
<p>To: Rochelle wheeler Bike and Pedestrian Program City of Alameda Transportation Planning Division</p>	<p>From: Stantec Consulting Services Inc. 1340 Treat Boulevard Walnut Creek, CA</p>
<p>File: Memorandum – Multi-Modal Analysis for Atlantic Avenue Gap Closure Project</p>	<p>Date: March 14, 2017</p>

Reference: Memorandum –Multi-Modal Analysis for Atlantic Avenue Gap Closure Project

Stantec conducted multi-modal level of service (LOS) analysis for the Atlantic Avenue corridor between Webster Street and Constitution Way in Alameda to determine the impact of the proposed Cross Alameda Trail Atlantic Gap project, which includes Cycle Track on the south side of the street. This memorandum briefly summarizes our findings.

BACKGROUND

PROJECT LOCATION

The proposed Cycle Track will be located along Atlantic Avenue between Webster Street and Constitution Way.

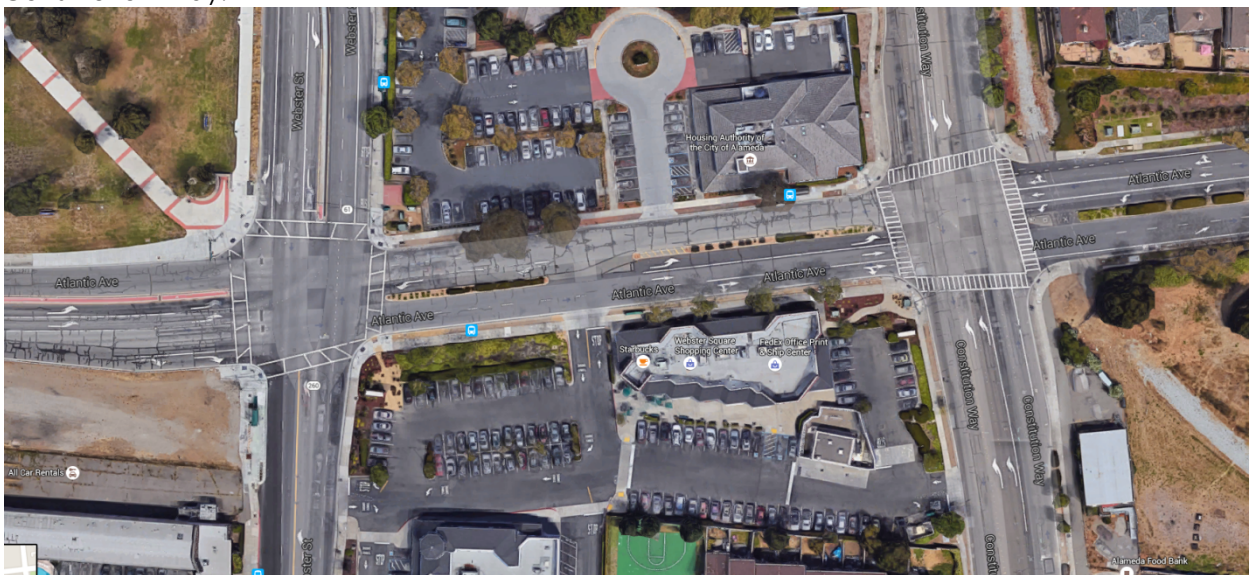


Figure 1 - Atlantic Avenue between Webster Avenue and Constitution Way

As shown in **Figure 1**, between Webster Street and Constitution Way, Atlantic Avenue currently has four through and/or through/right travel lanes with raised median and one left-turn lane at

Reference: Memorandum –Multi-Modal Analysis for Atlantic Avenue Gap Closure Project

both Webster Street and Constitution Way. In the City of Alameda General Plan,¹ Atlantic Avenue is identified as an east-west Regional Collector, a Residential Corridor Street, a Secondary Transit Street, a Bikeway and a Truck Route.

At the intersection with Atlantic Avenue, Webster Street has four travel lanes, one southbound right-turn lane, one left-turn lane for both northbound and southbound directions and one northbound bus lane, north of Atlantic Avenue. In the City's General Plan, Webster Street is identified as a Regional Arterial, a Commercial Main Street, a Primary Transit Street, and a Truck Route.

At the intersection with Atlantic Avenue, Constitution Way has four travel lanes. For both northbound and southbound directions, it has two left-turn lanes and one right-turn lane. In the City's General Plan, constitution Way is identified as a Regional Arterial, a Gateway Street, a Primary Transit Street, a Bikeway and a Truck Route north of Atlantic Avenue.

The City of Alameda provided the intersection turning movement counts, including vehicular, pedestrians and bicycle counts, during the a.m. (7:00 – 9:00 a.m.) and the p.m. (4:00 p.m. – 6:00 p.m.) peak periods at the two (2) study intersections on the study corridor:

1. Intersection of Atlantic Avenue and Webster Street
2. Intersection of Atlantic Avenue and Constitution Way

Appendix A contains the detailed turning movement counts.

ALTERNATIVES

The City explored a few options for the lane geometry on Atlantic Avenue between Webster Avenue and Constitution Way with the addition of a two-way cycle track on the south side of Atlantic Avenue. The option shown in **Figure 2** (Option 1) was selected as the preferred option along with an additional option of installing a mid-block crosswalk on Atlantic Avenue between the two study intersections (Option 2). As shown in **Figure 2**, the outer eastbound through/right-turn lane would be removed between the driveways and Constitution Way, and the median between Webster Street and the driveways would be removed to make room for the new bus pad and cycle track. The other option includes adding a midblock crosswalk, supplemented with a Rectangular Rapid Flashing Beacons (RRFB) or a Hybrid Pedestrian Beacon (PHB), installed between the North and South driveways along the study corridor.

¹ City of Alameda General Plan, <https://alamedaca.gov/community-development/planning/general-plan>, accessed September 2016.

Reference: Memorandum –Multi-Modal Analysis for Atlantic Avenue Gap Closure Project

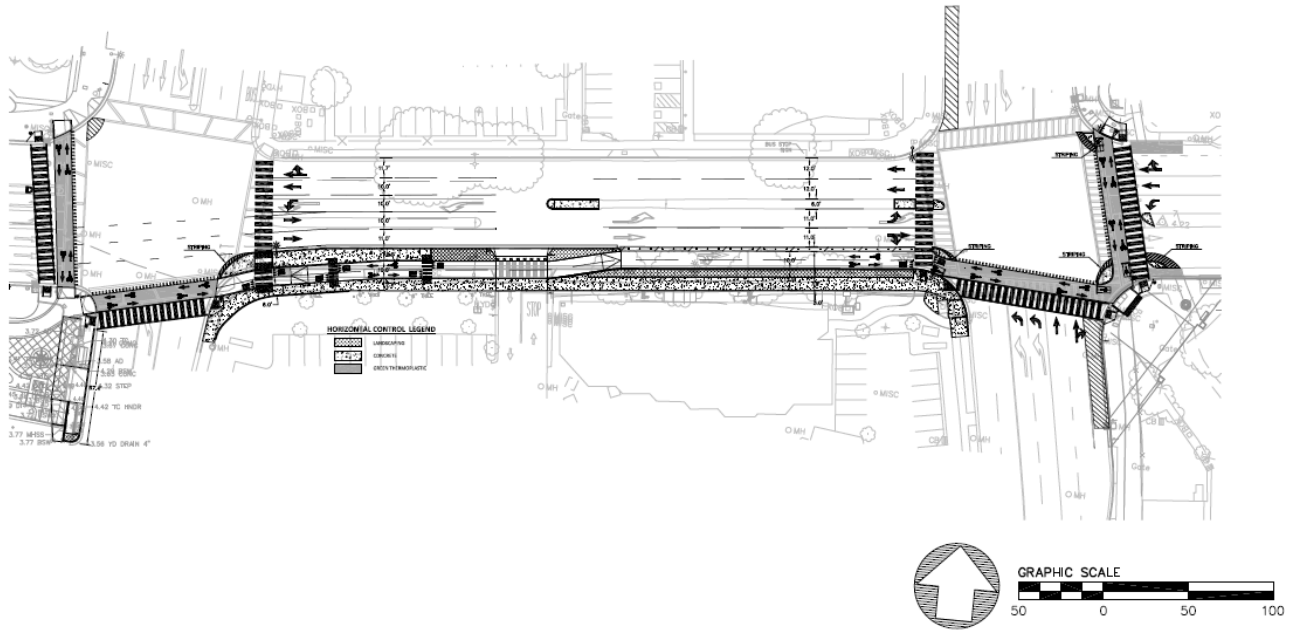


Figure 2 – Option 1 Lane Geometry

METHODOLOGY

Traffic operational conditions on the study corridor/intersections were quantified through the determination of level of service (LOS), a qualitative measure describing operational conditions within a traffic stream. There are six levels of service defined for each type of facility (i.e., roadway or intersection) that is analyzed. LOS has letter designations ranging from A to F, with LOS A representing free flow traffic with little or no delay and LOS F representing jammed conditions with excessive delay and long back-ups. Procedures for analyzing the study intersections are based on the *Highway Capacity Manual 2010 (HCM 2010)*, and procedures for analyzing the study corridor are based on the *Highway Capacity Manual 2000 (HCM 2000)*. The LOS for each study intersection and the study corridor was determined in a software package Synchro 9. Specifically,

- Intersection vehicular level of service – values of approach and overall intersection LOS are based on control delay (i.e. second/vehicle). The LOS thresholds for the automobile mode at a signalized intersection is listed in the following table.

Control Delay (seconds per vehicle)	Level of Service
≤10.0	A
>10.0 – 20.0	B
>20.0 – 35.0	C
>35.0 – 55.0	D
>55.0 – 80.0	E
>80.0	F

Source: HCM 2010

Reference: Memorandum –Multi-Modal Analysis for Atlantic Avenue Gap Closure Project

- Intersection bicycle level of service – A “quality of service” score is calculated along each approach of the intersection, and a LOS is assigned based on the LOS threshold listed in the following table. A score is primarily a function of the width of the street being crossed and the bicyclists’ operating space (wide outside lane, shoulder, or bike lane). High traffic volumes also influence the score. Note that the impacts on the segments between intersections were not assessed in this study.

Score	Level of Service
≤2.0	A
>2.0 – 2.75	B
>2.75 – 3.50	C
>2.50 – 4.25	D
>4.25 – 5.00	E
>5.00	F

Source: HCM 2010

- Intersection pedestrian level of service – A “quality of service” score is calculated along each approach of the intersection, and a LOS is assigned based on the LOS threshold listed in the following table. A score is primarily a function of the number of lanes crossed. High speeds and volumes can also play a large role in determining the final score.

Score	Level of Service
≤2.0	A
>2.0 – 2.75	B
>2.75 – 3.50	C
>2.50 – 4.25	D
>4.25 – 5.00	E
>5.00	F

Source: HCM 2010

- Arterial vehicular level of service – The average travel speed was computed from the running times on the arterial and the control delay at signalized intersections. For a one-block segment like the proposed project, the travel speed is for the average travel speed when vehicles travel between the border intersections. A longer arterial segment analysis was not conducted. A LOS is assigned based on the LOS threshold listed in the following table.

Average Speed for Free-Flow Speeds (FFS) between 25 and 35 mph	Level of Service
>25	A
>19 – 25	B
>13 – 19	C
>9 – 13	D
>7 – 9	E
≤7	F

Source: HCM 2000

Reference: Memorandum –Multi-Modal Analysis for Atlantic Avenue Gap Closure Project

- Intersection queuing – The 95th percentile queue length (i.e. feet), which 95 percent of the time the queue length would be shorter than, is reported for each approach of the three study intersections (two border intersections, and the midblock crossing). Assuming the average length of a regular vehicle is 25 feet, the queue length could be converted into the number of cars in the queue.

The multi-modal analysis for the study intersections and the study corridor were conducted for the following five scenarios:

- Existing Conditions
- Existing with Option 1 Conditions (or “Option 1”)
- Existing with Option 2 (with Midblock Crosswalk) Conditions (or “Option 2 (with Midblock Crosswalk)”)
- Cumulative with Option 1 Conditions (or “Cumulative Option 1”)
- Cumulative with Option 2 (with Midblock Crosswalk) Conditions (or “Cumulative Option 2 (with Midblock Crosswalk)”)

In this study, only vehicular volumes for the 2040 cumulative conditions were derived, using the growth rates shown in the City of Alameda Travel Demand model, which includes the development of Alameda Point. Therefore, only vehicular level of service analysis was conducted for the cumulative conditions.

MULTI-MODAL LEVEL OF SERVICE ANALYSIS

EXISTING CONDITIONS

Existing Intersection Vehicular Level of Service

Table 1 summarizes peak hour levels of service at the two study intersections at the border of the study corridor under Existing Conditions. LOS worksheets are provided in Appendix B. As shown, under Existing Conditions, both study intersections operate at LOS D or better, which is within acceptable City standards.

Table 1: Existing Intersection Vehicular Level of Service (LOS)

Int ID	Int Name	Control	Existing			
			AM Peak Hour		PM Peak Hour	
			Delay (s)	LOS	Delay (s)	LOS
1	Atlantic Ave & Webster St	Signalized	47.0	D	36.2	D
2	Atlantic Ave & Constitution Way	Signalized	15.3	B	17.8	B

Source: Stantec, January 2017

Existing Intersection Bicycle Level of Service

Table 2 shows the existing bicycle level of service at the two study intersections under Existing Conditions. LOS worksheets are provided in Appendix B. As shown, during both a.m. and p.m. peak hours under Existing Conditions, both study intersections operate at LOS B or better for all

Reference: Memorandum –Multi-Modal Analysis for Atlantic Avenue Gap Closure Project

approaches except for the eastbound approach at the Atlantic Ave/Webster Street intersection, which operates at LOS C due to lack of paved shoulder.

Table 2: Existing Intersection Bicycle Level of Service (LOS)

Approach	EB		WB		NB		SB	
	Score	LOS	Score	LOS	Score	LOS	Score	LOS
Intersection 1: Webster Street & Atlantic Avenue								
AM Peak Hour	3.32	C	2.56	B	2.08	B	1.64	A
PM Peak Hour	3.24	C	2.48	B	1.82	A	2.17	B
Intersection 2: Constitution Way & Atlantic Avenue								
AM Peak Hour	1.90	A	1.34	A	1.56	A	1.00	A
PM Peak Hour	1.99	A	1.33	A	1.18	A	1.88	A

Source: Stantec, March 2017

Existing Intersection Pedestrian Level of Service

Table 3 shows the existing pedestrian level of service at the two study intersections under Existing Conditions. LOS worksheets are provided in Appendix B. As shown, under Existing Conditions, both study intersections operate at LOS B or C for all the approaches during both a.m. and p.m. peak hours.

Table 3: Existing Intersection Pedestrian Level of Service (LOS)

Approach	EB		WB		NB		SB	
	Score	LOS	Score	LOS	Score	LOS	Score	LOS
Intersection 1: Webster Street & Atlantic Avenue								
AM Peak Hour	2.99	C	2.49	B	2.57	B	3.18	C
PM Peak Hour	2.94	C	2.57	B	2.62	B	3.27	C
Intersection 2: Constitution Way & Atlantic Avenue								
AM Peak Hour	2.58	B	2.50	B	2.83	C	2.80	C
PM Peak Hour	2.70	B	2.57	B	2.88	C	2.90	C

Source: Stantec, March 2017

Existing Arterial Level of Service

Table 4 shows the existing arterial level of service at the study corridor under Existing Conditions. LOS worksheets are provided in Appendix B. As shown, under Existing Conditions, the study corridor operates at LOS D for the eastbound direction and LOS F for the westbound direction during both a.m. and p.m. peak hours. In this case, delay (in seconds per vehicle) means control delay for the through movements due to signal, and speed refers to average speed, which is distance divided by travel time (running time plus signal delay).

Reference: Memorandum –Multi-Modal Analysis for Atlantic Avenue Gap Closure Project

Table 4: Existing Arterial Level of Service (LOS)

Approach	EB			WB		
	Delay (s)	Speed	LOS	Delay (s)	Speed	LOS
AM Peak Hour	12.2	10.2	D	42.1	5.3	F
PM Peak Hour	12.6	10.0	D	35.2	5.9	F

Source: Stantec, March 2017

Existing Intersection 95th Percentile Queue

Table 5 summarizes the existing 95th percentile queue for each movement at each study intersection during both a.m. and p.m. peak hours. Queuing calculation worksheets are included in Appendix B. As shown, currently, the existing lane geometry for the approaches on Atlantic Avenue between Webster Avenue and Constitution Way (i.e. the eastbound approach at Constitution Way and the westbound approach at Webster Avenue) could handle the 95th percentile queue during both a.m. and p.m. peak hours.

Table 5: Existing Intersection 95th Percentile Queues (ft)

Intersection 1: Webster St. & Atlantic Ave.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Storage Length	300'		80'	125'	380'	160'				150'		250'
AM Peak Hour	115'	136'	44'	32'	215'	0'	#181	344'	0'	#125	155'	57'
PM Peak Hour	102'	144'	51'	77'	151'	0'	#137	265'	0'	#245	#484	76'

Intersection 2: Constitution Way & Atlantic Ave.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Storage Length	195'	400'	230'	190'			190'		85'	225'		40'
AM Peak Hour	52'	67'	0'	26'	78'	0'	#112	241'	18'	38'	73'	12'
PM Peak Hour	56'	87'	0'	45'	66'	0'	#72	136'	14'	80'	#430	35'

Notes:

Bolded value means that the 95th percentile queue exceeds the storage length.
 The “#” symbol means the 95th percentile volume exceeds capacity. Queue may be longer, during certain period within the 15-minute peak, when there is a spillover of traffic.
 Blanks are left for through movements outside of the study corridor or left-turn/right-turn movements with no exclusive turn lanes outside of the study corridor.

Source: Stantec, March 2017

Reference: Memorandum –Multi-Modal Analysis for Atlantic Avenue Gap Closure Project

ALTERNATIVES

Multi-modal traffic operational conditions and 95th percentile queues under Option 1 and Option 2 (with Midblock Crosswalk) were compared with Existing Conditions.

Alternative Intersection Vehicular Level of Service

Table 6 summarizes peak hour vehicular levels of service at the study intersections under alternatives Option 1 and Option 2 (with Midblock Crosswalk). LOS worksheets are provided in Appendix C. As shown, under Option 1, the intersection of Atlantic Avenue and Webster Street would operate at the same level of service with no delay changes from Existing Conditions during both a.m. and p.m. peak hours. This is because the proposed lane geometry changes are on the departure lanes of the Atlantic Ave/Webster St intersection, which would not contribute to the overall intersection vehicular operational level of service. The intersection of Atlantic Avenue and Constitution Way would operate at the same LOS B during the a.m. peak hour, with minor delay increase, and deteriorates from LOS B to LOS C during the p.m. peak hour. These are due to the removal of one approaching lane (i.e. eastbound lanes) with Option 1.

Also as shown in **Table 6**, under Option 2 (with Midblock Crosswalk) conditions, there would be no changes from Option 1 on the intersection level of service or delay at either study intersection during either a.m. or p.m. peak hour. This is because both study intersections would operate without signal coordination along the study corridor under Option 1 and Option 2 (with Midblock Crosswalk). In addition, stops/delay due to pedestrians using midblock crosswalk could only affect the vehicles when they are driving on the roadway segment between the two study intersections, which would increase the total arterial delay, but not affect the study intersection operations. The new intersection at the proposed midblock crosswalk when pedestrians activate the RRFB/PHB to cross the midblock crosswalk would operate at LOS A during both a.m. and p.m. peak hours.

Table 6: Alternative Intersection Vehicular Level of Service (LOS)

Int ID	Int Name	Control	Existing Conditions				Option 1				Option 2 (with Midblock Crosswalk)			
			AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
			Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS
1	Atlantic Ave & Webster St	Signalized	47.0	D	36.2	D	47.0	D	36.2	D	47.0	D	36.2	D
2	Atlantic Ave & Constitution Way	Signalized	15.3	B	17.8	B	16.5	B	25.2	C	16.5	B	25.2	C
3	Atlantic Ave & Midblock Crosswalk	RRFB/PHB	-	-	-	-	-	-	-	-	3.8	A	5.0	A

Source: Stantec, January 2017

Reference: Memorandum –Multi-Modal Analysis for Atlantic Avenue Gap Closure Project

Alternative Intersection Bicycle Level of Service

Table 7 summarizes peak hour bicycle levels of service at the study intersections under alternatives Option 1 and Option 2 (with Midblock Crosswalk). LOS worksheets are provided in Appendix C. As shown, under Option 1, the eastbound approach at the intersection of Atlantic Avenue and Webster Street would improve from the existing LOS C to A during both a.m. and p.m. peak hours, and the westbound approach would deteriorate from the existing LOS B to C during the a.m. peak hour. All the other approaches would continue operating at LOS B or better, during both a.m. and p.m. peak hours. These are due to the installation of the cycle track on the south side of Atlantic Avenue, which would extend to the west of Webster Street. In addition, the increase (e.g. negative impact) in the westbound score is due to narrowing the westbound through lanes under Option 1. Under Option 1, the intersection of Atlantic Avenue and Constitution Way would operate at the same LOS A as under Existing Conditions for all approaches during both a.m. and p.m. peak hours. The decrease (e.g. improvement) in the eastbound score is due to the installation of the cycle track on the south side of Atlantic Avenue with Option 1.

Table 7: Alternative Intersection Bicycle Level of Service (LOS)

Intersection 1: Webster St. & Atlantic Ave.

Approach	EB		WB		NB		SB	
	Score	LOS	Score	LOS	Score	LOS	Score	LOS
AM Peak Hour								
Existing	3.32	C	2.56	B	2.08	B	1.64	A
Option 1	1.19	A	2.78	C	1.98	A	1.64	A
Option 2 (Mid-Block Crosswalk)	1.19	A	2.78	C	1.98	A	1.64	A
PM Peak Hour								
Existing	3.24	C	2.48	B	1.82	A	2.17	B
Option 1	1.11	A	2.70	B	1.72	A	2.17	B
Option 2 (Mid-Block Crosswalk)	1.11	A	2.70	B	1.72	A	2.17	B

Intersection 2: Constitution Way & Atlantic Ave.

Approach	EB		WB		NB		SB	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
AM Peak Hour								
Existing	1.90	A	1.34	A	1.56	A	1.00	A
Option 1	0.34	A	1.34	A	1.56	A	0.79	A
Option 2 (Mid-Block Crosswalk)	0.34	A	1.34	A	1.56	A	0.79	A
PM Peak Hour								
Existing	1.99	A	1.33	A	1.18	A	1.88	A
Option 1	0.52	A	1.33	A	1.18	A	1.67	A

Reference: Memorandum –Multi-Modal Analysis for Atlantic Avenue Gap Closure Project

Option 2 (Mid-Block Crosswalk)	0.52	A	1.33	A	1.18	A	1.67	A
---------------------------------------	------	---	------	---	------	---	------	---

Source: Stantec, March 2017

Also as shown in **Table 7**, under Option 2 (with Midblock Crosswalk) conditions, there will be no changes from Option 1 on the bicycle level of service or score for any approach at either study intersection during either a.m. or p.m. peak hour. This is because by installing a midblock crosswalk between the two study intersections, it would not affect the proposed bicycle facilities at the two study intersections.

Alternative Intersection Pedestrian Level of Service

Table 8: Alternative Intersection Pedestrian Level of Service (LOS)

Intersection 1: Webster St. & Atlantic Ave.

Approach	EB		WB		NB		SB	
	Score	LOS	Score	LOS	Score	LOS	Score	LOS
AM Peak Hour								
Existing	2.99	C	2.49	B	2.57	B	3.18	C
Option 1	2.99	C	2.49	B	2.57	B	3.18	C
Option 2 (Mid-Block Crosswalk)	2.99	C	2.49	B	2.57	B	3.18	C
PM Peak Hour								
Existing	2.94	C	2.57	B	2.62	B	3.27	C
Option 1	2.94	C	2.57	B	2.62	B	3.27	C
Option 2 (Mid-Block Crosswalk)	2.94	C	2.57	B	2.62	B	3.27	C

Intersection 2: Constitution Way & Atlantic Ave.

Approach	EB		WB		NB		SB	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
AM Peak Hour								
Existing	2.58	B	2.50	B	2.83	C	2.80	C
Option 1	2.36	B	2.50	B	2.83	C	2.80	C
Option 2 (Mid-Block Crosswalk)	2.36	B	2.50	B	2.83	C	2.80	C
PM Peak Hour								
Existing	2.70	B	2.57	B	2.88	C	2.90	C
Option 1	2.39	B	2.57	B	2.88	C	2.90	C
Option 2 (Mid-Block Crosswalk)	2.39	B	2.57	B	2.88	C	2.90	C

Source: Stantec, March 2017

Reference: Memorandum –Multi-Modal Analysis for Atlantic Avenue Gap Closure Project

Table 8 summarizes peak hour pedestrian levels of service at the study intersections under alternatives Option 1 and Option 2 (with Midblock Crosswalk). LOS worksheets are provided in Appendix C. As shown, under Option 1, all the approaches at the intersection of Atlantic Avenue and Webster Street would continue operating at the same LOS with same score as under Existing Conditions, during both a.m. and p.m. peak hours. This is because the proposed project with Option 1 would not change the number of lanes crossed for each approach or right-turn-on-red (RTOR) vehicles that would have conflicts with crossing pedestrians at the Atlantic Ave/Webster St intersection. Under Option 1, all the approaches at the intersection of Atlantic Avenue and Constitution Way would continue operating at the same LOS as under Existing Conditions, during both a.m. and p.m. peak hours. There would be minor decrease in the eastbound score, which is due to the reduction of one eastbound approaching lane.

Also as shown in **Table 8**, under Option 2 (with Midblock Crosswalk) conditions, there will be no changes from Option 1 on the pedestrian level of service or score for any approach at either study intersection during either a.m. or p.m. peak hour. This is because by installing a midblock crosswalk between the two study intersections, it would not affect the proposed pedestrian facilities under Option 1 at the two study intersections.

Alternative Arterial Level of Service

Table 9 summarizes the arterial levels of service at the study corridor under alternatives Option 1 and Option 2 (with Midblock Crosswalk). LOS worksheets are provided in Appendix C. As shown, under Option 1, the corridor operation would deteriorate from the existing LOS D to LOS E and F for the eastbound direction during the a.m. and p.m. peak hour, respectively. This is due to the removal of one eastbound through lane with Option 1. There would be no level of service changes for the westbound direction.

Also as shown in **Table 9**, under Option 2 (with Midblock Crosswalk) conditions, there will be minor increase in the delay and minor decrease in the average speed from Option 1 for both eastbound and westbound directions. This is due to the delay occurred when pedestrians activate the RRFB/PHB to cross the midblock crosswalk.

Table 9: Alternative Arterial Level of Service (LOS)

Approach	EB			WB		
	Delay (s)	Speed (mph)	LOS	Delay (s)	Speed (mph)	LOS
AM Peak Hour						
Existing	12.2	10.2	D	42.1	5.3	F
Option 1	22.7	7.7	E	42.1	5.3	F
Option 2 (Mid-Block Crosswalk)	25.2	6.6	F	44.7	4.7	F
PM Peak Hour						
Existing	12.6	10.0	D	35.2	5.9	F
Option 1	35.4	5.9	F	35.2	5.9	F
Option 2 (Mid-Block Crosswalk)	38.0	5.3	F	37.9	5.3	F

Source: Stantec, March 2017

Reference: Memorandum –Multi-Modal Analysis for Atlantic Avenue Gap Closure Project

Alternative Intersection 95th Percentile Queue

Table 10 summarizes the 95th percentile queue for each movement at each study intersection under alternative Option 1 and Option 2 (with Midblock Crosswalk) during both a.m. and p.m. peak hours. Queuing calculation worksheets are included in Appendix C.

Table 10: Alternative Intersection 95th Percentile Queues (ft)

Intersection 1: Webster St. & Atlantic Ave.												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
AM Peak Hour												
Existing Storage Length	300'		80'	125'	380'	160'				150'		250'
Proposed Storage Length with Crosswalk	300'		80'	125'	200'	160'				150'		250'
Existing	115'	136'	44'	32'	215'	0'	#181	344'	0'	#125	155'	57'
Option 1	115'	136'	44'	32'	215'	0'	#181	344'	0'	#125	155'	57'
Option 2 (Mid-Block Crosswalk)	115'	136'	44'	32'	215'	0'	#181	344'	0'	#125	155'	57'
PM Peak Hour												
Existing Storage Length	300'		80'	125'	380'	160'				150'		250'
Proposed Storage Length with Crosswalk	300'		80'	125'	200'	160'				150'		250'
Existing	102'	144'	51'	77'	151'	0'	#137	265'	0'	#245	#484	76'
Option 1	102'	144'	51'	77'	151'	0'	#137	265'	0'	#245	#484	76'
Option 2 (Mid-Block Crosswalk)	102'	144'	51'	77'	151'	0'	#137	265'	0'	#245	#484	76'
Intersection 2: Constitution Way & Atlantic Ave.												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
AM Peak Hour												
Existing Storage Length	195'	400'	230'	190'			190'		85'	225'		40'
Proposed Storage Length with Crosswalk	195'	230'	230'	190'			190'		85'	225'		40'
Existing	52'	67'	0'	26'	78'	0'	#112	241'	18'	38'	73'	12'
Option 1	52'	193'	0'	27'	78'	0'	#112	241'	18'	38'	73'	12'
Option 2 (Mid-Block Crosswalk)	52'	193'	0'	27'	78'	0'	#112	241'	18'	38'	73'	12'
PM Peak Hour												
Existing Storage Length	195'	400'	230'	190'			190'		85'	225'		40'
Proposed Storage Length with Crosswalk	195'	230'	230'	190'			190'		85'	225'		40'
Existing	56'	87'	0'	45'	66'	0'	#72	136'	14'	80'	#430	35'
Option 1	56'	#310	0'	51'	66'	0'	#81	136'	14'	80'	#393	34'
Option 2 (Mid-Block Crosswalk)	56'	#310	0'	51'	66'	0'	#81	136'	14'	80'	#393	34'

Notes:

Reference: Memorandum –Multi-Modal Analysis for Atlantic Avenue Gap Closure Project

Bolded value means that the 95th percentile queue exceeds the storage length.
The “#” symbol means the 95th percentile volume exceeds capacity. Queue may be longer, during certain period within the 15-minute peak, when there is a spillover of traffic.
Blanks are left for through movements outside of the study corridor or left-turn/right-turn movements with no exclusive turn lanes outside of the study corridor.
Source: Stantec, March 2017

As shown, under Option 1, the 95th percentile queues for all the movements at the intersection of Atlantic Avenue and Webster Street would be the same as under Existing Conditions during both a.m. and p.m. peak hours; and, the 95th percentile queues for all the movements except for the eastbound through movement at the intersection of Atlantic Avenue and Constitution Way would be the same as or close to under Existing Conditions. The eastbound queue for the through movement at the Atlantic Ave/Constitution Way intersection would be increased by approximately 120 and 220 feet from the existing queues during the a.m. and p.m. peak hour, respectively. This is due to the removal of one eastbound approaching lane at the Atlantic Ave/Constitution Way intersection with Option 1.

Under Option 1+Midblock Crosswalk conditions, there would be no changes from Option 1 on the 95th percentile queue at either study intersection during either a.m. or p.m. peak hour. This is because stops/delay due to pedestrians using midblock crosswalk could only stop the vehicles when they are driving on the roadway segment between the two study intersections, which would increase the total arterial delay, but not affect the 95th percentile queue for any approaching movements at the study intersections.

Also as shown in **Table 10**, the proposed lane geometry under both Option 1 and Option 2 (with Midblock Crosswalk) conditions for the approaches on Atlantic Avenue between Webster Avenue and Constitution Way (i.e. the eastbound approach at Constitution Way and the westbound approach at Webster Avenue) could handle the 95th percentile queue during both a.m. and p.m. peak hours, with the following exceptions:

- Intersection of Atlantic Avenue and Webster Street: the 95th percentile queue for the westbound through movement would extend beyond the proposed midblock crosswalk by approximately 15 feet during the a.m. peak hour under Option 2 (with Midblock Crosswalk) conditions.
- Intersection of Atlantic Avenue and Constitution Way: the 95th percentile queue for the eastbound through movement would extend beyond the proposed midblock crosswalk by approximately 80 feet during the p.m. peak hour under Option 2 (with Midblock Crosswalk) conditions.

CUMULATIVE CONDITIONS

Since only vehicular volumes for the 2040 cumulative conditions were derived, only vehicular level of service analysis was conducted for the cumulative conditions.

Cumulative Intersection Vehicular Level of Service

Reference: Memorandum –Multi-Modal Analysis for Atlantic Avenue Gap Closure Project

Table 11 summarizes peak hour vehicular levels of service at the study intersections under Cumulative conditions (with project), alternatives Cumulative Option 1 and Cumulative Option 2 (with Midblock Crosswalk). LOS worksheets are provided in Appendix D. As shown, under Cumulative Option 1, both study intersections would operate at acceptable LOS D or better during both a.m. and p.m. peak hours, except for the intersection of Atlantic Avenue and Webster Street, which would operate at LOS E during the a.m. peak hour (with or without the project).

Table 11: Alternative Intersection Vehicular Level of Service (LOS)

Int ID	Int Name	Control	Cumulative Conditions				Cum Option 1				Cum Option 2 (with Midblock Crosswalk)			
			AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
			Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS
1	Atlantic Ave & Webster St	Signalized	60.5	E	46.5	D	60.5	E	46.5	D	60.5	E	46.5	D
2	Atlantic Ave & Constitution Way	Signalized	18.6	B	22.7	C	20.9	C	35.8	D	20.9	C	35.8	D
3	Atlantic Ave & Midblock Crosswalk	RRFB/PHB	-	-	-	-	-	-	-	-	3.9	A	5.1	A

Source: Stantec, January 2017

Also as shown in **Table 11**, under Cumulative Option 2 (with Midblock Crosswalk) conditions, there will be no changes from Cumulative Option 1 on the intersection vehicular level of service or delay at either study intersection during either a.m. or p.m. peak hour. The new intersection at the proposed midblock crosswalk when pedestrians activate the RRFB/PHB to cross the midblock crosswalk would operate at LOS A during both a.m. and p.m. peak hours.

Cumulative Arterial Level of Service

Table 12 summarizes peak hour levels of service at the study corridor under alternatives Cumulative Option 1 and Cumulative Option 2 (with Midblock Crosswalk). LOS worksheets are provided in Appendix D. Comparing with **Table 9** for the arterial levels of service under existing with alternative conditions, it shows that the corridor would continue operating at LOS F for both eastbound and westbound directions during both a.m. and p.m. peak hour, with minor decrease in average speed. The only exception is for the eastbound direction during the a.m. peak hour, when the corridor would continue operating at LOS E with minor decrease in average speed.

Also as shown in **Table 12**, under Cumulative Option 2 (with Midblock Crosswalk) conditions, there will be minor increase in the delay and minor decrease from Cumulative Option 1 in the average speed for both eastbound and westbound directions. This is due to the delay occurred when pedestrians activate the RRFB/PHB to cross the midblock crosswalk.

Reference: Memorandum –Multi-Modal Analysis for Atlantic Avenue Gap Closure Project

Table 12: Cumulative Arterial Level of Service (LOS)

Approach	EB			WB		
	Delay (s)	Speed (mph)	LOS	Delay (s)	Speed (mph)	LOS
AM Peak Hour						
Cumulative	11.5	10.4	D	47.4	4.8	F
Cum Option 1	24.5	7.3	E	47.4	4.8	F
Cum Option 2 (Mid-Block Crosswalk)	27.0	6.4	F	50.1	4.4	F
PM Peak Hour						
Cumulative	15.0	9.3	D	37.3	5.7	F
Cum Option 1	46.6	4.9	F	37.3	5.7	F
Cum Option 2 (Mid-Block Crosswalk)	49.3	4.4	F	40.1	5.1	F

Source: Stantec, March 2017

Cumulative Intersection 95th Percentile Queue

Table 13 summarizes the 95th percentile queue for each movement at each study intersection under alternatives Cumulative Option 1 and Cumulative Option 2 (with Midblock Crosswalk) during both a.m. and p.m. peak hours. Queuing calculation worksheets are included in Appendix D.

As shown, under Cumulative Option 2 (with Midblock Crosswalk) conditions, there would be no changes from Cumulative Option 1 on the 95th percentile queue at either study intersection during either a.m. or p.m. peak hour. This is because stops/delay due to pedestrians using midblock crosswalk could only stop the vehicles when they are driving on the roadway segment between the two study intersections, which would increase the total arterial delay, but not affect the 95th percentile queue for any approaching movements at the study intersections.

Also as shown in **Table 13**, the proposed lane geometry under both Cumulative Option 1 and Cumulative Option 2 (with Midblock Crosswalk) conditions for the approaches on Atlantic Avenue between Webster Avenue and Constitution Way (i.e. the eastbound approach at Constitution Way and the westbound approach at Webster Avenue) could handle the 95th percentile queue during both a.m. and p.m. peak hours, with the following exceptions:

- Intersection of Atlantic Avenue and Webster Street: the 95th percentile queue for the westbound through movement would extend beyond the proposed midblock crosswalk by approximately 50 feet during the a.m. peak hour under Cumulative Option 2 (with Midblock Crosswalk) conditions.
- Intersection of Atlantic Avenue and Constitution Way: the 95th percentile queue for the eastbound through movement would extend beyond the proposed midblock crosswalk by approximately 170 feet during the p.m. peak hour under Cumulative Option 2 (with Midblock Crosswalk) conditions.

Reference: Memorandum –Multi-Modal Analysis for Atlantic Avenue Gap Closure Project

Table 13: Cumulative Intersection 95th Percentile Queues (ft)

Intersection 1: Webster St. & Atlantic Ave.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
AM Peak Hour												
Existing Storage Length	300'		80'	125'	380'	160'				150'		250'
Proposed Storage Length with Crosswalk	300'		80'	125'	200'	160'				150'		250'
Cumulative	129'	153'	54'	35'	#253	0'	#203	#437	0'	#145	178'	60'
Cum Option 1	129'	153'	54'	35'	#253	0'	#203	#437	0'	#145	178'	60'
Cum Option 2 (Mid-Block Crosswalk)	129'	153'	54'	35'	#253	0'	#203	#437	0'	#145	178'	60'
PM Peak Hour												
Existing Storage Length	300'		80'	125'	380'	160'				150'		250'
Proposed Storage Length with Crosswalk	300'		80'	125'	200'	160'				150'		250'
Cumulative	114'	162'	63'	84'	174'	0'	#167	#322	0'	#267	#585	116'
Cum Option 1	114'	162'	63'	84'	174'	0'	#167	#322	0'	#267	#585	116'
Cum Option 2 (Mid-Block Crosswalk)	114'	162'	63'	84'	174'	0'	#167	#322	0'	#267	#585	116'

Intersection 2: Constitution Way & Atlantic Ave.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
AM Peak Hour												
Existing Storage Length	195'	400'	230'	190'			190'		85'	225'		40'
Proposed Storage Length with Crosswalk	195'	230'	230'	190'			190'		85'	225'		40'
Cumulative	59'	75'	0'	29'	89'	0'	#127	284'	21'	#42	81'	15'
Cum Option 1	59'	226'	0'	30'	89'	0'	#127	284'	21'	#42	81'	15'
Cum Option 2 (Mid-Block Crosswalk)	59'	226'	0'	30'	89'	0'	#127	284'	21'	#42	81'	15'
PM Peak Hour												
Existing Storage Length	195'	400'	230'	190'			190'		85'	225'		40'
Proposed Storage Length with Crosswalk	195'	230'	230'	190'			190'		85'	225'		40'
Cumulative	64'	103'	0'	52'	74'	0'	#85	155'	17'	90'	#524	40'
Cum Option 1	64'	#400	0'	#75	74'	0'	#95	155'	17'	90'	#514	39'
Cum Option 2 (Mid-Block Crosswalk)	64'	#400	0'	#75	74'	0'	#95	155'	17'	90'	#514	39'

Notes:

Bolded value means that the 95th percentile queue exceeds the storage length.
 The “#” symbol means the 95th percentile volume exceeds capacity. Queue may be longer, during certain period within the 15-minute peak, when there is a spillover of traffic.

Reference: Memorandum –Multi-Modal Analysis for Atlantic Avenue Gap Closure Project

Blanks are left for through movements outside of the study corridor or left-turn/right-turn movements with no exclusive turn lanes outside of the study corridor.

Source: Stantec, March 2017

STANTEC CONSULTING SERVICES INC.

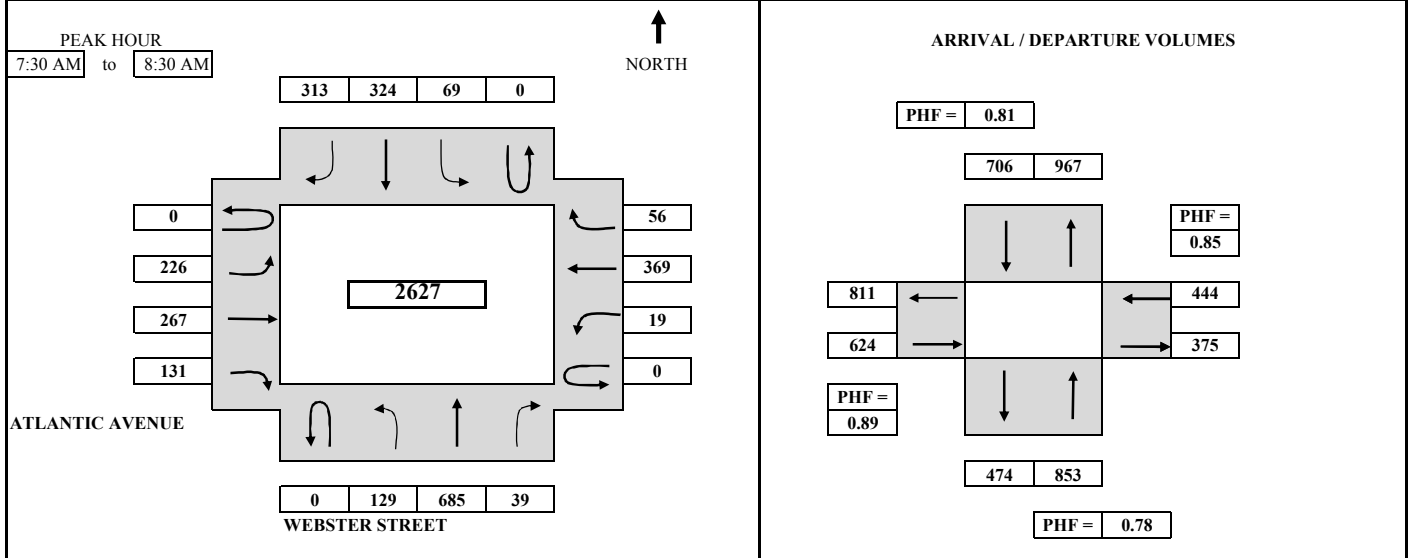
Attachment: Appendix A – Intersection Turning Movement Counts
Appendix B – Existing Multi-Modal LOS and Queuing Calculation Worksheets
Appendix C – Alternative Multi-Modal LOS and Queuing Calculation Worksheets
Appendix D – Cumulative Vehicular LOS and Queuing Calculation Worksheets

Appendix A Intersection Turning Movement Counts

B. A. Y. M. E. T. R. I. C. S.

INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN ALAMEDA (ON-CALL #9)	SURVEY DATE:	10/22/2015	DAY:	THURSDAY
N-S APPROACH:	WEBSTER STREET	SURVEY TIME:	7:00 AM	TO	9:00 AM
E-W APPROACH:	ATLANTIC AVENUE	JURISDICTION:	ALAMEDA	FILE:	3510120-1AM

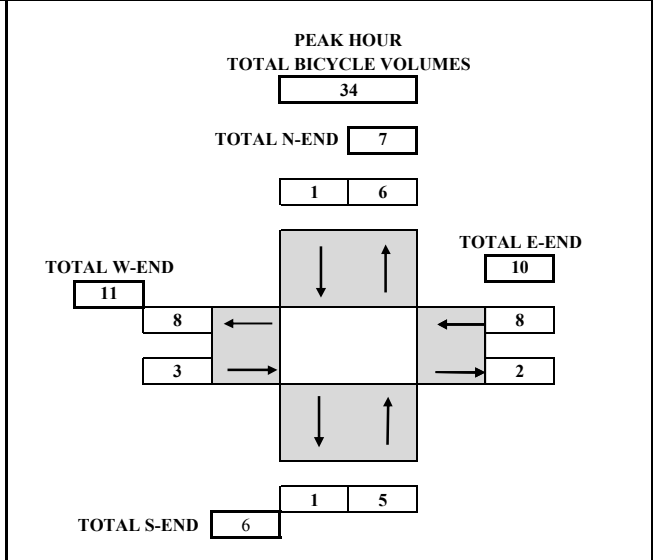
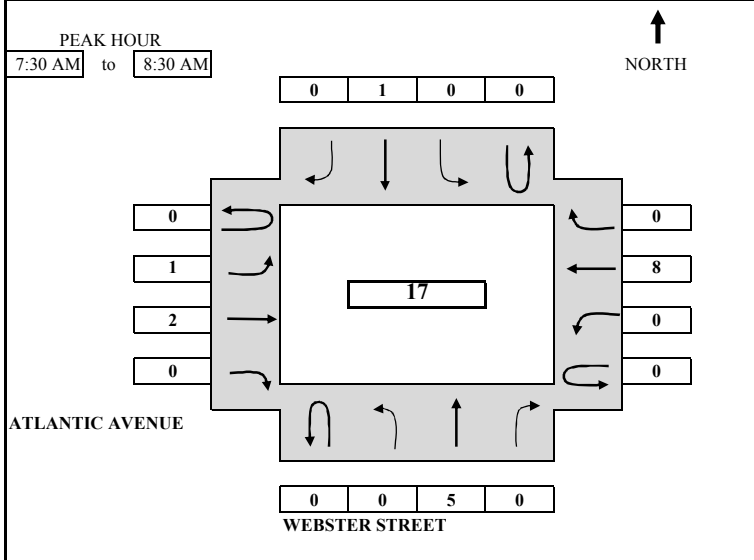


TIME PERIOD	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
SURVEY DATA																	
7:00 AM to 7:15 AM	9	112	5		11	49	31		45	17	1		1	28	9		318
7:15 AM to 7:30 AM	31	280	8		29	96	82		106	37	10		4	66	30		779
7:30 AM to 7:45 AM	46	445	16		38	176	149		160	76	28		7	126	49		1316
7:45 AM to 8:00 AM	79	675	27		54	263	264		239	130	61		11	219	63		2085
8:00 AM to 8:15 AM	118	830	36		77	350	343		284	215	102		17	326	80		2778
8:15 AM to 8:30 AM	160	965	47		98	420	395		332	304	141		23	435	86		3406
8:30 AM to 8:45 AM	196	1082	66		113	494	436		375	351	155		27	512	104		3911
8:45 AM to 9:00 AM	221	1206	75		137	568	481		419	386	177		33	566	132		4401
TOTAL BY PERIOD																	
7:00 AM to 7:15 AM	0	9	112	5	0	11	49	31	0	45	17	1	0	1	28	9	318
7:15 AM to 7:30 AM	0	22	168	3	0	18	47	51	0	61	20	9	0	3	38	21	461
7:30 AM to 7:45 AM	0	15	165	8	0	9	80	67	0	54	39	18	0	3	60	19	537
7:45 AM to 8:00 AM	0	33	230	11	0	16	87	115	0	79	54	33	0	4	93	14	769
8:00 AM to 8:15 AM	0	39	155	9	0	23	87	79	0	45	85	41	0	6	107	17	693
8:15 AM to 8:30 AM	0	42	135	11	0	21	70	52	0	48	89	39	0	6	109	6	628
8:30 AM to 8:45 AM	0	36	117	19	0	15	74	41	0	43	47	14	0	4	77	18	505
8:45 AM to 9:00 AM	0	25	124	9	0	24	74	45	0	44	35	22	0	6	54	28	490
HOURLY TOTALS																	
7:00 AM to 8:00 AM	0	79	675	27	0	54	263	264	0	239	130	61	0	11	219	63	2085
7:15 AM to 8:15 AM	0	109	718	31	0	66	301	312	0	239	198	101	0	16	298	71	2460
7:30 AM to 8:30 AM	0	129	685	39	0	69	324	313	0	226	267	131	0	19	369	56	2627
7:45 AM to 8:45 AM	0	150	637	50	0	75	318	287	0	215	275	127	0	20	386	55	2595
8:00 AM to 9:00 AM	0	142	531	48	0	83	305	217	0	180	256	116	0	22	347	69	2316
PEAK HOUR SUMMARY																	
7:30 AM to 8:30 AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	
VOLUME	0	129	685	39	0	69	324	313	0	226	267	131	0	19	369	56	2627
PHF BY MOVEMENT	0.00	0.77	0.74	0.89	0.00	0.75	0.93	0.68	0.00	0.72	0.75	0.80	0.00	0.79	0.85	0.74	OVERALL
PHF BY APPROACH	0.78				0.81				0.89				0.85				0.85
BICYCLE	5				1				3				8				17
PEDESTRIAN	74				22				50				108				254
	N-LEG				S-LEG				E-LEG				W-LEG				
PEDESTRIAN BY LEG:	127				31				51				45				254

B. A. Y. M. E. T. R. I. C. S.

BICYCLE TURNING MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN ALAMEDA (ON-CALL # 9)	SURVEY DATE:	10/22/2015	DAY:	THURSDAY
N-S APPROACH:	WEBSTER STREET	SURVEY TIME:	7:00 AM	TO	9:00 AM
E-W APPROACH:	ATLANTIC AVENUE	JURISDICTION:	ALAMEDA	FILE:	3510120-1AM



TIME PERIOD	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
SURVEY DATA																	
7:00 AM to 7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
7:15 AM to 7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
7:30 AM to 7:45 AM	0	0	1	0	0	0	0	0	0	0	1	0	0	0	1	0	3
7:45 AM to 8:00 AM	0	0	2	0	0	0	1	0	0	1	2	0	0	0	4	0	10
8:00 AM to 8:15 AM	0	0	4	0	0	0	1	0	0	1	2	0	0	0	8	0	16
8:15 AM to 8:30 AM	0	0	5	0	0	0	1	0	0	1	2	0	0	0	9	0	18
8:30 AM to 8:45 AM	0	1	5	0	0	0	1	0	0	2	2	0	0	0	9	0	20
8:45 AM to 9:00 AM	0	1	5	0	0	0	1	0	0	2	2	0	0	0	10	0	21
TOTAL BY PERIOD																	
7:00 AM to 7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
7:15 AM to 7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM to 7:45 AM	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	2
7:45 AM to 8:00 AM	0	0	1	0	0	0	1	0	0	1	1	0	0	0	3	0	7
8:00 AM to 8:15 AM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	4	0	6
8:15 AM to 8:30 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	2
8:30 AM to 8:45 AM	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2
8:45 AM to 9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
HOURLY TOTALS																	
7:00 AM to 8:00 AM	0	0	2	0	0	0	1	0	0	1	2	0	0	0	4	0	10
7:15 AM to 8:15 AM	0	0	4	0	0	0	1	0	0	1	2	0	0	0	7	0	15
7:30 AM to 8:30 AM	0	0	5	0	0	0	1	0	0	1	2	0	0	0	8	0	17
7:45 AM to 8:45 AM	0	1	4	0	0	0	1	0	0	2	1	0	0	0	8	0	17
8:00 AM to 9:00 AM	0	1	3	0	0	0	0	0	0	1	0	0	0	0	6	0	11

TEL: (510) 232 - 1271

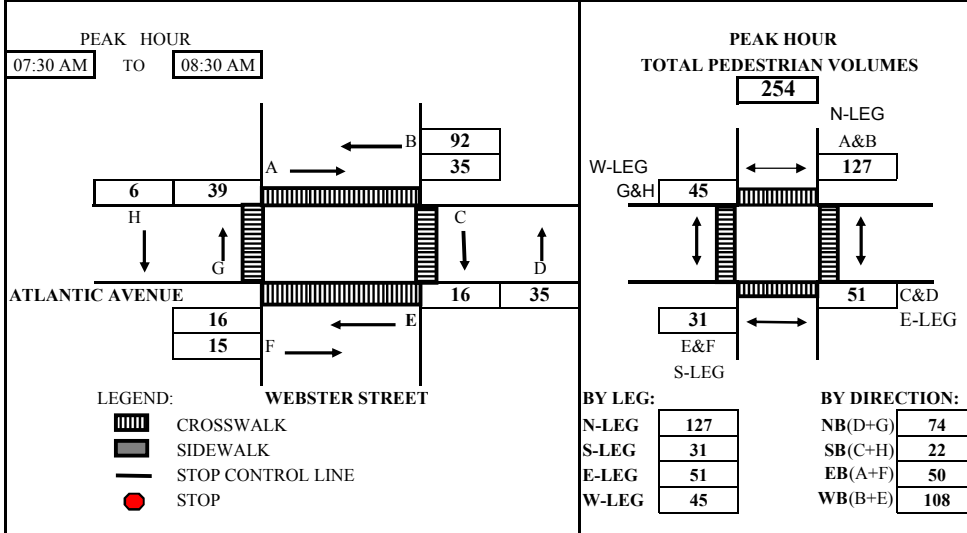
FAX: (510) 232 - 1272

7:30 AM to 8:30 AM					
APPROACH VOLUME	NB	SB	EB	WB	TOTAL
BICYCLE	5	1	3	8	17

B.A.Y.M.E.T.R.I.C.S.

PEDESTRIAN MOVEMENT SUMMARY

PROJECT: TRAFFIC COUNTS IN ALAMEDA (ON-CALL # 9)		SURVEY DATE: 10/22/2015	
N-S APPROACH: WEBSTER STREET		DAY: THURSDAY	
E-W APPROACH: ATLANTIC AVENUE		JURISDICTION: ALAMEDA	
SURVEY PERIOD	7:00 AM TO 9:00 AM	FILE:	3510120-1AM



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

SURVEY DATA											
07:00 AM	---	07:15 AM	2	2	2	3	2	2	2	1	16
07:15 AM	---	07:30 AM	4	8	5	8	7	2	8	3	45
07:30 AM	---	07:45 AM	8	22	7	16	12	4	13	3	85
07:45 AM	---	08:00 AM	17	50	10	19	15	9	32	3	155
08:00 AM	---	08:15 AM	27	79	15	29	21	15	38	6	230
08:15 AM	---	08:30 AM	39	100	21	43	23	17	47	9	299
08:30 AM	---	08:45 AM	50	117	22	54	24	17	59	10	353
08:45 AM	---	09:00 AM	64	133	28	60	31	25	71	11	423

TOTAL BY PERIOD											
07:00 AM	---	07:15 AM	2	2	2	3	2	2	2	1	16
07:15 AM	---	07:30 AM	2	6	3	5	5	0	6	2	29
07:30 AM	---	07:45 AM	4	14	2	8	5	2	5	0	40
07:45 AM	---	08:00 AM	9	28	3	3	3	5	19	0	70
08:00 AM	---	08:15 AM	10	29	5	10	6	6	6	3	75
08:15 AM	---	08:30 AM	12	21	6	14	2	2	9	3	69
08:30 AM	---	08:45 AM	11	17	1	11	1	0	12	1	54
08:45 AM	---	09:00 AM	14	16	6	6	7	8	12	1	70

HOURLY TOTALS											
07:00 AM	---	08:00 AM	17	50	10	19	15	9	32	3	155
07:15 AM	---	08:15 AM	25	77	13	26	19	13	36	5	214
07:30 AM	---	08:30 AM	35	92	16	35	16	15	39	6	254
07:45 AM	---	08:45 AM	42	95	15	38	12	13	46	7	268
08:00 AM	---	09:00 AM	47	83	18	41	16	16	39	8	268

Tel : (510) 232-1271

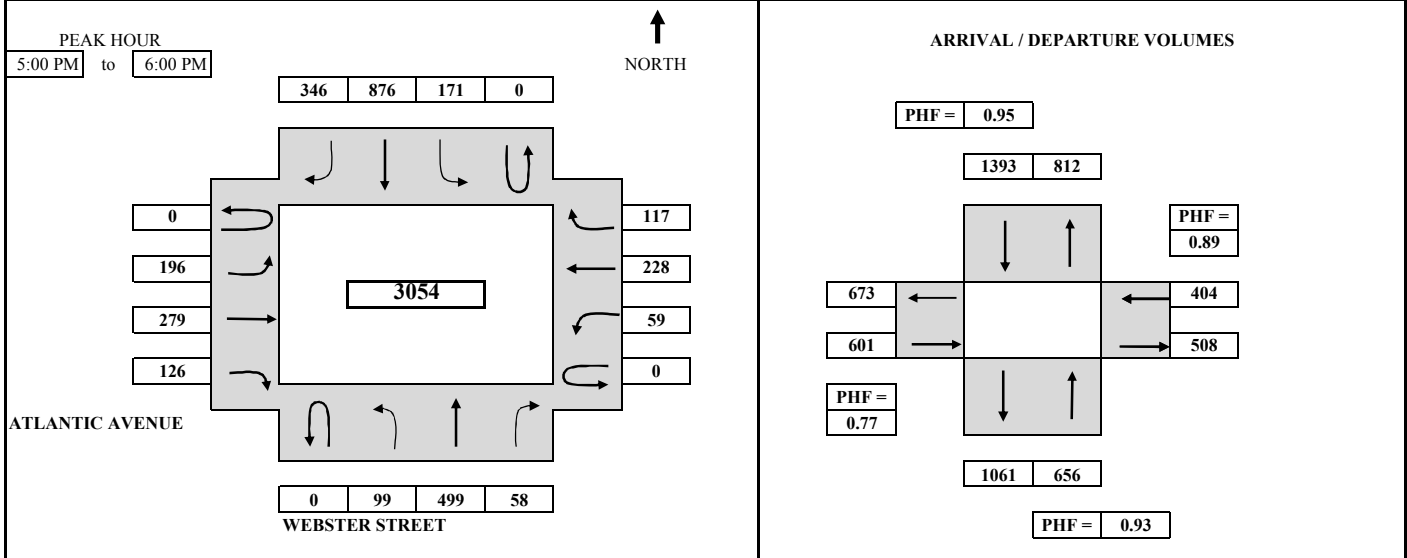
Fax: (510) 232-1272

12:00 AM to 12:00 AM					
VOLUME BY DIRECTION	NB	SB	EB	WB	TOTAL
PEDESTRIAN	74	22	50	108	254
VOLUME BY LEG	N-LEG	S-LEG	E-LEG	W-LEG	TOTAL
PEDESTRIAN	127	31	51	45	254

B.A.Y.M.E.T.R.I.C.S.

INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN ALAMEDA (ON-CALL #9)	SURVEY DATE:	10/22/2015	DAY:	THURSDAY
N-S APPROACH:	WEBSTER STREET	SURVEY TIME:	4:00 PM	TO	6:00 PM
E-W APPROACH:	ATLANTIC AVENUE	JURISDICTION:	ALAMEDA	FILE:	3510120-1PM



TIME PERIOD	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
SURVEY DATA																	
4:00 PM to 4:15 PM	22	111	10		39	158	47		49	56	19		11	50	17		589
4:15 PM to 4:30 PM	35	214	22		78	315	99		101	127	43		22	85	37		1178
4:30 PM to 4:45 PM	48	339	34		111	493	168		164	169	78		39	121	68		1832
4:45 PM to 5:00 PM	61	448	43		149	697	221		204	230	107		51	160	87		2458
5:00 PM to 5:15 PM	81	588	55		194	937	303		273	296	135		71	216	116		3265
5:15 PM to 5:30 PM	97	714	65		239	1153	377		314	361	163		80	257	147		3967
5:30 PM to 5:45 PM	127	840	85		276	1368	468		351	410	185		97	320	180		4707
5:45 PM to 6:00 PM	160	947	101		320	1573	567		400	509	233		110	388	204		5512

TOTAL BY PERIOD																	
4:00 PM to 4:15 PM	0	22	111	10	0	39	158	47	0	49	56	19	0	11	50	17	589
4:15 PM to 4:30 PM	0	13	103	12	0	39	157	52	0	52	71	24	0	11	35	20	589
4:30 PM to 4:45 PM	0	13	125	12	0	33	178	69	0	63	42	35	0	17	36	31	654
4:45 PM to 5:00 PM	0	13	109	9	0	38	204	53	0	40	61	29	0	12	39	19	626
5:00 PM to 5:15 PM	0	20	140	12	0	45	240	82	0	69	66	28	0	20	56	29	807
5:15 PM to 5:30 PM	0	16	126	10	0	45	216	74	0	41	65	28	0	9	41	31	702
5:30 PM to 5:45 PM	0	30	126	20	0	37	215	91	0	37	49	22	0	17	63	33	740
5:45 PM to 6:00 PM	0	33	107	16	0	44	205	99	0	49	99	48	0	13	68	24	805

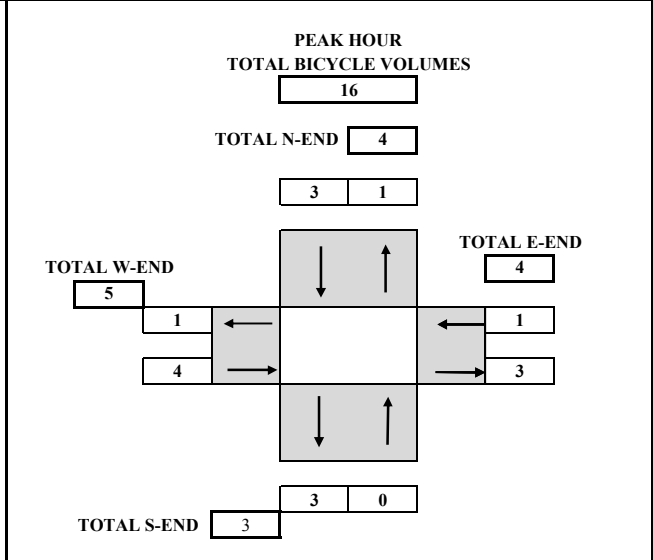
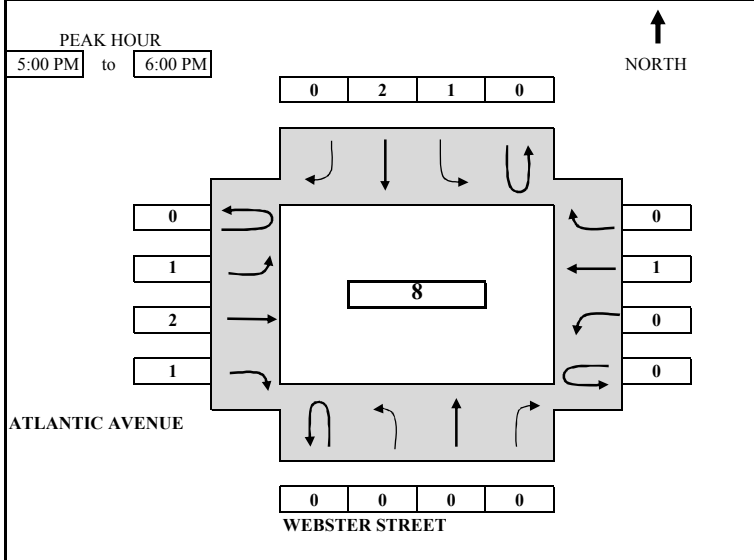
HOURLY TOTALS																	
4:00 PM to 5:00 PM	0	61	448	43	0	149	697	221	0	204	230	107	0	51	160	87	2458
4:15 PM to 5:15 PM	0	59	477	45	0	155	779	256	0	224	240	116	0	60	166	99	2676
4:30 PM to 5:30 PM	0	62	500	43	0	161	838	278	0	213	234	120	0	58	172	110	2789
4:45 PM to 5:45 PM	0	79	501	51	0	165	875	300	0	187	241	107	0	58	199	112	2875
5:00 PM to 6:00 PM	0	99	499	58	0	171	876	346	0	196	279	126	0	59	228	117	3054

PEAK HOUR SUMMARY																	
5:00 PM to 6:00 PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	
VOLUME	0	99	499	58	0	171	876	346	0	196	279	126	0	59	228	117	3054
PHF BY MOVEMENT	0.00	0.75	0.89	0.73	0.00	0.95	0.91	0.87	0.00	0.71	0.70	0.66	0.00	0.74	0.84	0.89	OVERALL
PHF BY APPROACH	0.93				0.95				0.77				0.89				0.95
BICYCLE	0				3				4				1				8
PEDESTRIAN	42				41				53				40				176
PEDESTRIAN BY LEG:	N-LEG				S-LEG				E-LEG				W-LEG				
	37				56				26				57				176

B.A.Y.M.E.T.R.I.C.S.

BICYCLE TURNING MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN ALAMEDA (ON-CALL # 9)	SURVEY DATE:	10/22/2015	DAY:	THURSDAY
N-S APPROACH:	WEBSTER STREET	SURVEY TIME:	4:00 PM	TO	6:00 PM
E-W APPROACH:	ATLANTIC AVENUE	JURISDICTION:	ALAMEDA	FILE:	3510120-1PM



TIME PERIOD	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL	
	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT		
SURVEY DATA																		
4:00 PM to 4:15 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:15 PM to 4:30 PM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
4:30 PM to 4:45 PM	0	0	2	0	0	0	0	0	0	1	3	0	0	0	0	0	0	4
4:45 PM to 5:00 PM	0	0	2	0	0	0	0	0	0	1	3	0	0	0	0	0	0	4
5:00 PM to 5:15 PM	0	0	2	0	0	0	0	0	0	1	4	0	0	0	0	0	0	7
5:15 PM to 5:30 PM	0	0	2	0	0	0	1	0	0	1	4	0	0	0	0	0	0	8
5:30 PM to 5:45 PM	0	0	2	0	0	0	2	0	0	2	5	0	0	0	1	0	0	12
5:45 PM to 6:00 PM	0	0	2	0	0	1	2	0	0	2	5	1	0	0	1	0	0	14
TOTAL BY PERIOD																		
4:00 PM to 4:15 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:15 PM to 4:30 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:30 PM to 4:45 PM	0	0	0	0	0	0	0	0	0	1	3	0	0	0	0	0	0	4
4:45 PM to 5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM to 5:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
5:15 PM to 5:30 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
5:30 PM to 5:45 PM	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	0	0	4
5:45 PM to 6:00 PM	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	2
HOURLY TOTALS																		
4:00 PM to 5:00 PM	0	0	2	0	0	0	0	0	0	1	3	0	0	0	0	0	0	6
4:15 PM to 5:15 PM	0	0	1	0	0	0	0	0	0	1	4	0	0	0	0	0	0	6
4:30 PM to 5:30 PM	0	0	0	0	0	0	1	0	0	1	4	0	0	0	0	0	0	6
4:45 PM to 5:45 PM	0	0	0	0	0	0	2	0	0	1	2	0	0	0	1	0	0	6
5:00 PM to 6:00 PM	0	0	0	0	0	1	2	0	0	1	2	1	0	0	1	0	0	8

TEL: (510) 232 - 1271

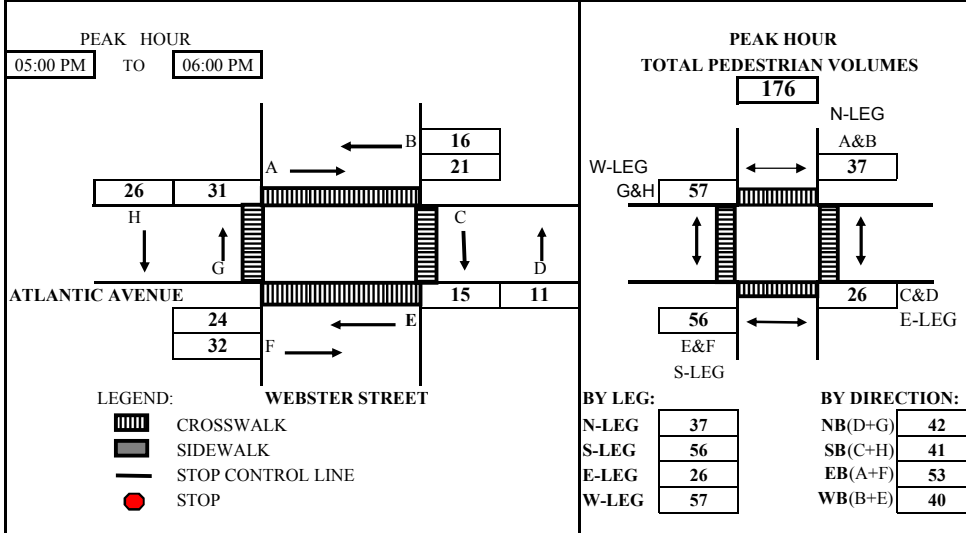
FAX: (510) 232 - 1272

5:00 PM to 6:00 PM					
APPROACH VOLUME	NB	SB	EB	WB	TOTAL
BICYCLE	0	3	4	1	8

B.A.Y.M.E.T.R.I.C.S.

PEDESTRIAN MOVEMENT SUMMARY

PROJECT: TRAFFIC COUNTS IN ALAMEDA (ON-CALL # 9)	SURVEY DATE: 10/22/2015
N-S APPROACH: WEBSTER STREET	DAY: THURSDAY
E-W APPROACH: ATLANTIC AVENUE	JURISDICTION: ALAMEDA
SURVEY PERIOD 4:00 PM TO 6:00 PM	FILE: 3510120-1PM



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

SURVEY DATA											
04:00 PM	---	04:15 PM	11	9	2	10	4	11	8	8	63
04:15 PM	---	04:30 PM	27	17	7	19	17	20	9	15	131
04:30 PM	---	04:45 PM	38	18	17	24	17	34	28	30	206
04:45 PM	---	05:00 PM	48	24	19	28	24	40	29	38	250
05:00 PM	---	05:15 PM	56	25	24	29	26	46	33	47	286
05:15 PM	---	05:30 PM	63	28	27	32	31	53	39	55	328
05:30 PM	---	05:45 PM	66	34	31	35	40	59	53	56	374
05:45 PM	---	06:00 PM	69	40	34	39	48	72	60	64	426

TOTAL BY PERIOD											
04:00 PM	---	04:15 PM	11	9	2	10	4	11	8	8	63
04:15 PM	---	04:30 PM	16	8	5	9	13	9	1	7	68
04:30 PM	---	04:45 PM	11	1	10	5	0	14	19	15	75
04:45 PM	---	05:00 PM	10	6	2	4	7	6	1	8	44
05:00 PM	---	05:15 PM	8	1	5	1	2	6	4	9	36
05:15 PM	---	05:30 PM	7	3	3	3	5	7	6	8	42
05:30 PM	---	05:45 PM	3	6	4	3	9	6	14	1	46
05:45 PM	---	06:00 PM	3	6	3	4	8	13	7	8	52

HOURLY TOTALS											
04:00 PM	---	05:00 PM	48	24	19	28	24	40	29	38	250
04:15 PM	---	05:15 PM	45	16	22	19	22	35	25	39	223
04:30 PM	---	05:30 PM	36	11	20	13	14	33	30	40	197
04:45 PM	---	05:45 PM	28	16	14	11	23	25	25	26	168
05:00 PM	---	06:00 PM	21	16	15	11	24	32	31	26	176

Tel : (510) 232-1271

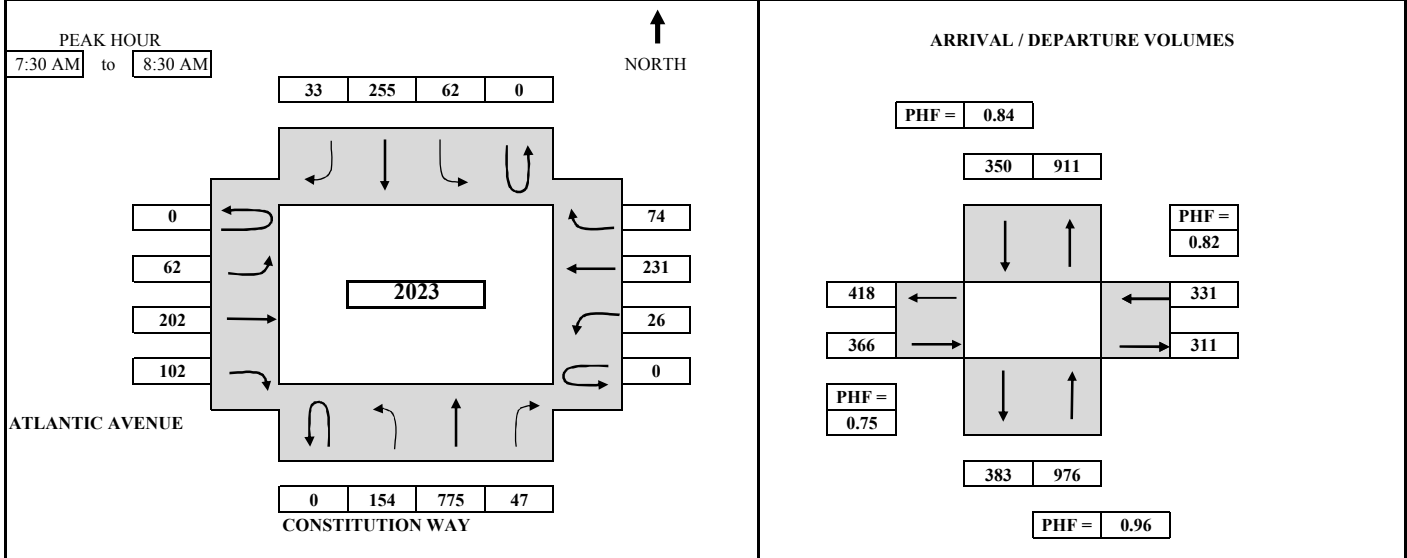
Fax: (510) 232-1272

12:00 AM to 12:00 AM					
VOLUME BY DIRECTION	NB	SB	EB	WB	TOTAL
PEDESTRIAN	42	41	53	40	176
VOLUME BY LEG	N-LEG	S-LEG	E-LEG	W-LEG	TOTAL
PEDESTRIAN	37	56	26	57	176

B.A.Y.M.E.T.R.I.C.S.

INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN ALAMEDA (ON-CALL #9)	SURVEY DATE:	10/22/2015	DAY:	THURSDAY
N-S APPROACH:	CONSTITUTION WAY	SURVEY TIME:	7:00 AM	TO	9:00 AM
E-W APPROACH:	ATLANTIC AVENUE	JURISDICTION:	ALAMEDA	FILE:	3510120-2AM

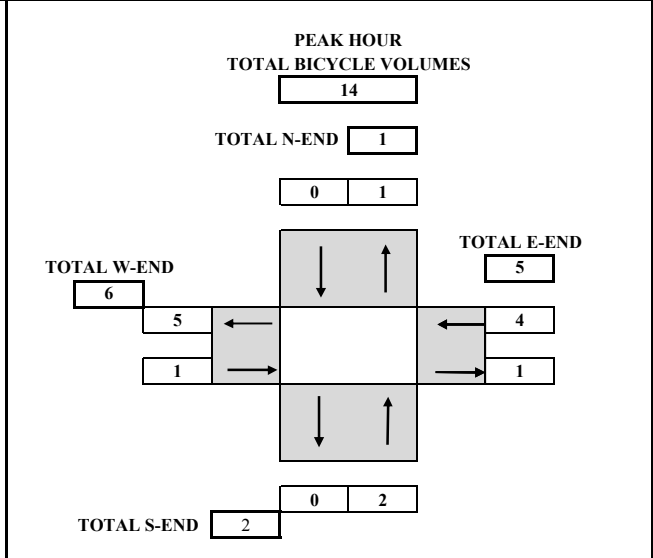
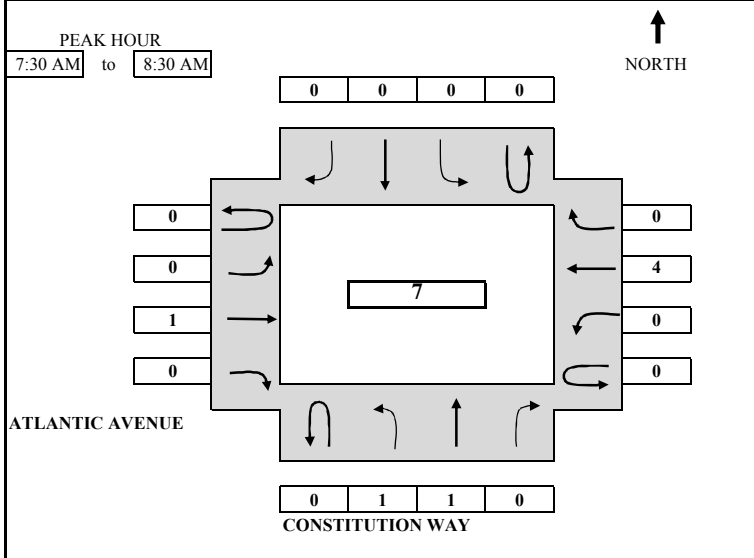


TIME PERIOD	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL		
	From	To	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT		THRU	RIGHT
SURVEY DATA																			
7:00 AM to 7:15 AM			16	152	5		11	42	8		6	10	6		1	15	18		290
7:15 AM to 7:30 AM			34	309	8		22	84	16		13	23	16		4	44	43		616
7:30 AM to 7:45 AM			54	508	13		36	163	27		27	61	29		8	81	65		1072
7:45 AM to 8:00 AM			99	705	26		55	217	33		37	109	50		13	158	84		1586
8:00 AM to 8:15 AM			139	908	38		73	282	40		56	177	85		25	222	104		2149
8:15 AM to 8:30 AM			188	1084	55		84	339	49		75	225	118		30	275	117		2639
8:30 AM to 8:45 AM			215	1222	71		98	392	56		95	265	139		32	320	135		3040
8:45 AM to 9:00 AM			248	1360	82		124	461	67		103	310	154		41	351	152		3453
TOTAL BY PERIOD																			
7:00 AM to 7:15 AM			0	16	152	5	0	11	42	8	0	6	10	6	0	1	15	18	290
7:15 AM to 7:30 AM			0	18	157	3	0	11	42	8	0	7	13	10	0	3	29	25	326
7:30 AM to 7:45 AM			0	20	199	5	0	14	79	11	0	14	38	13	0	4	37	22	456
7:45 AM to 8:00 AM			0	45	197	13	0	19	54	6	0	10	48	21	0	5	77	19	514
8:00 AM to 8:15 AM			0	40	203	12	0	18	65	7	0	19	68	35	0	12	64	20	563
8:15 AM to 8:30 AM			0	49	176	17	0	11	57	9	0	19	48	33	0	5	53	13	490
8:30 AM to 8:45 AM			0	27	138	16	0	14	53	7	0	20	40	21	0	2	45	18	401
8:45 AM to 9:00 AM			0	33	138	11	0	26	69	11	0	8	45	15	0	9	31	17	413
HOURLY TOTALS																			
7:00 AM to 8:00 AM			0	99	705	26	0	55	217	33	0	37	109	50	0	13	158	84	1586
7:15 AM to 8:15 AM			0	123	756	33	0	62	240	32	0	50	167	79	0	24	207	86	1859
7:30 AM to 8:30 AM			0	154	775	47	0	62	255	33	0	62	202	102	0	26	231	74	2023
7:45 AM to 8:45 AM			0	161	714	58	0	62	229	29	0	68	204	110	0	24	239	70	1968
8:00 AM to 9:00 AM			0	149	655	56	0	69	244	34	0	66	201	104	0	28	193	68	1867
PEAK HOUR SUMMARY																			
7:30 AM to 8:30 AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL		
	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR			
VOLUME	0	154	775	47	0	62	255	33	0	62	202	102	0	26	231	74	2023		
PHF BY MOVEMENT	0.00	0.79	0.95	0.69	0.00	0.82	0.81	0.75	0.00	0.82	0.74	0.73	0.00	0.54	0.75	0.84	OVERALL		
PHF BY APPROACH	0.96				0.84				0.75				0.82				0.90		
BICYCLE	2				0				1				4				7		
PEDESTRIAN	13				8				16				22				59		
	N-LEG				S-LEG				E-LEG				W-LEG						
PEDESTRIAN BY LEG:	21				17				12				9				59		

B. A. Y. M. E. T. R. I. C. S.

BICYCLE TURNING MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN ALAMEDA (ON-CALL # 9)	SURVEY DATE:	10/22/2015	DAY:	THURSDAY
N-S APPROACH:	CONSTITUTION WAY	SURVEY TIME:	7:00 AM	TO	9:00 AM
E-W APPROACH:	ATLANTIC AVENUE	JURISDICTION:	ALAMEDA	FILE:	3510120-2AM



TIME PERIOD	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	

SURVEY DATA

7:00 AM to 7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM to 7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM to 7:45 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
7:45 AM to 8:00 AM	0	1	1	0	0	0	0	0	0	0	1	0	0	0	4	0	7
8:00 AM to 8:15 AM	0	1	1	0	0	0	0	0	0	0	1	0	0	0	4	0	7
8:15 AM to 8:30 AM	0	1	1	0	0	0	0	0	0	0	1	0	0	0	4	0	7
8:30 AM to 8:45 AM	0	1	1	0	0	0	0	0	0	1	1	0	0	0	4	0	8
8:45 AM to 9:00 AM	0	1	1	0	0	0	0	0	0	1	1	0	0	0	5	0	9

TOTAL BY PERIOD

7:00 AM to 7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM to 7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM to 7:45 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
7:45 AM to 8:00 AM	0	1	1	0	0	0	0	0	0	0	0	0	0	0	4	0	6
8:00 AM to 8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM to 8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM to 8:45 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
8:45 AM to 9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1

HOURLY TOTALS

7:00 AM to 8:00 AM	0	1	1	0	0	0	0	0	0	0	1	0	0	0	4	0	7
7:15 AM to 8:15 AM	0	1	1	0	0	0	0	0	0	0	1	0	0	0	4	0	7
7:30 AM to 8:30 AM	0	1	1	0	0	0	0	0	0	0	1	0	0	0	4	0	7
7:45 AM to 8:45 AM	0	1	1	0	0	0	0	0	0	1	0	0	0	0	4	0	7
8:00 AM to 9:00 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	2

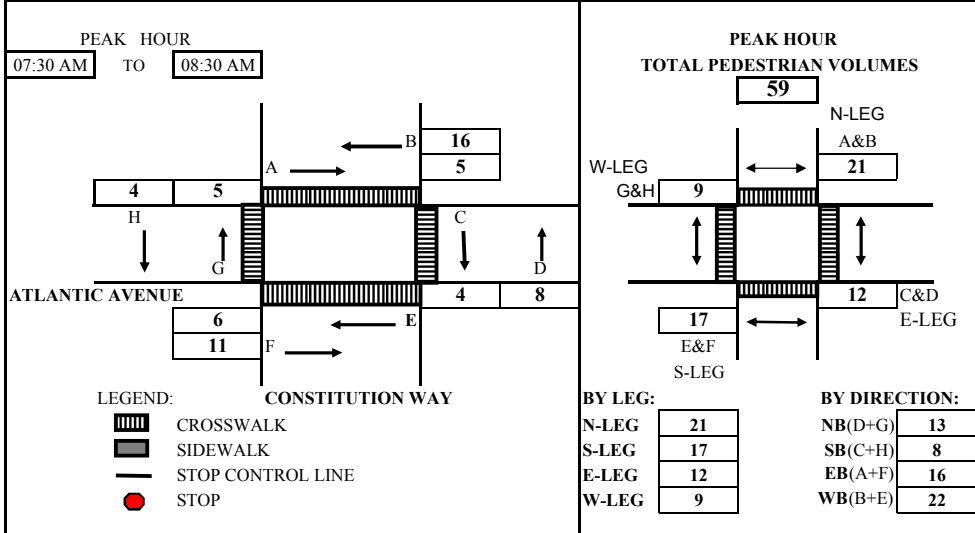
TEL: (510) 232 - 1271 FAX: (510) 232 - 1272

7:30 AM to 8:30 AM					
APPROACH VOLUME	NB	SB	EB	WB	TOTAL
BICYCLE	2	0	1	4	7

B.A.Y.M.E.T.R.I.C.S.

PEDESTRIAN MOVEMENT SUMMARY

PROJECT: TRAFFIC COUNTS IN ALAMEDA (ON-CALL # 9)		SURVEY DATE: 10/22/2015	
N-S APPROACH: CONSTITUTION WAY		DAY: THURSDAY	
E-W APPROACH: ATLANTIC AVENUE		JURISDICTION: ALAMEDA	
SURVEY PERIOD	7:00 AM TO 9:00 AM	FILE:	3510120-2AM



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

SURVEY DATA											
07:00 AM	---	07:15 AM	0	0	1	2	0	0	0	0	3
07:15 AM	---	07:30 AM	0	2	2	4	6	1	1	0	16
07:30 AM	---	07:45 AM	0	4	2	5	6	3	4	1	25
07:45 AM	---	08:00 AM	3	10	5	6	7	5	5	2	43
08:00 AM	---	08:15 AM	3	13	6	8	10	10	6	4	60
08:15 AM	---	08:30 AM	5	18	6	12	12	12	6	4	75
08:30 AM	---	08:45 AM	5	19	6	13	12	15	7	5	82
08:45 AM	---	09:00 AM	6	22	7	21	15	17	7	6	101

TOTAL BY PERIOD											
07:00 AM	---	07:15 AM	0	0	1	2	0	0	0	0	3
07:15 AM	---	07:30 AM	0	2	1	2	6	1	1	0	13
07:30 AM	---	07:45 AM	0	2	0	1	0	2	3	1	9
07:45 AM	---	08:00 AM	3	6	3	1	1	2	1	1	18
08:00 AM	---	08:15 AM	0	3	1	2	3	5	1	2	17
08:15 AM	---	08:30 AM	2	5	0	4	2	2	0	0	15
08:30 AM	---	08:45 AM	0	1	0	1	0	3	1	1	7
08:45 AM	---	09:00 AM	1	3	1	8	3	2	0	1	19

HOURLY TOTALS											
07:00 AM	---	08:00 AM	3	10	5	6	7	5	5	2	43
07:15 AM	---	08:15 AM	3	13	5	6	10	10	6	4	57
07:30 AM	---	08:30 AM	5	16	4	8	6	11	5	4	59
07:45 AM	---	08:45 AM	5	15	4	8	6	12	3	4	57
08:00 AM	---	09:00 AM	3	12	2	15	8	12	2	4	58

Tel : (510) 232-1271

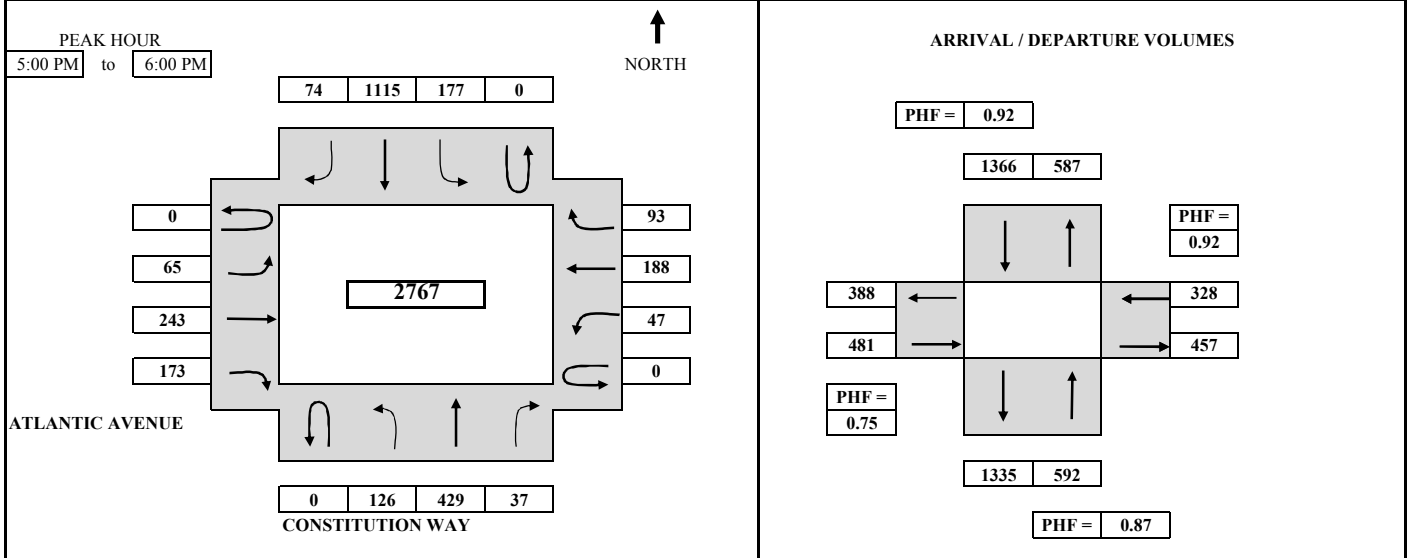
Fax: (510) 232-1272

12:00 AM to 12:00 AM					
VOLUME BY DIRECTION	NB	SB	EB	WB	TOTAL
PEDESTRIAN	13	8	16	22	59
VOLUME BY LEG	N-LEG	S-LEG	E-LEG	W-LEG	TOTAL
PEDESTRIAN	21	17	12	9	59

B. A. Y. M. E. T. R. I. C. S.

INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN ALAMEDA (ON-CALL #9)	SURVEY DATE:	10/22/2015	DAY:	THURSDAY
N-S APPROACH:	CONSTITUTION WAY	SURVEY TIME:	4:00 PM	TO	6:00 PM
E-W APPROACH:	ATLANTIC AVENUE	JURISDICTION:	ALAMEDA	FILE:	3510120-2PM



TIME PERIOD	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL		
	From	To	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT		THRU	RIGHT
SURVEY DATA																			
4:00 PM	to	4:15 PM	18	110	4	36	193	11	19	41	46	15	37	15					545
4:15 PM	to	4:30 PM	46	207	18	67	410	24	44	79	82	24	60	33					1094
4:30 PM	to	4:45 PM	67	309	25	99	685	36	58	118	116	36	89	63					1701
4:45 PM	to	5:00 PM	83	430	33	130	959	51	71	167	154	47	124	85					2334
5:00 PM	to	5:15 PM	111	543	44	166	1225	64	85	226	200	58	177	109					3008
5:15 PM	to	5:30 PM	144	638	48	207	1544	75	110	272	242	69	216	125					3690
5:30 PM	to	5:45 PM	177	762	62	256	1805	99	122	322	268	84	260	151					4368
5:45 PM	to	6:00 PM	209	859	70	307	2074	125	136	410	327	94	312	178					5101

TOTAL BY PERIOD																			
4:00 PM	to	4:15 PM	0	18	110	4	0	36	193	11	0	19	41	46	0	15	37	15	545
4:15 PM	to	4:30 PM	0	28	97	14	0	31	217	13	0	25	38	36	0	9	23	18	549
4:30 PM	to	4:45 PM	0	21	102	7	0	32	275	12	0	14	39	34	0	12	29	30	607
4:45 PM	to	5:00 PM	0	16	121	8	0	31	274	15	0	13	49	38	0	11	35	22	633
5:00 PM	to	5:15 PM	0	28	113	11	0	36	266	13	0	14	59	46	0	11	53	24	674
5:15 PM	to	5:30 PM	0	33	95	4	0	41	319	11	0	25	46	42	0	11	39	16	682
5:30 PM	to	5:45 PM	0	33	124	14	0	49	261	24	0	12	50	26	0	15	44	26	678
5:45 PM	to	6:00 PM	0	32	97	8	0	51	269	26	0	14	88	59	0	10	52	27	733

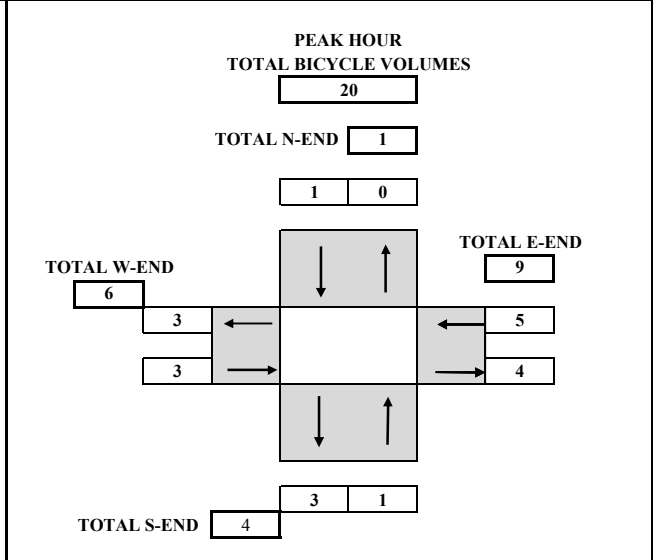
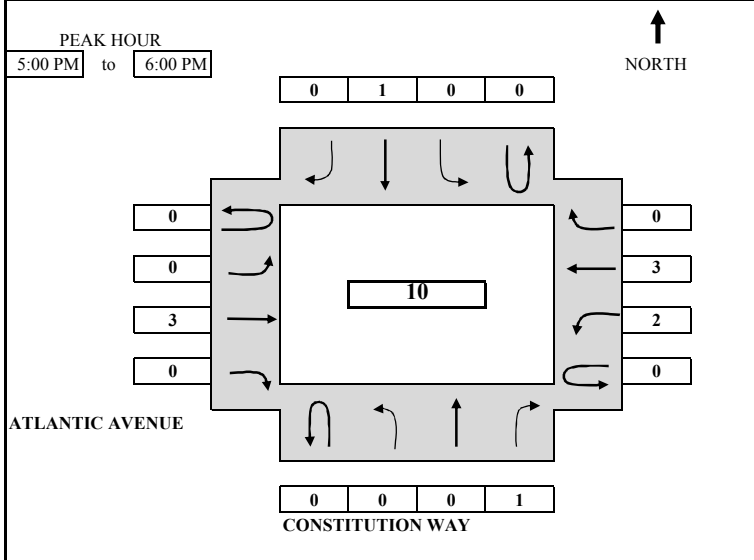
HOURLY TOTALS																			
4:00 PM	to	5:00 PM	0	83	430	33	0	130	959	51	0	71	167	154	0	47	124	85	2334
4:15 PM	to	5:15 PM	0	93	433	40	0	130	1032	53	0	66	185	154	0	43	140	94	2463
4:30 PM	to	5:30 PM	0	98	431	30	0	140	1134	51	0	66	193	160	0	45	156	92	2596
4:45 PM	to	5:45 PM	0	110	453	37	0	157	1120	63	0	64	204	152	0	48	171	88	2667
5:00 PM	to	6:00 PM	0	126	429	37	0	177	1115	74	0	65	243	173	0	47	188	93	2767

PEAK HOUR SUMMARY																			
5:00 PM	to	6:00 PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
			NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	
VOLUME			0	126	429	37	0	177	1115	74	0	65	243	173	0	47	188	93	2767
PHF BY MOVEMENT			0.00	0.95	0.86	0.66	0.00	0.87	0.87	0.71	0.00	0.65	0.69	0.73	0.00	0.78	0.89	0.86	OVERALL
PHF BY APPROACH			0.87				0.92				0.75				0.92				0.94
BICYCLE			1				1				3				5				10
PEDESTRIAN			13				21				4				15				53
PEDESTRIAN BY LEG:			N-LEG				S-LEG				E-LEG				W-LEG				
			11				8				12				22				53

B.A.Y.M.E.T.R.I.C.S.

BICYCLE TURNING MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN ALAMEDA (ON-CALL # 9)	SURVEY DATE:	10/22/2015	DAY:	THURSDAY
N-S APPROACH:	CONSTITUTION WAY	SURVEY TIME:	4:00 PM	TO	6:00 PM
E-W APPROACH:	ATLANTIC AVENUE	JURISDICTION:	ALAMEDA	FILE:	3510120-2PM



TIME PERIOD	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
SURVEY DATA																	
4:00 PM to 4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM to 4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM to 4:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
4:45 PM to 5:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
5:00 PM to 5:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	2	0	0	3
5:15 PM to 5:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	2	2	0	5
5:30 PM to 5:45 PM	0	0	0	0	0	0	1	0	0	0	2	0	0	2	3	0	8
5:45 PM to 6:00 PM	0	0	0	1	0	0	1	0	0	0	4	0	0	2	3	0	11
TOTAL BY PERIOD																	
4:00 PM to 4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM to 4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM to 4:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
4:45 PM to 5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM to 5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
5:15 PM to 5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
5:30 PM to 5:45 PM	0	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0	3
5:45 PM to 6:00 PM	0	0	0	1	0	0	0	0	0	0	2	0	0	0	0	0	3
HOURLY TOTALS																	
4:00 PM to 5:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
4:15 PM to 5:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	2	0	0	3
4:30 PM to 5:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	2	2	0	5
4:45 PM to 5:45 PM	0	0	0	0	0	0	1	0	0	0	1	0	0	2	3	0	7
5:00 PM to 6:00 PM	0	0	0	1	0	0	1	0	0	0	3	0	0	2	3	0	10

TEL: (510) 232 - 1271

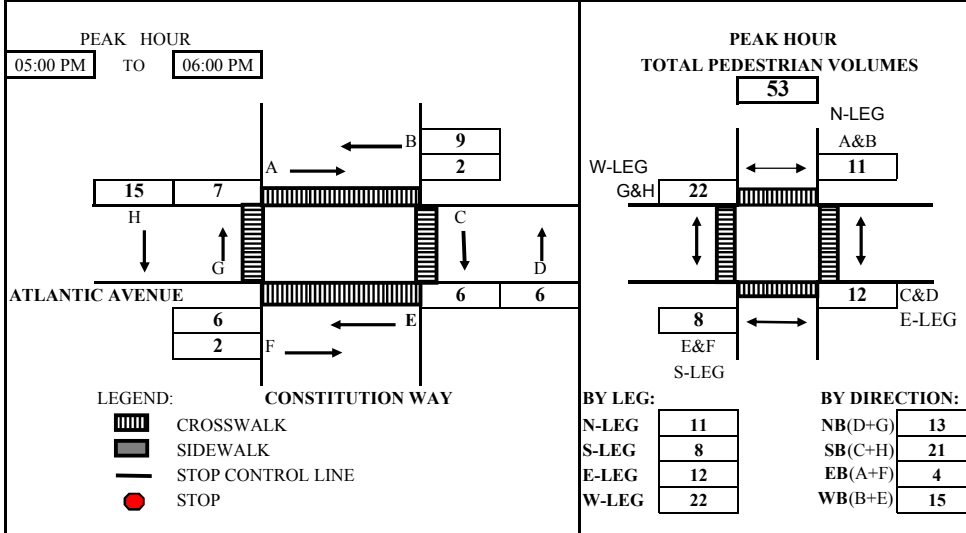
FAX: (510) 232 - 1272

5:00 PM to 6:00 PM					
APPROACH VOLUME	NB	SB	EB	WB	TOTAL
BICYCLE	1	1	3	5	10

B.A.Y.M.E.T.R.I.C.S.

PEDESTRIAN MOVEMENT SUMMARY

PROJECT: TRAFFIC COUNTS IN ALAMEDA (ON-CALL # 9)	SURVEY DATE: 10/22/2015
N-S APPROACH: CONSTITUTION WAY	DAY: THURSDAY
E-W APPROACH: ATLANTIC AVENUE	JURISDICTION: ALAMEDA
SURVEY PERIOD 4:00 PM TO 6:00 PM	FILE: 3510120-2PM



TIME PERIOD		NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL
From	To	A	B	C	D	E	F	G	H	

SURVEY DATA											
04:00 PM	---	04:15 PM	4	3	5	4	1	3	3	2	25
04:15 PM	---	04:30 PM	5	3	6	4	1	4	4	3	30
04:30 PM	---	04:45 PM	5	3	7	5	3	6	7	6	42
04:45 PM	---	05:00 PM	5	3	7	6	5	6	7	7	46
05:00 PM	---	05:15 PM	5	8	7	9	6	6	7	10	58
05:15 PM	---	05:30 PM	6	11	9	9	9	6	10	13	73
05:30 PM	---	05:45 PM	6	11	10	10	9	7	13	16	82
05:45 PM	---	06:00 PM	7	12	13	12	11	8	14	22	99

TOTAL BY PERIOD											
04:00 PM	---	04:15 PM	4	3	5	4	1	3	3	2	25
04:15 PM	---	04:30 PM	1	0	1	0	0	1	1	1	5
04:30 PM	---	04:45 PM	0	0	1	1	2	2	3	3	12
04:45 PM	---	05:00 PM	0	0	0	1	2	0	0	1	4
05:00 PM	---	05:15 PM	0	5	0	3	1	0	0	3	12
05:15 PM	---	05:30 PM	1	3	2	0	3	0	3	3	15
05:30 PM	---	05:45 PM	0	0	1	1	0	1	3	3	9
05:45 PM	---	06:00 PM	1	1	3	2	2	1	1	6	17

HOURLY TOTALS											
04:00 PM	---	05:00 PM	5	3	7	6	5	6	7	7	46
04:15 PM	---	05:15 PM	1	5	2	5	5	3	4	8	33
04:30 PM	---	05:30 PM	1	8	3	5	8	2	6	10	43
04:45 PM	---	05:45 PM	1	8	3	5	6	1	6	10	40
05:00 PM	---	06:00 PM	2	9	6	6	6	2	7	15	53

Tel : (510) 232-1271

Fax: (510) 232-1272

12:00 AM to 12:00 AM					
VOLUME BY DIRECTION	NB	SB	EB	WB	TOTAL
PEDESTRIAN	13	21	4	15	53
VOLUME BY LEG	N-LEG	S-LEG	E-LEG	W-LEG	TOTAL
PEDESTRIAN	11	8	12	22	53