



Ref: 11063

TECHNICAL MEMORANDUM

To: Mr. Michael Sanders, P.E.
From: Chris J. Walsh, P.E.
Subject: RRFB Assessment – State Road A1A Midblock Crosswalks
Indialantic, Florida
Date: October 31, 2017

Under FPID# 439512-1-32-01, 12 midblock crosswalks are being designed along State Road A1A from US 192 to approximately 500 feet north of Golden Bear Boulevard in Indialantic (Brevard County), Florida. The midblock crosswalk locations were identified in the Pedestrian Safety Study for State Road A1A from US 192 to State Road 518 (May 2015) and the Pedestrian Safety Study for State Road A1A from just north of State Road 518 to Volunteer Way (August 2016). However, because these two (2) studies did not include bicycle/pedestrian volume crossing data, supplemental devices such as Rectangular Rapid Flashing Beacons (RRFB's) were not identified for any of the locations. This memorandum provides additional assessment of seven (7) of the midblock locations to determine if RRFB's are recommended for installation.

It should be noted that Crossing Location #6 was previously north of Del Flora adjacent to undeveloped property on the west side of State Road A1A. However, since the completion of this study, new development has been constructed on the west side of State Road A1A immediately adjacent to the proposed crosswalk location (thus, the refuge island would impede vehicular access to the new development). Therefore, it is recommended to relocate proposed crossing location #6 to approximately 150' south of Ocean Oaks Drive as shown in the attachment.

For the purposes of this supplemental assessment, 8-hour pedestrian/bicycle crossing volumes were obtained on a typical Friday and Saturday at seven (7) of the locations expected to have the heaviest usage. Those locations are summarized below (See proposed crosswalk location Figures from the respective studies as attached):

Pedestrian Safety Study for State Road A1A from US 192 to State Road 518 (May 2015)

- South of 2nd Avenue (Crossing Location #1)
- North of Watson Drive (Crossing Location #2)
- North of Boskind Drive (Crossing Location #5)
- North of Terrace Shores Drive (Crossing Location #7)
- North of Poinsetta Street (Crossing Location #9)
- South of Ocean Oaks Drive (it should be noted that Crossing Location #6 in the study would impede vehicular access to a new development. Thus, consideration was given to relocating this location to just south of Ocean Oaks Drive for purposes of this memorandum)

Pedestrian Safety Study for State Road A1A from just north of State Road 518 to Volunteer Way (August 2016)

- Adjacent to Millennium Park (herein referred to as Crossing Location #12)

Tables summarizing the crossing volume data are attached. Recommendations for installation of RRFB's are provided below:

Crossing Location #1 (South of 2nd Avenue) - An RRFB is recommended at this location given the existing volumes (106 combined pedestrian/bicycle volume over the two days) and the crosswalk's direct access to the existing beachfront park (James H. Nance Park).

Crossing Location #2 (North of Watson Drive) – An RRFB is recommended at this location given the existing volumes (60 combined pedestrian/bicycle volume over the two days) and the crosswalk's direct access to the existing beachfront park (Sunrise Park). It should be noted that with a new marked crosswalk as well as a refuge island, pedestrian/bicycle volumes may also increase at this location.

Crossing Location #5 (North of Boskind Drive) – An RRFB is recommended at this location given the proximity of the crosswalk to significant pedestrian generators (residences) and attractors (Seaside Shopping Center and the beach access). Additionally, based on the Pedestrian Safety Study, there was a pedestrian crash at this location that involved a westbound pedestrian that was struck by a northbound vehicle. It should be noted that with a new marked crosswalk as well as a refuge island, existing pedestrian/bicycle volumes (41 combined pedestrian/bicycle volume over the two days) may also increase at this location.

Crossing Location #6 (South of Ocean Oaks Drive) – The pedestrian/bicycle volumes at this crossing location (42 combined pedestrian/bicycle volume over the two days) were generally lower. Additionally, while there were two bicycle crashes that involved bicyclists crossing the west leg of the Ocean Oaks Drive intersection, there is no crash history at this location with regard to pedestrians/bicyclists crossing State Road A1A. Therefore, no supplemental devices are recommended at this location.

Crossing Location #7 (North of Terrace Shores Drive) - An RRFB is recommended at this location given the existing volumes (64 combined pedestrian/bicycle volume over the two days) and the crosswalk's direct connection to the existing beach access for residents that live down both Terrace Shores Drive and Coconut Drive. It should be noted that with a new marked crosswalk as well as a refuge island, existing pedestrian/bicycle volumes may also increase at this location.

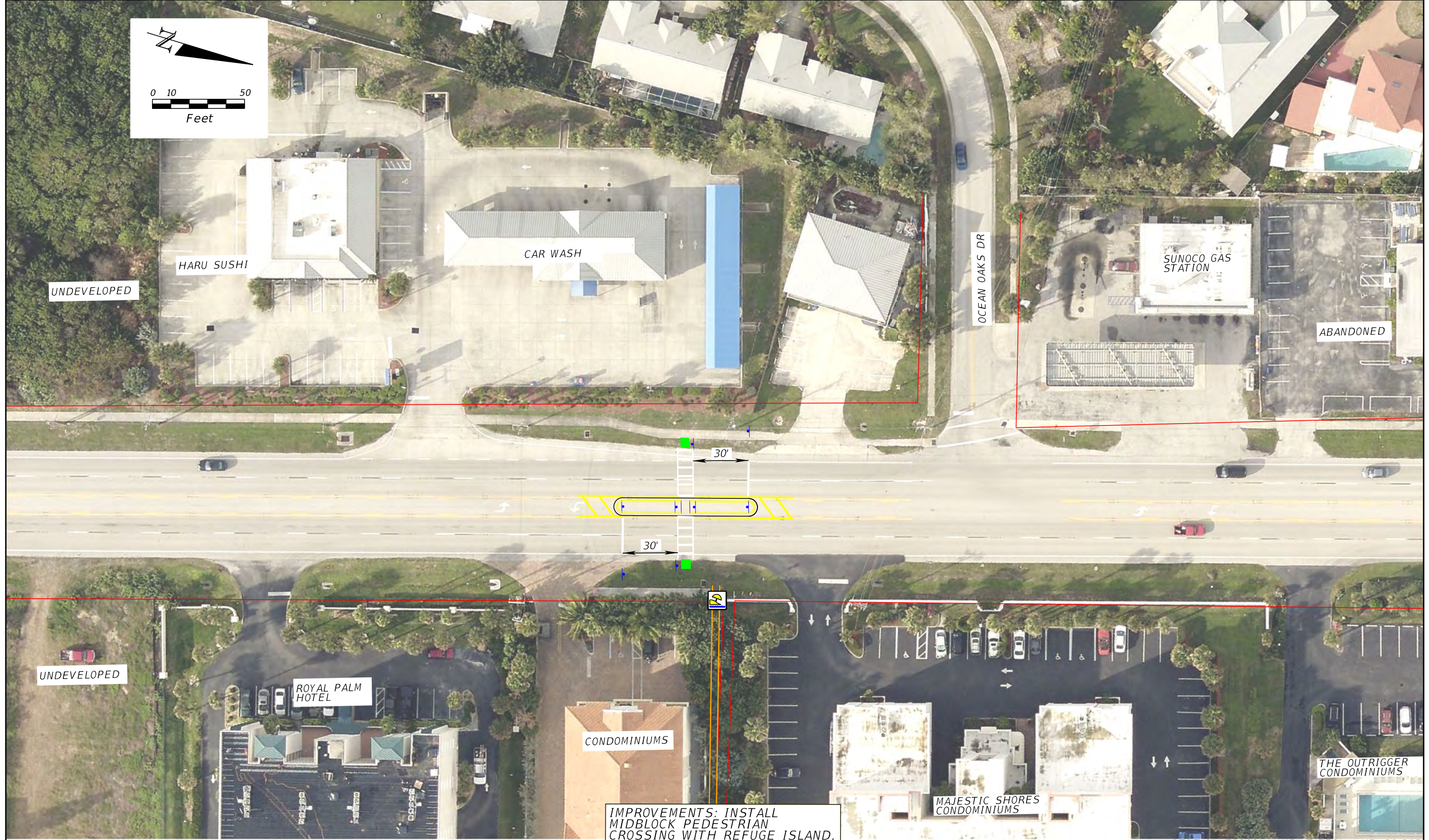
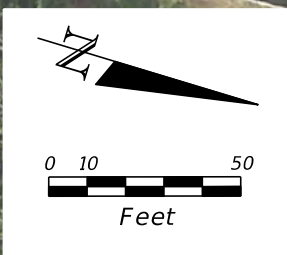
Crossing Location #9 (North of Poinsetta Street) - An RRFB is recommended at this crosswalk location, which provides a direct connection to a beach access and had 38 existing pedestrian/bicycle crossings over the two days, as there were two (2) fatal pedestrian crash at this location. It should be noted that with a new marked crosswalk as well as a refuge island, existing pedestrian/bicycle volumes may also increase at this location.

Crossing Location #12 (Adjacent to Millenium Park) - The pedestrian/bicycle volumes at this crossing location (28 combined pedestrian/bicycle volume over the two days) were the lowest of all seven locations. Additionally, there is no crash history at this location with regard to pedestrians/bicyclists crossing State Road A1A. Therefore, no supplemental devices are recommended at this location.

Please let us know if you have any questions.

Attachments

Proposed Midblock Crossing Location #6



IMPROVEMENTS: INSTALL
MIDBLOCK PEDESTRIAN
CROSSING WITH REFUGE ISLAND,
MODIFY SIGNAGE AND PAVEMENT
MARKINGS IN ACCORDANCE WITH
TYPICAL IN APPENDIX C

SECTION 70060 - MP 17.536 - MP 20.909
SR AIA FROM US 192 TO SR 518
BREVARD COUNTY - FLORIDA

Symbols:			

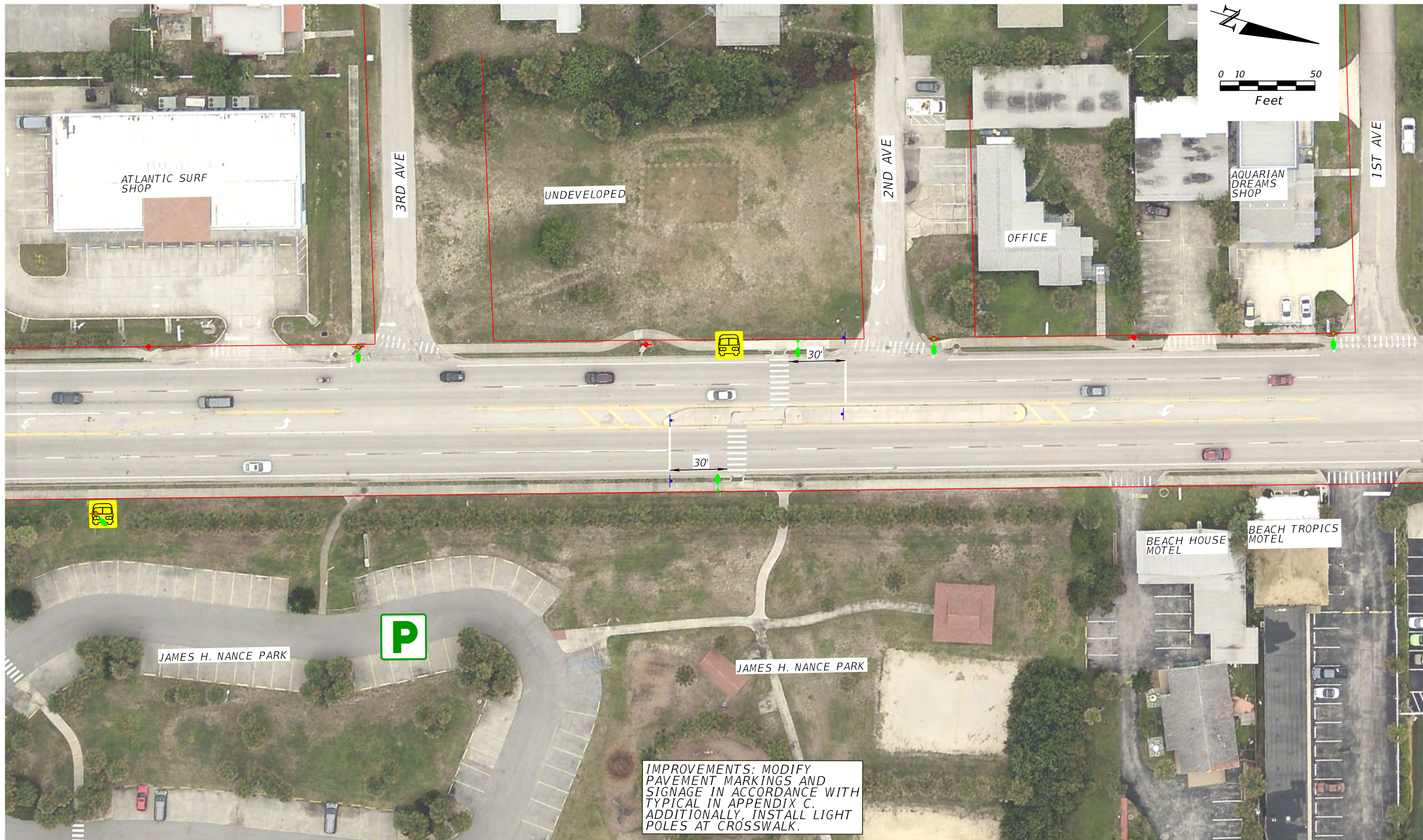
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FIGURE 10
IMPROVEMENT DIAGRAM
CROSSING LOCATION #6

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Midblock Crossing Location Figures from Pedestrian Safety Studies



IMPROVEMENTS: MODIFY PAVEMENT MARKINGS AND SIGNAGE IN ACCORDANCE WITH TYPICAL IN APPENDIX C. ADDITIONALLY, INSTALL LIGHT POLES AT CROSSWALK.

SECTION 70060 - MP 17.536 - MP 20.909
 SR AIA FROM US 192 TO SR 518
 BREVARD COUNTY - FLORIDA

Symbols:	
	Beach Access
	Traffic Signal
	Bus Stop
	Power Pole
	Public Parking
	Pedestrian Signal
	School
	Light Pole
	Existing Beach Access
	Existing Apparent Right-of-Way

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FIGURE 5
 IMPROVEMENT DIAGRAM
 CROSSING LOCATION #1

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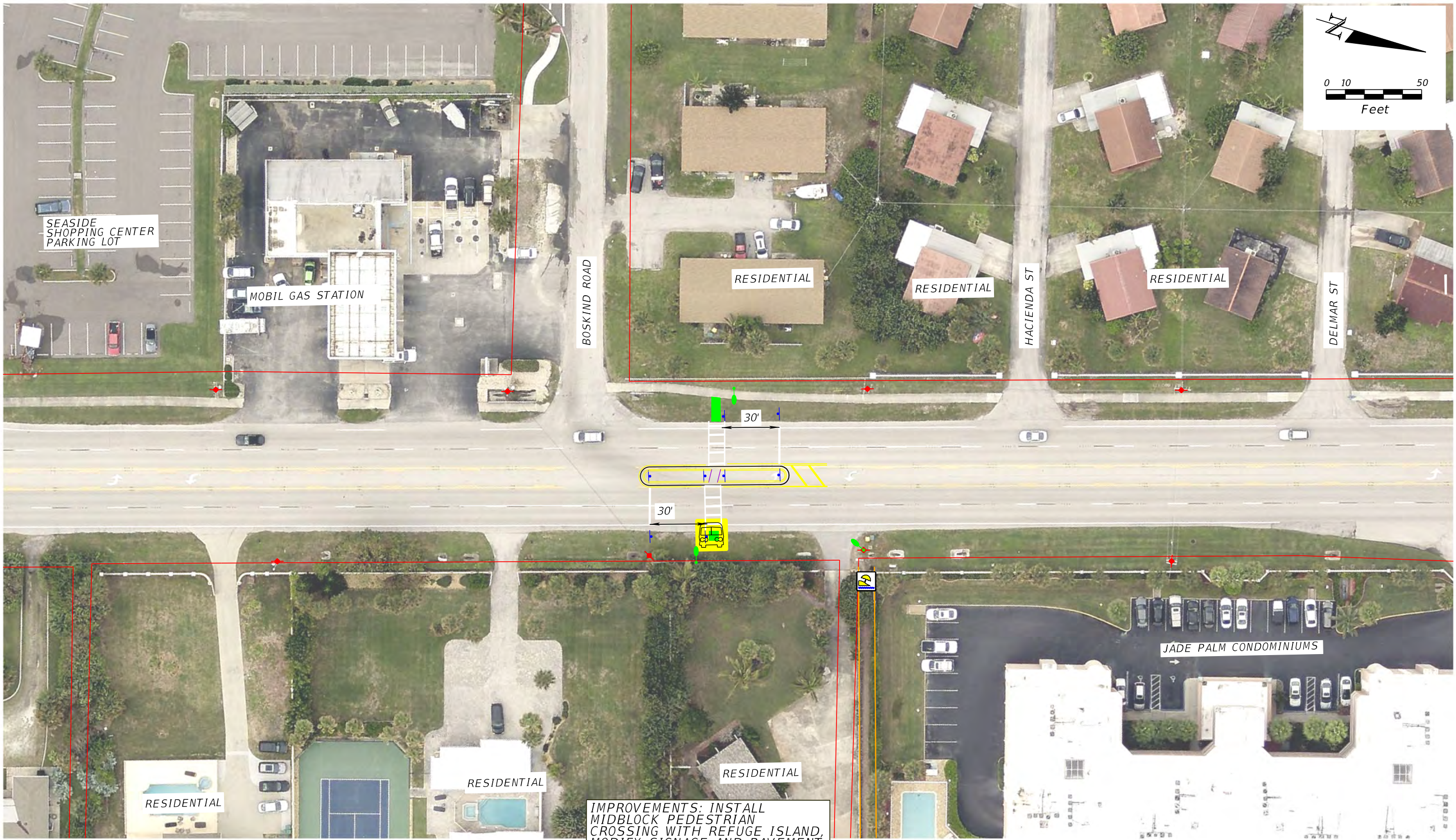
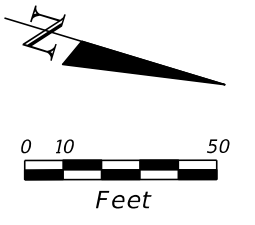
SECTION 70060 - MP 17.536 - MP 20.909
 SR AIA FROM US 192 TO SR 518
 BREVARD COUNTY - FLORIDA

Symbols:

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FIGURE 6
 IMPROVEMENT DIAGRAM
 CROSSING LOCATION #2



IMPROVEMENTS: INSTALL MIDBLOCK PEDESTRIAN CROSSING WITH REFUGE ISLAND, MODIFY SIGNAGE AND PAVEMENT MARKINGS IN ACCORDANCE WITH TYPICAL IN APPENDIX C. ADDITIONALLY, INSTALL LIGHT POLES AT CROSSWALK.

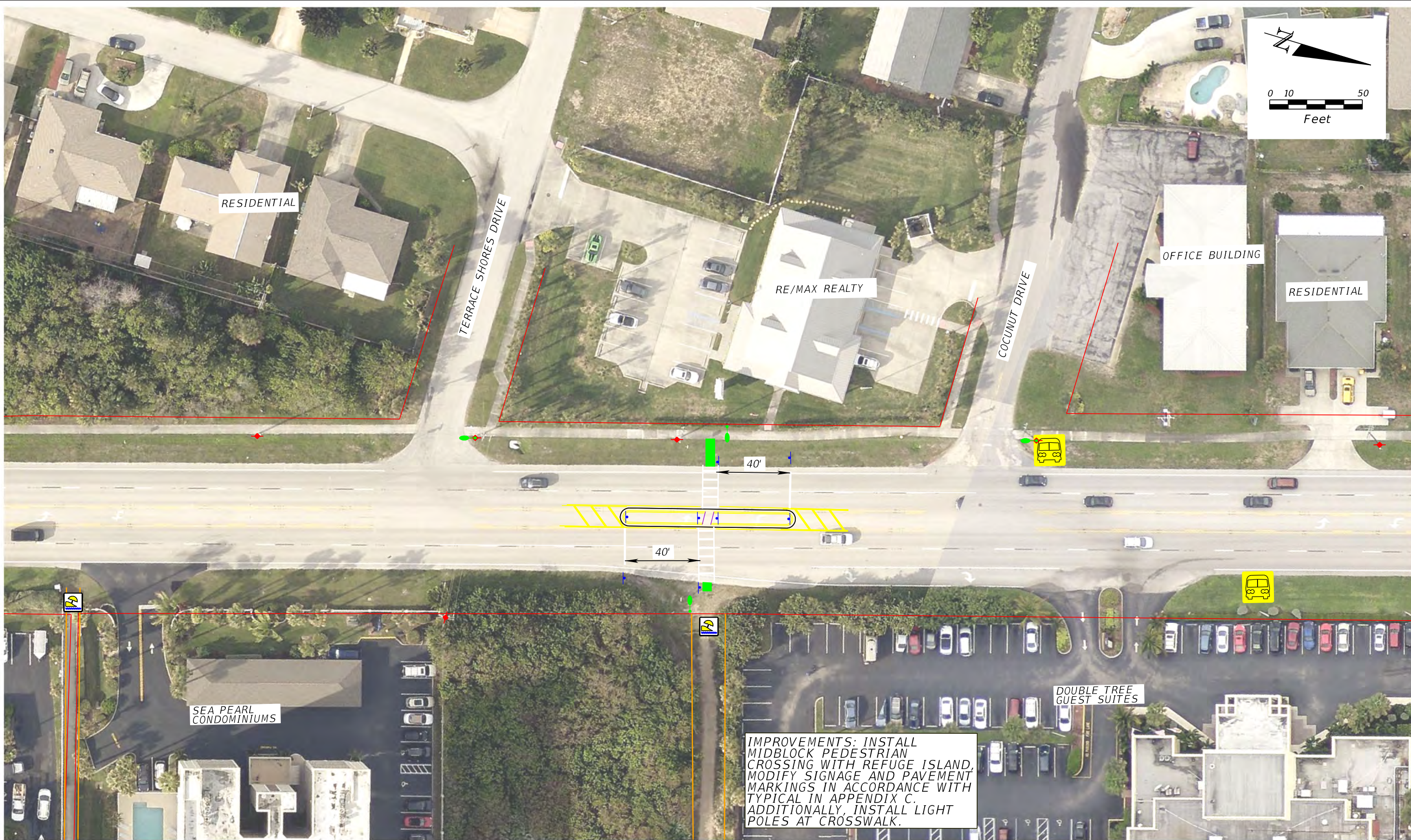
SECTION 70060 - MP 17.536 - MP 20.909
 SR AIA FROM US 192 TO SR 518
 BREVARD COUNTY - FLORIDA

Symbols:	
	Beach Access
	Public Parking
	Traffic Signal
	Pedestrian Signal
	Bus Stop
	School
	Power Pole
	Light Pole
	Existing Beach Access
	Existing Apparent Right-of-Way

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FIGURE 9
 IMPROVEMENT DIAGRAM
 CROSSING LOCATION #5



IMPROVEMENTS: INSTALL MIDBLOCK PEDESTRIAN CROSSING WITH REFUGE ISLAND, MODIFY SIGNAGE AND PAVEMENT MARKINGS IN ACCORDANCE WITH TYPICAL IN APPENDIX C. ADDITIONALLY, INSTALL LIGHT POLES AT CROSSWALK.

SECTION 70060 - MP 17.536 - MP 20.909
 SR AIA FROM US 192 TO SR 518
 BREVARD COUNTY - FLORIDA

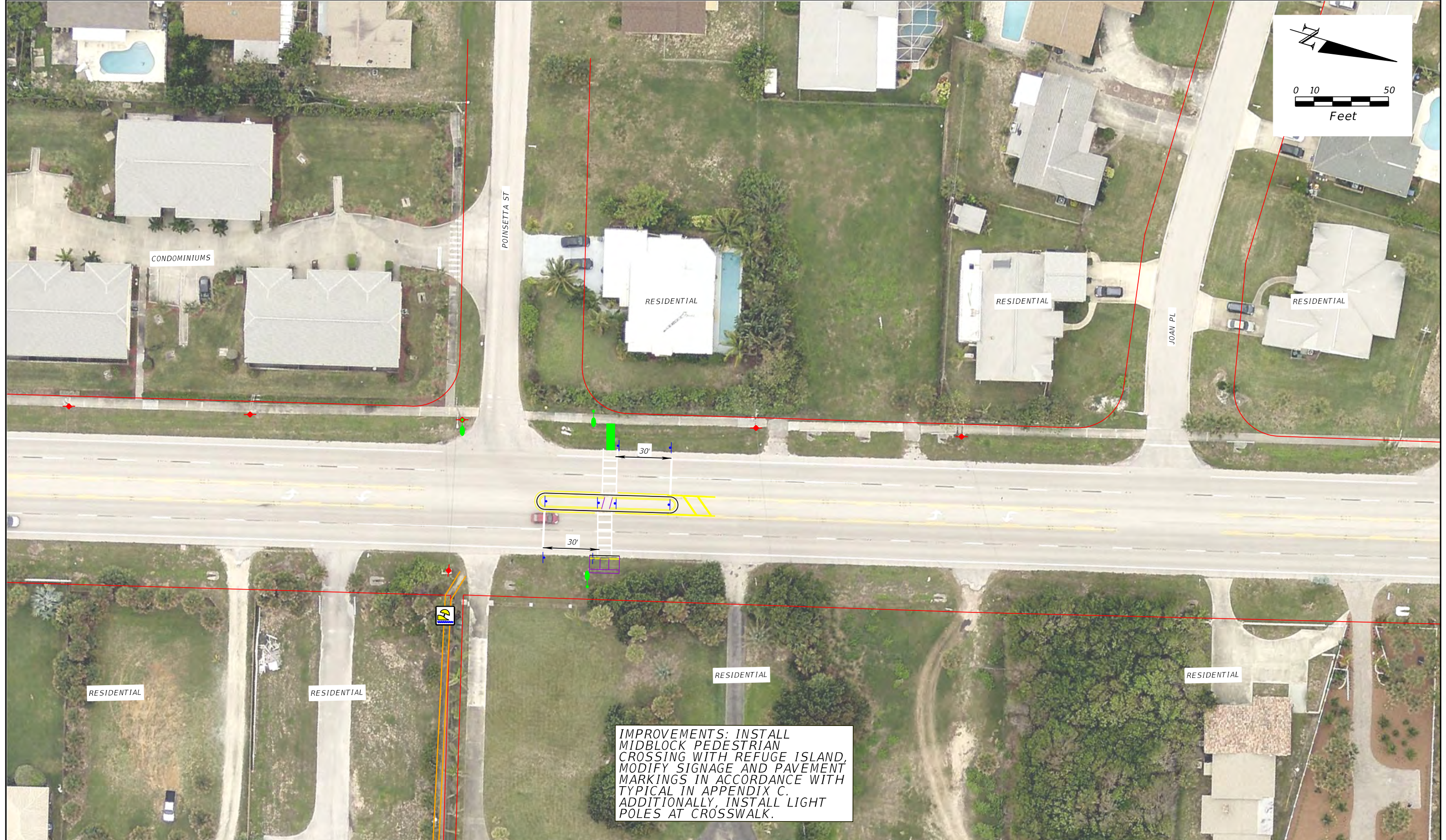
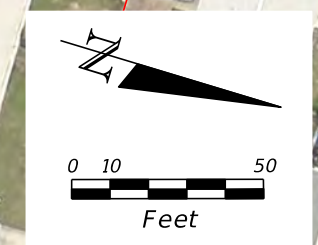
Symbols:	
	Beach Access
	Traffic Signal
	Bus Stop
	Power Pole
	Public Parking
	Pedestrian Signal
	School
	Light Pole
	Existing Beach Access
	Existing Apparent Right-of-Way

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FIGURE 11
 IMPROVEMENT DIAGRAM
 CROSSING LOCATION #7

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IMPROVEMENTS: INSTALL
 MIDBLOCK PEDESTRIAN
 CROSSING WITH REFUGE ISLAND,
 MODIFY SIGNAGE AND PAVEMENT
 MARKINGS IN ACCORDANCE WITH
 TYPICAL IN APPENDIX C.
 ADDITIONALLY, INSTALL LIGHT
 POLES AT CROSSWALK.

SECTION 70060 - MP 17.536 - MP 20.909
 SR AIA FROM US 192 TO SR 518
 BREVARD COUNTY - FLORIDA

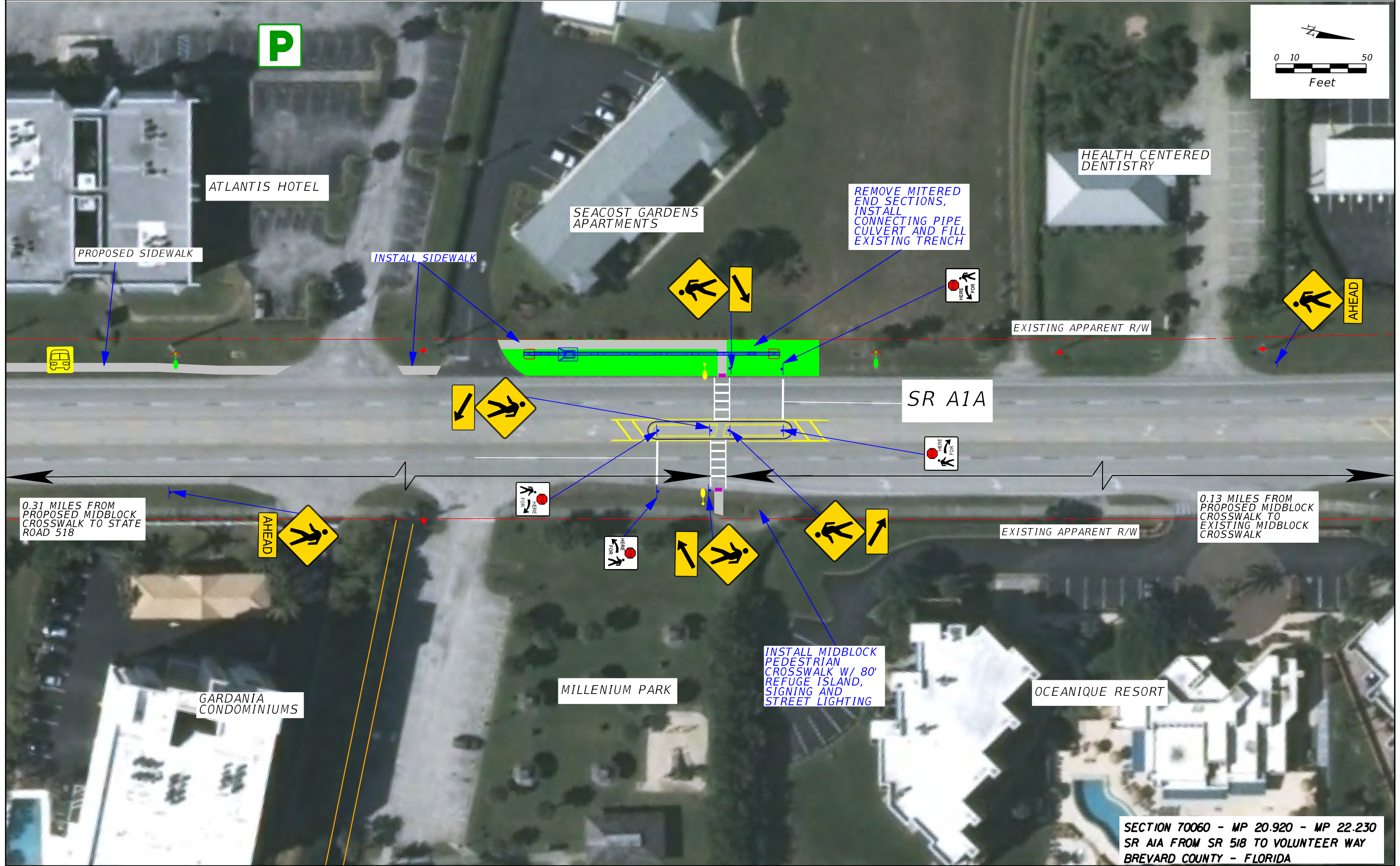
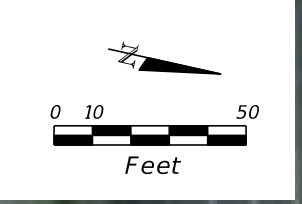
Symbols:	
	Beach Access
	Traffic Signal
	Bus Stop
	Power Pole
	Public Parking
	Pedestrian Signal
	School
	Light Pole
	Existing Beach Access
	Existing Apparent Right-of-Way

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FIGURE 13
 IMPROVEMENT DIAGRAM
 CROSSING LOCATION #9

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SECTION 70060 - MP 20.920 - MP 22.230
 SR A1A FROM SR 518 TO VOLUNTEER WAY
 BREVARD COUNTY - FLORIDA

		Symbols:	

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FIGURE 6
 IMPROVEMENT DIAGRAM
 CROSSING #1

8-Hour Pedestrian/Bicycle Counts

8-Hour Pedestrian/Bicycle Counts
State Road A1A at Crossing Location #1
(State Road A1A, South of 2nd Avenue)

Friday (8-25-17)							
Hours:	Ped			Bike			Ped/Bike
	EB	WB	Total	EB	WB	Total	Total
7-8	1	4	5	0	2	2	7
8-9	0	0	0	0	1	1	1
11-12	1	0	1	0	1	1	2
12-1	1	1	2	0	0	0	2
2-3	0	0	0	0	0	0	0
3-4	0	0	0	0	0	0	0
4-5	3	0	3	3	1	4	7
5-6	11	0	11	1	3	4	15
Total	17	5	22	4	8	12	34
Saturday (8-26-17)							
Hours:	Ped			Bike			Ped/Bike
	EB	WB	Total	EB	WB	Total	Total
7-8	2	5	7	2	3	5	12
8-9	7	1	8	2	2	4	12
11-12	8	2	10	3	1	4	14
12-1	3	5	8	0	0	0	8
2-3	0	0	0	0	0	0	0
3-4	0	2	2	0	0	0	2
4-5	4	12	16	1	1	2	18
5-6	3	1	4	1	1	2	6
Total	27	28	55	9	8	17	72

8-Hour Pedestrian/Bicycle Counts
State Road A1A at Crossing Location #2
 (State Road A1A, North of Watson Drive)

Friday (8-25-17)							
Hours:	Ped			Bike			Ped/Bike
	EB	WB	Total	EB	WB	Total	Total
7-8	1	2	3	1	3	4	7
8-9	4	1	5	2	0	2	7
11-12	1	1	2	0	0	0	2
12-1	2	1	3	0	0	0	3
2-3	0	2	2	2	0	2	4
3-4	0	1	1	0	1	1	2
4-5	0	0	0	0	0	0	0
5-6	2	2	4	0	0	0	4
Total	10	10	20	5	4	9	29
Saturday (8-26-17)							
Hours:	Ped			Bike			Ped/Bike
	EB	WB	Total	EB	WB	Total	Total
7-8	1	2	3	2	0	2	5
8-9	0	2	2	3	4	7	9
11-12	0	0	0	4	2	6	6
12-1	0	0	0	0	0	0	0
2-3	0	0	0	0	0	0	0
3-4	3	1	4	0	0	0	4
4-5	2	2	4	0	0	0	4
5-6	3	0	3	0	0	0	3
Total	9	7	16	9	6	15	31

8-Hour Pedestrian/Bicycle Counts
State Road A1A at Crossing Location #5
(State Road A1A, North of Boskind Drive)

Friday (8-25-17)							
Hours:	Ped			Bike			Ped/Bike
	EB	WB	Total	EB	WB	Total	Total
7-8	4	1	5	0	0	0	5
8-9	2	2	4	0	0	0	4
11-12	1	1	2	1	0	1	3
12-1	2	2	4	0	0	0	4
2-3	0	0	0	0	0	0	0
3-4	0	0	0	0	0	0	0
4-5	5	0	5	0	0	0	5
5-6	0	0	0	0	0	0	0
Total	14	6	20	1	0	1	21
Saturday (8-26-17)							
Hours:	Ped			Bike			Ped/Bike
	EB	WB	Total	EB	WB	Total	Total
7-8	1	1	2	0	0	0	2
8-9	2	2	4	0	0	0	4
11-12	5	0	5	1	0	1	6
12-1	0	0	0	1	2	3	3
2-3	1	0	1	0	0	0	1
3-4	0	0	0	0	0	0	0
4-5	0	1	1	0	1	1	2
5-6	0	2	2	0	0	0	2
Total	9	6	15	2	3	5	20

8-Hour Pedestrian/Bicycle Counts
State Road A1A at Crossing Location #6
(State Road A1A, South of Ocean Oaks Drive)

Friday (8-25-17)							
Hours:	Ped			Bike			Ped/Bike
	EB	WB	Total	EB	WB	Total	Total
7-8	3	1	4	1	1	2	6
8-9	2	3	5	0	0	0	5
11-12	0	0	0	2	0	2	2
12-1	0	0	0	0	1	1	1
2-3	0	1	1	0	0	0	1
3-4	0	0	0	0	0	0	0
4-5	3	0	3	0	0	0	3
5-6	3	4	7	0	0	0	7
Total	11	9	20	3	2	5	25
Saturday (8-26-17)							
Hours:	Ped			Bike			Ped/Bike
	EB	WB	Total	EB	WB	Total	Total
7-8	2	2	4	1	0	1	5
8-9	1	0	1	0	0	0	1
11-12	0	3	3	0	0	0	3
12-1	4	0	4	0	0	0	4
2-3	0	2	2	0	0	0	2
3-4	0	0	0	0	0	0	0
4-5	1	1	2	0	0	0	2
5-6	0	0	0	0	0	0	0
Total	8	8	16	1	0	1	17

8-Hour Pedestrian/Bicycle Counts
State Road A1A at Crossing Location #7
(State Road A1A, North of Terrace Shores Drive)

Friday (8-25-17)							
Hours:	Ped			Bike			Ped/Bike
	EB	WB	Total	EB	WB	Total	Total
7-8	0	0	0	1	1	2	2
8-9	1	0	1	0	3	3	4
11-12	0	0	0	3	3	6	6
12-1	1	0	1	0	0	0	1
2-3	2	1	3	1	1	2	5
3-4	0	0	0	0	0	0	0
4-5	0	0	0	0	1	1	1
5-6	0	1	1	1	1	2	3
Total	4	2	6	6	10	16	22
Saturday (8-26-17)							
Hours:	Ped			Bike			Ped/Bike
	EB	WB	Total	EB	WB	Total	Total
7-8	3	2	5	0	1	1	6
8-9	1	6	7	1	2	3	10
11-12	1	1	2	1	0	1	3
12-1	1	0	1	0	1	1	2
2-3	0	2	2	0	0	0	2
3-4	1	1	2	0	2	2	4
4-5	1	0	1	1	1	2	3
5-6	6	6	12	0	0	0	12
Total	14	18	32	3	7	10	42

8-Hour Pedestrian/Bicycle Counts
State Road A1A at Crossing Location #9
(State Road A1A, North of Poinsetta Street)

Friday (8-25-17)							
Hours:	Ped			Bike			Ped/Bike
	EB	WB	Total	EB	WB	Total	Total
7-8	0	0	0	1	0	1	1
8-9	2	0	2	0	0	0	2
11-12	2	1	3	2	2	4	7
12-1	0	0	0	0	0	0	0
2-3	0	0	0	0	0	0	0
3-4	0	0	0	0	0	0	0
4-5	0	0	0	0	0	0	0
5-6	0	0	0	0	0	0	0
Total	4	1	5	3	2	5	10
Saturday (8-26-17)							
Hours:	Ped			Bike			Ped/Bike
	EB	WB	Total	EB	WB	Total	Total
7-8	1	2	3	2	1	3	6
8-9	9	2	11	1	1	2	13
11-12	2	2	4	0	0	0	4
12-1	0	0	0	0	0	0	0
2-3	2	1	3	0	0	0	3
3-4	1	1	2	0	0	0	2
4-5	0	0	0	0	0	0	0
5-6	0	0	0	0	0	0	0
Total	15	8	23	3	2	5	28

8-Hour Pedestrian/Bicycle Counts
State Road A1A at Crossing Location #12
 (State Road A1A, Adjacent to Millenium Park)

Friday (8-25-17)							
Hours:	Ped			Bike			Ped/Bike
	EB	WB	Total	EB	WB	Total	Total
7-8	0	0	0	1	2	3	3
8-9	0	0	0	0	1	1	1
11-12	0	0	0	0	0	0	0
12-1	0	1	1	0	0	0	1
2-3	0	2	2	0	0	0	2
3-4	0	0	0	0	0	0	0
4-5	0	0	0	0	0	0	0
5-6	1	1	2	0	0	0	2
Total	1	4	5	1	3	4	9
Saturday (8-26-17)							
Hours:	Ped			Bike			Ped/Bike
	EB	WB	Total	EB	WB	Total	Total
7-8	1	0	1	2	1	3	4
8-9	0	1	1	4	4	8	9
11-12	0	0	0	1	0	1	1
12-1	0	0	0	1	2	3	3
2-3	0	0	0	0	0	0	0
3-4	0	0	0	1	1	2	2
4-5	0	0	0	0	0	0	0
5-6	0	0	0	0	0	0	0
Total	1	1	2	9	8	17	19

Summary of 8-Hour Pedestrian/Bicycle Counts on State Road A1A

Friday																					
Hours:	Location #1			Location #2			Location #5			Location #6			Location #7			Location #9			Location #12		
	Ped	Bike	Ped/Bike	Ped	Bike	Ped/Bike	Ped	Bike	Ped/Bike	Ped	Bike	Ped/Bike	Ped	Bike	Ped/Bike	Ped	Bike	Ped/Bike	Ped	Bike	Ped/Bike
	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total
7-8	5	2	7	3	4	7	5	0	5	4	2	6	0	2	2	0	1	1	0	3	3
8-9	0	1	1	5	2	7	4	0	4	5	0	5	1	3	4	2	0	2	0	1	1
11-12	1	1	2	2	0	2	2	1	3	0	2	2	0	6	6	3	4	7	0	0	0
12-1	2	0	2	3	0	3	4	0	4	0	1	1	1	0	1	0	0	0	1	0	1
2-3	0	0	0	2	2	4	0	0	0	1	0	1	3	2	5	0	0	0	2	0	2
3-4	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4-5	3	4	7	0	0	0	5	0	5	3	0	3	0	1	1	0	0	0	0	0	0
5-6	11	4	15	4	0	4	0	0	0	7	0	7	1	2	3	0	0	0	2	0	2
Total	22	12	34	20	9	29	20	1	21	20	5	25	6	16	22	5	5	10	5	4	9
Saturday																					
Hours:	Location #1			Location #2			Location #5			Location #6			Location #7			Location #9			Location #12		
	Ped	Bike	Ped/Bike	Ped	Bike	Ped/Bike	Ped	Bike	Ped/Bike	Ped	Bike	Ped/Bike	Ped	Bike	Ped/Bike	Ped	Bike	Ped/Bike	Ped	Bike	Ped/Bike
	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total
7-8	7	5	12	3	2	5	2	0	2	4	1	5	5	1	6	3	3	6	1	3	4
8-9	8	4	12	2	7	9	4	0	4	1	0	1	7	3	10	11	2	13	1	8	9
11-12	10	4	14	0	6	6	5	1	6	3	0	3	2	1	3	4	0	4	0	1	1
12-1	8	0	8	0	0	0	0	3	3	4	0	4	1	1	2	0	0	0	0	3	3
2-3	0	0	0	0	0	0	1	0	1	2	0	2	2	0	2	3	0	3	0	0	0
3-4	2	0	2	4	0	4	0	0	0	0	0	0	2	2	4	2	0	2	0	2	2
4-5	16	2	18	4	0	4	1	1	2	2	0	2	1	2	3	0	0	0	0	0	0
5-6	4	2	6	3	0	3	2	0	2	0	0	0	12	0	12	0	0	0	0	0	0
Total	55	17	72	16	15	31	15	5	20	16	1	17	32	10	42	23	5	28	2	17	19