

**TYLin**International

# Shared Use Pathway Intersection Improvement Study

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November 2015

# City of Sanibel

## Shared Use Pathway Intersection Improvement Study

### Introduction

T.Y. Lin International (TYLI) has been contracted to provide the City of Sanibel with guidance for improving the safety and condition of the shared use pathway network (the “network”) in the city. There are currently 25.43 miles of shared use paths stretching from Lighthouse Park on the eastern end of the island to the Blind Pass Bridge on the western end. The network is used by bicyclists, pedestrians, skateboarders, walkers, joggers, those in wheelchairs, and other non-motorized individuals.

When this study was initially conceived, the emphasis was to be on the interactions between pedestrians/cyclists and motor vehicles in or adjacent to intersections. However, as TYLI began gathering data, reading the supplied information, and analyzing the crash histories, it became apparent that major issues revolved around the interactions between pedestrians/cyclists and motor vehicles at mid-block crosswalks and along the shared use pathway network, especially at the more active commercial driveways. The major goal of the study and report is to communicate methods of reducing conflicts and confusion between vehicles and pathway users including methodologies to assist in controlling right-of-way conflicts. **The Scope of Services (Item No. 1 in Appendix) does not include any site-specific detailed analysis or design.**

If there is one overriding conclusion that can be drawn from this research and report, it is that the City of Sanibel has a great shared use pathway system and we are pleased to be able to offer recommendations to assist in making it even better.

TYLI was provided with a wealth of information regarding the makeup and history of the network and has reviewed the following documents:

- The Sanibel Plan
- The Sanibel Crosswalk Policy dated 2013
- City of Sanibel 2009 Shared Use Path Master Plan
- The Lee County Property Appraiser’s Maps
- Bicycle crash reports for the three-year period from 2012 through mid-2015
- City of Sanibel Memorandum titled: *Reported Bicycle and Pedestrian Accidents 2013-2014*
- The Sanibel Bicycle Club position paper regarding pavement messages on shared use pathway
- League of American Bicyclists Report Card (undated)
- Citizen input in the form of emails and telephone conversations

The foregoing documents, with the exception of The Sanibel Plan, the City of Sanibel 2009 Shared Use Path Master Plan, and the Property Appraiser’s Maps are included as Appendices in a separate volume from this report. In addition to document review and analysis, TYLI personnel spent several days in the field walking and riding the shared use pathway system.

The City of Sanibel’s shared use pathway network serves as a model of what can be accomplished by motivated citizens working in concert with their government to provide an amenity that not only serves its own citizens, but has become an attractor for visitors. The pathway network is in generally good repair and has an enviable safety record (over 25 miles of shared use pathway with just 36 potentially correctable bicycle or pedestrian crashes in four years). In addition to having relatively few

bicycle/pedestrian crashes given the close interactions of these more vulnerable road users with motor vehicles, only two listed crashes were so severe that they resulted in hospitalizations.

In general, TYLI has found that more of the crash locations are located at or near driveways rather than intersections (15 at or near driveways and 9 at intersections or mid-block crosswalks). Based on the data available and based on the relatively low frequency of bicycle/pedestrian crashes, we have evaluated the shared use pathway network to determine if there are techniques or spot improvements correctable by generally accepted engineering methods used in Florida and that are available to the City of Sanibel to enhance the current level of operation of the network.

In addition, TYLI has reviewed the proposed improvements slated for the Periwinkle Way/Casa Ybel Road intersection (crosswalk relocation and addition of staging areas for pedestrians and bicycles) and the Tarpon Bay Road between Sanibel Road and Island Inn Road area (pathway extension and additional crosswalk). These two additional improvements to the network are consistent with the City's desire to provide a safer and more complete shared use pathway network for all users, and with which we concur.

The recommendations in this report are intended to assist the City in achieving their objectives. We realize that the implementation of any of the proposed recommendations may have to be phased or programmed as funding may be made available and as the City's needs and desires change. In addition, modifications may be made as a consequence of circumstances, demographics, and local priorities.

### **Bicycle and Pedestrian Crash Locations and Outcomes**

Table 1 and Map 1 on the following pages represent a summarized tabulation of the bicycle and pedestrian crashes from 2012 through mid-2015 and are based on data provided by the City.

**It must be recognized that this listing only tabulates bicycle/pedestrian vs. motor vehicle crashes. Bicycle vs. bicycle or bicycle vs. pedestrian crashes were not in the materials provided by the City and have not been considered in this report except where specifically mentioned in the recommendations. An analysis of these types of crashes was not contemplated in the formation of the Scope of Work for this report.**

The columns titled "Xwalk" and "DW," respectively, indicate whether the crash occurred at a crosswalk or a driveway. No reference in either column indicates that the crash took place at other than those locations.

Sanibel Bicycle/Pedestrian Crash Reports, January 1, 2012 through July 31, 2015				
Ref.	Date	Location	Comments	DW
1	1/21/2012	1551 Periwinkle Way	V hit B as V was turning into DW; B was already in DW	X
2	2/17/2012	1 Wildlife Drive (Ding Darling)	V backed into B at exit	
3	2/23/2012	2025 Periwinkle Way	V and B touched while pulling out in early AM- no damage	X
4	3/27/2012	1149 Periwinkle Way	B lost control - no crash (poss. sight line issue)	X
5	3/30/2012	474 Lake Murex Circle	B head down, didn't see V w/trailer; could not stop	
6	4/25/2012	2331 Palm Ridge Road	V lost control; crashed into parked B; no inj/driver contact	
7	11/19/2012	Periwinkle Way and Dixie Beach Blvd.	V hit P as P was entering Xwalk	X
8	12/10/2012	2173 Periwinkle Way	V and B collided when V stopped at Xwalk, then proceeded	X
9	1/12/2013	2003 Periwinkle Way	B in driveway hit by V; V says not see B	X
10	1/28/2013	2163 Periwinkle Way	V exiting hit B; B says her fault; should have been in Xwalk	
11	2/11/2013	2460 Periwinkle Way	V hit B as V was turning in to parking lot	X
12	2/20/2013	1201 Periwinkle Way	V hit B as V was exiting parking lot	X
13	2/20/2013	Casa Ybel Road and Algiers Lane	B fell off bike; no V involved	
14	4/3/2013	1451 Middle Gulf Drive	B crashed into V; B issued Warning for poor bikemanship	
15	5/23/2013	2025 Periwinkle Way	V hit B as V was entering parking lot; V says B blocked by van	X
16	5/24/2013	1304 Estero Blvd. FMX-BGH	O/S jurisdiction	
17	8/5/2013	1201 Periwinkle Way	V hit B as V was exiting driveway	X
18	10/14/2013	841 Lindgren Blvd.	V hit B-1 while turning; overcorrected, then hit B-2	X
19	11/14/2013	2407 Periwinkle Way	B hit V as V was entering parking lot; B was prob. Intox.	
20	12/8/2013	Periwinkle Way and Casa Ybel Rd.	V hit B as V was making turn thru int.	X
21	1/13/2014	1699 Periwinkle Way	B braked hard as V turned across DW; B thrown over hbars	X
22	1/25/2014	2445 West Gulf Drive	V hit B as B was crossing street; violation by B (cit. issued)	
23	3/14/2014	Periwinkle Way and Casa Ybel Rd.	V hit B in Xwalk; both responded to Off. signal at same time	X
24	3/4/2014	Sanibel Causeway	V vs. V; O/S jurisdiction	
25	3/19/2014	San-Cap Rd. and Pine Tree Drive	V hit B in road as V was Xing int.; B was thrown clear	X
26	3/28/2014	Periwinkle Way and Denax Street	SV-crash- no B involved (B was a witness-only)	
27	7/18/2014	Near San-Cap Rd. and Tarpon Bay Rd.	V turning into parking lot on Palm Ridge hit B	
28	9/13/2014	Periwinkle Way @ Mango Bay DW	Exiting V hit EB B; B injured	X
29	12/23/2014	1025 Periwinkle Way	B WB on SUP; V claims he did not see B and bumper hit B	X
30	5/22/2015	2304 Periwinkle Way	V struck B at mid-block Xwalk	X
31	1/7/2015	1551 Periwinkle Way	V backed into B in DW	X
32	1/18/2015	Periwinkle Way/Purdy St.	WB turning vehicle hit EB cyclist in Xwalk	X
33	1/20/2015	1619 Periwinkle Way	WB turning vehicle hit EB cyclist on pathway in DW	X
34	2/21/2015	Middle Gulf Dr./Fulgur St.	EB to NB vehicle hit by EB cyclist who failed to stop at int.	
35	1/21/2015	Lighthouse Park entry	Vehicle backed into cyclist in Xwalk	X
36	2/23/2015	1119 Periwinkle Way	WB cyclist crossing private road hit by NB car	X
37	3/25/2015	Periwinkle Way and Tarpon Bay Road	V hit B as V was making rt. turn; B had no lights	X
38	4/9/2015	Periwinkle Way/Palm Street	WB cyclist stopped suddenly at DW to avoid crossing car	X
39	5/22/2015	2304 Periwinkle Way	V hit B in Xwalk; B injured > to hosp.	X
40	7/4/2015	1521 Periwinkle Way	WB cyclist hit by exiting vehicle	X
41	7/4/2015	1440 Middle Gulf Drive	EB cyclist hit by vehicle exiting parking lot	X

Note: Ref. Nos. 16 and 24 occurred outside City's jurisdiction. Ref. No. 26 did not involve a bicycle or pedestrian. Therefore, those reports were not used.

**Table 1**



# Recommendations for Sanibel Shared-use Pathways

## Introduction

TYLI has reviewed the available materials required to assess the Sanibel Shared-use Pathways. The following recommendations generally fall into two general categories: Network Recommendations and Location-Specific Recommendations. Network Recommendations are applicable to the entire shared use pathway network. Location-Specific Recommendations are either confined to a specific site or within a given area. Several of the recommendations discussed below provide examples of sites or locations that would be amenable to the suggested treatment. The mention or absence of similar locations is not meant to imply that these other locations are not worthy of consideration for the treatment; however, it is our goal to be both complete in describing the proposed treatment and succinct in presenting that treatment in this report. **In most cases, we recommend that a pilot installation or pilot program be instituted to observe and assess how traffic (motorized and non-motorized) reacts prior to any major implementation effort.**

The recommendations presented below are in no particular order with respect to importance. They are numbered only for convenience in referencing them.



Each Recommendation is followed by a short recap of citizen input responses for that recommendation. The citizen input is garnered from the comments received in writing at the Open house held on Thursday, October 22, 2015, the on-line survey forms, and other email correspondence pertinent to the Report. As a general finding, almost 90% of those responding to the survey, either in person or on-line, either Agreed or Strongly Agreed with all of the Recommendations in this Report and the remainder either Disagreed or Strongly Disagreed.

Based on the sample size (298 responses as of November 2, 2015) and the population of the City of Sanibel (about 7000), these figures represent a 95% Confidence Level. That is, given the population of Sanibel and the semi-random nature of the respondents, the responses may be relied upon to represent a fair appraisal of the thinking of the general population on Sanibel at any given time.

About half of the respondents are either year-round residents (about 48%) or seasonal visitors (about 43% during winter season – February through April, and about 32% during fall season – October through December). About 4% of the respondents list themselves as non-residents. Correcting for only year-round residents still provides a 95% Confidence Level.

The conclusion which may be drawn from these numbers is that even though both year-round and part-time residents are included in the sample (all respondents), the 95% confidence level with respect to the received responses is valid.

The following table provides insight into the public’s responses to the listed recommendations:

<b>Sanibel Recommendations:</b>									
		<b>Pos</b>	<b>Neg</b>	<b>Cksum</b>	<b>SA</b>	<b>A</b>	<b>D</b>	<b>SD</b>	<b>Cksum</b>
1	STOP messages on pavement	85.40	14.59	99.99	55.84	29.56	9.12	5.47	99.99
2	"T" signs	93.77	6.23	100.00	53.11	40.66	3.30	2.93	100.00
3	Shark's teeth at mid-block Xwalks	89.09	10.91	100.00	54.91	34.18	6.55	4.36	100.00
4	R1-6 at selected Xwalks	85.98	14.02	100.00	58.67	27.31	8.12	5.90	100.00
5	High-intensity upgrades	92.73	7.27	100.00	52.00	40.73	5.82	1.45	100.00
6	Foliage trimming	94.85	5.15	100.00	68.38	26.47	3.31	1.84	100.00
7	Review placement of advance Xwalk warning signs	85.61	14.39	100.00	44.28	41.33	9.96	4.43	100.00
8	Pathway STOP signs	83.02	16.98	100.00	50.55	32.47	11.44	5.54	100.00
9	Active public awareness campaign	88.06	11.94	100.00	54.10	33.96	7.09	4.85	100.00
10	Xwalk at Lighthouse Park	92.61	7.39	100.00	47.47	45.14	3.11	4.28	100.00
11	Edge stiping and ladder markings at driveways	95.50	4.49	99.99	60.67	34.83	2.62	1.87	99.99
12	Tarpon Bay "Share the Road" signs	87.55	12.45	100.00	44.15	43.40	7.92	4.53	100.00
13	Ding Darling entrance geometry change	88.34	11.66	100.00	50.75	37.59	6.77	4.89	100.00
14	East Gulf (Nerita to Elinor) path relocation	85.88	14.12	100.00	49.24	36.64	9.92	4.20	100.00
15	Periwinkle @ Dunlop path to nowhere	91.64	8.36	100.00	45.63	46.01	6.46	1.90	100.00
16	Periwinkle @ Palm Ridge new Xwalk north of CVS	88.97	11.02	99.99	48.29	40.68	6.84	4.18	99.99
17	Casa Ybel and Algiers plantings	87.13	12.88	100.01	48.11	39.02	6.44	6.44	100.01
18	Extend Post Office path (Lee Road)	89.10	10.90	100.00	50.75	38.35	8.27	2.63	100.00
19	San-Cap @ Mangrove island	88.67	11.33	100.00	38.87	49.80	9.31	2.02	100.00
	<b>Averages:</b>	89.15	10.85	100.00	51.36	37.80	6.97	3.88	100.00

**Legend:** POS. - Total Positive Responses  
 Neg. - Total Negative Responses  
 SA - Strongly Agree  
 A - Agree  
 D - Disagree  
 SD - Strongly Disagree

In addition to the 19 recommendations made in the body of this report, TYLI also recommends the following three additional items be considered by City Council:

1. Review and update the *City of Sanibel 2009 Shared Use Path Master Plan*. Based on the issues discussed during the development of this Report and based on a number of citizen comments, TYLI believes that a review and updating of that plan may be desirable to reflect the growth in pathway use over the past decade and a desire on the part of many pathway users for additional pathway segments.

2. In line with the foregoing additional recommendation, TYLI further recommends that City Council consider adding an extension of the Shared Use Path system on the north side of Periwinkle Way from Bailey Road westerly to Dunlop Road. The initial issues to be considered toward implementation of this recommendation, should Council determine to move forward, would be to review available right-of-way and to determine the safest and most efficient method of segmenting such a project to maintain both fiscal and physical integrity of the system.
3. There was one other issue that became apparent after a review of the comments sections of the public surveys: the addition of a mid-block crosswalks at several additional locations. Among the locations mentioned were a crosswalk between the CROW Center and the Sanibel School, and several residential locations. However, these locations may not meet the warrants specified in the City of Sanibel *Crosswalk Policy* adopted in 2013. Further study and analysis is recommended before installing any additional mid-block crosswalks.

### **Report Appendix**

The Appendix contains reference material used by TYLI in formulating this Report and synopses of the various citizen inputs for the period from January 2012 to the present.

Following is a listing of the material included in the Appendix:

1. T.Y. Lin International Scope of Services
2. Excerpts from the Manual On Uniform Traffic Control Devices (MUTCD)
3. Sanibel Bicycle Club position paper on STOP markings
4. League of American Bicyclists Report
5. City of Sanibel Crosswalk Policy 2013
6. City of Sanibel Memorandum titled: *Reported Bicycle and Pedestrian Accidents 2013-2014*
7. Crash Report Summary (2012 through mid-2015)
8. Citizen input (emails and letters 2012 through mid-2015)
9. Citizen Comments (Open House Oct. 22, 2015 and On-line Survey through Nov. 2, 2015)

### **Recommendation Recaps**

Subsequent to the Open House and closure of the On-line Survey, TYLI compiled the survey responses and reviewed all of the comments provided. Due to the wide variety of comments, including many deemed to be either unrelated to the primary Concern or unresponsive to that Concern, TYLI has not attempted to address them on an individual basis; however, they have been sorted into identifiable generalizations that most closely represent the issues, attitudes, and concerns of those responding.

In several cases, that analysis has resulted in a revision to the original recommendation and is so noted in the discussion.

Finally, Sanibel is blessed with the perfect storm of climate, abundance of natural beauty, and responsible forward-thinking governance. That combination of attractors for tourism and retirement living creates stresses to the infrastructure in a confined environment as is Sanibel's. The ongoing push-

pull of motorized and non-motorized transport coupled with increased pedestrian traffic has begun to strain the Shared Use Path network along with the roadway network. As increasing numbers of residents and visitors use these systems it will be more difficult to maintain both the safety and ambiance of each.

Detailed ranking of the recommendations is not included in the Scope of Services for this study and report; however, to assist the City for budgetary purposes, TYLI offers the following suggestions as to which Recommendations, if implemented could be easily performed (noted as “I”), which could be included in a five-year budget projection (noted as “II”), and which might involve a longer time frame to accomplish (noted as III). The column listed as “Pilot” indicates which of these recommendations could be implemented as a pilot program at limited locations, measured and tested for effectiveness, and a decision made as to further installations or changes.

<b>TYLI Rank</b>	<b>TYLI No.</b>	<b>Recommendation</b>	<b>Pilot</b>
I	1	STOP messages on pavement	
I	2	"T" signs	
I	3	Shark's teeth at mid-block crosswalks	X
I	6	Foliage trimming	
I	7	Review placement of advance crosswalk warning signs	
I	9	Active public awareness campaign	X
I	10	Crosswalk at Lighthouse Park	
I	12	Tarpon Bay "Share the Road" signs	
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II	4	R1-6 warning signs at selected crosswalks	X
II	5	High-intensity upgrades	
II	8	Pathway STOP signs	X
II	11	Edge stiping and ladder markings at driveways	X
II	14	East Gulf (Nerita to Elinor) path relocation	
II	15	Periwinkle @ Dunlop path to nowhere	
II	16	Periwinkle @ Palm Ridge crosswalk north of CVS	
II	17	Casa Ybel and Algiers plantings	
II	18	Extend Post Office path (Lee Road)	
II	22	New mid-block crosswalks	
II	19	San-Cap @ Mangrove separator island	
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III	13	Ding Darling entrance geometry change	
III	20	Update of SUP Master Plan	
III	21	SUP segment on north side of Periwinkle Way	

### Recommendation Number 1

**Concern:** “STOP” pavement messages on pathways. Based on several days of observation of pedestrian and cyclist behavior, we noted that these messages tend to be ignored by both cyclists and pedestrians. In addition, they promote user disregard for real or apparent dangers and are specifically prohibited in the *Manual On Uniform Traffic Control Devices (MUTCD)* (MUTCD Section 3B.20: The word STOP shall not be placed on the pavement in advance of a stop line, unless every vehicle is required to stop at all times).

**Recommendation:** Remove “STOP” pavement messages on pathways except locations detailed in Item No. 8. The use of STOP signs and STOP bars at selected locations is a more appropriate means of regulating the assignment of the right of way. In addition, pedestrians and bicyclists are more likely to obey signs and pavement markings that appear more reasonable given the characteristics of the site.



**Recap of Citizen Input:** The survey reported about 85% of those responding either Agree or Strongly Agree and 15% of those responding Disagree or Strongly Disagree with this Recommendation. The major concern of most respondents was the dichotomy between bicyclists and motorists. This theme repeats in several of the other comment sections of other Recommendations. In general, respondents do not believe that the painted pavement messages are helpful and many admit to ignoring them. One of the major complaints is that bicyclists cannot stop without potentially losing their balance with constant stopping/starting. Many respondents called for better education of both motorists and bicyclists/pedestrians (for this and other Recommendations) – a theme heard repeatedly throughout this Report.

Based on feedback coupled with standard engineering practice, TYLI continues to recommend removal of the pavement STOP messages on the SUP **except as noted in Recommendation No. 8.**

## Recommendation Number 2

**Concern:** While the “Bike Path Look Both Ways” and “Driveway Look Both Ways” T-shaped signs at driveways are not in the MUTCD or other professional literature, they do appear to be of value in Sanibel. There is nothing that prohibits their use and we believe that the local population is familiar with them and finds them useful.



**Recommendation:** We recommend that they be examined at each location and then positioned or relocated as may be necessary to assure easy sight lines for both motorists and bicyclists/pedestrians. We offer the following examples of how the signs might be installed to provide better visibility for both motorists and bicycles.

The first picture below indicates a preferable position for this sign at this particular location. The red spot shown would provide added sight distance and visibility of the warning for pedestrians, cyclists and motorists.



**255 Periwinkle Way at Shell Island Beach Club Entrance Driveway**

The following picture indicates where the addition of the T-shaped warning signs would give advance warning to shared pathway users.



### 455 Periwinkle Way at Island Girl Boutique Driveway

**Recap of Citizen Input:** The survey reported about 94% of those responding either Agree or Strongly Agree and 6% of those responding Disagree or Strongly Disagree with this Recommendation. The most significant concern of most respondents was that the signs should be placed so as not to constitute a potential hazard for SUP users and that the sharp edges of the signs should be provided with protective edging or covering.

Although not MUTCD compliant, TYLI has found that these signs appear to work well on Sanibel and that the local users become quickly acclimated to seeing and heeding the warnings as they would with regulation diamond-shaped signs.

Because diamond-shaped signs would be considerably larger to convey the same or similar messages, TYLI continues to recommend that these T-shaped signs be used by the City and that the placement of them be evaluated to assure both adequate sight lines and locational criteria.

### Recommendation Number 3

**Concern:** Mid-block crosswalks such as the ones located at Donax Street just south of Periwinkle, the crosswalk at Billy’s Bike Rentals, and the crosswalk at the Bailey Tract have a higher potential for bicycle/pedestrian/vehicle conflicts than other locations due to the higher volumes of pedestrians crossing at these locations.

**Recommendation:** One way of mitigating these conflicts is by providing standard YIELD symbols on the roadway pavement in advance of these crosswalks. We recommend this type of mitigation effort as a policy directive for current and future mid-block crosswalks. There are a number of places where this type of enhancement will assist all road users in providing clarity of intent. In addition, we recommend that all mid-block crosswalk markings be renewed to enhance visibility.



**Recap of Citizen Input:** The survey reported about 89% of those responding either Agree or Strongly Agree and 11% of those responding Disagree or Strongly Disagree with this Recommendation.

One major concern of most respondents was the mid-block crosswalk on Donax Street just south of Periwinkle Way. This location was also of concern to TYLI when we first began our review of SUP/roadway intersections. Originally, we thought to recommend relocating the crosswalk back to the intersection of Periwinkle Way and Donax Street. However, we discovered that the relocation of the crosswalk from its original location at the intersection to its current location was requested by a number of citizens and endorsed by the Sanibel Bicycle Club (SBC). While we retain our initial doubts about the long-term safety aspect of this crossing location, we recognize that it appears to be currently operating satisfactorily.

Another issue raised by respondents to this Recommendation was that the “shark’s teeth” triangular pavement markings may not be familiar to most drivers and pedestrians. These pavement markings are standard and have been in the MUTCD for a number of years. In Recommendation No. 9, we discuss the continuation of an aggressive public awareness campaign focused on bicycle, pedestrian, and motor vehicle safety, and we suggest adding an educational item that speaks to these pavement markings be included. To facilitate this awareness, we also concur with several remarks made that if these markings are used at the crosswalk adjacent to the Visitor’s Center on Causeway Boulevard and at the crosswalk adjacent to the Dairy Queen, the word “YIELD” also be included in the pavement warning. Doing so would alert motorists to both the law and to the meaning of the symbols. We do not believe it is necessary to use the added pavement message (“YIELD”) at all of the triangle locations.

#### Recommendation Number 4

**Concern:** Mid-block crosswalks, especially those with significant pedestrian traffic, are not always readily visible to oncoming motorists and high-speed bicyclists, even with the advance warning signs. At an unsignalized crosswalk, a driver must give way to a pedestrian (F.S. Ch. 316.130), stopping if necessary to yield, unless a sign indicating a requirement to stop for a pedestrian is posted, in which case the driver must stop for the pedestrian in any case.

**Recommendation:** For added emphasis at selected mid-block crosswalks, a “State Law – YIELD to Pedestrians/Bikes within Crosswalk” (R1-6) sign can be placed on the centerline wherever motorist yielding is still a problem, even after adding the YIELD pavement markings. (See Recommendation No. 3.) Because these signs are in the middle of the road, they are effective at slowing all vehicles and in increasing motorists compliance; however, they are sometimes hit and, even with flexible posts, may need to be replaced occasionally. These devices may also be placed along the edge of the traveled way rather than in the middle of the street.



A pilot installation could be installed at the mid-block crosswalk on Donax Street just south of Periwinkle Way. This crosswalk is located such that drivers’ accelerating upon entering Donax Street may unexpectedly encounter pedestrians and/or cyclists.

Examples of additional locations where this treatment could assist are:

- Periwinkle Way at entrance to Lighthouse Park parking lot
- Periwinkle Way at the Dairy Queen crossing
- Periwinkle Way at Bailey Homestead Preserve/Roadside Park
- Periwinkle Way at Billy’s Bike Rentals
- Periwinkle Way at the Sanibel Community Association
- Periwinkle Way east of Palm Ridge Drive
- Sanibel-Captiva Road just west of Rabbit Road

There are several other mid-block crosswalk locations that are not mentioned in the above list. We do not mean to exclude them from consideration of this suggested treatment; however, the above-listed locations are along corridors more heavily used by pedestrian and bicycles. In addition, the crash history indicates that the preponderance of bicycle/pedestrian vs. motor vehicle crashes has occurred in the Periwinkle corridor. These types of signs can also be placed along the roadway edges if it is found that emergency vehicle access during periods of high congestion becomes problematic. These signs are typically mounted to provide for a “spring-back” if hit by a vehicle. Our experience has been that this type of device can withstand several “hits” before being damaged to the extent that it must be replaced. We have found no evidence that they present a hazard to emergency vehicles.

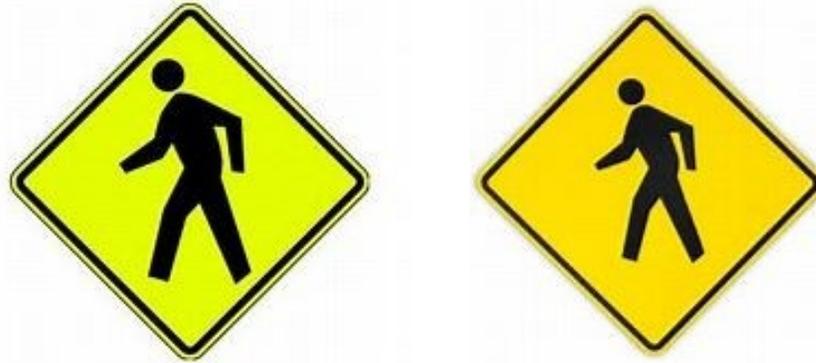
**Recap of Citizen Input:** The survey reported about 86% of those responding either Agree or Strongly Agree and 14% of those responding Disagree or Strongly Disagree with this Recommendation. The major concern of a number of respondents was placement of any sign in the middle of the roadway. As noted in our Recommendation, these signs may also be placed at the roadway edge rather than the mid-line. We do not advocate a wholesale sign placement project; however, this Recommendation would follow the previous Recommendation (regarding the in-roadway “YIELD” markings). They could be used as a supplement rather than as a primary tool. As noted in the recommendation, there are several locations recommended for a pilot treatment. Specifically, we believe that, if a pilot is to be implemented, then the crossings at Periwinkle Way and the Dairy Queen and Periwinkle Way and the Sanibel Community Association would be good initial application candidates.

Another issue raised by several of the respondents was the addition of a bicycle symbol to the sign panels, if this treatment is to be used. The City Public Works Department had several examples of such signs made up for the Open House. TYLI concurs, that while not a standard, such a modified sign, if implemented, would be appropriate on Sanibel due to the high volume of both pedestrians and bicyclists using the crosswalks.

In addition to Respondent concern regarding the use of any additional signs, we also discussed these signs and their placement with the Police Department. Both Police and Fire service are concerned about the use of these signs in the mid-line. These emergency vehicles often are forced to travel along the centerline during high season and would have to travel over these signs. The signs are constructed to rebound from such action; however, placement along the roadway edges, if implemented, would obviate that issue.

### Recommendation Number 5

**Concern:** The MUTCD has, in the latest edition, promoted the use of high-visibility fluorescent yellow-green as the required color for new or replacement school signing. In addition, the high-visibility color is preferred for pedestrian, and bicycle signing. New or replacement school signing is required; however pedestrian and bicycle signing is only recommended.



The high intensity fluorescent yellow-green sign is on the left and the standard yellow sign is on the right.

**Recommendation:** Institute a program of upgrading signage to the high-visibility color, where appropriate. As older or otherwise deteriorated signs are in need of replacement, they should be replaced with the high-visibility fluorescent yellow-green.

**Recap of Citizen Input:** The survey reported about 93% of those responding either Agree or Strongly Agree and 7% of those responding Disagree or Strongly Disagree with this Recommendation. The major issue for many of those responding was that any such warning sign include both a pedestrian and a bicycle symbol. As mentioned with respect to previous Recommendations, the addition of a bicycle symbol, while not MUTCD-compliant, would be acceptable for use on Sanibel as it would be consistent with similar uses already in place or being considered.

Many respondents were concerned with cost issues. TYLI is not recommending a wholesale replacement program; however, we recommend that as signs are replaced due to age or other factors, they be replaced with the high-intensity color. It is important to remember that the use of the yellow-green fluorescent color is restricted to school (required), bicycle and pedestrian (recommended) locations and not for other diamond-shaped warning signs.

A reasonable pilot program could be the replacement of only the pedestrian warning signs along Periwinkle Way coupled with a monitoring program to attempt to gauge driver reaction to the signs.

### Recommendation Number 6

**Concern:** Many intersections have overgrown or low hanging foliage, trees and shrubs, as well as posts, signs, and other obstructions to vision located such that sight lines for motorists, bicyclists, and pedestrians are impacted by lack of adequate reaction/stopping time/distance. The effect of poor sight lines not only hides oncoming bicyclists and pedestrians on the path, but even makes it difficult for motorists to see oncoming traffic.

**Recommendation:** We recommend that foliage continue to be cut back to improve sight lines. We have provided a list following this recommendation that includes a number of locations that we identified on our site reconnaissance. Trimming of foliage should continue to be scheduled on a regular basis several times annually. Some plants/shrubs/trees grow faster than others and may need closer attention.



Example of trimming needed: foliage blocking sight lines at S. Yachtsman Drive and Periwinkle Way on the left and at Anchor Drive/Periwinkle Way intersection on the right.



The following table is a sample listing of locations where trimming back the brush, tree limbs and other sight line obstructions may assist motorists, bicyclists, and pedestrians. The table represents conditions as found on the dates of inspection. Trimming and foliage maintenance is an ongoing project for the City of Sanibel Public Works Department. Additional resources may be required to continue the level of maintenance necessary to assure adequate sightlines and for protection from errant limbs or branches by users of the SUP.

Intersections		
Issues →	Trim brush	Site Specific
Periwinkle Way & Sanibel Lighthouse		●
Periwinkle Way & Seagrape Lane	●	
Periwinkle Way & Buttonwood Lane	●	
Periwinkle Way & E. Gulf Drive/Anhinga Lane	●	
Periwinkle Way & Lagoon Drive	●	
Periwinkle Way & Sabal Street	●	
Periwinkle Way & S. Yachtsman Drive/N. Yachtsman Drive	●	
Periwinkle Way & Anchor Drive	●	
Periwinkle Way & Pen Shell Drive/Limpet Drive	●	
Dixie Beach Boulevard & Albatross Road	●	
Periwinkle Way & Casa Ybel Road		●
Sanibel Captiva Road & Shell Museum Driveway		●
Sanibel Captiva Road & Entrance to Ding Darling	●	
Sanibel Captiva Road & Sanibel School West Drive	●	●
Sanibel Captiva Road & Sanibel School East Drive	●	
Sanibel Captiva Road & Rec Center Access Driveway	●	
Sanibel Captiva Road & Ding Darling Maintenance Road	●	
Sanibel Captiva Road & LCEC Access Road	●	
Sanibel Captiva Road & Wild Lime Drive	●	
Sanibel Captiva Road & Wulfert Road	●	
Sanibel Captiva Road & Water Tank Access Road	●	
Sanibel Captiva Road & Pine Tree Drive	●	
Sanibel Captiva Road & Pine Avenue	●	
Sanibel Captiva Road & Mangrove Lane	●	
E. Gulf Drive & Almas Court	●	
W. Gulf Drive & Butterknife Place		●
W. Gulf Drive & Tarpon Bay Road	●	●
Tarpon Bay Road & Island Inn Road		●
Tarpon Bay Road & Sanibel Blvd.		●
Tarpon Bay Road & Lee Road		●
Tarpon Bay Road & Wax Myrtle Way	●	●
Tarpon Bay Road & Periwinkle Way	●	
Tarpon Bay Road & Bailey's Northern Driveway	●	●
W. Gulf Drive & Daniel Drive north	●	
W. Gulf Drive & Island Inn Road	●	

**Recap of Citizen Input:** The survey reported about 95% of those responding either Agree or Strongly Agree and 5% of those responding Disagree or Strongly Disagree with this Recommendation. This issue resonated strongly with the most respondents. The City has an ongoing program for vegetation

trimming and foliage inspection; however, as mentioned by several respondents, there are more eyes “out there” than on the City staff. One suggestion was made that the City consider implementing some means of real-time reporting for those spot locations where vegetation becomes an issue and such a location is not within the current trimming program. Due to the nature of different plant types, some may grow faster than others and may necessitate more frequent trimming; however, site specific information would assist the City Public Works Department in scheduling and follow up.

Several others mentioned two specific locations that should be re-examined: Donax Street at Periwinkle Way at the eastbound approach on the southeast corner; Periwinkle Way at Lindgren Boulevard at the eastbound and northbound approaches on the southeast corner. Several bicyclists noted that when making these specific approaches, the foliage, while not overgrowing the SUP, blocks the sight triangle at the corner such that eastbound cannot see northbound and vice versa.

The table above in the Recommendation could be amended to include every intersection and segment of SUP; however, TYLI has provided these examples as locations where we found foliage obstructions at the date of inspection. Due to the ongoing nature of the current City program, it may reasonably be presumed that some of these locations have already been handled.

**Recommendation Number 7**

**Concern:** Use and placement of black/white regulatory signs in lieu of diamond-shaped standard yellow warning signs.

**Recommendation:** Sanibel has opted for black/white regulatory signs rather than diamond-shaped standard yellow warning signs normally used as advance warning signs at mid-block crosswalks. While there is no precedent for the use of regulatory signs rather than warning signs in this instance, we recommend that the City ensure that the current signs are placed in such a way that adequate distance is maintained between the signs and the hazard to allow a motorist time to react. While no specific distance is given in the MUTCD for the conditions on Sanibel, we recommend a minimum spacing of 250' between signs given the 30 MPH and 35 MPH speed limits on Periwinkle Way and Sanibel-Captiva Road.



The sign on the left is the first sign seen by motorists as they approach a mid-block crosswalk. The right-hand sign, second in the series, contains the penalty for failure to obey.

**Recap of Citizen Input:** The survey reported about 86% of those responding either Agree or Strongly Agree and 14% of those responding Disagree or Strongly Disagree with this Recommendation.

Many of the Respondents to this survey question appear to believe that TYLI is recommending the installation of new signs. That is not the case. Our Recommendation is that the existing signs be re-evaluated to assure that the placement is consistent with the recommended location and spacing set forth in the MUTCD.

The current signs are not MUTCD-compliant; however, as with other sign issues on Sanibel TYLI recognizes that the City has adopted a consistent sign program wholly within the City and appears to have a reasonable compliance rate along with public acceptance of the current signage.

Advance warnings for crosswalks are a necessary safety issue and for compliance with the MUTCD.

### Recommendation Number 8

**Concern:** Lack of pedestrian/bicycle STOP signs on the shared use path. STOP signs are a traffic control device used to assign right of way to one direction or the other. When an intersection is uncontrolled, there may be confusion in the minds of both cyclists and motorist as to whom the right of way should be granted. Placement of STOP signs could alleviate this confusion.

**Recommendation:** There are locations where the installation of STOP signs on the shared use pathway will enhance safety for both motorists and bicyclists/pedestrians. Typically, neither bicyclists nor pedestrians should be required or encouraged to stop at every driveway and street crossing. However, at some locations with high traffic volumes, limited sight distances or other constraints, half-size STOP signs placed specifically for bicycles and pedestrians are appropriate.



Exit from Ding Darling Preserve at Sanibel-Captiva Road



Left: Standard 36" STOP sign. Right: Half-size shared use pathway STOP sign.

The following are those locations where we believe this treatment will be useful. This listing is not meant to be a rigorous engineering analysis; however, it is an indication of how the assignment of right of way could be approached at these specific locations. Upon further review, the City may wish to add or eliminate any of these or other specific locations. Rather than placing large numbers of signs at all of the suggested intersections, we recommend a pilot program at several locations. After observation and assessment of how these locations are working – or not working – additional locations could gradually be introduced to the program.

In another recommendation (No. 11 on Page 20), we also discuss considering the addition of additional pavement markings at certain commercial driveways and at multi-family and resort driveways.

<u>Intersection</u>	<u>Approach Direction</u>			
	<u>North</u>	<u>South</u>	<u>East</u>	<u>West</u>
Sanibel-Captiva Road at Rabbit Road mid-block marked crosswalk	X	X		
Tarpon Bay Road and Periwinkle Way	X	X	X	X
Tarpon Bay Road and West Gulf Drive	X	X	X	X
Tarpon Bay Road and Sanibel-Captiva Road	X	X	X	X
Donax Street at the mid-block crosswalk south of Periwinkle Way			X	X
Periwinkle Way crosswalk at entrance to Lighthouse Park parking lot	X	X		
Periwinkle Way/Causeway Boulevard/Lindgren Street		X	X	X
Periwinkle Way at Bailey Road crosswalk	X	X		
Periwinkle Way at Dairy Queen mid-block crosswalk	X	X		
Periwinkle Way at Billy’s Bike Rentals mid-block crosswalk	X	X		
Periwinkle Way at Sanibel Community Association mid-block crosswalk	x	X		
Periwinkle Way at St. Michael’s Church mid-block crosswalk	X	X		
Casa Ybel Road at Periwinkle Way	X	X	X	X
East Gulf Drive at Nerita Street		X		
Middle Gulf Drive at Nerita Street			X	X
Middle Gulf Drive at Fulger Street			X	X
Middle Gulf Drive at Donax Street	X	X		
Middle Gulf Drive at mid-block crosswalk west of Cowry Court	X	X		
Causeway Boulevard at Chamber of Commerce mid-block crosswalk			X	X

**Recap of Citizen Input:** The survey reported about 83% of those responding either Agree or Strongly Agree and 17% of those responding Disagree or Strongly Disagree with this Recommendation.

The idea of adding more signs was not very popular with many of the respondents; however, there were also many who felt that such a program would be of value.

During the review of the respondents’ comments, TYLI had the impetus to re-think this Recommendation and would modify it to recommend that rather than STOP signs on the SUP, the City consider the use of YIELD signs at two pilot locations indicated in the original Recommendation: Sanibel-Captiva Road at Rabbit Road; Donax Street at mid-block crosswalk south of Periwinkle Way.

In addition, the intersection of Sanibel-Captiva Road and Wulfert Road was cited by several respondents as being a good candidate for this treatment. TYLI believes that if the "YIELD" option is chosen, then we would concur. Isolated "STOP signs in the absence of steady traffic tend to promote disrespect for all STOP signs and we do not recommend that treatment.

If the "YIELD" treatment is shown to be effective, then other locations could be added to the program.

### Recommendation Number 9

**Concern:** Enhancement of ongoing active public awareness campaign by both the City of Sanibel and the Sanibel Bicycle Club.

**Recommendation:** TYLI recommend that the City continue and enhance the targeted enforcement campaign aimed at educating the public – both motorists and cyclists – with bicycle renters/resorts, police, Chamber of Commerce, the Sanibel Bicycle Club, Sanibel Causeway toll booth employees, hotel/resort owners and staff, as well as any other groups that can assist in educating the public in safe bicycling and motoring habits in an island city. One excellent resource is the video presentation prepared by the Sanibel Bicycle Club. That video may be accessed on the Internet at:

<https://www.youtube.com/watch?v=4CITdJ6m9yo>

This educational effort should continue to include helmet, ear bud/earphone/cell phone education along with proper signaling behavior for bicyclists. For motorists, reminders to keep an eye out for pedestrians and bicyclists, along with the possibility of some sort of reward program for being caught “being safe,” e.g., stopping to let pedestrians cross a street in a marked crosswalk, walking a bicycle along a crowded length of pathway, etc. Signs along the shared use path reminding cyclists to yield to pedestrians (see figures below) could also be considered, keeping in mind the desire to keep “sign pollution” to a minimum.

In addition to vacationing and other slower-speed recreational bicyclists, we observed a number of higher-speed (in excess of ten miles per hour) cyclists using the pathways. The crash reports we were provided include at least one crash involving a high-speed cyclist that occurred on the pathway. The consequences of a high-speed crash on the pathways between bicyclists or bicyclists and pedestrians could be deadly. It has been our experience that high-speed cyclists are more comfortable on the roadway. Part of the continuing education effort should be to remind motorists that cyclists, regardless of speed, are entitled to use the roadway and motorists must share the road allowing at least three feet between vehicles and bicycles when passing.



**Recap of Citizen Input:** The survey reported about 88% of those responding either Agree or Strongly Agree and 12% of those responding Disagree or Strongly Disagree with this Recommendation.

The major concern of most respondents seems to be the fact that bicyclists use both the SUP and the roadways. One can expect that the higher-speed bicyclists would prefer the roadway and the lower-speed bicyclist would prefer the SUP; however, that is not always the case. TYLI has no solution to this dilemma beyond stressing education for all road users. The unfortunate fact is that many people, when

on vacation, tend to forget that the rules of the road – for motorists, bicyclists, and pedestrians – are still in effect.

Many of the respondents are familiar with the “3-foot rule” legislated by the State of Florida. We suggest that City vehicles be supplied with a bumper sticker reminding drivers of this rule. We also strongly support continuing education efforts aimed at bicyclists (and pedestrians) regarding safe use of the SUP and the crosswalks.

Many respondents also mentioned a desire for increased police presence and enforcement of motoring and bicycling laws. TYLI believes that a higher degree of enforcement, if implemented, would raise overall compliance with both sets of regulations; however, such a program must be carefully crafted so that the ambiance and inviting nature of Sanibel is not compromised.

**Recommendation Number 10**

**Concern:** Parking lot entrance at Periwinkle Way and Lighthouse Park where the crosswalk at the entrance to the parking lot at the eastern tip of Periwinkle way stops abruptly on the north side of the street.

**Recommendation:** The area at the north end of the crosswalk should be adjusted to taper toward the street so as to guide bicyclists and pedestrians to the roadway edge. Signs should be erected on the north and south side of Periwinkle Way warning that the pathway ends at the beginning of the northbound road. Midway along the paved road and at the end of the pavement, install pathway ends signs. “Share the Road” signs and/or sharrows (combination bicycle and arrow symbols) should also be installed along the roadway.



Looking north at existing pathway - Periwinkle Way and entrance to Lighthouse Park parking lot.



Sharrow symbol

**Recap of Citizen Input:** The survey reported about 93% of those responding either Agree or Strongly Agree and 7% of those responding Disagree or Strongly Disagree with this Recommendation. The comments do not indicate much difference from the survey numbers quoted above. There were several suggestions that if Sharrows are used at this location as a pilot program, they also be considered for several other locations.

TYLI concurs with this proposal.

**Recommendation Number 11**

**Concern:** Many commercial driveways (i.e. Huxter’s, Periwinkle Place, Tahitian Gardens, et. al.) have higher traffic volumes than do many of the side streets located along Periwinkle Way. There have been a number of crashes involving bicycles at several of these driveways along Periwinkle Way.

**Recommendation:** For example, at the first location shown below there have been three crashes in the past three years. Two of the three involve motorists turning into the parking lot from the roadway and one involved a motorist leaving the parking lot. The second location depicted has also experienced crashes at the access points. As a mitigation measure, we recommend that path crossings of major commercial driveways be striped either with parallel edge lines or similar to mid-block crosswalks; that is in addition to edge lines along the driveway, install a ladder-type pattern across the driveway to alert both motorists and non-motorists of the presence of each other. This treatment may eliminate the need for the T-shaped “Look Both Ways” driveway signs at these locations.



The picture below shows a comparison of the ladder markings and the parallel edge liner markings.



The ladder-style markings have been shown to be very effective in alerting both motorists and pedestrians to the location of crosswalks. Although this proposed application of the ladder-style markings is not typical, there is empirical evidence that more visible markings provide a safer driving environment. Because of the cost of installing and maintaining ladder-style markings, we do not advocate this treatment for most commercial driveways or for residential driveways; however, at major condominiums and resorts, at least parallel edge markings should be considered.

The addition of STOP signs and STOP bars in the commercial parking lots is also recommended at some locations. The latter will require the cooperation of the property owners.

We have also reviewed City of Sanibel Resolution 86-07, *Standards for Parking and Loading Areas and Driveways*. We did not find any reference to maximum driveway widths or curb cuts or minimum driveway spacing. We recommend that the City consider adding these provisions to the existing regulations to improve both general safety and to provide for smoother traffic flow. Typically, residential driveway widths should not exceed 15' in width for single-family dwellings, 18'-20' in width for multi-family dwellings, and 24' in width, per direction, for commercial locations. At commercial locations, if it is desired to have both entrance and exit at the same location, i.e., sharing one driveway "cut" in a property's road frontage, the directional traffic should be separated by a traffic island of at least five feet in width. The island, if installed, may be planted with low shrubs not to exceed 24"-30" mature height. Care should also be exercised in permitting any sort of signage in a traffic separator island. Such signage could negatively impact sight lines.

**Recap of Citizen Input:** The survey reported about 96% of those responding either Agree or Strongly Agree and 4% of those responding Disagree or Strongly Disagree with this Recommendation.

Respondents were about equally split between ladder-style and parallel-style SUP markings. Since there are already a number of locations where parallel edge markings are in place, TYLI recommends adding parallel markings at two or three high crash potential or proven crash locations. Among the most logical candidates would be Huxter's parking lot; Bailey's parking lot, Periwinkle Place, and Tahitian Village. One location could be used for ladder-style markings as well to gauge public reaction.

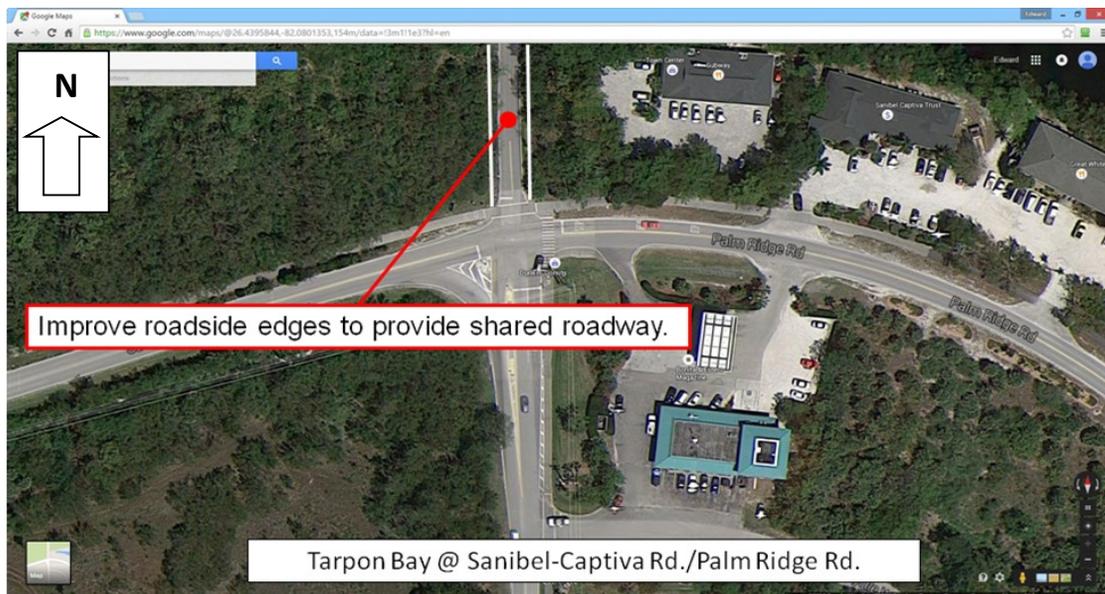
If the City chooses to implement such a pilot program, it is important that a monitoring system be included as part of the program to determine if the program should be expanded or if ladder-style markings might be more effective in some locations.

### **Recommendation Number 12**

**Concern:** Tarpon Bay Road at Sanibel-Captiva Road/Palm Ridge Road – The north leg of this intersection leads to a waterfront recreational area that is part of the J.N. “Ding” Darling (DD) National Preserve. It is used by both motor vehicles and bicycles.

**Recommendation:** We recommend the installation of “Share the Road” signs, sharrows, and, if possible, an extension of the shoulder as a widened bicycle accommodation along both sides of the northerly leg of Tarpon Bay Road.

Based on our discussions with City Staff, we understand there are several factors outside of the immediate control of the City that will affect the City’s ability to implement any long-term changes or improvements at this location. Our recommendation is meant to assist in the short term while the City continues to work toward a more permanent resolution.



**Recap of Citizen Input:** The survey reported about 88% of those responding either Agree or Strongly Agree and 12% of those responding Disagree or Strongly Disagree with this Recommendation.

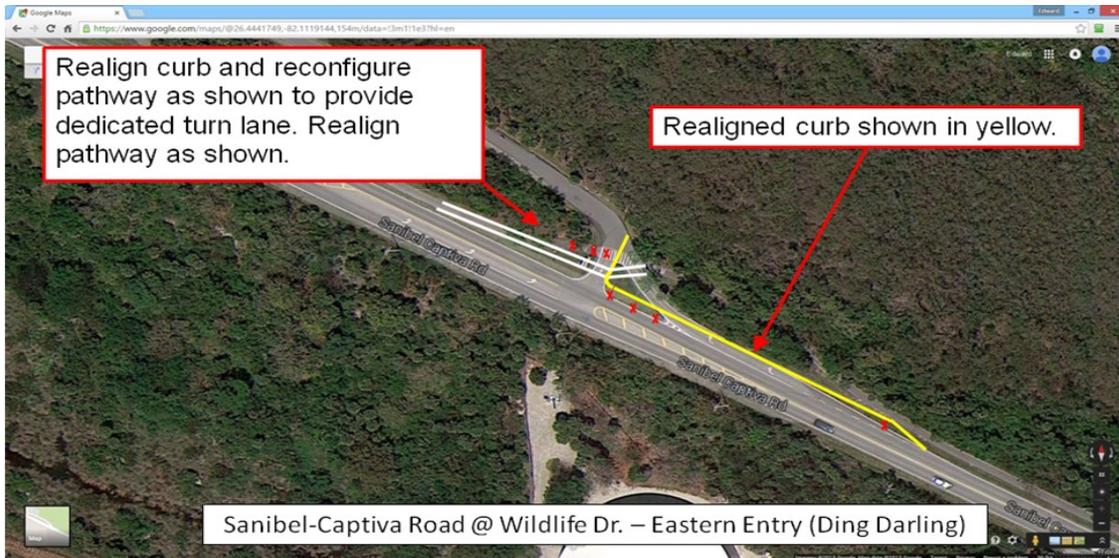
Interestingly, many comments viewed this as a low-priority issue or even as a non-issue; however, the survey responses indicate a very high percentage of agreement with the recommendation.

As noted in the table in the Introduction to this Report, TYLI has marked this Recommendation as not being an immediate priority.

### **Recommendation Number 13**

**Concern:** Sanibel-Captiva Road and Ding Darling Entrance – The westbound approach to Ding Darling Entrance consists of a long dedicated lane that crosses the shared use pathway in such a way that neither motorists nor pedestrians/bicyclists can see or be aware of one another’s presence until they are extremely close.

**Recommendation:** We recommend a realignment of the westbound entrance to provide a dedicated turn lane from Sanibel-Captiva Road into Wildlife Drive as shown on the photo below.



**Recap of Citizen Input:** The survey reported about 88% of those responding either Agree or Strongly Agree and 12% of those responding Disagree or Strongly Disagree with this Recommendation.

The entrance to Ding Darling is within the National Wildlife Refuge (NWR) and any work must be coordinated with the Refuge Manager. The NWR Manager has indicated that the refuge will work with the City to alleviate issues due to bicycle/pedestrian/motor vehicle conflicts at both the entrance and the exit.

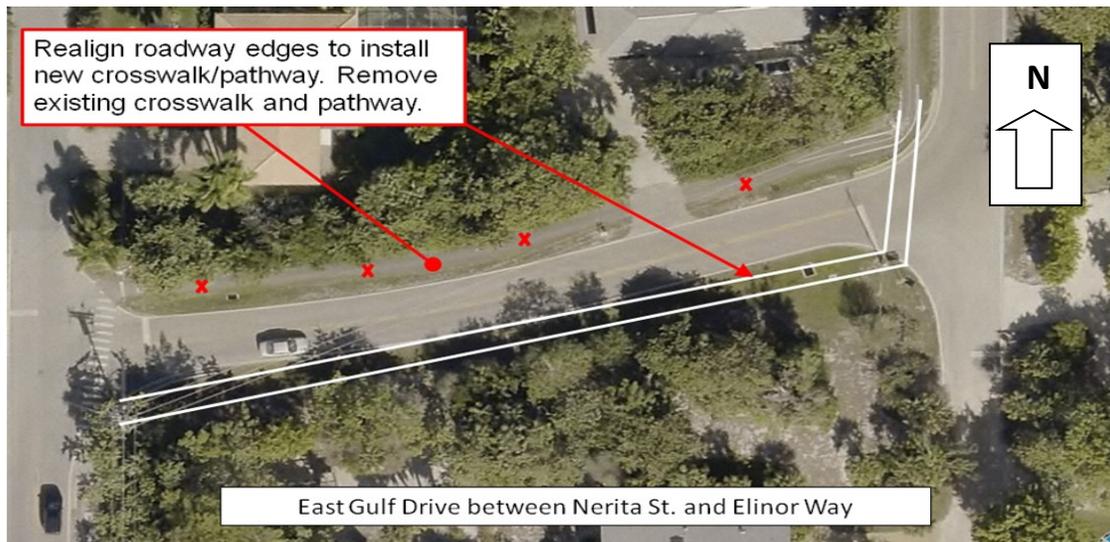
After a further review of this location TYLI suggests that the City and the Refuge confer to develop a plan to cut back additional foliage between the entrance roadway and the SUP. Cut-backs and trimming should be performed to assure a clear sight window from 30” above the natural ground line to about 8’ above the natural ground line. Doing so, will greatly assist both motorized and non-motorized traffic in seeing and being seen.

If there continue to be conflicts or crashes increase, then the recommended realignment of the entrance drive should be re-considered.

### **Recommendation Number 14**

**Concern:** East Gulf Drive between Nerita Street and Elinor Way – At the corner of East Gulf Drive and Elinor Way the shared use pathway bends very sharply from south to west and sight distance is restricted by vegetation outside the right-of-way. The corner clearance is constrained due to a power pole and limited right-of-way on the northwest corner.

**Recommendation:** Realignment of the pathway from the north side of East Gulf Drive to the south side with a new crosswalk at that location. This realignment will also entail the repaving of the roadway and the removal of the westerly crosswalk.



**Recap of Citizen Input:** The survey reported about 86% of those responding either Agree or Strongly Agree and 14% of those responding Disagree or Strongly Disagree with this Recommendation.

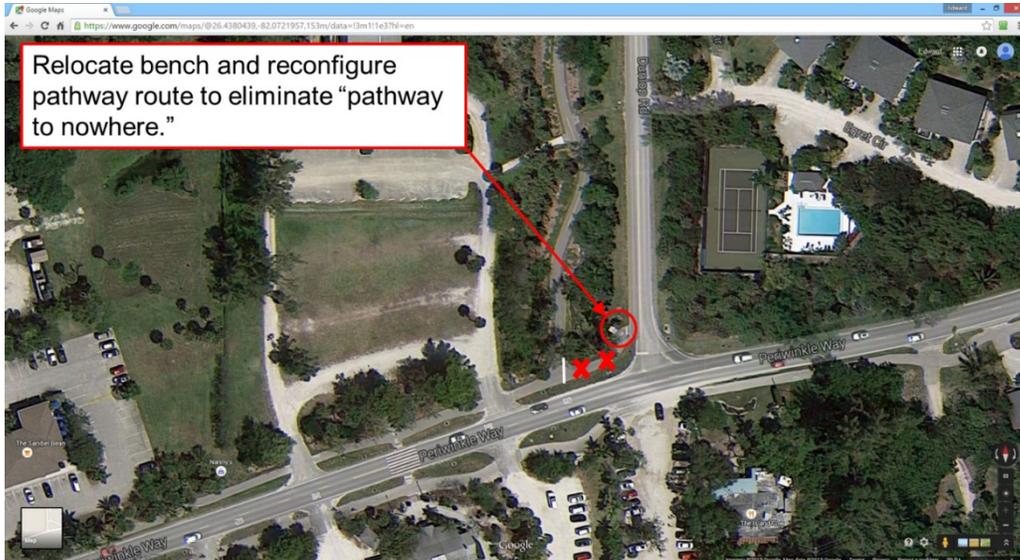
Many respondents were in agreement regarding the danger at the blind corner (northwest corner), but were concerned about having a similar issue at the southwest corner of East Gulf Drive and Elinor Way if the path is relocated as shown.

TYLI strongly supports this relocation plan; however, when the relocation is designed, caution must be exercised to assure that all approaches at the corners have adequate sight lines.

### **Recommendation Number 15**

**Concern:** Periwinkle Way at Dunlop Road – The shared use pathway continues east along Periwinkle way to this corner. About 100’ west of the intersection it branches off to join the pathway around Dunlop and Wooster Streets. The spur from the branch east to the corner does not lead to any connection.

**Recommendation:** Eliminate the spur and relocate the existing rest area bench to a location along the pathway.



**Periwinkle Way @ Dunlop Road**

**Recap of Citizen Input:** The survey reported about 92% of those responding either Agree or Strongly Agree and 8% of those responding Disagree or Strongly Disagree with this Recommendation.

Most respondents felt that while this recommendation is a good idea, it is not a high priority. TYLI concurs.

### **Recommendation Number 16**

**Concern:** Periwinkle Way @ Palm Ridge Road – The shared use pathway at this intersection bends around the corner such that the pathway is separated from the roadway by over 100’ at the corner. Pathway users seeking to move from the south side of Periwinkle Way to the north side must travel another quarter-mile east to the nearest crosswalk. Due to the volumes of traffic using the westbound to northbound right turn lane, a crosswalk at the intersection is not practical.

**Recommendation:** The City is considering a project to add additional short lengths of shared use pathway to enhance the interconnectivity of various small loops and currently dead-end pathway legs. To promote a more efficient and safer cyclist and pedestrian traffic flow in the vicinity of this intersection and as a precursor to future enhancement of the intersection, add a high-visibility crosswalk, as shown below, to the north of the Periwinkle way/Palm Ridge Road intersection near the CVS Pharmacy driveway. Add YIELD markings in the roadway prior to the crosswalk across the roadway.



### **Periwinkle Way @ Palm Ridge Road**

**Recap of Citizen Input:** The survey reported about 89% of those responding either Agree or Strongly Agree and 11% of those responding Disagree or Strongly Disagree with this Recommendation.

The major issue most respondents commented on was the location of the proposed crosswalk. During the Open House, TYLI met with and discussed this Recommendation with a number of attendees. After reviewing the comments and after taking into account the statements garnered at the Open House, TYLI is revising this Recommendation as follows:

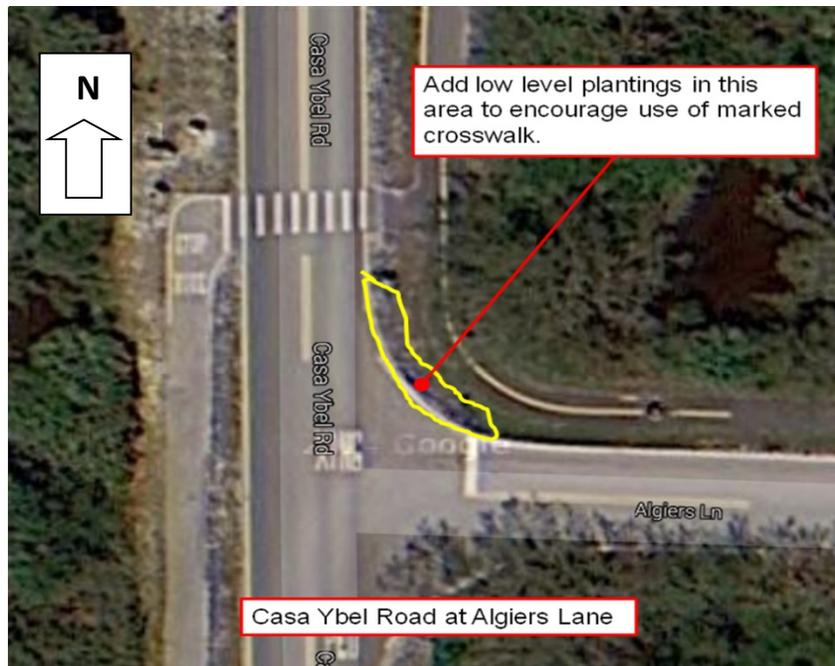
A crosswalk on Palm Ridge Road continues to be recommended; however, the location to be studied should be further north at or near Library Way. In addition, a pathway extension from Library Way south to connect to the CVS driveway should be considered as part of the project, or as an additional project.

### Recommendation Number 17

**Concern:** Casa Ybel Road and Algiers Lane – The shared use pathway at this intersection is located such that pathway users must head north to wind up heading south. We observed several users ignoring the pathway and markings and heading straight across the intersection.

The professional literature shows that pedestrians and bicyclists prefer the shortest path when crossing streets and moving from parking areas to stores or other attractors.

**Recommendation:** Install low plantings at the intersection as shown in the sketch below. Doing so will require cyclists and pedestrians to move to the marked crosswalk to cross Casa Ybel Road. In addition, add YIELD markings on the roadway to enhance the visibility of the crosswalk.



**Recap of Citizen Input:** The survey reported about 87% of those responding either Agree or Strongly Agree and 13% of those responding Disagree or Strongly Disagree with this Recommendation.

When TYLI first reviewed this intersection, we suggested that the crosswalk be re-aligned to the south so that it would be an extension of the SUP on Algiers Way. However, discussions with staff and further field review, suggested that the current location is valid – provided that several enhancements are made to assist both motorists and bicyclists/pedestrians.

If the crosswalk is to remain in its current location, then the staging/landing area located on the east side of the crosswalk should be improved by adding sufficient concrete pad area to allow for easier turning movements for bicycles once they arrive at that location. There appears to be sufficient right-of-way to allow for this improvement.

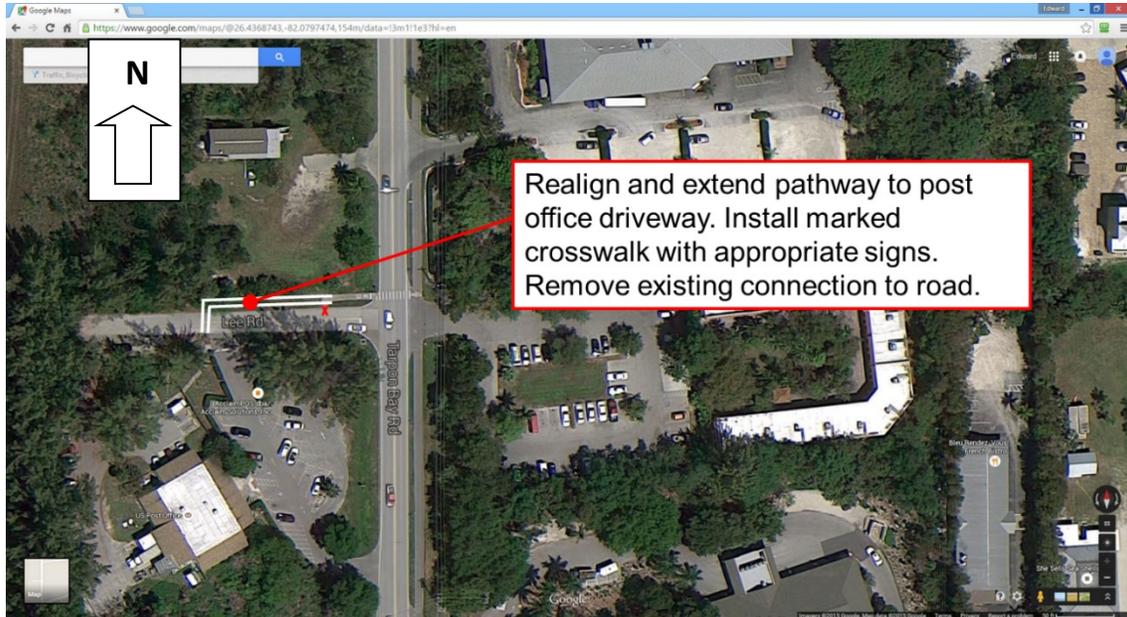
The placing of low (up to 30" height) shrubbery, low (up to 30" height) decorative sculpture or other hardscape in the area between the roadway edge/curb and the SUP in the area generally denoted in the photo above, and easterly along Algiers Way for a short distance, should be added to further encourage proper use of the crosswalk and to discourage inappropriate crossing behavior. Monitoring and observation of users reactions should be part of the project program to determine the optimum extent of placement of the plantings and/or hardscape.

### **Recommendation Number 18**

**Concern:** Tarpon Bay Road @ Lee Road – The pathway at this intersection stops on the west side of the street, but the entrance to the Post Office is farther west.

We observed several bicyclists riding against traffic to access the Post Office. The existing pathway does lead across the street, but it dead-ends at the street.

**Recommendation:** Extend the pathway west to facilitate a more logical crossing of Lee Street.



**Tarpon Bay @ Lee Road**

**Recap of Citizen Input:** The survey reported about 89% of those responding either Agree or Strongly Agree and 11% of those responding Disagree or Strongly Disagree with this Recommendation.

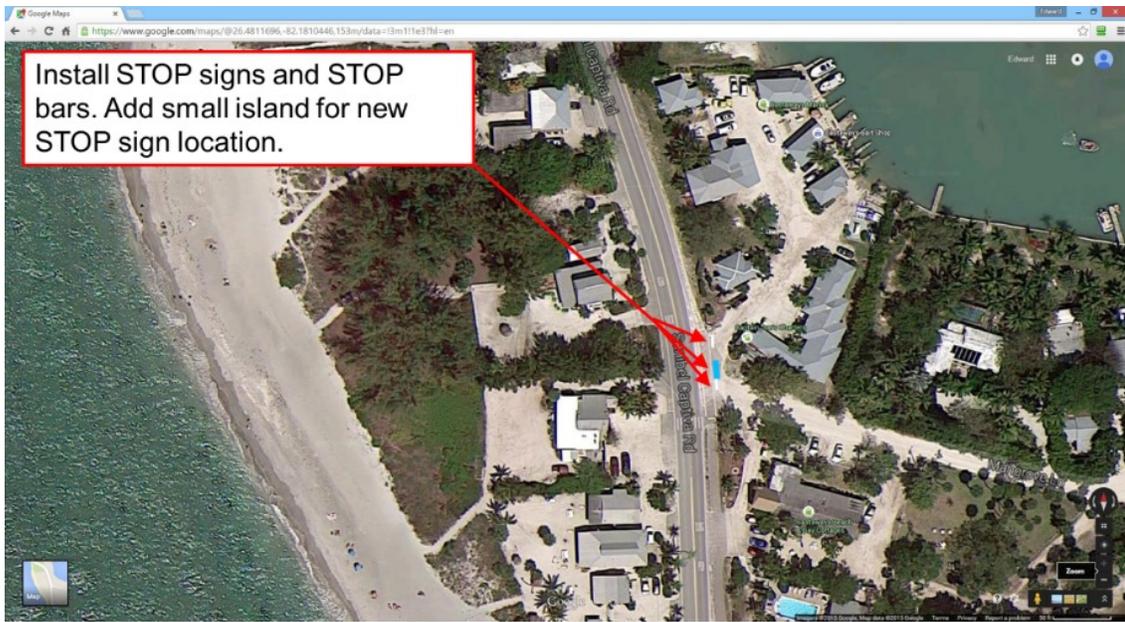
The major issue most respondents commented on was that this portion of the SUP, if extended as recommended, would place users in the position of entering the Post Office property at an exit rather than an entrance. The current SUP segment on Lee Road stops just west of Tarpon Bay Road and tends to put users in the street or to lead them to a small wooded area on the south side of Lee Road.

TYLI continues to recommend this SUP segment extension as a safer alternative to the current geometry.

### **Recommendation Number 19**

**Concern:** Sanibel-Captiva Road and Mangrove Lane – This location is actually a three-way intersection: Sanibel-Captiva Road; Mangrove Lane; and, the driveway into the Castaways Marina. This geometry creates a conflict between motorized vehicles and bicyclists/pedestrians. The exiting sight lines from both the Marina and Mangrove Lane are such that motorists have a blind spot to the west.

**Recommendation:** Relocate the STOP sign on Mangrove Lane and install stop lines at both the street and marina driveway locations. In addition, a small island to provide a more prominent location for the STOP sign would prevent vehicles from moving directly from Mangrove Lane to the Marina and vice versa.



**Sanibel-Captiva Road @ Mangrove Lane**

**Recap of Citizen Input:** The survey reported about 89% of those responding either Agree or Strongly Agree and 11% of those responding Disagree or Strongly Disagree with this Recommendation.

Most respondents had little to comment about for this Recommendation. This is not a high-crash area, but the geometry of the intersection does present visibility issues. In addition, it is our understanding that a number of local residents use golf carts for local travel. Adding these vehicles to the mix could be an issue as they act similarly to full-sized motor vehicles in a conflict with bicycles or pedestrians.

TYLI continues to recommend that this location be the subject of further study.

## Discussion of Additional Open-ended Comments not associated with Numbered Recommendations

The survey instrument used for the Open House and on the Internet encouraged respondents to add other comments, not necessarily associated with the numbered recommendations in the body of the Report. TYLI has tabulated and reviewed these comments as well as the numbered recommendation comments and we offer the following observations.

Among the most mentioned suggestions and concerns in these comments were, in no particular order:

- Concern regarding the carrying capacity of the roads and SUP systems
- Dichotomy between high-speed bikers and other non-speed bikers
- Bikes on roadways vs. bikes on SUP – public education needed
- Suggestions that segments of Periwinkle SUP should be moved behind businesses
- Lack of enforcement for both motor vehicles and bicyclists who disobey rules of the road – suggestions for warnings, if not citations
- Provide an “alert” sign on Causeway Boulevard telling drivers that Sanibel is a “bike-friendly” community
- Suggestions that humps, bumps, and rumble strips be installed at some locations to warn and slow vehicles/bikes
- Upgrade the signage at Rabbit Road and West Gulf Drive to better enable bicyclists to find the SUP extension behind the homes on Rabbit Road
- Many other suggestions too varied to enumerate in this listing without repeating all of the comments

TYLI has observed that even out of season when much of this study was performed, there are many times when traffic entanglements between bicyclists, pedestrians, and motor vehicles occur at some of the locations mentioned in these comments and in our previous Recommendations. Sanibel is a very “friendly” location and as more and more tourists, day-trippers, and permanent residents inhabit the finite space, the potential for escalation of these conflicts also rises. By continuing to take a pro-active approach, the City of Sanibel is showing a positive action rather than a negative reaction to these changes.

Many of the comments suggest the installation of crossing lights or other mechanical aids for pedestrians and/or bicyclists. TYLI had considered making such a recommendation, however, we do not believe that that would be consistent with the Sanibel Plan.

One of the major issues mentioned by many attendees at the Open House and repeated in the surveys is the lack of effective enforcement of the rules of the road. TYLI suggests that the City consider a program that would provide friendly warnings to violators of state law, such as the use of ear buds while riding bicycles, failure to obey traffic laws when riding bicycles on the roadway, failure of motorists to grant the right of way to pedestrians or bicyclists in crosswalks or on the SUP.

Additional study may be warranted to provide background and direction before implementing any of these citizen requests.