Table of Contents

Table of Figures

Table of Tables

Appendix

1. INTRODUCTION AND SCOPE OF WORK

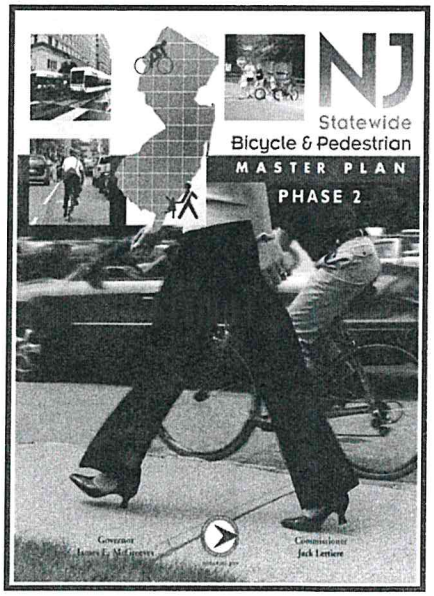
1.1 INTRODUCTION

The development of the Brigantine Beach Bicycle and Pedestrian Master Plan was sponsored through the New Jersey Department of Transportation (NJDOT) Bicycle and Pedestrian Local Technical Assistance Program. Through this program, New Jersey municipalities have an opportunity to identify bicycle and pedestrian issues and review concepts to improve bicycle and pedestrian facilities. At the request of a municipality, NJDOT provides consultant planning services to the community to perform planning studies that evaluate needs and opportunities related to bicycle and pedestrian circulation and safety, but makes no claims, promises, or guarantees about the availability of funding to complete the proposed improvements. The planning study serves as a basis for developing proposals for implementing specific improvements. The studies are locally driven in a partnership arrangement with the municipality and have a strong public outreach component.

The primary goal of the Master Plan is to develop a bicycle and pedestrian network throughout the City that provides linkages to the schools, parks, neighborhoods, and other areas of interest. The plan presents a range of improvements and implementation strategies, outlines recommended policies and practices to increase the safety and mobility of bicyclists and pedestrians, and identifies areas in need of further study to address the complex and constrained characteristics of the City.

The Local Technical Assistance Program is governed by the goals and objectives of the New Jersey Statewide Bicycle and Pedestrian Master Plan. The Master Plan has the following goals:

- **Build the Infrastructure:** "Create bicycle and pedestrian infrastructure by planning, designing, constructing and managing transportation and recreational facilities that will accommodate and encourage use by bicyclists and pedestrian and be responsive to their needs."
- **Improve Access:** "Make community destinations, transit facilities and recreation facilities accessible and convenient for use by all types and skill levels of bicyclists and pedestrians."
- **Update Policies, Ordinances and Procedures:** "Reform land use planning policies, ordinances and procedures to maximize opportunities for walking and bicycling."
- **Educate and Enforce:** "Develop and implement education and enforcement programs that will result in reduction of crashes and a greater sense of security."
- **Foster a Pro-Bicycling and Pro-Walking Ethic:** "Increase bicycling and walking by fostering a pro-bicycling and pro-walking ethic in individuals, private sector organizations and all levels of government."



The goals are factored into the bicycle and pedestrian planning and concept development process as appropriate. *The Statewide Bicycle and Pedestrian Master Plan* is available online at http://www.bikemap.com/RBA/NJBikePed.pdf.

1.2 SCOPE OF WORK

Brigantine Beach requested bicycle and pedestrian planning assistance from the New Jersey Department of Transportation-Office of Bicycle and Pedestrian Programs (NJDOT-OBPP) to develop a Bicycle and Pedestrian Master Plan. NJDOT-OBPP contracted with Michael Baker Jr., Inc. (Baker) to assist Brigantine Beach in developing the Bicycle and Pedestrian Master Plan through analysis of existing conditions and recommending locations of bicycle and pedestrian facility conceptual improvements. The Brigantine Beach Bicycle and Pedestrian Master Plan study included the following tasks:

- **Data Collection**
  - Review of Existing Planning Studies and Policies
  - Background Data
  - Field Data Collection

- **Public Outreach**
  - Online Community Survey
  - Steering Committee Meetings
  - Public Information Centers

- **Existing Conditions Analysis**
  - Bicycle and Pedestrian Crash Data
  - Bicycle and Pedestrian Network Development
  - Sidewalk Inventory and Assessment
  - Bicycle Compatibility Assessment
  - Bicycle Parking
  - Intersection Assessment

- **Recommendations**
  - Pedestrian Facility Improvements
  - Bicycle Facility Improvements
  - Proposed Bicycle Rack Locations
  - Intersection Improvements
  - Concept Level Layouts
  - Implementation Matrix and Potential Funding Resources

- **Bicycle Route Map**

2. DATA COLLECTION

2.1 REVIEW OF EXISTING PLANNING STUDIES AND POLICIES

2.1.1 Brigantine Beach 2010 Master Plan

The City of Brigantine Beach prepared an updated Master Plan in 2010. The Master Plan identified biking and walking as a goal related to recreation in that the community desires to "increase public recreation including but not limited to pedestrian and bikeways, recreation fields, parks and indoor recreation facilities." Additionally the 2010 Master Plan addresses the desire of its residents for a Bike Path through the community. The 2010 Plan states, "A Bike Path affords Brigantine's residents a safe means of recreation. In addition to its use as a recreational facility, a Bike Path can be used as a transportation system. This system will reduce residents' dependence on the automobile and ultimately result in reduced emissions, reduced fossil fuel consumption, and reduced junkyard waste."

2.1.2 Brigantine Beach Resolutions

In support of the Brigantine Beach Master Plan and further demonstrating the desire to improve bicycle and pedestrian facilities throughout the City, the Brigantine Beach City Council passed three resolutions on September 4, 2013. The three resolutions, subsequently signed by the Mayor, authorized the submission of grant applications for three NJDOT grants which include the Safe Streets to Transit Program, the Bikeway Grant, and the Municipal Aid Program. Copies of the resolutions are located in **Appendix A.**

2.1.3 Complete Streets Policy

The Local Technical Assistance (LTA) Program is also governed by the NJDOT Complete Streets (CS) policy. The policy was finalized in December 2009 and requires that future roadway improvement projects include safe accommodations for all users, including bicyclists, pedestrians, transit riders, and the mobility-impaired. The NJDOT CS policy is implemented through the planning, design, construction, maintenance, and operation of new or rehabilitated transportation facilities within public right-of-ways that are federally or state funded, including projects undertaken or administered by NJDOT.

It is recommended that Brigantine Beach develops and implements a Complete Streets Policy. The NJDOT's CS Policy could be used as an example and it is included in **Appendix B.** The NJDOT Complete Streets webpage http://www.state.nj.us/transportation/eng/completestreets/ provides additional information on the Policy, implementation, training and workshops, and helpful links.

2.2 BACKGROUND DATA

The City of Brigantine Beach is a 10.364 square mile barrier island located immediately northeast of Atlantic City. The population of Brigantine Beach in 2010 was 9,450 people, with 38% above the age of 55 and 13% under the age of 14. Tourism is the predominant industry and seasonal fluctuations impact nearly all aspects of the community. The population of Brigantine Beach reaches an estimate of 30,000 people during the peak summer months of May through September.

There is one NJ Transit bus route, Route 501, which provides service between Brigantine Beach and Atlantic City. The bus runs approximately every 50 minutes to 1 hour during weekdays with the exception of morning peak hours, 7:00 AM – 9:00 AM and evening peak hours, 4:00 PM – 6:00 PM with nine minute and 20 minute headways, respectively. The route travels along Brigantine Boulevard, Harbor Beach Boulevard, and Brigantine Avenue.

Nearby major roadways link the Atlantic City/ Brigantine Beach area with Philadelphia and New York City. These routes include the Atlantic City Expressway, U.S. Route 40-322 (Black Horse Pike), U.S. Route 30 (White Horse Pike), U.S. Route 9, and the Garden State Parkway.
There is one means of ingress and egress to the municipality, the bridge over the Absecon Channel (Brigantine Boulevard - NJ Route 87), which connects Atlantic City with Brigantine Beach. During peak summer months, May through September, this one access point is subject to high traffic volumes.

The 2010 Master Plan highlights the need to monitor traffic conditions along Brigantine Boulevard to determine if the one means of access can continue to adequately service Brigantine Beach due to anticipated further casino development along the Marina District in Atlantic City, coastal storm hazards, continued population increases, and increased tourist traffic.

In August of 2001, the Atlantic City Connector and Atlantic City Tunnel were opened providing improved traffic flow through Atlantic City to Brigantine Beach. Channeling traffic to Brigantine Boulevard, these highway improvements have increased the vehicular volume to Brigantine Beach. Roadways within Brigantine Beach include five major roadways running south to north of the island. These include Brigantine Boulevard (NJ 87), Brigantine Avenue (CR 638), Ocean Avenue, Revere Boulevard, and Bayshore Avenue. The remaining streets are local roads in a grid of short blocks running perpendicular to the major corridors.

Brigantine Beach has set a goal to increase public recreation by installing bike lanes along Brigantine Avenue in 2004 and Harbor Beach Boulevard and Lagoon Boulevard in 2006. Each of the installations was funded through the NJDOT Transportation Enhancement Program.

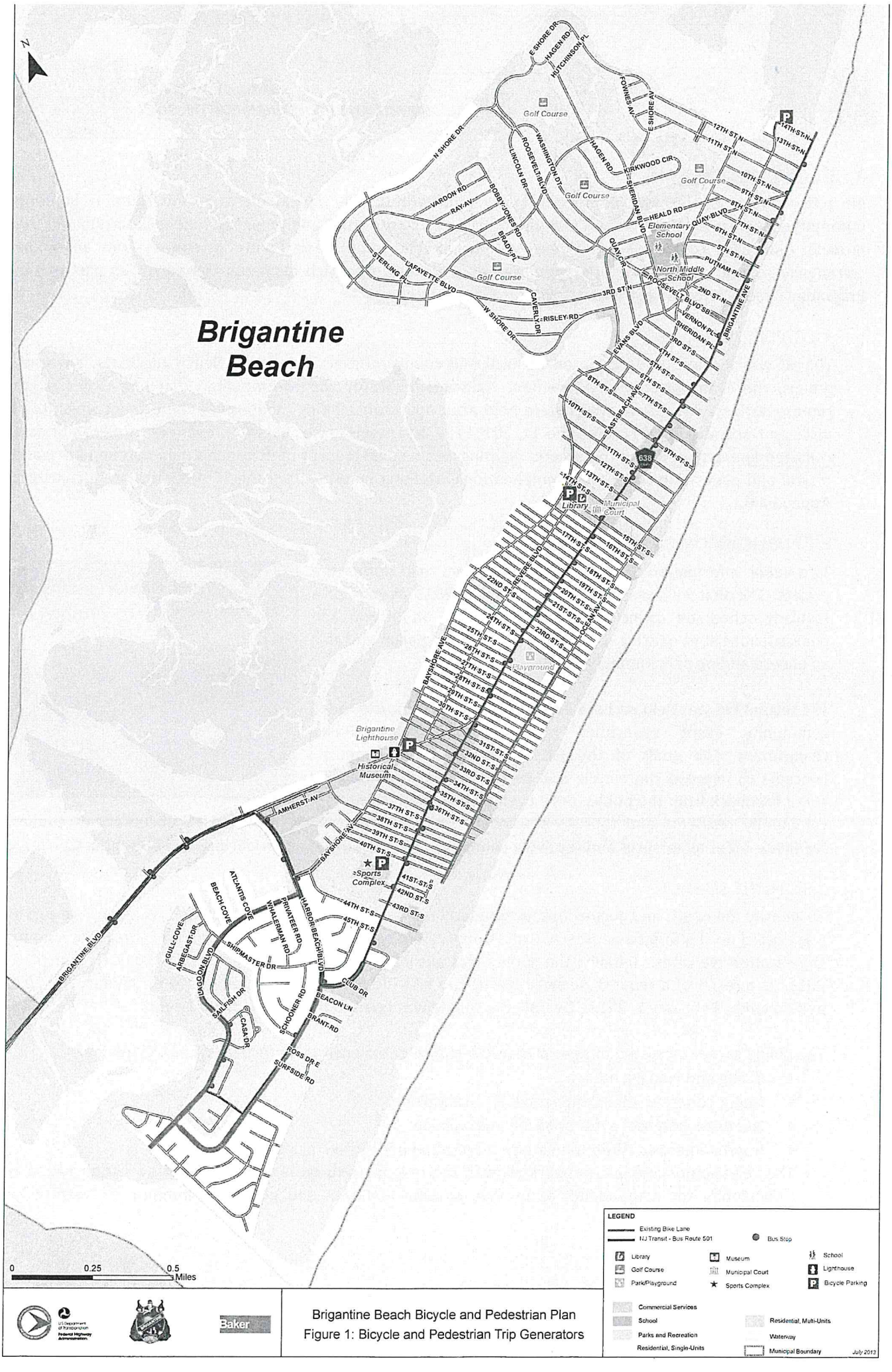
The City of Brigantine Beach is interested in making additional improvements for bicyclists and pedestrians. These types of improvements are intended to address local residents' desire for bicycle facilities, while also reducing their dependence on the automobile and ultimately result in reduced emissions, fossil fuel consumption, congestion, and increased levels of physical activity and safety.

2.3 FIELD DATA COLLECTION

Activity investigations were completed during the field data collection effort to observe and document existing travel patterns and behaviors of bicyclists and pedestrians in and around Brigantine Beach.

Several bicyclists were observed riding against traffic in bicycle lanes and pedestrian were observed crossing at intersections. Motorists did not often stop for pedestrians in crosswalks. The majority of sewer grates are not bicycle compatible.

Key bicycle and pedestrian trip generators such as schools, parks, commercial and municipal buildings, bus stops, and existing bicycle facilities are illustrated in **Figure 1.**


Brigantine Beach
N
E SHORE DR
HAGEN RD
HUTCHINSON PL
FOWNES AV
E SHORE AV
Golf Course
N SHORE DR
ROOSEVELT BLVD
WASHINGTON DR
LINCOLN DR
HAGEN RD
KIRKWOOD CIR
SHERIDAN BLVD
VARDON RD
RAY AV
BOBBY JONES RD
BRADY PL
STERLING PL
LAFAYETTE BLVD
HEALD RD
QUAY BLVD
QUAY CIR
Elementary School
North Middle School
PUTNAM PL
ROOSEVELT BLVD SB
VERNON PL
SHERIDAN PL
BRIGANTINE AVE
CAVERLY DR
RISLEY RD
W SHORE DR
EVANS BLVD
EAST BEACH AVE
638
Library
Municipal Court
DEVEREUX BLVD
OCEAN AV
Playground
BAYSHORE AVE
Brigantine Lighthouse
Historical Museum
AMHERST AV
BAYSHORE AV
Sports Complex
ATLANTIS COVE
BEACH COVE
WHALEMAN RD
PRIVATEER RD
HARBOR BEACH BLVD
GULL COVE
ARBEGAST DR
SHIPMASTER DR
LAGOON BLVD
SAILFISH DR
CASA DR
SCHOONER RD
BEACON LN
BRANT RD
CLUB DR
ROSS DR E
SURFSIDE RD
BRIGANTINE BLVD
0
0.25
0.5
Miles
LEGEND
Existing Bike Lane
NJ Transit - Bus Route 501
Bus Stop
Library
Museum
School
Golf Course
Municipal Court
Lighthouse
Park/Playground
Sports Complex
Bicycle Parking
Commercial Services
School
Parks and Recreation
Residential, Single-Units
Residential, Multi-Units
Waterway
Municipal Boundary
July 2013
US Department of Transportation Federal Highway Administration
Baker
Brigantine Beach Bicycle and Pedestrian Plan
Figure 1: Bicycle and Pedestrian Trip Generators

3. PUBLIC OUTREACH

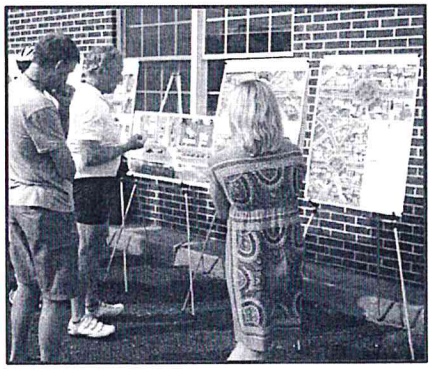
An active public involvement component was important to the development of this Plan. A Steering Committee (SC) was formed and was instrumental in guiding the study and providing feedback throughout the process. Additional comments were received from Public Information Center attendees, and an online community survey. Below is a brief summary of the public outreach elements completed as part of the Brigantine Beach Bicycle and Pedestrian Master Plan.

3.1 STEERING COMMITTEE

The SC was formed and comprised of local and county officials, Brigantine Beach residents, advocacy groups, the Transportation Management Association (TMA), and Metropolitan Planning Organization representatives. Two SC meetings were held after a kick-off scoping meeting for the project which took place on December 4, 2012 and June 11, 2013. The first meeting was held to present key findings of data collected and assessed, and the second meeting was held to present draft conceptual improvements, and bicycle and pedestrian facility recommendations. Meeting minutes from the SC meetings are included in **Appendix B.**

3.2 PUBLIC INFORMATION CENTER

Two Public Information Center (PIC) events were held during the project. The first PIC was held on January 16, 2013 as part of a regularly scheduled council meeting to present on bicycle and pedestrian facilities existing conditions in Brigantine Beach and gain an understanding of community needs.



The second PIC was held on June 29, 2013 as part of a bicycle rodeo community event sponsored by Brigantine Beach Police Department. The goals of the PIC were to present proposed concepts to improve the bicycle and pedestrian environment and solicit feedback from the public. Both events had a good turnout of community residents and tourists attending. Comment cards were provided to document attendees' feedback. Meeting minutes and receiving comments from the PICs are also included in **Appendix C.**

3.3 ONLINE SURVEY

To identify the needs and desires of the community, an on-line survey was developed. A link to the survey was posted on the Brigantine Beach, Cross County Connections, and South Jersey Transportation Planning Organization websites. Initially, the survey was available online from November 12, 2012 to January 8, 2013. As a result of a request received during the first PIC the survey was reopened on January 17, 2013 and closed by February 1, 2013. Overall, the survey was open to the public for 10 weeks.

The online survey consisted of several multiple-choice questions, which focused on the following:

- Biking and walking habits.
- Major concerns which impact biking and walking.
- Needs to increase levels of biking and walking.
- Improvements desired to increase bicycle and pedestrian facilities.

The selection of multiple answers allowed the responses to be ranked. The survey also provided an opportunity for respondents to provide specific feedback and general comments in open-ended format questions.

The following is a summary of the survey's key findings and common themes related to specific needs of biking and walking:

Key Findings

- A total of 278 responses were received.
  - 46% of the respondents live in Brigantine Beach all year-round
  - 50% of the respondents live in Brigantine Beach as a second home or seasonal resident
- The majority of respondents (91%) walk and bike for recreational purposes.
- Respondents would increase their levels of biking and walking if more or improved facilities were provided to better accommodate biking and walking. Respondents cited bicycle lanes, paths, trails, and sidewalks as potential facilities.

Common Themes

- Provide bike paths and trails that allow for use by people of all ages and abilities.
- Extend bike lanes to connect to existing bicycle facilities.
- Provide bike racks and/or bike lockers throughout Brigantine Beach.
- Improve crossing conditions at major intersections.
- Enforce the "Stop for Pedestrian" law.
- Provide smoother paving surface and fix pot holes.
- Provide a bicycle facility to connect between Brigantine Beach and Atlantic City.
- Educate bicyclists, pedestrians, and drivers on the rules of the road, particularly:
  - Riding with traffic and not on the sidewalk
  - Stopping for pedestrians in the crosswalk
- Provide a guide map to include existing bicyle facilities and attractions, and include distance markers.
- Increase separation between bike lane and motor vehicle travel lane.
- Improve pedestrian scale lighting on Brigantine Avenue and residential streets.

Corridors identified as areas of concern for walking and biking:

- Brigantine Avenue
- Brigantine Boulevard
- Harbor Beach Boulevard
- Bayshore Avenue
- Ocean Avenue

Travel Patterns

Biking

- Ninety-one percent (91%) of respondents bike primarily for recreational purposes, with shopping ranking second at 31%.
- Forty-seven percent (47%) bike on a weekly basis, while 20% bike on a daily basis.
- Nine percent (9%) bike to the beach.
- More than three-quarters (79%) of cyclists indicated that they ride in a bicycle lane; 51% said they share a lane with motor vehicles; and 48% said they ride on a paved shoulder.

Walking

- Ninety-one (91%) walk for recreational purposes; social reasons ranked second with 42%.
- Sixty-one percent (61%) walk to the beach.
- Forty-seven percent (47%) walk on a daily basis and 38% reported walking weekly.

General

- Only 20% of respondents reported that their children walk or bike to school.
- Eighty-six percent (86%) of respondents said that weather condition is the primary factor that influences their decision to ride or walk.

Influences

- When asked what would encourage them to ride a bicycle in Brigantine Beach more often, top responses included:
  - More or improved bicycle lanes - 73%
  - More or improved recreational trails and paths – 55%
  - Paved and well maintained shoulders - 48%
  - More bicycle racks and/or bicycle lockers at destinations – 35%

- When asked what would encourage them to walk in Brigantine Beach more often, top responses included:
  - More or improved recreational trails and paths - 48%
  - More or improved sidewalks - 44%
  - Improved pedestrian accomodations at intersections - 41%
  - Improved lighting on the streets – 29%

Detailed results of the online survey are included in **Appendix D.**

4. EXISTING CONDITIONS ANALYSIS

4.1 BICYCLE AND PEDESTRIAN CRASH DATA

Bicycle and pedestrian crash reports were provided by the Brigantine Beach Police Department for the period of January 2009 to December 2011. A total of 22 bicycle and pedestrian crashes occurred during this period. Seven of the crashes were pedestrian crashes with "Vehicles failing to stop/yield for pedestrians" being a contributing factor for 43% of the pedestrian crashes, and 15 were bicycle crashes. No fatal crashes occurred.

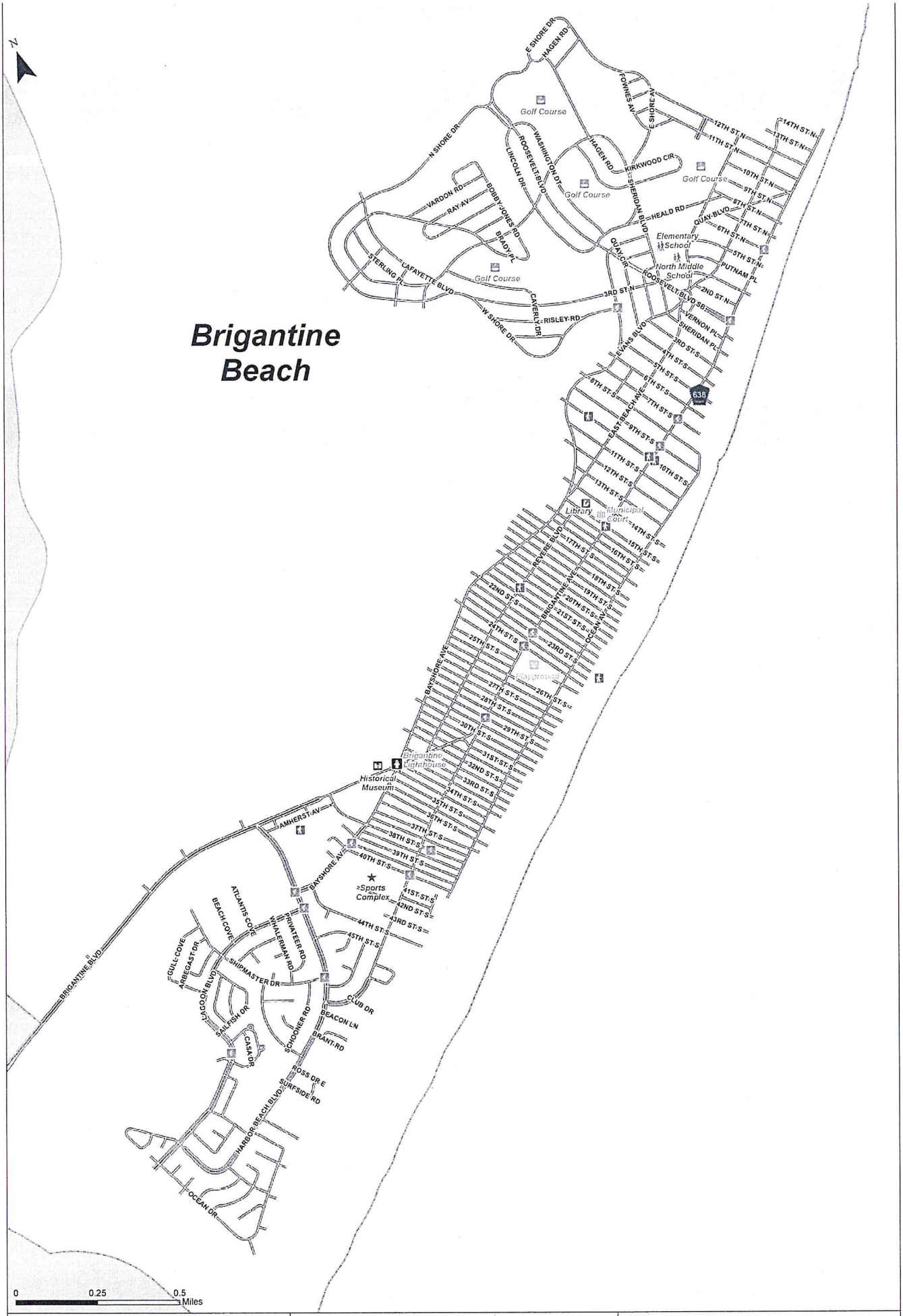
From 2009 to 2011, Brigantine Avenue was the roadway with the most bicycle and pedestrian crashes with eight crashes (five bicycle crashes and three pedestrian crashes). Brigantine Avenue from Harbor Beach Boulevard to 14th Street North spans 2.86 miles with bicycle lanes in each direction between 30th Street South and 14th Street North (2.13 miles). The eight crashes on Brigantine Avenue occurred throughout the corridor with no clustered locations.

The corridor with the second highest number of crashes was Harbor Beach Boulevard with 2 crashes.

The crash data is summarized in **Table 1** and illustrated in **Figure 2**.

Table 1: Bicycle and Pedestrian Crashes (2009-2011)

CRASH DATE	CRASH TIME	CRASH TYPE	DRIVER AGE	DRIVER GENDER	BIKE/PED AGE	BIKE/PED GENDER	CRASH LOCATION	CRASH SEVERITY	ENVIRONMENTAL CONDITION	LIGHT CONDITION	SURFACE CONDITION	VEHICLE ACTION	BIKE/PED ACTION
7/2/2009	16:17	Bicycle	30	M	58	M	Intersection of Brigantine Ave. and 9th St. S.	Moderate Injury	Clear	Daylight	Dry	Making right turn (failed to yield ROW to bike)	Traveling with traffic
7/25/2009	8:03	Bicycle	55	F	61	M	Intersection of Brigantine Ave. and 7th St. S.	Moderate Injury	Clear	Daylight	Dry	Making left turn (failed to yield ROW to bike)	Traveling with traffic
8/8/2009	8:06	Bicycle	59	F	26	M	Intersection of Bayshore Ave. and W. Shore Dr.	Complaint of Pain	Clear	Daylight	Dry	Making right turn	Traveling against traffic
11/14/2009	15:58	Bicycle	74	F	80	M	Intersection of Brigantine Ave. and 23rd St. S.	N/A	Rain	Daylight	Wet	Going straight ahead	Making left turn
5/27/2010	17:16	Bicycle	74	F	33	M	Intersection of 40th St. S. and Brigantine Ave.	Moderate Injury	Clear	Daylight	Dry	Going straight ahead	Traveling with traffic
5/30/2010	17:06	Bicycle	59	M	54	M	Intersection of Brigantine Ave. and 24th St. S.	Moderate Injury	Clear	Daylight	Dry	Going straight ahead	Making right turn
6/4/2010	17:28	Bicycle	20	M	69	M	Intersection of Harbor Beach Blvd. and Shipmaster Dr.	N/A	Clear	Daylight	Dry	Making left turn (failed to obey traffic control device)	Traveling with traffic
6/21/2010	18:09	Bicycle	61	M	15	M	Intersection of Brigantine Ave. and Roosevelt Blvd.	Moderate Injury	Clear	Daylight	Dry	Making right turn	Traveling against traffic
8/20/2010	17:24	Bicycle	76	M	15	M	Intersection of Bayshore Ave. and 39 1/2 St. S.	Moderate Injury	Clear	Daylight	Dry	Making right turn	Traveling with traffic
6/19/2011	19:40	Bicycle	51	M	9	M	38th St. S., 200 feet east of Brigantine Ave.	Complaint of Pain	Clear	Daylight	Dry	Going straight ahead	Coming from behind parked vehicle
6/24/2011	21:15	Bicycle	55	M	8	F	520 Lagoon Blvd.	Moderate Injury	Clear	Daylight	Dry	Backing	Playing in road
7/23/2011	10:45	Bicycle	44	M	50	M	Intersection of Harbor Beach Blvd. and Bayshore Ave.	N/A	Clear	Daylight	Dry	Making right turn	Traveling with traffic
7/27/2011	20:34	Bicycle	N/A	N/A	13	M	Intersection of Brigantine Ave. and 6th St. S.	N/A	Clear	Dark	Dry	Parked	Struck parked car
7/28/2011	19:07	Bicycle	61	M	54	F	Intersection of Harbor Beach Blvd. and Lagoon Blvd.	Complaint of Pain	Clear	Daylight	Dry	Making right turn	Traveling against traffic
7/31/2011	16:43	Bicycle	51	M	17	F	Intersection of 29th St. S. and Brigantine Ave.	N/A	Clear	Daylight	Dry	Going straight ahead	Traveling against traffic
4/18/2009	9:28	Pedestrian	66	M	51	M	Brigantine Ave., 3 feet south of 15th St. S.	Incapacitated	Clear	Daylight	Dry	Failed to yield ROW to pedestrian	Crossing at marked crosswalk
7/17/2009	14:35	Pedestrian	81	M	77	F	Intersection of Brigantine Ave. and 10th St. S.	Moderate Injury	Clear	Daylight	Dry	Failed to yield ROW to pedestrian	Crossing at marked crosswalk
7/22/2010	22:08	Pedestrian	44	M	17/16	M/F	Intersection of Brigantine Ave. and 10th St. S.	Moderate Injury	Clear	Dark	Dry	Failed to yield ROW to pedestrian	Crossing at marked crosswalk
9/4/2010	13:07	Pedestrian	59	M	7	M	10th St. S., 400 feet west of Beach Ave.	N/A	Clear	Daylight	Dry	Going straight ahead	Running into street
11/18/2010	15:59	Pedestrian	44	M	6	F	Harbor Beach Blvd., 100 feet east of Amherst Ave.	N/A	Clear	Daylight	Dry	Backing	Walking in parking lot
6/9/2011	19:03	Pedestrian	60	M	21	F	Jetty Beach, 160 feet north of Rock Jetty	Complaint of Pain	Clear	Dawn	Sand	Backing	Sitting on beach chair
7/26/2011	21:23	Pedestrian	23	M	13	M	Revere Blvd., 10 feet south of 21st St. S.	Moderate Injury	Clear	Dark	Dry	Going straight ahead	Swerved into lane of traffic


Brigantine Beach
N
E SHORE DR
HAGEN RD
FOWNES AV
SHORE AV
Golf Course
N SHORE DR
WASHINGTON DR
ROOSEVELT BLVD
LINCOLN DR
HAGEN RD
KIRKWOOD CIR
SHERIDAN BLVD
Golf Course
Golf Course
VARDON RD
RAY AV
BOBBY JONES RD
BRADY PL
HEALD RD
QUAY BLVD
STERLING PL
LAFAYETTE BLVD
Golf Course
QUAY DR
Elementary School
North Middle School
ROOSEVELT BLVD SB
CAVERLY DR
RISLEY RD
W SHORE DR
3RD ST N
2ND ST N
VERNON PL
SHERIDAN PL
PUTNAM PL
14TH ST N
13TH ST N
12TH ST N
11TH ST N
10TH ST N
9TH ST N
8TH ST N
7TH ST N
6TH ST N
5TH ST N
EVANS BLVD
3RD ST S
4TH ST S
5TH ST S
6TH ST S
7TH ST S
9TH ST S
10TH ST S
11TH ST S
12TH ST S
13TH ST S
14TH ST S
15TH ST S
16TH ST S
17TH ST S
18TH ST S
19TH ST S
20TH ST S
21ST ST S
22ND ST S
23RD ST S
24TH ST S
25TH ST S
26TH ST S
27TH ST S
28TH ST S
29TH ST S
30TH ST S
31ST ST S
32ND ST S
33RD ST S
34TH ST S
35TH ST S
36TH ST S
37TH ST S
38TH ST S
39TH ST S
40TH ST S
41ST ST S
42ND ST S
43RD ST S
44TH ST S
45TH ST S
638
EAST BEACH AVE
REVERE BLVD
BRIGANTINE AV
OCEAN AV
BAYSHORE AV
Library
Municipal Court
Playground
Brigantine Lighthouse
Historical Museum
AMHERST AV
BAYSHORE AV
Sports Complex
BRIGANTINE BLVD
ATLANTIS COVE
BEACH COVE
GULL COVE
ARBEGAST DR
PRIVATEER RD
WHALEMAN RD
SHIPMASTER DR
LAGOON BLVD
SAILFISH DR
CASA DR
SCHOONER RD
CLUB DR
BEACON LN
GRANT RD
ROSS DR E
SURFSIDE RD
HARBOR BEACH BLVD
OCEAN DR
0
0.25
0.5
Miles
Baker
Brigantine Beach Bicycle and Pedestrian Plan
Figure 2: Bicycle and Pedestrian Crashes (2009-2011)
LEGEND
Bicyle Crash
Pedestrian Crash
Lighthouse
Municipal Boundary
Library
Golf Course
Park/Playground
School
Museum
Municipal Court
Sports Complex
July 2013

4.2 BICYCLE AND PEDESTRIAN NETWORK DEVELOPMENT

Based on the crash data analysis, input from the Steering Committee, and community feedback through the online survey, a preliminary network of roadways was identified to serve as the first phase of the proposed bicycle and pedestrian network within the City. The preliminary network consists of 22 roadways and includes six key intersections.

The preliminary network was inventoried to assess sidewalk condition, bicycle compatibility, and intersections. **Figure 3** highlights the roadways and intersections included as part of the preliminary network. The corridors included:

1. Brigantine Boulevard (NJ 87) – from Municipal Border to Brigantine Avenue (CR 638)
2. Brigantine Avenue (CR 638) – from Brigantine Boulevard to its dead end
3. W Brigantine Avenue – from Harbor Beach Boulevard to 30th Street South
4. Harbor Beach Boulevard – from Brigantine Avenue (CR 638) to Lagoon Boulevard
5. Lagoon Boulevard – from Harbor Beach Boulevard to Ocean Drive
6. Ocean Drive – from Lagoon Boulevard to Harbor Beach Boulevard
7. Bayshore Avenue – from Harbor Beach Boulevard to Roosevelt Boulevard
8. Ocean Avenue – from 40th Street South to 9th Street South
9. Roosevelt Boulevard – from Brigantine Avenue (CR 638) to E Shore Drive
10. Evans Boulevard – from Bayshore Avenue to Roosevelt Boulevard Circle
11. Beach Avenue – from Bayshore Avenue to 14th Street North
12. E Shore Drive – from 12th Street North to Roosevelt Boulevard
13. N/W Shore Drive – Roosevelt Boulevard to Bayshore Avenue
14. Revere Boulevard – from Brigantine Avenue (CR 638) to 15th Street South
15. 44th Street South – from Brigantine Avenue (CR 638) to Bayshore Avenue
16. 40th Street South – from Ocean Avenue to Brigantine Avenue (CR 638)
17. 24th Street South – from Ocean Avenue to Brigantine Avenue (CR 638)
18. 15th Street South – from Revere Boulevard to Bayshore Avenue
19. 10th Street South – from Ocean Avenue to Brigantine Avenue (CR 638)
20. 6th Street South – from Brigantine Avenue (CR 638) to Beach Avenue
21. 12th Street North – from Brigantine Avenue (CR 638) to E Shore Drive
22. 14th Street North – from Beach Avenue to Brigantine Avenue (CR 638)

U.S. Department of Transportation
Federal Highway Administration

Baker

Brigantine Beach Bicycle and Pedestrian Plan
Figure 3: Preliminary Network

4.3 SIDEWALK INVENTORY AND ASSESSMENT

A sidewalk inventory was completed to determine presence and condition of sidewalk for the 22 priority pedestrian corridors included in the pedestrian network. Existing sidewalk condition data was obtained from the NJDOT County Roadway Sidewalk Inventory (CRSI) for county routes. Field visits were completed to verify the CRSI data, and investigate sidewalk conditions for local roads where CRSI data was not available. The sidewalk conditions were evaluated using the CRSI value rating as described in **Table 2**.

Table 2: CRSI Sidewalk Condition Classifications

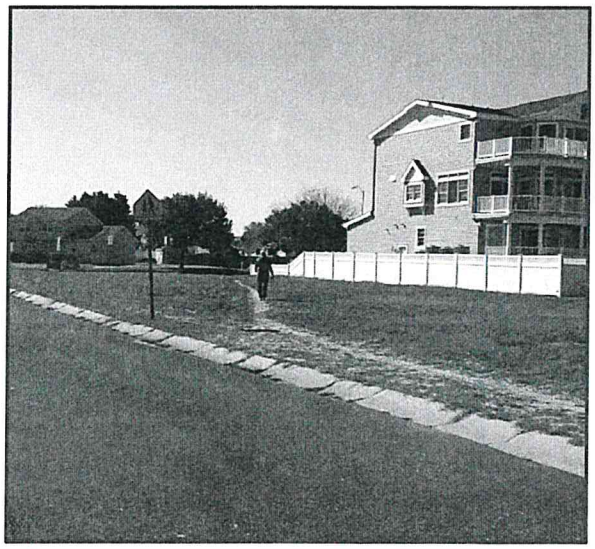
Value	Description
Good	New or nearly new material is present. No identifiable defects are present.
Fair	Minor defects are present but are not considered detrimental to bicycle/pedestrian traffic.
Poor	Major defects are present. Example: Sidewalk is severely cracked or is disintegrating. Bicycle/pedestrian travel could be difficult.
No Sidewalk	No sidewalk present

Ninety percent of sidewalks within the pedestrian network are in fair to good condition, as illustrated in **Figure 4** and summarized in **Table 3**. Only 10% of the network is missing sidewalks. The majority of missing sidewalks are located along Brigantine Boulevard (NJ 87), along the north side of the bridge entering/exiting the City, and along both sides of the four-lane boulevard entering the City. The remaining places missing sidewalks are located sporadically throughout the City on Lagoon Boulevard, Harbor Beach Boulevard, Ocean Avenue, West Shore Drive, North Shore Drive, East Shore Drive, Roosevelt Boulevard, and Bayshore Avenue.

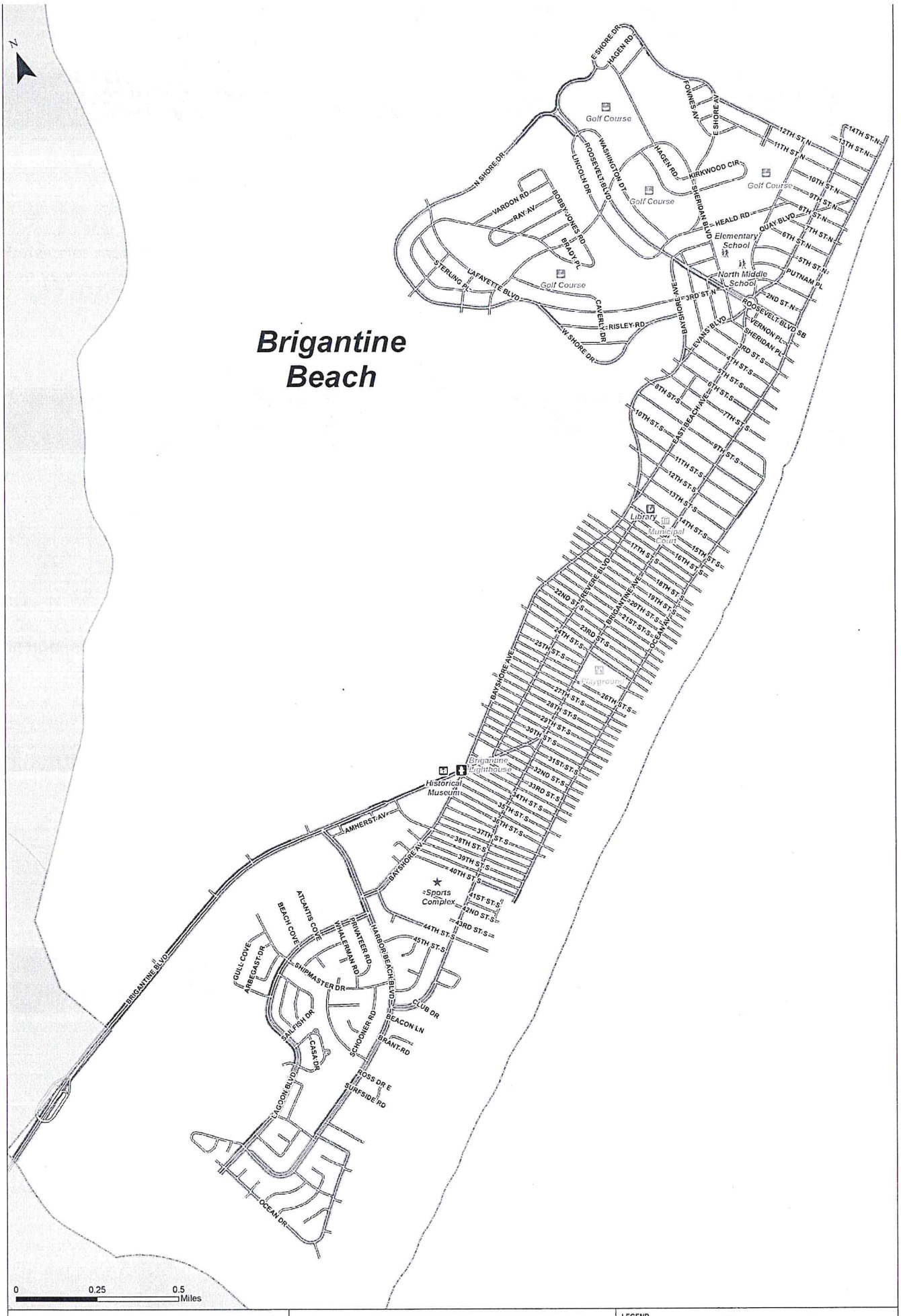
Table 3: Existing Sidewalk Condition

Condition	Miles	Percentage
Good/Fair Sidewalk	37.25	90%
Poor Sidewalk	0	0%
No Sidewalk	4.05	10%
Total	**41.3**	**100%**

The pedestrian network on East Shore Drive between 12th Street North and Sheridan Boulevard was not included in the inventory. However, the Steering Committee members and residents of Brigantine Beach indicated that sidewalk is missing on both sides of East Shore Drive between Fownes Avenue and Kirkwood Circle. East Shore Drive leads directly to the elementary school and middle school located on Sheridan Place.



Worn path on Harbor Beach Boulevard



U.S. Department of Transportation
Federal Highway Administration

Baker

Brigantine Beach Bicycle and Pedestrian Plan
Figure 4: Existing Sidewalk Condition

4.4 BICYCLE COMPATIBILITY ASSESSMENT

An assessment of existing bicycle compatibility was completed for the 22 priority bicycle corridors identified to be part of the bicycle network. The bicycle compatibility assessment utilizes a methodology developed by NJDOT as part of their Statewide Bicycle Map. The methodology builds on the 1996 *NJDOT Bicycle Compatible Roadways and Bikeways, Planning and Design Guidelines, and* considers several factors including Average Annual Daily Traffic (AADT), posted speed limit, land use type, roadway cross-section, curb lane width, and presence of on-street parking.

AADT data was obtained from NJDOT's Straight Line Diagram (SLD). For locations where traffic volumes were not available, estimates were developed using volumes from nearby roadways with similar functional classification.

The Bicycle Compatibility is reported in three categories.

- **Most** – Most suitable for on-road cycling for users of all skill levels. A majority of cyclists would find conditions favorable
- **Moderate** – Moderately suitable for on-road cycling. Cyclists of lesser skill and experience may find conditions unfavorable
- **Least** – Least suitable for on-road cycling. Cyclists of advanced skill and experience riding in traffic may find conditions unfavorable

The Bicycle Compatibility Rating Criteria guidelines are included in **Appendix E.**

The Existing Bicycle Compatibility Matrix provides a summary of existing conditions for each of the roadways considered. The results of the bicycle compatibility assessment indicate that just over half of the roadways (52%) in the preliminary network are rated as "Least Suitable" for cycling. This is mainly due to high traffic volume and existing on-street parking with narrow roadway cross-sections. **Table 4** summarizes the rating results. **Figure 5** illustrates the results of the existing bicycle compatibility ratings.

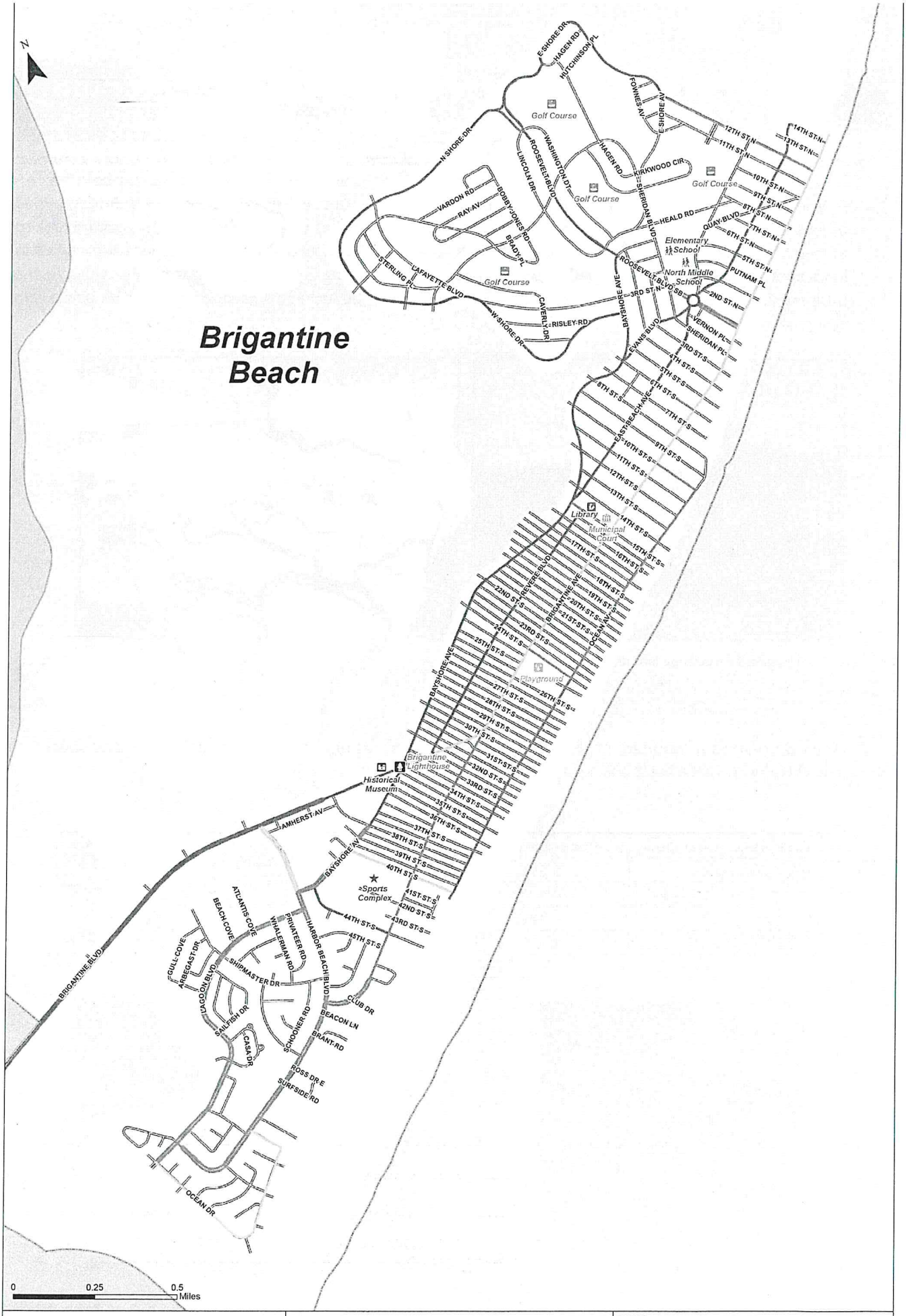
The Existing Bicycle Compatibility Matrix is shown in **Table 5**.

Table 4: Existing Bicycle Compatibility Percentage

Condition	Miles	Percentage
Most	2.23	17%
Moderate	4.04	31%
Least	6.68	52%
Total	**12.95**	**100%**

Table 5: Existing Bicycle Compatibility Matrix

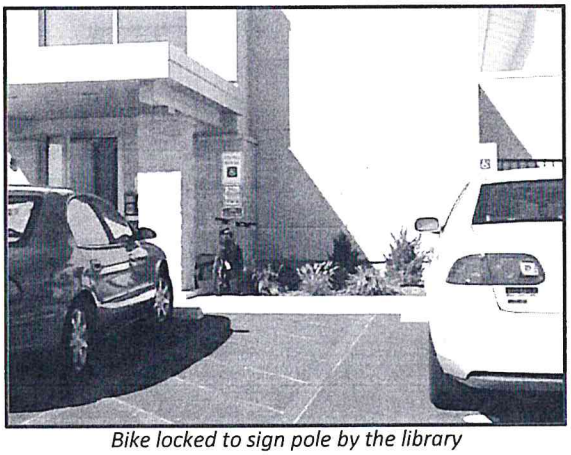
Road Name	Between	And	AADT (year)	Speed Limit (mph)	# of Lanes	Street Parking Permitted (Y/N)	Total Pavement (ft)	Shoulder and Lane Width SB // NB (ft)	Shoulder and Lane Width WB // EB (ft)	Existing Compatibility
Brigantine Boulevard (NJ 87)	*Municipality Border*	Brigantine Avenue (CR 638)	29,700 (2010)	45	4	N	60'	14'/12'//8'//12'/14'		Least
Brigantine Avenue (CR 638)	Brigantine Boulevard (NJ 87)	Harbor Beach Boulevard	> 10,000	45	4	Y	78'	8'/12'/12'//14'//12'/12'/8'		Least
	Harbor Beach Boulevard	38th Street	> 10,000	35	4	Y	78'	8'/12'/12'//14'//12'/12'/8'		Least
	38th Street	Bayshore Avenue *(Lighthouse)*	> 10,000	30	4	Y(SB only)	55'	7'PL/12'/12'//12'/12'		Least
	Bayshore Avenue *(Lighthouse)*	S 30th Street	5,000 < x < 10,000	30	2	Y	48'	24'//24'		Moderate
	S 30th Street	S 27th Street	5,000 < x < 10,000	30	4	N	58'	5'BL/12'/12'//12'/12'/5'BL		Moderate
	S 27th Street	S 23rd Street	5,000 < x < 10,000	30	4	N	58'	5'BL/10'/11'//7'//11'/9'/5'BL		Moderate
	S 23rd Street	S 18th Street	5,000 < x < 10,000	30	4	N	58'	5'BL/12'/12'//12'/12'/5'BL		Moderate
	S 18th Street	*Dead End*	5,000 < x < 10,000	30	2	Y	58'	8'PL/5'BL/10'//12'//10'/5'BL/8'PL		Moderate
W Brigantine Avenue	Harbor Beach Boulevard	Rainbow Drive	2,000 < x < 5,000	25	2	Y	71'	7'PL/5'BL/18'//11'//18'/5'BL/7'PL		Most
	Rainbow Drive	S 45th Street	2,000 < x < 5,000	25	2	Y	67'	8'PL/5'BL/19'//10'//12'/5'BL/8'PL		Most
	S 45th Street	S 30th Street	3,139 (2010)	25	2	Y	61'	8'PL/5'BL/13'//10'//12'/5'BL/8'PL		Most
Harbor Beach Boulevard	Brigantine Avenue (CR 638)	Bayshore Avenue	5,000 < x < 10,000	25	2	N	72'		28'//14'//30'	Moderate
	Bayshore Avenue	Lagoon Boulevard	2,000 < x < 5,000	25	2	Y	72'		8'PL/5'BL/16'//14'//16'/5'BL/8'PL	Most
Lagoon Boulevard	Harbor Beach Boulevard	Ocean Drive	2,000 < x < 5,000	25	2	Y	70'	8'PL/5'BL/15'//14'//15'/5'BL/8'PL		Most
Ocean Drive	Lagoon Boulevard	Harbor Beach Boulevard	1,200 < x < 2,000	25	2	Y	32'	32'		Moderate
Bayshore Avenue	Harbor Beach Boulevard	S 38th Street	2,000 < x < 5,000	25	2	Y	74'	30'//14'//30'		Most
	S 38th Street	Brigantine Avenue *(Lighthouse)*	2,000 < x < 5,000	25	2	Y	34'	17'//17'		Least
	Brigantine Avenue *(Lighthouse)*	S 18th Street	5,000 < x < 10,000	25	2	Y	34'	17'//17'		Least
	S 18th Street	Lafayette Place	2,000 < x < 5,000	25	2	Y	36'	18'//18'		Least
	Lafayette Place	Roosevelt Boulevard	2,000 < x < 5,000	25	2	Y	38'	19'//19'		Least
Ocean Avenue	S 40th Street	S 24th Street	2,000 < x < 5,000	25	2	Y	40'	8'PL/5'BL/12'//15'		Most(SB)/Least(NB)
	S 24th Street	S 10th Street	973 (2009)	25	2	Y	44'	22'//22'		Most
	S 10th Street	S 9th Street	< 1,200	25	2	Y	42'	9'PL/13'//12'/8PL		Most
Roosevelt Boulevard	Brigantine Avenue (CR 638)	Quay Boulevard	2,000 < x < 5,000	25	2	Y	70'		26'//18'//26'	Most
	Quay Boulevard	Lincoln Drive/Washington Drive	2,000 < x < 5,000	25	2	Y	36'		18'//18'	Least
	Lincoln Drive/Washington Drive	E Shore Drive	2,000 < x < 5,000	25	2	Y	100'		20'//60'//20'	Least
Evans Boulevard	Bayshore Avenue	Roosevelt Boulevard *(Circle)*	2,000 < x < 5,000	25	2	Y	36'	18'//18'		Least
Beach Avenue	Bayshore Avenue	Roosevelt Boulevard *(Circle)*	2,000 < x < 5,000	25	2	Y	36'	18'//18'		Least
	Roosevelt Boulevard *(Circle)*	N 14th Street	2,000 < x < 5,000	25	2	Y	36'	18'//18'		Least
E Shore Drive	N 12th Street	Roosevelt Boulevard	1,200 < x < 2,000	25	2	Y	30'	30'		Moderate
N/W Shore Drive	Roosevelt Boulevard	Bayshore Avenue	1,200 < x < 2,000	25	2	Y	30'	30'		Moderate
Revere Boulevard	Brigantine Avenue (CR 638)	S 15th Street	2,000 < x < 5,000	25	2	Y	34'	17'//17'		Least
S 44th Street	Brigantine Avenue (CR 638)	Bayshore Avenue	2,000 < x < 5,000	25	2	Y	28'		28'	Least
S 40th Street	Ocean Avenue	Brigantine Avenue (CR 638)	1,200 < x < 2,000	25	2	Y (WB only)	26'		26'	Moderate
S 24th Street	Ocean Avenue	Brigantine Avenue (CR 638)	< 1,200	25	2	Y	30'		30'	Most
S 15th Street	Revere Boulevard	Bayshore Avenue	< 1,200	25	2	Y	30'		30'	Most
S 10th Street	Ocean Avenue	Brigantine Avenue (CR 638)	< 1,200	25	2	Y	30'		30'	Most
S 6th Street	Brigantine Avenue (CR 638)	Beach Avenue	< 1,200	25	2	Y	30'		30'	Most
N 12th Street	Brigantine Avenue (CR 638)	E Shore Drive	< 1,200	25	2	Y (WB only)	30'		30'	Most
N 14th Street	Beach Avenue	Brigantine Avenue (CR 638)	529 (2008)	25	2	Y	25'		25'	Most


N
Brigantine Beach
E SHORE DR
HAGEN RD
HUTCHINSON PL
FOWNES AV
E SHORE DR
Golf Course
N SHORE DR
WASHINGTON DT
LINCOLN DR
ROOSEVELT BLVD
HAGEN RD
KIRKWOOD CIR
SHERIDAN BLVD
Golf Course
Golf Course
VARDON RD
RAY AV
BOBBY JONES RD
BRADY PL
HEALD RD
QUAY BLVD
Elementary School
North Middle School
STERLING PL
LAFAYETTE BLVD
Golf Course
ROOSEVELT BLVD SB
3RD ST N
2ND ST N
PUTNAM PL
CAVERLY DR
RISLEY RD
W SHORE DR
BAYSHORE AVE
EVANS BLVD
VERNON PL
SHERIDAN PL
3RD ST S
4TH ST S
5TH ST S
6TH ST S
7TH ST S
8TH ST S
EASTBEACH AVE
9TH ST S
10TH ST S
11TH ST S
12TH ST S
13TH ST S
14TH ST S
15TH ST S
16TH ST S
17TH ST S
18TH ST S
19TH ST S
20TH ST S
21ST ST S
22ND ST S
23RD ST S
24TH ST S
25TH ST S
26TH ST S
27TH ST S
28TH ST S
29TH ST S
30TH ST S
31ST ST S
32ND ST S
33RD ST S
34TH ST S
35TH ST S
36TH ST S
37TH ST S
38TH ST S
39TH ST S
40TH ST S
41ST ST S
42ND ST S
43RD ST S
44TH ST S
45TH ST S
Library
Municipal Court
Playground
Brigantine Lighthouse
Historical Museum
AMHERST AV
BAYSHORE AV
Sports Complex
BRIGANTINE BLVD
ATLANTIS COVE
BEACH COVE
GULL COVE
ARBEGAST DR
WHALERMAN RD
PRIVATEER RD
HARBOR BEACH BLVD
SHIPMASTER DR
LAGOON BLVD
SAILFISH DR
CASA DR
SCHOONER RD
CLUB DR
BEACON LN
BRANT RD
ROSS DR E
SURFSIDE RD
OCEAN DR
0
0.25
0.5
Miles
US Department of Transportation Federal Highway Administration
Baker
Brigantine Beach Bicycle and Pedestrian Plan
Figure 5: Existing Bicycle Compatibility
LEGEND
Existing Bicycle Compatibility Condition
Most Suitable
Moderately Suitable
Least Suitable
Municipal Boundary
Library
Golf Course
Park/Playground
School
Museum
Municipal Court
Sports Complex
Lighthouse
July 2013

4.5 BICYCLE PARKING

Bicycle parking is a vital component to the bicycle infrastructure in Brigantine Beach. Well-maintained bicycle parking can help encourage bicycle trips to destinations that might otherwise be avoided. Further, in the absence of visible and functional bicycle parking, bicyclists may simply choose to lock their bikes to lamp posts or other fixtures. Based on field views, bicycle parking is limited and not highly visible in the business district and at the beach. Bicycles were observed to be locked to garbage bins by the beach and sign posts.

Bikes locked to garbage bins along Ocean Avenue

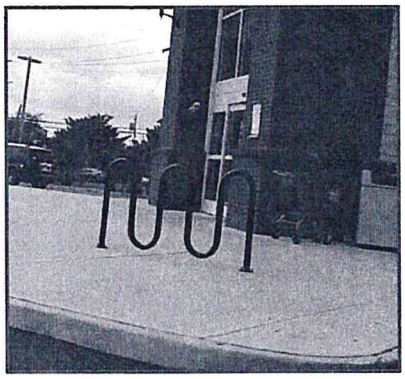


Bike locked to sign pole by the library

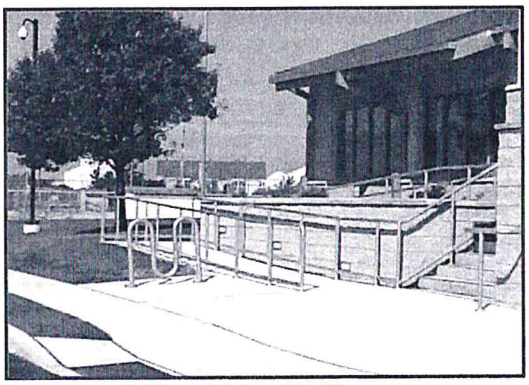
Table 6 provides a summary of the locations of bike racks along with the type, condition, and spaces on each bike rack. These locations are also identified on **Figure 1**.

Table 6: Existing Bicycle Parking

Location of Bike Rack	Type of Bike Rack	Condition of Bike Rack	Spaces on Bike Rack
Sports Complex	Wave	Good	4
CVS on Revere Blvd	Wave	Good	6
Library	Wave	Good	8
14th Street North	Grid	Good	10



Wave bike rack by CVS



Wave bike rack by library

4.6 INTERSECTION ASSESSMENT

Six intersections were evaluated to assess existing bicycle and pedestrian conditions. Each of the intersections were inventoried to document existing geometric design, type of signal controls, presence and conditions of curb ramps, crosswalks, sidewalks, and other features. The intersections included:

1. Brigantine Boulevard and Harbor Beach Boulevard
2. Harbor Beach Boulevard and Bayshore Avenue
3. Brigantine Boulevard and Bayshore Avenue (lighthouse circle)
4. Roosevelt Boulevard and Beach Avenue
5. Brigantine Avenue between 15th Street South and 7th Street South
6. Brigantine Avenue and 30th Street South

The intersections were selected based on crash analysis and feedback from the Steering Committee. Several common deficiencies among the intersections included the following:

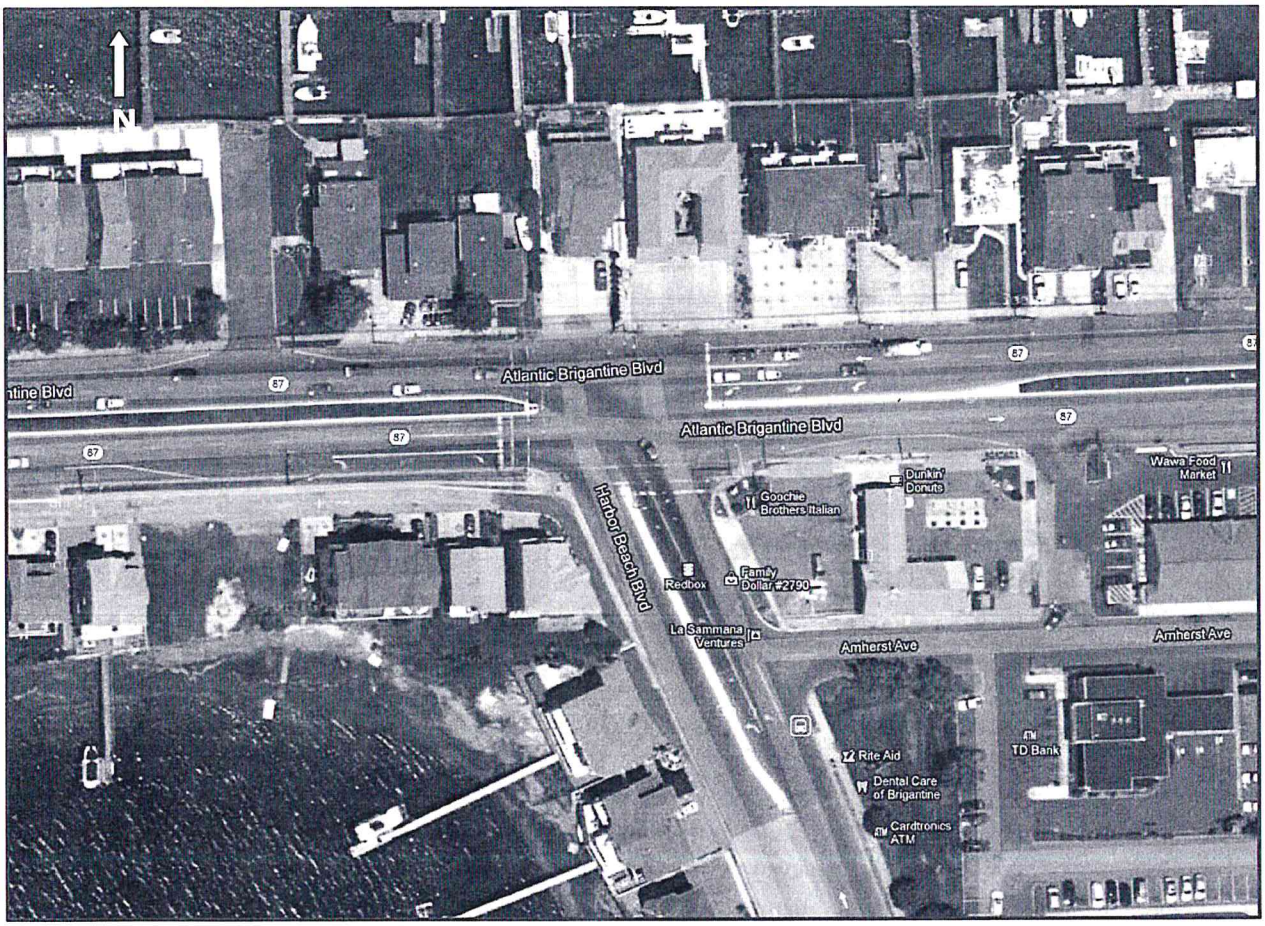
- Lack of ADA compliant curb ramps
- Wide pedestrian crossings
- Faded or missing crosswalks
- Lack of pedestrian scale lighting
- High vegetation in center median obscuring sight distances

During the data collection efforts bicyclist, pedestrian, and traffic observations were performed to document existing travel patterns, behaviors, and general use of bicycle and pedestrian facilities in Brigantine Beach. The following is a summary of observed behavior:

- Bicyclists riding against traffic
- Fast turning traffic
- Motorists not stopping for pedestrians in marked crosswalks
- Motorists not yielding to bicyclists or pedestrians when turning
- Students riding and walking home from school in groups

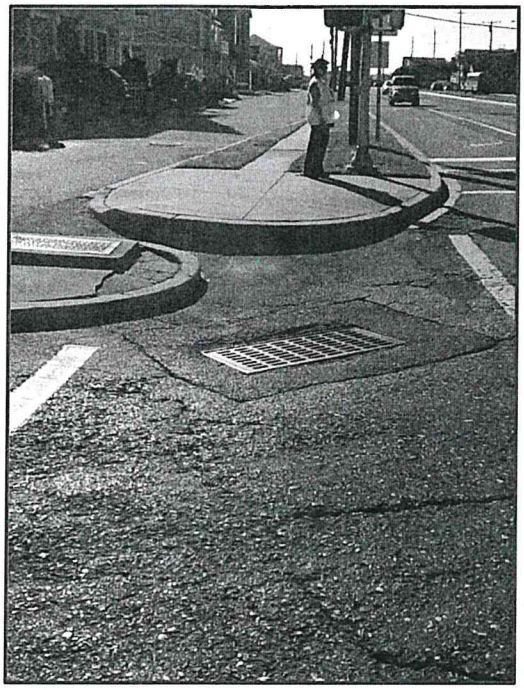
Results of the intersection inventory are summarized on the following pages.

Intersection of Brigantine Boulevard and Harbor Beach Boulevard

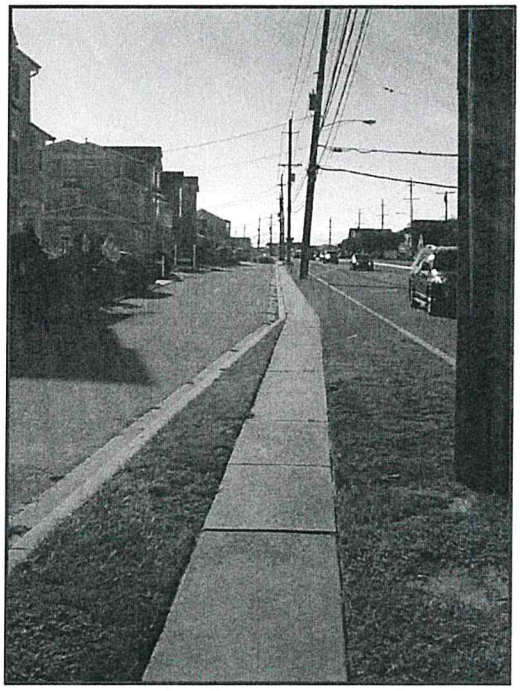


Assessment	
Crosswalks:	Exist along the east and south legs of the intersection but are faded
Curb Ramps:	Appear to be non-ADA compliant
Pedestrian Signals or Push Buttons:	Present
Sidewalk:	Existing sidewalks are narrow and do not extend to the intersection
Visibility:	Good
Comments:	
• Lack of pedestrian scale lighting • Driveways and access points are located within the intersection and block pedestrian access • Crossings are wide • Turning vehicular traffic from Brigantine Boulevard to Harbor Beach Boulevard appears to be fast • Lack of pedestrian scale lighting	

Intersection of Brigantine Boulevard and Harbor Beach Boulevard



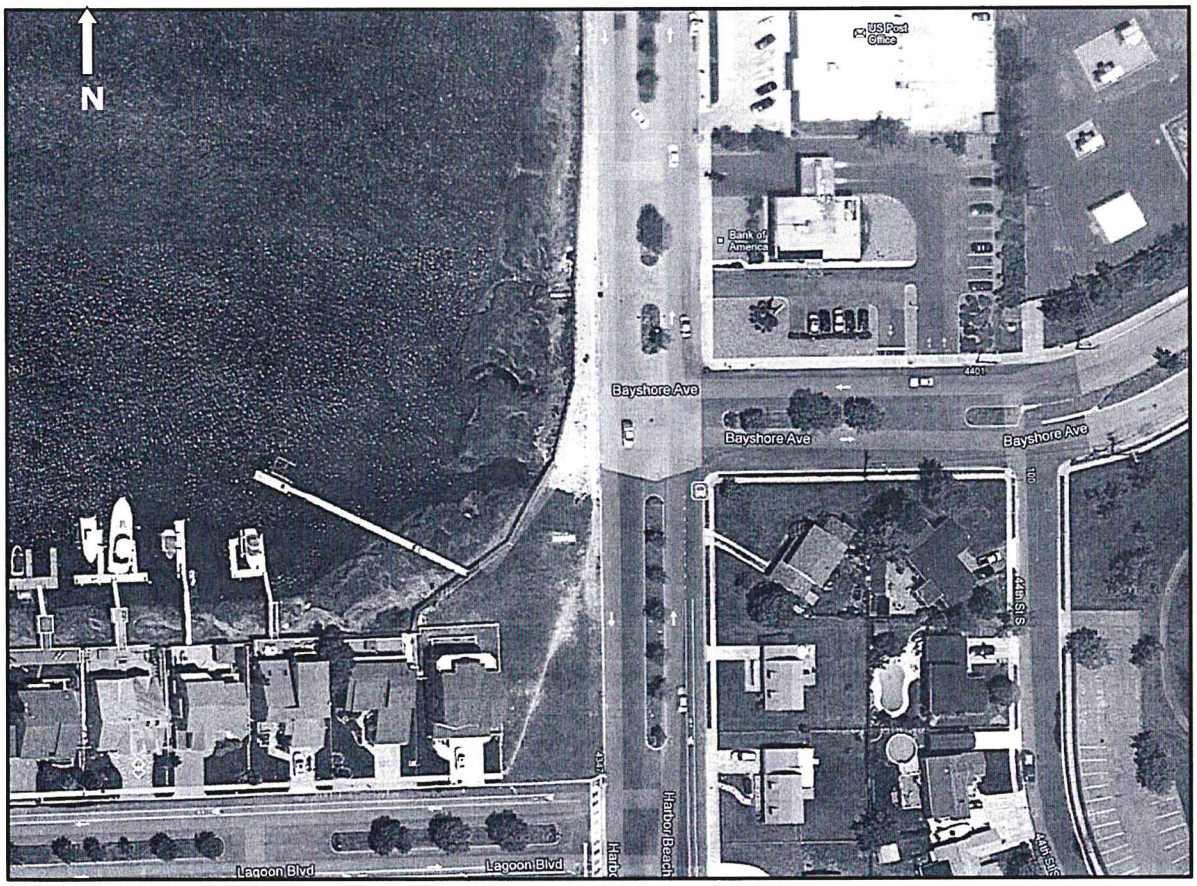
Curb ramp not ADA compliant



Narrow sidewalk on Brigantine Boulevard

Missing crosswalk on Brigantine Boulevard

Intersection of Harbor Beach Boulevard and Bayshore Avenue



Assessment	
Crosswalks:	None
Curb Ramps:	Appear to be non-ADA compliant
Pedestrian Signals or Push Buttons:	None - unsignalized intersection
Sidewalk:	Present at intersection - sidewalk on west side of Harbor Beach Blvd contains debris and ends immediately after intersection of Bayshore Avenue
Visibility:	Center median with high trees block visibility from Bayshore Avenue of oncoming traffic from southbound Harbor Beach Boulevard
Comments:	
• Bicyclists observed riding against traffic in bike lanes • Pedestrians observed walking to the nearby shopping center and recreational facilities • Wide crossing (72' wide) on Harbor Beach Boulevard • Bike lane ends abruptly on Harbor Beach Boulevard and does not continue to shopping center • Lack of pedestrian scale lighting	

Intersection of Harbor Beach Boulevard and Bayshore Avenue

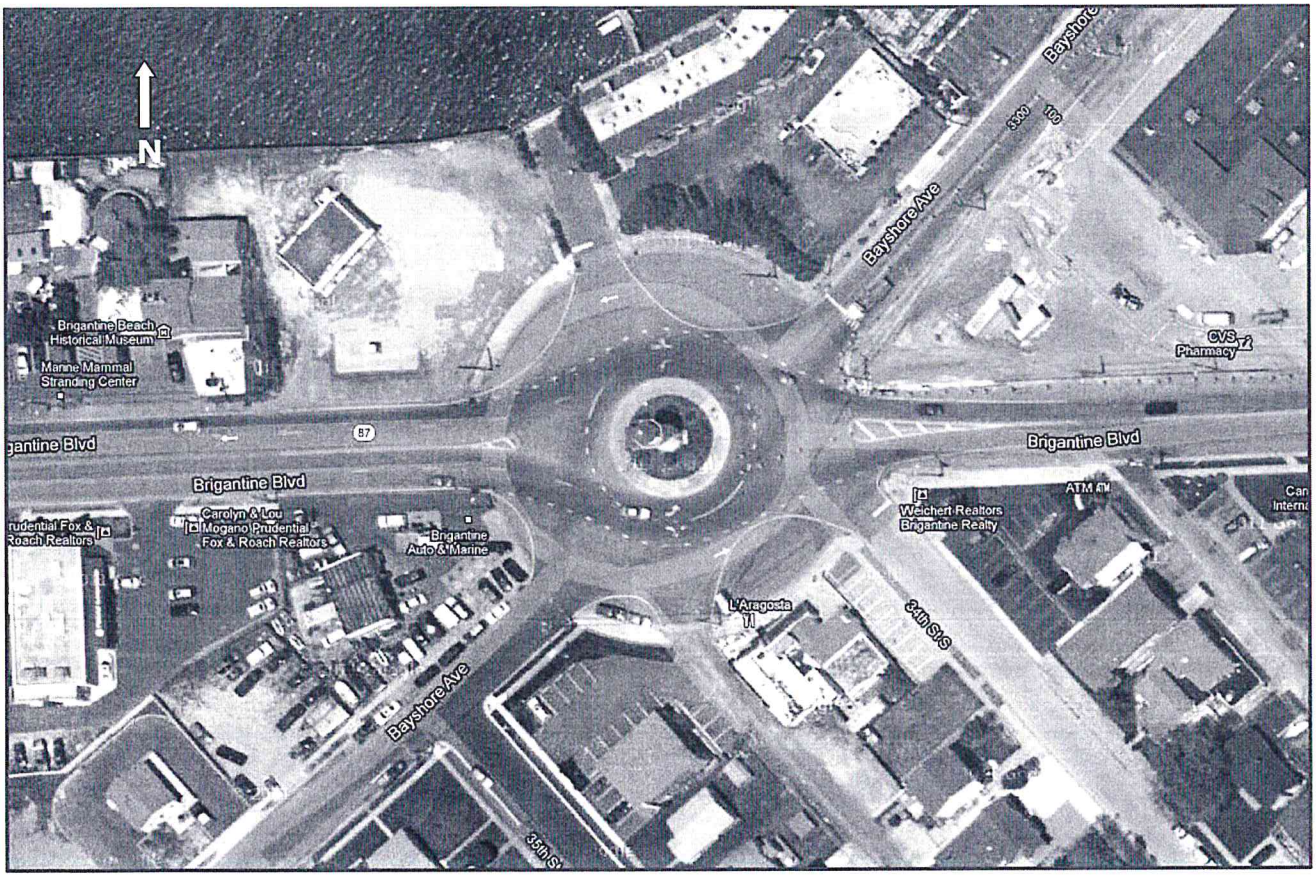
Curb ramp appear to be non-ADA compliant

Debris on sidewalk along Harbor Beach Blvd.

Bicyclist riding against traffic on Harbor Beach Boulevard

Wide crossing on Harbor Beach Boulevard

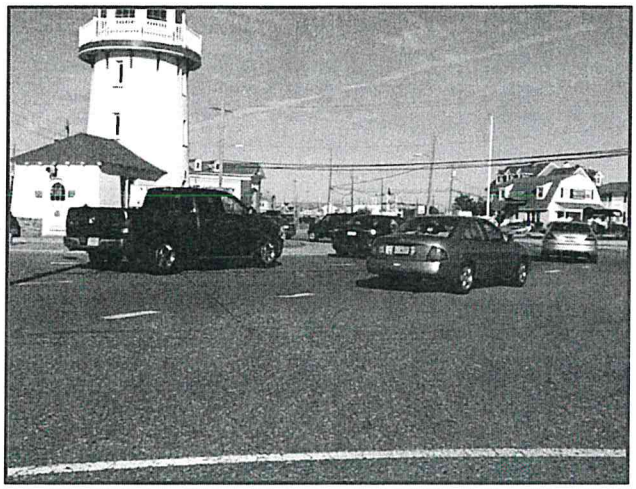
Intersection of Brigantine Boulevard and Bayshore Avenue (Lighthouse Cricle)



Assessment	
Crosswalks:	None
Curb Ramps:	Appear to be non-ADA compliant
Pedestrian Signals or Push Buttons:	None (unsignalized intersection)
Sidewalk:	Not complete, gaps in sidewalk
Visibility:	Visibility is difficult due to the numerous approaches of traffic coming into the intersection
Comment:	
• Sidewalk ends at the Mammal Rescue Center with a 6 inch drop from the sidewalk to the asphalt • Lack of warning signs and/or yielding signs at the approaches • Auto repair shop vehicles parked on Bayshore Avenue sidewalk • Motorists parked inside the circle, along the curb • Motorists were observed exiting the gas station right into the circle where sidewalks is missing • Missing sidewalks on both sides of Brigantine Blvd., in front of gas station and in front of Mammal Rescue Center • Lack of pedestrian scale lighting	

Intersection of Brigantine Boulevard and Bayshore Avenue (Lighthouse Circle)

Lack of warning signs at the approach

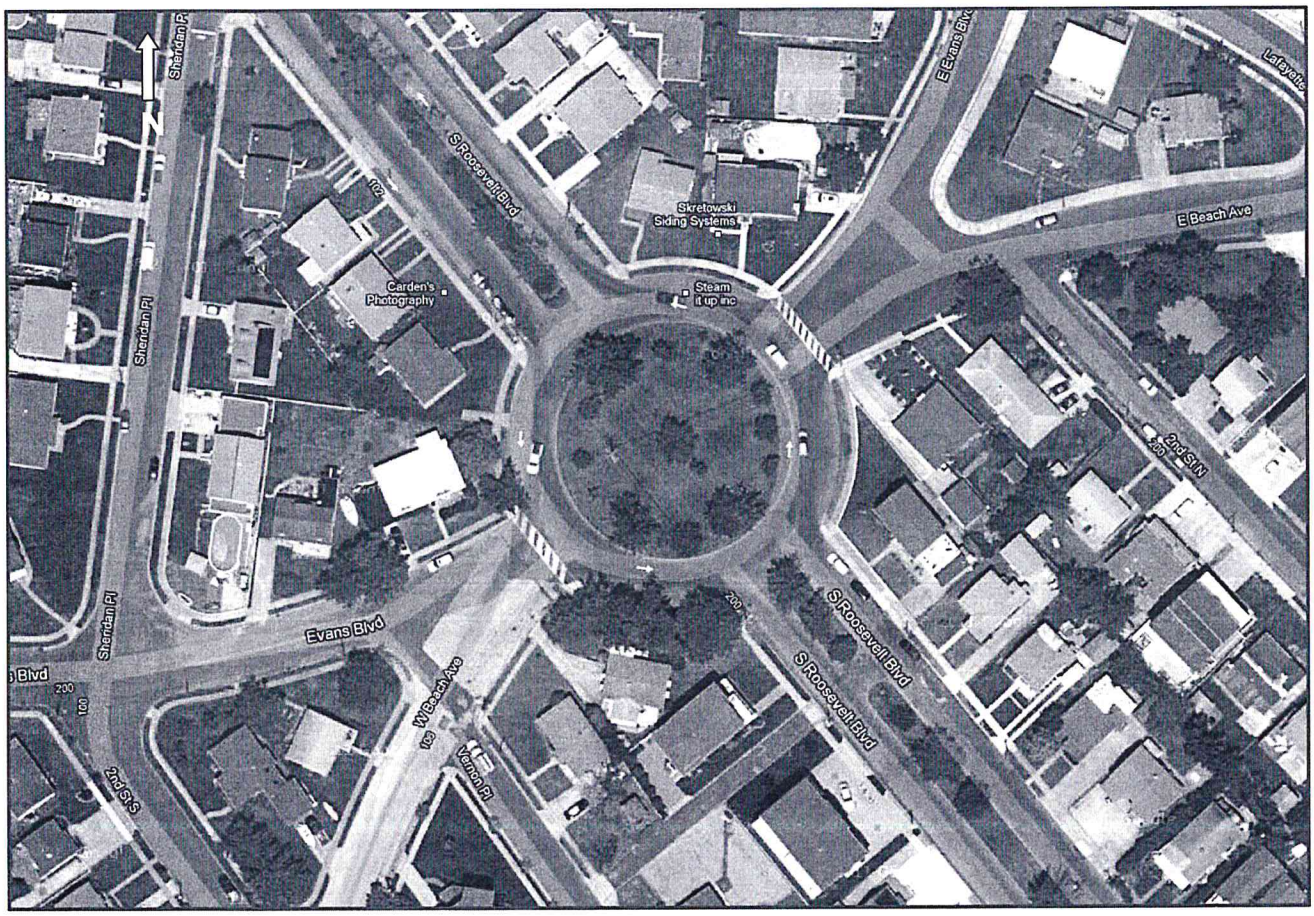


Lack of orientation inside the roundabout

Parked vehicles inside the roundabout curbs

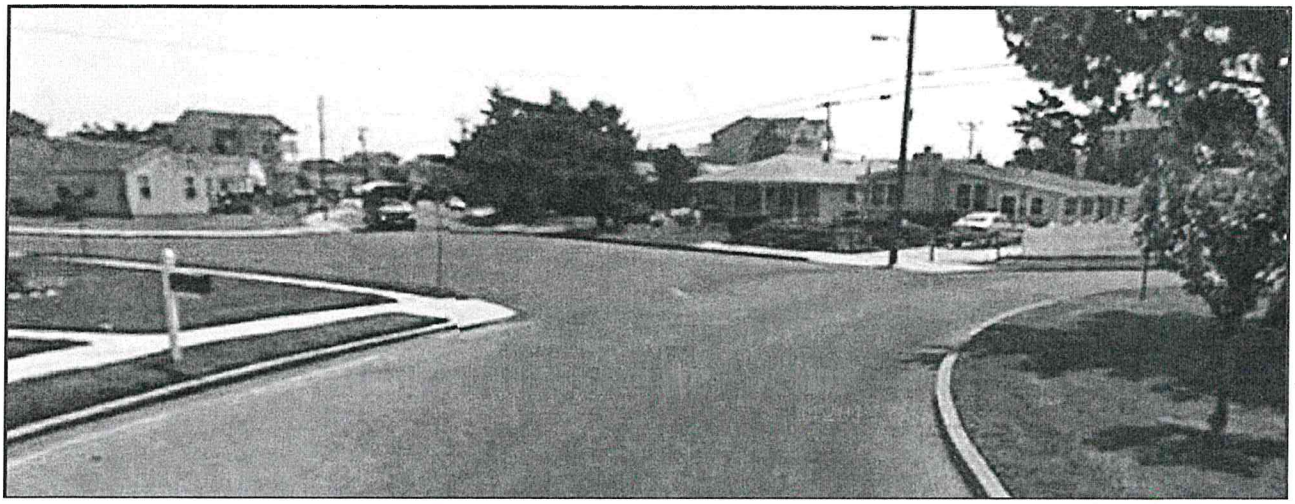
Vehicle exited gas station right into roundabout

Intersection of Roosevelt Boulevard and Beach Avenue

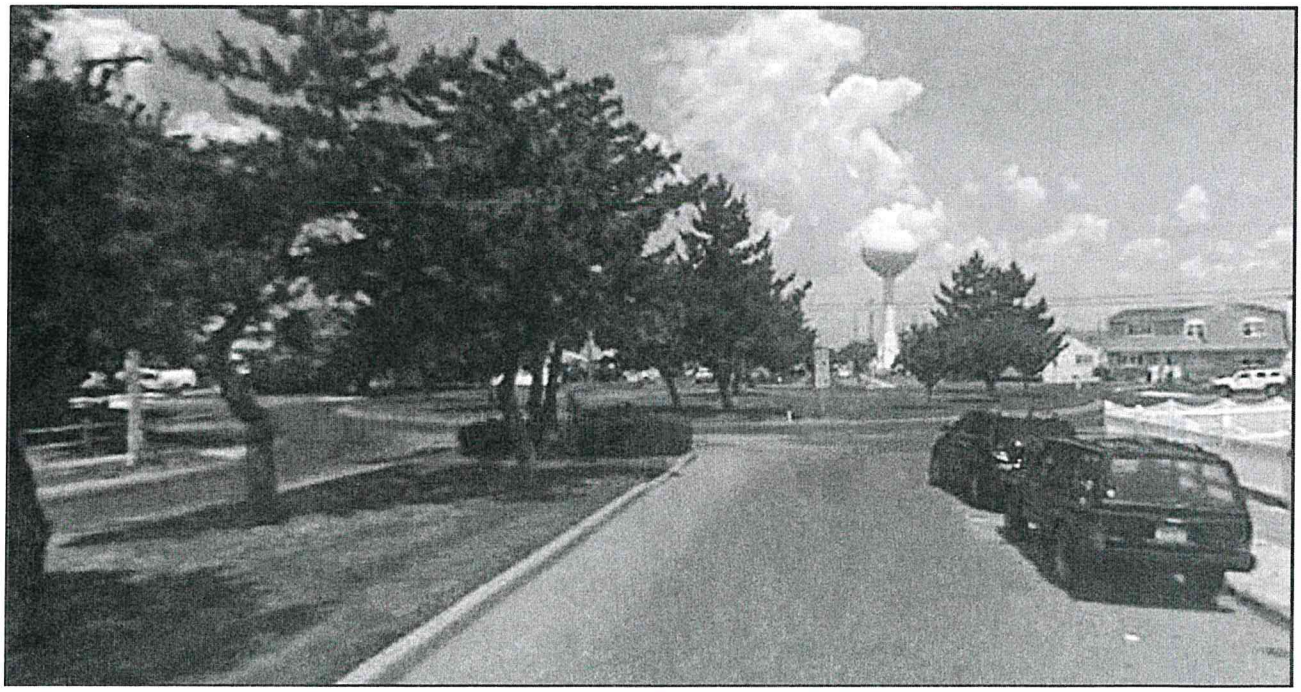


Assessment	
Crosswalks:	Faded and missing
Curb Ramps:	Appear to be non-ADA compliant
Pedestrian Signals or Push Buttons:	None (unsignalized intersection)
Sidewalk:	Present and in good condition
Visibility:	Obscured
Comment:	
• High vegetation in center medians obscuring sight distances • Wide crossings • Close proximity to elementary and middle schools • Two side streets merge at the approaches of Roosevelt Boulevard on either end of the circle without striped or physical separation • Lack of pedestrian scale lighting	

Intersection of Roosevelt Boulevard and Beach Avenue

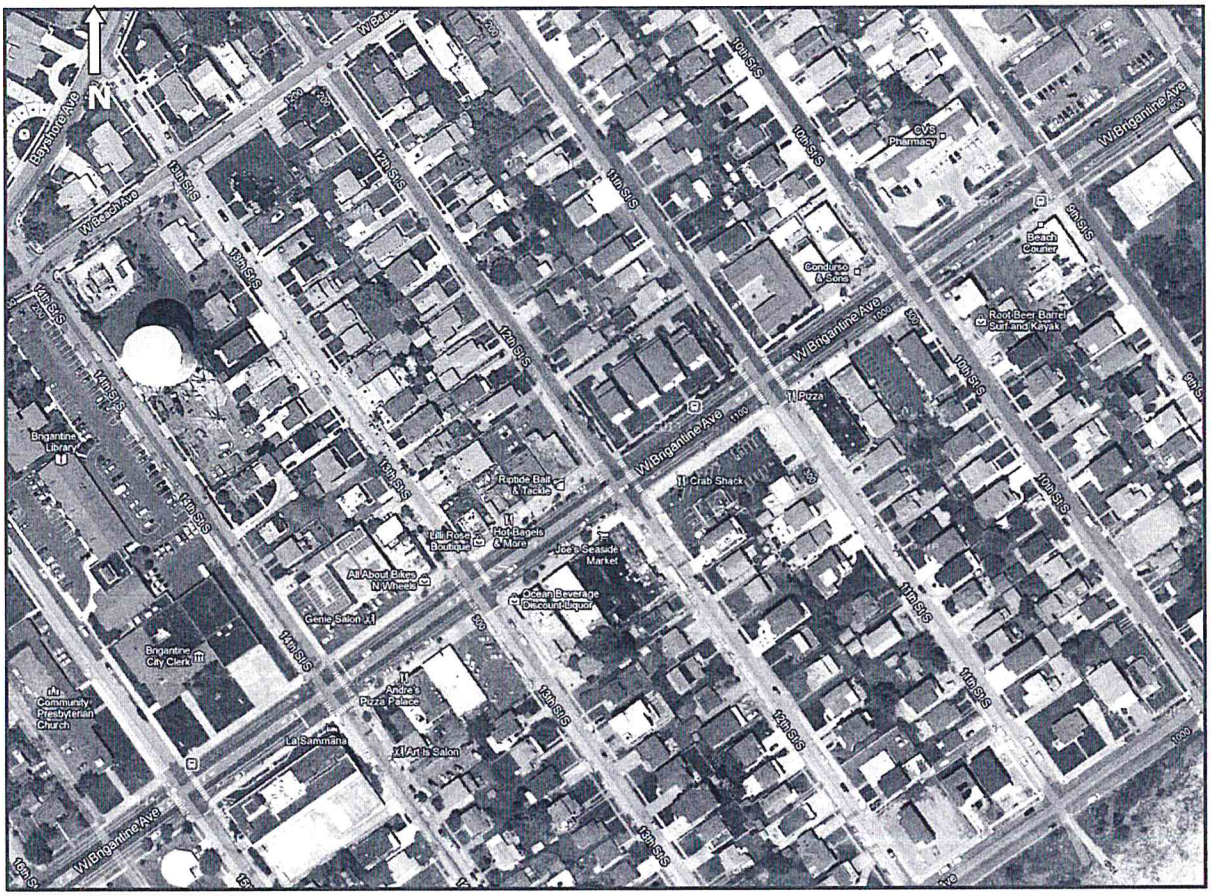


Side streets merging at circle's approach with wide crossing
Source: Google Map Street View



High vegetation in center median
Source: Google Map Street View

Brigantine Avenue, between 15th Street South and 8th Street South



Assessment	
Crosswalks:	Present but faded
Curb Ramps:	Appear to be non-ADA compliant
Pedestrian Signals or Push Buttons:	Present (only signalized intersection is located at 14th Street S.)
Sidewalk:	Present and in good condition
Visibility:	Visibility of pedestrians obstructed by on-street parking
Comments:	
• Driveways and access points impede pedestrian mobility • Long stretches between signalized intersections • High visibility crosswalks and pedestrian warning signs are present at some unsignalized intersections • Lack of pedestrian scale lighting	

Brigantine Avenue, between 15th Street South and 8th Street South

Debris by the crosswalk on Brigantine Avenue

Faded crosswalks

Intersection of Brigantine Avenue and 30th Street South

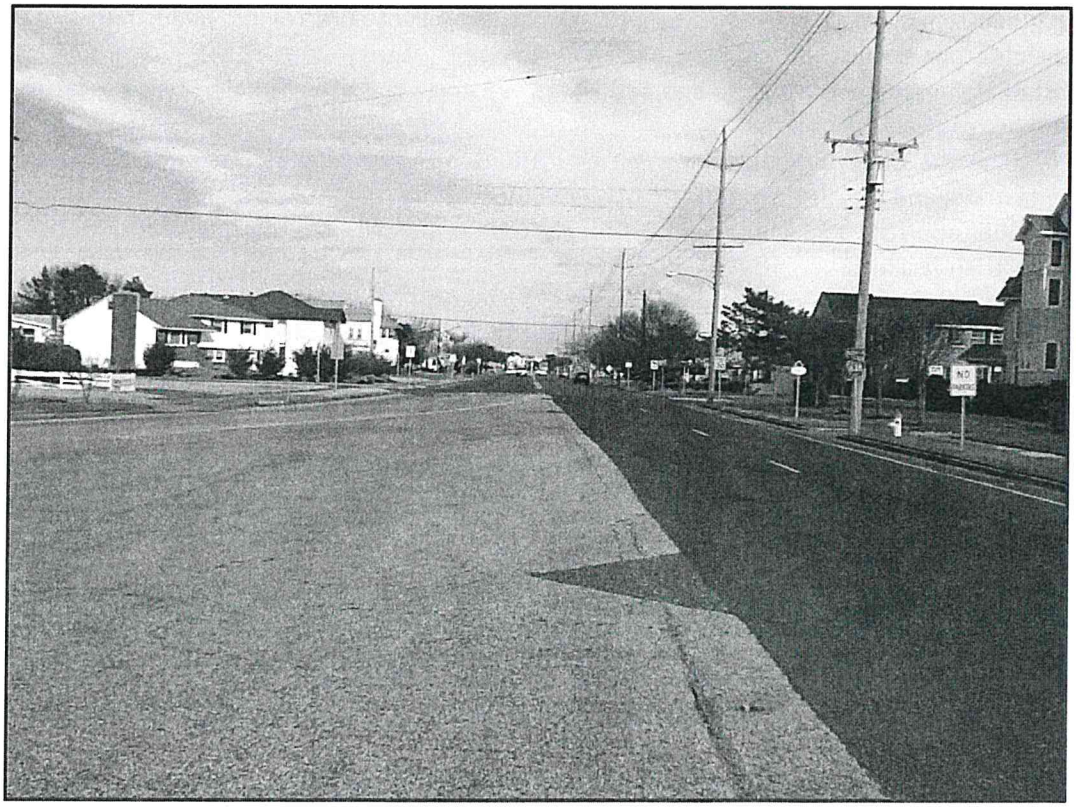
Assessment	
Crosswalks:	Faded and missing
Curb Ramps:	Appear to be non-ADA compliant
Pedestrian Signals or Push Buttons:	None (un-signalized intersection)
Sidewalk:	Incomplete, particularly around green spaced island
Visibility:	Open
Comments:	
• Wide intersection makes it difficult for pedestrians to cross • Access ways and driveways interrupt sidewalk • No crosswalks • No pedestrian scale lighting • High vegetation block visibility	

Brigantine Avenue and 30th Street South was the sixth evaluated intersection during the project study. However, the intersection was recently improved to include high visibility crosswalks, bicycle lanes, and traffic lane reconfiguration. Detailed proposed improvements are included in section 5.4 of the report.

Intersection of Brigantine Avenue and 30th Street South

Missing crosswalks

Wide crossing



Lack of pavement markings

5. RECOMMENDATIONS

In support of the Statewide Bicycle and Pedestrian Master Plan and Brigantine Beach Master Plan, recommendations have been developed to improve bicycle and pedestrian in Brigantine Beach. The recommendations include pedestrian facility improvements, bicycle facility improvements, proposed bicycle parking locations, and intersection improvements and conceptual schematics. The concepts follow Complete Streets principles which serve to provide accessibility and mobility for all users and modes of transportation. Collectively, the recommendations provide Brigantine Beach with a blueprint to guide the development of a comprehensive network to improve bicycle and pedestrian safety and promote physical activities.

The City of Brigantine Beach is aware that it is responsible for initiating the implementation of future improvements. In the case of roadways under State jurisdiction, NJDOT policy dictates that it is the responsibility of the municipality (applicant) to complete a Problem Statement to be submitted to NJDOT Capital Investment Planning and Development. NJDOT makes no guarantee of any kind that recommendations will be advanced for further study.

The overall recommendations developed for this study are:

- Install sidewalks where missing, particularly near schools, recreational facilities, shopping centers, and Brigantine Boulevard (NJ 87) bridge over Absecon Channel.
- Provide bicycle facilities within the roadway network using bicycle lanes, shared lanes, and shared lane markings (sharrows).
- Install additional bicycle racks and bicycle lockers at major trip generator locations.
- Upgrade signalized intersections to include ADA compliant curb ramps, pedestrian signal heads and push buttons, pedestrian scale lighting, and high visibility crosswalks.
- Install high visibility crosswalks and pedestrian warning signs at unsignalized intersections where high number of pedestrians cross.
- Continue the development of ongoing education and enforcement programs to increase motorist, pedestrian, and bicyclist' behavior to obey the rules of the road.
- Develop, approve, and implement a Complete Streets Policy for the City and prioritize bicycle and pedestrian facilities.

As mentioned previously, Brigantine Beach passed three resolutions to apply for the NJDOT Safe Streets to Transit Program, the NJDOT Bikeway Grant, and the NJDOT Municipal Aid Program. If awarded, these funds could be utilized to implement a number of the recommendations presented in this report. Copies of the resolutions are located in **Appendix A.**

5.1 PEDESTRIAN FACILITY IMPROVEMENTS

Most of the corridors evaluated within the pedestrian network have sidewalks that are in fair to good condition. Ten percent of the corridors assessed have sections of missing sidewalk and include:

- Brigantine Boulevard (NJ 87)
- Brigantine Avenue (CR 638)
- Harbor Beach Boulevard
- Lagoon Boulevard
- Ocean Avenue
- North/East/West Shore Drive
- Roosevelt Boulevard
- Bayshore Avenue

- Tee Court

The installation of sidewalks is recommended at all missing locations of the pedestrian network and missing sidewalks near the schools that were not part of the assessed network. The Steering Committee members and community feedback identified those areas as concerns for children walking to and from the schools.

In an attempt to quantify and prioritize improvements, a Sidewalk Priority Ranking System (**Table 7**) was developed to identify the most important section for improvements. A higher priority is assigned to missing sidewalk segments proximate to pedestrian-friendly commercial, multi-residential units, schools, transit stops and public facilities such as beaches, parks, libraries, and museums. Further, missing segments on roadways with higher volumes and speeds are also considered to be high priority.

Table 7: Sidewalk Priority Ranking System

Adjacent Land Use	Score
Pedestrian-Friendly Commercial	5
Other Commercial	3
Residential	
4 or more units/acre	4
<4 units/acre	2
School Proximity (max. of 2 schools)	**Score**
Elementary School	
<1/4 mile	6
1/4 to 1/2 mile	4
Middle or High School	
<1/2 mile	6
>1/2 mile to 1 mile	4
Transit Route Proximity	**Score**
<1/4 mile	4
1/4 to 1/2 mile	2

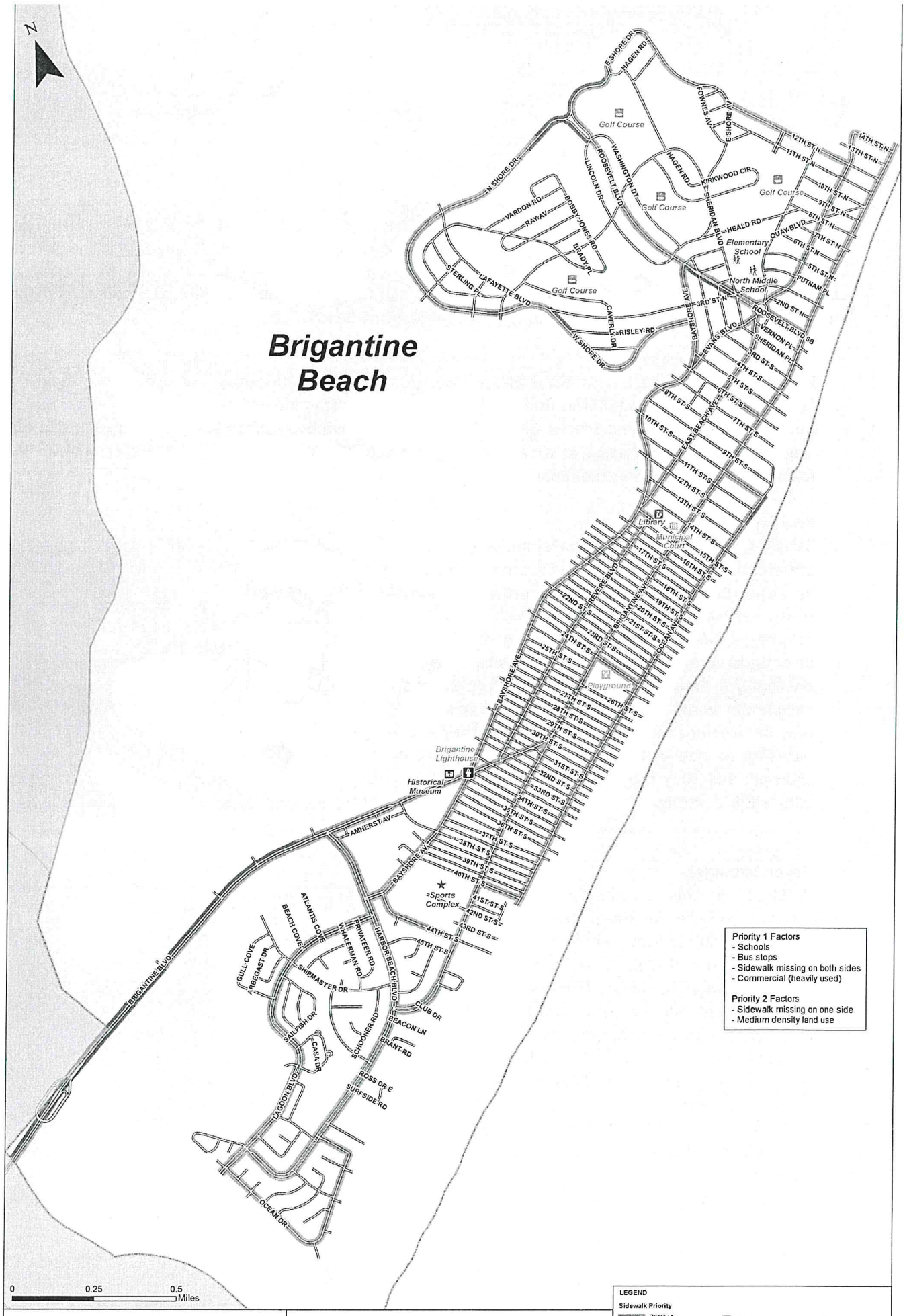
Block Frontage with Sidewalk	Score
Neither side has sidewalk	4
1 side has sidewalk	2
Posted Speed	**Score**
40+ mph	4
35 mph or below	2
Daily Traffic Volumes	**Score**
10,000 +	4
<10,000	2
Public Facilities	**Score**
<1/4 mile	4
1/4 to 1/2 mile	2

Implementing the priority sidewalk locations would provide over four miles of sidewalks in Brigantine Beach but more importantly completes the sidewalk network. **Table 8** outlines a prioritized list of areas with missing sidewalks and **Figure 6** illustrates each of the recommended priority sidewalk locations within the pedestrian network.

Table 8: Recommended Priority Sidewalk Locations

Road Name	Direction	Limits	MP	Priority	Score	Major Contributing Factors
Brigantine Blvd (NJ 87)	SB	From *Absecon Channel* to beginning of CR 638	1.38-1.70	High	20	• Transit route • Only ingress/egress to the City • High speed limit • High traffic volume
Brigantine Blvd (NJ 87)	NB	From U-Turn to beginning of CR 638	1.47-1.70	High	22	• Transit route • Only ingress/egress to the City • High speed limit • High traffic volume • Missing sidewalk on other side
Brigantine Avenue (CR 638)	NB	From end of NJ 87 to south of Cherokee Dr.	0.00-0.38	High	22	• Transit route • Only ingress/egress to the City • High speed limit • High traffic volume • Missing sidewalk on other side
		From north of Jefferson Ave. to south of Monroe Ave.	1.15-1.20	Medium	19	• High traffic volume • Pedestrian friendly commercial area • Close proximity to public facilities • Close proximity to transit route
Brigantine Avenue (CR 638)	SB	From end of NJ 87 to north of Edgewater Dr.	0.00-0.90	High	20	• Transit route • Only ingress/egress to the City • High speed limit • High traffic volume
		From Monroe Ave. to Bayshore Ave.	1.20-1.53	Medium	19	• High traffic volume • Pedestrian friendly commercial area • Close proximity to public facilities • Close proximity to transit route
Harbor Beach Boulevard	EB	From east of Amherst Ave. to west of Bayshore Ave.	0.14-0.17	Medium	19	• Transit route • Close proximity to public facilities
		From Bayshore Ave. to Lagoon Blvd.	0.23-0.29	Medium	19	• Transit route • Close proximity to public facilities
		From Manitoba Ave. to Ross Dr.	-	Medium	18	• Transit route • Close proximity to public facilities
Lagoon Boulevard	SB	From Shipmaster Dr. to Cove Dr.	-	Medium	18	• Transit route
		From south of Cove Dr. to Delmar Dr.	-	Medium	18	• Transit route
		From north of Ontario Ave. to south of Harbor Beach Cove	-	Medium	18	• Transit route
Ocean Avenue	NB	From south of 40th St. S. to 39th St. S.	-	Medium	16	• Close proximity to transit route • Direct access to the beach
		From 12th St. S. to 8th St. S.	-	High	21	• Close proximity to transit route • Direct access to the beach • Close proximity to public facilities and pedestrian friendly commercial area
Triangular island along Bayshore Avenue and W. Beach Avenue, between 15th St. S. and 14th St. S.			-	Medium	19	• Close proximity to public facilities and transit route
Triangular island along Bayshore Avenue and Evans Boulvard, between 6th St. S. and 5th St. S.			-	High	22	• School route
Roosevelt Boulevard	EB	From Quay Circle to Sheridan Pl.	-	High	22	• School route • Golf course
West Shore Drive	WB	From Risley Rd. to Layfayette Blvd.	-	High	20	• School route • Golf course
North Shore Drive	NB	From south of Tea Ct. to Tea Ct.	-	High	22	• School route • Missing sidewalk on other side • Golf course
North/East Shore Drive	SB	From south of Tea Ct. to north of Tea Ct.	-	High	22	• School route • Missing sidewalk on other side • Golf course
Tea Court	EB	From North Shore Dr. to Lincoln Dr.	-	High	20	• Close proximity to schools
Small segments along East Shore Drive			-	Medium	18	• Close proximity to school s

Priority Range:
Low Priority 0 – 9 Medium Priority 10 – 19 High Priority 20+



Brigantine Beach Bicycle and Pedestrian Plan
Figure 6: Recommended Priority Sidewalk Locations

5.2 BICYCLE FACILITY IMPROVEMENTS

Improvements to the bicycle network are proposed to accommodate and promote bicycle trips to major land uses using public roadways. The proposed recommendations enhance roadways for the use by bicyclists through appropriate signing, striping and pavement markings. The following is a description of common bicycle facility types, innovative facilities that can be implemented despite common constraints, and recommended facility improvements specific to Brigantine Beach.

5.2.1 Bicycle Facility Types

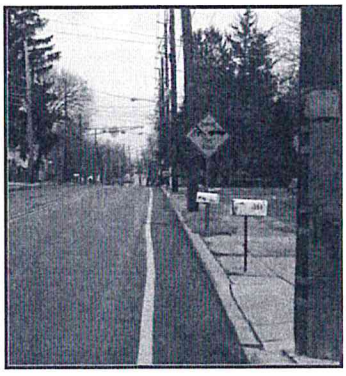
NJDOT's *Planning and Design Guidelines for Bicycle Compatible Roadways and Bikeways* outline the types of on-road bicycle facilities that were considered for Brigantine Beach's roadway network: Bicycle Lane, Paved Shoulder, and Shared Lane. These concepts have been successfully applied on urban and suburban roadway networks in NJ and throughout the US to provide improved bicycle travel. The following is a description of common bicycle facilities:

Bike Lane

Bicycle lanes are designated travel lanes for exclusive or preferential use by bicyclists, and are typically 5 to 6 feet in width. Bicycle lanes are often located on roadways in urban settings with moderate to high vehicular traffic volumes, moderate to high posted speeds and permitted or designated on-street parking. According to the Manual on Uniform Traffic Control Devices, bicycle lanes must include the words "bike lane" or the bike lane symbol; they may be accompanied by bike lane signs. They encourage bicyclists to ride in the bicycle lane as opposed to the sidewalk and they increase the compliance of bicyclists with traffic controls.

Paved Shoulders

A paved shoulder accommodates bicyclists on the roadway shoulder adjacent to vehicular travel lanes. Paved shoulders can be located on urban or rural roadways with moderate to high vehicular traffic volumes and moderate to high posted speeds. Paved shoulders for bicyclists typically range in width from 4 to 6 feet, and are occasionally supplemented with 'Share the Road' warning signs. Shoulders are used in a variety of circumstances. Bicyclists appreciate them because they indicate an area of roadway in which motorists normally do not encroach. On roadways where the roadway cross section does not allow for a 5-foot bike lane, 3- to 4-foot shoulders can be striped to provide a visual delineation between the vehicle lane and the shoulder where bicycles may ride. Studies show that on roadways without on-street parking, the effect of shoulders is similar to bike lanes.



Shared Lane

A shared lane accommodates bicyclists and motorists in the same travel lane. Shared lanes can be located on roadways with low vehicular traffic volumes and low posted speeds, and are occasionally supplemented with 'Share the Road' warning signs. Wide outside travel lanes (ideally 14+ feet) are often desired for shared lane facilities.

Shared Lane Markings

Informally referred to as "sharrows," shared lane markings are a sub-category of shared lanes; bicyclists shared the road with motorists, but markings guide bicyclists with lateral positioning, unlike the typical shared lane. The sharrow markings comprise two chevrons together with a bicyclist symbol, with the center of the chevron marked 11 feet from the curb on streets with parking, and 4 feet from the curb on streets without parking. These markings are placed after intersections and spaced at intervals of at least every 250 feet. They should be accommodated by "Bicycles May Use Full Lane" signs (MUTCD R4-11). They are particularly recommended for use on urban streets with on-street parking where bike lanes cannot be accommodated. Sharrows have been approved for inclusion in the 2009 Manual on Uniform Traffic Control Devices (MUTCD).

Bike Path

Bike paths (often referred to as shared use paths, since they accommodate a variety of non-motorized users, especially pedestrians) are bikeways that are physically separated from motorized traffic by an open space or barrier.

5.2.2 Innovative Bicycle Facilities

In certain situations, traditional bicycle facilities (e.g., bicycle lanes) may not achieve desired results due to the nature of the existing roadway network. For this reason, the application of innovative facilities can be utilized to make important connections that would otherwise be unavailable through traditional means.

The National Association of City Transportation Officials (NACTO) Urban Bikeway Design Guide provides details for innovative bicycle facility treatments that are not directly referenced in the current versions of the AASHTO Guide to Bikeway Facilities or the Manual on Uniform Traffic Control Devices (MUTCD). The Federal Highway Administration has recently posted information regarding approval status of various bicycle related treatments not covered in the MUTCD, including many of the treatments

provided in the NACTO Urban Bikeway Design Guide. All of the NACTO Urban Bikeway Design Guide treatments are in use internationally and in many cities around the US.

Three examples of innovative facilities are presented below. The buffered bike lane is a proposed bicycle facility treatment in Brigantine Beach. The others may be applicable for future improvements to bicycle compatibility in the City.

Advance Stop Line "Bicycle Box"

The Advance Stop Line or "Bicycle Box" is a roadway treatment developed to provide cyclists with the space to position themselves for turning movements at signalized intersections. This treatment marks an area for bicyclists in front of stopped vehicles at signalized intersections. Similar to High Visibility Bicycle Lanes, current applications use a contrasting surface color to mark the entire area occupied by the bicycle box and to enhance visibility. A prominent example of this treatment currently in use and under evaluation is in Portland, Oregon.

Bicycle Boulevard

A Bicycle Boulevard is a roadway on which bicycle travel receives priority over vehicular traffic. Typical applications are found on local roadways with low volumes, which are intended to serve as low-speed "arterials" for bicycle travel. Bicycle boulevards typically include bicycle route signage and other physical diversions that allow for the passage of bicycles, and discourage or slow vehicular through traffic. Intersecting streets are usually stop controlled, giving full right-of-way to the travelling bicyclist.

Buffered Bike Lane

Buffered bike lanes are conventional bicycle lanes paired with a striped cross-hatched area separating the bicycle lane from the adjacent motor vehicle travel lane and/or parking lane.

5.2.3 Brigantine Beach Recommended Bicycle Facilities

The recommended bicycle facilities are proposed to improve bicycle compatibility and accessibility in Brigantine Beach. They include a variety of bicycle facility treatments such as bike lanes, bike lanes with buffer, and shared lanes. The recommendations are intended to be implemented within the existing cross-section of the roadway as part of re-surfacing, restriping or other roadway reconstruction projects.

Bike lanes are the most preferred type of on-road bicycle facility and there are several opportunities to install them on roadways throughout Brigantine Beach. The installation of bike lanes could be integrated by reducing the width of existing travel lanes to a minimum of 11 feet and striping the on-street parking lane to a minimum of 7 feet. In locations where sufficient roadway width is available, a buffer could be included between the bike lane and the parking lane or between the bike lane and the travel lane. A buffer is preferred by less skilled cyclists when higher traffic volumes and speeds are present. When recommended adjacent to the parking lane, the buffer provides added space to position cyclists outside of the "door zone".

In locations where space is constrained and bike lanes cannot be accommodated, shared lanes are proposed. Shared lanes are used mutually by vehicles and bicycles. Under these conditions, it is recommended that either "Share The Road" signs or Shared Lane Marking, also referred to as sharrows, be incorporated to reinforce this shared lane concept.

The Proposed Bicycle Compatibility Matrix outlines specific details of the recommendations to incorporate bicycle facilities within the existing roadway cross-section. **Figure 7** illustrates the results of the Bicycle Compatibility Analysis.

The recommended bicycle facilities improve bicycle compatibility in Brigantine Beach by 16% in Moderate Suitable and 6% in Most Suitable. **Table 9** provides a summary of Bicycle Compatibility Percentage under the proposed conditions.

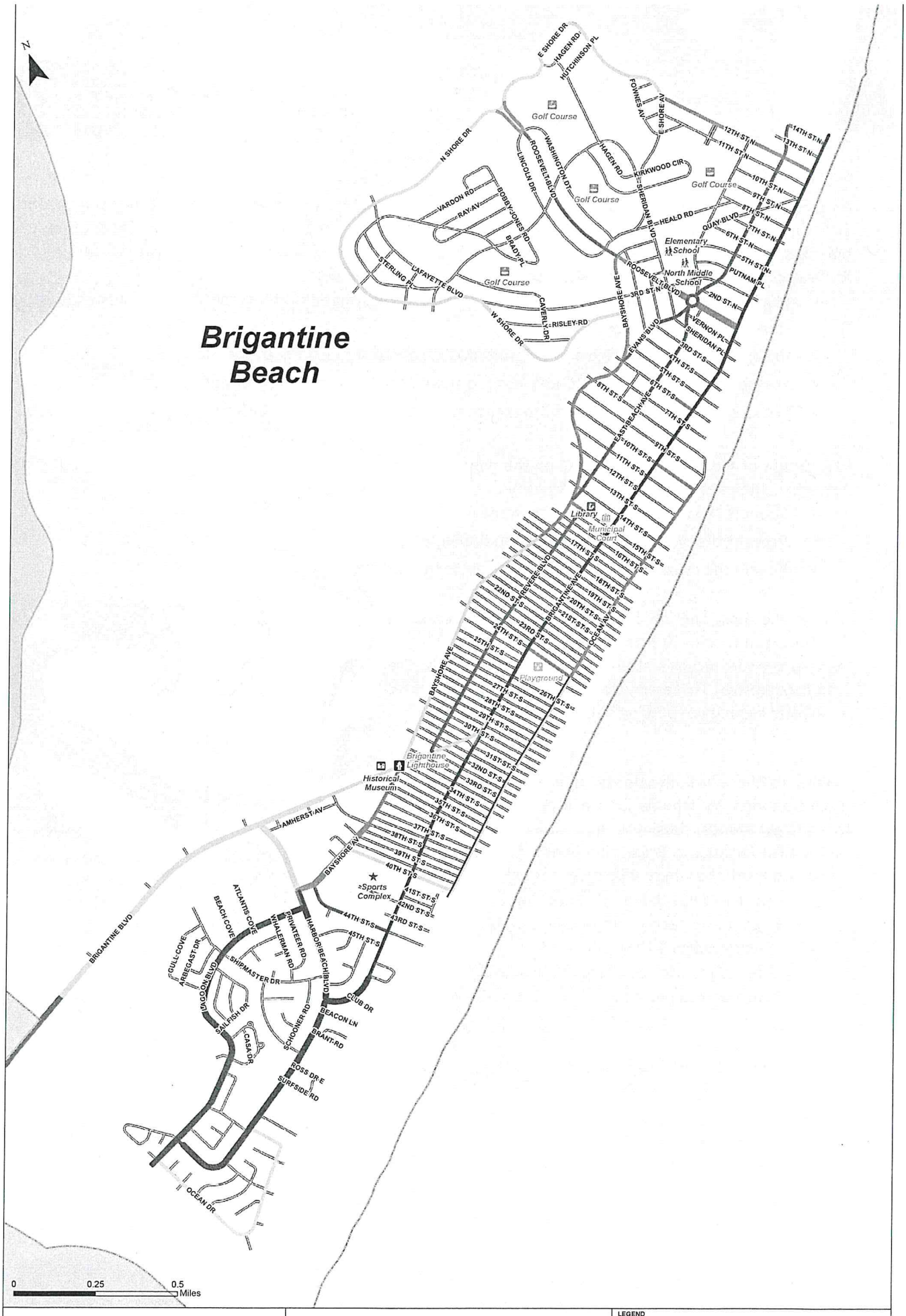
Table 9: Proposed Bicycle Compatibility Percentage

Condition	Miles	Percentage
Most	7.68	37%
Moderate	9.87	48%
Least	3.10	15%
Total	**20.65**	**100%**

The Proposed Bicycle Compatibility Matrix is shown in **Table 10**.

Table 10: Proposed Bicycle Compatibility Matrix

Road Name	Between	And	AADT (year)	Speed Limit (mph)	# of Lanes	On-Street Parking (Y/N)	Total Pavement (ft)	Existing Cross-Section Shoulder and Lane Width SB // NB or WB//EB (ft)	Proposed Cross Section	Proposed Suitability	Bicycle Facility
Brigantine Boulevard (NJ 87)	*Municipality Border*	Brigantine Ave. (CR 638)	29,700 (2010)	45	4	N	60'	14'/12'//8'//12'/14'	Maintain existing cross section	Least	None
Brigantine Avenue (CR 638)	Brigantine Blvd. (NJ 87)	Harbor Beach Blvd.	> 10,000	45	4	Y	78'	8'/12'/12'//14'//12'/12'/8'	8'PL/6'BL/11'/11'//14'//11'/11'/6'BL	Moderate	Bicycle Lanes (prohibit parking on NB)
	Harbor Beach Blvd.	S 38th St.	> 10,000	35	4	Y	78'	8'/12'/12'//14'//12'/12'/8'	7'PL/14'/11'//14'//11'/14'/7'PL	Moderate	Share The Road Signs
	S 38th St.	Bayshore Ave. *(Lighthouse)*	> 10,000	30	4	Y(SB only)	55'	7'PL/12'/12'//12'/12'	5.5'BL/11'/11'//11'/11'/5.5'BL OR 8'PL/5'BL/3'/11.5'//11.5'/3'/5'BL/8'PL	Moderate	Bicycle Lanes (Prohibit parking on both sides) OR Bicycle Lanes with Buffer (Reducing travel lanes)
	Bayshore Ave.*(Lighthouse)*	S 30th St.	5,000 < x < 10,000	30	2	Y	48'	24'//24'	7'PL/5'BL/12'//12'/5'BL/7'PL	Moderate	Bicycle Lanes
	S 30th St.	S 27th St.	5,000 < x < 10,000	30	4	N	58'	5'BL/12'/12'//12'/12'/5'BL	5'BL/2'/11'/11'//11'/11'/2'/5'BL	Moderate	Bicycle Lanes with Buffer
	S 27th St.	S 23rd St.	5,000 < x < 10,000	30	4	N	58'	5'BL/10'/11'//7'//11'/9'/5'BL	Maintain existing cross section	Moderate	Bicycle Lanes
	S 23rd St.	S 18th St.	5,000 < x < 10,000	30	4	N	58'	5'BL/12'/12'//12'/12'/5'BL	5'BL/2'/11'/11'//11'/11'/2'/5'BL	Moderate	Bicycle Lanes with Buffer
	S 18th St.	*Dead End*	5,000 < x < 10,000	30	2	Y	58'	8'PL/5'BL/10'//12'//10'/5'BL/8'PL	7'PL/5'BL/2'/10'//10'//10'/2'/5'BL/7'PL	Moderate	Bicycle Lanes with Buffer
W Brigantine Avenue	Harbor Beach Blvd.	Rainbow Dr.	2,000 < x < 5,000	25	2	Y	71'	7'PL/5'BL/18'//11'//18'/5'BL/7'PL	7'PL/5'BL/3'/15'//11'//15'/3'/5'BL/7'PL	Most	Bicycle Lanes with Buffer
	Rainbow Dr.	S 45th St.	2,000 < x < 5,000	25	2	Y	67'	8'PL/5'BL/19'//10'//12'/5'BL/8'PL	7'PL/5'BL/3'/13.5'//10'//13.5'/3'/5'BL/7'PL	Most	Bicycle Lanes with Buffer
	S 45th St.	S 30th St.	3,139 (2010)	25	2	Y	61'	8'PL/5'BL/13'//10'//12'/5'BL/8'PL	7'PL/5'BL/2'/11.5'//10'//11.5'/2'/5'BL/7'PL	Most	Bicycle Lanes with Buffer
Harbor Beach Boulevard	Brigantine Ave. (CR 638)	Bayshore Ave.	5,000 < x < 10,000	25	2	N	72'	28'//14'//30'	8'PL/5'BL/3'/13'//14'//13'/3'/5'BL/8'PL	Moderate	Bicycle Lanes with Buffer
	Bayshore Ave.	Lagoon Blvd.	2,000 < x < 5,000	25	2	Y	72'	8'PL/5'BL/16'//14'//16'/5'BL/8'PL	8'PL/5'BL/3'/13'//14'//13'/3'/5'BL/8'PL	Most	Bicycle Lanes with Buffer
Lagoon Boulevard	Harbor Beach Blvd.	Ocean Drive	2,000 < x < 5,000	25	2	Y	70'	8'PL/5'BL/15'//14'//15'/5'BL/8'PL	8'PL/5'BL/3'/12'//14'//12'/3'/5'BL/8'PL	Most	Bicycle Lanes with Buffer
Ocean Drive	Lagoon Blvd.	Harbor Beach Blvd.	1,200 < x < 2,000	25	2	Y	32'	32'	16'//16'	Moderate	Shared Lane Markings (Sharrows)
Bayshore Avenue	Harbor Beach Blvd.	S 38th St.	2,000 < x < 5,000	25	2	Y	74'	30'//14'//30'	8'PL/5'BL/3'/14'//14'//14'/3'/5'BL/8'PL	Most	Bicycle Lanes with Buffer
	S 38th St.	Brigantine Ave.*(Lighthouse)*	2,000 < x < 5,000	25	2	Y	34'	17'//17'	13.5'//13.5'/7'PL	Moderate	Shared Lane Markings (Sharrows)
	Brigantine Ave.*(Lighthouse)*	S 18th St.	5,000 < x < 10,000	25	2	Y	34'	17'//17'	5'BL/12'//12'/5'BL	Moderate	Bicycle Lanes
	S 18th St.	Lafayette Pl.	2,000 < x < 5,000	25	2	Y	36'	18'//18'	5'BL/13'//13'/5'BL	Most	Bicycle Lanes
	Lafayette Pl.	Roosevelt Blvd.	2,000 < x < 5,000	25	2	Y	38'	19'//19'	5'BL/14'//14'/5'BL	Most	Bicycle Lanes
Ocean Avenue	S 40th St.	S 24th St.	2,000 < x < 5,000	25	2	Y	40'	8'PL/5'BL/12'//15'	7'PL/13'//13'/7'PL	Moderate	Share The Road Signs
	S 24th St.	S 10th St.	973 (2009)	25	2	Y	44'	22'//22'	7'PL/15'//15'/7'PL	Most	Share The Road Signs
	S 10th St.	S 9th St.	< 1,200	25	2	Y	42'	9'PL/13'//12'/8PL	7'PL/14'//14'/7'PL	Most	Share The Road Signs
Roosevelt Boulevard	Brigantine Ave. (CR 638)	Quay Blvd.	2,000 < x < 5,000	25	2	Y	70'	26'//18'//26'	7'PL/5'BL/3'/11'//18'//11'/3'/5'BL/7'PL	Most	Bicycle Lanes with Buffer
	Quay Blvd.	Lincoln Dr./Washington Dr.	2,000 < x < 5,000	25	2	Y	36'	18'//18'	Maintain existing cross section	Least	Shared Lane Markings (Sharrows)
	Lincoln Dr./Washington Dr.	E Shore Dr.	2,000 < x < 5,000	25	2	Y	100'	20'//60'//20'	5'BL/3'/12'//60'//12'/3'/5'BL	Most	Bicycle Lanes with Buffer
Evans Boulevard	Bayshore Ave.	Roosevelt Blvd.*(Circle)*	2,000 < x < 5,000	25	2	Y	36'	18'//18'	Maintain existing cross section	Least	Shared Lane Markings (Sharrows)
Beach Avenue	Bayshore Ave.	Roosevelt Blvd. *(Circle)*	2,000 < x < 5,000	25	2	Y	36'	18'//18'	Maintain existing cross section	Least	Shared Lane Markings (Sharrows)
	Roosevelt Blvd. *(Circle)*	N 14th St.	2,000 < x < 5,000	25	2	Y	36'	18'//18'	Maintain existing cross section	Least	Shared Lane Markings (Sharrows)
E Shore Drive	N 12th St.	Roosevelt Blvd.	1,200 < x < 2,000	25	2	Y	30'	30'	Maintain existing cross section	Moderate	Shared Lane Markings (Sharrows)
N/W Shore Drive	Roosevelt Blvd.	Bayshore Ave.	1,200 < x < 2,000	25	2	Y	30'	30'	Maintain existing cross section	Moderate	Shared Lane Markings (Sharrows)
Revere Boulevard	Brigantine Ave. (CR 638)	S 15th St.	2,000 < x < 5,000	25	2	Y	34'	17'//17'	Maintain existing cross section	Least	Shared Lane Markings (Sharrows)
S 44th Street	Brigantine Ave. (CR 638)	Bayshore Ave.	2,000 < x < 5,000	25	2	Y	28'	28'	Maintain existing cross section	Least	Shared Lane Markings (Sharrows)
S 40th Street	Ocean Ave.	Brigantine Ave. (CR 638)	1,200 < x < 2,000	25	2	Y(WB only)	26'	26'	Maintain existing cross section	Moderate	Shared Lane Markings (Sharrows)
S 24th Street	Ocean Ave.	Brigantine Ave. (CR 638)	< 1,200	25	2	Y	30'	30'	Maintain existing cross section	Most	Shared Lane Markings (Sharrows)
S 15th Street	Revere Blvd.	Bayshore Ave.	< 1,200	25	2	Y	30'	30'	Maintain existing cross section	Most	Shared Lane Markings (Sharrows)
S 10th Street	Ocean Ave.	Brigantine Ave. (CR 638)	< 1,200	25	2	Y	30'	30'	Maintain existing cross section	Most	Shared Lane Markings (Sharrows)
S 6th Street	Brigantine Ave. (CR 638)	Beach Ave.	< 1,200	25	2	Y	30'	30'	Maintain existing cross section	Most	Shared Lane Markings (Sharrows)
N 12th Street	Brigantine Ave. (CR 638)	E Shore Dr.	< 1,200	25	2	Y(WB only)	30'	30'	Maintain existing cross section	Most	Shared Lane Markings (Sharrows)
N 14th Street	Beach Ave.	Brigantine Ave. (CR 638)	529 (2008)	25	2	Y	25'	25'	Maintain existing cross section	Most	Shared Lane Markings (Sharrows)


N
Brigantine Beach
E SHORE DR
HAGEN RD
HUTCHINSON PL
FOWNES AV
E SHORE AV
Golf Course
N SHORE DR
WASHINGTON DR
ROOSEVELT BLVD
LINCOLN DR
HAGEN RD
KIRKWOOD CIR
SHERIDAN BLVD
Golf Course
Golf Course
12TH ST N
11TH ST N
14TH ST N
13TH ST N
10TH ST N
9TH ST N
8TH ST N
7TH ST N
6TH ST N
5TH ST N
VARDON RD
RAY AV
BOBBY JONES RD
BRADY PL
HEALD RD
QUAY BLVD
Elementary School
North Middle School
PUTNAM PL
2ND ST N
STERLING PL
LAFAYETTE BLVD
Golf Course
3RD ST N
ROOSEVELT BLVD
BAYSHORE AVE
CAVERLY DR
RISLEY RD
W SHORE DR
EVANS BLVD
VERNON PL
SHERIDAN PL
3RD ST S
4TH ST S
5TH ST S
6TH ST S
8TH ST S
7TH ST S
EASTBEACH AVE
9TH ST S
10TH ST S
11TH ST S
12TH ST S
13TH ST S
14TH ST S
Library
Municipal Court
15TH ST S
17TH ST S
16TH ST S
18TH ST S
22ND ST S
BRIGANTINE AVE
20TH ST S
21ST ST S
OCEAN AV
23RD ST S
24TH ST S
25TH ST S
Playground
BAYSHORE AVE
27TH ST S
26TH ST S
28TH ST S
29TH ST S
30TH ST S
31ST ST S
Brigantine Lighthouse
Historical Museum
32ND ST S
33RD ST S
34TH ST S
35TH ST S
36TH ST S
37TH ST S
38TH ST S
39TH ST S
40TH ST S
AMHERST AV
BAYSHORE AV
Sports Complex
41ST ST S
42ND ST S
43RD ST S
44TH ST S
45TH ST S
BRIGANTINE BLVD
ATLANTIS COVE
BEACH COVE
PRIVATEER RD
WHALERMAN RD
HARBOR BEACH BLVD
GULL COVE
ARBEGAST DR
SHIPMASTER DR
LAGOON BLVD
CLUB DR
BEACON LN
SAILFISH DR
SCHOONER RD
BRANT RD
CASA DR
BOSS DR E
SURFSIDE RD
OCEAN DR
0
0.25
0.5
Miles
U.S Department of Transportation
Federal Highway Administration
Baker
Brigantine Beach Bicycle and Pedestrian Plan
Figure 7: Proposed Bicycle Compatibility
LEGEND
Proposed Bicycle Compatibility Condition
Most Suitable
Moderately Suitable
Least Suitable
Existing Bicycle Facility
Municipal Boundary
Library
Golf Course
Park/Playground
School
Museum
Municipal Court
Sports Complex
Lighthouse
July 2013

5.3 PROPOSED BICYCLE RACK LOCATIONS

An effective way to determine the best place to locate bike racks is to identify where bicyclists currently park their bikes. Conversely, placing bike racks where they go unnoticed or in locations inconvenient to bicyclists, will be unused. As noted in *Bicycle Parking Guidelines* (Association of Pedestrian and Bicycle Professionals (APBP), 2nd edition), short-term parking racks should be:

- Placed no more than 50 feet from the door of the destination; otherwise, cyclist may lock to other street furniture or trees
- Visible from the destination to reassure cyclists about the security of the rack
- Located in a high-traffic area with passive surveillance or eyes on the street
- Located along the desire line from adjacent bikeway (the path that cyclists are most likely to travel)

The design of bicycle racks will vary as the available space for secure bike parking may be limited. The following criteria are recommended by APBP:

- Support the bicycle upright by its frame in two places.
- Prevent the wheel of the bicycle from tipping over.
- Enable the frame and one or both wheels to be secured.

Two of the most commonly recommended bike racks are the "Inverted-U" and "Post and Ring" style bike racks. Both designs support bicycles at two points, are intuitive to use and inexpensive. These can be easily arranged in a series to expand capacity of parking at any one location.

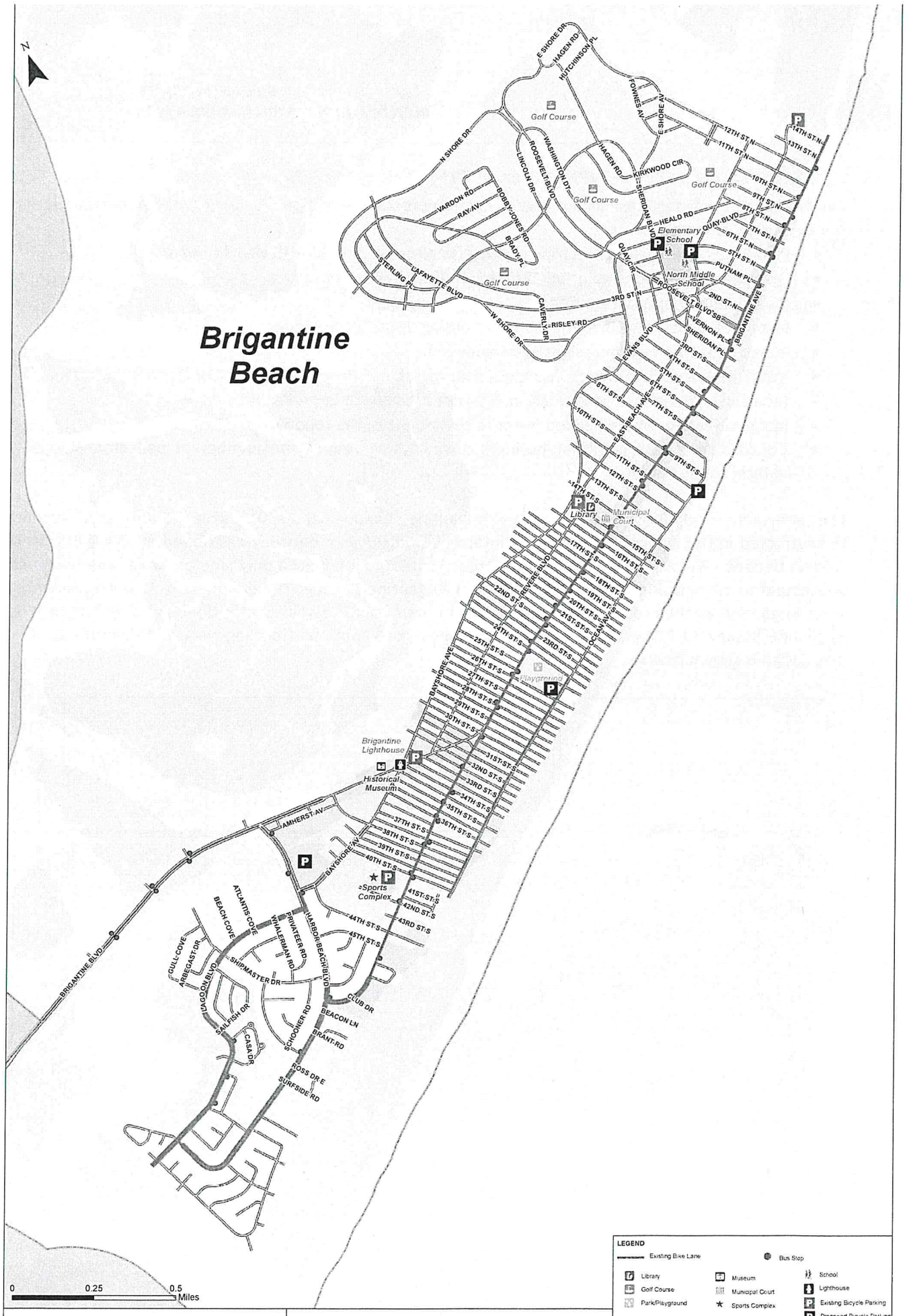
Inverted-U bike rack from Sunshine U-LOK Corporation

Post and Ring bike racks shown at the Philadelphia Zoo

Similar to the sidewalk priority ranking, bicycle racks are recommended by schools, beach access points, libraries, parks/playgrounds, business and commercial buildings, and transit facilities in Brigantine Beach. The following is a list of top locations where bike racks should be installed:

- Brigantine Beach Elementary School
- Brigantine Beach North Middle School
- Playground by 24th Street South
- Shopping Center by Harbor Beach Boulevard
- Beach access point by 10th Street South

Figure 8 illustrates the location of the recommended bicycle parking.



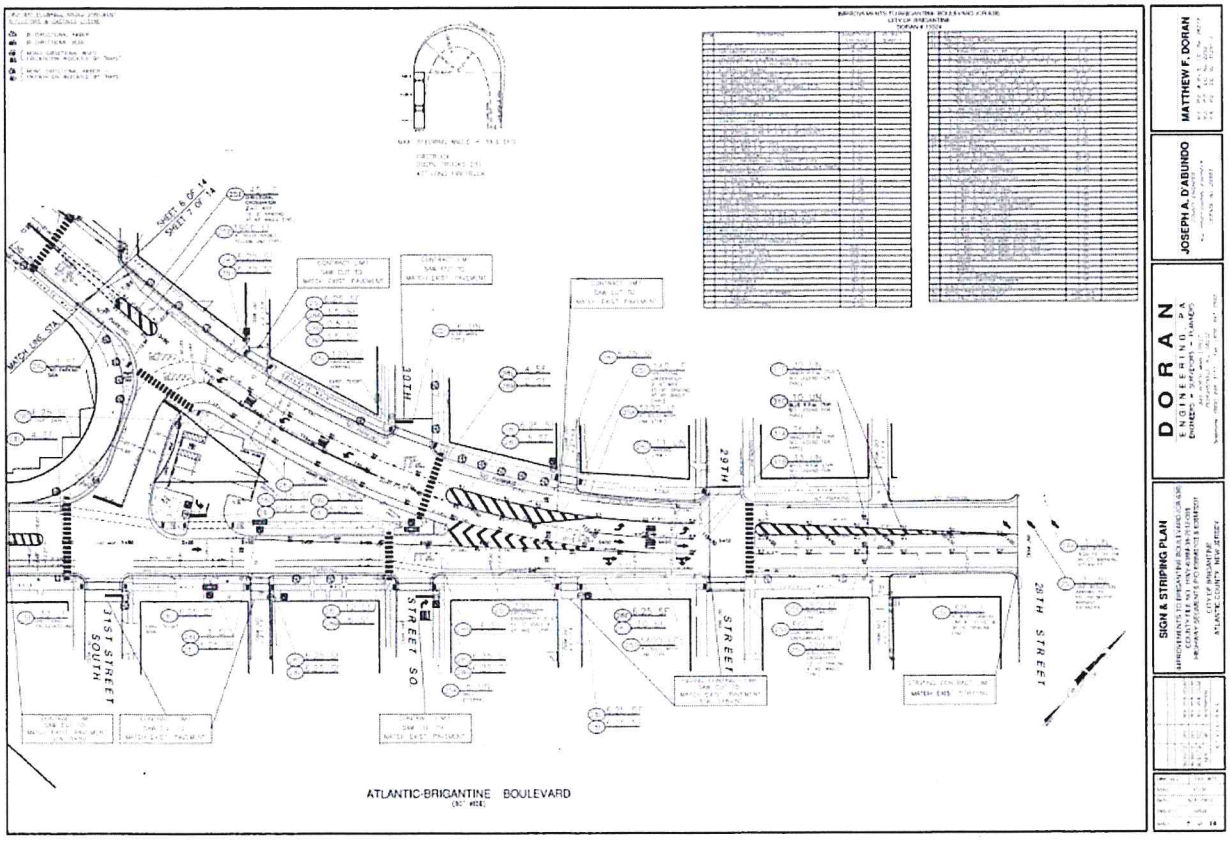
Brigantine Beach Bicycle and Pedestrian Plan
Figure 8: Recommended Bicycle Parking

5.4 INTERSECTION IMPROVEMENTS & CONCEPTUAL SCHEMATICS

The six assessed intersections include several common recommendations for bicycle and pedestrian facility improvements, among them are:

- Install new crosswalks or restripe existing faded crosswalks to high visibility crosswalks.
- Upgrade intersections to included ADA compliant curb ramps.
- Install pedestrian scale lighting.
- Install refuge islands where pedestrian crossing distances are long.
- Install pedestrian warning signs where needed.
- Install recommended bicycle facilities (refer to Table 9: Proposed Bicycle Compatibility Matrix).
- Increase maintenance of vegetation in center medians to improve visibility.
- Install sidewalks where needed (refer to section 5.1 of the report).
- Consolidate access points at business driveways to reduce the number of pedestrian/bicycle – vehicle conflict points.

The intersection of Brigantine Boulevard/Brigantine Avenue and 30th Street South was recently reconstructed in the summer of 2013. The intersection includes a one-way eastbound on West Brigantine Avenue between 31st Street South and 29th Street South and a left turn only lane on Brigantine Boulevard westbound to allow traffic to travel west on West Brigantine Avenue. The existing bike lane on westbound West Brigantine Avenue (east of 30th Street South) ends at 30th Street South, directing bicyclists to cross Brigantine Boulevard/Brigantine Avenue at the crosswalk to continue traveling west on Brigantine Avenue. This design is shown below.



Seven conceptual layouts have been developed to illustrate a variety of solutions to improve both bicycle and pedestrian mobility and accessibility. The concepts, illustrated on **Figure 9** to **Figure 15**, are described below:

- **Revere Boulevard between Brigantine Avenue and 15th Street South (Figure 9)** – This concept includes shared lane markings (sharrows) to be placed 11 feet from the curb due to on-street parking and accompanied by an MUTCD R4-11 sign "Bicycle May Use Full Lane". The existing cross-section will remain with a 17' travel lane in each direction.
- **Ocean Avenue between 40th Street South and 24th Street South (Figure 10)** – This concept replaces the existing southbound only bicycle lane to a two-way 13' shared bicycle/travel lane and 7' parking shoulder. MUTCD Share The Road signs W11-1 and W16-1P should be installed.
- **Intersection of Harbor Beach Boulevard and Bayshore Avenue (Figure 11)** – This concept reduces the existing 15' travel lanes on Harbor Beach Boulevard to 12' with a 3' bike buffer and extends the 5' bike lane and 8' parking shoulder to the intersection of Brigantine Boulevard. A 5' sidewalk is recommended to be installed on the southbound side of Harbor Beach Boulevard. Bayshore Avenue by the intersection includes 8' parking shoulder, 5' bike lane, 3' bike buffer, and 14' travel lane in each direction. Additionally, the intersection includes high visibility crosswalks, refuge islands, and curb extensions to reduce pedestrian crossing distance.
- **Intersection of Brigantine Avenue and Bayshore Avenue – Option 1 (Figure 12)** – This concept includes 5.5' bike lane and two 11' travel lanes in each direction on Brigantine Avenue west of the lighthouse circle and 7' parking lane, 5' bike lane, and 12' travel lane in each direction on Brigantine Avenue east of the lighthouse circle. Bayshore Avenue by the circle includes bike lanes to the north and shared bike/travel lanes to the south. Parking is prohibited inside the circle. High visibility crosswalks are recommended at the approaches and sidewalks where needed. MUTCD signs R3-17 and R4-11 should be installed.
- **Intersection of Brigantine Avenue and Bayshore Avenue – Option 2 (Figure 13)** – This concept defers from option 1 in that Brigantine Avenue, west of the circle, is being reduced to one travel lane in each direction. The lane reduction is only included between Adams Avenue/38th Street South and the lighthouse. The proposed cross-section includes 8' parking shoulder, 5' bike lane, 3' buffer, 11.5' travel lane, and 5' sidewalk in each direction. Bayshore Avenue, between 35th Street South and the circle, is recommended as a one-way travel lane into the circle with curb extensions at the approach.
- **Intersection of Roosevelt Boulevard and Evans Boulevard/Beach Avenue – Option 1 (Figure 14)** – This concept includes 7' parking shoulder, 5' bike lane, 3' buffer, and 11' travel lane in each direction on Roosevelt Boulevard between Brigantine Avenue and Quay Boulevard. MUTCD sign R3-17 should be installed. High visibility crosswalks and refuge islands are also recommended at every approach of the Roosevelt circle. Physical islands on Evans Boulevard/Beach Avenue are recommended near the circle to separate traffic entering and exiting the circle.
- **Intersection of Roosevelt Boulevard and Evans Boulevard/Beach Avenue – Option 2 (Figure 15)** – This concept defers from option 1 in that the physical islands on Evans Boulevard/Beach Avenue extend to the existing physical islands and allows traffic to make a U turn by Lafayette Place and Sheridan Place.

It should be noted that additional planning studies are required to fully determine the feasibility of each of the recommended concepts.

Figure 9: Revere Boulevard between Brigantine Avenue and 15th Street South

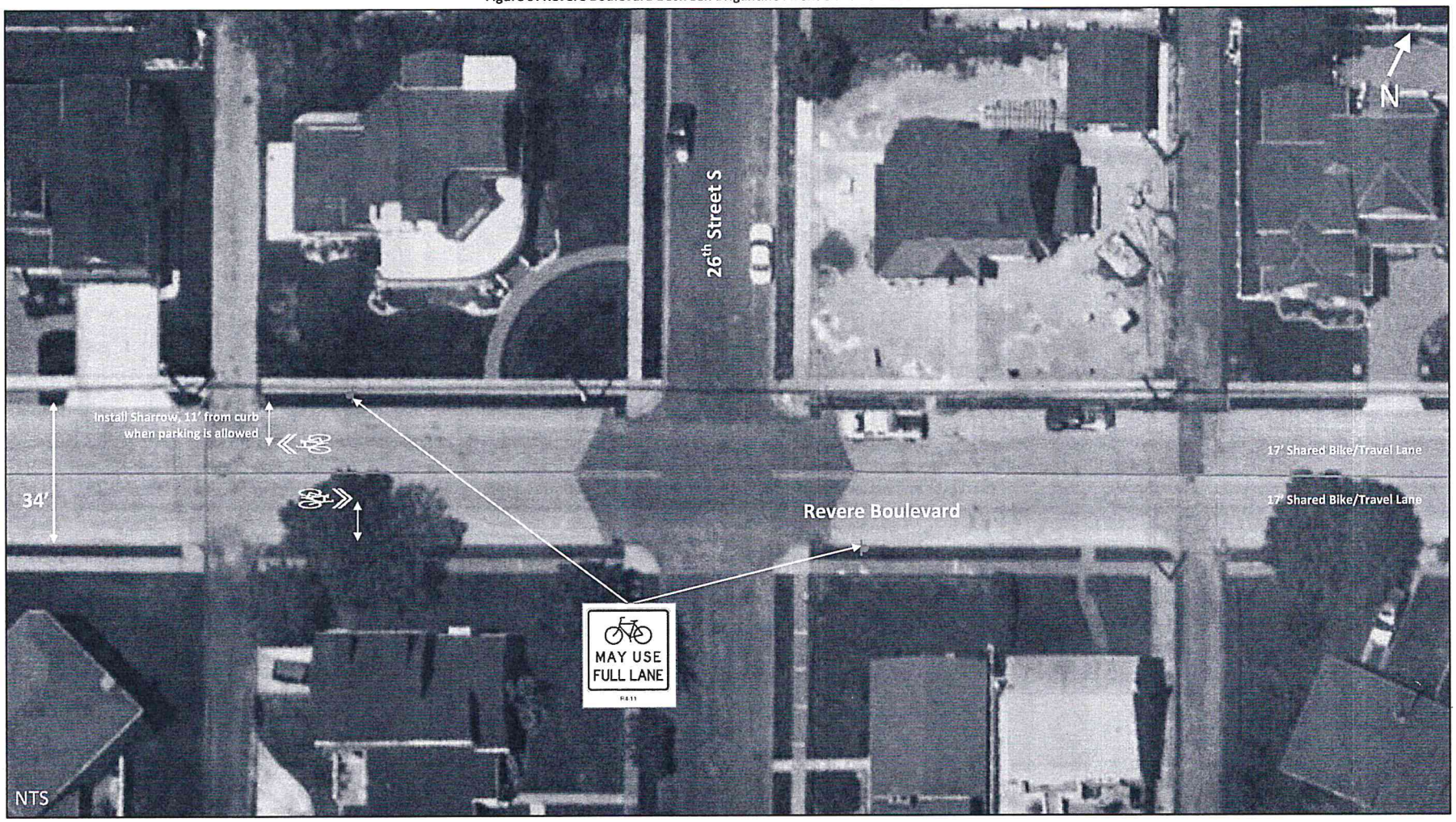


Figure 10: Ocean Avenue between 40th Street South and 24th Street South

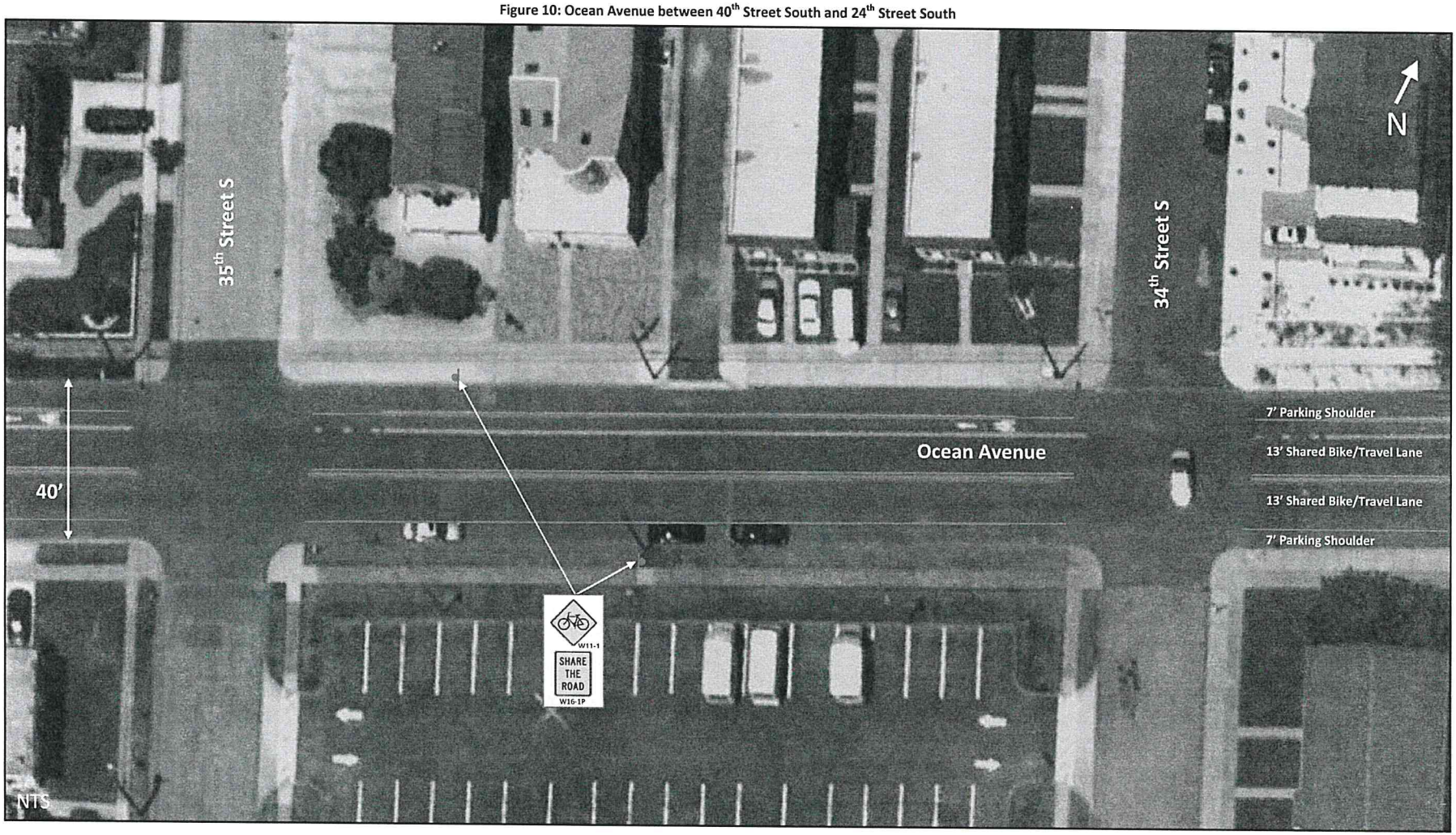


Figure 11: Intersection of Harbor Beach Boulevard and Bayshore Avenue

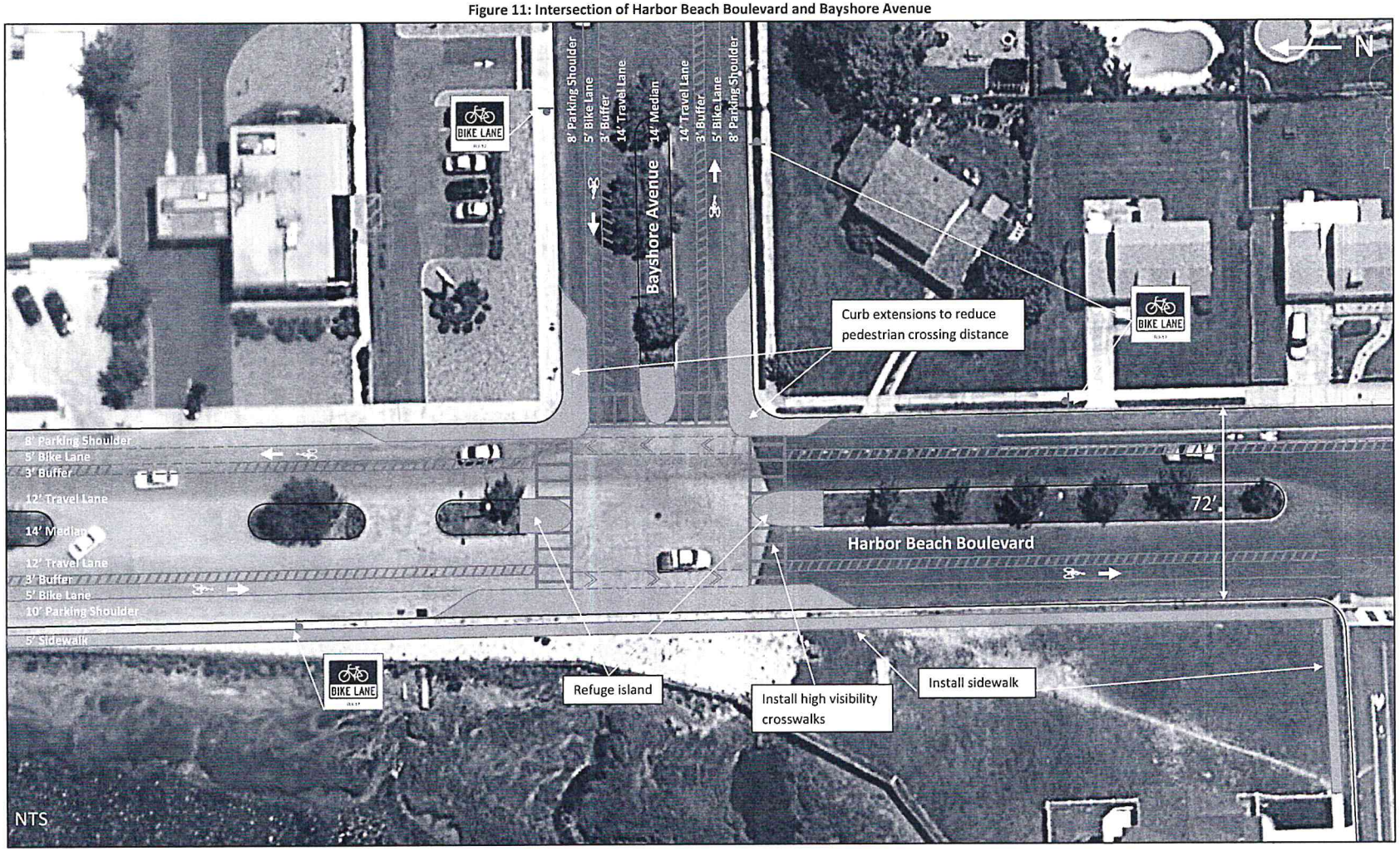


Figure 12: Intersection of Brigantine Avenue and Bayshore Avenue – Option 1

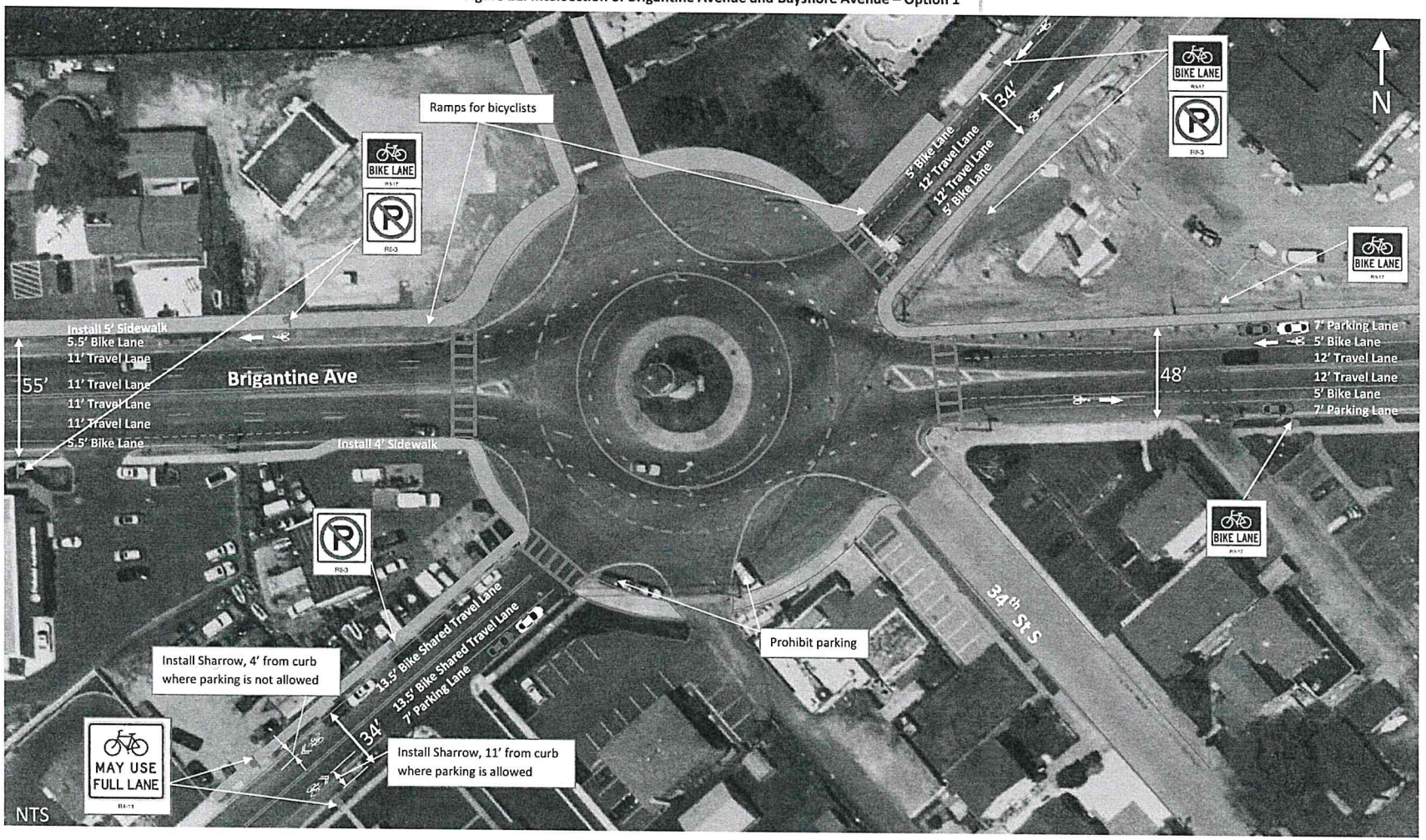


Figure 13: Intersection of Brigantine Avenue and Bayshore Avenue – Option 2

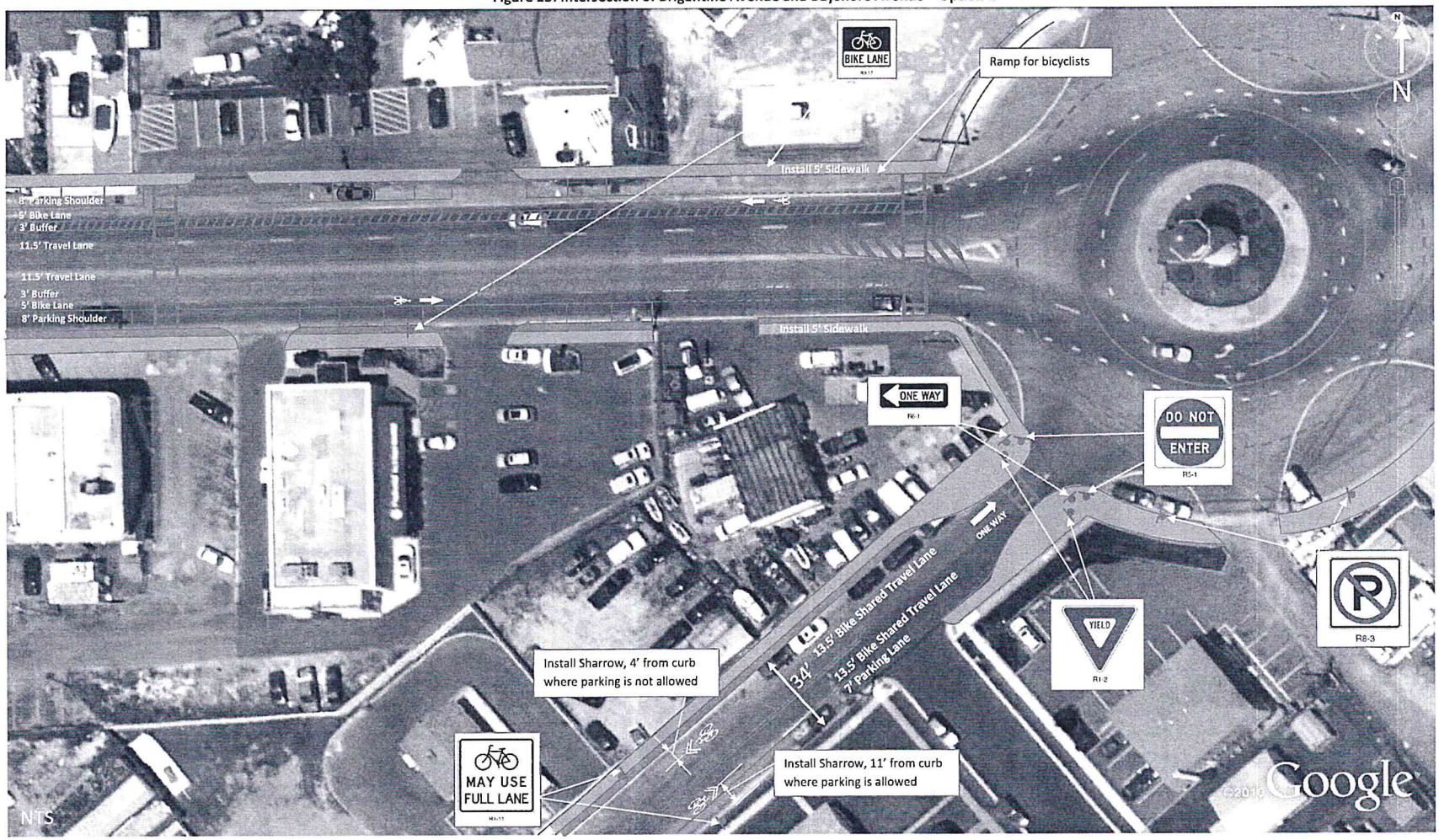


Figure 14: Intersection of Roosevelt Boulevard and Evans Boulevard/Beach Avenue – Option 1

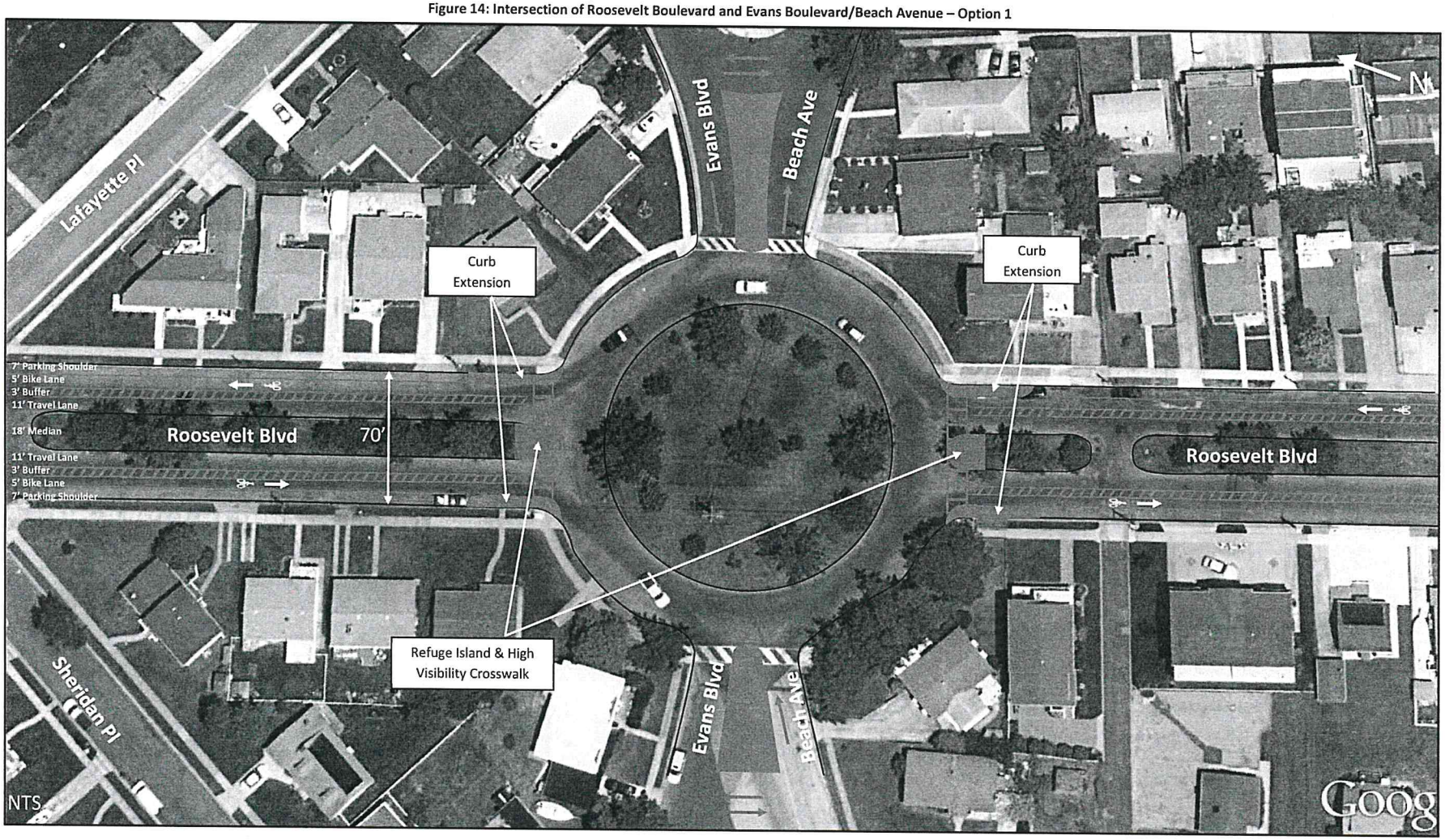
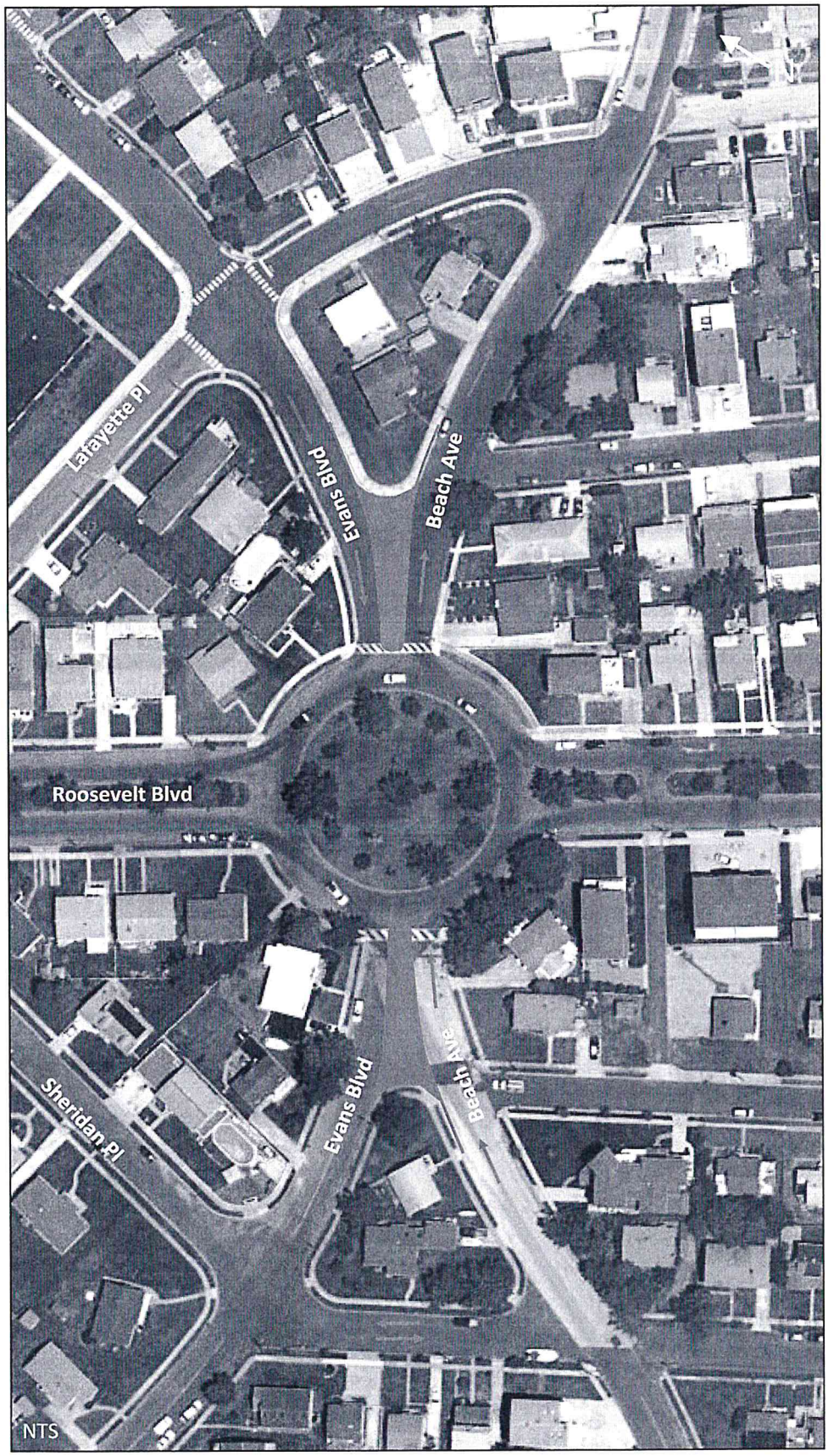


Figure 15: Intersection of Roosevelt Boulevard and Evans Boulevard/Beach Avenue – Option 2



6. IMPLEMENTATION AND FUNDING

The recommendations outlined as part of this Master Plan provide an opportunity to enhance biking and walking throughout Brigantine Beach. There are multiple opportunities to improve bicycle and pedestrian access and mobility. The following sections provide guidance on coordination, planning, and funding sources that can serve as a resource for advancing and implementing the proposed facilities throughout Brigantine Beach.

The City of Brigantine Beach is aware that it is responsible for initiating the implementation of future improvements that are recommended as part of this study.

6.1 COORDINATION EFFORTS

Coordination between Brigantine Beach, neighboring communities, and Atlantic County should be initiated to advance improvements for bicycle and pedestrian accommodations on roadways in Brigantine Beach. A potential next step could be the formation of a working group (e.g., Bike/Ped Task Force) to pursue opportunities and resources to support the design and implementation of the facilities. The working group could assist with advancing priority recommendations and build upon the preliminary network and regional connections identified in this plan, as well as identify opportunities for improving biking and walking through future development.

6.2 CAPITAL IMPROVEMENT PROJECTS

Brigantine Beach should review their Capital Improvement Projects to determine where bicycle and pedestrian improvements can be integrated. The majority of the bicycle facility recommendations outlined within this plan can be implemented as part of regular roadway resurfacing and/or restriping projects.

6.3 FUNDING IMPROVEMENTS

Although costs associated with bicycle and pedestrian improvements can fluctuate, many improvements (e.g., installing "Share the Road" signs or striping a bike lane) can be completed at a relatively low cost. Adding signing and striping for bicycle and pedestrian facilities to planned maintenance or development projects can be a way to minimize costs.

The recommended concepts for both bicycle and pedestrian projects could be eligible for the following potential funding sources:

- Community Development Block Grants (CDBG)
- Congestion Mitigation and Air quality (CMAQ)
- New Jersey Department of Transportation Local Aid Program for Municipalities and Counties
- Transportation Development Districts (TDD)
- Smart Future Planning Grants

On July 6, 2012, the Moving Ahead for Progress in the 21st Century Act (MAP-21) was signed into law. Unfortunately MAP-21 reduces funding for bicycle and pedestrian projects by 30%. For additional resources to help maximize all bicycling and walking eligibility under the law, visit Advocacy Advance at http://www.advocacyadvance.org/MAP21

6.4 IMPLEMENTATION MATRIX

It is recommended that Brigantine Beach determine a practical means for implementing the recommendations made in this Plan. In an effort to assist Brigantine Beach, this plan includes an Implementation Matrix for both proposed sidewalks and bicycle facilities. The Implementation Matrix is intended to assist the City in prioritizing the recommendations for a phased implementation, as well as identifying costs and the appropriate agency to coordinate carrying them out.

The Proposed Sidewalk Implementation Matrix, **Table 11**, is based on the priorities identified earlier in Section 5 of this report. The priorities are the same as those listed in Table 8 with the addition of identifying the timeframe of implementation, general cost estimates, and jurisdictional agency.

The Proposed Bicycle Implementation Matrix, **Table 12**, identifies the recommended bicycle facility type, proposed cross-section of the roadway, general cost estimates, and jurisdictional agency. Although the Proposed Bicycle Implementation Matrix does not include a priority ranking, Brigantine Beach should review proposed development, construction and resurfacing projects of roadways within the preliminary network to identify opportunities to include signing and striping in support of new bicycle facilities.

7. MAINTENANCE

Maintenance of roadways, including on-road bicycle facilities is an important consideration as bicycle ridership and pedestrian volumes increase with the creation of new facilities. The condition, specifically smoothness, of a roadway's surface is an important factor in bicycle comfort and safety. When a surface is irregular it not only causes an unpleasant ride, but also poses risks as potholes, cracking, heaving, and other roadway deterioration may cause a bicyclist to swerve into motor vehicle traffic to avoid the obstacle. NJDOT and AASHTO bicycle guidelines recommend the routine maintenance of roadways to provide good riding conditions. In addition, efforts should be made to remove and prevent debris from being placed in the roadway, especially along the outside edge of roadways where bicyclists often ride. Debris can impact bicycle operations and increase maintenance needs of roadway facilities over time.

When facilities are installed, it is important for municipalities to notify residents of the necessity to keep shoulders and bicycle lanes clear from debris. Additionally, continued coordination with the appropriate public works departments should also be maintained to identify areas that will need additional street cleaning during the fall and winter months. http://www.bicyclinginfo.org/bikesafe/case_studies/casestudy.cfm?CS_NUM=403

Sidewalk conditions also affect pedestrians, especially those with disabilities. Municipalities should include a process to routinely inspect sidewalk conditions, so that cracking, shifting, or deterioration can be addressed quickly. If replacement is necessary, the appropriate notice should be made to the responsible party or parties.

Table 11: Proposed Sidewalk Implementation Matrix

Road Name	Direction	Limits	MP	Priority	Timeframe	Cost	Jurisdiction
Brigantine Blvd (NJ 87)	SB	From *Absecon Channel* to beginning of CR 638	1.38-1.70	High	Long	High	NJDOT & SJTA
Brigantine Blvd (NJ 87)	NB	From U-Turn to beginning of CR 638	1.47-1.70	High	Long	High	NJDOT & SJTA
Brigantine Avenue (CR 638)	NB	From end of NJ 87 to south of Cherokee Dr.	0.00-0.38	High	Long	Medium	Atlantic County
		From north of Jefferson Ave. to south of Monroe Ave.	1.15-1.20	Medium	Long	Low	Atlantic County
Brigantine Avenue (CR 638)	SB	From end of NJ 87 to north of Edgewater Dr.	0.00-0.90	High	Long	High	Atlantic County
		From Monroe Ave. to Bayshore Ave.	1.20-1.53	Medium	Medium	Medium	Atlantic County
Harbor Beach Boulevard	EB	From east of Amherst Ave. to west of Bayshore Ave.	0.14-0.17	Medium	Short	Low	Brigantine Beach
		From Bayshore Ave. to Lagoon Blvd.	0.23-0.29	Medium	Short	Low	Brigantine Beach
		From Manitoba Ave. to Ross Dr.	-	Medium	Short	Medium	Brigantine Beach
Lagoon Boulevard	SB	From Shipmaster Dr. to Cove Dr.	-	Medium	Short	Medium	Brigantine Beach
		From south of Cove Dr. to Delmar Dr.	-	Medium	Short	Medium	Brigantine Beach
		From north of Ontario Ave. to south of Harbor Beach Cove	-	Medium	Short	Medium	Brigantine Beach
Ocean Avenue	NB	From south of 40th St. S. to 39th St. S.	-	Medium	Short	Low	Brigantine Beach
		From 12th St. S. to 8th St. S.	-	High	Medium	Low	Brigantine Beach
Triangular island along Bayshore Avenue and W. Beach Avenue, between 15th St. S. and 14th St. S.			-	Medium	Medium	Low	Brigantine Beach
Triangular island along Bayshore Avenue and Evans Boulvard, between 6th St. S. and 5th St. S.			-	High	Medium	Low	Brigantine Beach
Roosevelt Boulevard	EB	From Quay Circle to Sheridan Pl.	-	High	Medium	Medium	Brigantine Beach
West Shore Drive	WB	From Risley Rd. to Layfayette Blvd.	-	High	Medium	Medium	Brigantine Beach
North Shore Drive	NB	From south of Tea Ct. to Tea Ct.	-	High	Medium	Medium	Brigantine Beach
North/East Shore Drive	SB	From south of Tea Ct. to north of Tea Ct.	-	High	Medium	Medium	Brigantine Beach
Tea Court	EB	From North Shore Dr. to Lincoln Dr.	-	High	Medium	Medium	Brigantine Beach
Small segments along East Shore Drive			-	Medium	Short	Low	Brigantine Beach

LEGEND:

Timeframe
Short = 1-2 years
Medium = 3-4 years
Long = 5+ years

Cost
Low = < $10,000
Medium = $10,000 - $20,000
High = $20,000+

Priority Range:
Low Priority = 0 – 9
Medium Priority = 10 – 19
High Priority = 20+

Table 12: Proposed Bicycle Implementation Matrix

Road Name	Between	And	# of Lanes	On-Street Parking	Total Pavement (ft)	Proposed Cross Section	Bicycle Facility	Cost	Timeframe	Jurisdiction
Brigantine Avenue (CR 638)	Brigantine Blvd. (NJ 87)	Harbor Beach Blvd.	4	Y	78'	8'PL/6'BL/11'/11'//14'//11'/11'/6'BL	Bicycle Lanes	Medium	Long	Atlantic County
	Harbor Beach Blvd.	S 38th St.	4	Y	78'	7'PL/14'/11'//14'//11'/14'/7'PL	Share The Road Signs	Low	Medium	Atlantic County
	S 38th St.	Bayshore Ave. *(Lighthouse)*	4	Y(SB only)	55'	5.5'BL/11'/11'//11'/11'/5.5BL OR 8'PL/5'BL/3'/11.5'//11.5'/3'/5'BL/8'PL	Bicycle Lanes or Bicycle Lanes with Buffer	Medium	Long	Atlantic County
	Bayshore Ave.*(Lighthouse)*	S 30th St.	2	Y	48'	7'PL/5'BL/12'//12'/5'BL/7'PL	Bicycle Lanes	Low	Short	Atlantic County
	S 30th St.	S 27th St.	4	N	58'	5'BL/2'/11'/11'//11'/11'/2'/5'BL	Bicycle Lanes with Buffer	Low	Short	Atlantic County
	S 27th St.	S 23rd St.	4	N	58'	Maintain existing cross section	Bicycle Lanes	-	-	Atlantic County
	S 23rd St.	S 18th St.	4	N	58'	5'BL/2'/11'/11'//11'/11'/2'/5'BL	Bicycle Lanes with Buffer	Low	Medium	Atlantic County
	S 18th St.	*Dead End*	2	Y	58'	7'PL/5'BL/2'/10'//10'//10'/2'/5'BL/7'PL	Bicycle Lanes with Buffer	High	Long	Atlantic County
W Brigantine Avenue	Harbor Beach Blvd.	Rainbow Dr.	2	Y	71'	7'PL/5'BL/3'/15'//11'//15'/3'/5'BL/7'PL	Bicycle Lanes with Buffer	Low	Short	Brigantine Beach
	Rainbow Dr.	S 45th St.	2	Y	67'	7'PL/5'BL/3'/13.5'//10'//13.5'/3'/5'BL/7'PL	Bicycle Lanes with Buffer	Low	Medium	Brigantine Beach
	S 45th St.	S 30th St.	2	Y	61'	7'PL/5'BL/2'/11.5'//10'//11.5'/2'/5'BL/7'PL	Bicycle Lanes with Buffer	High	Long	Brigantine Beach
Harbor Beach Boulevard	Brigantine Ave. (CR 638)	Bayshore Ave.	2	N	72'	8'PL/5'BL/3'/13'//14'//13'/3'/5'BL/8'PL	Bicycle Lanes with Buffer	Low	Medium	Brigantine Beach
	Bayshore Ave.	Lagoon Blvd.	2	Y	72'	8'PL/5'BL/3'/13'//14'//13'/3'/5'BL/8'PL	Bicycle Lanes with Buffer	Medium	Long	Brigantine Beach
Lagoon Boulevard	Harbor Beach Blvd.	Ocean Drive	2	Y	70'	8'PL/5'BL/3'/12'//14'//12'/3'/5'BL/8'PL	Bicycle Lanes with Buffer	Medium	Long	Brigantine Beach
Ocean Drive	Lagoon Blvd.	Harbor Beach Blvd.	2	Y	32'	16'//16'	Shared Lane Markings (Sharrows)	Medium	Medium	Brigantine Beach
Bayshore Avenue	Harbor Beach Blvd.	S 38th St.	2	Y	74'	8'PL/5'BL/3'/14'//14'//14'/3'/5'BL/8'PL	Bicycle Lanes with Buffer	Low	Medium	Brigantine Beach
	S 38th St.	Brigantine Ave.*(Lighthouse)*	2	Y	34'	13.5'//13.5'/7'PL	Shared Lane Markings (Sharrows)	Low	Medium	Brigantine Beach
	Brigantine Ave.*(Lighthouse)*	S 18th St.	2	Y	34'	5'BL/12'//12'/5'BL	Bicycle Lanes	Low	Medium	Brigantine Beach
	S 18th St.	Lafayette Pl.	2	Y	36'	5'BL/13'//13'/5'BL	Bicycle Lanes	Medium	Long	Brigantine Beach
	Lafayette Pl.	Roosevelt Blvd.	2	Y	38'	5'BL/14'//14'/5'BL	Bicycle Lanes	Low	Short	Brigantine Beach
Ocean Avenue	S 40th St.	S 24th St.	2	Y	40'	7'PL/13'//13'/7'PL	Share The Road Signs	Medium	Long	Brigantine Beach
	S 24th St.	S 10th St.	2	Y	44'	7'PL/15'//15'/7'PL	Share The Road Signs	Low	Medium	Brigantine Beach
	S 10th St.	S 9th St.	2	Y	42'	7'PL/14'//14'/7'PL	Share The Road Signs	Low	Short	Brigantine Beach
Roosevelt Boulevard	Brigantine Ave. (CR 638)	Quay Blvd.	2	Y	70'	7'PL/5'BL/3'/11'//18'//11'/3'/5'BL/7'PL	Bicycle Lanes with Buffer	Low	Medium	Brigantine Beach
	Quay Blvd.	Lincoln Dr./Washington Dr.	2	Y	36'	Maintain existing cross section	Shared Lane Markings (Sharrows)	Low	Short	Brigantine Beach
	Lincoln Dr./Washington Dr.	E Shore Dr.	2	Y	100'	5'BL/3'/12'//60'//12'/3'/5'BL	Bicycle Lanes with Buffer	Medium	Medium	Brigantine Beach
Evans Boulevard	Bayshore Ave.	Roosevelt Blvd.*(Circle)*	2	Y	36'	Maintain existing cross section	Shared Lane Markings (Sharrows)	Low	Short	Brigantine Beach
Beach Avenue	Bayshore Ave.	Roosevelt Blvd. *(Circle)*	2	Y	36'	Maintain existing cross section	Shared Lane Markings (Sharrows)	Low	Medium	Brigantine Beach
	Roosevelt Blvd. *(Circle)*	N 14th St.	2	Y	36'	Maintain existing cross section	Shared Lane Markings (Sharrows)	Low	Medium	Brigantine Beach
E Shore Drive	N 12th St.	Roosevelt Blvd.	2	Y	30'	Maintain existing cross section	Shared Lane Markings (Sharrows)	Medium	Medium	Brigantine Beach
N/W Shore Drive	Roosevelt Blvd.	Bayshore Ave.	2	Y	30'	Maintain existing cross section	Shared Lane Markings (Sharrows)	Medium	Long	Brigantine Beach
Revere Boulevard	Brigantine Ave. (CR 638)	S 15th St.	2	Y	34'	Maintain existing cross section	Shared Lane Markings (Sharrows)	Low	Medium	Brigantine Beach
S 44th Street	Brigantine Ave. (CR 638)	Bayshore Ave.	2	Y	28'	Maintain existing cross section	Shared Lane Markings (Sharrows)	Low	Short	Brigantine Beach
S 40th Street	Ocean Ave.	Brigantine Ave. (CR 638)	2	Y(WB only)	26'	Maintain existing cross section	Shared Lane Markings (Sharrows)	Low	Short	Brigantine Beach
S 24th Street	Ocean Ave.	Brigantine Ave. (CR 638)	2	Y	30'	Maintain existing cross section	Shared Lane Markings (Sharrows)	Low	Short	Brigantine Beach
S 15th Street	Revere Blvd.	Bayshore Ave.	2	Y	30'	Maintain existing cross section	Shared Lane Markings (Sharrows)	Low	Short	Brigantine Beach
S 10th Street	Ocean Ave.	Brigantine Ave. (CR 638)	2	Y	30'	Maintain existing cross section	Shared Lane Markings (Sharrows)	Low	Short	Brigantine Beach
S 6th Street	Brigantine Ave. (CR 638)	Beach Ave.	2	Y	30'	Maintain existing cross section	Shared Lane Markings (Sharrows)	Low	Short	Brigantine Beach
N 12th Street	Brigantine Ave. (CR 638)	E Shore Dr.	2	Y(WB only)	30'	Maintain existing cross section	Shared Lane Markings (Sharrows)	Low	Medium	Brigantine Beach
N 14th Street	Beach Ave.	Brigantine Ave. (CR 638)	2	Y	25'	Maintain existing cross section	Shared Lane Markings (Sharrows)	Low	Short	Brigantine Beach

LEGEND

Cost

Low = < $25,000 Medium = $25,000 - $250,000 High = $250,000+

8. PROMOTION AND EDUCATION

The expansion of the bike network and development of pedestrian facilities is vital to Brigantine Beach. To encourage safe use of existing and proposed facilities and more walking and bicycling trips, it is recommended that Brigantine Beach promote walking and bicycling and implement educational programs on best practices and safety. Education programs are recommended for all types of users of all ages.

Efforts should be made to educate bicyclists, pedestrians and motorists on the rules of the road and how to safely share the road. Widespread education efforts can contribute to safer roadways for all. Encouragement is also needed to promote the spread of bicycling and walking as means of transport, recreation, and physical activity.

A Brigantine Beach Bicycle Rodeo, sponsored by the Police Benevolent Association (PBA) is a yearly event that the City holds to promote safe bicycling among children, through the distribution of literature, safety instruction, appropriate fitting of bicycle helmets, and other activities. In 2012 more than 80 helmets were distributed to the youth in the community and two kids won a raffle for a donated bicycle.

8.1 PROMOTIONAL ACTIVITIES

A wide variety of programs are available to encourage Brigantine Beach residents to walk or bicycle more. Below are some recommended educational programs:

- **Walk to School Day.** This is one of the most fundamental strategies for encouraging younger residents to walk or bicycle. Although sometimes referred to as "Walk and Roll to School Day," this event has been popularized in the past as "Walk to School Day," and the typical focus has been on encouraging walking. Programs encouraging walking and bicycling at the Middle School could be different than at the Elementary School. As one idea, walking and bicycling could be one of the units available in physical education classes. In the fall or spring, physical education teachers could enroll students in walking and bicycling events for a minimum number of miles.

- **Join a Walking or Bicycling Club.** Residents of Brigantine Beach can start a club to encourage other residents to log on a certain number of miles per week on foot or bicycling.

- **Special Events.** A Walk to School Day is an example of a special events; other examples include Trail Day, Car Free Day, Traffic Safety Day, and Bicycle to Work Day. The Brigantine Beach summer events could be used to make residents and tourists aware of special events planned for that year.

- **Awareness Campaign.** Public service announcements on cable television, posters, brochures, and bumper stickers could be used to promote increased use of walking or bicycling in general for errands, work trips, school and other purposes, or to promote special event days.

- **Commuter of the Month.** A Brigantine Beach business or public agency could recognize the employee that walks or bicycles to work with the greatest frequency.

A welcome sign is currently located on Brigantine Boulevard northbound as motorists enter Brigantine Beach. The sign warns motorists about speeding and it could also be a bit intimidating. Residents feel the need to change the sign to be more welcoming and providing motorists with a positive message. A sample message is provided below.

Before

After

8.2 BICYCLE ROUTE MAP

A bike brochure was developed as part of the Brigantine Beach Bicycle and Pedestrian Master Plan to provide residents and tourists with valuable bicycle and pedestrian information. One side of the brochure includes a map of Brigantine Beach with existing designated on-road bicycle facilities, regional bicycle and shared use facilities, most suitable bicycle compatibility roadways, and bicycle parking locations along with trip generators. The map also includes milepost markers for every route. The other side of the brochure includes bicycle and pedestrian safety information and laws.

It is recommended that Brigantine Beach updates the bike route map as more bicycle facilities are being implemented. This brochure will not only provide residents, commuters, and visitors with bicycle and pedestrian destinations in Brigantine Beach but also education on the rules of the road and safety tips. Copies of the brochure should be available for distribution throughout Brigantine Beach.

The brochure is provided as a separate document.

8.3 RESOURCES

Below are websites that encourage walking and bicycling, and safe behavior.

Pedestrian and Bicycle Information Center (PBIC)

The PBIC, which is partially funded by the FHWA, is an excellent place to start in reviewing strategies to encouraging walking and bicycling. Following are links to some of their web pages:

Walking

- http://www.walkinginfo.org/promote/strategies.cfm
- http://www.walkinginfo.org/promote/case-studies.cfm

Bicycling

- http://www.bicyclinginfo.org/promote/strategies.cfm
- http://www.bicyclinginfo.org/promote/case-studies.cfm
- http://www.bicyclinginfo.org/education/resource/bestguide.cfm

National Center for Safe Routes to School

The National Center serves as the information clearinghouse for the federal Safe Routes to School program. Below is a webpage on encouragement strategies.

- http://guide.saferoutesinfo.org/encouragement/

New Jersey Department of Transportation

NJDOT has a number of web pages encouraging bicycling and walking, as seen below.

- http://www.state.nj.us/transportation/commuter/bike/
- http://www.state.nj.us/transportation/commuter/pedsafety/
- http://www.state.nj.us/transportation/commuter/bike/tourtips.shtm

National Highway Traffic Safety Administration (NHTSA)

NHTSA distributes a packet called "Getting to School Safely Community Action Kit". Within the packet, fact sheets about bicycle and pedestrian safety are available and can be found at the following website:

- http://www.nhtsa.gov/people/injury/buses/Getting_to_School/index.html

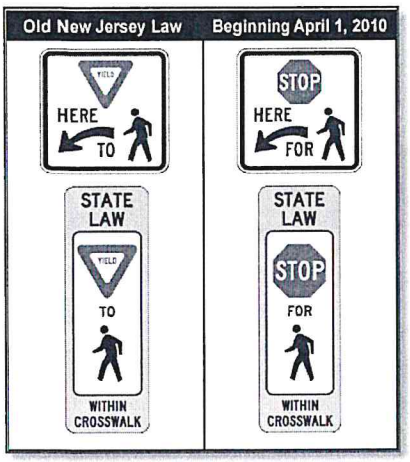
Other Sites

Following are two other examples of state and local encouragement strategies, the first from the Bicycle Alliance of Washington (State), and the second from the City of Santa Barbara, California.

- http://www.bicyclealliance.org/getinvolved/promote.html
- http://www.santabarbaraca.gov/NR/rdonlyres/77DDBC2E-BCF5-44E8-9859-70FBA64AFDB5/0/Chapter9Goal5EncouragingPeopletoWalk.pdf

9. ENFORCEMENT

An important component of a safe and well traveled transportation system is an enforcement program for traffic regulations as they apply to each type of roadway user: motorists, bicyclists, and pedestrians. Brigantine Beach can improve travel habits and behavior through enforcement. This process should include reviewing current ordinances and traffic regulations to identify elements that may unnecessarily affect certain roadway users, such as bicyclists. As bicycle facilities are installed, it is recommended that local ordinances and regulations be developed or revised to clarify items such as: application of vehicle laws to bicyclists, permitted movements on and across bicycle facilities (e.g., permitted motor vehicle movements across bicycle lanes), bicycling on sidewalks, and bicycle parking requirements.



In addition, a review of enforcement regulations and practices may assist in identifying opportunities to partner with community, county, or state organizations to inform users about safe bicycle travel behavior, such as the required use of helmets by bicyclists under the age of 17 (N.J.S.A 39:4-10.1), the N.J.S.A 39: 4-36 which requires motorists to stop for pedestrians in the crosswalk, or the N.J.S.A 39:4-14.2 which requires bicyclists to ride in single file. For more information on bicycle regulations in New Jersey visit http://www.state.nj.us/transportation/commuter/bike/regulations.shtm

Outreach and promotion through community channels and events is a critical piece in reminding motorists, bicyclists, and pedestrians of applicable laws and recommended travel practices.

10. CONCLUSION

The City of Brigantine Beach has an opportunity to enhance roadway and intersection conditions to improve bicycle and pedestrian accommodations. This report is intended to serve as a guide and resource for Brigantine Beach to improve roadway network for present and future generations of bicyclists, pedestrians, and motorists. The concept layout plans provided in this report illustrate improvements that could enhance bicycle and pedestrian safety and mobility and improve roadway conditions for all users throughout the City.

The next steps of this project should focus on the following:

- Install sidewalks where missing, particularly near schools, recreational facilities, shopping centers, and Brigantine Boulevard (NJ 87) bridge over Absecon Channel.
- Provide bicycle facilities within the roadway network using bicycle lanes, shared lanes, and shared lane markings (sharrows).
- Install additional bicycle racks and bicycle lockers at major trip generator locations.
- Install high visibility crosswalks and pedestrian warning signs at unsignalized intersections where high number of pedestrians cross.
- Upgrade signalized intersections to include ADA compliant curb ramps, pedestrian signal heads and push buttons, pedestrian scale lighting, and high visibility crosswalks.
- Continue the development of ongoing education and enforcement programs to increase motorist, pedestrian, and bicyclist' behavior to obey the rules of the road.
- Develop, approve, and implement a Complete Streets Policy for the City and prioritize bicycle and pedestrian facilities.