Stantec

Memo

To:	Damon Mamalakis Armbruster Goldsmith & Delvac LLP	From:	Maria Morris and Daryl Zerfass Stantec
Project/File:	2042648800	Date:	November 19, 2024

Reference: Northlake Specific Plan Transportation Analysis for CEQA

Stantec Consulting Services Inc. (Stantec) performed a transportation analysis for the proposed Northlake Specific Plan Development (Project). The Project is located east of the Interstate 5 (I-5) freeway and north of Lake Hughes Road in unincorporated Los Angeles County. This analysis was prepared in accordance with the California Environmental Quality Act (CEQA) and the Los Angeles County Department of Public Works Transportation Impact Analysis Guidelines for CEQA analysis (July 2020, Version 1.1, updated September 2020; "TIA Guidelines"). The purpose of this study is to identify potential significant impacts related to transportation due to the implementation of the proposed Project (as defined below). This analysis evaluates the Project's impact on vehicle miles traveled (VMT), potential conflicts with current transportation planning programs (plans, ordinances, and policies), increased hazards due to the Project's geometric design features, and emergency access.

The previously approved Northlake Traffic Impact Analysis (TIA)[1] is appended to this memorandum for information purposes only, as the approved TIA evaluated project impacts using the level of service (LOS) metric which is no longer the applicable metric for identifying significant impacts under CEQA. The approved TIA represents a conservative, worst-case analysis of the project's effect on LOS and therefore an update is not required.

Project Description

The Northlake Specific Plan (NLSP) was adopted by the Board of Supervisors on June 1, 1992 and includes the development of 2,337 single family residential units, 1,286 multi-family units (for a total of 3,623 units), 169,884 square feet of commercial uses, 545,589 square feet of light industrial uses, an 18-hole golf course, school, parks and open space. In 2019[2], changes to the land use plan were approved (referred to herein as the previously approved Project) and include the development of 1,143 single family residential units, 1,341 multifamily residential units, 345 age qualified single family residential units,

[1] Stantec, 2016

[2] In 2019 the Project was approved by the Los Angeles County Board of Supervisors. Subsequently, due to a superior court ruling, the County rescinded the Project approvals. The Project applicant is currently proposing to recirculate portions of the NLSP SEIR. At the time the previously approved Project traffic analysis was prepared, LOS was the metric used to evaluate transportation impacts. VMT is now the metric used to evaluate a transportation impact per Senate Bill 743. Los Angeles County has updated their Transportation Impact Analysis Guidelines to utilize the VMT metric.

315 affordable mixed-use housing units and 6 market-rate live-work units[3], for a total of 3,150 residential units. The previously approved Project would also construct highway commercial (e.g., retail near the highway), a middle school (as an option), private and public recreational parks, and a fire station.

Table 1 summarizes the NLSP land uses and the previously approved Project land uses. **Figure 1** shows the previously approved Project site plan.

Table 1 Northlake Specific Plan Project Land Use Summary

Category	NLSP			Previously Approved Project			Difference		
	(AC)	(DU)	(SQ. FT.)	(AC)	(DU)	(SQ. FT.)	(AC)	(DU)	(SQ. FT.)
Residential	600.3	3,623	--	362	3,150	--	-238.3	-794	--
Single Family	504.8	2,337	--	235	1,488	--	-269.8	-593	--
Multi-Family	95.5	1,286	--	107	1,341	--	11.5	-201	--
Affordable Mixed-Use / Live-Work***	0	0	--	20	321*	--	10.8	321	--
General Commercial	9.2	--	100,188		--	38,700**		--	-61,488
Highway Commercial	4	--	69,696	2	--	32,175**	2	--	-37,521
Industrial	50.1	--	545,589	0	--	0	-50.1	--	-545,589
School	23.1	--	--	44	--	--	20.9	--	--
Recreation/Park	167	--	--	167	--	--	0	--	--

* For the purposes of the VMT analysis, the affordable mixed-use housing / market-rate live-work units are treated as multi-family units.

** Square footage per Northlake Design Guidebook

*** 315 affordable mixed-use units and 6 market-rate live-work units.

VMT Analysis Methodology

Signed by the Governor in 2013, SB 743 requires the Governor's Office of Planning and Research (OPR) to identify new metrics for the identification of transportation related impacts within CEQA. Regulatory changes to CEQA guidelines that implement SB 743 were approved on December 28, 2018, establishing VMT as a new metric to replace level of service (LOS) for transportation analysis. Within CEQA, a project's effect on vehicle delay shall not constitute a significant transportation impact (Section 15064.3(a)).

Thresholds for determining a project's significant transportation impact shall be pursuant to section 15064.3 of the CEQA Guidelines. OPR released a Technical Advisory that contains recommendations for assessing

[3] For the purposes of the VMT analysis, the affordable mixed-use housing units and 6 market-rate live-work units are treated as multi-family units to provide a worst-case conservative assessment of Project-generated VMT. Since the County's VMT tool does not estimate VMT per capita for affordable mixed-use housing units or market-rate live-work units, the VMT per capita for multi-family units was used for the affordable mixed-use housing units and the market-rate live-work units.

VMT, thresholds of significance, and mitigation measures. OPR and the California Natural Resources Agency (CNRA) have concluded that VMT is the most appropriate metric to evaluate a project's transportation impacts. On July 1, 2020, statewide implementation occurred.

The Los Angeles County Public Works (LACPW) Department published the TIA Guidelines that provides recommendations for assessing VMT for development in unincorporated Los Angeles County. As such, this VMT analysis has been prepared in accordance with the County's guidelines and guidance from County Public Works staff. The previously Approved Project is evaluated as a land use plan and VMT per service population[4] is the metric used for the VMT impact analysis. An increase in the NLSP VMT on a per capita basis would result in a significant impact. This methodology is used because the NLSP was approved prior to SB 743 adoption and Project modifications are being made after SB 743 adoption.

Project-Level VMT Analysis

The County's VMT Tool uses data from the Southern California Association of Government's Regional Transportation Plan/Sustainable Communities Strategy (SCAG RTP/SCS) travel demand forecasting model and was specifically designed to be used to develop project-specific daily residential VMT per capita and daily employment VMT per employee metrics for residential, office, and industrial land use development projects in the unincorporated areas of the County of Los Angeles[5].

The estimated VMT for the NLSP establishes the baseline for the currently proposed Project to be evaluated against for determining a potential significant CEQA transportation impact. This is due to the approval occurring before SB 743 and modifications happening after SB 743. Unlike a brand new project, the previously approved Project does not need to be evaluated against the County baseline, as determined from the County's VMT Tool.

Table 2 summarizes the Project's VMT, service population, and the VMT per service population estimated for the NLSP and for the previously approved Project (VMT calculations are attached). The VMT estimates presented here are intended to compare the allowed uses of the NLSP and the previously approved Project, using VMT per service population as the basis of comparison. Therefore, the same assumptions to calculate the VMT per service population are applied to both the NLSP and the previously approved Project to provide an equal point of comparison. In regard to the on-site commercial, parks, and school, these uses are assumed to primarily serve the Project residents, therefore the VMT associated with these uses is primarily captured in the residential VMT totals, with any additional visitor VMT being generally equivalent between the NLSP and for the previously approved Project. As shown in **Table 2**, the previously approved Project would generate less VMT and have a VMT per service population rate lower than the NLSP. Due to the VMT reduction, the previously approved Project's impacts would be less and the Project would not result in any new or increased significant transportation impacts.

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[4] Service population is the sum of the number of residents and the number of employees.
[5] County of Los Angeles VMT Tool User Guide, Los Angeles County Public Works. December 2020.

Reference: Northlake Specific Plan Transportation Analysis for CEQA

Table 2 NLSP and Previously Approved Project VMT Summary

Category	NLSP VMT	Previously Approved Project VMT
Single Family Residential	260,013	165,568
Multi-Family Residential	77,860	100,623
Commercial Retail	8,765	3,670
Light Industrial	13,869	--
Recreation/Park	1,320	2,640
School	2,640	2,640
Project VMT	**364,467**	**275,141**
Service Population	**13,485**	**10,705**
VMT per Service Population	**27.0**	**25.7**
See attached VMT and Service Population Calculation Worksheet.		

The VMT estimates presented above use data from a travel demand model and are based on location and land use types only. The travel demand mode data does not consider the unique features of a specific project. For the previously approved Project, there are a number of features that tend to reduce VMT such as constructing a pedestrian network, integrating affordable housing, constructing bicycle trails, and expanding the transit network. VMT reduction ranges from the California Air Pollution Control Officers Association's (CAPCOA) Handbook for Analyzing Greenhous Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity[6] (GHG Handbook) are noted below.

Pedestrian Network: The previously approved Project would promote a high level of walkability by providing access to recreational destinations. Pedestrian facilities in the neighborhood would include multi-use trails, enhanced parkways, and neighborhood pedestrian trails. Neighborhood trails connect homes to the larger network, bringing all community amenities within pedestrian, bicycle, or equestrian access and reducing the need for automobiles[7]. The GHG Handbook's T-18 Provide Pedestrian Network Improvement measure cites up to a 6.4% potential reduction in VMT, however, the previously approved Project is not taking any quantitative credit for this project feature.

Affordable Housing: The previously approved Project includes affordable mixed-use housing units, which represent approximately 10% of the total number of residential units. The GHG Handbook's T-4 Integrate Affordable and Below Market Rate Housing measure cites up to a 28.6% potential reduction in VMT, however, the previously approved Project is not taking any quantitative credit for this project feature.

[6] Handbook for Analyzing Greenhous Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity, California Air Pollution Control Officers Association, December 2021.
[7] Northlake Design Guidebook, April 2018.

Bicycle Trails: The previously approved Project would construct a Class I Bike Path, Class II Bike Lanes, and Class III Bike Route. Per the Northlake Design Guidebook, a Class I Bike Path is planned along Northlake Boulevard and Ridge Route Road south of Northlake Boulevard. Class II bike lanes are planned for Local Collectors "A" and "B" and Fire Access Road. Class III Bike Route is planned along Ridge Route Road north of Northlake Boulevard. The GHG Handbook's T-19A Construct or Improve Bike Facility measure cites up to a 0.08% potential reduction in VMT, however, the previously approved Project is not taking any quantitative credit for this project feature.

Expand Transit Network: The Project would provide a community shuttle and service ("tram") for the Project residents and guests. The tram would service local destinations within the Project Site as well as regional destinations outside the site. The Northlake Design Guidebook provides a conceptual diagram of a well-connected public transit route within the Project site, providing access to local destinations. The GHG Handbook's T-25 Extend Transit Network Coverage or Hours measure cites up to a 4.6% potential reduction in VMT, however, the previously approved Project is not taking any quantitative credit for this project feature.

Cumulative VMT Impact Analysis

The previously approved Project would have a less than significant VMT impact at the Project-level and would, therefore, also have a less-than-significant cumulative VMT impact[8].

Plan Consistency

The previously approved Project does not conflict with the General Plan, any program plan, ordinance, or policy addressing the circulation system. The previously approved Project does not propose to amend or adjust roadway classifications, roadway network, transit routes, or bicycle network under existing conditions and future conditions as identified in the General Plan.

The previously approved Project would enhance the pedestrian experience by constructing multi-use trails, enhanced parkways, and neighborhood pedestrian trails. Neighborhood trails connect homes to the larger network, bringing all community amenities within pedestrian, bicycle, or equestrian access and reducing the need for automobiles. The previously approved Project would also construct a Class I Bike Path, Class II Bike Lanes, and Class III Bike Route. Per the Northlake Design Guidebook, a Class I Bike Path is planned along Northlake Boulevard and Ridge Route Road south of Northlake Boulevard. Class II bike lanes are planned for Local Collectors "A" and "B" and Fire Access Road. Class III Bike Route is planned along Ridge Route Road north of Northlake Boulevard. Lastly, the Project would expand the transit network by creating a route alignment and bus stop locations within the Project site. Therefore, the Project does not conflict with the General Plan, any program plan, ordinance, or policy addressing the circulation system.

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[8] "A project that falls below an efficiency-based threshold that is aligned with long-term goals and relevant plans has no cumulative impact distinct from the project impact. Accordingly, a finding of a less-than significant project impact would imply a less than significant cumulative impact, and vice versa." Technical Advisory on Evaluating Transportation Impacts in CEQA, Governors' Office of Planning and Research, December 2018, page 6.

On-site Access

The previously approved Project would involve construction of a new internal circulation system. According to the Santa Clarita Valley Area Plan 2012 EIR, hazards due to roadway design would be evaluated on a project-by-project basis. The previously approved Project would include implementation of the Access and Circulation Plan that provides circulation and design standards for the layout of arterial highways and local collector streets in support of the Northlake land use plan. Because the Northlake Specific Plan, including the Access and Circulation Plan, was evaluated as part of the Northlake 1992 EIR and approved as part of the Specific Plan, no significant impacts are anticipated. Further, all roadway design would comply with applicable design standards and requirements set forth in the Northlake Specific Plan and would be subject to review and approval by the County of Los Angeles Department of Public Works. Therefore, impacts would be less than significant.

Emergency Access

Development of the Project site will not alter or impede emergency response routes or plans set in place by the County. Access during construction will be addressed in the Project's construction traffic management plan.

Emergency vehicles would access the Project site using Ridge Route Road and use the internal street network. North of the Project site, existing Ridge Route Road can be accessed from Templin Highway. Vehicular circulation within the Project site would be accommodated by public and private roadways, which would be constructed consistent with applicable Los Angeles County Department of Public Works design standards for local roads. According to the California Fire Code (2016), fire apparatus access roads need to be no less than 20 feet wide and shall always be unobstructed, which the internal Project streets will meet. Based on the previously approved Project site plan, the internal streets and intersections, including the Project cul-de-sacs, would accommodate a fire truck.

The Project driveways are designed to comply with turning radius requirements for emergency vehicles and will not cause hazardous driving conditions. The Project's detailed design will be completed in compliance with California Fire Code requirements and not impair emergency vehicle access in the vicinity of the Project during construction and in ongoing operation. Compliance with the California Fire and Building Codes will be mandated through the plan check and approval process. This process will also ensure that adequate access for emergency services is provided, and the County's emergency response plan will be upheld during construction. Therefore, the Project's impact on emergency access would be less than significant.

Construction VMT Analysis

Construction of the proposed project would generate temporary VMT associated with construction activities. It is anticipated that construction of the proposed project would be phased based on market demand.

Construction-related VMT would primarily be associated with mass grading including movement of soils within the Project site, delivery of building materials and construction equipment, removal of construction debris, and construction workers commuting to/from the project site. The amount of construction VMT would vary daily depending on the nature of the activity. In general, phased construction of the proposed uses is not anticipated to result in substantial construction related VMT, except possibly for the initial demolition and clearing stages, which would generate the highest number of heavy truck VMT. All grading materials are anticipated to be balanced on the Project site; therefore, the primary source of construction related VMT would occur during the building phases of the Project. Construction traffic is expected to access the Project site from I-5 at Lake Hughes Road, which leads to Ridge Route Road, and which is the most direct and shortest route from the site to the regional freeway system. Construction workers would primarily be from the southern California region. In some cases, specialized workers will be housed temporarily in the local area for the duration of their work activity. The distance construction workers travel to jobsites is a function of the worker's home location and the jobsite location, which is continually changing due to the short-term nature of construction work. Construction related VMT is variable, short-term, and is substantially lower than the project's operational VMT. As such, construction related VMT would be less than significant.

As described in Mitigation Measure 5.11-3, to minimize traffic impacts during construction, a Construction Traffic Management Plan will be prepared and submitted to the County; this plan will describe safe detours, provide temporary traffic-control measures during construction activities, and identify requirements to be met when one or more travel lanes are obstructed during construction. To reduce traffic congestion, the plan would also include, as necessary, appropriate, and practicable, the following activities: implementing temporary traffic controls (e.g., a flag person) during all phases of construction to maintain smooth traffic flow; implementing signage for detours, if needed; assigning dedicated turn lanes for movement of construction trucks and equipment on and off the site; scheduling construction activities that affect traffic flow on the arterial system to off-peak hours; consolidating truck deliveries; rerouting construction trucks away from congested streets or sensitive receptors; and synchronizing signals to improve traffic flow. Conducting construction activities in compliance with the Traffic Management Plan would reduce potential impacts related to construction traffic to less than significant levels.

Conclusion

The purpose of this study is to identify potential significant impacts related to transportation due to the implementation of the proposed Project. The previously approved Project would generate less VMT and a lower VMT per service population rate than the NLSP. Due to the VMT reduction, the previously approved Project's impacts would be less and the previously approved Project would not result in any new or increased significant transportation impacts.

Reference: Northlake Specific Plan Transportation Analysis for CEQA

The previously approved Project's consistency with existing plans was evaluated and the previously approved Project does not conflict with the General Plan, any program plan, ordinance, or policy addressing the circulation system.

The previously approved Project's roadway design would comply with applicable design standards and requirements set forth in the Northlake Specific Plan and subject to review and approval by the County of Los Angeles Department of Public Works, therefore the Project would not increase hazards or incompatible uses.

Emergency access during construction would be maintained through the previously approved Project's construction management plan and on-site roadways would be designed per Fire Code requirements. Therefore, the previously approved Project would not impact emergency access.

Lastly, construction related VMT is variable, short-term, and is substantially lower than the Project's operational VMT. As such, construction related VMT would be less than significant. A construction Traffic Management Plan will be prepared and submitted to the County. Conducting construction activities in compliance with the Traffic Management Plan would reduce potential impacts related to construction traffic to less than significant levels.

Please reach out to us if you have any questions.

Sincerely,

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Attachment: VMT and Service Population Calculation Worksheet
County of Los Angeles VMT Tool Output Sheets
Figure 1 Project Site Plan
Figure 2 Traffic Analysis Zone Map
Appendix: Land Use Table
Northlake Traffic Impact Analysis

VMT AND SERVICE POPULATION CALCULATION WORKSHEET

Northlake Specific Plan and Previously Approved Project

Land Use Summary

Category	NLSP Amount	NLSP Unit	Previously Approved Project Amount	Previously Approved Project Unit
Single Family Residential	2,337	DU	1,488	DU
Multi Family Residential	1,286	DU	1,341	DU
Affordable Mixed-Use / Live-Work	--	--	321	DU
General Commercial	100.188	TSF	38.7	TSF
Highway Commercial	69.696	TSF	32.175	TSF
Industrial	545.589	TSF	--	--
Recreation/Park	166.9	Acre	167	Acre
School	23.1	Acre	44	Acre

DU = dwelling unit; TSF = thousand square feet

VMT Summary

Category	NLSP VMT	Previously Approved Project VMT
Single Family Residential	260,013	165,568
Multi Family Residential	77,860	100,623
Commercial	8,765	3,670
Light Industrial	13,869	--
Recreation/Park	1,320	2,640
School	2,640	2,640
Total	**364,467**	**275,141**

VMT per Service Population Summary

Metric	NLSP Plan	Previously Approved Project
VMT	364,467	275,141
SP	13,485	10,705
VMT per SP	27.0	25.7

SP = Service Population

NLSP Service Population

Category	Amount (TSF, Acre, Students)	Conversion Factor[1]	Population or Employee
Single Family Residential	2,337	3.85	8,997
Multi Family Residential	1,286	2.79	3,588
Light Industrial	545.589	1.306	418
Commercial	169.884	0.511	332
Recreation (Golf Course)/Park	166.9	na	50[2]
School	1,200	na	100[2]
Service Population			13,485
Residential and Commute VMT			364,467
VMT per Service Population			27.03

[1] Los Angeles County General Plan (DEIR Appendix D Buildout Methodology Figure 1E)

[2] Los Angeles County General Plan (DEIR Appendix D Buildout Methodology Figure 1F)

Previously Approved Project Service Population

Category	Amount (TSF, Acre, Students)	Conversion Factor[1]	Population or Employee
Single Family Residential	1,488	3.85	5,729
Multi Family Residential	1,662	2.79	4,637
Commercial	70.875	0.511	139
Sports Park	26	na[2]	50[2]
Recreation/Park	141	na[2]	50[2]
School	1,200	na[2]	100[2]
Service Population			10,705
Residential and Commute VMT			275,141
VMT per Service Population			25.70

[1] Los Angeles County General Plan (DEIR Appendix D Buildout Methodology Figure 1E)

[2] Los Angeles County General Plan (DEIR Appendix D Buildout Methodology Figure 1F)

NLSP VMT Estimates

Category	Amount (DU)	Persons/ HH[1]	Population	VMT per Capita[2]	Residential VMT
Single Family Residential	2,337	3.85	8,997	28.9	260,013
Multi Family Residential	1,286	2.79	3,588	21.7	77,860
Total Residential	3,623	--	12,585	--	337,873

[1] Los Angeles County General Plan (DEIR Appendix D Buildout Methodology Figure 1E)

[2] County of Los Angeles VMT Tool (See Figure 2 for TAZ Map)

Category	Amount (TSF)	TSF/Emp[1]	Employees	VMT per Employee[2]	Commute VMT
Light Industrial	545.589	1.306	418	33.2	13,869

[1] Los Angeles County General Plan (DEIR Appendix D Buildout Methodology Figure 1E)

[2] County of Los Angeles VMT Tool (See Figure 2 for TAZ Map)

Category	Employees	Employee ADT[1]	Average Trip Length[2] (miles)	Commute VMT	Residential and Commute VMT
Commercial	332	664	13.2	8,765	
Recreation (Golf Course)/Park	50	100	13.2	1,320	
School	100	200	13.2	2,640	
Total VMT					364,467

[1] Assumes 2 trips per employee (home to work and work to home)

[2] Since the County of LA VMT Tool does not calculate VMT per employee for Commerical, Recreation, and School uses, the average trip length was derived by using the General Office VMT per Employee for TAZ 20230100 (Project Location) from the County of LA VMT Tool and assumes 2 trips per employee (26.4 VMT per employee / 2 trips per employee = 13.2 miles).

Previously Approved Project VMT Estimates

Category	Amount (DU)	Persons/ HH[1]	Population	VMT per Capita[2]	Residential VMT
Single Family Residential	1,488	3.85	5,729	28.9	165,568
Multi Family Residential	1,662	2.79	4,637	21.7	100,623
Total Residential	3,150	--	10,366	--	266,191

[1] Los Angeles County General Plan (DEIR Appendix D Buildout Methodology Figure 1E)

[2] County of Los Angeles VMT Tool

Category	Amount (TSF)	TSF/Emp	Employees	VMT per Employee	Commute VMT
Light Industrial	--	--	--	--	--

Category	Employees	Employee ADT[1]	Average Trip Length[2] (miles)	Commute VMT	Residential and Commute VMT
Commercial	139	278	13.2	3,670	
Sports Park	50	100	13.2	1,320	
Recreation/Park	50	100	13.2	1,320	
School	100	200	13.2	2,640	
Total VMT					275,141

[1] Assumes 2 trips per employee (home to work and work to home)

[2] The average trip length was derived by using the General Office VMT per Employee for TAZ 20230100 (Project Location) from the County of LA VMT Tool and assumes 2 trips per employee (26.4 VMT per employee / 2 trips per employee = 13.2 miles).

COUNTY OF LOS ANGELES VMT TOOL

version 1.0

Project Information

Project Name	Analysis Year
Northlake Specific Plan (NLSP)	2022

Parcel Number (TAZ# 20230100)

3244012013, 2865003013, 2865003035, 2865003908, 2865036001, 2865036002, 2865036003,

Project Land Use Information

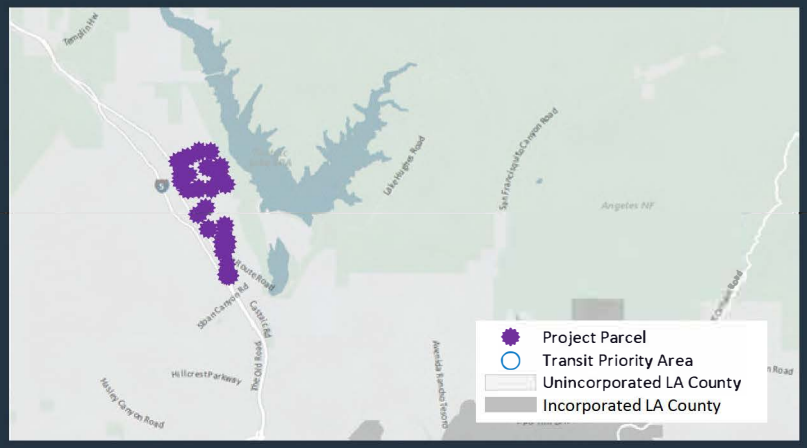
	Values	Unit
Residential - Single-Family Housing	2,337	DU
Residential - Multifamily Housing		DU
Residential - Affordable Housing		DU
Office - General Office		KSF
Office - Medical Office		KSF
Retail - Shopping Center, Restaurant, Services		KSF
Industrial - Warehousing		KSF
Industrial - Light Industrial		KSF
Custom Land Use (ignores all other land use entries)		Daily Trips

Project Daily Trips: 22,061

Screening Criteria for County of Los Angeles

	Value
Is the project screened in a Transit Priority Area?	No
Is the project's residential land uses 100% affordable housing?	N/A
Is the project's local service retail land uses under 50,000 square foot?	N/A
Does the project generate fewer than 110 daily trips? (enter project land use in the section above)	No

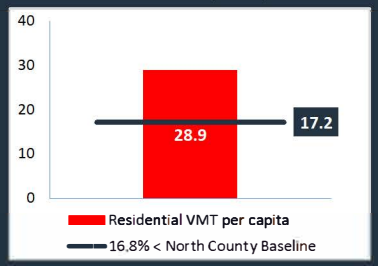
Project Location and VMT Information



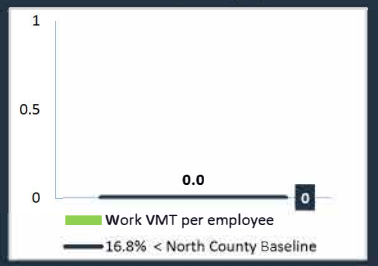
Project Summary Information

North County Residential VMT Baseline (20.7)	16.8%	% Threshold for Screening
North County Work VMT Baseline (15.9)	16.8%	% Threshold for Screening

Residential VMT per capita



Work VMT per employee



The project is not presumed to have a less than significant impact on VMT, therefore a CEQA VMT analysis may be required. Please refer to the Transportation Impact Analysis Guidelines on how to proceed forward.

FEHR & PEERS

COUNTY OF LOS ANGELES VMT TOOL

version 1.0

Project Information

Project Name	Analysis Year
Northlake Specific Plan (NLSP)	2022

Parcel Number (TAZ# 20230100)

3244012013, 2865003013, 2865003035, 2865003908, 2865036001, 2865036002, 2865036003,

Project Land Use Information

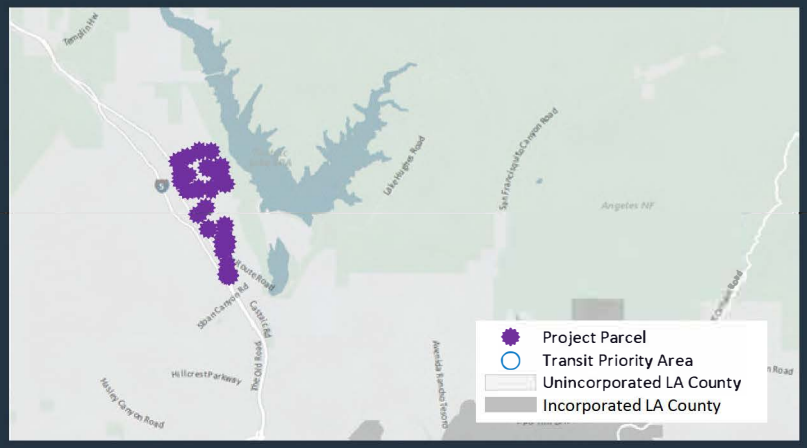
	Values	Unit
Residential - Single-Family Housing		DU
Residential - Multifamily Housing	1,286	DU
Residential - Affordable Housing		DU
Office - General Office		KSF
Office - Medical Office		KSF
Retail - Shopping Center, Restaurant, Services		KSF
Industrial - Warehousing		KSF
Industrial - Light Industrial		KSF
Custom Land Use (ignores all other land use entries)		Daily Trips

Project Daily Trips: 6,996

Screening Criteria for County of Los Angeles

	Value
Is the project screened in a Transit Priority Area?	No
Is the project's residential land uses 100% affordable housing?	N/A
Is the project's local service retail land uses under 50,000 square foot?	N/A
Does the project generate fewer than 110 daily trips? (enter project land use in the section above)	No

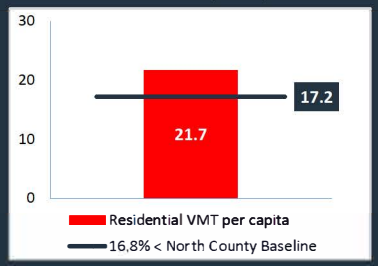
Project Location and VMT Information



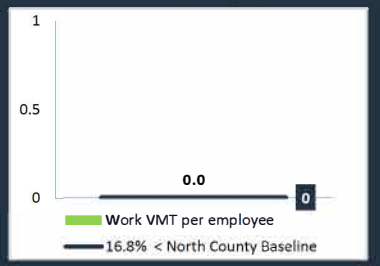
Project Summary Information

North County Residential VMT Baseline (20.7)	16.8%	% Threshold for Screening
North County Work VMT Baseline (15.9)	16.8%	% Threshold for Screening

Residential VMT per capita



Work VMT per employee



The project is not presumed to have a less than significant impact on VMT, therefore a CEQA VMT analysis may be required. Please refer to the Transportation Impact Analysis Guidelines on how to proceed forward.

FEHR PEERS

COUNTY OF LOS ANGELES VMT TOOL

version 1.0

Project Information

Project Name	Analysis Year
Northlake Specific Plan (NLSP)	2022

Parcel Number (TAZ# 20230100)

3244012013, 2865003013, 2865003035, 2865003908, 2865036001, 2865036002, 2865036003,

Project Land Use Information

	Values	Unit
Residential - Single-Family Housing		DU
Residential - Multifamily Housing		DU
Residential - Affordable Housing		DU
Office - General Office		KSF
Office - Medical Office		KSF
Retail - Shopping Center, Restaurant, Services		KSF
Industrial - Warehousing		KSF
Industrial - Light Industrial	545.589	KSF
Custom Land Use (ignores all other land use entries)		Daily Trips

Project Daily Trips: 2,706

Screening Criteria for County of Los Angeles

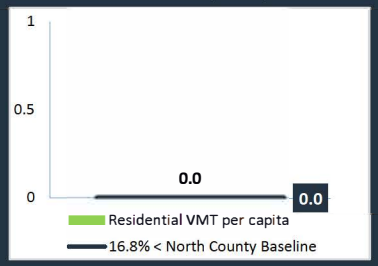
	Value
Is the project screened in a Transit Priority Area?	No
Is the project's residential land uses 100% affordable housing?	N/A
Is the project's local service retail land uses under 50,000 square foot?	N/A
Does the project generate fewer than 110 daily trips? (enter project land use in the section above)	No

Project Location and VMT Information

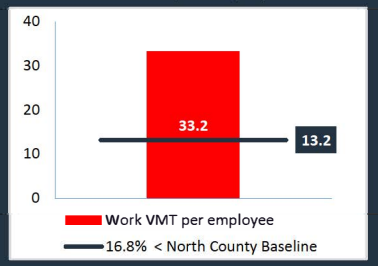
Project Summary Information

North County Residential VMT Baseline (20.7)	16.8%	% Threshold for Screening
North County Work VMT Baseline (15.9)	16.8%	% Threshold for Screening

Residential VMT per capita



Work VMT per employee



The project is not presumed to have a less than significant impact on VMT, therefore a CEQA VMT analysis may be required. Please refer to the Transportation Impact Analysis Guidelines on how to proceed forward.

FEHR & PEERS

COUNTY OF LOS ANGELES VMT TOOL

version 1.0

Project Information

Project Name	Analysis Year
Northlake Specific Plan (Previously Approved Project)	2022

Parcel Number (TAZ# 20230100)

3244012013, 2865003013, 2865003035, 2865003908, 2865036001, 2865036002, 2865036003,

Project Land Use Information

	Values	Unit
Residential - Single-Family Housing	1,488	DU
Residential - Multifamily Housing		DU
Residential - Affordable Housing		DU
Office - General Office		KSF
Office - Medical Office		KSF
Retail - Shopping Center, Restaurant, Services		KSF
Industrial - Warehousing		KSF
Industrial - Light Industrial		KSF
Custom Land Use (ignores all other land use entries)		Daily Trips

Project Daily Trips: 14,047

Screening Criteria for County of Los Angeles

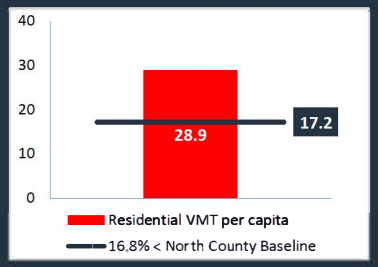
	Value
Is the project screened in a Transit Priority Area?	No
Is the project's residential land uses 100% affordable housing?	N/A
Is the project's local service retail land uses under 50,000 square foot?	N/A
Does the project generate fewer than 110 daily trips? (enter project land use in the section above)	No

Project Location and VMT Information

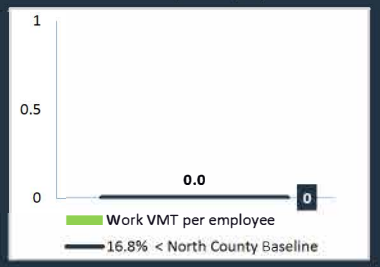
Project Summary Information

North County Residential VMT Baseline (20.7)	16.8%	% Threshold for Screening
North County Work VMT Baseline (15.9)	16.8%	% Threshold for Screening

Residential VMT per capita



Work VMT per employee



The project is not presumed to have a less than significant impact on VMT, therefore a CEQA VMT analysis may be required. Please refer to the Transportation Impact Analysis Guidelines on how to proceed forward.

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COUNTY OF LOS ANGELES VMT TOOL

version 1.0

Project Information

Project Name	Analysis Year
Northlake Specific Plan (Previously Approved Project)	2022

Parcel Number (TAZ# 20230100)

3244012013, 2865003013, 2865003035, 2865003908, 2865036001, 2865036002, 2865036003,

Project Land Use Information

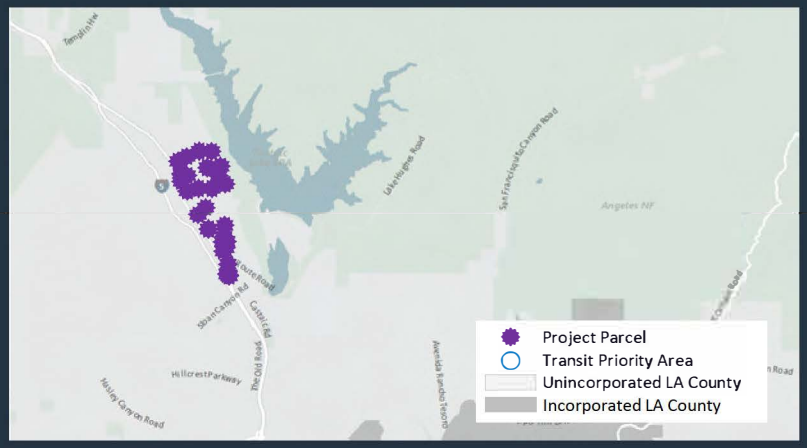
	Values	Unit
Residential - Single-Family Housing		DU
Residential - Multifamily Housing	1,341	DU
Residential - Affordable Housing		DU
Office - General Office		KSF
Office - Medical Office		KSF
Retail - Shopping Center, Restaurant, Services		KSF
Industrial - Warehousing		KSF
Industrial - Light Industrial		KSF
Custom Land Use (ignores all other land use entries)		Daily Trips

Project Daily Trips: 7,295

Screening Criteria for County of Los Angeles

	Value
Is the project screened in a Transit Priority Area?	No
Is the project's residential land uses 100% affordable housing?	N/A
Is the project's local service retail land uses under 50,000 square foot?	N/A
Does the project generate fewer than 110 daily trips? (enter project land use in the section above)	No

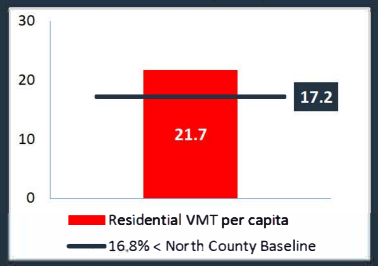
Project Location and VMT Information



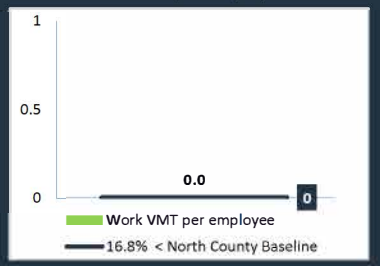
Project Summary Information

North County Residential VMT Baseline (20.7)	16.8%	% Threshold for Screening
North County Work VMT Baseline (15.9)	16.8%	% Threshold for Screening

Residential VMT per capita



Work VMT per employee



The project is not presumed to have a less than significant impact on VMT, therefore a CEQA VMT analysis may be required. Please refer to the Transportation Impact Analysis Guidelines on how to proceed forward.

FEHR & PEERS

COUNTY OF LOS ANGELES VMT TOOL

version 1.0

Project Information

Project Name	Analysis Year
Northlake Specific Plan (Previously Approved Project)	2022

Parcel Number (TAZ# 20230100)

3244012013, 2865003013, 2865003035, 2865003908, 2865036001, 2865036002, 2865036003,

Project Land Use Information

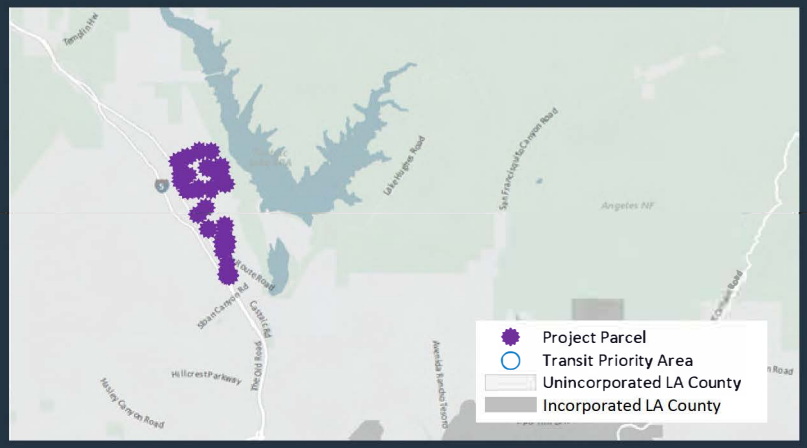
	Values	Unit
Residential - Single-Family Housing	1,488	DU
Residential - Multifamily Housing	1,341	DU
Residential - Affordable Housing	321	DU
Office - General Office		KSF
Office - Medical Office		KSF
Retail - Shopping Center, Restaurant, Services	32.175	KSF
Industrial - Warehousing		KSF
Industrial - Light Industrial		KSF
Custom Land Use (ignores all other land use entries)		Daily Trips

Project Daily Trips: 23,892

Screening Criteria for County of Los Angeles

	Value
Is the project screened in a Transit Priority Area?	No
Is the project's residential land uses 100% affordable housing?	No
Is the project's local service retail land uses under 50,000 square foot?	Yes
Does the project generate fewer than 110 daily trips? (enter project land use in the section above)	No

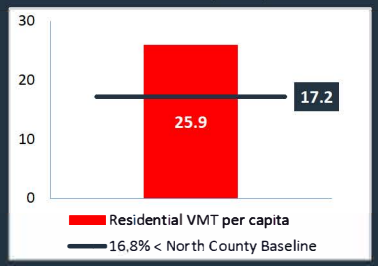
Project Location and VMT Information



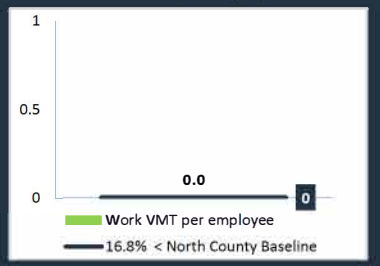
Project Summary Information

North County Residential VMT Baseline (20.7)	16.8%	% Threshold for Screening
North County Work VMT Baseline (15.9)	16.8%	% Threshold for Screening

Residential VMT per capita



Work VMT per employee



The retail portion of this project is presumed to have a less than significant impact on VMT, therefore a CEQA VMT analysis for the retail portion is not required. The project is not presumed to have a less than significant impact on VMT, therefore a CEQA VMT analysis may be required. Please refer to the Transportation Impact Analysis Guidelines on how to proceed forward.

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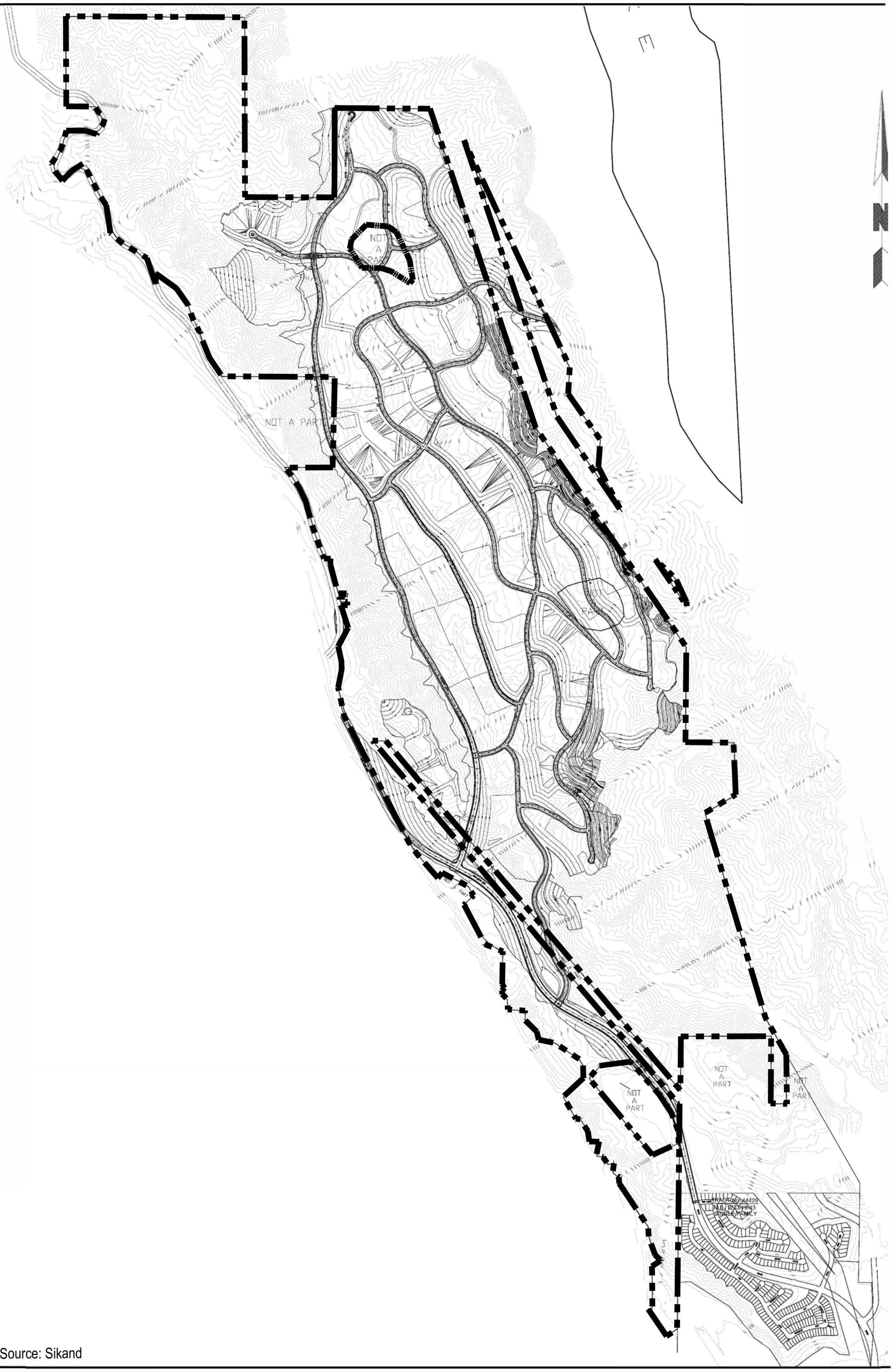

Source: Sikand

Figure 1
Previously Approved Project Site Plan

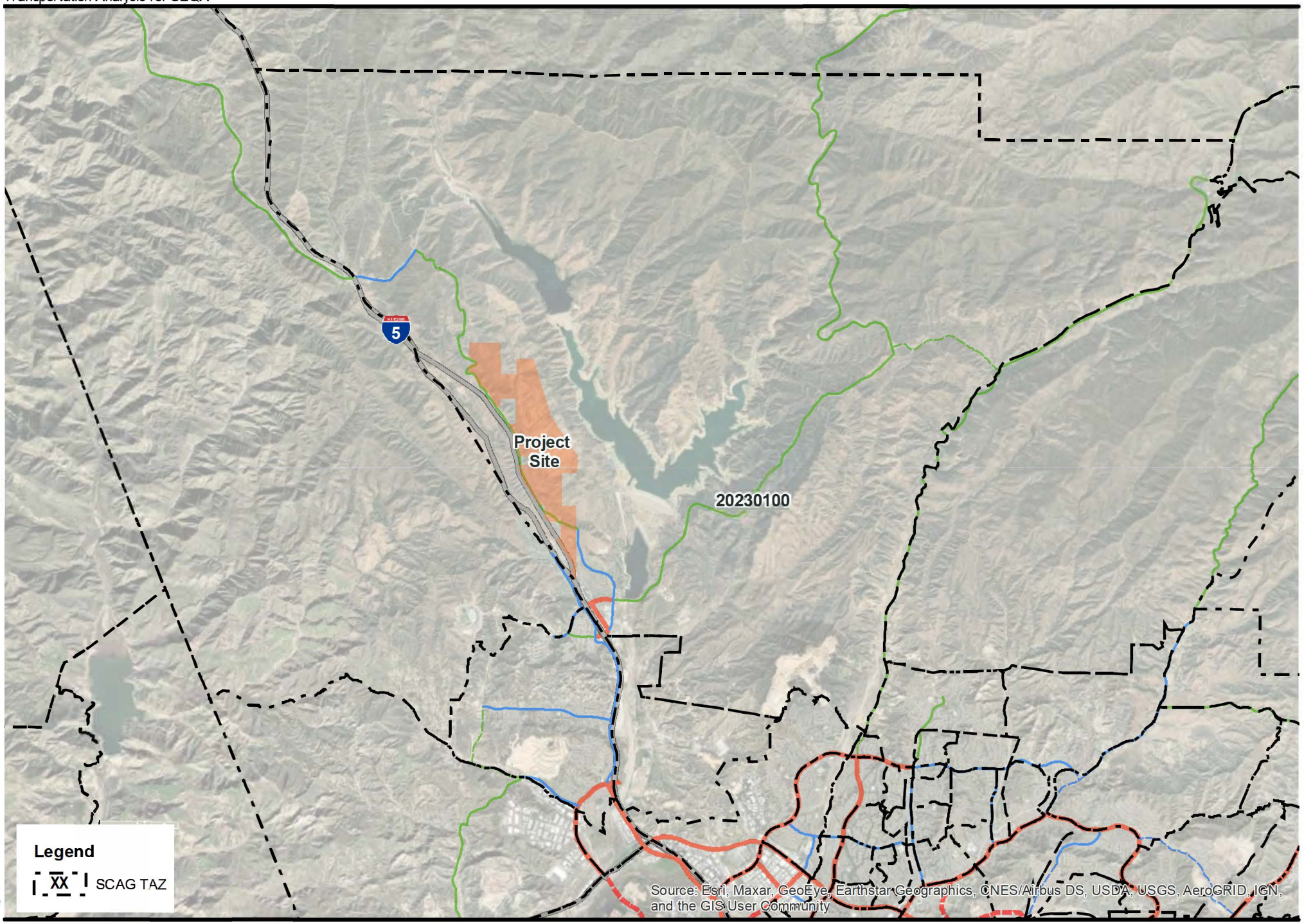

Figure 2
Traffic Analysis Zone (TAZ) Map

Appendix: Land Use Table

	PER APPROVED TM			
	ACREAGES		UNIT COUNT	
Residential	Phase 1	Phase 2	Phase 1	Phase 2
Single Family	41	145	288	855
Multi Family	107		1,341	
Single Family (Age Qualified)	49		345	
Affordable Housing	20		321	
~~Commerical~~ (converted to affordable)				
Commerical Highway	2			
~~Industrial~~ (converted to affordable)				
School	21	23		
Recreation Park				
Trail	10	2		
Grasshopper Creek Park	11	6		
Enhanced Parkway	38	2		
Ridge Route Park		8		
Northvalley Paseo		9		
Northvalley Park		10		
Sport Park	26			
Castaic Lagoon Park (WQ Basin)	17			
Cody Dog Park	1			
Vista Park		27		
OS - Manufactured Slope	144	161		
OS - Undisturbed	167	161		
Road	84	36		
Public Services				
Fire Station	1			
Total (ac.)	**739**	**590**	**3,150**	

Northlake Traffic Impact Analysis

Prepared for:
Northlake Associates, LLC

Prepared by:
Stantec Consulting Services Inc.
38 Technology Drive, Suite 100
Irvine, CA 92618

September 6, 2016

Sign-off Sheet

This report, entitled Northlake Traffic Impact Analysis, was produced by the following individuals:

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Stantec

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1.0 INTRODUCTION

This report presents the results of a traffic study carried out to evaluate a proposed development (hereby referred to as Northlake) within the Northlake Specific Plan area in unincorporated Los Angeles County. VTTM 73336 represents a portion of the Northlake development. The purpose of the study is to identify potential significant impacts of the project and will serve as a technical resource for the project's Environmental Impact Report (EIR).

1.1 PROPOSED PROJECT

Figure 1-1 illustrates the general location of the project. The project is located in the Castaic community, east of Interstate (I-5) and northeast of the Lake Hughes Road interchange. A Specific Plan was approved in 1991 for a development consisting of nearly 4,000 residential dwelling units. The buildout of the project as currently proposed, consists of 1,414 single family residential units, 1,341 condominium and townhouse units, 345 senior adult residential units with a combined total of 3,100 residential units. The project also includes non-residential uses estimated to consist of approximately 67,100 square feet of neighborhood commercial, a 304,900 square feet industrial park, a junior high school (approximately 1,200 students), 15 acre Sports Park and a 10 acre developed park.

The site is currently undeveloped, except for the existing Northlake Hills Elementary school just north of the intersection of Ridge Route Road and Pine Crest Place.

The project site plan is shown in Figure 1-2. Access to the project site is via an extension of the existing Ridge Route Road.

Based on established trip rates published by the Institute of Transportation Engineers (ITE) and the County of Los Angeles, at buildout the development will result in approximately 32,600 average daily trips (35,500 daily tripends) given the proposed land uses for the project site. Detailed trip generation and trip distribution data is provided in Chapter 3.0, Project Description. The project is expected to be fully built out over a 10 to 15 year period.

1.2 STUDY AREA

This traffic report addresses the local study area in the nearby Castaic community where project generated traffic could potentially cause a significant impact and the I-5 freeway segments near the project site. The local study area and the freeway segments addressed in this report are presented in Figure 1-3. As shown, the local study area extends south to the Ridge Route Road/Parker Road interchange and westerly to Sloan Canyon Road.

The study area was derived by utilizing a traffic model to distribute project trips to the area's roadways (see Section 1.3.1 for additional discussion of the traffic model used for this analysis)

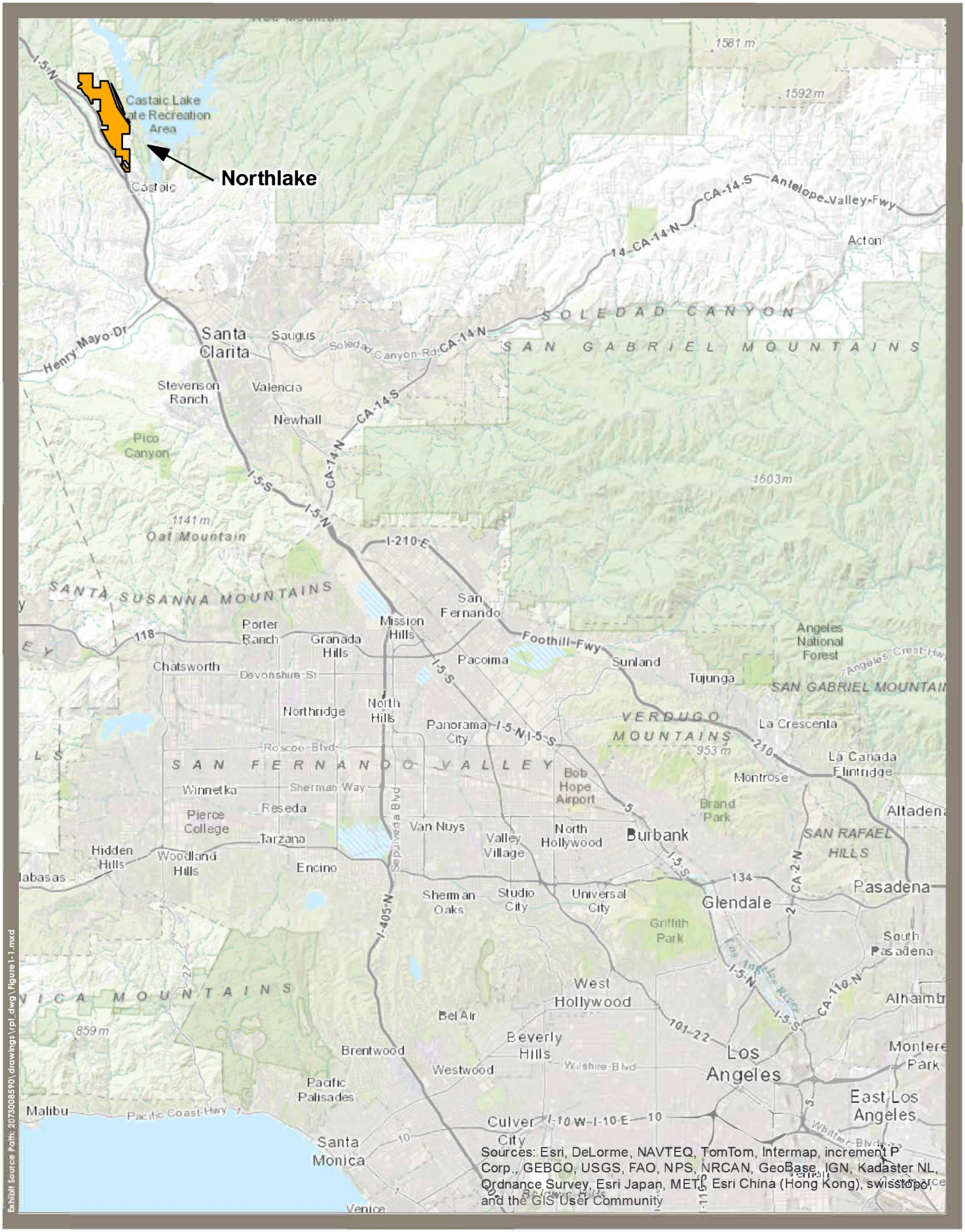

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Figure 1-1

Project Site Location Map

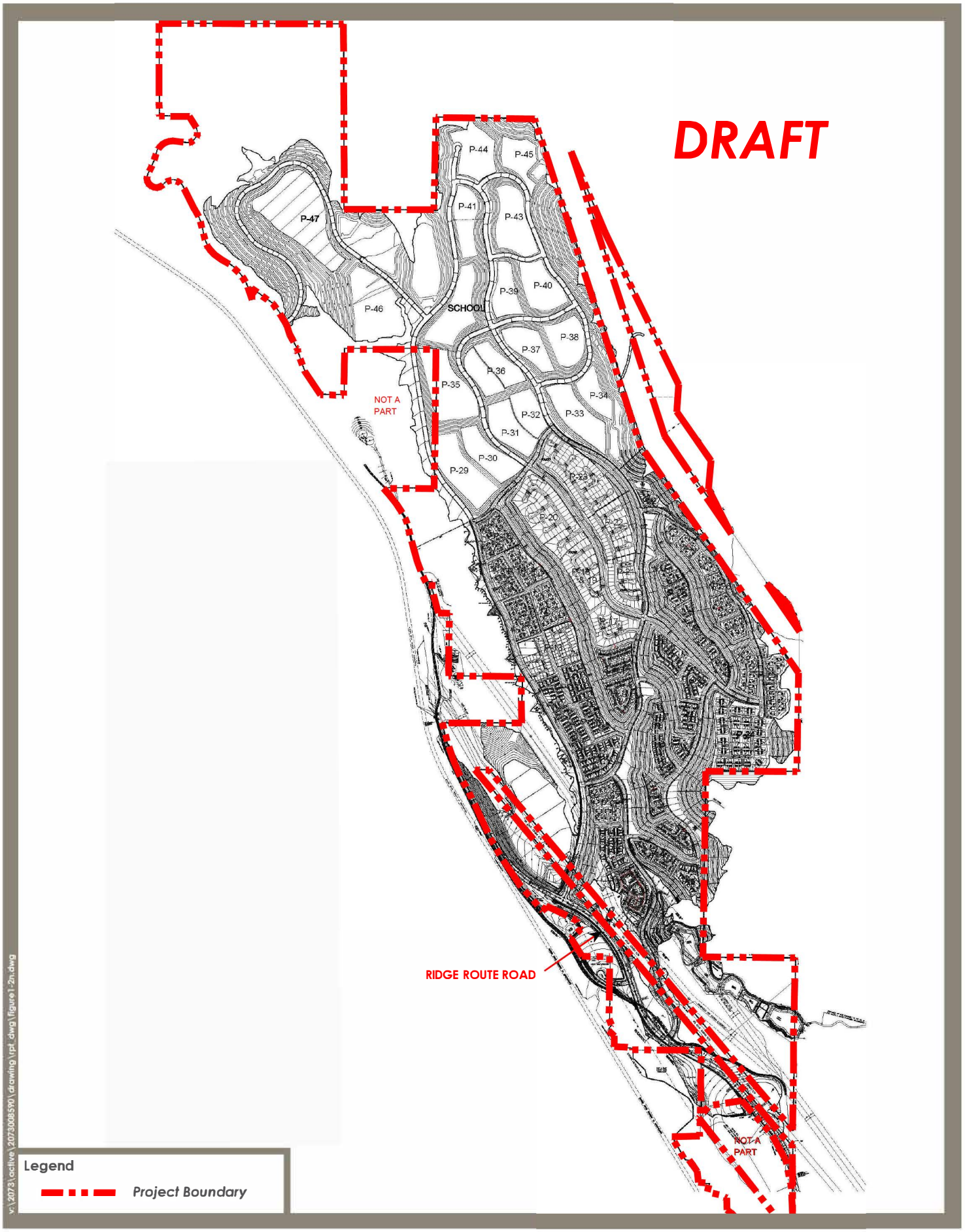

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Figure 1-2
Project Site Plan (Draft)
1.3

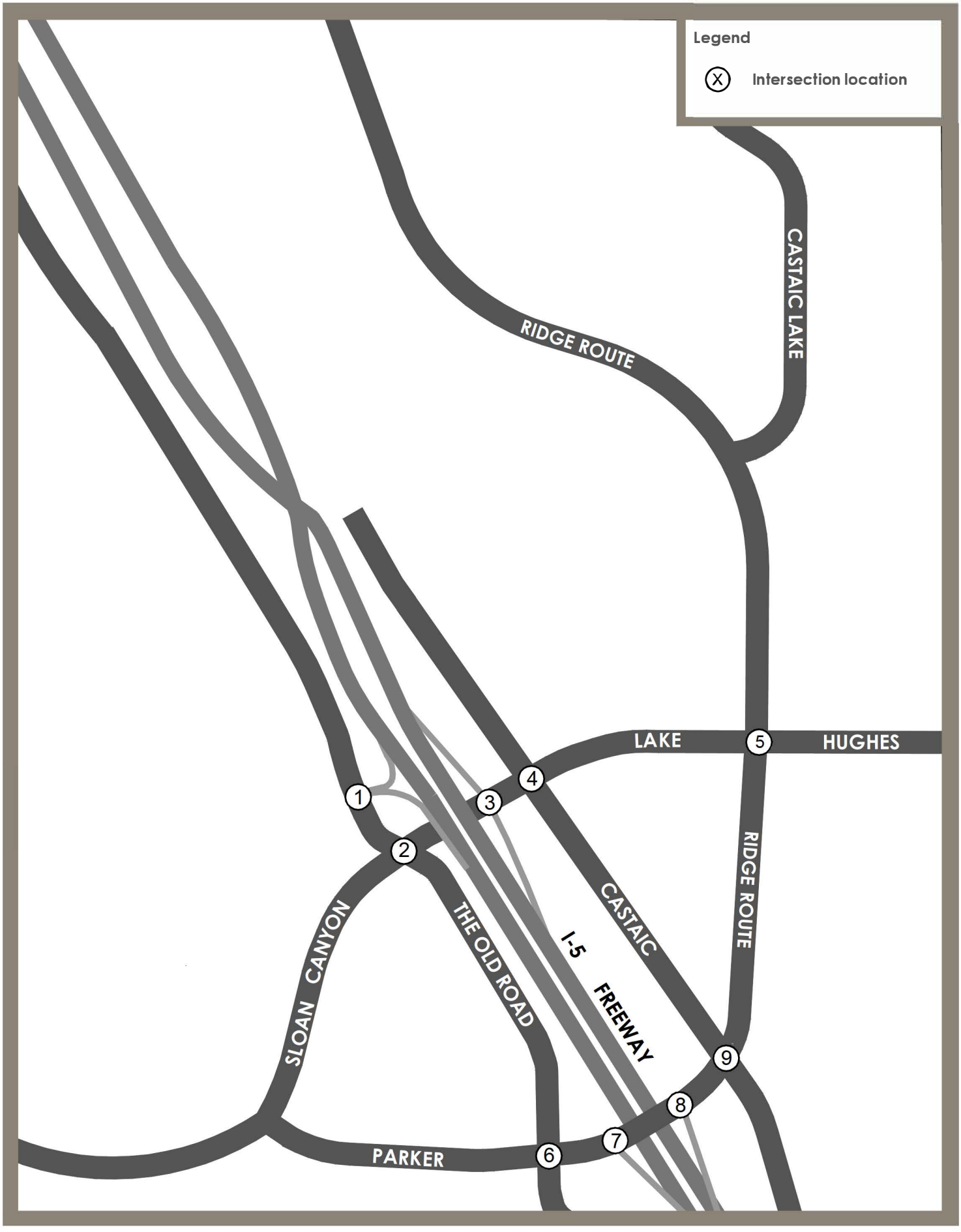

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Figure 1-3

Project Local Study Area - Intersection Location Map

1.4

and each major intersection with a discernible volume of project traffic (i.e., daily traffic volumes > 500 ADT) was included in the study area.

1.3 METHODOLOGY

The traffic analysis evaluates the project utilizing the established guidelines of the Los Angeles County Department of Public Works (See Reference 3 in Section 1.6) and current methodologies as direct by County staff. A special plan–to-ground analysis (i.e., existing plus project analysis) is provided as well as cumulative conditions (i.e., Related Projects) analysis. The project is expected to buildout over a 10 to 15 year period, therefore a horizon year of 2028 is utilized for the cumulative setting. The scenarios analyzed are as follows:

1. Existing Conditions
2. Existing Conditions plus Project
3. 2028 Cumulative Conditions/Related Projects with Project
4. 2028 Cumulative Conditions/Related Projects without Project

1.3.1 Project Impact Analysis

The County's traffic study guidelines specify the analysis of the scenarios shown above. The future forecasts were derived using three primary sources. The first is the Santa Clarita Valley Consolidated Traffic Model (SCVCTM), a model has the capability of forecasting the complex interaction of vehicle trips between existing and future land uses. The second is the Northlake Traffic Model (NTM), a fine-grained site-specific traffic model prepared for this traffic study. The third set of data is from the Los Angeles County Department of Regional GIS-NET-3 database, referred to here as "related projects". All three sources are discussed in detail in Section 2.2.

1.4 PERFORMANCE CRITERIA

In traffic impact studies, impact criteria are based on two primary measures. The first is "capacity," which establishes the vehicle carrying ability of a road segment, and the second is "volume". The volume measures is either a traffic count (in the case of existing volumes) or a traffic forecast for a future point in time. The ratio between the volume and the capacity gives a volume/capacity (V/C) ratio, and based on that V/C ratio, a corresponding level of service (LOS) is defined. Traffic LOS is designated "A" through "F" with LOS "A" representing free flow conditions and LOS "F" representing severe traffic congestion. Traffic flow quality for each LOS is described in Table 1-1 for arterial roadways and intersections and Table 1-2 for freeways, these descriptions being taken from the Highway Capacity Manual (HCM).

Table 1-3 summarizes the V/C ranges listed for arterial roads, intersections and freeway segments and are those used by the County of Los Angeles. The V/C ranges listed for freeway segments are based on the V/C and LOS relationships specified in the 2010 Highway Capacity Manual (see Reference 2 in Section 1.6 and referred to as "HCM 2010" in this report) for basic freeway sections with free-flow speeds of 65 miles per hour, and the V/C methodology is specified by the

County's Congestion Management Program (CMP) for the evaluation of CMP freeway monitoring stations.

The V/C is the methodology used in this analysis for the CEQA determination of impacts since it is the methodology specified by the Los Angeles County CMPs.

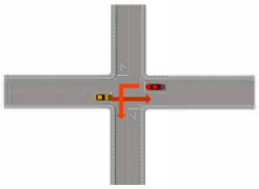
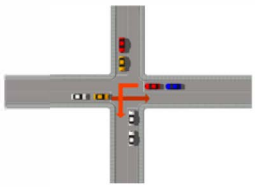
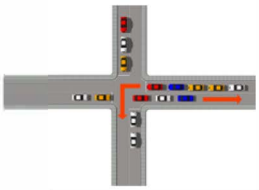
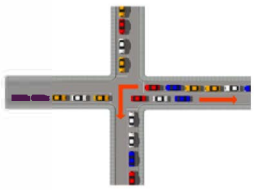
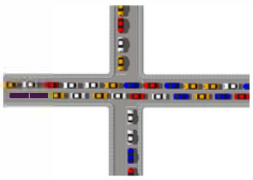
Both the V/C ratio and the LOS are used in identifying significant impacts. Certain LOS values are deemed unacceptable, and increases in the V/C ratio that cause or contribute to the LOS being unacceptable are defined as a significant impact. Note that while the Caltrans guidelines for the preparation of traffic studies (see Reference 4 in Section 1.6) recommend the HCM 2010 method for the evaluation of State highway facilities, those guidelines do not include a threshold of significance criteria for the determination of a significant project impact that is based on the HCM 2010 methodologies. While the Caltrans guidelines do not identify specific impact criteria due to differences between rural and urban areas of the State, as well as differences between the northern, central, and southern regions, the local Caltrans Districts will determine the impact criteria based on the appropriate requirements of that District. As such, the thresholds of significance criteria specified by the local agencies (i.e., Caltrans District 7, County of Los Angeles, and the LA County CMP) are utilized for this analysis.

In establishing V/C based performance criteria, there are certain items that need to be addressed to obtain suitable V/C estimates and relate them to LOS. For instance, while average daily traffic (ADT) is a useful measure to show general levels of traffic on a facility and to provide data for other related aspects such as noise and air quality, highway congestion is largely a peak hour or peak period occurrence and ADT does not reflect peak period conditions very effectively. Because of this, ADT is not used here as the basis for capacity evaluation but instead this evaluation focuses on those parts of the day when such congestion can occur, specifically the AM and PM peak hours.

For the arterial system and freeway system, the peak hour is the accepted time period used for impact evaluation. The analysis of the arterial road system is based on intersection capacity since this is the defining capacity limitation on an arterial highway system. The analysis of the freeway system is based on peak hour volumes by direction.

Levels of service for arterial roadway intersections and for freeway mainline segments are determined based on operating conditions during the AM and PM peak hours. For intersections, the intersection capacity utilization (ICU) methodology is applied, providing a planning level basis for determining V/C and LOS. This methodology sums the V/C ratios for the critical movements of an intersection and is the preferred procedure for intersection analysis by the County of Los Angeles. The ICU methodology is generally compatible with the intersection capacity analysis methodology outlined in the HCM 2010. For freeway segments, the V/C methodology is applied, which also provides a planning level basis for determining capacity utilization and LOS, and which is the methodology specified by the County CMP. The HCM 2010 equates V/C ratios to other performance measures such as speed and density shown in Table 1-4.

Table 1-1 Level of Service Descriptions – Arterial Roadway and Intersections

LOS	Traffic Flow Description	V/C or ICU
A	 Minimal or no vehicle delay.	0.00 – 0.60
B	 Slight delay to vehicles.	0.61 – 0.70
C	 Moderate vehicle delays, traffic flow remains stable.	0.71 – 0.80
D	 More extensive delays at intersections.	0.81 – 0.90
E	 Long queues create lengthy delays.	0.91 – 1.00
F	 Severe delays and congestion.	> 1.00

Sources: HCM 2010, Congestion Management Program of Los Angeles County
V/C = Volume to Capacity ratio
ICU = Intersection Capacity Utilization

Table 1-2 Level of Service Descriptions – Freeways

LOS	Traffic Flow Description	Density (pc/mi/ln)
A	 Free-flow conditions. Free-flow speed prevails and vehicles are almost completely unimpeded in their ability to maneuver within the traffic stream. The effects of incidents or point breakdowns are easily absorbed.	≤11
B	 Reasonably free-flow operations, and free-flow speed on the freeway is maintained. The ability to maneuver within the traffic stream is only slightly restricted, and the general level of physical and psychological comfort provided to drivers is still high. The effects of minor incidents and point breakdowns are still easily absorbed.	>11 – 18
C	 Traffic flow and speeds near the free-flow speed of the freeway. Freedom to maneuver within the traffic stream is noticeably restricted, and lane changes require more care and vigilance on the part of the driver. Minor incidents may still be absorbed, but the local deterioration in service quality will be significant. Queues may be expected to form behind any significant blockages.	>18 – 26
D	 Speeds begin to decline with increasing flows, with density increasing more quickly. Freedom to maneuver within the traffic stream is seriously limited and drivers experience reduced physical and psychological comfort levels. Even minor incidents can be expected to create queuing, because the traffic stream has little space to absorb disruptions.	>26 – 35
E	 Operation at capacity. Operations on the freeway at this level are highly volatile because there are virtually no usable gaps within the traffic stream, leaving little room to maneuver within the traffic stream. Any disruption to the traffic stream can establish a disruption wave that propagates throughout the upstream traffic flow. The physical and psychological comfort afforded to drivers is poor.	>35 – 45
F	 Breakdown, or unstable flow. Breakdown occurs when the ratio of demand to capacity exceeds 1.00. Whenever queues due to a breakdown exist, they have the potential to extend upstream for considerable distances.	>45

Source: HCM 2010
pc/mi/ln = passenger cars per mile per lane

Table 1-3 Volume/Capacity Ratio Level of Services Ranges

LOS	Roadway V/C & Intersection ICU Ranges	Freeway Segment V/C Ranges[1]
A	0.00 – 0.60	0.00 – 0.30
B	0.61 – 0.70	0.31 – 0.50
C	0.71 – 0.80	0.51 – 0.71
D	0.81 – 0.90	0.72 – 0.89
E	0.91 – 1.00	0.90 – 1.00
F	Above 1.00	Above 1.00

Sources: Congestion Management Program of Los Angeles County
HCM 2010

[1]Values based on a free flow speed of 65 mph.

Table 1-4 LOS Criteria for Basic Freeway Segments

	LOS				
Criteria	**A**	**B**	**C**	**D**	**E**
Maximum density (pc/mi/ln)	11	18	26	35	45
Minimum speed (mi/h)	65.0	65.0	64.6	59.7	52.2
Maximum V/C	0.30	0.50	0.71	0.89	1.00
Maximum service flow rate (pc/h/ln)	710	1,170	1,680	2,090	2,350

Notes:

The exact mathematical relationship between density and V/C has not always been maintained at LOS boundaries because of the use of rounded values. Density is the primary determinant of LOS. The speed criterion is the speed at maximum density for a given LOS.

Values based on a free flow speed of 65 mph.

Source: HCM 2010

The ICU calculation methodology and associated impact criteria for the study area arterial system are summarized in Table 1-5. The County utilizes a variable scale of ICU impact amounts that are based on the pre-project LOS.

The County CMP specifies that LOS E is the acceptable threshold for arterial intersections. Therefore, the CMP analysis presented in Section 4.3 utilizes LOS E as the acceptable threshold for CMP purposes.

The freeway V/C calculation methodology and associated impact criteria for the study area freeway system are summarized in Table 1-6. The County CMP specifies that LOS E or existing LOS, whichever is worse, represents the performance standard for freeway segments, and Caltrans goal is to maintain no worse than LOS E in urban areas.

1.5 DEFINITIONS

Certain terms used throughout this report are defined below to clarify their intended meaning:

ADT	Average Daily Traffic. Generally used to measure the total two-directional traffic volumes passing a given point on a roadway.
CMP	Congestion Management Program. A state mandated program administered by the Los Angeles County Metropolitan Transportation Authority (MTA) that provides a mechanism for coordinating land use and development decisions.
ICU	Intersection Capacity Utilization. A measure of the volume to capacity ratio for an intersection. Typically used to determine the peak hour level of service for a given set of intersection volumes.
LOS	Level of Service. A scale used to evaluate circulation system performance based on intersection ICU values or volume/capacity ratios of arterial segments.
Peak Hour	This refers to the hour during the AM peak period (typically 7 AM - 9 AM) or the PM peak period (typically 3 PM - 6 PM) in which the greatest number of vehicle trips are generated by a given land use or are traveling on a given roadway.
Tripend	A trip generation measure which represents the beginning or endpoint of a trip.
V/C	Volume to Capacity Ratio. This is typically used to describe the percentage of capacity utilized by existing or projected traffic on a segment of an arterial or intersection.
VPH	Vehicles per Hour. Used for roadway volumes (counts or forecasts) and trip generation estimates. Measures the number of vehicles in a one-hour period, typically the AM and PM peak hour.

Table 1-5 Arterial Intersection Performance Criteria

V/C Calculation Methodology

Level of service to be based on peak hour intersection capacity utilization (ICU) values calculated using the following assumptions:

Saturation Flow Rates:

County Methodology:	1,600 vehicles/hour/lane for through lanes, right-turn lanes, and single left-turn lanes 2,880 vehicles/hour/lane for dual left-turn lanes (total of both lanes)
Clearance Interval:	0.10

Significant Impact Thresholds[1]

An intersection is considered to be significantly impacted if the project increases the ICU by an amount equal to or greater than the amounts set forth below:

County Thresholds:	Pre-Project ICU	Project Increment
	0.71 - 0.80 (LOS C)[2]	greater than or equal to 0.04
	0.81 - 0.90 (LOS D)	greater than or equal to 0.02
	0.91 or more (LOS E & F)	greater than or equal to 0.01

[1]Note: For intersections under joint jurisdiction of the County and Caltrans or Caltrans, the analysis utilizes the corresponding threshold of the lead agency (County) or local agency.

[2]Note: The County guidelines do not address situations where pre-project conditions are less than 0.71. In that situation, County staff has interpreted the guidelines to mean that an increase resulting in a with-project condition of 0.75 or more is considered significant. The interpretation is based on the following scenario, which is addressed by the guidelines: 0.71 (pre-project) + 0.04 (project increment) = 0.75 and is a significant impact.

Abbreviations:
V/C – Volume/Capacity Ratio
LOS – Level of Service
ICU – Intersection Capacity Utilization

Table 1-6 Freeway Mainline Performance Criteria

V/C Calculation Methodology

Level of service to be based on peak hour V/C values calculated using the following assumptions for a planning level analysis:

Saturation/Service Flow Rates:

Mainline Mixed-flow/General Purpose Lane:	2,000 vehicles/hour/lane
High Occupancy Vehicle (HOV) or High Occupancy Toll (HOT Lane:	1,600[1] vehicles/hour/lane

Saturation flow rates derived from Caltrans PeMS data and through discussions with Caltrans staff.

[1] For buffered or contiguous HOV facilities, LOS C occurs at approximately 1,650 vph, or less if there is significant bus volume or if there are physical constraints (source: High Occupancy Vehicle Guidelines for Planning, Design and Operations, Caltrans, 2003, Chapter 2, page 4). However, for the purpose of planning studies, Caltrans District 7 has specified a capacity of 1,600 vph based on the desire to maintain an operating condition for the HOV lanes that is better than for general purpose lanes. As such, a V/C ratio of 1.00 in the HOV lane represents a better operating condition than a V/C ratio of 1.00 in the general purpose lanes.

Impact Threshold

A freeway mainline segment is considered to be significantly impacted if each of the following conditions are met:

The segment is forecast to operate deficiently (i.e., worse than LOS E (urban areas) or existing LOS, whichever is worse).

Compared to the V/C in the no-project alternative, the V/C in the with-project alternative increases by greater than or equal to .02 (the impact threshold specified in the CMP).

Abbreviations:

V/C – Volume/Capacity Ratio
PeMS – Performance Monitoring System
LOS – Level of Service
CMP – Congestion Management Program

1.6 REFERENCES

1. "Trip Generation 9th Edition," Institute of Transportation Engineers, 2012.
2. "Highway Capacity Manual 2010," Transportation Research Board, National Research Council, 2010.
3. "Traffic Impact Analysis Report Guidelines," County of Los Angeles Department of Public Works, January 1997.
4. "Guide for the Preparation of Traffic Impact Studies," Caltrans, December 2002.
5. "I-5 HOV/Truck Lanes Project SR-14 to Parker Road Final Environmental Impact Report/Environmental Assessment with Finding of No Significant Impact" (SCH No. 2007051028), State of California Department of Transportation, September 2009.
6. "I-5 HOT Lane Project Supplemental EIR/Environmental Reevaluation" (SCH No. 2007051028), State of California Department of Transportation, May 2013.
7. "Guidelines for CMP Transportation Impact Analysis," from the 2010 Congestion Management Program for Los Angeles County, Los Angeles County Metropolitan Transportation Authority, 2010.
8. "SCAG Regional Travel Demand Model and 2008 Model Validation," Southern California Association of Governments, June 2012.
9. "Caltrans 2013 Traffic Volumes on California State Highways," State of California Transportation Agency Department of Transportation, 2014.
10. "Subdivision Activity Unincorporated Areas Only," Los Angeles County GIS Data Portal, Accessed February 2015.
11. "Public Subdivision Activity," Los Angeles County Department of Regional Planning GIS-NET3, Accessed February 2015.
12. "Brea Sports Park Traffic Study," Austin-Foust Associates, Inc. August 2002.
13. "Westside Bridge and Major Thoroughfare Construction Fee District Report," Los Angeles County Department of Public Works, February 2011.
14. "City of San Diego Municipal Code Land Development Code Trip Generation Manual," City of San Diego, May 2003.

2.0 TRANSPORTATION SETTING

This chapter describes the transportation setting for the project. Existing conditions are first summarized, followed by the future background setting against which project impacts are evaluated.

2.1 EXISTING CONDITIONS

The following section describes the transportation system serving the local study area. It includes a description of the local study area roadway system, existing traffic volumes and the results of an intersection capacity utilization (ICU) level of service (LOS) analysis, thereby providing a point of reference for describing anticipated future traffic conditions.

2.1.1 Existing Local Roadway System

The existing local roadway system in the nearby Castaic community is illustrated in Figure 2-1 in the form of mid-block lanes, intersection lane configurations and intersection control types for the intersections being studied.

Immediately south of the project site, Ridge Route Road has been constructed with a 64 foot roadway width within 80 feet of right-of-way to just north of Castaic Lake Drive. From just north of Castaic Lake Drive to just south of the park entrance, Ridge Route Road has been constructed with a 94 foot roadway width within 110 feet of right-of-way. From just south of the park entrance to Lake Hughes Road, Ridge Route Road has been constructed with an 84 foot roadway within 100 feet of right-of-way, with a raised median ranging from 4 feet to 14 feet in width. South of Lake Hughes Road, Ridge Route Road consists of two lanes in each direction, with parking, within a 64 foot roadway width.

Lake Hughes Road is a major highway currently configured with two lanes in each direction between Ridge Route Road and the I-5 freeway. West of Ridge Route Road, Lake Hughes Road has been constructed with a 90 foot roadway width.

The I-5 freeway provides regional access to the Los Angeles area to the south and to Kern County to the north. It currently consists of four lanes in each direction. In the Castaic area, interchanges exist at Lake Hughes Road and at Parker Road/Ridge Route Road. At the Lake Hughes Road interchange, direct ramps exist for the northbound direction, and hook ramps to and from The Old Road for the southbound direction. At the Parker Road/Ridge Route interchange, ramps exist for movement to and from the south only.

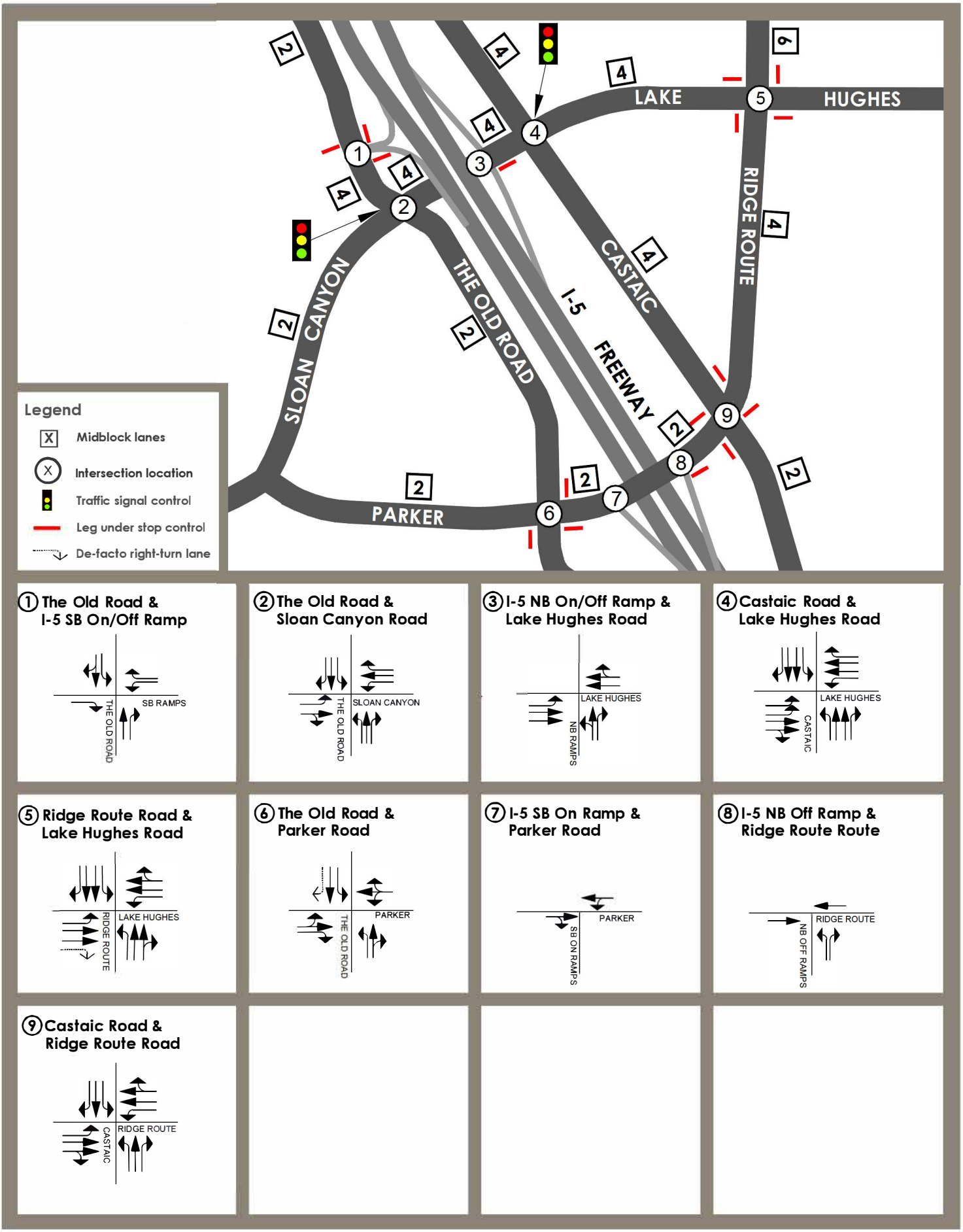


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Figure 2-1

Existing Intersection Lane Configuration, Stop Control and Midblock Lanes

2.2

2.1.2 Existing Traffic Volumes and Levels of Service

An illustration of existing average daily traffic (ADT) volumes is provided in Figure 2-2. Peak hour turning movement volumes for each intersection can be found in Figure 2-3 and Figure 2-4 for the AM peak hour and PM peak hour, respectively. The traffic counts were collected in January of 2015 (count data is provided in Appendix C).

As discussed in the section on performance criteria in Section 1.4, LOS is a concept developed to quantify the degree of comfort afforded to drivers as they travel on a given roadway. The degree of comfort includes such elements as travel time, number of stops, total amount of stopped delay, etc. As defined in the HCM 2010, six grades are used to denote the various LOS. The six are denoted "A" through "F" and a discussion on these was given in Section 1.4.

The results of the ICU and LOS analysis for the intersections near the project site are shown in Table 2-1 (detailed LOS calculation worksheets are provided in Appendix A). As noted in Figure 2-1, most intersections in the study area are not currently controlled by a traffic signal. For those locations, the ICU provides an indication of the level of service based on traffic signal control and provides a benchmark for comparison of future condition with the project.

Table 2-1 ICU and LOS Summary – Existing Conditions

Intersection	Jurisdiction	Signal Control	AM Peak Hour		PM Peak Hour		Count Date
			ICU	LOS	ICU	LOS	
1. The Old Road & I-5 SB Ramps	County/ Caltrans	Stop	0.41	A	0.39	A	1/27/2015
2. The Old Road & Sloan/Lake Hughes	County	Signal	0.34	A	0.36	A	1/22/2015
3. 1-5 NB Ramps & Lake Hughes	County/ Caltrans	Stop (South Leg)	0.31	A	0.41	A	1/27/2015
4. Castaic & Lake Hughes	County	Signal	0.31	A	0.37	A	1/27/2015
5. Ridge Route and Lake Hughes	County	Stop	0.31	A	0.19	A	1/27/2015
6. The Old Road & Parker	County	Stop	0.45	A	0.42	A	1/28/2015
7. I-5 SB On Ramp & Parker	County/ Caltrans	None	0.60	A	0.52	A	1/22/2015
8. I-5 NB Off Ramp & Ridge Route	County/ Caltrans	Stop (South Leg)	0.46	A	0.55	A	1/22/2015
9. Castaic & Ridge Route	County	Stop	0.33	A	0.41	A	1/22/2015
See Table 1-1 for level of service descriptions.							

As can be seen in Table 2-1, all intersections currently operate better than LOS D.

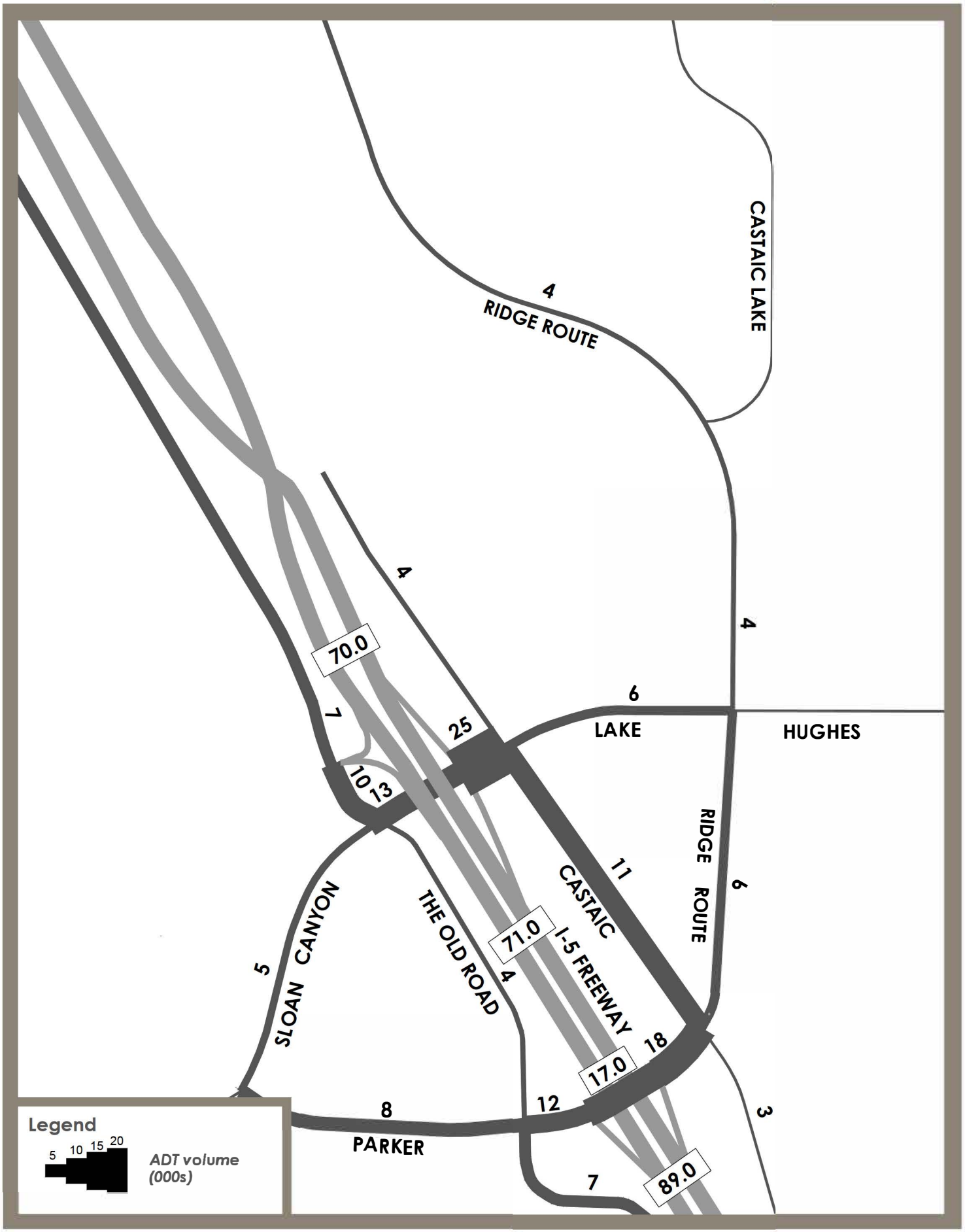

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Figure 2-2

Existing Average Daily Traffic

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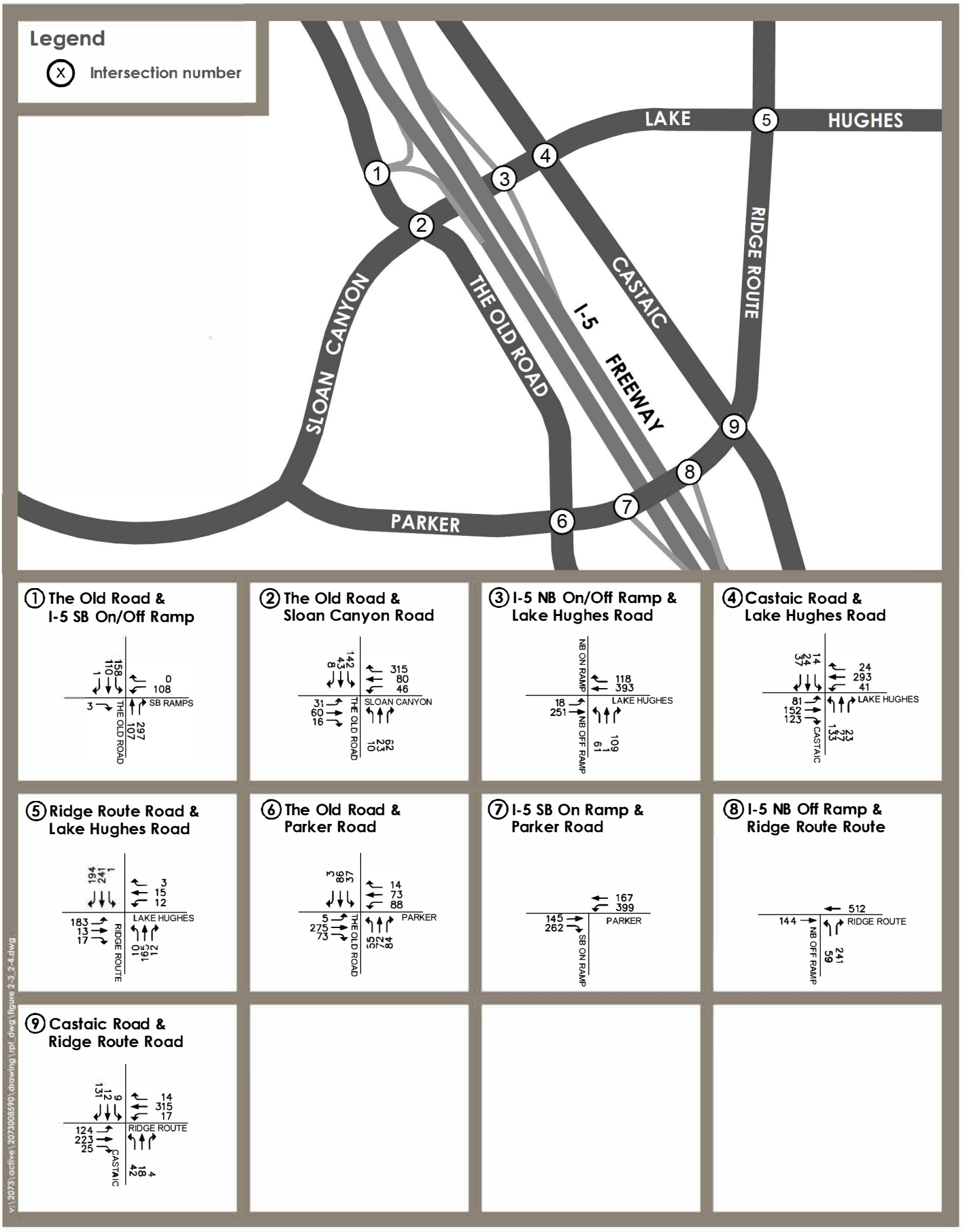

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Figure 2-3

Existing Intersection Turning Lane Movement Volumes
AM Peak Hour

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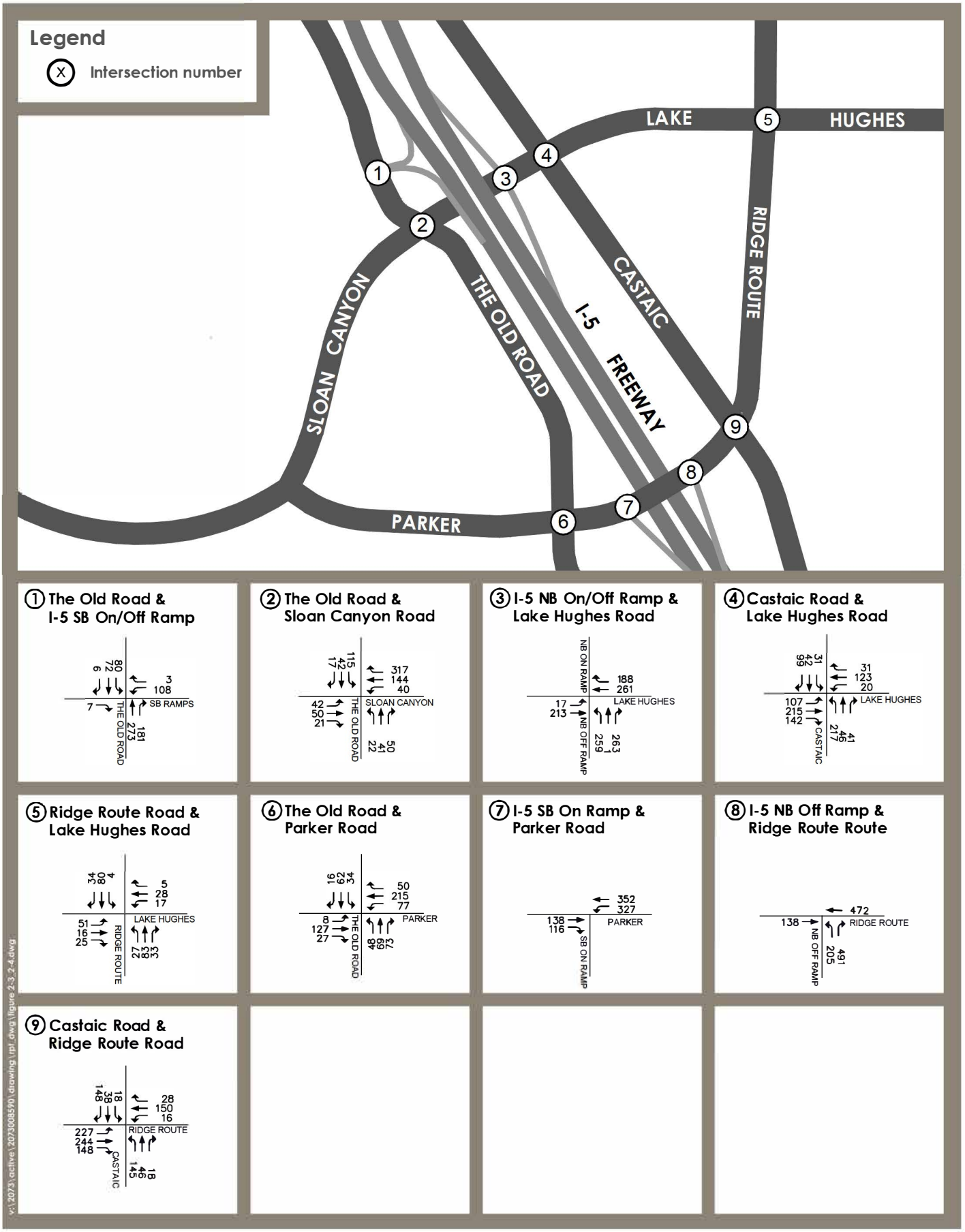

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Figure 2-4

Existing Intersection Turning Lane Movement Volumes
PM Peak Hour

2.6

2.1.3 Existing Freeway Traffic Volumes and Levels of Service

The I-5 freeway provides the regional travel in the project area. Freeway traffic volumes for existing (2013) conditions as reported by Caltrans are provided in Table 2-2 for average annual daily traffic (AADT).

Table 2-2 Freeway AADT Volumes – Existing Conditions

No.	Segment	2013 AADT
1	I-5 Between Templin Hwy & Lake Hughes	70,000
2	I-5 Between Lake Hughes & Parker	71,000
3	I-5 Between Parker & Hasley Canyon	89,000
4	I-5 Between Hasley Canyon & SR-126	109,000
5	I-5 Between Calgrove & SR-14	193,000
AADT – Annual Average Daily Traffic		

Peak hour volumes were obtained from the Caltrans Performance Measurement System (PeMS) at select representative locations over the period of one month for 2013 weekday conditions. These peak hour volumes represent the mean (average) weekday volume plus one standard deviation for the weekdays for the month of October, 2013. Peak hour data for several key segments on the I-5 was used to calculative representation K (peak hour volume factor) and D (directional factor) values in the AM and PM peak periods for each segment in order to calculate peak hour volumes by direction. The calculated K and D factors were then applied to 2013 AADT volumes to determine the peak hour volumes.

Table 2-3 Freeway Peak Hour K & D Factors (Sample Locations)

	AM Period			PM Period		
Location	**K**	**D**	**KD**	**K**	**D**	**KD**
I-5 at Templin Highway	3.80%	50.87% (NB)	1.93%	6.57%	51.34% (NB)	3.37%
I-5 at Magic Mountain Parkway	4.61%	55.25% (SB)	2.54%	6.12%	56.34% (SB)	3.45%
Source: PeMS – October 2013 weekday volumes (mean plus one standard deviation)						

Table 2-4 presents the freeway peak hour volumes and corresponding V/C ratios for the study area. As can be seen, no freeway segments are operating over capacity under existing conditions.

Table 2-4 Freeway Peak Hour Volumes and V/C Summary – Existing Conditions

No.	Segment	Lanes	Cap	2013 AM Peak Hour		2013 PM Peak Hour	
				Vol	V/C	Vol	V/C
Northbound							
1	I-5 Between Templin Hwy & Lake Hughes	4M	8,000	1,351	0.169	2,359	0.295
2	I-5 Between Lake Hughes & Parker	4M	8,000	1,463	0.183	1,896	0.237
3	I-5 Between Parker & Hasley Canyon	4M	8,000	1,833	0.229	2,376	0.297
4	I-5 Between Hasley Canyon & SR-126	4M +1A	9,000	2,245	0.249	2,910	0.323
5	I-5 Between Calgrove & SR-14	4M + 1T[C]	9,200	3,976	0.432	5,153	0.560
Southbound							
1	I-5 Between Templin Hwy and Lake Hughes	4M	8,000	1,309	0.164	2,240	0.280
2	I-5 Between Lake Hughes & Parker	4M	8,000	1,803	0.225	2,450	0.306
3	I-5 Between Parker & Hasley Canyon	4M	8,000	2,261	0.283	3,071	0.384
4	I-5 Between Hasley Canyon & SR-126	4M	8,000	2,769	0.346	3,761	0.470
5	I-5 Between Calgrove & SR-14	4M + 2T[C]	10,400	4,902	0.471	6,659	0.640

M = Mixed Flow Lane
Cap = Capacity
Vol = Volumes
See Table 1-6 for lane capacities.

2.1.4 Public Transportation

City of Santa Clarita Transit (SCT) is the primary bus service operator in the Castaic community. SCT provides two fixed route transit lines within close proximity to the project site; Routes 1 and 636.

SCT Route 1 provides service between Castaic and Val Verde to the McBean Regional Transit Center with 11 stops near the project site. Route 1 also stops through the Valencia Commerce Center and Valencia Industrial Center. Route 636 is a supplemental school day service route between West Ranch High School and the Castaic area with 13 stops within the project site.

Future bus transit routes are anticipated to be introduced in the project area in order to provide services for the new Castaic Middle School.

2.1.5 Active Transportation

The County of Los Angeles has a Bicycle Master Plan (BMP). At this time, the BMP does not address facilities in the Castaic community. Consultations with County have indicated that the

existing portion of Ridge Route Road south of Lake Hughes Road has been designated as a proposed Class II facility.

2.2 FUTURE CONDITIONS

The following section describes the long-range buildout conditions. It includes a description of the planned roadway system in the vicinity of the project site and a summary of the anticipated increases in land use.

2.2.1 Future Local Roadway System

Figure 2-5 illustrates the Los Angeles County Highway Master Plan for the Castaic community. On the Highway Master Plan, Ridge Route Road is classified as a secondary highway from Castaic Road to approximately 1.40 miles north of the Lake Hughes Road intersection where Ridge Route Road transitions to a limited secondary highway. Development of the project includes reconstruction of Ridge Route Road from north of Pine Crest Place to Northlake Boulevard to current standards and to the established IEC alignment within the project site. Ridge Route Road north of Northlake Boulevard would remain as a two-lane roadway. Ridge Route Road is classified as a major highway from Castaic Road to The Old Road where it becomes Parker Road, which is classified as a limited secondary highway.

Lake Hughes Road is classified as a major highway from The Old Road to east of Ridge Route Road. Castaic Road from Lake Hughes Road to Ridge Route Road is classified as a major highway. The Old Road is classified as a secondary highway. Most of the roadways are built out.

Also, a complete network of roadways will be constructed within the project site to serve the needs of the project generated traffic.

As part of the project, the extension of Ridge Route Road to Northlake Boulevard would be built to full County standards, which would include the construction of sidewalks on both sides of the roadway, as well as a Class I bike lane/multi-use trail along Ridge Route Road that would continue onto Northlake Boulevard and terminate at E Street. Within the project site, a complete network of streets with sidewalks, multi-use (10 feet) trails and neighborhood pedestrian (6 feet) trails would be constructed and would facilitate movement between the various areas of the site.

2.2.2 Future Land Use

Future forecasts were derived using three primary sources. The first is the Santa Clarita Valley Consolidated Traffic Model (SCVCTM), a model has the capability of forecasting the complex interaction of vehicle trips between existing and future land uses. The SCVCTM has the ability to provide traffic volume forecasts for a long-range setting, which represents buildout conditions, as well as Interim Year forecasts that are based on a defined list of planned, approved, and pending projects (i.e., "related projects"). An Interim Year version of SCVCTM was used to derive

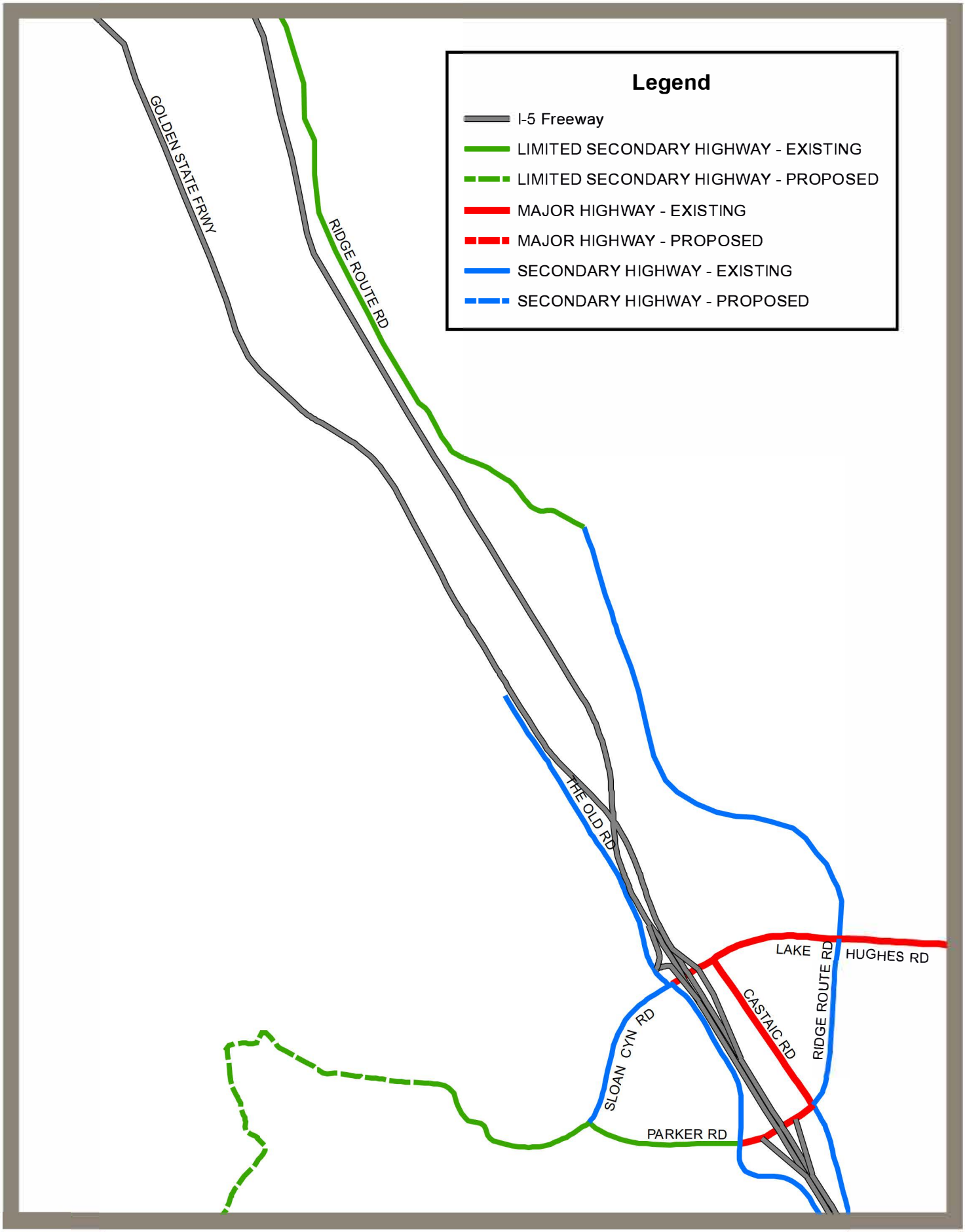

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Figure 2-5

Master Plan of Arterial Highways

2.10

2028 cumulative conditions forecasts. The SCVCTM was developed jointly by the County of Los Angeles Department of Public Works and the City of Santa Clarita

The second source of forecast data is the Northlake Traffic Model (NTM) prepared as part of this traffic study. The NTM is based on traffic modeling techniques used for fine-grained site-specific traffic forecasting. The arterial and freeway access network in the NTM defines the on-site circulation system used in the on-site impact analysis. The traffic forecasts results give traffic volumes on individual links and intersections.

The third set of data used in this report is from the Los Angeles County Department of Regional Planning GIS-NET3 database. The online database tool was used to access information regarding subdivision activity around the project site. A list was compiled, referred to in this report as the "related project" list. Table 2-5 defines a list of planned, approved, pending and inactive projects in and around the Castaic community (Figure 2-6 shows the general location of the projects). The list was incorporated into the interim year of the SCVCTM discussed above.

2.2.3 Future Traffic Volumes

As part of this study effort, the SCVCTM was updated to reflect the specific characteristics of the proposed project. An interim year version of the SCVCTM was used to derive 2028 cumulative conditions. Related projects discussed in the previous section were included in the model's land use database, along with additional growth derived by interpolating between existing and General Plan buildout conditions. 2028 model runs were prepared for conditions with and without the project. These traffic forecasts are presented in the subsequent chapters.

The SCVCTM forecasts the complex interaction of vehicle trips between existing and future land uses. As such, the future condition forecasts reflect the changes in existing travel patterns that occur due to changes in land use (e.g., the introduction of new development). The SCVCTM employs a process in which modeled future volumes are compared to modeled existing condition volumes, and the net change from existing to future is then applied to the actual observed traffic count in a post-processing procedure. Post-processing is applied to each of the intersection's 12 possible turning movements while controlling to the net change at each of the intersection's four legs (both entering and departure volumes). In that regard, the traffic forecasts presented here utilize existing traffic conditions as the foundation and build upon that foundation with the forecast change in volume (both increases and decreases) as derived by the model. As a result of changing traffic patterns, there are instances where specific turning movement volumes may decrease in the future relative to existing volumes.

Similar to the modeled changes between existing and future conditions, the SCVCTM is also used to derive the traffic volume differences between no project and with project conditions. A change in traffic patterns occurs with the introduction of the project's land uses; and the larger the project the more pronounced the changes will be. The effect of new land uses results in modified travel patterns that, in some instances, cause a reduction to specific turning movement volumes under conditions with the project.

Table 2-5 Defined Related Projects Included in the Cumulative Database

No.	Name	Description	Units	Commercial/ Industrial (sf)	Acres	Status
2	TR 42537	West of I-5 in Castaic. Site access via Romero Canyon Road.	95	0	553	Approved
3	Tract 46443	West of the I-5 in Castaic. Site access via Mandolin Canyon Road and Romero Canyon Road.	95	0	160	Recorded
4	TR 47807	West of I-5 in Castaic. Site is located west of Sloan Canyon Road	77	0	197	Approved
5	PM069961	West of I-5 in Castaic. Site access via Gilmour Street.	4	0	81	Pending
6	PM067785	West of I-5 in Castaic. No residences proposed – land division only.	0	0	80	Pending
7	Laro Properties L.P. (TR 52729)	West of I-5 in Castaic. Sloan Canyon Road, north of Hillcrest Parkway, west of Meadowgrass Drive.	33	0	80	Pending
8	TR067278	West of I-5 in Castaic. Site access via Sloan Canyon Road.	23	0	90	Pending
9	PM071059	West of I-5 in Castaic. Site access via Sloan Canyon Road.	3	0	8	Pending
10	PM25852	West of I-5 in Castaic. Site located at Cherry Drive and Church St north of Park Road. Access via Park Road and Cherry Drive.	4	0	1	Approved
11	Mobe Development Corp. TR060611	West of I-5 in Castaic. Site located west of The Old Road near the intersection of The Old Road and Ferguson Drive. Multi-family residences.	18	0	2	Recorded
12	TR060674	West of I-5 in Castaic. Site located west of The Old Drive at the intersection of Church Street and The Old Road.	21	0	2	Recorded
13	Lake View Estates TR53933	West of I-5 in Castaic, approx.. 1/5- mile south of Parker Road. Access to the site via The Old Road. Includes residential lots (10.62 acres), 3 commercial industrial lots (8.16 acres), and 4 open space lots (28.47 acres) and park (0.54 acre).	70	90TSF	47	Pending

(Continued)

Table 2-5 Defined Related Projects Included in the Cumulative Database (Continued)

No.	Name	Description	Units	Commercial/ Industrial (sf)	Acres	Status
14	TR46798	West of I-5 in Castaic, south of Parker Road with access via The Old Road.	55	0	22	Approved
15	TR46798	West of I-5 in Castaic, south of Parker Road with access via The Old Road.	0	0	16	Recorded
16	PM191949-2	West of I-5 in Castaic, access to the site via Hillcrest and Sloan Canyon.	4	0	20	Approved
17	PM062852	West of I-5 in Castaic, access to the site via Hillcrest and Romero Canyon Rd.	2	0	10	Pending
18	PM060646	West of I-5 in Castaic, access to the site via Hasley Canyon Road.	4	0	13	Approved
19	PM069664	West of I-5 in Castaic, access to the site via Hasley Canyon Road.	2	0	10	Pending
20	PM070839	West of I-5 in Castaic, located at the westerly terminus of Hillcrest at Sloan Canyon Rd.	4	0	12	Pending
21	PM064825	East of the I-5 in Castaic, north of Lake Hughes Road and east of Castaic Road. Site access via Castaic Road.	0	95.6TSF	9	Recorded
22	TR060024	East of the I-5 in Castaic, just south of Lake Hughes Road. Site access via Lake Hughes Road.	84	0	8	Recorded
23	Tapia Canyon (TR 53822)	East of the I-5 in Castaic, Tapia Canyon Road, west of Tesoro Residential Development. Access to the site currently via Parker Road exit from I-5.	405	0	1430	Pending
24	Tesoro del Valle (TR 51644)	West side of San Francisquito Creek, north of Copperhill Drive. Project includes residential, commercial (6.2-acres), Parks (61.8-acres), an elementary school, recreation center (13.96-acres) and open space. Designed to be built in 4 phases. Phase A is currently built-out. Areas B & C to be built, north of Avenida Rancho Tesoro.	714	40TSF	1262	Recorded
26	Golden Valley Ranch (TR 52535)	West of the I-5 in Castaic at the intersection of Royal Road and Green Hill Drive.	199	0	260	Inactive

(Continued)

Table 2-5 Defined Related Projects Included in the Cumulative Database (Continued)

No.	Name	Description	Units	Commercial/ Industrial (sf)	Acres	Status
27	TR48637	West of I-5 in Castaic. Site access via Sloan Canyon Road.	18	0	30	Inactive
28	TR50070	West of I-5 in Castaic. Site access via Sloan Canyon Road and Vaca Street.	18	0	5	Inactive
29	TR50220	West of I-5 in Castaic. Site access via Hasley Canyon Road and Gilmour Street.	21	0	120	Inactive
30	PM24179	West of I-5 in Castaic. Site access via Hasley Canyon Road and Gilmour Street.	2	0	5	Inactive
31	PM26549	West of I-5 in Castaic. Site is located at 30711 Romero Canyon Road.	3	0	18	Inactive
32	TR067617	West of I-5 in Castaic. Site is located at the northerly terminus of Park Vista Drive 200 feet north of the intersection with Hillcrest Parkway. Detached condominiums with two public facilities on 38-acres.	13	0	0	Inactive
33	TR48465	West of I-5 in Castaic. Site located at the intersection Hasley Canyon Road and Burlwood Drive.	5	0	10	Inactive
34	PM19776	West of the I-5 in Castaic. Site access via Romero Canyon Road.	15	0	22	Inactive
36	TR072680	West of I-5 in Castaic. Site location at Sloan Canyon Road at Canyon Hill Road. Site access via Sloan Canyon Road. Residential units and one public facility lot (	40	0	90	Pending
37	PM20202 (not shown on map)	East of I-5 in Castaic. North of Northlake project site.	3	0	28	Inactive
38	Auto Impound Yard	32170 N. Castaic Road.	0	28.2 GSF	NA	Proposed
39	Castaic High School (currently under construction)	West of I-5 in Castaic. Site located north of Romero Canyon Road/Hasley Canyon Road. Approximately 2,600 students.	0	0	198	Approved
40	Elementary School	West of I-5 in Castaic near Sloan Canyon Road. Approximately 900 students.	0	0	NA	Pending

See Figure 2-6 for location map.
Sources: Los Angeles County GIS Data Portal – Subdivision Activity
Los Angeles County Department of Regional Planning GIS-NET3 Public Subdivision Activity

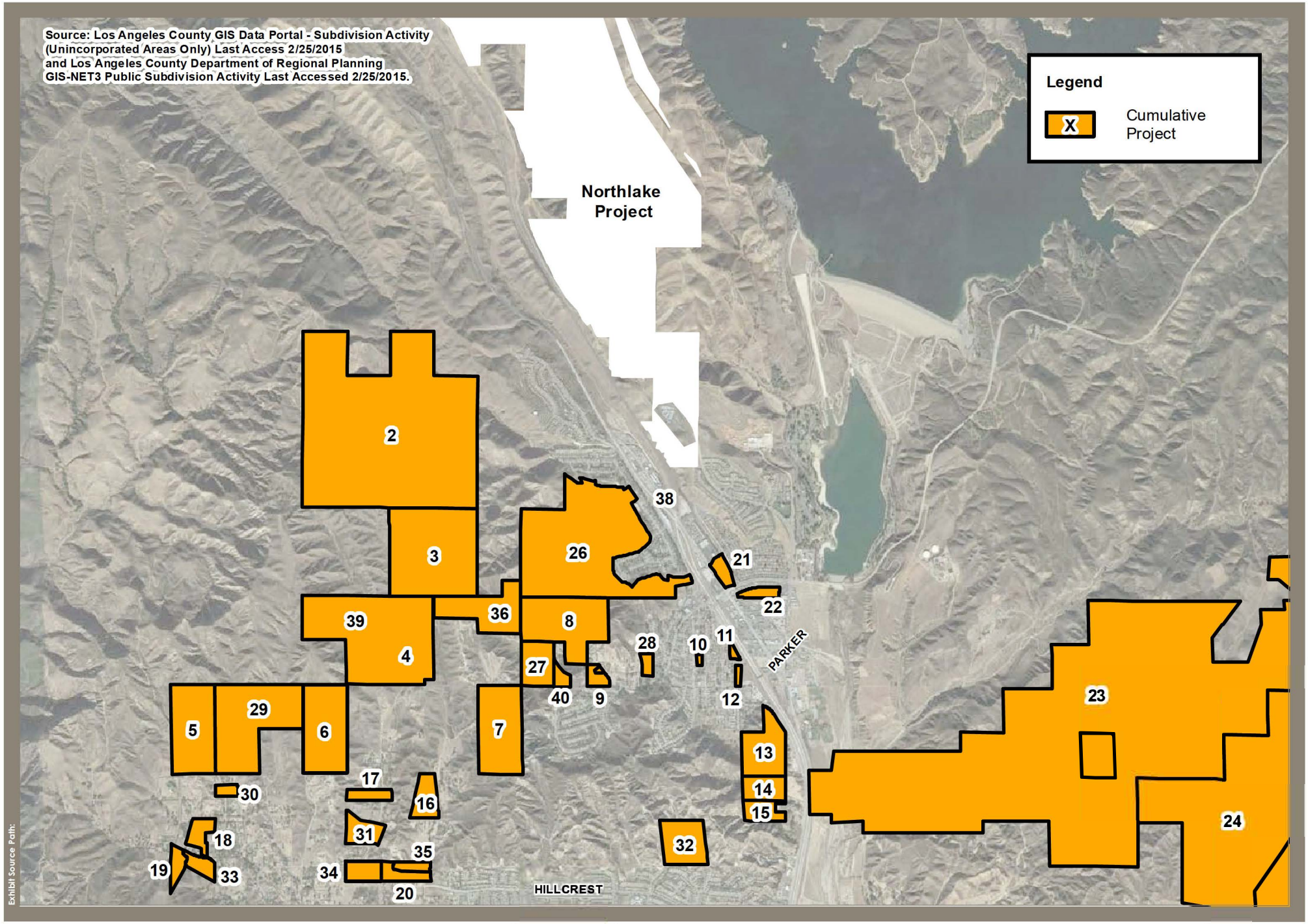

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Figure 2-6
Related Projects Location Map
2.15

2.2.4 Future Freeway Volumes

Freeway volumes for future year cumulative conditions were derived from two sources; the Supplemental EIR/ER for the HOT lanes prepared by Caltrans (See Reference 6 in Section 1.6) and the Southern California Association of Government's (SCAG) Regional Transportation Model (RTM).

The Supplemental EIR/ER for the HOT lanes study is for an improvement project that replaces the planned HOV lanes with HOT lanes. I-5 traffic volumes from this study were considered and average annual growth rates were derived from those volumes. The Supplemental EIR/ER addressed segments on the I-5 within the Santa Clarita Valley and it presents traffic forecasts for the year 2035.

The second source for deriving future freeway volumes is the SCAG RTM (See Reference 8 in Section 1.6). SCAG is the primary agency responsible for the development and maintenance of the regional travel demand forecasting models for the SCAG region that includes six counties – Los Angeles, Orange, Ventura, Riverside, San Bernardino and Imperial. Traffic model data, such as an average annual growth rate for the freeway section on the I-5 north of Lake Hughes Road (this segment was not addressed in the Caltrans HOT lanes study) was as obtained from SCAG. The growth rate was then applied to 2013 existing conditions traffic volumes previously discussed in Section 2.1.3.

Table 2-6 summarizes the average annual growth rates assumed in this analysis for 2028 Cumulative Conditions.

Table 2-6 Average Annual Growth Rates for the I-5

Segment	Description	Average Annual Growth Rate 2028	Source:
I-5			
1	Between Templin Hwy & Lake Hughes	3.06%	SCAG
2	Between Lake Hughes & Parker	4.44%	HOT Lane SEIR
3	Between Parker & Hasley Canyon	3.54%	HOT Lane SEIR
4	I-5 Between Hasley Canyon & SR-126	2.45%	HOT Lane SEIR
5	I-5 Between Calgrove & SR-14	1.22%	HOT Lane SEIR

3.0 PROJECT DESCRIPTION

This section describes the project in terms of its transportation characteristics. Trip generation is summarized and the distribution of project trips on the adjoining roadway network is presented.

3.1 PROJECT OVERVIEW

The Northlake Specific Plan was approved in 1992 for a development consisting of approximately 4,000 residential dwelling units. The project as currently proposed consists of approximately 1,414 single family detached dwelling units, 1,341 condominium dwelling units and 345 senior adult attached housing (total of 3,100 dwelling units). In addition to residential dwelling units, the project also includes non-residential uses estimated to consist of approximately 67,100 square feet of neighborhood commercial, approximately 304,900 square feet industrial park, a middle school (approximately 1,200 students), a 15-acre sports park, a 10-acre developed park and a fire station. VTTM 73336 represents a portion of the Northlake Project. The project site plan was presented in Section 1.1 (see Figure 1-2).

The project site would be accessed via an extension of the existing Ridge Route Road. Since the project area is currently vacant, a complete network of roadways will be constructed within the site to serve the needs of the project generated traffic.

Intersection lane geometry for the project site has been developed based on peak hour turning movement forecasts presented in the subsequent sections, and is illustrated in Figure 3-1.

3.2 PROJECT TRIP GENERATION

The project consists of a variety of land uses as described in the preceding section. For the purpose of the traffic study, these land uses have been categorized based on the land use categories used by the Santa Clarita Valley Consolidated Traffic Model (SCVCTM), the County of Los Angeles Department of Public Works Traffic Impact Analysis Guidelines (see Reference 3 in Section 1.6), and industry standards such as the Institute of Transportation Engineers (ITE) Trip Generation Manual (see Reference 1 in Section 1.6). The specific trip rates used for this analysis are listed in Table 3-1. Note that for the Sports Park land use category, a comparison was made between the Brea Sports Park Traffic Study (see Reference 12 in Section 1.6) and the City of San Diego Trip Generation Manual (see Reference 14 in Section 1.6), Developed Park land use category. It was determined that using the trip rate from the Brea Sports Park Traffic Study would be more conservative than using the trip rate from City of San Diego Trip Generation Manual.

Detailed trip generation estimates based on the trip generation rates referenced above are provided in Table 3-2. As shown, the project is estimated to generate approximately 35,500 average daily tripends, with approximately 2,900 tripends during the AM peak hour, and approximately 3,500 tripends during the PM peak hour.

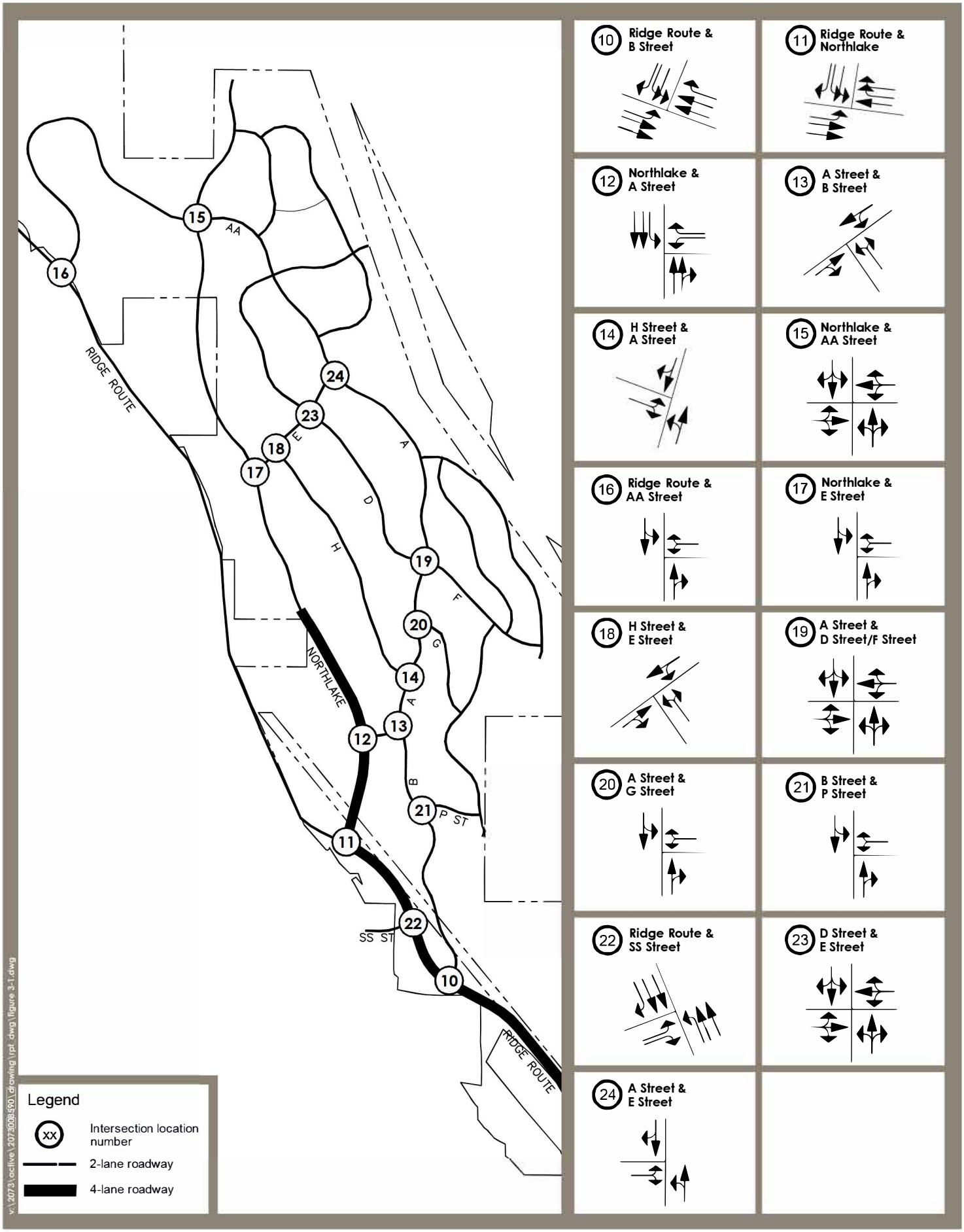

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Figure 3-1

On-Site Circulation System and Intersection Lane Configurations

3.2

The residential units of the project are forecast to generate approximately 25,400 ADT with approximately 1,850 tripends in the AM peak hour (1,480 outbound) and approximately 2,480 tripends in the PM peak hour (1,570 inbound). The non-residential uses (i.e., neighborhood commercial and industrial) are forecast to generate approximately 8,200 ADT with approximately 370 tripends in the AM peak hour (280 inbound) and 830 tripends in the PM peak hour (500 outbound).

The middle school site will serve students from the Northlake development and from outside the Specific Plan area. The middle school (approximately 1,200 students) is projected to generate approximately 1,940 ADT with approximately 650 tripends in the AM peak hour and approximately 190 tripends in the PM peak hour.

The location of the project and the on-site commercial and institutional uses (i.e., retail, existing Northlake Elementary School and proposed middle school) encourages a degree of local trip making. Table 3-3 shows the estimated ADT and peak hour trips separated by land use and both internal and external trip components.

Overall, around 19 percent of the daily trips generated (as measured by tripends) are estimated to be internal and 81 percent are external trips. The net volume of trips generated by the project is derived by combining the amount of internal trips (two on-site project tripends) with the amount of external trips (one on-site project tripend). As shown in Table 3-4, the project generates a net total of 33,241 trips when taking into account the project's 19 percent internal capture rate.

The internal capture rate was derived by first determining the amount of school traffic that would be captured by the residential uses on-site. A nominal amount of internal capture was assumed during the AM peak hour for the commercial and industrial uses. After deducting these on-site trips from residential uses, the remainder represents the net volume of external (off-site) trips. The same was done for the PM peak hour, but with opposite directionality. This approach produced a conservative estimate of external trips for the model to distribute to the off-site study area.

3.3 PROJECT TRIP DISTRIBUTION

The project is anticipated to buildout in over a period of 10 to 15 years. Traffic patterns for the project in relation the surrounding region were estimated for a year 2028 time frame to understand the relationship between the project and the surrounding region in this long-range buildout context. The distribution of project-generated trips was derived by the SCVCTM.

The SCVCTM is a computerized travel demand model that utilizes a sophisticated trip distribution function to derive the distribution of vehicle trips, and which has previously been calibrated to the existing conditions of the Santa Clarita Valley. Production and attraction trip data is generated by the model based on five separate trip purposes, and trip distribution patterns are then derived by the model. As a final step, the model assigns these trips to the roadway network based on the derived distribution patterns.

Table 3-1 Trip Generation Rates

Category	ITE Code	Units	AM Peak Hour			PM Peak Hour			Average Daily Tripends	Source
			In	Out	Total	In	Out	Total		
1. Single-Family Detached Housing	210	DU	0.19	0.56	0.75	0.63	0.37	1.00	9.52	ITE 9th Edition
2. Condominium/Townhouse	NA	DU	0.06	0.48	0.54	0.47	0.26	0.73	8.00	LAC TIA Guidelines 1997
3. Senior Adult Housing – Attached	252	DU	0.07	0.13	0.20	0.14	0.11	0.25	3.44	ITE 9th Edition
4. Jr High School	522	STU	0.30	0.24	0.54	0.08	0.08	0.16	1.62	ITE 9th Edition
5. Industrial Park	130	TSF	0.67	0.15	0.82	0.18	0.67	0.85	6.83	ITE 9th Edition
6. Shopping Center	820	TSF	1.11	0.72	1.83	3.27	3.53	6.80	78.09	ITE 9th Edition Shopping Center Fitted Curve Equation for 67 TSF.
7. Sports Park	NA	Acre	0.01	0.00	0.01	3.40	4.10	7.50	53.80	Sports Park Case Study[1]
8. Developed Park	NA	Acre	0.00	0.00	0.00	0.03	0.04	0.07	2.60	SCVCTM

DU = Dwelling Unit
TSF = Thousand Square Feet
STU = Student
LAC = Los Angeles County
SCVCTM = Santa Clarita Valley Consolidated Traffic Model
ITE = Institute of Transportation Engineers
[1] – Brea Sports Park Traffic Study, Austin-Foust Associates, Inc. August 29, 2002.

Table 3-2 Land Use and Trip Generation Summary – Northlake

Category	Amount	Units	AM Peak Hour			PM Peak Hour			Average Daily Tripends
			In	Out	Total	In	Out	Total	
1. Single-Family Detached Housing	1,414	DU	269	791	1,060	890	524	1,414	13,462
2. Condominium/Townhouse	1,341	DU	81	643	724	631	348	979	10,728
3. Senior Adult Housing – Attached	345	DU	24	45	69	45	42	87	1,187
4. Jr High School	1,200	STU	360	288	648	96	96	192	1,944
5. Industrial Park	304.9	TSF	204	46	250	55	204	259	2,083
6. Shopping Center	67.1	TSF	75	46	121	219	237	456	5,240
7. Sports Park	15	Acre	0	0	0	51	62	113	807
8. Developed Park	10	Acre	0	0	0	0	0	0	26
Total	-	-	**1,013**	**1,859**	**2,872**	**1,987**	**1,513**	**3,500**	**35,477**

Note: See Table 3-3 for net volume of external trips.

Table 3-3 Internal and External Trip Volumes and Percentages

Description	AM Peak Hour		PM Peak Hour		
	IB	OB	IB	OB	ADT
1. Project Residential	374	1,479	1,566	914	25,403
ext.%	86%	79%	82%	79%	80%
int. %	14%	21%	18%	21%	20%
ext. vol	322	1,168	1,284	722	20,322
int. vol	52	311	282	192	5,081
2. Project Non-Residential	279	92	325	503	8,130
ext.%	90%	98%	66%	75%	80%
int. %	10%	2%	34%	25%	20%
ext. vol	251	90	214	377	6,504
int. vol	28	2	111	126	1,626
3. Project Jr High School	360	288	96	96	1,944
ext.%	70%	95%	95%	70%	80%
int. %	30%	5%	5%	30%	20%
ext. vol	252	274	91	67	1,555
int. vol	108	14	5	29	389
Project Subtotal	**1,013**	**1,859**	**1,987**	**1,513**	**35,477**
4. Existing Elementary School[1]	188	150	53	60	968
ext.%	5%	75%	93%	5%	40%
int. %	95%	25%	7%	95%	60%
ext. vol	9	112	49	3	387
int. vol	179	38	4	57	581
External	834	1,644	1,638	1,169	28,768
Internal [2]	367	366	402	404	7,677
External %	82%	88%	82%	77%	81%
Internal %	18%	12%	18%	23%	19%

IB – Inbound
OB – Outbound
ADT – Average Daily Traffic
ext – external
int - internal

[1] - The elementary school peak hour and ADT trips shown in this table are in addition to the trips currently being made by existing residents.
[2]– Includes trips to/from the elementary school.

Table 3-4 Project Trip Summary

Total Tripends	External Trips[1]	Internal Trips[2]	Total Trips
35,477	28,768	3,839	32,607
[1]One tripend on-site [2]Two tripends on-site			

Illustrations of the project's trip distribution patterns are provided in Figure 3-2. 19 percent of the project's trip generation remains internal to the project site and the remaining 81 percent are distributed along Ridge Route Road south of the project site. Of those, 3 percent are generated by the adjacent neighborhood (north of the Lake Hughes Road intersection) and the remaining 78 percent are distributed to the Castaic area roadway system. 47 percent are distributed to Lake Hughes Road west of Ridge Route Road, and 31 percent remain on Ridge Route Road south of Lake Hughes Road.

3.4 PROJECT TRAFFIC FORECASTS

The following section presents project only traffic data, first for the on-site roadway system, followed by the local roadway system and then the freeway system. As noted in the previous section, the SCVCTM was used to calculate the distribution of trips to and from the project site. For on-site intersections, the site-specific Northlake Traffic Model was used to forecast future traffic volumes within the project.

3.4.1 On-Site Roadway System

Forecast ADT volumes based on the project for buildout within the project site are illustrated in Figure 3-3. Forecast peak hour turning movement volumes for buildout conditions are illustrated in Figure 3-4 and Figure 3-5 for the AM peak hour and PM peak hour, respectively.

The peak hour traffic volumes referenced above were utilized to derive the intersection lane configurations for the on-site intersections referenced in Figure 3-1. Intersection capacity analysis based on these lanes and the forecast peak hour volumes is summarized in Table 3-5. As shown, each of the on-site project intersections is anticipated to operate at LOS D or better for buildout conditions, with the majority of intersections operating at no worse than LOS B. Detailed LOS calculation worksheets for each intersection are provided in Appendix B.

The Northlake Specific Plan, approved in 1991, showed a need to either widen Ridge Route Road to a 6-lane Major Arterial, or build a secondary access. Due to the decreased dwelling unit total, in comparison to the Specific Plan, the findings of this analysis show that neither the widening of Ridge Route Road to a 6-lane Major Arterial, or build a secondary access is needed.

A traffic signal warrant analysis for on-site intersections is provided in Section 5.1.

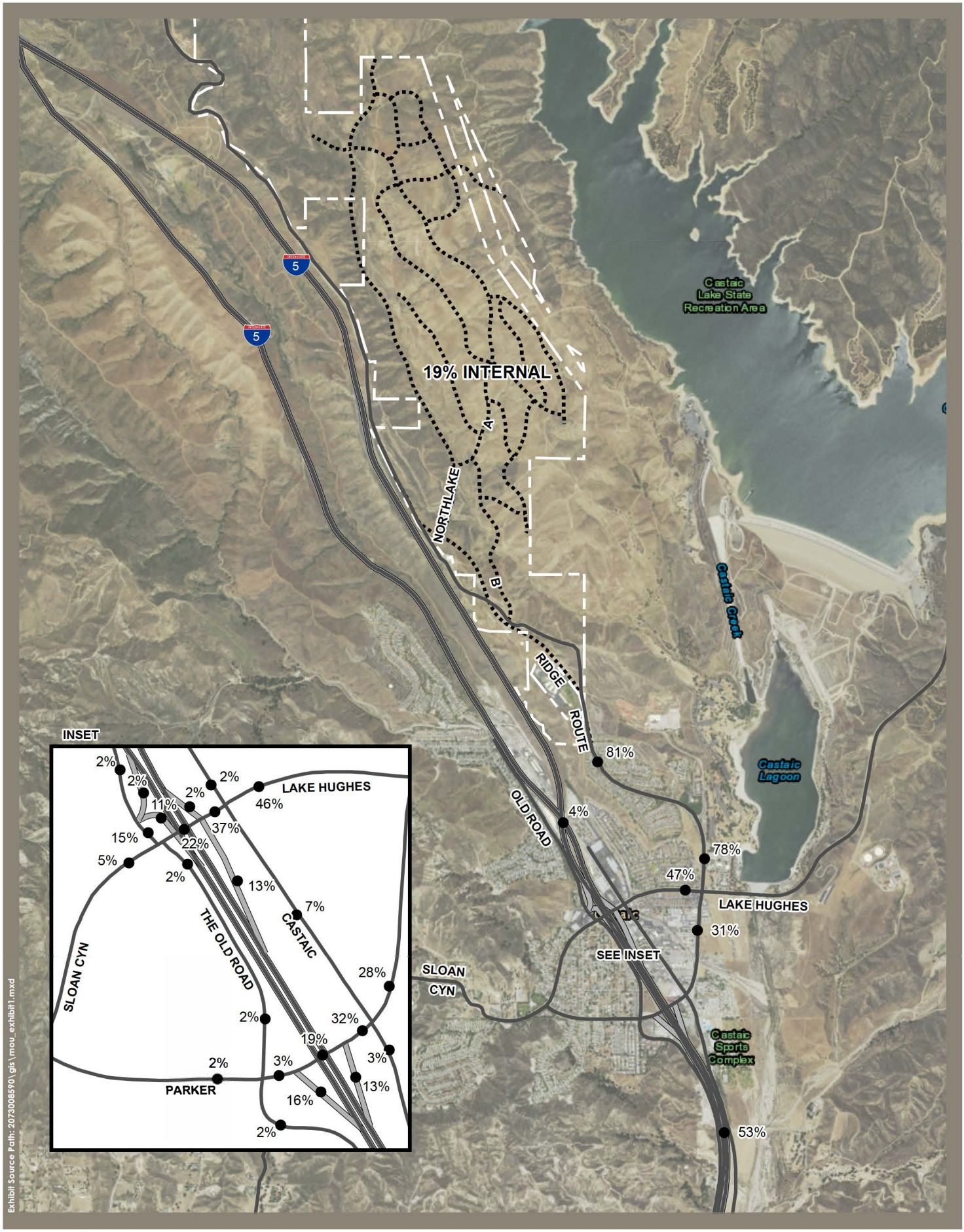

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Figure 3-2

Project Trip Distribution Percentages

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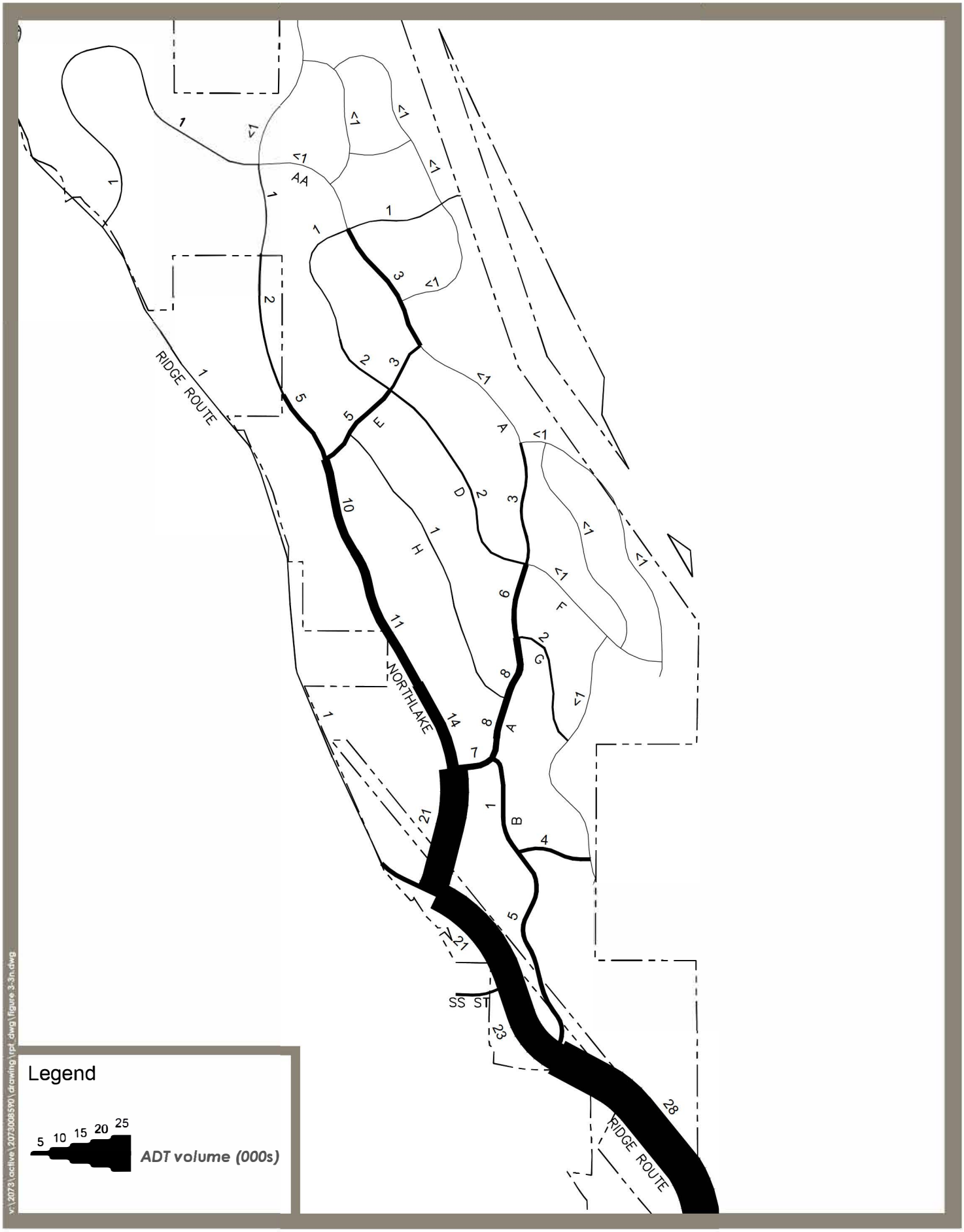

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Figure 3-3
On-Site ADT Volumes (000s)
3.8

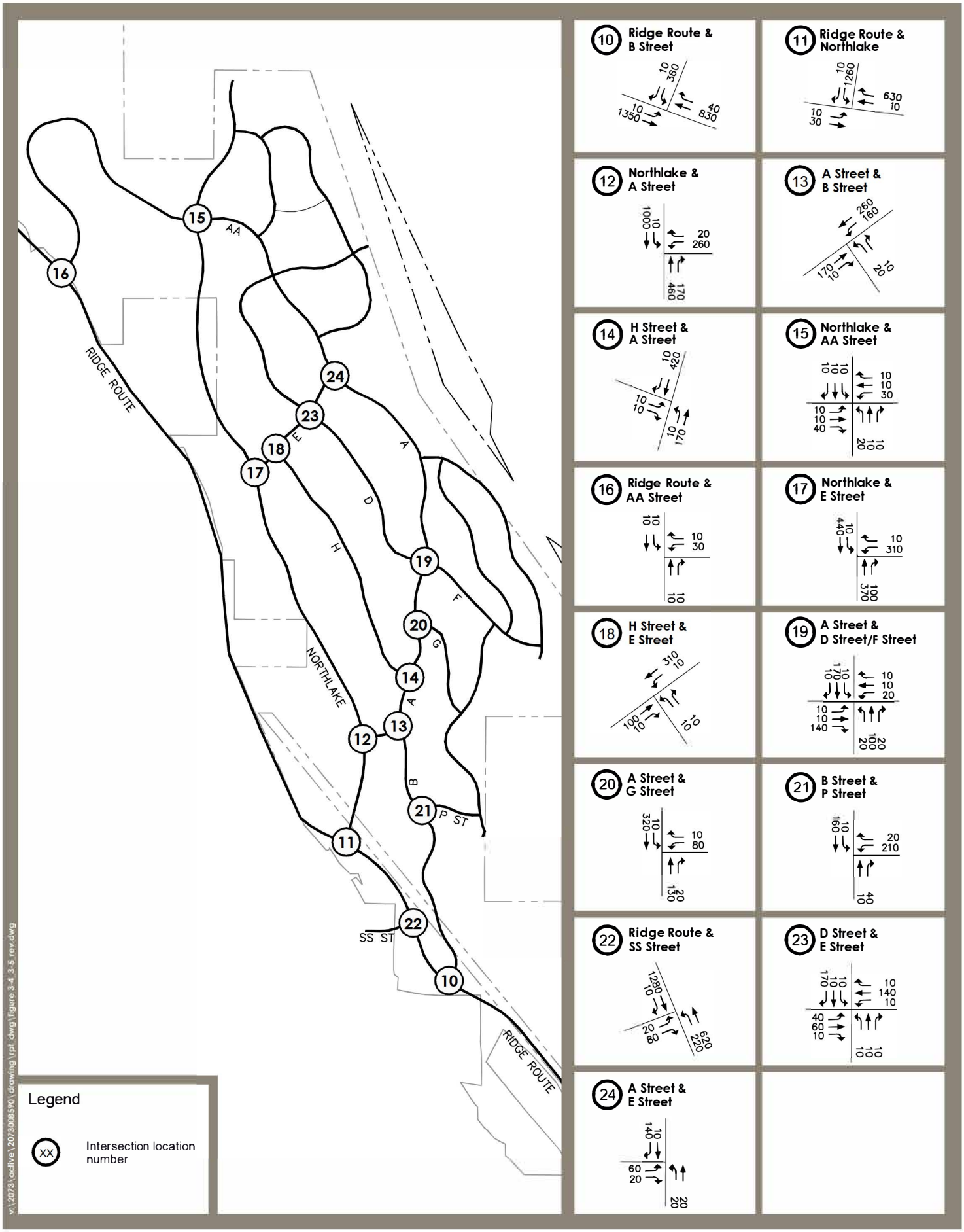

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Figure 3-4

On-Site Intersection Turning Volumes - AM Peak Hour

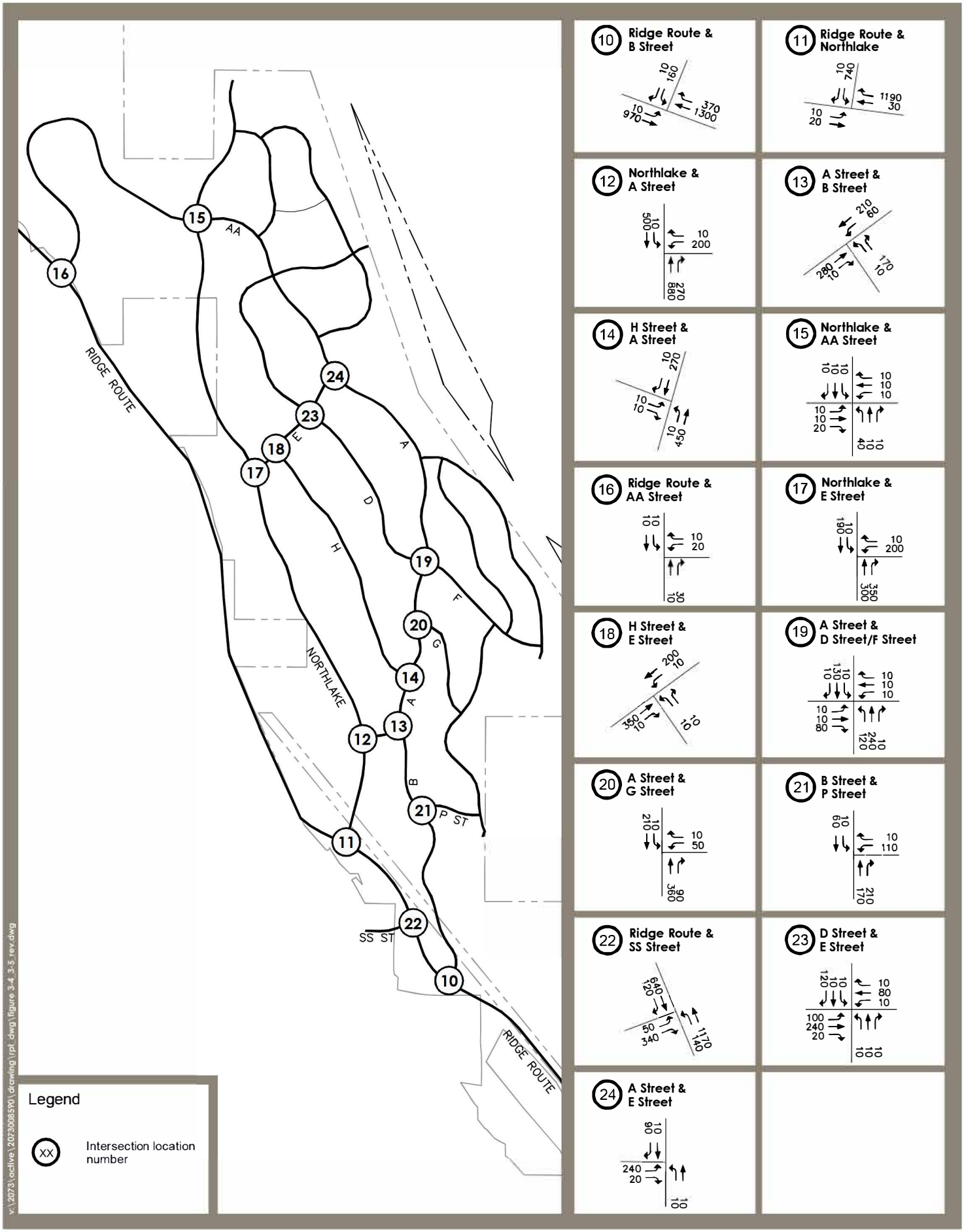

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Figure 3-5

On-Site Intersection Turning Volumes - PM Peak Hour

3.10

Table 3-5 ICU and LOS Summary - Buildout Conditions (On-Site)

Location	AM Peak Hour		PM Peak Hour	
	ICU	LOS	ICU	LOS
10. Ridge Route & B Street	0.65	B	0.58	A
11. Ridge Route & Northlake	0.56	A	0.39	A
12. Northlake & A Street	0.57	A	0.60	A
13. B Street & A Street	0.38	A	0.43	A
14. H Street & A street	0.39	A	0.40	A
15. Northlake & AA Street	0.20	A	0.19	A
16. Ridge Route & AA Street	0.15	A	0.16	A
17. Northlake & E Street	0.60	A	0.65	B
18. H Street & E Street	0.31	A	0.35	A
19. D Street & A Street	0.34	A	0.41	A
20. G Street & A Street	0.37	A	0.43	A
21. B Street & P Street	0.35	A	0.43	A
22. Ridge Route & SS Street	0.65	B	0.55	A
23. D Street & E Street	0.35	A	0.44	A
24. A Street & E Street	0.25	A	0.33	A

See Table 1-1 for level of service descriptions.
See Figure 3-1 for intersection locations

3.4.2 Off-Site Local Roadway System & Freeway System

Project generated ADT volumes are provided in Figure 3-6 for the local roadway system and freeway system. This distribution of project trips corresponds to the project's buildout horizon year of 2028 (see previously discussed Figure 3-2 for distribution percentages).

The corresponding project generated peak hour turning movement volumes are provided in Figure 3-7 and Figure 3-8 for the AM peak hour and PM peak hour, respectively.

3.5 ON-SITE BICYCLE FACILITIES

The project would include a network of bicycle facilities, trails and sidewalks to accommodate pedestrians and encourage non-motorized active transportation.

Bicycle facilities would be made available along Ridge Route Road, Northlake Boulevard, A Street and B Street. A Class 1 bike lane is proposed along the west side of Ridge Route Road from Northlake Hills Elementary School to the Ridge Route Road and Northlake Boulevard intersection, where it would continue along Northlake Boulevard. Class II bike lanes are proposed along B Street and A Street. The proposed bicycle facilities are illustrated in Figure 3-9.

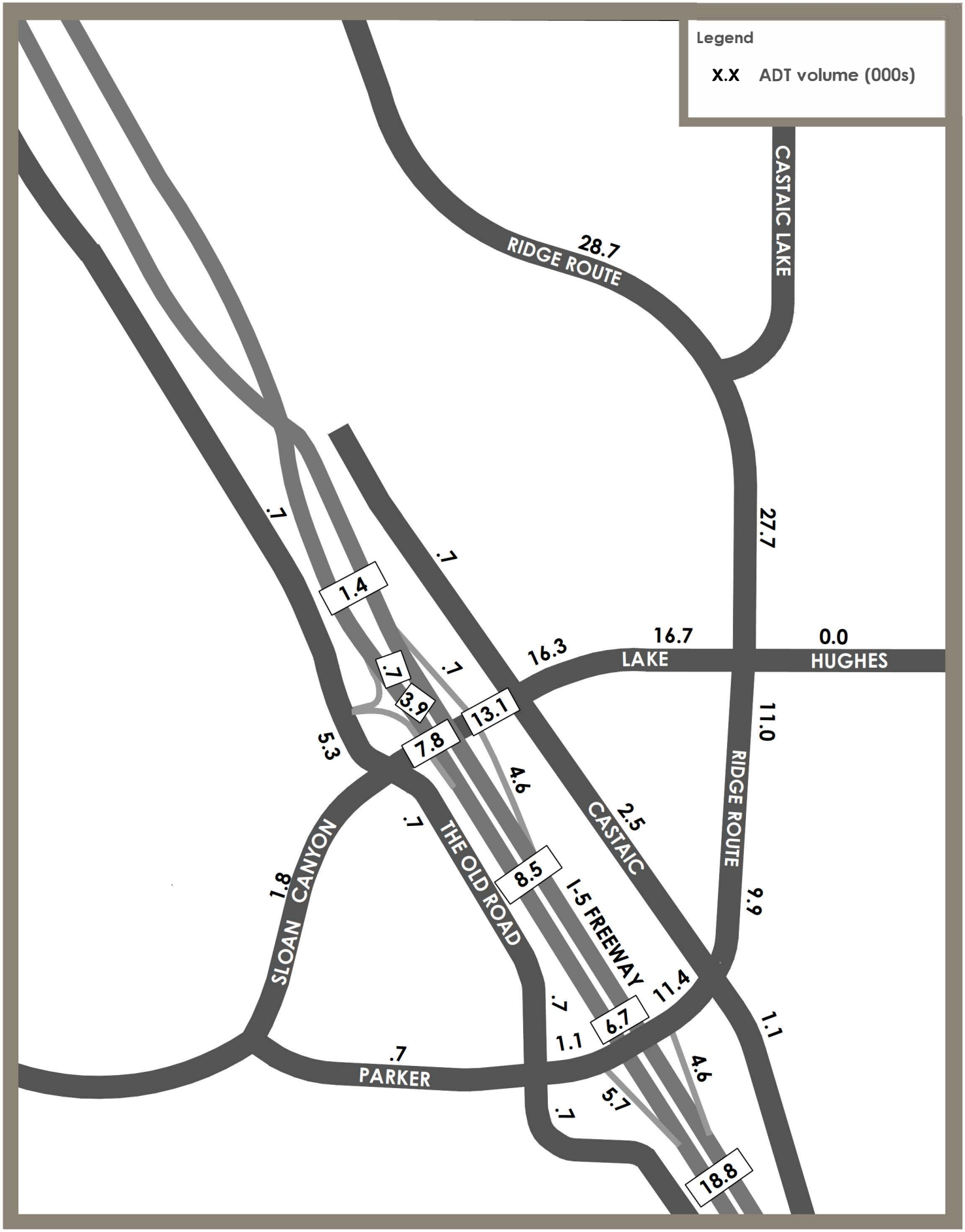

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Figure 3-6

ADT Volumes (000) - Project Only

3.13

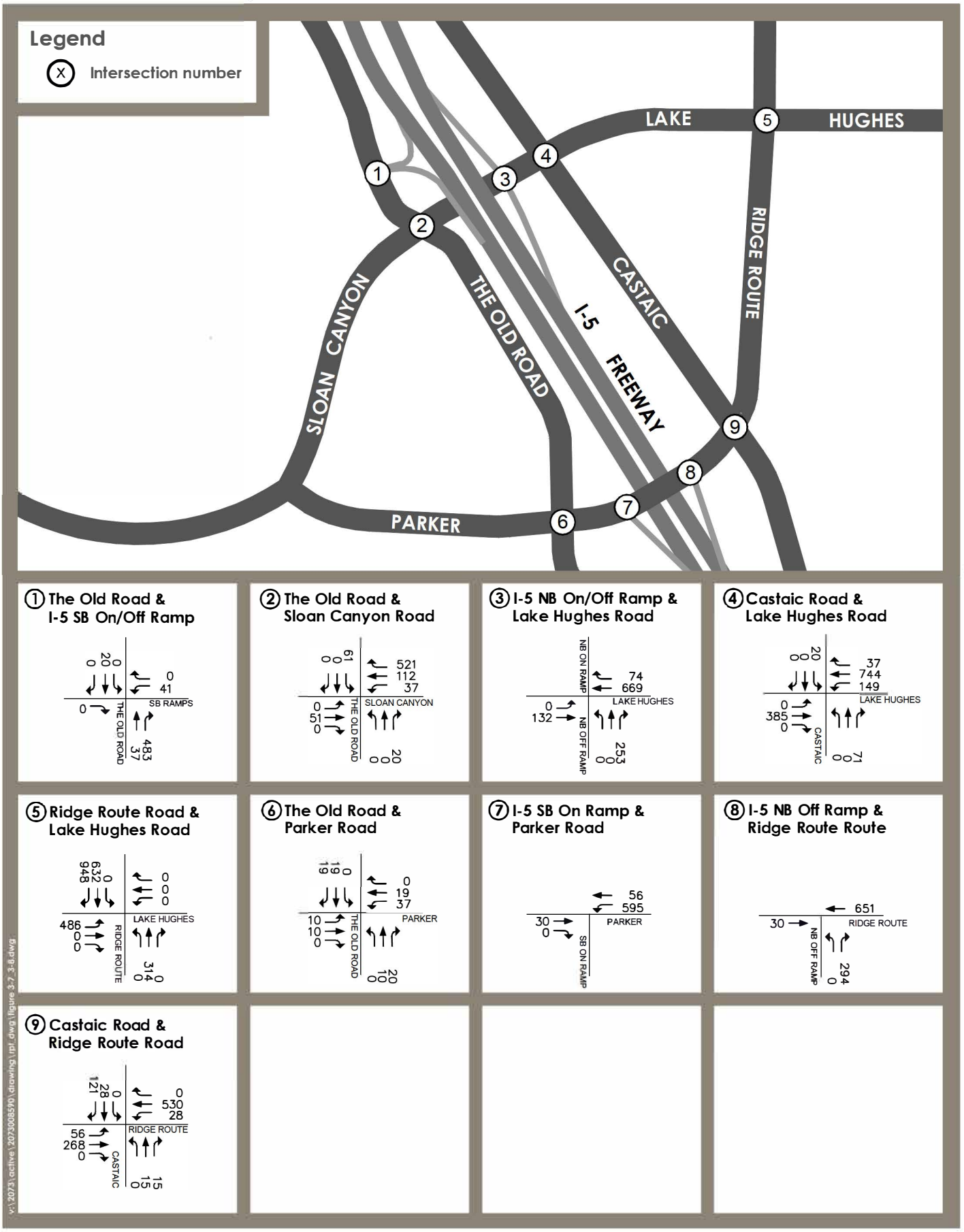

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Figure 3-7

Intersection Turning Lane Movement Volumes
AM Peak Hour - Project Only

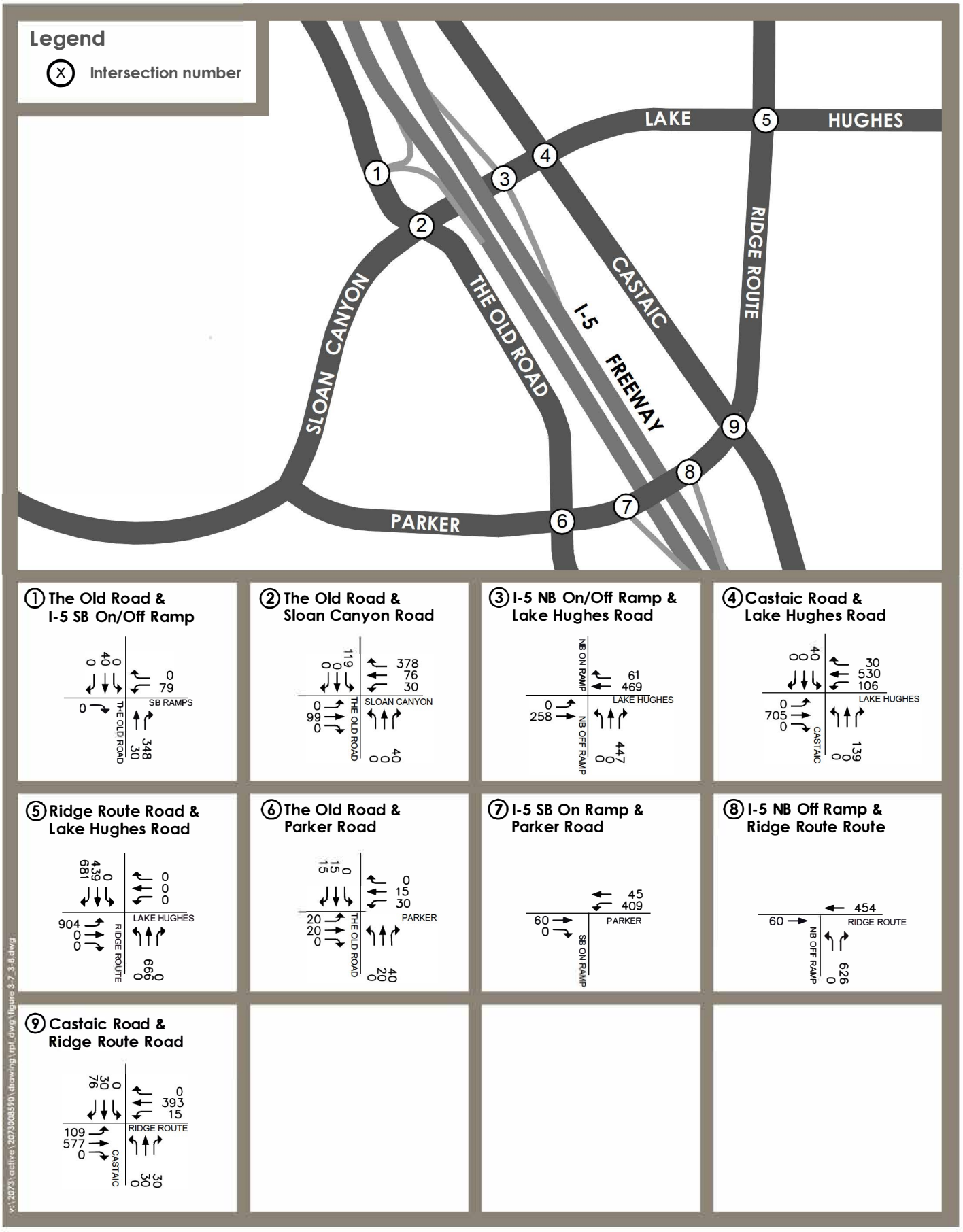

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Figure 3-8

Intersection Turning Lane Movement Volumes
PM Peak Hour - Project Only

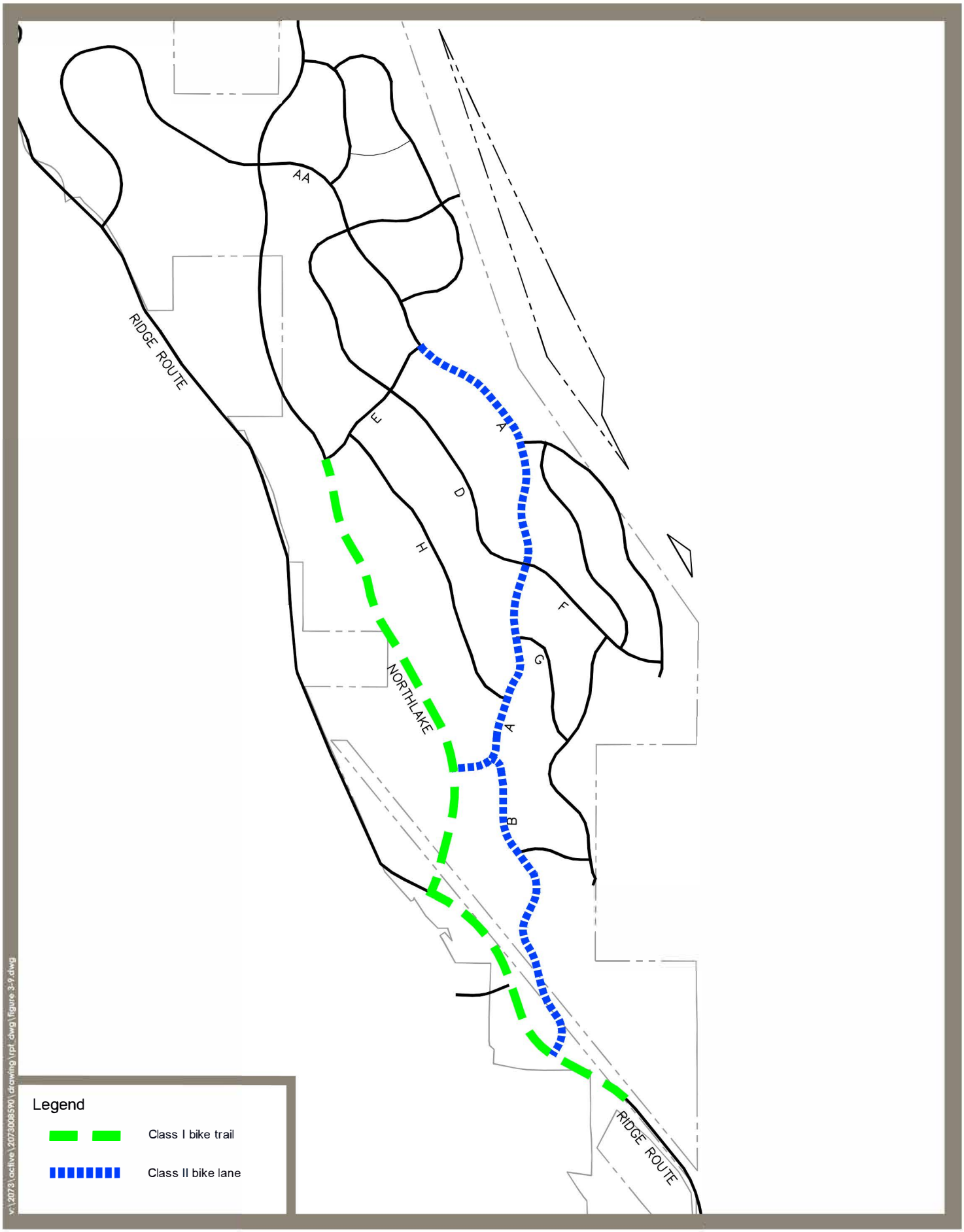

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Figure 3-9

Proposed On-Site Bicycle Facilities

4.0 IMPACT ANALYSIS

This chapter addresses the traffic impacts of the proposed project on the surrounding circulation system. Future conditions with project traffic and with traffic from cumulative projects are described in the following sections. Project impacts and cumulative impacts are identified using the criteria outlined in Chapter 1.0.

4.1 EXISTING PLUS PROJECT ANALYSIS

The existing plus project scenario depicts the addition of project generated traffic to existing traffic conditions. ADT forecasts for existing plus project conditions are shown in Figure 4-1. In all cases, the existing roadway system has been used for this analysis as a baseline to determine project impacts.

4.1.1 Existing plus Project Impact Analysis – Local Roadway System

The peak hour intersection data can be found in Figure 4-2 and Figure 4-3 for the AM peak hour and PM peak hour, respectively. Table 4-1 gives the corresponding ICU values and LOS results, which provides a comparison between the existing and with project conditions.

Table 4-1 Existing plus Project ICU and LOS Summary

	Existing				Existing plus Project				Difference	
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour			
4.9Location	**ICU**	**LOS**	**ICU**	**LOS**	**ICU**	**LOS**	**ICU**	**LOS**	**AM**	**PM**
1. The Old Road & I-5 SB Ramps	0.41	A	0.39	A	0.71	C	0.51	A	0.30	0.12
2. The Old Road & Sloan/Lake Hughes	0.34	A	0.36	A	0.65	B	0.59	B	0.31	0.23
3. 1-5 NB Ramps & Lake Hughes	0.31	A	0.41	A	0.54	A	0.73	C	0.23	0.32
4. Castaic & Lake Hughes	0.31	A	0.37	A	0.54	A	0.66	B	0.23	0.29
5. Ridge Route and Lake Hughes	0.31	A	0.19	A	0.94	E	0.95	E	**0.63**	**0.76**
6. The Old Road & Parker	0.45	A	0.42	A	0.51	A	0.51	A	0.06	0.09
7. I-5 SB On Ramp & Parker	0.60	A	0.52	A	0.99	E	0.81	D	**0.39**	**0.29**
8. I-5 NB Off Ramp & Ridge Route	0.46	A	0.55	A	0.87	D	1.03	F	**0.41**	**0.48**
9. Castaic & Ridge Route	0.33	A	0.41	A	0.59	A	0.62	B	0.26	0.21
Bold denotes a significant impact.										

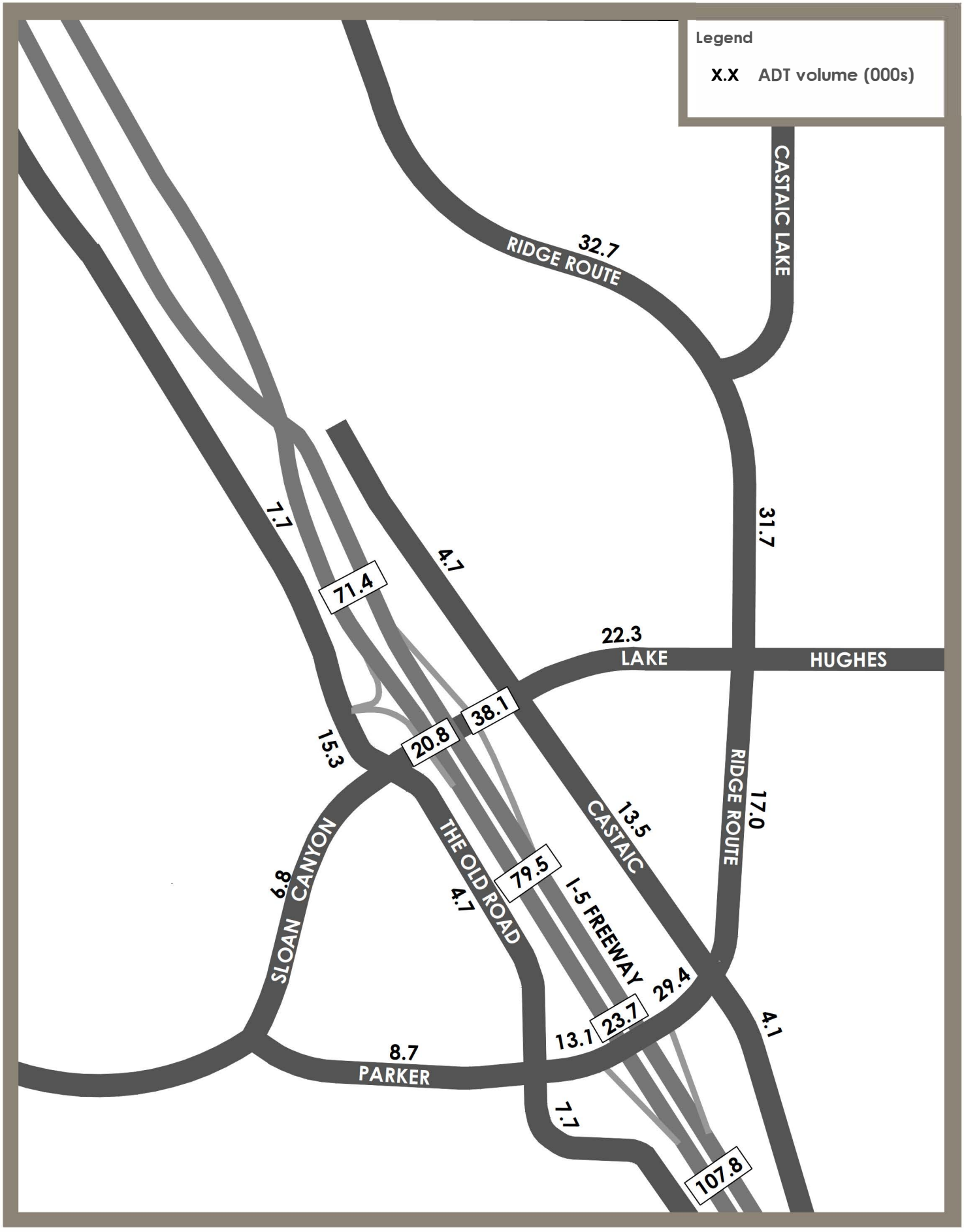

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Figure 4-1

ADT Volumes (000) - Existing plus Project

4.2

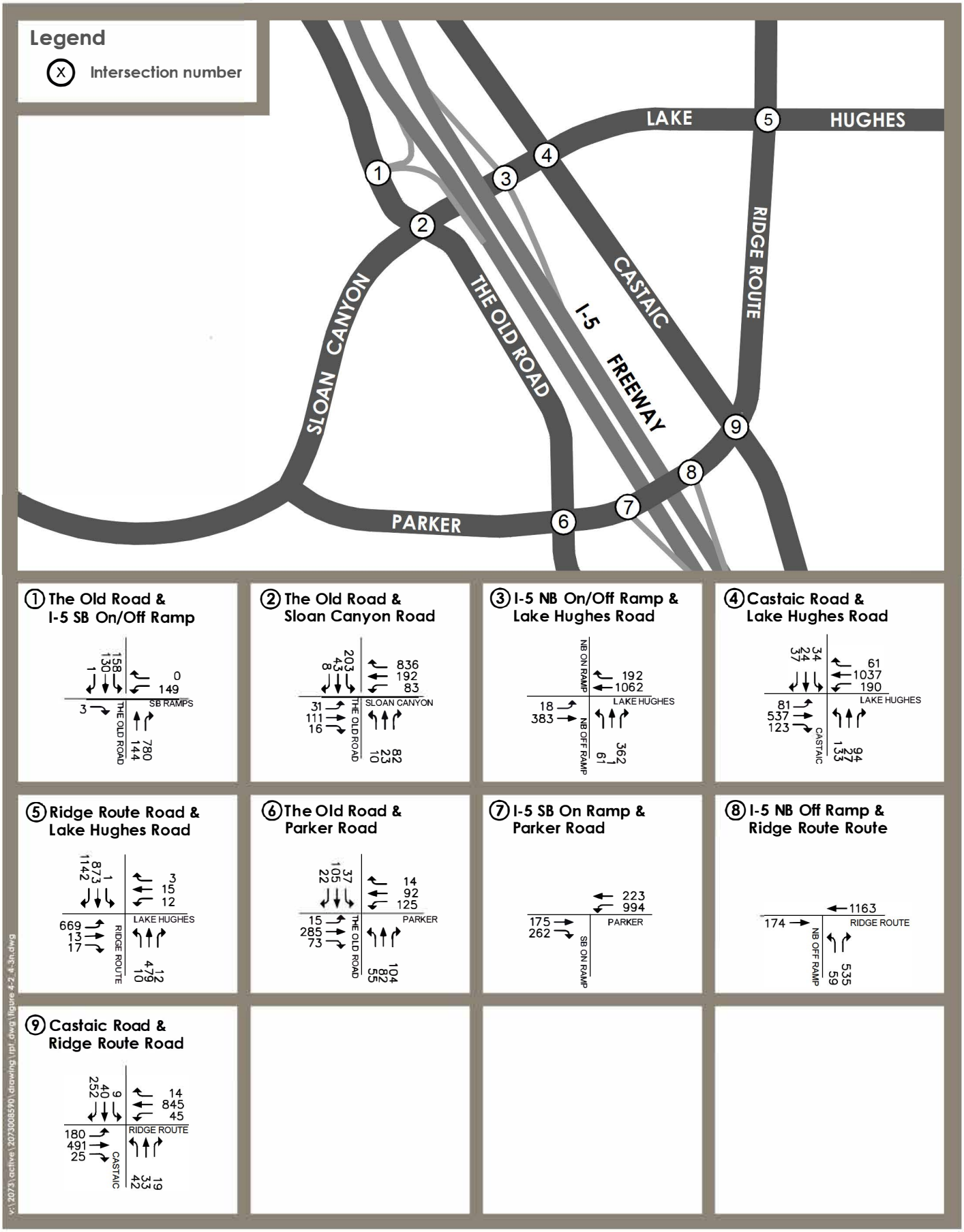

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Figure 4-2

Intersection Turning Lane Movement Volumes
AM Peak Hour - Existing Plus Project

4.3

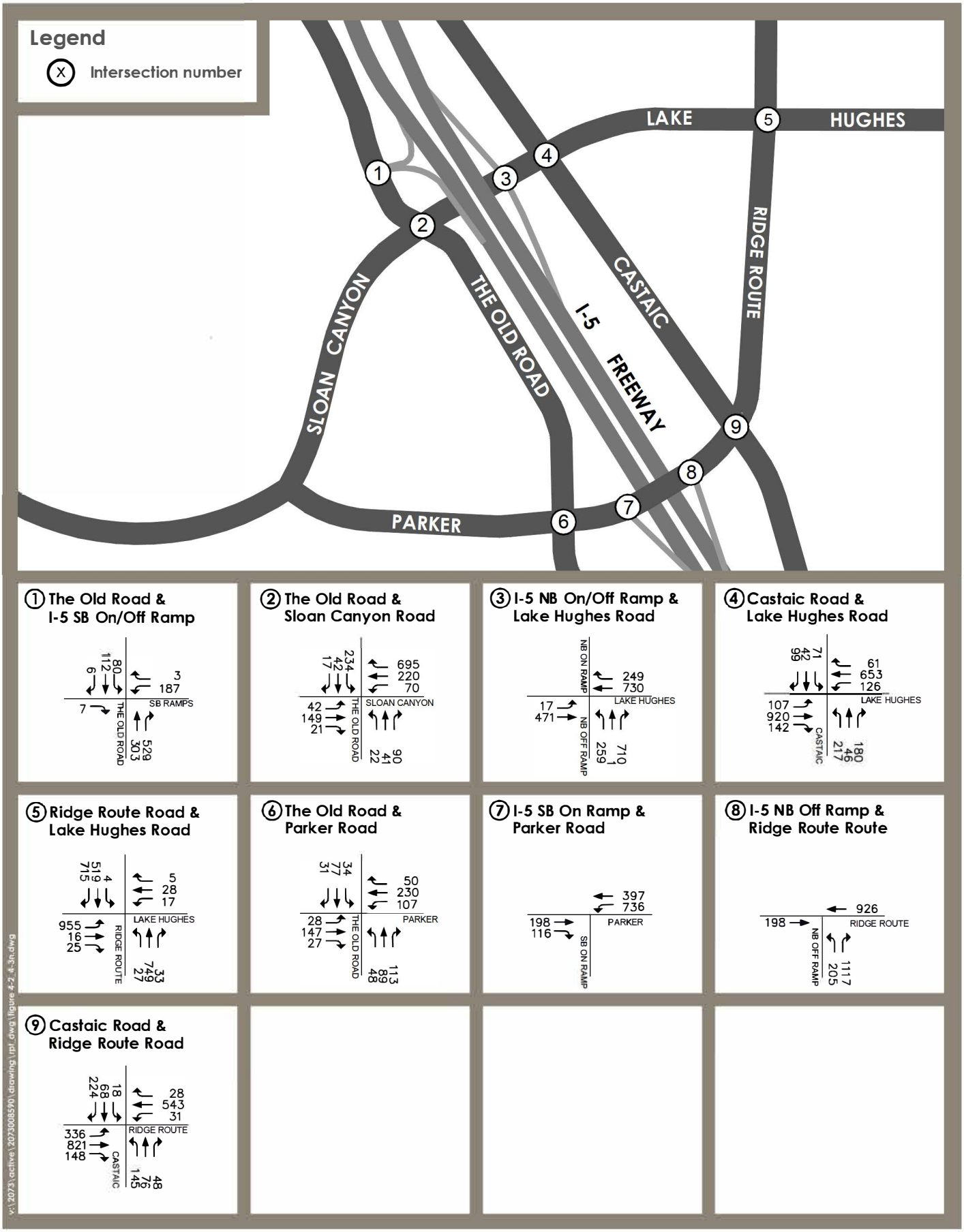

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Figure 4-3

Intersection Turning Lane Movement Volumes
PM Peak Hour - Existing Plus Project

4.4

Table 4-1 shows that under existing plus project conditions, three intersections are shown to be significantly impacted by the project in either the AM or PM peak hour:

5. Ridge Route Road & Lake Hughes Road (County)
7. I-5 SB On Ramp & Parker Road (County/Caltrans)
8. I-5 NB Off Ramp & Ridge Route Road (County/Caltrans)

4.1.2 Existing plus Project Mitigation – Local Roadway System

The results of the ICU and LOS analysis show that 3 intersections are significantly impacted by the proposed project under existing plus project conditions. Table 4-2 summarizes the potential improvements that mitigate the impacts at these locations and Table 4-3 summarizes the resulting ICUs and LOS with this mitigation.

Table 4-2 Existing plus Project Mitigation Measures for Project Impacts

Location	Jurisdiction	Mitigation
5. Ridge Route and Lake Hughes	County	Install traffic signal and include a southbound right-turn overlap phase. Restripe eastbound approach to include two left-turn lanes, one through lane and one right-turn lane. In the northbound direction, add one right-turn lane. In the westbound direction, add a dedicated right-turn lane.
7. I-5 SB On Ramp & Parker	County/ Caltrans	Reconstruct bridge to 4 lanes. Install Traffic Signal. At intersection add one eastbound right-turn lane and two westbound left-turn lanes.
8. I-5 NB Off Ramp & Ridge Route	County/ Caltrans	Reconstruct bridge to 4 lanes. Install Traffic Signal. At intersection add a second northbound right-turn lane and add a second westbound through lane.

Table 4-3 Existing plus Project ICU and LOS Summary – With Mitigation

	Existing				Existing plus Project with Mitigation				Difference	
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour			
Location	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	AM	PM
5. Ridge Route and Lake Hughes	0.31	A	0.19	A	0.82	D	0.67	B	0.51	0.48
7. I-5 SB On Ramp & Parker	0.60	A	0.52	A	0.61	A	0.48	A	0.01	(0.04)
8. I-5 NB Off Ramp & Ridge Route	0.46	A	0.55	A	0.50	A	0.61	B	0.04	0.06

With the improvements described above, the Ridge Route at Lake Hughes intersection would be mitigated to a desirable LOS D, consistent with the threshold established in the Los Angeles County General Plan and the Santa Clarita Valley Area Plan, One Valley One Vision. However, the intersection would not be fully mitigated to the LOS C threshold utilized in the County's Traffic Impact Analysis Guidelines. Improvements to fully mitigate the intersection to the LOS C threshold were considered, such as a southbound free-right turn lane, however was determined to not be geometrically feasible. Another improvement that was considered to achieve the LOS C threshold was to convert an existing southbound through lane to a shared through/right turn lane. However, the lane conversion would not be desirable when considering the crosswalks and pedestrians.

Mitigation measures for existing plus project conditions would require that the Parker Road interchange be reconstructed in order to accommodate the volume of traffic with the project. The ultimate buildout of the bridge is anticipated to have six lanes, four in the westbound direction and two in the eastbound direction. The ultimate configuration is not needed to mitigate the impacts under existing plus project conditions. Therefore, a phased improvement to the bridge consisting of 4-lanes, three lanes in the westbound direction and one lane in the eastbound direction, would be adequate to mitigate the project's impacts.

4.2 CUMULATIVE CONDITIONS ANALYSIS

Year 2028 cumulative conditions (i.e., with approved, planned, and pending projects reasonably anticipated to be in place within this horizon) have been derived as previously discussed in Section 2.2.3. The 2028 horizon year includes the future roadway system described in Section 2.2.1.

4.2.1 Cumulative Conditions – Local Roadway System

Year 2028 cumulative conditions ADT volumes with the project are provided in Figure 4-4. The corresponding cumulative conditions with project peak hour turning movement volumes are provided in Figure 4-5 and Figure 4-6 for the AM peak hour and PM peak hour, respectively.

4.2.2 Cumulative Conditions Impact Analysis – Local Roadway System

Peak hour ICU values and LOS that correspond with the cumulative conditions with project referenced above can be found in Table 4-4 which provides a comparison between the with project conditions and existing conditions. The criteria used to identify significant impacts are discussed in Section 1.4.

Table 4-4 ICU Summary – Existing and Cumulative Conditions (With Project)

Location	Existing				Cumulative with Project				Increase	
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour			
	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	AM	PM
1. The Old Road & I-5 SB Ramps	0.41	A	0.39	A	0.78	C	0.62	B	**0.37**	0.23
2. The Old Road & Sloan/Lake Hughes	0.34	A	0.36	A	0.73	C	0.73	C	0.39	0.37
3. 1-5 NB Ramps & Lake Hughes	0.31	A	0.41	A	0.66	B	0.77	C	0.35	**0.36**
4. Castaic & Lake Hughes	0.31	A	0.37	A	0.53	A	0.53	A	0.22	0.16
5. Ridge Route and Lake Hughes	0.31	A	0.19	A	0.92	E	1.03	F	**0.61**	**0.84**
6. The Old Road & Parker	0.45	A	0.42	A	0.55	A	0.71	C	0.10	0.29
7. I-5 SB On Ramp & Parker	0.60	A	0.52	A	1.10	F	1.16	F	**0.50**	**0.64**
8. I-5 NB Off Ramp & Ridge Route	0.46	A	0.55	A	1.09	F	1.44	F	**0.63**	**0.89**
9. Castaic & Ridge Route	0.33	A	0.41	A	0.69	B	0.84	D	0.36	**0.43**

Bold – denotes significant impact (See Table 1-5 for impact criteria)

The table indicates that under cumulative conditions with the project, the following intersections are forecast to be significantly impacted by the project:

1. The Old Road & I-5 SB Ramps (County/Caltrans)
3. I-5 NB Ramps & Lake Hughes Road (County/Caltrans)
5. Ridge Route Road & Lake Hughes Road (County)
7. I-5 SB On Ramp & Parker Road (County/Caltrans)
8. I-5 SB Off Ramps & Ridge Route Road (County/Caltrans)
9. Castaic Road & Ridge Route Road (County)

4.2.3 Cumulative Conditions Mitigation – Local Roadway System

Roadway improvements have been identified to mitigate the project impacts identified in the previous section. Table 4-5 lists the identified mitigation measures to address project impacts in the cumulative conditions with project setting.

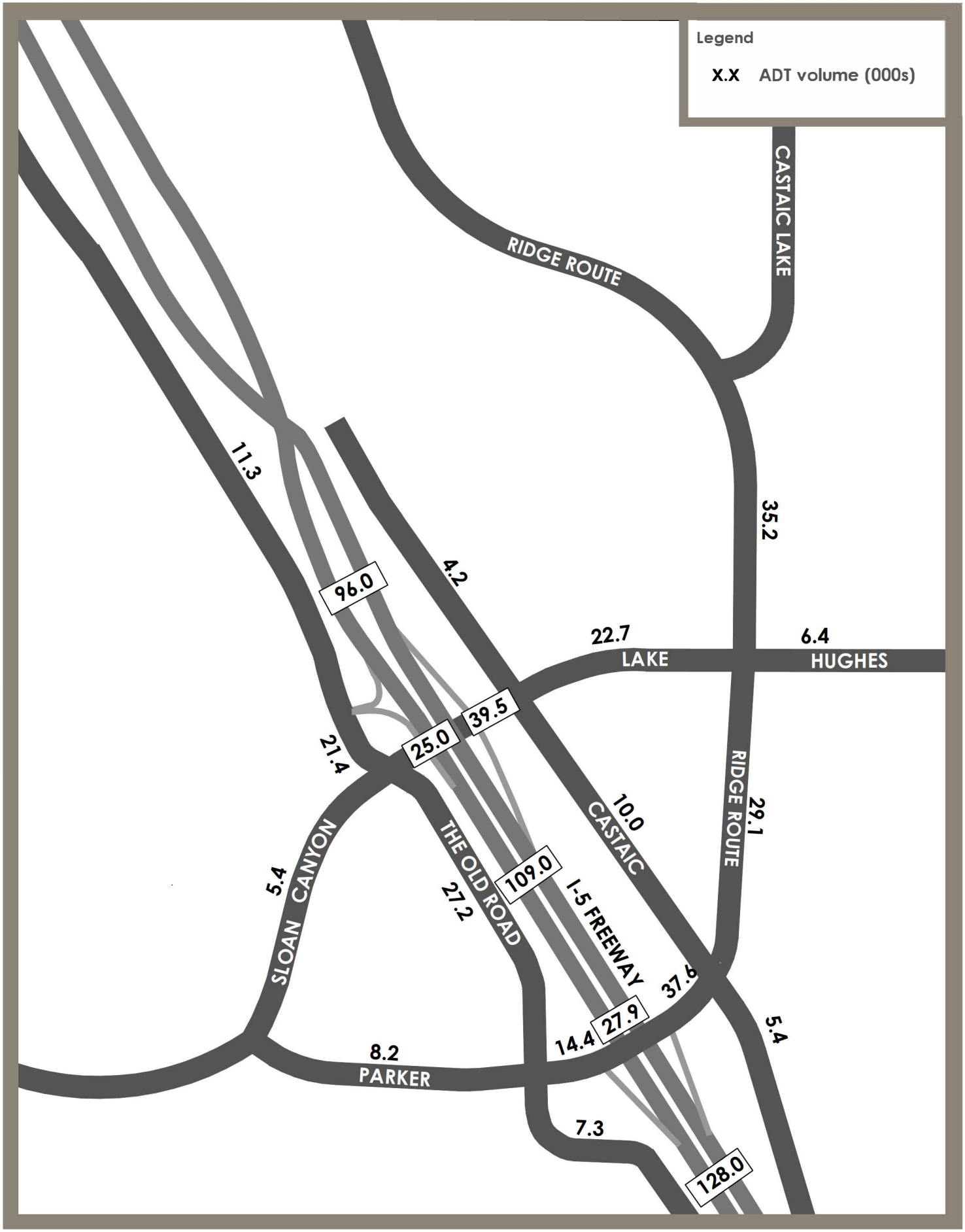

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Figure 4-4

ADT Volumes (000) - 2028 Cumulative Conditions With Project

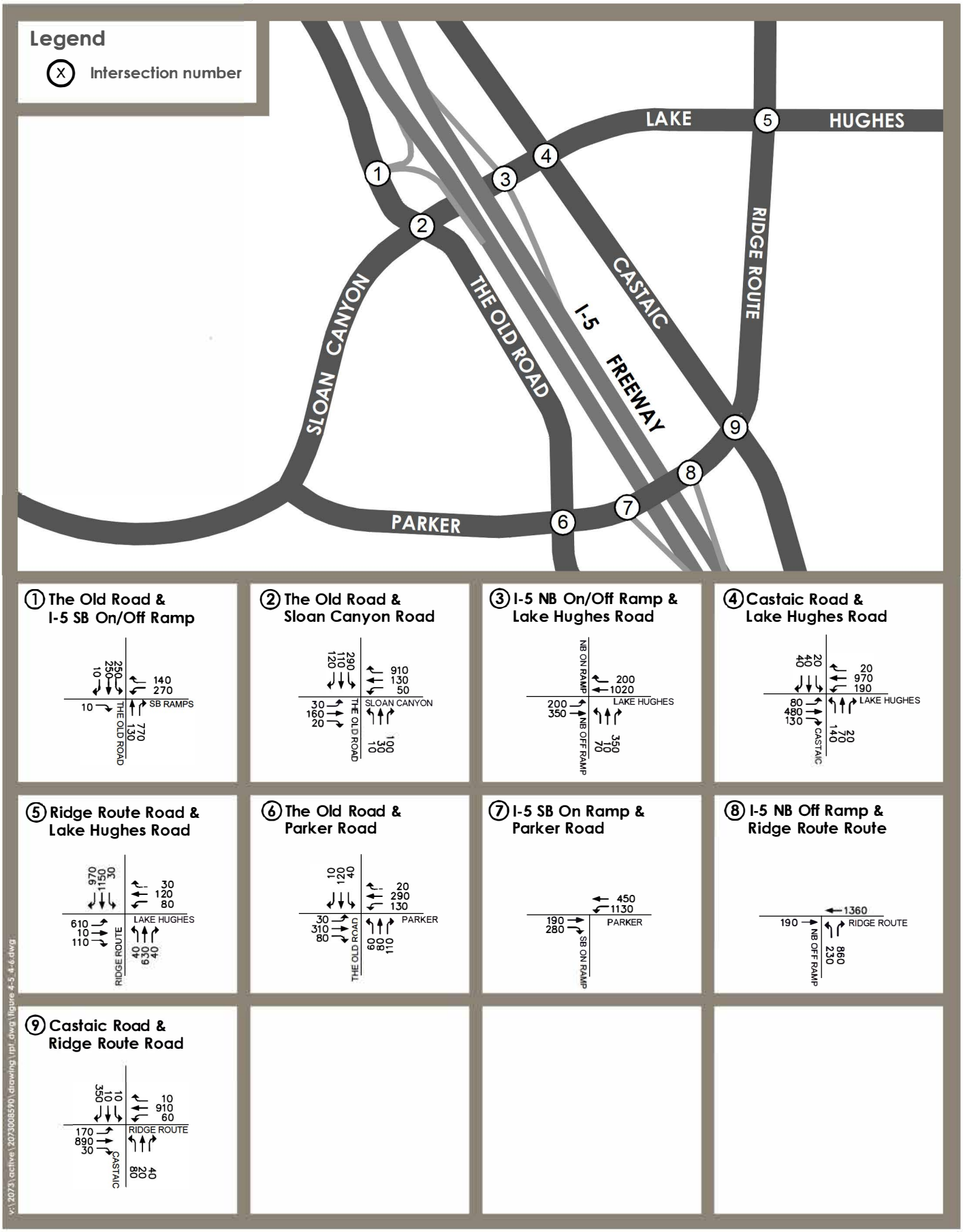

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Figure 4-5

Intersection Turning Lane Movement Volumes
AM Peak Hour - 2028 Cumulative Conditions - With Project

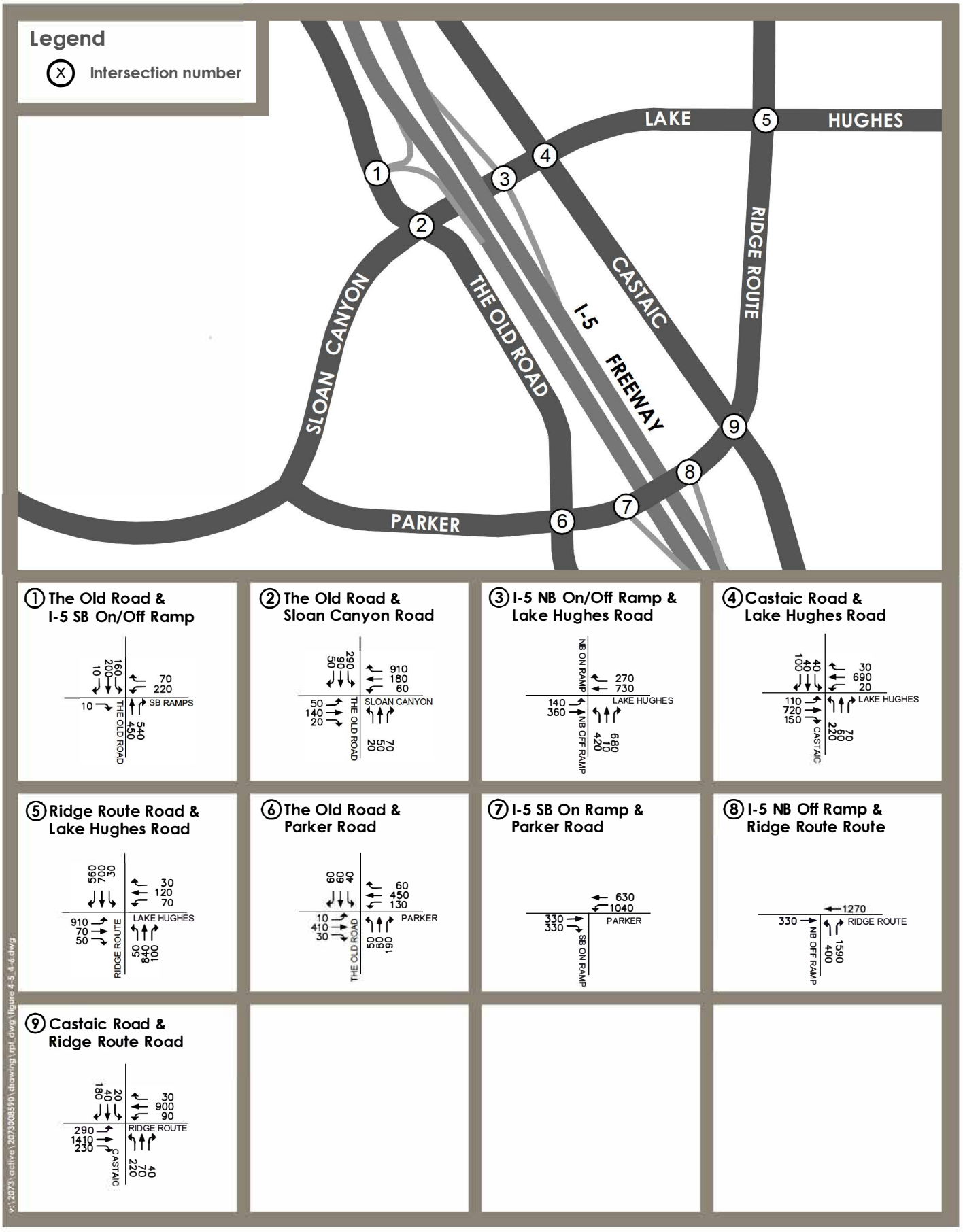

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Figure 4-6

Intersection Turning Lane Movement Volumes
PM Peak Hour - 2028 Cumulative Conditions - With Project

Table 4-5 Off-Site Mitigation Measures for Project Impacts – Cumulative Conditions (With Project)

Location	Juris-diction	Mitigation
1. The Old Road & I-5 SB Ramps	County/ Caltrans	Install traffic signal with a northbound right-turn overlap phasing.
3. 1-5 NB Ramps & Lake Hughes	County/ Caltrans	Install traffic signal. Widen off ramp to add one left-turn lane and restripe center lane to a shared left/through/right turn lane.
5. Ridge Route and Lake Hughes	County	Install traffic signal and include southbound right-turn overlap phasing. Restripe eastbound approach to include two left-turn lanes, one through lane and one right-turn lane. In the northbound direction, add one right-turn lane. In the westbound direction, add a dedicated right-turn lane.
7. I-5 SB On Ramp & Parker	County/ Caltrans	Reconstruct bridge to 4 lanes. Install traffic signal. At intersection add one eastbound right-turn lane and two westbound left-turn lanes.
8. I-5 NB Off Ramp & Ridge Route	County/ Caltrans	Reconstruct bridge to 4 lanes. Install traffic signal. At intersection add a second northbound right-turn lane and add a second and third westbound through lane.
9. Castaic & Ridge Route	County	Install traffic signal. Restripe northbound approach to include two left-turn lanes, one through lane and one right-turn lane. In the eastbound direction, stripe a right-turn lane. Signal modification to include southbound right-turn overlap phasing.

The identified impacts are cumulative impacts and, therefore, the project is responsible for its fair-share of the costs of the identified mitigation measures. Participation in the Castaic Bridge and Major Thoroughfare District will satisfy the project's fair share obligations. Each of the identified improvements would fully mitigate the project's significant impact, as shown in Table 4-6, with the exception of the Ridge Route at Lake Hughes intersection. With the improvements described above, the Ridge Route at Lake Hughes intersection would be mitigated to a desirable LOS C (0.78), better than the LOS D threshold established in the Los Angeles County General Plan and the Santa Clarita Valley Area Plan, One Valley One Vision. However, the intersection would not be fully mitigated to the LOS C (0.74) threshold utilized in the County's Traffic Impact Analysis Guidelines. Improvements to fully mitigate the intersection to the LOS C threshold were considered, such as a southbound free-right turn lane, however was determined to not be geometrically feasible.

Table 4-6 ICU Summary – Existing and Cumulative Conditions (With Project) Mitigation

Location	Existing				Cumulative with Project plus Mitigation				Increase	
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour			
	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	AM	PM
1. The Old Road & I-5 SB Ramps	0.41	A	0.39	A	0.74	C	0.62	B	0.33	0.23
3. 1-5 NB Ramps & Lake Hughes	0.31	A	0.41	A	0.63	B	0.66	B	0.32	0.25
5. Ridge Route and Lake Hughes	0.31	A	0.19	A	0.78	C	0.74	C	0.47	0.55
7. I-5 SB On Ramp & Parker	0.60	A	0.52	A	0.67 (16.7 sec)[1]	B (B)[1]	0.67 (21.1 sec)[1]	B (C)[1]	0.07	0.15
8. I-5 NB Off Ramp & Ridge Route	0.46	A	0.55	A	0.53 (10.1 sec)[1]	A (B)[1]	0.82 (26.1 sec)[1]	D (C)[1]	0.07	0.27[2]
9. Castaic & Ridge Route	0.33	A	0.41	A	0.64	B	0.71	C	0.31	0.30

Bold – denotes significant impact (See Table 1-5 for criteria)
[1] - Values in parentheses indicate average delay (seconds/vehicle) and LOS based 85on HCM delay methodology
[2] – Not a significant impact under Caltrans methodology due to LOS C conditions based on HCM delay calculation (See Appendix E for HCM worksheets).

Table 4-7 provides a comparison between Existing plus Project with mitigation conditions and Cumulative with Project with mitigation conditions. Table 4-7 lists locations where project specific mitigations are required.

Table 4-7 ICU Summary – Existing Plus Project Mitigation and Cumulative Condition (With Project) Mitigation

Location	Existing + Project + Mitigation				Cumulative + Project + Mitigation				Increase	
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour			
	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	AM	PM
5. Ridge Route and Lake Hughes	0.82	D	0.67	B	0.78	C	0.74	C	-0.04	0.07
7. I-5 SB On Ramp & Parker	0.61	B	0.48	A	0.67 (16.7 sec)[1]	B (B)[1]	0.67 (21.1 sec)[1]	B (C)[1]	0.06	0.19
8. I-5 NB Off Ramp & Ridge Route	0.50	A	0.61	B	0.53 (10.1 sec)[1]	A (B)[1]	0.82 (26.1 sec)[1]	D (C)[1]	0.03	0.21[2]

[1] - Values in parentheses indicate average delay (seconds/vehicle) and LOS based on HCM delay methodology
[2] – Not a significant impact under Caltrans methodology due to LOS C conditions based on HCM delay calculation (See Appendix E for HCM worksheets).

As can be seen in the previously referenced Table 4-6 and Table 4-7, the I-5 NB Ramp Off Ramp at Ridge Route Road intersection would operate at a LOS D under cumulative conditions with the project and mitigation using the ICU methodology, but would operate at a low LOS C using the HCM methodology. The acceptable LOS for a Caltrans intersection is LOS D, therefore the intersection would be fully mitigated.

The Ridge Route at Lake Hughes intersection would be mitigated to a desirable LOS C (0.78), better than the LOS D threshold established in the Los Angeles County General Plan and the Santa Clarita Valley Area Plan, One Valley One Vision. However, the intersection would not be fully mitigated to the LOS C (0.74) threshold utilized in the County's Traffic Impact Analysis Guidelines. Improvements to fully mitigate the intersection to the LOS C threshold were considered, such as a southbound free-right turn lane, however was determined to not be geometrically feasible.

4.2.4 Cumulative Conditions (No Project) Impact Analysis – Local Roadway System

To derive cumulative conditions no project ADT volumes, the SCVCTM was run with no land uses in the project traffic zone (except for related projects that fall inside the zone). In this process, trips from non-project zones that would otherwise interact with the project are redistributed to other zones (both internal and cordon zones).

ADT volumes for the local Castaic community for the cumulative condition no project scenario is provided in Figure 4-7. The corresponding no project peak hour turning movement volumes are provided in Figure 4-8 and Figure 4-9 for the AM peak hour and PM peak hour, respectively. Peak hour ICU values and LOS that correspond with the cumulative conditions traffic forecasts referenced above can be found in Table 4-8 which provides a comparison between no project condition and with project conditions.

Table 4-8 ICU Summary – Cumulative Conditions No Project and With Project

	Cumulative No Project				Cumulative with Project				Increase	
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour			
Location	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	AM	PM
1. The Old Road & I-5 SB Ramps	0.50	A	0.58	A	0.78	C	0.62	B	**0.28**	0.04
2. The Old Road & Sloan/Lake Hughes	0.43	A	0.52	A	0.73	C	0.73	C	0.30	0.21
3. 1-5 NB Ramps & Lake Hughes	0.49	A	0.65	B	0.66	B	0.77	C	0.17	**0.12**
4. Castaic & Lake Hughes	0.36	A	0.40	A	0.53	A	0.53	A	0.17	0.13
5. Ridge Route and Lake Hughes	0.40	A	0.25	A	0.92	E	1.03	F	**0.52**	**0.78**
6. The Old Road & Parker	0.52	A	0.68	B	0.55	A	0.71	C	0.03	0.03
7. I-5 SB On Ramp & Parker	0.76	C	0.90	D	1.10	F	1.16	F	**0.34**	**0.26**
8. I-5 NB Off Ramp & Ridge Route	0.73	C	1.00	E	1.09	F	1.44	F	**0.36**	**0.44**
9. Castaic & Ridge Route	0.46	A	0.62	B	0.69	B	0.84	D	0.23	**0.22**

The table indicates that under cumulative conditions, the following intersections are forecast to be significantly impacted by the project:

1. The Old Road & I-5 SB Ramps (County/Caltrans)
3. I-5 NB Ramps & Lake Hughes Road (County/Caltrans)
5. Ridge Route Road & Lake Hughes Road (County)
7. I-5 SB On Ramp & Parker Road (County/Caltrans)
8. I-5 SB Off Ramps & Ridge Route Road (County/Caltrans)
9. Castaic Road & Ridge Route Road (County)

Mitigation that addresses the above impacts is presented in the next section.

4.2.5 Cumulative Conditions (No Project) Mitigation – Local Roadway System

Roadway improvements have been identified to mitigate the project impacts identified in the previous section. Table 4-9 lists the identified mitigation measures to address project impacts in the cumulative conditions setting.

Table 4-9 Off-Site Mitigation Measures for Project Impacts – Cumulative Conditions (No Project and With Project)

Location	Jurisdiction	Mitigation
1. The Old Road & I-5 SB Ramps	County/ Caltrans	Install traffic signal with a northbound right-turn overlap phasing.
3. 1-5 NB Ramps & Lake Hughes	County/ Caltrans	Install traffic signal. Widen off ramp to add one left-turn lane and restripe center lane to a shared left/through/right turn lane.
5. Ridge Route and Lake Hughes	County	Install traffic signal and include southbound right-turn overlap phasing. Restripe eastbound approach to include two left-turn lanes, one through lane and one right-turn lane. In the northbound direction, add one right-turn lane. In the westbound direction, add a dedicated right-turn lane.
7. I-5 SB On Ramp & Parker	County/ Caltrans	Reconstruct Bridge to 4-lanes. Install traffic signal. Eastbound lane configuration includes one through lane and one dedicated right turn lane. In the westbound direction, two left-turn lanes and one through lane.
8. I-5 NB Off Ramp & Ridge Route	County/ Caltrans	Reconstruct Bridge to 4-lanes. Install traffic signal. Modify intersection to include the following: one northbound left turn lane, two northbound right turn lanes, one eastbound through lane and three westbound through lanes.
9. Castaic & Ridge Route	County	Install traffic signal. Restripe northbound approach to include two left-turn lanes, one through lane and one right-turn lane. In the eastbound direction, stripe a right-turn lane. Signal modification to include southbound right-turn overlap phasing.

The identified impacts are cumulative impacts and, therefore, the project is responsible for its fair-share of the costs of the identified mitigation measures. Participation in the Castaic Bridge and Major Thoroughfare District will satisfy the project's fair share obligations. Each of the

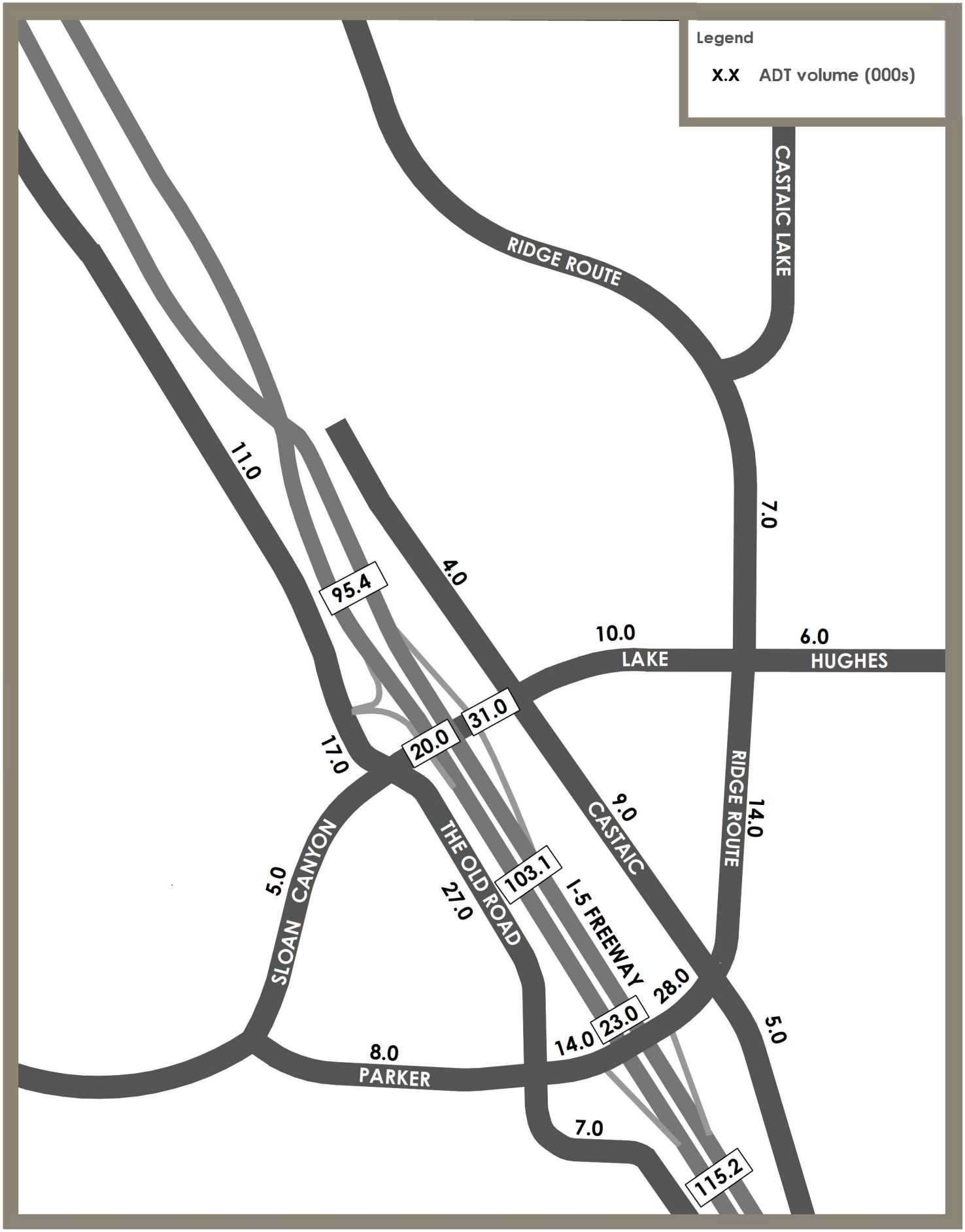

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Figure 4-7

ADT Volumes (000) - 2028 Cumulative Conditions No Project

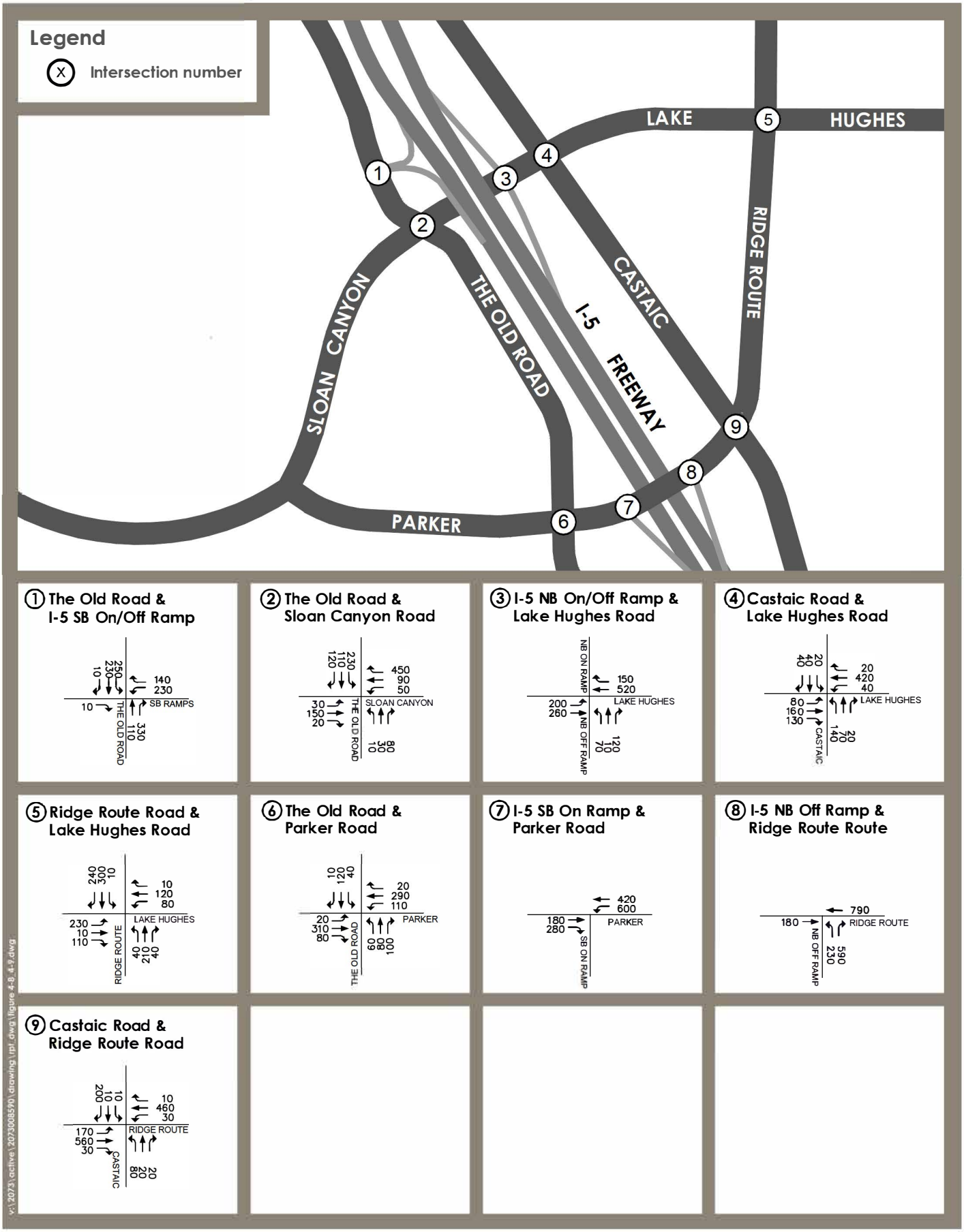

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Figure 4-8

Intersection Turning Lane Movement Volumes
AM Peak Hour - 2028 Cumulative Conditions - No Project

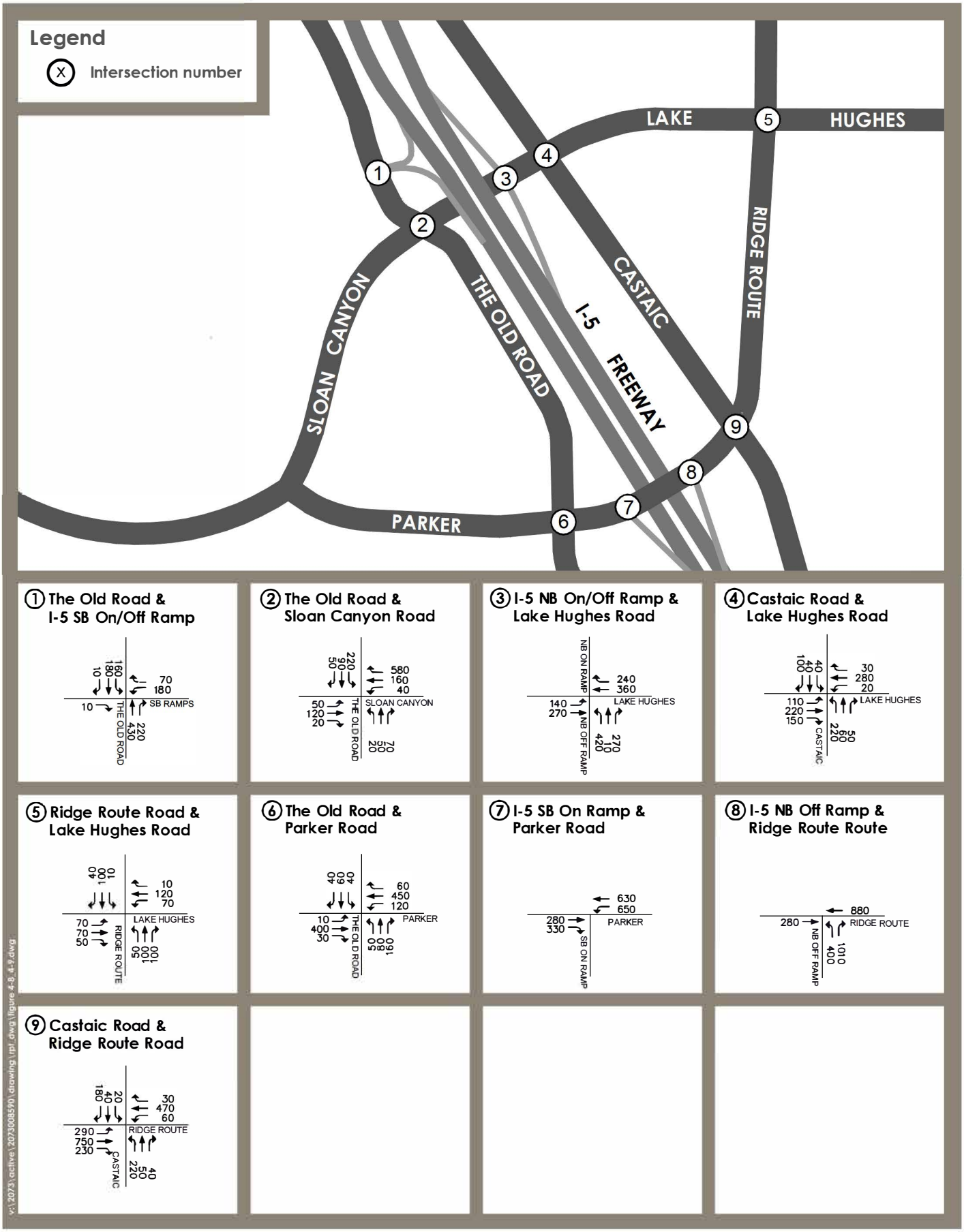

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Figure 4-9

Intersection Turning Lane Movement Volumes
PM Peak Hour - 2028 Cumulative Conditions - No Project

identified improvements would fully mitigate the project's significant impact, as shown in Table 4-10, with the exception of the Ridge Route at Lake Hughes intersection. With the improvements described above, the Ridge Route at Lake Hughes intersection would be mitigated to a desirable LOS C (0.78), better than the LOS D threshold established in the Los Angeles County General Plan and the Santa Clarita Valley Area Plan, One Valley One Vision. However, the intersection would not be fully mitigated to the LOS C (0.74) threshold utilized in the County's Traffic Impact Analysis Guidelines. Improvements to fully mitigate the intersection to the LOS C threshold were considered, such as a southbound free-right turn lane, however was determined to not be geometrically feasible.

Table 4-10 ICU Summary – Cumulative Conditions Mitigation (No Project and With Project)

Location	Cumulative No Project				Cumulative with Project plus Mitigation				Increase	
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour			
	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	AM	PM
1. The Old Road & I-5 SB Ramps	0.50	A	0.58	A	0.74	C	0.62	B	0.24	0.04
3. I-5 NB Ramps & Lake Hughes	0.49	A	0.65	B	0.63	B	0.66	B	0.14	0.01
5. Ridge Route and Lake Hughes	0.40	A	0.25	A	0.78	C	0.74	C	0.38	0.49
7. I-5 SB On Ramp & Parker	0.76	C	0.90	D	0.67	B	0.67	B	(0.09)	(0.23)
8. I-5 NB Ramp & Ridge Route	0.73	C	1.00	E	0.53	A	0.82	D	(0.20)	(0.18)
9. Castaic & Ridge Route	0.46	A	0.62	B	0.64	B	0.71	C	0.18	0.09

4.3 FREEWAY IMPACT ANALYSIS

The following section discusses an impact analysis conducted for the I-5 freeway that provides the regional travel to and from the project area

4.3.1 Existing plus Project Impact Analysis – Freeway System

Project generated traffic was added onto the existing freeway system. Existing AADT freeway volumes with the project trips are shown in Table 4-11.

Table 4-11 Freeway AADT Summary – Existing Plus Project

No.	Segment	Without Project	With Project
1	I-5 Between Templin Hwy & Lake Hughes	70,000	71,000
2	I-5 Between Lake Hughes & Parker	71,000	80,000
3	I-5 Between Parker & Hasley Canyon	89,000	108,000
4	I-5 Between Hasley Canyon & SR-126	109,000	124,000
5	I-5 Between Calgrove & SR-14	193,000	197,000
AADT – Annual Average Daily Traffic			

The AM and PM peak hour freeway volumes for existing plus project conditions are shown in Table 4-13. As can be seen in Table 4-13, the project increment exceeds the 0.02 CMP threshold at the following freeways segments:

- I-5 NB Between Lake Hughes Road & Parker Road (AM & PM)
- I-5 NB Between Parker Road & Hasley Canyon (AM & PM)
- I-5 SB Between Lake Hughes Road & Parker Road (AM & PM)
- I-5 SB Between Parker Road & Hasley Canyon (AM & PM)

However, although the project increment exceeds the 0.02 threshold at the above referenced freeway segments, the other criteria for the project to cause a significant impact is for the freeway segment to operate deficiently (i.e., worse than LOS E). All segments with the project operate at LOS C or better (V/C less than or equal to 0.71). Hence, the project does not cause a significant impact.

4.3.2 Cumulative Conditions Impact Analysis – Freeway System

As previously discussed in Section 2.2.4., future freeway forecasts were derived from multiple sources. Year 2028 cumulative conditions AADT volumes with and without the project are shown in Table 4-12.

Table 4-12 Freeway AADT Summary – 2028 Cumulative Conditions

No.	Segment	Without Project	With Project
1	I-5 Between Templin Hwy & Lake Hughes	95,000	96,000
2	I-5 Between Lake Hughes & Parker Road	103,000	109,000
3	I-5 Between Parker Road & Hasley Canyon	115,000	128,000
4	I-5 Between Hasley Canyon & SR-126	143,000	153,000
5	I-5 Between Calgrove & SR-14	224,000	226,000
AADT – Annual Average Daily Traffic			

Freeway lanes and capacities are shown in Table 4-14, along with directional peak hour volumes and the resulting V/C ratios and project increments.

As can be seen in Table 4-14 while segments on the I-5 freeway from the Lake Hughes interchange to south of Parker Road interchange contain a project increment exceeding 0.02, the freeway segments operate better than an LOS E (V/C less than or equal to 1.00). Therefore, these segments are not considered to be significantly impacted by the project.

Table 4-13 Freeway Peak Hour Volumes and V/C Summary– Existing Plus Project

No.	Segment	Lanes	Cap.	Existing				Existing Plus Project				Project Increment	
				AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour			
				Vol.	V/C	Vol.	V/C	Vol.	V/C	Vol.	V/C	AM	PM
Northbound													
1	I-5 Between Templin Hwy & Lake Hughes	4M	8,000	1,351	0.169	2,359	0.295	1,425	0.178	2,420	0.303	0.009	0.008
2	I-5 Between Lake Hughes & Parker	4M	8,000	1,463	0.183	1,896	0.237	1,716	0.214	2,343	0.293	0.031	0.056
3	I-5 Between Parker & Hasley Canyon	4M	8,000	1,833	0.229	2,376	0.297	2,380	0.298	3,449	0.431	0.069	0.134
4	I-5 Between Hasley Canyon & SR-126	4M +1A	9,000	2,245	0.249	2,910	0.323	2,671	0.297	3,746	0.416	0.048	0.093
5	I-5 Between Calgrove & SR-14	4M + 1T[C]	9,200	3,976	0.432	5,153	0.560	4,076	0.443	5,350	0.582	0.011	0.022
Southbound													
1	I-5 Between Templin Hwy & Lake Hughes	4M	8,000	1,309	0.164	2,240	0.280	1,350	0.169	2,319	0.290	0.005	0.010
2	I-5 Between Lake Hughes & Parker	4M	8,000	1,803	0.225	2,450	0.306	2,286	0.286	2,798	0.350	0.061	0.044
3	I-5 Between Parker & Hasley Canyon	4M	8,000	2,261	0.283	3,071	0.384	3,339	0.417	3,828	0.478	0.134	0.094
4	I-5 Between Hasley Canyon & SR-126	4M	8,000	2,769	0.346	3,761	0.470	3,609	0.451	4,351	0.544	0.105	0.074
5	I-5 Between Calgrove & SR-14	4M + 2T[C]	10,400	4,902	0.471	6,659	0.640	5,100	0.490	6,798	0.654	0.019	0.014

M = Mixed Flow Lane
A = Auxiliary Lane
T = Truck Lane
T[C] = Truck Lane (Climbing)
Cap = Capacity
Vol = Volume

See Table 1-6 for lane capacities and significant impact thresholds of significance.

Table 4-14 Freeway Peak Hour Volumes and V/C Summary– 2028 Cumulative Conditions with and without Project

No.	Segment	Lanes	Cap.	Without Project				With Project				Project Increment	
				AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour			
				Vol.	V/C	Vol.	V/C	Vol.	V/C	Vol.	V/C	AM	PM
Northbound													
1	I-5 Between Templin Hwy & Lake Hughes	4M	8,000	3,543	0.443	5,403	0.675	3,593	0.449	5,433	0.679	0.006	0.004
2	I-5 Between Lake Hughes & Parker	4M	8,000	3,948	0.493	5,995	0.749	4,178	0.522	6,405	0.801	0.029	0.051
3	I-5 Between Parker & Hasley Canyon	4M + 1H	9,600	4,313	0.449	6,273	0.653	4,813	0.501	7,263	0.757	0.052	0.103
4	I-5 Between Hasley Canyon & SR-126	4M + 1H + 1A	10,600	4,845	0.457	6,796	0.641	5,235	0.494	7,568	0.714	0.037	0.073
5	I-5 Between Calgrove & SR-14	4M + 1H + 1T(C)	10,800	7,791	0.721	9,396	0.870	7,883	0.730	9,578	0.887	0.009	0.017
Southbound													
1	I-5 Between Templin Hwy & Lake Hughes	4M	8,000	5,569	0.696	3,389	0.424	5,609	0.701	3,429	0.429	0.005	0.005
2	I-5 Between Lake Hughes & Parker	4M	8,000	6,087	0.761	3,712	0.464	6,527	0.816	4,032	0.504	0.055	0.040
3	I-5 Between Parker & Hasley Canyon	4M + 1H	9,600	6,467	0.674	3,951	0.412	7,437	0.775	4,661	0.486	0.101	0.074
4	I-5 Between Hasley Canyon & SR-126	4M + 1H	9,600	7,125	0.742	4,459	0.465	7,881	0.821	5,012	0.522	0.079	0.058
5	I-5 Between Calgrove & SR-14	4M + 1H + 2T[C]	12,000	9,976	0.831	7,678	0.640	10,154	0.846	7,808	0.651	0.015	0.011

M = Mixed Flow Lane
H = HOV or HOT Lane
A = Auxiliary Lane
T = Truck Lane
T[C] = Truck Lane (Climbing)

See Table 1-6 for lane capacities and significant impact thresholds of significance.

4.4 CONGESTION MANAGEMENT PROGRAM ANALYSIS

The Los Angeles County Congestion Management Program (CMP) requires that a proposed development address two major subject areas with respect to traffic impacts. These are the project's impacts on the CMP highway system and the project's impacts on the local and regional transit systems.

4.4.1 CMP Highway System

According to the CMP guidelines, the geographical area to be examined in a CMP traffic impact analysis (TIA) consists of the CMP monitoring locations that meet the following criteria:

- CMP intersections where the proposed project will add 50 or more trips during either the AM or PM weekday peak hours (determined based on adjacent street traffic).
- Mainline freeway locations where the project will add 150 or more trips, in either direction, during either the AM or PM weekday peak hours.

There are no CMP intersections located within the Castaic community, with the nearest two locations being Chiquito Canyon Road/SR-126 (8.5 miles south), Valencia Boulevard/Magic Mountain Parkway (9 miles south) and Railroad Avenue/Lyons Avenue (12 miles south).

The number of trips to and from the proposed Project is forecast to include more than 50 peak hour trips at the Chiquito Canyon Road/SR-126 intersection (70 peak hour trips). The Valencia Boulevard/Magic Mountain Parkway intersection and the Railroad Avenue and Lyons Avenue intersection have less than 50 peak hour trips. Therefore, a CMP analysis of Chiquito Canyon Road/SR-126 intersection is required since the peak hour volume of the project trips exceeds 50.

The intersection LOS methodology specified by the CMP is identical to the methodology utilized by the County of Los Angeles Department of Public Works and this traffic study for County intersections. Table 4-15 summarizes the results of the intersection LOS analysis for the CMP intersection. As shown, the intersection would operate at an unacceptable LOS F before the addition of project traffic. The table shows that the project would not result in a significant impact the intersection and therefore would not require mitigation measures. While the project does not require mitigation measures at this intersection, the "Westside Bridge and Major Thoroughfare Construction Fee District Report" include improvements of the Chiquito Canyon and SR-126 intersection that would improve the intersection LOS from an LOS F to a LOS C in the AM peak hour and LOS D in the PM peak hour.

Table 4-15 ICU Summary - CMP Methodology

Location	AM Peak Hour		PM Peak Hour	
	ICU	LOS	ICU	LOS
110. Chiquito Canyon & SR-126				
- Existing Conditions	0.35	A	0.39	A
- Cumulative Conditions (2028) without Project	1.78	F	1.70	F
- Cumulative Conditions (2028) with Project	1.78	F	1.70	F
- Cumulative Conditions with Phased Plan Improvements[1]	0.78	C	0.82	D
[1] – "Westside Bridge and Major Thoroughfare Construction Fee District Report," Los Angeles County Department of Public Works, February 2011.				

With respect to the mainline freeway, the CMP monitoring locations nearest to the project site are the following:

- I-5 north of SR-126
- I-5 north of SR-14

As shown in Table 4-16, the proposed project is forecast to add 150 or more peak hour trips to both of these monitoring locations. At the segment of I-5 north of the SR-126 the project contributes a maximum of 772 vehicles per hour in the northbound direction and a maximum of 756 vehicles per hour in the southbound direction. At the I-5 segment north of SR-14, the project contributes a maximum of 182 vehicles per hour in the northbound direction and a maximum of 178 vehicles per hour in the southbound direction. The next two closest CMP freeway monitoring locations do not meet the CMP analysis criteria since the maximum number of project trips at those locations is less than 150 vehicles per hour during the peak hour. Freeway segment V/C at these CMP freeway segments are shown in the previously referenced Table 2-10 in Section 4.2.4.

Table 4-16 Freeway Volume Summary – CMP Monitoring Locations

Segment	Peak Hour Project Volumes			
	Northbound		Southbound	
	AM	PM	AM	PM
I-5 between Hasley Cyn & SR-126	**390**	**772**	**756**	**553**
I-5 between Calgrove & SR-14	92	**182**	**178**	130
Bold – exceeds CMP impact analysis criteria of 150 veh/hour				

4.4.2 Local and Regional Transit Systems

Another component of the CMP transportation impact analysis is a review of transit impacts; public transit in the Santa Clarita Valley includes both bus and commuter rail service. The CMP review is to include evidence that transit operators received the Notice of Preparation, identification of existing transit services near the project, estimation of the number of project trips assigned to transit, information on facilities and/or programs that will encourage public transit use, and an analysis of project impacts on transit service.

With respect to the Notice of Preparation, the project's environmental documentation will include evidence that the applicable transit operators (i.e., City of Santa Clarita Transit, Metro, and Metrolink) received the Notice of Preparation. Section 2.1.3 provides a summary of the existing transit services in the vicinity of the Project Site.

As to the estimated number of project transit trips, buildout of the project is forecast to generate approximately 35,477 ADT. To estimate the number of project trips that would use public transit, the number of project vehicle trips is multiplied by an occupancy factor (1.4), which is provided in the CMP, to determine total person trips. The number of person trips is then multiplied by the applicable MTA factor (3.5%), which is also provided in the CMP, to determine the number of transit trips generated by the project (presuming that SCT extends the existing transit routes into the site). Based on this calculation, the project would generate approximately 1,700 daily transit trips, as shown in Table 4-17.

Table 4-17 Transit Trip Summary

	Time Period		
	Daily	**AM Peak Hour**	**PM Peak Hour**
Vehicle Trips	35,477	2,870	3,500
Person Trips[1]	49,668	4,018	4,900
Factor to Transit Trips	3.5%	3.5%	3.5%
Total Transit Trips	1,738	141	172
[1]Person Trips = Vehicle Trips x 1.4 Sources: Congestion Management Program for Los Angeles County, 2002, 2004, and 2010.			

With respect to the project's impacts on transit service, while the County does not have LOS standards applicable to future development such as the proposed project, the demand for transit service that would result from the project (approximately 140 to 170 peak hour trips as shown in the previously referenced (Table 4-17), has the potential to impact transit services.

The project would facilitate the use of public transit by providing areas designated for bus stops in accordance with County standards and transit provider requirements. It is anticipated that, over time, the local bus service will expand as additional development occurs within the valley. Meanwhile, the current transit arrangement is anticipated to continue to serve local residents of the area, connecting residential areas with employment and commercial centers.

With respect to commuter rail, Metrolink, governed by the Southern California Regional Rail Authority (SCRAA), provides commuter rail service between the Antelope Valley and Downtown Los Angeles, and also links Ventura, Los Angeles, San Bernardino, Riverside, Orange, and San Diego counties with transfer service between the bus and rail systems. The Metrolink station closest to the project site is located along Soledad Canyon Road east of Bouquet Canyon Road in the City of Santa Clarita. A second Metrolink station is located along Railroad Avenue just south of Lyons Canyon Road. Long-range plans include a potential Metrolink extension along the SR-126 corridor

4.5 PHASING ANALYSIS

This section presents the findings of a phasing analysis conducted for the project. The project is anticipated to be constructed in phases; the first phase includes VTTM 73336 and the second phase would be full buildout.

For purposes of the phasing analysis, various amounts of project development were tested. One scenario analyzed the following amounts of project development:

- 325 Single Family Residential Units
- 1,300 Multi-Family Residential Units
- 400 Multi-Family Residential Units

Note that the amount of project development listed above would accommodate VTTM 73336 as currently proposed. The following table summarizes the LOS based on the aforementioned amount of development:

Table 4-18 ICU and LOS Summary – Existing plus Project Phase I

	Existing				Existing plus Phase 1				Difference	
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour			
Location	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	AM	PM
1. The Old Road & I-5 SB Ramps	0.41	A	0.39	A	0.64	B	0.42	A	0.23	0.03
2. The Old Rd & Sloan/Lake Hughes	0.34	A	0.36	A	0.57	A	0.45	A	0.23	0.09
3. 1-5 NB Ramps & Lake Hughes	0.31	A	0.41	A	0.47	A	0.62	B	0.16	0.21
4. Castaic & Lake Hughes	0.31	A	0.37	A	0.47	A	0.55	A	0.16	0.18
5. Ridge Route and Lake Hughes	0.32	A	0.19	A	0.66	B	0.62	B	0.34	0.43
6. The Old Road & Parker	0.45	A	0.42	A	0.47	A	0.47	A	0.03	0.05
7. I-5 SB On Ramp & Parker	0.60	A	0.52	A	0.72	C	0.64	B	0.12	0.12
8. I-5 NB Off Ramp & Ridge Route	0.46	A	0.55	A	0.59	A	0.72	C	0.13	0.17
9. Castaic & Ridge Route	0.33	A	0.41	A	0.42	A	0.50	A	0.09	0.09

As shown in the above table, with this first phase of development, most intersections within the study area continue to operate at LOS B or better. The locations closest to being impacted are the on and off-ramp intersections at Ridge Route/Parker Road, which are forecast to operate at LOS C with a peak hour ICU of 0.72, but would not be significantly impacted by the first phase of development based on the County's significant impact criteria.

5.0 TRAFFIC SIGNAL WARRANT ANALYSIS

The following sections presents the results of traffic signal warrant analyses conducted for intersections within the project site (referred to here as on-site) as well as intersections in the local study area (referred to here as off-site).

5.1 ON-SITE TRAFFIC SIGNAL WARRANT ANALYSIS

A traffic signal warrant analysis was conducted for on-site intersections.

Traffic signal warrants are based on peak hour volumes as adopted by the Federal Highway Administration and Caltrans. For purposes of this analysis, on-site intersections along Ridge Route Road would have a speed limit greater than 40 mph. Therefore, the signal warrant analysis for intersections along Ridge Route Road would be based on the plotted data contained in the graph shown in Figure 5-1, which are for intersections where the posted speed on the major street is greater than 40 mph. Additionally, the southerly portion of Northlake Boulevard from Ridge Route Road to south of "E" Street would have a speed limit greater than 40 mph and therefore would also use the plotted data contained in the graph shown in Figure 5-1.

The remaining on-site roadways (not addressed above) would have speeds lower than 40 mph; therefore, the signal warrant analysis for the remaining on-site intersections is based on the plotted data contained in the graph shown in Figure 5-2, which are for intersections where the posted speed on the major street is lower than 40 mph.

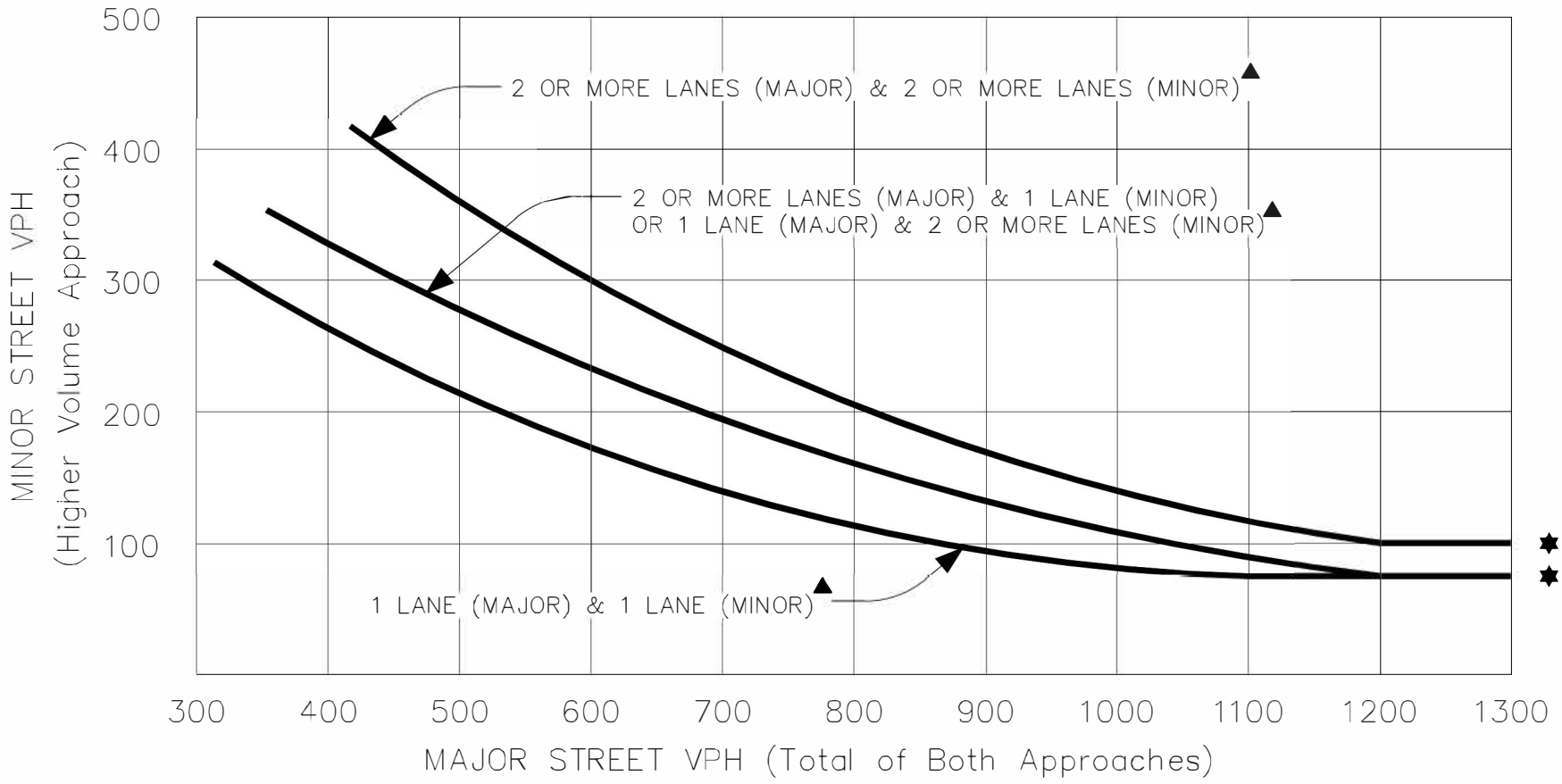
The results of the traffic signal warrant analysis for the on-site intersections are shown in Table 5-1.

As shown in Table 5-1 the following intersections warrant signalization:

10. Ridge Route Road at B Street
11. Ridge Route Road at Northlake Boulevard
12. Northlake Boulevard at A Street
17. Northlake Boulevard at E Street
22. Ridge Route at SS Street

5.2 OFF-SITE TRAFFIC SIGNAL WARRANT ANALYSIS

A traffic signal warrant analysis was conducted for intersections within the local study area for Existing Conditions plus Phase I of the Project and for 2028 Cumulative Conditions that includes full buildout of the Project.



○ AM peak hour Major Street Volume, Minor Street Volume

● PM peak hour Major Street Volume, Minor Street Volume

▲ Note: These curves are recommended for use in community less than 10,000 population or above 40 MPH on Major Street.

★ Note: 100 VPH applies as the lower threshold volume for a minor-street approach with two or more lanes, and 75 VPH applies as the lower threshold volume for a minor-street approach with one lane.

Source: MUTCD – Figure 4C-4

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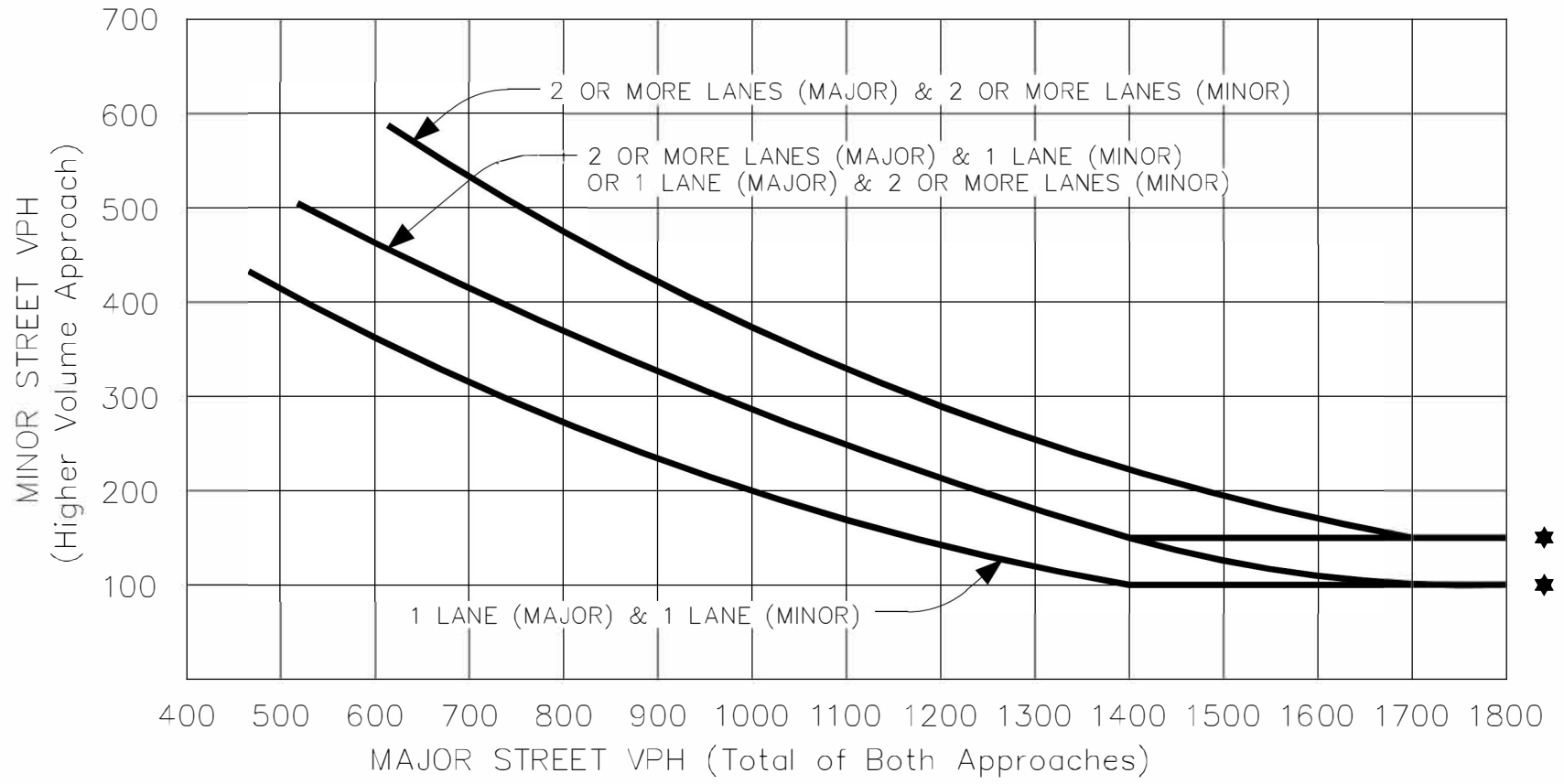
Figure 5-1

Peak Hour Volume Signal Warrant - Higher Speeds

5.2



★ Note: 150 VPH applies as the lower threshold volume for a minor-street approach with two or more lanes, and 100 VPH applies as the lower threshold volume for a minor-street approach with one lane.

Source: MUTCD – Figure 4C-3

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Figure 5-2

Peak Hour Volume Signal Warrant - Lower Speeds

Table 5-1 Signal Warrant Summary – On-Site

Intersection	Criteria	Direction	AM Peak Hour	PM Peak Hour
10. Ridge Route & B Street	Higher speed			
Major Approach	(Figure 5-1)	SB	1,360	980
		NB	870	1,670
		Total	2,230	2,650
Minor Approach		WB	370	170
		EB	0	0
		Total	370	170
Satisfies Warrant			Yes	Yes
11. Ridge Route & Northlake	Higher speed			
Major Approach	(Figure 5-1)	WB	1,270	750
		EB	0	0
		Total	1,270	750
Minor Approach		SB	40	30
		NB	640	1,220
		Total	680	1,250
Satisfies Warrant			Yes	Yes
12. Northlake & A Street	Higher Speed			
Major Approach	(Figure 5-1)	SB	1,020	520
		NB	640	1,180
		Total	1,660	1,700
Minor Approach		WB	290	220
		EB	30	70
		Total	320	290
Satisfies Warrant			Yes	Yes
13. A Street & B Street	Lower speed			
Major Approach	(Figure 5-2)	WB	420	270
		EB	180	290
		Total	600	560
Minor Approach		SB	0	0
		NB	30	180
		Total	30	180
Satisfies Warrant			No	No
14. H Street & A Street	Lower speed			
Major Approach	(Figure 5-2)	WB	430	280
		EB	180	460
		Total	610	740
Minor Approach		SB	20	20
		NB	0	0
		Total	20	20
Satisfies Warrant			No	No
15. Northlake & AA Street	Lower speed			
Major Approach	(Figure 5-2)	WB	50	30
		EB	60	40
		Total	110	70
Minor Approach		SB	30	30
		NB	40	60
		Total	70	90
Satisfies Warrant			No	No

Table 5-1 Signal Warrant Summary – On-Site (Continued)

Intersection	Criteria	Direction	AM Peak Hour	PM Peak Hour
17. Northlake & E St	Higher speed			
Major Approach	(Figure 5-1)	SB	450	200
		NB	470	650
		Total	920	850
Minor Approach		WB	320	210
		EB	0	0
		Total	320	210
Satisfies Warrant			Yes	Yes
18. H St & E St	Lower speed			
Major Approach	(Figure 5-2)	WB	320	210
		EB	110	360
		Total	430	570
Minor Approach		SB	0	0
		NB	20	20
		Total	20	20
Satisfies Warrant			No	No
19. D St & A St	Lower speed			
Major Approach	(Figure 5-2)	SB	190	150
		NB	140	370
		Total	330	520
Minor Approach		WB	40	30
		EB	160	100
		Total	200	130
Satisfies Warrant			No	No
20. G St & A St	Lower speed			
Major Approach	(Figure 5-2)	SB	330	220
		NB	150	450
		Total	480	670
Minor Approach		WB	90	60
		EB	0	0
		Total	90	60
Satisfies Warrant			No	No
21. B St & P St	Lower speed			
Major Approach	(Figure 5-2)	SB	170	70
		NB	50	380
		Total	220	450
Minor Approach		WB	230	120
		EB	0	0
		Total	230	120
Satisfies Warrant			No	No
22. Ridge Route & SS St	Higher speed			
Major Approach	(Figure 5-1)	SB	1,290	760
		NB	840	1,310
		Total	2,130	2,070
Minor Approach		WB	0	0
		EB	100	390
		Total	100	390
Satisfies Warrant			Yes	Yes

Table 5-1 Signal Warrant Summary – On-Site (Continued)

Intersection	Criteria	Direction	AM Peak Hour	PM Peak Hour
23. D St & E St	Lower speed			
Major Approach	(Figure 5-2)	WB	160	100
		EB	110	360
		Total	270	460
Minor Approach		SB	190	140
		NB	30	30
		Total	220	170
Satisfies Warrant			No	No
24. A St & E St	Lower speed			
Major Approach	(Figure 5-2)	WB	0	0
		EB	80	260
		Total	80	260
Minor Approach		SB	150	100
		NB	40	20
		Total	190	120
Satisfies Warrant			No	No

For purposes of this traffic signal warrant analysis, Table 5-2 lists the speed limits assumed. The results of the traffic signal warrant analysis for 2028 Cumulative Conditions are summarized in Table 5-3 and the traffic signal warrant analysis for Existing plus Phase I of the Project are summarized in Table 5-4.

Per the request of the County, three additional off-site intersections were included in the signal warrant analysis; Ridge Route at Shadow Lake intersection, Ridge Route at Elk Ridge intersection, and Ridge Route at Castaic Lake intersection (labeled intersection 10 – 12 in Table 5-3, respectively).

Table 5-2 Speed Limits – Local Study Area

Roadway Description	Speed (mph)
Ridge Route Road north of Lake Hughes Road	40
Ridge Route Road south of Lake Hughes Road to I-5 Freeway	35
Lake Hughes Road	35
Castaic Road	35
Sloan Canyon Road	40
The Old Road north of I-5 SB Ramps	55
The Old Road from I-5 SB Ramps to Parker Road	45
Parker Road	40
Based on current posted speed limits	

Based on the results of the signal warrant analysis, 9 intersections would warrant a signal for 2028 Cumulative Conditions and 5 intersections would warrant a signal for Existing plus Phase I of the Project (see Table 5-5 for list of intersections). The traffic signals should be installed only when warranted by actual traffic counts.

Table 5-3 2028 Cumulative Conditions With Project Signal Warrant Summary – Off-Site

Intersection	Criteria	Direction	AM Peak Hour	PM Peak Hour
1. The Old Road & I-5 SB Ramps	Higher speed			
Major Approach	(Figure 5-1)	SB	510	370
		NB	900	990
		Total	1,410	1,360
Minor Approach		WB	410	290
		EB	10	10
		Total	420	300
Satisfies Warrant			Yes	Yes
3. I-5 NB Ramps & Lake Hughes	Lower speed			
Major Approach	(Figure 5-2)	WB	1,220	1,000
		EB	550	500
		Total	1,770	1,500
Minor Approach		SB	0	0
		NB	430	1,110
		Total	430	1,110
Satisfies Warrant			Yes	Yes
5. Ridge Route & Lake Hughes	Lower speed			
Major Approach	(Figure 5-2)	SB	2,150	1,300
		NB	710	990
		Total	2,860	2,290
Minor Approach		WB	230	220
		EB	730	1,030
		Total	960	1,250
Satisfies Warrant			Yes	Yes
6. The Old Road & Parker	Higher speed			
Major Approach	(Figure 5-1)	WB	440	640
		EB	420	450
		Total	860	1,090
Minor Approach		SB	170	160
		NB	250	320
		Total	420	480
Satisfies Warrant			Yes	Yes
7. I-5 SB Ramps & Parker	Lower speed			
Major Approach	(Figure 5-2)	WBL	1,130	1,040
Minor Approach		EBT	190	330
Satisfies Warrant		Total	Yes	Yes
8. I-5 NB Ramps & Ridge Route	Lower speed			
Major Approach	(Figure 5-2)	SB	0	0
		NB	1,090	1,990
		Total	1,090	1,990
Minor Approach		WB	1,360	1,270
		EB	190	330
		Total	1,550	1,600
Satisfies Warrant			Yes	Yes

(Continued)

Table 5-3 2028 Cumulative Conditions With Project Signal Warrant Summary – Off-Site (Continued)

Intersection	Criteria	Direction	AM Peak Hour	PM Peak Hour
9. Castaic & Ridge Route	Lower speed			
Major Approach	(Figure 5-2)	WB	1,130	1,020
		EB	1,090	1,930
		Total	2,220	2,950
Minor Approach		SB	220	240
		NB	140	330
		Total	360	570
Satisfies Warrant			Yes	Yes
10. Ridge Route & Shadow Lake	Lower speed			
Major Approach	(Figure 5-2)	SB	1,990	1,190
		NB	1,220	1,720
		Total	3,210	2,910
Minor Approach		WB	70	50
		EB	100	50
		Total	170	100
Satisfies Warrant			Yes	No
11. Ridge Route & Elk Ridge	Lower speed			
Major Approach	(Figure 5-2)	SB	2,050	1,230
		NB	1,240	1,770
		Total	3,290	3,000
Minor Approach		WB	50	30
		EB	110	60
		Total	160	90
Satisfies Warrant			Yes	No
12. Ridge Route & Castaic Lake	Lower speed			
Major Approach	(Figure 5-2)	SB	2,130	1,260
		NB	1,260	1,780
		Total	3,390	3,040
Minor Approach		WB	30	40
		EB	0	0
		Total	30	40
Satisfies Warrant			No	No

Table 5-4 Existing Plus Phase I Signal Warrant Summary – Off-Site

Intersection	Criteria	Direction	AM Peak Hour	PM Peak Hour
1. The Old Road & I-5 SB Ramps	Higher speed			
Major Approach	(Figure 5-1)	SB	272	179
		NB	792	605
		Total	1,064	784
Minor Approach		WB	114	153
		EB	3	7
		Total	117	160
Satisfies Warrant			Yes	No
3. I-5 NB Ramps & Lake Hughes	Lower speed			
Major Approach	(Figure 5-2)	WB	1,012	663
		EB	288	367
		Total	1,300	1,030
Minor Approach		SB	0	0
		NB	218	865
		Total	218	865
Satisfies Warrant			No	Yes
5. Ridge Route & Lake Hughes	Lower speed			
Major Approach	(Figure 5-2)	SB	1,239	568
		NB	220	379
		Total	1,459	947
Minor Approach		WB	30	50
		EB	294	676
		Total	324	726
Satisfies Warrant			Yes	Yes
6. The Old Road & Parker	Higher speed			
Major Approach	(Figure 5-1)	WB	206	360
		EB	355	184
		Total	561	544
Minor Approach		SB	146	124
		NB	215	222
		Total	361	346
Satisfies Warrant			Yes	Yes
7. I-5 SB Ramps & Parker	Lower speed			
Major Approach	(Figure 5-2)	WBL	578	494
Minor Approach		EBT	149	170
Satisfies Warrant		Total	No	No
8. I-5 NB Ramps & Ridge Route	Lower speed			
Major Approach	(Figure 5-2)	SB	0	0
		NB	330	911
		Total	330	911
Minor Approach		WB	721	657
		EB	148	170
		Total	869	827
Satisfies Warrant			No	Yes

(Continued)

Table 5-4 Existing Plus Phase I Signal Warrant Summary – Off-Site (Continued)

Intersection	Criteria	Direction	AM Peak Hour	PM Peak Hour
9. Castaic & Ridge Route	Lower speed			
Major Approach	(Figure 5-2)	WB	514	356
		EB	406	865
		Total	920	1,221
Minor Approach		SB	224	245
		NB	68	241
		Total	292	486
Satisfies Warrant			No	No
10. Ridge Route & Shadow Lake	Lower speed			
Major Approach	(Figure 5-2)	SB	1,167	474
		NB	462	910
		Total	1,629	1,384
Minor Approach		WB	41	26
		EB	56	22
		Total	97	48
Satisfies Warrant			No	No
11. Ridge Route & Elk Ridge	Lower speed			
Major Approach	(Figure 5-2)	SB	1,192	527
		NB	478	949
		Total	1,670	1,476
Minor Approach		WB	17	5
		EB	76	33
		Total	93	38
Satisfies Warrant			No	No
12. Ridge Route & Castaic Lake	Lower speed			
Major Approach	(Figure 5-2)	SB	1,273	540
		NB	497	975
		Total	1,770	1,515
Minor Approach		WB	12	17
		EB	0	0
		Total	12	17
Satisfies Warrant			No	No

Table 5-5 Signal Warrant Analysis Summary

Location	Jurisdiction	Existing Plus Phase I[1]	2028 Cumulative Conditions With Full Buildout[1]
Off-Site			
1. The Old Road & I-5 SB Ramps	Caltrans/County	Yes (AM)	Yes (AM/PM)
3. I-5 NB Ramps & Lake Hughes	Caltrans/County	Yes (PM)	Yes (AM/PM)
5. Ridge Route & Lake Hughes	County	Yes (AM/PM)	Yes (AM/PM)
6. The Old Road & Parker	County	Yes (AM/PM)	Yes (AM/PM)
7. I-5 SB Ramps & Parker	Caltrans/County	No	Yes (AM/PM)
8. I-5 NB Ramps & Ridge Route	Caltrans/County	Yes (PM)	Yes (AM/PM)
9. Castaic & Ridge Route	County	No	Yes (AM/PM)
10. Ridge Route & Shadow Lake	County	No	Yes (AM)
11. Ridge Route & Elk Ridge	County	No	Yes (AM)
12. Ridge Route & Castaic Lake	County	No	No
On-Site			
10. Ridge Route & B Street	County	No	Yes (AM/PM)
11. Ridge Route & Northlake	County	Yes	Yes (AM/PM)
12. Northlake at A Street	County	No	Yes (AM/PM)
17. Northlake at E Street	County	No	Yes (AM/PM)
22. Ridge Route at SS Street	County	No	Yes (AM/PM)

[1] Traffic signals should be installed when warranted based on actual traffic counts.

Appendix A ICU WORKSHEET OFF SITE

Peak hour intersection volume/capacity ratios are calculated by means of intersection capacity utilization (ICU) values. ICU calculations were performed for the intersections shown in Figure A-1.

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

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

Example of Right-turn Capacity Utilization For Northbound Right

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

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

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

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

3. Right-Turn Overlap Adjustment

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

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

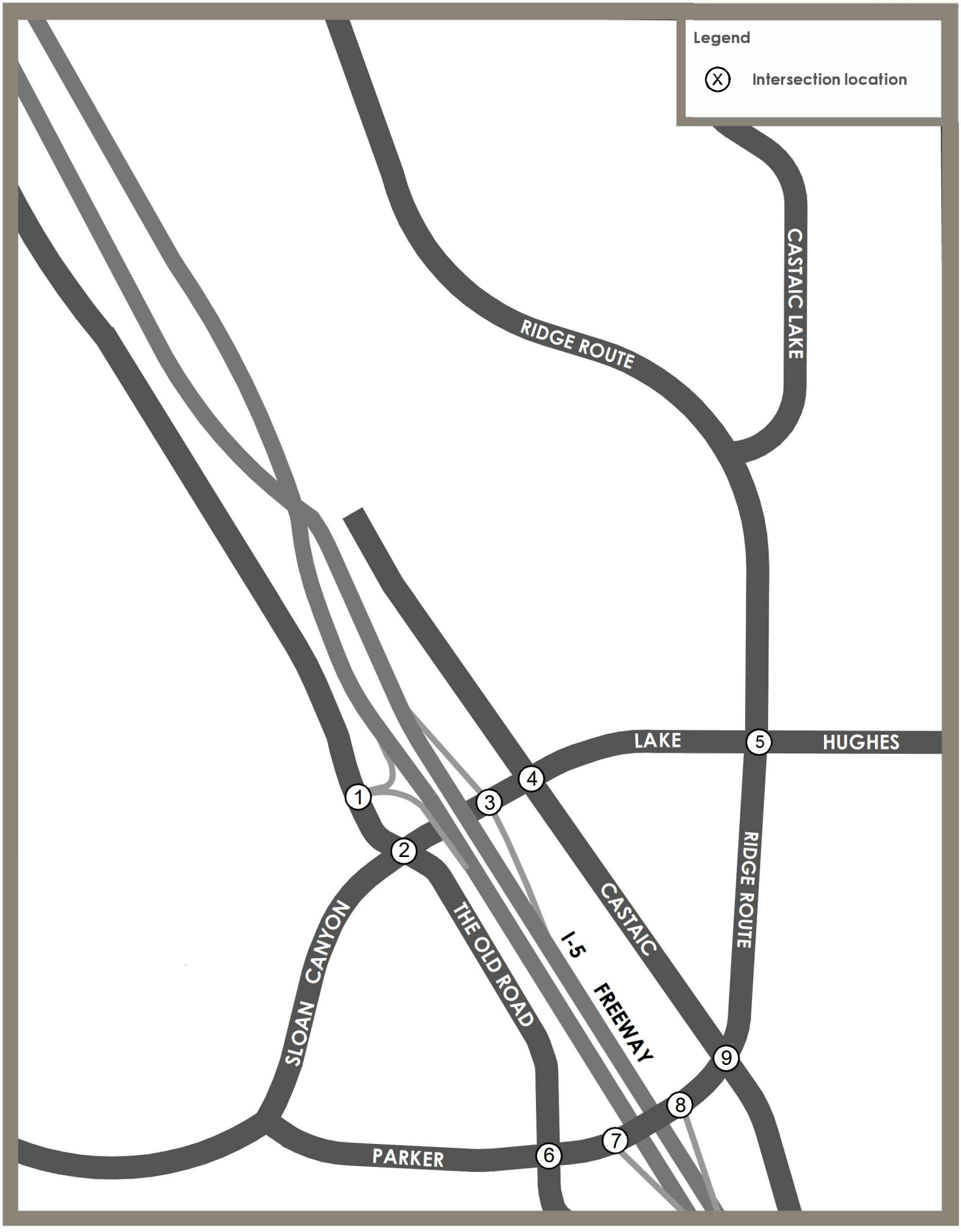

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Figure A-1

Project Local Study Area - Intersection Location Map

A.2

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

RTC = RTOG + factor x RTOR
Where factor = RTOR saturation flow factor (typically 75%)

5. Right-turn Adjustment for ICU Calculation

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

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

Shared Lane V/C Methodology

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

Example of Shared Lane Utilization for Shared Left/Through Lane

1. Average Lane Volume (ALV)

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

2. ALV for Each Approach

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

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

3. Lane Dedication is Warranted

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

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

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

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

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

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

4. Lane Dedication is Not Warranted

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

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

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

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

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

$$\text{V/C (Left)} = \text{V/C (Through)}$$

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

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

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

These same steps are carried out for shared through/right lanes. If full dedication of a shared through/right lane to the right-turn movement is warranted, the right-turn V/C value calculated in step three is checked against the RTOR and RTOG capacity availability if the option to include right-turns in the V/C ratio calculations is selected. If the V/C value that is determined using the shared lane methodology described here is reduced due to RTOR and RTOG capacity availability, the V/C value for the through/right lanes is posted in brackets.

When an approach contains more than one shared lane (e.g., left/through and through/right), steps one and two listed above are carried out for the three turn movements combined. Step four is carried out if dedication is not warranted for either of the shared lanes. If dedication of one of the shared lanes is warranted to one movement or another, step three is carried out for the two movements involved, and then steps one through four are repeated for the two movements involved in the other shared lane.

1. Old Road & I-5 SB On/Off Ramps

Existing (2015)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	1	1600	107	.07*	273	.17*
NBR	1	1600	297	.19	181	.11
SBL	1	1600	158	.10*	80	.05*
SBT	1	1600	110	.07	72	.05
SBR	0	0	1		6	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	1	1600	3	.00	7	.00
WBL	1	1600	108	.07*	108	.07*
WBT	0	0	0		0	
WBR	1	1600	0	.00	3	.00
Right Turn Adjustment			NBR	.07*		
Clearance Interval				.10*		.10*
TOTAL CAPACITY UTILIZATION				**.41**		**.39**

Existing plus Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	1	1600	144	.09*	303	.19*
NBR	1	1600	780	.49	529	.33
SBL	1	1600	158	.10*	80	.05*
SBT	1	1600	130	.08	112	.07
SBR	0	0	1		6	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	1	1600	3	.00	7	.00
WBL	1	1600	149	.09*	187	.12*
WBT	0	0	0		0	
WBR	1	1600	0	.00	3	.00
Right Turn Adjustment			NBR	.33*	NBR	.05*
Clearance Interval				.10*		.10*
TOTAL CAPACITY UTILIZATION				**.71**		**.51**

Existing plus Project Phase 1

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	1	1600	128	.08*	285	.18*
NBR	1	1600	664	.42	320	.20
SBL	1	1600	158	.10*	80	.05*
SBT	1	1600	113	.07	93	.06
SBR	0	0	1		6	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	1	1600	3	.00	7	.00
WBL	1	1600	114	.07*	150	.09*
WBT	0	0	0		0	
WBR	1	1600	0	.00	3	.00
Right Turn Adjustment			NBR	.29*		
Clearance Interval				.10*		.10*
TOTAL CAPACITY UTILIZATION				**.64**		**.42**

1. Sloan/Old Road & I-5 SB Ramps

2028 No Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	1	1600	110	.07*	430	.27*
NBR	1	1600	330	.21	220	.14
SBL	1	1600	250	.16*	160	.10*
SBT	1	1600	230	.15	180	.12
SBR	0	0	10		10	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	1	1600	10	.01	10	.01
WBL	1	1600	230	.14*	180	.11*
WBT	0	0	0		0	
WBR	1	1600	140	.09	70	.04
Right Turn Adjustment			NBR	.03*		
Clearance Interval				.10*		.10*
TOTAL CAPACITY UTILIZATION				**.50**		**.58**

2028 With Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	1	1600	130	.08*	450	.28*
NBR	1	1600	770	.48	540	.34
SBL	1	1600	250	.16*	160	.10*
SBT	1	1600	250	.16	200	.13
SBR	0	0	10		10	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	1	1600	10	.01	10	.01
WBL	1	1600	270	.17*	220	.14*
WBT	0	0	0		0	
WBR	1	1600	140	.09	70	.04
Right Turn Adjustment			NBR	.27*		
Clearance Interval				.10*		.10*
TOTAL CAPACITY UTILIZATION				**.78**		**.62**

2028 With Project + Mitigation

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	1	1600	130	.08*	450	.28*
NBR	1	1600	770	.48	540	.34
SBL	1	1600	250	.16*	160	.10*
SBT	1	1600	250	.16	200	.13
SBR	0	0	10		10	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	1	1600	10	.01	10	.01
WBL	1	1600	270	.17*	220	.14*
WBT	0	0	0		0	
WBR	1	1600	140	.09	70	.04
Right Turn Adjustment			NBR	.23*		
Clearance Interval				.10*		.10*
Note: Assumes Right-Turn Overlap for NBR						
TOTAL CAPACITY UTILIZATION				**.74**		**.62**

2. Old Road & Sloan/Lake Hughes

Existing (2015)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1600	10	.01	22	.01
NBT	1	1600	23	.01*	41	.03*
NBR	1	1600	62	.04	50	.03
SBL	1	1600	142	.09*	115	.07*
SBT	1	1600	43	.03	42	.03
SBR	1	1600	8	.01	17	.01
EBL	1	1600	31	.02	42	.03*
EBT	1	1600	60	.05*	50	.04
EBR	0	0	16		21	
WBL	1	1600	46	.03*	40	.03
WBT	1	1600	80	.05	144	.09*
WBR	1	1600	315	.20	317	.20
Right Turn Adjustment			Multi	.06*	WBR	.04*
Clearance Interval				.10*		.10*

Note: Assumes Right-Turn Overlap for WBR

TOTAL CAPACITY UTILIZATION .34 .36

Existing plus Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1600	10	.01	22	.01
NBT	1	1600	23	.01*	41	.03*
NBR	1	1600	82	.05	90	.06
SBL	1	1600	203	.13*	234	.15*
SBT	1	1600	43	.03	42	.03
SBR	1	1600	8	.01	17	.01
EBL	1	1600	31	.02*	42	.03*
EBT	1	1600	111	.08	149	.11
EBR	0	0	16		21	
WBL	1	1600	83	.05	70	.04
WBT	1	1600	192	.12*	220	.14*
WBR	1	1600	836	.52	695	.43
Right Turn Adjustment			WBR	.27*	WBR	.14*
Clearance Interval				.10*		.10*

Note: Assumes Right-Turn Overlap for WBR

TOTAL CAPACITY UTILIZATION .65 .59

Existing plus Project Phase 1

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1600	10	.01	22	.01
NBT	1	1600	23	.01*	41	.03*
NBR	1	1600	65	.04	71	.04
SBL	1	1600	151	.09*	178	.11*
SBT	1	1600	43	.03	42	.03
SBR	1	1600	8	.01	17	.01
EBL	1	1600	31	.02*	42	.03*
EBT	1	1600	67	.05	103	.08
EBR	0	0	16		21	
WBL	1	1600	67	.04	52	.03
WBT	1	1600	131	.08*	173	.11*
WBR	1	1600	703	.44	467	.29
Right Turn Adjustment			WBR	.27*	WBR	.07*
Clearance Interval				.10*		.10*

Note: Assumes Right-Turn Overlap for WBR

TOTAL CAPACITY UTILIZATION .57 .45

2. Old Road & Sloan/Lake Hughes

2028 No Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1600	10	.01	20	.01
NBT	1	1600	30	.02*	50	.03*
NBR	1	1600	80	.05	70	.04
SBL	1	1600	230	.14*	220	.14*
SBT	1	1600	110	.07	90	.06
SBR	1	1600	120	.08	50	.03
EBL	1	1600	30	.02	50	.03*
EBT	1	1600	150	.11*	120	.09
EBR	0	0	20		20	
WBL	1	1600	50	.03*	40	.03
WBT	1	1600	90	.06	160	.10*
WBR	1	1600	450	.28	580	.36
Right Turn Adjustment		Multi	.03*	WBR	.12*	
Clearance Interval			.10*		.10*	

Note: Assumes Right-Turn Overlap for WBR

TOTAL CAPACITY UTILIZATION .43 .52

2028 With Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1600	10	.01	20	.01
NBT	1	1600	30	.02*	50	.03*
NBR	1	1600	100	.06	70	.04
SBL	1	1600	290	.18*	290	.18*
SBT	1	1600	110	.07	90	.06
SBR	1	1600	120	.08	50	.03
EBL	1	1600	30	.02	50	.03
EBT	1	1600	160	.11*	140	.10*
EBR	0	0	20		20	
WBL	1	1600	50	.03*	60	.04*
WBT	1	1600	130	.08	180	.11
WBR	1	1600	910	.57	910	.57
Right Turn Adjustment		Multi	.29*	WBR	.28*	
Clearance Interval			.10*		.10*	

Note: Assumes Right-Turn Overlap for WBR

TOTAL CAPACITY UTILIZATION .73 .73

3. I-5 NB On/Off Ramps & Lake Hughes

Existing (2015)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	61	{.04}*	259	{.16}*
NBT	1	1600	1	.04	1	.16
NBR	1	1600	109	.07	263	.16
SBL	0	0	0		0	
SBT	0	0	0		0	
SBR	0	0	0		0	
EBL	1	1600	18	.01*	17	.01*
EBT	2	3200	251	.08	213	.07
EBR	0	0	0		0	
WBL	0	0	0		0	
WBT	2	3200	393	.16*	261	.14*
WBR	0	0	118		188	
Clearance Interval				.10*		.10*

TOTAL CAPACITY UTILIZATION **.31** **.41**

Existing plus Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	61	{.04}*	259	{.16}*
NBT	1	1600	1	.04	1	.16
NBR	1	1600	362	.23	710	.44
SBL	0	0	0		0	
SBT	0	0	0		0	
SBR	0	0	0		0	
EBL	1	1600	18	.01*	17	.01*
EBT	2	3200	383	.12	471	.15
EBR	0	0	0		0	
WBL	0	0	0		0	
WBT	2	3200	1062	.39*	730	.31*
WBR	0	0	192		249	
Right Turn Adjustment					NBR	.15*
Clearance Interval				.10*		.10*

TOTAL CAPACITY UTILIZATION **.54** **.73**

Existing plus Project Phase 1

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	61	{.04}*	259	{.16}*
NBT	1	1600	1	.04	1	.16
NBR	1	1600	156	.10	605	.38
SBL	0	0	0		0	
SBT	0	0	0		0	
SBR	0	0	0		0	
EBL	1	1600	18	.01*	17	.01*
EBT	2	3200	270	.08	350	.11
EBR	0	0	0		0	
WBL	0	0	0		0	
WBT	2	3200	853	.32*	452	.21*
WBR	0	0	159		211	
Right Turn Adjustment					NBR	.14*
Clearance Interval				.10*		.10*

TOTAL CAPACITY UTILIZATION **.47** **.62**

3. I-5 NB Ramps & Lake Hughes

2028 No Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	70		420	
NBT	1	1600	10	.05*	10	.27*
NBR	1	1600	120	.08	270	.17
SBL	0	0	0		0	
SBT	0	0	0		0	
SBR	0	0	0		0	
EBL	1	1600	200	.13*	140	.09*
EBT	2	3200	260	.08	270	.08
EBR	0	0	0		0	
WBL	0	0	0		0	
WBT	2	3200	520	.21*	360	.19*
WBR	0	0	150		240	
Clearance Interval				.10*		.10*
TOTAL CAPACITY UTILIZATION				**.49**		**.65**

2028 With Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	70		420	
NBT	1	1600	10	.05*	10	.27*
NBR	1	1600	350	.22	680	.43
SBL	0	0	0		0	
SBT	0	0	0		0	
SBR	0	0	0		0	
EBL	1	1600	200	.13*	140	.09*
EBT	2	3200	350	.11	360	.11
EBR	0	0	0		0	
WBL	0	0	0		0	
WBT	2	3200	1020	.38*	730	.31*
WBR	0	0	200		270	
Clearance Interval				.10*		.10*
TOTAL CAPACITY UTILIZATION				**.66**		**.77**

2028 With Project + Mitigation

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1.5		70	.02*	420	{.16}*
NBT	0	4800	10		10	{.16}
NBR	1.5		350		680	
SBL	0	0	0		0	
SBT	0	0	0		0	
SBR	0	0	0		0	
EBL	1	1600	200	.13*	140	.09*
EBT	2	3200	350	.11	360	.11
EBR	0	0	0		0	
WBL	0	0	0		0	
WBT	2	3200	1020	.38*	730	.31*
WBR	0	0	200		270	
Clearance Interval				.10*		.10*
TOTAL CAPACITY UTILIZATION				**.63**		**.66**

4. Castaic & Lake Hughes

Existing (2015)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1600	133	.08*	217	.14*
NBT	2	3200	27	.01	46	.01
NBR	1	1600	23	.01	41	.03
SBL	1	1600	14	.01	31	.02
SBT	2	3200	24	.01*	42	.01*
SBR	1	1600	37	.02	99	.06
EBL	2	2880	81	.03*	107	.04
EBT	2	3200	152	.09	215	.11*
EBR	0	0	123		142	
WBL	1	1600	41	.03	20	.01*
WBT	2	3200	293	.09*	123	.04
WBR	1	1600	24	.02	31	.02
Clearance Interval				.10*		.10*
TOTAL CAPACITY UTILIZATION				**.31**		**.37**

Existing plus Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1600	133	.08*	217	.14*
NBT	2	3200	27	.01	46	.01
NBR	1	1600	94	.06	180	.11
SBL	1	1600	34	.02	71	.04
SBT	2	3200	24	.01*	42	.01*
SBR	1	1600	37	.02	99	.06
EBL	2	2880	81	.03*	107	.04
EBT	2	3200	537	.21	920	.33*
EBR	0	0	123		142	
WBL	1	1600	190	.12	126	.08*
WBT	2	3200	1037	.32*	653	.20
WBR	1	1600	61	.04	61	.04
Clearance Interval				.10*		.10*
TOTAL CAPACITY UTILIZATION				**.54**		**.66**

Existing plus Project Phase 1

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1600	133	.08*	217	.14*
NBT	2	3200	27	.01	46	.01
NBR	1	1600	33	.02	115	.07
SBL	1	1600	17	.01	52	.03
SBT	2	3200	24	.01*	42	.01*
SBR	1	1600	37	.02	99	.06
EBL	2	2880	81	.03*	107	.04
EBT	2	3200	218	.11	694	.26*
EBR	0	0	123		142	
WBL	1	1600	113	.07	60	.04*
WBT	2	3200	794	.25*	337	.11
WBR	1	1600	45	.03	43	.03
Clearance Interval				.10*		.10*
TOTAL CAPACITY UTILIZATION				**.47**		**.55**

4. Castaic & Lake Hughes

2028 No Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1600	140	.09*	220	.14*
NBT	2	3200	70	.02	60	.02
NBR	1	1600	20	.01	50	.03
SBL	1	1600	20	.01	40	.03
SBT	2	3200	40	.01*	40	.01*
SBR	1	1600	40	.03	100	.06
EBL	2	2880	80	.03*	110	.04*
EBT	2	3200	160	.09	220	.12
EBR	0	0	130		150	
WBL	1	1600	40	.03	20	.01
WBT	2	3200	420	.13*	280	.09*
WBR	1	1600	20	.01	30	.02
Right Turn Adjustment					SBR	.02*
Clearance Interval				.10*		.10*
TOTAL CAPACITY UTILIZATION				**.36**		**.40**

2028 With Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1600	140	.09*	220	.14*
NBT	2	3200	70	.02	60	.02
NBR	1	1600	20	.01	70	.04
SBL	1	1600	20	.01	40	.03
SBT	2	3200	40	.01*	40	.01*
SBR	1	1600	40	.03	100	.06
EBL	2	2880	80	.03*	110	.04
EBT	2	3200	480	.19	720	.27*
EBR	0	0	130		150	
WBL	1	1600	190	.12	20	.01*
WBT	2	3200	970	.30*	690	.22
WBR	1	1600	20	.01	30	.02
Clearance Interval				.10*		.10*
TOTAL CAPACITY UTILIZATION				**.53**		**.53**

5. Ridge Route & Lake Hughes

Existing (2015)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1600	10	.01*	27	.02*
NBT	2	3200	165	.06	83	.04
NBR	0	0	12		33	
SBL	1	1600	1	.00	4	.00
SBT	2	3200	241	.08*	80	.03*
SBR	1	1600	194	.12	34	.02
EBL	1	1600	183	.11*	51	.03*
EBT	2	3200	13	.00	16	.01
EBR	d	1600	17	.01	25	.02
WBL	1	1600	12	.01	17	.01
WBT	2	3200	15	.01*	28	.01*
WBR	0	0	3		5	
Clearance Interval				.10*		.10*

TOTAL CAPACITY UTILIZATION **.31** **.19**

Existing plus Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1600	10	.01*	27	.02
NBT	2	3200	479	.15	749	.24*
NBR	0	0	12		33	
SBL	1	1600	1	.00	4	.00
SBT	2	3200	873	.27*	519	.16
SBR	1	1600	1142	.71	715	.45
EBL	1	1600	669	.42*	955	.60*
EBT	2	3200	13	.00	16	.01
EBR	d	1600	17	.01	25	.02
WBL	1	1600	12	.01	17	.01
WBT	2	3200	15	.01*	28	.01*
WBR	0	0	3		5	
Right Turn Adjustment		SBR		.13*		
Clearance Interval				.10*		.10*

TOTAL CAPACITY UTILIZATION **.94** **.95**

Existing plus Project with Mitigation

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1600	10	.01*	27	.02
NBT	2	3200	479	.15	749	.23*
NBR	1	1600	12	.01	33	.02
SBL	1	1600	1	.00	4	.00
SBT	2	3200	873	.27*	519	.16
SBR	1	1600	1142	.71	715	.45
EBL	2	2880	669	.23*	955	.33*
EBT	1	1600	13	.01	16	.01
EBR	1	1600	17	.01	25	.02
WBL	1	1600	12	.01	17	.01
WBT	2	3200	15	.00*	28	.01*
WBR	1	1600	3	.00	5	.00
Right Turn Adjustment		SBR		.21*		
Clearance Interval				.10*		.10*

Note: Assumes Right-Turn Overlap for SBR

TOTAL CAPACITY UTILIZATION **.82** **.67**

Existing plus Project Phase 1

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1600	10	.01*	27	.02
NBT	2	3200	198	.07	319	.11*
NBR	0	0	12		33	
SBL	1	1600	1	.00	4	.00
SBT	2	3200	440	.14*	259	.08
SBR	1	1600	798	.50	305	.19
EBL	1	1600	264	.17*	635	.40*
EBT	2	3200	13	.00	16	.01
EBR	d	1600	17	.01	25	.02
WBL	1	1600	12	.01	17	.01
WBT	2	3200	15	.01*	28	.01*
WBR	0	0	3		5	
Right Turn Adjustment		SBR		.23*		
Clearance Interval				.10*		.10*

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

5. Ridge Route & Lake Hughes

2028 No Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1600	40	.03*	50	.03
NBT	2	3200	210	.08	100	.06*
NBR	0	0	40		100	
SBL	1	1600	10	.01	10	.01*
SBT	2	3200	300	.09*	100	.03
SBR	1	1600	240	.15	40	.03
EBL	1	1600	230	.14*	70	.04*
EBT	2	3200	10	.00	70	.02
EBR	d	1600	110	.07	50	.03
WBL	1	1600	80	.05	70	.04
WBT	2	3200	120	.04*	120	.04*
WBR	0	0	10		10	
Clearance Interval				.10*		.10*

TOTAL CAPACITY UTILIZATION **.40** **.25**

2028 With Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1600	40	.03*	50	.03
NBT	2	3200	630	.21	840	.29*
NBR	0	0	40		100	
SBL	1	1600	30	.02	30	.02*
SBT	2	3200	1150	.36*	700	.22
SBR	1	1600	970	.61	560	.35
EBL	1	1600	610	.38*	910	.57*
EBT	2	3200	10	.00	70	.02
EBR	d	1600	110	.07	50	.03
WBL	1	1600	80	.05	70	.04
WBT	2	3200	120	.05*	120	.05*
WBR	0	0	30		30	
Clearance Interval				.10*		.10*

TOTAL CAPACITY UTILIZATION **.92** **1.03**

2028 With Project + Mitigation

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1600	40	.03*	50	.03
NBT	2	3200	630	.20	840	.26*
NBR	1	1600	40	.03	100	.06
SBL	1	1600	30	.02	30	.02*
SBT	2	3200	1150	.36*	700	.22
SBR	1	1600	970	.61	560	.35
EBL	2	2880	610	.21*	910	.32*
EBT	1	1600	10	.01	70	.04
EBR	1	1600	110	.07	50	.03
WBL	1	1600	80	.05	70	.04
WBT	2	3200	120	.04*	120	.04*
WBR	1	1600	30	.02	30	.02
Right Turn Adjustment			SBR	.04*		
Clearance Interval				.10*		.10*

Note: Assumes Right-Turn Overlap for SBR

TOTAL CAPACITY UTILIZATION **.78** **.74**

6. Old Road & Parker

Existing (2015)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1600	55	.03	48	.03
NBT	1	1600	72	.10*	69	.09*
NBR	0	0	84		73	
SBL	1	1600	37	.02*	34	.02*
SBT	1	1600	86	.05	62	.04
SBR	d	1600	3	.00	16	.01
EBL	0	0	5		8	
EBT	1	1600	275	.18*	127	.08
EBR	1	1600	73	.05	27	.02
WBL	0	0	88	{.05}*	77	
WBT	1	1600	73	.11	215	.21*
WBR	0	0	14		50	
Clearance Interval				.10*		.10*
TOTAL CAPACITY UTILIZATION				**.45**		**.42**

Existing plus Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1600	55	.03	48	.03
NBT	1	1600	82	.12*	89	.13*
NBR	0	0	104		113	
SBL	1	1600	37	.02*	34	.02*
SBT	1	1600	105	.07	77	.05
SBR	d	1600	22	.01	31	.02
EBL	0	0	15		28	{.02}*
EBT	1	1600	285	.19*	147	.11
EBR	1	1600	73	.05	27	.02
WBL	0	0	125	{.08}*	107	
WBT	1	1600	92	.14	230	.24*
WBR	0	0	14		50	
Clearance Interval				.10*		.10*
TOTAL CAPACITY UTILIZATION				**.51**		**.51**

Existing plus Project Phase 1

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1600	55	.03	48	.03
NBT	1	1600	73	.10*	80	.11*
NBR	0	0	87		94	
SBL	1	1600	37	.02*	34	.02*
SBT	1	1600	96	.06	68	.04
SBR	d	1600	13	.01	22	.01
EBL	0	0	6		19	{.01}*
EBT	1	1600	276	.18*	138	.10
EBR	1	1600	73	.05	27	.02
WBL	0	0	109	{.07}*	89	
WBT	1	1600	83	.13	221	.23*
WBR	0	0	14		50	
Clearance Interval				.10*		.10*
TOTAL CAPACITY UTILIZATION				**.47**		**.47**

6. Old Road & Parker

2028 No Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1600	60	.04	50	.03
NBT	1	1600	80	.11*	80	.15*
NBR	0	0	100		160	
SBL	1	1600	40	.03*	40	.03*
SBT	1	1600	120	.08	60	.04
SBR	d	1600	10	.01	40	.03
EBL	0	0	20		10	{.01}*
EBT	1	1600	310	.21*	400	.26
EBR	1	1600	80	.05	30	.02
WBL	0	0	110	{.07}*	120	
WBT	1	1600	290	.26	450	.39*
WBR	0	0	20		60	
Clearance Interval				.10*		.10*
TOTAL CAPACITY UTILIZATION				**.52**		**.68**

2028 With Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1600	60	.04	50	.03
NBT	1	1600	80	.12*	80	.17*
NBR	0	0	110		190	
SBL	1	1600	40	.03*	40	.03*
SBT	1	1600	120	.08	60	.04
SBR	d	1600	10	.01	60	.04
EBL	0	0	30	{.02}*	10	{.01}*
EBT	1	1600	310	.21	410	.26
EBR	1	1600	80	.05	30	.02
WBL	0	0	130		130	
WBT	1	1600	290	.28*	450	.40*
WBR	0	0	20		60	
Clearance Interval				.10*		.10*
TOTAL CAPACITY UTILIZATION				**.55**		**.71**

7. I-5 SB On Ramp & Parker

Existing (2015)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	0	0	0		0	
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	0	0	0		0	
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	1	1600	145	.25*	138	.16
EBR	0	0	262		116	
WBL	0	0	399	{.25}*	327	
WBT	1	1600	167	.35	352	.42*
WBR	0	0	0		0	
Clearance Interval				.10*		.10*
TOTAL CAPACITY UTILIZATION				**.60**		**.52**

Existing plus Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	0	0	0		0	
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	0	0	0		0	
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	1	1600	175	.27*	198	.20
EBR	0	0	262		116	
WBL	0	0	994	{.62}*	736	
WBT	1	1600	223	.76	397	.71*
WBR	0	0	0		0	
Clearance Interval				.10*		.10*
TOTAL CAPACITY UTILIZATION				**.99**		**.81**

Existing plus Project with Mitigation

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	0	0	0		0	
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	0	0	0		0	
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	1	1600	175	.11*	198	.12*
EBR	1	1600	262	.16	116	.07
WBL	2	2880	994	.35*	736	.26*
WBT	1	1600	223	.14	397	.25
WBR	0	0	0		0	
Right Turn Adjustment			EBR	.05*		
Clearance Interval				.10*		.10*
TOTAL CAPACITY UTILIZATION				**.61**		**.48**

Existing plus Project Phase 1

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	0	0	0		0	
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	0	0	0		0	
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	1	1600	149	.26*	170	.18
EBR	0	0	262		116	
WBL	0	0	578	{.36}*	494	
WBT	1	1600	198	.49	369	.54*
WBR	0	0	0		0	
Clearance Interval				.10*		.10*
TOTAL CAPACITY UTILIZATION				**.72**		**.64**

7. I-5 SB Ramp & Parker

2028 No Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	0	0	0		0	
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	0	0	0		0	
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	1	1600	180	.29*	280	.38
EBR	0	0	280		330	
WBL	0	0	600	{.37}*	650	
WBT	1	1600	420	.64	630	.80*
WBR	0	0	0		0	
Clearance Interval				.10*		.10*

TOTAL CAPACITY UTILIZATION .76 .90

2028 With Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	0	0	0		0	
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	0	0	0		0	
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	1	1600	190	.29*	330	.41*
EBR	0	0	280		330	
WBL	0	0	1130	{.71}*	1040	{.65}*
WBT	1	1600	450	.99	630	1.04
WBR	0	0	0		0	
Clearance Interval				.10*		.10*

TOTAL CAPACITY UTILIZATION 1.10 1.16

2028 With Project + Mitigation

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	0	0	0		0	
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	0	0	0		0	
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	1	1600	190	.12*	330	.21*
EBR	1	1600	280	.18	330	.21
WBL	2	2880	1130	.39*	1040	.36*
WBT	1	1600	450	.28	630	.39
WBR	0	0	0		0	
Right Turn Adjustment			EBR	.06*		
Clearance Interval				.10*		.10*

TOTAL CAPACITY UTILIZATION .67 .67

8. I-5 NB Ramps & Ridge Route

Existing (2015)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1600	59	.04*	205	.13*
NBT	0	0	0		0	
NBR	1	1600	241	.15	491	.31
SBL	0	0	0		0	
SBT	0	0	0		0	
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	1	1600	144	.09	138	.09
EBR	0	0	0		0	
WBL	0	0	0		0	
WBT	1	1600	512	.32*	472	.29*
WBR	0	0	0		0	
Right Turn Adjustment					NBR	.03*
Clearance Interval				.10*		.10*
TOTAL CAPACITY UTILIZATION				**.46**		**.55**

Existing plus Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1600	59	.04*	205	.13*
NBT	0	0	0		0	
NBR	1	1600	535	.33	1117	.70
SBL	0	0	0		0	
SBT	0	0	0		0	
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	1	1600	174	.11	198	.12
EBR	0	0	0		0	
WBL	0	0	0		0	
WBT	1	1600	1163	.73*	926	.58*
WBR	0	0	0		0	
Right Turn Adjustment					NBR	.22*
Clearance Interval				.10*		.10*
TOTAL CAPACITY UTILIZATION				**.87**		**1.03**

Existing plus Project with Mitigation

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1600	59	.04*	205	.13*
NBT	0	0	0		0	
NBR	2	3200	535	.17	1117	.35
SBL	0	0	0		0	
SBT	0	0	0		0	
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	1	1600	174	.11	198	.12
EBR	0	0	0		0	
WBL	0	0	0		0	
WBT	2	3200	1163	.36*	926	.29*
WBR	0	0	0		0	
Right Turn Adjustment					NBR	.09*
Clearance Interval				.10*		.10*
TOTAL CAPACITY UTILIZATION				**.50**		**.61**

Existing plus Project Phase 1

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1600	59	.04*	205	.13*
NBT	0	0	0		0	
NBR	1	1600	271	.17	706	.44
SBL	0	0	0		0	
SBT	0	0	0		0	
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	1	1600	148	.09	170	.11
EBR	0	0	0		0	
WBL	0	0	0		0	
WBT	1	1600	721	.45*	657	.41*
WBR	0	0	0		0	
Right Turn Adjustment					NBR	.08*
Clearance Interval				.10*		.10*
TOTAL CAPACITY UTILIZATION				**.59**		**.72**

8. I-5 NB Ramp & Ridge Route

2028 No Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1600	230	.14*	400	.25*
NBT	0	0	0		0	
NBR	1	1600	590	.37	1010	.63
SBL	0	0	0		0	
SBT	0	0	0		0	
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	1	1600	180	.11	280	.18
EBR	0	0	0		0	
WBL	0	0	0		0	
WBT	1	1600	790	.49*	880	.55*
WBR	0	0	0		0	
Right Turn Adjustment					NBR	.10*
Clearance Interval				.10*		.10*
TOTAL CAPACITY UTILIZATION				**.73**		**1.00**

2028 With Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1600	230	.14*	400	.25*
NBT	0	0	0		0	
NBR	1	1600	860	.54	1590	.99
SBL	0	0	0		0	
SBT	0	0	0		0	
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	1	1600	190	.12	330	.21
EBR	0	0	0		0	
WBL	0	0	0		0	
WBT	1	1600	1360	.85*	1270	.79*
WBR	0	0	0		0	
Right Turn Adjustment					NBR	.30*
Clearance Interval				.10*		.10*
TOTAL CAPACITY UTILIZATION				**1.09**		**1.44**

2028 With Project + Mitigation

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1600	230	.14*	400	.25*
NBT	0	0	0		0	
NBR	2	3200	860	.27	1590	.50
SBL	0	0	0		0	
SBT	0	0	0		0	
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	1	1600	190	.12	330	.21
EBR	0	0	0		0	
WBL	0	0	0		0	
WBT	3	4800	1360	.28*	1270	.26*
WBR	0	0	0		0	
Right Turn Adjustment			NBR	.01*	NBR	.21*
Clearance Interval				.10*		.10*
TOTAL CAPACITY UTILIZATION				**.53**		**.82**

9. Castaic & Ridge Route

Existing (2015)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1600	42	.03*	145	.09*
NBT	1	1600	18	.01	46	.03
NBR	1	1600	4	.00	18	.01
SBL	1	1600	9	.01	18	.01
SBT	1	1600	12	.01*	38	.02*
SBR	1	1600	131	.08	148	.09
EBL	1	1600	124	.08*	227	.14*
EBT	2	3200	223	.08	244	.12
EBR	0	0	25		148	
WBL	1	1600	17	.01	16	.01
WBT	2	3200	315	.10*	150	.06*
WBR	0	0	14		28	
Right Turn Adjustment			SBR	.01*		
Clearance Interval				.10*		.10*
TOTAL CAPACITY UTILIZATION				**.33**		**.41**

Existing plus Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1600	42	.03*	145	.09*
NBT	1	1600	33	.02	76	.05
NBR	1	1600	19	.01	48	.03
SBL	1	1600	9	.01	18	.01
SBT	1	1600	40	.03*	68	.04*
SBR	1	1600	252	.16	224	.14
EBL	1	1600	180	.11*	336	.21*
EBT	2	3200	491	.16	821	.30
EBR	0	0	25		148	
WBL	1	1600	45	.03	31	.02
WBT	2	3200	845	.27*	543	.18*
WBR	0	0	14		28	
Right Turn Adjustment			SBR	.05*		
Clearance Interval				.10*		.10*
TOTAL CAPACITY UTILIZATION				**.59**		**.62**

Existing plus Project Phase 1

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1600	42	.03*	145	.09*
NBT	1	1600	20	.01	62	.04
NBR	1	1600	6	.00	34	.02
SBL	1	1600	9	.01	18	.01
SBT	1	1600	27	.02*	47	.03*
SBR	1	1600	188	.12	180	.11
EBL	1	1600	132	.08*	285	.18*
EBT	2	3200	249	.09	432	.18
EBR	0	0	25		148	
WBL	1	1600	32	.02	25	.02
WBT	2	3200	468	.15*	303	.10*
WBR	0	0	14		28	
Right Turn Adjustment			SBR	.04*		
Clearance Interval				.10*		.10*
TOTAL CAPACITY UTILIZATION				**.42**		**.50**

9. Castaic & Ridge Route

2028 No Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1600	80	.05*	220	.14*
NBT	1	1600	20	.01	50	.03
NBR	1	1600	20	.01	40	.03
SBL	1	1600	10	.01	20	.01
SBT	1	1600	10	.01*	40	.03*
SBR	1	1600	200	.13	180	.11
EBL	1	1600	170	.11*	290	.18
EBT	2	3200	560	.18	750	.31*
EBR	0	0	30		230	
WBL	1	1600	30	.02	60	.04*
WBT	2	3200	460	.15*	470	.16
WBR	0	0	10		30	
Right Turn Adjustment			SBR	.04*		
Clearance Interval				.10*		.10*
TOTAL CAPACITY UTILIZATION				**.46**		**.62**

2028 With Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1600	80	.05*	220	.14*
NBT	1	1600	20	.01	70	.04
NBR	1	1600	40	.03	40	.03
SBL	1	1600	10	.01	20	.01
SBT	1	1600	10	.01*	40	.03*
SBR	1	1600	350	.22	180	.11
EBL	1	1600	170	.11*	290	.18
EBT	2	3200	890	.29	1410	.51*
EBR	0	0	30		230	
WBL	1	1600	60	.04	90	.06*
WBT	2	3200	910	.29*	900	.29
WBR	0	0	10		30	
Right Turn Adjustment			SBR	.13*		
Clearance Interval				.10*		.10*
TOTAL CAPACITY UTILIZATION				**.69**		**.84**

2028 With Project + Mitigation

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	2880	80	.03*	220	.08*
NBT	1	1600	20	.01	70	.04
NBR	1	1600	40	.03	40	.03
SBL	1	1600	10	.01	20	.01
SBT	1	1600	10	.01*	40	.03*
SBR	1	1600	350	.22	180	.11
EBL	1	1600	170	.11*	290	.18
EBT	2	3200	890	.28	1410	.44*
EBR	1	1600	30	.02	230	.14
WBL	1	1600	60	.04	90	.06*
WBT	2	3200	910	.29*	900	.29
WBR	0	0	10		30	
Right Turn Adjustment			SBR	.10*		
Clearance Interval				.10*		.10*
Note: Assumes Right-Turn Overlap for SBR						
TOTAL CAPACITY UTILIZATION				**.64**		**.71**

Appendix B ICU WORKSHEET ON SITE

10. Ridge Route & B st

On-Site (Buildout)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	2	3200	830	.26	1300	.41*
NBR	1	1600	40	.03	370	.23
SBL	1	1600	10	.01	10	.01*
SBT	2	3200	1350	.42*	970	.30
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	2	2880	360	.13*	160	.06*
WBT	0	0	0		0	
WBR	1	1600	10	.01	10	.01
Clearance Interval				.10*		.10*
TOTAL CAPACITY UTILIZATION				**.65**		**.58**

11. Ridge Route & Northlake

On-Site (Buildout)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	1	1600	10	.01*	30	.02*
NBR	2(f)		630		1190	
SBL	1	1600	10	.01*	10	.01*
SBT	2	3200	30	.01	20	.01
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	2	2880	1260	.44*	740	.26*
WBT	0	0	0		0	
WBR	1	1600	10	.01	10	.01
Clearance Interval				.10*		.10*
TOTAL CAPACITY UTILIZATION				**.56**		**.39**

12. Northlake & A St

On-Site (Buildout)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	2	3200	460	.20	880	.36*
NBR	0	0	170		270	
SBL	1	1600	10	.01	10	.01*
SBT	2	3200	1000	.31*	500	.16
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	1	1600	260	.16*	200	.13*
WBT	0	0	0		0	
WBR	1	1600	20	.01	10	.01
Clearance Interval				.10*		.10*
TOTAL CAPACITY UTILIZATION				**.57**		**.60**

13. B st & A St

On-Site (Buildout)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	20		10	
NBT	1	1600	0	.02*	0	.11*
NBR	0	0	10		170	
SBL	0	0	0		0	
SBT	0	0	0		0	
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	1	1600	170	.11	280	.18*
EBR	0	0	10		10	
WBL	0	0	160		60	{.04}*
WBT	1	1600	260	.26*	210	.17
WBR	0	0	0		0	
Clearance Interval				.10*		.10*
TOTAL CAPACITY UTILIZATION				**.38**		**.43**

14. H St & A St

On-Site (Buildout)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	0	0	0		0	
NBR	0	0	0		0	
SBL	0	0	10		10	
SBT	1	1600	0	.01*	0	.01*
SBR	0	0	10		10	
EBL	0	0	10	{.01}*	10	
EBT	1	1600	170	.11	450	.29*
EBR	0	0	0		0	
WBL	0	0	0		0	
WBT	1	1600	420	.27*	270	.18
WBR	0	0	10		10	
Clearance Interval				.10*		.10*

TOTAL CAPACITY UTILIZATION .39 .40

15. Northlake & AA St

On-Site (Buildout)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	20		40	
NBT	1	1600	10	.03*	10	.04*
NBR	0	0	10		10	
SBL	0	0	10	{.01}*	10	{.01}*
SBT	1	1600	10	.02	10	.02
SBR	0	0	10		10	
EBL	0	0	10		10	
EBT	1	1600	10	.04*	10	.03*
EBR	0	0	40		20	
WBL	0	0	30	{.02}*	10	{.01}*
WBT	1	1600	10	.03	10	.02
WBR	0	0	10		10	
Clearance Interval				.10*		.10*

TOTAL CAPACITY UTILIZATION .20 .19

16. Ridge Route & AA St

On-Site (Buildout)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	1	1600	10	.01*	10	.03*
NBR	0	0	10		30	
SBL	0	0	10	{.01}*	10	{.01}*
SBT	1	1600	10	.01	10	.01
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	0	0	30		20	
WBT	1	1600	0	.03*	0	.02*
WBR	0	0	10		10	
Clearance Interval				.10*		.10*

TOTAL CAPACITY UTILIZATION .15 .16

17. Northlake & E St

On-Site (Buildout)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	1	1600	370	.29*	300	.41*
NBR	0	0	100		350	
SBL	0	0	10	{.01}*	10	{.01}*
SBT	1	1600	440	.28	190	.13
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	0	0	310		200	
WBT	1	1600	0	.20*	0	.13*
WBR	0	0	10		10	
Clearance Interval				.10*		.10*

TOTAL CAPACITY UTILIZATION .60 .65

18. H St & E St

On-Site (Buildout)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	10	{.01}*	10	{.01}*
NBT	1	1600	0	.01	0	.01
NBR	0	0	10		10	
SBL	0	0	0		0	
SBT	0	0	0		0	
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	1	1600	100	.07	350	.23*
EBR	0	0	10		10	
WBL	0	0	10		10	{.01}*
WBT	1	1600	310	.20*	200	.13
WBR	0	0	0		0	
Clearance Interval				.10*		.10*
TOTAL CAPACITY UTILIZATION				**.31**		**.35**

19. A St & D St

On-Site (Buildout)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	20	{.01}*	120	
NBT	1	1600	100	.09	240	.23*
NBR	0	0	20		10	
SBL	0	0	10		10	{.01}*
SBT	1	1600	170	.12*	130	.09
SBR	0	0	10		10	
EBL	0	0	10		10	
EBT	1	1600	10	.10*	10	.06*
EBR	0	0	140		80	
WBL	0	0	20	{.01}*	10	{.01}*
WBT	1	1600	10	.03	10	.02
WBR	0	0	10		10	
Clearance Interval				.10*		.10*
TOTAL CAPACITY UTILIZATION				**.34**		**.41**

20. A St & G St

On-Site (Buildout)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	1	1600	130	.09	360	.28*
NBR	0	0	20		90	
SBL	0	0	10		10	{.01}*
SBT	1	1600	320	.21*	210	.14
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	0	0	80		50	
WBT	1	1600	0	.06*	0	.04*
WBR	0	0	10		10	
Clearance Interval				.10*		.10*
TOTAL CAPACITY UTILIZATION				**.37**		**.43**

21. B St & P St

On-Site (Buildout)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	1	1600	10	.03	170	.24*
NBR	0	0	40		210	
SBL	0	0	10		10	{.01}*
SBT	1	1600	160	.11*	60	.04
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	0	0	210		110	
WBT	1	1600	0	.14*	0	.08*
WBR	0	0	20		10	
Clearance Interval				.10*		.10*
TOTAL CAPACITY UTILIZATION				**.35**		**.43**

22. Ridge Route & SS St

On-Site (Buildout)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1600	220	.14*	140	.09
NBT	2	3200	620	.19	1170	.37*
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3200	1280	.40*	640	.20
SBR	1	1600	10	.01	120	.08
EBL	1	1600	20	.01*	50	.03*
EBT	0	0	0		0	
EBR	1	1600	80	.05	340	.21
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Right Turn Adjustment					EBR	.05*
Clearance Interval				.10*		.10*

TOTAL CAPACITY UTILIZATION .65 .55

23. D St & E St

On-Site (Buildout)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	10	{.01}*	10	{.01}*
NBT	1	1600	10	.02	10	.02
NBR	0	0	10		10	
SBL	0	0	10		10	
SBT	1	1600	10	.12*	10	.09*
SBR	0	0	170		120	
EBL	0	0	40	{.02}*	100	
EBT	1	1600	60	.07	240	.23*
EBR	0	0	10		20	
WBL	0	0	10		10	{.01}*
WBT	1	1600	140	.10*	80	.06
WBR	0	0	10		10	
Clearance Interval				.10*		.10*

TOTAL CAPACITY UTILIZATION .35 .44

24. A St & E St

On-Site (Buildout)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	20	{.01}*	10	{.01}*
NBT	1	1600	20	.03	10	.01
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	1	1600	10	.09*	10	.06*
SBR	0	0	140		90	
EBL	0	0	60		240	
EBT	1	1600	0	.05*	0	.16*
EBR	0	0	20		20	
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.10*		.10*

TOTAL CAPACITY UTILIZATION .25 .33

Appendix C TRAFFIC COUNT WORKSHEETS

Transportation Studies, Inc.
2640 Walnut Avenue, Suite H
Tustin, CA. 9278

City: SANTA CLARITA
N-S- Direction: THE OLD ROAD
E-W Direction: I-5 SB RAMPS

File Name : h1501003
Site Code : 00000000
Start Date : 1/27/2015
Page No : 1

Groups Printed- Turning Movements

	THE OLD ROAD Southbound			I-5 SB RAMPS Westbound			THE OLD ROAD Northbound			DRIVEWAY Eastbound			
Start Time	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Int. Total
07:00	0	26	42	3	0	23	53	18	0	0	0	0	165
07:15	0	18	44	0	0	28	74	11	0	0	0	0	175
07:30	0	31	52	0	0	25	73	22	0	1	0	0	204
07:45	1	37	35	0	0	27	84	38	0	2	0	0	224
Total	1	112	173	3	0	103	284	89	0	3	0	0	768
08:00	0	24	27	0	0	28	66	36	0	0	0	0	181
08:15	2	13	40	0	0	22	49	30	0	0	0	0	156
08:30	0	23	31	0	0	29	42	19	0	1	0	0	145
08:45	0	9	23	0	0	21	41	19	0	0	0	0	113
Total	2	69	121	0	0	100	198	104	0	1	0	0	595
16:00	0	13	9	1	0	38	40	43	0	0	0	0	144
16:15	1	5	11	0	0	32	34	61	0	1	1	0	146
16:30	1	19	20	0	0	23	39	60	0	0	0	0	162
16:45	2	21	24	0	0	30	46	71	0	0	0	0	194
Total	4	58	64	1	0	123	159	235	0	1	1	0	646
17:00	0	11	20	1	0	19	46	78	0	1	0	0	176
17:15	3	23	10	1	0	28	45	60	0	3	0	0	173
17:30	1	17	26	1	0	31	44	64	0	3	0	0	187
17:45	0	19	19	0	0	26	33	72	0	2	0	0	171
Total	4	70	75	3	0	104	168	274	0	9	0	0	707
Grand Total	11	309	433	7	0	430	809	702	0	14	1	0	2716
Apprch %	1.5	41	57.5	1.6	0	98.4	53.5	46.5	0	93.3	6.7	0	
Total %	0.4	11.4	15.9	0.3	0	15.8	29.8	25.8	0	0.5	0	0	

Transportation Studies, Inc.

2640 Walnut Avenue, Suite H
Tustin, CA. 92780

Location : RIDGE ROUTE ROAD
Segment : N/O CASTAIC LAKE
Client : STANTEC

Site: SANTA CLARIT
Date: 01/28/15

Day: Wednesday

Interval	NB				SB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	3	9	18	116	2	5	16	88	5	14	34	204
12:15	1		17		0		18		1		35	
12:30	4		35		2		16		6		51	
12:45	1		46		1		38		2		84	
01:00	2	8	60	269	0	1	24	289	2	9	84	558
01:15	2		79		0		17		2		96	
01:30	1		81		1		150		2		231	
01:45	3		49		0		98		3		147	
02:00	0	1	32	118	1	3	36	129	1	4	68	247
02:15	0		23		1		29		1		52	
02:30	1		31		1		20		2		51	
02:45	0		32		0		44		0		76	
03:00	2	3	26	113	1	9	36	127	3	12	62	240
03:15	0		30		1		33		1		63	
03:30	0		19		2		30		2		49	
03:45	1		38		5		28		6		66	
04:00	0	1	35	114	3	18	23	107	3	19	58	221
04:15	0		25		4		34		4		59	
04:30	1		24		5		17		6		41	
04:45	0		30		6		33		6		63	
05:00	1	8	35	143	6	52	20	76	7	60	55	219
05:15	1		34		12		16		13		50	
05:30	0		38		18		15		18		53	
05:45	6		36		16		25		22		61	
06:00	6	30	35	125	23	103	15	53	29	133	50	178
06:15	4		35		21		18		25		53	
06:30	10		34		32		8		42		42	
06:45	10		21		27		12		37		33	
07:00	26	352	28	94	29	397	9	30	55	749	37	124
07:15	50		25		62		9		112		34	
07:30	139		19		128		3		267		22	
07:45	137		22		178		9		315		31	
08:00	33	97	23	65	61	152	10	36	94	249	33	101
08:15	28		14		32		6		60		20	
08:30	19		18		38		9		57		27	
08:45	17		10		21		11		38		21	
09:00	19	70	22	57	30	71	4	19	49	141	26	76
09:15	14		11		8		6		22		17	
09:30	19		14		15		4		34		18	
09:45	18		10		18		5		36		15	
10:00	12	59	11	27	28	81	4	12	40	140	15	39
10:15	7		6		13		5		20		11	
10:30	15		5		22		2		37		7	
10:45	25		5		18		1		43		6	
11:00	22	101	3	11	25	114	3	9	47	215	6	20
11:15	34		1		39		1		73		2	
11:30	18		5		32		4		50		9	
11:45	27		2		18		1		45		3	
Totals	739		1.252		1.006		975		1.745		2.227	
Split%	42.3		56.2		57.7		43.8					
Day Totals		1,991				1,981				3,972		
Day Splits		50.1				49.9						
Peak Hour	07:15		01:00		07:15		01:30		07:15		01:00	
Volume	359		269		429		313		788		558	
Factor	0.65		0.83		0.60		0.52		0.63		0.60	

* Data File : D1501039

Printed : 2/3/2015

Transportation Studies, Inc.

2640 Walnut Avenue, Suite H
Tustin, CA. 92780

Location: : RIDGE ROUTE ROAD
Segment: : N/O LAKE HUGHES ROAD
Client: : STANTEC

Site: SANTA CLARIT
Date: 01/28/15

Day: Wednesday

Interval	NB				SB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	4	12	22	126	3	7	21	103	7	19	43	229
12:15	1		23		0		22		1		45	
12:30	3		34		2		20		5		54	
12:45	4		47		2		40		6		87	
01:00	2	7	65	295	1	3	36	307	3	10	101	602
01:15	2		88		0		23		2		111	
01:30	1		78		2		106		3		184	
01:45	2		64		0		142		2		206	
02:00	1	2	34	125	0	3	52	151	1	5	86	276
02:15	0		20		1		29		1		49	
02:30	1		32		2		26		3		58	
02:45	0		39		0		44		0		83	
03:00	2	3	29	126	0	7	46	144	2	10	75	270
03:15	0		31		2		34		2		65	
03:30	0		21		2		39		2		60	
03:45	1		45		3		25		4		70	
04:00	0	2	35	123	5	17	26	125	5	19	61	248
04:15	0		29		2		38		2		67	
04:30	2		24		4		29		6		53	
04:45	0		35		6		32		6		67	
05:00	1	26	37	148	7	54	21	81	8	80	58	229
05:15	6		35		11		18		17		53	
05:30	6		38		20		24		26		62	
05:45	13		38		16		18		29		56	
06:00	14	62	35	128	21	108	21	82	35	170	56	210
06:15	15		35		27		26		42		61	
06:30	16		34		32		21		48		55	
06:45	17		24		28		14		45		38	
07:00	28	367	26	91	26	354	15	51	54	721	41	142
07:15	54		26		52		16		106		42	
07:30	131		18		116		8		247		26	
07:45	154		21		160		12		314		33	
08:00	37	112	24	70	124	219	4	29	161	331	28	99
08:15	31		14		35		9		66		23	
08:30	24		18		30		9		54		27	
08:45	20		14		30		7		50		21	
09:00	25	85	20	61	27	81	5	27	52	166	25	88
09:15	17		16		20		10		37		26	
09:30	20		12		13		2		33		14	
09:45	23		13		21		10		44		23	
10:00	20	69	12	33	26	95	10	30	46	164	22	63
10:15	10		7		22		14		32		21	
10:30	17		8		23		6		40		14	
10:45	22		6		24		0		46		6	
11:00	32	121	3	12	22	132	1	8	54	253	4	20
11:15	34		2		32		0		66		2	
11:30	22		5		50		4		72		9	
11:45	33		2		28		3		61		5	
Totals	868		1.338		1.080		1.138		1.948		2.476	
Split%	44.6		54.0		55.4		46.0					
Day Totals		2,206				2,218				4,424		
Day Splits		49.9				50.1						
Peak Hour	07:15		01:00		07:15		01:30		07:15		01:00	
Volume	376		295		452		329		828		602	
Factor	0.61		0.84		0.71		0.58		0.66		0.73	

Data File : D1501040

Printed : 2/3/2015

Transportation Studies, Inc.

2640 Walnut Avenue, Suite H
Tustin, CA. 92780

Location : RIDGE ROUTE ROAD
Segment : N/O CASTAIC
Client : STANTEC

Site: SANTA CLARIT
Date: 01/28/15

Day: Wednesday

Interval	SB				NB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	3	9	34	144	8	26	26	146	11	35	60	290
12:15	2		31		4		42		6		73	
12:30	1		35		7		44		8		79	
12:45	3		44		7		34		10		78	
01:00	2	3	41	177	3	10	43	209	5	13	84	386
01:15	0		32		2		65		2		97	
01:30	1		44		2		51		3		95	
01:45	0		60		3		50		3		110	
02:00	2	14	52	195	1	9	44	165	3	23	96	360
02:15	8		52		2		37		10		89	
02:30	3		55		1		32		4		87	
02:45	1		36		5		52		6		88	
03:00	4	20	60	182	3	14	43	186	7	34	103	368
03:15	1		34		3		44		4		78	
03:30	6		52		6		46		12		98	
03:45	9		36		2		53		11		89	
04:00	6	47	41	185	3	18	63	219	9	65	104	404
04:15	7		50		1		39		8		89	
04:30	12		38		8		55		20		93	
04:45	22		56		6		62		28		118	
05:00	25	134	45	158	0	32	60	223	25	166	105	381
05:15	25		40		5		54		30		94	
05:30	42		37		10		55		52		92	
05:45	42		36		17		54		59		90	
06:00	36	184	41	153	24	88	48	193	60	272	89	346
06:15	40		34		24		49		64		83	
06:30	51		40		18		52		69		92	
06:45	57		38		22		44		79		82	
07:00	54	322	30	96	28	181	41	149	82	503	71	245
07:15	70		30		29		38		99		68	
07:30	102		18		58		28		160		46	
07:45	96		18		66		42		162		60	
08:00	94	237	17	76	28	122	46	138	122	359	63	214
08:15	58		21		30		26		88		47	
08:30	43		22		26		40		69		62	
08:45	42		16		38		26		80		42	
09:00	42	140	5	42	26	91	34	120	68	231	39	162
09:15	31		18		16		38		47		56	
09:30	35		7		25		24		60		31	
09:45	32		12		24		24		56		36	
10:00	36	137	7	31	30	127	29	71	66	264	36	102
10:15	35		14		27		12		62		26	
10:30	42		5		36		19		78		24	
10:45	24		5		34		11		58		16	
11:00	27	161	4	16	28	128	11	41	55	289	15	57
11:15	40		5		33		7		73		12	
11:30	51		4		31		9		82		13	
11:45	43		3		36		14		79		17	
Totals	1.408		1.455		846		1.860		2.254		3.315	
Split%	62.5		43.9		37.5		56.1					
Day Totals		2,863				2,706				5,569		
Day Splits		51.4				48.6						
Peak Hour	07:15		01:45		07:30		04:30		07:15		04:30	
Volume	362		219		182		231		543		410	
Factor	0.89		0.91		0.69		0.93		0.84		0.87	

Data File : D1501041

Printed : 2/3/2015

Transportation Studies, Inc.

2640 Walnut Avenue, Suite H
Tustin, CA. 92780

Location: : RIDGE ROUTE ROAD
Segment: : E/O I-5 NB RAMPS
Client: : STANTEC

Site: SANTA CLARIT
Date: 01/28/15

Day: Wednesday

Interval	WB				EB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	20	83	112	480	40	157	140	648	60	240	252	1,128
12:15	27		130		33		166		60		296	
12:30	12		124		40		164		52		288	
12:45	24		114		44		178		68		292	
01:00	12	53	106	456	24	112	170	711	36	165	276	1,167
01:15	9		104		39		196		48		300	
01:30	16		118		29		171		45		289	
01:45	16		128		20		174		36		302	
02:00	22	74	130	518	25	99	180	726	47	173	310	1,244
02:15	26		150		27		194		53		344	
02:30	18		126		28		164		46		290	
02:45	8		112		19		188		27		300	
03:00	18	137	143	526	20	126	212	765	38	263	355	1,291
03:15	44		130		36		188		80		318	
03:30	31		141		34		177		65		318	
03:45	44		112		36		188		80		300	
04:00	38	187	107	415	50	170	175	780	88	357	282	1,195
04:15	25		120		36		207		61		327	
04:30	58		87		48		182		106		269	
04:45	66		101		36		216		102		317	
05:00	62	280	150	501	38	235	224	769	100	515	374	1,270
05:15	71		126		56		189		127		315	
05:30	74		103		68		186		142		289	
05:45	73		122		73		170		146		292	
06:00	96	388	144	494	112	339	138	542	208	727	282	1,036
06:15	92		108		64		138		156		246	
06:30	96		122		86		154		182		276	
06:45	104		120		77		112		181		232	
07:00	96	564	84	316	90	494	143	531	186	1,058	227	847
07:15	136		82		101		146		237		228	
07:30	168		78		144		112		312		190	
07:45	164		72		159		130		323		202	
08:00	134	431	106	301	103	432	155	446	237	863	261	747
08:15	102		84		107		113		209		197	
08:30	90		62		92		83		182		145	
08:45	105		49		130		95		235		144	
09:00	94	402	66	226	105	407	106	362	199	809	172	588
09:15	98		54		78		92		176		146	
09:30	116		44		126		91		242		135	
09:45	94		62		98		73		192		135	
10:00	94	351	34	156	98	518	66	240	192	869	100	396
10:15	74		41		122		64		196		105	
10:30	101		50		148		72		249		122	
10:45	82		31		150		38		232		69	
11:00	94	448	39	116	130	548	43	166	224	996	82	282
11:15	116		27		118		36		234		63	
11:30	104		23		152		42		256		65	
11:45	134		27		148		45		282		72	
Totals	3,398		4,505		3,637		6,686		7,035		11,191	
Split%	48.3		40.3		51.7		59.7					
Day Totals		7,903				10,323				18,226		
Day Splits		43.4				56.6						
Peak Hour	07:15		01:45		10:15		04:15		07:15		04:45	
Volume	602		534		550		829		1,109		1,295	
Factor	0.90		0.89		0.92		0.93		0.86		0.87	

Data File : D1501042

Printed : 2/3/2015

Transportation Studies, Inc.

2640 Walnut Avenue, Suite H
Tustin, CA. 92780

Location: : RIDGE ROUTE ROAD
Segment: : BETWEEN I-5 RAMPS
Client: : STANTEC

Site: SANTA CLARIT
Date: 01/28/15

Interval	EB				WB				Combined				Day: Wednesday
Begin	AM		PM		AM		PM		AM		PM		
12:00	12	32	72	292	38	151	148	671	50	183	220	963	
12:15	8		80		61		196		69		276		
12:30	4		75		26		185		30		260		
12:45	8		65		26		142		34		207		
01:00	10	27	62	280	16	90	140	607	26	117	202	887	
01:15	8		48		16		141		24		189		
01:30	6		96		21		150		27		246		
01:45	3		74		37		176		40		250		
02:00	4	7	90	356	38	129	186	683	42	136	276	1,039	
02:15	1		70		45		184		46		254		
02:30	1		94		32		157		33		251		
02:45	1		102		14		156		15		258		
03:00	10	27	100	363	31	229	178	753	41	256	278	1,116	
03:15	6		79		74		191		80		270		
03:30	7		86		54		214		61		300		
03:45	4		98		70		170		74		268		
04:00	8	27	92	460	67	297	154	668	75	324	246	1,128	
04:15	1		126		35		206		36		332		
04:30	9		106		102		154		111		260		
04:45	9		136		93		154		102		290		
05:00	5	60	114	427	96	400	247	847	101	460	361	1,274	
05:15	6		125		104		230		110		355		
05:30	19		92		92		164		111		256		
05:45	30		96		108		206		138		302		
06:00	32	124	74	334	127	502	239	757	159	626	313	1,091	
06:15	40		84		119		160		159		244		
06:30	32		94		130		186		162		280		
06:45	20		82		126		172		146		254		
07:00	33	242	88	284	140	853	156	538	173	1,095	244	822	
07:15	34		74		212		132		246		206		
07:30	94		68		217		128		311		196		
07:45	81		54		284		122		365		176		
08:00	71	253	44	224	182	587	162	451	253	840	206	675	
08:15	72		59		139		109		211		168		
08:30	52		56		117		89		169		145		
08:45	58		65		149		91		207		156		
09:00	70	203	46	179	126	552	101	365	196	755	147	544	
09:15	48		44		132		90		180		134		
09:30	38		50		160		72		198		122		
09:45	47		39		134		102		181		141		
10:00	56	225	32	126	156	499	52	243	212	724	84	369	
10:15	45		34		90		64		135		98		
10:30	65		28		142		76		207		104		
10:45	59		32		111		51		170		83		
11:00	64	229	18	68	132	657	58	180	196	886	76	248	
11:15	56		14		168		46		224		60		
11:30	63		23		161		36		224		59		
11:45	46		13		196		40		242		53		
Totals	1,456		3,393		4,946		6,763		6,402		10,156		
Split%	22.7		33.4		77.3		66.6						
Day Totals		4,849				11,709				16,558			
Day Splits		29.3				70.7							
Peak Hour	07:30		04:15		07:15		05:00		07:15		05:00		
Volume	318		482		895		847		1,175		1,274		
Factor	0.85		0.89		0.79		0.86		0.80		0.88		

Data File : D1501043

Printed : 2/3/2015

Transportation Studies, Inc.

2640 Walnut Avenue, Suite H
Tustin, CA. 92780

Location : SLOAN CANYON ROAD
Segment : E/O THE OLD ROAD
Client : STANTEC

Site: SANTA CLARIT
Date: 01/28/15

Day: Wednesday

Interval	EB				WB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	23	54	76	320	18	42	146	627	41	96	222	947
12:15	12		87		16		179		28		266	
12:30	10		79		4		152		14		231	
12:45	9		78		4		150		13		228	
01:00	16	66	72	298	2	28	128	612	18	94	200	910
01:15	20		58		12		114		32		172	
01:30	12		86		12		185		24		271	
01:45	18		82		2		185		20		267	
02:00	14	58	70	309	10	46	121	502	24	104	191	811
02:15	14		49		10		122		24		171	
02:30	6		82		9		116		15		198	
02:45	24		108		17		143		41		251	
03:00	32	114	60	273	7	51	129	568	39	165	189	841
03:15	17		65		13		157		30		222	
03:30	36		72		20		144		56		216	
03:45	29		76		11		138		40		214	
04:00	17	111	68	295	12	101	158	518	29	212	226	813
04:15	32		78		34		120		66		198	
04:30	28		64		28		134		56		198	
04:45	34		85		27		106		61		191	
05:00	24	155	77	334	36	240	120	557	60	395	197	891
05:15	48		100		49		132		97		232	
05:30	40		78		69		150		109		228	
05:45	43		79		86		155		129		234	
06:00	40	163	64	288	70	378	148	497	110	541	212	785
06:15	43		70		94		111		137		181	
06:30	28		82		112		126		140		208	
06:45	52		72		102		112		154		184	
07:00	78	351	48	194	109	653	122	386	187	1,004	170	580
07:15	74		60		132		95		206		155	
07:30	104		46		200		84		304		130	
07:45	95		40		212		85		307		125	
08:00	85	301	62	199	174	494	68	238	259	795	130	437
08:15	68		47		116		60		184		107	
08:30	86		48		122		44		208		92	
08:45	62		42		82		66		144		108	
09:00	54	265	51	161	91	417	62	222	145	682	113	383
09:15	68		26		113		50		181		76	
09:30	63		40		101		56		164		96	
09:45	80		44		112		54		192		98	
10:00	67	254	24	145	104	461	32	130	171	715	56	275
10:15	58		24		109		32		167		56	
10:30	74		41		120		36		194		77	
10:45	55		56		128		30		183		86	
11:00	81	285	18	83	106	467	42	102	187	752	60	185
11:15	71		24		101		26		172		50	
11:30	53		19		116		22		169		41	
11:45	80		22		144		12		224		34	
Totals	2,177		2,899		3,378		4,959		5,555		7,858	
Split%	39.2		36.9		60.8		63.1					
Day Totals		5,076				8,337				13,413		
Day Splits		37.8				62.2						
Peak Hour	07:15		04:45		07:15		12:00		07:15		12:00	
Volume	358		340		718		627		1,076		947	
Factor	0.86		0.85		0.85		0.88		0.88		0.89	

* Data File : D1501044

Printed : 2/3/2015

Transportation Studies, Inc.

2640 Walnut Avenue, Suite H
Tustin, CA. 92780

Location : LAKE HUGHES ROAD
Segment : W/O CASTAIC ROAD
Client : STANTEC

Site: SANTA CLARIT
Date: 01/28/15

Day: Wednesday

Interval	EB				WB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	58	142	182	776	38	250	188	905	96	392	370	1,681
12:15	33		206		71		208		104		414	
12:30	21		168		39		279		60		447	
12:45	30		220		102		230		132		450	
01:00	24	115	168	701	22	166	188	1,022	46	281	356	1,723
01:15	32		136		57		236		89		372	
01:30	23		210		61		307		84		517	
01:45	36		187		26		291		62		478	
02:00	36	118	170	732	52	207	229	991	88	325	399	1,723
02:15	21		160		48		259		69		419	
02:30	20		162		52		260		72		422	
02:45	41		240		55		243		96		483	
03:00	58	196	134	667	17	181	228	992	75	377	362	1,659
03:15	38		185		26		274		64		459	
03:30	53		174		64		282		117		456	
03:45	47		174		74		208		121		382	
04:00	32	194	214	818	56	276	210	924	88	470	424	1,742
04:15	47		173		72		194		119		367	
04:30	54		223		82		260		136		483	
04:45	61		208		66		260		127		468	
05:00	56	334	196	892	66	441	292	958	122	775	488	1,850
05:15	106		260		113		232		219		492	
05:30	88		216		142		216		230		432	
05:45	84		220		120		218		204		438	
06:00	78	323	173	743	99	508	218	718	177	831	391	1,461
06:15	66		206		143		180		209		386	
06:30	81		198		118		168		199		366	
06:45	98		166		148		152		246		318	
07:00	136	647	124	486	126	653	146	578	262	1,300	270	1,064
07:15	134		152		159		142		293		294	
07:30	195		98		162		152		357		250	
07:45	182		112		206		138		388		250	
08:00	164	572	120	455	152	503	115	494	316	1,075	235	949
08:15	148		122		141		116		289		238	
08:30	138		109		119		141		257		250	
08:45	122		104		91		122		213		226	
09:00	144	556	112	370	162	635	104	422	306	1,191	216	792
09:15	125		82		158		98		283		180	
09:30	109		94		160		106		269		200	
09:45	178		82		155		114		333		196	
10:00	125	559	73	310	128	678	94	329	253	1,237	167	639
10:15	143		66		146		77		289		143	
10:30	158		73		190		70		348		143	
10:45	133		98		214		88		347		186	
11:00	162	656	48	200	172	807	58	239	334	1,463	106	439
11:15	157		52		166		57		323		109	
11:30	169		46		233		68		402		114	
11:45	168		54		236		56		404		110	
Totals	4,412		7,150		5,305		8,572		9,717		15,722	
Split%	45.4		45.5		54.6		54.5					
Day Totals		11,562				13,877				25,439		
Day Splits		45.4				54.6						
Peak Hour	07:30		05:00		11:00		01:30		11:00		04:30	
Volume	689		892		807		1,086		1,463		1,931	
Factor	0.88		0.86		0.85		0.88		0.91		0.98	

* Data File : D150101045

Printed : 2/3/2015

Transportation Studies, Inc.

2640 Walnut Avenue, Suite H
Tustin, CA. 92780

Location : LAKE HUGHES ROAD
Segment : E/O CASTAIC ROAD
Client : STANTEC

Site: SANTA CLARIT
Date: 01/28/15

Day: Wednesday

Interval	EB				WB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	7	23	40	184	6	15	46	166	13	38	86	350
12:15	5		43		3		50		8		93	
12:30	3		44		3		34		6		78	
12:45	8		57		3		36		11		93	
01:00	2	10	57	221	8	19	36	269	10	29	93	490
01:15	4		41		5		40		9		81	
01:30	2		64		4		102		6		166	
01:45	2		59		2		91		4		150	
02:00	10	26	44	207	8	22	45	171	18	48	89	378
02:15	3		35		1		30		4		65	
02:30	9		57		8		40		17		97	
02:45	4		71		5		56		9		127	
03:00	2	12	43	205	2	25	36	172	4	37	79	377
03:15	5		51		8		40		13		91	
03:30	1		45		8		58		9		103	
03:45	4		66		7		38		11		104	
04:00	1	19	67	259	4	53	42	159	5	72	109	418
04:15	8		58		14		31		22		89	
04:30	1		66		13		46		14		112	
04:45	9		68		22		40		31		108	
05:00	4	44	65	286	11	103	41	164	15	147	106	450
05:15	14		85		28		44		42		129	
05:30	18		68		38		37		56		105	
05:45	8		68		26		42		34		110	
06:00	14	63	61	224	50	192	33	131	64	255	94	355
06:15	14		64		46		36		60		100	
06:30	14		47		52		32		66		79	
06:45	21		52		44		30		65		82	
07:00	38	220	50	157	58	332	24	104	96	552	74	261
07:15	46		42		60		34		106		76	
07:30	66		27		98		16		164		43	
07:45	70		38		116		30		186		68	
08:00	54	142	38	142	75	204	23	73	129	346	61	215
08:15	30		28		40		18		70		46	
08:30	36		43		52		16		88		59	
08:45	22		33		37		16		59		49	
09:00	20	90	28	108	38	133	10	53	58	223	38	161
09:15	28		31		39		18		67		49	
09:30	22		29		18		18		40		47	
09:45	20		20		38		7		58		27	
10:00	21	101	19	70	36	144	16	39	57	245	35	109
10:15	22		16		34		9		56		25	
10:30	32		14		32		7		64		21	
10:45	26		21		42		7		68		28	
11:00	42	169	14	34	32	172	6	26	74	341	20	60
11:15	42		4		41		4		83		8	
11:30	31		7		51		7		82		14	
11:45	54		9		48		9		102		18	
Totals	919		2,097		1,414		1,527		2,333		3,624	
Split%	39.4		57.9		60.6		42.1					
Day Totals		3,016				2,941				5,957		
Day Splits		50.6				49.4						
Peak Hour	07:15		04:45		07:15		01:15		07:15		01:00	
Volume	236		286		349		278		585		490	
Factor	0.84		0.84		0.75		0.68		0.79		0.74	

Data File : D1501046

Printed : 2/3/2015

Transportation Studies, Inc.

2640 Walnut Avenue, Suite H
Tustin, CA. 92780

Location : THE OLD ROAD
Segment : N/O SLOAN CANYON
Client : STANTEC

Site: SANTA CLARIT
Date: 01/28/15

Day: Wednesday

Interval	NB				SB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	14	36	90	377	28	81	54	259	42	117	144	636
12:15	14		105		18		65		32		170	
12:30	4		100		19		82		23		182	
12:45	4		82		16		58		20		140	
01:00	7	23	82	378	16	70	56	252	23	93	138	630
01:15	8		74		20		55		28		129	
01:30	7		126		10		77		17		203	
01:45	1		96		24		64		25		160	
02:00	6	28	80	377	14	63	62	236	20	91	142	613
02:15	6		74		19		54		25		128	
02:30	6		93		10		49		16		142	
02:45	10		130		20		71		30		201	
03:00	8	42	98	402	32	107	56	229	40	149	154	631
03:15	8		92		15		55		23		147	
03:30	14		120		38		60		52		180	
03:45	12		92		22		58		34		150	
04:00	8	86	112	436	12	100	46	246	20	186	158	682
04:15	30		92		30		76		60		168	
04:30	24		120		30		58		54		178	
04:45	24		112		28		66		52		178	
05:00	20	160	122	454	28	159	74	294	48	319	196	748
05:15	27		122		52		99		79		221	
05:30	49		122		41		61		90		183	
05:45	64		88		38		60		102		148	
06:00	36	240	111	384	41	177	57	262	77	417	168	646
06:15	52		97		44		68		96		165	
06:30	85		90		38		80		123		170	
06:45	67		86		54		57		121		143	
07:00	74	402	66	281	82	325	43	171	156	727	109	452
07:15	96		80		78		58		174		138	
07:30	126		74		90		36		216		110	
07:45	106		61		75		34		181		95	
08:00	94	310	40	173	74	268	56	202	168	578	96	375
08:15	78		52		58		58		136		110	
08:30	79		28		76		56		155		84	
08:45	59		53		60		32		119		85	
09:00	62	273	58	186	68	277	44	151	130	550	102	337
09:15	67		40		48		29		115		69	
09:30	70		50		91		40		161		90	
09:45	74		38		70		38		144		76	
10:00	78	291	34	111	44	222	21	139	122	513	55	250
10:15	70		34		70		30		140		64	
10:30	59		21		58		38		117		59	
10:45	84		22		50		50		134		72	
11:00	66	295	23	64	50	243	22	102	116	538	45	166
11:15	74		14		79		32		153		46	
11:30	69		17		60		22		129		39	
11:45	86		10		54		26		140		36	
Totals	2.186		3.623		2.092		2.543		4.278		6.166	
Split%	51.1		58.8		48.9		41.2					
Day Totals		5,809				4,635				10,444		
Day Splits		55.6				44.4						
Peak Hour	07:15		04:45		07:00		04:45		07:15		04:45	
Volume	422		478		325		300		739		778	
Factor	0.84		0.98		0.90		0.76		0.86		0.88	

Data File : D1501047

Printed : 2/3/2015

Transportation Studies, Inc.

2640 Walnut Avenue, Suite H
Tustin, CA. 92780

Location : PARKER ROAD
Segment : W/O I-5 SB RAMPS
Client : STANTEC

Site: SANTA CLARIT
Date: 01/28/15

Day: Wednesday

Interval	EB				WB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	2	16	56	223	8	30	52	233	10	46	108	456
12:15	6		57		11		66		17		123	
12:30	2		61		6		64		8		125	
12:45	6		49		5		51		11		100	
01:00	4	12	56	222	7	14	50	231	11	26	106	453
01:15	4		54		3		52		7		106	
01:30	3		58		1		50		4		108	
01:45	1		54		3		79		4		133	
02:00	2	18	59	271	1	12	65	262	3	30	124	533
02:15	6		61		3		68		9		129	
02:30	2		66		4		61		6		127	
02:45	8		85		4		68		12		153	
03:00	4	21	66	237	4	25	52	276	8	46	118	513
03:15	6		51		3		84		9		135	
03:30	4		52		6		64		10		116	
03:45	7		68		12		76		19		144	
04:00	19	71	59	230	1	10	63	300	20	81	122	530
04:15	12		60		0		84		12		144	
04:30	16		46		3		72		19		118	
04:45	24		65		6		81		30		146	
05:00	34	171	70	252	1	35	80	350	35	206	150	602
05:15	32		55		7		111		39		166	
05:30	40		60		12		82		52		142	
05:45	65		67		15		77		80		144	
06:00	49	246	46	187	15	71	78	328	64	317	124	515
06:15	50		55		24		92		74		147	
06:30	82		45		16		80		98		125	
06:45	65		41		16		78		81		119	
07:00	87	423	44	127	18	117	68	240	105	540	112	367
07:15	90		32		24		60		114		92	
07:30	125		25		30		60		155		85	
07:45	121		26		45		52		166		78	
08:00	66	294	28	100	66	170	45	175	132	464	73	275
08:15	96		28		43		40		139		68	
08:30	68		16		33		48		101		64	
08:45	64		28		28		42		92		70	
09:00	60	201	19	70	32	129	36	145	92	330	55	215
09:15	34		18		32		35		66		53	
09:30	53		18		26		38		79		56	
09:45	54		15		39		36		93		51	
10:00	47	197	13	50	34	130	30	100	81	327	43	150
10:15	49		11		30		23		79		34	
10:30	44		14		38		32		82		46	
10:45	57		12		28		15		85		27	
11:00	56	227	7	26	42	182	15	56	98	409	22	82
11:15	54		6		42		15		96		21	
11:30	68		7		50		16		118		23	
11:45	49		6		48		10		97		16	
Totals	1.897		1.995		925		2.696		2.822		4.691	
Split%	67.2		42.5		32.8		57.5					
Day Totals		3,892				3,621				7,513		
Day Splits		51.8				48.2						
Peak Hour	07:00		02:15		07:45		04:45		07:30		04:45	
Volume	423		278		187		354		592		604	
Factor	0.85		0.82		0.71		0.80		0.89		0.91	

Data File : D1501048

Printed : 2/3/2015

Transportation Studies, Inc.

2640 Walnut Avenue, Suite H
Tustin, CA. 92780

Location : CASTAIC ROAD
Segment : N/O LAKE HUGHES ROAD
Client : STANTEC

Site: SANTA CLARIT
Date: 01/28/15

Day: Wednesday

Interval	SB				NB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	3	11	30	150	11	20	46	175	14	31	76	325
12:15	2		32		4		46		6		78	
12:30	2		46		4		38		6		84	
12:45	4		42		1		45		5		87	
01:00	0	4	39	135	0	19	36	175	0	23	75	310
01:15	0		28		7		38		7		66	
01:30	1		38		4		60		5		98	
01:45	3		30		8		41		11		71	
02:00	4	16	32	140	4	8	66	172	8	24	98	312
02:15	2		38		0		37		2		75	
02:30	1		36		2		36		3		72	
02:45	9		34		2		33		11		67	
03:00	2	15	24	133	4	17	50	184	6	32	74	317
03:15	2		44		4		48		6		92	
03:30	5		31		4		50		9		81	
03:45	6		34		5		36		11		70	
04:00	5	22	26	129	4	11	36	153	9	33	62	282
04:15	4		38		1		34		5		72	
04:30	8		33		2		37		10		70	
04:45	5		32		4		46		9		78	
05:00	4	28	28	129	2	29	44	154	6	57	72	283
05:15	11		40		12		38		23		78	
05:30	6		34		7		38		13		72	
05:45	7		27		8		34		15		61	
06:00	4	18	34	101	13	37	39	133	17	55	73	234
06:15	4		24		9		32		13		56	
06:30	6		21		1		30		7		51	
06:45	4		22		14		32		18		54	
07:00	10	49	30	78	8	45	27	127	18	94	57	205
07:15	12		10		12		42		24		52	
07:30	16		20		12		30		28		50	
07:45	11		18		13		28		24		46	
08:00	8	40	9	48	23	76	30	114	31	116	39	162
08:15	12		12		16		44		28		56	
08:30	8		18		15		22		23		40	
08:45	12		9		22		18		34		27	
09:00	12	85	11	29	17	98	12	50	29	183	23	79
09:15	29		4		24		14		53		18	
09:30	25		8		21		8		46		16	
09:45	19		6		36		16		55		22	
10:00	14	84	10	45	26	111	8	51	40	195	18	96
10:15	21		14		25		21		46		35	
10:30	29		7		34		4		63		11	
10:45	20		14		26		18		46		32	
11:00	38	133	6	9	37	145	4	18	75	278	10	27
11:15	24		2		32		5		56		7	
11:30	33		1		42		7		75		8	
11:45	38		0		34		2		72		2	
Totals	505		1.126		616		1.506		1.121		2.632	
Split%	45.0		42.8		55.0		57.2					
Day Totals		1.631				2,122				3,753		
Day Splits		43.5				56.5						
Peak Hour	11:00		12:15		11:00		01:15		11:00		01:30	
Volume	133		159		145		205		278		342	
Factor	0.88		0.86		0.86		0.78		0.93		0.87	

Data File : D1501049

Printed : 2/3/2015

Transportation Studies, Inc.

2640 Walnut Avenue, Suite H
Tustin, CA. 92780

Location : CASTAIC ROAD
Segment : S/O LAKE HUGHES ROAD
Client : STANTEC

Site: SANTA CLARIT
Date: 01/28/15

Day: Wednesday

Interval	SB				NB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	30	82	64	270	30	135	101	431	60	217	165	701
12:15	18		83		36		90		54		173	
12:30	20		60		22		144		42		204	
12:45	14		63		47		96		61		159	
01:00	18	73	62	241	16	99	108	482	34	172	170	723
01:15	19		44		31		121		50		165	
01:30	14		69		30		149		44		218	
01:45	22		66		22		104		44		170	
02:00	15	53	63	231	26	103	151	533	41	156	214	764
02:15	12		48		24		132		36		180	
02:30	5		54		25		138		30		192	
02:45	21		66		28		112		49		178	
03:00	37	110	46	217	18	101	138	511	55	211	184	728
03:15	20		50		21		123		41		173	
03:30	35		56		26		150		61		206	
03:45	18		65		36		100		54		165	
04:00	14	112	53	238	28	133	94	459	42	245	147	697
04:15	22		56		33		83		55		139	
04:30	43		56		38		132		81		188	
04:45	33		73		34		150		67		223	
05:00	30	151	51	254	30	193	163	472	60	344	214	726
05:15	44		69		52		76		96		145	
05:30	40		60		59		106		99		166	
05:45	37		74		52		127		89		201	
06:00	41	129	46	256	46	212	118	373	87	341	164	629
06:15	20		68		56		99		76		167	
06:30	36		80		52		79		88		159	
06:45	32		62		58		77		90		139	
07:00	60	214	45	185	48	224	94	332	108	438	139	517
07:15	49		58		64		71		113		129	
07:30	57		40		52		85		109		125	
07:45	48		42		60		82		108		124	
08:00	38	209	56	214	66	238	76	318	104	447	132	532
08:15	51		60		66		84		117		144	
08:30	64		44		54		92		118		136	
08:45	56		54		52		66		108		120	
09:00	63	221	54	160	80	288	75	266	143	509	129	426
09:15	40		23		66		58		106		81	
09:30	60		32		78		67		138		99	
09:45	58		51		64		66		122		117	
10:00	46	214	32	147	74	325	53	206	120	539	85	353
10:15	59		26		57		55		116		81	
10:30	61		36		98		34		159		70	
10:45	48		53		96		64		144		117	
11:00	48	244	24	86	80	381	38	141	128	625	62	227
11:15	64		29		75		26		139		55	
11:30	56		6		112		46		168		52	
11:45	76		27		114		31		190		58	
Totals	1.812		2.499		2.432		4.524		4.244		7.023	
Split%	42.7		35.6		57.3		64.4					
Day Totals		4,311				6,956				11,267		
Day Splits		38.3				61.7						
Peak Hour	11:00		12:00		11:00		01:30		11:00		01:30	
Volume	244		270		381		536		625		782	
Factor	0.80		0.81		0.84		0.89		0.82		0.90	

Data File : D1501050

Printed : 2/3/2015

Transportation Studies, Inc.

2640 Walnut Avenue, Suite H
Tustin, CA. 92780

Location : CASTAIC ROAD
Segment : S/O RIDGE ROUTE ROAD
Client : STANTEC

Site: SANTA CLARIT
Date: 01/28/15

Day: Wednesday

Interval	NB				SB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	3	6	23	124	1	6	30	107	4	12	53	231
12:15	1		40		2		36		3		76	
12:30	0		29		1		16		1		45	
12:45	2		32		2		25		4		57	
01:00	0	4	22	108	4	8	20	99	4	12	42	207
01:15	4		34		2		27		6		61	
01:30	0		30		2		20		2		50	
01:45	0		22		0		32		0		54	
02:00	1	3	32	138	1	2	36	99	2	5	68	237
02:15	0		60		0		26		0		86	
02:30	0		26		1		18		1		44	
02:45	2		20		0		19		2		39	
03:00	3	4	36	165	4	4	24	134	7	8	60	299
03:15	0		38		0		42		0		80	
03:30	0		66		0		30		0		96	
03:45	1		25		0		38		1		63	
04:00	0	5	44	132	1	10	36	151	1	15	80	283
04:15	3		27		1		32		4		59	
04:30	0		34		4		32		4		66	
04:45	2		27		4		51		6		78	
05:00	3	22	50	180	6	39	50	177	9	61	100	357
05:15	3		42		8		50		11		92	
05:30	2		30		15		36		17		66	
05:45	14		58		10		41		24		99	
06:00	8	34	59	175	18	58	19	89	26	92	78	264
06:15	10		40		11		21		21		61	
06:30	4		38		11		23		15		61	
06:45	12		38		18		26		30		64	
07:00	10	42	20	79	24	70	21	80	34	112	41	159
07:15	10		22		20		26		30		48	
07:30	12		16		14		17		26		33	
07:45	10		21		12		16		22		37	
08:00	7	54	54	115	18	101	16	58	25	155	70	173
08:15	5		30		18		18		23		48	
08:30	28		23		27		16		55		39	
08:45	14		8		38		8		52		16	
09:00	23	62	5	46	18	74	7	24	41	136	12	70
09:15	14		16		22		4		36		20	
09:30	12		10		12		5		24		15	
09:45	13		15		22		8		35		23	
10:00	15	68	6	12	24	81	2	10	39	149	8	22
10:15	13		2		24		4		37		6	
10:30	18		3		13		3		31		6	
10:45	22		1		20		1		42		2	
11:00	22	102	1	13	21	83	2	6	43	185	3	19
11:15	20		6		30		2		50		8	
11:30	17		3		18		2		35		5	
11:45	43		3		14		0		57		3	
Totals	406		1.287		536		1.034		942		2.321	
Split%	43.1		55.5		56.9		44.5					
Day Totals		1,693				1,570				3,263		
Day Splits		51.9				48.1						
Peak Hour	11:00		05:45		08:30		04:45		11:00		05:00	
Volume	102		195		105		187		185		357	
Factor	0.59		0.83		0.69		0.92		0.81		0.89	

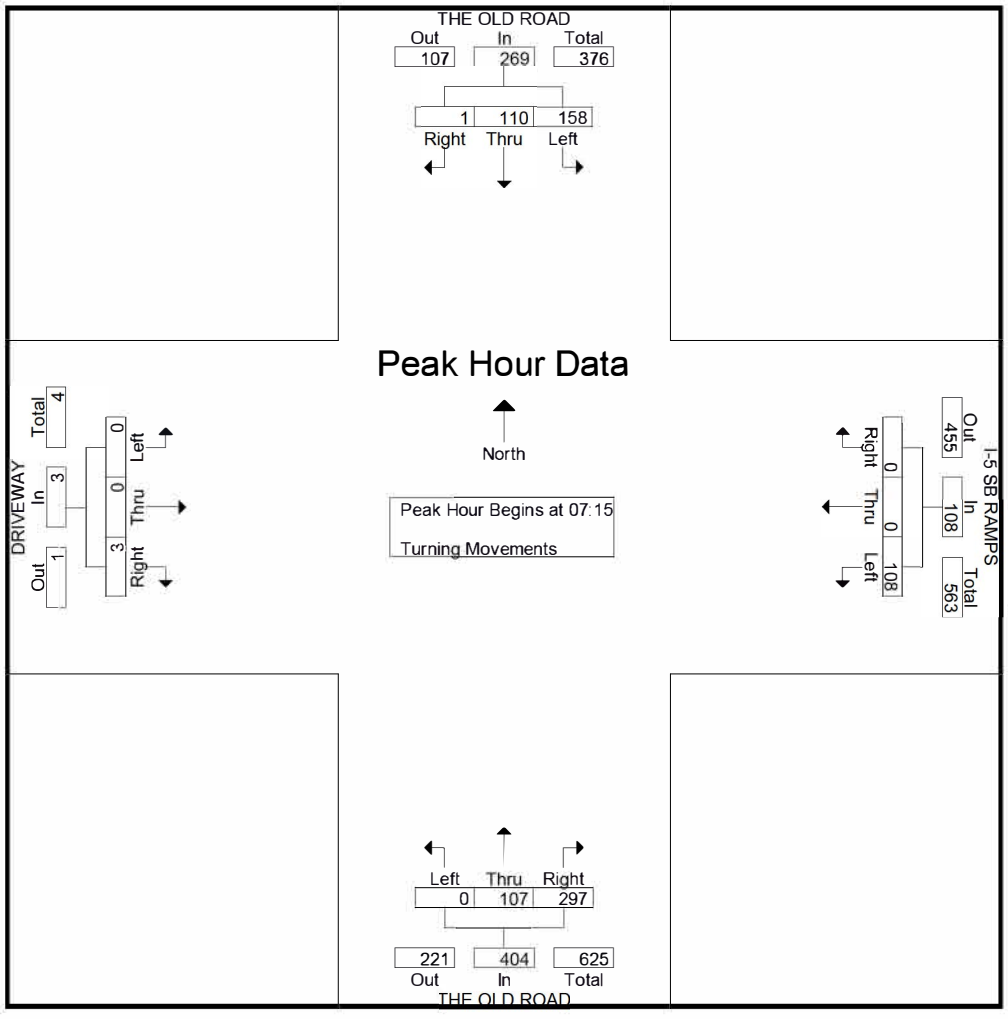
Data File : D1501051

Printed : 2/3/2015

Transportation Studies, Inc.
2640 Walnut Avenue, Suite H
Tustin, CA. 92780

File Name : h1501003
Site Code : 00000000
Start Date : 1/27/2015
Page No : 2

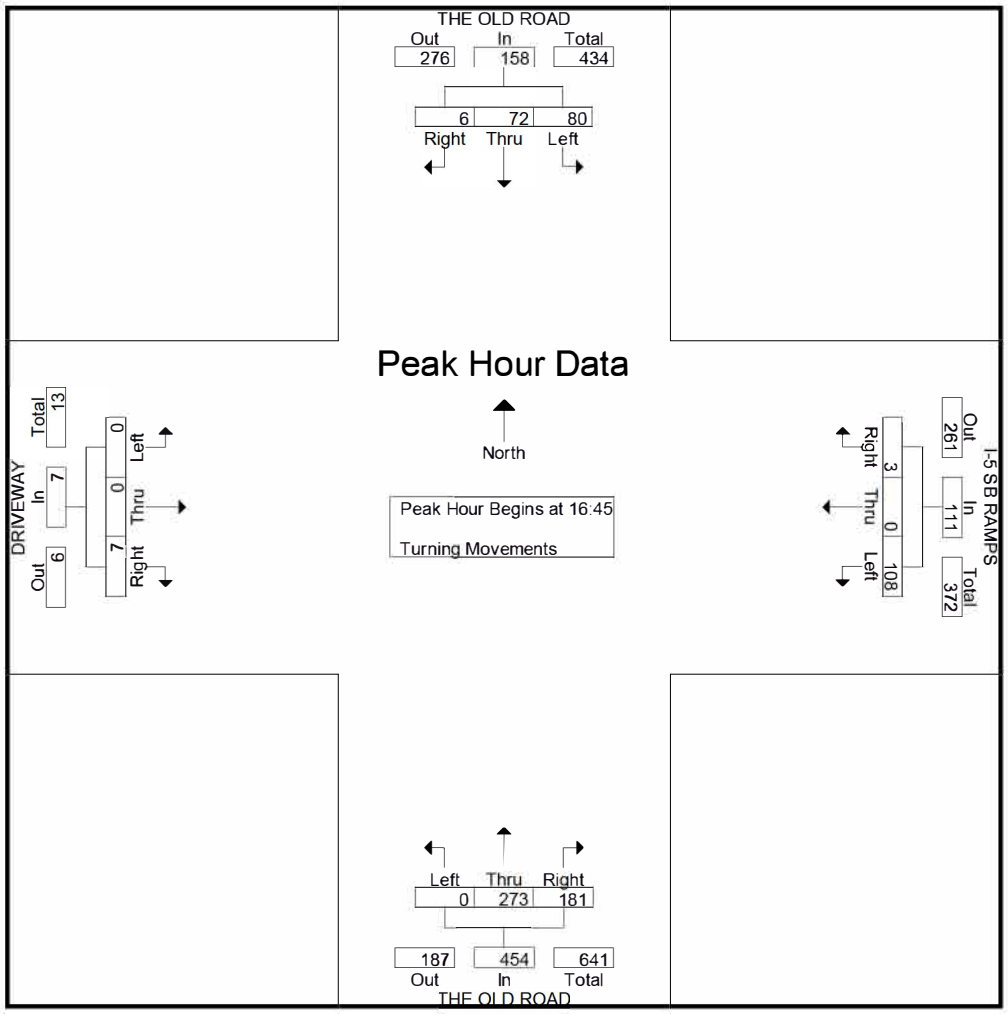
	THE OLD ROAD Southbound				I-5 SB RAMPS Westbound				THE OLD ROAD Northbound				DRIVEWAY Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15																	
07:15	0	18	44	62	0	0	**28**	**28**	74	11	0	85	0	0	0	0	175
07:30	0	31	**52**	**83**	0	0	25	25	73	22	0	95	1	0	0	1	204
07:45	**1**	**37**	35	73	0	0	27	27	**84**	**38**	0	**122**	**2**	0	0	**2**	**224**
08:00	0	24	27	51	0	0	28	28	66	36	0	102	0	0	0	0	181
Total Volume	1	110	158	269	0	0	108	108	297	107	0	404	3	0	0	3	784
% App. Total	0.4	40.9	58.7		0	0	100		73.5	26.5	0		100	0	0		
PHF	.250	.743	.760	.810	.000	.000	.964	.964	.884	.704	.000	.828	.375	.000	.000	.375	.875



Transportation Studies, Inc.
2640 Walnut Avenue, Suite H
Tustin, CA. 92780

File Name : h1501003
Site Code : 00000000
Start Date : 1/27/2015
Page No : 3

	THE OLD ROAD Southbound				I-5 SB RAMPS Westbound				THE OLD ROAD Northbound				DRIVEWAY Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:45																	
16:45	2	21	24	**47**	0	0	30	30	**46**	71	0	117	0	0	0	0	**194**
17:00	0	11	20	31	**1**	0	19	20	46	**78**	0	**124**	1	0	0	1	176
17:15	**3**	**23**	10	36	1	0	28	29	45	60	0	105	**3**	0	0	**3**	173
17:30	1	17	**26**	44	1	0	**31**	**32**	44	64	0	108	3	0	0	3	187
Total Volume	6	72	80	158	3	0	108	111	181	273	0	454	7	0	0	7	730
% App. Total	3.8	45.6	50.6		2.7	0	97.3		39.9	60.1	0		100	0	0		
PHF	.500	.783	.769	.840	.750	.000	.871	.867	.984	.875	.000	.915	.583	.000	.000	.583	.941



Transportation Studies, Inc.
2640 Walnut Avenue, Suite H
Tustin, CA. 9278

City: SANTA CLARITA
N-S- Direction: THE OLD ROAD
E-W Direction: LAKE HUGHES / SLOAN

File Name : h1501004
Site Code : 00000000
Start Date : 1/22/2015
Page No : 1

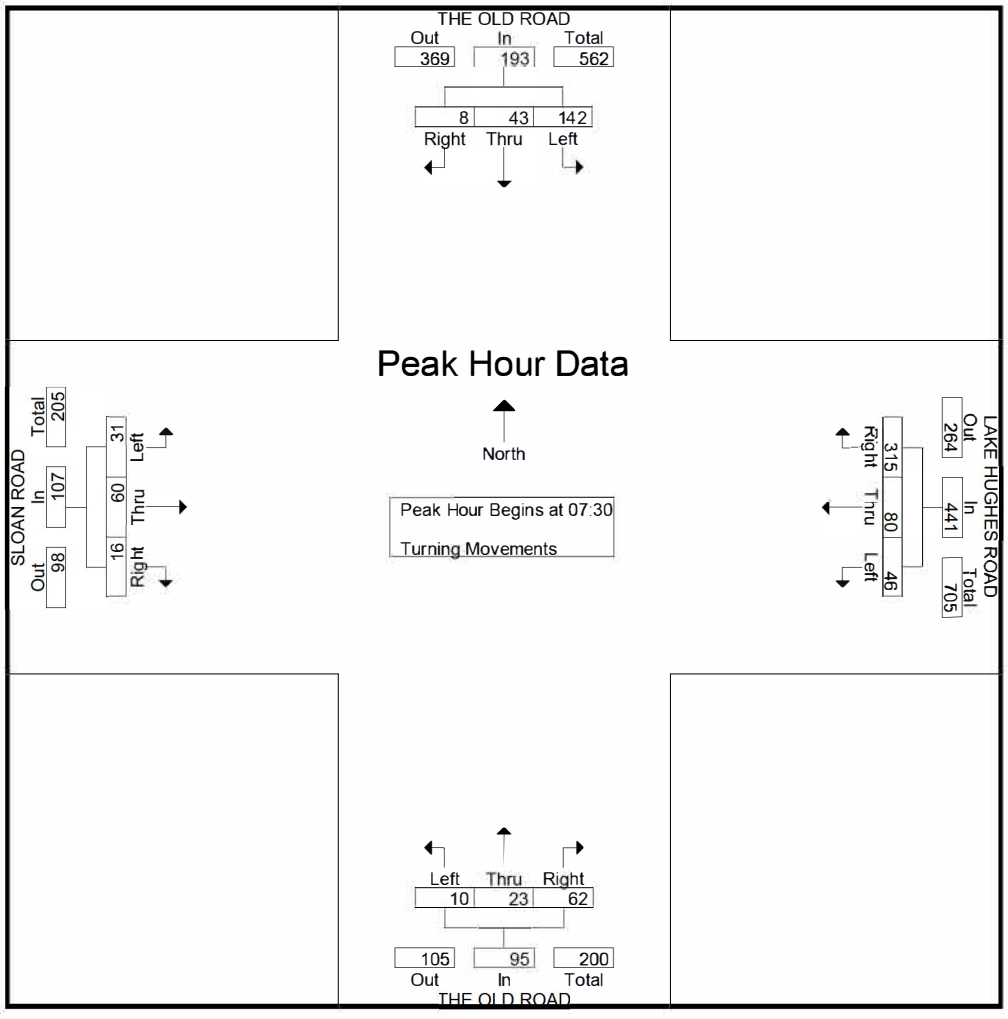
Groups Printed- Turning Movements

	THE OLD ROAD Southbound			LAKE HUGHES ROAD Westbound			THE OLD ROAD Northbound			SLOAN ROAD Eastbound			
Start Time	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Int. Total
07:00	1	8	30	68	9	5	3	3	0	1	9	3	140
07:15	6	9	36	65	4	7	10	4	1	3	10	7	162
07:30	0	6	47	92	16	7	14	3	3	5	28	11	232
07:45	3	15	43	104	21	17	10	6	2	3	19	5	248
Total	10	38	156	329	50	36	37	16	6	12	66	26	782
08:00	2	13	24	68	25	16	17	7	2	3	6	9	192
08:15	3	9	28	51	18	6	21	7	3	5	7	6	164
08:30	2	9	34	66	10	7	12	4	5	1	6	10	166
08:45	1	6	21	49	24	7	12	14	2	6	6	5	153
Total	8	37	107	234	77	36	62	32	12	15	25	30	675
16:00	5	8	35	73	24	6	11	15	8	6	15	7	213
16:15	3	10	30	68	23	11	15	9	6	3	13	12	203
16:30	3	5	25	90	33	12	10	18	3	11	14	11	235
16:45	4	10	32	65	38	13	14	6	9	3	11	6	211
Total	15	33	122	296	118	42	50	48	26	23	53	36	862
17:00	5	7	18	72	33	10	11	10	4	7	4	11	192
17:15	3	9	36	84	34	12	11	9	9	5	10	7	229
17:30	6	13	27	89	35	14	21	15	3	5	14	14	256
17:45	3	13	34	72	42	4	7	7	6	4	22	10	224
Total	17	42	115	317	144	40	50	41	22	21	50	42	901
Grand Total	50	150	500	1176	389	154	199	137	66	71	194	134	3220
Apprch %	7.1	21.4	71.4	68.4	22.6	9	49.5	34.1	16.4	17.8	48.6	33.6	
Total %	1.6	4.7	15.5	36.5	12.1	4.8	6.2	4.3	2	2.2	6	4.2	

Transportation Studies, Inc.
2640 Walnut Avenue, Suite H
Tustin, CA. 92780

File Name : h1501004
Site Code : 00000000
Start Date : 1/22/2015
Page No : 2

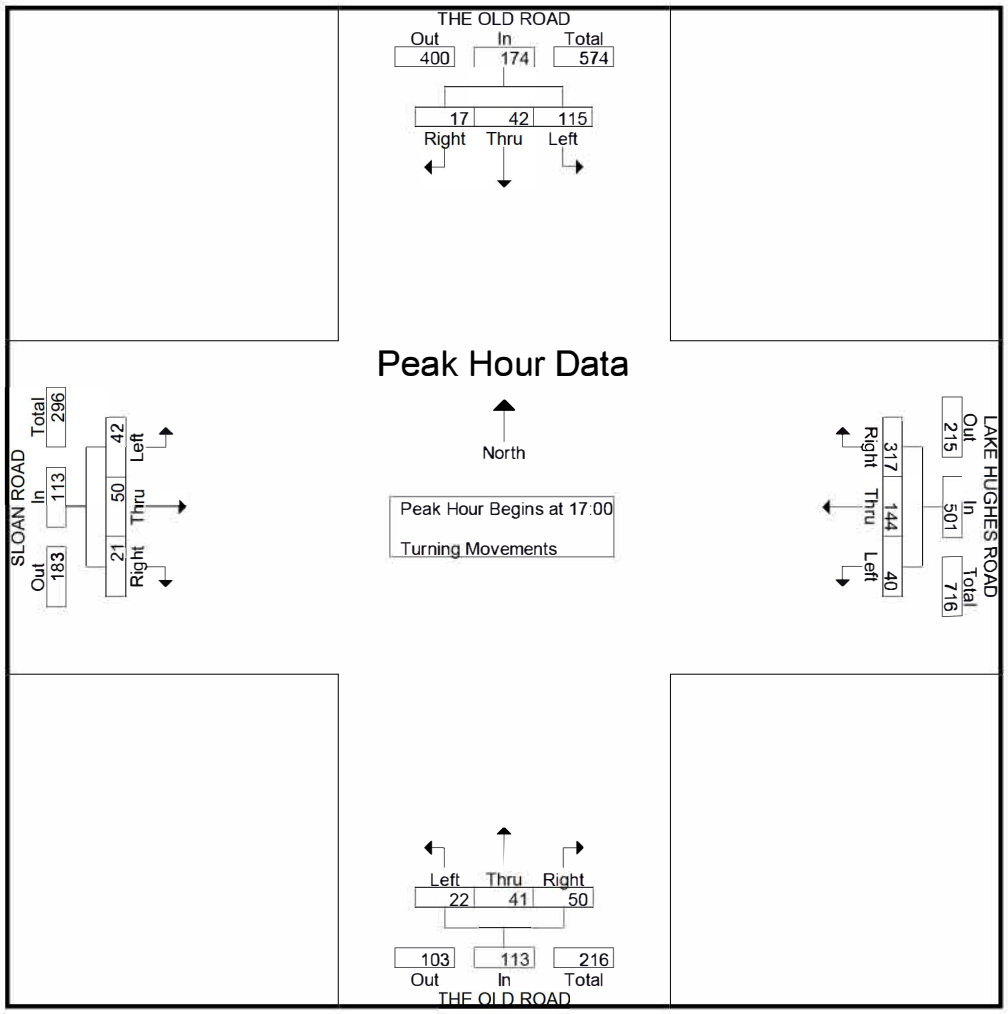
	THE OLD ROAD Southbound				LAKE HUGHES ROAD Westbound				THE OLD ROAD Northbound				SLOAN ROAD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30																	
07:30	0	6	**47**	53	92	16	7	115	14	3	**3**	20	**5**	**28**	**11**	**44**	232
07:45	**3**	**15**	43	**61**	**104**	21	**17**	**142**	10	6	2	18	3	19	5	27	**248**
08:00	2	13	24	39	68	**25**	16	109	17	**7**	2	26	3	6	9	18	192
08:15	3	9	28	40	51	18	6	75	**21**	7	3	**31**	5	7	6	18	164
Total Volume	8	43	142	193	315	80	46	441	62	23	10	95	16	60	31	107	836
% App. Total	4.1	22.3	73.6		71.4	18.1	10.4		65.3	24.2	10.5		15	56.1	29		
PHF	.667	.717	.755	.791	.757	.800	.676	.776	.738	.821	.833	.766	.800	.536	.705	.608	.843



Transportation Studies, Inc.
2640 Walnut Avenue, Suite H
Tustin, CA. 92780

File Name : h1501004
Site Code : 00000000
Start Date : 1/22/2015
Page No : 3

	THE OLD ROAD Southbound				LAKE HUGHES ROAD Westbound				THE OLD ROAD Northbound				SLOAN ROAD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 17:00																	
17:00	5	7	18	30	72	33	10	115	11	10	4	25	**7**	4	11	22	192
17:15	3	9	**36**	48	84	34	12	130	11	9	**9**	29	5	10	7	22	229
17:30	**6**	**13**	27	46	**89**	35	**14**	**138**	**21**	**15**	3	**39**	5	14	**14**	33	**256**
17:45	3	13	34	**50**	72	**42**	4	118	7	7	6	20	4	**22**	10	**36**	224
Total Volume	17	42	115	174	317	144	40	501	50	41	22	113	21	50	42	113	901
% App. Total	9.8	24.1	66.1		63.3	28.7	8		44.2	36.3	19.5		18.6	44.2	37.2		
PHF	.708	.808	.799	.870	.890	.857	.714	.908	.595	.683	.611	.724	.750	.568	.750	.785	.880



Transportation Studies, Inc.
2640 Walnut Avenue, Suite H
Tustin, CA. 9278

City: SANTA CLARITA
N-S- Direction: I-5 NB RAMPS
E-W Direction: LAKE HUGHES ROAD

File Name : h1501005
Site Code : 00000000
Start Date : 1/27/2015
Page No : 1

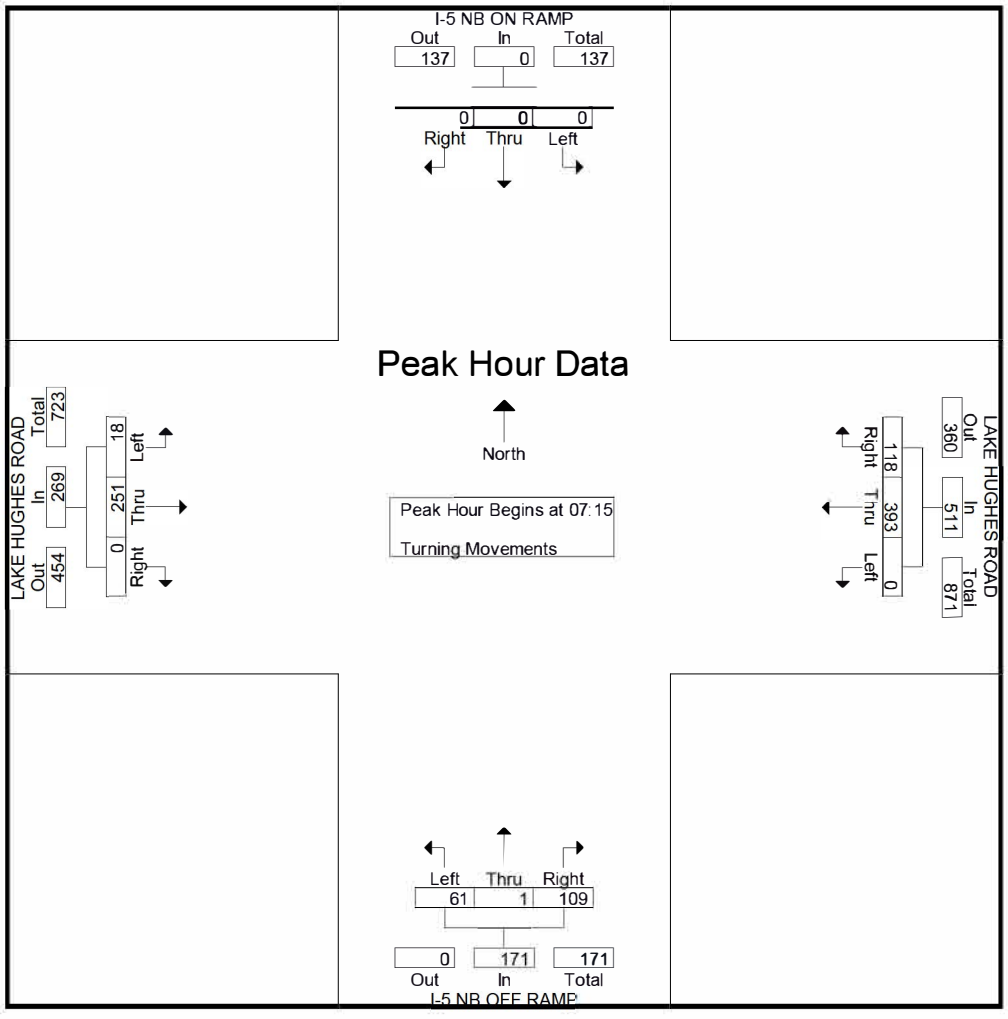
Groups Printed- Turning Movements

	I-5 NB ON RAMP Southbound			LAKE HUGHES ROAD Westbound			I-5 NB OFF RAMP Northbound			LAKE HUGHES ROAD Eastbound			
Start Time	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Int. Total
07:00	0	0	0	33	67	0	24	0	16	0	55	1	196
07:15	0	0	0	24	85	0	28	0	11	0	43	4	195
07:30	0	0	0	34	98	0	25	1	13	0	63	7	241
07:45	0	0	0	27	130	0	30	0	15	0	90	5	297
Total	0	0	0	118	380	0	107	1	55	0	251	17	929
08:00	0	0	0	33	80	0	26	0	22	0	55	2	218
08:15	0	0	0	29	57	0	35	0	19	0	36	2	178
08:30	0	0	0	27	44	0	16	1	12	0	47	4	151
08:45	0	0	0	26	44	0	32	1	15	0	39	3	160
Total	0	0	0	115	225	0	109	2	68	0	177	11	707
16:00	0	0	0	43	67	0	64	0	37	0	49	6	266
16:15	0	0	0	66	55	0	59	0	38	0	43	6	267
16:30	0	0	0	53	57	0	56	0	54	0	45	3	268
16:45	0	0	0	53	66	0	65	0	71	0	56	3	314
Total	0	0	0	215	245	0	244	0	200	0	193	18	1115
17:00	0	0	0	55	73	0	68	0	71	0	40	4	311
17:15	0	0	0	39	65	0	65	1	59	0	50	4	283
17:30	0	0	0	41	57	0	65	0	58	0	67	6	294
17:45	0	0	0	43	58	0	57	0	63	0	46	9	276
Total	0	0	0	178	253	0	255	1	251	0	203	23	1164
Grand Total	0	0	0	626	1103	0	715	4	574	0	824	69	3915
Apprch %	0	0	0	36.2	63.8	0	55.3	0.3	44.4	0	92.3	7.7	
Total %	0	0	0	16	28.2	0	18.3	0.1	14.7	0	21	1.8	

Transportation Studies, Inc.
2640 Walnut Avenue, Suite H
Tustin, CA. 92780

File Name : h1501005
Site Code : 00000000
Start Date : 1/27/2015
Page No : 2

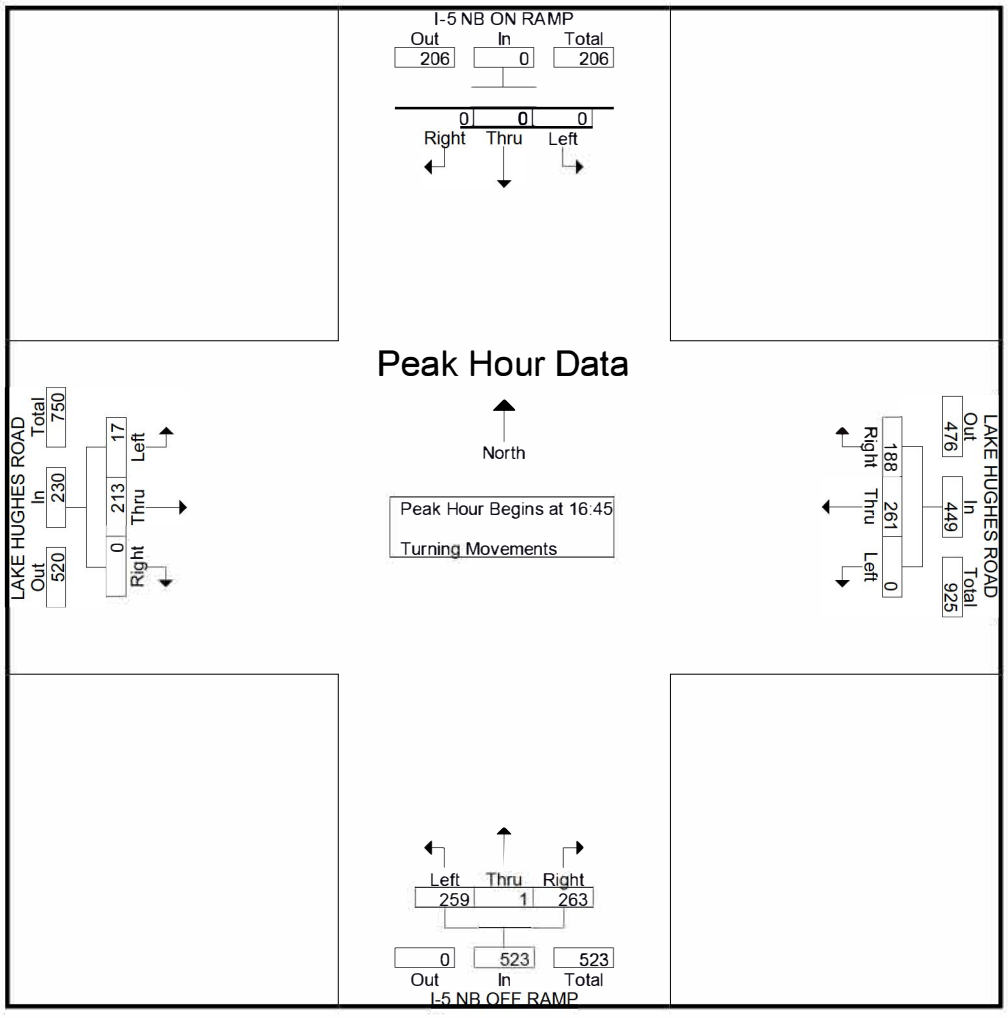
	I-5 NB ON RAMP Southbound				LAKE HUGHES ROAD Westbound				I-5 NB OFF RAMP Northbound				LAKE HUGHES ROAD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15																	
07:15	0	0	0	0	24	85	0	109	28	0	11	39	0	43	4	47	195
07:30	0	0	0	0	**34**	98	0	132	25	**1**	13	39	0	63	**7**	70	241
07:45	0	0	0	0	27	**130**	0	**157**	**30**	0	15	45	0	**90**	5	**95**	**297**
08:00	0	0	0	0	33	80	0	113	26	0	**22**	**48**	0	55	2	57	218
Total Volume	0	0	0	0	118	393	0	511	109	1	61	171	0	251	18	269	951
% App. Total	0	0	0		23.1	76.9	0		63.7	0.6	35.7		0	93.3	6.7		
PHF	.000	.000	.000	.000	.868	.756	.000	.814	.908	.250	.693	.891	.000	.697	.643	.708	.801



Transportation Studies, Inc.
2640 Walnut Avenue, Suite H
Tustin, CA. 92780

File Name : h1501005
Site Code : 00000000
Start Date : 1/27/2015
Page No : 3

	I-5 NB ON RAMP Southbound				LAKE HUGHES ROAD Westbound				I-5 NB OFF RAMP Northbound				LAKE HUGHES ROAD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:45																	
16:45	0	0	0	0	53	66	0	119	65	0	**71**	136	0	56	3	59	**314**
17:00	0	0	0	0	**55**	**73**	0	**128**	**68**	0	71	**139**	0	40	4	44	311
17:15	0	0	0	0	39	65	0	104	65	**1**	59	125	0	50	4	54	283
17:30	0	0	0	0	41	57	0	98	65	0	58	123	0	**67**	**6**	**73**	294
Total Volume	0	0	0	0	188	261	0	449	263	1	259	523	0	213	17	230	1202
% App. Total	0	0	0		41.9	58.1	0		50.3	0.2	49.5		0	92.6	7.4		
PHF	.000	.000	.000	.000	.855	.894	.000	.877	.967	.250	.912	.941	.000	.795	.708	.788	.957



Transportation Studies, Inc.
2640 Walnut Avenue, Suite H
Tustin, CA. 9278[illegible]

City: SANTA CLARITA
N-S- Direction: CASTAIC ROAD
E-W Direction: LAKE HUGHES ROAD

File Name : H1501006
Site Code : 00000000
Start Date : 1/27/2015
Page No : 1

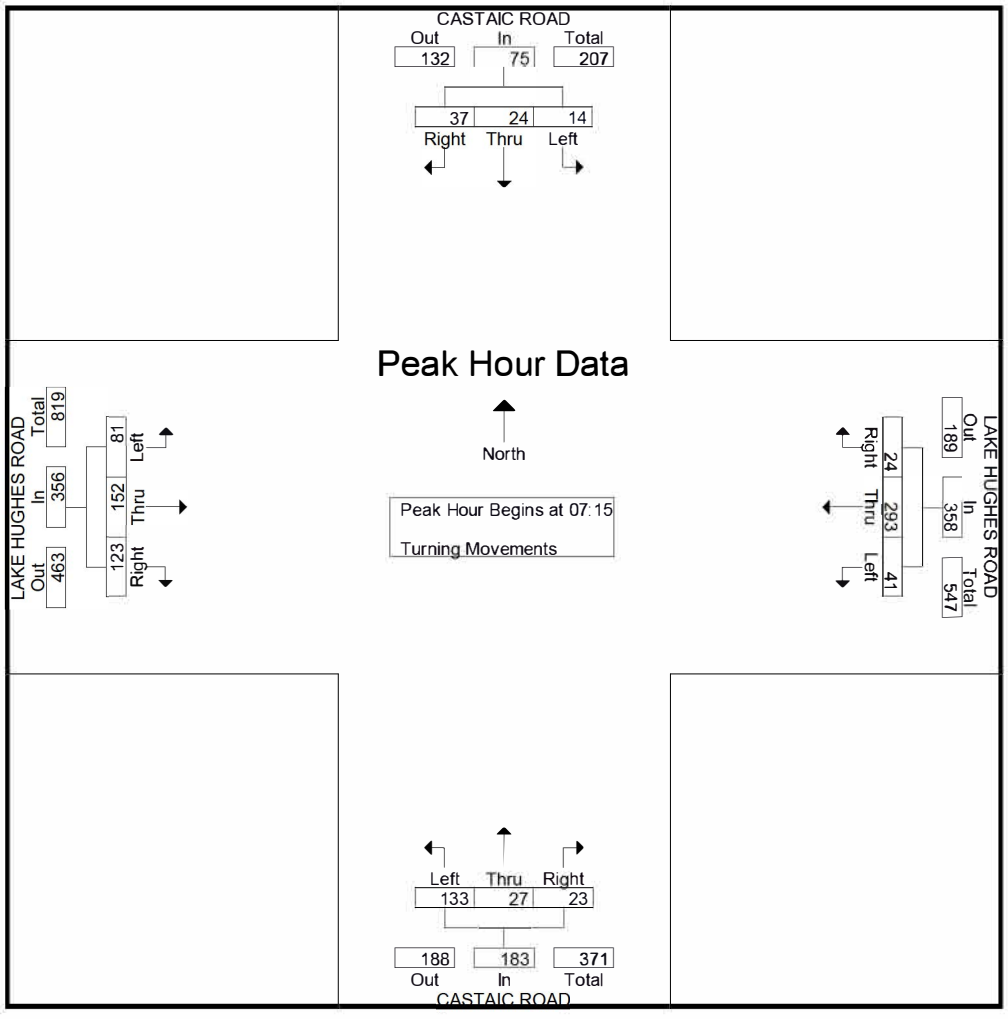
Groups Printed- Turning Movements

	CASTAIC ROAD Southbound			LAKE HUGHES ROAD Westbound			CASTAIC ROAD Northbound			LAKE HUGHES ROAD Eastbound			
Start Time	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Int. Total
07:00	12	1	5	4	46	8	10	4	34	33	36	14	207
07:15	7	7	3	3	61	8	6	5	29	29	20	15	193
07:30	10	6	3	6	76	13	8	7	36	27	41	25	258
07:45	9	3	3	8	87	11	6	7	32	37	64	15	282
Total	38	17	14	21	270	40	30	23	131	126	161	69	940
08:00	11	8	5	7	69	9	3	8	36	30	27	26	239
08:15	9	3	3	6	35	7	2	10	32	27	22	22	178
08:30	10	6	1	3	34	10	6	7	26	30	16	19	168
08:45	11	8	5	5	27	5	2	8	28	25	17	19	160
Total	41	25	14	21	165	31	13	33	122	112	82	86	745
16:00	30	7	8	9	30	8	17	18	45	42	43	26	283
16:15	22	10	11	6	33	9	7	8	72	36	39	32	285
16:30	21	7	5	6	35	9	9	11	61	33	45	26	268
16:45	29	9	8	12	31	3	7	10	55	30	48	34	276
Total	102	33	32	33	129	29	40	47	233	141	175	118	1112
17:00	27	9	6	10	28	5	10	17	61	37	52	18	280
17:15	24	9	11	8	35	6	11	8	48	39	57	24	280
17:30	19	15	6	1	29	6	13	11	53	36	58	31	278
17:45	27	12	6	9	27	4	4	15	45	34	43	29	255
Total	97	45	29	28	119	21	38	51	207	146	210	102	1093
Grand Total	278	120	89	103	683	121	121	154	693	525	628	375	3890
Apprch %	57.1	24.6	18.3	11.4	75.3	13.3	12.5	15.9	71.6	34.4	41.1	24.5	
Total %	7.1	3.1	2.3	2.6	17.6	3.1	3.1	4	17.8	13.5	16.1	9.6	

Transportation Studies, Inc.
2640 Walnut Avenue, Suite H
Tustin, CA. 92780

File Name : H1501006
Site Code : 00000000
Start Date : 1/27/2015
Page No : 2

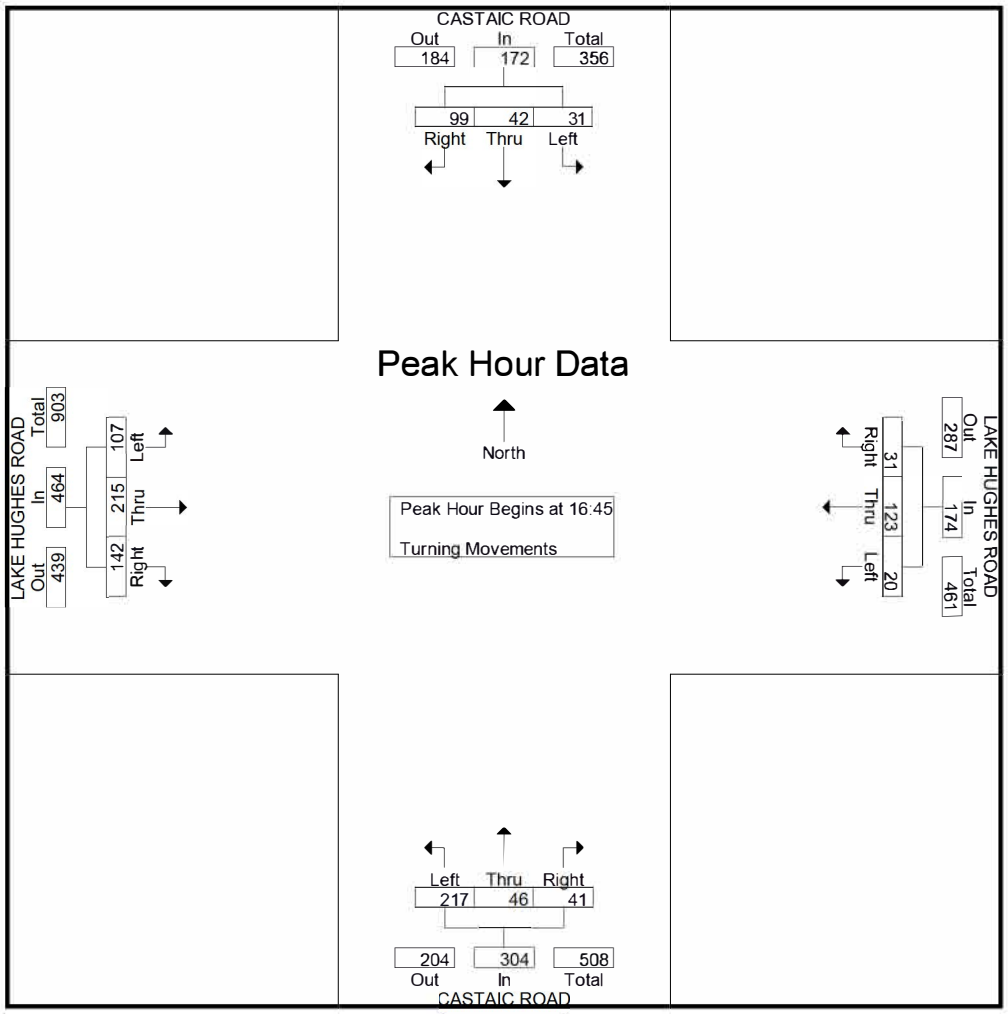
	CASTAIC ROAD Southbound				LAKE HUGHES ROAD Westbound				CASTAIC ROAD Northbound				LAKE HUGHES ROAD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15																	
07:15	7	7	3	17	3	61	8	72	6	5	29	40	29	20	15	64	193
07:30	10	6	3	19	6	76	**13**	95	**8**	7	**36**	**51**	27	41	25	93	258
07:45	9	3	3	15	**8**	**87**	11	**106**	6	7	32	45	**37**	**64**	15	**116**	**282**
08:00	**11**	**8**	**5**	**24**	7	69	9	85	3	**8**	36	47	30	27	**26**	83	239
Total Volume	37	24	14	75	24	293	41	358	23	27	133	183	123	152	81	356	972
% App. Total	49.3	32	18.7		6.7	81.8	11.5		12.6	14.8	72.7		34.6	42.7	22.8		
PHF	.841	.750	.700	.781	.750	.842	.788	.844	.719	.844	.924	.897	.831	.594	.779	.767	.862



Transportation Studies, Inc.
2640 Walnut Avenue, Suite H
Tustin, CA. 92780

File Name : H1501006
Site Code : 00000000
Start Date : 1/27/2015
Page No : 3

	CASTAIC ROAD Southbound				LAKE HUGHES ROAD Westbound				CASTAIC ROAD Northbound				LAKE HUGHES ROAD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:45																	
16:45	**29**	9	8	**46**	**12**	31	3	46	7	10	55	72	30	48	**34**	112	276
17:00	27	9	6	42	10	28	5	43	10	**17**	**61**	**88**	37	52	18	107	**280**
17:15	24	9	**11**	44	8	**35**	**6**	**49**	11	8	48	67	**39**	57	24	120	280
17:30	19	**15**	6	40	1	29	6	36	**13**	11	53	77	36	**58**	31	**125**	278
Total Volume	99	42	31	172	31	123	20	174	41	46	217	304	142	215	107	464	1114
% App. Total	57.6	24.4	18		17.8	70.7	11.5		13.5	15.1	71.4		30.6	46.3	23.1		
PHF	.853	.700	.705	.935	.646	.879	.833	.888	.788	.676	.889	.864	.910	.927	.787	.928	.995



Transportation Studies, Inc.
2640 Walnut Avenue, Suite H
Tustin, CA. 92780

City: SANTA CLARITA
N-S- Direction: RIDGE ROUTE ROAD
E-W Direction: LAKE HUGHES ROAD

File Name : H1501007
Site Code : 00005724
Start Date : 1/27/2015
Page No : 1

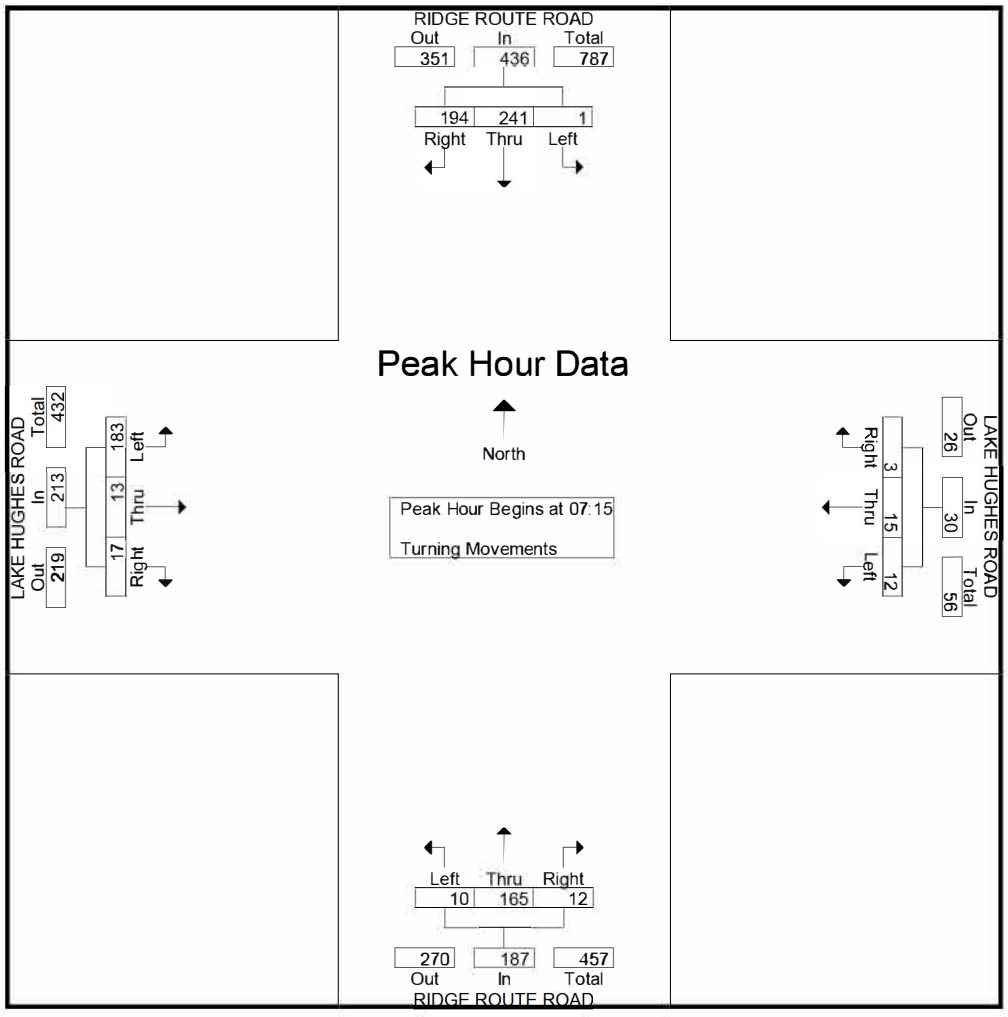
Groups Printed- Turning Movements

	RIDGE ROUTE ROAD Southbound			LAKE HUGHES ROAD Westbound			RIDGE ROUTE ROAD Northbound			LAKE HUGHES ROAD Eastbound			
Start Time	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Int. Total
07:00	13	20	0	1	4	5	4	15	5	2	6	16	91
07:15	16	31	1	0	1	2	3	27	3	2	2	30	118
07:30	33	56	0	0	4	3	2	43	2	7	3	52	205
07:45	69	72	0	0	3	3	1	67	3	3	2	78	301
Total	131	179	1	1	12	13	10	152	13	14	13	176	715
08:00	76	82	0	3	7	4	6	28	2	5	6	23	242
08:15	13	21	1	2	4	3	2	14	3	2	0	14	79
08:30	15	33	1	1	6	3	1	20	3	2	5	9	99
08:45	12	29	0	0	2	3	3	7	5	7	4	4	76
Total	116	165	2	6	19	13	12	69	13	16	15	50	496
16:00	11	15	0	2	3	3	4	11	11	6	4	8	78
16:15	12	18	2	1	6	5	12	24	5	7	4	18	114
16:30	10	19	0	2	6	5	9	15	7	5	1	8	87
16:45	5	21	0	0	10	5	8	21	7	4	5	14	100
Total	38	73	2	5	25	18	33	71	30	22	14	48	379
17:00	7	22	2	2	6	2	4	23	8	9	6	11	102
17:15	9	16	0	2	4	2	4	19	6	12	8	22	104
17:30	4	13	0	0	11	5	3	25	5	6	3	11	86
17:45	4	12	0	0	3	1	3	25	9	7	2	14	80
Total	24	63	2	4	24	10	14	92	28	34	19	58	372
Grand Total	309	480	7	16	80	54	69	384	84	86	61	332	1962
Apprch %	38.8	60.3	0.9	10.7	53.3	36	12.8	71.5	15.6	18	12.7	69.3	
Total %	15.7	24.5	0.4	0.8	4.1	2.8	3.5	19.6	4.3	4.4	3.1	16.9	

Transportation Studies, Inc.
2640 Walnut Avenue, Suite H
Tustin, CA. 92780

File Name : H1501007
Site Code : 00005724
Start Date : 1/27/2015
Page No : 2

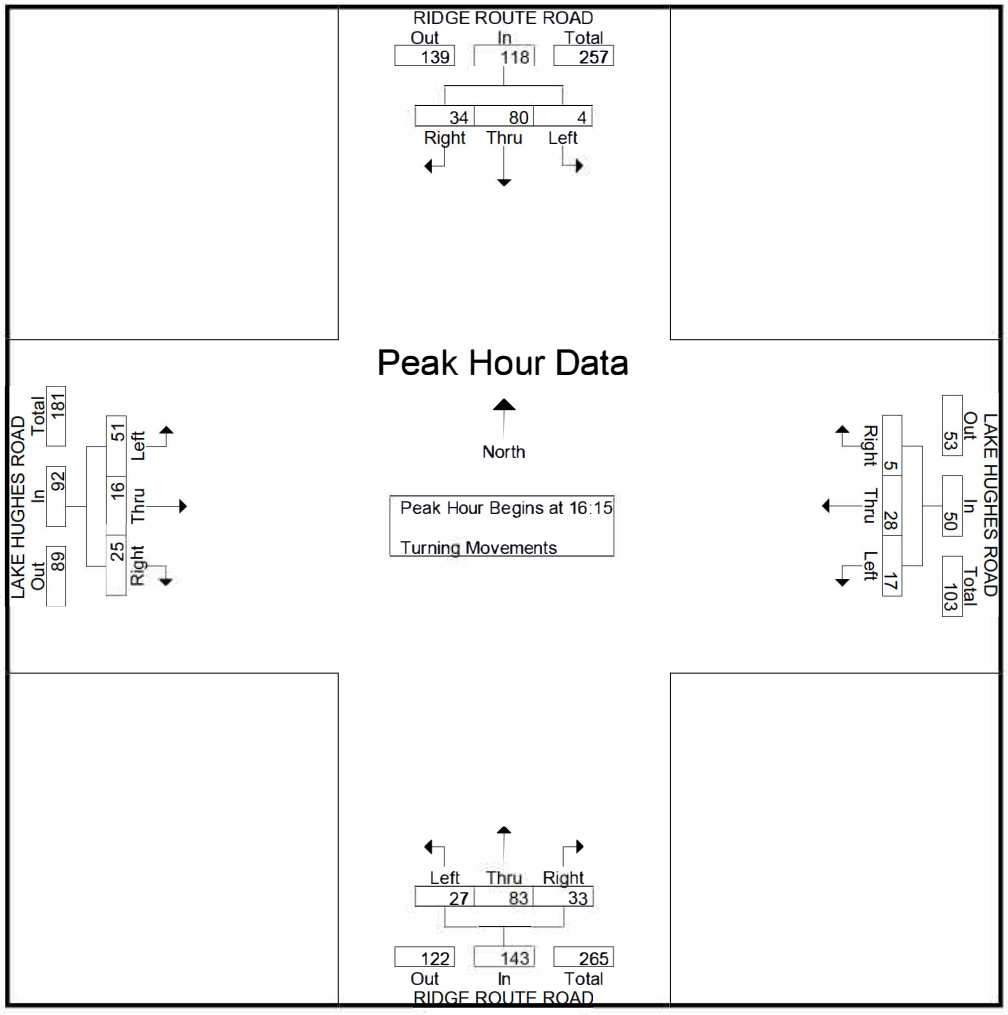
	RIDGE ROUTE ROAD Southbound				LAKE HUGHES ROAD Westbound				RIDGE ROUTE ROAD Northbound				LAKE HUGHES ROAD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15																	
07:15	16	31	**1**	48	0	1	2	3	3	27	**3**	33	2	2	30	34	118
07:30	33	56	0	89	0	4	3	7	2	43	2	47	**7**	3	52	62	205
07:45	69	72	0	141	0	3	3	6	1	**67**	3	**71**	3	2	**78**	**83**	**301**
08:00	**76**	**82**	0	**158**	**3**	**7**	**4**	**14**	**6**	28	2	36	5	**6**	23	34	242
Total Volume	194	241	1	436	3	15	12	30	12	165	10	187	17	13	183	213	866
% App. Total	44.5	55.3	0.2		10	50	40		6.4	88.2	5.3		8	6.1	85.9		
PHF	.638	.735	.250	.690	.250	.536	.750	.536	.500	.616	.833	.658	.607	.542	.587	.642	.719



Transportation Studies, Inc.
2640 Walnut Avenue, Suite H
Tustin, CA. 92780

File Name : H1501007
Site Code : 00005724
Start Date : 1/27/2015
Page No : 3

	RIDGE ROUTE ROAD Southbound				LAKE HUGHES ROAD Westbound				RIDGE ROUTE ROAD Northbound				LAKE HUGHES ROAD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:15																	
16:15	**12**	18	**2**	**32**	**1**	6	**5**	12	**12**	**24**	5	**41**	7	4	**18**	**29**	**114**
16:30	10	19	0	29	**2**	6	5	13	9	15	7	31	5	**1**	8	14	87
16:45	5	21	0	26	0	**10**	5	**15**	8	21	7	36	4	5	14	23	100
17:00	7	**22**	2	31	2	6	2	10	4	23	**8**	35	**9**	**6**	11	26	102
Total Volume	34	80	4	118	5	28	17	50	33	83	27	143	25	16	51	92	403
% App. Total	28.8	67.8	3.4		10	56	34		23.1	58	18.9		27.2	17.4	55.4		
PHF	.708	.909	.500	.922	.625	.700	.850	.833	.688	.865	.844	.872	.694	.667	.708	.793	.884



Transportation Studies, Inc.
2640 Walnut Avenue, Suite H
Tustin, CA. 92780

City: SANTA CLARITA
N-S- Direction: THE OLD ROAD
E-W Direction: PARKER ROAD

File Name : H1501008
Site Code : 00005724
Start Date : 1/28/2015
Page No : 1

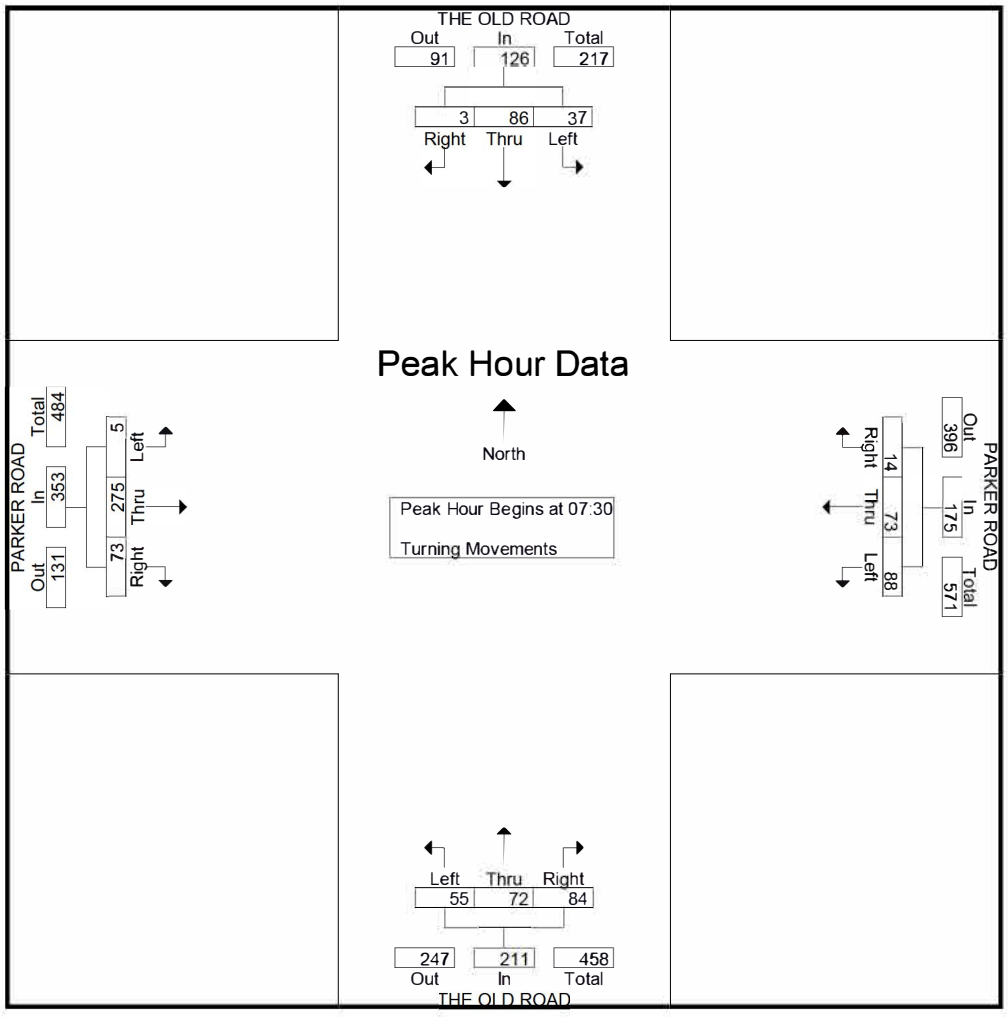
Groups Printed- Turning Movements

	THE OLD ROAD Southbound			PARKER ROAD Westbound			THE OLD ROAD Northbound			PARKER ROAD Eastbound			
Start Time	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Int. Total
07:00	2	6	9	4	12	4	12	5	4	8	59	0	125
07:15	0	14	8	2	14	13	10	5	3	13	68	2	152
07:30	2	14	10	2	10	13	19	5	4	10	76	0	165
07:45	0	20	7	2	20	18	21	13	8	19	97	2	227
Total	4	54	34	10	56	48	62	28	19	50	300	4	669
08:00	1	29	13	4	25	35	25	20	21	22	54	1	250
08:15	0	23	7	6	18	22	19	34	22	22	48	2	223
08:30	2	12	11	0	18	5	23	20	13	10	44	3	161
08:45	1	9	7	4	14	16	14	15	6	8	38	1	133
Total	4	73	38	14	75	78	81	89	62	62	184	7	767
16:00	5	17	6	17	45	20	20	19	9	13	27	2	200
16:15	2	17	9	11	33	14	25	17	15	9	37	1	190
16:30	3	11	15	11	40	19	17	21	18	10	35	0	200
16:45	1	8	6	8	55	17	18	20	5	4	33	3	178
Total	11	53	36	47	173	70	80	77	47	36	132	6	768
17:00	1	10	11	12	53	23	18	13	8	8	29	2	188
17:15	6	10	10	14	58	21	22	23	16	6	38	3	227
17:30	4	24	3	14	53	18	14	15	11	5	34	3	198
17:45	5	18	10	10	51	15	19	18	13	8	26	0	193
Total	16	62	34	50	215	77	73	69	48	27	127	8	806
Grand Total	35	242	142	121	519	273	296	263	176	175	743	25	3010
Apprch %	8.4	57.8	33.9	13.3	56.8	29.9	40.3	35.8	23.9	18.6	78.8	2.7	
Total %	1.2	8	4.7	4	17.2	9.1	9.8	8.7	5.8	5.8	24.7	0.8	

Transportation Studies, Inc.
2640 Walnut Avenue, Suite H
Tustin, CA. 92780

File Name : H1501008
Site Code : 00005724
Start Date : 1/28/2015
Page No : 2

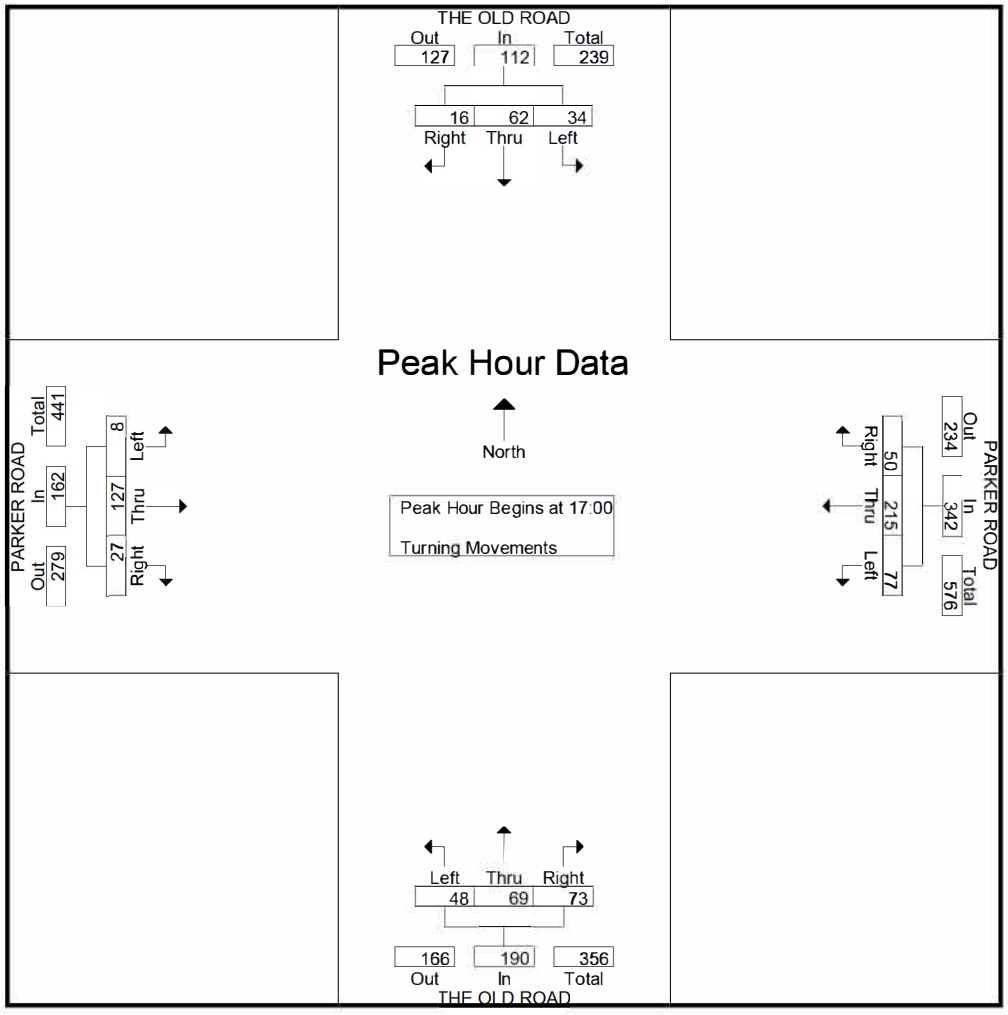
	THE OLD ROAD Southbound				PARKER ROAD Westbound				THE OLD ROAD Northbound				PARKER ROAD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30																	
07:30	**2**	14	10	26	2	10	13	25	19	5	4	28	10	76	0	86	165
07:45	0	20	7	27	2	20	18	40	21	13	8	42	19	**97**	**2**	**118**	227
08:00	1	**29**	**13**	**43**	4	**25**	**35**	**64**	**25**	20	21	66	**22**	54	1	77	**250**
08:15	0	23	7	30	**6**	18	22	46	19	**34**	**22**	**75**	22	48	2	72	223
Total Volume	3	86	37	126	14	73	88	175	84	72	55	211	73	275	5	353	865
% App. Total	2.4	68.3	29.4		8	41.7	50.3		39.8	34.1	26.1		20.7	77.9	1.4		
PHF	.375	.741	.712	.733	.583	.730	.629	.684	.840	.529	.625	.703	.830	.709	.625	.748	.865



Transportation Studies, Inc.
2640 Walnut Avenue, Suite H
Tustin, CA. 92780

File Name : H1501008
Site Code : 00005724
Start Date : 1/28/2015
Page No : 3

	THE OLD ROAD Southbound				PARKER ROAD Westbound				THE OLD ROAD Northbound				PARKER ROAD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 17:00																	
17:00	1	10	**11**	22	12	53	**23**	88	18	13	8	39	**8**	29	2	39	188
17:15	**6**	10	10	26	**14**	**58**	21	**93**	**22**	**23**	**16**	**61**	6	**38**	**3**	**47**	**227**
17:30	4	**24**	3	31	14	53	18	85	14	15	11	40	5	34	3	42	198
17:45	5	18	10	**33**	10	51	15	76	19	18	13	50	8	26	0	34	193
Total Volume	16	62	34	112	50	215	77	342	73	69	48	190	27	127	8	162	806
% App. Total	14.3	55.4	30.4		14.6	62.9	22.5		38.4	36.3	25.3		16.7	78.4	4.9		
PHF	.667	.646	.773	.848	.893	.927	.837	.919	.830	.750	.750	.779	.844	.836	.667	.862	.888



Transportation Studies, Inc.
2640 Walnut Avenue, Suite H
Tustin, CA. 92780

City: SANTA CLARITA
N-S- Direction: I-5 SB ON RAMP
E-W Direction: PARKER ROAD

File Name : H1501009
Site Code : 00000000
Start Date : 1/22/2015
Page No : 1

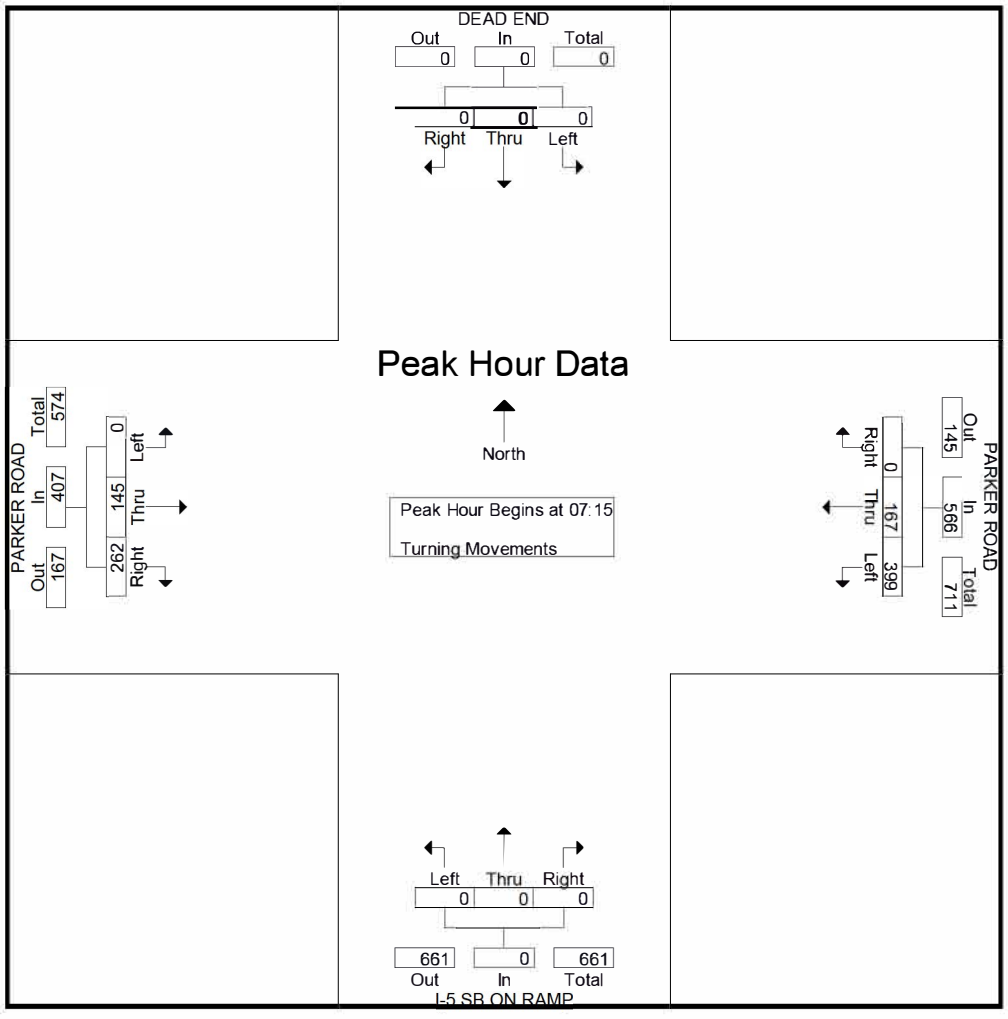
Groups Printed- Turning Movements

	DEAD END Southbound			PARKER ROAD Westbound			I-5 SB ON RAMP Northbound			PARKER ROAD Eastbound			
Start Time	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Int. Total
07:00	0	0	0	0	21	84	0	0	0	69	12	0	186
07:15	0	0	0	0	30	94	0	0	0	78	14	0	216
07:30	0	0	0	0	26	113	0	0	0	75	51	0	265
07:45	0	0	0	0	57	103	0	0	0	67	45	0	272
Total	0	0	0	0	134	394	0	0	0	289	122	0	939
08:00	0	0	0	0	54	89	0	0	0	42	35	0	220
08:15	0	0	0	0	40	71	0	0	0	53	34	0	198
08:30	0	0	0	0	35	65	0	0	0	38	21	0	159
08:45	0	0	0	0	33	77	0	0	0	42	18	0	170
Total	0	0	0	0	162	302	0	0	0	175	108	0	747
16:00	0	0	0	0	72	61	0	0	0	31	25	0	189
16:15	0	0	0	0	69	51	0	0	0	35	28	0	183
16:30	0	0	0	0	73	84	0	0	0	40	27	0	224
16:45	0	0	0	0	66	76	0	0	0	28	42	0	212
Total	0	0	0	0	280	272	0	0	0	134	122	0	808
17:00	0	0	0	0	90	88	0	0	0	31	36	0	245
17:15	0	0	0	0	84	82	0	0	0	29	23	0	218
17:30	0	0	0	0	90	83	0	0	0	28	31	0	232
17:45	0	0	0	0	88	74	0	0	0	28	48	0	238
Total	0	0	0	0	352	327	0	0	0	116	138	0	933
Grand Total	0	0	0	0	928	1295	0	0	0	714	490	0	3427
Apprch %	0	0	0	0	41.7	58.3	0	0	0	59.3	40.7	0	
Total %	0	0	0	0	27.1	37.8	0	0	0	20.8	14.3	0	

Transportation Studies, Inc.
2640 Walnut Avenue, Suite H
Tustin, CA. 92780

File Name : H1501009
Site Code : 00000000
Start Date : 1/22/2015
Page No : 2

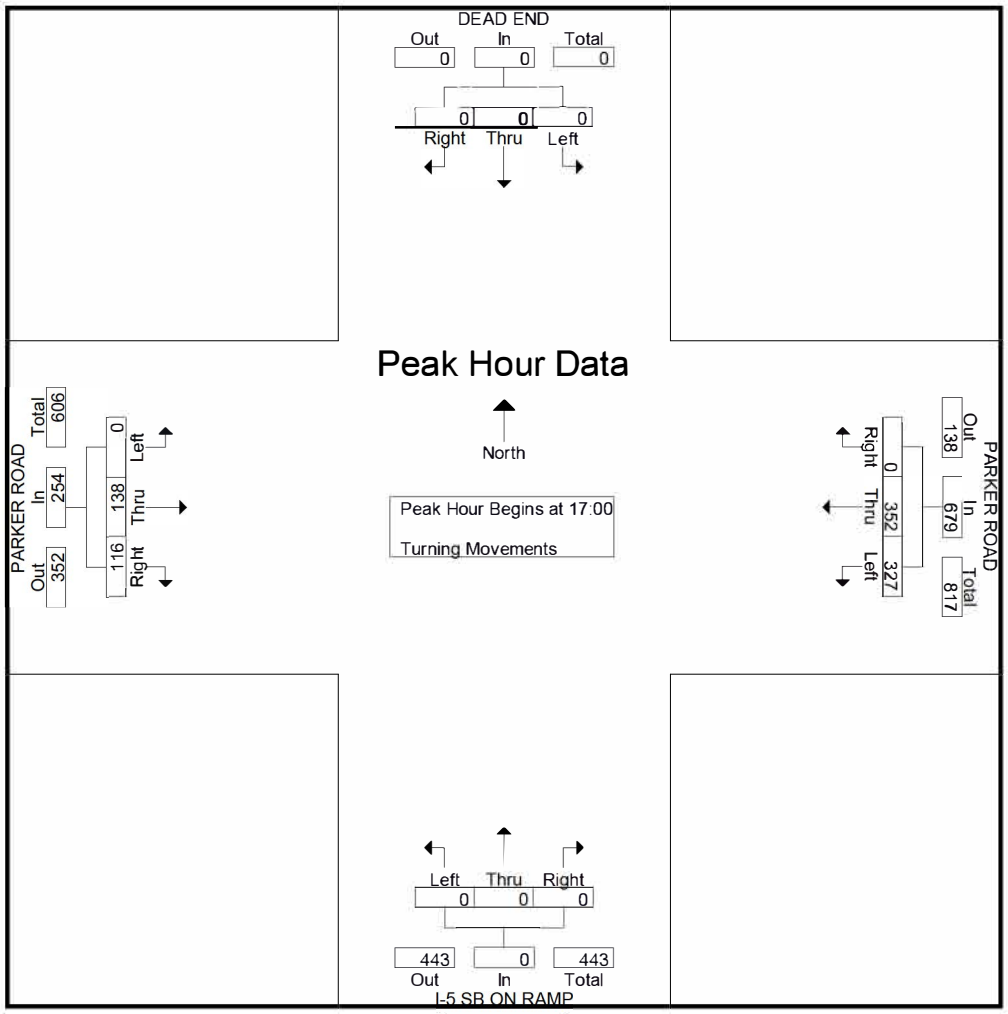
	DEAD END Southbound				PARKER ROAD Westbound				I-5 SB ON RAMP Northbound				PARKER ROAD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15																	
07:15	0	0	0	0	0	30	94	124	0	0	0	0	**78**	14	0	92	216
07:30	0	0	0	0	0	26	**113**	139	0	0	0	0	75	**51**	0	**126**	265
07:45	0	0	0	0	0	**57**	103	**160**	0	0	0	0	67	45	0	112	**272**
08:00	0	0	0	0	0	54	89	143	0	0	0	0	42	35	0	77	220
Total Volume	0	0	0	0	0	167	399	566	0	0	0	0	262	145	0	407	973
% App. Total	0	0	0		0	29.5	70.5		0	0	0		64.4	35.6	0		
PHF	.000	.000	.000	.000	.000	.732	.883	.884	.000	.000	.000	.000	.840	.711	.000	.808	.894



Transportation Studies, Inc.
2640 Walnut Avenue, Suite H
Tustin, CA. 92780

File Name : H1501009
Site Code : 00000000
Start Date : 1/22/2015
Page No : 3

	DEAD END Southbound				PARKER ROAD Westbound				I-5 SB ON RAMP Northbound				PARKER ROAD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 17:00																	
17:00	0	0	0	0	0	**90**	**88**	**178**	0	0	0	0	**31**	36	0	67	**245**
17:15	0	0	0	0	0	84	82	166	0	0	0	0	29	23	0	52	218
17:30	0	0	0	0	0	90	83	173	0	0	0	0	28	31	0	59	232
17:45	0	0	0	0	0	88	74	162	0	0	0	0	28	**48**	0	**76**	238
Total Volume	0	0	0	0	0	352	327	679	0	0	0	0	116	138	0	254	933
% App. Total	0	0	0		0	51.8	48.2		0	0	0		45.7	54.3	0		
PHF	.000	.000	.000	.000	.000	.978	.929	.954	.000	.000	.000	.000	.935	.719	.000	.836	.952



Transportation Studies, Inc.
2640 Walnut Avenue, Suite H
Tustin, CA. 9278

City: SANTA CLARITA
N-S- Direction: I-5 NB OFF RAMP
E-W Direction: RIDGE ROUTE ROAD

File Name : H1501010
Site Code : 00000000
Start Date : 1/22/2015
Page No : 1

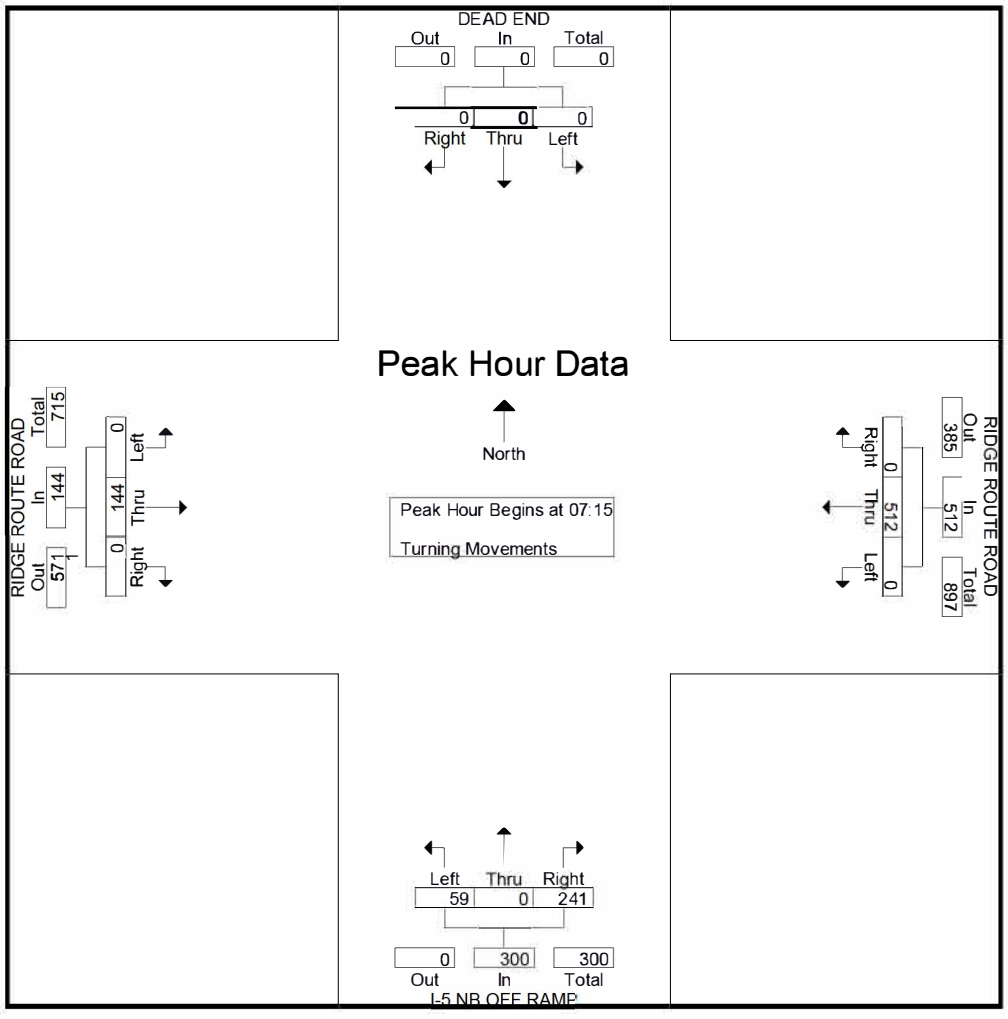
Groups Printed- Turning Movements

	DEAD END Southbound			RIDGE ROUTE ROAD Westbound			I-5 NB OFF RAMP Northbound			RIDGE ROUTE ROAD Eastbound			
Start Time	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Int. Total
07:00	0	0	0	0	87	0	48	0	15	0	10	0	160
07:15	0	0	0	0	118	0	61	0	10	0	14	0	203
07:30	0	0	0	0	132	0	64	0	12	0	50	0	258
07:45	0	0	0	0	138	0	58	0	19	0	46	0	261
Total	0	0	0	0	475	0	231	0	56	0	120	0	882
08:00	0	0	0	0	124	0	58	0	18	0	34	0	234
08:15	0	0	0	0	88	0	49	0	16	0	34	0	187
08:30	0	0	0	0	89	0	55	0	17	0	20	0	181
08:45	0	0	0	0	88	0	60	0	14	0	16	0	178
Total	0	0	0	0	389	0	222	0	65	0	104	0	780
16:00	0	0	0	0	90	0	109	0	50	0	25	0	274
16:15	0	0	0	0	75	0	110	0	39	0	27	0	251
16:30	0	0	0	0	109	0	127	0	46	0	25	0	307
16:45	0	0	0	0	105	0	135	0	44	0	42	0	326
Total	0	0	0	0	379	0	481	0	179	0	119	0	1158
17:00	0	0	0	0	128	0	119	0	46	0	37	0	330
17:15	0	0	0	0	106	0	127	0	57	0	26	0	316
17:30	0	0	0	0	126	0	125	0	50	0	32	0	333
17:45	0	0	0	0	112	0	120	0	52	0	43	0	327
Total	0	0	0	0	472	0	491	0	205	0	138	0	1306
Grand Total	0	0	0	0	1715	0	1425	0	505	0	481	0	4126
Apprch %	0	0	0	0	100	0	73.8	0	26.2	0	100	0	
Total %	0	0	0	0	41.6	0	34.5	0	12.2	0	11.7	0	

Transportation Studies, Inc.
2640 Walnut Avenue, Suite H
Tustin, CA. 92780

File Name : H1501010
Site Code : 00000000
Start Date : 1/22/2015
Page No : 2

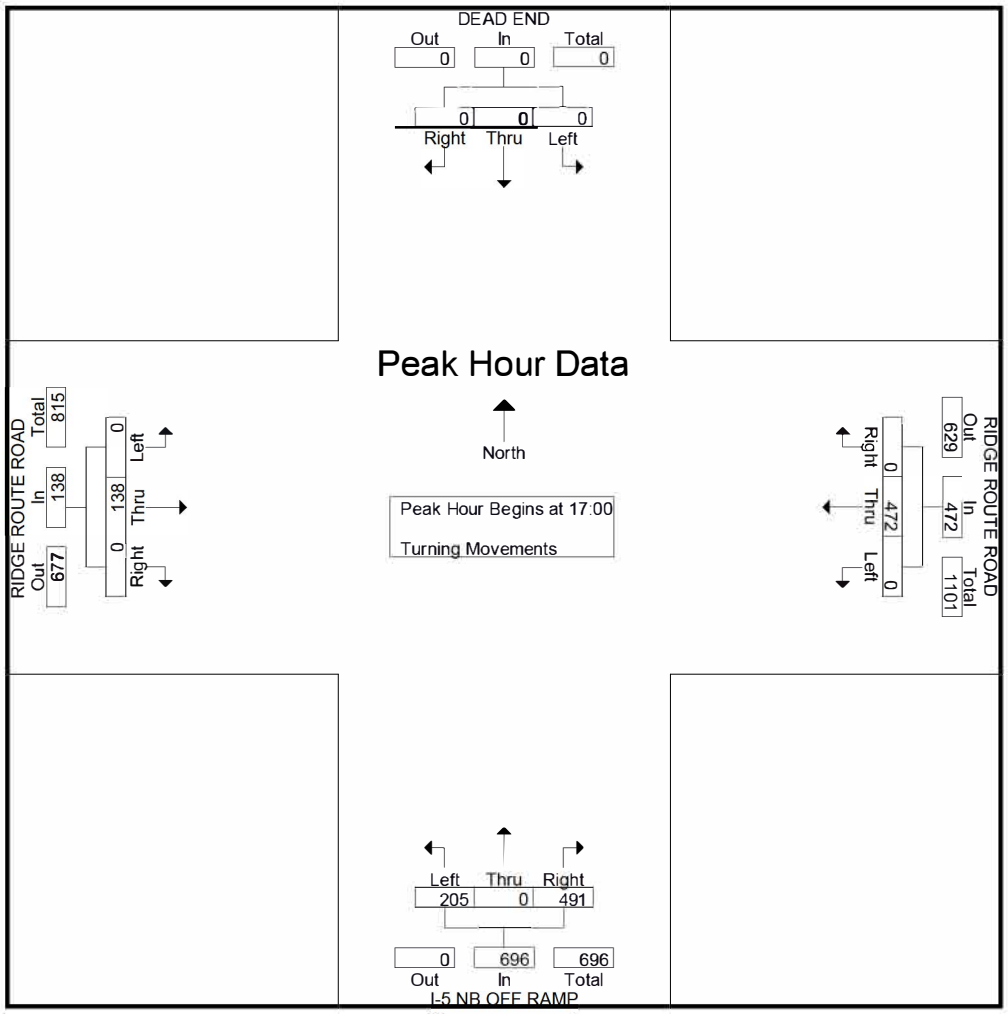
	DEAD END Southbound				RIDGE ROUTE ROAD Westbound				I-5 NB OFF RAMP Northbound				RIDGE ROUTE ROAD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15																	
07:15	0	0	0	0	0	118	0	118	61	0	10	71	0	14	0	14	203
07:30	0	0	0	0	0	132	0	132	**64**	0	12	76	0	**50**	0	**50**	258
07:45	0	0	0	0	0	**138**	0	**138**	58	0	**19**	**77**	0	46	0	46	**261**
08:00	0	0	0	0	0	124	0	124	58	0	18	76	0	34	0	34	234
Total Volume	0	0	0	0	0	512	0	512	241	0	59	300	0	144	0	144	956
% App. Total	0	0	0		0	100	0		80.3	0	19.7		0	100	0		
PHF	.000	.000	.000	.000	.000	.928	.000	.928	.941	.000	.776	.974	.000	.720	.000	.720	.916



Transportation Studies, Inc.
2640 Walnut Avenue, Suite H
Tustin, CA. 92780

File Name : H1501010
Site Code : 00000000
Start Date : 1/22/2015
Page No : 3

	DEAD END Southbound				RIDGE ROUTE ROAD Westbound				I-5 NB OFF RAMP Northbound				RIDGE ROUTE ROAD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 17:00																	
17:00	0	0	0	0	0	**128**	0	**128**	119	0	46	165	0	37	0	37	330
17:15	0	0	0	0	0	106	0	106	**127**	0	**57**	**184**	0	26	0	26	316
17:30	0	0	0	0	0	126	0	126	125	0	50	175	0	32	0	32	**333**
17:45	0	0	0	0	0	112	0	112	120	0	52	172	0	**43**	0	**43**	327
Total Volume	0	0	0	0	0	472	0	472	491	0	205	696	0	138	0	138	1306
% App. Total	0	0	0		0	100	0		70.5	0	29.5		0	100	0		
PHF	.000	.000	.000	.000	.000	.922	.000	.922	.967	.000	.899	.946	.000	.802	.000	.802	.980



Transportation Studies, Inc.
2640 Walnut Avenue, Suite H
Tustin, CA. 92780

City: SANTA CLARITA
N-S- Direction: CASTAIC ROAD
E-W Direction: RIDGE ROUTE ROAD

File Name : H1501011
Site Code : 00000000
Start Date : 1/22/2015
Page No : 1

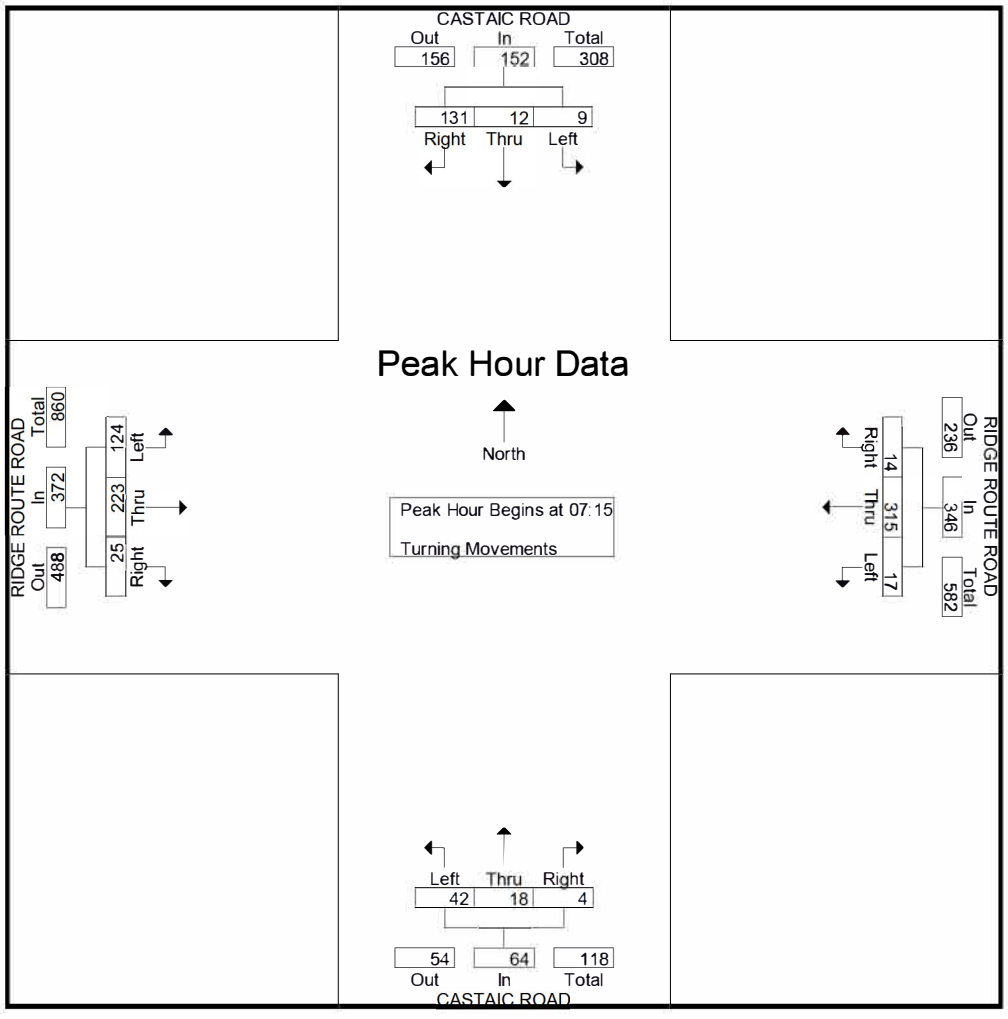
Groups Printed- Turning Movements

	CASTAIC ROAD Southbound			RIDGE ROUTE ROAD Westbound			CASTAIC ROAD Northbound			RIDGE ROUTE ROAD Eastbound			
Start Time	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Int. Total
07:00	27	1	2	7	67	4	1	3	9	11	30	18	180
07:15	35	0	1	1	68	4	1	6	8	10	42	24	200
07:30	25	4	2	3	93	4	2	2	11	3	78	29	256
07:45	33	2	3	8	87	5	0	5	7	5	62	32	249
Total	120	7	8	19	315	17	4	16	35	29	212	103	885
08:00	38	6	3	2	67	4	1	5	16	7	41	39	229
08:15	29	4	2	1	50	6	4	9	6	10	41	33	195
08:30	34	5	0	2	41	5	4	3	14	5	34	30	177
08:45	37	4	4	2	38	5	3	1	9	13	21	38	175
Total	138	19	9	7	196	20	12	18	45	35	137	140	776
16:00	30	8	2	3	35	4	4	12	30	19	47	59	253
16:15	32	12	3	6	31	4	3	6	10	23	55	59	244
16:30	37	7	2	4	41	9	4	14	29	23	69	56	295
16:45	38	15	4	3	36	4	4	15	27	62	63	53	324
Total	137	42	11	16	143	21	15	47	96	127	234	227	1116
17:00	36	6	1	10	34	6	5	18	49	31	67	53	316
17:15	35	8	5	7	34	5	4	5	37	26	58	62	286
17:30	39	9	8	8	46	1	5	8	32	29	56	59	300
17:45	33	10	3	3	38	11	7	15	44	51	55	54	324
Total	143	33	17	28	152	23	21	46	162	137	236	228	1226
Grand Total	538	101	45	70	806	81	52	127	338	328	819	698	4003
Apprch %	78.7	14.8	6.6	7.3	84.2	8.5	10.1	24.6	65.4	17.8	44.4	37.8	
Total %	13.4	2.5	1.1	1.7	20.1	2	1.3	3.2	8.4	8.2	20.5	17.4	

Transportation Studies, Inc.
2640 Walnut Avenue, Suite H
Tustin, CA. 92780

File Name : H1501011
Site Code : 00000000
Start Date : 1/22/2015
Page No : 2

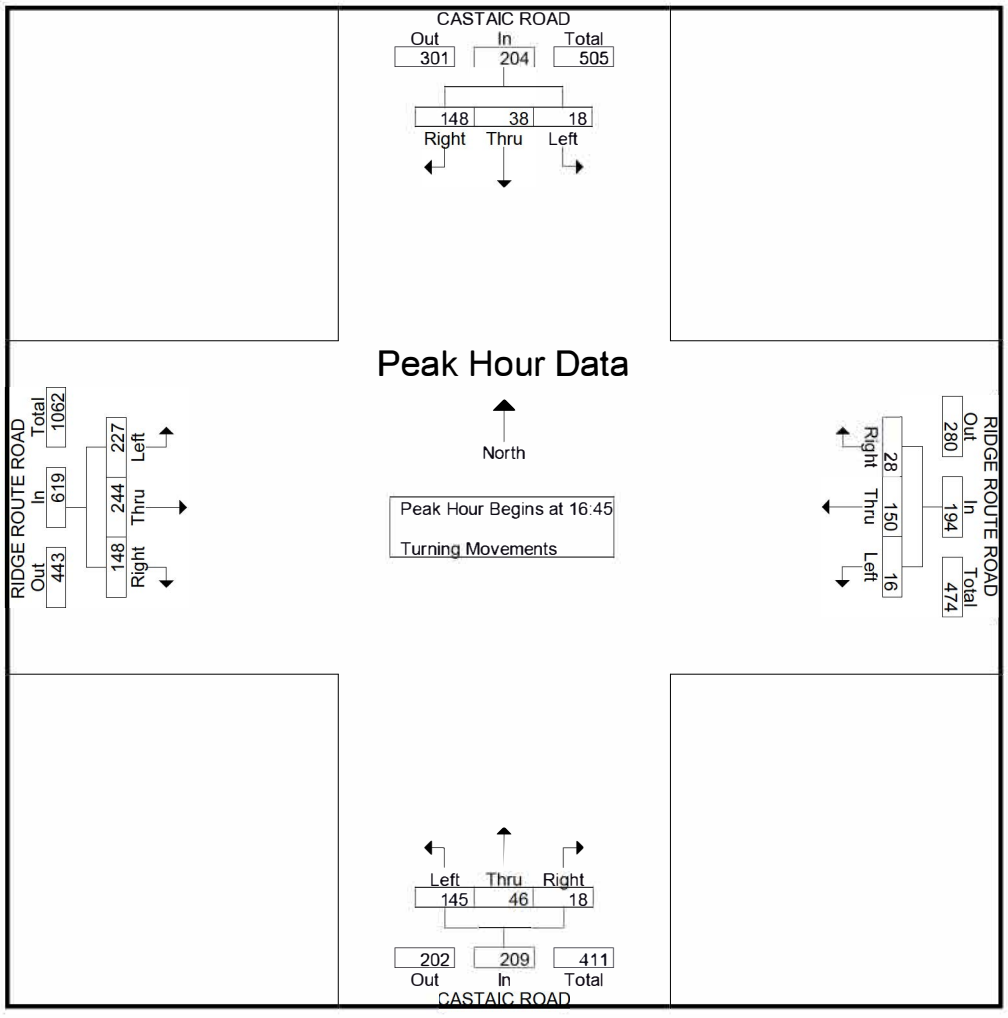
	CASTAIC ROAD Southbound				RIDGE ROUTE ROAD Westbound				CASTAIC ROAD Northbound				RIDGE ROUTE ROAD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15																	
07:15	35	0	1	36	1	68	4	73	1	**6**	8	15	**10**	42	24	76	200
07:30	25	4	2	31	3	**93**	4	**100**	**2**	2	11	15	3	**78**	29	**110**	**256**
07:45	33	2	**3**	38	**8**	87	**5**	100	0	5	7	12	5	62	32	99	249
08:00	**38**	**6**	3	**47**	2	67	4	73	1	5	**16**	**22**	7	41	**39**	87	229
Total Volume	131	12	9	152	14	315	17	346	4	18	42	64	25	223	124	372	934
% App. Total	86.2	7.9	5.9		4	91	4.9		6.2	28.1	65.6		6.7	59.9	33.3		
PHF	.862	.500	.750	.809	.438	.847	.850	.865	.500	.750	.656	.727	.625	.715	.795	.845	.912



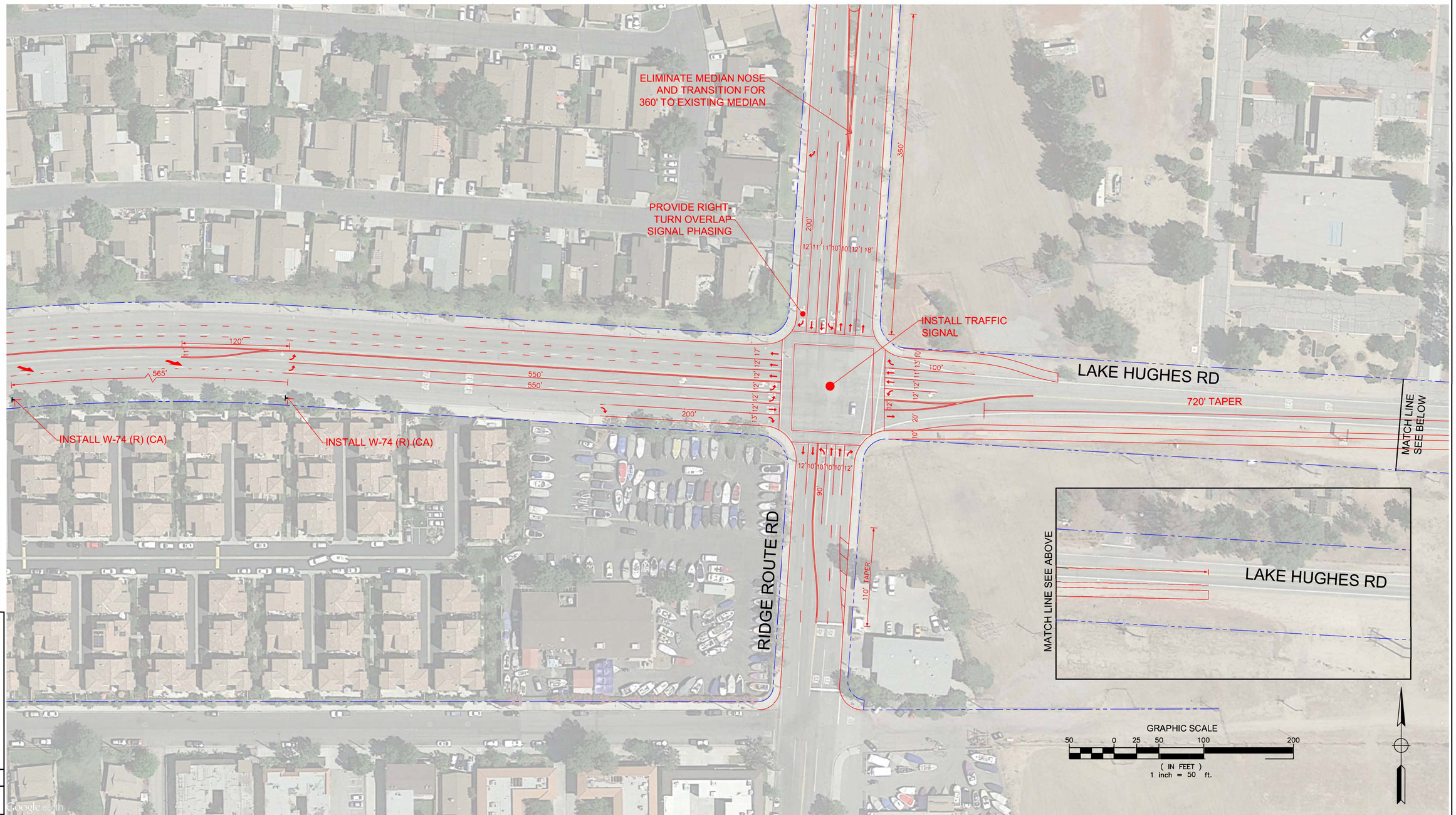
Transportation Studies, Inc.
2640 Walnut Avenue, Suite H
Tustin, CA. 92780

File Name : H1501011
Site Code : 00000000
Start Date : 1/22/2015
Page No : 3

	CASTAIC ROAD Southbound				RIDGE ROUTE ROAD Westbound				CASTAIC ROAD Northbound				RIDGE ROUTE ROAD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:45																	
16:45	38	**15**	4	**57**	3	36	4	43	4	15	27	46	**62**	63	53	**178**	**324**
17:00	36	6	1	43	**10**	34	**6**	50	**5**	**18**	**49**	**72**	31	**67**	53	151	316
17:15	35	8	5	48	7	34	5	46	4	5	37	46	26	58	**62**	146	286
17:30	**39**	9	**8**	56	8	**46**	1	**55**	5	8	32	45	29	56	59	144	300
Total Volume	148	38	18	204	28	150	16	194	18	46	145	209	148	244	227	619	1226
% App. Total	72.5	18.6	8.8		14.4	77.3	8.2		8.6	22	69.4		23.9	39.4	36.7		
PHF	.949	.633	.563	.895	.700	.815	.667	.882	.900	.639	.740	.726	.597	.910	.915	.869	.946



Appendix D CONCEPT MITIGATION PLAN



NO.	PROJECT	CADD FILE NAME	DATE	BY	REVISIONS

T.G. Page: 4369 / H-6

REGISTERED PROFESSIONAL ENGINEER
FENG XU
No. 80744
Exp. 3-31-17
CIVIL
STATE OF CALIFORNIA

PLANS PREPARED BY:
Stantec

FENG XU, RCE 80744 EXPIRE 3-31-17 DATE:

CONSTRUCTION DIVISION SHALL CONTACT TRAFFIC AND LIGHTING DIVISION PRIOR TO ISSUANCE OF PERMIT

REVIEWED
DATE:

RECOMMENDED
DATE:

APPROVED
GAIL FARBER, DIRECTOR OF PUBLIC WORKS

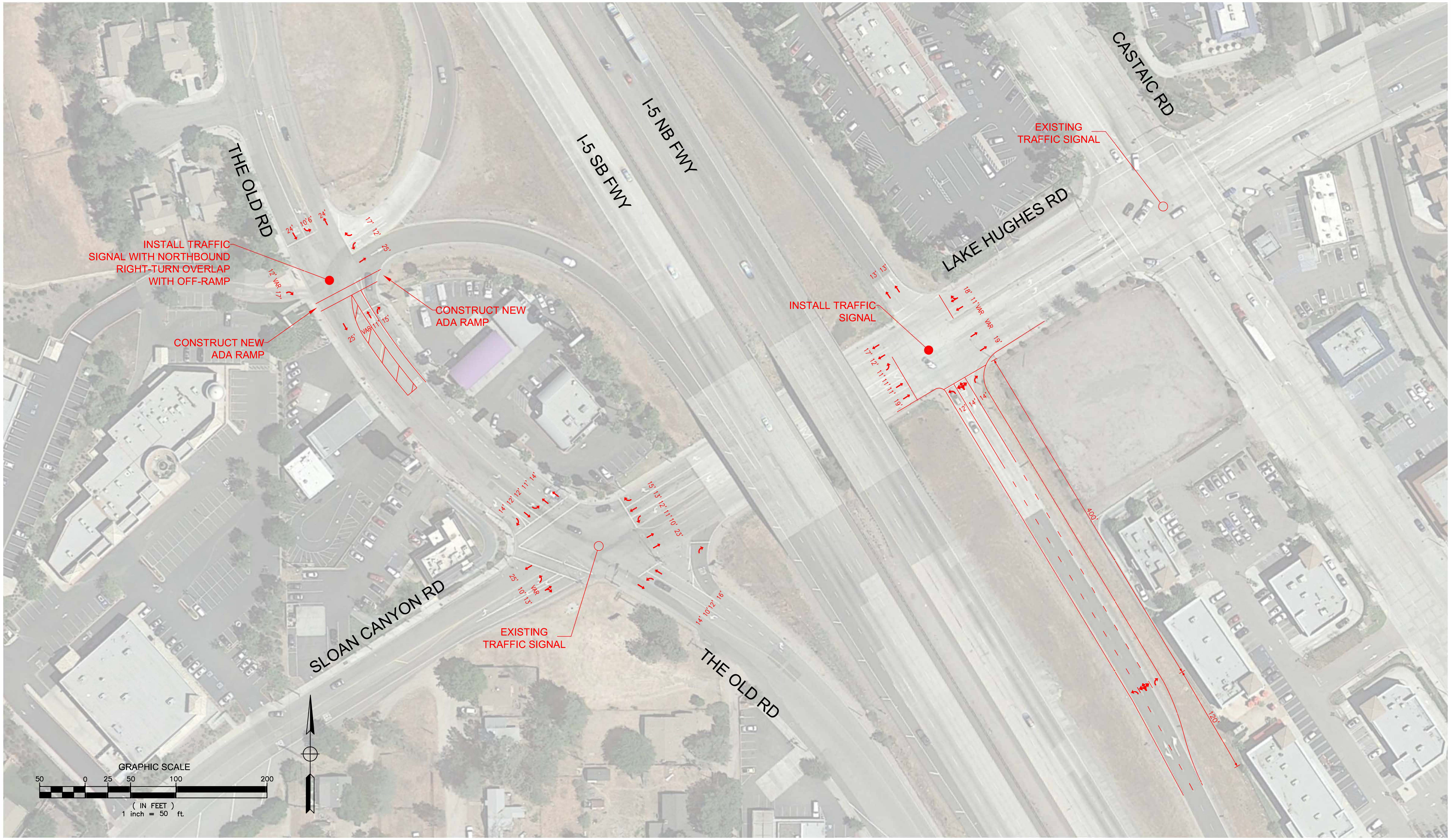
BY: ASSISTANT DEPUTY DIRECTOR DATE

THIS PLAN EXPIRES TWO YEARS AFTER APPROVAL DATE

NORTHLAKE ASSOCIATES, LLC
NORTHLAKE SPECIFIC PLAN
CASTAIC,CA

CONCEPT MITIGATION PLAN
RIDGE ROUTE RD AND LAKE HUGHES RD

VTTM 73336	SHEET 1 OF 3	SCALE: 1" = 50'	T.S.



CONSTRUCTION DIVISION SHALL CONTACT TRAFFIC AND LIGHTING DIVISION PRIOR TO ISSUANCE OF PERMIT

REVISIONS				
NO.	PROJECT	CADD FILE NAME	DATE	BY

T.G. Page: 4369 / G-6

REGISTERED PROFESSIONAL ENGINEER
FENG XU
No. 80744
Exp. 3-31-17
CIVIL
STATE OF CALIFORNIA

PLANS PREPARED BY:

Stantec

FENG XU, RCE 80744 EXPIRE 3-31-17 DATE: ________

REVIEWED
DATE: ________

RECOMMENDED
DATE: ________

APPROVED
GAIL FARBER, DIRECTOR OF PUBLIC WORKS

BY: ________
ASSISTANT DEPUTY DIRECTOR DATE

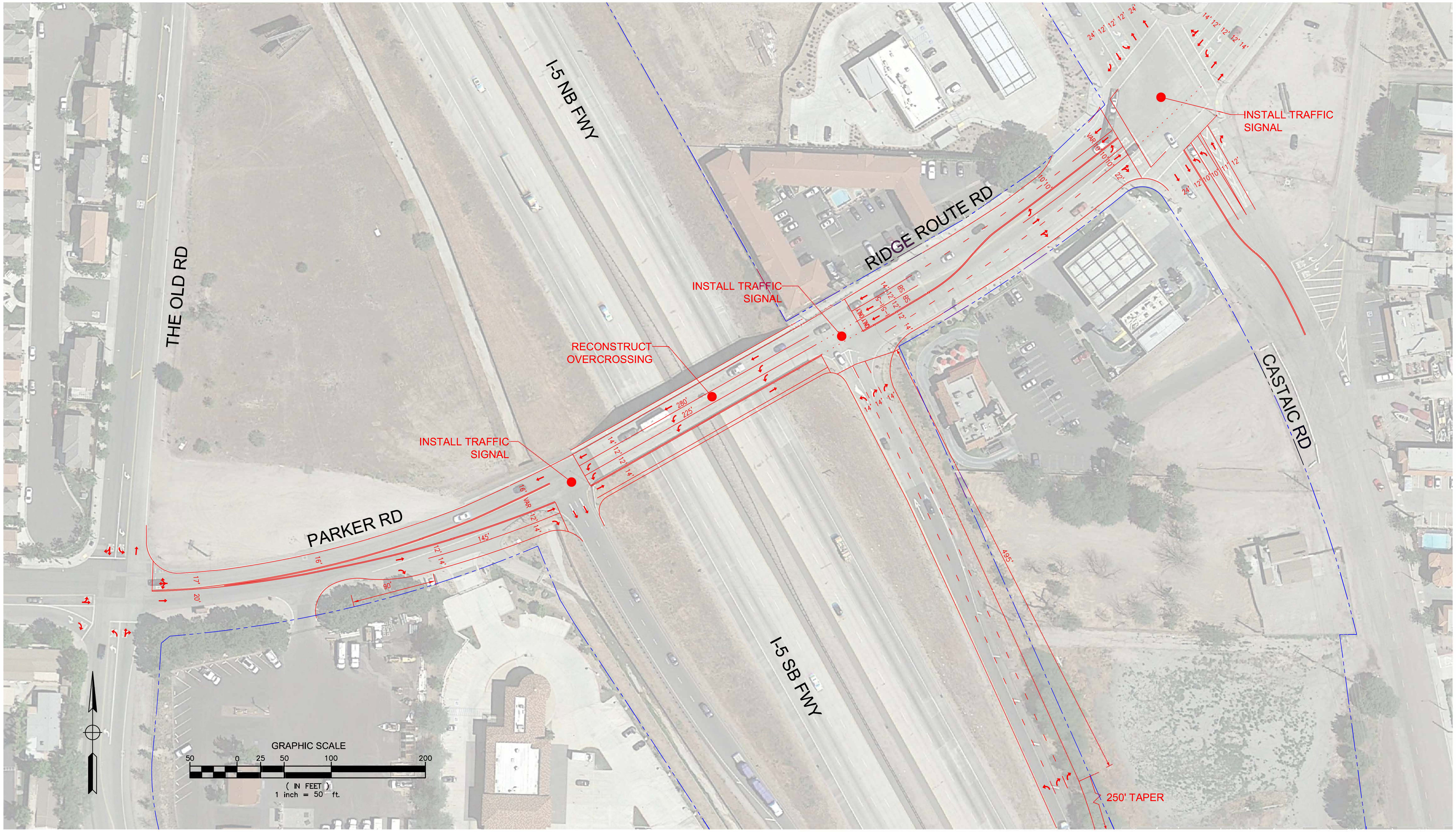
NORTHLAKE ASSOCIATES, LLC
NORTHLAKE SPECIFIC PLAN
CASTAIC,CA

CONCEPT MITIGATION PLAN
THE OLD RD, LAKE HUGHES RD TO
I-5 RAMPS

VTTM 73336	SHEET 2 OF 3	SCALE: 1" = 50'	T.S.

THIS PLAN EXPIRES TWO YEARS AFTER APPROVAL DATE

D3



CONSTRUCTION DIVISION SHALL CONTACT TRAFFIC AND LIGHTING DIVISION PRIOR TO ISSUANCE OF PERMIT

NO.	PROJECT	CADD FILE NAME	DATE	BY	REVISIONS

T.G. Page: 4369 / H-7

REGISTERED PROFESSIONAL ENGINEER
FENG XU
No. 80744
Exp. 3-31-17
CIVIL
STATE OF CALIFORNIA

PLANS PREPARED BY:

Stantec

FENG XU, RCE 80744 EXPIRE 3-31-17 DATE:

REVIEWED
DATE:

RECOMMENDED
DATE:

APPROVED
GAIL FARBER, DIRECTOR OF PUBLIC WORKS

BY: ASSISTANT DEPUTY DIRECTOR DATE

NORTHLAKE ASSOCIATES, LLC
NORTHLAKE SPECIFIC PLAN
CASTAIC, CA

CONCEPT MITIGATION PLAN
THE OLD RD AND PARKER RD -
RIDGE ROUTE RD AND CASTAIC RD

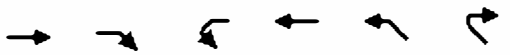
VTTM 73336 | SHEET 3 OF 3 | SCALE: 1" = 50' | T.S.

THIS PLAN EXPIRES TWO YEARS AFTER APPROVAL DATE

4/14/2016 10:02 AM

D4

Appendix EHCM WORKSHEETS



Lane Group	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations						
Traffic Volume (vph)	190	280	1130	450	0	0
Future Volume (vph)	190	280	1130	450	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		250	300		0	0
Storage Lanes		1	1		0	0
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	0.97	1.00	1.00	1.00
Frt		0.850				
Flt Protected			0.950			
Satd. Flow (prot)	1845	1568	3335	1810	0	0
Flt Permitted			0.950			
Satd. Flow (perm)	1845	1568	3335	1810	0	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		77				
Link Speed (mph)	30			30	30	
Link Distance (ft)	486			342	585	
Travel Time (s)	11.0			7.8	13.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	3%	5%	5%	2%	2%
Adj. Flow (vph)	190	280	1130	450	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	190	280	1130	450	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	24			24	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Number of Detectors	1	1	1	1		
Detector Template						
Leading Detector (ft)	50	50	50	50		
Trailing Detector (ft)	0	0	0	0		
Detector 1 Position(ft)	0	0	0	0		
Detector 1 Size(ft)	50	50	50	50		
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		
Turn Type	NA	Perm	Split	NA		
Protected Phases	4		8	8		
Permitted Phases		4				
Detector Phase	4	4	8	8		
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0		
Minimum Split (s)	20.0	20.0	20.0	20.0		

Lane Group	EBT	EBR	WBL	WBT	NWL	NWR
Total Split (s)	35.0	35.0	55.0	55.0		
Total Split (%)	38.9%	38.9%	61.1%	61.1%		
Maximum Green (s)	31.0	31.0	51.0	51.0		
Yellow Time (s)	3.5	3.5	3.5	3.5		
All-Red Time (s)	0.5	0.5	0.5	0.5		
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		
Total Lost Time (s)	4.0	4.0	4.0	4.0		
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0		
Recall Mode	None	None	None	None		
Walk Time (s)	5.0	5.0	5.0	5.0		
Flash Dont Walk (s)	11.0	11.0	11.0	11.0		
Pedestrian Calls (#/hr)	0	0	0	0		
Act Effct Green (s)	40.0	40.0	42.0	42.0		
Actuated g/C Ratio	0.44	0.44	0.47	0.47		
v/c Ratio	0.23	0.38	0.73	0.53		
Control Delay	18.4	15.3	17.2	15.2		
Queue Delay	0.0	0.0	0.0	0.2		
Total Delay	18.4	15.3	17.3	15.4		
LOS	B	B	B	B		
Approach Delay	16.5			16.7		
Approach LOS	B			B		

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 15 (17%), Referenced to phase 2: and 6:, Start of Green			
Natural Cycle: 40			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 16.7		Intersection LOS: B	
Intersection Capacity Utilization 83.7%		ICU Level of Service E	
Analysis Period (min) 15			

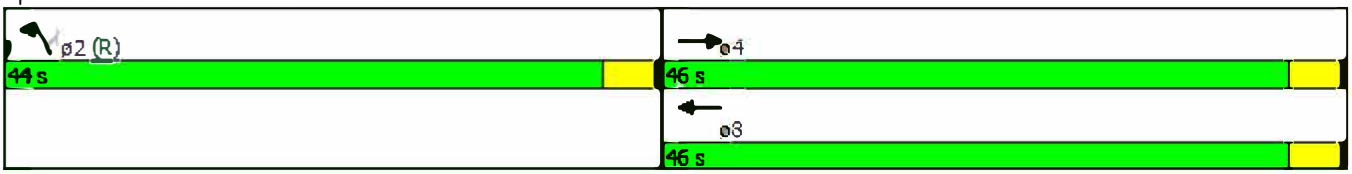
Splits and Phases: 2: I-5 SB & Parker

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	190	0	0	1360	230	860
Future Volume (vph)	190	0	0	1360	230	860
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	0		400	400
Storage Lanes		0	0		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	0.91	1.00	0.88
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	1810	0	0	4893	1703	2682
Flt Permitted					0.950	
Satd. Flow (perm)	1810	0	0	4893	1703	2682
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						860
Link Speed (mph)	30			30	30	
Link Distance (ft)	342			421	1215	
Travel Time (s)	7.8			9.6	27.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	5%	5%	6%	6%	6%	6%
Adj. Flow (vph)	190	0	0	1360	230	860
Shared Lane Traffic (%)						
Lane Group Flow (vph)	190	0	0	1360	230	860
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Number of Detectors	1			1	1	1
Detector Template						
Leading Detector (ft)	50			50	50	50
Trailing Detector (ft)	0			0	0	0
Detector 1 Position(ft)	0			0	0	0
Detector 1 Size(ft)	50			50	50	50
Detector 1 Type	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0			0.0	0.0	0.0
Detector 1 Queue (s)	0.0			0.0	0.0	0.0
Detector 1 Delay (s)	0.0			0.0	0.0	0.0
Turn Type	NA			NA	Prot	Perm
Protected Phases	4			8	2	
Permitted Phases						2
Detector Phase	4			8	2	2
Switch Phase						
Minimum Initial (s)	4.0			4.0	4.0	4.0
Minimum Split (s)	20.0			20.0	20.0	20.0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Total Split (s)	46.0			46.0	44.0	44.0
Total Split (%)	51.1%			51.1%	48.9%	48.9%
Maximum Green (s)	42.0			42.0	40.0	40.0
Yellow Time (s)	3.5			3.5	3.5	3.5
All-Red Time (s)	0.5			0.5	0.5	0.5
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	4.0			4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	None			None	C-Max	C-Max
Walk Time (s)	5.0			5.0	5.0	5.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	34.4			34.4	47.6	47.6
Actuated g/C Ratio	0.38			0.38	0.53	0.53
v/c Ratio	0.27			0.73	0.26	0.47
Control Delay	36.9			10.8	13.6	2.0
Queue Delay	0.0			0.1	0.0	0.0
Total Delay	36.9			10.8	13.6	2.0
LOS	D			B	B	A
Approach Delay	36.9			10.8	4.4	
Approach LOS	D			B	A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 88 (98%), Referenced to phase 2:NBL and 6:, Start of Green			
Natural Cycle: 40			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 10.1		Intersection LOS: B	
Intersection Capacity Utilization 83.7%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 10: I-5 NB & Parker



Lane Group	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations						
Traffic Volume (vph)	330	330	1040	630	0	0
Future Volume (vph)	330	330	1040	630	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		250	300		0	0
Storage Lanes		1	1		0	0
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	0.97	1.00	1.00	1.00
Frt		0.850				
Flt Protected			0.950			
Satd. Flow (prot)	1845	1568	3335	1810	0	0
Flt Permitted			0.950			
Satd. Flow (perm)	1845	1568	3335	1810	0	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		95				
Link Speed (mph)	30			30	30	
Link Distance (ft)	486			342	585	
Travel Time (s)	11.0			7.8	13.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	3%	5%	5%	2%	2%
Adj. Flow (vph)	330	330	1040	630	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	330	330	1040	630	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	24			24	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Number of Detectors	1	1	1	1		
Detector Template						
Leading Detector (ft)	50	50	50	50		
Trailing Detector (ft)	0	0	0	0		
Detector 1 Position(ft)	0	0	0	0		
Detector 1 Size(ft)	50	50	50	50		
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		
Turn Type	NA	Perm	Split	NA		
Protected Phases	4		8	8		
Permitted Phases		4				
Detector Phase	4	4	8	8		
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0		
Minimum Split (s)	20.0	20.0	20.0	20.0		

Lane Group	EBT	EBR	WBL	WBT	NWL	NWR
Total Split (s)	35.0	35.0	55.0	55.0		
Total Split (%)	38.9%	38.9%	61.1%	61.1%		
Maximum Green (s)	31.0	31.0	51.0	51.0		
Yellow Time (s)	3.5	3.5	3.5	3.5		
All-Red Time (s)	0.5	0.5	0.5	0.5		
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		
Total Lost Time (s)	4.0	4.0	4.0	4.0		
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0		
Recall Mode	None	None	None	None		
Walk Time (s)	5.0	5.0	5.0	5.0		
Flash Dont Walk (s)	11.0	11.0	11.0	11.0		
Pedestrian Calls (#/hr)	0	0	0	0		
Act Effct Green (s)	39.2	39.2	42.8	42.8		
Actuated g/C Ratio	0.44	0.44	0.48	0.48		
v/c Ratio	0.41	0.45	0.66	0.73		
Control Delay	21.7	16.6	20.3	23.2		
Queue Delay	0.1	0.0	0.3	0.7		
Total Delay	21.8	16.6	20.6	23.9		
LOS	C	B	C	C		
Approach Delay	19.2			21.8		
Approach LOS	B			C		

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 15 (17%), Referenced to phase 2: and 6:, Start of Green			
Natural Cycle: 50			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 21.1		Intersection LOS: C	
Intersection Capacity Utilization 110.6%		ICU Level of Service H	
Analysis Period (min) 15			

Splits and Phases: 2: I-5 SB & Parker

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	330	0	0	1270	400	1590
Future Volume (vph)	330	0	0	1270	400	1590
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	0		400	400
Storage Lanes		0	0		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	0.91	1.00	0.88
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	1810	0	0	4893	1703	2682
Flt Permitted					0.950	
Satd. Flow (perm)	1810	0	0	4893	1703	2682
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						483
Link Speed (mph)	30			30	30	
Link Distance (ft)	342			421	1215	
Travel Time (s)	7.8			9.6	27.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	5%	5%	6%	6%	6%	6%
Adj. Flow (vph)	330	0	0	1270	400	1590
Shared Lane Traffic (%)						
Lane Group Flow (vph)	330	0	0	1270	400	1590
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Number of Detectors	1			1	1	1
Detector Template						
Leading Detector (ft)	50			50	50	50
Trailing Detector (ft)	0			0	0	0
Detector 1 Position(ft)	0			0	0	0
Detector 1 Size(ft)	50			50	50	50
Detector 1 Type	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0			0.0	0.0	0.0
Detector 1 Queue (s)	0.0			0.0	0.0	0.0
Detector 1 Delay (s)	0.0			0.0	0.0	0.0
Turn Type	NA			NA	Prot	Perm
Protected Phases	4			8	2	
Permitted Phases						2
Detector Phase	4			8	2	2
Switch Phase						
Minimum Initial (s)	4.0			4.0	4.0	4.0
Minimum Split (s)	20.0			20.0	20.0	20.0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Total Split (s)	32.0			32.0	58.0	58.0
Total Split (%)	35.6%			35.6%	64.4%	64.4%
Maximum Green (s)	28.0			28.0	54.0	54.0
Yellow Time (s)	3.5			3.5	3.5	3.5
All-Red Time (s)	0.5			0.5	0.5	0.5
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	4.0			4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	None			None	C-Max	C-Max
Walk Time (s)	5.0			5.0	5.0	5.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	27.4			27.4	54.6	54.6
Actuated g/C Ratio	0.30			0.30	0.61	0.61
v/c Ratio	0.60			0.85	0.39	0.88
Control Delay	45.1			36.1	10.6	17.2
Queue Delay	4.5			0.0	0.0	0.0
Total Delay	49.6			36.1	10.6	17.2
LOS	D			D	B	B
Approach Delay	49.6			36.1	15.8	
Approach LOS	D			D	B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 88 (98%), Referenced to phase 2:NBL and 6:, Start of Green			
Natural Cycle: 50			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay: 26.1		Intersection LOS: C	
Intersection Capacity Utilization 110.6%		ICU Level of Service H	
Analysis Period (min) 15			

Splits and Phases: 10: I-5 NB & Parker