

# **Pedestrian Study**

Qualitative Assessment  
Pedestrian Volume Count

**SR A1A at 3rd Street South (Flagler Beach Pier)**

FLAGLER COUNTY  
SECTION 73030  
MP 3.890 to MP 3.942

Prepared for:

**THE FLORIDA DEPARTMENT OF TRANSPORTATION  
DISTRICT 5 TRAFFIC OPERATIONS**

719 South Woodland Boulevard  
DeLand, Florida 32720



Districtwide Community Traffic Safety Program  
Financial Project No. 237995-1-32-09  
Contract Number: C-8T80  
Consultant No.: 382.15.6  
Task Work Order No.: 15.6

Prepared by:

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A handwritten signature in blue ink that reads "Richard S. Jardim". The signature is written in a cursive style with some stars interspersed between the letters.

December 2014

Engineer of Record: Richard S. Jardim  
P.E. No. 60127

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## EXECUTIVE SUMMARY

**Faller, Davis & Associates, Inc. (FDA)** conducted a pedestrian study at the intersection of SR A1A and 3<sup>rd</sup> Street South (Flagler Beach Pier) in Flagler Beach, Flagler County, Florida. Based on the results of the analysis, field observations, and engineering judgment, the following recommendations and conclusions were developed:

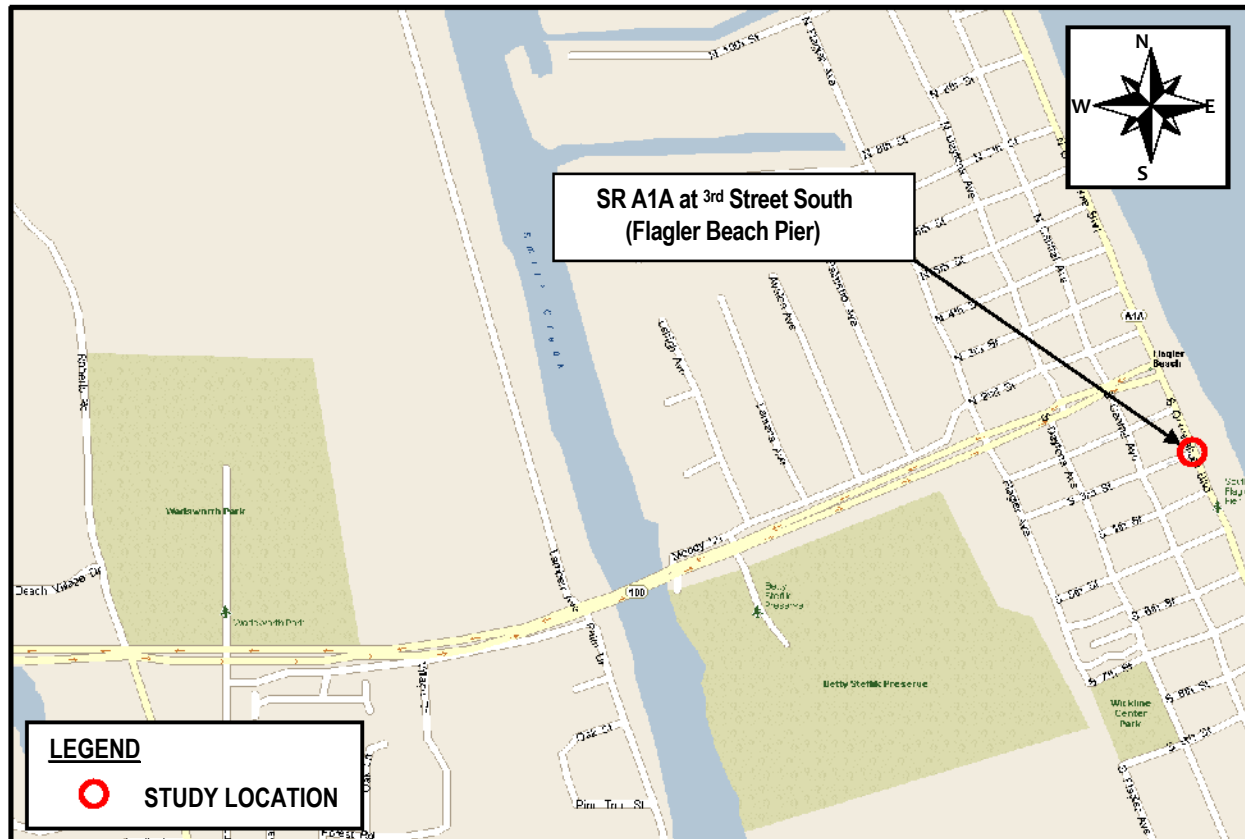
1. A curb bulb-out should be constructed on the northwest corner of the intersection. A trench drain with a pedestrian safe cast iron grate should be installed between the existing curb line and the proposed curb bulb-out to maintain existing drainage.
2. The existing crosswalk should be re-striped with special emphasis markings per Index 17346.
3. The northbound advance pedestrian warning sign assembly should be relocated.
4. The existing southbound pedestrian warning sign assembly should be removed, and a new sign assembly should be installed in the proposed bulb-out. The southbound yellow flashing beacon should be relocated to the proposed pedestrian warning sign assembly.
5. A fully actuated pedestrian signal is not recommended since the pedestrian volumes do not meet the requirements of Warrant 4.
6. A pedestrian hybrid beacon was considered for the crosswalk; however, since the crosswalk is located at an intersection, a pedestrian hybrid beacon should not be installed.
7. Rectangular rapid flashing beacons (RRFB) were considered. However, since the pedestrian crossing volume is significant, the RRFB would likely receive constant actuations and operate similarly to the existing flashing beacons.

Additional recommendations are included at the end of the report.

## 1. INTRODUCTION

The Florida Department of Transportation has retained FDA to perform a pedestrian study at the intersection of SR A1A and 3rd Street South (Flagler Beach Pier) in Flagler Beach, Flagler County, Florida. The analysis methods used in conducting this study are consistent with those set forth in the Manual on Uniform Traffic Control Devices (MUTCD 2009), the Manual on Uniform Traffic Studies (MUTS 2000), the Traffic Engineering Manual (TEM 2014), and FDOT District 5 guidelines and procedures.

Figure 1-Project Location Map



## 2. EXISTING CONDITIONS

The intersection of SR A1A and 3<sup>rd</sup> Street South (Flagler Beach Pier) is located in Flagler Beach, Flagler County, Florida. Significant features for the study location are summarized below:

**Table 1-Summary of Existing Conditions**

Feature	Description
<b>Project Limits</b>	<ul style="list-style-type: none"><li>• SR A1A at 3<sup>rd</sup> Street South (Flagler Beach Pier)</li></ul>
<b>Area Location</b>	<ul style="list-style-type: none"><li>• The study location is located approximately 500 feet south of SR 100 (Moody Boulevard) and is adjacent to the Atlantic Ocean.</li></ul>
<b>SR A1A</b>	<ul style="list-style-type: none"><li>• The typical section of SR A1A consists of: Southbound: A 7-foot wide parking lane, a 12-foot wide through lane, curb, and a closed drainage system. Northbound: An 8-foot paved shoulder, a 12-foot wide through lane, and a closed drainage system. Angled parking spaces are located adjacent to the paved shoulder.</li><li>• The posted speed limit on SR A1A is 30 mph throughout the study limits.</li></ul>
<b>Signalized Intersections</b>	<ul style="list-style-type: none"><li>• A traffic signal is located at SR 100, 500 feet north of the study location.</li></ul>
<b>Pedestrian Generators</b>	<ul style="list-style-type: none"><li>• Flagler Beach</li><li>• Flagler Beach Pier</li><li>• Wacky Pelican Restaurant</li><li>• Local businesses</li><li>• Bank</li></ul>
<b>Sidewalks</b>	<ul style="list-style-type: none"><li>• A 5-foot wide sidewalk is located on the west side of SR A1A. A 5-foot wide sidewalk is located on the east side of SR A1A north of 3<sup>rd</sup> Street South, and a 6-foot wide boardwalk is located on the east side of SR A1A south of 3<sup>rd</sup> Street South.</li></ul>
<b>Street Lighting</b>	<ul style="list-style-type: none"><li>• There is a mixture of conventional and decorative street lighting along the west side of SR A1A and conventional street lighting along the east side of SR A1A.</li></ul>
<b>Other Distinct Features</b>	<ul style="list-style-type: none"><li>• The Flagler Beach Pier and beach access are located on the east side of the study location.</li></ul>

## Pedestrian Volumes

A four-hour pedestrian/bicycle count was conducted within the study limits from 10:00 AM to 2:00 PM on Saturday, August 23<sup>rd</sup>, 2014. The count included recording pedestrians and bicyclists traveling along and crossing SR A1A. Table 2 summarizes the counts for the entire corridor.

**Table 2-Pedestrian/Bicycle Movement Summary (4 Hours)**

Statistic	Traveling on West Side of SR A1A	Traveling on East Side of SR A1A	Total	Crossing SR A1A
<b>Total Pedestrian Movements</b>	347	34	381	452
<b>Pedestrian Movements per Hour (PMpH)</b>	87	9	96	113
<b>Corridor Length (mi)</b>	0.052	0.052	0.052	0.052
<b>Number of 300 foot long sections</b>	0.9	0.9	0.9	0.9
<b>PMpH per 300 foot section</b>	97	10	107	126
<b>Total Bicycle Movements</b>	26	14	40	10
<b>Bicycle Movements per Hour (BMpH)</b>	7	4	11	3
<b>Corridor Length (mi)</b>	0.052	0.052	0.052	0.052
<b>Number of 300 foot long sections</b>	0.9	0.9	0.9	0.9
<b>BMpH per 300 foot section</b>	8	4	12	3
<b>Total Pedestrian and Bicycle Movements</b>	373	48	421	462
<b>Pedestrian/Bicycle Movements per Hour (PBMpH)</b>	94	13	107	116
<b>PBMpH per 300 foot section</b>	105	14	119	129

Note: A 300-foot long section was selected based on the Plans Preparation Manual (PPM) criteria that alternative crossing locations must be at least 300 feet from mid-block crosswalks.

A four-hour pedestrian/bicycle count summary is included in the appendix of the report. The pedestrian/bicycle crossing locations are shown in detail in Figure 2.

## Collision Data

Pedestrian and bicycle safety along the corridor are assessed through review of crash reports, identification of significant crash trends, then correlation to field conditions. Following are the observations relating to the safety of the corridor:

A review of FDOT Collision Analysis Reporting System (CARS) and Signal Four Analytics data found one reported bicycle-related collision within the study limits during the five year period ending December 2013. The crash occurred when a northbound bicyclist, riding on the sidewalk, struck the side of a vehicle exiting the bank drive-through. The collision resulted in one injury and occurred during the day on a dry roadway.

- One additional pedestrian crash was reported just south of the study intersection at 4<sup>th</sup> Street South. The crash occurred when a northbound motorist drove around a northbound left turning motorcycle and onto the east paved shoulder striking a pedestrian. The collision resulted in one injury and occurred during the day on a dry roadway.







$1410113^1$ 





N44:11404-  
1



ion.414



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CONTROLLER CABINET S/W SIDEWALK  
TRAFFIC SIGNAL POLE -0 POWER POLE  
SIGNAL s/p C LIGHT POLE  
SIGN HYDRANT

B/W BOARDWALK

n YELLOW FLASHING

6-4 BEACON

PAGE  
NO.

TREE/SHRUB  
DRAINAGE INLET

-X-X- FENCE

BENCH

OBSERVED PED  
MOVEMENT

4 HR PED VOLUME

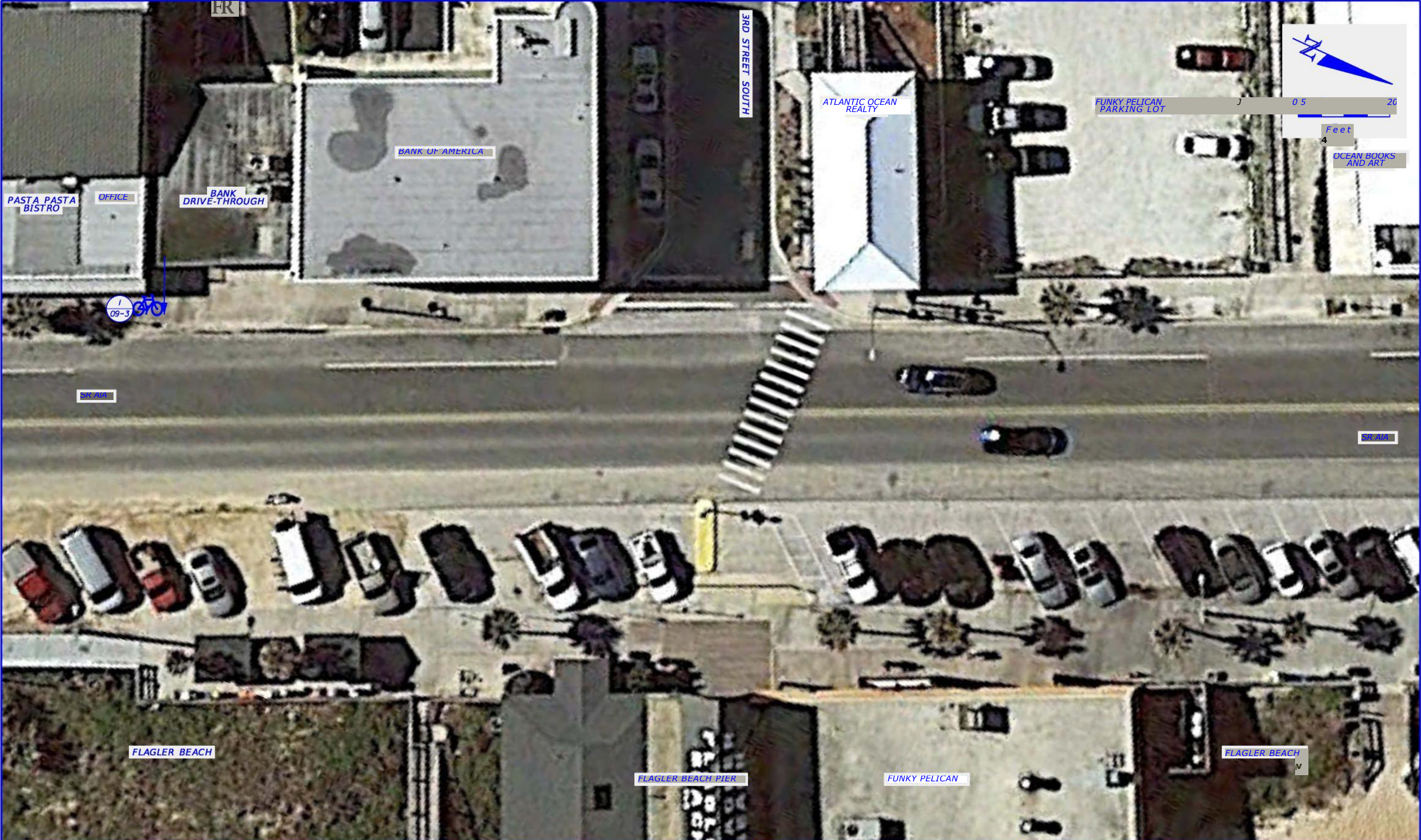
FALLER, DAVIS, & ASSOCIATES, INC.  
258 SOUTHHALL LANE  
SUITE 210  
MAITLAND, FL 32751

FIGURE 3  
4-HR PEDESTRIAN CROSSING VOLUME  
DISTRICTWIDE COMMUNITY  
TRAFFIC SAFETY PROGRAM

ocobo12/10/20149:02:45 AMZ:\362.00 D5 CTSP 2009\Work Order 15\TW0 15.6\DGNS\condition-collision-4 hour ped20.do







<p><b>SYMBOLS:</b></p> <p><b>CRASH NUMBER</b> 208-04-3</p> <p><b>INJURY SEVERITY</b></p> <p>YEAR 1=NO INJURY 2=POSSIBLE INJURY 3=NON-INCAPACITATING 4=INCAPACITATING 5=FATALITY</p> <p><b>BACK REAR END</b></p> <p><b>SIDESWIPE</b></p> <p><b>OUT OF CONTROL</b></p> <p><b>BACKED INTO</b></p>	<p><b>RIGHT TURN</b></p> <p><b>LEFT TURN</b></p> <p><b>HIT PEDESTRIAN</b></p> <p><b>OVERTURNED</b></p> <p><b>I ANGLE</b></p> <p><b>HEAD ON</b></p> <p><b>HIT WALL</b></p>	<p><b>HIT BIKE</b></p> <p><b>HIT SIGN</b></p> <p><b>HIT UTILITY POLE</b></p> <p><b>HIT DITCH</b></p>	<p><b>FALLER, DAVIS, &amp; ASSOCIATES, INC.</b> 258 SOUTHBALL LANE SUITE 210 MAITLAND, FL 32751</p>	<p><b>FIGURE 4</b> <b>PEDESTRIAN/BICYCLE COLLISION DIAGRAM</b> <b>DISTRICTWIDE COMMUNITY</b> <b>TRAFFIC SAFETY PROGRAM</b></p>	<p><b>PAGE NO.</b></p> <p><b>7</b></p>
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**Table 3**  
**PEDESTRIAN/BICYCLE COLLISION SUMMARY**

Section: 73030000  
State Road: SR A1A  
Intersecting Roadway 3rd Street South (Flagler Beach Pier)  
Source Data: CARS Data and Signal Four Analytics

County: Flagler  
City: Flagler Beach

Study Period From 1/1/2009 to 12/31/2013 60 Months

No.	HSMV No.	Mile Point	Date	Day	Time	Driver 1 Age	Alcohol Involved	Lighting Condition	Roadway Surface	Weather	Vehicle 1 Direction	Vehicle 2 Direction	Number of Fatalities	Number of Injuries	Harmful Event	Contributing Cause
1	709371560	3.895	12/17/09	Thursday	9:11	42	None	Daylight	Dry	Clear	E	N	0	1	Bike	FTYRW
<b>SUMMARY</b>																
<b>INJURIES</b>			<b>LIGHTING</b>					<b>ROADWAY CONDITION</b>			<b>HARMFUL EVENT</b>					
Total Number of Crashes	Total Number of Fatalities	Total Number of Injuries	Daylight	Dark (SL)	Dark (No SL)	Dusk	Dawn	Wet	Dry	Rear End	Head-On	Angle	Left Turn	Right Turn	Sideswipe	Backed Into
1	0	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0
100%	N/A	N/A	100%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%
<b>HARMFUL EVENT</b>																
Parked Car	Coll W/MV On Road	Pedestrian	Bike	Bike (Bike Lane)	Moped	Train	Animal	Hit Sign/Sign Post	Hit Guardrail	Hit Utility Pole	Hit Fence	Hit Concrete Barrier Wall	Hit Br/Pier/Abutt	Hit Tree/Shrub	Hit Construction Barricd/SignBr/ Pier/Abutt	Traffic Gate
0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
<b>HARMFUL EVENT</b>																
Crash Attenuator	Fixed Object Above Road	Other Fixed Object	Moveable Object	Ran Into Ditch/Culver	Ran Off Rd Into Water	Overturned	Occupant Fell From Vehicle	Trac/Trail Jackknifed	Fire	Explosion	Downhill Runaway	Cargo Loss or Shift	Separation of Units	Median Crossover	All Other	Unknown/Not Coded
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
<b>CONTRIBUTING CAUSES</b>																
No Improper Driving	Careless Driving	FTYRW	Improper Backing	Improper Lane	Improper Turn	Alcohol-Under Influence	Drugs-Under Influence	Alcohol/Drugs- Under Influence	Followed Too Closely	Disregarded Traffic Signal	Exceeded Safe Speed Limit	Disregarded Stop Sign	Failed to Maintain Equipment	Improper Passing	Drove Left of Center	Exceeded Stated Safe Speed Limit
0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Obstructing Traffic	Improper Load	Disregarded Other Traffic Control	Driving Wrong Side/Way	Fleeing Police	Vehicle Modified	Driver Distraction	All Other	Unknown/Not Coded								
0	0	0	0	0	0	0	0	0								
0%	0%	0%	0%	0%	0%	0%	0%	0%								



### 3. PEDESTRIAN OPERATIONS

The intersection of SR A1A and 3<sup>rd</sup> Street South (Flagler Beach Pier) was reviewed by a registered professional engineer from 9:30 to 11:00 AM on Saturday, August 23<sup>rd</sup>, 2014 to evaluate pedestrian and bicycle operations. The field review was conducted in fair weather conditions.

- SR A1A is a two lane undivided minor arterial roadway with on-street parking on the west side of SR A1A and angled parking spaces on the east side of SR A1A, adjacent to the shoulder. The alignment within the study corridor is straight and level.
- Per count station 731001, located south of the study corridor, traffic volumes on SR A1A are moderate with an Average Annual Daily Traffic of 8,800 vehicles per day. Heavy vehicles comprise 3.3% of the traffic on SR A1A.
  - The count station indicated that traffic volumes on SR A1A are moderate within the study corridor from 10:00 AM to 2:00 PM, averaging 327 vehicles per hour (vph) northbound and 309 vph southbound.
- The west approach, 3<sup>rd</sup> Street South, is a single lane one-way road. Eastbound movements are prohibited, and only northbound left turn and southbound right turn movements are allowed. No conflicts were observed between southbound right turning vehicles, northbound left turning vehicles, and pedestrians.
- There are marked crosswalks across the west and north approaches of the intersection.
  - The west approach crosswalk consists of stamped asphalt with longitudinal pavement marking lines on both edges of the stamped asphalt. The pavement markings are in fair condition.
  - The north approach crosswalk consists of special emphasis pavement markings supplemented by W11-2/W16-7P pedestrian warning signs with non-actuated yellow flashing beacons and W11-2/W16-9P advance pedestrian warning signs on the north and south approaches to the intersection. The crosswalk length is approximately 44 feet, and it extends from 3<sup>rd</sup> Street South across SR A1A at a diagonal, ending at a flat concrete walkway which leads to the restaurant, beach, and pier.
- Pedestrian and bicycle traffic was significant during the 4-hour count period, with 833 pedestrian/bicyclist movements recorded within the study limits; of those, 462 pedestrian/bicyclist movements were across SR A1A.
- Based on the pedestrian/bicycle counts conducted within the study limits, there were a total of 119 PBMpH traveling along SR A1A per 300 foot long section.
- Groups of pedestrians (maximum group size of 7 pedestrians) were observed crossing the north approach of SR A1A throughout the observation period. A majority of these pedestrians originated from parking lots and on-street parking north and west of 3<sup>rd</sup> Avenue South and traveled south before crossing the north approach of the intersection with final destinations being the beach, Flagler Beach Pier, and the Funky Pelican restaurant. This pattern was also observed in the opposite direction, with pedestrians crossing the north approach of SR A1A, from the east, then traveling north to on-street parking and parking lots.

- Most pedestrians traveling along SR A1A were observed to walk on the sidewalk or the boardwalk.
- A majority of pedestrians were observed to utilize the crosswalk to cross SR A1A. Motorist compliance of the marked crosswalk and warning signs was observed to be good as they typically stopped to allow pedestrians to cross the road. No conflicts were observed between vehicles and pedestrians at the crosswalk.
- Some pedestrians were observed to cross SR A1A outside of the marked crosswalk. These pedestrians would cross when a traffic gap was available. Approaching motorists typically stopped to allow pedestrians to complete their crossings. No conflicts were observed.
- Some pedestrians were observed to run across SR A1A if a vehicle approached during their crossing. No conflicts were observed.
- At the time of the field review, approximately 10 parking spaces along northbound SR A1A, south of the crosswalk, were occupied as a construction staging area for Flagler Beach Pier pile replacements. Most of these spaces were for city vehicles. All other available northbound parking was occupied.
- All available on-street parking on southbound SR A1A was occupied during the field review.
- Southbound on-street parking ends approximately 30 feet north of the pedestrian crossing, which exceeds the 20 foot minimum requirement from Index 17346 (12 of 14).
- Vehicles parked within the on-street parking were observed to restrict the line of sight for eastbound pedestrians entering the crosswalk and southbound motorists approaching the crosswalk. Eastbound pedestrians do not achieve an adequate line of sight until they have entered approximately 10 feet into the crosswalk. Per Plans Preparation Manual Chapter 8, adequate sight distance shall be provided for both the pedestrian and motorists per PPM Table 2.7.1, Minimum Stopping Sight Distance. Per Table 2.7.1, the minimum stopping sight distance for a 30 mph speed limit is 200 feet. The existing southbound stopping sight distance from the curb is estimated to be 80 feet due to on-street parking. Sight distance can be improved via the construction of a curb bulb-out on the northwest corner of the intersection. The bulb-out will also provide a traffic calming feature on southbound SR A1A approaching the crosswalk. Consideration was given to re-aligning the crosswalk to be perpendicular to SR A1A; however, it is likely that pedestrians would still cross at a diagonal to the pier, as this is the primary destination for pedestrians.



Eastbound sight line to southbound A1A from curb ramp



Eastbound sight line to southbound A1A from crosswalk



- The crosswalk for 3<sup>rd</sup> Street South was analyzed to determine if the pedestrian and vehicle volumes meet the requirements of Warrant 4, Pedestrian Volume (MUTCD 2009). The vehicle volumes from count station 731001 and the pedestrian hourly volumes were used in the analysis. Based on the results of the analysis, the pedestrian volumes do not meet the warrant requirements for the crosswalk at 3<sup>rd</sup> Street South (Flagler Beach Pier). As such, a fully actuated pedestrian signal is not recommended.

The signal warrant work sheets, pedestrian volume summary, and count station traffic volume summary are included in the appendix.

- A pedestrian hybrid beacon was considered. According to the MUTCD 2009, a pedestrian hybrid beacon may be considered for installation to facilitate pedestrian crossings at a location that does not meet traffic signal warrants, or at a location that meets traffic signal warrants, but a decision is made to not install a traffic control signal. Pedestrian hybrid beacons should not be used at intersections.

The pedestrian volumes do not meet the traffic signal warrants. However, the pedestrian crossing is located at an intersection; therefore, a pedestrian hybrid beacon should not be installed at this location.

- Rectangular rapid flashing beacons (RRFB) were considered. However, due to the significant volume of pedestrians, the RRFB would likely receive constant actuations and operate similarly to the existing flashing beacons.

## 4. RECOMMENDATIONS

Based on the results of the analysis, field observations, and engineering judgment, the following recommendations were developed:

1. Construct a curb bulb-out on the northwest corner of the intersection.
  - a. Install a trench drain with a pedestrian safe cast iron grate between the existing curb line and the proposed curb bulb-out to maintain existing drainage.
2. Re-stripe existing crosswalk with special emphasis markings per Index 17346.
3. Relocate the northbound advance pedestrian warning sign assembly.
4. Remove the existing southbound pedestrian warning sign assembly and install a new sign assembly in the proposed bulb out. Relocate the southbound yellow flashing beacon to the proposed pedestrian warning sign assembly.
5. A fully actuated pedestrian signal is not recommended as the pedestrian volumes do not meet the requirements of Warrant 4.
6. A pedestrian hybrid beacon was considered for the crosswalk; however, since the crosswalk is located at an intersection, a pedestrian hybrid beacon should not be installed.
7. Rectangular rapid flashing beacons (RRFB) were considered. However, since the pedestrian crossing volume is significant, the RRFB would likely receive constant actuations and operate similarly to the existing flashing beacons.

A conceptual improvement diagram has been developed to further depict the recommended improvements and is included on the following page.





<div><div><div></div><div>CONTROLLER CABINET</div></div><div><div></div><div>TRAFFIC SIGNAL POLE</div></div><div><div></div><div>SIGNAL HEAD</div></div><div><div></div><div>SIGN</div></div></div> <div><div><div></div><div>S/W SIDEWALK</div></div><div><div></div><div>POWER POLE</div></div><div><div></div><div>LIGHT POLE</div></div><div><div></div><div>HYDRANT</div></div></div> <div><div><div></div><div>DITCH BOTTOM INLET</div></div><div><div></div><div>MANHOLE</div></div><div><div></div><div>MITERED END SECTION</div></div><div><div></div><div>DRAINAGE INLET</div></div></div> <div><div><div></div><div>FENCE</div></div><div><div></div><div>BENCH</div></div><div><div></div><div>OBSERVED PED MOVEMENT</div></div><div><div></div><div>4 HR PED VOLUME</div></div></div>	<div>FALLER, DAVIS, &amp; ASSOCIATES, INC.</div> <div>258 SOUTHWALL LANE</div> <div>SUITE 210</div> <div>MAITLAND, FL 32751</div>	<div>FIGURE 5</div> <div>CONCEPTUAL IMPROVEMENT DIAGRAM</div> <div>DISTRICTWIDE COMMUNITY</div> <div>TRAFFIC SAFETY PROGRAM</div>	<div>PAGE NO.</div> <div>13</div>
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## APPENDIX

## North Approach Photographs



Looking north along SR MA from the intersection



Looking south along SR MA into the intersection



## South Approach Photographs



Looking south along SR MA from the intersection



Looking north along SR MA into the intersection

## West Approach Photographs



Looking west along 3rd Street South (Flagler Beach Pier) from the intersection



Looking east along 3rd Street South (Flagler Beach Pier) into the intersection

FDOT Florida Traffic Online (2013)

COUNT STATION 731001 ON SR-A1A, 0.3 MI. S OF SR-100 (5/28/2013)											COUNT STATION 731001 ON SR-A1A, 0.3 MI. S OF SR-100 (5/29/2013)												
TIME	NORTHBOUND					SOUTHBOUND					N/S TOTAL	NORTHBOUND					SOUTHBOUND					N/S TOTAL	AVERAGE
	1ST	2ND	3RD	4TH	TOTAL	1ST	2ND	3RD	4TH	TOTAL		1ST	2ND	3RD	4TH	TOTAL	1ST	2ND	3RD	4TH	TOTAL		
0	0	4	3	2	9	5	4	0	7	16	25	2	6	0	1	9	7	6	6	6	25	34	30
100	1	1	3	3	8	1	1	3	8	13	21	7	2	1	2	12	2	3	1	1	7	19	20
200	5	2	1	4	12	2	2	1	3	8	20	1	1	1	3	6	1	1	2	1	5	11	16
300	4	2	7	1	14	2	6	2	0	10	24	4	2	3	3	12	3	2	0	1	6	18	21
400	8	6	7	12	33	7	2	2	3	14	47	3	6	6	10	25	1	4	0	2	7	32	40
500	7	13	26	20	66	1	2	5	9	17	83	8	11	19	15	53	4	1	5	10	20	73	78
600	24	28	48	57	157	11	15	22	35	83	240	22	40	42	56	160	5	15	19	23	62	222	231
700	55	55	79	71	260	34	35	45	40	154	414	63	64	80	61	268	30	36	41	51	158	426	420
800	70	67	79	75	291	58	45	58	52	213	504	72	75	94	84	325	62	43	66	53	224	549	527
900	63	83	78	70	294	54	60	73	72	259	553	75	59	78	77	289	61	61	51	53	226	515	534
1000	77	73	70	75	295	57	75	63	69	264	559	75	81	82	63	301	55	56	61	73	245	546	553
1100	84	69	90	59	302	66	85	75	88	314	616	83	80	91	79	333	65	85	70	95	315	648	632
1200	85	88	81	92	346	87	76	75	89	327	673	82	81	85	82	330	80	78	90	90	338	668	671
1300	96	91	81	97	365	86	100	87	70	343	708	85	95	93	74	347	98	74	88	69	329	676	692
1400	67	88	78	75	308	101	77	97	87	362	670	95	95	92	72	354	82	74	88	89	333	687	679
1500	77	82	77	80	316	75	82	84	107	348	664	87	81	79	72	319	78	95	99	103	375	694	679
1600	60	82	84	77	303	111	100	96	83	390	693	64	77	79	68	288	94	94	91	108	387	675	684
1700	91	60	76	62	289	98	112	81	101	392	681	70	77	57	62	266	107	104	110	103	424	690	686
1800	56	76	37	54	223	73	78	71	72	294	517	69	74	64	66	273	94	87	60	73	314	587	552
1900	54	56	45	45	200	71	53	54	50	228	428	58	57	70	54	239	67	52	60	63	242	481	455
2000	48	48	40	32	168	44	42	43	49	178	346	71	44	38	42	195	49	69	56	38	212	407	377
2100	30	21	25	18	94	33	37	22	19	111	205	34	28	20	31	113	25	35	41	30	131	244	225
2200	26	15	11	9	61	18	24	12	8	62	123	21	16	7	14	58	30	21	16	12	79	137	130
2300	12	8	10	4	34	14	10	12	3	39	73	10	10	12	8	40	12	9	4	1	26	66	70

Total Volume (24 Hrs) 8,996



# TRAFFIC SIGNAL WARRANT SUMMARY

City: Flagler Beach  
County: Flagler

Engineer: RSJ  
Date: September 12, 2014

Major Street: SR A1A  
Minor Street: 3rd Street South (Flagler Beach Pier)

Lanes: 1  
Lanes: 1

Critical Approach Speed: 30

## Volume Level Criteria

1. Is the critical speed of major street traffic > 70 km/h (40 mph) ?
2. Is the intersection in a built-up area of isolated community of <10,000 population?

☐ Yes

☐ Yes

If Question 1 or 2 above is answered "Yes", then use "70%" volume level

☐ 70% • 100%

## WARRANT 4A - PEDESTRIAN FOUR-HOUR VOLUME

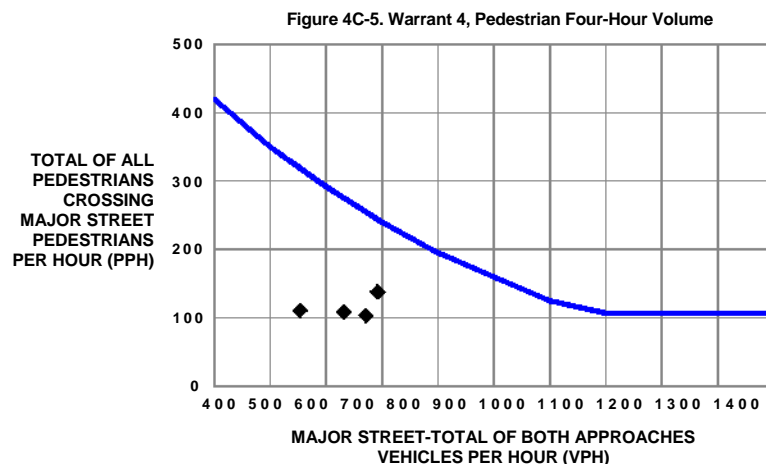
If Condition 1 is satisfied and any four points lie above the appropriate line, then the warrant is satisfied.

Applicable: • Yes ☐ No  
Satisfied: ☐ Yes • No

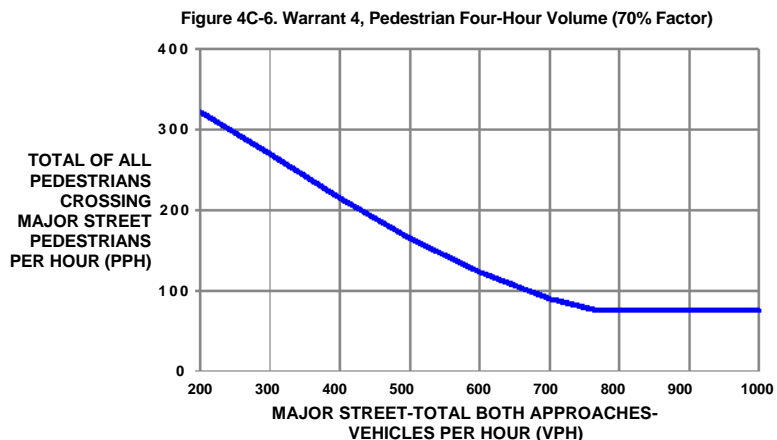
**Condition 1:** The nearest signal or stop controlled intersection along the street that the pedestrians desire to cross is more than 300 feet away, or the nearest signal or stop controlled intersection along the street that the pedestrians desire to cross is within 300 feet, but the proposed traffic signal will not restrict the progressive movement of traffic.

• Yes ☐ No

Warranting Volumes			Met	
Hour	Major Street	Peds Crossing Major St	100%	70%
1000	553	111		
1100	632	109		
1200	671	104		
1300	692	138		
Satisfied			N	



\*Note: 107 pph applies as the lower threshold volume



\*Note: 75 pph applies as lower threshold volume.

# TRAFFIC SIGNAL WARRANT SUMMARY

City: Flagler Beach  
County: Flagler

Engineer: RSJ  
Date: September 12, 2014

Major Street: SR A1A  
Minor Street: 3rd Street South (Flagler Beach Pier)

Lanes: 1  
Lanes: 1

Critical Approach Speed: 30

## Volume Level Criteria

1. Is the critical speed of major street traffic > 70 km/h (40 mph) ?

☐ Yes

☒ No

If Question 1 or 2 above is answered "Yes", then use "70%" volume level

☐ 70% ☒ 100%

## WARRANT 4B - PEDESTRIAN PEAK HOUR

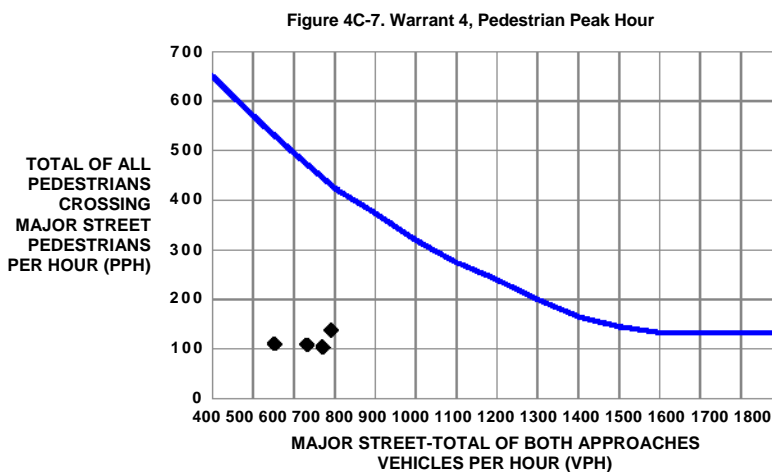
If Condition 1 is satisfied and any of the plotted points lie above the appropriate line, then the warrant is satisfied.

**Condition 1:** The nearest signal or stop controlled intersection along the street that the pedestrians desire to cross is more than 300 feet away, or the nearest signal or stop controlled intersection along the street that the pedestrians desire to cross is within 300 feet, but the proposed traffic signal will not restrict the progressive movement of traffic.

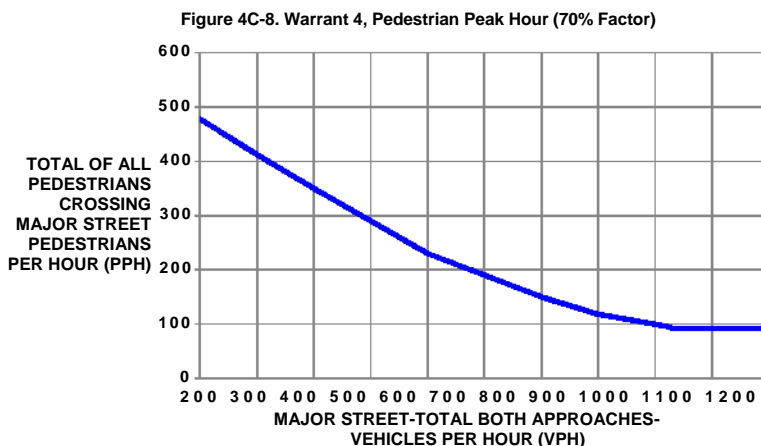
Applicable: ☒ Yes ☐ No  
Satisfied: ☒ Yes ☐ No

☒ Yes ☐ No

Warranting Volumes			Met	
Hour	Major Street	Peds Crossing Major St	100%	70%
1000	553	111		
1100	632	109		
1200	671	104		
1300	692	138		
Satisfied			N	



\*Note: 133 pph applies as the lower threshold volume



\*Note: 93 pph applies as lower threshold volume.

Pedestrian/Bicycle Movement Summary  
 Section: 73030  
 Mile Post: From 3.890 to 3.942  
 Date: August 23rd, 2014

State Road: A1A  
 Observer: KLC  
 Time: 10:00 -14:00  
 Weather: Fair



From MP 3.890 to MP 3.942

Time	Traveling on West Side of SR A1A				Traveling on East Side of SR A1A				Crossing from the West Heading East		Crossing from the East Heading West		Time	Traveling on West Side of SR A1A				Traveling on East Side of SR A1A				Crossing from the West Heading East		Crossing from the East Heading West		
	Traveling North		Traveling South		Traveling North		Traveling South							Traveling North		Traveling South										
	Ped	Bike	Ped	Bike	Ped	Bike	Ped	Bike	Ped	Bike	Ped	Bike		Ped	Bike	Ped	Bike	Ped	Bike	Ped	Bike	Ped	Bike	Ped	Bike	
10:00-10:15	15	2	19		20		20		19	0	20	0	12:00-12:15	6	0	19		10		10	0	21		19	0	
10:15-10:30	5	3	17			12	10		0	15	0	11	0	12:15-12:30	13	0	3		11	0	3	0	6	0	14	0
10:30-10:45		8	19		1		3	20		12	0	14	1	12:30-12:45	10	0	20	20		0	20		11	0	12	0
10:45-11:00	5	0	3		1		11	0	7	0	11	1	12:45-13:00	10			17	20		20		13	0	17	0	
11:00-11:15	6	0	11	20			14	1	15	0	19	1	13:00-13:15	10	0	18		12	0	11		18	1	12	0	
11:15-11:30	18	0			12				15	1	11	0	13:15-13:30	14	0	16	0	0		11	0	13	2	16	1	
11:30-11:45	6	0	16	20		0	0	0	15	0	9	0	13:30-13:45	13	0	17	0	0		10	0	32	0	12	0	
11:45-12:00	9	0	5	0	0		10	0	7	0	16	0	13:45-14:00	9	0	9		10	0		10	8	0	22	1	
Subtotal	72	6	81	11	8	8	11	2	105	1	111	3	Subtotal	85	1	109		85	3	10	1	122	4	114	2	
Total	78		92		16		13		106		114		Total	86		117		8		11		126		116		