



# State of New Jersey

DEPARTMENT OF TRANSPORTATION  
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JAMES E. MCGREEVEY  
*Governor*

JACK LETTIERE  
*Commissioner*

September 26, 2003

Mayor Jefferson Van Drew  
Dennis Township  
21 North Main Street  
Cape May Court House, NJ 08210

Re: Shore Connection "Near Term" Improvements  
Dennis Township  
Concept Development Report

Dear Mayor Van Drew :

Enclosed please find the final Concept Development Report for proposed improvements along Routes 47, 347 and U.S. 9. These improvements have been endorsed by the Shore Connection Committee.

I look forward to our continued collaboration on these projects, as well as others that have been recommended for further study by the Shore Connection Committee.

Sincerely,

Thomas B. Carbone  
Supervising Engineer  
Bureau of Project Planning and Development – South

Enclosures

Cc w/enclosures:

Mr. Dale Foster, Cape May County Engineer  
Mr. Tim Chelius, Executive Director, SJTPO

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CAPE MAY COUNTY  
ENGINEER

# Shore Connection Concept Development Report

Dennis Township

Cape May County, New Jersey

**NJ Route 47 Corridor** (*from NJ Route 347 until  
Petersburg Road (CR 610)*)

**US Route 9 Corridor** (*from Woodbine Road (CR 550) to  
Sea Isle Blvd (CR 625)*)

September 24, 2003



New Jersey Department of Transportation

**MTA**

McCormick, Taylor & Associates, Inc.



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**McCormick, Taylor & Associates, Inc.**

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**List of Appendices (attached to Concept Development Report)**

**APPENDIX A:** Community Impact Assessment (Meeting Information)

**APPENDIX B:** Level of Service Definitions

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**List of Technical Appendices (in separate Technical Appendix)**

**TECHNICAL APPENDIX A:** Pavement Rating and Bridge Management Data

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**TECHNICAL APPENDIX C:** Summer 2002 Traffic Counts

## I. INTRODUCTION

### A. Shore Connection Background

*"The Shore Connection Committee (SCC) was established as a forum of vested state and local parties to evaluate the corridor, come to agreement on the problems in the corridor, and come to an agreement on a solution or range of solutions that could advance in the project development process."*

The initial Shore Connection study began in the summer of 1997 and concluded in November of 1998 with the Shore Connection Committee Report, NJ Routes 55/47 Corridor Transportation Study. This study resulted in an improvement program consisting of recommendations to manage the summer recreational traffic, advocate the Atlantic City Expressway and Garden State Parkway corridors, and investigate various levels of Capital Improvement Programs. The Capital Improvement Program Studies were categorized as Near-Term, Mid-Term and Long-Term. There were five intersections identified as problem areas for Near-Term Capital Improvement Studies that could be advanced immediately by the New Jersey Department of Transportation (NJDOT). Please see **Figure 1** for project location. They include:

- NJ Routes 55/49 in the City of Millville, Cumberland County
- NJ Routes 55/47 in Maurice River Township, Cumberland County
- NJ Routes 347/47 in Port Elizabeth (Maurice River Township), Cumberland County
- NJ Routes 347/47 in Dennis Township, Cape May County
- US 9/CR 550/Sea Isle Blvd. at GSP (Interchange 17) in Dennis Township (including US 9 and CR 550), Cape May County

### B. Scope of work

In response to the Shore Connection Committee's 1998 report, NJDOT is conducting the Concept Development for the NJ Route 47 corridor and US Route 9 corridor. The report details the study of existing conditions and alternative improvements in the area near these short intersection/corridors. Recently the project area was extended from just the intersection of NJ 47 and 347 to include Route 47's intersections with CR 611 and CR 610. The report provides an existing condition assessment at the project area, which includes the geometry of the roadway, traffic operations and environmental conditions. From this, improvement alternatives were developed, analyzed, and compared to existing conditions. In addition, this project included a municipal and public outreach program, including numerous meetings (see **Appendix A** for more detailed meeting information).

McCormick, Taylor & Associates, Inc. (MTA) conducted the Concept Development by collecting and reviewing applicable project data/documentation. Field investigations were also performed to confirm existing conditions. The following key people participated in this effort:

Lance E. Weight	NJDOT	609-530-2890
Tom Carbone	NJDOT	609-530-2728
Tom Saylor	NJDOT	609-530-2739
Paul Archibald	McCormick, Taylor & Associates, Inc.	215-592-4200
Jeanette J. Quirus	McCormick, Taylor & Associates, Inc.	215-592-4200
Rachel T. Kruger	McCormick, Taylor & Associates, Inc.	215-592-4200

**C. Site Description and Perceived Problems**

*1. NJ Route 47 Corridor*

NJ Route 47 in Dennis Township is classified as a two-lane Rural Principal Arterial with a speed limit of 45 mph that serves as one of the main routes from the Philadelphia Metropolitan area to the southern New Jersey shore. This section focuses on the portion of NJ Route 47 from where NJ Route 347 terminates at the intersection with NJ Route 47, to south to the intersections with Petersburg Road (CR 610) and Tyler Road (CR 611) in Cape May County, NJ. These portions of NJ Route 47 and NJ Route 347 are both Cape May County Evacuation Routes. The Shore Connection Committee was formed to find solutions to these shore related traffic problems, and subsequently the Shore Connection study, covering three municipalities and two counties, became a doctrine for the 47/55 Shore corridors.



The perceived problems at the start of the study included generally congested conditions from a point beyond the NJ Route 47/NJ Route 347 intersection past the intersections with Tyler and Petersburg Roads. Queues were observed to extend as far back as 1.3 miles on NJ Route 47 and 2.7 miles on NJ Route 347. Times for vehicles at the back of the queue to clear the NJ Route 47/NJ Route 347

intersection ranged from 26 minutes on NJ Route 347 to 35 minutes on NJ Route 47. The NJ Route 347 intersection has a northbound turning lane for motorists choosing to stay on NJ Route 47 and southbound NJ Route 47 has a small left turn lane for motorists traveling from southbound Route 47 to northbound Route 347.

The southern intersection of NJ Route 47 and NJ Route 347 is located in Dennis Township, Cape May County (**Figure 2**). This intersection serves as a collector for people traveling southbound on NJ Route 347 and NJ Route 47. NJ Route 47 serves as one of the primary routes to the shore for locations south of the study area and terminates near many shorebound destination cities. Originally, the Shore Connection Report explained the problem in this area as only occurring at the intersection of NJ Route 47 and NJ Route 347. However data collection and observations proved that this problem was more far reaching than originally perceived and included two downstream intersections.

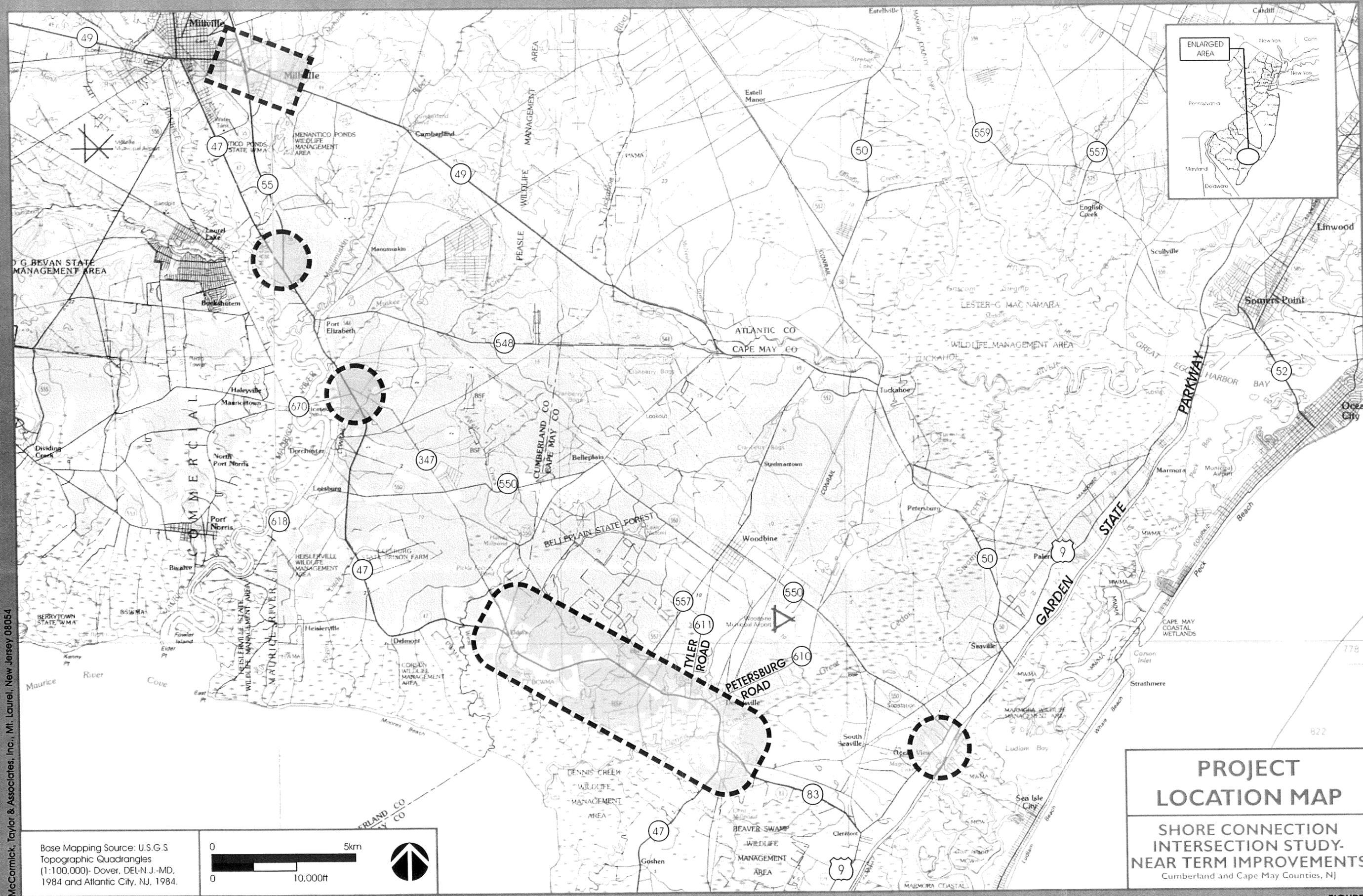
As a direct response to data collection and observation efforts indicating that traffic began building south of this intersection at Tyler and Petersburg Roads, the study area was extended to include this NJ Route 47 "corridor". There are a total of three signalized intersections along this corridor – NJ Route 47 & NJ Route 347, NJ Route 47 & Tyler Road (CR 611), and NJ Route 47 & Petersburg Road (CR 610). There are no turning lanes present along NJ Route 47 at the intersections with Tyler Road and Petersburg Roads.

## 2. US Route 9 and CR 625 (Sea Isle Blvd.), US Route 9 and CR 550

US Route 9 is classified as a Rural Minor<sup>2</sup> Arterial along the section of roadway between CR 625 and CR 550. It is a two lane north-south road, which runs adjacent to Garden State Pkwy (**Figure 3**). US Route 9 between CR 550 and CR 625 (Sea Isle Blvd.) is one of Cape May County's Evacuation Routes. At the US Route 9 & Sea Isle Blvd. intersection, there is a left turning lane along the southbound US Route 9 approach and a left turning lane westbound along the Sea Isle Blvd. approach. There are no auxiliary lanes in the northbound direction. At US Route 9 & Woodbine/Ocean View Road (C.R. 550), there is one left turning lane along the northbound US Route 9 approach, but no other turning lanes in any other direction.

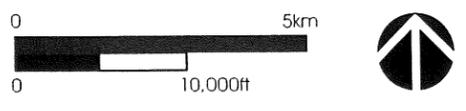
The major perceived problem at the start of the study was focused on the congestion problem at the intersection of US Route 9 and CR 625 (Sea Isle Boulevard). However during the initial observations in the summer of 2000, it was quickly deduced that the problem was not an isolated one. Many motorists travel east on CR 550 onto southbound US Route 9 and then onto eastbound CR 625 (Sea Isle Boulevard) on Saturday and again in the reverse direction on Sunday. At times, this link can be fully saturated. To study the intersection of CR 625 and US Route 9 without considering the affects of that close-by intersection would prove to be illogical. Therefore, CR 550 was added to this study and counted during the Summer 2001 data collection effort.

As a result of this count effort it was observed that the eastbound movement from CR 550 onto southbound US Route 9, consistently backed up for right turning vehicles. In addition once the link gets saturated, which was observed to happen 2-3 times between the hours of 10AM to 2PM on Saturday, right turning vehicles from CR 550 have even less roadway to travel onto.



McCormick, Taylor & Associates, Inc., Mt. Laurel, New Jersey 08054

Base Mapping Source: U.S.G.S  
 Topographic Quadrangles  
 (1:100,000)- Dover, DEL-N J.-MD,  
 1984 and Atlantic City, NJ, 1984.



**PROJECT  
 LOCATION MAP**

**SHORE CONNECTION  
 INTERSECTION STUDY-  
 NEAR TERM IMPROVEMENTS**  
 Cumberland and Cape May Counties, NJ

FIGURE 1

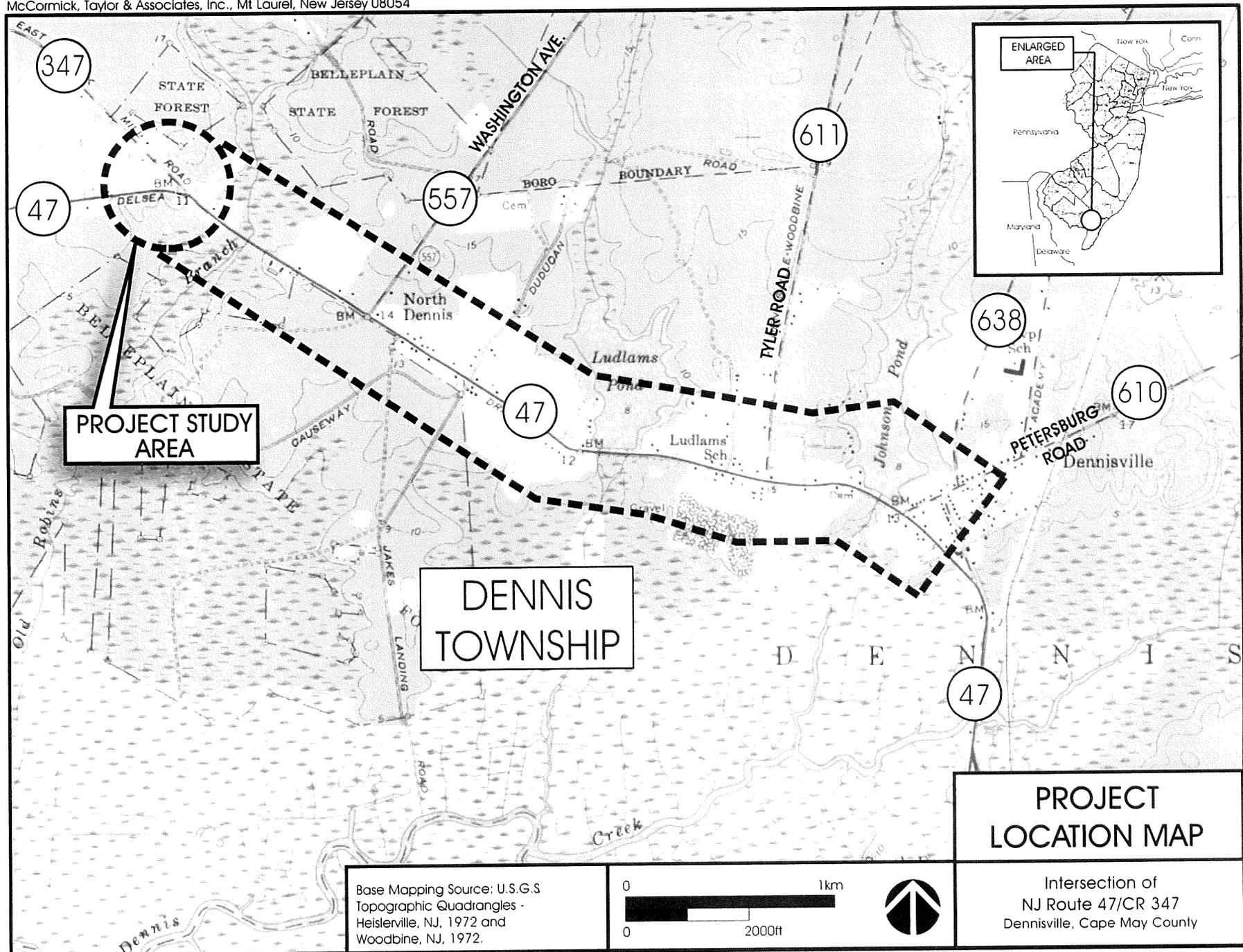
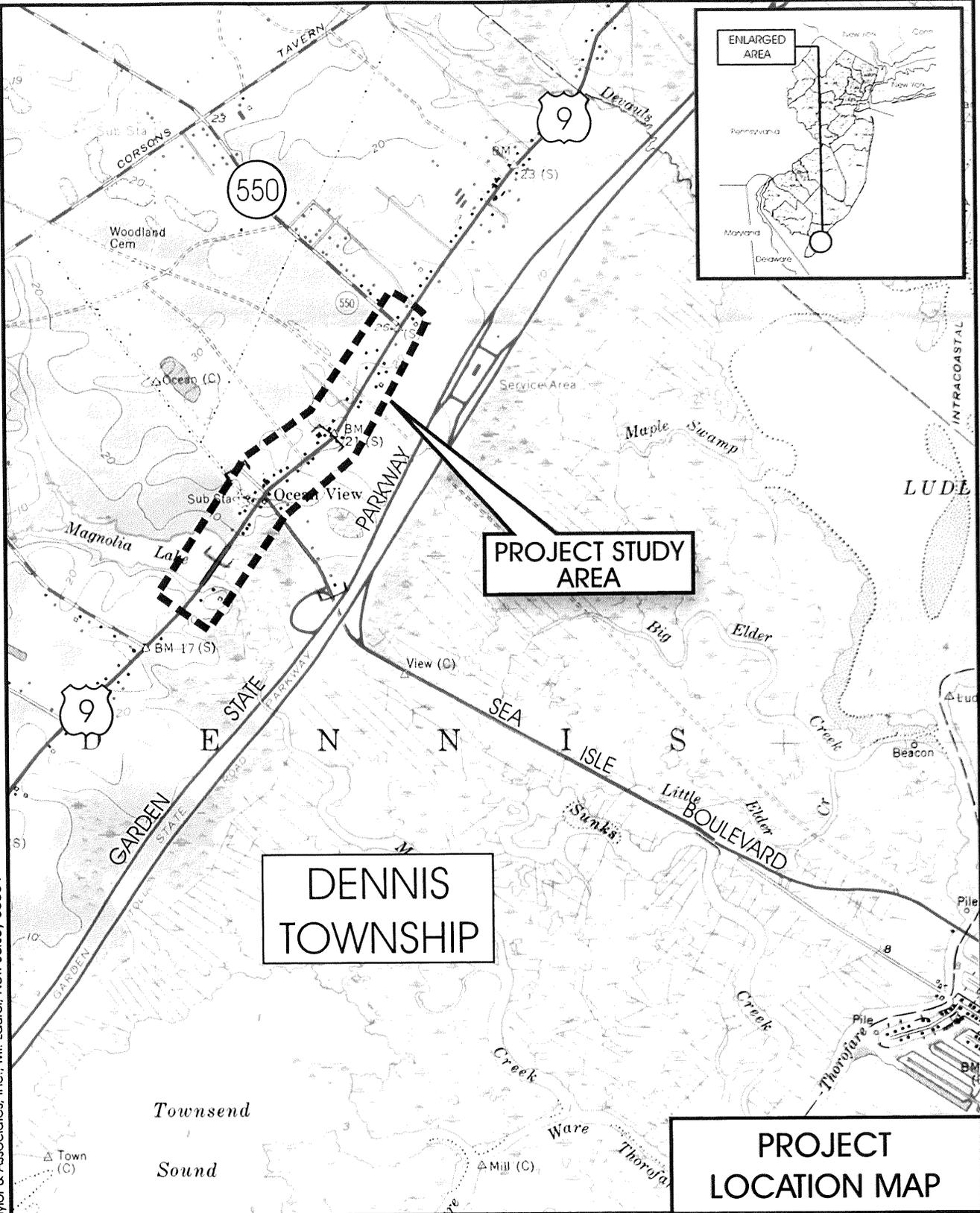


FIGURE 2

McCormick, Taylor & Associates, Inc., Mt. Laurel, New Jersey 08054

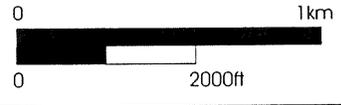


DENNIS TOWNSHIP

PROJECT STUDY AREA

PROJECT LOCATION MAP

Base Mapping Source: U.S.G.S Topographic Quadrangle - Sea Isle City, 1972.



US Route 9/Sea Isle Boulevard and CR 550  
Dennis Township, Cape May County

FIGURE 3

## II. NJ ROUTE 47 CORRIDOR

### A. Existing Traffic Conditions

#### 1. *Historical Traffic Comparison*

Other studies completed in this area include Skycomp's reports on this area in 1991, 1997 and 2001. It appears as the years have progressed the traffic conditions in this area gradually worsened. In 1991 both northbound and southbound volumes on this corridor were observed and classified as "heavy". The 1991 report also stated that the roadway was at or near capacity for northbound Sunday traffic. On Saturday however, shore-bound traffic was stable with only moderate volumes. Both of these aforementioned days were reported to have queues moving at a "slow yet steady" pace.

In the 1997 report, conditions deteriorated from what was reported in the 1991 study. This study reports that the signal at Tyler Road created a queue of congested traffic for Saturday, southbound traffic and for Sunday, northbound traffic. Another major problem area was at the Route 347/Route 47 southbound convergence where a 3-4 mile queue was recorded. Almost opposite as to what was seen in 1991, the northbound return from the shore saw only minor congestion at the Route 347/Route 47 split.

During MTA's 2000 general observations, heavy traffic was observed to exist on northbound NJ Route 47 between NJ Route 83 and Tyler Road, thus observations were consistent with the historic trends. While conditions were observed to be very similar for the most recent study, it seems that congestion in this area has shown a marked increase in the past few years.

Subsequent field views and traffic data collection efforts in 2001 and 2002 have indicated that the major problem exists for southbound traffic approaching the intersection of NJ Route 347 and NJ Route 47 on summer Saturdays. This volume problem is further exacerbated by the existence of two signals south of this intersection at Tyler Road (CR 611) and Petersburg Road (CR 610). These intersections lack southbound left turn lanes and therefore, often cause traffic to back up towards the next intersection.

#### 2. *Traffic Volumes, Queuing and General Observations*

As stated previously, this study focuses on the summer weekend traffic problems at this intersection. In the past five years or so, what used to be a Memorial Day to Labor Day summer peak period, has now extended to the period from May to October. This is based on general information obtained by residents of the area and municipal officials.

MTA first observed this intersection in the summer of 2000 when informal observations and counts took place. A full count program was conducted the following year, including complete turning movement counts and automatic traffic recorders

throughout the study area. Turning movement counts were taken only at the intersection of NJ Route 347 with NJ Route 47 in 2001 because the study area had not been officially extended yet. However, in 2002, additional counts were taken at this intersection through a more comprehensive data collection program. All count efforts were performed during peak summer travel periods on Saturday afternoons and Sunday evenings. Congestion on the NJ Route 47 Corridor was consistently observed and documented for all three years.

#### AUGUST 2000 – SATURDAY & SUNDAY

General traffic conditions were observed between 10:00 AM and 2:00 PM on Saturday, August 26, 2000. This day proved to be a typical “summer Saturday” with clear skies and high temperatures. Observations indicated that traffic in the southbound direction (towards the shore) was congested along Routes 47 and 347 and also past the intersection until the signal with C.R. 657 (south of the currently unsignalized intersection of NJ Route 47 and CR 83). Queues were observed to extend as far back as 1.3 miles (approximately 275 cars) on NJ Route 47 and 2.7 miles on NJ Route 347 and peaked between 12:00 – 1:15 PM. Times for vehicles at the back of the queue to clear the NJ Route 47/NJ Route 347 intersection ranged from 26 minutes on NJ Route 347 to 35 minutes on NJ Route 47.

Once vehicles made it past the NJ Route 47/NJ Route 347 intersection, free-flow speeds were not achieved due to downstream conditions at the NJ Route 47 intersections with Tyler Road and Petersburg Road. Average speeds were observed in the range of 5-10 mph. On Saturday, there were no observed problems for northbound NJ Route 47/NJ Route 347 traffic during the study period.

On Sunday August 27, 2000 from 4:00 PM. – 8:00 PM traffic was observed in the northbound direction (away from the shore) to be generally congested from approximately 1000 feet south of the C.R. 657 intersection until just beyond the Tyler Road (CR 611) intersection. After Tyler Road, northbound NJ Route 47 traffic was able to travel at free-flow speeds to the northern NJ Route 47/NJ Route 347 intersection. In the congested area (i.e., between CR 657 and Tyler Road) speeds averaged between 13 and 27 mph, with the slowest section being between C.R. 657 and NJ 83.

#### AUGUST 2001 – SATURDAY & SUNDAY

Shortly before the summer of 2001, Cape May County Officials installed alternate route signs throughout Cumberland and Cape May counties. A full-scale traffic count program was conducted in August 2001 in order to collect more detailed information. Even though the 2001 count program landed on a rainy weekend two weeks before Labor Day, traffic volumes still appeared to be relatively consistent with past studies.

Turning movement counts were only collected at the intersection of NJ Route 47 and NJ Route 347, however observations indicated that the downstream intersections of NJ Route 47 and Tyler Road (CR 611) and NJ Route 47 and Petersburg Road (CR 610) still appeared to be contributing to the congestion problem. The turning

movement counts at NJ Routes 47 and 347 along with general observations, indicated that traffic volumes and congestion were in fact a problem at the intersections of NJ Route 47 with CR 610 and CR 611. Although in depth queue analysis was not completed during this data collection effort, existing conditions analysis match observations of severe back up seen in previous years.

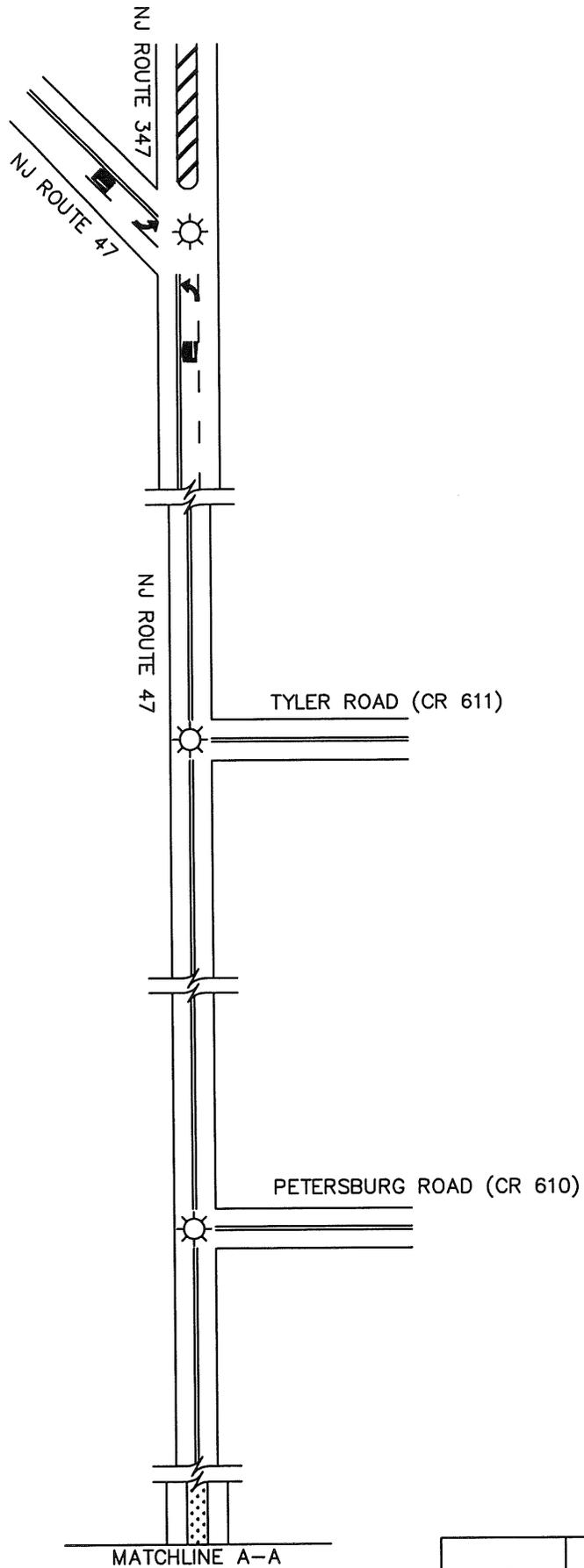
For complete traffic count data information, please reference **Technical Appendix B**.

#### AUGUST 2002 – SATURDAY & SUNDAY

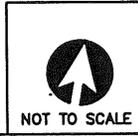
A third data collection effort was put forth August 17-18, 2002. This weekend was again a typical "beach" weekend with high temperatures and clear skies. Although congestion corresponded with historical trends, tourism in August 2002 was significantly down from the previous two months of the summer. During this data collection effort, turning movement counts were taken at three intersections – NJ Route 347 and NJ Route 47, NJ Route 47 and Tyler Road (CR 611), NJ Route 47 and Petersburg Road (CR 610). Historically, both Route 347 and Route 47 *southbound approaches* have been reported to fail with up to five minutes of delay per vehicle. Because the intersection of Tyler Road (CR 611) and NJ Route 47 was operating at LOS F conditions (over 10 minutes of southbound delay), the intersection of NJ Route 47 and NJ Route 347 was also affected. Despite back ups along NJ Route 347, analysis yielded a 68 second/vehicle delay (LOS E). This is because the congestion at the intersection of 47 and Tyler Road prevented more traffic from traveling through that roadway. Along the southbound approach of NJ Route 47 (vehicles who chose to continue south on NJ 47 must make a right at the signal), analysis yielded an average delay of almost 34 minutes just to pass through the intersection with NJ Route 347.

Saturday, August 17 2002, southbound Route 347 failed with an average of 83 seconds/vehicle (slightly over one minute) and Route 47 failed at 198 seconds/vehicle (approximately three minutes). The intersection capacity analysis indicates that the whole intersection operates at a LOS of F (80 seconds average delay per vehicle) on Saturdays. On Sunday, the northbound approach problem is significantly diminished with a LOS C (22 average delay per vehicle) as most traffic flows smoothly through the northbound approach of this intersection. The intersections with Tyler Road (CR 611) and Petersburg Road (CR 610) also yielded LOS F for existing conditions.

**Figure 4** shows NJ Route 47 existing lane configurations



☀ TRAFFIC SIGNAL



SHORE CONNECTION  
 ROUTE 47 CORRIDOR  
 FIGURE 4  
 EXISTING LANE CONDITIONS

3. *Transit Access Information*

NJ Transit bus routes #313 runs from Cape May to Philadelphia through Dennis Township along NJ Route 47. There are no official stops between the Southern State/Bayside Correctional Facility in Maurice River and Washington Avenue in Woodbine, Dennis Township.

No passenger rail service currently serves the municipality.

4. *Existing Conditions Capacity Analysis*

SYNCHRO 5 is a complete software package for modeling traffic operations and optimizing traffic signal timings. SYNCHRO uses the methods outlined in the 2000 Highway Capacity Manual, Chapter 16. The capabilities of SYNCHRO include calculating capacity, modeling actuated signals, and optimizing cycle lengths, splits and offsets. SIMTRAFFIC is a simulation program that works with SYNCHRO and is designed to model roadway networks including signalized and unsignalized intersections. It is a tool used to check and revise traffic signal operations. As a network model, the operations of the roadway system can be analyzed as a whole and the affects of changes in one part of the network on other parts can be seen (ie., spillback between intersections and platooning affects). Measures of effectiveness provided by SIM TRAFFIC include the following: stopped delay, stops, queue lengths, speeds, travel times and distance traveled. See **Appendix B** for detailed descriptions about the levels of service.

Existing conditions corridor traffic analysis for 2002 (most recent) indicated that during the Saturday peak hour, the intersection of NJ Route 47 and NJ Route 347 operated at a LOS F, while during the Sunday peak, the intersection operates at LOS D. This LOS D is deceiving however, because the northbound back up at Tyler and Petersburg Road is creating a metered effect for traffic that approaches the intersection of NJ Route 47 and NJ Route 347. If the signal were optimized, more volume would travel through this intersection to create more demand upon NJ 347 and NJ 47. During the Saturday peak hour, southbound approaches on both NJ Route 47 and NJ Route 347 operate at LOS F with delays exceeding 32 minutes along NJ Route 47.

5. *Pedestrian and Bicycle Activity*

NJ Route 47 is generally well maintained throughout Dennis Township. The roadway is a major north/south arterial within the municipality. Along the NJ Route 47 corridor, the roadway provides the sole crossing of Dennis Creek. While paved shoulders are present within this intersection segment, vehicles are often forced onto the shoulders frequently, at the risk of pedestrians and bicyclists that may also be using the shoulder.

*what intersection*

The potential for pedestrian and bicycle activities within the corridor segment of this Route 47 Corridor is directly dependent on the existing village of Dennisville and



municipal Master Plan goals. These plans should direct all forms of future development within existing nodes of retail and residential uses.

During MTA's data collection and observation efforts, very little pedestrian traffic was observed in this area.

*- State proposal for Rte 47 Bike use*

**B. Existing Physical Deficiencies**

*1. Field View*

The purpose of a physical inventory and deficiency identification is to gain familiarity with the physical features of the roadway and identify roadway deficiencies within the project area. It involves an on-site field view of the study area as well as a review of existing NJDOT roadway data. A windshield survey for the study area was conducted in October of 2000. Several deficiencies were noted in the vicinity of NJ Route 47 and NJ Route 347.

The most easily identifiable deficiencies in the project area were short left turn bays on southbound NJ Route 47 that appear to be inadequate, and insufficient taper lengths for both southbound approaches at NJ Route 47 and NJ Route 347.

*2. Pavement Ratings Summary*

Along with the field view of the study area, the NJDOT Pavement Management Section was consulted to assess the pavement surface. The most recent data used is based on the 2001-2002 NJDOT database containing information based on the pavement conditions throughout New Jersey. The three key pieces of information provided by the database are ride quality index, surface distress index, and final pavement rating. Ride Quality Index (RQI) is used to describe the comfort level of the road according to roughness and the Surface Distress Index (SDI) measures the severity of surface distresses. These numbers are then combined to determine a Final Pavement Rating (FPR). **Table 1** shows the RQI, SDI, and FPR for this intersection area. Detailed explanations are in **Technical Appendix A**.

**Table 1: Average Pavement Ratings**

Route	Direction	MP	RQI	SDI	FPR	Average Rut Depth (in)
47	North	17.5 – 21.5	3.87	5.00	4.44	0.0
47	South	17.5 – 21.5	3.87	3.03	3.45	0.05



The indices for the RQI (Ride Quality Index) and the SDI (Surface Distress Index) are based on a numeric scale of 0 – 5 corresponding to very poor to very good conditions.

0.00 – 1.00	Very Poor
1.01 – 2.00	Poor
2.01 – 3.00	Fair
3.01 – 4.00	Good
4.01 – 5.00	Very Good

47

27.5 - 21.5

From the Table 1 above, both directions of NJ Route 55, from MP 24.0 – 26.0, have a **“Very Good”** rating for **Ride Quality Index**. The northbound direction of Route 55 performs at the **“Very Good”** level for SDI. The southbound side of this section of NJ Route 55 is in **“Good”** condition for SDI. A **“Very Good”** rating means that pavement is likely to be new or nearly new and is sufficiently free of cracks and patches while a **“Good”** rating indicates that pavements still give a first class ride, however evidence of slight surface deterioration might be beginning to take form.

Rut depth of more than 0.5 inches could also initiate a resurfacing job, but projects base on rut depth are given lowest priority. Average rut depth for northbound and southbound NJ Route 55 is less than 0.1 therefore it is ACCEPTABLE.

### 3. Structure Summary

To determine the condition of a bridge, the NJDOT Bridge Management System (BMS) was consulted. The BMS lists the components of the bridge and rates them on a scale from 0 (failed condition) to 9 (excellent condition). The numbers for this scale come from the US Department of Transportation *Recording and Coding Guide for Structure Inventory, and Appraisal of the Nation's Bridges*. Each rating is associated with a qualitative description of the condition of the bridge component. A bridge is defined as Structurally Deficient (SD) if it is rated 4 or less for its deck, superstructure, substructure, or culvert, or if it is rated 2 or less for its overall structure evaluation for load capacity or waterway adequacy. A bridge is defined as Functionally Obsolete (FO) if its deck geometry, under-clearances (vertical and horizontal), approach roadway alignment, or overall structure evaluation for load capacity or waterway adequacy for the bridge is rated as a 3 or less. To summarize, structurally deficient bridges have structural issues that need to be repaired, while functionally obsolete bridges are generally not designed to handle the type or speed of vehicles traveling on the roadway where the bridge is located.

Another way BMS evaluates bridges is through a numeric percentage known as a sufficiency rating. This rating indicates the ability of a bridge to remain in service in relation to the vehicles expected on the roadway traveling over the bridge. Bridges with a sufficiency rating of 100% are state-of-the-art bridges with all applicable safety and geometry features. Bridges with a sufficiency rating of 0% represent bridges in need of immediate closure, replacement or repair. A bridge is eligible for federal funds

if its sufficiency rating is less than 80%, and it is defined as either Structurally Deficient or Functionally Obsolete.

Two bridges cross over the branch of Dennis Creek along NJ Route 47 at milepost (MP) 17.68 and MP 18.44. Their structure numbers are 0508150 and 0508151, respectively. Both of the concrete structures were constructed in 1928. Bridge 0508150 has a rating of 4 for its substructure, which corresponds to a description of "Poor Condition" which can include characteristics such as advanced section loss, deterioration, spalling and/or scour. It rated a 4 for structural evaluation meaning that it "meets minimum tolerable limits to be left in place as is" and a 3 for its deck geometry indicating that it is "basically intolerable requiring high priority of corrective action." It was last inspected in September 2001, has a sufficiency rating of 36.6%, and is described as Structurally Deficient. The next scheduled inspection for this structure is to take place in September 2003, however updated information was not available at the time of this report. The structural inventory taken during bridge inspection found characteristics such as exposed rebars, spalling under deck, encasement deterioration, leaking with efflorescence, erosion, and severe spalling and scaling for various components of the bridge. Bridge 0508151 was last inspected in April 2003 and has a rating of 3 for its deck geometry, meaning that its deck geometry is "basically intolerable requiring high priority of corrective action." This bridge has a sufficiency rating of 61.9%, and is described as Functionally Obsolete. The structural inventory taken during bridge inspection found characteristics such as joint leakage, and moderate to heavy spalling for various components of the bridge.

The structural inventories for both bridges are located in **Technical Appendix A**.

#### *4. Accident Data And Analysis*

Accident data was requested from NJDOT. Most recent data obtained for this area is from 1999 – 2002 (3 years) for NJ Route 47 Corridor from NJ Route 347 until north of CR 83. In addition, a crash diagram is attached for the corridor of NJ Route 47 from NJ Route 347 to north of CR 83 (**Figure 5**).

**Table 2**  
**NJ Route 47 (MP 17.5 - 21.5)**  
**1999-2002**

<b>TYPE OF INJURY</b>	<b>NUMBER</b>	<b>PERCENTAGE</b>
Rear End	70	55%
Side Swipe	9	7%
Right Angle	4	3%
Left Turn	4	3%
Head On	5	4%
Overtuned	0	0%
Fixed Object	30	24%
Animal	5	4%
<b>TOTAL</b>	<b>127</b>	<b>100.0%</b>

<b>TIME OF DAY</b>	<b>NUMBER</b>	<b>PERCENTAGE</b>
Daylight	91	72%
Nighttime	36	28%
<b>TOTAL</b>	<b>127</b>	<b>100%</b>



NOT TO SCALE

C.R. 347

S.R. 47

Washington 557

Tyler 611

Petersburg 610

S.R. 47

Route 83 Ramps

LEGEND

Symbol	Type of Accident	Number
	= Angle	8
	= Hit Fixed Object	30
	= Rear End	70
	= Head On	5
	= Sideswipe	9
	= Non-Collision	0
	= Pedestrian Crash	0
	= Animal Crash	5
	= Fatality	1
	= Injury	40
	= Property Damage Only	86
	SB traffic on NJ Route 47	
	NB traffic on NJ Route 47	
	EB traffic on sidestreets	
	WB traffic on sidestreets	

Project: Shore Connection

Date: 7/17/03

Project Number: 4765-04-01

Intersection: NJ Route 47 Corridor, Dennis Township

Created by: JS

Checked by: CLS/DPS

**FIGURE 5**

**NJ 47 Corridor**

**MTA**

McCormick, Taylor & Associates, Inc.

Engineers and Planners

### C. Environmental Screening

An environmental screening was conducted for the study area encompassing the limits of the proposed transportation improvements. The purpose of the screening was to identify potential environmental concerns for the development of conceptual alternatives. The screening included a review of available information for Wetland and Water Resources, Hazardous Materials, Threatened and/or Endangered Species, Section 4(f)/Green Acres Resources, and Cultural Resources on or in the vicinity of the project area, and field investigation on July 30, 2003. In addition, an assessment of potential construction permits and related clearances was performed.

#### 1. *Wetland And Water Resources*

A review of existing information sources (e.g., National Wetland Inventory [NWI] maps, United States Geological Survey [USGS] topographic maps, New Jersey Department of Environmental Protection [NJDEP] Freshwater Wetlands GIS digital data, etc.) and a field investigation were performed to determine the presence, proximity and number of wetland areas in the proposed project area.

The areas indicated by the USFWS NWI Woodbine Quadrangle and NJDEP digital data as palustrine forested/scrub-shrub wetlands correspond closely with the field investigation, and are located to the south and north of the project corridor. These wetlands are associated with Dennis Creek [FW2-NT/SE1(C1)], two unnamed tributaries to Dennis Creek [both: north side of Route 47 – PL; south side of Route 47 – FW2-NT/SE1(C1)], and Old Robins Branch [FW2-NT/SE1(C1)], also a tributary to Dennis Creek, which are all tributaries to the Delaware Bay. It is in the vicinity of these stream crossings that the wetlands come in closest proximity to the proposed project. Construction activities may affect these areas.

A determination of floodplain boundaries was made based on review of applicable Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps. Based on review of FEMA Flood Insurance Rate Maps for the Township of Dennis, New Jersey, it has been determined that while much of the proposed project exists in areas of minimal flooding, portions of the corridor cross the 100-year floodplain, particularly in the vicinity of the stream crossings discussed in the preceding paragraph.

#### 2. *Hazardous Materials*

Potential hazardous waste involvement with the project was determined through a review of NJDEP's Known Contaminated Sites List (KCSL) –2001 Edition, Cape May's List of Registered Underground Storage Tanks (USTs), and a field inspection. An on-site inspection was conducted on July 30, 2003. The on-site inspection area was limited to those properties within the proposed project area. Inspections identified any observable areas of significant and/or potential environmental concern.

While no signs of spillage, staining, or noxious odors were observed, several areas of potential concern were noted during the inspection. The properties of potential environmental concern are identified in **Table 3** and could need further investigation as the project advances.

**Table 3: Properties of Potential Environmental Concern**

Facility	Location	Concern
JMC Salvage	Intersection of Route 47 and Main St.	Potential handler/generator of lubricants, solvents, by-products, etc.
Dennis Fire Company	Intersection of Routes 47 and 610	Vehicle bays, potential handler/generator of lubricants, solvents, by-products, etc.
Mobil Gas Station	Intersection of Routes 47 and 611	Fuel pump islands and USTs

Many properties within the project area have aboveground storage tanks (ASTs) associated with home heating fuel.

### 3. Threatened and/or Endangered Species

The NJDEP Office of Natural Lands Management, Natural Heritage Program (NHP) and the United States Fish and Wildlife Service (USFWS) were consulted for information on the presence of threatened or endangered species within or in the vicinity of the project study area.

The NJDEP-NHP provided information on rare plants, animals and/or natural communities in the project area in a letter, with attachments, dated August 18, 2003. This response indicated that the NHP Database has records for occurrences of barred owl (*Strix varia*), black rail (*Laterallus jamaicensis*), northern harrier (*Circus cyaneus*), peregrine falcon (*Falco peregrinus*), red knot (*Calidris canutus*), red-shouldered hawk (*Buteo lineatus*), pine barrens treefrog (*Hyla andersonii*), Cope's gray treefrog (*Hyla chrysoscelis*), northern pine snake (*Pituophis m. melanoleucus*), red-headed woodpecker (*Melanerpes erythrocephalus*), Martha's pennant (*Celithemis martha*), pine barrens bluet (*Enallagma recurvatum*), scarlet bluet (*Enallagma pictum*), on the referenced site. NHP also reported the existence of foraging habitat for bald eagle (*Haliaeetus leucocephalus*), black skimmer (*Rynchops niger*), black-crowned night heron (*Nycticorax nycticorax*), and unnamed species of colonial bird and tern within the project area. NHP further reported the existence of certified and suitable vernal pool habitat within the project area. Bald eagles were reported within ¼ mile of the site, with its nesting buffer extending into the site. The NHP database has records of rare plants on or within ¼ mile of the site. Included are reports of featherfoil (*Hottonia inflata*) that may be on the site and reversed bladderwort (*Utricularia resupinata*), small yellow pond-lily (*Nuphar microphyllum*), dwarf plantain (*Plantago pusilla*), slender

arrowhead (*Sagittaria teres*), angled spike-rush (*Eleocharis quadrangulata*), and slender horned-rush (*Rhynchospora inundata*) that may be in the immediate vicinity of the site. This portion of NJ Route 47 composes the northern boundary of the Dennis Creek Marsh Macrosite (Natural Heritage Priority Site), and Great Cedar Swamp Macrosite and South Dennis Site also occur in the vicinity of the proposed project. NJDEP also reported existence of certified vernal pools within the project area. Additional surveying should be done if widening is proposed into these areas.

The USFWS reported a nesting pair of bald eagles (*Haliaeetus leucocephalus*) within 1.3 miles of the project site and that the eagles' foraging and roosting areas include Johnson and Ludlams Ponds and Dennis Creek tributaries within the vicinity of the project site. The USFWS also reported a known occurrence of swamp pink (*Helonias bullata*) within 0.6 mile of the project site with potential for the species to occur in forested wetlands on or adjacent to the project site.

The USFWS requires further consultation to minimize potential impacts to bald eagle foraging and roosting habitat because the bald eagles were reported within 1.4 miles of the project site. They also require a survey of the Dennis Creek tributaries within the construction area, 500 feet up and downstream of any crossings to determine presence or absence of swamp pink.

#### 4. Section 4(F)/Green Acres Resources

Section 4(f) of the USDOT Act applies only to federally funded projects (such as FHWA projects). Properties subject to Section 4(f) regulations include publicly owned parks and recreational lands, wildlife and waterfowl refuges, and historic sites and bridges that are on or eligible for the National Register of Historic Places. Section 4(f) also applies to archaeological sites that are on or eligible for the National Register and which warrant preservation in place. Historic and archaeological sites may be either publicly- or privately owned. Potential historic sites and archaeological sites located within the project study area are discussed below under **Cultural Resources**.

The Green Acres Program provides planning assistance and low interest loans and grants to municipalities and counties for open space acquisition and recreation development projects. It also serves as the NJDEP's land acquisition agent in purchasing land for state parks, forests, natural areas, and wildlife management areas. When a local unit accepts Green Acres funding for the acquisition or development of parkland, the funded parcels and facilities and all other lands held by the local unit for conservation and recreation purposes are encumbered with Green Acres restrictions. Any diversion of these lands for other than conservation or recreation purposes requires prior approval, through Green Acres, of the Commissioner of the NJDEP and the State House Commission, and if applicable, the National Park Service.

To date, no Section 4(f)/Green Acres resources have been identified in the project area. However, portions of Belleplain State Forest are located in the vicinity of the north end of the proposed project area to the north and south of Route 47. Depending on the extent of proposed construction activities, these resources may be affected. According to P.L. 2001 (Amendments to the No Net Loss Reforestation Act), if the

proposed project results in the deforestation of a half-acre or more of state-owned forested land, reforestation plans will be mandatory.

#### 5. *Cultural Resources*

A cultural resource assessment was conducted with intent to identify any previously documented cultural resources, both historic architectural and archaeological, within the immediate vicinity of the NJ Route 47 Mileposts 17.5-21.5 project area. Although this assessment included a cursory windshield survey of the project area, the majority of this effort consisted of review of available documentation. In addition to in-house materials, primary references included files housed at the New Jersey Historic Preservation Office (NJHPO) and the New Jersey State Museum (NJSM). Additional resources that were subjected to review were pertinent publications regarding the prehistory, history, ethnohistory, and geography of the area. Included in these publications were historical and environmental maps, cultural resource management surveys, and technical journals. The documentary research also included a review of electronic media (e.g., internet resources). For the purposes of this report, "documented cultural resources" means resources on or eligible for the State or National Registers. In addition, compliance with Section 106 of NHPA will be needed since FHWA funding is assumed for any potential improvements.

Historic Architectural Resources: Results of the documentary review revealed that six historic architectural properties have been recorded within the project area. The Henry Ludlam House was listed in the New Jersey and National Registers of Historic Places on July 7, 1993 and August 12, 1993, respectively. The William S. Townsend House was listed in the New Jersey and National Registers of Historic Places on March 14, 1984 and April 5, 1984, respectively. The Dennisville Historic District was originally listed on the New Jersey Register of Historic Places in 1973. Later the boundaries were redefined to its present listing. The Dennisville Historic District was listed in the New Jersey and National Registers of Historic Places on April 14, 1987 and November 24, 1987, respectively. The South Dennisville Historic District received an eligible NJHPO Opinion on July 18, 2001. This district has only been defined by its northern limits; no southern limits have yet been defined. The Dennis Creek Landing Archaeological Historic District (28-Cm-53) received an eligible NJHPO Opinion on July 18, 2001. This district has only been defined by its eastern limits; no western limits have yet been defined. Petersburg Road (CR 610) is part of the Dennisville Historic District along with bridge structure 0508151. The bridge is listed as a noncontributing element. It is not individually eligible for listing to the National Register of Historic Places.

Archaeological Resources: To date, three previously documented archaeological sites are contained within the project area. Dennisville (28-Cm-51) was identified in 1913 by Alanson Skinner and Max Scrabisch. The South Dennisville Historic District (28-Cm-52) was registered at the NJSM in 2000. This district has only been defined by its northern limits; no southern limits have yet been defined. The Dennis Creek Landing Archaeological Historic District (28-Cm-53) was registered at the NJSM in 2000. This

district has only been defined by its eastern limits; no western limits have yet been defined. Files housed at the NJHPO indicate that there are two archaeological sites associated with Johnson Pond. There is also an archaeological site in Dennisville and South Dennis.

Summary of Cultural Resources: Based on the results of the cultural resource assessment, it has been concluded that the project area may contain historic architectural and archaeological resources that could be affected by the project. It is recommended that consultation be undertaken in order to examine the relationship of the proposed project to the documented resources and to assess appropriate cultural resources studies, both historic architectural and archaeological, that may be warranted for the proposed project.

#### *6. Permits and Related Clearances*

A determination has been made as to which environmental permits and related clearances are potentially required for completion of the proposed project. These permits and clearances are as follows:

- NJDEP Freshwater Wetlands Permit(s)

- NJDEP Coastal Area Facility Review Act (CAFRA) Permit

- NJDEP Natural Heritage Program Section 7 of Endangered Species Act consultation

- USFWS Endangered Species consultation

- Pinelands Commission Coordination and Development Permit

- No Net Loss Reforestation Act involvement



## D. Conceptual Improvement Options

MTA developed two improvement options over the course of this study. The development of these improvement options were based upon increasing capacity at the intersection, Dennis Township Official comments and general safety in and around the intersection. Any improvements to the area considered the traffic impact on other streets in addition to the NJ Route 47/347 intersection.

### 1. *Recommended Improvement Option*

- Additional Northbound and Southbound lanes along NJ Route 47/347
- Install southbound left turn lanes at NJ 47's intersections with Tyler Road and Petersburg Road

This option includes the addition of auxiliary (additional) northbound and southbound lanes both before and after the convergence of NJ Route 47 and NJ Route 347. Analysis indicates that this would reduce NB delays in half on both Saturday and Sunday. Dennis Township Officials had little objections to the NORTHBOUND Auxiliary Lane option due to little obstructions upstream. The southbound direction on Saturday is the worst directional peak seen at this intersection, particularly on Saturday. Even though this alternative helps to lessen SB delays on Saturday and Sunday, without any improvements downstream delay increases at Tyler Road because the traffic is shifted south. Because of this, it is also recommended that appropriate southbound left turn lanes be added at the intersections of NJ 47 and Tyler Road and NJ 47 and Petersburg Road to accommodate traffic flowing from the upstream convergence of NJ Route 47 and NJ Route 347.

### 2. *Southbound Only Improvement Option*

This option included an eastbound acceleration lane from southbound Route 47 to continue south along NJ Route 47, and some southbound Florida T's to assist the southbound through traffic further down the corridor. The Florida T would allow for through traffic to travel without the impedance of stopping at a traffic signal. It only requires vehicles making left hand turns to stop. Dennis Township Officials did not like the idea of allowing the traffic to travel at higher speeds at this intersection and believes that low speeds keep accidents to a minimum. Dennis Township did not appear to favor the Florida T Option.

After further study, this option was eliminated because it only addresses southbound problems. In addition, there were concerns regarding the Florida T installation at the intersections with both County Route 610 and County Route 611. The Dennis Township committee did not appear to be in favor of this alternative, however the committee requested further study be completed for the general area and be presented to them at a later date.



## E. Analysis of Improvement Options

Each alternative was coded into SYNCRHO and analyzed using volume data collected in 2002 through use of SIM TRAFFIC software (Volumes were only collected at the intersection of 347 and 47 in 2001, therefore the most relevant analysis uses 2002 data). The option to add an additional northbound and southbound lane along with southbound left turn lanes at the County Routes was decided upon due to the extreme southbound delays experienced along this corridor. This alternative was analyzed without the addition of the southbound left turn lanes. Only minor benefits to the intersection of NJ Route 47 and 347 were seen without the improvement of the southbound intersections. With the recommended addition of the left turn lanes along NJ Route 47, this alternative will likely yield significant benefits.

Existing conditions analysis for 2002 reported an average delay on the NJ Route 47 southbound approach of 34 minutes of delay/vehicle (LOS F) and a minute and a half on NJ Route 347 (LOS E). Analysis was initially done without considering left turn lanes at Tyler and Petersburg Roads. This was in order to determine effectiveness of improvements at 47/347 intersections ONLY. Delay was expected to improve 12% along NJ Route 47 and about 6% on NJ Route 347 from existing conditions without the addition of left turn lanes at Tyler and Petersburg Roads.

When analysis was done for the complete recommended alternative, including the left turn lanes at Tyler and Petersburg Roads, southbound delay improved 75% along NJ Route 47 and 28% along NJ Route 347. Further south at the intersection with Tyler Road (CR 611), southbound delay improved 48%. Delay along NJ Route 47 near the intersection with Petersburg Road (CR 610) is not expected to see a southbound improvement due to the increase in volume that has transversed through the Tyler Road intersection. Although delay increases slightly near Petersburg Road, the total benefit gained along this corridor as a result of this recommended improvement option would still be a savings of approximately 30 minutes. In addition, as a result of these interim improvements, safety improvements are expected specifically at the intersection of NJ Route 47 and NJ Route 347. Consistent with the title of this study, these improvements do not "completely" solve the capacity problem along this corridor and would serve as interim improvements only.

Capacity analysis was also done for Sunday conditions when the peak move is northbound. Improvement is mostly seen at the intersection of NJ Route 47 and NJ Route 347. This is because the northbound improvement recommendation is only at this intersection. Northbound delay is expected to reduce 65% from existing conditions.

**Tables 4 and 5** indicate the capacity analysis results for Saturday and Sunday conditions.



**Table 4: 2002 Capacity Analysis Results – Saturday Volumes**

Intersection	Movement	LOS (Delay/Vehicle (sec))		
		Existing	Recommended Option	% Change
NJ Route 347 and NJ Route 47	<b>SB 347</b>	<b>E (68)</b>	<b>E (49)</b>	<b>28%</b>
	NB 47	D (49)	E (44)	10%
	<b>EB 47</b>	<b>F (2036)</b>	<b>F (511)</b>	<b>75%</b>
	Overall	F (652)	F (221)	66%
NJ Route 47 Tyler Road (CR 611)	<b>Southbound</b>	<b>F (632)</b>	<b>F (330)</b>	<b>48%</b>
	Northbound	B (18)	C (26)	-44%
	Westbound	F (164)	F (65)	60%
	Overall	F (350)	F (199)	43%
NJ Route 47 Petersburg Road (CR 610)	<b>Southbound</b>	<b>C (22)</b>	<b>D (55)</b>	<b>-150%</b>
	Northbound	A (8)	B (20)	-150%
	Westbound	B (15)	E (67)	-347%
	Overall	C (25)	D (42)	-68%

**Table 5: 2002 Capacity Analysis Results – Sunday Volumes**

Intersection	Movement	LOS (Delay/Vehicle (sec))		
		Existing	Recommended Option	% Change
NJ Route 347 and NJ Route 47	SB 347	C (21)	B (17)	17%
	<b>NB 47</b>	<b>D (37)</b>	<b>B (13)</b>	<b>65%</b>
	EB 47	C (21)	B (13)	38%
	Overall	C (32)	B (14)	56%
NJ Route 47 Tyler Road (CR 611)	Southbound	F (105)	E (58)	45%
	<b>Northbound</b>	<b>C (21)</b>	<b>E (77)</b>	<b>-262%</b>
	Westbound	D (55)	E (71)	-29%
	Overall	E (57)	E (71)	-24%
NJ Route 47 Petersburg Road (CR 610)	Southbound	C (20)	C (21)	0%
	<b>Northbound</b>	<b>F (92)</b>	<b>D (46)</b>	<b>50%</b>
	Westbound	D (55)	E (71)	-29%
	Overall	E (70)	D (40)	43%

### III. US ROUTE 9 CORRIDOR FROM CR 550 TO SEA ISLE BLVD.

#### A. Existing Traffic Conditions

##### 1. *Historical Traffic Comparison*

Other studies completed in this area include Skycomp's reports in this area in 1991, 1997 and 2001. The Skycomp study conducted in 1991 indicates problems on the Sea Isle Blvd exit ramp on Saturday between 10:00 AM and noon. This corresponds with the MTA's general observations that took place August 2000 in which the worst backups were observed on US Route 9 between 11:15 AM and 12:15 PM.

In the 1997 Skycomp report, severe congestion on both US Route 9 and Sea Isle Blvd. (CR 625) was reported on Saturday, and "heavy" traffic was reported on the Sunday return at the intersection of Route 9 and Sea Isle Blvd. The intersection of Route 9 and Woodbine Ocean View Road was not included in any of these previous reports.

The 2001 Skycomp Report included US Route 9, Sea Isle Blvd and Woodbine Ocean View Road. The southbound queue on US 9 was observed to be the highest on Saturday during the 12:43 observation with about 298 vehicles in the queue. These queues were reported to back up past Woodbine Ocean View road and end approximately 2-3 miles north of US Route 9's intersection with Sea Isle Blvd. Congestion was observed to be especially heavy on eastbound Woodbine Ocean View between noon and 2 PM with queues formed as far back as a mile West of the road's intersection with US Route 9.

Subsequent field views and traffic data collection efforts in 2001 have indicated that the major problem exists for the "S" movement beginning with eastbound traffic along CR 550 onto southbound US Route 9 and then traveling eastbound onto Sea Isle Blvd. (towards the shore) on summer Saturdays. The congestion is reversed on Sundays heading northbound, however as indicated in other Shore Connection Concept Development Reports, this movement is more staggered than Saturday's peak period due to a less focused exit period.

##### 2. *Traffic Volumes, Queuing and General Observations*

As stated previously, this study focuses on the summer weekend traffic problems at this intersection. In the past five years or so, what used to be a Memorial Day to Labor Day summer peak period, has now extended to the period from May to October. This is based on general information obtained by residents of the area and municipal officials.

MTA first observed this intersection in the summer of 2000 when informal observations and counts took place. A full count program was conducted the following year, including complete turning movement counts and automatic traffic recorders (ATR) throughout the study area. During the summer of 2002, ATR data was collected in the area, however no turning movement data was taken for these intersections.



### AUGUST 2000 – SATURDAY & SUNDAY

General traffic conditions were observed between 10:00 AM and 2:00 PM on Saturday, August 26, 2000. This day proved to be a typical “summer Saturday” with clear skies and high temperatures. Observations indicated that traffic in the southbound direction (towards the shore) almost completely saturated the US Route 9 link between CR 550 (Oceanview Road) and CR 625 (Sea Isle Blvd).

The intersection at US Route 9 and Sea Isle Blvd/School House Road experienced the longest delays in the southbound direction on Saturday August 26, 2000 between 10:00 AM and 2:00 PM. The maximum queue lengths during the peak hours were as much as 140-180 vehicles, and the travel times from the back of the queue through the intersection ranged from 8 minutes to more than 12 minutes. Many vehicles on southbound US Route 9 at the intersection with Sea Isle Blvd., experienced long delays due to the volume of left-turning vehicles blocking the shared through and right turn lane. The queues extended through the upstream intersection with CR 550 (Woodbine/Ocean View Road), making it difficult to make a right turn onto US Route 9 from the intersecting roadway.

During the 2000 observations, the intersection of US Route 9 and Woodbine/Ocean View Road was not examined in as much detail as the intersection of US Route 9 and Sea Isle Blvd. However, it was included in this study because the delays experienced at Sea Isle Blvd. significantly effect the operation of this intersection and vice versa.

During the Sunday observations, there were no major traffic delays on either northbound or southbound US Route 9 approaching to the intersection. However some vehicles heading westbound on Sea Isle Blvd. experienced cycle failures on Sunday August 27, 2000 between 4:00 PM to 8:00 PM. There were no apparent problems Sunday at the US Route 9 and Woodbine/Ocean View Road intersection.

### AUGUST 2001 – SATURDAY AND SUNDAY

Conditions were observed again in the summer of 2001, however this time detailed turning movement counts and ATR data was collected in addition to general observations. The data found indicated that although there was not complete saturation along US Route 9, congestion on Sunday was greater than the year before. In addition traffic congestion on Sunday appeared to be worse than what was seen in 2000. In 2001, conditions on Sunday were essentially a mirror image of Saturday. Northbound US Route 9 approaching Sea Isle Blvd. (CR 625) had major delays of almost 9 minutes on average, however, the intersection of US Route 9 and CR 550 did not experience the same magnitude of problems as this is a system wide problem for these two intersections. If the intersection of Sea Isle Blvd and US Route 9 improved operations on Sunday, problems would most likely be shifted north to the intersection of US Route 9 and CR 550. **Figure 6** indicates the existing lane configuration for the US Route 9 corridor.

Woodbine Road (CR 550)

US Route 9

Sea Isle Blvd. (CR 625)

ONLY

ONLY

ONLY

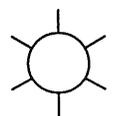
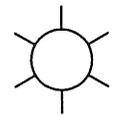
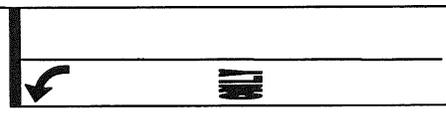
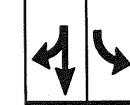
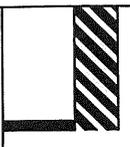


TRAFFIC SIGNAL



NOT TO SCALE

SHORE CONNECTION  
US ROUTE 9 CORRIDOR  
FIGURE 6  
EXISTING LANE CONDITIONS





### *3. Transit Access Information*

No bus routes utilize this segment of Route 9. Bus service to New York, Atlantic City and Wildwood include limited or seasonal service to Sea Isle City at Landis Avenue and 46<sup>th</sup> Street, east of the study intersection.

### *4. Existing Conditions Capacity Analysis*

SYNCHRO 5 is a complete software package for modeling traffic operations and optimizing traffic signal timings. SYNCHRO uses the methods outlined in the 2000 Highway Capacity Manual, Chapter 16. The capabilities of SYNCHRO include calculating capacity, modeling actuated signals, and optimizing cycle lengths, splits and offsets. SIMTRAFFIC is a simulation program that works with SYNCHRO and is designed to model roadway networks including signalized and unsignalized intersections. It is a tool used to check and revise traffic signal operations. As a network model, the operations of the roadway system can be analyzed as a whole and the affects of changes in one part of the network on other parts can be seen (ie. spillback between intersections and platooning affects). Measures of effectiveness provided by SIM TRAFFIC include the following: stopped delay, stops, queue lengths, speeds, travel times and distance traveled. See **Appendix B** for detailed descriptions about the levels of service.

Existing conditions traffic analysis for 2002 (most recent) indicated that during the Saturday peak hour, the intersection of US Route 9 and Sea Isle Blvd. (CR 625) operated at a LOS F (average delay of approximately eight minutes/vehicle), while during the Sunday peak, the intersection operates at LOS E. Although the average delay on Sunday was analyzed to be 57 seconds of delay/vehicle, the northbound and westbound approaches (critical movement away from shore) operated at 526 seconds of delay/vehicle (almost nine minutes) and 85 seconds of delay/vehicle respectively.

The intersection of US Route 9 and CR 550 operates at LOS F on Saturday and a LOS C on Sunday. Existing conditions analysis indicates that Saturday conditions typically see significant delays along southbound US Route 9, often backing up from the southern intersection to US Route 9 and Sea Isle Blvd. On Sunday, conditions at the intersection of CR 550 and US Route 9 appear to improve, however this is likely due to metering by the downstream intersection at Sea Isle Blvd. Because northbound delay averages over eight minutes, conditions at CR 550 and US Route 9 appear to have minimal capacity problems.

### *5. Pedestrian and Bicycle Activity*

US Route 9 between Sea Isle Blvd. (CR 625) and CR 550 is likely to be an active area for pedestrian and bicycle activity due to the highly developed retail uses in the immediate area of the corridor, the proximity of campgrounds in the vicinity and the direct access to seashore recreation sites by way of Sea Isle Boulevard. The

congestion and lack of shoulder area for pedestrian and bicycle functions is expected to be in direct conflict with the potential for these activities as the corridor develops.

Strong consideration of a sidewalk and bike lane/bike movement pavement marking program or an aggressive study of an alternate bike trail network through this area is important for future safety concerns for the corridor. Although a limited amount of pedestrians were observed throughout this study area, many bicyclists were observed throughout the roadways, particularly on CR 550.

## B. Existing Physical Deficiencies

### 1. Field View

The purpose of a physical inventory and deficiency identification is to gain familiarity with the physical features of the roadway and identify roadway deficiencies within the project area. It involves an on-site field view of the study area as well as a review of existing NJDOT roadway data. A windshield survey for the study area was conducted in October of 2000. Several deficiencies were noted during this time to exist along US Route 9 between CR 550 and CR 625.

At the intersection of US Route 9 and Sea Isle Blvd. (CR 625) one of the most easily identifiable deficiencies at the intersection was a short left turn bay on southbound US Route 9. It was considered generally inadequate for the summer traffic. In addition the northbound taper along US Route 9 was not striped, and there were missing pavement markings observed in the left lane of westbound Sea Isle Blvd. (CR 625). Further north at the intersection of US Route 9 and CR 550, insufficient taper lengths were observed on both northbound and southbound approaches of US Route 9. In addition the eastbound right turn lane along CR 550 could be lengthened and improved with striping.

### 2. Pavement Ratings Summary

Along with the field view of the study area, the NJDOT Pavement Management Section was consulted to assess the pavement surface. The most recent data used is based on the 2001-2002 NJDOT database containing information based on the pavement conditions throughout New Jersey.

In addition to the field view of the study area, the NJDOT Pavement Management System was consulted to assess the pavement surface. The three key pieces of information provided by the database are ride quality index, surface distress index, and final pavement rating. Ride Quality Index (RQI) is used to describe the comfort level of the road according to roughness and the Surface Distress Index (SDI) measures the severity of surface distresses. These numbers are then combined to determine a Final Pavement Rating (FPR). **Table 6** shows the RQI, SDI, and FPR for this intersection area. Detailed explanations are in **Technical Appendix A**.



**Table 6: Average Pavement Ratings**

Route	Direction	MP	RQI	SDI	Average Rut Depth (in)
009	North	20.5 – 22.0	3.42	2.85	0.1
009	South	20.5 – 22.0	3.42	2.57	0.2

The indices for the RQI (Ride Quality Index) and the SDI (Surface Distress Index) are based on a numeric scale of 0 – 5 corresponding to very poor to very good conditions.

- 0.00 – 1.00 Very Poor
- 1.01 – 2.00 Poor
- 2.01 – 3.00 Fair
- 3.01 – 4.00 Good
- 4.01 – 5.00 Very Good

From the Table 1 above, both directions of NJ Route 009 from MP 20.05 – 22.0, have a **“Good”** rating for **Ride Quality Index**. The northbound direction of Route 009 performs at the **“Fair”** level for SDI. A **“Good”** rating means that pavement should provide a first class ride and exhibit few visible signs of surface deterioration while a **“Fair”** rating states that the surface defects of flexible pavement may include rutting, map cracking and extensive patching. The southbound side of this section of NJ Route 009 is also in **“Fair”** condition for SDI.

In addition, rut depth of more than 0.5 inches could also initiate a resurfacing job, but projects based on rut depth are given lowest priority. Average rut depth for northbound 009 is 0.1 and southbound is 0.2 therefore this is **ACCEPTABLE**.

*3. Structure Summary*

There are no structures along US Route 9 within the project limits.



#### 4. Accident Data and Analysis

Accident data was requested from NJDOT. Most recent data obtained for this area is from 1999 – 2002 (3 years) for US Route 9 from milepost 21.0 – 21.7. **Table 7** details this crash summary. In addition, a crash diagram is attached for the corridor of US Route 9 between County Routes 625 and 550 (**Figure 7**).

**Table 7**  
**US ROUTE 9 (MP 20.50 – 21.50)**  
**1999-2002**

<b>TYPE OF INJURY</b>	<b>NUMBER</b>	<b>PERCENTAGE</b>
Rear End	9	38%
Side Swipe	1	4.0%
Right Angle	3	12.5%
Left Turn	5	21%
Head On	3	12.5%
Overtuned	0	0%
Fixed Object	2	8%
Animal	1	4%
<b>TOTAL</b>	<b>24</b>	<b>100%</b>

<b>SURFACE CONDITION</b>	<b>NUMBER</b>	<b>PERCENTAGE</b>
Dry	15	63%
Wet	8	33%
Snow or Ice	1	4%
<b>TOTAL</b>	<b>24</b>	<b>100.0%</b>

<b>TIME OF DAY</b>	<b>NUMBER</b>	<b>PERCENTAGE</b>
Daylight	18	75%
Nighttime	6	25%
<b>TOTAL</b>	<b>24</b>	<b>100%</b>

Project: Shore Connections

Intersection: U.S. 9 & C.R. 625 & C.R. 550

Date: 7/16/03

Created by: DPS

Project Number: 4670-11

Checked by: CLS

# FIGURE 7

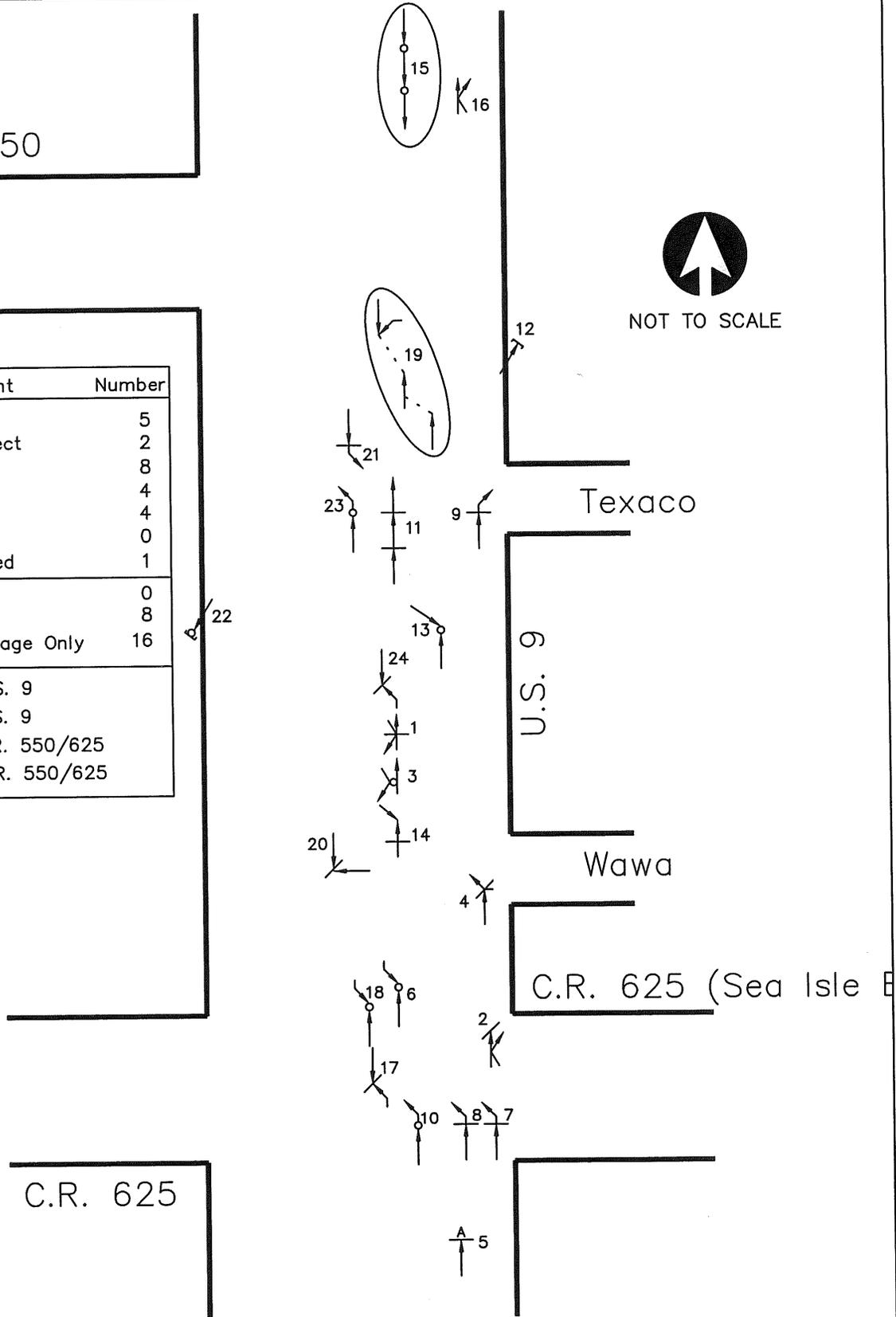
C.R. 550

## LEGEND

Symbol	Type of Accident	Number
	= Angle	5
	= Hit Fixed Object	2
	= Rear End	8
	= Head On	4
	= Sideswipe	4
	= Non-Collision	0
	= Animal-Related	1
	= Fatality	0
	= Injury	8
	= Property Damage Only	16
	NB traffic on U.S. 9	
	SB traffic on U.S. 9	
	EB traffic on C.R. 550/625	
	WB traffic on C.R. 550/625	



NOT TO SCALE



C.R. 625

## Collision Diagram

**MTA**

McCormick, Taylor & Associates, Inc.

Engineers and Planners

### C. Environmental Screening

An environmental screening was conducted for the study area encompassing the limits of the proposed transportation improvements. The purpose of the screening was to identify potential environmental concerns for the development of conceptual alternatives. The screening included a review of available information for Wetland and Water Resources, Hazardous Materials, Threatened and/or Endangered Species, Section 4(f)/Green Acres Resources, and Cultural Resources on or in the vicinity of the project area, and field investigation on July 23, 2003. In addition, an assessment of potential construction permits and related clearances was performed.

#### 1. *Wetland and Water Resources*

A review of existing information sources (e.g., National Wetland Inventory [NWI] maps, United States Geological Survey [USGS] topographic maps, New Jersey Department of Environmental Protection [NJDEP] Freshwater Wetlands GIS digital data, etc.) and a field investigation were performed to determine the presence, proximity and number of wetland areas in the proposed project area.

Based on a review of available mapping and the field investigation, no wetlands were observed within or in the immediate vicinity of the Project Area.

A determination of floodplain boundaries was made based on review of applicable Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps. Based on review of FEMA Flood Insurance Rate Maps for the Township of Dennis, New Jersey, it has been determined that the proposed project is located in an area of minimal flooding, outside the 100-year and 500-year floodplains (which comes within 400 feet to the southeast).

According to the Cape May County Soil Survey (USDA, 1977), six soil series occur within the Project Area. The Downer sandy loams consist of nearly level to gently sloping, well-drained soils. The vegetation typically supported by these soils includes oaks, hickories, and pines, with blueberry and mountain berry. Evesboro sand consists of nearly level to gently sloping excessively drained soils. These soils typically support oaks, pines, blueberry, and bracken fern. Fort Mott sand consists of nearly level to gently sloping, well-drained soils. These soils also typically support oaks, pines, and blueberry. Sassafras sandy loams consist of nearly level to gently sloping, well-drained soils. The vegetation typically supported by these soils includes oaks, hickories, and pines, with blueberry and mountain berry. None of the soils within the Project Area are listed in Hydric Soils of the United States (NTCHS, 1991).

#### 2. *Hazardous Materials*

Potential hazardous waste involvement with the project was determined through a review of NJDEP's Known Contaminated Sites List (KCSL) –2001 Edition and a field inspection. An on-site inspection was conducted on July 23, 2003. The on-site inspection area was limited to those properties within the proposed project area.

Inspections identified any observable areas of significant and/or potential environmental concern. The on-site inspection revealed four properties of potential environmental concern within the proposed project area. Properties of potential environmental concern are identified in **Table 8**.

**Table 8: Properties of Potential Environmental Concern**

Facility	Location	Concerns
Citgo Station	East side of Route 9	Fuel pumps, evidence of underground storage tanks, potentially hazardous substances stored, handled, and/or generated; no signs spillage, staining, or noxious odors detected
Texaco Station	East side of Route 9	Fuel pumps, evidence of underground storage tanks, potentially hazardous substances stored, handled, and/or generated; no signs spillage, staining, or noxious odors detected
Exxon Station	West side of Route 9	Fuel pumps, evidence of underground storage tanks, potentially hazardous substances stored, handled, and/or generated; no signs spillage, staining, or noxious odors detected
L&M Auto Repair	Northwest side of intersection of Route 9 and Sea Isle Blvd.	Vehicle maintenance bays, potentially hazardous substances stored, handled, and/or generated; no signs spillage, staining, or noxious odors detected
Atlantic Electric's Ocean View Substation	Southwest side of intersection of Route 9 and Sea Isle Blvd.	Electrical equipment and transformers; potentially hazardous substances stored, handled, and/or generated; no signs spillage, staining, or noxious odors detected

**3. Threatened and/or Endangered Species**

The NJDEP Office of Natural Lands Management, Natural Heritage Program (NHP) and the United States Fish and Wildlife Service (USFWS) were consulted for information on the presence of threatened or endangered species within or in the vicinity of the project study area. The NJDEP-NHP provided information on rare plants, animals and/or natural communities in the project area in a letter, with attachments, dated August 4, 2003. This response indicated that the NHP Database has records for occurrences of barred owl (*Strix varia*), pine barrens treefrog (*Hyla andersonii*), Cope's gray treefrog (*Hyla chrysoscelis*), northern pine snake (*Pituophis*

*m. melanoleucus*), and red-shouldered hawk (*Buteo lineatus*) on the referenced site. Further, NHP reported the presence of foraging habitat for black skimmer (*Rynchops niger*), black-crowned night-heron (*Nycticorax nycticorax*), and an unnamed tern species, on the site. Potential vernal pool habitats were also reported to be approximately 0.5 miles away from CR 550. NHP also reported occurrence of red-headed woodpecker (*Melanerpes erythrocephalus*) within ¼ mile of the site. The NHP database has records of dense-flowered knotweed (*Polygonum densiflorum*) and reversed bladderwort (*Utricularia resupinata*) that may be in the immediate vicinity of the site. The USFWS reported that except for the occasional transient bald eagle (*Haliaeetus leucocephalus*), no other federally listed or proposed threatened or endangered species under USFWS jurisdiction are known to occur within the vicinity of the Project Area.

#### 4. Section 4(F)/Green Acres Resources

Section 4(f) of the USDOT Act applies only to federally funded projects (such as FHWA projects). Properties subject to Section 4(f) regulations include publicly-owned parks and recreational lands, wildlife and waterfowl refuges, and historic sites and bridges that are on or eligible for the National Register of Historic Places. Section 4(f) also applies to archaeological sites that are on or eligible for the National Register and which warrant preservation in place. Historic and archaeological sites may be either publicly- or privately owned. Potential historic sites and archaeological sites located within the project study area are discussed below under *Cultural Resources*.

The Green Acres Program provides planning assistance and low interest loans and grants to municipalities and counties for open space acquisition and recreation development projects. It also serves as the NJDEP's land acquisition agent in purchasing land for state parks, forests, natural areas, and wildlife management areas. When a local unit accepts Green Acres funding for the acquisition or development of parkland, the funded parcels and facilities and all other lands held by the local unit for conservation and recreation purposes are encumbered with Green Acres restrictions. Any diversion of these lands for other than conservation or recreation purposes requires prior approval, through Green Acres, of the Commissioner of the NJDEP and the State House Commission, and if applicable, the National Park Service.

To date, no Section 4(f)/Green Acres resources have been identified in the project area.

#### 5. Cultural Resources

A cultural resource assessment was conducted with intent to identify any previously documented cultural resources, both historic architectural and archaeological, within the immediate vicinity of the US Route 9/ Sea Isle Boulevard and CR 550 project area. Although this assessment included a cursory windshield survey of the project area, the majority of this effort consisted of review of available documentation. In addition to in-house materials, primary references included files housed at the New Jersey Historic



Preservation Office (NJHPO) and the New Jersey State Museum (NJSM). Additional resources that were subjected to review were pertinent publications regarding the prehistory, history, ethnohistory, and geography of the area. Included in these publications were historical and environmental maps, cultural resource management surveys, and technical journals. The documentary research also included a review of electronic media (e.g., internet resources). For the purposes of this report, "documented cultural resources" means resources on or eligible for the State or National Registers. In addition, compliance with Section 106 of NHPA will be needed since FHWA funding is assumed for any potential improvements.

Historic Architectural Resources. Results of the documentary review revealed that two historic architectural properties have been recorded in the immediate vicinity of the project area. The Calvary Baptist Church, located at the corner of Seaville Road and US Route 9, has been listed in the New Jersey and National Registers of Historic Places, since August 15, 1980 and November 25, 1980, respectively. The Garden State Parkway received and eligible NJHPO Opinion on October 12, 2001.

Archaeological Resources. To date, no previously documented archaeological sites are contained within the project area; however numerous archaeological sites are located along the coast in a similar physiographic setting. Files housed at the NJHPO indicated that there are three such archaeological sites located on the south side on Magnolia Lake.

Summary of Cultural Resources. Based on the results of the cultural resource assessment, it has been concluded that the project area may contain historic architectural and archaeological resources that could be affected by the project. It is recommended that consultation be undertaken in order to examine the relationship of the proposed project to the documented resources and to assess appropriate cultural resources studies, both historic architectural and archaeological, that may be warranted for the proposed project.

#### *6. Permits and Related Clearances*

A determination has been made as to which environmental permits and related clearances are potentially required for completion of the proposed project. These permits and clearances are as follows:

NJDEP Coastal Area Facility Review Act (CAFRA) Permit

NJDEP Natural Heritage Program Section 7 of Endangered Species Act consultation

NJHPO / FHWA (Section 106) consultation

## D. Conceptual Improvement Options

MTA developed two minor improvement options over the course of this study. The development of these improvement options was based upon improving conditions at the intersections, Dennis Township official's input and general safety in and around the intersection. In addition, the context sensitive design was a large factor, along with the history of the area.

### 1. *Recommended Improvement Option*

- Extend the NB right turn lane on US Route 9 at the intersection with Sea Isle Blvd. and improve delineation along this approach (striping improvements)
- Add an additional WB right turn lane on Sea Isle Blvd. from vicinity of GSP off ramp to the signal at US Route 9 (***out of study area***)
- Add an exclusive right turn lane on CR 550 for the right turning traffic onto US Route 9. (*This improvement will likely be under existing Highway Occupancy Permit for Restricted Age Living Community planned for this intersection*)

Due to the interim nature of the Shore Connection Concept Development Reports and the commercial nature of the corridor, large capacity improvements are not expected as a result of these recommended improvement options. The major benefit of these improvements will be seen on the "fringe" periods before and after the peak traffic congestion. Because the above improvements include striping only at the intersection of Sea Isle Blvd. (CR 625) and US Route 9, assumptions taken in the analysis of the recommended improvement option scenario include the improvement of an exclusive eastbound right turn lane at CR 550 only. Dennis Township Officials appeared to be in agreement that these improvement options would provide only minor congestion relief during peak traffic times, however they still did not seem in favor of grander improvements due to the possible impacts upon of that segment of corridor.

### 2. *Other Improvement Options studied and then dismissed*

A center left turning lane on US Route 9 between Sea Isle Blvd. (CR 625) and Woodbine/Ocean View Road (CR 550) was discussed early in the project process at the August 13, 2001 meeting with Dennis Township Officials. Expected benefits of this improvement option would be to provide more adequate storage for peak hour left turning traffic. The center left turn lane would be bi-directional and could be useful in providing the storage room when needed. Officials expressed numerous concerns regarding this option such as concern for business access during peak summer traffic, potential property takes, and safety concerns.

The Sea Isle Blvd. Extension could provide a direct connection from Woodbine Ocean View Road (CR 550) to Sea Isle Blvd (CR 625). This was dismissed as an interim improvement because if it would be studied further, the whole Shore Connection area

should be considered a system. Therefore, this type of improvement option would be a larger effort than is covered under this scope of study.

Another option that was addressed was the forward jug handle from southbound US Route 9 to eastbound Sea Isle Blvd. A right hand jug handle would allow southbound US Route 9 traffic wishing to travel east on Sea Isle Blvd. to become a through move at Sea Isle Blvd. This would eliminate southbound left turns at the signal and help to reduce the queues during summer peak traffic. Dennis Township officials thought it best to disregard this jug-handle option.

### **E. Analysis of Improvement Options**

Each alternative was coded into SYNCRHO and analyzed using volume data collected in 2001 through use of SIM TRAFFIC software (turning movement volumes were not collected along the US Route 9 corridor in 2002, therefore the most relevant analysis uses 2001 data). The exclusive right turn lane along CR 550 was the improvement option analyzed. As stated previously, this improvement does not solve the problem (eliminate LOS F) but does lessen the severity of delays. In addition, this improvement is expected to alleviate some of the problem in the beginning and end of each Saturday peak period.

Existing conditions analysis for 2001 Saturday conditions reported an average delay on the US Route 9 southbound approach of approximately 4 minutes of delay/vehicle (LOS F). All approaches fail with an average delay/vehicle of 501 seconds (LOS F). Eastbound CR 550 operated at a LOS D (47.8 seconds of delay/vehicle).

The exclusive right turn lane along eastbound CR 550 was the preferred and recommended interim improvement option for this corridor; therefore this is the final option that was analyzed. Capacity results for the recommended improvement option along this corridor, indicated that the time (delay/vehicle) reduced slightly for both intersections, however LOS did not improve. This is predominantly because the capacity problem along US Route 9 is not being addressed due to the impacts associated with larger scale improvements. This means that although improvements are being proposed on the eastbound approach of CR 550, only limited benefits can be realized for the intersection as a whole until greater improvements are made along US Route 9 to address summer peak conditions. This improvement option is only a slight improvement from a no-build scenario. This right turn lane would likely benefit traffic from CR 550 heading SB on Route 9 and improve safety in this vicinity. However, once southbound traffic builds up, traffic from CR 550 still has no place to go. This is why we are seeing little to no improvement in overall delay and capacity.

**Tables 9 and 10** indicate the capacity analysis results for Saturday and Sunday conditions.



Table 9 - US Route 9 Corridor from CR 550 to Sea Isle Blvd		
SATURDAY CONDITIONS		
Approach	2001 Existing Conditions Sec/Veh (LOS)	CR 550 EB Right Turn Lane Sec/Veh (LOS)
NB US Route 9 @ Sea Isle Blvd.	793 (F)	795 (F)
SB Route 9 @ Sea Isle Blvd.	245 (F)	243 (F)
EB School House Lane @ US Route 9	781 (F)	787 (F)
WB Sea Isle Blvd @ US Route 9	373 (F)	449 (F)
EB Woodbine/Oceanview (CR 550) @ US Route 9	48 (D)	43 (D)
NB US Route 9 @ Woodbine/Oceanview (CR 550)	237 (F)	196 (F)
SB US Route 9 @ Woodbine/Oceanview (CR 550)	76 (E)	95 (F)

Table 10 - US Route 9 Corridor from CR 550 to Sea Isle Blvd		
SUNDAY CONDITIONS		
Approach	2001 Existing Conditions Sec/Veh (LOS)	CR 550 EB Right Turn Lane Sec/Veh (LOS)
NB US Route 9 @ Sea Isle Blvd.	528 (F)	526 (F)
SB Route 9 @ Sea Isle Blvd.	34 (C)	27 (C)
EB School House Lane @ US Route 9	27 (C)	26 (C)
WB Sea Isle Blvd @ US Route 9	64 (E)	85 (F)
EB Woodbine/Oceanview (CR 550) @ US Route 9	27 (C)	23 (C)
NB US Route 9 @ Woodbine/Oceanview (CR 550)	34 (C)	32 (C)
SB US Route 9 @ Woodbine/Oceanview (CR 550)	25 (C)	25 (C)



#### **IV. COMMUNITY IMPACT ASSESSMENT**

Public involvement programs can open channels of communication between agencies and the public it serves. In the long term, decisions made cooperatively are more workable and acceptable to the community. Public acceptance, support, and confidence in decision making can increase the likelihood of transportation improvements and will sometimes even expedite the process. The community's continuing participation in project development will lead to a greater understanding of the proposed plan along with a more positive reaction.

##### **A. Initial Meetings with the Shore Connection**

The initial Shore Connection Committee Meetings were held February 13, 2001 and March 21, 2001. The five intersections contained within the Shore Connection Project were discussed throughout the series of these meetings including both corridors in Dennis Township. The US Route 9 Corridor was discussed at the meeting in February, and the NJ Route 47 Corridor in Dennis Township was discussed during the March meeting. These meetings were conducted as an open forum where attendees were encouraged to express their opinions and suggestions. The two improvement options discussed for the US Route 9 corridor during the February Shore Connection meeting were:

- Adding additional northbound and/or southbound lanes along US Route 9 along with creating an exclusive eastbound left turn lane along CR 550.
- Sea Isle Blvd. Extension that would redirect traffic away from US Route 9 and create a direct connection from CR 550 to Sea Isle Blvd. (CR 625)

General comments heard regarding the US Route 9 corridor included concerns to study this area along with the whole Cape May and Cumberland County "Shore Connection" area as a system. In addition, Shore Connection Committee members reminded the project team that in the past, Dennis Township has not preferred any recommended improvements to that intersection area. At this meeting, it was suggested to make some small improvements to the intersection of US Route 9 and Sea Isle Blvd. (CR 625) instead of any improvement that would have greater impacts upon the nearby businesses and communities.

At the March 21, 2001 Shore Connection meeting, the improvement option for the NJ Route 47 corridor was the installation of southbound Florida T's at NJ Route 47's intersections with NJ Route 347, Tyler Road (CR 610) and Petersburg Road (CR 611). The Committee was not fond of this idea mostly due to access concerns and suggested exploring other options. There were no other options discussed at this meeting

Meeting minutes can be found in **Appendix A**.

##### **B. Meetings with Dennis Township Officials**

On August 13, 2001 and again on December 9, 2002, McCormick Taylor and Associates and NJDOT met with representatives of Dennis Township. The purpose of the first meeting was



to discuss the possible improvement concepts for the NJ Route 47 Corridor and the US Route 9 corridor. The municipal officials provided valuable information regarding summer traffic conditions in the area. Some of the information provided at these municipal meetings included general information regarding the nature of the area such as the primary uses and peak times of each corridor.

During the August 13, 2001 official meeting, many of the preliminary improvement options were presented. For the NJ 47 Corridor, this included an eastbound acceleration lane from southbound Route 47 at the Route 47/347 convergence, and some Florida T's to assist the southbound through traffic further down the corridor. The Florida T would allow through traffic to travel without the impedance of stopping at a traffic signal. It only requires vehicles making left hand turns to stop. The committee did not like the idea of allowing the traffic to travel at higher speeds at this intersection and believes that low speeds keep accidents to a minimum. There does not seem to be a desirable option to fix this area short term, however the committee would like further study completed and be presented to them at a later date.

The options presented for the US Route 9 corridor included center left turning lane on US Route 9 between Sea Isle Blvd. (CR 625) and Woodbine/Ocean View Road (CR 550), Sea Isle Blvd. Extension providing a direct connection from CR 550 to Sea Isle Blvd. (CR 625), and a forward jug-handle from southbound US Route 9 to eastbound Sea Isle Blvd. Expected benefits of the extended or exclusive left turn lane option would be to provide more adequate storage for peak hour left turning traffic. Officials expressed numerous concerns regarding this option such as concern for business access during peak summer traffic, potential property takes, and safety concerns. The Sea Isle Extension could provide a direct connection from Woodbine Ocean View Road (CR 550) to Sea Isle Blvd (CR 625) however this was dismissed as an interim improvement because it would have to be studied on a system wide scale and was out of the scope of interim improvements; and it falls under county jurisdiction. Finally, the forward jug-handle could eliminate left turns from southbound US Route 9 onto eastbound Sea Isle Blvd. (CR 625) however Dennis Township officials thought that option should be disregarded due to the potential impacts.

Coordination continued with Dennis Township as the project team returned again to discuss the most recent recommended improvement options on December 9, 2002. Intersection improvements reviewed included an exclusive eastbound right turn lane on CR 550 onto southbound US Route 9, along with striping improvements at the intersection of US Route 9 and Sea Isle Blvd. Intersection improvements discussed along the NJ Route 47 corridor included adding an auxiliary NB lane both before and after the intersection and an auxiliary SB lane north of the intersection ONLY. This improvement did not include the addition of left turn lanes at Tyler (CR 610) and Petersburg (CR 611) Roads because the study area had not been officially extended yet.

The main sentiment heard at this meeting was that Dennis Township Officials would like to see the NJ Route 47 corridor from NJ Route 347 to Petersburg Road studied as a whole. This is because, as demonstrated at the meeting, benefits to the corridor are minimal without considering any improvements at the downstream intersections with Tyler and Petersburg



Roads. Although the committee did not appear to have major objections to the suggested adjustments to the intersection of US Route 9 and Sea Isle Blvd., they stated that improvements to this intersection have been stopped in the past due to various concerns regarding the intersection characteristics.

These comments and suggestions were considered and addressed in the final recommended improvement options for both intersection areas. Detailed meeting minutes are provided in **Appendix A**.

### **C. Final Shore Connection Committee Meeting**

This SCC meeting was held September 25, 2002 with the intention for this to be the last Shore Connection Meeting relating to the five intersections. At this meeting the project team presented the most current recommended improvement option for the NJ Route 47 corridor and the US Route 9 Corridor. The options presented at this time for these intersection areas in Dennis Township were the small improvement recommended at the intersection of US Route 9 and CR 550. The Shore Connection Committee supported this as a minor improvement to this area although they identified that this does not help the major summer congestion problem on US Route 9 at the Sea Isle Intersection area. There were no improvements recommended for the NJ Route 47 corridor in Dennis Township at this meeting due to the understanding of NJDOT that the recommendations were not amenable to Dennis Township Officials. The last Dennis Township Meeting was held in December 2002 to clarify Dennis Township's position on the recommended improvements. The meeting is discussed above and detailed meeting minutes are contained in **Appendix A**.

### **D. Meeting with Technical Advisory Committee (TAC) from SJTPO**

The TAC is made up of township, municipal and county engineers and planners in the South Jersey region. These transportation professionals advise the South Jersey Transportation Planning Organization (SJTPO) board on technical issues and provide expertise and opinions to them. On May 6 2003, MTA and NJDOT presented the most recent improvement options to the committee along with a history of the Shore Connection Study and a summary of existing conditions through all five-intersection areas. At this point, the recommended improvement options for both corridors in Dennis Township were slightly adjusted from the improvement options presented at the December 9, 2002 meeting. This was based on a combination of factors from expanding the study area for the NJ Route 47 corridor to addressing the historical traffic problems in each area. The last section of the report, "Conclusions and Recommendations" details the final recommended improvement option for each corridor studied in Dennis Township.

## V. CONCLUSIONS AND RECOMMENDATIONS

### A. Recommended Improvement Option (NJ Route 47 Corridor)

The improvement option recommended for further study along the NJ Route 47 Corridor, is the final option presented at the May 6, 2003 SJTPO TAC meeting. This option includes the construction of two auxiliary lanes – one northbound and one southbound at the intersection of NJ Route 347 and NJ Route 47. In addition this option includes southbound left turn lanes at NJ Route 47's intersections with Petersburg Road (CR 610) and Tyler Road (CR 611). This option will help lessen the long southbound delays along this corridor on summer Saturdays while also aiding northbound traffic continuing straight on NJ 347 on summer Sundays. To summarize, the following improvement option is recommended for advancement by the NJDOT Division Of Project Planning and Development:

- Add auxiliary NB & SB through lanes at intersection of NJ Route 47 and NJ Route 347
- Add left turn lanes on NJ Route 47 at Tyler and Petersburg Roads

**Figure 8** represents the final recommended improvement option for the NJ Route 47 Corridor. Preliminary cost estimate for this improvement option is approximately \$3.3 million. No right of way costs were assumed in this estimate and a Rural Utilities estimate was used for this area.

The improvements made within this project area along NJ Route 47 in Dennis Township would provide congestion relief by improving operations along these three intersections. Furthermore, this corridor appears to operate independently of any other of the four identified Shore Connection Intersections (listed on page 1 of this report) since the intersection of NJ Route 47 and NJ Route 347 is 11 miles south of the intersection of these two roadways in Maurice River Township. Furthermore, the next signal on NJ 47 south of Petersburg Road (CR 610) is at CR 657, about 1.6 miles south. It can therefore be determined that the recommended improvements for this corridor have independent utility, i.e. these improvements can be implemented regardless of any other improvements at the other Shore Connection intersections.

#### Recommendations for Pedestrian and Bicycle Enhancements

1. Provide encouragement and assistance to Dennis Township to plan for a sidewalk network to be implemented through any future private development in the Site Plan and Major Subdivision Approval process.
2. Consider providing bicycle detector loop and detector pavement marking for bicycle-actuated traffic signal.
3. Consider pedestrian-activation for the traffic signal, crosswalk striping, and rest/sidewalk islands as appropriate within the intersections to emphasize pedestrian and bicycle functions at the intersections (particularly Petersburg Road).

4. Integrate widened paved shoulders with proposed improvements to utilize the shoulders for the walking and bicycling public. Shoulder widths can vary from 4' to 6' in response to existing obstacles or pavement reflectors, rumble strips and detailed improvements contemplated for the Intersection.
5. Introduce "Share the Road" and "Pedestrian Area" signage and destination signage for local villages, campgrounds, marinas, ecotourism sites, the Shores Lines Bikeway and parks and preserves in the area.

#### **B. Recommended Improvement Option (US Route 9 Corridor)**

The improvement recommendation for further study along the US Route 9 corridor include adding an extended right turn lane eastbound on CR 550 to the intersection with US Route 9. The intersection of US Route 9 and CR 550 is included in a land development plan that is currently proposed. Coordination of this project and the proposed development would have to continue to avoid duplicate efforts. In addition, the project team is proposing some minor re-striping at the intersection of US Route 9 and Sea Isle Blvd that would stay within the existing right-of-way. This will provide traffic congestion relief to the beginning and ends of each traffic peak, however does not significantly diminish congestion and delay during the summer peak periods. The project team considered Dennis Township officials' concerns regarding the affects construction would bring to the commercial area as a result of any more significant improvements to the area. To summarize, the following option will be recommended for advancement to the NJDOT Bureau of Scope Development:

- Add an additional WB right turn lane on Sea Isle Blvd. from the off-ramp to the Garden State Parkway to the signal at US Route 9
- Extend the NB right turn lane on US Route 9 and improve delineation along this approach

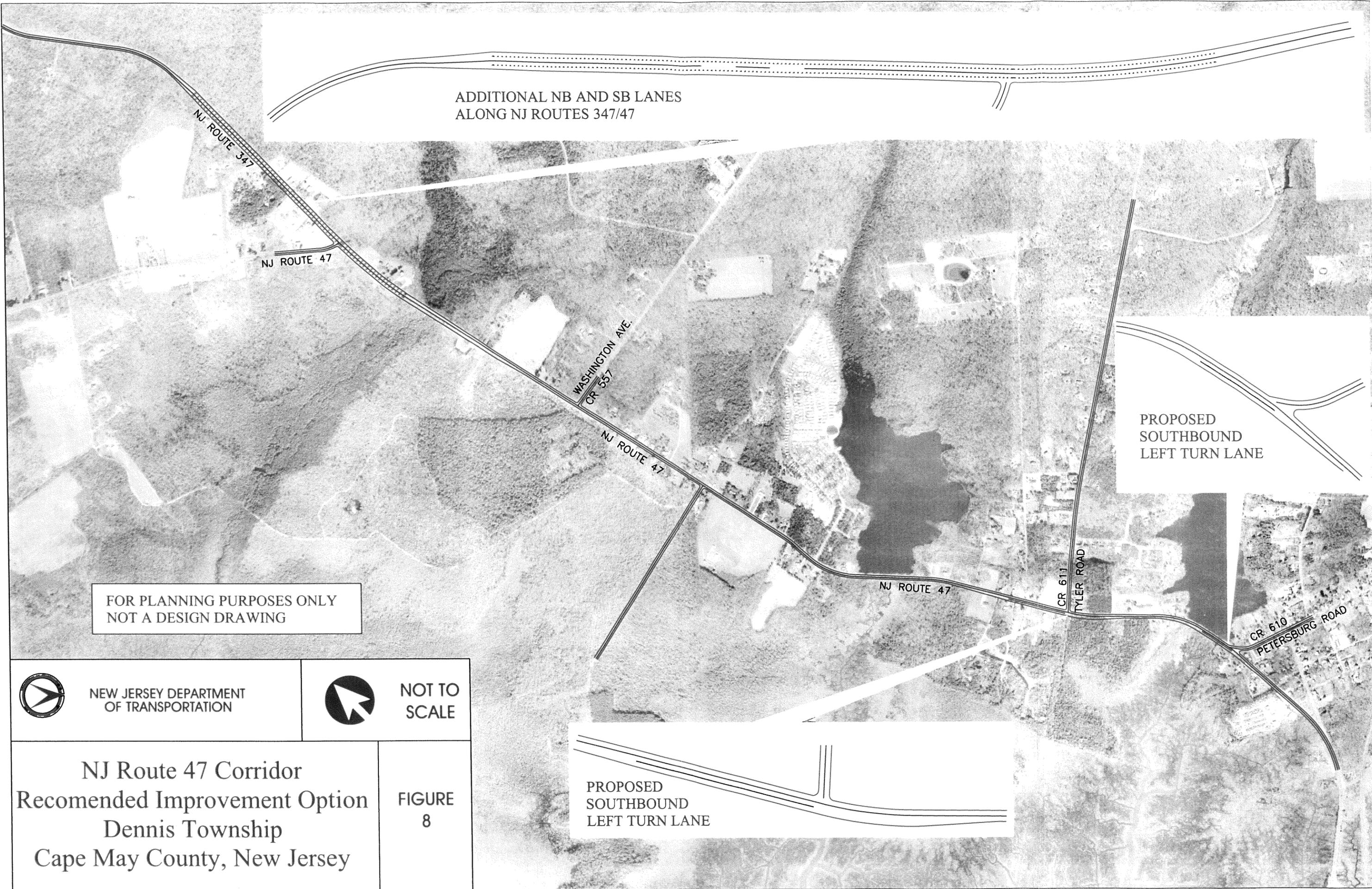
**Figure 9** depicts the final recommended improvement option for US Route 9 and Sea Isle Blvd. (CR 625). This improvement is estimated to have a preliminary construction cost of approximately \$520,000. This estimate does not include any right of way estimates and assumes a Rural Utilities Estimate.

The improvements made within this study area along US Route 9 in Dennis Township would provide some congestion relieve by improving operations between CR 550 and CR 625. This corridor appears to operate independently of any other of the four identified Shore Connection Intersections (listed on page 1 of this report) since CR 550 is approximately 3 miles south of the next signalized intersection along US Route 9 at CR 671. South of Sea Isle Blvd. (CR 625), the next signalized intersection is about 4 miles south at the intersection with CR 601 (Avalon Blvd.).



Recommendations for Pedestrian and Bicycle Enhancements

1. Provide encouragement and assistance to the municipality to plan for a sidewalk network to be implemented through any possible future private development in the Site Plan and Major Subdivision Approval process.
2. Provide bicycle detector loop and detector pavement marking for bicycle-actuated traffic signal and add pavement marking for bicycle turns and movements through the intersections of the proposed improvement program.
3. Provide pedestrian-activation for the traffic signal, crosswalk striping, and rest/sidewalk islands as appropriate within the intersections to emphasize pedestrian and bicycle functions at the intersections (particularly Sea Isle Boulevard).
4. Introduce "Share the Road" and "Pedestrian Area" signage and destination signage for local villages, campgrounds, marinas, ecotourism sites, the Shores Lines Bikeway and parks and preserves in the area.
5. As an alternative to widening paved shoulders for bicyclists, pursue an aggressive signage of an alternative bike route on less intensively used streets.



ADDITIONAL NB AND SB LANES  
ALONG NJ ROUTES 347/47

PROPOSED  
SOUTHBOUND  
LEFT TURN LANE

FOR PLANNING PURPOSES ONLY  
NOT A DESIGN DRAWING



NEW JERSEY DEPARTMENT  
OF TRANSPORTATION



NOT TO  
SCALE

NJ Route 47 Corridor  
Recommended Improvement Option  
Dennis Township  
Cape May County, New Jersey

FIGURE  
8

PROPOSED  
SOUTHBOUND  
LEFT TURN LANE



NEW JERSEY DEPARTMENT  
OF TRANSPORTATION



NOT TO  
SCALE

US Route 9 Corridor (Sea Isle Blvd.)  
Recommended Improvement Option  
Dennis Township  
Cape May County, New Jersey

FIGURE  
9

### US ROUTE 9 & SEA ISLE BLVD. PROPOSED CONCEPTUAL IMPROVEMENTS



- PROPOSED GEOMETRY
- EXISTING GEOMETRY
- EXISTING CURB

# **APPENDIX A**

## *Community Impact Assessment*



**McCormick, Taylor & Associates, Inc.**

Engineers and Planners

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Philadelphia, Pennsylvania 19103

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**Shore Connection Committee Meeting #1**

**DATE:** February 13, 2001

**TIME:** 7:00 PM

**PLACE:** Dennis Township Municipal Building, Cape May County

**ATTENDEES**

Wes Whalen  
Andrew Sarclette  
Fred Winkler  
Karl Gliessner  
Don Kirchoffer  
Chuck Horner  
Bill Pikolycky  
Harry Ciabutoni  
Jay Laubergeyer  
Jim Smith  
Kim Warker  
Ed Churley  
Jim Pickering  
Jack Gibson  
Berwyn Kirby  
Leslie Ficaglia  
John J. Petersack  
David Cox  
Tom Berryman  
Paul Archibald  
Rachel Kruger  
Steve Nieman  
Jeannette Quirus  
Tim Chelius

**REPRESENTING**

New Jersey Highway Association  
Maurice River Township  
Winchester and Western Railroad, S. Jersey Transit Committee  
Cumberland County Planning  
New Jersey Conservation Foundation  
Pinelands Commission  
Woodbine Township  
Woodbine Township  
TNC  
Cape May County  
City of Millville  
Maurice River Township  
Dennis Township  
New Jersey State Assembly  
Citizens United  
Pinelands Commission  
New Jersey Department Of Transportation (NJDOT)  
NJDOT  
NJDOT  
McCormick, Taylor and Assoc. (MTA)  
MTA  
MTA  
MTA  
South Jersey Transportation Planning Organization (SJTPO)

**DISCUSSION**

**1. Introductions**

Tim Chelius of SJTPO and Dave Cox of NJDOT made introductions and detailed the agenda for the meeting. Steve Nieman then took over the role of facilitator.



## **2. Intersection of NJ Route 49 with NJ Route 55 SB off-ramp**

Paul Archibald of McCormick Taylor discussed the existing Saturday conditions of this intersection and described improvement options while Rachel Kruger displayed the SimTraffic simulation for this area.

The first alternative was a signal timing change that would allow more time for traffic exiting the Route 55 off-ramp onto Eastbound Route 49. The next alternative was to add another left turn lane. Finally, the full cloverleaf option was presented to the committee.

### Committee Suggestions and Comments

- Transit-friendly improvements of intersections such as shelters and pullouts at bus stops for all potential alternatives should be considered
- Consideration should be given to making the turning lanes longer in addition to adding another left turn lane.
- Perhaps this situation should not be considered as an isolated condition? Instead it should be studied as a whole corridor.
- Firm counts for through traffic on Route 55 is very important to obtain as the general consensus was the weekend observed was not a "typical" beach weekend.
- There was discussion of installing a signal with the cloverleaf option at the entrance to Route 49 and only activating it in the summer, however after further discussion, it was agreed that this would go against driver expectations and is not a good alternative.
- The preferred alternative is the full cloverleaf system.
- The idea of a direct fly-over from SB Route 55 to EB Route 49 was suggested however this could be a very expensive alternative.
- It is a difficult move for the commuter traffic from Route 55 NB turning left onto Route 49.

## **3. Intersection of NJ Route 55 and NJ Route 47**

Paul Archibald described the existing conditions of this intersection as Rachel displayed the SimTraffic simulation for this area. According to MTA's field study, there was no significant queuing observed on either Saturday or Sunday.

Paul stated that it is possible that "normal" traffic problems were not observed at the intersections of Route 55 and Route 47 were not observed on the weekend in August. He also noted that the northbound traffic is somewhat metered from the upstream intersection.

A new signal had been recently installed in the Fall of 2000. Steve Nieman facilitated a conversation regarding the residents' reaction to the new traffic signal.

## Committee Suggestions and Comments

- The residents approve of the signal. It is now possible to exit onto Route 47 from driveways, businesses and side streets. The new signal creates gaps in traffic flow that were not there before. When the signal was first installed, it was a three-phase cycle and was too long. The current two-phase signal is much better.
- There was discussion about carrying two through lanes all the way south until Route 47 and Route 55 meet, however it was suggested that this would not be a good idea because traffic would have a hard time slowing down from 55 mph to 40 mph.
- This new signal has not operated in summer yet and it is still unknown as to the queues this signal will create. According to some committee members, there is frequently a 5-mile back up on Saturday in this area. Dave Cox later commented that from talking to locals lately, he thinks that this problem has disappeared or dissipated in the past couple of years.
- Transit-friendly improvements should be considered in this area.
- Two northbound lanes could be carried all the way to Route 55. It was further suggested that two southbound lanes be added along with additional stacking length. It was stated that this option could just move the location of the bottleneck.

#### **4. Intersection of US Route 9 and Sea Isle Blvd.**

Paul Archibald led the discussion of this intersection while Rachel Kruger displayed the SimTraffic simulations for the existing conditions and for the potential alternatives. The first alternative discussed was adding additional turn lanes on Northbound and Southbound Route 9 at Sea Isle Blvd. It also required channelizing the right turn lane at Woodbine/Ocean View Road and changing the westbound lane configuration of Sea Isle Blvd. to an exclusive right-turn lane.

The other alternative suggested was the Sea Isle Blvd. Extension. This would redirect traffic away from the "off-set intersections" of Sea Isle Blvd. and Woodbine/Ocean View Road.

## Committee Suggestions and Comments

- Some members of the committee were under the impression that the Sea Isle Extension was ruled out. Dave Cox responded that this has been discussed and agreed upon with the Cape May County engineer.
- When MTA did the last study on Sea Isle Blvd., the neighborhood preferred the existing configuration to any of the 9 alternatives presented with that report.
- Public transit might be "coming back". Route 9 is a major commercial corridor and would therefore have the potential to benefit from transit. Like the other discussed intersections, improvements to this area should also consider bicyclists and pedestrians.
- There was concern that this area would be studied only as in isolated project and some residents don't want to see the Sea Isle Extension completed without overall corridor improvement completed or studied beforehand.



- In past studies of the extension, there had been sufficient environmental concerns regarding the extension. Most likely those same problems would arise again.
- The neighborhood does not want to lose left turn access along Route 9 because it is the access to the business district.
- It was suggested that the paint on Northbound approach of Route 9 be adjusted 3-4 feet to extend the stacking length. He thinks we should still consider the dual left turn option if the Extension is delayed or denied.
- There is a Super Wawa replacing the existing Wawa at the intersection of Route 9 and Sea Isle Blvd.
- The Sea Isle Extension is not a short-term solution and a solution such as the Extension has to be studied longer. It was reiterated that it should not be studied in isolation.
- Some residents think that this year the congestion at the intersection will not be as bad as it has been in the past. This could be because people are choosing alternative routes and avoiding this problem area.

Dave Cox suggested that Dennis Township look at potential economic benefits of Sea Isle Extension.

#### **5. Overall Comments**

According to the Shore Connection Committee, without accurate counts it is hard to develop good improvements. It is also a common agreement that the 49/55 intersection was the critical spot of the Shore Connection Project.

Paul discussed how to quantify results with measures of effectiveness and then turned it over to Dave Cox to elaborate on the DOT process. This project deals with options that are worth investigating further.

Dave Cox said more detail engineering on these alternatives and potential impacts may be presented at the next meeting.

Meeting closed at approximately 10:20 PM. MTA got compliments on the graphics, visuals and software used.

Minutes prepared by:

Rachel T. Kruger  
Traffic Department

pc: Meeting Attendees  
Shore Connection Committee Members



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**Shore Connection Committee Meeting #2**

**DATE:** March 21, 2001

**TIME:** 7:00 PM

**PLACE:** Dennis Township Municipal Building, Cape May County

**ATTENDEES**

**REPRESENTING**

Chuck Horner	Pinelands Commission
Leslie M. Ficaglia	Pinelands Commission
Chris Jage	New Jersey Conservation Foundation
Andrew Sarcletti	Maurice River Township
Lance E. Weight	New Jersey Dept. of Trans.
Berwyn Kirby	Citizens United
Karl Gleissner	Cumberland County
James Smith	Cape May County Planning Board
Daniel Beyel	Cape May County
Dale Foster	Cape May County Engineer
Jim Pickering	Dennis Township
Doug Fisher	Cumberland County
Tim Chelius	South Jersey Transportation Planning Organization (SJTPO)
Rachel Kruger	McCormick Taylor and Assoc. (MTA)
Steve Nieman	MTA
Jeannette Qirus	MTA

**DISCUSSION**

**1. Introductions**

Steve Nieman opened the meeting with a recap of the last Shore Connection Committee Meeting and detailed the evening's agenda. Introductions for new people were made and the meeting began.

**2. Alternate Route Signing**

The meeting began with a discussion of Alternate Route Signing for the project area led by Dale Foster and Daniel Beyel of Cape May County. Alternate Route Signing would use color coded signs along the existing roadway networks. These would direct visitors to the beach areas. Confirmation detour route signs would be placed along the alternate route. The map Daniel and



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Dale showed the group included 5 alternative routes beginning north of the intersection of Route 55 with Route 47 and ending at various destination points along US Route 9 and the Garden State Parkway.

The colors yellow, orange and blue were avoided due to the connotation with construction (yellow and orange) and the Philadelphia "Blue" Route.

Lance Weight of NJDOT approved the concept but had some concerns for the increased traffic that would make left turns at intersections that are not designed for high left turns. He would like to arrange a meeting with the local police departments to discuss this. Lance also suggested a meeting with the NJDOT Traffic Division and Dale Foster to look closely at details.

Committee Suggestions and Comments

- Introduction of this new signing program to the public should include an educational outreach that could include radio station coverage and perhaps an incorporation of the already existing "Reach the Beach" projects. Realtors of each rental could hand out brochures explaining this system. The idea of animal representation for each route such as the "Red Fox" route or the "Brown Bear" route was also brainstormed.
- It was suggested that the Variable Message Signs be improved at the same time.
- NJDOT is working on making these signs more accurate and up-to-date.
- All present at the committee meeting support installation of the Alternate Route Signing and would like to see it installed for this summer. Township representatives will introduce the concept to the town communities.

**3. Northern intersection of NJ Route 347 with NJ Route 47 – Maurice River Township**

Jeannette Quirus of McCormick Taylor presented the alternative to the committee while Rachel Kruger displayed the SimTraffic simulation of the area. This alternative is referred to as a Florida T. It allows the northbound through traffic to travel through the signalized intersection without stopping. The left turns from Mauricetown Causeway Road would have their own acceleration lane and yield to the Route 347 through traffic.

Committee Suggestions and Comments

- There was widespread concern among committee members for the safety aspects of this design such as the driver discomfort with the left-hand merge. The committee agreed that this traffic would likely be speeding and it would be difficult to reduce speeds.
- Jeannette brought up the possibility of a NB/SB Concrete Barrier to reduce driver confusion.
- Some residents think that although this "Florida T" helps to reduce queuing delays, it also eliminates gaps in the system, thus making it difficult to travel to and from local destinations.



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- Another problem brought up was the Southbound queues observed over the summers on Thursday afternoons. Changes to the signal timing could directly affect this problem.

**4. Southern Intersection of NJ Route 347 and NJ Route 47 and the 47 Corridor**

This alternative was also presented using SimTraffic software. This was the introduction of "Florida T"s at the intersections of Route 47 with Petersburg Road and Tyler Road along with a right turn bay at the terminus of Route 347.

As was already determined from the discussion of the Northern intersection of 347 and 47, the "Florida T"s were not looked upon fondly. Tim Chelius requested that left turn bays be installed at Petersburg and Tyler to prevent that move from delaying all the southbound through traffic. There was committee support for this.

**5. Further Discussion**

Tim Chelius suggested the return to low-tech or "mid-term" solutions.

Alternative ways to improve the overall situation of the Shore Connection congestion problem were addressed. A feasible solution that is utilized in other shore communities in other states is to stagger the weekly rentals. This is when rentals are staggered between Friday to Friday, Saturday to Saturday and Sunday to Sunday.

This will be looked into in other shore communities.

The meeting adjourned at approximately 10 PM.

Minutes prepared by:

Rachel T. Kruger  
Traffic Department

pc: All Shore Connection Committee Members  
Meeting Attendees



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**Township of Dennis – Municipal Meeting**

**DATE:** August 13, 2001  
**TIME:** 6:30 PM  
**PLACE:** Dennis Township Municipal Meeting, Cape May County

<b>ATTENDEES</b>	<b>REPRESENTING</b>
Lance E. Weight	NJDOT
Jefferson Van Drew	Mayor
Georgeann Pettit	Deputy Mayor
Howard Halsey	Committee Member
Ruth Blessing	Committee Member
Jim Pettit	Committee Member
Albert Knoll	Administrator
Jeff April	Solicitor
Jim Pickering	Shore Connection Liaison
Dale Foster	County Engineer
Andrew Previti	Township Engineer
Jeannette Quirus	McCormick Taylor and Assoc. (MTA)
Rachel Kruger	MTA

**1. Introductions**

Mayor Van Drew opened the meeting with introductions of everyone in attendance. He then turned it to Lance Weight who explained the purpose of the meeting and the steps to follow. The purpose of the meeting was to understand the shore related traffic problems in the study areas, go through the options, and to leave knowing that there is township support for the concepts discussed. Lance then turned the meeting over to Jeannette Quirus of McCormick Taylor and Associates, to lead the discussion for improvements to the intersections in the Township of Dennis – US Route 9 and Sea Isle Blvd and the southern intersection of Route 47 and Route 347.

**2. US Route 9 - from Woodbine Ocean View Road (CR 550) to Sea Isle Blvd. (CR 625)**

Option 1 includes a right-turn lane on eastbound Woodbine/Ocean View Road onto southbound US Route 9. Dale Foster believes that the current plans already include right of way for a right turn lane at this location. Concerns for this option includes a general worry for the poor drainage on US Route 9 and the constraint of the utilities in that area. It was stated that the drainage has been a problem since the culverts were filled in by a private landowner.



Option 2, adding a center left turning lane on US Route 9 between Sea Isle Blvd. and Woodbine Ocean View Road, was the next option discussed. This would provide more adequate storage for peak hour left turning traffic. The center left turn lane would be bi-directional and could be useful in providing the storage room when needed. Numerous concerns were expressed about this option. They include:

- Concern for business access during peak summer traffic. Stacking could fill the whole center lane from Sea Isle Blvd. to Woodbine Ocean View Road with no room for local turning.
- Widening US Route 9 would probably require property takes which is rarely supported by area residents.
- Rear end and head-on accidents could increase due to the addition of a center left turn lane from Woodbine Road to Sea Isle Blvd.
- There was no approval for this option based on the above concerns, however Dennis Township Officials are interested in further studies to determine how well this option could operate.

Sea Isle Extension was briefly reviewed. This would provide a direct connection from Woodbine Ocean View Road to Sea Isle Blvd. It was agreed that if this was implemented, the whole Shore Connection area should be considered as a system. This would be a county project and would be separate from NJDOT. The option for the Sea Isle Extension was generally not well received and will not be presented at the upcoming public information session.

Option 3 would be to add a forward jug handle from southbound Route 9 to eastbound Sea Isle Blvd. A right hand jug handle would allow southbound Route 9 traffic wishing to travel east on Sea Isle Blvd. to become a through move at Sea Isle Blvd. This would eliminate left turns at the signal and help to reduce the queues during summer peak traffic. Dennis Township officials thought it best to disregard this option

General comments on this area of US Route 9 from Woodbine Ocean View Road to Sea Isle Blvd.:

- Traffic patterns are different this year due to the alternate-signing program implemented in the spring. Volumes have increased on Woodbine Ocean View Road and US Route 9.
- A traffic signal is desired at the off-ramp from the Garden State Parkway onto westbound Sea Isle Blvd. Sight distance is a problem here. Dale Foster will look into this after his office receives a written request.
- General consensus is that drainage is poor on US Route 9 between Sea Isle Blvd and Woodbine Ocean View Road. There are not adequate culverts to offset the pooling of water that occurs during rainstorms.



### **3. NJ Route 47 from NJ Route 347 to Petersburg Road**

The option presented for this area includes an eastbound acceleration lane from southbound Route 47 at the Route 47/347 convergence, and some Florida T's to assist the southbound through traffic further down the corridor. A Florida T allows through traffic to travel without the impedance of stopping at a traffic signal. It only requires vehicles making left hand turns to stop. The committee did not like the idea of allowing the traffic to travel at higher speeds at this intersection and believes that low speeds keep accidents to a minimum. There does not seem to be a desirable option to fix this area short term, however the committee would like further study completed and be presented to them at a later date.

As an immediate action step, Jim Pickering raised a practical idea after the meeting. This would be to consider hiring police to control the traffic signals on Route 47 at Tyler Road and Petersburg Road during the peak summer periods (approximately Friday from 4-9 PM and Saturday from 12-6 PM). He suggested that perhaps the price to hire police would be extremely more affordable than a capital improvement program. He believes this could be more feasible than widening Route 47 due to the number of constraints that presently exist in the areas of Tyler Road and Petersburg Road. If the road were widened at any or both of these intersections, environmental mitigation would be necessary along with bridge reconstruction at Petersburg Road.

### **4. Next Steps**

The next step in this process will be a public information center tentatively scheduled for Fall 2001 at the Dennis Township Building. NJ DOT and the consultants, McCormick Taylor and Associates, will present information via boards and informal question/answer sessions. The meeting will include an introduction to the Shore Connection Project, an explanation of the process and an informal presentation of the concepts for both US Route 9 and for the Route 47 Corridor.

This concludes these minutes. Any revisions or additions to these meeting minutes should be sent to me directly within seven (7) working days of their receipt. At that time, they will become part of the official minutes of the meeting.

Minutes prepared by:

Rachel T. Kruger  
Traffic Department

pc: Meeting Attendees  
Paul Archibald, MTA  
Tim Chelius, SJTPO  
Mike Russo, NJDOT Bureau of Project Scope Development  
Jim Stevenson, NJDOT Community Involvement  
Kurt AuPschneider, NJDOT Traffic Operations

**Summary of Progress on the Shore Connection  
Intersection Study**

**“FIVE INTERSECTIONS,  
CUMBERLAND AND CAPE MAY COUNTIES, NJ”**

**Prepared for:**

**Shore Connection Committee (SCC) and  
South Jersey Transportation Planning Organization (SJTPO)**

**Prepared by:**

**New Jersey Department of Transportation and  
McCormick, Taylor and Associates, Inc.**

**September 25, 2002**

**Revised: October 22, 2002**

## **Summary of Progress on the Shore Connection Intersection Study Cumberland and Cape May Counties, NJ**

### **OVERVIEW**

This Summary of Progress will serve as an update to the Shore Connection Committee and South Jersey Transportation Planning Organization. This report will serve as brief summary and chronology of data collection, public involvement, recommended improvement options and conclusions that have been reached thus far in the study process.

### **INTRODUCTION**

The initial Shore Connection study began in the summer of 1997 and concluded in November of 1998 with the Shore Connection Committee Report, NJ Routes 55/47 Corridor Transportation Study. This study resulted in an improvement program consisting of recommendations to manage the summer recreational traffic, advocate the Atlantic City Expressway and Garden State Parkway corridors, and investigate various levels of Capital Improvement Programs.

The Capital Improvement Program Studies were categorized as Near-Term, Mid-Term and Long-Term. There were five intersections identified as problem areas for Near-Term Capital Improvement Studies that could be advanced immediately by the New Jersey Department of Transportation (NJDOT). They include:

- US 9/CR 550/Sea Isle Blvd. at GSP (Interchange 17) in Dennis Township (including US 9 and CR 550)
- NJ Routes 347/47 in Dennis Township
- NJ Routes 347/47 in Port Elizabeth (Maurice River Township)
- NJ Routes 55/47 in Maurice River Township
- NJ Routes 55/49 in Millville

The consultant for this study, McCormick, Taylor and Associates (MTA), was directed by NJDOT in 2000 to begin the Concept Development Study of the Five Intersections. The concept development phase is the planning part of the NJDOT's five-tiered process consisting of Concept Development, Feasibility Assessment, Final Scope Development, Design Development, and Construction.

### **SUMMARY OF THE STUDY'S TRAFFIC DATA COLLECTION PROGRAMS**

Site visits to the study intersections began in August 2000 when engineers from MTA observed the characteristics of each intersection listed above. Although complete traffic counts were not taken at this time, other measures of effectiveness (MOE's) were observed such as queue length, time of day that the queue peaked, travel times, signal timings and general conditions of the area. In certain cases, such as the Route 347/47 intersection in Dennisville, the area of observation was extended due to obvious causes

## **Summary of Progress on the Shore Connection Intersection Study Cumberland and Cape May Counties, NJ**

of congestion (such as the southbound congestion on the Route 47 corridor at Dennisville and extending past Route 83).

In the August of 2001, a complete traffic count program at all study intersections and adjacent intersections was conducted. This included both Automatic Traffic Recorder (ATR) data and turning movement counts. The counts were used to conduct the technical traffic analysis studies.

Most recently, in the summer of 2002, an additional traffic data collection program was implemented to support this project along with other efforts, which included ATR and turning movement counts in all study areas with the exception of Dennis Township. This served to obtain information regarding the most up to date traffic data that was used for additional traffic analysis.

### **SUMMARY OF CAPACITY ANALYSIS – EXISTING CONDITIONS**

The results for the studies and observations showed congestion as noted:

#### **1. NJ Route 49 and NJ Route 55 Interchange, City of Millville:**

Millville police indicated that this area sees some of its worst congestion on Friday evenings and early afternoons on Saturdays. Observations during the summer of 2000 indicated that traffic periodically builds up to a ½ mile on the southbound off-ramp, spilling over onto the NJ Route 55 expressway and causing potential safety problems. It was also observed that the time for a vehicle to get through the signal at the southbound off-ramp exceeds 4 minutes; which indicates a failing Level of Service (LOS). Analysis based on 2002 traffic data yielded the southbound approach delay on the ramp is 143.2 seconds per vehicle; a LOS of F. This means that delays are extremely long, often due to the arrival rate of vehicles exceeding the capacity of the lanes. A LOS F also indicates that most vehicles will wait through several signal cycles to travel through the intersection.

Intersection capacity analysis, based on 2001 data, indicated that during a typical Summer Saturday peak hour, the intersection operates with 59.2 seconds of average delay per vehicle at a LOS E. This means that most vehicles have to wait at least one cycle length or more to travel through the intersection. In 2002 the intersection average delays increased to 101.4 seconds per vehicle, yielding a LOS of F.

#### **2. NJ Routes 47 and 55 Intersection, Maurice River Township:**

Slightly congested conditions were observed during the summer of 2000, in the southbound direction on a typical summer Saturday. Congestion is due to the termination of the Route 55 expressway onto the local arterial, Route 47. Using traffic data from August 2002, capacity results indicated that the southbound approach of NJ Route 55 was a LOS A (7.4 seconds of delay) on Saturday which indicates that many vehicles did not have to stop at all at the signal. On Sunday, capacity analysis indicated that the northbound approach operates at a LOS B with an average delay of 10.5

## **Summary of Progress on the Shore Connection Intersection Study Cumberland and Cape May Counties, NJ**

seconds per vehicle. A LOS B indicates that more vehicles will have to stop for the signal than with LOS A.

Intersection capacity analysis, based on the previous summer conditions of 2001, indicates that during the busiest (peak) hour of a summer Saturday and the busiest hour of a summer Sunday, this intersection operates at a LOS C (22.7 seconds average delay per vehicle) and B(15.6 average delay per vehicle) respectively. The typical traffic conditions that represent a LOS C indicates that some cycle failures (vehicles do not finish progression through intersection) may appear. Traffic volumes and conditions observed in 2002, indicate an overall intersection LOS of A (9.5 seconds of delay) on Saturday.

### **3. NJ Route 47, CR 347 and CR 670 Intersection, Maurice River Township:**

At this location, southbound congestion is typically seen Friday evenings and Saturday afternoons in the summer while the congestion problem shifts to the northbound direction on typical summer Sundays. This type of shore bound data collection is variable year-by-year and week-by-week based on different traffic patterns and weather conditions. Therefore, although conditions were only observed by the team to be failing in 2000, it could be expected that this intersection will continue to fail often during the summer months as was related to the team by local residents and officials.

Conditions were observed to be the worst in August 24, 2000. On that Saturday, the southbound time in queue was observed to be up to 90 seconds and vehicles heading northbound on Sunday sometimes exceeded 8 minutes to travel from the end of queue to the intersection, indicating a failing LOS F. It was observed that northbound queues on Sunday were over 2 miles (also indicating a failing LOS) and southbound queues exceeded 1000 feet.

Data collection in 2001 took place during an overcast day and therefore intersection capacity data yielded an intersection LOS C for Saturday and LOS D for Sunday. Intersection capacity analysis, based on data collected in 2002, indicates that both intersections are operating at a LOS E on a summer Saturday. On Sunday the intersection of CR 670 and CR 347 operates at LOS C (31.2 seconds of delay per vehicle) with the northbound approach also operating at LOS C (30.7 seconds of delay per vehicle), while CR 670 and NJ 47 operates at LOS B (12.6 seconds of delay per vehicle).

The southbound congestion for Saturday 2002 was observed to be significantly less than in past years with an average approach delay of 29.6 seconds of delay per vehicle (LOS C). However, residents have reported that these intersections consistently experience "congested conditions" similar to what was seen in 2000.

## **Summary of Progress on the Shore Connection Intersection Study Cumberland and Cape May Counties, NJ**

### **4. NJ Route 47 and CR 347, Dennis Township**

Observations for this intersection in Dennis Township have consistently indicated back ups and congestion on both southbound approaches on Summer Saturdays. Field observation and travel time studies in 2000 indicate that both Route 347 and Route 47 southbound approaches fail with up to five minutes of delay per vehicle.

On Saturday, August 17, 2002, the southbound Route 347 approach operates at LOS F with an average delay of 82.7 seconds of delay per vehicle and the Route 47 southbound approach failed at 198.4 seconds/vehicle. Field observations showed that vehicles often waited for multiple signal cycle lengths before clearing the intersection. On Sunday, the northbound approach problem is significantly diminished with a LOS C (22.3 average delay per vehicle) as most traffic was seen flowing smoothly through the northbound approach of this intersection. Although the volumes are not lower for this approach, the peak periods are more spread out than on a Saturday morning. ATR data has indicated that there are two Sunday peaks, one late morning to early afternoon, and one in the evening.

### **PROPOSED IMPROVEMENT OPTIONS AND PUBLIC INVOLVEMENT FEEDBACK**

The Shore Connection Committee (SCC) met with NJDOT and MTA in February and March of 2001 where the preliminary existing conditions and project needs were presented using display boards. The preliminary traffic analysis was also presented via computer display. Discussions and brainstorming took place at both meetings regarding the general nature of each intersection, along with new ideas for improvements. Opinions of the SCC varied greatly from long-term improvements (complete Route 55) to short-term drainage and signing concerns (note: the signing discussion focused on alternate route signing, intended to more evenly distribute vehicles headed to the Shore on the local roadway network, which was implemented by NJDOT and Cape May County just prior to the summer of 2001). In the summer of 2001, the public involvement programs that concentrated on each separate municipality began. In August the team met with Dennis Township and City of Millville officials and in September the team met with Maurice River Township officials. These meetings were designed to gather input on which improvement concepts would and would not be supported by each municipality.

### **NJ Route 49 and NJ Route 55 Interchange - City of Millville, Cumberland County:**

In October 2001, the first Public Information Center (PIC) for the City of Millville was held at the senior high school. In an open-house format, NJDOT and MTA presented the two separate improvement options for the intersection of the Route 55 southbound off-ramp with Route 49. These improvement options were a cloverleaf ramp addition and an additional left turning lane on the NJ Route 55 off-ramp. The signal at this intersection had been evaluated and modified during the summer of 2001 by the NJDOT to facilitate flow from the Route 55 off-ramp.. Approximately 30 residents

## **Summary of Progress on the Shore Connection Intersection Study Cumberland and Cape May Counties, NJ**

circulated the room where representatives from NJDOT and MTA explained the NJDOT project process along with the alternatives.

The residents' concerns and questions, such as the length of construction and disruption to their neighborhoods, were also addressed. The two alternatives discussed at the meeting were:

1. Adding an additional left turn lane on the off-ramp and running that lane along Route 49 until the vicinity of Court or Crescent Blvd
2. Adding an additional ramp in the southwest corner of the 49/55 area, creating a full "cloverleaf" interchange

Capacity analysis indicates that adding an additional left turn lane on the southbound off-ramp and extending an additional lane along Route 49 until Court Blvd. will significantly reduce delay and the associated queuing on the off-ramp. This improvement is expected to improve the ramp approach LOS from a LOS F to a LOS C on a typical summer Saturday. In addition, based on capacity analysis that is consistent with summer field observations, the average approach delay is expected to be reduced by approximately 85% from 143 seconds per vehicle to 22 seconds/vehicle.

The cloverleaf ramp option would have significant right-of-way impacts (including residential acquisitions) and higher construction costs. However, capacity analysis indicates that this option would essentially remove the delay associated with the signal, since the current signal would no longer be necessary.

Residents living within the potential cloverleaf area did not approve of this alternative because it could potentially take their homes. Residents living along Route 49 did not like the idea of widening the road in front of their houses because of safety concerns. It was decided by the project team to recommend the widening of NJ Route 49 over the cloverleaf option due to the high impacts associated with the cloverleaf. However, due to the general resident dissent over the interchange concepts, the City of Millville did not pass a resolution to approve either option. (All resident concerns and completed comment forms will be included in the final report.)

The final recommended improvement for the City of Millville is:

- Extend the Route 55 off-ramp so queuing does not back up onto the expressway
- Add an additional left turn lane at the signal
- Extend the extra lane along Route 49 until the vicinity of Court Blvd.
- Add a new traffic signal at the intersection of Route 49 and Court Blvd.
- Incorporate new, uniform sidewalks along the newly widened Route 49

The Shore Connection Committee concurred with this improvement.

**Summary of Progress on the Shore Connection Intersection Study  
Cumberland and Cape May Counties, NJ**

NJ Route 55 Southbound Off-ramp at NJ Route 49 - 2002 Traffic Data

"Existing Conditions" Delay	Anticipated Delay	Improvement	LOS Improvement
143 sec/veh	22 sec/veh	85%	F to C

\* The signal was evaluated and modified during the summer of 2001 by NJDOT to facilitate more flow from the Route 55 off-ramp.

**NJ Route 47, CR 347 and CR 670 - Maurice River Township, Cumberland County**

The Maurice River Township (MRT) Public Information Center (PIC) was held at the local Maurice River Township elementary school in November 2001. At this meeting, the team presented possible improvement options for two intersections in the township: the "triangle" of Route 47, Route 347, and Mauricetown Road (CR 670); and the termination of Route 55 at Route 47 in Port Elizabeth.

Observations and data collection efforts were completed during the summers of 2000, 2001 and 2002. Although travel time studies indicated that backups in the summer of 2000 were up to 2 miles and delay up to 8 minutes/vehicle on the northbound approach of Route 347 on Sunday, there was not a complete turning movement count taken that year. Because of this, a complete analysis could not be completed for 2000.

For the intersection of Route 47, 347, and 670, the option presented was a "Florida T" configuration that would allow for continuous-green northbound travel lane on Route 347 and a signalized left hand turn lane onto CR 670. The residents who attended the PIC expressed strong opposition to this option due to the expected continuous flow of northbound traffic along with the anticipated higher travel speeds that cause difficult access/egress issues located further north on Route 47 in Port Elizabeth near the area of the firehall, post office and elementary school. Not formally presented, but discussed in passing at the PIC, was an "Additional Lanes Option" at this location. This improvement option was further developed following the PIC.

This original "Additional Lanes Option", which allowed for two limited length additional lanes in both directions of NJ Route 347, was analyzed for the April 2002 meeting with Maurice River Township. Capacity results based on August 2002 traffic, indicate that the southbound (shore bound) delay on Saturday would be reduced by approximately 59% (from 29.5 seconds of delay/vehicle for the existing conditions to 12.2 seconds of delay/vehicle after the improvement option). Sunday's results indicated that the northbound approach delay would decrease by approximately 70% (from 30.0 seconds of delay/vehicle for the existing conditions to 9.1 seconds of delay/vehicle with the northbound additional lane).

**Summary of Progress on the Shore Connection Intersection Study  
Cumberland and Cape May Counties, NJ**

This "Additional Lane Option" was changed due to resident dissent and was redesigned to allow for an additional lane in the southbound direction of Route 347. Based on results of August 2002 traffic volumes, with signal adjustments and a southbound additional lane ONLY, the southbound delay would reduce approximately 56% from the existing conditions, improving the southbound approach LOS from a C (29.5 seconds of delay/vehicle) to a B (12.2 seconds of delay/vehicle).

This recommended option allows for an extra southbound through lane on NJ Route 347 at the intersection with CR 670, to improve southbound capacity at the intersection. This alternative would improve the southbound CR 347 Level of Service on summer Fridays and Saturdays. MRT officials did not look at these options favorably because they anticipated some impact on their community. Additionally, they did not feel that this alternative would eliminate the traffic through their community. Based on the capacity analysis indicating an improvement of traffic conditions in this area and minimal lack of impact on the community, it is recommended that NJDOT advance and further study the additional southbound lane option for the CR 347 and CR 670 intersection. The SCC concurred in the advancement of this effort. The SCC concurred in the advancement of this effort.

Route 347 Northbound at the intersection of Route 347 and 670 – 2002 Traffic Data  
(Existing Conditions vs. Additional NB and SB Lane Option)

"Existing Conditions" Delay	Anticipated Delay	Improvement	LOS Improvement
30 sec/veh	9 sec/veh	70%	C to A

Route 347 Southbound at the intersection of Route 347 and 670 - 2002 Traffic Data  
(Existing Conditions vs. Additional SB Lane Only Option)

"Existing Conditions" Delay	Anticipated Delay	Improvement	LOS Improvement
30 sec/veh	12 sec/veh	60%	C to B

[Additionally, NJDOT is presently (10/21/02) investigating the addition of a northbound lane at the signal of Routes 347 and 670 but only allowing the signal to operate at full capacity on Sunday afternoons and evenings only. However, only a reduced flow would be allowed to flow through during the rest of the week. This would help to ease the concerns of Maurice River Township residents regarding the impact that increased traffic flow would have upon the town.]

**Summary of Progress on the Shore Connection Intersection Study  
Cumberland and Cape May Counties, NJ**

**NJ Routes 55 and 47 - Maurice River Township, Cumberland County**

The improvement options that were discussed and/or analyzed throughout this project process include a Florida T Option and the replacement of the jug-handle with a protected left turn lane. Initially there was only a small amount of opposition regarding the possible installation of a Florida T. This was due to the lack of access issues north of the intersection. However, a resolution was not passed by Maurice River Township on this alternative. As a direct response to this, a new preliminary alternative was proposed. This was the elimination of the jug-handle with the replacement of a left turn lane. No capacity analysis was done on this alternative due to the reaction of officials and residents.

While the Florida T was initially presented for this intersection at the PIC, based on recent 2002 observations and subsequent analysis that indicated an intersection operation of LOS A for both Saturday and Sunday, current conditions do not appear to be problematic. Therefore it is expected that any minor improvements in this area would be of marginal value. No changes or improvement options are recommended to the NJ Route 47 and NJ Route 55 Intersection.

**US Route 9 and CR 550 - Dennis Township, Cape May County**

It was suggested that a turn lane be added to CR 550 at the intersection with Route 9. This will assist to some minimal degree with both left and right turns from CR 550 and Route 9. The SCC concurred.

**NJ Route 47 and CR 347, and US Route 9 US Route 9 and Sea Isle Blvd.,  
Dennis Township, Cape May County**

The study team will be meeting with Dennis Township on Monday, December 9, 2002 to explore improvements at the above intersections and to gain their perspective regarding the improvement options discussed in the past. More recommendations may result from that meeting.

## Summary of Progress on the Shore Connection Intersection Study Cumberland and Cape May Counties, NJ

### Summary of Meetings and Public Involvement Centers:

The following is a list of the public involvement efforts with this project:

<b>February 13, 2001</b>	Shore Connection Committee Meeting
<b>March 21, 2001</b>	Shore Connection Committee Meeting
<b>August 6, 2001</b>	Dennis Township officials meeting
<b>August 13, 2001</b>	City of Millville officials meeting
<b>September 19, 2001</b>	Maurice River Township officials meeting
<b>October 19, 2001</b>	City of Millville Public Information Center
<b>November 17, 2001</b>	Maurice River Township Public Information Center
<b>April 18, 2002</b>	follow up meeting with MRT officials and residents
<b>May 6, 2002</b>	follow up meeting with City of Millville officials and residents
<b>September 25, 2002</b>	Shore Connection Committee Meeting

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### **10 Total Meetings**

#### Study Schedule

A Shore Connection Committee meeting was held on September 25. The results of that meeting will be incorporated into the study reports when they are finalized. After the conclusion of meetings with Dennis Township Officials the study team will update the SCC.

Thank you for your assistance in this process,

The Study Team



**McCormick, Taylor & Associates, Inc.**

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Shore Connection Committee Meeting Notes, September 25, 2002

“Presentation on the SCC Five Intersection Study by NJDOT”

The Shore Connection Committee meeting held on September 25, 2002 began at approximately 7:15 PM. Tim Chelius, Executive Director of SJTPO, opened the meeting by reviewing the Shore Connection Committee Report dated November 1998. This report discussed the “Short-Term”, “Mid-Term” and “Long-Term” capital improvements the Shore Connection Committee identified as problems in that report. The study of these five intersections was identified as “short-term” capital improvements to be studied.

Lance Weight, NJDOT Project Manager for the current Shore Connection Five Intersection Study, explained the status of the current study and went over the NJDOT project delivery process. Mr. Weight explained he is expecting to present the results of this study to NJDOT Management towards the end of November. NJDOT Management will then decide whether or not to go forward with further study of these improvements.

The meeting was then handed over to Jeannette J. Quirus, P.E., PTOE and Rachel Kruger, the engineering consultants from McCormick Taylor and Associates, Inc (MTA) who provided the study process and recommendations. Mrs. Quirus explained the data collection efforts throughout the past three summers. The meeting was then turned over to Ms. Kruger who proceeded to discuss the most recent conditions observed during the summer of 2002, the volume trends seen over the years and the public and municipal official feedback we have received. The three areas of recommended improvement options are the interchange of NJ Route 55/NJ Route 49 in the City of Millville, NJ Route 47/CR 347 /CR 670 in Maurice River Township, and US Route 9/CR 550 in Dennis Township.

**Improvements being recommended are as follows:**

1. NJ Route 55 and 49:

- Additional left turn lane on the Route 55 southbound off-ramp to Route 49 eastbound.
- Extra storage space on the off-ramp to help eliminate the safety problem of traffic overflowing onto NJ Route 55.
- An additional eastbound lane along Route 49 from the signal at the southbound Route 55 off-ramp to the area of Court Blvd.

- Sidewalks would be recommended along NJ Route 49 along length of improvement option.
  - Traffic Signal at Court Blvd. to aid residents to break into traffic and to help meter Route 49 traffic.
  - Reduction of speed limit along this stretch of Route 49 to 35 mph.
2. CR 347 and CR 670
- Create an additional southbound lane on CR 347 beginning before the signal at the CR 347/670 intersection and ending after the signal. This would be designed to operate safely with the correct taper lengths.
  - Delineate right turn lane from CR 670 onto southbound CR 347.
  - Improve signing for this area to clarify movements for northbound travelers on NJ Route 47 to direct them to make a right onto CR 670 and then a left to stay on NJ 47.
3. US Route 9 and CR 550
- Add an exclusive right turn lane on CR 550 for the right turning traffic onto US Route 9.

## Discussions and Consensus

### 1. NJ Route 55/NJ Route 49

Consensus was sought from the Shore Connection Committee for each recommended improvement option. John Knoop, the City of Millville Engineer, reminded the Committee about the residents' concerns regarding the possibility of creating a raceway with the addition of a second through lane that would taper to one lane. However, he said the City would support installing a light at the intersection of NJ Route 49 and Court Blvd., and the addition of sidewalk improvements along NJ Route 49. (He also wanted to state that although he realizes the off-ramp to the industrial park near Orange Street is a separate project, he proposed that this should be endorsed by NJDOT and should be included with Shore Connection studies). **Consensus from the Shore Connection Committee regarding the NJ Routes 55 and 49 improvement stated above was to support this improvement option for further study.**

### 2. NJ Route 47/CR 347/CR 670

The next intersection improvement that was discussed was the intersection of CR 347 and CR 670. **The Shore Connection Committee endorses the improvement (southbound Route 347 addition of a lane at the intersection) for further study as an aid to alleviate the southbound congestion problem, identifying that this improvement option does not address the significant northbound congestion problem.** There was no recommendation for a northbound additional lane due to the access concerns of the residents of Maurice River Township. Adding an additional northbound lane would



make it more difficult for residents living north of this intersection in Port Elizabeth to exit their private properties, along with the public school, post office and fire hall.

3. US Route 9/CR 550(Woodbine/Ocean View Road)

The small improvement recommended at the intersection of US Route 9 and CR 550 was supported as a minor improvement to this area. **The Shore Connection Committee endorses the addition of a right turn lane on CR 550, however, identifies that this does not help the major summer congestion problem on US Route 9 at the Sea Isle Intersection area.** Jim Pickering, a representative from Dennis Township, stated that he believes there are no real solutions to this problem due to the number of businesses along this corridor. He stated that residents rarely complain about this area and generally seem to accept the congested conditions.

**Other Intersections Not Recommended for Improvements**

1. NJ Route 55/NJ Route 47

No improvements are recommended for this intersection in Maurice River Township. This is due to the observations in 2001 and 2002 that indicate that this intersection appears to operate well since the addition of a traffic signal in 2001.

2. NJ Route 47 and CR 347

At this time, no improvements are recommended for this intersection in Dennis Township. This is due to the understanding of NJDOT that the recommendations were not amenable to Dennis Township Officials. Jim Pickering stated that he believed this understanding might misrepresent the Township's wishes. Mr. Weight suggested that the NJDOT/Consultant team should consider meeting again with the Dennis Township Officials in order to gain a clear understanding of the thoughts on the need for improvements at this intersection. Mr. Pickering said he would bring this matter to the Dennis Township Officials. Mr. Weight emphasized a meeting will be setup by the NJDOT/Consultant team with Dennis Township Officials so that the project team can gain a clearer understanding of the Official's thoughts on this intersection. This meeting is set to occur December 9<sup>th</sup>, during Dennis Township's Committee work session. NJDOT will report to the SCC Committee the results of these discussions after the meeting occurs.

Members of the SCC mentioned their dismay that there are no southbound improvements suggested for this intersection (and the nearby two county roads). This sentiment is based on the occurrence of heavy congestion in the southbound direction of Route 47 that's often observed during the summer months.



3. US Route 9 and Sea Isle Boulevard

No recommendations are being made at this time. The study team will be meeting with Dennis Township again to gain their insight on possible improvements in the area of US 9 and Sea Isle Blvd.

Next Steps

Mr. Weight explained that he is hoping to make a presentation of the intersection recommendations discussed (55/49, 47/347/670, and 9/550) to NJDOT management at the end of November.

Other Comments/Recommendations Made at the Meeting:

1. Addition of bus pull-offs at or near any intersection to accommodate possible increased use of public transit systems.
2. Build NJ Route 55 expressway extension as an elevated highway so it would only disturb the environment one time (with the belief that the environment would recover after construction).
3. Follow up on the idea of staggering shore rentals in order to spread out the shore traffic throughout the weekend. Tim mentioned this is likely a Chamber of Commerce issue.

The meeting ended at approximately 9PM.

**PLEASE NOTE:**

**SCC Members indicated that they might want to send some written comments on the intersections discussed. It would be very helpful if these comments could be made by the end of October instead of November (as previously mentioned). Thank you.**

This concludes this meeting summary. Any revisions or additions to this summary should be sent to me directly within seven (7) working days of their receipt. At that time, they will become part of the official record of the meeting.

Summary prepared by:

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2001 Market Street, 10<sup>th</sup> Floor  
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pc: Jeannette J. Quirus, MTA  
Lance Weight, NJDOT

Tim Chelius, SJTPO  
Shore Connection Committee



**McCormick, Taylor & Associates, Inc.**

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**Dennis Township Working Meeting Notes**  
**December 9, 2002**

**NJ Route 47 Corridor from Route 347 to County Route 83**  
**US Route 9 Corridor from Sea Isle Blvd to Woodbine/Oceanview Road (CR 550)**

The working session of Dennis Township's Committee meeting began at approximately 6:45PM. Lance Weight, NJDOT Project Manager, opened the meeting by reviewing the Shore Connection Committee Report dated November 1998. This report discussed the "Short-Term", "Mid-Term" and "Long-Term" capital improvements the Shore Connection Committee identified as problems in that report.

Lance Weight, NJDOT Project Manager for the current Shore Connection Five Intersection Study, explained the status of the current study and went over the NJDOT project delivery process. Mr. Weight explained that it was brought to his attention at the September 25<sup>th</sup> Shore Connection Meeting that Dennis Township felt it was being misrepresented by not recommending any improvements at the above stated intersections. Because of this, the DOT felt it best to meet with Dennis Township again to discuss some of the short-term improvements that have been studied for these areas.

The meeting was handed over to Rachel Kruger from the engineering consultant, McCormick Taylor and Associates, Inc (MTA). She reviewed the various options being studied. The two areas of recommended improvement options are the areas of NJ Route 47/CR 347 in Dennis Township, and US Route 9/CR 550 in Dennis Township.

**Improvements reviewed included:**

1. US Route 9 and CR 550
  - Add an exclusive right turn lane on CR 550 for the right turning traffic onto US Route 9
2. US Route 9 and Sea Isle Blvd. (CR 625)
  - Add an additional WB right turn lane on Sea Isle Blvd. from the off-ramp to the Garden State Parkway to the signal at US Route 9.
  - Extend the NB right turn lane on US Route 9 and improve delineation along this stretch of road



3. NJ Route 47 and NJ Route 347

- Add an additional NB lane both before and after the intersection
- Add an additional SB lane before (north of) the intersection ONLY

**Discussions and Informal Consensus**

1. US Route 9/CR 550(Woodbine/Ocean View Road)

This intersection is included in a land development plan that is currently in the works. Included with this plan is an improvement to add an extended right turn lane eastbound on CR 550 to the intersection with US Route 9. The committee did not voice any objections to this

2. US Route 9/Sea Isle Blvd

The main sentiment heard from the Township Committee regarding changes and improvements to this corridor and intersection included:

- Past plans for this area have not been supported
- Although the committee did not appear to have major objections to the suggested adjustments to the intersection of US Route 9 and Sea Isle Blvd., they brought it to the attention to all meeting attendees that in the past NJDOT has stopped this improvement due to an important telephone pole that would be expensive to relocate.
- Lance explained that was likely a long time ago and would probably not be a problem anymore.
- Dale Foster, Cape May County Engineer, indicated that he did not think this improvement would affect the telephone pole in question

NJ Route 47 and 347

MTA presented the improvement of adding an extra northbound lane both before and after the intersection and adding an extra southbound lane before and after the intersection. The pros and cons of each alternative were discussed:

**Northbound Auxiliary Lane**

- Reduces NB delays in half on both Saturday and Sunday however it can only improve the flow of vehicles who can get to the intersection (the southbound intersections of Tyler and Petersburg Road)
- There were little objections to the NORTHBOUND Auxiliary Lane option due to little obstructions upstream.

**Southbound Auxiliary Lane**

- The southbound direction on Saturday is the worst directional peak seen at this intersection, particularly on Saturday. Even though this alternative helps to lessen SB delays on Saturday and Sunday, delay increases at Tyler Road because the traffic is shifted downstream.



**McCormick, Taylor & Associates, Inc.**

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- Dennis Township Officials expressed dismay as to why we were presenting this alternative if we said it wouldn't help the corridor as a whole. The DOT responded that we wanted to **discuss** with them the various options for this intersection. It is important to understand that this is a "band-aid" approach and although it reduces the problem at the Route 47/347 intersection, it does not solve the congestion problem of the corridor.
- The Township would like to see this whole corridor studied together or not at all and would like the DOT to consider the local residents who live in Dennis Township and not just the tourists who travel through it.

#### Next Steps

NJDOT will evaluate the information obtained at this meeting and decide on the next steps to this project and whether or not a new focus of the study should be adopted.

The meeting ended at approximately 8PM.

This concludes the meeting summary. All attempts to accurately represent the proceedings and discussions regarding the above listed topics have been made by MTA and NJDOT. This summary should not be used as a legal document.

Summary prepared by:

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cc: All Meeting Attendees



**Shore Connection Five Intersections – Near Term Improvements  
Concept Development Scope Team Meeting  
August 27, 2003**

**Attendees:** see attached

**Meeting Summary**

This scoping meeting began at 9:30 AM and took place in Room 3C of the NJDOT E&O building.

Tom Carbone began the meeting with introductions and a brief project history. The initial Shore Connection study concluded in November of 1998 with the Shore Connection Committee Report, NJ Routes 55/47 Corridor Transportation Study. There were five intersections identified as problem areas for Near-Term Capital Improvement Studies that could be advanced immediately by the New Jersey Department of Transportation (NJDOT). The Concept Development phase of this Shore Connection project is expected to be completed before the end of September 2003. The Department has received the Shore Connection Committee's (SCC) support along with that of South Jersey Transportation Planning Organization (SJTPO) for all of our recommendations. Support among the municipalities varied depending on local issues.

**Discussion on Each Intersection and possible issues brought up at the meeting.**

1. NJ Routes 49 and 55 in the City of Millville

The recommended improvement option is:

- Extend the NJ Route 55 SB off-ramp so queuing does not back up onto the expressway approximately 0.4 miles (before structure on NJ Route 55)
- Add an additional left turn lane at the signal of NJ Route 55 SB off-ramp and NJ Route 49
- Add an additional through lane along NJ Route 49 to accommodate double left for approximately 1620 feet (taper would end soon after Burns Road)
- Investigate a new traffic signal at the intersection of NJ Route 49 & Court Boulevard and investigate construction of new sidewalks along the newly widened NJ Route 49

**Discussion items:**

- Major problem at this intersection is the summer southbound traffic congestion on the NJ Route 55 off ramp onto eastbound NJ Route 49
- Traffic Operations stated that the project should consider an additional CCTV camera at the intersection of NJ Route 55 and 49.
- Utility relocation costs could be higher than expected due to the "riser" telephone poles and the location of the 12" gas line along NJ Route 49, as well as electric utilities under the Route 49 shoulder.

- Consider the access issues related to the driveways along NJ Route 49 (per NJDOT Access Code)
- The Near Term projects include roadways having the designation "Hurricane Evacuation Route"
- Future investigations should ensure proper lengths for deceleration lanes, if feasible, from NJ Route 49 to NJ Route 55
- If possible, sidewalks on both sides of Route 49 should be provided
- For all locations under study, improvements should address bicyclists and pedestrians needs
- ITS conduit along Route 55 should be considered for any future improvement

**Potential pipeline assignments:** Although it was thought this could be a pipeline 3 or 4 assignment, the potential high cost of any utility relocation, may push towards a Pipeline 2 assignment instead.

## 2. NJ Route 55 and NJ Route 47 in Maurice River Township

The intersection of NJ Route 47 and 55 does not have an improvement recommendation. Soon after this project began in 2000, a signal was installed at the intersection. Maurice River Township has reported that this has greatly approved access and safety issues. In addition, because it is side-street actuated only, no major backups have been observed during the summer months as a result.

## 3. NJ Route 347/47/670 in Maurice River Township

The recommended improvement option is:

- Additional northbound through lane on NJ Route 347 at the intersection with CR 670 (to improve NB 347 LOS on Summer Sunday)
- Delineate right turn lane on CR 670 to Rt. 347 SB

### **Discussion items:**

- Major problem at this intersection is the northbound congestion and high volumes seen on NJ 347 on summer Sundays.
- Jurisdiction issues (Route 347 and CR 670) should be resolved before the CD report is finalized because it affects the design criteria and issues. However, it was made clear that the proposed improvements do not require a change in traffic patterns, signing or jurisdictional assignments for NJ Route 47
- Although there is no official support from the Township, this recommended improvement option will still go in the report and the public involvement/local concerns will be told to upper management.
- It is believed that these "fix it first" improvements do not preclude the potential for extending Route 55. This is an improvement that could happen much quicker than any Route 55 extension project.

**Potential pipeline assignment:** Pipeline 3 or 4

#### 4. NJ Routes 47 and 347 in Dennis Township

- Add auxiliary NB & SB through lanes at intersection
- Add southbound left turn lanes on NJ Route 47 at Tyler and Petersburg Roads

Because it is difficult to realize any benefits at the intersection of NJ Routes 47 and 347 without improving conditions at the southern County Routes of 610 and 611, MTA and NJDOT propose installing left turn lanes at both Petersburg (CR 610) and Tyler Road (CR 611). No written resolution of support has been received from Dennis Township for these improvements. However, from the two meetings with township officials, it is our understanding that the township would not oppose further study to the above-mentioned improvements.

#### **Discussion items:**

- Major problem at this intersection is severe southbound congestion along both NJ Routes 47 and 347 south towards CR 610 and CR 611. Northbound congestion is also considered a problem.
- Severe queues occur on Fridays and Saturdays on each southbound approach in the summer.
- Shoulders and sidewalks need to be considered in any future study
- The left turn lanes at CR 610 and CR 611 could be considered first
- Future study of an interconnected signal system should be considered.
- Bridge along NJ Route 47 near the intersection with CR 83 is scheduled to be reconstructed. The width would be able to accommodate three lanes by using the shoulder. If a third lane was extended to the intersection of NJ Route 47 and CR 83, then intersection reconstruction would be necessary.
- Access issues regarding any driveways (both commercial and residential) would need to be considered. (e.g.: Access code does not allow driveways opposite of left turn lanes with installing a 4 foot raised median)
- Should consider reforestation application if applicable along this stretch of roadway (note: this is identified in the Concept Development report)
- It was noted that the proposed improvements do not preclude a potential future center turning lane through the area. A study of this option is expected to continue as part of the SCC's recommended "Mid-term" projects.

#### 5. US Route 9 and Sea Isle Blvd and US Route 9 and CR 550 in Dennis Township

The following ideas were received informally by Dennis Township at the December 9, 2002 Meeting. Since these ideas would not provide significant operational improvements, Officials generally accepted the concepts but voiced some objections.

- Add an additional WB right turn lane on Sea Isle Blvd. from the off-ramp to the Garden State Parkway to the signal at US Route 9
- Extend the NB right turn lane on US Route 9 and improve delineation along this approach
- Add an exclusive right turn lane on CR 550 for the right turning traffic onto US Route 9.



**Discussion Items:**

The major problem along this corridor is congestion southbound on Saturdays and northbound on Sundays. The idea for the above improvements at US Route 9 are to use the existing pavement, however, it is likely that a shoulder would need to be reconstructed to accommodate the increase in traffic. In addition the pedestrian and bicycle access should also be considered. These improvements would assist the fringe period and do little to improve the peak "problem" period.

It was noted that the classification of US Route 9 (Urban or Rural Arterial) could affect the design standards. (Follow up: US Route 9 between CR 550 and CR 625 (Sea Isle Blvd.) is classified as a Rural Minor Arterial at this point and doesn't become an Urban Minor Arterial until it reaches the Upper Township line north of this intersection). Design standards are generally more stringent for Rural Minor Arterials because there is typically more room to build.

Below is a summary of support from various townships and groups for the proposed improvement options:

Organization	Status of Support
South Jersey Transportation Planning Organization (SJTPO)	Supports <i>all</i> intersection improvement options for further study
Shore Connection Committee (SCC)	Supports <i>most</i> intersection improvement options for further study
City of Millville	Resolution obtained for NJ 55/NJ 49 intersection, some residents still opposed
Maurice River Township	Resolution rescinded for 347/47/670 intersection, council and residents opposed
Dennis Township	No resolution, supports further study but are wary of future work. No official record of comment for US Route 9 corridor between CR 625 (Sea Isle Blvd) and CR 550, and the NJ 47 Corridor

The meeting ended at approximately 11:00 AM.

Summary prepared by:

Rachel T. Kruger  
Traffic Designer / Planner

Cc: Meeting attendees  
Lourdes Castaneda, FHWA

# **APPENDIX B**

## *Level Of Service Definitions*

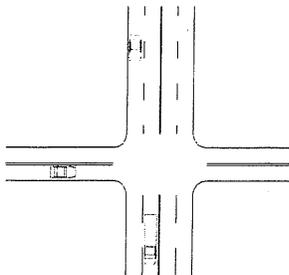
# What is Level of Service?

Level of Service (LOS) is a grading system for intersections and other transportation components (freeways, ramps, etc.). Like school, LOS A indicates the best conditions, while LOS F indicates the worst conditions.

In this area, signalized intersections are the key bottleneck points that control the traffic operations of the entire corridor.

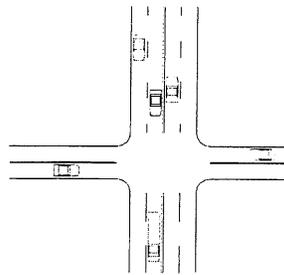
Graphical and written descriptions of level of service are shown below. The most important grade difference is between LOS E and F. At LOS E, although delays are becoming significant, queues still do not generally back-up through or affect nearby intersections. The volume is slightly under or at capacity. However, at LOS F, the demand volume is greater than capacity, and queues can frequently back-up through adjacent intersections. This can lead to a domino affect that can propagate congestion throughout an entire corridor.

## LOS A



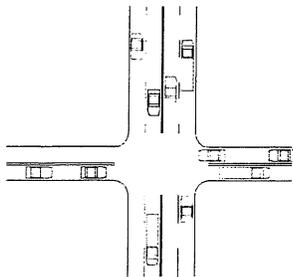
With LOS A, motorists experience virtually no delay. Most vehicles pass through the intersection without stopping. This is indicative of very low volume compared to capacity and good signal coordination.

## LOS B



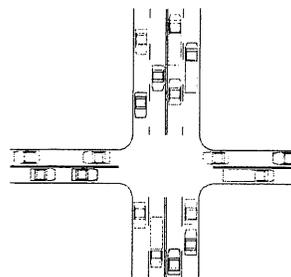
With slightly more delay than LOS A, LOS B still maintains excellent conditions. Some vehicles must stop for relatively short periods of time.

## LOS C



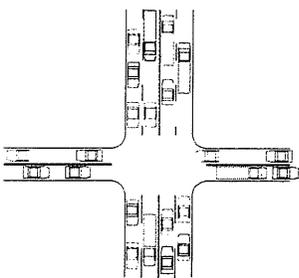
At LOS C, delays are longer than LOS B, but operations would still be considered good. Short to moderate queue lengths form during the red phase of the signal. In rare cases, a vehicle may have to wait through more than one signal cycle to proceed.

## LOS D



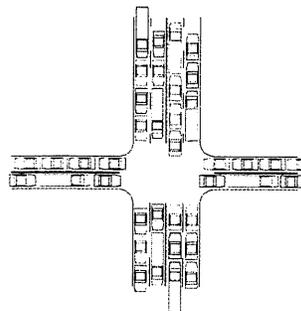
At LOS D, delays start to become more noticeable, and longer queue lengths start to become apparent at intersections. Still, the majority of vehicles have to wait no more than one signal cycle to clear the intersection.

## LOS E



At LOS E, intersection volume now equals capacity. Nearly all vehicles have to stop, and delays are long. Many vehicles may have to wait for more than one signal cycle to proceed. However, back-ups generally do not affect nearby intersections.

## LOS F



Volumes exceed capacity at LOS F. Delays are extremely long, and virtually all vehicles must wait through several signal cycles to proceed. Extensive queues frequently back-up through adjacent intersections, propagating the gridlock conditions.

# **APPENDIX C**

## *Level of Service and Delay Summaries* (2001 and 2002)

NJ Route 47 Corridor between NJ Route 347 and CR 610, Dennis Township

US Route 9 Corridor between CR 625 and CR 550, Dennis Township

## NJ Route 47 Analysis

2002 NJ Route 47  
Saturday Existing Conditions

Intersection		Run 1 Sec/Veh	Run 2 Sec/Veh	Run 3 Sec/Veh	Run 4 Sec/Veh	Run 5 Sec/Veh	Average Sec/Veh	LOS
5: NJ Route 47 & NJ Route 347 Intersection	Signalized	680.7	642.6	700.8	641.5	593.6	651.8	F
7: NJ Route 47 & Tyler Road (C.R. 611) Intersection	Signalized	405.3	378.8	335.4	328.6	300.0	349.6	F
9: NJ Route 47 & Petersburg Road (C.R. 610) Intersection	Signalized	25.9	25.2	23.8	28.7	20.8	24.8	C
19: NJ Route 47 and CR 83	Unsignalized	11.9	11.9	13.6	14.8	13.3	13.1	B

LOS	Signalized	Unsignalized
A	<=10s	<=10s
B	>10s & <=20s	>10s & <=15s
C	>20s & <=35s	>15s & <=25s
D	>35s & <=55s	>25s & <=35s
E	>55s & <=80s	>35s & <=50s
F	>80s	>50s

2002 NJ Route 47  
Saturday Existing Conditions

Approach		Run 1 Sec/Veh	Run 2 Sec/Veh	Run 3 Sec/Veh	Run 4 Sec/Veh	Run 5 Sec/Veh	Average Sec/Veh	LOS
EB Route 47 @ Route 347	Signalized	2005.8	2007.4	2373.8	2023.4	1767.6	2035.6	F
SE Route 347 @ Route 47		91.6	68.5	62.2	67.6	52.1	68.4	E
NW Route 47 @ Route 47		50.3	38.6	67.6	48.2	39.5	48.8	D
SB Route 47 @ Tyler Road (CR 611)	Signalized	756.4	668.6	607.6	615.5	512.8	632.2	F
WB Tyler Road (CR 611) @ Route 47		102.9	273.7	193.1	79.1	171.1	164.0	F
NB Route 47 @ Tyler Road (CR 611)		19.3	16.5	17.6	20.9	17.5	18.4	B
SB Route 47 @ Petersburg Road (CR 610)	Signalized	22.3	25.7	23.2	18.4	18.2	21.6	C
WB Petersburg Road (CR 610) @ Route 47		57.2	70.2	67.4	84.1	80.7	71.9	E
NB Route 47 @ Petersburg Road (CR 610)		25.3	18.1	17.4	32.7	16.3	22.0	B
SB Route 47 @ CR 83	Unsignalized	13.4	13.6	16.2	17.7	15.9	15.4	C
WB CR 83 @ Route 47		15.9	13.1	14.4	17.6	13.1	14.8	B
NW Route 47 @ CR 83		7.4	7.9	8.2	8.0	7.2	7.7	B

LOS	Signalized	Unsignalized
A	<=10s	<=10s
B	>10s & <=20s	>10s & <=15s
C	>20s & <=35s	>15s & <=25s
D	>35s & <=55s	>25s & <=35s
E	>55s & <=80s	>35s & <=50s
F	>80s	>50s

2002 NJ Route 47 Corridor  
NB Auxiliary Lane Option - Saturday Conditions

Intersection		Run 1 Sec/Veh	Run 2 Sec/Veh	Run 3 Sec/Veh	Run 4 Sec/Veh	Run 5 Sec/Veh	Average Sec/Veh	LOS
5: NJ Route 47 & NJ Route 347 Intersection	Signalized	660.0	623.4	747.1	569.8	599.6	640.0	F
7: NJ Route 47 & Tyler Road (C.R. 611) Intersection	Signalized	134.9	196.8	153.2	183.0	129.7	159.5	F
9: NJ Route 47 & Petersburg Road (C.R. 610) Intersection	Signalized	204.9	192.1	204.8	194.0	178.0	194.8	F
19. NJ Route 47 and CR 83	Unsignalized	12.6	12.4	13.6	17.1	13.7	13.9	B

LOS	Signalized	Unsignalized
A	<=10s	<=10s
B	>10s & <=20s	>10s & <=15s
C	>20s & <=35s	>15s & <=25s
D	>35s & <=55s	>25s & <=35s
E	>55s & <=80s	>35s & <=50s
F	>80s	>50s

2002 NJ Route 47 Corridor  
NB Auxiliary Lane Option - Saturday Conditions

Approach		Run 1 Sec/Veh	Run 2 Sec/Veh	Run 3 Sec/Veh	Run 4 Sec/Veh	Run 5 Sec/Veh	Average Sec/Veh	LOS
EB Route 47 @ Route 347	Signalized	2083.7	1930.4	2381.6	1660.6	1815.9	1974.4	F
SE Route 347 @ Route 47		88.8	76.2	89.9	80.0	62.6	79.5	E
NW Route 47 @ Route 47		28.8	22.7	28.1	25.3	24.9	26.0	C
EB Route 47 @ Tyler Road (CR 611)	Signalized	228.1	376.6	252.6	337.1	203.8	279.6	F
SB Tyler Road (CR 611) @ Route 47		241.0	80.7	229.4	237.2	275.7	212.8	F
WB Route 47 @ Tyler Road (CR 611)		17.5	18.7	20.1	20.0	19.3	19.1	B
EB Route 47 @ Petersburg Road (CR 610)	Signalized	382.4	354.3	376.4	352.5	300.3	353.2	F
SB Petersburg Road (CR 610) @ Route 47		61.5	77.7	67.2	55.9	75.4	67.5	E
WB Route 47 @ Petersburg Road (CR 610)		18.9	19.9	21.7	30.1	26.7	23.5	C
EB Route 47 @ CR 83	Unsignalized	14.8	14.3	15.8	18.4	16.4	15.9	B
WB CR 83 @ Route 47		13.6	14.2	16.9	31.2	15.1	18.2	B
NW Route 47 @ CR 83		8.0	8.2	8.0	8.0	7.6	8.0	A

LOS	Signalized	Unsignalized
A	<=10s	<=10s
B	>10s & <=20s	>10s & <=15s
C	>20s & <=35s	>15s & <=25s
D	>35s & <=55s	>25s & <=35s
E	>55s & <=80s	>35s & <=50s
F	>80s	>50s

2002 NJ Route 47 Corridor  
Saturday NB and SB Auxiliary Lane Option

Intersection		Run 1 Sec/Veh	Run 2 Sec/Veh	Run 3 Sec/Veh	Run 4 Sec/Veh	Run 5 Sec/Veh	Average Sec/Veh	LOS
5: NJ Route 47 & NJ Route 347 Intersection	Signalized	536.8	549.9	656.4	527.0	594.2	572.9	F
7: NJ Route 47 & Tyler Road (C.R. 611) Intersection	Signalized	169.0	242.7	175.3	205.8	142.9	187.1	F
9: NJ Route 47 & Petersburg Road (C.R. 610) Intersection	Signalized	76.0	104.0	50.4	118.7	82.2	86.3	F
19: NJ Route 47 and CR 83	Unsignalized	13.8	18.4	17.0	14.0	14.9	15.6	C

LOS	Signalized	Unsignalized
A	<=10s	<=10s
B	>10s & <=20s	>10s & <=15s
C	>20s & <=35s	>15s & <=25s
D	>35s & <=55s	>25s & <=35s
E	>55s & <=80s	>35s & <=50s
F	>80s	>50s

2002 NJ Route 47 Corridor  
Saturday NB and SB Auxiliary Lane Option

Approach		Run 1 Sec/Veh	Run 2 Sec/Veh	Run 3 Sec/Veh	Run 4 Sec/Veh	Run 5 Sec/Veh	Average Sec/Veh	LOS
EB Route 47 @ Route 347	Signalized	1622.5	1753.7	2174.4	1588.8	1846.1	1797.1	F
SE Route 347 @ Route 47		65.3	44.9	68.0	78.6	65.7	64.5	E
NW Route 47 @ Route 47		33.7	32.9	25.8	30.7	24.9	29.6	D
EB Route 47 @ Tyler Road (CR 611)	Signalized	232.8	359.6	231.7	323.4	223.2	274.1	F
SB Tyler Road (CR 611) @ Route 47		558.1	667.6	628.4	400.5	227.2	496.4	F
WB Route 47 @ Tyler Road (CR 611)		39.6	35.5	37.5	36.0	34.5	36.6	D
EB Route 47 @ Petersburg Road (CR 610)	Signalized	123.9	175.6	75.0	201.1	134.1	141.9	F
SB Petersburg Road (CR 610) @ Route 47		71.3	78.3	72.8	85.9	71.1	75.9	E
WB Route 47 @ Petersburg Road (CR 610)		16.5	14.5	16.8	16.5	16.1	16.1	B
EB Route 47 @ CR 83	Unsignalized	17.6	24.3	22.3	17.0	18.2	19.9	C
WB CR 83 @ Route 47		2.6	16.0	2.5	13.7	15.4	10.0	B
NW Route 47 @ CR 83		11.7	7.9	13.7	7.9	8.0	9.8	A

LOS	Signalized	Unsignalized
A	<=10s	<=10s
B	>10s & <=20s	>10s & <=15s
C	>20s & <=35s	>15s & <=25s
D	>35s & <=55s	>25s & <=35s
E	>55s & <=80s	>35s & <=50s
F	>80s	>50s

2002 NJ Route 47 Corridor  
Saturday SB Auxiliary Lane Option

Intersection		Run 1 Sec/Veh	Run 2 Sec/Veh	Run 3 Sec/Veh	Run 4 Sec/Veh	Run 5 Sec/Veh	Average Sec/Veh	LOS
5: NJ Route 47 & NJ Route 347 Intersection	Signalized	596.4	521.1	575.2	483.1	442.4	523.7	F
7: NJ Route 47 & Tyler Road (C.R. 611) Intersection	Signalized	563.2	514.8	477.8	498.8	503.2	511.6	F
9: NJ Route 47 & Petersburg Road (C.R. 610) Intersection	Signalized	38.1	43.2	26.4	27.2	30.2	33.0	C
19. NJ Route 47 and CR 83	Unsignalized	12.3	12.6	14.1	13.8	12.5	13.1	B

LOS	Signalized	Unsignalized
A	<=10s	<=10s
B	>10s & <=20s	>10s & <=15s
C	>20s & <=35s	>15s & <=25s
D	>35s & <=55s	>25s & <=35s
E	>55s & <=80s	>35s & <=50s
F	>80s	>50s

2002 NJ Route 47 Corridor  
Saturday SB Auxiliary Lane Option

Approach		Run 1 Sec/Veh	Run 2 Sec/Veh	Run 3 Sec/Veh	Run 4 Sec/Veh	Run 5 Sec/Veh	Average Sec/Veh	LOS
EB Route 47 @ Route 347	Signalized	1667.3	1434.4	1785.7	1290.5	1152.1	1466.0	F
SE Route 347 @ Route 47		163.3	151.9	80.6	142.5	94.6	126.6	F
NW Route 47 @ Route 47		42.0	40.2	43.3	56.4	88.6	54.1	D
SB Route 47 @ Tyler Road (CR 611)	Signalized	1071.4	1009.7	880.3	927.5	895.2	956.8	F
WB Tyler Road (CR 611) @ Route 47		147.7	88.5	109.3	188.7	355.6	178.0	F
NB Route 47 @ Tyler Road (CR 611)		23.4	22.2	16.6	22.7	20.8	21.1	C
SB Route 47 @ Petersburg Road (CR 610)	Signalized	31.5	27.7	26.3	23.0	27.1	27.1	C
WB Petersburg Road (CR 610) @ Route 47		72.0	72.2	81.4	78.9	83.1	77.5	E
NB Route 47 @ Petersburg Road (CR 610)		39.7	55.8	18.0	23.5	25.7	32.5	C
SB Route 47 @ CR 83	Unsignalized	13.7	13.2	16.5	15.7	14.6	14.7	B
WB CR 83 @ Route 47		17.2	18.4	17.6	18.4	14.5	17.2	C
NW Route 47 @ CR 83		7.7	8.8	8.0	7.9	7.6	8.0	A

LOS	Signalized	Unsignalized
A	<=10s	<=10s
B	>10s & <=20s	>10s & <=15s
C	>20s & <=35s	>15s & <=25s
D	>35s & <=55s	>25s & <=35s
E	>55s & <=80s	>35s & <=50s
F	>80s	>50s

2002 NJ Route 47 Corridor  
 Sunday Existing Conditions

Intersection		Run 1 Sec/Veh	Run 2 Sec/Veh	Run 3 Sec/Veh	Run 4 Sec/Veh	Run 5 Sec/Veh	Average Sec/Veh	LOS
5: NJ Route 47 & NJ Route 347 Intersection	Signalized	29.3	31.4	36.3	29.8	32.6	31.9	C
7: NJ Route 47 & Tyler Road (C.R. 611) Intersection	Signalized	31.1	104.3	40.3	79.2	32.0	57.4	E
9: NJ Route 47 & Petersburg Road (C.R. 610) Intersection	Signalized	85.0	65.9	62.1	71.1	64.9	69.8	E
19: NJ Route 47 and CR 83	Unsignalized	107.4	55.7	58.9	83.4	64.5	74.0	D

LOS	Signalized	Unsignalized
A	<=10s	<=10s
B	>10s & <=20s	>10s & <=15s
C	>20s & <=35s	>15s & <=25s
D	>35s & <=55s	>25s & <=35s
E	>55s & <=80s	>35s & <=50s
F	>80s	>50s

2002 NJ Route 47 Corridor  
Sunday Existing Conditions

Approach		Run 1 Sec/Veh	Run 2 Sec/Veh	Run 3 Sec/Veh	Run 4 Sec/Veh	Run 5 Sec/Veh	Average Sec/Veh	LOS
EB Route 47 @ Route 347	Signalized	21.4	18.2	14.1	19.7	18.1	18.3	B
SE Route 347 @ Route 47		21.5	17.5	18.3	23.0	24.7	21.0	C
NW Route 47 @ Route 47		32.5	37.3	44.1	33.1	36.8	36.8	D
SB Route 47 @ Tyler Road (CR 611)	Signalized	50.1	219.3	60.8	149.0	45.5	104.9	F
WB Tyler Road (CR 611) @ Route 47		55.4	62.4	52.1	54.7	46.9	54.3	D
NB Route 47 @ Tyler Road (CR 611)		22.6	21.0	21.5	21.9	19.6	21.3	C
SB Route 47 @ Petersburg Road (CR 610)	Signalized	14.8	23.8	17.7	22.8	23.1	20.4	C
WB Petersburg Road (CR 610) @ Route 47		59.2	52.3	52.0	56.5	54.5	54.9	D
NB Route 47 @ Petersburg Road (CR 610)		114.8	85.3	80.8	92.9	83.9	91.5	F
SB Route 47 @ CR 83	Unsignalized	17.0	12.6	13.1	14.3	14.7	14.3	B
WB CR 83 @ Route 47		517.0	288.0	326.1	683.6	440.3	451.0	F
NB Route 47 @ CR 83		16.6	13.3	13.4	40.6	19.7	20.7	C

LOS	Signalized	Unsignalized
A	<=10s	<=10s
B	>10s & <=20s	>10s & <=15s
C	>20s & <=35s	>15s & <=25s
D	>35s & <=55s	>25s & <=35s
E	>55s & <=80s	>35s & <=50s
F	>80s	>50s

2002 NJ Route 47 Corridor  
 Sunday NB Auxiliary Lane Option

Intersection		Run 1 Sec/Veh	Run 2 Sec/Veh	Run 3 Sec/Veh	Run 4 Sec/Veh	Run 5 Sec/Veh	Average Sec/Veh	LOS
5: NJ Route 47 & NJ Route 347 Intersection	Signalized	17.1	17.7	17.0	17.6	16.8	17.2	B
7: NJ Route 47 & Tyler Road (C.R. 611) Intersection	Signalized	45.9	119.5	39.1	80.0	39.0	64.7	E
9: NJ Route 47 & Petersburg Road (C.R. 610) Intersection	Signalized	69.0	76.4	74.2	77.4	76.7	74.7	E
19: NJ Route 47 and CR 83	Unsignalized	135.8	55.6	68.3	68.6	66.1	78.9	F

LOS	Signalized	Unsignalized
A	<=10s	<=10s
B	>10s & <=20s	>10s & <=15s
C	>20s & <=35s	>15s & <=25s
D	>35s & <=55s	>25s & <=35s
E	>55s & <=80s	>35s & <=50s
F	>80s	>50s

2002 NJ Route 47 Corridor  
 Sunday NB Auxiliary Lane Option

Approach		Run 1 Sec/Veh	Run 2 Sec/Veh	Run 3 Sec/Veh	Run 4 Sec/Veh	Run 5 Sec/Veh	Average Sec/Veh	LOS
EB Route 47 @ Route 347	Signalized	19.7	17.0	14.4	19.4	16.1	17.3	B
SE Route 347 @ Route 47		18.9	23.1	22.2	22.5	19.3	21.2	C
NW Route 47 @ Route 47		16.2	16.1	15.7	15.9	16.2	16.0	B
SB Route 47 @ Tyler Road (CR 611)	Signalized	71.3	250.1	55.7	150.6	57.6	117.1	F
WB Tyler Road (CR 611) @ Route 47		0.0	82.8	68.7	68.7	68.7	57.8	E
NB Route 47 @ Tyler Road (CR 611)		21.6	59.3	35.6	35.6	35.6	37.5	E
SB Route 47 @ Petersburg Road (CR 610)	Signalized	36.9	59.3	35.6	39.3	47.9	43.8	D
WB Petersburg Road (CR 610) @ Route 47		62.4	82.8	68.7	56.2	65.0	67.0	E
NB Route 47 @ Petersburg Road (CR 610)		83.5	83.9	91.2	96.5	89.2	88.9	C
SB Route 47 @ CR 83	Unsignalized	14.4	13.7	15.1	13.2	12.9	13.9	B
WB CR 83 @ Route 47		718.4	316.4	489.1	513.8	382.3	484.0	F
NB Route 47 @ CR 83		14.1	13.5	20.5	23.1	16.8	17.6	A

LOS	Signalized	Unsignalized
A	<=10s	<=10s
B	>10s & <=20s	>10s & <=15s
C	>20s & <=35s	>15s & <=25s
D	>35s & <=55s	>25s & <=35s
E	>55s & <=80s	>35s & <=50s
F	>80s	>50s

2002 NJ Route 47 Corridor  
 Sunday NB and SB Auxiliary Lane Option

Intersection		Run 1 Sec/Veh	Run 2 Sec/Veh	Run 3 Sec/Veh	Run 4 Sec/Veh	Run 5 Sec/Veh	Average Sec/Veh	LOS
5: NJ Route 47 & NJ Route 347 Intersection	Signalized	15.7	15.6	15.2	52.3	15.6	22.9	C
7: NJ Route 47 & Tyler Road (C.R. 611) Intersection	Signalized	81.3	177.9	91.4	143.6	92.9	117.4	F
9: NJ Route 47 & Petersburg Road (C.R. 610) Intersection	Signalized	31.0	42.1	35.8	36.8	51.1	39.4	D
19: NJ Route 47 and CR 83	Unsignalized	72.3	46.2	30.0	36.9	56.1	48.3	F

LOS	Signalized	Unsignalized
A	<=10s	<=10s
B	>10s & <=20s	>10s & <=15s
C	>20s & <=35s	>15s & <=25s
D	>35s & <=55s	>25s & <=35s
E	>55s & <=80s	>35s & <=50s
F	>80s	>50s

2002 NJ Route 47 Corridor  
 Sunday NB and SB Auxiliary Lane Option

Approach		Run 1 Sec/Veh	Run 2 Sec/Veh	Run 3 Sec/Veh	Run 4 Sec/Veh	Run 5 Sec/Veh	Average Sec/Veh	LOS
EB Route 47 @ Route 347	Signalized	16.4	16.3	16.2	17.5	16.2	16.5	B
SE Route 347 @ Route 47		16.2	16.8	17.6	37.8	15.5	20.8	C
NW Route 47 @ Route 47		15.5	15.1	14.3	60.9	15.5	24.3	C
SB Route 47 @ Tyler Road (CR 611)	Signalized	65.7	280.9	61.0	176.7	71.1	131.1	F
WB Tyler Road (CR 611) @ Route 47		50.2	60.0	64.6	64.6	64.6	60.8	E
NB Route 47 @ Tyler Road (CR 611)		96.5	60.9	47.0	47.0	47.0	59.7	E
SB Route 47 @ Petersburg Road (CR 610)	Signalized	55.8	60.9	47.0	33.3	51.1	49.6	D
WB Petersburg Road (CR 610) @ Route 47		56.4	60.0	64.6	53.9	66.0	60.2	E
NB Route 47 @ Petersburg Road (CR 610)		19.1	33.7	29.8	37.7	50.5	34.2	D
SB Route 47 @ CR 83	Unsignalized	18.7	18.0	14.7	12.9	14.3	15.7	C
WB CR 83 @ Route 47		320.5	233.9	120.7	153.5	293.5	224.4	F
NB Route 47 @ CR 83		9.9	10.7	9.7	10.1	13.1	10.7	B

LOS	Signalized	Unsignalized
A	<=10s	<=10s
B	>10s & <=20s	>10s & <=15s
C	>20s & <=35s	>15s & <=25s
D	>35s & <=55s	>25s & <=35s
E	>55s & <=80s	>35s & <=50s
F	>80s	>50s

2002 NJ Route 47 Corridor  
SUNDAY SB Auxiliary Lane Option

Intersection		Run 1 Sec/Veh	Run 2 Sec/Veh	Run 3 Sec/Veh	Run 4 Sec/Veh	Run 5 Sec/Veh	Average Sec/Veh	LOS
5: NJ Route 47 & NJ Route 347 Intersection	Signalized	27.0	35.9	26.6	30.2	27.9	29.5	C
7: NJ Route 47 & Tyler Road (C.R. 611) Intersection	Signalized	29.3	31.7	75.5	38.2	32.1	41.4	D
9: NJ Route 47 & Petersburg Road (C.R. 610) Intersection	Signalized	64.8	65.1	26.0	78.4	68.5	60.6	E
19: NJ Route 47 and CR 83	Unsignalized	178.4	60.2	19.4	76.7	79.7	82.9	F

LOS	Signalized	Unsignalized
A	<=10s	<=10s
B	>10s & <=20s	>10s & <=15s
C	>20s & <=35s	>15s & <=25s
D	>35s & <=55s	>25s & <=35s
E	>55s & <=80s	>35s & <=50s
F	>80s	>50s

2002 NJ Route 47 Corridor  
SUNDAY SB Auxiliary Lane Option

Approach		Run 1 Sec/Veh	Run 2 Sec/Veh	Run 3 Sec/Veh	Run 4 Sec/Veh	Run 5 Sec/Veh	Average Sec/Veh	LOS
EB Route 47 @ Route 347	Signalized	14.0	15.3	12.9	14.7	15.3	14.4	B
SE Route 347 @ Route 47		13.0	15.9	15.4	13.4	14.8	14.5	B
NW Route 47 @ Route 47		32.5	44.3	31.8	37.5	33.5	35.9	D
SB Route 47 @ Tyler Road (CR 611)	Signalized	44.4	53.9	41.8	95.3	50.7	57.2	E
WB Tyler Road (CR 611) @ Route 47		51.5	66.3	0.0	93.8	57.9	53.9	D
NB Route 47 @ Tyler Road (CR 611)		22.6	20.9	117.3	22.6	23.0	41.3	D
SB Route 47 @ Petersburg Road (CR 610)	Signalized	13.4	14.4	38.5	38.6	16.9	24.4	C
WB Petersburg Road (CR 610) @ Route 47		65.5	64.2	59.9	63.1	67.8	64.1	E
NB Route 47 @ Petersburg Road (CR 610)		86.3	87.6	18.9	96.9	92.1	76.4	E
SB Route 47 @ CR 83	Unsignalized	13.8	14.0	12.2	14.9	14.9	14.0	B
WB CR 83 @ Route 47		1106.3	411.4	58.3	525.1	590.4	538.3	F
NB Route 47 @ CR 83		15.2	16.1	9.9	27.7	30.8	19.9	C

LOS	Signalized	Unsignalized
A	<=10s	<=10s
B	>10s & <=20s	>10s & <=15s
C	>20s & <=35s	>15s & <=25s
D	>35s & <=55s	>25s & <=35s
E	>55s & <=80s	>35s & <=50s
F	>80s	>50s

## US Route 9 Analysis

US 9 2001 Existing Saturday Condition.xls

Intersection		Run 1 Sec/Veh	Run 2 Sec/Veh	Run 3 Sec/Veh	Run 4 Sec/Veh	Run 5 Sec/Veh	Average Sec/Veh	LOS
3: Woodbine/OceanView Road (CR 550) & US Route 9 Intersection	Signalized	74.4	206.6	79.0	82.1	103.8	109.2	F
5: Sea Isle Blvd. & US Route 9 Intersection	Signalized	528.1	510.7	479.4	532.4	454.8	501.1	F

LOS	Signalized	Unsignalized
A	<=10s	<=10s
B	>10s & <=20s	>10s & <=15s
C	>20s & <=35s	>15s & <=25s
D	>35s & <=55s	>25s & <=35s
E	>55s & <=80s	>35s & <=50s
F	>80s	>50s

US 9 2001 Existing Saturday Condition.xls

Approach		Run 1 Sec/Veh	Run 2 Sec/Veh	Run 3 Sec/Veh	Run 4 Sec/Veh	Run 5 Sec/Veh	Average Sec/Veh	LOS
NE US Route 9 @ Sea Isle Blvd	Signalized	818.0	773.0	788.0	786.0	802.0	793.4	F
SW US Route 9 @ Sea Isle Blvd.		275.9	316.2	203.6	206.5	221.5	244.7	F
SE School House Lane @ US Route 9		780.5	848.3	755.4	798.9	720.5	780.7	F
NW Sea Isle Blvd. @ US Route 9		370.0	343.2	351.3	624.3	174.0	372.6	F
EB Woodbine/Oceanview (CR 550) @ US Route 9	Signalized	36.0	45.9	43.6	47.5	66.2	47.8	D
NB US Route 9 @ Woodbine/Oceanview (CR 550)		145.9	518.5	137.9	162.7	220.4	237.1	F
SB US Route 9 @ Woodbine/Oceanview (CR 550)		67.7	126.4	78.1	55.4	50.9	75.7	E

LOS	Signalized	Unsignalized
A	<=10s	<=10s
B	>10s & <=20s	>10s & <=15s
C	>20s & <=35s	>15s & <=25s
D	>35s & <=55s	>25s & <=35s
E	>55s & <=80s	>35s & <=50s
F	>80s	>50s

2001 550 Right turn lane Saturday LOS.xls

Intersection		Run 1 Sec/Veh	Run 2 Sec/Veh	Run 3 Sec/Veh	Run 4 Sec/Veh	Run 5 Sec/Veh	Average Sec/Veh	LOS
3: Woodbine/OceanView Road (CR 550) & US Route 9 Intersection	Signalized	95.3	178.0	69.7	79.3	82.7	101.0	F
5: Sea Isle Blvd. & US Route 9 Intersection	Signalized	539.9	519.5	517.6	515.4	529.8	524.4	F

LOS	Signalized	Unsignalized
A	<=10s	<=10s
B	>10s & <=20s	>10s & <=15s
C	>20s & <=35s	>15s & <=25s
D	>35s & <=55s	>25s & <=35s
E	>55s & <=80s	>35s & <=50s
F	>80s	>50s

2001 550 Right turn lane Saturday LOS.xls

Approach		Run 1 Sec/Veh	Run 2 Sec/Veh	Run 3 Sec/Veh	Run 4 Sec/Veh	Run 5 Sec/Veh	Average Sec/Veh	LOS
NE US Route 9 @ Sea Isle Blvd	Signalized	828.0	772.0	787.0	791.0	799.0	795.4	F
SW US Route 9 @ Sea Isle Blvd.		241.9	335.7	208.3	182.7	244.0	242.5	F
SE School House Lane @ US Route 9		753.6	866.0	749.1	814.2	754.0	787.4	F
NW Sea Isle Blvd. @ US Route 9		440.0	329.9	376.1	547.7	549.6	448.7	F
EB Woodbine/Oceanview (CR 550) @ US Route 9	Signalized	30.9	45.1	39.0	60.0	41.1	43.2	D
NB US Route 9 @ Woodbine/Oceanview (CR 550)		168.1	442.7	75.4	131.7	160.7	195.7	F
SB US Route 9 @ Woodbine/Oceanview (CR 550)		118.9	122.6	103.3	58.3	70.2	94.7	F

LOS	Signalized	Unsignalized
A	<=10s	<=10s
B	>10s & <=20s	>10s & <=15s
C	>20s & <=35s	>15s & <=25s
D	>35s & <=55s	>25s & <=35s
E	>55s & <=80s	>35s & <=50s
F	>80s	>50s

2001 550 Right turn lane Saturday LOS.xls

Intersection		Run 1 Sec/Veh	Run 2 Sec/Veh	Run 3 Sec/Veh	Run 4 Sec/Veh	Run 5 Sec/Veh	Average Sec/Veh	LOS
3: Woodbine/OceanView Road (CR 550) & US Route 9 Intersection	Signalized	95.3	178.0	69.7	79.3	82.7	101.0	F
5: Sea Isle Blvd. & US Route 9 Intersection	Signalized	539.9	519.5	517.6	515.4	529.8	524.4	F

LOS	Signalized	Unsignalized
A	<=10s	<=10s
B	>10s & <=20s	>10s & <=15s
C	>20s & <=35s	>15s & <=25s
D	>35s & <=55s	>25s & <=35s
E	>55s & <=80s	>35s & <=50s
F	>80s	>50s

2001 550 Right turn lane Saturday LOS.xls

Approach		Run 1 Sec/Veh	Run 2 Sec/Veh	Run 3 Sec/Veh	Run 4 Sec/Veh	Run 5 Sec/Veh	Average Sec/Veh	LOS
NE US Route 9 @ Sea Isle Blvd	Signalized	828.0	772.0	787.0	791.0	799.0	795.4	F
SW US Route 9 @ Sea Isle Blvd.		241.9	335.7	208.3	182.7	244.0	242.5	F
SE School House Lane @ US Route 9		753.6	866.0	749.1	814.2	754.0	787.4	F
NW Sea Isle Blvd. @ US Route 9		440.0	329.9	376.1	547.7	549.6	448.7	F
EB Woodbine/Oceanview (CR 550) @ US Route 9	Signalized	30.9	45.1	39.0	60.0	41.1	43.2	D
NB US Route 9 @ Woodbine/Oceanview (CR 550)		168.1	442.7	75.4	131.7	160.7	195.7	F
SB US Route 9 @ Woodbine/Oceanview (CR 550)		118.9	122.6	103.3	58.3	70.2	94.7	F

LOS	Signalized	Unsignalized
A	<=10s	<=10s
B	>10s & <=20s	>10s & <=15s
C	>20s & <=35s	>15s & <=25s
D	>35s & <=55s	>25s & <=35s
E	>55s & <=80s	>35s & <=50s
F	>80s	>50s

US 9 2001 Exist Sunday.xls

Intersection		Run 1 Sec/Veh	Run 2 Sec/Veh	Run 3 Sec/Veh	Run 4 Sec/Veh	Run 5 Sec/Veh	Average Sec/Veh	LOS
3: Woodbine/OceanView Road (CR 550) & US Route 9 Intersection	Signalized	26.5	26.5	26.7	29.2	26.6	27.1	C
5: Sea Isle Blvd. & US Route 9 Intersection	Signalized	47.3	39.0	54.8	49.6	40.0	46.1	D

LOS	Signalized	Unsignalized
A	<=10s	<=10s
B	>10s & <=20s	>10s & <=15s
C	>20s & <=35s	>15s & <=25s
D	>35s & <=55s	>25s & <=35s
E	>55s & <=80s	>35s & <=50s
F	>80s	>50s

US 9 2001 Exist Sunday.xls

Approach		Run 1 Sec/Veh	Run 2 Sec/Veh	Run 3 Sec/Veh	Run 4 Sec/Veh	Run 5 Sec/Veh	Average Sec/Veh	LOS
NE US Route 9 @ Sea Isle Blvd	Signalized	532.0	512.0	537.0	530.0	527.0	527.6	F
SW US Route 9 @ Sea Isle Blvd.		42.2	31.7	46.0	22.5	26.8	33.8	C
SE School House Lane @ US Route 9		31.0	25.2	24.4	25.1	30.1	27.2	C
NW Sea Isle Blvd. @ US Route 9		62.0	48.9	83.0	76.8	50.4	64.2	E
EB Woodbine/Oceanview (CR 550) @ US Route 9	Signalized	25.2	25.3	26.3	30.2	26.2	26.6	C
NB US Route 9 @ Woodbine/Oceanview (CR 550)		35.0	32.6	31.9	35.4	35.6	34.1	C
SB US Route 9 @ Woodbine/Oceanview (CR 550)		26.4	26.9	25.3	22.0	23.9	24.9	C

LOS	Signalized	Unsignalized
A	<=10s	<=10s
B	>10s & <=20s	>10s & <=15s
C	>20s & <=35s	>15s & <=25s
D	>35s & <=55s	>25s & <=35s
E	>55s & <=80s	>35s & <=50s
F	>80s	>50s