

List of meeting materials

Phase 2 Working Group Meeting #3

October 28, 2019, 6:00 pm
Beacon Middle School
19483 John J. Williams Highway
Lewes, DE 19958

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Agenda

Phase 2 Working Group Meeting #3

October 28, 2019, 6:00 pm
Beacon Middle School
19483 John J. Williams Highway
Lewes, DE 19958

1. Introduction
 - Welcome
 - Summary of notebook materials
 - Approval of July 29, 2019 meeting minutes
2. Phase 2 implementation status
3. Update on DeIDOT's project development process and September hearings
4. Review of summer traffic conditions
5. Update on SR 1 crossovers and grade separations
6. Public comment
7. Adjourn



Phase 2 Working Group Meeting #3

October 28, 2019



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Agenda

2

- **Introduction**
 - Welcome
 - Summary of notebook materials
 - Approval of July 29, 2019 minutes
- **Phase 2 implementation status**
- **Update on DeIDOT's project development process**
- **Review of summer traffic conditions**
- **Update on SR 1 crossovers and grade separations**
- **Public comment**

Introduction

3

- **Welcome**
- **Summary of notebook materials**
 - Agenda
 - Presentation
 - Draft minutes of July 29 Working Group meeting
 - List of upcoming meetings
 - Updated implementation plan
- **Approval of July 29, 2019 meeting minutes**

78 recommendations

Recommendations to be implemented under current DeIDOT projects or initiatives (7 recommendations)

Implement policies and procedures to make the area more efficient, sustainable and beautiful (8 priorities out of 27 recommendations)

Make the most of existing roadway infrastructure (8 priorities out of 20 recommendations)

Make walking, bicycling, and transit more viable as alternatives to driving (5 priorities out of 15 recommendations)

Invest in new infrastructure to support anticipated growth (3 priorities out of 9 recommendations)

Previous status (as of July 2019)

6

32 of 78 recommendations in progress or completed

- 7 of 7 in Category A – to be addressed by current DelDOT projects or initiatives
- 9 of 27 in Category B – policies and procedures
- 11 of 20 in Category C – make the most of existing infrastructure
- 3 of 15 in Category D – bicycle, pedestrian, transit
- 2 of 9 in Category E – major infrastructure improvements

Current status (as of October 2019) ⁷

33 of 78 recommendations in progress or completed, an increase of 1

- 1 recommendation changed from “Priority for 2019” to “In Progress”
- DeIDOT has taken action on 11 of the 15 recommendations listed as “Priority for 2019”

Category A

8

being addressed by current DeIDOT projects and initiatives

Number of recommendations by status

Status	July 2019	Oct 2019	Change
COMPLETE	4	4	-
IN PROGRESS	3	3	-
Total A	7	7	-

- **A-1 – In progress: Review the need for grade separating or restricting crossings between Frederica and Lewes before eliminating signals in this area**
 - Studies conducted this summer
 - Results will be reviewed later in this presentation

Category B

Policies and procedures

10

Number of recommendations by status

Status	July 2019	Oct 2019	Change
COMPLETE	3	3	-
IN PROGRESS	6	6	-
Priority for 2019	2	2	-
Longer-term	16	16	-
Total B	27	27	-

Category B progress

11

- **B-7 – In progress: Continue TID studies both east and west of Route 1**
 - The Henlopen TID study (west of Route 1) future year traffic analysis and identification of improvements is completed and was reviewed with County staff this fall.
 - Sussex County and DeIDOT are working to identify next steps, including public involvement.

Category C

Make the most of existing roadway infrastructure

Number of recommendations by status

Status	July 2019	Oct 2019	Change
COMPLETE	1	1	-
IN PROGRESS	10	10	-
Priority for 2019	0	0	-
Longer-term	9	9	-
Total C	20	20	-

- **C-8 – Study the feasibility of restriping two-lane sections of Savannah Road with a two-way left-turn lane**
 - An assessment has been prepared.
 - Providing a two-way left-turn lane is potentially feasible.
 - There are pros and cons to this idea.
 - Implementation would likely involve more than striping.

- **C-9 – Evaluate potential short-term safety and operational improvements at Route 9, Plantation Road, and Beaver Dam Road while longer-term improvements are under development**
 - It appears that extension of the second westbound Route 9 through lane west of the Plantation Road connector may have some safety benefits.
 - This change will likely have only modest benefits for congestion.

Category D

Walking, bicycling, and transit

15

Number of recommendations by status

Status	July 2019	Oct 2019	Change
COMPLETE	0	0	-
IN PROGRESS	3	4	+1
Priority for 2019	3	2	-1
Longer-term	9	9	-
Total D	15	15	-

- **D-5 – Develop concepts and estimates for filling all sidewalk gaps along Savannah Road between Lewes and Five Points**
 - Current CTP projects will fill many of these gaps.
 - Assessment of remaining gaps is underway.

- **D-2 – Study the feasibility of potential connections for walking and bicycling between existing neighborhoods, along streets, and to trails**

Category E

New infrastructure

18

Number of recommendations by status

Status	July 2019	Oct 2019	Change
COMPLETE	0	0	-
IN PROGRESS	2	2	-
Priority for 2019	0	0	-
Longer-term	7	7	-
Total E	9	9	-

Phase 2 implementation plan

19

- **Next steps**
 - Continue work on 2019 priorities
 - Provide email progress updates in November and December
 - Convene the Working Group on January 27, 2020

Phase 2 implementation plan

20

- **Looking ahead to 2020**
 - Convene the Working Group in January, April, July, and October
 - Prepare the first annual report, showing progress made in 2019, in early 2020
 - Hold the first annual Phase 2 public workshop in spring 2020

Update on DeIDOT's project development process



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Update on DeIDOT's project development process

22

- **Fiscal Years 2021 – 2026 Capital Transportation Program (CTP) is currently in development.**
- **Council on Transportation (COT) released the draft CTP on August 29, 2019.**
- **Public workshop for Sussex County was held on September 25, 2019.**
- **Comment period closed on October 5, 2019.**

Update on DeIDOT's project development process

23

- **New Projects Presented:**

- US 9 and Minos Conaway Intersection Improvement
- SR 1 Fenwick Island Sidewalk (Lighthouse Rd. to Lewes St.)
- US 9 Widening (Ward Ave. to Old Vine Blvd.)
- US 113 Widening, Dagsboro Rd to Hardscrabble Rd
- Dewey Beach Pedestrian and ADA Improvements (Anchors Way to Bayard Ave.)
- SR 54 Multi-modal Improvements (Blue Beard Trail to Monroe Ave.)
- Cave Neck Rd, Hudson Rd, and Sweetbriar Rd
- Beaver Dam Rd Widening (SR 1 to Dairy Farm Rd.)
- Old Landing Rd and Warrington Rd Intersection Improvement
- New Rd, Nassau Rd to Old Orchard Rd

Update on DeIDOT's project development process

24

- In addition to staff, 45 public attendees
- Thank you for your feedback!

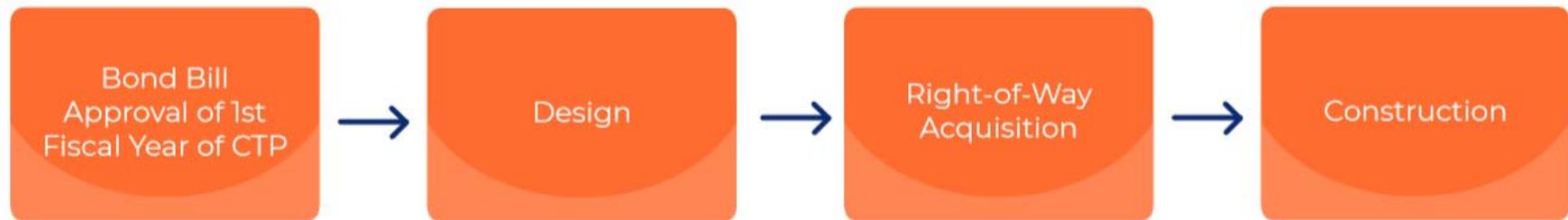


Capital Transportation Program Process

FY21-26



Project Development Process



Review of summer traffic conditions

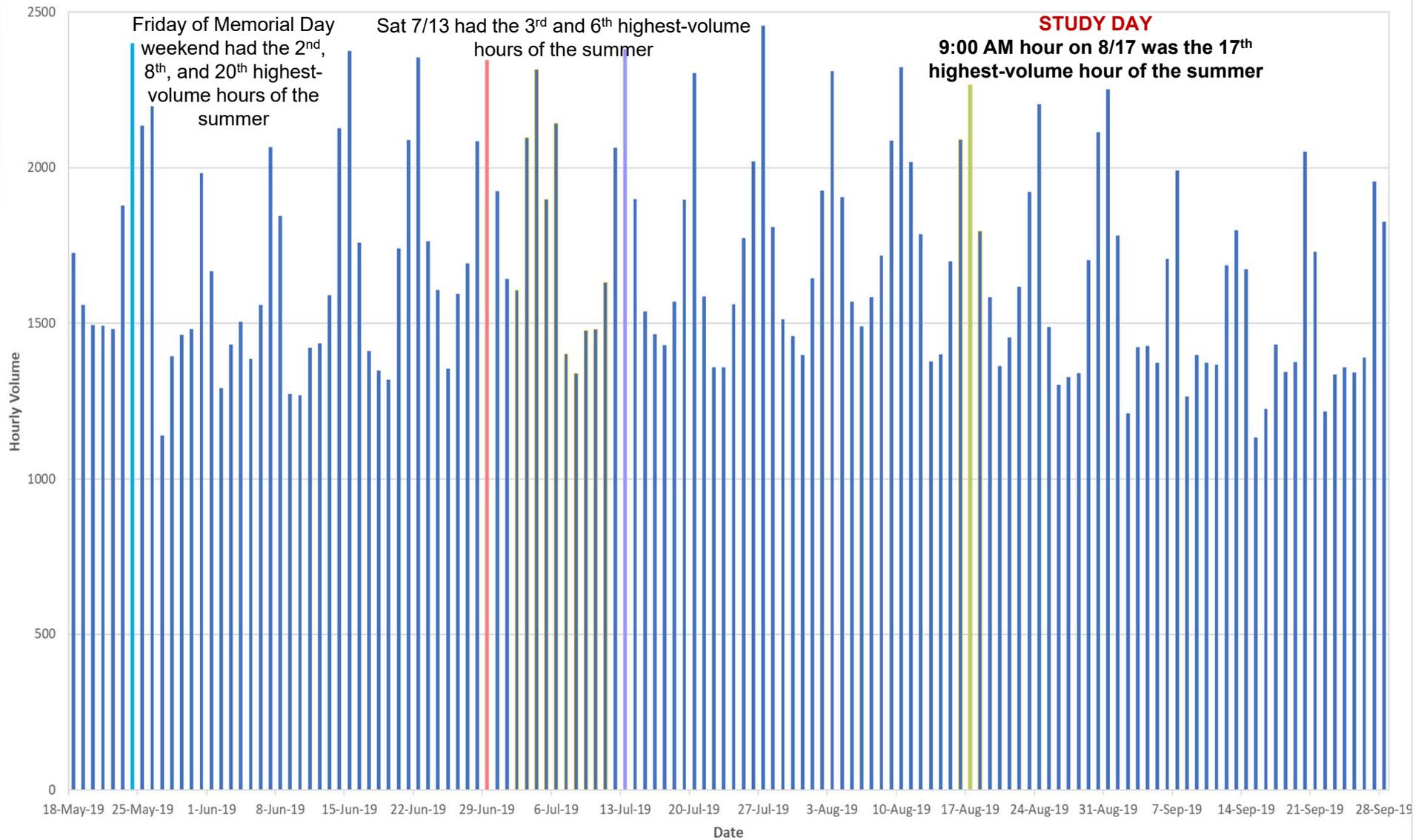


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- **Comparison of summer Saturday conditions in 2016, 2017, 2018, 2019**
 - Peak hour volumes
 - Peak 12-hour average travel times
 - Peak 30-minute travel times
- **Mid-August summer Saturday data was used for each year**

2019 SR 1 SB Maximum Hourly Volumes by Day at Eagle Crest



■ Miovision Video Available

■ **STUDY DAY**
Mid-August Saturday (8/17/19)

Other Days Reviewed
(Volumes & Travel
Times):

■ Memorial Day Friday (5/24/19)

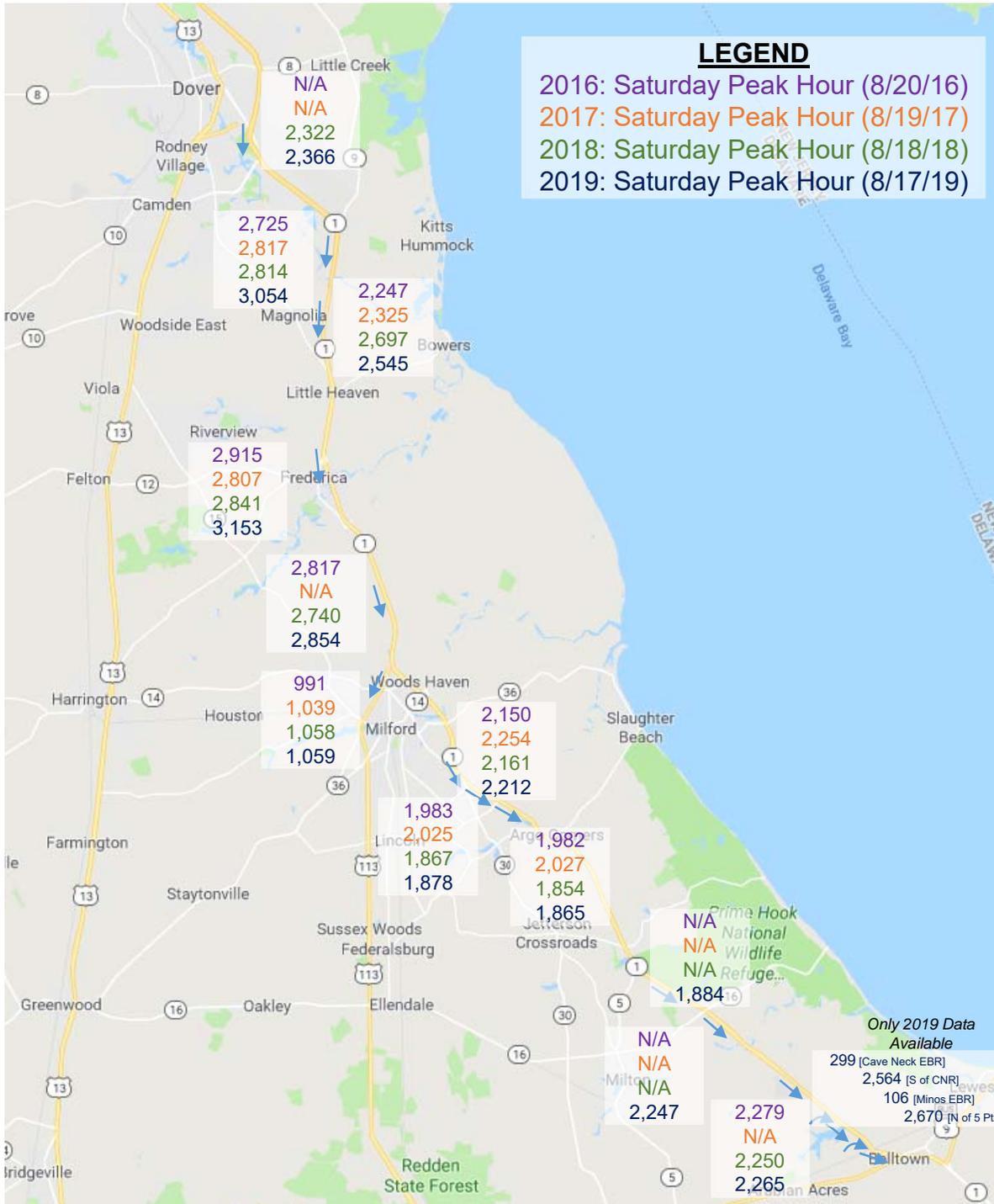
■ Saturday before July 4th (6/29/19)

■ Saturday of week after July 4th (7/13/19)

- **Peak hour for Saturday, August 17 had similar peak volumes to Saturdays throughout the summer**
- **Multiple other peak days had corridor volumes and travel times reviewed and summarized**

LEGEND

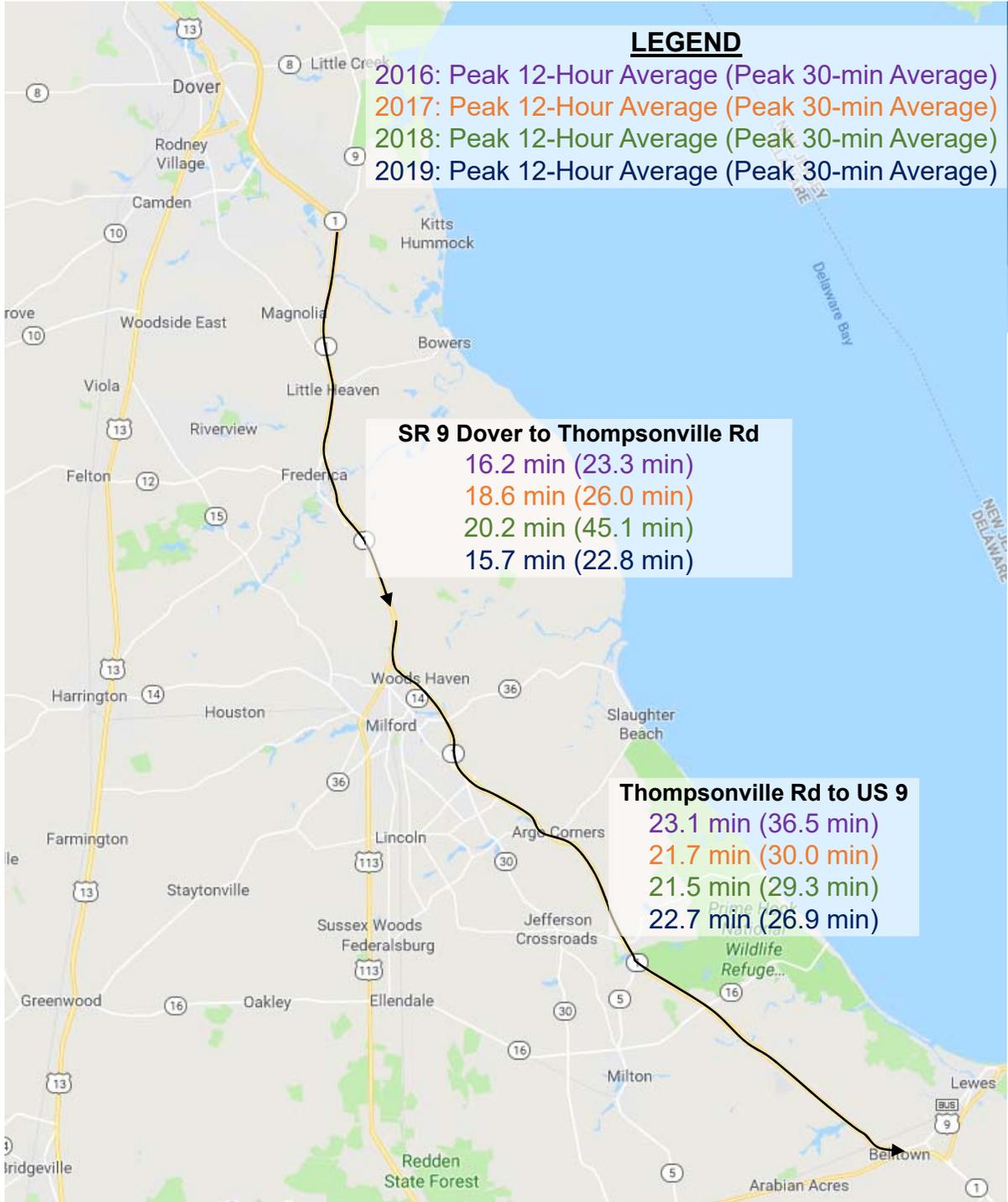
2016: Saturday Peak Hour (8/20/16)
 2017: Saturday Peak Hour (8/19/17)
 2018: Saturday Peak Hour (8/18/18)
 2019: Saturday Peak Hour (8/17/19)



Mid-August Saturday southbound peak hour volumes



- **The segment of SR 1 between Dover and Milford has the highest southbound volumes, over 3,000 vehicles per hour (vph) in 2019, compared to about 2,700 vph approaching Five Points**
- **The US 113 split draws more than one-third of southbound volume off of SR 1**



Mid-August Saturday southbound travel times (RITIS)



Travel times (RITIS)

34

- **Despite significant fluctuations in year-to-year travel times north of Milford, average travel times between Milford and Five Points have been relatively consistent**
- **Increased volumes and lower travel times north of Milford in 2019 have had minimal effect on travel times to the south (peak travel times actually decreased)**

Data source: Regional Integrated Transportation Information System (RITIS)

LEGEND

- 2016: Peak 12-Hour Average (Peak 30-min Average)
- 2017: Peak 12-Hour Average (Peak 30-min Average)
- 2018: Peak 12-Hour Average (Peak 30-min Average)
- 2019: Peak 12-Hour Average (Peak 30-min Average)

SR 9 Dover to Thompsonville Rd

N/A
16.9 min (24.2 min)
17.8 min (33.1 min)
14.1 min (20.5 min)

Thompsonville Rd to US 9

N/A
23.3 min (33.0 min)
22.5 min (27.7 min)
23.0 min (26.5 min)

Mid-August Saturday southbound travel times (Bluetooth)



Travel times (Bluetooth)

36

- **A different data collection system results in similar travel times that support the same conclusion: replacement of signals with Grade Separated Intersections (GSIs) to the north did not significantly impact downstream travel times**

Update on SR 1 crossovers and grade separations

Goal: Address public concerns raised regarding the removal of the SR 1 traffic signal at SR 16, related to traffic volume, congestion, and gaps south of SR 16

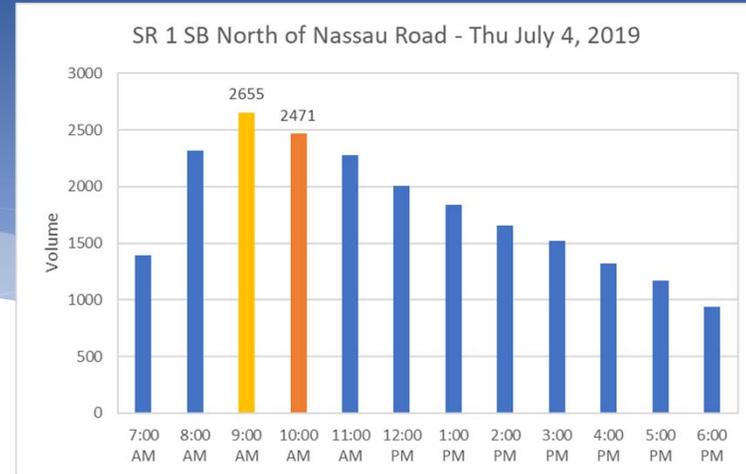


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SR 1 SB Standing Queue Check North of Nassau Road (7/4)

- 158 hours of daytime summer video was reviewed, no standing queues were noted at this location
- Camera is located between Minos Conaway Road and Nassau Road (north), 1.2 miles north of Five Points



4x video speed

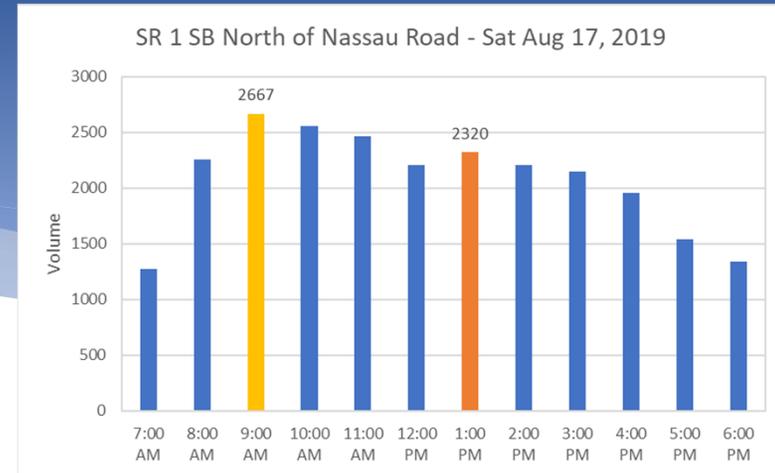


4x video speed



SR 1 SB Standing Queue Check North of Nassau Road (8/17)

- 158 hours of daytime summer video was reviewed, no standing queues were noted at this location
- Camera is located between Minos Conaway Road and Nassau Road (north), 1.2 miles north of Five Points



4x video speed



4x video speed



SR 1 SB, 450 ft north of Pine Haven Road

- **In 10 minutes, 9:30 AM – 9:40 AM:**
 - 295 vehicles
 - **1770 vph flow rate**
 - 12 acceptable gaps (> 8 sec)
 - 142 sec total acceptable gap time
 - **23% of time over 10 min**
- **6.6 mi north of SR 16**



2x video speed



SR 1 SB, 1250 ft south of SR 16 (Broadkill Road)

- **In 10 minutes, 9:35 AM – 9:45 AM:**
 - 410 vehicles
 - **2460 vph flow rate**
 - 12 acceptable gaps (> 8-sec)
 - 205 sec total acceptable gap time
 - **34% of time over 10 min**



2x video speed



SR 1 SB, 1000 ft south of Cave Neck Road

- **In 10 minutes, 9:40 AM – 9:50 AM:**
 - 417 vehicles
 - **2502 vph flow rate**
 - 5 acceptable gaps (> 8-sec)
 - 55 sec total acceptable gap time
 - **9.2% of time over 10 min**
- **4.2 mi south of SR 16**



2x video speed



SR 1 SB, 450 ft north of Nassau Road

- **In 10 minutes, 9:40 AM – 9:50 AM:**
 - 465 vehicles
 - **2790 vph flow rate**
 - 1 acceptable gap (> 8-sec)
 - 9.6 sec total acceptable gap time
 - **1.6% of time over 10 min**
- **5.5 mi south of SR 16**

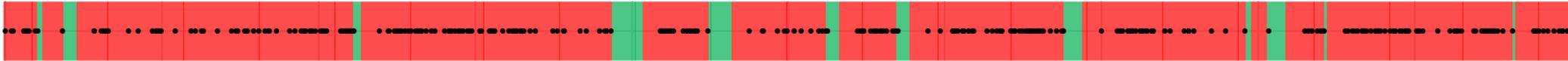


2x video speed



SR 1 SB Arrivals Comparison

SR 1 SB north of Pine Haven Road

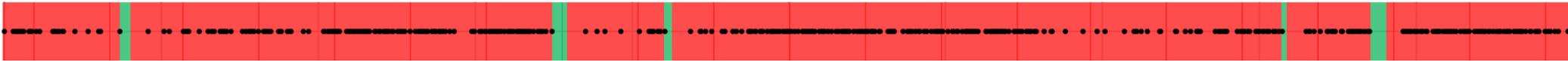


SR 1 SB south of SR 16

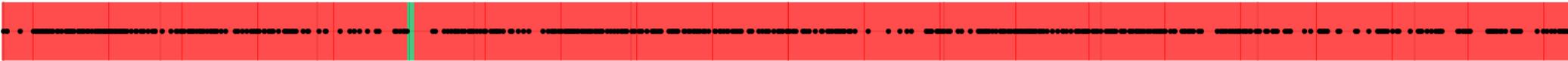


~185" cycle (actuated) ~185" cycle (actuated) ~185" cycle (actuated) ~185" cycle (actuated)

SR 1 SB south of Cave Neck Road



SR 1 SB north of Nassau Road



Takeaways

- **No significant change in findings from 2016 analysis, despite:**
 - 3 fewer signals between Dover and Milford in 2019
 - Slight upward trend in volumes year-to-year
 - No “carmageddon” at SR 16 and/or Five Points based on travel time data
- **US 113 split in Milford removes over one-third of SR 1 traffic**
 - Highest-volume sections of SR 1 within the study area are north of Milford
- **Gaps in traffic are “lost” primarily due to:**
 - Platoons naturally spacing out
 - SR 16 to Cave Neck Road – similar volumes, but significantly fewer and shorter gaps
 - Volume increases from “fill-in” traffic
 - Pine Haven Road to Nassau Road – similarly unaffected by signals, but higher volumes and virtual elimination of gaps

Conclusion

- **The SR 1 and SR 16 Grade Separated Intersection (GSI) project should proceed as scheduled**
 - No significant changes expected to traffic patterns or delays at Five Points
 - Gap availability will be reduced along SR 1 approximately 3-4 miles downstream of the GSI
- **Lack of peak-period gaps is a concern regardless of the SR 1 and SR 16 GSI project**
 - Short term: crossover projects
 - Long term: Minos Conaway Road and Cave Neck Road GSI projects



SR 1 median crossovers

Nine short-term recommendations

Cave Neck Road – implemented August 2019

SR 5 – Design complete; construction planned for 2020

Presently in design; summer 2020 implementation goal:

- Minos Conaway Road, Nassau Road and Tulip Drive signing and striping upgrades

Currently under further evaluation (e.g., large vehicle impacts):

- Hudson Road/Steamboat Landing Road
- Oyster Rocks Road/Eagle Crest Road

Designs to commence in 2020:

- Reynolds Road and Deep Branch Road



Public comment



Thank you for your participation!

Next meeting
Monday, January 27, 2020
6:00 pm
Beacon Middle School

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Project Planner

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Meeting Minutes

Phase 2 Working Group Meeting #2

July 29, 2019, 6:00 pm
Cape Henlopen High School
1250 Kings Highway
Lewes, DE 19958

Members present:

I.G. Burton
Greg Christmas
Robert Fischer
Dennis Forney
Scott Green
Rev. Wendell A. Hall, Sr.
Christian Hudson
Doug Hudson
DJ Hughes
Carole Kohr
Todd Lawson
Lloyd Schmitz
Josh Thomas
Ann Marie Townshend

Members absent:

Sen. Ernesto B. Lopez
Rep. Peter Schwartzkopf
Kim Hoey Stevenson
Rep. Steve Smyk
Helen Truitt
Gail Van Gilder

There were 41 members of the public in attendance. Names of those who signed in are listed at the end of these notes.

The meeting began with a quorum of 14 Working Group members present.

Andrew welcomed everyone and noted that the public will have the opportunity to comment at the end of the meeting. The Working Group members introduced themselves.

Andrew went over the agenda and summarized the contents of the meeting packet that was provided to the members of the Working Group at the meeting.



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The draft meeting minutes were not received in advance, so approval of the minutes was deferred to later in the week to give members time to review them.

Andrew noted that based on discussion at the last meeting, the Working Group will meet more frequently than originally proposed. Meetings will occur every three months, and in the months with no meeting an email communication will be sent with updates.

Andrew introduced Secretary Jennifer Cohan for opening remarks.

Secretary Cohan thanked returning and new Working Group members. She said this evening DeIDOT would explain the project development process, which is heavily regulated on the federal side. She then introduced Shante Hastings as DeIDOT's new Chief Engineer.

Project Development Process

Shante Hastings described the process for how projects are initiated and how they ultimately move forward to construction. Project ideas come from many sources, e.g. Metropolitan Planning Organizations (MPO's), local governments, and the general public. Programs within DeIDOT also identify potential projects; examples of programs are Safety, Bridge, Paving, and Bicycle and Pedestrian. Project ideas get funneled through a prioritization process. There is a statewide prioritization for standalone projects. Separately, the programs each have their own process to prioritize their projects.

After projects are prioritized, they are paired with funding sources and a draft 6-year Capital Transportation Program (CTP) is prepared for review and comment. This process used to occur every year and took a lot of resources. Now DeIDOT has changed to a two-year process. This will allow more time for outreach. This fall there will be public workshops to present and receive input on the 6-year program. The workshop for Sussex County is typically held in Georgetown. After the hearings and public comments, the draft CTP goes to the Council on Transportation (COT). COT is an advisory group that oversees the prioritization process and makes sure the CTP meets all requirements. Every two years, generally in March, the COT will provide an approved CTP to the Governor and the General Assembly. The first year of the CTP gets approved through the bond bill process, which authorizes DeIDOT to begin work on new projects.

Some recommendations that came from the Five Points Phase 1 Working Group have gone through this process. Some ideas must be studied before they can become a project. Some of the ideas were already in the CTP. Shante emphasized that it is important for the public to come out to the workshops both



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for individual projects and for the CTP so their input can be incorporated into the projects.

Once the bond bill is approved for the CTP, projects go into the design and construction process. That process includes survey of existing conditions, obtaining deeds to determine rights of way, mapping utilities, wetlands, historic properties, and other data. The information is used to develop alternative designs and minimize the impacts of the project. After alternatives are laid out, a public workshop is held to get feedback. When a preferred alternative is selected, detailed design is performed. Then the final right of way requirements can be determined, and the right of way acquisition process can begin. For each affected property, right of way acquisition involves an appraisal, an offer to the property owner, and often a negotiation. For projects with many impacted properties right of way acquisition can take a long time. All the right of way must be secured before the project is advertised for bidding. From the time the advertisement goes out until the time construction starts is about 5 – 6 months. The construction duration depends on the size and complexity of the project. DeIDOT realizes the process takes a long time but needs to follow the requirements.

Dennis Forney asked if there are any situations where the process has been leap-frogged due to extreme need? Shante responded that it depends on impacts. A small project may be easier to speed up; it is hard to do with a corridor. DeIDOT is piloting ideas to speed up the right of way acquisition process. DeIDOT does have authority to skip steps in an emergency situation.

Implementation Plan Status

Jeff Riegner described the implementation plan status and progress that has been made since the April 29 Working Group meeting. The progress is described in detail in the presentation slides and on the implementation plan status spreadsheet. Both are in the Working Group meeting packet.

Shante noted with regard to Recommendation A-1 that several of the crossovers on Route 1 will soon be getting improvements aimed at restricting some movements that are causing safety concerns while providing for the main movements.

Route 1 and Cave Neck Road will be getting tubular delineators next week. Three other intersections require construction and DeIDOT is in the process of advertising a contract. Construction will be later in the fall or next spring.

- Route 1 and Route 5
- Route 1 and Hudson Road
- Route 1 and Oyster Rocks Road/Eagle Crest Road



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Shante also said this summer DeIDOT has been collecting data and conducting studies on Route 1 between Milford and Five Points to address the issue of what will happen once the signal at Route 16 is removed. DeIDOT will provide information to the Working Group on results of these studies as well as on the crossover projects.

Andrew asked for questions from the Working Group members.

Working Group Questions

Bob Fischer said he understands DeIDOT has a project underway related to C-10 “Continue to improve traffic signal phasing, timing and coordination using real time monitoring and control technologies”. He recommended that the project be described and added to Category A, and that the Working Group be apprised of progress. This should not be just tweaking the existing surveillance and signal operation but include new ideas that are being developed. A lot of people are asking what DeIDOT is doing to fix the summertime traffic problem.

Shante responded that DeIDOT can provide updates on their work on signalized corridors at quarterly Working Group meetings and/or in the monthly newsletters.

DJ said that at the Route 1/16 workshops, information was given that removal of the Little Heaven signal 21 miles north would add 130 vehicles per hour to Five Points and the intersections in between. DJ would like to see information on how much traffic will be added per hour to the Five Points intersection after removal of the Route 16 signal, as well as information on how much the longer the queue from Five Points will be. His intent for Recommendation A-1 was about reprioritizing other grade separations before the signal at Route 16 is removed. He would like to see data on queue and overall delays on Hudson Road and Cave Neck Road. He questioned why the area from Minos Conaway Road to Tulip Drive wasn't being addressed first when that area has the highest number of crashes.

Shante responded that DeIDOT is in fact analyzing side road queues and gaps this summer. Information will be available in the fall. She noted that Route 1 /16 is ahead of other projects in terms of design schedule. DeIDOT is now buying right of way. DeIDOT is not buying right of way at the other locations because the design isn't done yet. DeIDOT is proceeding with the current schedule. Information from all the studies now being conducted at locations south of 1/16 will be presented in the fall.

Lloyd said he was concerned about Cave Neck Road. People will have to go south and make a U-turn to go north on Route 1; he's concerned that traffic will



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back up beyond the turn lane storage into Route 1. Will the turning lane be extended?

Shante said the Cave Neck Road improvements will prohibit eastbound Cave Neck Road left turns so traffic wanting to go north will have to make a right turn and U turn. The predominant movement at Cave Neck is the northbound Route 1 left turn into Cave Neck and the improvement preserves the most important movements. It is being done with tubular delineators. They will monitor for the need to make any tweaks.

Christian Hudson expressed concern about a possible weave situation at Cave Neck Road. He suggested a longer acceleration lane in the median to go north on Route 1

Greg Christmas commented that the U-turn at Cave Neck Road from northbound to southbound doesn't have as much volume but is a bigger problem because of the wall of southbound traffic. U-turns jump across Route 1 into the Cave Neck Road acceleration lane for Cave Neck east to Route 1 south. Think about eliminating U-turns altogether at that intersection. Also think about bringing the yield sign back – the stop sign makes it worse.

Jeff responded that the northbound U-turn at Cave Neck Road can't be physically prohibited because the northbound left turn is an important movement that will remain. But perhaps something can be done with signing.

Ann Marie said that part of Recommendation B-3 was intended to divert traffic bound for Long Neck to use Route 5 and Route 30. What's the intent for signs there?

Jeff responded that signs are becoming less effective for route choices and more people rely on apps like Waze that take congestion into account. Also, Route 1 is designed for longer trips, higher speed, better shoulders and sight lines, and generally a higher standard of design than Route 30. Route 30 is a two-lane road with no shoulders in some areas and no turn lanes at many intersections so it's not desirable to direct large volumes of traffic that way.

Bob Fischer asked whether the 45 MPH speed limit signs for southbound Route 1 now located at the apex of the Nassau Bridge might be better located further north.

DJ asked whether the signal justification study for Minos Conaway Road and Route 9 is available. The answer is yes, the study will be made available.



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DJ asked how much traffic will be added to Minos Conaway Road once the New Road underpass is complete? There is potential for cut-through traffic on Minos Conaway Road to avoid Five Points.

Jeff responded that a traffic model was done for the entire area, and there will be a public workshop this fall.

Bob Fischer noted that cyclists need to be educated on how to cycle safely. There was nearly a crash on Minos Conaway Road caused by a cyclist coming out of a development. There are a lot more cyclists and they need to know their responsibilities, including anywhere the new bike path intersects roads.

Jeff thanked Bob for that comment and noted Sen. Lopez sponsored a recent cycling safety session associated with the Georgetown-Lewis Trail.

Regarding Recommendation E-2 (extension of Mulberry Knoll Road), Jeff noted it is closely related to Recommendation A-7 (widening Plantation Road), and it might not be necessary to do both. Lloyd asked whether the Plantation Road workshop scheduled for August 6 will address that issue.

Shante clarified that the current Plantation Road project, called Phase 1, extends from Route 9 to Robinsonville Road and DeIDOT can't yet address Mulberry Knoll Road extension or potential changes to Plantation Road south of Robinsonville Road. The relative impacts of each need to be examined.

DJ asked what the timeframe for road improvements will be if DeIDOT is relying on the TID, which would require development to occur. Could those projects be considered for the CTP?

Drew Boyce responded that the TID will be leveraged to inform the CTP. Many of the projects proposed in the draft FY 21-26 CTP are in the TID study. DeIDOT will continue to work with the County to reach an agreement so that developer contributions will help fund projects.

Greg Christmas said the real problem is the Five Points intersection itself. Improvements need to be made there and Belltown Road needs to be eliminated. He does not see a master plan for the Five Points intersection.

Jeff agreed, and studying improvements for the Five Points intersection is Recommendation E-1. However, DeIDOT first wants to understand how some of the other planning efforts will affect the Five Points intersection before undertaking that study. For example, the Plantation Road Phase 1 project will



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significantly affect how you get from southbound Route 1 to Plantation Road, it will be much easier and safer.

Rev. Hall said recent construction on Jimtown Road is substandard and asked if DeIDOT can get involved. The DeIDOT team present did not have information on that construction and will investigate it.

Dennis Forney asked now that DeIDOT has real time data, what does traffic this summer look like compared with previous summers?

Peter Haag, DeIDOT Traffic Studies Manager, said DeIDOT is collecting live data from video, sensors, and traffic signals and utilizing it through the operation center to analyze conditions. He also said the public can report a road condition on the DeIDOT website or the DeIDOT app or dial #77 which goes directly to the Traffic Management Center (TMC).

DJ advised that when Bluetooth data is analyzed for travel time, don't discard data as invalid if the time is excessive, assuming the vehicle must have stopped somewhere. Actual travel times can be very long.

Jeff summarized the next steps in the process:

- Meetings will be held every three months, with the next meeting in October at Beacon Middle School.
- Meetings will generally be the last Monday of the month.
- Email progress updates will be sent in months that there is no meeting
- An annual report will be prepared in early 2020.
- A public workshop will be held in the spring of each year.

Andrew said that the future meetings would be much like this one, presenting progress made on the recommendations and getting further input from the Working Group and public.

Public comments

- Bill Weller of Minos Conaway Road thanked DeIDOT for listening and scheduling more frequent meetings. He questioned why DeIDOT was doing yet more studies aimed at showing that removing the signal at Route 16 won't adversely affect people downstream. He said he could not be convinced with statistics. The red time at the Route 16 signal gives people time to get out of their developments.



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- George Dellinger called for a paradigm shift. The right in, right out strategy on high speed roads is a rural strategy. The area is urban now, and we need urban solutions. You can't have uncontrolled access onto Route 1. There are five variables to evaluate:
 - Density of vehicles,
 - speed,
 - density of intersections,
 - U-turn acceleration lanes of sufficient length, and
 - distance between U-turn and the targeted exit pointCave Neck might be safe because it's half a mile to the next intersection. But the closer you get to Five Points, the closer spaced the intersections are and they compete for access. Urbanization begins at Devon Road. Cars from Minos Conaway Road that want to go north and southbound Route 1 cars that want to go to Old Mill Road must go to the Nassau Road crossover which is very dangerous. This needs an urban solution.
- Margaret Fischer said the new pavement markings on the bridge have helped reduce speed and asked whether similar markings could be installed approaching Cave Neck Road.
- Kim Smitas commented on timing of lights on Route 1. Driving on Route 1 today, she could not get from one light to the next without having to stop. Also, the length of the yellow lights causes people to stop in the middle of the intersection, blocking it. People then try to drive around the blockage in an unsafe manner. She does not know how to fix this but said the red-light running camera (she did not recall the location) seems to affect behavior. A camera would pay for itself in one weekend if offending drivers were ticketed.
- Charlie Daneri commented that he thought the speed markings on Nassau bridge did have an effect, but when the marking first went in there was also a speed sign which was very effective. As soon as that sign went away, speed went back up. He also commented that something needs to be done about speeding on Minos Conaway Road. He saw drag racing on Minos Conaway with cars accelerating around the curve and probably going over 70 mph. Speeding is the major problem on Minos Conaway Road.
- Steven Mumford wants lower speed limits on all the roads. He would like to look at a map of future construction and then he may have additional remarks.

Andrew adjourned the meeting at 7:45 pm.



DRAFT

Public sign-in list

Baker, Kathleen	Rogers, Dan
Bass, Ronald	Schmitz, Kat
Bilowus, Colleen	Schreck, Neil
Bilowus, Paul	Smitas, Kim
Borrasso, Rich	Smith, Patricia
Carey, Paul	Steinback, Robert
Catania, Jerry	Syakon, Joanne
Catania, Lorraine	Tan, Vincent
Cherry-Wall, Tremica	Udebohm, Becky
Colman, Katherine	Venezian, Jim
Daneri, Charles	Venezian, Rose
DeBoissiere, Dan	Waage, Arthur
Dellinger, George	Wall, P.
Fischer, Margaret	Weller, Bill
Gray, Pam	Weller, Nancy
Hutson, Larry	Wilfong, Peg
Kauffman, Jared	Williams, Emily
Lister, A.	Zawislak, JR
Lofgron, Sylvia	
Moore, Jan	
Moore, Ken	
Mumford, Steven	
O'Hagan, Diana	

List of upcoming meetings

Phase 2 Working Group

Meeting #3

October 28, 2019, 6:00 pm
Beacon Middle School
19483 John J. Williams Highway
Lewes, DE 19958

Meeting #4

January 27, 2020, 6:00 pm
Beacon Middle School

Meeting #5

April 27, 2020, 6:00 pm
Beacon Middle School (tentative)

Meeting #6

July 27, 2020, 6:00 pm
Location to be determined

Meeting dates, times, locations, and agendas are subject to change.

See the Delaware Public Meeting Calendar
at publicmeetings.delaware.gov
for official meeting notices.



**FIVE POINTS TRANSPORTATION STUDY
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Category	ID	Priority	Old idea no.	Working Group recommendation	Assumed lead agency	Other responsible parties (if any)	Study cost	Study timeframe	Imp. cost	Imp. timeframe	Imp. impacts	Status	Remarks
A	1	N/A	25	Review the need for grade separating or restricting crossings between Frederica and Lewes before eliminating signals in this area	DeIDOT - Traffic		\$	*	N/A	N/A	N/A	IN PROGRESS	Studies are being conducted to develop a plan for unsignalized crossovers. This is an ongoing effort.
A	2	N/A	42	Evaluate Tulip Drive connection to Route 1 as part of the Minos Conaway Road grade separation project	DeIDOT - PD South		\$	*	\$\$	**	◊◊	COMPLETE	Tulip Drive connection is now part of the Minos Conaway project.
A	3	N/A	53	Study the feasibility of increasing the proposed Route 24 bypass of Millsboro from one lane in each direction to two lanes in each direction	DeIDOT - PD South		\$\$	**	\$\$\$\$	**	◊◊◊	COMPLETE	This effort was completed as part of the US 113 Millsboro-South Area Supplemental DEIS. A two-lane bypass was found to be adequate for future demand.
A	4	N/A	54	Study options for signage to direct appropriate traffic, i.e. local, boat, U of D and walking/biking areas, under the Nassau Bridge	DeIDOT - PD South		\$	*	TBD	TBD	TBD	IN PROGRESS	This will be addressed as part of the Minos Conaway project. Documentation of signing will be available when semi-final plans are completed and the public will have the opportunity to comment.
A	5	N/A	55	Evaluate one-way service roads as part of the Minos Conaway Road grade separation project	DeIDOT - PD South		\$	*	\$\$	**	◊◊	COMPLETE	Service roads are now part of the project. Please see the project page for additional information.
A	6	N/A	82	Study the feasibility of extending the eastbound widening of Route 24 to Love Creek	DeIDOT - PD South		\$	*	\$\$\$	**	◊◊◊	COMPLETE	The current project, design of which is nearing completion, extends the four-lane section on SR 24 to a point west of Beacon Middle School. Widening to three lanes (one through lane in each direction plus a center left-turn lane) will extend to the Love Creek bridge. The Henlopen TID study anticipates that widening of the bridge will be needed by 2040.
A	7	N/A	83	Study the feasibility of widening or adding through lanes on Plantation Road from Route 24 to Cedar Grove Road and Postal Lane	DeIDOT - PD South/Planning		\$	*	\$\$\$	**	◊◊◊	IN PROGRESS	The Henlopen TID effort is studying widening of Plantation Road and an extension of Mulberry Knoll Road. See recommendations E-2 and E-3.
B	1	Y	34	Require new developments to plan for interconnections to any future development areas and monitor to ensure implementation	Sussex County	DeIDOT	\$	*	N/A	N/A	N/A	Priority recommendation for 2019	Addressed in the County's comprehensive plan and currently required for commercial properties. Implementation for residential developments will be considered.
B	2	Y	86	Consider modifications to land development requirements and/or the Development Coordination Manual that require additional buffers/setbacks for all new developments for future road expansion	Sussex County	DeIDOT	\$	*	N/A	N/A	N/A	Priority recommendation for 2019	Addressed in the County's 2018 comprehensive plan update; more work is needed.
B	3	Y	4	Study the feasibility and anticipated effectiveness of modifying signage, starting in Milford, to encourage through drivers (to points outside the Route 1 corridor between Lewes and Dewey Beach) to use Route 113, Route 5, Route 23, etc.	DeIDOT - Traffic	Private partner(s) such as Waze	\$	*	\$\$	*	◊	COMPLETE	An additional sign was installed on southbound SR 1 south of Thompsonville Road to identify municipal destinations and distances. Anticipated effectiveness of guide signs is decreasing as more and more people rely on GPS/route guidance systems.
B	4	Y	91	Improve advance acquisition process to allow DeIDOT to more quickly acquire land needed for transportation improvements and acquire available land within the Five Points Study Area (e.g., Creative Concepts)	General Assembly	DeIDOT	\$	**	N/A	N/A	N/A	COMPLETE	New advance acquisition regulations were approved in 2018. Now proactive purchases will be feasible.
B	5	Y	50	Study the feasibility of converting the Arby's driveway between Route 1 and Savannah Road into a publicly-accessible road	DeIDOT - Planning	DeIDOT - Real Estate and PD South; property owners	\$	*	\$\$	**	◊	IN PROGRESS	DeIDOT is reviewing potential options. Coordinate with B-1 and C-12.
B	6	Y	14	Incorporate more walkable, bikeable, mixed-use town centers into the	Sussex County		\$	*	N/A	N/A	N/A	Longer term	

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B	7	Y	89	Continue TID studies both east and west of Route 1	DeIDOT - Planning	Sussex County, City of Lewes	\$\$	*	TBD	TBD	TBD	IN PROGRESS	The Henlopen TID study (west of Route 1) future year traffic analysis and identification of improvements is completed and was reviewed with County staff this fall. Sussex County and DeIDOT are working to identify next steps, including public involvement. That study conducted traffic analysis related to Recommendations A-6, A-7, C-1, C-3, C-7, C-19, E-2, and E-3. Discussions regarding the Lewes TID on the east side of Route 1 are pending completion of the New Road Master Plan
B	8	Y	62	Study the feasibility of a parking management system to alert travelers when parking lots at major destinations are full	DeIDOT - Planning	DeIDOT Traffic, property owners, businesses, DNREC, private partner(s)	\$\$	*	\$\$\$	**	◊	Longer-term	
B	9	N	69	Study enhancing New Road per Byway Master Plan	Delaware Greenways; DeIDOT - Planning	City of Lewes	N/A	N/A	\$\$\$	**	◊◊◊	IN PROGRESS	A Master Plan study is underway. See https://delawaregreenways.org/new-road-master-plan/ .
B	10	N	94	Endorse "don't block the box" legislation with camera enforcement	General Assembly	Delaware State Police, DeIDOT	\$	**	\$\$	*	◊	Longer-term	
B	11	N	87	Ensure cost savings from transportation projects within the study area are re-invested in projects within the study area	General Assembly		\$	*	N/A	N/A	N/A	Longer-term	
B	12	N	15	Study relaxed height limits as part of the comprehensive plan to increase density	Sussex County		\$	*	N/A	N/A	N/A	Longer-term	
B	13	N	95	Study alternatives to both meter and slow southbound traffic approaching Five Points	DeIDOT		\$	*	TBD	TBD	TBD	IN PROGRESS	DeIDOT has implemented speed reduction pavement markings along SR 1 southbound approaching the Nassau Bridge. Performance of pavement markings will be evaluated; if additional measures are needed, they will be considered. Coordinate with A-1.
B	14	N	36	Identify locations where trees can safely be planted within the right of way	DeIDOT		\$	*	\$\$	**	◊	Longer-term	
B	15	N	17	Identify all locations in the study area with poor drainage and make recommendations for potential inclusion in the Capital Transportation Program or developer requirements	DeIDOT	Sussex County	\$	*	\$\$\$	***	◊◊	Longer-term	
B	16	N	16	Increase the importance of considering noise and lighting impacts of major transportation project recommendations per regulations	DeIDOT		\$	*	N/A	N/A	N/A	Longer-term	
B	17	N	56	Evaluate the use of land made available by narrowing lanes for landscape and multi-modal trails or parks	DeIDOT		\$	*	\$\$	**	◊	Longer-term	
B	18	N	26	Study potential locations and designs for aesthetically pleasing gateways to coastal Sussex County	Sussex County	DeIDOT, City of Lewes, Byway Committee	\$	*	\$\$	**	◊	Longer-term	
B	19	N	75	Study the feasibility of mounting clear, consistent, day/night address/block numbering signage along Route 1	DeIDOT	Sussex County Tourism	\$	*	\$\$	*	◊	Longer-term	
B	20	N	80	Consider whether CTP funding should be allocated based on population growth	DeIDOT	Council on Transportation	\$	**	N/A	N/A	N/A	Longer-term	
B	21	N	7	Study frequency and causes of emergency vehicle preemption and make recommendations to balance emergency vehicle access with traveler mobility	DeIDOT	Emergency service providers	\$	*	\$\$	*	◊	IN PROGRESS	DeIDOT is studying the frequency of emergency vehicle pre-emption. DeIDOT has completed a signal hardware update and is in the process of installing new equipment that should reduce the disruption of pre-emption. Replacements in the study area should be completed by the end of the year.
B	22	N	2	Require bike parking as a condition of certain new developments	Sussex County		\$	*	N/A	N/A	N/A	IN PROGRESS	Discussions with developers occur as plans are submitted. Bike parking recommendations are made for some site plans.
B	23	N	35	Use an app to warn people of congestion on Route 1 and recommend alternative routes	DeIDOT		\$	*	N/A	N/A	N/A	COMPLETE	DeIDOT app is in place and continually being updated.

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B	24	N	49	Improve tourism-oriented destination signage along Route 1	Sussex County Tourism	DeIDOT	\$	*	\$	*	◊	Longer-term	
B	25	N	28	Identify the costs and benefits of dedicating Nassau Commons Boulevard to public use	DeIDOT	Sussex County, property owner	\$	*	\$\$	**	◊◊	Longer-term	
B	26	N	21	Bring in nationally recognized planners and engineers to provide new, creative ideas that draw from examples in other parts of the country	DeIDOT	Sussex County	\$	*	N/A	N/A	N/A	Longer-term	
B	27	N	9	Develop a better process for constituents to request transportation improvements	DeIDOT	General Assembly, Sussex County, Council on Transportation	\$	*	N/A	N/A	N/A	Longer-term	
C	1	Y	20	Conduct a corridor study on Route 9 to determine the feasibility of widening to four lanes	DeIDOT - Planning		\$\$	**	\$\$\$\$	***	◊◊◊	IN PROGRESS	Being considered by Henlopen TID study, with limits from Ward Avenue to just west of Old Vine Boulevard. DeIDOT will initiate a planning study for this effort. A project is proposed in the FY 21 - 26 CTP.
C	2	Y	72	Conduct a study at Route 9 and Minos Conaway Road to determine if a traffic signal is warranted and install a signal if warranted	DeIDOT - Traffic		\$	*	\$\$	*	◊	COMPLETE	Study is complete, recommending installation of a southbound right-turn lane on Minos Conaway Road and keeping stop sign control. A project is proposed in the FY 21 - 26 CTP.
C	3	Y	64	Initiate a capital project to improve the intersection of Old Landing and Warrington Road (developer funding and concept are	DeIDOT - PD South		N/A	N/A	\$\$\$	**	◊◊	IN PROGRESS	A project is proposed in the FY 21 - 26 CTP.
C	4	Y	11	Improve the Canary Creek bridge on New Road to reduce flooding	DeIDOT - Bridge		N/A	N/A	\$\$\$	**	◊◊◊	IN PROGRESS	A project has been initiated under DeIDOT's Bridges/State of Good Repair budget. It cannot be constructed until after the Old Orchard Road/Savannah Road intersection project is complete.
C	5	Y	92	Improve the intersection of Cave Neck Road, Sweet Briar Road, and Hudson Road	DeIDOT - PD South (in CTP)		\$	*	\$\$\$	**	◊◊	IN PROGRESS	Short-term modifications were recently completed and are being monitored in December 2018 and June 2019. Further improvements are proposed for the later years of the Capital Transportation Program.
C	6	Y	102	Study the feasibility of lengthening left- and right-turn lanes throughout the study area	DeIDOT - Traffic		\$	*	\$\$\$\$	***	◊◊◊	Longer-term	It would be helpful to understand critical locations, some of which could be addressed in the short term.
C	7	Y	104	Study the feasibility of improving Minos Conaway Road with appropriate lane widths, shoulder widths, turn lanes, curvature, etc.	DeIDOT - Planning/Traffic		\$	*	\$\$\$	***	◊◊◊	IN PROGRESS	A curve compliance study completed in February 2019 and signage improvements were implemented in March 2019. A preliminary concept is being considered as part of the Henlopen TID study.
C	8	Y	103	Study the feasibility of restriping two-lane sections of Savannah Road with a two-way left-turn lane	DeIDOT - Traffic		\$	*	\$\$	**	◊	IN PROGRESS	An assessment has been prepared. Providing a two-way left-turn lane is potentially feasible, but there are pros and cons to this idea. Implementation would likely involve more than striping.
C	9	Y*	73	Evaluate potential short-term safety and operational improvements at Route 9, Plantation Road, and Beaver Dam Road while longer-term improvements are under development	DeIDOT Traffic/PD South		\$	*	\$	*	◊	IN PROGRESS	Evaluating extension of the second westbound Route 9 through lane west of the Plantation Road connector. Initial study shows that this improvement may have some safety benefits. Potential direct access to Lowe's from Route 1 may reduce traffic at this location.
C	10	Y*	32	Continue to improve traffic signal phasing, timing and coordination using real time monitoring and control technologies	DeIDOT - Traffic		\$	*	\$	*	◊	IN PROGRESS	This is a core function of DeIDOT Traffic, and is done on an ongoing basis. Pre-emption improvements are in progress; see recommendation B-21.
C	11	N	68	Develop concepts and estimates for bringing roads in the study area to DeIDOT standard, including shoulders	DeIDOT		\$\$	**	\$\$\$\$\$	***	◊◊◊	Longer-term	Sussex County recently introduced an ordinance to upgrade standards for new roads as they are built.
C	12	N	98	Study access management opportunities along Route 1 in the study area, including potential connections between businesses	DeIDOT	Sussex County	\$	*	\$\$\$	**	◊◊◊	Longer-term	Consideration of direct access to Lowe's from Route 1 may be considered in the short term.
C	13	N	22	Study the feasibility of eliminating unsignalized crossovers on Route 1	DeIDOT		\$	*	\$\$	**	◊	Longer-term	

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C	14	N	51	Study the feasibility of installing a "YOUR SPEED" display on southbound Route 1 at	General Assembly	DeIDOT	\$	*	\$	*	◊	Longer-term	
C	15	N	38	Study the feasibility of lengthening the southbound acceleration lane on Route 1 at Minos Conaway Road	DeIDOT		\$	*	\$\$	*	◊	Longer-term	
C	16	N	84	Study the feasibility of providing driveway access from Beacon Middle School and Love Creek Elementary School onto Mulberry Knoll	DeIDOT	Sussex County, Cape Henlopen School District	\$	*	\$\$\$	**	◊◊	Longer-term	
C	17	N	27	Conduct capacity analyses at study area intersections to identify the need for turn lanes	DeIDOT		\$\$	*	\$\$\$\$	**	◊◊	Longer-term	
C	18	N	60	Improve lane markings and signs at identified intersections: Five Points, Dartmouth Drive/Kings Highway, Plantation Road/Beaver	DeIDOT		\$	*	\$	*	◊	Longer-term	Immediate maintenance concerns are being addressed now.
C	19	N	78	Study the feasibility of an all-way STOP at Beaver Dam Road and Kendale Road	DeIDOT		\$	*	\$	*	◊	IN PROGRESS	Being considered by Henlopen TID study.
C	20	N	48	Study the feasibility of replacing the HAWK signal with a full signal at Holland Glade Road, potentially with a fourth leg at the outlets	DeIDOT - Development Coordination		\$	*	\$\$	*	◊	IN PROGRESS	DeIDOT is studying how this could be implemented in conjunction with development activity.
D	1	Y	79	Study the feasibility of a hop-on, hop-off van or jitney service loop for Lewes similar to free service in Cape May (Five Points, hospital, Lloyds Grocery Store, downtown Lewes, Library, Lewes Beach, Ferry, State Park, etc.)	DTC	City of Lewes, DRBA	\$	*	\$\$	*	◊	Priority recommendation for 2019	
D	2	Y	5	Study the feasibility of potential connections for walking and bicycling between existing neighborhoods, along streets, and to trails	Sussex County (as part of comprehensive plan)	DeIDOT - Planning	\$\$	*	\$\$\$	***	◊◊	Longer-term	A new Mobility Committee is proposed under the comprehensive plan. This committee and/or the Working Group could play a role in this effort.
D	3	Y	96	Develop design guidance to separate pedestrians and bicyclists from highway traffic using aesthetic treatments	DeIDOT	Sussex County	\$	*	TBD	TBD	TBD	Longer-term	
D	4	Y	90	Develop concepts and estimates for filling all sidewalk gaps along New Road and Old Orchard Road	DeIDOT - Planning		\$	*	\$\$\$	**	◊◊◊	IN PROGRESS	Portions will be built by current CTP projects on Old Orchard Road and SR 1/Minos Conaway Road, as well as by developer projects. The New Road Master Plan will identify remaining gaps on New Road.
D	5	Y	71	Develop concepts and estimates for filling all sidewalk gaps along Savannah Road between Lewes and Five Points	DeIDOT - Planning		\$	*	\$\$\$	**	◊◊◊	IN PROGRESS	Portions will be built by current CTP projects on Old Orchard Road and on Savannah Road (between the Georgetown-Lewes Trail and Quaker Road). Assessment of remaining gaps is underway. To be coordinated with C-8.
D	6	Y*	52	Study the feasibility of pedestrian bridges over Route 1 at specific locations	DeIDOT		\$	*	\$\$\$	***	◊◊	Longer-term	
D	7	N	59	Study the feasibility of transit service to tie the Milton/Red Mill Pond/Minos Conaway Road area into the transit network	DTC		\$	*	\$\$	*	◊	Priority recommendation for 2019	
D	8	N	81	Study the feasibility of a park and ride lot on Route 24 at the edge of the study area	DTC	DeIDOT	\$	*	\$\$\$	**	◊◊◊	Longer-term	
D	9	N	23	Identify potential connections to and from the Lewes Transit Center	DeIDOT		\$	*	\$\$	**	◊	Longer-term	
D	10	N	6	Study the feasibility of a barrier in the median of Route 1 to deter pedestrian crossings at inappropriate locations	DeIDOT		\$	*	\$\$\$	**	◊	Longer-term	
D	11	N	67	Study the feasibility of providing shelters at bus stops - Context Sensitive i.e. cottage beach style shelters	DTC		\$	*	\$\$	*	◊	Longer-term	
D	12	N	41	Identify publicly- and privately-owned land in the study area that may be used for trails	DeIDOT		\$	*	\$\$\$\$	***	◊◊	Longer-term	
D	13	N	1	Identify locations in the study area where bike parking can be provided	DeIDOT		\$	*	\$	*	◊	Longer-term	

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D 14	N	43	Study the feasibility of signing and/or pavement markings that will improve bicyclist comfort turning left from Dartmouth Drive onto Route 1	DeIDOT - Traffic		\$	*	\$	*	◊	IN PROGRESS	Bike box design is complete, but the bike box concept will be introduced at a less complex location first. In the meantime, bicyclists may cross SR 1 with pedestrian signals. Additional safety measures may be considered as part of the CTP project on Kings Highway.
D 15	N	47	Study opportunities for pedestrian crossings on Kings Highway and Freeman Highway	DeIDOT		\$	*	\$\$	**	◊	IN PROGRESS	Signs were installed in May 2018. Additional pedestrian facilities may be included with the Kings Highway CTP project as proposed by the Kings Highway/Gills Neck Road Byway Master Plan.
E 1	Y	66	Study the feasibility of a grade separation at Five Points	DeIDOT - Planning		\$\$	**	\$\$\$\$	***	◊◊◊	Longer-term	This effort will depend on the results of studies under A-7, E-2, and E-3. Additionally, the shorter term improvements and CTP projects will impact the scope of the study as well.
E 2	Y	70	Evaluate the potential transportation benefits, costs, and impacts of a new road parallel to Plantation Road connecting Mulberry Knoll Road to Route 9; require any new development in this area to build this road to state specifications one parcel at a time	DeIDOT - Planning	Sussex County	\$\$	**	\$\$\$\$	***	◊◊◊	IN PROGRESS	Idea is being considered as part of the Henlopen TID study. DeIDOT will initiate a planning study for this effort. Coordinate with A-7 and E-3.
E 3	Y	8	Develop a plan for grid road patterns where land is available, working with property owners and developers, including a series of roads that connect Route 9, Route 23, and Route 24 between Plantation Road and Dairy Farm Road	DeIDOT - Planning	Sussex County, property owners and developers	\$\$	**	\$\$\$\$	***	◊◊◊	IN PROGRESS	Idea is being considered as part of the Henlopen TID study. Coordinate with A-7 and E-3.
E 4	N	29	Evaluate the potential transportation benefits, costs, and impacts of a new road connecting Route 1 north of Five Points and the Vineyards	DeIDOT		\$\$	**	\$\$\$	***	◊◊◊	Longer-term	
E 5	N	44	Look at east/west traffic as a system: Minos Conaway (starting at Route 9), New, Old Orchard, and Clay Roads	DeIDOT - Planning, PD South		\$\$	*	TBD	TBD	TBD	Longer-term	
E 6	N	57	Study the feasibility, benefits, costs, and impacts of potential service roads along Route 1, including whether narrowing the median would facilitate provision of service roads	DeIDOT		\$\$	**	\$\$\$\$	***	◊◊◊	Longer-term	
E 7	N	77	Evaluate the potential transportation benefits, costs, and impacts of a new through road connecting Postal Lane with the intersection of Old Landing Road/Airport Road	DeIDOT		\$\$	**	\$\$\$	***	◊◊◊	Longer-term	
E 8	N	85	Evaluate the potential transportation benefits, costs, and impacts of a new road to connect Route 24 near Beacon Middle School with Old Landing Road near Arnell Creek	DeIDOT		\$\$	**	\$\$\$	***	◊◊◊	Longer-term	
E 9	N	30	Revisit and consider feasibility of recommendations from 2003 SR 1 Land Use and Transportation Study	DeIDOT		\$\$	*	\$\$\$\$	***	◊◊◊	Longer-term	



MEMORANDUM

One Riverwalk Center
110 S. Poplar Street, Suite 102
Wilmington, DE 19801
Phone 302.468.4880

Date: October 25, 2019
To: Mark Luszcz, P.E., PTOE, DeIDOT
Peter Haag, P.E., PTOE, DeIDOT
From: Josephus van Boekhold, RK&K
Guy Pusey, RK&K
CC: B.J. Song, RK&K
Subject: **Savannah Road (S018) from Wescoats Road to Drake Knoll Road:
Assessment of Two-Way Left-Turn Lane Configuration Under Existing Pavement
Conditions**

Introduction

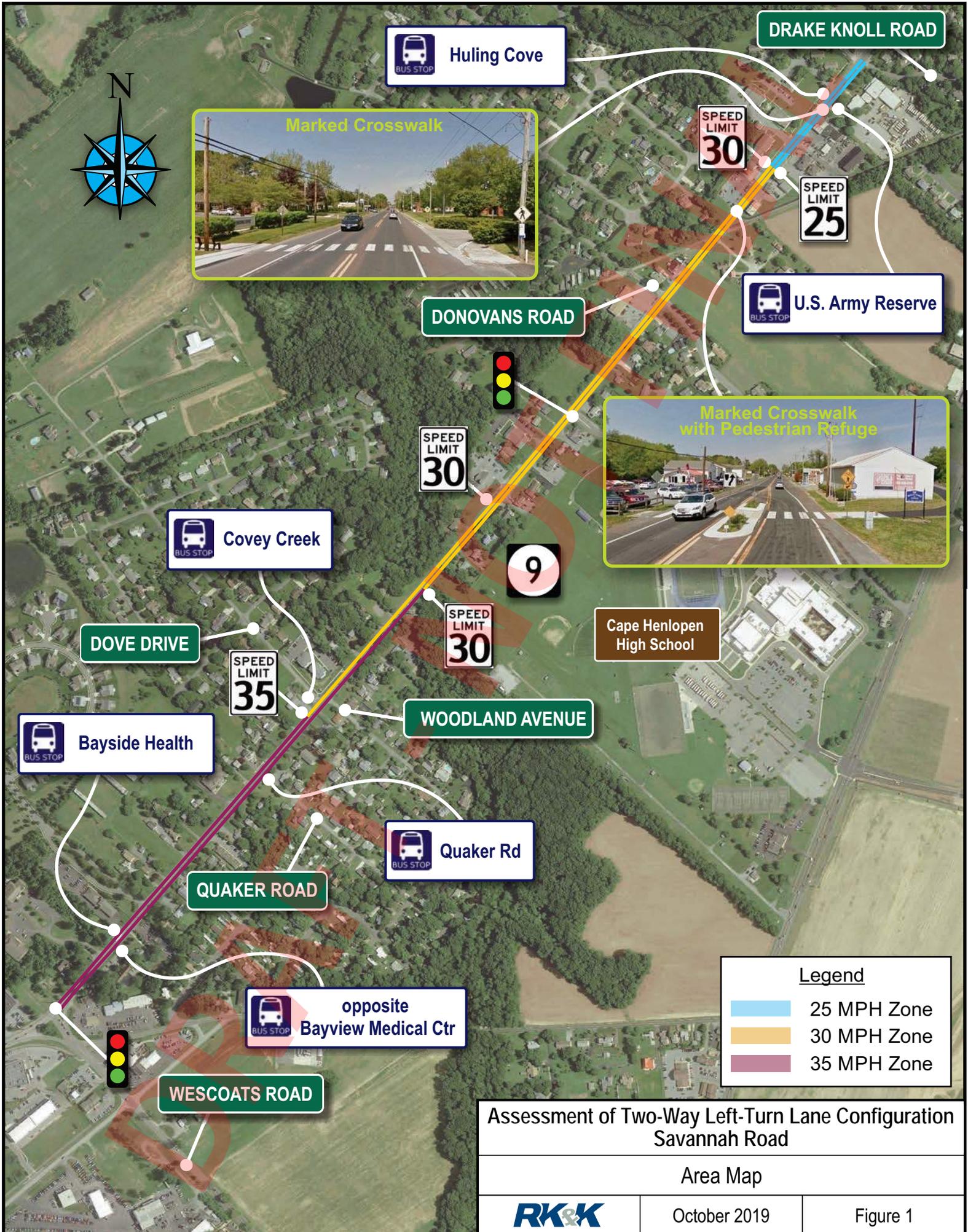
DeIDOT received a request from the City of Lewes and the Five-Points Working Group to look at the feasibility of reconfiguring the existing Savannah Road two-lane roadway configuration to a three-lane configuration, or Two-Way Left-Turn Lane (TWLTL) configuration, with adjacent bicycle lanes. The segment of Savannah Road (S018, US 9 BR, Lewes-Georgetown Road) that is assessed is from Wescoats Road (S012) to Drake Knoll Road and is located in the City of Lewes in Sussex County. The Five-Points Working Group recommended, **Recommendation C-8**, that DeIDOT evaluate the feasibility of reconfiguring Savannah Road to a roadway with 11-foot travel lanes separated by an 11-foot TWLTL and adjacent 5-foot bicycle lanes for a total width of 43 feet.

The purpose of this technical memorandum is to summarize existing traffic, transit, and pavement core information, as well as any proposed transportation projects near or along the segment of Savannah Road to determine the feasibility of a TWLTL configuration under existing pavement conditions. The type of pedestrian crossing improvements that could be implemented for the existing two-lane configuration versus the proposed three-lane configuration was also evaluated.

Existing Conditions

The segment of Savannah Road, from Wescoats Road to Drake Knoll Road, is classified as a Major Collector, according to DeIDOT's Functional Classifications ARCGIS MAP (Accessed June 2019). According to DeIDOT's 2018 Traffic Summary, Savannah Road has a 2018 Annual Average Daily Traffic (AADT) volume of 18,709 vehicles per day (vpd) southwest of Donovans Road (S263), and 10,577 vpd northeast of Donovans Road. The speed limit on Savannah Road varies between 25 MPH and 35 MPH (See **Figure 1**). The existing travel lanes along Savannah Road are 12-feet wide and shoulder widths vary with a minimum shoulder width of 4 feet near Wescoats Road. DeIDOT's Materials and Research Section took pavement core samples from the existing shoulders along Savannah Road, and based on their analysis, the shoulders on Savannah Road are **not sufficient** to support through traffic.

There are existing bicycle pavement markings, but markings have not been consistently installed. Existing sections of sidewalk are present on either side of Savannah Road, mainly near businesses; however, these sections are not connected. Two (2) existing marked crosswalks are located at the Lewes Georgetown Trail (with a pedestrian median refuge island), and at the U.S. Army Reserve.



Huling Cove

DRAKE KNOLL ROAD



SPEED LIMIT 30

SPEED LIMIT 25

U.S. Army Reserve

DONOVANS ROAD



SPEED LIMIT 30

9

Covey Creek

Cape Henlopen High School

DOVE DRIVE

SPEED LIMIT 35

SPEED LIMIT 30

WOODLAND AVENUE

Bayside Health

Quaker Rd

QUAKER ROAD

opposite Bayview Medical Ctr

WESCOATS ROAD

Assessment of Two-Way Left-Turn Lane Configuration Savannah Road

Area Map

The roadway edge is located approximately within 10 to 15 feet of DeIDOT's existing Right-of-Way based on the preliminary plans for the Savannah Road Sidewalk Improvements Project. There are fixed objects (e.g., utility poles, mailboxes, signs, guardrails, etc.) located within the 18-foot clear zone, as determined from the suggested clear zone distances provided in the Roadside Design Guide (RSDG-4 Table 3-1). There are no horizontal or vertical curves present along Savannah Road. Lastly, there is an existing TWLTL segment near Bayview Medical Center, which is approximately 115 feet.

The types of land use surrounding the Savannah Road segment is primarily dedicated to residential, commercial, and governmental purposes. The access point density for the corridor is approximately 74 access points per mile.

DeIDOT has designated Savannah Road for the following purposes:

- Evacuation Route
- Regional Bicycle Route providing connectivity between Five-Points, the Lewes Scenic and Historic Byway, American Discovery Trail, Downtown Lewes, and Cape Henlopen State Park
- Business Route (US 9 Business Route)

Related Projects and Studies

A review of DeIDOT's archives revealed that Savannah Road west of Quaker Road was reviewed as a part of the 2010 Hazard Elimination Program (HEP Site W). The improvements from the HEP study should already have been implemented and should not impact the recommendations provided in this technical memorandum.

DeIDOT and the Sussex County Administrator created the Five-Points Working Group to reduce congestion and improve facilities for pedestrians, bicyclists, and transit on the roadways surrounding the Five-Points intersection. In April 2019, the Five-Points Working Group provided a list of 78 recommendations for improving the roadways surrounding the Five-Points intersection, which included three (3) studies on Savannah Road. The first recommendation, **Recommendation C-8**, recommended that Savannah Road be reconfigured to have 5' bicycle lanes, 11' travel lanes, and an 11' TWLTL, which would require a 43 feet roadway width. The working group also recommended, **Recommendation D-5**, that DeIDOT fill in sidewalk gaps on the section of Savannah Road between Five-Points and the City of Lewes.

A review of DeIDOT's website and local newspapers revealed three (3) upcoming projects along or adjacent to the segment of Savannah Road, which may support or impact the findings of this assessment. A summary of the projects are listed below, but DeIDOT staff should look at these projects in more detail.

- **T201801302 Savannah Road Sidewalk Improvements**
 - This project will add approximately 3,700 feet of sidewalk along the south side of Savannah Road, from Quaker Road to the Georgetown-Lewes Pathway Trail crossing.
 - The shoulder along the south side of Savannah Road will be reconstructed to support through traffic
 - The preliminary plans for this project show a proposed roadway width of 39 feet from Ebenezer Branch to North Atlantic Drive, which is less than the 43 feet required for the proposed three-lane alignment
- **T201609601 Realignment of Old Orchard Road at Wescoats Corner**
 - This project will realign Old Orchard Road to create a four-legged intersection at the intersection of Savannah Road and Wescoats Road
 - The project will prohibit left-turn movements at some of the minor intersections on Wescoats Road, and a new intersection will be constructed at the intersection of Wescoats Road and Marsh Road (S269B)
 - The project will add marked crosswalks at the intersection of Savannah Road and Wescoats Road and will add marked bike lanes along Savannah Road

- **T201620018 Savannah Road Bicycle Improvements**

- This project will improve bicycle and pedestrian safety along Savannah Road from the Lewes-Rehoboth Canal drawbridge to American Legion Road
- Reduce travel lanes from 11 feet to 10 feet to accommodate marked bicycle lanes on both sides of the roadway
- Upgrade crosswalks for pedestrians
- Connect pedestrian and bicycle facilities on Savannah Road with a new trail on a section of former railroad that runs from the canal to the entrance of Cape Henlopen State Park

There are some key issues between the TWLTL proposed by the Five-Points Working Group and the Savannah Road Sidewalk Improvements Project. The typical roadway cross-section for the proposed TWLTL is 43 feet wide; however, the preliminary plans for the Savannah Road Sidewalk Improvements project show a proposed pavement width of 39 feet. Furthermore, the preliminary plans indicate that 3,700 feet of shoulder on the south side of Savannah Road will be reconstructed to carry through traffic. However, there would be an additional 7,500 feet of shoulder that would need to be reconstructed to carry through traffic for the proposed TWLTL configuration.

Transit Data for DART Bus Route 204

DART Route 204 is a beach route on Savannah Road between the Lewes Park & Ride and the Cape May-Lewes Ferry Terminal. Buses depart every 30 minutes between 6:00 AM and 2:00 AM. There is an existing ADA compliant bus pad and shelter at the Huling Cove stop; however, the remaining locations are not ADA compliant and buses use existing shoulders for boarding and alighting passengers. The preliminary plans for the Savannah Road Sidewalk Improvements project show a proposed bus stop sign at the Quaker Road stop; however, this sign is shown on the opposite side of Quaker Road from the existing shelter and proposed bus stop pad.

RK&K received ridership data along Savannah Road from the Delaware Transit Corporation (DTC). For this evaluation, RK&K used data from May 20, 2018, to December 8, 2018, to include summer data. It is expected that during the summer ridership is generally higher, due to the roadway's proximity to the Lewes beach areas. A breakdown of the average number of riders getting onto and off of buses, at each bus stop, is provided in **Table 1**.

Table 1: Transit Data: DART Route 204 (Savannah Road) Average Weekday Daily Number of Riders per bus stop location						
Stop Name	Eastbound			Westbound		
	On	Off	Total	On	Off	Total
Savannah Rd & U.S. Army Reserve	3.53	14.90	18.43			
Savannah Rd & Huling Cove				15.51	4.61	20.13
Savannah Rd & Quaker Rd	0.31	1.99	2.30			
Savannah Rd & Covey Creek				2.11	0.58	2.69
Savannah Rd & OP Bay View Med CTR	6.22	1.44	7.65			
Savannah Rd & Bay View Med CTR				2.71	2.72	5.43

Average Weekday Daily Ridership information in Table 1 is based on data from May 20, 2018 – December 8, 2018

Based on the ridership information from Table 1, the bus stops at the U.S. Army Reserve Center and Huling Cove serve the highest number of pedestrians (EB – 18, WB – 20) per day. The next highest locations are the bus stops at Bayview Medical Center (EB – 8, WB – 5). There is a marked crosswalk across Savannah Road which provides access between the two (2) bus stops in front of the U. S. Army

Reserve Center; however, there are no marked crosswalks at the remaining bus stop locations along the Savannah Road corridor.

Crash Trend Analysis

All available crash data for Savannah Road was reviewed from Thursday, April 16, 2015, through Tuesday, April 16, 2019. There were a total of forty (40) crashes reported for the segment of Savannah Road during this period. The following trends were identified in the crash data below:

- There were three (3) angle crashes and all of the angle crashes resulted in property-damage only
- There were 30 rear-end crashes, and five (5) of the rear-end crashes resulted in personal injury
 - Sixteen (16) rear-end crashes involved vehicles traveling EB
 - Fourteen (14) rear-end crashes involved vehicles traveling WB
 - Five (5) rear-end crashes involved a vehicle waiting to turn left
 - Twenty-two (22) rear-end crashes involved vehicles stopped for heavy traffic
 - Three (3) rear-end crashes involved vehicles stopped for traffic signals
- There were two (2) crashes involving a motor vehicle backing into another motor vehicle
- There were two (2) crashes involving a motor vehicle and a deer
- There were two (2) sideswipe crashes. One (1) sideswipe crash involved a vehicle waiting to turn left onto a side street
- There was one (1) crash involving a motor vehicle and a cyclist. The motor vehicle made a right-turn in front of the cyclist, cutting the cyclist off

Based on the crash summary, there does not appear to be a high frequency of rear-end crashes attributable to motor vehicles being rear-ended while they attempted to make a left turn, which are the types of crashes correctable by the implementation of a TWLTL.

Evaluation of Mid-Block Crossing Locations

To determine the types of future pedestrian safety improvement treatments at or near the unsignalized intersections, analyses utilizing the methodology specified in the NCHRP Report 562 (Improving Pedestrian Safety at Unsignalized Crossings) were completed. NCHRP Report 562 presents a guideline for selecting pedestrian crossing treatments for unsignalized intersections and mid-block locations, based on input variables such as peak hour pedestrian volume, street crossing width and the major road peak hour vehicular volume. Specifically, NCHRP Report 562 analyses use the methodology defined in the Highway Capacity Manual (HCM) to calculate the pedestrian delay and give recommendations in the following four (4) treatment categories:

- No treatment
- Marked Crosswalk
- Enhanced, High Visibility or Active-when-present Devices (i.e., Rapid Flashing Beacons)
- Red Beacon (i.e., HAWK or a conventional traffic signal)

For this analysis, the peak hour volume for Savannah Road was calculated using the Annual Average Daily Traffic (AADT) volume provided in the 2018 Traffic Summary, published by DeIDOT. The 2018 Traffic Summary provides the AADT for the following Savannah Road segments:

- Between Wescoats Road and Donovans Road (18,709 vpd)
- Between Donovans Road and Drake Knoll Road (10,577 vpd)

The 2016 Traffic Summary provided a Monthly Average Daily Traffic (MADT) percent for a few roadways near Savannah Road. Based on this data, the Average Daily Traffic (ADT) on similar roadways near Savannah Road is at least 10% higher during the summer (June – August) than the AADT. For this evaluation, it is assumed that the 2018 ADT (Average Daily Traffic) volumes provided above would be 10% higher during the summer months.

**Savannah Road (S018) from Wescoats Road to Drake Knoll Road:
Assessment of Two-Way Left-Turn Lane Configuration Under
Existing Pavement Conditions**

October 25, 2019

- Between Wescoats Road and Donovans Road (20,580 vpd)
- Between Donovans Road and Drake Knoll Road (11,635 vpd)

The 2018 Traffic Summary provides an hourly breakdown of AADT for 24-hours. This is presented as a K-factor and can be used to estimate the peak hour volumes based on time of day and day of the week (weekday vs. weekend). For this analysis, the weekend K-factors were utilized because Savannah Road provides access to the area beaches and parks. The weekend K-factors for Savannah Road are provided in **Table 2**.

Table 2 Savannah Road Weekend Hourly Volume K-Factors			
AM Hours	K-Factor	PM Hours	K-Factor
0:00 AM - 1:00 AM	0.99	12:00 PM - 1:00 PM	8.15
1:00 AM - 2:00 AM	0.72	1:00 PM - 2:00 PM	7.83
2:00 AM - 3:00 AM	0.44	2:00 PM - 3:00 PM	7.68
3:00 AM - 4:00 AM	0.28	3:00 PM - 4:00 PM	7.59
4:00 AM - 5:00 AM	0.31	4:00 PM - 5:00 PM	7.13
5:00 AM - 6:00 AM	0.68	5:00 PM - 6:00 PM	6.55
6:00 AM - 7:00 AM	1.58	6:00 PM - 7:00 PM	5.70
7:00 AM - 8:00 AM	3.00	7:00 PM - 8:00 PM	4.77
8:00 AM - 9:00 AM	4.58	8:00 PM - 9:00 PM	3.86
9:00 AM - 10:00 AM	6.23	9:00 PM - 10:00 PM	3.05
10:00 AM - 11:00 AM	7.39	10:00 PM - 11:00 PM	2.11
11:00 AM - 12:00 PM	8.05	11:00 PM - 12:00 PM	1.33

NCHRP Report 562 analyses utilize the highest one (1) hourly volume of a day for determining which type of pedestrian crossing is warranted. Based on **Table 2**, 12:00 PM – 1:00 PM has the highest volume based on the K-factor of 8.15. The K-factor was used to calculate the highest hourly volume for the two segments of Savannah Road and the results are provided below.

- Between Wescoats Road and Donovans Road
 - Peak hour volume (based on AADT) – 1,525 vph
 - Peak hour volume (Summertime) – 1,677 vph
- Between Donovans Road and Drake Knoll Road
 - Peak hour volume (based on AADT) – 862 vph
 - Peak hour volume (Summertime) – 948 vph

The two (2) segments of Savannah Road were analyzed with NCHRP Report 562 using the peak hour volumes calculated above with the existing two-lane configuration. The segment of Savannah Road between Wescoats Road and Donovans Road was also analyzed with the proposed three-lane configuration, which assumes a pedestrian median refuge island. **Table 3** shows the inputs used for the NCHRP Report 562 analyses as well as the recommendations.

Since it was not feasible to collect the peak hour pedestrian volumes for all mid-block and unsignalized locations along the segment of Savannah Road, the peak hour pedestrian volume crossing Savannah

Road was assumed to be 20 pedestrians per hour, which is the minimum peak hour pedestrian volume needed according to the NCHRP Report 562.

Table 3 Savannah Road NCHRP Report 562 - Guideline For Pedestrian Crossing Treatments Analyses						
	Speed Limit	Peak Hour Ped Volume	2018 MADT	Peak Hour Vehicular Volume	Ped Crossing Distance	Recommendation
With Existing Roadway Geometry/Lane Alignment						
Wescoats Road to Woodland Avenue	35 MPH	20 per hour	20,580	1,680 vph	44 ft.	Red Beacon
Woodland Avenue to Donovans Road	30 MPH	20 per hour	20,580	1,680 vph	44 ft.	Red Beacon
Donovans Road to Drake Knoll Road	30 MPH	20 per hour	11,635	950 vph	44 ft.	Active or Enhanced
Donovans Road to Drake Knoll Road	25 MPH	20 per hour	11,635	950 vph	44 ft.	Active or Enhanced
Assuming TWLTL and Median Pedestrian Refuge Island						
Wescoats Road to Woodland Avenue	35 MPH	20 per hour	20,580	1,680 vph	18 ft.	Active or Enhanced
Woodland Avenue to Donovans Road	30 MPH	20 per hour	20,580	1,680 vph	18 ft.	Active or Enhanced

***Assumptions**

- The area population is assumed to be less than 10,000 for all locations
- Peak hour pedestrian volume is assumed to be 20 peds/hour for all locations
- AADT was referenced from DeIDOT's 2018 Traffic Summary
- The MADT was reference from DeIDOT's 2016 Traffic Summary
- Peak hour K-factor was derived from DeIDOT's 2018 Traffic Summary
- 15th Percentile pedestrian speed is assumed to be greater than 3.5 ft/sec for all locations
- Driver Compliance for pedestrians is assumed to be high for all locations

Based on the analyses with 2018 peak hour volumes and the existing two-lane roadway configuration, Enhanced High Visibility Improvements such as signing and pavement markings or Active-when-present devices such as Rectangular Rapid Flashing Beacons (RRFB) could be considered along the segment of Savannah Road between Donovans Road and Drake Knoll Road. Though, the analyses indicated that a Red Beacon (Pedestrian Signal, HAWK Beacon, or conventional traffic signal) should be considered for the section of Savannah Road between Wescoats Road and Donovans Road.

If Two-Way Left-Turn Lanes (TWLTL) and pedestrian median refuge islands are installed, the analyses indicate that Enhanced High Visibility Improvements or Active-when-present devices may be a sufficient crossing treatment for the segment of Savannah Road between Wescoats Road and Donovans Road.

Two-Way Left-Turn Lane Advantage/Disadvantages

FHWA's Road Diet FAQ Sheet notes that Two-Way Left-Turn Lanes can improve safety for motorists, pedestrians, and bicyclists through the following ways:

- May reduce the frequency of rear-end crashes by separating through vehicles from vehicles waiting to turn left. It may also reduce head-on crashes by separating opposing traffic lanes.
- Travel lanes can be restriped to provide larger shoulders for buses and mail trucks to move out of the travel lane.
- Travel lanes can be restriped to provide room for bicycle lanes and pedestrian refuge islands, which may increase the visibility of pedestrians and bicyclists.

Table 4 provides a list of advantages and disadvantages to installing a Two-Way Left-Turn Lane on Savannah Road.

Table 4 Savannah Road Two-Way Left-Turn Lane (TWLTL) Advantage/Disadvantages	
Advantages	
Improved Safety on Savannah Road:	<ul style="list-style-type: none"> Five (5) rear-end crashes and one (1) sideswipe crash involved vehicles waiting to turn left from Savannah Road. Providing TWLTL would provide a safer location for vehicles to wait while they wait to turn left, which may reduce the frequency of rear-end crashes on Savannah Road.
Reduced delay and queuing on Savannah Road:	<ul style="list-style-type: none"> With existing conditions, vehicles that are waiting to turn left force all of the vehicles following them to stop. This creates delay and subsequently queuing along Savannah Road. Removing the vehicles waiting to turn left may reduce queuing on Savannah Road Reducing the queuing on Savannah Road may make it easier for left-turning motor vehicles to find a gap in traffic and it may increase the visibility of pedestrians waiting to cross Savannah Road
Installing median islands at pedestrian crossings may change the characteristics of the roadway:	<ul style="list-style-type: none"> Would change the characteristics of the roadway to be more in line with the section of Savannah Road inside the Lewes City Limits Pedestrian refuge islands may act as a traffic calming device to slow motor vehicles down and prevent vehicles from 'riding' the TWLTL
Median islands would provide benefits for pedestrians:	<ul style="list-style-type: none"> Would shorten the distance that pedestrians need to cross the roadway. Pedestrians would cross one (1) lane at a time. This would allow them to focus their attention on the approaching vehicles from one direction at a time. Increases the visibility of pedestrians crossing the roadway
Disadvantages	
Pavement cores revealed that the shoulders on this section of Savannah Road are not sufficient to be used as a regular traffic lane. For the roadway to be reconfigured with a TWLTL, the shoulders would require reconstruction.	
Motor vehicles may use the TWLTL to bypass vehicles or to accelerate. There may also be instances where two (2) vehicles attempt to turn left from opposing directions. This may result in an increased frequency of head-on crashes.	
The proposed TWLTL reconfiguration would reduce the existing shoulder width which may cause issues for DART buses, mail delivery vehicles, trash trucks, and miscellaneous service vehicles, which all would need to stop within the travel lane and bicycle lane.	
The proposed TWLTL reconfiguration would push motor vehicle traffic closer to clear zone obstructions.	
TWLTL may cause the following issues for bicycles:	<ul style="list-style-type: none"> DART buses and miscellaneous service vehicles would all need to stop in the bike lane, which would obstruct cyclists The new alignment would push the bike lanes closer to the roadway edge, which would force the cyclists to ride closer to mailboxes, trash receptacles, and guardrails There would be less of a buffer between cyclists, motor vehicles, and buses
If a TWLTL is installed with median islands, it may result in DART buses and service vehicles stopping in the bike lane which would force all of the vehicles following them to stop, increasing vehicle delay.	
The existing bypass lane, left-turn lanes, and right-turn lanes on Savannah Road may need to be removed.	

Two-Way Left-Turn Lane Feasibility Evaluation Matrix

To assess if the proposed reconfiguration of Savannah Road to a Two-Way Left-Turn Lane configuration is feasible, a simple star-based system was used to assign minimal, moderate, or maximum value to each evaluation parameter that was derived from the existing conditions, proposed transportation projects, and the pedestrian crossing improvement types analyses. **Table 5** shows the TWLTL feasibility evaluation matrix for Savannah Road with 14 stars favoring the existing two-lane roadway configuration over 9 stars for the proposed three-lane configuration.

Table 5: Savannah Road Two-Way Left-Turn Lane (TWLTL) Feasibility Evaluation Matrix		
Evaluation Parameter	Existing (Two-lane)	TWLTL (Three-lane)
<i>Pavement Section</i> Required pavement section improvements	***	
<i>Roadway Cross-Section</i> Required cross-section (43 feet) vs. available cross-section (39 feet) between Ebenezer Branch and North Atlantic Drive	***	
<i>Crash Data</i> Effectiveness in reducing rear-end type crashes attributed to vehicles stopped to make a left turn		*
<i>Clear Zone</i> Encroachment on roadside objects	**	
<i>Left-turns/bypass lanes</i> ("Sitting Duck" effect) Removes left-turning vehicles from the through lane		***
<i>Right-turns</i> Removes right-turning vehicles from the through lane	*	
<i>Blockage of travel lane</i> Transit buses Trash collection (Mail) deliveries Misc. service vehicles	**	
<i>Bus stops</i> Impact on existing pedestrian facilities	*	
<i>Midblock Crossings</i> Need for red beacons		**
<i>Pedestrian Safety/Comfort</i> Crossing distance		***
<i>Bicycle Safety/Comfort</i> Narrow bicycle Lanes Guardrails, mailboxes, trash receptacles Drainage inlets Ponding	**	
Totals	14	9

- * Minimal Advantage
- ** Moderate Advantage
- *** Maximum Advantage