

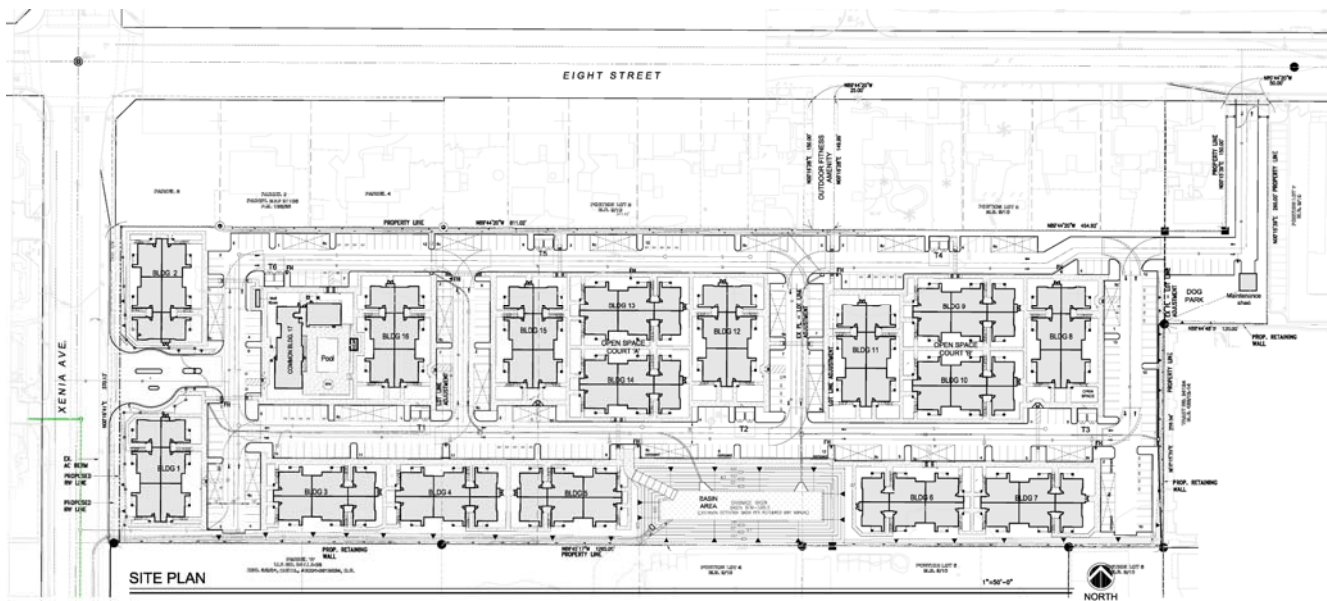
Appendix J

Xenia Multifamily Residential Project Traffic Impact Analysis
RK Engineering Group, Inc.
September 22, 2022

XENIA MULTI-FAMILY RESIDENTIAL PROJECT

TRAFFIC IMPACT ANALYSIS

City of Beaumont, California



**XENIA MULTI-FAMILY
RESIDENTIAL PROJECT
TRAFFIC IMPACT STUDY
City of Beaumont, California**

Prepared for:

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September 22, 2022

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1.0 Introduction

1.1 Purpose of Report & Study Objectives

The purpose of this traffic impact analysis and report is to evaluate and assess the proposed Xenia Multi-Family Residential Project (hereinafter referred to as “project”) from a traffic and circulation standpoint. Furthermore, this analysis will determine whether the proposed project will have a significant traffic impact on the environment.

This study has been conducted pursuant to the *Western Riverside Council of Governments Recommended Traffic Impact Analysis Guidelines for Vehicles Miles Traveled and Level of Service Assessment*, updated January 2020, and the California Environmental Quality Act (CEQA). This study evaluates the potential traffic and environmental impacts associated with the proposed project in accordance with the thresholds of significance.

This study has been prepared in accordance with the scope of work approved by the City of Beaumont staff, which is contained in Appendix A.

1.2 Site Location & Project Description

The project site is located near the southeast corner of Xenia Avenue and 8th Street in the City of Beaumont. The project site is currently vacant. The proposed project consists of constructing 192 multi-family residential dwelling units on approximately 10.93 acres. The proposed project will also provide ancillary amenities such as a community club and swimming pool. The proposed project will not provide any low income/affordable housing.

Vehicular access for the project is planned via the following two (2) proposed project access ways:

- One (1) full-access unsignalized access driveway along Xenia Avenue (Gated Access)
- One (1) full-access unsignalized access driveway along 8th Street (Gated Access)

The project is planned to open in 2024 and is evaluated in a single phase.

Exhibit 1-1 shows the location of the proposed project. Exhibit 1-2 shows the proposed project’s site plan.

1.3 Traffic Study Area & Analysis Scenarios

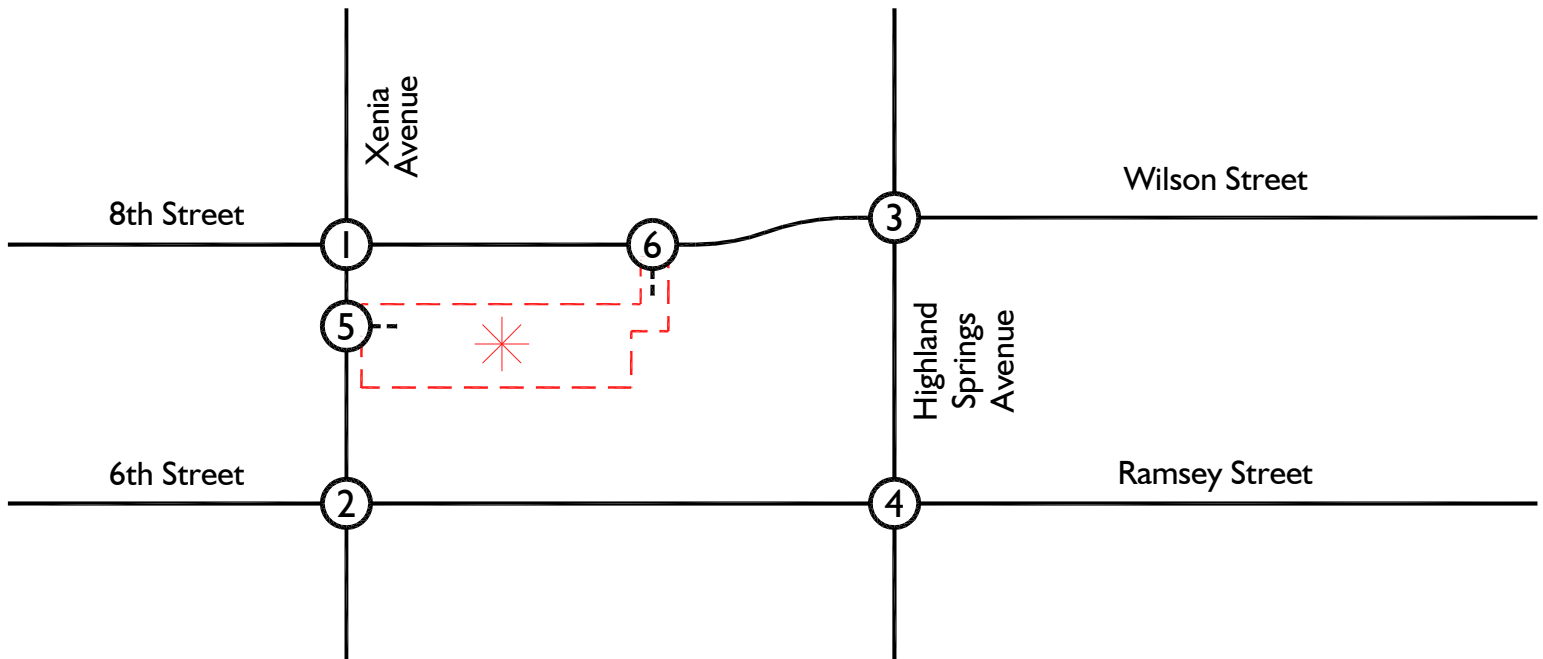
Exhibit 1-1 illustrates the project's site location map and traffic analysis study area.

The study area consists of the following six (6) intersections. The jurisdiction where each of these study intersections is located is also identified.

1. Xenia Avenue (NS) at 8th Street (EW) (Beaumont)
2. Xenia Avenue (NS) at 6th Street (EW) (Beaumont)
3. Highland Springs Avenue (NS) at 8th Street/Wilson Street (EW) (Beaumont/Banning);
4. Highland Springs Avenue (NS) at 6th Street/Ramsey Street (EW) (Beaumont/Banning);
5. Xenia Avenue (NS) at Project Access 1 (EW) (Beaumont); and
6. Project Access 2 (NS) at 8th Street (EW) (Beaumont).

The analysis evaluates traffic conditions for the study intersections under the following scenarios:

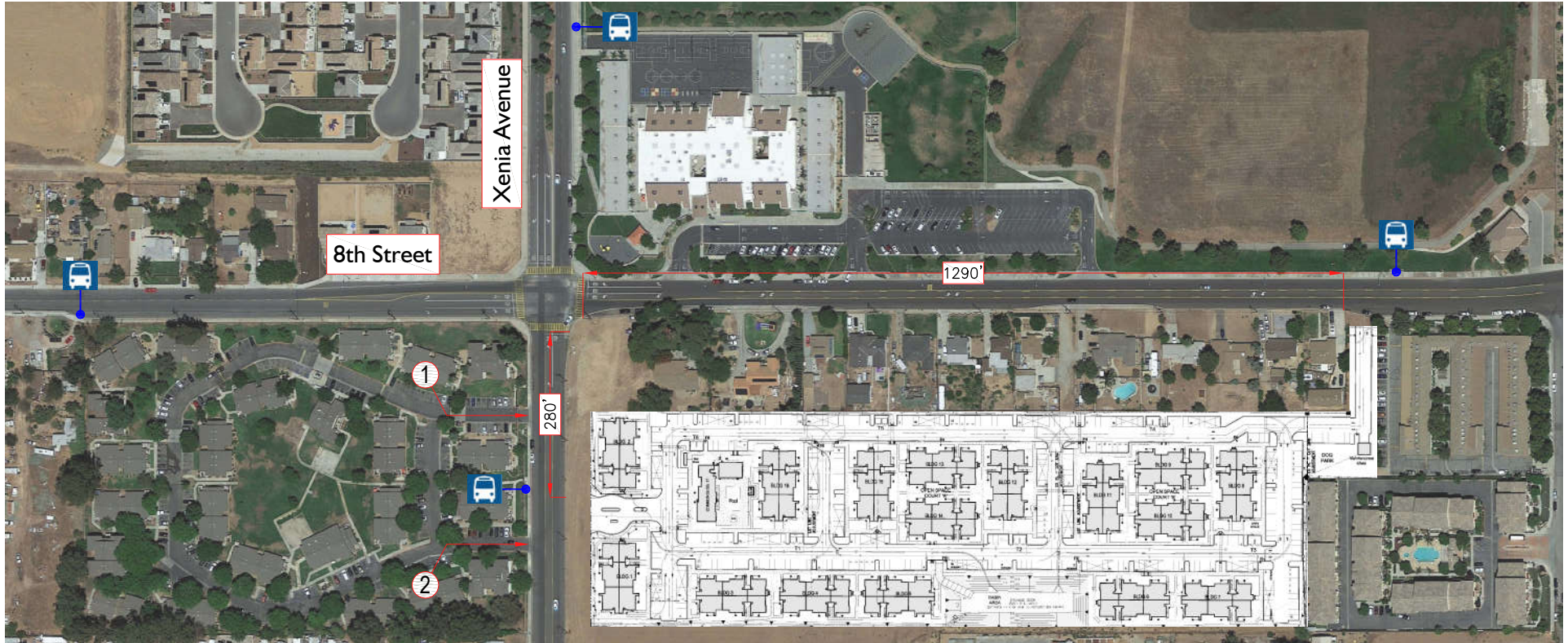
- Existing Conditions;
- Project Opening Year (2024) Without Project Conditions; and
- Project Opening Year (2024) With Project Conditions.



Legend:

- ① = Study Area Intersection
- = Project Site Boundary
- * = Project Site
- = Project Access Driveway





Legend:

-  = Bus Stop Location
- ① = 216-Unit Noble Creek Apartments Driveway #1
- ② = 216-Unit Noble Creek Apartments Driveway #2



2.0 Analysis Methodologies, Performance Criteria, & Thresholds of Significance

This section of the report presents the methodologies used to perform the traffic analyses summarized in this report in accordance with the City of Beaumont.

This section also discusses the agency-established applicable performance criteria and thresholds of significance for the study facilities.

2.1 Study Intersection Peak Hour Level of Service Analysis Methodology

In accordance with the *Western Riverside Council of Governments Recommended Traffic Impact Analysis Guidelines for Vehicles Miles Traveled and Level of Service Assessment*, updated January 2020, the Highway Capacity Manual Sixth Edition (HCM 6) is utilized as the technical guide in the evaluation of traffic operations.

The HCM defines level of service as a qualitative measure which describes operational conditions within a traffic stream, generally in terms of factors such as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience, and safety. The criteria used to evaluate LOS (Level of Service) conditions vary based on the type of roadway and whether the traffic flow is considered interrupted or uninterrupted.

The definitions of level of service for interrupted flow (flow regulated by the existence of traffic control devices) are:

- **LOS A** describes traffic operations in which progression is exceptionally favorable or the cycle length is extremely short. Generally, LOS A operations for signalized intersections tend to result in most vehicles arriving during the green phase and traveling through the intersection without stopping. LOS A operations for unsignalized intersection experience little or no delay.
- **LOS B** describes traffic operations in which progression slightly diminishes but is considered highly favorable and the cycle length is short. Vehicles stop more often causing a marginal increase in average delay.
- **LOS C** describes traffic operations in which progression is favorable and the cycle length is moderate. Individual cycle failures (i.e., one or more queued vehicles are not able to depart as a result of insufficient capacity during the

cycle) may begin to appear. Many vehicles still past through the intersection but a significant number of vehicles are stopping. Average delay is fair.

- **LOS D** describes traffic operations in which progression is ineffective and/or cycle length is long. Considerable amount of vehicles stop and individual cycle failures are noticeable. Average delay is adequate.
- **LOS E** describes traffic operations in which progression is unfavorable and the cycle length is exceedingly long. Individual cycle failures are frequent. Average delay is high.
- **LOS F** describes traffic operations in which progression is extremely poor and the cycle length is extremely long. Most cycles fail to clear the queue. Average delay is vast.

2.1.1 HCM Methodology

Level of service is typically dependent on the quality of traffic flow at the intersection along a roadway. The HCM methodology expresses the level of service at an intersection in terms of delay time for various intersection approaches. The HCM uses different procedures depending on the type of intersection control. The levels of service determined in this study are calculated using the HCM methodology.

For signalized intersections, average control delay per vehicle is used to determine the level of service. Levels of service at signalized study intersections have been evaluated using the HCM intersection analysis program.

For all-way stop-controlled intersections, average control delay per vehicle is used to determine the level of service.

For intersections with stop control on the minor approach only, the calculation of level of service is dependent on the occurrence of gaps occurring in the free-flow traffic movement of the major street, and the level of service is determined based on the worst individual movement on the stop-controlled minor approach or movements sharing a single lane on the stop-controlled minor approach.

Table 2-1 shows the level of service criteria based on the HCM methodology.

Table 2-1
HCM Intersection LOS & Delay Ranges

LOS	Average Control Delay Per Vehicle (Seconds)	
	Signalized	Unsignalized
A	0.00 - 10.00	0.00 - 10.00
B	10.01 - 20.00	10.01 - 15.00
C	20.01 - 35.00	15.01 - 25.00
D	35.01 - 55.00	25.01 - 35.00
E	55.01 - 80.00	35.01 - 50.00
F	>80.00	>50.00

2.2 LOS Performance Criteria & Thresholds for Requiring LOS Improvements

The six (6) key study intersections span over the following jurisdictions:

- City of Beaumont; and
- City of Banning.

Hence, this study evaluates the potential traffic impacts associated with the proposed project for each study intersection based on the performance criteria and thresholds of significance set forth by each respective jurisdiction.

2.2.1 City of Beaumont

The City of Beaumont adheres to the *Western Riverside Council of Governments Recommended Traffic Impact Analysis Guidelines for Vehicles Miles Traveled and Level of Service Assessment*, updated January 2020, for guidance and methodologies in the evaluation of intersection operations. Therefore, based on the WRCOG guidelines, the acceptable level of service for intersection operations is LOS D (or better). Hence, LOS E (or worse) would be considered deficient.

Per the WRCOG guidelines, the City adheres to the following performance criteria and thresholds of significance for signalized and unsignalized intersections.

Signalized Intersections

Any signalized study intersection operating at an acceptable LOS (D or better) without project traffic in which the addition of project traffic causes the intersection to degrade to a deficient LOS (E or worse) shall identify improvements to improve operations to an acceptable LOS (D or better).

Any signalized study intersection that is operating at LOS E or F without project traffic where the project increases delay by 5.0 or more seconds shall identify improvements to offset the increase in delay.

Unsignalized Intersections

An operational improvement would be required if the study determines that either section a) or both section b) and c) occur:

- a) The addition of project related traffic causes the intersection to degrade from an acceptable LOS D or better to LOS E or F

OR

- b) The project adds 5.0 seconds or more of delay to an intersection that is already projected to operate without project traffic at a LOS E or F;

AND

- c) The intersection meets the peak hour traffic signal warrant after the addition of project traffic.

If the conditions above are satisfied, improvements should be identified that achieve the following:

- LOS D or better for case a) above.
- Above or to pre-project LOS and delay for case b) above.

2.2.2 City of Banning

In accordance with the City of Banning's General Plan Circulation Element, the acceptable LOS to be maintained for all study intersections is LOS D or better.

2.3 Vehicles Miles Traveled Performance Criteria and Thresholds of Significance

In response to Senate Bill (SB) 743, the California Resource Agency certified and adopted new CEQA guidelines in December 2018 which now identifies Vehicles Miles Traveled (VMT) as the most appropriate metric to evaluate a project's transportation impact under CEQA (§15064.3). Hence, the proposed project is subject to a VMT analysis to identify potential VMT related impacts to the environment.

The City of Beaumont adheres to the *Western Riverside Council of Governments Recommended Traffic Impact Analysis Guidelines for Vehicles Miles Traveled and Level of Service Assessment*, updated January 2020, which establish uniform analysis methodology and thresholds of significance for determining VMT impacts under CEQA.

In addition, the WRCOG guidelines describe project screening procedures to effectively screen out applicable development projects from project-level VMT assessment. Therefore, the proposed project shall first be evaluated per the screening procedures prior to further project-level VMT assessment.

3.0 Existing Conditions and Setting

3.1 Existing Traffic Controls & Intersection Geometrics

RK conducted a field review of the study area on March 10th, 2022. Exhibit 3-1 identifies the existing roadway conditions within the study. The number of through traffic lanes for existing roadways and existing intersections controls are identified. The type of traffic control and number of lanes at an intersection are key inputs for the calculation of level of service.

3.2 Existing Conditions Traffic Volumes

Existing conditions intersection level of service calculations are based upon manual AM and PM peak hour turning movement counts taken in March 2022 during typical weekday conditions. The AM peak hour traffic volumes were determined by counting the two-hour peak period between 7:00 AM and 9:00 AM and using the highest hour within that two-hour peak period. Similarly, the PM peak hour traffic volumes were identified by counting the two-hour peak period between 4:00 PM and 6:00 PM and using the highest hour within that two-hour peak period. The traffic count worksheets are included in Appendix B.

Existing traffic volumes for the study area intersections are shown on Exhibit 3-2.

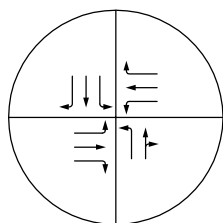
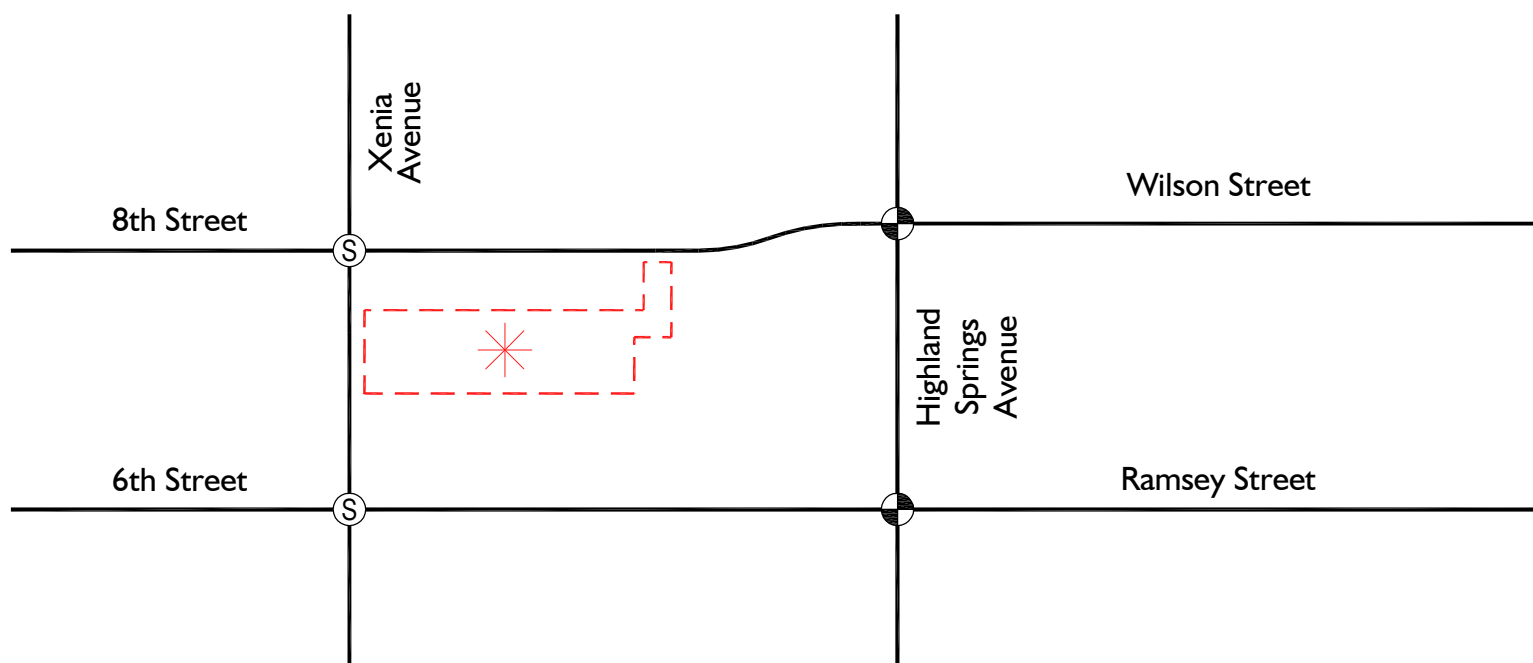
3.3 Existing Conditions Study Intersection Level of Service

The intersection level of service analysis for Existing Conditions is shown in Table 3-1.

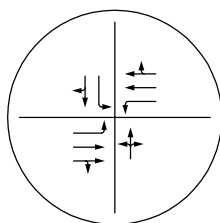
Detailed LOS analysis sheets for Existing Conditions are contained in Appendix C.

As shown in Table 3-1, all four (4) existing study intersections are currently operating at an acceptable level of service (LOS D or better) during the AM and PM peak hours.

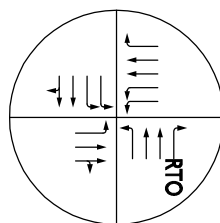
Existing Traffic Controls & Study Intersection Geometry



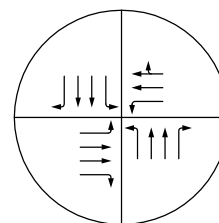
1. Xenia Avenue (NS) at
8th Street (EW)



2. Xenia Avenue (NS) at
6th Street (EW)



3. Highland Springs Avenue (NS) at
Wilson Street / 8th Street (EW)



4. Highland Springs Avenue (NS) at
Ramsey Street / 6th Street (EW)

Legend:

= Traffic Signal

= All Way Stop

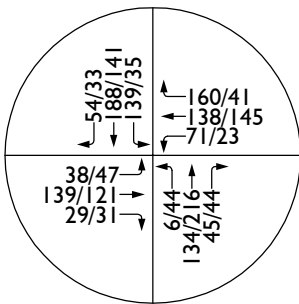
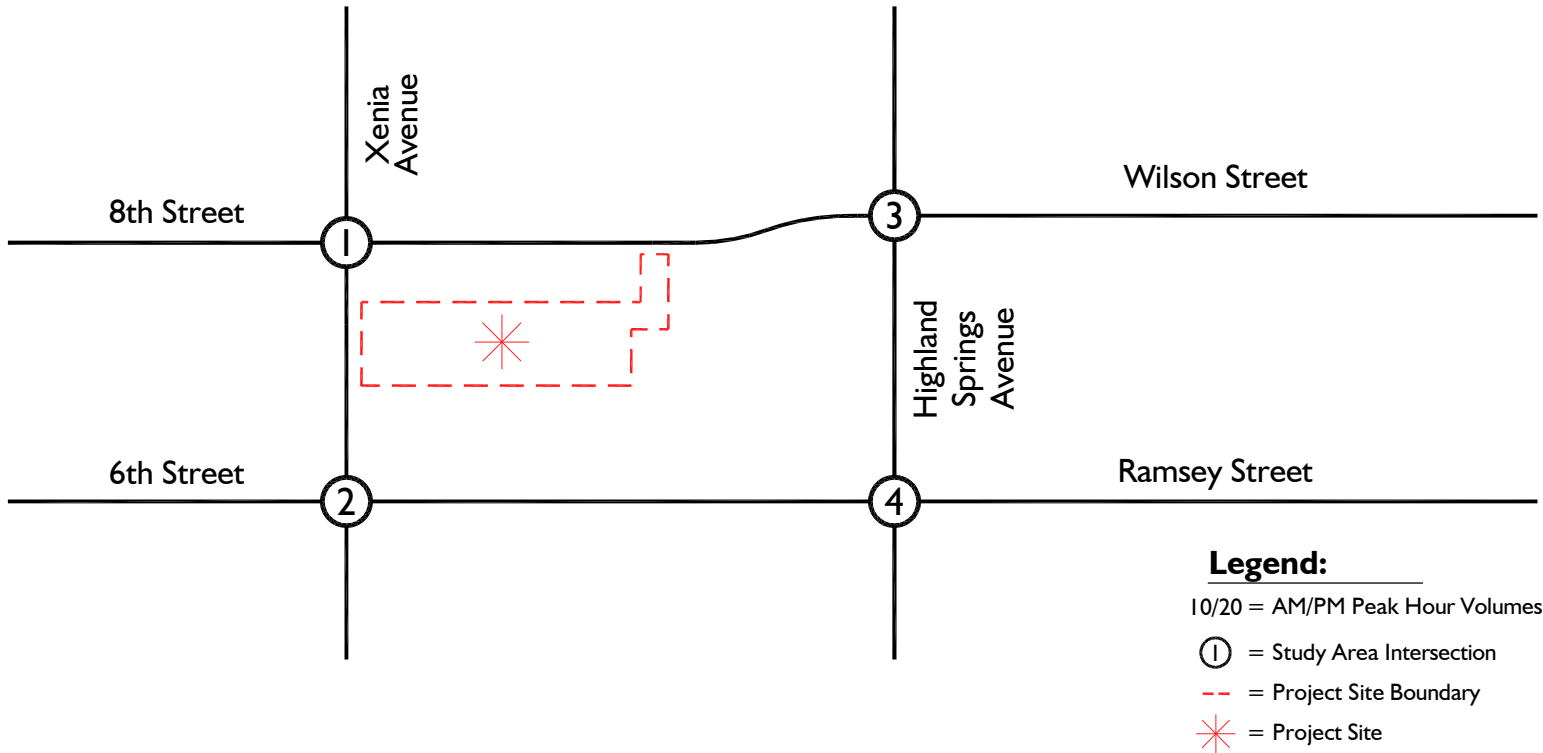
= Right Turn Overlap

= Project Site Boundary

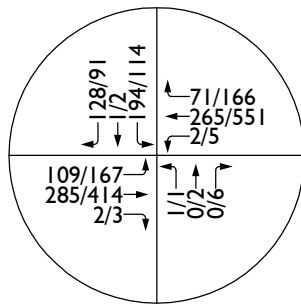
= Project Site



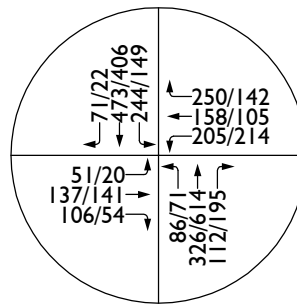
Exhibit 3-2 Existing Conditions Traffic Volumes



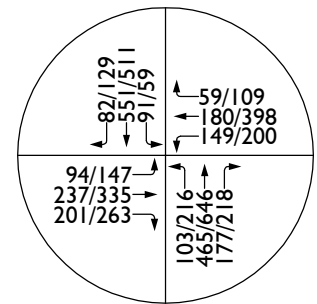
1. Xenia Avenue (NS) at 8th Street (EW)



2. Xenia Avenue (NS) at 6th Street (EW)



3. Highland Springs Avenue (NS) at Wilson Street / 8th Street (EW)



4. Highland Springs Avenue (NS) at Ramsey Street / 6th Street (EW)



Table 3-1
Study Intersection LOS Analysis Summary
Existing Conditions

Intersection		Jurisdiction	Traffic Control ³	Methodology	Delay (Sec / Veh) ^{1,2}		Level of Service	
					AM	PM	AM	PM
1.	Xenia Avenue (NS) at 8th Street (EW)	City of Beaumont	AWS	HCM 6	13.6	11.8	B	B
2.	Xenia Avenue (NS) at 6th Street (EW)	City of Beaumont	AWS	HCM 6	12.3	18.7	B	C
3.	Highland Springs Avenue (NS) at 8th Street/Wilson Street (EW)	City of Beaumont / City of Banning	TS	HCM 6	31.8	26.2	C	C
4.	Highland Springs Avenue (NS) at 6th Street/Ramsey Street (EW)	City of Beaumont / City of Banning	TS	HCM 6	34.0	47.7	C	D
5.	Xenia Avenue (NS) at Project Access 1 (EW)	City of Beaumont	CSS	HCM 6	Does Not Currently Exist			
6.	Project Access 2 (NS) at 8th Street (EW)	City of Beaumont	CSS	HCM 6	Does Not Currently Exist			

¹ Deficient operation shown in **Bold**.

² HCM Analysis Software: Vistro, Version 2022. Per the Highway Capacity Manual 6th Edition, overall average intersection delay and level of service are shown for intersections with traffic signal or all-way stop control. For intersections with cross-street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

³ TS = Traffic Signal
 AWS = All-Way Stop
 CSS = Cross Street Stop

4.0 Project Traffic

4.1 Project Trip Generation

Trip generation represents the amount of traffic that is attracted and produced by a development. The trip generation for the project is based upon the specific land uses that have been planned for this development.

Trip generation is typically estimated based on the trip generation rates from the latest Institute of Transportation Engineers (ITE) Trip Generation Manual (11th Edition, 2021). This publication provides a comprehensive evaluation of trip generation rates for a variety of land uses.

Table 4-1 shows the ITE trip generation rates for the trip generation analysis of the project land uses.

Utilizing the trip generation rates from Table 4-1, Table 4-2 summarizes the daily and peak hour trip generation for weekday conditions for the proposed project.

As shown in Table 4-2, based on the ITE trip generation rates:

- The proposed project is forecast to generate approximately 1,294 daily trips which include approximately 77 AM peak hour trips and approximately 98 PM peak hour trips.

4.2 Project Trip Distribution

Trip distribution represents the directional orientation of traffic to and from the project site. Trip distribution is heavily influenced by the geographical location of the site and the proximity to the regional freeway system. The directional orientation of traffic was determined by evaluating existing and proposed land uses and highways within the study area.

The project trip distribution is shown in Exhibit 4-1.

4.2.1 Modal Split

Modal split denotes the proportion of traffic generated by a project that would use any of the transportation modes, namely buses, cars, bicycles, motorcycles, trains, carpools, etc. The traffic reducing potential of public transit and other modes can be notable. However,

the traffic projections in this study are conservative because no modal split reduction is applied to the projections.

4.3 Project Traffic Assignment and Volumes

The assignment of project traffic to the adjoining roadway system is based upon the project's trip generation, trip distribution, arterial highway, and local street systems that would be in place by the time of initial occupancy of the site.

Project traffic volumes are shown on Exhibit 4-2.

4.4 Cumulative Projects Traffic

Information on future projects in the vicinity of the study area has been provided by the City of Beaumont and the City of Banning staff for inclusion in this analysis and is shown in Table 4-3.

The list of cumulative projects provided are for projects that have been officially submitted for land use review, are waiting public hearing approval, or have been approved by the public hearing body.

Table 4-3 shows the land uses and corresponding trip generation for the nearby cumulative projects provided by public agencies.

A location map of the cumulative projects is shown in Exhibit 4-3.

Cumulative projects traffic volumes are shown in Exhibit 4-4.

In reality, some of the cumulative projects may be downsized or may not be developed by project opening year (2024). In addition, many of the cumulative projects have been or will be subject to a variety of mitigation measures that will reduce the potential environmental impacts associate with those projects. However, those mitigation measures have not been taken into account in projecting the environmental impact of the cumulative projects.

Therefore, the cumulative analyses set forth below are conservative and could result in greater impacts than actually anticipated. Additionally, the analysis utilizes a growth rate of two percent (2.0%) per year for project opening year (2024) conditions, which would already capture and account for most projects in the area. Applied to the Year 2022 existing traffic volumes, this factor results in a 4.0% total growth in existing volumes to near-term horizon year 2024. The growth rate methodology is considered conservative since it is applied to all movements in all the study intersections.

4.5 Project Opening Year (2024) Without Project Conditions Traffic Volumes

Project Opening Year (2024) Without Project Conditions traffic volumes consist of two (2) years of linear annual growth on top of existing (2022) traffic volumes at two percent (2%) per year (i.e. 4% total growth), plus traffic generated by the cumulative projects.

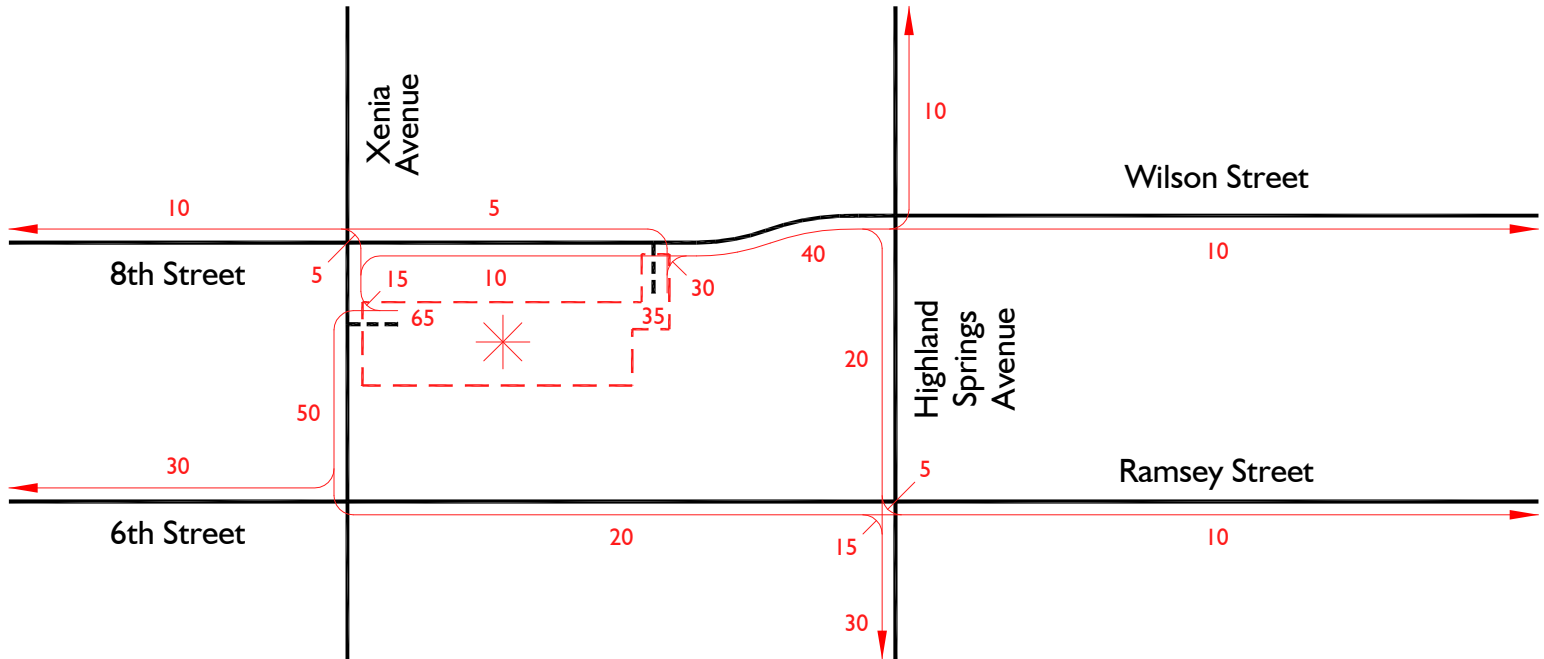
Project Opening Year (2024) Without Project Conditions traffic volumes are shown on Exhibit 4-5.

4.6 Project Opening Year (2024) With Project Conditions Traffic Volumes

Project Opening Year (2024) With Project Conditions traffic volumes consist of two (2) year of linear annual growth on top of existing (2022) traffic volumes at two percent (2%) per year (i.e. 4% total growth), plus traffic generated by the cumulative projects and traffic generated by the proposed project.

Project Opening Year (2024) With Project Conditions traffic volumes are shown on Exhibit 4-6.

Exhibit 4-I
Project Trip Distribution



Legend:

10 = Percent to/from Project

-- = Project Site Boundary

* = Project Site

--- = Project Access Driveway



Table 4-1
ITE Trip Generation Rates¹

Land Use	Units ²	ITE Code	AM			PM			Daily
			In	Out	Total	In	Out	Total	
Multi-Family Housing - Low Rise	DU	220	0.10	0.30	0.40	0.32	0.19	0.51	6.74

¹ Source: *ITE Trip Generation Manual* (11th Edition, 2021)

² DU = Dwelling Units

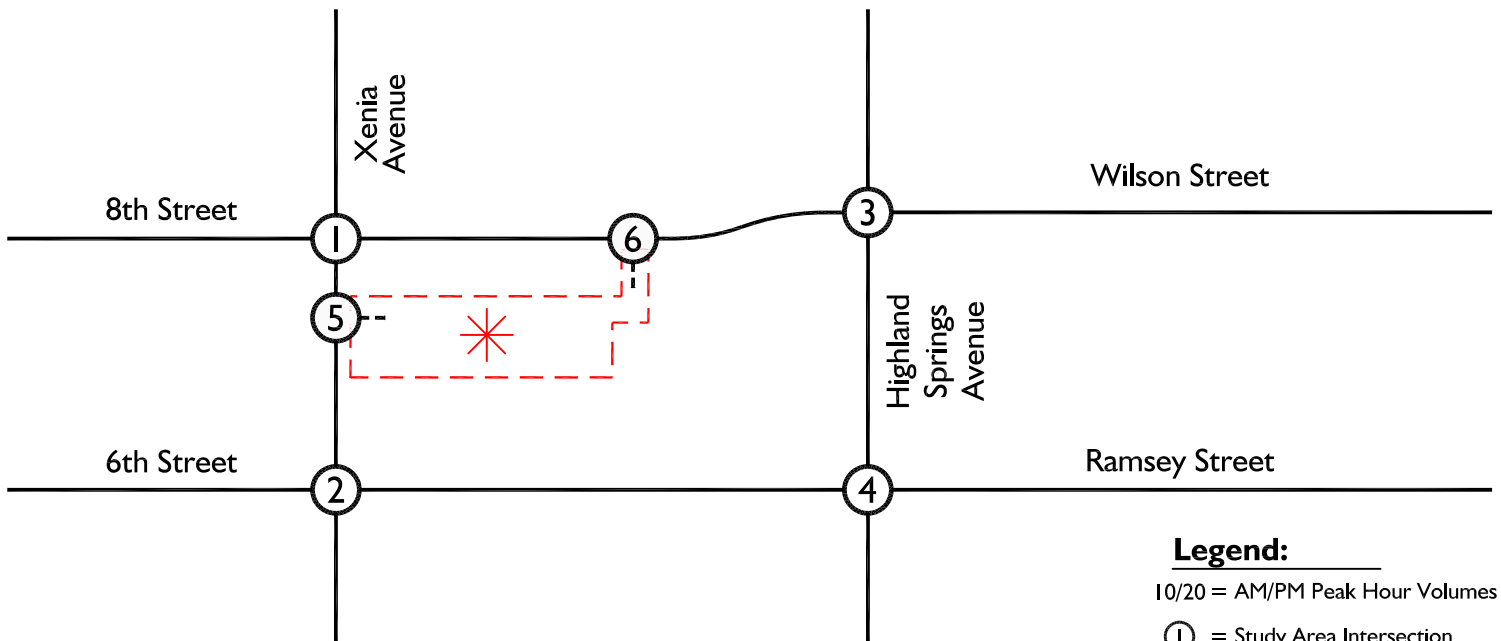
Table 4-2
Project Trip Generation¹

Proposed Land Uses									
Land Use (ITE Code)	Quantity	Units ²	AM			PM			Daily
			In	Out	Total	In	Out	Total	
Xenia Multi-Family Residential Project (ITE 210)	192	DU	18	59	77	62	36	98	1,294
Total			18	59	77	62	36	98	1,294

¹ Source: *ITE Trip Generation Manual* (11th Edition, 2021)

² DU = Dwelling Units

Exhibit 4-2 Project Traffic Volumes



Legend:

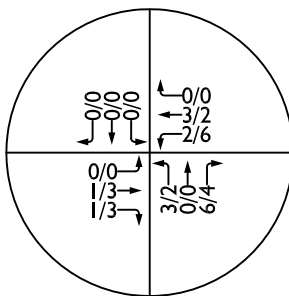
10/20 = AM/PM Peak Hour Volumes

① = Study Area Intersection

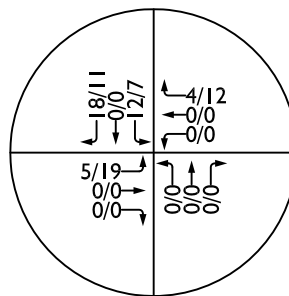
-- = Project Site Boundary

* = Project Site

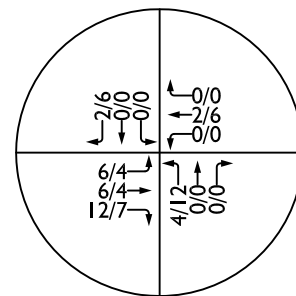
--- = Project Access Driveway



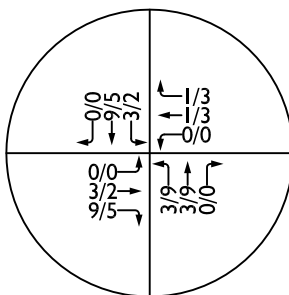
1. Xenia Avenue (NS) at 8th Street (EW)



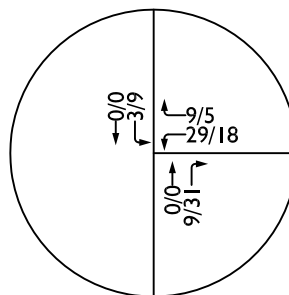
2. Xenia Avenue (NS) at 6th Street (EW)



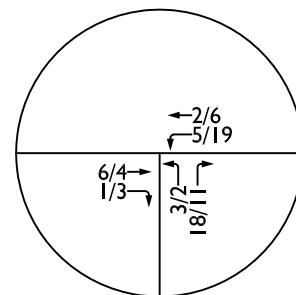
3. Highland Springs Avenue (NS) at Wilson Street / 8th Street (EW)



4. Highland Springs Avenue (NS) at Ramsey Street / 6th Street (EW)



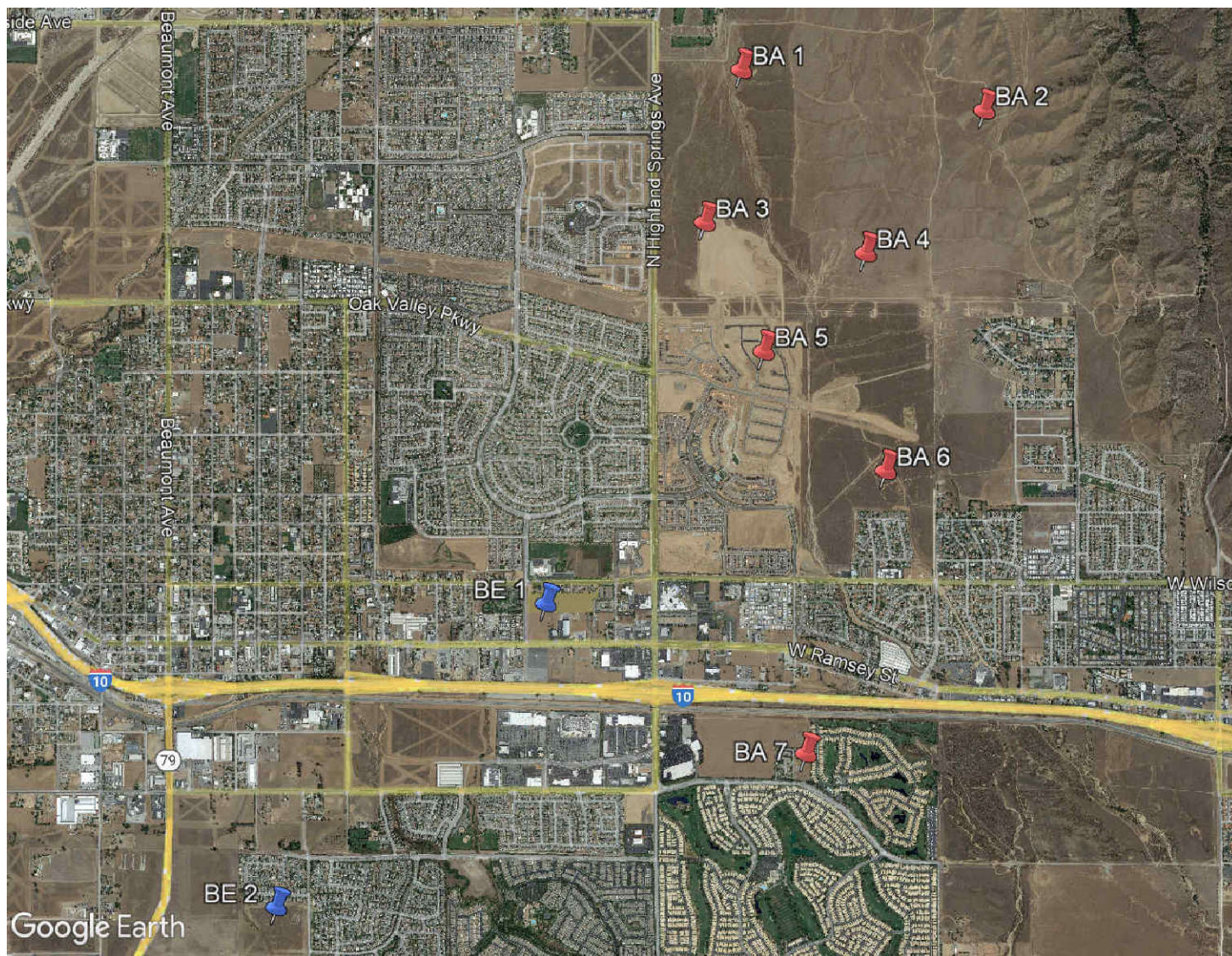
5. Xenia Avenue (NS) at Project Access I (EW)



6. Project Access II (NS) at 8th Street (EW)



Cumulative Projects Location Map



NOTE: See report for full list of cumulative projects and traffic analysis zones (TAZ).

Legend:

- = City of Beaumont Cumulative Project
- = City of Banning Cumulative Project



Table 4-3
Cumulative Projects Trip Generation¹

ID No.	Jurisdiction	Project Name / Case Number	Land Use	Quantity	Units ²	Peak Hour						Daily
						AM			PM			
						In	Out	Total	In	Out	Total	
TAZ 1												
BE 1	Beaumont	Beaumont Commons ³	Single Family Homes	120	DU	13	42	55	42	25	67	878
TAZ 1 Total						13	42	55	42	25	67	878
TAZ 2												
BE 2	Beaumont	Pacific Scene (Tract No. 32850) ³	Single Family Homes	95	DU	18	53	71	59	35	94	897
TAZ 2 Total						18	53	71	59	35	94	897
TAZ 3												
BA 1	Banning	TTM 37445 - Pardee Homes	Single Family Homes	690	DU	126	357	483	409	240	649	6,507
BA 2	Banning	TTM 37446 - Pardee Homes	Single Family Homes	437	DU	80	226	306	259	152	411	4,121
BA 3	Banning	TTM 37443 - Pardee Homes	Single Family Homes	576	DU	105	298	403	341	200	541	5,432
BA 4	Banning	TTM 37444 - Pardee Homes	Single Family Homes	477	DU	87	247	334	282	166	448	4,498
BA 5	Banning	TTM 37388 - Pardee Homes	Single Family Homes	287	DU	52	149	201	170	100	270	2,706
BA 6	Banning	TTM 37389 - Pardee Homes	Single Family Homes	403	DU	73	209	282	239	140	379	3,800
TAZ 3 Total						523	1,486	2,009	1,700	998	2,698	27,064
TAZ 4												
BA 7	Banning	Banning Medical	Medical Office	35.250	TSF	86	23	109	42	97	139	1,269
			Pharmacy	1.257	TSF	2	2	4	6	6	12	136
TAZ 4 Total						88	25	113	48	103	151	1,405
Total Cumulative Projects Trip Generation						642	1,606	2,248	1,849	1,161	3,010	30,244

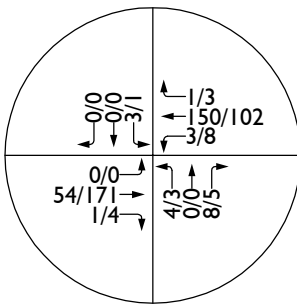
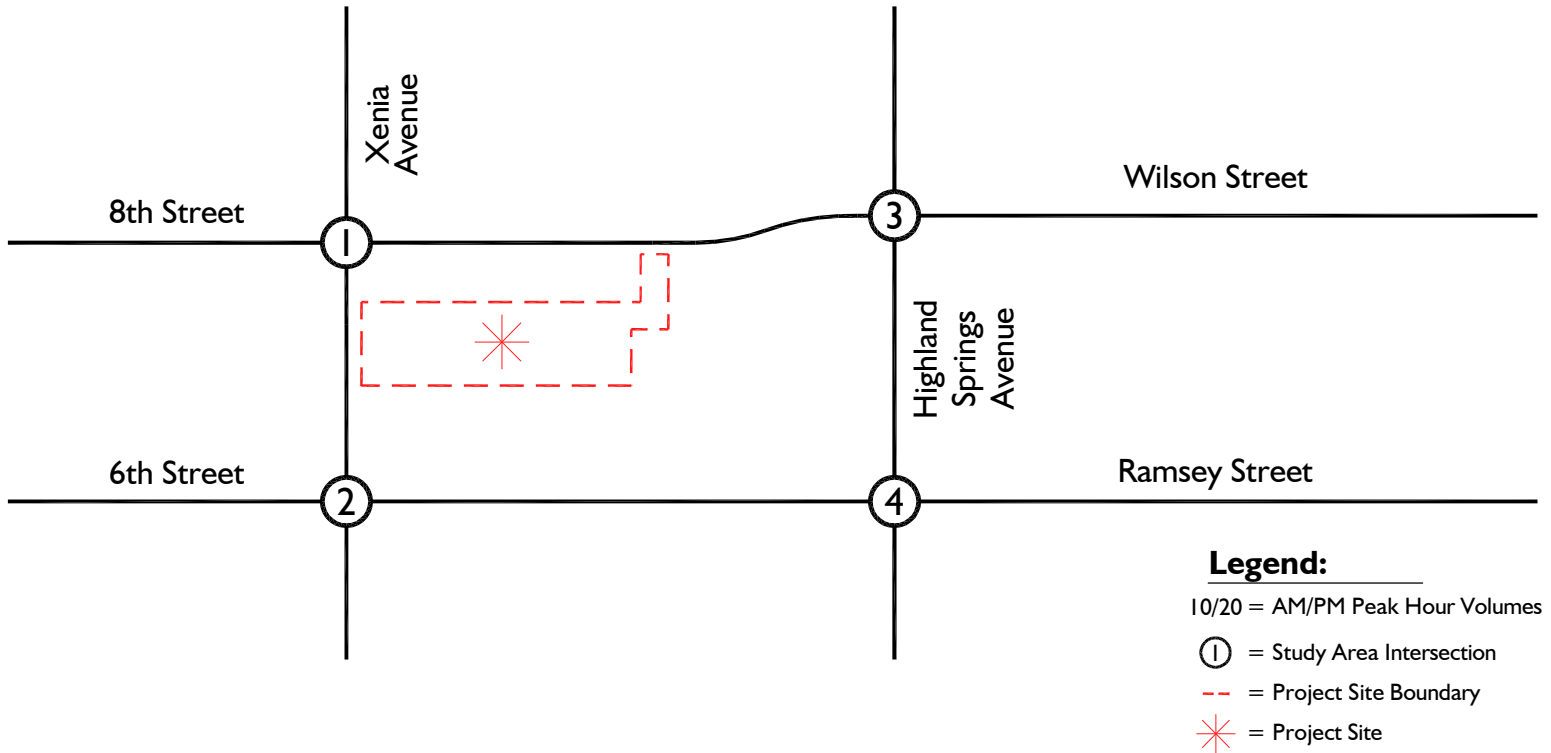
¹ Cumulative Projects information provided by City of Beaumont and City of Banning staff.

² DU = Dwelling Units.
TSF = Thousand Square Feet.

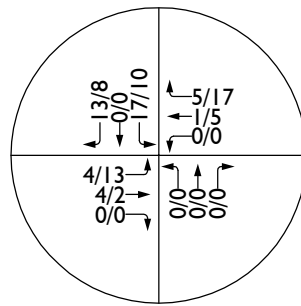
³ Source: *Beaumont Summit Station Traffic Study*, dated February 2022, prepared by Kimley-Horn and Associates, Inc.

Exhibit 4-4

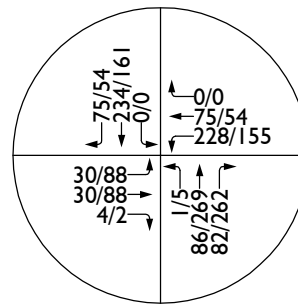
Cumulative Projects Traffic Volumes



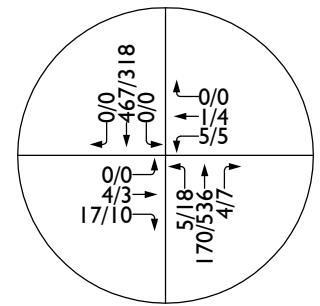
1. Xenia Avenue (NS) at 8th Street (EW)



2. Xenia Avenue (NS) at 6th Street (EW)



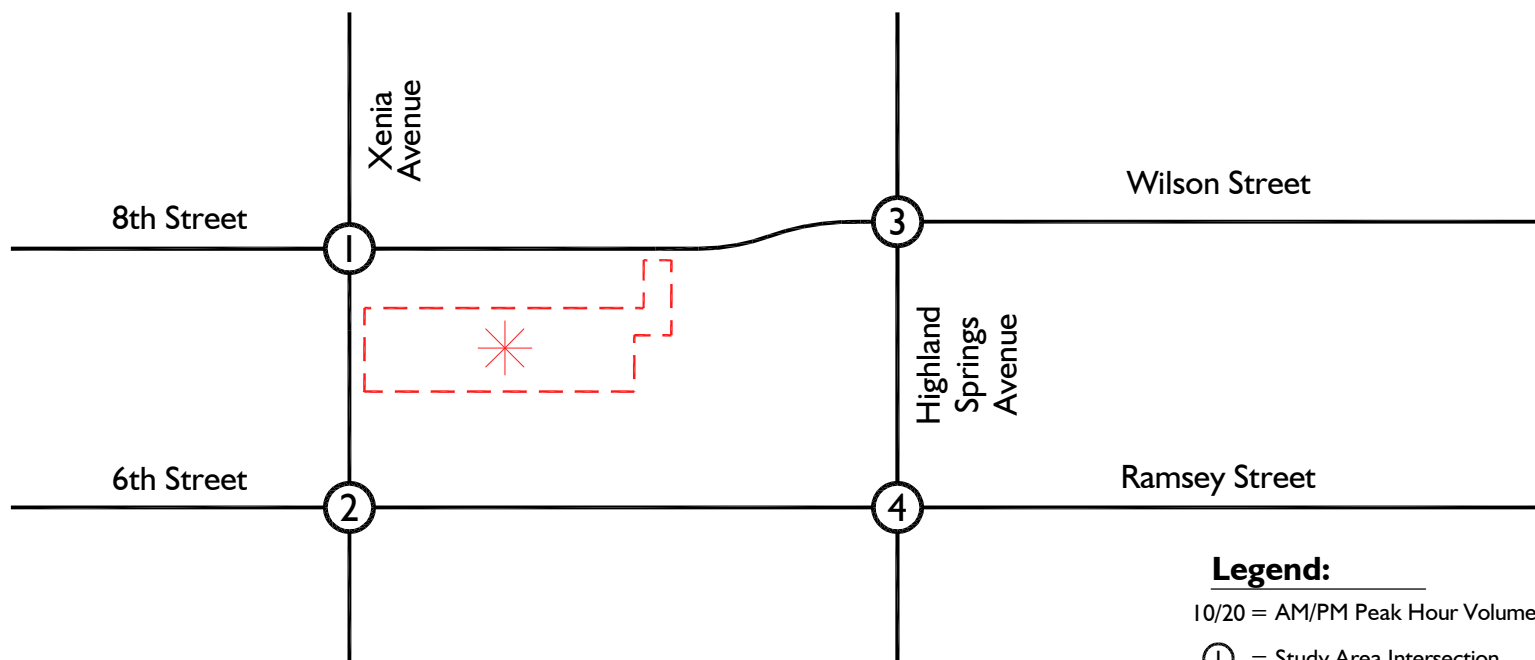
3. Highland Springs Avenue (NS) at Wilson Street / 8th Street (EW)



4. Highland Springs Avenue (NS) at Ramsey Street / 6th Street (EW)



Project Opening Year Without Project Conditions Traffic Volumes



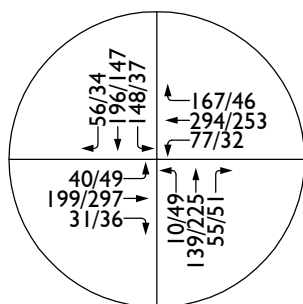
Legend:

10/20 = AM/PM Peak Hour Volumes

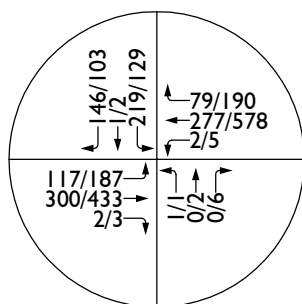
① = Study Area Intersection

-- = Project Site Boundary

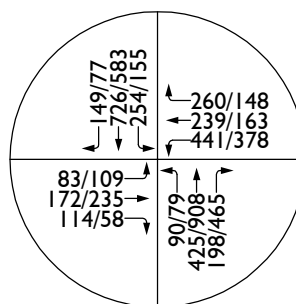
* = Project Site



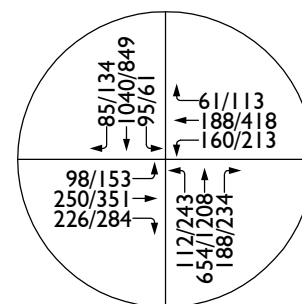
1. Xenia Avenue (NS) at 8th Street (EW)



2. Xenia Avenue (NS) at 6th Street (EW)



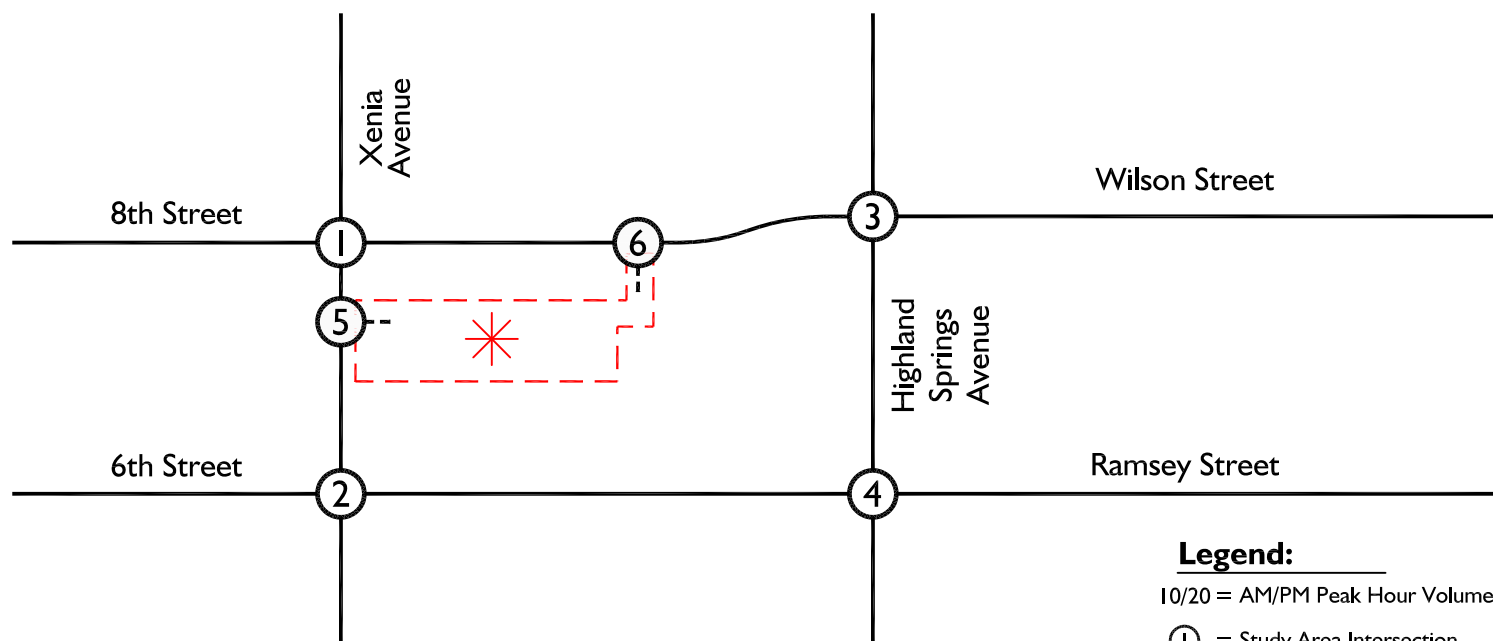
3. Highland Springs Avenue (NS) at Wilson Street / 8th Street (EW)



4. Highland Springs Avenue (NS) at Ramsey Street / 6th Street (EW)



Project Opening Year (2024) With Project Conditions Traffic Volumes



Legend:

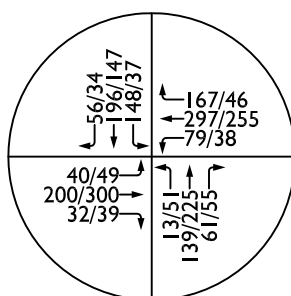
10/20 = AM/PM Peak Hour Volumes

① = Study Area Intersection

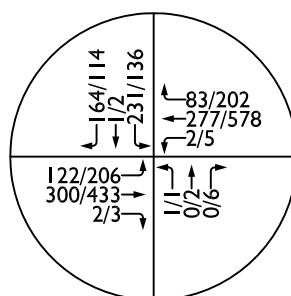
-- = Project Site Boundary

* = Project Site

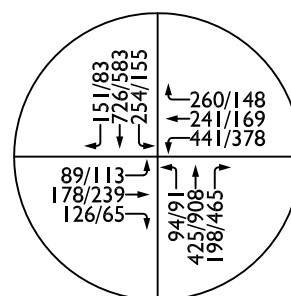
--- = Project Access Driveway



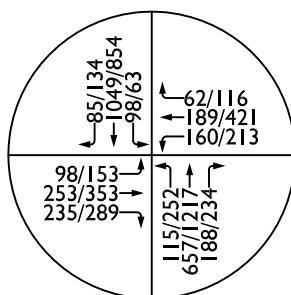
1. Xenia Avenue (NS) at 8th Street (EW)



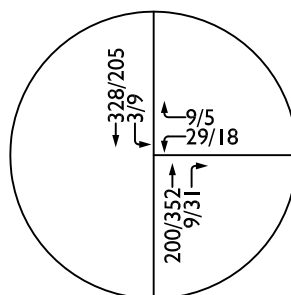
2. Xenia Avenue (NS) at 6th Street (EW)



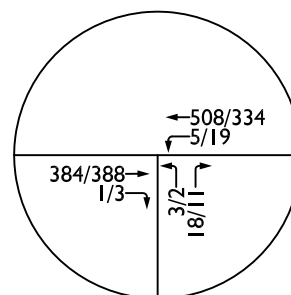
3. Highland Springs Avenue (NS) at Wilson Street / 8th Street (EW)



4. Highland Springs Avenue (NS) at Ramsey Street / 6th Street (EW)



5. Xenia Avenue (NS) at Project Access I (EW)



6. Project Access II (NS) at 8th Street (EW)



5.0 Project Opening Year (2024) Conditions

This section of the report provides a discussion on the study intersection peak hour level of service (LOS) analysis and findings.

5.1 Project Opening Year (2024) Without Project Conditions Level of Service

Project Opening Year (2024) Without Project Conditions LOS calculations for the four (4) existing study intersections are shown in Table 5-1 and are based upon the Project Opening Year (2024) Without Project Conditions traffic volumes shown on Exhibit 4-5 and the existing geometry shown on Exhibit 3-1.

As shown in Table 5-1, the four (4) existing study intersections are forecast to operate at an acceptable LOS (D or better) during the AM and PM peak hours for Project Opening Year (2024) Without Project Conditions.

Detailed LOS analysis worksheets for Project Opening Year (2024) Without Project Conditions are contained in Appendix D.

5.2 Project Opening Year (2024) With Project Conditions Level of Service

Project Opening Year (2024) With Project Conditions LOS calculations for the six (6) study intersections are also shown in Table 5-1 and are based upon the Project Opening Year (2024) With Project Conditions traffic volumes shown on Exhibit 4-6 and the existing geometry shown on Exhibit 3-1.

As shown in Table 5-1, the six (6) study intersections are forecast to operate at an acceptable LOS (D or better) during the AM and PM peak hours for Project Opening Year (2024) With Project Conditions. As such, no improvements are required or recommended at any of the six (6) study intersections.

Detailed LOS analysis worksheets for Project Opening Year (2024) With Project Conditions are contained in Appendix E.

Table 5-1
Study Intersection LOS Analysis Summary
Project Opening Year (2024) Conditions

Intersection		Jurisdiction	Traffic Control ³	Methodology	Without Project				With Project							
					Delay (Sec / Veh) ^{1,2}		Level of Service		Delay (Sec / Veh) ^{1,2}		Increase in Delay		Level of Service		Requires Improvement?	
					AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1.	Xenia Avenue (NS) at 8th Street (EW)	City of Beaumont	AWS	HCM 6	20.6	17.6	C	C	20.9	17.8	0.3	0.2	C	C	No	No
2.	Xenia Avenue (NS) at 6th Street (EW)	City of Beaumont	AWS	HCM 6	13.2	22.4	B	C	13.6	24.2	0.4	1.8	B	C	No	No
3.	Highland Springs Avenue (NS) at 8th Street/Wilson Street (EW)	City of Beaumont / City of Banning	TS	HCM 6	38.0	28.1	D	C	38.5	28.5	0.5	0.4	D	C	No	No
4.	Highland Springs Avenue (NS) at 6th Street/Ramsey Street (EW)	City of Beaumont / City of Banning	TS	HCM 6	34.3	50.7	C	D	34.7	52.5	0.4	1.8	C	D	No	No
5.	Xenia Avenue (NS) at Project Access 1 (EW)	City of Beaumont	CSS	HCM 6	Does Not Currently Exist				12.3	12.9	--	--	B	B	No	No
6.	Project Access 2 (NS) at 8th Street (EW)	City of Beaumont	CSS	HCM 6	Does Not Currently Exist				11.8	11.4	--	--	B	B	No	No

¹ Deficient operation shown in **Bold**.

² HCM Analysis Software: Vistro, Version 2022. Per the Highway Capacity Manual 6th Edition, overall average intersection delay and level of service are shown for intersections with traffic signal or all-way stop control. For intersections with cross-street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

³ TS = Traffic Signal
AWS = All-Way Stop
CSS = Cross Street Stop

6.0 Vehicles Miles Traveled (VMT) Analysis

The following VMT analysis has been conducted in accordance with the *Western Riverside Council of Governments Recommended Traffic Impact Analysis Guidelines for Vehicles Miles Traveled and Level of Service Assessment*, updated January 2020.

6.1 Low VMT Area Screening

The WRCOG guidelines have implemented project screening procedures to identify projects that may be presumed to have a less than significant impact on VMT.

The WRCOG guidelines indicate that projects located within a low VMT-generating area may be presumed to have a less than significant impact absent substantial evidence to the contrary and would be exempted from further project-level VMT assessment.

The results of the VMT screening analysis are summarized in Table 6-1.

Table 6-1
VMT Screening Analysis¹

Project APN	Baseline Year (Opening Year)	OD VMT Per Service Population
419170027	2024	30.2
City of Beaumont Threshold of Significance		31.5
Potentially Significant Impact? (Yes/No)		No

¹ Western Riverside Council of Government (WRCOG) VMT Screening Tool. Website: <https://fehrrandpeers.maps.arcgis.com/apps/webappviewer/index.html?id=4e34ad3196464c8086c881189237b25c>. Accessed: March 2022.

To identify if the project is in a low VMT-generating area, the WRCOG screening tool is used to compare the baseline (i.e. Opening Year 2024) project-generated VMT per service population to the lead agency's (Beaumont) VMT per service population.

Based on the results of the WRCOG VMT screening tool as shown in Appendix F, the proposed project's baseline VMT (i.e. Opening Year 2024) is calculated to be 30.2 VMT per service population. Since the project's baseline VMT is less than the City of Beaumont's threshold of significance of 31.5 VMT per service population, the proposed project satisfies the Low VMT Area Screening procedure

The project may be presumed to have a less than significant impact to VMT.

7.0 Gated Access Points Queuing Analysis

A queue evaluation has been performed at the two gated access driveways for Project Opening Year (2024) With Project Conditions. The purpose of this analysis is to determine whether adequate storage capacity is provided to allow vehicles to enter the project area without causing vehicles to spill back onto the public roadway.

The vehicular queues at the gates under Project Opening Year (2024) Conditions were forecast utilizing the Crommelin methodology. This analysis is based on the intensity of the inbound traffic which is a function of the arrival rate of vehicles at the entry location and the service rate at which vehicles are served by the gate system while entering the project site.

7.1 Arrival Rate

In order to determine the arrival rate of vehicles at the gated entry locations, the project's trip generation and trip distribution was reviewed to estimate the volume of inbound vehicles at both project access points.

Table 7-1 calculates the number of project trips entering the project access driveways based on the project's trip generation and trip distribution.

As shown in Table 7-1, the following inbound trips are anticipated at the entrances on an average day during the peak hour:

- Project Access 1: 40 inbound vehicles per hour.
- Project Access 2: 22 inbound vehicles per hour.

7.2 Service Rate

As detailed in the *Residential Electronic Gate Service Rate Study, July 22, 2016*, prepared by RK Engineering Group Inc., 190 vehicles per hour has been calculated as the recommended gate service rate for one entering lane shared by both residents and visitors. As such, this service rate of 190 vehicles per hour has been utilized as the service rate for both access points serving the proposed project. The gate service rate study is included in Appendix G.

7.3 Intensity Rate

The intensity rate is calculated as the ratio of the arrival rate to the service rate. Hence, the following intensity rates have been calculated for the two (2) project access driveways:

- Project Access 1: 0.21
- Project Access 2: 0.12

7.4 Queue Findings

Exhibit 7-1 and Exhibit 7-2 shows the results of the Crommelin methodology by plotting the intensity rates previously calculated on the Crommelin nomograph and identifying the corresponding number of vehicles in the reservoir space behind the service position.

Table 7-2 summarizes the results of the Crommelin methodology.

As shown in Table 7-2, under Project Opening Year (2024) With Project Conditions:

- The 95th percentile vehicular queue for the Project Access 1 driveway is forecast to be approximately two (2) vehicles during the peak hour.
- The 95th percentile vehicular queue for the Project Access 2 driveway is forecast to be approximately two (2) vehicles during the peak hour.

Based on the project site plan, it is expected that the projected two (2) vehicle queue at both project access driveways can be accommodated and is not expected to spill back onto the public roadway.

7.5 Recommendations

Since the Project Access 2 driveway is not expected to serve visitors and no turnaround area is proposed, a "Residents Only" sign should be installed at the entrance to redirect visitors to utilize the main gate at the Project Access 1 driveway along Xenia Avenue.

Table 7-1
Trips Per Entry Lane

Land Use	Quantity	Units ²	Highest Peak Hour Inbound Trips ¹	Percentage of Trips at Entrance ²		Number of Trips at Entrance	
				Project Access 1	Project Access 2	Project Access 1	Project Access 2
Xenia Multi-Family Residential Project	192	DU	62	65%	35%	40	22

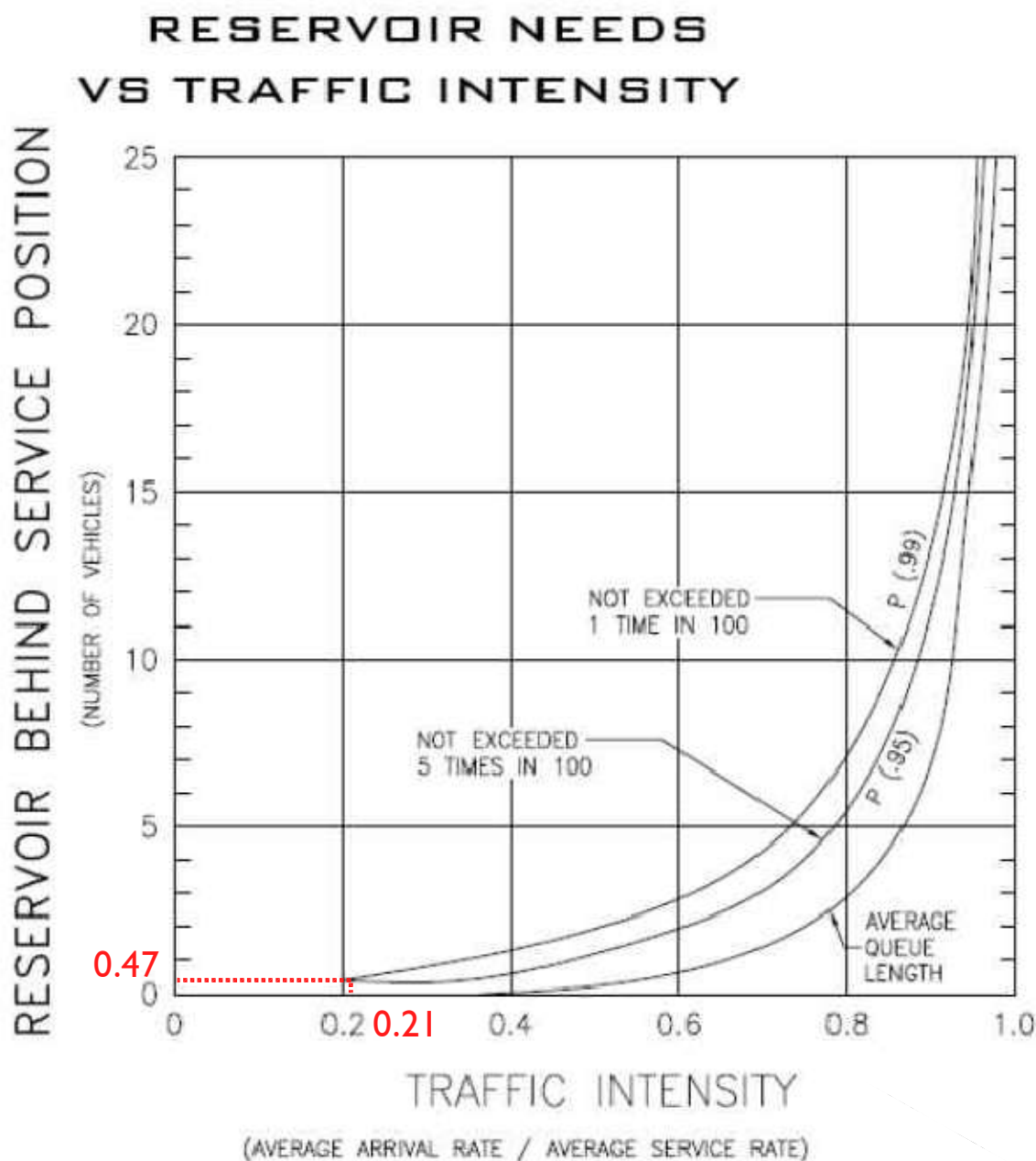
¹ Maximum number of project inbound trips between the project's AM and PM Peak hour trip generation shown in Table 4-2.

² Determined by the project's trip distribution as shown in Exhibit 4-1.

Crommelin Gate Queuing Analysis

Project Access I Gate

Project Opening Year (2024) Conditions



Crommelin Gate Queuing Analysis

Project Access 2 Gate

Project Opening Year (2024) Conditions

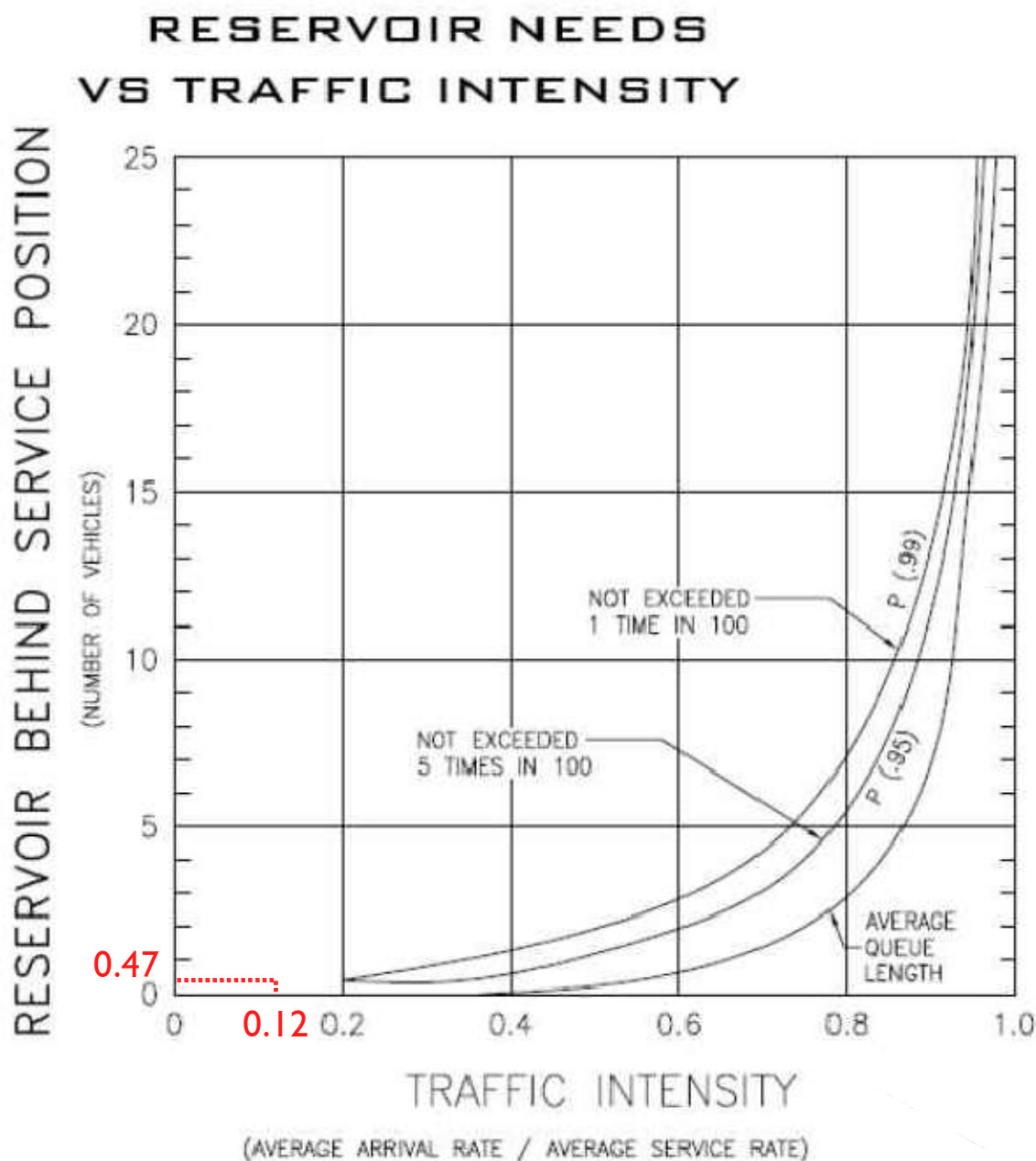


Table 7-2

Gate Service Rate Calculations

Gate Location	Project Opening Year (2024) Crommelin Traffic Arrival Rate (Number of Vehicles per Hour) ¹	Crommelin Traffic Service Rate (Number of Vehicles per Hour) ²	Crommelin Traffic Intensity Rate	Anticipated Maximum Queue Behind Service Position (Vehicles) ³	Anticipated Maximum Queue Including Service Position (Vehicles) ⁴
Project Access 1	40	190	0.21	1	2
Project Access 2	22	190	0.12	1	2

¹ Crommelin traffic arrival rate based on the project's trip generation and inbound trip distribution.

² Recommended gate service rate for combined user (Resident & Visitor) for a single entry lane. Source: *Residential Electronic Gate Service Rate Study*, dated July 22, 2016, prepared by RK Engineering Group Inc.

³ Maximum queue behind service station position has been estimated using the Crommelin graph (rounded up to the nearest vehicle).

⁴ An additional one vehicle is assumed to be in the service position.

8.0 Findings & Recommendations

8.1 Project Summary

The project site is located near the southeast corner of Xenia Avenue and 8th Street in the City of Beaumont. The project site is currently vacant. The proposed project consists of constructing 192 multi-family residential dwelling units on approximately 10.93 acres. The proposed project will also provide ancillary amenities such as a community club and swimming pool. The proposed project will not provide any low income/affordable housing.

The project is planned to open in 2024 and is evaluated in a single phase.

The proposed project is forecast to generate approximately 1,294 daily trips which include approximately 77 AM peak hour trips and approximately 98 PM peak hour trips.

8.2 Intersection Analysis Summary

The intersection level of service analysis has been performed at six (6) intersections within the vicinity of the site where the project may contribute a significant amount of traffic. Project deficiencies have been evaluated within the study area based on peak hour level of service criteria.

Existing Conditions

All four (4) existing study intersections are currently operating at an acceptable level of service (LOS D or better) during the AM and PM peak hours.

Project Opening Year (2024) Without Project Conditions

All four (4) existing study intersections are forecast to operate at an acceptable LOS (D or better) during the AM and PM peak hours for Project Opening Year (2024) Without Project Conditions.

Project Opening Year (2024) With Project Conditions

All six (6) study intersections are forecast to operate at an acceptable LOS (D or better) during the AM and PM peak hours for Project Opening Year (2024) With Project Conditions. As such, no improvements are required or recommended at any of the six (6) study intersections.

8.3 Vehicles Miles Traveled (VMT) Analysis Summary

The proposed project was subject to a VMT analysis conducted in accordance with the *Western Riverside Council of Governments Recommended Traffic Impact Analysis Guidelines for Vehicles Miles Traveled and Level of Service Assessment*, updated January 2020.

The WRCOG guidelines indicate that projects located within a low VMT-generating area may be presumed to have a less than significant impact absent substantial evidence to the contrary and would be exempted from further project-level VMT assessment.

To identify if the project is in a low VMT-generating area, the WRCOG screening tool is used to compare the baseline (i.e. Opening Year 2024) project-generated VMT per service population to the lead agency's (Beaumont) VMT per service population.

Based on the results of the WRCOG VMT screening tool, the proposed project's baseline VMT (i.e. Opening Year 2024) is calculated to be 30.2 VMT per service population. The project's baseline VMT is less than the City of Beaumont's threshold of significance of 31.5 VMT per service population. Therefore, the proposed project satisfies the Low VMT Area Screening procedure.

The project may be presumed to have a less than significant impact to VMT.

8.4 Gated Access Points Queuing Analysis Summary

Based on the project site plan, it is expected that the projected two (2) vehicle queue at both project access driveways can be accommodated and is not expected to spill back onto the public roadway. Since the Project Access 2 driveway is not expected to serve visitors and no turnaround area is proposed, a "Residents Only" sign should be installed at the entrance to redirect visitors to utilize the main gate at the Project Access 1 driveway along Xenia Avenue.

Appendix A

Approved Scope of Work

Xenia Multi-Family Residential Project Revised Traffic Impact Study Scoping Agreement

March 15, 2022

The following provides information on the proposed project, summarizes the analysis scope, parameters, and assumptions for review and approval, and also includes request for information on items related to the study.

A. Project Description: The proposed Xenia Multi-Family Residential development project (hereinafter referred to as project) is located near the southeast corner of Xenia Avenue and 8th Street in the City of Beaumont.

The proposed project site is currently vacant. The project consists of constructing and operating 192 multi-family dwelling units on approximately 10.93 acres. The project will also provide ancillary amenities such as a community club and swimming pool. The proposed project will not provide any low income/affordable housing.

Main access for the project is planned via the following:

- One (1) full-access unsignalized access driveway along 8th Street (Gated Access)
- One (1) full-access unsignalized access driveway along Xenia Avenue (Gated Access)

The project is planned to open in 2024 and will be evaluated in one single phase.

Exhibit A shows the location map of the proposed project. Exhibit B shows the proposed site plan.

B. Project Trip Generation: Trip generation represents the amount of traffic that is attracted and produced by a development.

Trip generation is typically estimated based on the trip generation rates from the latest *Institute of Transportation Engineers (ITE) Trip Generation Manual*. The 11th Edition, 2021 ITE Manual has been utilized for this scoping agreement. This publication provides a comprehensive evaluation of trip generation rates for a variety of land uses.

Table 1 shows the ITE trip generation rates utilized for the trip generation analysis of the proposed project land use.

Table 1
ITE Trip Generation Rates¹

Land Use	Units	ITE Code	AM			PM			Daily
			In	Out	Total	In	Out	Total	
Multi-family Housing - Low Rise	DU	220	24%	76%	0.40	63%	37%	0.51	6.74

¹ Source: 2021 ITE Trip Generation Manual (11th Edition)

² DU = Dwelling Units

Table 2 shows the trip generation for the proposed project utilizing the trip generation rates shown in Table 1.

Table 2
Proposed Project Trip Generation¹

Land Use (ITE Code)	Quantity	Units	AM			PM			Daily
			In	Out	Total	In	Out	Total	
Xenia Multi-Family Residential Project	192	DU	18	59	77	62	36	98	1,294

¹ Source: 2021 ITE Trip Generation Manual (11th Edition)

² DU = Dwelling Units

As shown in Table 2, based on the ITE trip generation rates, the proposed project is forecast to generate approximately 1,294 daily trips which include approximately 77 AM peak hour trips and approximately 98 PM peak hour trips.

C. Project Trip Distribution: Exhibit C shows the project trip distribution for the proposed project.

D. Study Intersections: The analysis will evaluate the following six (6) study intersections:

1. Xenia Avenue (NS) at 8th Street (EW)
2. Xenia Avenue (NS) at 6th Street (EW)
3. Highland Springs Avenue (NS) at 8th Street (EW)
4. Highland Springs Avenue (NS) at 6th Street (EW)

5. Xenia Avenue (NS) at Project Access 1 (EW)

6. Project Access 2 (NS) at 8th Street (EW)

E. Analysis Scenarios: The analysis will evaluate traffic conditions for the following scenarios during the weekday AM (7:00 AM to 9:00 AM) and weekday PM (4:00 PM to 6:00 PM):

- Existing Conditions;
- Project Opening Year Without Project Conditions; and
- Project Opening Year With Project Conditions;

F. Traffic Analysis Parameters: The analysis will utilize the following parameters:

- Synchro and/or Vistro analysis software and the Highway Capacity Manual 6th Editions (HCM 6) methodology.
- Optimized signal timing;

G. Existing Traffic Counts: The analysis will utilize new traffic counts. The counts will not be collected by vehicle classification.

- AM peak period counts will be collected during one typical weekday from 7:00 AM to 9:00 AM.
- PM peak period counts will be collected during one typical weekday from 4:00 PM to 6:00 PM.

H. Forecast Opening Year (2024) Conditions Traffic Volumes: Opening year (2024) background traffic volumes will be derived by applying an annual growth rate of two percent (2%) per year to existing traffic volumes and addition of traffic associated with specific cumulative projects in the area provided by the City.

I. Performance Criteria: Acceptable LOS of D or better.

J. Queuing Analysis at Gated Access Points: Since the two project access points are proposed to be gated, the traffic impact study will evaluate the projected inbound queues for each project access point utilizing City of Beaumont criteria and/or the Crommelin Methodology.

K. VMT Analysis:

Effective July 1st, 2020, the longstanding metric of roadway level of service (LOS), which is typically measured in terms of vehicle delay, roadway capacity and congestion, will no longer be considered a significant impact under the California Environmental Quality Act (CEQA). Pursuant to CEQA Guidelines, Section 15064.3, VMT is now the most appropriate measure of transportation impacts.

Based on preliminary review of the VMT data for the site utilizing the WRCOG website, the project appears to be in a low VMT area. Therefore, the project is expected to meet the VMT screening criteria consistent with WRCOG and the County of Riverside and a full VMT analysis will not be provided. Exhibit D presents a screenshot from the online WRCOG VMT Tool, prepared by Fehr & Peers, stating that the project site is located within low VMT generating TAZ's. The TIA will present all supporting maps and data to justify the project meeting the VMT screening criteria.

L. Mitigation Measures: If an intersection is operating deficiently and a significant impact is anticipated, improvements shall be identified to improve intersection operations back to overall level of service prior to the addition of project-related traffic, If an impact drops from an acceptable LOS to an unacceptable LOS level, then improvements may be necessary to return intersection operations back to an acceptable level.

M. Request for Information: Please provide information on the following for use in the traffic study:

- Information on cumulative projects that need to be included in the traffic analysis (location, land use type(s), and land use quantities); and
- Information on future roadway and circulation system modifications/improvements that are planned within the study area and would potentially affect the analysis.

If you have any questions, or would like further review, please call us at (949) 474-0809.

Sincerely,

RK ENGINEERING GROUP, INC.

A handwritten signature in black ink, appearing to read 'Justin Tucker', with a stylized, cursive script.

Justin Tucker, P.E.
Principal Engineer

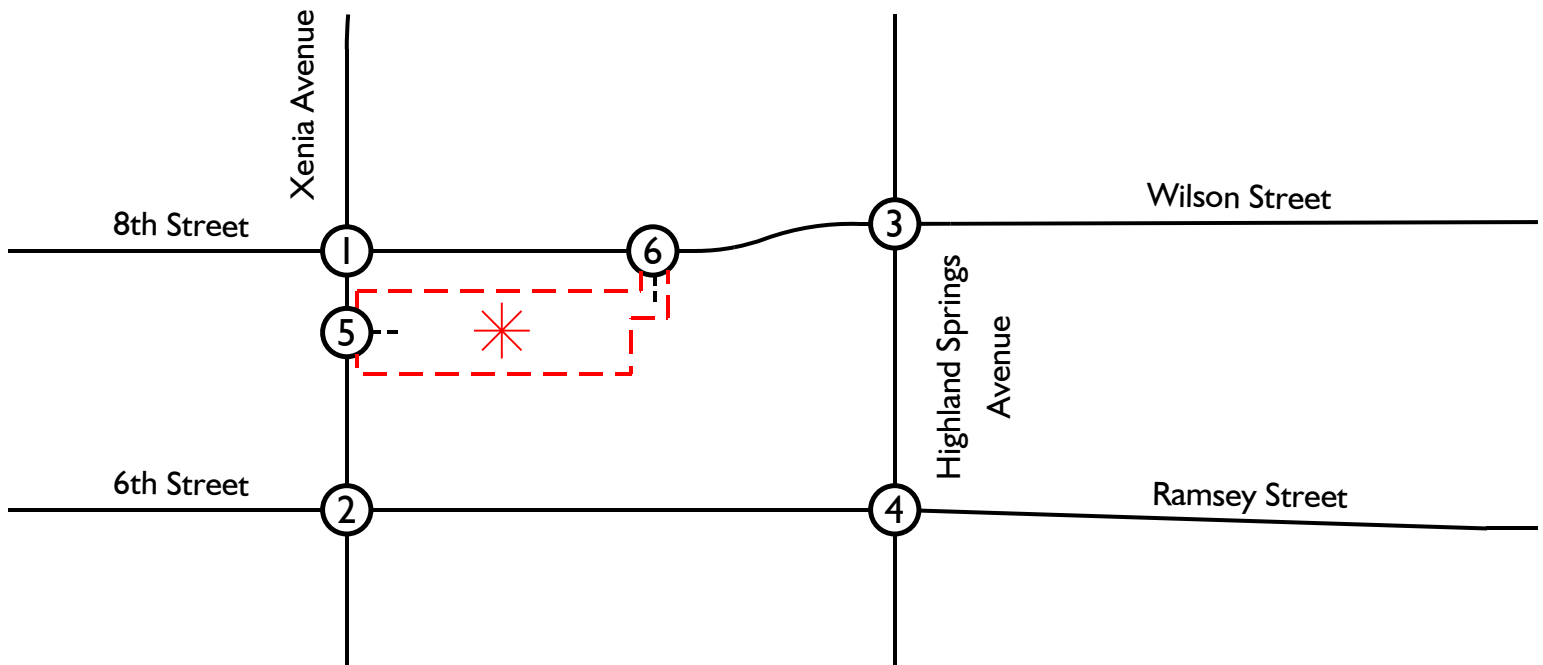
Attachments

Approved by:

City of Beaumont

Date

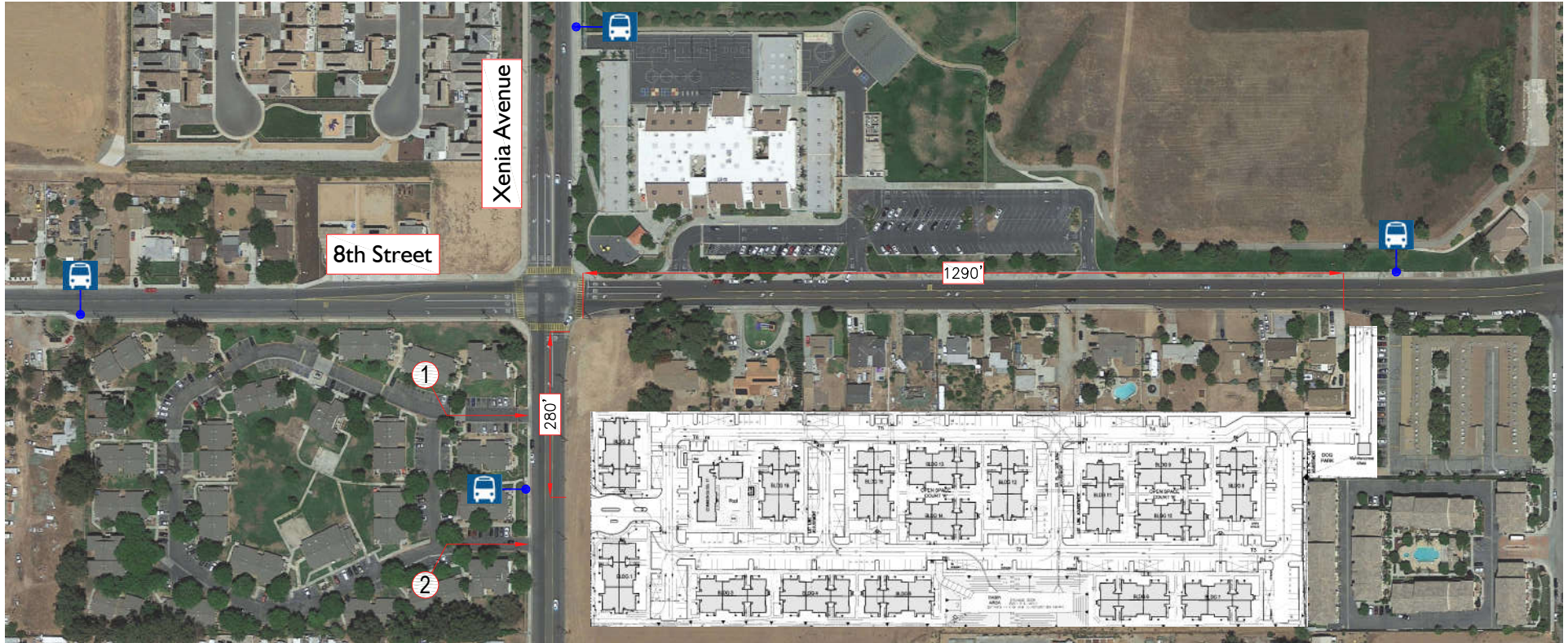
Attachments



Legend:

- ① = Study Area Intersection
- = Project Site Boundary
- * = Project Site
- = Project Access Driveway





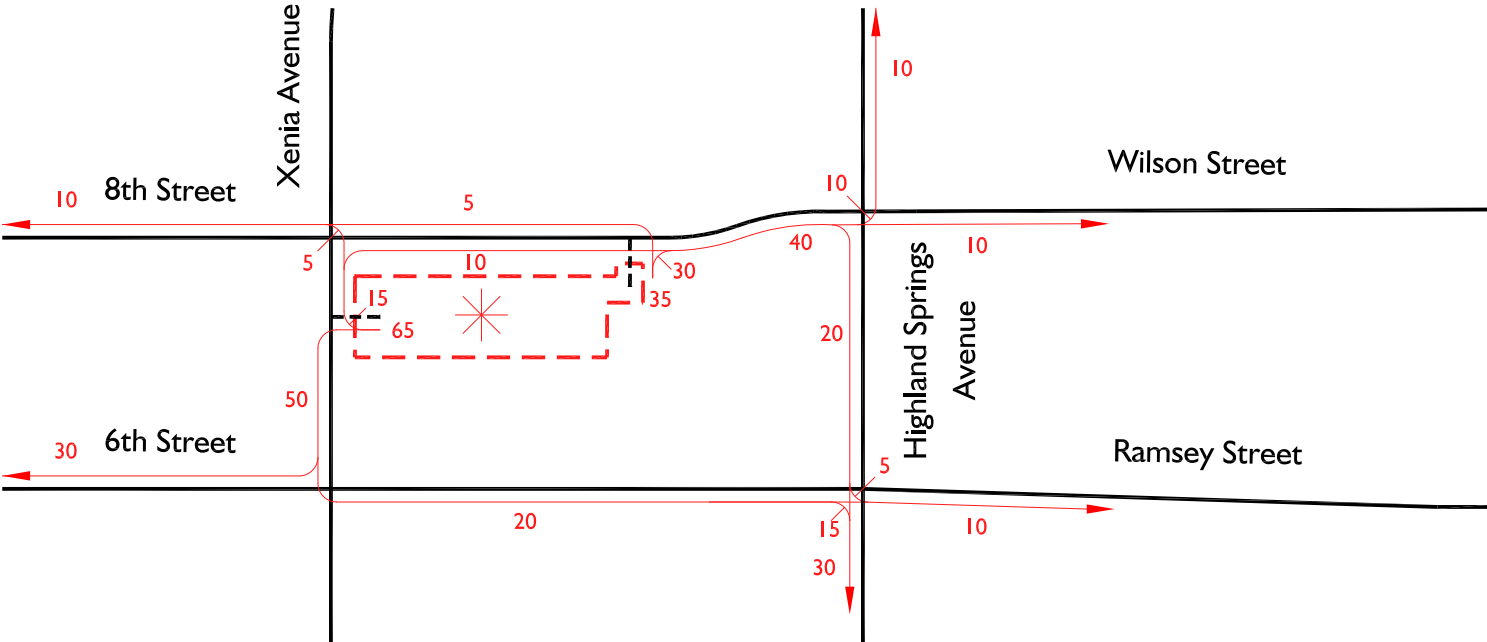
Legend:

-  = Bus Stop Location
- ① = 216-Unit Noble Creek Apartments Driveway #1
- ② = 216-Unit Noble Creek Apartments Driveway #2



Exhibit C

Project Trip Distribution

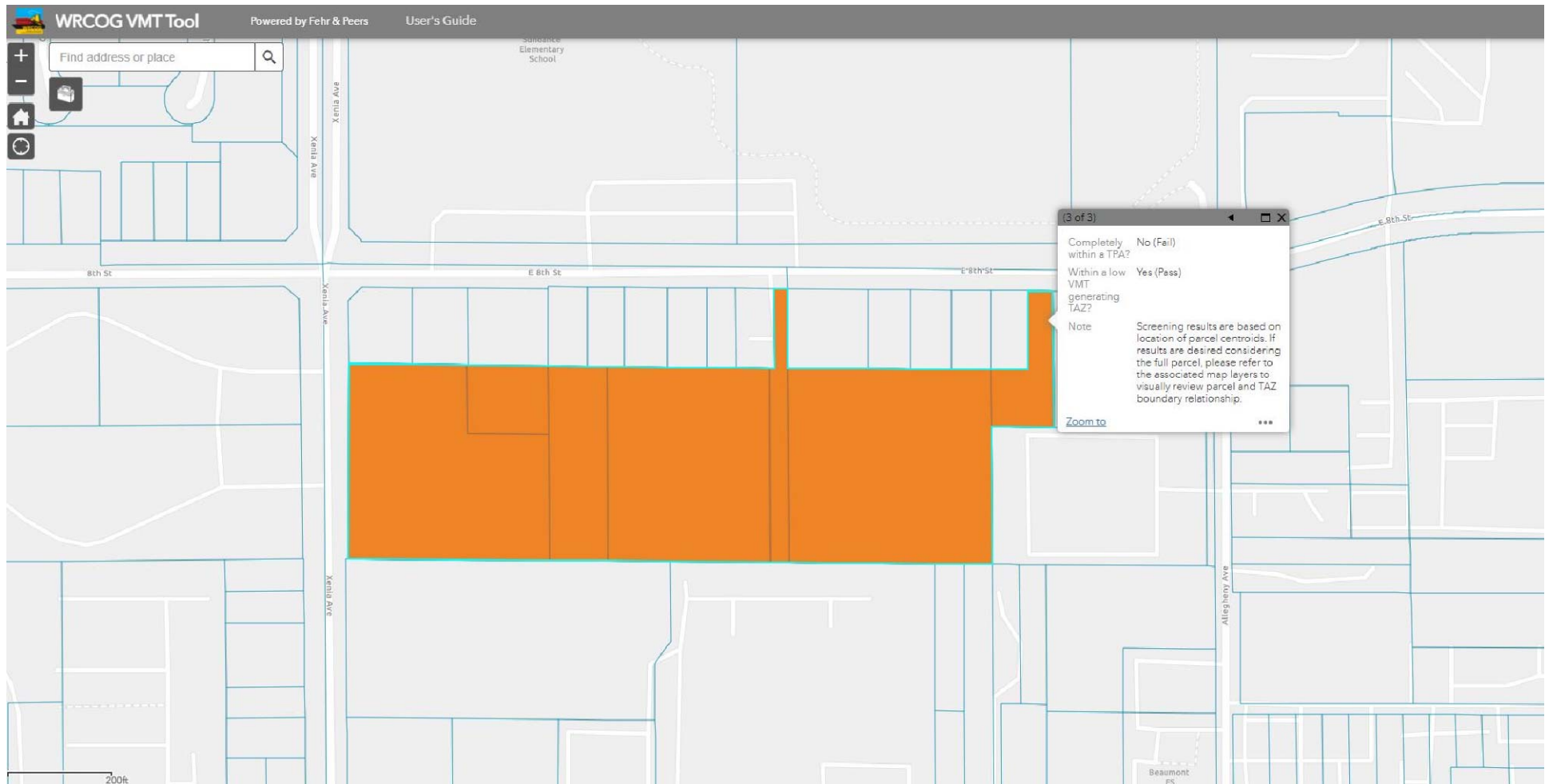


Legend:

10 = Percent to/from Project



Exhibit D WRCOG VMT Tool Output



2640-2020-02

XENIA MULTI-FAMILY RESIDENTIAL PROJECT TRAFFIC IMPACT ANALYSIS, City of Beaumont, CA

Appendix B

Existing Traffic Count Worksheets

City of Beaumont
N/S: Xenia Avenue
E/W: 8th Street
Weather: Clear

File Name : 01_BMT_Xenia_8th AM
Site Code : 10522218
Start Date : 3/10/2022
Page No : 1

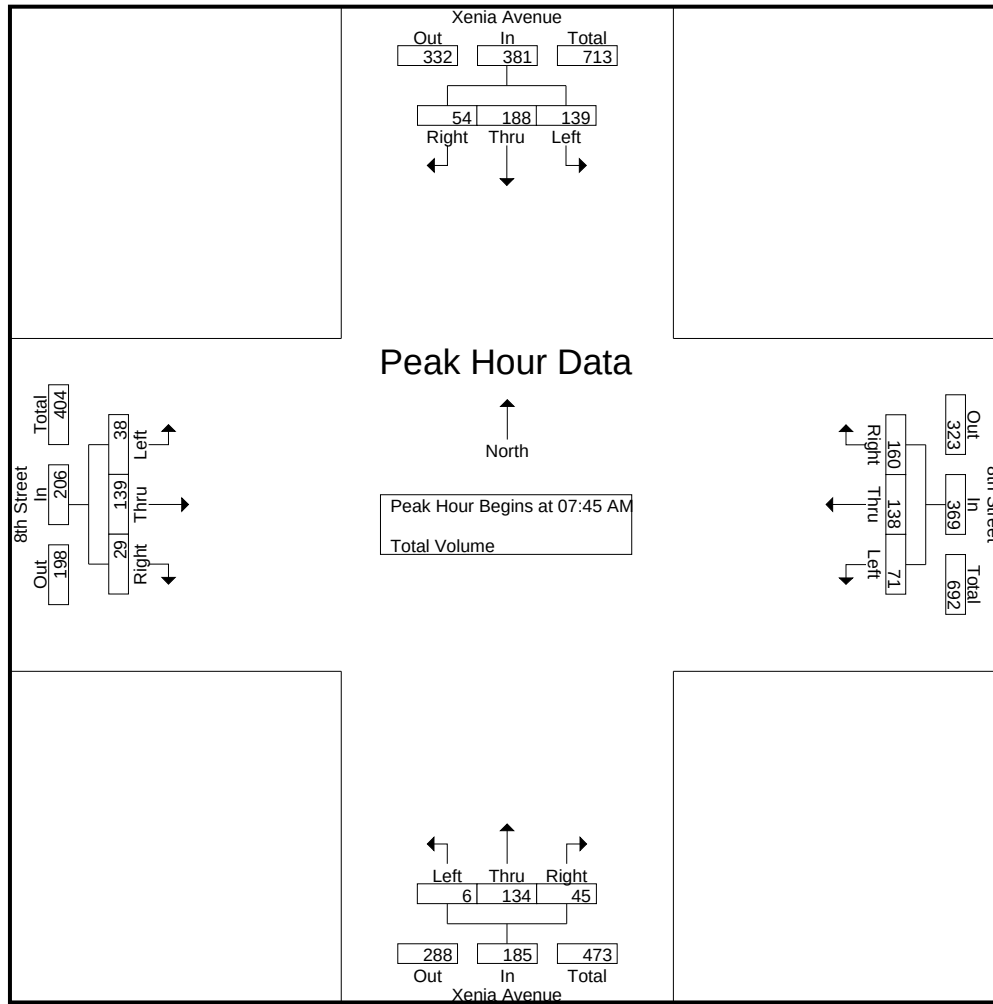
Groups Printed- Total Volume

	Xenia Avenue Southbound				8th Street Westbound				Xenia Avenue Northbound				8th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	7	33	12	52	2	8	5	15	2	8	5	15	3	19	3	25	107
07:15 AM	17	30	8	55	6	9	6	21	1	21	4	26	1	25	4	30	132
07:30 AM	37	35	12	84	6	27	18	51	1	21	16	38	5	36	11	52	225
07:45 AM	61	36	18	115	25	41	55	121	1	30	22	53	10	44	6	60	349
Total	122	134	50	306	39	85	84	208	5	80	47	132	19	124	24	167	813
08:00 AM	43	31	14	88	24	37	64	125	1	27	7	35	7	37	6	50	298
08:15 AM	14	44	7	65	11	33	26	70	3	42	9	54	10	35	11	56	245
08:30 AM	21	77	15	113	11	27	15	53	1	35	7	43	11	23	6	40	249
08:45 AM	19	65	24	108	7	13	16	36	4	26	9	39	15	21	10	46	229
Total	97	217	60	374	53	110	121	284	9	130	32	171	43	116	33	192	1021
Grand Total	219	351	110	680	92	195	205	492	14	210	79	303	62	240	57	359	1834
Apprch %	32.2	51.6	16.2		18.7	39.6	41.7		4.6	69.3	26.1		17.3	66.9	15.9		
Total %	11.9	19.1	6	37.1	5	10.6	11.2	26.8	0.8	11.5	4.3	16.5	3.4	13.1	3.1	19.6	

	Xenia Avenue Southbound				8th Street Westbound				Xenia Avenue Northbound				8th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	61	36	18	115	25	41	55	121	1	30	22	53	10	44	6	60	349
08:00 AM	43	31	14	88	24	37	64	125	1	27	7	35	7	37	6	50	298
08:15 AM	14	44	7	65	11	33	26	70	3	42	9	54	10	35	11	56	245
08:30 AM	21	77	15	113	11	27	15	53	1	35	7	43	11	23	6	40	249
Total Volume	139	188	54	381	71	138	160	369	6	134	45	185	38	139	29	206	1141
% App. Total	36.5	49.3	14.2		19.2	37.4	43.4		3.2	72.4	24.3		18.4	67.5	14.1		
PHF	.570	.610	.750	.828	.710	.841	.625	.738	.500	.798	.511	.856	.864	.790	.659	.858	.817

City of Beaumont
N/S: Xenia Avenue
E/W: 8th Street
Weather: Clear

File Name : 01_BMT_Xenia_8th AM
Site Code : 10522218
Start Date : 3/10/2022
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Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM				07:45 AM				07:45 AM				07:30 AM			
+0 mins.	61	36	18	115	25	41	55	121	1	30	22	53	5	36	11	52
+15 mins.	43	31	14	88	24	37	64	125	1	27	7	35	10	44	6	60
+30 mins.	14	44	7	65	11	33	26	70	3	42	9	54	7	37	6	50
+45 mins.	21	77	15	113	11	27	15	53	1	35	7	43	10	35	11	56
Total Volume	139	188	54	381	71	138	160	369	6	134	45	185	32	152	34	218
% App. Total	36.5	49.3	14.2		19.2	37.4	43.4		3.2	72.4	24.3		14.7	69.7	15.6	
PHF	.570	.610	.750	.828	.710	.841	.625	.738	.500	.798	.511	.856	.800	.864	.773	.908

City of Beaumont
N/S: Xenia Avenue
E/W: 8th Street
Weather: Clear

File Name : 01_BMT_Xenia_8th PM
Site Code : 10522218
Start Date : 3/10/2022
Page No : 1

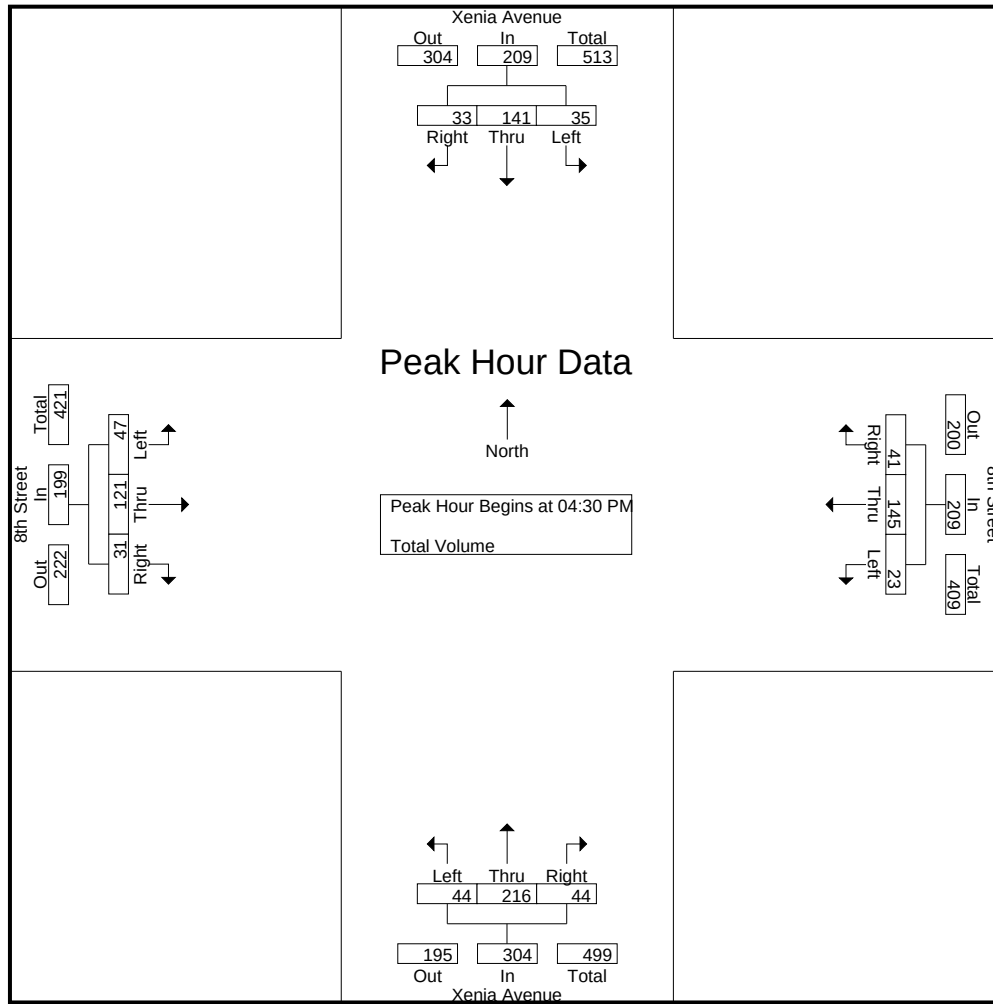
Groups Printed- Total Volume

	Xenia Avenue Southbound				8th Street Westbound				Xenia Avenue Northbound				8th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	10	39	14	63	9	36	16	61	6	37	7	50	8	37	11	56	230
04:15 PM	8	39	9	56	1	31	9	41	11	41	10	62	9	28	13	50	209
04:30 PM	10	31	9	50	3	42	11	56	9	54	8	71	9	33	10	52	229
04:45 PM	8	42	10	60	6	34	9	49	13	56	11	80	15	30	9	54	243
Total	36	151	42	229	19	143	45	207	39	188	36	263	41	128	43	212	911
05:00 PM	6	43	6	55	5	26	15	46	12	51	9	72	11	28	3	42	215
05:15 PM	11	25	8	44	9	43	6	58	10	55	16	81	12	30	9	51	234
05:30 PM	11	25	9	45	5	29	14	48	9	66	5	80	5	28	1	34	207
05:45 PM	19	42	10	71	7	25	21	53	7	48	12	67	8	29	6	43	234
Total	47	135	33	215	26	123	56	205	38	220	42	300	36	115	19	170	890
Grand Total	83	286	75	444	45	266	101	412	77	408	78	563	77	243	62	382	1801
Apprch %	18.7	64.4	16.9		10.9	64.6	24.5		13.7	72.5	13.9		20.2	63.6	16.2		
Total %	4.6	15.9	4.2	24.7	2.5	14.8	5.6	22.9	4.3	22.7	4.3	31.3	4.3	13.5	3.4	21.2	

	Xenia Avenue Southbound				8th Street Westbound				Xenia Avenue Northbound				8th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	10	31	9	50	3	42	11	56	9	54	8	71	9	33	10	52	229
04:45 PM	8	42	10	60	6	34	9	49	13	56	11	80	15	30	9	54	243
05:00 PM	6	43	6	55	5	26	15	46	12	51	9	72	11	28	3	42	215
05:15 PM	11	25	8	44	9	43	6	58	10	55	16	81	12	30	9	51	234
Total Volume	35	141	33	209	23	145	41	209	44	216	44	304	47	121	31	199	921
% App. Total	16.7	67.5	15.8		11	69.4	19.6		14.5	71.1	14.5		23.6	60.8	15.6		
PHF	.795	.820	.825	.871	.639	.843	.683	.901	.846	.964	.688	.938	.783	.917	.775	.921	.948

City of Beaumont
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Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:30 PM				04:45 PM				04:00 PM			
+0 mins.	10	39	14	63	3	42	11	56	13	56	11	80	8	37	11	56
+15 mins.	8	39	9	56	6	34	9	49	12	51	9	72	9	28	13	50
+30 mins.	10	31	9	50	5	26	15	46	10	55	16	81	9	33	10	52
+45 mins.	8	42	10	60	9	43	6	58	9	66	5	80	15	30	9	54
Total Volume	36	151	42	229	23	145	41	209	44	228	41	313	41	128	43	212
% App. Total	15.7	65.9	18.3		11	69.4	19.6		14.1	72.8	13.1		19.3	60.4	20.3	
PHF	.900	.899	.750	.909	.639	.843	.683	.901	.846	.864	.641	.966	.683	.865	.827	.946

City of Beaumont
N/S: Xenia Avenue
E/W: 6th Street
Weather: Clear

File Name : 02_BMT_Xenia_6th AM
Site Code : 10522218
Start Date : 3/10/2022
Page No : 1

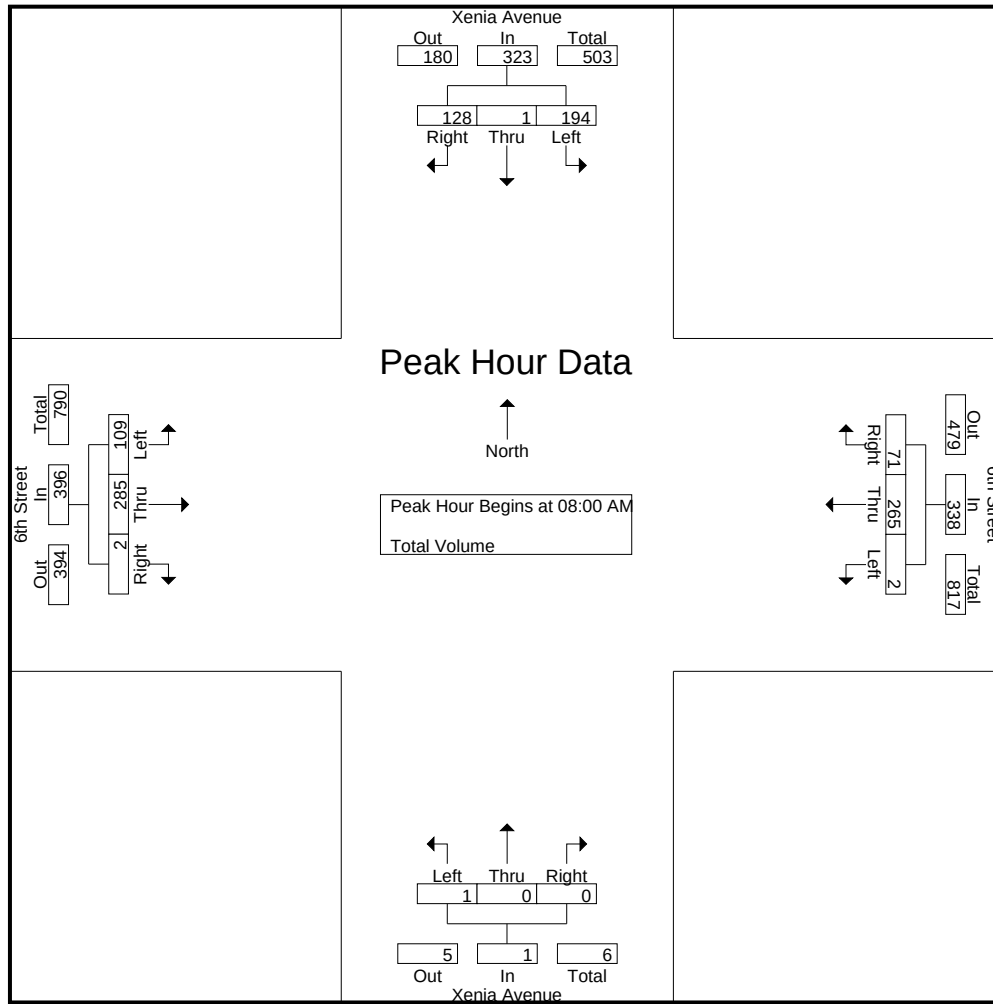
Groups Printed- Total Volume

	Xenia Avenue Southbound				6th Street Westbound				Xenia Avenue Northbound				6th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	20	1	17	38	0	43	9	52	2	0	0	2	7	36	0	43	135
07:15 AM	24	0	21	45	0	32	9	41	0	0	0	0	16	53	0	69	155
07:30 AM	32	0	18	50	2	63	17	82	0	0	0	0	22	85	0	107	239
07:45 AM	28	0	27	55	1	58	12	71	0	0	1	1	32	84	0	116	243
Total	104	1	83	188	3	196	47	246	2	0	1	3	77	258	0	335	772
08:00 AM	38	1	31	70	0	70	13	83	1	0	0	1	27	73	0	100	254
08:15 AM	41	0	35	76	0	68	33	101	0	0	0	0	31	65	0	96	273
08:30 AM	58	0	35	93	2	65	12	79	0	0	0	0	29	60	0	89	261
08:45 AM	57	0	27	84	0	62	13	75	0	0	0	0	22	87	2	111	270
Total	194	1	128	323	2	265	71	338	1	0	0	1	109	285	2	396	1058
Grand Total	298	2	211	511	5	461	118	584	3	0	1	4	186	543	2	731	1830
Apprch %	58.3	0.4	41.3		0.9	78.9	20.2		75	0	25		25.4	74.3	0.3		
Total %	16.3	0.1	11.5	27.9	0.3	25.2	6.4	31.9	0.2	0	0.1	0.2	10.2	29.7	0.1	39.9	

	Xenia Avenue Southbound				6th Street Westbound				Xenia Avenue Northbound				6th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	38	1	31	70	0	70	13	83	1	0	0	1	27	73	0	100	254
08:15 AM	41	0	35	76	0	68	33	101	0	0	0	0	31	65	0	96	273
08:30 AM	58	0	35	93	2	65	12	79	0	0	0	0	29	60	0	89	261
08:45 AM	57	0	27	84	0	62	13	75	0	0	0	0	22	87	2	111	270
Total Volume	194	1	128	323	2	265	71	338	1	0	0	1	109	285	2	396	1058
% App. Total	60.1	0.3	39.6		0.6	78.4	21		100	0	0		27.5	72	0.5		
PHF	.836	.250	.914	.868	.250	.946	.538	.837	.250	.000	.000	.250	.879	.819	.250	.892	.969

City of Beaumont
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File Name : 02_BMT_Xenia_6th AM
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Start Date : 3/10/2022
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM				08:00 AM				07:00 AM				07:30 AM			
+0 mins.	38	1	31	70	0	70	13	83	2	0	0	2	22	85	0	107
+15 mins.	41	0	35	76	0	68	33	101	0	0	0	0	32	84	0	116
+30 mins.	58	0	35	93	2	65	12	79	0	0	0	0	27	73	0	100
+45 mins.	57	0	27	84	0	62	13	75	0	0	1	1	31	65	0	96
Total Volume	194	1	128	323	2	265	71	338	2	0	1	3	112	307	0	419
% App. Total	60.1	0.3	39.6		0.6	78.4	21		66.7	0	33.3		26.7	73.3	0	
PHF	.836	.250	.914	.868	.250	.946	.538	.837	.250	.000	.250	.375	.875	.903	.000	.903

City of Beaumont
N/S: Xenia Avenue
E/W: 6th Street
Weather: Clear

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Page No : 1

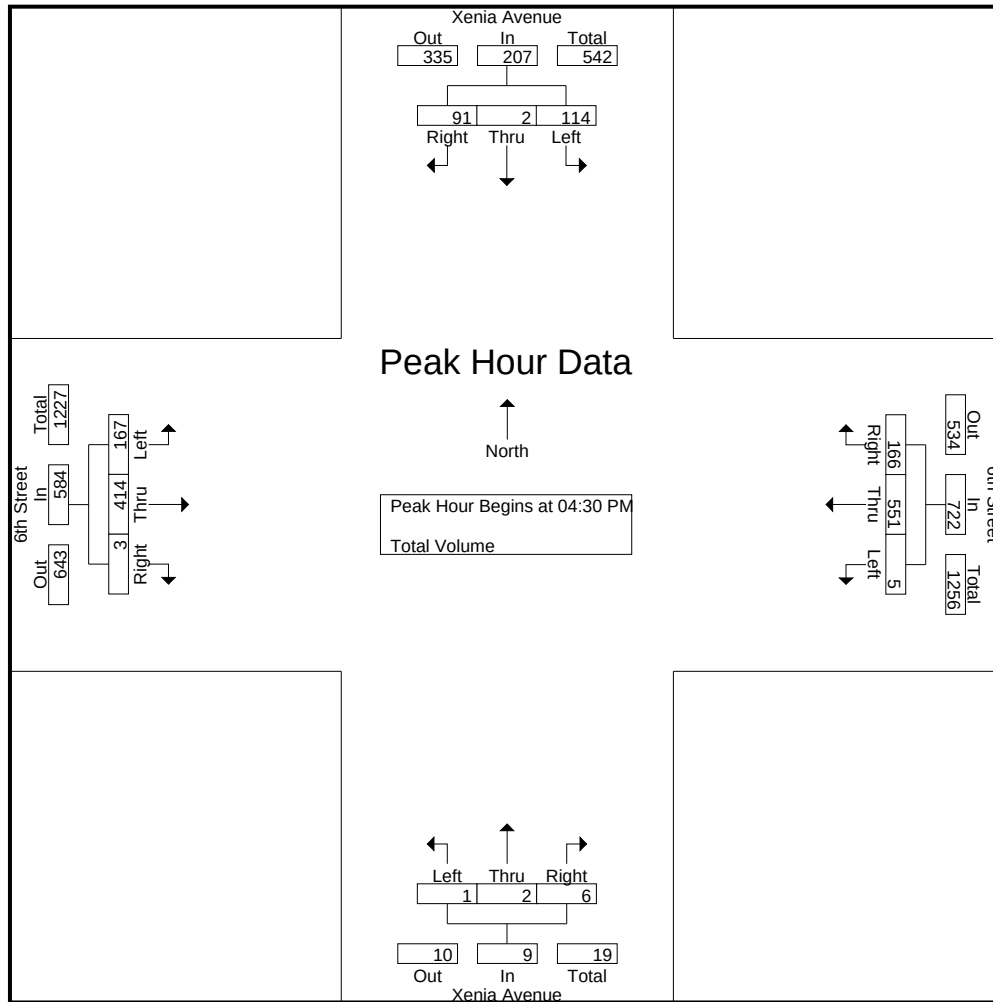
Groups Printed- Total Volume

	Xenia Avenue Southbound				6th Street Westbound				Xenia Avenue Northbound				6th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	40	0	25	65	0	103	27	130	0	0	0	0	33	110	2	145	340
04:15 PM	38	0	14	52	2	95	33	130	0	0	2	2	33	103	0	136	320
04:30 PM	32	0	20	52	2	149	38	189	0	0	0	0	38	112	0	150	391
04:45 PM	29	1	26	56	3	126	46	175	0	0	3	3	38	104	0	142	376
Total	139	1	85	225	7	473	144	624	0	0	5	5	142	429	2	573	1427
05:00 PM	33	0	21	54	0	135	34	169	0	1	2	3	47	111	3	161	387
05:15 PM	20	1	24	45	0	141	48	189	1	1	1	3	44	87	0	131	368
05:30 PM	17	0	20	37	0	134	35	169	0	0	1	1	46	111	2	159	366
05:45 PM	35	0	26	61	0	99	31	130	1	0	1	2	45	95	0	140	333
Total	105	1	91	197	0	509	148	657	2	2	5	9	182	404	5	591	1454
Grand Total	244	2	176	422	7	982	292	1281	2	2	10	14	324	833	7	1164	2881
Apprch %	57.8	0.5	41.7		0.5	76.7	22.8		14.3	14.3	71.4		27.8	71.6	0.6		
Total %	8.5	0.1	6.1	14.6	0.2	34.1	10.1	44.5	0.1	0.1	0.3	0.5	11.2	28.9	0.2	40.4	

	Xenia Avenue Southbound				6th Street Westbound				Xenia Avenue Northbound				6th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	32	0	20	52	2	149	38	189	0	0	0	0	38	112	0	150	391
04:45 PM	29	1	26	56	3	126	46	175	0	0	3	3	38	104	0	142	376
05:00 PM	33	0	21	54	0	135	34	169	0	1	2	3	47	111	3	161	387
05:15 PM	20	1	24	45	0	141	48	189	1	1	1	3	44	87	0	131	368
Total Volume	114	2	91	207	5	551	166	722	1	2	6	9	167	414	3	584	1522
% App. Total	55.1	1	44		0.7	76.3	23		11.1	22.2	66.7		28.6	70.9	0.5		
PHF	.864	.500	.875	.924	.417	.924	.865	.955	.250	.500	.500	.750	.888	.924	.250	.907	.973

City of Beaumont
N/S: Xenia Avenue
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File Name : 02_BMT_Xenia_6th PM
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Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:30 PM				04:45 PM				04:45 PM			
+0 mins.	40	0	25	65	2	149	38	189	0	0	3	3	38	104	0	142
+15 mins.	38	0	14	52	3	126	46	175	0	1	2	3	47	111	3	161
+30 mins.	32	0	20	52	0	135	34	169	1	1	1	3	44	87	0	131
+45 mins.	29	1	26	56	0	141	48	189	0	0	1	1	46	111	2	159
Total Volume	139	1	85	225	5	551	166	722	1	2	7	10	175	413	5	593
% App. Total	61.8	0.4	37.8		0.7	76.3	23		10	20	70		29.5	69.6	0.8	
PHF	.869	.250	.817	.865	.417	.924	.865	.955	.250	.500	.583	.833	.931	.930	.417	.921

City of Beaumont
N/S: Highland Springs Avenue
E/W: 8th Street/Wilson Street
Weather: Clear

File Name : 03_BMT_Highland_8th AM
Site Code : 10522218
Start Date : 3/10/2022
Page No : 1

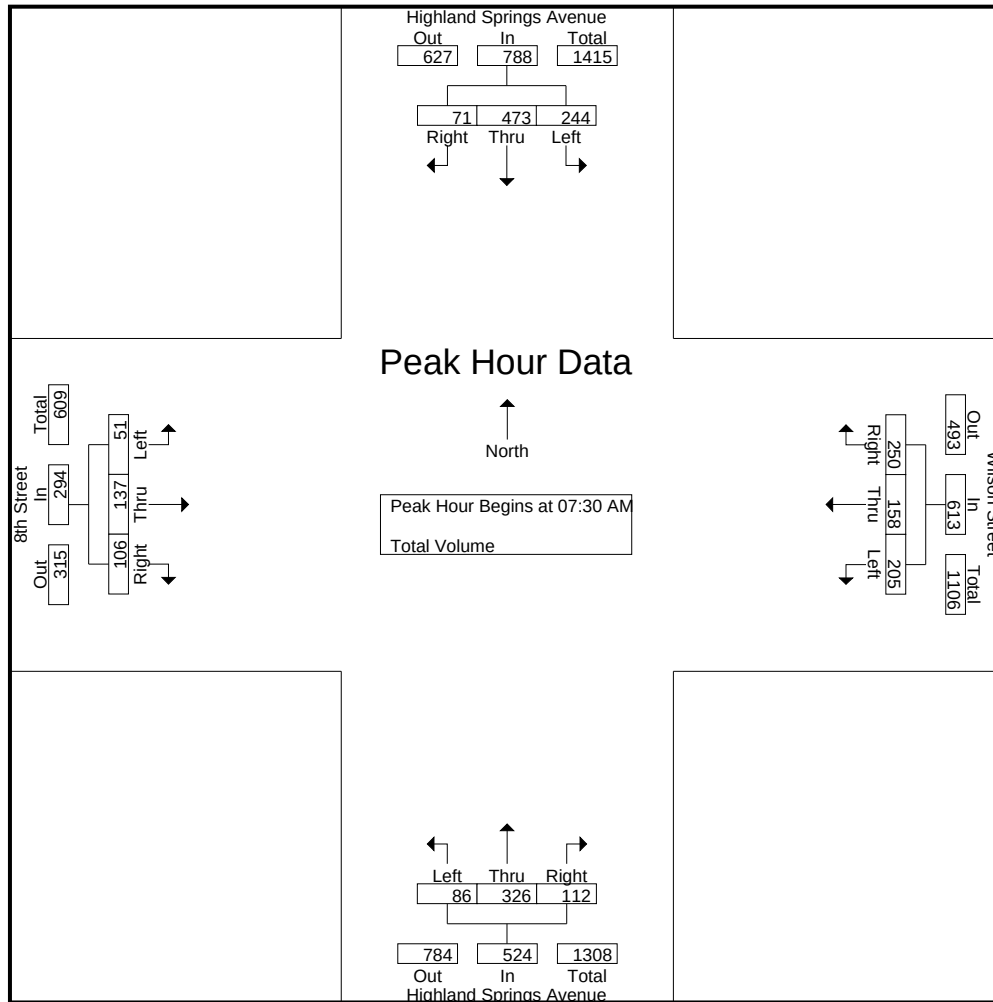
Groups Printed- Total Volume

	Highland Springs Avenue Southbound				Wilson Street Westbound				Highland Springs Avenue Northbound				8th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	41	128	1	170	63	11	46	120	9	78	23	110	4	18	17	39	439
07:15 AM	40	125	6	171	31	12	49	92	14	75	25	114	3	15	14	32	409
07:30 AM	39	126	14	179	53	34	62	149	11	83	19	113	2	25	20	47	488
07:45 AM	60	130	29	219	56	46	85	187	33	92	41	166	23	36	28	87	659
Total	180	509	50	739	203	103	242	548	67	328	108	503	32	94	79	205	1995
08:00 AM	68	111	22	201	41	50	60	151	33	73	21	127	18	38	28	84	563
08:15 AM	77	106	6	189	55	28	43	126	9	78	31	118	8	38	30	76	509
08:30 AM	62	123	3	188	60	42	44	146	6	62	17	85	1	36	15	52	471
08:45 AM	45	118	1	164	53	27	24	104	13	82	25	120	1	34	21	56	444
Total	252	458	32	742	209	147	171	527	61	295	94	450	28	146	94	268	1987
Grand Total	432	967	82	1481	412	250	413	1075	128	623	202	953	60	240	173	473	3982
Apprch %	29.2	65.3	5.5		38.3	23.3	38.4		13.4	65.4	21.2		12.7	50.7	36.6		
Total %	10.8	24.3	2.1	37.2	10.3	6.3	10.4	27	3.2	15.6	5.1	23.9	1.5	6	4.3	11.9	

	Highland Springs Avenue Southbound				Wilson Street Westbound				Highland Springs Avenue Northbound				8th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	39	126	14	179	53	34	62	149	11	83	19	113	2	25	20	47	488
07:45 AM	60	130	29	219	56	46	85	187	33	92	41	166	23	36	28	87	659
08:00 AM	68	111	22	201	41	50	60	151	33	73	21	127	18	38	28	84	563
08:15 AM	77	106	6	189	55	28	43	126	9	78	31	118	8	38	30	76	509
Total Volume	244	473	71	788	205	158	250	613	86	326	112	524	51	137	106	294	2219
% App. Total	31	60	9		33.4	25.8	40.8		16.4	62.2	21.4		17.3	46.6	36.1		
PHF	.792	.910	.612	.900	.915	.790	.735	.820	.652	.886	.683	.789	.554	.901	.883	.845	.842

City of Beaumont
N/S: Highland Springs Avenue
E/W: 8th Street/Wilson Street
Weather: Clear

File Name : 03_BMT_Highland_8th AM
Site Code : 10522218
Start Date : 3/10/2022
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM				07:30 AM				07:30 AM				07:45 AM			
+0 mins.	60	130	29	219	53	34	62	149	11	83	19	113	23	36	28	87
+15 mins.	68	111	22	201	56	46	85	187	33	92	41	166	18	38	28	84
+30 mins.	77	106	6	189	41	50	60	151	33	73	21	127	8	38	30	76
+45 mins.	62	123	3	188	55	28	43	126	9	78	31	118	1	36	15	52
Total Volume	267	470	60	797	205	158	250	613	86	326	112	524	50	148	101	299
% App. Total	33.5	59	7.5		33.4	25.8	40.8		16.4	62.2	21.4		16.7	49.5	33.8	
PHF	.867	.904	.517	.910	.915	.790	.735	.820	.652	.886	.683	.789	.543	.974	.842	.859

City of Beaumont
N/S: Highland Springs Avenue
E/W: 8th Street/Wilson Street
Weather: Clear

File Name : 03_BMT_Highland_8th PM
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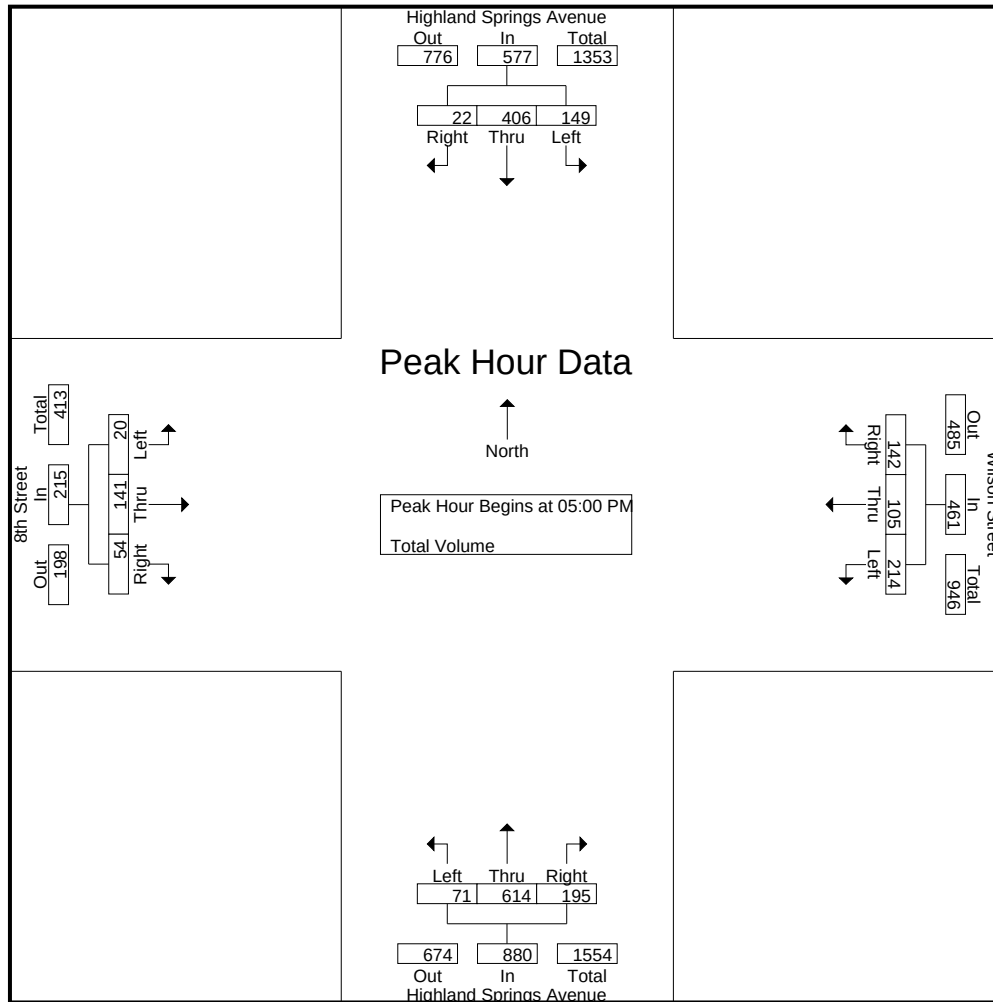
Groups Printed- Total Volume

	Highland Springs Avenue Southbound				Wilson Street Westbound				Highland Springs Avenue Northbound				8th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	80	125	4	209	56	24	33	113	16	133	49	198	4	42	25	71	591
04:15 PM	56	95	3	154	42	29	32	103	10	146	39	195	2	25	14	41	493
04:30 PM	49	105	2	156	52	31	34	117	14	140	45	199	3	39	14	56	528
04:45 PM	31	103	2	136	34	28	37	99	21	157	60	238	3	28	10	41	514
Total	216	428	11	655	184	112	136	432	61	576	193	830	12	134	63	209	2126
05:00 PM	34	108	5	147	53	15	33	101	20	166	48	234	8	32	12	52	534
05:15 PM	30	86	4	120	50	41	37	128	15	147	43	205	4	40	11	55	508
05:30 PM	41	97	5	143	43	26	31	100	23	147	55	225	4	22	17	43	511
05:45 PM	44	115	8	167	68	23	41	132	13	154	49	216	4	47	14	65	580
Total	149	406	22	577	214	105	142	461	71	614	195	880	20	141	54	215	2133
Grand Total	365	834	33	1232	398	217	278	893	132	1190	388	1710	32	275	117	424	4259
Apprch %	29.6	67.7	2.7		44.6	24.3	31.1		7.7	69.6	22.7		7.5	64.9	27.6		
Total %	8.6	19.6	0.8	28.9	9.3	5.1	6.5	21	3.1	27.9	9.1	40.2	0.8	6.5	2.7	10	

	Highland Springs Avenue Southbound				Wilson Street Westbound				Highland Springs Avenue Northbound				8th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	34	108	5	147	53	15	33	101	20	166	48	234	8	32	12	52	534
05:15 PM	30	86	4	120	50	41	37	128	15	147	43	205	4	40	11	55	508
05:30 PM	41	97	5	143	43	26	31	100	23	147	55	225	4	22	17	43	511
05:45 PM	44	115	8	167	68	23	41	132	13	154	49	216	4	47	14	65	580
Total Volume	149	406	22	577	214	105	142	461	71	614	195	880	20	141	54	215	2133
% App. Total	25.8	70.4	3.8		46.4	22.8	30.8		8.1	69.8	22.2		9.3	65.6	25.1		
PHF	.847	.883	.688	.864	.787	.640	.866	.873	.772	.925	.886	.940	.625	.750	.794	.827	.919

City of Beaumont
N/S: Highland Springs Avenue
E/W: 8th Street/Wilson Street
Weather: Clear

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Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				05:00 PM				04:45 PM				05:00 PM			
+0 mins.	80	125	4	209	53	15	33	101	21	157	60	238	8	32	12	52
+15 mins.	56	95	3	154	50	41	37	128	20	166	48	234	4	40	11	55
+30 mins.	49	105	2	156	43	26	31	100	15	147	43	205	4	22	17	43
+45 mins.	31	103	2	136	68	23	41	132	23	147	55	225	4	47	14	65
Total Volume	216	428	11	655	214	105	142	461	79	617	206	902	20	141	54	215
% App. Total	33	65.3	1.7		46.4	22.8	30.8		8.8	68.4	22.8		9.3	65.6	25.1	
PHF	.675	.856	.688	.783	.787	.640	.866	.873	.859	.929	.858	.947	.625	.750	.794	.827

City of Beaumont
N/S: Highland Springs Avenue
E/W: 6th Street/Ramsey Street
Weather: Clear

File Name : 04_BMT_Highland_6th AM
Site Code : 10522218
Start Date : 3/10/2022
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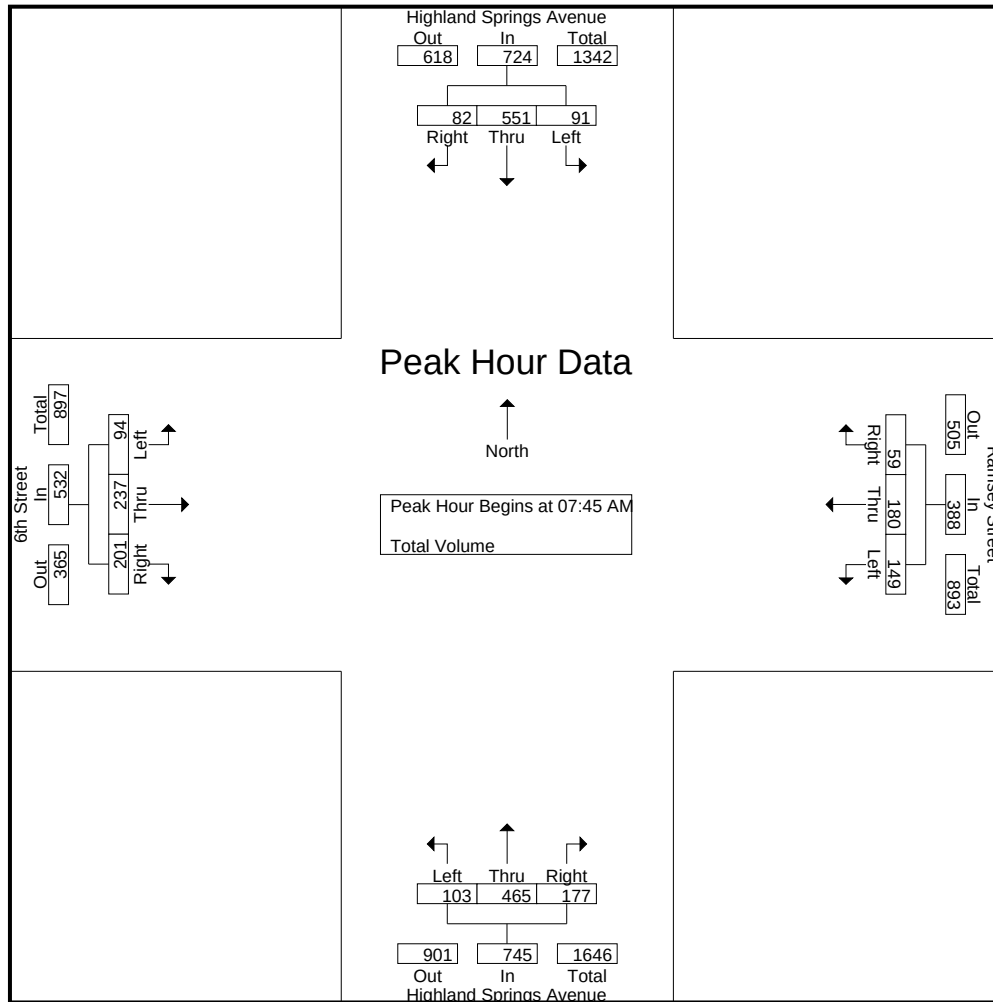
Groups Printed- Total Volume

	Highland Springs Avenue Southbound				Ramsey Street Westbound				Highland Springs Avenue Northbound				6th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	15	167	15	197	34	28	8	70	21	99	27	147	18	23	36	77	491
07:15 AM	12	134	11	157	35	20	9	64	24	87	35	146	23	42	31	96	463
07:30 AM	18	147	14	179	34	42	15	91	19	105	48	172	32	54	40	126	568
07:45 AM	24	136	23	183	34	45	13	92	26	146	55	227	28	73	33	134	636
Total	69	584	63	716	137	135	45	317	90	437	165	692	101	192	140	433	2158
08:00 AM	24	129	15	168	38	44	11	93	25	129	35	189	21	52	54	127	577
08:15 AM	24	133	19	176	39	50	22	111	29	110	39	178	23	62	49	134	599
08:30 AM	19	153	25	197	38	41	13	92	23	80	48	151	22	50	65	137	577
08:45 AM	22	108	34	164	46	52	16	114	27	81	57	165	25	70	73	168	611
Total	89	523	93	705	161	187	62	410	104	400	179	683	91	234	241	566	2364
Grand Total	158	1107	156	1421	298	322	107	727	194	837	344	1375	192	426	381	999	4522
Apprch %	11.1	77.9	11		41	44.3	14.7		14.1	60.9	25		19.2	42.6	38.1		
Total %	3.5	24.5	3.4	31.4	6.6	7.1	2.4	16.1	4.3	18.5	7.6	30.4	4.2	9.4	8.4	22.1	

	Highland Springs Avenue Southbound				Ramsey Street Westbound				Highland Springs Avenue Northbound				6th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	24	136	23	183	34	45	13	92	26	146	55	227	28	73	33	134	636
08:00 AM	24	129	15	168	38	44	11	93	25	129	35	189	21	52	54	127	577
08:15 AM	24	133	19	176	39	50	22	111	29	110	39	178	23	62	49	134	599
08:30 AM	19	153	25	197	38	41	13	92	23	80	48	151	22	50	65	137	577
Total Volume	91	551	82	724	149	180	59	388	103	465	177	745	94	237	201	532	2389
% App. Total	12.6	76.1	11.3		38.4	46.4	15.2		13.8	62.4	23.8		17.7	44.5	37.8		
PHF	.948	.900	.820	.919	.955	.900	.670	.874	.888	.796	.805	.820	.839	.812	.773	.971	.939

City of Beaumont
N/S: Highland Springs Avenue
E/W: 6th Street/Ramsey Street
Weather: Clear

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Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM				08:00 AM				07:30 AM				08:00 AM			
+0 mins.	24	136	23	183	38	44	11	93	19	105	48	172	21	52	54	127
+15 mins.	24	129	15	168	39	50	22	111	26	146	55	227	23	62	49	134
+30 mins.	24	133	19	176	38	41	13	92	25	129	35	189	22	50	65	137
+45 mins.	19	153	25	197	46	52	16	114	29	110	39	178	25	70	73	168
Total Volume	91	551	82	724	161	187	62	410	99	490	177	766	91	234	241	566
% App. Total	12.6	76.1	11.3		39.3	45.6	15.1		12.9	64	23.1		16.1	41.3	42.6	
PHF	.948	.900	.820	.919	.875	.899	.705	.899	.853	.839	.805	.844	.910	.836	.825	.842

City of Beaumont
N/S: Highland Springs Avenue
E/W: 6th Street/Ramsey Street
Weather: Clear

File Name : 04_BMT_Highland_6th PM
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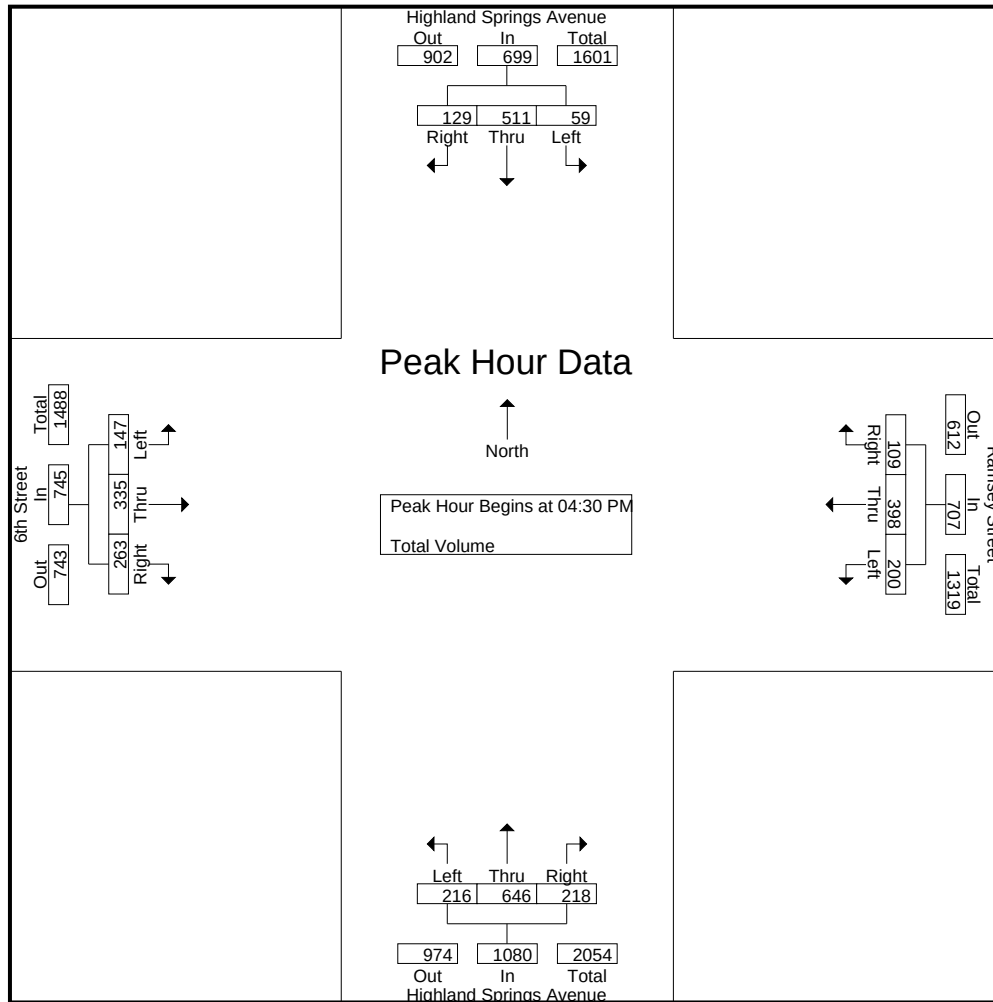
Groups Printed- Total Volume

	Highland Springs Avenue Southbound				Ramsey Street Westbound				Highland Springs Avenue Northbound				6th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	22	145	18	185	50	80	19	149	51	148	58	257	44	90	52	186	777
04:15 PM	15	116	14	145	45	86	24	155	58	147	55	260	32	76	74	182	742
04:30 PM	13	135	37	185	54	99	23	176	54	153	57	264	40	96	84	220	845
04:45 PM	14	118	32	164	47	99	26	172	55	170	56	281	38	77	58	173	790
Total	64	514	101	679	196	364	92	652	218	618	226	1062	154	339	268	761	3154
05:00 PM	22	142	35	199	44	108	28	180	55	163	48	266	36	86	70	192	837
05:15 PM	10	116	25	151	55	92	32	179	52	160	57	269	33	76	51	160	759
05:30 PM	14	118	23	155	49	117	24	190	46	152	46	244	36	82	53	171	760
05:45 PM	14	145	29	188	41	77	24	142	43	177	61	281	37	75	57	169	780
Total	60	521	112	693	189	394	108	691	196	652	212	1060	142	319	231	692	3136
Grand Total	124	1035	213	1372	385	758	200	1343	414	1270	438	2122	296	658	499	1453	6290
Apprch %	9	75.4	15.5		28.7	56.4	14.9		19.5	59.8	20.6		20.4	45.3	34.3		
Total %	2	16.5	3.4	21.8	6.1	12.1	3.2	21.4	6.6	20.2	7	33.7	4.7	10.5	7.9	23.1	

	Highland Springs Avenue Southbound				Ramsey Street Westbound				Highland Springs Avenue Northbound				6th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	13	135	37	185	54	99	23	176	54	153	57	264	40	96	84	220	845
04:45 PM	14	118	32	164	47	99	26	172	55	170	56	281	38	77	58	173	790
05:00 PM	22	142	35	199	44	108	28	180	55	163	48	266	36	86	70	192	837
05:15 PM	10	116	25	151	55	92	32	179	52	160	57	269	33	76	51	160	759
Total Volume	59	511	129	699	200	398	109	707	216	646	218	1080	147	335	263	745	3231
% App. Total	8.4	73.1	18.5		28.3	56.3	15.4		20	59.8	20.2		19.7	45	35.3		
PHF	.670	.900	.872	.878	.909	.921	.852	.982	.982	.950	.956	.961	.919	.872	.783	.847	.956

City of Beaumont
N/S: Highland Springs Avenue
E/W: 6th Street/Ramsey Street
Weather: Clear

File Name : 04_BMT_Highland_6th PM
Site Code : 10522218
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Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:45 PM				04:30 PM				04:15 PM			
+0 mins.	13	135	37	185	47	99	26	172	54	153	57	264	32	76	74	182
+15 mins.	14	118	32	164	44	108	28	180	55	170	56	281	40	96	84	220
+30 mins.	22	142	35	199	55	92	32	179	55	163	48	266	38	77	58	173
+45 mins.	10	116	25	151	49	117	24	190	52	160	57	269	36	86	70	192
Total Volume	59	511	129	699	195	416	110	721	216	646	218	1080	146	335	286	767
% App. Total	8.4	73.1	18.5		27	57.7	15.3		20	59.8	20.2		19	43.7	37.3	
PHF	.670	.900	.872	.878	.886	.889	.859	.949	.982	.950	.956	.961	.913	.872	.851	.872

City of Beaumont
N/S: Xenia Avenue
E/W: Noble Creek Apartments South DW
Weather: Clear

File Name : 05_BMT_Xenia_Noble AM
Site Code : 10522218
Start Date : 3/10/2022
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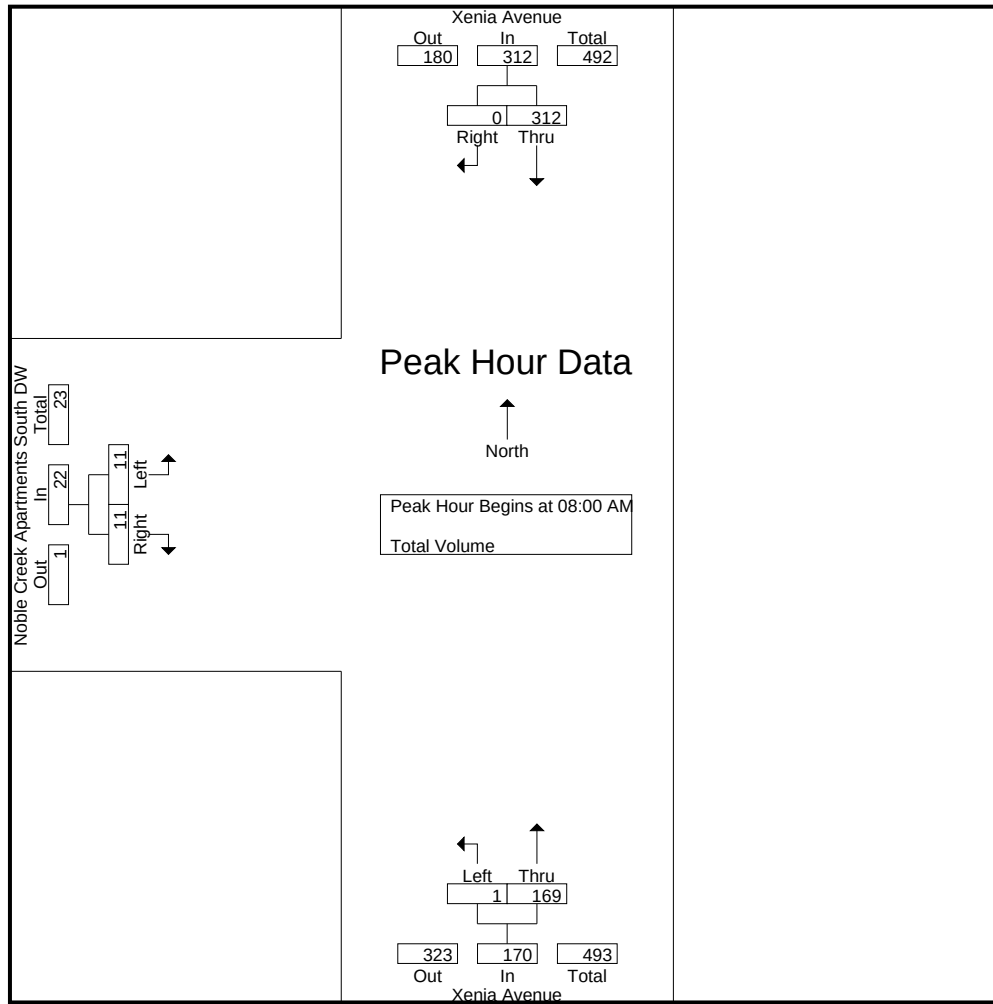
Groups Printed- Total Volume

	Xenia Avenue Southbound			Xenia Avenue Northbound			Noble Creek Apartments South DW Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
07:00 AM	36	0	36	0	16	16	0	3	3	55
07:15 AM	41	0	41	0	25	25	2	2	4	70
07:30 AM	48	0	48	0	32	32	3	2	5	85
07:45 AM	57	0	57	0	46	46	6	0	6	109
Total	182	0	182	0	119	119	11	7	18	319
08:00 AM	66	0	66	0	36	36	4	3	7	109
08:15 AM	70	0	70	1	57	58	2	3	5	133
08:30 AM	91	0	91	0	39	39	3	1	4	134
08:45 AM	85	0	85	0	37	37	2	4	6	128
Total	312	0	312	1	169	170	11	11	22	504
Grand Total	494	0	494	1	288	289	22	18	40	823
Apprch %	100	0		0.3	99.7		55	45		
Total %	60	0	60	0.1	35	35.1	2.7	2.2	4.9	

	Xenia Avenue Southbound			Xenia Avenue Northbound			Noble Creek Apartments South DW Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 08:00 AM										
08:00 AM	66	0	66	0	36	36	4	3	7	109
08:15 AM	70	0	70	1	57	58	2	3	5	133
08:30 AM	91	0	91	0	39	39	3	1	4	134
08:45 AM	85	0	85	0	37	37	2	4	6	128
Total Volume	312	0	312	1	169	170	11	11	22	504
% App. Total	100	0		0.6	99.4		50	50		
PHF	.857	.000	.857	.250	.741	.733	.688	.688	.786	.940

City of Beaumont
N/S: Xenia Avenue
E/W: Noble Creek Apartments South DW
Weather: Clear

File Name : 05_BMT_Xenia_Noble AM
Site Code : 10522218
Start Date : 3/10/2022
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Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM			07:45 AM			07:30 AM		
+0 mins.	66	0	66	0	46	46	3	2	5
+15 mins.	70	0	70	0	36	36	6	0	6
+30 mins.	91	0	91	1	57	58	4	3	7
+45 mins.	85	0	85	0	39	39	2	3	5
Total Volume	312	0	312	1	178	179	15	8	23
% App. Total	100	0		0.6	99.4		65.2	34.8	
PHF	.857	.000	.857	.250	.781	.772	.625	.667	.821

City of Beaumont
N/S: Xenia Avenue
E/W: Noble Creek Apartments South DW
Weather: Clear

File Name : 05_BMT_Xenia_Noble PM
Site Code : 10522218
Start Date : 3/10/2022
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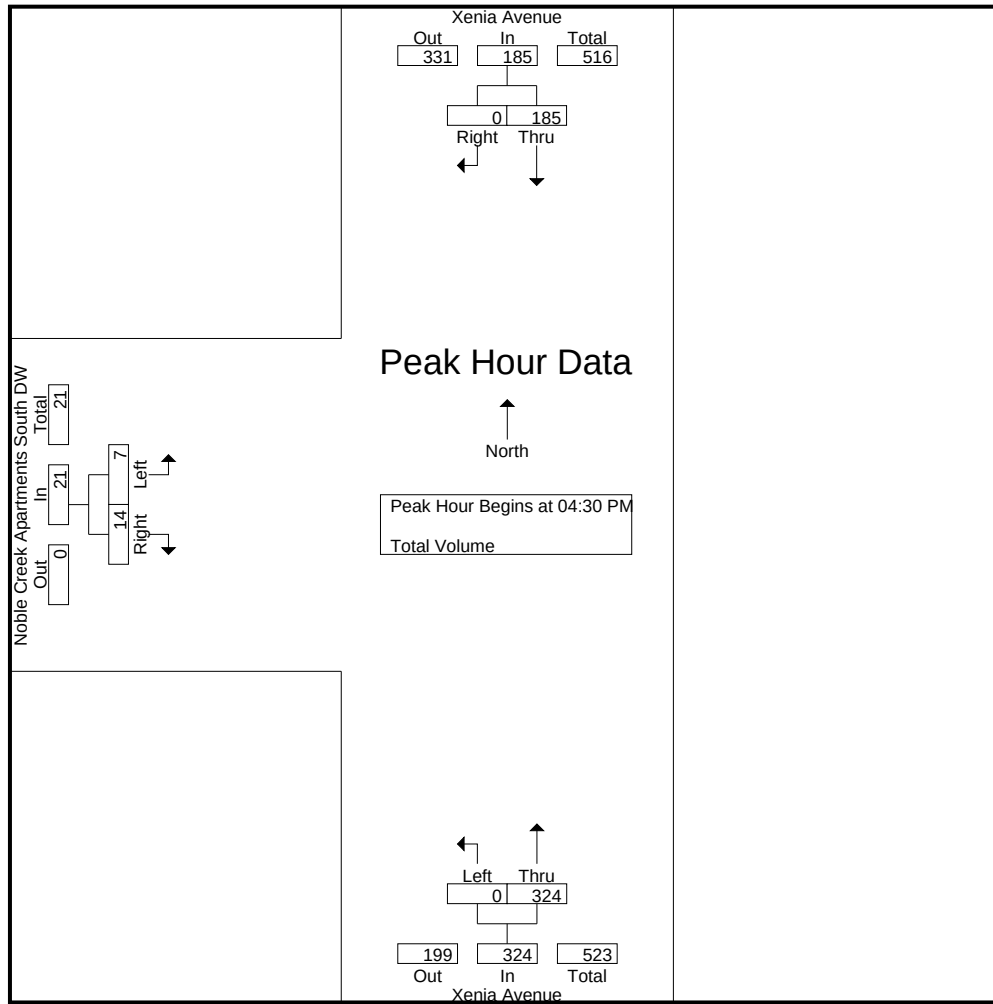
Groups Printed- Total Volume

	Xenia Avenue Southbound			Xenia Avenue Northbound			Noble Creek Apartments South DW Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
04:00 PM	56	0	56	0	54	54	1	7	8	118
04:15 PM	53	0	53	1	67	68	5	8	13	134
04:30 PM	42	0	42	0	74	74	1	5	6	122
04:45 PM	53	0	53	0	82	82	1	2	3	138
Total	204	0	204	1	277	278	8	22	30	512
05:00 PM	49	0	49	0	77	77	1	3	4	130
05:15 PM	41	0	41	0	91	91	4	4	8	140
05:30 PM	31	0	31	0	78	78	1	4	5	114
05:45 PM	53	0	53	0	73	73	0	7	7	133
Total	174	0	174	0	319	319	6	18	24	517
Grand Total	378	0	378	1	596	597	14	40	54	1029
Apprch %	100	0		0.2	99.8		25.9	74.1		
Total %	36.7	0	36.7	0.1	57.9	58	1.4	3.9	5.2	

	Xenia Avenue Southbound			Xenia Avenue Northbound			Noble Creek Apartments South DW Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:30 PM										
04:30 PM	42	0	42	0	74	74	1	5	6	122
04:45 PM	53	0	53	0	82	82	1	2	3	138
05:00 PM	49	0	49	0	77	77	1	3	4	130
05:15 PM	41	0	41	0	91	91	4	4	8	140
Total Volume	185	0	185	0	324	324	7	14	21	530
% App. Total	100	0		0	100		33.3	66.7		
PHF	.873	.000	.873	.000	.890	.890	.438	.700	.656	.946

City of Beaumont
N/S: Xenia Avenue
E/W: Noble Creek Apartments South DW
Weather: Clear

File Name : 05_BMT_Xenia_Noble PM
Site Code : 10522218
Start Date : 3/10/2022
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Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM			04:45 PM			05:00 PM		
+0 mins.	56	0	56	0	82	82	1	7	8
+15 mins.	53	0	53	0	77	77	5	8	13
+30 mins.	42	0	42	0	91	91	1	5	6
+45 mins.	53	0	53	0	78	78	1	2	3
Total Volume	204	0	204	0	328	328	8	22	30
% App. Total	100	0		0	100		26.7	73.3	
PHF	.911	.000	.911	.000	.901	.901	.400	.688	.577

City of Beaumont
N/S: Sycamore Square Gated Driveway
E/W: 8th Street
Weather: Clear

File Name : 06_BMT_Sycamore_8th AM
Site Code : 10522218
Start Date : 3/10/2022
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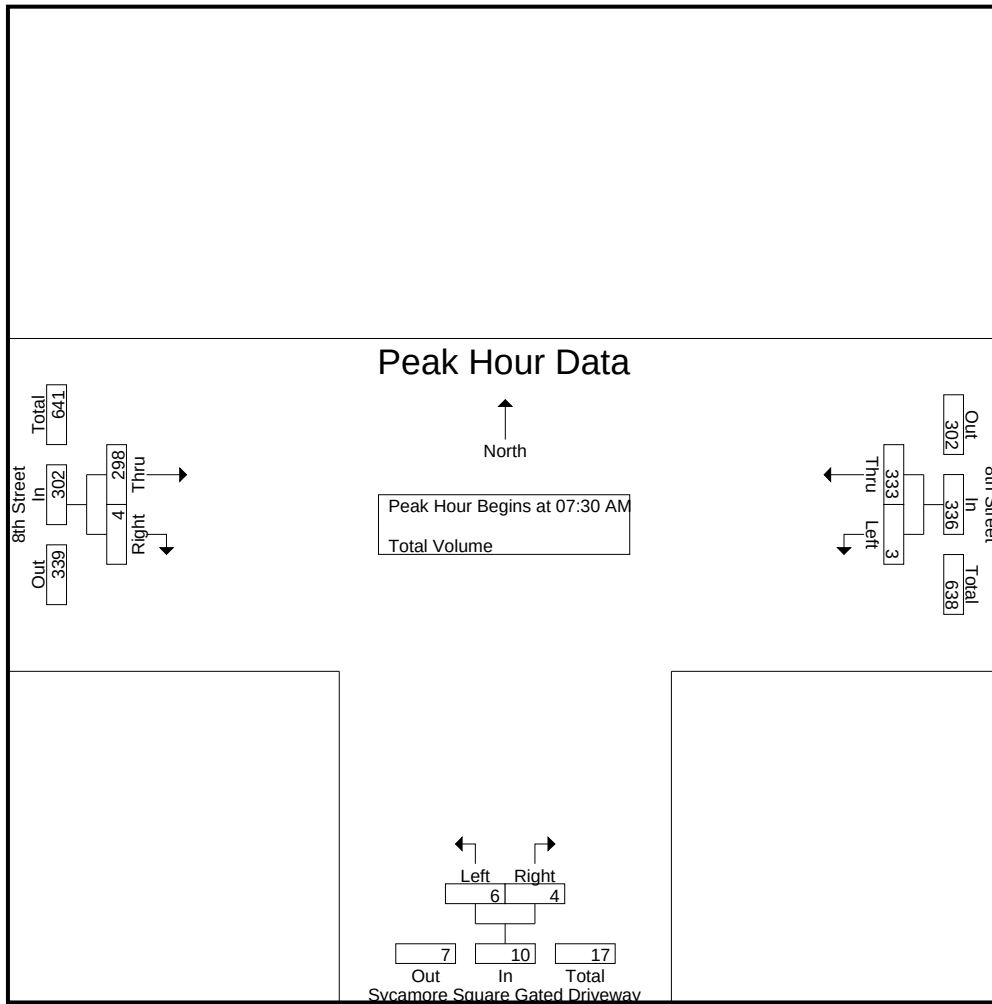
Groups Printed- Total Volume

	8th Street Westbound			Sycamore Square Gated Driveway Northbound			8th Street Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
07:00 AM	0	19	19	1	3	4	31	0	31	54
07:15 AM	1	26	27	1	0	1	32	2	34	62
07:30 AM	0	57	57	2	0	2	48	0	48	107
07:45 AM	1	108	109	2	1	3	89	1	90	202
Total	2	210	212	6	4	10	200	3	203	425
08:00 AM	0	129	129	1	3	4	86	0	86	219
08:15 AM	2	39	41	1	0	1	75	3	78	120
08:30 AM	1	47	48	0	1	1	51	0	51	100
08:45 AM	0	30	30	1	0	1	50	1	51	82
Total	3	245	248	3	4	7	262	4	266	521
Grand Total	5	455	460	9	8	17	462	7	469	946
Apprch %	1.1	98.9		52.9	47.1		98.5	1.5		
Total %	0.5	48.1	48.6	1	0.8	1.8	48.8	0.7	49.6	

	8th Street Westbound			Sycamore Square Gated Driveway Northbound			8th Street Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	0	57	57	2	0	2	48	0	48	107
07:45 AM	1	108	109	2	1	3	89	1	90	202
08:00 AM	0	129	129	1	3	4	86	0	86	219
08:15 AM	2	39	41	1	0	1	75	3	78	120
Total Volume	3	333	336	6	4	10	298	4	302	648
% App. Total	0.9	99.1		60	40		98.7	1.3		
PHF	.375	.645	.651	.750	.333	.625	.837	.333	.839	.740

City of Beaumont
N/S: Sycamore Square Gated Driveway
E/W: 8th Street
Weather: Clear

File Name : 06_BMT_Sycamore_8th AM
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Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:30 AM			07:00 AM			07:45 AM		
+0 mins.	0	57	57	1	3	4	89	1	90
+15 mins.	1	108	109	1	0	1	86	0	86
+30 mins.	0	129	129	2	0	2	75	3	78
+45 mins.	2	39	41	2	1	3	51	0	51
Total Volume	3	333	336	6	4	10	301	4	305
% App. Total	0.9	99.1		60	40		98.7	1.3	
PHF	.375	.645	.651	.750	.333	.625	.846	.333	.847

City of Beaumont
N/S: Sycamore Square Gated Driveway
E/W: 8th Street
Weather: Clear

File Name : 06_BMT_Sycamore_8th PM
Site Code : 10522218
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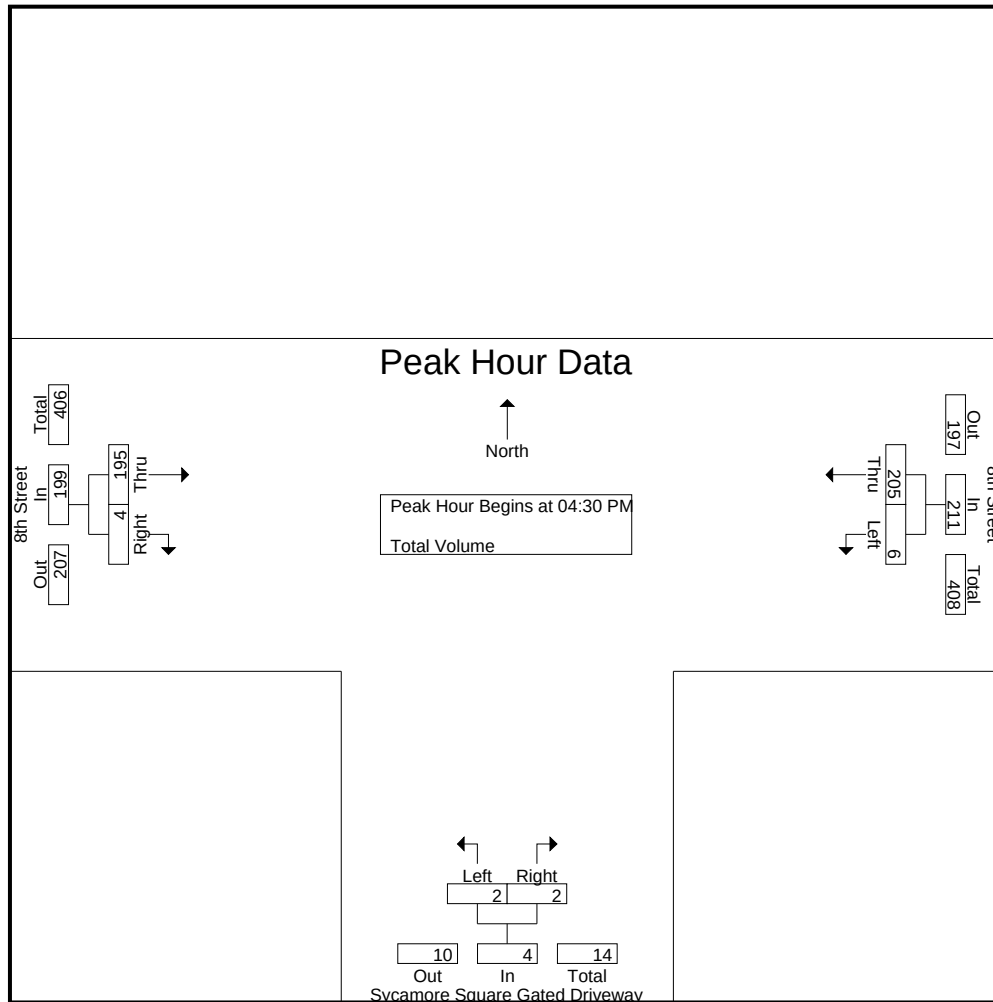
Groups Printed- Total Volume

	8th Street Westbound			Sycamore Square Gated Driveway Northbound			8th Street Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
04:00 PM	0	48	48	1	1	2	65	1	66	116
04:15 PM	3	40	43	1	1	2	42	0	42	87
04:30 PM	0	54	54	0	1	1	54	1	55	110
04:45 PM	0	49	49	2	0	2	46	2	48	99
Total	3	191	194	4	3	7	207	4	211	412
05:00 PM	4	45	49	0	1	1	43	0	43	93
05:15 PM	2	57	59	0	0	0	52	1	53	112
05:30 PM	2	56	58	1	1	2	41	0	41	101
05:45 PM	0	42	42	0	1	1	61	0	61	104
Total	8	200	208	1	3	4	197	1	198	410
Grand Total	11	391	402	5	6	11	404	5	409	822
Apprch %	2.7	97.3		45.5	54.5		98.8	1.2		
Total %	1.3	47.6	48.9	0.6	0.7	1.3	49.1	0.6	49.8	

	8th Street Westbound			Sycamore Square Gated Driveway Northbound			8th Street Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:30 PM										
04:30 PM	0	54	54	0	1	1	54	1	55	110
04:45 PM	0	49	49	2	0	2	46	2	48	99
05:00 PM	4	45	49	0	1	1	43	0	43	93
05:15 PM	2	57	59	0	0	0	52	1	53	112
Total Volume	6	205	211	2	2	4	195	4	199	414
% App. Total	2.8	97.2		50	50		98	2		
PHF	.375	.899	.894	.250	.500	.500	.903	.500	.905	.924

City of Beaumont
N/S: Sycamore Square Gated Driveway
E/W: 8th Street
Weather: Clear

File Name : 06_BMT_Sycamore_8th PM
Site Code : 10522218
Start Date : 3/10/2022
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Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM			04:00 PM			04:00 PM		
+0 mins.	0	49	49	1	1	2	65	1	66
+15 mins.	4	45	49	1	1	2	42	0	42
+30 mins.	2	57	59	0	1	1	54	1	55
+45 mins.	2	56	58	2	0	2	46	2	48
Total Volume	8	207	215	4	3	7	207	4	211
% App. Total	3.7	96.3		57.1	42.9		98.1	1.9	
PHF	.500	.908	.911	.500	.750	.875	.796	.500	.799

Appendix C

Existing Conditions Intersection Analysis Worksheets

Intersection Level Of Service Report
Intersection 1: Xenia Avenue (NS) / 8th Street (EW)

Control Type:	All-way stop	Delay (sec / veh):	13.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.452

Intersection Setup

Name	Xenia Avenue			Xenia Avenue			8th Street			8th Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	90.00	100.00	100.00	150.00	100.00	150.00	150.00	100.00	150.00	125.00	100.00	125.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Xenia Avenue			Xenia Avenue			8th Street			8th Street		
Base Volume Input [veh/h]	6	134	45	139	188	54	38	139	29	71	138	160
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	134	45	139	188	54	38	139	29	71	138	160
Peak Hour Factor	0.8170	0.8170	0.8170	0.8170	0.8170	0.8170	0.8170	0.8170	0.8170	0.8170	0.8170	0.8170
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	41	14	43	58	17	12	43	9	22	42	49
Total Analysis Volume [veh/h]	7	164	55	170	230	66	47	170	35	87	169	196
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings**Lanes**

Capacity per Entry Lane [veh/h]	495	540	477	509	563	450	479	527	463	494	546
Degree of Utilization, x	0.01	0.41	0.36	0.45	0.12	0.10	0.35	0.07	0.19	0.34	0.36

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.04	1.95	1.60	2.32	0.40	0.35	1.58	0.21	0.68	1.50	1.62
95th-Percentile Queue Length [ft]	1.07	48.81	39.89	57.92	9.90	8.68	39.58	5.32	17.11	37.60	40.53
Approach Delay [s/veh]	13.73		14.28			13.19			13.11		
Approach LOS	B		B			B			B		
Intersection Delay [s/veh]	13.61										
Intersection LOS	B										

Intersection Level Of Service Report
Intersection 2: Xenia Avenue (NS) / 6th Street (EW)

Control Type:	All-way stop	Delay (sec / veh):	12.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.398

Intersection Setup

Name	Xenia Avenue			Xenia Avenue			6th Street			6th Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	185.00	100.00	100.00	180.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Xenia Avenue			Xenia Avenue			6th Street			6th Street		
Base Volume Input [veh/h]	1	0	0	194	1	128	109	285	2	2	265	71
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	0	0	194	1	128	109	285	2	2	265	71
Peak Hour Factor	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	50	0	33	28	74	1	1	68	18
Total Analysis Volume [veh/h]	1	0	0	200	1	132	112	294	2	2	273	73
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings**Lanes**

Capacity per Entry Lane [veh/h]	486	502	601	504	543	544	499	536	561
Degree of Utilization, x	0.00	0.40	0.22	0.22	0.27	0.27	0.00	0.32	0.31

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.01	1.89	0.84	0.84	1.10	1.10	0.01	1.39	1.30
95th-Percentile Queue Length [ft]	0.15	47.29	21.03	21.06	27.50	27.45	0.30	34.68	32.57
Approach Delay [s/veh]	10.43	12.88		11.81			12.25		
Approach LOS	B	B		B			B		
Intersection Delay [s/veh]	12.28								
Intersection LOS	B								

Intersection Level Of Service Report**Intersection 3: Highland Springs Avenue (NS) / Wilson Street - 8th Street (EW)**

Control Type:	Signalized	Delay (sec / veh):	31.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.542

Intersection Setup

Name	Hi Sp			Hi Sp			8th Street			Wilson Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	210.00	100.00	200.00	155.00	100.00	100.00	150.00	100.00	100.00	300.00	100.00	325.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			45.00			35.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Hi Sp			Hi Sp			8th Street			Wilson Street		
Base Volume Input [veh/h]	86	326	112	244	473	71	51	137	106	205	158	250
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	86	326	112	244	473	71	51	137	106	205	158	250
Peak Hour Factor	0.8420	0.8420	0.8420	0.8420	0.8420	0.8420	0.8420	0.8420	0.8420	0.8420	0.8420	0.8420
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	97	33	72	140	21	15	41	31	61	47	74
Total Analysis Volume [veh/h]	102	387	133	290	562	84	61	163	126	243	188	297
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protect	Permis	Overla	Protect	Permis	Permis	Protect	Permis	Permis	Protect	Permis	Permis
Signal Group	1	6	6	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups			6,7									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	7	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	18	37	37	14	33	0	11	36	0	13	38	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	7	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	26	0	22	0	0	25	0	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No		No	No		No	No	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	47	60	10	50	50	6	18	18	9	21	21
g / C, Green / Cycle	0.07	0.47	0.60	0.10	0.50	0.50	0.06	0.18	0.18	0.09	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.06	0.11	0.08	0.08	0.18	0.18	0.03	0.08	0.09	0.07	0.05	0.19
s, saturation flow rate [veh/h]	1781	3560	1589	3459	1870	1786	1781	1870	1610	3459	3560	1589
c, Capacity [veh/h]	131	1669	952	348	927	886	104	338	291	311	757	338
d1, Uniform Delay [s]	45.57	15.85	8.80	44.21	15.46	15.46	45.99	36.55	36.74	44.62	32.78	38.19
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.44	0.33	0.31	5.22	1.07	1.12	5.22	0.92	1.19	4.32	0.17	7.62
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.23	0.14	0.83	0.36	0.36	0.59	0.45	0.47	0.78	0.25	0.88
d, Delay for Lane Group [s/veh]	55.02	16.17	9.11	49.42	16.53	16.58	51.20	37.47	37.93	48.93	32.95	45.81
Lane Group LOS	E	B	A	D	B	B	D	D	D	D	C	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.80	2.60	1.25	3.65	4.46	4.27	1.61	3.32	3.06	3.03	1.84	7.41
50th-Percentile Queue Length [ft/ln]	69.88	64.97	31.16	91.15	111.38	106.70	40.20	82.98	76.60	75.71	45.94	185.31
95th-Percentile Queue Length [veh/ln]	5.03	4.68	2.24	6.56	7.92	7.66	2.89	5.97	5.52	5.45	3.31	11.88
95th-Percentile Queue Length [ft/ln]	125.78	116.94	56.09	164.08	197.92	191.40	72.37	149.37	137.89	136.27	82.69	296.93

Movement, Approach, & Intersection Results

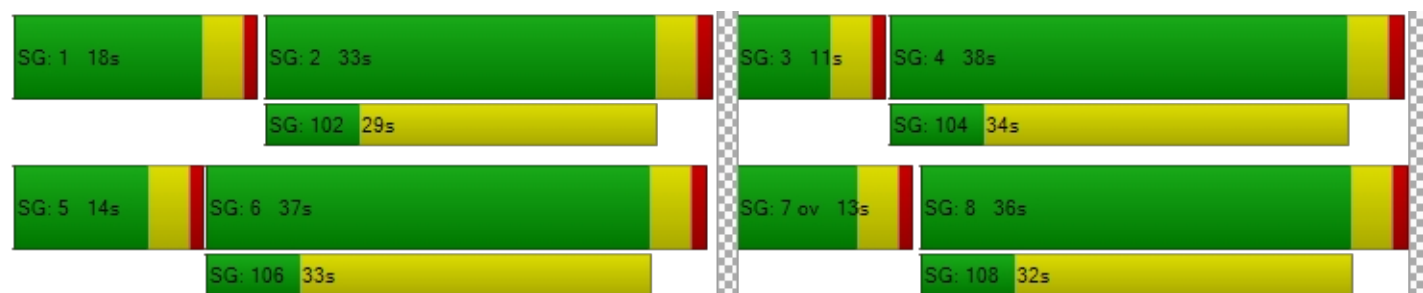
d_M, Delay for Movement [s/veh]	55.02	16.17	9.11	49.42	16.55	16.58	51.20	37.50	37.93	48.93	32.95	45.81
Movement LOS	E	B	A	D	B	B	D	D	D	D	C	D
d_A, Approach Delay [s/veh]	21.03			26.74			40.05			43.53		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	31.80											
Intersection LOS	C											
Intersection V/C	0.542											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.64			39.64			39.64			39.64		
I_p,int, Pedestrian LOS Score for Intersection	2.752			2.867			2.469			2.873		
Crosswalk LOS	C			C			B			C		
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	660			580			640			680		
d_b, Bicycle Delay [s]	22.48			25.24			23.15			21.81		
I_b,int, Bicycle LOS Score for Intersection	2.073			2.332			1.848			2.160		
Bicycle LOS	B			B			A			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 4: Highland Springs Avenue (NS) / 6th Street - Ramsey Street (EW)**

Control Type:	Signalized	Delay (sec / veh):	34.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.520

Intersection Setup

Name	Hi Sp			Hi Sp			6th Street			Ramsey Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	195.00	150.00	100.00	85.00	205.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			30.00			35.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Hi Sp			Hi Sp			6th Street			Ramsey Street		
Base Volume Input [veh/h]	103	465	177	91	551	82	94	237	201	149	180	59
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	103	465	177	91	551	82	94	237	201	149	180	59
Peak Hour Factor	0.9390	0.9390	0.9390	0.9390	0.9390	0.9390	0.9390	0.9390	0.9390	0.9390	0.9390	0.9390
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	27	124	47	24	147	22	25	63	54	40	48	16
Total Analysis Volume [veh/h]	110	495	188	97	587	87	100	252	214	159	192	63
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protect	Permis	Permis	Protect	Permis	Permis	Protect	Permis	Permis	Protect	Permis	Permis
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	14	46	0	12	44	0	25	44	0	18	37	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	35	0	0	33	0	0	32	0	0	26	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	65	65	8	64	64	8	19	19	13	23	23
g / C, Green / Cycle	0.08	0.54	0.54	0.07	0.53	0.53	0.07	0.16	0.16	0.10	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.06	0.14	0.12	0.05	0.16	0.05	0.06	0.07	0.13	0.09	0.07	0.07
s, saturation flow rate [veh/h]	1781	3560	1589	1781	3560	1589	1781	3560	1589	1781	1870	1716
c, Capacity [veh/h]	136	1914	854	120	1882	840	127	559	250	187	357	327
d1, Uniform Delay [s]	54.60	14.91	14.56	55.23	15.97	14.11	54.88	45.90	49.29	52.82	42.27	42.36
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.84	0.33	0.59	12.03	0.43	0.25	10.41	0.57	8.29	10.36	0.63	0.72
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.26	0.22	0.81	0.31	0.10	0.79	0.45	0.86	0.85	0.37	0.38
d, Delay for Lane Group [s/veh]	65.44	15.24	15.16	67.25	16.41	14.36	65.30	46.47	57.58	63.18	42.91	43.08
Lane Group LOS	E	B	B	E	B	B	E	D	E	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.66	3.62	2.76	3.30	4.62	1.24	3.32	3.43	6.76	5.13	3.37	3.19
50th-Percentile Queue Length [ft/ln]	91.41	90.47	69.01	82.40	115.38	30.92	82.98	85.85	168.93	128.18	84.19	79.74
95th-Percentile Queue Length [veh/ln]	6.58	6.51	4.97	5.93	8.14	2.23	5.97	6.18	11.02	8.84	6.06	5.74
95th-Percentile Queue Length [ft/ln]	164.54	162.85	124.22	148.33	203.46	55.65	149.36	154.54	275.50	221.01	151.55	143.53

Movement, Approach, & Intersection Results

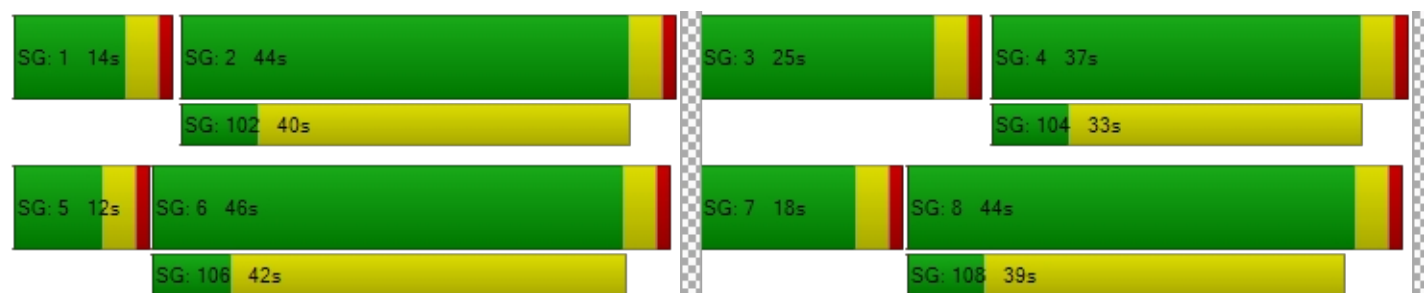
d_M, Delay for Movement [s/veh]	65.44	15.24	15.16	67.25	16.41	14.36	65.30	46.47	57.58	63.18	42.96	43.08
Movement LOS	E	B	B	E	B	B	E	D	E	E	D	D
d_A, Approach Delay [s/veh]	22.18			22.57			54.00			50.75		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	34.03											
Intersection LOS	C											
Intersection V/C	0.520											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.52			49.52			49.52			49.52		
I_p,int, Pedestrian LOS Score for Intersection	2.799			2.699			2.648			2.592		
Crosswalk LOS	C			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	700			666			666			550		
d_b, Bicycle Delay [s]	25.36			26.68			26.68			31.55		
I_b,int, Bicycle LOS Score for Intersection	2.214			2.196			2.027			1.901		
Bicycle LOS	B			B			B			A		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 1: Xenia Avenue (NS) / 8th Street (EW)

Control Type:	All-way stop	Delay (sec / veh):	11.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.466

Intersection Setup

Name	Xenia Avenue			Xenia Avenue			8th Street			8th Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	90.00	100.00	100.00	150.00	100.00	150.00	150.00	100.00	150.00	125.00	100.00	125.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Xenia Avenue			Xenia Avenue			8th Street			8th Street		
Base Volume Input [veh/h]	44	216	44	35	141	33	47	121	31	23	145	41
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	44	216	44	35	141	33	47	121	31	23	145	41
Peak Hour Factor	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	57	12	9	37	9	12	32	8	6	38	11
Total Analysis Volume [veh/h]	46	228	46	37	149	35	50	128	33	24	153	43
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings**Lanes**

Capacity per Entry Lane [veh/h]	535	588	514	553	618	502	539	602	505	542	605
Degree of Utilization, x	0.09	0.47	0.07	0.27	0.06	0.10	0.24	0.05	0.05	0.28	0.07

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.28	2.47	0.23	1.08	0.18	0.33	0.92	0.17	0.15	1.15	0.23
95th-Percentile Queue Length [ft]	7.02	61.65	5.79	27.07	4.49	8.25	22.94	4.34	3.74	28.82	5.72
Approach Delay [s/veh]	13.49		10.93			10.88			11.19		
Approach LOS	B		B			B			B		
Intersection Delay [s/veh]	11.82										
Intersection LOS	B										

Intersection Level Of Service Report
Intersection 2: Xenia Avenue (NS) / 6th Street (EW)

Control Type:	All-way stop	Delay (sec / veh):	18.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.709

Intersection Setup

Name	Xenia Avenue			Xenia Avenue			6th Street			6th Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	185.00	100.00	100.00	180.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Xenia Avenue			Xenia Avenue			6th Street			6th Street		
Base Volume Input [veh/h]	1	2	6	114	2	91	167	414	3	5	551	166
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	2	6	114	2	91	167	414	3	5	551	166
Peak Hour Factor	0.9730	0.9730	0.9730	0.9730	0.9730	0.9730	0.9730	0.9730	0.9730	0.9730	0.9730	0.9730
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	1	2	29	1	23	43	106	1	1	142	43
Total Analysis Volume [veh/h]	1	2	6	117	2	94	172	425	3	5	566	171
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings**Lanes**

Capacity per Entry Lane [veh/h]	456	418	484	467	500	500	485	520	546
Degree of Utilization, x	0.02	0.28	0.20	0.37	0.43	0.43	0.01	0.71	0.68

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.06	1.13	0.73	1.67	2.12	2.12	0.03	5.63	5.08
95th-Percentile Queue Length [ft]	1.51	28.28	18.29	41.87	53.08	52.96	0.78	140.69	126.96
Approach Delay [s/veh]	11.07	13.42		15.09			23.25		
Approach LOS	B	B		C			C		
Intersection Delay [s/veh]	18.71								
Intersection LOS	C								

Intersection Level Of Service Report**Intersection 3: Highland Springs Avenue (NS) / Wilson Street - 8th Street (EW)**

Control Type:	Signalized	Delay (sec / veh):	26.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.428

Intersection Setup

Name	Hi Sp			Hi Sp			8th Street			Wilson Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	210.00	100.00	200.00	155.00	100.00	100.00	150.00	100.00	100.00	300.00	100.00	325.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			45.00			35.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Hi Sp			Hi Sp			8th Street			Wilson Street		
Base Volume Input [veh/h]	71	614	195	149	406	22	20	141	54	214	105	142
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	71	614	195	149	406	22	20	141	54	214	105	142
Peak Hour Factor	0.9190	0.9190	0.9190	0.9190	0.9190	0.9190	0.9190	0.9190	0.9190	0.9190	0.9190	0.9190
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	167	53	41	110	6	5	38	15	58	29	39
Total Analysis Volume [veh/h]	77	668	212	162	442	24	22	153	59	233	114	155
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	105
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protect	Permis	Overla	Protect	Permis	Permis	Protect	Permis	Permis	Protect	Permis	Permis
Signal Group	1	6	6	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups			6,7									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	7	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	14	37	37	11	34	0	11	37	0	20	46	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	7	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	26	0	22	0	0	25	0	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No		No	No		No	No	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	105	105	105	105	105	105	105	105	105	105	105	105
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	64	77	7	64	64	3	9	9	10	15	15
g / C, Green / Cycle	0.06	0.61	0.74	0.07	0.61	0.61	0.03	0.08	0.08	0.09	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.04	0.19	0.13	0.05	0.13	0.13	0.01	0.06	0.06	0.07	0.03	0.10
s, saturation flow rate [veh/h]	1781	3560	1589	3459	1870	1836	1781	1870	1700	3459	3560	1589
c, Capacity [veh/h]	108	2152	1169	231	1142	1121	58	157	142	321	512	229
d1, Uniform Delay [s]	48.48	10.13	4.25	48.01	9.11	9.11	49.79	46.84	47.00	46.38	39.80	42.69
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.45	0.38	0.34	3.82	0.41	0.42	4.00	5.35	6.97	3.12	0.22	3.49
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.71	0.31	0.18	0.70	0.21	0.21	0.38	0.69	0.73	0.73	0.22	0.68
d, Delay for Lane Group [s/veh]	56.94	10.50	4.59	51.84	9.52	9.53	53.79	52.19	53.97	49.50	40.02	46.18
Lane Group LOS	E	B	A	D	A	A	D	D	D	D	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.21	3.57	1.23	2.13	2.21	2.18	0.62	2.95	2.89	3.00	1.28	3.90
50th-Percentile Queue Length [ft/ln]	55.26	89.19	30.87	53.37	55.36	54.56	15.61	73.70	72.23	75.06	31.93	97.55
95th-Percentile Queue Length [veh/ln]	3.98	6.42	2.22	3.84	3.99	3.93	1.12	5.31	5.20	5.40	2.30	7.02
95th-Percentile Queue Length [ft/ln]	99.47	160.54	55.56	96.07	99.64	98.21	28.10	132.66	130.01	135.10	57.47	175.59

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	56.94	10.50	4.59	51.84	9.52	9.53	53.79	52.71	53.97	49.50	40.02	46.18
Movement LOS	E	B	A	D	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	12.93			20.44			53.13			46.32		
Approach LOS	B			C			D			D		
d_I, Intersection Delay [s/veh]	26.24											
Intersection LOS	C											
Intersection V/C	0.428											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	42.11			42.11			42.11			42.11		
I_p,int, Pedestrian LOS Score for Intersection	2.781			2.819			2.409			2.816		
Crosswalk LOS	C			C			B			C		
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	628			571			628			800		
d_b, Bicycle Delay [s]	24.71			26.81			24.71			18.93		
I_b,int, Bicycle LOS Score for Intersection	2.349			2.078			1.753			1.974		
Bicycle LOS	B			B			A			A		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 4: Highland Springs Avenue (NS) / 6th Street - Ramsey Street (EW)**

Control Type:	Signalized	Delay (sec / veh):	47.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.655

Intersection Setup

Name	Hi Sp			Hi Sp			6th Street			Ramsey Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	195.00	150.00	100.00	85.00	205.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			30.00			35.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Hi Sp			Hi Sp			6th Street			Ramsey Street		
Base Volume Input [veh/h]	216	646	218	59	511	129	147	335	263	200	398	109
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	216	646	218	59	511	129	147	335	263	200	398	109
Peak Hour Factor	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	56	169	57	15	134	34	38	88	69	52	104	29
Total Analysis Volume [veh/h]	226	676	228	62	535	135	154	350	275	209	416	114
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protect	Permis	Permis	Protect	Permis	Permis	Protect	Permis	Permis	Protect	Permis	Permis
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	17	49	0	12	44	0	22	43	0	16	37	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	35	0	0	33	0	0	32	0	0	26	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	62	62	6	55	55	12	24	24	12	23	23
g / C, Green / Cycle	0.11	0.52	0.52	0.05	0.46	0.46	0.10	0.20	0.20	0.10	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.13	0.19	0.14	0.03	0.15	0.08	0.09	0.10	0.17	0.12	0.15	0.15
s, saturation flow rate [veh/h]	1781	3560	1589	1781	3560	1589	1781	3560	1589	1781	1870	1733
c, Capacity [veh/h]	194	1843	823	92	1640	732	183	701	313	179	364	337
d1, Uniform Delay [s]	53.50	17.24	16.31	55.93	20.56	19.09	52.90	42.95	46.83	54.00	45.64	45.67
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	86.84	0.56	0.84	8.21	0.53	0.56	9.91	0.55	8.32	88.22	3.19	3.49
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.17	0.37	0.28	0.67	0.33	0.18	0.84	0.50	0.88	1.17	0.75	0.76
d, Delay for Lane Group [s/veh]	140.34	17.80	17.14	64.14	21.09	19.64	62.82	43.50	55.15	142.22	48.83	49.17
Lane Group LOS	F	B	B	E	C	B	E	D	E	F	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	10.46	5.55	3.64	2.06	4.87	2.34	5.02	4.65	8.60	9.65	7.82	7.31
50th-Percentile Queue Length [ft/ln]	261.57	138.65	90.93	51.42	121.71	58.44	125.60	116.21	214.89	241.24	195.40	182.71
95th-Percentile Queue Length [veh/ln]	16.73	9.41	6.55	3.70	8.49	4.21	8.70	8.18	13.40	15.61	12.40	11.74
95th-Percentile Queue Length [ft/ln]	418.19	235.20	163.68	92.56	212.17	105.20	217.50	204.61	335.09	390.30	310.03	293.55

Movement, Approach, & Intersection Results

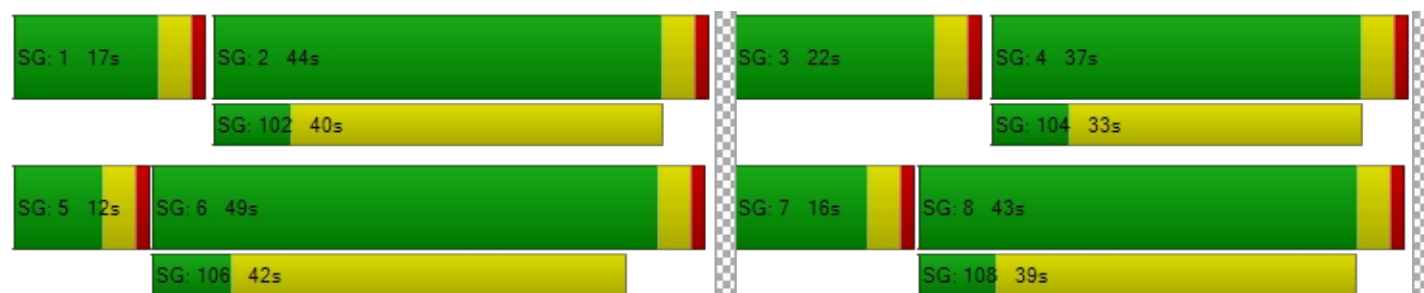
d_M, Delay for Movement [s/veh]	140.34	17.80	17.14	64.14	21.09	19.64	62.82	43.50	55.15	142.22	48.94	49.17
Movement LOS	F	B	B	E	C	B	E	D	E	F	D	D
d_A, Approach Delay [s/veh]	42.18			24.47			51.43			75.36		
Approach LOS	D			C			D			E		
d_I, Intersection Delay [s/veh]	47.73											
Intersection LOS	D											
Intersection V/C	0.655											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.52	49.52	49.52	49.52
I_p,int, Pedestrian LOS Score for Intersection	2.874	2.739	2.762	2.717
Crosswalk LOS	C	B	C	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	750	666	650	550
d_b, Bicycle Delay [s]	23.45	26.68	27.35	31.55
I_b,int, Bicycle LOS Score for Intersection	2.492	2.164	2.202	2.169
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Appendix D

Project Opening Year (2024) Without Project Conditions
Intersection Analysis Worksheets

Intersection Level Of Service Report**Intersection 1: Xenia Avenue (NS) / 8th Street (EW)**

Control Type:	All-way stop	Delay (sec / veh):	20.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.787

Intersection Setup

Name	Xenia Avenue			Xenia Avenue			8th Street			8th Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	90.00	100.00	100.00	150.00	100.00	150.00	150.00	100.00	150.00	125.00	100.00	125.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Xenia Avenue			Xenia Avenue			8th Street			8th Street		
Base Volume Input [veh/h]	10	139	55	148	196	56	40	199	31	77	294	167
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	139	55	148	196	56	40	199	31	77	294	167
Peak Hour Factor	0.8170	0.8170	0.8170	0.8170	0.8170	0.8170	0.8170	0.8170	0.8170	0.8170	0.8170	0.8170
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	43	17	45	60	17	12	61	9	24	90	51
Total Analysis Volume [veh/h]	12	170	67	181	240	69	49	244	38	94	360	204
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings**Lanes**

Capacity per Entry Lane [veh/h]	447	484	420	445	486	409	433	471	431	458	501
Degree of Utilization, x	0.03	0.49	0.43	0.54	0.14	0.12	0.56	0.08	0.22	0.79	0.41

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.08	2.66	2.12	3.13	0.49	0.40	3.39	0.26	0.82	7.03	1.96
95th-Percentile Queue Length [ft]	2.07	66.39	52.96	78.16	12.31	10.11	84.75	6.55	20.54	175.74	48.94
Approach Delay [s/veh]	16.80		17.81			18.80			25.06		
Approach LOS	C		C			C			D		
Intersection Delay [s/veh]	20.61										
Intersection LOS	C										

Intersection Level Of Service Report
Intersection 2: Xenia Avenue (NS) / 6th Street (EW)

Control Type:	All-way stop	Delay (sec / veh):	13.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.462

Intersection Setup

Name	Xenia Avenue			Xenia Avenue			6th Street			6th Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	185.00	100.00	100.00	180.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Xenia Avenue			Xenia Avenue			6th Street			6th Street		
Base Volume Input [veh/h]	1	0	0	219	1	146	117	300	2	2	277	79
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	0	0	219	1	146	117	300	2	2	277	79
Peak Hour Factor	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	57	0	38	30	77	1	1	71	20
Total Analysis Volume [veh/h]	1	0	0	226	1	151	121	310	2	2	286	82
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings**Lanes**

Capacity per Entry Lane [veh/h]	471	490	583	486	522	523	481	515	540
Degree of Utilization, x	0.00	0.46	0.26	0.25	0.30	0.30	0.00	0.36	0.34

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.01	2.40	1.04	0.97	1.24	1.24	0.01	1.60	1.50
95th-Percentile Queue Length [ft]	0.16	59.94	25.96	24.34	31.11	31.06	0.31	40.03	37.46
Approach Delay [s/veh]	10.66	14.13		12.51			13.11		
Approach LOS	B	B		B			B		
Intersection Delay [s/veh]	13.21								
Intersection LOS	B								

Intersection Level Of Service Report**Intersection 3: Highland Springs Avenue (NS) / Wilson Street - 8th Street (EW)**

Control Type:	Signalized	Delay (sec / veh):	38.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.690

Intersection Setup

Name	Hi Sp			Hi Sp			8th Street			Wilson Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	210.00	100.00	200.00	155.00	100.00	100.00	150.00	100.00	100.00	300.00	100.00	325.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			45.00			35.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Hi Sp			Hi Sp			8th Street			Wilson Street		
Base Volume Input [veh/h]	90	425	198	254	726	149	83	172	114	441	239	260
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	90	425	198	254	726	149	83	172	114	441	239	260
Peak Hour Factor	0.8420	0.8420	0.8420	0.8420	0.8420	0.8420	0.8420	0.8420	0.8420	0.8420	0.8420	0.8420
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	27	126	59	75	216	44	25	51	34	131	71	77
Total Analysis Volume [veh/h]	107	505	235	302	862	177	99	204	135	524	284	309
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protect	Permis	Overla	Protect	Permis	Permis	Protect	Permis	Permis	Protect	Permis	Permis
Signal Group	1	6	6	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups			6,7									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	7	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	37	37	20	44	0	12	36	0	27	51	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	7	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	26	0	22	0	0	25	0	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No		No	No		No	No	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	56	81	13	60	60	8	14	14	21	27	27
g / C, Green / Cycle	0.07	0.47	0.68	0.11	0.50	0.50	0.07	0.12	0.12	0.17	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.06	0.14	0.15	0.09	0.28	0.29	0.06	0.10	0.10	0.15	0.08	0.19
s, saturation flow rate [veh/h]	1781	3560	1589	3459	1870	1761	1781	1870	1629	3459	3560	1589
c, Capacity [veh/h]	132	1670	1072	364	935	881	120	224	196	595	801	357
d1, Uniform Delay [s]	54.73	19.71	7.46	52.64	20.97	21.04	55.29	51.37	51.59	48.49	39.20	44.78
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.98	0.47	0.47	4.85	2.52	2.72	13.13	6.20	8.43	4.43	0.27	6.30
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.30	0.22	0.83	0.57	0.57	0.83	0.79	0.82	0.88	0.35	0.86
d, Delay for Lane Group [s/veh]	65.70	20.18	7.93	57.49	23.49	23.76	68.42	57.57	60.02	52.91	39.47	51.08
Lane Group LOS	E	C	A	E	C	C	E	E	E	D	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.56	4.39	2.27	4.59	10.40	9.95	3.37	5.54	5.15	7.79	3.47	9.17
50th-Percentile Queue Length [ft/ln]	89.11	109.87	56.75	114.80	259.99	248.83	84.31	138.54	128.79	194.75	86.70	229.30
95th-Percentile Queue Length [veh/ln]	6.42	7.83	4.09	8.11	15.69	15.13	6.07	9.40	8.87	12.37	6.24	14.14
95th-Percentile Queue Length [ft/ln]	160.39	195.82	102.15	202.66	392.20	378.17	151.76	235.06	221.84	309.19	156.06	353.47

Movement, Approach, & Intersection Results

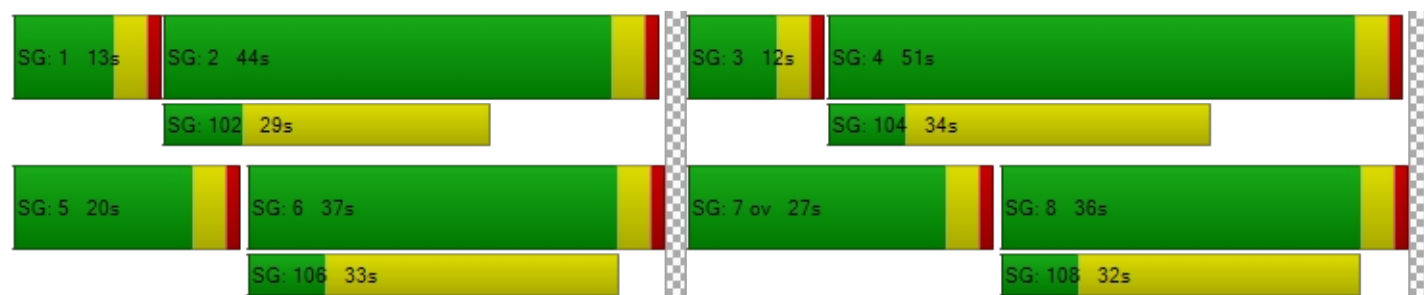
d_M, Delay for Movement [s/veh]	65.70	20.18	7.93	57.49	23.59	23.76	68.42	57.88	60.02	52.91	39.47	51.08
Movement LOS	E	C	A	E	C	C	E	E	E	D	D	D
d_A, Approach Delay [s/veh]	22.53			31.25			60.93			48.99		
Approach LOS	C			C			E			D		
d_I, Intersection Delay [s/veh]	38.04											
Intersection LOS	D											
Intersection V/C	0.690											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.52			49.52			49.52			49.52		
I_p,int, Pedestrian LOS Score for Intersection	2.916			3.016			2.543			2.996		
Crosswalk LOS	C			C			B			C		
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	550			666			533			783		
d_b, Bicycle Delay [s]	31.55			26.68			32.28			22.22		
I_b,int, Bicycle LOS Score for Intersection	2.258			2.666			1.921			2.481		
Bicycle LOS	B			B			A			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 4: Highland Springs Avenue (NS) / 6th Street - Ramsey Street (EW)**

Control Type:	Signalized	Delay (sec / veh):	34.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.721

Intersection Setup

Name	Hi Sp			Hi Sp			6th Street			Ramsey Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	195.00	150.00	100.00	85.00	205.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			30.00			35.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Hi Sp			Hi Sp			6th Street			Ramsey Street		
Base Volume Input [veh/h]	112	654	188	95	1040	85	98	250	226	160	188	61
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	112	654	188	95	1040	85	98	250	226	160	188	61
Peak Hour Factor	0.9390	0.9390	0.9390	0.9390	0.9390	0.9390	0.9390	0.9390	0.9390	0.9390	0.9390	0.9390
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	174	50	25	277	23	26	67	60	43	50	16
Total Analysis Volume [veh/h]	119	696	200	101	1108	91	104	266	241	170	200	65
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protect	Permis	Permis	Protect	Permis	Permis	Protect	Permis	Permis	Protect	Permis	Permis
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	46	0	12	45	0	14	46	0	15	48	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	35	0	0	33	0	0	32	0	0	26	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	64	64	8	63	63	9	21	21	11	23	23
g / C, Green / Cycle	0.08	0.53	0.53	0.07	0.53	0.53	0.07	0.17	0.17	0.09	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.07	0.20	0.13	0.06	0.31	0.06	0.06	0.07	0.15	0.10	0.07	0.07
s, saturation flow rate [veh/h]	1781	3560	1589	1781	3560	1589	1781	3560	1589	1781	1870	1717
c, Capacity [veh/h]	135	1897	847	120	1868	834	129	621	277	164	363	333
d1, Uniform Delay [s]	54.97	16.29	14.99	55.36	19.70	14.40	54.83	44.23	48.24	54.49	42.08	42.17
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	16.61	0.55	0.66	14.38	1.40	0.26	10.94	0.47	8.22	41.97	0.65	0.73
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	0.37	0.24	0.84	0.59	0.11	0.80	0.43	0.87	1.03	0.38	0.39
d, Delay for Lane Group [s/veh]	71.57	16.83	15.64	69.74	21.10	14.66	65.77	44.70	56.46	96.47	42.73	42.90
Lane Group LOS	E	B	B	E	C	B	E	D	E	F	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.16	5.53	3.00	3.50	10.77	1.31	3.47	3.55	7.57	6.75	3.50	3.31
50th-Percentile Queue Length [ft/ln]	103.91	138.15	75.02	87.53	269.33	32.77	86.65	88.78	189.27	168.72	87.45	82.67
95th-Percentile Queue Length [veh/ln]	7.48	9.38	5.40	6.30	16.16	2.36	6.24	6.39	12.08	11.15	6.30	5.95
95th-Percentile Queue Length [ft/ln]	187.03	234.53	135.03	157.55	403.91	58.98	155.97	159.80	302.09	278.73	157.40	148.81

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	71.57	16.83	15.64	69.74	21.10	14.66	65.77	44.70	56.46	96.47	42.78	42.90
Movement LOS	E	B	B	E	C	B	E	D	E	F	D	D
d_A, Approach Delay [s/veh]	23.02			24.43			52.93			63.78		
Approach LOS	C			C			D			E		
d_I, Intersection Delay [s/veh]	34.27											
Intersection LOS	C											
Intersection V/C	0.721											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.52			49.52			49.52			49.52		
I_p,int, Pedestrian LOS Score for Intersection	2.947			2.818			2.660			2.607		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	700			683			700			733		
d_b, Bicycle Delay [s]	25.36			26.02			25.36			24.08		
I_b,int, Bicycle LOS Score for Intersection	2.397			2.632			2.064			1.918		
Bicycle LOS	B			B			B			A		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 1: Xenia Avenue (NS) / 8th Street (EW)**

Control Type:	All-way stop	Delay (sec / veh):	17.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.641

Intersection Setup

Name	Xenia Avenue			Xenia Avenue			8th Street			8th Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	90.00	100.00	100.00	150.00	100.00	150.00	150.00	100.00	150.00	125.00	100.00	125.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Xenia Avenue			Xenia Avenue			8th Street			8th Street		
Base Volume Input [veh/h]	49	225	51	37	147	34	49	297	36	32	253	46
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	49	225	51	37	147	34	49	297	36	32	253	46
Peak Hour Factor	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	59	13	10	39	9	13	78	9	8	67	12
Total Analysis Volume [veh/h]	52	237	54	39	155	36	52	313	38	34	267	49
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings**Lanes**

Capacity per Entry Lane [veh/h]	461	499	439	466	510	458	489	539	450	479	528
Degree of Utilization, x	0.11	0.58	0.09	0.33	0.07	0.11	0.64	0.07	0.08	0.56	0.09

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.38	3.68	0.29	1.44	0.23	0.38	4.45	0.23	0.24	3.35	0.31
95th-Percentile Queue Length [ft]	9.48	91.94	7.28	36.05	5.67	9.53	111.17	5.67	6.10	83.66	7.63
Approach Delay [s/veh]	18.30		13.19			19.73			17.20		
Approach LOS	C		B			C			C		
Intersection Delay [s/veh]	17.56										
Intersection LOS	C										

Intersection Level Of Service Report
Intersection 2: Xenia Avenue (NS) / 6th Street (EW)

Control Type:	All-way stop	Delay (sec / veh):	22.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.790

Intersection Setup

Name	Xenia Avenue			Xenia Avenue			6th Street			6th Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	185.00	100.00	100.00	180.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Xenia Avenue			Xenia Avenue			6th Street			6th Street		
Base Volume Input [veh/h]	1	2	6	129	2	103	187	433	3	5	578	190
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	2	6	129	2	103	187	433	3	5	578	190
Peak Hour Factor	0.9730	0.9730	0.9730	0.9730	0.9730	0.9730	0.9730	0.9730	0.9730	0.9730	0.9730	0.9730
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	1	2	33	1	26	48	111	1	1	149	49
Total Analysis Volume [veh/h]	1	2	6	133	2	106	192	445	3	5	594	195
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings**Lanes**

Capacity per Entry Lane [veh/h]	436	402	463	449	479	480	467	500	525
Degree of Utilization, x	0.02	0.33	0.23	0.43	0.47	0.47	0.01	0.79	0.75

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.06	1.42	0.90	2.11	2.45	2.44	0.03	7.26	6.49
95th-Percentile Queue Length [ft]	1.58	35.58	22.39	52.67	61.22	61.09	0.81	181.45	162.35
Approach Delay [s/veh]	11.43	14.60		16.63			29.55		
Approach LOS	B	B		C			D		
Intersection Delay [s/veh]	22.40								
Intersection LOS	C								

Intersection Level Of Service Report**Intersection 3: Highland Springs Avenue (NS) / Wilson Street - 8th Street (EW)**

Control Type:	Signalized	Delay (sec / veh):	28.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.630

Intersection Setup

Name	Hi Sp			Hi Sp			8th Street			Wilson Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	210.00	100.00	200.00	155.00	100.00	100.00	150.00	100.00	100.00	300.00	100.00	325.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			45.00			35.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Hi Sp			Hi Sp			8th Street			Wilson Street		
Base Volume Input [veh/h]	79	908	465	155	583	77	109	235	58	378	163	148
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	79	908	465	155	583	77	109	235	58	378	163	148
Peak Hour Factor	0.9190	0.9190	0.9190	0.9190	0.9190	0.9190	0.9190	0.9190	0.9190	0.9190	0.9190	0.9190
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	247	126	42	159	21	30	64	16	103	44	40
Total Analysis Volume [veh/h]	86	988	506	169	634	84	119	256	63	411	177	161
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	105
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protect	Permis	Overla	Protect	Permis	Permis	Protect	Permis	Permis	Protect	Permis	Permis
Signal Group	1	6	6	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups			6,7									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	7	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	37	37	11	33	0	19	37	0	20	38	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	7	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	26	0	22	0	0	25	0	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No		No	No		No	No	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	105	105	105	105	105	105	105	105	105	105	105	105
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	54	74	7	55	55	9	12	12	16	19	19
g / C, Green / Cycle	0.06	0.52	0.71	0.07	0.52	0.52	0.08	0.11	0.11	0.15	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.05	0.28	0.32	0.05	0.20	0.20	0.07	0.09	0.09	0.12	0.05	0.10
s, saturation flow rate [veh/h]	1781	3560	1589	3459	1870	1794	1781	1870	1745	3459	3560	1589
c, Capacity [veh/h]	111	1832	1121	233	971	932	149	212	197	528	648	289
d1, Uniform Delay [s]	48.53	17.14	6.69	48.07	15.10	15.10	47.27	45.30	45.39	42.82	37.02	39.14
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.67	1.14	1.31	4.26	1.12	1.17	9.24	5.90	6.84	2.52	0.23	1.68
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.54	0.45	0.73	0.38	0.38	0.80	0.77	0.79	0.78	0.27	0.56
d, Delay for Lane Group [s/veh]	59.20	18.28	8.01	52.33	16.22	16.27	56.51	51.20	52.23	45.34	37.24	40.82
Lane Group LOS	E	B	A	D	B	B	E	D	D	D	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.52	7.83	4.47	2.24	5.06	4.87	3.40	4.43	4.27	5.12	1.91	3.77
50th-Percentile Queue Length [ft/ln]	63.07	195.82	111.69	56.01	126.40	121.64	84.94	110.63	106.69	128.03	47.80	94.33
95th-Percentile Queue Length [veh/ln]	4.54	12.42	7.93	4.03	8.74	8.48	6.12	7.87	7.66	8.83	3.44	6.79
95th-Percentile Queue Length [ft/ln]	113.52	310.57	198.34	100.81	218.59	212.08	152.90	196.87	191.39	220.81	86.04	169.80

Movement, Approach, & Intersection Results

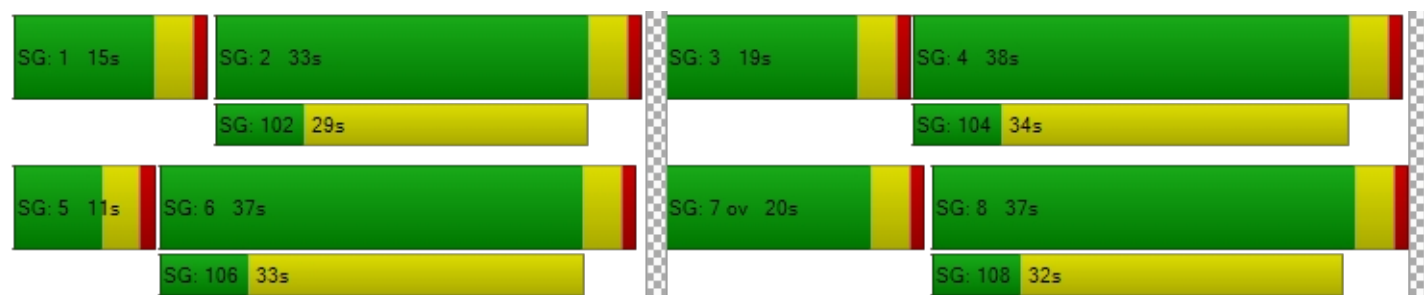
d_M, Delay for Movement [s/veh]	59.20	18.28	8.01	52.33	16.24	16.27	56.51	51.57	52.23	45.34	37.24	40.82
Movement LOS	E	B	A	D	B	B	E	D	D	D	D	D
d_A, Approach Delay [s/veh]	17.22			23.12			53.01			42.45		
Approach LOS	B			C			D			D		
d_I, Intersection Delay [s/veh]	28.11											
Intersection LOS	C											
Intersection V/C	0.630											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	42.11			42.11			42.11			42.11		
I_p,int, Pedestrian LOS Score for Intersection	2.970			2.985			2.486			2.952		
Crosswalk LOS	C			C			B			C		
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	628			552			628			647		
d_b, Bicycle Delay [s]	24.71			27.53			24.71			24.03		
I_b,int, Bicycle LOS Score for Intersection	2.863			2.291			1.921			2.178		
Bicycle LOS	C			B			A			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 4: Highland Springs Avenue (NS) / 6th Street - Ramsey Street (EW)**

Control Type:	Signalized	Delay (sec / veh):	50.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.812

Intersection Setup

Name	Hi Sp			Hi Sp			6th Street			Ramsey Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	195.00	150.00	100.00	85.00	205.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			30.00			35.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Hi Sp			Hi Sp			6th Street			Ramsey Street		
Base Volume Input [veh/h]	243	1208	234	61	849	134	153	351	284	213	418	113
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	243	1208	234	61	849	134	153	351	284	213	418	113
Peak Hour Factor	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	64	316	61	16	222	35	40	92	74	56	109	30
Total Analysis Volume [veh/h]	254	1264	245	64	888	140	160	367	297	223	437	118
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protect	Permis	Permis	Protect	Permis	Permis	Protect	Permis	Permis	Protect	Permis	Permis
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	17	50	0	11	44	0	22	43	0	16	37	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	35	0	0	33	0	0	32	0	0	26	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	60	60	6	54	54	13	25	25	12	25	25
g / C, Green / Cycle	0.11	0.50	0.50	0.05	0.45	0.45	0.11	0.21	0.21	0.10	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.14	0.36	0.15	0.04	0.25	0.09	0.09	0.10	0.19	0.13	0.15	0.15
s, saturation flow rate [veh/h]	1781	3560	1589	1781	3560	1589	1781	3560	1589	1781	1870	1735
c, Capacity [veh/h]	194	1792	800	93	1590	710	189	750	335	179	384	356
d1, Uniform Delay [s]	53.50	22.97	17.51	55.93	24.49	20.16	52.70	41.69	45.99	54.00	44.82	44.84
k, delay calibration	0.14	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.15	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	149.65	2.36	0.99	8.69	1.42	0.62	9.92	0.50	10.25	120.57	2.96	3.21
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.31	0.71	0.31	0.69	0.56	0.20	0.85	0.49	0.89	1.25	0.75	0.75
d, Delay for Lane Group [s/veh]	203.15	25.33	18.50	64.62	25.91	20.78	62.62	42.19	56.24	174.57	47.77	48.06
Lane Group LOS	F	C	B	E	C	C	E	D	E	F	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	13.84	13.75	4.11	2.13	9.51	2.51	5.21	4.80	9.43	11.26	8.11	7.57
50th-Percentile Queue Length [ft/ln]	346.11	343.63	102.73	53.29	237.75	62.73	130.37	120.00	235.78	281.46	202.72	189.34
95th-Percentile Queue Length [veh/ln]	22.03	19.83	7.40	3.84	14.57	4.52	8.96	8.39	14.47	18.14	12.78	12.09
95th-Percentile Queue Length [ft/ln]	550.65	495.64	184.92	95.93	364.19	112.92	223.99	209.82	361.69	453.57	319.47	302.18

Movement, Approach, & Intersection Results

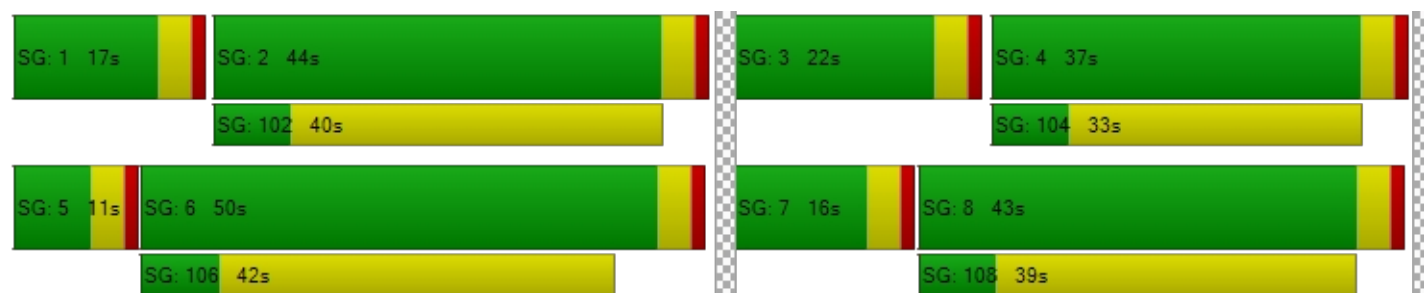
d_M, Delay for Movement [s/veh]	203.15	25.33	18.50	64.62	25.91	20.78	62.62	42.19	56.24	174.57	47.87	48.06
Movement LOS	F	C	B	E	C	C	E	D	E	F	D	D
d_A, Approach Delay [s/veh]	50.00			27.52			51.22			84.22		
Approach LOS	D			C			D			F		
d_I, Intersection Delay [s/veh]	50.69											
Intersection LOS	D											
Intersection V/C	0.812											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.52			49.52			49.52			49.52		
I_p,int, Pedestrian LOS Score for Intersection	3.068			2.895			2.780			2.739		
Crosswalk LOS	C			C			C			B		
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	766			666			650			550		
d_b, Bicycle Delay [s]	22.83			26.68			27.35			31.55		
I_b,int, Bicycle LOS Score for Intersection	3.014			2.461			2.239			2.201		
Bicycle LOS	C			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Appendix E

Project Opening Year (2024) With Project Conditions
Intersection Analysis Worksheets

Intersection Level Of Service Report**Intersection 1: Xenia Avenue (NS) / 8th Street (EW)**

Control Type:	All-way stop	Delay (sec / veh):	20.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.797

Intersection Setup

Name	Xenia Avenue			Xenia Avenue			8th Street			8th Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	90.00	100.00	100.00	150.00	100.00	150.00	150.00	100.00	150.00	125.00	100.00	125.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Xenia Avenue			Xenia Avenue			8th Street			8th Street		
Base Volume Input [veh/h]	13	139	61	148	196	56	40	200	32	79	297	167
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	13	139	61	148	196	56	40	200	32	79	297	167
Peak Hour Factor	0.8170	0.8170	0.8170	0.8170	0.8170	0.8170	0.8170	0.8170	0.8170	0.8170	0.8170	0.8170
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	43	19	45	60	17	12	61	10	24	91	51
Total Analysis Volume [veh/h]	16	170	75	181	240	69	49	245	39	97	364	204
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings**Lanes**

Capacity per Entry Lane [veh/h]	447	484	419	444	485	410	433	471	430	457	500
Degree of Utilization, x	0.04	0.51	0.43	0.54	0.14	0.12	0.57	0.08	0.23	0.80	0.41

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.11	2.81	2.12	3.14	0.49	0.40	3.41	0.27	0.86	7.25	1.96
95th-Percentile Queue Length [ft]	2.78	70.34	53.11	78.46	12.35	10.09	85.18	6.73	21.41	181.25	49.10
Approach Delay [s/veh]	17.14		17.87			18.80			25.67		
Approach LOS	C		C			C			D		
Intersection Delay [s/veh]	20.90										
Intersection LOS	C										

Intersection Level Of Service Report
Intersection 2: Xenia Avenue (NS) / 6th Street (EW)

Control Type:	All-way stop	Delay (sec / veh):	13.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.490

Intersection Setup

Name	Xenia Avenue			Xenia Avenue			6th Street			6th Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	185.00	100.00	100.00	180.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Xenia Avenue			Xenia Avenue			6th Street			6th Street		
Base Volume Input [veh/h]	1	0	0	231	1	164	122	300	2	2	277	83
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	0	0	231	1	164	122	300	2	2	277	83
Peak Hour Factor	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	60	0	42	31	77	1	1	71	21
Total Analysis Volume [veh/h]	1	0	0	238	1	169	126	310	2	2	286	86
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings**Lanes**

Capacity per Entry Lane [veh/h]	465	486	578	478	513	513	473	507	531
Degree of Utilization, x	0.00	0.49	0.29	0.26	0.30	0.30	0.00	0.37	0.35

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.01	2.65	1.22	1.05	1.28	1.27	0.01	1.67	1.56
95th-Percentile Queue Length [ft]	0.16	66.33	30.54	26.23	31.89	31.84	0.32	41.76	38.99
Approach Delay [s/veh]	10.76	14.72		12.80			13.46		
Approach LOS	B	B		B			B		
Intersection Delay [s/veh]	13.64								
Intersection LOS	B								

Intersection Level Of Service Report**Intersection 3: Highland Springs Avenue (NS) / Wilson Street - 8th Street (EW)**

Control Type:	Signalized	Delay (sec / veh):	38.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.701

Intersection Setup

Name	Hi Sp			Hi Sp			8th Street			Wilson Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	210.00	100.00	200.00	155.00	100.00	100.00	150.00	100.00	100.00	300.00	100.00	325.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			45.00			35.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Hi Sp			Hi Sp			8th Street			Wilson Street		
Base Volume Input [veh/h]	94	425	198	254	726	151	89	178	126	441	241	260
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	94	425	198	254	726	151	89	178	126	441	241	260
Peak Hour Factor	0.8420	0.8420	0.8420	0.8420	0.8420	0.8420	0.8420	0.8420	0.8420	0.8420	0.8420	0.8420
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	28	126	59	75	216	45	26	53	37	131	72	77
Total Analysis Volume [veh/h]	112	505	235	302	862	179	106	211	150	524	286	309
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protect	Permis	Overla	Protect	Permis	Permis	Protect	Permis	Permis	Protect	Permis	Permis
Signal Group	1	6	6	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups			6,7									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	7	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	37	37	20	44	0	12	36	0	27	51	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	7	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	26	0	22	0	0	25	0	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No		No	No		No	No	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	56	80	13	59	59	8	15	15	21	28	28
g / C, Green / Cycle	0.08	0.46	0.67	0.11	0.49	0.49	0.07	0.13	0.13	0.17	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.06	0.14	0.15	0.09	0.29	0.29	0.06	0.10	0.11	0.15	0.08	0.19
s, saturation flow rate [veh/h]	1781	3560	1589	3459	1870	1760	1781	1870	1619	3459	3560	1589
c, Capacity [veh/h]	135	1646	1062	364	920	866	120	237	205	595	825	368
d1, Uniform Delay [s]	54.73	20.22	7.77	52.64	21.68	21.75	55.52	50.95	51.17	48.49	38.54	43.99
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.25	0.48	0.48	4.85	2.67	2.89	18.27	6.20	8.44	4.43	0.25	5.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.31	0.22	0.83	0.58	0.59	0.88	0.80	0.83	0.88	0.35	0.84
d, Delay for Lane Group [s/veh]	66.99	20.70	8.25	57.49	24.34	24.64	73.79	57.15	59.60	52.91	38.79	49.14
Lane Group LOS	E	C	A	E	C	C	E	E	E	D	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.77	4.46	2.33	4.59	10.66	10.20	3.76	5.91	5.45	7.79	3.46	8.99
50th-Percentile Queue Length [ft/ln]	94.29	111.60	58.36	114.80	266.46	254.98	94.11	147.86	136.22	194.75	86.45	224.64
95th-Percentile Queue Length [veh/ln]	6.79	7.93	4.20	8.11	16.01	15.44	6.78	9.90	9.28	12.37	6.22	13.90
95th-Percentile Queue Length [ft/ln]	169.72	198.23	105.05	202.66	400.32	385.92	169.39	247.56	231.93	309.19	155.60	347.55

Movement, Approach, & Intersection Results

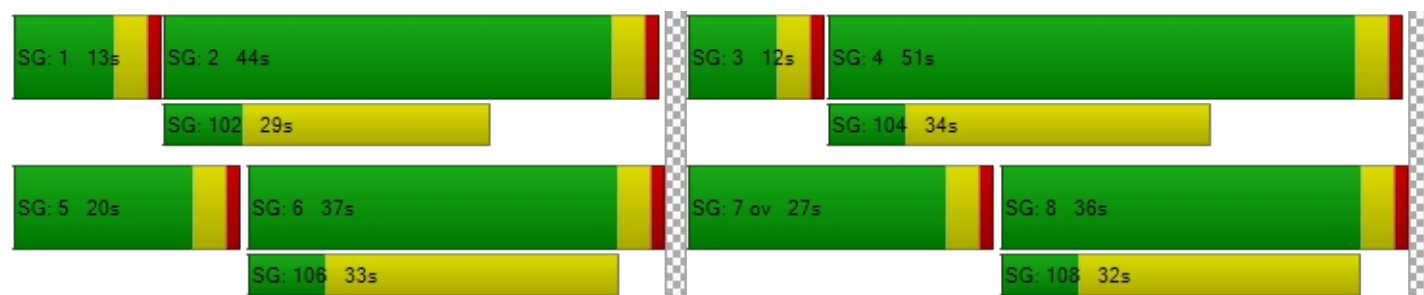
d_M, Delay for Movement [s/veh]	66.99	20.70	8.25	57.49	24.45	24.64	73.79	57.39	59.60	52.91	38.79	49.14
Movement LOS	E	C	A	E	C	C	E	E	E	D	D	D
d_A, Approach Delay [s/veh]	23.35			31.91			61.83			48.26		
Approach LOS	C			C			E			D		
d_I, Intersection Delay [s/veh]	38.52											
Intersection LOS	D											
Intersection V/C	0.701											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.52			49.52			49.52			49.52		
I_p,int, Pedestrian LOS Score for Intersection	2.919			3.018			2.551			2.998		
Crosswalk LOS	C			C			B			C		
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	550			666			533			783		
d_b, Bicycle Delay [s]	31.55			26.68			32.28			22.22		
I_b,int, Bicycle LOS Score for Intersection	2.263			2.668			1.945			2.483		
Bicycle LOS	B			B			A			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 4: Highland Springs Avenue (NS) / 6th Street - Ramsey Street (EW)**

Control Type:	Signalized	Delay (sec / veh):	34.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.733

Intersection Setup

Name	Hi Sp			Hi Sp			6th Street			Ramsey Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	195.00	150.00	100.00	85.00	205.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			30.00			35.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Hi Sp			Hi Sp			6th Street			Ramsey Street		
Base Volume Input [veh/h]	115	657	188	98	1049	85	98	253	235	160	189	62
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	115	657	188	98	1049	85	98	253	235	160	189	62
Peak Hour Factor	0.9390	0.9390	0.9390	0.9390	0.9390	0.9390	0.9390	0.9390	0.9390	0.9390	0.9390	0.9390
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	31	175	50	26	279	23	26	67	63	43	50	17
Total Analysis Volume [veh/h]	122	700	200	104	1117	91	104	269	250	170	201	66
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protect	Permis	Permis	Protect	Permis	Permis	Protect	Permis	Permis	Protect	Permis	Permis
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	46	0	12	45	0	14	46	0	15	48	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	35	0	0	33	0	0	32	0	0	26	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	63	63	8	62	62	9	22	22	11	24	24
g / C, Green / Cycle	0.08	0.53	0.53	0.07	0.52	0.52	0.07	0.18	0.18	0.09	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.07	0.20	0.13	0.06	0.31	0.06	0.06	0.08	0.16	0.10	0.07	0.08
s, saturation flow rate [veh/h]	1781	3560	1589	1781	3560	1589	1781	3560	1589	1781	1870	1716
c, Capacity [veh/h]	135	1877	838	120	1847	825	129	641	286	164	373	342
d1, Uniform Delay [s]	55.06	16.71	15.36	55.46	20.25	14.74	54.83	43.66	47.89	54.49	41.51	41.60
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	19.10	0.57	0.67	16.57	1.48	0.27	10.94	0.44	8.21	41.97	0.61	0.69
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.91	0.37	0.24	0.87	0.60	0.11	0.80	0.42	0.87	1.03	0.37	0.38
d, Delay for Lane Group [s/veh]	74.17	17.28	16.03	72.02	21.73	15.01	65.77	44.10	56.10	96.47	42.12	42.28
Lane Group LOS	E	B	B	E	C	B	E	D	E	F	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.35	5.65	3.05	3.67	11.07	1.33	3.47	3.56	7.84	6.75	3.50	3.30
50th-Percentile Queue Length [ft/ln]	108.64	141.29	76.16	91.73	276.73	33.25	86.65	89.12	196.04	168.72	87.41	82.58
95th-Percentile Queue Length [veh/ln]	7.76	9.55	5.48	6.60	16.53	2.39	6.24	6.42	12.43	11.15	6.29	5.95
95th-Percentile Queue Length [ft/ln]	194.10	238.75	137.09	165.11	413.13	59.84	155.97	160.41	310.85	278.73	157.34	148.65

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	74.17	17.28	16.03	72.02	21.73	15.01	65.77	44.10	56.10	96.47	42.17	42.28
Movement LOS	E	B	B	E	C	B	E	D	E	F	D	D
d_A, Approach Delay [s/veh]	23.83			25.25			52.53			63.31		
Approach LOS	C			C			D			E		
d_I, Intersection Delay [s/veh]	34.73											
Intersection LOS	C											
Intersection V/C	0.733											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.52			49.52			49.52			49.52		
I_p,int, Pedestrian LOS Score for Intersection	2.952			2.821			2.663			2.609		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	700			683			700			733		
d_b, Bicycle Delay [s]	25.36			26.02			25.36			24.08		
I_b,int, Bicycle LOS Score for Intersection	2.403			2.642			2.074			1.920		
Bicycle LOS	B			B			B			A		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Xenia Avenue (NS) / Project Access 1 (EW)

Control Type:	Two-way stop	Delay (sec / veh):	13.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.066

Intersection Setup

Name	Xenia Avenue		Xenia Avenue		Project Access 1	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	50.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Xenia Avenue		Xenia Avenue		Project Access 1	
Base Volume Input [veh/h]	200	9	3	328	30	9
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	200	9	3	328	30	9
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	53	2	1	86	8	2
Total Analysis Volume [veh/h]	211	9	3	345	32	9
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.07	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	7.67	0.00	13.00	9.93
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.01	0.00	0.25	0.25
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.17	0.00	6.23	6.23
d_A, Approach Delay [s/veh]	0.00		0.07		12.33	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.87					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 6: Project Access 2 (NS) / 8th Street (EW)

Control Type:	Two-way stop	Delay (sec / veh):	17.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.010

Intersection Setup

Name	Project Access 2		8th Street		8th Street	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	50.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Project Access 2		8th Street		8th Street	
Base Volume Input [veh/h]	3	18	384	1	5	508
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	18	384	1	5	508
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	5	101	0	1	134
Total Analysis Volume [veh/h]	3	19	404	1	5	535
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.03	0.00	0.00	0.00	0.01
d_M, Delay for Movement [s/veh]	17.79	10.84	0.00	0.00	8.13	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.12	0.12	0.00	0.00	0.01	0.00
95th-Percentile Queue Length [ft/ln]	3.11	3.11	0.00	0.00	0.33	0.00
d_A, Approach Delay [s/veh]	11.79		0.00		0.08	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.31					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 1: Xenia Avenue (NS) / 8th Street (EW)

Control Type:	All-way stop	Delay (sec / veh):	17.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.649

Intersection Setup

Name	Xenia Avenue			Xenia Avenue			8th Street			8th Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	90.00	100.00	100.00	150.00	100.00	150.00	150.00	100.00	150.00	125.00	100.00	125.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Xenia Avenue			Xenia Avenue			8th Street			8th Street		
Base Volume Input [veh/h]	51	225	55	37	147	34	49	300	39	38	255	46
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	51	225	55	37	147	34	49	300	39	38	255	46
Peak Hour Factor	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	59	15	10	39	9	13	79	10	10	67	12
Total Analysis Volume [veh/h]	54	237	58	39	155	36	52	316	41	40	269	49
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings**Lanes**

Capacity per Entry Lane [veh/h]	460	499	438	465	509	457	487	537	449	478	526
Degree of Utilization, x	0.12	0.59	0.09	0.33	0.07	0.11	0.65	0.08	0.09	0.56	0.09

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.40	3.78	0.29	1.45	0.23	0.38	4.57	0.25	0.29	3.42	0.31
95th-Percentile Queue Length [ft]	9.90	94.50	7.30	36.18	5.69	9.56	114.16	6.18	7.30	85.41	7.67
Approach Delay [s/veh]	18.55		13.22			20.04			17.34		
Approach LOS	C		B			C			C		
Intersection Delay [s/veh]	17.77										
Intersection LOS	C										

Intersection Level Of Service Report
Intersection 2: Xenia Avenue (NS) / 6th Street (EW)

Control Type:	All-way stop	Delay (sec / veh):	24.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.820

Intersection Setup

Name	Xenia Avenue			Xenia Avenue			6th Street			6th Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	185.00	100.00	100.00	180.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Xenia Avenue			Xenia Avenue			6th Street			6th Street		
Base Volume Input [veh/h]	1	2	6	136	2	114	206	433	3	5	578	202
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	2	6	136	2	114	206	433	3	5	578	202
Peak Hour Factor	0.9730	0.9730	0.9730	0.9730	0.9730	0.9730	0.9730	0.9730	0.9730	0.9730	0.9730	0.9730
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	1	2	35	1	29	53	111	1	1	149	52
Total Analysis Volume [veh/h]	1	2	6	140	2	117	212	445	3	5	594	208
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings**Lanes**

Capacity per Entry Lane [veh/h]	428	396	454	440	470	471	458	489	514
Degree of Utilization, x	0.02	0.35	0.26	0.48	0.48	0.48	0.01	0.82	0.78

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.06	1.57	1.04	2.55	2.53	2.52	0.03	7.94	7.08
95th-Percentile Queue Length [ft]	1.61	39.23	26.02	63.87	63.16	63.03	0.83	198.60	176.93
Approach Delay [s/veh]	11.60	15.21		17.48			32.77		
Approach LOS	B	C		C			D		
Intersection Delay [s/veh]	24.22								
Intersection LOS	C								

Intersection Level Of Service Report**Intersection 3: Highland Springs Avenue (NS) / Wilson Street - 8th Street (EW)**

Control Type:	Signalized	Delay (sec / veh):	28.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.635

Intersection Setup

Name	Hi Sp			Hi Sp			8th Street			Wilson Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	210.00	100.00	200.00	155.00	100.00	100.00	150.00	100.00	100.00	300.00	100.00	325.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			45.00			35.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Hi Sp			Hi Sp			8th Street			Wilson Street		
Base Volume Input [veh/h]	91	908	465	155	583	83	113	239	65	378	169	148
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	91	908	465	155	583	83	113	239	65	378	169	148
Peak Hour Factor	0.9190	0.9190	0.9190	0.9190	0.9190	0.9190	0.9190	0.9190	0.9190	0.9190	0.9190	0.9190
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	25	247	126	42	159	23	31	65	18	103	46	40
Total Analysis Volume [veh/h]	99	988	506	169	634	90	123	260	71	411	184	161
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	105
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protect	Permis	Overla	Protect	Permis	Permis	Protect	Permis	Permis	Protect	Permis	Permis
Signal Group	1	6	6	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups			6,7									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	7	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	37	37	11	33	0	19	37	0	20	38	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	7	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	26	0	22	0	0	25	0	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No		No	No		No	No	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	105	105	105	105	105	105	105	105	105	105	105	105
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	54	74	7	53	53	9	12	12	16	19	19
g / C, Green / Cycle	0.07	0.51	0.70	0.07	0.51	0.51	0.09	0.12	0.12	0.15	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.06	0.28	0.32	0.05	0.20	0.20	0.07	0.09	0.09	0.12	0.05	0.10
s, saturation flow rate [veh/h]	1781	3560	1589	3459	1870	1790	1781	1870	1735	3459	3560	1589
c, Capacity [veh/h]	126	1819	1115	233	948	908	154	219	203	528	653	291
d1, Uniform Delay [s]	48.03	17.41	6.87	48.07	15.92	15.92	47.13	45.09	45.18	42.82	36.97	39.01
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.04	1.17	1.33	4.26	1.21	1.26	9.17	5.87	6.87	2.52	0.23	1.64
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.54	0.45	0.73	0.39	0.39	0.80	0.78	0.79	0.78	0.28	0.55
d, Delay for Lane Group [s/veh]	58.07	18.58	8.20	52.33	17.12	17.18	56.30	50.96	52.05	45.34	37.20	40.64
Lane Group LOS	E	B	A	D	B	B	E	D	D	D	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.87	7.91	4.55	2.24	5.29	5.08	3.51	4.60	4.41	5.12	1.99	3.76
50th-Percentile Queue Length [ft/ln]	71.75	197.83	113.85	56.01	132.37	127.07	87.64	114.89	110.28	128.03	49.70	94.10
95th-Percentile Queue Length [veh/ln]	5.17	12.53	8.05	4.03	9.07	8.78	6.31	8.11	7.86	8.83	3.58	6.78
95th-Percentile Queue Length [ft/ln]	129.16	313.17	201.34	100.81	226.71	219.51	157.75	202.78	196.39	220.81	89.45	169.38

Movement, Approach, & Intersection Results

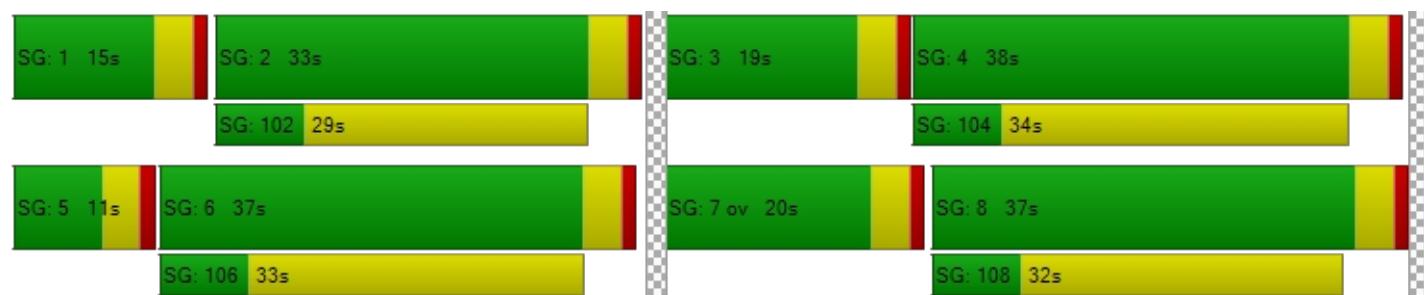
d_M, Delay for Movement [s/veh]	58.07	18.58	8.20	52.33	17.15	17.18	56.30	51.34	52.05	45.34	37.20	40.64
Movement LOS	E	B	A	D	B	B	E	D	D	D	D	D
d_A, Approach Delay [s/veh]	17.74			23.81			52.80			42.36		
Approach LOS	B			C			D			D		
d_I, Intersection Delay [s/veh]	28.55											
Intersection LOS	C											
Intersection V/C	0.635											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	42.11			42.11			42.11			42.11		
I_p,int, Pedestrian LOS Score for Intersection	2.974			2.988			2.495			2.954		
Crosswalk LOS	C			C			B			C		
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	628			552			628			647		
d_b, Bicycle Delay [s]	24.71			27.53			24.71			24.03		
I_b,int, Bicycle LOS Score for Intersection	2.874			2.296			1.934			2.183		
Bicycle LOS	C			B			A			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 4: Highland Springs Avenue (NS) / 6th Street - Ramsey Street (EW)**

Control Type:	Signalized	Delay (sec / veh):	52.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.824

Intersection Setup

Name	Hi Sp			Hi Sp			6th Street			Ramsey Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	195.00	150.00	100.00	85.00	205.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			30.00			35.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Hi Sp			Hi Sp			6th Street			Ramsey Street		
Base Volume Input [veh/h]	252	1217	234	63	854	134	153	353	289	213	421	116
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	252	1217	234	63	854	134	153	353	289	213	421	116
Peak Hour Factor	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	66	318	61	16	223	35	40	92	76	56	110	30
Total Analysis Volume [veh/h]	264	1273	245	66	893	140	160	369	302	223	440	121
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protect	Permis	Permis	Protect	Permis	Permis	Protect	Permis	Permis	Protect	Permis	Permis
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	17	50	0	11	44	0	22	43	0	16	37	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	35	0	0	33	0	0	32	0	0	26	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	60	60	6	53	53	13	26	26	12	25	25
g / C, Green / Cycle	0.11	0.50	0.50	0.05	0.44	0.44	0.11	0.21	0.21	0.10	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.15	0.36	0.15	0.04	0.25	0.09	0.09	0.10	0.19	0.13	0.16	0.16
s, saturation flow rate [veh/h]	1781	3560	1589	1781	3560	1589	1781	3560	1589	1781	1870	1733
c, Capacity [veh/h]	194	1779	794	94	1579	705	189	761	340	179	389	361
d1, Uniform Delay [s]	53.50	23.39	17.77	55.95	24.81	20.39	52.70	41.39	45.80	54.00	44.56	44.58
k, delay calibration	0.15	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.15	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	172.95	2.50	1.01	9.21	1.47	0.63	9.92	0.48	10.69	120.57	2.87	3.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.36	0.72	0.31	0.70	0.57	0.20	0.85	0.48	0.89	1.25	0.75	0.75
d, Delay for Lane Group [s/veh]	226.45	25.89	18.77	65.16	26.29	21.02	62.62	41.87	56.49	174.57	47.43	47.71
Lane Group LOS	F	C	B	E	C	C	E	D	E	F	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	15.10	14.04	4.15	2.21	9.65	2.53	5.21	4.81	9.62	11.26	8.17	7.62
50th-Percentile Queue Length [ft/ln]	377.48	350.94	103.65	55.20	241.26	63.16	130.37	120.16	240.58	281.46	204.35	190.61
95th-Percentile Queue Length [veh/ln]	24.00	20.18	7.46	3.97	14.74	4.55	8.96	8.40	14.71	18.14	12.86	12.15
95th-Percentile Queue Length [ft/ln]	599.96	504.55	186.57	99.36	368.62	113.69	223.99	210.04	367.77	453.57	321.57	303.83

Movement, Approach, & Intersection Results

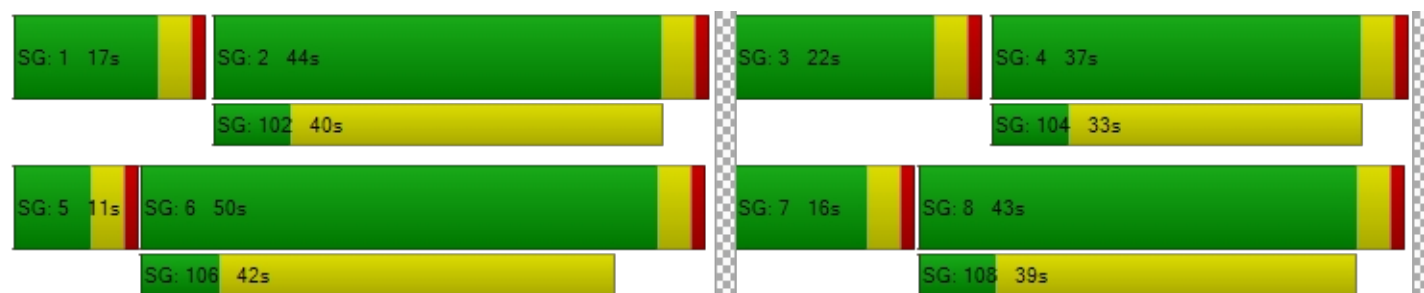
d_M, Delay for Movement [s/veh]	226.45	25.89	18.77	65.16	26.29	21.02	62.62	41.87	56.49	174.57	47.52	47.71
Movement LOS	F	C	B	E	C	C	E	D	E	F	D	D
d_A, Approach Delay [s/veh]	54.62			27.95			51.18			83.69		
Approach LOS	D			C			D			F		
d_I, Intersection Delay [s/veh]	52.53											
Intersection LOS	D											
Intersection V/C	0.824											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.52			49.52			49.52			49.52		
I_p,int, Pedestrian LOS Score for Intersection	3.073			2.898			2.784			2.742		
Crosswalk LOS	C			C			C			B		
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	766			666			650			550		
d_b, Bicycle Delay [s]	22.83			26.68			27.35			31.55		
I_b,int, Bicycle LOS Score for Intersection	3.030			2.466			2.245			2.206		
Bicycle LOS	C			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 5: Xenia Avenue (NS) / Project Access 1 (EW)**

Control Type:	Two-way stop	Delay (sec / veh):	13.4
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.042

Intersection Setup

Name	Xenia Avenue		Xenia Avenue		Project Access 1	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	50.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Xenia Avenue		Xenia Avenue		Project Access 1	
Base Volume Input [veh/h]	352	31	9	205	18	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	352	31	9	205	18	5
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	93	8	2	54	5	1
Total Analysis Volume [veh/h]	371	33	9	216	19	5
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.01	0.00	0.04	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	8.14	0.00	13.45	10.85
Movement LOS	A	A	A	A	B	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.02	0.00	0.16	0.16
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.59	0.00	3.94	3.94
d_A, Approach Delay [s/veh]	0.00		0.33		12.90	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.59					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 6: Project Access 2 (NS) / 8th Street (EW)

Control Type:	Two-way stop	Delay (sec / veh):	15.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.006

Intersection Setup

Name	Project Access 2		8th Street		8th Street	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	50.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Project Access 2		8th Street		8th Street	
Base Volume Input [veh/h]	2	11	388	3	19	334
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	11	388	3	19	334
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	3	102	1	5	88
Total Analysis Volume [veh/h]	2	12	408	3	20	352
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

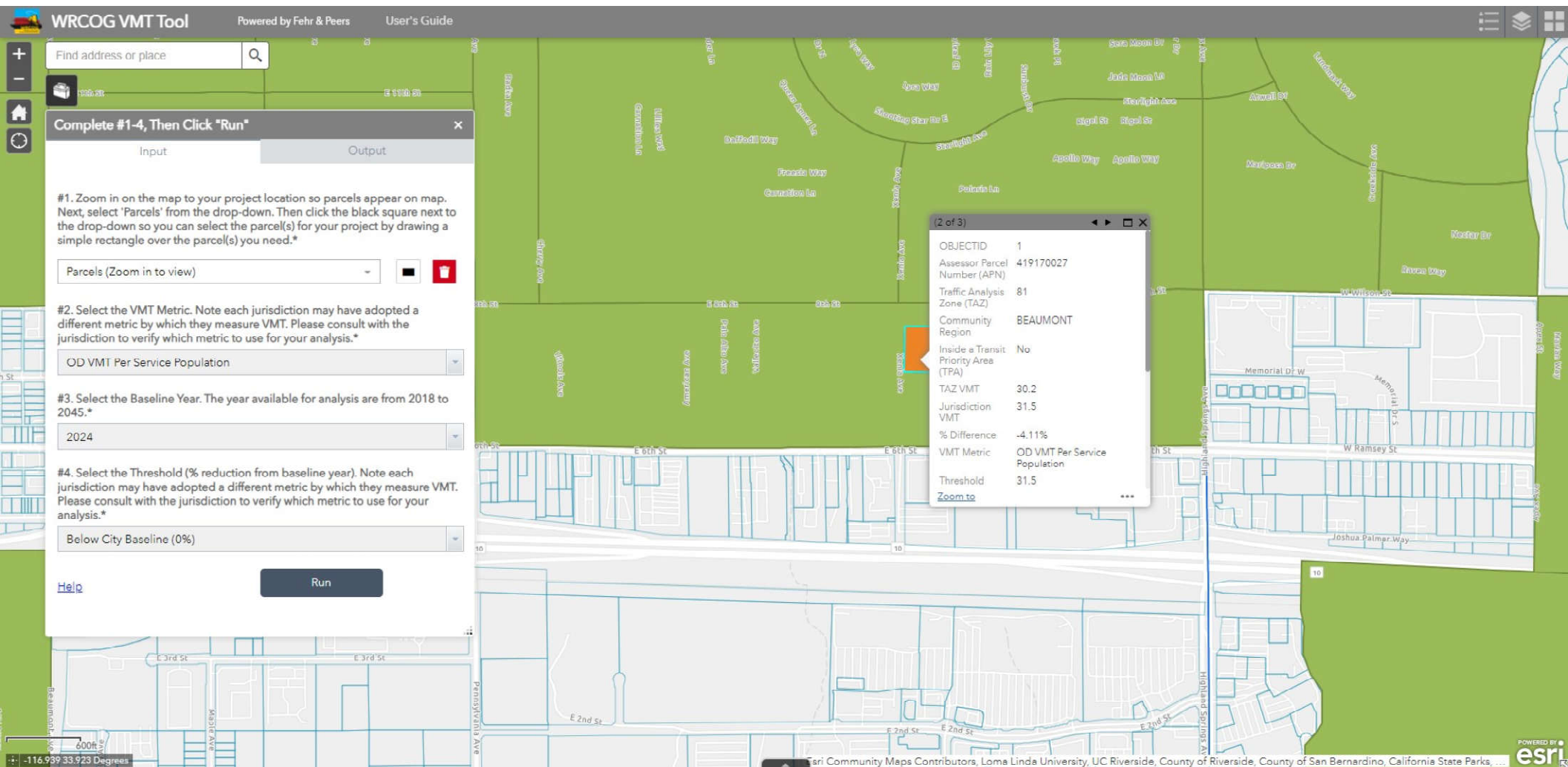
Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.02	0.00	0.00	0.02	0.00
d_M, Delay for Movement [s/veh]	15.52	10.77	0.00	0.00	8.19	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.08	0.08	0.00	0.00	0.05	0.00
95th-Percentile Queue Length [ft/ln]	1.88	1.88	0.00	0.00	1.33	0.00
d_A, Approach Delay [s/veh]	11.44		0.00		0.44	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.41					
Intersection LOS	C					

Appendix F

WRCOG Screening Tool Output



Appendix G

Residential Electronic Gate Service Rate Study

RESIDENTIAL ELECTRONIC GATE SERVICE RATE STUDY Orange County, California

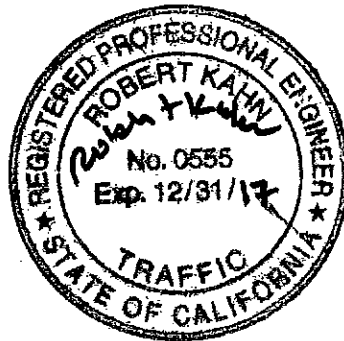


**RESIDENTIAL ELECTRONIC GATE
SERVICE RATE STUDY
Orange County, California**

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July 22, 2016

List of Attachments

Exhibits

Location Map: Spy Glass Hill Road	A-1
Location Map: Newport Ridge Dr. West.....	A-2
Location Map: Newport Ridge Dr. East.....	A-3
Location Map: Ridge Park Road.....	A-4
Location Map: Kensington and Silver Oaks.....	A-5
Location Map: Crimson Canyon and Endless Vista.....	A-6
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Residential Electronic Swinging Gate Times and Service Rates	3
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Site #1-13 PM Peak Hour Traffic Counts.....	B

Introduction

Many private residential communities in Southern California have utilized electronic or manned (guard) gates to control access to their communities. Typically these residential communities have private streets and have limited access through one or more gate controls. The vast majority of communities with gates use electronic gates for controlling access into their community. Manned gates typically occur in very high-end residential communities and were not studied in this analysis. The service rates for visitors at manned gates are somewhat lower capacity than for electronic automated gates, since they require communication with the guard.

For the most part, electronic gates are either swinging gates or rolling gates depending on the traffic control selected by the developer or homeowner association. While the operations of these two types of electronic gates are somewhat different, functionally they are similar. However, access times do vary somewhat between the two types of gates. For nearly all communities, an electronic gate is accompanied by a traffic directory for visitors to activate the gates, and a resident bypass control system activated by a resident's garage door remote controller. The traffic directories are operated by either entering a code for automatic entrance or requesting access by dialing an individual home owner's telephone system to be let in. Residence activation occurs through the use of an electronic remote control device integrated into their garage door remote control which then immediately opens the gate. Typically there is very little delay with the resident activation in comparison to the time required for visitors to request to open the gate through the traffic directory. Also, many times when a resident or visitor activates the gate, other residents or visitors can follow-up quickly once the gate is opened by the first resident or visitor, which increases the overall service capacity of the gate. This can also result in unauthorized visitors to access the gate.

The gate capacity or service rate (vehicles per hour) of the gates is used to determine the potential queuing which would occur at either the traffic directory or the gate. Typically, residents will queue near the gate, whereas visitors will queue at the traffic directory. Once the peak entering demand is established, then the potential queuing can be determined. The peak inbound demand is distributed between the visitors and residents entering the community. Typically this is approximately 20% visitors versus 80% residents within residential communities.

Once the peak entering demand for visitors/residents and service rate of the gate are determined, the traffic utilization factor (the ratio of the demand to the service rate for both the visitors and residents) can be determined and used to calculate the potential queuing. If there is sufficient entering width for two lanes, queuing for both visitors and residents can be determined separately.

At the present time, there are two methodologies available to determine gate queuing, *Transportation and Land Development* prepared by the Institute of Transportation Engineers (1988), and *Entrance/Exit Design and Control for Major Parking Facilities* prepared by Robert W. Crommelin, P.E. (October 1972). Both of these documents provide methodologies for calculating the potential queuing depending on the peak demand rate and average service rate.

According to the Crommelin report, "research has shown that random arrivals or events in a traffic stream tend to follow the Poisson mathematical distribution. This distribution provides a means that, if the average rate is known, the probability of exceeding a given volume in a unit of time may be calculated. Thus, if you know the average volume, you may calculate the surges in volume to allow design of reservoir space". This methodology allows for a gate utilization factor to be calculated to then determine the potential queuing. The Crommelin report provides a graph based upon a Poisson distribution to determine the queue length behind the vehicle being served. Similarly, the ITE report includes Poisson distribution equations that can determine the number of queued vehicles, based upon various probability levels.

Purpose and Objectives

The purpose of this study is to determine the hourly service rate capacity (vehicles per hour) of electronic gates at residential communities containing single family detached homes. The results of this study could also be applied to multi-family residential developments, since the service rates is expected to be similar. This study is based on field observations conducted at a total of thirteen (13) existing gated residential communities in Orange County, California in the Cities of Newport Beach and Aliso Viejo. A total of fourteen (14) electronic gate operations were observed in this study.

This study includes analysis of both swinging and rolling style gates. Swinging gates consist of two separate gates where both sides "swing" open, whereas rolling gates consist of a single gate that rolls on a metal track. The observations also account for the type of users entering the sites by identifying residents versus visitors (those using the traffic

directory). Hence, the study determines the visitor service rate as well as the resident service rate for a typical residential gated community. The study focused on the PM peak hour (4-6 pm) which has been determined to be the peak entering time for most residential communities. For both types of gates, “sneakers” can follow residents or visitors that activate the gate which actually increases the gate capacity.

Furthermore, as part of this study, the number of vehicles entering and exiting the observed properties during the PM peak hour were counted. This information was utilized to determine the inbound and outbound PM peak hour trip generation rate of single family detached residential use based on the conducted observations and provide a comparison to data published in the *Institute of Transportation Engineers (ITE) Trip Generation Manual*. It should be noted that the trip generation data was collected simultaneously with the service rate data, but it is not intended to be conclusive. It is strictly included as supplemental information to the primary purpose of the study.

Findings

The following findings are obtained from this study:

1. Observed Average Gate Service Rate per User Type:
 - Resident = 320.7 vehicles per hour (Range = 191.5 to 437.8 vehicles per hour)
 - Visitor = 150.6 vehicles per hour (Range = 111.7 to 184.4 vehicles per hour)
2. Observed 95th Percentile Gate Service Rate per User Type:
 - Resident = 209.6 vehicles per hour
 - Visitor = 117.5 vehicles per hour
3. Observed Average Percent Split of Total Entering PM Peak Hour Traffic by User Type:
 - Resident = 79.52%
 - Visitor = 20.48%

4. Recommended Percent Split of Total Entering PM Peak Hour Traffic by User Type:

- Resident = 80.00%
- Visitor = 20.00%

5. Recommended Gate Service Rate per User Type:

- Resident ¹ = 210 vehicles per hour
- Visitor ¹ = 115 vehicles per hour
- Combined ² = 190 vehicles per hour

6. Comparison of Observed Swinging Gate versus Rolling Gate Service Rates:

- Swinging gates and rolling gates have similar service rates for visitors
(Swinging gates have a 95th percentile service rate of 113.9 vehicles per hour, whereas rolling gates have a 95th percentile service rate of 133.5 vehicles per hour)
- Swinging gates have more capacity than rolling gates for residents
(Swinging gates have a 95th percentile service rate of 286.3 vehicles per hour, whereas rolling gates have 95th percentile service rate of 200.8 vehicles per hour)

7. Observed Average PM Peak Hour Trip Generation Rate:

- a. Inbound = 0.42 vehicles/hour/dwelling unit
- b. Outbound = 0.34 vehicles/hour/dwelling unit
- c. Total (Inbound & Outbound) = 0.76 vehicles/hour/dwelling unit

¹ To be used when there is sufficient entering width for 2 lanes: one for residents and one for visitors.

² To be used when only one entering lane is available and is shared between residents and visitors.

Site Location and Study Area

This study is based on field observations conducted at a total of fourteen (14) existing gates within a total of thirteen (13) existing gated residential communities in Orange County, California in the Cities of Newport Beach and Aliso Viejo. Eight (8) of the gates were rolling gates and six (6) were swinging style gates. All of the gates were found to be typical for these types of private gate access controlled communities.

The following is a summary list of the observed sites. The location maps of the observed sites are shown in Exhibits A-1 through A-7.

City of Newport Beach:

1. Hillsborough at Spy Glass Hill Road, Newport Beach (40 Dwelling Units with a Rolling Gate)
2. Palisades Dr at Newport Ridge Dr W, Newport Beach (56 Dwelling Units with a Swinging Gate)
3. Whitesands Dr at Newport Ridge Dr W, Newport Beach (21 Dwelling Units with a Swinging Gate)
4. Terrace Ridge at Newport Ridge Dr W, Newport Beach (38 Dwelling Units with a Swinging Gate)
5. Montserrat at Newport Ridge Dr E, Newport Beach (80 Dwelling Units with a Rolling Gate)
6. Mont St Michel/Menton at Newport Ridge Dr E, Newport Beach (169 Dwelling Units with two (2) Rolling Gates)
7. Tesoro at Ridge Park Road, Newport Beach (180 Dwelling Units with a Rolling Gate)
8. Campobello at Ridge Park Road, Newport Beach (90 Dwelling Units with a Rolling Gate)

City of Aliso Viejo:

9. Kensington at Oak View Dr, Aliso Viejo (154 Dwelling Units with a Swinging Gate)

10. Silver Oaks at Oak View Dr, Aliso Viejo (81 Dwelling Units with a Rolling Gate)
11. Crimson Canyon at Oak View Dr, Aliso Viejo (76 Dwelling Units with a Swinging Gate)
12. Endless Vista at Oak View Dr, Aliso Viejo (115 Dwelling Units with a Swinging Gate)
13. Alastair at Oak View Dr, Aliso Viejo (116 Dwelling Units with a Rolling Gate)

Data Collection

Service rate times were calculated at each location by measuring the time from when the vehicle entered the traffic directory to when it passed through the gate. The location of a typical traffic directory and gate are shown in Exhibit B (the service time was measured once the vehicle reached the traffic directory and then passed the gate). These times were converted to a service rate by the following formula:

$$\text{Service Rate (vehicles per hour)} = \frac{3,600 \text{ (sec/hr.)}}{\text{Service time (sec/vehicle)}}$$

Data collection at each of the fourteen (14) studied gates was conducted on a typical weekday (Tuesday, Wednesday or Thursday) during the typical weekday PM peak period from 4:00 PM to 6:00 PM. This is also considered to be the typical peak time of entering (inbound) traffic for residential communities.

At each study gate, the type of the gate was noted as either rolling or swinging. Service times for both visitors and residents were noted on the data collection forms. Service rates for both types of gates were calculated and also combined as a single rate for both residents and visitors

For every inbound vehicle between 4:00 PM and 6:00 PM, the observer noted the time at which the vehicle entered the community, timed how long it took for the vehicle to get from the directory through the gate, and noted whether the vehicle was a visitor or resident. If a vehicle stopped at the directory to type in a key code or call someone, it was categorized as a visitor and the time spent at the directory was included in the service time. If a vehicle did not stop at the directory and instead used a remote control device or followed up a vehicle to gain access, it was categorized as a resident, since that time was much shorter than those vehicles utilizing the traffic directory. Some of these vehicles could be considered "sneakers" that followed either a resident or visitor who activated the gate.

Similarly, for every outbound vehicle between 4:00 PM and 6:00 PM, the observer noted the time at which the vehicle exited the community. The raw data collected at each study gate can be found in Appendix A.

Data Analysis

1. Percent Split of Visitors versus Residents

The percentage of entering visitors versus residents for each site was calculated by dividing the total number of visitors or residents that entered between 4:00 PM and 6:00 PM by the total number of inbound vehicles during that time period. Then, the overall average was determined by averaging the entering visitor and resident percentages for each site (see Table 1). Based upon this study, approximately 80% of peak inbound traffic were residents and 20% were visitors.

2. Hourly Gate Service Rate Capacity

For each study site, the observed duration of time in seconds that each resident took to get from the directory through the gate was averaged to determine the average service time for residents at that specific site. The hourly service rate for residents at each site was then determined by dividing the number of seconds in a single hour (3,600 sec./hour) by the average service time for the residents obtained from the previous step.

The same calculation was performed for visitors at each of the sites. Then the data from all the sites were averaged to determine the overall hourly service rate for visitors and residents. The data was also separated by the gate type (rolling versus swinging) to compare the service rates for each gate type.

A summary of the calculated service rates for all types of gates is shown in Table 2. Service rates for swinging gates were calculated separately and are shown in Table 3 and service rates for rolling gates are shown in Table 4.

A statistical analysis was performed on the resulting data to determine the standard deviation, coefficient of variation and the 95th, 90th and 85th percentiles for all gate types. The statistical analysis was also performed on the data for both swinging gates and rolling gates. Since for most planning studies the gate types may not be known, it is recommended that the average for all gate types be utilized for determining service rates and calculating potential queuing.

When data from a number of observations and locations is available, there are a few different methods for determining what the appropriate design capacity is. For instance, the Crommelin method is a common methodology for determining gate processing capacity and forecasting vehicular queues at various gate types. The Crommelin report states that gates should be designed to operate at 80% of the average capacity. Other methods state that gates should be designed to accommodate 95% of the average gate capacity.

For this study, both of these two methods were used to derive the recommended design capacity based on the observed data. Based on the observed data at the fourteen (14) study gates, 80% of the average hourly service rate design capacity is 120.4 vehicles per hour for visitors and 256.6 vehicles per hour for residents. Based on the observed data at the fourteen (14) study gates, utilizing the 95th percentile, the service rate design capacity is 117.5 vehicles per hour for visitors and 209.6 vehicles per hour for residents.

By reviewing both methodologies with the data collected at the fourteen (14) electronic gates, recommended gate service rates have been determined by user type. In the case where there are sufficient entering widths to accommodate both a visitor and resident lane, it is recommended that the resident service rate be approximately 210 vehicles per hour and the visitor service rate is recommended to be approximately 115 vehicles per hour. When there is insufficient width available for both residents and visitors, the combined rate of 190 vehicles per hour would appear to be appropriate. It should be noted that in most cases at the sites that were observed, there was sufficient width for residents to bypass visitors at the traffic directory. These recommendations are typical for most gate installations similar to that which were observed during this study.

3. Peak Hour & Trip Generation

The observed data over the two-hour peak period was grouped and organized into fifteen-minute intervals. The peak hour is considered to be the four (4) consecutive 15-minute periods from 4:00 PM to 6:00 PM that had the highest number of total observed trips (inbound plus outbound).

Then, for each study site, the trip generation rate was determined by dividing the total peak hour trips for that site by the number of dwelling units at the site. The trip generation calculation data for each study gate can be found in Appendix B.

The PM peak hour trip generation ranges from 0.57 to 0.98 vehicles per hour per dwelling unit. The overall average trip generation rate was then determined by averaging the peak hour data results of the thirteen (13) study sites. The results of this analysis are shown in Table 5. The average inbound rate was 0.42 vehicles per dwelling unit, the average outbound rate was 0.34 vehicles per dwelling unit and the total trip generation rate was 0.76 vehicles per dwelling unit.

The total peak hour trip rate is somewhat less than the ITE (Institute of Transportation Engineers) PM peak hour rates which are 0.63 entering vehicles per hour per dwelling unit (inbound), 0.37 exiting vehicles per hour per dwelling unit (outbound) and a total of 1.00 vehicles per hour per dwelling unit. This data was collected for informational purposes only and not to question the ITE data which included substantially more sites.

Recommendations & Conclusions

Combining the two methods for determining the hourly gate service rate design capacity yields a rate of 115 vehicles per hour for visitors and 210 vehicles per hour for residents. The recommended service rates provide for sufficient variation in actual individual site conditions when there is enough room to accommodate both a visitor lane and resident lane. The entering width will typically allow for an entering resident to bypass the visitor at the gate directory and queue directly at the gate. Therefore, gate queuing for residents should be measured from the gate itself, whereas gate queuing for visitors would be measured from the traffic directory.

To obtain a recommended design capacity for residential gates when there is not sufficient width for two entering lanes, the design capacities for visitors and residents should be based upon a weighted average rate, calculated using the average percentage of residents versus visitors and the recommended design rate for residents and visitors. Based upon this study, it would be 190 vehicles per hour for a single entry lane.

Both the Crommelin and ITE methods for gate queuing use traffic intensity in order to predict the queue length at any given time. Based on the observed data, the average PM peak hour traffic intensity would be equal to the average PM peak hour entering trips per hour divided by the gate design capacity for both residents and visitors. When there is sufficient width for two entering lanes, then the queue length for each lane can be determined.

As the traffic intensity increases towards 1.0, the predicted queue length substantially increases. If the number of dwelling units in the community would lead to a high traffic intensity, hence a long queue length, installing multiple electronic gates is recommended to mitigate traffic intensity at a single electronic gate. Therefore, this study provides numerical data on gate service rates that can be used to predict queuing by both visitors and residents in a community that is controlled by electronic gates. The recommended service rates from this study are as follows:

Gate Condition	Service Rate (vehicles per hour)		
	Visitors	Residents	Both
Two Entry Lanes	115	220	-
Single Entry Lane	-	-	190

Resources

- (1) Stover, Vergil G. and Koepke, Frank J., Transportation and Land Development, Institute of Transportation Engineers, 1988
- (2) Crommelin, Robert W., Entrance/Exit Design and Control for Major Parking Facilities, October 1972

RK Engineering Group, Inc. is pleased to provide this study of Residential Electronic Gate Service Rates. A significant effort was placed on this study to evaluate several electronic gates throughout south Orange County. The study will serve to provide service rates for queuing studies at future residential developments. Once the inbound demand is known then the queuing can be determined based upon the appropriate service rate.

RK Engineering Group was assisted in this project by UCI Senior Civil Engineering Team II, which consists of Jeremy Mempin, Natalie Chen, Sara Lay, Selena Lau, Madeleine Ortiz and Alex Vu. The UCI group helped by collecting field data for the overall study. Furthermore, Alexandra Brown assisted in the data analysis and participated in preparing the report for the study. Finally, Ms. Allison Kahn Goedecke provided editorial review of the report to finalize it for publication.

RK Engineering Group hopes that this report will be useful to other transportation engineers and planners for the analysis of queuing requirements for residential electronic gate projects. Very little information on this subject has been published in the past and hopefully this information will be useful to others in the future.

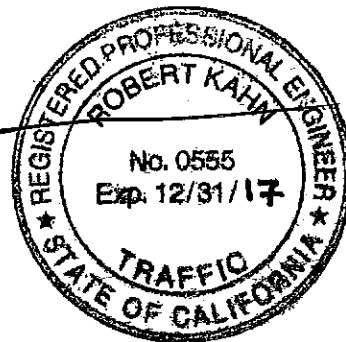
If you have any questions regarding this study, please call me at (949) 474-0809.

Sincerely,

RK ENGINEERING GROUP, INC

Robert Kahn

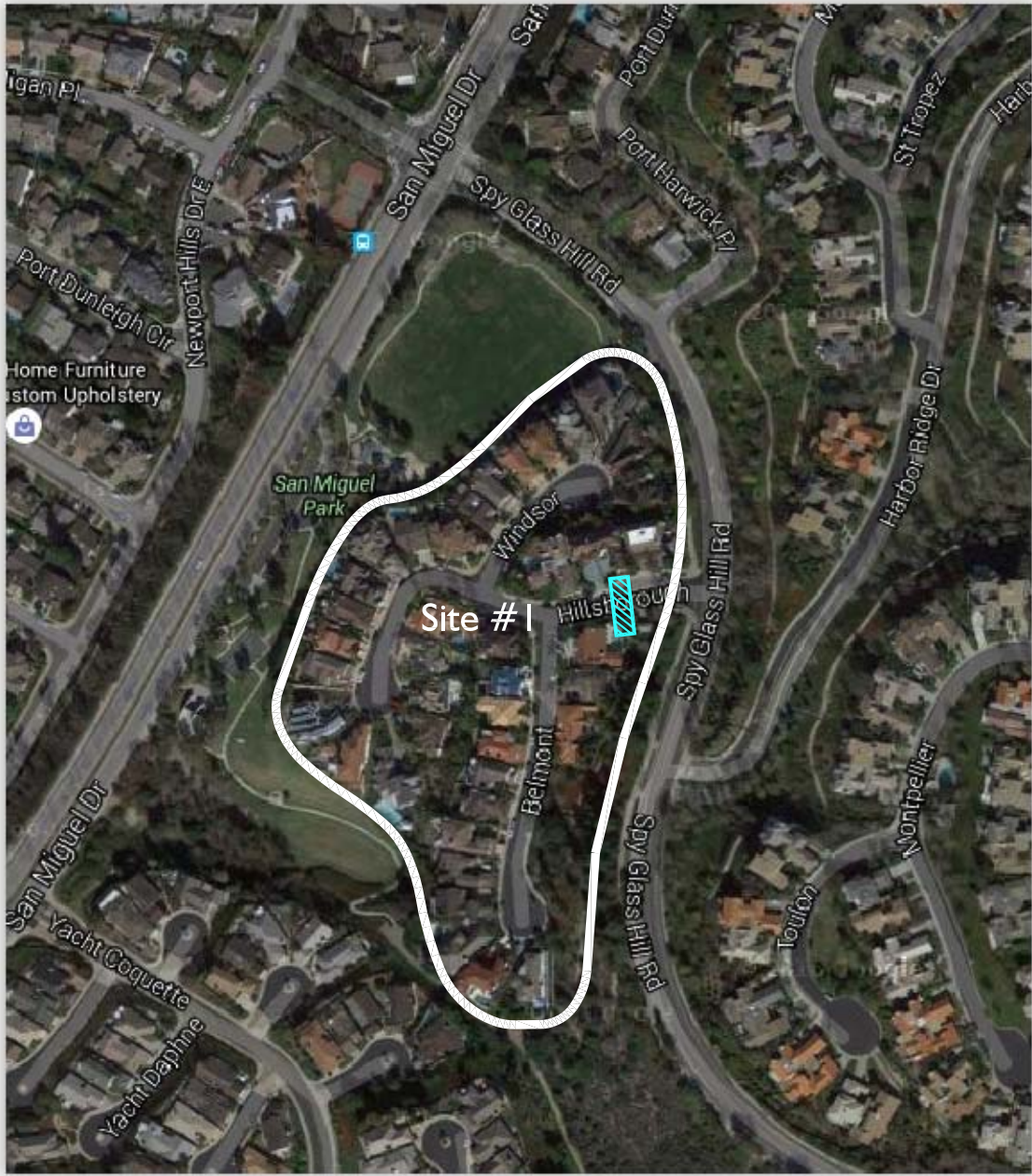
Robert Kahn, P.E.
Principal



Exhibits

Exhibit A-1

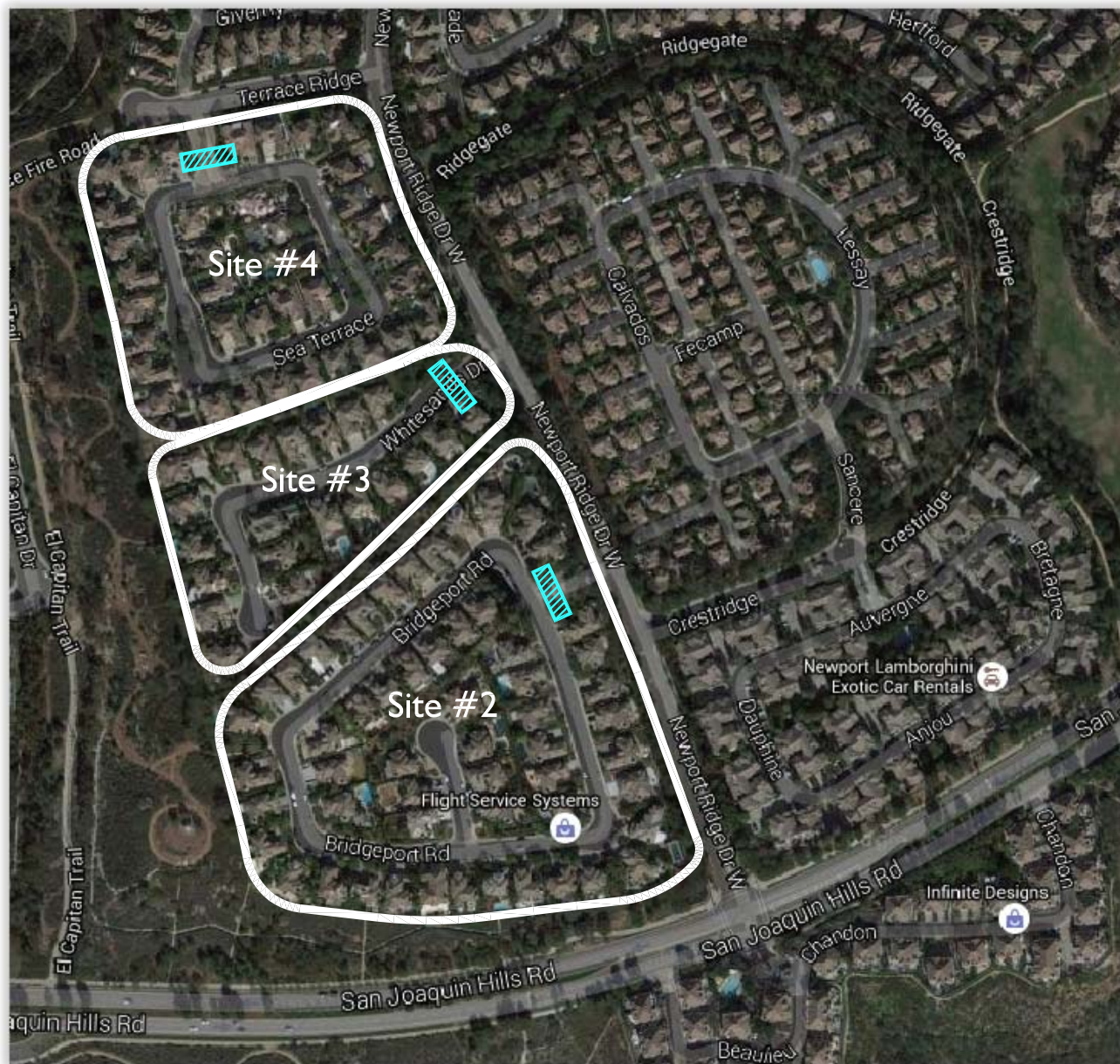
Location Map: Spy Glass Hill Road



Legend:

 = Residential Electronic Gate

Location Map: Newport Ridge Dr W



Legend:

 = Residential Electronic Gate

Exhibit A-3
Location Map: Newport Ridge Dr E



Legend:

 = Residential Electronic Gate

Location Map: Ridge Park Road



Legend:

 = Residential Electronic Gate

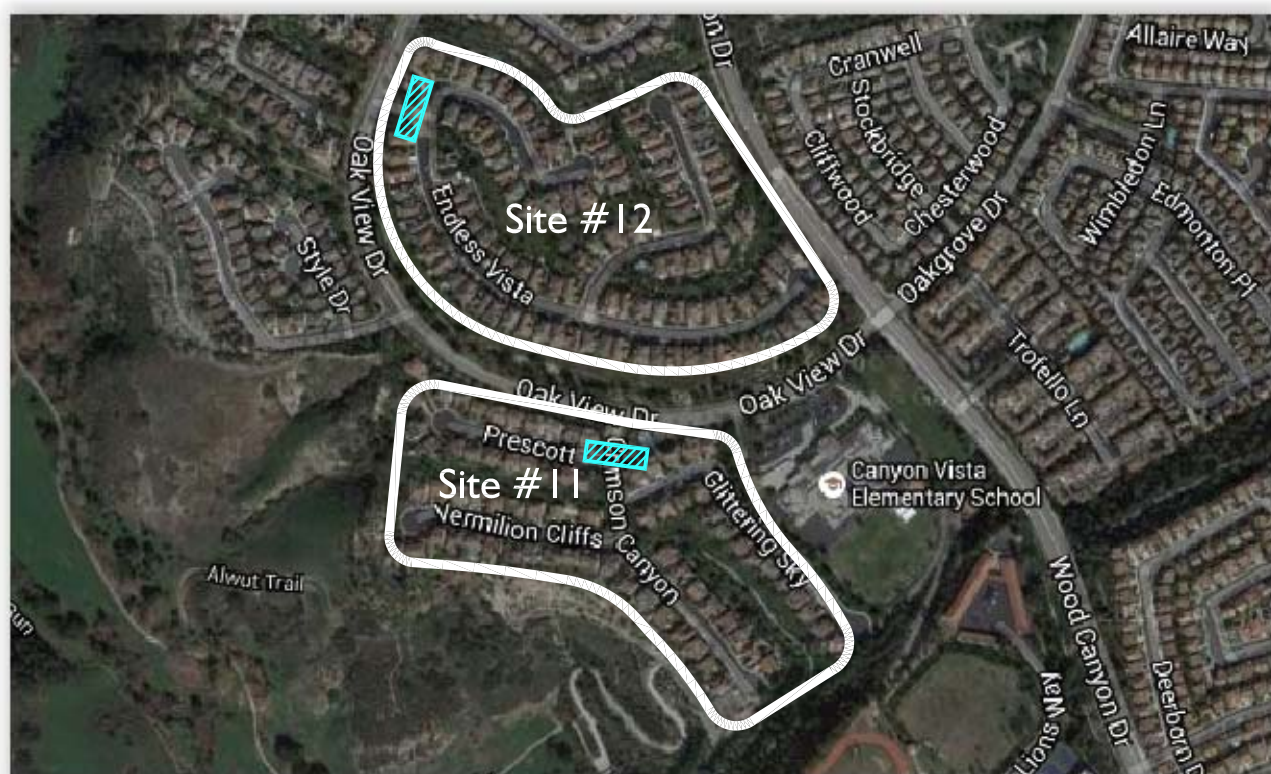
Location Map: Kensington and Silver Oaks



Legend:

 = Residential Electronic Gate

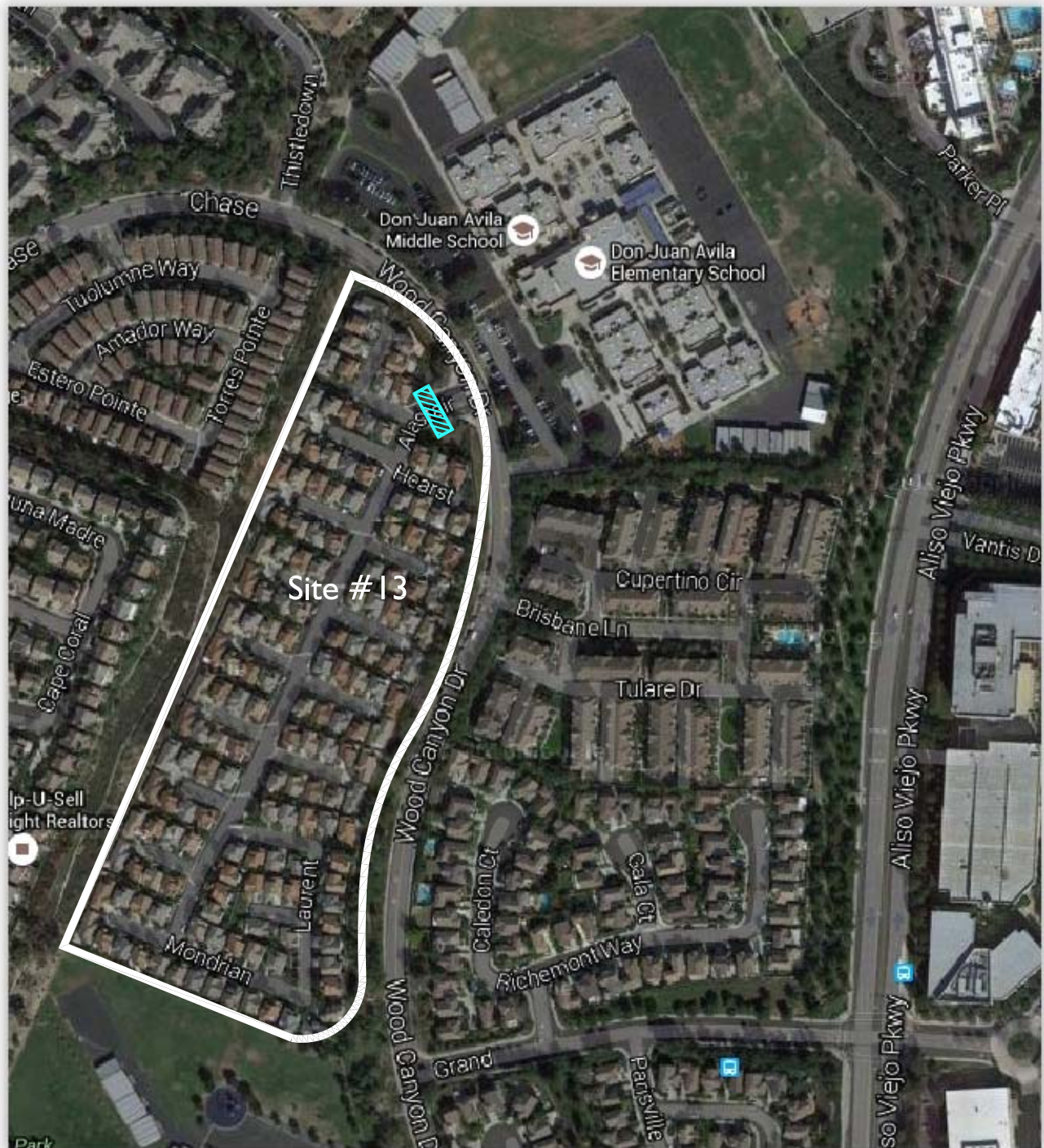
Location Map: Crimson Canyon and Endless Vista



Legend:

 = Residential Electronic Gate

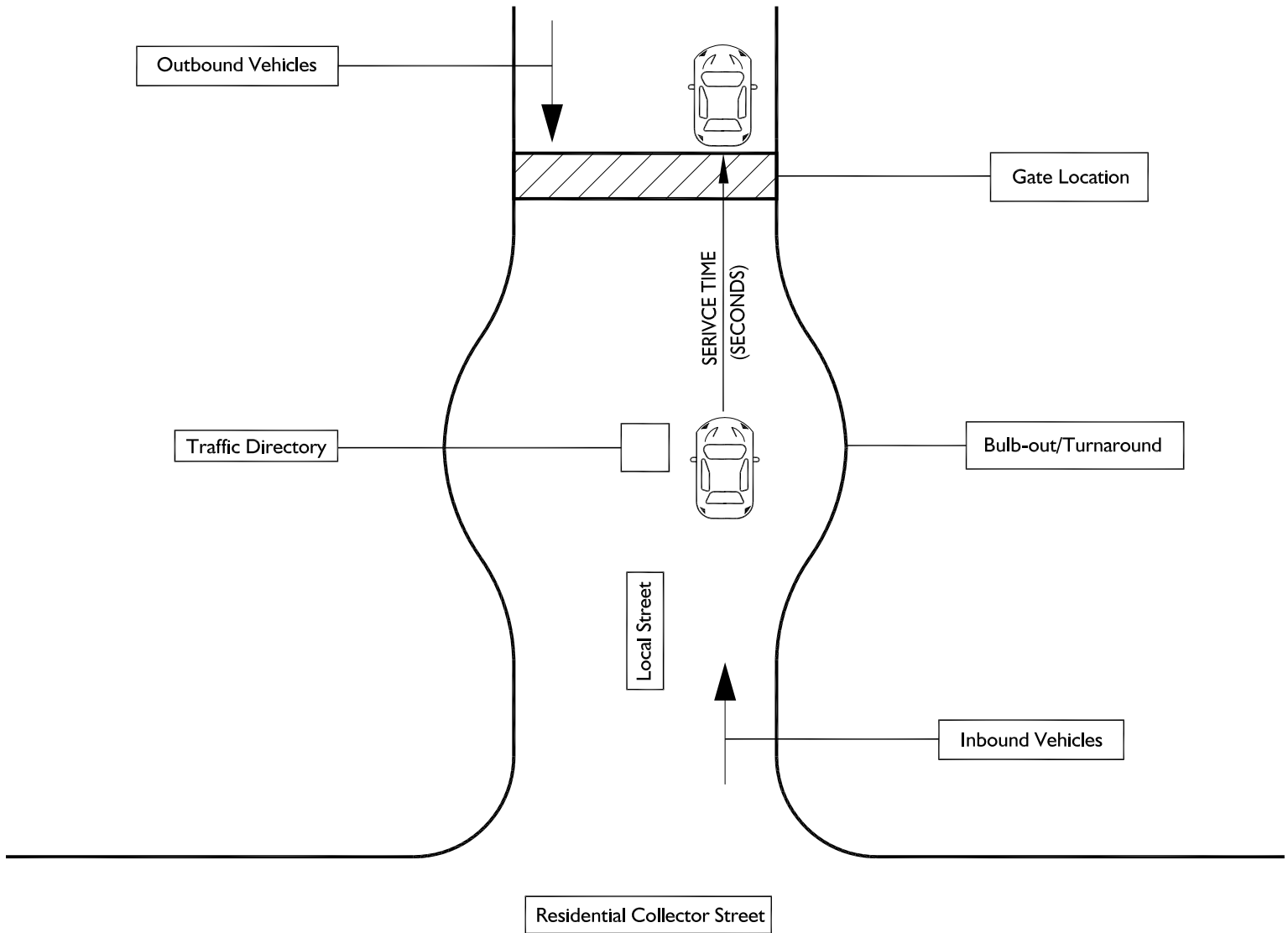
Exhibit A-7
Location Map: Alastair



Legend:

 = Residential Electronic Gate

Exhibit B Typical Gate Layout



Tables

Table 1
Percentage of Visitors vs. Residents Entering Residential Gates

SITE NO.	VISITORS (%)	RESIDENTS (%)
1	32.43	67.57
2	18.18	81.82
3	17.65	82.35
4	44.00	56.00
5	4.55	95.45
6a	21.43	78.57
6b	20.24	79.76
7	16.42	83.58
8	16.67	83.33
9	13.66	86.34
10	24.42	75.58
11	30.00	70.00
12	16.84	83.16
13	10.19	89.81
AVERAGE (%)	20.48	79.52
WEIGHTED AVG.	18.36	81.64

Table 2
Residential Electronic Gate Times and Service Rates (All types of gates)

SITE NO.	VISITOR TIME (SECONDS)	VISITOR RATE (VPH) ¹	RESIDENT TIME (SECONDS)	RESIDENT RATE (VPH) ¹	GATE TYPE
1	25.5	141.1	13.6	265.3	Rolling
2	29.8	120.8	8.2	437.6	Swinging
3	32.2	111.7	8.8	409.1	Swinging
4	20.1	179.2	13.1	273.9	Swinging
5	27.6	130.7	18.8	191.5	Rolling
6a	23.7	152.1	16.3	220.6	Rolling
6b	23.0	156.4	11.9	302.7	Rolling
7	25.4	141.8	10.1	356.0	Rolling
8	25.1	143.6	12.0	301.3	Rolling
9	23.6	152.3	11.0	327.7	Swinging
10	25.8	139.6	15.1	238.6	Rolling
11	19.7	183.2	8.2	437.8	Swinging
12	19.5	184.4	9.8	366.2	Swinging
13	21.1	170.8	10.0	361.6	Rolling

AVERAGE	24.4	150.6	11.9	320.7	Both
STANDARD DEV.	3.8	22.5	3.2	78.3	Both
COEFF. OF VARIATION	15.4	15.0	26.6	24.4	Both
95th %	30.6	117.5	17.2	209.6	Both
90th %	29.1	123.5	15.9	225.8	Both
85th %	27.7	129.9	15.2	237.5	Both

WEIGHTED AVG.	23.5	153.4	11.5	313.5	Both
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80% AVERAGE		120.4		256.6	Both
80% WEIGHTED AVG.		122.7		250.8	Both

	RECOMMENDED DESIGN CAPACITY
VISITORS	115.0
RESIDENTS	210.0
COMBINED	190.0

¹ VPH = vehicle per hour

Table 3
Residential Electronic Swinging Gate Times and Service Rates

SITE NO.	VISITOR TIME (SECONDS)	VISITOR RATE (VPH) ¹	RESIDENT TIME (SECONDS)	RESIDENT RATE (VPH) ¹	GATE TYPE
2	29.8	120.8	8.2	437.6	Swinging
3	32.2	111.7	8.8	409.1	Swinging
4	20.1	179.2	13.1	273.9	Swinging
9	23.6	152.3	11.0	327.7	Swinging
11	19.7	183.2	8.2	437.8	Swinging
12	19.5	184.4	9.8	366.2	Swinging

AVERAGE	24.1	155.3	9.8	375.4	Swinging
STANDARD DEV.	5.6	32.5	1.9	65.7	Swinging
COEFF. OF VARIATION	23.1	21.0	19.5	17.5	Swinging

95th %	31.6	113.9	12.6	286.3	Swinging
90th %	31.0	116.1	12.0	298.9	Swinging
85th %	30.4	118.4	11.5	312.6	Swinging

¹ VPH = vehicles per hour

Table 4
Residential Electronic Rolling Gate Times and Service Rates

SITE NO.	VISITOR TIME (SECONDS)	VISITOR RATE (VPH) ¹	RESIDENT TIME (SECONDS)	RESIDENT RATE (VPH) ¹	GATE TYPE
1	25.5	141.1	13.6	265.3	Rolling
5	27.6	130.7	18.8	191.5	Rolling
6a	23.7	152.1	16.3	220.6	Rolling
6b	23.0	156.4	11.9	302.7	Rolling
7	25.4	141.8	10.1	356.0	Rolling
8	25.1	143.6	12.0	301.3	Rolling
10	25.8	139.6	15.1	238.6	Rolling
13	21.1	170.8	10.0	361.6	Rolling

AVERAGE	24.7	147.0	13.5	279.7	Rolling
STANDARD DEV.	2.0	12.4	3.1	61.8	Rolling
COEFF. OF VARIATION	8.1	8.4	23.0	22.1	Rolling

95th %	27.0	133.5	17.9	200.8	Rolling
90th %	26.3	136.7	17.1	211.1	Rolling
85th %	25.8	139.6	16.2	221.7	Rolling

¹ VPH = vehicles per hour

Table 5
PM Peak Hour Trips per Dwelling Unit (D.U.)

SITE NO.	PEAK HOUR TRIPS IN PER D.U.	PEAK HOUR TRIPS OUT PER D.U.	PEAK HOUR TOTAL TRIPS PER D.U.
1	0.48	0.45	0.93
2	0.30	0.27	0.57
3	0.52	0.19	0.71
4	0.37	0.42	0.79
5	0.35	0.28	0.63
6a/6b	0.36	0.24	0.59
7	0.37	0.37	0.73
8	0.36	0.28	0.63
9	0.56	0.40	0.95
10	0.51	0.47	0.98
11	0.5	0.46	0.96
12	0.43	0.37	0.79
13	0.37	0.25	0.62
AVERAGE	0.42	0.34	0.76
WEIGHTED AVG.	0.41	0.30	0.71

Appendices

Appendix A

Site #1-13
Raw Data

Site #1 : Hillsborough at Spyglass Hill Road, Newport Beach
40 Dwelling Units with a Rolling Gate

TIME (PM)	GUEST SERIVE TIME (SECONDS)	RESIDENT SERVICE TIME (SECONDS)	OUTBOUND NO. VEHICLES
4:00			1
4:01			1
4:02			1
4:04			1
4:07	27.7		
4:10	20.6	14.5	
4:14		6.3	
4:15			1
4:19			1
4:20		26.5	1
4:25	24.0	9.4	
4:28			1
4:31	35.9		1
4:34		13.1	
4:37			1
4:40		19.8	
4:41			1
4:43	35.9		
4:45		8.0	2
4:45		7.2	
4:47	33.2		2
4:50			1
4:52			
4:53		8.8	
4:53		9.3	
4:54	18.6		
4:54		10.2	1
4:56			
4:59		12.0	
5:00			1
5:07			1
5:09		17.0	
5:12		17.9	
5:16	23.9		
5:18			1
5:21	20.3		
5:26	17.3	9.8	1
5:30		25.5	
5:34		14.1	
5:34		13.7	

TIME (PM)	GUEST SERIVE TIME (SECONDS)	RESIDENT SERVICE TIME (SECONDS)	OUTBOUND NO. VEHICLES
5:36			1
5:39		14	
5:40			2
5:43		8.4	1
5:45		12.6	
5:46	22.4		
5:46		16.7	
5:50		10.6	1
5:52		19.1	
5:55	26.3		
5:59			1
6:00		14.8	
AVG. TIME	25.5	13.6	
AVG. RATE	141.1	265.3	
COUNT	12	25	37

Site #2 : Palisades Dr at Newport Ridge Dr W, Newport Beach
56 Dwelling Units with a Swinging Gate

TIME (PM)	GUEST SERIVE TIME (SECONDS)	RESIDENT SERVICE TIME (SECONDS)	OUTBOUND NO. VEHICLES
4:03			1
4:10		10.3	
4:14			2
4:16	31.3		
4:21		7.6	1
4:22		12.5	1
4:25	29.1		
4:27		10.1	
4:27		3.4	
4:33		9.4	1
4:37		7.2	
4:40	30.2		
4:40		3.6	
4:40		2.2	
4:43			1
4:44		13.6	
4:49		11.2	1
4:54		10.2	
4:59			1
5:01			1
5:07			1
5:09			2

TIME (PM)	GUEST SERIVE TIME (SECONDS)	RESIDENT SERVICE TIME (SECONDS)	OUTBOUND NO. VEHICLES
5:16		7.2	1
5:16		7.0	
5:16		14.1	
5:23		10.6	
5:24			1
5:27		15.7	1
5:28	36.5		
5:28		2.3	
5:28		2.2	
5:31			1
5:33		9.1	1
5:35	23.1		
5:36		5.2	
5:38	28.6		1
5:38		3.1	
5:39		2.3	1
5:41		10.6	1
5:43			1
5:49		17.7	
5:49		4.5	
5:56		9.2	
AVG. TIME	29.8	8.2	
AVG. RATE	120.8	437.6	
COUNT	6	27	33

Site #3 : Whitesands Dr at Newport Ridge Dr W, Newport Beach
21 Dwelling Units with a Swinging Gate

TIME (PM)	GUEST SERVICE TIME (SECONDS)	RESIDENT SERVICE TIME (SECONDS)	OUTBOUND NO. VEHICLES
4:46		7.4	
4:57	70		
4:58		8.1	
5:06	9.5		
5:12			1
5:15		6.5	
5:16		8.3	
5:18			1
5:28		9.6	
5:28		9	
5:31		8.3	
5:32	17.2		
5:33		10.6	

TIME (PM)	GUEST SERIVE TIME (SECONDS)	RESIDENT SERVICE TIME (SECONDS)	OUTBOUND NO. VEHICLES
5:37			1
5:41			1
5:58		8.5	
6:17		9.7	
6:20		9	
6:27		10.1	
6:31		8.4	
6:39		9.7	
AVG. TIME	32.2	8.8	
AVG. RATE	111.7	409.1	
COUNT	3	14	17

Site #4 : Terrace Ridge at Newport Ridge Dr W, Newport Beach
38 Dwelling Units with a Swinging Gate

TIME (PM)	GUEST SERVICE TIME (SECONDS)	RESIDENT SERVICE TIME (SECONDS)	OUTBOUND NO. VEHICLES
3:55	17.0		
3:59			1
4:02	34.0		
4:06			1
4:09			1
4:13		10.0	
4:15	17.0		
4:18			1
4:20			1
4:20		12.0	
4:23			1
4:25			2
4:26		14.0	
4:28	16.0		1
4:33			1
4:34	18.0		
4:35		12.0	
4:36		14.0	
4:38			1
4:40	18.0		1
4:41			2
4:43			1
4:46		20.0	
4:49	27.0		
4:50		14.0	
4:50			1

TIME (PM)	GUEST SERIVE TIME (SECONDS)	RESIDENT SERVICE TIME (SECONDS)	OUTBOUND NO. VEHICLES
4:51	16.0		
5:02		11.0	
5:05			1
5:12			1
5:13	16.0		
5:15			1
5:16	18.0		
5:16		13.0	
5:20		13.0	
5:25	24.0		
5:26			1
5:29			1
5:31			1
5:32		10.0	
5:36		12.0	
5:36			1
5:37		13.0	
5:41			1
5:46		16.0	
5:51			1
AVG. TIME	20.1	13.1	
AVG. RATE	179.2	273.9	
COUNT	11	14	25

Site #5 : Montserrat at Newport Ridge Dr E, Newport Beach
80 Dwelling Units with a Rolling Gate

TIME (PM)	GUEST SERVICE TIME (SECONDS)	RESIDENT SERVICE TIME (SECONDS)	OUTBOUND NO. VEHICLES
4:00			1
4:01		18.4	
4:02		17.4	2
4:03		14.9	2
4:04		20.1	
4:05		16.9	
4:07			1
4:08		12.9	1
4:11		23.6	
4:12		17.6	
4:13		24.1	
4:14		21.0	
4:15			2
4:19		25.4	

TIME (PM)	GUEST SERIVE TIME (SECONDS)	RESIDENT SERVICE TIME (SECONDS)	OUTBOUND NO. VEHICLES
4:21		23.7	
4:22		16.9	
4:23		14.9	2
4:25	27.1		
4:26		20.6	
4:27		14.0	1
4:31		19.1	1
4:33		26.1	
4:34		22.3	
4:36		14.5	
4:37			2
4:38		25.4	
4:41		22.5	
4:42	28.0		
4:43		17.9	
4:45		25.8	
4:46			3
4:48			
4:50			2
4:51		22.9	
4:54			
4:55		16.6	
4:58			2
5:01		14.0	
5:02		15.2	
5:03		15.6	
5:07		19.2	2
5:08		16.6	1
5:09		14.1	
5:15			1
5:16		15.3	
5:20		18.3	
5:22		18.1	
5:27			1
5:29		15.6	
5:30		17.3	
5:40		20.1	
5:41		19.2	
5:47			1
5:49		20.4	
5:50			1
5:51		18.1	

TIME (PM)	GUEST SERIVE TIME (SECONDS)	RESIDENT SERVICE TIME (SECONDS)	OUTBOUND NO. VEHICLES
5:57		16.8	
AVG. TIME	27.6	18.8	
AVG. RATE	130.7	191.5	
COUNT	2	42	44

Site # 6a : Mont St Michel at Newport Ridge Dr E, Newport Beach
169 Dwelling Units with two Rolling Gates

TIME (PM)	GUEST SERVICE TIME (SECONDS)	RESIDENT SERVICE TIME (SECONDS)	OUTBOUND NO. VEHICLES
4:03			1
4:05		15.3	
4:09		13.2	
4:13			1
4:17			3
4:19		15.0	
4:21		17.3	
4:22	22.7		
4:25			1
4:28			1
4:29		17.6	
4:30		20.6	
4:31		18.4	1
4:32		24.7	
4:34		14.1	1
4:39		12.2	
4:39	21.4		
4:44		13.9	
4:45		18.7	
4:47			1
4:49	24.2		1
4:52		17.4	
4:53		23.1	1
4:55			1
4:56			1
4:58		17.5	
4:59		21.5	
5:00	33.6		1
5:04		14.9	
5:08		14.8	
5:09		7.1	
5:11			1
5:13			1

TIME (PM)	GUEST SERIVE TIME (SECONDS)	RESIDENT SERVICE TIME (SECONDS)	OUTBOUND NO. VEHICLES
5:15	22.0		1
5:16	18.1		1
5:27			1
5:31		14.0	
5:38			1
5:40		13.2	
5:49		14.5	
AVG. TIME	23.7	16.3	
AVG. RATE	152.1	220.6	
COUNT	6	22	28

Site #6b : Menton at Newport Ridge Dr E, Newport Beach
169 Dwelling Units with two Rolling Gates

TIME (PM)	GUEST SERVICE TIME (SECONDS)	RESIDENT SERVICE TIME (SECONDS)	OUTBOUND NO. VEHICLES
4:00			1
4:02		15.2	1
4:03			1
4:05	15.1	13.9	1
4:06		3.5	1
4:07		11.5	
4:10		19.9	1
4:11		8.9	
4:13	20.4		2
4:13		7.9	1
4:13		3.8	
4:14		13.9	
4:15	19.1		
4:16		11.7	
4:17			1
4:18			1
4:20			1
4:22			1
4:23			1
4:24		13.5	
4:25		12.3	
4:26		10.3	
4:27		15.1	
4:28		8.1	
4:28		7.3	
4:30	33.0		
4:30	26.7		

TIME (PM)	GUEST SERIVE TIME (SECONDS)	RESIDENT SERVICE TIME (SECONDS)	OUTBOUND NO. VEHICLES
4:31		12.9	
4:31		13.5	
4:34		30.8	1
4:35	14.6		
4:38			1
4:42		15.5	1
4:43			1
4:44		12.2	
4:44		17.2	
4:45		6.3	
4:46	22.4		1
4:47		14.5	
4:48		7.8	
4:51	29.8		
4:52	16.5		
4:53		5.6	
4:53		14.9	1
4:56		18.3	
4:57		10.5	
4:59		12.7	1
5:00	17.4		4
5:01		15.3	
5:02		8.9	
5:02		9.9	1
5:04			1
5:05		14.1	
5:06			1
5:07			1
5:08	17.5		
5:10		10.8	
5:12		11.3	
5:13		4.1	
5:14		15.0	
5:14		13.6	
5:15		12.1	
5:15		8.2	
5:16			1
5:17		11.3	1
5:18			1
5:21	16.8		1
5:22		16.5	
5:22		9.8	

TIME (PM)	GUEST SERIVE TIME (SECONDS)	RESIDENT SERVICE TIME (SECONDS)	OUTBOUND NO. VEHICLES
5:22		6.4	1
5:26			2
5:27	15.9		
5:28	59.8		
5:30		12.8	
5:31			1
5:34	16.0	8.5	
5:35		13.9	1
5:35		14.6	
5:36	30.0		
5:38		12.1	
5:38		13.8	
5:40			1
5:42			1
5:44			1
5:46		14.4	
5:46		12.3	
5:46		16	
5:48		10.9	
5:49			1
5:50		11.6	
5:50		4.3	
5:52		14.4	
5:52		9.4	
5:53		17.0	
5:53		3.8	
5:53		4.5	
5:54		11.6	1
5:56		19	
5:57	20.2		
5:59		13.6	
6:00		13.3	
6:00		8.3	
AVG. TIME	23.0	11.9	
AVG. RATE	156.4	302.7	
COUNT	17	67	84

Site #7 : Tesoro at Ridge Park, Newport Beach
180 Dwelling Units with a Rolling Gate

TIME	GUEST SERVICE TIME (SECONDS)	RESIDENT SERVICE TIME (SECONDS)	OUTBOUND NO. VEHICLES
4:01		13.2	

TIME (PM)	GUEST SERIVE TIME (SECONDS)	RESIDENT SERVICE TIME (SECONDS)	OUTBOUND NO. VEHICLES
4:02		13.8	
4:03		12.4	
4:04		5.5	1
4:05			2
4:06			1
4:07	14.9		3
4:09		12.2	1
4:09		3.4	
4:09		15.3	
4:10		3.4	1
4:11	17.5	6.1	
4:13		9.1	
4:13		3.9	
4:14	16.5		2
4:15		11.9	1
4:15		10.8	
4:15		11.1	
4:15		4.0	
4:18		13.2	1
4:19		15.1	1
4:20			1
4:22			1
4:23			1
4:24		15.8	
4:26	14.8	7.7	2
4:27	31.7	11.2	
4:28		9.6	
4:29		8.7	
4:29		9.4	
4:29		10.1	
4:30		13.9	
4:31		10.3	
4:31		13.8	
4:32		11.3	2
4:33	18.5	10.2	2
4:34		7.4	2
4:35			1
4:36			1
4:37			4
4:38		12.8	
4:39	24.3		
4:40		11.3	2

TIME (PM)	GUEST SERIVE TIME (SECONDS)	RESIDENT SERVICE TIME (SECONDS)	OUTBOUND NO. VEHICLES
4:41		5.1	2
4:42			1
4:44		9.3	
4:44		13.9	
4:45		12.0	1
4:45		11.9	
4:47		18.8	1
4:49		12.2	2
4:50	23.9		2
4:51	15.8	10.3	
4:51		3.8	
4:51		8.2	1
4:52		11.9	
4:53		10.0	
4:53		10.2	
4:53		6.7	
4:54			1
4:55	21.7	13.8	
4:55	15.5	11.2	
4:56	23.6	9.6	2
4:56		10.3	
4:57			1
4:58	16.5	13.6	3
4:59			2
5:00			1
5:01	77.3	13.7	2
5:02		9.0	1
5:03		12.3	
5:03		4.2	
5:04		12.6	
5:04		9.2	
5:04		2.5	
5:04		3.2	1
5:06	11.3	3.5	1
5:07		16.9	
5:08		3.1	2
5:08		7.3	
5:10		10.8	2
5:13		17.1	1
5:14		3.4	
5:14		2.8	
5:15			1

TIME (PM)	GUEST SERIVE TIME (SECONDS)	RESIDENT SERVICE TIME (SECONDS)	OUTBOUND NO. VEHICLES
5:16		15.3	
5:16		13.2	
5:16		9.3	1
5:16		4.3	
5:16		6.1	1
5:17			2
5:18			3
5:19			1
5:21			1
5:22		11.7	1
5:22		5.3	
5:22		3.1	
5:23			1
5:25		15.2	1
5:25		3.3	
5:25		2.9	2
5:27			1
5:28		10.8	2
5:29		13.7	2
5:30		16.8	2
5:31	15.4	9.1	
5:31		5.3	1
5:32		11.0	1
5:33			2
5:34	91.2		
5:35		8.2	2
5:36		18.4	1
5:37		9.7	
5:37		13.2	
5:38		14.1	
5:38		9.2	1
5:39		11.1	2
5:40		19.3	
5:40		15.6	
5:41		6.2	1
5:42		8.8	
5:43		11.2	
5:44		15.4	
5:45			2
5:46	24.6	11.1	3
5:47		15.4	
5:47		3.7	2

TIME (PM)	GUEST SERIVE TIME (SECONDS)	RESIDENT SERVICE TIME (SECONDS)	OUTBOUND NO. VEHICLES
5:48		13.5	
5:48		18.5	
5:49		2.7	1
5:49		14.6	
5:49		5.1	
5:50			2
5:51	11.1		
5:51	32.1	7.4	
5:53			1
5:54			2
5:55	23.1	3.2	
5:56		13.2	
5:56		5.3	1
5:58	17.2	14.0	
5:59		10.8	1
6:00		15.0	
AVG. TIME	25.39	10.11	
AVG. RATE	141.8	356.0	
COUNT	22	112	134

Site #8 : Campobello at Ridge Park, Newport Beach
90 Dwelling Units with a Rolling Gate

TIME	GUEST SERVICE TIME (SECONDS)	RESIDENT SERVICE TIME (SECONDS)	OUTBOUND NO. VEHICLES
4:00			1
4:01		9.2	
4:02			1
4:03	21.3		
4:04		14.3	
4:04		11.1	
4:06		8.8	
4:07	18.4	12.9	1
4:08			1
4:09		15.2	1
4:11			1
4:13	15.5		
4:14			2
4:15		16.6	
4:16	16.0	10.3	1
4:18			1
4:20		9.4	2
4:22		17.6	1

TIME (PM)	GUEST SERIVE TIME (SECONDS)	RESIDENT SERVICE TIME (SECONDS)	OUTBOUND NO. VEHICLES
4:22		15.4	
4:22		4.7	
4:23		2.8	1
4:25	13.4		1
4:26		13.4	
4:29			1
4:30		19.3	
4:32		10.7	
4:33		20.7	1
4:33		16.3	
4:36			1
4:39		12.3	
4:40	104.68		
4:46		26.2	1
4:48		17.4	1
4:50			1
4:51	18.5	11.3	
4:53			1
4:55			1
4:57		11.8	
4:59		8.2	1
5:00		10.7	1
5:01			1
5:03		8.3	
5:05		12.1	
5:05		10.2	
5:06		22.8	
5:07		13.4	2
5:08		14.8	
5:09		3.6	1
5:09		1.8	
5:09		3.4	
5:12			2
5:13		11.3	2
5:17	10.1	9.4	1
5:20			3
5:22			2
5:28	16.9	14.2	
5:29		13.6	
5:30		15.6	
5:30		14.0	
5:31			1

TIME (PM)	GUEST SERIVE TIME (SECONDS)	RESIDENT SERVICE TIME (SECONDS)	OUTBOUND NO. VEHICLES
5:34		12.3	
5:35		7.4	
5:36	15.9		
5:39			1
5:40		9.6	
5:40		5.2	
5:40		5.3	
5:42		10.0	
5:45			1
5:46			1
5:47			1
5:48		12.1	
5:51		15.3	1
5:52			1
5:53		13.7	
5:55		11.5	
5:57			2
5:58			1
AVG. TIME	25.07	11.95	
AVG. RATE	143.6	301.3	
COUNT	10	50	60

Site #9 : Kensington at Oak View Dr, Aliso Viejo
154 Dwelling Units with a Swinging Gate

TIME	GUEST SERVICE TIME (SECONDS)	RESIDENT SERVICE TIME (SECONDS)	OUTBOUND NO. VEHICLES
4:01			1
4:01	18.5		
4:02			4
4:03		17.4	5
4:04		16.5	1
4:04		16	
4:06		12.5	1
4:08	18.3		
4:08		10.3	
4:09		12.1	
4:09		6.1	
4:10		10.7	1
4:10			1
4:11	31.1	12.5	1
4:11		17.6	
4:11		16.2	

TIME (PM)	GUEST SERIVE TIME (SECONDS)	RESIDENT SERVICE TIME (SECONDS)	OUTBOUND NO. VEHICLES
4:12		12.9	
4:12		1.9	1
4:13			2
4:13		14.5	
4:14			3
4:15	18.8		
4:16		13.7	
4:16		13.3	
4:16		12.6	
4:16		3.2	4
4:17		17.5	
4:17		8.6	
4:17		4.9	
4:18		13.1	2
4:19		14.8	2
4:21			2
4:22			1
4:23		11.8	
4:23		3.3	
4:23		14.5	
4:23		11.2	
4:24		14.1	
4:25			3
4:26		12.0	
4:26		8.8	1
4:27		8.7	3
4:27		13.7	
4:29		17.4	1
4:29		16.5	
4:29		10.9	
4:29		8.1	
4:29		2.3	
4:31		21.6	
4:31		6.0	
4:33		10.5	1
4:34		14.8	1
4:35		12.1	2
4:36		15.5	
4:37			1
4:38		13.9	
4:38		8.1	1
4:39		23.6	

TIME (PM)	GUEST SERIVE TIME (SECONDS)	RESIDENT SERVICE TIME (SECONDS)	OUTBOUND NO. VEHICLES
4:40		20.4	1
4:41		11.9	1
4:41		15.2	1
4:43			2
4:45		13.7	
4:46		11.9	
4:46		15.0	
4:47		18.7	2
4:47		11.4	
4:48		14.7	1
4:49		10.6	1
4:50	17.1		1
4:50		13.1	1
4:51			3
4:52		24.9	
4:53			1
4:54		22.3	2
4:54		5.9	1
4:55	69.6	14.0	1
4:56		19.4	1
4:56			
4:58	22.0	17.8	
4:58		16.2	
4:58		2.5	
4:58		3.2	
4:58		1.7	
4:59			2
5:00		14.5	
5:01		10.4	
5:02		18.0	1
5:02		3.0	
5:03			1
5:04	18.2	16.2	
5:04		15.2	
5:05		13.1	1
5:05		13.0	
5:07			3
5:08			1
5:09		15.1	
5:09		2.0	1
5:11		16.0	2
5:11		13.3	

TIME (PM)	GUEST SERIVE TIME (SECONDS)	RESIDENT SERVICE TIME (SECONDS)	OUTBOUND NO. VEHICLES
5:12			3
5:12			
5:13		12.2	
5:13		3.9	2
5:14	23.0		
5:15		12.0	1
5:16	23.3		2
5:16		5.6	
5:16		2.1	
5:18			3
5:19		17.0	
5:19		15.8	3
5:20		14.2	1
5:20		13.8	1
5:20		7.4	
5:20		2.2	
5:21			1
5:22		17.3	3
5:23	24.2	2.0	1
5:23	23.0	2.7	
5:25			1
5:26	20.0	4.8	2
5:28		19.0	
5:29	15.9	5.1	1
5:30			2
5:31	21.0	6.7	
5:32		19.5	1
5:32		3.8	
5:33		8.3	1
5:33		4.4	
5:35		12.9	3
5:36		1.6	
5:36		13.5	
5:37		12.7	
5:39		13.5	1
5:39		3.7	1
5:39		6.8	
5:41	19.0	12.4	
5:42	17.4	14.7	
5:42		15.9	
5:43		3.2	3
5:44		15.2	2

TIME (PM)	GUEST SERIVE TIME (SECONDS)	RESIDENT SERVICE TIME (SECONDS)	OUTBOUND NO. VEHICLES
5:47	18.1		1
5:48	18.8		
5:49		15.4	1
5:49		7.8	
5:49		3.0	
5:51		13.7	
5:51		3.9	
5:51		2.4	
5:52		13.6	
5:52		12.5	1
5:53		15.0	1
5:53		11.1	1
5:54	22.9	15.7	
5:54		13.8	
5:54		7.9	
5:54		3.0	
5:54		2.9	
5:55		15.6	2
5:55		8.9	
5:55		2.7	
5:56	37.9	10.9	1
5:56		2.8	
5:57			1
5:58	21.9		
5:59		10.6	3
6:00		5.2	
6:00		2.8	
6:00		2.2	
6:00		3.2	
6:00		2.0	
AVG. TIME	23.64	10.99	
AVG. RATE	152.31	327.68	
COUNT	22	139	161

Site #10 : Silver Oaks at Oak View Dr, Aliso Viejo
81 Dwelling Units with a Rolling Gate

TIME (PM)	GUEST SERVICE TIME (SECONDS)	RESIDENT SERVICE TIME (SECONDS)	OUTBOUND NO. VEHICLES
4:00		12.7	1
4:02	20.6		
4:03		13.4	
4:04	38.2		

TIME (PM)	GUEST SERIVE TIME (SECONDS)	RESIDENT SERVICE TIME (SECONDS)	OUTBOUND NO. VEHICLES
4:05		30.4	1
4:06		12.7	
4:08		19.1	2
4:08		16.2	
4:08		5.3	
4:09		16.2	2
4:10			2
4:11			1
4:12		12.0	
4:13			1
4:15	24.2		2
4:16		11.6	1
4:17		12.1	
4:18			2
4:19		23.2	1
4:21		20.0	
4:21		18.2	
4:22		22.9	1
4:23			1
4:24			1
4:25	19.2		1
4:26		20.5	
4:27			2
4:28	19.0		1
4:29			2
4:31			1
4:32			1
4:33			2
4:34		15.5	1
4:36	18.1		
4:37		11.1	1
4:38		12.1	1
4:40	21.1		
4:43			1
4:44	42.7		
4:47			2
4:48		21.7	
4:49			1
4:50		21.6	
4:51		20.5	
4:53		24.4	1
4:53		6.6	

TIME (PM)	GUEST SERIVE TIME (SECONDS)	RESIDENT SERVICE TIME (SECONDS)	OUTBOUND NO. VEHICLES
4:54		19.0	
4:55	26.3		1
4:55		22.7	
4:56		15.3	
4:58		17.0	
4:58		19.4	
4:58		13.8	
5:00	31.4	19.7	
5:01	26.7		
5:03		9.4	
5:06	38.4		
5:07		8.3	
5:07		12.5	
5:07		6.3	
5:08			2
5:09		18.7	2
5:12		18.9	
5:12		15.3	
5:12		12.4	
5:12		12.0	
5:13		2.1	
5:14		11.7	
5:15	24.7	22.9	1
5:16		7.0	
5:17		12.4	
5:19		37.7	2
5:20	22.1		1
5:22		13.2	
5:23		20.0	
5:23		19.6	
5:24			1
5:25		13.5	2
5:27		13.8	
5:28			1
5:32			1
5:35			1
5:38			1
5:39			1
5:40		15.5	
5:40		3.2	
5:41		11.2	1
5:41		6.3	

TIME (PM)	GUEST SERIVE TIME (SECONDS)	RESIDENT SERVICE TIME (SECONDS)	OUTBOUND NO. VEHICLES
5:41		3.7	
5:42	21.9		
5:44	24.1		1
5:45		18.1	1
5:48		18.3	
5:48		15.2	
5:49	18.4		1
5:50		19.4	2
5:51			2
5:53			1
5:54	15.4		
5:54	22.2		
5:55	50.0		
5:56	16.7	18.6	1
5:58		11.7	
6:00		10.9	1
6:00		8.7	
6:00		5.4	
AVG. TIME	25.78	15.09	
AVG. RATE	139.64	238.58	
COUNT	21	65	86

Site #11 : Crimson Canyon at Oak View Dr, Aliso Viejo
76 Dwelling Units with a Swinging Gate

TIME (PM)	GUEST SERVICE TIME (SECONDS)	RESIDENT SERVICE TIME (SECONDS)	OUTBOUND NO. VEHICLES
4:00			3
4:01		10.2	
4:04			1
4:05	14.4		2
4:06		8.8	2
4:06		2.0	
4:07			1
4:08		10.4	2
4:09			1
4:14		10.4	
4:15		11.4	
4:19	32.8		
4:20		5.8	
4:22	8.8	3.9	
4:23		10.3	
4:25			1

TIME (PM)	GUEST SERIVE TIME (SECONDS)	RESIDENT SERVICE TIME (SECONDS)	OUTBOUND NO. VEHICLES
4:27		11.5	
4:28	15.6		
4:29	63.8		
4:30			2
4:32	17.2		
4:34			1
4:35			2
4:37			1
4:38	12.3		1
4:39		6.8	
4:40			1
4:41		16.6	
4:42		5.0	
4:45		11.7	1
4:46	18.8	7.2	
4:48	23.0		1
4:49			1
4:50	18.1		
4:51		2.2	2
4:52	9.3	1.8	
4:52		2.3	
4:53	17.1		2
4:55			1
4:56			1
4:57			1
4:58			2
5:00			1
5:02	14.7		1
5:03		10.9	1
5:04			1
5:05	13.7		
5:06		15.1	1
5:06		2.7	
5:07			2
5:08	18.8		1
5:10		14.8	1
5:11	14.3		1
5:13		2.6	1
5:14			1
5:16		7.6	
5:16		13.5	
5:17			1

TIME (PM)	GUEST SERIVE TIME (SECONDS)	RESIDENT SERVICE TIME (SECONDS)	OUTBOUND NO. VEHICLES
5:18		6.4	1
5:18		4.9	
5:19		11.2	1
5:21		12.4	
5:22			1
5:25		7.3	
5:25		6.6	
5:27		6.0	
5:30		10.1	
5:30		10.3	
5:31		8.8	
5:32		1.8	
5:32		2.3	
5:32		2.4	
5:34			3
5:35	20.0		1
5:36			1
5:37	35.0		
5:39			1
5:41		6.4	
5:42			1
5:43		16.0	
5:44		13.7	
5:45			1
5:46		11	
5:47		2.9	
5:49		6.8	
5:50		7.1	
5:51		10.9	1
5:56		14.7	2
5:57	11.0	7.2	
5:59	16.7		1
6:00	17.3	10.2	
AVG. TIME	19.7	8.2	
AVG. RATE	183.2	437.8	
COUNT	21	49	70

**Site #12 : Endless Vista at Oak View Dr, Aliso Viejo
115 Dwelling Units with a Swinging Gate**

TIME (PM)	GUEST SERVICE TIME (SECONDS)	RESIDENT SERVICE TIME (SECONDS)	OUTBOUND NO. VEHICLES
4:01		16.5	1

TIME (PM)	GUEST SERIVE TIME (SECONDS)	RESIDENT SERVICE TIME (SECONDS)	OUTBOUND NO. VEHICLES
4:02		11.2	1
4:03		4.8	1
4:04			1
4:05	15.2	7.2	
4:06		11.4	
4:06		3.8	1
4:07			1
4:08		10.3	1
4:09		4.1	
4:09		6.5	
4:10	22.4		
4:11		17.5	
4:13	15.4		
4:15		14.6	
4:16	16.3	6.0	
4:18			2
4:19		9.4	1
4:22		3.0	1
4:23		12.2	
4:24		12.6	
4:24		11.6	2
4:26	17.0		1
4:28		13.5	2
4:29			1
4:31		14.4	
4:32		19.7	1
4:33		4.2	1
4:33			2
4:37		16.6	
4:38		13.1	1
4:39			1
4:39			2
4:40		15.4	1
4:41	17.2	3.7	
4:42		14.1	
4:43		13.7	1
4:43		4	
4:43		2.9	
4:44		4.3	
4:44		14.9	1
4:45			2
4:46			2

TIME (PM)	GUEST SERIVE TIME (SECONDS)	RESIDENT SERVICE TIME (SECONDS)	OUTBOUND NO. VEHICLES
4:48			1
4:49	17.7		
4:51		13.2	1
4:53			1
4:54		12.6	
4:54		7.2	
4:54		9.3	
4:55		3.4	1
4:57		10.8	
4:58		10.9	
5:00		7.3	1
5:01			1
5:04			1
5:05	17.1		1
5:06		10.5	1
5:07			2
5:08	18.4	3.8	
5:09			1
5:10	14.2		
5:11		10.3	1
5:12			1
5:13	23.9	14.8	
5:15		4.5	1
5:16	15.9		1
5:17	15.8	11.7	
5:19		16.9	
5:19		4.3	
5:20			1
5:22	32.5	4.8	
5:24		13.9	
5:25		13.9	1
5:26		7.9	
5:26		3.9	
5:27	39.4		
5:28		11.2	2
5:30		17.2	
5:31		3.8	
5:31		4.2	1
5:31		4.9	
5:32		15.6	1
5:33			1
5:34		10.5	2

TIME (PM)	GUEST SERIVE TIME (SECONDS)	RESIDENT SERVICE TIME (SECONDS)	OUTBOUND NO. VEHICLES
5:36		12.9	2
5:36		7.8	
5:36		4.4	
5:36		3.9	1
5:39			1
5:40		17.0	1
5:40		4.2	
5:42		14.0	
5:43		15.4	
5:43		3.9	
5:45		8.1	
5:46		22.2	2
5:47		17.8	2
5:49		16.2	
5:49		3.9	
5:50		6.4	1
5:51		11.0	1
5:51		3.5	1
5:52			2
5:53			3
5:55			1
5:56			1
5:57		8.5	1
5:58		11.8	
5:58		3.3	
5:59	14.0		1
6:00			1
AVG. TIME	19.5	9.8	
AVG. RATE	184.4	366.2	
COUNT	16	79	95

Site #13 : Alastair at Oak View Dr, Aliso Viejo
116 Dwelling Units with a Rolling Gate

TIME (PM)	GUEST SERVICE TIME (SECONDS)	RESIDENT SERVICE TIME (SECONDS)	OUTBOUND NO. VEHICLES
4:00			1
4:03		4.9	
4:06		16.9	
4:11		7.6	
4:12	17.0		
4:13	14.7		
4:14			1

TIME (PM)	GUEST SERIVE TIME (SECONDS)	RESIDENT SERVICE TIME (SECONDS)	OUTBOUND NO. VEHICLES
4:16		17.6	1
4:18		16.2	
4:18		4.9	
4:21		13.6	
4:22			1
4:23		11.9	
4:23		9.7	
4:24		13.4	
4:25		16.7	1
4:26		16.4	1
4:26		16.8	
4:27			3
4:28			1
4:30		11.5	
4:31	31.3		
4:32		2.5	
4:32		3.6	1
4:33		7.2	1
4:34			1
4:35		15.9	2
4:36		4	
4:36		2.7	
4:38		17.8	
4:39		3.6	
4:39		3.9	
4:39		5.6	
4:40			2
4:42			3
4:43		13.2	
4:44			2
4:45		9.7	
4:47		12.9	
4:47		10.3	
4:47		4.8	1
4:49		9.6	
4:51		16.6	
4:52		19.2	
4:52		18.8	
4:52		5.2	
4:53			1
4:54		7.7	1
4:54		3.7	

TIME (PM)	GUEST SERIVE TIME (SECONDS)	RESIDENT SERVICE TIME (SECONDS)	OUTBOUND NO. VEHICLES
4:54		3.4	
4:56	20.5	14.7	
4:57			1
4:58		15.5	
4:58		5.1	
4:59		4.8	
5:00		4.9	
5:00		5.7	
5:00		3.6	
5:00		2.3	
5:01		11.2	
5:05		6.3	2
5:07		10.8	2
5:07		9.9	
5:08		14.5	
5:09		14.6	2
5:10	19.6		
5:12			1
5:13		15.9	1
5:15		11.0	1
5:15		3.6	
5:17		8.9	1
5:18			1
5:19		14.1	3
5:19		3.0	
5:20	19.0		1
5:21			1
5:22		11.6	
5:22		12.0	1
5:23		11.6	
5:24		16.2	1
5:24		15.7	
5:25		13.2	
5:26		12.8	
5:26		11.8	1
5:27	19.8	3.9	
5:27		3.9	
5:28		4.1	
5:28		5.1	
5:28		3.4	
5:29	11.7	14.0	1
5:31		5.9	

TIME (PM)	GUEST SERIVE TIME (SECONDS)	RESIDENT SERVICE TIME (SECONDS)	OUTBOUND NO. VEHICLES
5:33		12.8	
5:33		11.9	2
5:34		7	1
5:34		5.1	1
5:37		11	1
5:37		3	
5:38	13.4		
5:39		3	1
5:40			1
5:43		11.3	
5:43		8.4	
5:44		11.4	1
5:45		11.3	3
5:46			1
5:47		12.7	
5:47		7.6	
5:51	46.2	16.4	1
5:52		15.9	1
5:53		15.5	1
5:54		14.7	
5:56	18.6		2
5:57		18.1	
5:58		14.1	1
5:58		14.3	1
5:59		7.1	
5:59		6.8	
5:59		4.1	1
6:00		8.7	
6:00		7.9	
AVG. TIME	21.1	10.0	
AVG. RATE	170.8	361.6	
COUNT	11	97	108

Appendix B

Site #1-13

PM Peak Hour Traffic Counts

Site #1 PM Peak Hour Traffic Counts
40 Dwelling Units with Rolling Gate

TIME	NO. TRIPS IN	NO. TRIPS OUT	HOURLY TRIPS IN	HOURLY TRIPS OUT	HOURLY TOTAL TRIPS
4:15 PM	4	5			
4:30 PM	3	3			
4:45 PM	6	5			
5:00 PM	6	5	19	18	37
5:15 PM	2	1	17	14	31
5:30 PM	5	2	19	13	32
5:45 PM	5	4	18	12	30
6:00 PM	6	2	18	9	27
PEAK HOUR TRIP COUNT			19	18	37
PEAK HOUR TRIPS PER D.U.			0.48	0.45	0.93

Site #2 PM Peak Hour Traffic Counts
56 Dwelling Units with a Swinging Gate

TIME	NO. TRIPS IN	NO. TRIPS OUT	HOURLY TRIPS IN	HOURLY TRIPS OUT	HOURLY TOTAL TRIPS
4:15 PM	1	3			
4:30 PM	6	2			
4:45 PM	6	2			
5:00 PM	2	2	15	9	24
5:15 PM	0	4	14	10	24
5:30 PM	8	3	16	11	27
5:45 PM	7	6	17	15	32
6:00 PM	3	0	18	13	31
PEAK HOUR TRIP COUNT			17	15	32
PEAK HOUR TRIPS PER D.U.			0.30	0.27	0.57

Site #3 PM Peak Hour Traffic Counts
21 Dwelling Units with a Swinging Gate

TIME	NO. TRIPS IN	NO. TRIPS OUT	HOURLY TRIPS IN	HOURLY TRIPS OUT	HOURLY TOTAL TRIPS
5:00 PM	3	0			
5:15 PM	2	1			
5:30 PM	3	1			
5:45 PM	3	2	11	4	15
6:00 PM	1	0	9	4	13
6:15 PM	0	0	7	3	10
6:30 PM	3	0	7	2	9
6:45 PM	2	0	6	0	6
PEAK HOUR TRIP COUNT			11	4	15
PEAK HPUR TRIPS PER D.U.			0.52	0.19	0.71

Site #4 PM Peak Hour Traffic Counts
38 Dwelling Units with a Swinging Gate

TIME	NO. TRIPS IN	NO. TRIPS OUT	HOURLY TRIPS IN	HOURLY TRIPS OUT	HOURLY TOTAL TRIPS
4:15 PM	3	3			
4:30 PM	3	6			
4:45 PM	4	6			
5:00 PM	4	1	14	16	30
5:15 PM	2	3	13	16	29
5:30 PM	4	2	14	12	26
5:45 PM	3	3	13	9	22
6:00 PM	2	1	11	9	20
PEAK HOUR TRIP COUNT			14	16	30
PEAK HOUR TRIPS PER D.U.			0.37	0.42	0.79

Site #5 PM Peak Hour Traffic Counts
80 Dwelling Units with a Rolling Gate

TIME	NO. TRIPS IN	NO. TRIPS OUT	HOURLY TRIPS IN	HOURLY TRIPS OUT	HOURLY TOTAL TRIPS
4:15 PM	10	9			
4:30 PM	7	3			
4:45 PM	9	3			
5:00 PM	2	7	28	22	50
5:15 PM	6	4	24	17	41
5:30 PM	5	1	22	15	37
5:45 PM	2	0	15	12	27
6:00 PM	3	2	16	7	23
PEAK HOUR TRIP COUNT			28	22	50
PEAK HOUR TRIPS PER D.U.			0.35	0.28	0.63

Site #6 PM Peak Hour Traffic Counts
169 Dwelling Units with two Rolling Gates

TIME	NO. TRIPS IN	NO. TRIPS OUT	HOURLY TRIPS IN	HOURLY TRIPS OUT	HOURLY TOTAL TRIPS
4:15 PM	14	11			
4:30 PM	14	10			
4:45 PM	15	6			
5:00 PM	17	13	60	40	100
5:15 PM	16	7	62	36	98
5:30 PM	9	9	57	35	92
5:45 PM	9	6	51	35	86
6:00 PM	17	2	51	24	75
PEAK HOUR TRIP COUNT			60	40	100
PEAK HOUR TRIPS PER D.U.			0.36	0.24	0.59

Site #7 PM Peak Hour Traffic Counts
180 Dwelling Units with Rolling Gate

TIME	NO. TRIPS IN	NO. TRIPS OUT	HOURLY TRIPS IN	HOURLY TRIPS OUT	HOURLY TOTAL TRIPS
4:15 PM	18	12			
4:30 PM	12	7			
4:45 PM	14	18			
5:00 PM	20	16	64	53	117
5:15 PM	18	11	64	52	116
5:30 PM	14	21	66	66	132
5:45 PM	18	13	70	61	131
6:00 PM	20	13	70	58	128
PEAK HOUR TRIP COUNT			66	66	132
PEAK HOUR TRIPS PER D.U.			0.37	0.37	0.73

Site #8 PM Peak Hour Traffic Counts
90 Dwelling Units with Rolling Gate

TIME	NO. TRIPS IN	NO. TRIPS OUT	HOURLY TRIPS IN	HOURLY TRIPS OUT	HOURLY TOTAL TRIPS
4:15 PM	10	8			
4:30 PM	10	8			
4:45 PM	5	2			
5:00 PM	7	7	32	25	57
5:15 PM	10	8	32	25	57
5:30 PM	7	6	29	23	52
5:45 PM	7	3	31	24	55
6:00 PM	4	7	28	24	52
PEAK HOUR TRIP COUNT			32	25	57
PEAK HOUR TRIPS PER D.U.			0.36	0.28	0.63

Site #9 PM Peak Hour Traffic Counts
154 Dwelling Units with a Swinging Gate

TIME	NO. TRIPS IN	NO. TRIPS OUT	HOURLY TRIPS IN	HOURLY TRIPS OUT	HOURLY TOTAL TRIPS
4:15 PM	18	21			
4:30 PM	23	19			
4:45 PM	13	12			
5:00 PM	21	17	75	69	144
5:15 PM	16	16	73	64	137
5:30 PM	19	21	69	66	135
5:45 PM	20	12	76	66	142
6:00 PM	31	12	86	61	147
PEAK HOUR TRIP COUNT			86	61	147
PEAK HOUR TRIPS PER D.U.			0.56	0.40	0.95

Site #10 PM Peak Hour Traffic Counts
81 Dwelling Units with a Rolling Gate

TIME	NO. TRIPS IN	NO. TRIPS OUT	HOURLY TRIPS IN	HOURLY TRIPS OUT	HOURLY TOTAL TRIPS
4:15 PM	12	12			
4:30 PM	9	13			
4:45 PM	6	8			
5:00 PM	14	5	41	38	79
5:15 PM	15	5	44	31	75
5:30 PM	9	7	44	25	69
5:45 PM	8	7	46	24	70
6:00 PM	13	8	45	27	72
PEAK HOUR TRIP COUNT			41	38	79
PEAK HOUR TRIPS PER D.U.			0.51	0.47	0.98

Site #11 PM Peak Hour Traffic Counts
76 Dwelling Units with a Swinging Gate

TIME	NO. TRIPS IN	NO. TRIPS OUT	HOURLY TRIPS IN	HOURLY TRIPS OUT	HOURLY TOTAL TRIPS
4:15 PM	7	12			
4:30 PM	8	3			
4:45 PM	6	7			
5:00 PM	9	12	30	34	64
5:15 PM	9	11	32	33	65
5:30 PM	11	4	35	34	69
5:45 PM	9	8	38	35	73
6:00 PM	11	4	40	27	67
PEAK HOUR TRIP COUNT			38	35	73
PEAK HOUR TRIPS PER D.U.			0.50	0.46	0.96

Site #12 PM Peak Hour Traffic Counts
115 Dwelling Units with a Swinging Gate

TIME	NO. TRIPS IN	NO. TRIPS OUT	HOURLY TRIPS IN	HOURLY TRIPS OUT	HOURLY TOTAL TRIPS
4:15 PM	14	7			
4:30 PM	9	10			
4:45 PM	14	13			
5:00 PM	9	7	46	37	83
5:15 PM	9	10	41	40	81
5:30 PM	14	5	46	35	81
5:45 PM	15	10	47	32	79
6:00 PM	11	17	49	42	91
PEAK HOUR TRIP COUNT			49	42	91
PEAK HOUR TRIPS PER D.U.			0.43	0.37	0.79

Site #13 PM Peak Hour Traffic Counts
116 Dwelling Units with a Rolling Gate

TIME	NO. TRIPS IN	NO. TRIPS OUT	HOURLY TRIPS IN	HOURLY TRIPS OUT	HOURLY TOTAL TRIPS
4:15 PM	5	2			
4:30 PM	11	8			
4:45 PM	13	12			
5:00 PM	20	4	49	26	75
5:15 PM	10	9	54	33	87
5:30 PM	20	11	63	36	99
5:45 PM	13	11	63	35	98
6:00 PM	16	9	59	40	99
PEAK HOUR TRIP COUNT			59	40	99
PEAK HOUR TRIPS PER D.U.			0.37	0.25	0.62