ATTACHMENT G

CITY OF COSTA MESA

CALIFORNIA 92628-1200 P. O. BOX 1200

FROM THE OFFICE OF THE DIRECTOR, DEPARTMENT OF PUBLIC SERVICES

November 18, 2024

Gregory Nord
Section Manager III
Orange County Transportation Authority
550 S Main St.
Orange, CA 92863

RE: MASTER PLAN OF ARTERIAL HIGHWAYS (MPAH) AMENDMENT REQUEST – MERRIMAC WAY, CITY OF COSTA MESA, FOCUSED TRAFFIC STUDY

Dear Mr. Nord:

On February 1, 2024, the City submitted a traffic monitoring report for Merrimac Way pursuant to your letter dated December 6, 2023. Per the original letter agreement with OCTA dated February 2020, the City is responsible for monitoring and evaluating traffic conditions on Merrimac Way every three years until the MPAH is amended to reflect the configuration of a two lane, divided facility with Class II and Class IV bicycle lanes. This letter serves as the City's official request for an MPAH Amendment for Merrimac Way within the City of Costa Mesa to change its Primary Collector classification.

Per the MPAH guidelines, a traffic study was prepared for Merrimac Way. The traffic study is attached as **Appendix A** and was prepared using new traffic counts taken in February 2024 to account for school traffic. The study shows that Merrimac Way is anticipated to operate at an acceptable level of service for both current year 2024 and future year 2050. If OCTA concurs and the amendment is approved, the City will adjust the classification of Merrimac Way during the next update of the City's General Plan Circulation Element.

If you have any questions or require further clarification, please contact me at (714) 754-5343.

Respectfully,

Raja Sethuraman
Public Works Director

c Ramin Nikoui, Senior Engineer
Brett Atencio Thomas, Active Transportation Coordinator
Ivy Hang, Senior Transportation Analyst, OCTA

Appendix A: Focused Traffic Study, Merrimac Way Master Plan Arterial Highway Amendment

Focused Traffic Study

Merrimac Way
Master Plan Arterial Highway Amendment

Submitted to

City of Costa Mesa
77 Fair Drive, Costa Mesa City Hall, CA 92626

November 4, 2024

Submitted by

AGA Engineers, Inc.
211 Imperial Highway, Suite 208
Fullerton, CA 92835
(714) 992-4592
aga@agaengineersinc.com

November 4, 2024

Ramin Nikoui
Senior Engineer – Transportation Service Division
City of Costa Mesa
77 Fair Drive
Costa Mesa, CA 92626

RE: Proposed Amendment to OCTA MPAH – Merrimac Way

Dear Nikoui,

Pursuant to City of Costa Mesa's request, AGA Engineers has conducted a focused traffic study to evaluate potential traffic impacts along Merrimac Way resulting from the proposed amendment to the Orange County Master Plan of Arterial Highways (MPAH) to reduce the number of lanes. Between Harbor Boulevard and Fairview Road, Merrimac Way has been reduced from four lanes with a raised median to two lanes with a raised median and Class II and Class IV bike lanes.

This traffic analysis is to assess the reduction of lanes on Merrimac way and if it will have a significant impact on the traffic conditions.

Should you have any questions regarding this study, please do not hesitate to contact Greg Wong or Vannessa Pedroza at (714) 992-4592.

Respectfully submitted,

AGA ENGINEERS, INC.

Greg Wong, P.E.
Vice President

Vannessa Pedroza
Associate Transportation Engineer

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A Year 2024 Average Daily Traffic
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Project Objective and Purpose

The purpose of this study is to evaluate the proposed change in roadway classification of Merrimac Way between Harbor Boulevard and Fairview Road from a Four-Lane Primary Arterial to a Two-Lane Collector Arterial, and to determine any impacts due to the proposed modification. The City of Costa Mesa will be requesting the Master Plan of Arterial Highway (MPAH) Amendment with the Orange County Transportation Authority (OCTA) for the proposed modification.

Project Study Area

Typically, an MPAH Amendment is conducted prior to the change of a roadway to determine if there would be any impacts from the proposed change. For the purposes of this MPAH report, it was assumed that the proposed change has not taken place. Therefore, the "current configuration" was evaluated as the Four-Lane configuration, and the "proposed configuration" was evaluated as the Two-Lane configuration.

Merrimac Way is a Four-Lane Arterial between Harbor Boulevard and Fairview Road with a raised median, located south of Orange Coast College, and is classified as a Primary Arterial. With the proposed lane modifications, the arterial is proposed to be classified as a Two-Lane Divided Collector Arterial with Class II and Class IV bike lanes. The study segment on Merrimac Way between Harbor Boulevard and Fairview Road were analyzed. A total of two intersections were analyzed in this study area, Harbor Boulevard/Merrimac Way and Fairview Road/Merrimac Way, both of which are signalized intersections controlled by the City of Costa Mesa. A project vicinity map is shown on **Figure 1A** and the study area is identified on **Figure 1B** and listed below. While lane modifications are to be applied on Merrimac Way, the curb-to-curb street width will remain unchanged. At the intersection of Harbor Boulevard/Merrimac Way, the lane configuration changes for the westbound approach, from having the middle lane as a shared through/right turn lane to a through only lane. There are no proposed changes to the intersection of Fairview Road/ Merrimac Way.

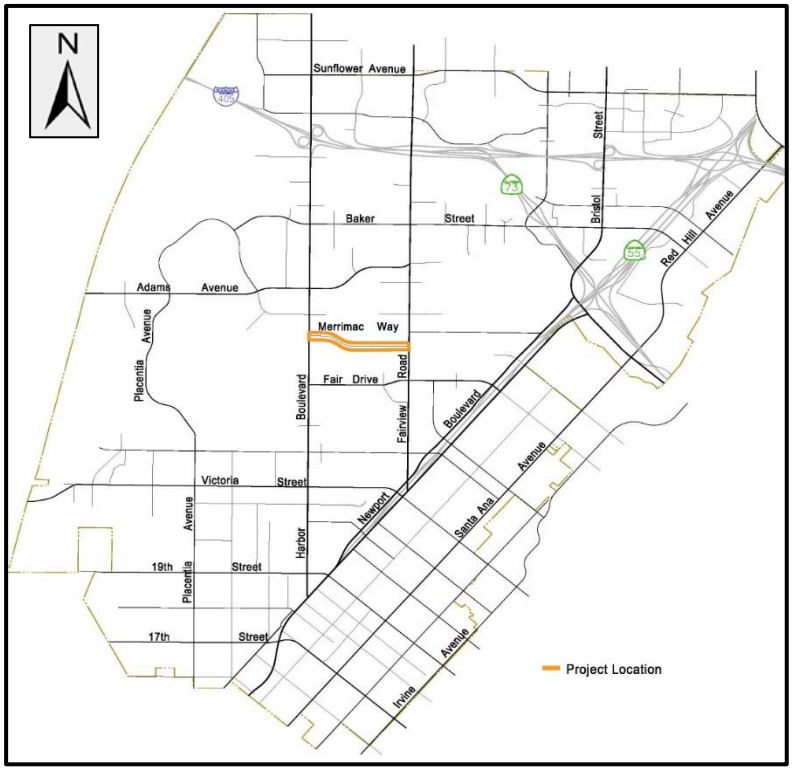


Figure 1A. Vicinity Map

Study Arterial

- Merrimac Way: Harbor Boulevard – Fairview Road

Study Intersections

- Harbor Boulevard/Merrimac Way
- Fairview Road/Merrimac Way

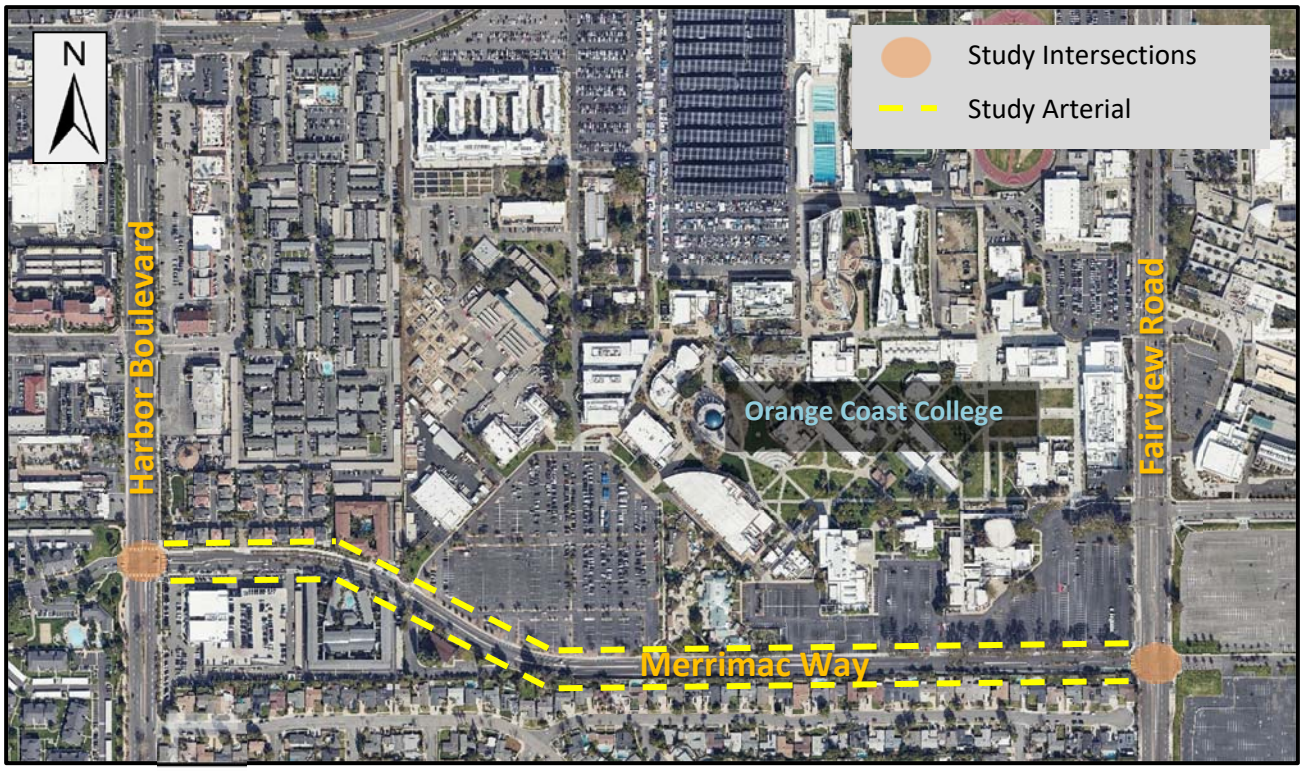


Figure 1B. Study Area

Level of Service (LOS) Analysis and Methodology

Arterial LOS Analysis

For arterial Level of Service (LOS) analysis, OCTA utilizes LOS C for acceptable LOS. For the current configuration of the Four-Lane divided Primary Arterial, the arterial capacity for LOS C is 30,000 (vpd). For the proposed configuration of the Two-Lane Divided Collector Arterial, the arterial capacity for LOS C is 15,000 (vpd). If the existing or future traffic volumes on Merrimac Way exceed LOS C capacity for the proposed configuration, then the current configuration of four lanes divided roadway should

remain on Merrimac Way. The Arterial Highway Master Plan of Arterial Highways (MPAH) capacity values are shown below on **Table 1.**

Table 1. Arterial Highway MPAH Capacity Values

Configuration	Type of Arterial	Level of Service				
		A	B	C	D	E
Current	Four-lane divided	22,500	26,300	30,000	33,800	37,500
Proposed	Two-lane divided	9,000	12,000	15,000	20,000	22,000

Intersection LOS Analysis

The intersection LOS analysis for the two study intersections was determined using the Intersection Capacity Utilization (ICU) Methodology per the Orange County Transportation Authority Congestion Management Program (OCTA CMP) guidelines. The ICU methodology is a simple demand-over-capacity assessment of key intersection movements. This methodology assigns LOS rankings from LOS A to LOS F based on the ratio of vehicles utilizing the intersection to the overall intersection capacity, which is also known as the volume-to-capacity (V/C) ratio (see **Table 2**). The saturation flow rate, or lane capacity, is 1700 vehicles per hour per lane and used for the left, through and right turn lanes. This rate was derived from historical research performed on intersections in Orange County, during peak periods.

Table 2. Level-of-Service by Capacity

Volume/Capacity Ratio (V/C)	LOS
0.00 to 0.60	A
0.61 to 0.70	B
0.71 to 0.80	C
0.81 to 0.90	D
0.91 to 1.00	E
Greater than 1.00	F

Intersection Significant Impact Criteria

Per the OCTA guidelines, traffic impacts for a given intersection are identified as significant if the proposed project results in a downgrade of LOS from an acceptable LOS D (or better) to LOS E/F, or a downgrade from LOS E "without project" to LOS F "with project". Additionally, for an intersection that already operates at LOS E/F "without project", a change in ICU value of 0.01 or more will result in a significant impact for that intersection.

Study Scenarios

LOS analyses were conducted for the following Project Year 2024 and Project Year 2050 scenarios for both the arterial LOS and intersection LOS as shown below:

- Year 2024
  - Current Configuration – Four-Lane, Divided Primary Arterial
  - Proposed Configuration – Two-Lane, Divided Collector Arterial
- Year 2050
  - Current Configuration – Four-Lane, Divided Primary Arterial
  - Proposed Configuration – Two-Lane, Divided Collector Arterial

Lane configurations for Harbor Boulevard and Fairview Road are shown on **Figures 2A** and **2B** for existing conditions and **Figures 3A** and **3B** for proposed conditions.

Year 2024 LOS Analysis

Arterial LOS Analysis

Weekday 24-hour traffic counts were taken in order to assess the LOS for Merrimac Way for both configurations. The traffic counts were taken on Merrimac Way on Thursday February 15, 2024 between Harbor Boulevard and Fairview Road and showed a total of 6,514 vehicles per day (see **Table 3**), which is well under the arterial LOS C capacity. The analysis show that Merrimac Way operates at a LOS A for both a Four-Lane Divided Primary Arterial and a Two-Lane Divided Collector Arterial. Detailed 24-hour traffic counts are included in **Attachments A**.

Table 3. Average Daily Traffic on Merrimac Way for Year 2024

Year	ADT for Merrimac Way (vpd)	MPAH Arterial LOS A Capacity (vpd)		LOS for Merrimac Way
		Current Configuration for Primary Divided Arterial (four-lanes)	Proposed Configuration for Divided Collector Arterial (two-lanes)	
2024	6,514	22,500	9,000	A

Intersection LOS Analysis

Lane configurations for Harbor Boulevard at Merrimac Way and Fairview Road at Merrimac Way are shown on **Figures 2A** and **2B** for existing conditions and **Figures 3A** and **3B** for proposed conditions.

The lane configuration change for Harbor Boulevard/Merrimac Way from existing to proposed is only for the westbound approach, where the shared through and right turn lane will be striped as a through lane only. The lane configuration change for Fairview Road/Merrimac Way from existing to proposed is only for the eastbound approach, where a bike lane is implemented.

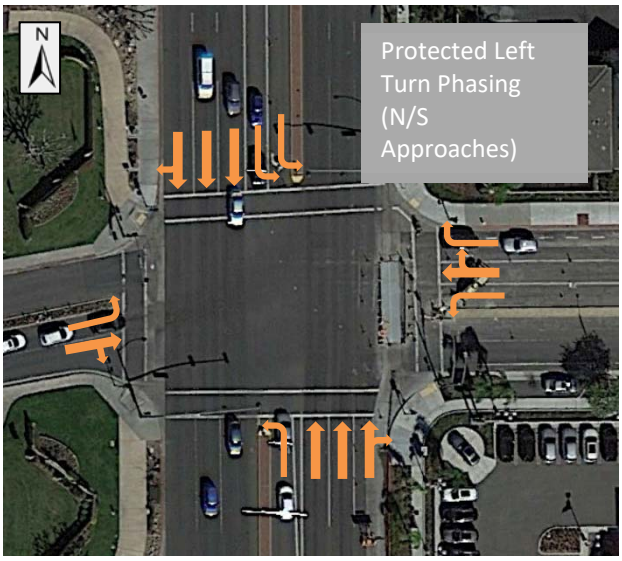


Figure 2A. Existing Lane Configuration on Harbor Boulevard/Merrimac Way

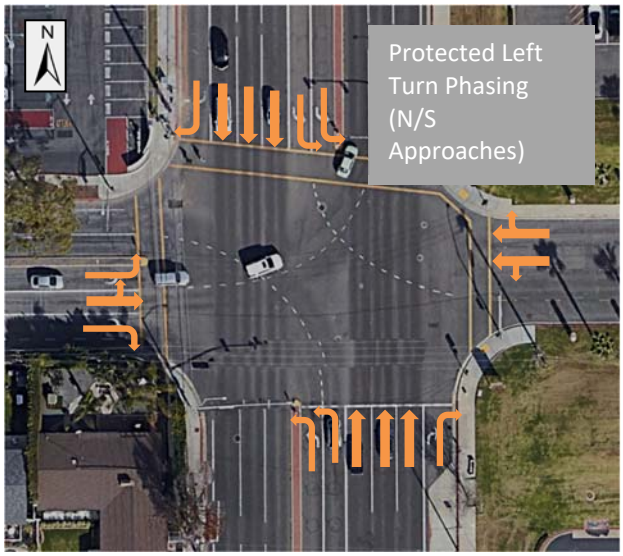


Figure 2B. Existing Lane Configuration on Fairview Road/Merrimac Way

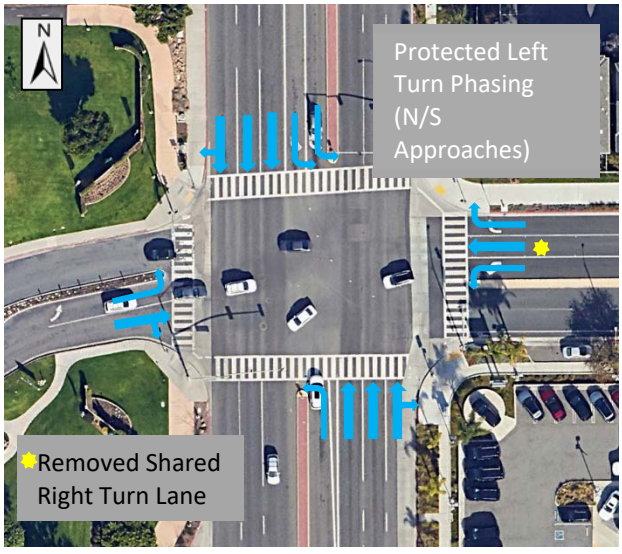


Figure 3A. Proposed Lane Configuration on Harbor Boulevard/Merrimac Way

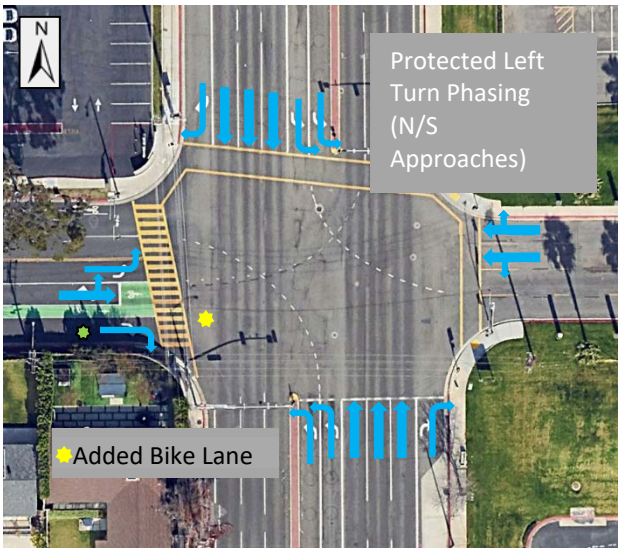


Figure 3B. Proposed Lane Configuration on Fairview Road/Merrimac Way

For the intersection LOS analysis, peak period turning movement counts were taken on Thursday February 15, 2024. The AM and PM peak hour traffic volumes are shown in **Figures 4A and 4B**, respectively. Detailed peak hour turning movement counts are included in **Attachment B.** For low vehicle volumes a minimum of 10 vehicles per hour was used.

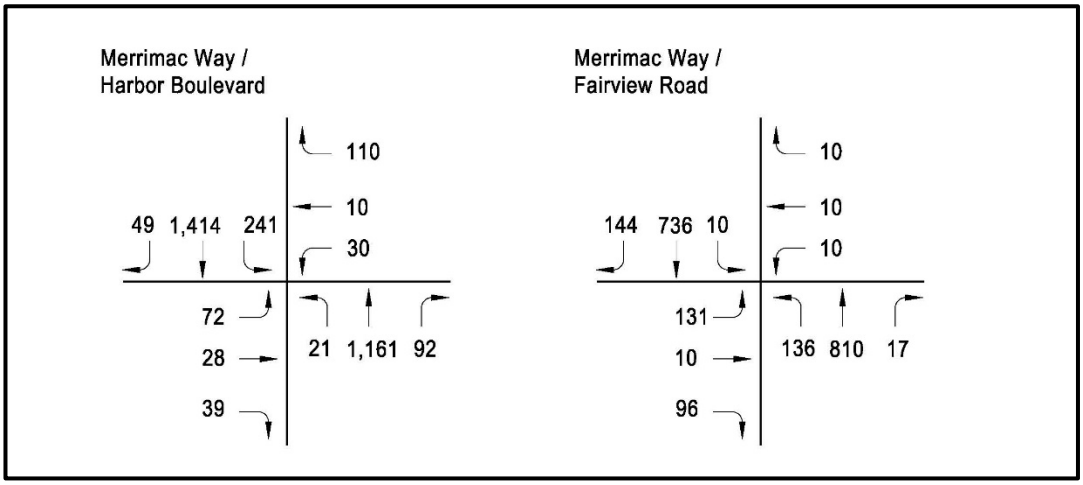


Figure 4A. Year 2024 AM Peak Hour Turning Movement Counts

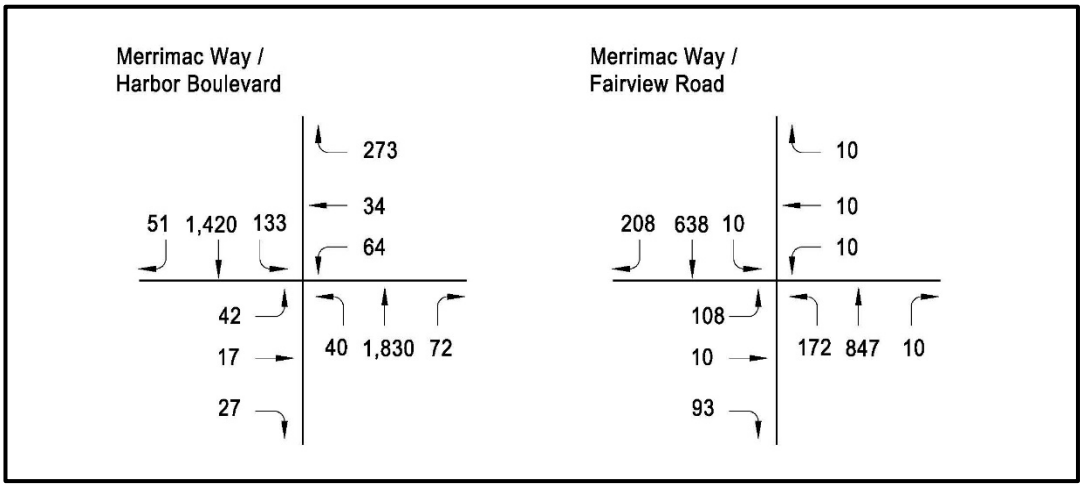


Figure 4B. Year 2024 PM Peak Hour Turning Movement Counts

For this Current Configuration scenario, Fairview Road/Merrimac Way operates at a LOS A for both peak hours, while Harbor Boulevard/Merrimac Way operates at LOS A for both peak hours as well. For Proposed Configuration scenario, the LOS remained the same as the current configuration for

both intersections. Intersection LOS analysis for the current configuration and proposed configuration scenarios are summarized in **Table 4.** The intersection LOS analysis ICU worksheets are provided in **Attachment C**.

Table 4. Intersection Level of Service Analysis for Year 2024

	No.	Location	Year 2024			
			AM Peak Hour		PM Peak Hour	
			ICU	LOS	ICU	LOS
Current Configuration	1	Merrimac Way/Harbor Boulevard	0.42	A	0.56	A
	2	Merrimac Way/Fairview Road	0.29	A	0.28	A
Proposed Configuration	1	Merrimac Way/Harbor Boulevard	0.42	A	0.61	B
	2	Merrimac Way/Fairview Road	0.29	A	0.28	A

Year 2050 LOS Analysis

Data from the Orange County Transportation Analysis Model (OCTAM) was utilized to determine the projected future growth rate from Base Year 2019 to Future Year 2050. Based on the data (see **Attachment D**), there was no significant increase except for northbound approach in the AM peak hour and the southbound approach in the PM peak hour for Harbor Boulevard, with a growth of 32% and 14%, respectively. All other movements had a 5% growth or less. Therefore, the projected growth provided by OCTAM was used only for the AM northbound approach and PM southbound approach, at Harbor Boulevard. In order to account for other ambient growth in the study area and for a conservative analysis, a 10% increase was used for all other approaches. For the northbound approach at Harbor Boulevard, during the AM peak hour, extrapolating the growth of 32% from Year 2019 to Year 2050 equates to approximately 1% growth, per year. Therefore, from Year 2024 to Year 2050, the northbound approach is expected to have a growth rate total of 26%. For the southbound approach at Harbor Boulevard, during the PM peak hour, extrapolating the growth of 14% from Year 2019 to Year 2050 equates to approximately 0.5% growth per year. Therefore, from Year 2024 to Year 2050, the southbound approach is expected to have a growth rate total of 13%. The growth rates are summarized below.

- OCTAM Year 2019 – Year 2050, Weekday AM Peak Period Growth
    - Harbor Boulevard, Northbound – 32% growth, Equates to approximately 1% per year
        - Year 2024 to Year 2050 = 26% total growth
- OCTAM Year 2019 – Year 2050, Weekday PM Peak Period Growth

- Harbor Boulevard, Southbound – 14% growth, Equates to approximately 0.5% per year
  - Year 2024 to Year 2050 = 13% total growth
- All other movements, 10% total growth

Arterial LOS Analysis

Year 2050 traffic reflects the 2024 traffic volumes plus a projected growth rate for the daily traffic. The projected 10% growth was applied to the 2024 daily traffic volumes on Merrimac Way to develop Year 2050 traffic volumes. The traffic volumes increased to 7,166 vehicles per day for the Year 2050 using the 10% growth as shown in **Table 5.** Based on the projected 2050 traffic volumes on Merrimac Way, the arterial is expected to continue to operate at LOS A under both the Four-Lane Divided Primary Arterial and the Two-Lane Divided Collector Arterial scenarios.

Table 5. Average Daily Traffic on Merrimac Way for Year 2050

Count Year	10% Growth ADT for Merrimac Way (vpd)	MPAH Arterial LOS A Capacity (vpd)		LOS for Merrimac Way
		Current Configuration for Primary Divided Arterial (four-lanes)	Proposed Configuration for Divided Collector Arterial (two-lanes)	
2024	7,166	22,500	9,000	A

Intersection LOS Analysis

The growth rates were applied to the 2024 turning movement counts to develop the 2050 intersection traffic volumes. The 10% growth rate was applied to all movements except for the AM northbound and PM southbound at Harbor Boulevard. These movements were increased by 26% for the AM peak hour and 13% for the PM peak hour. Year 2050 for AM and PM peak hour turning movement traffic volumes are shown in **Figures 5A and 5B,** respectively.

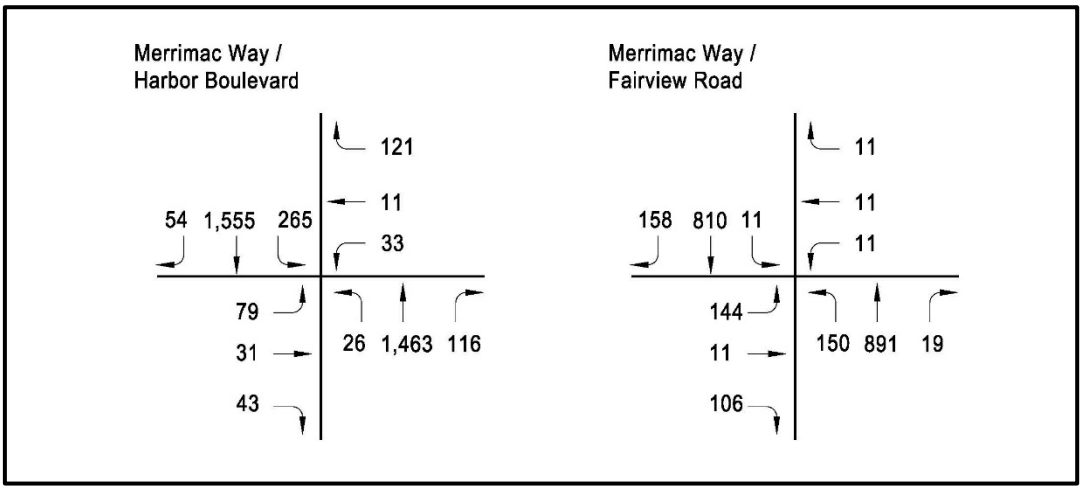


Figure 5A: Year 2050 AM Peak Hour Turning Movement Counts

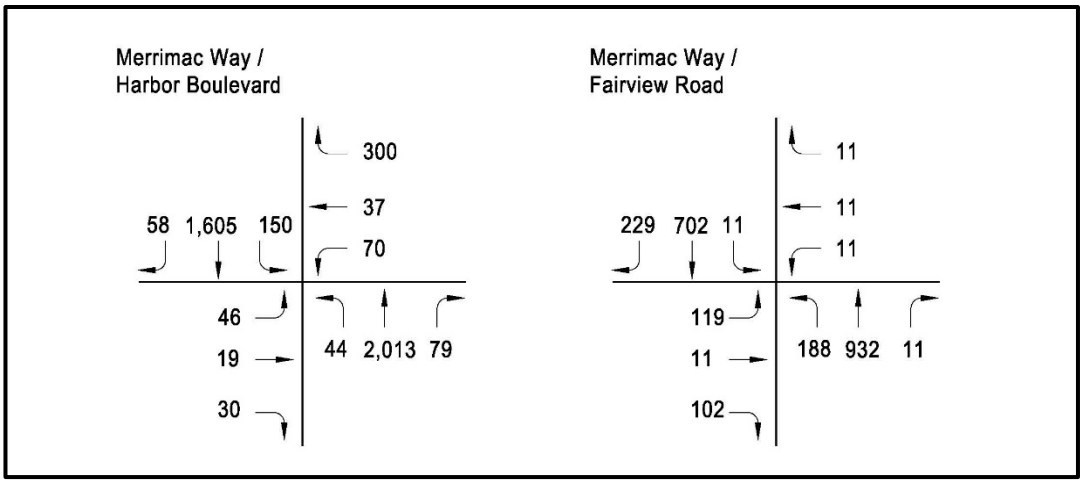


Figure 5B: Year 2050 PM Peak Hour Turning Movement Counts

For the Current Configuration scenario, Harbor Boulevard/Merrimac Way intersection is expected to operate at a LOS A for the AM peak hour and LOS B for the PM peak hour. The Fairview Road/Merrimac Way intersection is expected to operate at a LOS A for both the AM peak hour and the PM peak hour. For Proposed Configuration scenario, the LOS for both intersections remain the same as the current configuration. Intersection LOS analysis for the current configuration and proposed configuration Year 2050 scenarios are summarized in **Table 6**, and intersection LOS analysis worksheets are provided in **Attachment E.**

Table 6. Intersection Level of Service Analysis for Year 2050

	No.	Location	Year 2050			
			AM Peak Hour		PM Peak Hour	
			ICU	LOS	ICU	LOS
Current Configuration	1	Merrimac Way/Harbor Boulevard	0.50	A	0.61	B
	2	Merrimac Way/Fairview Road	0.32	A	0.30	A
Proposed Configuration	1	Merrimac Way/Harbor Boulevard	0.50	A	0.66	B
	2	Merrimac Way/Fairview Road	0.32	A	0.30	A

Conclusion

This traffic study evaluated Merrimac Way between Harbor Boulevard and Fairview Road from a Four-Lane Primary Arterial to a Two-Lane Collector Arterial and to determine any impacts due to the proposed modification.

After analyzing the current conditions for Merrimac Way between Harbor Boulevard and Fairview Road for Year 2024, the proposed configuration of two-lanes and with Class II and Class IV bike lanes will have no significant impact on traffic conditions. The arterial LOS analysis for Merrimac Way, showed a LOS A for the current and proposed configurations. Intersection LOS was conducted for two intersections on Merrimac Way at Harbor Boulevard and at Fairview Road. The intersection LOS analysis determined that both intersections will operate at an acceptable LOS B or better with the proposed configuration. Using the OCTAM model for the Year 2050 analysis, growth rates were determined and applied to the 2024 traffic volumes to develop 2050 traffic conditions. The roadway segment LOS analysis conducted for Year 2050, determined that Merrimac Way is expected to operate at LOS A for the current and proposed configurations. The intersection LOS analysis for Year 2050, determined that neither of the two intersections on Merrimac Way – at Harbor Boulevard and at Fairview Road will be significantly impacted by the proposed configuration. Both study intersections are expected to operate at an acceptable LOS B or better with the proposed configuration.

Merrimac Way, between Harbor Boulevard and Fairview Road, and the intersections of Harbor Boulevard/Merrimac Way and Fairview Road/Merrimac Way, are expected to operate at an acceptable LOS for the proposed configuration for both Current Year 2024 and Future Year 2050. Therefore, it is recommended to reclassify Merrimac Way from a Four-Lane Divided Primary Arterial to a Two-Lane Divided Collector Arterial.

Merrimac Way MPAH Amendment

Year 2024 Average Daily Traffic

Attachment A

AGA Engineers, Inc.

Thursday, February 15, 2024 CITY: Costa Mesa PROJECT: SC4414

ADT1 Merrimac Way between Harbor Blvd and Fairview Rd. Suhsduhg#e|#DlpWG#OOF##who1#:47#586#:;;;

AM Period	EB		WB			PM Period	EB		WB		
0:00	3		4			12:00	80		73		
0:15	0		3			12:15	49		61		
0:30	0		2			12:30	106		86		
0:45	2	5	1	10	15	12:45	72	307	82	302	609
1:00	1		1			13:00	37		49		
1:15	0		0			13:15	38		45		
1:30	0		1			13:30	39		61		
1:45	2	3	3	5	8	13:45	52	166	49	204	370
2:00	2		2			14:00	69		87		
2:15	0		0			14:15	70		61		
2:30	0		0			14:30	37		46		
2:45	0	2	0	2	4	14:45	49	225	55	249	474
3:00	0		0			15:00	56		69		
3:15	1		0			15:15	66		55		
3:30	0		0			15:30	66		70		
3:45	1	2	0	0	2	15:45	85	273	86	280	553
4:00	0		1			16:00	49		65		
4:15	1		1			16:15	51		86		
4:30	1		1			16:30	51		73		
4:45	1	3	2	5	8	16:45	30	181	96	320	501
5:00	2		0			17:00	52		112		
5:15	4		3			17:15	61		100		
5:30	3		15			17:30	58		126		
5:45	16	25	10	28	53	17:45	61	232	98	436	668
6:00	5		4			18:00	52		71		
6:15	5		5			18:15	39		68		
6:30	7		7			18:30	29		50		
6:45	17	34	17	33	67	18:45	28	148	52	241	389
7:00	17		14			19:00	26		44		
7:15	35		21			19:15	27		40		
7:30	42		35			19:30	22		29		
7:45	70	164	67	137	301	19:45	24	99	23	136	235
8:00	77		61			20:00	24		27		
8:15	80		62			20:15	30		52		
8:30	92		67			20:30	21		23		
8:45	63	312	51	241	553	20:45	54	129	23	125	254
9:00	60		48			21:00	138		28		
9:15	52		42			21:15	40		20		
9:30	49		38			21:30	38		14		
9:45	20	181	31	159	340	21:45	33	249	7	69	318
10:00	30		26			22:00	22		9		
10:15	28		29			22:15	12		17		
10:30	31		34			22:30	3		12		
10:45	28	117	27	116	233	22:45	2	39	6	44	83
11:00	75		53			23:00	2		7		
11:15	39		42			23:15	2		3		
11:30	72		56			23:30	1		5		
11:45	48	234	64	215	449	23:45	2	7	5	20	27
Total Vol.		1082		951	**2033**			2055		2426	**4481**

	Daily Totals		
	EB	WB	**Combined**
	3137	3377	**6514**

	AM			**PM**		
Split %	53.2%	46.8%	**31.2%**	45.9%	54.1%	**68.8%**
Peak Hour	7:45	11:45	**7:45**	12:00	17:00	**17:00**
Volume	319	284	**576**	307	436	**668**
P.H.F.	0.87	0.83	**0.91**	0.80	0.87	**0.91**

cs@aimtd.com Tell. 714 253 7888

Merrimac Way MPAH Amendment

Year 2024 Turning Movement Counts

Attachment B

AGA Engineers, Inc.

INTERSECTION TURNING MOVEMENT COUNTS

T012524

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

DATE: Thu, Feb 15, 24

LOCATION: Costa Mesa
NORTH & SOUTH: Harbor Blvd
EAST & WEST: Merrimac Way

PROJECT #: SC4414
LOCATION #: 1
CONTROL: SIGNAL

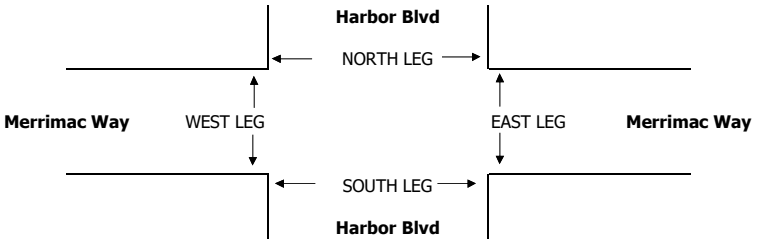
NOTES:

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

		NORTHBOUND Harbor Blvd			SOUTHBOUND Harbor Blvd			EASTBOUND Merrimac Way			WESTBOUND Merrimac Way			
	LANES:	NL 1	NT 3	NR 0	SL 2	ST 3	SR 0	EL 1	ET 1	ER 0	WL 1	WT 1	WR 1	TOTAL
AM	7:00 AM	3	154	5	11	196	9	18	2	11	3	1	6	419
	7:15 AM	2	186	5	28	235	0	15	2	9	2	4	4	492
	7:30 AM	4	223	12	30	286	5	17	6	10	1	4	16	614
	7:45 AM	2	323	17	52	373	25	20	8	9	8	3	22	862
	8:00 AM	9	258	26	51	346	8	26	6	15	10	1	35	791
	8:15 AM	6	298	33	64	342	9	13	9	9	5	4	27	819
	8:30 AM	3	282	16	62	353	7	13	5	6	7	2	26	782
	8:45 AM	3	247	16	73	374	7	11	6	6	4	2	33	782
	VOLUMES	32	1,971	130	371	2,505	70	133	44	75	40	21	169	5,585
	APPROACH %	1%	92%	6%	13%	85%	2%	53%	17%	30%	17%	9%	73%	
	APP/DEPART	2,139	/	2,291	2,964	/	2,626	252	/	545	230	/	123	0
	BEGIN PEAK HR		7:45 AM											
	VOLUMES	20	1,161	92	229	1,414	49	72	28	39	30	10	110	3,267
	APPROACH %	2%	91%	7%	13%	83%	3%	52%	20%	28%	20%	7%	73%	
	PEAK HR FACTOR		0.929			0.934			0.739			0.815		0.940
	APP/DEPART	1,274	/	1,355	1,704	/	1,484	139	/	349	150	/	79	0
PM	4:00 PM	9	461	10	18	318	16	21	4	8	13	9	81	968
	4:15 PM	6	412	10	21	367	15	11	2	9	16	8	65	942
	4:30 PM	11	463	12	24	318	15	10	3	10	12	11	69	958
	4:45 PM	10	444	14	17	343	10	17	0	1	13	10	46	925
	5:00 PM	10	447	11	23	385	9	9	5	5	16	10	76	1,006
	5:15 PM	8	474	23	23	333	10	15	5	9	12	8	62	982
	5:30 PM	8	435	19	34	320	21	11	4	6	16	9	70	953
	5:45 PM	8	474	19	38	382	11	7	3	7	15	7	65	1,036
	VOLUMES	70	3,610	118	198	2,766	107	101	26	55	113	72	534	7,824
	APPROACH %	2%	95%	3%	6%	89%	3%	55%	14%	30%	16%	10%	73%	
	APP/DEPART	3,810	/	4,279	3,105	/	2,946	182	/	350	727	/	249	0
	BEGIN PEAK HR		5:00 PM											
	VOLUMES	34	1,830	72	118	1,420	51	42	17	27	59	34	273	4,003
	APPROACH %	2%	94%	4%	7%	89%	3%	49%	20%	31%	16%	9%	74%	
	PEAK HR FACTOR		0.958			0.918			0.741			0.900		0.960
	APP/DEPART	1,942	/	2,160	1,604	/	1,512	86	/	212	371	/	119	0

U-TURNS

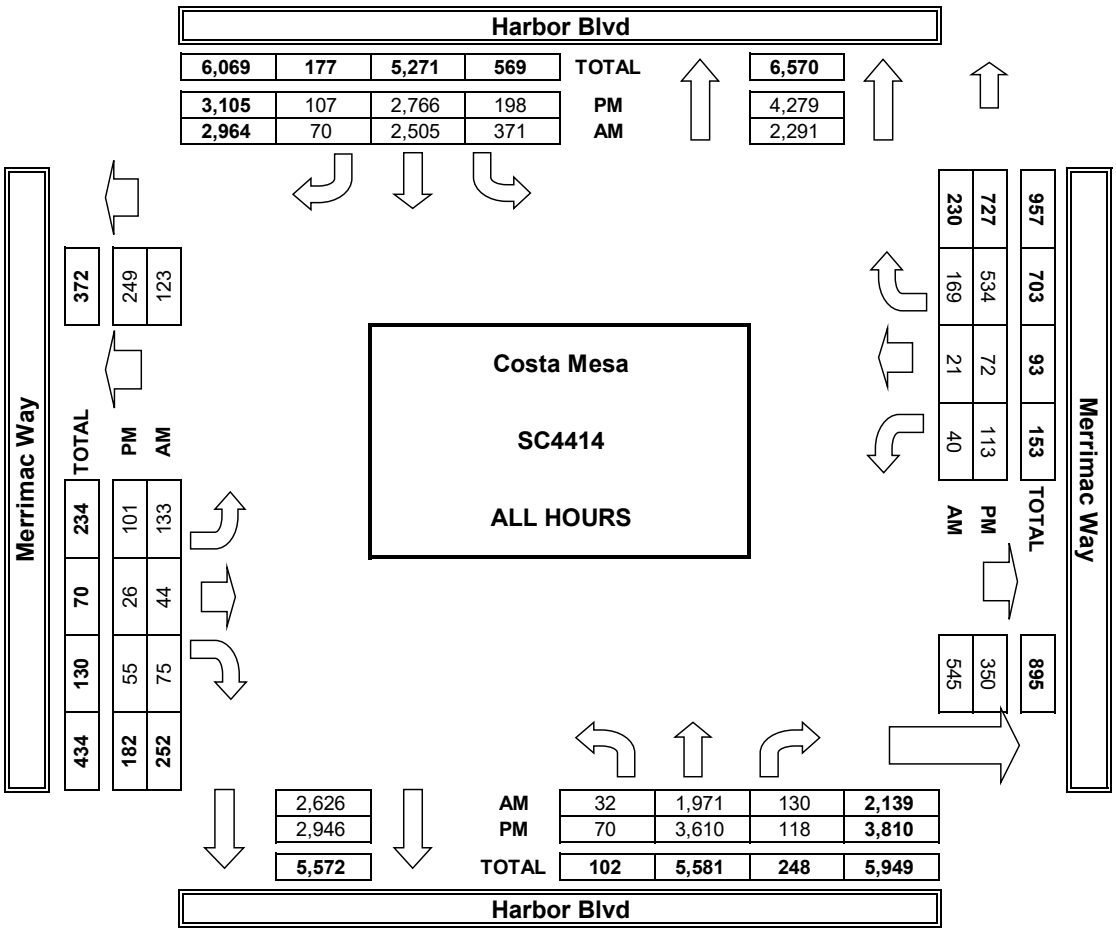
	NB	SB	EB	WB	TTL
7:00 AM	2	0	0	0	2
7:15 AM	1	1	0	0	2
7:30 AM	1	1	0	0	2
7:45 AM	1	6	0	0	7
8:00 AM	0	1	0	0	1
8:15 AM	0	3	0	0	3
8:30 AM	0	2	0	0	2
8:45 AM	1	4	0	0	5
VOLUMES	6	18	0	0	24
PEAK HR	1	12	0	0	
4:00 PM	2	3	0	0	5
4:15 PM	2	5	0	1	8
4:30 PM	1	6	0	1	8
4:45 PM	1	5	0	1	7
5:00 PM	3	3	0	1	7
5:15 PM	2	3	0	2	7
5:30 PM	1	3	0	2	6
5:45 PM	0	6	0	0	6
VOLUMES	12	34	0	8	54
PEAK HR	6	15	0	5	

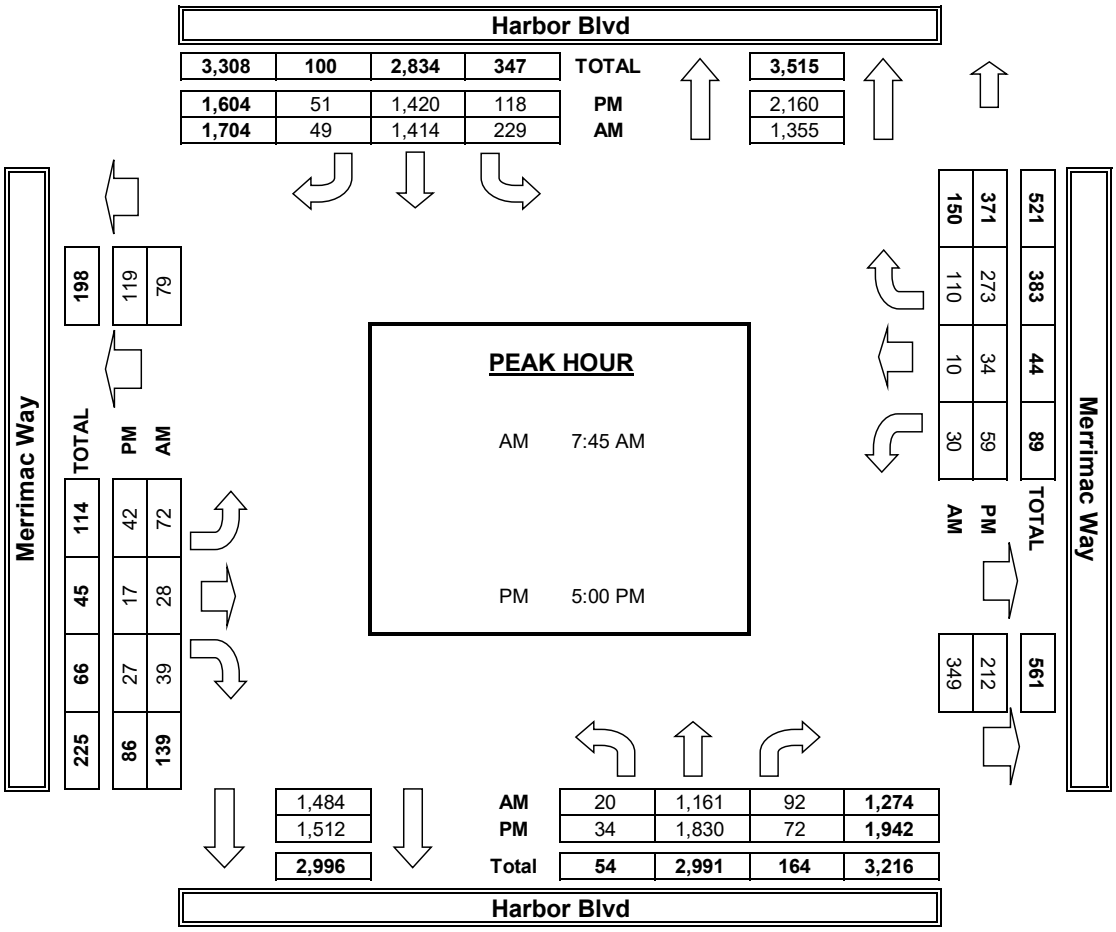


		ALL PED + BIKE & SCOOTER					PEDESTRIAN CROSSINGS					BICYCLE & SCOOTER CROSSINGS				
		N LEG	S LEG	E LEG	W LEG	TOTAL	N LEG	S LEG	E LEG	W LEG	TOTAL	NL	SL	EL	WL	TOTAL
AM	7:00 AM	1	3	3	4	11	1	1	1	1	4	0	2	2	3	7
	7:15 AM	0	5	3	2	10	0	4	2	1	7	0	1	1	1	3
	7:30 AM	4	0	2	11	17	3	0	1	2	6	1	0	1	9	11
	7:45 AM	10	2	1	7	20	6	2	1	2	11	4	0	0	5	9
	8:00 AM	3	2	1	5	11	1	0	0	0	1	2	2	1	5	10
	8:15 AM	5	3	2	7	17	2	0	1	2	5	3	3	1	5	12
	8:30 AM	3	4	4	7	18	2	3	2	6	13	1	1	2	1	5
	8:45 AM	2	1	3	1	7	1	0	2	0	3	1	1	1	1	4
	TOTAL	28	20	19	44	111	16	10	10	14	50	12	10	9	30	61
	BEGIN PEAK HR			7:45 AM			11	5	4	10	30					
PM	4:00 PM	3	4	4	9	20	1	2	3	4	10	2	2	1	5	10
	4:15 PM	6	1	4	8	19	4	1	3	2	10	2	0	1	6	9
	4:30 PM	2	0	2	9	13	0	0	0	7	7	2	0	2	2	6
	4:45 PM	3	0	2	11	16	0	0	1	3	4	3	0	1	8	12
	5:00 PM	2	0	2	6	10	2	0	1	2	5	0	0	1	4	5
	5:15 PM	2	0	4	5	11	1	0	3	1	5	1	0	1	4	6
	5:30 PM	4	2	1	8	15	3	2	0	2	7	1	0	1	6	8
	5:45 PM	3	2	1	3	9	1	1	0	1	3	2	1	1	2	6
	TOTAL	25	9	20	59	113	12	6	11	22	51	13	3	9	37	62
	BEGIN PEAK HR			5:00 PM			7	3	4	6	20					

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

T012524

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

DATE: Thu, Feb 15, 24

LOCATION: Costa Mesa
NORTH & SOUTH: Fairview Rd
EAST & WEST: Merrimac Way

PROJECT #: SC4414
LOCATION #: 2
CONTROL: SIGNAL

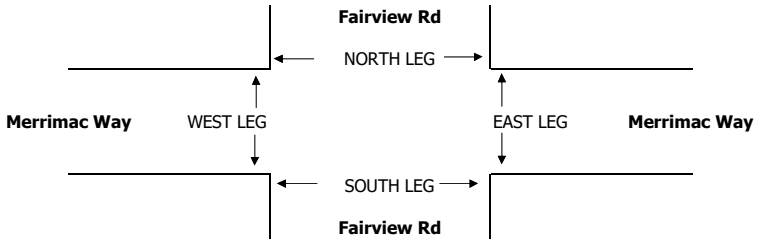
NOTES:

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

		NORTHBOUND Fairview Rd			SOUTHBOUND Fairview Rd			EASTBOUND Merrimac Way			WESTBOUND Merrimac Way			
	LANES:	NL 2	NT 3	NR 1	SL 2	ST 3	SR 1	EL 1,5	ET 0,5	ER 1	WL 0	WT 1	WR 0	TOTAL
AM	7:00 AM	15	68	2	0	60	12	0	0	13	0	0	0	170
	7:15 AM	16	122	0	0	100	15	13	1	11	0	0	0	278
	7:30 AM	20	146	4	0	131	20	19	0	13	1	0	0	354
	7:45 AM	23	197	1	0	156	29	26	0	26	0	0	0	458
	8:00 AM	25	257	4	0	182	34	39	0	17	0	0	0	558
	8:15 AM	42	246	9	1	213	43	47	0	18	0	1	3	623
	8:30 AM	45	110	3	1	185	38	19	1	35	0	1	0	438
	8:45 AM	54	130	7	3	121	70	16	2	21	0	0	2	426
	VOLUMES	240	1,276	30	5	1,148	261	179	4	154	1	2	5	3,307
	APPROACH %	16%	82%	2%	0%	81%	18%	53%	1%	46%	13%	25%	63%	
	APP/DEPART	1,547	/	1,461	1,415	/	1,304	337	/	39	8	/	503	0
	BEGIN PEAK HR		7:45 AM											
	VOLUMES	135	810	17	2	736	144	131	1	96	0	2	3	2,079
	APPROACH %	14%	84%	2%	0%	83%	16%	57%	0%	42%	0%	40%	60%	
	PEAK HR FACTOR		0.811			0.856			0.877			0.313		0.833
	APP/DEPART	963	/	945	883	/	833	228	/	20	5	/	281	0
PM	4:00 PM	35	162	0	0	155	46	36	0	24	0	0	0	458
	4:15 PM	34	178	0	0	137	31	31	0	18	0	0	0	429
	4:30 PM	33	184	1	0	151	30	24	0	22	0	1	0	446
	4:45 PM	35	220	0	0	154	39	20	0	13	0	0	0	481
	5:00 PM	45	199	0	0	156	40	30	0	17	0	0	0	487
	5:15 PM	36	211	0	0	156	57	28	0	20	0	0	0	508
	5:30 PM	49	189	0	0	168	45	26	0	30	0	0	0	507
	5:45 PM	41	248	1	0	158	66	23	0	26	0	0	1	564
	VOLUMES	308	1,591	2	0	1,235	354	218	0	170	0	1	1	3,884
	APPROACH %	16%	84%	0%	0%	78%	22%	56%	0%	44%	0%	50%	50%	
	APP/DEPART	1,902	/	1,812	1,591	/	1,406	389	/	2	2	/	664	0
	BEGIN PEAK HR		5:00 PM											
	VOLUMES	171	847	1	0	638	208	107	0	93	0	0	1	2,070
	APPROACH %	17%	83%	0%	0%	75%	25%	53%	0%	46%	0%	0%	100%	
	PEAK HR FACTOR		0.876			0.946			0.897			0.250		0.914
	APP/DEPART	1,020	/	957	848	/	732	201	/	1	1	/	380	0

U-TURNS

	NB	SB	EB	WB	TTL
AM 7:00 AM	0	0	0	0	0
7:15 AM	0	0	0	0	0
7:30 AM	0	0	0	0	0
7:45 AM	0	0	0	0	0
8:00 AM	1	0	0	0	1
8:15 AM	0	1	0	0	1
8:30 AM	0	0	0	0	0
8:45 AM	0	0	0	0	0
VOLUMES	1	1	0	0	2
BEGIN PEAK HR	1	1	0	0	
PM 4:00 PM	0	0	0	0	0
4:15 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0
5:15 PM	0	1	0	0	1
5:30 PM	0	1	0	0	1
5:45 PM	1	0	1	0	2
VOLUMES	1	2	1	0	4
BEGIN PEAK HR	1	2	1	0	



ALL PED + BIKE & SCOOTER

	N LEG	S LEG	E LEG	W LEG	TOTAL
AM 7:00 AM	0	1	2	1	4
7:15 AM	1	0	1	1	3
7:30 AM	2	0	2	1	5
7:45 AM	2	0	5	3	10
8:00 AM	2	1	7	5	15
8:15 AM	0	1	11	7	19
8:30 AM	0	0	3	2	5
8:45 AM	5	0	3	3	11
TOTAL	12	3	34	23	72
BEGIN PEAK HR			7:45 AM		
PM 4:00 PM	0	0	0	3	3
4:15 PM	0	0	4	3	7
4:30 PM	3	0	3	6	12
4:45 PM	1	0	3	3	7
5:00 PM	0	0	4	2	6
5:15 PM	1	0	3	2	6
5:30 PM	0	0	2	2	4
5:45 PM	1	2	8	4	15
TOTAL	6	2	27	25	60
BEGIN PEAK HR			5:00 PM		

PEDESTRIAN CROSSINGS

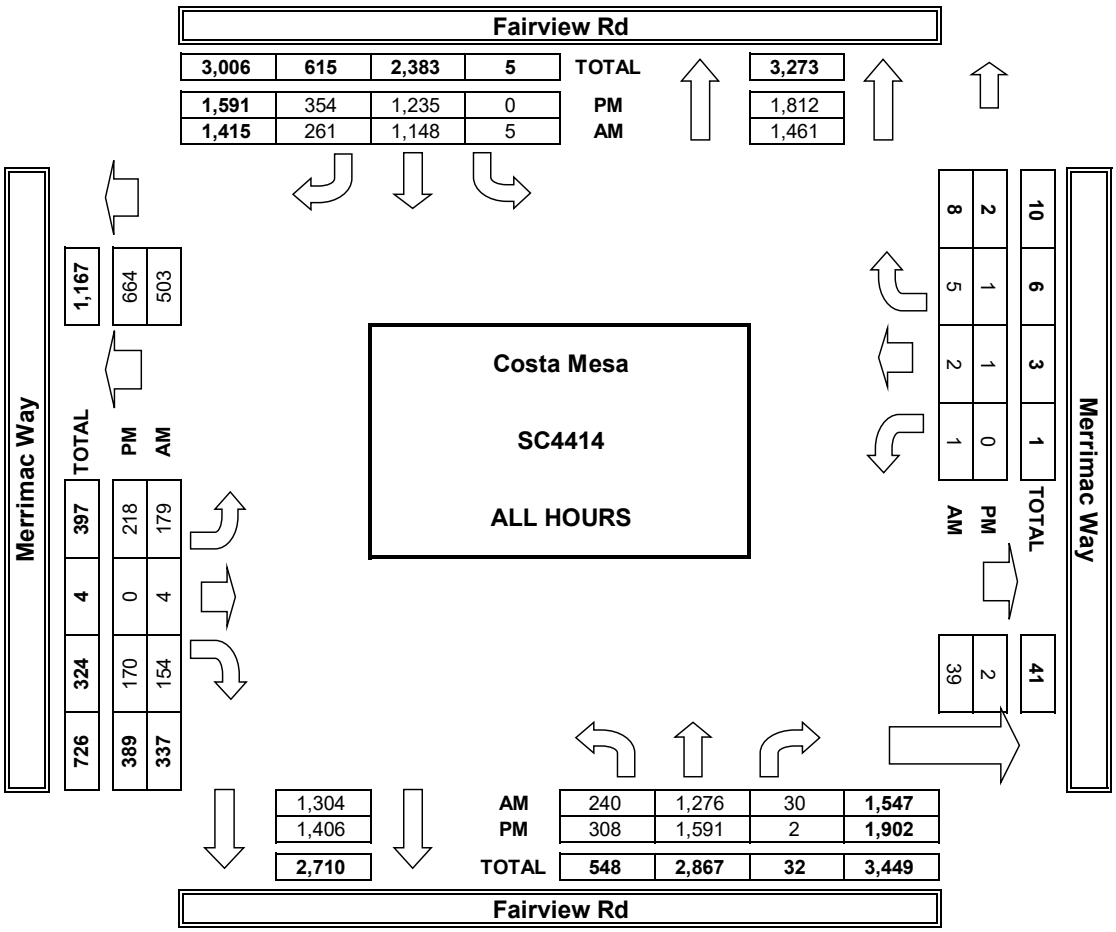
	N LEG	S LEG	E LEG	W LEG	TOTAL
AM 7:00 AM	0	0	1	0	1
7:15 AM	0	0	0	1	1
7:30 AM	1	0	0	0	1
7:45 AM	1	0	3	2	6
8:00 AM	2	0	3	2	7
8:15 AM	0	0	6	5	11
8:30 AM	0	0	1	0	1
8:45 AM	1	0	2	2	5
TOTAL	5	0	16	12	33
BEGIN PEAK HR	3	0	13	9	25
PM 4:00 PM	0	0	0	0	0
4:15 PM	0	0	2	0	2
4:30 PM	3	0	1	4	8
4:45 PM	0	0	2	0	2
5:00 PM	0	0	2	0	2
5:15 PM	1	0	1	1	3
5:30 PM	0	0	0	0	0
5:45 PM	0	0	0	3	3
TOTAL	4	0	8	8	20
BEGIN PEAK HR	1	0	3	4	8

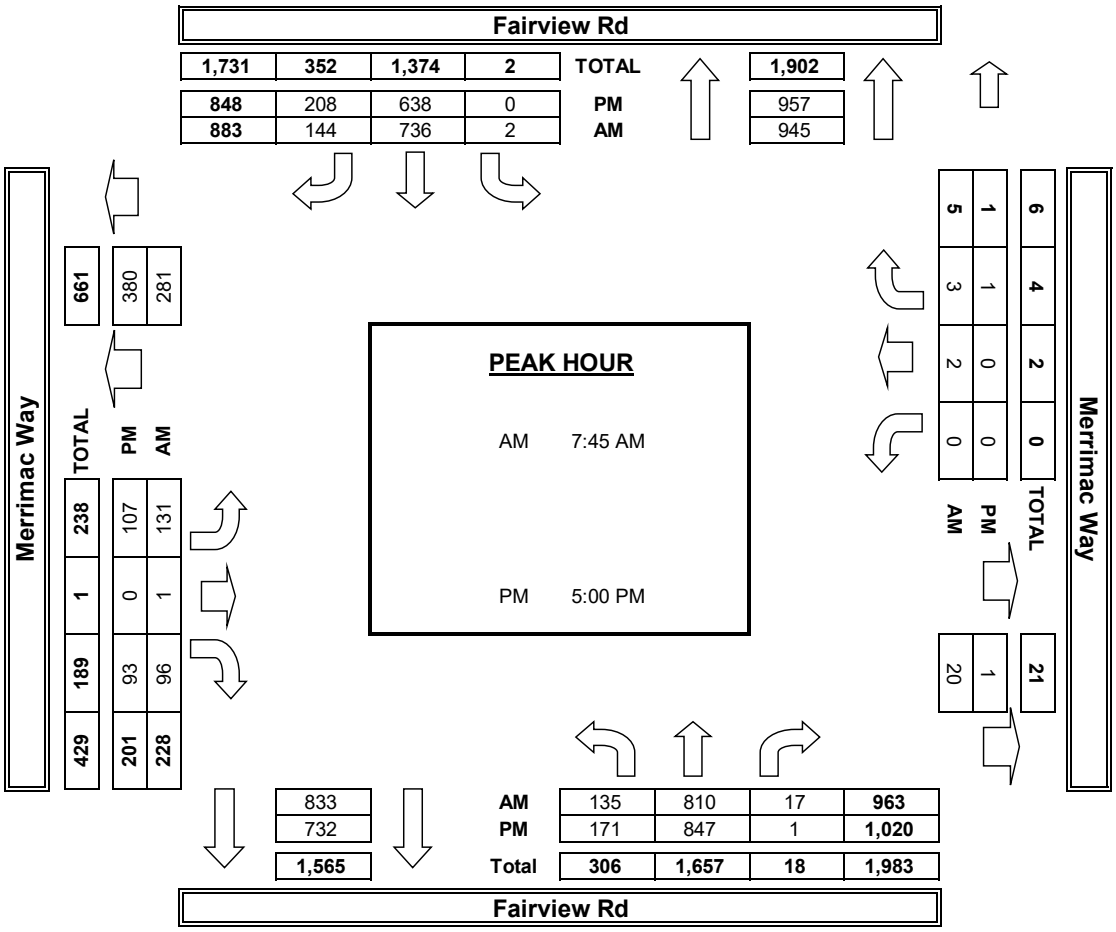
BICYCLE & SCOOTER CROSSINGS

	NL	SL	EL	WL	TOTAL
AM 7:00 AM	0	1	1	1	3
7:15 AM	1	0	1	0	2
7:30 AM	1	0	2	1	4
7:45 AM	1	0	2	1	4
8:00 AM	0	1	4	3	8
8:15 AM	0	1	5	2	8
8:30 AM	0	0	2	2	4
8:45 AM	4	0	1	1	6
TOTAL	7	3	18	11	39
BEGIN PEAK HR					
PM 4:00 PM	0	0	0	3	3
4:15 PM	0	0	2	3	5
4:30 PM	0	0	2	2	4
4:45 PM	1	0	1	3	5
5:00 PM	0	0	2	2	4
5:15 PM	0	0	2	1	3
5:30 PM	0	0	2	2	4
5:45 PM	1	2	8	1	12
TOTAL	2	2	19	17	40
BEGIN PEAK HR					

AimTD LLC

TURNING MOVEMENT COUNTS





Merrimac Way MPAH Amendment

Year 2024 Intersection Capacity Utilization (ICU) Analysis

Attachment C

AGA Engineers, Inc.

INTERSECTION CAPACITY UTILIZATION

Intersection: Harbor Blvd & Merrimac Way
Scenario: Year 2024 Current — Peak Hr: AM Peak
Analyst: AGA Engineers, Inc. — Agency: City of Costa Mesa

Movement	Volume	No. of Lanes	Capacity*	V/C Ratio		Critical V/C	Total
NB Left	21	1	1,700	21/1,700=	0.012		
NB Thru	1,161	3	5,100	1,253/5,100=	0.246	< ==	
NB Right	92	0	0		----		
SB Left	241	2	3,400	241/3,400=	0.071	< ==	
SB Thru	1,414	3	5,100	1,463/5,100=	0.287		
SB Right	49	0	0		----		
							0.317
EB Left	72	1	1,700	72/1,700=	0.042		
EB Thru	28	1	1,700	67/1,700=	0.039	< ==	
EB Right	39	0	0		----		
WB Left	30	1	1,700	30/1,700=	0.018	< ==	
WB Thru	10	0.5	850	10/850=	0.012		
WB Right **	110	1.5	2550	110/2,550=	0.043		
							0.057
Sum of Critical V/C Ratios							0.374
Adjustment for Lost Time							0.050
Intersection Capacity Utilization (ICU)							**0.424**
Level of Service (LOS) - Refer to table below							**A**

* NOTES

Per-lane Capacity = 1,700 vehicles/hour
Dual left turn lane capacity = 3,400 vph
Shared lane capacity = 1,700 vph/2 = 850 vph
** WBR can clear with SBL movement; therefore, WBL is used as critical movement

LOS	Maximum V/C
A	0.600
B	0.700
C	0.800
D	0.900
E	1.000
F	N/A

INTERSECTION CAPACITY UTILIZATION

Intersection: Harbor Blvd & Merrimac Way
Scenario: Year 2024 Current — Peak Hr: PM Peak
Analyst: AGA Engineers, Inc. — Agency: City of Costa Mesa

Movement	Volume	No. of Lanes	Capacity*	V/C Ratio		Critical V/C	Total
NB Left	40	1	1,700	40/1,700=	0.024		
NB Thru	1,830	3	5,100	1,902/5,100=	0.373	< ==	
NB Right	72	0	0		----		
SB Left	133	2	3,400	133/3,400=	0.039	< ==	
SB Thru	1,420	3	5,100	1,471/5,100=	0.288		
SB Right	51	0	0		----		
							0.412
EB Left	42	1	1,700	42/1,700=	0.025	< ==	
EB Thru	17	1	1,700	44/1,700=	0.026		
EB Right	27	0	0		----		
WB Left	64	1	1,700	64/1,700=	0.038		
WB Thru	34	0.5	850	34/850=	0.040		
WB Right **	273	1.5	2550	273/2,550=	0.107	< ==	
							0.093
Sum of Critical V/C Ratios							0.505
Adjustment for Lost Time							0.050
Intersection Capacity Utilization (ICU)							**0.555**
Level of Service (LOS) - Refer to table below							**A**

* NOTES

Per-lane Capacity = 1,700 vehicles/hour

Dual left turn lane capacity = 3,400 vph

Shared lane capacity = 1,700 vph/2 = 850 vph

** WBR partially clears w/SBL movement (.107-.039=.068); WBR still remains as critical movement over WBT movement. Use 0.068 as Critical V/C for WB movement.

LOS	Maximum V/C
A	0.600
B	0.700
C	0.800
D	0.900
E	1.000
F	N/A

INTERSECTION CAPACITY UTILIZATION

Intersection: Harbor Blvd & Merrimac Way
Scenario: Year 2024 Proposed — Peak Hr: AM Peak
Analyst: AGA Engineers, Inc. — Agency: City of Costa Mesa

Movement	Volume	No. of Lanes	Capacity*	V/C Ratio		Critical V/C	Total
NB Left	21	1	1,700	21/1,700=	0.012		
NB Thru	1,161	3	5,100	1,253/5,100=	0.246	< ==	
NB Right	92	0	0		----		
SB Left	241	2	3,400	241/3,400=	0.071	< ==	
SB Thru	1,414	3	5,100	1,463/5,100=	0.287		
SB Right	49	0	0		----		
							0.317
EB Left	72	1	1,700	72/1,700=	0.042		
EB Thru	28	1	1,700	67/1,700=	0.039	< ==	
EB Right	39	0	0		----		
WB Left	30	1	1,700	30/1,700=	0.018	< ==	
WB Thru	10	1	1,700	10/1,700=	0.006		
WB Right **	110	1	1,700	110/1,700=	0.065		
							0.057
Sum of Critical V/C Ratios							0.374
Adjustment for Lost Time							0.050
Intersection Capacity Utilization (ICU)							**0.424**
Level of Service (LOS) - Refer to table below							**A**

* NOTES

Per-lane Capacity = 1,700 vehicles/hour

Dual left turn lane capacity = 3,400 vph

** WBR can clear with SBL movement; therefore, WBL is used as critical movement

LOS	Maximum V/C
A	0.600
B	0.700
C	0.800
D	0.900
E	1.000
F	N/A

INTERSECTION CAPACITY UTILIZATION

Intersection: Harbor Blvd & Merrimac Way
Scenario: Year 2024 Proposed — Peak Hr: PM Peak
Analyst: AGA Engineers, Inc. — Agency: City of Costa Mesa

Movement	Volume	No. of Lanes	Capacity*	V/C Ratio		Critical V/C	Total
NB Left	40	1	1,700	40/1,700=	0.024		
NB Thru	1,830	3	5,100	1,902/5,100=	0.373	< ==	
NB Right	72	0	0		----		
SB Left	133	2	3,400	133/3,400=	0.039	< ==	
SB Thru	1,420	3	5,100	1,471/5,100=	0.288		
SB Right	51	0	0		----		
							0.412
EB Left	42	1	1,700	42/1,700=	0.025	< ==	
EB Thru	17	1	1,700	44/1,700=	0.026		
EB Right	27	0	0		----		
WB Left	64	1	1,700	64/1,700=	0.038		
WB Thru	34	1	1,700	34/1,700=	0.020		
WB Right **	273	1	1,700	273/1,700=	0.161	< ==	
							0.147
Sum of Critical V/C Ratios							0.559
Adjustment for Lost Time							0.050
Intersection Capacity Utilization (ICU)							**0.609**
Level of Service (LOS) - Refer to table below							**B**

* NOTES

Per-lane Capacity = 1,700 vehicles/hour

Dual left turn lane capacity = 3,400 vph

** WBR partially clears w/SBL movement (.161-.039=.122); WBR still remains as critical movement over WBT movement. Use 0.122 as Critical V/C for WB movement.

LOS	Maximum V/C
A	0.600
B	0.700
C	0.800
D	0.900
E	1.000
F	N/A

INTERSECTION CAPACITY UTILIZATION

Intersection: Fairview Rd & Merrimac Way
Scenario: Year 2024 Current/Proposed — Peak Hr: AM Peak
Analyst: AGA Engineers, Inc. — Agency: City of Costa Mesa

Movement	Volume	No. of Lanes	Capacity*	V/C Ratio		Critical V/C	Total
NB Left	136	2	3,400	136/3,400=	0.040	< ==	
NB Thru	810	3	5,100	810/5,100=	0.159		
NB Right	17	1	1,700	17/1,700=	0.010		
SB Left	10	2	3,400	10/3,400=	0.003		
SB Thru	736	3	5,100	736/5,100=	0.144	< ==	
SB Right	144	1	1,700	144/1,700=	0.085		
							0.184
EB Left	131	1.5	2550	131/2,550=	0.051	< ==	
EB Thru	10	0.5	850	10/850=	0.012		
EB Right **	96	1	1,700	96/1,700=	0.056		
WB Left	10	0	0		----		
WB Thru	10	2	3,400	30/3,400=	0.009	< ==	
WB Right	10	0	0		----		
							0.060
Sum of Critical V/C Ratios							0.244
Adjustment for Lost Time							0.050
Intersection Capacity Utilization (ICU)							**0.294**
Level of Service (LOS) - Refer to table below							**A**

* NOTES

Per-lane Capacity = 1,700 vehicles/hour
Dual left turn lane capacity = 3,400 vph
For low volumes a minimum of 10 vph is used
** EBR partially clears w/NBL movement (.056-.04=.016); therefore, EBL is the higher critical movement

LOS	Maximum V/C
A	0.600
B	0.700
C	0.800
D	0.900
E	1.000
F	N/A

INTERSECTION CAPACITY UTILIZATION

Intersection: Fairview Rd & Merrimac Way
Scenario: Year 2024 Current/Proposed — Peak Hr: PM Peak
Analyst: AGA Engineers, Inc. — Agency: City of Costa Mesa

Movement	Volume	No. of Lanes	Capacity*	V/C Ratio		Critical V/C	Total
NB Left	172	2	3,400	172/3,400=	0.051	< ==	
NB Thru	847	3	5,100	847/5,100=	0.166		
NB Right	10	1	1,700	10/1,700=	0.006		
SB Left	10	2	3,400	10/3,400=	0.003		
SB Thru	638	3	5,100	638/5,100=	0.125	< ==	
SB Right	208	1	1,700	208/1,700=	0.122		
							0.176
EB Left	108	1.5	2,550	108/2,550=	0.042	< ==	
EB Thru	10	0.5	850	10/850=	0.012		
EB Right **	93	1	1,700	93/1,700=	0.055		
WB Left	10	0	0		----		
WB Thru	10	2	3,400	30/3,400=	0.009	< ==	
WB Right	10	0	0		----		
							0.051
Sum of Critical V/C Ratios							0.227
Adjustment for Lost Time							0.050
Intersection Capacity Utilization (ICU)							**0.277**
Level of Service (LOS) - Refer to table below							**A**

* NOTES

Per-lane Capacity = 1,700 vehicles/hour
Dual left turn lane capacity = 3,400 vph
For low volumes a minimum of 10 vph is used
** EBR partially clears w/NBL movement (.055-.051=.004); therefore, EBL is the higher critical movement

LOS	Maximum V/C
A	0.600
B	0.700
C	0.800
D	0.900
E	1.000
F	N/A

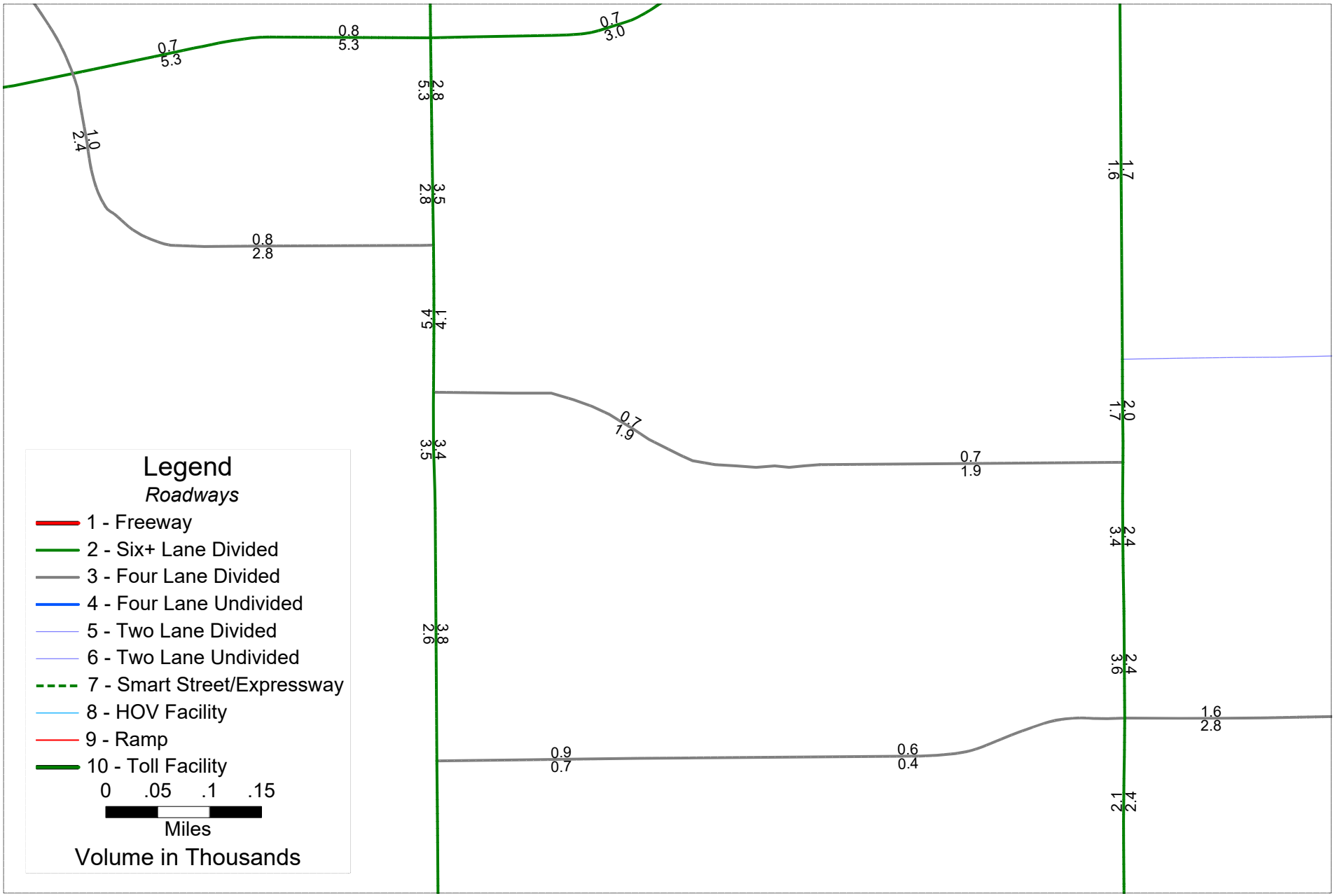
Merrimac Way MPAH Amendment

OCTAM Model Data

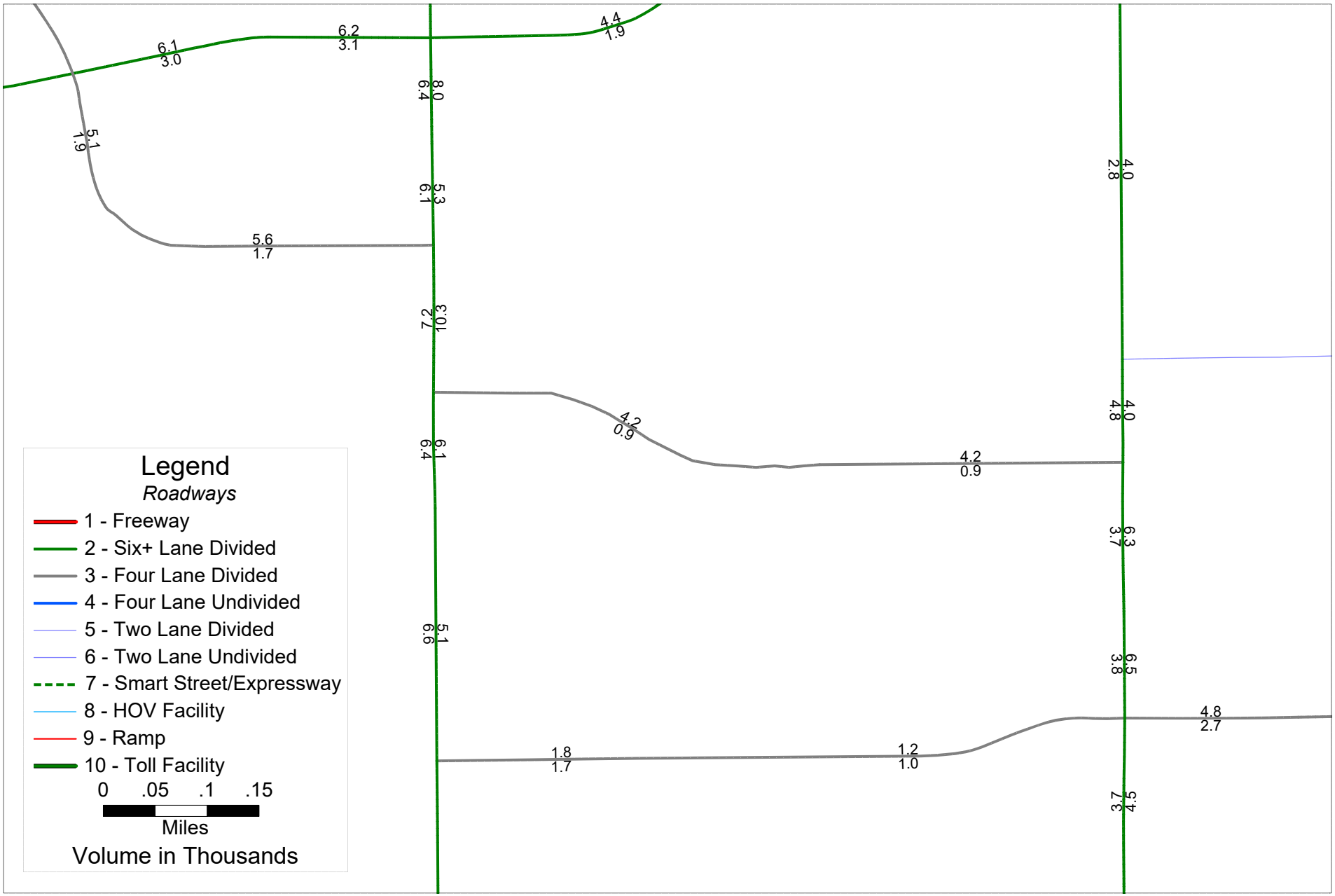
Attachment D

AGA Engineers, Inc.

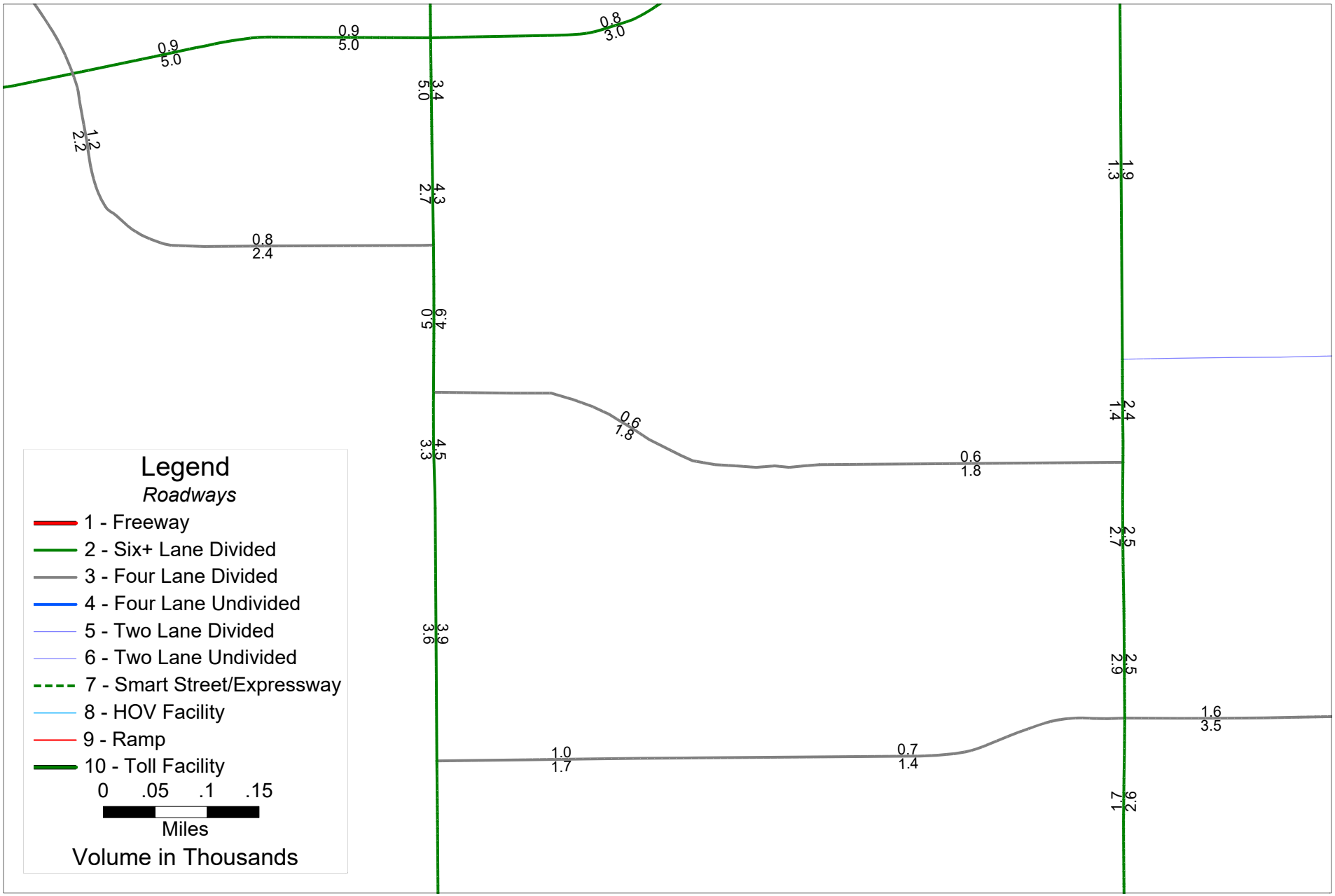
OCTAM 5.1 Year 2019 AM Peak Forecasts
Volumes in Thousands
Raw volumes - DO NOT DISTRIBUTE



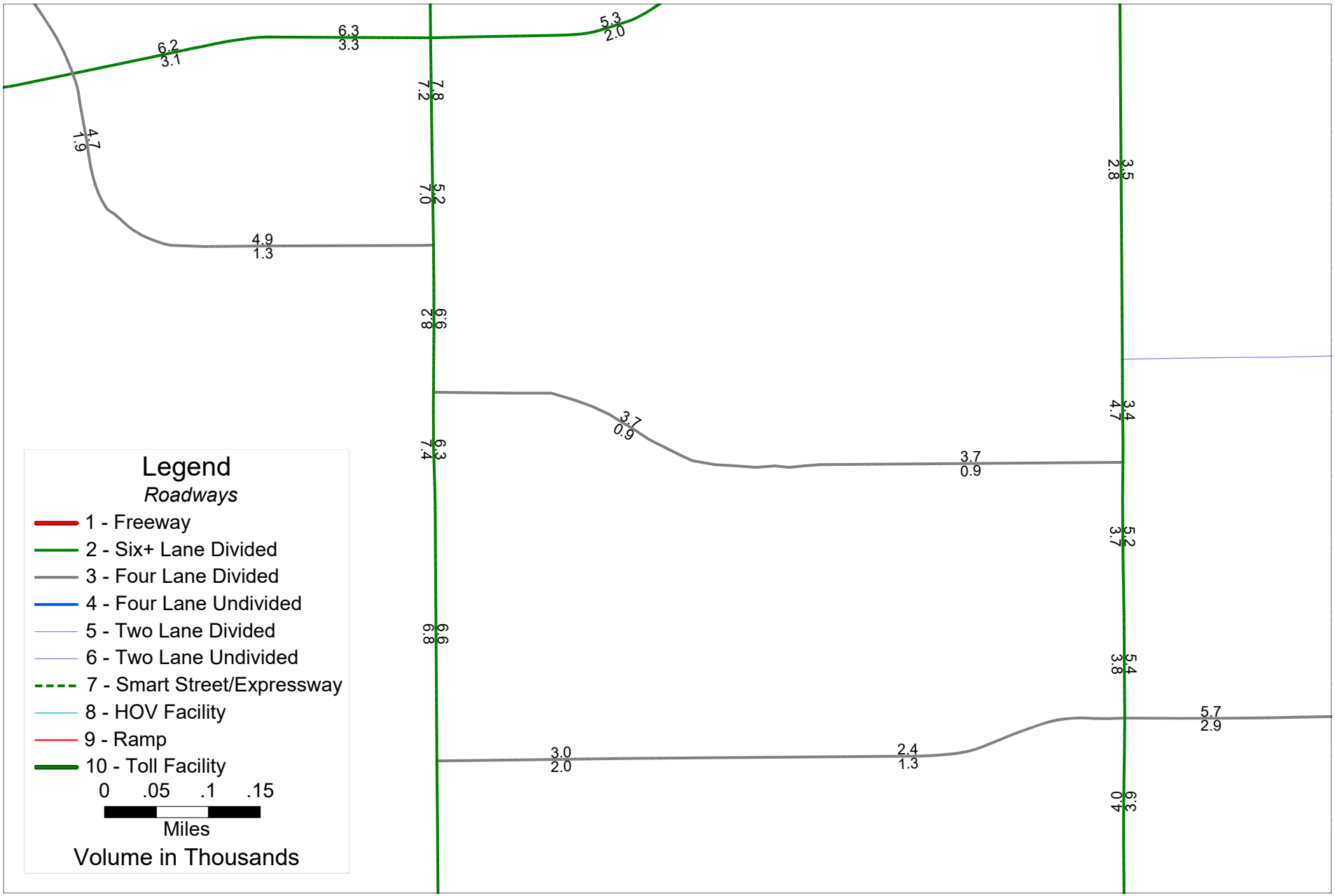
OCTAM 5.1 Year 2019 PM Peak Forecasts
Volumes in Thousands
Raw volumes - DO NOT DISTRIBUTE



OCTAM 5.1 Year 2050 AM Peak Forecasts
Volumes in Thousands
Raw volumes - DO NOT DISTRIBUTE



OCTAM 5.1 Year 2050 PM Peak Forecasts
Volumes in Thousands
Raw volumes - DO NOT DISTRIBUTE



Merrimac Way MPAH Amendment

Year 2050 Intersection Capacity Utilization (ICU) Analysis

Attachment E

AGA Engineers, Inc.

INTERSECTION CAPACITY UTILIZATION

Intersection: Harbor Blvd & Merrimac Way
Scenario: Year 2050 Current — Peak Hr: AM Peak
Analyst: AGA Engineers, Inc. — Agency: City of Costa Mesa

Movement	Volume	No. of Lanes	Capacity*	V/C Ratio		Critical V/C	Total
NB Left	26	1	1,700	26/1,700=	0.015		
NB Thru	1,463	3	5,100	1,579/5,100=	0.310	< ==	
NB Right	116	0	0		----		
SB Left	265	2	3,400	265/3,400=	0.078	< ==	
SB Thru	1,555	3	5,100	1,609/5,100=	0.315		
SB Right	54	0	0		----		
							0.388
EB Left	79	1	1,700	79/1,700=	0.046		
EB Thru	31	1	1,700	74/1,700=	0.044	< ==	
EB Right	43	0	0		----		
WB Left	33	1	1,700	33/1,700=	0.019	< ==	
WB Thru	11	0.5	850	11/850=	0.013		
WB Right **	121	1.5	2550	121/2,550=	0.047		
							0.063
Sum of Critical V/C Ratios							0.451
Adjustment for Lost Time							0.050
Intersection Capacity Utilization (ICU)							**0.501**
Level of Service (LOS) - Refer to table below							**A**

* NOTES

Per-lane Capacity = 1,700 vehicles/hour
Dual left turn lane capacity = 3,400 vph
Shared lane capacity = 1,700 vph/2 = 850 vph
** WBR can clear with SBL movement; therefore, WBL is used as critical movement

LOS	Maximum V/C
A	0.600
B	0.700
C	0.800
D	0.900
E	1.000
F	N/A

INTERSECTION CAPACITY UTILIZATION

Intersection: Harbor Blvd & Merrimac Way
Scenario: Year 2050 Current — Peak Hr: PM Peak
Analyst: AGA Engineers, Inc. — Agency: City of Costa Mesa

Movement	Volume	No. of Lanes	Capacity*	V/C Ratio		Critical V/C	Total
NB Left	44	1	1,700	44/1,700=	0.026		
NB Thru	2,013	3	5,100	2,092/5,100=	0.410	< ==	
NB Right	79	0	0		----		
SB Left	150	2	3,400	150/3,400=	0.044	< ==	
SB Thru	1,605	3	5,100	1663/5,100=	0.326		
SB Right	58	0	0		----		
							0.454
EB Left	46	1	1,700	46/1,700=	0.027	< ==	
EB Thru	19	1	1,700	49/1,700=	0.029		
EB Right	30	0	0		----		
WB Left	70	1	1,700	70/1,700=	0.041		
WB Thru	37	0.5	850	37/850=	0.044		
WB Right **	300	1.5	2550	300/2,550=	0.118	< ==	
							0.101
Sum of Critical V/C Ratios							0.555
Adjustment for Lost Time							0.050
Intersection Capacity Utilization (ICU)							**0.605**
Level of Service (LOS) - Refer to table below							**B**

* NOTES

Per-lane Capacity = 1,700 vehicles/hour
Dual left turn lane capacity = 3,400 vph
Shared lane capacity = 1,700 vph/2 = 850 vph
** WBR partially clears w/SBL movement (.118-.044=.074); WBR still remains as critical movement over WBT movement. Use 0.074 as Critical V/C for WB movement

LOS	Maximum V/C
A	0.600
B	0.700
C	0.800
D	0.900
E	1.000
F	N/A

INTERSECTION CAPACITY UTILIZATION

Intersection: Harbor Blvd & Merrimac Way
Scenario: Year 2050 Proposed — Peak Hr: AM Peak
Analyst: AGA Engineers, Inc. — Agency: City of Costa Mesa

Movement	Volume	No. of Lanes	Capacity*	V/C Ratio	Critical V/C	Total
NB Left	26	1	1,700	26/1,700= 0.015		
NB Thru	1,463	3	5,100	1,579/5,100= 0.310	< ==	
NB Right	116	0	0	----		
SB Left	265	2	3,400	265/3,400= 0.078	< ==	
SB Thru	1,555	3	5,100	1,609/5,100= 0.315		
SB Right	54	0	0	----		
						0.388
EB Left	79	1	1,700	79/1,700= 0.046		
EB Thru	31	1	1,700	74/1,700= 0.044	< ==	
EB Right	43	0	0	----		
WB Left	33	1	1,700	33/1,700= 0.019	< ==	
WB Thru	11	1	1,700	11/1,700= 0.006		
WB Right **	121	1	1,700	121/1,700= 0.071		
						0.063
Sum of Critical V/C Ratios						0.451
Adjustment for Lost Time						0.050
Intersection Capacity Utilization (ICU)						**0.501**
Level of Service (LOS) - Refer to table below						**A**

* NOTES

Per-lane Capacity = 1,700 vehicles/hour

Dual left turn lane capacity = 3,400 vph

** WBR can clear with SBL movement; therefore, WBL is used as critical movement

LOS	Maximum V/C
A	0.600
B	0.700
C	0.800
D	0.900
E	1.000
F	N/A

INTERSECTION CAPACITY UTILIZATION

Intersection: Harbor Blvd & Merrimac Way
Scenario: Year 2050 Proposed — Peak Hr: PM Peak
Analyst: AGA Engineers, Inc. — Agency: City of Costa Mesa

Movement	Volume	No. of Lanes	Capacity*	V/C Ratio		Critical V/C	Total
NB Left	44	1	1,700	44/1,700=	0.026		
NB Thru	2,013	3	5,100	2,092/5,100=	0.410	< ==	
NB Right	79	0	0		----		
SB Left	150	2	3,400	150/3,400=	0.044	< ==	
SB Thru	1,605	3	5,100	1,663/5,100=	0.326		
SB Right	58	0	0		----		
							0.454
EB Left	46	1	1,700	46/1,700=	0.027	< ==	
EB Thru	19	1	1,700	49/1,700=	0.029		
EB Right	30	0	0		----		
WB Left	70	1	1,700	70/1,700=	0.041		
WB Thru	37	1	1,700	37/1,700=	0.022		
WB Right **	300	1	1,700	300/1,700=	0.176	< ==	
							0.159
Sum of Critical V/C Ratios							0.613
Adjustment for Lost Time							0.050
Intersection Capacity Utilization (ICU)							**0.663**
Level of Service (LOS) - Refer to table below							**B**

* NOTES

Per-lane Capacity = 1,700 vehicles/hour

Dual left turn lane capacity = 3,400 vph

** WBR partially clears w/SBL movement (.176-.044=.132); WBR still remains as critical movement over WBT movement. Use 0.132 as critical V/C for WB movement

LOS	Maximum V/C
A	0.600
B	0.700
C	0.800
D	0.900
E	1.000
F	N/A

INTERSECTION CAPACITY UTILIZATION

Intersection: Fairview Rd & Merrimac Way
Scenario: Year 2050 Current/Proposed — Peak Hr: AM Peak
Analyst: AGA Engineers, Inc. — Agency: City of Costa Mesa

Movement	Volume	No. of Lanes	Capacity*	V/C Ratio		Critical V/C	Total
NB Left	150	2	3,400	150/3,400=	0.044	< ==	
NB Thru	891	3	5,100	891/5,100=	0.175		
NB Right	19	1	1,700	19/1,700=	0.011		
SB Left	11	2	3,400	11/3,400=	0.003		
SB Thru	810	3	5,100	810/5,100=	0.159	< ==	
SB Right	158	1	1,700	158/1,700=	0.093		
							0.203
EB Left	144	1.5	2550	144/2,550=	0.056	< ==	
EB Thru	11	0.5	850	11/850=	0.013		
EB Right **	106	1	1,700	106/1,700=	0.062		
WB Left	11	0	0		----		
WB Thru	11	2	3,400	33/3,400=	0.010	< ==	
WB Right	11	0	0		----		
							0.066
Sum of Critical V/C Ratios							0.269
Adjustment for Lost Time							0.050
Intersection Capacity Utilization (ICU)							**0.319**
Level of Service (LOS) - Refer to table below							**A**

* NOTES

Per-lane Capacity = 1,700 vehicles/hour
Dual left turn lane capacity = 3,400 vph
For low volumes a minimum of 10 vph is used
** EBR partially clears w/NBL movement (.062-.044=.018); therefore, EBL is the higher critical movement

LOS	Maximum V/C
A	0.600
B	0.700
C	0.800
D	0.900
E	1.000
F	N/A

INTERSECTION CAPACITY UTILIZATION

Intersection: Fairview Rd & Merrimac Way
Scenario: Year 2050 Current/Proposed — Peak Hr: PM Peak
Analyst: AGA Engineers, Inc. — Agency: City of Costa Mesa

Movement	Volume	No. of Lanes	Capacity*	V/C Ratio		Critical V/C	Total
NB Left	189	2	3,400	189/3,400=	0.056	< ==	
NB Thru	932	3	5,100	932/5,100=	0.183		
NB Right	11	1	1,700	11/1,700=	0.006		
SB Left	11	2	3,400	11/3,400=	0.003		
SB Thru	702	3	5,100	702/5,100=	0.138	< ==	
SB Right	229	1	1,700	229/1,700=	0.135		
							0.194
EB Left	119	1.5	2,550	119/2,550=	0.047	< ==	
EB Thru	11	0.5	850	11/850=	0.013		
EB Right **	102	1	1,700	102/1,700=	0.060		
WB Left	11	0	0		----		
WB Thru	11	2	3,400	33/3,400=	0.010	< ==	
WB Right	11	0	0		----		
							0.057
Sum of Critical V/C Ratios							0.251
Adjustment for Lost Time							0.050
Intersection Capacity Utilization (ICU)							**0.301**
Level of Service (LOS) - Refer to table below							**A**

* NOTES

Per-lane Capacity = 1,700 vehicles/hour
Dual left turn lane capacity = 3,400 vph
For low volumes a minimum of 10 vph is used
** EBR partially clears w/NBL movement (.060-.056=.004); therefore, EBL is the higher critical movement

LOS	Maximum V/C
A	0.600
B	0.700
C	0.800
D	0.900
E	1.000
F	N/A