Appendix J:
Traffic and Circulation

J-1: Expanded Traffic and Circulation Analysis

Expanded Traffic and Circulation Analysis
Prepared for the
Draft EIR
County of San Luis Obispo
Los Osos Wastewater Proposed Project

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November 14, 2008

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PREFACE

This Expanded Traffic and Circulation Analysis corresponds to Section 5.8, Traffic and Circulation, of the Los Osos Wastewater Proposed Project Draft EIR. For readability and reference, the numbering system for headings and page numbers in the following environmental analysis uses the same section number as that used in the Draft EIR.

This Expanded Traffic and Circulation Analysis of the Los Osos Wastewater Proposed Project Draft EIR is a summary of a compendium of knowledge regarding traffic and circulation issues statewide, as well as those issues applicable to San Luis Obispo County and specifically Los Osos. Since the body of knowledge is considerable and contained in numerous appendices, it would be difficult to present it entirely in this document and in a manner that is easily understood by the reader. In order to aid the reader in locating background information, this section is formatted to facilitate the retrieval of appended information by presenting the reader with references that address the issue at hand.

5.8 - TRAFFIC AND CIRCULATION

5.8.1 - Introduction

This section provides a summary of the analysis contained within the Traffic Study prepared for the Los Osos Wastewater Project (LOWWP) by Associated Transportation Engineers in October 2008. The Traffic Study evaluates the potential traffic impacts of the LOWWP on existing and future traffic operations in Los Osos. The study methodology is consistent with the California Department of Transportation (Caltrans) and County of San Luis Obispo. This section provides information regarding existing and future traffic conditions within the LOWWP study-area and recommends mitigations where necessary. Two evaluations are presented for the LOWWP. Potential impacts related to "on-going" operations after the project is built are assessed based on the traffic that would be generated by employee and maintenance vehicle trips required to operate and maintain the system. Potential impacts related to construction of the project are also assessed. The following is a list of information reviewed in preparation of this section.

1. Los Osos Wastewater Treatment Proposed Project, San Luis Obispo County, California – Traffic and Circulation Study. October 7, 2008. Associated Transportation Engineers. This information is located in Appendix J-2 of the Draft EIR appendices.
2. Estero Area Plan. November 2002. San Luis Obispo County Department of Planning and Building. This document is not contained in the EIR appendices, but is instead available for review at the San Luis Obispo County Department of Planning and Building. Pursuant to CEQA Guidelines Section 15150, this document is hereby incorporated by reference.
3. San Luis Obispo County General Plan. Transportation Plan. June 1979. San Luis Obispo County Department of Planning and Building. This document is not contained in the EIR appendices, but is instead available for review at the San Luis Obispo County Department of Planning and Building. Pursuant to CEQA Guidelines Section 15150, this document is hereby incorporated by reference.

5.8.2 - Environmental Setting

Methodology

The Traffic Study, prepared for the Los Osos Wastewater Project, utilizes existing traffic counts, published average daily traffic (ADT) volumes, and data from San Luis Obispo County Department of Public Works.

Performance Measures and Standards

A level of service (LOS) designation is the generally accepted measure utilized for determining the quality of operation of either a roadway segment or intersection. There are six LOS categories ranging from LOS A, free flowing traffic to LOS F, bumper-to-bumper traffic. The volume to capacity ratio (V/C) measures the percentage of actual traffic volume on a roadway compared to the

total traffic capacity of that roadway and also corresponds with LOS designations. Existing peak hour volumes were counted in September 2008 for this study.

Table 5.8-1 and Table 5.8-2 below identify LOS criteria for both unsignalized and signalized intersections and Table 5.8-3 identifies LOS criteria for roadway segments. As shown in Table 5.8-1, performance criteria are determined in relation to the average control delay at an unsignalized intersection expressed in the average vehicle delay in seconds per vehicle (sec/veh), which corresponds to a specific LOS. Each constrained movement has a level of service rating, and there is an overall level of service rating for unsignalized intersection. As shown in Table 5.8-2, performance at signalized intersections is determined by calculating the vehicle/capacity (v/c) ratio, that is translated into a sec/veh peak hour delay that ultimately corresponds to a specified LOS. In particular, a v/c ratio refers to the total volume of traffic on a roadway in relation to the designated capacity that a roadway may accommodate based upon the roadway design. Lastly, as shown in Table 5.8-3, the LOS for roadway segments is determined by the v/c ratio.

Table 5.8-1: Signalized Intersection Level of Service Definitions

LOS	Delay	V/C/ Ratio	Definition
A	< 10.0	< 0.60	Progression is extremely favorable. Most vehicles arrive during the green phase. Many vehicles do not stop at all.
B	10.1 – 20.0	0.61 – 0.70	Good progression, short cycle lengths, or both. More vehicles stop than with LOS A, causing higher levels of delay.
C	20.1 – 35.0	0.71 – 0.80	Only fair progression, longer cycle lengths, or both, result in higher cycle lengths. Cycle lengths may fail to serve queued vehicles, and overflow occurs. Number of vehicles stopped is significant, though many still pass through intersections without stopping.
D	35.1 – 55.0	0.81 – 0.90	Congestion becomes more noticeable. Unfavorable progression, longer cycle lengths and high v/c ratios result in longer delays. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	55.1 – 80.0	0.91 – 1.00	High delay values indicate poor progression, long cycle lengths and high v/c ratios. Individual cycle failures are frequent.
F	> 80.0	> 1.00	Considered unacceptable for most drivers, this level occurs when arrival flow rates exceed the capacity of lane groups, resulting in many individual cycle failures. Poor progression and long cycle lengths may also contribute to high delay levels.
Source: Associated Transportation Engineers, November 2008			

Table 5.8-2: Unsignalized Intersection Level of Service Definitions

LOS	Control Delay Seconds per Vehicle
A	< 10.0
B	10.1 – 15.0
C	15.1 – 25.0
D	25.1 – 35.0
E	35.1 – 50.0
F	> 50.0
Source: Associated Transportation Engineers, November 2008.	

Table 5.8-3: Level of Service for Roadway Segments

LOS	V/C/ Ratio
A	< 0.60
B	0.61 – 0.70
C	0.71 – 0.80
D	0.81 – 0.90
E	0.91 – 1.00
F	> 1.00
Source: Associated Transportation Engineers, November 2008.	

Street Network

The Los Osos area is served by a street network composed of arterial streets, collector streets, and local streets. Exhibit 5.8-1 shows the traffic study area by illustrating the streets and intersections that are evaluated. The study area streets and intersections were selected based on their potential to accommodate a substantial amount of the projected project traffic volumes. The following provides a brief discussion of the street network.

Los Osos Valley Road - is a two-lane principal arterial that traverses the agricultural lands between Los Osos and the City of San Luis Obispo. Within the community of Los Osos the roadway widens to four lanes between Lariat Drive and Bush Drive. A combination of two-way left-turn lanes and left-turn pockets are provided along Los Osos Valley Road within the community. LOVR would provide access to the Proposed Project sites.

South Bay Boulevard - is a two-lane principal arterial that connects the community of Los Osos with the City of Morro Bay to the north. The LOVR/South Bay Boulevard intersection is controlled by a traffic signal.

Turri Road - is a two-lane rural roadway that extends north of LOVR and westerly to its connection to South Bay Boulevard. Turri Road would provide access to the Tonini sprayfield site on the west side of the roadway. Turri Road is controlled by stop-signs at the LOVR and South Bay Boulevard intersections and is located outside of the Urban Reserve Line.

Broderson Avenue - is a two-lane collector street that extends south of LOVR. Broderson Avenue serves the adjacent residential neighborhood and becomes a dirt road south of Highland Drive. Broderson Avenue would provide access to the proposed leachfield disposal site. Broderson Avenue is controlled by a stop-sign at the LOVR intersection.

9th Street - is a north-south two-lane collector street that extends between Santa Ysabel Avenue on the north and LOVR on the south. The roadway continues as Bayview Heights Drive south of LOVR. The LOVR/9th Street intersection is signalized.

10th Street - is a north-south two-lane collector street that extends between Santa Ysabel Avenue on the north and LOVR on the south. The LOVR/10th Street intersection is signalized.

Roadway Operations

Existing ADT volumes were obtained from the San Luis Obispo County Department of Public Works. Table 5.8-4 shows the existing ADT volumes and the capacities for the study area roadway segments. Roadway capacities were derived from the Estero Area Plan prepared by San Luis Obispo County. As shown, the existing traffic volumes are within the design capacities of the area roadways.

Table 5.8-4: Existing Roadway Operations

Roadway Segment	Classification	Capacity	Existing ADT	LOS
Broderson Avenue s/o LOVR	2-Lane Local	14,400 ADT	800 ADT	A
LOVR e/o Broderson Road	2-Lane Arterial	18,000 ADT	12,100 ADT	B
LOVR w/o South Bay Boulevard	4-Lane Arterial	35,900 ADT	16,300 ADT	A
LOVR e/o South Bay Boulevard	4-Lane Arterial	35,900 ADT	17,100 ADT	A
Turri Road n/o LOVR	2-Lane Local	14,400 ADT	400 ADT	A
Source: Associated Transportation Engineers, November 2008.				

Source: AirPhoto USA, San Luis Obispo County GIS Data, and MBA GIS Data.

NORTH

2,000 1,000 0 2,000 Feet

Michael Brandman Associates

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Exhibit 5.8-1
Study Area Roadways and Intersections

COUNTY OF SAN LUIS OBISPO • LOS OSOS WASTEWATER PROJECT
TRAFFIC AND CIRCULATION EXPANDED ANALYSIS SECTION

Intersection Operations

Because traffic flow on street networks is most constrained at intersections, detailed traffic flow analyses focus on the operating conditions of critical intersections during peak travel periods. "Levels of Service" (LOS) A through F are used to rate operations, with LOS A indicating free flow operations and LOS F indicating congested operations. San Luis Obispo County considers LOS D as the minimum acceptable operating standard for the planning area within the Urban Reserve Line. Therefore, levels of service LOS A, B, C, and D are acceptable and levels of service LOS E and F are not acceptable. The County considers LOS C as the minimum acceptable operating standard for rural areas and therefore LOS A, B and C are acceptable and LOS D, E and F are not acceptable. As shown in Table 5.8-5 the existing intersection operations are within the design capacities of the area intersections.

Levels of service were calculated for the study-area intersections using the methodology outlined in the Highway Capacity Manual (HCM). The County's LOS D standard applies to the overall average delay per vehicle at signalized intersections, as well as to each of the constrained movements at unsignalized intersections for urban areas, while the County's standard of LOS C applies to rural areas.

Except for the Los Osos Valley Road (LOVR)/Turri Road intersection, all of the study area intersections are located within the urban area (within the Urban Reserve Line). The intersection of LOVR/Turri Road is located within the rural area because it is located east of the Urban Reserve Line.

Table 5.8-5: Existing Intersection Operations

Intersection	Control	LOS	
		A.M Peak Hour	P.M. Peak Hour
LOVR/Broderson Avenue Westbound Los Osos Valley Northbound Broderson Overall LOS	Stop Sign	 LOS A LOS B LOS B	 LOS A LOS A LOS A
LOVR/9th Street	Signal	LOS B	LOS A
LOVR/10th Street	Signal	LOS A	LOS B
LOVR/South Bay Boulevard	Signal	LOS C	LOS C
LOVR/ Turri Road Eastbound Los Osos Valley Southbound Turri Overall LOS	Stop Sign	 LOS A LOS C LOS C	 LOS B LOS C LOS C
Source: Associated Transportation Engineers, November 2008.			

5.8.3 - Regulatory Setting

Based on a review of the County of San Luis Obispo General Plan, there are one goal and one policy that address traffic and transportation related issues. The one goal and one policy relevant to the project are presented below.

San Luis Obispo Regional Transportation Plan

Transportation Plan Goals and Policies

The goals and policies for the County Transportation Plan were taken from the Regional Transportation Plan. The following goals and policies were found to be applicable to Proposed Projects 1 through 4:

Bikeway Element:

The goal of this element is to serve as a guide to governmental agencies and private developers, to meet the following cyclist goal:

4. To increase the efficiency of facilities for the cyclist, as well as to lessen or eliminate the cyclist's conflict with the motorists for the use of the streets and highways of the County.

The applicable policy established in the Circulation Element of the Estero Area Plan is listed below:

B2 Maintain Los Osos Valley Road east of the urban reserve line as a two-lane highway with operational improvements.

5.8.4 - Thresholds of Significance

According to the CEQA Guidelines' Appendix G Environmental Checklist, to determine whether transportation and traffic impacts are significant environmental effects, the following questions are analyzed and evaluated. Would the Proposed Project:

a.) Cause an increase in traffic, which is substantial in relation to the existing traffic load and capacity of the street system, either individually or cumulatively, exceed a level of service standard established by the county congestion management agency for designated roads or highways?

b.) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?

c.) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

d.) Result in inadequate emergency access?

e.) Result in inadequate parking capacity?

Other Thresholds

For the purpose of the Proposed Project, the following threshold has been added. To evaluate the Proposed Project's consistency with applicable goals, policies, and regulations related to traffic and circulation:

f.) Would the Proposed Project conflict with local goals and policies related to traffic and transportation?

The County of San Luis Obispo uses a performance standard to determine whether the projected traffic generation is substantial and therefore significant. A significant traffic impact occurs when the level of service (LOS) at roadways and intersections is at LOS D or worse for areas within the urban reserve line. This standard is a decrease of a level of service to LOS D or worse at roadways and intersections. A significant traffic impact occurs when the level of service at roadways and intersections is at LOS E or worse for urban areas and LOS D or worse for rural areas.

5.8.5 - Analysis

This section analyzes Proposed Projects 1 through 4. The analysis includes a discussion of Proposed Project- specific and cumulative impacts, provides mitigation measures where required, and concludes with a determination of level of significance after mitigation.

Traffic Increase and Level of Service Standards

5.8-A:	**The project could cause an increase in traffic, which is substantial in relation to the existing traffic load and capacity of the street system or either individually or cumulatively exceed a level of service standard established by the county congestion management agency for designated roads or highways.**

Project-Specific Impact Analysis

Proposed Project 1

Short-term Construction Impacts

The street network in the community of Los Osos currently operates at LOS C or better. The construction activities associated with Proposed Project 1 would be located throughout the entire community. Construction of the collection system, and facilities at the treatment plant site and disposal site, would generate additional traffic on the roadways and intersections within the community of Los Osos. Construction activities would be temporary, lasting 16-24 months throughout the community but construction activities at any specific location along the collection system may be a few weeks. The construction activities at the treatment plant and disposal sites could extend up to 16 to 24 months. Trips generated by the construction activities include employees traveling to and from the construction sites and material/equipment deliveries. Employee trips would typically occur during the A.M. and P.M. peak hour periods and generate approximately 286 average daily trips (ADT), while equipment and material deliveries would occur throughout the entire day with a total of approximately 289 ADT. These construction activities would result in temporary lane

closures and limited access to residences and businesses that may cause short-term significant impacts on the existing capacity of the roadways and intersections.

Long-term Operational Impacts

Trip generation estimates were developed for Proposed Project 1 based on the number of employees and their commute trips plus the trips associated with operations and maintenance of the proposed facilities (maintenance trips, material delivery trips, product delivery trips, etc.). Proposed Project 1 is forecasted to generate approximately 58 average daily trips in the long-term, with approximately 15 trips occurring during the A.M. Peak Hour and approximately 15 trips occurring during the P.M. peak hour.

Traffic generated by Proposed Project 1 was distributed onto the study-area street network based on the location of the proposed facilities, consideration of the most logical travel routes to/from the Proposed Project site, and existing traffic patterns. The majority of trip distribution would occur within the community of Los Osos (60 percent) with the remaining distributions occurring along South Bay Boulevard north of the community of Los Osos (15 percent) and LOVR east of the community of Los Osos (25 percent).

Table 5.8-6 lists the Existing plus Proposed Project 1 roadway volumes and identifies the impacts of the traffic additions based on County standards.

Table 5.8-6: Existing plus Proposed Project 1 Roadway Operations

Roadway Segment	Average Daily Traffic					Significant Impact?
	Existing	Proposed Project Added	Existing plus Proposed Project	Capacity	LOS	
Broderson s/o LOVR	800 ADT	0 ADT	800 ADT	14,400 ADT	A	No
LOVR e/o Broderson Rd	12,100 ADT	24 ADT	12,124 ADT	18,000 ADT	B	No
LOVR w/o South Bay Blvd	16,300 ADT	24 ADT	16,324 ADT	35,900 ADT	A	No
LOVR e/o South Bay Blvd	17,100 ADT	44 ADT	17,144 ADT	35,900 ADT	A	No
Turri Road n/o LOVR	400 ADT	0 ADT	400 ADT	14,400 ADT	A	No
Source: Associated Transportation Engineers, November 2008.						

The data presented in Table 5.8-6 show that Existing plus Proposed Project 1 volume forecasts are within the design capacities of the area roadways and these roadways would operate at LOS B or better. Proposed Project 1 roadway impacts would be less than significant based on County standards.

In addition to roadways, intersections were evaluated. Table 5.8-7 shows the Existing plus Proposed Project 1 level of service forecasts for study area intersections and identifies the significance of Proposed Project-added traffic based on County standards. As shown in Table 5.8-7, the study area intersection would operate at LOS C or better after the addition of project traffic. Therefore, implementation of Proposed Project 1 would result in less than significant impacts on study area intersections based on County standards.

Table 5.8-7: Existing plus Proposed Project 1 Intersection Operations

Intersection	Control	Delay / LOS		Significant Impact?
		A.M. Peak	P.M. Peak	
LOVR/Broderson Avenue Westbound LOVR Northbound Broderson Overall LOS	Stop Sign	 LOS A LOS B LOS B	 LOS A LOS B LOS A	No
LOVR/9th Street	Signal	LOS B	LOS A	No
LOVR/10th Street	Signal	LOS A	LOS B	No
LOVR/South Bay Boulevard	Signal	LOS C	LOS C	No
LOVR/Turri Road Eastbound LOVR Southbound Turri Overall LOS	Stop Sign	 LOS A LOS C LOS C	 LOS B LOS C LOS C	No
Source: Associated Transportation Engineers, November 2008.				

Proposed Project 2

Short-term Construction Impacts

Construction of Proposed Project 2 would result in similar impacts as those discussed under Proposed Project 1. Employee trips would typically occur during the A.M. and P.M. peak hour periods and generate approximately 222 ADT, while equipment and material deliveries would occur throughout the entire day with a total of approximately 225 ADT. Similar to Proposed Project 1, the additional short-term daily trips generated by construction under Proposed Project 2 would result in temporary lane closures and limited access to residences and businesses that may cause short-term significant impacts on the existing capacity of the roadways and intersections.

Long-term Operational Impacts

Trip generation estimates were developed for Proposed Project 2 based on the number of employees and their commute trips plus the trips associated with operations and maintenance of the proposed facilities (maintenance trips, material delivery trips, product delivery trips, etc.). Proposed Project 2 is forecasted to generate approximately 52 average daily trips in the long-term, with approximately 14 trips occurring during the A.M. Peak Hour and approximately 14 trips occurring during the P.M. peak hour.

Traffic generation would result in the same impacts as those discussed under Proposed Project 1.

Table 5.8-8 lists the Existing plus Proposed Project 2 roadway volumes and identifies the impacts of the traffic additions based on County standards.

Table 5.8-8: Existing plus Proposed Project 2 Roadway Operations

Roadway Segment	Average Daily Traffic					Significant Impact?
	Existing	Proposed Project Added	Existing plus Proposed Project	Capacity	LOS	
Broderson s/o LOVR	800 ADT	0 ADT	800 ADT	14,400 ADT	A	No
LOVR e/o Broderson Rd	12,100 ADT	21 ADT	12,121 ADT	18,000 ADT	B	No
LOVR w/o South Bay Blvd	16,300 ADT	21 ADT	16,321 ADT	35,900 ADT	A	No
LOVR e/o South Bay Blvd	17,100 ADT	39 ADT	17,139 ADT	35,900 ADT	A	No
Turri Road n/o LOVR	400 ADT	0 ADT	400 ADT	14,400 ADT	A	No
Source: Associated Transportation Engineers, November 2008.						

The data presented in Table 5.8-8 show that Existing plus Proposed Project 2 volume forecasts are within the design capacities of the area roadways and these roadways operate at LOS B or better. Proposed Project 2 roadway impacts would be less than significant based on County standards.

In addition to roadways, intersections were evaluated. Table 5.8-9 shows the Existing plus Proposed Project 2 level of service forecasts for study area intersections and identifies the significance of Proposed Project-added traffic based on County standards. As shown in Table 5.8-9, the study area intersections would operate at LOS C or better after the addition of project traffic. Therefore, implementation of Proposed Project 2 would result in less than significant impacts on study area intersections based on County standards.

Table 5.8-9: Existing plus Proposed Project 2 Intersection Operations

Intersection	Control	Delay / LOS		Significant Impact?
		A.M. Peak	P.M. Peak	
LOVR/Broderson Avenue Westbound LOVR Northbound Broderson Overall LOS	Stop Sign	 LOS A LOS B LOS B	 LOS A LOS B LOS A	No
LOVR/9th Street	Signal	LOS B	LOS A	No
LOVR/10th Street	Signal	LOS A	LOS B	No
LOVR/South Bay Boulevard	Signal	LOS C	LOS C	No

Table 5.8-9 (Cont.): Existing plus Proposed Project 2 Intersection Operations

Intersection	Control	Delay / LOS		Significant Impact?
		A.M. Peak	P.M. Peak	
LOVR/Turri Road Eastbound LOVR Southbound Turri Overall LOS	Stop Sign	 LOS A LOS C LOS C	 LOS B LOS C LOS C	No
Source: Associated Transportation Engineers, November 2008.				

Proposed Project 3

Short-term Construction Impacts

Construction of Proposed Project 3 would result in similar impacts as those discussed under Proposed Project 1. Employee trips would typically occur during the A.M. and P.M. peak hour periods and generate approximately 222 ADT, while equipment and material deliveries would occur throughout the entire day with a total of approximately 225 ADT. Similar to Proposed Project 1, the additional short-term daily trips generated by construction under Proposed Project 3 would result in temporary lane closures and limited access to residences and businesses that may cause short-term significant impacts on the existing capacity of the roadways and intersections.

Long-term Operational Impacts

Trip generation of Proposed Project 3 would result in the same impacts as those discussed under Proposed Project 2.

Table 5.8-10 lists the Existing plus Proposed Project 3 roadway volumes and identifies the impacts of the traffic additions based on County standards.

Table 5.8-10: Existing plus Proposed Project 3 Roadway Operations

Roadway Segment	Average Daily Traffic					Significant Impact?
	Existing	Proposed Project Added	Existing plus Proposed Project	Capacity	LOS	
Broderson s/o LOVR	800 ADT	0 ADT	800 ADT	14,400 ADT	A	No
LOVR e/o Broderson Rd	12,100 ADT	21 ADT	12,121 ADT	18,000 ADT	B	No
LOVR w/o South Bay Blvd	16,300 ADT	21 ADT	16,321 ADT	35,900 ADT	A	No
LOVR e/o South Bay Blvd	17,100 ADT	39 ADT	17,139 ADT	35,900 ADT	A	No
Turri Road n/o LOVR	400 ADT	0 ADT	400 ADT	14,400 ADT	A	No
Source: Associated Transportation Engineers, November 2008.						

The data presented in Table 5.8-10 show that Existing plus Proposed Project 3 volume forecasts are within the design capacities of the area roadways and these roadways would operate at LOS B or better. Proposed Project 3 roadway impacts would be less than significant based on County standards.

In addition, to roadways, intersections were evaluated. Table 5.8-11 shows the Existing plus Proposed Project 3 level of service forecasts for study area intersections and identifies the significance of Proposed Project-added traffic based on County standards. As shown in Table 5.8-11, the study area intersections would operate at LOS C or better after the addition of project traffic. Therefore, implementation of Proposed Project 3 would result in less than significant impacts on study area intersections based on County standards.

Table 5.8-11: Existing plus Proposed Project 3 Intersection Operations

Intersection	Control	Delay / LOS		Significant Impact?
		A.M. Peak	P.M. Peak	
LOVR/Broderson Avenue Westbound LOVR Northbound Broderson Overall LOS	Stop Sign	 LOS A LOS B LOS B	 LOS A LOS B LOS A	No
LOVR/9th Street	Signal	LOS B	LOS A	No
LOVR/10th Street	Signal	LOS A	LOS B	No
LOVR/South Bay Boulevard	Signal	LOS C	LOS C	No
LOVR/Turri Road Eastbound LOVR Southbound Turri Overall LOS	Stop Sign	 LOS A LOS C LOS C	 LOS B LOS C LOS C	No
Source: Associated Transportation Engineers, November 2008.				

Proposed Project 4

Short-term Construction Impacts

Construction of Proposed Project 4 would result insimiliar impacts as those discussed under Proposed Project 1. Employee trips would typically occur during the A.M. and P.M. peak hour periods and generate approximately 222 ADT, while equipment and material deliveries would occur throughout the entire day with a total of approximately 227 ADT. Similar to Proposed Project 1, the additional daily trips generated by construction would result in temporary lane closures and limited access to residences and businesses that may cause short-term significant impacts on the existing capacity of the roadways and intersections.

Long-term Operational Impacts

Trip generation estimates were developed for Proposed Project 4 based on the number of employees and their commute trips plus the trips associated with operations and maintenance of the proposed facilities (maintenance trips, material delivery trips, product delivery trips, etc.). Proposed Project 4 is forecasted to generate approximately 46 average daily trips in the long-term, with approximately 13

trips occurring during the A.M. Peak Hour and approximately 13 trips occurring during the P.M. peak hour.

Traffic generation would result in the same impacts as those discussed under Proposed Project 1.

Table 5.8-12 lists the Existing plus Proposed Project 4 roadway volumes and identifies the impacts of the traffic additions based on County standards.

Table 5.8-12: Existing plus Proposed Project 4 Roadway Operations

Roadway Segment	Average Daily Traffic					Significant Impact?
	Existing	Proposed Project Added	Existing plus Proposed Project	Capacity	LOS	
Broderson s/o LOVR	800 ADT	0 ADT	800 ADT	14,400 ADT	A	No
LOVR e/o Broderson Rd	12,100 ADT	18 ADT	12,118 ADT	18,000 ADT	B	No
LOVR w/o South Bay Blvd	16,300 ADT	18 ADT	16,318 ADT	35,900 ADT	A	No
LOVR e/o South Bay Blvd	17,100 ADT	35 ADT	17,135 ADT	35,900 ADT	A	No
Turri Road n/o LOVR	400 ADT	16 ADT	416 ADT	14,400 ADT	A	No
Source: Associated Transportation Engineers, November 2008.						

The data presented in Table 5.8-12 show that Existing plus Proposed Project 4 volume forecasts are within the design capacities of the area roadways and these roadways would operate at LOS B or better. Proposed Project 4 roadway impacts would be less than significant based on County standards.

In addition to roadways, intersections were evaluated. Table 5.8-13 shows the Existing plus Proposed Project 4 level of service forecasts and identifies the significance of Proposed Project-added traffic based on County standards. As shown in Table 5.8-13, the study area intersections would operate at LOS C or better after the addition of project traffic. Therefore, implementation of Proposed Project 4 would result in less than significant impacts on study area intersections based on County standards.

Table 5.8-13: Existing plus Proposed Project 4 Roadway Operations

Intersection	Control	Delay / LOS		Significant Impact?
		A.M. Peak	P.M. Peak	
LOVR/Broderson Avenue Westbound LOVR Northbound Broderson Overall LOS	Stop Sign	 LOS A LOS B LOS B	 LOS A LOS B LOS A	No

Table 5.8-13 (Cont.): Existing plus Proposed Project 4 Roadway Operations

Intersection	Control	Delay / LOS		Significant Impact?
		A.M. Peak	P.M. Peak	
LOVR/9th Street	Signal	LOS B	LOS A	No
LOVR/10th Street	Signal	LOS A	LOS B	No
LOVR/South Bay Boulevard	Signal	LOS C	LOS C	No
LOVR/Turri Road Eastbound LOVR Southbound Turri Overall LOS	Stop Sign	 LOS A LOS C LOS B	 LOS B LOS C LOS C	No
Source: Associated Transportation Engineers, November 2008.				

Cumulative Impact Analysis

Related projects within the greater cumulative project area are detailed in Section 4.2 and Exhibit 4.2-1 in the Draft EIR. Three of the nine related projects (Los Osos CSD Waterline Replacement, Los Osos Valley Road Palisades Storm Drain, and AT&T Cable) physically overlap with the study area for the proposed project but are either completed or expected to be completed by the time that construction of the proposed project is anticipated to begin (2010). Six of the nine related projects (State Park Marina Renovation, Morro Bay Wastewater Treatment Plant, Dredging of Morro Bay, CMC Wastewater Treatment Plant, Phase II Steam Generator Replacement at Diablo, and Spent Fuel Storage Facility at Diablo) have no physical overlap with the proposed project. The two related Diablo projects are in fact nearly 7 miles south of Los Osos.

Since there are no related projects that would contribute to cumulative impacts, the proposed projects would not contribute to short-term cumulative construction traffic impacts. Traffic growth rates in the vicinity of the Los Osos Community were evaluated to assess potential long-term traffic impacts. These growth rates may reflect increases in population without new development. Based on a review of the growth rates, a one percent annual growth factor was used to forecast future traffic volumes for the Los Osos area in order to account for potential growth in the surrounding areas. The growth factor was developed based on historical traffic growth in the Los Osos area and applied for a period of 10 years to represent cumulative conditions.

Proposed Project 1

Cumulative Roadway Impacts.

Table 5.8-14 lists the Cumulative and Cumulative plus Proposed Project 1 long-term roadway volumes and identifies cumulative impacts. As shown, all of the area roadways would operate within their respective capacities under Cumulative plus Proposed Project 1 conditions. Proposed Project 1 would contribute less than significant cumulative impacts to roadways based on County standards.

Table 5.8-14: Cumulative and Cumulative plus Proposed Project 1 Roadway Operations

Roadway Segment	Average Daily Traffic					Significant Impact?
	Cumulative	Proposed Project Added	Cumulative plus Proposed Project	Capacity	LOS	
Broderson s/o LOVR	900 ADT	12 ADT	912 ADT	14,400 ADT	A	No
LOVR e/o Broderson Rd	13,500 ADT	24 ADT	13,524 ADT	18,000 ADT	C	No
LOVR w/o South Bay Blvd	18,200 ADT	24 ADT	18,224 ADT	35,900 ADT	A	No
LOVR e/o South Bay Blvd	19,300 ADT	44 ADT	19,344 ADT	35,900 ADT	A	No
Turri Road n/o LOVR	450 ADT	5 ADT	455 ADT	14,400 ADT	A	No
Source: Associated Transportation Engineers, November 2008.						

Cumulative Intersection Impacts.

Cumulative and Cumulative plus Proposed Project 1 long-term levels of service for the study-area intersections are shown in Table 5.8-15 and Table 5.8-16. As shown, all of the area intersections would operate at LOS C or better under Cumulative plus Proposed Project 1 conditions. Proposed Project 1 would contribute less than significant cumulative impacts to intersections based on County standards.

Table 5.8-15: Cumulative plus Proposed Project 1 A.M. Peak Hour Intersection Operations

Intersection	Control	Delay / LOS		Significant Impact?
		Cumulative	Cumulative plus Proposed Project	
LOVR/Broderson Avenue Westbound LOVR Northbound Broderson Overall LOS	Stop Sign	 LOS A LOS B LOS B	 LOS A LOS B LOS B	No
LOVR/9th Street	Signal	LOS B	LOS B	No
LOVR/10th Street	Signal	LOS A	LOS A	No
LOVR/South Bay Boulevard	Signal	LOS C	LOS C	No
LOVR/Turri Road Eastbound LOVR Southbound Turri Overall LOS	Stop Sign	 LOS A LOS C LOS C	 LOS A LOS C LOS C	No
Source: Associated Transportation Engineers, November 2008.				

Table 5.8-16: Cumulative plus Proposed Project 1 P.M. Peak Hour Intersection Operations

Intersection	Control	Delay / LOS		Significant Impact?
		Cumulative	Cumulative plus Proposed Project	
LOVR/Broderson Avenue Westbound LOVR Northbound Broderson Overall LOS	Stop Sign	 LOS A LOS B LOS A	 LOS A LOS B LOS A	No
LOVR/9th Street	Signal	LOS A	LOS A	No
LOVR/10th Street	Signal	LOS B	LOS B	No
LOVR/South Bay Boulevard	Signal	LOS C	LOS C	No
LOVR/Turri Road Eastbound LOVR Southbound Turri Overall LOS	Stop Sign	 LOS B LOS C LOS C	 LOS B LOS C LOS C	No
Source: Associated Transportation Engineers, November 2008.				

Proposed Project 2

Cumulative Roadway Impacts.

Table 5.8-17 lists the Cumulative and Cumulative plus Proposed Project 2 long-term roadway volumes and identifies cumulative impacts. As shown, all of the area roadways would operate within their respective capacities under Cumulative plus Proposed Project 2 conditions. Proposed Project 2 would contribute less than significant cumulative impacts to roadways that are less than significant based on County standards.

Table 5.8-17: Cumulative and Cumulative plus Proposed Project 2 Roadway Operations

Roadway Segment	Average Daily Traffic					Significant Impact?
	Cumulative	Proposed Project Added	Cumulative plus Proposed Project	Capacity	LOS	
Broderson s/o LOVR	900 ADT	10 ADT	910 ADT	14,400 ADT	A	No
LOVR e/o Broderson Rd	13,500 ADT	21 ADT	13,521 ADT	18,000 ADT	C	No
LOVR w/o South Bay Blvd	18,200 ADT	21 ADT	18,221 ADT	35,900 ADT	A	No
LOVR e/o South Bay Blvd	19,300 ADT	39 ADT	19,339 ADT	35,900 ADT	A	No
Turri Road n/o LOVR	450 ADT	5 ADT	455 ADT	14,400 ADT	A	No
Source: Associated Transportation Engineers, November 2008.						

Cumulative Intersection Impacts.

Cumulative and Cumulative plus Proposed Project 2 long-term levels of service for the study-area intersections are shown in Table 5.8-18 and Table 5.8-19. As shown, all of the area intersections would operate at LOS C or better under Cumulative plus Proposed Project 2 conditions. Proposed Project 2 would contribute less than significant cumulative impacts to intersections based on County standards.

Table 5.8-18: Cumulative plus Proposed Project 2 A.M. Peak Hour Intersection Operations

Intersection	Control	Delay / LOS		Significant Impact?
		Cumulative	Cumulative plus Proposed Project	
LOVR/Broderson Avenue Westbound LOVR Northbound Broderson Overall LOS	Stop Sign	 LOS A LOS B LOS B	 LOS A LOS B LOS B	No
LOVR/9th Street	Signal	LOS B	LOS B	No
LOVR/10th Street	Signal	LOS A	LOS A	No
LOVR/South Bay Boulevard	Signal	LOS C	LOS C	No
LOVR/Turri Road Eastbound LOVR Southbound Turri Overall LOS	Stop Sign	 LOS A LOS C LOS C	 LOS A LOS C LOS C	No
Source: Associated Transportation Engineers, November 2008.				

Table 5.8-19: Cumulative plus Proposed Project 2 P.M. Peak Hour Intersection Operations

Intersection	Control	Delay / LOS		Significant Impact?
		Cumulative	Cumulative plus Proposed Project	
LOVR/Broderson Avenue Westbound LOVR Northbound Broderson Overall LOS	Stop Sign	 LOS A LOS B LOS A	 LOS A LOS B LOS A	No
LOVR/9th Street	Signal	LOS A	LOS A	No
LOVR/10th Street	Signal	LOS B	LOS B	No
LOVR/South Bay Boulevard	Signal	LOS C	LOS C	No
LOVR/Turri Road Eastbound LOVR Southbound Turri Overall LOS	Stop Sign	 LOS B LOS C LOS C	 LOS B LOS C LOS C	No
Source: Associated Transportation Engineers, November 2008.				

Proposed Project 3

Cumulative Roadway Impacts.

Table 5.8-20 lists the Cumulative and Cumulative plus Proposed Project 3 long-term roadway volumes and identifies cumulative impacts. As shown, all of the area roadways would operate within their respective capacities under Cumulative plus Proposed Project 3 conditions. Proposed Project 3 would contribute less than significant cumulative impacts to roadways based on County standards.

Table 5.8-20: Cumulative and Cumulative plus Proposed Project 3 Roadway Operations

Roadway Segment	Average Daily Traffic					Significant Impact?
	Cumulative	Proposed Project Added	Cumulative plus Proposed Project	Capacity	LOS	
Broderson s/o LOVR	900 ADT	10 ADT	910 ADT	14,400 ADT	A	No
LOVR e/o Broderson Rd	13,500 ADT	21 ADT	13,521 ADT	18,000 ADT	C	No
LOVR w/o South Bay Blvd	18,200 ADT	21 ADT	18,221 ADT	35,900 ADT	A	No
LOVR e/o South Bay Blvd	19,300 ADT	39 ADT	19,339 ADT	35,900 ADT	A	No
Turri Road n/o LOVR	450 ADT	5 ADT	455 ADT	14,400 ADT	A	No
Source: Associated Transportation Engineers, November 2008.						

Cumulative Intersection Impacts.

Cumulative and Cumulative plus Proposed Project 3 long-term levels of service for the study-area intersections are shown in Table 5.8-21 and Table 5.8-22. As shown, all of the area intersections would operate at LOS C or better under Cumulative plus Proposed Project 3 conditions. Proposed Project 3 would contribute less than significant cumulative impacts to intersections based on County standards.

Table 5.8-21: Cumulative plus Proposed Project 3 A.M. Peak Hour Intersection Operations

Intersection	Control	Delay / LOS		Significant Impact?
		Cumulative	Cumulative plus Proposed Project	
LOVR/Broderson Avenue Westbound LOVR Northbound Broderson Overall LOS	Stop Sign	 LOS A LOS B LOS B	 LOS A LOS B LOS B	No
LOVR/9th Street	Signal	LOS B	LOS B	No
LOVR/10th Street	Signal	LOS A	LOS A	No
LOVR/South Bay Boulevard	Signal	LOS C	LOS C	No

Table 5.8-21 (Cont.): Cumulative plus Proposed Project 3 A.M. Peak Hour Intersection Operations

Intersection	Control	Delay / LOS		Significant Impact?
		Cumulative	Cumulative plus Proposed Project	
LOVR/Turri Road Eastbound LOVR Southbound Turri Overall LOS	Stop Sign	 LOS A LOS C LOS C	 LOS A LOS C LOS C	No
Source: Associated Transportation Engineers, November 2008.				

Table 5.8-22: Cumulative plus Proposed Project 3 A.M. Peak Hour Intersection Operations

Intersection	Control	Delay / LOS		Significant Impact?
		Cumulative	Cumulative plus Proposed Project	
LOVR/Broderson Avenue Westbound LOVR Northbound Broderson Overall LOS	Stop Sign	 LOS A LOS B LOS A	 LOS A LOS B LOS A	No
LOVR/9th Street	Signal	LOS A	LOS A	No
LOVR/10th Street	Signal	LOS B	LOS B	No
LOVR/South Bay Boulevard	Signal	LOS C	LOS C	No
LOVR/Turri Road Eastbound LOVR Southbound Turri Overall LOS	Stop Sign	 LOS B LOS C LOS C	 LOS B LOS C LOS C	No
Source: Associated Transportation Engineers, November 2008.				

Proposed Project 4

Cumulative Roadway Impacts.

Table 5.8-23 lists the Cumulative and Cumulative plus Proposed Project 4 long-term roadway volumes and identifies cumulative impacts. As shown, all of the area roadways would operate within their respective capacities under Cumulative plus Proposed Project 4 conditions. Proposed Project 4 would contribute less than significant cumulative impacts to roadways based on County standards.

Table 5.8-23: Cumulative and Cumulative plus Proposed Project 4 Roadway Operations

Roadway Segment	Average Daily Traffic					Significant Impact?
	Cumulative	Proposed Project Added	Cumulative plus Proposed Project	Capacity	LOS	
Broderson s/o LOVR	900 ADT	9 ADT	909 ADT	14,400 ADT	A	No
LOVR e/o Broderson Rd	13,500 ADT	18 ADT	13,518 ADT	18,000 ADT	C	No
LOVR w/o South Bay Blvd	18,200 ADT	18 ADT	18,218 ADT	35,900 ADT	A	No
LOVR e/o South Bay Blvd	19,300 ADT	35 ADT	19,335 ADT	35,900 ADT	A	No
Turri Road n/o LOVR	450 ADT	16 ADT	466 ADT	14,400 ADT	A	No
Source: Associated Transportation Engineers, November 2008.						

Cumulative Intersection Impacts.

Cumulative and Cumulative plus Proposed Project 4 long-term levels of service for the study-area intersections are shown in Table 5.8-24 and Table 5.8-25. As shown, all of the area intersections would operate at LOS C or better under Cumulative plus Proposed Project 4 conditions. Proposed Project 4 would contribute less than significant cumulative impacts to intersections based on County standards.

Table 5.8-24: Cumulative plus Proposed Project 4 A.M. Peak Hour Intersection Operations

Intersection	Control	Delay / LOS		Significant Impact?
		Cumulative	Cumulative plus Proposed Project	
LOVR/Broderson Avenue Westbound LOVR Northbound Broderson Overall LOS	Stop Sign	 LOS A LOS B LOS B	 LOS A LOS B LOS B	No
LOVR/9th Street	Signal	LOS B	LOS B	No
LOVR/10th Street	Signal	LOS A	LOS A	No
LOVR/South Bay Boulevard	Signal	LOS C	LOS C	No
LOVR/Turri Road Eastbound LOVR Southbound Turri Overall LOS	Stop Sign	 LOS A LOS C LOS C	 LOS A LOS C LOS B	No
Source: Associated Transportation Engineers, November 2008.				

Table 5.8-25: Cumulative plus Proposed Project 4 P.M. Peak Hour Intersection Operations

Intersection	Control	Delay / LOS		Significant Impact?
		Cumulative	Cumulative plus Proposed Project	
LOVR/Broderson Avenue Westbound LOVR Northbound Broderson Overall LOS	Stop Sign	 LOS A LOS B LOS A	 LOS A LOS B LOS A	No
LOVR/9th Street	Signal	LOS A	LOS A	No
LOVR/10th Street	Signal	LOS B	LOS B	No
LOVR/South Bay Boulevard	Signal	LOS C	LOS C	No
LOVR/Turri Road Eastbound LOVR Southbound Turri Overall LOS	Stop Sign	 LOS B LOS C LOS C	 LOS B LOS C LOS C	No
Source: Associated Transportation Engineers, November 2008.				

Mitigation Measures

Project-Specific

Proposed Project 1

5.8-A1 Prior to construction, a traffic management plan shall be prepared for review and approval by the County of San Luis Obispo Traffic Department. The traffic management plan shall be based on the type of roadway, traffic conditions, duration of construction, physical constraints, nearness of the work zone to traffic and other facilities (bicycle, pedestrian, driveway access, etc.). The traffic management plan shall include:

a) Advertisement. An advertisement campaign informing the public of the proposed construction activities should be developed. Advertisements should occur prior to beginning work and periodically during the course of project construction.

b) Property Access. Access to parcels along the construction area shall be maintained to the greatest extent feasible. Affected property owners shall receive advance notice of work adjacent to their property access and when driveways would be potentially closed.

c) Schools. Any construction adjacent to schools shall ensure that access is maintained for vehicles, pedestrians, and bicyclists, particularly at the beginning and end of the school day.

d) Buses, Bicycles and Pedestrians. The work zone shall provide for passage by buses, bicyclists and pedestrians, particularly in the vicinity of schools.

e) Intersections. Traffic control (i.e. use of flag men) shall be used at intersections that are determined to be unacceptably congested due to construction traffic.

Proposed Project 2

Implementation of Mitigation Measures 5.8-A1 is required.

Proposed Project 3

Implementation of Mitigation Measures 5.8-A1 is required.

Proposed Project 4

Implementation of Mitigation Measures 5.8-A1 is required.

Cumulative

Proposed Project 1

No mitigation measures are required.

Proposed Project 2

No mitigation measures are required.

Proposed Project 3

No mitigation measures are required.

Proposed Project 4

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

Proposed Project 1

Less than significant.

Proposed Project 2

Less than significant.

Proposed Project 3

Less than significant.

Proposed Project 4

Less than significant.

Cumulative

Proposed Project 1

Less than significant.

Proposed Project 2

Less than significant.

Proposed Project 3
Less than significant.

Proposed Project 4
Less than significant.

Air Traffic Patterns

5.8-B:	**The project would not result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks.**

Project-Specific Impact Analysis

Proposed Projects 1 through 4

The nearest airport to Proposed Projects 1 through 4 is the San Luis Obispo County Airport located approximately 14 miles to the east. Due to this distance, no change in air traffic patterns is anticipated with Proposed Project development and/or operation; nor does the Proposed Project involve any uses that would result in a change in air traffic patterns. Therefore, no impacts are expected.

Cumulative Impact Analysis

Proposed Projects 1 through 4

Since Proposed Projects 1 through 4 would not impact air traffic patterns, they would not contribute to any cumulative impact on air traffic patters.

Mitigation Measures

Project-Specific

Proposed Projects 1 through 4
No mitigation measures are required.

Cumulative

Proposed Projects 1 through 4
No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

Proposed Projects 1 through 4
No impact.

Cumulative

Proposed Projects 1 through 4
No impact.

Traffic Hazards

5.8-C: The project may substantially increase traffic hazards?

Project-Specific Impact Analysis

Proposed Projects 1 through 4

The proposed facilities do not include any hazardous features and implementation of the Proposed Projects 1 through 4 would not affect public safety or increase hazards due to a design feature or incompatible uses. However, the construction of pipelines along roadways may generate short-term hazards to motorists and cyclists due to temporary lane closures, limited access to residences and businesses, and increase project truck traffic. It is noted that construction of the pipeline would affect limited areas for relatively short time periods (i.e. construction would not affect the entire street system within the community for the entire 2-year period). Therefore, short-term significant traffic impacts could occur during relatively short time periods at any one location during construction activities.

Cumulative Impact Analysis

Proposed Project 1 through 4

Related projects within the greater cumulative project area are detailed in Section 4.2 and Exhibit 4.2-1 in the Draft EIR. Three of the nine related projects (Los Osos CSD Waterline Replacement, Los Osos Valley Road Palisades Storm Drain, and AT&T Cable) physically overlap with the study area for the proposed project but are either completed or expected to be completed by the time that construction of the proposed project is anticipated to begin (2010). Six of the nine related projects (State Park Marina Renovation, Morro Bay Wastewater Treatment Plant, Dredging of Morro Bay, CMC Wastewater Treatment Plant, Phase II Steam Generator Replacement at Diablo, and Spent Fuel Storage Facility at Diablo) have no physical overlap with the proposed project. The two related Diablo projects are in fact nearly 7 miles south of Los Osos.

Since there are no related projects that would contribute to cumulative construction traffic hazard impacts, implementation of Proposed Projects 1 through 4 would not contribute to cumulative traffic hazard impacts.

Mitigation Measures

Project-Specific

Proposed Projects 1 through 4

Implementation of Mitigation Measure 5.8-A1 is required.

Cumulative

Proposed Project 1 through 4

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

Proposed Project 1 through 4

Less than significant.

Cumulative

Proposed Project 1 through 4

No impact.

Emergency Access

5.8-D: The project would result in adequate emergency access.

Project-Specific Impact Analysis

Proposed Projects1 through 4

The long-term operation of the proposed facilities will not affect emergency access. However, the construction of pipelines along roadways may limit emergency access, due to temporary lane closures and limited access to residences and businesses. It is noted that construction of the pipeline would affect limited areas for relatively short time periods (i.e. construction would not affect the entire street system within the community for the entire 2-year period). However, potential impacts to emergency access during construction activities would be considered less than significant.

Cumulative Impact Analysis

Proposed Projects1 through 4

Related projects within the greater cumulative project area are detailed in Section 4.2 and Exhibit 4.2-1 in the Draft EIR. Three of the nine related projects (Los Osos CSD Waterline Replacement, Los Osos Valley Road Palisades Storm Drain, and AT&T Cable) physically overlap with the study area for the proposed project but are either completed or expected to be completed by the time that construction of the proposed project is anticipated to begin (2010). Six of the nine related projects (State Park Marina Renovation, Morro Bay Wastewater Treatment Plant, Dredging of Morro Bay, CMC Wastewater Treatment Plant, Phase II Steam Generator Replacement at Diablo, and Spent Fuel Storage Facility at Diablo) have no physical overlap with the proposed project. The two related Diablo projects are in fact nearly 7 miles south of Los Osos.

Since there are no related projects that would contribute to cumulative impacts on emergency access during short-term construction, implementation of Proposed Projects 1 through 4 would not contribute to cumulative impact on emergency access.

Mitigation Measures

Project-Specific

Proposed Projects 1 through 4

No mitigation measures are required.

Cumulative

Proposed Projects 1 through 4

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

Proposed Projects 1 through 4

Less than significant.

Cumulative

Proposed Projects 1 through 4

No impact.

Parking Capacity

5.8-E: The project would result in adequate parking capacity.

Project-Specific Impact Analysis

Proposed Projects 1 through 4

Nominal parking facilities would be required at the proposed treatment facilities, and the design of these facilities would include adequate parking for Proposed Projects 1 through 4. Detailed plans for the proposed facilities would include parking that will comply with the San Luis Obispo Municipal Code. Therefore, the Proposed Projects 1 through 4 would result in no impacts on future parking facilities.

Cumulative Impact Analysis

Proposed Projects 1 through 4

Since Proposed Projects 1 through 4 would provide adequate parking facilities, they would not contribute to potential cumulative impacts on parking.

Mitigation Measures

Project-Specific

Proposed Projects 1through 4

No mitigation measures are required.

Cumulative

Proposed Project 1 through 4

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

Proposed Projects 1 through 4

No impact.

Cumulative

Proposed Projects 1 through 4

No impact.

Conflict with Alternative Transportation

5.8-F:	The project may conflict with adopted policies, plans, or programs supporting alternative transportation (e.g. bus turnouts, bicycle racks).

Project-Specific Impact Analysis

Proposed Projects 1 through 4

The construction of pipelines along roadways may conflict with the Route 12 bus route, due to temporary lane closures and short-term closures or displacement of bus stops. The following streets used by RTA Route 12 may be impacted by the construction of Proposed Projects 1 through 4 due to lane closures and limited access to residents and businesses:

- 2nd Street
- 7th Street
- 10th Street
- 11th Street
- Los Osos Valley Road
- Pine Street
- Ramona Avenue
- Santa Ynez
- Santal Ysabel Avenue
- South Bay Boulevard

It is noted that construction of the pipeline would affect limited areas for relatively short time periods (i.e. construction would not affect the entire street system within the community for the entire 2-year period). These impacts on existing bus stops along Route 12 would be temporary; however, they are considered potentially significant.

Cumulative Impact Analysis

Proposed Projects 1 through 4

Related projects within the greater cumulative project area are detailed in Section 4.2 and Exhibit 4.2-1 in the Draft EIR. Three of the nine related projects (Los Osos CSD Waterline Replacement, Los Osos Valley Road Palisades Storm Drain, and AT&T Cable) physically overlap with the study area for the proposed project but are either completed or expected to be completed by the time that construction of the proposed project is anticipated to begin (2010). Six of the nine related projects (State Park Marina Renovation, Morro Bay Wastewater Treatment Plant, Dredging of Morro Bay, CMC Wastewater Treatment Plant, Phase II Steam Generator Replacement at Diablo, and Spent Fuel Storage Facility at Diablo) have no physical overlap with the proposed project. The two related Diablo projects are in fact nearly 7 miles south of Los Osos.

Since there are no related projects that would contribute to cumulative impacts, implementation of Proposed Projects 1 through 4 would not contribute to cumulative impacts on alternative transportation systems such as the bus system. Therefore, Proposed Projects 1 through 4 would result in no cumulative impacts on alternative transportation systems.

Mitigation Measures

Project-Specific

Proposed Projects 1 through 4

Implementation of Mitigation Measures 5.8-A1 is required.

Cumulative

Proposed Projects 1 through 4

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

Proposed Projects 1 through 4

Less than significant.

Cumulative

Proposed Projects 1 through 4

No impact.

Conflict with Local Goals and Policies

5.8-G:	**The project may conflict with local goals and policies relating to traffic and transportation.**

Project-Specific Impact Analysis

Proposed Projects 1 through 4

Table 5.8-26 provides a discussion of the project's consistency with the County's policies contained in the San Luis Obispo County General Plan and the Estero Area Plan. As discussed in Table 5.8-26, the proposed projects may not be consistent with the applicable goal and policy without mitigation, due to impacts associated with construction activities.

Table 5.8-26: Consistency of the Proposed Projects with Traffic and Transportation Goals and Policies

Goals and Policies	Proposed Project Consistency			
	Proposed Project 1	Proposed Project 2	Proposed Project 3	Proposed Project 4
Bikeway Element **Goal 4:** To increase the efficiency of facilities for the cyclist, as well as to lessen or eliminate the cyclist's conflict with the motorists for the use of the streets and highways of the County.	The construction of pipelines along roadways may conflict with cyclists due to temporary lane closures and limited access to residences and businesses. The proposed projects may not be consistent with this goal.			
Circulation Element **Estero Are Plan** **Policy B2**: Maintain Los Osos Valley Road east of the urban reserve line as a two-lane highway with operational improvements.	The construction of pipelines along roadways may result in the need for temporary lane closures along Los Osos Valley Road east of the Urban Reserve Line. Therefore, the proposed projects may conflict with this policy.			

Cumulative Impact Analysis

Proposed Projects 1 through 4

Related projects within the greater cumulative project area are detailed in Section 4.2 and Exhibit 4.2-1 in the Draft EIR. Three of the nine related projects (Los Osos CSD Waterline Replacement, Los Osos Valley Road Palisades Storm Drain, and AT&T Cable) physically overlap with the study area for the proposed project but are either completed or expected to be completed by the time that construction of the proposed project is anticipated to begin (2010). Six of the nine related projects (State Park Marina Renovation, Morro Bay Wastewater Treatment Plant, Dredging of Morro Bay, CMC Wastewater Treatment Plant, Phase II Steam Generator Replacement at Diablo, and Spent Fuel Storage Facility at Diablo) have no physical overlap with the proposed project. The two related Diablo projects are in fact nearly 7 miles south of Los Osos.

Since there are no related projects that would contribute to cumulative impacts on circulation goals and policies, implementation of Proposed Projects 1 through 4 would not contribute to cumulative impacts on circulation goals and policies.

Mitigation Measures

Project-Specific

Proposed Projects 1 through 4

Implementation of Mitigation Measures 5.8-A1 is required.

Cumulative

Proposed Projects 1 through 4

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

Proposed Projects 1 through 4

Less than significant.

Cumulative

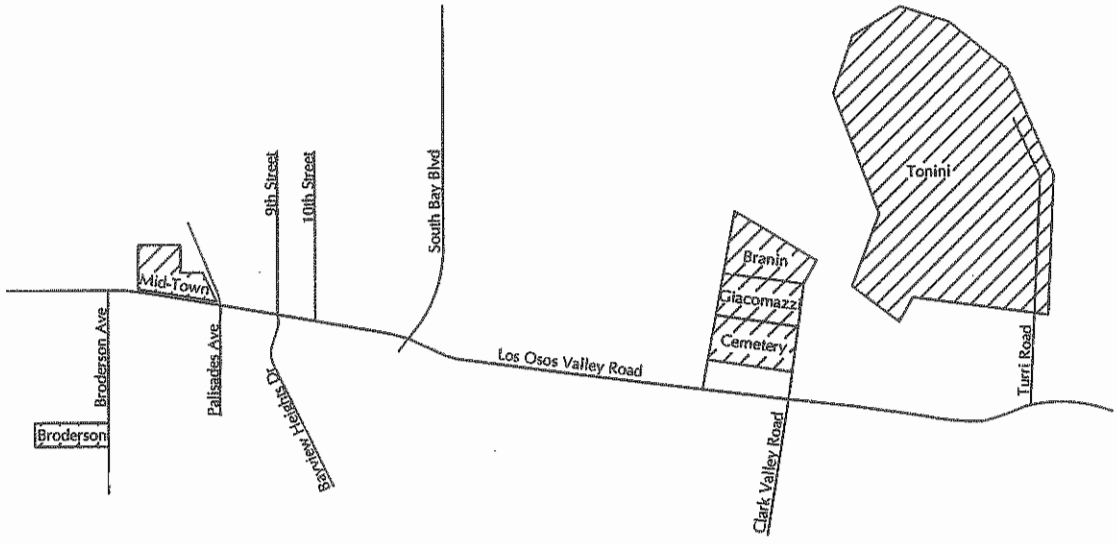
Proposed Projects 1 through 4

No impact.

J-2: Traffic and Circulation Study

LOS OSOS WASTEWATER TREATMENT PROJECT
SAN LUIS OBISPO COUNTY, CALIFORNIA

TRAFFIC & CIRCULATION STUDY



October 7, 2008 **ATE #08081**

Prepared for:

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TRAFFIC AND CIRCULATION STUDY FOR THE LOS OSOS WASTEWATER TREATMENT PROJECT, SAN LUIS OBISPO COUNTY

Associated Transportation Engineers (ATE) has prepared the following traffic study for the Los Osos Wastewater Treatment Project, located in the Los Osos area of San Luis Obispo County. The traffic study contains an evaluation of the potential traffic impacts associated with each of the four project alternatives. The traffic study also includes an assessment of the construction-related traffic impacts that would result during the construction phase of the project.

We appreciate the opportunity to assist you with the project.

Associated Transportation Engineers

Scott A. Schell, AICP, PTP
Principal Transportation Planner

CONTENTS

TABLES

FIGURES

TRANSPORTATION AND CIRCULATION

This following section contains an analysis of potential traffic impacts associated with the Los Osos Wastewater Treatment Project. This section provides information regarding existing and future traffic conditions within the project study-area and recommends mitigations where necessary. Traffic analyses are provided for each of the four Proposed Projects on an equal basis. Two evaluations are presented for the Proposed Projects. Potential impacts related to "on-going" operations after the project is built are assessed based on the traffic that would be generated by employee and fleet vehicle trips required to operate and maintain the system. Potential impacts related to construction of the project are also assessed.

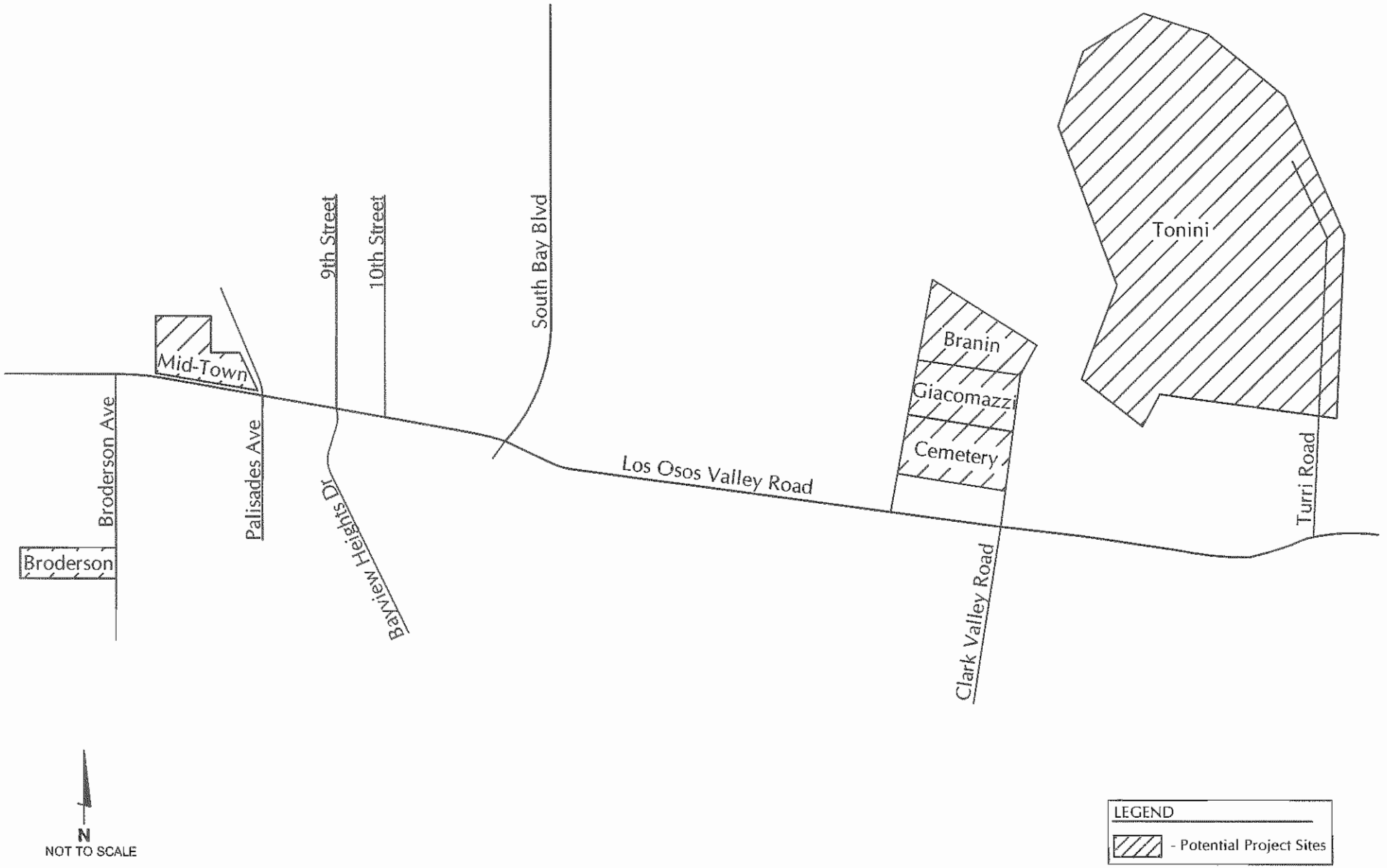
PROJECT DESCRIPTION

The four projects are briefly described below and the project sites are shown on Figure 1. The Broderson site is located south of the Los Osos Valley Road (LOVR)/Broderson intersection and the Mid-Town site is located northwest of the LOVR/Palisades Avenue intersection in the western part of the community. The Cemetery/Giacomazzi/Branin site is located northwest of the LOVR/Clark Valley Road intersection and the Tonini site is located northwest of the LOVR/Turri Road intersection in the eastern part of the community.

Proposed Project 1 includes a combination Septic Tank Effluent Pumps (STEP)/Septic Tank Effluent Gravity (STEG) collection system and a facultative pond wastewater treatment facility that provides secondary level treatment. The raw water conveyance system carries the collected wastewater from the Mid-Town central collection point to the combined Cemetery/Giacomazzi/Branin wastewater treatment plant site. Treated effluent can be stored in the seasonal storage pond on the combined Cemetery/Giacomazzi/Branin site or sent directly through the treated effluent conveyance system to the Broderson leachfield and/or the Tonini sprayfields.

Proposed Project 2 includes a gravity sewerage collection system and an Oxidation Ditch/Biolac wastewater treatment facility that provides secondary level treatment. The raw water conveyance system carries the collected wastewater from the Mid-Town pump station to the Giacomazzi wastewater treatment plant site. Treated effluent can be sent directly through the treated effluent conveyance system to the Broderson leachfield. Alternatively, some or all of the treated effluent can be sent through the eastern end of the treated effluent conveyance system to the Tonini sprayfields or the seasonal storage pond on the Tonini site.

Proposed Project 3 includes a gravity sewerage collection system and an Oxidation Ditch/Biolac wastewater treatment facility that provides secondary level treatment. The raw water conveyance system carries the collected wastewater from the Mid-Town pump station to the combined Giacomazzi/Branin wastewater treatment plant and sprayfield site. Treated effluent can be stored in the seasonal storage pond on the combined Giacomazzi/Branin site or sent directly through the treated effluent conveyance system to the Broderson leachfield and/or the Tonini sprayfields.



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LOCATION OF PROJECT SITES/EXISTING STREET NETWORK

FIGURE 1

JJK - #08081

Proposed Project 4 includes a gravity sewerage collection system and a facultative pond wastewater treatment facility that provides secondary level treatment. The raw water conveyance system carries the collected wastewater from the Mid-Town pump station to the combined Tonini wastewater treatment plant site. Treated effluent can be sent directly through the treated effluent conveyance system to the Broderson leachfield. Alternatively, some or all of the treated effluent can be sent to the nearby Tonini sprayfields and or seasonal storage pond on the Tonini site.

EXISTING CONDITIONS

Street Network

The Los Osos area is served by a street network composed of arterial streets, collector streets, local streets. Figure 1 shows the street network that would serve the four projects and the following text provides a brief discussion of the street network.

LOVR is a two-lane principal arterial which traverses the agricultural lands between Los Osos and the City of San Luis Obispo. Within the community of Los Osos the roadway widens to four lanes between Lariat Drive and Bush Drive. A combination of two-way left-turn lanes and left-turn pockets are provided along LOVR within the community. LOVR would provide access to the project sites.

South Bay Boulevard is a two-lane principal arterial which connects community of Los Osos with the City of Morro Bay to the north. The LOVR/South Bay Boulevard intersection is controlled by traffic signals.

Turri Road is a two-lane rural roadway that extends north of LOVR and westerly to it connection to South Bay Boulevard. Turri Road would provide access to the Tonini spray field site on the west side of the roadway. Turri Road is controlled by stop-signs at the LOVR and South Bay Boulevard intersections.

Broderson Avenue is a two-lane collector street that extends south of LOVR. Broderson Avenue serves the adjacent residential neighborhood and becomes a dirt road south of Highland Drive. Broderson Avenue would provide access to the proposed effluent disposal site. Broderson Avenue is controlled by a stop-sign at the LOVR intersection.

9th Street is a north-south two-lane collector street that extends between Santa Ysabel Avenue on the north and LOVR on the south. The roadway continues as Bayview Heights Drive south of LOVR. The LOVR/9th Street intersection is signalized.

10th Street is a north-south two-lane collector street that extends between Santa Ysabel Avenue on the north and LOVR on the south. The LOVR/10th Street intersection is signalized.

Roadway Operations

Figure 2 illustrates the existing average daily traffic (ADT) volumes for the study-area roadways. Existing ADT volumes were obtained from the San Luis Obispo County Department of Public Works. Table 1 shows the existing ADT volumes and the capacities for the key roadways in the project study area. Roadway capacities were derived from the Estero Area Plan prepared by San Luis Obispo County. As shown, the Existing traffic volumes are within the design capacities of the area roadways.

Table 1
Existing Roadway Operations

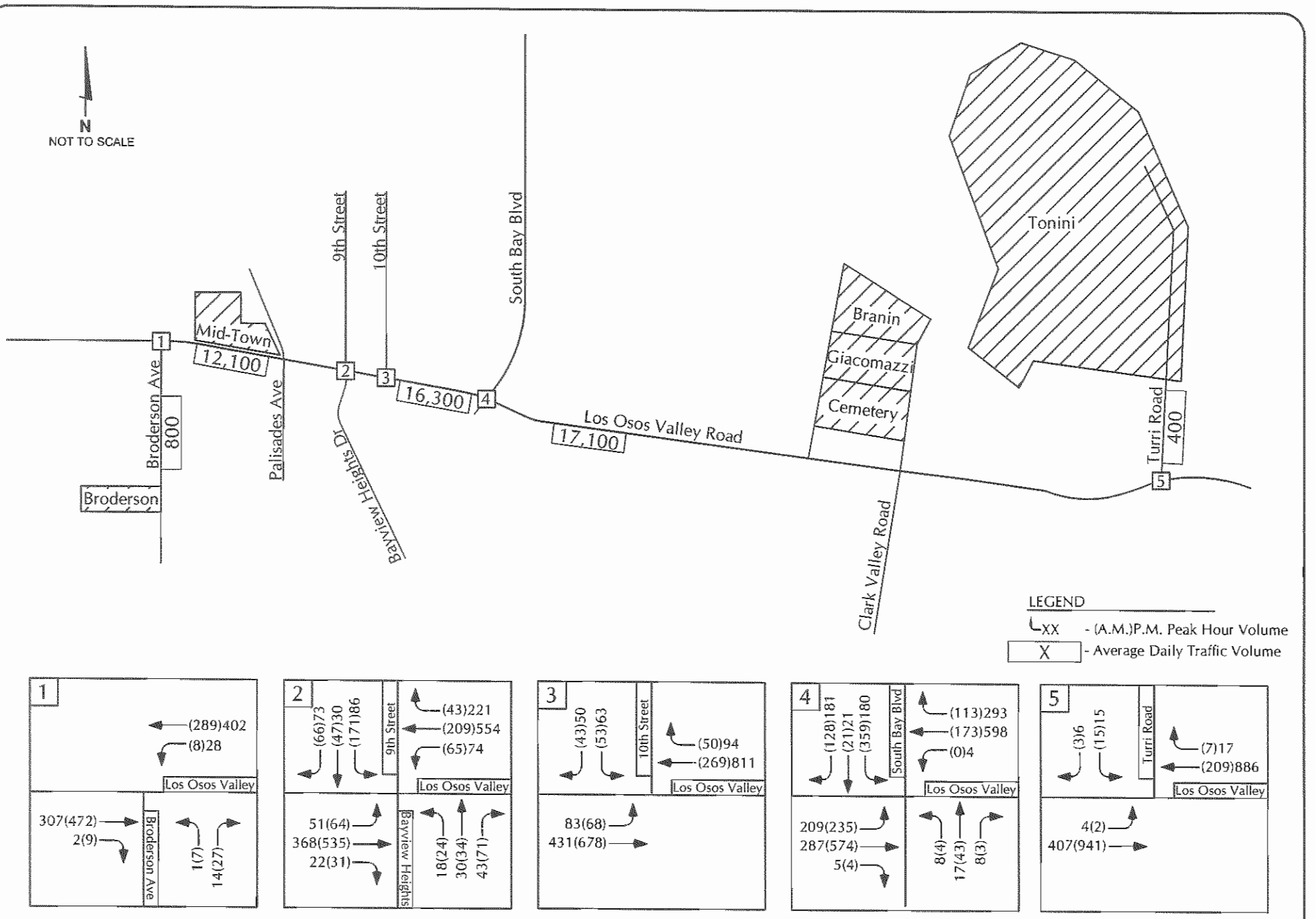
Roadway Segment	Classification	Capacity	Existing ADT
Broderson Ave s/o LOVR	2-Lane Local	14,400 ADT	800 ADT
LOVR e/o Broderson Road	2-Lane Arterial	18,000 ADT	12,100 ADT
LOVR w/o South Bay Blvd	4-Lane Arterial	35,900 ADT	16,300 ADT
LOVR e/o South Bay Blvd	4-Lane Arterial	35,900 ADT	17,100 ADT
Turri Road n/o LOVR	2-Lane Local	14,400 ADT	400 ADT

Intersection Operations

Because traffic flow on street networks is most constrained at intersections, detailed traffic flow analyses focus on the operating conditions of critical intersections during peak travel periods. "Levels of Service" (LOS) A through F are used to rate operations, with LOS A indicating free flow operations and LOS F indicating congested operations (more complete definitions of levels of service are included in the Technical Appendix). San Luis Obispo County considers LOS D as the minimum acceptable operating standard for most of the roadways and intersection within the Los Osos planning area. LOS C is the standard for the LOVR/Turri Road intersection since it is located outside of the Urban Reserve Line.

The Existing A.M. and P.M. peak hour traffic volumes at the study-area intersections are shown on Figure 2. Existing peak hour volumes were counted in September 2008 for this study. Figure 3 shows the study-area intersections, the existing traffic controls and the intersection lane geometries. Levels of service were calculated for the study-area intersections using the methodology outlined in the Highway Capacity Manual (HCM).[1] The County's LOS D standard applies to the overall average delay per vehicle at *signalized* intersections, while the LOS D standard applies to each of the constrained movements at *unsignalized* intersections. Thus, each constrained movement has a level of service rating and there also is an overall level of service rating for unsignalized intersection.

[1] Highway Capacity Manual, Transportation Research Special Report 209, National Research Council, 2000.



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EXISTING TRAFFIC VOLUMES

FIGURE 2

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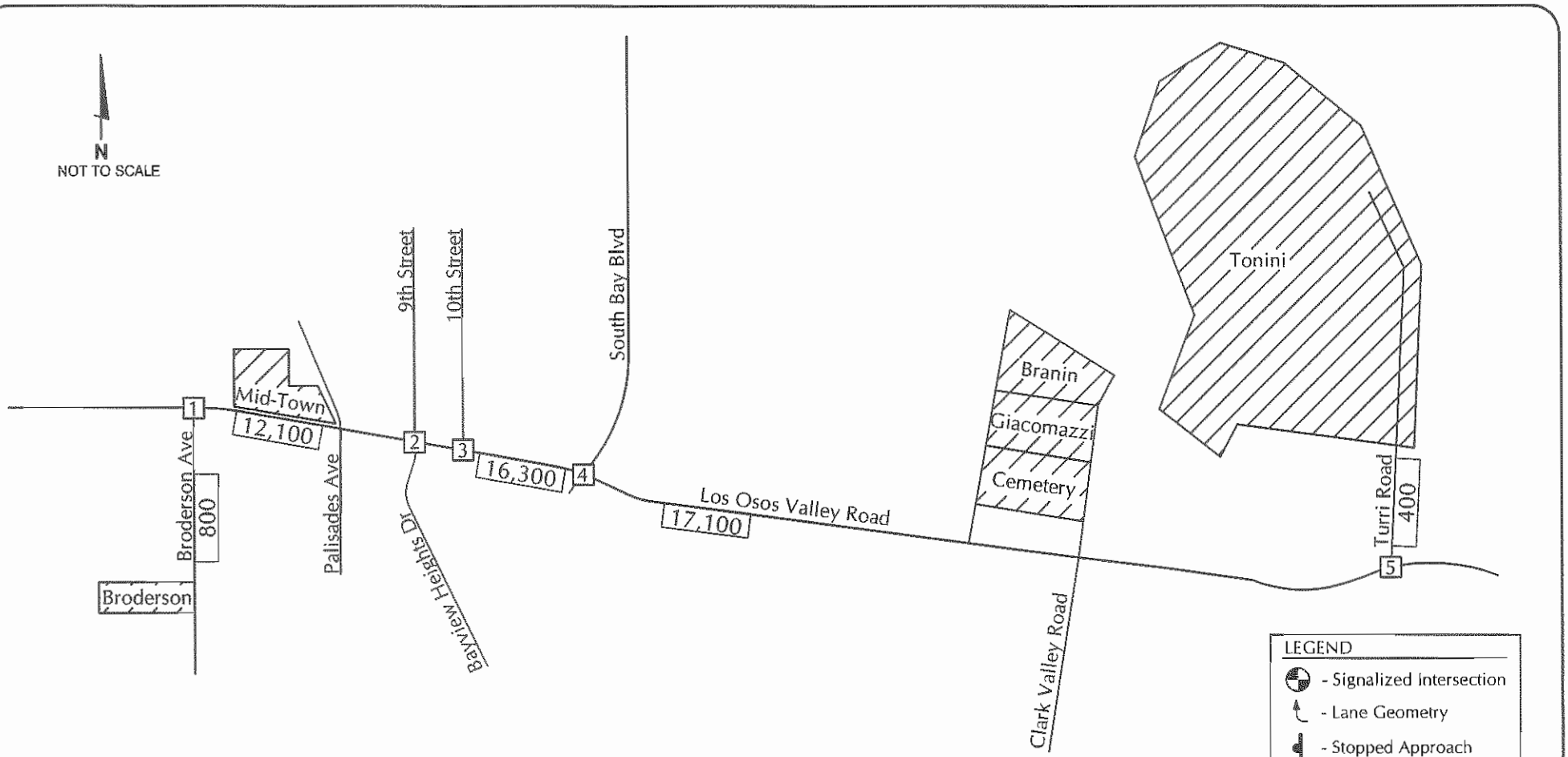

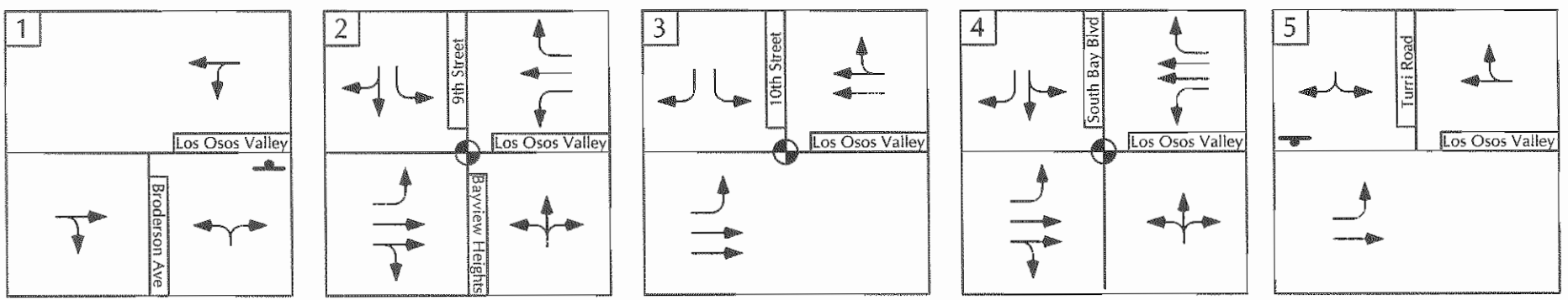

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INTERSECTION TRAFFIC CONTROLS AND LANE GEOMETRIES

FIGURE 3

JJK - #08081

Existing levels of service (LOS) for the key intersections are shown on Table 2. The data presented in Table 2 show that the key intersections operate at LOS C or better during the peak hour periods, which meets the County's standards.

Table 2
Existing Intersection Operations

Intersection	Control	Delay / LOS	
		A.M. Peak Hour	P.M. Peak Hour
LOVR/Broderson Avenue Westbound Los Osos Valley Northbound Broderson Overall LOS	Stop Sign	0.7 Sec/LOS A 13.1 Sec/LOS B 10.6 Sec/LOS B	0.8 Sec/LOS A 10.7 Sec/LOS A 4.2 Sec/LOS A
LOVR/9th Street	Signal	12.6 sec/LOS B	5.4 sec/LOS A
LOVR/10th Street	Signal	9.0 sec/LOS A	15.9 sec/LOS B
LOVR/South Bay Boulevard	Signal	22.4 sec/LOS C	21.9 sec/LOS C
LOVR/Turri Road Eastbound Los Osos Valley Southbound Turri Overall LOS	Stop Sign	7.7 Sec/LOS A 17.1 Sec/LOS C 16.2 Sec/LOS C	10.2 Sec/LOS B 19.0 Sec/LOS C 17.7 Sec/LOS C

IMPACT THRESHOLDS

The County has adopted LOS D as the minimum standard for most of the roadways and intersection within the Los Osos planning area, with mitigation required for LOS E and LOS F operations. LOS C is the standard for the LOVR/Turri Road intersection since it is located outside of the Urban Reserve Line, with mitigation required for LOS D, LOS E, and LOS F operations.

POTENTIAL IMPACTS - ON-GOING OPERATIONS

Project 1

Trip Generation. Trip generation estimates were developed for Project 1 based on the number of employees and their commute trips plus the trips associated with operations and maintenance of the proposed facilities (maintenance trips, material delivery trips, product delivery trips, etc.). Table 3 presents the trip generation forecasts for Project 1.

Table 3
Trip Generation - Project 1

Traffic Generator	# Per Day	ADT		A.M. Peak		P.M. Peak	
		Rate	Trips	Rate	Trips	Rate	Trips
Employees	11(a)	2.00	22	1.00	11	1.00	11
Operations & Maintenance(a)	18(b)	2.00	36	0.20	4	0.20	4
Total			**58**		**15**		**15**

(a) Average number of employee commuters per day.
(b) Average number of vehicles per day for maintenance trips, material delivery trips, product trips, etc.

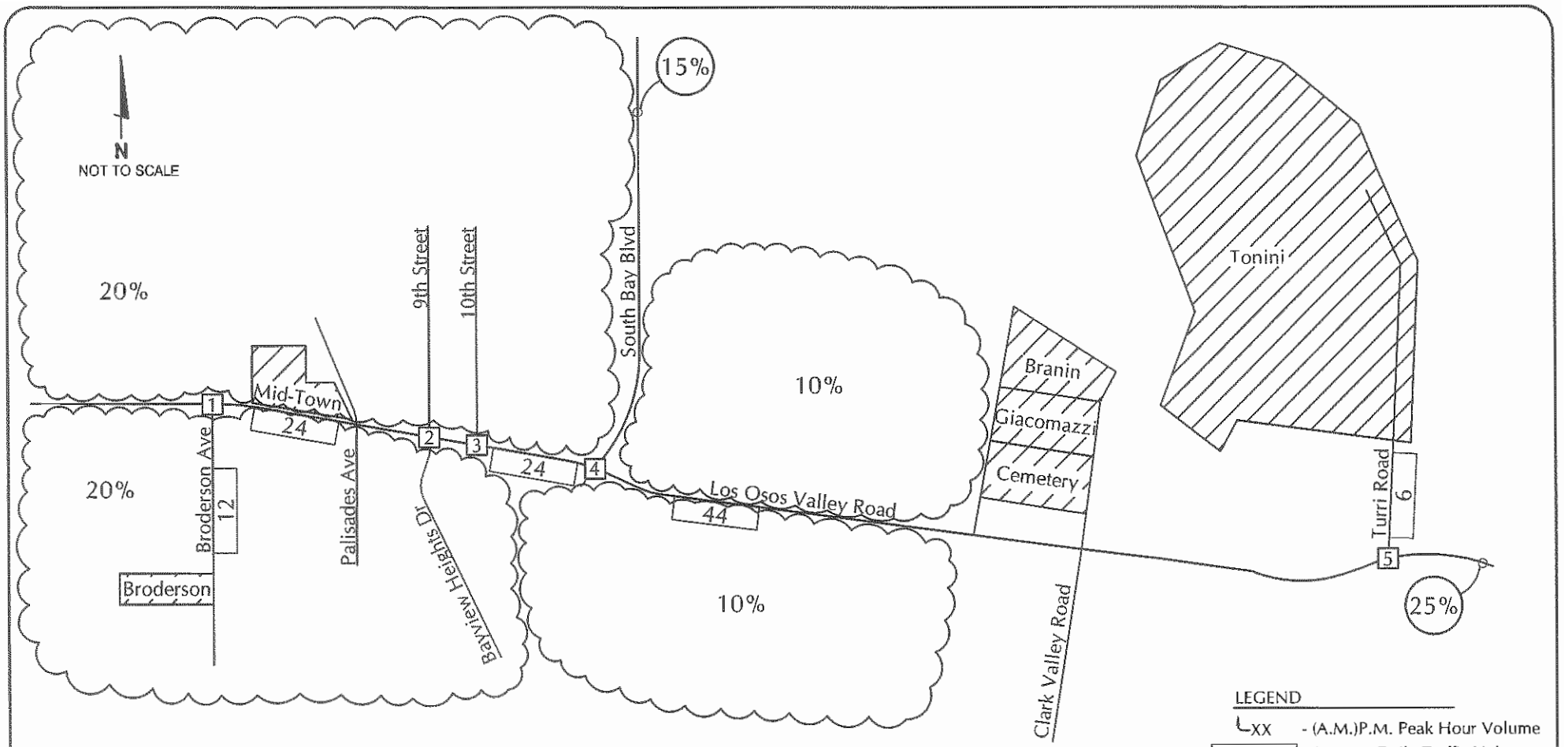
Table 3 shows that Project 1 is forecast to generate 58 average daily trips, with 15 trips occurring during the A.M. Peak Hour and 15 trips occurring during the P.M. peak hour.

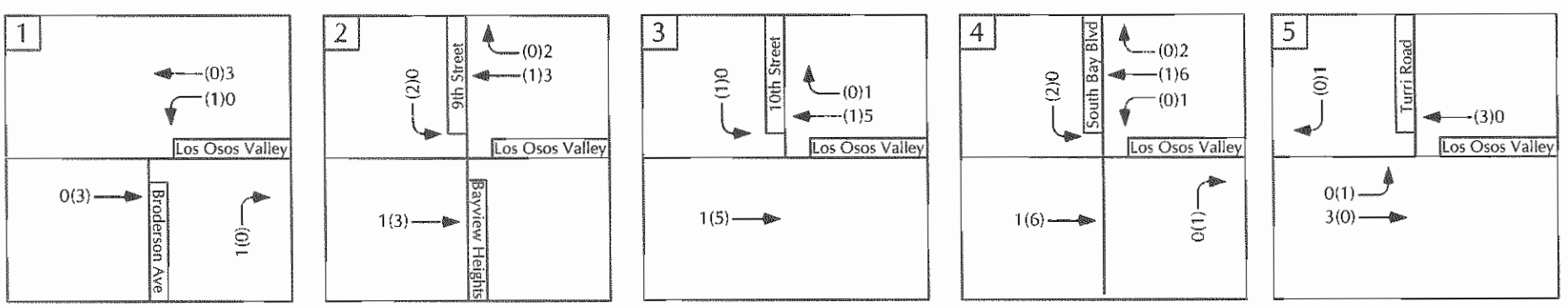
Trip Distribution and Assignment. Traffic generated by Project 1 was distributed onto the study-area street network based on the location of the proposed facilities, consideration of the most logical travel routes to/from the project site, and existing traffic patterns. The trip distribution percentages pattern for Project 1 is shown in Table 4. The assignment of Project 1 traffic is displayed on Figure 4.

Table 4
Trip Distribution - Project 1

Origin/Destination	Direction	Percentage
Internal to Los Osos	-	60%
South Bay Boulevard north of Los Osos	North	15%
LOVR east of Los Osos	East	25%
Total		100%

Project-Specific Roadway Impacts. Table 5 lists the Existing + Project 1 roadway volumes and identifies the impacts of the traffic additions based on County standards.





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PROJECT 1 - TRIP DISTRIBUTION AND ASSIGNMENT

FIGURE 4

JJK - #08081

Table 5
Existing + Project 1 Roadway Operations

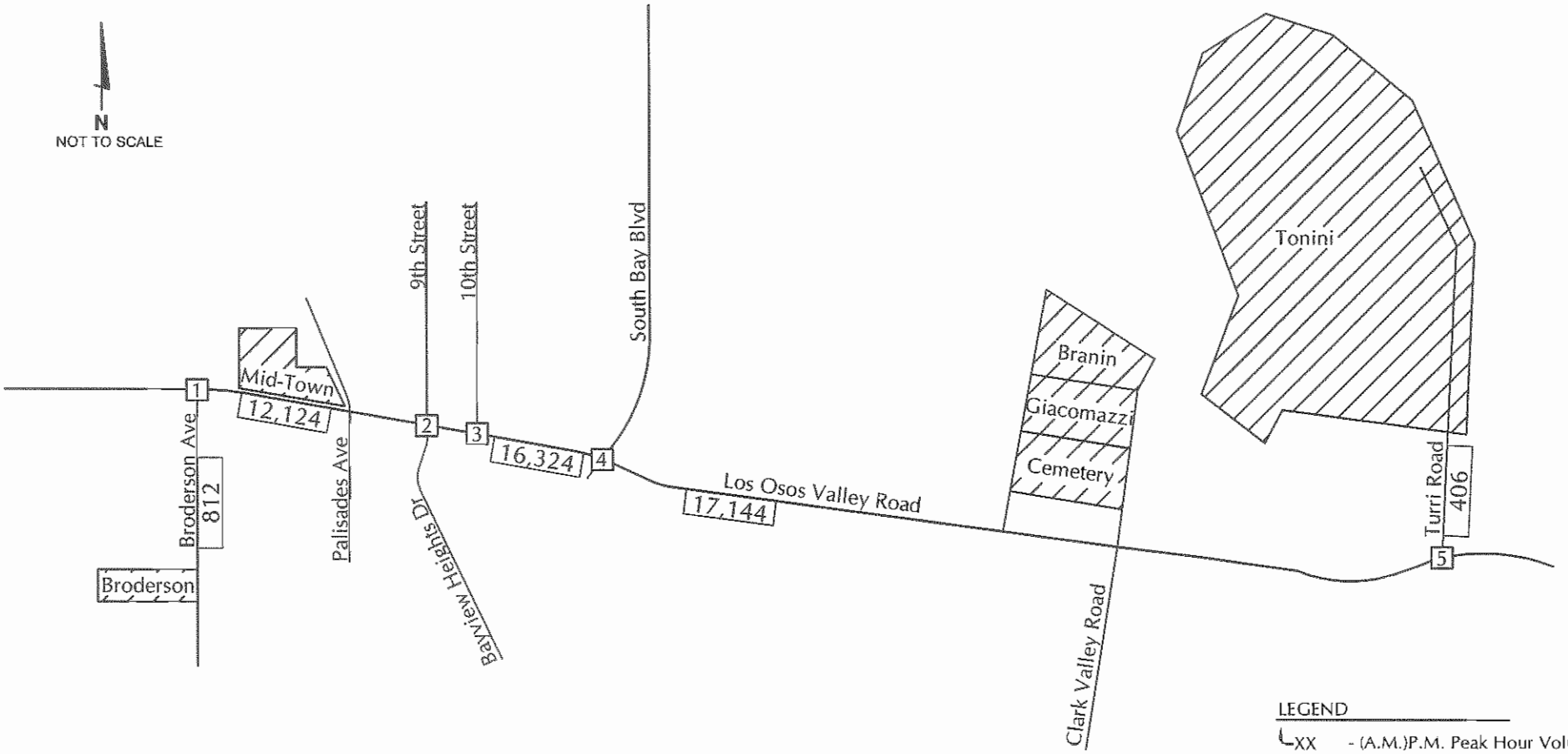
Roadway Segment	Average Daily Traffic				Impact?
	Existing	Project Added	Existing + Project	Capacity	
Broderson s/o LOVR	800 ADT	12 ADT	812 ADT	14,400 ADT	No
LOVR e/o Broderson Rd	12,100 ADT	24 ADT	12,124 ADT	18,000 ADT	No
LOVR w/o South Bay Blvd	16,300 ADT	24 ADT	16,324 ADT	35,900 ADT	No
LOVR e/o South Bay Blvd	17,100 ADT	44 ADT	17,144 ADT	35,900 ADT	No
Turri Road n/o LOVR	400 ADT	6 ADT	406 ADT	14,400 ADT	No

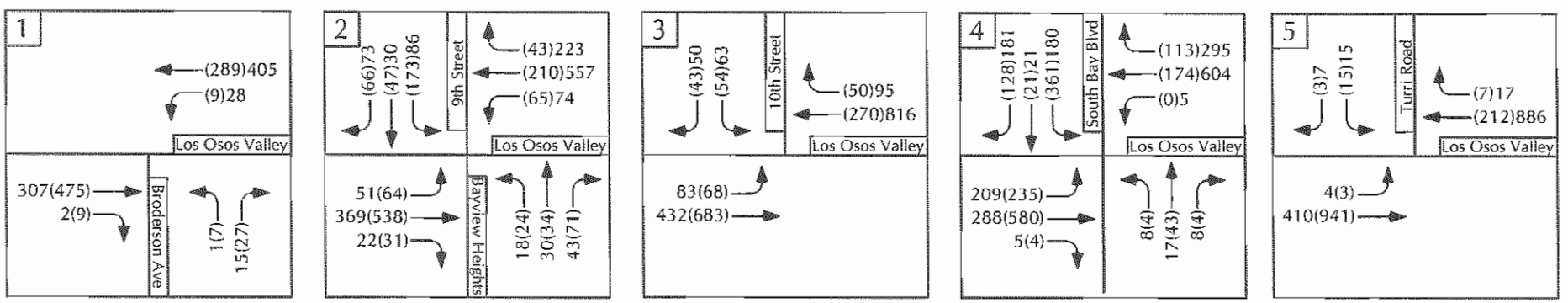
The data presented in Table 5 show that Existing + Project 1 volume forecasts are within the design capacities of the area roadways. Project 1 roadway impacts would be less than significant based on County standards.

Project-Specific Intersection Impacts. Levels of service were calculated for key intersections assuming the Existing + Project 1 peak hour traffic volumes shown on Figure 5. Table 6 shows the Existing + Project 1 level of service forecasts and identifies the significance of project-added traffic based on County standards. As shown, the study-area intersections are forecast to operate at LOS C or better under Existing + Project 1 conditions. Project 1 intersection impacts would be less significant based on County standards.

Table 6
Existing + Project 1 Intersection Operations

Intersection	Control	Delay / LOS		Impact?
		A.M. Peak	P.M. Peak	
LOVR/Broderson Avenue Westbound LOVR Northbound Broderson Overall LOS	Stop Sign	0.4 Sec/LOS A 13.1 Sec/LOS B 10.4 Sec/LOS B	0.8 Sec/LOS A 10.6 Sec/LOS B 4.3 Sec/LOS A	No
LOVR/9th Street	Signal	12.7 sec/LOS B	5.4 sec/LOS A	No
LOVR/10th Street	Signal	9.2 sec/LOS A	15.8 sec/LOS B	No
LOVR/South Bay Boulevard	Signal	22.5 sec/LOS C	21.9 sec/LOS C	No
LOVR/Turri Road Eastbound LOVR Southbound Turri Overall LOS	Stop Sign	7.7 Sec/LOS A 17.1 Sec/LOS C 15.9 Sec/LOS C	10.2 Sec/LOS B 19.0 Sec/LOS C 17.7 Sec/LOS C	No





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EXISTING + PROJECT 1 TRAFFIC VOLUMES

FIGURE 5

JJK - #08081

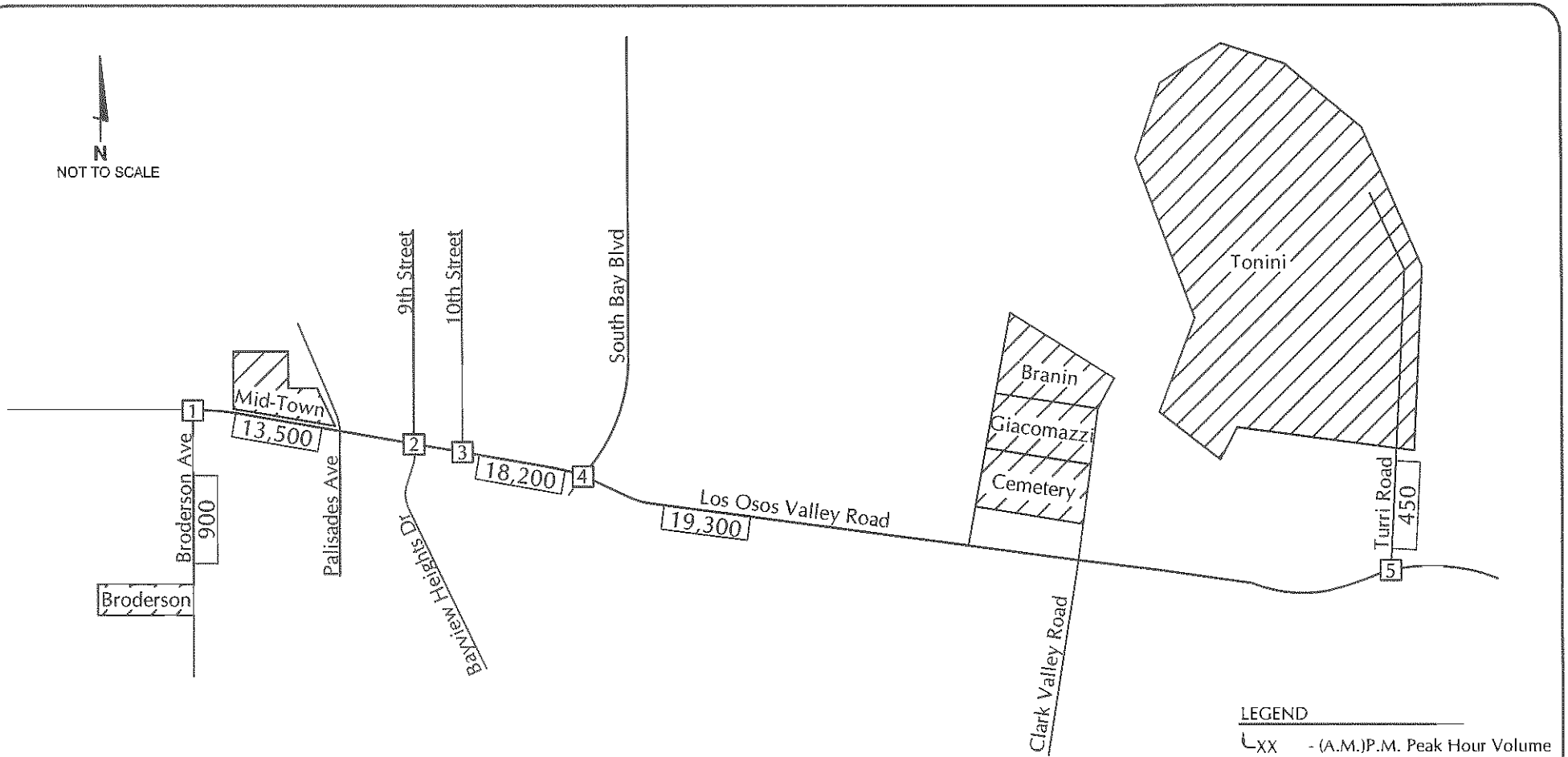
Cumulative Roadway Impacts. Cumulative traffic volumes for the area roadways are presented on Figure 6. The Cumulative traffic volumes were forecast using a 1% annual growth factor, which was developed based on historical traffic growth in the Los Osos area. The growth factor was applied for a period of 10 years to represent cumulative conditions.

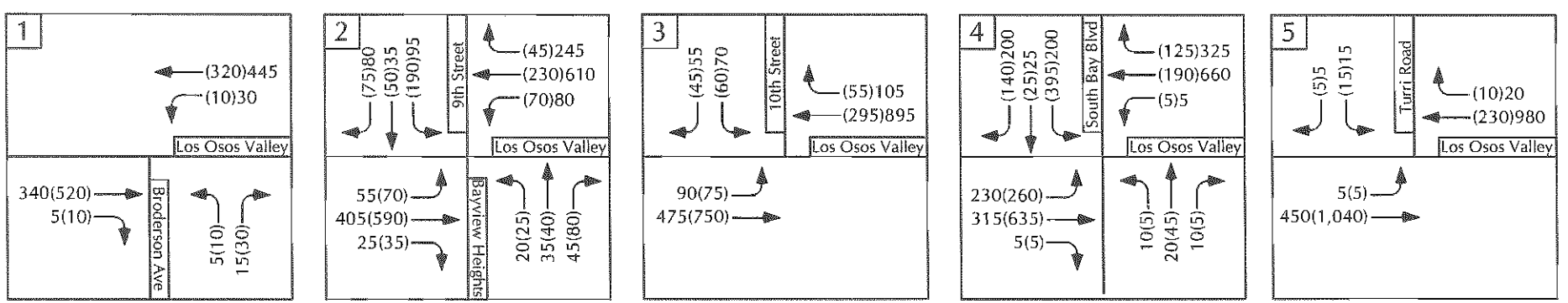
Table 7 lists the Cumulative and Cumulative + Project 1 roadway volumes and identifies cumulative impacts. As shown, all of the area roadways would operate within their respective capacities under Cumulative + Project 1 conditions. Project 1 would not contribute to cumulative roadways impacts based on County standards.

Table 7
Cumulative and Cumulative + Project 1 Roadway Operations

Roadway Segment	Average Daily Traffic				Impact?
	Cumulative	Project Added	Cumulative + Project	Capacity	
Broderson s/o LOVR	900 ADT	12 ADT	912 ADT	14,400 ADT	No
LOVR e/o Broderson Rd	13,500 ADT	24 ADT	13,524 ADT	18,000 ADT	No
LOVR w/o South Bay Blvd	18,200 ADT	24 ADT	18,224 ADT	35,900 ADT	No
LOVR e/o South Bay Blvd	19,300 ADT	44 ADT	19,344 ADT	35,900 ADT	No
Turri Road n/o LOVR	450 ADT	6 ADT	456 ADT	14,400 ADT	No

Cumulative Intersection Impacts. Figure 7 shows the Cumulative + Project 1 peak hour traffic volumes. Cumulative and Cumulative + Project levels of service for the study-area intersections are shown in Tables 8 and 9. As shown, all of the area intersections would operate at LOS C or better under Cumulative + Project 1 conditions. Project 1 would not contribute to cumulative intersection impacts based on County standards.





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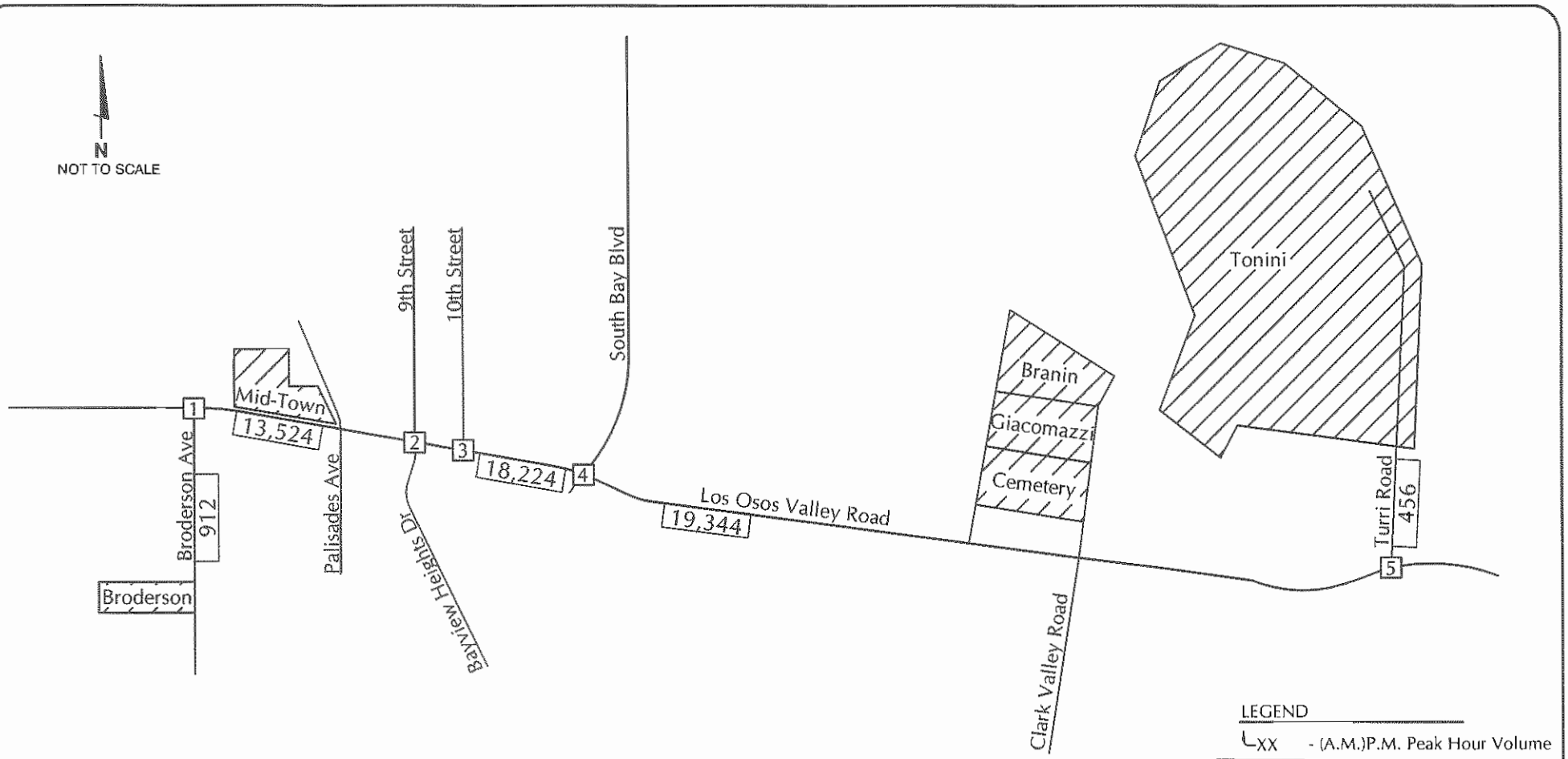
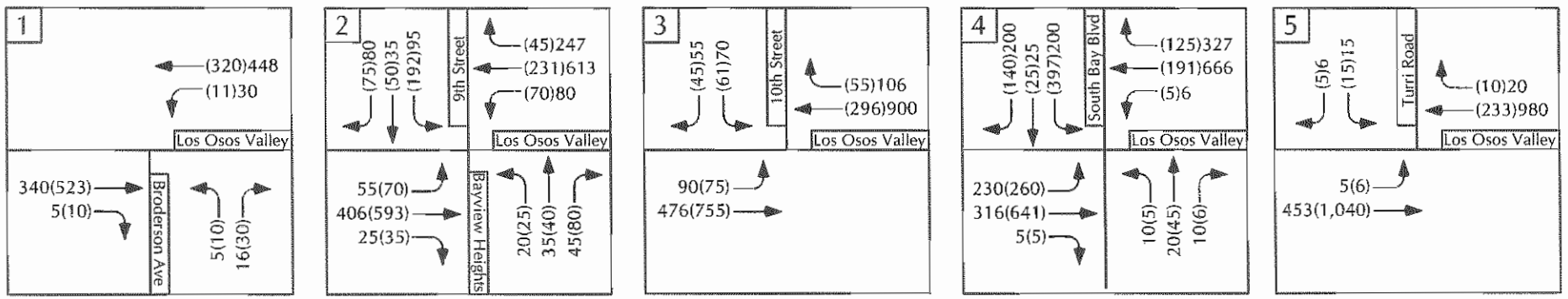
CUMULATIVE TRAFFIC VOLUMES

FIGURE 6

JJK - #08081





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CUMULATIVE + PROJECT 1 TRAFFIC VOLUMES

FIGURE 7

JJK - #06081

Table 8
Cumulative + Project 1 A.M. Peak Hour Intersection Operations

Intersection	Control	Delay / LOS		Impact?
		Cumulative	Cumulative + Project	
LOVR/Broderson Avenue Westbound LOVR Northbound Broderson Overall LOS	Stop Sign	0.4 Sec/LOS A 14.3 Sec/LOS B 11.5 Sec/LOS B	0.8 Sec/LOS A 14.4 Sec/LOS B 11.3 Sec/LOS B	No
LOVR/9th Street	Signal	11.6 sec/LOS B	11.6 sec/LOS B	No
LOVR/10th Street	Signal	9.7 sec/LOS A	9.6 sec/LOS A	No
LOVR/South Bay Boulevard	Signal	28.4 sec/LOS C	28.5 sec/LOS C	No
LOVR/Turri Road Eastbound LOVR Southbound Turri Overall LOS	Stop Sign	7.8 Sec/LOS A 17.9 Sec/LOS C 16.0 Sec/LOS C	7.8 Sec/LOS A 18.0 Sec/LOS C 15.5 Sec/LOS C	No

Table 9
Cumulative + Project 1 P.M. Peak Hour Intersection Operations

Intersection	Control	Delay / LOS		Impact?
		Cumulative	Cumulative + Project	
LOVR/Broderson Avenue Westbound LOVR Northbound Broderson Overall LOS	Stop Sign	0.8 Sec/LOS A 12.5 Sec/LOS B 5.5 Sec/LOS A	0.8 Sec/LOS A 12.4 Sec/LOS B 5.6 Sec/LOS A	No
LOVR/9th Street	Signal	5.6 sec/LOS A	5.6 sec/LOS A	No
LOVR/10th Street	Signal	14.9 sec/LOS B	14.9 sec/LOS B	No
LOVR/South Bay Boulevard	Signal	23.8 sec/LOS C	24.0 sec/LOS C	No
LOVR/Turri Road Eastbound LOVR Southbound Turri Overall LOS	Stop Sign	10.7 Sec/LOS B 21.1 Sec/LOS C 19.2 Sec/LOS C	10.7 Sec/LOS A 21.1 Sec/LOS C 19.2 Sec/LOS C	No

Project 2

Trip Generation. Trip generation estimates were developed for Project 2 based on the number of employees and their commute trips plus the trips associated with operations and maintenance of the proposed facilities (maintenance trips, material delivery trips, product delivery trips, etc.). Table 10 presents the trip generation forecasts for Project 2.

Table 10
Trip Generation - Project 2

Traffic Generator	# Per Day	ADT		A.M. Peak		P.M. Peak	
		Rate	Trips	Rate	Trips	Rate	Trips
Employees	11(a)	2.00	22	1.00	11	1.00	11
Operations & Maintenance(a)	15(b)	2.00	30	0.20	3	0.20	3
Total			**52**		**14**		**14**

(a) Average number of employee commuters per day.
(b) Average number of vehicles per day for maintenance trips, material delivery trips, product trips, etc.

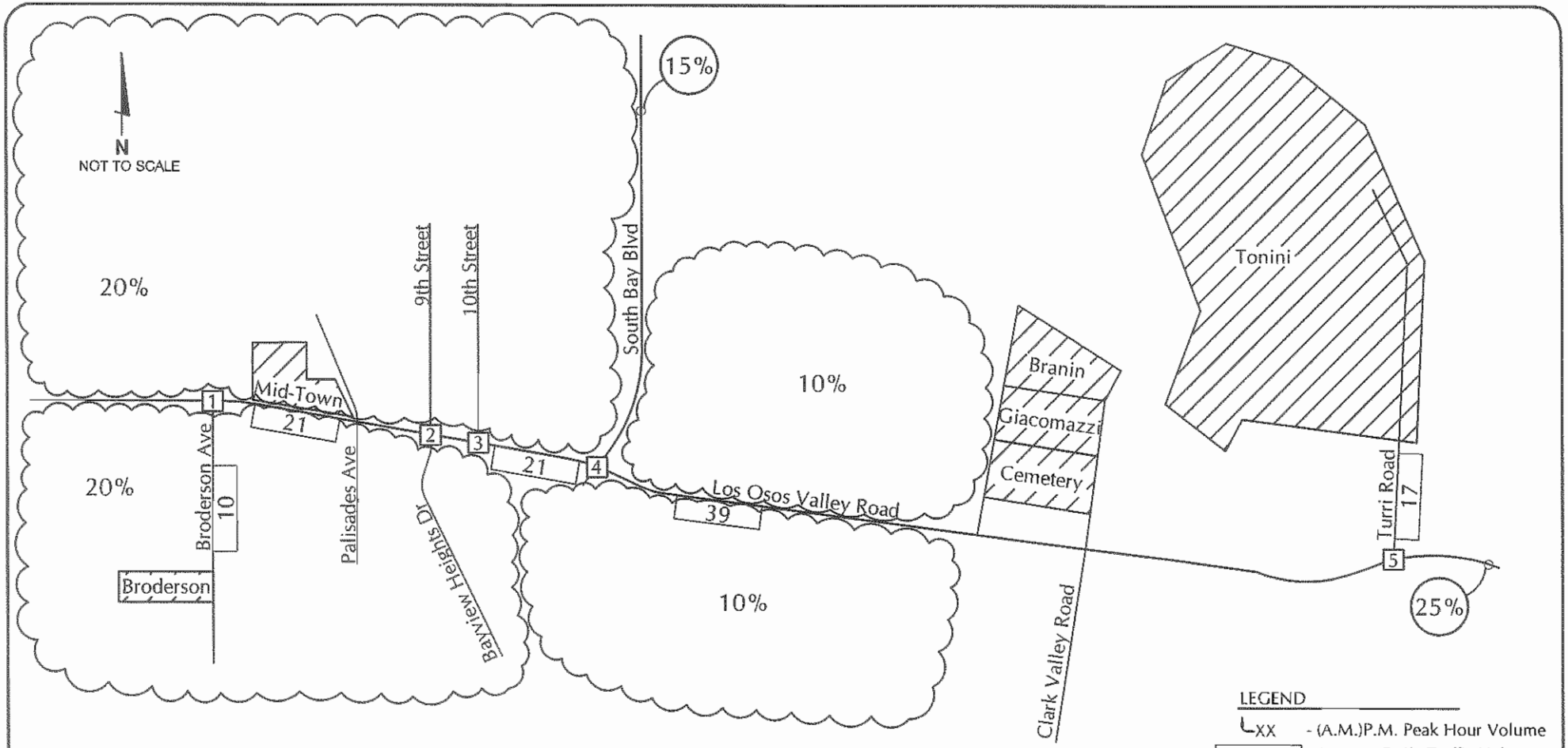
Table 10 shows that Project 2 is forecast to generate 52 average daily trips, with 14 trips occurring during the A.M. Peak Hour and 14 trips occurring during the P.M. peak hour.

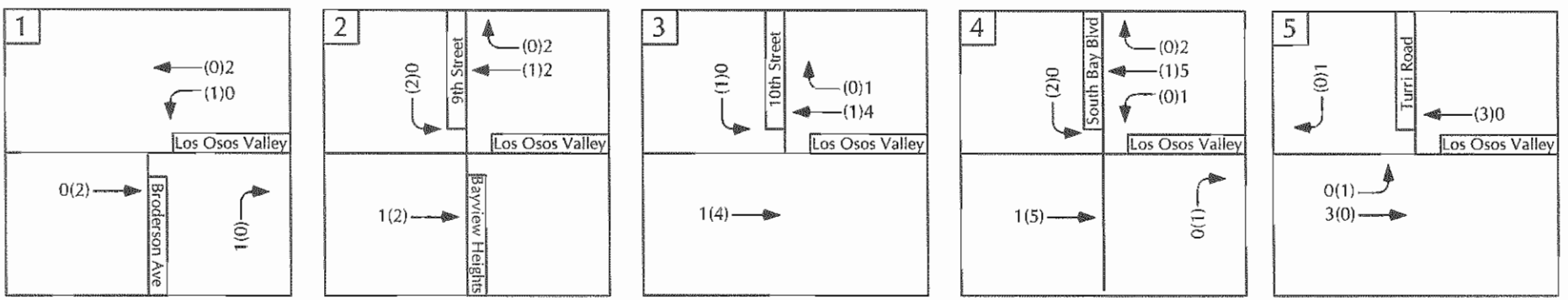
Trip Distribution and Assignment. Traffic generated by Project 2 was distributed onto the study-area street network based on the location of the proposed facilities, consideration of the most logical travel routes to/from the project site, and existing traffic patterns. The trip distribution percentages pattern for Project 2 is shown in Table 11. The assignment of Project 2 traffic is displayed on Figure 8.

Table 11
Trip Distribution - Project 2

Origin/Destination	Direction	Percentage
Internal to Los Osos	-	60%
South Bay Boulevard north of Los Osos	North	15%
LOVR east of Los Osos	East	25%
Total		100%

Project-Specific Roadway Impacts. Table 12 lists the Existing + Project 2 roadway volumes and identifies the impacts of the traffic additions based on County standards.





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PROJECT 2 - TRIP DISTRIBUTION AND ASSIGNMENT

FIGURE 8

JJK - #08081

Table 12
Existing + Project 2 Roadway Operations

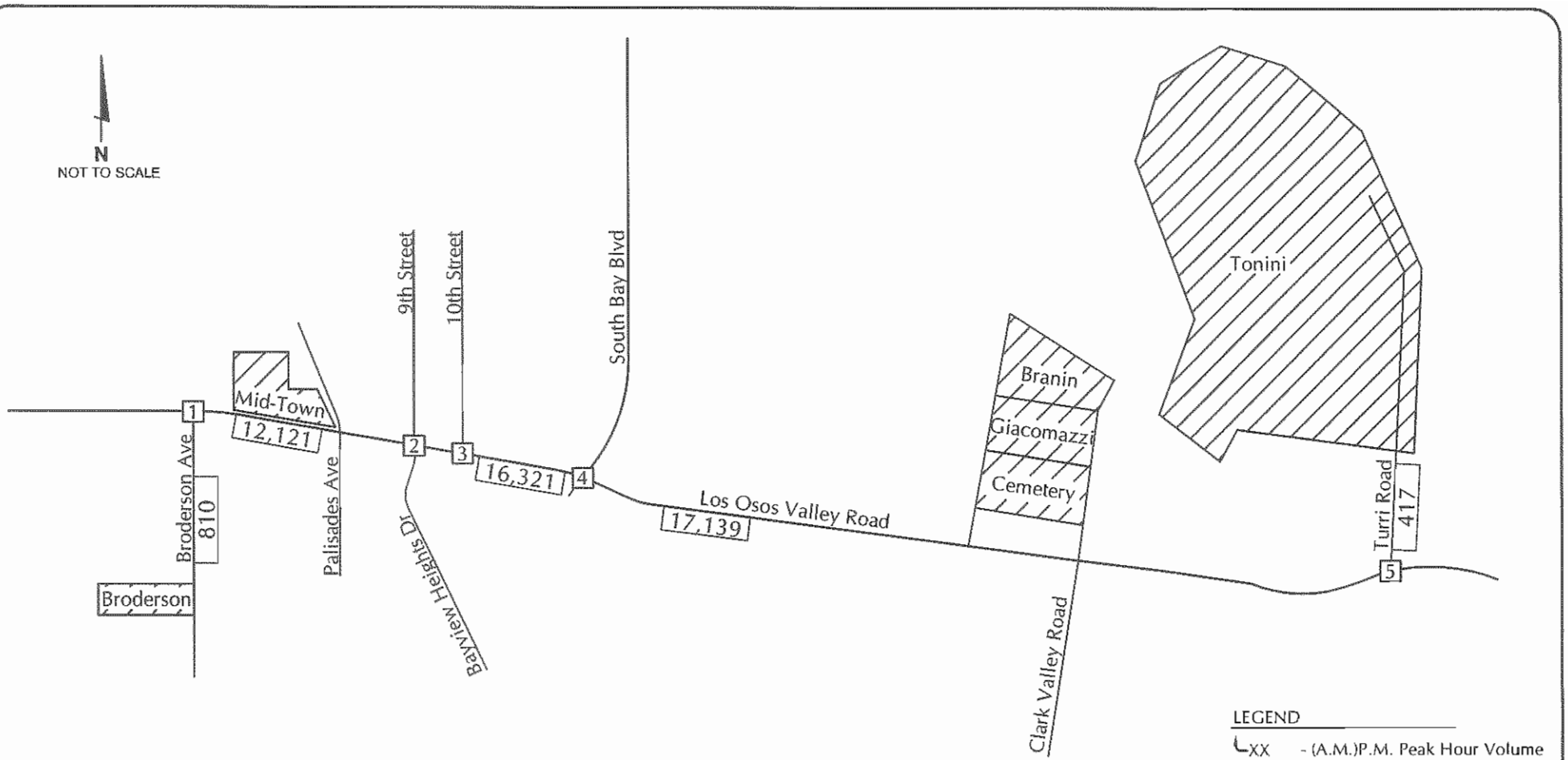
Roadway Segment	Average Daily Traffic				Impact?
	Existing	Project Added	Existing + Project	Capacity	
Broderson s/o LOVR	800 ADT	10 ADT	810 ADT	14,400 ADT	No
LOVR e/o Broderson Rd	12,100 ADT	21 ADT	12,121 ADT	18,000 ADT	No
LOVR w/o South Bay Blvd	16,300 ADT	21 ADT	16,321 ADT	35,900 ADT	No
LOVR e/o South Bay Blvd	17,100 ADT	39 ADT	17,139 ADT	35,900 ADT	No
Turri Road n/o LOVR	400 ADT	17 ADT	417 ADT	14,400 ADT	No

The data presented in Table 12 show that Existing + Project 2 volume forecasts are within the design capacities of the area roadways. Project 2 roadway impacts would be less than significant based on County standards.

Project-Specific Intersection Impacts. Levels of service were calculated for key intersections assuming the Existing + Project 2 peak hour traffic volumes shown on Figure 9. Table 13 shows the Existing + Project 2 level of service forecasts and identifies the significance of project-added traffic based on County standards. As shown, the study-area intersections are forecast to operate at LOS C or better under Existing + Project 2 conditions. Project 2 intersection impacts would be less significant based on County standards.

Table 13
Existing + Project 2 Intersection Operations

Intersection	Control	Delay / LOS		Impact?
		A.M. Peak	P.M. Peak	
LOVR/Broderson Avenue Westbound LOVR Northbound Broderson Overall LOS	Stop Sign	0.4 Sec/LOS A 13.1 Sec/LOS B 10.4 Sec/LOS B	0.8 Sec/LOS A 10.6 Sec/LOS B 4.3 Sec/LOS A	No
LOVR/9th Street	Signal	12.7 sec/LOS B	5.4 sec/LOS A	No
LOVR/10th Street	Signal	9.2 sec/LOS A	15.8 sec/LOS B	No
LOVR/South Bay Boulevard	Signal	22.5 sec/LOS C	21.9 sec/LOS C	No
LOVR/Turri Road Eastbound LOVR Southbound Turri Overall LOS	Stop Sign	7.7 Sec/LOS A 17.1 Sec/LOS C 15.9 Sec/LOS C	10.2 Sec/LOS B 19.0 Sec/LOS C 17.7 Sec/LOS C	No



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EXISTING + PROJECT 2 TRAFFIC VOLUMES

FIGURE 9

JJK - #08081

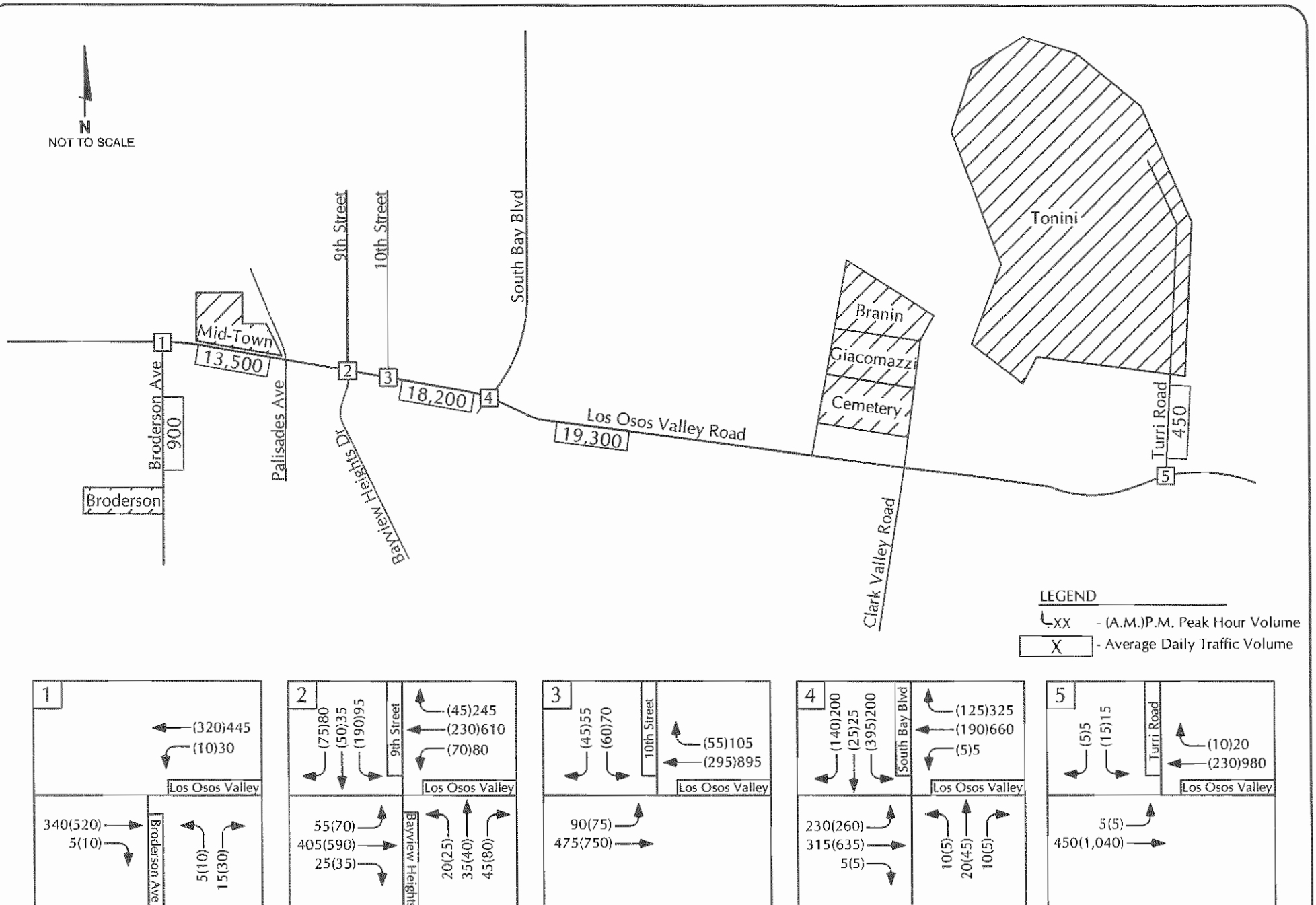
Cumulative Roadway Impacts. Cumulative traffic volumes for the area roadways are presented on Figure 10. The Cumulative traffic volumes were forecast using a 1% annual growth factor, which was developed based on historical traffic growth in the Los Osos area. The growth factor was applied for a period of 10 years to represent cumulative conditions.

Table 14 lists the Cumulative and Cumulative + Project 2 roadway volumes and identifies cumulative impacts. As shown, all of the area roadways would operate within their respective capacities under Cumulative + Project 2 conditions. Project 2 would not contribute to cumulative roadways impacts based on County standards.

Table 14
Cumulative and Cumulative + Project 2 Roadway Operations

Roadway Segment	Average Daily Traffic				Impact?
	Cumulative	Project Added	Cumulative + Project	Capacity	
Broderson s/o LOVR	900 ADT	10 ADT	910 ADT	14,400 ADT	No
LOVR e/o Broderson Rd	13,500 ADT	21 ADT	13,521 ADT	18,000 ADT	No
LOVR w/o South Bay Blvd	18,200 ADT	21 ADT	18,221 ADT	35,900 ADT	No
LOVR e/o South Bay Blvd	19,300 ADT	39 ADT	19,339 ADT	35,900 ADT	No
Turri Road n/o LOVR	450 ADT	17 ADT	467 ADT	14,400 ADT	No

Cumulative Intersection Impacts. Figure 11 shows the Cumulative + Project 2 peak hour traffic volumes. Cumulative and Cumulative + Project levels of service for the study-area intersections are shown in Tables 15 and 16. As shown, all of the area intersections would operate at LOS C or better under Cumulative + Project 2 conditions. Project 2 would not contribute to cumulative intersection impacts based on County standards.



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CUMULATIVE TRAFFIC VOLUMES

FIGURE 10

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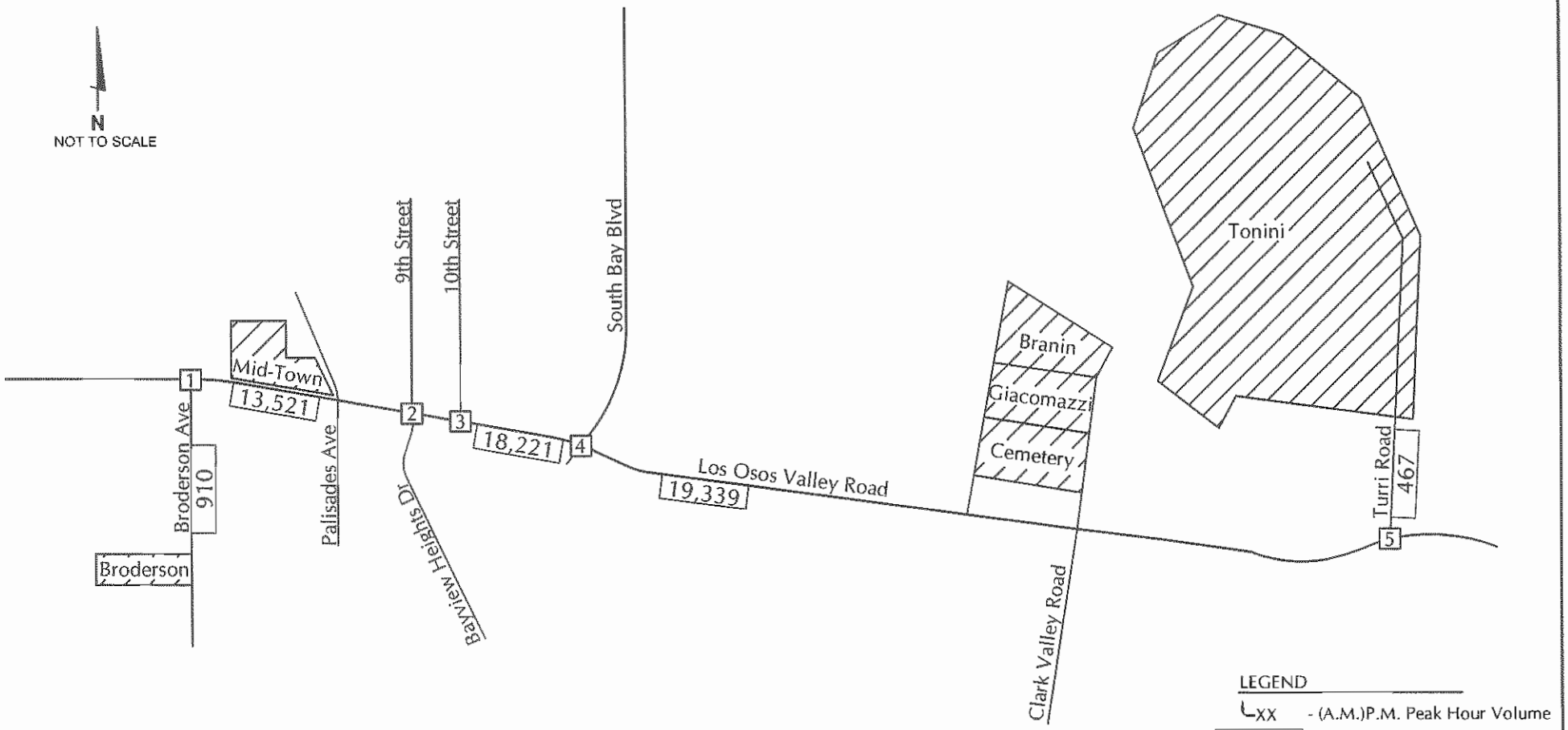

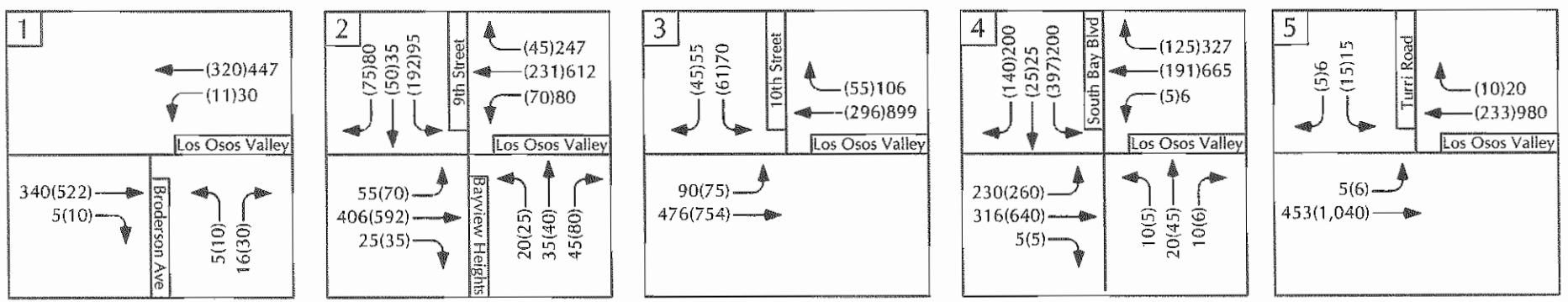

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CUMULATIVE + PROJECT 2 TRAFFIC VOLUMES

FIGURE 11

JJK - #08081

Table 15
Cumulative + Project 2 A.M. Peak Hour Intersection Operations

Intersection	Control	Delay / LOS		Impact?
		Cumulative	Cumulative + Project	
LOVR/Broderson Avenue Westbound LOVR Northbound Broderson Overall LOS	Stop Sign	0.4 Sec/LOS A 14.3 Sec/LOS B 11.5 Sec/LOS B	0.4 Sec/LOS A 14.3 Sec/LOS B 11.3 Sec/LOS B	No
LOVR/9th Street	Signal	11.6 sec/LOS B	11.6 sec/LOS B	No
LOVR/10th Street	Signal	9.7 sec/LOS A	9.7 sec/LOS A	No
LOVR/South Bay Boulevard	Signal	28.4 sec/LOS C	28.5 sec/LOS C	No
LOVR/Turri Road Eastbound LOVR Southbound Turri Overall LOS	Stop Sign	7.8 Sec/LOS A 17.9 Sec/LOS C 19.7 Sec/LOS C	7.8 Sec/LOS A 18.0 Sec/LOS C 15.5 Sec/LOS C	No

Table 16
Cumulative + Project 2 P.M. Peak Hour Intersection Operations

Intersection	Control	Delay / LOS		Impact?
		Cumulative	Cumulative + Project	
LOVR/Broderson Avenue Westbound LOVR Northbound Broderson Overall LOS	Stop Sign	0.8 Sec/LOS A 12.5 Sec/LOS B 5.5 Sec/LOS A	0.8 Sec/LOS A 12.4 Sec/LOS B 5.6 Sec/LOS A	No
LOVR/9th Street	Signal	5.6 sec/LOS A	5.6 sec/LOS A	No
LOVR/10th Street	Signal	14.9 sec/LOS B	14.9 sec/LOS B	No
LOVR/South Bay Boulevard	Signal	23.8 sec/LOS C	24.0 sec/LOS C	No
LOVR/Turri Road Eastbound LOVR Southbound Turri Overall LOS	Stop Sign	10.7 Sec/LOS B 21.1 Sec/LOS C 19.2 Sec/LOS C	10.7 Sec/LOS A 21.1 Sec/LOS C 19.2 Sec/LOS C	No

Project 3

Trip Generation. Trip generation estimates were developed for Project 3 based on the number of employees and their commute trips plus the trips associated with operations and maintenance of the proposed facilities (maintenance trips, material delivery trips, product delivery trips, etc.). Table 17 presents the trip generation forecasts for Project 3.

Table 17
Trip Generation - Project 3

Traffic Generator	# Per Day	ADT		A.M. Peak		P.M. Peak	
		Rate	Trips	Rate	Trips	Rate	Trips
Employees	11(a)	2.00	22	1.00	11	1.00	11
Operations & Maintenance(a)	15(b)	2.00	30	0.20	3	0.20	3
Total			**52**		**14**		**14**

(a) Average number of employee commuters per day.
(b) Average number of vehicles per day for maintenance trips, material delivery trips, product trips, etc.

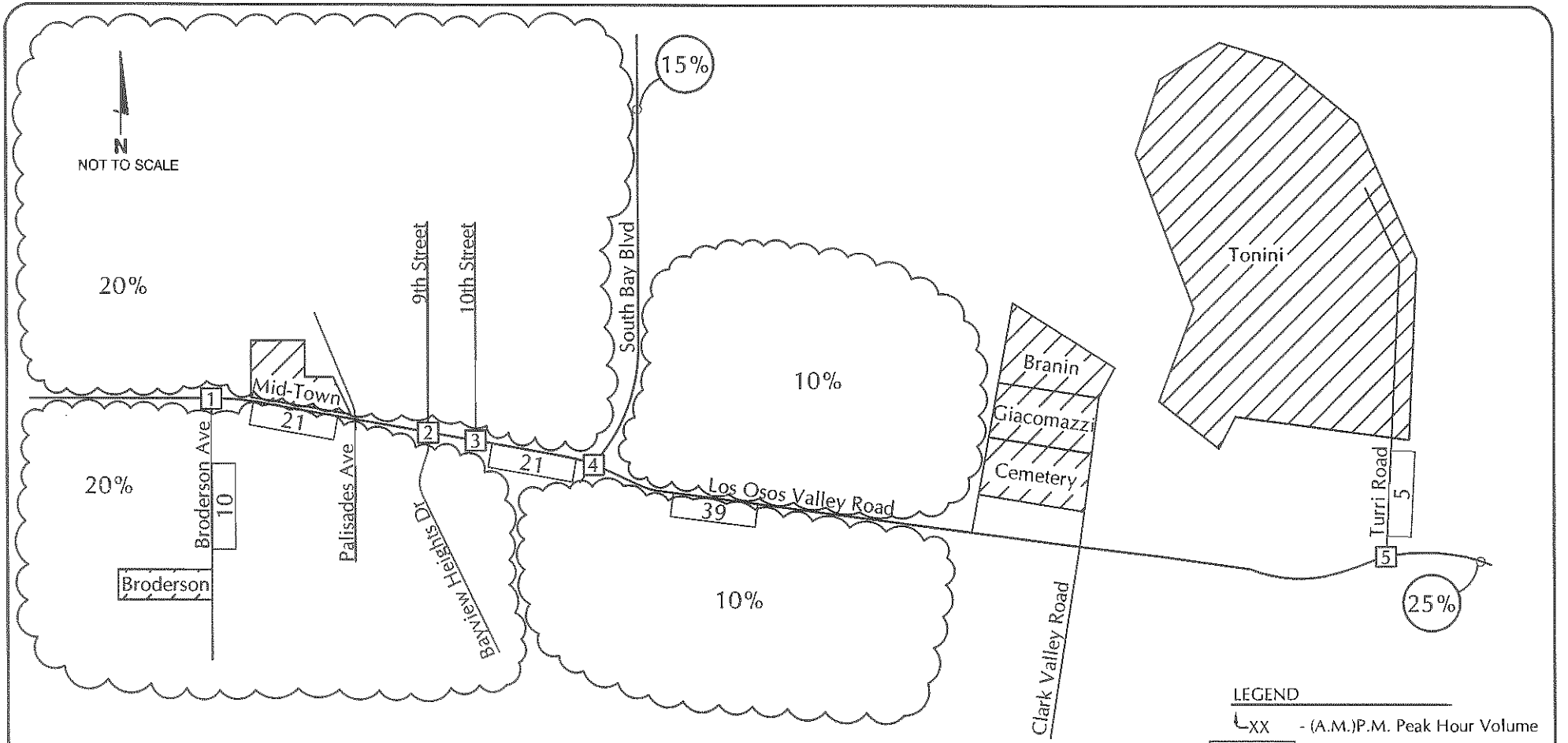
Table 17 shows that Project 3 is forecast to generate 52 average daily trips, with 14 trips occurring during the A.M. Peak Hour and 14 trips occurring during the P.M. peak hour.

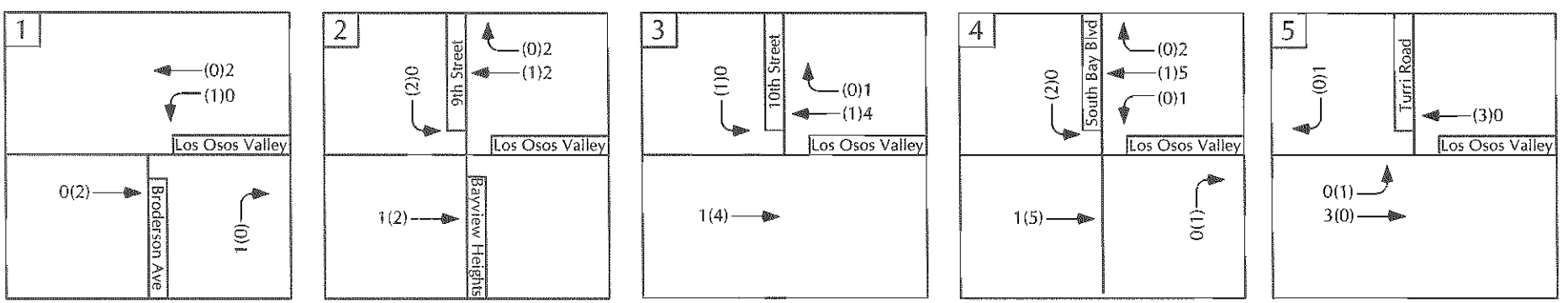
Trip Distribution and Assignment. Traffic generated by Project 3 was distributed onto the study-area street network based on the location of the proposed facilities, consideration of the most logical travel routes to/from the project site, and existing traffic patterns. The trip distribution percentages pattern for Project 3 is shown in Table 18. The assignment of Project 3 traffic is displayed on Figure 12.

Table 18
Trip Distribution - Project 3

Origin/Destination	Direction	Percentage
Internal to Los Osos	-	60%
South Bay Boulevard north of Los Osos	North	15%
LOVR east of Los Osos	East	25%
Total		100%

Project-Specific Roadway Impacts. Table 19 lists the Existing + Project 3 roadway volumes and identifies the impacts of the traffic additions based on County standards.





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PROJECT 3 - TRIP DISTRIBUTION AND ASSIGNMENT

FIGURE 12

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Table 19
Existing + Project 3 Roadway Operations

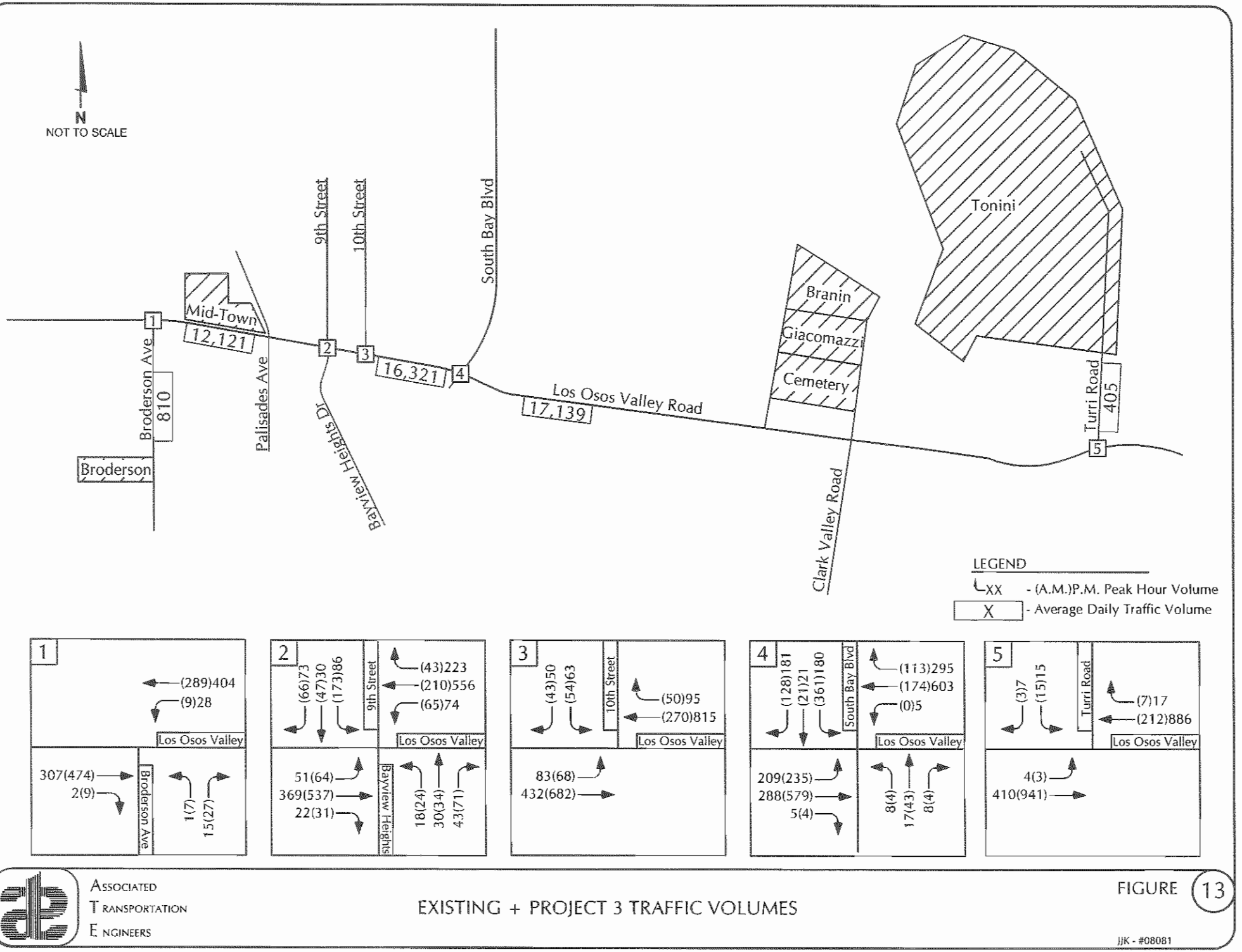
Roadway Segment	Average Daily Traffic				Impact?
	Existing	Project Added	Existing + Project	Capacity	
Broderson s/o LOVR	800 ADT	10 ADT	810 ADT	14,400 ADT	No
LOVR e/o Broderson Rd	12,100 ADT	21 ADT	12,121 ADT	18,000 ADT	No
LOVR w/o South Bay Blvd	16,300 ADT	21 ADT	16,321 ADT	35,900 ADT	No
LOVR e/o South Bay Blvd	17,100 ADT	39 ADT	17,139 ADT	35,900 ADT	No
Turri Road n/o LOVR	400 ADT	5 ADT	405 ADT	14,400 ADT	No

The data presented in Table 19 show that Existing + Project 3 volume forecasts are within the design capacities of the area roadways. Project 3 roadway impacts would be less than significant based on County standards.

Project-Specific Intersection Impacts. Levels of service were calculated for key intersections assuming the Existing + Project 3 peak hour traffic volumes shown on Figure 13. Table 20 shows the Existing + Project 3 level of service forecasts and identifies the significance of project-added traffic based on County standards. As shown, the study-area intersections are forecast to operate at LOS C or better under Existing + Project 3 conditions. Project 3 intersection impacts would be less significant based on County standards.

Table 20
Existing + Project 3 Intersection Operations

Intersection	Control	Delay / LOS		Impact?
		A.M. Peak	P.M. Peak	
LOVR/Broderson Avenue Westbound LOVR Northbound Broderson Overall LOS	Stop Sign	0.4 Sec/LOS A 13.1 Sec/LOS B 10.4 Sec/LOS B	0.8 Sec/LOS A 10.6 Sec/LOS B 4.3 Sec/LOS A	No
LOVR/9th Street	Signal	12.7 sec/LOS B	5.4 sec/LOS A	No
LOVR/10th Street	Signal	9.2 sec/LOS A	15.8 sec/LOS B	No
LOVR/South Bay Boulevard	Signal	22.5 sec/LOS C	21.9 sec/LOS C	No
LOVR/Turri Road Eastbound LOVR Southbound Turri Overall LOS	Stop Sign	7.7 Sec/LOS A 17.1 Sec/LOS C 15.9 Sec/LOS C	10.2 Sec/LOS B 19.0 Sec/LOS C 17.7 Sec/LOS C	No



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EXISTING + PROJECT 3 TRAFFIC VOLUMES

FIGURE 13

JJK - #08081

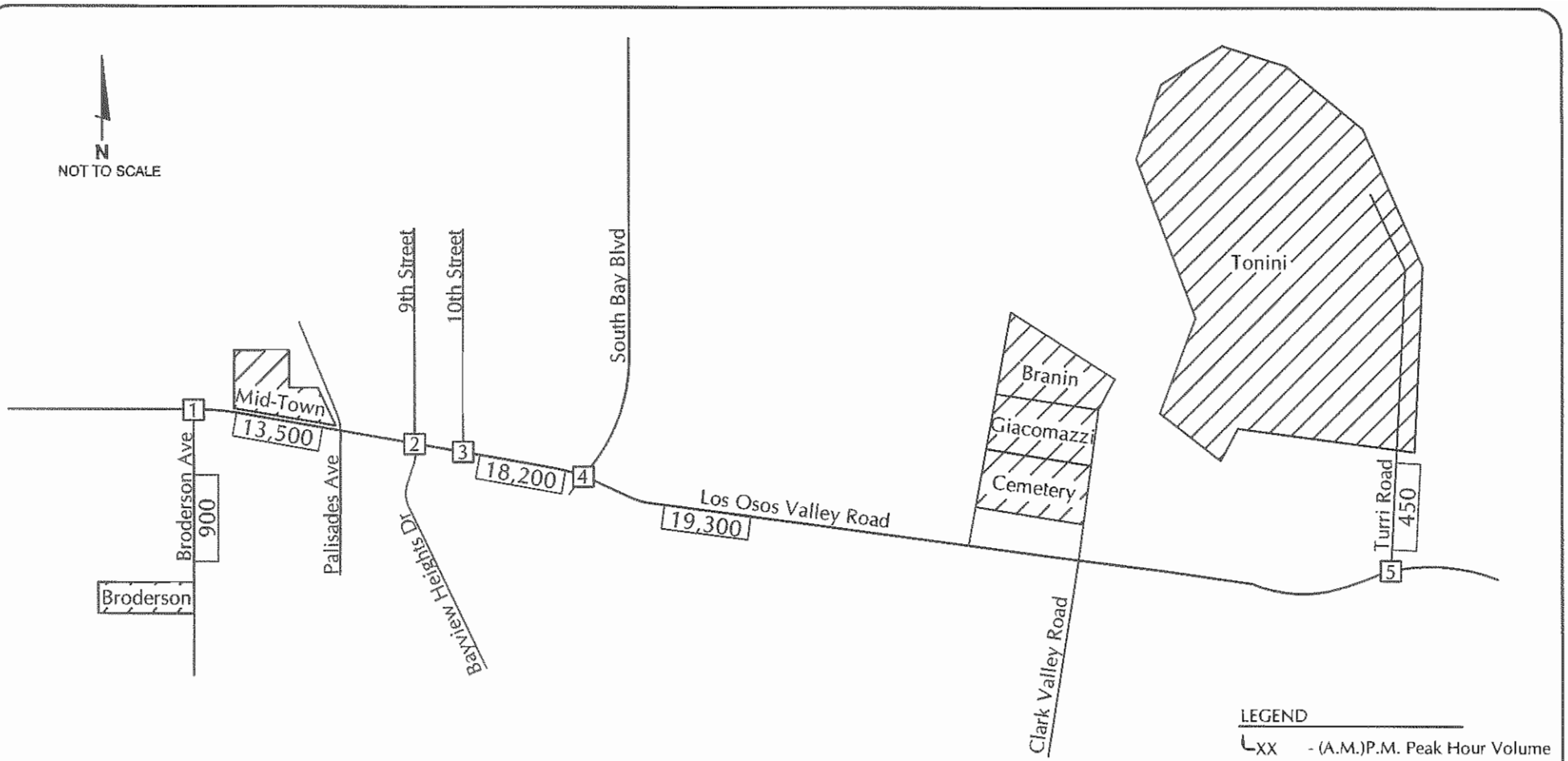
Cumulative Roadway Impacts. Cumulative traffic volumes for the area roadways are presented on Figure 14. The Cumulative traffic volumes were forecast using a 1% annual growth factor, which was developed based on historical traffic growth in the Los Osos area. The growth factor was applied for a period of 10 years to represent cumulative conditions.

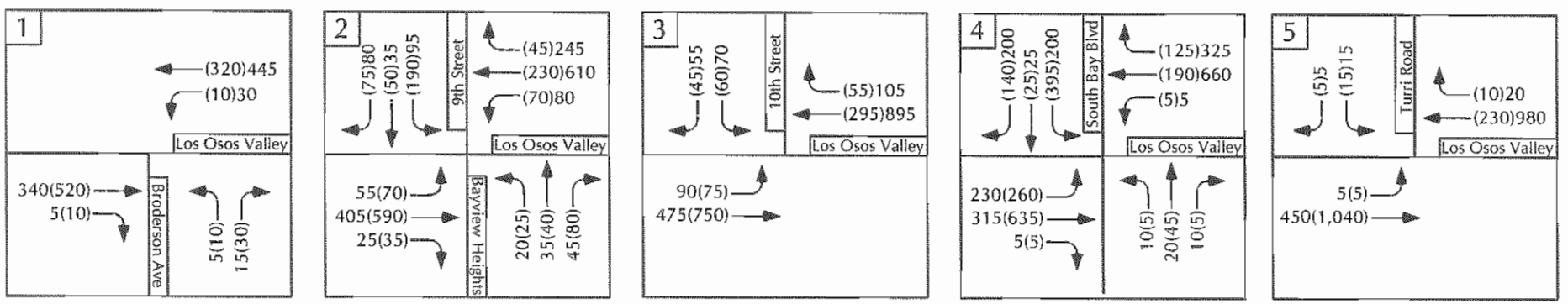
Table 21 lists the Cumulative and Cumulative + Project 3 roadway volumes and identifies cumulative impacts. As shown, all of the area roadways would operate within their respective capacities under Cumulative + Project 3 conditions. Project 3 would not contribute to cumulative roadways impacts based on County standards.

Table 21
Cumulative and Cumulative + Project 3 Roadway Operations

Roadway Segment	Average Daily Traffic				Impact?
	Cumulative	Project Added	Cumulative + Project	Capacity	
Broderson s/o LOVR	900 ADT	10 ADT	910 ADT	14,400 ADT	No
LOVR e/o Broderson Rd	13,500 ADT	21 ADT	13,521 ADT	18,000 ADT	No
LOVR w/o South Bay Blvd	18,200 ADT	21 ADT	18,221 ADT	35,900 ADT	No
LOVR e/o South Bay Blvd	19,300 ADT	39 ADT	19,339 ADT	35,900 ADT	No
Turri Road n/o LOVR	450 ADT	5 ADT	455 ADT	14,400 ADT	No

Cumulative Intersection Impacts. Figure 15 shows the Cumulative + Project 3 peak hour traffic volumes. Cumulative and Cumulative + Project levels of service for the study-area intersections are shown in Tables 22 and 23. As shown, all of the area intersections would operate at LOS C or better under Cumulative + Project 3 conditions. Project 3 would not contribute to cumulative intersection impacts based on County standards.





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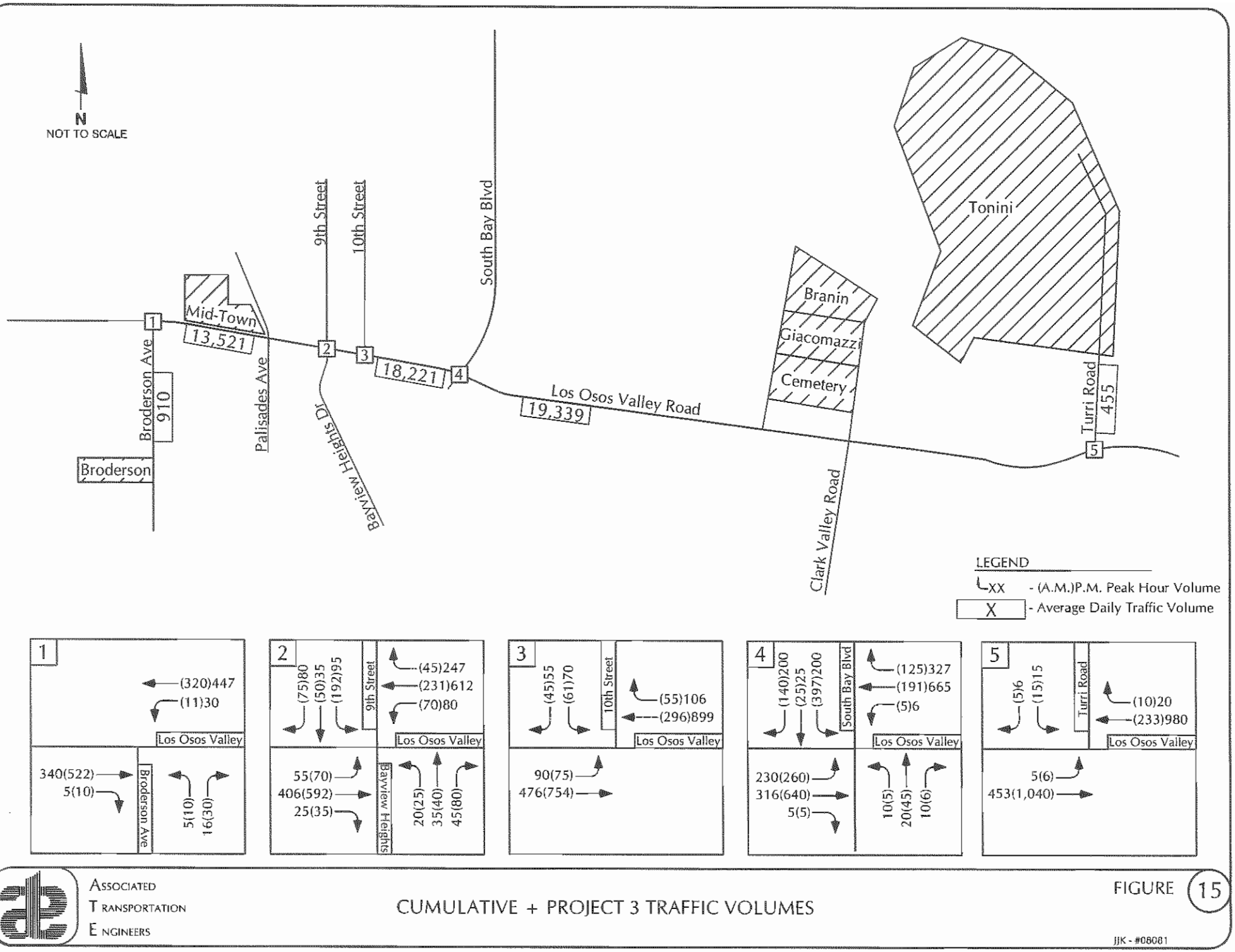
CUMULATIVE TRAFFIC VOLUMES

FIGURE 14

JJK - #08081



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CUMULATIVE + PROJECT 3 TRAFFIC VOLUMES

FIGURE 15

JJK - #08081

Table 22
Cumulative + Project 3 A.M. Peak Hour Intersection Operations

Intersection	Control	Delay / LOS		Impact?
		Cumulative	Cumulative + Project	
LOVR/Broderson Avenue Westbound LOVR Northbound Broderson Overall LOS	Stop Sign	0.4 Sec/LOS A 14.3 Sec/LOS B 11.5 Sec/LOS B	0.4 Sec/LOS A 14.3 Sec/LOS B 11.3 Sec/LOS B	No
LOVR/9th Street	Signal	11.6 sec/LOS B	11.6 sec/LOS B	No
LOVR/10th Street	Signal	9.7 sec/LOS A	9.7 sec/LOS A	No
LOVR/South Bay Boulevard	Signal	28.4 sec/LOS C	28.5 sec/LOS C	No
LOVR/Turri Road Eastbound LOVR Southbound Turri Overall LOS	Stop Sign	7.8 Sec/LOS A 17.9 Sec/LOS C 16.0 Sec/LOS C	7.8 Sec/LOS A 18.0 Sec/LOS C 18.9 Sec/LOS C	No

Table 23
Cumulative + Project 3 P.M. Peak Hour Intersection Operations

Intersection	Control	Delay / LOS		Impact?
		Cumulative	Cumulative + Project	
LOVR/Broderson Avenue Westbound LOVR Northbound Broderson Overall LOS	Stop Sign	0.8 Sec/LOS A 12.5 Sec/LOS B 5.5 Sec/LOS A	0.8 Sec/LOS A 12.4 Sec/LOS B 5.6 Sec/LOS A	No
LOVR/9th Street	Signal	5.6 sec/LOS A	5.6 sec/LOS A	No
LOVR/10th Street	Signal	14.9 sec/LOS B	14.9 sec/LOS B	No
LOVR/South Bay Boulevard	Signal	23.8 sec/LOS C	24.0 sec/LOS C	No
LOVR/Turri Road Eastbound LOVR Southbound Turri Overall LOS	Stop Sign	10.7 Sec/LOS B 21.1 Sec/LOS C 19.2 Sec/LOS C	10.7 Sec/LOS A 21.1 Sec/LOS C 19.2 Sec/LOS C	No

Project 4

Trip Generation. Trip generation estimates were developed for Project 4 based on the number of employees and their commute trips plus the trips associated with operations and maintenance of the proposed facilities (maintenance trips, material delivery trips, product delivery trips, etc.). Table 24 presents the trip generation forecasts for Project 4.

Table 24
Trip Generation - Project 4

Traffic Generator	# Per Day	ADT		A.M. Peak		P.M. Peak	
		Rate	Trips	Rate	Trips	Rate	Trips
Employees	10(a)	2.00	20	1.00	10	1.00	10
Operations & Maintenance(a)	13(b)	2.00	26	0.20	3	0.20	3
Total			**46**		**13**		**13**

(a) Average number of employee commuters per day.
(b) Average number of vehicles per day for maintenance trips, material delivery trips, product trips, etc.

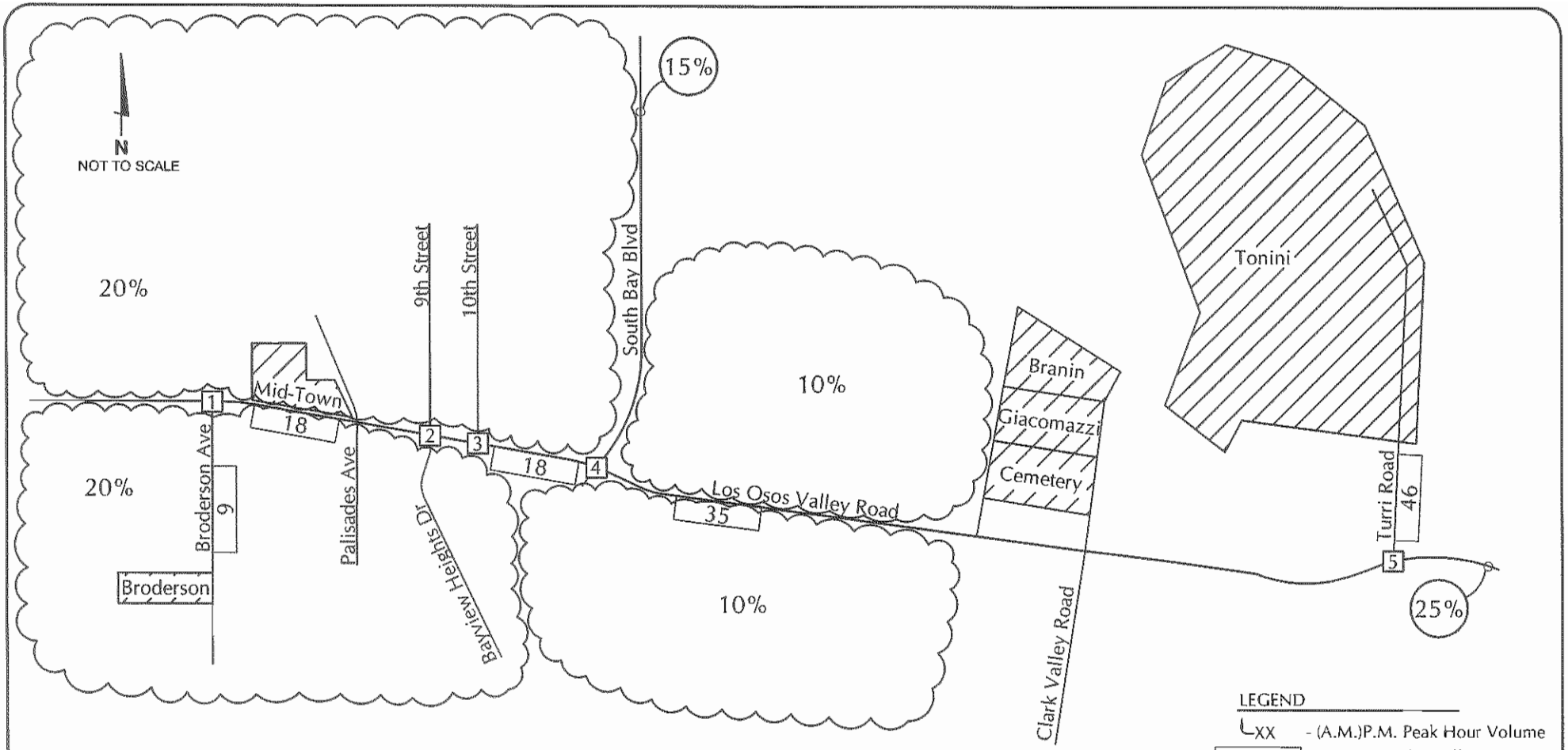
Table 24 shows that Project 4 is forecast to generate 46 average daily trips, with 13 trips occurring during the A.M. Peak Hour and 13 trips occurring during the P.M. peak hour.

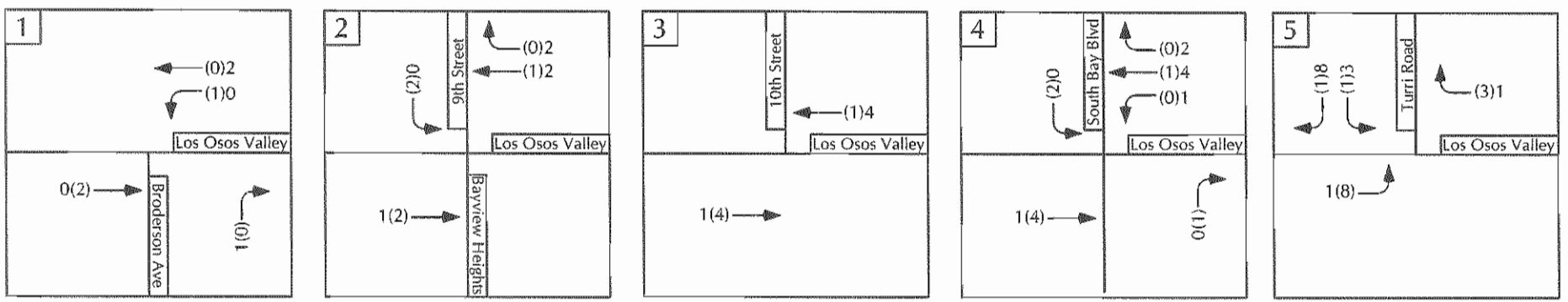
Trip Distribution and Assignment. Traffic generated by Project 4 was distributed onto the study-area street network based on the location of the proposed facilities, consideration of the most logical travel routes to/from the project site, and existing traffic patterns. The trip distribution percentages pattern for Project 4 is shown in Table 25. The assignment of Project 4 traffic is displayed on Figure 16.

Table 25
Trip Distribution - Project 4

Origin/Destination	Direction	Percentage
Internal to Los Osos	-	60%
South Bay Boulevard north of Los Osos	North	15%
LOVR east of Los Osos	East	25%
Total		100%

Project-Specific Roadway Impacts. Table 26 lists the Existing + Project 4 roadway volumes and identifies the impacts of the traffic additions based on County standards.





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PROJECT 4 - TRIP DISTRIBUTION AND ASSIGNMENT

FIGURE 16

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Table 26
Existing + Project 4 Roadway Operations

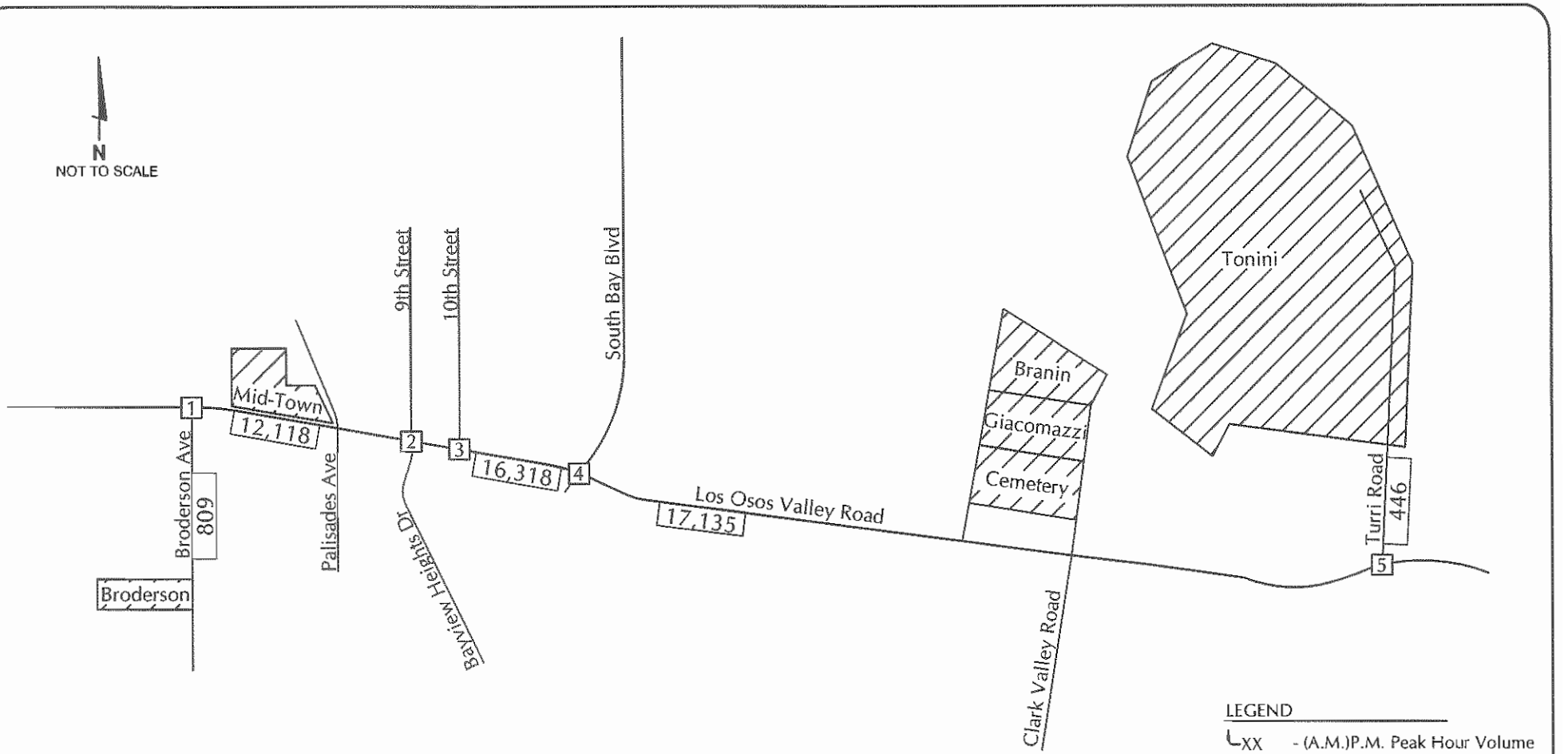
Roadway Segment	Average Daily Traffic				Impact?
	Existing	Project Added	Existing + Project	Capacity	
Broderson s/o LOVR	800 ADT	9 ADT	809 ADT	14,400 ADT	No
LOVR e/o Broderson Rd	12,100 ADT	18 ADT	12,118 ADT	18,000 ADT	No
LOVR w/o South Bay Blvd	16,300 ADT	18 ADT	16,318 ADT	35,900 ADT	No
LOVR e/o South Bay Blvd	17,100 ADT	35 ADT	17,135 ADT	35,900 ADT	No
Turri Road n/o LOVR	400 ADT	46 ADT	446 ADT	14,400 ADT	No

The data presented in Table 26 show that Existing + Project 4 volume forecasts are within the design capacities of the area roadways. Project 4 roadway impacts would be less than significant based on County standards.

Project-Specific Intersection Impacts. Levels of service were calculated for key intersections assuming the Existing + Project 4 peak hour traffic volumes shown on Figure 17. Table 27 shows the Existing + Project 4 level of service forecasts and identifies the significance of project-added traffic based on County standards. As shown, the study-area intersections are forecast to operate at LOS C or better under Existing + Project 4 conditions. Project 4 intersection impacts would be less significant based on County standards.

Table 27
Existing + Project 4 Intersection Operations

Intersection	Control	Delay / LOS		Impact?
		A.M. Peak	P.M. Peak	
LOVR/Broderson Avenue Westbound LOVR Northbound Broderson Overall LOS	Stop Sign	0.4 Sec/LOS A 13.1 Sec/LOS B 10.4 Sec/LOS B	0.8 Sec/LOS A 10.6 Sec/LOS B 4.3 Sec/LOS A	No
LOVR/9th Street	Signal	12.7 sec/LOS B	5.4 sec/LOS A	No
LOVR/10th Street	Signal	9.2 sec/LOS A	15.8 sec/LOS B	No
LOVR/South Bay Boulevard	Signal	22.5 sec/LOS C	21.9 sec/LOS C	No
LOVR/Turri Road Eastbound LOVR Southbound Turri Overall LOS	Stop Sign	7.8 Sec/LOS A 17.1 Sec/LOS C 14.0 Sec/LOS C	10.2 Sec/LOS B 19.4 Sec/LOS C 18.3 Sec/LOS C	No



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EXISTING + PROJECT 4 TRAFFIC VOLUMES

FIGURE 17

JJK - #08081

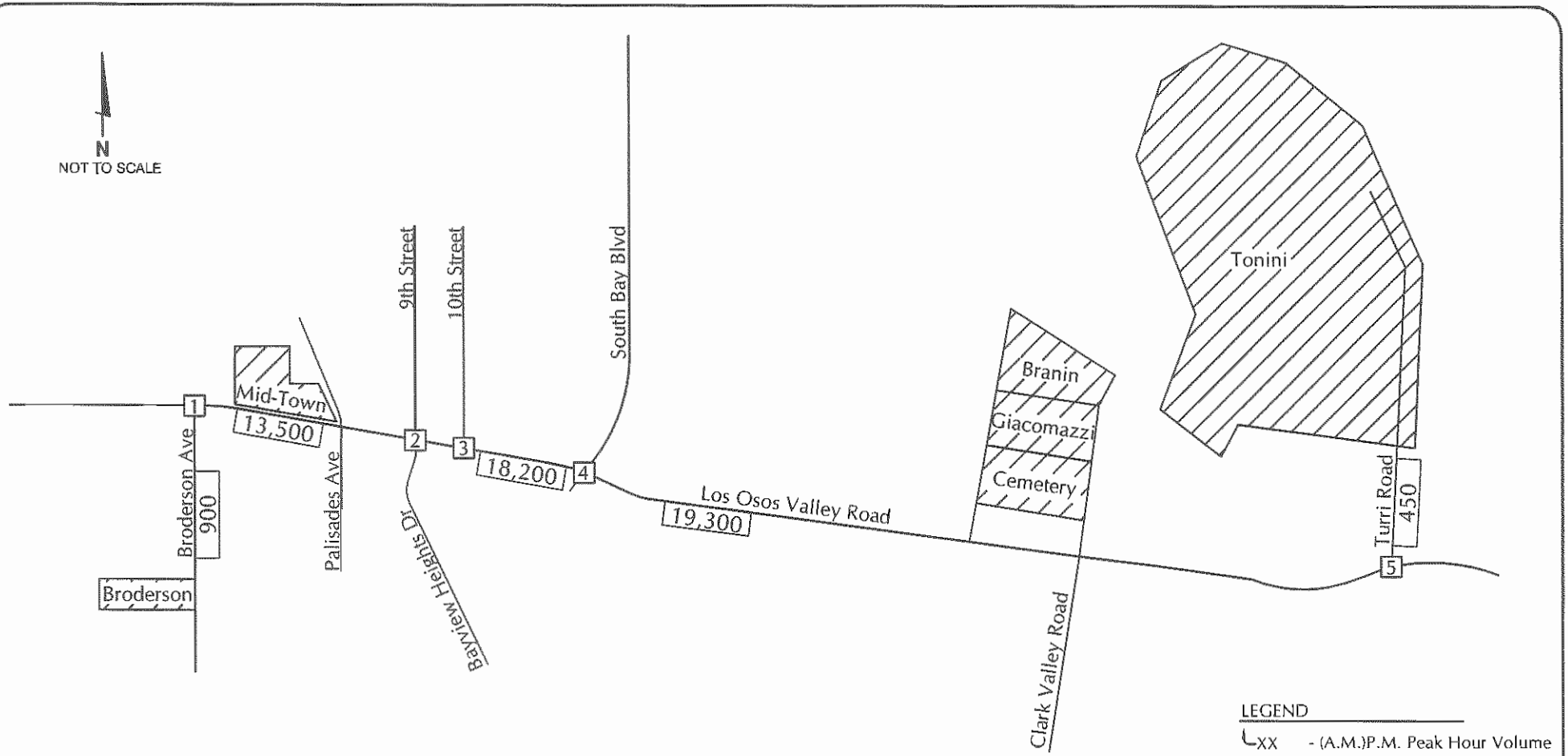
Cumulative Roadway Impacts. Cumulative traffic volumes for the area roadways are presented on Figure 18. The Cumulative traffic volumes were forecast using a 1% annual growth factor, which was developed based on historical traffic growth in the Los Osos area. The growth factor was applied for a period of 10 years to represent cumulative conditions.

Table 28 lists the Cumulative and Cumulative + Project 4 roadway volumes and identifies cumulative impacts. As shown, all of the area roadways would operate within their respective capacities under Cumulative + Project 4 conditions. Project 4 would not contribute to cumulative roadways impacts based on County standards.

Table 28
Cumulative and Cumulative + Project 4 Roadway Operations

Roadway Segment	Average Daily Traffic				Impact?
	Cumulative	Project Added	Cumulative + Project	Capacity	
Broderson s/o LOVR	900 ADT	9 ADT	909 ADT	14,400 ADT	No
LOVR e/o Broderson Rd	13,500 ADT	18 ADT	13,518 ADT	18,000 ADT	No
LOVR w/o South Bay Blvd	18,200 ADT	18 ADT	18,218 ADT	35,900 ADT	No
LOVR e/o South Bay Blvd	19,300 ADT	35 ADT	19,335 ADT	35,900 ADT	No
Turri Road n/o LOVR	450 ADT	46 ADT	446 ADT	14,400 ADT	No

Cumulative Intersection Impacts. Figure 19 shows the Cumulative + Project 4 peak hour traffic volumes. Cumulative and Cumulative + Project levels of service for the study-area intersections are shown in Tables 29 and 30. As shown, all of the area intersections would operate at LOS C or better under Cumulative + Project 4 conditions. Project 4 would not contribute to cumulative intersection impacts based on County standards.



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CUMULATIVE TRAFFIC VOLUMES

FIGURE 18

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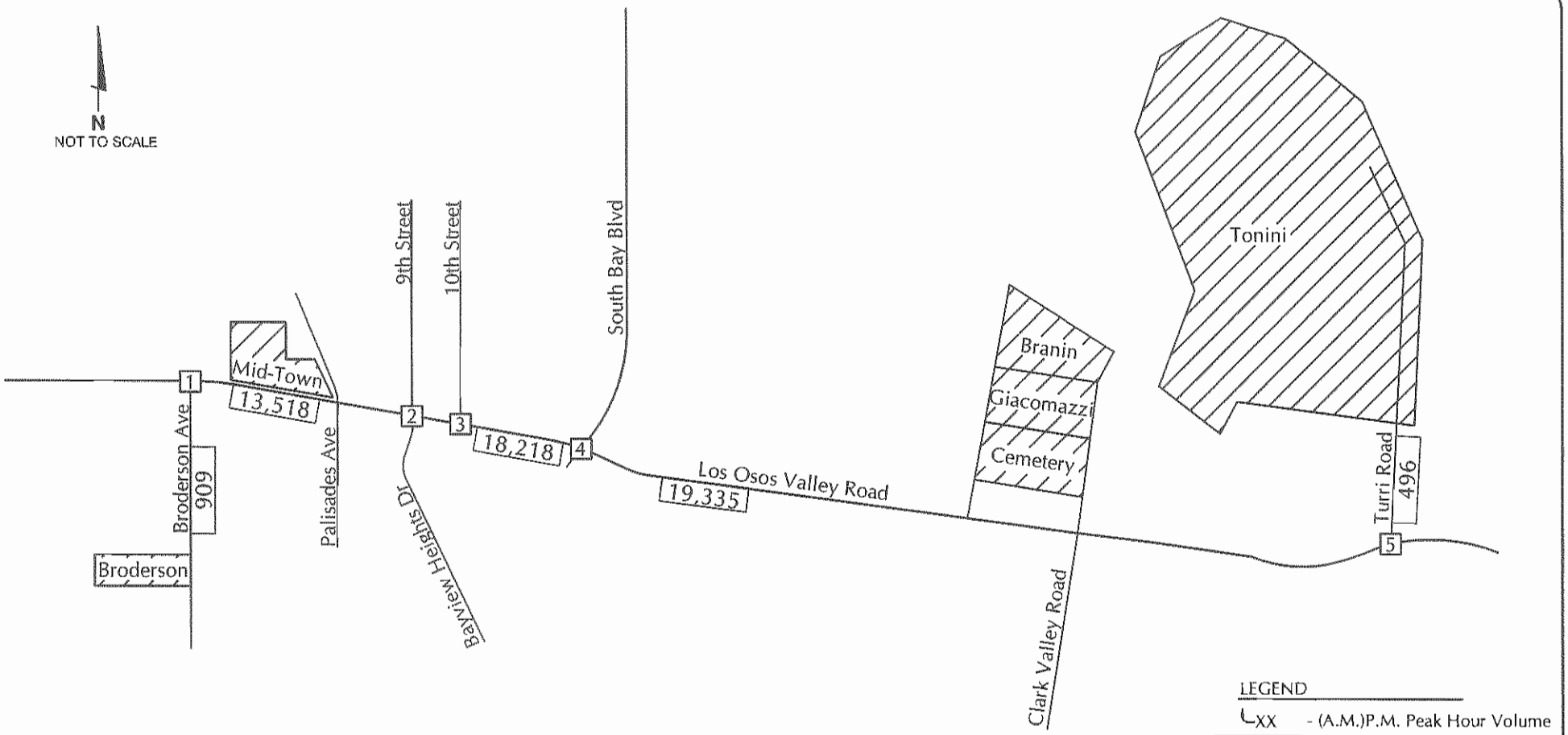

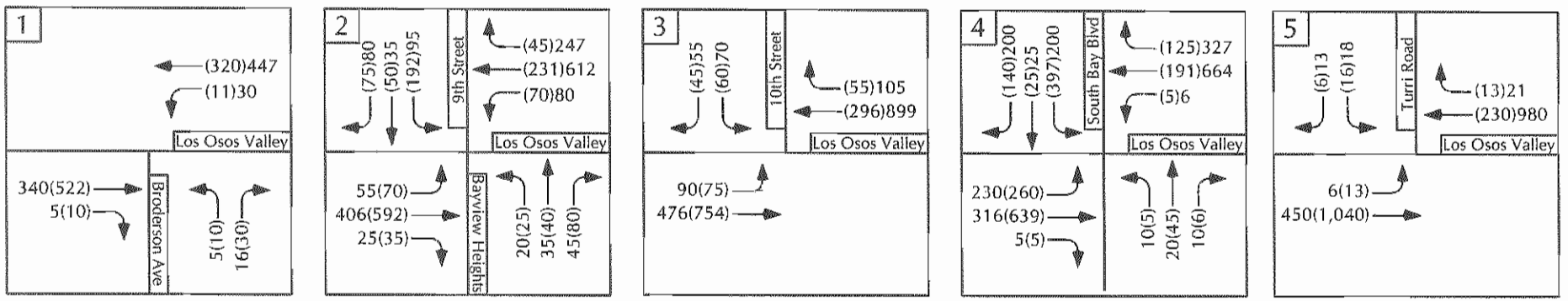

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CUMULATIVE + PROJECT 4 TRAFFIC VOLUMES

FIGURE 19

JJK - #08081

Table 29
Cumulative + Project 4 A.M. Peak Hour Intersection Operations

Intersection	Control	Delay / LOS		Impact?
		Cumulative	Cumulative + Project	
LOVR/Broderson Avenue Westbound LOVR Northbound Broderson Overall LOS	Stop Sign	0.4 Sec/LOS A 14.3 Sec/LOS B 11.5 Sec/LOS B	0.4 Sec/LOS A 14.3 Sec/LOS B 11.3 Sec/LOS B	No
LOVR/9th Street	Signal	11.6 sec/LOS B	11.6 sec/LOS B	No
LOVR/10th Street	Signal	9.7 sec/LOS A	9.7 sec/LOS A	No
LOVR/South Bay Boulevard	Signal	28.4 sec/LOS C	28.5 sec/LOS C	No
LOVR/Turri Road Eastbound LOVR Southbound Turri Overall LOS	Stop Sign	7.8 Sec/LOS A 17.9 Sec/LOS C 16.0 Sec/LOS C	7.8 Sec/LOS A 18.1 Sec/LOS C 14.3 Sec/LOS C	No

Table 30
Cumulative + Project 4 P.M. Peak Hour Intersection Operations

Intersection	Control	Delay / LOS		Impact?
		Cumulative	Cumulative + Project	
LOVR/Broderson Avenue Westbound LOVR Northbound Broderson Overall LOS	Stop Sign	0.8 Sec/LOS A 12.5 Sec/LOS B 5.5 Sec/LOS A	0.8 Sec/LOS A 12.4 Sec/LOS B 5.6 Sec/LOS A	No
LOVR/9th Street	Signal	5.6 sec/LOS A	5.6 sec/LOS A	No
LOVR/10th Street	Signal	14.9 sec/LOS B	14.8 sec/LOS B	No
LOVR/South Bay Boulevard	Signal	23.8 sec/LOS C	24.0 sec/LOS C	No
LOVR/Turri Road Eastbound LOVR Southbound Turri Overall LOS	Stop Sign	10.7 Sec/LOS B 21.1 Sec/LOS C 19.2 Sec/LOS C	10.7 Sec/LOS A 21.7 Sec/LOS C 19.8 Sec/LOS C	No

POTENTIAL IMPACTS - CONSTRUCTION

Construction of the treatment plant, solids processing facilities, storage pond, spray field facilities, and the waste water collection system will generate additional traffic on the roadways and intersections within the community of Los Osos (all four projects). Construction activities would be temporary, lasting 16-24 months. Trips generated by the construction activities include employees traveling to and from the construction sites and material/equipment deliveries. Employee trips would typically occur during the A.M. and P.M. peak hour periods, while equipment and material deliveries would occur throughout the entire day.

As reviewed in previous sections of this report, the street network in the community of Los Osos currently operates at LOS C or better. The construction activities associated with the project would be located throughout the entire community and would not significantly degrade the existing levels of service.

Construction of the collection and disposal systems would result in temporary lane closures and limited access to residences and businesses. The impact would be short-term and temporary, lasting for approximately 2 years. It is noted that construction of the pipeline would affect limited areas for relatively short time periods (i.e. construction would not affect the entire street system within the community for the entire 2-year period). When the normal function of a roadway is disrupted, temporary traffic control planning must provide for continued movements of traffic, pedestrians, bicyclists, transit operations, and access to property/utilities. A traffic management plan is recommended to minimize impacts to the local street network during the project construction period. The traffic management plan should include:

1) Advertisement. An ad campaign informing the public of the proposed construction activities should be developed. Advertisements should occur prior to beginning work and periodically during the course of the project.

2) Property Access. Access to parcels along the construction area should be maintained to the greatest extent feasible. Affected property owners should receive advance notice of work adjacent to their property access and when driveways would be potentially closed.

3) Schools. Any construction adjacent to schools should ensure that access is maintained for vehicles, and pedestrians and bicyclists, particularly at the beginning and end of the school day.

4) Bicycles & Pedestrians. The work zone should provide for passage by bicyclists and pedestrians, particularly in the vicinity of schools.

The District will be required to prepare a Traffic Control Plan once the design of pipeline construction is completed since encroachment permits will need to be obtained from the County for work within the County's right-of-ways. The encroachment permit process will include the need to develop traffic control plans for areas where construction occurs within the roadway bed, where traffic lanes will be restricted or closed, or where there may be potential impacts to other facilities along the route (bicycles, pedestrian, driveway access, etc.). The traffic control plan should be based on the type of roadway, traffic conditions, duration of construction, physical constraints, nearness of the work zone to traffic and other facilities (bicycles, pedestrian, driveway access, etc.).

REFERENCES AND PERSONS CONTACTED

Associated Transportation Engineers

Scott A. Schell, AICP, PTP, Principal Transportation Planner
Dan Dawson, PTP, Supervising Transportation Planner
Matthew Farrington, Transportation Planner I
Josh Kohlhaas, Traffic Technician II

References

Highway Capacity Manual, Highway Research Board Special Report 209, Transportation Research Board, National Research Council, 2000.

Traffic Volumes, County of San Luis Obispo, Engineering Department, 1993-2001.

TECHNICAL APPENDIX

CONTENTS:

LEVEL OF SERVICE DEFINITIONS

TRAFFIC COUNT DATA

GROWTH FACTOR WORKSHEETS

INTERSECTION LEVEL OF SERVICE CALCULATION WORKSHEETS

LEVEL OF SERVICE DEFINITIONS

Signalized Intersection Level of Service Definitions

LOS	Delay[a]	V/C Ratio	Definition
A	< 10.0	< 0.60	Progression is extremely favorable. Most vehicles arrive during the green phase. Many vehicles do not stop at all.
B	10.1 - 20.0	0.61 - 0.70	Good progression, short cycle lengths, or both. More vehicles stop than with LOS A, causing higher levels of delay.
C	20.1 - 35.0	0.71 - 0.80	Only fair progression, longer cycle lengths, or both, result in higher cycle lengths. Cycle lengths may fail to serve queued vehicles, and overflow occurs. Number of vehicles stopped is significant, though many still pass through intersection without stopping.
D	35.1 - 55.0	0.81 - 0.90	Congestion becomes more noticeable. Unfavorable progression, long cycle lengths and high v/c ratios result in longer delays. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	55.1 - 80.0	0.91 - 1.00	High delay values indicate poor progression, long cycle lengths and high v/c ratios. Individual cycle failures are frequent
F	> 80.0	> 1.00	Considered unacceptable for most drivers, this level occurs when arrival flow rates exceed the capacity of lane groups, resulting in many individual cycle failures. Poor progression and long cycle lengths may also contribute to high delay levels.

[a] Average control delay per vehicle in seconds.

Unsignalized Intersection Level of Service Definitions

The HCM[1] uses *control delay* to determine the level of service at unsignalized intersections. Control delay is the difference between the travel time actually experienced at the control device and the travel time that would occur in the absence of the traffic control device. Control delay includes deceleration from free flow speed, queue move-up time, stopped delay and acceleration back to free flow speed.

LOS	Control Delay Seconds per Vehicle
A	< 10.0
B	10.1 - 15.0
C	15.1 - 25.0
D	25.1 - 35.0
E	35.1 - 50.0
F	> 50.0

[1] Highway Capacity Manual, National Research Board, 2000

TRAFFIC COUNT DATA

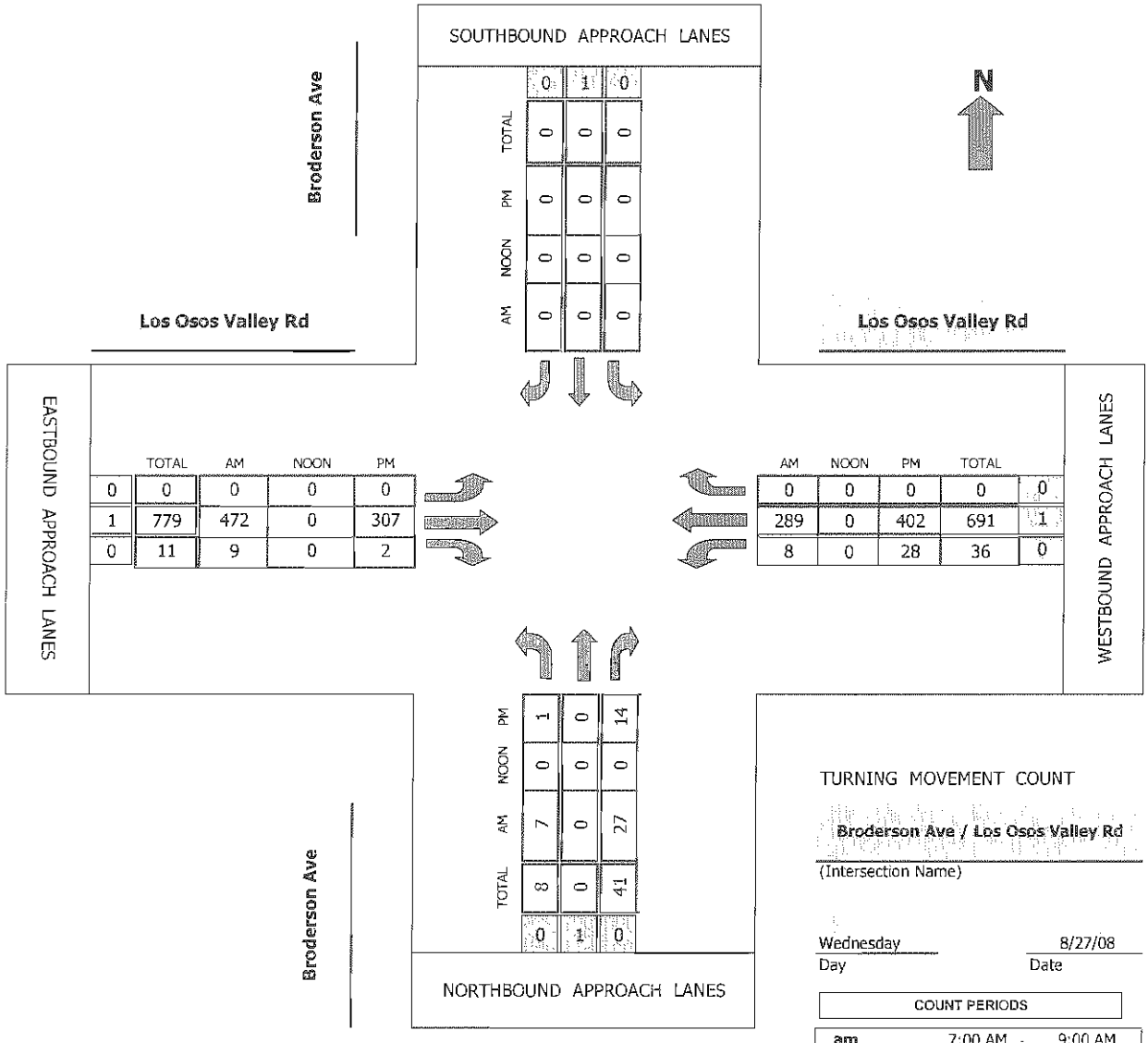
Intersection Turning Movement

Prepared by:

National Data & Surveying Services

TMC Summary of Broderson Ave/Los Osos Valley Rd

Project #: 08-8176-001



TURNING MOVEMENT COUNT

Broderson Ave / Los Osos Valley Rd

(Intersection Name)

Wednesday — Day

8/27/08 — Date

COUNT PERIODS			
am	7:00 AM	-	9:00 AM
noon		-	
pm	4:00 PM	-	6:00 PM

CONTROL: 1-Way Stop (NB)

AM PEAK HOUR	745 AM
NOON PEAK HOUR	0 AM
PM PEAK HOUR	415 PM

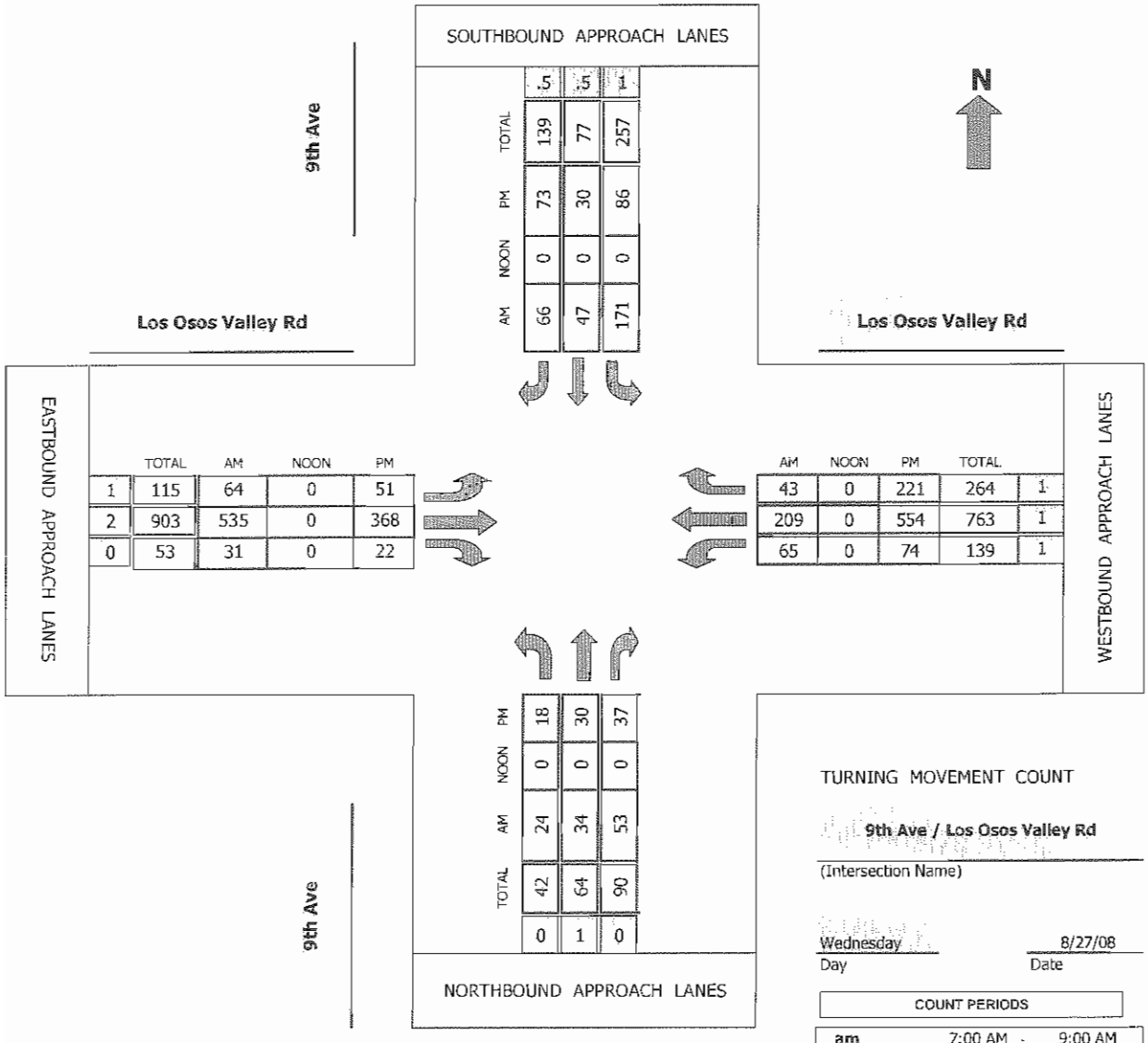
Intersection Turning Movement

Prepared by:

National Data & Surveying Services

TMC Summary of 9th Ave/Los Osos Valley Rd

Project #: 08-8176-002



	TOTAL	AM	NOON	PM
1	115	64	0	51
2	903	535	0	368
0	53	31	0	22

	AM	NOON	PM	TOTAL	
	43	0	221	264	1
	209	0	554	763	1
	65	0	74	139	1

	AM	NOON	PM	TOTAL
	66	0	73	139
	47	0	30	77
	171	0	86	257
	5		5	

	AM	NOON	PM	TOTAL
	24	0	18	42
	34	0	30	64
	53	0	37	90
				0
				1
				0

TURNING MOVEMENT COUNT

9th Ave / Los Osos Valley Rd

(Intersection Name)

Wednesday — Day

8/27/08 — Date

COUNT PERIODS		
am	7:00 AM -	9:00 AM
noon		
pm	4:00 PM -	6:00 PM

CONTROL: Signalized

AM PEAK HOUR	730 AM
NOON PEAK HOUR	0 AM
PM PEAK HOUR	500 PM

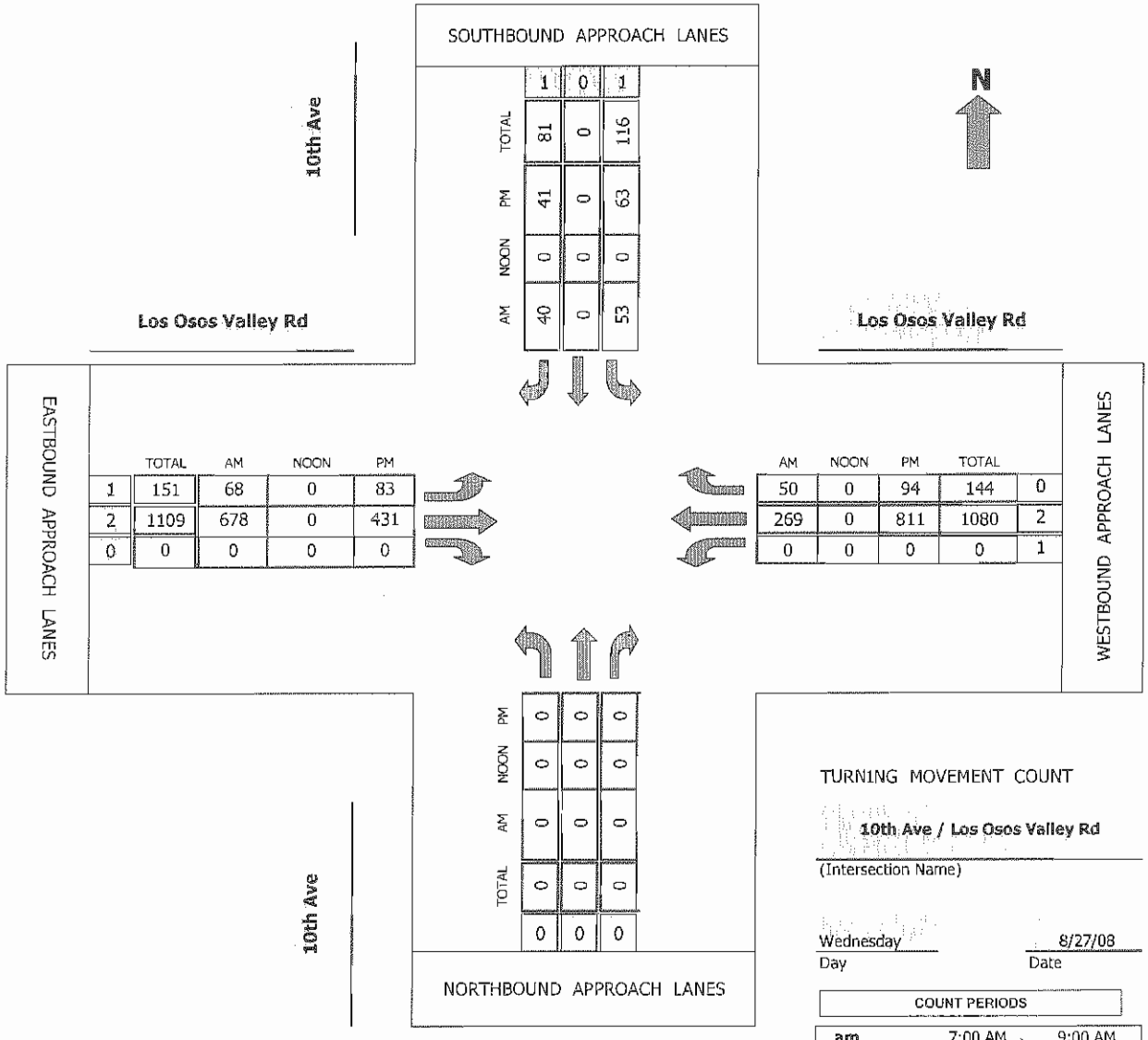
Intersection Turning Movement

Prepared by:

National Data & Surveying Services

TMC Summary of 10th Ave/Los Osos Valley Rd

Project #: 08-8176-003



	TOTAL	AM	NOON	PM
1	151	68	0	83
2	1109	678	0	431
0	0	0	0	0

	AM	NOON	PM	TOTAL	
	50	0	94	144	0
	269	0	811	1080	2
	0	0	0	0	1

TOTAL	81	0	116
PM	41	0	63
NOON	0	0	0
AM	40	0	53
	1	0	1

PM	0	0	0
NOON	0	0	0
AM	0	0	0
TOTAL	0	0	0
	0	0	0

TURNING MOVEMENT COUNT

10th Ave / Los Osos Valley Rd

(Intersection Name)

Wednesday — Day

8/27/08 — Date

COUNT PERIODS		
am	7:00 AM -	9:00 AM
noon	-	
pm	4:00 PM -	6:00 PM

CONTROL: Signalized

AM PEAK HOUR	730 AM
NOON PEAK HOUR	0 AM
PM PEAK HOUR	500 PM

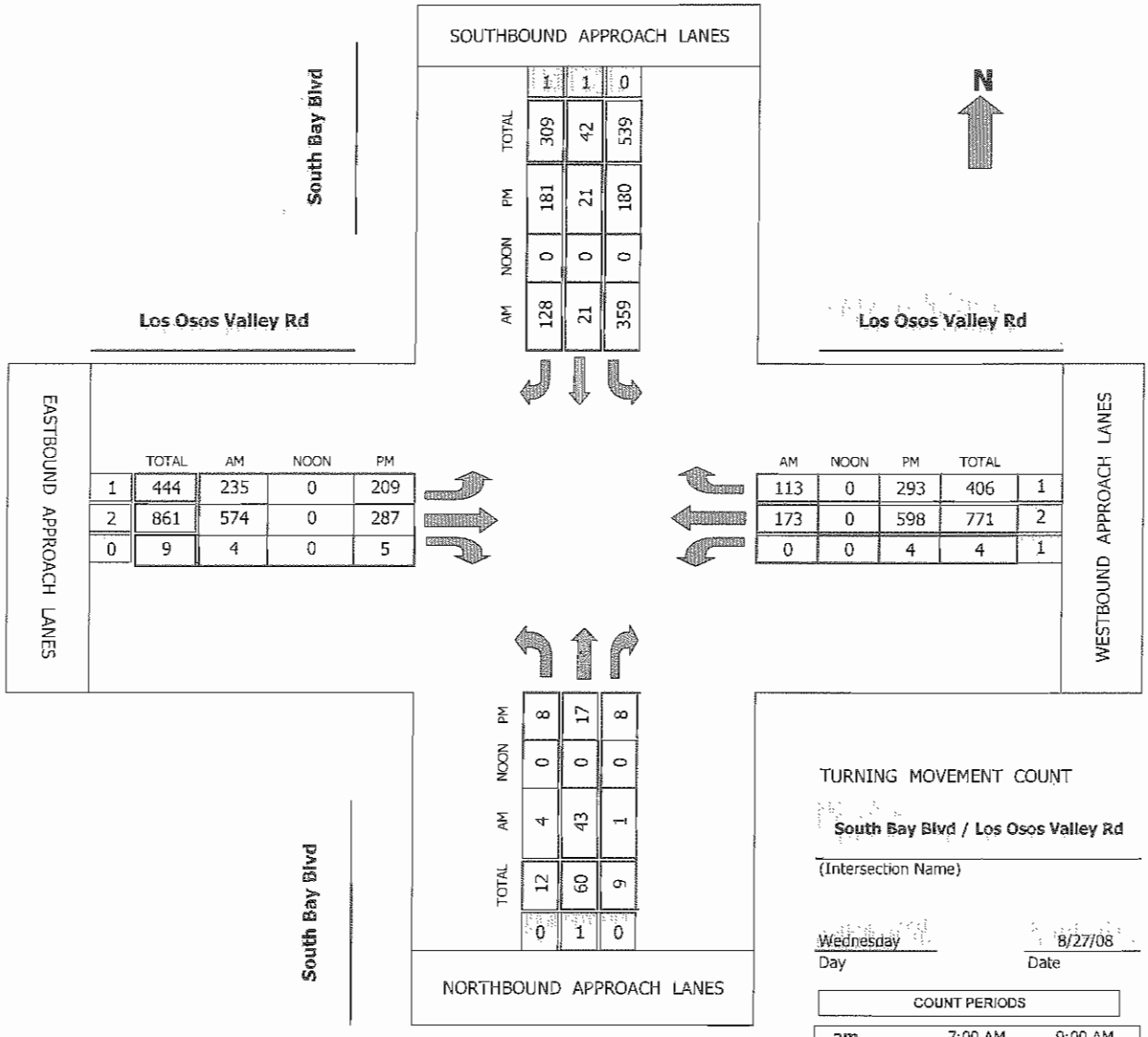
Intersection Turning Movement

Prepared by:

National Data & Surveying Services

TMC Summary of South Bay Blvd/Los Osos Valley Rd

Project #: 08-8176-004



TURNING MOVEMENT COUNT

South Bay Blvd / Los Osos Valley Rd

(Intersection Name)

Wednesday — Day

8/27/08 — Date

COUNT PERIODS			
am	7:00 AM	-	9:00 AM
noon		-	
pm	4:00 PM	-	6:00 PM

CONTROL: Signalized

AM PEAK HOUR	715 AM
NOON PEAK HOUR	0 AM
PM PEAK HOUR	445 PM

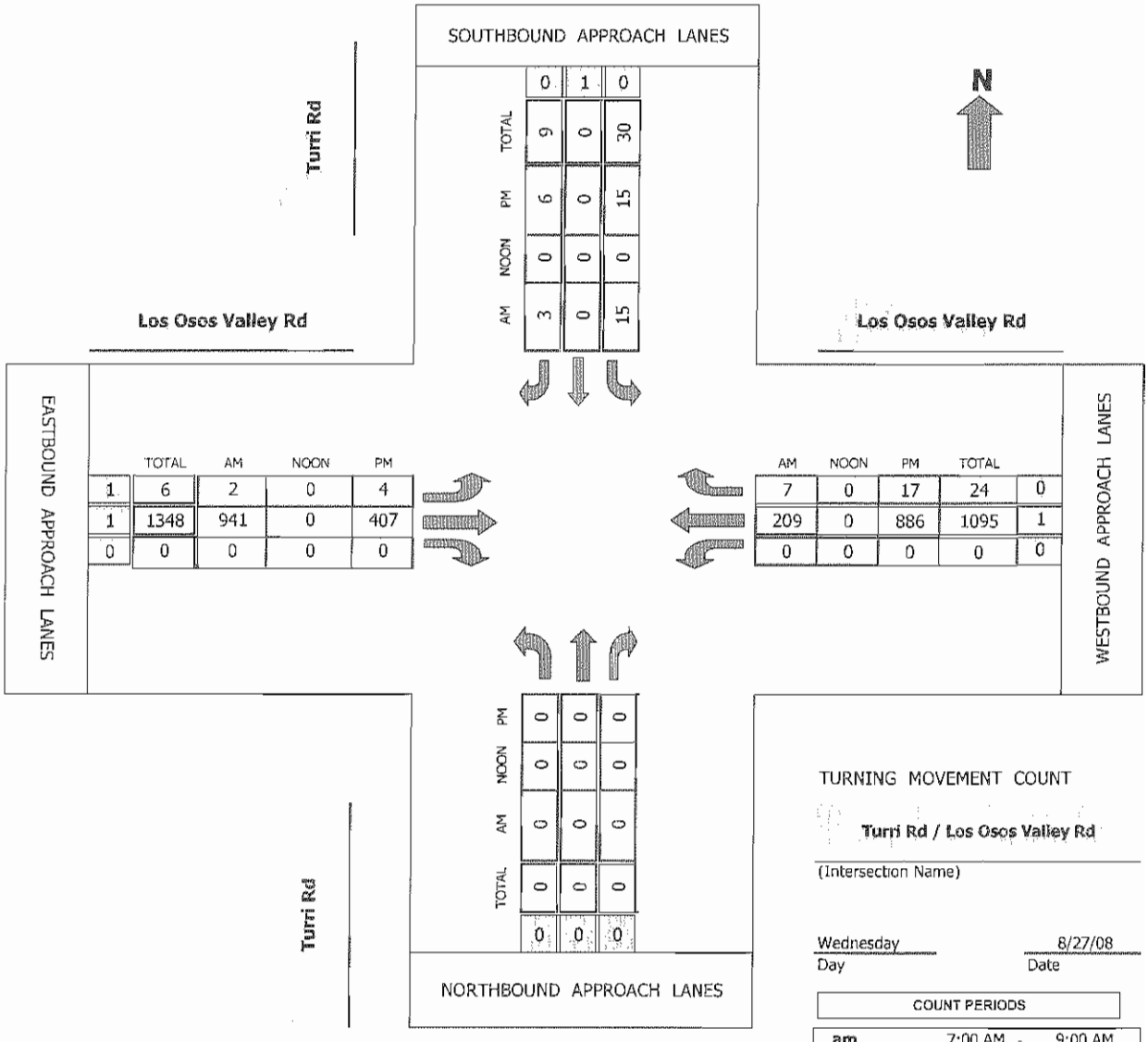
Intersection Turning Movement

Prepared by:

National Data & Surveying Services

TMC Summary of Turri Rd/Los Osos Valley Rd

Project #: 08-8176-005



TURNING MOVEMENT COUNT

Turri Rd / Los Osos Valley Rd

(Intersection Name)

Wednesday — Day

8/27/08 — Date

COUNT PERIODS			
am	7:00 AM	-	9:00 AM
noon		-	
pm	4:00 PM	-	6:00 PM

CONTROL: 1-Way Stop (SB)

AM PEAK HOUR	715 AM
NOON PEAK HOUR	0 AM
PM PEAK HOUR	430 PM

GROWTH FACTOR WORKSHEETS

ADT Growth Factor Calculations

Location Description	Location #	Day of week	Year	ADT	Growth Rate
Los Osos Valley Rd. (East of Pecho Road)	3160	Saturday	1993	5100	0.6%
		Saturday	2000	5500	
Los Osos Valley Rd. (West of Palisades Ave.)	9492	Wednesday	1994	5351	0.1%
		Tuesday	2001	5434	
Los Osos Valley Rd. (West of Bush Drive)	3170	Tue/Wed*	1994	10407	1.2%
		Thursday	2007	12099	
Los Osos Valley Rd. (West of S. Bay Blvd.)	6910	Friday	1989	13669	0.5%
		Friday	2000	14539	
Los Osos Valley Road (at Los Osos Creek)	6340	Friday	1987	13088	0.8%
		Friday	2000	14539	
				Average Growth Rate:	0.6%
				Growth Factor Applied Below:	1.0%

* Based on averaged ADT's.

Year	Broderson Ave.	W. of Bush	W. of S. Bay Blvd.	E. of S. Bay Blvd.	Turri Road
2006	-	-	-	17100	400
2007	800	12100	16300	-	-
2018	900	13500	18200	19300	450

CUMULATIVE TRIP GENERATION

Los Osos Wastewater Project #08081

Growth Rate: 1% (All values rounded to the nearest 5)

BRODERSON AVENUE/LOS OSOS VALLEY ROAD												
	A.M. PEAK HOUR PERIOD						P.M. PEAK HOUR PERIOD					
YEAR	EBT	EBR	NBL	NBR	WBL	WBT	EBT	EBR	NBL	NBR	WBL	WBT
2008	472	9	7	27	8	289	307	2	1	14	28	402
2018	520	10	10	30	10	320	340	5	5	15	30	445

9TH STREET/LOS OSOS VALLEY ROAD												
	A.M. PEAK HOUR PERIOD											
YEAR	EBL	EBT	EBR	NBL	NBT	NBR	WBL	WBT	WBR	SBL	SBT	SBR
2008	64	535	31	24	34	71	65	209	43	171	47	66
2018	70	590	35	25	40	80	70	230	45	190	50	75
	P.M. PEAK HOUR PERIOD											
YEAR	EBL	EBT	EBR	NBL	NBT	NBR	WBL	WBT	WBR	SBL	SBT	SBR
2008	51	368	22	18	30	43	74	554	221	86	30	73
2018	55	405	25	20	35	45	80	610	245	95	35	80

10TH STREET/LOS OSOS VALLEY ROAD												
	A.M. PEAK HOUR PERIOD						P.M. PEAK HOUR PERIOD					
YEAR	EBL	EBT	WBT	WBR	SBL	SBR	EBL	EBT	WBT	WBR	SBL	SBR
2008	68	678	269	50	53	43	83	431	811	94	63	50
2018	75	750	295	55	60	45	90	475	895	105	70	55

SOUTH BAY BOULEVARD/LOS OSOS VALLEY ROAD												
	A.M. PEAK HOUR PERIOD											
YEAR	EBL	EBT	EBR	NBL	NBT	NBR	WBL	WBT	WBR	SBL	SBT	SBR
2008	235	574	4	4	43	3	0	173	113	359	21	128
2018	260	635	5	5	45	5	5	190	125	395	25	140
	P.M. PEAK HOUR PERIOD											
YEAR	EBL	EBT	EBR	NBL	NBT	NBR	WBL	WBT	WBR	SBL	SBT	SBR
2008	209	287	5	8	17	8	4	598	293	180	21	181
2018	230	315	5	10	20	10	5	660	325	200	25	200

TURRI ROAD/LOS OSOS VALLEY ROAD												
	A.M. PEAK HOUR PERIOD						P.M. PEAK HOUR PERIOD					
YEAR	EBL	EBT	WBT	WBR	SBL	SBR	EBL	EBT	WBT	WBR	SBL	SBR
2008	2	941	209	7	15	3	4	407	886	17	15	6
2018	5	1040	230	10	15	5	5	450	980	20	15	5

INTERSECTION LEVEL OF SERVICE CALCULATION WORKSHEETS

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	472	9	8	289	7	27
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	513	10	9	314	8	29
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			523		849	518
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			523		849	518
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		98	95
cM capacity (veh/h)			1034		326	554

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	523	323	37
Volume Left	0	9	8
Volume Right	10	0	29
cSH	1700	1034	484
Volume to Capacity	0.31	0.01	0.08
Queue Length 95th (ft)	0	1	6
Control Delay (s)	0.0	0.3	13.1
Lane LOS		A	B
Approach Delay (s)	0.0	0.3	13.1
Approach LOS			B

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	35.4%	ICU Level of Service	A
Analysis Period (min)	15		

AWD = 10.6 Los B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	307	2	28	402	1	14
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	334	2	30	437	1	15
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			336		833	335
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			336		833	335
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		100	98
cM capacity (veh/h)			1212		328	703

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	336	467	16
Volume Left	0	30	1
Volume Right	2	0	15
cSH	1700	1212	653
Volume to Capacity	0.20	0.03	0.02
Queue Length 95th (ft)	0	2	2
Control Delay (s)	0.0	0.8	10.7
Lane LOS		A	B
Approach Delay (s)	0.0	0.8	10.7
Approach LOS			B

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	52.3%	ICU Level of Service	A
Analysis Period (min)	15		

AWD = 4.2 LOS A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00		1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85		0.93		1.00	0.91	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99		0.95	1.00	
Satd. Flow (prot)	1736	3442		1736	1827	1553		1676		1736	1667	
Flt Permitted	0.54	1.00		0.29	1.00	1.00		0.95		0.67	1.00	
Satd. Flow (perm)	988	3442		529	1827	1553		1608		1220	1667	
Volume (vph)	64	535	31	65	209	43	24	34	71	171	47	66
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	70	582	34	71	227	47	26	37	77	186	51	72
RTOR Reduction (vph)	0	9	0	0	0	33	0	33	0	0	30	0
Lane Group Flow (vph)	70	607	0	71	227	14	0	107	0	186	93	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	17.4	17.4		17.4	17.4	17.4		34.6		34.6	34.6	
Effective Green, g (s)	17.4	17.4		17.4	17.4	17.4		34.6		34.6	34.6	
Actuated g/C Ratio	0.29	0.29		0.29	0.29	0.29		0.58		0.58	0.58	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	287	998		153	530	450		927		704	961	
v/s Ratio Prot		c0.18			0.12						0.06	
v/s Ratio Perm	0.07			0.13		0.01		0.07		c0.15		
v/c Ratio	0.24	0.61		0.46	0.43	0.03		0.12		0.26	0.10	
Uniform Delay, d1	16.3	18.4		17.5	17.3	15.3		5.8		6.3	5.7	
Progression Factor	1.00	1.00		0.37	0.48	0.05		1.00		1.00	1.00	
Incremental Delay, d2	0.4	1.1		2.2	0.5	0.0		0.3		0.9	0.2	
Delay (s)	16.7	19.4		8.7	8.9	0.7		6.0		7.3	5.9	
Level of Service	B	B		A	A	A		A		A	A	
Approach Delay (s)		19.1			7.7			6.0			6.7	
Approach LOS		B			A			A			A	

Intersection Summary			
HCM Average Control Delay	12.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	45.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00		1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85		0.94		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99		0.95	1.00	
Satd. Flow (prot)	1736	3442		1736	1827	1553		1694		1736	1634	
Flt Permitted	0.36	1.00		0.50	1.00	1.00		0.94		0.76	1.00	
Satd. Flow (perm)	649	3442		922	1827	1553		1604		1383	1634	
Volume (vph)	51	368	22	74	554	221	18	30	43	86	30	73
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	55	400	24	80	602	240	20	33	47	93	33	79
RTOR Reduction (vph)	0	7	0	0	0	88	0	36	0	0	60	0
Lane Group Flow (vph)	55	417	0	80	602	152	0	64	0	93	52	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	37.9	37.9		37.9	37.9	37.9		14.1		14.1	14.1	
Effective Green, g (s)	37.9	37.9		37.9	37.9	37.9		14.1		14.1	14.1	
Actuated g/C Ratio	0.63	0.63		0.63	0.63	0.63		0.24		0.24	0.24	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	410	2174		582	1154	981		377		325	384	
v/s Ratio Prot		0.12			c0.33						0.03	
v/s Ratio Perm	0.08			0.09		0.10		0.04		c0.07		
v/c Ratio	0.13	0.19		0.14	0.52	0.15		0.17		0.29	0.13	
Uniform Delay, d1	4.4	4.6		4.5	6.1	4.5		18.3		18.8	18.1	
Progression Factor	1.00	1.00		0.11	0.21	0.00		1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.0		0.1	0.3	0.0		1.0		2.2	0.7	
Delay (s)	4.6	4.7		0.6	1.6	0.1		19.3		21.0	18.9	
Level of Service	A	A		A	A	A		B		C	B	
Approach Delay (s)		4.7			1.1			19.3			19.8	
Approach LOS		A			A			B			B	

Intersection Summary				
HCM Average Control Delay	5.4	HCM Level of Service	A	
HCM Volume to Capacity ratio	0.46			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	54.4%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1736	3471	3390		1736	1553
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1736	3471	3390		1736	1553
Volume (vph)	68	678	269	50	53	43
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	74	737	292	54	58	47
RTOR Reduction (vph)	0	0	25	0	0	30
Lane Group Flow (vph)	74	737	321	0	58	17
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Turn Type	Prot					Perm
Protected Phases	7	4	8		6	
Permitted Phases						6
Actuated Green, G (s)	7.0	30.9	19.9		21.1	21.1
Effective Green, g (s)	7.0	30.9	19.9		21.1	21.1
Actuated g/C Ratio	0.12	0.52	0.33		0.35	0.35
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	203	1788	1124		610	546
v/s Ratio Prot	0.04	c0.21	0.09		c0.03	
v/s Ratio Perm						0.01
v/c Ratio	0.36	0.41	0.29		0.10	0.03
Uniform Delay, d1	24.4	9.0	14.8		13.0	12.7
Progression Factor	0.63	0.53	1.00		1.00	1.00
Incremental Delay, d2	1.0	0.1	0.1		0.3	0.1
Delay (s)	16.5	4.9	14.9		13.4	12.8
Level of Service	B	A	B		B	B
Approach Delay (s)		6.0	14.9		13.1	
Approach LOS		A	B		B	

Intersection Summary			
HCM Average Control Delay	9.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	28.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1736	3471	3417		1736	1553
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1736	3471	3417		1736	1553
Volume (vph)	83	431	811	94	63	50
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	90	468	882	102	68	54
RTOR Reduction (vph)	0	0	18	0	0	38
Lane Group Flow (vph)	90	468	966	0	68	16
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Turn Type	Prot					Perm
Protected Phases	7	4	8		6	
Permitted Phases						6
Actuated Green, G (s)	7.4	33.7	22.3		18.3	18.3
Effective Green, g (s)	7.4	33.7	22.3		18.3	18.3
Actuated g/C Ratio	0.12	0.56	0.37		0.30	0.30
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	214	1950	1270		529	474
v/s Ratio Prot	c0.05	0.13	c0.28		c0.04	
v/s Ratio Perm						0.01
v/c Ratio	0.42	0.24	0.76		0.13	0.03
Uniform Delay, d1	24.3	6.7	16.5		15.1	14.6
Progression Factor	1.01	1.04	1.00		1.00	1.00
Incremental Delay, d2	1.3	0.1	2.7		0.5	0.1
Delay (s)	25.9	7.0	19.3		15.6	14.8
Level of Service	C	A	B		B	B
Approach Delay (s)		10.0	19.3		15.2	
Approach LOS		B	B		B	

Intersection Summary			
HCM Average Control Delay	15.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	43.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0			4.0	4.0
Lane Util. Factor	1.00	0.95			0.95	1.00		1.00			1.00	1.00
Frt	1.00	1.00			1.00	0.85		0.99			1.00	0.85
Flt Protected	0.95	1.00			1.00	1.00		1.00			0.95	1.00
Satd. Flow (prot)	1736	3468			3471	1553		1807			1745	1553
Flt Permitted	0.95	1.00			1.00	1.00		1.00			0.95	1.00
Satd. Flow (perm)	1736	3468			3471	1553		1807			1745	1553
Volume (vph)	235	574	4	0	173	113	4	43	3	359	21	128
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	255	624	4	0	188	123	4	47	3	390	23	139
RTOR Reduction (vph)	0	1	0	0	0	111	0	3	0	0	0	95
Lane Group Flow (vph)	255	627	0	0	188	12	0	51	0	0	413	44
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot			Prot		Perm	Split			Split		Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases						8						6
Actuated Green, G (s)	11.4	21.4			6.0	6.0		7.0			19.0	19.0
Effective Green, g (s)	11.4	21.4			6.0	6.0		7.0			19.0	19.0
Actuated g/C Ratio	0.19	0.36			0.10	0.10		0.12			0.32	0.32
Clearance Time (s)	4.0	4.0			4.0	4.0		4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	333	1249			351	157		213			558	497
v/s Ratio Prot	c0.15	c0.18			0.05			c0.03			c0.24	
v/s Ratio Perm						0.01						0.03
v/c Ratio	0.77	0.50			0.54	0.08		0.24			0.74	0.09
Uniform Delay, d1	22.7	14.8			25.4	24.2		23.8			18.0	14.1
Progression Factor	1.00	1.00			1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	10.1	0.3			1.6	0.2		2.7			8.6	0.4
Delay (s)	32.8	15.2			26.9	24.4		26.5			26.6	14.5
Level of Service	C	B			C	C		C			C	B
Approach Delay (s)		20.3			25.9			26.5			23.5	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	22.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	59.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	57.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0			4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.97			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99			0.96	1.00
Satd. Flow (prot)	1736	3463		1736	3471	1553		1743			1749	1553
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.99			0.96	1.00
Satd. Flow (perm)	1736	3463		1736	3471	1553		1743			1749	1553
Volume (vph)	209	287	5	4	598	293	8	17	8	180	21	181
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	227	312	5	4	650	318	9	18	9	196	23	197
RTOR Reduction (vph)	0	2	0	0	0	230	0	8	0	0	0	163
Lane Group Flow (vph)	227	315	0	4	650	88	0	28	0	0	219	34
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot			Prot		Perm	Split			Split		Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases						8						6
Actuated Green, G (s)	9.5	25.0		0.4	15.9	15.9		6.0			10.0	10.0
Effective Green, g (s)	9.5	25.0		0.4	15.9	15.9		6.0			10.0	10.0
Actuated g/C Ratio	0.17	0.44		0.01	0.28	0.28		0.10			0.17	0.17
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0		4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	287	1508		12	961	430		182			305	271
v/s Ratio Prot	c0.13	0.09		0.00	c0.19			c0.02			c0.13	
v/s Ratio Perm						0.06						0.02
v/c Ratio	0.79	0.21		0.33	0.68	0.20		0.15			0.72	0.13
Uniform Delay, d1	23.0	10.1		28.4	18.5	15.9		23.4			22.4	20.0
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	13.8	0.1		15.7	1.9	0.2		1.8			13.6	1.0
Delay (s)	36.8	10.1		44.0	20.4	16.1		25.2			35.9	21.0
Level of Service	D	B		D	C	B		C			D	C
Approach Delay (s)		21.3			19.1			25.2			28.9	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM Average Control Delay	21.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	57.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	55.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	2	941	209	7	15	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	1023	227	8	16	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					TWLTL	
Median storage veh)					1	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	235				1258	231
vC1, stage 1 conf vol					231	
vC2, stage 2 conf vol					1027	
vCu, unblocked vol	235				1258	231
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				94	100
cM capacity (veh/h)	1321				283	803

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	2	1023	235	20
Volume Left	2	0	0	16
Volume Right	0	0	8	3
cSH	1321	1700	1700	318
Volume to Capacity	0.00	0.60	0.14	0.06
Queue Length 95th (ft)	0	0	0	5
Control Delay (s)	7.7	0.0	0.0	17.1
Lane LOS	A			C
Approach Delay (s)	0.0		0.0	17.1
Approach LOS				C

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	59.5%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	4	407	886	17	15	6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	442	963	18	16	7
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					TWLTL	
Median storage veh)					1	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	982				1423	972
vC1, stage 1 conf vol					972	
vC2, stage 2 conf vol					451	
vCu, unblocked vol	982				1423	972
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	99				94	98
cM capacity (veh/h)	695				271	304

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	4	442	982	23
Volume Left	4	0	0	16
Volume Right	0	0	18	7
cSH	695	1700	1700	280
Volume to Capacity	0.01	0.26	0.58	0.08
Queue Length 95th (ft)	0	0	0	7
Control Delay (s)	10.2	0.0	0.0	19.0
Lane LOS	B			C
Approach Delay (s)	0.1		0.0	19.0
Approach LOS				C

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	57.7%	ICU Level of Service	B
Analysis Period (min)	15		

Ave - 77.0 - C

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	475	9	9	289	7	27
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	516	10	10	314	8	29
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			526		855	521
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			526		855	521
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		98	95
cM capacity (veh/h)			1031		323	551

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	526	324	37
Volume Left	0	10	8
Volume Right	10	0	29
cSH	1700	1031	481
Volume to Capacity	0.31	0.01	0.08
Queue Length 95th (ft)	0	1	6
Control Delay (s)	0.0	0.4	13.1
Lane LOS		A	B
Approach Delay (s)	0.0	0.4	13.1
Approach LOS			B

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	35.5%	ICU Level of Service	A
Analysis Period (min)	15		

AWD = 10.4 LOS B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	307	2	28	405	1	15
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	334	2	30	440	1	16
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			336		836	335
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			336		836	335
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		100	98
cM capacity (veh/h)			1212		326	703

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	336	471	17
Volume Left	0	30	1
Volume Right	2	0	16
cSH	1700	1212	655
Volume to Capacity	0.20	0.03	0.03
Queue Length 95th (ft)	0	2	2
Control Delay (s)	0.0	0.8	10.6
Lane LOS		A	B
Approach Delay (s)	0.0	0.8	10.6
Approach LOS			B

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	52.5%	ICU Level of Service	A
Analysis Period (min)	15		

AWD = 4.3 LOS A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00		1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85		0.93		1.00	0.91	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99		0.95	1.00	
Satd. Flow (prot)	1736	3443		1736	1827	1553		1676		1736	1667	
Flt Permitted	0.54	1.00		0.29	1.00	1.00		0.95		0.67	1.00	
Satd. Flow (perm)	985	3443		525	1827	1553		1608		1220	1667	
Volume (vph)	64	538	31	65	210	43	24	34	71	173	47	66
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	70	585	34	71	228	47	26	37	77	188	51	72
RTOR Reduction (vph)	0	9	0	0	0	33	0	33	0	0	30	0
Lane Group Flow (vph)	70	610	0	71	228	14	0	107	0	188	93	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	17.4	17.4		17.4	17.4	17.4		34.6		34.6	34.6	
Effective Green, g (s)	17.4	17.4		17.4	17.4	17.4		34.6		34.6	34.6	
Actuated g/C Ratio	0.29	0.29		0.29	0.29	0.29		0.58		0.58	0.58	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	286	998		152	530	450		927		704	961	
v/s Ratio Prot		c0.18			0.12						0.06	
v/s Ratio Perm	0.07			0.14		0.01		0.07		c0.15		
v/c Ratio	0.24	0.61		0.47	0.43	0.03		0.12		0.27	0.10	
Uniform Delay, d1	16.3	18.4		17.5	17.3	15.3		5.8		6.4	5.7	
Progression Factor	1.00	1.00		0.38	0.49	0.05		1.00		1.00	1.00	
Incremental Delay, d2	0.4	1.1		2.2	0.6	0.0		0.3		0.9	0.2	
Delay (s)	16.7	19.5		8.8	9.0	0.7		6.0		7.3	5.9	
Level of Service	B	B		A	A	A		A		A	A	
Approach Delay (s)		19.2			7.8			6.0			6.7	
Approach LOS		B			A			A			A	

Intersection Summary			
HCM Average Control Delay	12.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utiilization	45.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00		1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85		0.94		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99		0.95	1.00	
Satd. Flow (prot)	1736	3442		1736	1827	1553		1694		1736	1634	
Flt Permitted	0.35	1.00		0.50	1.00	1.00		0.94		0.76	1.00	
Satd. Flow (perm)	647	3442		921	1827	1553		1603		1383	1634	
Volume (vph)	51	369	22	74	557	223	18	30	43	86	30	73
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	55	401	24	80	605	242	20	33	47	93	33	79
RTOR Reduction (vph)	0	7	0	0	0	89	0	36	0	0	61	0
Lane Group Flow (vph)	55	418	0	80	605	153	0	64	0	93	51	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	38.0	38.0		38.0	38.0	38.0		14.0		14.0	14.0	
Effective Green, g (s)	38.0	38.0		38.0	38.0	38.0		14.0		14.0	14.0	
Actuated g/C Ratio	0.63	0.63		0.63	0.63	0.63		0.23		0.23	0.23	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	410	2180		583	1157	984		374		323	381	
v/s Ratio Prot		0.12			c0.33						0.03	
v/s Ratio Perm	0.09			0.09		0.10		0.04		c0.07		
v/c Ratio	0.13	0.19		0.14	0.52	0.16		0.17		0.29	0.13	
Uniform Delay, d1	4.4	4.6		4.4	6.0	4.5		18.4		18.9	18.2	
Progression Factor	1.00	1.00		0.12	0.22	0.00		1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.0		0.1	0.3	0.0		1.0		2.2	0.7	
Delay (s)	4.6	4.6		0.6	1.6	0.1		19.4		21.1	18.9	
Level of Service	A	A		A	A	A		B		C	B	
Approach Delay (s)		4.6			1.1			19.4			19.9	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	5.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1736	3471	3390		1736	1553
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1736	3471	3390		1736	1553
Volume (vph)	68	683	270	50	54	43
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	74	742	293	54	59	47
RTOR Reduction (vph)	0	0	25	0	0	30
Lane Group Flow (vph)	74	742	322	0	59	17
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Turn Type	Prot					Perm
Protected Phases	7	4	8		6	
Permitted Phases						6
Actuated Green, G (s)	7.0	30.8	19.8		21.2	21.2
Effective Green, g (s)	7.0	30.8	19.8		21.2	21.2
Actuated g/C Ratio	0.12	0.51	0.33		0.35	0.35
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	203	1782	1119		613	549
v/s Ratio Prot	0.04	c0.21	0.09		c0.03	
v/s Ratio Perm						0.01
v/c Ratio	0.36	0.42	0.29		0.10	0.03
Uniform Delay, d1	24.4	9.0	14.9		13.0	12.7
Progression Factor	0.63	0.55	1.00		1.00	1.00
Incremental Delay, d2	1.0	0.1	0.1		0.3	0.1
Delay (s)	16.4	5.2	15.0		13.3	12.8
Level of Service	B	A	B		B	B
Approach Delay (s)		6.2	15.0		13.1	
Approach LOS		A	B		B	

Intersection Summary			
HCM Average Control Delay	9.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	28.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1736	3471	3417		1736	1553
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1736	3471	3417		1736	1553
Volume (vph)	83	432	816	95	63	50
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	90	470	887	103	68	54
RTOR Reduction (vph)	0	0	18	0	0	38
Lane Group Flow (vph)	90	470	972	0	68	16
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Turn Type	Prot					Perm
Protected Phases	7	4	8		6	
Permitted Phases						6
Actuated Green, G (s)	7.3	33.7	22.4		18.3	18.3
Effective Green, g (s)	7.3	33.7	22.4		18.3	18.3
Actuated g/C Ratio	0.12	0.56	0.37		0.30	0.30
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	211	1950	1276		529	474
v/s Ratio Prot	c0.05	0.14	c0.28		c0.04	
v/s Ratio Perm						0.01
v/c Ratio	0.43	0.24	0.76		0.13	0.03
Uniform Delay, d1	24.4	6.7	16.5		15.1	14.6
Progression Factor	1.02	1.01	1.00		1.00	1.00
Incremental Delay, d2	1.4	0.1	2.7		0.5	0.1
Delay (s)	26.2	6.8	19.2		15.6	14.8
Level of Service	C	A	B		B	B
Approach Delay (s)		9.9	19.2		15.2	
Approach LOS		A	B		B	

Intersection Summary			
HCM Average Control Delay	15.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	43.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0			4.0	4.0
Lane Util. Factor	1.00	0.95			0.95	1.00		1.00			1.00	1.00
Frt	1.00	1.00			1.00	0.85		0.99			1.00	0.85
Flt Protected	0.95	1.00			1.00	1.00		1.00			0.95	1.00
Satd. Flow (prot)	1736	3468			3471	1553		1802			1745	1553
Flt Permitted	0.95	1.00			1.00	1.00		1.00			0.95	1.00
Satd. Flow (perm)	1736	3468			3471	1553		1802			1745	1553
Volume (vph)	235	580	4	0	174	113	4	43	4	361	21	128
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	255	630	4	0	189	123	4	47	4	392	23	139
RTOR Reduction (vph)	0	1	0	0	0	111	0	4	0	0	0	95
Lane Group Flow (vph)	255	633	0	0	189	12	0	51	0	0	415	44
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot			Prot		Perm	Split			Split		Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases						8						6
Actuated Green, G (s)	11.4	21.4			6.0	6.0		7.0			19.0	19.0
Effective Green, g (s)	11.4	21.4			6.0	6.0		7.0			19.0	19.0
Actuated g/C Ratio	0.19	0.36			0.10	0.10		0.12			0.32	0.32
Clearance Time (s)	4.0	4.0			4.0	4.0		4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	333	1249			351	157		212			558	497
v/s Ratio Prot	c0.15	c0.18			0.05			c0.03			c0.24	
v/s Ratio Perm						0.01						0.03
v/c Ratio	0.77	0.51			0.54	0.08		0.24			0.74	0.09
Uniform Delay, d1	22.7	14.9			25.4	24.2		23.8			18.0	14.1
Progression Factor	1.00	1.00			1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	10.1	0.3			1.6	0.2		2.7			8.7	0.4
Delay (s)	32.8	15.2			27.0	24.4		26.5			26.7	14.5
Level of Service	C	B			C	C		C			C	B
Approach Delay (s)		20.2			26.0			26.5			23.7	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	22.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	59.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	57.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0			4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.97			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99			0.96	1.00
Satd. Flow (prot)	1736	3463		1736	3471	1553		1743			1749	1553
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.99			0.96	1.00
Satd. Flow (perm)	1736	3463		1736	3471	1553		1743			1749	1553
Volume (vph)	209	288	5	5	604	295	8	17	8	180	21	181
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	227	313	5	5	657	321	9	18	9	196	23	197
RTOR Reduction (vph)	0	2	0	0	0	232	0	8	0	0	0	163
Lane Group Flow (vph)	227	316	0	5	657	89	0	28	0	0	219	34
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot			Prot		Perm	Split			Split		Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases						8						6
Actuated Green, G (s)	9.5	25.0		0.4	15.9	15.9		6.0			10.0	10.0
Effective Green, g (s)	9.5	25.0		0.4	15.9	15.9		6.0			10.0	10.0
Actuated g/C Ratio	0.17	0.44		0.01	0.28	0.28		0.10			0.17	0.17
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0		4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	287	1508		12	961	430		182			305	271
v/s Ratio Prot	c0.13	0.09		0.00	c0.19			c0.02			c0.13	
v/s Ratio Perm						0.06						0.02
v/c Ratio	0.79	0.21		0.42	0.68	0.21		0.15			0.72	0.13
Uniform Delay, d1	23.0	10.1		28.4	18.5	15.9		23.4			22.4	20.0
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	13.8	0.1		21.8	2.0	0.2		1.8			13.6	1.0
Delay (s)	36.8	10.1		50.2	20.5	16.2		25.2			35.9	21.0
Level of Service	D	B		D	C	B		C			D	C
Approach Delay (s)		21.2			19.3			25.2			28.9	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM Average Control Delay	21.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	57.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	56.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	3	941	212	7	15	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	1023	230	8	16	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					TWLTL	
Median storage veh)					1	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	238				1264	234
vC1, stage 1 conf vol					234	
vC2, stage 2 conf vol					1029	
vCu, unblocked vol	238				1264	234
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				94	100
cM capacity (veh/h)	1317				282	800

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	3	1023	238	20
Volume Left	3	0	0	16
Volume Right	0	0	8	3
cSH	1317	1700	1700	316
Volume to Capacity	0.00	0.60	0.14	0.06
Queue Length 95th (ft)	0	0	0	5
Control Delay (s)	7.7	0.0	0.0	17.1
Lane LOS	A			C
Approach Delay (s)	0.0		0.0	17.1
Approach LOS				C

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	59.5%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	4	410	886	17	15	7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	446	963	18	16	8
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					TWLTL	
Median storage veh)					1	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	982				1427	972
vC1, stage 1 conf vol					972	
vC2, stage 2 conf vol					454	
vCu, unblocked vol	982				1427	972
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	99				94	97
cM capacity (veh/h)	695				271	304

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	4	446	982	24
Volume Left	4	0	0	16
Volume Right	0	0	18	8
cSH	695	1700	1700	280
Volume to Capacity	0.01	0.26	0.58	0.09
Queue Length 95th (ft)	0	0	0	7
Control Delay (s)	10.2	0.0	0.0	19.0
Lane LOS	B			C
Approach Delay (s)	0.1		0.0	19.0
Approach LOS				C

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	57.7%	ICU Level of Service	B
Analysis Period (min)	15		

AM - 17.7 - C

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	520	10	10	320	10	30
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	565	11	11	348	11	33
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			576		940	571
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			576		940	571
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		96	94
cM capacity (veh/h)			987		287	517

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	576	359	43
Volume Left	0	11	11
Volume Right	11	0	33
cSH	1700	987	431
Volume to Capacity	0.34	0.01	0.10
Queue Length 95th (ft)	0	1	8
Control Delay (s)	0.0	0.4	14.3
Lane LOS		A	B
Approach Delay (s)	0.0	0.4	14.3
Approach LOS			B

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	38.0%	ICU Level of Service	A
Analysis Period (min)	15		

AWD = 11.5 LOS B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	340	5	30	445	5	15
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	370	5	33	484	5	16
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			375		921	372
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			375		921	372
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		98	98
cM capacity (veh/h)			1173		289	669

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	375	516	22
Volume Left	0	33	5
Volume Right	5	0	16
cSH	1700	1173	504
Volume to Capacity	0.22	0.03	0.04
Queue Length 95th (ft)	0	2	3
Control Delay (s)	0.0	0.8	12.5
Lane LOS		A	B
Approach Delay (s)	0.0	0.8	12.5
Approach LOS			B

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	56.6%	ICU Level of Service	B
Analysis Period (min)	15		

AWD = 5.5 LOSA

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00		1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85		0.93		1.00	0.91	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99		0.95	1.00	
Satd. Flow (prot)	1736	3442		1736	1827	1553		1676		1736	1662	
Flt Permitted	0.54	1.00		0.29	1.00	1.00		0.95		0.70	1.00	
Satd. Flow (perm)	985	3442		527	1827	1553		1607		1283	1662	
Volume (vph)	70	590	35	70	230	45	25	40	80	190	50	75
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	76	641	38	76	250	49	27	43	87	207	54	82
RTOR Reduction (vph)	0	8	0	0	0	32	0	42	0	0	40	0
Lane Group Flow (vph)	76	671	0	76	250	17	0	115	0	207	96	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	21.1	21.1		21.1	21.1	21.1		30.9		30.9	30.9	
Effective Green, g (s)	21.1	21.1		21.1	21.1	21.1		30.9		30.9	30.9	
Actuated g/C Ratio	0.35	0.35		0.35	0.35	0.35		0.52		0.52	0.52	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	346	1210		185	642	546		828		661	856	
v/s Ratio Prot		c0.19			0.14						0.06	
v/s Ratio Perm	0.08			0.14		0.01		0.07		c0.16		
v/c Ratio	0.22	0.55		0.41	0.39	0.03		0.14		0.31	0.11	
Uniform Delay, d1	13.7	15.7		14.7	14.6	12.8		7.6		8.4	7.5	
Progression Factor	1.00	1.00		0.34	0.53	0.07		1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.6		1.4	0.4	0.0		0.3		1.2	0.3	
Delay (s)	14.0	16.2		6.5	8.1	0.9		7.9		9.7	7.8	
Level of Service	B	B		A	A	A		A		A	A	
Approach Delay (s)		16.0			6.8			7.9			8.9	
Approach LOS		B			A			A			A	

Intersection Summary			
HCM Average Control Delay	11.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00		1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85		0.94		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99		0.95	1.00	
Satd. Flow (prot)	1736	3441		1736	1827	1553		1699		1736	1636	
Flt Permitted	0.32	1.00		0.48	1.00	1.00		0.93		0.73	1.00	
Satd. Flow (perm)	592	3441		884	1827	1553		1597		1342	1636	
Volume (vph)	55	405	25	80	610	245	20	35	45	95	35	80
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	60	440	27	87	663	266	22	38	49	103	38	87
RTOR Reduction (vph)	0	7	0	0	0	94	0	38	0	0	68	0
Lane Group Flow (vph)	60	460	0	87	663	172	0	71	0	103	57	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	38.8	38.8		38.8	38.8	38.8		13.2		13.2	13.2	
Effective Green, g (s)	38.8	38.8		38.8	38.8	38.8		13.2		13.2	13.2	
Actuated g/C Ratio	0.65	0.65		0.65	0.65	0.65		0.22		0.22	0.22	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	383	2225		572	1181	1004		351		295	360	
v/s Ratio Prot		0.13			c0.36						0.03	
v/s Ratio Perm	0.10			0.10		0.11		0.04		c0.08		
v/c Ratio	0.16	0.21		0.15	0.56	0.17		0.20		0.35	0.16	
Uniform Delay, d1	4.2	4.3		4.2	5.9	4.2		19.1		19.8	18.9	
Progression Factor	1.00	1.00		0.13	0.23	0.00		1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.0		0.1	0.4	0.1		1.3		3.2	0.9	
Delay (s)	4.4	4.4		0.6	1.8	0.1		20.4		23.0	19.9	
Level of Service	A	A		A	A	A		C		C	B	
Approach Delay (s)		4.4			1.2			20.4			21.3	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	5.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1736	3471	3389		1736	1553
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1736	3471	3389		1736	1553
Volume (vph)	75	750	295	55	60	45
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	815	321	60	65	49
RTOR Reduction (vph)	0	0	27	0	0	32
Lane Group Flow (vph)	82	815	354	0	65	17
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Turn Type	Prot					Perm
Protected Phases	7	4	8		6	
Permitted Phases						6
Actuated Green, G (s)	10.2	30.9	16.7		21.1	21.1
Effective Green, g (s)	10.2	30.9	16.7		21.1	21.1
Actuated g/C Ratio	0.17	0.52	0.28		0.35	0.35
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	295	1788	943		610	546
v/s Ratio Prot	0.05	c0.23	0.10		c0.04	
v/s Ratio Perm						0.01
v/c Ratio	0.28	0.46	0.38		0.11	0.03
Uniform Delay, d1	21.7	9.2	17.4		13.1	12.8
Progression Factor	0.72	0.51	1.00		1.00	1.00
Incremental Delay, d2	0.5	0.2	0.3		0.4	0.1
Delay (s)	16.1	4.9	17.7		13.5	12.9
Level of Service	B	A	B		B	B
Approach Delay (s)		5.9	17.7		13.2	
Approach LOS		A	B		B	

Intersection Summary			
HCM Average Control Delay	9.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	30.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1736	3471	3417		1736	1553
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1736	3471	3417		1736	1553
Volume (vph)	90	475	895	105	70	55
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	98	516	973	114	76	60
RTOR Reduction (vph)	0	0	17	0	0	44
Lane Group Flow (vph)	98	516	1070	0	76	16
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Turn Type	Prot					Perm
Protected Phases	7	4	8		6	
Permitted Phases						6
Actuated Green, G (s)	7.5	35.6	24.1		16.4	16.4
Effective Green, g (s)	7.5	35.6	24.1		16.4	16.4
Actuated g/C Ratio	0.12	0.59	0.40		0.27	0.27
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	217	2059	1372		475	424
v/s Ratio Prot	c0.06	0.15	c0.31		c0.04	
v/s Ratio Perm						0.01
v/c Ratio	0.45	0.25	0.78		0.16	0.04
Uniform Delay, d1	24.3	5.8	15.6		16.6	16.0
Progression Factor	1.00	0.80	1.00		1.00	1.00
Incremental Delay, d2	1.5	0.1	2.9		0.7	0.2
Delay (s)	25.9	4.7	18.5		17.3	16.2
Level of Service	C	A	B		B	B
Approach Delay (s)		8.1	18.5		16.8	
Approach LOS		A	B		B	

Intersection Summary			
HCM Average Control Delay	14.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	46.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0			4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.99			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00			0.96	1.00
Satd. Flow (prot)	1736	3467		1736	3471	1553		1798			1745	1553
Flt Permitted	0.95	1.00		0.95	1.00	1.00		1.00			0.96	1.00
Satd. Flow (perm)	1736	3467		1736	3471	1553		1798			1745	1553
Volume (vph)	260	635	5	5	190	125	5	45	5	395	25	140
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	283	690	5	5	207	136	5	49	5	429	27	152
RTOR Reduction (vph)	0	1	0	0	0	116	0	4	0	0	0	106
Lane Group Flow (vph)	283	694	0	5	207	20	0	55	0	0	456	46
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot			Prot		Perm	Split			Split		Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases						8						6
Actuated Green, G (s)	11.7	20.5		0.4	9.2	9.2		7.0			19.0	19.0
Effective Green, g (s)	11.7	20.5		0.4	9.2	9.2		7.0			19.0	19.0
Actuated g/C Ratio	0.19	0.33		0.01	0.15	0.15		0.11			0.30	0.30
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0		4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	323	1130		11	508	227		200			527	469
v/s Ratio Prot	c0.16	c0.20		0.00	0.06			c0.03			c0.26	
v/s Ratio Perm						0.01						0.03
v/c Ratio	0.88	0.61		0.45	0.41	0.09		0.27			0.87	0.10
Uniform Delay, d1	24.9	17.9		31.1	24.4	23.2		25.6			20.7	15.8
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	22.3	1.0		27.0	0.5	0.2		3.3			17.1	0.4
Delay (s)	47.2	18.9		58.2	24.9	23.4		29.0			37.8	16.2
Level of Service	D	B		E	C	C		C			D	B
Approach Delay (s)		27.1			24.8			29.0			32.4	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	28.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	62.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	60.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0			4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.97			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99			0.96	1.00
Satd. Flow (prot)	1736	3464		1736	3471	1553		1743			1749	1553
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.99			0.96	1.00
Satd. Flow (perm)	1736	3464		1736	3471	1553		1743			1749	1553
Volume (vph)	230	315	5	5	660	325	10	20	10	200	25	200
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	250	342	5	5	717	353	11	22	11	217	27	217
RTOR Reduction (vph)	0	2	0	0	0	252	0	10	0	0	0	179
Lane Group Flow (vph)	250	345	0	5	717	101	0	34	0	0	244	39
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot			Prot		Perm	Split			Split		Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases						8						6
Actuated Green, G (s)	11.3	28.6		0.4	17.7	17.7		6.0			11.0	11.0
Effective Green, g (s)	11.3	28.6		0.4	17.7	17.7		6.0			11.0	11.0
Actuated g/C Ratio	0.18	0.46		0.01	0.29	0.29		0.10			0.18	0.18
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0		4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	316	1598		11	991	443		169			310	276
v/s Ratio Prot	c0.14	0.10		0.00	c0.21			c0.02			c0.14	
v/s Ratio Perm						0.06						0.02
v/c Ratio	0.79	0.22		0.45	0.72	0.23		0.20			0.79	0.14
Uniform Delay, d1	24.2	10.0		30.7	19.9	16.9		25.8			24.4	21.5
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	12.7	0.1		27.0	2.6	0.3		2.7			18.1	1.1
Delay (s)	36.9	10.1		57.7	22.6	17.2		28.5			42.4	22.6
Level of Service	D	B		E	C	B		C			D	C
Approach Delay (s)		21.3			21.0			28.5			33.1	
Approach LOS		C			C			C			C	

Intersection Summary					
HCM Average Control Delay	23.8	HCM Level of Service		C	
HCM Volume to Capacity ratio	0.69				
Actuated Cycle Length (s)	62.0	Sum of lost time (s)		16.0	
Intersection Capacity Utilization	60.0%	ICU Level of Service		B	
Analysis Period (min)	15				

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	5	1040	230	10	15	5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	1130	250	11	16	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					TWLTL	
Median storage veh)					1	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	261				1397	255
vC1, stage 1 conf vol					255	
vC2, stage 2 conf vol					1141	
vCu, unblocked vol	261				1397	255
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				93	99
cM capacity (veh/h)	1292				249	778

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	5	1130	261	22
Volume Left	5	0	0	16
Volume Right	0	0	11	5
cSH	1292	1700	1700	300
Volume to Capacity	0.00	0.66	0.15	0.07
Queue Length 95th (ft)	0	0	0	6
Control Delay (s)	7.8	0.0	0.0	17.9
Lane LOS	A			C
Approach Delay (s)	0.0		0.0	17.9
Approach LOS				C

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	64.7%	ICU Level of Service	C
Analysis Period (min)	15		

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Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	5	450	980	20	15	5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	489	1065	22	16	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					TWLTL	
Median storage veh)					1	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1087				1576	1076
vC1, stage 1 conf vol					1076	
vC2, stage 2 conf vol					500	
vCu, unblocked vol	1087				1576	1076
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	99				93	98
cM capacity (veh/h)	634				240	264

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	5	489	1087	22
Volume Left	5	0	0	16
Volume Right	0	0	22	5
cSH	634	1700	1700	245
Volume to Capacity	0.01	0.29	0.64	0.09
Queue Length 95th (ft)	1	0	0	7
Control Delay (s)	10.7	0.0	0.0	21.1
Lane LOS	B			C
Approach Delay (s)	0.1		0.0	21.1
Approach LOS				C

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	62.8%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	523	10	11	320	10	30
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	568	11	12	348	11	33
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			579		946	574
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			579		946	574
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		96	94
cM capacity (veh/h)			985		284	515

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	579	360	43
Volume Left	0	12	11
Volume Right	11	0	33
cSH	1700	985	428
Volume to Capacity	0.34	0.01	0.10
Queue Length 95th (ft)	0	1	8
Control Delay (s)	0.0	0.4	14.4
Lane LOS		A	B
Approach Delay (s)	0.0	0.4	14.4
Approach LOS			B

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	38.1%	ICU Level of Service	A
Analysis Period (min)	15		

AWD = 11.3 LOS B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	340	5	30	448	5	16
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	370	5	33	487	5	17
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			375		924	372
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			375		924	372
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		98	97
cM capacity (veh/h)			1173		288	669

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	375	520	23
Volume Left	0	33	5
Volume Right	5	0	17
cSH	1700	1173	509
Volume to Capacity	0.22	0.03	0.04
Queue Length 95th (ft)	0	2	4
Control Delay (s)	0.0	0.8	12.4
Lane LOS		A	B
Approach Delay (s)	0.0	0.8	12.4
Approach LOS			B

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	56.8%	ICU Level of Service	B
Analysis Period (min)	15		

AWD = 5.6 LOS A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00		1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85		0.93		1.00	0.91	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99		0.95	1.00	
Satd. Flow (prot)	1736	3442		1736	1827	1553		1676		1736	1662	
Flt Permitted	0.54	1.00		0.29	1.00	1.00		0.95		0.70	1.00	
Satd. Flow (perm)	982	3442		522	1827	1553		1607		1283	1662	
Volume (vph)	70	593	35	70	231	45	25	40	80	192	50	75
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	76	645	38	76	251	49	27	43	87	209	54	82
RTOR Reduction (vph)	0	8	0	0	0	32	0	42	0	0	40	0
Lane Group Flow (vph)	76	675	0	76	251	17	0	115	0	209	96	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	21.1	21.1		21.1	21.1	21.1		30.9		30.9	30.9	
Effective Green, g (s)	21.1	21.1		21.1	21.1	21.1		30.9		30.9	30.9	
Actuated g/C Ratio	0.35	0.35		0.35	0.35	0.35		0.52		0.52	0.52	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	345	1210		184	642	546		828		661	856	
v/s Ratio Prot		c0.20			0.14						0.06	
v/s Ratio Perm	0.08			0.15		0.01		0.07		c0.16		
v/c Ratio	0.22	0.56		0.41	0.39	0.03		0.14		0.32	0.11	
Uniform Delay, d1	13.7	15.7		14.8	14.6	12.8		7.6		8.4	7.5	
Progression Factor	1.00	1.00		0.34	0.53	0.07		1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.6		1.4	0.4	0.0		0.3		1.3	0.3	
Delay (s)	14.0	16.2		6.5	8.1	0.9		7.9		9.7	7.8	
Level of Service	B	B		A	A	A		A		A	A	
Approach Delay (s)		16.0			6.9			7.9			8.9	
Approach LOS		B			A			A			A	

Intersection Summary				
HCM Average Control Delay	11.6	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.41			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	53.7%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00		1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85		0.94		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99		0.95	1.00	
Satd. Flow (prot)	1736	3441		1736	1827	1553		1699		1736	1636	
Flt Permitted	0.32	1.00		0.48	1.00	1.00		0.93		0.73	1.00	
Satd. Flow (perm)	590	3441		883	1827	1553		1597		1342	1636	
Volume (vph)	55	406	25	80	613	247	20	35	45	95	35	80
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	60	441	27	87	666	268	22	38	49	103	38	87
RTOR Reduction (vph)	0	7	0	0	0	94	0	38	0	0	68	0
Lane Group Flow (vph)	60	461	0	87	666	174	0	71	0	103	57	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	38.9	38.9		38.9	38.9	38.9		13.1		13.1	13.1	
Effective Green, g (s)	38.9	38.9		38.9	38.9	38.9		13.1		13.1	13.1	
Actuated g/C Ratio	0.65	0.65		0.65	0.65	0.65		0.22		0.22	0.22	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	383	2231		572	1185	1007		349		293	357	
v/s Ratio Prot		0.13			c0.36						0.03	
v/s Ratio Perm	0.10			0.10		0.11		0.04		c0.08		
v/c Ratio	0.16	0.21		0.15	0.56	0.17		0.20		0.35	0.16	
Uniform Delay, d1	4.1	4.3		4.1	5.8	4.2		19.2		19.9	19.0	
Progression Factor	1.00	1.00		0.13	0.23	0.00		1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.0		0.1	0.4	0.1		1.3		3.3	1.0	
Delay (s)	4.3	4.3		0.6	1.7	0.1		20.5		23.1	19.9	
Level of Service	A	A		A	A	A		C		C	B	
Approach Delay (s)		4.3			1.2			20.5			21.4	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	5.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	58.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1736	3471	3389		1736	1553
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1736	3471	3389		1736	1553
Volume (vph)	75	755	296	55	61	45
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	821	322	60	66	49
RTOR Reduction (vph)	0	0	27	0	0	32
Lane Group Flow (vph)	82	821	355	0	66	17
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Turn Type	Prot					Perm
Protected Phases	7	4	8		6	
Permitted Phases						6
Actuated Green, G (s)	10.4	31.2	16.8		20.8	20.8
Effective Green, g (s)	10.4	31.2	16.8		20.8	20.8
Actuated g/C Ratio	0.17	0.52	0.28		0.35	0.35
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	301	1805	949		602	538
v/s Ratio Prot	0.05	c0.24	0.10		c0.04	
v/s Ratio Perm						0.01
v/c Ratio	0.27	0.45	0.37		0.11	0.03
Uniform Delay, d1	21.5	9.1	17.4		13.3	12.9
Progression Factor	0.72	0.51	1.00		1.00	1.00
Incremental Delay, d2	0.4	0.2	0.2		0.4	0.1
Delay (s)	15.9	4.8	17.6		13.7	13.1
Level of Service	B	A	B		B	B
Approach Delay (s)		5.8	17.6		13.4	
Approach LOS		A	B		B	

Intersection Summary			
HCM Average Control Delay	9.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	30.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1736	3471	3416		1736	1553
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1736	3471	3416		1736	1553
Volume (vph)	90	476	900	106	70	55
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	98	517	978	115	76	60
RTOR Reduction (vph)	0	0	17	0	0	44
Lane Group Flow (vph)	98	517	1076	0	76	16
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Turn Type	Prot					Perm
Protected Phases	7	4	8		6	
Permitted Phases						6
Actuated Green, G (s)	7.5	35.7	24.2		16.3	16.3
Effective Green, g (s)	7.5	35.7	24.2		16.3	16.3
Actuated g/C Ratio	0.12	0.60	0.40		0.27	0.27
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	217	2065	1378		472	422
v/s Ratio Prot	c0.06	0.15	c0.31		c0.04	
v/s Ratio Perm						0.01
v/c Ratio	0.45	0.25	0.78		0.16	0.04
Uniform Delay, d1	24.3	5.8	15.6		16.6	16.1
Progression Factor	1.00	0.79	1.00		1.00	1.00
Incremental Delay, d2	1.5	0.1	2.9		0.7	0.2
Delay (s)	25.9	4.6	18.5		17.4	16.3
Level of Service	C	A	B		B	B
Approach Delay (s)		8.0	18.5		16.9	
Approach LOS		A	B		B	

Intersection Summary			
HCM Average Control Delay	14.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	47.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0			4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.98			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00			0.96	1.00
Satd. Flow (prot)	1736	3467		1736	3471	1553		1791			1745	1553
Flt Permitted	0.95	1.00		0.95	1.00	1.00		1.00			0.96	1.00
Satd. Flow (perm)	1736	3467		1736	3471	1553		1791			1745	1553
Volume (vph)	260	641	5	5	191	125	5	45	6	397	25	140
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	283	697	5	5	208	136	5	49	7	432	27	152
RTOR Reduction (vph)	0	1	0	0	0	116	0	6	0	0	0	106
Lane Group Flow (vph)	283	701	0	5	208	20	0	55	0	0	459	46
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot			Prot		Perm	Split			Split		Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases						8						6
Actuated Green, G (s)	11.7	20.5		0.4	9.2	9.2		7.0			19.0	19.0
Effective Green, g (s)	11.7	20.5		0.4	9.2	9.2		7.0			19.0	19.0
Actuated g/C Ratio	0.19	0.33		0.01	0.15	0.15		0.11			0.30	0.30
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0		4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	323	1130		11	508	227		199			527	469
v/s Ratio Prot	c0.16	c0.20		0.00	0.06			c0.03			c0.26	
v/s Ratio Perm						0.01						0.03
v/c Ratio	0.88	0.62		0.45	0.41	0.09		0.28			0.87	0.10
Uniform Delay, d1	24.9	17.9		31.1	24.4	23.2		25.6			20.8	15.8
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	22.3	1.1		27.0	0.5	0.2		3.4			17.7	0.4
Delay (s)	47.2	19.0		58.2	24.9	23.4		29.0			38.5	16.2
Level of Service	D	B		E	C	C		C			D	B
Approach Delay (s)		27.1			24.8			29.0			32.9	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	28.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	62.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0			4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.97			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99			0.96	1.00
Satd. Flow (prot)	1736	3464		1736	3471	1553		1743			1749	1553
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.99			0.96	1.00
Satd. Flow (perm)	1736	3464		1736	3471	1553		1743			1749	1553
Volume (vph)	230	316	5	6	666	327	10	20	10	200	25	200
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	250	343	5	7	724	355	11	22	11	217	27	217
RTOR Reduction (vph)	0	2	0	0	0	253	0	10	0	0	0	179
Lane Group Flow (vph)	250	346	0	7	724	102	0	34	0	0	244	38
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot			Prot		Perm	Split			Split		Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases						8						6
Actuated Green, G (s)	11.3	28.8		0.4	17.9	17.9		6.0			11.0	11.0
Effective Green, g (s)	11.3	28.8		0.4	17.9	17.9		6.0			11.0	11.0
Actuated g/C Ratio	0.18	0.46		0.01	0.29	0.29		0.10			0.18	0.18
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0		4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	315	1604		11	999	447		168			309	275
v/s Ratio Prot	c0.14	0.10		0.00	c0.21			c0.02			c0.14	
v/s Ratio Perm						0.07						0.02
v/c Ratio	0.79	0.22		0.64	0.72	0.23		0.20			0.79	0.14
Uniform Delay, d1	24.3	10.0		30.8	19.9	16.9		25.9			24.5	21.6
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	12.9	0.1		81.7	2.6	0.3		2.7			18.3	1.1
Delay (s)	37.2	10.0		112.6	22.6	17.1		28.6			42.8	22.7
Level of Service	D	B		F	C	B		C			D	C
Approach Delay (s)		21.4			21.4			28.6			33.3	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	24.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	62.2	Sum of lost time (s)	16.0
Intersection Capacity Utilization	60.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	6	1040	233	10	15	5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	1130	253	11	16	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					TWLTL	
Median storage veh)					1	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	264				1402	259
vC1, stage 1 conf vol					259	
vC2, stage 2 conf vol					1143	
vCu, unblocked vol	264				1402	259
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	99				93	99
cM capacity (veh/h)	1288				248	775

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	7	1130	264	22
Volume Left	7	0	0	16
Volume Right	0	0	11	5
cSH	1288	1700	1700	299
Volume to Capacity	0.01	0.66	0.16	0.07
Queue Length 95th (ft)	0	0	0	6
Control Delay (s)	7.8	0.0	0.0	18.0
Lane LOS	A			C
Approach Delay (s)	0.0		0.0	18.0
Approach LOS				C

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	64.7%	ICU Level of Service	C
Analysis Period (min)	15		

AM - 15 - LOS C

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	5	453	980	20	15	6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	492	1065	22	16	7
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					TWLTL	
Median storage veh)					1	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1087				1579	1076
vC1, stage 1 conf vol					1076	
vC2, stage 2 conf vol					503	
vCu, unblocked vol	1087				1579	1076
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	99				93	98
cM capacity (veh/h)	634				239	264

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	5	492	1087	23
Volume Left	5	0	0	16
Volume Right	0	0	22	7
cSH	634	1700	1700	246
Volume to Capacity	0.01	0.29	0.64	0.09
Queue Length 95th (ft)	1	0	0	8
Control Delay (s)	10.7	0.0	0.0	21.1
Lane LOS	B			C
Approach Delay (s)	0.1		0.0	21.1
Approach LOS				C

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	62.8%	ICU Level of Service	B
Analysis Period (min)	15		

AM = 19.2 sec

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	474	9	9	289	7	27
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	515	10	10	314	8	29
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			525		854	520
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			525		854	520
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		98	95
cM capacity (veh/h)			1032		323	552

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	525	324	37
Volume Left	0	10	8
Volume Right	10	0	29
cSH	1700	1032	482
Volume to Capacity	0.31	0.01	0.08
Queue Length 95th (ft)	0	1	6
Control Delay (s)	0.0	0.4	13.1
Lane LOS		A	B
Approach Delay (s)	0.0	0.4	13.1
Approach LOS			B

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	35.5%	ICU Level of Service	A
Analysis Period (min)	15		

AWD = 10.4 LOS B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	307	2	28	404	1	15
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	334	2	30	439	1	16
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			336		835	335
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			336		835	335
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		100	98
cM capacity (veh/h)			1212		327	703

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	336	470	17
Volume Left	0	30	1
Volume Right	2	0	16
cSH	1700	1212	655
Volume to Capacity	0.20	0.03	0.03
Queue Length 95th (ft)	0	2	2
Control Delay (s)	0.0	0.8	10.6
Lane LOS		A	B
Approach Delay (s)	0.0	0.8	10.6
Approach LOS			B

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		

AWD = 4.3 LOS A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00		1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85		0.93		1.00	0.91	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99		0.95	1.00	
Satd. Flow (prot)	1736	3443		1736	1827	1553		1676		1736	1667	
Flt Permitted	0.54	1.00		0.29	1.00	1.00		0.95		0.67	1.00	
Satd. Flow (perm)	985	3443		526	1827	1553		1608		1220	1667	
Volume (vph)	64	537	31	65	210	43	24	34	71	173	47	66
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	70	584	34	71	228	47	26	37	77	188	51	72
RTOR Reduction (vph)	0	9	0	0	0	33	0	33	0	0	30	0
Lane Group Flow (vph)	70	609	0	71	228	14	0	107	0	188	93	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	17.4	17.4		17.4	17.4	17.4		34.6		34.6	34.6	
Effective Green, g (s)	17.4	17.4		17.4	17.4	17.4		34.6		34.6	34.6	
Actuated g/C Ratio	0.29	0.29		0.29	0.29	0.29		0.58		0.58	0.58	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	286	998		153	530	450		927		704	961	
v/s Ratio Prot		c0.18			0.12						0.06	
v/s Ratio Perm	0.07			0.13		0.01		0.07		c0.15		
v/c Ratio	0.24	0.61		0.46	0.43	0.03		0.12		0.27	0.10	
Uniform Delay, d1	16.3	18.4		17.5	17.3	15.3		5.8		6.4	5.7	
Progression Factor	1.00	1.00		0.37	0.49	0.05		1.00		1.00	1.00	
Incremental Delay, d2	0.4	1.1		2.2	0.6	0.0		0.3		0.9	0.2	
Delay (s)	16.7	19.4		8.7	9.0	0.7		6.0		7.3	5.9	
Level of Service	B	B		A	A	A		A		A	A	
Approach Delay (s)		19.2			7.8			6.0			6.7	
Approach LOS		B			A			A			A	

Intersection Summary			
HCM Average Control Delay	12.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	45.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00		1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85		0.94		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99		0.95	1.00	
Satd. Flow (prot)	1736	3442		1736	1827	1553		1694		1736	1634	
Flt Permitted	0.35	1.00		0.50	1.00	1.00		0.94		0.76	1.00	
Satd. Flow (perm)	648	3442		921	1827	1553		1603		1383	1634	
Volume (vph)	51	369	22	74	556	223	18	30	43	86	30	73
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	55	401	24	80	604	242	20	33	47	93	33	79
RTOR Reduction (vph)	0	7	0	0	0	89	0	36	0	0	61	0
Lane Group Flow (vph)	55	418	0	80	604	153	0	64	0	93	51	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	38.0	38.0		38.0	38.0	38.0		14.0		14.0	14.0	
Effective Green, g (s)	38.0	38.0		38.0	38.0	38.0		14.0		14.0	14.0	
Actuated g/C Ratio	0.63	0.63		0.63	0.63	0.63		0.23		0.23	0.23	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	410	2180		583	1157	984		374		323	381	
v/s Ratio Prot		0.12			c0.33						0.03	
v/s Ratio Perm	0.08			0.09		0.10		0.04		c0.07		
v/c Ratio	0.13	0.19		0.14	0.52	0.16		0.17		0.29	0.13	
Uniform Delay, d1	4.4	4.6		4.4	6.0	4.5		18.4		18.9	18.2	
Progression Factor	1.00	1.00		0.11	0.22	0.00		1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.0		0.1	0.3	0.0		1.0		2.2	0.7	
Delay (s)	4.6	4.6		0.6	1.6	0.1		19.4		21.1	18.9	
Level of Service	A	A		A	A	A		B		C	B	
Approach Delay (s)		4.6			1.1			19.4			19.9	
Approach LOS		A			A			B			B	

Intersection Summary				
HCM Average Control Delay	5.4	HCM Level of Service	A	
HCM Volume to Capacity ratio	0.46			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	54.5%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1736	3471	3390		1736	1553
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1736	3471	3390		1736	1553
Volume (vph)	68	682	270	50	54	43
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	74	741	293	54	59	47
RTOR Reduction (vph)	0	0	25	0	0	30
Lane Group Flow (vph)	74	741	322	0	59	17
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Turn Type	Prot					Perm
Protected Phases	7	4	8		6	
Permitted Phases						6
Actuated Green, G (s)	7.0	30.8	19.8		21.2	21.2
Effective Green, g (s)	7.0	30.8	19.8		21.2	21.2
Actuated g/C Ratio	0.12	0.51	0.33		0.35	0.35
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	203	1782	1119		613	549
v/s Ratio Prot	0.04	c0.21	0.09		c0.03	
v/s Ratio Perm						0.01
v/c Ratio	0.36	0.42	0.29		0.10	0.03
Uniform Delay, d1	24.4	9.0	14.9		13.0	12.7
Progression Factor	0.63	0.56	1.00		1.00	1.00
Incremental Delay, d2	1.0	0.1	0.1		0.3	0.1
Delay (s)	16.4	5.2	15.0		13.3	12.8
Level of Service	B	A	B		B	B
Approach Delay (s)		6.2	15.0		13.1	
Approach LOS		A	B		B	

Intersection Summary			
HCM Average Control Delay	9.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	28.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1736	3471	3417		1736	1553
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1736	3471	3417		1736	1553
Volume (vph)	83	432	815	95	63	50
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	90	470	886	103	68	54
RTOR Reduction (vph)	0	0	18	0	0	38
Lane Group Flow (vph)	90	470	971	0	68	16
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Turn Type	Prot					Perm
Protected Phases	7	4	8		6	
Permitted Phases						6
Actuated Green, G (s)	7.4	33.8	22.4		18.2	18.2
Effective Green, g (s)	7.4	33.8	22.4		18.2	18.2
Actuated g/C Ratio	0.12	0.56	0.37		0.30	0.30
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	214	1955	1276		527	471
v/s Ratio Prot	c0.05	0.14	c0.28		c0.04	
v/s Ratio Perm						0.01
v/c Ratio	0.42	0.24	0.76		0.13	0.03
Uniform Delay, d1	24.3	6.6	16.5		15.2	14.7
Progression Factor	1.01	1.02	1.00		1.00	1.00
Incremental Delay, d2	1.3	0.1	2.7		0.5	0.1
Delay (s)	25.9	6.8	19.2		15.7	14.9
Level of Service	C	A	B		B	B
Approach Delay (s)		9.9	19.2		15.3	
Approach LOS		A	B		B	

Intersection Summary			
HCM Average Control Delay	15.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	43.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0			4.0	4.0
Lane Util. Factor	1.00	0.95			0.95	1.00		1.00			1.00	1.00
Frt	1.00	1.00			1.00	0.85		0.99			1.00	0.85
Flt Protected	0.95	1.00			1.00	1.00		1.00			0.95	1.00
Satd. Flow (prot)	1736	3468			3471	1553		1802			1745	1553
Flt Permitted	0.95	1.00			1.00	1.00		1.00			0.95	1.00
Satd. Flow (perm)	1736	3468			3471	1553		1802			1745	1553
Volume (vph)	235	579	4	0	174	113	4	43	4	361	21	128
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	255	629	4	0	189	123	4	47	4	392	23	139
RTOR Reduction (vph)	0	1	0	0	0	111	0	4	0	0	0	95
Lane Group Flow (vph)	255	632	0	0	189	12	0	51	0	0	415	44
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot			Prot		Perm	Split			Split		Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases						8						6
Actuated Green, G (s)	11.4	21.4			6.0	6.0		7.0			19.0	19.0
Effective Green, g (s)	11.4	21.4			6.0	6.0		7.0			19.0	19.0
Actuated g/C Ratio	0.19	0.36			0.10	0.10		0.12			0.32	0.32
Clearance Time (s)	4.0	4.0			4.0	4.0		4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	333	1249			351	157		212			558	497
v/s Ratio Prot	c0.15	c0.18			0.05			c0.03			c0.24	
v/s Ratio Perm						0.01						0.03
v/c Ratio	0.77	0.51			0.54	0.08		0.24			0.74	0.09
Uniform Delay, d1	22.7	14.9			25.4	24.2		23.8			18.0	14.1
Progression Factor	1.00	1.00			1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	10.1	0.3			1.6	0.2		2.7			8.7	0.4
Delay (s)	32.8	15.2			27.0	24.4		26.5			26.7	14.5
Level of Service	C	B			C	C		C			C	B
Approach Delay (s)		20.2			26.0			26.5			23.7	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	22.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	59.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	57.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0			4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.97			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99			0.96	1.00
Satd. Flow (prot)	1736	3463		1736	3471	1553		1743			1749	1553
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.99			0.96	1.00
Satd. Flow (perm)	1736	3463		1736	3471	1553		1743			1749	1553
Volume (vph)	209	288	5	5	603	295	8	17	8	180	21	181
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	227	313	5	5	655	321	9	18	9	196	23	197
RTOR Reduction (vph)	0	2	0	0	0	232	0	8	0	0	0	163
Lane Group Flow (vph)	227	316	0	5	655	89	0	28	0	0	219	34
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot			Prot		Perm	Split			Split		Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases						8						6
Actuated Green, G (s)	9.5	25.0		0.4	15.9	15.9		6.0			10.0	10.0
Effective Green, g (s)	9.5	25.0		0.4	15.9	15.9		6.0			10.0	10.0
Actuated g/C Ratio	0.17	0.44		0.01	0.28	0.28		0.10			0.17	0.17
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0		4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	287	1508		12	961	430		182			305	271
v/s Ratio Prot	c0.13	0.09		0.00	c0.19			c0.02			c0.13	
v/s Ratio Perm						0.06						0.02
v/c Ratio	0.79	0.21		0.42	0.68	0.21		0.15			0.72	0.13
Uniform Delay, d1	23.0	10.1		28.4	18.5	15.9		23.4			22.4	20.0
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	13.8	0.1		21.8	2.0	0.2		1.8			13.6	1.0
Delay (s)	36.8	10.1		50.2	20.5	16.2		25.2			35.9	21.0
Level of Service	D	B		D	C	B		C			D	C
Approach Delay (s)		21.2			19.2			25.2			28.9	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM Average Control Delay	21.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	57.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	56.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	3	941	212	7	15	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	1023	230	8	16	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					TWLTL	
Median storage veh)					1	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	238				1264	234
vC1, stage 1 conf vol					234	
vC2, stage 2 conf vol					1029	
vCu, unblocked vol	238				1264	234
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				94	100
cM capacity (veh/h)	1317				282	800

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	3	1023	238	20
Volume Left	3	0	0	16
Volume Right	0	0	8	3
cSH	1317	1700	1700	316
Volume to Capacity	0.00	0.60	0.14	0.06
Queue Length 95th (ft)	0	0	0	5
Control Delay (s)	7.7	0.0	0.0	17.1
Lane LOS	A			C
Approach Delay (s)	0.0		0.0	17.1
Approach LOS				C

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	59.5%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	4	410	886	17	15	7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	446	963	18	16	8
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					TWLTL	
Median storage veh)					1	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	982				1427	972
vC1, stage 1 conf vol					972	
vC2, stage 2 conf vol					454	
vCu, unblocked vol	982				1427	972
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	99				94	97
cM capacity (veh/h)	695				271	304

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	4	446	982	24
Volume Left	4	0	0	16
Volume Right	0	0	18	8
cSH	695	1700	1700	280
Volume to Capacity	0.01	0.26	0.58	0.09
Queue Length 95th (ft)	0	0	0	7
Control Delay (s)	10.2	0.0	0.0	19.0
Lane LOS	B			C
Approach Delay (s)	0.1		0.0	19.0
Approach LOS				C

Intersection Summary				
Average Delay		0.3		
Intersection Capacity Utilization		57.7%	ICU Level of Service	B
Analysis Period (min)		15		

AM - 97 - LOS -

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	522	10	11	320	10	30
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	567	11	12	348	11	33
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			578		945	573
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			578		945	573
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		96	94
cM capacity (veh/h)			986		285	515

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	578	360	43
Volume Left	0	12	11
Volume Right	11	0	33
cSH	1700	986	429
Volume to Capacity	0.34	0.01	0.10
Queue Length 95th (ft)	0	1	8
Control Delay (s)	0.0	0.4	14.3
Lane LOS		A	B
Approach Delay (s)	0.0	0.4	14.3
Approach LOS			B

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	38.1%	ICU Level of Service	A
Analysis Period (min)	15		

AWD = 11.3 Los B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	340	5	30	447	5	16
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	370	5	33	486	5	17
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			375		923	372
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			375		923	372
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		98	97
cM capacity (veh/h)			1173		289	669

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	375	518	23
Volume Left	0	33	5
Volume Right	5	0	17
cSH	1700	1173	509
Volume to Capacity	0.22	0.03	0.04
Queue Length 95th (ft)	0	2	4
Control Delay (s)	0.0	0.8	12.4
Lane LOS		A	B
Approach Delay (s)	0.0	0.8	12.4
Approach LOS			B

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	56.7%	ICU Level of Service	B
Analysis Period (min)	15		

AWD = 5.6 LOS A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00		1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85		0.93		1.00	0.91	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99		0.95	1.00	
Satd. Flow (prot)	1736	3442		1736	1827	1553		1676		1736	1662	
Flt Permitted	0.54	1.00		0.29	1.00	1.00		0.95		0.70	1.00	
Satd. Flow (perm)	982	3442		525	1827	1553		1607		1283	1662	
Volume (vph)	70	592	35	70	231	45	25	40	80	192	50	75
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	76	643	38	76	251	49	27	43	87	209	54	82
RTOR Reduction (vph)	0	8	0	0	0	32	0	42	0	0	40	0
Lane Group Flow (vph)	76	673	0	76	251	17	0	115	0	209	96	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	21.1	21.1		21.1	21.1	21.1		30.9		30.9	30.9	
Effective Green, g (s)	21.1	21.1		21.1	21.1	21.1		30.9		30.9	30.9	
Actuated g/C Ratio	0.35	0.35		0.35	0.35	0.35		0.52		0.52	0.52	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	345	1210		185	642	546		828		661	856	
v/s Ratio Prot		c0.20			0.14						0.06	
v/s Ratio Perm	0.08			0.14		0.01		0.07		c0.16		
v/c Ratio	0.22	0.56		0.41	0.39	0.03		0.14		0.32	0.11	
Uniform Delay, d1	13.7	15.7		14.7	14.6	12.8		7.6		8.4	7.5	
Progression Factor	1.00	1.00		0.34	0.53	0.07		1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.6		1.4	0.4	0.0		0.3		1.3	0.3	
Delay (s)	14.0	16.2		6.5	8.1	0.9		7.9		9.7	7.8	
Level of Service	B	B		A	A	A		A		A	A	
Approach Delay (s)		16.0			6.8			7.9			8.9	
Approach LOS		B			A			A			A	

Intersection Summary			
HCM Average Control Delay	11.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00		1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85		0.94		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99		0.95	1.00	
Satd. Flow (prot)	1736	3441		1736	1827	1553		1699		1736	1636	
Flt Permitted	0.32	1.00		0.48	1.00	1.00		0.93		0.73	1.00	
Satd. Flow (perm)	591	3441		883	1827	1553		1597		1342	1636	
Volume (vph)	55	406	25	80	612	247	20	35	45	95	35	80
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	60	441	27	87	665	268	22	38	49	103	38	87
RTOR Reduction (vph)	0	7	0	0	0	94	0	38	0	0	68	0
Lane Group Flow (vph)	60	461	0	87	665	174	0	71	0	103	57	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	38.9	38.9		38.9	38.9	38.9		13.1		13.1	13.1	
Effective Green, g (s)	38.9	38.9		38.9	38.9	38.9		13.1		13.1	13.1	
Actuated g/C Ratio	0.65	0.65		0.65	0.65	0.65		0.22		0.22	0.22	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	383	2231		572	1185	1007		349		293	357	
v/s Ratio Prot		0.13			c0.36						0.03	
v/s Ratio Perm	0.10			0.10		0.11		0.04		c0.08		
v/c Ratio	0.16	0.21		0.15	0.56	0.17		0.20		0.35	0.16	
Uniform Delay, d1	4.1	4.3		4.1	5.8	4.2		19.2		19.9	19.0	
Progression Factor	1.00	1.00		0.13	0.23	0.00		1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.0		0.1	0.4	0.1		1.3		3.3	1.0	
Delay (s)	4.3	4.3		0.6	1.7	0.1		20.5		23.1	19.9	
Level of Service	A	A		A	A	A		C		C	B	
Approach Delay (s)		4.3			1.2			20.5			21.4	
Approach LOS		A			A			C			C	

Intersection Summary				
HCM Average Control Delay	5.6	HCM Level of Service	A	
HCM Volume to Capacity ratio	0.51			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	57.9%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1736	3471	3389		1736	1553
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1736	3471	3389		1736	1553
Volume (vph)	75	754	296	55	61	45
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	820	322	60	66	49
RTOR Reduction (vph)	0	0	27	0	0	32
Lane Group Flow (vph)	82	820	355	0	66	17
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Turn Type	Prot					Perm
Protected Phases	7	4	8		6	
Permitted Phases						6
Actuated Green, G (s)	10.3	31.1	16.8		20.9	20.9
Effective Green, g (s)	10.3	31.1	16.8		20.9	20.9
Actuated g/C Ratio	0.17	0.52	0.28		0.35	0.35
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	298	1799	949		605	541
v/s Ratio Prot	0.05	c0.24	0.10		c0.04	
v/s Ratio Perm						0.01
v/c Ratio	0.28	0.46	0.37		0.11	0.03
Uniform Delay, d1	21.6	9.1	17.4		13.2	12.9
Progression Factor	0.72	0.51	1.00		1.00	1.00
Incremental Delay, d2	0.5	0.2	0.2		0.4	0.1
Delay (s)	16.0	4.8	17.6		13.6	13.0
Level of Service	B	A	B		B	B
Approach Delay (s)		5.8	17.6		13.3	
Approach LOS		A	B		B	

Intersection Summary			
HCM Average Control Delay	9.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	30.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1736	3471	3416		1736	1553
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1736	3471	3416		1736	1553
Volume (vph)	90	476	899	106	70	55
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	98	517	977	115	76	60
RTOR Reduction (vph)	0	0	17	0	0	44
Lane Group Flow (vph)	98	517	1075	0	76	16
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Turn Type	Prot					Perm
Protected Phases	7	4	8		6	
Permitted Phases						6
Actuated Green, G (s)	7.5	35.7	24.2		16.3	16.3
Effective Green, g (s)	7.5	35.7	24.2		16.3	16.3
Actuated g/C Ratio	0.12	0.60	0.40		0.27	0.27
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	217	2065	1378		472	422
v/s Ratio Prot	c0.06	0.15	c0.31		c0.04	
v/s Ratio Perm						0.01
v/c Ratio	0.45	0.25	0.78		0.16	0.04
Uniform Delay, d1	24.3	5.8	15.6		16.6	16.1
Progression Factor	1.00	0.79	1.00		1.00	1.00
Incremental Delay, d2	1.5	0.1	2.9		0.7	0.2
Delay (s)	25.9	4.6	18.5		17.4	16.3
Level of Service	C	A	B		B	B
Approach Delay (s)		8.0	18.5		16.9	
Approach LOS		A	B		B	

Intersection Summary			
HCM Average Control Delay	14.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	47.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0			4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.98			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00			0.95	1.00
Satd. Flow (prot)	1736	3467		1736	3471	1553		1791			1745	1553
Flt Permitted	0.95	1.00		0.95	1.00	1.00		1.00			0.96	1.00
Satd. Flow (perm)	1736	3467		1736	3471	1553		1791			1745	1553
Volume (vph)	260	640	5	5	191	125	5	45	6	397	25	140
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	283	696	5	5	208	136	5	49	7	432	27	152
RTOR Reduction (vph)	0	1	0	0	0	116	0	6	0	0	0	106
Lane Group Flow (vph)	283	700	0	5	208	20	0	55	0	0	459	46
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot			Prot		Perm	Split			Split		Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases						8						6
Actuated Green, G (s)	11.7	20.5		0.4	9.2	9.2		7.0			19.0	19.0
Effective Green, g (s)	11.7	20.5		0.4	9.2	9.2		7.0			19.0	19.0
Actuated g/C Ratio	0.19	0.33		0.01	0.15	0.15		0.11			0.30	0.30
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0		4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	323	1130		11	508	227		199			527	469
v/s Ratio Prot	c0.16	c0.20		0.00	0.06			c0.03			c0.26	
v/s Ratio Perm						0.01						0.03
v/c Ratio	0.88	0.62		0.45	0.41	0.09		0.28			0.87	0.10
Uniform Delay, d1	24.9	17.9		31.1	24.4	23.2		25.6			20.8	15.8
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	22.3	1.0		27.0	0.5	0.2		3.4			17.7	0.4
Delay (s)	47.2	18.9		58.2	24.9	23.4		29.0			38.5	16.2
Level of Service	D	B		E	C	C		C			D	B
Approach Delay (s)		27.1			24.8			29.0			32.9	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	28.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	62.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0			4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.97			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99			0.96	1.00
Satd. Flow (prot)	1736	3464		1736	3471	1553		1743			1749	1553
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.99			0.96	1.00
Satd. Flow (perm)	1736	3464		1736	3471	1553		1743			1749	1553
Volume (vph)	230	316	5	6	665	327	10	20	10	200	25	200
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	250	343	5	7	723	355	11	22	11	217	27	217
RTOR Reduction (vph)	0	2	0	0	0	253	0	10	0	0	0	179
Lane Group Flow (vph)	250	346	0	7	723	102	0	34	0	0	244	38
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot			Prot		Perm	Split			Split		Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases						8						6
Actuated Green, G (s)	11.3	28.8		0.4	17.9	17.9		6.0			11.0	11.0
Effective Green, g (s)	11.3	28.8		0.4	17.9	17.9		6.0			11.0	11.0
Actuated g/C Ratio	0.18	0.46		0.01	0.29	0.29		0.10			0.18	0.18
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0		4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	315	1604		11	999	447		168			309	275
v/s Ratio Prot	c0.14	0.10		0.00	c0.21			c0.02			c0.14	
v/s Ratio Perm						0.07						0.02
v/c Ratio	0.79	0.22		0.64	0.72	0.23		0.20			0.79	0.14
Uniform Delay, d1	24.3	10.0		30.8	19.9	16.9		25.9			24.5	21.6
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	12.9	0.1		81.7	2.6	0.3		2.7			18.3	1.1
Delay (s)	37.2	10.0		112.6	22.6	17.1		28.6			42.8	22.7
Level of Service	D	B		F	C	B		C			D	C
Approach Delay (s)		21.4			21.4			28.6			33.3	
Approach LOS		C			C			C			C	

Intersection Summary				
HCM Average Control Delay	24.0	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.69			
Actuated Cycle Length (s)	62.2	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	60.2%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	6	1040	233	10	15	5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	1130	253	11	16	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					TWLTL	
Median storage veh)					1	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	264				1402	259
vC1, stage 1 conf vol					259	
vC2, stage 2 conf vol					1143	
vCu, unblocked vol	264				1402	259
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	99				93	99
cM capacity (veh/h)	1288				248	775

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	7	1130	264	22
Volume Left	7	0	0	16
Volume Right	0	0	11	5
cSH	1288	1700	1700	299
Volume to Capacity	0.01	0.66	0.16	0.07
Queue Length 95th (ft)	0	0	0	6
Control Delay (s)	7.8	0.0	0.0	18.0
Lane LOS	A			C
Approach Delay (s)	0.0		0.0	18.0
Approach LOS				C

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	64.7%	ICU Level of Service	C
Analysis Period (min)	15		

AWD = 19.3 sec

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	5	453	980	20	15	6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	492	1065	22	16	7
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					TWLTL	
Median storage veh)					1	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1087				1579	1076
vC1, stage 1 conf vol					1076	
vC2, stage 2 conf vol					503	
vCu, unblocked vol	1087				1579	1076
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	99				93	98
cM capacity (veh/h)	634				239	264

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	5	492	1087	23
Volume Left	5	0	0	16
Volume Right	0	0	22	7
cSH	634	1700	1700	246
Volume to Capacity	0.01	0.29	0.64	0.09
Queue Length 95th (ft)	1	0	0	8
Control Delay (s)	10.7	0.0	0.0	21.1
Lane LOS	B			C
Approach Delay (s)	0.1		0.0	21.1
Approach LOS				C

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	62.8%	ICU Level of Service	B
Analysis Period (min)	15		

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Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	474	9	9	289	7	27
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	515	10	10	314	8	29
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			525		854	520
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			525		854	520
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		98	95
cM capacity (veh/h)			1032		323	552

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	525	324	37
Volume Left	0	10	8
Volume Right	10	0	29
cSH	1700	1032	482
Volume to Capacity	0.31	0.01	0.08
Queue Length 95th (ft)	0	1	6
Control Delay (s)	0.0	0.4	13.1
Lane LOS		A	B
Approach Delay (s)	0.0	0.4	13.1
Approach LOS			B

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	35.5%	ICU Level of Service	A
Analysis Period (min)	15		

AWD = 10.4 LOS B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	307	2	28	404	1	15
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	334	2	30	439	1	16
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			336		835	335
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			336		835	335
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		100	98
cM capacity (veh/h)			1212		327	703

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	336	470	17
Volume Left	0	30	1
Volume Right	2	0	16
cSH	1700	1212	655
Volume to Capacity	0.20	0.03	0.03
Queue Length 95th (ft)	0	2	2
Control Delay (s)	0.0	0.8	10.6
Lane LOS		A	B
Approach Delay (s)	0.0	0.8	10.6
Approach LOS			B

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		

AWD = 4.3 LOS A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00		1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85		0.93		1.00	0.91	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99		0.95	1.00	
Satd. Flow (prot)	1736	3443		1736	1827	1553		1676		1736	1667	
Flt Permitted	0.54	1.00		0.29	1.00	1.00		0.95		0.67	1.00	
Satd. Flow (perm)	985	3443		526	1827	1553		1608		1220	1667	
Volume (vph)	64	537	31	65	210	43	24	34	71	173	47	66
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	70	584	34	71	228	47	26	37	77	188	51	72
RTOR Reduction (vph)	0	9	0	0	0	33	0	33	0	0	30	0
Lane Group Flow (vph)	70	609	0	71	228	14	0	107	0	188	93	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	17.4	17.4		17.4	17.4	17.4		34.6		34.6	34.6	
Effective Green, g (s)	17.4	17.4		17.4	17.4	17.4		34.6		34.6	34.6	
Actuated g/C Ratio	0.29	0.29		0.29	0.29	0.29		0.58		0.58	0.58	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	286	998		153	530	450		927		704	961	
v/s Ratio Prot		c0.18			0.12						0.06	
v/s Ratio Perm	0.07			0.13		0.01		0.07		c0.15		
v/c Ratio	0.24	0.61		0.46	0.43	0.03		0.12		0.27	0.10	
Uniform Delay, d1	16.3	18.4		17.5	17.3	15.3		5.8		6.4	5.7	
Progression Factor	1.00	1.00		0.37	0.49	0.05		1.00		1.00	1.00	
Incremental Delay, d2	0.4	1.1		2.2	0.6	0.0		0.3		0.9	0.2	
Delay (s)	16.7	19.4		8.7	9.0	0.7		6.0		7.3	5.9	
Level of Service	B	B		A	A	A		A		A	A	
Approach Delay (s)		19.2			7.8			6.0			6.7	
Approach LOS		B			A			A			A	

Intersection Summary			
HCM Average Control Delay	12.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	45.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00		1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85		0.94		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99		0.95	1.00	
Satd. Flow (prot)	1736	3442		1736	1827	1553		1694		1736	1634	
Flt Permitted	0.35	1.00		0.50	1.00	1.00		0.94		0.76	1.00	
Satd. Flow (perm)	648	3442		921	1827	1553		1603		1383	1634	
Volume (vph)	51	369	22	74	556	223	18	30	43	86	30	73
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	55	401	24	80	604	242	20	33	47	93	33	79
RTOR Reduction (vph)	0	7	0	0	0	89	0	36	0	0	61	0
Lane Group Flow (vph)	55	418	0	80	604	153	0	64	0	93	51	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	38.0	38.0		38.0	38.0	38.0		14.0		14.0	14.0	
Effective Green, g (s)	38.0	38.0		38.0	38.0	38.0		14.0		14.0	14.0	
Actuated g/C Ratio	0.63	0.63		0.63	0.63	0.63		0.23		0.23	0.23	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	410	2180		583	1157	984		374		323	381	
v/s Ratio Prot		0.12			c0.33						0.03	
v/s Ratio Perm	0.08			0.09		0.10		0.04		c0.07		
v/c Ratio	0.13	0.19		0.14	0.52	0.16		0.17		0.29	0.13	
Uniform Delay, d1	4.4	4.6		4.4	6.0	4.5		18.4		18.9	18.2	
Progression Factor	1.00	1.00		0.11	0.22	0.00		1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.0		0.1	0.3	0.0		1.0		2.2	0.7	
Delay (s)	4.6	4.6		0.6	1.6	0.1		19.4		21.1	18.9	
Level of Service	A	A		A	A	A		B		C	B	
Approach Delay (s)		4.6			1.1			19.4			19.9	
Approach LOS		A			A			B			B	

Intersection Summary				
HCM Average Control Delay	5.4	HCM Level of Service	A	
HCM Volume to Capacity ratio	0.46			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	54.5%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1736	3471	3390		1736	1553
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1736	3471	3390		1736	1553
Volume (vph)	68	682	270	50	54	43
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	74	741	293	54	59	47
RTOR Reduction (vph)	0	0	25	0	0	30
Lane Group Flow (vph)	74	741	322	0	59	17
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Turn Type	Prot					Perm
Protected Phases	7	4	8		6	
Permitted Phases						6
Actuated Green, G (s)	7.0	30.8	19.8		21.2	21.2
Effective Green, g (s)	7.0	30.8	19.8		21.2	21.2
Actuated g/C Ratio	0.12	0.51	0.33		0.35	0.35
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	203	1782	1119		613	549
v/s Ratio Prot	0.04	c0.21	0.09		c0.03	
v/s Ratio Perm						0.01
v/c Ratio	0.36	0.42	0.29		0.10	0.03
Uniform Delay, d1	24.4	9.0	14.9		13.0	12.7
Progression Factor	0.63	0.56	1.00		1.00	1.00
Incremental Delay, d2	1.0	0.1	0.1		0.3	0.1
Delay (s)	16.4	5.2	15.0		13.3	12.8
Level of Service	B	A	B		B	B
Approach Delay (s)		6.2	15.0		13.1	
Approach LOS		A	B		B	

Intersection Summary			
HCM Average Control Delay	9.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	28.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1736	3471	3417		1736	1553
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1736	3471	3417		1736	1553
Volume (vph)	83	432	815	95	63	50
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	90	470	886	103	68	54
RTOR Reduction (vph)	0	0	18	0	0	38
Lane Group Flow (vph)	90	470	971	0	68	16
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Turn Type	Prot					Perm
Protected Phases	7	4	8		6	
Permitted Phases						6
Actuated Green, G (s)	7.4	33.8	22.4		18.2	18.2
Effective Green, g (s)	7.4	33.8	22.4		18.2	18.2
Actuated g/C Ratio	0.12	0.56	0.37		0.30	0.30
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	214	1955	1276		527	471
v/s Ratio Prot	c0.05	0.14	c0.28		c0.04	
v/s Ratio Perm						0.01
v/c Ratio	0.42	0.24	0.76		0.13	0.03
Uniform Delay, d1	24.3	6.6	16.5		15.2	14.7
Progression Factor	1.01	1.02	1.00		1.00	1.00
Incremental Delay, d2	1.3	0.1	2.7		0.5	0.1
Delay (s)	25.9	6.8	19.2		15.7	14.9
Level of Service	C	A	B		B	B
Approach Delay (s)		9.9	19.2		15.3	
Approach LOS		A	B		B	

Intersection Summary			
HCM Average Control Delay	15.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	43.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0			4.0	4.0
Lane Util. Factor	1.00	0.95			0.95	1.00		1.00			1.00	1.00
Frt	1.00	1.00			1.00	0.85		0.99			1.00	0.85
Flt Protected	0.95	1.00			1.00	1.00		1.00			0.95	1.00
Satd. Flow (prot)	1736	3468			3471	1553		1802			1745	1553
Flt Permitted	0.95	1.00			1.00	1.00		1.00			0.95	1.00
Satd. Flow (perm)	1736	3468			3471	1553		1802			1745	1553
Volume (vph)	235	579	4	0	174	113	4	43	4	361	21	128
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	255	629	4	0	189	123	4	47	4	392	23	139
RTOR Reduction (vph)	0	1	0	0	0	111	0	4	0	0	0	95
Lane Group Flow (vph)	255	632	0	0	189	12	0	51	0	0	415	44
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot			Prot		Perm	Split			Split		Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases						8						6
Actuated Green, G (s)	11.4	21.4			6.0	6.0		7.0			19.0	19.0
Effective Green, g (s)	11.4	21.4			6.0	6.0		7.0			19.0	19.0
Actuated g/C Ratio	0.19	0.36			0.10	0.10		0.12			0.32	0.32
Clearance Time (s)	4.0	4.0			4.0	4.0		4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	333	1249			351	157		212			558	497
v/s Ratio Prot	c0.15	c0.18			0.05			c0.03			c0.24	
v/s Ratio Perm						0.01						0.03
v/c Ratio	0.77	0.51			0.54	0.08		0.24			0.74	0.09
Uniform Delay, d1	22.7	14.9			25.4	24.2		23.8			18.0	14.1
Progression Factor	1.00	1.00			1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	10.1	0.3			1.6	0.2		2.7			8.7	0.4
Delay (s)	32.8	15.2			27.0	24.4		26.5			26.7	14.5
Level of Service	C	B			C	C		C			C	B
Approach Delay (s)		20.2			26.0			26.5			23.7	
Approach LOS		C			C			C			C	

Intersection Summary				
HCM Average Control Delay	22.5	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.61			
Actuated Cycle Length (s)	59.4	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	57.2%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0			4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.97			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99			0.96	1.00
Satd. Flow (prot)	1736	3463		1736	3471	1553		1743			1749	1553
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.99			0.96	1.00
Satd. Flow (perm)	1736	3463		1736	3471	1553		1743			1749	1553
Volume (vph)	209	288	5	5	603	295	8	17	8	180	21	181
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	227	313	5	5	655	321	9	18	9	196	23	197
RTOR Reduction (vph)	0	2	0	0	0	232	0	8	0	0	0	163
Lane Group Flow (vph)	227	316	0	5	655	89	0	28	0	0	219	34
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot			Prot		Perm	Split			Split		Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases						8						6
Actuated Green, G (s)	9.5	25.0		0.4	15.9	15.9		6.0			10.0	10.0
Effective Green, g (s)	9.5	25.0		0.4	15.9	15.9		6.0			10.0	10.0
Actuated g/C Ratio	0.17	0.44		0.01	0.28	0.28		0.10			0.17	0.17
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0		4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	287	1508		12	961	430		182			305	271
v/s Ratio Prot	c0.13	0.09		0.00	c0.19			c0.02			c0.13	
v/s Ratio Perm						0.06						0.02
v/c Ratio	0.79	0.21		0.42	0.68	0.21		0.15			0.72	0.13
Uniform Delay, d1	23.0	10.1		28.4	18.5	15.9		23.4			22.4	20.0
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	13.8	0.1		21.8	2.0	0.2		1.8			13.6	1.0
Delay (s)	36.8	10.1		50.2	20.5	16.2		25.2			35.9	21.0
Level of Service	D	B		D	C	B		C			D	C
Approach Delay (s)		21.2			19.2			25.2			28.9	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM Average Control Delay	21.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	57.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	56.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	3	941	212	7	15	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	1023	230	8	16	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					TWLTL	
Median storage veh)					1	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	238				1264	234
vC1, stage 1 conf vol					234	
vC2, stage 2 conf vol					1029	
vCu, unblocked vol	238				1264	234
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				94	100
cM capacity (veh/h)	1317				282	800

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	3	1023	238	20
Volume Left	3	0	0	16
Volume Right	0	0	8	3
cSH	1317	1700	1700	316
Volume to Capacity	0.00	0.60	0.14	0.06
Queue Length 95th (ft)	0	0	0	5
Control Delay (s)	7.7	0.0	0.0	17.1
Lane LOS	A			C
Approach Delay (s)	0.0		0.0	17.1
Approach LOS				C

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	59.5%	ICU Level of Service	B
Analysis Period (min)	15		

AM = 59.6 = C

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	4	410	886	17	15	7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	446	963	18	16	8
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					TWLTL	
Median storage veh)					1	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	982				1427	972
vC1, stage 1 conf vol					972	
vC2, stage 2 conf vol					454	
vCu, unblocked vol	982				1427	972
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	99				94	97
cM capacity (veh/h)	695				271	304

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	4	446	982	24
Volume Left	4	0	0	16
Volume Right	0	0	18	8
cSH	695	1700	1700	280
Volume to Capacity	0.01	0.26	0.58	0.09
Queue Length 95th (ft)	0	0	0	7
Control Delay (s)	10.2	0.0	0.0	19.0
Lane LOS	B			C
Approach Delay (s)	0.1		0.0	19.0
Approach LOS				C

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	57.7%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	522	10	11	320	10	30
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	567	11	12	348	11	33
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			578		945	573
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			578		945	573
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		96	94
cM capacity (veh/h)			986		285	515

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	578	360	43
Volume Left	0	12	11
Volume Right	11	0	33
cSH	1700	986	429
Volume to Capacity	0.34	0.01	0.10
Queue Length 95th (ft)	0	1	8
Control Delay (s)	0.0	0.4	14.3
Lane LOS		A	B
Approach Delay (s)	0.0	0.4	14.3
Approach LOS			B

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	38.1%	ICU Level of Service	A
Analysis Period (min)	15		

AWD = 11.3 LOS B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	340	5	30	447	5	16
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	370	5	33	486	5	17
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			375		923	372
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			375		923	372
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		98	97
cM capacity (veh/h)			1173		289	669

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	375	518	23
Volume Left	0	33	5
Volume Right	5	0	17
cSH	1700	1173	509
Volume to Capacity	0.22	0.03	0.04
Queue Length 95th (ft)	0	2	4
Control Delay (s)	0.0	0.8	12.4
Lane LOS		A	B
Approach Delay (s)	0.0	0.8	12.4
Approach LOS			B

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	56.7%	ICU Level of Service	B
Analysis Period (min)	15		

AWD = 5.6 LOS A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00		1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85		0.93		1.00	0.91	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99		0.95	1.00	
Satd. Flow (prot)	1736	3442		1736	1827	1553		1676		1736	1662	
Flt Permitted	0.54	1.00		0.29	1.00	1.00		0.95		0.70	1.00	
Satd. Flow (perm)	982	3442		525	1827	1553		1607		1283	1662	
Volume (vph)	70	592	35	70	231	45	25	40	80	192	50	75
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	76	643	38	76	251	49	27	43	87	209	54	82
RTOR Reduction (vph)	0	8	0	0	0	32	0	42	0	0	40	0
Lane Group Flow (vph)	76	673	0	76	251	17	0	115	0	209	96	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	21.1	21.1		21.1	21.1	21.1		30.9		30.9	30.9	
Effective Green, g (s)	21.1	21.1		21.1	21.1	21.1		30.9		30.9	30.9	
Actuated g/C Ratio	0.35	0.35		0.35	0.35	0.35		0.52		0.52	0.52	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	345	1210		185	642	546		828		661	856	
v/s Ratio Prot		c0.20			0.14						0.06	
v/s Ratio Perm	0.08			0.14		0.01		0.07		c0.16		
v/c Ratio	0.22	0.56		0.41	0.39	0.03		0.14		0.32	0.11	
Uniform Delay, d1	13.7	15.7		14.7	14.6	12.8		7.6		8.4	7.5	
Progression Factor	1.00	1.00		0.34	0.53	0.07		1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.6		1.4	0.4	0.0		0.3		1.3	0.3	
Delay (s)	14.0	16.2		6.5	8.1	0.9		7.9		9.7	7.8	
Level of Service	B	B		A	A	A		A		A	A	
Approach Delay (s)		16.0			6.8			7.9			8.9	
Approach LOS		B			A			A			A	

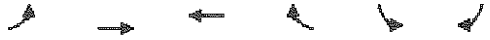
Intersection Summary			
HCM Average Control Delay	11.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00		1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85		0.94		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99		0.95	1.00	
Satd. Flow (prot)	1736	3441		1736	1827	1553		1699		1736	1636	
Flt Permitted	0.32	1.00		0.48	1.00	1.00		0.93		0.73	1.00	
Satd. Flow (perm)	591	3441		883	1827	1553		1597		1342	1636	
Volume (vph)	55	406	25	80	612	247	20	35	45	95	35	80
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	60	441	27	87	665	268	22	38	49	103	38	87
RTOR Reduction (vph)	0	7	0	0	0	94	0	38	0	0	68	0
Lane Group Flow (vph)	60	461	0	87	665	174	0	71	0	103	57	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	38.9	38.9		38.9	38.9	38.9		13.1		13.1	13.1	
Effective Green, g (s)	38.9	38.9		38.9	38.9	38.9		13.1		13.1	13.1	
Actuated g/C Ratio	0.65	0.65		0.65	0.65	0.65		0.22		0.22	0.22	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	383	2231		572	1185	1007		349		293	357	
v/s Ratio Prot		0.13			c0.36						0.03	
v/s Ratio Perm	0.10			0.10		0.11		0.04		c0.08		
v/c Ratio	0.16	0.21		0.15	0.56	0.17		0.20		0.35	0.16	
Uniform Delay, d1	4.1	4.3		4.1	5.8	4.2		19.2		19.9	19.0	
Progression Factor	1.00	1.00		0.13	0.23	0.00		1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.0		0.1	0.4	0.1		1.3		3.3	1.0	
Delay (s)	4.3	4.3		0.6	1.7	0.1		20.5		23.1	19.9	
Level of Service	A	A		A	A	A		C		C	B	
Approach Delay (s)		4.3			1.2			20.5			21.4	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	5.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1736	3471	3389		1736	1553
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1736	3471	3389		1736	1553
Volume (vph)	75	754	296	55	61	45
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	820	322	60	66	49
RTOR Reduction (vph)	0	0	27	0	0	32
Lane Group Flow (vph)	82	820	355	0	66	17
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Turn Type	Prot					Perm
Protected Phases	7	4	8		6	
Permitted Phases						6
Actuated Green, G (s)	10.3	31.1	16.8		20.9	20.9
Effective Green, g (s)	10.3	31.1	16.8		20.9	20.9
Actuated g/C Ratio	0.17	0.52	0.28		0.35	0.35
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	298	1799	949		605	541
v/s Ratio Prot	0.05	c0.24	0.10		c0.04	
v/s Ratio Perm						0.01
v/c Ratio	0.28	0.46	0.37		0.11	0.03
Uniform Delay, d1	21.6	9.1	17.4		13.2	12.9
Progression Factor	0.72	0.51	1.00		1.00	1.00
Incremental Delay, d2	0.5	0.2	0.2		0.4	0.1
Delay (s)	16.0	4.8	17.6		13.6	13.0
Level of Service	B	A	B		B	B
Approach Delay (s)		5.8	17.6		13.3	
Approach LOS		A	B		B	

Intersection Summary			
HCM Average Control Delay	9.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	30.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1736	3471	3416		1736	1553
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1736	3471	3416		1736	1553
Volume (vph)	90	476	899	106	70	55
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	98	517	977	115	76	60
RTOR Reduction (vph)	0	0	17	0	0	44
Lane Group Flow (vph)	98	517	1075	0	76	16
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Turn Type	Prot					Perm
Protected Phases	7	4	8		6	
Permitted Phases						6
Actuated Green, G (s)	7.5	35.7	24.2		16.3	16.3
Effective Green, g (s)	7.5	35.7	24.2		16.3	16.3
Actuated g/C Ratio	0.12	0.60	0.40		0.27	0.27
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	217	2065	1378		472	422
v/s Ratio Prot	c0.06	0.15	c0.31		c0.04	
v/s Ratio Perm						0.01
v/c Ratio	0.45	0.25	0.78		0.16	0.04
Uniform Delay, d1	24.3	5.8	15.6		16.6	16.1
Progression Factor	1.00	0.79	1.00		1.00	1.00
Incremental Delay, d2	1.5	0.1	2.9		0.7	0.2
Delay (s)	25.9	4.6	18.5		17.4	16.3
Level of Service	C	A	B		B	B
Approach Delay (s)		8.0	18.5		16.9	
Approach LOS		A	B		B	

Intersection Summary			
HCM Average Control Delay	14.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	47.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0			4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.98			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00			0.96	1.00
Satd. Flow (prot)	1736	3467		1736	3471	1553		1791			1745	1553
Flt Permitted	0.95	1.00		0.95	1.00	1.00		1.00			0.96	1.00
Satd. Flow (perm)	1736	3467		1736	3471	1553		1791			1745	1553
Volume (vph)	260	640	5	5	191	125	5	45	6	397	25	140
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	283	696	5	5	208	136	5	49	7	432	27	152
RTOR Reduction (vph)	0	1	0	0	0	116	0	6	0	0	0	106
Lane Group Flow (vph)	283	700	0	5	208	20	0	55	0	0	459	46
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot			Prot		Perm	Split			Split		Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases						8						6
Actuated Green, G (s)	11.7	20.5		0.4	9.2	9.2		7.0			19.0	19.0
Effective Green, g (s)	11.7	20.5		0.4	9.2	9.2		7.0			19.0	19.0
Actuated g/C Ratio	0.19	0.33		0.01	0.15	0.15		0.11			0.30	0.30
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0		4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	323	1130		11	508	227		199			527	469
v/s Ratio Prot	c0.16	c0.20		0.00	0.06			c0.03			c0.26	
v/s Ratio Perm						0.01						0.03
v/c Ratio	0.88	0.62		0.45	0.41	0.09		0.28			0.87	0.10
Uniform Delay, d1	24.9	17.9		31.1	24.4	23.2		25.6			20.8	15.8
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	22.3	1.0		27.0	0.5	0.2		3.4			17.7	0.4
Delay (s)	47.2	18.9		58.2	24.9	23.4		29.0			38.5	16.2
Level of Service	D	B		E	C	C		C			D	B
Approach Delay (s)		27.1			24.8			29.0			32.9	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	28.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	62.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0			4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.97			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99			0.96	1.00
Satd. Flow (prot)	1736	3464		1736	3471	1553		1743			1749	1553
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.99			0.96	1.00
Satd. Flow (perm)	1736	3464		1736	3471	1553		1743			1749	1553
Volume (vph)	230	316	5	6	665	327	10	20	10	200	25	200
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	250	343	5	7	723	355	11	22	11	217	27	217
RTOR Reduction (vph)	0	2	0	0	0	253	0	10	0	0	0	179
Lane Group Flow (vph)	250	346	0	7	723	102	0	34	0	0	244	38
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot			Prot		Perm	Split			Split		Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases						8						6
Actuated Green, G (s)	11.3	28.8		0.4	17.9	17.9		6.0			11.0	11.0
Effective Green, g (s)	11.3	28.8		0.4	17.9	17.9		6.0			11.0	11.0
Actuated g/C Ratio	0.18	0.46		0.01	0.29	0.29		0.10			0.18	0.18
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0		4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	315	1604		11	999	447		168			309	275
v/s Ratio Prot	c0.14	0.10		0.00	c0.21			c0.02			c0.14	
v/s Ratio Perm						0.07						0.02
v/c Ratio	0.79	0.22		0.64	0.72	0.23		0.20			0.79	0.14
Uniform Delay, d1	24.3	10.0		30.8	19.9	16.9		25.9			24.5	21.6
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	12.9	0.1		81.7	2.6	0.3		2.7			18.3	1.1
Delay (s)	37.2	10.0		112.6	22.6	17.1		28.6			42.8	22.7
Level of Service	D	B		F	C	B		C			D	C
Approach Delay (s)		21.4			21.4			28.6			33.3	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	24.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	62.2	Sum of lost time (s)	16.0
Intersection Capacity Utilization	60.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	6	1040	233	10	15	5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	1130	253	11	16	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					TWLTL	
Median storage veh)					1	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	264				1402	259
vC1, stage 1 conf vol					259	
vC2, stage 2 conf vol					1143	
vCu, unblocked vol	264				1402	259
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	99				93	99
cM capacity (veh/h)	1288				248	775

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	7	1130	264	22
Volume Left	7	0	0	16
Volume Right	0	0	11	5
cSH	1288	1700	1700	299
Volume to Capacity	0.01	0.66	0.16	0.07
Queue Length 95th (ft)	0	0	0	6
Control Delay (s)	7.8	0.0	0.0	18.0
Lane LOS	A			C
Approach Delay (s)	0.0		0.0	18.0
Approach LOS				C

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	64.7%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	5	453	980	20	15	6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	492	1065	22	16	7
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					TWLTL	
Median storage veh)					1	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1087				1579	1076
vC1, stage 1 conf vol					1076	
vC2, stage 2 conf vol					503	
vCu, unblocked vol	1087				1579	1076
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	99				93	98
cM capacity (veh/h)	634				239	264

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	5	492	1087	23
Volume Left	5	0	0	16
Volume Right	0	0	22	7
cSH	634	1700	1700	246
Volume to Capacity	0.01	0.29	0.64	0.09
Queue Length 95th (ft)	1	0	0	8
Control Delay (s)	10.7	0.0	0.0	21.1
Lane LOS	B			C
Approach Delay (s)	0.1		0.0	21.1
Approach LOS				C

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	62.8%	ICU Level of Service	B
Analysis Period (min)	15		

AM - 19.2 = LOS C

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	474	9	9	289	7	27
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	515	10	10	314	8	29
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			525		854	520
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			525		854	520
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		98	95
cM capacity (veh/h)			1032		323	552

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	525	324	37
Volume Left	0	10	8
Volume Right	10	0	29
cSH	1700	1032	482
Volume to Capacity	0.31	0.01	0.08
Queue Length 95th (ft)	0	1	6
Control Delay (s)	0.0	0.4	13.1
Lane LOS		A	B
Approach Delay (s)	0.0	0.4	13.1
Approach LOS			B

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	35.5%	ICU Level of Service	A
Analysis Period (min)	15		

AWD = 10.4 LOS B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	307	2	28	404	1	15
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	334	2	30	439	1	16
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			336		835	335
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			336		835	335
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		100	98
cM capacity (veh/h)			1212		327	703

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	336	470	17
Volume Left	0	30	1
Volume Right	2	0	16
cSH	1700	1212	655
Volume to Capacity	0.20	0.03	0.03
Queue Length 95th (ft)	0	2	2
Control Delay (s)	0.0	0.8	10.6
Lane LOS		A	B
Approach Delay (s)	0.0	0.8	10.6
Approach LOS			B

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		

AWD = 4.3 Los A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00		1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85		0.93		1.00	0.91	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99		0.95	1.00	
Satd. Flow (prot)	1736	3443		1736	1827	1553		1676		1736	1667	
Flt Permitted	0.54	1.00		0.29	1.00	1.00		0.95		0.67	1.00	
Satd. Flow (perm)	985	3443		526	1827	1553		1608		1220	1667	
Volume (vph)	64	537	31	65	210	43	24	34	71	173	47	66
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	70	584	34	71	228	47	26	37	77	188	51	72
RTOR Reduction (vph)	0	9	0	0	0	33	0	33	0	0	30	0
Lane Group Flow (vph)	70	609	0	71	228	14	0	107	0	188	93	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	17.4	17.4		17.4	17.4	17.4		34.6		34.6	34.6	
Effective Green, g (s)	17.4	17.4		17.4	17.4	17.4		34.6		34.6	34.6	
Actuated g/C Ratio	0.29	0.29		0.29	0.29	0.29		0.58		0.58	0.58	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	286	998		153	530	450		927		704	961	
v/s Ratio Prot		c0.18			0.12						0.06	
v/s Ratio Perm	0.07			0.13		0.01		0.07		c0.15		
v/c Ratio	0.24	0.61		0.46	0.43	0.03		0.12		0.27	0.10	
Uniform Delay, d1	16.3	18.4		17.5	17.3	15.3		5.8		6.4	5.7	
Progression Factor	1.00	1.00		0.37	0.49	0.05		1.00		1.00	1.00	
Incremental Delay, d2	0.4	1.1		2.2	0.6	0.0		0.3		0.9	0.2	
Delay (s)	16.7	19.4		8.7	9.0	0.7		6.0		7.3	5.9	
Level of Service	B	B		A	A	A		A		A	A	
Approach Delay (s)		19.2			7.8			6.0			6.7	
Approach LOS		B			A			A			A	

Intersection Summary			
HCM Average Control Delay	12.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	45.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00		1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85		0.94		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99		0.95	1.00	
Satd. Flow (prot)	1736	3442		1736	1827	1553		1694		1736	1634	
Flt Permitted	0.35	1.00		0.50	1.00	1.00		0.94		0.76	1.00	
Satd. Flow (perm)	648	3442		921	1827	1553		1603		1383	1634	
Volume (vph)	51	369	22	74	556	223	18	30	43	86	30	73
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	55	401	24	80	604	242	20	33	47	93	33	79
RTOR Reduction (vph)	0	7	0	0	0	89	0	36	0	0	61	0
Lane Group Flow (vph)	55	418	0	80	604	153	0	64	0	93	51	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	38.0	38.0		38.0	38.0	38.0		14.0		14.0	14.0	
Effective Green, g (s)	38.0	38.0		38.0	38.0	38.0		14.0		14.0	14.0	
Actuated g/C Ratio	0.63	0.63		0.63	0.63	0.63		0.23		0.23	0.23	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	410	2180		583	1157	984		374		323	381	
v/s Ratio Prot		0.12			c0.33						0.03	
v/s Ratio Perm	0.08			0.09		0.10		0.04		c0.07		
v/c Ratio	0.13	0.19		0.14	0.52	0.16		0.17		0.29	0.13	
Uniform Delay, d1	4.4	4.6		4.4	6.0	4.5		18.4		18.9	18.2	
Progression Factor	1.00	1.00		0.11	0.22	0.00		1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.0		0.1	0.3	0.0		1.0		2.2	0.7	
Delay (s)	4.6	4.6		0.6	1.6	0.1		19.4		21.1	18.9	
Level of Service	A	A		A	A	A		B		C	B	
Approach Delay (s)		4.6			1.1			19.4			19.9	
Approach LOS		A			A			B			B	

Intersection Summary				
HCM Average Control Delay	5.4	HCM Level of Service	A	
HCM Volume to Capacity ratio	0.46			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	54.5%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1736	3471	3390		1736	1553
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1736	3471	3390		1736	1553
Volume (vph)	68	682	270	50	53	43
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	74	741	293	54	58	47
RTOR Reduction (vph)	0	0	25	0	0	30
Lane Group Flow (vph)	74	741	322	0	58	17
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Turn Type	Prot					Perm
Protected Phases	7	4	8		6	
Permitted Phases						6
Actuated Green, G (s)	7.0	30.8	19.8		21.2	21.2
Effective Green, g (s)	7.0	30.8	19.8		21.2	21.2
Actuated g/C Ratio	0.12	0.51	0.33		0.35	0.35
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	203	1782	1119		613	549
v/s Ratio Prot	0.04	c0.21	0.09		c0.03	
v/s Ratio Perm						0.01
v/c Ratio	0.36	0.42	0.29		0.09	0.03
Uniform Delay, d1	24.4	9.0	14.9		13.0	12.7
Progression Factor	0.63	0.56	1.00		1.00	1.00
Incremental Delay, d2	1.0	0.1	0.1		0.3	0.1
Delay (s)	16.4	5.2	15.0		13.3	12.8
Level of Service	B	A	B		B	B
Approach Delay (s)		6.2	15.0		13.1	
Approach LOS		A	B		B	

Intersection Summary			
HCM Average Control Delay	9.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	28.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1736	3471	3417		1736	1553
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1736	3471	3417		1736	1553
Volume (vph)	83	432	815	94	63	50
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	90	470	886	102	68	54
RTOR Reduction (vph)	0	0	17	0	0	38
Lane Group Flow (vph)	90	470	971	0	68	16
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Turn Type	Prot					Perm
Protected Phases	7	4	8		6	
Permitted Phases						6
Actuated Green, G (s)	7.4	33.8	22.4		18.2	18.2
Effective Green, g (s)	7.4	33.8	22.4		18.2	18.2
Actuated g/C Ratio	0.12	0.56	0.37		0.30	0.30
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	214	1955	1276		527	471
v/s Ratio Prot	c0.05	0.14	c0.28		c0.04	
v/s Ratio Perm						0.01
v/c Ratio	0.42	0.24	0.76		0.13	0.03
Uniform Delay, d1	24.3	6.6	16.5		15.2	14.7
Progression Factor	1.01	1.02	1.00		1.00	1.00
Incremental Delay, d2	1.3	0.1	2.7		0.5	0.1
Delay (s)	25.9	6.8	19.2		15.7	14.9
Level of Service	C	A	B		B	B
Approach Delay (s)		9.9	19.2		15.3	
Approach LOS		A	B		B	

Intersection Summary			
HCM Average Control Delay	15.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	43.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0			4.0	4.0
Lane Util. Factor	1.00	0.95			0.95	1.00		1.00			1.00	1.00
Frt	1.00	1.00			1.00	0.85		0.99			1.00	0.85
Flt Protected	0.95	1.00			1.00	1.00		1.00			0.95	1.00
Satd. Flow (prot)	1736	3468			3471	1553		1802			1745	1553
Flt Permitted	0.95	1.00			1.00	1.00		1.00			0.95	1.00
Satd. Flow (perm)	1736	3468			3471	1553		1802			1745	1553
Volume (vph)	235	578	4	0	174	113	4	43	4	361	21	128
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	255	628	4	0	189	123	4	47	4	392	23	139
RTOR Reduction (vph)	0	1	0	0	0	111	0	4	0	0	0	95
Lane Group Flow (vph)	255	631	0	0	189	12	0	51	0	0	415	44
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot			Prot		Perm	Split			Split		Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases						8						6
Actuated Green, G (s)	11.4	21.4			6.0	6.0		7.0			19.0	19.0
Effective Green, g (s)	11.4	21.4			6.0	6.0		7.0			19.0	19.0
Actuated g/C Ratio	0.19	0.36			0.10	0.10		0.12			0.32	0.32
Clearance Time (s)	4.0	4.0			4.0	4.0		4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	333	1249			351	157		212			558	497
v/s Ratio Prot	c0.15	c0.18			0.05			c0.03			c0.24	
v/s Ratio Perm						0.01						0.03
v/c Ratio	0.77	0.51			0.54	0.08		0.24			0.74	0.09
Uniform Delay, d1	22.7	14.9			25.4	24.2		23.8			18.0	14.1
Progression Factor	1.00	1.00			1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	10.1	0.3			1.6	0.2		2.7			8.7	0.4
Delay (s)	32.8	15.2			27.0	24.4		26.5			26.7	14.5
Level of Service	C	B			C	C		C			C	B
Approach Delay (s)		20.2			26.0			26.5			23.7	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	22.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	59.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	57.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0			4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.97			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99			0.96	1.00
Satd. Flow (prot)	1736	3463		1736	3471	1553		1743			1749	1553
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.99			0.96	1.00
Satd. Flow (perm)	1736	3463		1736	3471	1553		1743			1749	1553
Volume (vph)	209	288	5	5	602	295	8	17	8	180	21	181
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	227	313	5	5	654	321	9	18	9	196	23	197
RTOR Reduction (vph)	0	2	0	0	0	232	0	8	0	0	0	163
Lane Group Flow (vph)	227	316	0	5	654	89	0	28	0	0	219	34
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot			Prot		Perm	Split			Split		Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases						8						6
Actuated Green, G (s)	9.5	25.0		0.4	15.9	15.9		6.0			10.0	10.0
Effective Green, g (s)	9.5	25.0		0.4	15.9	15.9		6.0			10.0	10.0
Actuated g/C Ratio	0.17	0.44		0.01	0.28	0.28		0.10			0.17	0.17
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0		4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	287	1508		12	961	430		182			305	271
v/s Ratio Prot	c0.13	0.09		0.00	c0.19			c0.02			c0.13	
v/s Ratio Perm						0.06						0.02
v/c Ratio	0.79	0.21		0.42	0.68	0.21		0.15			0.72	0.13
Uniform Delay, d1	23.0	10.1		28.4	18.5	15.9		23.4			22.4	20.0
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	13.8	0.1		21.8	2.0	0.2		1.8			13.6	1.0
Delay (s)	36.8	10.1		50.2	20.5	16.2		25.2			35.9	21.0
Level of Service	D	B		D	C	B		C			D	C
Approach Delay (s)		21.2			19.2			25.2			28.9	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM Average Control Delay	21.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	57.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	56.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	10	941	209	10	16	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	1023	227	11	17	4
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					TWLTL	
Median storage veh)					1	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	238				1277	233
vC1, stage 1 conf vol					233	
vC2, stage 2 conf vol					1045	
vCu, unblocked vol	238				1277	233
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	99				94	99
cM capacity (veh/h)	1317				277	802

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	11	1023	238	22
Volume Left	11	0	0	17
Volume Right	0	0	11	4
cSH	1317	1700	1700	318
Volume to Capacity	0.01	0.60	0.14	0.07
Queue Length 95th (ft)	1	0	0	5
Control Delay (s)	7.8	0.0	0.0	17.1
Lane LOS	A			C
Approach Delay (s)	0.1		0.0	17.1
Approach LOS				C

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	59.5%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	5	407	886	18	18	14
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	442	963	20	20	15
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					TWLTL	
Median storage veh)					1	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	983				1426	973
vC1, stage 1 conf vol					973	
vC2, stage 2 conf vol					453	
vCu, unblocked vol	983				1426	973
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	99				93	95
cM capacity (veh/h)	695				270	303

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	5	442	983	35
Volume Left	5	0	0	20
Volume Right	0	0	20	15
cSH	695	1700	1700	284
Volume to Capacity	0.01	0.26	0.58	0.12
Queue Length 95th (ft)	1	0	0	10
Control Delay (s)	10.2	0.0	0.0	19.4
Lane LOS	B			C
Approach Delay (s)	0.1		0.0	19.4
Approach LOS				C

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	57.7%	ICU Level of Service	B
Analysis Period (min)	15		

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Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	522	10	11	320	10	30
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	567	11	12	348	11	33
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			578		945	573
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			578		945	573
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		96	94
cM capacity (veh/h)			986		285	515

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	578	360	43
Volume Left	0	12	11
Volume Right	11	0	33
cSH	1700	986	429
Volume to Capacity	0.34	0.01	0.10
Queue Length 95th (ft)	0	1	8
Control Delay (s)	0.0	0.4	14.3
Lane LOS		A	B
Approach Delay (s)	0.0	0.4	14.3
Approach LOS			B

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	38.1%	ICU Level of Service	A
Analysis Period (min)	15		

AWD = 11.3 LOS B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	340	5	30	447	5	16
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	370	5	33	486	5	17
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			375		923	372
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			375		923	372
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		98	97
cM capacity (veh/h)			1173		289	669

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	375	518	23
Volume Left	0	33	5
Volume Right	5	0	17
cSH	1700	1173	509
Volume to Capacity	0.22	0.03	0.04
Queue Length 95th (ft)	0	2	4
Control Delay (s)	0.0	0.8	12.4
Lane LOS		A	B
Approach Delay (s)	0.0	0.8	12.4
Approach LOS			B

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	56.7%	ICU Level of Service	B
Analysis Period (min)	15		

AWD = 5.6 LOS A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00		1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85		0.93		1.00	0.91	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99		0.95	1.00	
Satd. Flow (prot)	1736	3442		1736	1827	1553		1676		1736	1662	
Flt Permitted	0.54	1.00		0.29	1.00	1.00		0.95		0.70	1.00	
Satd. Flow (perm)	982	3442		525	1827	1553		1607		1283	1662	
Volume (vph)	70	592	35	70	231	45	25	40	80	192	50	75
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	76	643	38	76	251	49	27	43	87	209	54	82
RTOR Reduction (vph)	0	8	0	0	0	32	0	42	0	0	40	0
Lane Group Flow (vph)	76	673	0	76	251	17	0	115	0	209	96	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	21.1	21.1		21.1	21.1	21.1		30.9		30.9	30.9	
Effective Green, g (s)	21.1	21.1		21.1	21.1	21.1		30.9		30.9	30.9	
Actuated g/C Ratio	0.35	0.35		0.35	0.35	0.35		0.52		0.52	0.52	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	345	1210		185	642	546		828		661	856	
v/s Ratio Prot		c0.20			0.14						0.06	
v/s Ratio Perm	0.08			0.14		0.01		0.07		c0.16		
v/c Ratio	0.22	0.56		0.41	0.39	0.03		0.14		0.32	0.11	
Uniform Delay, d1	13.7	15.7		14.7	14.6	12.8		7.6		8.4	7.5	
Progression Factor	1.00	1.00		0.34	0.53	0.07		1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.6		1.4	0.4	0.0		0.3		1.3	0.3	
Delay (s)	14.0	16.2		6.5	8.1	0.9		7.9		9.7	7.8	
Level of Service	B	B		A	A	A		A		A	A	
Approach Delay (s)		16.0			6.8			7.9			8.9	
Approach LOS		B			A			A			A	

Intersection Summary				
HCM Average Control Delay	11.6	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.41			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	53.7%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00		1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85		0.94		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99		0.95	1.00	
Satd. Flow (prot)	1736	3441		1736	1827	1553		1699		1736	1636	
Flt Permitted	0.32	1.00		0.48	1.00	1.00		0.93		0.73	1.00	
Satd. Flow (perm)	591	3441		883	1827	1553		1597		1342	1636	
Volume (vph)	55	406	25	80	612	247	20	35	45	95	35	80
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	60	441	27	87	665	268	22	38	49	103	38	87
RTOR Reduction (vph)	0	7	0	0	0	94	0	38	0	0	68	0
Lane Group Flow (vph)	60	461	0	87	665	174	0	71	0	103	57	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	38.9	38.9		38.9	38.9	38.9		13.1		13.1	13.1	
Effective Green, g (s)	38.9	38.9		38.9	38.9	38.9		13.1		13.1	13.1	
Actuated g/C Ratio	0.65	0.65		0.65	0.65	0.65		0.22		0.22	0.22	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	383	2231		572	1185	1007		349		293	357	
v/s Ratio Prot		0.13			c0.36						0.03	
v/s Ratio Perm	0.10			0.10		0.11		0.04		c0.08		
v/c Ratio	0.16	0.21		0.15	0.56	0.17		0.20		0.35	0.16	
Uniform Delay, d1	4.1	4.3		4.1	5.8	4.2		19.2		19.9	19.0	
Progression Factor	1.00	1.00		0.13	0.23	0.00		1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.0		0.1	0.4	0.1		1.3		3.3	1.0	
Delay (s)	4.3	4.3		0.6	1.7	0.1		20.5		23.1	19.9	
Level of Service	A	A		A	A	A		C		C	B	
Approach Delay (s)		4.3			1.2			20.5			21.4	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	5.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1736	3471	3389		1736	1553
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1736	3471	3389		1736	1553
Volume (vph)	75	754	296	55	60	45
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	820	322	60	65	49
RTOR Reduction (vph)	0	0	27	0	0	32
Lane Group Flow (vph)	82	820	355	0	65	17
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Turn Type	Prot					Perm
Protected Phases	7	4	8		6	
Permitted Phases						6
Actuated Green, G (s)	10.3	31.1	16.8		20.9	20.9
Effective Green, g (s)	10.3	31.1	16.8		20.9	20.9
Actuated g/C Ratio	0.17	0.52	0.28		0.35	0.35
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	298	1799	949		605	541
v/s Ratio Prot	0.05	c0.24	0.10		c0.04	
v/s Ratio Perm						0.01
v/c Ratio	0.28	0.46	0.37		0.11	0.03
Uniform Delay, d1	21.6	9.1	17.4		13.2	12.9
Progression Factor	0.72	0.51	1.00		1.00	1.00
Incremental Delay, d2	0.5	0.2	0.2		0.4	0.1
Delay (s)	16.0	4.8	17.6		13.6	13.0
Level of Service	B	A	B		B	B
Approach Delay (s)		5.8	17.6		13.3	
Approach LOS		A	B		B	

Intersection Summary			
HCM Average Control Delay	9.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	30.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1736	3471	3417		1736	1553
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1736	3471	3417		1736	1553
Volume (vph)	90	476	899	105	70	55
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	98	517	977	114	76	60
RTOR Reduction (vph)	0	0	17	0	0	44
Lane Group Flow (vph)	98	517	1074	0	76	16
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Turn Type	Prot					Perm
Protected Phases	7	4	8		6	
Permitted Phases						6
Actuated Green, G (s)	7.5	35.7	24.2		16.3	16.3
Effective Green, g (s)	7.5	35.7	24.2		16.3	16.3
Actuated g/C Ratio	0.12	0.60	0.40		0.27	0.27
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	217	2065	1378		472	422
v/s Ratio Prot	c0.06	0.15	c0.31		c0.04	
v/s Ratio Perm						0.01
v/c Ratio	0.45	0.25	0.78		0.16	0.04
Uniform Delay, d1	24.3	5.8	15.6		16.6	16.1
Progression Factor	1.00	0.79	1.00		1.00	1.00
Incremental Delay, d2	1.5	0.1	2.9		0.7	0.2
Delay (s)	25.9	4.6	18.4		17.4	16.3
Level of Service	C	A	B		B	B
Approach Delay (s)		8.0	18.4		16.9	
Approach LOS		A	B		B	

Intersection Summary			
HCM Average Control Delay	14.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	47.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0			4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.98			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00			0.96	1.00
Satd. Flow (prot)	1736	3467		1736	3471	1553		1791			1745	1553
Flt Permitted	0.95	1.00		0.95	1.00	1.00		1.00			0.96	1.00
Satd. Flow (perm)	1736	3467		1736	3471	1553		1791			1745	1553
Volume (vph)	260	639	5	5	191	125	5	45	6	397	25	140
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	283	695	5	5	208	136	5	49	7	432	27	152
RTOR Reduction (vph)	0	1	0	0	0	116	0	6	0	0	0	106
Lane Group Flow (vph)	283	699	0	5	208	20	0	55	0	0	459	46
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot			Prot		Perm	Split			Split		Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases						8						6
Actuated Green, G (s)	11.7	20.5		0.4	9.2	9.2		7.0			19.0	19.0
Effective Green, g (s)	11.7	20.5		0.4	9.2	9.2		7.0			19.0	19.0
Actuated g/C Ratio	0.19	0.33		0.01	0.15	0.15		0.11			0.30	0.30
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0		4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	323	1130		11	508	227		199			527	469
v/s Ratio Prot	c0.16	c0.20		0.00	0.06			c0.03			c0.26	
v/s Ratio Perm						0.01						0.03
v/c Ratio	0.88	0.62		0.45	0.41	0.09		0.28			0.87	0.10
Uniform Delay, d1	24.9	17.9		31.1	24.4	23.2		25.6			20.8	15.8
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	22.3	1.0		27.0	0.5	0.2		3.4			17.7	0.4
Delay (s)	47.2	18.9		58.2	24.9	23.4		29.0			38.5	16.2
Level of Service	D	B		E	C	C		C			D	B
Approach Delay (s)		27.1			24.8			29.0			32.9	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	28.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	62.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0			4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.97			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99			0.95	1.00
Satd. Flow (prot)	1736	3464		1736	3471	1553		1743			1749	1553
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.99			0.96	1.00
Satd. Flow (perm)	1736	3464		1736	3471	1553		1743			1749	1553
Volume (vph)	230	316	5	6	664	327	10	20	10	200	25	200
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	250	343	5	7	722	355	11	22	11	217	27	217
RTOR Reduction (vph)	0	2	0	0	0	253	0	10	0	0	0	179
Lane Group Flow (vph)	250	346	0	7	722	102	0	34	0	0	244	38
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot			Prot		Perm	Split			Split		Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases						8						6
Actuated Green, G (s)	11.3	28.8		0.4	17.9	17.9		6.0			11.0	11.0
Effective Green, g (s)	11.3	28.8		0.4	17.9	17.9		6.0			11.0	11.0
Actuated g/C Ratio	0.18	0.46		0.01	0.29	0.29		0.10			0.18	0.18
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0		4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	315	1604		11	999	447		168			309	275
v/s Ratio Prot	c0.14	0.10		0.00	c0.21			c0.02			c0.14	
v/s Ratio Perm						0.07						0.02
v/c Ratio	0.79	0.22		0.64	0.72	0.23		0.20			0.79	0.14
Uniform Delay, d1	24.3	10.0		30.8	19.9	16.9		25.9			24.5	21.6
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	12.9	0.1		81.7	2.6	0.3		2.7			18.3	1.1
Delay (s)	37.2	10.0		112.6	22.5	17.1		28.6			42.8	22.7
Level of Service	D	B		F	C	B		C			D	C
Approach Delay (s)		21.4			21.3			28.6			33.3	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	24.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	62.2	Sum of lost time (s)	16.0
Intersection Capacity Utilization	60.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	13	1040	230	13	16	6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	14	1130	250	14	17	7
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					TWLTL	
Median storage veh)					1	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	264				1416	257
vC1, stage 1 conf vol					257	
vC2, stage 2 conf vol					1159	
vCu, unblocked vol	264				1416	257
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	99				93	99
cM capacity (veh/h)	1288				243	777

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	14	1130	264	24
Volume Left	14	0	0	17
Volume Right	0	0	14	7
cSH	1288	1700	1700	299
Volume to Capacity	0.01	0.66	0.16	0.08
Queue Length 95th (ft)	1	0	0	6
Control Delay (s)	7.8	0.0	0.0	18.1
Lane LOS	A			C
Approach Delay (s)	0.1		0.0	18.1
Approach LOS				C

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	64.7%	ICU Level of Service	C
Analysis Period (min)	15		

AM = 14.3 : LOS C

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	6	450	980	21	18	13
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	489	1065	23	20	14
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					TWLTL	
Median storage veh)					1	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1088				1579	1077
vC1, stage 1 conf vol					1077	
vC2, stage 2 conf vol					502	
vCu, unblocked vol	1088				1579	1077
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	99				92	95
cM capacity (veh/h)	634				239	264

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	7	489	1088	34
Volume Left	7	0	0	20
Volume Right	0	0	23	14
cSH	634	1700	1700	249
Volume to Capacity	0.01	0.29	0.64	0.14
Queue Length 95th (ft)	1	0	0	12
Control Delay (s)	10.7	0.0	0.0	21.7
Lane LOS	B			C
Approach Delay (s)	0.1		0.0	21.7
Approach LOS				C

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	62.9%	ICU Level of Service	B
Analysis Period (min)	15		

AM = 19.8 sec C