APPENDIX E

Traffic Impact Analysis

CITY OF COSTA MESA

AUDI FLETCHER JONES DEALERSHIP TRAFFIC IMPACT ANALYSIS

JUNE 2019

Prepared for:
City of Costa Mesa
Transportation Services
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June 3, 2019

Ms. Jennifer Rosales
Transportation Services
City of Costa Mesa
77 Fair Drive
Costa Mesa, CA 92626

Subject: Traffic Impact Analysis Report for the Audi Fletcher Jones Dealership Project in the City of Costa Mesa

Dear Ms. Rosales:

KOA Corporation is pleased to present this focused traffic impact analysis report for the proposed Audi Fletcher Jones Dealership project in the City of Costa Mesa. This report documents the existing traffic conditions and demands within the study area along with project-related traffic analysis and findings.

The traffic analysis has been prepared to meet the traffic impact analysis requirements from the City of Costa Mesa. The report is being submitted to you for review. Please contact our office if you have any questions or comments about the report, or if you need additional information. If there are any comments that require response or revisions, please notify our office as soon as possible for prompt revision.

Sincerely,

Min Zhou, PE

Vice President | Deputy CEO

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1.0 INTRODUCTION & ANALYSIS METHODOLOGY

PROJECT DESCRIPTION

The City of Costa Mesa is reviewing the proposed Audi Fletcher Jones Dealership project. The proposed project is located at 1275 Bristol Street between southbound Newport Boulevard and Santa Ana Avenue/Red Hill Avenue. The project includes a new ground-up 2-story, approximately 58,900 square feet (sf) sales and service center for Audi on approximately 5.2 acres. The site is to consist of a large auto display area, and perimeter parking. The building consists of sales/office, service operation with a parked roof above the service operation. The sales/office spaces are to include Sales, Finance & Insurance, Delivery, Showroom, Service Write-up and Administrative offices. The service spaces will contain service bays, car wash, employee facilities and parts department. The project will provide a total of 377 parking spaces on-site.

Figure 1.1 shows the project vicinity map and study intersections. Figure 1.2 shows the project site plan.

PROJECT STUDY AREA

Study intersections were identified as those that may potentially be impacted by the proposed project. The intersection analysis of potential project traffic impacts examined weekday conditions during the morning (AM) and afternoon (PM) peak hours for a total of three study intersections.

The study area includes the following three intersections:

1. Santa Ana Avenue/Red Hill Avenue and Bristol Street (signalized)
2. Northbound Newport Boulevard and Bristol Street (signalized)
3. Southbound Newport Boulevard and Bristol Street (signalized)

STUDY TIMEFRAMES

Traffic impacts associated with the proposed project were analyzed at the study intersections for a typical weekday AM and PM peak-hour periods. The study includes the analysis of the following timeframes:

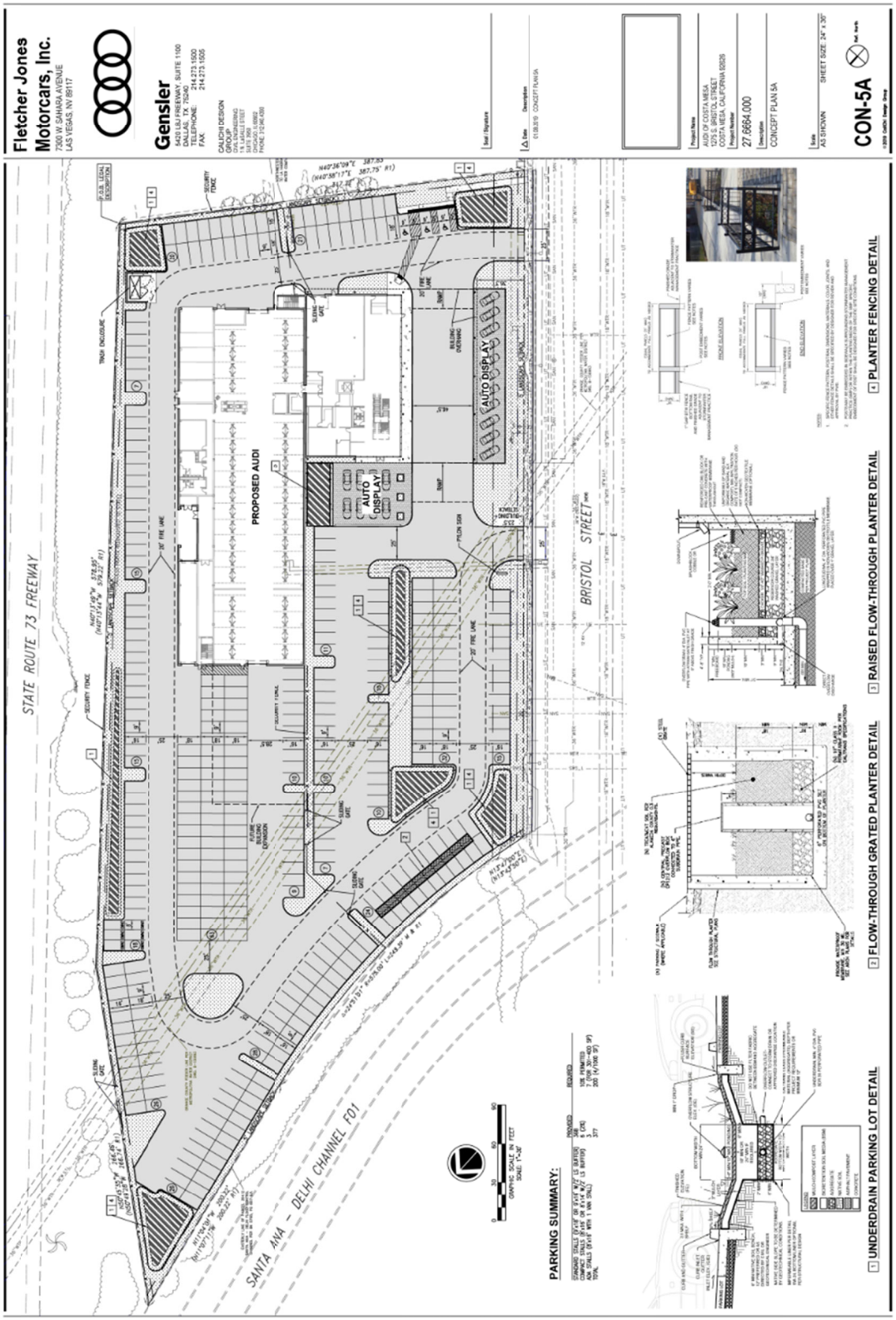
- Existing Year (2019)

The following scenarios have been evaluated for this project:

- Existing Year (2019) conditions
- Existing Year (2019) Plus Project conditions

FIGURE 1.1 – PROJECT VICINITY MAP

FIGURE 1.2 – PROJECT SITE PLAN



ANALYSIS METHODOLOGY

This section documents the methodologies and assumptions used to conduct the analysis for the proposed project. Coordination with the City was the first step in the traffic analysis, in order to define the study area and other major details. City of Costa Mesa requires that the study area intersections be evaluated using the Intersection Capacity Utilization (ICU) methodology for signalized intersections and Highway Capacity Manual (HCM) methodology for unsignalized intersections. The following peak periods during the weekdays were selected for the intersection analysis:

- Weekday AM (peak hour between 7:00 AM and 9:00 PM)
- Weekday PM (peak hour between 4:00 PM and 6:00 PM)

The list of study intersections were finalized through this process, as are the trip generation and trip distribution assumptions. The following subsections describe the methodology for this report.

Existing Year (2019) Condition

Review of existing conditions at key study intersections was conducted to identify traffic controls and approach lane configurations at each study intersection and to identify the locations of on-street parking and other existing roadway characteristics.

Project Trip Generation and Distribution

For this project, the trip generation data provided in the *Trip Generation Analysis for the Fletcher Jones Automotive Facility* study previously conducted by Associated Transportation Engineers was used. The trip generation data for similar projects provided in the trip generation study was used to determine the AM and PM inbound and outbound trip generation rate per 1,000 square feet.

The project trips were then distributed based on existing traffic patterns, geographic location of the site and its proximity to freeways and major travel routes; and the relative distribution of the population from which prospective employees and visitors of the project would expect to be drawn.

Existing (2019) with-Project Conditions

Based on the traffic that is projected for the proposed project and the existing traffic volumes, an existing with-project conditions scenario was analyzed per the Sunnyvale and SMART Rail California Environmental Quality Act (CEQA) court case decisions that determined that project impacts should be analyzed against existing conditions.

Intersection Capacity Utilization (ICU) Analysis Methodology

The Intersection Capacity Utilization (ICU) methodology has been used for the analysis and evaluation of traffic capacity at signalized intersections. The ICU method estimates the volume-to-capacity (V/C) relationship to an intersection based on the individual V/C ratios for key conflicting traffic movements. The ICU numerical values represent the percent signal green time, and thus capacity, required by traffic. Using the ICU procedures, a determination can be made of the operating characteristics of an intersection in terms of the Level of Service for different levels of traffic volumes and other variables, such as critical signal phases and the number and type of traffic lanes.

The term "Level of Service" (LOS) describes the quality of traffic flow at an intersection. LOS A to C is

indicative of excellent to good traffic flow conditions. LOS D corresponds to fair conditions that may experience substantial delay during portions of the peak hours, but without excessive backups. LOS E represents poor conditions, with volumes at or near the capacity of the intersection and long lines of vehicles that may have to wait through several signal cycles. LOS F is characteristic of failure (i.e., the intersection is overloaded, vehicular movements may be restricted or prevented, and delays and queue lengths become increasingly longer).

Per the City of Costa Mesa requirements, the ICU calculations use a lane capacity of 1,600 vehicles per hour (vph) for left-turn lanes, through lanes and right-turn lanes.

Table 1.1 shows the relationship between level of service and ICU volume to capacity (V/C) ratio for intersections.

Table 1.1 – Levels of Service as a Function of ICU Values for Intersections

Level of Service	Range of ICU Values
A	0.00 – 0.600
B	0.601 – 0.700
C	0.701 – 0.800
D	0.801 – 0.900
E	0.901 – 1.000
F	1.001 and up

According to City of Costa Mesa criteria, LOS "D" (ICU = 0.801 – 0.900) is the minimum acceptable conditions that should be maintained during the morning and evening peak hours.

The analysis of peak hour signalized intersection conditions was conducted using the VISTRO software program developed by the PTV Group.

For all scenarios, a cycle length of 110 seconds was applied at all study intersections except for the intersection of Santa Ana Ave/Red Hill Ave at Bristol Street where a cycle length of 120 seconds was applied.

2.0 EXISTING YEAR (2019) CONDITIONS

EXISTING ROADWAY SYSTEM

The key roadways within the study area are described below. The discussion presented here is limited to specific roadways that traverse the study intersections and serve the project site. Figure 2.1 illustrates the existing traffic controls and approach lane geometries at the study intersections.

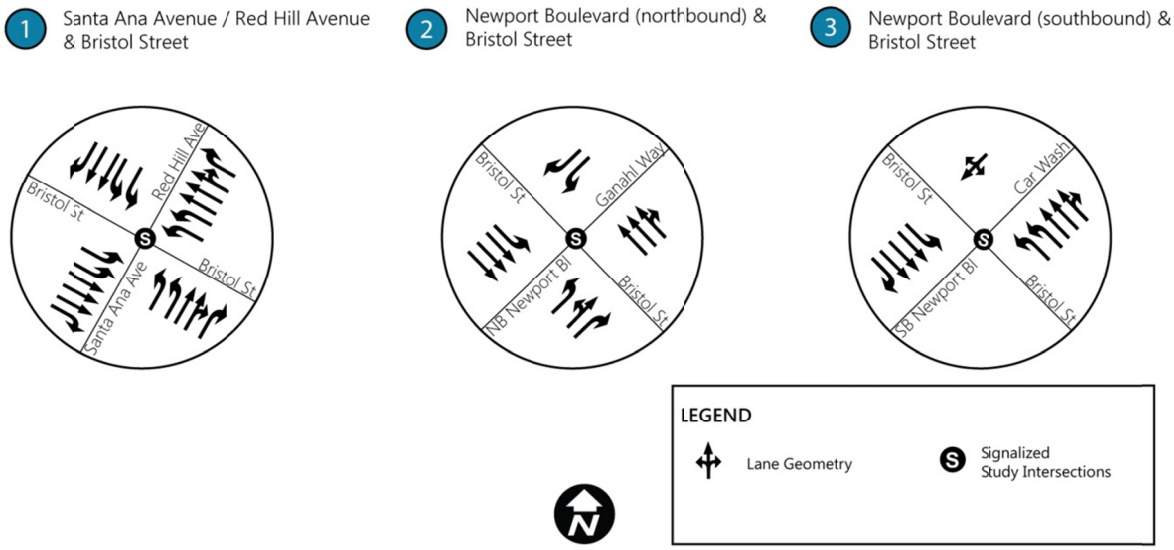
Bristol Street: Bristol Street is a Major Arterial running on an east/west alignment adjacent to the project site. Bristol Street consists of three lanes in each direction with a center left-turn lane. Land uses along the study route include commercial and retail uses. The posted speed limit along Bristol Street is 45 miles per hour (mph) and on-street parking is prohibited on both sides of the roadway.

Southbound Newport Boulevard: Southbound Newport Boulevard is a Secondary Arterial running on a north/south alignment west of the project site. This roadway is a two-lane roadway providing on-way travel in the southbound direction adjacent to the State Route 55 Freeway (SR-55). The posted speed limit along southbound Newport Boulevard is 45 mph and on-street parking is prohibited on both sides of the roadway. A Class II bike lane is provided along the west side of the roadway from Bristol Street to Arlington Drive.

Northbound Newport Boulevard: Northbound Newport Boulevard is a Secondary Arterial running on a north/south alignment east of the project site. This roadway is a two-lane roadway providing on-way travel in the northbound direction adjacent to the State Route 55 Freeway (SR-55). The posted speed limit along northbound Newport Boulevard is 45 mph and on-street parking is prohibited on both sides of the roadway. A Class II bike lane is provided along the east side of the roadway from Bristol Street to Walnut Street.

Santa Ana Avenue/Red Hill Avenue: Santa Ana Avenue/Red Hill Avenue is a Secondary Arterial south of Bristol Street and a Primary Arterial north of Bristol Street. Santa Ana Avenue (south of Bristol Street) is a three-lane roadway providing one northbound travel lane and two southbound travel lanes with a center left-turn lane. On-street parking is allowed along the east side of the roadway. A Class II bike lane is provided along the east side of the roadway between Bristol Street and Mesa Drive. The posted speed limit along Santa Ana Avenue is 45 mph. Red Hill Avenue is (north of Bristol Street) is a four-lane roadway providing two lanes in each direction with a center left-turn lane. On-street parking is prohibited along both sides of the roadway. A Class II bike lane is provided along both sides of the roadway. The posted speed limit along Red Hill Avenue is 50 mph.

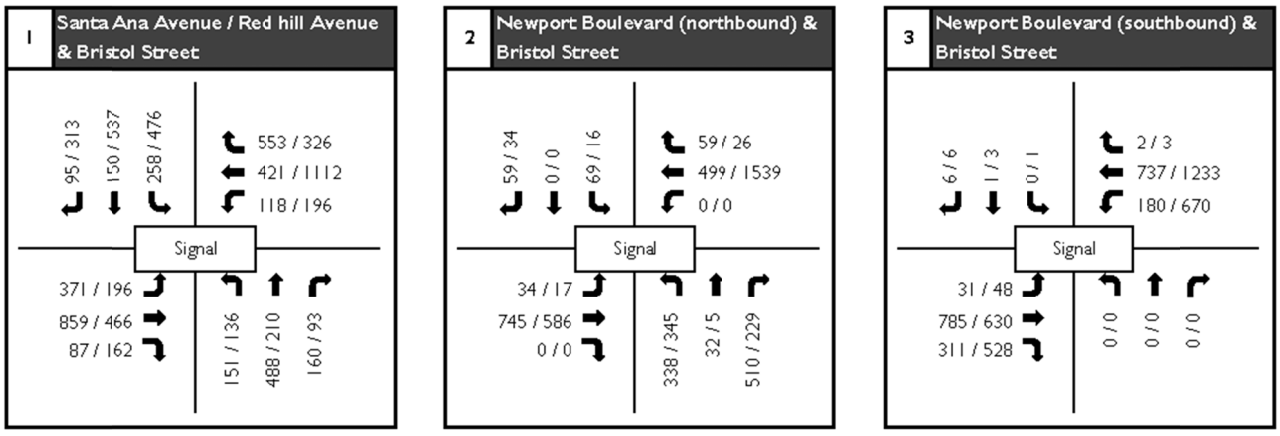
FIGURE 2.1 – EXISTING INTERSECTION GEOMETRIES



EXISTING TRAFFIC VOLUMES

New traffic counts were collected at the three study intersections on May 1, 2019. Traffic count sheets are included in Appendix A. Figure 2.2 shows the AM/PM peak hour traffic counts collected at the study intersections.

FIGURE 2.2 – EXISTING YEAR (2019) AM/PM PEAK HOUR TRAFFIC VOLUMES



EXISTING YEAR (2019) INTERSECTION LEVEL OF SERVICE

Table 2.1 summarizes the results of the Intersection Capacity Utilization (ICU) analysis for the Existing Year (2019) conditions. As shown on Table 2.1, all of the study intersections are currently operating at acceptable level of service during the AM and PM peak hours. Appendix B contains the Existing Conditions ICU analysis worksheets.

Table 2.1 – Existing Year (2019) Traffic Conditions, ICU Analysis

Intersection	AM Peak Hour		PM Peak hour	
	V/C	LOS	V/C	LOS
1. Santa Ana Avenue/Red Hill Avenue at Bristol Street	0.628	B	0.664	B
2. Northbound Newport Boulevard at Bristol Street	0.663	B	0.646	B
3. Southbound Newport Boulevard at Bristol St	0.400	A	0.691	B

Note: ICU = Intersection Capacity Utilization volume-to-capacity (V/C) ratio; LOS = Level of Service

3.0 PROJECT TRAFFIC

This section defines the traffic that would be generated by the proposed Project in a three-step process including trip generation, trip distribution, and trip assignment.

Project-related traffic consists of trips on any portion of the street system that will begin or end on the project as a result of the deployment of the proposed project. Project-related traffic is a function of the intensity and type of development proposed for the site. This information is used to establish traffic generation for the site.

PROJECT TRIP GENERATION

Trip generation is a measure or forecast of the number of trips that will be made to or from the project. It is generally equal to the traffic volume expected at the project entrances. Trip generation characteristics for projects are normally estimated based on rates published in *Trip Generation Manual,* published by the Institute of Transportation Engineers (ITE). For this project, the trip generation data was provided in the *Trip Generation Analysis for the Fletcher Jones Automotive Facility* study previously conducted by Associated Transportation Engineers. The trip generation data for similar projects provided in the trip generation study was used to determine the AM and PM inbound and outbound trip generation rate per 1,000 square feet. Appendix D provides the Trip Generation study used to develop the Project trip generation rate.

The project consists of a new ground-up 2-story, approximately 58,900 square feet (sf) sales and service center for Audi on approximately 5.2 acres. The site is to consist of a large auto display area, and perimeter parking. The building consists of sales/office, service operation with a parked roof above the service operation. The sales/office spaces are to include Sales, Finance & Insurance, Delivery, Showroom, Service Write-up and Administrative offices. The service spaces will contain service bays, car wash, employee facilities and parts department.

The project site is currently vacant; therefore, no trip credits are applied to the proposed project trip calculations.

Table 3.1 summarizes the trip generation for the proposed project. As shown in Table 3.1, the proposed project would generate in a trip generation of 112 AM peak-hour trips (74 inbound trips and 38 outbound trips) and 123 PM peak hour trips (49 inbound trips and 74 outbound trips).

Table 3.1 – Project Trip Generation

Project Location	Square Feet	Daily	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Trip Generation (Similar site) Rate Calculations								
Ontario (Similar site)	69,218	1,499	57	31	88	56	71	127
Temecula (Similar site)	58,663	1,069	68	34	102	27	55	82
Total	127,881	2,568	125	65	190	83	126	209
Calculated Rate per 1,000 SF		**20.08**	**0.98**	**0.51**	**1.49**	**0.65**	**0.99**	**1.63**
Project Trips								
Proposed Project	**75,519**	**1,517**	**74**	**38**	**112**	**49**	**74**	**123**

Note: For conservative analysis purposes, no existing trip credits were applied to the proposed project trip generation calculations.

PROJECT TRIP DISTRIBUTION

Estimation of the geographic distribution of trips for the proposed project uses is the next step in the analytical process. The primary factors affecting the trip distribution for the project are the nature of the uses; existing traffic patterns; the geographic location of the site and its proximity to freeways and major travel routes; and the relative distribution of the population from which prospective employees and visitors of the project would expect to be drawn. Based on these factors, the overall project directional trip distribution was determined and is shown on Figure 3.1 for inbound and outbound directions that were used for the traffic impact analysis.

The general geographic distribution for project trips anticipated is as follows:

North: 15% South: 30% East: 30% West: 25%

PROJECT TRIP ASSIGNMENT

Based on the trip generation and distribution assumptions described above, Project traffic was assigned to the roadway system. Figure 3.2 illustrates the project trips for the weekday AM and PM peak hours.

FIGURE 3.1 – PROJECT TRIP DISTRIBUTION

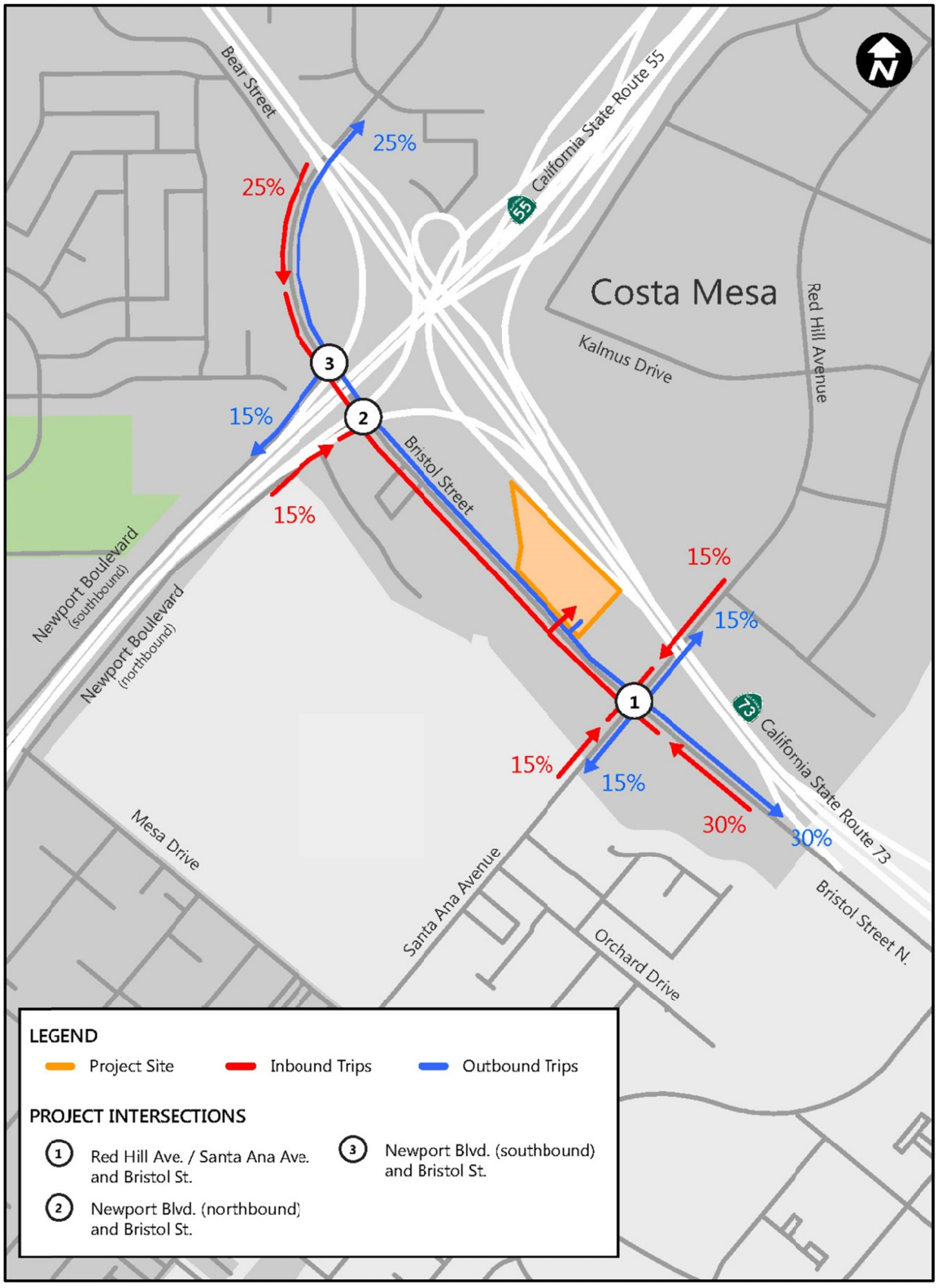
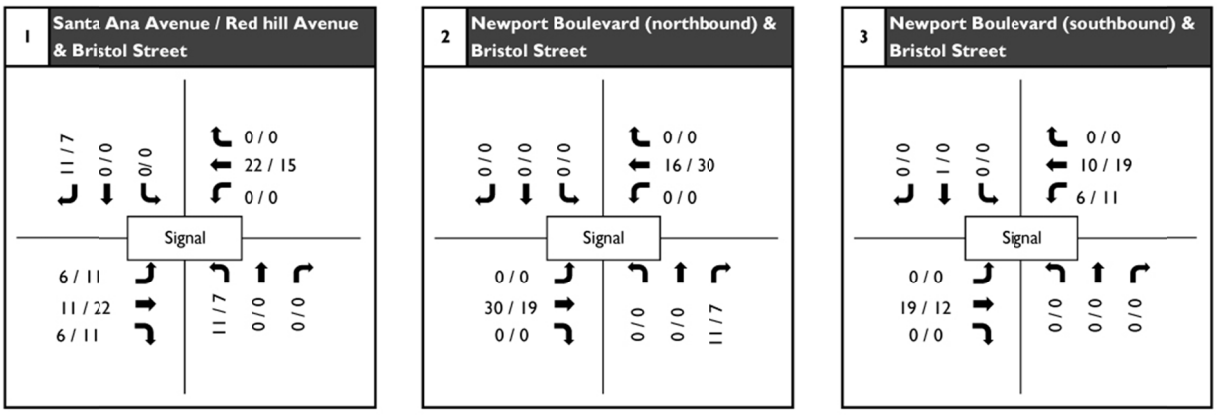


FIGURE 3.2 – PROJECT TRIP ASSIGNMENT



4.0 EXISTING YEAR (2019) PLUS PROJECT CONDITIONS

This section documents existing traffic conditions at the study intersections with the addition of project-generated traffic. Traffic volumes for these conditions were derived by adding project trips to the existing traffic volumes.

The Existing Plus Project traffic volumes for the weekday AM and PM peak hour are illustrated on Figure 4.1.

EXISTING YEAR (2019) PLUS PROJECT INTERSECTION LEVEL OF SERVICE

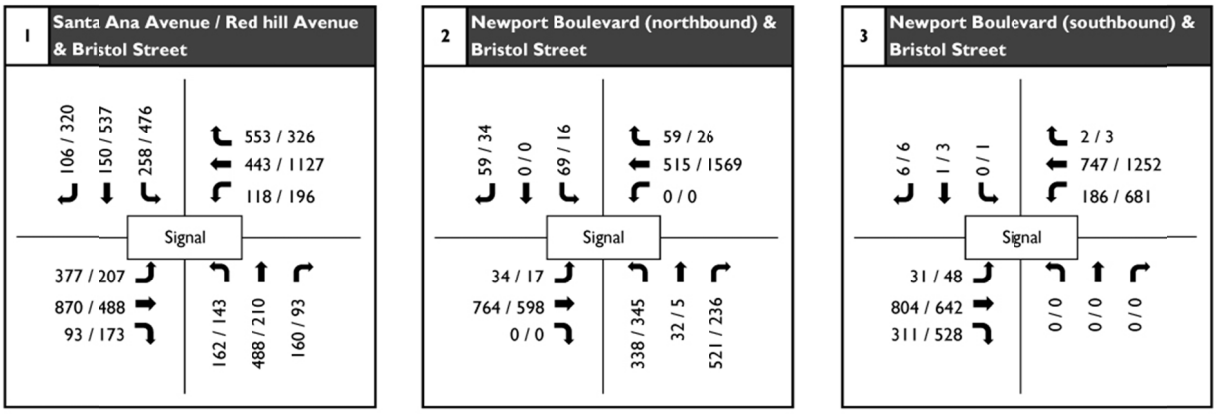
Table 4.1 summarizes the results of the Intersection Capacity Utilization (ICU) analysis for the Existing Year (2019) Plus Project conditions. As shown on Table 4.1, all of the study intersections are currently operating at acceptable level of service during the AM and PM peak hours. Appendix E contains the Existing Year (2019) Plus Project Conditions ICU analysis worksheets.

Table 4.1 – Existing Year (2019) Plus Project Traffic Conditions, ICU Analysis

Intersection	AM Peak Hour		PM Peak hour	
	V/C	LOS	V/C	LOS
1. Santa Ana Avenue/Red Hill Avenue at Bristol Street	0.634	B	0.678	B
2. Northbound Newport Boulevard at Bristol Street	0.673	B	0.657	B
3. Southbound Newport Boulevard at Bristol St	0.402	A	0.695	B

Note: ICU = Intersection Capacity Utilization volume-to-capacity (V/C) ratio; LOS = Level of Service

FIGURE 4.1 – EXISTING YEAR (2019) PLUS PROJECT AM/PM PEAK HOUR TRAFFIC VOLUMES



5.0 PROJECT TRAFFIC IMPACTS

DETERMINATION OF TRAFFIC IMPACTS

According to the City of Costa Mesa guidelines, a project is considered to have a significant traffic impact at an intersection if LOS deteriorates from LOS D (or better) to an LOS E or LOS F and the project contribution to the volume/capacity ratio at the study intersection is 0.01 or greater.

If the project is shown to have a significant impact as described above, mitigation of the project contribution to ICU is required to bring the intersection back to an acceptable level of service or to no-project conditions.

PROJECT TRAFFIC IMPACTS: EXISTING PLUS PROJECT CONDITIONS

Table 5.1 provides a summary of the project impacts under Existing Plus Project conditions. Traffic impacts created by the proposed project were determined by comparing the Existing scenario conditions to the Existing Plus Project scenario conditions.

As shown in Table 5.1, the Project would not create any significant traffic impacts at the three study intersections under Existing Plus Project conditions, during either the weekday AM or PM peak hour. Project mitigation measures, therefore, are not required.

Table 5.1 – Determination of Project Impacts: Existing Year (2019) Plus Project Conditions

Study Intersections		Peak Hour	Existing (2019) Conditions		Existing Year (2019) Plus Project		Change in V/C	Significant Impact?
			V/C	LOS	V/C	LOS		
1	Santa Ana Ave/Red Hill Ave at Bristol Street	AM	0.628	B	0.634	B	0.006	NO
		PM	0.664	B	0.678	B	0.014	NO
2	Northbound Newport Blvd at Bristol Street	AM	0.663	B	0.673	B	0.010	NO
		PM	0.646	B	0.657	B	0.011	NO
3	Southbound Newport Blvd at Bristol Street	AM	0.400	A	0.402	A	0.002	NO
		PM	0.691	B	0.695	B	0.004	NO

LOS = Level-of-Service
V/C = Volume-to-Capacity Ratio

6.0 SITE ACCESS AND ON-SITE CIRCULATION

Access to the proposed project would be provided by two stop-controlled driveways along Bristol Street providing full access (right-in, right-out, left-in, and left-out) to and out of the project site. Based on the project site plan, the driveways will provide sufficient drive isle clearance within the project site to allow for any potential temporary queuing of vehicles to occur on-site. The stop-controlled access driveways along Bristol Street will provide adequate access to the project site.

Based on the project site plan, the parking lot layout will provide a 20-foot fire lane with 25-foot drive isles throughout the parking lot area for adequate access to parking spaces. Pedestrian access is provided along the sidewalk adjacent to the project along Bristol Street and areas within the project site.

7.0 ANALYSIS SUMMARY AND CONCLUSIONS

The purpose of this study is to evaluate existing and existing plus project traffic conditions for the selected study intersections to identify any potential impacts the proposed project may have on the surrounding roadway network.

The proposed Project, located at 1275 Bristol Street, consists of a new ground-up 2-story, approximately 58,900 square feet (sf) sales and service center for Audi on approximately 5.2 acres. The site is to consist of a large auto display area, and perimeter parking. The building consists of sales/office, service operation with a parked roof above the service operation. The sales/office spaces are to include Sales, Finance & Insurance, Delivery, Showroom, Service Write-up and Administrative offices. The service spaces will contain service bays, car wash, employee facilities and parts department. The project will provide a total of 377 parking spaces on-site.

The project site is currently vacant; therefore, no existing trip credits were applied to the proposed project. The proposed project would generate a trip generation of 112 AM peak-hour trips (74 inbound trips and 38 outbound trips) and 123 PM peak hour trips (49 inbound trips and 74 outbound trips).

The report presents an analysis of the intersection operating conditions during the morning and evening peak hours for the following timeframes:

- Existing Year (2019)

The following scenarios have been evaluated for this project:

- Existing Year (2019) conditions
- Existing Year (2019) Plus Project conditions

The study area includes the following three (3) intersections:

1. Santa Ana Avenue/Red Hill Avenue and Bristol Street
2. Northbound Newport Boulevard and Bristol Street
3. Southbound Newport Boulevard and Bristol Street

Based on the City of Costa Mesa significant traffic impact criteria, the proposed Project would not create any significant traffic impacts at the study intersections under Existing Plus Project conditions. Therefore, no mitigation measures are required.

Appendix A – Traffic Counts

INTERSECTION TURNING MOVEMENT COUNTS

T218

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Wed, May 1, 19

LOCATION: Costa Mesa
NORTH & SOUTH: Santa Ana
EAST & WEST: Bristol

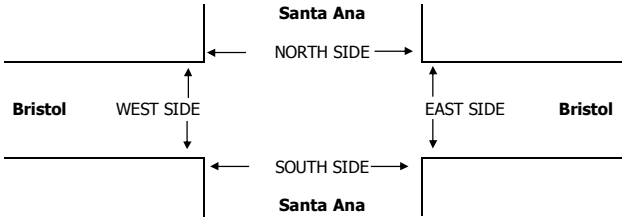
PROJECT #: SC2175
LOCATION #: 1
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

☑ Add U-Turns to Left Turns

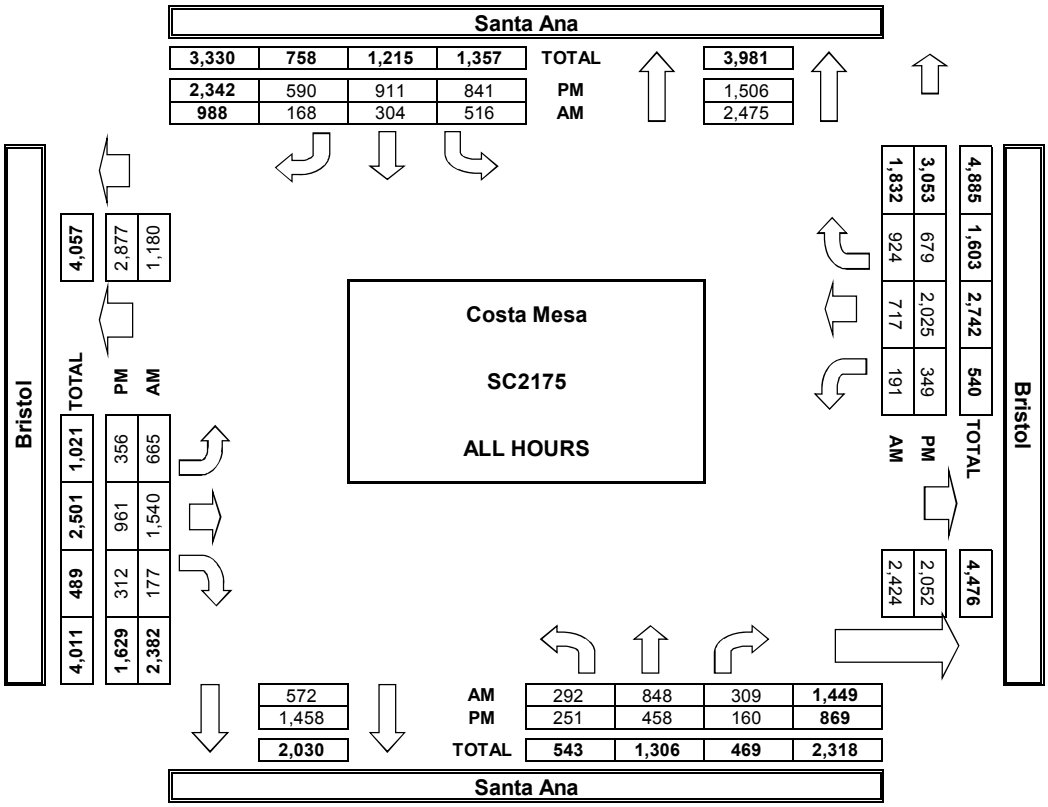
		NORTHBOUND Santa Ana			SOUTHBOUND Santa Ana			EASTBOUND Bristol			WESTBOUND Bristol				U-TURNS				
	LANES:	NL 2	NT 1.5	NR 1.5	SL 2	ST 2	SR 1	EL 2	ET 3	ER 1	WL 2	WT 2.5	WR 1.5	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	29	67	26	46	25	16	55	121	16	13	63	64	541	0	6	0	8	14
	7:15 AM	33	68	26	45	35	17	74	156	23	25	83	61	646	0	3	0	14	17
	7:30 AM	35	106	48	62	35	14	87	200	26	17	80	101	811	0	4	1	8	13
	7:45 AM	39	136	45	61	28	22	118	248	22	37	106	134	996	0	9	0	15	24
	8:00 AM	36	117	42	76	41	19	83	221	20	29	101	131	916	0	7	0	19	26
	8:15 AM	41	116	39	55	33	24	86	212	27	22	115	126	896	0	4	0	11	15
	8:30 AM	35	119	34	66	48	30	84	178	18	30	99	162	903	0	5	1	17	23
	8:45 AM	44	119	49	105	59	26	78	204	25	18	70	145	942	0	3	1	8	12
	VOLUMES	292	848	309	516	304	168	665	1,540	177	191	717	924	6,651	0	41	3	100	144
	APPROACH %	20%	59%	21%	52%	31%	17%	28%	65%	7%	10%	39%	50%						
	APP/DEPART	1,449	/	2,475	988	/	572	2,382	/	2,424	1,832	/	1,180	0					
	BEGIN PEAK HR		7:45 AM																
	VOLUMES	151	488	160	258	150	95	371	859	87	118	421	553	3,711					
	APPROACH %	19%	61%	20%	51%	30%	19%	28%	65%	7%	11%	39%	51%						
	PEAK HR FACTOR		0.908			0.873			0.849			0.938		0.931					
	APP/DEPART	799	/	1,436	503	/	293	1,317	/	1,314	1,092	/	668	0					
PM	4:00 PM	35	79	13	78	81	73	40	111	36	27	205	92	870	0	4	3	12	19
	4:15 PM	26	49	15	98	84	51	42	105	38	46	220	100	874	0	3	2	15	20
	4:30 PM	23	62	19	96	96	84	39	119	42	47	224	88	939	0	0	1	18	19
	4:45 PM	25	54	20	113	105	72	49	105	31	51	268	99	992	0	3	1	19	23
	5:00 PM	37	37	29	146	139	107	46	124	36	42	271	71	1,085	0	4	1	11	16
	5:15 PM	38	61	21	119	173	81	41	133	40	38	287	74	1,106	0	4	1	16	21
	5:30 PM	36	58	23	98	120	53	60	104	55	65	286	82	1,040	0	1	2	11	14
	5:45 PM	31	58	20	93	113	69	39	160	34	33	264	73	987	0	5	0	12	17
	VOLUMES	251	458	160	841	911	590	356	961	312	349	2,025	679	7,893	0	24	11	114	149
	APPROACH %	29%	53%	18%	36%	39%	25%	22%	59%	19%	11%	66%	22%						
	APP/DEPART	869	/	1,506	2,342	/	1,458	1,629	/	2,052	3,053	/	2,877	0					
	BEGIN PEAK HR		4:45 PM																
	VOLUMES	136	210	93	476	537	313	196	466	162	196	1,112	326	4,223					
	APPROACH %	31%	48%	21%	36%	40%	24%	24%	57%	20%	12%	68%	20%						
	PEAK HR FACTOR		0.915			0.846			0.941			0.943		0.955					
	APP/DEPART	439	/	739	1,326	/	838	824	/	1,080	1,634	/	1,566	0					

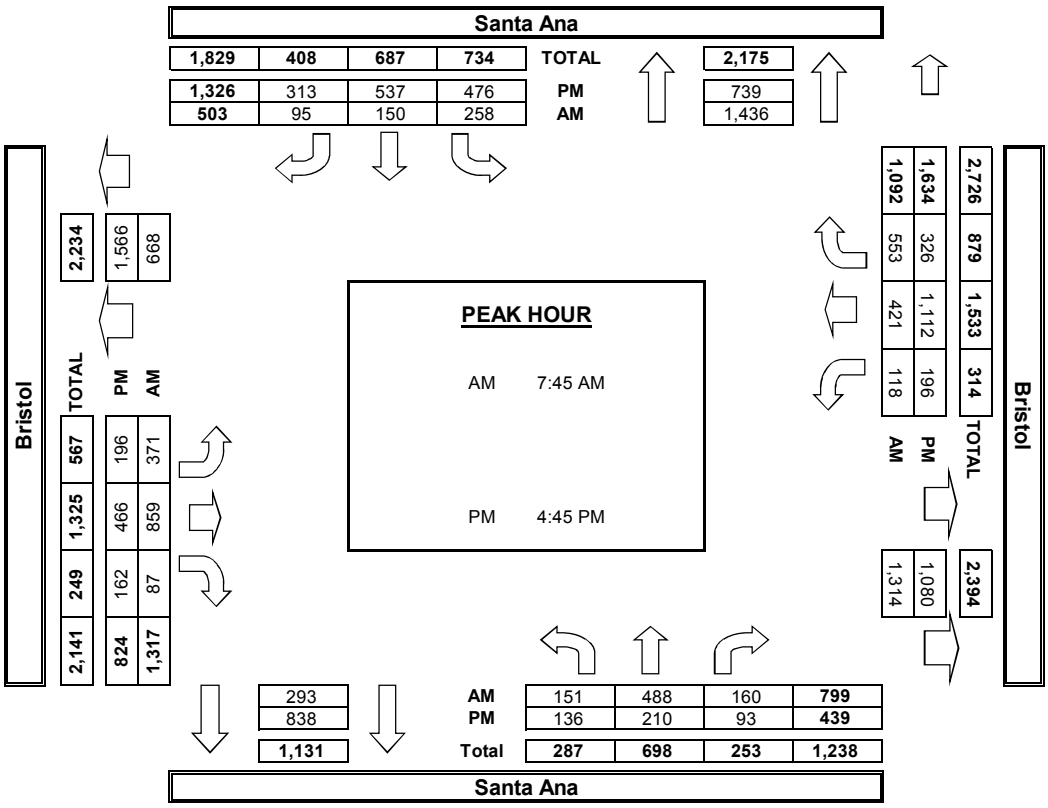


		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AM BEGIN PEAK HR			7:45 AM			0	0	0	0	0					
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PM BEGIN PEAK HR			4:45 PM			0	0	0	0	0					

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

T218

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Wed, May 1, 19

LOCATION: Costa Mesa
NORTH & SOUTH: NB Newport
EAST & WEST: Bristol

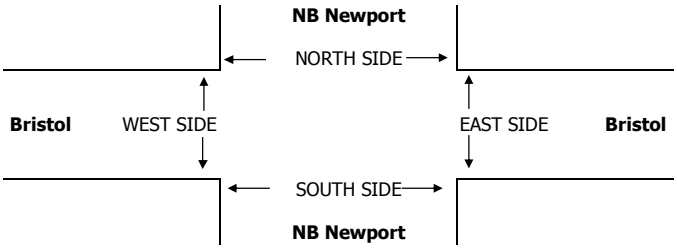
PROJECT #: SC2175
LOCATION #: 2
CONTROL: SIGNAL

NOTES: Queue WB PM

AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

☑ Add U-Turns to Left Turns

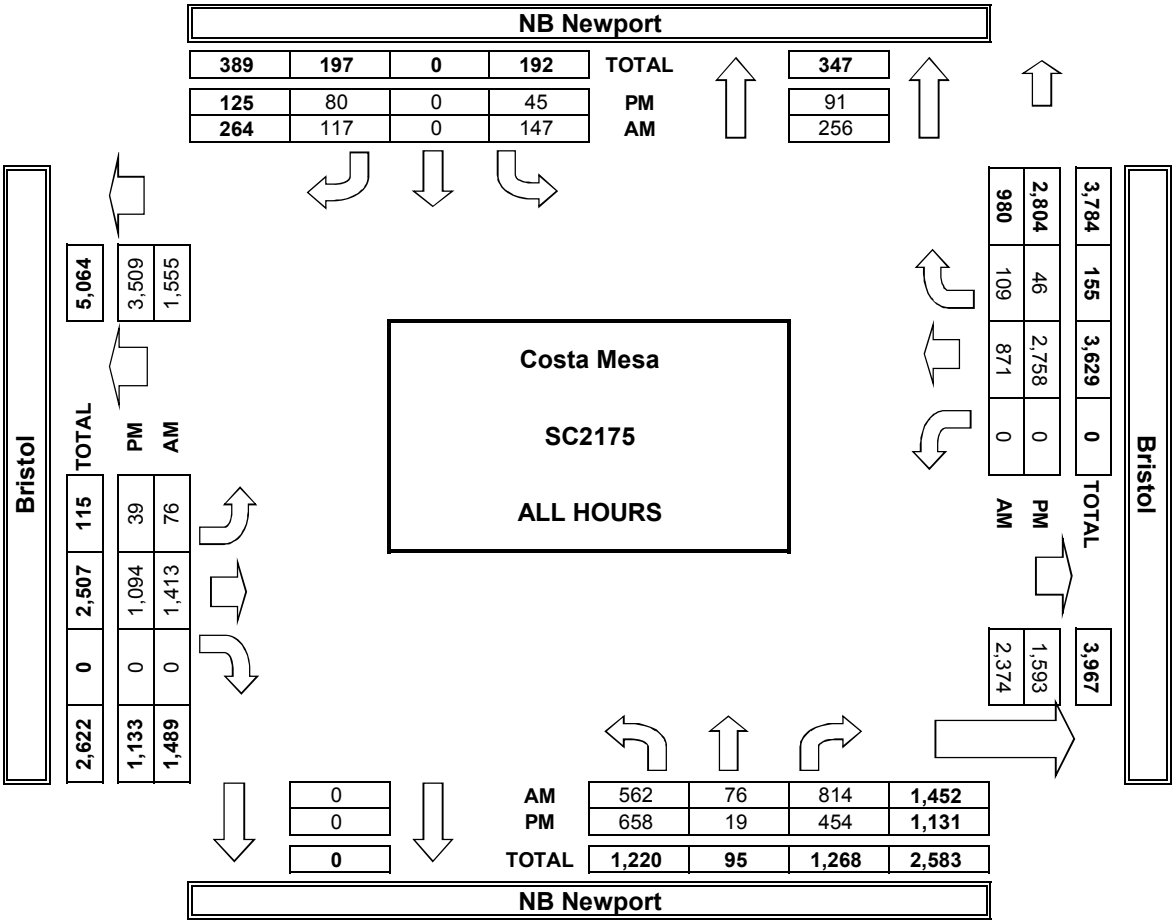
		NORTHBOUND (NB Newport)			SOUTHBOUND (NB Newport)			EASTBOUND (Bristol)			WESTBOUND (Bristol)				U-TURNS				
	LANES:	NL 1.5	NT 0.5	NR 1	SL 1	ST X	SR 1	EL 1	ET 3	ER X	WL X	WT 3	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	30	13	49	12	0	12	15	119	0	0	80	5	335	0	0	0	0	0
	7:15 AM	51	12	58	19	0	16	10	162	0	0	81	23	432	0	0	1	0	1
	7:30 AM	62	8	84	23	0	19	11	191	0	0	95	10	503	0	0	0	0	0
	7:45 AM	99	8	163	22	0	12	5	201	0	0	119	14	643	0	0	0	0	0
	8:00 AM	97	10	134	22	0	15	15	203	0	0	122	10	628	0	0	1	0	1
	8:15 AM	73	10	119	11	0	14	8	181	0	0	127	16	559	0	0	1	0	1
	8:30 AM	69	4	94	14	0	18	6	160	0	0	131	19	515	0	0	0	0	0
	8:45 AM	81	11	113	24	0	11	6	196	0	0	116	12	570	0	0	2	0	2
	VOLUMES	562	76	814	147	0	117	76	1,413	0	0	871	109	4,185	0	0	5	0	5
	APPROACH %	39%	5%	56%	56%	0%	44%	5%	95%	0%	0%	89%	11%						
	APP/DEPART	1,452	/	256	264	/	0	1,489	/	2,374	980	/	1,555	0					
	BEGIN PEAK HR		7:45 AM																
	VOLUMES	338	32	510	69	0	59	34	745	0	0	499	59	2,345					
	APPROACH %	38%	4%	58%	54%	0%	46%	4%	96%	0%	0%	89%	11%						
	PEAK HR FACTOR		0.815			0.865			0.893			0.930		0.912					
	APP/DEPART	880	/	123	128	/	0	779	/	1,324	558	/	898	0					
PM	4:00 PM	78	2	63	11	0	13	4	122	0	0	300	7	600	0	0	1	0	1
	4:15 PM	83	5	44	8	0	15	10	107	0	0	288	6	566	0	0	5	0	5
	4:30 PM	86	3	55	7	0	7	6	128	0	0	306	6	604	0	0	1	0	1
	4:45 PM	71	0	58	6	0	15	3	118	0	0	363	8	642	0	0	1	0	1
	5:00 PM	90	2	57	2	0	6	5	158	0	0	351	2	673	0	0	0	0	0
	5:15 PM	83	1	52	5	0	7	4	168	0	0	437	10	767	0	0	2	0	2
	5:30 PM	101	2	62	3	0	6	5	142	0	0	388	6	715	0	0	2	0	2
	5:45 PM	66	4	63	3	0	11	2	151	0	0	325	1	626	0	0	1	0	1
	VOLUMES	658	19	454	45	0	80	39	1,094	0	0	2,758	46	5,193	0	0	13	0	13
	APPROACH %	58%	2%	40%	36%	0%	64%	3%	97%	0%	0%	98%	2%						
	APP/DEPART	1,131	/	91	125	/	0	1,133	/	1,593	2,804	/	3,509	0					
	BEGIN PEAK HR		4:45 PM																
	VOLUMES	345	5	229	16	0	34	17	586	0	0	1,539	26	2,797					
	APPROACH %	60%	1%	40%	32%	0%	68%	3%	97%	0%	0%	98%	2%						
	PEAK HR FACTOR		0.877			0.595			0.876			0.875		0.912					
	APP/DEPART	579	/	43	50	/	0	603	/	831	1,565	/	1,923	0					

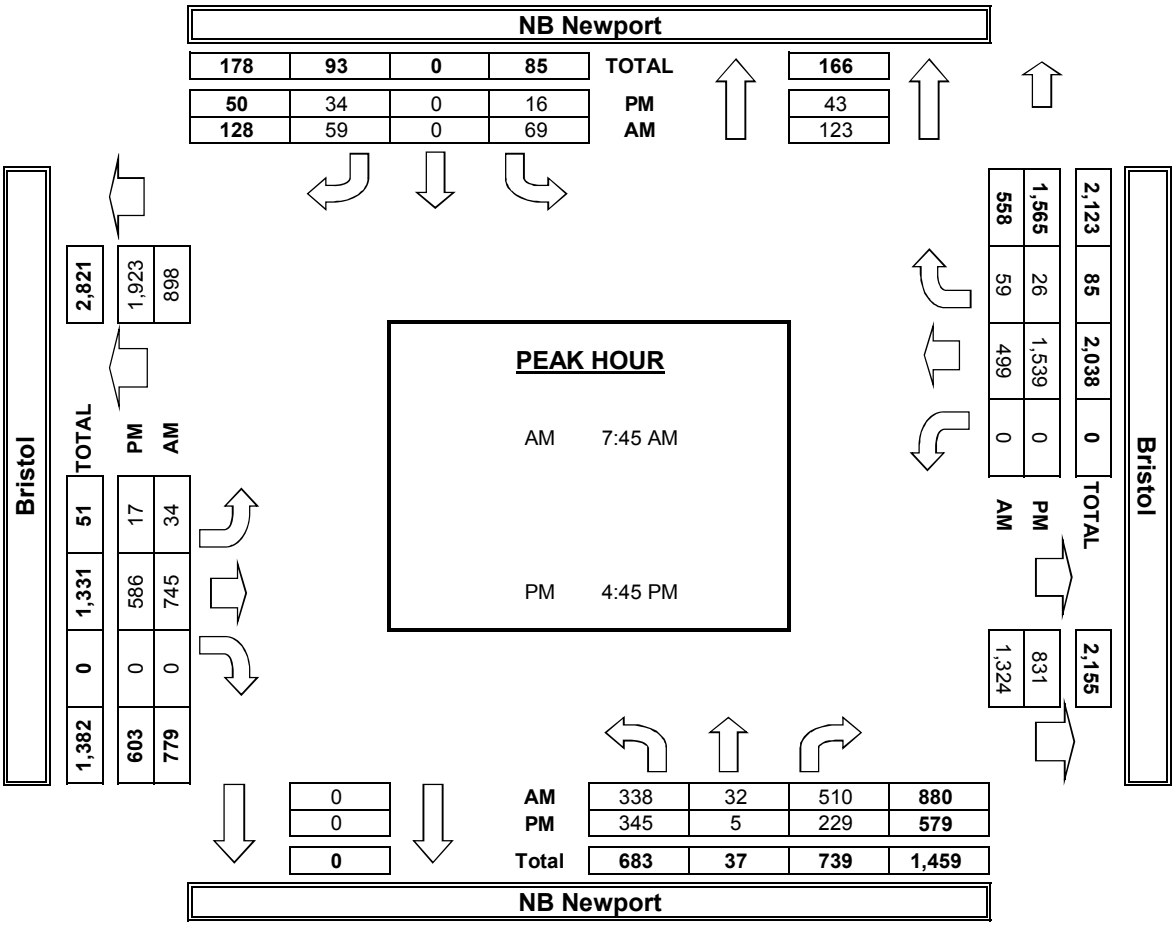


		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AM BEGIN PEAK HR	7:45 AM					0	0	0	0	0					
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PM BEGIN PEAK HR	4:45 PM					0	0	0	0	0					

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

T218

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Wed, May 1, 19

LOCATION: Costa Mesa
NORTH & SOUTH: SB Newport
EAST & WEST: Bristol

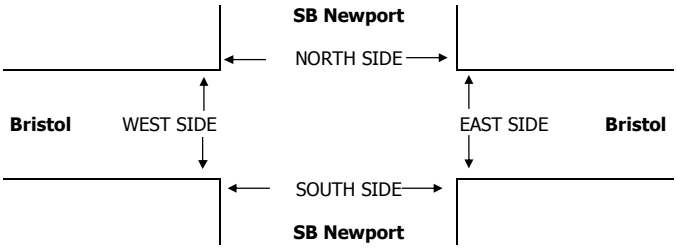
PROJECT #: SC2175
LOCATION #: 3
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

☑ Add U-Turns to Left Turns

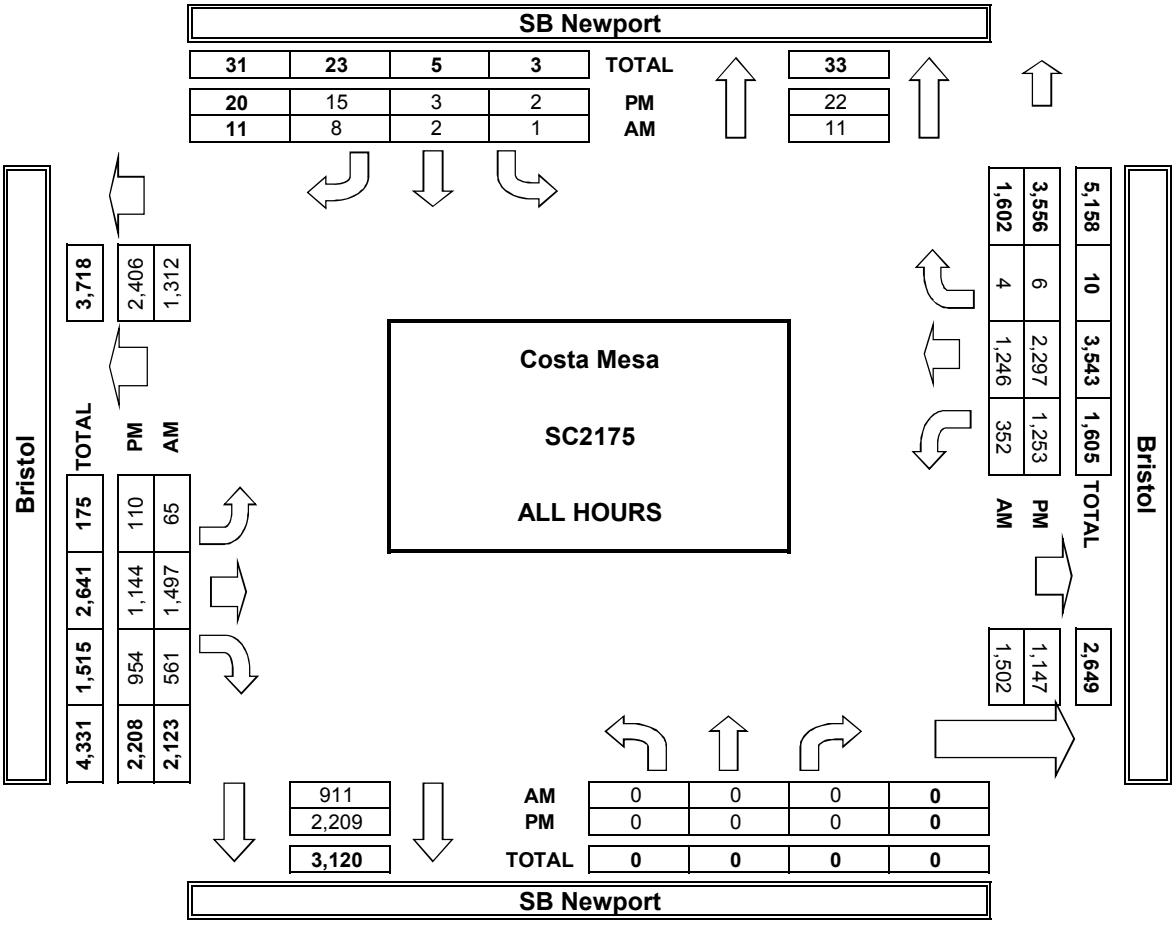
		NORTHBOUND SB Newport			SOUTHBOUND SB Newport			EASTBOUND Bristol			WESTBOUND Bristol				U-TURNS				
	LANES:	NL X	NT X	NR X	SL 0	ST 1	SR 0	EL 1	ET 3	ER 0	WL 2	WT 3	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	0	0	0	0	1	0	9	155	59	29	107	0	360	0	0	9	0	9
	7:15 AM	0	0	0	1	0	0	10	167	66	46	114	0	404	0	0	9	1	10
	7:30 AM	0	0	0	0	0	1	7	193	63	43	131	0	438	0	0	6	2	8
	7:45 AM	0	0	0	0	0	1	3	225	84	51	194	0	558	0	0	3	0	3
	8:00 AM	0	0	0	0	1	2	11	195	71	50	181	0	511	0	0	9	1	10
	8:15 AM	0	0	0	0	0	2	7	185	70	34	189	0	487	0	0	5	0	5
	8:30 AM	0	0	0	0	0	1	10	180	86	45	173	2	497	0	0	10	0	10
	8:45 AM	0	0	0	0	0	1	8	197	62	54	157	2	481	0	0	7	0	7
	VOLUMES	0	0	0	1	2	8	65	1,497	561	352	1,246	4	3,736	0	0	58	4	62
	APPROACH %	0%	0%	0%	9%	18%	73%	3%	71%	26%	22%	78%	0%						
	APP/DEPART	0	/	11	11	/	911	2,123	/	1,502	1,602	/	1,312	0					
	BEGIN PEAK HR		7:45 AM																
	VOLUMES	0	0	0	0	1	6	31	785	311	180	737	2	2,053					
	APPROACH %	0%	0%	0%	0%	14%	86%	3%	70%	28%	20%	80%	0%						
	PEAK HR FACTOR		0.000			0.583			0.903			0.938		0.920					
	APP/DEPART	0	/	6	7	/	491	1,127	/	786	919	/	770	0					
PM	4:00 PM	0	0	0	0	0	1	14	125	88	140	265	0	633	0	0	13	0	13
	4:15 PM	0	0	0	0	0	3	14	128	125	124	257	2	653	0	0	11	0	11
	4:30 PM	0	0	0	1	0	3	14	147	98	163	262	1	689	0	0	11	0	11
	4:45 PM	0	0	0	0	0	2	20	114	115	156	280	0	687	0	0	18	0	18
	5:00 PM	0	0	0	1	0	3	15	174	143	150	293	1	780	0	0	14	0	14
	5:15 PM	0	0	0	0	3	2	20	142	110	184	367	0	828	0	0	17	0	17
	5:30 PM	0	0	0	0	0	1	7	155	142	166	325	0	796	0	0	6	1	7
	5:45 PM	0	0	0	0	0	0	6	159	133	170	248	2	718	0	0	4	0	4
	VOLUMES	0	0	0	2	3	15	110	1,144	954	1,253	2,297	6	5,784	0	0	94	1	95
	APPROACH %	0%	0%	0%	10%	15%	75%	5%	52%	43%	35%	65%	0%						
	APP/DEPART	0	/	22	20	/	2,209	2,208	/	1,147	3,556	/	2,406	0					
	BEGIN PEAK HR		5:00 PM																
	VOLUMES	0	0	0	1	3	6	48	630	528	670	1,233	3	3,122					
	APPROACH %	0%	0%	0%	10%	30%	60%	4%	52%	44%	35%	65%	0%						
	PEAK HR FACTOR		0.000			0.500			0.908			0.865		0.943					
	APP/DEPART	0	/	10	10	/	1,200	1,206	/	632	1,906	/	1,280	0					

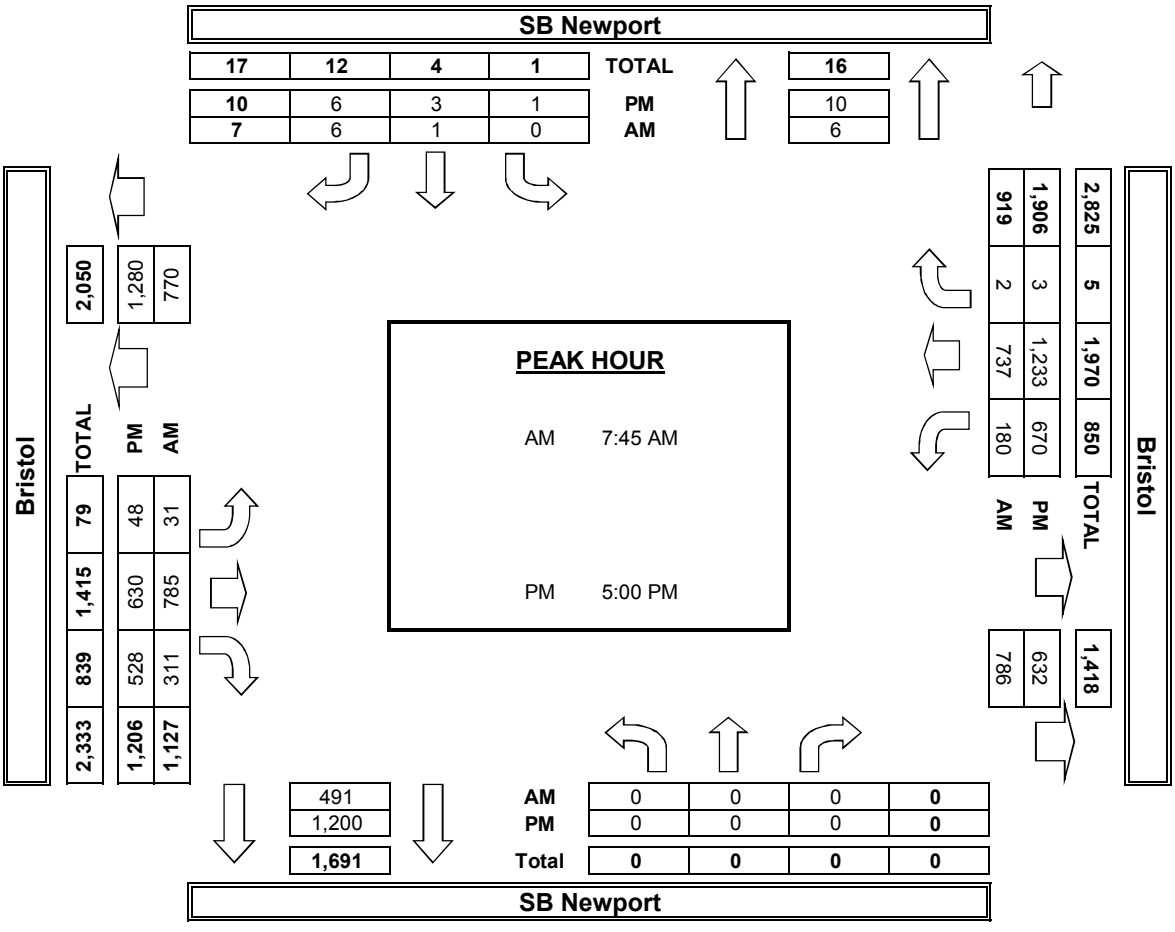


		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AM BEGIN PEAK HR	7:45 AM					0	0	0	0	0					
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PM BEGIN PEAK HR	5:00 PM					0	0	0	0	0					

AimTD LLC

TURNING MOVEMENT COUNTS





Appendix B – Existing Year (2019) Conditions, ICU Analysis Worksheets

CM Audi Fletcher Jones TIA

Vistro File: J:\...\CM_Audi_TIS_Existing.vistro Scenario 1 Existing AM
Report File: J:\...\CM_Audi_Existing_ICU_AM.pdf 5/12/2019

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Santa Ana/Red Hill / Bristol	Signalized	ICU 1	SEB Thru	0.628	-	B
2	Northbound Newport / Bristol	Signalized	ICU 1	NEB Right	0.663	-	B
3	Southbound Newport / Bristol	Signalized	ICU 1	SB Right	0.400	-	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Santa Ana/Red Hill / Bristol

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.628

Intersection Setup

Name	Santa Ana Avenue			Red Hill Avenue			Bristol Street			Bristol Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	10.00	10.00	10.00	10.00	11.00	11.00	12.00	11.00	11.00	11.00	11.00	10.00
No. of Lanes in Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Pocket Length [ft]	204.00	100.00	60.00	150.00	100.00	130.00	210.00	100.00	255.00	280.00	100.00	95.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Santa Ana Avenue			Red Hill Avenue			Bristol Street			Bristol Street		
Base Volume Input [veh/h]	151	488	160	258	150	95	118	421	553	371	859	87
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	151	488	160	258	150	95	118	421	553	371	859	87
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	122	40	65	38	24	30	105	138	93	215	22
Total Analysis Volume [veh/h]	151	488	160	258	150	95	118	421	553	371	859	87
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	120
Lost time [s]	16.00

Phasing & Timing

Control Type	Protect	Permis	Permis	Protect	Permis	Permis	Protect	Permis	Permis	Protect	Permis	Permis
Signal group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.15	0.10	0.08	0.05	0.06	0.04	0.15	0.15	0.12	0.18	0.05
Intersection LOS	B											
Intersection V/C	0.628											

Intersection Level Of Service Report
Intersection 2: Northbound Newport / Bristol

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.663

Intersection Setup

Name	NB Newport Blvd			Ganahl Way			Bristol Street			Bristol Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	1	0	0	0	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	90.00	90.00	100.00	100.00	100.00	100.00	100.00	130.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	NB Newport Blvd			Ganahl Way			Bristol Street			Bristol Street		
Base Volume Input [veh/h]	338	32	510	69	0	59	0	499	59	34	745	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	338	32	510	69	0	59	0	499	59	34	745	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	85	8	128	17	0	15	0	125	15	9	186	0
Total Analysis Volume [veh/h]	338	32	510	69	0	59	0	499	59	34	745	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	110
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permis	Split	Permis	Permis	Permis	Protect	Permis	Permis
Signal group	0	3	0	4	0	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.11	0.12	0.32	0.04	0.00	0.04	0.00	0.12	0.12	0.02	0.16	0.00
Intersection LOS	B											
Intersection V/C	0.663											

Intersection Level Of Service Report
Intersection 3: Southbound Newport / Bristol

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.400

Intersection Setup

Name	Bristol Street			SB Newport Blvd			Car Wash Driveway			Bristol Street		
Approach	Southbound			Northeastbound			Southwestbound			Northwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	10.00	11.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	11.00	13.00
No. of Lanes in Pocket	1	0	1	0	0	0	0	0	0	2	0	0
Pocket Length [ft]	165.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	395.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

Volumes

Name	Bristol Street			SB Newport Blvd			Car Wash Driveway			Bristol Street		
Base Volume Input [veh/h]	31	785	311	0	0	0	0	1	6	180	737	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	31	785	311	0	0	0	0	1	6	180	737	2
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	196	78	0	0	0	0	0	2	45	184	1
Total Analysis Volume [veh/h]	31	785	311	0	0	0	0	1	6	180	737	2
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	110
Lost time [s]	16.00

Phasing & Timing

Control Type	Protect	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Protect	Permis	Permis
Signal group	1	6	0	0	0	0	0	4	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	-	-	-	-	-	-	Lag	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.16	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.15	0.15
Intersection LOS	A											
Intersection V/C	0.400											

CM Audi Fletcher Jones TIA

Vistro File: J:\...\CM_Audi_TIS_Existing.vistro Scenario 2 Existing PM
Report File: J:\...\CM_Audi_Existing_ICU_PM.pdf 5/12/2019

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Santa Ana/Red Hill / Bristol	Signalized	ICU 1	NWB Thru	0.664	-	B
2	Northbound Newport / Bristol	Signalized	ICU 1	NWB Thru	0.646	-	B
3	Southbound Newport / Bristol	Signalized	ICU 1	SB Right	0.691	-	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Santa Ana/Red Hill / Bristol

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.664

Intersection Setup

Name	Santa Ana Avenue			Red Hill Avenue			Bristol Street			Bristol Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	10.00	10.00	10.00	10.00	11.00	11.00	12.00	11.00	11.00	11.00	11.00	10.00
No. of Lanes in Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Pocket Length [ft]	204.00	100.00	60.00	150.00	100.00	130.00	210.00	100.00	255.00	280.00	100.00	95.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Santa Ana Avenue			Red Hill Avenue			Bristol Street			Bristol Street		
Base Volume Input [veh/h]	136	210	93	476	537	313	196	1112	326	196	466	162
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	136	210	93	476	537	313	196	1112	326	196	466	162
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	53	23	119	134	78	49	278	82	49	117	41
Total Analysis Volume [veh/h]	136	210	93	476	537	313	196	1112	326	196	466	162
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	120
Lost time [s]	16.00

Phasing & Timing

Control Type	Protect	Permis	Permis	Protect	Permis	Permis	Protect	Permis	Permis	Protect	Permis	Permis
Signal group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.07	0.06	0.15	0.17	0.20	0.06	0.23	0.20	0.06	0.10	0.10
Intersection LOS	B											
Intersection V/C	0.664											

Intersection Level Of Service Report
Intersection 2: Northbound Newport / Bristol

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.646

Intersection Setup

Name	No Ne			Ganahl Way			Bristol Street			Bristol Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	1	0	0	0	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	90.00	90.00	100.00	100.00	100.00	100.00	100.00	130.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	No Ne			Ganahl Way			Bristol Street			Bristol Street		
Base Volume Input [veh/h]	345	5	229	16	0	34	0	1539	26	17	586	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	345	5	229	16	0	34	0	1539	26	17	586	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	86	1	57	4	0	9	0	385	7	4	147	0
Total Analysis Volume [veh/h]	345	5	229	16	0	34	0	1539	26	17	586	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	110
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permis	Split	Permis	Permis	Permis	Protect	Permis	Permis
Signal group	0	3	0	4	0	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.11	0.11	0.14	0.01	0.00	0.02	0.00	0.33	0.33	0.01	0.12	0.00
Intersection LOS	B											
Intersection V/C	0.646											

Intersection Level Of Service Report
Intersection 3: Southbound Newport / Bristol

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.691

Intersection Setup

Name	Bristol Street			So Ne			Car Wash Driveway			Bristol Street		
Approach	Southbound			Northeastbound			Southwestbound			Northwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	10.00	11.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	11.00	13.00
No. of Lanes in Pocket	1	0	1	0	0	0	0	0	0	2	0	0
Pocket Length [ft]	165.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	395.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

Volumes

Name	Bristol Street			So Ne			Car Wash Driveway			Bristol Street		
Base Volume Input [veh/h]	48	630	528	0	0	0	1	3	6	670	1233	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	48	630	528	0	0	0	1	3	6	670	1233	3
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	158	132	0	0	0	0	1	2	168	308	1
Total Analysis Volume [veh/h]	48	630	528	0	0	0	1	3	6	670	1233	3
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	110
Lost time [s]	16.00

Phasing & Timing

Control Type	Protect	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Protect	Permis	Permis
Signal group	1	6	0	0	0	0	0	4	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	-	-	-	-	-	-	Lag	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.13	0.33	0.00	0.00	0.00	0.00	0.01	0.01	0.21	0.26	0.26
Intersection LOS	B											
Intersection V/C	0.691											

Appendix C – Previous Trip Generation Analysis Study

ASSOCIATED TRANSPORTATION ENGINEERS
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Since 1978

Richard L. Pool, P.E.
Scott A. Schell, AICP, PTP

May 24, 2018 17085L02

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CaliChi Civil Engineer
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Chicago, Illinois 60602

TRIP GENERATION ANALYSIS FOR THE
FLETCHER JONES AUTOMOTIVE FACILITY - COSA MESA, CALIFORNIA

Associated Transportation Engineers (ATE) has prepared the following trip generation analysis to assist the applicant and City staff in determining the appropriate Floor-Area-Ratio (FAR), building area and traffic fees for the proposed Fletcher Jones dealership in Costa Mesa.

The City of Costa Mesa's General Plan has established FAR's for commercial land uses to determine the maximum amount of building area that is allowed on a lot or parcel based on the average daily traffic generated by commercial land uses. Currently, the Project is designated by the City as a "Moderate" traffic generator with a daily trip generation rate of 50 trip ends per 1,000 sq.ft. and an allowable FAR of 0.30. The applicant would like to determine if the proposed Project should be classified as a "Low" traffic generator with an FAR of 0.40.

Data and Analysis: The 24-hour tube count data was collected at the access points at two similar Fletcher Jones dealerships identified by the applicant. One dealership located on Guasti Road in Ontario, California was 69,218 square feet and generated 1,499 daily trip ends. The second dealership located on Temecula Center Drive in Temecula, California was 58,633 square feet and generated 1,069 daily trip ends. The data collected for each dealership is shown on the attached sheets. Based on the traffic count data collected by ATE at the two Fletcher Jones dealerships the average daily trip generation rate is 20.08 trip ends per 1,000 sq,.ft as shown in Table 1.

Table 1
Daily Trip Generation Data

Dealership	Square Footage	Daily Trips	Trip Ends Per 1,000 S.F.
Ontario	69,218 sq.ft.	1,499	21.66
Temecula	58,663 sq.ft.	1,069	18.22
Total:	127,881 sq.ft.	2,568	
Average:	2,568 trip/127.881		20.08

Institute of Transportation Engineers (ITE) Trip Generation: Trip generation rates presented in the Institute of Transportation Engineers (ITE), Trip Generation, 10th Edition for Automobile Sales (Land-Use Code #840) indicate that the average daily trip generation is 27.84 trip ends per 1,000 square feet.

Summary: According to City of Costa Mesa Develop standards, a "Moderate" traffic generator generates between 20 and 75 daily trip ends per 1,000 square feet. A "Low" traffic generator generates between 3 and 20 daily trips per 1,000 square feet. The City of Costa Mesa has designated the Project a "Moderate" traffic generator with a daily trip generation rate of 50 trip ends per 1,000 square feet. ITE trip generation data and field data collected by ATE at two similar Fletcher Jones dealerships indicated that daily trip generation rate is less than the 50 trips ends per 1,000 sq, ft. Based on the surveys of similar Fletcher Jones dealerships, the Project is on the cusp of being a "Low" traffic generator. As summarized in Table 2, the estimated trip generation for the Costa Mesa dealership ranges from 1,516 daily trips to 3,776 daily trips based on the ATE field data, ITE trip rates and the City of Costa Mesa "Moderate" traffic generator.

Table 2
Costa Mesa Project Daily Trip Generation Comparison

Trip Generation Source	Square Footage	Daily Trip Rate	Daily Trips
ATE Field	75,519 sq.ft.	20.08	1,516
ITE Rate	75,519 sq.ft.	27.84	2,102
City of Costa Mesa	75,519 sq.ft.	50.00	3,776

Associated Transportation Engineers

By: Richard L. Pool, P.E.
President

Attachment: Traffic Count Data for November, 2017)

Prepared by NDS/ATD

Volume

Temecula Center Dr & Dwy 3

Day: Tuesday
Date: 11/14/2017

City: Temecula
Project #: CA17_6165_003

DAILY TOTALS	IN	OUT	Total
	197	201	398

AM Period	IN		OUT		TOTAL		PM Period	IN		OUT		TOTAL	
00:00	0		0		0		12:00	1		9		10	
00:15	0		0		0		12:15	2		4		6	
00:30	0		0		0		12:30	2		3		5	
00:45	0		0		0		12:45	8	13	3	19	11	32
01:00	0		0		0		13:00	6		8		14	
01:15	0		0		0		13:15	4		2		6	
01:30	0		0		0		13:30	7		3		10	
01:45	0		0		0		13:45	3	20	4	17	7	37
02:00	0		0		0		14:00	3		6		9	
02:15	0		0		0		14:15	5		4		9	
02:30	0		0		0		14:30	2		3		5	
02:45	0		0		0		14:45	2	12	5	18	7	30
03:00	0		0		0		15:00	1		5		6	
03:15	0		0		0		15:15	6		1		7	
03:30	0		0		0		15:30	1		3		4	
03:45	0		0		0		15:45	4	12	2	11	6	23
04:00	0		0		0		16:00	3		14		17	
04:15	0		0		0		16:15	4		6		10	
04:30	0		0		0		16:30	0		4		4	
04:45	0		0		0		16:45	3	10	9	33	12	43
05:00	0		0		0		17:00	0		10		10	
05:15	0		0		0		17:15	1		4		5	
05:30	1		0		1		17:30	0		6		6	
05:45	2	3	0		2	3	17:45	1	2	4	24	5	26
06:00	2		0		2		18:00	0		6		6	
06:15	2		0		2		18:15	0		3		3	
06:30	2		0		2		18:30	1		2		3	
06:45	13	19	1	1	14	20	18:45	1	2	1	12	2	14
07:00	10		0		10		19:00	1		3		4	
07:15	3		2		5		19:15	0		0		0	
07:30	8		2		10		19:30	0		0		0	
07:45	14	35	2	6	16	41	19:45	0	1	1	4	1	5
08:00	6		4		10		20:00	0		1		1	
08:15	11		1		12		20:15	0		1		1	
08:30	4		5		9		20:30	0		0		0	
08:45	6	27	1	11	7	38	20:45	0		0	2	0	2
09:00	1		0		1		21:00	0		4		4	
09:15	3		0		3		21:15	0		0		0	
09:30	3		2		5		21:30	0		0		0	
09:45	3	10	1	3	4	13	21:45	0		3	7	3	7
10:00	6		2		8		22:00	0		0		0	
10:15	3		3		6		22:15	0		0		0	
10:30	5		5		10		22:30	0		0		0	
10:45	4	18	6	16	10	34	22:45	0		0		0	
11:00	4		3		7		23:00	0		0		0	
11:15	4		5		9		23:15	0		0		0	
11:30	2		5		7		23:30	0		0		0	
11:45	3	13	4	17	7	30	23:45	0		0		0	
TOTALS	125		54		179		TOTALS	72		147		219	
SPLIT %	69.8%		30.2%		45.0%		SPLIT %	32.9%		67.1%		55.0%	

DAILY TOTALS	IN	OUT	Total
	197	201	398

AM Peak Hour	07:30	11:15			07:30		PM Peak Hour	12:45	16:00			16:00
AM Pk Volume	39	23			48		PM Pk Volume	25	33			43
Pk Hr Factor	0.696	0.639			0.750		Pk Hr Factor	0.781	0.589			0.632
7 - 9 Volume	62	17	0	0	79		4 - 6 Volume	12	57	0	0	69
7 - 9 Peak Hour	07:30	07:45			07:30		4 - 6 Peak Hour	16:00	16:00			16:00
7 - 9 Pk Volume	39	12	0	0	48		4 - 6 Pk Volume	10	33	0	0	43
Pk Hr Factor	0.696	0.600	0.000	0.000	0.750		Pk Hr Factor	0.625	0.589	0.000	0.000	0.632

Prepared by NDS/ATD

Volume

Temecula Center Dr & Dwy 4

Day: Tuesday
Date: 11/14/2017

City: Temecula
Project #: CA17_6165_004

DAILY TOTALS	IN	OUT			Total
	78	126			204

AM Period	IN		OUT		TOTAL		PM Period	IN		OUT		TOTAL	
00:00	0		0		0		12:00	4		3		7	
00:15	0		0		0		12:15	2		0		2	
00:30	0		0		0		12:30	0		2		2	
00:45	0		0		0		12:45	7	13	8	13	15	26
01:00	0		0		0		13:00	0		4		4	
01:15	0		0		0		13:15	0		2		2	
01:30	0		0		0		13:30	0		4		4	
01:45	0		0		0		13:45	2	2	1	11	3	13
02:00	0		0		0		14:00	8		6		14	
02:15	0		0		0		14:15	1		1		2	
02:30	0		0		0		14:30	4		3		7	
02:45	0		0		0		14:45	2	15	2	12	4	27
03:00	0		0		0		15:00	2		7		9	
03:15	1		1		2		15:15	4		4		8	
03:30	0		0		0		15:30	1		5		6	
03:45	0	1	0	1	0	2	15:45	1	8	3	19	4	27
04:00	0		0		0		16:00	1		1		2	
04:15	0		0		0		16:15	0		2		2	
04:30	0		0		0		16:30	4		3		7	
04:45	0		0		0		16:45	0	5	2	8	2	13
05:00	0		0		0		17:00	0		4		4	
05:15	0		0		0		17:15	1		1		2	
05:30	0		0		0		17:30	0		0		0	
05:45	0		0		0		17:45	1	2	2	7	3	9
06:00	0		0		0		18:00	1		2		3	
06:15	1		0		1		18:15	1		4		5	
06:30	0		0		0		18:30	0		2		2	
06:45	0	1	0		0	1	18:45	0	2	2	10	2	12
07:00	1		2		3		19:00	1		1		2	
07:15	1		0		1		19:15	1		3		4	
07:30	2		0		2		19:30	0		0		0	
07:45	1	5	3	5	4	10	19:45	0	2	0	4	0	6
08:00	1		0		1		20:00	1		0		1	
08:15	0		1		1		20:15	1		0		1	
08:30	1		0		1		20:30	0		0		0	
08:45	0	2	0	1	0	3	20:45	0	2	0		0	2
09:00	0		1		1		21:00	0		3		3	
09:15	1		0		1		21:15	0		1		1	
09:30	2		4		6		21:30	0		0		0	
09:45	0	3	1	6	1	9	21:45	0		0	4	0	4
10:00	2		2		4		22:00	0		0		0	
10:15	3		2		5		22:15	0		0		0	
10:30	1		1		2		22:30	0		0		0	
10:45	3	9	5	10	8	19	22:45	0		0		0	
11:00	0		7		7		23:00	0		0		0	
11:15	2		2		4		23:15	0		0		0	
11:30	3		3		6		23:30	0		0		0	
11:45	1	6	3	15	4	21	23:45	0		0		0	
TOTALS	27		38		65		TOTALS	51		88		139	
SPLIT %	41.5%		58.5%		31.9%		SPLIT %	36.7%		63.3%		68.1%	

DAILY TOTALS	IN	OUT			Total
	78	126			204

AM Peak Hour	11:15	10:45			10:45	PM Peak Hour	13:45	15:00			14:30
AM Pk Volume	10	17			25	PM Pk Volume	15	19			28
Pk Hr Factor	0.625	0.607			0.781	Pk Hr Factor	0.469	0.679			0.778
7 - 9 Volume	7	6	0	0	13	4 - 6 Volume	7	15	0	0	22
7 - 9 Peak Hour	07:00	07:00			07:00	4 - 6 Peak Hour	16:00	16:15			16:15
7 - 9 Pk Volume	5	5	0	0	10	4 - 6 Pk Volume	5	11	0	0	15
Pk Hr Factor	0.625	0.417	0.000	0.000	0.625	Pk Hr Factor	0.313	0.688	0.000	0.000	0.536

Prepared by NDS/ATD

Volume

Temecula Center Dr & Dwy 5

Day: Tuesday
Date: 11/14/2017

City: Temecula
Project #: CA17_6165_005

DAILY TOTALS	IN	OUT	Total
	257	210	467

AM Period	IN		OUT		TOTAL		PM Period	IN		OUT		TOTAL	
00:00	0		0		0		12:00	8		6		14	
00:15	0		0		0		12:15	4		6		10	
00:30	0		0		0		12:30	6		2		8	
00:45	0		0		0		12:45	8	26	6	20	14	46
01:00	0		0		0		13:00	8		7		15	
01:15	0		0		0		13:15	2		4		6	
01:30	0		0		0		13:30	5		8		13	
01:45	0		0		0		13:45	3	18	8	27	11	45
02:00	0		0		0		14:00	3		5		8	
02:15	0		0		0		14:15	4		2		6	
02:30	0		0		0		14:30	2		5		7	
02:45	0		0		0		14:45	8	17	2	14	10	31
03:00	0		0		0		15:00	1		4		5	
03:15	0		0		0		15:15	3		4		7	
03:30	0		0		0		15:30	9		2		11	
03:45	0		0		0		15:45	6	19	3	13	9	32
04:00	0		0		0		16:00	3		1		4	
04:15	0		0		0		16:15	2		5		7	
04:30	0		0		0		16:30	2		2		4	
04:45	0		0		0		16:45	5	12	0	8	5	20
05:00	0		0		0		17:00	2		4		6	
05:15	0		0		0		17:15	3		3		6	
05:30	0		0		0		17:30	1		2		3	
05:45	2	2	0		2	2	17:45	1	7	2	11	3	18
06:00	0		1		1		18:00	4		0		4	
06:15	0		0		0		18:15	1		1		2	
06:30	1		0		1		18:30	1		1		2	
06:45	1	2	1	2	2	4	18:45	1	7	2	4	3	11
07:00	7		2		9		19:00	1		0		1	
07:15	0		0		0		19:15	0		1		1	
07:30	8		4		12		19:30	1		1		2	
07:45	6	21	3	9	9	30	19:45	0	2	1	3	1	5
08:00	3		3		6		20:00	1		2		3	
08:15	6		3		9		20:15	0		0		0	
08:30	7		4		11		20:30	0		1		1	
08:45	8	24	7	17	15	41	20:45	0	1	0	3	0	4
09:00	3		1		4		21:00	0		0		0	
09:15	12		7		19		21:15	0		0		0	
09:30	11		5		16		21:30	0		0		0	
09:45	11	37	6	19	17	56	21:45	0		0		0	
10:00	7		10		17		22:00	0		0		0	
10:15	7		8		15		22:15	0		0		0	
10:30	7		7		14		22:30	0		0		0	
10:45	10	31	8	33	18	64	22:45	0		0		0	
11:00	4		7		11		23:00	0		0		0	
11:15	8		3		11		23:15	0		0		0	
11:30	5		6		11		23:30	0		0		0	
11:45	14	31	11	27	25	58	23:45	0		0		0	
TOTALS		148		107		255	TOTALS		109		103		212
SPLIT %		58.0%		42.0%		54.6%	SPLIT %		51.4%		48.6%		45.4%

DAILY TOTALS	IN	OUT	Total
	257	210	467

AM Peak Hour	09:15	10:00			09:15	PM Peak Hour	12:00	13:00			12:45
AM Pk Volume	41	33			69	PM Pk Volume	26	27			48
Pk Hr Factor	0.854	0.825			0.908	Pk Hr Factor	0.813	0.844			0.800
7 - 9 Volume	45	26	0	0	71	4 - 6 Volume	19	19	0	0	38
7 - 9 Peak Hour	08:00	08:00			08:00	4 - 6 Peak Hour	16:00	16:15			16:15
7 - 9 Pk Volume	24	17	0	0	41	4 - 6 Pk Volume	12	11	0	0	22
Pk Hr Factor	0.750	0.607	0.000	0.000	0.683	Pk Hr Factor	0.600	0.550	0.000	0.000	0.786

Prepared by NDS/ATD

Volume

Guasti Rd & Dwy 1

Day: Tuesday
Date: 11/14/2017

City: Ontario
Project #: CA17_6165_001

DAILY TOTALS	IN	OUT	Total
	653	653	1,306

AM Period	IN		OUT		TOTAL		PM Period	IN		OUT		TOTAL	
00:00	0		0		0		12:00	14		16		30	
00:15	0		0		0		12:15	22		15		37	
00:30	0		0		0		12:30	19		21		40	
00:45	0		0		0		12:45	23	78	19	71	42	149
01:00	0		0		0		13:00	16		25		41	
01:15	0		0		0		13:15	15		19		34	
01:30	0		0		0		13:30	7		16		23	
01:45	0		0		0		13:45	11	49	15	75	26	124
02:00	0		0		0		14:00	14		12		26	
02:15	0		0		0		14:15	11		13		24	
02:30	0		0		0		14:30	8		10		18	
02:45	0		0		0		14:45	7	40	7	42	14	82
03:00	0		0		0		15:00	14		12		26	
03:15	0		0		0		15:15	9		13		22	
03:30	0		0		0		15:30	8		8		16	
03:45	0		0		0		15:45	9	40	14	47	23	87
04:00	1		1		2		16:00	10		6		16	
04:15	0		0		0		16:15	7		12		19	
04:30	0		0		0		16:30	14		14		28	
04:45	2	3	0	1	2	4	16:45	11	42	8	40	19	82
05:00	0		0		0		17:00	11		14		25	
05:15	0		0		0		17:15	7		12		19	
05:30	1		1		2		17:30	13		18		31	
05:45	0	1	0	1	0	2	17:45	9	40	10	54	19	94
06:00	0		0		0		18:00	7		15		22	
06:15	0		0		0		18:15	7		7		14	
06:30	3		2		5		18:30	4		4		8	
06:45	3	6	0	2	3	8	18:45	7	25	4	30	11	55
07:00	7		2		9		19:00	4		6		10	
07:15	6		4		10		19:15	3		6		9	
07:30	5		2		7		19:30	2		4		6	
07:45	8	26	4	12	12	38	19:45	5	14	5	21	10	35
08:00	8		5		13		20:00	3		1		4	
08:15	8		7		15		20:15	1		2		3	
08:30	15		5		20		20:30	4		2		6	
08:45	21	52	10	27	31	79	20:45	4	12	4	9	8	21
09:00	26		11		37		21:00	3		7		10	
09:15	14		15		29		21:15	0		3		3	
09:30	16		14		30		21:30	1		1		2	
09:45	12	68	14	54	26	122	21:45	0	4	2	13	2	17
10:00	21		19		40		22:00	1		2		3	
10:15	25		20		45		22:15	1		1		2	
10:30	21		12		33		22:30	1		2		3	
10:45	10	77	25	76	35	153	22:45	0	3	1	6	1	9
11:00	13		23		36		23:00	0		1		1	
11:15	22		20		42		23:15	0		0		0	
11:30	20		15		35		23:30	0		0		0	
11:45	18	73	13	71	31	144	23:45	0		0	1	0	1
TOTALS	306		244		550		TOTALS	347		409		756	
SPLIT %	55.6%		44.4%		42.1%		SPLIT %	45.9%		54.1%		57.9%	

DAILY TOTALS	IN	OUT	Total
	653	653	1,306

AM Peak Hour	09:45	10:45			10:00	PM Peak Hour	12:15	12:30			12:15
AM Pk Volume	79	83			153	PM Pk Volume	80	84			160
Pk Hr Factor	0.790	0.830			0.850	Pk Hr Factor	0.870	0.840			0.952
7 - 9 Volume	78	39	0	0	117	4 - 6 Volume	82	94	0	0	176
7 - 9 Peak Hour	08:00	08:00			08:00	4 - 6 Peak Hour	16:15	17:00			16:45
7 - 9 Pk Volume	52	27	0	0	79	4 - 6 Pk Volume	43	54	0	0	94
Pk Hr Factor	0.619	0.675	0.000	0.000	0.637	Pk Hr Factor	0.768	0.750	0.000	0.000	0.758

Prepared by NDS/ATD

Volume

Guasti Rd & Dwy 2

Day: Tuesday
Date: 11/14/2017

City: Ontario
Project #: CA17_6165_002

DAILY TOTALS	IN	OUT			Total
	93	100			193

AM Period	IN		OUT		TOTAL		PM Period	IN		OUT		TOTAL	
00:00	0		1		1		12:00	0		0		0	
00:15	0		0		0		12:15	0		0		0	
00:30	0		0		0		12:30	5		7		12	
00:45	0		0	1	0	1	12:45	4	9	2	9	6	18
01:00	0		0		0		13:00	2		2		4	
01:15	0		0		0		13:15	4		2		6	
01:30	0		0		0		13:30	1		2		3	
01:45	0		0		0		13:45	2	9	3	9	5	18
02:00	0		0		0		14:00	6		9		15	
02:15	0		0		0		14:15	3		4		7	
02:30	0		0		0		14:30	1		0		1	
02:45	0		0		0		14:45	0	10	3	16	3	26
03:00	0		0		0		15:00	3		3		6	
03:15	0		0		0		15:15	8		4		12	
03:30	0		0		0		15:30	3		4		7	
03:45	1	1	0		1	1	15:45	3	17	5	16	8	33
04:00	0		1		1		16:00	7		8		15	
04:15	0		0		0		16:15	3		4		7	
04:30	0		0		0		16:30	1		2		3	
04:45	0		0	1	0	1	16:45	2	13	3	17	5	30
05:00	0		0		0		17:00	2		1		3	
05:15	0		0		0		17:15	0		0		0	
05:30	0		0		0		17:30	1		0		1	
05:45	0		0		0		17:45	0	3	0	1	0	4
06:00	0		0		0		18:00	1		0		1	
06:15	0		0		0		18:15	1		1		2	
06:30	0		1		1		18:30	0		0		0	
06:45	0		0	1	0	1	18:45	0	2	0	1	0	3
07:00	0		0		0		19:00	0		0		0	
07:15	2		1		3		19:15	0		0		0	
07:30	0		0		0		19:30	0		0		0	
07:45	1	3	1	2	2	5	19:45	0		0		0	
08:00	0		0		0		20:00	0		0		0	
08:15	1		2		3		20:15	0		0		0	
08:30	2		0		2		20:30	0		0		0	
08:45	2	5	2	4	4	9	20:45	0		0		0	
09:00	2		2		4		21:00	0		0		0	
09:15	1		1		2		21:15	0		0		0	
09:30	2		4		6		21:30	0		0		0	
09:45	3	8	2	9	5	17	21:45	0		0		0	
10:00	4		4		8		22:00	0		0		0	
10:15	1		0		1		22:15	0		0		0	
10:30	2		2		4		22:30	0		0		0	
10:45	3	10	3	9	6	19	22:45	0		0		0	
11:00	1		1		2		23:00	0		0		0	
11:15	1		1		2		23:15	1		0		1	
11:30	0		2		2		23:30	0		0		0	
11:45	0	2	0	4	0	6	23:45	0	1	0		0	1
TOTALS	29		31		60		TOTALS	64		69		133	
SPLIT %	48.3%		51.7%		31.1%		SPLIT %	48.1%		51.9%		68.9%	

DAILY TOTALS	IN	OUT			Total
	93	100			193

AM Peak Hour	09:15	09:15			09:15		PM Peak Hour	15:15	15:15			15:15
AM Pk Volume	10	11			21		PM Pk Volume	21	21			42
Pk Hr Factor	0.625	0.688			0.656		Pk Hr Factor	0.656	0.656			0.700
7 - 9 Volume	8	6	0	0	14		4 - 6 Volume	16	18	0	0	34
7 - 9 Peak Hour	08:00	08:00			08:00		4 - 6 Peak Hour	16:00	16:00			16:00
7 - 9 Pk Volume	5	4	0	0	9		4 - 6 Pk Volume	13	17	0	0	30
Pk Hr Factor	0.625	0.500	0.000	0.000	0.563		Pk Hr Factor	0.464	0.531	0.000	0.000	0.500

Appendix D – Existing Year (2019) Plus Project Conditions, ICU Analysis Worksheets

CM Audi Fletcher Jones TIA

Vistro File: J:\...\CM_Audi_TIS_Existing_Plus_Proj.vistro Scenario 1 1 Existing Plus Proj AM

Report File: J:\...\CM_Audi_Existing_Plus_Proj_ICU_AM.pdf 6/3/2019

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Santa Ana/Red Hill / Bristol	Signalized	ICU 1	SEB Thru	0.634	-	B
2	Northbound Newport / Bristol	Signalized	ICU 1	NEB Right	0.673	-	B
3	Southbound Newport / Bristol	Signalized	ICU 1	SB Right	0.402	-	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Santa Ana/Red Hill / Bristol

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.634

Intersection Setup

Name	Santa Ana Avenue			Red Hill Avenue			Bristol Street			Bristol Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	10.00	10.00	10.00	10.00	11.00	11.00	12.00	11.00	11.00	11.00	11.00	10.00
No. of Lanes in Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Pocket Length [ft]	204.00	100.00	60.00	150.00	100.00	130.00	210.00	100.00	255.00	280.00	100.00	95.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Santa Ana Avenue			Red Hill Avenue			Bristol Street			Bristol Street		
Base Volume Input [veh/h]	162	488	160	258	150	106	118	443	553	377	870	93
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	162	488	160	258	150	106	118	443	553	377	870	93
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	41	122	40	65	38	27	30	111	138	94	218	23
Total Analysis Volume [veh/h]	162	488	160	258	150	106	118	443	553	377	870	93
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	120
Lost time [s]	16.00

Phasing & Timing

Control Type	Protect	Permis	Permis	Protect	Permis	Permis	Protect	Permis	Permis	Protect	Permis	Permis
Signal group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.15	0.10	0.08	0.05	0.07	0.04	0.16	0.16	0.12	0.18	0.06
Intersection LOS	B											
Intersection V/C	0.634											

Intersection Level Of Service Report
Intersection 2: Northbound Newport / Bristol

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.673

Intersection Setup

Name	NB Newport Blvd			Ganahl Way			Bristol Street			Bristol Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	1	0	0	0	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	90.00	90.00	100.00	100.00	100.00	100.00	100.00	130.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	NB Newport Blvd			Ganahl Way			Bristol Street			Bristol Street		
Base Volume Input [veh/h]	338	32	521	69	0	59	0	515	59	34	764	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	338	32	521	69	0	59	0	515	59	34	764	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	85	8	130	17	0	15	0	129	15	9	191	0
Total Analysis Volume [veh/h]	338	32	521	69	0	59	0	515	59	34	764	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	110
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permis	Split	Permis	Permis	Permis	Protect	Permis	Permis
Signal group	0	3	0	4	0	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.11	0.12	0.33	0.04	0.00	0.04	0.00	0.12	0.12	0.02	0.16	0.00
Intersection LOS	B											
Intersection V/C	0.673											

Intersection Level Of Service Report
Intersection 3: Southbound Newport / Bristol

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.402

Intersection Setup

Name	Bristol Street			SB Newport Blvd			Car Wash Driveway			Bristol Street		
Approach	Southbound			Northeastbound			Southwestbound			Northwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	10.00	11.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	11.00	13.00
No. of Lanes in Pocket	1	0	1	0	0	0	0	0	0	2	0	0
Pocket Length [ft]	165.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	395.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

Volumes

Name	Bristol Street			SB Newport Blvd			Car Wash Driveway			Bristol Street		
Base Volume Input [veh/h]	31	804	311	0	0	0	0	1	6	186	747	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	31	804	311	0	0	0	0	1	6	186	747	2
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	201	78	0	0	0	0	0	2	47	187	1
Total Analysis Volume [veh/h]	31	804	311	0	0	0	0	1	6	186	747	2
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	110
Lost time [s]	16.00

Phasing & Timing

Control Type	Protect	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Protect	Permis	Permis
Signal group	1	6	0	0	0	0	0	4	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	-	-	-	-	-	-	Lag	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.17	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.16	0.16
Intersection LOS	A											
Intersection V/C	0.402											

CM Audi Fletcher Jones TIA

Vistro File: J:\...\CM_Audi_TIS_Existing_Plus_Proj.vistro Scenario 2 2 Existing Plus Proj PM

Report File: J:\...\CM_Audi_Existing_Plus_Proj_ICU_PM.pdf 6/3/2019

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Santa Ana/Red Hill / Bristol	Signalized	ICU 1	NWB Thru	0.678	-	B
2	Northbound Newport / Bristol	Signalized	ICU 1	NWB Right	0.657	-	B
3	Southbound Newport / Bristol	Signalized	ICU 1	SB Right	0.695	-	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Santa Ana/Red Hill / Bristol

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.678

Intersection Setup

Name	Santa Ana Avenue			Red Hill Avenue			Bristol Street			Bristol Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	10.00	10.00	10.00	10.00	11.00	11.00	12.00	11.00	11.00	11.00	11.00	10.00
No. of Lanes in Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Pocket Length [ft]	204.00	100.00	60.00	150.00	100.00	130.00	210.00	100.00	255.00	280.00	100.00	95.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Santa Ana Avenue			Red Hill Avenue			Bristol Street			Bristol Street		
Base Volume Input [veh/h]	143	210	93	476	537	320	196	1127	326	207	488	173
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	143	210	93	476	537	320	196	1127	326	207	488	173
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	53	23	119	134	80	49	282	82	52	122	43
Total Analysis Volume [veh/h]	143	210	93	476	537	320	196	1127	326	207	488	173
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	120
Lost time [s]	16.00

Phasing & Timing

Control Type	Protect	Permis	Permis	Protect	Permis	Permis	Protect	Permis	Permis	Protect	Permis	Permis
Signal group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.07	0.06	0.15	0.17	0.20	0.06	0.23	0.20	0.06	0.10	0.11
Intersection LOS	B											
Intersection V/C	0.678											

Intersection Level Of Service Report
Intersection 2: Northbound Newport / Bristol

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.657

Intersection Setup

Name	No Ne			Ganahl Way			Bristol Street			Bristol Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	1	0	0	0	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	90.00	90.00	100.00	100.00	100.00	100.00	100.00	130.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	No Ne			Ganahl Way			Bristol Street			Bristol Street		
Base Volume Input [veh/h]	345	5	236	16	0	34	0	1569	26	17	598	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	345	5	236	16	0	34	0	1569	26	17	598	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	86	1	59	4	0	9	0	392	7	4	150	0
Total Analysis Volume [veh/h]	345	5	236	16	0	34	0	1569	26	17	598	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	110
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permis	Split	Permis	Permis	Permis	Protect	Permis	Permis
Signal group	0	3	0	4	0	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.11	0.11	0.15	0.01	0.00	0.02	0.00	0.33	0.33	0.01	0.12	0.00
Intersection LOS	B											
Intersection V/C	0.657											

Intersection Level Of Service Report
Intersection 3: Southbound Newport / Bristol

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.695

Intersection Setup

Name	Bristol Street			So Ne			Car Wash Driveway			Bristol Street		
Approach	Southbound			Northeastbound			Southwestbound			Northwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	10.00	11.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	11.00	13.00
No. of Lanes in Pocket	1	0	1	0	0	0	0	0	0	2	0	0
Pocket Length [ft]	165.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	395.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

Volumes

Name	Bristol Street			So Ne			Car Wash Driveway			Bristol Street		
Base Volume Input [veh/h]	48	642	528	0	0	0	1	3	6	681	1252	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	48	642	528	0	0	0	1	3	6	681	1252	3
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	161	132	0	0	0	0	1	2	170	313	1
Total Analysis Volume [veh/h]	48	642	528	0	0	0	1	3	6	681	1252	3
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	110
Lost time [s]	16.00

Phasing & Timing

Control Type	Protect	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Protect	Permis	Permis
Signal group	1	6	0	0	0	0	0	4	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	-	-	-	-	-	-	Lag	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.13	0.33	0.00	0.00	0.00	0.00	0.01	0.01	0.21	0.26	0.26
Intersection LOS	B											
Intersection V/C	0.695											