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Pinon Hills Gas Station

SAN BERNARDINO COUNTY, CALIFORNIA

DAVID EVANS AND ASSOCIATES INC.

UPDATED REPORT
November 28, 2017

DAVID EVANS
AND ASSOCIATES INC.

November 28, 2017 Job No. OVCV0002-0001

Mr. George Wanis
Pinon Hills Gas Station
9128 Green Road
Pinon Hills, CA 92372

RE: Traffic Impact Study – Pinon Hills Gas Station
Pinon Hills, San Bernardino County, California

Dear Mr. Wanis:

David Evans and Associates, Inc. is pleased to submit this Traffic Impact Study (TIS) Report for the proposed Pinon Hills Gas Station. The Pinon Hills Gas Station is proposed to be located at the northwest corner of Beekley Road and Highway 138 in the unincorporated community of Pinon Hills, San Bernardino County, California. The proposed project consists of a gas station with convenience store and 14 fueling positions.

The report examines the traffic impacts with and without the addition of the proposed project and presents recommended traffic improvements. The report also addresses the impacts of overall growth within the area to assure that cumulative traffic mitigations can be addressed.

We are pleased to have been of assistance to you in processing and obtaining approval for the project. If you have any questions or comments, please feel free to contact me at 760-524-9115.

Respectfully submitted,

David Evans and Associates, Inc.

Robert A. Kilpatrick, P.E., T.E.
Senior Project Manager / Senior Associate

DAVID EVANS AND ASSOCIATES INC.

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DAVID EVANS AND ASSOCIATES INC.

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1 INTRODUCTION

This report identifies the traffic impacts and presents recommendations for access and traffic mitigation for the proposed Pinon Hills Gas Station. The Gas Station is proposed to be located at the northwest corner of Beekley Road and Highway 138 in the unincorporated community of Pinon Hills, San Bernardino County, California. The proposed site consists of a gas station with a convenience store and 14 fueling positions. *Figure 1* illustrates the vicinity map and project location and *Figure 2* illustrates the proposed project site plan. The proposed project is currently bounded to the north and west by Beekley Lane, to the east by Beekley Road, and Highway 138 to the south.

The intent of this TIS is to address the impacts and mitigations required for the proposed development. This report identifies six (6) scenarios, as outlined in the County approved Traffic Scope, necessary to address project specific mitigations. The scenarios include an Existing Condition, Existing Plus Project Condition, Background Condition, Project Conditions, Future Conditions Year 2040, and Future Conditions Year 2040 with Project.

The Existing Condition analysis is based on existing traffic counts collected in March 2017 and reflects the current conditions of the project area.

The Existing Plus Project Condition addresses anticipated impacts if the project were completed today. The values generate a base comparison of project impacts without ambient growth. The Existing Plus Project Condition considers a trip distribution utilizing existing intersections included in the study area.

The Background Condition addresses impacts due to ambient growth up to the Project Buildout Year of 2018 within the study area. The ambient growth is estimated as an annual 1% growth rate. The Background Condition considers a trip distribution utilizing existing intersections included in the study area.

The Project Conditions analysis is the examination of potential development correlating with the development of the project up to the Project Year of 2018. The values generate a base comparison of project impacts with ambient growth. The Project Conditions considers a trip distribution utilizing existing intersections included in the study area.

The Future Conditions Year 2040 addresses impacts due to ambient growth of the surrounding regional area up to the Future Year 2040. The ambient growth up to the Future Year 2040 was developed from the San Bernardino Transportation Analysis Model (SBTAM). The Future Conditions Year 2040 considers a trip distribution utilizing existing intersections included in the study area.

The Future Conditions Year 2040 plus Project addresses impacts due to the proposed project and ambient growth up to the Future Year 2040 within the study area. The Future Conditions Year 2040 plus Project considers a trip distribution utilizing existing intersections included in the study area.

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FIGURE 1: VICINITY MAP
PINON HILLS GAS STATION
PINON HILLS, CALIFORNIA

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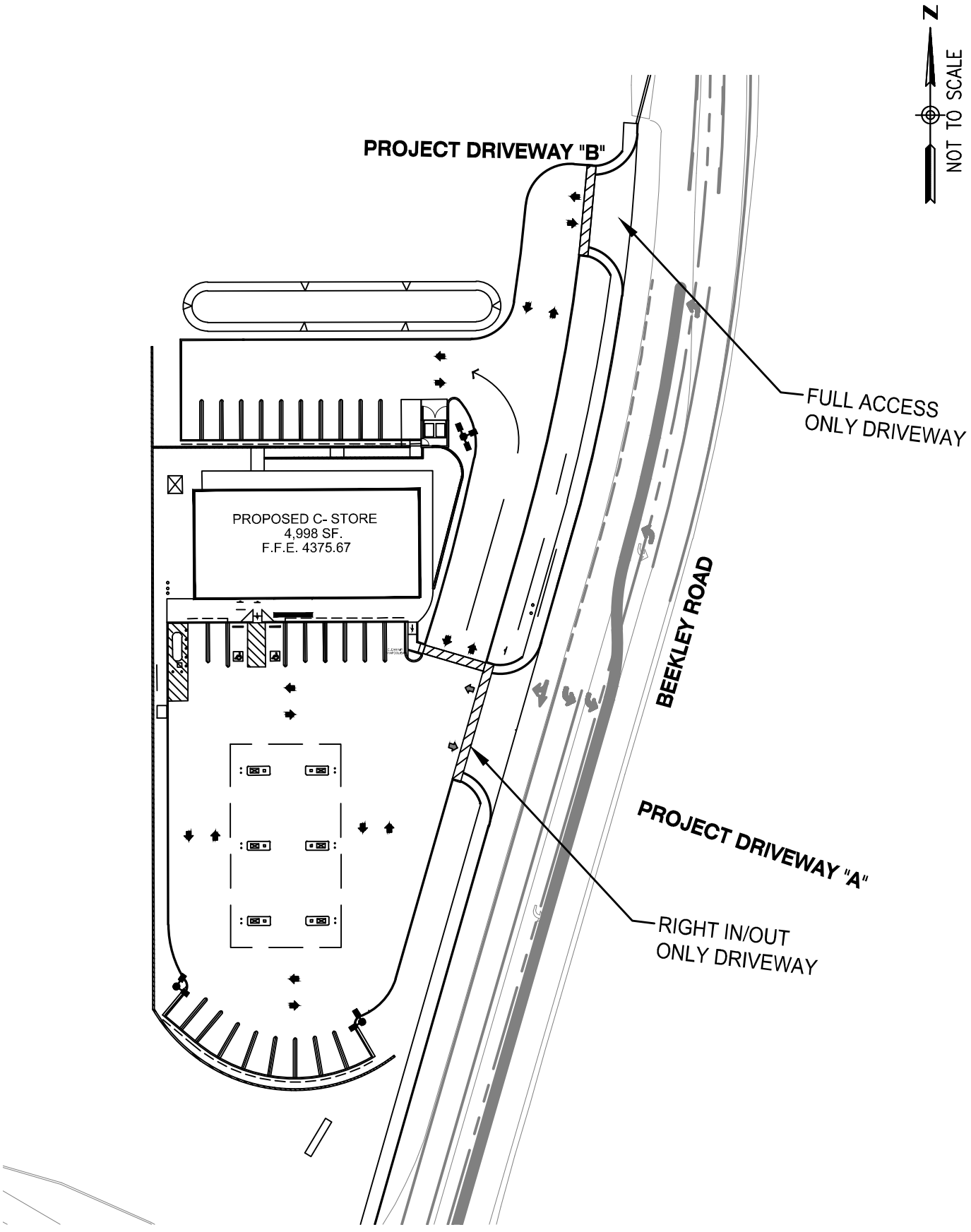

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FIGURE 2: SITE PLAN
PINON HILLS GAS STATION
PINON HILLS, CALIFORNIA

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2 EXISTING CONDITIONS

Existing Street System

The following roadways provide access to the study area:

Beekley Road is a north-south route that serves as a primary access road to the Pinon Hills community. It is a two-lane roadway (one lane in each direction) and provides direct access to residential driveways.

Highway 138 is a primarily east-west route that provides regional access to the Pinon Hills community. This roadway is primarily a two-lane highway (one lane in each direction) with an additional lane provided for major left and right turn movements.

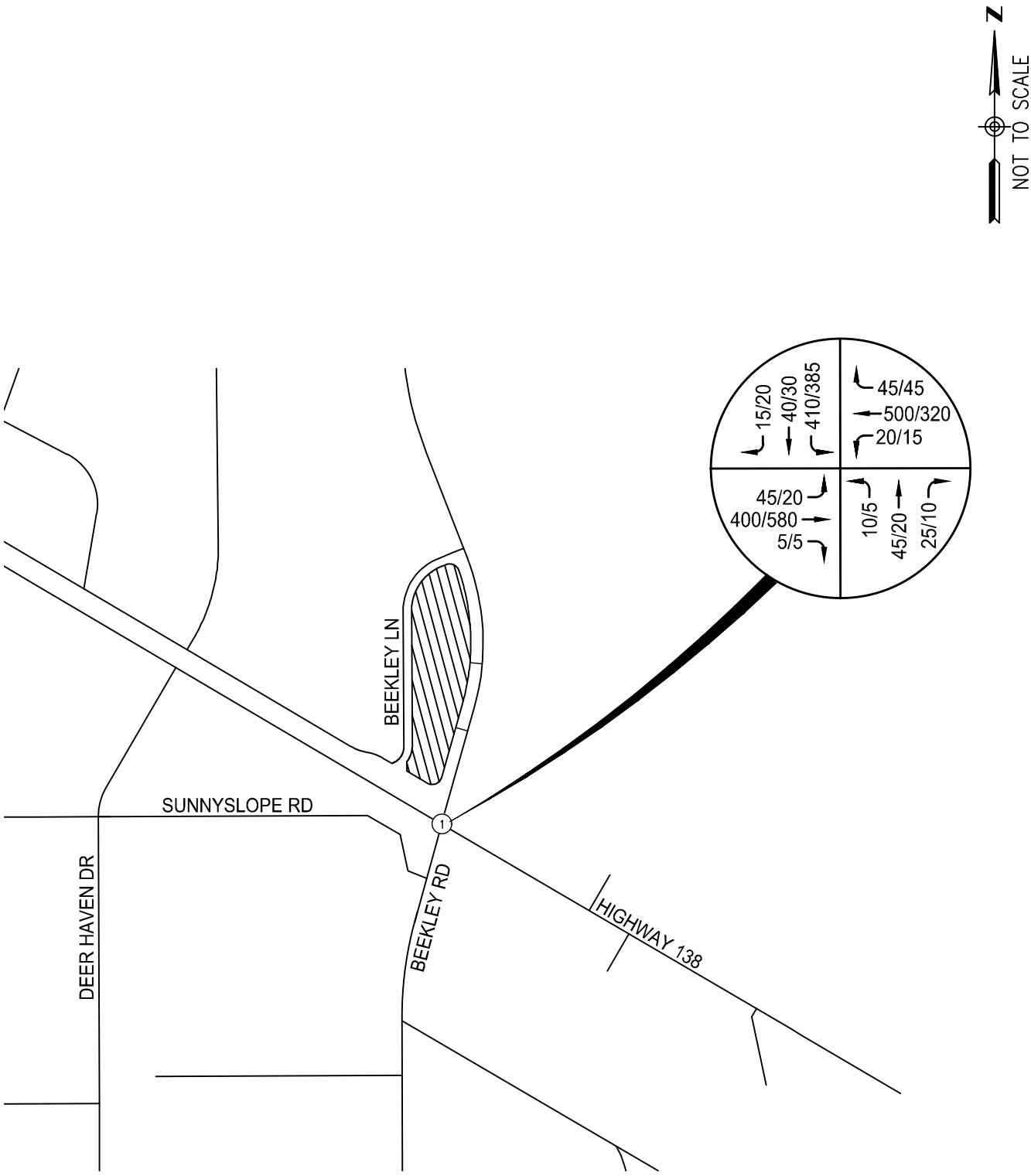
The proposed project is located at the northwest corner of Beekley Road and Highway 138 in the unincorporated community of Pinon Hills, San Bernardino County, California. It is bounded to the north and west by Beekley Lane, to the east by Beekley Road, and Highway 138 to the south. Based on the potential traffic impacts to the area roadways, one (1) existing intersection and one (1) future intersection in the study area have been identified for analysis:

1. Beekley Road and Highway 138
2. Beekley Road and Project Driveway “A” (Future Intersection)
3. Beekley Road and Project Driveway “B” (Future Intersection)

The intersection of Beekley Road and Highway 138 is a signalized intersection.

Existing Traffic Volumes

Figure 3 illustrates the existing peak hour traffic volumes in the study area. Turn movement counts were obtained from Newport Traffic Studies, an independent traffic data collection company. Turn movement counts were collected during the AM (7:00am – 9:00am) and PM (4:00pm – 6:00pm) peak hour at the above-mentioned existing intersection. These counts were conducted in March 2017. The resulting turning movement volumes are presented in *APPENDIX C* of this report.



LEGEND

XX% - SPECIFIC PROJECT TRIP

(#) - STUDY INTERSECTIONS

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FIGURE 3: EXISTING TRAFFIC VOLUMES
PINON HILLS GAS STATION
PINON HILLS, CALIFORNIA

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Intersection Capacity Analysis Methodology

Based on the existing intersection geometrics and traffic volumes during the AM and PM peak hour, the intersection capacity analyses were conducted for the signalized intersection using the Synchro Software. Synchro is released by Trafficware Ltd, version 10.

The Highway Capacity Manual (HCM) traffic analysis methodology is a method developed by the Transportation Research Board (TRB). Under the HCM methodology the LOS of an intersection is determined based on the delay of vehicles at the intersections. *Table 1* provides the HCM 6 LOS thresholds for signalized intersections. *Table 2* provides the HCM 6 LOS thresholds for Two-Way-Stop-Controlled (TWSC) intersections.

Table 1: HCM 6 - LOS Criteria for Signalized Intersections

LOS	Control Delay per Vehicle (s/veh)
A	≤ 10
B	> 10 and ≤20
C	> 20 and ≤35
D	> 35 and ≤ 55
E	> 55 and ≤ 80
F	> 80

Source: **HCM 6 (Exhibit 19-8)**

Table 2: HCM 6 - LOS Criteria for Two-Way Stop Controlled Intersections

LOS	Control Delay per Vehicle (s/veh)
A	0 – 10
B	10 – 15
C	15 – 25
D	25 – 35
E	35 – 50
F	> 50

Source: **HCM 6 (Exhibit 20-2)**

2.1 Existing Traffic Analysis

Intersection capacity analysis were conducted for the study intersection to determine an existing intersection level-of-service (LOS), based on the existing intersection geometrics and the AM and PM peak hour traffic volumes. The results of the analysis are shown in *Table 3* and provided in *APPENDIX C. Figure 4* illustrates the existing intersection geometrics utilized in the capacity analysis.

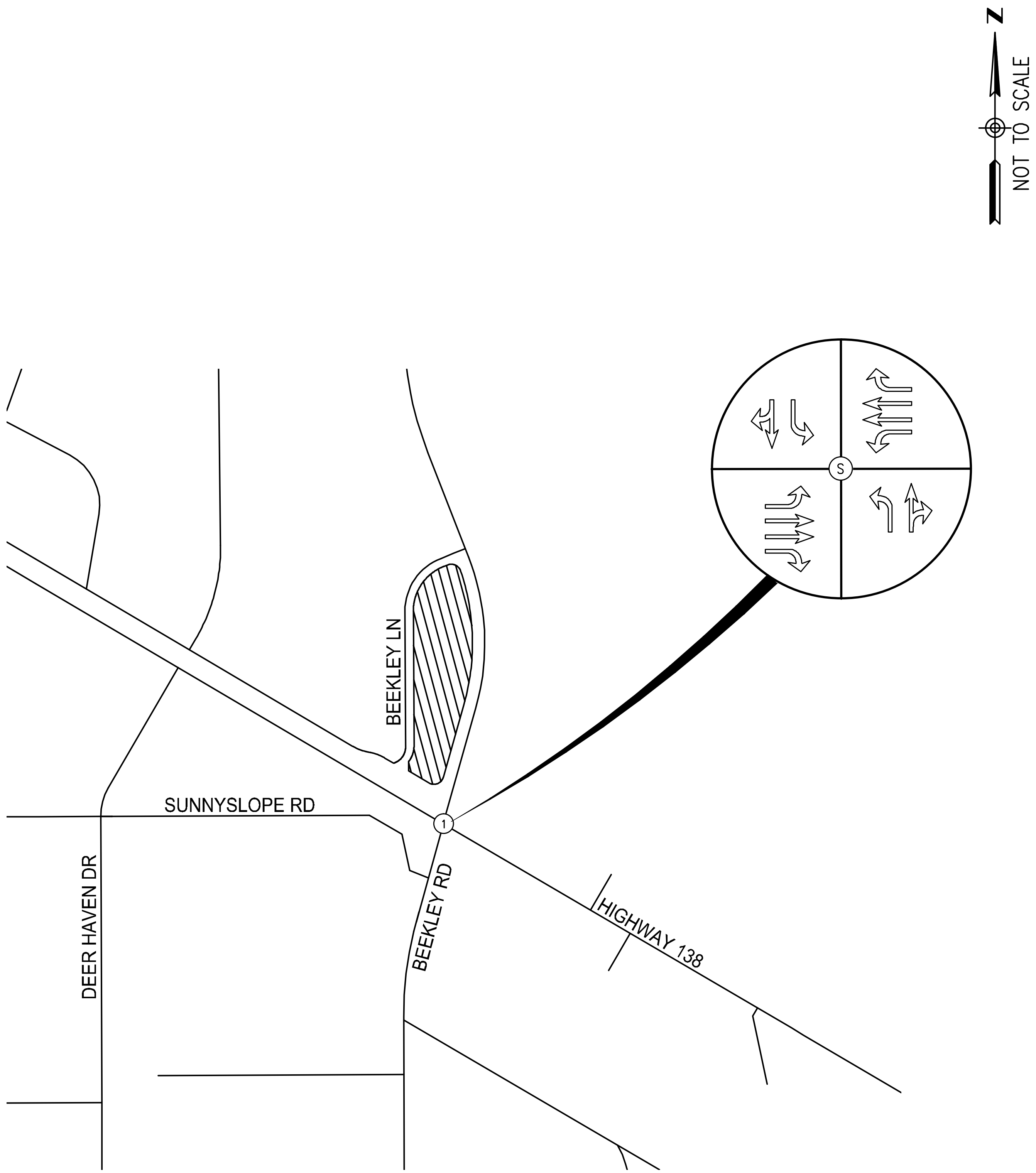
Table 3: Intersection Capacity Analysis - Existing Condition

Intersection		AM		PM	
		Delay (1)	LOS(2)	Delay (1)	LOS(2)
1	Beekley Road and Highway 138	22.8	C	19.5	B

(1) Delay –In Seconds (HCM Methodology)
(2) LOS – HCM Level of Service

Source: **David Evans and Associates, Inc.**

As shown in *Table 3* under Existing Conditions, the study intersection is operating at an acceptable LOS during the AM and PM peak periods.



LEGEND

- (#) - STUDY INTERSECTIONS
- (S) - SIGNALIZED INTERSECTION
- ⟸ - EXISTING GEOMETRICS

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FIGURE 4: EXISTING CONDITION
INTERSECTION GEOMETRICS
PINON HILLS GAS STATION
PINON HILLS, CALIFORNIA

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3 EXISTING PLUS PROJECT CONDITIONS

The proposed project consists of a gas station with convenience store and 14 fueling positions. The Existing Plus Project Conditions address the impacts due to project traffic.

Project Trip Generation

To identify potential traffic impacts, trip generation factors were applied to the land use to generate project trip estimates. The trip generation factors for a Gas Station with Convenience Store were obtained from the 9th Edition of the Institute of Transportation Engineers trip generation report.

Table 4 summarizes the estimated trip generation for the project site during the weekday AM peak (7-9 AM) and PM peak (4-6 PM) periods. The project is highway oriented as a result of a Pass-By Trip reduction of 65%/56% applied to the trip generation.

Table 4: Project Trip Generation

	Use		AM Peak Hour			PM Peak Hour		
		Daily	In	Out	Total	In	Out	Total
1	**Gas Station with Convenience Store**							
	(ITE 945) Vehicle Fueling Positions	162.78	5.08	5.08	10.16	6.76	6.76	13.51
	14 Gasoline Fueling Positions	2,279	71	71	142	95	95	189
	Pass-By Trips (62%/56%)	-	44	44	88	53	53	106
	Primary Trips (38%/44%)	-	27	27	**54**	42	42	**83**

Source: "Trip Generation Manual, Institute of Transportation Engineers", 9th Edition

As presented in *Table 4,* it is estimated that the proposed project will generate 54 primary trips during the AM peak hour and 83 primary trips during the PM peak hour.

Project Trip Distribution

To address the impacts of the estimated project traffic, the trips were distributed and assigned to the surrounding streets and study intersections. The project traffic was distributed based on the anticipated project utilization. Once the distribution pattern was established, project trips were assigned to the area streets that serve the project.

Figure 5 illustrates the estimated distribution pattern for the primary trips. *Figure 6* illustrates the AM and PM peak hour primary trips that occur at the study area intersections. *Figure 7* illustrates the AM and PM peak hour pass-by trips that occur at the study intersections. *Figure 8* illustrates the AM and PM peak hour total project trips that occur at the study intersections.

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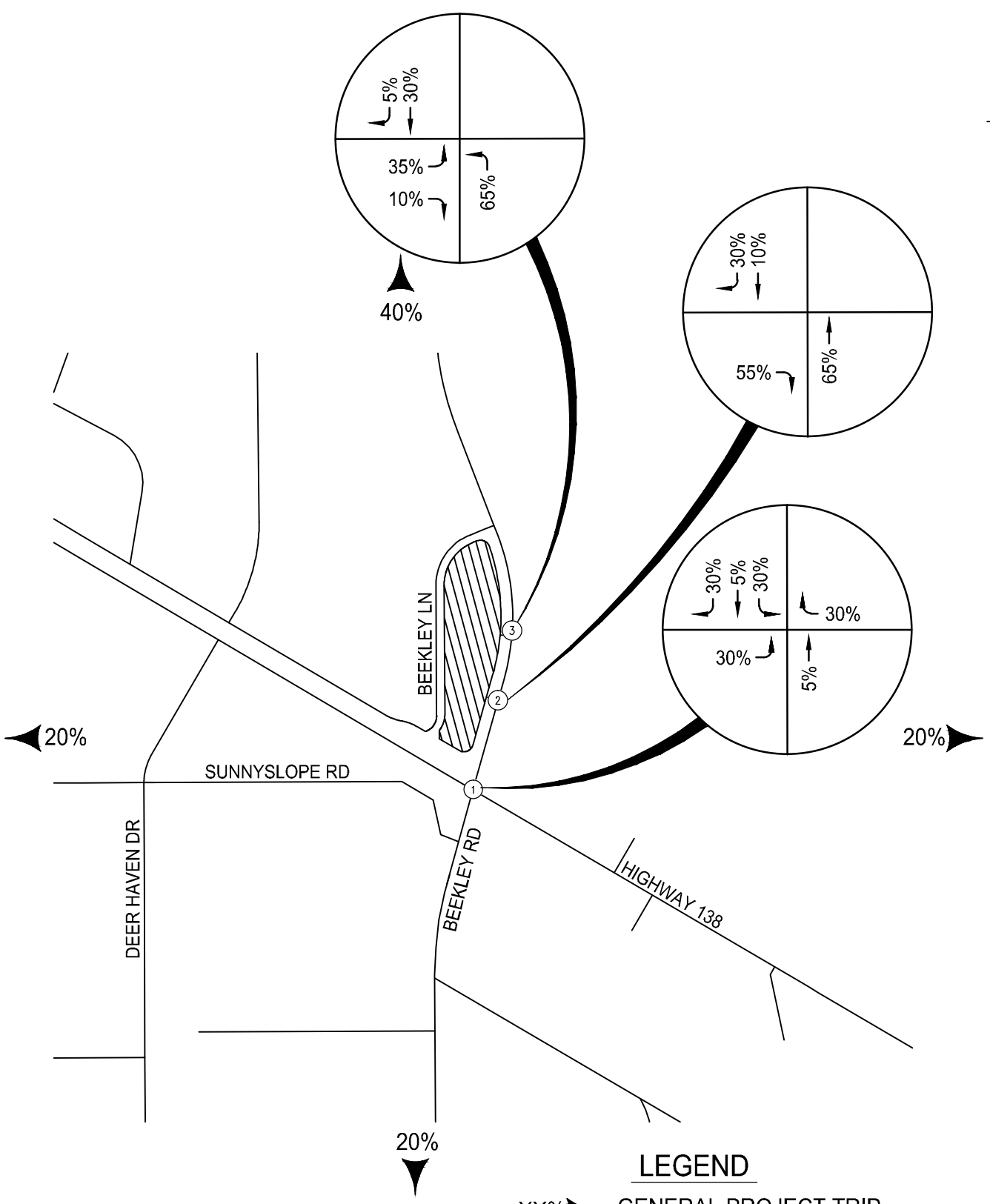

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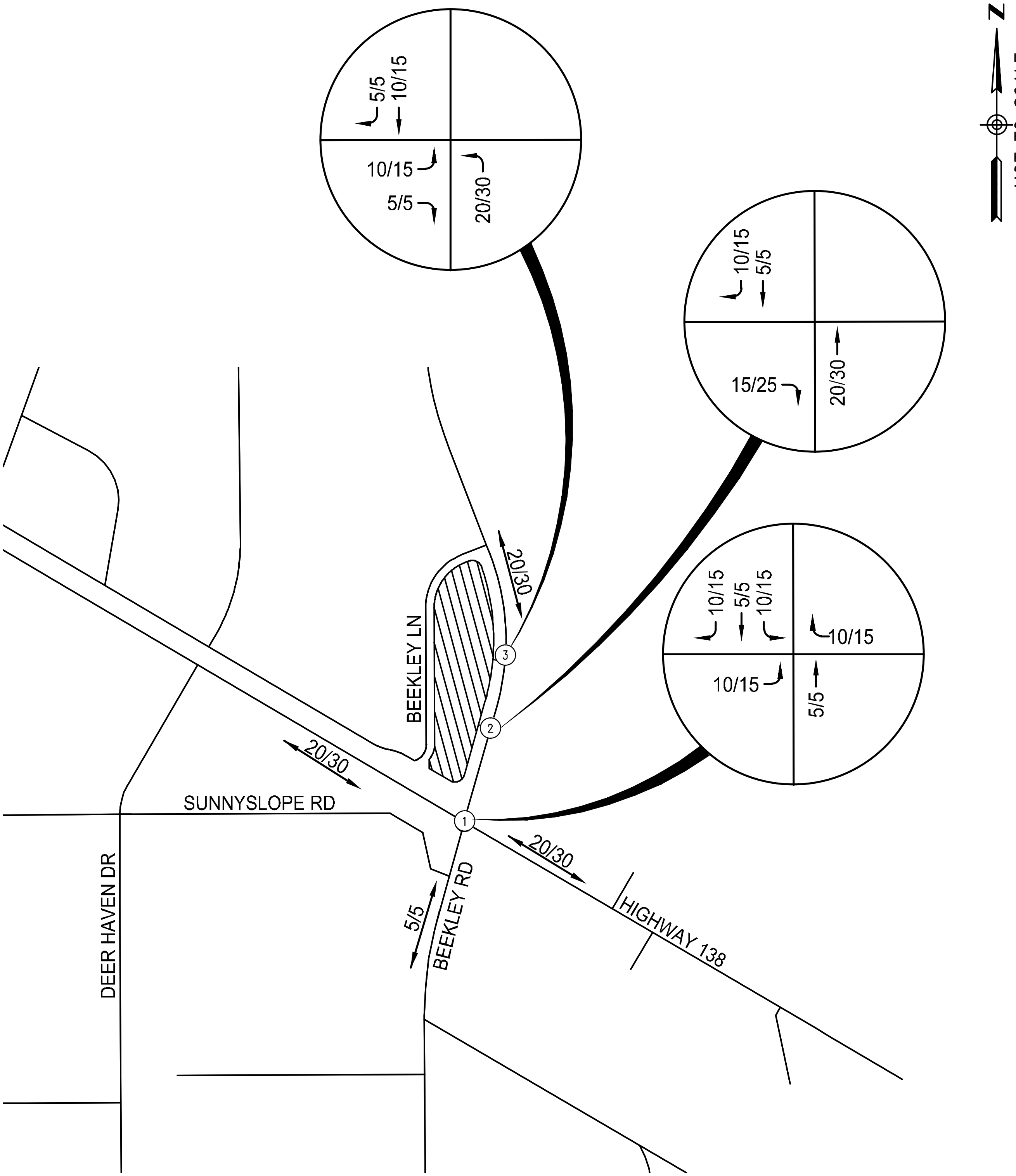
FIGURE 5: PRIMARY TRIP DISTRIBUTION
PINON HILLS GAS STATION
PINON HILLS , CALIFORNIA



PROJECT TRIPS

AM PEAK PERIOD - 27 IN / 27 OUT
PM PEAK PERIOD - 42 IN / 42 OUT

LEGEND

XX/XX - AM/PM PROJECT TRIP
(#) - STUDY INTERSECTIONS

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FIGURE 6: PRIMARY PROJECT TRIPS
PINON HILLS GAS STATION
PINON HILLS , CALIFORNIA

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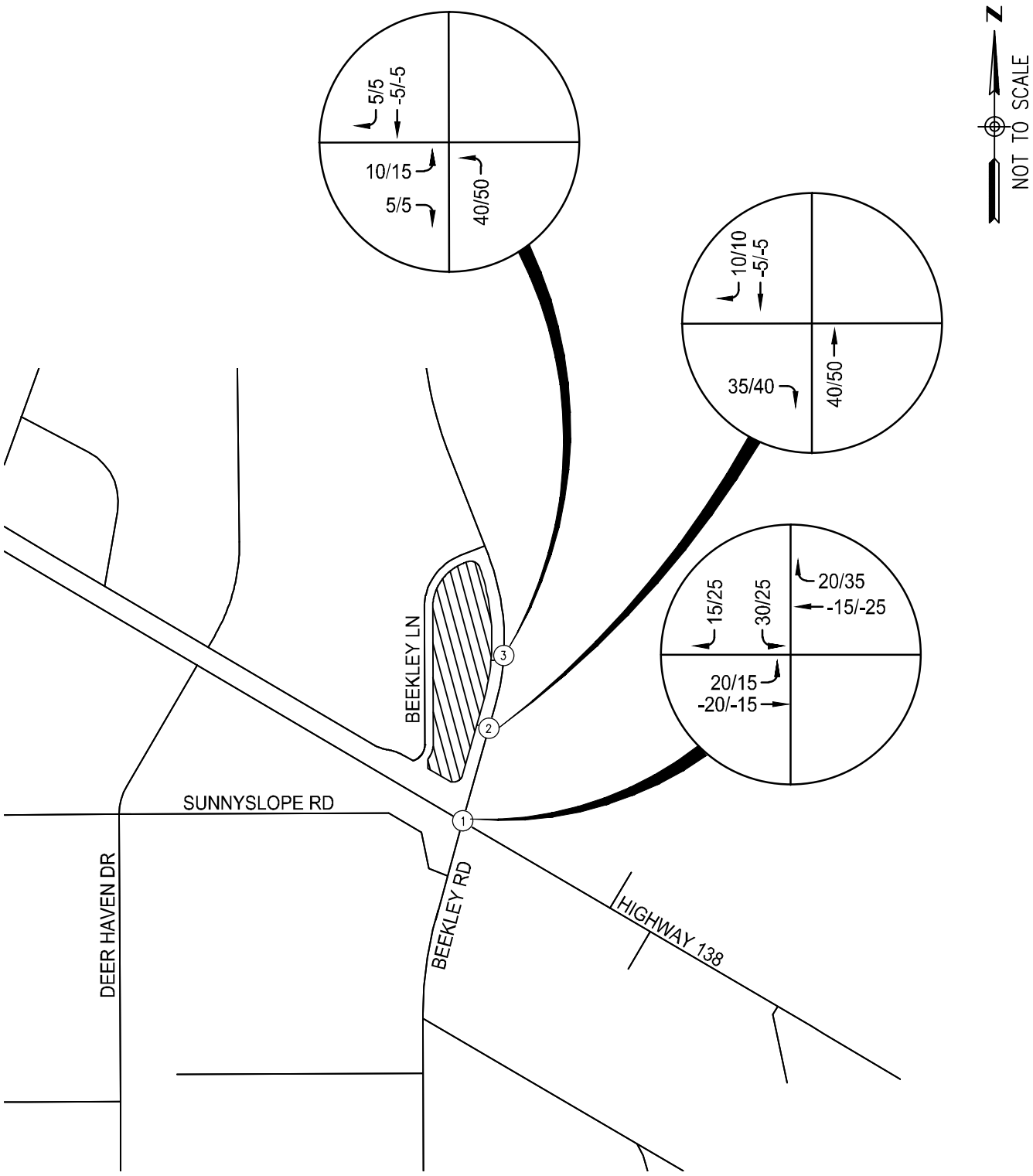

PROJECT TRIPS

AM PEAK PERIOD - 44 IN / 44 OUT
PM PEAK PERIOD - 53 IN / 53 OUT

LEGEND

XX/XX - AM/PM PROJECT TRIP
(#) - STUDY INTERSECTIONS

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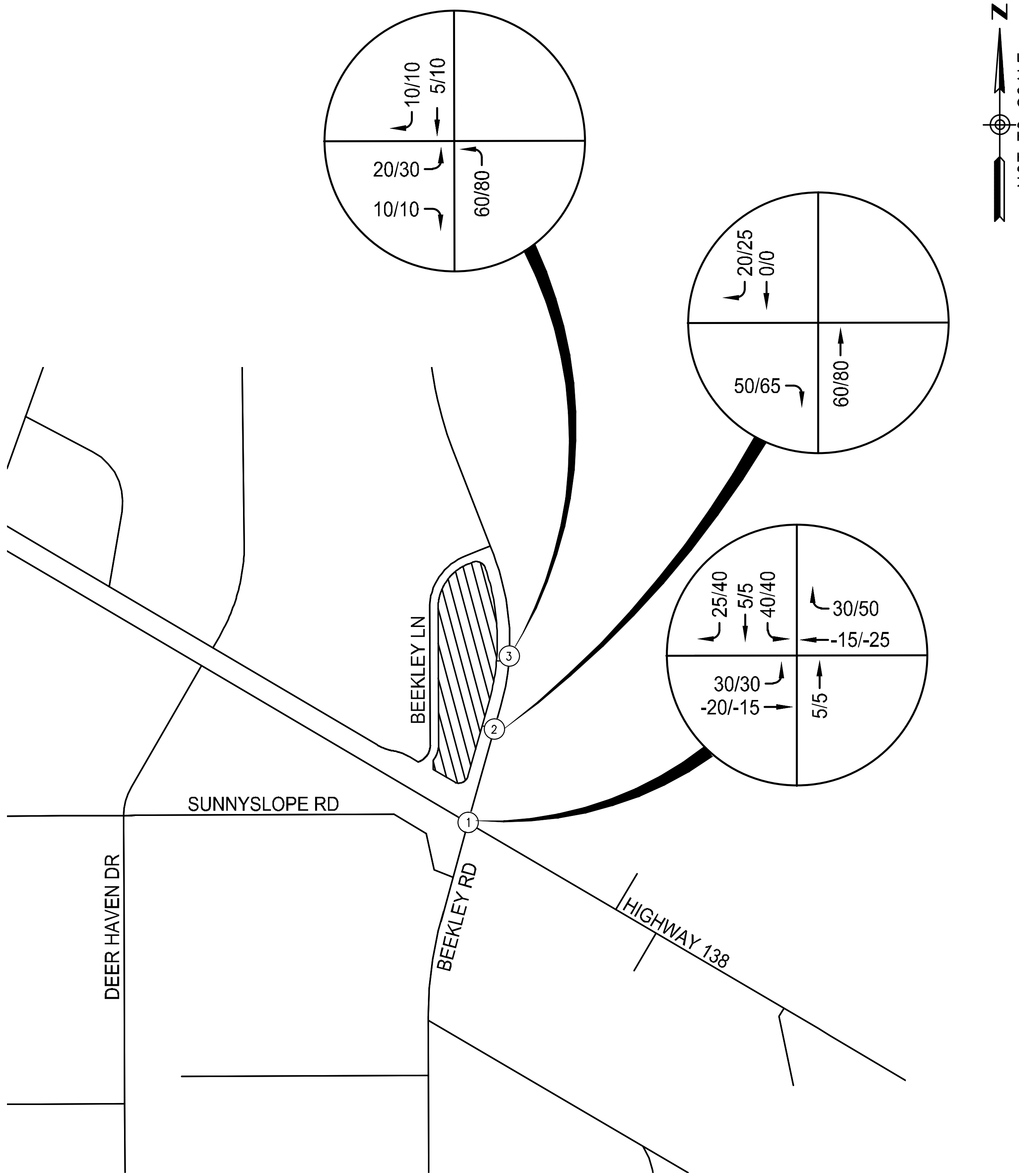
FIGURE 7: PASS-BY PROJECT TRIPS
PINON HILLS GAS STATION
PINON HILLS, CALIFORNIA



PROJECT TRIPS

AM PEAK PERIOD - 71 IN / 71 OUT
PM PEAK PERIOD - 95 IN / 95 OUT

LEGEND

XX/XX - AM/PM PROJECT TRIP
(#) - STUDY INTERSECTIONS

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FIGURE 8: TOTAL PROJECT TRIPS
PINON HILLS GAS STATION
PINON HILLS , CALIFORNIA

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3.1 Existing Plus Project Traffic Analysis

Based on the proposed project trip generation, traffic distribution and assignment patterns intersection capacity analyses were conducted to assess the estimated project impacts.

The project trips were added to the Existing Condition to develop the Existing Plus Project Traffic Volumes, illustrated in *Figure 9.* Intersection capacity analysis for the Existing Plus Project was performed using the methodology presented in *Chapter 2.* The results of the analysis are shown in *Table 5* and provided in *APPENDIX C.*

Table 5: Intersection Capacity Analysis – Existing plus Project Conditions

Intersection		AM		PM	
		Delay (1)	LOS(2)	Delay (1)	LOS(2)
1	Beekley Road and Highway 138	25.3	C	20.4	C
2	Beekley Road and Project Driveway “A” (3) (4)	13.1	B	12.2	B
3	Beekley Road and Project Driveway “B” (3)	14.5	B	13.8	B

(1) Delay –In Seconds (HCM Methodology)
(2) LOS – HCM Level of Service
(3) Un-signalized Intersection
(4) Right-in / Right-out Driveway

Source: **David Evans and Associates, Inc.**

As shown in *Table 5* under the Existing plus Project Condition, all of the study intersections are anticipated to continue to operate at an acceptable LOS during the AM and PM peak periods utilizing the existing and proposed intersection geometrics.

The Existing plus Project Conditions Intersection Geometrics are illustrated in *Figure 10.*

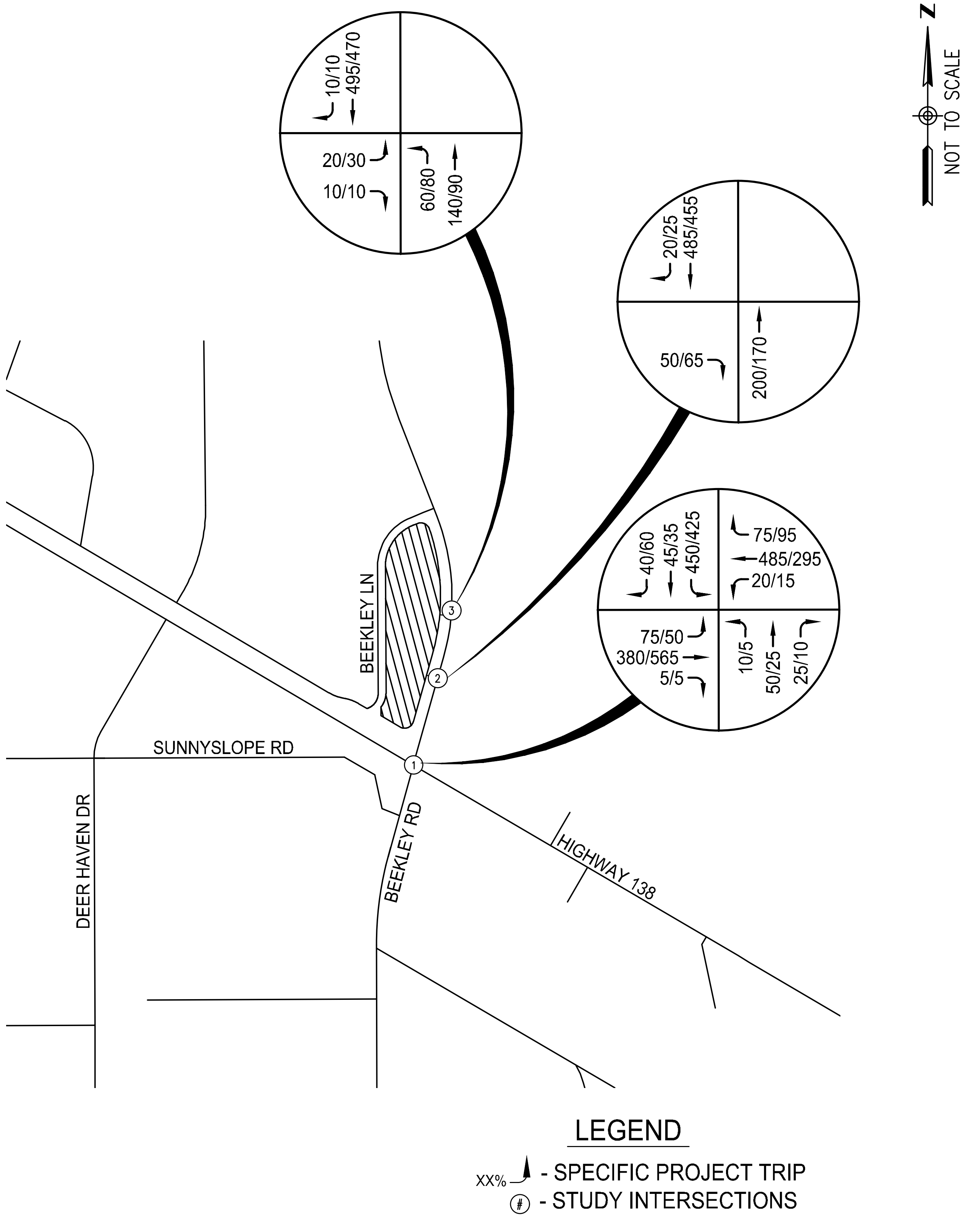

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FIGURE 9: EXISTING PLUS PROJECT TRAFFIC VOLUMES
PINON HILLS GAS STATION
PINON HILLS, CALIFORNIA

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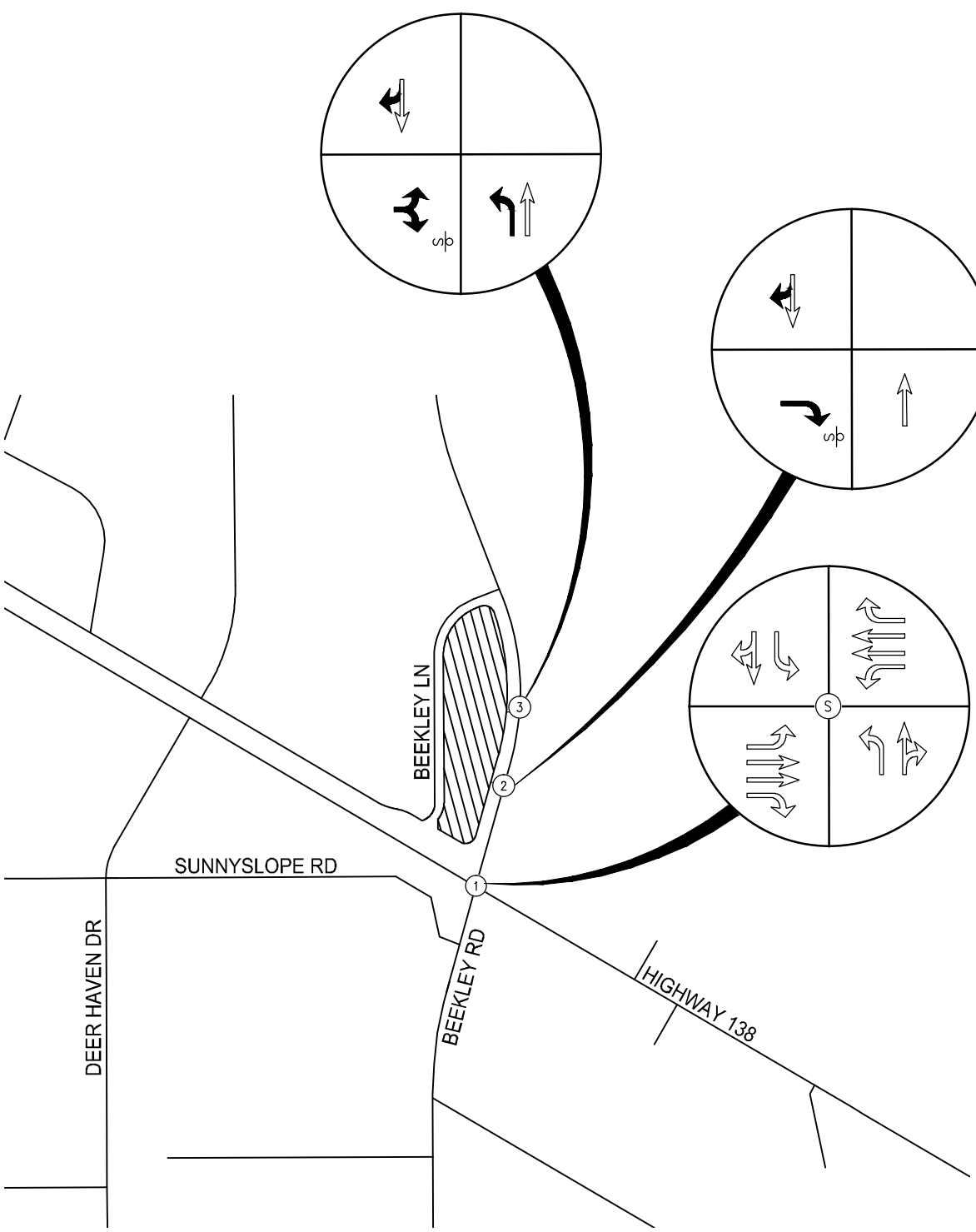

LEGEND

- (#) - STUDY INTERSECTIONS
- sb / S - UNSIGNALIZED INTERSECTION
- (S) - SIGNALIZED INTERSECTION
- ⇦ - EXISTING GEOMETRICS
- ⬅ - PROPOSED GEOMETRICS

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FIGURE 10: EXISTING PLUS PROJECT CONDITION INTERSECTION GEOMETRICS
PINON HILLS GAS STATION
PINON HILLS, CALIFORNIA

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3.2 Existing Plus Project Queuing Analysis

Table 6: Queue Length – Existing plus Project Conditions

	Intersection/Movement		Storage Length (ft)	AM 95th% Queue	PM 95th% Queue
1	Highway 138 and Beekley Road	EBL	420	70	64
		EBT		136	**182**
		EBT		93	168
		EBR	420	2	-
		WBL	430	32	30
		WBT		**222**	134
		WBT		180	74
		WBR		28	34
		NBL	250	30	22
		NBTR		**142**	83
		SBL	385	**279**	250
		SBLTR		65	78
2	Beekley Road and Driveway "A"	EBR		60	64
		NBT			
		SBTR		57	18
3	Beekley Road and Driveway "B"	EBLR		45	63
		NBLT		76	61
		SBTR		-	-

Critical Queue Length is denoted in **Bold** font
"-" denotes a Queue Length that is not provided
95% - 95 Percentile Queue Length

Source: **David Evans and Associates, Inc.**

Table 6 provides the 95% queue length by lane for each study intersection. Denoted in bold are the critical queue lengths used in determining the length needed for the storage pocket of the southbound turn lanes for the intersection of Beekley Road and Highway 138.

4 BACKGROUND CONDITIONS

Area Growth

To analyze the project impacts, the inclusion of ambient traffic within the study area is necessary. Typically, regional and local growth is expected over the years at rates ranging from 1% to 2% compounded annually. The regional and local growth is based on the existing traffic volumes, an annual 2% increase up to Project Year. This growth is known as background traffic. The analysis of background traffic allows a comparison of traffic impacts with and without the project applying the growth to the existing turn movement volumes. *Figure 11* illustrates Background Condition traffic volumes.

4.1 Background Traffic Analysis

To determine the impacts of the project to the study intersection, anticipated regional growth was added to existing condition volumes to produce the Background Condition volumes. The analysis was conducted with the existing intersection geometrics. Intersection capacity analysis for the Background Condition was performed using the methodology presented in *Chapter 2.* The results of the analysis are shown in *Table 7* and provided in *Appendix C* of this report.

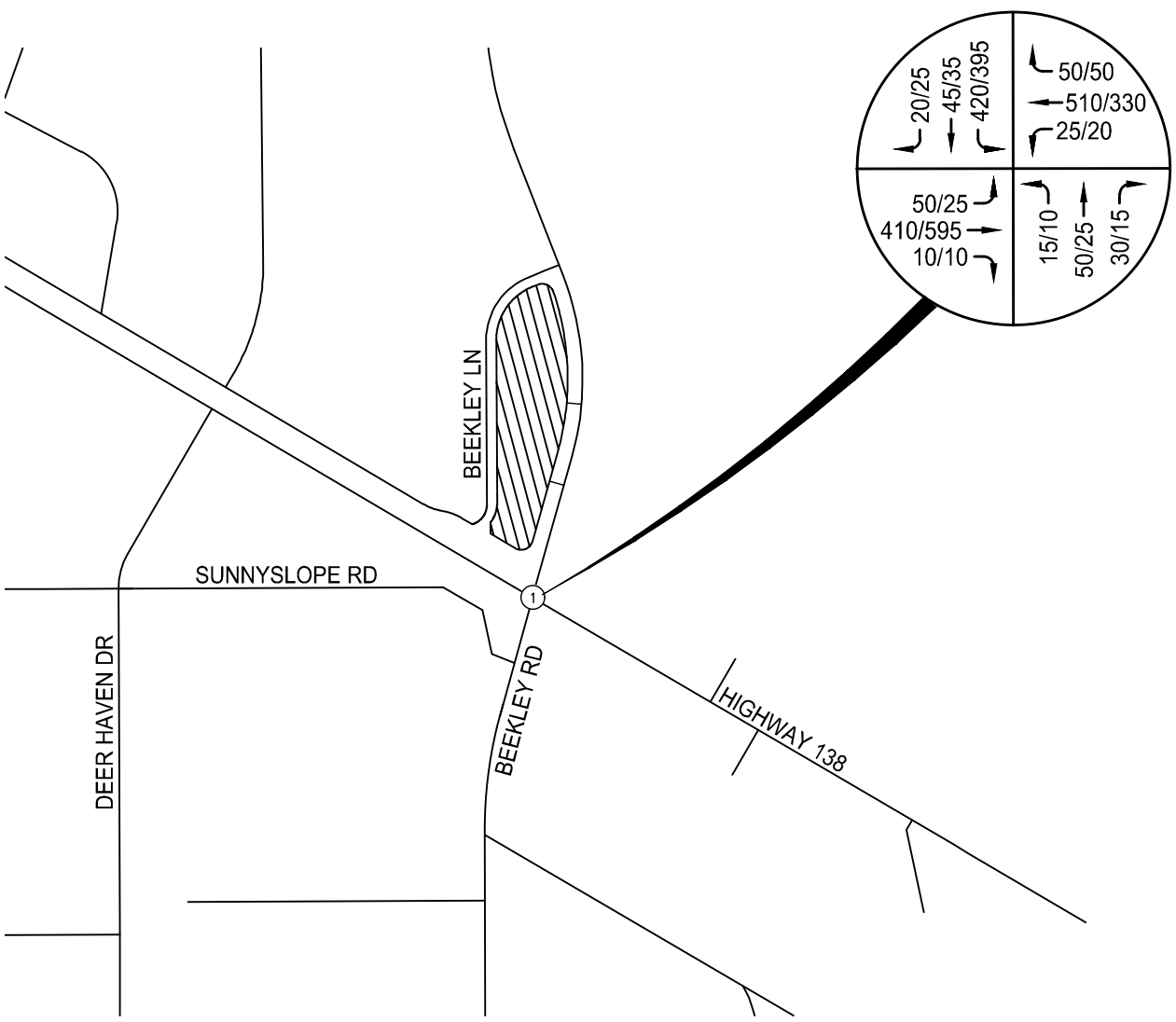
Table 7: Intersection Capacity Analysis - Background Condition

Intersection		AM		PM	
		Delay (1)	LOS(2)	Delay (1)	LOS(2)
1	Beekley Road and Highway 138	21.1	C	19.9	B

(1) Delay –In Seconds (HCM Methodology)
(2) LOS – HCM Level of Service

Source: **David Evans and Associates, Inc.**

As provided in *Table 7* under Background Condition, the study intersection is anticipated to continue operate at an acceptable LOS during the AM and PM peak hours.



LEGEND

XX% - SPECIFIC PROJECT TRIP

(#) - STUDY INTERSECTIONS

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FIGURE 11: BACKGROUND TRAFFIC VOLUMES
PINON HILLS GAS STATION
PINON HILLS, CALIFORNIA

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5 PROJECT CONDITIONS

The proposed project is anticipated to open in the Year 2018. To analyze the project impacts, the inclusion of traffic generated by regional ambient growth within the study area is necessary. Typically, ambient growth is expected over the years at rates ranging from 1% to 2% annually; a 1% annual increase was utilized to establish the background traffic.

Based on the proposed traffic distribution, assignment patterns and project trip generation, intersection capacity analyses were conducted to assess the estimated project impacts. To determine the project impacts at the study intersection and driveways, project trips were added to the Background Condition volumes to produce the Project Condition volumes.

5.1 Project Traffic Analysis

Figure 12 illustrates the calculated Project Condition traffic volumes. Intersection capacity analysis for the Project Condition was performed using the methodology presented in *Chapter 2.* The results of the analysis are shown in *Table 8* and provided in *Appendix C* of this report.

Table 8: Intersection Capacity Analysis - Project Traffic

	Intersection	AM		PM	
		Delay (1)	LOS(2)	Delay (1)	LOS(2)
1	Beekley Road and Highway 138	22.8	C	20.2	C
	Mitigation: Addition of left turn and Signal Modification	17.9	B	16.9	B
2	Beekley Road and Project Driveway “A” (3) (4)	12.5	B	12.2	B
3	Beekley Road and Project Driveway “B” (3)	13.7	B	13.7	B

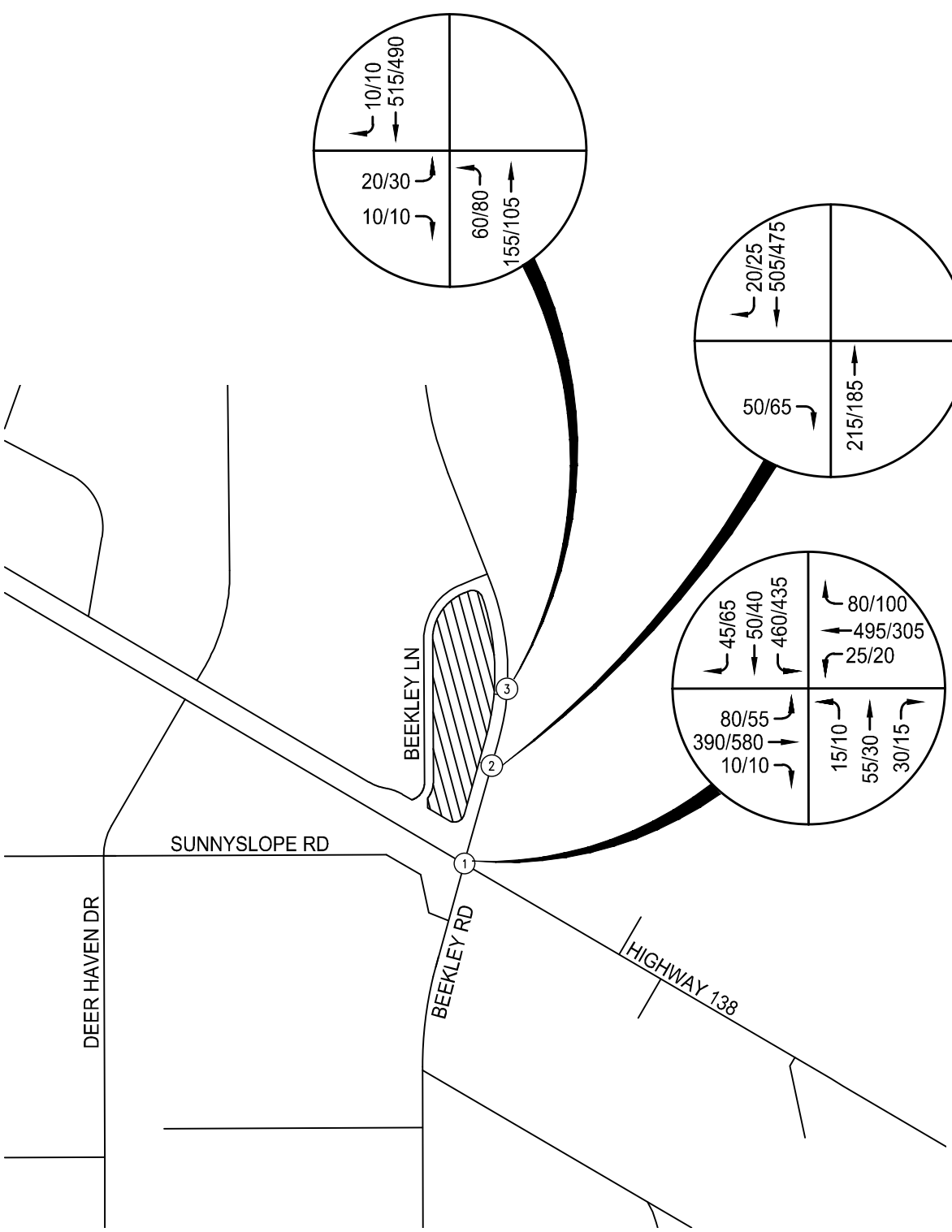
(1) Delay –In Seconds (HCM Methodology)
(2) LOS – HCM Level of Service
(3) Un-signalized Intersection
(4) Right-in / Right-out Driveway

Source: **David Evans and Associates, Inc.**

As presented in *Table 8* under Project Completion, all of the study intersections are anticipated to continue operate at an acceptable LOS during the AM and PM peak periods utilizing the existing intersection.

The proposed Project mitigations for the intersection of Beekley Road and Highway 138 is to stripe an additional southbound left turn lane and optimize the existing 8-phase signal timing, with this improvement the intersection is anticipated to operate at a LOS B for both the AM and PM peak periods.

The Project Conditions Intersection Geometrics are illustrated in *Figure 13.*



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NOT TO SCALE

LEGEND

XX% - SPECIFIC PROJECT TRIP

(#) - STUDY INTERSECTIONS

DAVID EVANS AND ASSOCIATES INC.

FIGURE 12: PROJECT TRAFFIC VOLUMES
PINON HILLS GAS STATION
PINON HILLS, CALIFORNIA

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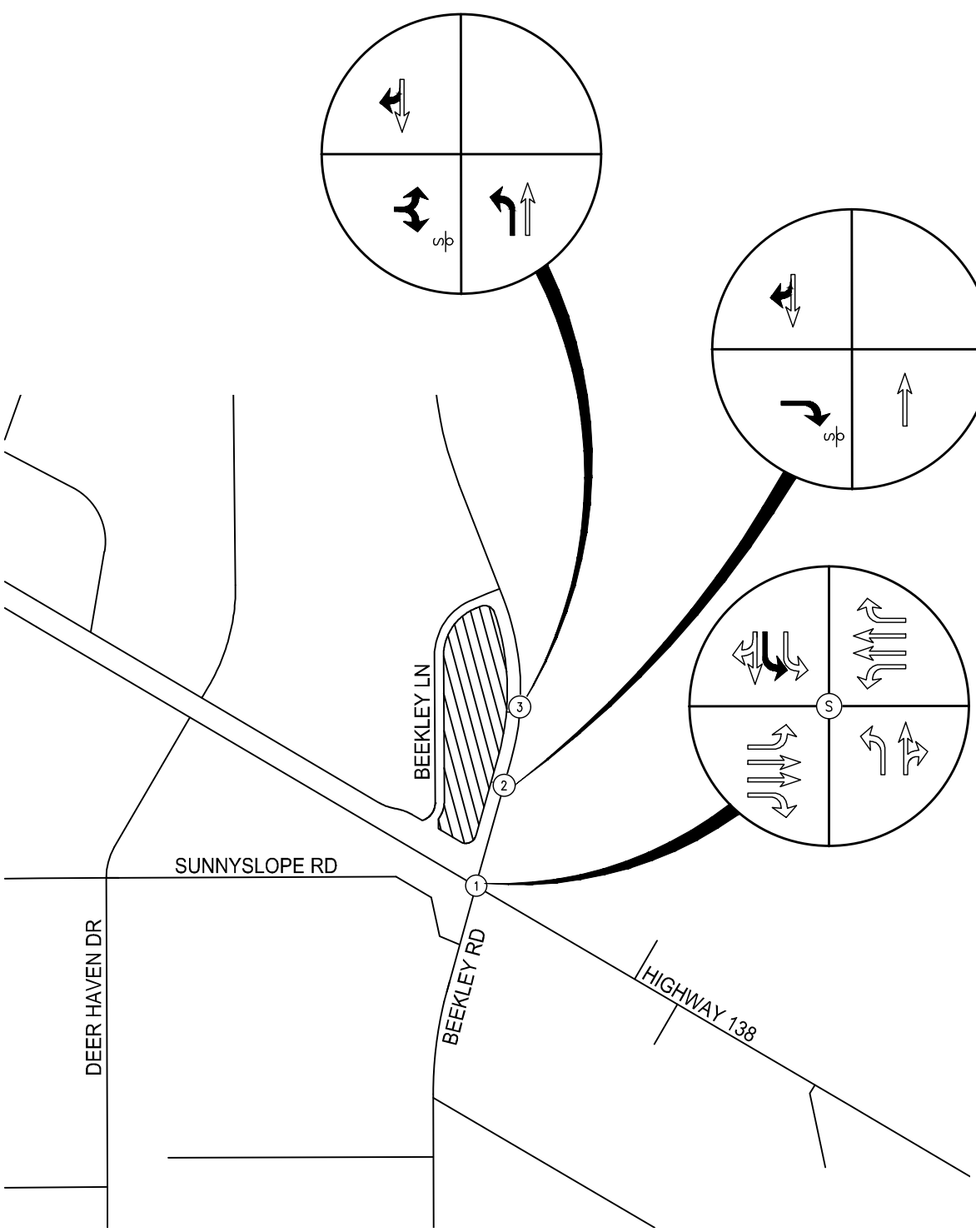

LEGEND

- (#) - STUDY INTERSECTIONS
- sb/S - UNSIGNALIZED INTERSECTION
- (S) - SIGNALIZED INTERSECTION
- ⇦ - EXISTING GEOMETRICS
- ⬅ - PROPOSED GEOMETRICS

DAVID EVANS AND ASSOCIATES INC.

FIGURE 13: PROJECT CONDITION INTERSECTION GEOMETRICS PINON HILLS GAS STATION PINON HILLS, CALIFORNIA

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5.2 Queuing Analysis

Table 9: Queue Length - Project Condition

	Intersection/Movement		Storage Length (ft)	Project Traffic Condition		Project Traffic Condition Mitigated	
				AM	PM	AM	PM
				95th% Queue	95th% Queue	95th% Queue	95th% Queue
1	Highway 138 and Beekley Road	EBL	420	98	64	72	70
		EBT		135	**182**	137	**142**
		EBT		80	168	73	122
		EBR	420	2	-	0	1
		WBL	430	43	30	40	20
		WBT		**210**	134	**209**	133
		WBT		177	74	172	71
		WBR		27	34	24	21
		NBL	250	36	22	44	39
		NBTR		**122**	83	**107**	57
		SBL	385	**275**	250	**188**	158
		SBL		-	-	158	139
		SBLTR		91	78	84	74
2	Beekley Road and Driveway "A"	EBR		58	64	48	58
		NBT		-	-	-	-
		SBTR		50	18	-	-
3	Beekley Road and Driveway "B"	EBLR		59	63	55	63
		NBLT		95	61	75	65
		SBTR		15	-	-	10

Critical Queue Length is denoted in **Bold** font
"-" denotes a Queue Length that is not provided
95% - 95 Percentile Queue Length

Source: **David Evans and Associates, Inc.**

Table 9 provides the 95% queue length by lane for each study intersection. Denoted in bold are the critical queue lengths used in determining the length needed for the storage pocket of the southbound turn lanes for the intersection of Beekley Road and Highway 138.

The proposed improvements for the intersection of Beekley Road and Highway 138 include is to stripe an additional southbound left turn lane and optimize the existing 8-phase signal timing. It is anticipated that the proposed improvements will not degrade the LOS and the intersection will continue to operate at the same LOS as existing conditions in the am and pm peak periods.

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6 FUTURE YEAR 2040 CONDITION

The Future Year 2040 Condition addresses impacts due to ambient growth for the year within the study area. The Future Year 2040 Volumes were developed from the San Bernardino Transportation Analysis Model (SBTAM) Traffic Model. The Future Year 2040 intersection turn movements were determined using existing counts and the model plot approach volumes. These values were then used in a 'Future Directional Link Volume (NCHRP 255)' calculator to determine Future Year 2040 Turn Movement Volumes. The SBTAM Traffic Model Plots are provided in *APPENDIX B.*

Area Growth

The analysis of ambient traffic allows a comparison of traffic impacts with and without the project. The results of the year 2040 ambient traffic forecast calculations are illustrated in *Figure 14,* and presented in *a* to this report.

6.1 Future Year 2040 Traffic Analysis

The intersection of Beekley Road and Highway 138 was analyzed using the capacity analysis methodology described in *Chapter 2*. The analysis was conducted with the anticipated Future Year 2040 traffic volumes and the existing intersection geometrics. The results of the analysis are shown in *Table 10* and provided in *APPENDIX C.*

Table 10: Intersection Capacity Analysis - Future Year 2040 Condition

Intersection		AM		PM	
		Delay (1)	LOS (2)	Delay (1)	LOS (2)
1	Beekley Road and Highway 138	31.9	C	65.3	E
	Mitigation: Addition of left turn and Signal Modification	21.2	C	27.5	C

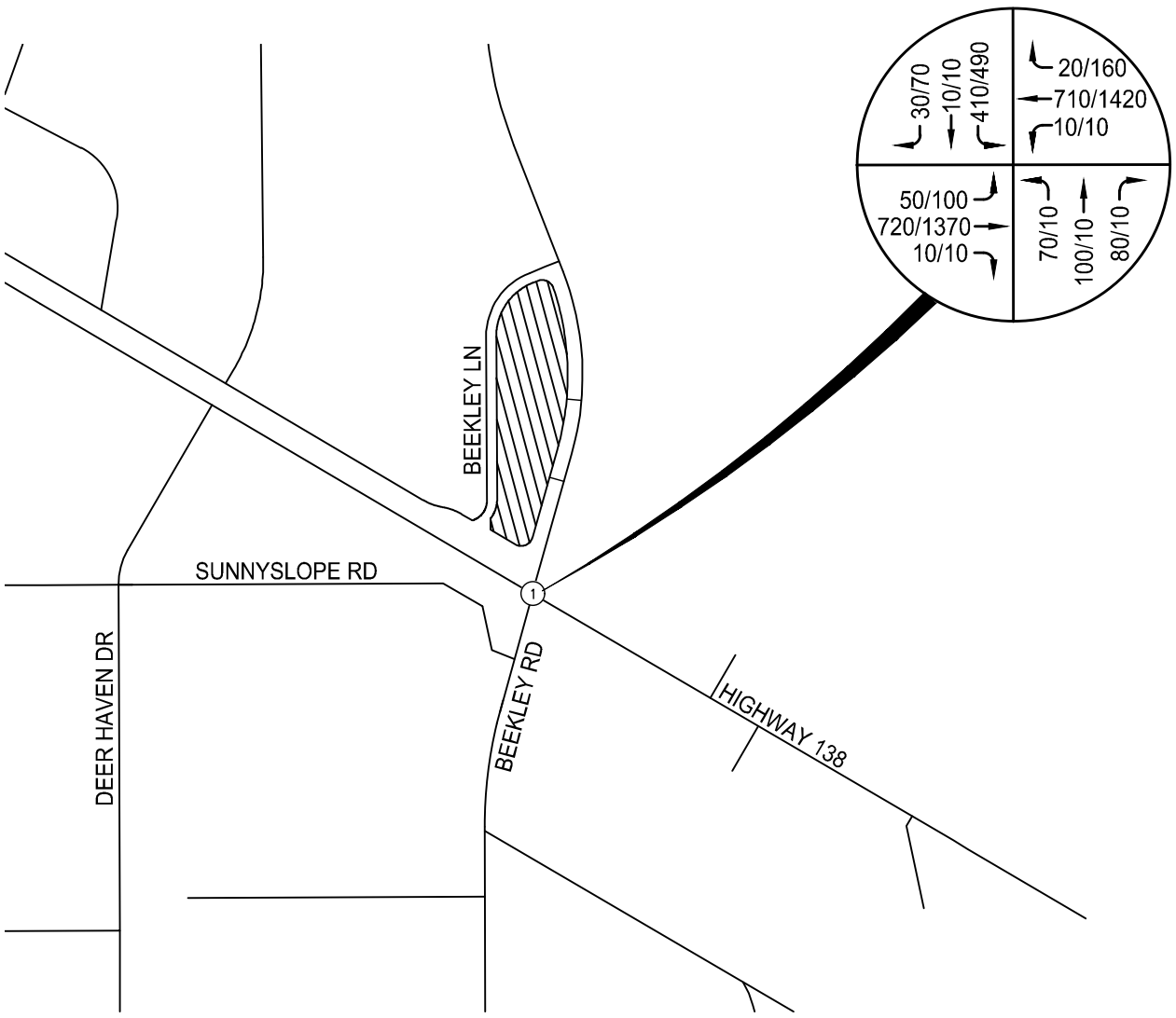
(1) Delay –In Seconds (HCM Methodology)
(2) LOS – HCM Level of Service

Source: **David Evans and Associates, Inc.**

As presented in *Table 10* under the Future Year 2040 Condition, the existing intersection is anticipated to operate at a LOS C for the AM and PM peak periods, utilizing the existing and proposed intersection geometrics intersection geometrics.

The proposed Future 2040 mitigations for the intersection of Beekley Road and Highway 138 is to stripe an additional southbound left turn lane and optimize the signal timing, with these mitigations the intersection is anticipated to operate at a LOS C for both the AM and PM peak periods.

The Future Year 2040 plus Project Condition Intersection Geometrics are illustrated in *Figure 15*.



LEGEND

XX% - SPECIFIC PROJECT TRIP

(#) - STUDY INTERSECTIONS

FIGURE 14: FUTURE YEAR 2040
TRAFFIC VOLUMES
PINON HILLS GAS STATION
PINON HILLS, CALIFORNIA

DAVID EVANS AND ASSOCIATES INC.

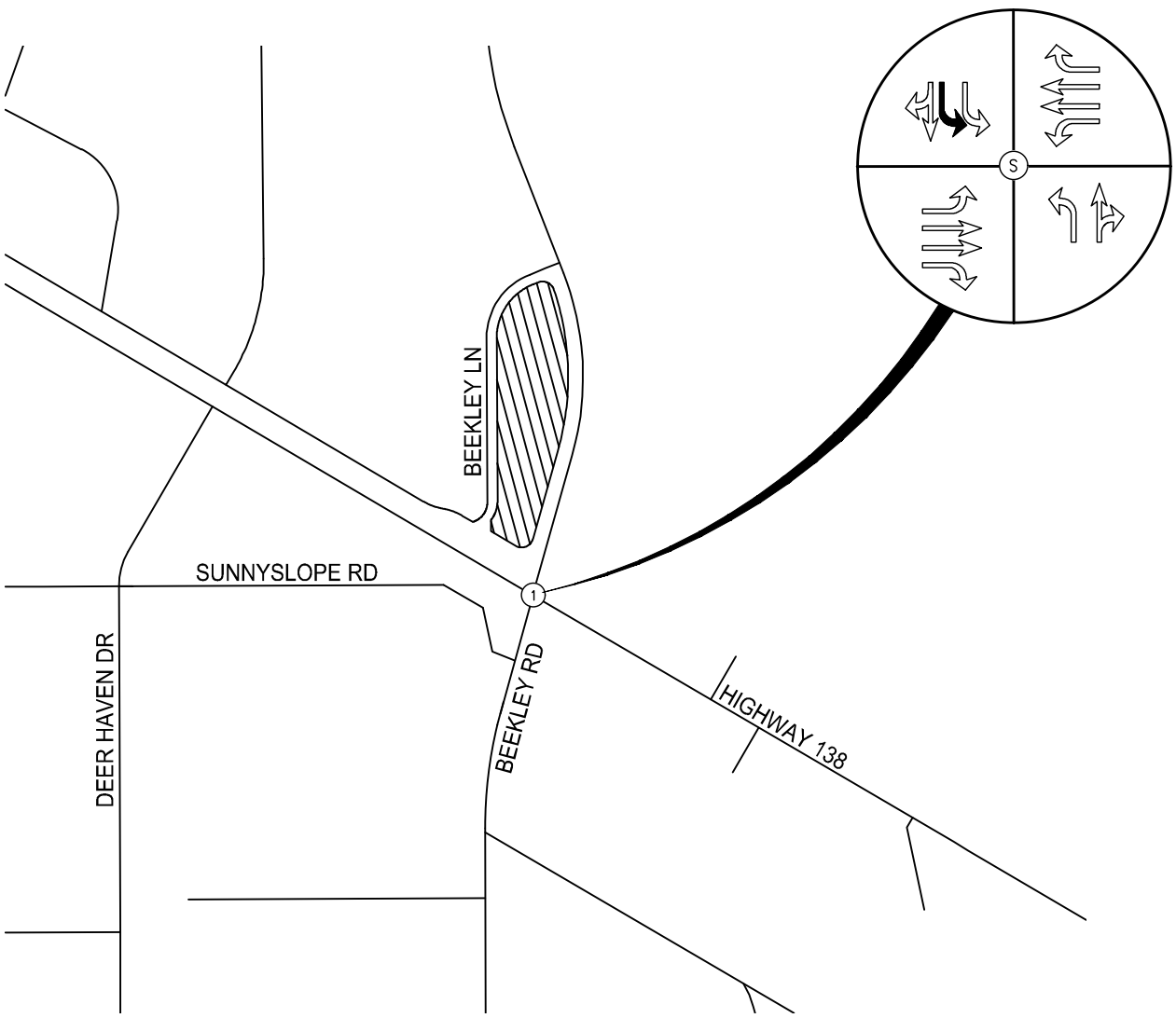


FIGURE 15: FUTURE YEAR 2040 CONDITION
INTERSECTION GEOMETRICS
PINON HILLS GAS STATION
PINON HILLS, CALIFORNIA

DAVID EVANS AND ASSOCIATES INC.

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7 FUTURE YEAR 2040 PLUS PROJECT CONDITION

The Future Year 2040 plus Project Condition addresses impacts for the Future Year 2040 within the study area. The Future Year 2040 Volumes were developed from the San Bernardino Transportation Analysis Model (SBTAM) Traffic Model. The traffic from the proposed project was added to the projected Future Year 2040 Volumes to develop the Future Year 2040 Plus Project Volumes.

7.1 Future Year 2040 Plus Project Traffic Analysis

The results of the Future Conditions Year 2040 plus Project forecasted volumes are illustrated in *Figure 16,* and presented in the Turn Movement summary worksheets provided in *APPENDIX C* of this report.

Intersection capacity analysis for Future Conditions Year 2040 plus Project Condition was performed using the methodology presented in *Chapter 2.* The results of the analysis are shown in *Table 11* and provided in *APPENDIX C.*

Table 11: Intersection Capacity Analysis – Future Year 2040 Plus Project Condition

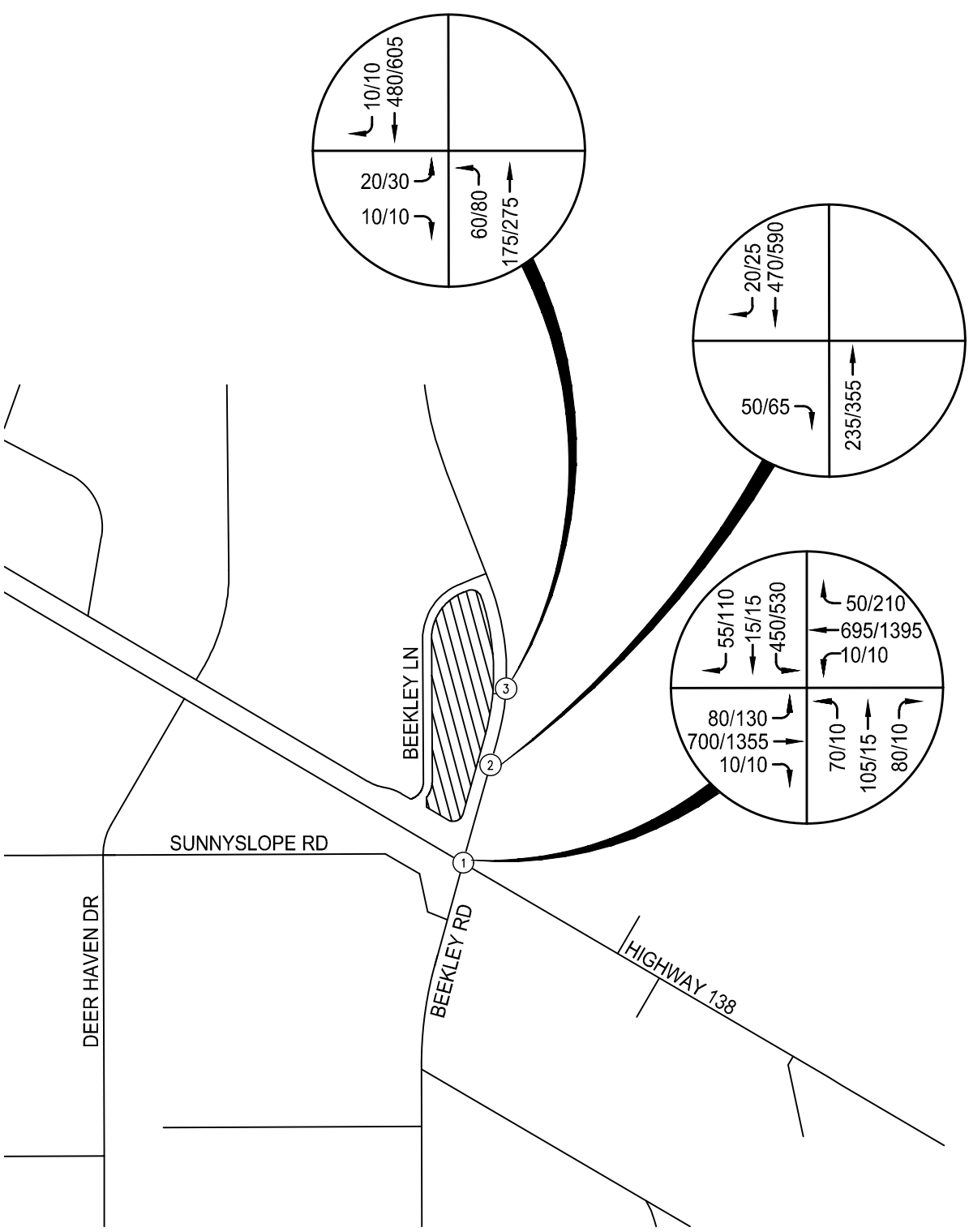
	Intersection	AM		PM	
		Delay (1)	LOS(2)	Delay (1)	LOS(2)
1	Beekley Road and Highway 138	37.3	D	77.3	E
	Mitigation: Addition of left turn and Signal Modification	22.6	C	30.4	C
2	Beekley Road and Project Driveway "A" (3) (4)	12.1	B	13.9	B
3	Beekley Road and Project Driveway "B" (3)	13.4	B	16.7	C

(1) Delay –In Seconds (HCM Methodology)
(2) LOS – HCM Level of Service
(3) Un-signalized Intersection
(4) Right-in / Right-out Driveway

Source: **David Evans and Associates, Inc.**

As presented in *Table 11* under the Future Year 2040 Plus Project Condition, all of the study intersections are anticipated to continue operating at an acceptable LOS utilizing the existing and proposed intersection geometrics.

The proposed Future Year 2040 plus Project mitigations for the intersection of Beekley Road and Highway 138 is to stripe an additional southbound left turn lane and optimize the existing 8-phase signal timing, with these mitigations, the intersection is anticipated to operate at a LOS C for the AM and PM peak periods.



LEGEND

XX% - SPECIFIC PROJECT TRIP

(#) - STUDY INTERSECTIONS

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FIGURE 16: FUTURE YEAR 2040 PLUS PROJECT TRAFFIC VOLUMES PINON HILLS GAS STATION PINON HILLS, CALIFORNIA

7.2 Queuing Analysis

Table 12: Queue Length - Future Condition Plus Project

Intersection/Movement			Storage Length (ft)	Future Project Traffic Condition		Future Project Traffic Condition Mitigated	
				AM	PM	AM	PM
				95th% Queue	95th% Queue	95th% Queue	95th% Queue
1	Highway 138 and Beekley Road	EBL	420	104	661	102	181
		EBT		215	**1132**	212	**384**
		EBT		197	1120	170	321
		EBR	420	7	3	10	2
		WBL	430	18	415	12	27
		WBT		253	1086	266	455
		WBT		235	1085	239	**458**
		WBR		21	**1357**	26	58
		NBL	250	403	25	103	30
		NBTR		385	63	200	62
		SBL	385	292	283	222	283
		SBL		-	-	207	261
		SBLTR		53	90	70	107
2	Beekley Road and Driveway "A"	EBR		72	93	63	68
		NBT		-	-	-	32
		SBTR		81	269	-	25
3	Beekley Road and Driveway "B"	EBLR		50	53	71	64
		NBLT		82	113	76	172
		SBTR		-	195	-	7

Critical Queue Length is denoted in **Bold** font
"-" denotes a Queue Length that is not provided
95% - 95 Percentile Queue Length

Source: **David Evans and Associates, Inc.**

Table 12 provides the 95% queue length by lane for each study intersection. Denoted in bold are the critical queue lengths used in determining the length needed for the storage pocket of the southbound turn lanes for the intersection of Beekley Road and Highway 138.

The proposed improvements for the intersection of Beekley Road and Highway 138 include is to stripe an additional southbound left turn lane and the existing 8-phase signal timing. It is anticipated that the proposed improvements will not degrade the LOS and the intersection will continue to operate at the same LOS as existing conditions in the am and pm peak periods.

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8 PROJECT MITIGATION AND SUMMARY

In summary, the project as presented will not cause significant impacts to the intersections. The project specific improvements are as follows.

8.1 Project Specific Mitigations

1. Construct curb and gutter along project frontage on Beekley Road.

2. Construct the project driveway approaches on Beekley Road, as illustrated on *Figure 17* Project Driveway “A” and Beekley Road will provide right-in right-out access. Project Driveway “B” and Beekley Road will provide full access.

3. Project Driveway “A” and Beekley Road: Install raised median along Beekley Road restricting northbound left turn movements into Project Driveway “A” , as illustrated on *Figure 17*.

4. Project Driveway “B” and Beekley Road: Provide a northbound left turn lane to enter the full access driveway and stripe a two way left turn lane, as illustrated on *Figure 17*.

5. Highway 138 and Beekley Road: Stripe an additional southbound left turn lane, as illustrated on *Figure 17*, and optimize the existing 8-phase signal timing.

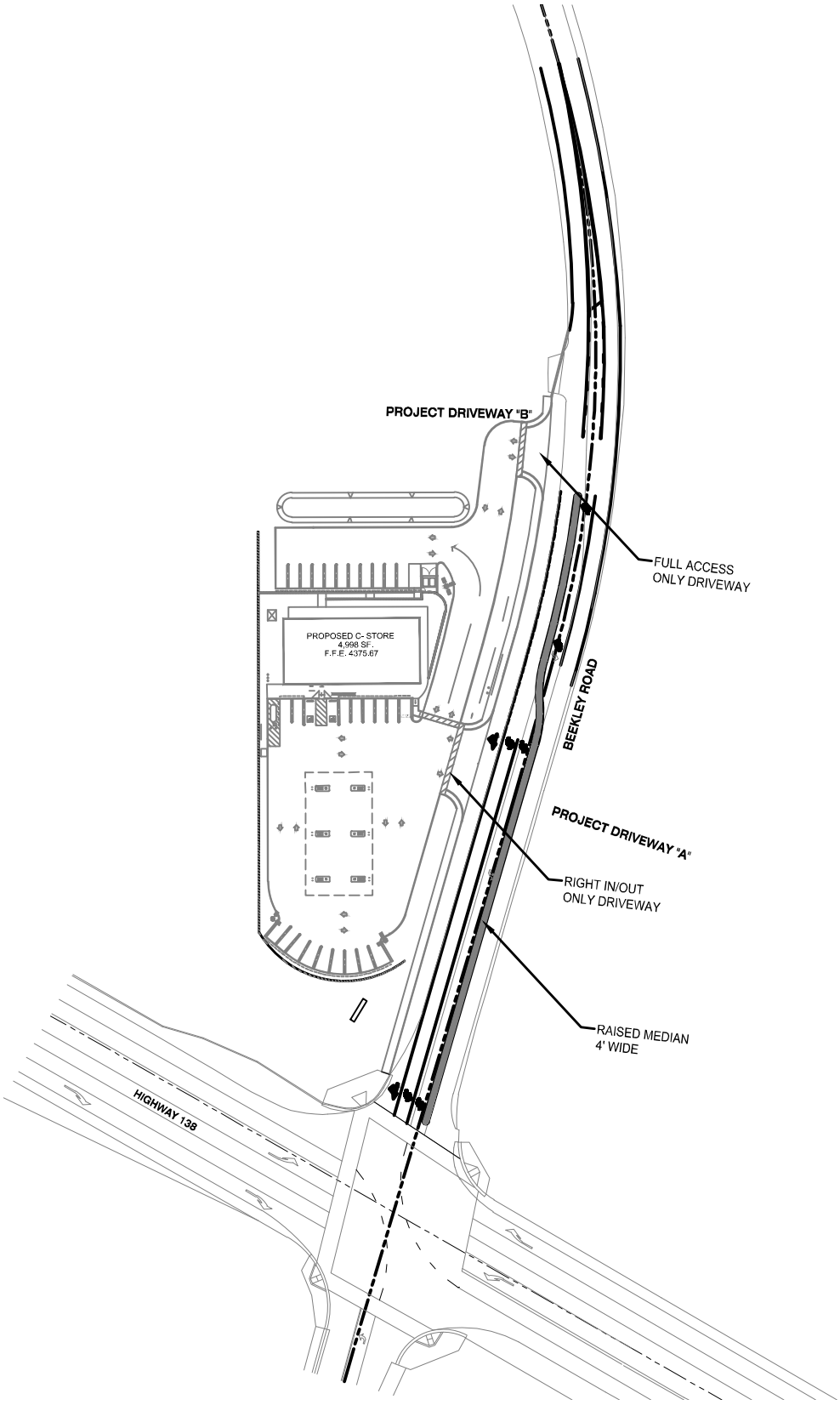

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FIGURE 17: PROJECT CONDITIONS
PINON HILLS GAS STATION
PINON HILLS, CALIFORNIA

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9 APPENDICES

APPENDIX A: SCOPE MEMO/MEMORANDUM OF UNDERSTANDING
APPENDIX B: MODEL PLOTS
APPENDIX C: INTERSECTION CAPACITY ANALYSIS CALCULATIONS
APPENDIX D: QUEUING ANALYSIS

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APPENDIX A: SCOPE MEMO/MEMORANDUM OF UNDERSTANDING

SCOPE FOR TRAFFIC STUDY

Project Name:	Pinon Hills Gas Station

This Scope for Traffic Study acknowledges San Bernardino County Department of Public Works, Traffic Division requirements of traffic impact analysis for the project and is subject to change:

Project Address:	Northwest corner of Beekley Road and Highway 138		
Project Description:	New construction of a Gas Station with Convenience Market.		
City:	Unincorporated Community of Pinon Hills, California		
Project Buildout Year:	2018	**Ambient or CMP Growth Rate per Year:**	2%
Closest Intersection (Xtn) to the Project			
Xtn N/S Street Name:	Beekley Road		
Xtn E/W Street Name:	Highway 138		
Thomas Guide Pg+Grid:	4562-H1	**County Supervisorial District:**	1

	Engineer	Developer
Company:	David Evans and Associates, Inc	Pinon Hills Gas Station
Name:	Robert Kilpatrick, PE/TE	George Wanis
Address:	14297 Cajon Avenue, Suite 101	9128 Green Road
City, State, ZIP Code:	Victorville, CA 92392	Pinon Hills, CA 92372
Phone #:	(760) 524-9115	
Fax #:	(760) 524-9101	
E-Mail:	rkilpatrick@deainc.com	

By:		**Reviewed By:**	
Print Name: Robert Kilpatrick	**6/6/2017**	**Print Name:**	
Consultant/Developer's Representative	**Date**	**Traffic Division Representative**	**Date**

SCOPE FOR TRAFFIC STUDY

Project Name:	Pinon Hills Gas Station

1. **Traffic Distribution**: Please insert or attach Figure(s) illustrating project trip distribution in percentages and volumes at the study intersections analyzed.

   The attached Exhibit C illustrates the Primary Trip Distribution in percentages. The attached Exhibit D1 illustrates the Primary Project Trips, Exhibit D2 illustrates the Pass-by Project Trips, and Exhibit D3 illustrates the Total Project Trips distribution volumes.

2. **Trip Credit:** Exact amount of credit subject to approval by Traffic Division.

Transportation Demand Management (TDM)	☐YES ☒NO	No trip credit
Existing Active Land Use	☐YES ☒NO	No trip credit
Previous Land Use	☐YES ☒NO	No trip credit
Internal Trip Reduction	☐YES ☒NO	No trip credit
Pass-by Trip Reduction	☒YES ☐NO	62%/56%

3. **Related Projects:** Consultant should check with Planning in the San Bernardino County Department of Land Use Services and planning departments of adjoining Cities. Documentation of the consultation from these agencies shall be included in the traffic study. Related projects list shall be submitted to Traffic Division for our review and approval before being incorporated in the study.

4. **Freeway Analysis:** The potential traffic impact on the following Freeway(s) must be considered.

   N/A

The applicant shall consult with the State of California Department of Transportation (Caltrans) to determine the California Environmental Quality Act levels of significance with regard to traffic impacts on Caltrans' freeway facilities. This consultation shall also include a determination of Caltrans requirements for the study of traffic impacts to its facilities and the mitigation of any such impacts. This analysis must follow the most current Caltrans' Guide for the Preparation of Traffic Impact Studies (December 2002) and can be obtained from http://www.dot.ca.gov/hq/traffops/developserv/operationalsystems/reports/tiguide.pdf. If Caltrans finds that the project has a significant impact on the freeway, Caltrans shall be requested to include the basis for this finding in their response. If fees are proposed to mitigate the freeway impact, Caltrans shall be requested to identify the specific project to which the fees will apply. These written comments from Caltrans shall be included with the traffic study and submitted to Public Works for review and approval. If a documented good faith effort is made to consult with Caltrans and written comments cannot be obtained from within a reasonable amount of time, an analysis of the freeway impact shall be made using HCM procedures. Appendix A of the SANBAG CMP outlines allowable modifications to these procedures. The SANBAG CMP can be viewed online at: http://www.sanbag.ca.gov/planning/subr_congestion.html

SCOPE FOR TRAFFIC STUDY

Project Name:	Pinon Hills Gas Station

5. Trip Generation

Trip Generation Rate Source(s): ITE Trip Generation Manual	**I – Institute of Transportation Engineers; S – San Diego Traffic Generators; C – County; O – Other:**				**Edition:**	9th					
Land Use Code	**Land Use**	**Rate Based On:** (I)	**Qty**	***AVTE vs**	**ADT**	**AM peak hour**		**PM peak hour**		**Weekend peak hour****	
						In	Out	In	Out	In	Out
LU 945	Gas Station and Convenience Store	Peak hour of Adjacent Street	14	VFP	2,279	71	71	95	95	-	-
				Pass-By Trips (62%/56%)	-	44	44	53	53	-	-
				Primary Trips (38%/44%)	-	27	27	42	42	-	-

AVTE* = Average Vehicle Trip Ends; VFP = Vehicle Fueling Positions

For ITE Land Uses provide number and name of Land Use. e.g. LU 814 - Variety Store

SCOPE FOR TRAFFIC STUDY

Project Name:	Pinon Hills Gas Station

6. Study Intersections: At minimum, the study shall include the following intersections. The list is subject to change after related projects, trip generation and distribution are determined. Consultant should check with adjoining Cities regarding their requirements in addition to the following County/City intersections. Documentation of the consultation from these agencies shall be included in the traffic study.

Xtn #	% County	Thomas Guide Page + Grid	N/S + E/W Street Name	City	Signalized	CMP
1	100	4562-H1	Beekley Road + Highway 138	Pinon Hills (County + Caltrans)	Yes	No
2	100	4562-H1	Beekley Road + Project Driveway	Pinon Hills (County)	No	No

Cites to be consulted: Caltrans D8

SCOPE FOR TRAFFIC STUDY

Project Name:	Pinon Hills Gas Station

7. Other:

Traffic counts may be conducted immediately per the following:
• Must be taken on Tuesdays, Wednesdays or Thursdays.
• Must exclude holidays, and the first weekdays before and after the holiday.
• Must be taken on days when local schools or colleges are in session.
• Must be taken on days of good weather, and avoid atypical conditions (e.g., road construction, detours, or major traffic incidents).
• Traffic counts used for other traffic studies in the area shall **NOT** be reused again, unless 25% of the counts conducted for that particular traffic study are validated with new counts. The difference in volumes between the old and new counts at each corresponding movement should not be more than 10%.
• New traffic counts shall be checked to ensure the difference in volumes at corresponding approaches, if applicable, between two adjacent intersections is no more than 10% unless the difference can be justified.
• For all proposed mitigation measures, a conceptual plan for the improvements shall be submitted to our Traffic Studies section for review and approval prior to the approval of the Traffic Impact Analysis. All proposed improvements shall be within the right-of-way.
• For all cumulative mitigation measures, a cost estimate for the improvement shall be submitted.

This analysis must follow the most current Traffic Impact Study Guidelines for the County as states in the County's Road Planning and Design Standards.

8. Fees:

The County charges on an actual cost basis for review of traffic studies. An initial deposit of $3,400 is required at the time that a land use application is filed with the Department of Land Use Services. If the review costs exceed the initial deposit, the applicant will be expected to provide additional funds and the review will be suspended until the additional funds are deposited.

SCOPE FOR TRAFFIC STUDY

Project Name:	Pinon Hills Gas Station

9. Contact Information:

Please submit a signed copy of this MOU for approval by the Traffic Division. The MOU may be submitted in person, by fax, by e-mail or by US Mail to:

County of San Bernardino
Dept. of Public Works, Traffic Division
825 E. 3rd Street, Rm. 115
San Bernardino, CA 92415-0835

Phone: 909-387-8186
Fax: 909-387-7809
E-mail: epetre@dpw.sbcounty.gov (Ed Petre)

DAVID EVANS AND ASSOCIATES INC.

June 6, 2017 Job No. OVCV0002-0001

MEMORANDUM

To: Mr. George Wanis
Pinon Hills Gas Station
9128 Green Road
Pinon Hills, CA 92372

From: Robert Kilpatrick, PE/TE
Senior Project Manager / Senior Associate

RE: Traffic Scope Outline – Pinon Hills Gas Station – Pinon Hills, San Bernardino County, California

This memorandum presents the scope of the traffic impact analysis for the Proposed Project consisting of a Gas Station with Convenience Market. The proposed project is located at the northwest corner of Beekley Road and Highway 138 in the unincorporated community of Pinon Hills, San Bernardino County, California. The purpose of the scope is to assess the requirements of a detailed Traffic Study for the project by the County of San Bernardino staff.

A. Project Description

The proposed project is located at the northwest corner of Beekley Road and Highway 138 in the unincorporated community of Pinon Hills, San Bernardino County, California, as illustrated in *Exhibit A.* It is bounded to the north and west by Beekley Lane, to the east by Beekley Road, and Highway 138 to the south.

As presented, the proposed project is comprised of a Gas Station with 14 pumps and a Convenience Market. *Exhibit B* illustrates the proposed Site Plan. As illustrated, the access to the site will be obtained from a driveway along Beekley Road.

B. Project Trip Generation

Table A summarizes the estimated trip generation for the project site during the AM (7-9 AM) peak and PM (4-6 PM) peak periods. The generation factors for the Gas Station with 14 pumps and a Convenience Market were obtained from the ITE Trip Generation Manual, 9th Edition and based on land use type 945.

The project is highway oriented as a result of a Pass-By Trip reduction of 65%/56% applied to the trip generation.

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Table A: Project Trip Generation
Traffic Scope – Pinon Hills Gas Station

	Use		AM Peak Hour			PM Peak Hour		
		Daily	In	Out	Total	In	Out	Total
1	**Gas Station with Convenience Store**							
	(ITE 945) Vehicle Fueling Positions	162.78	5.08	5.08	10.16	6.76	6.76	13.51
	14 Gasoline Fueling Positions	2,279	71	71	142	95	95	190
	Pass-By Trips (62%/56%)	-	44	44	88	53	53	106
	Primary Trips (38%/44%)	-	27	27	54	42	42	84

Source: "Trip Generation Manual, Institute of Transportation Engineers", 9th Edition

It is estimated that the project will generate 54 AM primary trips and 84 PM primary trips.

C. Project Trip Distribution and Assignment

To address the impacts of the estimated project traffic, the trips were distributed and assigned to the surrounding streets and study intersections. The project traffic was distributed based on the anticipated project utilization. Once the distribution pattern was established, project trips were assigned to the area streets that serve the project.

To address the impacts of the estimated entry/exit trips at the project driveways, the trips were distributed and assigned to each driveway. The project was distributed based on the anticipated project traffic flows and surrounding area utilization.

The project trips are distributed based on the local area network streets. The distribution of the project trips is illustrated in *Exhibit C.* The Primary Trips are illustrated on Exhibit D1. The Pass-By Project Trips are illustrated on *Exhibit D2*. The Total Project Trips are illustrated on *Exhibit D3.* The trip distribution is based on the existing street system.

D. Study Intersections

The proposed project is located at the northwest corner of Beekley Road and Highway 138 in the unincorporated community of Pinon Hills, San Bernardino County, California. We examined the trips distributed to one (1) existing intersection and one (1) future intersection in the study area;

1. Beekley Road and Highway 138
2. Project Driveway "A" and Beekley Road (Future intersection)

The intersection of Beekley Road and Highway 138 is a signalized intersection.

The primary trips entering and exiting the Project Driveway "A" in the direction of the unincorporated community of Pinon Hills are at 20 and 30 during the am and pm peak hours respectively. The land uses between the proposed project and the intersection of Beekley Road and Highway 138 are anticipated to provide primary trips. The total number of primary project trips traveling north of the intersection of Beekley Road and Project Driveway "A" will be below the 50 project trip threshold. The intersections to the north will not meet the Guideline 10.5.1 project trip threshold of intersections with more than 50 project trips are not to be studied.

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E. Traffic Study Scenarios

The following is an outline of the Traffic Study analysis scenarios;

1. Existing Conditions (AM (7-9 AM) peak and PM (4-6 PM) peak periods)

2. Existing plus Project Conditions
    a. Existing
    b. Growth (assume growth rate of 2% per year)
    c. Project Traffic

3. Background Conditions
    a. Existing
    b. Growth (assume growth rate of 2% per year)
    c. Related Projects in the vicinity

4. Project Conditions
    a. Existing
    b. Growth (assume growth rate of 2% per year)
    c. Project Traffic
    d. Related Projects in the vicinity

5. Future Year 2040
    a. County's traffic forecast model (to be provided by the County)

6. Future Year 2040 With Project
    b. County's traffic forecast model (to be provided by the County)
    c. Project Traffic

If you have any questions or comments, please feel free to contact us.

Attachments

1. Exhibit A - Vicinity Map
2. Exhibit B - Site Plan
3. Exhibit C - Primary Trip Distribution
4. Exhibit D1 – Primary Project Trips
5. Exhibit D2 – Pass-By Project Trips
6. Exhibit D3 – Total Project Trips

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EXHIBIT A: VICINITY MAP
PINON HILLS GAS STATION
PINON HILLS , CALIFORNIA

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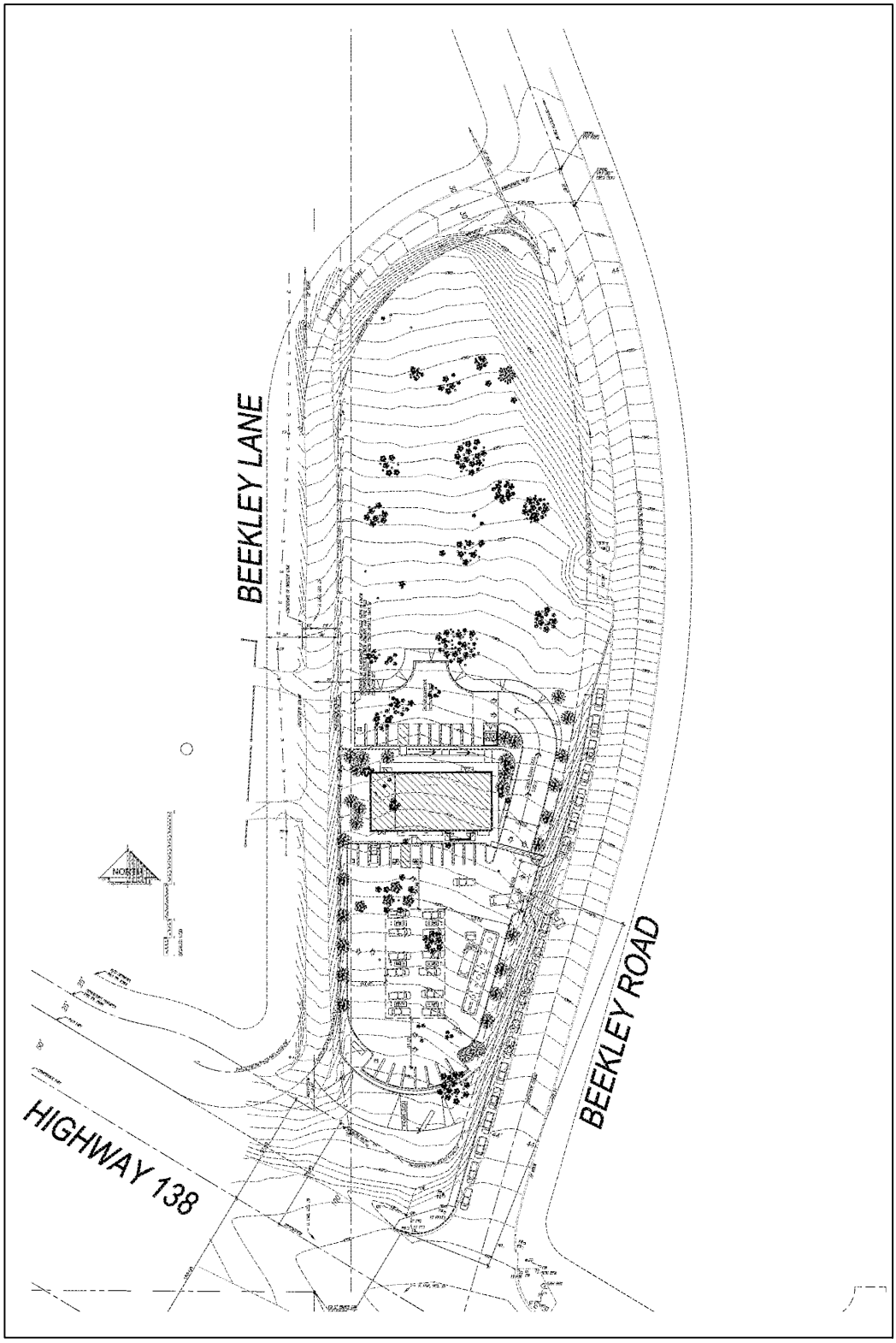

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NOT TO SCALE

DAVID EVANS AND ASSOCIATES INC.

EXHIBIT B: SITE PLAN
PINON HILLS GAS STATION
PINON HILLS , CALIFORNIA

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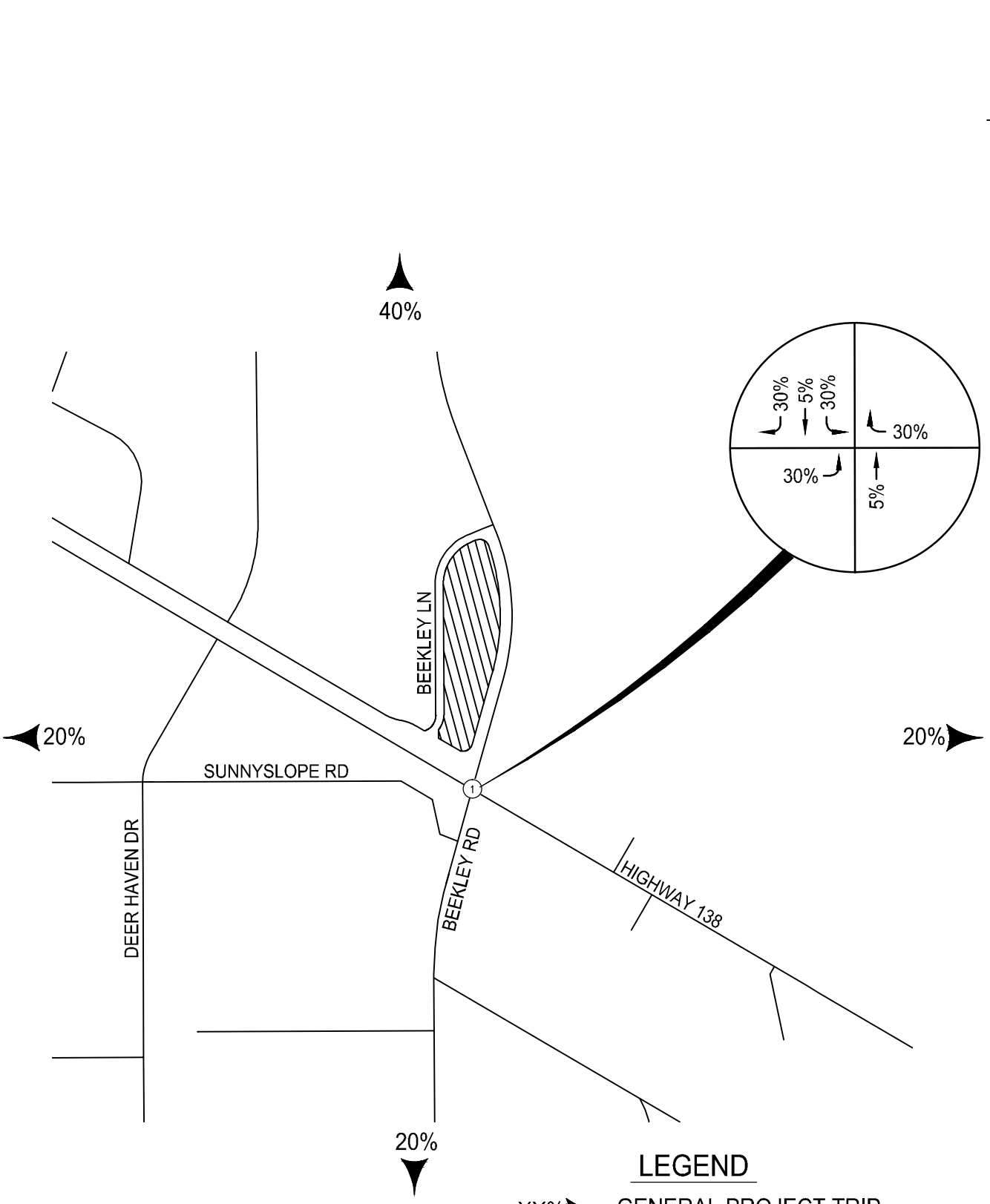

LEGEND

XX% - GENERAL PROJECT TRIP DISTRIBUTION

XX% - SPECIFIC PROJECT TRIP

(#) - STUDY INTERSECTIONS

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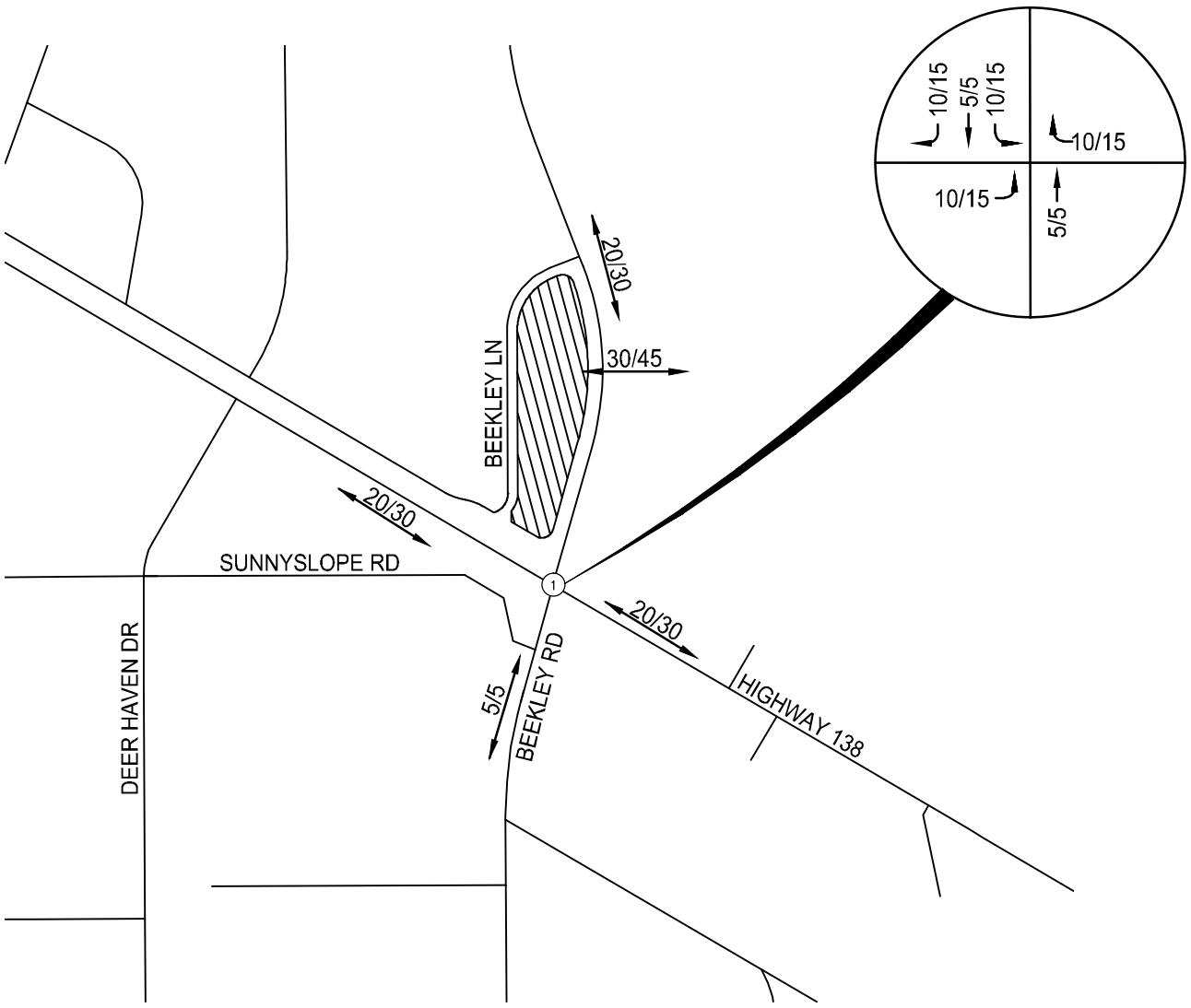
EXHIBIT C: PRIMARY TRIP DISTRIBUTION
PINON HILLS GAS STATION
PINON HILLS , CALIFORNIA



PROJECT TRIPS

AM PEAK PERIOD - 27 IN / 27 OUT
PM PEAK PERIOD - 42 IN / 42 OUT

LEGEND

XX/XX - AM/PM PROJECT TRIP
(#) - STUDY INTERSECTIONS

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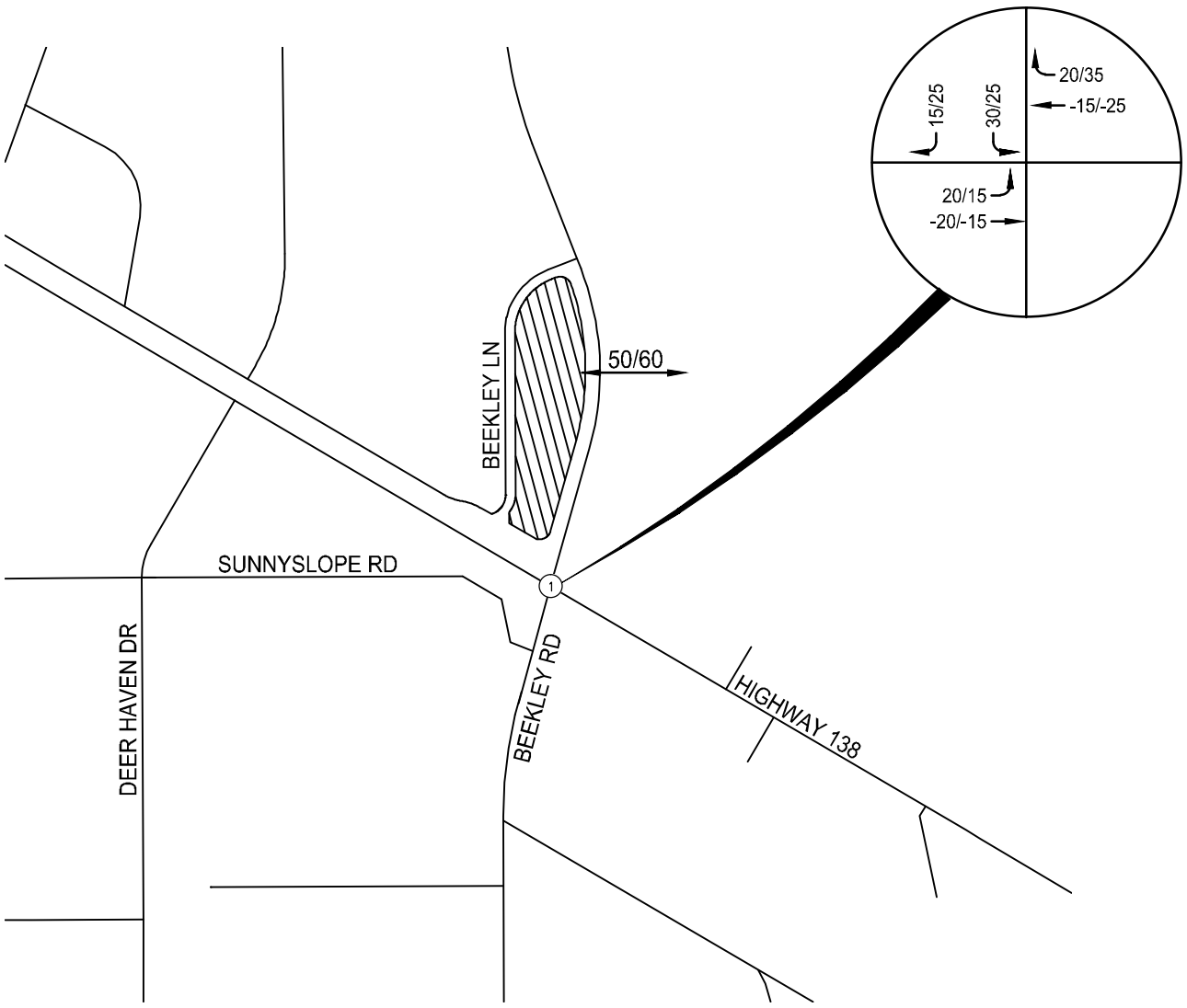
EXHIBIT D1: PRIMARY PROJECT TRIPS
PINON HILLS GAS STATION
PINON HILLS , CALIFORNIA



PROJECT TRIPS

AM PEAK PERIOD - 44 IN / 44 OUT
PM PEAK PERIOD - 53 IN / 53 OUT

LEGEND

XX/XX - AM/PM PROJECT TRIP
(#) - STUDY INTERSECTIONS

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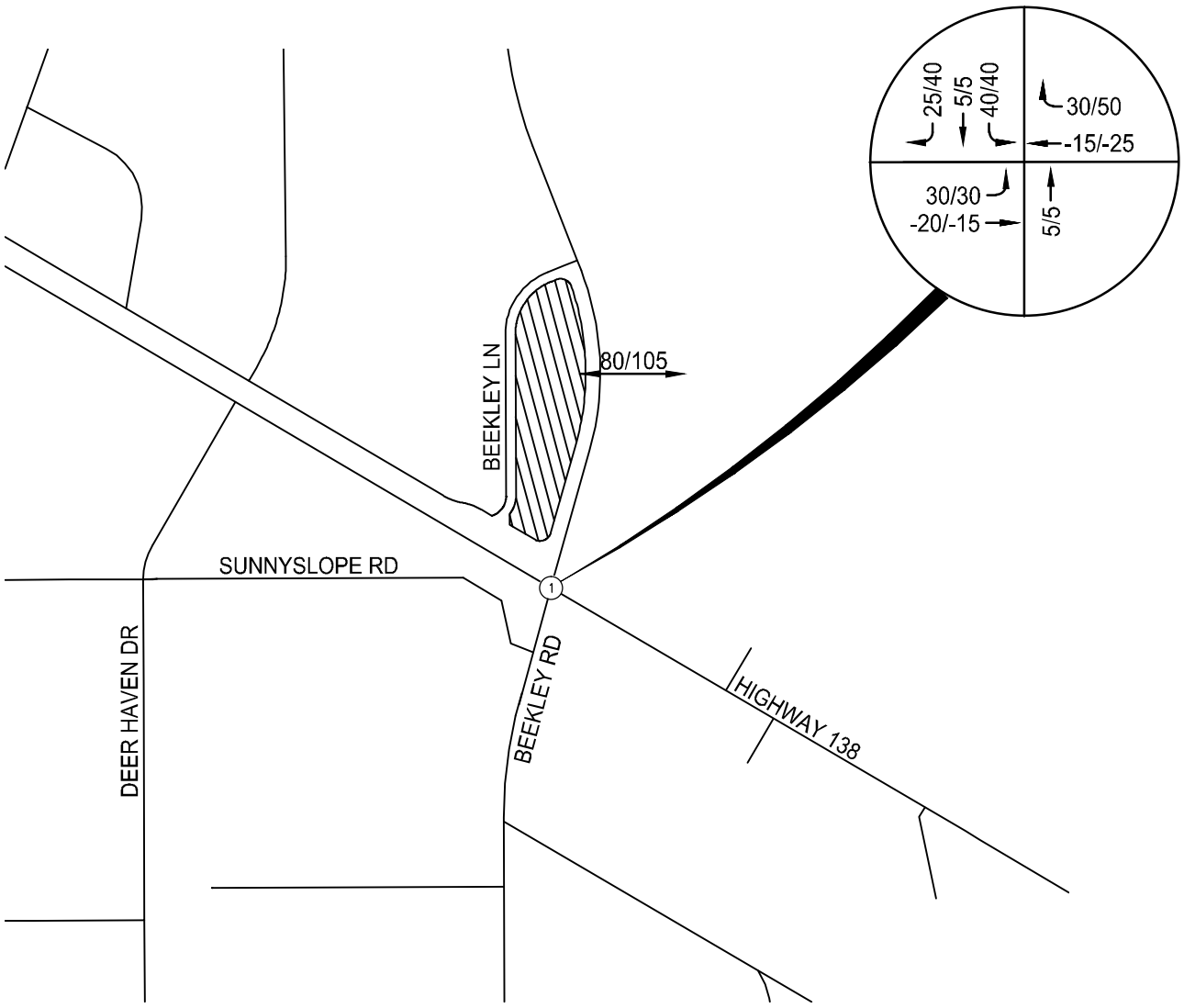
EXHIBIT D2: PASS-BY PROJECT TRIPS
PINON HILLS GAS STATION
PINON HILLS, CALIFORNIA



PROJECT TRIPS

AM PEAK PERIOD - 71 IN / 71 OUT
PM PEAK PERIOD - 95 IN / 95 OUT

LEGEND

XX/XX - AM/PM PROJECT TRIP
(#) - STUDY INTERSECTIONS

DAVID EVANS AND ASSOCIATES INC.

EXHIBIT D3: TOTAL PROJECT TRIPS
PINON HILLS GAS STATION
PINON HILLS , CALIFORNIA

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AND ASSOCIATES INC.

APPENDIX B: MODEL PLOTS

SBTAM 2040
Pinon Hills Project Site
Daily Flow

DUNCAN RD
263RD ST E
WINTERGREEN RD
SHEEP CREEK RD
MONTE VISTA RD
GOSS RD
ANTELOPE HIGHWAY
OASIS RD
BEEKLEY RD
SMOKE TREE RD
MOUNTAIN RD
STATE HIGHWAY 138
SILVER ROCK RD
JOHNSON RD
LINDERO ST
CROWLEY RD
PHELAN OH
PHELAN RD
NIELSON RD
Project Site
GREEN RD
DESERT FRONT RD

Map layers
Node
Base Year Links
SBTAM 2040
Node selection sets
Centroids
Connectors
0 .33 .67 1
Miles

SBTAM 2040
Pinon Hills Project Site
AM Peak Period

DUNCAN RD
GOSS RD
SMOKE TREE RD
PHELAN OH
PHELAN RD
NIELSON RD
LINDERO ST
263RD ST E
WINTERGREEN RD
SHEEP CREEK RD
MONTE VISTA RD
OASIS RD
BEEKLEY RD
SILVER ROCK RD
JOHNSON RD
CROWLEY RD
MOUNTAIN RD
ANTELOPE HIGHWAY
STATE HIGHWAY 138
GREEN RD
DESERT FRONT RD
CREST HIGHWAY
Project Site

Map layers
Node
Base Year Links
SBTAM 2040
Node selection sets
Centroids
Connectors
0 .33 .67 1
Miles

SBTAM 2040
Pinon Hills Project Site
PM Peak Period

DUNCAN RD
263RD ST E
WINTERGREEN RD
SHEEP CREEK RD
MONTE VISTA RD
GOSS RD
ANTELOPE HIGHWAY
OASIS RD
BEEKLEY RD
SMOKE TREE RD
MOUNTAIN RD
STATE HIGHWAY 138
SILVER ROCK RD
JOHNSON RD
LINDERO ST
CROWLS RD
PHELAN OH
PHELAN RD
NIELSON RD
Project Site
GREEN RD
DESERT FRONT RD
CREST HIGHWAY

Map layers
Node
Base Year Links
SBTAM 2040
Node selection sets
Centroids
Connectors
0 .33 .67 1
Miles

DAVID EVANS
AND ASSOCIATES INC.

APPENDIX C: INTERSECTION CAPACITY ANALYSIS CALCULATIONS

Capacity Analysis Comparison - AM Peak Period

	Intersection	Existing Condition		Existing + Project Condition		Background Condition		Project Condition		Project Condition with Mitigation		Future Condition		Future Condition with Mitigation		Future + Project Condition		Future + Project Condition with Mitigation	
		Delay (1)	LOS(2)	Delay (1)	LOS(2)	Delay (1)	LOS(2)	Delay (1)	LOS(2)	Delay (1)	LOS(2)	Delay (1)	LOS(2)	Delay (1)	LOS(2)	Delay (1)	LOS(2)	Delay (1)	LOS(2)
1	Beekley Road and Highway 13ε	22.8	C	25.3	C	21.1	C	22.8	C	17.9	B	31.9	C	21.2	C	37.3	D	22.6	C
2	Beekley Road and Project Driveway “A” (3) (4)	-	-	13.1	B	-	-	12.5	B	-	-	-	-	-	-	12.1	B	-	-
3	Beekley Road and Project Driveway “B” (3)	-	-	14.5	B	-	-	13.7	B	-	-	-	-	-	-	13.4	B	-	-

Capacity Analysis Comparison - AM Peak Period

	Intersection	Existing Condition		Existing + Project Condition		Background Condition		Project Condition		Project Condition with Mitigation		Future Condition		Future Condition with Mitigation		Future + Project Condition		Future + Project Condition with Mitigation	
		Delay (1)	LOS(2)	Delay (1)	LOS(2)	Delay (1)	LOS(2)	Delay (1)	LOS(2)	Delay (1)	LOS(2)	Delay (1)	LOS(2)	Delay (1)	LOS(2)	Delay (1)	LOS(2)	Delay (1)	LOS(2)
1	Beekley Road and Highway 13ε	19.5	B	20.4	C	19.9	B	20.2	C	16.9	B	65.3	E	27.5	C	77.3	E	30.4	C
2	Beekley Road and Project Driveway “A” (3) (4)	-	-	12.2	B	-	-	12.2	B	-	-	-	-	-	-	13.9	B	-	-
3	Beekley Road and Project Driveway “B” (3)	-	-	13.8	B	-	-	13.7	B	-	-	-	-	-	-	16.7	C	-	-

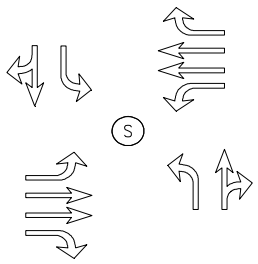
DAVID EVANS AND ASSOCIATES INC.

SUBJECT	BY	DATE	JOB NO.	SHEET OF
TURN MOVEMENTS	CF	11-Jul-18	OVCV0002-0001	1 OF 2

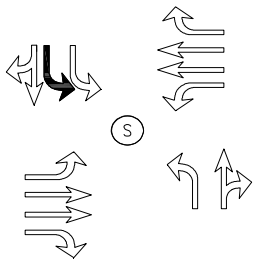
E/W STREET : HIGHWAY 138
N/S STREET : BEEKLEY ROAD
CONDITION : AM PEAK HOUR

INTERSECTION : 1
PROJECTED GROWTH PER YEAR : 2.0%

CONDITION DIAGRAMS



EXISTING GEOMETRICS



PROJECT GEOMETRICS

TURN MOVEMENTS

CONDITION	EXISTING TRAFFIC	PROJECT TRIPS	EXISTING + PROJECT TRAFFIC	AMBIENT GROWTH TRIPS	BACKGROUND TRAFFIC	PROJECT TRAFFIC	YEAR 2040 TRAFFIC	YEAR 2040 AMBIENT + PROJECT TRAFFIC
SCENARIO #:	1		3		5	7	9	11
HIGHWAY 138								
EB LEFT	45	30	75	5	50	80	50	80
EB THRU	400	-20	380	10	410	390	720	700
EB RIGHT	5	0	5	5	10	10	10	10
WB LEFT	20	0	20	5	25	25	10	10
WB THRU	500	-15	485	10	510	495	710	695
WB RIGHT	45	30	75	5	50	80	20	50
BEEKLEY ROAD								
NB LEFT	10	0	10	5	15	15	70	70
NB THRU	45	5	50	5	50	55	100	105
NB RIGHT	25	0	25	5	30	30	80	80
SB LEFT	410	40	450	10	420	460	410	450
SB THRU	40	5	45	5	45	50	10	15
SB RIGHT	15	25	40	5	20	45	30	55
TOTALS	**1560**	**100**	**1660**	**75**	**1635**	**1735**	**2220**	**2320**

DAVID EVANS AND ASSOCIATES INC.

SUBJECT	BY	DATE	JOB NO.	SHEET	OF
TURN VOLUME SUMMARY	CF	11-Jul-18	OVCV0002-0001	2	OF 2

E/W STREET : HIGHWAY 138 N/S STREET : BEEKLEY ROAD

CONDITION : AM PEAK HOUR PHF : 0.84

NORTH LEG

LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	0	0	0	2	1	0	0	0
0	0	1	0	0	3	0	0	1
0	0	1	0	0	0	0	0	2
1	0	0	0	1	2	0	0	1

SOUTH LEG

LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	0	0	2	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	1	0	0	0	0	0
0	0	0	0	0	0	0	0	0

EAST LEG

LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	3	0	0	2	1	0	9	0
0	6	0	0	1	0	0	17	0
0	6	0	0	0	0	0	12	0
0	0	0	0	0	0	0	17	0

WEST LEG

LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	2	0	0	1	0	0	9	0
0	1	0	0	1	0	0	6	0
0	3	0	0	1	0	0	7	0
0	4	0	0	0	0	0	7	0

NORTH LEG			SOUTH LEG			EAST LEG			WEST LEG		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
5	4	73	4	11	1	14	83	4	1	53	10
3	6	82	4	11	0	13	100	4	0	79	11
4	14	138	7	17	5	9	109	1	1	111	10
2	10	104	4	6	1	8	131	7	2	111	14

	TRUCK TOTAL	AUTO VOLUMES	TOTALS	ROUNDED TOTALS	TRUCK PERCENTAGE
HIGHWAY 138					
EB LEFT	0	45	**45**	**45**	**5%**
EB THRU	42	354	**396**	**400**	**10%**
EB RIGHT	0	4	**4**	**5**	**5%**
WB LEFT	1	16	**17**	**20**	**5%**
WB THRU	73	423	**496**	**500**	**15%**
WB RIGHT	0	44	**44**	**45**	**5%**
BEEKLEY ROAD					
NB LEFT	0	7	**7**	**10**	**5%**
NB THRU	0	45	**45**	**45**	**5%**
NB RIGHT	3	19	**22**	**25**	**15%**
SB LEFT	12	397	**409**	**410**	**5%**
SB THRU	3	34	**37**	**40**	**10%**
SB RIGHT	1	14	**15**	**15**	**5%**

INTERSECTION TURN COUNT

PEAK HOUR

NORTH-SOUTH STREET: BEEKLEY RD
EAST-WEST STREET: HWY 138
JURISDICTION: PINON HILLS

DATE: 03-09-17

PEAK HOUR: 07:15AM

NORTH LEG

TOTAL: 461

Rt	Thru	Lt	
15	37	409	Total
5	6	74	1st
3	6	87	2nd
4	14	141	3rd
3	11	107	4th

EAST LEG TOTAL: 557

	1st	2nd	3rd	4th	Total
Rt	14	13	9	8	44
Thru	97	124	127	148	496
Lt	5	4	1	7	17

WEST LEG TOTAL: 445

Total	1st	2nd	3rd	4th	
45	10	11	10	14	Lt
396	65	87	122	122	Thru
4	1	0	1	2	Rt

SOUTH LEG

TOTAL: 74

	Lt	Thru	Rt
1st	1	11	6
2nd	0	11	4
3rd	5	17	8
4th	1	6	4
Total	7	45	22

PEAK HOUR FACTORS

NORTH LEG = 0.72
SOUTH LEG = 0.62
EAST LEG = 0.85
WEST LEG = 0.81

ALL LEGS = 0.84

HOUR TOTAL: 1,537

Prepared by NEWPORT TRAFFIC STUDIES

SANBAG CLASSIFICATION SUMMARY

NORTH-SOUTH STREET : BEEKLEY RD — PINON HILLS

EAST-WEST STREET : HWY 138

BEGINNING TIME : 07:00AM

AUTOS RT	AUTOS THRU	AUTOS LT	LARGE 2 AXLE RT	LARGE 2 AXLE THRU	LARGE 2 AXLE LT	3 AXLE RT	3 AXLE THRU	3 AXLE LT	4(+) AXLE RT	4(+) AXLE THRU	4(+) AXLE LT	TOTALS
NORTH LEG												
6	1	21	0	0	0	0	2	0	0	0	0	30
5	4	73	0	0	0	0	2	1	0	0	0	85
3	6	82	0	0	1	0	0	3	0	0	1	96
4	14	138	0	0	1	0	0	0	0	0	2	159
2	10	104	1	0	0	0	1	2	0	0	1	121
4	5	94	0	0	0	0	0	0	0	0	0	103
1	4	75	0	0	1	0	0	0	0	0	1	82
5	10	88	0	0	0	0	0	0	0	0	1	104
30	54	675	1	0	3	0	5	6	0	0	6	780
SOUTH LEG												
4	9	0	0	0	0	0	0	0	0	0	0	13
4	11	1	0	0	0	2	0	0	0	0	0	18
4	11	0	0	0	0	0	0	0	0	0	0	15
7	17	5	0	0	0	1	0	0	0	0	0	30
4	6	1	0	0	0	0	0	0	0	0	0	11
2	3	0	0	0	0	0	1	0	0	0	0	6
1	4	0	0	0	0	0	0	0	0	0	0	5
6	4	0	1	0	0	1	0	0	0	0	0	12
32	65	7	1	0	0	4	1	0	0	0	0	110
EAST LEG												
6	75	10	0	3	0	0	2	1	0	8	0	105
14	83	4	0	3	0	0	2	1	0	9	0	116
13	100	4	0	6	0	0	1	0	0	17	0	141
9	109	1	0	6	0	0	0	0	0	12	0	137
8	131	7	0	0	0	0	0	0	0	17	0	163
6	37	4	0	5	0	0	3	0	0	15	0	70
9	79	3	0	4	0	0	2	0	0	25	0	122
3	84	10	1	3	1	0	1	0	1	10	0	114
68	698	43	1	30	1	0	11	2	1	113	0	968
WEST LEG												
6	71	6	0	1	0	0	1	0	0	6	0	91
1	53	10	0	2	0	0	1	0	0	9	0	76
0	79	11	0	1	0	0	1	0	0	6	0	98
1	111	10	0	3	0	0	1	0	0	7	0	133
2	111	14	0	4	0	0	0	0	0	7	0	138
0	75	4	0	1	0	0	2	0	0	5	0	87
2	71	4	0	4	0	0	3	0	0	12	0	96
2	72	10	0	3	0	0	0	0	0	18	0	105
14	643	69	0	19	0	0	9	0	0	70	0	824

Prepared by Newport Traffic Studies

INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: BEEKLEY RD

EAST-WEST STREET: HWY 138

TIME: 07:00AM-08:00AM DATE: 03-09-17

NORTH LEG

Rt	Thru	Lt	
18	29	323	Total
6	3	21	1st
5	6	74	2nd
3	6	87	3rd
4	14	141	4th

	1st	2nd	3rd	4th	Total
Rt	6	14	13	9	42
Thru	88	97	124	127	436
Lt	11	5	4	1	21

Total	1st	2nd	3rd	4th	
37	6	10	11	10	Lt
353	79	65	87	122	Thru
8	6	1	0	1	Rt

	Lt	Thru	Rt
1st	0	9	4
2nd	1	11	6
3rd	0	11	4
4th	5	17	8
Total	6	48	22

Prepared by NEWPORT TRAFFIC STUDIES

INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: BEEKLEY RD

EAST-WEST STREET: HWY 138

TIME: 08:00AM-09:00AM DATE: 03-09-17

NORTH LEG

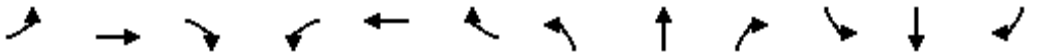
Rt	Thru	Lt	
13	30	367	Total
3	11	107	1st
4	5	94	2nd
1	4	77	3rd
5	10	89	4th

	1st	2nd	3rd	4th	Total
Rt	8	6	9	5	28
Thru	148	60	110	98	416
Lt	7	4	3	11	25

Total	1st	2nd	3rd	4th	
32	14	4	4	10	Lt
388	122	83	90	93	Thru
6	2	0	2	2	Rt

	Lt	Thru	Rt
1st	1	6	4
2nd	0	4	2
3rd	0	4	1
4th	0	4	8
Total	1	18	15

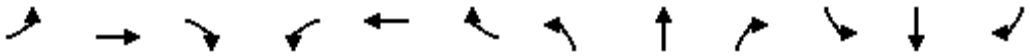
Prepared by NEWPORT TRAFFIC STUDIES



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	400	5	20	500	45	10	45	25	410	40	15
Future Volume (veh/h)	45	400	5	20	500	45	10	45	25	410	40	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1752	1826	1826	1678	1826	1826	1826	1826	1826	1752	1752
Adj Flow Rate, veh/h	54	476	6	24	595	54	12	54	30	488	48	18
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	5	10	5	5	15	5	5	5	5	5	10	10
Cap, veh/h	84	949	441	47	841	408	26	88	49	559	470	176
Arrive On Green	0.05	0.29	0.29	0.03	0.26	0.26	0.02	0.08	0.08	0.32	0.39	0.39
Sat Flow, veh/h	1739	3328	1547	1739	3188	1547	1739	1103	613	1739	1214	455
Grp Volume(v), veh/h	54	476	6	24	595	54	12	0	84	488	0	66
Grp Sat Flow(s),veh/h/ln	1739	1664	1547	1739	1594	1547	1739	0	1716	1739	0	1670
Q Serve(g_s), s	1.9	7.5	0.2	0.9	10.6	1.7	0.4	0.0	3.0	16.7	0.0	1.6
Cycle Q Clear(g_c), s	1.9	7.5	0.2	0.9	10.6	1.7	0.4	0.0	3.0	16.7	0.0	1.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.36	1.00		0.27
Lane Grp Cap(c), veh/h	84	949	441	47	841	408	26	0	138	559	0	646
V/C Ratio(X)	0.64	0.50	0.01	0.51	0.71	0.13	0.46	0.00	0.61	0.87	0.00	0.10
Avail Cap(c_a), veh/h	207	2300	1069	152	2102	1020	152	0	204	1257	0	1260
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	29.4	18.8	16.1	30.2	21.0	17.7	30.7	0.0	28.0	20.1	0.0	12.3
Incr Delay (d2), s/veh	7.8	0.4	0.0	8.1	1.1	0.1	12.0	0.0	4.3	4.4	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	2.5	0.1	0.4	3.5	0.6	0.3	0.0	1.3	6.6	0.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.2	19.2	16.2	38.3	22.1	17.8	42.8	0.0	32.3	24.6	0.0	12.4
LnGrp LOS	D	B	B	D	C	B	D	A	C	C	A	B
Approach Vol, veh/h		536			673			96			554	
Approach Delay, s/veh		21.0			22.3			33.6			23.1	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.2	22.4	5.4	28.8	7.6	21.1	24.7	9.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.5	43.5	5.5	47.5	7.5	41.5	45.5	7.5
Max Q Clear Time (g_c+I1), s	2.9	9.5	2.4	3.6	3.9	12.6	18.7	5.0
Green Ext Time (p_c), s	0.0	3.0	0.0	0.3	0.0	4.0	1.6	0.1

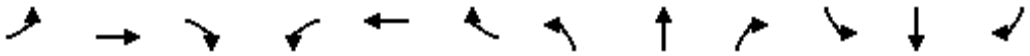
Intersection Summary	
HCM 6th Ctrl Delay	22.8
HCM 6th LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	380	5	20	485	75	10	50	25	450	45	40
Future Volume (veh/h)	75	380	5	20	485	75	10	50	25	450	45	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1752	1826	1826	1678	1826	1826	1826	1826	1826	1752	1752
Adj Flow Rate, veh/h	89	452	6	24	577	89	12	60	30	536	54	48
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	5	10	5	5	15	5	5	5	5	5	10	10
Cap, veh/h	114	963	448	46	799	388	26	92	46	601	351	312
Arrive On Green	0.07	0.29	0.29	0.03	0.25	0.25	0.01	0.08	0.08	0.35	0.41	0.41
Sat Flow, veh/h	1739	3328	1547	1739	3188	1547	1739	1148	574	1739	855	760
Grp Volume(v), veh/h	89	452	6	24	577	89	12	0	90	536	0	102
Grp Sat Flow(s),veh/h/ln	1739	1664	1547	1739	1594	1547	1739	0	1723	1739	0	1615
Q Serve(g_s), s	3.5	7.8	0.2	0.9	11.5	3.2	0.5	0.0	3.5	20.3	0.0	2.8
Cycle Q Clear(g_c), s	3.5	7.8	0.2	0.9	11.5	3.2	0.5	0.0	3.5	20.3	0.0	2.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.33	1.00		0.47
Lane Grp Cap(c), veh/h	114	963	448	46	799	388	26	0	138	601	0	663
V/C Ratio(X)	0.78	0.47	0.01	0.52	0.72	0.23	0.46	0.00	0.65	0.89	0.00	0.15
Avail Cap(c_a), veh/h	187	2077	966	137	1898	921	137	0	185	1135	0	1101
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	32.1	20.4	17.7	33.5	23.9	20.8	34.1	0.0	31.1	21.6	0.0	12.9
Incr Delay (d2), s/veh	11.1	0.4	0.0	8.7	1.3	0.3	12.4	0.0	5.1	4.9	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	2.7	0.1	0.5	3.9	1.1	0.3	0.0	1.6	8.2	0.0	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	43.2	20.7	17.7	42.1	25.1	21.1	46.4	0.0	36.2	26.5	0.0	13.0
LnGrp LOS	D	C	B	D	C	C	D	A	D	C	A	B
Approach Vol, veh/h		547			690			102			638	
Approach Delay, s/veh		24.3			25.2			37.4			24.3	
Approach LOS		C			C			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.4	24.7	5.5	33.1	9.1	22.0	28.6	10.1
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.5	43.5	5.5	47.5	7.5	41.5	45.5	7.5
Max Q Clear Time (g_c+I1), s	2.9	9.8	2.5	4.8	5.5	13.5	22.3	5.5
Green Ext Time (p_c), s	0.0	2.8	0.0	0.6	0.0	3.9	1.7	0.1

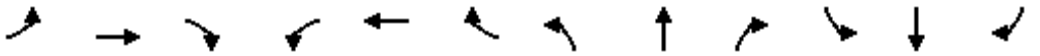
Intersection Summary	
HCM 6th Ctrl Delay	25.3
HCM 6th LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	410	10	25	510	50	15	50	30	420	45	20
Future Volume (veh/h)	50	410	10	25	510	50	15	50	30	420	45	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1752	1826	1826	1678	1826	1826	1826	1826	1826	1752	1752
Adj Flow Rate, veh/h	53	432	11	26	537	53	16	53	32	442	47	21
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	5	10	5	5	15	5	5	5	5	5	10	10
Cap, veh/h	87	897	417	51	795	386	34	93	56	519	420	188
Arrive On Green	0.05	0.27	0.27	0.03	0.25	0.25	0.02	0.09	0.09	0.30	0.37	0.37
Sat Flow, veh/h	1739	3328	1547	1739	3188	1547	1739	1066	644	1739	1147	513
Grp Volume(v), veh/h	53	432	11	26	537	53	16	0	85	442	0	68
Grp Sat Flow(s),veh/h/ln	1739	1664	1547	1739	1594	1547	1739	0	1710	1739	0	1660
Q Serve(g_s), s	1.7	6.2	0.3	0.8	8.7	1.5	0.5	0.0	2.7	13.7	0.0	1.5
Cycle Q Clear(g_c), s	1.7	6.2	0.3	0.8	8.7	1.5	0.5	0.0	2.7	13.7	0.0	1.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.38	1.00		0.31
Lane Grp Cap(c), veh/h	87	897	417	51	795	386	34	0	150	519	0	608
V/C Ratio(X)	0.61	0.48	0.03	0.51	0.68	0.14	0.47	0.00	0.57	0.85	0.00	0.11
Avail Cap(c_a), veh/h	228	2533	1177	167	2314	1123	167	0	224	1384	0	1379
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	26.6	17.5	15.4	27.3	19.4	16.7	27.7	0.0	25.0	18.9	0.0	12.0
Incr Delay (d2), s/veh	6.8	0.4	0.0	7.5	1.0	0.2	9.7	0.0	3.4	4.1	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	2.0	0.1	0.4	2.7	0.5	0.3	0.0	1.2	5.3	0.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.5	17.9	15.4	34.8	20.4	16.8	37.4	0.0	28.4	22.9	0.0	12.0
LnGrp LOS	C	B	B	C	C	B	D	A	C	C	A	B
Approach Vol, veh/h		496			616			101			510	
Approach Delay, s/veh		19.5			20.7			29.8			21.5	
Approach LOS		B			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.2	19.9	5.6	25.4	7.3	18.8	21.6	9.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.5	43.5	5.5	47.5	7.5	41.5	45.5	7.5
Max Q Clear Time (g_c+I1), s	2.8	8.2	2.5	3.5	3.7	10.7	15.7	4.7
Green Ext Time (p_c), s	0.0	2.7	0.0	0.4	0.0	3.6	1.4	0.1

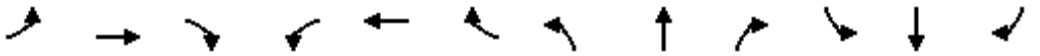
Intersection Summary	
HCM 6th Ctrl Delay	21.1
HCM 6th LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	390	10	25	495	80	15	55	30	460	50	45
Future Volume (veh/h)	80	390	10	25	495	80	15	55	30	460	50	45
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1752	1826	1826	1678	1826	1826	1826	1826	1826	1752	1752
Adj Flow Rate, veh/h	84	411	11	26	521	84	16	58	32	484	53	47
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	5	10	5	5	15	5	5	5	5	5	10	10
Cap, veh/h	108	906	421	51	762	370	34	93	52	557	330	293
Arrive On Green	0.06	0.27	0.27	0.03	0.24	0.24	0.02	0.08	0.08	0.32	0.39	0.39
Sat Flow, veh/h	1739	3328	1547	1739	3188	1547	1739	1106	610	1739	856	759
Grp Volume(v), veh/h	84	411	11	26	521	84	16	0	90	484	0	100
Grp Sat Flow(s),veh/h/ln	1739	1664	1547	1739	1594	1547	1739	0	1716	1739	0	1615
Q Serve(g_s), s	2.9	6.3	0.3	0.9	9.1	2.7	0.6	0.0	3.1	16.1	0.0	2.5
Cycle Q Clear(g_c), s	2.9	6.3	0.3	0.9	9.1	2.7	0.6	0.0	3.1	16.1	0.0	2.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.36	1.00		0.47
Lane Grp Cap(c), veh/h	108	906	421	51	762	370	34	0	145	557	0	622
V/C Ratio(X)	0.78	0.45	0.03	0.51	0.68	0.23	0.47	0.00	0.62	0.87	0.00	0.16
Avail Cap(c_a), veh/h	213	2364	1099	156	2160	1049	156	0	210	1292	0	1253
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	28.3	18.5	16.3	29.3	21.2	18.7	29.7	0.0	27.1	19.6	0.0	12.3
Incr Delay (d2), s/veh	11.3	0.4	0.0	7.8	1.1	0.3	9.9	0.0	4.3	4.3	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	2.1	0.1	0.4	3.0	0.9	0.3	0.0	1.4	6.3	0.0	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.6	18.9	16.4	37.1	22.3	19.1	39.6	0.0	31.4	23.9	0.0	12.5
LnGrp LOS	D	B	B	D	C	B	D	A	C	C	A	B
Approach Vol, veh/h		506			631			106			584	
Approach Delay, s/veh		22.3			22.5			32.6			22.0	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.3	21.2	5.7	28.1	8.3	19.1	24.1	9.7
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.5	43.5	5.5	47.5	7.5	41.5	45.5	7.5
Max Q Clear Time (g_c+I1), s	2.9	8.3	2.6	4.5	4.9	11.1	18.1	5.1
Green Ext Time (p_c), s	0.0	2.6	0.0	0.6	0.0	3.5	1.6	0.1

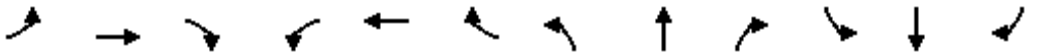
Intersection Summary	
HCM 6th Ctrl Delay	22.8
HCM 6th LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	390	10	25	495	80	15	55	30	460	50	45
Future Volume (veh/h)	80	390	10	25	495	80	15	55	30	460	50	45
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1752	1826	1826	1678	1826	1826	1826	1826	1826	1752	1752
Adj Flow Rate, veh/h	84	411	11	26	521	84	16	58	32	484	53	47
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	5	10	5	5	15	5	5	5	5	5	10	10
Cap, veh/h	120	987	459	53	822	399	35	112	62	700	247	219
Arrive On Green	0.07	0.30	0.30	0.03	0.26	0.26	0.02	0.10	0.10	0.21	0.29	0.29
Sat Flow, veh/h	1739	3328	1547	1739	3188	1547	1739	1106	610	3374	856	759
Grp Volume(v), veh/h	84	411	11	26	521	84	16	0	90	484	0	100
Grp Sat Flow(s),veh/h/ln	1739	1664	1547	1739	1594	1547	1739	0	1716	1687	0	1615
Q Serve(g_s), s	2.3	4.9	0.2	0.7	7.2	2.1	0.4	0.0	2.5	6.6	0.0	2.3
Cycle Q Clear(g_c), s	2.3	4.9	0.2	0.7	7.2	2.1	0.4	0.0	2.5	6.6	0.0	2.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.36	1.00		0.47
Lane Grp Cap(c), veh/h	120	987	459	53	822	399	35	0	174	700	0	467
V/C Ratio(X)	0.70	0.42	0.02	0.49	0.63	0.21	0.46	0.00	0.52	0.69	0.00	0.21
Avail Cap(c_a), veh/h	510	3266	1518	264	2677	1299	229	0	538	2082	0	1291
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	22.5	13.9	12.3	23.6	16.3	14.4	24.0	0.0	21.1	18.1	0.0	13.3
Incr Delay (d2), s/veh	7.1	0.3	0.0	6.9	0.8	0.3	9.2	0.0	2.4	1.2	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	1.4	0.1	0.4	2.1	0.7	0.3	0.0	1.0	2.3	0.0	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.6	14.2	12.3	30.5	17.1	14.7	33.2	0.0	23.5	19.3	0.0	13.6
LnGrp LOS	C	B	B	C	B	B	C	A	C	B	A	B
Approach Vol, veh/h		506			631			106			584	
Approach Delay, s/veh		16.7			17.3			24.9			18.4	
Approach LOS		B			B			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.0	19.2	5.5	18.8	7.9	17.2	14.8	9.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	7.5	48.5	6.5	39.5	14.5	41.5	30.5	15.5
Max Q Clear Time (g_c+I1), s	2.7	6.9	2.4	4.3	4.3	9.2	8.6	4.5
Green Ext Time (p_c), s	0.0	2.6	0.0	0.6	0.1	3.6	1.7	0.3

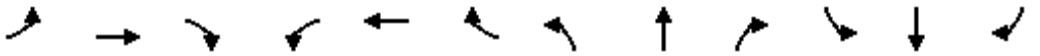
Intersection Summary	
HCM 6th Ctrl Delay	17.9
HCM 6th LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	720	10	10	710	20	70	100	80	410	10	30
Future Volume (veh/h)	50	720	10	10	710	20	70	100	80	410	10	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1752	1826	1826	1678	1826	1826	1826	1826	1826	1752	1752
Adj Flow Rate, veh/h	53	758	11	11	747	21	74	105	84	432	11	32
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	5	10	5	5	15	5	5	5	5	5	10	10
Cap, veh/h	80	1135	528	24	985	478	94	100	80	494	133	386
Arrive On Green	0.05	0.34	0.34	0.01	0.31	0.31	0.05	0.11	0.11	0.28	0.34	0.34
Sat Flow, veh/h	1739	3328	1547	1739	3188	1547	1739	939	751	1739	395	1150
Grp Volume(v), veh/h	53	758	11	11	747	21	74	0	189	432	0	43
Grp Sat Flow(s),veh/h/ln	1739	1664	1547	1739	1594	1547	1739	0	1691	1739	0	1545
Q Serve(g_s), s	2.1	13.7	0.3	0.4	14.9	0.7	3.0	0.0	7.5	16.7	0.0	1.3
Cycle Q Clear(g_c), s	2.1	13.7	0.3	0.4	14.9	0.7	3.0	0.0	7.5	16.7	0.0	1.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.44	1.00		0.74
Lane Grp Cap(c), veh/h	80	1135	528	24	985	478	94	0	180	494	0	519
V/C Ratio(X)	0.67	0.67	0.02	0.46	0.76	0.04	0.78	0.00	1.05	0.87	0.00	0.08
Avail Cap(c_a), veh/h	185	2051	953	135	1874	910	135	0	180	1121	0	1039
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	33.2	19.9	15.4	34.6	22.0	17.1	33.0	0.0	31.6	24.1	0.0	16.0
Incr Delay (d2), s/veh	9.2	0.7	0.0	13.2	1.2	0.0	17.1	0.0	81.7	5.0	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	4.6	0.1	0.3	4.9	0.2	1.7	0.0	7.0	7.0	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.3	20.5	15.5	47.7	23.2	17.1	50.0	0.0	113.2	29.1	0.0	16.1
LnGrp LOS	D	C	B	D	C	B	D	A	F	C	A	B
Approach Vol, veh/h		822			779			263			475	
Approach Delay, s/veh		21.9			23.4			95.4			27.9	
Approach LOS		C			C			F			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.5	28.6	8.3	28.2	7.7	26.3	24.6	12.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.5	43.5	5.5	47.5	7.5	41.5	45.5	7.5
Max Q Clear Time (g_c+I1), s	2.4	15.7	5.0	3.3	4.1	16.9	18.7	9.5
Green Ext Time (p_c), s	0.0	5.0	0.0	0.2	0.0	4.9	1.4	0.0

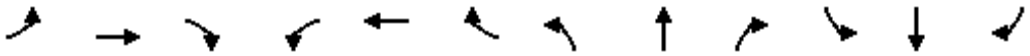
Intersection Summary	
HCM 6th Ctrl Delay	31.9
HCM 6th LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	720	10	10	710	20	70	100	80	410	10	30
Future Volume (veh/h)	50	720	10	10	710	20	70	100	80	410	10	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1752	1826	1826	1678	1826	1826	1826	1826	1826	1752	1752
Adj Flow Rate, veh/h	53	758	11	11	747	21	74	105	84	432	11	32
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	5	10	5	5	15	5	5	5	5	5	10	10
Cap, veh/h	85	1192	554	24	1031	500	102	145	116	596	108	313
Arrive On Green	0.05	0.36	0.36	0.01	0.32	0.32	0.06	0.15	0.15	0.18	0.27	0.27
Sat Flow, veh/h	1739	3328	1547	1739	3188	1547	1739	939	751	3374	395	1150
Grp Volume(v), veh/h	53	758	11	11	747	21	74	0	189	432	0	43
Grp Sat Flow(s),veh/h/ln	1739	1664	1547	1739	1594	1547	1739	0	1691	1687	0	1545
Q Serve(g_s), s	1.8	11.5	0.3	0.4	12.6	0.6	2.5	0.0	6.5	7.3	0.0	1.3
Cycle Q Clear(g_c), s	1.8	11.5	0.3	0.4	12.6	0.6	2.5	0.0	6.5	7.3	0.0	1.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.44	1.00		0.74
Lane Grp Cap(c), veh/h	85	1192	554	24	1031	500	102	0	261	596	0	421
V/C Ratio(X)	0.63	0.64	0.02	0.45	0.72	0.04	0.72	0.00	0.72	0.72	0.00	0.10
Avail Cap(c_a), veh/h	244	2551	1186	158	2286	1109	330	0	683	1418	0	980
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	28.3	16.2	12.6	29.7	18.1	14.1	28.1	0.0	24.4	23.6	0.0	16.5
Incr Delay (d2), s/veh	7.4	0.6	0.0	12.7	1.0	0.0	9.3	0.0	3.8	1.7	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	3.5	0.1	0.2	3.9	0.2	1.3	0.0	2.7	2.8	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.7	16.8	12.6	42.3	19.1	14.1	37.4	0.0	28.2	25.3	0.0	16.6
LnGrp LOS	D	B	B	D	B	B	D	A	C	C	A	B
Approach Vol, veh/h		822			779			263			475	
Approach Delay, s/veh		17.9			19.3			30.8			24.5	
Approach LOS		B			B			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.3	26.2	8.1	21.0	7.5	24.1	15.2	13.9
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.5	46.5	11.5	38.5	8.5	43.5	25.5	24.5
Max Q Clear Time (g_c+I1), s	2.4	13.5	4.5	3.3	3.8	14.6	9.3	8.5
Green Ext Time (p_c), s	0.0	5.2	0.1	0.2	0.0	5.1	1.4	0.9

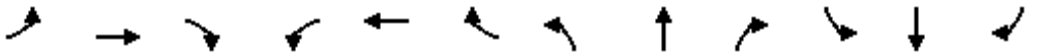
Intersection Summary	
HCM 6th Ctrl Delay	21.2
HCM 6th LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	700	10	10	695	50	70	105	80	450	15	55
Future Volume (veh/h)	80	700	10	10	695	50	70	105	80	450	15	55
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1752	1826	1826	1678	1826	1826	1826	1826	1826	1752	1752
Adj Flow Rate, veh/h	84	737	11	11	732	53	74	111	84	474	16	58
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	5	10	5	5	15	5	5	5	5	5	10	10
Cap, veh/h	107	1153	536	24	951	462	94	95	72	532	116	421
Arrive On Green	0.06	0.35	0.35	0.01	0.30	0.30	0.05	0.10	0.10	0.31	0.35	0.35
Sat Flow, veh/h	1739	3328	1547	1739	3188	1547	1739	965	730	1739	332	1203
Grp Volume(v), veh/h	84	737	11	11	732	53	74	0	195	474	0	74
Grp Sat Flow(s),veh/h/ln	1739	1664	1547	1739	1594	1547	1739	0	1695	1739	0	1535
Q Serve(g_s), s	3.6	14.2	0.4	0.5	16.0	1.9	3.2	0.0	7.5	19.9	0.0	2.5
Cycle Q Clear(g_c), s	3.6	14.2	0.4	0.5	16.0	1.9	3.2	0.0	7.5	19.9	0.0	2.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.43	1.00		0.78
Lane Grp Cap(c), veh/h	107	1153	536	24	951	462	94	0	166	532	0	537
V/C Ratio(X)	0.78	0.64	0.02	0.46	0.77	0.11	0.79	0.00	1.17	0.89	0.00	0.14
Avail Cap(c_a), veh/h	171	1896	882	125	1733	841	125	0	166	1036	0	955
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	35.3	20.9	16.4	37.4	24.4	19.5	35.7	0.0	34.4	25.3	0.0	16.9
Incr Delay (d2), s/veh	11.7	0.6	0.0	13.5	1.3	0.1	20.8	0.0	123.3	5.4	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	4.9	0.1	0.3	5.4	0.7	1.9	0.0	8.7	8.4	0.0	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.0	21.5	16.4	50.8	25.7	19.6	56.5	0.0	157.8	30.7	0.0	17.1
LnGrp LOS	D	C	B	D	C	B	E	A	F	C	A	B
Approach Vol, veh/h		832			796			269			548	
Approach Delay, s/veh		24.0			25.7			129.9			28.8	
Approach LOS		C			C			F			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.5	30.9	8.6	31.2	9.2	27.3	27.9	12.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.5	43.5	5.5	47.5	7.5	41.5	45.5	7.5
Max Q Clear Time (g_c+I1), s	2.5	16.2	5.2	4.5	5.6	18.0	21.9	9.5
Green Ext Time (p_c), s	0.0	4.8	0.0	0.4	0.0	4.8	1.5	0.0

Intersection Summary	
HCM 6th Ctrl Delay	37.3
HCM 6th LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	700	10	10	695	50	70	105	80	450	15	55
Future Volume (veh/h)	80	700	10	10	695	50	70	105	80	450	15	55
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1752	1826	1826	1678	1826	1826	1826	1826	1826	1752	1752
Adj Flow Rate, veh/h	84	737	11	11	732	53	74	111	84	474	16	58
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	5	10	5	5	15	5	5	5	5	5	10	10
Cap, veh/h	108	1203	559	24	999	485	99	150	114	632	95	344
Arrive On Green	0.06	0.36	0.36	0.01	0.31	0.31	0.06	0.16	0.16	0.19	0.29	0.29
Sat Flow, veh/h	1739	3328	1547	1739	3188	1547	1739	965	730	3374	332	1203
Grp Volume(v), veh/h	84	737	11	11	732	53	74	0	195	474	0	74
Grp Sat Flow(s),veh/h/ln	1739	1664	1547	1739	1594	1547	1739	0	1695	1687	0	1535
Q Serve(g_s), s	3.0	11.6	0.3	0.4	13.1	1.6	2.7	0.0	7.0	8.5	0.0	2.3
Cycle Q Clear(g_c), s	3.0	11.6	0.3	0.4	13.1	1.6	2.7	0.0	7.0	8.5	0.0	2.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.43	1.00		0.78
Lane Grp Cap(c), veh/h	108	1203	559	24	999	485	99	0	264	632	0	439
V/C Ratio(X)	0.78	0.61	0.02	0.46	0.73	0.11	0.74	0.00	0.74	0.75	0.00	0.17
Avail Cap(c_a), veh/h	313	2473	1150	150	2069	1004	286	0	649	1293	0	925
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	29.5	16.7	13.1	31.3	19.6	15.6	29.7	0.0	25.7	24.6	0.0	17.1
Incr Delay (d2), s/veh	11.4	0.5	0.0	12.8	1.1	0.1	10.4	0.0	4.0	1.8	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	3.7	0.1	0.2	4.1	0.5	1.4	0.0	3.0	3.3	0.0	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	40.9	17.2	13.1	44.1	20.6	15.7	40.1	0.0	29.8	26.4	0.0	17.3
LnGrp LOS	D	B	B	D	C	B	D	A	C	C	A	B
Approach Vol, veh/h		832			796			269			548	
Approach Delay, s/veh		19.6			20.6			32.6			25.2	
Approach LOS		B			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.4	27.6	8.2	22.8	8.5	24.5	16.5	14.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.5	47.5	10.5	38.5	11.5	41.5	24.5	24.5
Max Q Clear Time (g_c+I1), s	2.4	13.6	4.7	4.3	5.0	15.1	10.5	9.0
Green Ext Time (p_c), s	0.0	5.0	0.1	0.4	0.1	5.0	1.5	0.9

Intersection Summary	
HCM 6th Ctrl Delay	22.6
HCM 6th LOS	C

DAVID EVANS AND ASSOCIATES INC.

SUBJECT	BY	DATE	JOB NO.	SHEET OF
TURN MOVEMENTS	CF	11-Jul-18	OVCV0002-0001	1 OF 2

E/W STREET : HIGHWAY 138
N/S STREET : BEEKLEY ROAD
CONDITION : PM PEAK HOUR

INTERSECTION : 1
:
PROJECTED GROWTH PER YEAR : 2.0%

TURN MOVEMENTS

CONDITION	EXISTING TRAFFIC	PROJECT TRIPS	EXISTING + PROJECT TRAFFIC	AMBIENT GROWTH TRIPS	BACKGROUND TRAFFIC	PROJECT TRAFFIC	YEAR 2040 TRAFFIC	YEAR 2040 AMBIENT + PROJECT TRAFFIC
SCENARIO #:	2		4		6	8	10	12
HIGHWAY 138								
EB LEFT	20	30	50	5	25	55	100	130
EB THRU	580	-15	565	15	595	580	1370	1355
EB RIGHT	5	0	5	5	10	10	10	10
WB LEFT	15	0	15	5	20	20	10	10
WB THRU	320	-25	295	10	330	305	1420	1395
WB RIGHT	45	50	95	5	50	100	160	210
BEEKLEY ROAD								
NB LEFT	5	0	5	5	10	10	10	10
NB THRU	20	5	25	5	25	30	10	15
NB RIGHT	10	0	10	5	15	15	10	10
SB LEFT	385	40	425	10	395	435	490	530
SB THRU	30	5	35	5	35	40	10	15
SB RIGHT	20	40	60	5	25	65	70	110
TOTALS	**1455**	**130**	**1585**	**80**	**1535**	**1665**	**3670**	**3800**

DAVID EVANS AND ASSOCIATES INC.

SUBJECT	BY	DATE	JOB NO.	SHEET	OF
TURN VOLUME SUMMARY	CF	11-Jul-18	OVCV0002-0001	2	OF 2

E/W STREET : HIGHWAY 138 N/S STREET : BEEKLEY ROAD

CONDITION : PM PEAK HOUR PHF : 0.93

NORTH LEG								
LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	0	3	0	0	0	0	0	0
0	0	0	0	1	1	0	0	0
0	0	0	0	0	0	0	0	6
0	0	0	0	0	0	0	0	0

SOUTH LEG								
LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0

EAST LEG								
LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	0	0	1	0	0	0	8	0
0	2	0	0	0	0	0	2	0
0	3	0	0	0	0	0	9	0
0	1	0	0	0	0	0	5	0

WEST LEG								
LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	8	0	0	0	0	0	18	0
0	4	0	0	0	0	0	16	0
0	2	0	0	0	0	0	21	0
0	2	0	0	1	0	0	18	0

NORTH LEG			SOUTH LEG			EAST LEG			WEST LEG		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
4	3	111	3	4	0	16	94	2	1	107	3
7	3	70	3	5	0	13	83	4	1	138	5
3	11	87	2	6	2	5	45	3	1	116	4
5	9	105	1	4	0	8	65	4	1	125	4

	TRUCK TOTAL	AUTO VOLUMES	TOTALS	ROUNDED TOTALS	TRUCK PERCENTAGE
HIGHWAY 138					
EB LEFT	0	16	**16**	**20**	**5%**
EB THRU	90	486	**576**	**580**	**15%**
EB RIGHT	0	4	**4**	**5**	**5%**
WB LEFT	0	13	**13**	**15**	**5%**
WB THRU	30	287	**317**	**320**	**10%**
WB RIGHT	1	42	**43**	**45**	**5%**
BEEKLEY ROAD					
NB LEFT	0	2	**2**	**5**	**5%**
NB THRU	1	19	**20**	**20**	**5%**
NB RIGHT	0	9	**9**	**10**	**5%**
SB LEFT	10	373	**383**	**385**	**5%**
SB THRU	1	26	**27**	**30**	**5%**
SB RIGHT	0	19	**19**	**20**	**5%**

INTERSECTION TURN COUNT

PEAK HOUR

NORTH-SOUTH STREET: BEEKLEY RD
EAST-WEST STREET: HWY 138
JURISDICTION: PINON HILLS

DATE: 03-09-17

PEAK HOUR: 04:00PM

NORTH LEG

TOTAL: 429

Rt	Thru	Lt	
19	27	383	Total
4	3	114	1st
7	4	71	2nd
3	11	93	3rd
5	9	105	4th

EAST LEG TOTAL: 373

	1st	2nd	3rd	4th	Total
Rt	17	13	5	8	43
Thru	102	87	57	71	317
Lt	2	4	3	4	13

WEST LEG TOTAL: 596

Total	1st	2nd	3rd	4th	
16	3	5	4	4	Lt
576	133	158	139	146	Thru
4	1	1	1	1	Rt

PEAK HOUR FACTORS

NORTH LEG = 0.89
SOUTH LEG = 0.70
EAST LEG = 0.77
WEST LEG = 0.91

ALL LEGS = 0.93

SOUTH LEG

TOTAL: 31

	Lt	Thru	Rt
1st	0	4	3
2nd	0	5	3
3rd	2	7	2
4th	0	4	1
Total	2	20	9

HOUR TOTAL: 1,429

Prepared by NEWPORT TRAFFIC STUDIES

SANBAG CLASSIFICATION SUMMARY

NORTH-SOUTH STREET : BEEKLEY RD — PINON HILLS

EAST-WEST STREET : HWY 138

BEGINNING TIME : 04:00PM

AUTOS RT	AUTOS THRU	AUTOS LT	LARGE 2 AXLE RT	LARGE 2 AXLE THRU	LARGE 2 AXLE LT	3 AXLE RT	3 AXLE THRU	3 AXLE LT	4(+) AXLE RT	4(+) AXLE THRU	4(+) AXLE LT	TOTALS
NORTH LEG												
4	3	111	0	0	3	0	0	0	0	0	0	121
7	3	70	0	0	0	0	1	1	0	0	0	82
3	11	87	0	0	0	0	0	0	0	0	6	107
5	9	105	0	0	0	0	0	0	0	0	0	119
1	8	80	0	0	2	0	0	0	0	0	1	92
1	11	70	0	0	1	0	0	0	0	0	0	83
8	11	65	0	0	0	0	0	0	0	0	1	85
5	8	59	0	0	0	0	0	0	0	0	1	73
34	64	647	0	0	6	0	1	1	0	0	9	762
SOUTH LEG												
3	4	0	0	0	0	0	0	0	0	0	0	7
3	5	0	0	0	0	0	0	0	0	0	0	8
2	6	2	0	1	0	0	0	0	0	0	0	11
1	4	0	0	0	0	0	0	0	0	0	0	5
4	4	1	0	0	0	0	0	0	0	0	0	9
1	5	0	0	0	0	0	0	0	0	0	0	6
3	6	1	0	0	0	0	0	0	0	0	0	10
2	3	1	0	0	0	0	0	0	0	0	0	6
19	37	5	0	1	0	0	0	0	0	0	0	62
EAST LEG												
16	94	2	0	0	0	1	0	0	0	8	0	121
13	83	4	0	2	0	0	0	0	0	2	0	104
5	45	3	0	3	0	0	0	0	0	9	0	65
8	65	4	0	1	0	0	0	0	0	5	0	83
11	62	3	0	1	0	0	0	0	0	4	0	81
0	102	5	0	0	0	0	1	0	0	11	0	119
17	96	3	0	1	0	0	1	0	0	6	0	124
7	94	5	0	2	0	0	0	0	0	4	0	112
77	641	29	0	10	0	1	2	0	0	49	0	809
WEST LEG												
1	107	3	0	8	0	0	0	0	0	18	0	137
1	138	5	0	4	0	0	0	0	0	16	0	164
1	116	4	0	2	0	0	0	0	0	21	0	144
1	125	4	0	2	0	0	1	0	0	18	0	151
0	121	2	0	3	0	0	1	0	0	16	0	143
1	106	6	0	1	0	0	3	0	0	19	0	136
1	106	7	0	2	0	0	3	0	0	9	0	128
1	92	4	0	1	0	0	1	0	0	11	0	110
7	911	35	0	23	0	0	9	0	0	128	0	1113

Prepared by Newport Traffic Studies

INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: BEEKLEY RD

EAST-WEST STREET: HWY 138

TIME: 04:00PM-05:00PM DATE: 03-09-17

NORTH LEG

Rt	Thru	Lt	
19	27	383	Total
4	3	114	1st
7	4	71	2nd
3	11	93	3rd
5	9	105	4th

	1st	2nd	3rd	4th	Total
Rt	17	13	5	8	43
Thru	102	87	57	71	317
Lt	2	4	3	4	13

Total	1st	2nd	3rd	4th	
16	3	5	4	4	Lt
576	133	158	139	146	Thru
4	1	1	1	1	Rt

	Lt	Thru	Rt
1st	0	4	3
2nd	0	5	3
3rd	2	7	2
4th	0	4	1
Total	2	20	9

Prepared by NEWPORT TRAFFIC STUDIES

INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: BEEKLEY RD

EAST-WEST STREET: HWY 138

TIME: 05:00PM-06:00PM DATE: 03-09-17

NORTH LEG

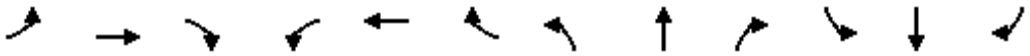
Rt	Thru	Lt	
15	38	280	Total
1	8	83	1st
1	11	71	2nd
8	11	66	3rd
5	8	60	4th

	1st	2nd	3rd	4th	Total
Rt	11	0	17	7	35
Thru	67	114	104	100	385
Lt	3	5	3	5	16

Total	1st	2nd	3rd	4th	
19	2	6	7	4	Lt
495	141	129	120	105	Thru
3	0	1	1	1	Rt

	Lt	Thru	Rt
1st	1	4	4
2nd	0	5	1
3rd	1	6	3
4th	1	3	2
Total	3	18	10

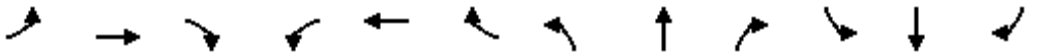
Prepared by NEWPORT TRAFFIC STUDIES



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	580	5	15	320	45	5	20	10	385	30	20
Future Volume (veh/h)	20	580	5	15	320	45	5	20	10	385	30	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1678	1826	1826	1752	1826	1826	1826	1826	1826	1826	1826
Adj Flow Rate, veh/h	22	624	5	16	344	48	5	22	11	414	32	22
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	5	15	5	5	10	5	5	5	5	5	5	5
Cap, veh/h	45	905	439	34	924	430	12	103	52	492	369	254
Arrive On Green	0.03	0.28	0.28	0.02	0.28	0.28	0.01	0.09	0.09	0.28	0.37	0.37
Sat Flow, veh/h	1739	3188	1547	1739	3328	1547	1739	1148	574	1739	1008	693
Grp Volume(v), veh/h	22	624	5	16	344	48	5	0	33	414	0	54
Grp Sat Flow(s),veh/h/ln	1739	1594	1547	1739	1664	1547	1739	0	1723	1739	0	1701
Q Serve(g_s), s	0.7	9.7	0.1	0.5	4.6	1.3	0.2	0.0	1.0	12.5	0.0	1.2
Cycle Q Clear(g_c), s	0.7	9.7	0.1	0.5	4.6	1.3	0.2	0.0	1.0	12.5	0.0	1.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.33	1.00		0.41
Lane Grp Cap(c), veh/h	45	905	439	34	924	430	12	0	155	492	0	623
V/C Ratio(X)	0.49	0.69	0.01	0.47	0.37	0.11	0.43	0.00	0.21	0.84	0.00	0.09
Avail Cap(c_a), veh/h	172	2549	1237	172	2662	1237	172	0	201	1422	0	1422
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	26.7	17.7	14.3	27.0	16.2	15.0	27.5	0.0	23.5	18.8	0.0	11.5
Incr Delay (d2), s/veh	8.0	0.9	0.0	9.6	0.2	0.1	23.2	0.0	0.7	4.0	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	2.9	0.0	0.3	1.4	0.4	0.1	0.0	0.4	4.9	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.7	18.7	14.3	36.6	16.4	15.1	50.7	0.0	24.2	22.7	0.0	11.6
LnGrp LOS	C	B	B	D	B	B	D	A	C	C	A	B
Approach Vol, veh/h		651			408			38			468	
Approach Delay, s/veh		19.2			17.1			27.7			21.5	
Approach LOS		B			B			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.6	20.3	4.9	24.9	5.9	20.0	20.2	9.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.5	44.5	5.5	46.5	5.5	44.5	45.5	6.5
Max Q Clear Time (g_c+I1), s	2.5	11.7	2.2	3.2	2.7	6.6	14.5	3.0
Green Ext Time (p_c), s	0.0	4.1	0.0	0.3	0.0	2.2	1.3	0.0

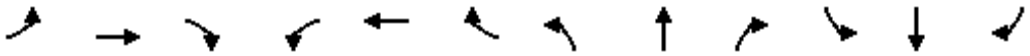
Intersection Summary	
HCM 6th Ctrl Delay	19.5
HCM 6th LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	560	5	15	295	95	5	25	10	425	35	60
Future Volume (veh/h)	50	560	5	15	295	95	5	25	10	425	35	60
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1678	1826	1826	1752	1826	1826	1826	1826	1826	1826	1826
Adj Flow Rate, veh/h	53	596	5	16	314	101	5	27	11	452	37	64
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	5	15	5	5	10	5	5	5	5	5	5	5
Cap, veh/h	87	864	420	34	802	373	12	108	44	530	232	401
Arrive On Green	0.05	0.27	0.27	0.02	0.24	0.24	0.01	0.09	0.09	0.30	0.39	0.39
Sat Flow, veh/h	1739	3188	1547	1739	3328	1547	1739	1233	502	1739	600	1039
Grp Volume(v), veh/h	53	596	5	16	314	101	5	0	38	452	0	101
Grp Sat Flow(s),veh/h/ln	1739	1594	1547	1739	1664	1547	1739	0	1735	1739	0	1639
Q Serve(g_s), s	1.7	9.5	0.1	0.5	4.5	3.0	0.2	0.0	1.2	13.9	0.0	2.3
Cycle Q Clear(g_c), s	1.7	9.5	0.1	0.5	4.5	3.0	0.2	0.0	1.2	13.9	0.0	2.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.29	1.00		0.63
Lane Grp Cap(c), veh/h	87	864	420	34	802	373	12	0	153	530	0	633
V/C Ratio(X)	0.61	0.69	0.01	0.47	0.39	0.27	0.43	0.00	0.25	0.85	0.00	0.16
Avail Cap(c_a), veh/h	168	2495	1211	168	2605	1211	168	0	198	1392	0	1340
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	26.5	18.6	15.2	27.6	18.1	17.5	28.1	0.0	24.2	18.6	0.0	11.4
Incr Delay (d2), s/veh	6.8	1.0	0.0	9.7	0.3	0.4	23.2	0.0	0.8	4.0	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	3.0	0.0	0.3	1.5	1.0	0.1	0.0	0.5	5.4	0.0	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.3	19.6	15.2	37.2	18.4	17.9	51.4	0.0	25.0	22.6	0.0	11.5
LnGrp LOS	C	B	B	D	B	B	D	A	C	C	A	B
Approach Vol, veh/h		654			431			43			553	
Approach Delay, s/veh		20.6			19.0			28.1			20.6	
Approach LOS		C			B			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.6	19.9	4.9	26.4	7.3	18.2	21.8	9.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.5	44.5	5.5	46.5	5.5	44.5	45.5	6.5
Max Q Clear Time (g_c+I1), s	2.5	11.5	2.2	4.3	3.7	6.5	15.9	3.2
Green Ext Time (p_c), s	0.0	3.9	0.0	0.6	0.0	2.2	1.5	0.0

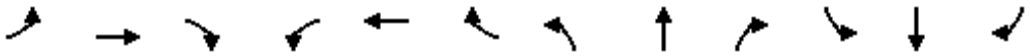
Intersection Summary	
HCM 6th Ctrl Delay	20.4
HCM 6th LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	595	10	20	330	50	10	25	15	395	35	25
Future Volume (veh/h)	25	595	10	20	330	50	10	25	15	395	35	25
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1678	1826	1826	1752	1826	1826	1826	1826	1826	1826	1826
Adj Flow Rate, veh/h	26	626	11	21	347	53	11	26	16	416	37	26
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	5	15	5	5	10	5	5	5	5	5	5	5
Cap, veh/h	52	905	439	43	929	432	24	94	58	493	358	251
Arrive On Green	0.03	0.28	0.28	0.02	0.28	0.28	0.01	0.09	0.09	0.28	0.36	0.36
Sat Flow, veh/h	1739	3188	1547	1739	3328	1547	1739	1058	651	1739	998	701
Grp Volume(v), veh/h	26	626	11	21	347	53	11	0	42	416	0	63
Grp Sat Flow(s),veh/h/ln	1739	1594	1547	1739	1664	1547	1739	0	1709	1739	0	1700
Q Serve(g_s), s	0.8	9.9	0.3	0.7	4.7	1.4	0.4	0.0	1.3	12.7	0.0	1.4
Cycle Q Clear(g_c), s	0.8	9.9	0.3	0.7	4.7	1.4	0.4	0.0	1.3	12.7	0.0	1.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.38	1.00		0.41
Lane Grp Cap(c), veh/h	52	905	439	43	929	432	24	0	151	493	0	609
V/C Ratio(X)	0.50	0.69	0.03	0.49	0.37	0.12	0.45	0.00	0.28	0.84	0.00	0.10
Avail Cap(c_a), veh/h	170	2515	1221	170	2626	1221	170	0	197	1403	0	1401
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	27.0	18.0	14.6	27.1	16.4	15.2	27.6	0.0	24.0	19.0	0.0	12.1
Incr Delay (d2), s/veh	7.4	1.0	0.0	8.2	0.2	0.1	12.5	0.0	1.0	4.0	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	3.0	0.1	0.3	1.5	0.5	0.2	0.0	0.5	5.0	0.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.4	19.0	14.6	35.4	16.6	15.3	40.0	0.0	25.0	23.0	0.0	12.1
LnGrp LOS	C	B	B	D	B	B	D	A	C	C	A	B
Approach Vol, veh/h		663			421			53			479	
Approach Delay, s/veh		19.5			17.4			28.1			21.6	
Approach LOS		B			B			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.9	20.5	5.3	24.7	6.2	20.2	20.5	9.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.5	44.5	5.5	46.5	5.5	44.5	45.5	6.5
Max Q Clear Time (g_c+I1), s	2.7	11.9	2.4	3.4	2.8	6.7	14.7	3.3
Green Ext Time (p_c), s	0.0	4.1	0.0	0.3	0.0	2.3	1.3	0.0

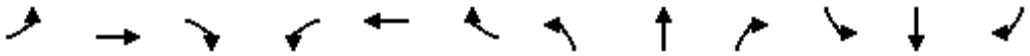
Intersection Summary	
HCM 6th Ctrl Delay	19.9
HCM 6th LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	560	5	15	295	95	5	25	10	425	35	60
Future Volume (veh/h)	50	560	5	15	295	95	5	25	10	425	35	60
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1678	1826	1826	1752	1826	1826	1826	1826	1826	1826	1826
Adj Flow Rate, veh/h	53	589	5	16	311	100	5	26	11	447	37	63
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	5	15	5	5	10	5	5	5	5	5	5	5
Cap, veh/h	87	859	417	34	795	370	12	108	46	525	233	397
Arrive On Green	0.05	0.27	0.27	0.02	0.24	0.24	0.01	0.09	0.09	0.30	0.38	0.38
Sat Flow, veh/h	1739	3188	1547	1739	3328	1547	1739	1218	515	1739	607	1033
Grp Volume(v), veh/h	53	589	5	16	311	100	5	0	37	447	0	100
Grp Sat Flow(s),veh/h/ln	1739	1594	1547	1739	1664	1547	1739	0	1733	1739	0	1640
Q Serve(g_s), s	1.7	9.3	0.1	0.5	4.4	3.0	0.2	0.0	1.1	13.6	0.0	2.2
Cycle Q Clear(g_c), s	1.7	9.3	0.1	0.5	4.4	3.0	0.2	0.0	1.1	13.6	0.0	2.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.30	1.00		0.63
Lane Grp Cap(c), veh/h	87	859	417	34	795	370	12	0	154	525	0	630
V/C Ratio(X)	0.61	0.69	0.01	0.47	0.39	0.27	0.43	0.00	0.24	0.85	0.00	0.16
Avail Cap(c_a), veh/h	170	2521	1224	170	2633	1224	170	0	200	1406	0	1355
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	26.2	18.4	15.1	27.3	18.0	17.4	27.8	0.0	23.9	18.4	0.0	11.4
Incr Delay (d2), s/veh	6.7	1.0	0.0	9.6	0.3	0.4	23.2	0.0	0.8	4.0	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	2.9	0.0	0.3	1.4	1.0	0.1	0.0	0.5	5.3	0.0	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.9	19.4	15.1	36.9	18.3	17.8	51.0	0.0	24.7	22.4	0.0	11.5
LnGrp LOS	C	B	B	D	B	B	D	A	C	C	A	B
Approach Vol, veh/h		647			427			42			547	
Approach Delay, s/veh		20.5			18.9			27.8			20.4	
Approach LOS		C			B			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.6	19.7	4.9	26.1	7.3	17.9	21.5	9.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.5	44.5	5.5	46.5	5.5	44.5	45.5	6.5
Max Q Clear Time (g_c+I1), s	2.5	11.3	2.2	4.2	3.7	6.4	15.6	3.1
Green Ext Time (p_c), s	0.0	3.8	0.0	0.6	0.0	2.2	1.4	0.0

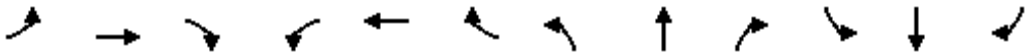
Intersection Summary	
HCM 6th Ctrl Delay	20.2
HCM 6th LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	580	10	20	305	100	10	30	15	435	40	65
Future Volume (veh/h)	55	580	10	20	305	100	10	30	15	435	40	65
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1678	1826	1826	1752	1826	1826	1826	1826	1826	1826	1826
Adj Flow Rate, veh/h	58	611	11	21	321	105	11	32	16	458	42	68
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	5	15	5	5	10	5	5	5	5	5	5	5
Cap, veh/h	98	937	455	44	877	408	25	120	60	676	182	295
Arrive On Green	0.06	0.29	0.29	0.03	0.26	0.26	0.01	0.10	0.10	0.20	0.29	0.29
Sat Flow, veh/h	1739	3188	1547	1739	3328	1547	1739	1148	574	3374	627	1016
Grp Volume(v), veh/h	58	611	11	21	321	105	11	0	48	458	0	110
Grp Sat Flow(s),veh/h/ln	1739	1594	1547	1739	1664	1547	1739	0	1723	1687	0	1643
Q Serve(g_s), s	1.6	8.0	0.2	0.6	3.8	2.6	0.3	0.0	1.2	6.0	0.0	2.4
Cycle Q Clear(g_c), s	1.6	8.0	0.2	0.6	3.8	2.6	0.3	0.0	1.2	6.0	0.0	2.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.33	1.00		0.62
Lane Grp Cap(c), veh/h	98	937	455	44	877	408	25	0	180	676	0	477
V/C Ratio(X)	0.59	0.65	0.02	0.47	0.37	0.26	0.45	0.00	0.27	0.68	0.00	0.23
Avail Cap(c_a), veh/h	454	3094	1502	272	2883	1340	272	0	665	2077	0	1389
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	22.1	14.8	12.0	23.0	14.4	13.9	23.4	0.0	19.8	17.7	0.0	12.9
Incr Delay (d2), s/veh	5.7	0.8	0.0	7.7	0.3	0.3	12.0	0.0	0.8	1.2	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	2.2	0.1	0.3	1.1	0.8	0.2	0.0	0.5	2.1	0.0	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.7	15.5	12.0	30.7	14.6	14.3	35.5	0.0	20.6	18.9	0.0	13.2
LnGrp LOS	C	B	B	C	B	B	D	A	C	B	A	B
Approach Vol, veh/h		680			447			59			568	
Approach Delay, s/veh		16.5			15.3			23.3			17.8	
Approach LOS		B			B			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.7	18.6	5.2	18.4	7.2	17.1	14.1	9.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	7.5	46.5	7.5	40.5	12.5	41.5	29.5	18.5
Max Q Clear Time (g_c+I1), s	2.6	10.0	2.3	4.4	3.6	5.8	8.0	3.2
Green Ext Time (p_c), s	0.0	4.1	0.0	0.6	0.1	2.3	1.6	0.1

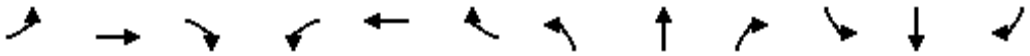
Intersection Summary	
HCM 6th Ctrl Delay	16.9
HCM 6th LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	1370	10	10	1420	160	10	10	10	490	10	70
Future Volume (veh/h)	100	1370	10	10	1420	160	10	10	10	490	10	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1678	1826	1826	1752	1826	1826	1826	1826	1826	1826	1826
Adj Flow Rate, veh/h	105	1442	11	11	1495	168	11	11	11	516	11	74
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	5	15	5	5	10	5	5	5	5	5	5	5
Cap, veh/h	89	1445	701	23	1381	642	23	39	39	555	72	485
Arrive On Green	0.05	0.45	0.45	0.01	0.41	0.41	0.01	0.05	0.05	0.32	0.35	0.35
Sat Flow, veh/h	1739	3188	1547	1739	3328	1547	1739	838	838	1739	204	1374
Grp Volume(v), veh/h	105	1442	11	11	1495	168	11	0	22	516	0	85
Grp Sat Flow(s),veh/h/ln	1739	1594	1547	1739	1664	1547	1739	0	1675	1739	0	1579
Q Serve(g_s), s	5.5	48.4	0.4	0.7	44.5	7.6	0.7	0.0	1.4	30.8	0.0	3.9
Cycle Q Clear(g_c), s	5.5	48.4	0.4	0.7	44.5	7.6	0.7	0.0	1.4	30.8	0.0	3.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.50	1.00		0.87
Lane Grp Cap(c), veh/h	89	1445	701	23	1381	642	23	0	78	555	0	557
V/C Ratio(X)	1.18	1.00	0.02	0.49	1.08	0.26	0.49	0.00	0.28	0.93	0.00	0.15
Avail Cap(c_a), veh/h	89	1445	701	89	1381	642	89	0	102	738	0	685
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	50.9	29.3	16.1	52.6	31.4	20.6	52.6	0.0	49.4	35.3	0.0	23.7
Incr Delay (d2), s/veh	150.7	23.2	0.0	15.2	49.8	0.2	15.2	0.0	1.9	15.3	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.0	21.1	0.1	0.4	25.7	2.8	0.4	0.0	0.6	14.9	0.0	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	201.6	52.4	16.2	67.8	81.2	20.8	67.8	0.0	51.3	50.6	0.0	23.9
LnGrp LOS	F	D	B	E	F	C	E	A	D	D	A	C
Approach Vol, veh/h		1558			1674			33			601	
Approach Delay, s/veh		62.2			75.0			56.8			46.8	
Approach LOS		E			E			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.9	53.1	5.9	42.3	10.0	49.0	38.7	9.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.5	44.5	5.5	46.5	5.5	44.5	45.5	6.5
Max Q Clear Time (g_c+I1), s	2.7	50.4	2.7	5.9	7.5	46.5	32.8	3.4
Green Ext Time (p_c), s	0.0	0.0	0.0	0.5	0.0	0.0	1.4	0.0

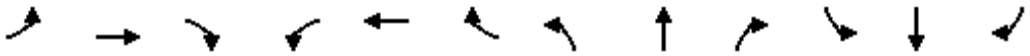
Intersection Summary	
HCM 6th Ctrl Delay	65.3
HCM 6th LOS	E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	1370	10	10	1420	160	10	10	10	490	10	70
Future Volume (veh/h)	100	1370	10	10	1420	160	10	10	10	490	10	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1678	1826	1826	1752	1826	1826	1826	1826	1826	1826	1826
Adj Flow Rate, veh/h	105	1442	11	11	1495	168	11	11	11	516	11	74
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	5	15	5	5	10	5	5	5	5	5	5	5
Cap, veh/h	131	1789	868	23	1661	772	23	44	44	620	46	307
Arrive On Green	0.08	0.56	0.56	0.01	0.50	0.50	0.01	0.05	0.05	0.18	0.22	0.22
Sat Flow, veh/h	1739	3188	1547	1739	3328	1547	1739	838	838	3374	204	1374
Grp Volume(v), veh/h	105	1442	11	11	1495	168	11	0	22	516	0	85
Grp Sat Flow(s),veh/h/ln	1739	1594	1547	1739	1664	1547	1739	0	1675	1687	0	1579
Q Serve(g_s), s	5.6	34.5	0.3	0.6	38.8	5.8	0.6	0.0	1.2	14.0	0.0	4.2
Cycle Q Clear(g_c), s	5.6	34.5	0.3	0.6	38.8	5.8	0.6	0.0	1.2	14.0	0.0	4.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.50	1.00		0.87
Lane Grp Cap(c), veh/h	131	1789	868	23	1661	772	23	0	88	620	0	352
V/C Ratio(X)	0.80	0.81	0.01	0.48	0.90	0.22	0.48	0.00	0.25	0.83	0.00	0.24
Avail Cap(c_a), veh/h	137	1789	868	101	1768	822	101	0	308	940	0	639
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	43.3	16.7	9.2	46.6	21.7	13.4	46.6	0.0	43.2	37.4	0.0	30.3
Incr Delay (d2), s/veh	26.8	2.8	0.0	14.5	6.5	0.1	14.5	0.0	1.5	4.0	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	11.0	0.1	0.3	14.3	2.0	0.3	0.0	0.5	6.0	0.0	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	70.1	19.5	9.2	61.1	28.1	13.5	61.1	0.0	44.7	41.4	0.0	30.7
LnGrp LOS	E	B	A	E	C	B	E	A	D	D	A	C
Approach Vol, veh/h		1558			1674			33			601	
Approach Delay, s/veh		22.9			26.9			50.2			39.9	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.8	57.9	5.8	25.7	11.7	51.9	22.0	9.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.5	52.5	5.5	38.5	7.5	50.5	26.5	17.5
Max Q Clear Time (g_c+I1), s	2.6	36.5	2.6	6.2	7.6	40.8	16.0	3.2
Green Ext Time (p_c), s	0.0	8.8	0.0	0.5	0.0	6.6	1.5	0.0

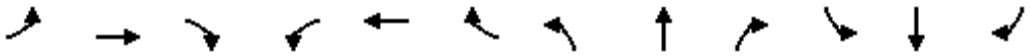
Intersection Summary	
HCM 6th Ctrl Delay	27.5
HCM 6th LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	130	1355	10	10	1395	210	10	15	10	530	15	110
Future Volume (veh/h)	130	1355	10	10	1395	210	10	15	10	530	15	110
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1678	1826	1826	1752	1826	1826	1826	1826	1826	1826	1826
Adj Flow Rate, veh/h	137	1426	11	11	1468	221	11	16	11	558	16	116
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	5	15	5	5	10	5	5	5	5	5	5	5
Cap, veh/h	86	1396	678	23	1336	621	23	45	31	594	71	518
Arrive On Green	0.05	0.44	0.44	0.01	0.40	0.40	0.01	0.05	0.05	0.34	0.37	0.37
Sat Flow, veh/h	1739	3188	1547	1739	3328	1547	1739	1008	693	1739	191	1385
Grp Volume(v), veh/h	137	1426	11	11	1468	221	11	0	27	558	0	132
Grp Sat Flow(s),veh/h/ln	1739	1594	1547	1739	1664	1547	1739	0	1701	1739	0	1577
Q Serve(g_s), s	5.5	48.6	0.4	0.7	44.5	11.1	0.7	0.0	1.7	34.5	0.0	6.3
Cycle Q Clear(g_c), s	5.5	48.6	0.4	0.7	44.5	11.1	0.7	0.0	1.7	34.5	0.0	6.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.41	1.00		0.88
Lane Grp Cap(c), veh/h	86	1396	678	23	1336	621	23	0	77	594	0	589
V/C Ratio(X)	1.59	1.02	0.02	0.49	1.10	0.36	0.49	0.00	0.35	0.94	0.00	0.22
Avail Cap(c_a), veh/h	86	1396	678	86	1336	621	86	0	100	714	0	661
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	52.7	31.1	17.6	54.3	33.2	23.2	54.3	0.0	51.4	35.4	0.0	23.7
Incr Delay (d2), s/veh	312.3	29.6	0.0	15.4	56.2	0.3	15.4	0.0	2.7	18.5	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.8	22.5	0.2	0.4	26.8	4.1	0.4	0.0	0.8	17.2	0.0	2.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	364.9	60.7	17.6	69.8	89.4	23.5	69.8	0.0	54.1	53.9	0.0	23.9
LnGrp LOS	F	F	B	E	F	C	E	A	D	D	A	C
Approach Vol, veh/h		1574			1700			38			690	
Approach Delay, s/veh		86.9			80.7			58.6			48.2	
Approach LOS		F			F			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.9	53.1	5.9	45.9	10.0	49.0	42.4	9.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.5	44.5	5.5	46.5	5.5	44.5	45.5	6.5
Max Q Clear Time (g_c+I1), s	2.7	50.6	2.7	8.3	7.5	46.5	36.5	3.7
Green Ext Time (p_c), s	0.0	0.0	0.0	0.8	0.0	0.0	1.4	0.0

Intersection Summary	
HCM 6th Ctrl Delay	77.3
HCM 6th LOS	E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	130	1355	10	10	1395	210	10	15	10	530	15	110
Future Volume (veh/h)	130	1355	10	10	1395	210	10	15	10	530	15	110
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1678	1826	1826	1752	1826	1826	1826	1826	1826	1826	1826
Adj Flow Rate, veh/h	137	1426	11	11	1468	221	11	16	11	558	16	116
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	5	15	5	5	10	5	5	5	5	5	5	5
Cap, veh/h	151	1773	861	23	1607	747	23	51	35	662	45	324
Arrive On Green	0.09	0.56	0.56	0.01	0.48	0.48	0.01	0.05	0.05	0.20	0.23	0.23
Sat Flow, veh/h	1739	3188	1547	1739	3328	1547	1739	1008	693	3374	191	1385
Grp Volume(v), veh/h	137	1426	11	11	1468	221	11	0	27	558	0	132
Grp Sat Flow(s),veh/h/ln	1739	1594	1547	1739	1664	1547	1739	0	1701	1687	0	1577
Q Serve(g_s), s	7.7	35.3	0.3	0.6	40.0	8.5	0.6	0.0	1.5	15.6	0.0	6.9
Cycle Q Clear(g_c), s	7.7	35.3	0.3	0.6	40.0	8.5	0.6	0.0	1.5	15.6	0.0	6.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.41	1.00		0.88
Lane Grp Cap(c), veh/h	151	1773	861	23	1607	747	23	0	87	662	0	369
V/C Ratio(X)	0.91	0.80	0.01	0.48	0.91	0.30	0.48	0.00	0.31	0.84	0.00	0.36
Avail Cap(c_a), veh/h	151	1773	861	97	1679	780	97	0	269	980	0	618
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	44.4	17.5	9.7	48.1	23.5	15.3	48.1	0.0	44.9	38.0	0.0	31.4
Incr Delay (d2), s/veh	47.6	2.8	0.0	14.7	7.9	0.2	14.7	0.0	2.0	4.5	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.1	11.4	0.1	0.3	15.3	2.9	0.4	0.0	0.7	6.7	0.0	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	92.1	20.3	9.7	62.8	31.4	15.5	62.8	0.0	46.9	42.5	0.0	32.0
LnGrp LOS	F	C	A	E	C	B	E	A	D	D	A	C
Approach Vol, veh/h		1574			1700			38			690	
Approach Delay, s/veh		26.5			29.5			51.5			40.5	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.8	59.1	5.8	27.5	13.0	51.9	23.8	9.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.5	52.5	5.5	38.5	8.5	49.5	28.5	15.5
Max Q Clear Time (g_c+I1), s	2.6	37.3	2.6	8.9	9.7	42.0	17.6	3.5
Green Ext Time (p_c), s	0.0	8.4	0.0	0.8	0.0	5.3	1.6	0.0

Intersection Summary	
HCM 6th Ctrl Delay	30.4
HCM 6th LOS	C

CALCULATION OF FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES (NCHRP 255)

Intersection No.: 1
North/South Street: BEEKLEY ROAD
East/West Street: HIGHWAY 138

Analysis Condition: YEAR 2040 AMBIENT TRAFFIC

A.M. Peak Hour

Approach Direction		Base Year Count	Forecast Future Year Link Volume			Turn Volume	Rounded Volume
South leg	Left	10	Approach	4	Left	72	70
NB	Through	45	Departure	4	Through	96	100
	Right	25			Right	81	80
North leg	Left	410	Approach	507	Left	406	410
SB	Through	40	Departure	168	Through	2	10
	Right	15			Right	33	30
West leg	Left	45	Approach	897	Left	54	50
EB	Through	400	Departure	820	Through	725	720
	Right	5			Right	1	10
East leg	Left	20	Approach	796	Left	1	10
WB	Through	500	Departure	1,211	Through	715	710
	Right	45			Right	19	20

P.M. Peak Hour

Approach Direction		Base Year Count	Forecast Future Year Link Volume			Turn Volume	Rounded Volume
South leg	Left	5	Approach	4	Left	1	10
NB	Through	20	Departure	4	Through	2	10
	Right	10			Right	1	10
North leg	Left	385	Approach	574	Left	486	490
SB	Through	30	Departure	270	Through	2	10
	Right	20			Right	69	70
West leg	Left	20	Approach	1,531	Left	105	100
EB	Through	580	Departure	1,490	Through	1,368	1370
	Right	5			Right	1	10
East leg	Left	15	Approach	1,509	Left	1	10
WB	Through	320	Departure	1,854	Through	1,420	1420
	Right	45			Right	162	160

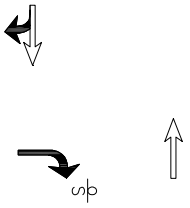
DAVID EVANS AND ASSOCIATES INC.

SUBJECT	BY	DATE	JOB NO.	SHEET OF
TURN MOVEMENTS	CF	11-Jul-18	OVCV0002-0001	1 OF 2

E/W STREET : PROJECT DRIVEWAY
N/S STREET : BEEKLEY ROAD
CONDITION : AM PEAK HOUR

INTERSECTION : 2
PROJECTED GROWTH PER YEAR : 2.0%

CONDITION DIAGRAMS



PROJECT GEOMETRICS

TURN MOVEMENTS

CONDITION	EXISTING TRAFFIC	PROJECT TRIPS	EXISTING + PROJECT TRAFFIC	AMBIENT GROWTH TRIPS	BACKGROUND TRAFFIC	PROJECT TRAFFIC	YEAR 2040 TRAFFIC	YEAR 2040 AMBIENT + PROJECT TRAFFIC
SCENARIO #:	1		3		5	7	9	11
PROJECT DRIVEWAY								
EB LEFT	0	0	0	0	0	0	0	0
EB THRU	0	0	0	0	0	0	0	0
EB RIGHT	0	50	50	0	0	50	0	50
WB LEFT	0	0	0	0	0	0	0	0
WB THRU	0	0	0	0	0	0	0	0
WB RIGHT	0	0	0	0	0	0	0	0
BEEKLEY ROAD								
NB LEFT	0	0	0	0	0	0	0	0
NB THRU	135	65	200	15	150	215	170	235
NB RIGHT	0	0	0	0	0	0	0	0
SB LEFT	0	0	0	0	0	0	0	0
SB THRU	465	0	485	20	485	505	450	470
SB RIGHT	0	20	20	0	0	20	0	20
TOTALS	**600**	**135**	**755**	**35**	**635**	**790**	**620**	**775**

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	50	0	200	485	20
Future Vol, veh/h	0	50	0	200	485	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	0	60	0	238	577	24

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	589	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.25	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.345	-	-	-	-
Pot Cap-1 Maneuver	0	503	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	503	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.1	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	503	-	-
HCM Lane V/C Ratio	-	0.118	-	-
HCM Control Delay (s)	-	13.1	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.4	-	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	50	0	215	505	20
Future Vol, veh/h	0	50	0	215	505	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	0	53	0	226	532	21

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	543	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.25	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.345	-	-	-	-
Pot Cap-1 Maneuver	0	534	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	534	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.5	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	534	-	-
HCM Lane V/C Ratio	-	0.099	-	-
HCM Control Delay (s)	-	12.5	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.3	-	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	50	0	235	470	20
Future Vol, veh/h	0	50	0	235	470	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	0	53	0	247	495	21

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	506	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.25	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.345	-	-	-	-
Pot Cap-1 Maneuver	0	560	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	560	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.1	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	560	-	-
HCM Lane V/C Ratio	-	0.094	-	-
HCM Control Delay (s)	-	12.1	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.3	-	-

DAVID EVANS AND ASSOCIATES INC.

SUBJECT	BY	DATE	JOB NO.	SHEET OF
TURN MOVEMENTS	CF	11-Jul-18	OVCV0002-0001	1 OF 2

E/W STREET : PROJECT DRIVEWAY
N/S STREET : BEEKLEY ROAD
CONDITION : PM PEAK HOUR

INTERSECTION : 2
: 2.0%
PROJECTED GROWTH PER YEAR :

TURN MOVEMENTS

CONDITION	EXISTING TRAFFIC	PROJECT TRIPS	EXISTING + PROJECT TRAFFIC	AMBIENT GROWTH TRIPS	BACKGROUND TRAFFIC	PROJECT TRAFFIC	YEAR 2040 TRAFFIC	YEAR 2040 AMBIENT + PROJECT TRAFFIC
SCENARIO #:	2		4		6	8	10	12
PROJECT DRIVEWAY								
EB LEFT	0	0	0	0	0	0	0	0
EB THRU	0	0	0	0	0	0	0	0
EB RIGHT	0	65	65	0	0	65	0	65
WB LEFT	0	0	0	0	0	0	0	0
WB THRU	0	0	0	0	0	0	0	0
WB RIGHT	0	0	0	0	0	0	0	0
BEEKLEY ROAD								
NB LEFT	0	0	0	0	0	0	0	0
NB THRU	85	80	170	15	100	185	270	355
NB RIGHT	0	0	0	0	0	0	0	0
SB LEFT	0	0	0	0	0	0	0	0
SB THRU	435	0	455	20	455	475	570	590
SB RIGHT	0	25	25	0	0	25	0	25
TOTALS	**520**	**170**	**715**	**35**	**555**	**750**	**840**	**1035**

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	65	0	170	455	25
Future Vol, veh/h	0	65	0	170	455	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	0	69	0	181	484	27

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	498	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.25	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.345	-	-	-	-
Pot Cap-1 Maneuver	0	566	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	566	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.2	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	566	-	-
HCM Lane V/C Ratio	-	0.122	-	-
HCM Control Delay (s)	-	12.2	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.4	-	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	65	0	170	455	25
Future Vol, veh/h	0	65	0	170	455	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	0	68	0	179	479	26

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	492	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.25	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.345	-	-	-	-
Pot Cap-1 Maneuver	0	571	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	571	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.2	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	571	-	-
HCM Lane V/C Ratio	-	0.12	-	-
HCM Control Delay (s)	-	12.2	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.4	-	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	65	0	355	590	25
Future Vol, veh/h	0	65	0	355	590	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	0	68	0	374	621	26

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	634	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.25	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.345	-	-	-	-
Pot Cap-1 Maneuver	0	474	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	474	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.9	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	474	-	-
HCM Lane V/C Ratio	-	0.144	-	-
HCM Control Delay (s)	-	13.9	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.5	-	-

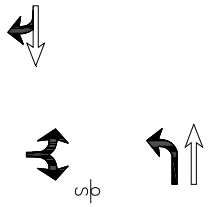
DAVID EVANS AND ASSOCIATES INC.

SUBJECT	BY	DATE	JOB NO.	SHEET OF
TURN MOVEMENTS	CF	11-Jul-18	OVCV0002-0001	1 OF 2

E/W STREET : PROJECT DRIVEWAY "B"
N/S STREET : BEEKLEY ROAD
CONDITION : AM PEAK HOUR

INTERSECTION : 3
PROJECTED GROWTH PER YEAR : 2.0%

CONDITION DIAGRAMS



PROJECT GEOMETRICS

TURN MOVEMENTS

CONDITION	EXISTING TRAFFIC	PROJECT TRIPS	EXISTING + PROJECT TRAFFIC	AMBIENT GROWTH TRIPS	BACKGROUND TRAFFIC	PROJECT TRAFFIC	YEAR 2040 TRAFFIC	YEAR 2040 AMBIENT + PROJECT TRAFFIC
SCENARIO #:	1		3		5	7	9	11
PROJECT DRIVEWAY "B"								
EB LEFT	0	20	20	0	0	20	0	20
EB THRU	0	0	0	0	0	0	0	0
EB RIGHT	0	10	10	0	0	10	0	10
WB LEFT	0	0	0	0	0	0	0	0
WB THRU	0	0	0	0	0	0	0	0
WB RIGHT	0	0	0	0	0	0	0	0
BEEKLEY ROAD								
NB LEFT	0	60	60	0	0	60	0	60
NB THRU	135	65	140	15	150	155	170	175
NB RIGHT	0	0	0	0	0	0	0	0
SB LEFT	0	0	0	0	0	0	0	0
SB THRU	465	5	495	20	485	515	450	480
SB RIGHT	0	10	10	0	0	10	0	10
TOTALS	**600**	**170**	**735**	**35**	**635**	**770**	**620**	**755**

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	20	10	60	140	495	10
Future Vol, veh/h	20	10	60	140	495	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	24	12	71	167	589	12

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	904	595	601	0	-	0
Stage 1	595	-	-	-	-	-
Stage 2	309	-	-	-	-	-
Critical Hdwy	6.45	6.25	4.15	-	-	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	2.245	-	-	-
Pot Cap-1 Maneuver	304	499	962	-	-	-
Stage 1	545	-	-	-	-	-
Stage 2	738	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	279	499	962	-	-	-
Mov Cap-2 Maneuver	384	-	-	-	-	-
Stage 1	501	-	-	-	-	-
Stage 2	738	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.5	2.7	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	962	-	416	-	-
HCM Lane V/C Ratio	0.074	-	0.086	-	-
HCM Control Delay (s)	9	0	14.5	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.3	-	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	20	10	60	155	515	10
Future Vol, veh/h	20	10	60	155	515	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	21	11	63	163	542	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	837	548	553	0	-	0
Stage 1	548	-	-	-	-	-
Stage 2	289	-	-	-	-	-
Critical Hdwy	6.45	6.25	4.15	-	-	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	2.245	-	-	-
Pot Cap-1 Maneuver	333	530	1002	-	-	-
Stage 1	573	-	-	-	-	-
Stage 2	753	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	310	530	1002	-	-	-
Mov Cap-2 Maneuver	411	-	-	-	-	-
Stage 1	533	-	-	-	-	-
Stage 2	753	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.7	2.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1002	-	444	-	-
HCM Lane V/C Ratio	0.063	-	0.071	-	-
HCM Control Delay (s)	8.8	0	13.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.2	-	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	20	10	60	140	495	10
Future Vol, veh/h	20	10	60	140	495	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	21	11	63	147	521	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	800	527	532	0	-	0
Stage 1	527	-	-	-	-	-
Stage 2	273	-	-	-	-	-
Critical Hdwy	6.45	6.25	4.15	-	-	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	2.245	-	-	-
Pot Cap-1 Maneuver	350	545	1020	-	-	-
Stage 1	586	-	-	-	-	-
Stage 2	766	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	327	545	1020	-	-	-
Mov Cap-2 Maneuver	425	-	-	-	-	-
Stage 1	547	-	-	-	-	-
Stage 2	766	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.4	2.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1020	-	459	-	-
HCM Lane V/C Ratio	0.062	-	0.069	-	-
HCM Control Delay (s)	8.8	0	13.4	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.2	-	-

DAVID EVANS AND ASSOCIATES INC.

SUBJECT	BY	DATE	JOB NO.	SHEET OF
TURN MOVEMENTS	CF	11-Jul-18	OVCV0002-0001	1 OF 2

E/W STREET : PROJECT DRIVEWAY "B"
N/S STREET : BEEKLEY ROAD
CONDITION : PM PEAK HOUR

INTERSECTION : 3
PROJECTED GROWTH PER YEAR : 2.0%

TURN MOVEMENTS

CONDITION	EXISTING TRAFFIC	PROJECT TRIPS	EXISTING + PROJECT TRAFFIC	AMBIENT GROWTH TRIPS	BACKGROUND TRAFFIC	PROJECT TRAFFIC	YEAR 2040 TRAFFIC	YEAR 2040 AMBIENT + PROJECT TRAFFIC
SCENARIO #:	2		4		6	8	10	12
PROJECT DRIVEWAY "B"								
EB LEFT	0	30	30	0	0	30	0	30
EB THRU	0	0	0	0	0	0	0	0
EB RIGHT	0	10	10	0	0	10	0	10
WB LEFT	0	0	0	0	0	0	0	0
WB THRU	0	0	0	0	0	0	0	0
WB RIGHT	0	0	0	0	0	0	0	0
BEEKLEY ROAD								
NB LEFT	0	80	80	0	0	80	0	80
NB THRU	85	0	90	15	100	105	270	275
NB RIGHT	0	0	0	0	0	0	0	0
SB LEFT	0	0	0	0	0	0	0	0
SB THRU	435	10	470	20	455	490	570	605
SB RIGHT	0	10	10	0	0	10	0	10
TOTALS	**520**	**140**	**690**	**35**	**555**	**725**	**840**	**1010**

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	10	80	90	470	10
Future Vol, veh/h	30	10	80	90	470	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	32	11	85	96	500	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	772	506	511	0	-	0
Stage 1	506	-	-	-	-	-
Stage 2	266	-	-	-	-	-
Critical Hdwy	6.45	6.25	4.15	-	-	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	2.245	-	-	-
Pot Cap-1 Maneuver	364	560	1039	-	-	-
Stage 1	599	-	-	-	-	-
Stage 2	772	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	333	560	1039	-	-	-
Mov Cap-2 Maneuver	426	-	-	-	-	-
Stage 1	547	-	-	-	-	-
Stage 2	772	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.8	4.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1039	-	453	-	-
HCM Lane V/C Ratio	0.082	-	0.094	-	-
HCM Control Delay (s)	8.8	0	13.8	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.3	-	0.3	-	-

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	10	80	90	470	10
Future Vol, veh/h	30	10	80	90	470	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	32	11	84	95	495	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	764	501	506	0	-	0
Stage 1	501	-	-	-	-	-
Stage 2	263	-	-	-	-	-
Critical Hdwy	6.45	6.25	4.15	-	-	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	2.245	-	-	-
Pot Cap-1 Maneuver	368	564	1043	-	-	-
Stage 1	603	-	-	-	-	-
Stage 2	774	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	337	564	1043	-	-	-
Mov Cap-2 Maneuver	430	-	-	-	-	-
Stage 1	552	-	-	-	-	-
Stage 2	774	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.7	4.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1043	-	457	-	-
HCM Lane V/C Ratio	0.081	-	0.092	-	-
HCM Control Delay (s)	8.8	0	13.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.3	-	0.3	-	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	10	80	275	605	10
Future Vol, veh/h	30	10	80	275	605	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	32	11	84	289	637	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1100	643	648	0	-	0
Stage 1	643	-	-	-	-	-
Stage 2	457	-	-	-	-	-
Critical Hdwy	6.45	6.25	4.15	-	-	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	2.245	-	-	-
Pot Cap-1 Maneuver	232	468	924	-	-	-
Stage 1	518	-	-	-	-	-
Stage 2	631	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	207	468	924	-	-	-
Mov Cap-2 Maneuver	322	-	-	-	-	-
Stage 1	462	-	-	-	-	-
Stage 2	631	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.7	2.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	924	-	349	-	-
HCM Lane V/C Ratio	0.091	-	0.121	-	-
HCM Control Delay (s)	9.3	0	16.7	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.3	-	0.4	-	-

DAVID EVANS
AND ASSOCIATES INC.

APPENDIX D: QUEUING ANALYSIS

Intersection: 1: BEEKLEY RD & HIGHWAY 138

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	T	R	L	TR	L	TR
Maximum Queue (ft)	101	156	116	3	43	269	234	52	51	181	280	74
Average Queue (ft)	34	77	34	0	9	139	88	9	7	72	189	31
95th Queue (ft)	70	136	93	2	32	222	180	28	30	142	279	65
Link Distance (ft)		875	875			914	914	914		285	265	265
Upstream Blk Time (%)											2	
Queuing Penalty (veh)											5	
Storage Bay Dist (ft)	420			420	430				250			
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 2: BEEKLEY RD & DRIVEWAY A

Movement	EB	SB
Directions Served	R	TR
Maximum Queue (ft)	80	147
Average Queue (ft)	30	10
95th Queue (ft)	60	57
Link Distance (ft)	102	212
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: BEEKLEY RD & DRIVEWAY B

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	52	98
Average Queue (ft)	17	31
95th Queue (ft)	45	76
Link Distance (ft)	106	212
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 5

Intersection: 1: BEEKLEY RD & HIGHWAY 138

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	L	T	T	R	L	TR	L	TR
Maximum Queue (ft)	100	246	203	43	169	147	48	31	96	268	109
Average Queue (ft)	27	119	82	9	74	22	14	5	36	171	32
95th Queue (ft)	64	182	168	30	134	74	34	22	83	250	78
Link Distance (ft)		875	875		914	914	914		285	265	265
Upstream Blk Time (%)										0	
Queuing Penalty (veh)										0	
Storage Bay Dist (ft)	420			430				250			
Storage Blk Time (%)											
Queuing Penalty (veh)											

Intersection: 2: BEEKLEY RD & DRIVEWAY A

Movement	EB	SB
Directions Served	R	TR
Maximum Queue (ft)	105	55
Average Queue (ft)	34	2
95th Queue (ft)	64	18
Link Distance (ft)	102	212
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: BEEKLEY RD & DRIVEWAY B

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	80	74
Average Queue (ft)	35	26
95th Queue (ft)	63	61
Link Distance (ft)	106	212
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 0

Intersection: 1: BEEKLEY RD & HIGHWAY 138

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	T	R	L	TR	L	TR
Maximum Queue (ft)	106	150	115	3	64	228	190	56	52	160	268	93
Average Queue (ft)	59	77	37	1	16	131	82	9	11	64	203	43
95th Queue (ft)	98	135	80	2	43	210	177	27	36	122	275	91
Link Distance (ft)		875	875			914	914	914		285	265	265
Upstream Blk Time (%)											1	
Queuing Penalty (veh)											3	
Storage Bay Dist (ft)	420			420	430				250			
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 2: BEEKLEY RD & DRIVEWAY A

Movement	EB	SB
Directions Served	R	TR
Maximum Queue (ft)	73	98
Average Queue (ft)	25	9
95th Queue (ft)	58	50
Link Distance (ft)	102	212
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: BEEKLEY RD & DRIVEWAY B

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	78	146	46
Average Queue (ft)	23	38	2
95th Queue (ft)	59	95	15
Link Distance (ft)	106	212	332
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 3

Intersection: 1: BEEKLEY RD & HIGHWAY 138

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	T	R	L	TR	L	L
Maximum Queue (ft)	104	147	109	1	45	224	223	34	50	116	220	185
Average Queue (ft)	37	74	23	0	16	132	78	8	19	55	126	99
95th Queue (ft)	72	137	73	0	40	209	172	24	44	104	188	158
Link Distance (ft)		868	868			909	909	909		284	264	264
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	420			420	430				250			
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 1: BEEKLEY RD & HIGHWAY 138

Movement	SB
Directions Served	TR
Maximum Queue (ft)	115
Average Queue (ft)	38
95th Queue (ft)	84
Link Distance (ft)	264
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 2: BEEKLEY RD & DRIVEWAY A

Movement	EB
Directions Served	R
Maximum Queue (ft)	52
Average Queue (ft)	22
95th Queue (ft)	48
Link Distance (ft)	90
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 3: BEEKLEY RD & DRIVEWAY B

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	67	115
Average Queue (ft)	27	26
95th Queue (ft)	55	72
Link Distance (ft)	106	212
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 0

Intersection: 1: BEEKLEY RD & HIGHWAY 138

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	L	T	T	R	L	TR	L	TR
Maximum Queue (ft)	100	246	203	43	169	147	48	31	96	268	109
Average Queue (ft)	27	119	82	9	74	22	14	5	36	171	32
95th Queue (ft)	64	182	168	30	134	74	34	22	83	250	78
Link Distance (ft)		875	875		914	914	914		285	265	265
Upstream Blk Time (%)										0	
Queuing Penalty (veh)										0	
Storage Bay Dist (ft)	420			430				250			
Storage Blk Time (%)											
Queuing Penalty (veh)											

Intersection: 2: BEEKLEY RD & DRIVEWAY A

Movement	EB	SB
Directions Served	R	TR
Maximum Queue (ft)	105	55
Average Queue (ft)	34	2
95th Queue (ft)	64	18
Link Distance (ft)	102	212
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: BEEKLEY RD & DRIVEWAY B

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	80	74
Average Queue (ft)	35	26
95th Queue (ft)	63	61
Link Distance (ft)	106	212
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 0

Intersection: 1: BEEKLEY RD & HIGHWAY 138

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	T	R	L	TR	L	L
Maximum Queue (ft)	83	161	155	2	19	148	107	46	52	75	173	175
Average Queue (ft)	30	86	50	0	7	69	28	8	13	25	105	77
95th Queue (ft)	70	142	122	1	20	133	71	21	39	57	158	139
Link Distance (ft)		868	868			909	909	909		284	264	264
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	420			420	430				250			
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 1: BEEKLEY RD & HIGHWAY 138

Movement	SB
Directions Served	TR
Maximum Queue (ft)	114
Average Queue (ft)	37
95th Queue (ft)	74
Link Distance (ft)	264
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 2: BEEKLEY RD & DRIVEWAY A

Movement	EB
Directions Served	R
Maximum Queue (ft)	72
Average Queue (ft)	30
95th Queue (ft)	58
Link Distance (ft)	90
Upstream Blk Time (%)	0
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 3: BEEKLEY RD & DRIVEWAY B

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	120	94	22
Average Queue (ft)	23	28	1
95th Queue (ft)	63	65	10
Link Distance (ft)	106	212	332
Upstream Blk Time (%)	1		
Queuing Penalty (veh)	0		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 0

Intersection: 1: BEEKLEY RD & HIGHWAY 138

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	B9	SB
Directions Served	L	T	T	R	L	T	T	R	L	TR	T	L
Maximum Queue (ft)	108	263	224	22	20	288	238	50	284	379	511	285
Average Queue (ft)	59	148	114	1	6	186	152	5	207	361	242	220
95th Queue (ft)	104	215	197	7	18	253	235	21	403	385	483	292
Link Distance (ft)		875	875			914	914	914		285	496	265
Upstream Blk Time (%)									1	84	3	4
Queuing Penalty (veh)									0	0	0	11
Storage Bay Dist (ft)	420			420	430				250			
Storage Blk Time (%)									0	91		
Queuing Penalty (veh)									0	64		

Intersection: 1: BEEKLEY RD & HIGHWAY 138

Movement	SB
Directions Served	TR
Maximum Queue (ft)	74
Average Queue (ft)	20
95th Queue (ft)	53
Link Distance (ft)	265
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 2: BEEKLEY RD & DRIVEWAY A

Movement	EB	SB
Directions Served	R	TR
Maximum Queue (ft)	98	157
Average Queue (ft)	33	18
95th Queue (ft)	72	81
Link Distance (ft)	102	212
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: BEEKLEY RD & DRIVEWAY B

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	54	97
Average Queue (ft)	21	35
95th Queue (ft)	50	82
Link Distance (ft)	106	212
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 74

Intersection: 1: BEEKLEY RD & HIGHWAY 138

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	T	R	L	TR	L	L
Maximum Queue (ft)	108	287	230	22	18	273	242	53	114	273	227	214
Average Queue (ft)	53	131	85	2	2	183	144	7	56	106	157	131
95th Queue (ft)	102	212	170	10	12	266	239	26	103	200	222	207
Link Distance (ft)		868	868			909	909	909		284	264	264
Upstream Blk Time (%)										0		
Queuing Penalty (veh)										0		
Storage Bay Dist (ft)	420			420	430				250			
Storage Blk Time (%)										1		
Queuing Penalty (veh)										0		

Intersection: 1: BEEKLEY RD & HIGHWAY 138

Movement	SB
Directions Served	TR
Maximum Queue (ft)	97
Average Queue (ft)	29
95th Queue (ft)	70
Link Distance (ft)	264
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 2: BEEKLEY RD & DRIVEWAY A

Movement	EB
Directions Served	R
Maximum Queue (ft)	74
Average Queue (ft)	29
95th Queue (ft)	63
Link Distance (ft)	90
Upstream Blk Time (%)	0
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 3: BEEKLEY RD & DRIVEWAY B

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	100	95
Average Queue (ft)	30	28
95th Queue (ft)	71	76
Link Distance (ft)	106	212
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 0

Intersection: 1: BEEKLEY RD & HIGHWAY 138

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	T	R	L	TR	L	TR
Maximum Queue (ft)	520	938	909	5	530	977	977	966	31	77	286	113
Average Queue (ft)	450	693	650	0	92	907	898	754	6	21	268	38
95th Queue (ft)	661	1132	1120	3	415	1086	1085	1357	25	63	283	90
Link Distance (ft)		875	875			914	914	914		285	265	265
Upstream Blk Time (%)		39	3			46	63	51			24	
Queuing Penalty (veh)		0	0			0	0	0			80	
Storage Bay Dist (ft)	420			420	430				250			
Storage Blk Time (%)	75	1	4			62						
Queuing Penalty (veh)	505	2	0			6						

Intersection: 2: BEEKLEY RD & DRIVEWAY A

Movement	EB	SB
Directions Served	R	TR
Maximum Queue (ft)	117	226
Average Queue (ft)	47	136
95th Queue (ft)	93	269
Link Distance (ft)	102	212
Upstream Blk Time (%)	0	6
Queuing Penalty (veh)	0	39
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: BEEKLEY RD & DRIVEWAY B

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	52	138	339
Average Queue (ft)	26	44	52
95th Queue (ft)	53	113	195
Link Distance (ft)	106	212	332
Upstream Blk Time (%)			0
Queuing Penalty (veh)			0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 632

Intersection: 1: BEEKLEY RD & HIGHWAY 138

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	T	R	L	TR	L	L
Maximum Queue (ft)	194	565	436	5	45	479	478	75	52	79	288	266
Average Queue (ft)	106	218	170	0	9	339	313	28	8	22	208	175
95th Queue (ft)	181	384	321	2	27	455	458	58	30	62	283	261
Link Distance (ft)		868	868			909	909	909		284	264	264
Upstream Blk Time (%)											1	0
Queuing Penalty (veh)											2	0
Storage Bay Dist (ft)	420			420	430				250			
Storage Blk Time (%)		1	0			1						
Queuing Penalty (veh)		1	0			0						

Intersection: 1: BEEKLEY RD & HIGHWAY 138

Movement	SB
Directions Served	TR
Maximum Queue (ft)	119
Average Queue (ft)	62
95th Queue (ft)	107
Link Distance (ft)	264
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 2: BEEKLEY RD & DRIVEWAY A

Movement	EB	NB	SB
Directions Served	R	T	TR
Maximum Queue (ft)	105	72	76
Average Queue (ft)	35	4	3
95th Queue (ft)	68	32	25
Link Distance (ft)	90	264	212
Upstream Blk Time (%)	0		
Queuing Penalty (veh)	0		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: BEEKLEY RD & DRIVEWAY B

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	77	220	22
Average Queue (ft)	31	65	1
95th Queue (ft)	64	172	7
Link Distance (ft)	106	212	332
Upstream Blk Time (%)		1	
Queuing Penalty (veh)		4	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 7