT TRAFFIC VOLUMES
SHORELINE GATEWAY EAST TOWER, LONG BEACH

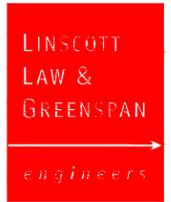
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STREET KEY
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 ** = BROADWAY CT
 *** = MARTIN LUTHER KING JR. AVE



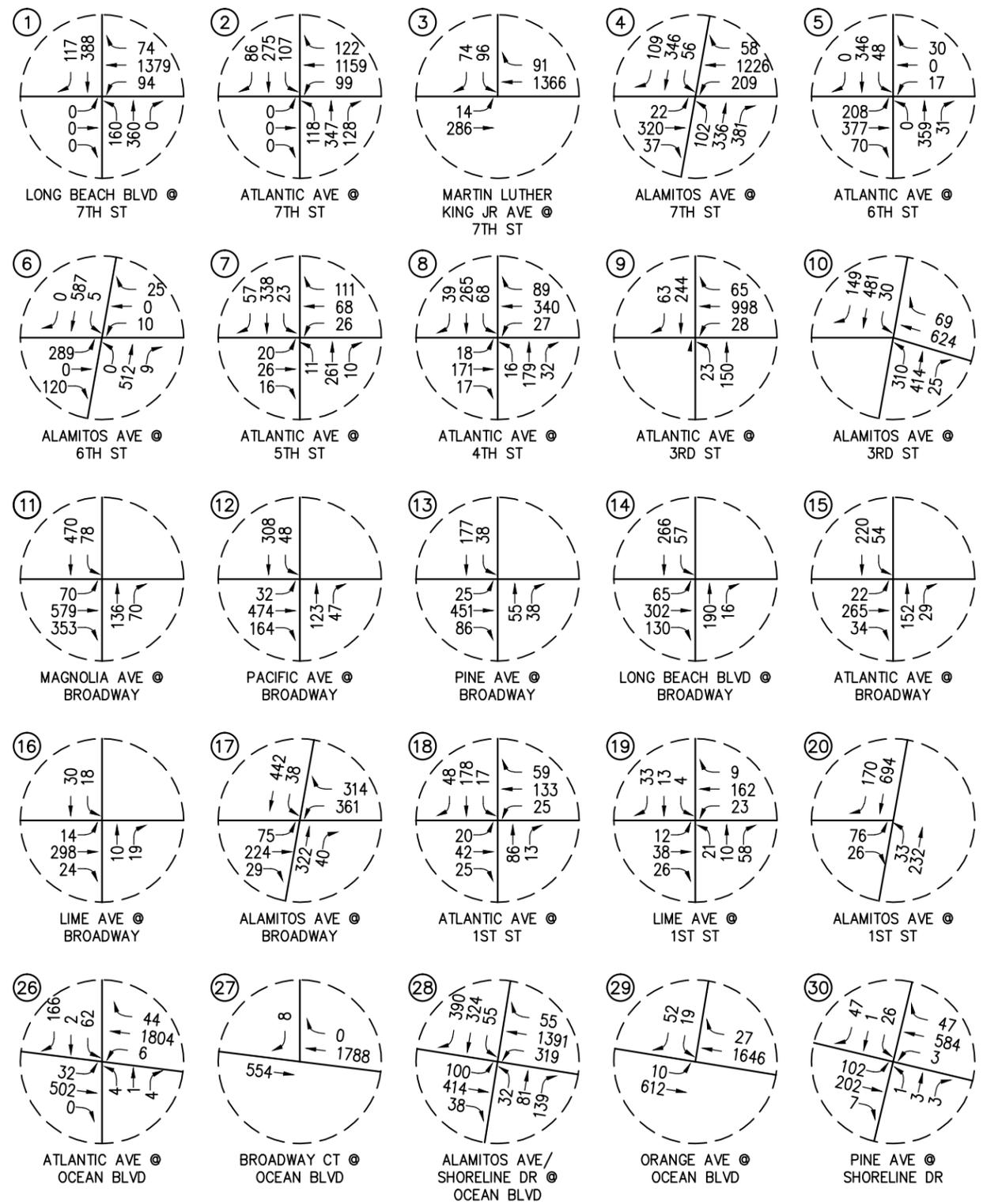
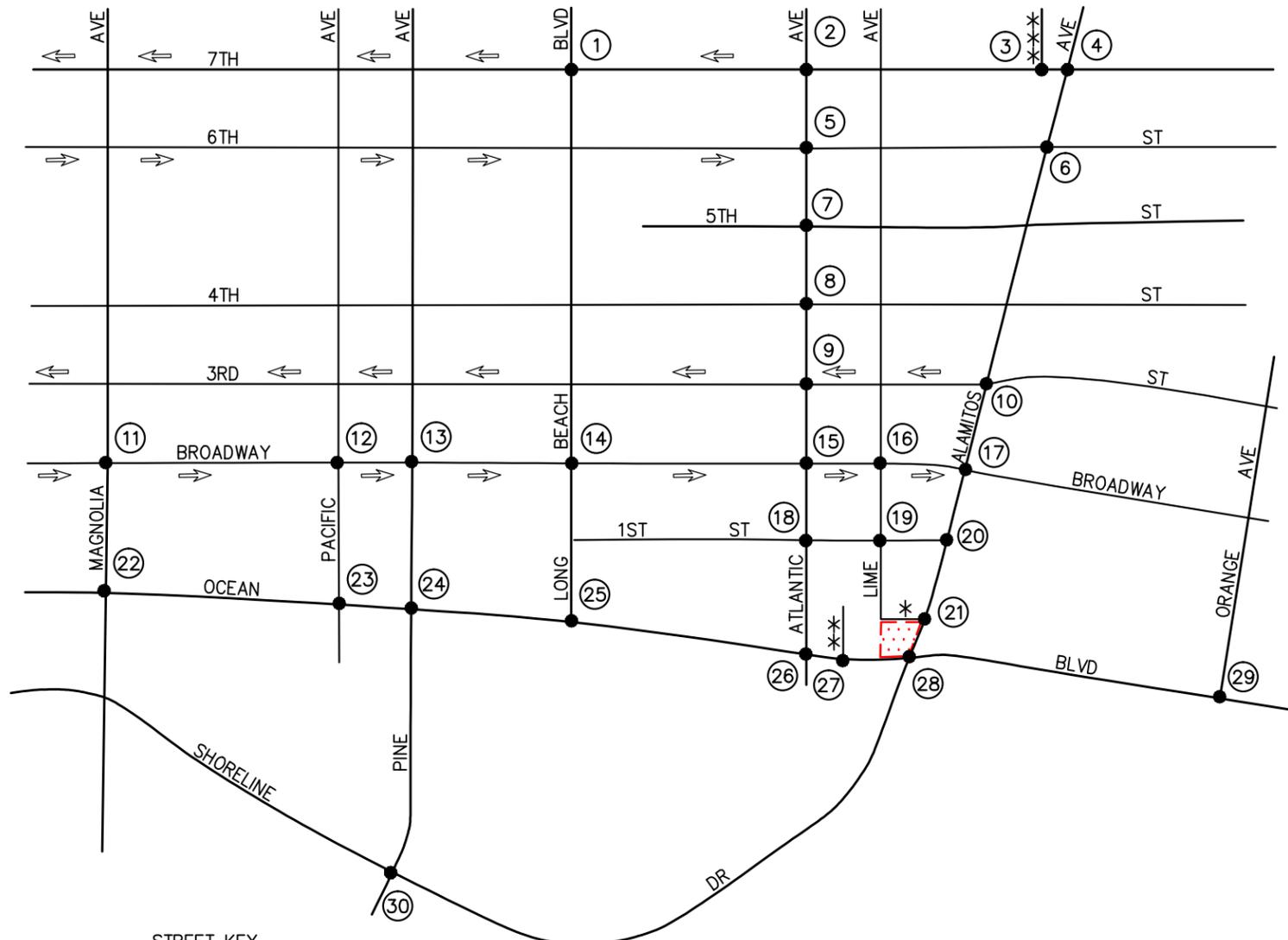
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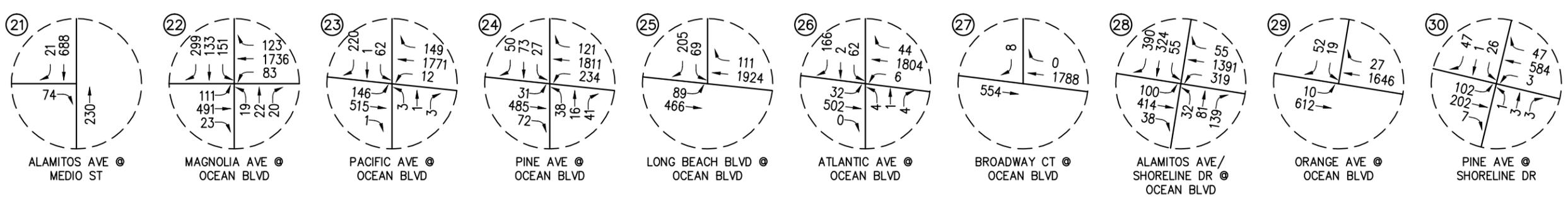
KEY
 # = STUDY INTERSECTION
 [Red Hatched Box] = PROJECT SITE

FIGURE 5-3

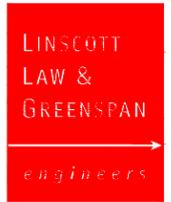
PM PEAK HOUR PROJECT TRAFFIC VOLUMES
 SHORELINE GATEWAY EAST TOWER, LONG BEACH



STREET KEY
 * = MEDIO ST
 ** = BROADWAY CT
 *** = MARTIN LUTHER KING JR. AVE

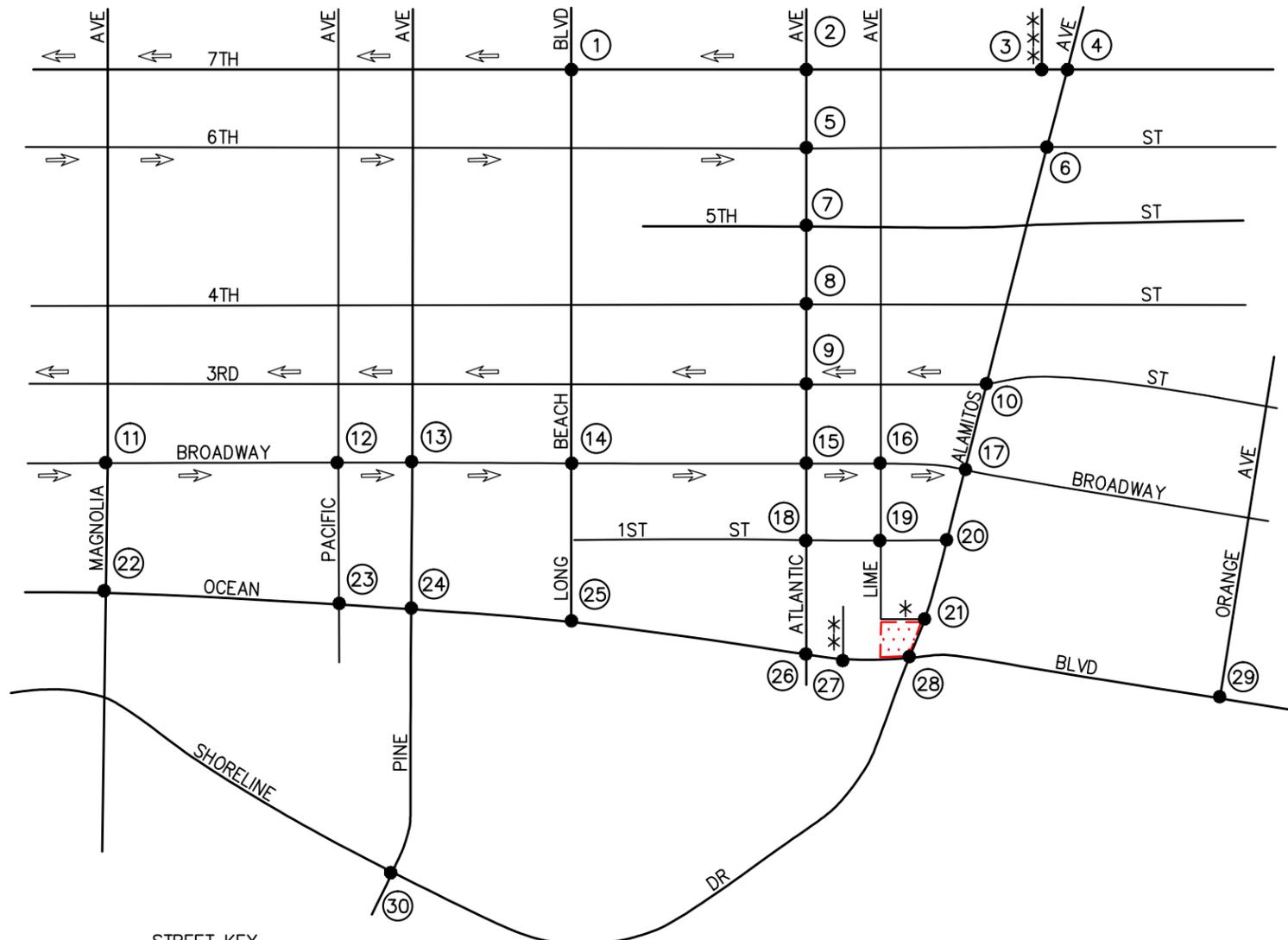


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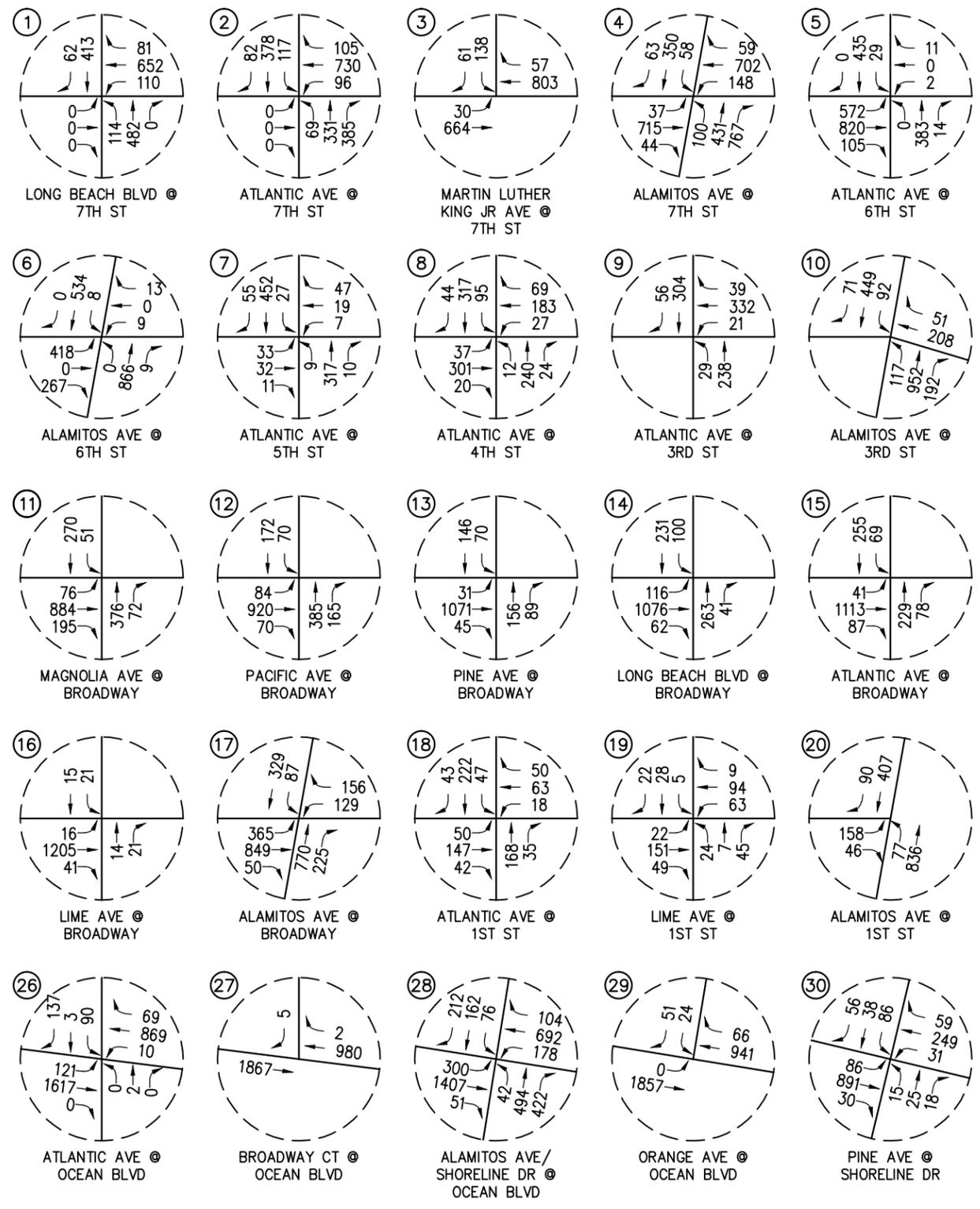


KEY
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 [Red Hatched Box] = PROJECT SITE

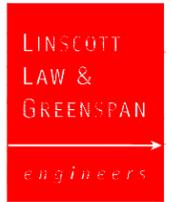
FIGURE 5-4
 EXISTING PLUS PROJECT AM PEAK HOUR TRAFFIC VOLUMES
 SHORELINE GATEWAY EAST TOWER, LONG BEACH



STREET KEY
 * = MEDIO ST
 ** = BROADWAY CT
 *** = MARTIN LUTHER KING JR. AVE



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KEY
 # = STUDY INTERSECTION
 [Red Hatched Box] = PROJECT SITE

FIGURE 5-5

EXISTING PLUS PROJECT PM PEAK HOUR TRAFFIC VOLUMES
 SHORELINE GATEWAY EAST TOWER, LONG BEACH

6.0 FUTURE TRAFFIC CONDITIONS

6.1 Ambient Traffic Growth

Cumulative traffic growth estimates have been calculated using an ambient growth factor. The ambient traffic 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 future growth in traffic volumes has been calculated at one percent (1%) per year. Applied to existing Year 2016 traffic volumes results in a four percent (4%) increase of growth in existing volumes to horizon year 2020.

Please note that the recommended ambient growth factor is generally consistent with the background traffic growth estimates contained in the most current *Congestion Management Program for Los Angeles County*. It should be further noted that the 1.0% per year ambient growth factor was approved by City of Long Beach staff.

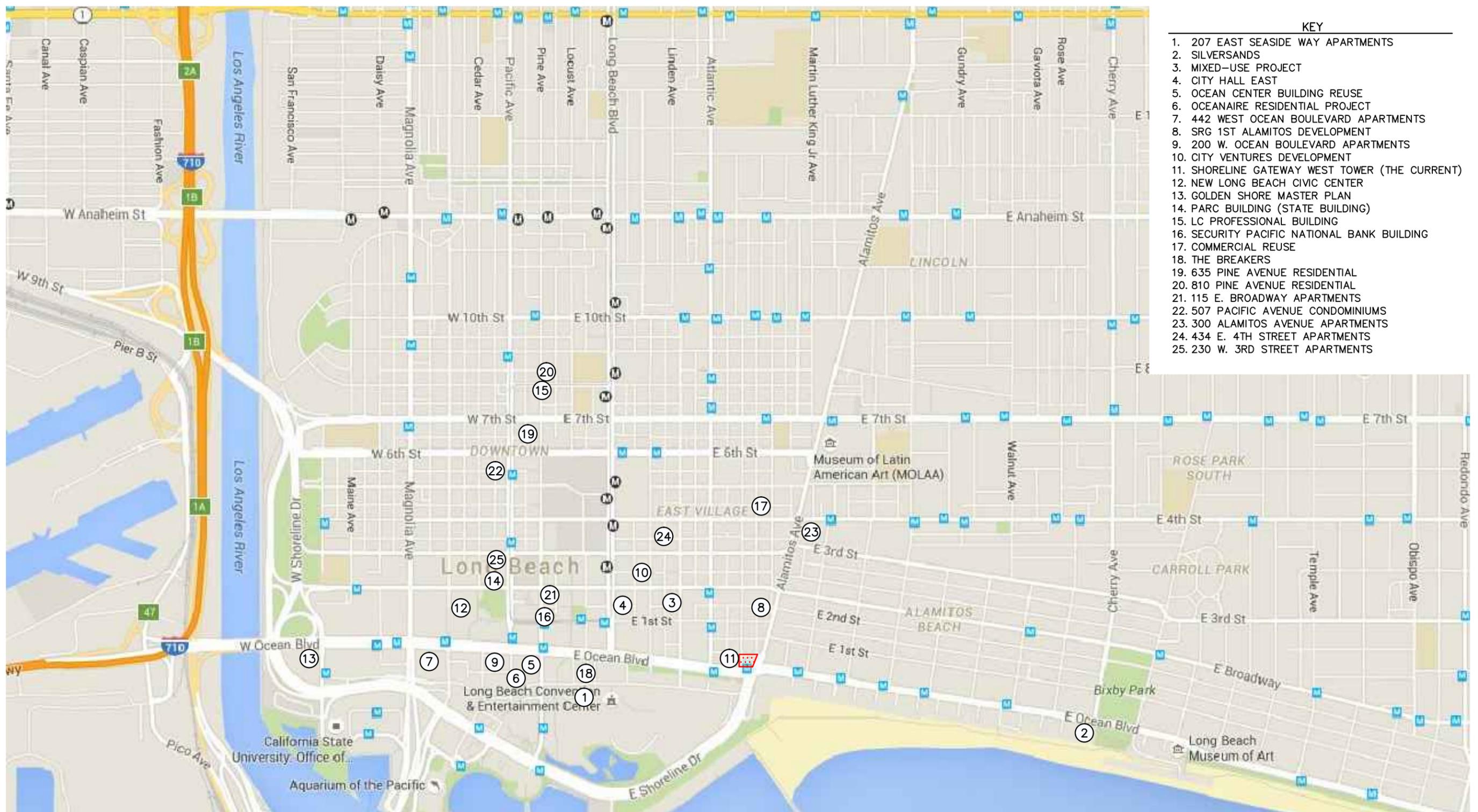
6.2 Cumulative Projects Traffic Characteristics

The City of Long Beach identified twenty-five (25) 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 all of 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 cumulative 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. With this information, the potential impact of the proposed Project can be evaluated within the context of the cumulative impact of all ongoing development. These twenty-five (25) cumulative projects have been included as part of the cumulative background setting.

Table 6-1 provides the location and a brief description for each of the twenty-five (25) cumulative projects. **Figure 6-1** graphically illustrates the location of the cumulative projects. These cumulative projects are expected to generate vehicular traffic, which may affect the operating conditions of the key study intersections.

Table 6-2 presents the development totals and resultant trip generation for the twenty-five (25) cumulative projects. As shown in **Table 6-2**, the twenty-five (25) cumulative projects are expected to generate a combined total of 41,040 daily trips, 3,157 AM peak hour trips (1,349 inbound and 1,808 outbound) and 3,367 PM peak hour trips (1,793 inbound and 1,574 outbound) on a typical weekday.

The AM and PM peak hour traffic volumes associated with the twenty-five (25) cumulative projects are presented in **Figures 6-2** and **6-3** respectively.



- KEY**
1. 207 EAST SEASIDE WAY APARTMENTS
 2. SILVERSANDS
 3. MIXED-USE PROJECT
 4. CITY HALL EAST
 5. OCEAN CENTER BUILDING REUSE
 6. OCEANAIRE RESIDENTIAL PROJECT
 7. 442 WEST OCEAN BOULEVARD APARTMENTS
 8. SRG 1ST ALAMITOS DEVELOPMENT
 9. 200 W. OCEAN BOULEVARD APARTMENTS
 10. CITY VENTURES DEVELOPMENT
 11. SHORELINE GATEWAY WEST TOWER (THE CURRENT)
 12. NEW LONG BEACH CIVIC CENTER
 13. GOLDEN SHORE MASTER PLAN
 14. PARC BUILDING (STATE BUILDING)
 15. LC PROFESSIONAL BUILDING
 16. SECURITY PACIFIC NATIONAL BANK BUILDING
 17. COMMERCIAL REUSE
 18. THE BREAKERS
 19. 635 PINE AVENUE RESIDENTIAL
 20. 810 PINE AVENUE RESIDENTIAL
 21. 115 E. BROADWAY APARTMENTS
 22. 507 PACIFIC AVENUE CONDOMINIUMS
 23. 300 ALAMITOS AVENUE APARTMENTS
 24. 434 E. 4TH STREET APARTMENTS
 25. 230 W. 3RD STREET APARTMENTS

- KEY**
- Ⓝ = CUMULATIVE PROJECT LOCATION
 - ▨ = PROJECT SITE

FIGURE 6-1

**LOCATION OF CUMULATIVE PROJECTS
SHORELINE GATEWAY EAST TOWER, LONG BEACH**



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TABLE 6-1
LOCATION AND DESCRIPTION OF CUMULATIVE PROJECTS⁴

No.	Cumulative Project	Location	Description
1.	207 East Seaside Way Apartments	207 East Seaside Way	117 apartments
2.	Silversands	2010 East Ocean Boulevard	40 hotel rooms and 56 DU condominiums
3.	Mixed-Use Project	135 Linden Avenue	44 apartments and 1,257 SF retail
4.	City Hall East	100 Long Beach Boulevard	156 apartments and 3,621 SF retail
5.	Ocean Center Building Reuse	110 West Ocean Boulevard	74 apartments, 5,000 SF restaurant and 5,400 SF retail
6.	Oceanaire Residential Project	150 West Ocean Boulevard	216 apartments
7.	442 West Ocean Boulevard Apartments	442 West Ocean Boulevard	94 DU apartments
8.	SRG 1st Alamitos Development	101 Alamitos Avenue	136 DU condominiums and 2,700 SF commercial
9.	200 W. Ocean Boulevard Apartments	200 W. Ocean Boulevard	94 DU apartments and 4,597 SF commercial
10.	City Ventures Development	227 Elm Avenue	40 DU townhomes
11.	Shoreline Gateway West Tower (The Current)	707 E. Ocean Boulevard, north of Ocean Boulevard, east of Broadway Court and west of Alamitos Avenue	223 apartment homes and 9,182 SF of retail/restaurant, consisting of 2,636 SF of retail space and 6,546 SF of café/restaurant uses. ⁵
12.	New Long Beach Civic Center	North of Ocean Boulevard and south of Broadway, between Magnolia Avenue and Pacific Avenue in downtown Long Beach	3 rd & Pacific – 163 condominiums; Civic Center – 270,000 SF City Hall and 240,000 SF Port Administration; Lincoln Park – 92,000 SF Library and 3.17 Acres City Park; Center Block – 580 apartment homes, 200-room hotel, 32,000 SF of retail and 8,000 SF of restaurant uses. Existing 138,000 SF Main Library, 283,000 SF City Hall and 2.60 acre City Park to be replaced.
13.	Golden Shore Master Plan	East side and west side of Golden Shore, south of Ocean Boulevard and north of Shoreline Drive	1,110 DU high-rise residential condominiums, 340,000 SF office, 27,000 SF retail, 27,000 SF banquet area, and 400 room hotel

⁴ Source: City of Long Beach Planning Department.

⁵ To provide a conservative assessment the approved retail mix (i.e. 9,182 SF of retail/restaurant space was used in place of what was built (i.e. 6,502 SF of retail/restaurant space), which results in 6 more AM peak hour trips and 24 more PM peak hour trips.

TABLE 6-1 (CONTINUED)
LOCATION AND DESCRIPTION OF CUMULATIVE PROJECTS⁶

No.	Cumulative Project	Location	Description
14.	Parc Building (State Building)	245 W. Broadway	222 DU apartments with 8,500 SF retail
15.	LC Professional Building	117 E. 8 th Street	91 bed assisted living residential care facility
16.	Security Pacific National Bank Building	110 Pine Avenue	118 DU condominiums
17.	Commercial Reuse	743 E. 4 th Street	3,657 SF restaurant with bar
18.	The Breakers	210 E. Ocean Boulevard	202 DU apartments
19.	635 Pine Avenue Residential	635 Pine Avenue	142 DU apartments
20.	810 Pine Avenue Residential	810 Pine Avenue	64 DU apartments
21.	115 E. Broadway Apartments	115 E. Broadway	141 DU apartments with 3,650 SF retail
22.	507 Pacific Avenue Condominiums	507 Pacific Avenue	134 DU condominiums with 7,200 SF commercial space
23.	300 Alamitos Avenue Apartments	300 Alamitos Avenue	77 DU apartments
24.	434 E. 4 th Street Apartments	434 E. 4 th Street	49 DU apartments with 2,350 SF retail
25.	230 W. 3 rd Street Apartments	230 W. 3 rd Street	163 DU apartments

⁶ Source: City of Long Beach Planning Department.

TABLE 6-2
CUMULATIVE PROJECTS TRAFFIC GENERATION FORECAST⁷

Cumulative Project Description	Daily 2-way	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
1. 207 East Seaside Way Apartments ⁸	778	12	48	60	47	26	73
2. Silversands	652	16	30	46	31	22	53
3. Mixed-Use Project	293	4	18	22	18	9	27
4. City Hall East	1,192	18	65	83	69	41	110
5. Ocean Center Building Reuse	1,359	41	56	97	69	46	115
6. Oceanaire Residential Project ⁹	1,436	22	89	111	86	48	134
7. 442 West Ocean Boulevard Apartments ¹⁰	625	10	38	48	38	20	58
8. SRG 1 st Alamitos Development	790	10	50	60	48	23	71
9. 200 W. Ocean Boulevard	801	12	40	52	43	26	69
10. City Ventures Development	232	3	15	18	14	7	21
11. Shoreline Gateway West Tower (The Current)	1,781	28	89	117	101	59	163
12. New Long Beach Civic Center ¹¹	10,923	377	294	671	247	305	552
13. Golden Shore Master Plan	11,004	640	432	1,072	444	648	1,092
14. Parc Building (State Building)	1,476	23	90	113	90	48	138
15. LC Professional Building	242	8	5	13	9	11	20
16. Security Pacific National Bank	686	9	43	52	41	20	61
17. Commercial Reuse	418	20	16	36	13	8	21
18. The Breakers	1,343	21	82	103	81	44	125
19. 635 Pine Avenue Residential	944	14	58	72	57	31	88
20. 810 Pine Avenue Residential	426	7	26	33	26	14	40
21. 115 E. Broadway Apartments	938	14	58	72	57	30	87
22. 507 Pacific Avenue Condominiums	779	10	49	59	47	23	70
23. 300 Alamitos Avenue Apartments	512	8	31	39	31	17	48
24. 434 E. 4 th Street Apartments	326	5	20	25	20	10	30
25. 230 W. 3 rd Street Apartments	1,084	17	66	83	66	35	101
Total Cumulative Projects Trip Generation Potential	41,040	1,349	1,808	3,157	1,793	1,574	3,367

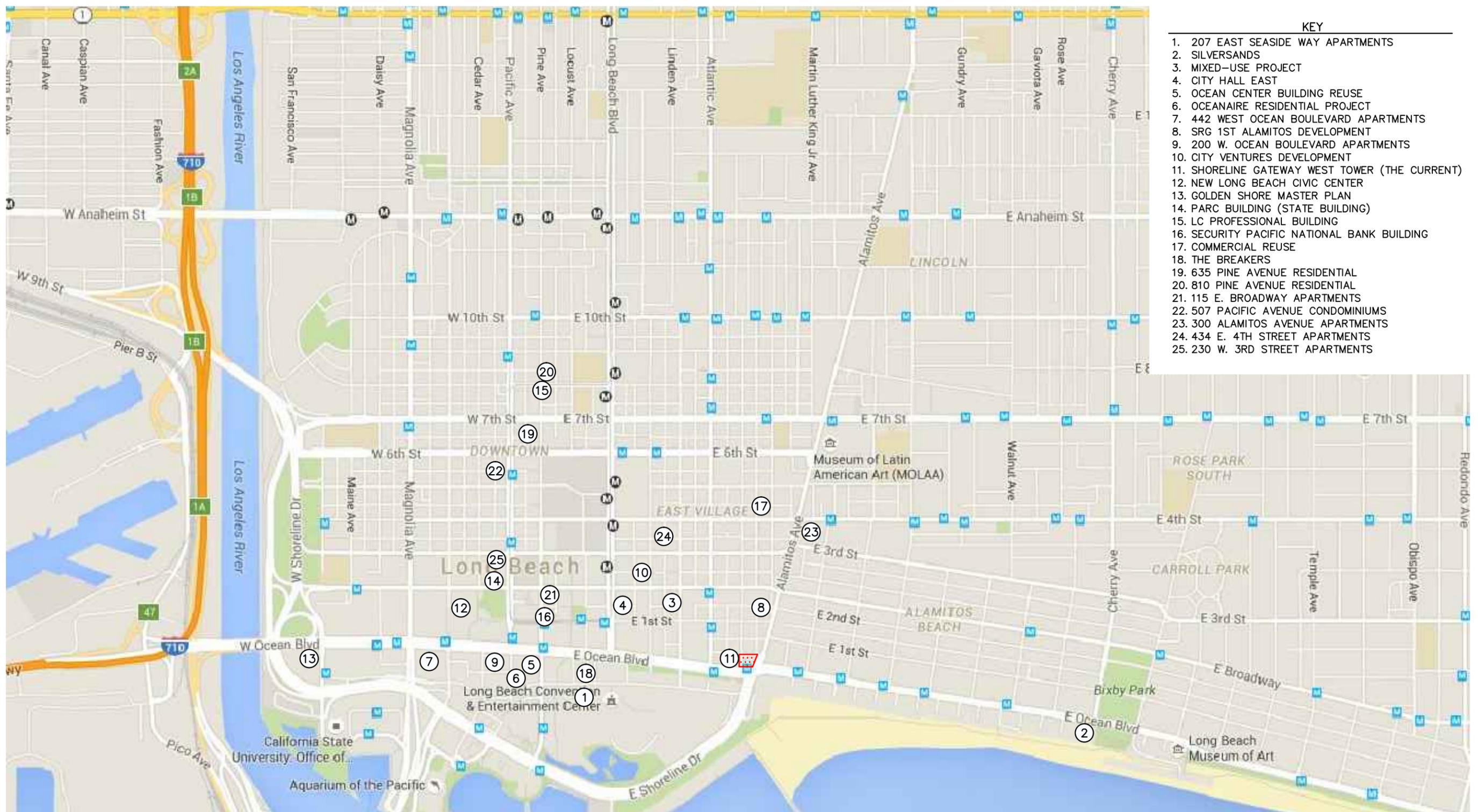
⁷ Source: *Trip Generation*, 9th Edition, Institute of Transportation Engineers (ITE) [Washington, D.C. (2012)].

⁸ Source: *207 East Seaside Way Apartments Project Traffic Impact Analysis*, prepared by LLG.

⁹ Source: *Oceanaire Apartments Traffic Impact Analysis*, prepared by Michael Baker International.

¹⁰ Source: *442 West Ocean Boulevard Apartments Project Traffic Impact Analysis*, prepared by LLG.

¹¹ Source: *Traffic Impact Analysis for the New Long Beach Civic Center Project*, prepared by LLG.



KEY

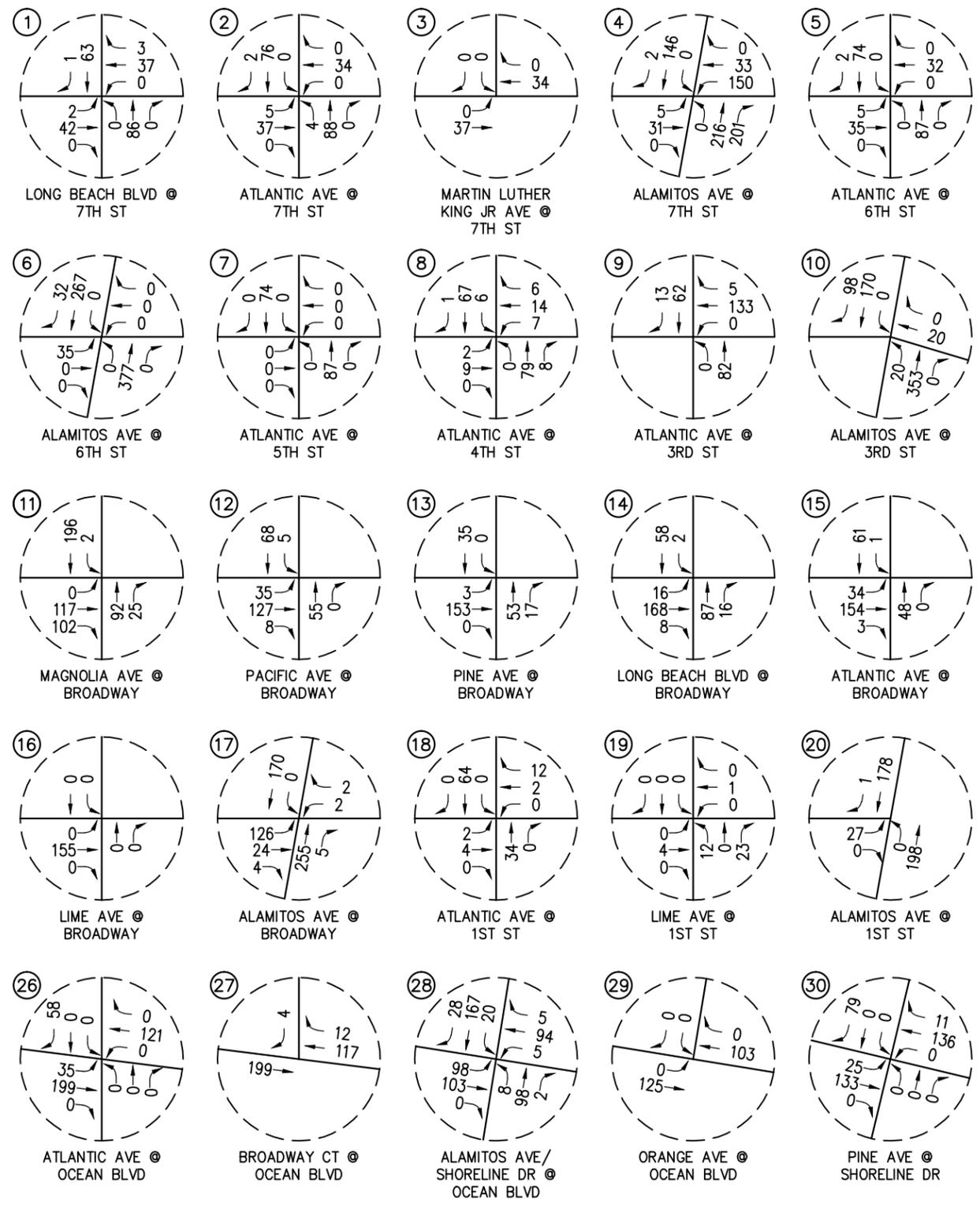
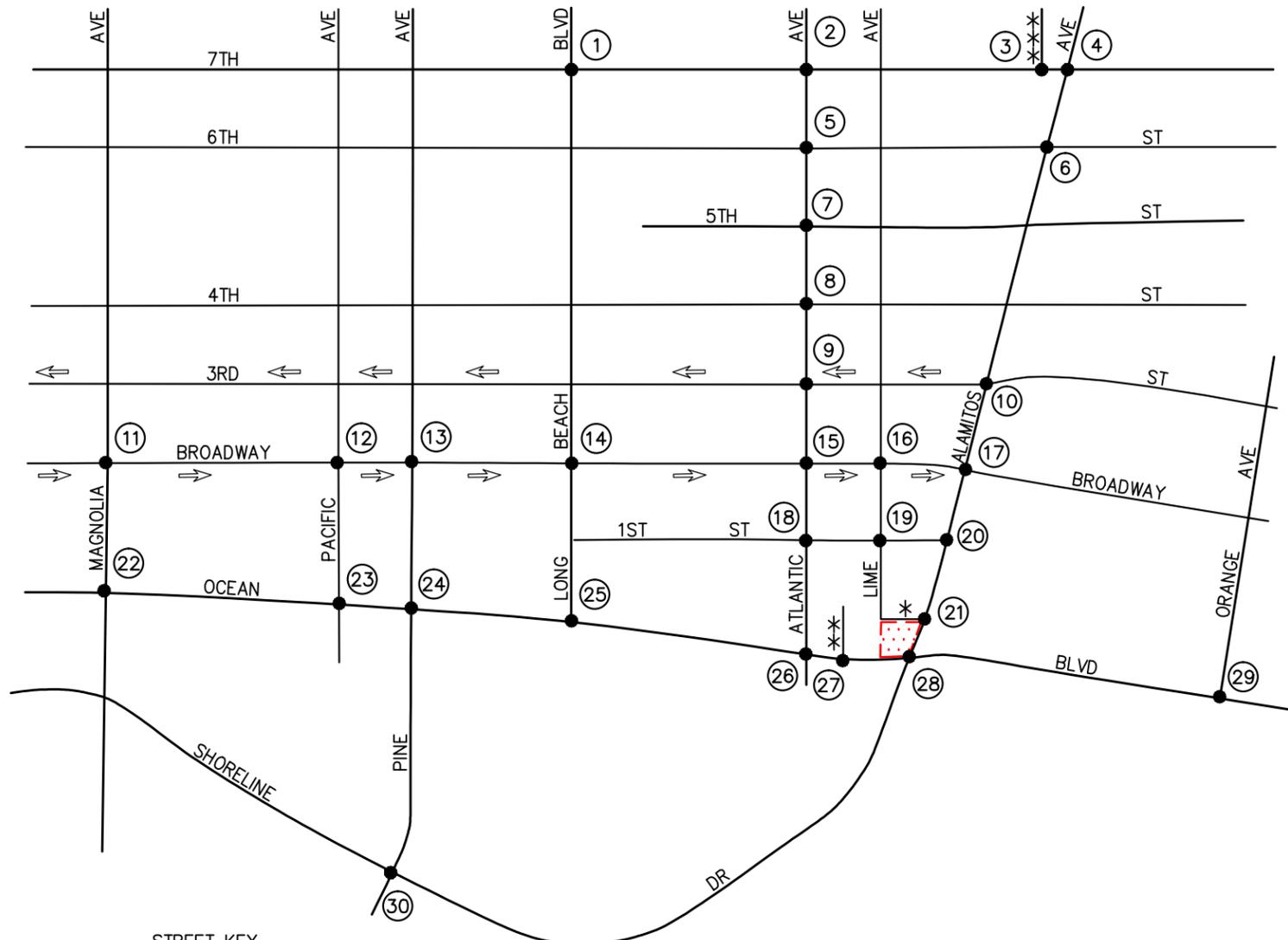
1. 207 EAST SEASIDE WAY APARTMENTS
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24. 434 E. 4TH STREET APARTMENTS
25. 230 W. 3RD STREET APARTMENTS

KEY

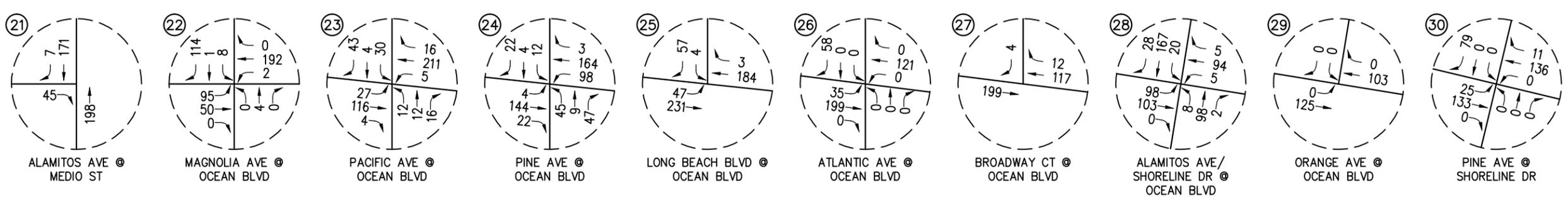
- Ⓝ = CUMULATIVE PROJECT LOCATION
- ▨ = PROJECT SITE

FIGURE 6-1

LOCATION OF CUMULATIVE PROJECTS
SHORELINE GATEWAY EAST TOWER, LONG BEACH



STREET KEY
 * = MEDIO ST
 ** = BROADWAY CT
 *** = MARTIN LUTHER KING JR. AVE



KEY
 # = STUDY INTERSECTION
 [Red Hatched Box] = PROJECT SITE

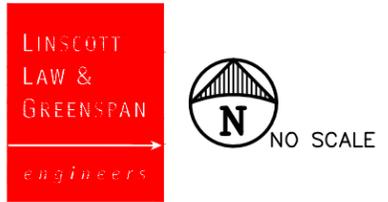


FIGURE 6-2

AM PEAK HOUR CUMULATIVE PROJECT TRAFFIC VOLUMES
 SHORELINE GATEWAY EAST TOWER, LONG BEACH

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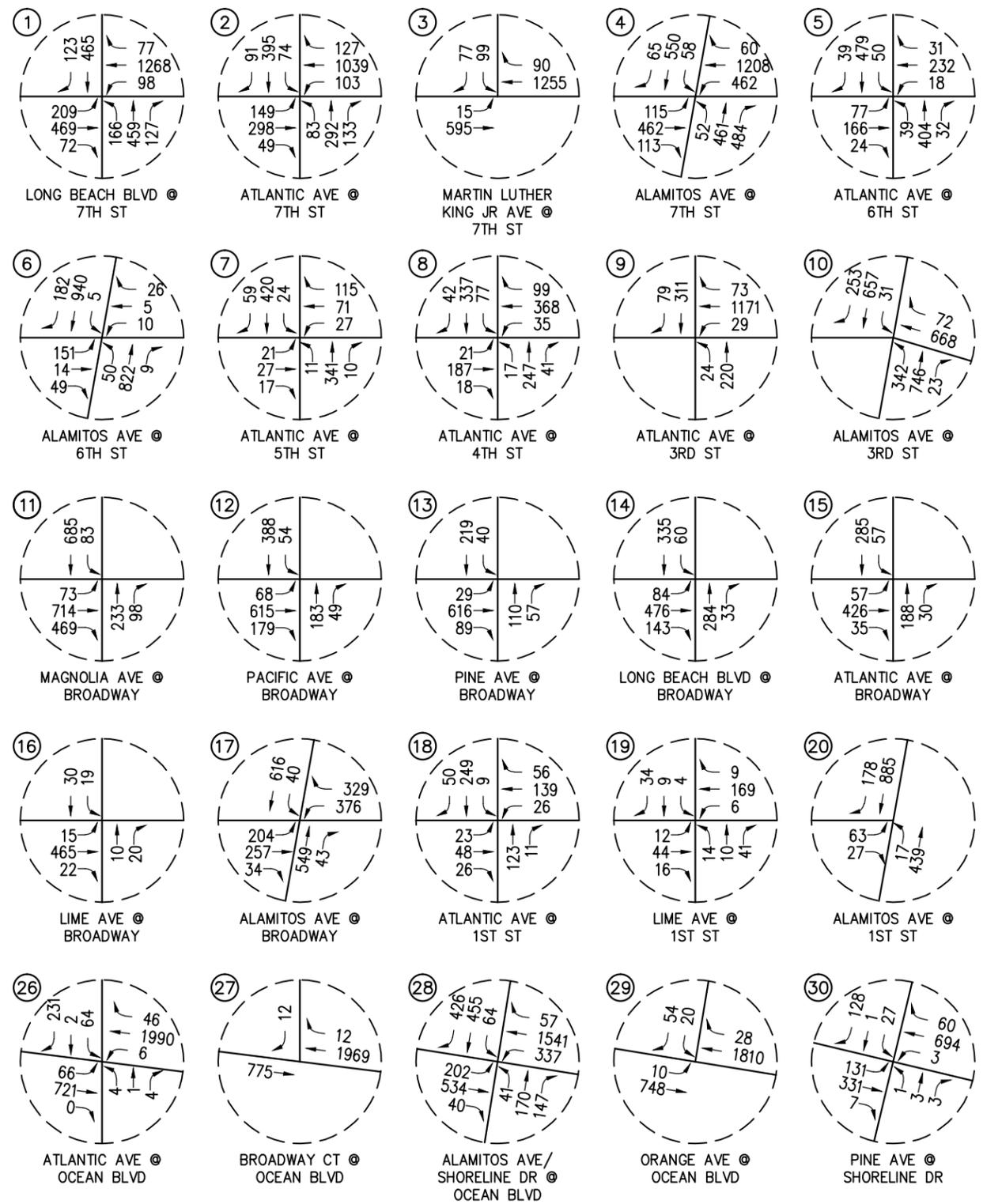
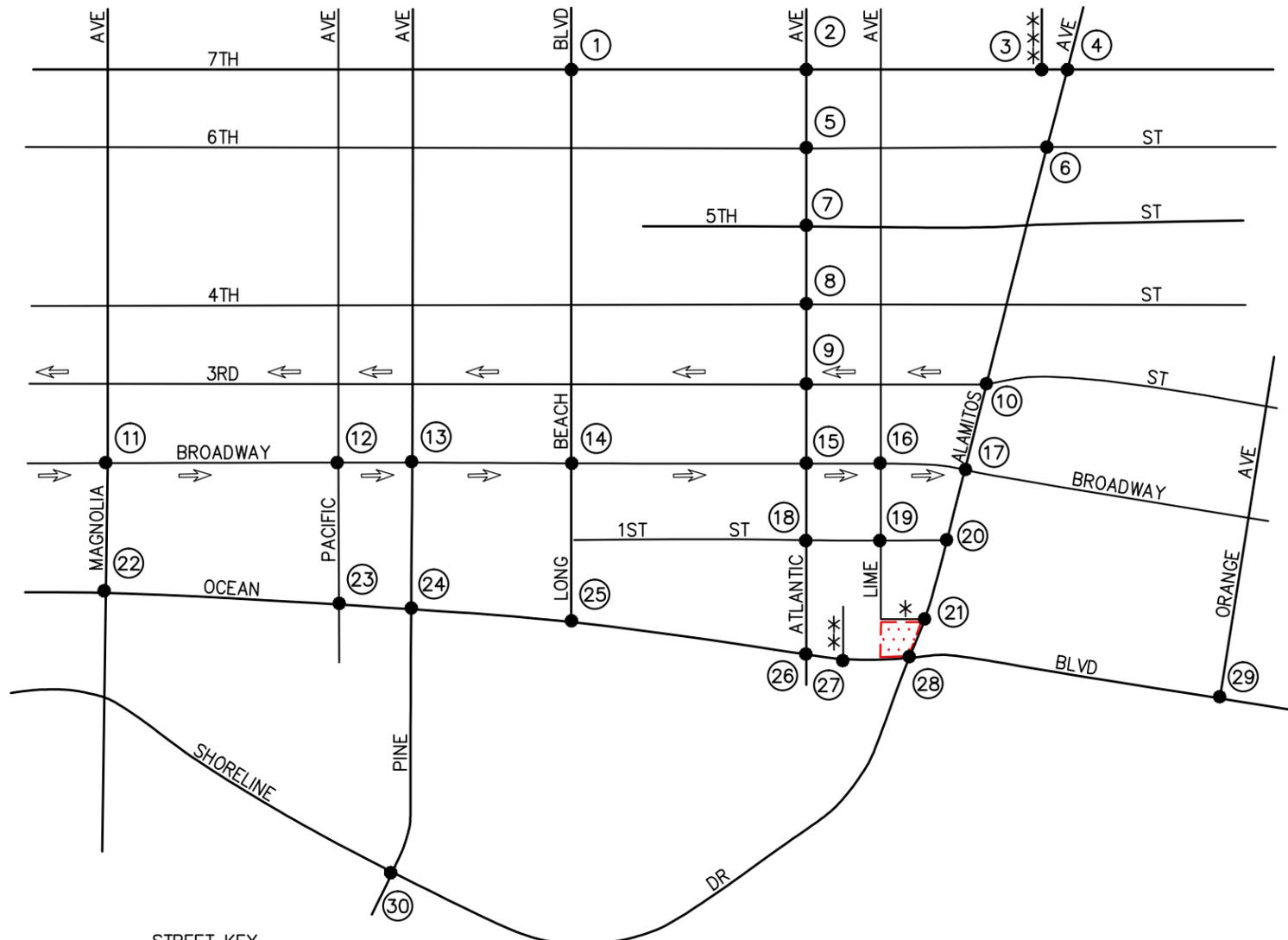
6.3 Year 2020 Traffic Volumes

Figures 6-4 and **6-5** present future AM and PM peak hour cumulative traffic volumes at the thirty (30) key study intersections for the Year 2020, respectively. Please note that the cumulative traffic volumes represent the accumulation of existing traffic, ambient growth traffic and cumulative projects traffic.

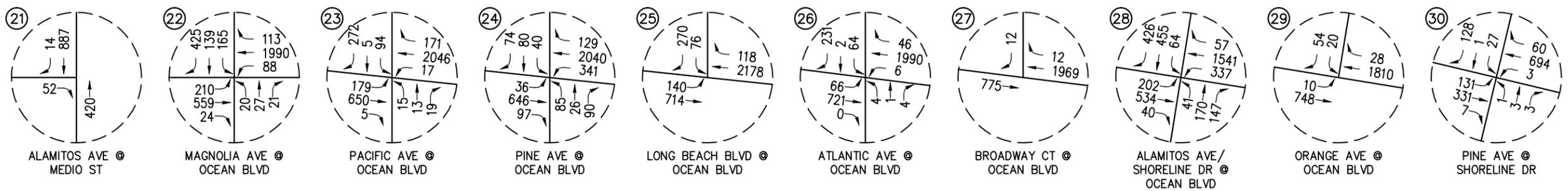
Figures 6-6 and **6-7** illustrate Year 2020 forecast AM and PM peak hour traffic volumes with the inclusion of the trips generated by the proposed Project, respectively.

6.4 Year 2020 Roadway Network Improvements

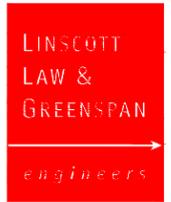
Based on information obtained from the City of Long Beach, roadway network changes in the downtown area were applied to the Year 2020 cumulative background setting. The roadway network changes include the conversion of 7th Street and 6th Street to a two-way roadway west of Atlantic Avenue; the conversion of these two streets from one-way flow to two-way traffic flow west to Alamitos Avenue was recently completed by the City over the past year or so. These planned improvements are discussed further in Section 9.0 and are included in the cumulative traffic setting.



STREET KEY
 * = MEDIO ST
 ** = BROADWAY CT
 *** = MARTIN LUTHER KING JR. AVE

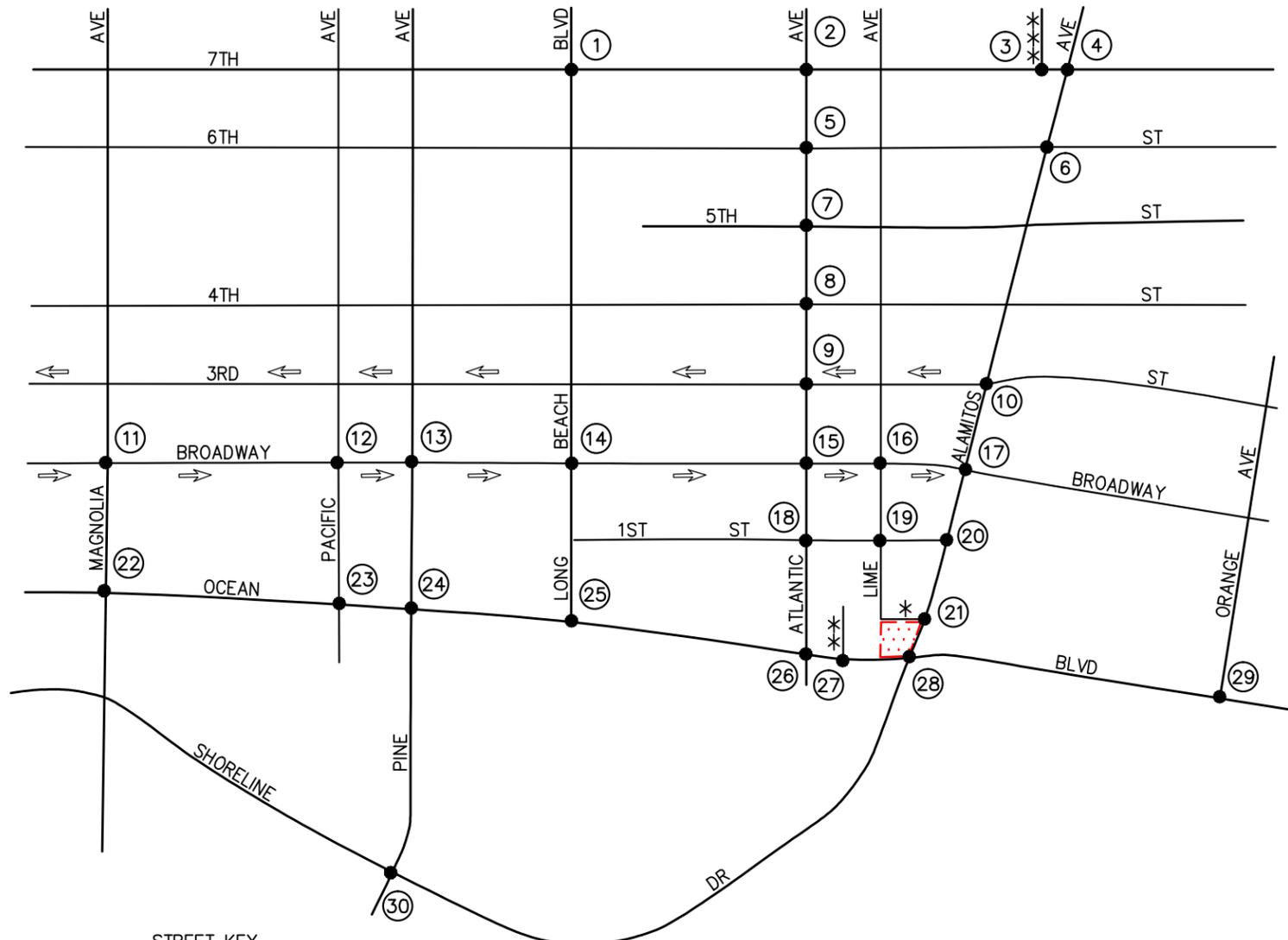


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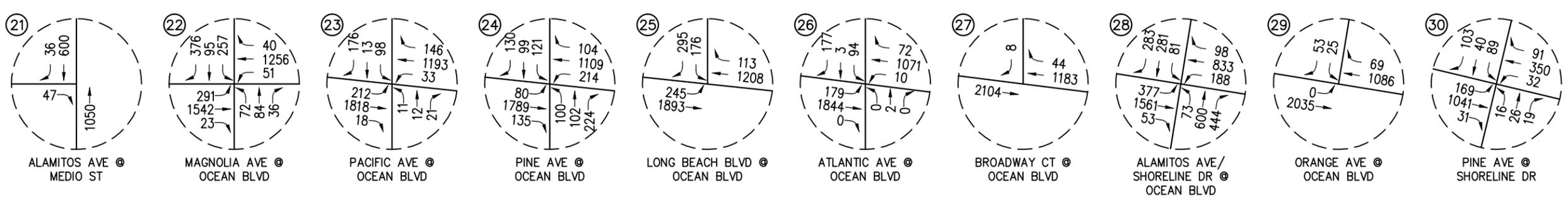
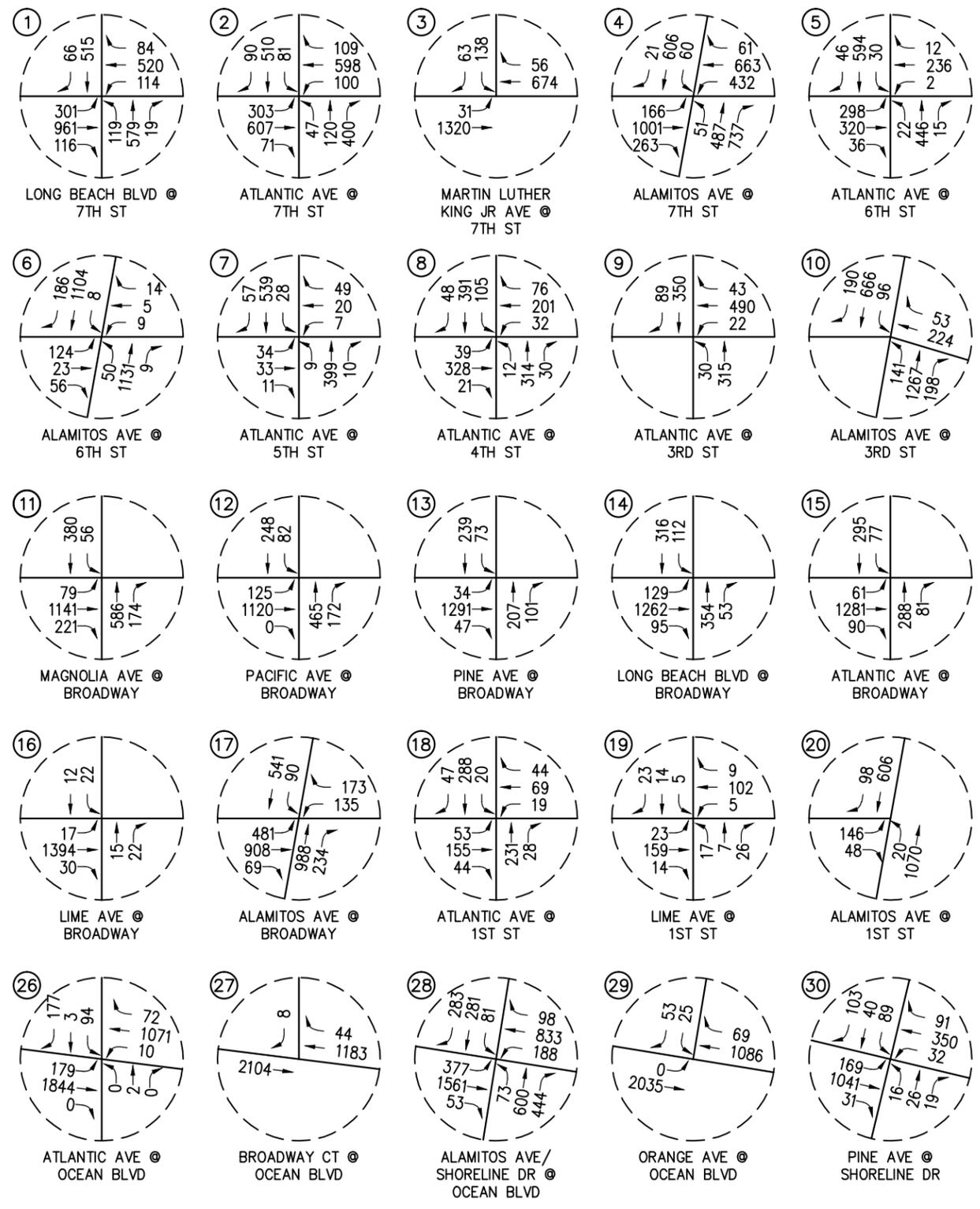


KEY
 # = STUDY INTERSECTION
 [Red Hatched Box] = PROJECT SITE

FIGURE 6-4
 YEAR 2020 CUMULATIVE AM PEAK HOUR TRAFFIC VOLUMES
 SHORELINE GATEWAY EAST TOWER, LONG BEACH



STREET KEY
 * = MEDIO ST
 ** = BROADWAY CT
 *** = MARTIN LUTHER KING JR. AVE

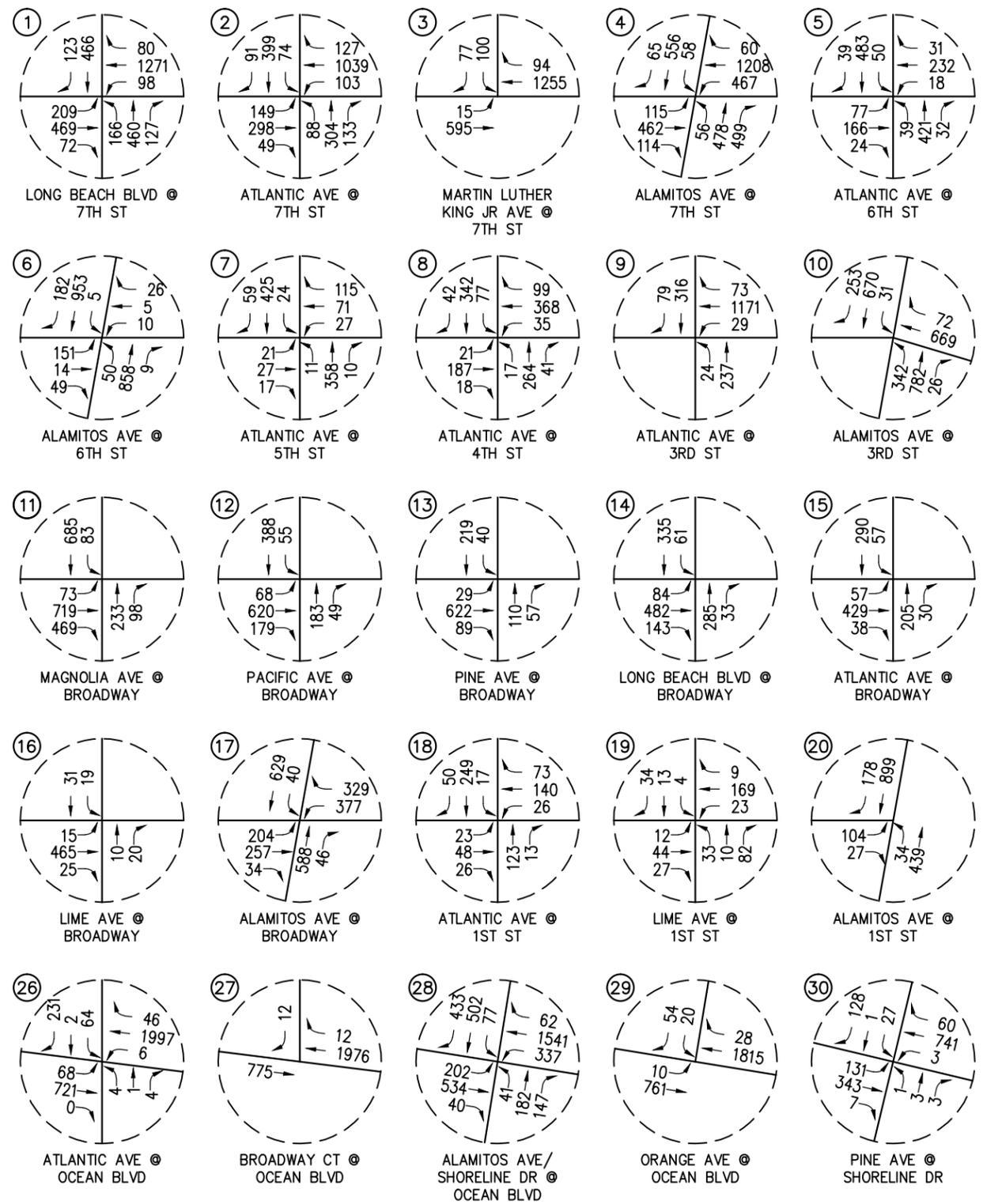
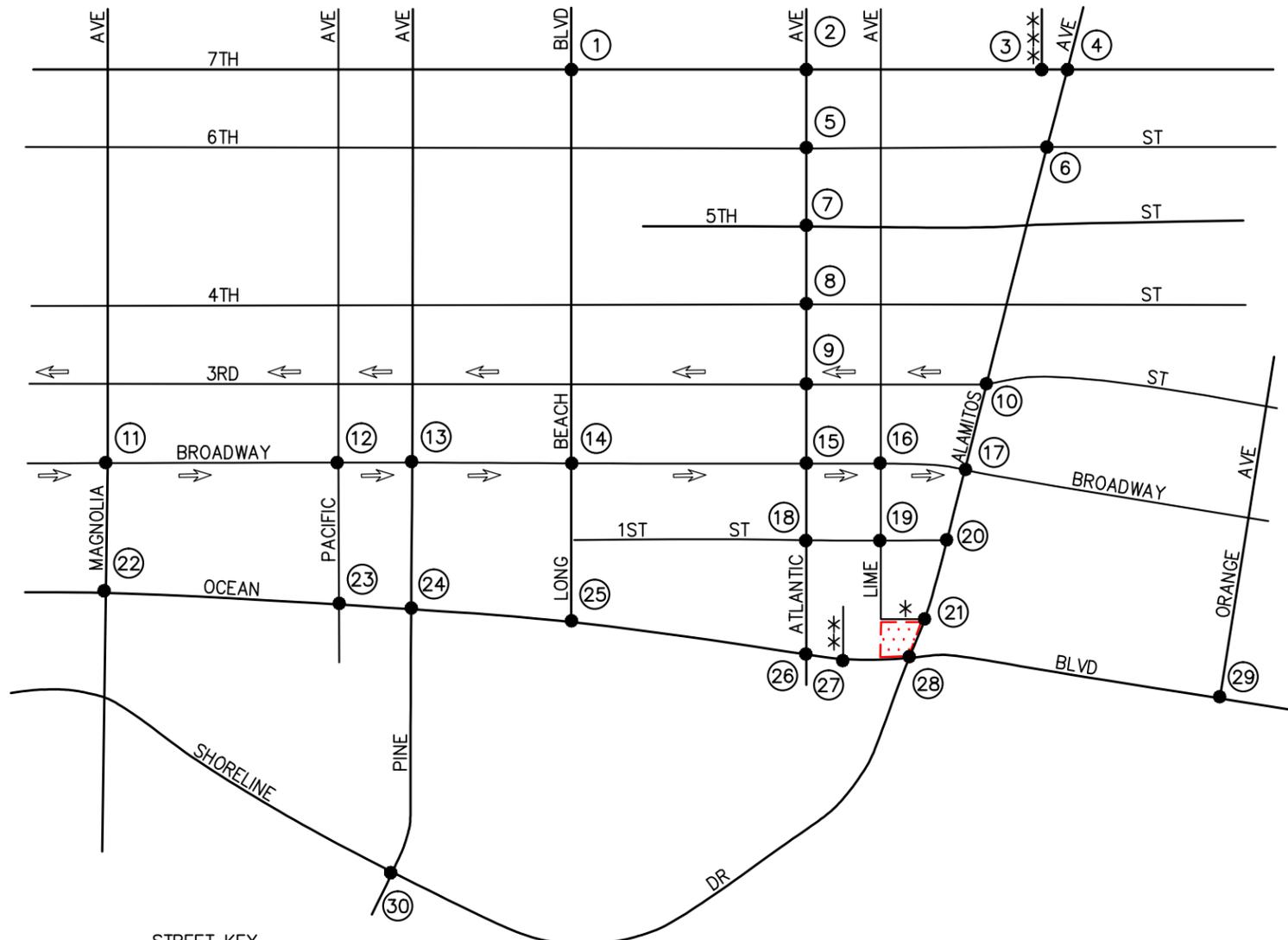


KEY
 # = STUDY INTERSECTION
 [Red Hatched Box] = PROJECT SITE



FIGURE 6-5
 YEAR 2020 CUMULATIVE PM PEAK HOUR TRAFFIC VOLUMES
 SHORELINE GATEWAY EAST TOWER, LONG BEACH

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STREET KEY
 * = MEDIO ST
 ** = BROADWAY CT
 *** = MARTIN LUTHER KING JR. AVE

KEY
 # = STUDY INTERSECTION
 [Red Hatched Box] = PROJECT SITE

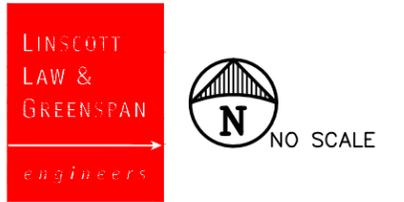
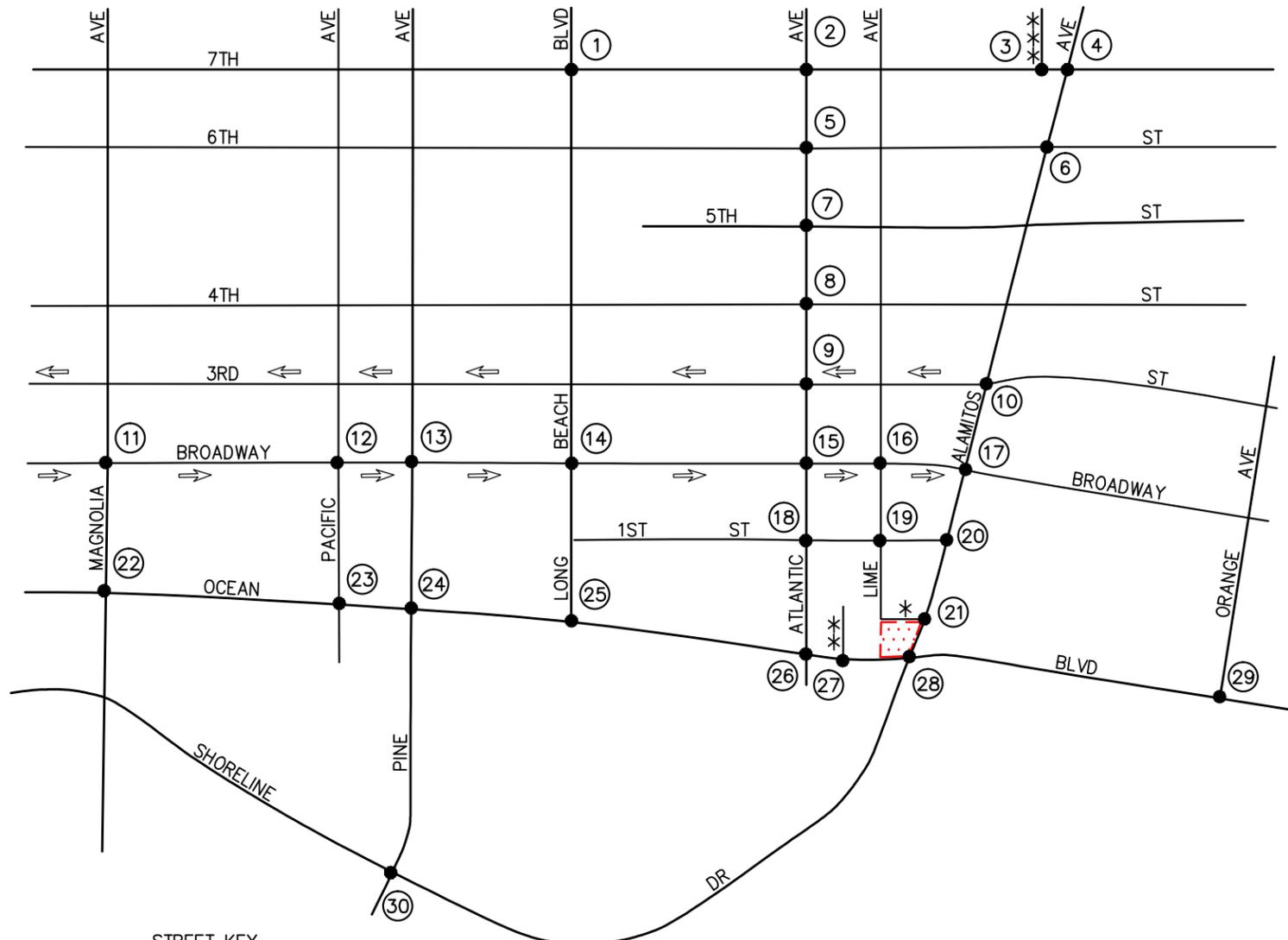
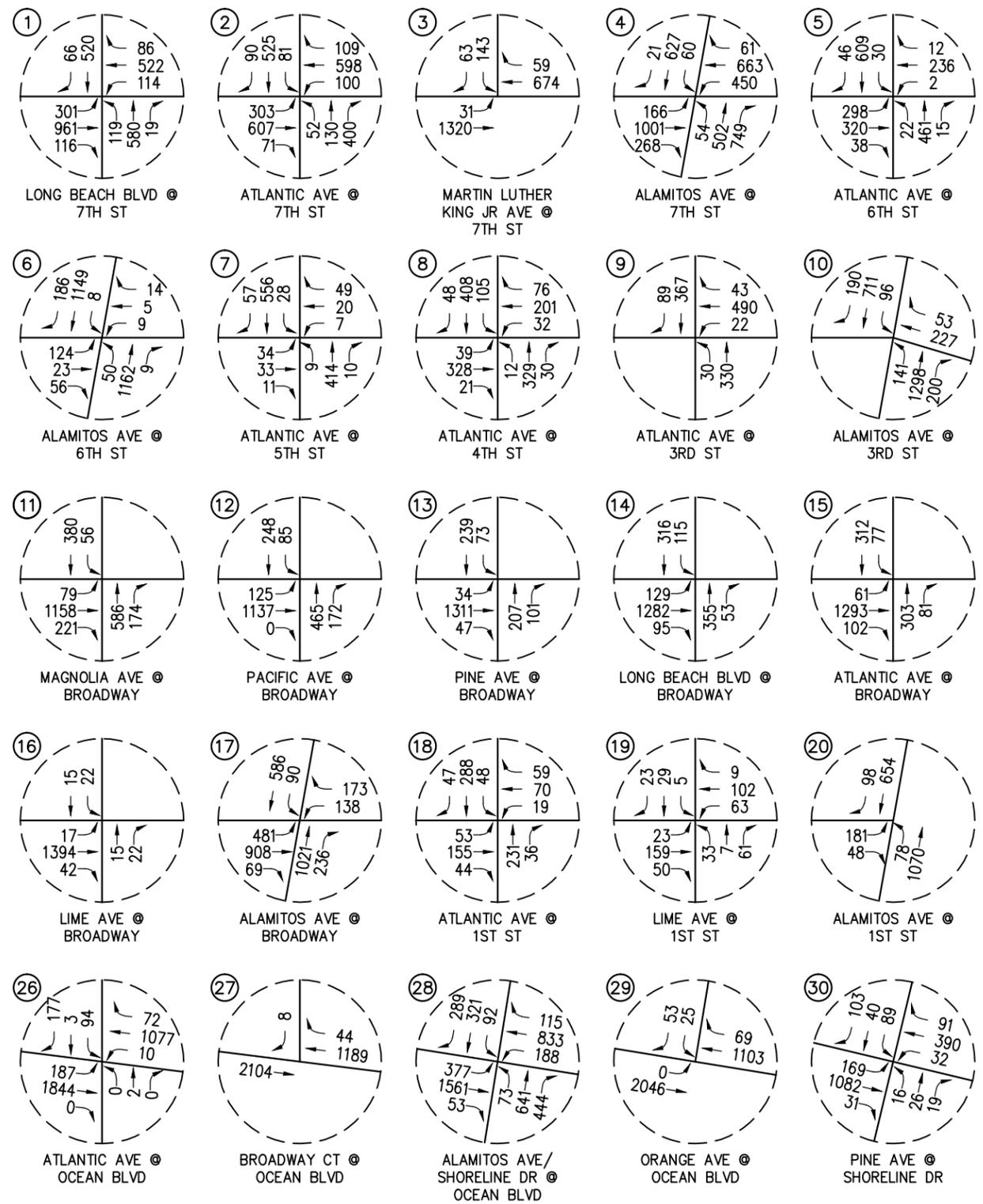


FIGURE 6-6
 YEAR 2020 CUMULATIVE PLUS PROJECT
 AM PEAK HOUR TRAFFIC VOLUMES
 SHORELINE GATEWAY EAST TOWER, LONG BEACH

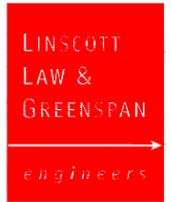
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STREET KEY
 * = MEDIO ST
 ** = BROADWAY CT
 *** = MARTIN LUTHER KING JR. AVE



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KEY
 # = STUDY INTERSECTION
 [Red hatched box] = PROJECT SITE

FIGURE 6-7
 YEAR 2020 CUMULATIVE PLUS PROJECT
 PM PEAK HOUR TRAFFIC VOLUMES
 SHORELINE GATEWAY EAST TOWER, LONG BEACH

7.0 TRAFFIC IMPACT ANALYSIS METHODOLOGY

7.1 Impact Criteria and Thresholds

The potential impact of the added project traffic volumes generated by the proposed Project during the weekday peak hours was evaluated based on analysis of future operating conditions at the thirty (30) key study intersections, without, then with, the proposed Project. The previously discussed capacity analysis procedures were utilized to investigate the future volume-to-capacity relationships and service level characteristics at each study intersection. The significance of the potential impacts of the project at each key intersection was then evaluated using the following traffic impact criteria.

7.1.1 City of Long Beach

Impacts to local and regional transportation systems are considered significant if:

- The project causes a study intersection to deteriorate from Level of Service (LOS) D to LOS E or F. The City of Long Beach considers LOS D (ICU = 0.801 - 0.900) to be the minimum acceptable LOS for all intersections; or
- The project increases traffic demand at the study intersection by 2% of capacity (ICU increase ≥ 0.020), causing or worsening LOS E or F (ICU > 0.901) when an intersection is operating at LOS E or F in the baseline condition.

7.2 Traffic Impact Analysis Scenarios

The following scenarios are those for which volume/capacity calculations have been performed using the ICU/HCM methodologies:

- A. Existing Traffic Conditions;
- B. Existing Plus Project Traffic Conditions;
- C. Scenario (B) with Improvements, if necessary;
- D. Year 2020 Cumulative Traffic Conditions;
- E. Year 2020 Cumulative Plus Project Traffic Conditions; and
- F. Scenario (E) with Improvements, if necessary.

7.2.1 Comparative Traffic Impact Assessment

A comparison of the proposed Project's traffic impacts to that of the "Approved Development" is included in Section 12.0 of this TIA. The purpose of this comparative assessment is to determine if development modifications associated with the proposed Project would create impacts beyond that of the "Approved Development".

8.0 PEAK HOUR INTERSECTION CAPACITY ANALYSIS

8.1 Existing Plus Project Traffic Conditions

Table 8-1 summarizes the peak hour Level of Service results at the thirty (30) key study intersections for existing plus project traffic conditions. The first column (1) of ICU/LOS and HCM/LOS values in *Table 8-1* presents a summary of existing AM and PM peak hour traffic conditions (which were also presented in *Table 3-4*). The second column (2) lists existing plus project traffic conditions with current intersection geometry/lane configurations. The third column (3) shows the increase in ICU/HCM value due to the added peak hour project trips and indicates whether the traffic associated with the Project will have a significant impact based on the significant impact criteria defined in this report. The fourth column (4) indicates the anticipated level of service with improvements, if any.

8.1.1 Existing Traffic Conditions

As previously presented in *Table 3-4*, all thirty (30) key study intersections currently operate at an acceptable level of service (LOS D or better) during the AM and PM peak hours.

8.1.2 Existing Plus Project Traffic Conditions

Review of Columns 2 and 3 of *Table 8-1* indicates that the traffic associated with the proposed Project ***will not*** significantly impact any of the thirty (30) key study intersections. The thirty (30) key study intersections will continue to operate at acceptable LOS D or better during the AM and PM peak hours with the addition of Project generated traffic to existing traffic.

Appendix C presents the existing plus project weekday ICU/LOS and HCM/LOS calculations for the thirty (30) key study intersections.

TABLE 8-1
EXISTING PLUS PROJECT PEAK HOUR INTERSECTION CAPACITY ANALYSIS SUMMARY

Key Intersection	Time Period	(1) Existing Traffic Conditions		(2) Existing Plus Project Traffic Conditions		(3) Significant Impact		(4) Existing Plus Project Traffic Conditions with Improvements	
		ICU/HCM	LOS	ICU/HCM	LOS	Increase	Yes/No	ICU/HCM	LOS
1. Long Beach Boulevard at 7 th Street	AM	0.658	B	0.659	B	0.001	No	--	--
	PM	0.484	A	0.486	A	0.002	No	--	--
2. Atlantic Avenue at 7 th Street	AM	0.703	C	0.707	C	0.004	No	--	--
	PM	0.434	A	0.434	A	0.000	No	--	--
3. Martin Luther King Jr Ave at 7 th Street	AM	0.672	B	0.674	B	0.002	No	--	--
	PM	0.520	A	0.524	A	0.004	No	--	--
4. Alamitos Avenue at 7 th Street	AM	0.825	D	0.831	D	0.006	No	--	--
	PM	0.763	C	0.785	C	0.022	No	--	--
5. Atlantic Avenue at 6 th Street	AM	0.445	A	0.450	A	0.005	No	--	--
	PM	0.642	B	0.647	B	0.005	No	--	--
6. Alamitos Avenue at 6 th Street	AM	0.502	A	0.506	A	0.004	No	--	--
	PM	0.664	B	0.673	B	0.009	No	--	--
7. Atlantic Avenue at 5 th Street	AM	0.377	A	0.378	A	0.001	No	--	--
	PM	0.333	A	0.339	A	0.006	No	--	--
8. Atlantic Avenue at 4 th Street	AM	0.504	A	0.506	A	0.002	No	--	--
	PM	0.462	A	0.467	A	0.005	No	--	--

Notes:

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

TABLE 8-1 (CONTINUED)
EXISTING PLUS PROJECT PEAK HOUR INTERSECTION CAPACITY ANALYSIS SUMMARY

Key Intersection	Time Period	(1) Existing Traffic Conditions		(2) Existing Plus Project Traffic Conditions		(3) Significant Impact		(4) Existing Plus Project Traffic Conditions with Improvements	
		ICU/HCM	LOS	ICU/HCM	LOS	Increase	Yes/No	ICU/HCM	LOS
9. Atlantic Avenue at 3 rd Street	AM	0.541	A	0.543	A	0.002	No	--	--
	PM	0.341	A	0.347	A	0.006	No	--	--
10. Alamos Avenue at 3 rd Street	AM	0.853	D	0.861	D	0.008	No	--	--
	PM	0.577	A	0.588	A	0.011	No	--	--
11. Magnolia Avenue at Broadway	AM	0.468	A	0.468	A	0.000	No	--	--
	PM	0.543	A	0.548	A	0.005	No	--	--
12. Pacific Avenue at Broadway	AM	0.444	A	0.446	A	0.002	No	--	--
	PM	0.616	B	0.623	B	0.007	No	--	--
13. Pine Avenue at Broadway	AM	0.397	A	0.398	A	0.001	No	--	--
	PM	0.659	B	0.666	B	0.007	No	--	--
14. Long Beach Boulevard at Broadway	AM	0.367	A	0.369	A	0.002	No	--	--
	PM	0.628	B	0.635	B	0.007	No	--	--
15. Atlantic Avenue at Broadway	AM	0.277	A	0.284	A	0.007	No	--	--
	PM	0.602	B	0.614	B	0.012	No	--	--
16. Lime Avenue at Broadway	AM	0.229	A	0.230	A	0.001	No	--	--
	PM	0.521	A	0.524	A	0.003	No	--	--

Notes:

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

TABLE 8-1 (CONTINUED)
EXISTING PLUS PROJECT PEAK HOUR INTERSECTION CAPACITY ANALYSIS SUMMARY

Key Intersection	Time Period	(1) Existing Traffic Conditions		(2) Existing Plus Project Traffic Conditions		(3) Significant Impact		(4) Existing Plus Project Traffic Conditions with Improvements	
		ICU/HCM	LOS	ICU/HCM	LOS	Increase	Yes/No	ICU/HCM	LOS
17. Alamitos Avenue at Broadway	AM	0.713	C	0.722	C	0.009	No	--	--
	PM	0.867	D	0.878	D	0.011	No	--	--
18. Atlantic Avenue at 1 st Street	AM	0.310	A	0.324	A	0.014	No	--	--
	PM	0.349	A	0.358	A	0.009	No	--	--
19. Lime Avenue at 1 st Street	AM	9.8 s/v	A	10.1 s/v	B	0.3 s/v	No	--	--
	PM	10.5 s/v	B	11.9 s/v	B	1.4 s/v	No	--	--
20. Alamitos Avenue at 1 st Street	AM	0.573	A	0.618	B	0.045	No	--	--
	PM	0.467	A	0.530	A	0.063	No	--	--
21. Alamitos Avenue at Medio Street	AM	10.6 s/v	B	11.3 s/v	B	0.7 s/v	No	--	--
	PM	9.5 s/v	A	10.0 s/v	B	0.5 s/v	No	--	--
22. Magnolia Avenue at Ocean Boulevard	AM	0.748	C	0.750	C	0.002	No	--	--
	PM	0.661	B	0.662	B	0.001	No	--	--
23. Pacific Avenue at Ocean Boulevard	AM	0.649	B	0.651	B	0.002	No	--	--
	PM	0.504	A	0.505	A	0.001	No	--	--
24. Pine Avenue at Ocean Boulevard	AM	0.623	B	0.625	B	0.002	No	--	--
	PM	0.778	C	0.780	C	0.002	No	--	--

Notes:

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

TABLE 8-1 (CONTINUED)
EXISTING PLUS PROJECT PEAK HOUR INTERSECTION CAPACITY ANALYSIS SUMMARY

Key Intersection	Time Period	(1) Existing Traffic Conditions		(2) Existing Plus Project Traffic Conditions		(3) Significant Impact		(4) Existing Plus Project Traffic Conditions with Improvements	
		ICU/HCM	LOS	ICU/HCM	LOS	Increase	Yes/No	ICU/HCM	LOS
25. Long Beach Boulevard at Ocean Boulevard	AM	0.639	B	0.641	B	0.002	No	--	--
	PM	0.538	A	0.539	A	0.001	No	--	--
26. Atlantic Avenue at Ocean Boulevard	AM	0.659	B	0.661	B	0.002	No	--	--
	PM	0.573	A	0.573	A	0.000	No	--	--
27. Broadway Court at Ocean Boulevard	AM	20.2 s/v	C	20.3 s/v	C	0.1 s/v	No	--	--
	PM	13.1 s/v	B	13.1 s/v	B	0.0 s/v	No	--	--
28. Alamitos Avenue/Shoreline Drive at Ocean Boulevard	AM	0.779	C	0.796	C	0.017	No	--	--
	PM	0.854	D	0.866	D	0.012	No	--	--
29. Orange Avenue at Ocean Boulevard	AM	0.672	B	0.673	B	0.001	No	--	--
	PM	0.724	C	0.727	C	0.003	No	--	--
30. Pine Avenue at Shoreline Drive	AM	0.373	A	0.388	A	0.015	No	--	--
	PM	0.492	A	0.505	A	0.013	No	--	--

Notes:

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

8.2 Year 2020 Traffic Conditions

Table 8-2 summarizes the peak hour Level of Service results at the thirty (30) key study intersections for the Year 2020 horizon year. The first column (1) of ICU/LOS and HCM/LOS values in *Table 8-2* presents a summary of existing AM and PM peak hour traffic conditions (which were also presented in *Table 3-4*). The second column (2) lists future Year 2020 cumulative traffic conditions (existing plus ambient growth traffic plus cumulative projects traffic plus City planned roadway network improvements on 6th Street and 7th Street), without any traffic generated by the proposed Project. The third column (3) presents future forecast traffic conditions with the addition of traffic generated by the proposed Project. The fourth column (4) shows the increase in ICU/HCM value due to the added peak hour project trips and indicates whether the traffic associated with the Project will have a significant impact based on the LOS standards and significant impact criteria defined in this report. The fifth column (5) indicates the anticipated level of service with improvements, if any.

8.2.1 Year 2020 Cumulative Traffic Conditions

Review of Column 2 of *Table 8-2* indicates that the addition of ambient traffic growth and cumulative project traffic, and/or planned roadway network improvements, will cumulatively impact seven (7) of the thirty (30) key study intersections. The remaining intersections are forecast to operate at acceptable service levels in the AM and PM peak hours. The intersections forecast to operate at an adverse level of service in the Year 2020 Cumulative Traffic Conditions during the AM peak hour and/or PM peak hour are as follows:

<u>Key Intersection</u>	<u>AM Peak Hour</u>		<u>PM Peak Hour</u>	
	<u>ICU/HCM</u>	<u>LOS</u>	<u>ICU/HCM</u>	<u>LOS</u>
1. Long Beach Boulevard at 7 th Street	0.950	E	--	--
4. Alamitos Avenue at 7 th Street	0.995	E	1.226	F
10. Alamitos Avenue at 3 rd Street	1.006	F	--	--
17. Alamitos Avenue at Broadway	--	--	0.980	E
22. Magnolia Avenue at Ocean Boulevard	0.944	E	--	--
24. Pine Avenue at Ocean Boulevard	--	--	0.952	E
28. Alamitos Avenue/Shoreline Drive at Ocean Boulevard	0.948	E	0.969	E

8.2.2 Year 2020 Cumulative Plus Project Conditions

Review of Columns 3 and 4 of *Table 8-2* indicates that the traffic associated with the proposed Project will significantly impact one (1) of the thirty (30) key study intersections.

While the intersections of Long Beach Boulevard/7th Street, Alamitos Avenue/3rd Street, Alamitos Avenue/Broadway, Magnolia Avenue/Ocean Boulevard, Pine Avenue/Ocean Boulevard, and Alamitos Avenue/Shoreline Drive/Ocean Boulevard are all forecast to operate at unacceptable service levels in the AM and/or PM peak hours, the proposed Project is expected to add less than 0.020 to the ICU value. The remaining intersections are forecast to operate at acceptable service levels in the AM and PM peak hours.

The intersection significantly impacted by the proposed Project under Year 2020 Cumulative traffic conditions is:

<u>Key Intersection</u>	<u>AM Peak Hour</u>		<u>PM Peak Hour</u>	
	<u>ICU/HCM</u>	<u>LOS</u>	<u>ICU/HCM</u>	<u>LOS</u>
4. Alamitos Avenue at 7 th Street	1.004	F	1.253	F

An evaluation of Alamitos/7th Street indicate that there are no feasible mitigation measures that would mitigate the Project's impact and therefore are considered significant and unavoidable. This finding is consistent with findings of the prior June 2006 TIS as the "Approved Development" was determined to have a significant and unavoidable impact at this location as well.

Appendix C presents the Year 2020 ICU/LOS and HCM/LOS calculations for the thirty (30) key study intersections.

TABLE 8-2
YEAR 2020 CUMULATIVE PLUS PROJECT PEAK HOUR INTERSECTION CAPACITY ANALYSIS SUMMARY

Key Intersection	Time Period	(1) Existing Traffic Conditions		(2) Year 2020 Cumulative Traffic Conditions		(3) Year 2020 Cumulative Plus Project Traffic Conditions		(4) Significant Impact		(5) Year 2020 Cumulative Plus Project Traffic Conditions with Improvements	
		ICU/HCM	LOS	ICU/HCM	LOS	ICU/HCM	LOS	Increase	Yes/No	ICU/HCM	LOS
1. Long Beach Boulevard at 7 th Street	AM	0.658	B	0.950	E¹²	0.952	E¹²	0.002	No	--	--
	PM	0.484	A	0.793	C ¹²	0.795	C ¹²	0.002	No	--	--
2. Atlantic Avenue at 7 th Street	AM	0.703	C	0.781	C ¹²	0.786	C ¹²	0.005	No	--	--
	PM	0.434	A	0.831	D ¹²	0.831	D ¹²	0.000	No	--	--
3. Martin Luther King Jr Ave at 7 th Street	AM	0.672	B	0.642	B	0.643	B	0.001	No	--	--
	PM	0.520	A	0.649	B	0.652	B	0.003	No	--	--
4. Alamitos Avenue at 7 th Street	AM	0.825	D	0.995	E	1.004	F	0.009	No	--	--
	PM	0.763	C	1.226	F	1.253	F	0.027	Yes¹³	--	--
5. Atlantic Avenue at 6 th Street	AM	0.445	A	0.585	A ¹²	0.587	A ¹²	0.002	No	--	--
	PM	0.642	B	0.714	C ¹²	0.720	C ¹²	0.006	No	--	--
6. Alamitos Avenue at 6 th Street	AM	0.502	A	0.622	B ¹²	0.626	B ¹²	0.004	No	--	--
	PM	0.664	B	0.649	B ¹²	0.663	B ¹²	0.014	No	--	--
7. Atlantic Avenue at 5 th Street	AM	0.377	A	0.410	A	0.412	A	0.002	No	--	--
	PM	0.333	A	0.369	A	0.375	A	0.006	No	--	--

Notes:

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

¹² Represents anticipated LOS with conversion of 6th Street and 7th Street from one-way traffic flow to two-way traffic flow as planned by the City of Long Beach. The conversion is assumed as a part of the Year 2020 cumulative traffic conditions/traffic network without and with Project traffic per the direction of City staff

¹³ Alamitos Avenue at 7th Street is considered significantly impacted in the PM peak hour, however, the impact at this intersection is considered significant and unavoidable.

TABLE 8-2 (CONTINUED)

YEAR 2020 CUMULATIVE PLUS PROJECT PEAK HOUR INTERSECTION CAPACITY ANALYSIS SUMMARY

Key Intersection	Time Period	(1) Existing Traffic Conditions		(2) Year 2020 Cumulative Traffic Conditions		(3) Year 2020 Cumulative Plus Project Traffic Conditions		(4) Significant Impact		(5) Year 2020 Cumulative Plus Project Traffic Conditions with Improvements	
		ICU/HCM	LOS	ICU/HCM	LOS	ICU/HCM	LOS	Increase	Yes/No	ICU/HCM	LOS
8. Atlantic Avenue at 4 th Street	AM	0.504	A	0.548	A	0.554	A	0.006	No	--	--
	PM	0.462	A	0.516	A	0.520	A	0.004	No	--	--
9. Atlantic Avenue at 3 rd Street	AM	0.541	A	0.626	B	0.627	B	0.001	No	--	--
	PM	0.341	A	0.423	A	0.428	A	0.005	No	--	--
10. Alamitos Avenue at 3 rd Street	AM	0.853	D	1.006	F	1.014	F	0.008	No	--	--
	PM	0.577	A	0.741	C	0.770	C	0.029	No	--	--
11. Magnolia Avenue at Broadway	AM	0.468	A	0.607	B	0.607	B	0.000	No	--	--
	PM	0.543	A	0.729	C	0.734	C	0.005	No	--	--
12. Pacific Avenue at Broadway	AM	0.444	A	0.519	A	0.521	A	0.002	No	--	--
	PM	0.616	B	0.697	B	0.704	C	0.007	No	--	--
13. Pine Avenue at Broadway	AM	0.397	A	0.477	A	0.479	A	0.002	No	--	--
	PM	0.659	B	0.776	C	0.783	C	0.007	No	--	--
14. Long Beach Boulevard at Broadway	AM	0.367	A	0.463	A	0.466	A	0.003	No	--	--
	PM	0.628	B	0.740	C	0.748	C	0.008	No	--	--
15. Atlantic Avenue at Broadway	AM	0.277	A	0.348	A	0.355	A	0.007	No	--	--
	PM	0.602	B	0.692	B	0.704	C	0.012	No	--	--

Notes:

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

TABLE 8-2 (CONTINUED)

YEAR 2020 CUMULATIVE PLUS PROJECT PEAK HOUR INTERSECTION CAPACITY ANALYSIS SUMMARY

Key Intersection	Time Period	(1) Existing Traffic Conditions		(2) Year 2020 Cumulative Traffic Conditions		(3) Year 2020 Cumulative Plus Project Traffic Conditions		(4) Significant Impact		(5) Year 2020 Cumulative Plus Project Traffic Conditions with Improvements	
		ICU/HCM	LOS	ICU/HCM	LOS	ICU/HCM	LOS	Increase	Yes/No	ICU/HCM	LOS
16. Lime Avenue at Broadway	AM	0.229	A	0.283	A	0.284	A	0.001	No	--	--
	PM	0.521	A	0.582	A	0.586	A	0.004	No	--	--
17. Alamitos Avenue at Broadway	AM	0.713	C	0.850	D	0.859	D	0.009	No	--	--
	PM	0.867	D	0.980	E	0.991	E	0.011	No	--	--
18. Atlantic Avenue at 1 st Street	AM	0.310	A	0.349	A	0.363	A	0.014	No	--	--
	PM	0.349	A	0.380	A	0.389	A	0.009	No	--	--
19. Lime Avenue at 1 st Street	AM	9.8 s/v	A	9.9 s/v	A	10.3 s/v	B	0.4 s/v	No	--	--
	PM	10.5 s/v	B	10.5 s/v	B	12.1 s/v	B	1.6 s/v	No	--	--
20. Alamitos Avenue at 1 st Street	AM	0.573	A	0.720	C	0.765	C	0.045	No	--	--
	PM	0.467	A	0.613	B	0.701	C	0.088	No	--	--
21. Alamitos Avenue at Medio Street	AM	10.6 s/v	B	12.1 s/v	B	13.3 s/v	B	1.2 s/v	No	--	--
	PM	9.5 s/v	A	10.7 s/v	B	11.5 s/v	B	0.8 s/v	No	--	--
22. Magnolia Avenue at Ocean Boulevard	AM	0.748	C	0.944	E	0.945	E	0.001	No	--	--
	PM	0.661	B	0.844	D	0.845	D	0.001	No	--	--

Notes:

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

TABLE 8-2 (CONTINUED)

YEAR 2020 CUMULATIVE PLUS PROJECT PEAK HOUR INTERSECTION CAPACITY ANALYSIS SUMMARY

Key Intersection	Time Period	(1) Existing Traffic Conditions		(2) Year 2020 Cumulative Traffic Conditions		(3) Year 2020 Cumulative Plus Project Traffic Conditions		(4) Significant Impact		(5) Year 2020 Cumulative Plus Project Traffic Conditions with Improvements	
		ICU/HCM	LOS	ICU/HCM	LOS	ICU/HCM	LOS	Increase	Yes/No	ICU/HCM	LOS
23. Pacific Avenue at Ocean Boulevard	AM	0.649	B	0.766	C	0.767	C	0.001	No	--	--
	PM	0.504	A	0.605	B	0.607	B	0.002	No	--	--
24. Pine Avenue at Ocean Boulevard	AM	0.623	B	0.719	C	0.720	C	0.001	No	--	--
	PM	0.778	C	0.952	E	0.954	E	0.002	No	--	--
25. Long Beach Boulevard at Ocean Boulevard	AM	0.639	B	0.746	C	0.747	C	0.001	No	--	--
	PM	0.538	A	0.623	B	0.624	B	0.001	No	--	--
26. Atlantic Avenue at Ocean Boulevard	AM	0.659	B	0.762	C	0.765	C	0.003	No	--	--
	PM	0.573	A	0.645	B	0.645	B	0.000	No	--	--
27. Broadway Court at Ocean Boulevard	AM	20.2 s/v	C	23.1 s/v	C	23.2 s/v	C	0.100	No	--	--
	PM	13.1 s/v	B	14.9 s/v	B	14.9 s/v	B	0.000	No	--	--
28. Alamos Avenue/Shoreline Drive at Ocean Boulevard	AM	0.779	C	0.948	E	0.964	E	0.016	No	--	--
	PM	0.854	D	0.969	E	0.982	E	0.013	No	--	--
29. Orange Avenue at Ocean Boulevard	AM	0.672	B	0.727	C	0.728	C	0.001	No	--	--
	PM	0.724	C	0.785	C	0.788	C	0.003	No	--	--
30. Pine Avenue at Shoreline Drive	AM	0.373	A	0.483	A	0.498	A	0.015	No	--	--
	PM	0.492	A	0.555	A	0.568	A	0.013	No	--	--

Notes:

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

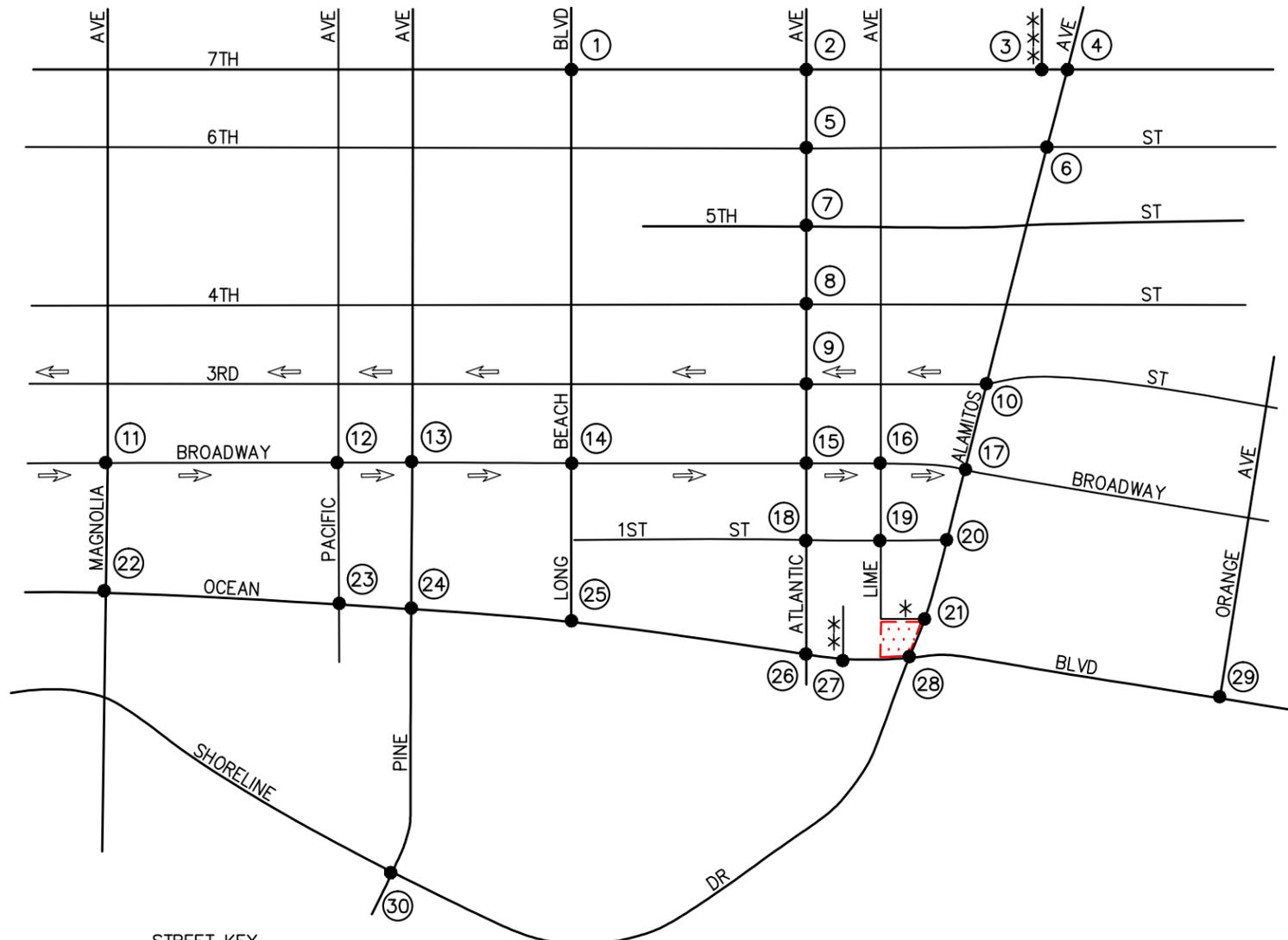
9.0 AREA-WIDE TRAFFIC IMPROVEMENTS

9.1 Year 2020 Planned Improvements

Based on information obtained from the City of Long Beach, roadway network changes in the downtown area were applied to the Year 2020 cumulative background setting. The roadway network changes include the conversion of 7th Street and 6th Street from a one-way roadway to a two-way roadway west of Atlantic Avenue. As such, the following improvements listed below have been identified as part of the roadway network changes and are subject to review and confirmation by the City of Long Beach:

- **No. 1 – Long Beach Boulevard at 7th Street:** Restripe the east-west direction to provide two way flow. Restripe the east leg to include an exclusive left-turn lane, a through lane, a shared through-right lane, and two departure lanes. Restripe the west leg to include an exclusive left-turn lane, a through lane, a shared through-right lane, and two departure lanes. Modify the existing traffic signal to include permissive phasing in the east-west direction. The installation of these improvements is subject to the approval of the City of Long Beach.
- **No. 2 – Atlantic Avenue at 7th Street:** Restripe the west leg to include an exclusive left-turn lane, a through lane, a shared through-right lane, and two departure lanes. Modify the existing traffic signal to include permissive phasing in the east-west direction. The installation of these improvements is subject to the approval of the City of Long Beach.
- **No. 5 – Atlantic Avenue at 6th Street:** Restripe the south leg to include an exclusive left-turn lane. Restripe the east leg to a shared left/through/right turn lane. On the west leg, remove the exclusive left-turn lane, restripe the through lane into a shared left-through lane, and restripe to include a departure lane. Modify the existing traffic signal to include protected-permissive phasing in the north-south directions and split phasing in the east-west direction. The installation of these improvements is subject to the approval of the City of Long Beach.
- **No. 6 – Alamitos Avenue at 6th Street:** Restripe the south leg approach to include an exclusive left-turn lane. Restripe the east leg to into a shared left/through/right turn lane. On the west leg, restripe the exclusive right-turn line into a shared through-right turn lane and widen the leg to include a departure lane. Modify the existing traffic signal to include permissive phasing in the northbound direction and permissive-protected phasing in the eastbound direction. The installation of these improvements is subject to the approval of the City of Long Beach.

Figure 9-1 presents the planned traffic improvements and intersection controls assumed for Year 2020 Cumulative Traffic Conditions for the study intersections detailed above.



STREET KEY
 * = MEDIO ST
 ** = BROADWAY CT
 *** = MARTIN LUTHER KING JR. AVE

NOTES:
 • ONLY INTERSECTIONS THAT REQUIRE IMPROVEMENTS ARE INCLUDED IN THIS FIGURE. ALL OTHER INTERSECTIONS REMAIN CONSISTENT WITH THE GEOMETRIES SHOWN IN FIGURE 3-1.
 • 7TH AND 6TH STREET WILL BE CONVERTED TO A TWO-WAY ROADWAY WEST OF ATLANTIC AVENUE UNDER THE YEAR 2020 CUMULATIVE BACKGROUND SETTING.

INTERSECTION	EXISTING	YEAR 2020 WITH PLANNED IMPROVEMENTS
① LONG BEACH BLVD @ 7TH ST		
② ATLANTIC AVE @ 7TH ST		
④ ALAMITOS AVE @ 7TH ST		NO CHANGE
⑤ ATLANTIC AVE @ 6TH ST		
⑥ ALAMITOS AVE @ 6TH ST		

KEY
 = APPROACH LANE ASSIGNMENT
 = YEAR 2020 PLANNED IMPROVEMENTS
 = TRAFFIC SIGNAL, = STOP SIGN,
 = PROJECT SITE

KEY
 [A] = IMPROVEMENT INCLUDES PROTECTED/PERMISSIVE PHASING IN THE NORTHBOUND DIRECTION
 IMPROVEMENTS INCLUDE PERMISSIVE PHASING IN THE NORTHBOUND DIRECTION AND PERMISSIVE/PROTECTED PHASING IN THE EASTBOUND DIRECTION



FIGURE 9-1
PLANNED AND RECOMMENDED TRAFFIC IMPROVEMENTS
 SHORELINE GATEWAY EAST TOWER, LONG BEACH

n:\3700\2163705 - shoreline gateway east tower, long beach\dwg\3705 f9-1.dwg LDP 16:03:20 08-25-2016 lam

9.2 Recommended Improvements

For those intersections where projected traffic volumes are expected to result in poor operating conditions, this report identifies roadway improvements that are expected to:

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

9.2.1 Existing Plus Project Traffic Conditions

The results of the intersection capacity analysis presented previously in *Table 8-1* shows that the proposed Project will not significantly impact any of the thirty (30) key study intersections under the “Existing Plus Project” traffic scenario. Given that there are no significant project impacts, no improvements are required under this traffic scenario.

9.2.2 Year 2020 Cumulative Plus Project Traffic Conditions

The results of the intersection capacity analysis presented previously in *Table 8-2* shows that the proposed Project will significantly impact the intersection of Alamitos Avenue/7th Street under the “Year 2020 Cumulative Plus Project” traffic scenario.

Analysis of this location indicates that there are no feasible mitigation measures that could be developed at this intersection that would mitigate the Project’s impact. Therefore, the impact at this intersection would be considered significant and unavoidable. This finding is consistent with findings of the prior June 2006 TIS as the “Approved Development” was determined to have a significant and unavoidable impact at this location as well.

9.3 Transportation Improvement Fee

Pursuant to the requirements of the City of Long Beach Municipal Code, Transportation Improvement Fees will be required of the Project. The Transportation Improvement Fee, based on the size of all new commercial development in the City of Long Beach, is assessed as shown below:

- Residential: \$1,125.00 per unit
- Retail (City-wide): \$4.50 per square-foot

Based on a total Project development of 315 DU of residential and 6,711 DU of commercial/retail space, the proposed Project can be expected to pay up to **\$384,574.50** in Transportation Improvement Fees. The precise fee will be determined by the City upon issuance of project building permits.

10.0 SITE ACCESS EVALUATION

10.1 Site Access

Access to the project site will be provided via one stop-controlled full access driveway located on Medio Street, with the intersections of Lime Avenue at 1st Street (study location no. 19) and Alamitos Avenue at Medio Street (study location no. 21) providing vehicular access to the property from the adjacent street system. The driveway will connect to the proposed 5-level subterranean parking structure with a total of 458 vehicular spaces. Based on our evaluation, of the project driveway traffic volumes and forecast acceptable service levels at the two intersections identified above, site access will be adequate. Motorists entering and exiting the Project site will be able to do so comfortably, safely, and without undue congestion.

To ensure adequate access and egress to the site is provided, it is recommended to install a “STOP” sign and bar at the proposed Project driveway, along with all appropriate striping, signage and/or pavement legends per City of Long Beach standards/requirements.

11.0 CONGESTION MANAGEMENT PROGRAM COMPLIANCE ASSESSMENT

The Congestion Management Program (CMP) was created statewide as a result of Proposition 111 and has been implemented locally by the Los Angeles County Metropolitan Transportation Authority (LACMTA). The CMP for Los Angeles County requires that the traffic impact of individual development projects of potential regional significance be analyzed. A specific system of arterial roadways plus all freeways comprise the CMP system.

For purposes of the CMP, a significant impact occurs when the proposed Project increases traffic demand on a CMP facility by two percent of capacity ($V/C \geq 0.02$), causing LOS F ($V/C > 1.00$). If the facility is already at LOS F, a significant impact occurs when the proposed Project increases traffic demand on a CMP facility by two percent of capacity ($V/C \geq 0.02$).

11.1 Traffic Impact Review

As required by the current *Congestion Management Program for Los Angeles County*, a review has been made of designated monitoring locations on the CMP highway system for potential impact analysis. Per CMP TIA criteria, the geographic area examined in the TIA must include the following, at a minimum:

- All CMP arterial monitoring intersections, including freeway on and off-ramp intersections, where the project will add 50 or more trips during either the AM or PM weekday peak hours.
- Mainline freeway-monitoring stations where the project will add 150 or more trips, in either direction, during the AM or PM weekday peak hours.

11.1.1 Intersections

The following CMP intersection monitoring locations within the project study area have been identified:

<u>CMP Station</u>	<u>Int. No.</u>	<u>Intersection/Jurisdiction</u>
No. 33	28	Alamitos Avenue/Shoreline Drive at Ocean Boulevard
No. 41	4	Alamitos Avenue at 7 th Street

As stated earlier, the CMP guidelines require that arterial monitoring intersection locations must be examined if the proposed Project will add 50 or more trips during either the AM or PM weekday peak hours (of adjacent street traffic) at CMP monitoring intersections. Based on the proposed Project's trip generation potential, trip distribution and trip assignment, the Project will add 50 or more trips at the identified CMP intersections during the weekday AM peak hour or PM peak hour. Therefore a CMP intersection traffic impact analysis is required.

- **Alamitos Avenue/Shoreline Drive at Ocean Boulevard** – Based on the results of a detailed analysis of project added trips to the CMP system, approximately 84 trips during the AM peak hour and 115 trips during the PM peak hour will be added by the project at this location. Per CMP TIA guidelines, intersection level of service analysis is therefore required. The impact

analysis is discussed in detail in Section 8.0 of this traffic study report and the results are summarized in *Table 8-2*. As presented previously, the analysis indicates that the Project will not significantly impact this intersection based on the City's standards and the significant impact criteria noted above.

- **Alamitos Avenue at 7th Street** – Based on the results of a detailed analysis of project added trips to the CMP system, approximately 48 trips during the AM peak hour and 74 trips during the PM peak hour will be added by the project at this location. Per CMP TIA guidelines, intersection level of service analysis is therefore required. The impact analysis is discussed in detail in Section 8.0 of this traffic study report and the results are summarized in *Table 8-2*. As presented previously, the analysis indicates that the Project will increase demand at this key intersection by two percent (0.020) during the PM peak hour and cause a significant impact. However, there are no feasible mitigation measures that could be developed at this intersection that would mitigate the Project's impact. Therefore, the impact at this intersection would be considered significant and unavoidable. This finding is consistent with findings of the prior June 2006 TIS as the "Approved Development" was determined to have a significant and unavoidable impact at this location as well.

11.1.2 Freeways

The following CMP freeway monitoring location in the project vicinity has been identified:

- | | |
|--------------------|----------------------------------|
| <u>CMP Station</u> | <u>Intersection/Jurisdiction</u> |
| No. 1078 | I-710, north of Route 1 (PCH) |

As stated earlier, the CMP TIA guidelines require that freeway monitoring locations must be examined if the proposed Project will add 150 or more trips (in either direction) during either the AM or PM weekday peak periods. Based on the project's trip generation potential and distribution pattern, the proposed Project will not add more than 150 trips during the AM or PM peak hour at this CMP mainline freeway-monitoring location. Therefore, a CMP freeway traffic impact analysis is not required.

11.2 Transit Impact Review

As required by the current *Congestion Management Program for Los Angeles County*, a review has been made of the potential impacts of the project on transit service. As previously discussed and shown in *Figure 3-4*, a number of transit services exist in the project area, necessitating the following transit impact review.

The project trip generation, as shown in *Table 5-1*, was adjusted by values set forth in the CMP (i.e. person trips equal 1.4 times vehicle trips, and transit trips equal 3.5 percent of the total person trips) to estimate project-related transit trip generation. Pursuant to the CMP guidelines, the proposed Project is forecast to generate 9 transit trips (2 inbound and 7 outbound) during the AM peak hour and 14 transit trips (8 inbound and 6 outbound) during the PM peak hour. Over a 24-hour period the proposed Project is forecasted to generate 152 daily weekday transit trips.

It is anticipated that the existing transit service in the project area would be able to accommodate the project generated transit trips. Therefore, given the number of transit trips generated by the project and the existing transit routes in the project vicinity, it is concluded that the existing public transit system would not be significantly impacted by the proposed Project.

12.0 COMPARATIVE TRAFFIC IMPACT ASSESSMENT

12.1 Approved Development vs. Proposed Project

As described in Section 5.0, the “Approved Development” as evaluated in the June 2006 TIS consisted of 221 DU of residential and 6,367 SF of commercial/retail. To identify if the Project, which includes an additional 94 units and 344 SF of additional retail/restaurant floor area, a comparison of the forecast service levels at the 30 key study intersections have been completed for the following traffic analysis scenarios:

- A. Existing Plus Project traffic
- B. Existing Plus Approved Development traffic
- C. Year 2020 Cumulative Plus Project traffic; and
- D. Year 2020 Cumulative Plus Approved Development traffic.

12.2 Existing Plus Approved Development vs. Existing Plus Project

Table 12-1 summarizes the peak hour Level of Service results for Existing Plus Approved Development vs. Existing Plus Project traffic conditions. The first column (1) of ICU/HCM values in **Table 12-1** presents a summary of Existing Plus Approved Development traffic for the AM and PM peak hour traffic conditions. This column of LOS values represents the anticipated service level with the Approved Development for the East Tower. The second column (2) lists Existing Plus Project traffic conditions (which were also presented in **Table 8-1**). The third column (3) presents change in ICU/HCM between Existing Plus Project vs. Existing Plus Approved Development traffic conditions.

Review of **Table 12-1** shows that the thirty (30) key study intersections are forecast to operate at acceptable LOS D or better during the AM and PM peak hours for both the Approved Development and proposed Project traffic conditions. In addition, the proposed Project will have similar service levels to that of the Approved Development. Hence, it is concluded that the proposed Project will not create additional impacts when compared to the Approved Development. **Figure 12-1** graphically illustrates the level of service results for the AM and PM peak hours for Existing Plus Approved Development vs. Existing Plus Project.

Appendix D presents the Existing Plus Approved Development AM and PM peak hour ICU/HCM calculations worksheets.

12.3 Year 2020 Cumulative Plus Approved Development vs. Year 2020 Cumulative Plus Project

Table 12-2 summarizes the peak hour Level of Service results for Year 2020 Cumulative Plus Approved Development traffic vs. Year 2020 Cumulative Plus Project traffic conditions. The first column (1) of ICU/HCM values in *Table 12-2* presents a summary of Year 2020 Cumulative Plus Approved Development traffic for the AM and PM peak hour traffic conditions. The second column (2) lists Year 2020 Cumulative Plus Project traffic conditions (which were also presented in *Table 8-2*). The third column (3) presents change in ICU/HCM between Year 2020 Cumulative Plus Project vs. Year 2020 Cumulative Plus Approved Development traffic conditions.

Review of column (3) of *Table 12-2* shows that the proposed Project will not increase services levels by more than 2.0% beyond that of the Approved Development. Therefore, the proposed Project will have similar service levels to that of the Approved Development.

While the intersections of Long Beach Boulevard/7th Street, Alamitos Avenue/7th Street, Alamitos Avenue/3rd Street, Alamitos Avenue/Broadway, Magnolia Avenue/Ocean Boulevard, Pine Avenue/Ocean Boulevard, and Alamitos Avenue/Shoreline Drive/Ocean Boulevard are all forecast to operate at unacceptable service levels in the AM and/or PM peak hours, with the Approved Development and with the proposed Project, the ICU increment (difference) between the two is less than 0.020.

Hence, the application of the City's significance criteria under this comparative assessment indicates that the modifications to the development totals associated with the proposed Project will not result in any significant impacts. **Figure 12-2** graphically illustrates the level of service results for the AM and PM peak hours for Year 2020 Cumulative Plus Approved Development vs. Year 2020 Cumulative Plus Project.

Appendix D presents the Year 2020 Cumulative Plus Approved Development AM and PM peak hour ICU/HCM calculations worksheets.

TABLE 12-1
EXISTING PLUS PROJECT PEAK HOUR INTERSECTION CAPACITY ANALYSIS COMPARISON
PROPOSED PROJECT VS. APPROVED DEVELOPMENT

Key Intersection	Time Period	(1) Existing Plus Approved Development Traffic Conditions		(2) Existing Plus Project Traffic Conditions		(3) Proposed Project vs. Approved Development (2)-(1)
		ICU/HCM	LOS	ICU/HCM	LOS	Change in ICU/HCM
1. Long Beach Boulevard at 7 th Street	AM	0.658	B	0.659	B	0.001
	PM	0.486	A	0.486	A	0.000
2. Atlantic Avenue at 7 th Street	AM	0.706	C	0.707	C	0.001
	PM	0.434	A	0.434	A	0.000
3. Martin Luther King Jr Ave at 7 th Street	AM	0.674	B	0.674	B	0.000
	PM	0.523	A	0.524	A	0.001
4. Alamitos Avenue at 7 th Street	AM	0.830	D	0.831	D	0.001
	PM	0.781	C	0.785	C	0.004
5. Atlantic Avenue at 6 th Street	AM	0.449	A	0.450	A	0.001
	PM	0.646	B	0.647	B	0.001
6. Alamitos Avenue at 6 th Street	AM	0.505	A	0.506	A	0.001
	PM	0.672	B	0.673	B	0.001
7. Atlantic Avenue at 5 th Street	AM	0.378	A	0.378	A	0.000
	PM	0.337	A	0.339	A	0.002
8. Atlantic Avenue at 4 th Street	AM	0.505	A	0.506	A	0.001
	PM	0.466	A	0.467	A	0.001
9. Atlantic Avenue at 3 rd Street	AM	0.542	A	0.543	A	0.001
	PM	0.345	A	0.347	A	0.002
10. Alamitos Avenue at 3 rd Street	AM	0.860	D	0.861	D	0.001
	PM	0.587	A	0.588	A	0.001
11. Magnolia Avenue at Broadway	AM	0.468	A	0.468	A	0.000
	PM	0.547	A	0.548	A	0.001

Notes:

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

TABLE 12-1 (CONTINUED)
EXISTING PLUS PROJECT PEAK HOUR INTERSECTION CAPACITY ANALYSIS COMPARISON
PROPOSED PROJECT VS. APPROVED DEVELOPMENT

Key Intersection	Time Period	(1) Existing Plus Approved Development Traffic Conditions		(2) Existing Plus Project Traffic Conditions		(3) Proposed Project vs. Approved Development (2)-(1)
		ICU/HCM	LOS	ICU/HCM	LOS	Change in ICU/HCM
12. Pacific Avenue at Broadway	AM	0.445	A	0.446	A	0.001
	PM	0.622	B	0.623	B	0.001
13. Pine Avenue at Broadway	AM	0.398	A	0.398	A	0.000
	PM	0.664	B	0.666	B	0.002
14. Long Beach Boulevard at Broadway	AM	0.369	A	0.369	A	0.000
	PM	0.634	B	0.635	B	0.001
15. Atlantic Avenue at Broadway	AM	0.282	A	0.284	A	0.002
	PM	0.611	B	0.614	B	0.003
16. Lime Avenue at Broadway	AM	0.230	A	0.230	A	0.000
	PM	0.523	A	0.524	A	0.001
17. Alamitos Avenue at Broadway	AM	0.721	C	0.722	C	0.001
	PM	0.876	D	0.878	D	0.002
18. Atlantic Avenue at 1 st Street	AM	0.321	A	0.324	A	0.003
	PM	0.356	A	0.358	A	0.002
19. Lime Avenue at 1 st Street	AM	10.1 s/v	B	10.1 s/v	B	0.0 s/v
	PM	11.4 s/v	B	11.9 s/v	B	0.5 s/v
20. Alamitos Avenue at 1 st Street	AM	0.608	B	0.618	B	0.010
	PM	0.511	A	0.530	A	0.019
21. Alamitos Avenue at Medio Street	AM	11.1 s/v	B	11.3 s/v	B	0.2 s/v
	PM	9.9 s/v	A	10.0 s/v	B	0.1 s/v
22. Magnolia Avenue at Ocean Boulevard	AM	0.749	C	0.750	C	0.001
	PM	0.662	B	0.662	B	0.000

Notes:

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

TABLE 12-1 (CONTINUED)
EXISTING PLUS PROJECT PEAK HOUR INTERSECTION CAPACITY ANALYSIS COMPARISON
PROPOSED PROJECT VS. APPROVED DEVELOPMENT

Key Intersection	Time Period	(1) Existing Plus Approved Development Traffic Conditions		(2) Existing Plus Project Traffic Conditions		(3) Proposed Project vs. Approved Development (2)-(1)
		ICU/HCM	LOS	ICU/HCM	LOS	Change in ICU/HCM
23. Pacific Avenue at Ocean Boulevard	AM	0.650	B	0.651	B	0.001
	PM	0.505	A	0.505	A	0.000
24. Pine Avenue at Ocean Boulevard	AM	0.624	B	0.625	B	0.001
	PM	0.780	C	0.780	C	0.000
25. Long Beach Boulevard at Ocean Boulevard	AM	0.640	B	0.641	B	0.001
	PM	0.539	A	0.539	A	0.000
26. Atlantic Avenue at Ocean Boulevard	AM	0.661	B	0.661	B	0.000
	PM	0.573	A	0.573	A	0.000
27. Broadway Court at Ocean Boulevard	AM	20.2 s/v	C	20.3 s/v	C	0.1 s/v
	PM	13.1 s/v	B	13.1 s/v	B	0.0 s/v
28. Alamitos Avenue/Shoreline Drive at Ocean Boulevard	AM	0.791	C	0.796	C	0.005
	PM	0.863	D	0.866	D	0.003
29. Orange Avenue at Ocean Boulevard	AM	0.673	B	0.673	B	0.000
	PM	0.727	C	0.727	C	0.000
30. Pine Avenue at Shoreline Drive	AM	0.384	A	0.388	A	0.004
	PM	0.502	A	0.505	A	0.003

Notes:

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

TABLE 12-2
YEAR 2020 CUMULATIVE PEAK HOUR INTERSECTION CAPACITY ANALYSIS COMPARISON
PROPOSED PROJECT VS. APPROVED DEVELOPMENT

Key Intersection	Time Period	(1) Year 2020 Cumulative Plus Approved Development Traffic Conditions		(2) Year 2020 Cumulative Plus Project Traffic Conditions		(3) Proposed Project vs. Approved Development (2)-(1)
		ICU/HCM	LOS	ICU/HCM	LOS	Change in ICU/HCM
1. Long Beach Boulevard at 7 th Street	AM	0.952	E	0.952	E	0.000
	PM	0.794	C	0.795	C	0.001
2. Atlantic Avenue at 7 th Street	AM	0.785	C	0.786	C	0.001
	PM	0.831	D	0.831	D	0.000
3. Martin Luther King Jr Ave at 7 th Street	AM	0.643	B	0.643	B	0.000
	PM	0.651	B	0.652	B	0.001
4. Alamitos Avenue at 7 th Street	AM	1.002	F	1.004	F	0.002
	PM	1.248	F	1.253	F	0.005
5. Atlantic Avenue at 6 th Street	AM	0.587	A	0.587	A	0.000
	PM	0.718	C	0.720	C	0.002
6. Alamitos Avenue at 6 th Street	AM	0.625	B	0.626	B	0.001
	PM	0.660	B	0.663	B	0.003
7. Atlantic Avenue at 5 th Street	AM	0.412	A	0.412	A	0.000
	PM	0.373	A	0.375	A	0.002
8. Atlantic Avenue at 4 th Street	AM	0.552	A	0.554	A	0.002
	PM	0.520	A	0.520	A	0.000
9. Atlantic Avenue at 3 rd Street	AM	0.627	B	0.627	B	0.000
	PM	0.427	A	0.428	A	0.001
10. Alamitos Avenue at 3 rd Street	AM	1.013	F	1.014	F	0.001
	PM	0.763	C	0.770	C	0.007
11. Magnolia Avenue at Broadway	AM	0.607	B	0.607	B	0.000
	PM	0.733	C	0.734	C	0.001

Notes:

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

TABLE 12-2 (CONTINUED)
YEAR 2020 CUMULATIVE PEAK HOUR INTERSECTION CAPACITY ANALYSIS COMPARISON
PROPOSED PROJECT VS. APPROVED DEVELOPMENT

Key Intersection	Time Period	(1) Year 2020 Cumulative Plus Approved Development Traffic Conditions		(2) Year 2020 Cumulative Plus Project Traffic Conditions		(3) Proposed Project vs. Approved Development (2)-(1)
		ICU/HCM	LOS	ICU/HCM	LOS	Change in ICU/HCM
12. Pacific Avenue at Broadway	AM	0.521	A	0.521	A	0.000
	PM	0.703	C	0.704	C	0.001
13. Pine Avenue at Broadway	AM	0.479	A	0.479	A	0.000
	PM	0.781	C	0.783	C	0.002
14. Long Beach Boulevard at Broadway	AM	0.466	A	0.466	A	0.000
	PM	0.746	C	0.748	C	0.002
15. Atlantic Avenue at Broadway	AM	0.353	A	0.355	A	0.002
	PM	0.701	C	0.704	C	0.003
16. Lime Avenue at Broadway	AM	0.284	A	0.284	A	0.000
	PM	0.585	A	0.586	A	0.001
17. Alamitos Avenue at Broadway	AM	0.858	D	0.859	D	0.001
	PM	0.989	E	0.991	E	0.002
18. Atlantic Avenue at 1 st Street	AM	0.359	A	0.363	A	0.004
	PM	0.387	A	0.389	A	0.002
19. Lime Avenue at 1 st Street	AM	10.2 s/v	B	10.3 s/v	B	0.1 s/v
	PM	11.5 s/v	B	12.1 s/v	B	0.6 s/v
20. Alamitos Avenue at 1 st Street	AM	0.754	C	0.765	C	0.011
	PM	0.681	B	0.701	C	0.020
21. Alamitos Avenue at Medio Street	AM	13.0 s/v	B	13.3 s/v	B	0.3 s/v
	PM	11.4 s/v	B	11.5 s/v	B	0.1 s/v
22. Magnolia Avenue at Ocean Boulevard	AM	0.945	E	0.945	E	0.000
	PM	0.845	D	0.845	D	0.000

Notes:

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

TABLE 12-2 (CONTINUED)
 YEAR 2020 CUMULATIVE PEAK HOUR INTERSECTION CAPACITY ANALYSIS COMPARISON
 PROPOSED PROJECT VS. APPROVED DEVELOPMENT

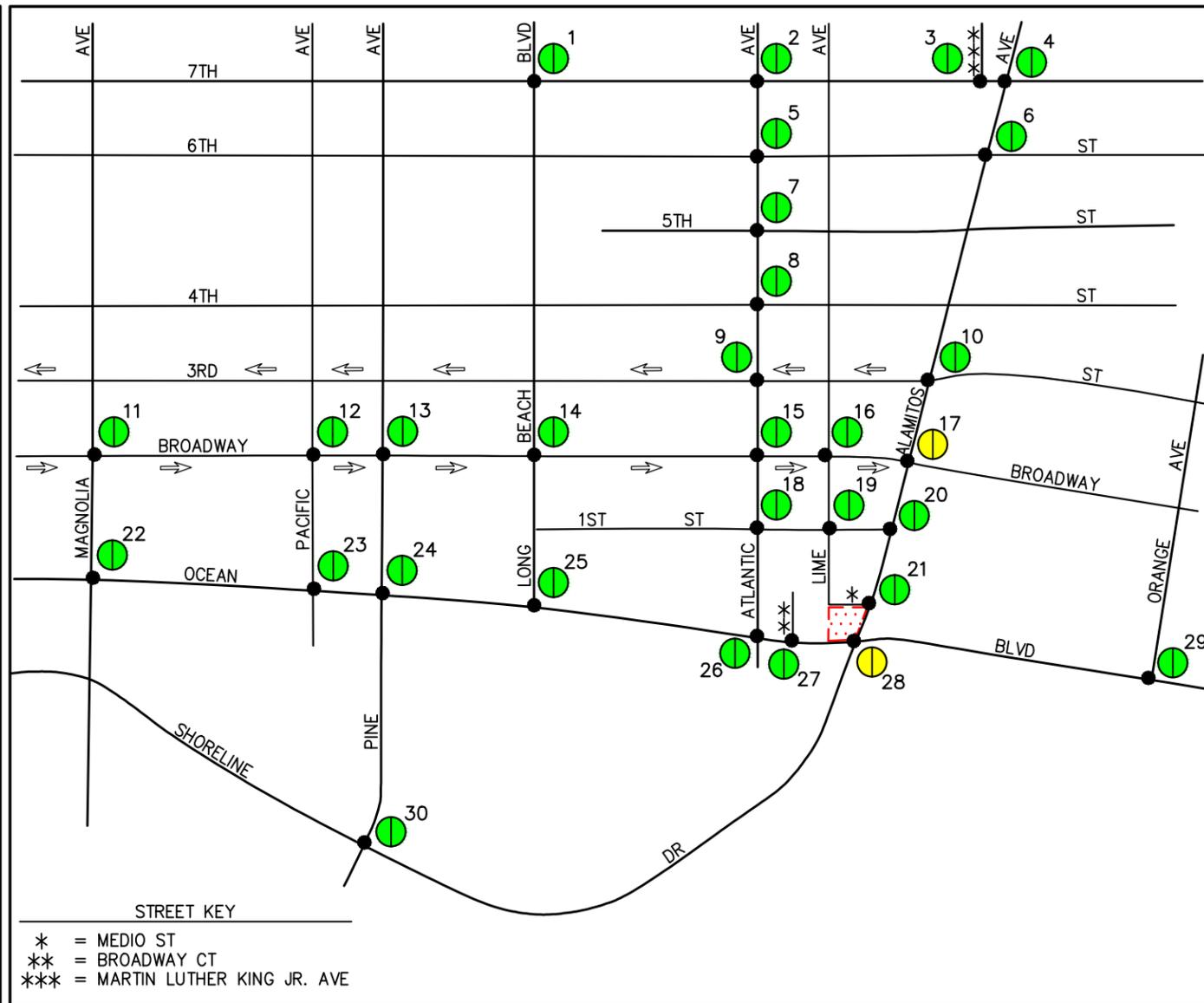
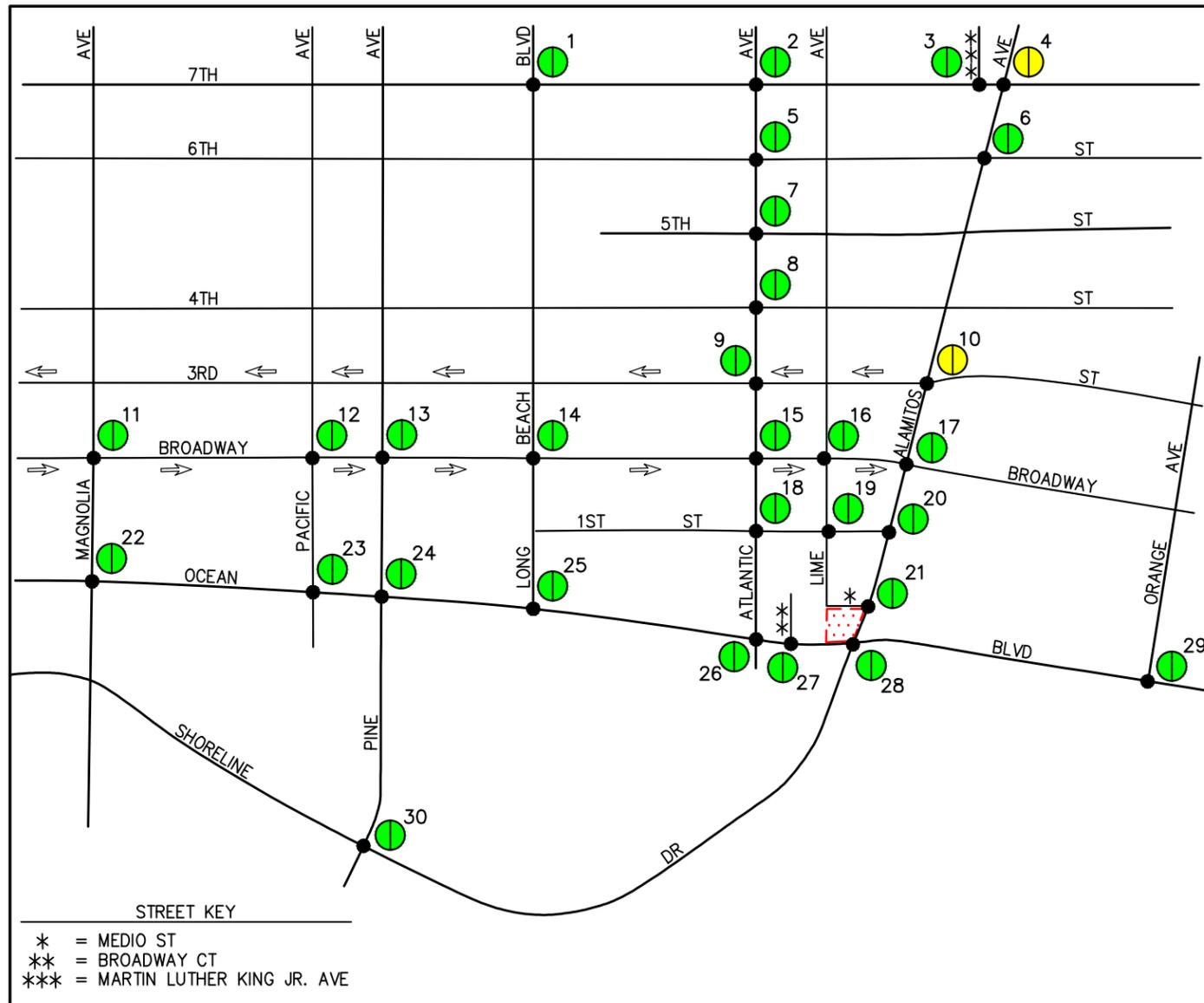
Key Intersection	Time Period	(1) Year 2020 Cumulative Plus Approved Development Traffic Conditions		(2) Year 2020 Cumulative Plus Project Traffic Conditions		(3) Proposed Project vs. Approved Development (2)-(1)
		ICU/HCM	LOS	ICU/HCM	LOS	Change in ICU/HCM
23. Pacific Avenue at Ocean Boulevard	AM	0.767	C	0.767	C	0.000
	PM	0.607	B	0.607	B	0.000
24. Pine Avenue at Ocean Boulevard	AM	0.720	C	0.720	C	0.000
	PM	0.953	E	0.954	E	0.001
25. Long Beach Boulevard at Ocean Boulevard	AM	0.747	C	0.747	C	0.000
	PM	0.624	B	0.624	B	0.000
26. Atlantic Avenue at Ocean Boulevard	AM	0.765	C	0.765	C	0.000
	PM	0.645	B	0.645	B	0.000
27. Broadway Court at Ocean Boulevard	AM	23.2 s/v	C	23.2 s/v	C	0.0 s/v
	PM	14.9 s/v	B	14.9 s/v	B	0.0 s/v
28. Alamitos Avenue/Shoreline Drive at Ocean Boulevard	AM	0.960	E	0.964	E	0.004
	PM	0.979	E	0.982	E	0.003
29. Orange Avenue at Ocean Boulevard	AM	0.728	C	0.728	C	0.000
	PM	0.788	C	0.788	C	0.000
30. Pine Avenue at Shoreline Drive	AM	0.494	A	0.498	A	0.004
	PM	0.565	A	0.568	A	0.003

Notes:

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

AM PEAK HOUR

PM PEAK HOUR



EXISTING PLUS APPROVED DEVELOPMENT LOS RESULTS

EXISTING PLUS PROJECT LOS RESULTS

KEY

- = LOS E/F
- = LOS D
- = LOS A/B/C
- = STUDY INTERSECTION
- = PROJECT SITE

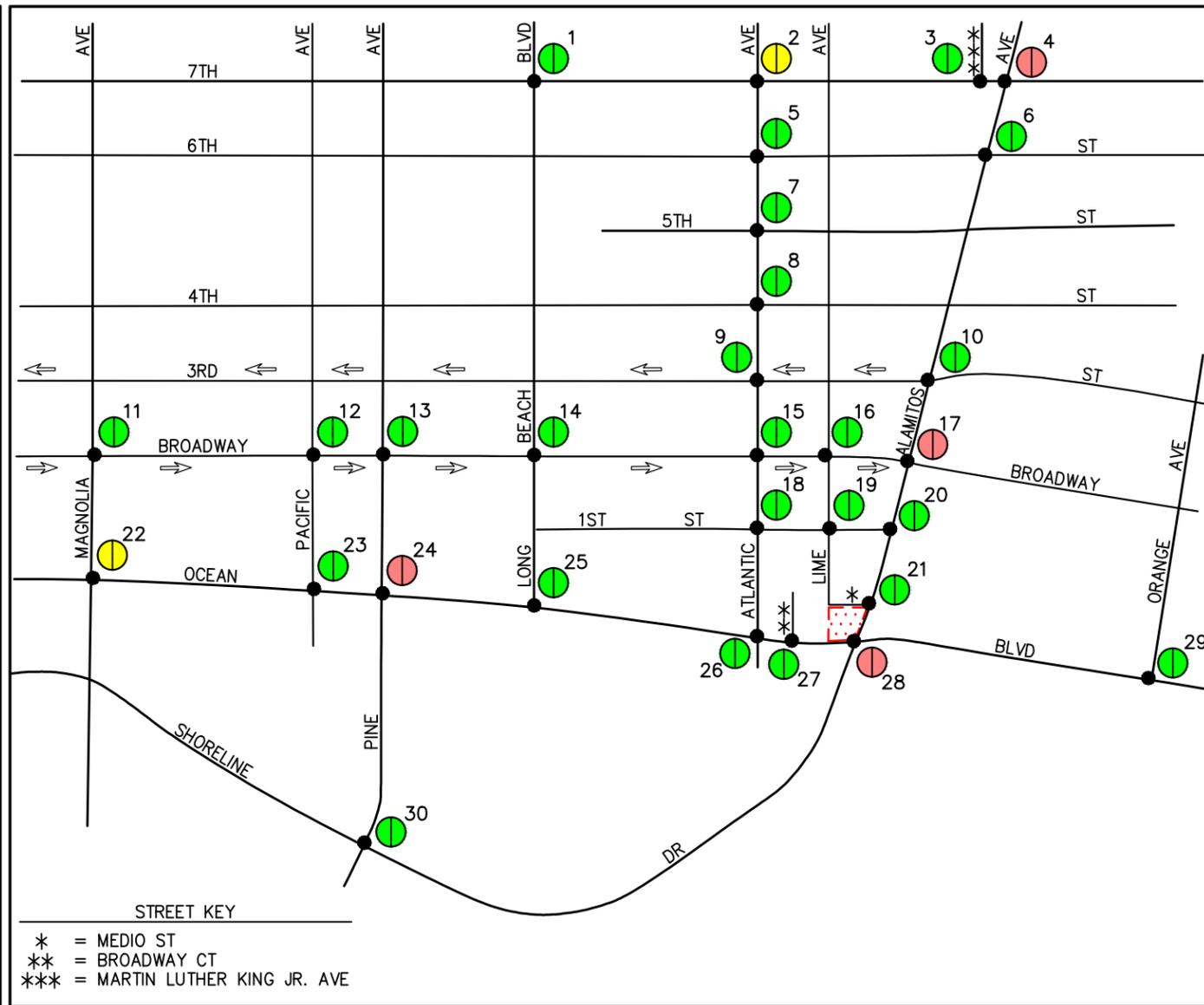
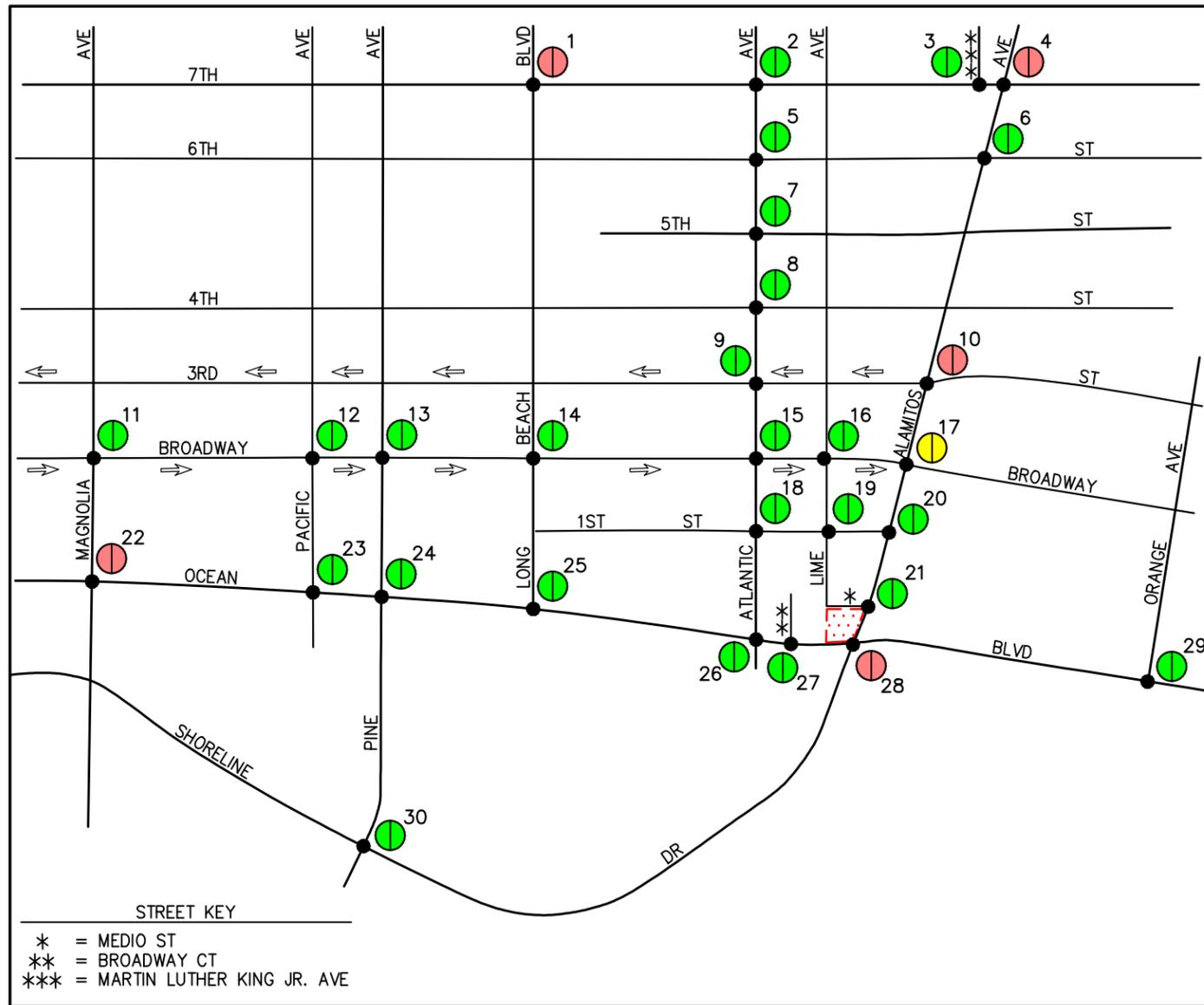
EXISTING PLUS APPROVED DEVELOPMENT VS. EXISTING PLUS PROJECT
AM AND PM PEAK HOUR LEVEL OF SERVICE RESULTS COMPARISON

SHORELINE GATEWAY EAST TOWER, LONG BEACH

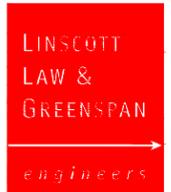
FIGURE 12-1

AM PEAK HOUR

PM PEAK HOUR



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YEAR 2020 CUMULATIVE PLUS APPROVED DEVELOPMENT LOS RESULTS

YEAR 2020 CUMULATIVE PLUS PROJECT LOS RESULTS

KEY

- = LOS E/F
- = LOS D
- = LOS A/B/C
- = STUDY INTERSECTION
- = PROJECT SITE

FIGURE 12-2
 YEAR 2020 CUMULATIVE PLUS APPROVED DEVELOPMENT VS. YEAR 2020 CUMULATIVE PLUS PROJECT AM AND PM PEAK HOUR LEVEL OF SERVICE RESULTS COMPARISON
 SHORELINE GATEWAY EAST TOWER, LONG BEACH

13.0 CONSTRUCTION ASSESSMENT

This section of the report summarizes the potential traffic impacts due to construction activities at the Project site. It is anticipated that construction activities will include grading and excavation, building erection, and building completion.

13.1 Project Construction Trip Generation

Table 13-1 displays the assumed work schedule for construction activities, the number of workers needed for each phase, and the number of trucks needed for each phase, which were used to forecast the potential construction related trips associated with the each construction phase of the Project.

Table 13-2 provides a summary of the forecast construction peak hour and daily traffic volumes associated with each construction phase based on the work schedule presented in *Table 13-1*. To remain conservative, the truck trips were converted to passenger car equivalents (P.C.E.'s) using a 3.0 P.C.E. conversion factor.

Review of *Table 13-2* shows that on a typical weekday during the grading and excavation phase, construction traffic is expected to generate 890 daily trips with 280 trips (265 inbound, 15 outbound) produced during the AM peak hour and 280 trips (15 inbound, 265 outbound) produced during the PM peak hour. On a typical weekday of the building erection phase, construction traffic is expected to generate 548 daily trips with 253 trips (253 inbound, 0 outbound) produced in the AM peak hour and 253 trips (0 inbound, 253 outbound) produced during the PM peak hour. On a typical weekday of the building completion phase, construction traffic is expected to generate 548 daily trips with 253 trips (253 inbound, 0 outbound) produced in the AM peak hour and 253 trips (0 inbound, 253 outbound) produced during the PM peak hour.

Based on the expected generated trips, the grading and excavation phase will produce the most trips. Therefore, the Project construction-related traffic analysis will be based off of the grading and excavation traffic.

13.2 Project Construction Traffic Distribution Pattern

Figure 13-1 graphically illustrates the traffic distribution pattern for all construction employee related traffic. **Figure 13-2** illustrates the traffic distribution pattern for all construction truck related traffic.

The anticipated AM and PM peak hour construction traffic volumes at the key study intersections are presented in **Figures 13-3** and **13-4**, respectively. The traffic volume assignments presented in **Figures 13-3** and **13-4** reflect the construction traffic distribution characteristics shown in **Figures 13-1** and **13-2** and the construction traffic generation forecast presented in *Table 13-2*.

13.3 Existing Plus Project Construction Traffic Volumes

Figures 13-5 and **13-6** present the Existing Plus Project Construction traffic volumes at the key study intersections during the AM and PM peak hours, respectively.

13.4 Existing Plus Project Construction Traffic Level of Service Results

Table 13-3 summarizes the results of the Existing Plus Project Construction traffic level of service analysis at the thirty (30) key study intersections. Column (1) in **Table 13-3** presents a summary of existing AM and PM peak hour traffic conditions. The second column (2) presents forecast existing with the addition of Project construction traffic. The third column (3) shows the increase in ICU/HCM value due to the added peak hour construction trips and indicates whether the traffic associated with the Project construction will have a significant impact based on the LOS standards and the significant impact criteria defined in this report. The fourth column (4) indicates the anticipated operating conditions with implementation of improvements recommended to mitigate Project construction traffic and/or achieve an acceptable Level of Service.

Review of **Table 13-3** shows that the thirty (30) key study intersections will continue to operate at acceptable LOS D or better during the AM and PM peak hours with the addition of project construction traffic. Therefore, aside from the nuisance traffic that will occur as a result of construction-related traffic (e.g., construction materials, construction workers, etc.); impacts resulting from construction traffic would be less than significant.

Appendix E contains the Existing Plus Project Construction Traffic Conditions Intersection ICU/HCM calculation worksheets.

TABLE 13-1
CONSTRUCTION ACTIVITIES WORK SCHEDULE

Construction Phase	Number of Working Days	Worker Trips Per Day	Truck Trips Per Day
Grading and Excavation	80	250	65
Building Erection	440	250	8
Building Completion	80	250	8

TABLE 13-2
PROJECT CONSTRUCTION TRIP GENERATION FORECAST

Project Description	Daily 2-Way	AM Peak Hour			PM Peak Hour		
		Enter	Exit	Total	Enter	Exit	Total
<u>Grading and Excavation</u>							
• Employees	500	250	0	250	0	250	250
• Trucks	130	5	5	10	5	5	10
<i>Passenger Car Equivalent Factor¹⁴</i>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>
<i>Truck Subtotal</i>	390	15	15	30	15	15	30
Grading and Excavation Total	890	265	15	280	15	265	280
<u>Building Erection</u>							
• Employees	500	250	0	250	0	250	250
• Trucks	16	1	0	1	0	1	1
<i>Passenger Car Equivalent Factor¹⁴</i>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>
<i>Truck Subtotal</i>	48	3	0	3	0	3	3
Building Erection Total	548	253	0	253	0	253	253
<u>Building Completion</u>							
• Employees	500	250	0	250	0	250	250
• Trucks	16	1	0	1	0	1	1
<i>Passenger Car Equivalent Factor¹⁴</i>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>
<i>Truck Subtotal</i>	48	3	0	3	0	3	3
Building Completion Total	548	253	0	253	0	253	253

TABLE 13-3
EXISTING PLUS PROJECT CONSTRUCTION PEAK HOUR INTERSECTION CAPACITY ANALYSIS SUMMARY

Key Intersection	Time Period	(1) Existing Traffic Conditions		(2) Existing Plus Project Construction Traffic Conditions		(3) Significant Impact		(4) Existing Plus Project Construction Traffic Conditions with Improvements	
		ICU/HCM	LOS	ICU/HCM	LOS	Increase	Yes/No	ICU/HCM	LOS
1. Long Beach Boulevard at 7 th Street	AM	0.658	B	0.660	B	0.002	No	--	--
	PM	0.484	A	0.485	A	0.001	No	--	--
2. Atlantic Avenue at 7 th Street	AM	0.703	C	0.710	C	0.007	No	--	--
	PM	0.434	A	0.434	A	0.000	No	--	--
3. Martin Luther King Jr Ave at 7 th Street	AM	0.672	B	0.677	B	0.005	No	--	--
	PM	0.520	A	0.522	A	0.002	No	--	--
4. Alamitos Avenue at 7 th Street	AM	0.825	D	0.846	D	0.021	No	--	--
	PM	0.763	C	0.784	C	0.021	No	--	--
5. Atlantic Avenue at 6 th Street	AM	0.445	A	0.446	A	0.001	No	--	--
	PM	0.642	B	0.652	B	0.010	No	--	--
6. Alamitos Avenue at 6 th Street	AM	0.502	A	0.523	A	0.021	No	--	--
	PM	0.664	B	0.685	B	0.021	No	--	--
7. Atlantic Avenue at 5 th Street	AM	0.377	A	0.384	A	0.007	No	--	--
	PM	0.333	A	0.333	A	0.000	No	--	--
8. Atlantic Avenue at 4 th Street	AM	0.504	A	0.512	A	0.008	No	--	--
	PM	0.462	A	0.462	A	0.000	No	--	--

Notes:

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

TABLE 13-3 (CONTINUED)
EXISTING PLUS PROJECT CONSTRUCTION PEAK HOUR INTERSECTION CAPACITY ANALYSIS SUMMARY

Key Intersection	Time Period	(1) Existing Traffic Conditions		(2) Existing Plus Project Construction Traffic Conditions		(3) Significant Impact		(4) Existing Plus Project Construction Traffic Conditions with Improvements	
		ICU/HCM	LOS	ICU/HCM	LOS	Increase	Yes/No	ICU/HCM	LOS
9. Atlantic Avenue at 3 rd Street	AM	0.541	A	0.549	A	0.008	No	--	--
	PM	0.341	A	0.341	A	0.000	No	--	--
10. Alamitos Avenue at 3 rd Street	AM	0.853	D	0.897	D	0.044	No	--	--
	PM	0.577	A	0.600	B	0.023	No	--	--
11. Magnolia Avenue at Broadway	AM	0.468	A	0.468	A	0.000	No	--	--
	PM	0.543	A	0.543	A	0.000	No	--	--
12. Pacific Avenue at Broadway	AM	0.444	A	0.452	A	0.008	No	--	--
	PM	0.616	B	0.616	B	0.000	No	--	--
13. Pine Avenue at Broadway	AM	0.397	A	0.406	A	0.009	No	--	--
	PM	0.659	B	0.659	B	0.000	No	--	--
14. Long Beach Boulevard at Broadway	AM	0.367	A	0.378	A	0.011	No	--	--
	PM	0.628	B	0.629	B	0.001	No	--	--
15. Atlantic Avenue at Broadway	AM	0.277	A	0.295	A	0.018	No	--	--
	PM	0.602	B	0.612	B	0.010	No	--	--
16. Lime Avenue at Broadway	AM	0.229	A	0.235	A	0.006	No	--	--
	PM	0.521	A	0.521	A	0.000	No	--	--

Notes:

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

TABLE 13-3 (CONTINUED)
EXISTING PLUS PROJECT CONSTRUCTION PEAK HOUR INTERSECTION CAPACITY ANALYSIS SUMMARY

Key Intersection	Time Period	(1) Existing Traffic Conditions		(2) Existing Plus Project Construction Traffic Conditions		(3) Significant Impact		(4) Existing Plus Project Construction Traffic Conditions with Improvements	
		ICU/HCM	LOS	ICU/HCM	LOS	Increase	Yes/No	ICU/HCM	LOS
17. Alamitos Avenue at Broadway	AM	0.713	C	0.759	C	0.046	No	--	--
	PM	0.867	D	0.892	D	0.025	No	--	--
18. Atlantic Avenue at 1 st Street	AM	0.310	A	0.324	A	0.014	No	--	--
	PM	0.349	A	0.349	A	0.000	No	--	--
19. Lime Avenue at 1 st Street	AM	9.8 s/v	A	12.4 s/v	B	2.6 s/v	No	--	--
	PM	10.5 s/v	B	11.0 s/v	B	0.5 s/v	No	--	--
20. Alamitos Avenue at 1 st Street	AM	0.573	A	0.691	B	0.118	No	--	--
	PM	0.467	A	0.525	A	0.058	No	--	--
21. Alamitos Avenue at Medio Street	AM	10.6 s/v	B	11.2 s/v	B	0.6 s/v	No	--	--
	PM	9.5 s/v	A	10.6 s/v	B	1.1 s/v	No	--	--
22. Magnolia Avenue at Ocean Boulevard	AM	0.748	C	0.751	C	0.003	No	--	--
	PM	0.661	B	0.666	B	0.005	No	--	--
23. Pacific Avenue at Ocean Boulevard	AM	0.649	B	0.652	B	0.003	No	--	--
	PM	0.504	A	0.510	A	0.006	No	--	--
24. Pine Avenue at Ocean Boulevard	AM	0.623	B	0.626	B	0.003	No	--	--
	PM	0.778	C	0.781	C	0.003	No	--	--

Notes:

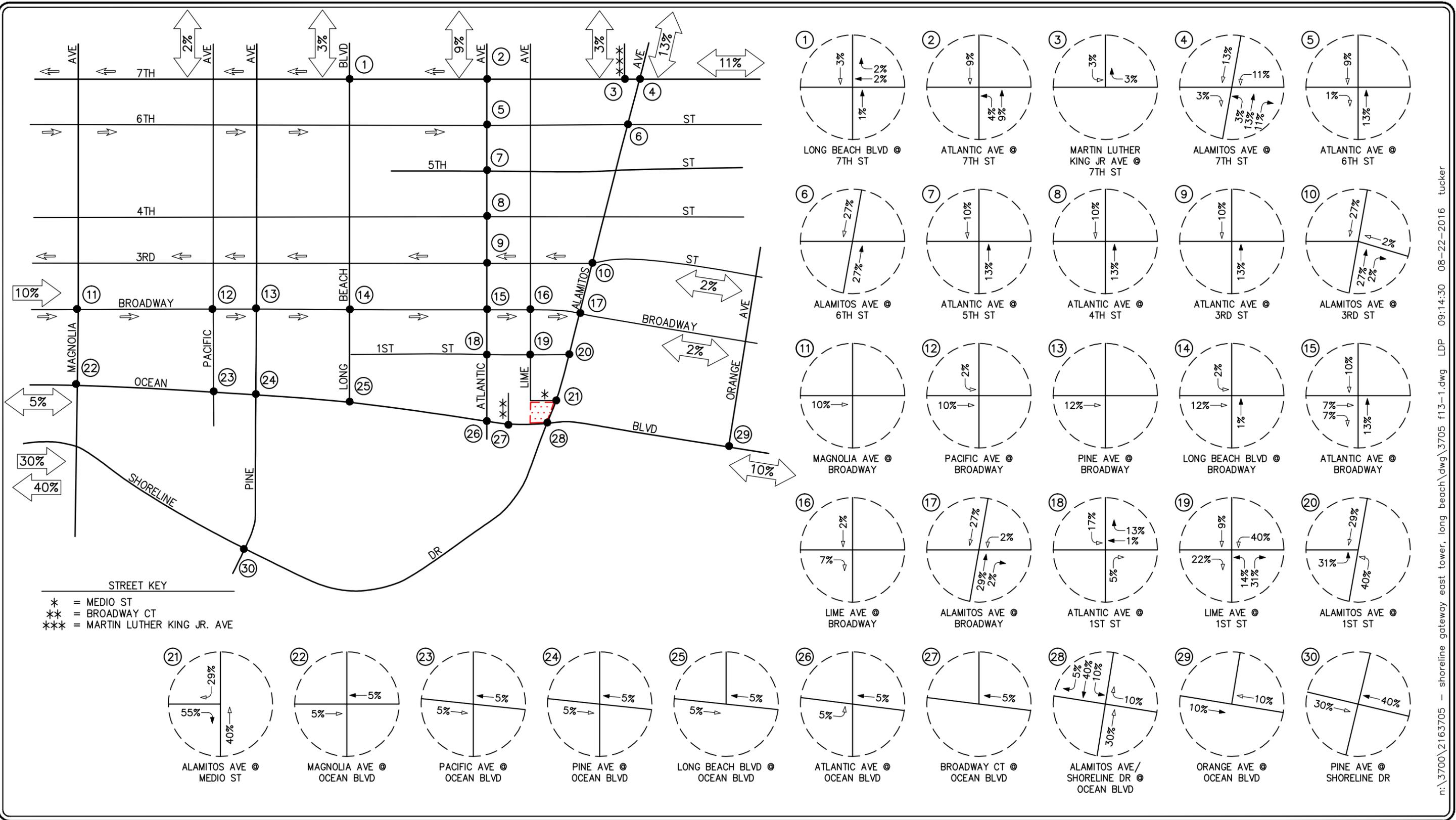
- LOS = Level of Service, please refer to *Tables 3-2 and 3-3* for the LOS definitions
- s/v = seconds per vehicle (delay)
- **ICU/LOS and HCM/LOS values** indicate adverse service levels based on the LOS standards mentioned in this report

TABLE 13-3 (CONTINUED)
EXISTING PLUS PROJECT CONSTRUCTION PEAK HOUR INTERSECTION CAPACITY ANALYSIS SUMMARY

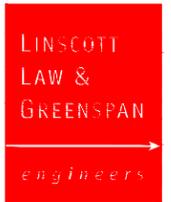
Key Intersection	Time Period	(1) Existing Traffic Conditions		(2) Existing Plus Project Construction Traffic Conditions		(3) Significant Impact		(4) Existing Plus Project Construction Traffic Conditions with Improvements	
		ICU/HCM	LOS	ICU/HCM	LOS	Increase	Yes/No	ICU/HCM	LOS
25. Long Beach Boulevard at Ocean Boulevard	AM	0.639	B	0.642	B	0.003	No	--	--
	PM	0.538	A	0.541	A	0.003	No	--	--
26. Atlantic Avenue at Ocean Boulevard	AM	0.659	B	0.679	B	0.020	No	--	--
	PM	0.573	A	0.573	A	0.000	No	--	--
27. Broadway Court at Ocean Boulevard	AM	20.2 s/v	C	20.4 s/v	C	0.2 s/v	No	--	--
	PM	13.1 s/v	B	13.3 s/v	B	0.2 s/v	No	--	--
28. Alamitos Avenue/Shoreline Drive at Ocean Boulevard	AM	0.779	C	0.787	C	0.008	No	--	--
	PM	0.854	D	0.869	D	0.015	No	--	--
29. Orange Avenue at Ocean Boulevard	AM	0.672	B	0.680	B	0.008	No	--	--
	PM	0.724	C	0.732	C	0.008	No	--	--
30. Pine Avenue at Shoreline Drive	AM	0.373	A	0.373	A	0.000	No	--	--
	PM	0.492	A	0.492	A	0.000	No	--	--

Notes:

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



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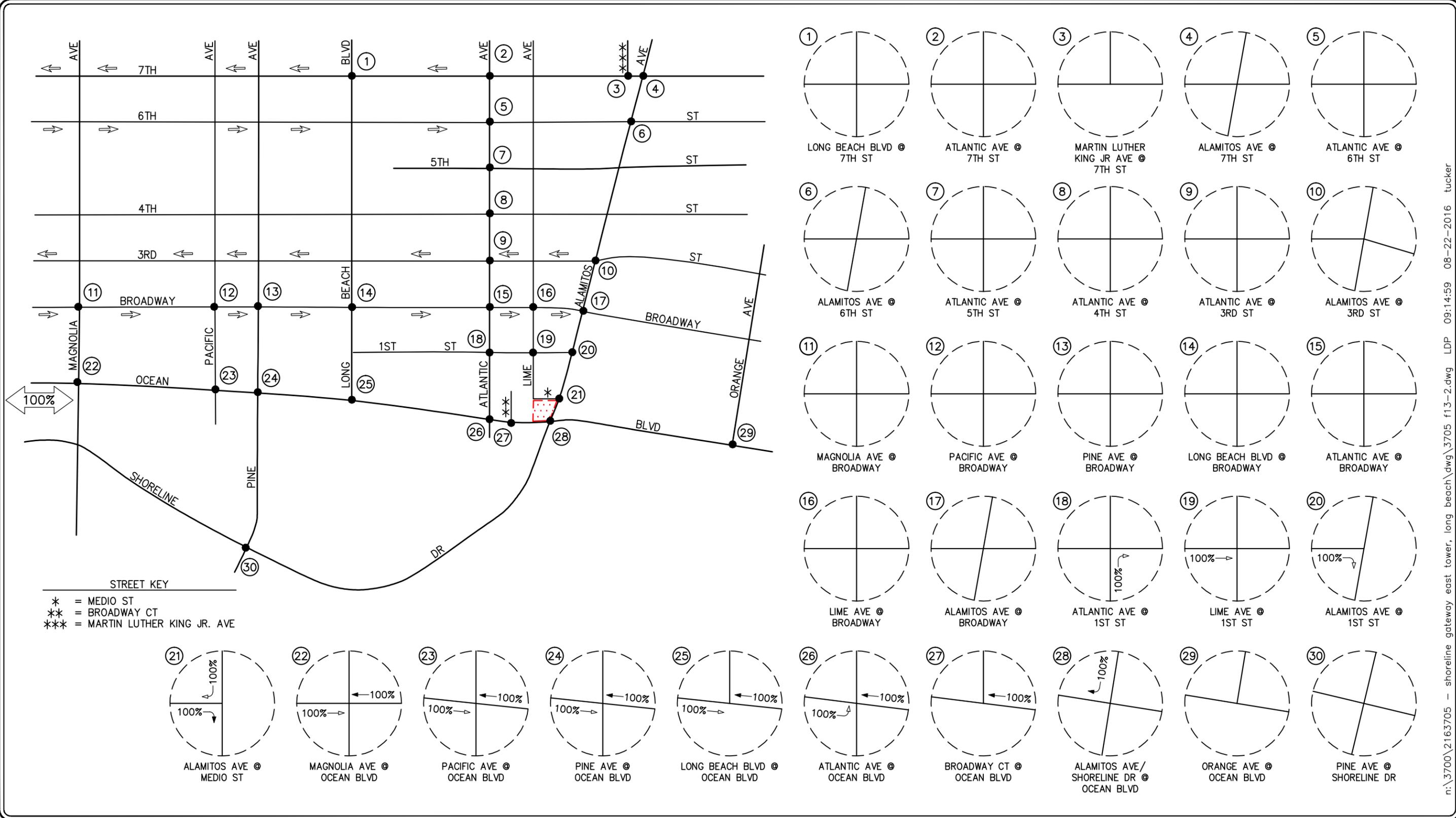


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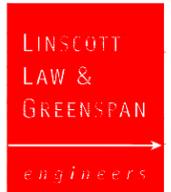
- # = STUDY INTERSECTION
- ← = INBOUND PERCENTAGE
- = OUTBOUND PERCENTAGE
- [Red Box] = PROJECT SITE

FIGURE 13-1

PROJECT CONSTRUCTION EMPLOYEE TRAFFIC DISTRIBUTION PATTERN
SHORELINE GATEWAY EAST TOWER, LONG BEACH



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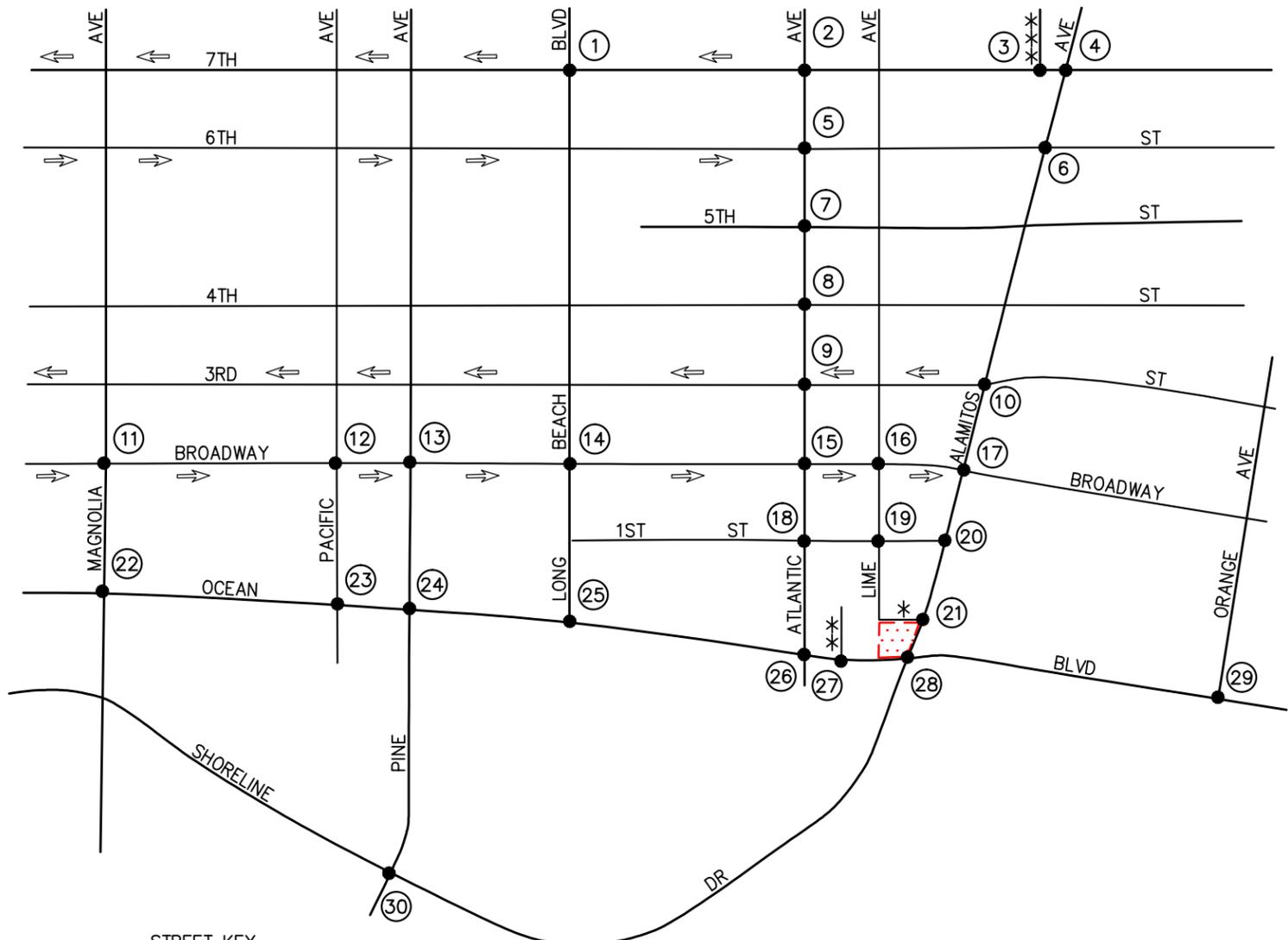
KEY

- # = STUDY INTERSECTION
- ← = INBOUND PERCENTAGE
- = OUTBOUND PERCENTAGE
- [Red Dotted Area] = PROJECT SITE

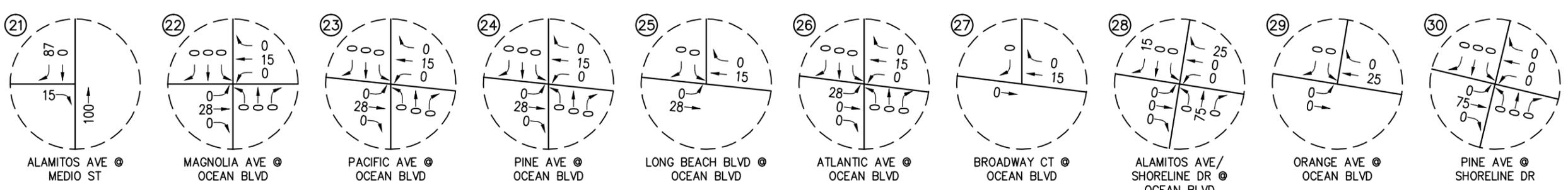
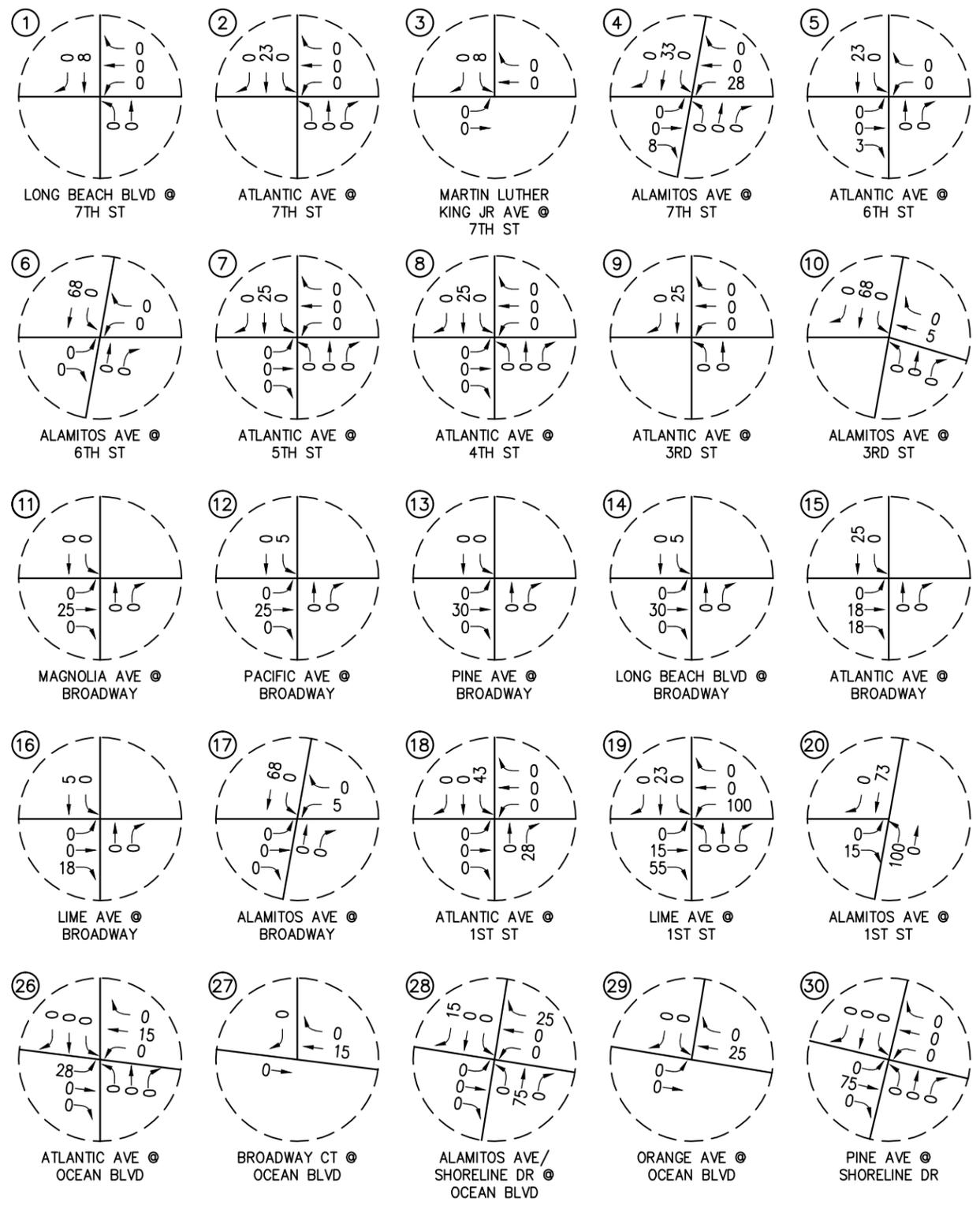
FIGURE 13-2

PROJECT CONSTRUCTION TRUCK TRAFFIC DISTRIBUTION PATTERN

SHORELINE GATEWAY EAST TOWER, LONG BEACH



STREET KEY
 * = MEDIO ST
 ** = BROADWAY CT
 *** = MARTIN LUTHER KING JR. AVE



KEY
 # = STUDY INTERSECTION
 [Red Hatched Box] = PROJECT SITE

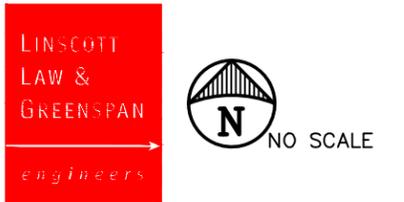
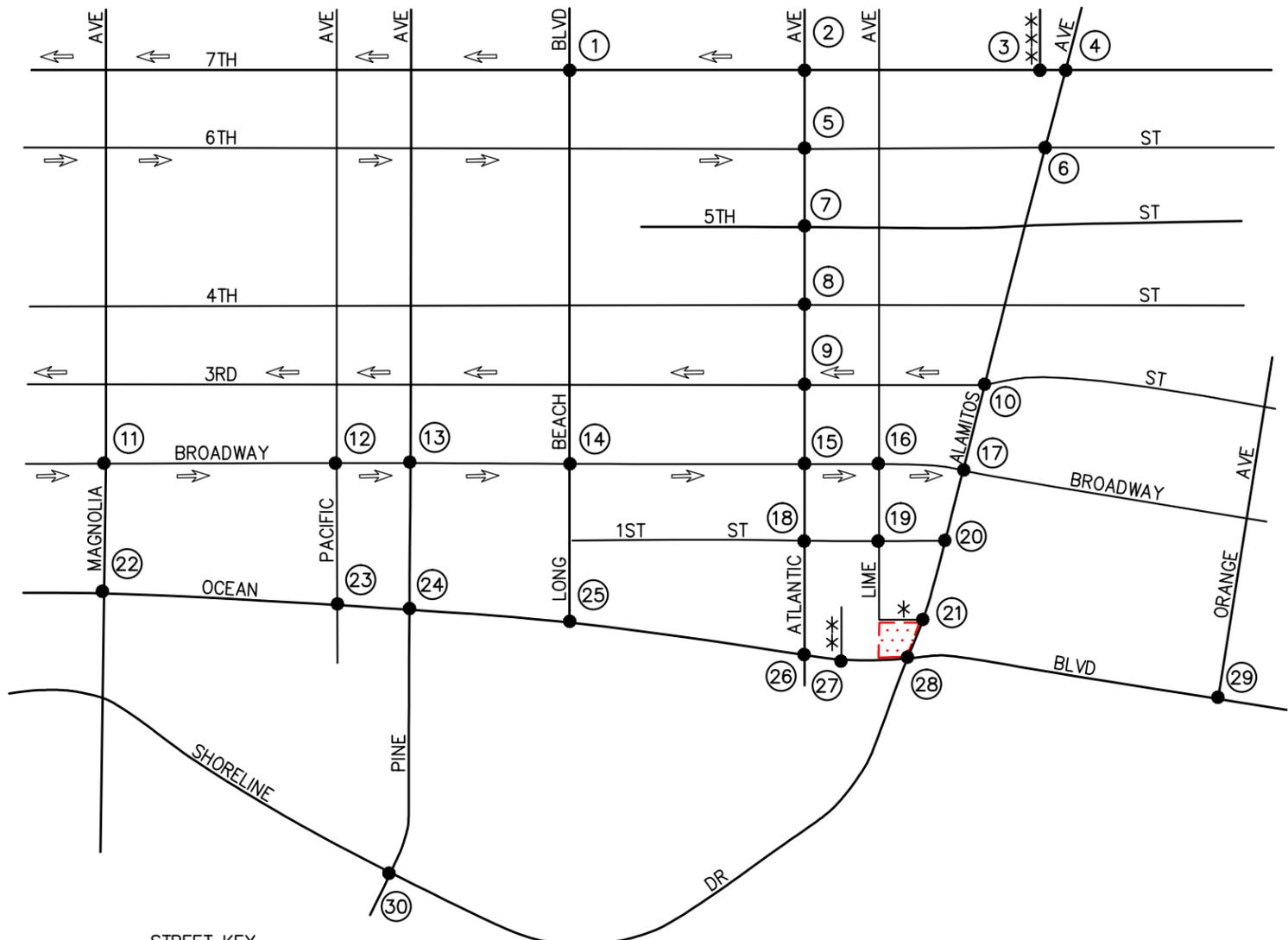


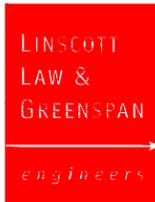
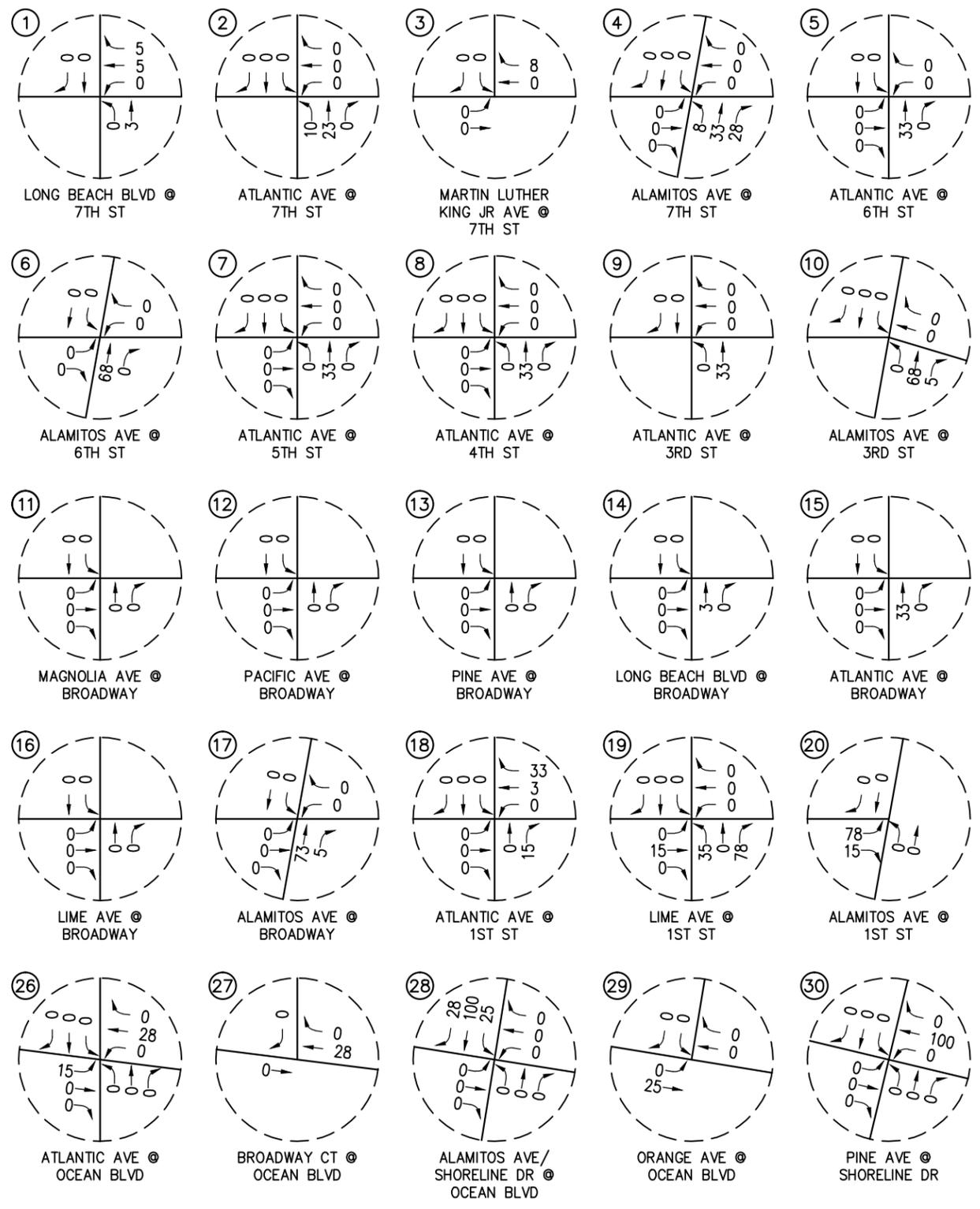
FIGURE 13-3

AM PEAK HOUR CONSTRUCTION TRAFFIC VOLUMES
 SHORELINE GATEWAY EAST TOWER, LONG BEACH

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STREET KEY
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 ** = BROADWAY CT
 *** = MARTIN LUTHER KING JR. AVE



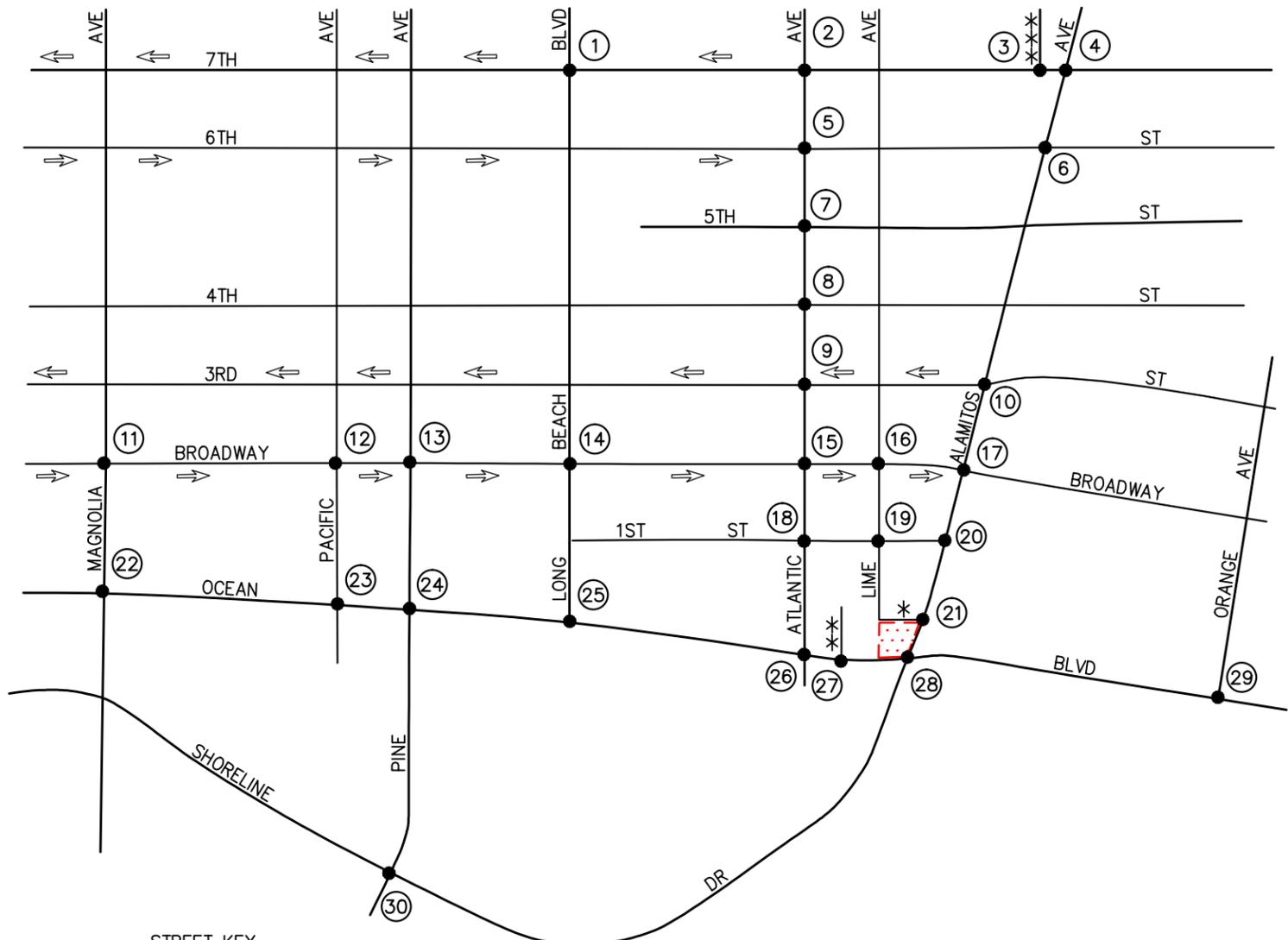
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KEY
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 [Red Hatched Box] = PROJECT SITE

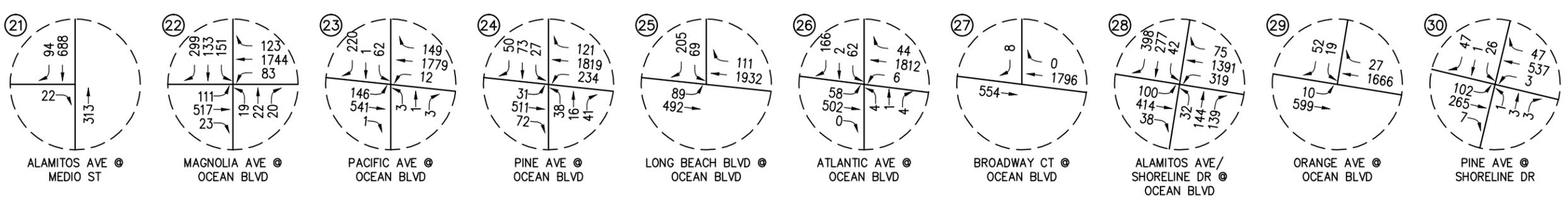
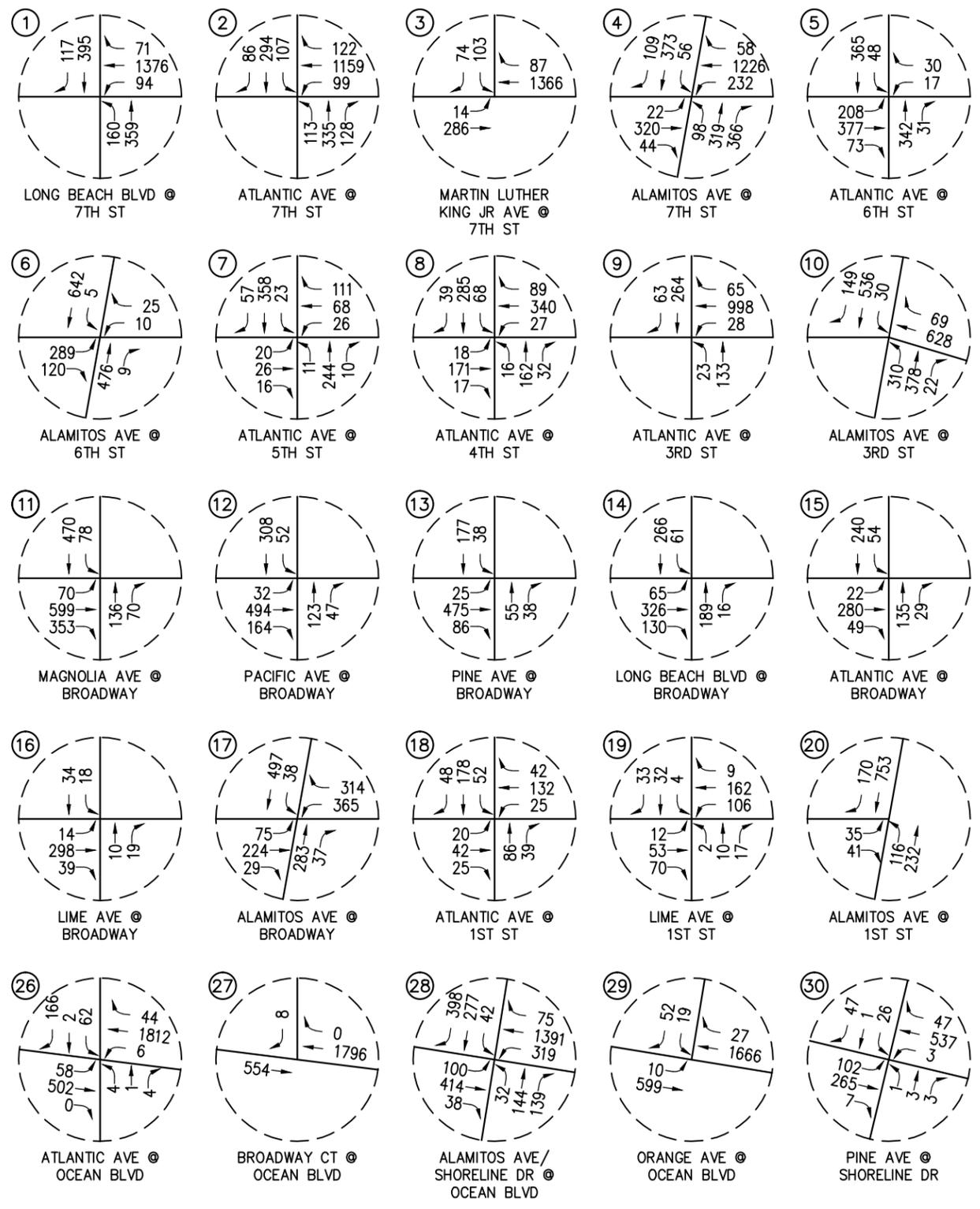
FIGURE 13-4

PM PEAK HOUR CONSTRUCTION TRAFFIC VOLUMES
 SHORELINE GATEWAY EAST TOWER, LONG BEACH

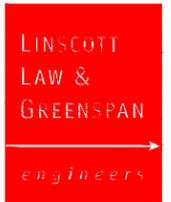
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STREET KEY
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 *** = MARTIN LUTHER KING JR. AVE



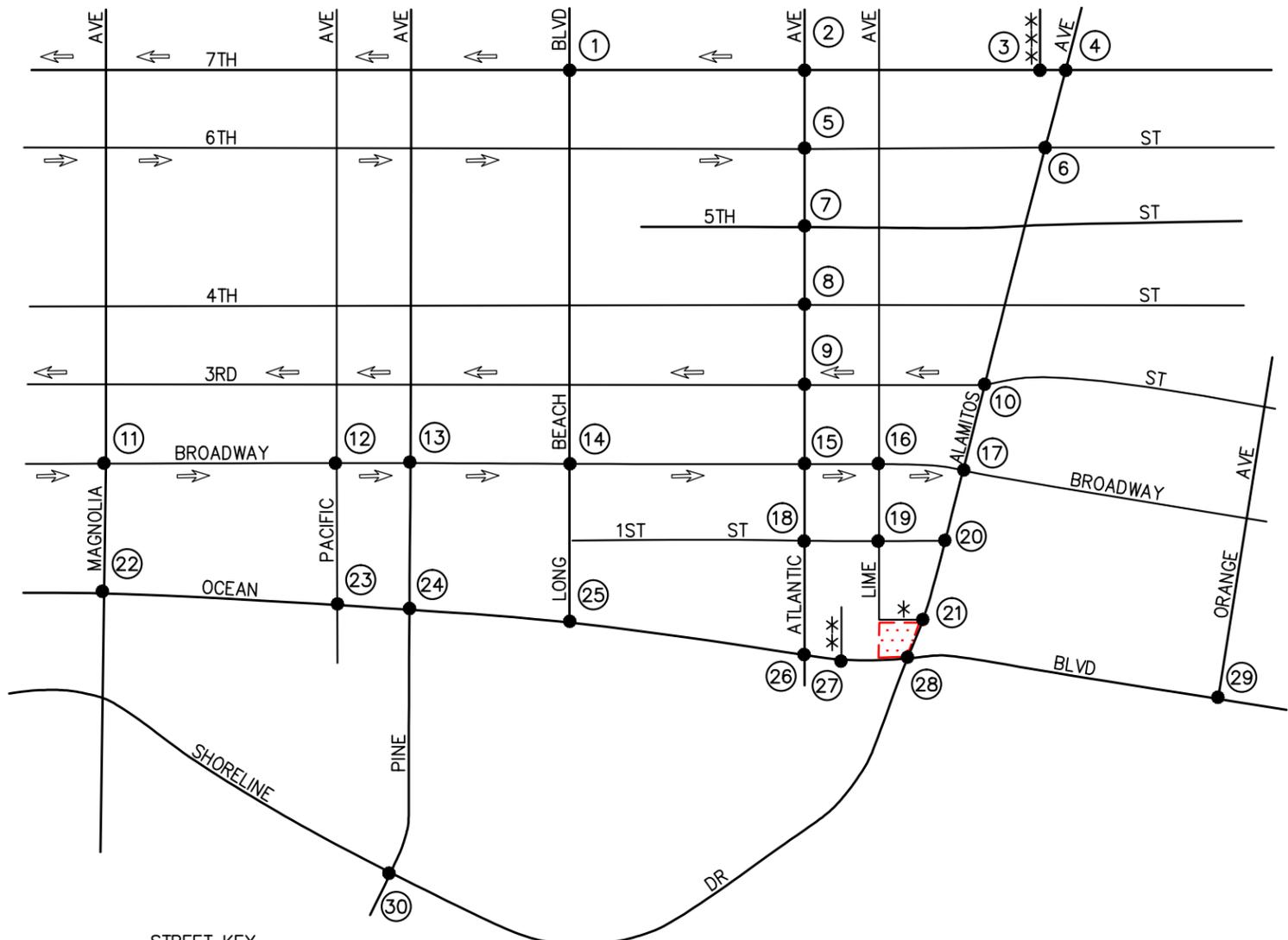
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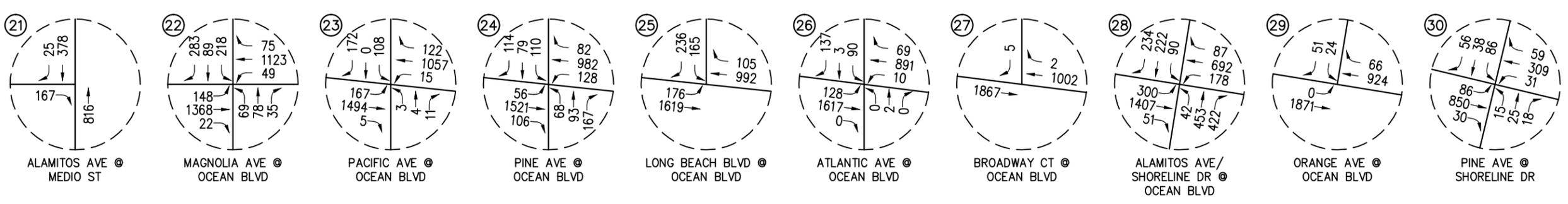
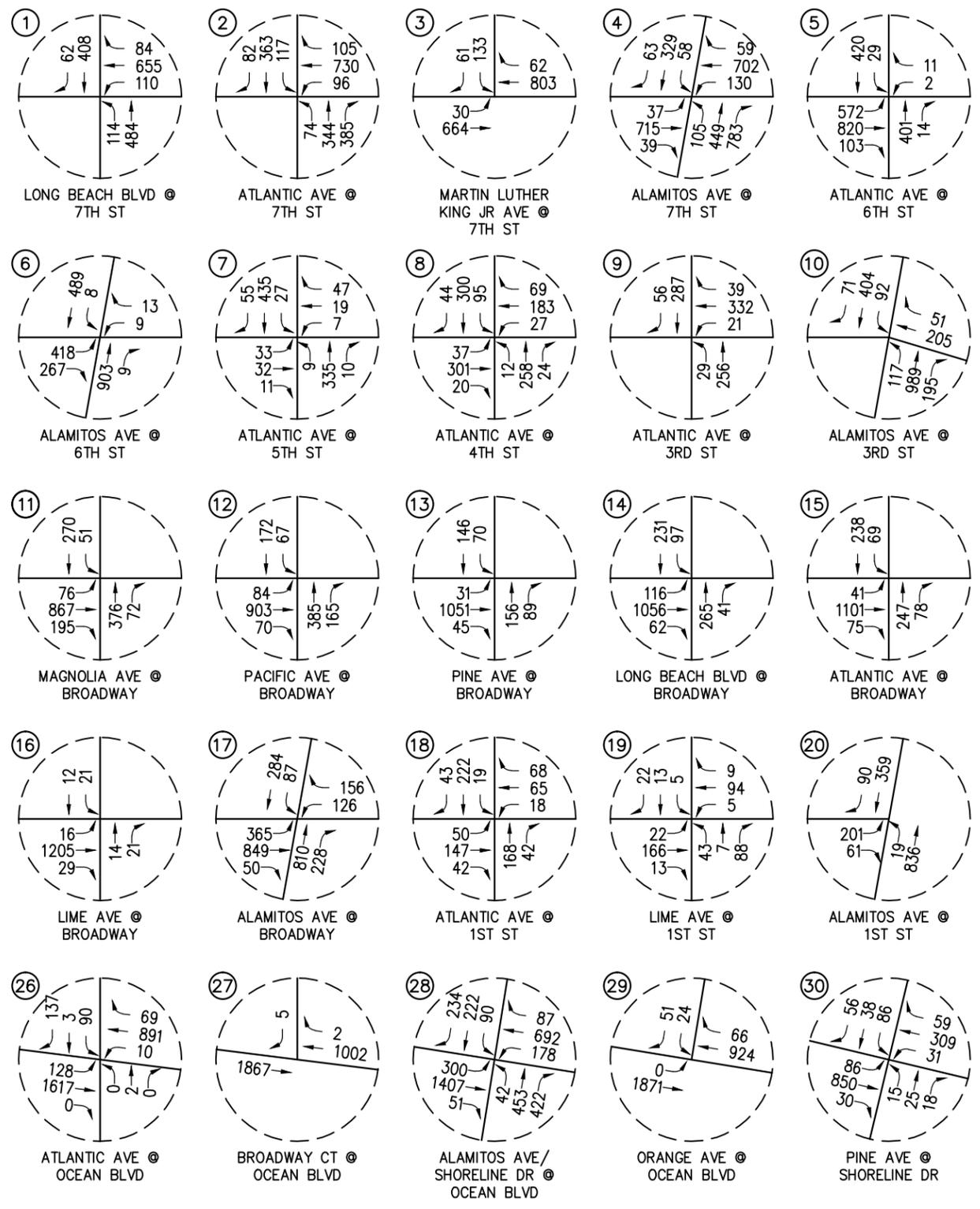
KEY
 # = STUDY INTERSECTION
 [Red Hatched Box] = PROJECT SITE

FIGURE 13-5

**EXISTING PLUS PROJECT AM PEAK HOUR
 CONSTRUCTION TRAFFIC VOLUMES**
 SHORELINE GATEWAY EAST TOWER, LONG BEACH



STREET KEY
 * = MEDIO ST
 ** = BROADWAY CT
 *** = MARTIN LUTHER KING JR. AVE



KEY
 # = STUDY INTERSECTION
 [Red Hatched Box] = PROJECT SITE

FIGURE 13-6
 EXISTING PLUS PROJECT PM PEAK HOUR
 CONSTRUCTION TRAFFIC VOLUMES
 SHORELINE GATEWAY EAST TOWER, LONG BEACH

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13.5 Project Construction Management Plan Criteria

Project construction related trips associated with trucks and employees traveling to and from the Project site in the morning and afternoon during Project construction activities may result in some minor traffic delays; however, potential traffic interference caused by construction vehicles may create a temporary/short-term impact to vehicles using the street system in the immediate area in the morning and afternoon hours. It is anticipated that a majority of the construction-related traffic will utilize Ocean Boulevard and the I-710 Freeway to gain regional access to the Project site.

To reduce the impact of construction-related traffic, the implementation of a Construction Management Plan is recommended to minimize traffic impacts upon the local circulation system in the area.

To ensure impacts to the surrounding street system are kept to a minimum, it is recommended that the Construction Management Plan for the proposed Project be developed in coordination with the City of Long Beach City Engineer and at a minimum, address the following:

- Ingress and egress for the construction truck traffic would be via Alamitos Avenue at Medio Street, with a flagman to assist with right-turn egress from to site to southbound Alamitos Avenue.
- Traffic control for any street closure, detour or other disruption to traffic circulation.
- Identify the routes that construction vehicles will utilize for the delivery of construction materials (i.e. lumber, tiles piping, windows, etc.), to access the site, traffic controls and detours and proposed construction phasing plan for the Project.
- Identify parking needs and parking areas for construction related equipment and workman support.
- Specify the hours during which transport activities can occur and methods to mitigate construction-related impacts to adjacent streets.
- Require the Applicant to keep all haul routes clean and free of debris including but not limited to gravel and dirt as a result of its operations. The Applicant shall clean adjacent streets, as directed by the City Engineer (or representative of the City Engineer) of any material which may have been spilled, tracked or blown onto adjacent streets or areas.
- Hauling or transport of oversize loads will be allowed between the hours of 8:30 AM and 3:30 PM only, Monday through Friday, unless approved otherwise by the City Engineer (exact hours to be determined by the City Engineer). Hauling or transport may be permitted/required during nighttime hours, weekends or Federal holidays, at the discretion of the City Engineer. All hauling/delivery access to and from the site will be from Ocean Boulevard. An approved Haul Route Permit will be required from the City.
- Haul trucks entering or exiting public streets shall at all times yield to public traffic.

- If hauling operations cause any damage to existing pavement, street, curb and/or gutter along the haul route, the applicant will be fully responsible for repairs. The repairs shall be completed to the satisfaction of the City Engineer.
- All constructed-related parking and staging of vehicles will be kept out of the adjacent public roadways and parking lots and will occur on-site.
- This Plan shall meet standards established in the current *California Manual on Uniform Traffic Control Device (MUTCD)* as well as City of Long Beach requirements.

APPENDIX A
SCOPE OF WORK

MEMORANDUM

To: Abraham Bandegan, TE, PTP
Assistant City Traffic Engineer
City of Long Beach

Date: May 23, 2016

From: Richard E. Barretto, P.E., Principal
LLG, Engineers

LLG Ref: 2.16.3705.1

Richard E. Barretto

Cc: Christopher Koontz, AICP, Advance Planning Officer,
Long Beach Development Services, Planning Bureau
Joe Power, Principal
Rincon Consultants, Inc.

Subject: ***Shoreline Gateway East Tower Project, Long Beach
Traffic Impact Analysis Scope of Work***

Linscott, Law & Greenspan, Engineers (LLG) is pleased to submit the following scope of work for the preparation of a Traffic Impact Analysis for the Shoreline Gateway East Tower Project (hereinafter referred to as Project) in the City of Long Beach. The traffic study is required as part of the entitlement process of the proposed modification to the approved development plan of the East Tower and will be included in the environmental document to be prepared for the Project. The construction of the West Tower of Shoreline Gateway (now known as The Current) was recently completed in April 2016.

The traffic study for the proposed Project will satisfy the traffic impact requirements of the City of Long Beach and be consistent with the requirements and procedures outlined in the current *Congestion Management Program (CMP) for Los Angeles County*.

Traffic Study Scope of Work

A. Project Background and Location: The Shoreline Gateway site is generally located north of Ocean Boulevard, between Broadway Court and Alamitos Avenue. The West Tower site is located on the northeast corner of Broadway Court and Ocean Boulevard at 707 E. Ocean Boulevard. The East Tower site, which is currently developed as a parking lot, is located on the northwest corner of Alamitos Avenue and Ocean Boulevard at 777 E. Ocean Boulevard. See the attached **Figure 1-1**, a Vicinity Map that illustrates the general location of the Project and surrounding street system. **Figure 2-1** is an existing aerial photograph of the Project site.

Shoreline Gateway, as originally evaluated in the *City of Long Beach Shoreline Gateway EIR Traffic Impact Study, dated May 2006 (Revise June 2006), prepared by MMA/Iteris*, consisted of the development of three (3) residential towers with a total of 358 units and 13,561 square-feet (SF) of retail/restaurant floor area. In

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Woodland Hills



October 2007, the Supplemental EIR that was prepared for Shoreline Gateway was certified which allowed one of the buildings to be 35-stories tall, with the total unit count remaining at 358 units. The Shoreline Gateway Master Plan was approved in November 2007 by the Planning Commission with approval of a 35-story East Tower, with 221 units, in accordance with the Shoreline Gateway Supplemental EIR completed in October 2007.

With the Shoreline Gateway site is located within the Downtown Plan planning area, the Project site was again evaluated in the *Long Beach Downtown Community Plan EIR Traffic Impact Analysis, dated February 4, 2010, prepared by MMA/Iteris*, but with an assumed development total of with a total of 365 units and 12,630 SF of retail/restaurant floor area.

In May 2013, the City's Planning Commission approved the 17-story West Tower, with 224 units, with a finding of "previously assessed" in accordance with the Shoreline Gateway Supplemental EIR and the Downtown Plan Program EIR (the West Tower is now complete, but only 223 units, with 9,182 SF of retail/restaurant space, was constructed). This changed the overall development total for Shoreline Gateway from 358 to 445 units, an increase of 87 units, or 24% from what was previously analyzed.

B. Project Description: The 35-Story, East Tower, as now proposed, will include 315 units and 6,711 SF of retail/restaurant space, consisting of 5,731 SF of café/restaurant space and 1,380 SF of retail space. The proposed East Tower unit count of 315 represents an increase of 94 units over the approved total of 221 units. Parking for the East Tower is proposed to be provided within a 5-level parking structure with a total of 458 vehicular spaces. Vehicular access to the proposed subterranean garage will be provided via Medio Street. The attached **Figure 2-2** illustrates the proposed site plan for the Project's East Tower.

As noted above, the construction of the 17-story, West Tower was recently completed and includes 223 units (one less than approved) and 9,182 SF of retail/restaurant space consisting of 2,636 SF of retail space and 6,546 SF café/restaurant space. Parking for the West Tower is provided within a 5-level parking structure with a total of 275 spaces. Vehicular access to the on-site garage is provided via Broadway Court. The attached **Figure 2-3** illustrates the approved site plan for the Project's West Tower.

Upon completion of the proposed East Tower Project, Shoreline Gateway will consist of two (2) residential towers with a total of 538 units and 15,983 SF retail/restaurant floor area. When compared to the original development, the

combined development totals of the East and West Towers result in an increase of 180 dwelling units and 2,422 SF of retail/restaurant floor area over what was evaluated in the Shoreline Gateway EIR Traffic Impact Study.

C. Project Traffic Generation: The trip generation potential of the proposed Project will be estimated using the average rates given in the *Trip Generation, 9th Edition, Institute of Transportation Engineers (ITE)*, Washington, D.C. (2012) – See attached **Table 5-1**. Based on the Project description, trips generated by the proposed Project will be estimated using trip generation rates/equations for ITE Land Use 220: Apartments and ITE Land Use 820: Shopping Center, as shown in the upper portion of *Table 5-1*.

Review of *Table 5-1* shows that the proposed Project is forecast to generate 3,105 daily trips (one half arriving and one half departing), with 181 trips (48 inbound, 133 outbound) produced in the AM peak hour and 278 trips (165 inbound, 113 outbound) produced in the PM peak hour on a “typical” weekday.

For comparison purposes, the trip generation potential of the “Approved Development” as evaluated in the June 2006 TIA is included on *Table 5-1*. As shown the “Approved Development” is forecast to generate 2,474 daily trips (one half arriving and one half departing), with 135 trips (39 inbound, 96 outbound) produced in the AM peak hour and 220 trips (128 inbound, 92 outbound) produced in the PM peak hour on a “typical” weekday. Please note that the trip generation has been updated using the *Trip Generation, 9th Edition* and assuming “apartments” in place of “condominiums” as originally evaluated.

When the proposed Project is compared to the “Approved Project”, the proposed Project is forecast to generate 631 more daily trips, 46 more AM peak hour trips and 58 more PM peak hour trips (see last row of *Table 5-1*).

D. Trip Distribution: See attached **Figure 5-1** for the Project Trip Distribution Pattern as well as a tabular summary on **Table 5-2** for review by the City. Project traffic volumes both entering and exiting the site have been distributed and assigned to the adjacent street system based on the following considerations:

- location of site access points in relation to the surrounding street system,
- the site's proximity to major traffic carriers and regional access routes,
- physical characteristics of the circulation system such as lane channelization and presence of traffic signals that affect travel patterns,
- presence of traffic congestion in the surrounding vicinity,
- ingress/egress availability at the project site, and

- trip distribution pattern contained in the Shoreline Gateway EIR Traffic Impact Study.

E. Background Traffic:

- Project Completion Year: 2020 (to be confirmed with City/project applicant)
- Ambient Growth Rate: 1% per year
- Cumulative Projects: Planned and/or approved projects within a 2-mile radius of the Project site that may contribute traffic to the Project study area will be researched at the City of Long Beach and confirmed with City staff.
- In addition, obtain information on additional roadway network changes in the downtown area, in addition to the recent reduction of Alamitos Avenue north of 7th Street to a two-lane divided roadway with the installation of bike lanes, and the conversion of 7th Street to a two-way roadway between Alamitos Avenue and Atlantic Avenue.

Table 6-1 provides the location and a brief description of the thirteen (13) cumulative projects located within the vicinity of the Project. Subject to review and confirmation by City staff, these related projects will be considered in the cumulative analysis. Please note that the West Tower of Shoreline Gateway (The Current) is included in the list of related projects, as well as the New Long Beach Civic Center project. See *Figure 6-1* for location of cumulative projects.

Table 6-2 presents the development totals and resultant trip generation for the thirteen (13) cumulative projects. As shown in *Table 6-2*, the thirteen (13) cumulative projects are expected to generate a combined total of 24,049 daily trips, 1,471 AM peak hour trips (611 inbound and 860 outbound) and 1,722 PM peak hour trips (923 inbound and 799 outbound) on a typical weekday.

F. Traffic Study Intersections: The thirty (30) study intersections listed below, identified in consideration of proximity to the site and use of a “50-trip” threshold criteria, are locations that could potentially be impacted by the proposed Project and will be analyzed:

- | | |
|---|---|
| 1. Magnolia Avenue at Broadway | 16. Atlantic Avenue at Ocean Boulevard |
| 2. Pacific Avenue at Broadway | 17. Broadway Court at Ocean Boulevard |
| 3. Pine Avenue at Broadway | 18. Alamitos Av/Shoreline Dr at Ocean Blvd |
| 4. Long Beach Boulevard at Broadway | 19. Orange Avenue at Ocean Boulevard |
| 5. Atlantic Avenue at Broadway | 20. Shoreline Drive at Pine Avenue |
| 6. Lime Avenue at Broadway | 21. Long Beach Boulevard at 7 th Street |
| 7. Alamitos Avenue at Broadway | 22. Atlantic Avenue at 7 th Street |
| 8. Atlantic Avenue at 1 st Street | 23. Atlantic Avenue at 6 th Street |
| 9. Lime Avenue at 1 st Street | 24. Atlantic Avenue at 5 th Street |
| 10. Alamitos Avenue at 1 st Street | 25. Atlantic avenue at 4 th Street |
| 11. Alamitos Avenue at Medio Street | 26. Atlantic Avenue at 3 rd Street |
| 12. Magnolia Avenue at Ocean Boulevard | 27. Alamitos Avenue at 7 th Street |
| 13. Pacific Avenue at Ocean Boulevard | 28. Alamitos Avenue at 6 th Street |
| 14. Pine Avenue at Ocean Boulevard | 29. Alamitos Avenue at 3 rd Street |
| 15. Long Beach Blvd at Ocean Boulevard | 30. Martin Luther King, Jr. at 7 th Street |

G. Traffic Counts: Traffic counts for the key study intersections will be collected during the week of May 23, 2016 or May 30, 2016 on a weekday (Tuesday, Wednesday or Thursday) during the AM peak period (7:00 AM – 9:00 AM) and weekday PM peak period (4:00 PM – 6:00 PM).

H. Analysis Methodology: The LOS calculations will be based on Intersection Capacity Utilization (ICU) methodology for signalized intersections and Highway Capacity Manual (HCM) methodology for signalized and unsignalized intersections. The Project’s potential impact will be based on the City of Long Beach significant impact criteria. The following scenarios are those for which LOS calculations have been performed using the ICU and HCM methodologies:

- 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. Near-Term Cumulative (Year 2020) Traffic Conditions (existing plus ambient growth plus cumulative projects);
- E. Near-Term Cumulative (Year 2020) Plus Project Traffic Conditions; and
- F. Scenario (E) With Recommended Improvements, if any.



For each of the scenarios listed above, a comparative LOS assessment will be prepared for the “Approved Development Total” of the East Tower to identify the potential traffic implications associated with the proposed Project, which includes 94 additional units.

The project’s potential impact will be based on the following significant impact criteria:

- The City of Long Beach considers LOS D to be the minimum acceptable service level that should be maintained during the peak commute hours, or the current LOS if that existing LOS is worse than LOS D (i.e. LOS E or F). For this study, a significant project impact is defined as an increase in the intersection volume-to-capacity (V/C) of 0.020 or greater at any location where the final (future) LOS is deficient or adverse (LOS E or worse); or a two percent (2%) change in delay at unsignalized intersections where the final LOS is E or F.
- The City Traffic Engineer will be consulted on the development of traffic mitigation measures at a scheduled meeting before such measures are completed and included in the traffic study.

I. Other Issues:

- Conduct a CMP compliance assessment.
- Evaluate Site Access/Circulation
- Prepare a construction traffic assessment for the proposed project to include a trip generation analysis and an existing plus project assessment for the most intense construction activity, and include forecast of haul trips, as well as construction-related traffic.

* * * * *

We appreciate the opportunity to provide this scope of work. Should you have any questions, please call me at (949) 825-6175. Thank You.

Approved by:

City of Long Beach

Date

cc: File

Attachments

TABLE 5-1
PROJECT TRIP GENERATION FORECAST ¹
SHORELINE GATEWAY EAST TOWER PROJECT, LONG BEACH

ITE Land Use Code / Project Description	Daily 2-Way	AM Peak Hour			PM Peak Hour		
		Enter	Exit	Total	Enter	Exit	Total
Generation Rates:							
▪ 220: Apartments (TE/DU)	6.65	20%	80%	0.51	65%	35%	0.62
▪ 820: Shopping Center (TE/1000 SF)	[a]	62%	38%	[a]	48%	52%	[a]
Generation Forecasts:							
<u>Proposed Project</u>							
▪ East Tower – Shoreline Gateway (315 DU)	2,095	32	129	161	127	68	195
▪ Retail/Restaurant (6,711 SF)	<u>1,173</u>	<u>19</u>	<u>11</u>	<u>30</u>	<u>47</u>	<u>51</u>	<u>98</u>
Subtotal	3,268	51	140	191	174	119	293
Non-Auto Trip Adjustment (5%)	<u>-163</u>	<u>-3</u>	<u>-7</u>	<u>-10</u>	<u>-9</u>	<u>-6</u>	<u>-15</u>
Net Trip Generation Potential	3,105	48	133	181	165	113	278
<u>Approved Development Totals</u>							
▪ East Tower – Shoreline Gateway (221 DU)	1,470	23	90	113	89	48	137
▪ Retail/Restaurant (6,367 SF)	<u>1,134</u>	<u>18</u>	<u>11</u>	<u>29</u>	<u>46</u>	<u>49</u>	<u>95</u>
Subtotal	2,604	41	101	142	135	97	232
Non-Auto Trip Adjustment (5%)	<u>-130</u>	<u>-2</u>	<u>-5</u>	<u>-7</u>	<u>-7</u>	<u>-5</u>	<u>-12</u>
Net Trip Generation Potential	2,474	39	96	135	128	92	220
Net Difference: Proposed Project versus Approved Development	+631	+9	+37	+46	+37	+21	+58

Notes:

TE/DU = Trip end per dwelling unit

[a] = Shopping Center equations was used.

Daily: $\text{Ln}(T) = 0.65\text{Ln}(X) + 5.83$

AM Peak Hour: $\text{Ln}(T) = 0.61\text{Ln}(X) + 2.24$

PM Peak Hour: $\text{Ln}(T) = 0.67\text{Ln}(X) + 3.31$

¹ Source: *Trip Generation, 9th Edition, Institute of Transportation Engineers (ITE), Washington, D.C. (2012)*. Trip Generation forecast based on the approach published in the *City of Long Beach Shoreline Gateway EIR Traffic Impact Study, June 2006, prepared by MMA*.

TABLE 5-3
PRELIMINARY PROJECT DIRECTIONAL DISTRIBUTION PATTERN
SHORELINE GATEWAY EAST TOWER PROJECT, LONG BEACH

Vehicular Traffic Distribution Percentage	Orientation/Direction
35%	To/from the north via I-710
13%	To/from the north via Alamitos Avenue
17%	To/from the north via MLK, Jr., Atlantic Avenue, Long Beach Blvd & Pacific Avenue
5%	To/from the east via Ocean Boulevard
11%	To/from the west via 7 th Street
14%	To/from the west via Ocean Boulevard, Broadway, 3 rd Street
5%	Non-Auto / Mode Spilt
100%	Total

**TABLE 6-1
LOCATION AND DESCRIPTION OF CUMULATIVE PROJECTS²
SHORELINE GATEWAY EAST TOWER PROJECT, LONG BEACH**

No.	Cumulative Project	Location	Description
1.	207 East Seaside Way Apartments	207 East Seaside Way	113 Apartments
2.	Silversands	2010 East Ocean Boulevard	40 Hotel Rooms and 56 DU Condominiums
3.	Mixed-Use Project	125 Linden Avenue	25 Apartments and 1,257 SF Retail
4.	City Hall East	100 Long Beach Boulevard	156 Apartments and 3,621 SF Retail
5.	Ocean Center Building Reuse	110 West Ocean Boulevard	81 Apartments, 5,000 SF Restaurant and 5,400 SF Retail
6.	Oceanaire Residential Project	150 West Ocean Boulevard	216 Apartments
7.	The Pike Outlet Conversion Project	Generally south of Seaside Way between Cedar Ave and Pine Ave	Conversion of Retail/Entertainment Center to Retail Outlet Center and the Construction of 49,825 SF of New Retail Space
8.	442 West Ocean Boulevard Apartments	442 West Ocean Boulevard	95 DU Apartments
9.	SRG 1st Alamitos Development	101 Alamitos Avenue	141 DU Condominiums and 2,700 SF Commercial
10.	200 W. Ocean Boulevard Apartments	200 W. Ocean Boulevard	94 DU Apartments and 4,597 SF Commercial
11.	City Ventures Development	227 Elm Avenue	40 DU Townhomes
12.	Shoreline Gateway West Tower (The Current)	707 E. Ocean Boulevard, north of Ocean Boulevard, east of Broadway Court and west of Alamitos Avenue	223 apartment homes and 9,182 SF of retail/restaurant, consisting of 2,636 SF of retail space and 6,546 SF of café/restaurant uses.
13.	New Long Beach Civic Center	north of Ocean Boulevard and south of Broadway, between Magnolia Avenue and Pacific Avenue in downtown Long Beach	3 rd & Pacific – 200 condominiums; Civic Center – 270,000 SF City Hall and 240,000 SF Port Administration; Lincoln Park – 92,000 SF Library and 3.17 Acres City Park; Center Block – 580 apartment homes, 200-room hotel, 32,000 SF of retail and 8,000 SF of restaurant uses. Existing 138,000 SF Main Library, 283,000 SF City Hall and 2.60 acre City Park to be replaced.

² Source: City of Long Beach Planning Department.

TABLE 6-2
CUMULATIVE PROJECTS TRAFFIC GENERATION FORECAST³
SHORELINE GATEWAY EAST TOWER PROJECT, LONG BEACH

Cumulative Project Description	Daily 2-way	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
1. 207 East Seaside Way Apartments ⁴	751	11	47	58	45	25	70
2. Silversands	652	16	30	46	31	22	53
3. Mixed-Use Project	220	4	10	14	12	9	21
4. City Hall East	1,192	18	65	83	69	41	110
5. Ocean Center Building Reuse	1,247	41	59	100	60	38	98
6. Oceanaire Residential Project ⁵	1,436	22	89	111	86	48	134
7. The Pike Outlet Conversion Project	2,266	41	22	63	85	124	209
8. 442 West Ocean Boulevard Apartments ⁶	632	10	38	48	38	21	59
9. SRG 1 st Alamos Development	922	13	52	65	52	28	80
10. 200 W. Ocean Boulevard	801	12	40	52	43	26	69
11. City Ventures Development	232	3	15	18	14	7	21
12. Shoreline Gateway – The Current ⁷	2,775	43	99	142	141	105	246
13. New Long Beach Civic Center ⁸	10,923	377	294	671	247	305	552
Total Cumulative Projects Trip Generation Potential	24,049	611	860	1,471	923	799	1,722

³ Source: *Trip Generation*, 9th Edition, Institute of Transportation Engineers (ITE) [Washington, D.C. (2012)].

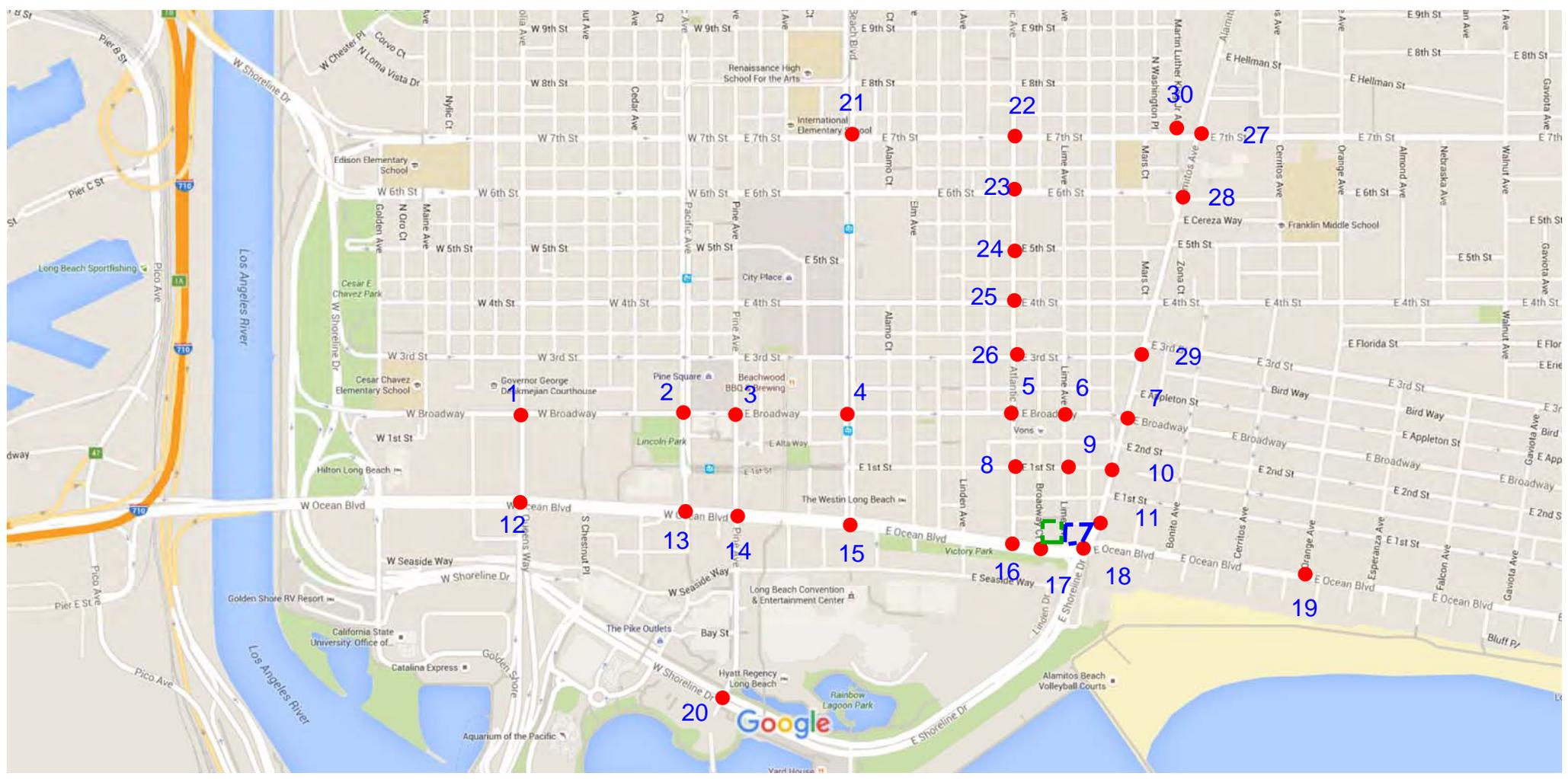
⁴ Source: *207 East Seaside Way Apartments Project Traffic Impact Analysis*, prepared by LLG.

⁵ Source: *Oceanaire Apartments Traffic Impact Analysis*, prepared by Michael Baker International.

⁶ Source: *442 West Ocean Boulevard Apartments Project Traffic Impact Analysis*, prepared by LLG.

⁷ Trip Generation forecast based on the approach published in the *City of Long Beach Shoreline Gateway EIR Traffic Impact Study, June 2006*, prepared by MMA. Project Development Totals based on information provided by the City of Long Beach.

⁸ Source: *Traffic Impact Analysis for the New Long Beach Civic Center Project*, prepared by LLG.

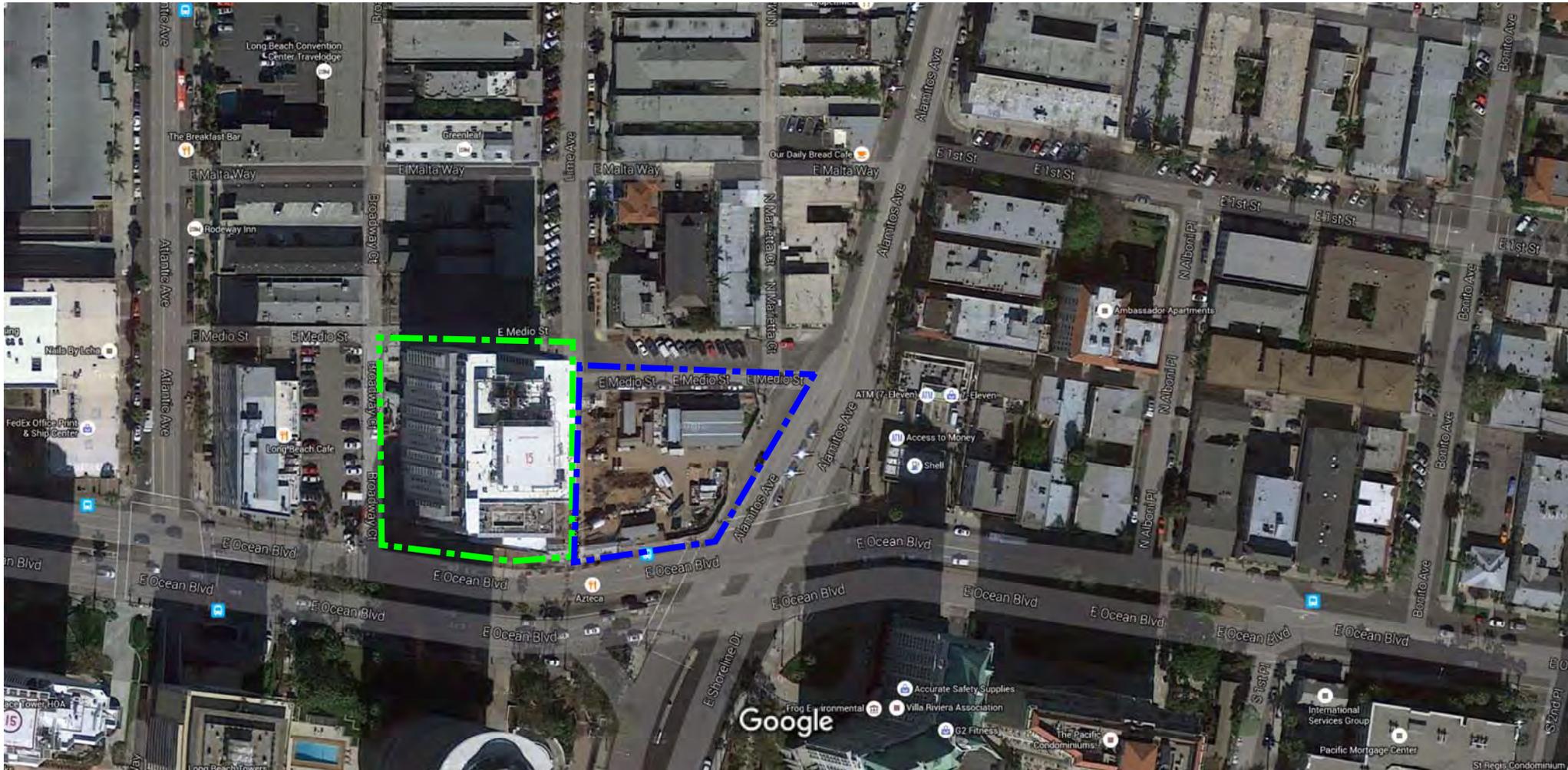


Map data ©2016 Google 500 ft

Google Maps

- = Existing Shoreline Gateway West Tower (The Current)
- 7 = Proposed Shoreline Gateway East Tower (Proposed Project)
- = Potential Study Intersections

FIGURE 1-1
PROJECT VICINITY MAP AND
POTENTIAL STUDY INTERSECTIONS



Imagery ©2016 DigitalGlobe, Sanborn, U.S. Geological Survey, Map data ©2016 Google 50 ft

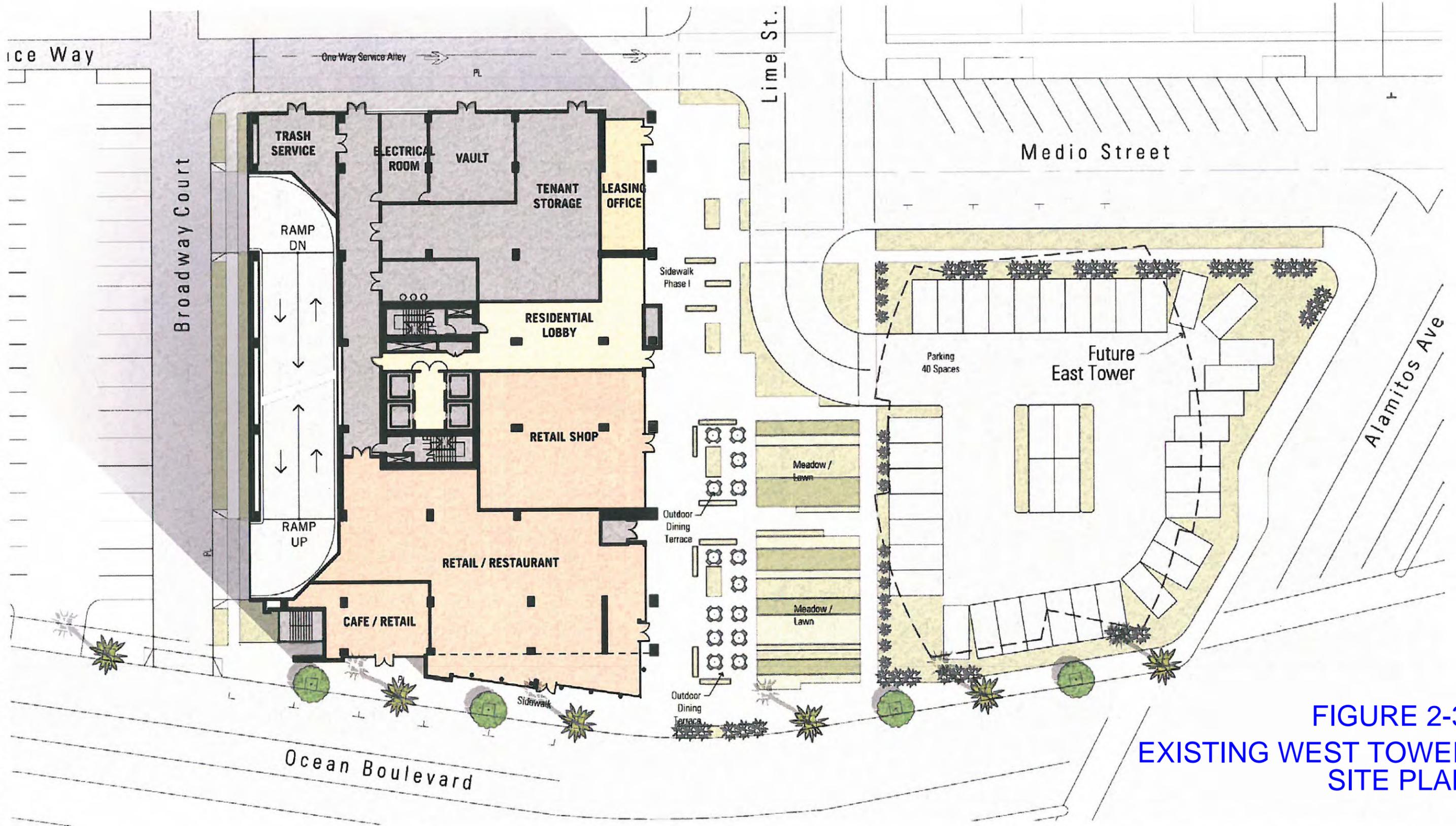
Google Maps

-  = Existing Shoreline Gateway West Tower (The Current)
-  = Proposed Shoreline Gateway East Tower (Proposed Project)

FIGURE 2-1
EXISTING AERIAL MAP



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**FIGURE 2-3
EXISTING WEST TOWER
SITE PLAN**

Shoreline Gateway - West Tower

Long Beach, California

Illustrative Phase One Site Plan / Landscape Plan

BAR ARCHITECTS

543 Howard Street, San Francisco, CA 94105, T. 415 293 5700, F. 415 293 5701 WWW.BARARCH.COM

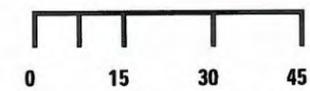
SHORELINE GATEWAY, LLC
ANDERSONPACIFIC III
FOUNDED

NABIH YOUSSEF
ASSOCIATES
Driver URBAN
PLANNING & DESIGN

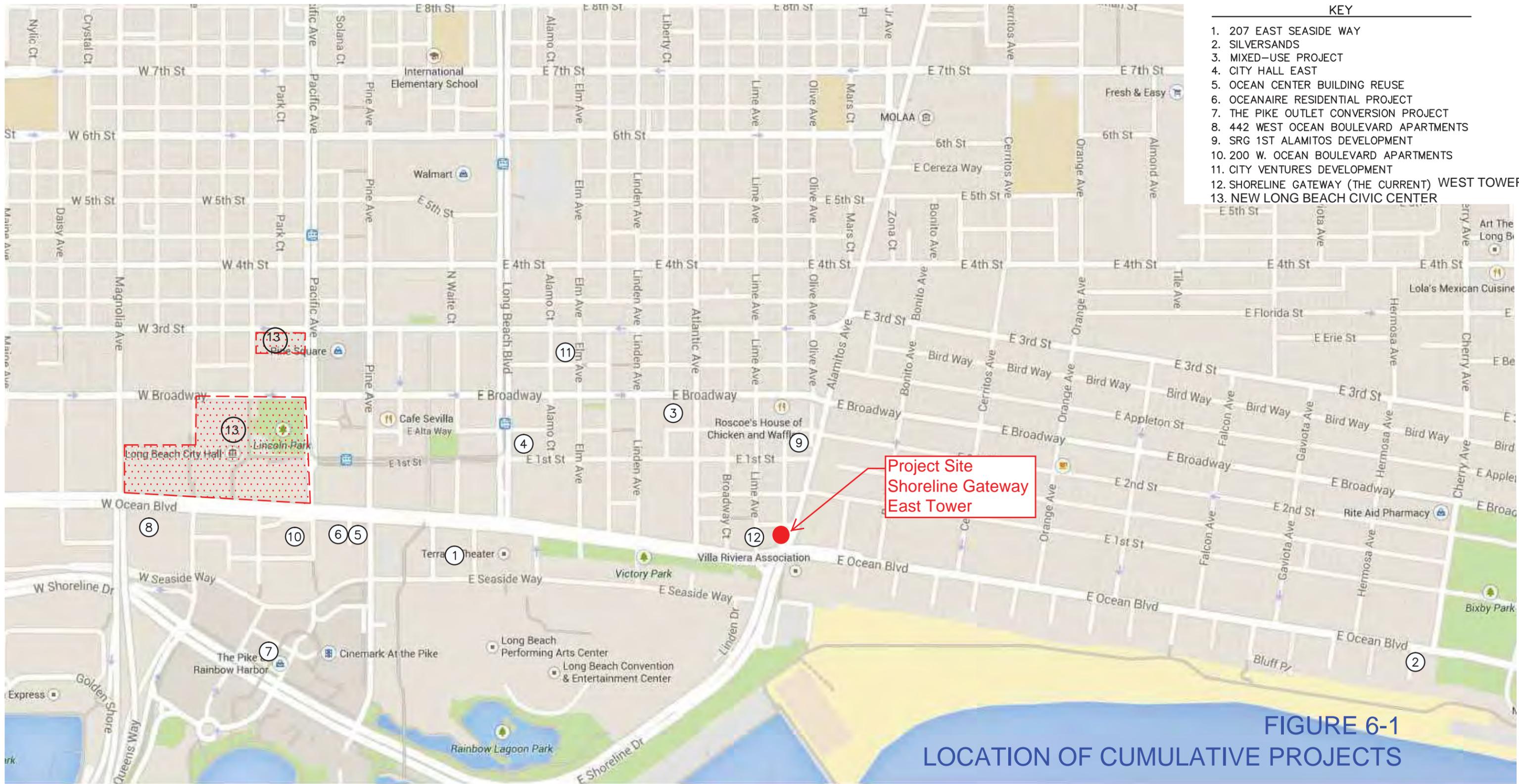


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04.12.13



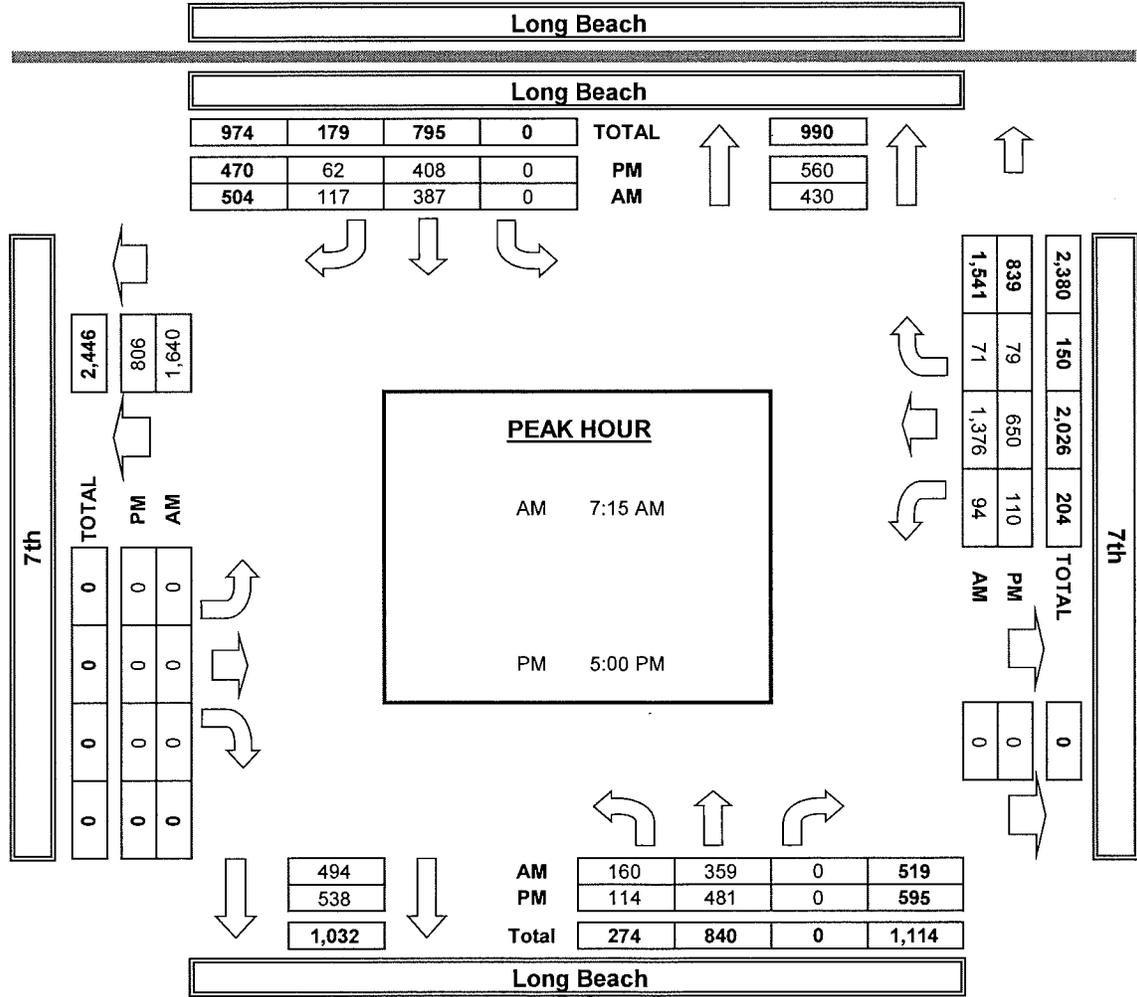
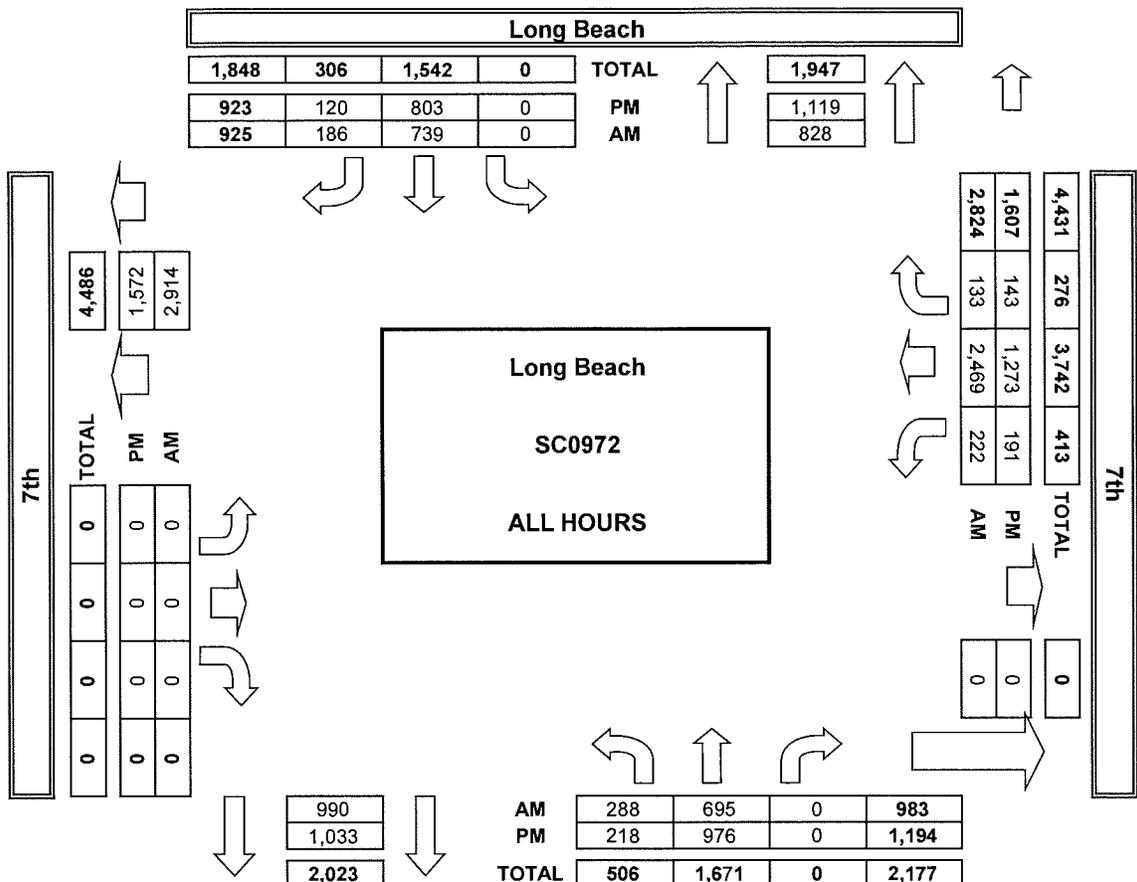
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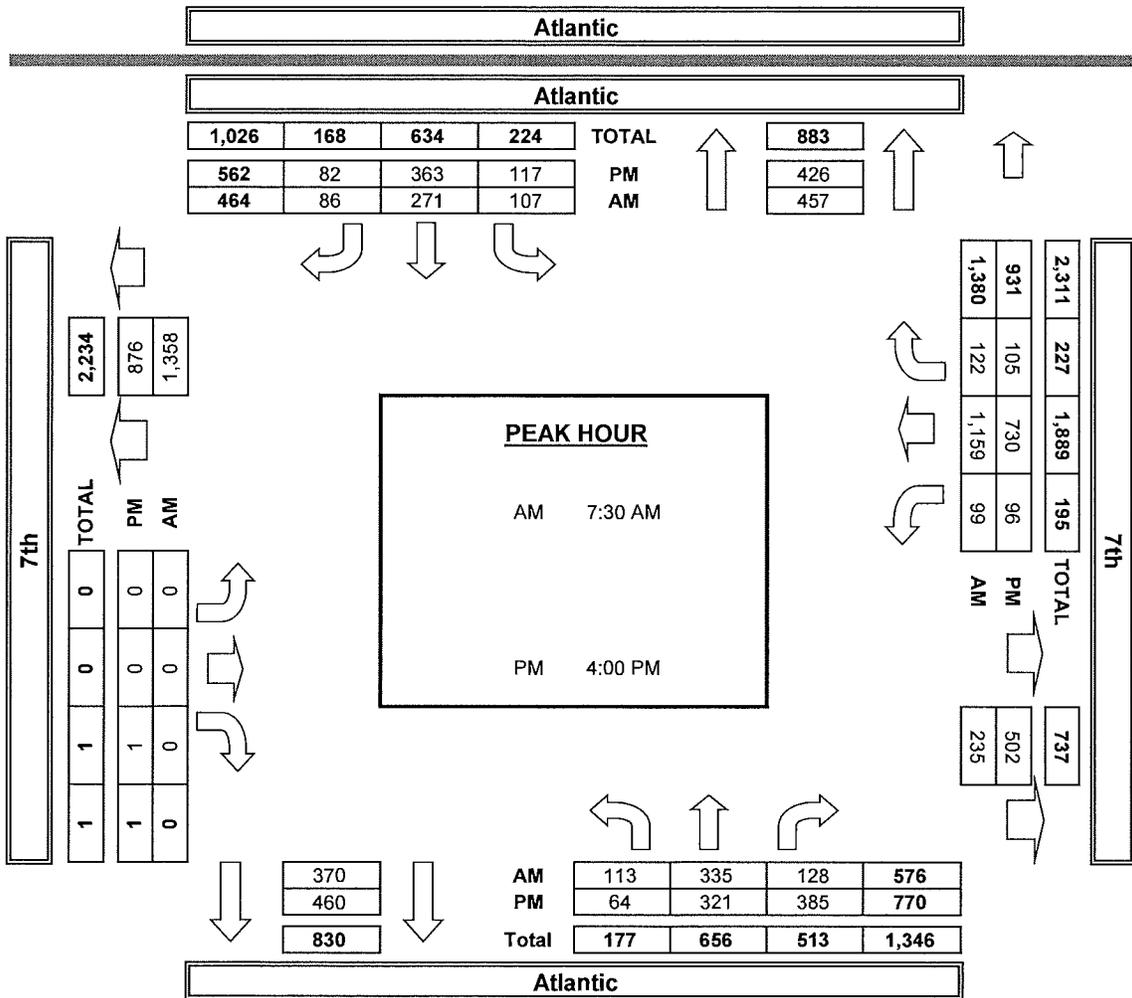
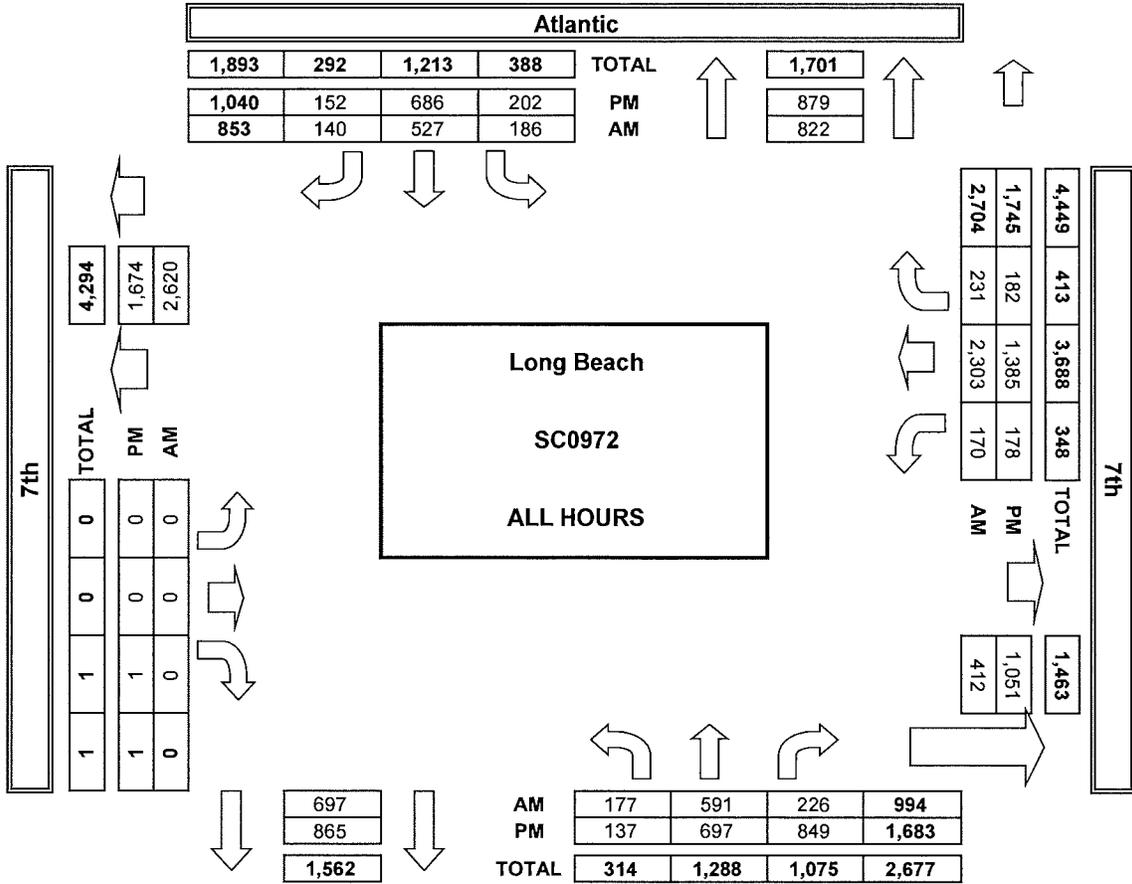
Source: City of Long Beach Planning Department as included in the Traffic Impact Analysis for the New Long Beach Civic Center, prepared by LLG, dated July 2015

APPENDIX B
EXISTING TRAFFIC COUNT DATA

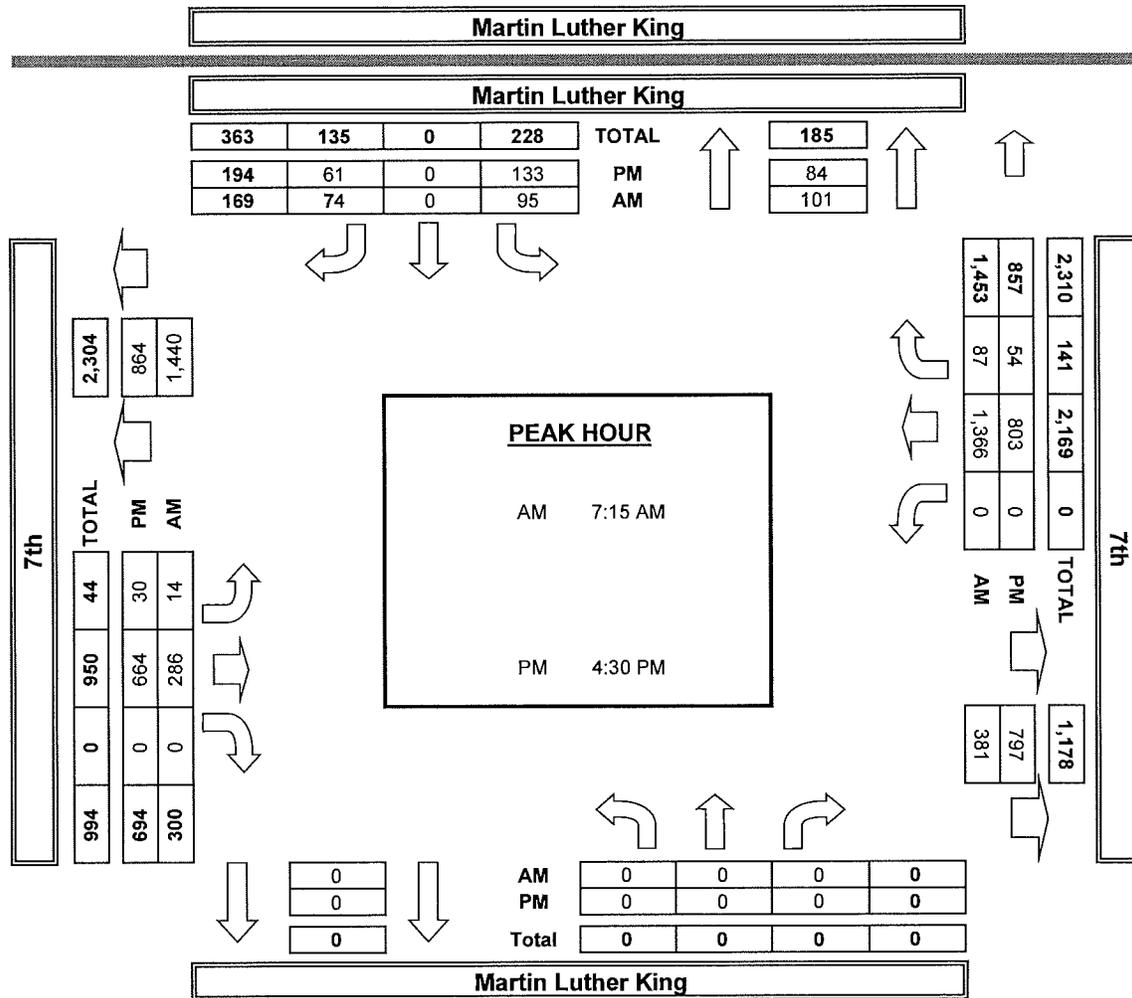
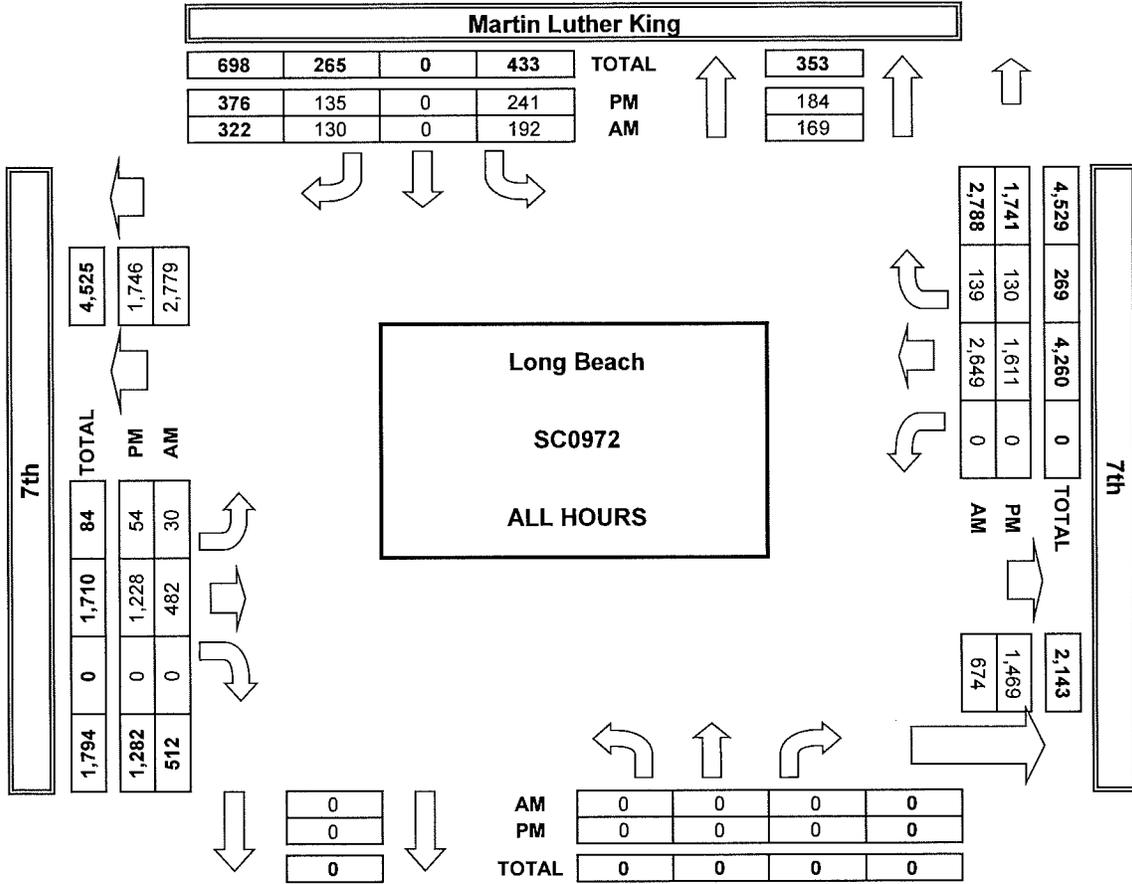
AimTD LLC
TURNING MOVEMENT COUNTS



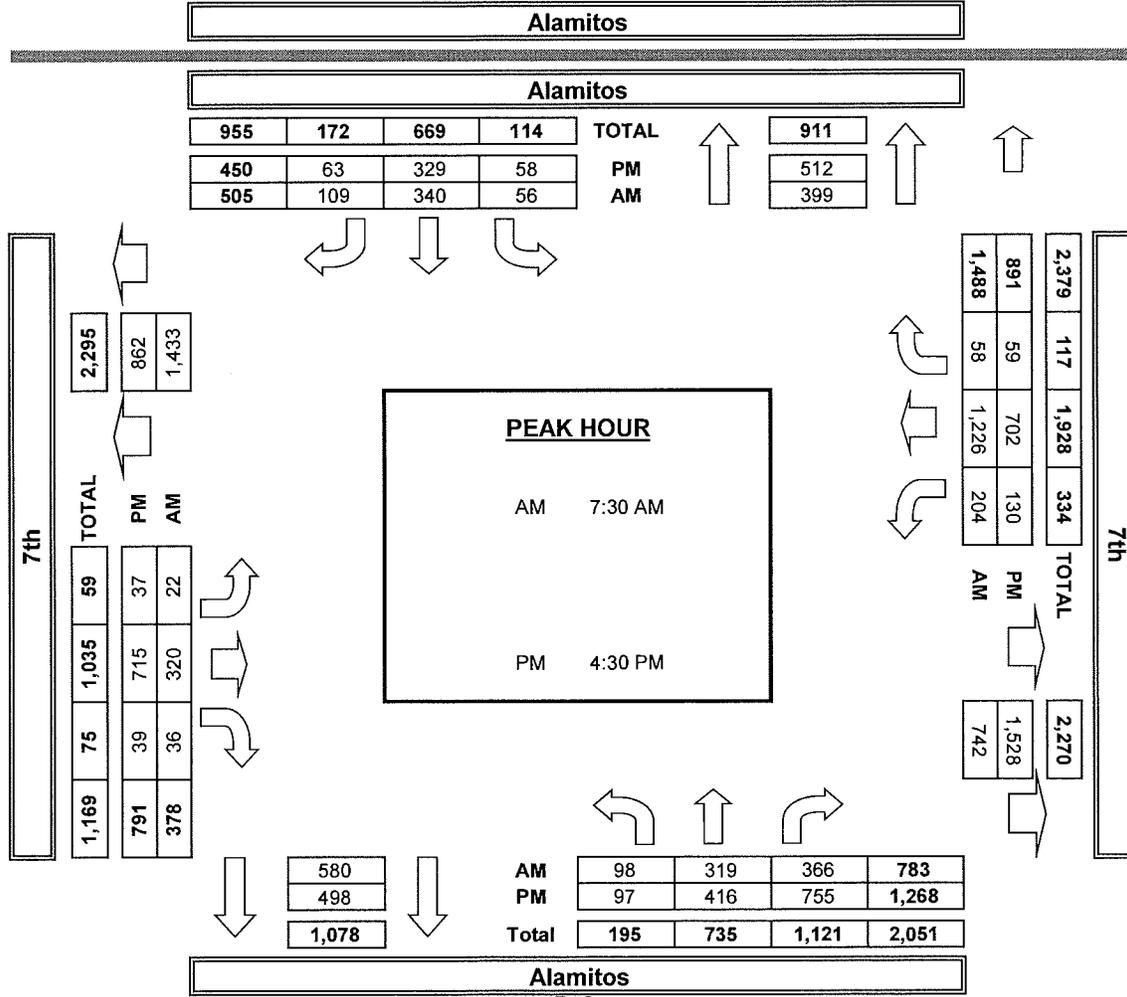
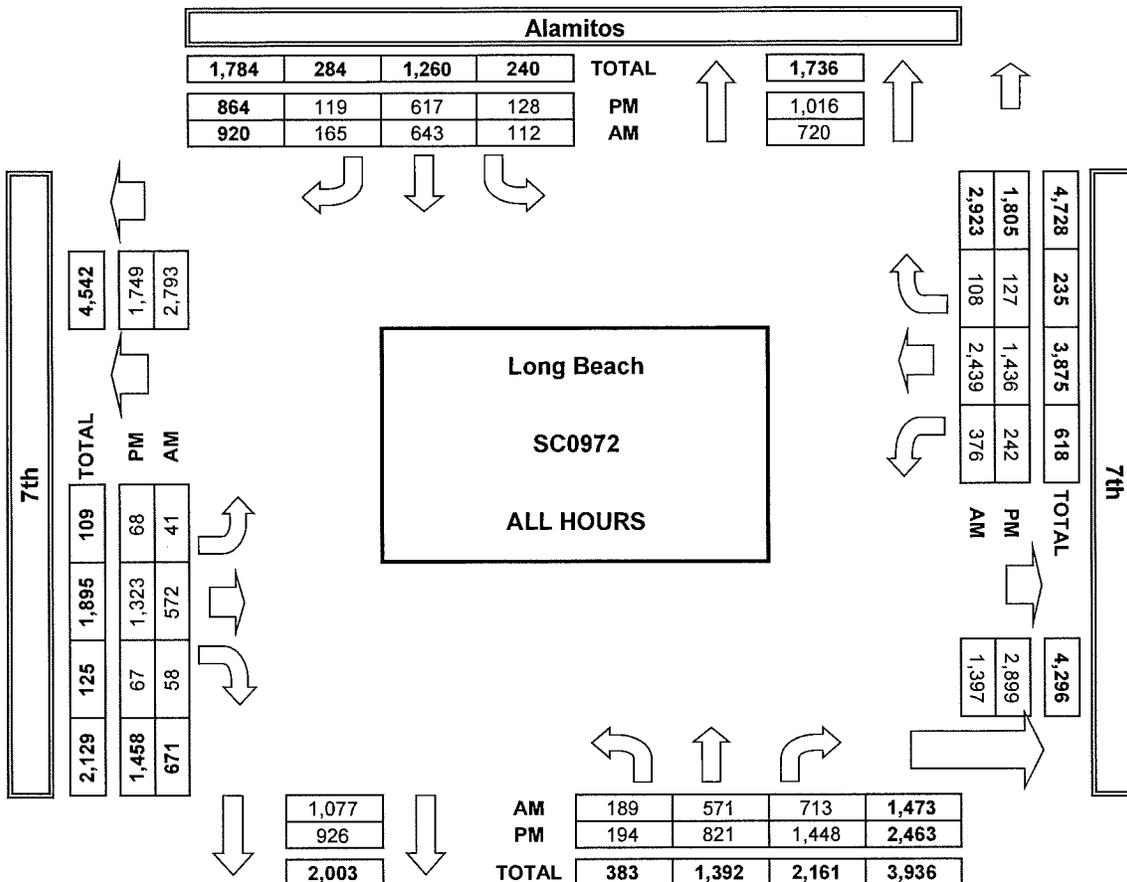
AimTD LLC
TURNING MOVEMENT COUNTS



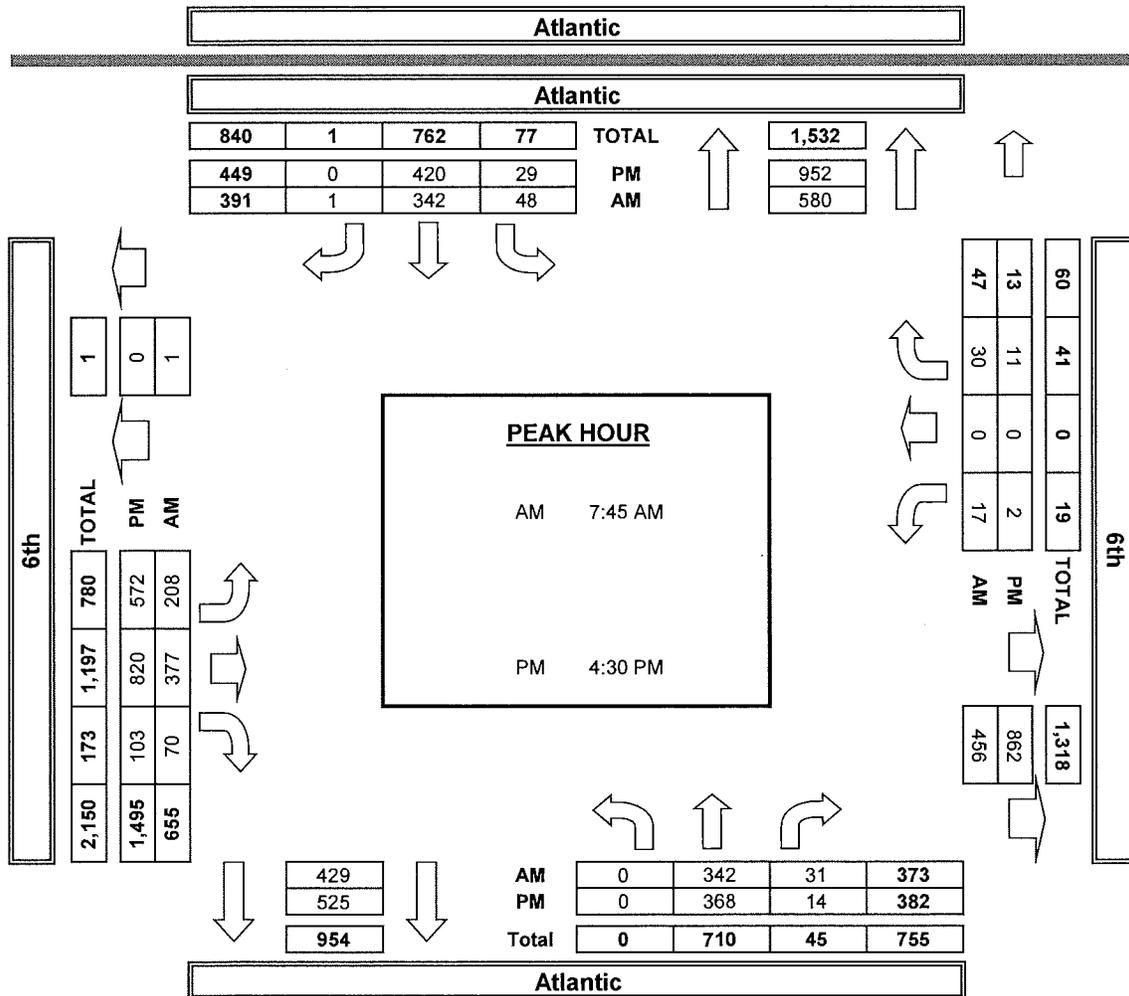
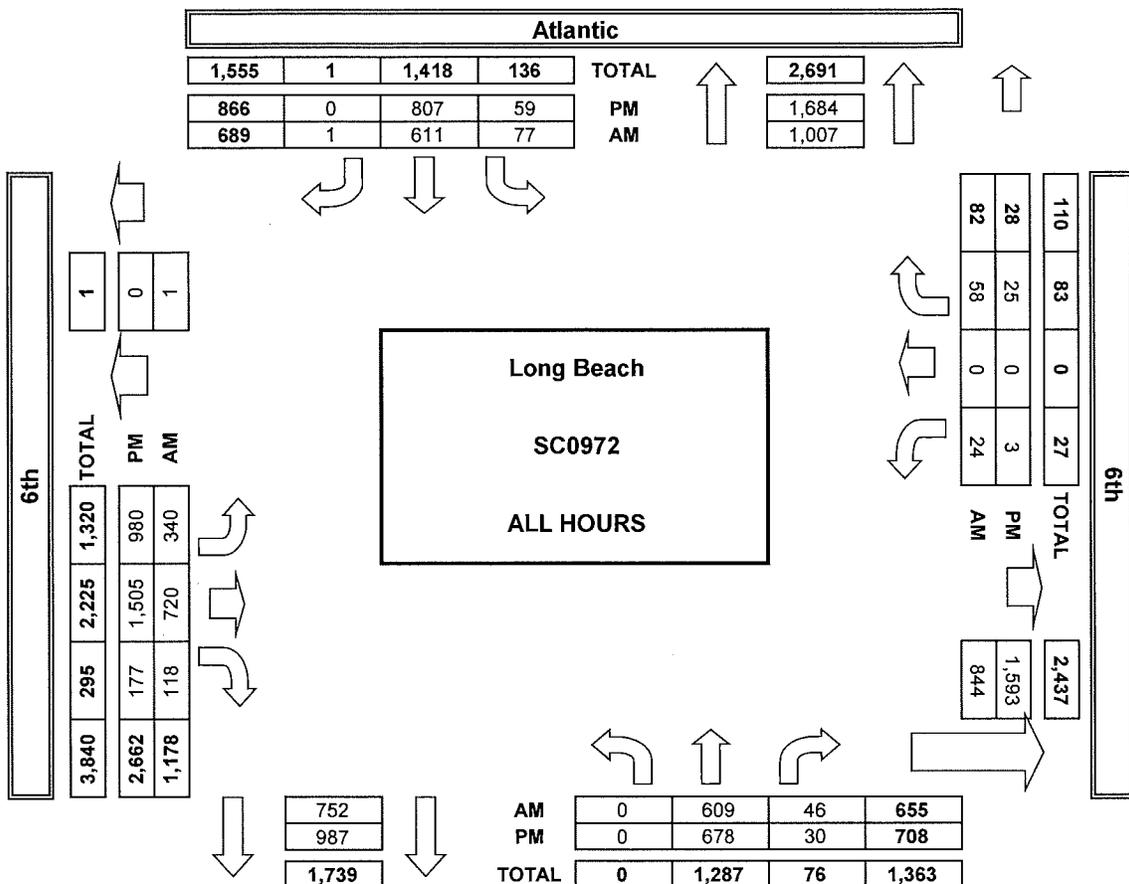
AimTD LLC
TURNING MOVEMENT COUNTS



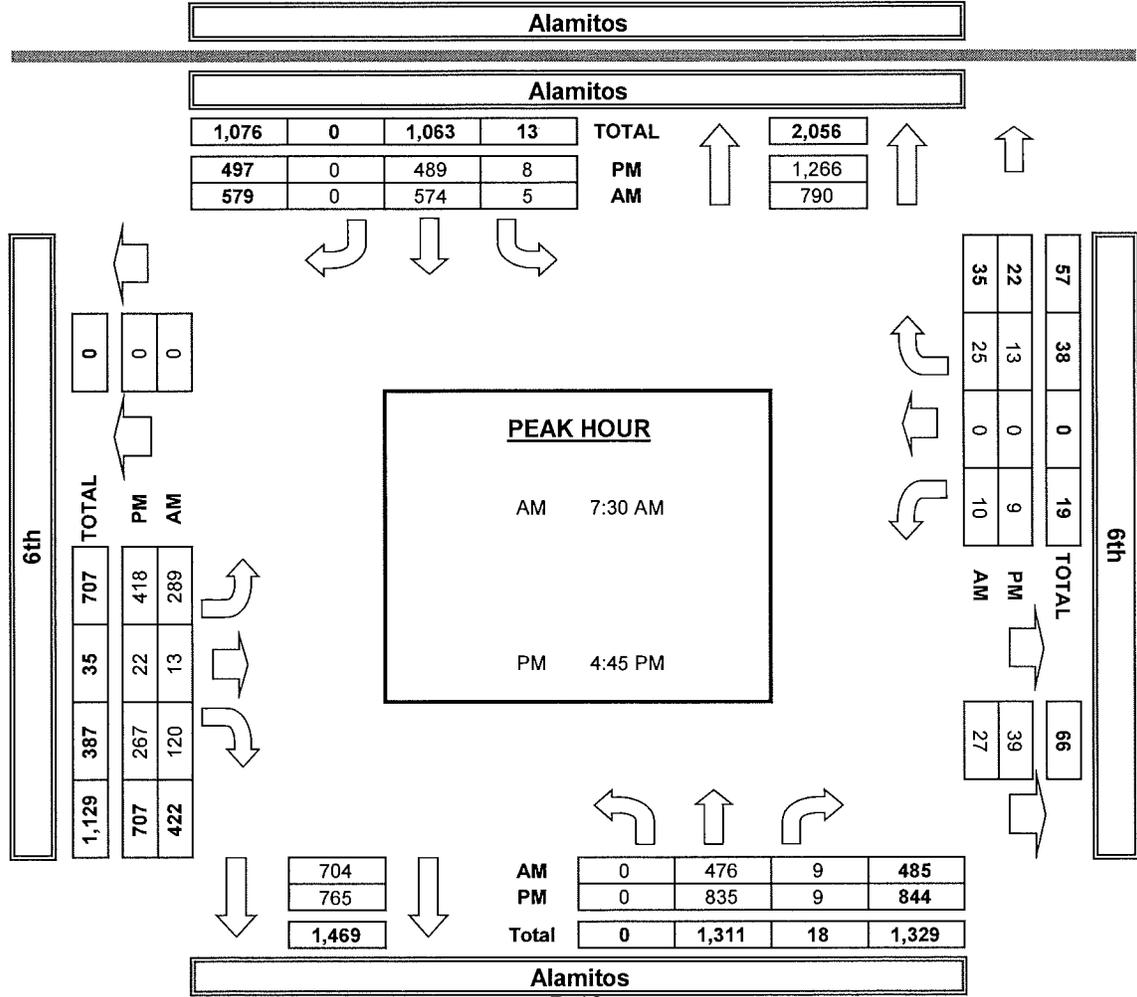
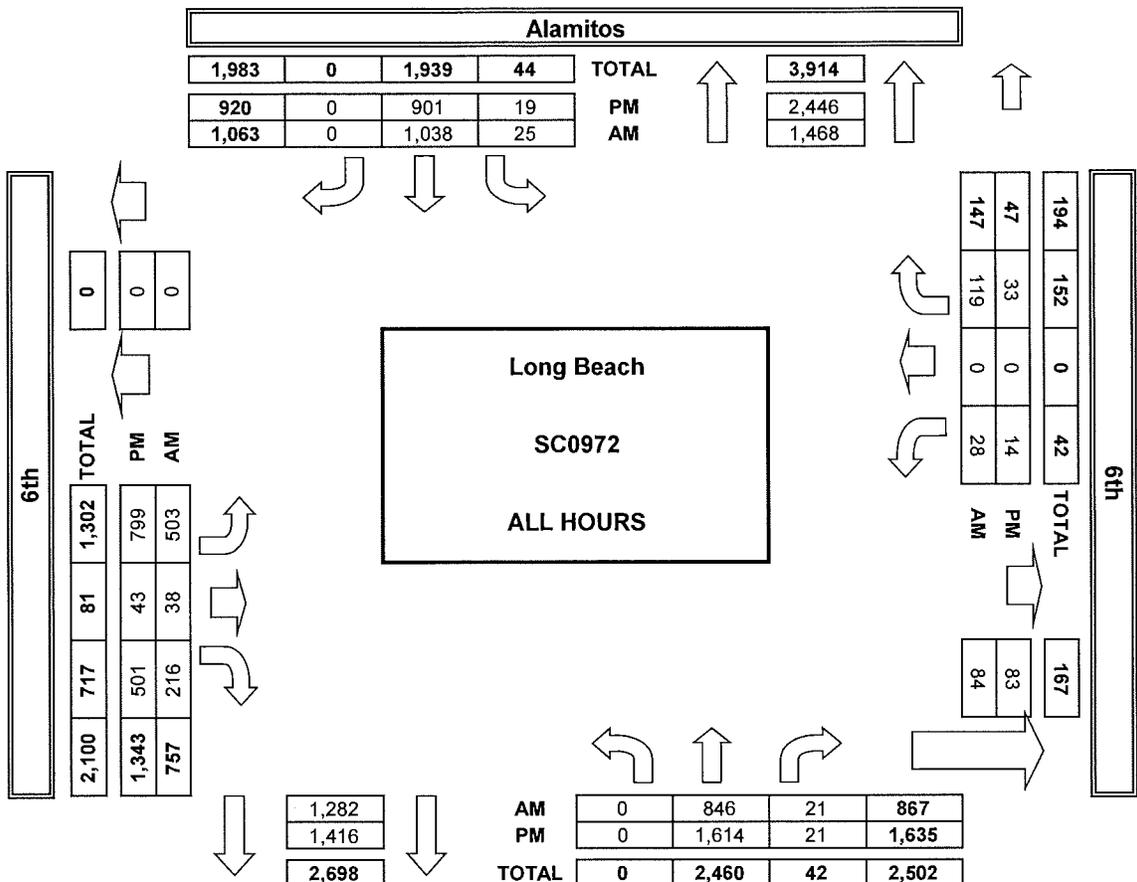
AimTD LLC
TURNING MOVEMENT COUNTS



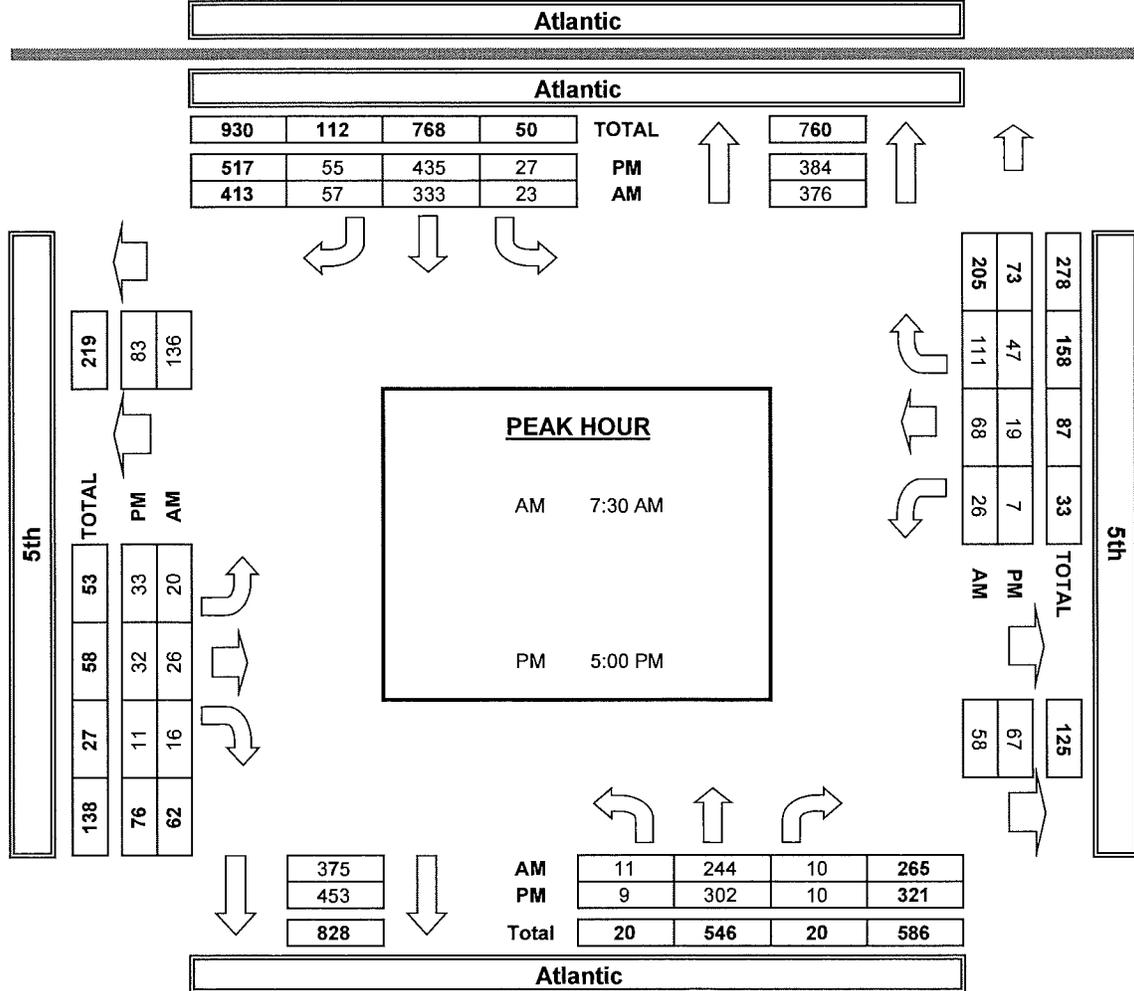
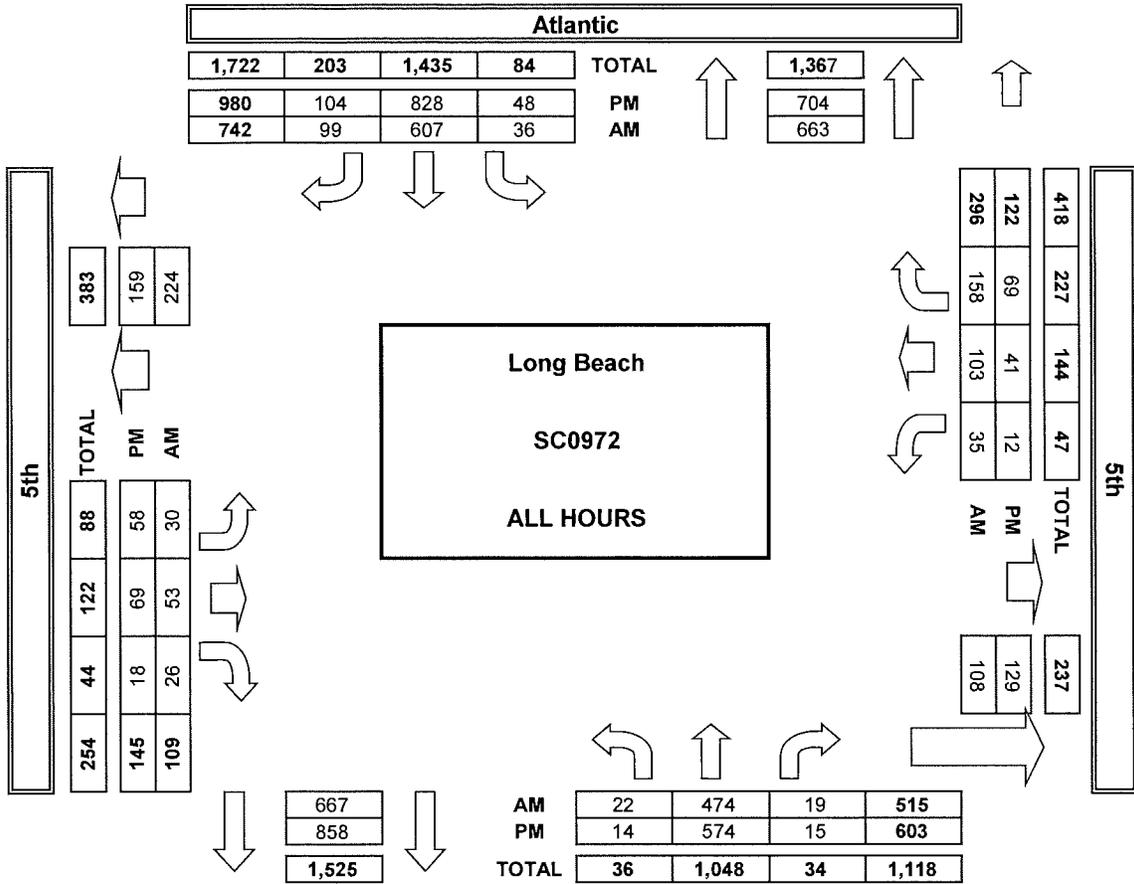
AimTD LLC
TURNING MOVEMENT COUNTS



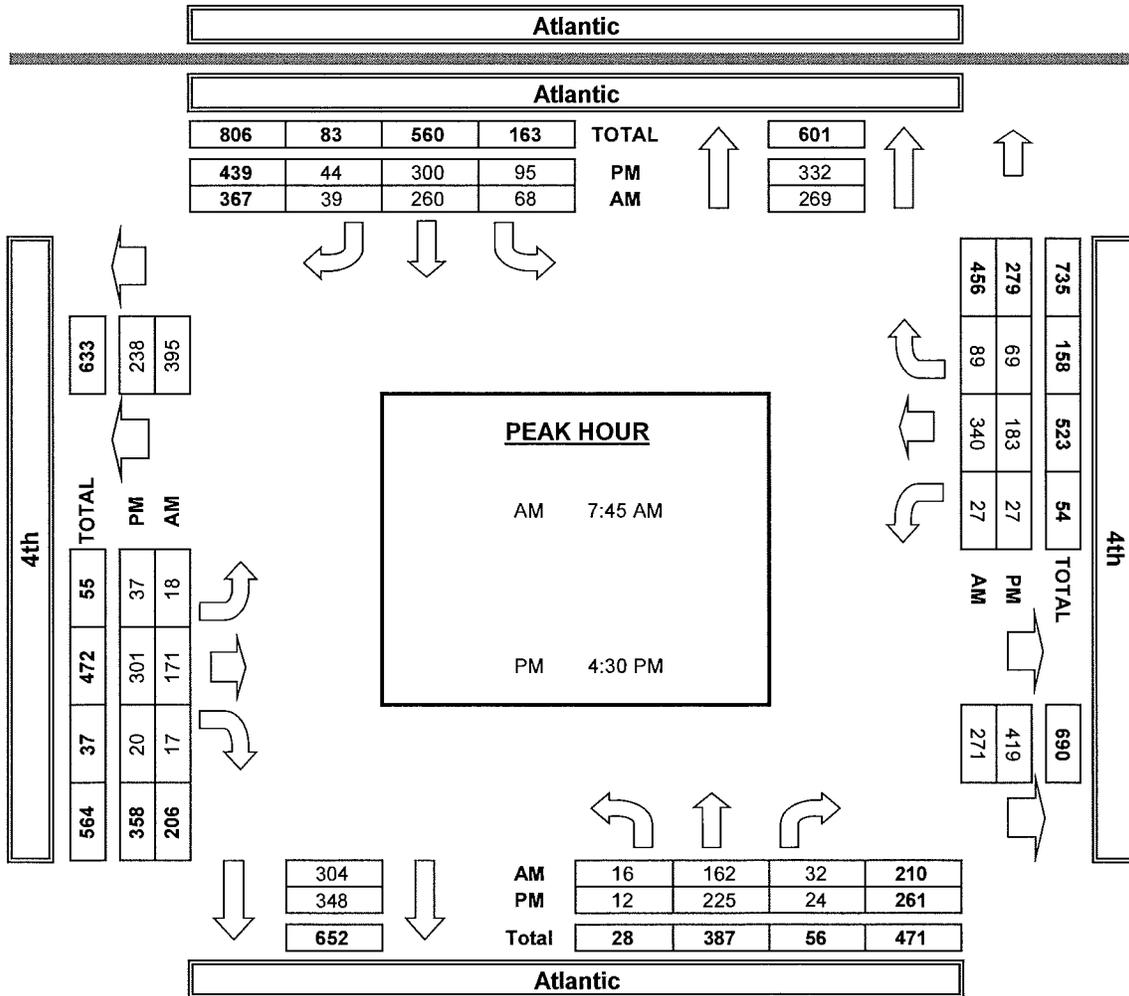
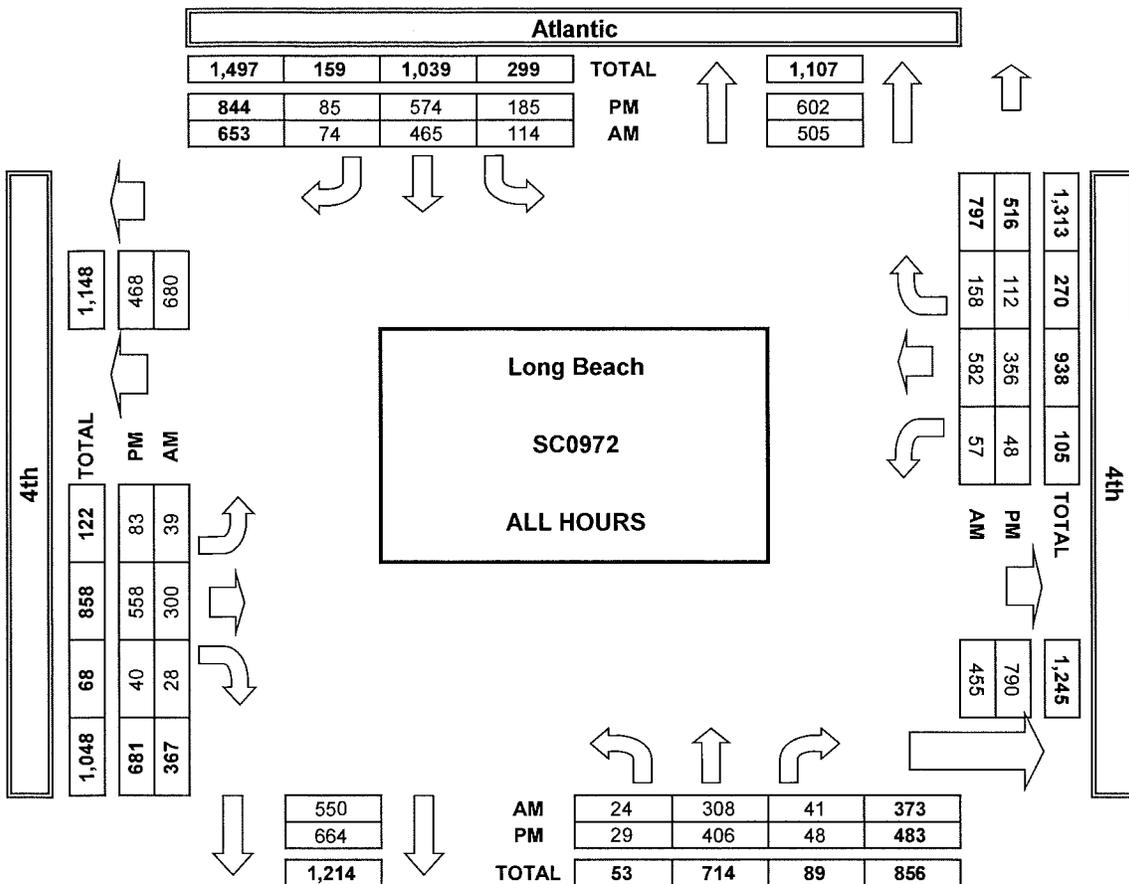
AimTD LLC
TURNING MOVEMENT COUNTS



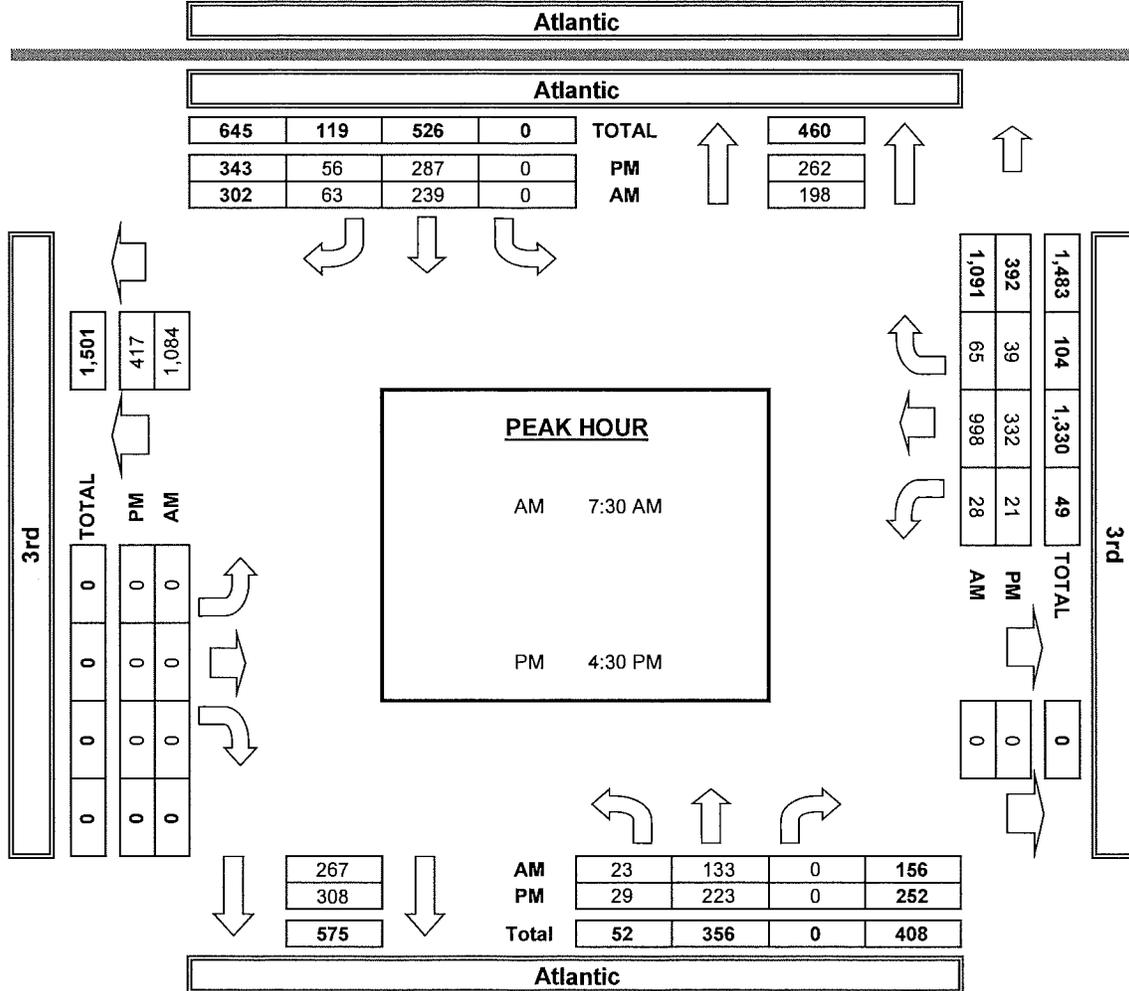
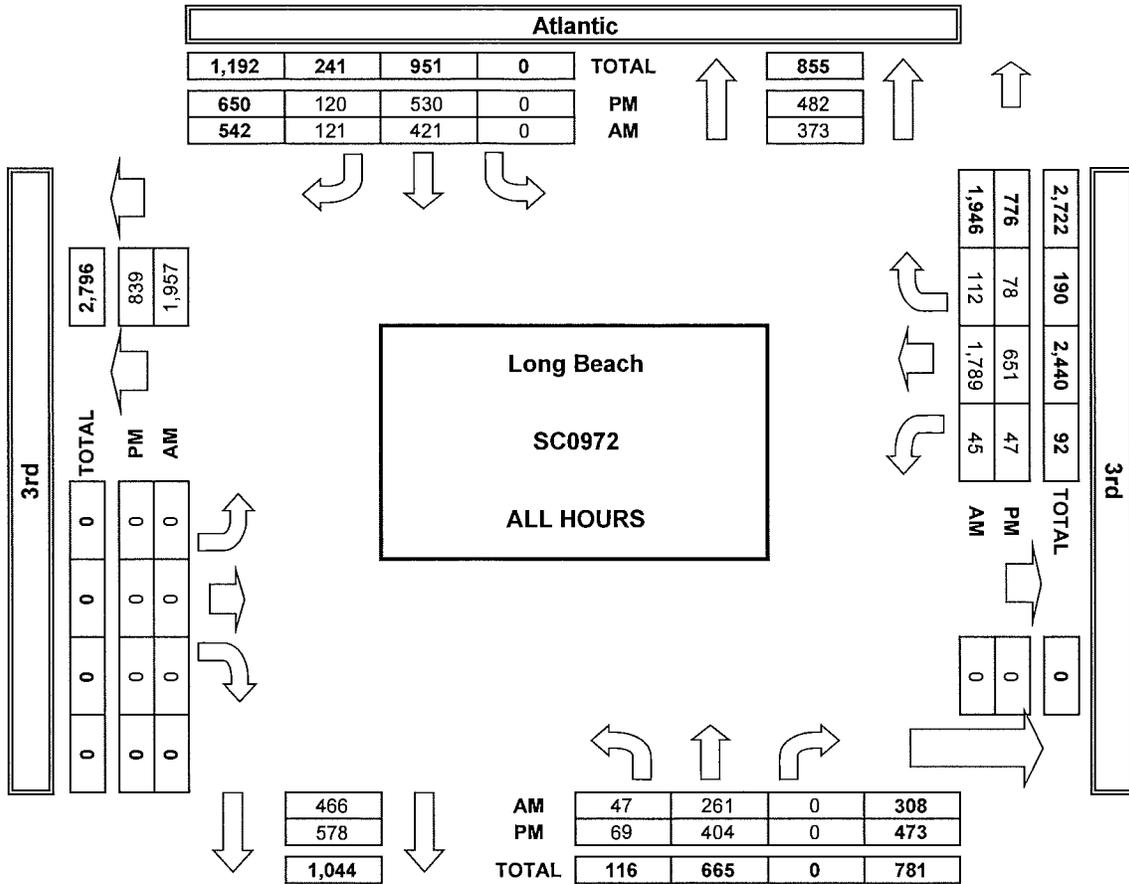
AimTD LLC
TURNING MOVEMENT COUNTS



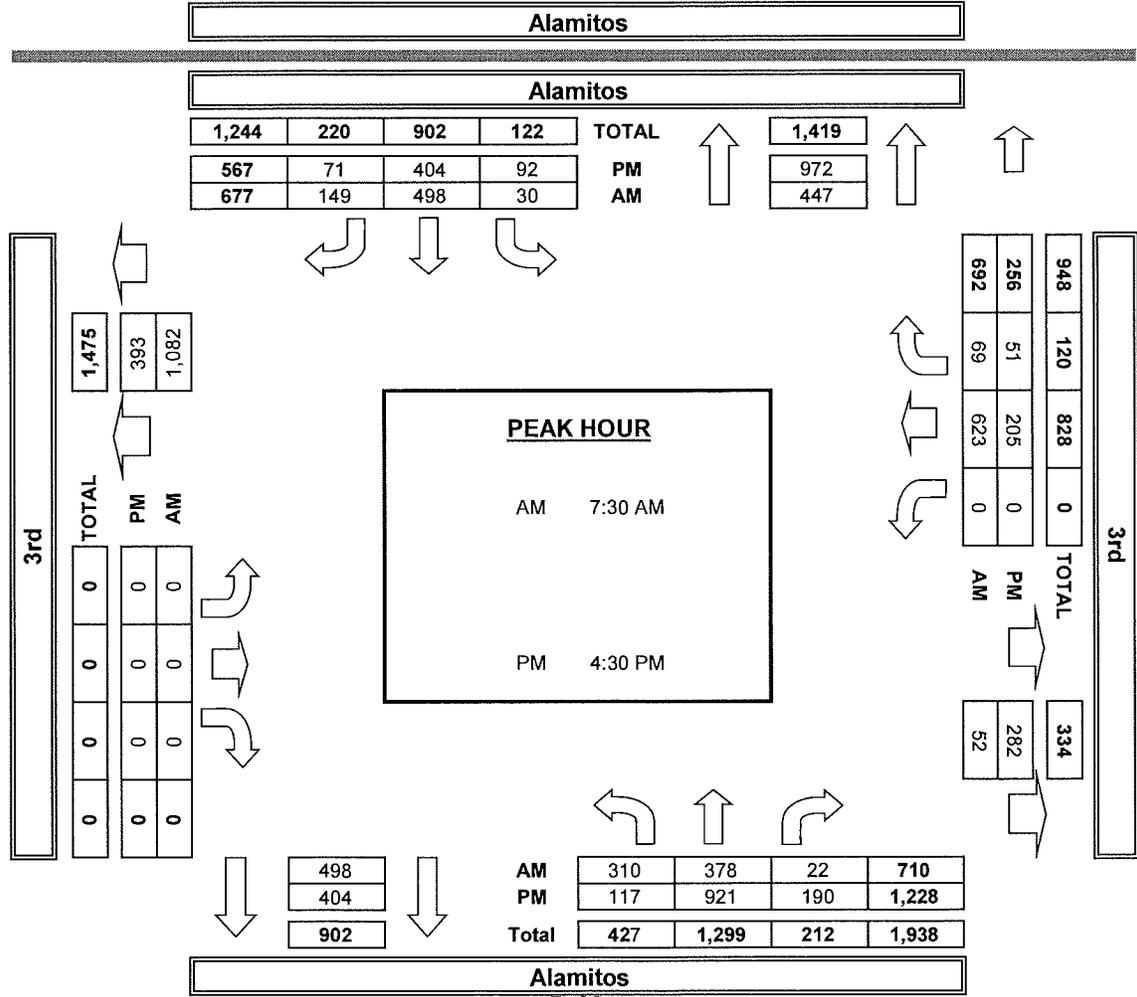
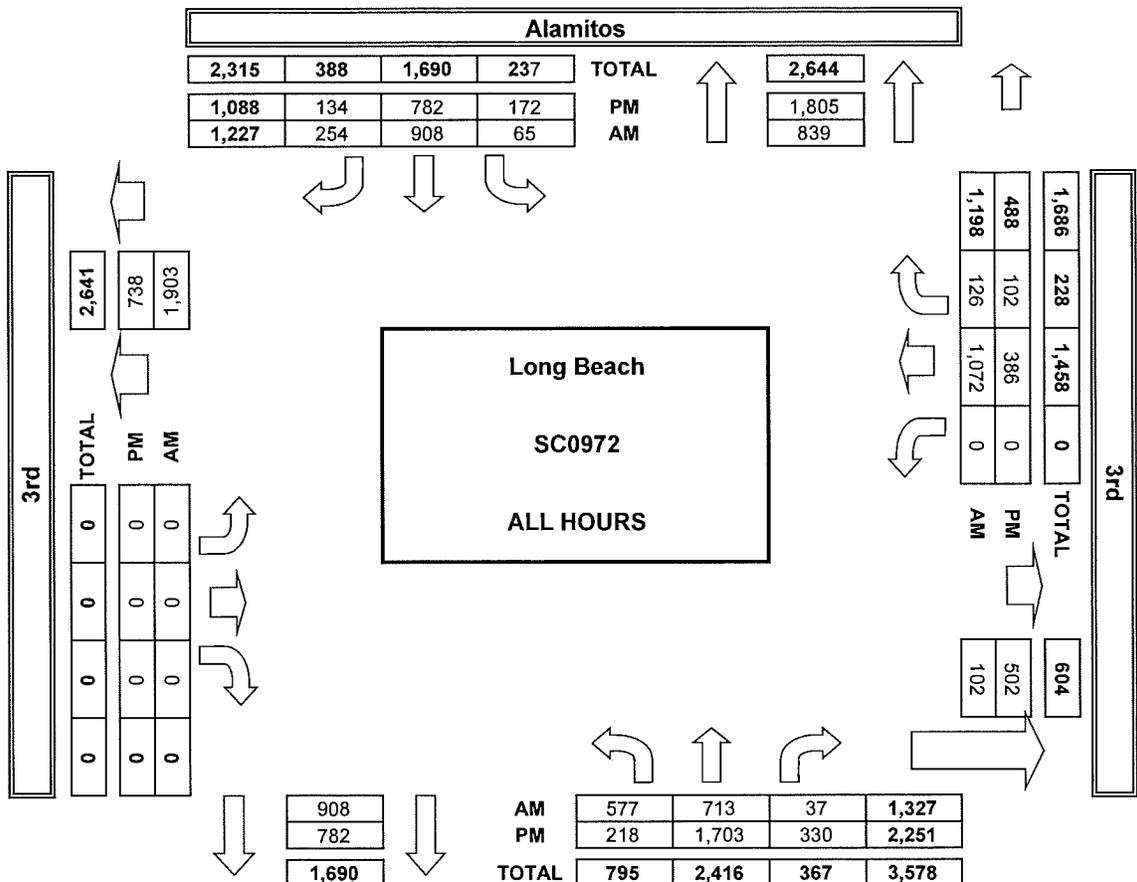
AimTD LLC
TURNING MOVEMENT COUNTS



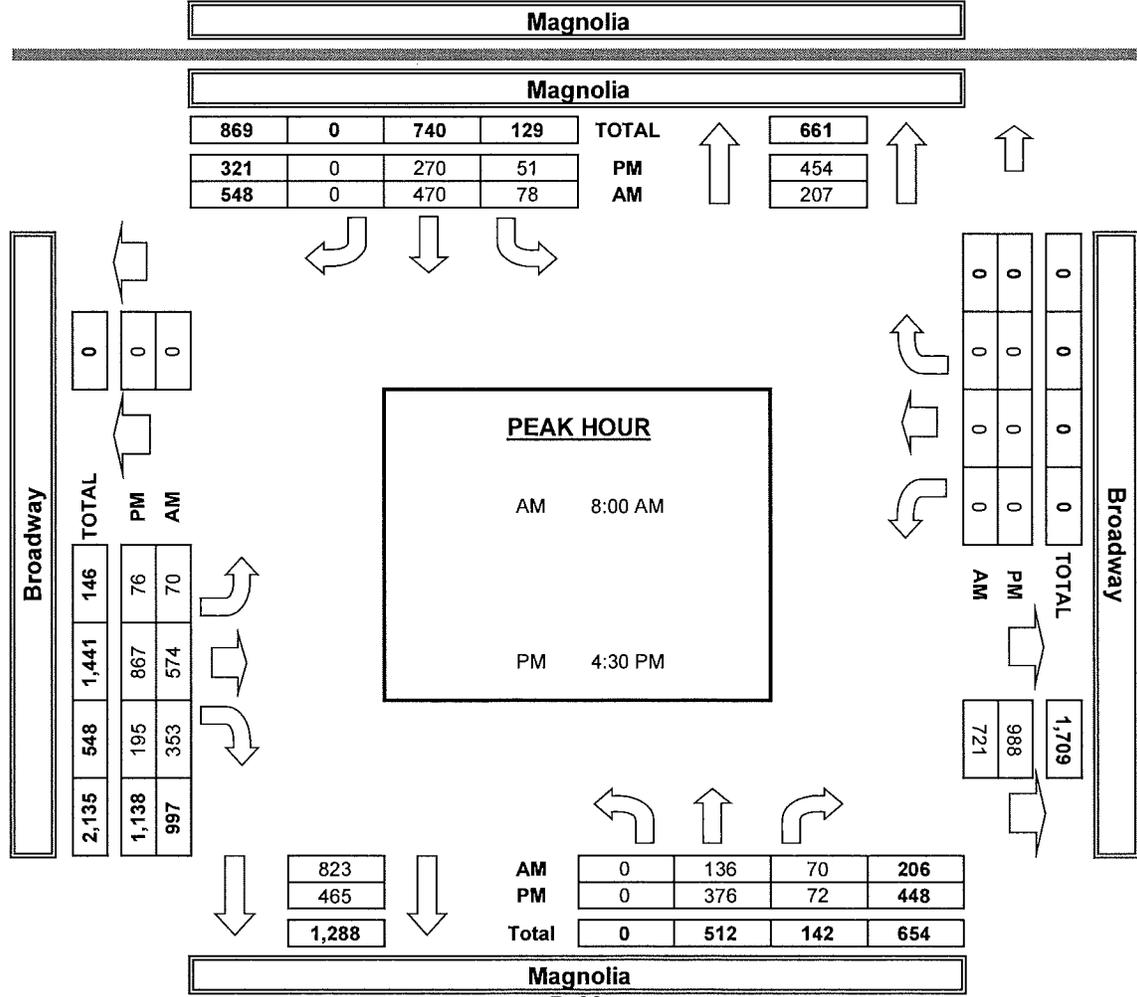
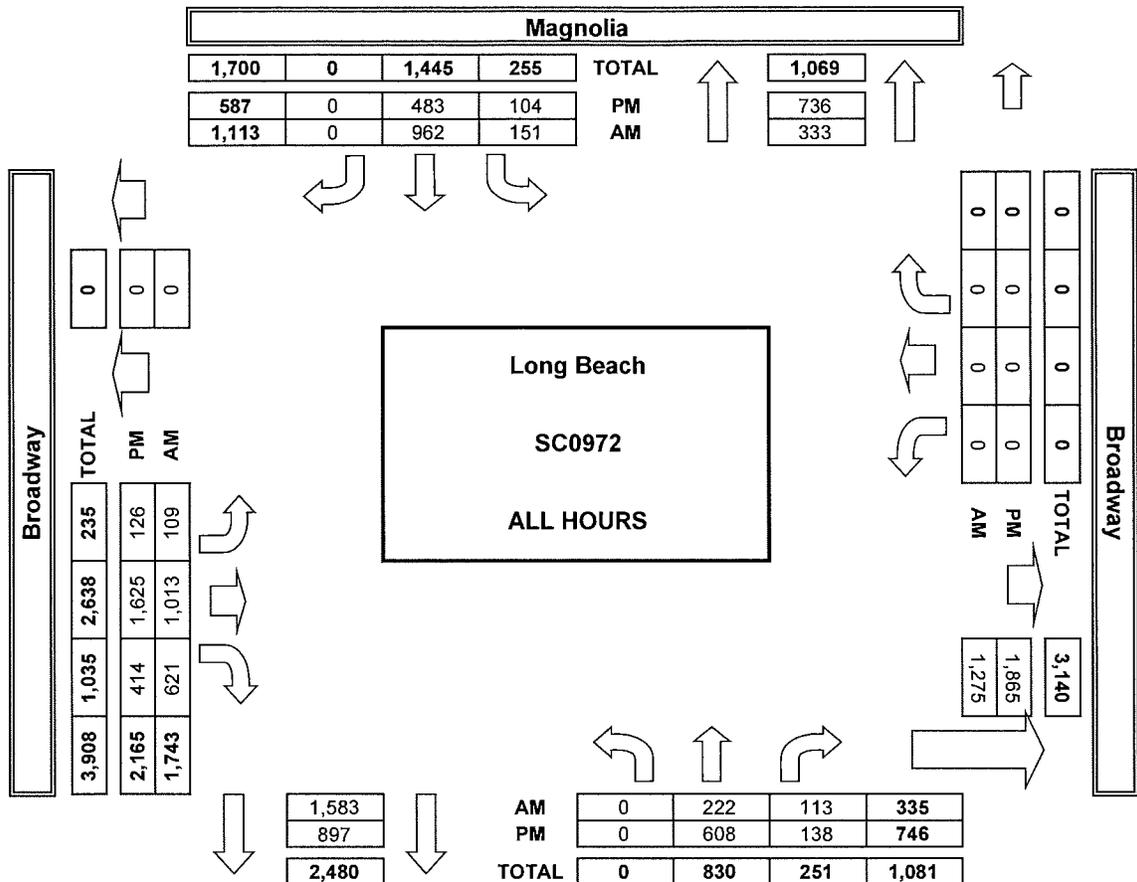
AimTD LLC
TURNING MOVEMENT COUNTS



AimTD LLC
TURNING MOVEMENT COUNTS



AimTD LLC
TURNING MOVEMENT COUNTS



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Wed, May 25, 16	LOCATION: NORTH & SOUTH: EAST & WEST:	Long Beach Pacific Broadway	PROJECT #: LOCATION #: CONTROL:	SC0972 2 SIGNAL
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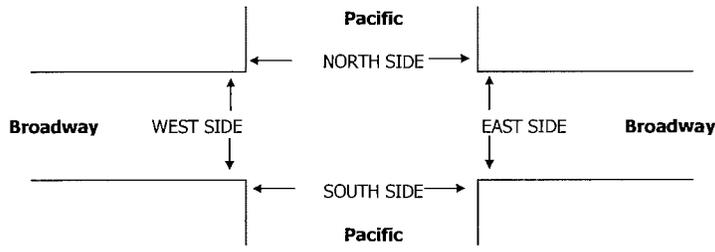
NOTES:	AM PM OTHER OTHER	← W E →	▲ N ▼ S	
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Add U-Turns to Left Turns

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
LANES:	X	2	1	1	2	X	1	2	0	X	X	X	
7:00 AM	0	21	4	13	50	0	1	89	14	0	0	0	192
7:15 AM	0	14	4	11	57	0	3	82	20	0	0	0	191
7:30 AM	0	24	9	12	70	0	9	94	23	0	0	0	241
7:45 AM	0	33	7	10	84	0	5	115	29	0	0	0	283
8:00 AM	0	18	10	9	81	0	9	130	32	0	0	0	289
8:15 AM	0	33	9	13	77	0	9	111	50	0	0	0	302
8:30 AM	0	42	13	10	80	0	6	124	39	0	0	0	314
8:45 AM	0	30	15	15	70	0	8	104	43	0	0	0	285
VOLUMES	0	215	71	93	569	0	50	849	250	0	0	0	2,097
APPROACH %	0%	75%	25%	14%	86%	0%	4%	74%	22%	0%	0%	0%	
APP/DEPART	286	/	268	662	/	819	1,149	/	1,010	0	/	0	0
BEGIN PEAK HR	8:00 AM												
VOLUMES	0	123	47	47	308	0	32	469	164	0	0	0	1,190
APPROACH %	0%	72%	28%	13%	87%	0%	5%	71%	25%	0%	0%	0%	
PEAK HR FACTOR	0.773												
APP/DEPART	170	/	156	355	/	472	665	/	562	0	/	0	0
4:00 PM	0	75	39	12	50	0	11	196	16	0	0	0	399
4:15 PM	0	59	32	13	49	0	12	185	13	0	0	0	363
4:30 PM	0	92	46	15	41	0	20	208	10	0	0	0	432
4:45 PM	0	75	34	14	44	0	16	231	13	0	0	0	427
5:00 PM	0	114	48	18	40	0	24	218	20	0	0	0	482
5:15 PM	0	112	53	18	48	0	21	226	23	0	0	0	501
5:30 PM	0	84	30	17	40	0	23	228	14	0	0	0	436
5:45 PM	0	56	30	7	48	0	9	188	17	0	0	0	355
VOLUMES	0	667	312	114	360	0	136	1,680	126	0	0	0	3,395
APPROACH %	0%	68%	32%	24%	76%	0%	7%	87%	6%	0%	0%	0%	
APP/DEPART	979	/	808	474	/	486	1,942	/	2,101	0	/	0	0
BEGIN PEAK HR	4:45 PM												
VOLUMES	0	385	165	67	172	0	84	903	70	0	0	0	1,846
APPROACH %	0%	70%	30%	28%	72%	0%	8%	85%	7%	0%	0%	0%	
PEAK HR FACTOR	0.833												
APP/DEPART	550	/	472	239	/	242	1,057	/	1,132	0	/	0	0

U-TURNS				
NB	SB	EB	WB	TTL
X	0	X	X	
0	1	0	0	1
0	0	0	0	0
0	0	0	0	0
0	1	0	0	1
0	1	0	0	1
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	3	0	0	3

0	1	0	0	1
0	1	0	0	1
0	0	0	0	0
0	0	0	0	0
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0	1	0	0	1
0	0	0	0	0
0	5	0	0	5



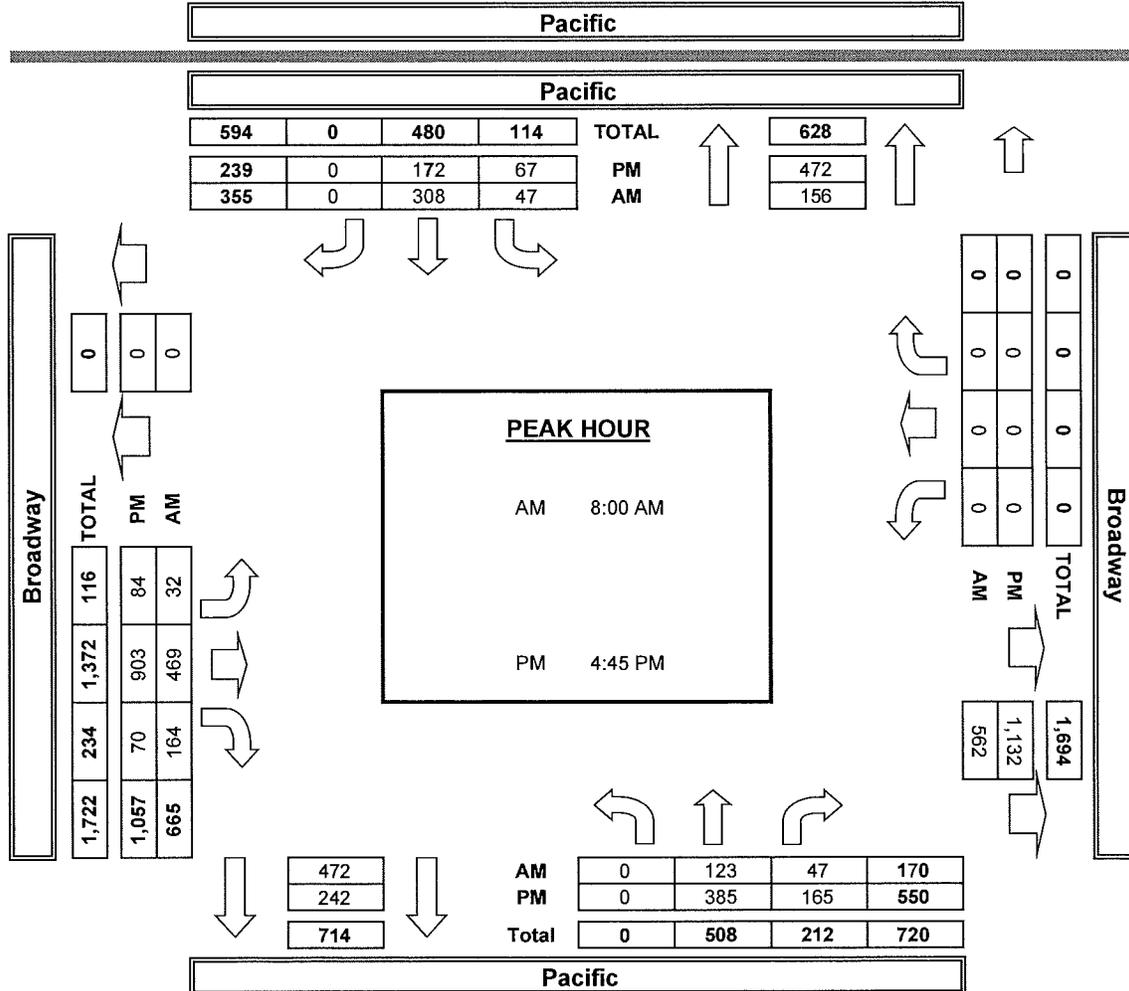
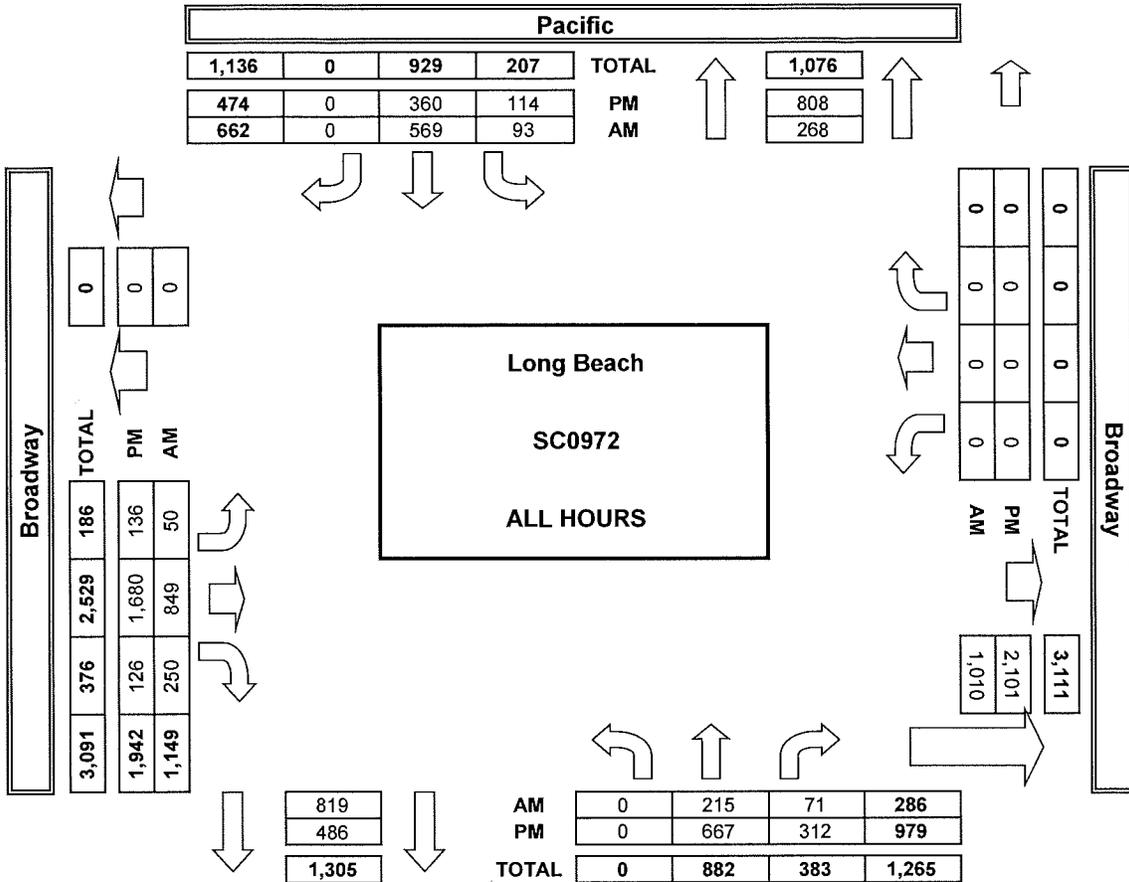
	PEDESTRIAN + BIKE CROSSINGS				TOTAL
	N SIDE	S SIDE	E SIDE	W SIDE	
7:00 AM	0	0	0	0	0
7:15 AM	0	0	0	0	0
7:30 AM	0	0	0	0	0
7:45 AM	0	0	0	0	0
8:00 AM	0	0	0	0	0
8:15 AM	0	0	0	0	0
8:30 AM	0	0	0	0	0
8:45 AM	0	0	0	0	0
TOTAL	0	0	0	0	0
4:00 PM	0	0	0	0	0
4:15 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0
TOTAL	0	0	0	0	0

	PEDESTRIAN CROSSINGS				TOTAL
	N SIDE	S SIDE	E SIDE	W SIDE	
7:00 AM	0	0	0	0	0
7:15 AM	0	0	0	0	0
7:30 AM	0	0	0	0	0
7:45 AM	0	0	0	0	0
8:00 AM	0	0	0	0	0
8:15 AM	0	0	0	0	0
8:30 AM	0	0	0	0	0
8:45 AM	0	0	0	0	0
TOTAL	0	0	0	0	0
4:00 PM	0	0	0	0	0
4:15 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0
TOTAL	0	0	0	0	0

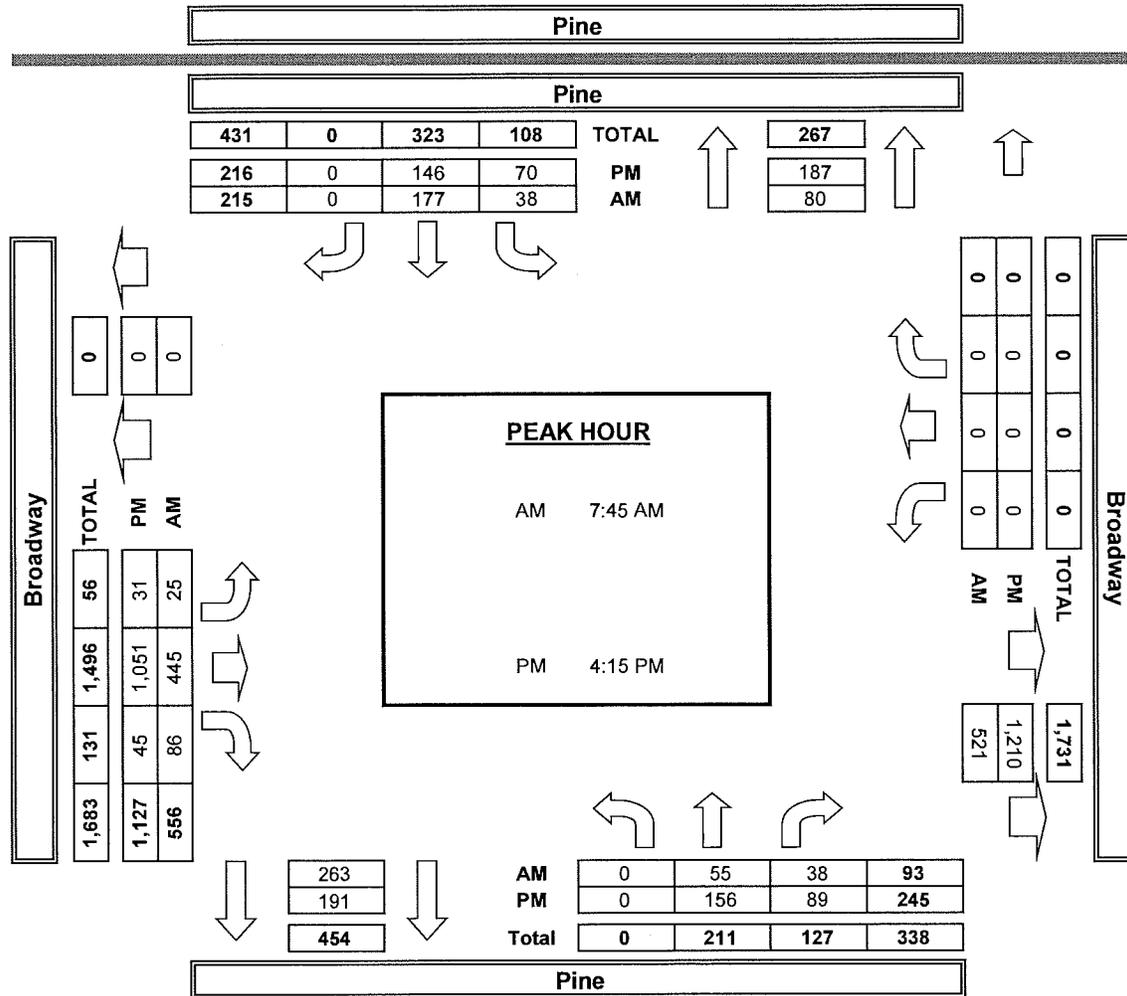
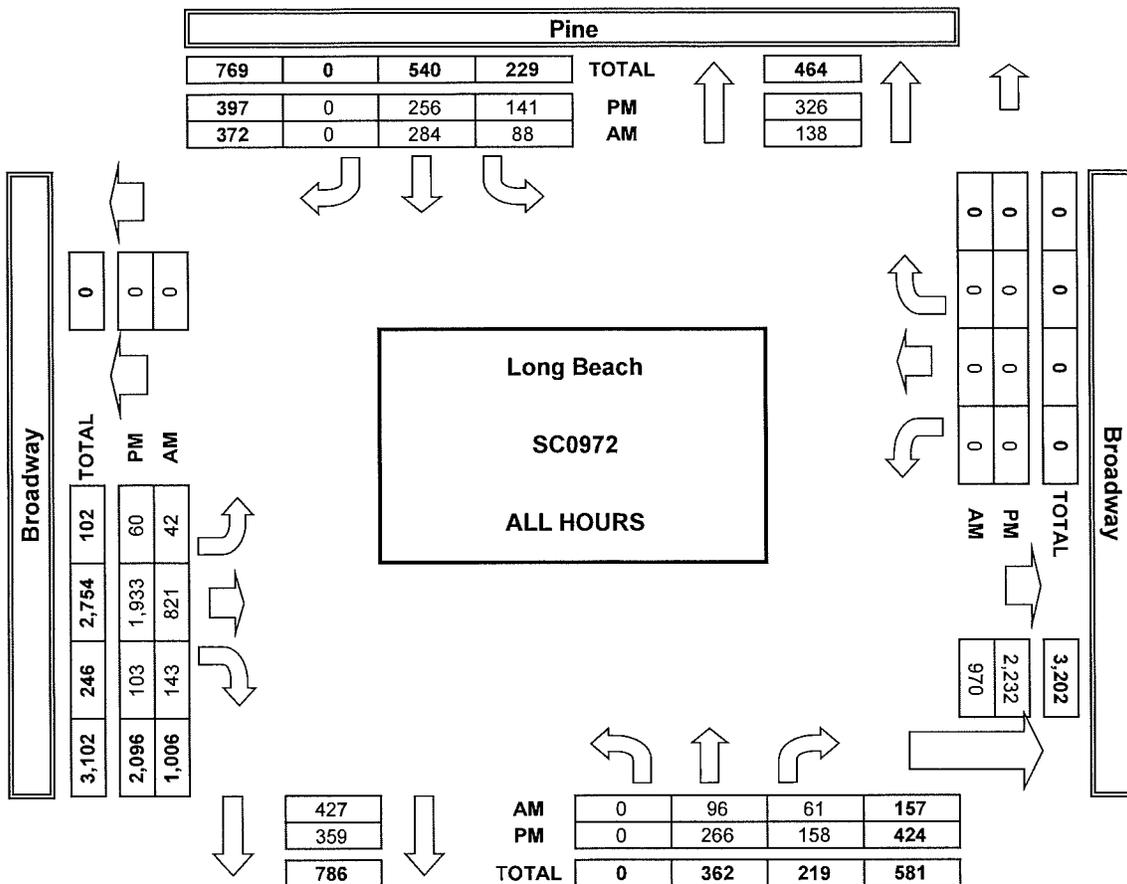
	BICYCLE CROSSINGS				TOTAL
	NS	SS	ES	WS	
7:00 AM	0	0	0	0	0
7:15 AM	0	0	0	0	0
7:30 AM	0	0	0	0	0
7:45 AM	0	0	0	0	0
8:00 AM	0	0	0	0	0
8:15 AM	0	0	0	0	0
8:30 AM	0	0	0	0	0
8:45 AM	0	0	0	0	0
TOTAL	0	0	0	0	0
4:00 PM	0	0	0	0	0
4:15 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0
TOTAL	0	0	0	0	0

0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
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0	0	0	0	0
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0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

AimTD LLC
TURNING MOVEMENT COUNTS



AimTD LLC
TURNING MOVEMENT COUNTS



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:
Thu, May 26, 16

LOCATION:
NORTH & SOUTH:
EAST & WEST:

Long Beach
Long Beach
Broadway

PROJECT #: SC0972
LOCATION #: 4
CONTROL: SIGNAL

NOTES:

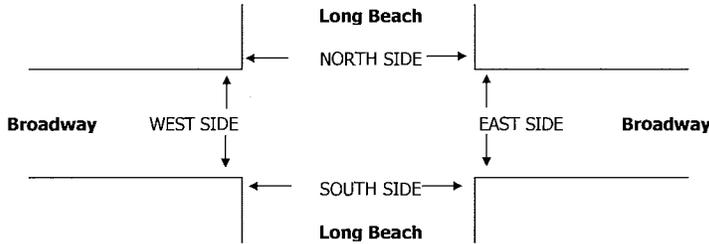
AM	◀ W ▶	▲ N
PM		▼ S
OTHER		
OTHER		

Add U-Turns to Left Turns

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
LANES:	X	2	0	2	1	X	1	2	0	X	X	X	
AM													
7:00 AM	0	29	2	13	52	0	7	56	26	0	0	0	185
7:15 AM	0	35	5	11	52	0	11	52	24	0	0	0	190
7:30 AM	0	40	1	13	68	0	12	53	18	0	0	0	205
7:45 AM	0	44	6	17	74	0	13	73	22	0	0	0	249
8:00 AM	0	39	7	10	83	0	16	72	38	0	0	0	265
8:15 AM	0	47	7	12	48	0	13	73	41	0	0	0	241
8:30 AM	0	45	1	14	65	0	19	67	30	0	0	0	241
8:45 AM	0	58	1	20	70	0	17	84	21	0	0	0	271
VOLUMES	0	337	30	110	512	0	108	530	220	0	0	0	1,847
APPROACH %	0%	92%	8%	18%	82%	0%	13%	62%	26%	0%	0%	0%	
APP/DEPART	367	/	458	622	/	732	858	/	657	0	/	0	0
BEGIN PEAK HR	8:00 AM												
VOLUMES	0	189	16	56	266	0	65	296	130	0	0	0	1,018
APPROACH %	0%	92%	8%	17%	83%	0%	13%	60%	26%	0%	0%	0%	
PEAK HR FACTOR		0.869			0.866			0.967			0.000		0.939
APP/DEPART	205	/	260	322	/	396	491	/	362	0	/	0	0
PM													
4:00 PM	0	60	7	20	53	0	23	189	18	0	0	0	370
4:15 PM	0	57	5	26	50	0	28	239	15	0	0	0	420
4:30 PM	0	64	15	41	45	0	32	242	16	0	0	0	455
4:45 PM	0	60	5	20	40	0	25	263	19	0	0	0	432
5:00 PM	0	60	14	27	51	0	29	267	12	0	0	0	460
5:15 PM	0	70	11	25	67	0	25	273	14	0	0	0	485
5:30 PM	0	72	11	25	73	0	37	253	17	0	0	0	488
5:45 PM	0	53	7	24	59	0	25	219	24	0	0	0	411
VOLUMES	0	496	75	208	438	0	224	1,945	135	0	0	0	3,521
APPROACH %	0%	87%	13%	32%	68%	0%	10%	84%	6%	0%	0%	0%	
APP/DEPART	571	/	733	646	/	573	2,304	/	2,215	0	/	0	0
BEGIN PEAK HR	4:45 PM												
VOLUMES	0	262	41	97	231	0	116	1,056	62	0	0	0	1,865
APPROACH %	0%	86%	14%	30%	70%	0%	9%	86%	5%	0%	0%	0%	
PEAK HR FACTOR		0.913			0.837			0.989			0.000		0.955
APP/DEPART	303	/	382	328	/	293	1,234	/	1,190	0	/	0	0

U-TURNS				
NB	SB	EB	WB	TTL
X	0	X	X	
0	2	0	0	2
0	3	0	0	3
0	2	0	0	2
0	0	0	0	0
0	0	0	0	0
0	1	0	0	1
0	1	0	0	1
0	4	0	0	4
0	13	0	0	13

0	4	0	0	4
0	1	0	0	1
0	2	0	0	2
0	1	0	0	1
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0	0	0	0	0
0	2	0	0	2
0	2	0	0	2
0	13	0	0	13



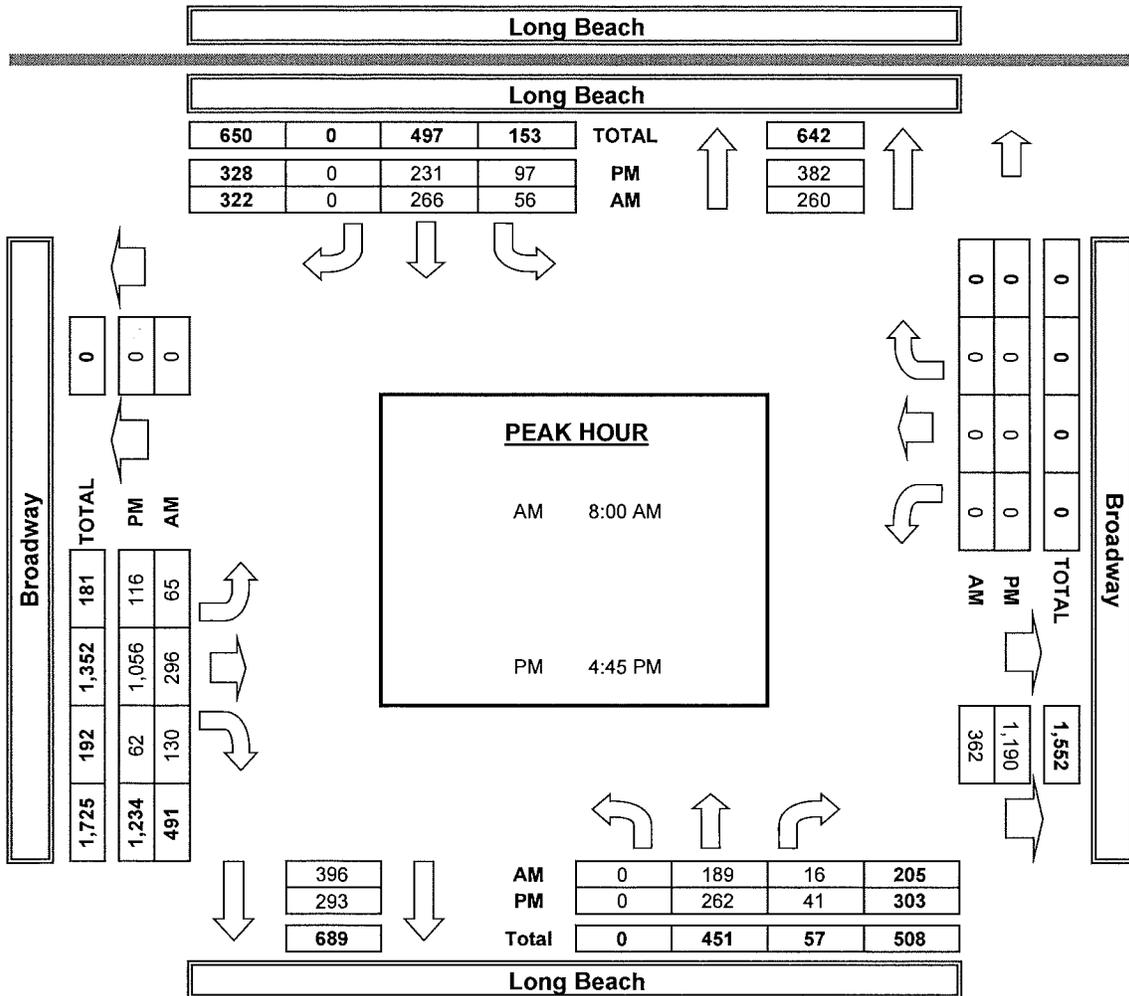
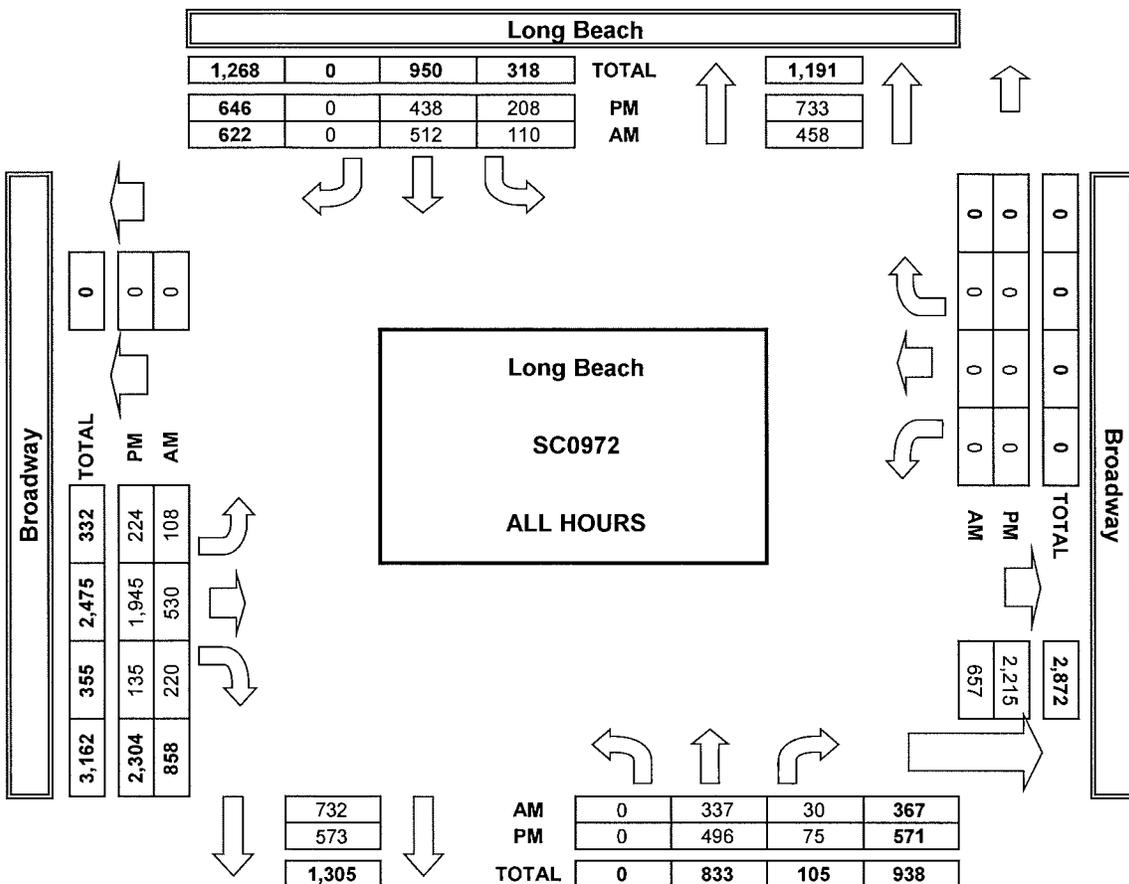
	PEDESTRIAN + BIKE CROSSINGS				
	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL
AM					
7:00 AM	0	0	0	0	0
7:15 AM	0	0	0	0	0
7:30 AM	0	0	0	0	0
7:45 AM	0	0	0	0	0
8:00 AM	0	0	0	0	0
8:15 AM	0	0	0	0	0
8:30 AM	0	0	0	0	0
8:45 AM	0	0	0	0	0
TOTAL	0	0	0	0	0
PM					
4:00 PM	0	0	0	0	0
4:15 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0
TOTAL	0	0	0	0	0

PEDESTRIAN CROSSINGS				
N SIDE	S SIDE	E SIDE	W SIDE	TOTAL
7:00 AM	0	0	0	0
7:15 AM	0	0	0	0
7:30 AM	0	0	0	0
7:45 AM	0	0	0	0
8:00 AM	0	0	0	0
8:15 AM	0	0	0	0
8:30 AM	0	0	0	0
8:45 AM	0	0	0	0
TOTAL	0	0	0	0
4:00 PM	0	0	0	0
4:15 PM	0	0	0	0
4:30 PM	0	0	0	0
4:45 PM	0	0	0	0
5:00 PM	0	0	0	0
5:15 PM	0	0	0	0
5:30 PM	0	0	0	0
5:45 PM	0	0	0	0
TOTAL	0	0	0	0

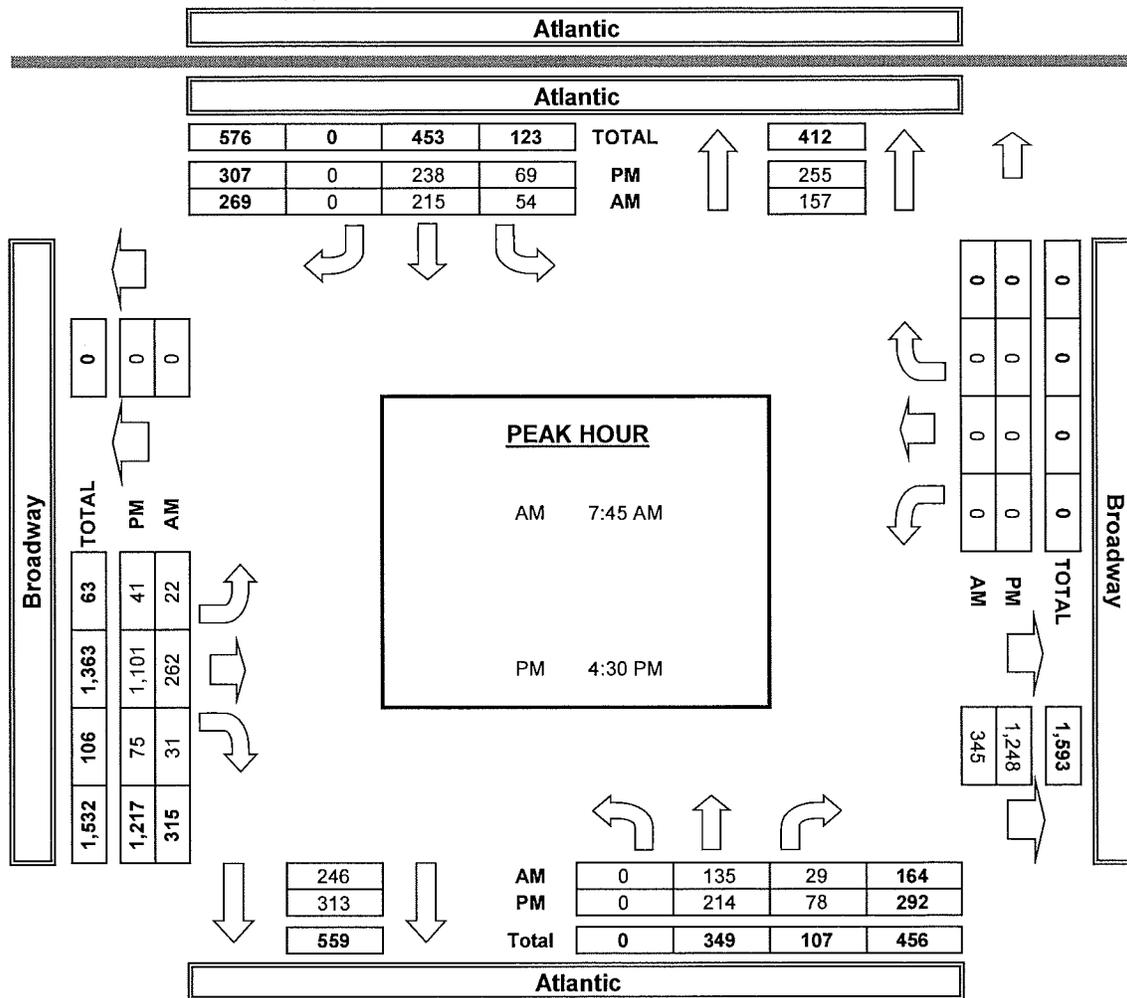
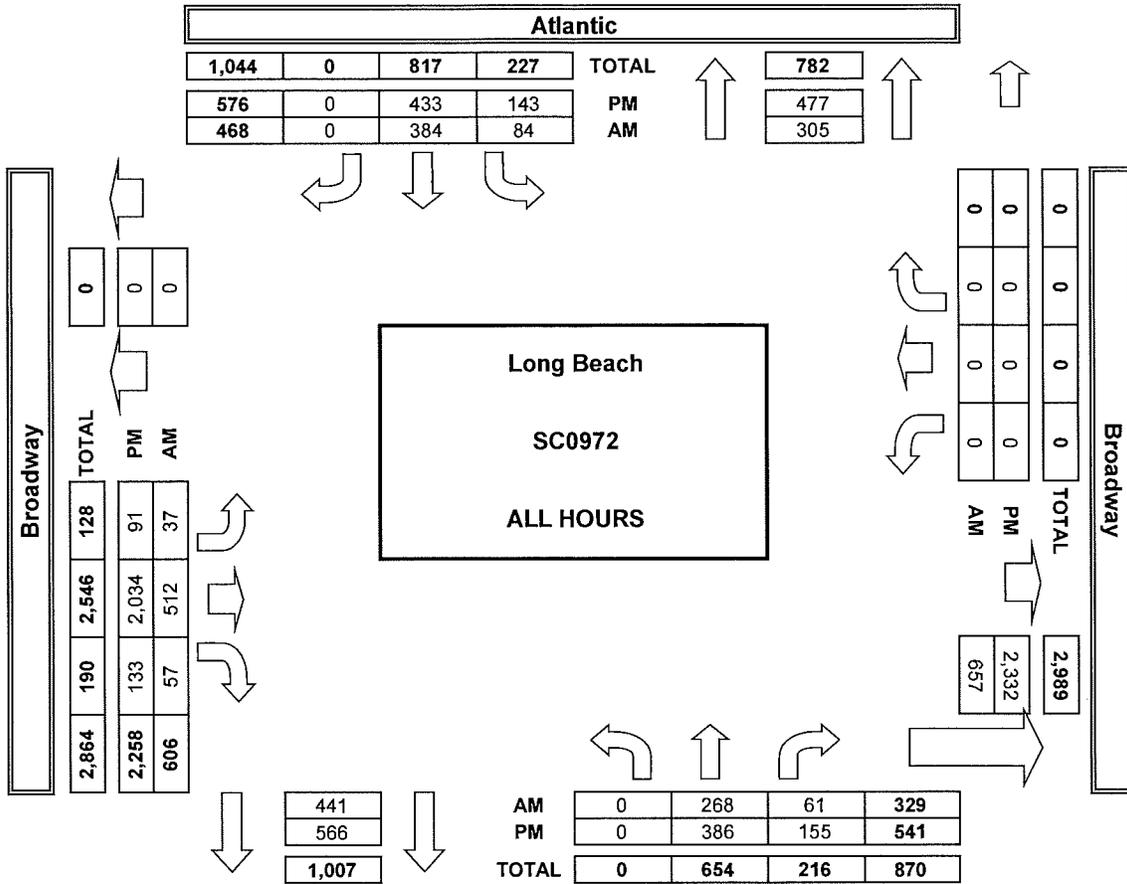
BICYCLE CROSSINGS				
NS	SS	ES	WS	TOTAL
7:00 AM	0	0	0	0
7:15 AM	0	0	0	0
7:30 AM	0	0	0	0
7:45 AM	0	0	0	0
8:00 AM	0	0	0	0
8:15 AM	0	0	0	0
8:30 AM	0	0	0	0
8:45 AM	0	0	0	0
TOTAL	0	0	0	0
4:00 PM	0	0	0	0
4:15 PM	0	0	0	0
4:30 PM	0	0	0	0
4:45 PM	0	0	0	0
5:00 PM	0	0	0	0
5:15 PM	0	0	0	0
5:30 PM	0	0	0	0
5:45 PM	0	0	0	0
TOTAL	0	0	0	0

0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
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0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
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0	0	0	0	0
0	0	0	0	0
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0	0	0	0	0

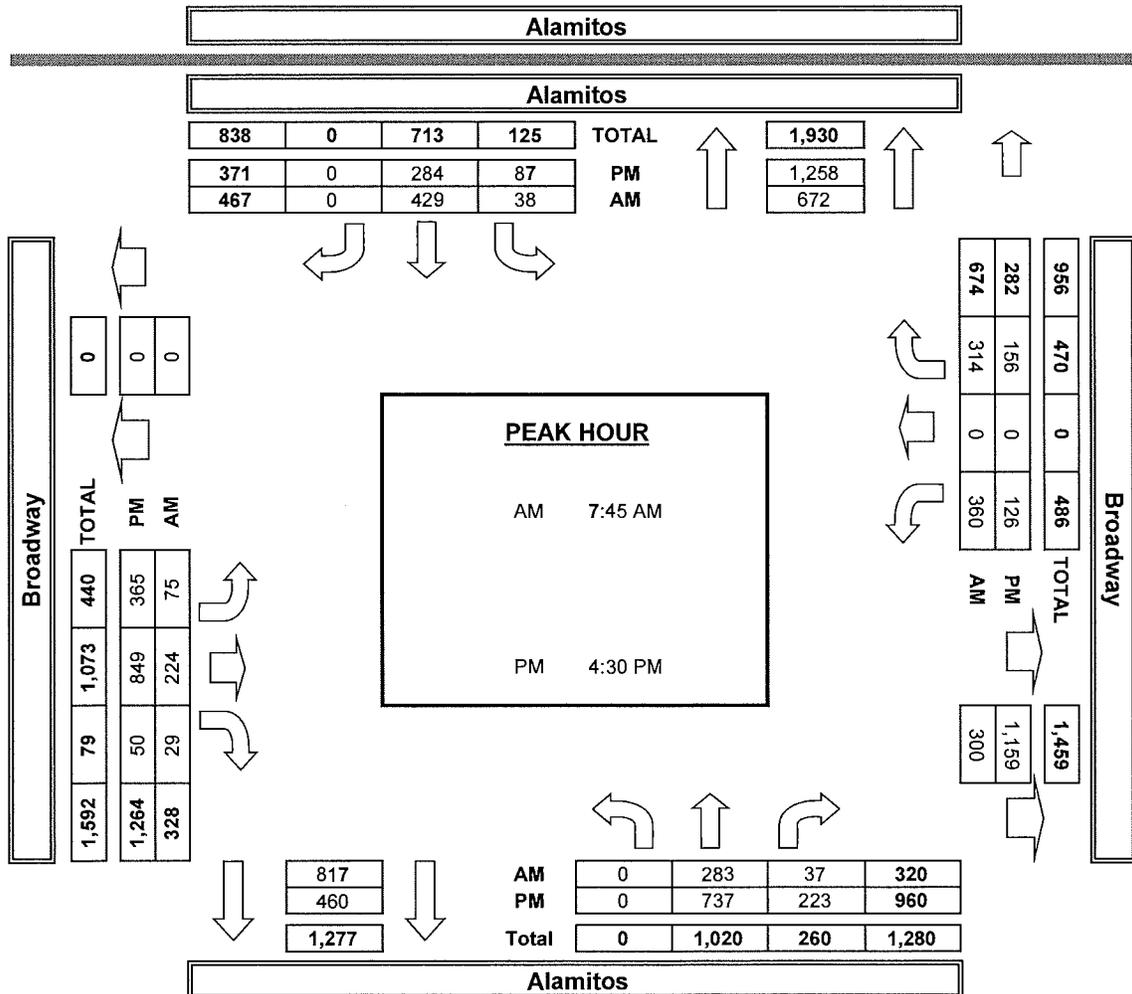
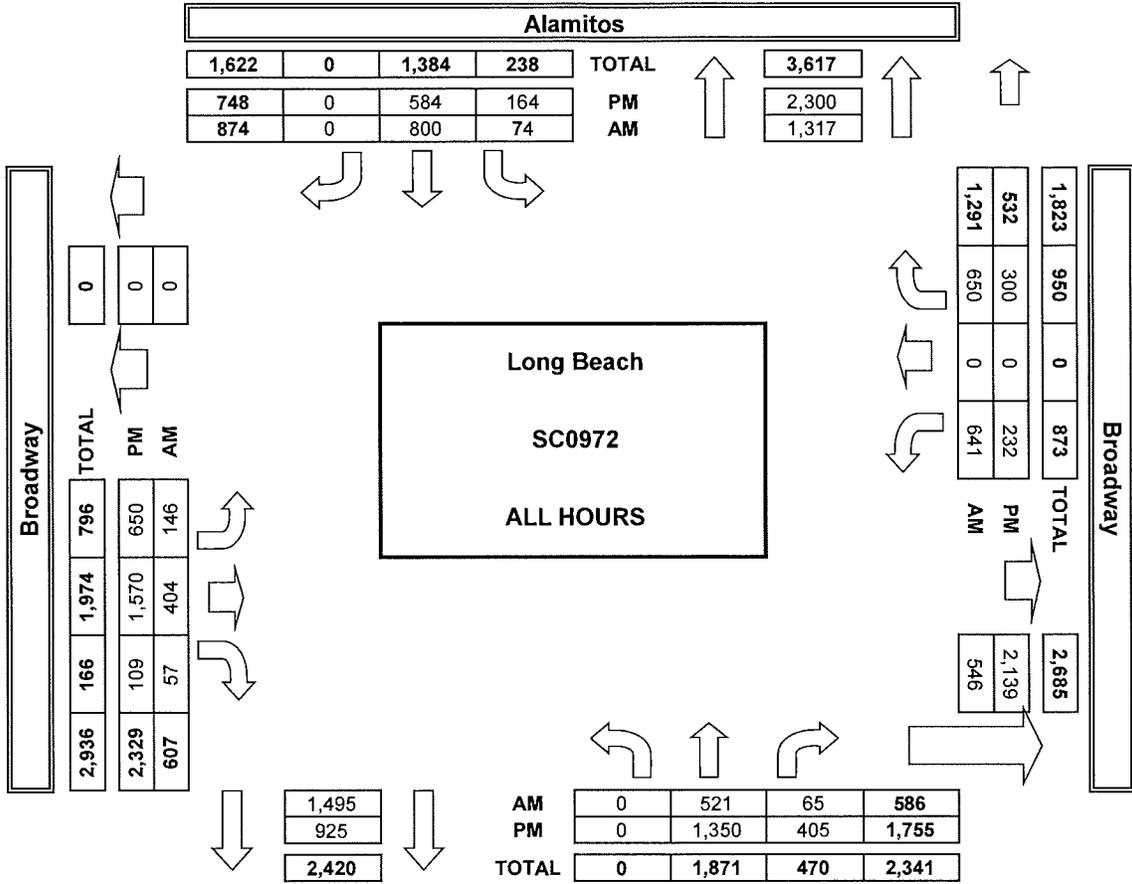
AimTD LLC
TURNING MOVEMENT COUNTS



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AimTD LLC
TURNING MOVEMENT COUNTS



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Wed, May 25, 16	LOCATION: NORTH & SOUTH: EAST & WEST:	Long Beach Atlantic 1st	PROJECT #: SC0972 LOCATION #: 8 CONTROL: SIGNAL
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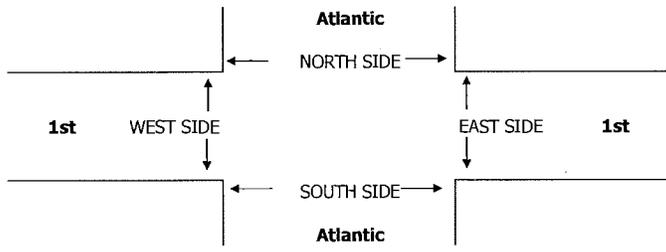
NOTES:	<table border="1" style="font-size: 8px;"> <tr><td>AM</td></tr> <tr><td>PM</td></tr> <tr><td>1st</td></tr> <tr><td>OTHER</td></tr> <tr><td>OTHER</td></tr> </table>	AM	PM	1st	OTHER	OTHER	<table border="1" style="font-size: 12px;"> <tr><td>▲</td></tr> <tr><td>N</td></tr> <tr><td>◀</td></tr> <tr><td>W</td></tr> <tr><td>▶</td></tr> <tr><td>E</td></tr> <tr><td>▼</td></tr> <tr><td>S</td></tr> </table>	▲	N	◀	W	▶	E	▼	S	
AM																
PM																
1st																
OTHER																
OTHER																
▲																
N																
◀																
W																
▶																
E																
▼																
S																

Add U-Turns to Left Turns

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	Atlantic			Atlantic			1st			1st			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
7:00 AM	0	19	0	1	34	5	4	3	2	5	20	5	98
7:15 AM	2	23	1	1	28	9	7	5	1	2	16	8	103
7:30 AM	1	19	2	4	43	8	5	7	1	10	29	11	140
7:45 AM	0	17	4	4	47	8	5	11	6	10	28	8	148
8:00 AM	1	20	4	4	53	15	2	11	9	10	38	9	176
8:15 AM	0	20	2	1	38	14	9	9	5	7	22	13	140
8:30 AM	0	25	2	2	38	8	3	8	8	2	34	10	140
8:45 AM	0	21	3	2	49	11	6	14	3	6	38	10	163
VOLUMES	4	164	18	19	330	78	41	68	35	52	225	74	1,108
APPROACH %	2%	88%	10%	4%	77%	18%	28%	47%	24%	15%	64%	21%	
APP/DEPART	186	/	279	427	/	411	144	/	111	351	/	307	0
BEGIN PEAK HR	8:00 AM												
VOLUMES	1	86	11	9	178	48	20	42	25	25	132	42	619
APPROACH %	1%	88%	11%	4%	76%	20%	23%	48%	29%	13%	66%	21%	
PEAK HR FACTOR	0.907												0.879
APP/DEPART	98	/	148	235	/	226	87	/	64	199	/	181	0
4:00 PM	3	32	3	5	48	11	3	25	5	2	15	17	169
4:15 PM	1	38	4	2	50	8	7	24	4	1	16	11	166
4:30 PM	0	42	3	5	58	13	18	31	6	4	21	7	208
4:45 PM	0	47	3	6	56	11	11	31	2	2	12	8	189
5:00 PM	0	51	8	5	60	14	15	43	11	5	17	10	239
5:15 PM	0	39	9	4	51	12	13	26	14	8	15	8	199
5:30 PM	2	31	7	4	55	6	11	47	15	3	18	9	208
5:45 PM	2	31	2	3	55	6	5	22	10	3	15	12	166
VOLUMES	8	311	39	34	433	81	83	249	67	28	129	82	1,544
APPROACH %	2%	87%	11%	6%	79%	15%	21%	62%	17%	12%	54%	34%	
APP/DEPART	358	/	478	548	/	527	399	/	321	239	/	218	0
BEGIN PEAK HR	4:45 PM												
VOLUMES	2	168	27	19	222	43	50	147	42	18	62	35	835
APPROACH %	1%	85%	14%	7%	78%	15%	21%	62%	18%	16%	54%	30%	
PEAK HR FACTOR	0.835												0.873
APP/DEPART	197	/	253	284	/	282	239	/	193	115	/	107	0

U-TURNS				
NB	SB	EB	WB	TTL
X	X	0	0	
0	0	0	2	2
0	0	0	0	0
0	0	0	1	1
0	0	0	1	1
0	0	0	1	1
0	0	0	0	0
0	0	0	0	0
0	0	0	6	6

0	0	0	1	1
0	1	0	0	1
0	1	0	0	1
0	0	0	0	0
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0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	2	0	1	3

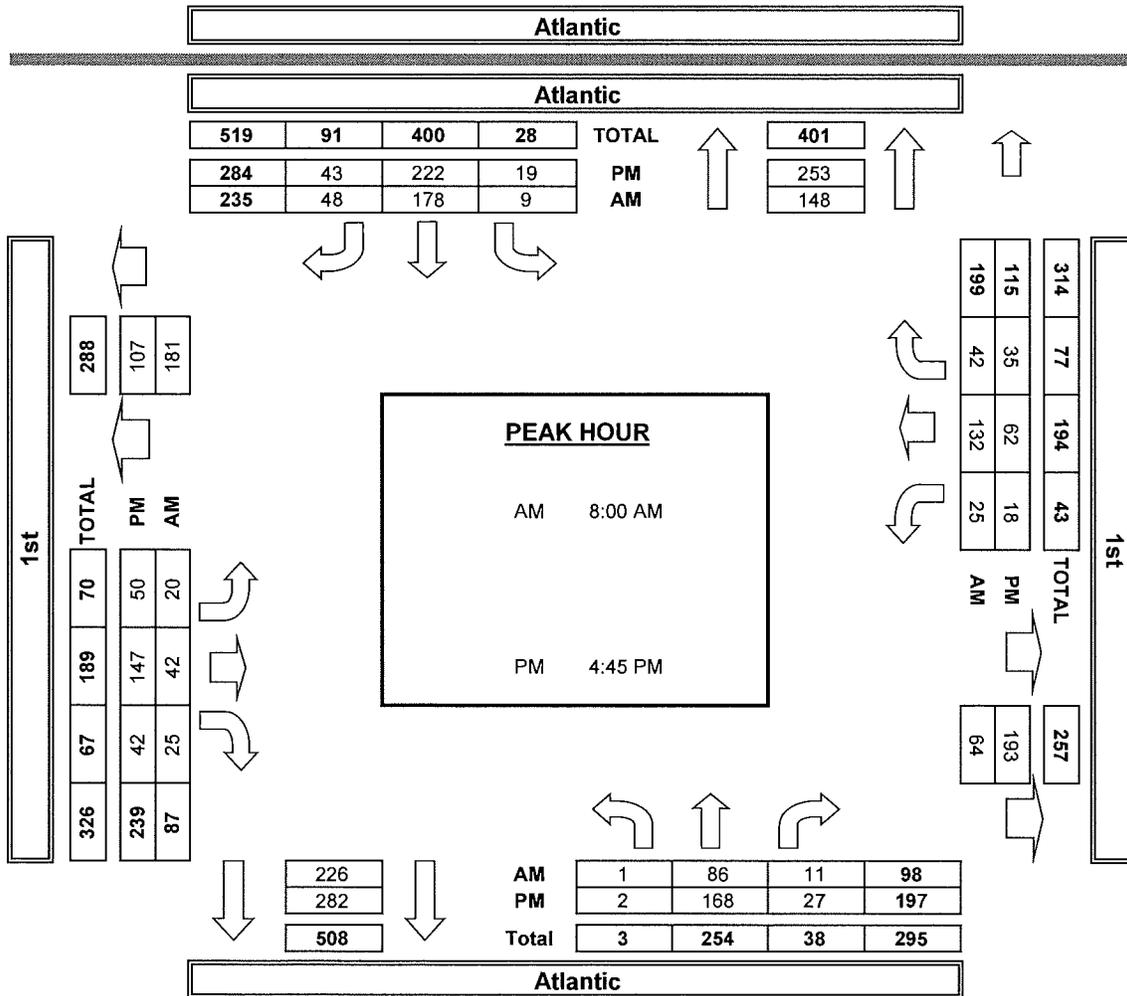
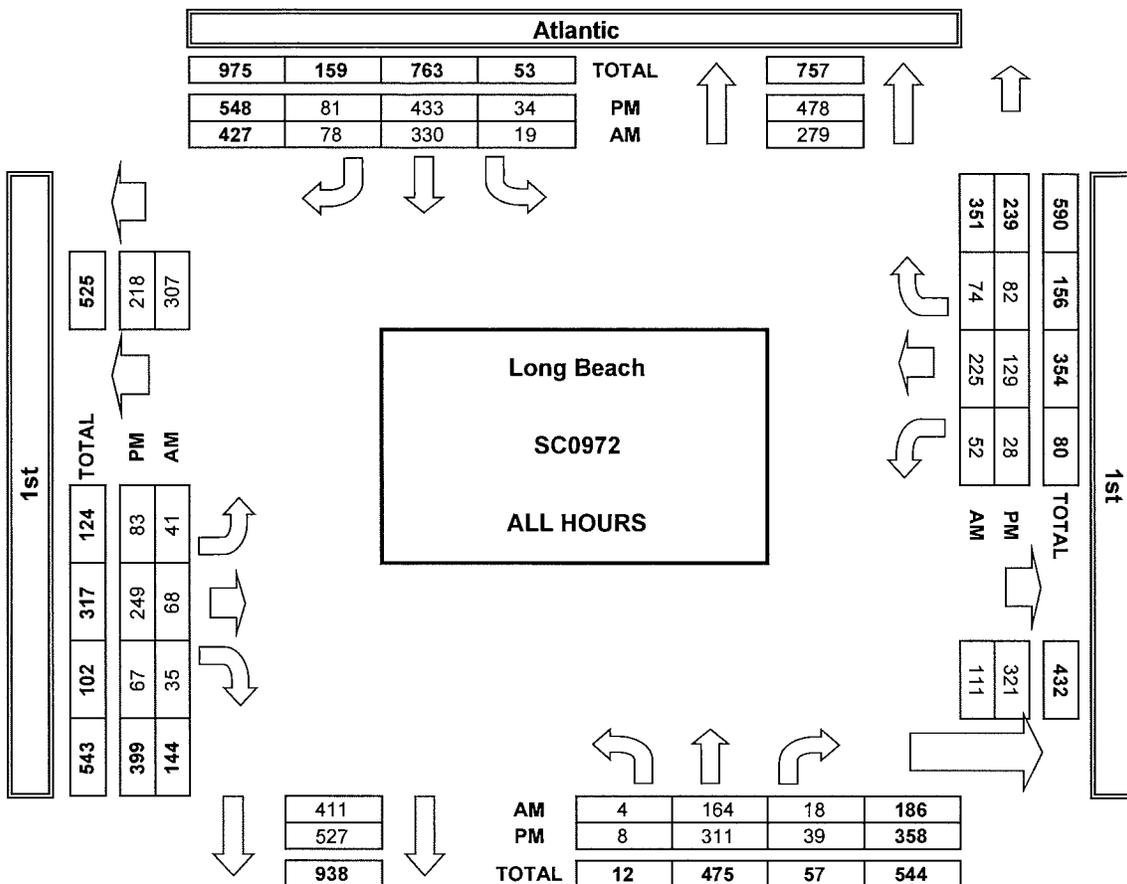


	PEDESTRIAN + BIKE CROSSINGS				TOTAL
	N SIDE	S SIDE	E SIDE	W SIDE	
7:00 AM	0	0	0	0	0
7:15 AM	0	0	0	0	0
7:30 AM	0	0	0	0	0
7:45 AM	0	0	0	0	0
8:00 AM	0	0	0	0	0
8:15 AM	0	0	0	0	0
8:30 AM	0	0	0	0	0
8:45 AM	0	0	0	0	0
TOTAL	0	0	0	0	0
4:00 PM	0	0	0	0	0
4:15 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0
TOTAL	0	0	0	0	0

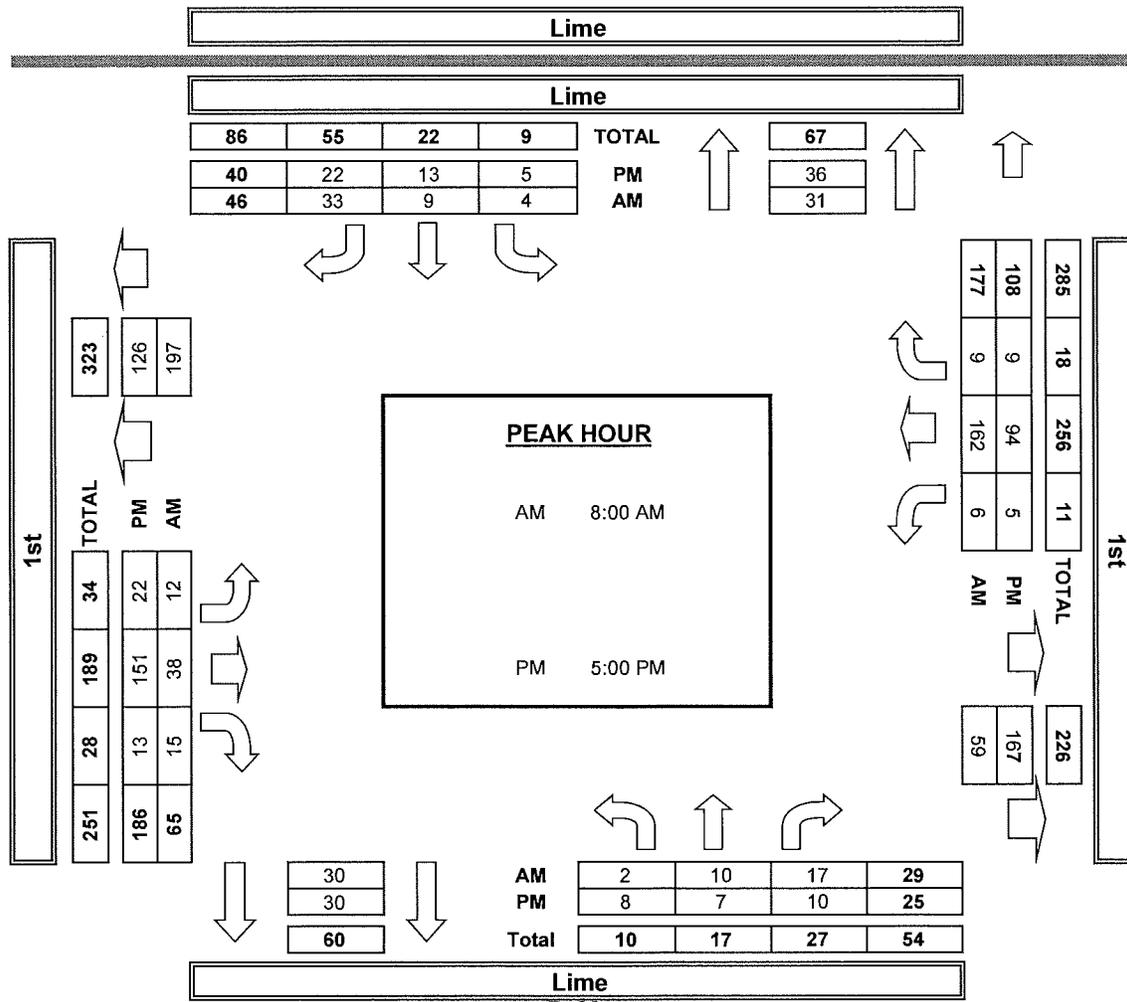
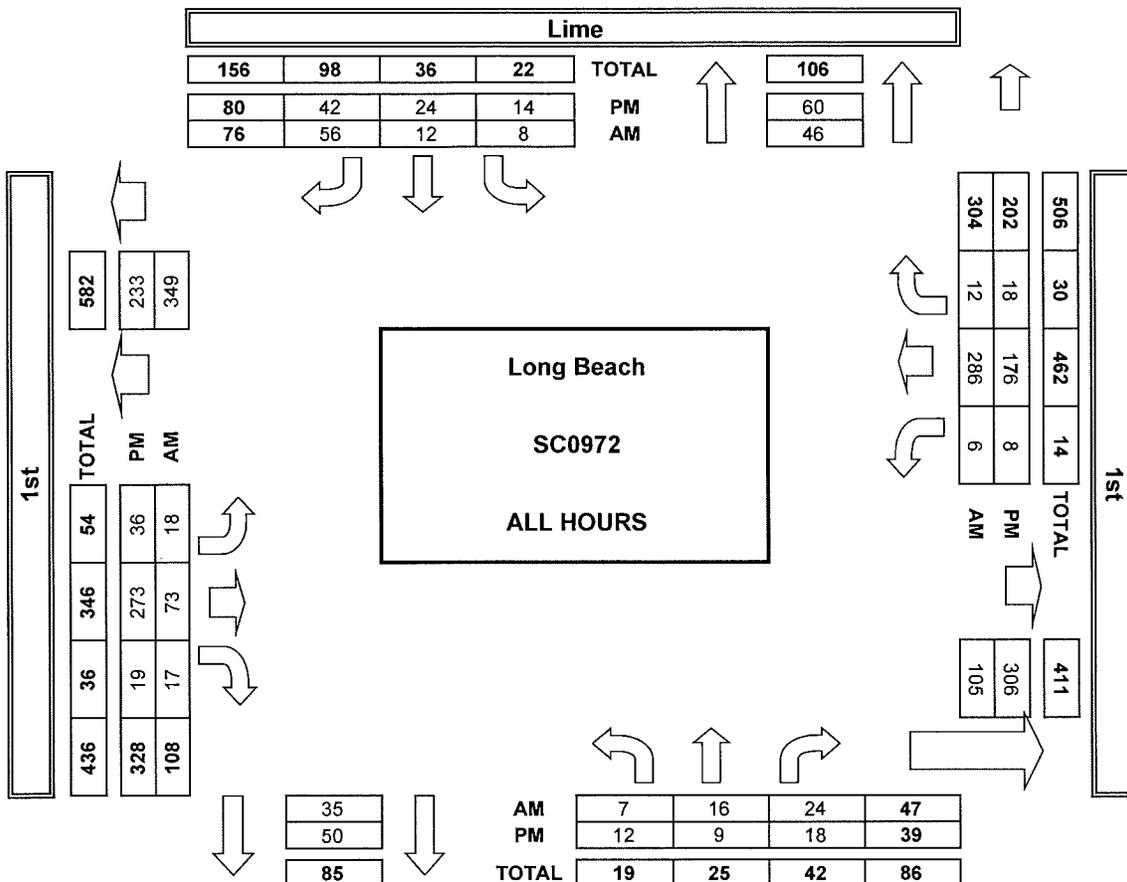
	PEDESTRIAN CROSSINGS				TOTAL
	N SIDE	S SIDE	E SIDE	W SIDE	
7:00 AM	0	0	0	0	0
7:15 AM	0	0	0	0	0
7:30 AM	0	0	0	0	0
7:45 AM	0	0	0	0	0
8:00 AM	0	0	0	0	0
8:15 AM	0	0	0	0	0
8:30 AM	0	0	0	0	0
8:45 AM	0	0	0	0	0
TOTAL	0	0	0	0	0
4:00 PM	0	0	0	0	0
4:15 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0
TOTAL	0	0	0	0	0

	BICYCLE CROSSINGS				TOTAL
	NS	SS	ES	WS	
7:00 AM	0	0	0	0	0
7:15 AM	0	0	0	0	0
7:30 AM	0	0	0	0	0
7:45 AM	0	0	0	0	0
8:00 AM	0	0	0	0	0
8:15 AM	0	0	0	0	0
8:30 AM	0	0	0	0	0
8:45 AM	0	0	0	0	0
TOTAL	0	0	0	0	0
4:00 PM	0	0	0	0	0
4:15 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0
TOTAL	0	0	0	0	0

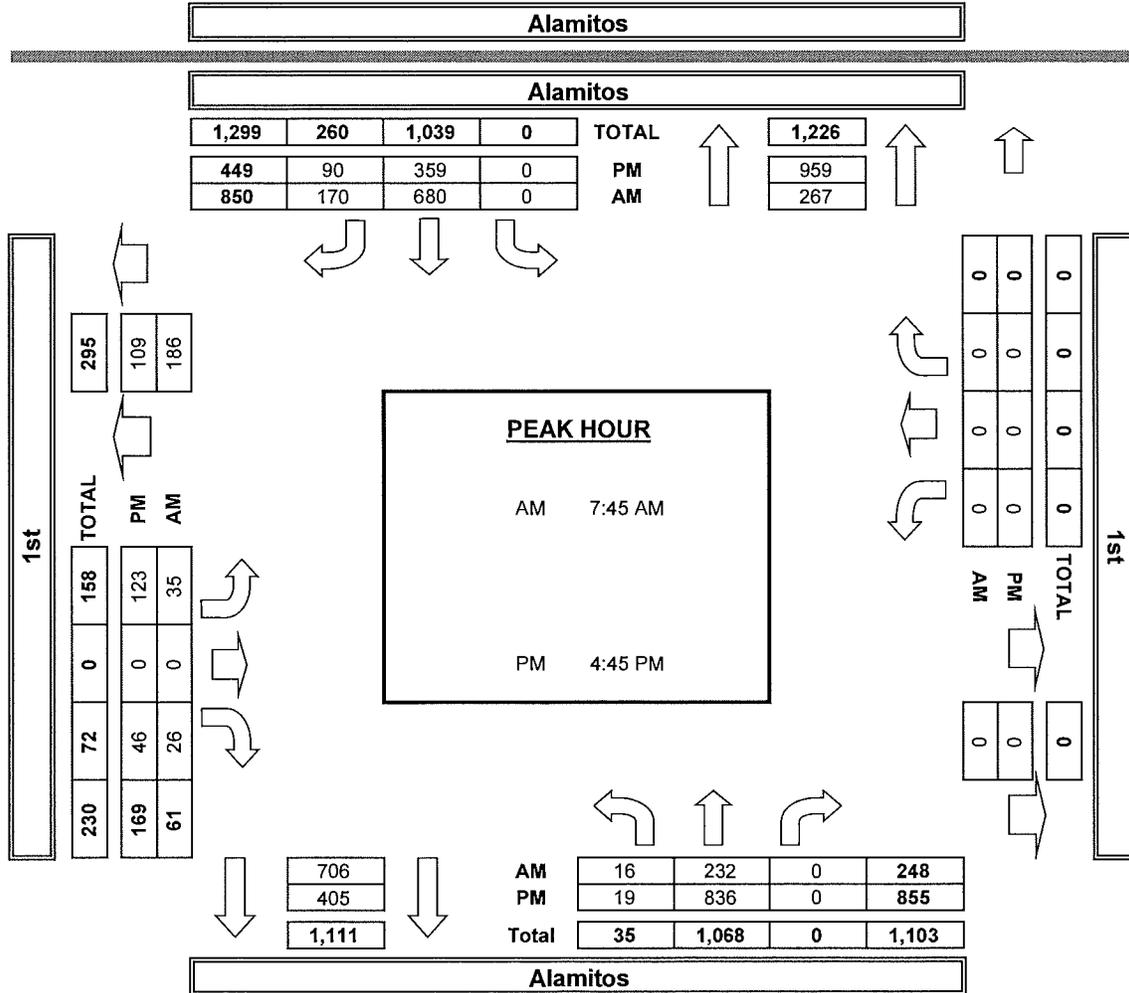
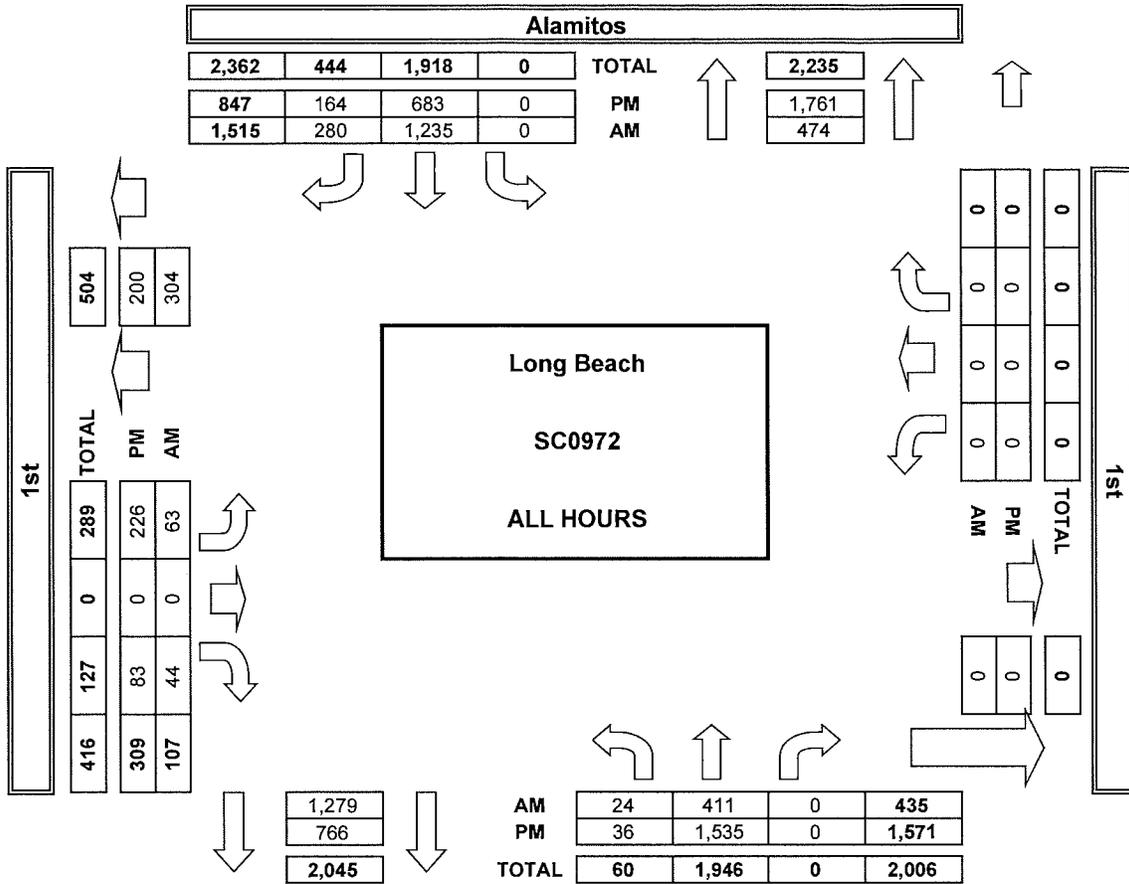
AimTD LLC
TURNING MOVEMENT COUNTS



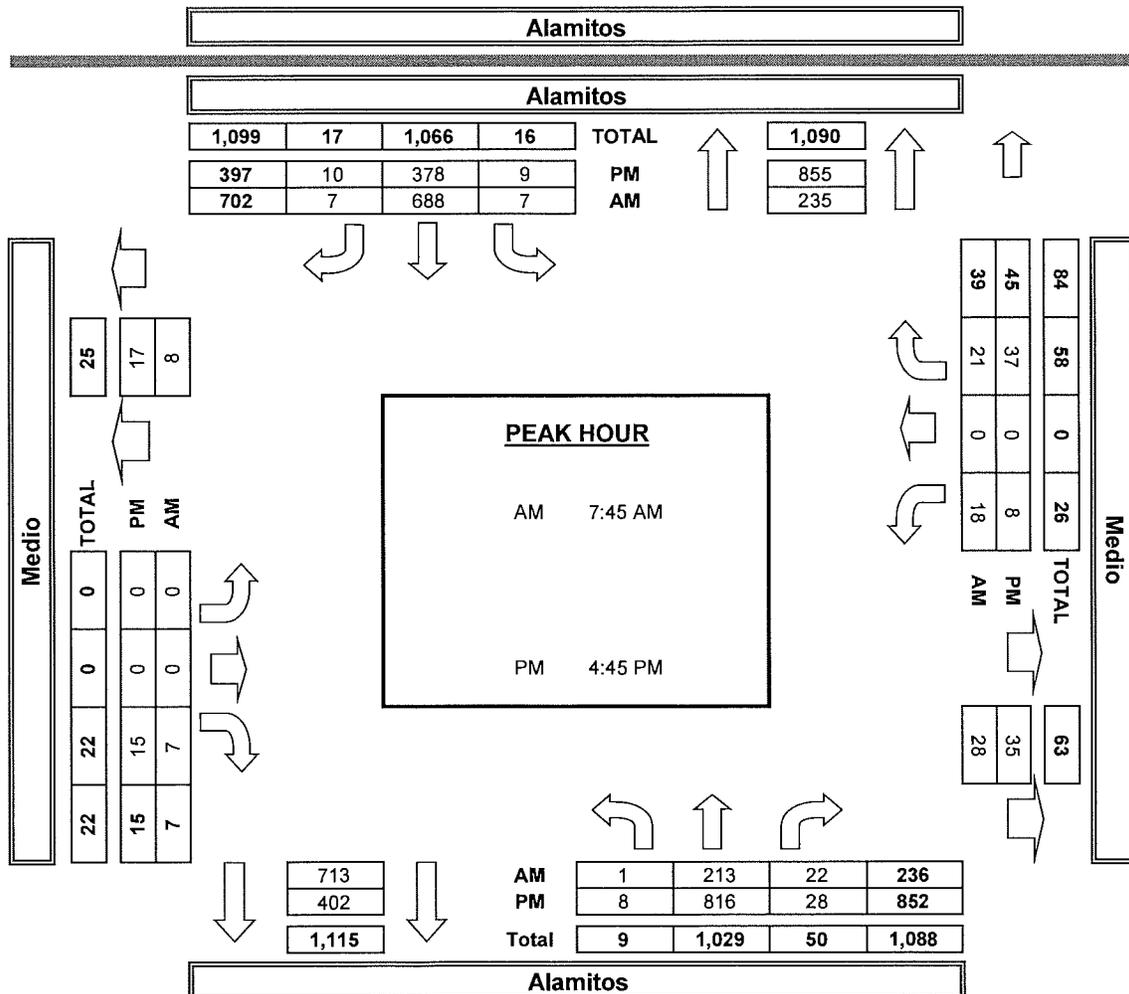
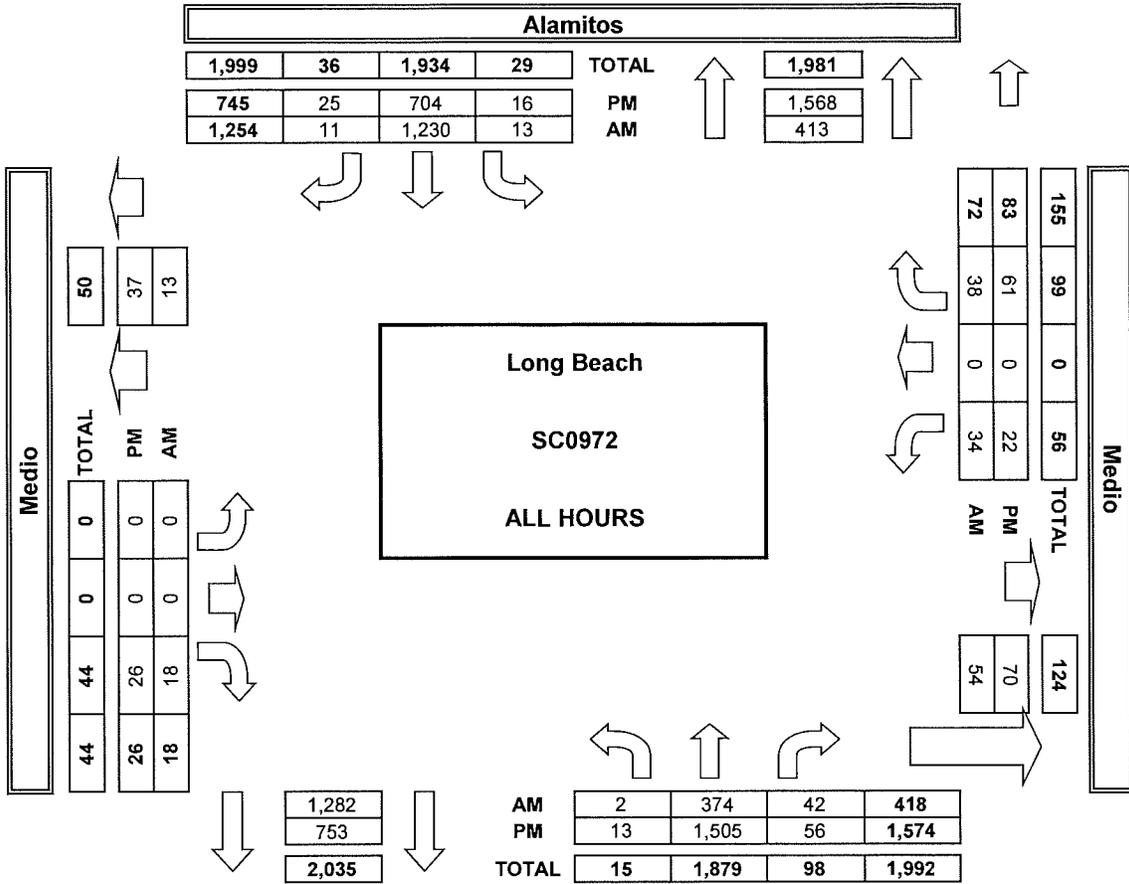
AimTD LLC
TURNING MOVEMENT COUNTS



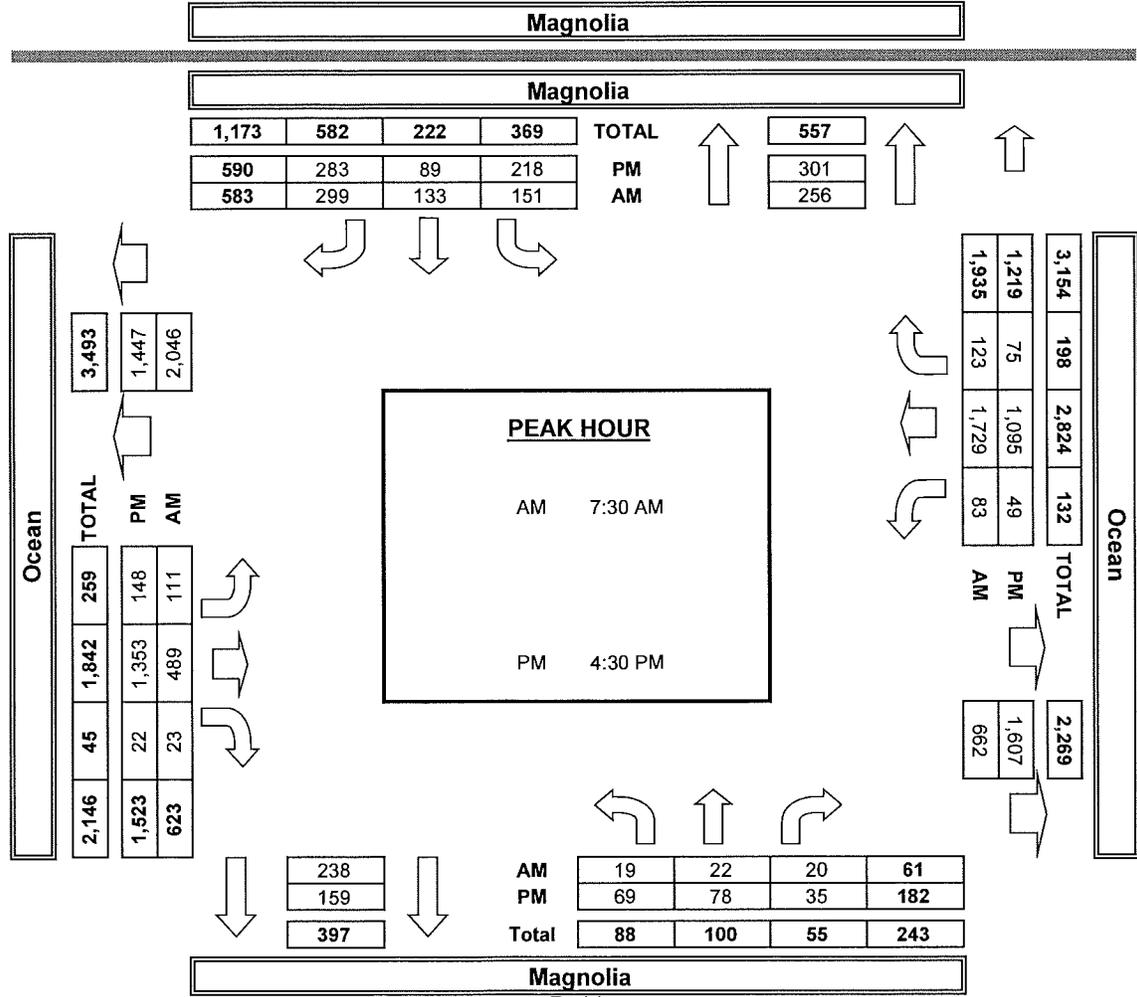
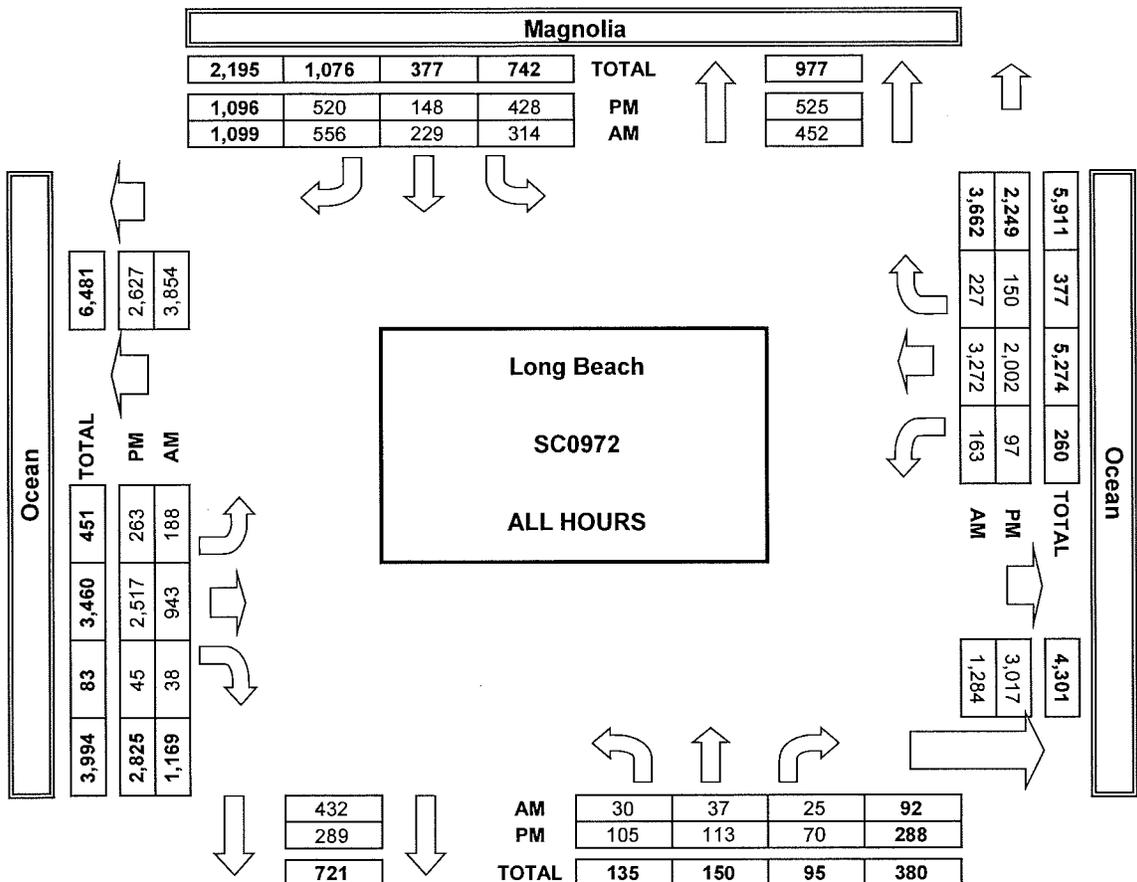
AimTD LLC
TURNING MOVEMENT COUNTS



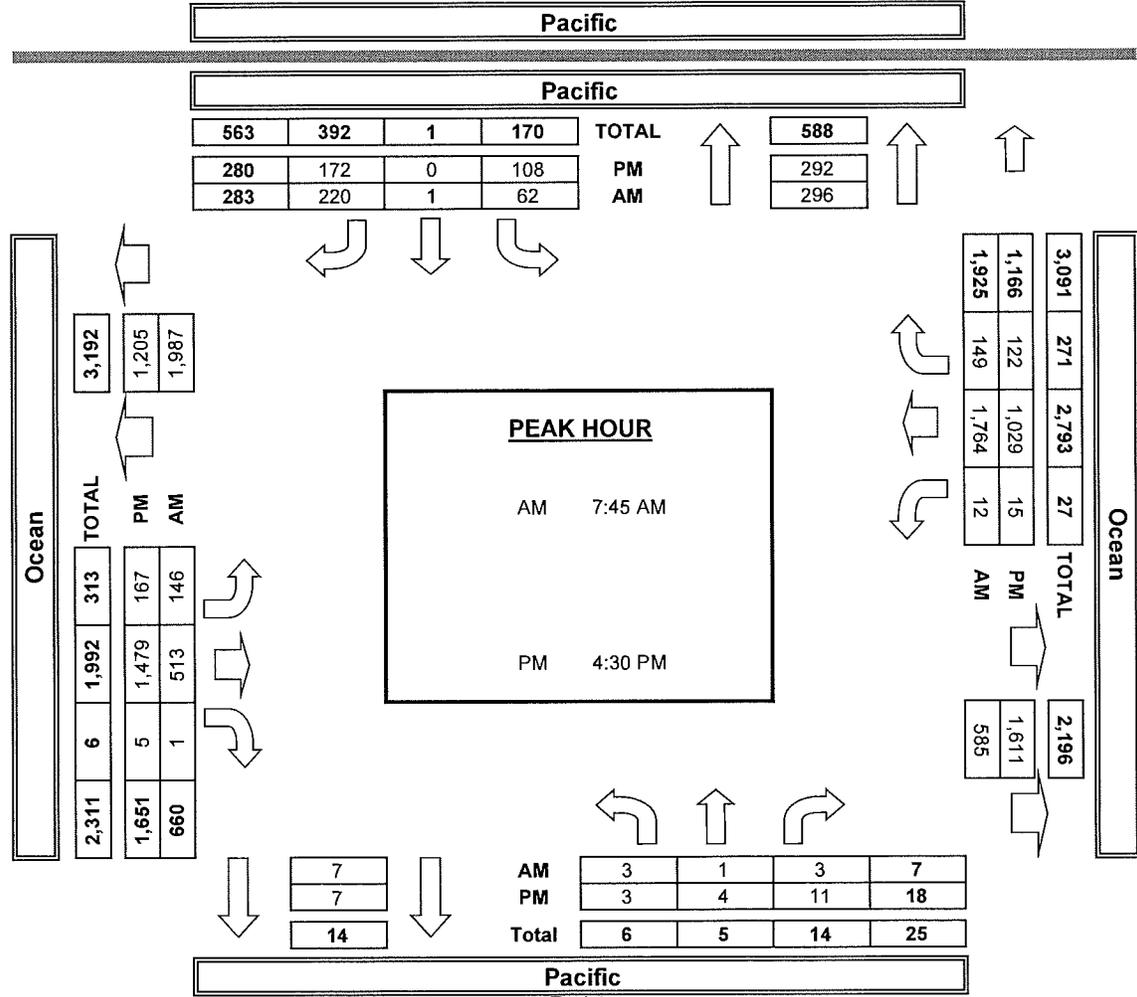
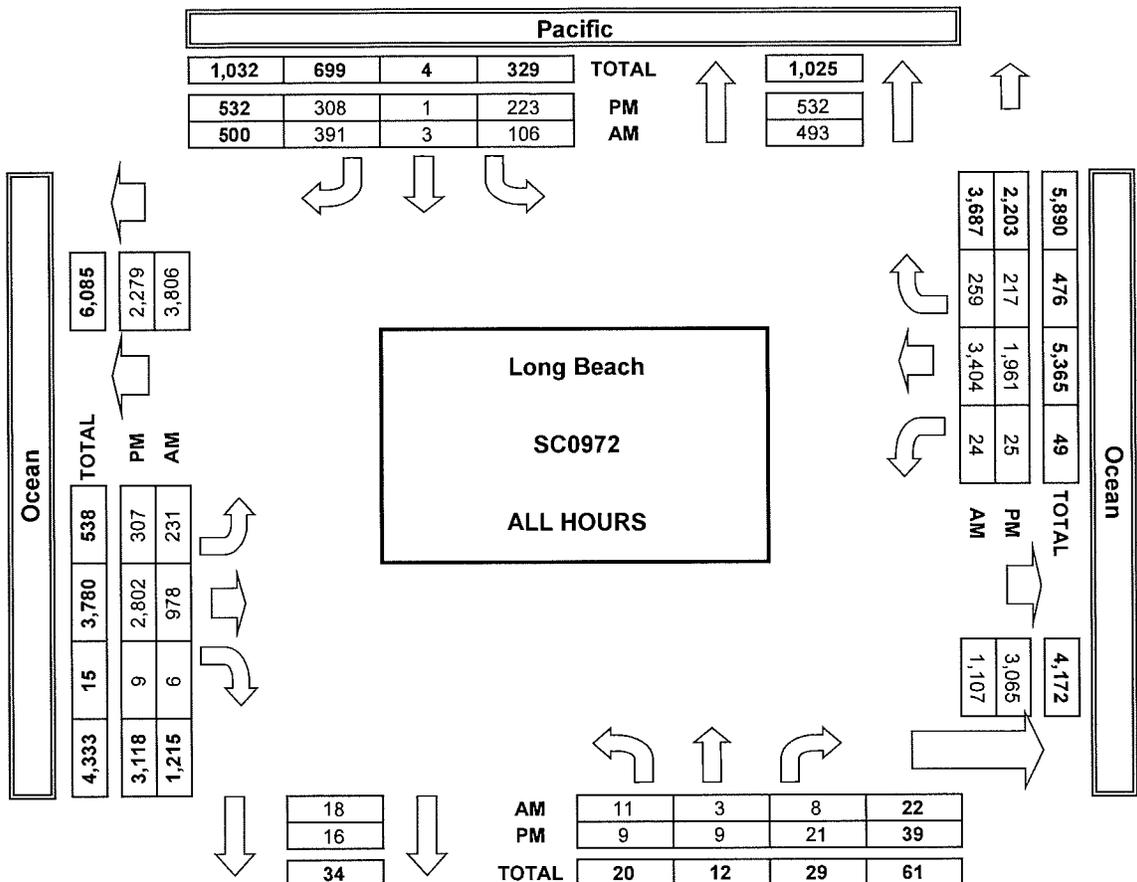
AimTD LLC
TURNING MOVEMENT COUNTS



AimTD LLC
TURNING MOVEMENT COUNTS



AimTD LLC
TURNING MOVEMENT COUNTS



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Wed, May 25, 16	LOCATION: NORTH & SOUTH: EAST & WEST:	Long Beach Pine Ocean	PROJECT #: SC0972	LOCATION #: 14	CONTROL: SIGNAL
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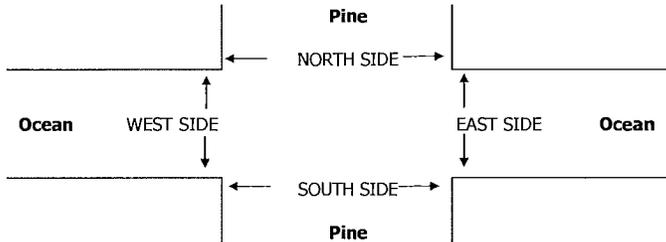
NOTES:	AM PM MD OTHER OTHER	◀ W S ▶	▲ N S ▼	E ▶
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Add U-Turns to Left Turns

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	NL 1	NT 1	NR 1	SL 0	ST 1	SR 1	EL 1	ET 3	ER 0	WL 1	WT 3	WR 0	
LANES:													
AM													
7:00 AM	4	4	10	0	8	10	5	96	2	22	451	14	626
7:15 AM	5	2	11	5	13	11	0	117	10	37	450	18	679
7:30 AM	5	2	9	4	13	7	5	122	7	47	491	18	730
7:45 AM	13	3	4	6	21	5	4	108	12	67	470	29	742
8:00 AM	9	3	16	5	17	14	7	131	22	47	478	24	773
8:15 AM	6	4	10	8	19	15	6	114	18	58	415	32	705
8:30 AM	10	6	11	8	16	16	14	130	20	62	441	36	770
8:45 AM	9	10	17	7	13	11	15	113	18	55	320	34	622
VOLUMES	61	34	88	43	120	89	56	931	109	395	3,516	205	5,647
APPROACH %	33%	19%	48%	17%	48%	35%	5%	85%	10%	10%	85%	5%	
APP/DEPART	183	/	286	252	/	611	1,096	/	1,076	4,116	/	3,674	0
BEGIN PEAK HR	7:45 AM												
VOLUMES	38	16	41	27	73	50	31	483	72	234	1,804	121	2,990
APPROACH %	40%	17%	43%	18%	49%	33%	5%	82%	12%	11%	84%	6%	
PEAK HR FACTOR	0.848			0.893			0.893			0.954			0.967
APP/DEPART	95	/	162	150	/	371	586	/	560	2,159	/	1,897	0
PM													
4:00 PM	18	15	25	18	19	25	19	371	16	24	212	21	783
4:15 PM	15	18	41	18	13	29	9	290	19	26	214	15	707
4:30 PM	18	25	38	16	17	30	11	390	22	38	254	21	880
4:45 PM	12	36	53	26	25	29	19	369	26	28	233	21	877
5:00 PM	27	14	38	33	20	35	19	393	27	18	257	25	906
5:15 PM	11	18	38	35	17	20	7	354	31	44	210	15	800
5:30 PM	13	19	34	17	27	30	19	310	23	44	240	15	791
5:45 PM	8	13	33	15	12	25	7	299	37	43	194	19	705
VOLUMES	122	158	300	178	150	223	110	2,776	201	265	1,814	152	6,449
APPROACH %	21%	27%	52%	32%	27%	40%	4%	90%	7%	12%	81%	7%	
APP/DEPART	580	/	404	551	/	608	3,087	/	3,262	2,231	/	2,175	0
BEGIN PEAK HR	4:30 PM												
VOLUMES	68	93	167	110	79	114	56	1,506	106	128	954	82	3,463
APPROACH %	21%	28%	51%	36%	26%	38%	3%	90%	6%	11%	82%	7%	
PEAK HR FACTOR	0.812			0.861			0.950			0.930			0.956
APP/DEPART	328	/	219	303	/	310	1,668	/	1,786	1,164	/	1,148	0

U-TURNS				
NB	SB	EB	WB	TTL
0	0	0	1	1
0	0	0	1	1
0	0	0	2	2
0	0	1	2	3
0	0	1	6	7
1	0	2	0	3
0	0	2	1	3
0	0	3	1	4
1	0	9	14	24

0	0	1	2	3
0	0	0	1	1
0	0	2	0	2
0	0	3	0	3
0	0	4	1	5
0	0	3	2	5
0	0	2	2	4
0	0	1	0	1
0	0	16	8	24

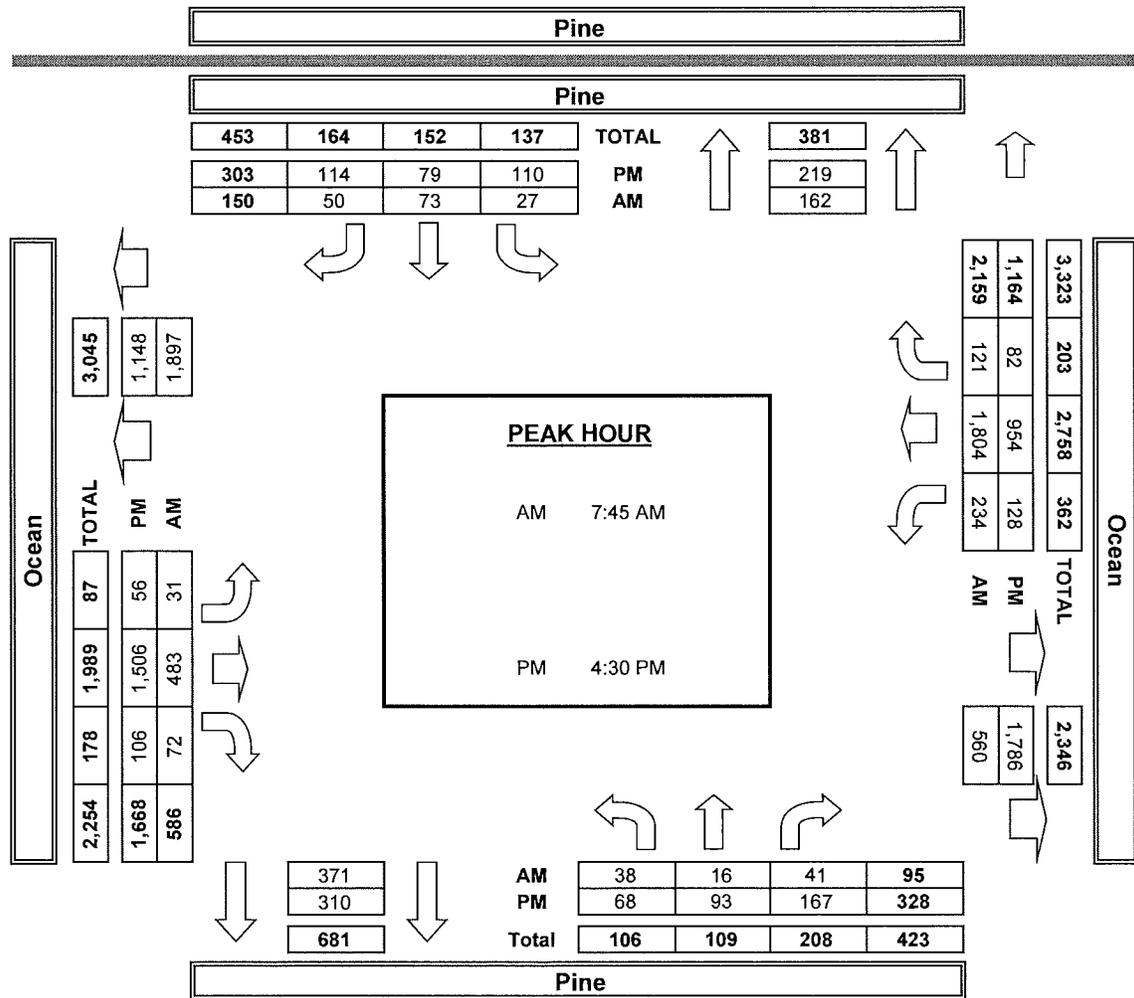
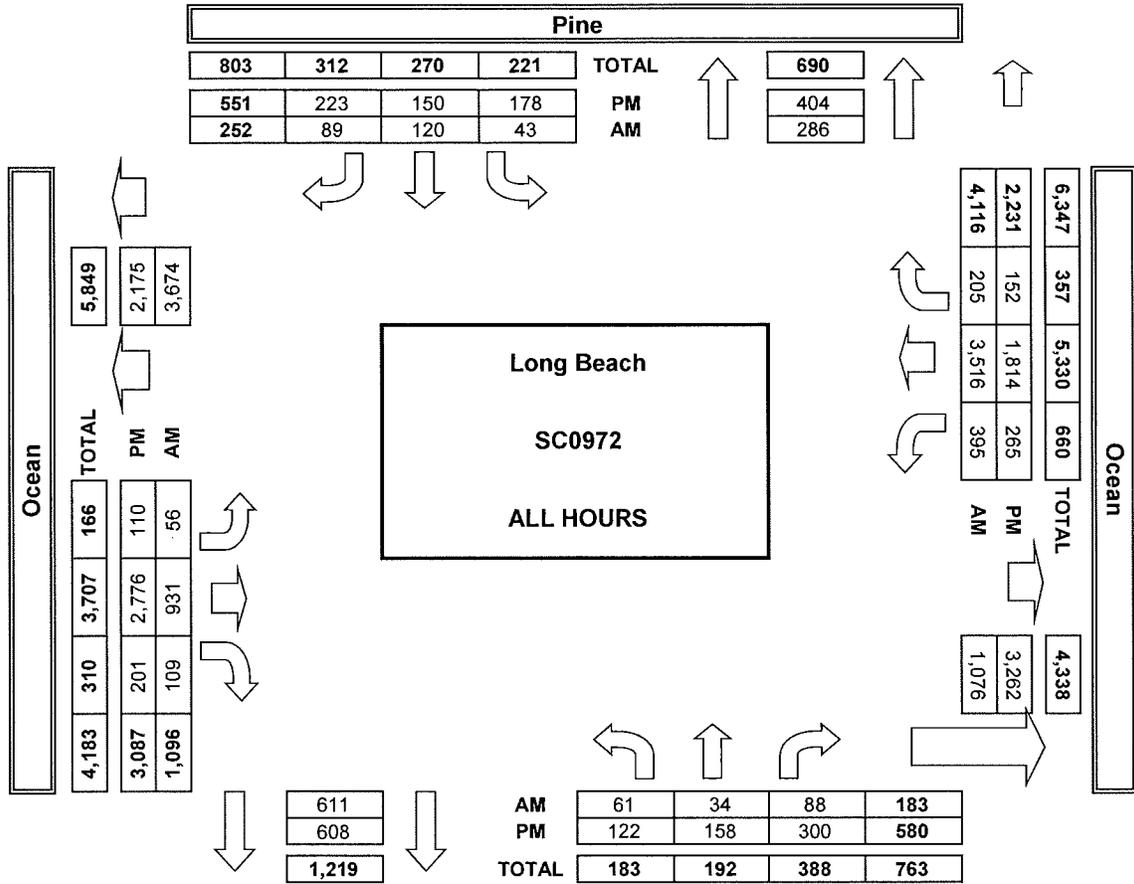


	PEDESTRIAN + BIKE CROSSINGS				
	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL
AM					
7:00 AM	0	0	0	0	0
7:15 AM	0	0	0	0	0
7:30 AM	0	0	0	0	0
7:45 AM	0	0	0	0	0
8:00 AM	0	0	0	0	0
8:15 AM	0	0	0	0	0
8:30 AM	0	0	0	0	0
8:45 AM	0	0	0	0	0
TOTAL	0	0	0	0	0
PM					
4:00 PM	0	0	0	0	0
4:15 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0
TOTAL	0	0	0	0	0

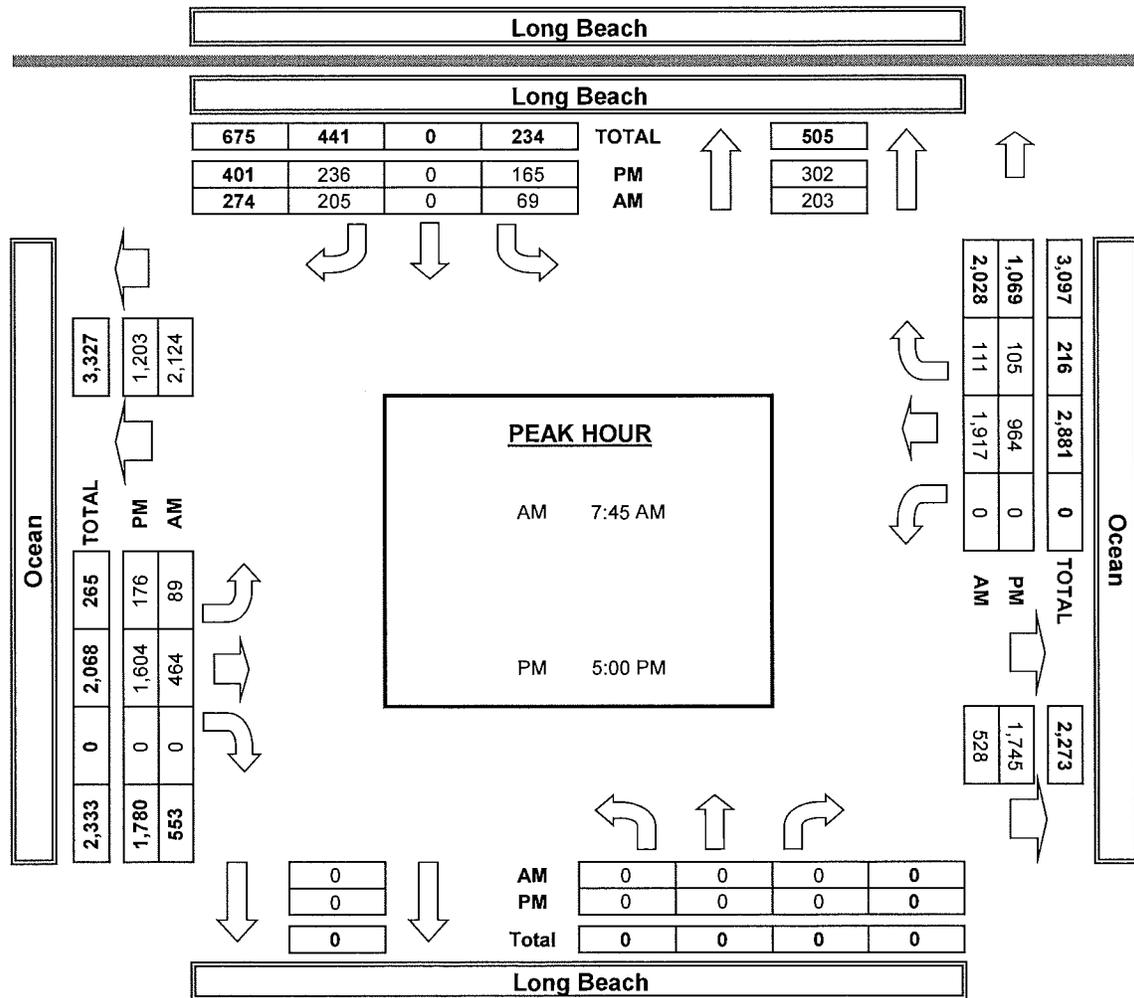
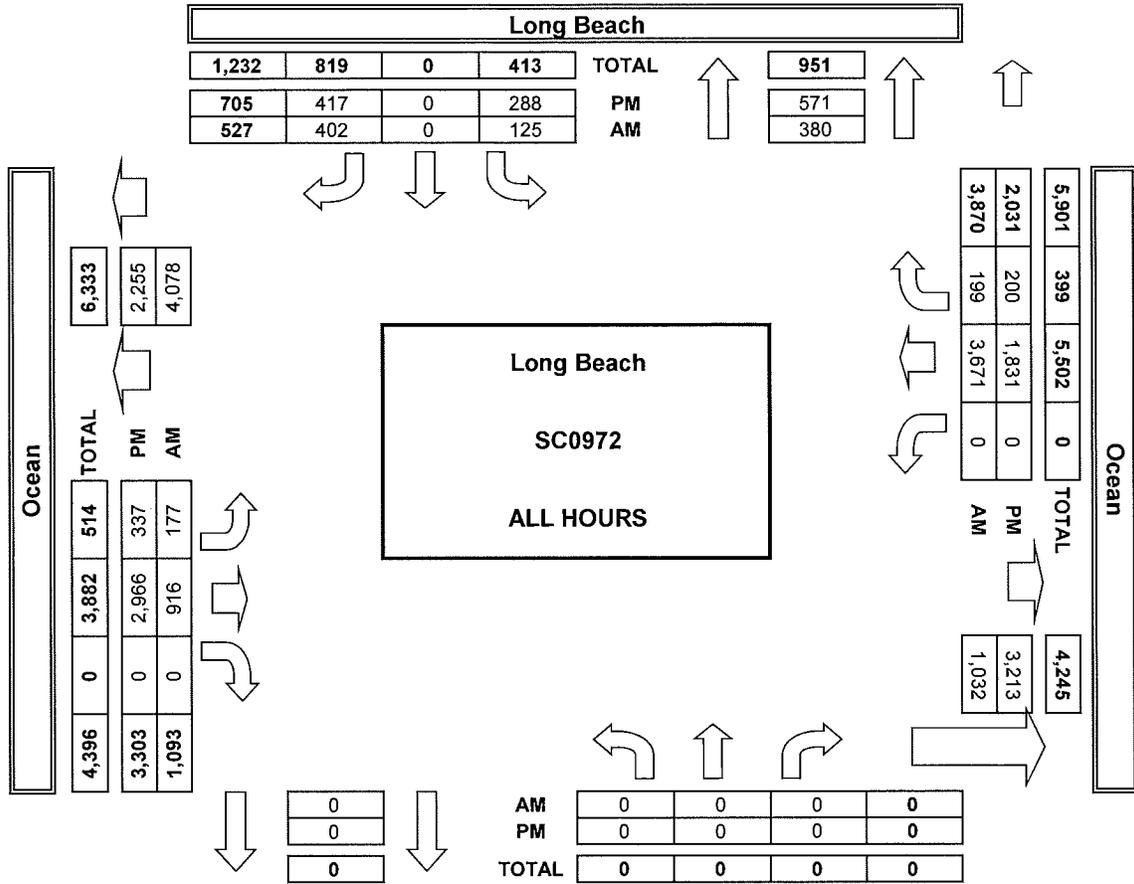
PEDESTRIAN CROSSINGS				
N SIDE	S SIDE	E SIDE	W SIDE	TOTAL
7:00 AM	0	0	0	0
7:15 AM	0	0	0	0
7:30 AM	0	0	0	0
7:45 AM	0	0	0	0
8:00 AM	0	0	0	0
8:15 AM	0	0	0	0
8:30 AM	0	0	0	0
8:45 AM	0	0	0	0
TOTAL	0	0	0	0
4:00 PM	0	0	0	0
4:15 PM	0	0	0	0
4:30 PM	0	0	0	0
4:45 PM	0	0	0	0
5:00 PM	0	0	0	0
5:15 PM	0	0	0	0
5:30 PM	0	0	0	0
5:45 PM	0	0	0	0
TOTAL	0	0	0	0

BICYCLE CROSSINGS				
NS	SS	ES	WS	TOTAL
7:00 AM	0	0	0	0
7:15 AM	0	0	0	0
7:30 AM	0	0	0	0
7:45 AM	0	0	0	0
8:00 AM	0	0	0	0
8:15 AM	0	0	0	0
8:30 AM	0	0	0	0
8:45 AM	0	0	0	0
TOTAL	0	0	0	0
4:00 PM	0	0	0	0
4:15 PM	0	0	0	0
4:30 PM	0	0	0	0
4:45 PM	0	0	0	0
5:00 PM	0	0	0	0
5:15 PM	0	0	0	0
5:30 PM	0	0	0	0
5:45 PM	0	0	0	0
TOTAL	0	0	0	0

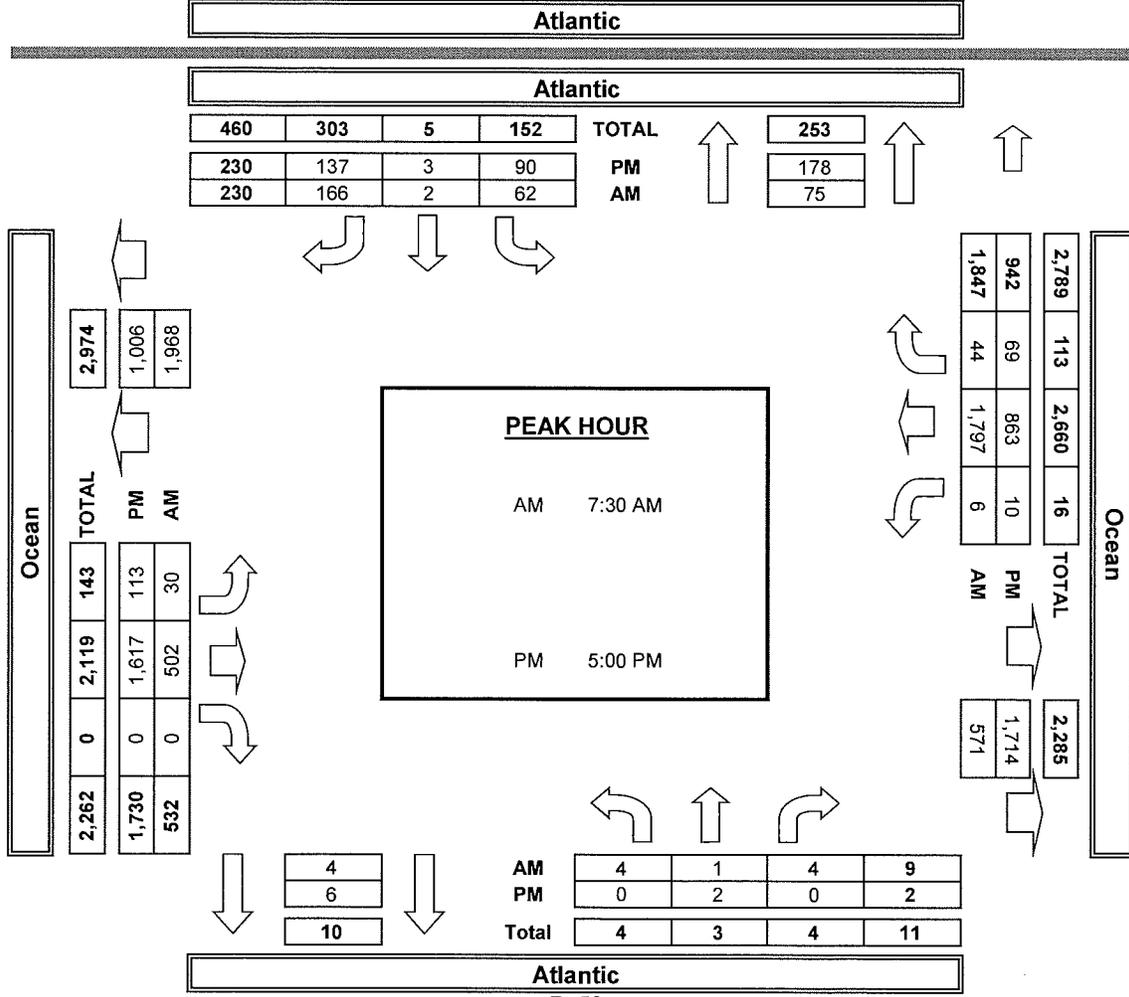
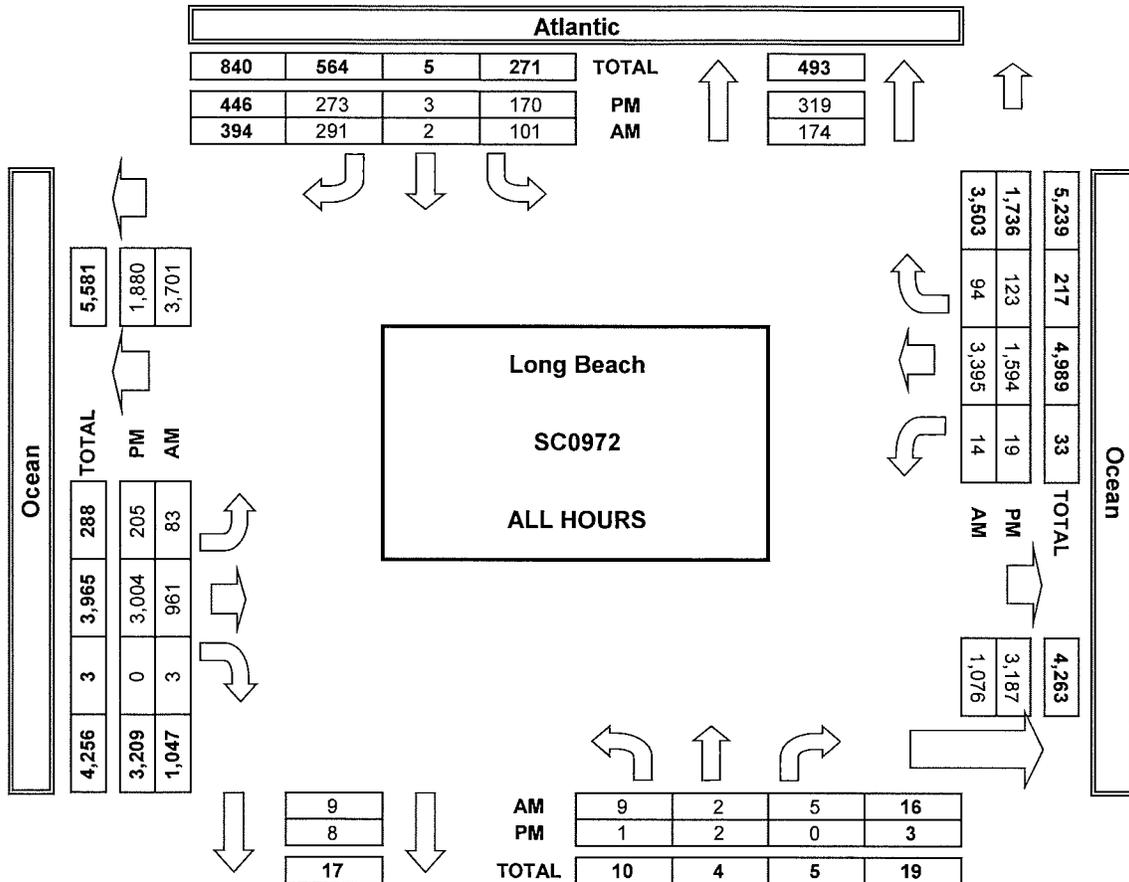
AimTD LLC
TURNING MOVEMENT COUNTS



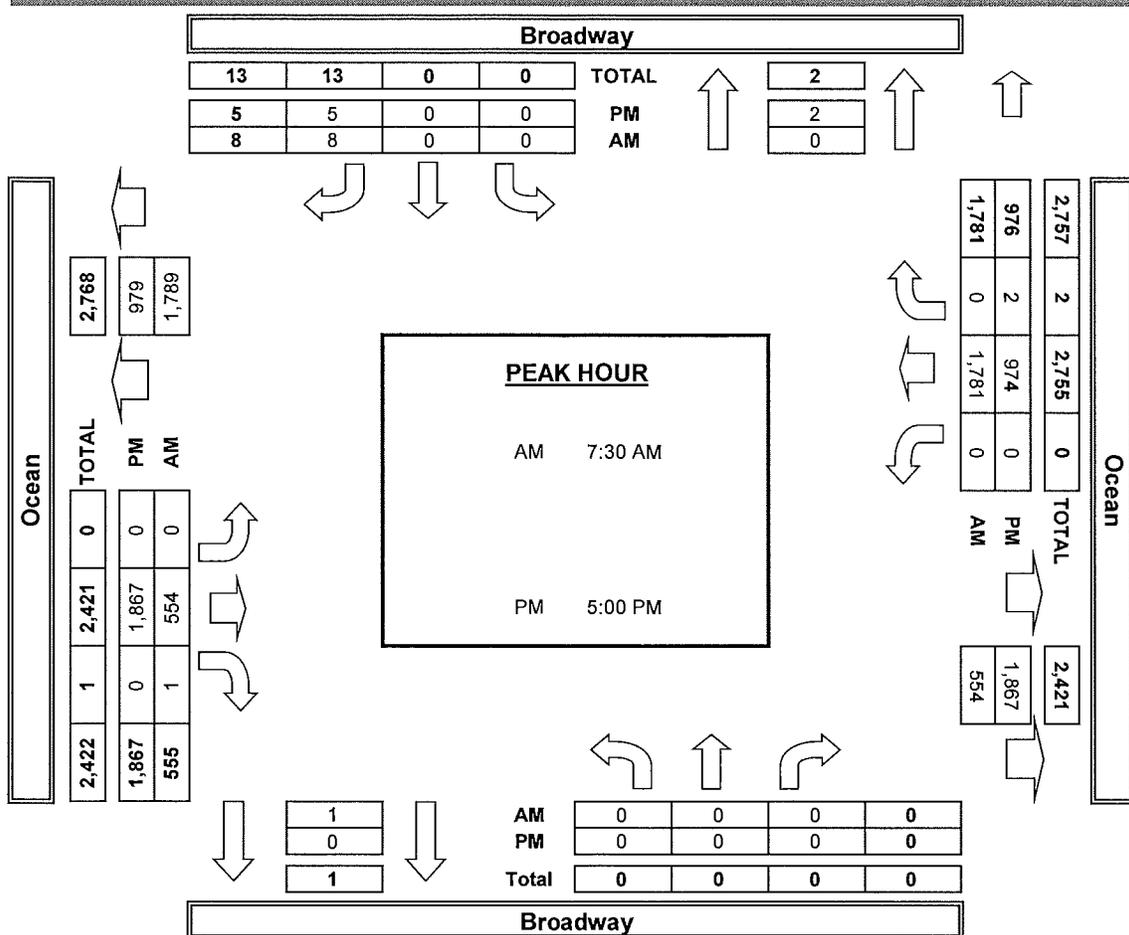
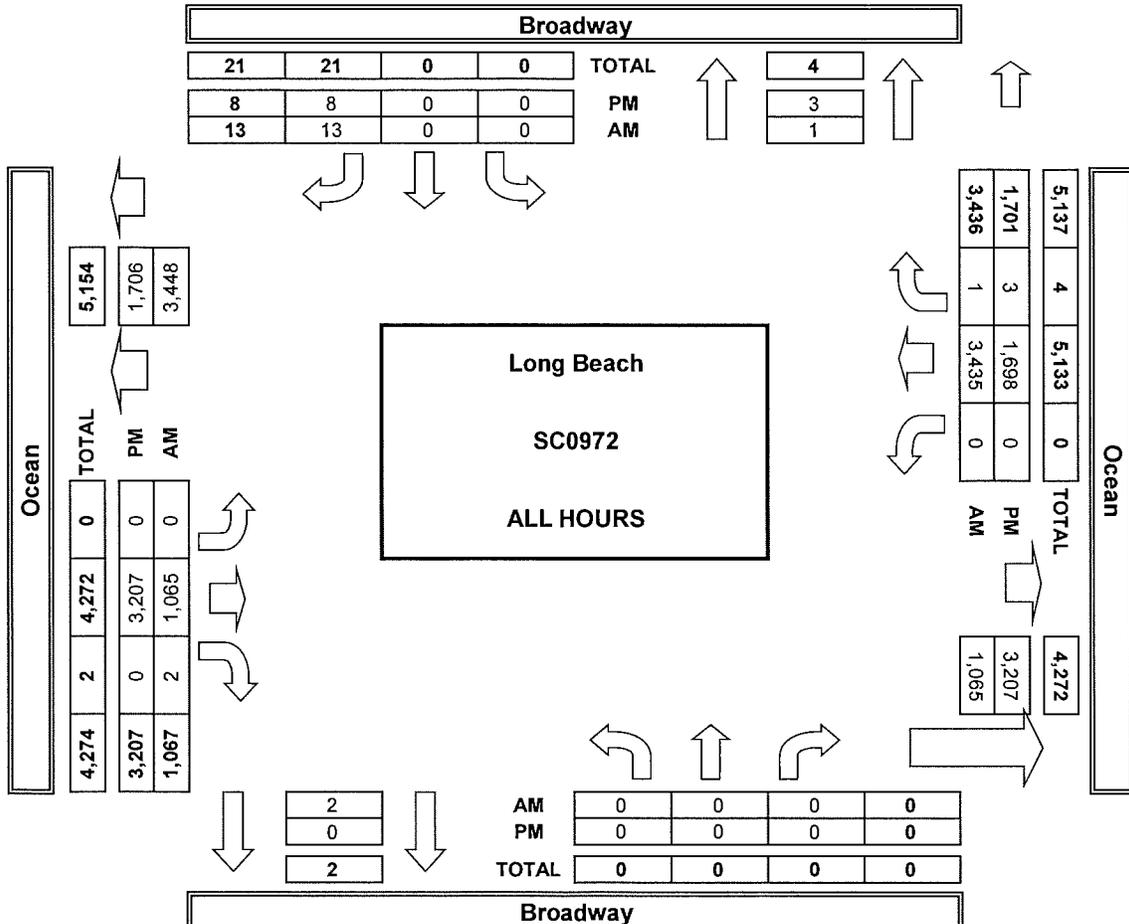
AimTD LLC
TURNING MOVEMENT COUNTS



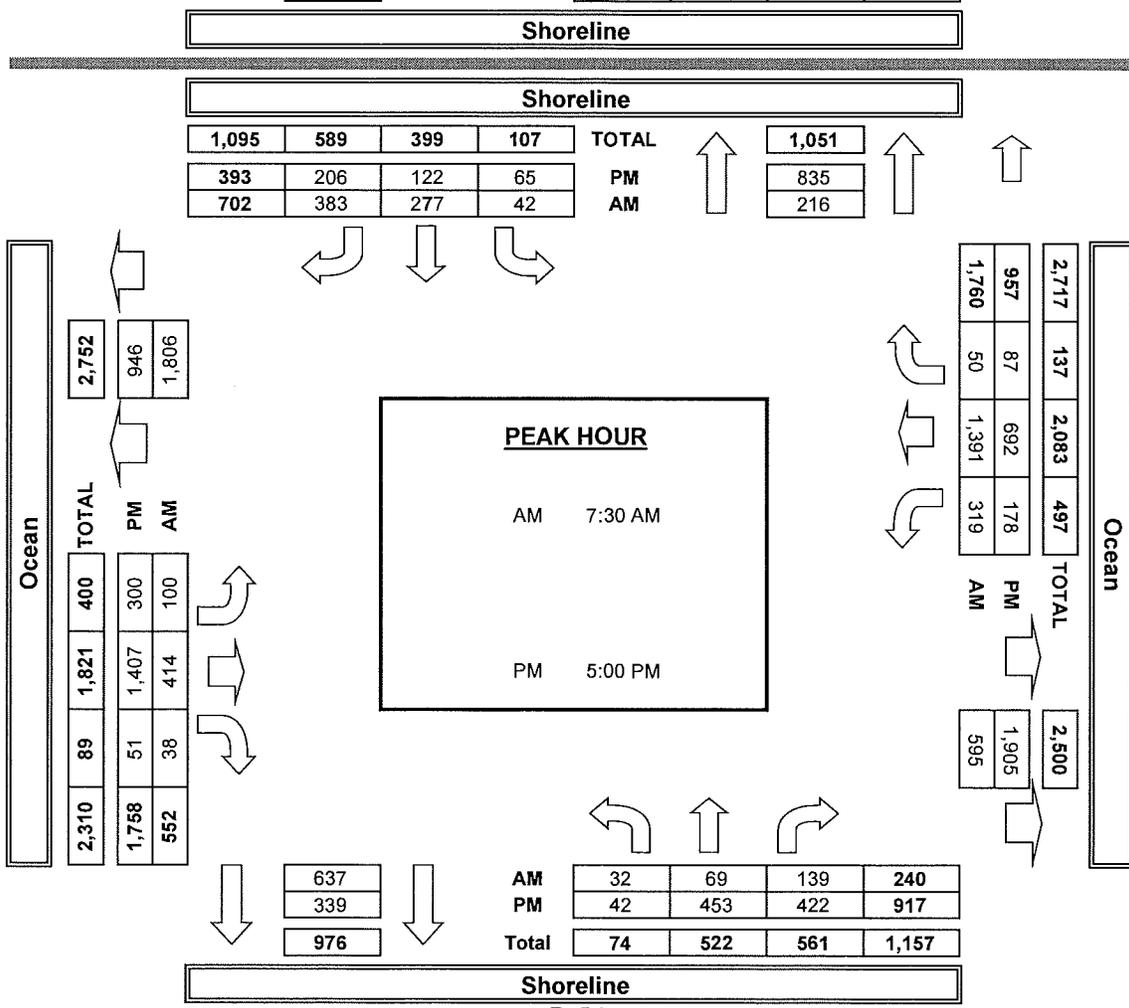
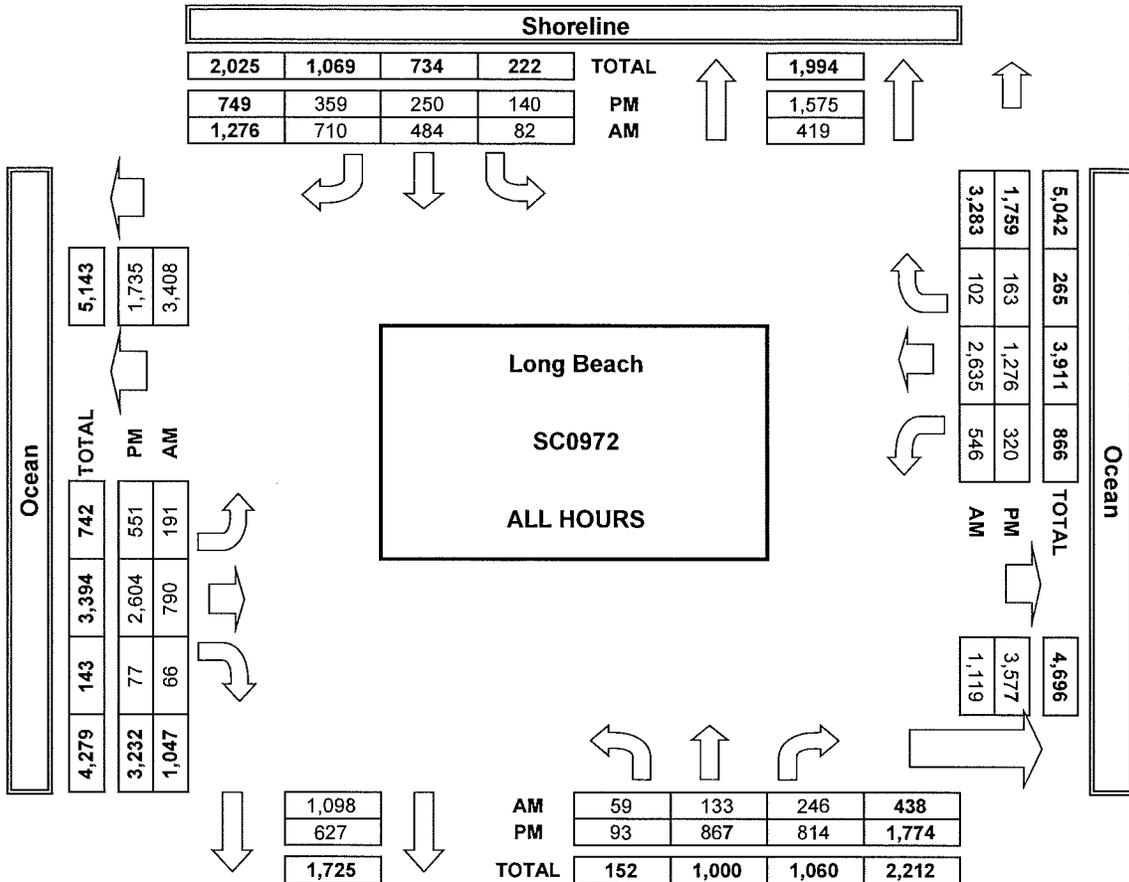
AimTD LLC
TURNING MOVEMENT COUNTS



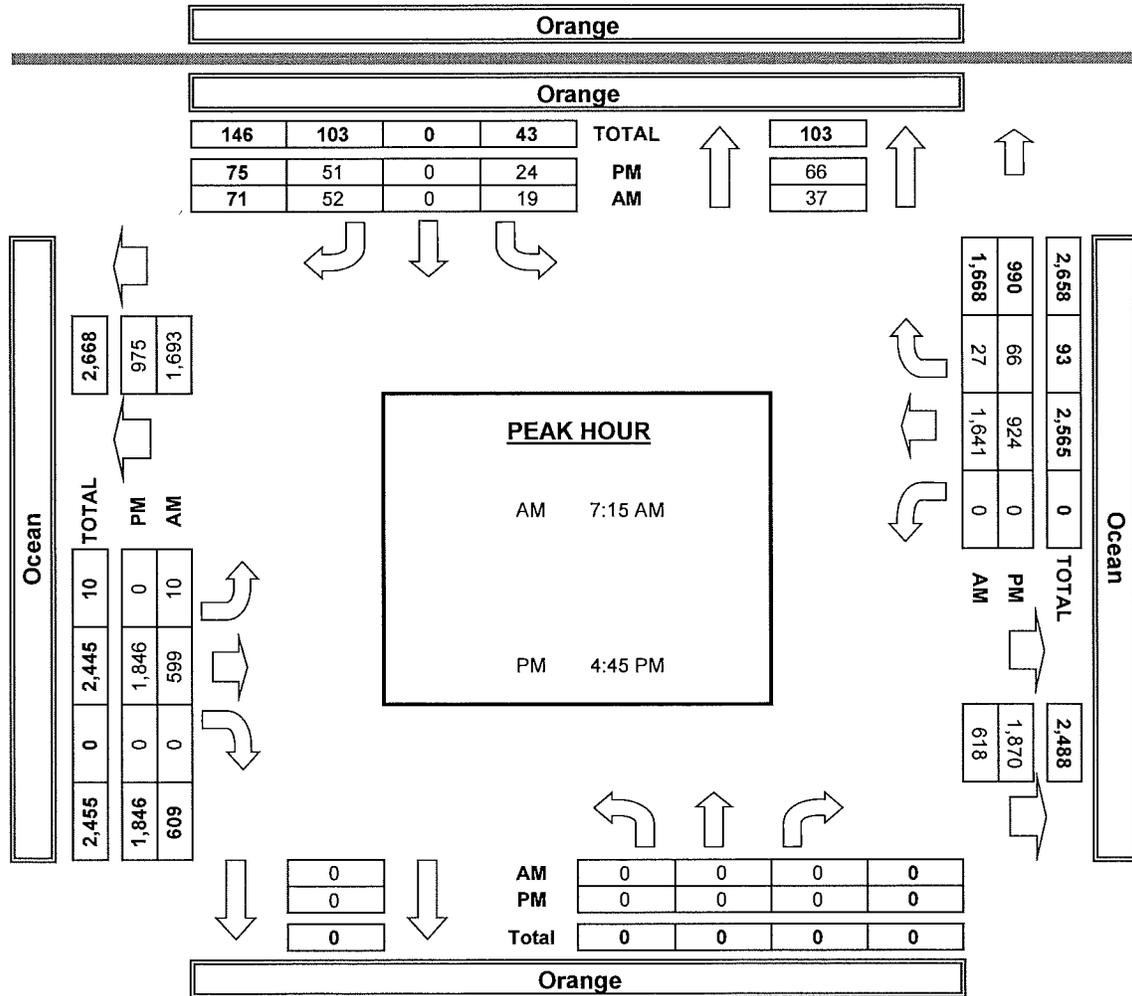
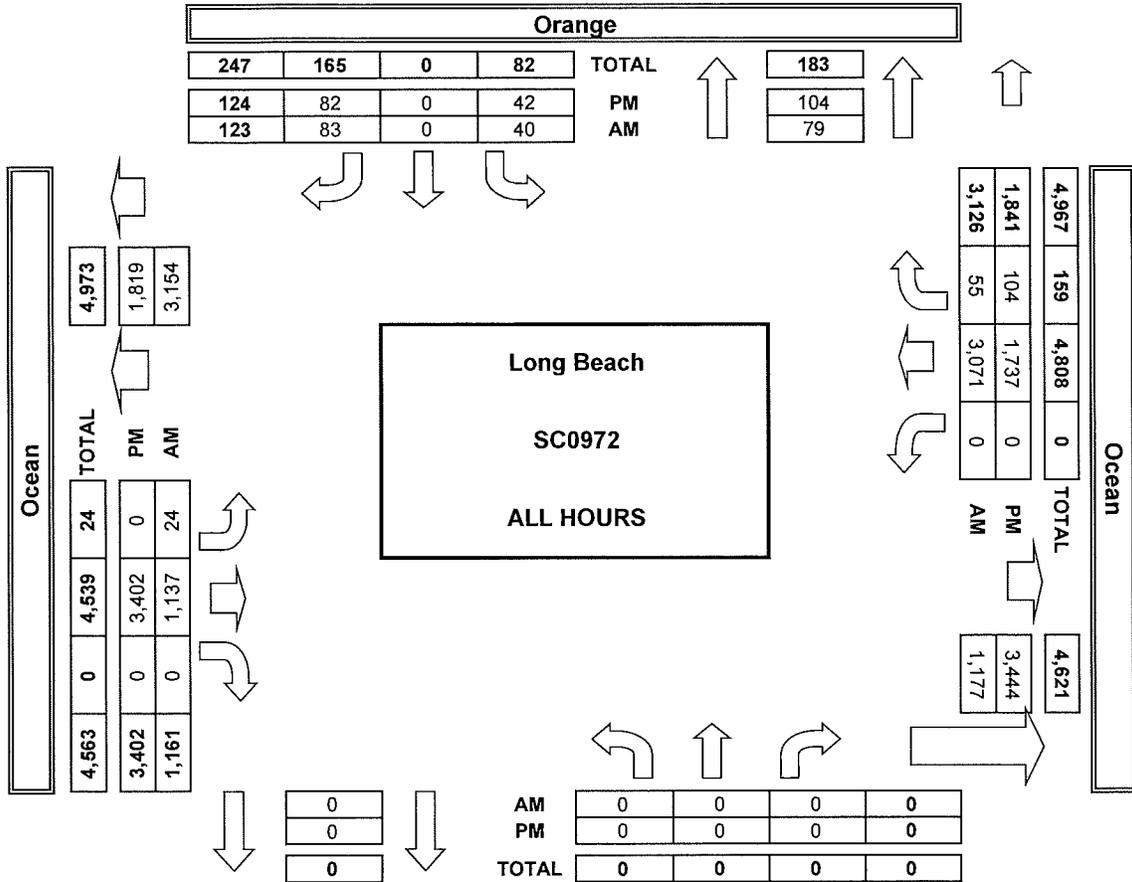
AimTD LLC
TURNING MOVEMENT COUNTS



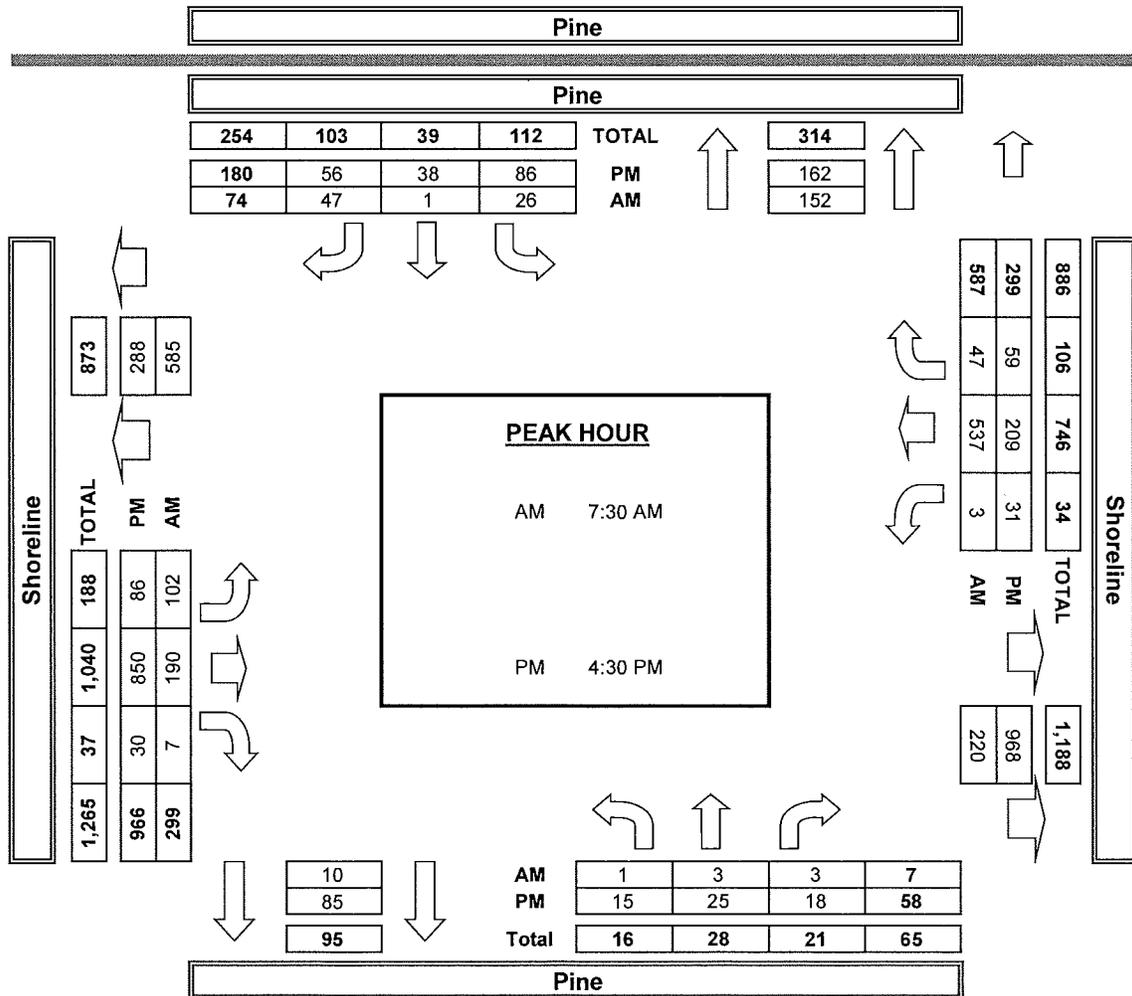
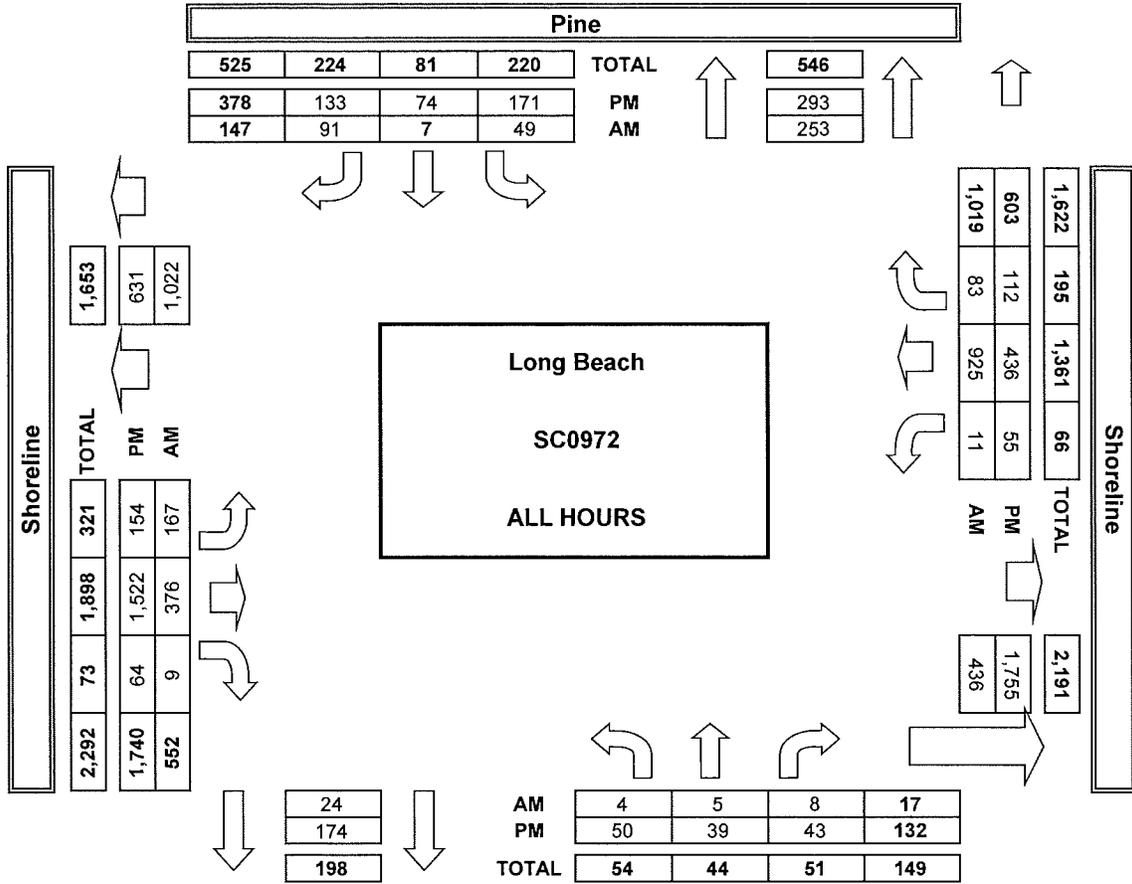
AimTD LLC
TURNING MOVEMENT COUNTS



AimTD LLC
TURNING MOVEMENT COUNTS



AimTD LLC
TURNING MOVEMENT COUNTS



APPENDIX C

INTERSECTION LEVEL OF SERVICE CALCULATION WORKSHEETS