LINSCOTT LAW & GREENSPAN engineers

TRAFFIC IMPACT ANALYSIS REPORT

NUVO EL TORO RESIDENTIAL PROJECT

Mission Viejo, California
June 25, 2020
(Revision of May 11, 2020)

Prepared for:

Saddleback Valley Community Church
1 Saddleback Parkway
Lake Forest, CA 92630

LLG Ref. 2-20-4269-1

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EXECUTIVE SUMMARY

Project Description

- The proposed Project site consists of approximately 3.50 acres of vacant land located on the southwest quadrant of El Toro Road and the SR-241 Toll Road in the City of Mission Viejo, California. The proposed Project will consist of 91 attached (low-rise) townhouse condominiums. The proposed Project is expected to be completed and fully occupied by the Year 2023.

- Vehicular access for the proposed Project is proposed via a new full-access unsignalized driveway on El Toro Road. Per direction from the City of Mission Viejo, the following Project feature and driveway configuration options are evaluated in this report to ensure that adequate ingress and egress to the Project site is provided:

  - **Project Feature *(this improvement will be assumed for both options):*** Reconfigure the median to convert the existing eastbound left-turn pocket (providing access to the existing StorageWest facility located directly across El Toro Road from the Project site) into a two-way-left-turn (TWLT) lane connecting to the existing TWLT lane east of the StorageWest facility driveway. Reconfigure the existing raised median west of the Project driveway to provide a 215-foot acceleration lane with a 180-foot opening for northbound left-turning vehicles exiting the Project site onto westbound El Toro Road.

  - **Option #1:** Restripe the No. 3 eastbound through lane along El Toro Road (from Marguerite Parkway to the Project driveway) into an exclusive 200-foot eastbound right-turn lane for eastbound right-turning vehicles entering the Project site. This site access option will remove one (1) existing eastbound through lane along El Toro Road across the Project frontage and may require coordination with OCTA regarding a Master Plan of Arterial Highways (MPAH) Amendment for El Toro Road.

    Per the MPAH Guidance (Section 4), Option #1 may trigger two things. First, the City may be required to submit an initial letter of intent to Orange County Transportation Authority (OCTA) staff to conduct a MPAH Amendment for El Toro Road from a major roadway to a primary roadway designation. Second, City staff may be required to conduct a General Plan Circulation Element Update to change the classification of El Toro Road from a major roadway to a primary roadway classification.

    If Option #1 is selected, then the developer may be fully responsible for completing any required technical documents to process a MPAH Amendment on the City of Mission Viejo's behalf to the full satisfaction of OCTA staff. If the proposed MPAH Amendment is not successfully completed per OCTA's requirements, then the developer may be required to proceed forward with Option #2. However, it should be noted that while Option #1 technically eliminates the third eastbound through lane along this portion of El

Toro Road, it is our finding that an MPAH Amendment and General Plan roadway reclassification is not absolutely required because, in reality, the third eastbound through lane will function as an auxiliary lane between Marguerite Parkway and Painted Trails, where the third eastbound lane traps into an exclusive right turn lane, such that the functional capacity of the roadway is not reduced.

- **Option #2:** Widen El Toro Road to provide an exclusive 200-foot eastbound right-turn lane with a 120-foot opening for eastbound right-turning vehicles entering the Project site. This site access option will continue to provide three (3) eastbound through lanes along El Toro Road across the Project frontage.

➢ The proposed Project (91 DU) is expected to generate 666 daily trips (one half arriving and one half departing), with 42 trips (10 inbound, 32 outbound) produced in the AM peak hour and 51 trips (32 inbound, 19 outbound) produced in the PM peak hour on a "typical" weekday.

Project Study Area

➢ The key study intersections with their respective jurisdictions listed below provide both local and regional access to the study area and define the extent of the boundaries for this traffic impact investigation:

1. Glenn Ranch Road at El Toro Road (Mission Viejo)
2. Marguerite Parkway/Saddleback Church at El Toro Road (Mission Viejo)
3. Marguerite Parkway at Los Alisos Boulevard (Mission Viejo)
4. Santa Margarita Parkway/Portola Parkway at El Toro Road (Lake Forest)
5. Portola Parkway at SR-241 Ramps (Lake Forest/Caltrans)
6. Storage West Driveway at El Toro Road (Mission Viejo)
7. Project Driveway at El Toro Road (Mission Viejo – Future Intersection)

➢ The six (6) roadway segments listed below were selected based on the arterial network within the study area and discussions with City of Mission Viejo staff:

A. El Toro Road, between Glenn Ranch Road and Cielo Entrada (Mission Viejo)
B. El Toro Road, between Project Driveway and Glen Ranch Road (Mission Viejo)
C. El Toro Road, between Marguerite Parkway/Saddleback Church and Project Driveway (Mission Viejo)
D. El Toro Road, between Santa Margarita Parkway/Portola Parkway and Marguerite Parkway/Saddleback Church (Lake Forest)
E. Portola Parkway, between SR-241 Ramps and El Toro Road (Lake Forest)
F. Marguerite Parkway, between El Toro Road and Los Alisos Boulevard (Mission Viejo)

Cumulative Projects

- The six (6) cumulative projects are forecast to generate a total of 21,439 daily trips, with 2,069 trips (734 inbound, 1,335 outbound) forecast during the AM peak hour and 2,196 trips (1,335 inbound, 861 outbound) forecast during the PM peak hour.

Traffic Impact Analysis

Existing Traffic Conditions

- All six (6) key study intersections are forecast to operate at acceptable LOS C or better for Existing traffic conditions.

- All six (6) key roadway segments are forecast to operate at acceptable LOS A for Existing traffic conditions.

Existing With Project Traffic Conditions

- All six (6) key study intersections are forecast to operate at acceptable LOS C or better for Existing With Project traffic conditions.

- All six (6) key roadway segments are forecast to operate at acceptable LOS A for Existing With Project traffic conditions.

Year 2023 With Project Traffic Conditions

- All six (6) key study intersections are forecast to operate at acceptable LOS D or better under Year 2023 With Project traffic conditions.

- All six (6) key roadway segments are forecast to operate at acceptable LOS A for Year 2023 With Project traffic conditions.

Year 2045 With Project Traffic Conditions

- The traffic associated with the proposed Project ***will not*** significantly impact any of the six (6) key study intersections, when compared to the LOS standards and significant impact criteria specified in this report. Although the intersection of El Toro Road at Glenn Ranch Road is forecast to operate at unacceptable LOS F during the PM peak hour with the addition of Project traffic, the Project is expected to add less than the allowable threshold to the ICU value. The remaining five (5) key study intersections are forecast to continue to operate at acceptable LOS D or better during the AM and PM peak hours with the addition of Project generated traffic in the Year 2045.

- All six (6) key roadway segments are forecast to operate at acceptable LOS A for Year 2045 With Project traffic conditions.

Caltrans Facilities Analysis

Existing Traffic Conditions

- The one (1) state-controlled study intersection currently operates at acceptable LOS B during the AM and PM peak hours.

Existing With Project Traffic Conditions

- The one (1) state-controlled study intersection is forecast to continue to operate at acceptable LOS B during the AM and PM peak hours with the addition of Project generated traffic to existing traffic.

Year 2023 With Project Traffic Conditions

- The one (1) state-controlled study intersection is forecast to continue to operate at an acceptable LOS B during the AM and PM peak hours with the addition of Project generated traffic to Year 2023 cumulative traffic.

Year 2045 With Project Traffic Conditions

- The one (1) state-controlled study intersection is forecast to continue to operate at an acceptable LOS B during the AM and PM peak hours with the addition of Project generated traffic to Year 2045 buildout traffic.

Site Access & On-Site Circulation

- The Project driveway is forecast to operate at acceptable LOS C or better during the AM and PM peak hours under the Year 2023 With Project traffic conditions for both site access Options #1 and #2. The Project driveway is forecast to operate at acceptable LOS D or better during the AM and PM peak hours under Year 2045 With Project traffic conditions for both site access Options #1 and #2, except for site access Option #2 during the PM peak hour under Year 2045 With Project traffic conditions. It should be noted that the delay reported for the intersection of Project Driveway at El Toro Road represents the minor street approach and it is not uncommon for unsignalized private driveways that have direct access to primary arterials, such as El Toro Road, to operate at an unacceptable LOS due to the limited gaps in traffic and the high volume of traffic on the major street, but technically do not operate as a congested facility similar to a public street intersection since there is no traffic impact to the transportation network. Furthermore, the peak driveway queue can be accommodated entirely within the driveway throat. Based on these considerations, the adverse level of service is not considered significant.

- The unsignalized Project driveway, for both site access Options #1 and #2, does not have future traffic conditions that would exceed the volume thresholds of Warrant #3, Part A and/or Part B for the AM or PM peak hour for the Year 2023 With Project and Year 2045 With Project traffic conditions.

- Motorists entering and exiting the Project site from this driveway will be able to do so comfortably, safely, and without undue congestion.

- Adequate sight distance will be provided at the proposed Project driveway along El Toro Road.

Project-Specific Access Improvements

- Per direction from the City of Mission Viejo, the following Project-specific traffic improvement will be implemented to facilitate ingress and egress to the project site:

  - **Project Feature *(this improvement will be assumed for both options):*** Reconfigure the median to convert the existing eastbound left-turn pocket (providing access to the existing StorageWest facility located directly across El Toro Road from the Project site) into a two-way-left-turn (TWLT) lane connecting to the existing TWLT lane east of the StorageWest facility driveway. Reconfigure the existing raised median west of the Project driveway to provide a 215-foot acceleration lane with a 180-foot opening for northbound left-turning vehicles exiting the Project site onto westbound El Toro Road.

  - **Option #1:** Restripe the No. 3 eastbound through lane along El Toro Road (from Marguerite Parkway to the Project driveway) into an exclusive 200-foot eastbound right-turn lane for eastbound right-turning vehicles entering the Project site. This site access option will remove one (1) existing eastbound through lane along El Toro Road across the Project frontage and may require coordination with OCTA regarding a Master Plan of Arterial Highways (MPAH) Amendment for El Toro Road.

    Per the MPAH Guidance (Section 4), Option #1 may trigger two things. First, the City may be required to submit an initial letter of intent to Orange County Transportation Authority (OCTA) staff to conduct a MPAH Amendment for El Toro Road from a major roadway to a primary roadway designation. Second, City staff may be required to conduct a General Plan Circulation Element Update to change the classification of El Toro Road from a major roadway to a primary roadway classification.

    If Option #1 is selected, then the developer may be fully responsible for completing any required technical documents to process a MPAH Amendment on the City of Mission Viejo's behalf to the full satisfaction of OCTA staff. If the proposed MPAH Amendment is not successfully completed per OCTA's requirements, then the developer may be required to proceed forward with Option #2. However, it should be noted that while Option #1 technically eliminates the third eastbound through lane along this portion of El Toro Road, it is our finding that an MPAH Amendment and General Plan roadway reclassification is not absolutely required because, in reality, the third eastbound through lane will function as an auxiliary lane between Marguerite Parkway and Painted Trails,

where the third eastbound lane traps into an exclusive right turn lane, such that the functional capacity of the roadway is not reduced.

- **Option #2:** Widen El Toro Road to provide an exclusive 200-foot eastbound right-turn deceleration lane with a 120-foot opening for eastbound right-turning vehicles entering the Project site. This site access option will continue to provide three (3) eastbound through lanes along El Toro Road across the Project frontage.

Recommended Improvements

- The proposed Project is not forecast to have a significant impact at any of the five (5) key intersections or six (6) roadway segments under Existing With Project, Year 2023 With Project, and Year 2045 With Project traffic conditions. As there are no significant impacts, no traffic mitigation measures are required or recommended for the intersections.

Congestion Management Program (CMP) Analysis

- The proposed Project is expected to generate 666 daily trips, and thus does not meet the criteria required for a CMP traffic analysis. Therefore, it is concluded that the proposed Project will not have any significant traffic impacts on the Congestion Management Program Highway System.

Construction Traffic Impacts

- The site grading/excavation construction component is expected to generate 640 daily trips with 89 trips produced during the AM peak hour and 89 trips produced during the PM peak hour. The building foundation/framing/construction component is expected to generate 204 daily trips with 42 trips produced during the AM peak hour and 42 trips produced during the PM peak hour. The paving/concrete/landscaping construction component is expected to generate 108 daily trips with 33 trips produced during the AM peak hour and 33 trips produced during the PM peak hour. Given that the site grading/excavation construction component will generate the greatest amount of construction-related traffic; this construction traffic assessment focuses to the potential impacts associated with the site grading/excavation construction component (i.e. 640 daily trips, 89 AM peak hour trips and 89 PM peak hour trips).

- Construction traffic associated with the proposed Project ***will not*** significantly impact any of the six (6) key study intersections when compared to the LOS standards and significant impact criteria specified in this report. The six (6) key study intersections currently operate and are forecast to continue to operate at an acceptable LOS C or better during the AM and PM peak hours with the addition of Project generated construction traffic to existing traffic. Based on the Caltrans HCM methodology, key study intersection #5 (i.e. Portola Parkway at SR-241 Ramps) is forecast to operate at an acceptable LOS during the AM and PM peak

hours without and with project construction and will not be impacted based on Caltrans criteria. Therefore no intersection improvements are required for any of the six (6) key study intersections. Nevertheless, 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 a minimum, it is recommended that a Construction Management Plan for the proposed Project be developed. The Construction Management Plan should be developed in coordination with the City of Mission Viejo and at a minimum, address the following:

  - 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.
  - 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 9:00 AM and 12:00 PM only, Monday through Friday, unless approved otherwise by the City Traffic Engineer. No hauling or transport will be allowed during nighttime hours, weekends or Federal holidays.
  - Restrict construction traffic on local and residential streets.
  - 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 construction-related parking and staging of vehicles will be kept out of the adjacent public roadways 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 Mission Viejo requirements.
  - The City of Mission Viejo Haul Route Permit presents the provisions during construction. As written in the provisions, no moving is permitted on Saturdays/Sundays/Holidays or workdays from 7:00 AM to 9:00 AM and 3:00 PM to 6:00 PM to minimize delays during peak hours. If this Project anticipates having construction traffic during these hours, it will require an approval from the City of Mission Viejo.
  - Ingress/Egress for the construction traffic would be via the driveway located along El Toro Road with a flagman to provide left-turn or right turn ingress/egress to/from the Project site on to El Toro Road.

- Identify parking needs and parking areas for construction related equipment and workman support.

VMT Assessment

- The 2019 CEQA Guidelines include an updated Appendix G checklist and a new section (15064.3) that significantly changes how transportation impacts are evaluated under CEQA. Delay-based levels of service are no longer considered a significant impact under CEQA, although the new guidelines do not preclude local agencies from continuing to utilize LOS for roadway planning and project evaluation. Section 15064.3 recommends that a project's transportation impacts be evaluated using vehicle miles traveled (VMT). VMT is simply a calculation of the project's trip generation times the average trip length for a project in that area. Per Section 15064.3(c), local agencies have until July 1, 2020 to fully implement the use of VMT for evaluation of transportation impacts. At this time, the City of Mission Viejo has not yet adopted a method for evaluating VMT or thresholds of significance for projects in the City. The VMT for the proposed Novo El Toro Project has been evaluated using the CalEEMod software. The proposed 91-unit Project is forecast to generate 1,928,504 annual VMT, or approximately 5,284 VMT per day.

TRAFFIC IMPACT ANALYSIS REPORT

NUVO EL TORO RESIDENTIAL PROJECT

Mission Viejo, California
June 25, 2020
(Revision of May 11, 2020)

1.0 INTRODUCTION

This traffic impact analysis report addresses the potential traffic impacts and circulation needs associated with the proposed Nuvo El Toro Residential project (hereinafter referred to as Project). The proposed Project site consists of approximately 3.50 acres of vacant land located on the southwest quadrant of El Toro Road and the SR-241 Toll Road in the City of Mission Viejo, California. The proposed Project will consist of 91 attached (low-rise) townhouse condominiums. Access for the proposed Project is proposed via a new full-access unsignalized driveway on El Toro Road.

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 Project. The traffic analysis evaluates the existing operating conditions at six (6) key study intersections and six (6) key roadway segments within the Project vicinity, estimates the trip generation potential of the Project, and forecasts future operating conditions without and with the proposed Project. Where necessary, intersection improvements/mitigation measures are identified.

The traffic report satisfies the traffic impact requirements of the City of Mission Viejo and is consistent with the most current *Congestion Management Program (CMP) for Orange County*. The Scope of Work for this traffic study, which is included in ***Appendix A***, was developed in conjunction with City of Mission Viejo Traffic Engineering staff.

The Project site has been visited and an inventory of adjacent area roadways and intersections was performed. Existing traffic information has been collected at six (6) key study intersections and six (6) key roadway segments on a "typical" weekday for use in the preparation of intersection and roadway segment level of service calculations. Information concerning cumulative projects (planned and/or approved) in the vicinity of the proposed Project has been researched at the City of Mission Viejo, the County of Orange, the City of Lake Forest, and the City of Rancho Santa Margarita. Based on our research, there are two (2) cumulative projects in the City of Mission Viejo, two (2) cumulative projects in the County of Orange, and two (2) cumulative projects in the City of Lake Forest within the vicinity of the Project site. There were no cumulative projects identified by the City of Rancho Santa Margarita in the vicinity of the Project site. These six (6) planned and/or approved cumulative projects were considered in the cumulative traffic analysis for this Project.

This traffic report analyzes existing and future weekday daily, AM peak hour and PM peak hour traffic conditions for a near-term (Year 2023 – Project Opening Year) and long-term (Year 2045) traffic setting upon completion of the proposed Project. Daily and peak hour traffic forecasts for the

Year 2023 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 six (6) cumulative projects. Long-term (Year 2045) daily and peak hour traffic forecasts were projected based on modeled traffic projections utilizing the OCTAM 5.0 Year 2045 Model.

1.1 Study Area

1.1.1 *Intersections*

The study intersections listed below are locations that could potentially be impacted by the Project. Six (6) existing key study intersections and one (1) future Project driveway listed below were selected for evaluation based on discussions with City of Mission Viejo staff. The key study intersections with their respective jurisdictions listed below provide both local and regional access to the study area and define the extent of the boundaries for this traffic impact investigation:

1. Glenn Ranch Road at El Toro Road (Mission Viejo)
2. Marguerite Parkway/Saddleback Church at El Toro Road (Mission Viejo)
3. Marguerite Parkway at Los Alisos Boulevard (Mission Viejo)
4. Santa Margarita Parkway/Portola Parkway at El Toro Road (Lake Forest)
5. Portola Parkway at SR-241 Ramps (Lake Forest/Caltrans)
6. Storage West Driveway at El Toro Road (Mission Viejo)
7. Project Driveway at El Toro Road (Mission Viejo – Future Intersection)

1.1.2 *Roadway Segments*

The study roadway segments listed below are locations that could potentially be impacted by the Project. The six (6) roadway segments listed below were selected based on the arterial network within the study area and discussions with City of Mission Viejo staff:

A. El Toro Road, between Glenn Ranch Road and Cielo Entrada (Mission Viejo)
B. El Toro Road, between Project Driveway and Glen Ranch Road (Mission Viejo)
C. El Toro Road, between Marguerite Parkway/Saddleback Church and Project Driveway (Mission Viejo)
D. El Toro Road, between Santa Margarita Parkway/Portola Parkway and Marguerite Parkway/Saddleback Church (Lake Forest)
E. Portola Parkway, between SR-241 Ramps and El Toro Road (Lake Forest)
F. Marguerite Parkway, between El Toro Road and Los Alisos Boulevard (Mission Viejo)

1.2 Traffic Impact Analysis Components

The Level of Service (LOS) investigations at these key locations were used to evaluate the potential traffic-related impacts associated with area growth, cumulative projects and the proposed Project. When necessary, this report recommends intersection and/or roadway segment improvements that may be required to accommodate future traffic volumes and restore/maintain an acceptable Level of Service and/or mitigate the impact of the Project.

Included in this Traffic Impact Analysis are:

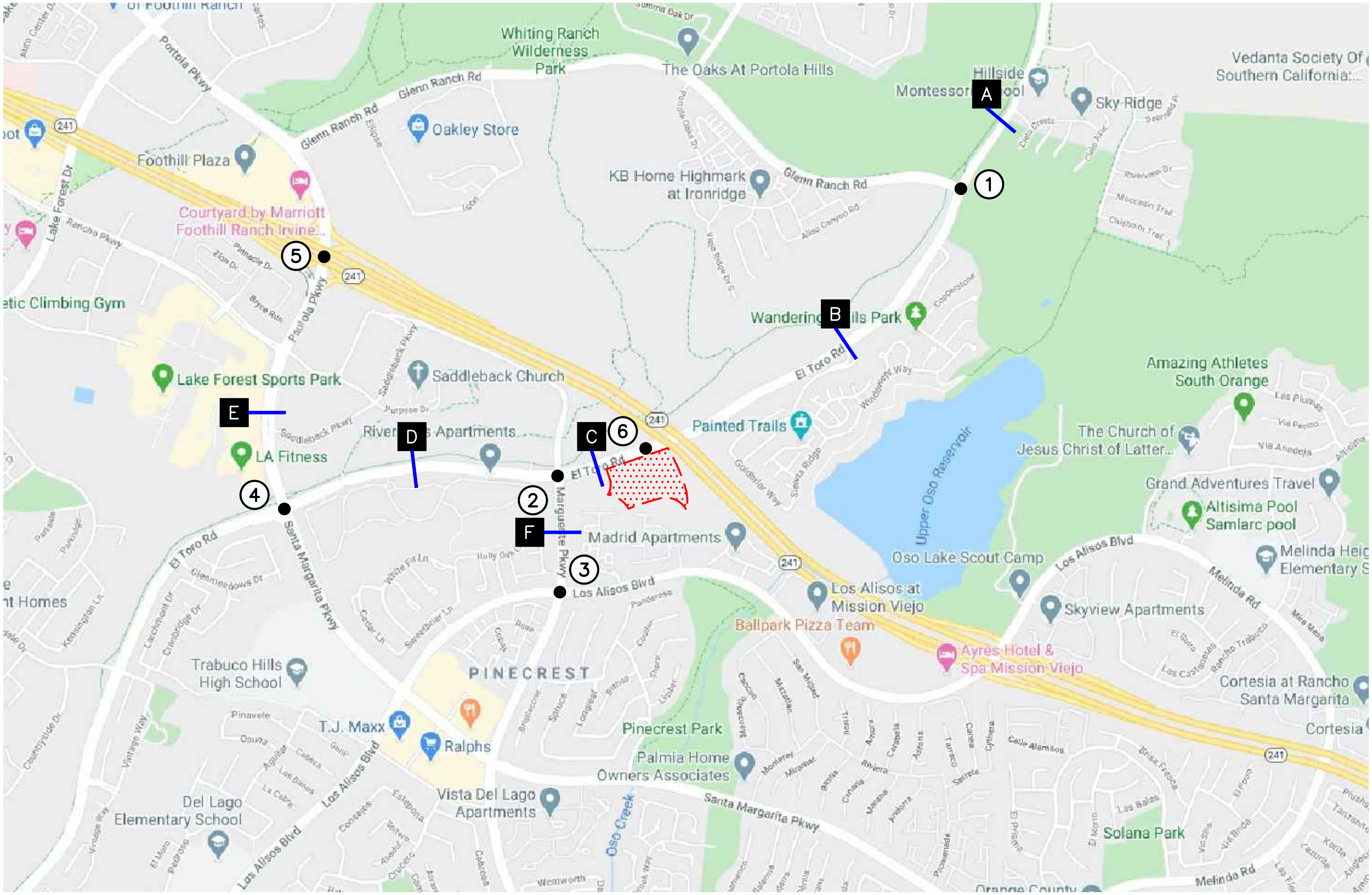
- Existing traffic counts,
- Estimated Project traffic generation/distribution/assignment,
- Estimated cumulative project traffic generation/distribution/assignment,
- Daily, AM and PM peak hour LOS analyses for Existing Conditions,
- Daily, AM and PM peak hour LOS analyses for Existing With Project traffic conditions,
- Daily, AM and PM peak hour LOS analyses for Near-Term (Year 2023) conditions without and with Project traffic,
- Daily, AM and PM peak hour LOS analyses for Long-Term (Year 2045) conditions without and with Project traffic,
- Caltrans Facilities Analysis (HCM Methodology),
- Site Access and On-Site Circulation Analysis,
- Area-Wide Traffic Improvements,
- Congestion Management Program (CMP) Assessment,
- Construction Traffic Impact Analysis, and
- VMT Assessment.

Figure 1-1 presents a Vicinity Map, which illustrates the general location of the Project and depicts the study locations and surrounding street system. ***Figure 1-2*** presents a Regional Map, which illustrates the general location of the Project, surrounding cities and the regional freeway system.

1.3 Traffic Impact Analysis Scenarios

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

A. Existing Traffic Conditions,
B. Existing With Project Traffic Conditions,
C. Scenario (B) with Recommended Improvements, if any,
D. Year 2023 Without Project Traffic Conditions,
E. Year 2023 With Project Traffic Conditions,
F. Scenario (E) With Recommended Improvements, if any,
G. Year 2045 Without Project Traffic Conditions,
H. Year 2045 With Project Traffic Conditions, and
I. Scenario (H) With Recommended Improvements, if any.



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engineers

N
NO SCALE

SOURCE: GOOGLE

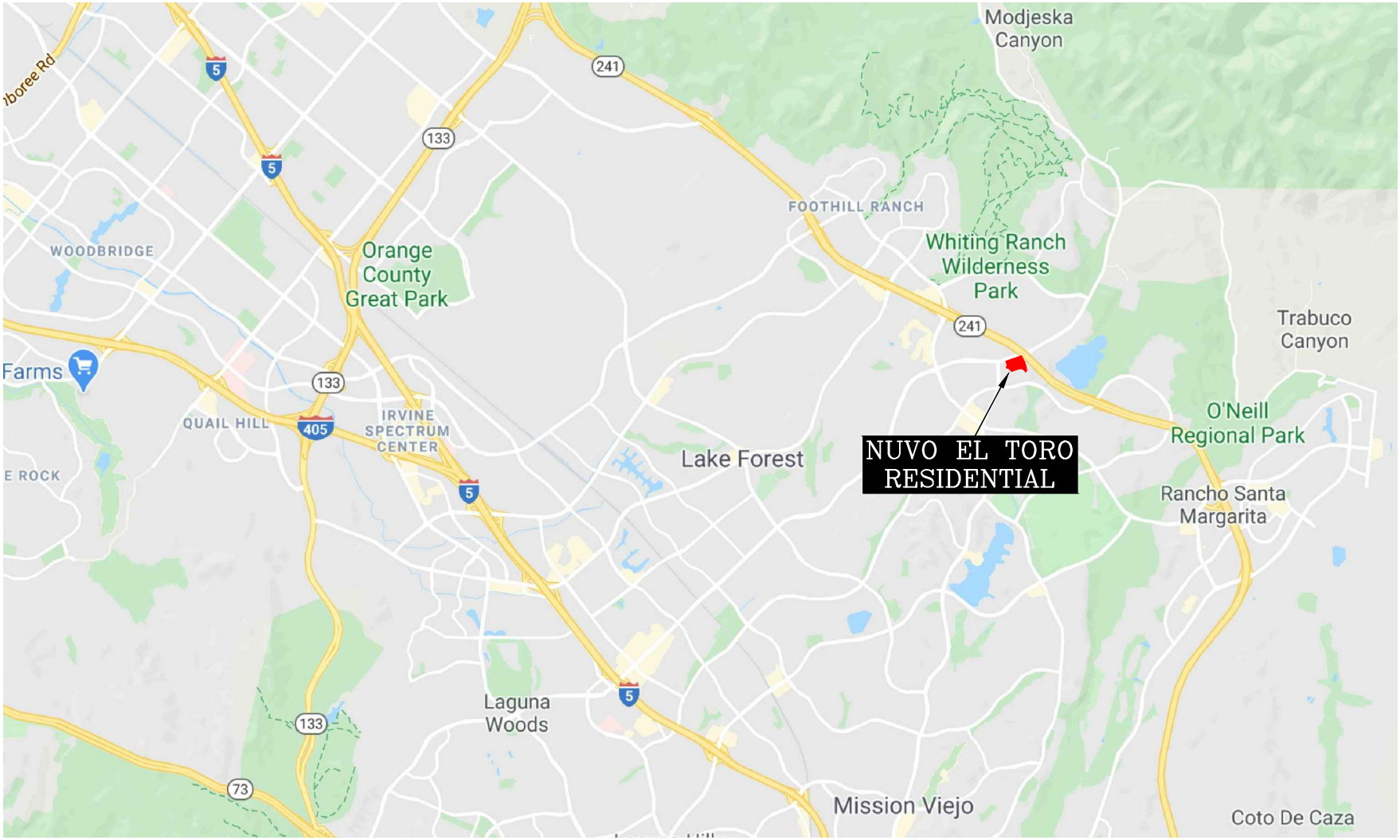
KEY

- (#) = STUDY INTERSECTION
- [#] = STUDY ROADWAY SEGMENT
- [hatched] = PROJECT SITE

FIGURE 1–1

VICINITY MAP

NUVO EL TORO RESIDENTIAL, MISSION VIEJO



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LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

SOURCE: GOOGLE

KEY

= PROJECT SITE

FIGURE 1-2

REGIONAL MAP

NUVO EL TORO RESIDENTIAL, MISSION VIEJO

2.0 PROJECT DESCRIPTION AND LOCATION

The proposed Project site consists of approximately 3.50 acres of vacant land located on the southwest quadrant of El Toro Road and the SR-241 Toll Road in the City of Mission Viejo, California. ***Figure 2-1*** presents an aerial depiction of the existing site, which is currently vacant. ***Figures 2-2*** and ***2-3*** present the site plans for the proposed Project for Option #1 and Option #2, respectively. Section 2.2 below describes the details of each site plan option. The proposed Project will consist of 91 attached (low-rise) townhouse condominiums. The proposed Project is expected to be completed and fully occupied by the Year 2023.

2.1 Site Access

As shown in *Figure 2-2*, vehicular access for the proposed Project is proposed via a new full access unsignalized driveway on El Toro Road. As further shown in *Figure 2-2,* an exclusive eastbound right-turn lane will also be provided at the proposed Project driveway.

2.2 Project Specific Access Improvements

Per direction from the City of Mission Viejo, the following Project feature and driveway configuration options are evaluated in this report to ensure that adequate ingress and egress to the Project site is provided. The selected site access option below will be constructed by the proposed Project to ensure that adequate ingress and egress to the project site is provided:

- **Project Feature *(this improvement will be assumed for both options):*** Reconfigure the median to convert the existing eastbound left-turn pocket (providing access to the existing StorageWest facility located directly across El Toro Road from the Project site) into a two-way-left-turn (TWLT) lane connecting to the existing TWLT lane east of the StorageWest facility driveway. Reconfigure the existing raised median west of the Project driveway to provide a 215-foot acceleration lane with a 180-foot opening for northbound left-turning vehicles exiting the Project site onto westbound El Toro Road.

- **Option #1:** Restripe the No. 3 eastbound through lane along El Toro Road (from Marguerite Parkway to the Project driveway) into an exclusive 200-foot eastbound right-turn lane for eastbound right-turning vehicles entering the Project site. This site access option will remove one (1) existing eastbound through lane along El Toro Road across the Project frontage and may require coordination with OCTA regarding a Master Plan of Arterial Highways (MPAH) Amendment for El Toro Road.

  Per the MPAH Guidance (Section 4), Option #1 may trigger two things. First, the City may be required to submit an initial letter of intent to Orange County Transportation Authority (OCTA) staff to conduct a MPAH Amendment for El Toro Road from a major roadway to a primary roadway designation. Second, City staff may be required to conduct a General Plan Circulation Element Update to change the classification of El Toro Road from a major roadway to a primary roadway classification.

If Option #1 is selected, then the developer may be fully responsible for completing any required technical documents to process a MPAH Amendment on the City of Mission Viejo's behalf to the full satisfaction of OCTA staff. If the proposed MPAH Amendment is not successfully completed per OCTA's requirements, then the developer may be required to proceed forward with Option #2. However, it should be noted that while Option #1 technically eliminates the third eastbound through lane along this portion of El Toro Road, it is our finding that an MPAH Amendment and General Plan roadway reclassification is not absolutely required because, in reality, the third eastbound through lane will function as an auxiliary lane between Marguerite Parkway and Painted Trails, where the third eastbound lane traps into an exclusive right turn lane, such that the functional capacity of the roadway is not reduced.

Appendix B contains the Master Plan of Arterial Highways (MPAH) 2019 Map. ***Appendix C*** contains the Guidance for Administration of the Orange County Master Plan of Arterial Highways document. ***Appendix D*** contains the City of Mission Viejo Master Plan of Streets (General Plan Circulation Element) map.

- **Option #2:** Widen El Toro Road to provide an exclusive 200-foot eastbound right-turn deceleration lane with a 120-foot opening for eastbound right-turning vehicles entering the Project site. This site access option will continue to provide three (3) eastbound through lanes along El Toro Road across the Project frontage.

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N NO SCALE

SOURCE: GOOGLE

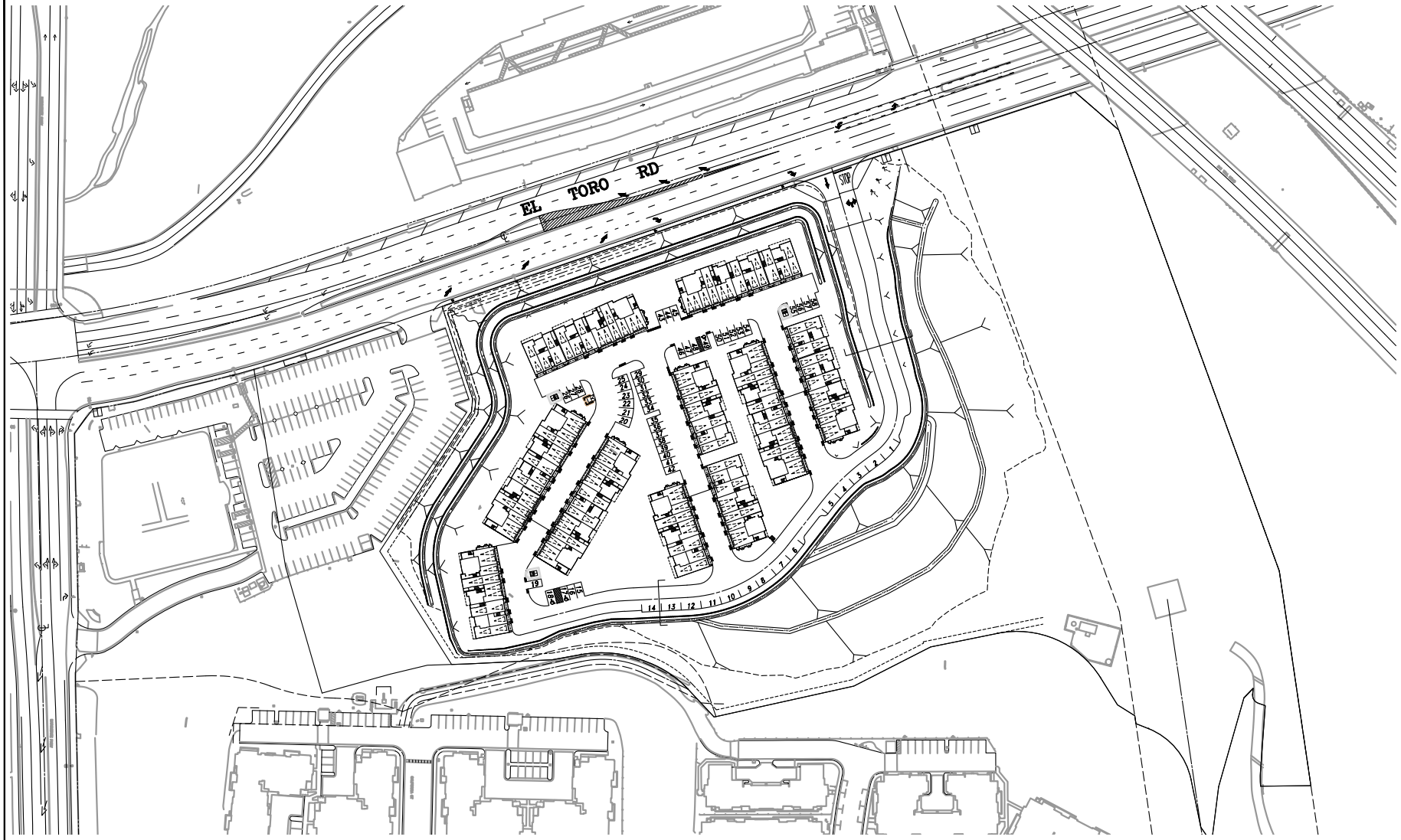
KEY

= PROJECT SITE

FIGURE 2-1

EXISTING SITE AERIAL

NUVO EL TORO RESIDENTIAL, MISSION VIEJO



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LINSCOTT LAW & GREENSPAN engineers

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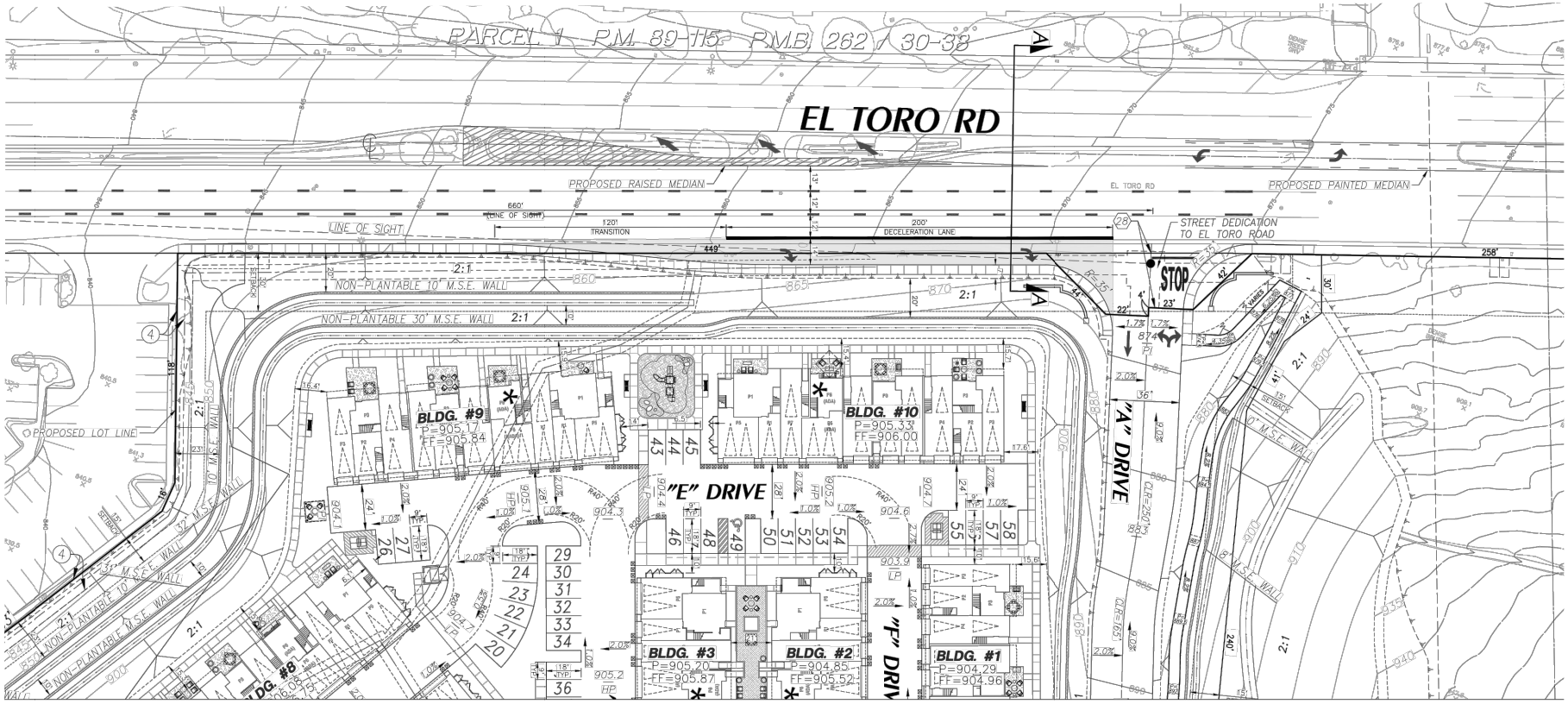
NO SCALE

SOURCE: HUNSAKER & ASSOCIATES

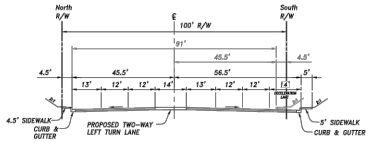
FIGURE 2-2

PROPOSED SITE PLAN – OPTION #1

NUVO EL TORO RESIDENTIAL, MISSION VIEJO



STREET SECTIONS



SECTION A–A
OPTION 2
El Toro Road
SCALE: 1"= 20'

LEGEND:

TRANSITION AND DECELERATION LANE

LANE STRIPING

n:\4200\2204269 - nuvo el toro residential, mission viejo\dwg\4269 f2-3.dwg LDP 14:34:32 06-25-2020 aguilar

SOURCE: HUNSAKER & ASSOCIATES

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

FIGURE 2–3

PROPOSED SITE PLAN – OPTION #2

NUVO EL TORO RESIDENTIAL, MISSION VIEJO

3.0 ANALYSIS CONDITIONS AND METHODOLOGY

3.1 Existing Street Network

The Foothill Toll Road (SR-241) provides primary regional access to the proposed Project. The SR-241 Toll Road runs in the northwest-southeast direction, east of the Project site. The principal local network of streets serving the Project site consists of Portola Parkway, Santa Margarita Parkway, El Toro Road, Marguerite Parkway, and Glenn Ranch Road. The following discussion provides a brief synopsis of the key area streets.

Portola Parkway is a northwest-southeast roadway located west of the Project site. On-street parking is not permitted on either side of the roadway within the Project vicinity. Portola Parkway is a seven-lane divided roadway from El Toro Road to the SR-241 Ramps. The posted speed limit on Portola Parkway is 50 miles per hour (mph). South of El Toro Road, Portola Parkway becomes Santa Margarita Parkway.

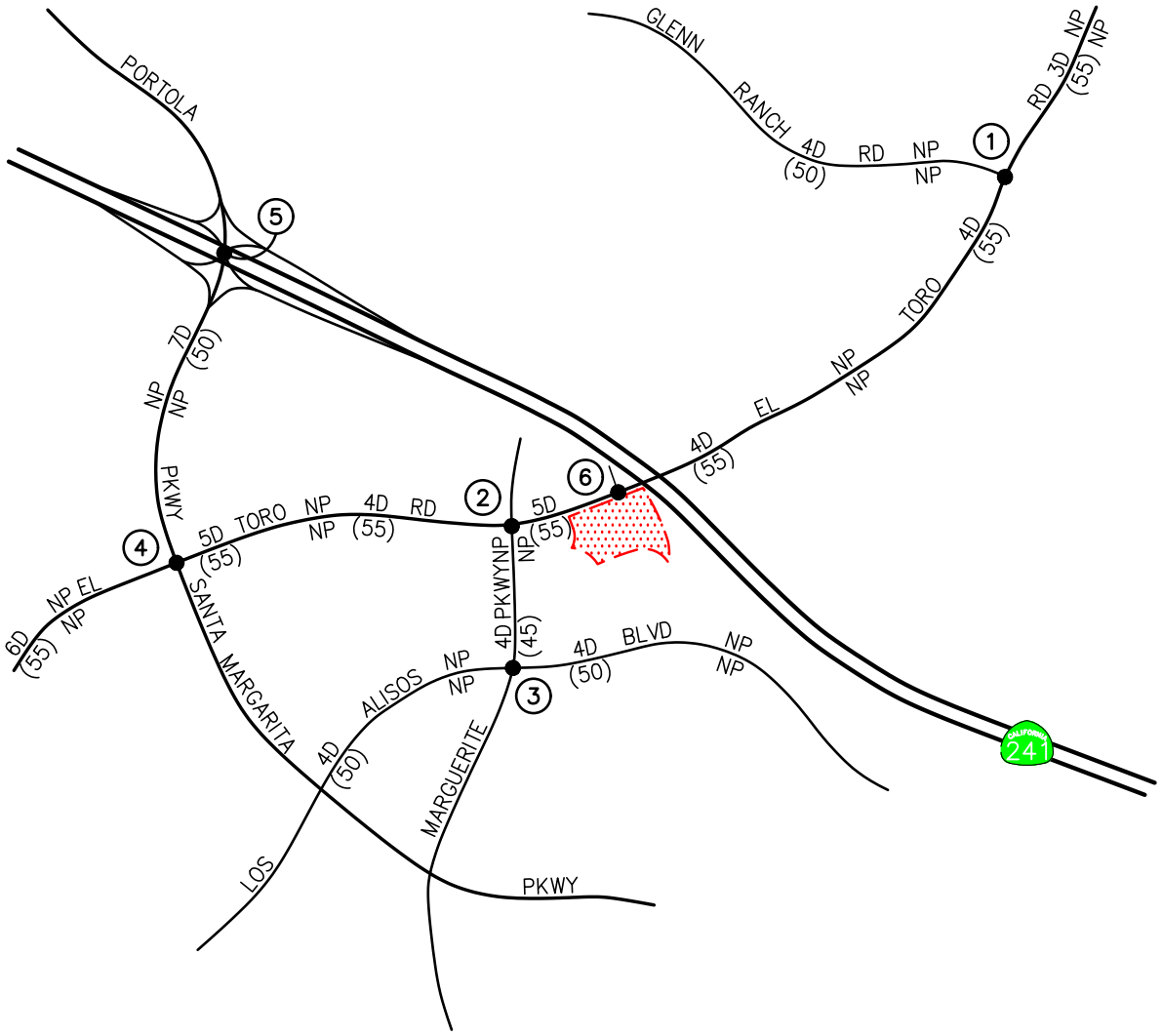
Santa Margarita Parkway is a northwest-southeast roadway located west and south of the Project site. On-street parking is not permitted on either side of the roadway within the Project vicinity. Santa Margarita Parkway is a six-lane divided roadway with a posted speed limit of 50 mph. North of El Toro Road, Santa Margarita Parkway becomes Portola Parkway.

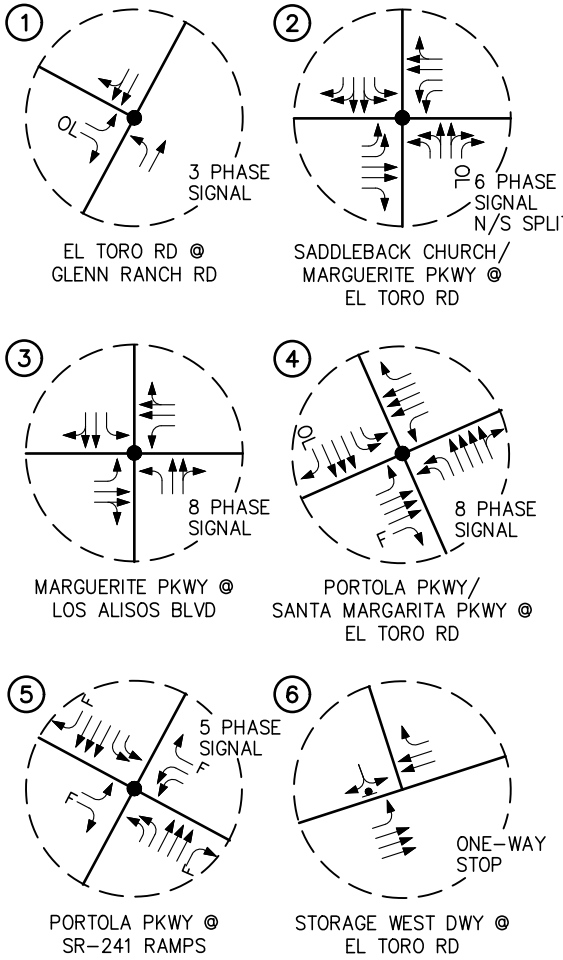
El Toro Road is a northeast-southwest roadway that borders the Project site on the north. On-street parking is not permitted on either side of the roadway within the Project vicinity. West of Portola Parkway, El Toro Road is a six-lane, divided roadway. Between Portola Parkway and Marguerite Parkway, El Toro Road is a five-lane, divided roadway that transitions to a four-lane, divided roadway just west of Marguerite Parkway. Between Marguerite Parkway and Painted Trails, El Toro Road is a five-lane, divided roadway that transitions to a four-lane, divided roadway just west of Painted Trails. Between Painted Trails and Wandering Trails, El Toro Road is a four-lane, divided roadway that transitions to a three-lane, divided roadway just west of Wandering Trails. Between Wandering Trails and Glenn Ranch Road, El Toro Road is a three-lane, divided roadway. North of Glenn Ranch Road, El Toro Road is a three-lane, divided roadway that transitions into a two-lane, undivided roadway north of Cielo Entrada. The posted speed limit on El Toro Road is 55 mph. Project access will be provided along El Toro Road via a full-access stop-controlled driveway.

Marguerite Parkway is a north-south roadway located west of the Project site. On-street parking is not permitted on either side of the roadway within the Project vicinity. Marguerite Parkway is a four-lane, divided roadway with a posted speed limit of 45 mph.

Glenn Ranch Road is an east-west roadway located northeast of the Project site. On-street parking is not permitted on either side of the roadway within the Project vicinity. Glenn Ranch Road is a four-lane, divided roadway with a posted speed limit of 50 mph.

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





LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

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

FIGURE 3-1

EXISTING ROADWAY CONDITIONS AND INTERSECTION CONTROLS

NUVO EL TORO RESIDENTIAL, MISSION VIEJO

3.2 Existing Public Transit

Orange County Transportation Authority (OCTA) operates several bus lines within the study area. A description of the transit services within the Project vicinity are as follows:

Orange County Transportation Authority (OCTA)

City Route 82:

- Route 82 provides service from Foothill Ranch to Rancho Santa Margarita; via Towne Centre & Alton, Mustang Run & Los Alisos, Santa Margarita & Los Alisos, and Plano Trabuco & Alas De Paz.
- Most notably, Route 82 provides service to Portola Plaza and Foothill Ranch Towne Centre.
- The route traverses the cities of Rancho Santa Margarita, Mission Viejo, and Lake Forest.
- During the AM and PM peak hour, Route 82 has approximate headways of 60 minutes in the eastbound and westbound directions.

City Route 85:

- Route 85 provides service from Mission Viejo to Laguna Niguel; via Niguel & Crown Valley, Saddleback College, Marguerite & La Paz, and Los Alisos & Mustang Run.
- Most notably, Route 85 provides service to Portola Plaza and Saddleback College.
- The route traverses the cities of Mission Viejo and Laguna Niguel.
- During the AM and PM peak hour, Route 85 has approximate headways of 60 minutes in the northbound and southbound directions.

City Route 89:

- Route 89 provides service from Mission Viejo to Laguna Beach; via Laguna Beach Bus Station, El Toro & Moulton, Laguna Hills Transportation Center, El Toro & Jeronimo, and Los Alisos & Mustang Run.
- Most notably, Route 89 provides service to Portola Plaza, Laguna Hills Transportation Center/Park-And-Ride, and Laguna Beach Bus Station.
- The route traverses the cities of Mission Viejo, Lake Forest, Laguna Woods, Laguna Hills, and Laguna Beach.
- During the AM and PM peak hour, Route 89 has approximate headways of 30 minutes in the northbound and southbound directions.

City Route 206:

- Route 206 provides Express service from Santa Ana to Lake Forest; via Bristol & Civic Center, Santa Ana & Santiago, Barranca & Ada, Rockfield & Lake Forest, Dimension & Commercentre, and Icon & Ellipse.
- Most notably, Route 206 provides service to Orange County High School of the Arts, Santa Ana Civic Center, County Courthouse, Orange County Central Jail, Ronald Reagan Federal Courthouse, Santa Ana Regional Transportation Center, Irvine Station, Irvine Spectrum, and Foothill Rach Marketplace and Towne Centre.

- The route traverses the cities of Santa Ana, Irvine, Lake Forest, Foothill Ranch, and Portola Hills.
- During the AM and PM peak hour, Route 206 provides limited service with approximate headways of 40 minutes in the northbound and southbound directions.

Appendix E contains the most current public transit route schedules and maps for the aforementioned bus routes.

3.3 Pedestrian/Bicycle Trails

Orange County Parks manages nearly 60,000 acres of parks, historical and coastal facilities, and open space for the County of Orange as part of OC Community Resources. Parks that are located in the vicinity of the Project site include Limestone Canyon Park, Whiting Ranch Wilderness Park and O'Neill Regional Park. The following is a brief description of the trails that are in close proximity to the proposed Project:

- **Aliso Creek Bikeway** is an 18.4-mile cycling trail that extends from Wood-Aliso Park in Laguna Niguel to Whiting Ranch Wilderness Park. This trail is used primarily for cycling. Located on the opposite side of El Toro Road, access to this trail will be available via a path located just west of Marguerite Parkway (approximately 0.3 miles west of the Project site).

Appendix E also contains the most current Bicycle and Pedestrian Trails Maps.

Pedestrian connection to the surrounding commercial and residential developments is provided via existing sidewalks along the Project frontage on El Toro Road as well as along Marguerite Parkway, Los Alisos Boulevard, Santa Margarita Parkway, and Portola Parkway in the vicinity of the Project site.

3.4 Existing Traffic Volumes

Due to the State of California "Stay at Home" order as a result of the COVID-19 Coronavirus Pandemic, historical counts were collected at the six (6) key study intersections and the six (6) key roadway segments evaluated in this report, except for key study intersection #6 (i.e. Storage West Driveway at El Toro Road). Specifically, the traffic counts for key study intersections #1, #2, #4, and #5 were conducted in Year 2018, while the traffic counts for key study intersection #3 were conducted in Year 2019. These Year 2018 and Year 2019 traffic counts were factored up by the City of Mission Viejo and/or City of Lake Forest approved growth factor of 1.0% per year (i.e. 2.0% total growth for the Year 2018 counts and 1.0% total growth for the Year 2019 counts) to reflect current Year 2020 existing baseline traffic conditions. For key study intersection #6, existing AM and PM peak hour turning movement volumes (i.e. southbound left-turns, southbound right-turns, eastbound left-turns and westbound right-turns) were taken from the trip generation and trip distribution based analysis from the *Storage West Facility Traffic Study* provided by City of Mission Viejo staff. The AM and PM peak hour eastbound and westbound through traffic volumes along El Toro Road for key study intersection #6 were tracked from key study intersection #2.

Similarly, historical counts were collected for the six (6) key roadway segments. Specifically, the traffic counts for key roadway segment E were conducted in Year 2017, the traffic counts for key roadway segment D were conducted in Year 2018, and the remaining key roadway segments were collected in Year 2020 (i.e. segments A, B, C, and F). The Year 2017 and Year 2018 traffic counts were factored up by the City of Lake Forest approved growth factor of 1.0% per year (i.e. 3.0% total growth for the Year 2017 counts, 2.0% total growth for the Year 2018 counts, and no growth for the Year 2020 counts) to reflect current Year 2020 existing baseline traffic conditions.

Appendix F contains the daily, AM and PM peak hour historical traffic count data for the key study intersections and key roadway segments.

Figures 3-2 and ***3-3*** present the existing AM and PM peak hour traffic volumes, respectively, for the six (6) key study intersections. *Figure 3-3* also presents the existing daily traffic volumes for the six (6) key study roadway segments.

3.5 Level Of Service (LOS) Analysis Methodologies

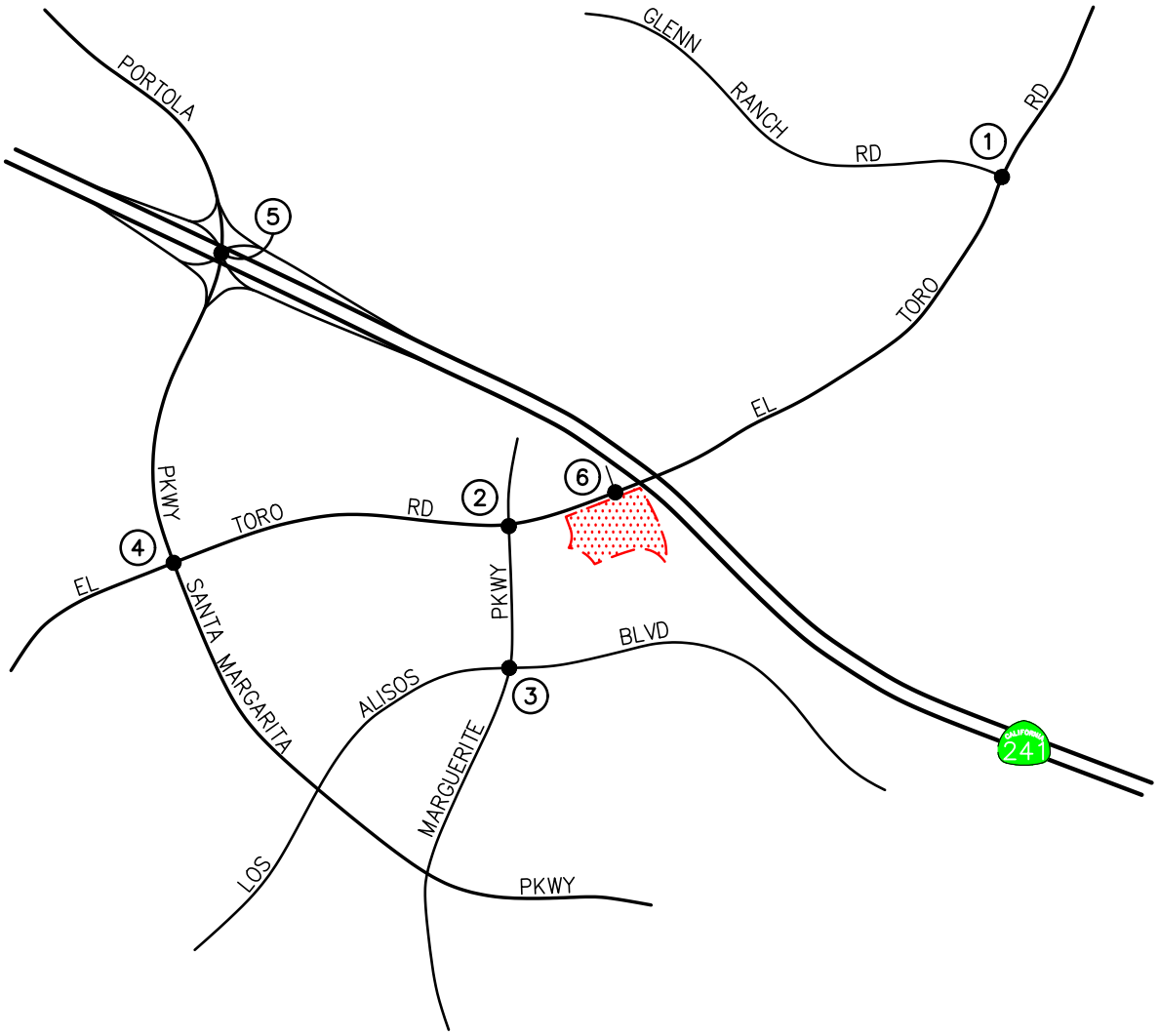
AM and PM peak hour operating conditions for the six (6) key study intersections and the proposed project driveway were evaluated using the *Intersection Capacity Utilization* (ICU) methodology for signalized intersections and the methodology outlined in the *Highway Capacity Manual* (HCM) for unsignalized intersections.

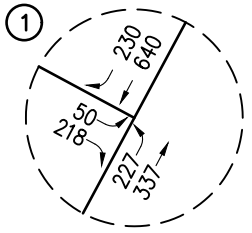
3.5.1 *Intersection Capacity Utilization (ICU) Method of Analysis (Signalized Intersections)*

Per the requirements of the City of Mission Viejo and the City of Lake Forest, AM and PM 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.

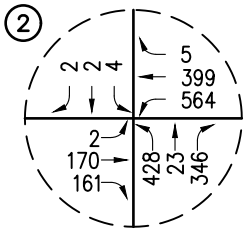
The ICU numerical value represents the percent signal (green) time and thus capacity, required by existing and/or future traffic. It should be noted that the ICU methodology assumes uniform traffic distribution per intersection approach lane and optimal signal timing. For both the City of Mission Viejo and the City of Lake Forest, the ICU calculations use a lane capacity of 1,700 vehicles per hour (vph) for through and all turn lanes. A clearance adjustment factor of 0.05 was added to each Level of Service calculation.

The ICU value translates to a Level of Service (LOS) estimate, which is a relative measure of the intersection performance. 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. The six qualitative categories of Level of Service have been defined along with the corresponding ICU value range and are shown in ***Table 3-1***.

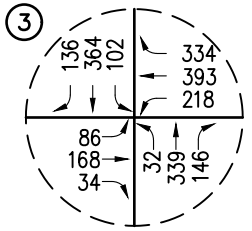




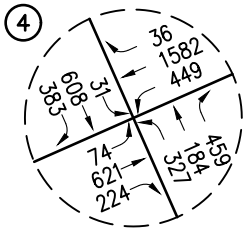
EL TORO RD @
GLENN RANCH RD



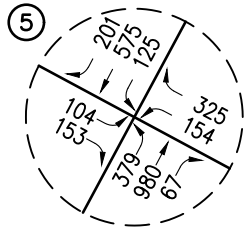
SADDLEBACK CHURCH/
MARGUERITE PKWY @
EL TORO RD



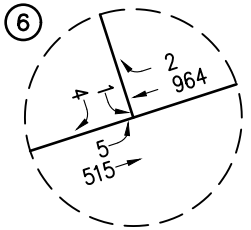
MARGUERITE PKWY @
LOS ALISOS BLVD



PORTOLA PKWY/
SANTA MARGARITA PKWY @
EL TORO RD



PORTOLA PKWY @
SR-241 RAMPS



STORAGE WEST DWY @
EL TORO RD

LINSCOTT LAW & GREENSPAN
engineers

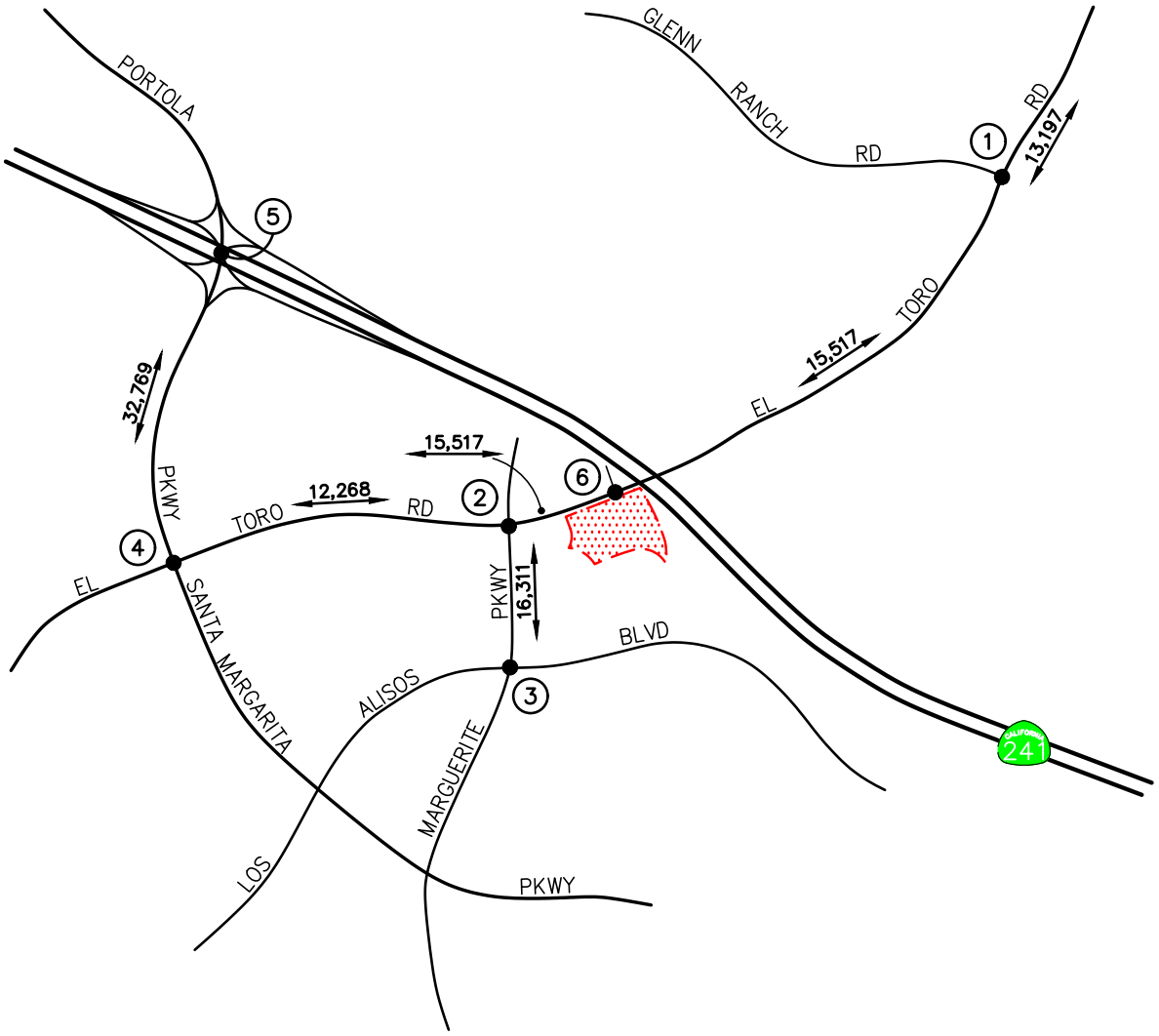
N
NO SCALE

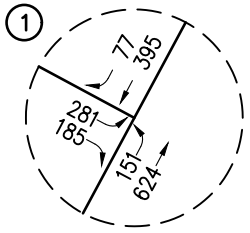
KEY
(#) = STUDY INTERSECTION
= PROJECT SITE

FIGURE 3-2

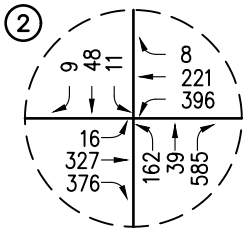
EXISTING AM PEAK HOUR TRAFFIC VOLUMES

NUVO EL TORO RESIDENTIAL, MISSION VIEJO

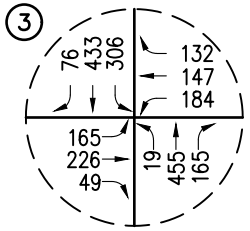




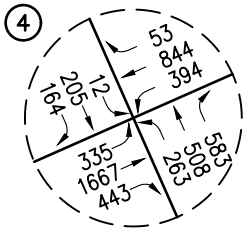
EL TORO RD @
GLENN RANCH RD



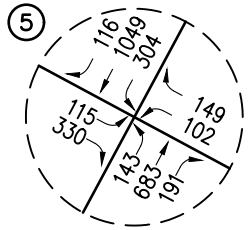
SADDLEBACK CHURCH/
MARGUERITE PKWY @
EL TORO RD



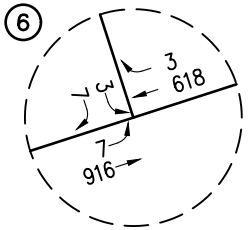
MARGUERITE PKWY @
LOS ALISOS BLVD



PORTOLA PKWY/
SANTA MARGARITA PKWY @
EL TORO RD



PORTOLA PKWY @
SR-241 RAMPS



STORAGE WEST DWY @
EL TORO RD

LINSCOTT LAW & GREENSPAN
engineers

N NO SCALE

KEY

(#) = STUDY INTERSECTION

XX,XXX = DAILY TRAFFIC VOLUMES

= PROJECT SITE

FIGURE 3-3

EXISTING PM PEAK HOUR AND DAILY TRAFFIC VOLUMES

NUVO EL TORO RESIDENTIAL, MISSION VIEJO

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

The HCM unsignalized methodology for stop-controlled intersections was utilized for the analysis of the unsignalized intersections. LOS criteria for unsignalized intersections differ from LOS criteria for signalized intersections as signalized intersections are designed for heavier traffic and therefore a greater delay.

3.5.2.1 Two-Way Stop-Controlled Intersections

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

3.5.2.2 All-Way Stop-Controlled Intersections

All-way stop-controlled intersections require every vehicle to stop at the intersection before proceeding. Because each driver must stop, the decision to proceed into the intersection is a function of traffic conditions on the other approaches. The time between subsequent vehicle departures depends on the degree of conflict that results between the vehicles and vehicles on the other approaches. This methodology determines the control delay for each lane on the approach, computes a weighted average for the whole approach, and computes a weighted average for the intersection as a whole. Level of service (LOS) at the approach and intersection levels is based solely on control delay. The HCM control delay value range for all-way stop-controlled intersections is shown in *Table 3-2*.

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

In conformance with City of Mission Viejo and City of Lake Forest requirements, daily operating conditions for the key study roadway links have been investigated according to the Volume to Capacity (V/C) ratio of each roadway segment. The V/C relationship is used to estimate the LOS of the roadway segment with the volume based on the 24-hour traffic volumes and the capacity based on the City's classification of each roadway. The roadway segment daily capacity of each street classification according to the *Orange County Master Plan of Arterial Highways (MPAH)* is presented in ***Table 3-3.*** The six qualitative categories of Level of Service have been defined along with the corresponding Volume to Capacity (V/C) value range and are shown in ***Table 3-4***.

3.6 Impact Criteria and Thresholds

3.6.1 *City of Mission Viejo*

Impacts to local and regional transportation systems located in the City of Mission Viejo are considered significant if:

Intersections:

- An unacceptable peak hour Level of Service (LOS) at any of the key intersections is projected. The City of Mission Viejo considers LOS D to be the minimum acceptable condition that should be maintained during the AM and PM peak hours for all intersections; and
- The Project increases traffic demand at the study intersection by 1% of capacity (ICU increase ≥ 0.010), causing or worsening LOS E or LOS F (ICU > 0.900).
- At key unsignalized study intersections, an impact is considered to be significant if the project causes an intersection operating at LOS D or better to degrade to LOS E or LOS F, and the traffic signal warrant analysis determines that a traffic signal is justified.

Roadway Segments:

- An unacceptable daily Level of Service (LOS) at any of the key roadway segments is projected. LOS D (V/C not to exceed 0.90) is the minimum performance standard that has been adopted for the study area circulation system by the City of Mission Viejo which adheres to the Orange County Highway Design Manual; and
- The project increases traffic demand at the roadway segment by 1% of capacity (V/C increase ≥ 0.010), causing or worsening LOS E or LOS F (V/C > 0.900).

3.6.2 *City of Lake Forest Locations*

Impacts to local and regional transportation systems located in the City of Lake Forest are considered significant if:

Intersections:

- An unacceptable peak hour Level of Service (LOS) at any of the key intersections is projected. The City of Lake Forest considers LOS D to be the minimum acceptable condition that should be maintained during the AM and PM peak hours for all intersections; and
- The Project increases traffic demand at the study intersection by 1% of capacity (ICU increase ≥ 0.010), causing or worsening LOS E or LOS F (ICU > 0.900).

Roadway Segments:

- An unacceptable daily Level of Service (LOS) at any of the key roadway segments is projected. LOS D (V/C not to exceed 0.90) is the minimum performance standard that has been adopted for the study area circulation system by the City of Lake Forest which adheres to the Orange County Highway Design Manual; and
- The project increases traffic demand at the roadway segment by 1% of capacity (V/C increase ≥ 0.010), causing or worsening LOS E or LOS F (V/C > 0.900).

TABLE 3-1

LEVEL OF SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS (ICU METHODOLOGY)[1]

Level of Service (LOS)	Intersection Capacity Utilization Value (V/C)	Level of Service Description
A	≤ 0.60	EXCELLENT. No vehicle waits longer than one red light, and no approach phase is fully used.
B	0.61 – 0.70	VERY GOOD. An occasional approach phase is fully utilized; many drivers begin to feel somewhat restricted within groups of vehicles.
C	0.71 – 0.80	GOOD. Occasionally drivers may have to wait through more than one red light; backups may develop behind turning vehicles.
D	0.81 – 0.90	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	0.91 – 1.00	POOR. Represents the most vehicles intersection approaches can accommodate; may be long lines of waiting vehicles through several signal cycles.
F	> 1.00	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.

[1] Source: *Transportation Research Board Circular 212 – Interim Materials on Highway Capacity*.

TABLE 3-2

LEVEL OF SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS (HCM 6 METHODOLOGY)[2,3]

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

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

TABLE 3-3

DAILY ROADWAY SEGMENT CAPACITIES[4]

Type of Arterial	Lane Configuration	LOS E Capacity (VPD)
Principal	8-Lanes Divided	75,000
Principal	7-Lanes Divided	65,600[5]
Major	6-Lanes Divided	56,300
Major	5-Lanes Divided	46,900[6]
Primary	4-Lanes Divided	37,500
Primary	3-Lanes Divided	28,100[7]
Secondary	4-Lanes Undivided	25,000
Collector	2-Lanes Undivided	12,500

Notes:

- VPD = Vehicles per day

4 Source: *Guidance for Administration of the Orange County Master Plan of Arterial Highways, dated August 14, 2017,* Table A-4-1: Arterial Highways MPAH Capacity Values (refer to Appendix C).

5 Modified LOS E capacity for a 5-lane, divided roadway based on the following: [(75,000/8) x 7 = 65,600].

6 Modified LOS E capacity for a 5-lane, divided roadway based on the following: [(56,300/6) x 5 = 46,900].

7 Modified LOS E capacity for a 3-lane, divided roadway based on the following: [(37,500/4) x 3 = 28,100].

TABLE 3-4

LEVEL OF SERVICE CRITERIA FOR ROADWAY SEGMENTS (V/C METHODOLOGY)[8]

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

Note:

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

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

4.0 TRAFFIC FORECASTING METHODOLOGY

In order to estimate the traffic impact characteristics of the Project, a multi-step process has been utilized. The first step is traffic generation, which estimates the total arriving and departing traffic on a peak hour and daily basis. The traffic generation potential is forecast by applying the appropriate vehicle trip generation equations and/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 segments and intersection turning movements throughout the study area.

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

5.0 PROJECT TRAFFIC CHARACTERISTICS

5.1 Project Trip Generation Forecast

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

Table 5-1 summarizes the trip generation rates used in forecasting the vehicular trips generated by the proposed Project and presents the forecast daily and peak hour project traffic volumes for a "typical" weekday. The trip generation potential for the proposed Project was forecast using ITE Land Use Code 220: Multifamily Housing Low-Rise trip rates. As shown in *Table 5-1*, the proposed Project is expected to generate 666 daily trips (one half arriving and one half departing), with 42 trips (10 inbound, 32 outbound) produced in the AM peak hour and 51 trips (32 inbound, 19 outbound) produced in the PM peak hour on a "typical" weekday.

5.2 Project Trip 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:

- directional flows on the freeways in the immediate vicinity of the Project site (i.e. SR-241 Freeway),
- the site's proximity to major traffic carriers (i.e. El Toro Road),
- expected localized traffic flow patterns based on adjacent street channelization and presence of traffic signals,
- ingress/egress availability at the Project site, and
- input from City of Mission Viejo staff.

The anticipated AM and PM peak hour Project traffic volumes associated with the Project are presented in ***Figures 5-2*** and ***5-3***, respectively. *Figure 5-3* also presents the daily Project traffic volumes. 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*.

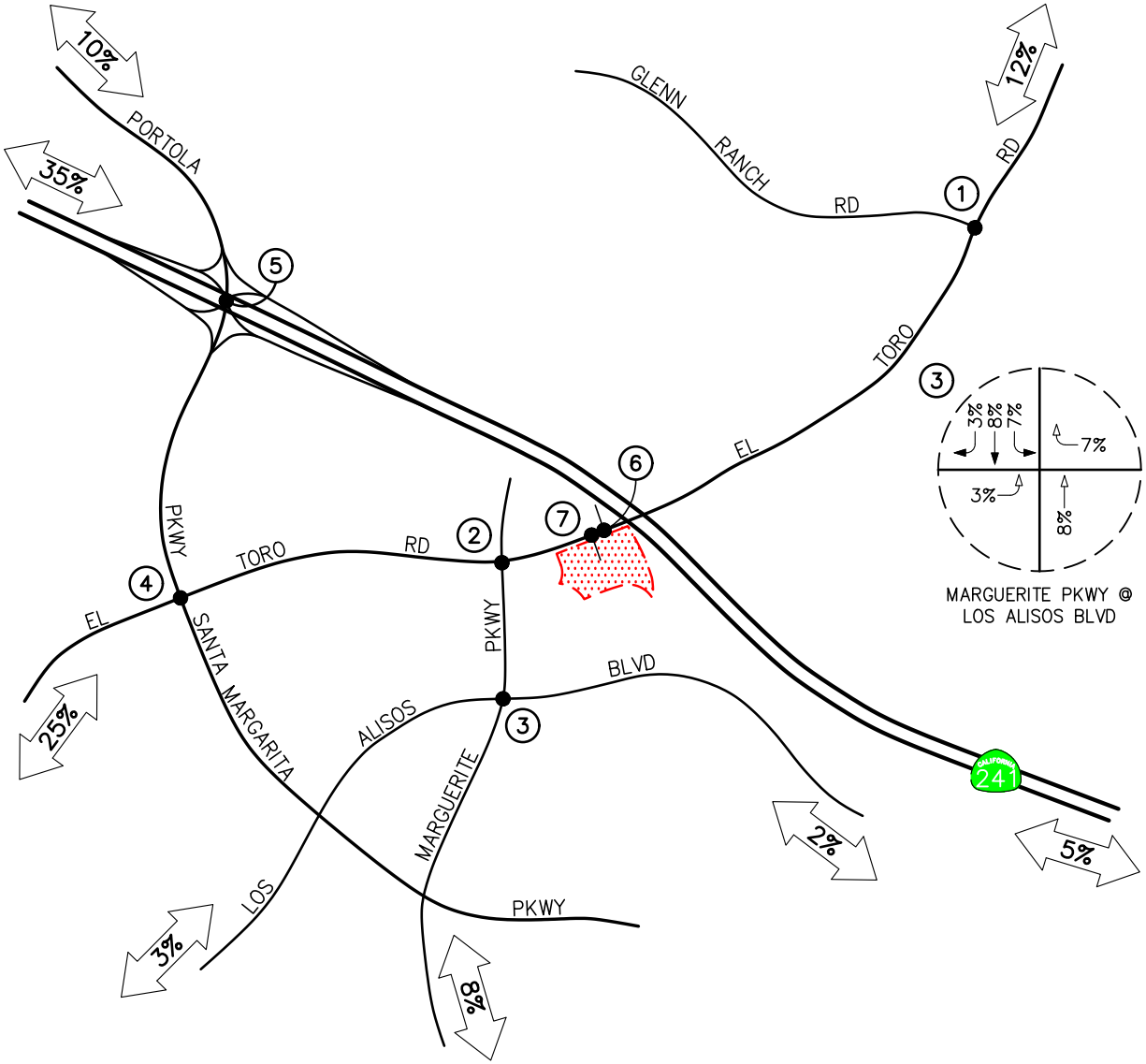
TABLE 5-1

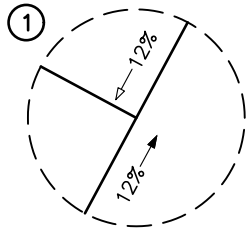
PROJECT TRAFFIC GENERATION RATES AND FORECAST[9]

ITE Land Use Code / Project Description	Daily	AM Peak Hour			PM Peak Hour		
		Enter	Exit	Total	Enter	Exit	Total
Trip Generation Factors:							
▪ 220: Multifamily Housing Low-Rise (TE/DU)	7.32	23%	77%	0.46	63%	37%	0.56
Proposed Project Trip Generation Forecast:							
▪ Nuvo El Toro Residential Project (91 DU)	666	10	32	42	32	19	51

Notes:
- TE/DU = Trip end per dwelling unit

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





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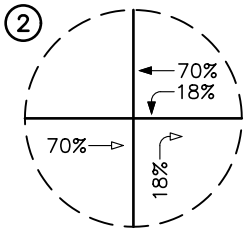
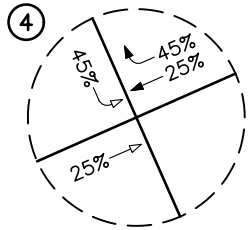
GLENN RANCH RD



SADDLEBACK CHURCH/
MARGUERITE PKWY @
EL TORO RD

MARGUERITE PKWY @
LOS ALISOS BLVD



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SANTA MARGARITA PKWY @
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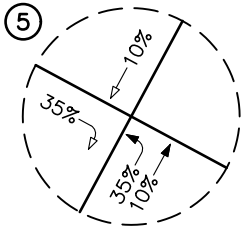

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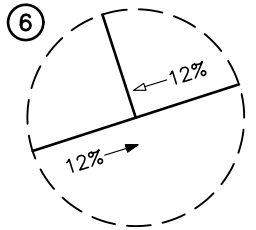
SR-241 RAMPS



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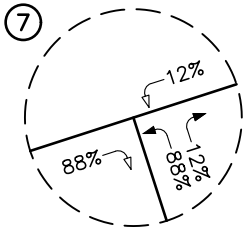


PROJECT DWY @
EL TORO RD

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

(#) = STUDY INTERSECTION

= INBOUND PERCENTAGE

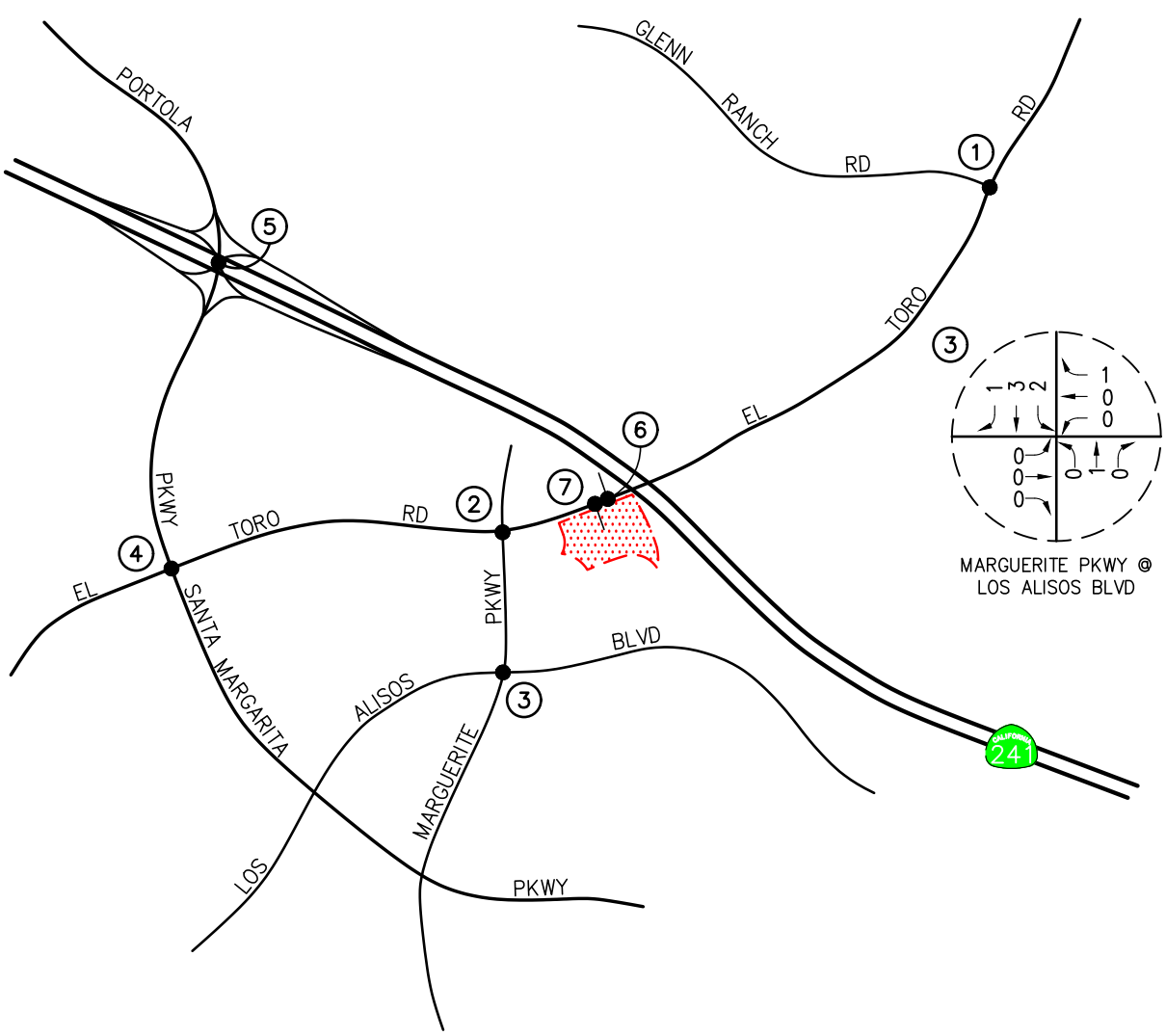
= OUTBOUND PERCENTAGE

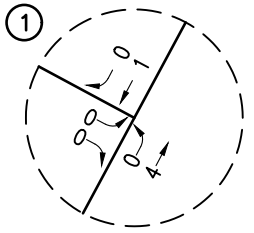
= PROJECT SITE

FIGURE 5-1

PROJECT TRAFFIC DISTRIBUTION PATTERN

NUVO EL TORO RESIDENTIAL, MISSION VIEJO





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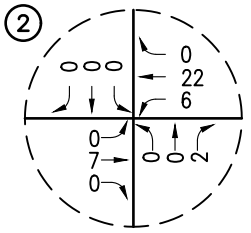
GLENN RANCH RD



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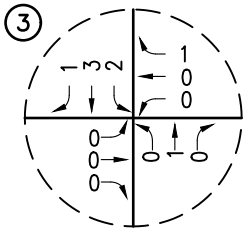
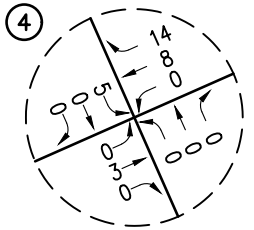
MARGUERITE PKWY @
EL TORO RD



MARGUERITE PKWY @
LOS ALISOS BLVD



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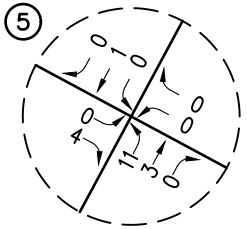
SANTA MARGARITA PKWY @
EL TORO RD



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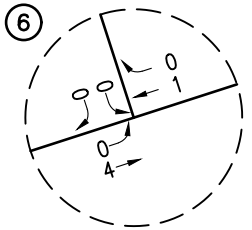
SR-241 RAMPS



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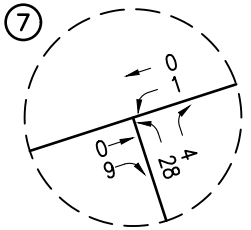
EL TORO RD



PROJECT DWY @
EL TORO RD

n:\4200\2204269 - nuvo el toro residential, mission viejo\dwg\4269 f5-2.dwg LDP 13:41:04 06-17-2020 tucker

LINSCOTT LAW & GREENSPAN
engineers

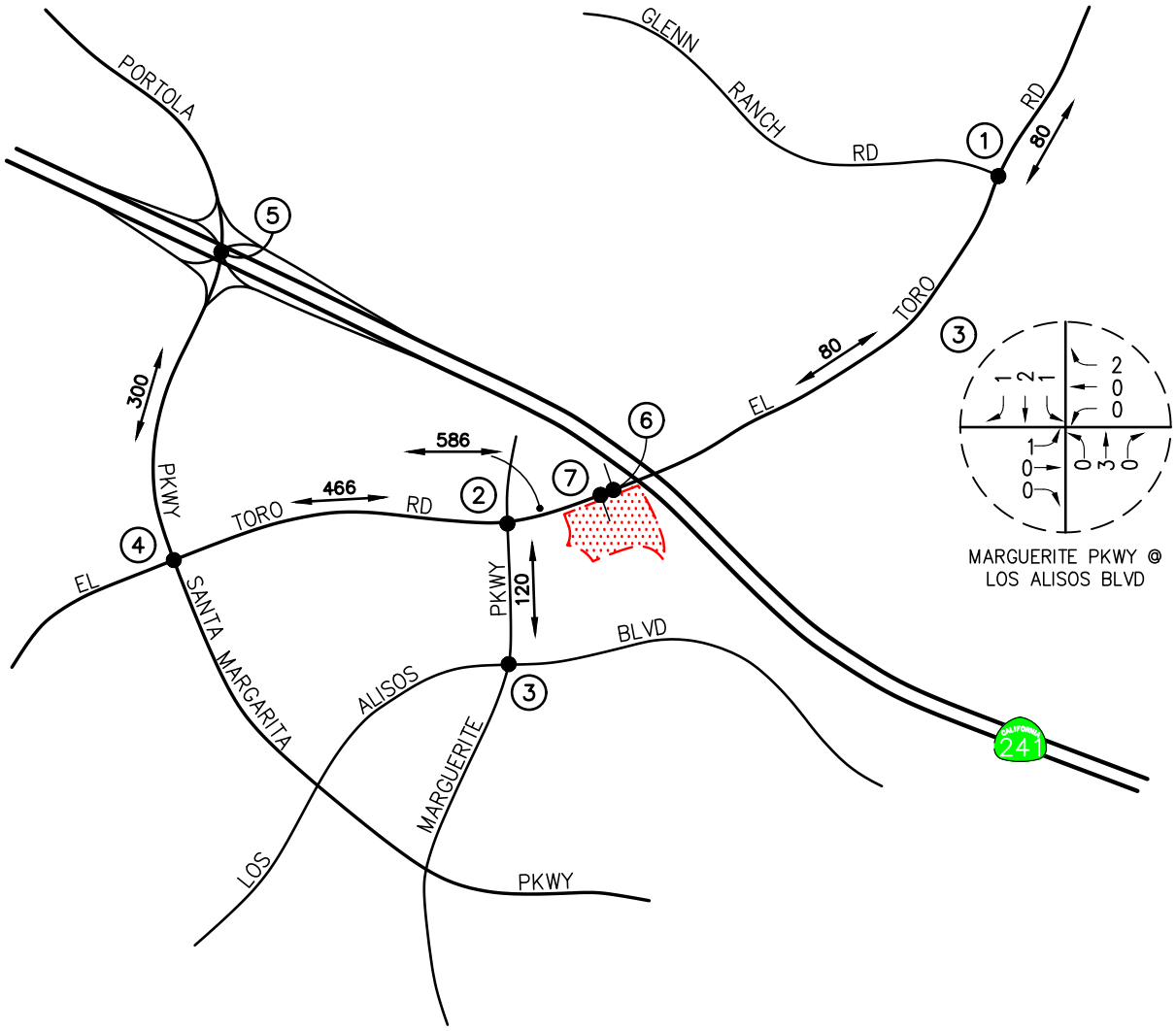
N
NO SCALE

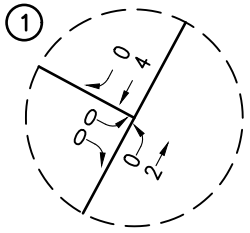
KEY
(#) = STUDY INTERSECTION
= PROJECT SITE

FIGURE 5-2

AM PEAK HOUR PROJECT TRAFFIC VOLUMES

NUVO EL TORO RESIDENTIAL, MISSION VIEJO





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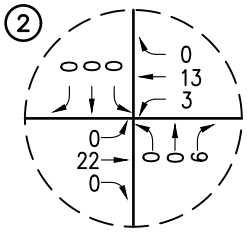
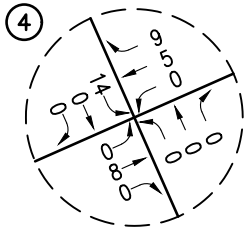
GLENN RANCH RD



SADDLEBACK CHURCH/
MARGUERITE PKWY @
EL TORO RD

MARGUERITE PKWY @
LOS ALISOS BLVD



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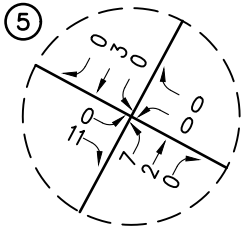

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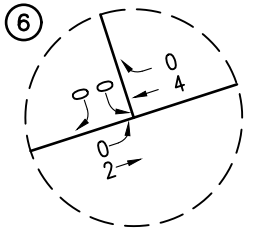

STORAGE WEST DWY @
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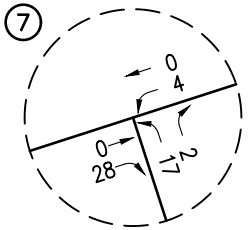


PROJECT DWY @
EL TORO RD

LINSCOTT LAW & GREENSPAN
engineers

N
NO SCALE

KEY

(#) = STUDY INTERSECTION

XX,XXX = DAILY TRAFFIC VOLUMES

= PROJECT SITE

FIGURE 5-3

PM PEAK HOUR AND DAILY PROJECT TRAFFIC VOLUMES

NUVO EL TORO RESIDENTIAL, MISSION VIEJO

6.0 FUTURE TRAFFIC CONDITIONS

6.1 Existing With Project Traffic Volumes

The estimates of Project-generated traffic volumes were added to the Existing traffic conditions to develop traffic projections for Existing With Project traffic conditions. The anticipated Existing With Project AM and PM peak hour traffic volumes at the six (6) key study intersections are presented in ***Figures 6-1*** and ***6-2***, respectively. *Figure 6-2* also presents the Existing With Project daily traffic volumes.

6.2 Year 2023 Without Project Traffic Volumes

6.2.1 *Ambient Growth Traffic*

Near-term horizon year, traffic growth estimates have been calculated using an ambient growth factor. The ambient growth factor is intended to include unknown and future cumulative projects in the study area, as well as account for regular growth in traffic volumes due to the development of projects outside the study area. The application of the one percent (1.0%) annual growth rate to baseline Year 2020 traffic volumes results in a three percent (3.0%) growth in existing baseline volumes at the six (6) key study intersections and six (6) key roadway segments to horizon Year 2023.

6.2.2 *Cumulative Projects Traffic*

In order to make a realistic estimate of future on-street conditions prior to implementation of the proposed Project, the status of other known development projects (cumulative projects) in the vicinity of the proposed Project has been researched at the County of Orange and the Cities of Mission Viejo, Lake Forest, and Rancho Santa Margarita. With this information, the potential impact of the proposed Project can be evaluated within the context of the cumulative impact of all ongoing development. Based on our research, there are two (2) cumulative projects in the City of Mission Viejo, two (2) cumulative projects in the County of Orange, and two (2) cumulative projects in the City of Lake Forest within the vicinity of the Project site. There were no cumulative projects identified by the City of Rancho Santa Margarita in the vicinity of the Project site. These six (6) planned and/or approved cumulative projects have been included as part of the cumulative background setting.

Table 6-1 provides a brief description and location for each of the six (6) cumulative projects. ***Figure 6-3*** graphically illustrates the location of the six (6) cumulative projects. These cumulative projects are expected to generate vehicular traffic, which may affect the operating conditions of the key study intersections and key roadway segments.

Table 6-2 presents the development totals and resultant trip generation for the six (6) cumulative projects. As shown in *Table 6-2*, the cumulative projects are forecast to generate a total of 21,439 daily trips, with 2,069 trips (734 inbound, 1,335 outbound) forecast during the AM peak hour and 2,196 trips (1,335 inbound, 861 outbound) forecast during the PM peak hour.

The AM and PM peak hour traffic volumes associated with the six (6) cumulative projects are presented in ***Figures 6-4*** and ***6-5***, respectively. *Figure 6-5* also presents the daily cumulative project traffic volumes.

Figures 6-6 and ***6-7*** present Year 2023 Without Project AM and PM peak hour traffic volumes at the six (6) key study intersections, respectively. *Figure 6-7* also presents the Year 2023 Without Project daily traffic volumes for the six (6) key study roadway segments. It should be noted that the Year 2023 Without Project traffic volumes include ambient traffic growth as well as the traffic from the six (6) cumulative projects.

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

6.3 Year 2023 With Project Traffic Volumes

The estimates of Project-generated traffic volumes were added to the Year 2023 Without Project traffic conditions to develop traffic projections for the Year 2023 With Project traffic conditions. The anticipated Year 2023 With Project traffic conditions AM and PM peak hour traffic volumes at the six (6) key study intersections are presented in ***Figures 6-8*** and ***6-9***, respectively. *Figure 6-9* also presents the Year 2023 With Project daily traffic volumes for the six (6) key study roadway segments.

6.4 Long-Term Buildout (Year 2045) Traffic Conditions

As coordinated with City of Mission Viejo staff, the Year 2045 traffic volume forecasts for this traffic study were developed via the utilization of the OCTAM 5.0 Year 2045 traffic model provided by OCTA. Specifically, daily, AM peak period and PM peak period link traffic volumes were provided by OCTA for the existing base year (i.e. Year 2016) and for the future buildout year (i.e. Year 2045). The AM peak period corresponds to a three-hour morning commute period while the PM peak period corresponds to a four-hour afternoon commute period. Using the peak period model runs and the OCTA approved peak hour factors (i.e. AM = 0.3566 and PM = 0.2662), the one-hour peak hour link traffic volumes were determined. These future year 2045 link traffic volumes were post-processed based on the relationship of the base year validation model run output to the base year ground traffic counts resulting in Year 2045 without project daily traffic volumes for the key roadway segments and AM peak hour/PM peak hour turning movements for the key study intersections. Copies of the model post-processing worksheets are contained in ***Appendix G***.

6.4.1 *Long-Term Buildout (Year 2045) Traffic Volumes*

Figures 6-10 and ***6-11*** present the AM and PM peak hour Year 2045 Without Project traffic volumes at the six (6) key study intersections, respectively. *Figure 6-11* also presents the daily Year 2045 Without Project traffic volumes. ***Figures 6-12*** and ***6-13*** illustrate the forecast Year 2045 Buildout AM and PM peak hour traffic volumes, with the inclusion of the trips generated by the proposed Project, respectively. *Figure 6-13* also presents the daily Year 2045 With Project traffic volumes.

TABLE 6-1

LOCATION AND DESCRIPTION OF CUMULATIVE PROJECTS[10]

No.	Description	Location/Address	Size
City of Mission Viejo			
1.	City Lane Townhomes	NWC of Los Alisos Boulevard and SR-241	60 DU Multifamily (Low Rise)
2.	Mission Foothills Shopping Center	NWC of Los Alisos Boulevard and SR-241	44 DU Single-Family Homes 61 DU Multifamily (Low Rise)
County of Orange			
3.	Saddleback Crest	North of Santiago Canyon Road, west of Ridgeline Road	65 DU Single-Family Homes
4.	Red Rock Chateau	17521 E Santiago Canyon Road	200 Guest Wedding Venue
City of Lake Forest			
5.	Nakase Property	South of Bake Parkway, west of Rancho Parkway	675 DU Single-Family Homes 101 DU Senior Affordable Homes 1,000 Student Elementary School
6.	Portola Center Project	Generally located around Saddleback Ranch Road at Glenn Ranch Road	613 DU Single-Family Homes 260 DU Multifamily 57 DU Affordable Multifamily 10,000 SF Commercial

[10] Source: City of Mission Viejo, City of Lake Forest, and County of Orange staff.

TABLE 6-2

CUMULATIVE PROJECTS TRAFFIC GENERATION FORECAST[11]

No.	Cumulative Project Description	Daily Two-Way	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
1.	City Lane Townhomes[12]	439	6	22	28	21	13	34
2.	Mission Foothills Shopping Center[13]	862	15	46	61	49	29	78
3.	Saddleback Crest[14]	780	16	42	58	49	29	78
4.	Red Rock Chateau[15]	174	0	0	0	67	10	77
5.	Nakase Property[16]	8,789	503	699	1,202	521	358	879
6.	Portola Center Project[17]	10,395	194	526	720	628	422	1,050
Total Cumulative Projects Trip Generation Forecast		**21,439**	**734**	**1,335**	**2,069**	**1,335**	**861**	**2,196**

11 Unless otherwise noted, Source: *Trip Generation, 10th Editions*, Institute of Transportation Engineers (ITE) [Washington, D.C. (2017)].

12 Source: *City Lane Townhomes Traffic Impact Analysis Addendum,* dated August 23, 2019, prepared by Environment, Planning, Development Solutions, Inc.

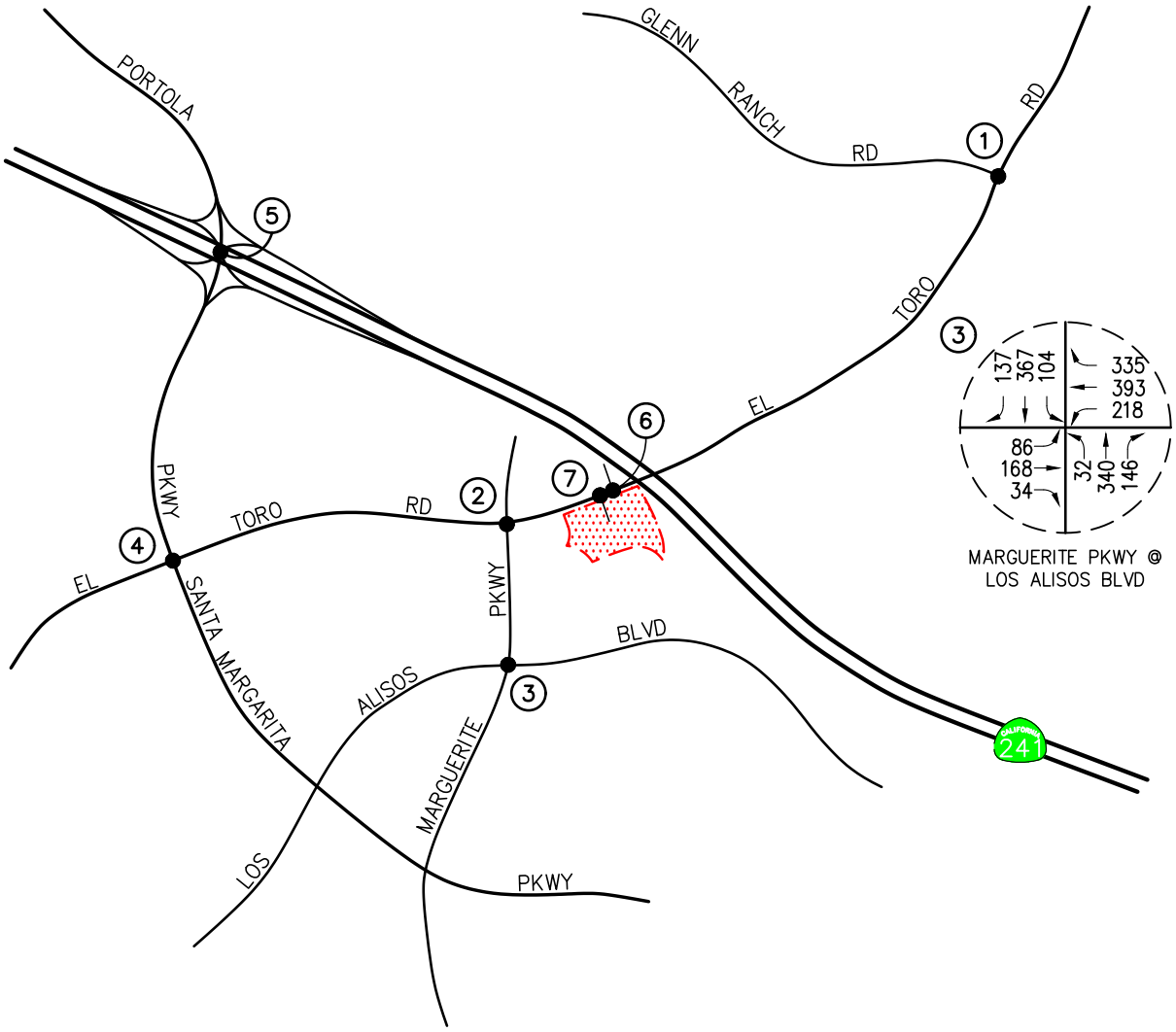
13 Source: *Mission Foothills Shopping Center – Trip Generation Analysis,* dated December 21, 2018, prepared by LSA.

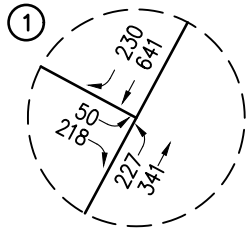
14 Source: *Saddleback Crest Traffic Impact Study,* dated January 18, 2012, prepared by RK Engineering Group, Inc.

15 Source: *Red Rock Chateau Traffic Impact Analysis,* dated August 9, 2011, prepared by DKS Associates.

16 Source: *Nakase Property Traffic Impact Analysis,* dated May 16, 2018, prepared by Urban Crossroads.

17 Source: *Portola Center Project Traffic Impact Study,* dated January 2013, prepared by Wilson & Company.





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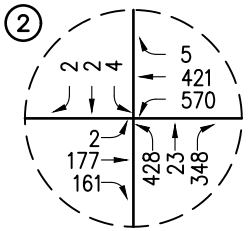

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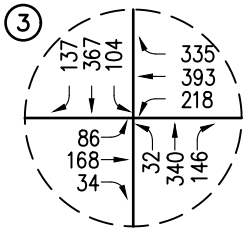

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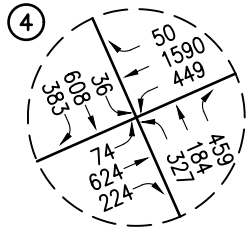

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SANTA MARGARITA PKWY @
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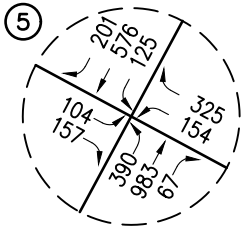
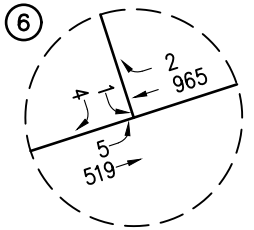
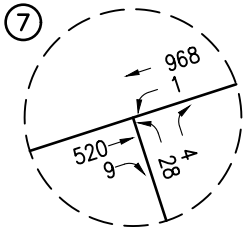


PORTOLA PKWY @
SR-241 RAMPS



STORAGE WEST DWY @
EL TORO RD



PROJECT DWY @
EL TORO RD

LINSCOTT LAW & GREENSPAN
engineers

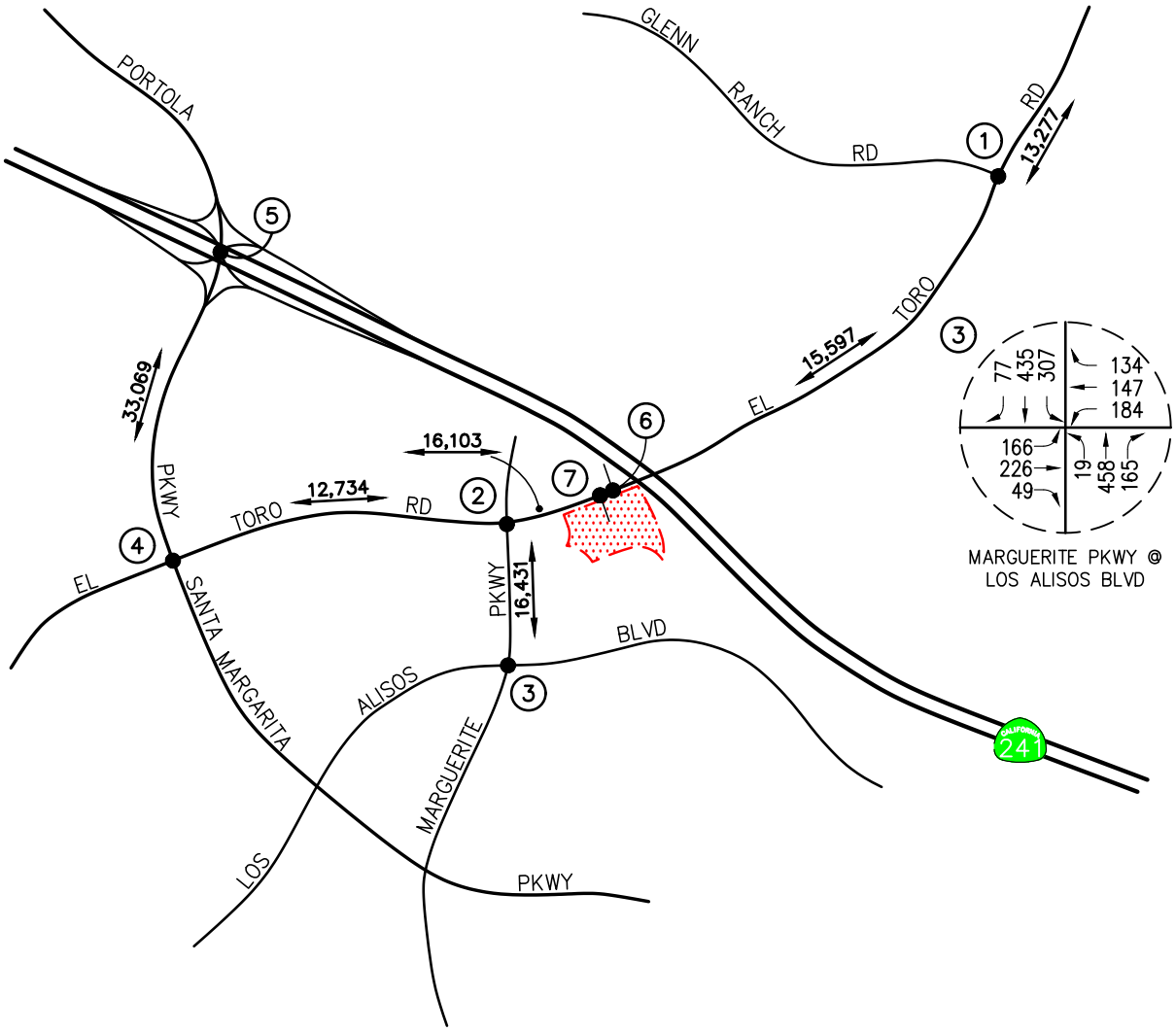
N
NO SCALE

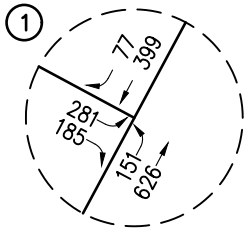
KEY
(#) = STUDY INTERSECTION
= PROJECT SITE

FIGURE 6-1

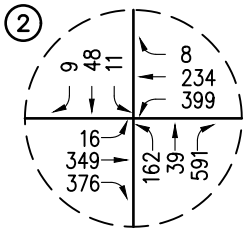
EXISTING PLUS PROJECT AM PEAK HOUR TRAFFIC VOLUMES

NUVO EL TORO RESIDENTIAL, MISSION VIEJO



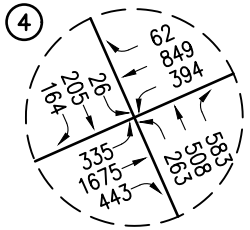


EL TORO RD @
GLENN RANCH RD

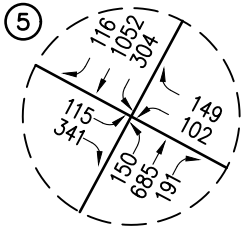


SADDLEBACK CHURCH/
MARGUERITE PKWY @
EL TORO RD

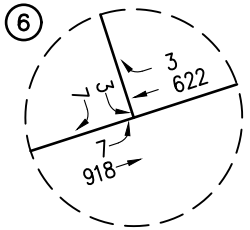
MARGUERITE PKWY @
LOS ALISOS BLVD



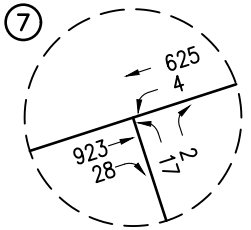
PORTOLA PKWY/
SANTA MARGARITA PKWY @
EL TORO RD



PORTOLA PKWY @
SR-241 RAMPS



STORAGE WEST DWY @
EL TORO RD



PROJECT DWY @
EL TORO RD

LINSCOTT LAW & GREENSPAN
engineers

N
NO SCALE

KEY

(#) = STUDY INTERSECTION

XX,XXX = DAILY TRAFFIC VOLUMES

= PROJECT SITE

FIGURE 6-2

EXISTING PLUS PROJECT PM PEAK HOUR AND DAILY TRAFFIC VOLUMES

NUVO EL TORO RESIDENTIAL, MISSION VIEJO

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LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

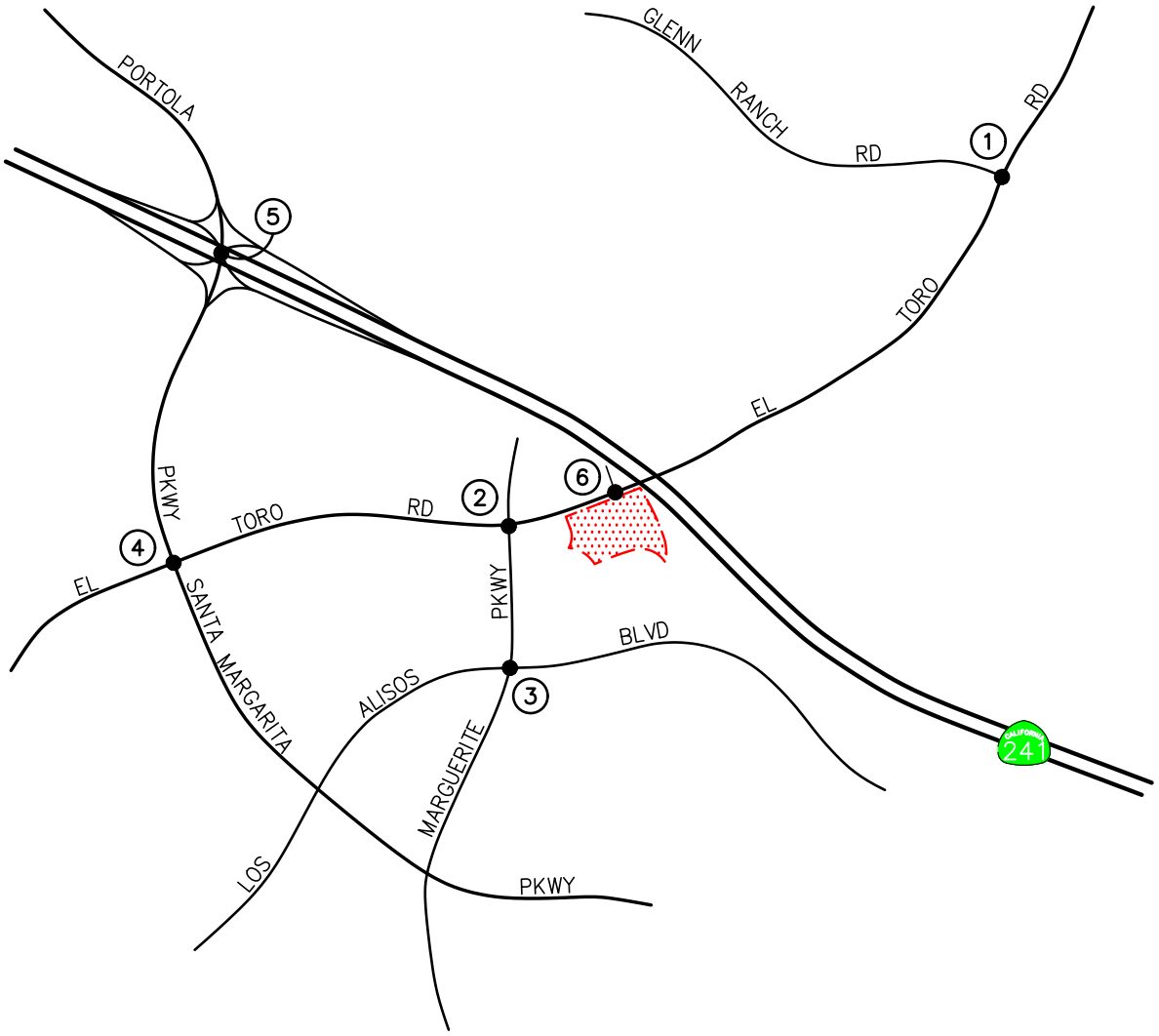
(#) = CUMULATIVE PROJECT LOCATION

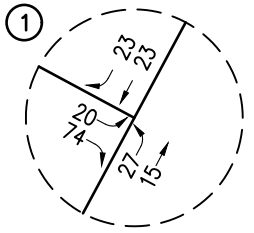
= PROJECT SITE

FIGURE 6-3

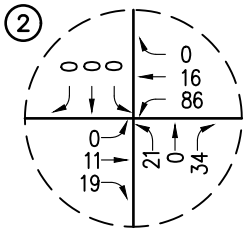
LOCATION OF CUMULATIVE PROJECTS

NUVO EL TORO RESIDENTIAL, MISSION VIEJO

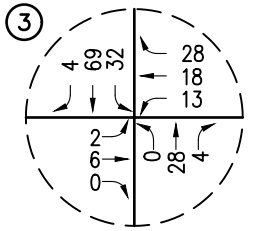




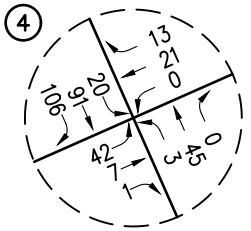
EL TORO RD @
GLENN RANCH RD



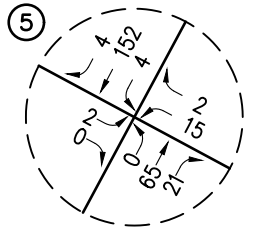
SADDLEBACK CHURCH/
MARGUERITE PKWY @
EL TORO RD



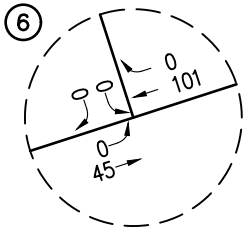
MARGUERITE PKWY @
LOS ALISOS BLVD



PORTOLA PKWY/
SANTA MARGARITA PKWY @
EL TORO RD



PORTOLA PKWY @
SR-241 RAMPS



STORAGE WEST DWY @
EL TORO RD

LINSCOTT LAW & GREENSPAN
engineers

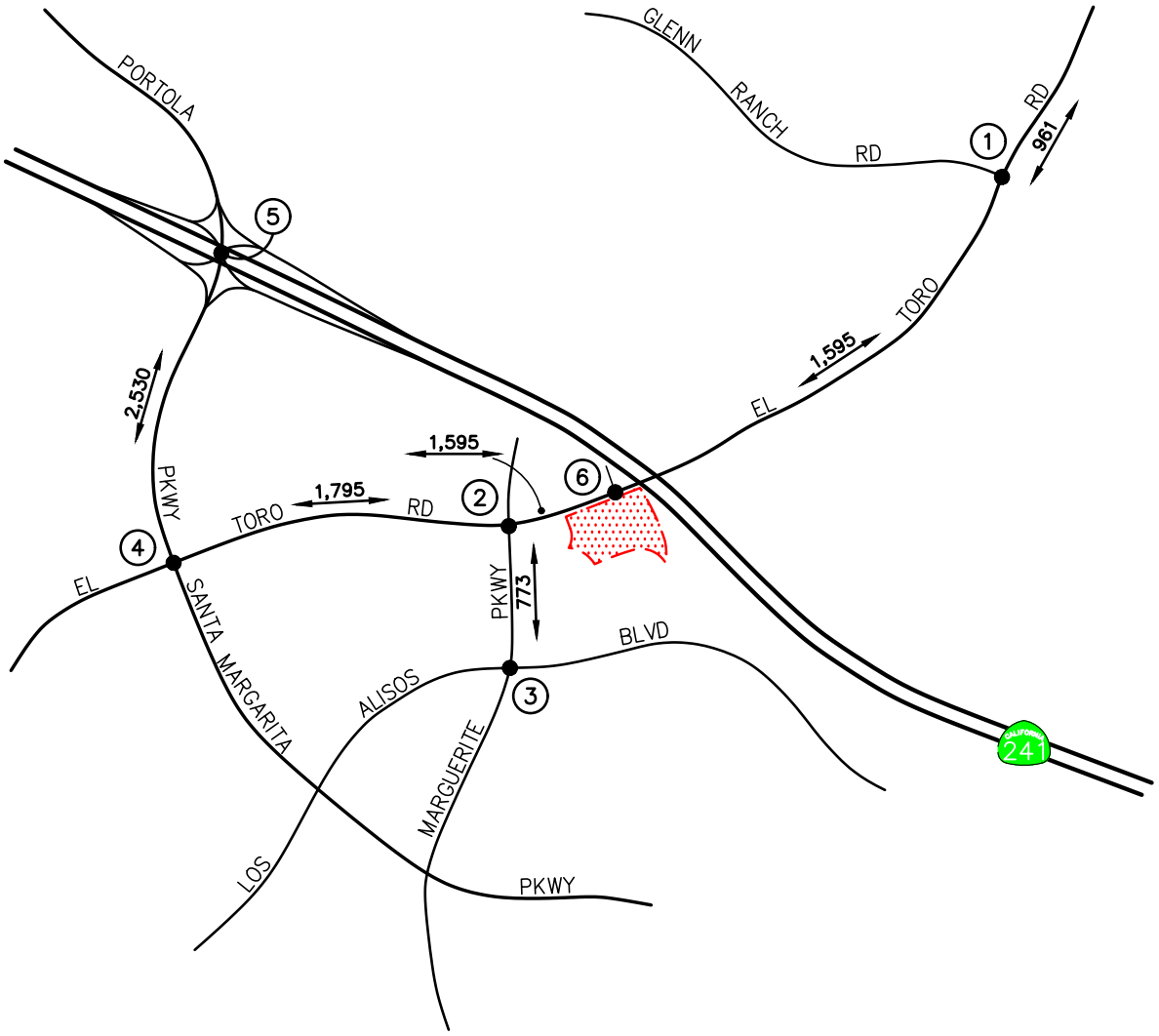
N
NO SCALE

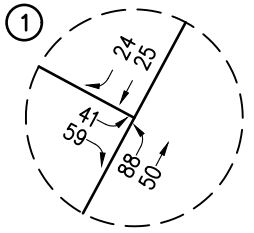
KEY
(#) = STUDY INTERSECTION
= PROJECT SITE

FIGURE 6-4

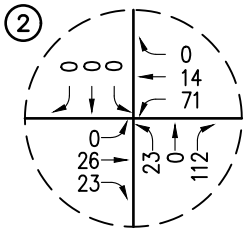
AM PEAK HOUR CUMULATIVE PROJECTS TRAFFIC VOLUMES

NUVO EL TORO RESIDENTIAL, MISSION VIEJO

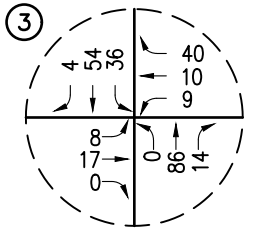




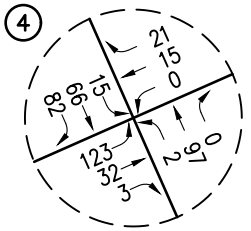
EL TORO RD @
GLENN RANCH RD



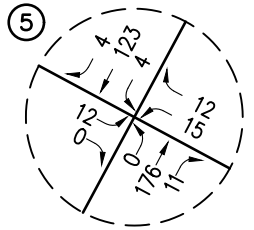
SADDLEBACK CHURCH/
MARGUERITE PKWY @
EL TORO RD



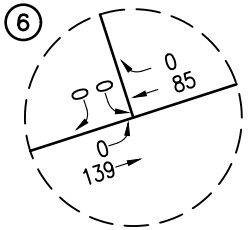
MARGUERITE PKWY @
LOS ALISOS BLVD



PORTOLA PKWY/
SANTA MARGARITA PKWY @
EL TORO RD



PORTOLA PKWY @
SR-241 RAMPS



STORAGE WEST DWY @
EL TORO RD

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LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

(#) = STUDY INTERSECTION

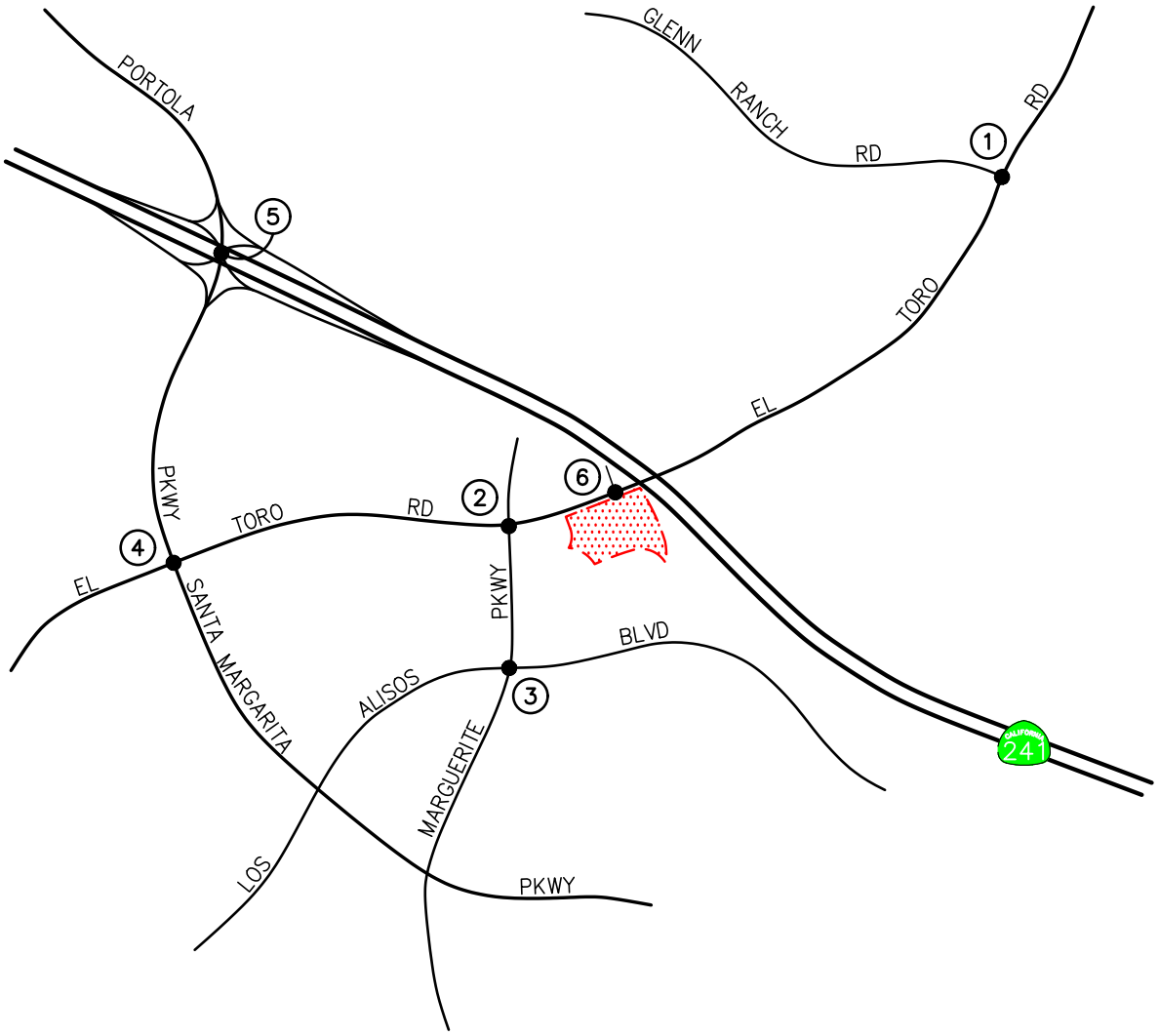
XX,XXX = DAILY TRAFFIC VOLUMES

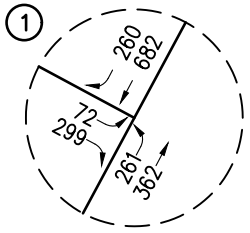
= PROJECT SITE

FIGURE 6-5

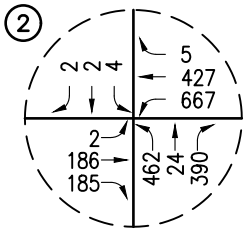
PM PEAK HOUR AND DAILY CUMULATIVE PROJECTS TRAFFIC VOLUMES

NUVO EL TORO RESIDENTIAL, MISSION VIEJO

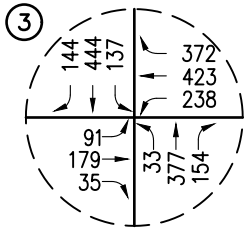




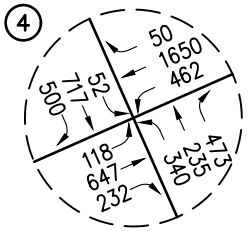
EL TORO RD @
GLENN RANCH RD



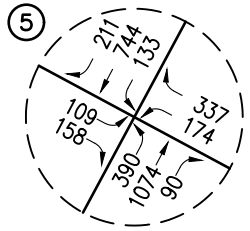
SADDLEBACK CHURCH/
MARGUERITE PKWY @
EL TORO RD



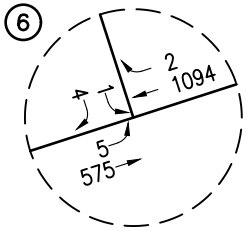
MARGUERITE PKWY @
LOS ALISOS BLVD



PORTOLA PKWY/
SANTA MARGARITA PKWY @
EL TORO RD



PORTOLA PKWY @
SR-241 RAMPS



STORAGE WEST DWY @
EL TORO RD

LINSCOTT LAW & GREENSPAN
engineers

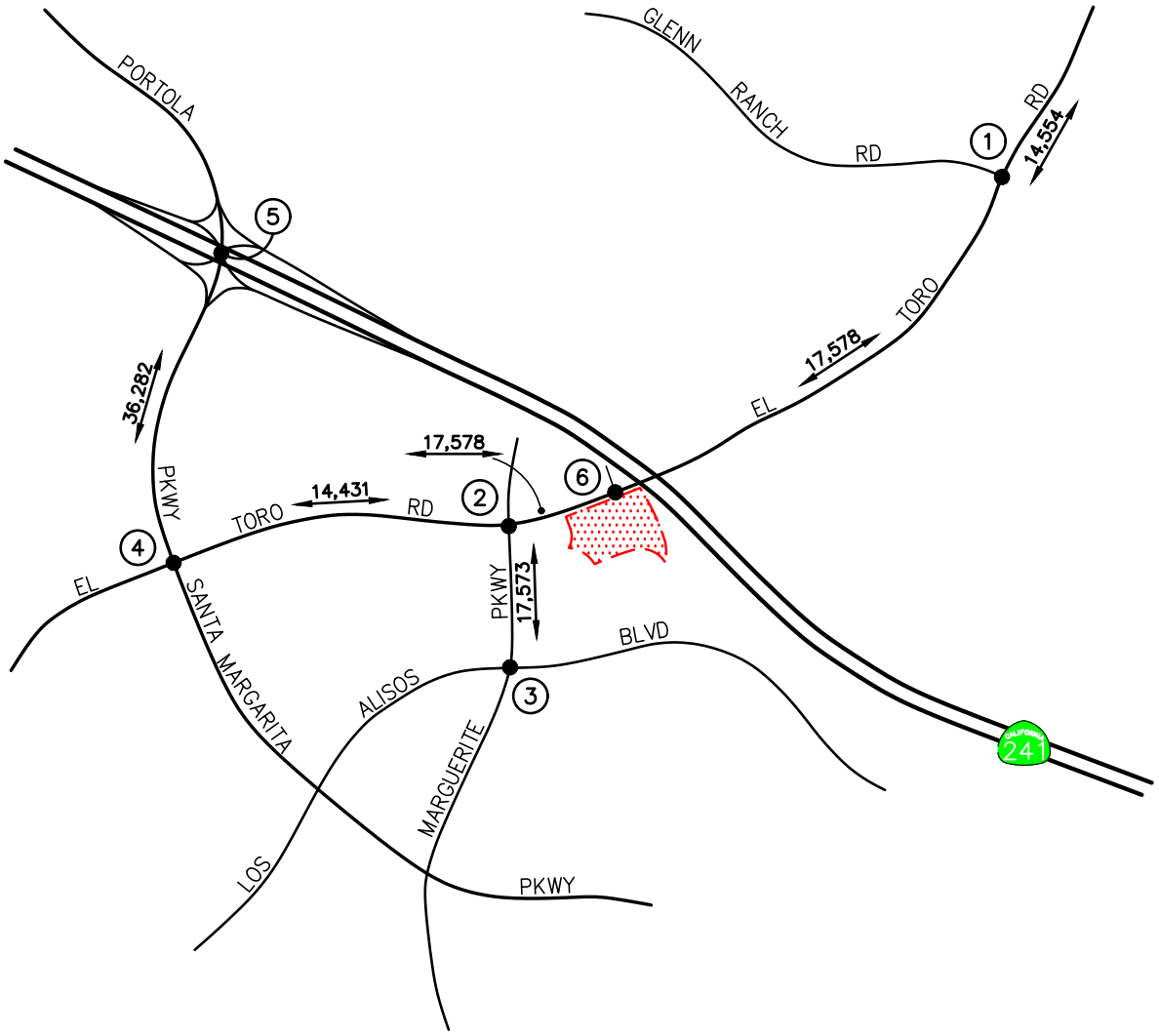
N
NO SCALE

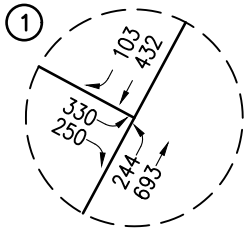
KEY
(#) = STUDY INTERSECTION
= PROJECT SITE

FIGURE 6-6

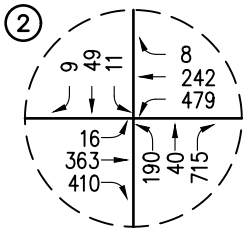
YEAR 2023 CUMULATIVE AM PEAK HOUR TRAFFIC VOLUMES

NUVO EL TORO RESIDENTIAL, MISSION VIEJO

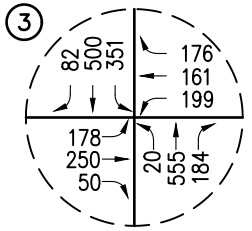




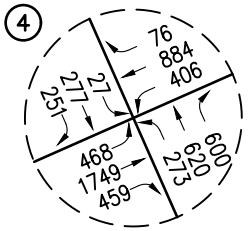
EL TORO RD @
GLENN RANCH RD



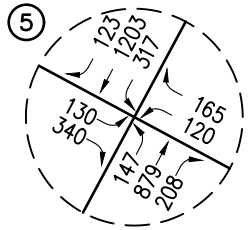
SADDLEBACK CHURCH/
MARGUERITE PKWY @
EL TORO RD



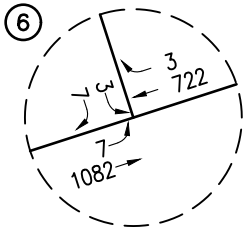
MARGUERITE PKWY @
LOS ALISOS BLVD



PORTOLA PKWY/
SANTA MARGARITA PKWY @
EL TORO RD



PORTOLA PKWY @
SR-241 RAMPS



STORAGE WEST DWY @
EL TORO RD

LINSCOTT LAW & GREENSPAN
engineers

N
NO SCALE

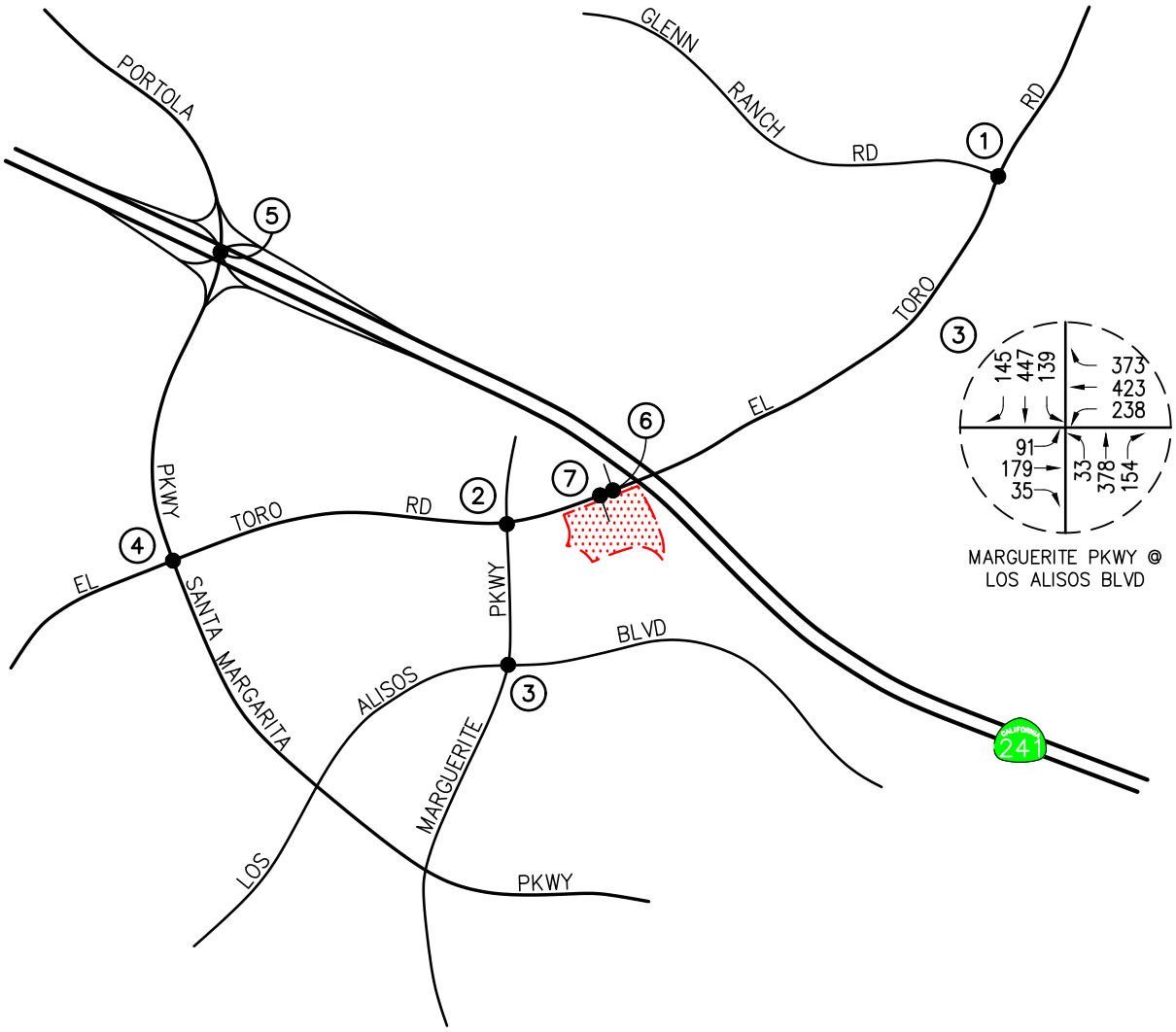
KEY

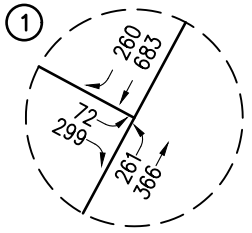
(#) = STUDY INTERSECTION
XX,XXX = DAILY TRAFFIC VOLUMES
= PROJECT SITE

FIGURE 6-7

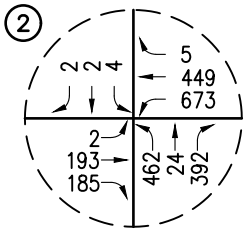
YEAR 2023 CUMULATIVE PM PEAK HOUR AND DAILY TRAFFIC VOLUMES

NUVO EL TORO RESIDENTIAL, MISSION VIEJO

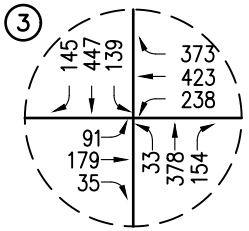




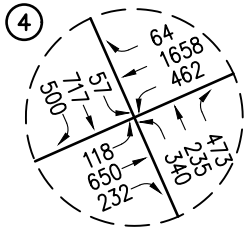
EL TORO RD @
GLENN RANCH RD



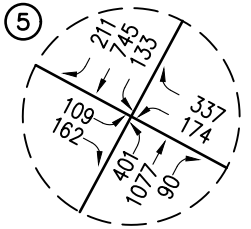
SADDLEBACK CHURCH/
MARGUERITE PKWY @
EL TORO RD



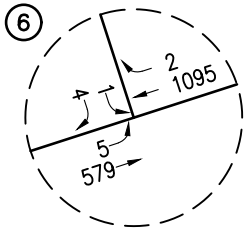
MARGUERITE PKWY @
LOS ALISOS BLVD



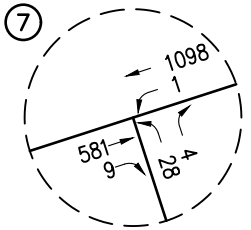
PORTOLA PKWY/
SANTA MARGARITA PKWY @
EL TORO RD



PORTOLA PKWY @
SR-241 RAMPS



STORAGE WEST DWY @
EL TORO RD



PROJECT DWY @
EL TORO RD

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

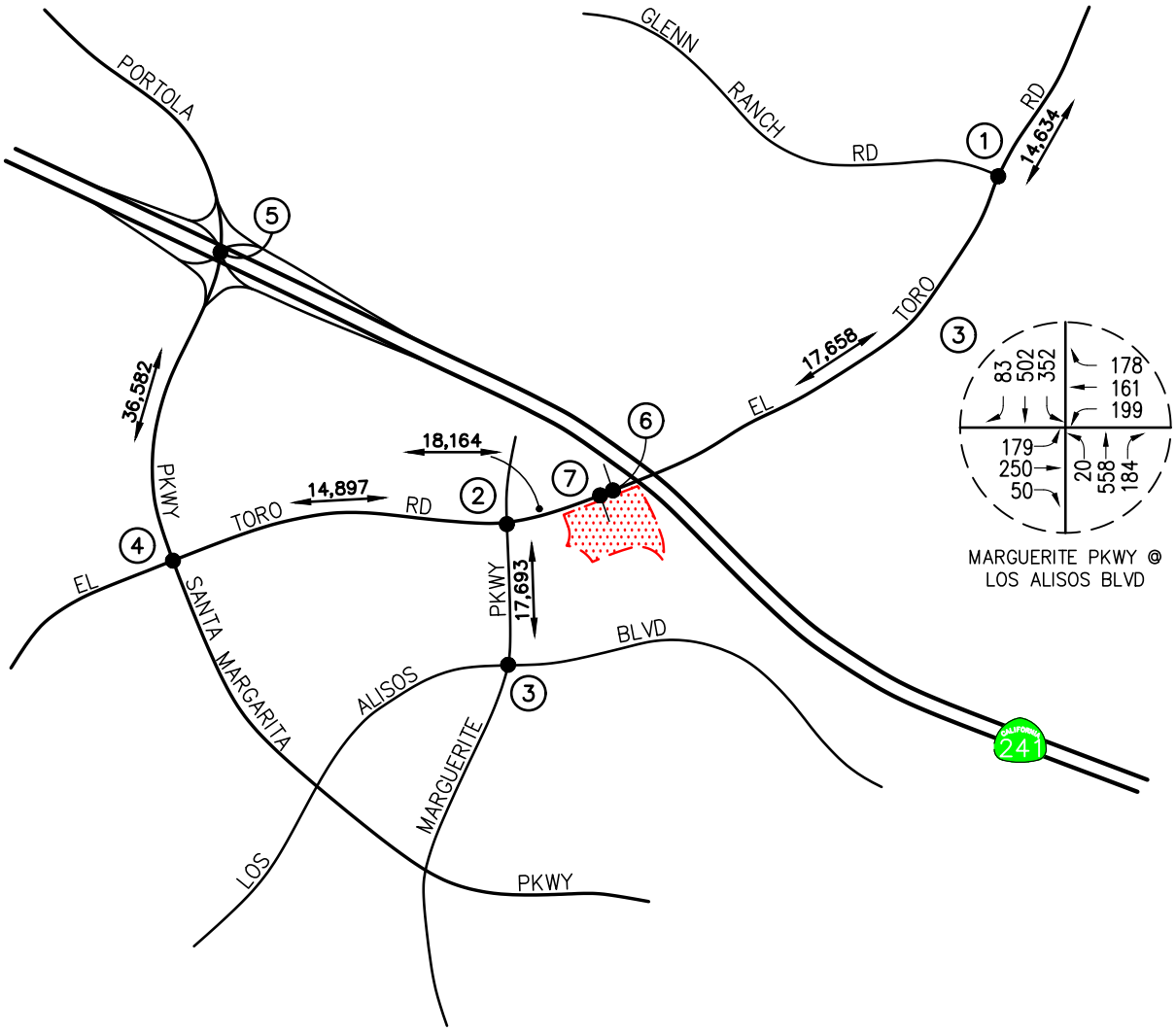
(#) = STUDY INTERSECTION

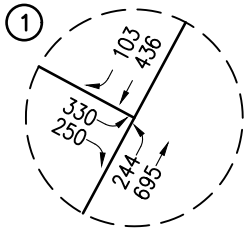
= PROJECT SITE

FIGURE 6-8

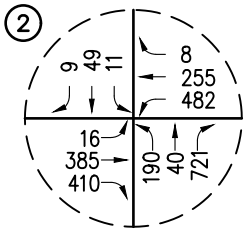
YEAR 2023 CUMULATIVE PLUS PROJECT AM PEAK HOUR TRAFFIC VOLUMES

NUVO EL TORO RESIDENTIAL, MISSION VIEJO



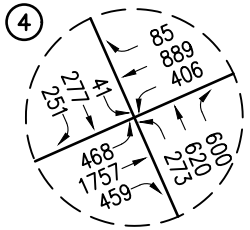


EL TORO RD @
GLENN RANCH RD

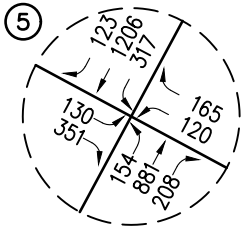


SADDLEBACK CHURCH/
MARGUERITE PKWY @
EL TORO RD

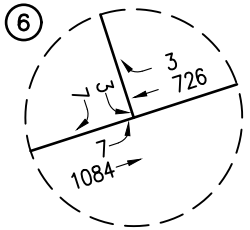
MARGUERITE PKWY @
LOS ALISOS BLVD



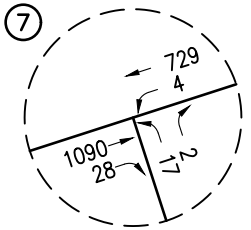
PORTOLA PKWY/
SANTA MARGARITA PKWY @
EL TORO RD



PORTOLA PKWY @
SR-241 RAMPS



STORAGE WEST DWY @
EL TORO RD



PROJECT DWY @
EL TORO RD

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

(#) = STUDY INTERSECTION

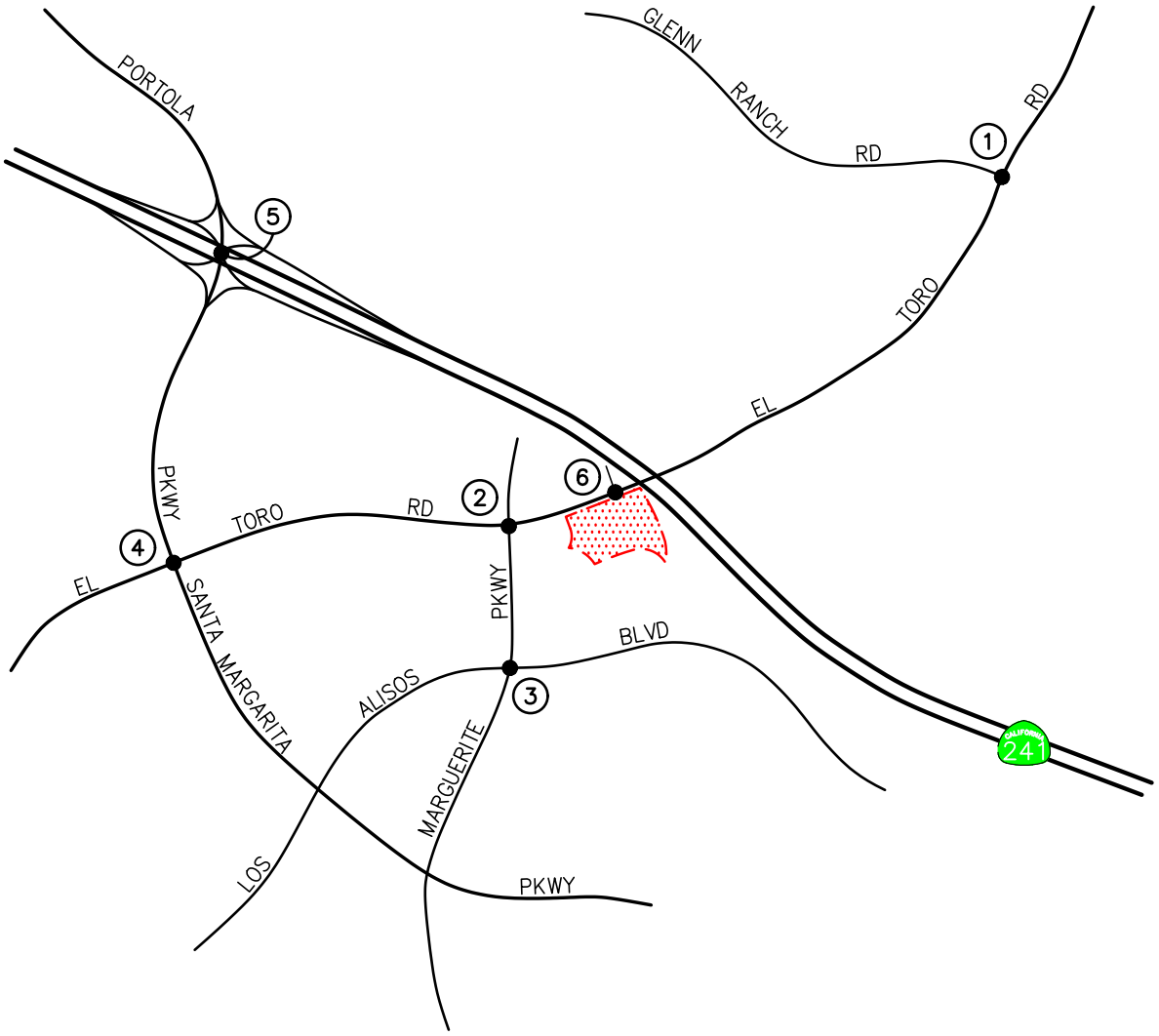
XX,XXX = DAILY TRAFFIC VOLUMES

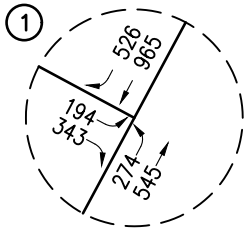
= PROJECT SITE

FIGURE 6-9

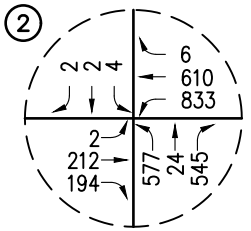
YEAR 2023 CUMULATIVE PLUS PROJECT PM PEAK HOUR AND DAILY TRAFFIC VOLUMES

NUVO EL TORO RESIDENTIAL, MISSION VIEJO

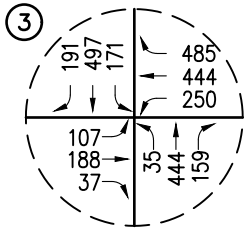




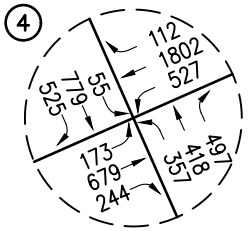
EL TORO RD @
GLENN RANCH RD



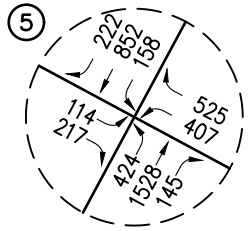
SADDLEBACK CHURCH/
MARGUERITE PKWY @
EL TORO RD



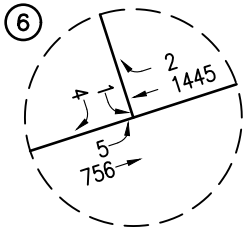
MARGUERITE PKWY @
LOS ALISOS BLVD



PORTOLA PKWY/
SANTA MARGARITA PKWY @
EL TORO RD



PORTOLA PKWY @
SR-241 RAMPS



STORAGE WEST DWY @
EL TORO RD

LINSCOTT LAW & GREENSPAN
engineers

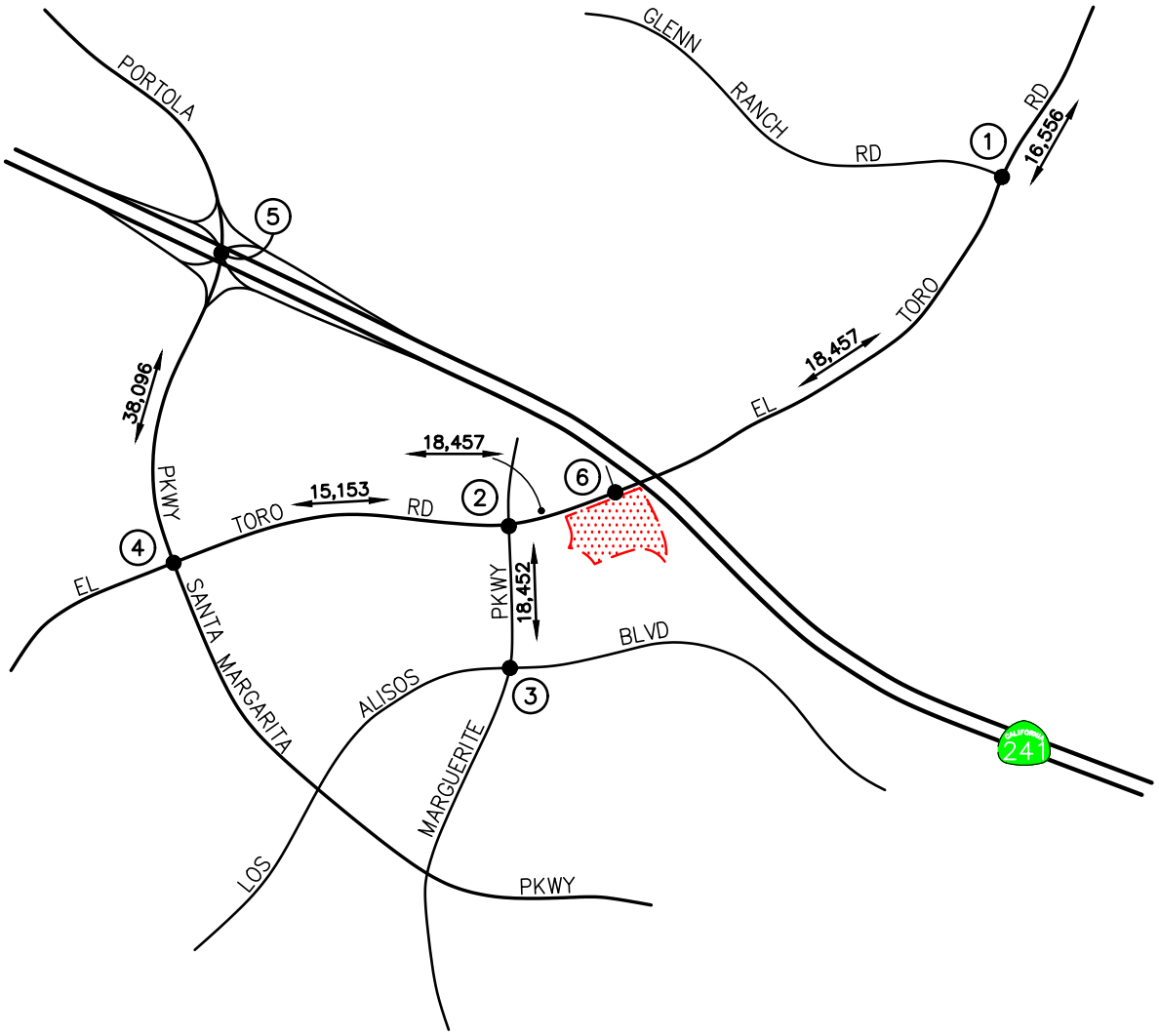
N
NO SCALE

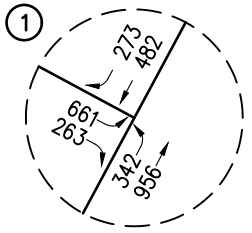
KEY
(#) = STUDY INTERSECTION
= PROJECT SITE

FIGURE 6-10

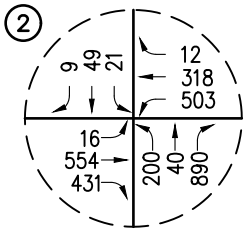
YEAR 2045 BUILDOUT
AM PEAK HOUR TRAFFIC VOLUMES

NUVO EL TORO RESIDENTIAL, MISSION VIEJO

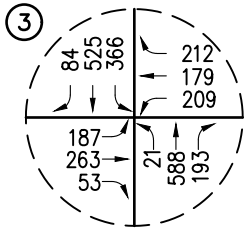




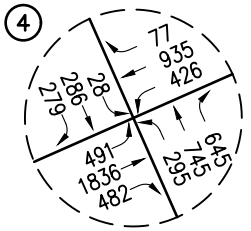
EL TORO RD @
GLENN RANCH RD



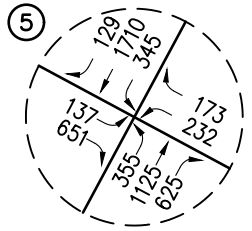
SADDLEBACK CHURCH/
MARGUERITE PKWY @
EL TORO RD



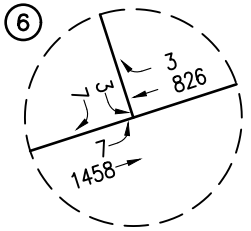
MARGUERITE PKWY @
LOS ALISOS BLVD



PORTOLA PKWY/
SANTA MARGARITA PKWY @
EL TORO RD



PORTOLA PKWY @
SR-241 RAMPS



STORAGE WEST DWY @
EL TORO RD

LINSCOTT LAW & GREENSPAN
engineers

N
NO SCALE

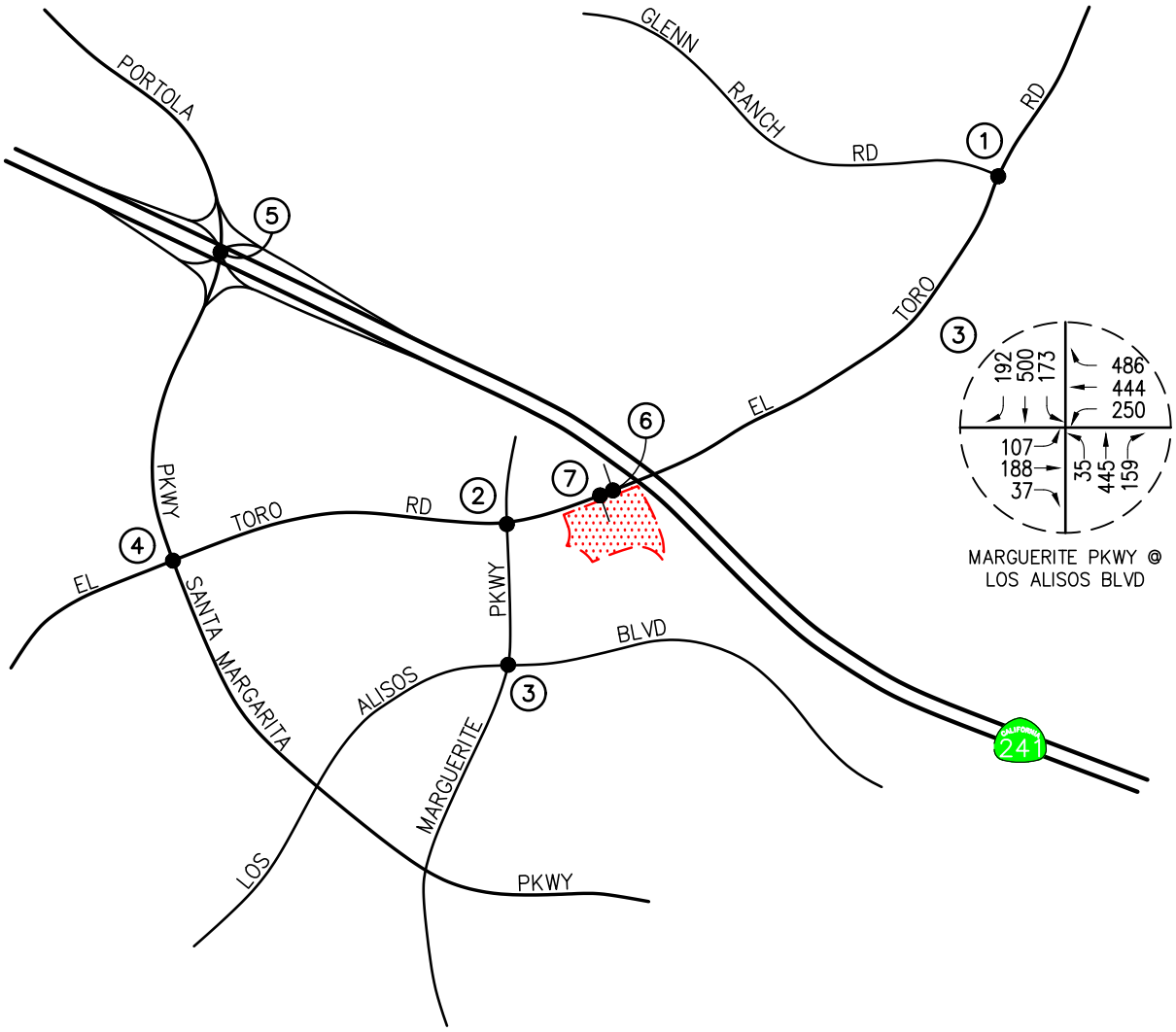
KEY

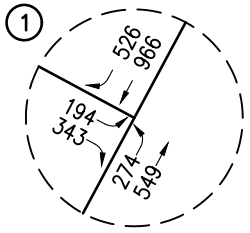
(#) = STUDY INTERSECTION
XX,XXX = DAILY TRAFFIC VOLUMES
= PROJECT SITE

FIGURE 6-11

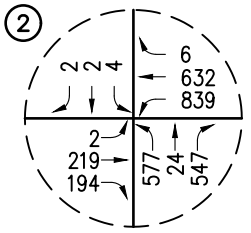
YEAR 2045 BUILDOUT
PM PEAK HOUR AND DAILY TRAFFIC VOLUMES

NUVO EL TORO RESIDENTIAL, MISSION VIEJO

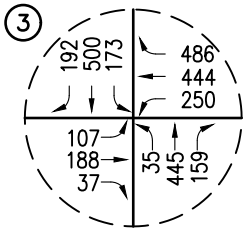




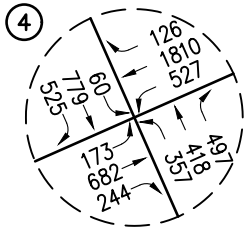
EL TORO RD @
GLENN RANCH RD



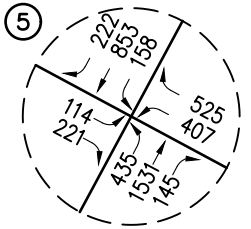
SADDLEBACK CHURCH/
MARGUERITE PKWY @
EL TORO RD



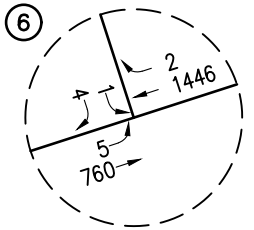
MARGUERITE PKWY @
LOS ALISOS BLVD



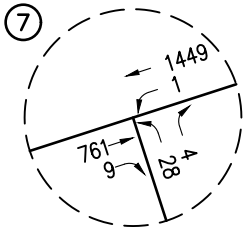
PORTOLA PKWY/
SANTA MARGARITA PKWY @
EL TORO RD



PORTOLA PKWY @
SR-241 RAMPS



STORAGE WEST DWY @
EL TORO RD



PROJECT DWY @
EL TORO RD

n:\4200\2204269 - nuvo el toro residential, mission viejo\dwg\4269 f6-12.dwg LDP 14:12:30 06-17-2020 tucker

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

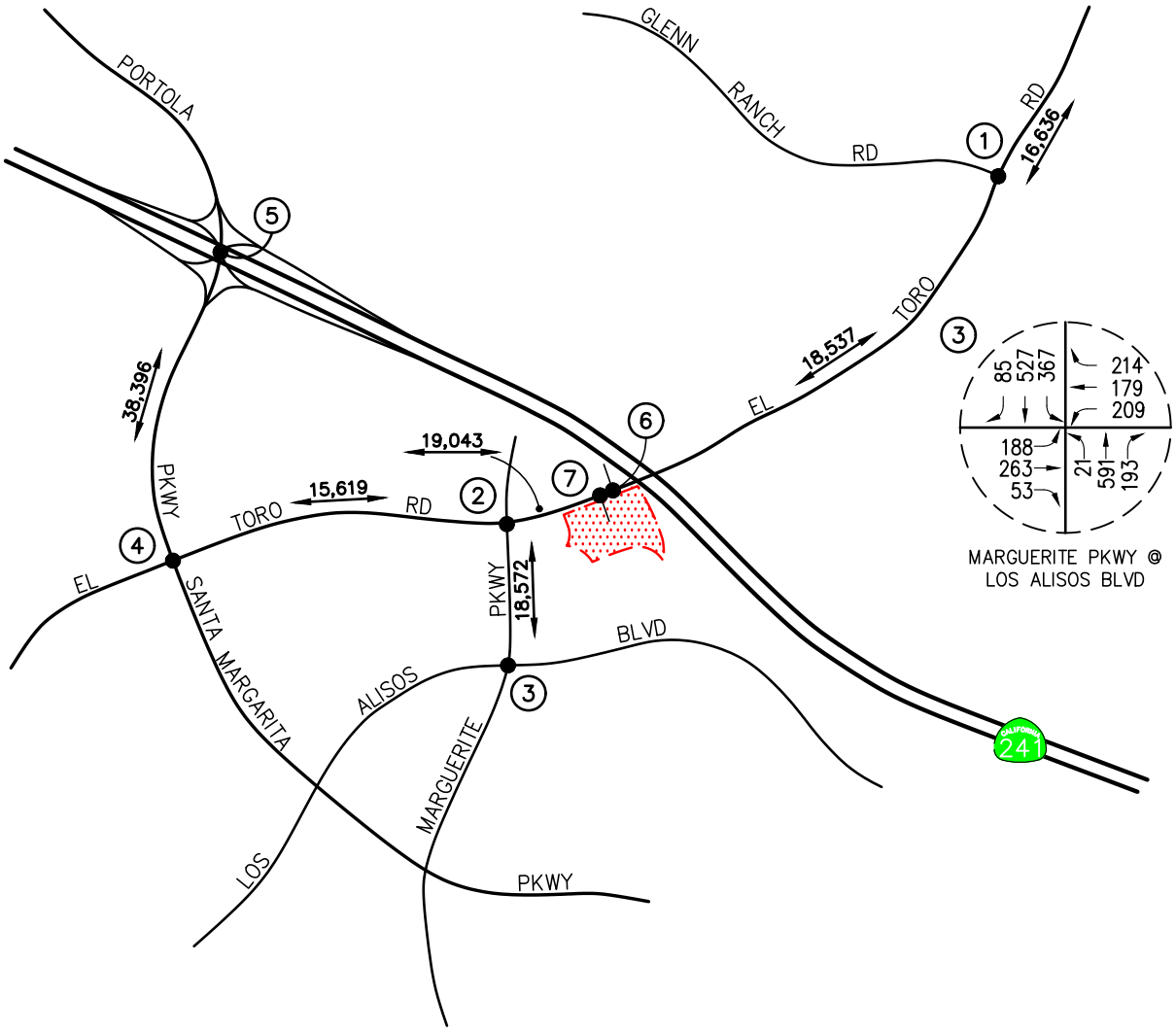
(#) = STUDY INTERSECTION

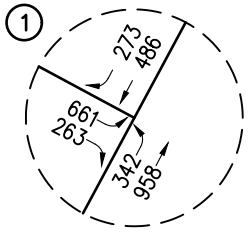
= PROJECT SITE

FIGURE 6-12

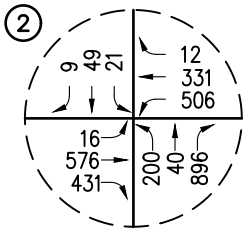
YEAR 2045 BUILDOUT PLUS PROJECT AM PEAK HOUR TRAFFIC VOLUMES

NUVO EL TORO RESIDENTIAL, MISSION VIEJO



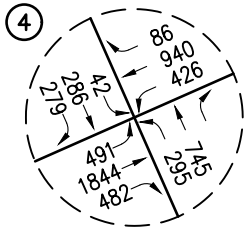


EL TORO RD @
GLENN RANCH RD

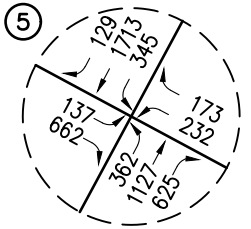


SADDLEBACK CHURCH/
MARGUERITE PKWY @
EL TORO RD

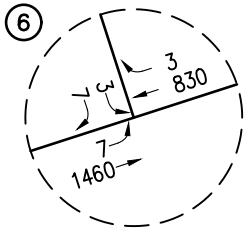
MARGUERITE PKWY @
LOS ALISOS BLVD



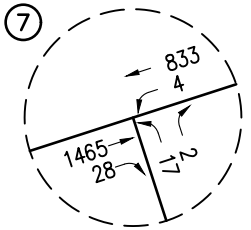
PORTOLA PKWY/
SANTA MARGARITA PKWY @
EL TORO RD



PORTOLA PKWY @
SR-241 RAMPS



STORAGE WEST DWY @
EL TORO RD



PROJECT DWY @
EL TORO RD

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

(#) = STUDY INTERSECTION

XX,XXX = DAILY TRAFFIC VOLUMES

= PROJECT SITE

FIGURE 6-13

YEAR 2045 BUILDOUT PLUS PROJECT PM PEAK HOUR AND DAILY TRAFFIC VOLUMES

NUVO EL TORO RESIDENTIAL, MISSION VIEJO

7.0 EXISTING CONDITIONS TRAFFIC IMPACT ANALYSIS

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

7.1 Existing Conditions Intersection Capacity Analysis

Table 7-1 summarizes the peak hour Level of Service results at the six (6) key study intersections for existing traffic conditions, with and without the Project. The first column (1) of ICU/LOS and HCM/LOS values in *Table 7-1* presents a summary of Existing AM and PM peak hour traffic conditions. The second column (2) in *Table 7-1* presents forecast Existing With Project traffic conditions. The third column (3) of *Table 7-1* shows whether the traffic associated with the Project will have a significant impact based on the LOS standards and the significance impact criteria defined in this report.

7.1.1 *Existing Traffic Conditions*

Review of column (1) of *Table 7-1* indicates that all six (6) key study intersections are forecast to operate at acceptable LOS C or better for the Existing traffic conditions.

7.1.2 *Existing With Project Traffic Conditions*

Review of columns (2) and (3) of *Table 7-1* indicates that traffic associated with the proposed Project ***will not*** significantly impact any of the six (6) key study intersections when compared to the LOS standards and significant impact criteria specified in this report. The six (6) key study intersections currently operate and are forecast to continue to operate at an acceptable LOS C or better during the AM and PM peak hours with the addition of Project generated traffic to existing traffic.

Appendix H contains the ICU/LOS and HCM/LOS calculation worksheets for Existing and Existing With Project Traffic Conditions.

TABLE 7-1

EXISTING CONDITIONS PEAK HOUR INTERSECTION CAPACITY ANALYSIS SUMMARY[18]

Key Intersection	Time Period	(1) Existing Traffic Conditions		(2) Existing With Project Traffic Conditions		(3) Significant Impact	
		ICU/HCM	LOS	ICU/HCM	LOS	ICU/HCM Increase	Yes/No
1. El Toro Road at	AM	0.469	A	0.469	A	0.000	No
Glenn Ranch Road	PM	0.582	A	0.584	A	0.002	No
2. Marguerite Parkway/Saddleback Church at	AM	0.438	A	0.439	A	0.001	No
El Toro Road	PM	0.629	B	0.633	B	0.004	No
3. Marguerite Parkway at	AM	0.517	A	0.519	A	0.002	No
Los Alisos Boulevard	PM	0.601	B	0.603	B	0.002	No
4. Santa Margarita Parkway/Portola Pkwy at	AM	0.714	C	0.714	C	0.000	No
El Toro Road	PM	0.773	C	0.778	C	0.005	No
5. Portola Parkway at	AM	0.385	A	0.386	A	0.001	No
SR-241 Ramps	PM	0.395	A	0.398	A	0.003	No
6. Storage West Driveway at	AM	14.4 s/v	B	14.4 s/v	B	0.0 s/v	No
El Toro Road	PM	13.0 s/v	B	13.0 s/v	B	0.0 s/v	No

Notes:

- ICU = Intersection Capacity Utilization
- HCM = Highway Capacity Manual
- LOS = Level of Service, please refer to *Tables 3-1* and *3-2* for the LOS definitions.
- s/v = seconds per vehicle (delay).
- **Bold ICU/LOS** and **Delay/LOS values** indicate unacceptable service levels.

[18] *Appendix H* contains the ICU/LOS and HCM/LOS calculation worksheets for all study intersections.

7.2 Existing Conditions Roadway Segment Analysis

Table 7-2 summarizes the roadway segment level of service results at the six (6) key roadway segments for existing traffic conditions with and without the Project. The first column (1) shows the number of lanes, the second column (2) shows the arterial classification and the third column (3) shows the existing LOS "E" capacity. The fourth column (4) presents a summary of existing daily traffic conditions. The fifth column (5) lists existing with project daily traffic conditions. Column 5 also shows the increase in V/C ratio value due to the added daily 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.

7.2.1 *Existing Traffic Conditions*

Review of column (4) of *Table 7-2* indicates that all six (6) key roadway segments are forecast to operate at acceptable LOS A for the Existing traffic conditions.

7.2.2 *Existing With Project Traffic Conditions*

Review of column (5) of *Table 7-2* indicates that traffic associated with the proposed Project ***will not*** significantly impact any of the six (6) key roadway segments when compared to the LOS standards and significant impact criteria specified in this report. The six (6) key roadway segments are forecast to continue to operate at an acceptable LOS A on a daily basis with the addition of Project generated traffic to existing traffic. It should be noted that Roadway Segment C was evaluated based on both Option #1 (i.e. 4D Primary) and Option #2 (i.e. 5D Major).

TABLE 7-2

EXISTING CONDITIONS DAILY ROADWAY SEGMENT ANALYSIS SUMMARY

Key Roadway Segment	(1) Lanes	(2) Type of Arterial	(3) LOS E Capacity (VPD)	(4) Existing Traffic Conditions			(5) Existing With Project Traffic Conditions				
				Daily Volume	V/C Ratio	LOS	Daily Volume	V/C Ratio	LOS	Increase	Significant (Yes/No)
A. El Toro Road *between* Glenn Ranch Road and Cielo Entrada	3D	Primary	28,100[19]	13,197	0.470	A	13,277	0.472	A	0.002	No
B. El Toro Road *between* Project Driveway and Glenn Ranch Road	4D	Primary	37,500	15,517	0.414	A	15,597	0.416	A	0.002	No
C. El Toro Road *between* Marguerite Pkwy/Saddleback Church and Project Driveway											
➢ Option #1	4D	Primary	37,500	15,517	0.414	A	16,103	0.429	A	0.015	No
➢ Option #2	5D	Major	46,900[20]	15,517	0.331	A	16,103	0.343	A	0.012	No

Notes:

- VPD = Vehicles Per Day
- D = Divided
- U = Undivided
- V/C = Volume to Capacity Ratio
- LOS = Level of Service, please refer to *Table 3-4* for the LOS definitions.

[19] Modified LOS E capacity for a 3-lane, divided roadway based on the following: [(37,500/4) x 3 = 28,100].

[20] Modified LOS E capacity for a 5-lane, divided roadway based on the following: [(56,300/6) x 5 = 46,900].

TABLE 7-2 (CONTINUED)

EXISTING CONDITIONS DAILY ROADWAY SEGMENT ANALYSIS SUMMARY

Key Roadway Segment	(1) Lanes	(2) Type of Arterial	(3) LOS E Capacity (VPD)	(4) Existing Traffic Conditions			(5) Existing With Project Traffic Conditions				
				Daily Volume	V/C Ratio	LOS	Daily Volume	V/C Ratio	LOS	Increase	Significant (Yes/No)
D. El Toro Road *between* Santa Margarita Pkwy/Portola Pkwy and Marguerite Pkwy/Saddleback Church	4D	Primary	37,500	12,268	0.327	A	12,734	0.340	A	0.013	No
E. Portola Parkway *between* SR-241 Ramps and El Toro Road	7D	Principal	65,600[21]	32,769	0.500	A	33,069	0.504	A	0.004	No
F. Marguerite Pkwy *between* El Toro Road and Los Alisos Boulevard	4D	Primary	37,500	16,311	0.435	A	16,431	0.438	A	0.003	No

Notes:

- VPD = Vehicles Per Day
- D = Divided
- U = Undivided
- V/C = Volume to Capacity Ratio
- LOS = Level of Service, please refer to *Table 3-4* for the LOS definitions.

[21] Modified LOS E capacity for a 5-lane, divided roadway based on the following: [(75,000/8) x 7 = 65,600].

8.0 YEAR 2023 TRAFFIC IMPACT ANALYSIS

The relative impacts of the added Project traffic volumes generated by the proposed Project during the AM and PM peak hours, was evaluated based on analysis of future Year 2023 operating conditions at the six (6) key study intersections, with and without the proposed Project. The previously discussed capacity analysis procedures were utilized to investigate the future ICU/HCM and V/C relationships and service level characteristics at each study intersection and roadway segment. The significance of the potential impacts of the Project at each key intersection and roadway segment was then evaluated using the traffic impact criteria mentioned in this report.

8.1 Year 2023 Conditions Intersection Capacity Analysis

Table 8-1 summarizes the AM and PM peak hour Level of Service results at the six (6) key study intersections for Year 2023 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 7-1*). The second column (2) presents forecast Year 2023 Without Project traffic conditions and the third column (3) identifies forecast Year 2023 With Project traffic conditions. The fourth column (4) identifies the Project increment and indicates whether the traffic associated with the Project will have a significant impact based on the significant traffic impact criteria mentioned in this report.

8.1.1 *Year 2023 Without Project Traffic Conditions*

Review of column (2) of *Table 8-1* shows that all six (6) key study intersections are forecast to operate at acceptable LOS D or better during the AM and PM peak hours under Year 2023 Without Project traffic conditions.

8.1.2 *Year 2023 With Project Traffic Conditions*

Review of columns (3) and (4) of *Table 8-1* indicates that traffic associated with the proposed Project ***will not*** significantly impact any of the six (6) key study intersections when compared to the LOS standards and significant impact criteria specified in this report. All six (6) key study intersections are forecast to continue to operate at an acceptable LOS D or better during the AM and PM peak hours with the addition of project generated traffic in the Year 2023.

Appendix I contains the ICU/LOS and HCM/LOS calculation worksheets for Year 2023 Traffic Conditions.

TABLE 8-1

YEAR 2023 CONDITIONS PEAK HOUR INTERSECTION CAPACITY ANALYSIS SUMMARY[22]

Key Intersection		Time Period	(1) Existing Traffic Conditions		(2) Year 2023 Without Project Traffic Conditions		(3) Year 2023 With Project Traffic Conditions		(4) Significant Impact	
			ICU/HCM	LOS	ICU/HCM	LOS	ICU/HCM	LOS	ICU/HCM Increase	Yes/No
1.	El Toro Road at	AM	0.469	A	0.523	A	0.523	A	0.000	No
	Glenn Ranch Road	PM	0.582	A	0.652	B	0.653	B	0.001	No
2.	Marguerite Parkway/Saddleback Church at	AM	0.438	A	0.492	A	0.494	A	0.002	No
	El Toro Road	PM	0.629	B	0.726	C	0.730	C	0.004	No
3.	Marguerite Parkway at	AM	0.517	A	0.574	A	0.576	A	0.002	No
	Los Alisos Boulevard	PM	0.601	B	0.679	B	0.681	B	0.002	No
4.	Santa Margarita Parkway/Portola Pkwy at	AM	0.714	C	0.773	C	0.774	C	0.001	No
	El Toro Road	PM	0.773	C	0.819	D	0.825	D	0.006	No
5.	Portola Parkway at	AM	0.385	A	0.426	A	0.429	A	0.003	No
	SR-241 Ramps	PM	0.395	A	0.441	A	0.444	A	0.003	No
6.	Storage West Driveway at	AM	14.4 s/v	B	15.6 s/v	C	15.6 s/v	C	0.0 s/v	No
	El Toro Road	PM	13.0 s/v	B	14.1 s/v	B	14.2 s/v	B	0.1 s/v	No

Notes:

- ICU = Intersection Capacity Utilization
- HCM = Highway Capacity Manual
- LOS = Level of Service, please refer to *Tables 3-1* and *3-2* for the LOS definitions.
- s/v = seconds per vehicle (delay).
- **Bold ICU/LOS** and **Delay/LOS values** indicate unacceptable service levels.

[22] *Appendix I* contains the ICU/LOS and HCM/LOS calculation worksheets for all study intersections.

8.2 Year 2023 Conditions Roadway Segment Analysis

Table 8-2 summarizes the roadway segment level of service results at the six (6) key roadway segments for Year 2023 traffic conditions. The first column (1) shows the number of lanes, the second column (2) shows the arterial classification and the third column (3) shows the existing LOS "E" capacity. The fourth column (4) presents a summary of existing daily traffic conditions. The fifth column (5) presents a summary of projected Year 2023 cumulative daily traffic conditions. The sixth column (6) lists Year 2023 plus project daily traffic conditions. Column 6 also shows the increase in V/C ratio value due to the added daily 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.

8.2.1 *Year 2023 Without Project Traffic Conditions*

Review of column (5) of *Table 8-2* indicates that all six (6) key roadway segments are forecast to operate at acceptable LOS A for Year 2023 Without Project traffic conditions based on the LOS impact criteria outlined in this report.

8.2.2 *Year 2023 With Project Traffic Conditions*

Review of column (6) of *Table 8-2* indicates that traffic associated with the proposed Project ***will not*** significantly impact any of the six (6) key roadway segments when compared to the LOS standards and significant impact criteria specified in this report. The six (6) key roadway segments are forecast to continue to operate at an acceptable LOS A on a daily basis with the addition of Project generated traffic in the Year 2022 traffic condition. It should be noted that Roadway Segment C was evaluated based on both Option #1 (i.e. 4D Primary) and Option #2 (i.e. 5D Major).

TABLE 8-2

YEAR 2023 CONDITIONS DAILY ROADWAY SEGMENT ANALYSIS SUMMARY

Key Roadway Segment	(1) Lanes	(2) Type of Arterial	(3) LOS E Capacity (VPD)	(4) Existing Traffic Conditions			(5) Year 2023 Without Project Traffic Conditions			(6) Year 2023 With Project Traffic Conditions				
				Daily Volume	V/C Ratio	LOS	Daily Volume	V/C Ratio	LOS	Daily Volume	V/C Ratio	LOS	Increase	Significant (Yes/No)
A. El Toro Road *between* Glenn Ranch Road and Cielo Entrada	3D	Primary	28,100[23]	13,197	0.470	A	14,554	0.518	A	14,634	0.521	A	0.003	No
B. El Toro Road *between* Project Driveway and Glenn Ranch Road	4D	Primary	37,500	15,517	0.414	A	17,578	0.469	A	17,658	0.471	A	0.002	No
C. El Toro Road *between* Marguerite Pkwy/Saddleback Church and Project Driveway														
➢ Option #1	4D	Primary	37,500	15,517	0.414	A	17,578	0.469	A	18,164	0.484	A	0.015	No
➢ Option #2	5D	Major	46,900[24]	15,517	0.331	A	17,578	0.375	A	18,164	0.387	A	0.012	No

Notes:

- VPD = Vehicles Per Day
- D = Divided
- U = Undivided
- V/C = Volume to Capacity Ratio
- LOS = Level of Service, please refer to *Table 3-4* for the LOS definitions.

[23] Modified LOS E capacity for a 3-lane, divided roadway based on the following: [(37,500/4) x 3 = 28,100].

[24] Modified LOS E capacity for a 5-lane, divided roadway based on the following: [(56,300/6) x 5 = 46,900].

TABLE 8-2 (CONTINUED)

YEAR 2023 CONDITIONS DAILY ROADWAY SEGMENT ANALYSIS SUMMARY

Key Roadway Segment	(1) Lanes	(2) Type of Arterial	(3) LOS E Capacity (VPD)	(4) Existing Traffic Conditions			(5) Year 2023 Without Project Traffic Conditions			(6) Year 2023 With Project Traffic Conditions				
				Daily Volume	V/C Ratio	LOS	Daily Volume	V/C Ratio	LOS	Daily Volume	V/C Ratio	LOS	Increase	Significant (Yes/No)
D. El Toro Road *between* Santa Margarita Pkwy/Portola Pkwy and Marguerite Pkwy/Saddleback Church	4D	Primary	37,500	12,268	0.327	A	14,431	0.385	A	14,897	0.397	A	0.012	No
E. Portola Parkway *between* SR-241 Ramps and El Toro Road	7D	Principal	65,600[25]	32,769	0.500	A	36,282	0.553	A	36,582	0.558	A	0.005	No
F. Marguerite Pkwy *between* El Toro Road and Los Alisos Boulevard	4D	Primary	37,500	16,311	0.435	A	17,573	0.469	A	17,693	0.472	A	0.003	No

Notes:

- VPD = Vehicles Per Day
- D = Divided
- U = Undivided
- V/C = Volume to Capacity Ratio
- LOS = Level of Service, please refer to *Table 3-4* for the LOS definitions.

[25] Modified LOS E capacity for a 5-lane, divided roadway based on the following: [(75,000/8) x 7 = 65,600].

9.0 YEAR 2045 TRAFFIC IMPACT ANALYSIS

The relative impacts of the added Project traffic volumes generated by proposed Project during the AM and PM peak hours, was evaluated based on analysis of future Year 2045 operating conditions at the six (6) key study intersections, with and without the proposed Project. The previously discussed capacity analysis procedures were utilized to investigate the future ICU/HCM and V/C relationships and service level characteristics at each study intersection and roadway segment. The significance of the potential impacts of the Project at each key intersection and roadway segment was then evaluated using the traffic impact criteria mentioned in this report.

9.1 Year 2045 Conditions Intersection Capacity Analysis

Table 9-1 summarizes the AM and PM peak hour Level of Service results at the six (6) key study intersections for Year 2045 traffic conditions. The first column (1) of ICU/LOS and HCM/LOS values in *Table 9-1* presents a summary of existing AM and PM peak hour traffic conditions. The second column (2) presents forecast Year 2045 Without Project traffic conditions and the third column (3) identifies forecast Year 2045 With Project traffic conditions. The fourth column (4) identifies the Project increment and indicates whether the traffic associated with the Project will have a significant impact based on the significant traffic impact criteria mentioned in this report.

9.1.1 *Year 2045 Without Project Traffic Conditions*

Review of column (2) of *Table 9-1* shows that Year 2045 Without Project traffic will adversely impact one (1) of the six (6) key study intersections during the PM peak hour when compared to the LOS standards specified in this report. The remaining five (5) key study intersections are forecast to operate at an acceptable LOS D or better for Year 2045 Without Project traffic conditions. The location projected to operate at an adverse LOS consists of the following:

	AM Peak Hour		PM Peak Hour	
Key Intersection	ICU	LOS	ICU	LOS
1. El Toro Road at Glenn Ranch Road	--	--	1.001	F

9.1.2 *Year 2045 With Project Traffic Conditions*

Review of columns (3) and (4) of *Table 9-1* indicates that traffic associated with the proposed Project ***will not*** significantly impact any of the six (6) key study intersections, when compared to the LOS standards and significant impact criteria specified in this report. Although the intersection of El Toro Road at Glenn Ranch Road is forecast to operate at unacceptable LOS F during the PM peak hour with the addition of Project traffic, the Project is expected to add less than the allowable threshold to the ICU value. The remaining five (5) key study intersections are forecast to continue to operate at acceptable LOS D or better during the AM and PM peak hours with the addition of Project generated traffic in the Year 2045.

Appendix J contains the ICU/LOS and HCM/LOS calculation worksheets for Year 2045 Traffic Conditions.

TABLE 9-1

YEAR 2045 CONDITIONS PEAK HOUR INTERSECTION CAPACITY ANALYSIS SUMMARY[26]

Key Intersection		Time Period	(1) Existing Traffic Conditions		(2) Year 2045 Without Project Traffic Conditions		(3) Year 2045 With Project Traffic Conditions		(4) Significant Impact	
			ICU/HCM	LOS	ICU/HCM	LOS	ICU/HCM	LOS	ICU/HCM Increase	Yes/No
1.	El Toro Road at	AM	0.469	A	0.764	C	0.764	C	0.000	No
	Glenn Ranch Road	PM	0.582	A	**1.001**	**F**	**1.002**	**F**	0.001	No
2.	Marguerite Parkway/Saddleback Church at	AM	0.438	A	0.580	A	0.582	A	0.002	No
	El Toro Road	PM	0.629	B	0.841	D	0.845	D	0.004	No
3.	Marguerite Parkway at	AM	0.517	A	0.664	B	0.666	B	0.002	No
	Los Alisos Boulevard	PM	0.601	B	0.720	C	0.723	C	0.003	No
4.	Santa Margarita Parkway/Portola Pkwy at	AM	0.714	C	0.817	D	0.819	D	0.002	No
	El Toro Road	PM	0.773	C	0.873	D	0.879	D	0.006	No
5.	Portola Parkway at	AM	0.385	A	0.583	A	0.583	A	0.000	No
	SR-241 Ramps	PM	0.395	A	0.639	B	0.641	B	0.002	No
6.	Storage West Driveway at	AM	14.4 s/v	B	20.2 s/v	C	20.2 s/v	C	0.0 s/v	No
	El Toro Road	PM	13.0 s/v	B	16.1 s/v	C	16.2 s/v	C	0.1 s/v	No

Notes:

- ICU = Intersection Capacity Utilization
- HCM = Highway Capacity Manual
- LOS = Level of Service, please refer to *Tables 3-1* and *3-2* for the LOS definitions.
- s/v = seconds per vehicle (delay).
- **Bold ICU/LOS** and **Delay/LOS values** indicate unacceptable service levels.

[26] *Appendix J* contains the ICU/LOS and HCM/LOS calculation worksheets for all study intersections.

9.2 Year 2045 Conditions Roadway Segment Analysis

Table 9-2 summarizes the roadway segment level of service results at the six (6) key roadway segments for Year 2045 traffic conditions. The first column (1) shows the number of lanes, the second column (2) shows the arterial classification and the third column (3) shows the existing LOS "E" capacity. The fourth column (4) presents a summary of existing daily traffic conditions. The fifth column (5) presents a summary of projected Year 2045 daily traffic conditions. The sixth column (6) lists Year 2045 plus project daily traffic conditions. Column 6 also shows the increase in V/C ratio value due to the added daily 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.

9.2.1 *Year 2045 Without Project Traffic Conditions*

Review of column (5) of *Table 9-2* indicates that all six (6) key roadway segments are forecast to operate at acceptable LOS A for Year 2045 Without Project traffic conditions based on the LOS impact criteria outlined in this report.

9.2.2 *Year 2045 With Project Traffic Conditions*

Review of column (6) of *Table 9-2* indicates that traffic associated with the proposed Project ***will not*** significantly impact any of the six (6) key roadway segments when compared to the LOS standards and significant impact criteria specified in this report. The six (6) key roadway segments are forecast to continue to operate at an acceptable LOS A on a daily basis with the addition of Project generated traffic in the Year 2045 traffic condition. It should be noted that Roadway Segment C was evaluated based on both Option #1 (i.e. 4D Primary) and Option #2 (i.e. 5D Major).

TABLE 9-2

YEAR 2045 CONDITIONS DAILY ROADWAY SEGMENT ANALYSIS SUMMARY

Key Roadway Segment	(1) Lanes	(2) Type of Arterial	(3) LOS E Capacity (VPD)	(4) Existing Traffic Conditions			(5) Year 2045 Without Project Traffic Conditions			(6) Year 2045 With Project Traffic Conditions				
				Daily Volume	V/C Ratio	LOS	Daily Volume	V/C Ratio	LOS	Daily Volume	V/C Ratio	LOS	Increase	Significant (Yes/No)
A. El Toro Road *between* Glenn Ranch Road and Cielo Entrada	3D	Primary	28,100[27]	13,197	0.470	A	16,556	0.589	A	16,636	0.592	A	0.003	No
B. El Toro Road *between* Project Driveway and Glenn Ranch Road	4D	Primary	37,500	15,517	0.414	A	18,457	0.492	A	18,537	0.494	A	0.002	No
C. El Toro Road *between* Marguerite Pkwy/Saddleback Church and Project Driveway														
➢ Option #1	4D	Primary	37,500	15,517	0.414	A	18,457	0.492	A	19,043	0.508	A	0.016	No
➢ Option #2	5D	Major	46,900[28]	15,517	0.331	A	18,457	0.394	A	19,043	0.406	A	0.012	No

Notes:

- VPD = Vehicles Per Day
- D = Divided
- U = Undivided
- V/C = Volume to Capacity Ratio
- LOS = Level of Service, please refer to *Table 3-4* for the LOS definitions.

[27] Modified LOS E capacity for a 3-lane, divided roadway based on the following: [(37,500/4) x 3 = 28,100].

[28] Modified LOS E capacity for a 5-lane, divided roadway based on the following: [(56,300/6) x 5 = 46,900].

TABLE 9-2 (CONTINUED)

YEAR 2045 CONDITIONS DAILY ROADWAY SEGMENT ANALYSIS SUMMARY

Key Roadway Segment	(1) Lanes	(2) Type of Arterial	(3) LOS E Capacity (VPD)	(4) Existing Traffic Conditions			(5) Year 2045 Without Project Traffic Conditions			(6) Year 2045 With Project Traffic Conditions				
				Daily Volume	V/C Ratio	LOS	Daily Volume	V/C Ratio	LOS	Daily Volume	V/C Ratio	LOS	Increase	Significant (Yes/No)
D. El Toro Road *between* Santa Margarita Pkwy/Portola Pkwy and Marguerite Pkwy/Saddleback Church	4D	Primary	37,500	12,268	0.327	A	15,153	0.404	A	15,619	0.417	A	0.013	No
E. Portola Parkway *between* SR-241 Ramps and El Toro Road	7D	Principal	65,600[29]	32,769	0.500	A	38,096	0.581	A	38,396	0.585	A	0.004	No
F. Marguerite Pkwy *between* El Toro Road and Los Alisos Boulevard	4D	Primary	37,500	16,311	0.435	A	18,452	0.492	A	18,572	0.495	A	0.003	No

Notes:

- VPD = Vehicles Per Day
- D = Divided
- U = Undivided
- V/C = Volume to Capacity Ratio
- LOS = Level of Service, please refer to *Table 3-4* for the LOS definitions.

[29] Modified LOS E capacity for a 5-lane, divided roadway based on the following: [(75,000/8) x 7 = 65,600].

10.0 STATE OF CALIFORNIA (CALTRANS) METHODOLOGY

In conformance with the current Caltrans *Guide for the Preparation of Traffic Impact Studies*, existing and projected peak hour operating conditions at the one (1) state-controlled study intersection within the study area has been evaluated using the *Highway Capacity Manual 6th Edition* (HCM 6) operations method of analysis. This state-controlled location includes the following intersection:

5. Portola Parkway at SR-241 Ramps

10.1 Impact Criteria and Thresholds

Consistent with the *Caltrans Guide for the Preparation of Traffic Impact Studies,* the following criteria has been utilized to determine project impacts at the aforementioned one (1) state-controlled study intersection:

- Caltrans endeavors to maintain a target LOS at the transition between LOS "C" and LOS "D" on State highway facilities. However, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS. Caltrans has established that LOS D is the operating standard for all Caltrans facilities. Caltrans has determined that all state-owned facilities that operate below LOS D should be identified and improved to an acceptable LOS. The *Caltrans Traffic Impact Study Guidelines dated December 2002* states that if an existing State-owned facility operates at less than the target LOS (i.e. LOS D); the existing service level should be maintained.

10.2 Highway Capacity Manual (HCM) Method of Analysis (Signalized Intersections)

Based on the HCM operations method of analysis, level of service for signalized intersections is defined in terms of control delay, which is a measure of driver discomfort, frustration, fuel consumption, and lost travel time. The delay experienced by a motorist is made up of a number of factors that relate to control, geometries, traffic, and incidents. Total delay is the difference between the travel time actually experienced and the reference travel time that would result during ideal conditions: in the absence of traffic control, in the absence of geometric delay, in the absence of any incidents, and when there are no other vehicles on the road.

In Chapter 19 of the HCM, only the portion of total delay attributed to the control facility is quantified. This delay is called *control delay.* Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. In contrast, in previous versions of the HCM (1994 and earlier), delay included only stopped delay. Specifically, LOS criteria for traffic signals are stated in terms of the average control delay per vehicle. The six qualitative categories of Level of Service that have been defined along with the corresponding HCM control delay value range for signalized intersections are shown in ***Table 10-1***.

10.3 Existing With Project Traffic Conditions

Table 10-2 summarizes the peak hour *Highway Capacity Manual* level of service results at the one (1) state-controlled study intersection within the study area for Existing With Project traffic conditions. The first column (1) of HCM/LOS values in *Table 10-2* presents a summary of Existing traffic conditions. The second column (2) presents Existing With Project traffic conditions based on existing intersection geometry. The third column (3) indicates whether the traffic associated with the Project will have a significant impact based on the significant impact criteria defined in this report.

10.3.1 *Existing Traffic Conditions*

Review of column (1) of *Table 10-2* indicates that the one (1) state-controlled study intersection currently operates at acceptable LOS B during the AM and PM peak hours.

10.3.2 *Existing With Project Traffic Conditions*

Review of columns (2) and (3) of *Table 10-2* indicates that traffic associated with the proposed Project ***will not*** significantly impact the one (1) state-controlled study intersection when compared to the LOS standards and significant impact criteria specified in this report. The one (1) state-controlled study intersection is forecast to continue to operate at acceptable LOS B during the AM and PM peak hours with the addition of Project generated traffic to existing traffic.

10.4 Year 2023 With Project Traffic Conditions

Table 10-3 summarizes the peak hour *Highway Capacity Manual* level of service results at the one (1) state-controlled study intersection within the study area for Year 2023 traffic conditions. The first column (1) of HCM/LOS values in *Table 10-3* presents a summary of existing traffic conditions. The second column (2) presents Year 2023 Without Project traffic conditions based on existing intersection geometry, but without any Project generated traffic. The third column (3) presents future forecast traffic conditions with the addition of project traffic. The fourth column (4) indicates whether the traffic associated with the Project will have a significant impact based on the significant impact criteria defined in this report.

10.4.1 *Year 2023 Without Project Traffic Conditions*

An analysis of future (Year 2023) cumulative traffic conditions indicates that the addition of ambient traffic growth and cumulative project traffic will not adversely impact the one (1) state-controlled study intersection. The one (1) state-controlled study intersection is forecast to continue to operate at an acceptable LOS B during the AM and PM peak hours with the addition of ambient traffic growth and cumulative projects traffic.

10.4.2 *Year 2023 With Project Traffic Conditions*

Review of columns (3) and (4) of *Table 10-3* indicates that traffic associated with the proposed Project ***will not*** significantly impact the one (1) state-controlled study intersection when compared to the LOS standards and significant impact criteria specified in this report. The one (1) state-controlled study intersection is forecast to continue to operate at an acceptable LOS B during the

AM and PM peak hours with the addition of Project generated traffic to Year 2023 cumulative traffic.

10.5 Year 2045 With Project Traffic Conditions

Table 10-4 summarizes the peak hour *Highway Capacity Manual* level of service results at the one (1) state-controlled study intersection within the study area for Year 2045 traffic conditions. The structure of this table is similar to the near-term (Year 2023) capacity analysis summary presented in *Table 10-3*.

10.5.1 *Year 2045 Without Project Traffic Conditions*

An analysis of future (Year 2045) buildout traffic conditions indicates the one (1) state-controlled study intersection will not be adversely impacted. The one (1) state-controlled study intersection is forecast to continue to operate at an acceptable LOS B during the AM and PM peak hours under Year 2045 Without Project traffic conditions.

10.5.2 *Year 2045 With Project Traffic Conditions*

Review of columns (3) and (4) of *Table 10-4* indicates that traffic associated with the proposed Project ***will not*** significantly impact the one (1) state-controlled study intersection when compared to the LOS standards and significant impact criteria specified in this report. The one (1) state-controlled study intersection is forecast to continue to operate at an acceptable LOS B during the AM and PM peak hours with the addition of Project generated traffic to Year 2045 buildout traffic.

Appendix K presents the Existing With Project, Year 2023 With Project, and Year 2045 With Project HCM/LOS calculations for the one (1) state-controlled study intersection.

10.6 Recommended Improvements – Caltrans Analysis

The results of the Caltrans analyses presented in *Tables 10-2* through *10-4* indicate that the proposed Project ***will not*** significantly impact the one (1) state-controlled study intersection under "Existing With Project", "Year 2023 With Project" and "Year 2045 With Project" traffic conditions. As there are no significant impacts, no traffic mitigation measures are required or recommended for the one (1) state-controlled study intersection.

TABLE 10-1

LEVEL OF SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS (HCM 6 METHODOLOGY)[30]

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

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

TABLE 10-2

EXISTING WITH PROJECT PEAK HOUR INTERSECTION CAPACITY ANALYSIS – CALTRANS

Key Intersection	Time Period	(1) Existing Traffic Conditions		(2) Existing With Project Traffic Conditions		(3) Project Significant Impact
		HCM	LOS	HCM	LOS	Yes/No
5. Portola Parkway at SR-241 Ramps	AM	17.7 s/v	B	17.8 s/v	B	No
	PM	15.8 s/v	B	15.9 s/v	B	No

Notes:

- s/v = seconds per vehicle (delay).
- LOS = Level of Service, please refer to *Table 10-1* for the LOS definitions.
- **Bold Delay/LOS values** indicate unacceptable service levels based on the Caltrans LOS Criteria.

TABLE 10-3

YEAR 2023 PEAK HOUR INTERSECTION CAPACITY ANALYSIS – CALTRANS

Key Intersection	Time Period	(1) Existing Traffic Conditions		(2) Year 2023 Without Project Traffic Conditions		(3) Year 2023 With Project Traffic Conditions		(4) Project Significant Impact
		HCM	LOS	HCM	LOS	HCM	LOS	Yes/No
5. Portola Parkway at SR-241 Ramps	AM	17.7 s/v	B	18.5 s/v	B	18.6 s/v	B	No
	PM	15.8 s/v	B	16.7 s/v	B	16.8 s/v	B	No

Notes:

- s/v = seconds per vehicle (delay).
- LOS = Level of Service, please refer to *Table 10-1* for the LOS definitions.
- **Bold Delay/LOS values** indicate unacceptable service levels based on the Caltrans LOS Criteria.

TABLE 10-4

YEAR 2045 PEAK HOUR INTERSECTION CAPACITY ANALYSIS – CALTRANS

Key Intersection	Time Period	(1) Existing Traffic Conditions		(2) Year 2045 Without Project Traffic Conditions		(3) Year 2045 With Project Traffic Conditions		(4) Project Significant Impact
		HCM	LOS	HCM	LOS	HCM	LOS	Yes/No
5. Portola Parkway at SR-241 Ramps	AM	17.7 s/v	B	18.9 s/v	B	19.0 s/v	B	No
	PM	15.8 s/v	B	17.9 s/v	B	18.0 s/v	B	No

Notes:

- s/v = seconds per vehicle (delay).
- LOS = Level of Service, please refer to *Table 10-1* for the LOS definitions.
- **Bold Delay/LOS values** indicate unacceptable service levels based on the Caltrans LOS Criteria.

11.0 SITE ACCESS, INTERNAL CIRCULATION, AND SIGHT DISTANCE ANALYSIS

11.1 Site Access

As previously detailed, vehicular access for the proposed Project is proposed via a new full-access unsignalized driveway on El Toro Road. Per direction from the City of Mission Viejo, the following Project feature and driveway configuration options are evaluated in this report to ensure that adequate ingress and egress to the project site is provided. The selected site access option below will be constructed by the proposed Project to ensure that adequate ingress and egress to the project site is provided:

- **Project Feature *(this improvement will be assumed for both options):*** Reconfigure the median to convert the existing eastbound left-turn pocket (providing access to the existing StorageWest facility located directly across El Toro Road from the Project site) into a two-way-left-turn (TWLT) lane connecting to the existing TWLT lane east of the StorageWest facility driveway. Reconfigure the existing raised median west of the Project driveway to provide a 215-foot acceleration lane with a 180-foot opening for northbound left-turning vehicles exiting the Project site onto westbound El Toro Road.

- **Option #1:** Restripe the No. 3 eastbound through lane along El Toro Road (from Marguerite Parkway to the Project driveway) into an exclusive 200-foot eastbound right-turn lane for eastbound right-turning vehicles entering the Project site. This site access option will remove one (1) existing eastbound through lane along El Toro Road across the Project frontage and may require coordination with OCTA regarding a Master Plan of Arterial Highways (MPAH) Amendment for El Toro Road.

  Per the MPAH Guidance (Section 4), Option #1 may trigger two things. First, the City may be required to submit an initial letter of intent to Orange County Transportation Authority (OCTA) staff to conduct a MPAH Amendment for El Toro Road from a major roadway to a primary roadway designation. Second, City staff may be required to conduct a General Plan Circulation Element Update to change the classification of El Toro Road from a major roadway to a primary roadway classification.

  If Option #1 is selected, then the developer may be fully responsible for completing any required technical documents to process a MPAH Amendment on the City of Mission Viejo's behalf to the full satisfaction of OCTA staff. If the proposed MPAH Amendment is not successfully completed per OCTA's requirements, then the developer may be required to proceed forward with Option #2. However, it should be noted that while Option #1 technically eliminates the third eastbound through lane along this portion of El Toro Road, it is our finding that an MPAH Amendment and General Plan roadway reclassification is not absolutely required because, in reality, the third eastbound through lane will function as an auxiliary lane between Marguerite Parkway and Painted Trails, where the third eastbound lane traps into an exclusive right turn lane, such that the functional capacity of the roadway is not reduced.

- **Option #2:** Widen El Toro Road to provide an exclusive 200-foot eastbound right-turn deceleration lane with a 120-foot opening for eastbound right-turning vehicles entering the Project site. This site access option will continue to provide three (3) eastbound through lanes along El Toro Road across the Project frontage.

Figure 11-1 presents the El Toro Road Project feature improvement and Project Driveway Concept Channelization Plan for Option #1. Refer to *Figure 2-3* for Option #2, which is identical to Option #1, but includes widening along El Toro Road to provide an exclusive right turn deceleration lane.

Table 11-1 summarizes the levels of service at the Project driveway for Year 2023 With Project and Year 2045 With Project traffic conditions for both site access Options #1 and #2. The operations analysis for the Project driveway is based on the *Highway Capacity Manual 6* (HCM 6) methodology for unsignalized intersections.

- For the purposes of this site access driveway analysis, an unsignalized facility is considered to be unacceptable if the project causes an intersection operating at LOS D or better to degrade to LOS E or LOS F, and the traffic signal warrant analysis determines that a traffic signal is justified.

11.1.1 *Year 2023 With Project Traffic Conditions*

As shown in column (1) of *Table 11-1* the Project driveway is forecast to operate at acceptable LOS C or better during the AM and PM peak hours under the Year 2023 With Project traffic conditions for both site access Options #1 and #2.

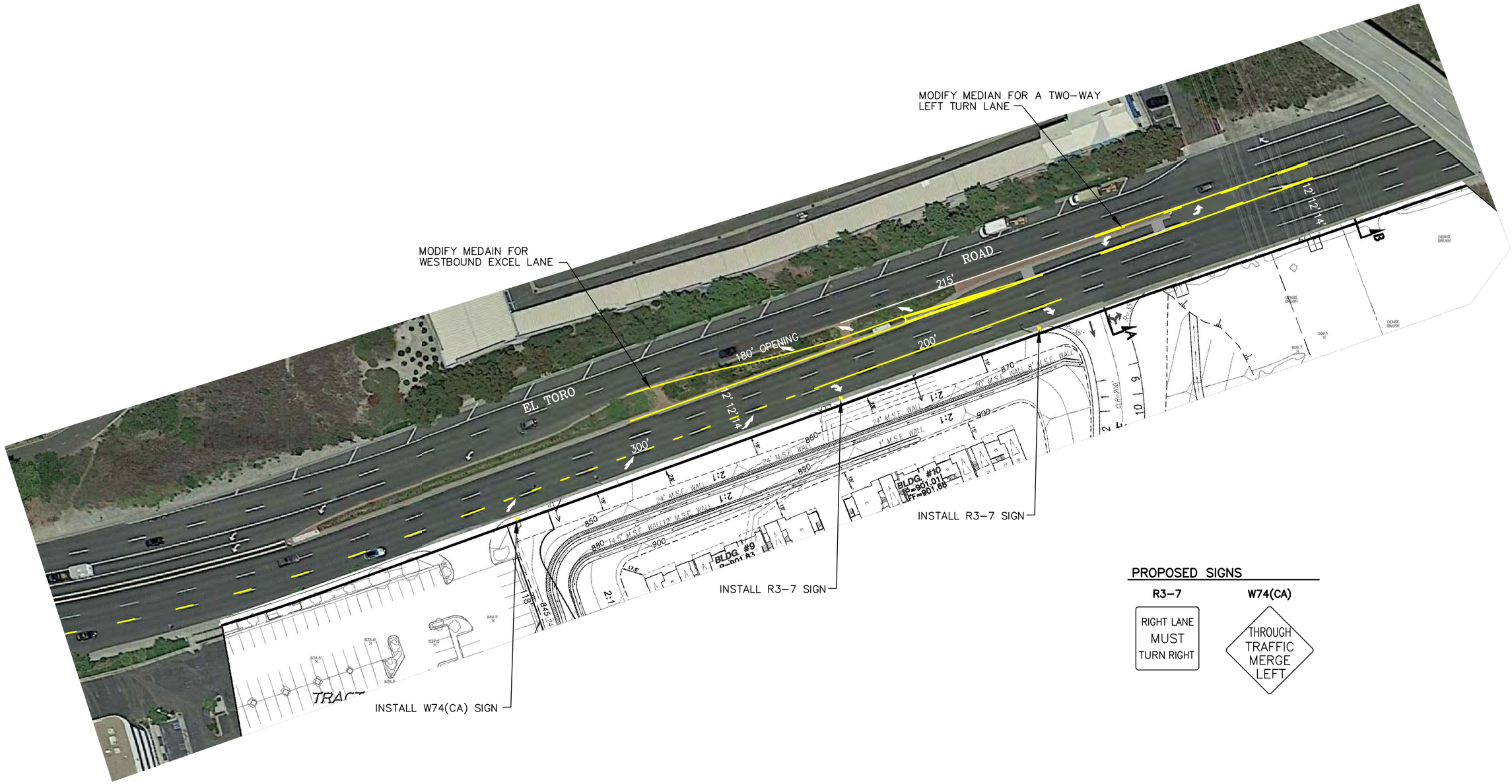
Appendix L contains the Delay/LOS calculation worksheets for Year 2023 With Project Traffic Conditions.

11.1.2 *Year 2045 With Project Traffic Conditions*

As shown in column (2) of *Table 11-1* the Project driveway is forecast to operate at acceptable LOS D or better during the AM and PM peak hours under the Year 2045 With Project traffic conditions for both site access Options #1 and #2, except for site access Option #2 during the PM peak hour under Year 2045 With Project traffic conditions. It should be noted that the delay reported for the intersection of Project Driveway at El Toro Road represents the minor street approach and it is not uncommon for unsignalized private driveways that have direct access to primary arterials, such as El Toro Road, to operate at an unacceptable LOS due to the limited gaps in traffic and the high volume of traffic on the major street, but technically do not operate as a congested facility similar to a public street intersection since there is no traffic impact to the transportation network. Furthermore, the peak driveway queue can be accommodated entirely within the driveway throat. Based on these considerations, the adverse level of service is not considered significant.

Appendix L also contains the Delay/LOS calculation worksheets for Year 2045 With Project Traffic Conditions.

It should be noted that under site access Option #1, the No. 3 eastbound though lane along El Toro Road is proposed to be converted into an exclusive eastbound right-turn lane spanning from



PROPOSED SIGNS

R3-7	W74(CA)
RIGHT LANE MUST TURN RIGHT	THROUGH TRAFFIC MERGE LEFT

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FIGURE 11-1

CONCEPTUAL IMPROVEMENT STRIPING PLAN

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Marguerite Parkway to the Project site (i.e. roadway segment C). While this site access improvement does not entirely remove the No. 3 eastbound lane along El Toro Road, as previously presented in *Tables 7-2, 8-2* and *9-2,* Roadway Segment C will continue to operate at LOS A under all traffic scenarios analyzed in this report with the capacity decreased from 46,900 vehicles per day (i.e. capacity for a 5-lane divided roadway) to 37,500 vehicles per day (i.e. capacity for a 4-lane divided roadway). As such, reclassification of this segment of El Toro Road and site access Option #1 will not cause roadway segment C to degrade to an adverse service level.

Per the MPAH Guidance (Section 4), Option #1 may trigger two things. First, the City may be required to submit an initial letter of intent to Orange County Transportation Authority (OCTA) staff to conduct a MPAH Amendment for El Toro Road from a major roadway to a primary roadway designation. Second, City staff may be required to conduct a General Plan Circulation Element Update to change the classification of El Toro Road from a major roadway to a primary roadway classification.

If Option #1 is selected, then the developer may be fully responsible for completing any required technical documents to process a MPAH Amendment on the City of Mission Viejo's behalf to the full satisfaction of OCTA staff. If the proposed MPAH Amendment is not successfully completed per OCTA's requirements, then the developer may be required to proceed forward with Option #2. However, it should be noted that while Option #1 technically eliminates the third eastbound through lane along this portion of El Toro Road, it is our finding that an MPAH Amendment and General Plan roadway reclassification is not absolutely required because, in reality, the third eastbound through lane will function as an auxiliary lane between Marguerite Parkway and Painted Trails, where the third eastbound lane traps into an exclusive right turn lane, such that the functional capacity of the roadway is not reduced.

TABLE 11-1

PROJECT DRIVEWAY PEAK HOUR CAPACITY ANALYSIS SUMMARY[31]

Key Project Driveway	Time Period	(1) Year 2023 With Project Traffic Conditions				(2) Year 2045 With Project Traffic Conditions			
		Option #1		Option #2		Option #1		Option #2	
		HCM	LOS	HCM	LOS	HCM	LOS	HCM	LOS
7. Project Driveway at El Toro Road	AM	14.3 s/v	B	14.5 s/v	B	17.1 s/v	C	17.5 s/v	C
	PM	19.2 s/v	C	23.5 s/v	C	28.0 s/v	D	**38.4 s/v**	**E**

Notes:

- s/v = seconds per vehicle (delay).
- LOS = Level of Service, please refer to *Table 3-2* for the LOS definitions.
- **Bold Delay/LOS values** indicate unacceptable service levels.

[31] *Appendix L* contains the Delay/LOS calculation worksheets for the Project driveway.

11.2 Traffic Signal Warrant Analysis

Per the City's requirements, the level of service analysis at the unsignalized Project driveway is supplemented with an assessment of the need for signalization of the driveway. This assessment is made on the basis of signal warrant criteria adopted by Caltrans. For this study, the need for signalization is assessed on the basis of the peak-hour traffic signal warrant, Warrant #3, described in the *California Manual on Uniform Traffic Control Devices (MUTCD)*. Warrant #3 has two parts:

1. *Part A* evaluates peak hour vehicle delay for traffic on the minor street approach with the highest delay, and
2. *Part B* evaluates peak-hour traffic volumes on the major and minor streets.

This method provides an indication of whether peak-hour traffic conditions or peak-hour traffic volume levels are, or would be, sufficient to justify installation of a traffic signal. Other traffic signal warrants are available; however, they cannot be checked under future conditions (background without and with Project) because they rely on data for which forecasts are not available (such as accidents, pedestrian volume, and four- or eight-hour vehicle volumes).

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

Table 11-2 presents the Year 2023 with Project and Year 2045 with Project traffic signal warrant analysis results for the proposed Project driveway along El Toro Road (Options #1 and #2).

11.2.1 *Year 2023 With Project Traffic Signal Warrant Analysis*

The results of the peak-hour traffic signal warrant analysis for Year 2023 With Project traffic conditions are summarized in column (1) of *Table 11-2*. The results indicate that the unsignalized Project driveway, for both site access Options #1 and #2, does not have future traffic conditions that would exceed the volume thresholds of Warrant #3, Part A and/or Part B for the AM or PM peak hour for Year 2023 With Project traffic conditions. Thus, it is concluded from column (1) of *Table 11-2* that a traffic signal is not warranted at the Project driveway.

11.2.2 *Year 2045 With Project Traffic Signal Warrant Analysis*

The results of the peak-hour traffic signal warrant analysis for Year 2045 With Project traffic conditions are summarized in column (2) of *Table 11-2*. The results indicate that the unsignalized Project driveway, for both site access Options #1 and #2, does not have future traffic conditions that would exceed the volume thresholds of Warrant #3, Part A and/or Part B for the AM or PM peak hour for Year 2045 With Project traffic conditions. Thus, it is concluded from column (2) of *Table 11-2* that a traffic signal is not warranted at the Project driveway.

The peak-hour signal warrant worksheets for Year 2023 With Project traffic conditions and Year 2045 With Project traffic conditions are contained in ***Appendix M***.

TABLE 11-2

PROJECT DRIVEWAY TRAFFIC SIGNAL WARRANT ANALYSIS SUMMARY[32]

Project Driveway	Time Period	(1) Year 2023 With Project Traffic Conditions				(2) Year 2045 With Project Traffic Conditions			
		Option #1		Option #2		Option #1		Option #2	
		Part A of Warrant 3 Satisfied?	Part B of Warrant 3 Satisfied?	Part A of Warrant 3 Satisfied?	Part B of Warrant 3 Satisfied?	Part A of Warrant 3 Satisfied?	Part B of Warrant 3 Satisfied?	Part A of Warrant 3 Satisfied?	Part B of Warrant 3 Satisfied?
7. Project Driveway at El Toro Road	AM	No	No	No	No	No	No	No	No
	PM	No	No	No	No	No	No	No	No

Notes:

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

[32] *Appendix M* contains the traffic signal warrant analysis worksheets for the Project driveway.

11.3 Internal Circulation

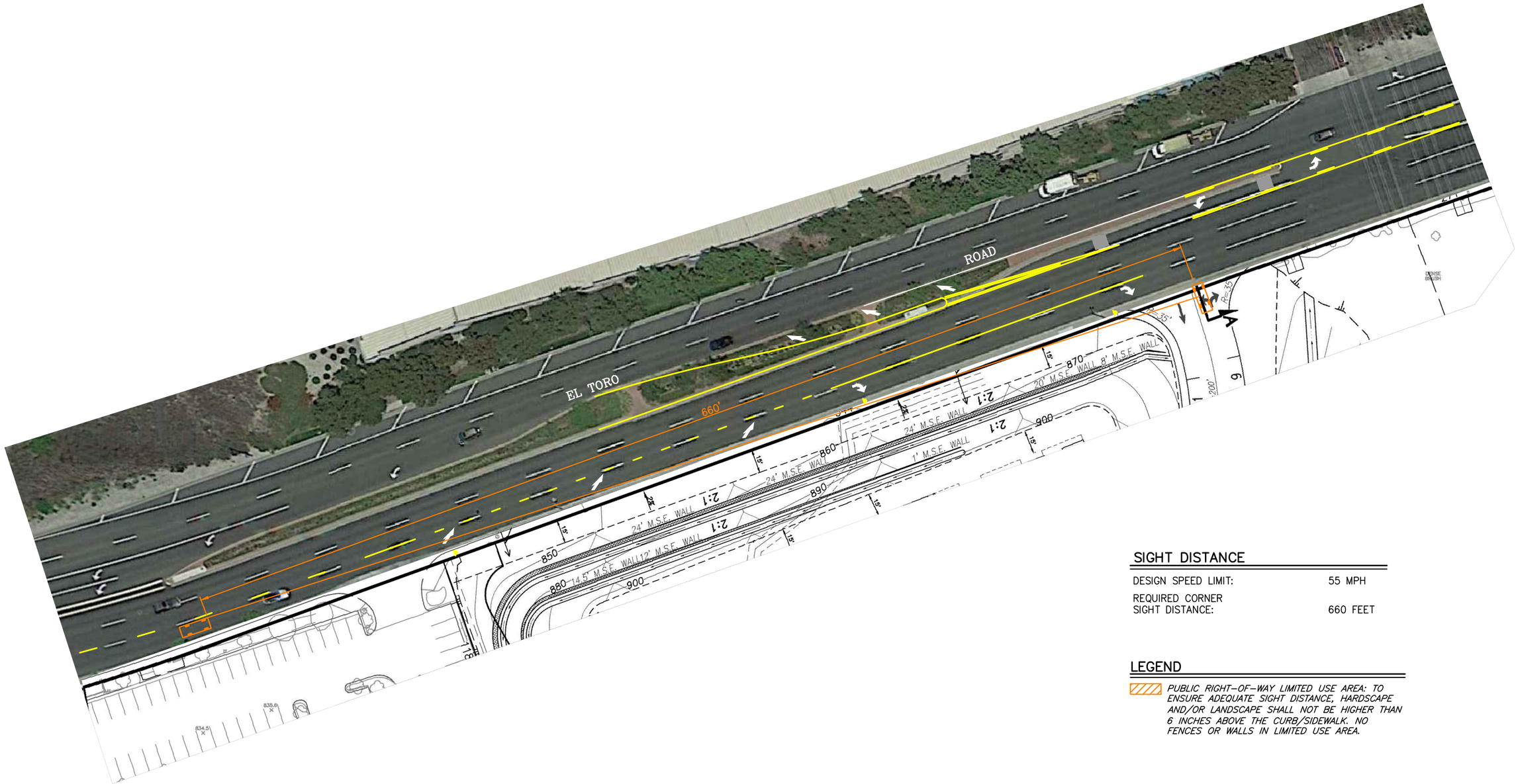
The on-site circulation was evaluated in terms of vehicle-pedestrian conflicts. Based on our review of the preliminary site plan, the overall layout does not create significant vehicle-pedestrian conflict points, as the Project will provide a sidewalk on both sides of the driveway that will connect to the existing sidewalk system on El Toro Road. In addition, the Project driveway will provide bicycle access from the townhouse condominiums to El Toro Road. The driveway throat lengths are sufficient such that access to residential driveways is not impacted by internal vehicle queuing/stacking. Project traffic is not anticipated to cause significant queuing/stacking on the Project driveway. The on-site circulation is acceptable based on our review of the proposed site plan. The alignment, spacing and throat length of the Project driveway is also deemed adequate. Turning movements into and out of the Project site at the Project driveway are anticipated to operate at an acceptable service levels. The proposed throat length at the Project driveway is sufficient for storing potential queuing vehicles (i.e. 95th percentile queue of one vehicle for the outbound shared left/right-turn lane). As such, motorists entering and exiting the Project site from this driveway will be able to do so comfortably, safely, and without undue congestion.

11.4 Sight Distance Evaluation

A sight distance analysis was prepared for the proposed Project driveway along El Toro Road using the City of Mission Viejo Standard Plan No. 315 – *Intersection Sight Distance*. Minimum left and right turn out and cross traffic sight distance was utilized for this evaluation and is defined as the distance required by the driver of a vehicle, traveling at a given speed, to bring his vehicle to a stop after an object on the road becomes visible. Stopping sight distance is measured from the driver's eyes, which are assumed to be 3.5 feet above the pavement surface, to an object 0.5-feet high on the roadway. For this analysis, although El Toro Road will consist of only five lanes in the vicinity of the Project driveway, the 6-lane Major Roadway criteria was utilized to provide for a conservative analysis since the City of Mission Viejo Standard Drawing No. 315 does not provide a minimum sight distance for a 5-lane roadway. Based on the criteria set forth in Standard Drawing No. 315, a minimum sight distance of 660 feet is recommended for the proposed Project driveway on El Toro Road[33].

Figures 11-2 and ***11-3*** present schematics of the sight distance analysis performed at the proposed Project driveway along El Toro Road, which illustrates the actual sight distance and corresponding limited use areas, if any. As shown, adequate sight distance will be provided at the proposed Project driveway along El Toro Road.

[33] Source: City of Mission Viejo Standard Plan No. 315 – *Intersection Sight Distance*, *Major Roadway*.



SIGHT DISTANCE

DESIGN SPEED LIMIT:	55 MPH
REQUIRED CORNER SIGHT DISTANCE:	660 FEET

LEGEND

PUBLIC RIGHT-OF-WAY LIMITED USE AREA: TO ENSURE ADEQUATE SIGHT DISTANCE, HARDSCAPE AND/OR LANDSCAPE SHALL NOT BE HIGHER THAN 6 INCHES ABOVE THE CURB/SIDEWALK. NO FENCES OR WALLS IN LIMITED USE AREA.

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FIGURE 11-2

SIGHT DISTANCE ANALYSIS (EASTBOUND)

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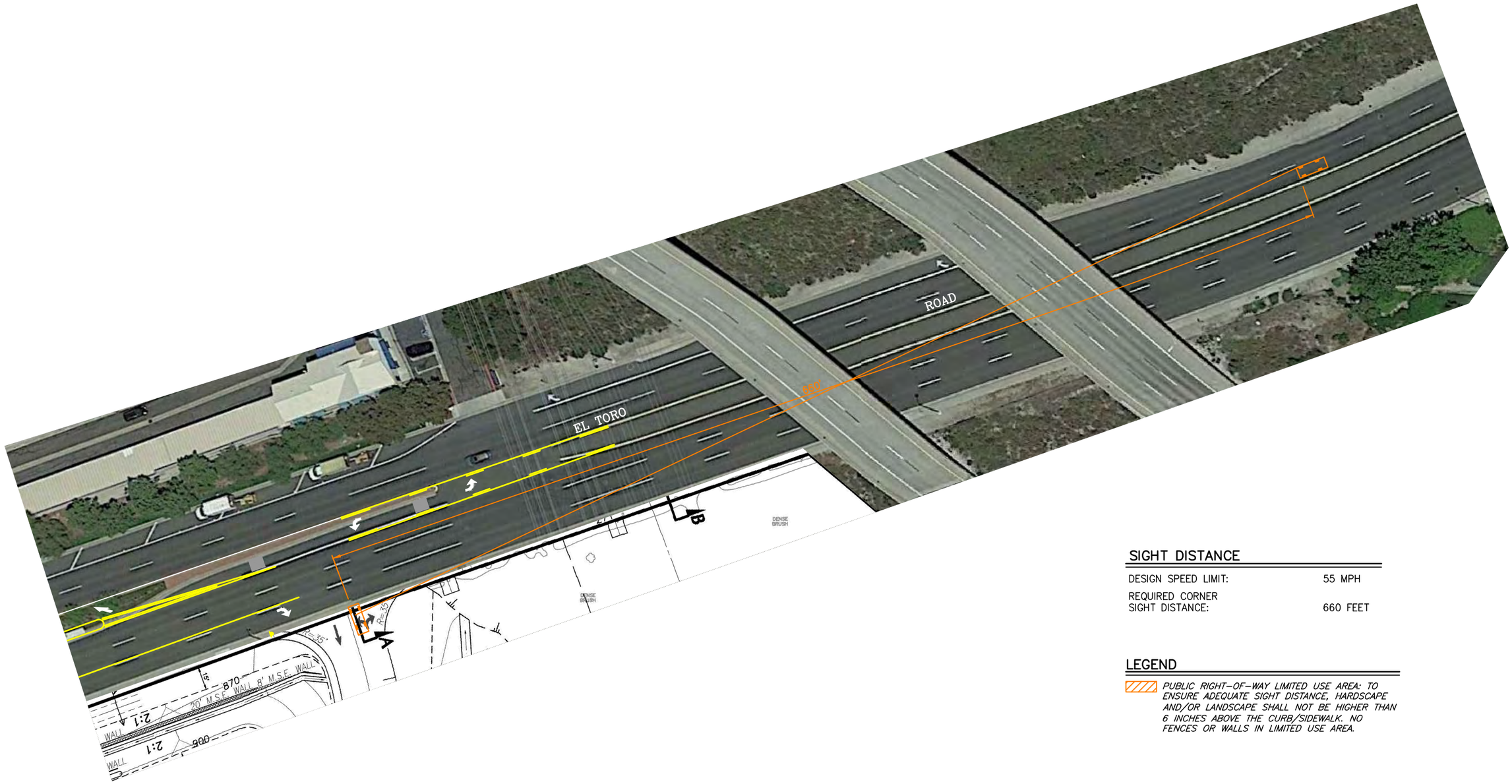

SIGHT DISTANCE

DESIGN SPEED LIMIT:	55 MPH
REQUIRED CORNER SIGHT DISTANCE:	660 FEET

LEGEND

PUBLIC RIGHT-OF-WAY LIMITED USE AREA: TO ENSURE ADEQUATE SIGHT DISTANCE, HARDSCAPE AND/OR LANDSCAPE SHALL NOT BE HIGHER THAN 6 INCHES ABOVE THE CURB/SIDEWALK. NO FENCES OR WALLS IN LIMITED USE AREA.

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FIGURE 11-3

SIGHT DISTANCE ANALYSIS (WESTBOUND)

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12.0 AREA-WIDE TRAFFIC IMPROVEMENTS

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

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

12.1 Project-Specific Access Improvements

Per direction from the City of Mission Viejo, the following Project-specific traffic improvement will be implemented to facilitate ingress and egress to the project site:

- **Project Feature *(this improvement will be assumed for both options):*** Reconfigure the median to convert the existing eastbound left-turn pocket (providing access to the existing StorageWest facility located directly across El Toro Road from the Project site) into a two-way-left-turn (TWLT) lane connecting to the existing TWLT lane east of the StorageWest facility driveway. Reconfigure the existing raised median west of the Project driveway to provide a 215-foot acceleration lane with a 180-foot opening for northbound left-turning vehicles exiting the Project site onto westbound El Toro Road.

- **Option #1:** Restripe the No. 3 eastbound through lane along El Toro Road (from Marguerite Parkway to the Project driveway) into an exclusive 200-foot eastbound right-turn lane for eastbound right-turning vehicles entering the Project site. This site access option will remove one (1) existing eastbound through lane along El Toro Road across the Project frontage and may require coordination with OCTA regarding a Master Plan of Arterial Highways (MPAH) Amendment for El Toro Road.

  Per the MPAH Guidance (Section 4), Option #1 may trigger two things. First, the City may be required to submit an initial letter of intent to Orange County Transportation Authority (OCTA) staff to conduct a MPAH Amendment for El Toro Road from a major roadway to a primary roadway designation. Second, City staff may be required to conduct a General Plan Circulation Element Update to change the classification of El Toro Road from a major roadway to a primary roadway classification.

  If Option #1 is selected, then the developer may be fully responsible for completing any required technical documents to process a MPAH Amendment on the City of Mission Viejo's behalf to the full satisfaction of OCTA staff. If the proposed MPAH Amendment is not successfully completed per OCTA's requirements, then the developer may be required to proceed forward with Option #2. However, it should be noted that while Option #1 technically eliminates the third eastbound through lane along this portion of El Toro Road, it is our finding that an MPAH

Amendment and General Plan roadway reclassification is not absolutely required because, in reality, the third eastbound through lane will function as an auxiliary lane between Marguerite Parkway and Painted Trails, where the third eastbound lane traps into an exclusive right turn lane, such that the functional capacity of the roadway is not reduced.

- **Option #2:** Widen El Toro Road to provide an exclusive 200-foot eastbound right-turn deceleration lane with a 120-foot opening for eastbound right-turning vehicles entering the Project site. This site access option will continue to provide three (3) eastbound through lanes along El Toro Road across the Project frontage.

Figure 12-1 presents the above-mentioned Project-specific traffic improvement for El Toro Road.

12.2 Existing With Project Traffic Conditions Recommended Improvements

12.2.1 *Intersections*

The results of the intersection analyses for Existing With Project traffic conditions summarized in *Table 7-1* indicate that the proposed Project is not forecast to have a significant impact at any of the six (6) key intersections. As there are no significant impacts, no traffic mitigation measures are required or recommended for the intersections.

12.2.2 *Roadway Segments*

The results of the Existing With Project traffic conditions level of service analyses summarized in *Table 7-2* indicate that the proposed Project is not forecast to have a significant impact at any of the six (6) roadway segments. As there are no significant impacts, no traffic mitigation measures are required or recommended for the roadway segments.

12.3 Year 2023 With Project Traffic Conditions Recommended Improvements

12.3.1 *Intersections*

The results of the intersection analyses for Year 2023 With Project traffic conditions summarized in *Table 8-1* indicate that the proposed Project is not forecast to have a significant impact at any of the six (6) key intersections. As there are no significant impacts, no traffic mitigation measures are required or recommended for the intersections.

12.3.2 *Roadway Segments*

The results of the Year 2023 With Project traffic conditions level of service analyses summarized in *Table 8-2* indicate that the proposed Project is not forecast to have a significant impact at any of the six (6) roadway segments. As there are no significant impacts, no traffic mitigation measures are required or recommended for the roadway segments.

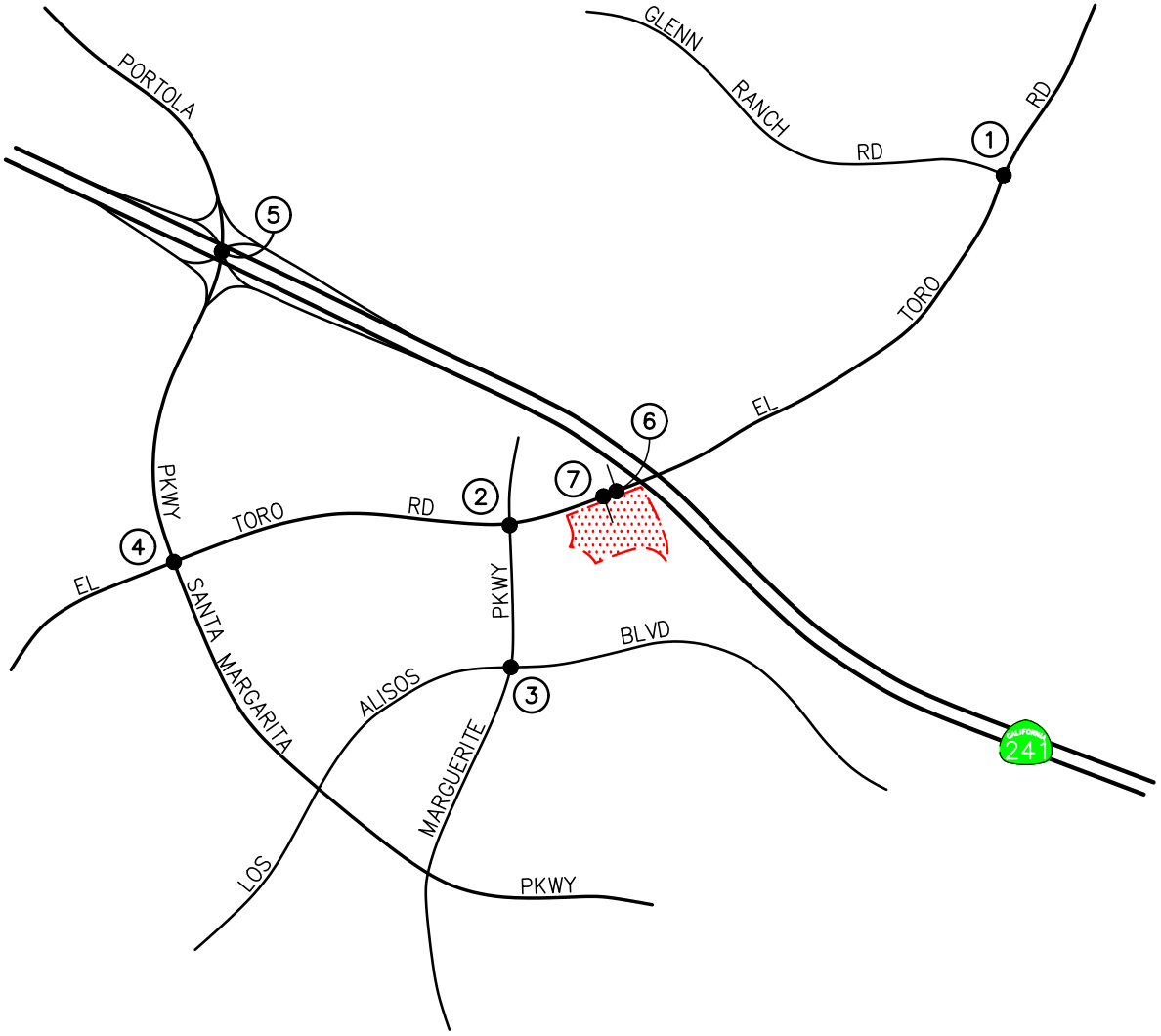
12.4 Year 2045 With Project Traffic Conditions Recommended Improvements

12.4.1 *Intersections*

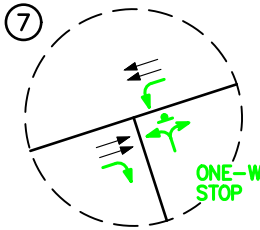
The results of the intersection analyses for Year 2045 With Project traffic conditions summarized in *Table 9-1* indicate that the proposed Project is not forecast to have a significant impact at any of the six (6) key intersections. As there are no significant impacts, no traffic mitigation measures are required or recommended for the intersections.

12.4.2 *Roadway Segments*

The results of the Year 2045 With Project traffic conditions level of service analyses summarized in *Table 9-2* indicate that the proposed Project is not forecast to have a significant impact at any of the six (6) roadway segments. As there are no significant impacts, no traffic mitigation measures are required or recommended for the roadway segments.



OPTION #1



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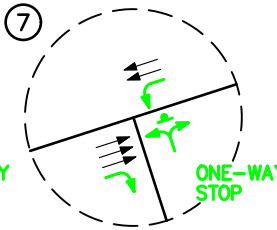
EL TORO RD

OPTION #2



PROJECT DWY @
EL TORO RD

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KEY

= APPROACH LANE ASSIGNMENT
= PROJECT-SPECIFIC IMPROVEMENTS
= STOP SIGN
= PROJECT SITE

FIGURE 12-1

PROJECT-SPECIFIC IMPROVEMENTS

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13.0 CONGESTION MANAGEMENT PROGRAM (CMP) ANALYSIS

This analysis is consistent with the requirements and procedures outlined in the current *Orange County Congestion Management Program (CMP)*. The CMP requires that a traffic impact analysis be conducted for any project generating 2,400 or more daily trips, or 1,600 or more daily trips for projects that directly access the CMP Highway System (HS). Per the CMP guidelines, this number is based on the desire to analyze any impacts that will be 3.0% or more of the existing CMP highway system facilities' capacity.

However, as noted in this traffic study, the proposed Project is expected to generate 666 daily trips, and thus does not meet the criteria required for a CMP traffic analysis. Therefore, it is concluded that the proposed Project will not have any significant traffic impacts on the Congestion Management Program Highway System.

14.0 CONSTRUCTION TRAFFIC IMPACTS

This section of the report summarizes the potential traffic impacts due to construction activities at the Project site. The construction activities associated with the proposed Project consists of 1) site grading/excavation, 2) building foundation/framing/construction and 3) paving/concrete/ landscaping. The following section describes the potential construction related trips associated with each construction activity and provides an assessment as to whether or not the forecast construction trips will have an impact on the existing street system.

14.1 Construction Traffic Trip Generation

In order to forecast the potential construction related trips associated with the construction activities at the project site, the following assumptions, as provided by VCS Environmental, have been utilized for the three aforementioned construction components.

Site Grading/Excavation

- 49,000 cubic yards of soil to be imported during this construction phase.
- A five-day work week (Monday through Friday) and nine-hour workday was assumed.
- The soil import is anticipated to last approximately 110 working days.
- Maximum of 100 delivery/haul trucks per day (i.e. 200 total daily truck trips).
- A total of 10-20 workers will be on the site per day. The TIA assumes a worst case of 20 workers per day.

Building Foundation/Framing/Construction

- Maximum of 26 delivery/concrete/haul trucks per day (i.e. 52 total daily truck trips).
- A five-day work week (Monday through Friday) and nine-hour workday was assumed.
- The building foundation/framing/construction phase is anticipated to last approximately 245 days (i.e. 168 days for plex, 28 days for foundation, and 49 days for framing).
- A maximum of 24 workers will be on the site at one time.

Paving/Concrete/Landscape

- Maximum of 10 delivery/haul trucks per day (i.e. 20 total daily truck trips).
- A five-day work week (Monday through Friday) and nine-hour workday was assumed.
- The paving/concrete/landscaping construction phase is anticipated to last approximately 230 days (i.e. 20 days for paving and 210 days for landscaping).
- A total of 18-24 workers will be on the site per day. The TIA assumes a worst case of 24 workers per day.

In addition to the aforementioned assumptions for each construction component, the following assumptions were utilized for truck trips and employee trips.

- Each truckload requires an inbound trip and an outbound trip.
- The daily number of truck trips was averaged over the nine-hour workday to obtain the number of peak hour truck trips (50% entering and 50% exiting).

- All truck trips were converted to passenger car equivalents (P.C.E.'s) using a P.C.E. factor of 3.0.
- Each worker would make 2 trips per day (one during the AM peak hour and one during the PM peak hour).

Using the aforementioned assumptions, ***Table 14-1*** provides a summary of the forecast construction peak hour and daily traffic volumes for each of the three construction components. Review of the first row of *Table 14-1* shows that the site grading/excavation construction component is expected to generate 640 daily trips with 89 trips produced during the AM peak hour and 89 trips produced during the PM peak hour. Review of the second row of *Table 14-1* shows that the building foundation/framing/construction component is expected to generate 204 daily trips with 42 trips produced during the AM peak hour and 42 trips produced during the PM peak hour. Review of the last row of *Table 14-1* shows that the paving/concrete/landscaping construction component is expected to generate 108 daily trips with 33 trips produced during the AM peak hour and 33 trips produced during the PM peak hour.

14.2 Construction Traffic Assessment

Given that the site grading/excavation construction component will generate the greatest amount of construction-related traffic; this construction traffic assessment focuses to the potential impacts associated with the site grading/excavation construction component (i.e. 640 daily trips, 89 AM peak hour trips and 89 PM peak hour trips).

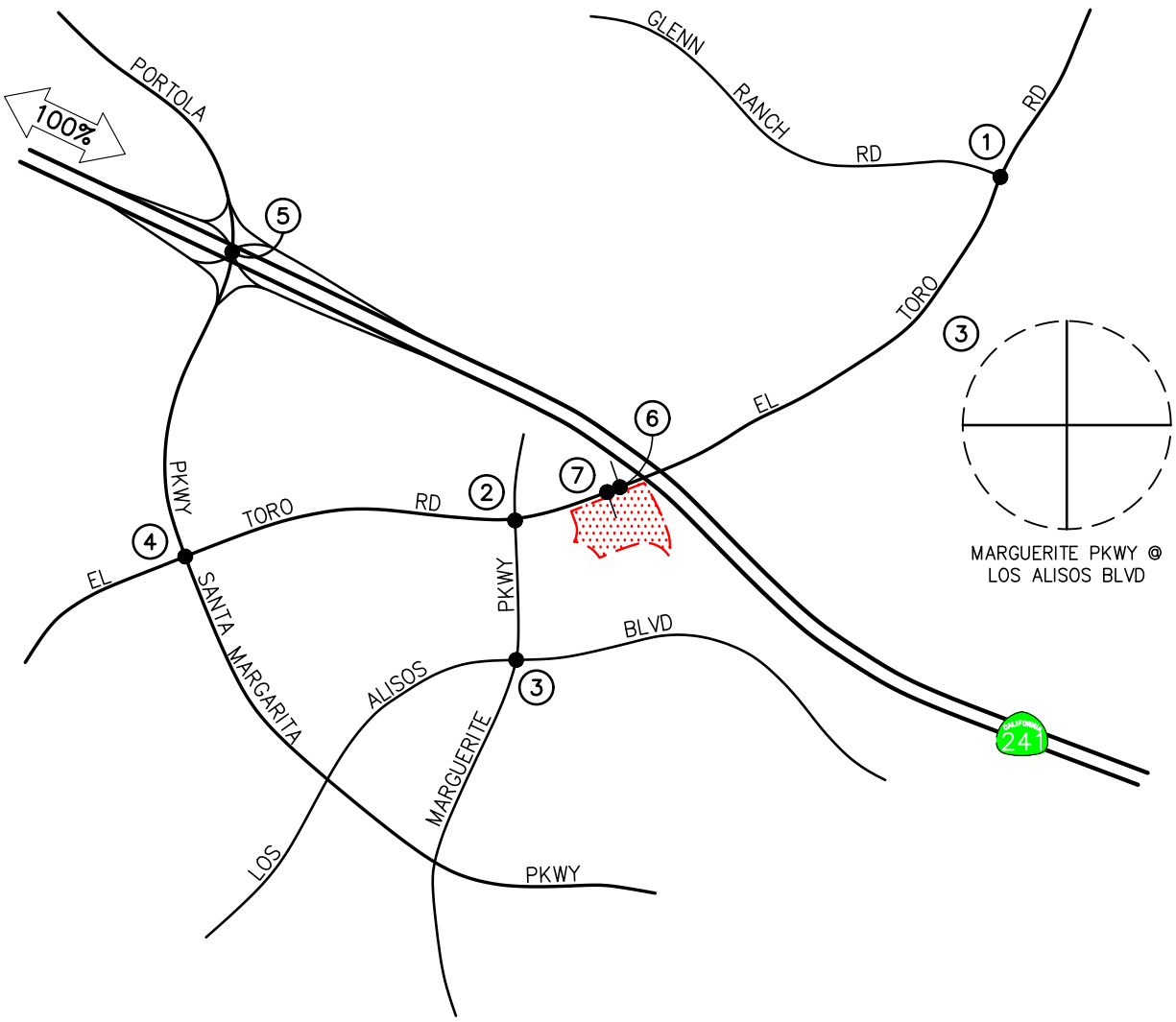
14.2.1 *Construction Traffic Distribution Pattern*

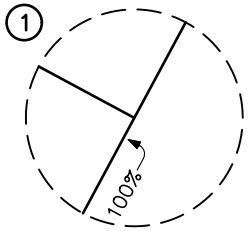
Based on information provided by the project applicant, regional access to/from the project site for construction trucks were assumed to be provided via the SR-241 Freeway. Construction worker traffic is anticipated to utilize both regional and local roadways to travel to/from the project site. ***Figure 14-1*** graphically illustrates the construction traffic distribution pattern for the construction trucks. ***Figure 14-2*** graphically illustrates the construction traffic distribution pattern for the construction workers.

The anticipated AM and PM peak hour construction traffic volumes at the six (6) key study intersections and one (1) Project driveway are presented in ***Figures 14-3*** and ***14-4***, respectively. The traffic volume assignments presented in *Figures 14-3* and *14-4* reflect the construction traffic distribution characteristics shown in *Figures 14-1* and *14-2* and the construction traffic trip generation forecast (i.e. site grading/excavation) presented in *Table 14-1*.

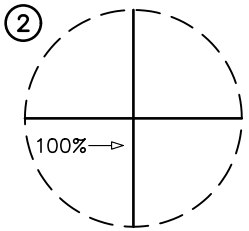
14.2.2 *Existing With Project Construction Traffic Volumes*

Figures 14-5 and ***14-6*** present the Existing With Project Construction Traffic volumes at the six (6) key study intersections and one (1) Project driveway during the AM and PM peak hours, respectively.

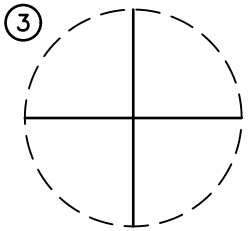




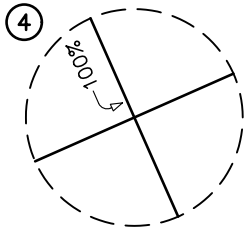
EL TORO RD @
GLENN RANCH RD



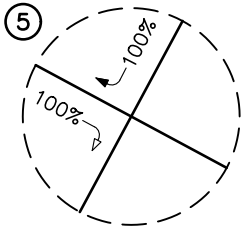
SADDLEBACK CHURCH/
MARGUERITE PKWY @
EL TORO RD



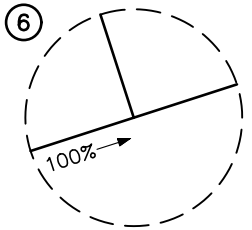
MARGUERITE PKWY @
LOS ALISOS BLVD



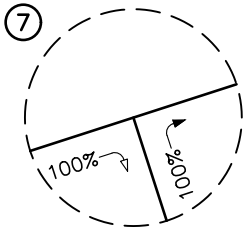
PORTOLA PKWY/
SANTA MARGARITA PKWY @
EL TORO RD



PORTOLA PKWY @
SR-241 RAMPS



STORAGE WEST DWY @
EL TORO RD



PROJECT DWY @
EL TORO RD

LINSCOTT LAW & GREENSPAN
engineers

N
NO SCALE

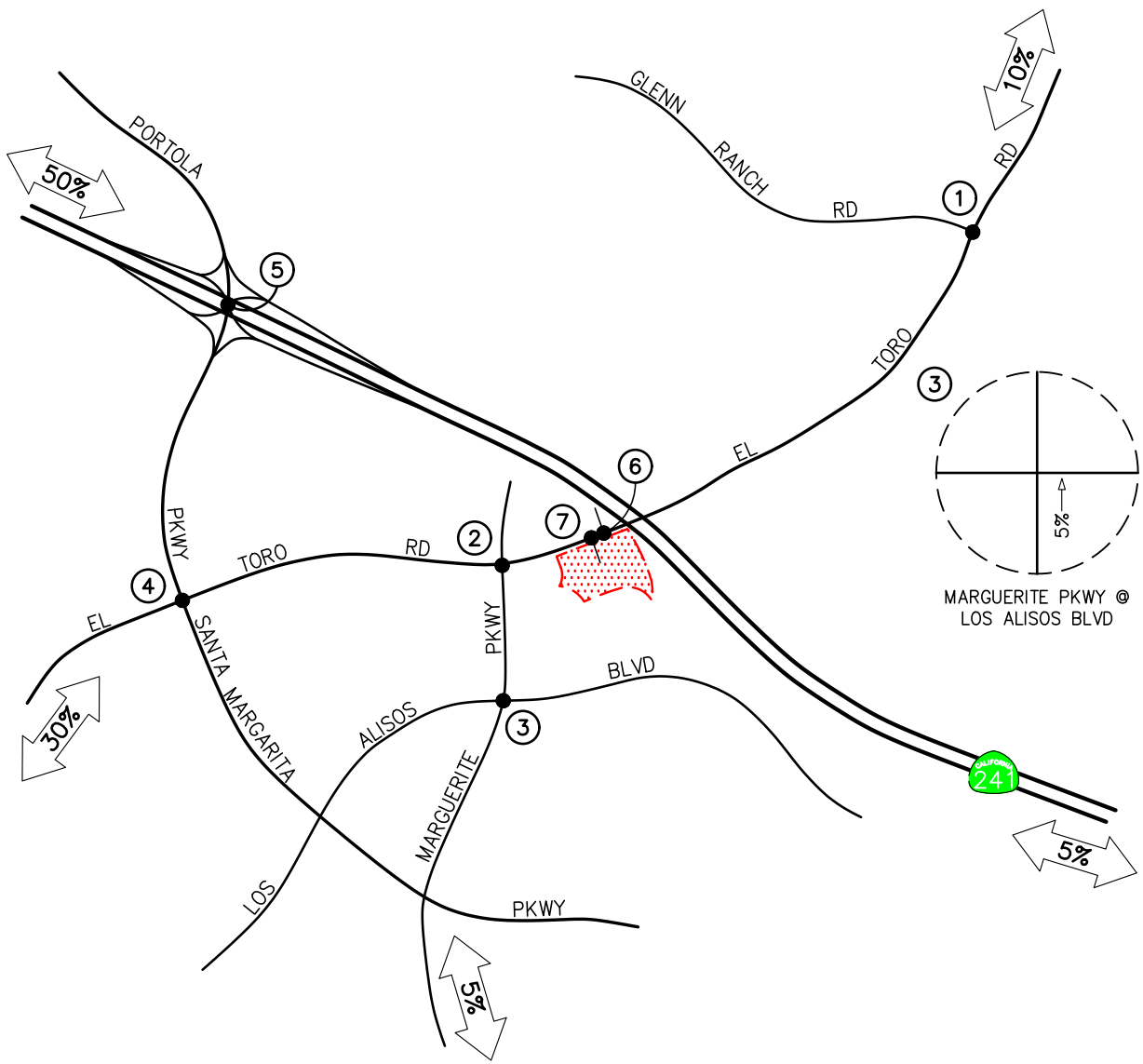
KEY

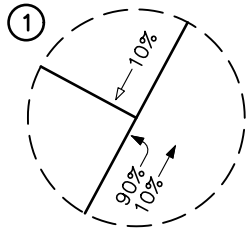
(#) = STUDY INTERSECTION
= INBOUND PERCENTAGE
= OUTBOUND PERCENTAGE
= PROJECT SITE

FIGURE 14-1

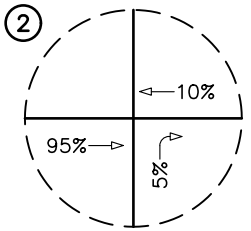
PROJECT CONSTRUCTION TRAFFIC DISTRIBUTION PATTERN (CONSTRUCTION TRUCKS)

NUVO EL TORO RESIDENTIAL, MISSION VIEJO



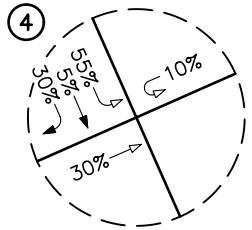


EL TORO RD @
GLENN RANCH RD

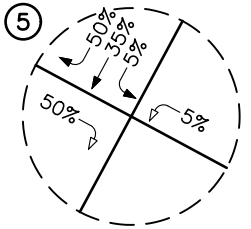


SADDLEBACK CHURCH/
MARGUERITE PKWY @
EL TORO RD

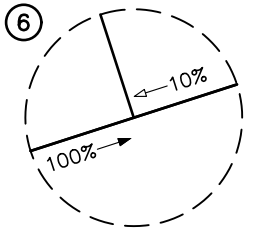
MARGUERITE PKWY @
LOS ALISOS BLVD



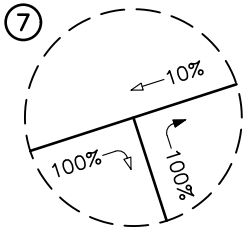
PORTOLA PKWY/
SANTA MARGARITA PKWY @
EL TORO RD



PORTOLA PKWY @
SR-241 RAMPS



STORAGE WEST DWY @
EL TORO RD



PROJECT DWY @
EL TORO RD

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

(#) = STUDY INTERSECTION

◁—— = INBOUND PERCENTAGE

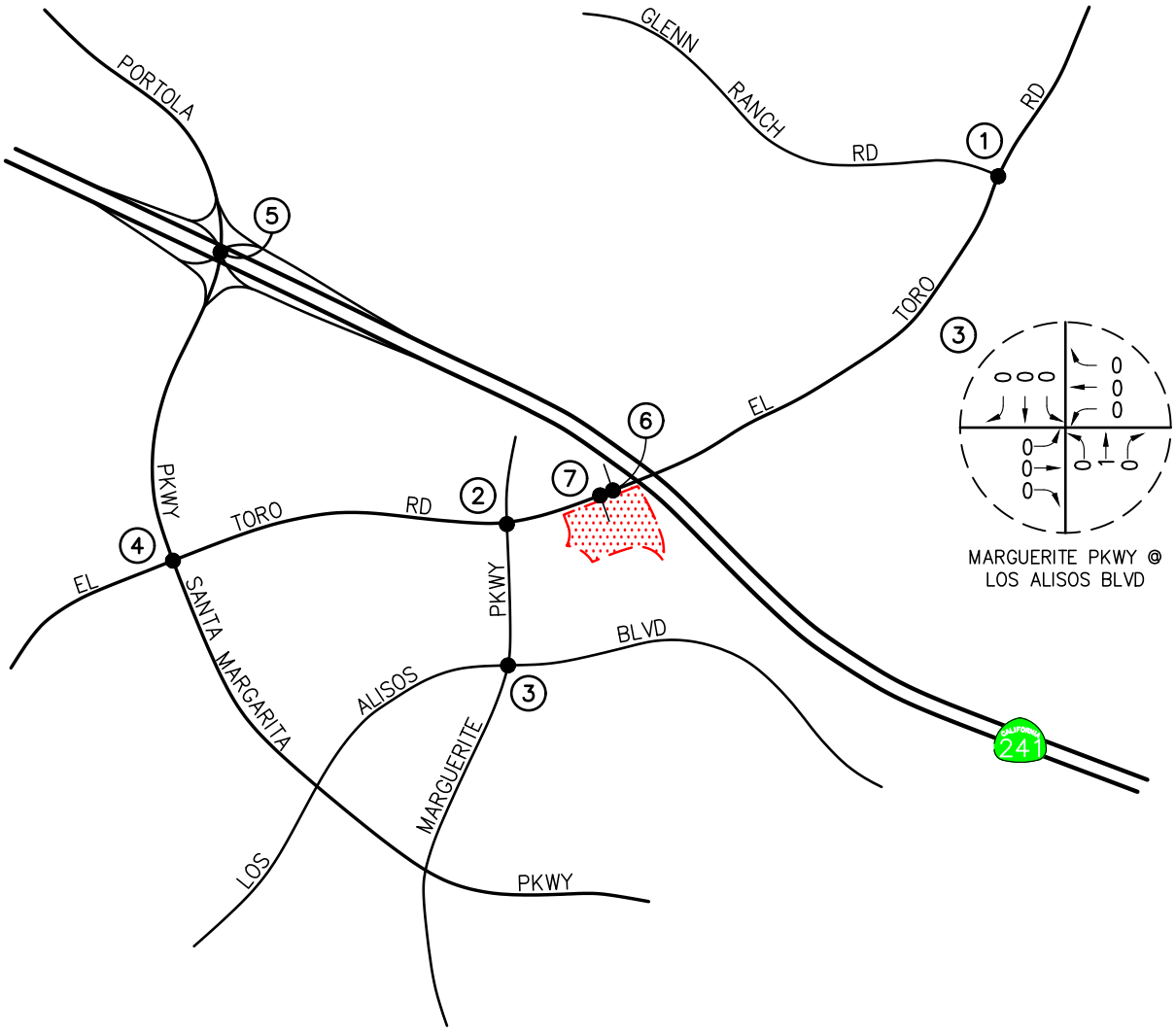
——◀ = OUTBOUND PERCENTAGE

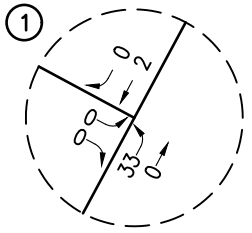
▭ = PROJECT SITE

FIGURE 14-2

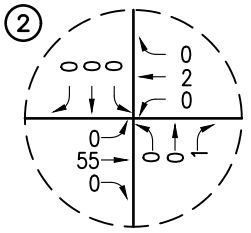
PROJECT CONSTRUCTION TRAFFIC DISTRIBUTION PATTERN (CONSTRUCTION WORKERS)

NUVO EL TORO RESIDENTIAL, MISSION VIEJO



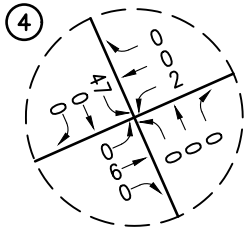


EL TORO RD @
GLENN RANCH RD

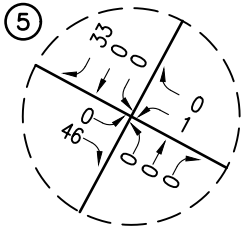


SADDLEBACK CHURCH/
MARGUERITE PKWY @
EL TORO RD

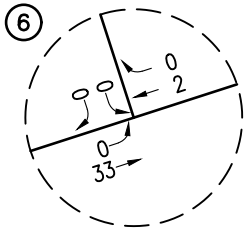
MARGUERITE PKWY @
LOS ALISOS BLVD



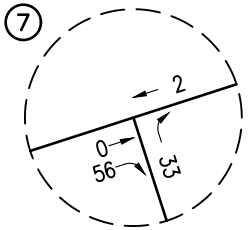
PORTOLA PKWY/
SANTA MARGARITA PKWY @
EL TORO RD



PORTOLA PKWY @
SR-241 RAMPS



STORAGE WEST DWY @
EL TORO RD



PROJECT DWY @
EL TORO RD

LINSCOTT LAW & GREENSPAN
engineers

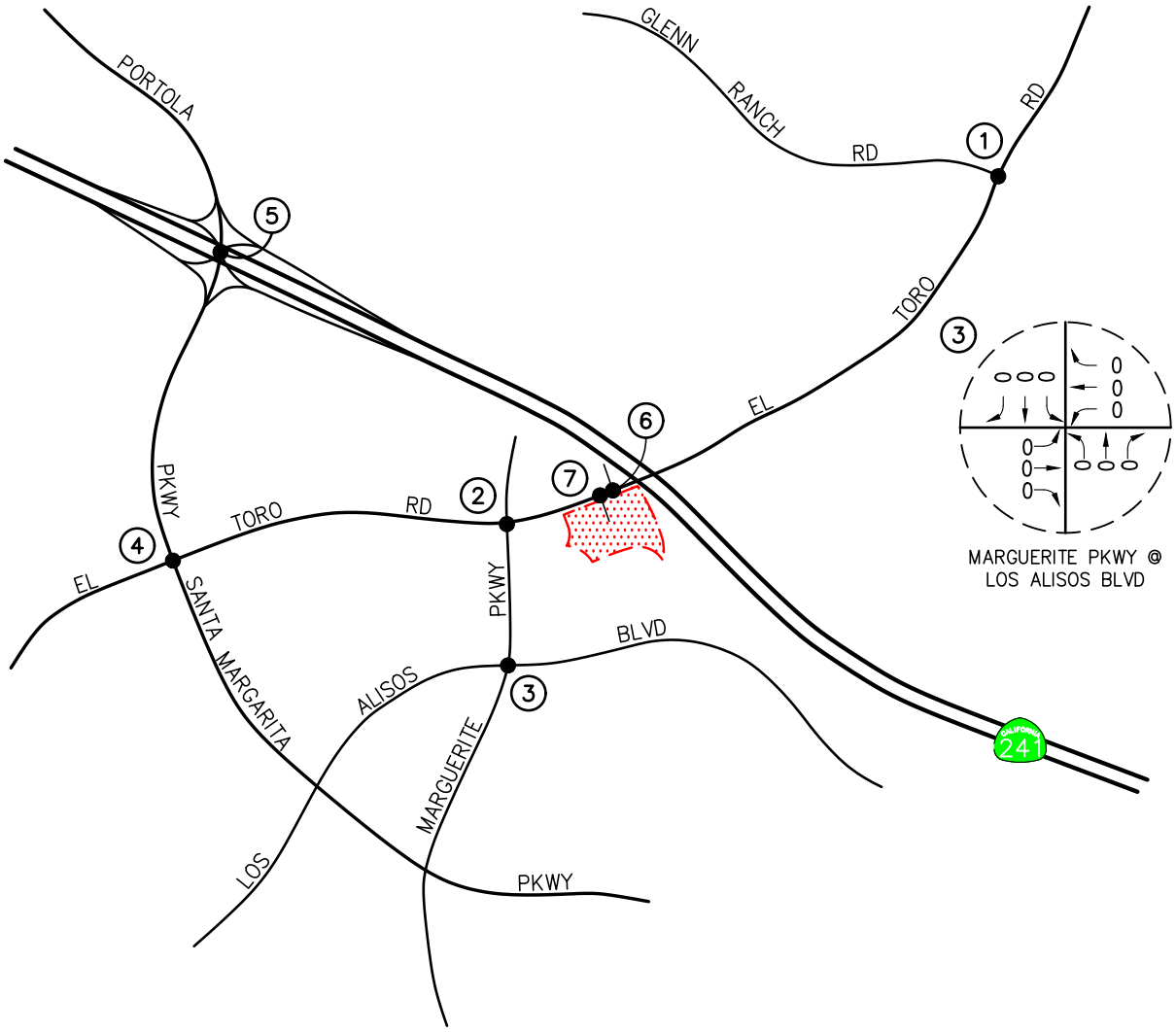
N
NO SCALE

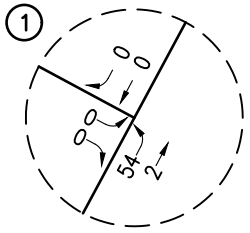
KEY
(#) = STUDY INTERSECTION
= PROJECT SITE

FIGURE 14-3

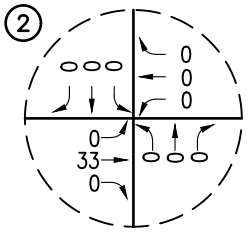
AM PEAK HOUR PROJECT CONSTRUCTION TRAFFIC VOLUMES

NUVO EL TORO RESIDENTIAL, MISSION VIEJO

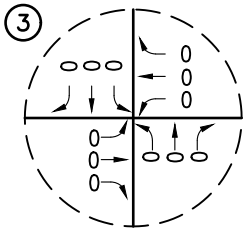




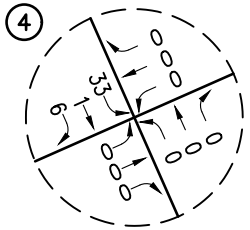
EL TORO RD @
GLENN RANCH RD



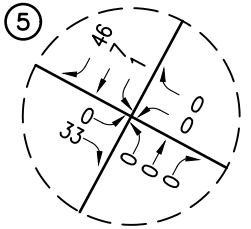
SADDLEBACK CHURCH/
MARGUERITE PKWY @
EL TORO RD



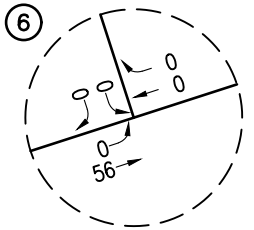
MARGUERITE PKWY @
LOS ALISOS BLVD



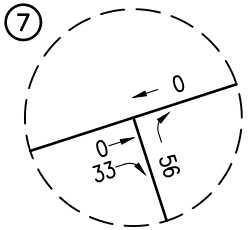
PORTOLA PKWY/
SANTA MARGARITA PKWY @
EL TORO RD



PORTOLA PKWY @
SR-241 RAMPS



STORAGE WEST DWY @
EL TORO RD



PROJECT DWY @
EL TORO RD

LINSCOTT LAW & GREENSPAN
engineers

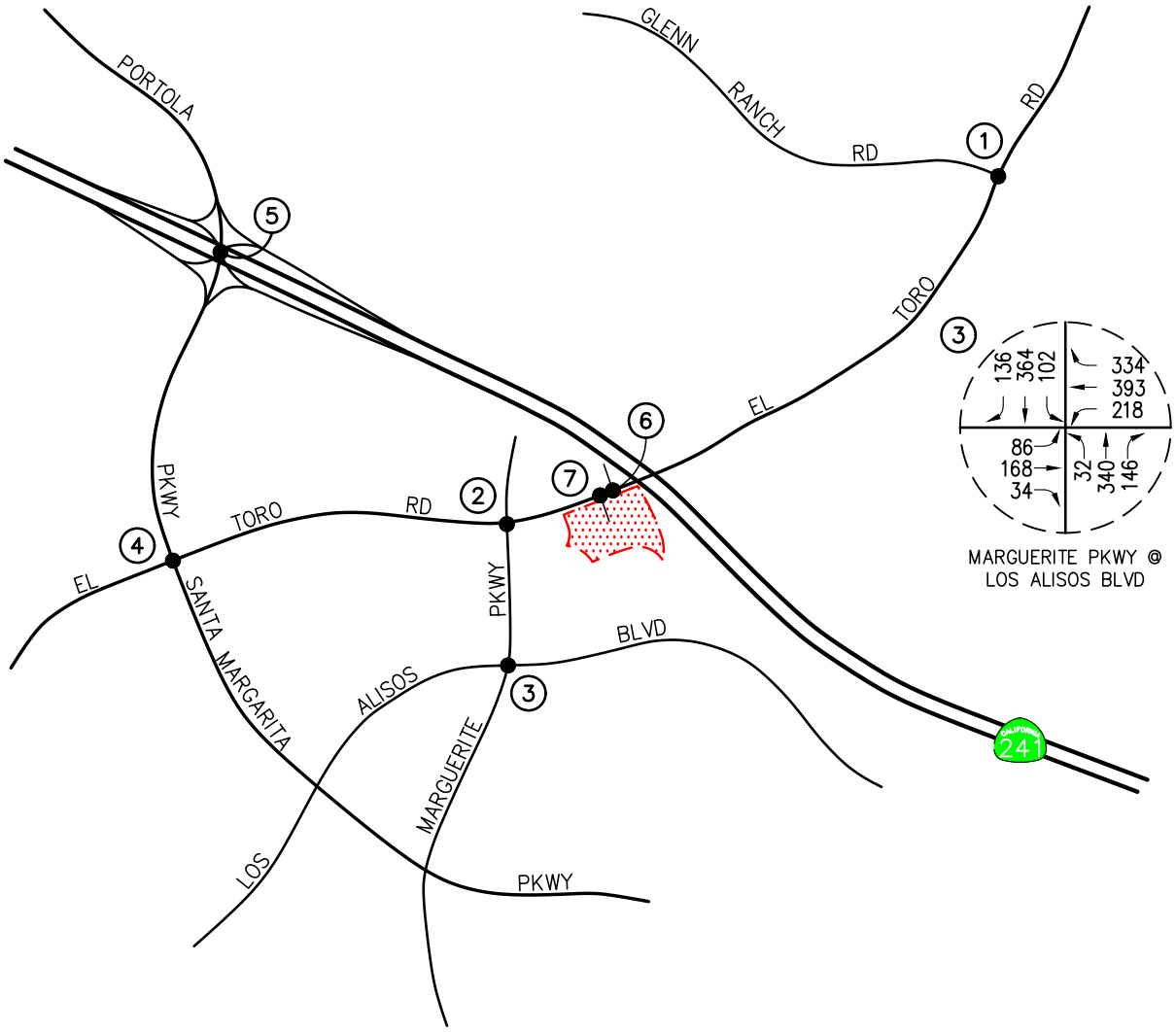
N
NO SCALE

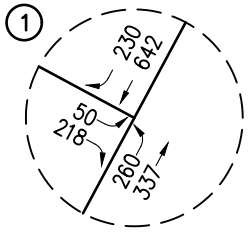
KEY
(#) = STUDY INTERSECTION
= PROJECT SITE

FIGURE 14-4

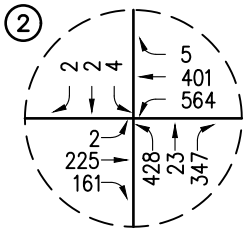
PM PEAK HOUR PROJECT CONSTRUCTION TRAFFIC VOLUMES

NUVO EL TORO RESIDENTIAL, MISSION VIEJO

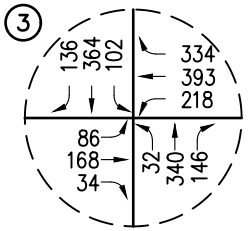




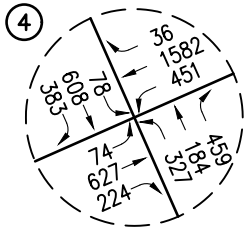
EL TORO RD @
GLENN RANCH RD



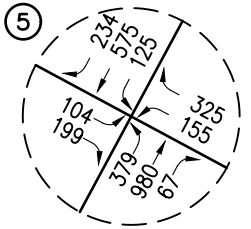
SADDLEBACK CHURCH/
MARGUERITE PKWY @
EL TORO RD



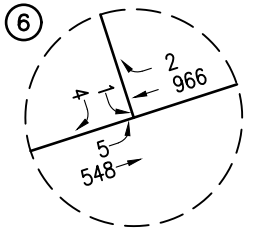
MARGUERITE PKWY @
LOS ALISOS BLVD



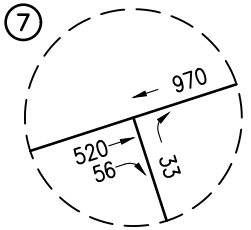
PORTOLA PKWY/
SANTA MARGARITA PKWY @
EL TORO RD



PORTOLA PKWY @
SR-241 RAMPS



STORAGE WEST DWY @
EL TORO RD



PROJECT DWY @
EL TORO RD

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

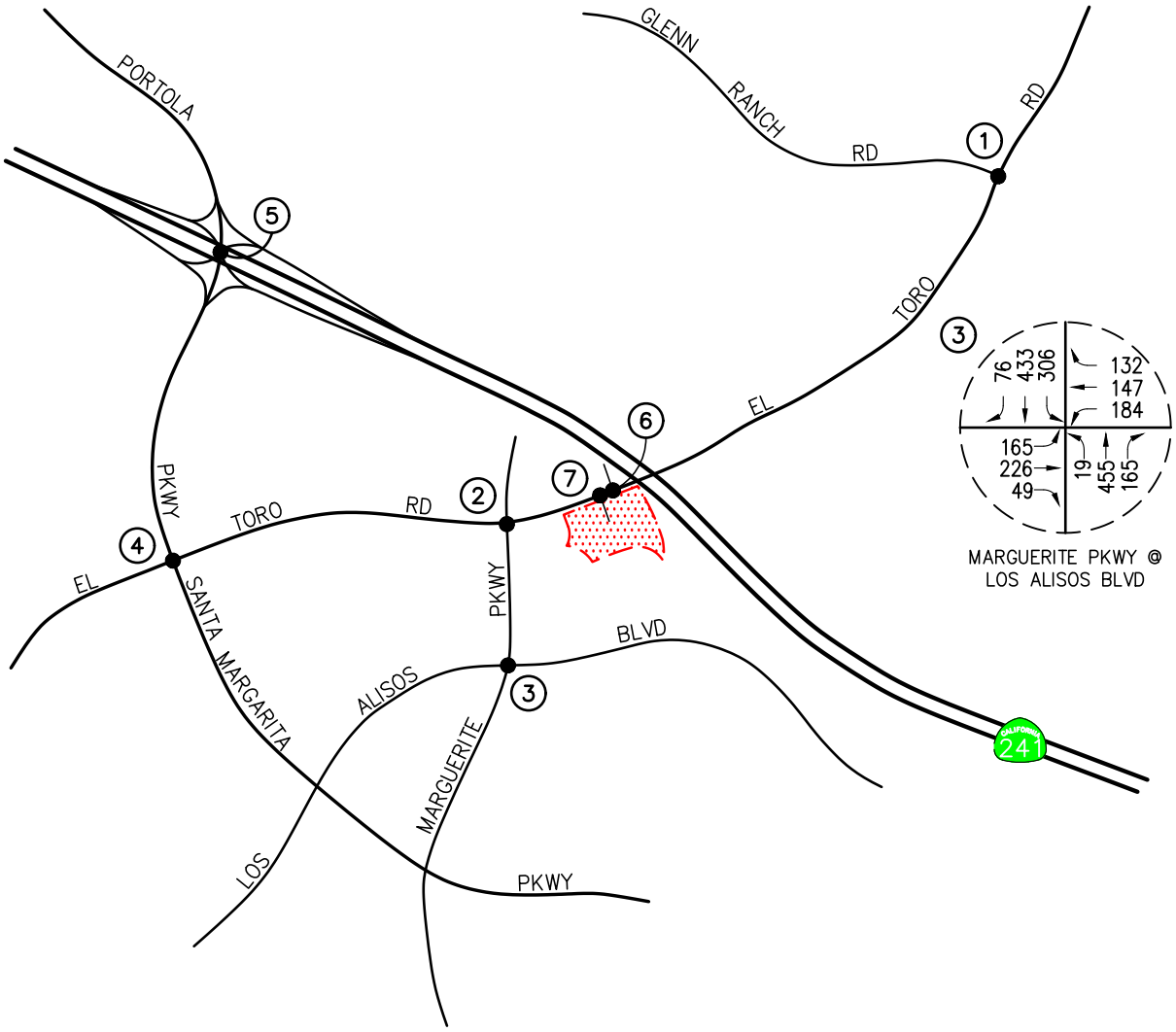
(#) = STUDY INTERSECTION

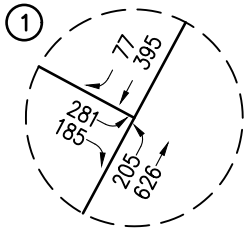
= PROJECT SITE

FIGURE 14-5

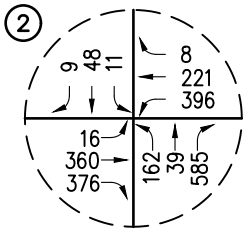
EXISTING WITH PROJECT CONSTRUCTION TRAFFIC AM PEAK HOUR TRAFFIC VOLUMES

NUVO EL TORO RESIDENTIAL, MISSION VIEJO



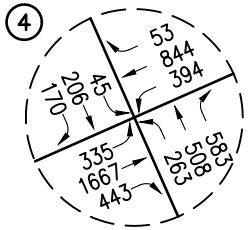


EL TORO RD @
GLENN RANCH RD

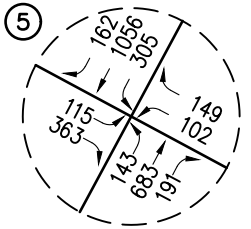


SADDLEBACK CHURCH/
MARGUERITE PKWY @
EL TORO RD

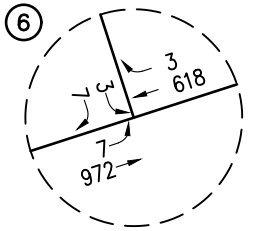
MARGUERITE PKWY @
LOS ALISOS BLVD



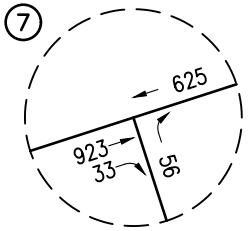
PORTOLA PKWY/
SANTA MARGARITA PKWY @
EL TORO RD



PORTOLA PKWY @
SR-241 RAMPS



STORAGE WEST DWY @
EL TORO RD



PROJECT DWY @
EL TORO RD

LINSCOTT LAW & GREENSPAN
engineers

N
NO SCALE

KEY
(#) = STUDY INTERSECTION
= PROJECT SITE

FIGURE 14-6

EXISTING WITH PROJECT CONSTRUCTION TRAFFIC PM PEAK HOUR TRAFFIC VOLUMES

NUVO EL TORO RESIDENTIAL, MISSION VIEJO

14.2.3 *Existing Plus Construction Traffic Level of Service Results*

Table 14-2 summarizes the results of the existing plus construction traffic level of service analysis at the six (6) key study intersections. The first column (1) of ICU/LOS and HCM/LOS values in *Table 14-2* presents a summary of Existing AM and PM peak hour traffic conditions. The second column (2) presents Existing With Project Construction traffic conditions. The third column (3) shows the increase in ICU value or Delay value due to the added peak hour construction trips and indicates whether or not the key study intersection will be temporarily impacted by construction traffic based on the significant impact criteria defined in this report. Given that key study intersection #5 (i.e. Portola Parkway at SR-241 Ramps) is also under the jurisdiction of Caltrans, HCM calculations have also been prepared, consistent with Caltrans requirements.

Review of columns (2) and (3) of *Table 14-2* indicates that construction traffic associated with the proposed Project ***will not*** significantly impact any of the six (6) key study intersections when compared to the LOS standards and significant impact criteria specified in this report. The six (6) key study intersections currently operate and are forecast to continue to operate at an acceptable LOS C or better during the AM and PM peak hours with the addition of Project generated construction traffic to existing traffic. As further shown in *Table 14-2*, based on the Caltrans HCM methodology, key study intersection #5 (i.e. Portola Parkway at SR-241 Ramps) is forecast to operate at an acceptable LOS during the AM and PM peak hours without and with project construction and will not be impacted based on Caltrans criteria. Therefore no intersection improvements are required for any of the six (6) key study intersections. Nevertheless, 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.

Appendix N presents the AM peak hour and PM peak hour construction traffic ICU/LOS and HCM/LOS calculations for the site grading/excavation construction component.

14.3 Construction Management Plan

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

- 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.
- 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 9:00 AM and 12:00 PM only, Monday through Friday, unless approved otherwise by the City Traffic Engineer. No hauling or transport will be allowed during nighttime hours, weekends or Federal holidays.
- Restrict construction traffic on local and residential streets.
- 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 construction-related parking and staging of vehicles will be kept out of the adjacent public roadways 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 Mission Viejo requirements.
- The City of Mission Viejo Haul Route Permit presents the provisions during construction. As written in the provisions, no moving is permitted on Saturdays/Sundays/Holidays or workdays from 7:00 AM to 9:00 AM and 3:00 PM to 6:00 PM to minimize delays during peak hours. If this Project anticipates having construction traffic during these hours, it will require an approval from the City of Mission Viejo.
- Ingress/Egress for the construction traffic would be via the driveway located along El Toro Road with a flagman to provide left-turn or right turn ingress/egress to/from the Project site on to El Toro Road.
- Identify parking needs and parking areas for construction related equipment and workman support.

TABLE 14-1

PROJECT CONSTRUCTION–RELATED TRAFFIC GENERATION

Project Description	Daily 2-Way	AM Peak Hour			PM Peak Hour		
		Enter	Exit	Total	Enter	Exit	Total
Site Grading/Excavation Generation Forecast:							
▪ Construction Truck Traffic (100 Trucks)	200	12	11	23	11	12	23
Passenger Car Equivalent Factor[34]	3	3	3	3	3	3	3
Subtotal	600	36	33	69	33	36	69
▪ Employees (20 Workers)	40	20	0	20	0	20	20
Total Site Grading/Excavation Construction Related Traffic Trip Generation Potential	**640**	**56**	**33**	**89**	**33**	**56**	**89**
Building Foundation/Framing/Construction Generation Forecast:							
▪ Construction Truck Traffic (26 Trucks)	52	3	3	6	3	3	6
Passenger Car Equivalent Factor[34]	3	3	3	3	3	3	3
Subtotal	156	9	9	18	9	9	18
▪ Employees (24 Workers)	48	24	0	24	0	24	24
Total Building Foundation/Framing Construction Related Traffic Trip Generation Potential	**204**	**33**	**9**	**42**	**9**	**33**	**42**
Paving/Concrete/Landscaping Generation Forecast:							
▪ Construction Truck Traffic (10 Trucks)	20	2	1	3	1	2	3
Passenger Car Equivalent Factor[34]	3	3	3	3	3	3	3
Subtotal	60	6	3	9	3	6	9
▪ Employees (24 Workers)	48	24	0	24	0	24	24
Total Paving/Concrete/Landscaping Construction Related Traffic Trip Generation Potential	**108**	**30**	**3**	**33**	**3**	**30**	**33**

[34] A passenger car equivalent factor of 3.0 was applied to the truck trips to convert them into passenger car trips.

TABLE 14-2

EXISTING WITH PROJECT CONSTRUCTION TRAFFIC CONDITIONS

PEAK HOUR INTERSECTION CAPACITY ANALYSIS SUMMARY[35]

Key Intersection	Time Period	(1) Existing Traffic Conditions		(2) Existing With Project Construction Traffic Conditions		(3) Significant Impact	
		ICU/HCM	LOS	ICU/HCM	LOS	ICU/HCM Increase	Yes/No
1. El Toro Road at	AM	0.469	A	0.489	A	0.020	No
Glenn Ranch Road	PM	0.582	A	0.584	A	0.002	No
2. Marguerite Parkway/Saddleback Church at	AM	0.438	A	0.438	A	0.000	No
El Toro Road	PM	0.629	B	0.629	B	0.000	No
3. Marguerite Parkway at	AM	0.517	A	0.517	A	0.000	No
Los Alisos Boulevard	PM	0.601	B	0.601	B	0.000	No
4. Santa Margarita Parkway/Portola Pkwy at	AM	0.714	C	0.716	C	0.002	No
El Toro Road	PM	0.773	C	0.782	C	0.009	No
5. Portola Parkway at	AM	0.385	A	0.386	A	0.001	No
SR-241 Ramps	PM	0.395	A	0.397	A	0.002	No
➢ HCM LOS Results – Caltrans	AM	17.7 s/v	B	17.7 s/v	B	0.0 s/v	No
	PM	15.8 s/v	B	15.8 s/v	B	0.0 s/v	No
6. Storage West Driveway at	AM	14.4 s/v	B	14.4 s/v	B	0.0 s/v	No
El Toro Road	PM	13.0 s/v	B	13.1 s/v	B	0.1 s/v	No

Notes:

- ICU = Intersection Capacity Utilization
- HCM = Highway Capacity Manual
- LOS = Level of Service, please refer to *Tables 3-1* and *3-2* for the LOS definitions.
- s/v = seconds per vehicle
- **Bold ICU/LOS and HCM/LOS values** indicate unacceptable service levels.

[35] *Appendix N* contains the ICU/LOS and HCM/LOS calculation worksheets for all study intersections.

15.0 VEHICLE MILES TRAVELED (VMT) ASSESSMENT

The 2019 CEQA Guidelines include an updated Appendix G checklist and a new section (15064.3) that significantly changes how transportation impacts are evaluated under CEQA. Delay-based levels of service are no longer considered a significant impact under CEQA, although the new guidelines do not preclude local agencies from continuing to utilize LOS for roadway planning and project evaluation. Section 15064.3 recommends that a project's transportation impacts be evaluated using vehicle miles traveled (VMT). VMT is simply a calculation of the project's trip generation times the average trip length for a project in that area. Per Section 15064.3(c), local agencies have until July 1, 2020 to fully implement the use of VMT for evaluation of transportation impacts. At this time, the City of Mission Viejo has not yet adopted a method for evaluating VMT or thresholds of significance for projects in the City. The VMT for the proposed Novo El Toro Project has been evaluated using the CalEEMod software. The proposed 91-unit Project is forecast to generate 1,928,504 annual VMT, or approximately 5,284 VMT per day.