



STATE OF DELAWARE  
**DEPARTMENT OF TRANSPORTATION**  
800 BAY ROAD  
P.O. BOX 778  
DOVER, DELAWARE 19903

NICOLE MAJESKI  
SECRETARY

December 1, 2023

Ms. Dawn M. Riggi, P.E.  
Davis, Bowen & Friedel, Inc.  
1 Park Avenue  
Milford, Delaware 19963

Dear Ms. Dawn Riggi:

The enclosed Traffic Impact Study (TIS) review letter for the proposed **Forrest Landing** (Tax Parcel: 230-19.00-112.00) residential development has been completed under the responsible charge of a registered professional engineer whose firm is authorized to work in the State of Delaware. They have found the TIS to conform to DelDOT's Development Coordination Manual and other accepted practices and procedures for such studies. DelDOT accepts this letter and concurs with the recommendations. If you have any questions concerning this letter or the enclosed review letter, please contact me at [Annamaria.Furmato@delaware.gov](mailto:Annamaria.Furmato@delaware.gov).

Sincerely,

Annamaria Furmato  
TIS Group Project Engineer

AF:sf

Enclosures

cc with enclosures: Ben Gordy, Ocean Atlantic Communities, LLC  
Zac Crouch, Davis, Bowen & Friedel, Inc.  
David L. Edgell, Office of State Planning Coordination  
Jamie Whitehouse, Sussex County Planning & Zoning  
Andrew J. Parker, McCormick Taylor, Inc.  
Tucker Smith, McCormick Taylor, Inc.  
DelDOT Distribution

## DelDOT Distribution

Brad Eaby, Deputy Attorney General  
Shanté Hastings, Deputy Secretary / Director of Transportation Solutions (DOTS)  
Mark Luszcz, Deputy Director, DelDOT Traffic, DOTS  
Michael Simmons, Assistant Director, Project Development South, DOTS  
Peter Haag, Chief Traffic Engineer, DelDOT Traffic, DOTS  
Wendy Carpenter, Traffic Calming & Subdivision Relations Manager, DelDOT Traffic, DOTS  
Sean Humphrey, Traffic Engineer, DelDOT Traffic, DOTS  
Matt Schlitter, South District Public Works Engineer, Maintenance & Operations  
Jared Kauffman, Service Development Planner, Delaware Transit Corporation  
Tremica Cherry, Service Development Planner, Delaware Transit Corporation  
Pamela Steinebach, Director, Planning  
Todd Sammons, Assistant Director, Development Coordination, Planning  
Wendy Polasko, Subdivision Engineer, Development Coordination, Planning  
Kevin Hickman, Sussex County Review Coordinator, Development Coordination, Planning  
Derek Sapp, Sussex County Subdivision Reviewer, Development Coordination, Planning  
Sireen Muhtaseb, TIS Group Manager, Development Coordination, Planning  
Steve Bayer, Planning Supervisor, Statewide & Regional Planning  
Anthony Aglio, Planning Supervisor, Statewide & Regional Planning, Planning



December 1, 2023

Ms. Annamaria Furrato  
Project Engineer  
DelDOT Division of Planning  
P.O. Box 778  
Dover, DE 19903

RE: Agreement No. 1946F  
Traffic Impact Study Services  
**Task No. 4A Subtask 02 – Forest Landing**

Dear Ms. Furrato:

McCormick Taylor has completed its review of the Traffic Impact Study (TIS) for the Forest Landing residential development prepared by Davis, Bowen & Friedel, Inc. (DBF), dated August 2022. DBF prepared the report in a manner generally consistent with DelDOT's Development Coordination Manual.

The TIS evaluates the impacts of the proposed Forest Landing development, on the east side of N. Old State Road (Sussex Road 213) just over one mile north of Delaware Route 16 in Sussex County, Delaware. The proposed development would consist of 199 single-family detached houses and 112 units of low-rise multi-family housing. One access point is proposed as a full-movement unsignalized access on N. Old State Road. There are also two proposed cross-access easements with the neighboring development to the south, Ingram Village. Construction is anticipated to be completed in 2028.

The subject land is located on an approximately 82.6-acre parcel. The land was recently annexed into the Town of Ellendale with R-3 (Residential) zoning.

Currently, there are three DelDOT projects within the area of study. The first initiative is DelDOT's *Corridor Capacity Preservation Program (CCPP)*, a statewide program intended to sustain the through capacity of adopted highway corridors by various means such as limiting access points and using service roads for local vehicle trips. The general purpose of the program is to ensure that existing principal arterial roadways, including this section of US Route 113, are able to efficiently carry regional traffic without impedance from the effects of local development.

The second project in the study area is DelDOT's *US Route 113 at Delaware Route 16 (Ellendale) Grade Separated Intersection Project (T201212701)*. The project will replace the existing signal with a grade separated intersection to improve safety, operations, and reduce congestion. The proposed improvements were recommended as part of the Ellendale Area portion of the overall US Route 113 North/South Study. The most recent project updates indicate that conceptual design is underway, and construction is anticipated to begin no earlier than 2029.

Finally, DelDOT’s *Coastal Corridors Study* aims to study the east-west travel patterns in Sussex County including, but not limited to, Delaware Route 404 and Delaware Route 16, including the section nearest the proposed development. Initial efforts will identify the east-west routes/corridors in northwestern Sussex County that are currently congested or are at risk for congestion based on anticipated growth in the area. The study will focus on a number of factors including longer trips from the Chesapeake Bay Bridge to the Delaware beaches and Ocean City, Maryland, regional traffic between Maryland’s Eastern Shore and Sussex County, and local east-west traffic within the northwestern part of Sussex County. The latest updates indicate that the study is in the data collection / public outreach phase.

Based on our review, we have the following comments and recommendations:

The following intersections exhibit level of service (LOS) deficiencies without the implementation of physical roadway and/or traffic control improvements:

<i>Intersection</i>	<i>Existing Traffic Control</i>	<i>Situations for which deficiencies occur</i>
US Route 113 and Fleetown Road / Staytonville Road	Unsignalized	2021 existing Saturday (Case 1) 2028 without development Saturday (Case 2) 2028 with development Saturday (Case 3)
US Route 113 and E. Hudson Pond Road / W. Hudson Pond Road	Unsignalized	2021 existing Saturday (Case 1) 2028 without development Saturday (Case 2) 2028 with development Saturday (Case 3)
Delaware Route 16 and N. Old State Road	Unsignalized	2028 without development PM and Saturday (Case 2) 2028 with development AM, PM, and Saturday (Case 3)
US Route 113 and Delaware Route 16	Signalized	2028 without development Saturday (Case 2) 2028 with development Saturday (Case 3)

US Route 113 and Fleetown Road / Staytonville Road

This unsignalized intersection experiences LOS deficiencies in the existing and future scenarios during only the summer Saturday peak period. The deficiencies are limited to the westbound Fleetown Road approach. This intersection has an unusual configuration that includes no left-turns on the northbound US Route 113 approach, no through movement on the westbound Fleetown Road approach, and right-turns-only on the eastbound Staytonville Road approach. It also includes a 1,000-foot long dedicated receiving/acceleration lane for westbound left turns onto southbound US Route 113. The only methods of resolving the westbound left-turn LOS deficiencies that occur only on Saturday would be to either signalize the intersection or remove the westbound left-turn movement completely, but neither of these are desirable mitigation measures. Furthermore, although it would occur much further into the future, as part of a future initiative stemming from the US Route 113 North/South Study this intersection may one day be modified or possibly converted to an overpass with connections to US Route 113 via local access roads. For these reasons, we recommend that the developer make no improvements at this intersection.

#### US Route 113 and E. Hudson Pond Road / W. Hudson Pond Road

This unsignalized intersection experiences LOS deficiencies in the existing and future scenarios during the summer Saturday peak period. The deficiencies are limited to the eastbound W. Hudson Pond Road approach. However, given that the total volume on the eastbound approach is less than ten vehicles during the summer Saturday peak hour we recommend that the developer make no improvements at this intersection.

#### Delaware Route 16 and N. Old State Road

This unsignalized intersection experiences LOS deficiencies in the future without and with development scenarios during the weekday PM and summer Saturday peak periods, and with development during the weekday AM peak hour. The deficiencies include LOS F with significant delays and lengthy queues on both the northbound and southbound stop-controlled approaches of N. Old State Road. The longest queue based on the analysis is over 400 feet long on southbound N. Old State Road during the future with development Saturday peak hour. While the developer recommends implementing a traffic signal here (via a contribution to DelDOT's Traffic Signal Revolving Fund (TSRF)), a Traffic Signal Justification Study (TSJS) would first be needed to support that. As such, McCormick Taylor completed a TSJS and found that a signal would not be warranted at full buildout of Forest Landing. The TSJS analysis assumed geometric improvements that would be required by DelDOT at the intersection if a signal were to be installed, including left-turn lanes on the Delaware Route 16 approaches and right-turn lanes on the N. Old State Road approaches. While a signal would not be warranted based on future build volumes used in the Forest Landing TIS, we also assessed the possible signal when reviewing the TIS for Ellendale Subdivision, which is a proposed residential development to be located on the west side of N. Old State Road south of Forest Landing and is anticipated to be completed shortly after Forest Landing. When future build volumes used in the Ellendale Subdivision TIS were considered, the signal at Delaware Route 16 and N. Old State Road was found to be warranted. As such, we recommend that the Forest Landing developer enter into an agreement with DelDOT to contribute to the TSRF for a future signal at this intersection as described below in Item No. 3.

#### US Route 113 and Delaware Route 16

This signalized intersection experiences overall LOS deficiencies in the future without and with development scenarios during the summer Saturday peak period. DelDOT's *US Route 113 at Delaware Route 16 (Ellendale) Grade Separated Intersection Project* will result in replacing the existing signal with a grade separated intersection. The developer should contribute towards that project.

Should the Town of Ellendale choose to approve the proposed development, the following items should be incorporated into the site design and reflected on the record plan by note or illustration, unless a Design Deviation is requested and approved by the Department. All applicable agreements (i.e. letter agreements for off-site improvements and traffic signal agreements) should be executed and Design Deviations approved prior to entrance plan approval for the proposed development. The following items should be implemented at the same time as site construction once all agency approvals and permits are secured and completed in accordance with DelDOT’s Standards and Specifications.

1. The developer shall improve the State-maintained road(s) on which they front (N. Old State Road), within the limits of their frontage, to meet DelDOT’s standards for their Functional Classification as found in Section 1.1 of the Development Coordination Manual and elsewhere therein. The improvements shall include both directions of travel, regardless of whether the developer’s lands are on one or both sides of the road. Frontage is defined in Section 1 of the Development Coordination Manual, which states “This length includes the length of roadway perpendicular to lines created by the projection of the outside parcel corners to the roadway.” Questions on or appeals of this requirement should be directed to the DelDOT Subdivision Review Coordinator in whose area the development is located.
2. The developer should construct the full-movement site access on N. Old State Road. The proposed configuration is shown in the table below.

<b>Approach</b>	<b>Existing Configuration</b>	<b>Proposed Configuration</b>
Westbound Site Access	Approach does not exist	One shared left/right-turn lane
Northbound N. Old State Road	One through lane	One through lane and one right-turn lane
Southbound N. Old State Road	One through lane	One left-turn lane and one through lane

Initial recommended minimum turn-lane lengths (excluding tapers) of the separate turn lanes are listed below. The developer should coordinate with DelDOT’s Development Coordination Section to determine final turn-lane lengths and other design details during the site plan review.

<b>Approach</b>	<b>Left-Turn Lane</b>	<b>Right-Turn Lane</b>
Westbound Site Access	N/A	N/A
Northbound N. Old State Road	N/A	110 feet *
Southbound N. Old State Road	120 feet *	N/A

\* Initial turn-lane length based on DelDOT’s *Auxiliary Lane Worksheet*

3. The developer should enter into an agreement with DelDOT to contribute to the Traffic Signal Revolving Fund (TSRF) for a future signal at the intersection of Delaware Route 16 and N. Old State Road. The amount of the TSRF contribution, as determined by DelDOT's Development Coordination Section, is \$27,383.
4. The developer should coordinate with DelDOT regarding an equitable share contribution toward DelDOT's *US Route 113 at Delaware Route 16 (Ellendale) Grade Separated Intersection Project*. The amount of the contribution, as determined by DelDOT's Development Coordination Section, should not exceed \$111,312.92.
5. The developer should coordinate with DelDOT's Development Coordination Section regarding roadway interconnection(s) to the adjacent Ingram Village residential development located immediately to the south. The roadway interconnection(s) would connect with existing stub street(s) in that development.
6. The following bicycle and pedestrian improvements should be included:
  - a. Per the DelDOT Development Coordination Manual section 5.2.9.2, bicycle lanes are required where right turn lanes are being installed.
  - b. Appropriate bicycle symbols, directional arrows, pavement markings, and signing should be included along bicycle facilities and turn lanes within the project limits.
  - c. Utility covers should be made flush with the pavement.
  - d. If clubhouses or other community facilities are constructed within the site, bicycle parking should be provided near building entrances. Where building architecture provides for an awning, other overhang, or indoor parking, the bicycle parking should be covered.
  - e. A minimum 15-foot wide permanent easement from the edge of the right-of-way should be dedicated to DelDOT within the site frontage along N. Old State Road. Within the easement, a minimum of a 10-foot wide shared-use path that meets current AASHTO and ADA standards should be constructed. The shared-use path should meet AASHTO and ADA standards and should have a minimum of a five-foot buffer from the roadway. At the property boundaries, the shared-use path should connect to the adjacent property or to the shoulder in accordance with DelDOT's *Shared-Use Path and/or Sidewalk Termination Reference Guide* dated August 1, 2018. The developer shall coordinate with DelDOT's Development Coordination Section through the plan review process to determine the details of the shared-use path design and connections/terminations at or before both boundaries of the property.
  - f. ADA compliant curb ramps and crosswalks should be provided at all pedestrian crossings, including all site entrances. Type 3 curb ramps are discouraged.



- g. Internal sidewalks for pedestrian safety and to promote walking as a viable transportation alternative should be constructed within the development. These sidewalks should each be a minimum of five-feet wide (with a minimum of a five-foot buffer from the roadway) and should meet current AASHTO and ADA standards. Internal sidewalks in the development should connect to the proposed shared-use path along N. Old State Road.
- h. Where internal sidewalks are located alongside of parking spaces, a buffer should be added to prevent vehicular overhang onto the sidewalk.

Improvements in this TIS may be considered “significant” under DelDOT’s *Work Zone Safety and Mobility Procedures and Guidelines*. These guidelines are available on DelDOT’s website at [http://deldot.gov/Publications/manuals/de\\_mutcd/index.shtml](http://deldot.gov/Publications/manuals/de_mutcd/index.shtml).

Please note that this review generally focuses on capacity and level of service issues; additional safety and operational and constructability issues will be further addressed through DelDOT’s Plan Review process.

Additional details on our review of this TIS are attached. Please contact me at (610) 640-3500 or through e-mail at [ajparker@mccormicktaylor.com](mailto:ajparker@mccormicktaylor.com) if you have any questions concerning this review.

Sincerely,

A handwritten signature in black ink, appearing to read "Andrew J. Parker".

**McCormick Taylor, Inc.**  
Andrew J. Parker, PE, PTOE  
Project Manager

Enclosure



## **General Information**

**Report date:** August 2022

**Prepared by:** Davis, Bowen, Friedel, Inc. (DBF)

**Prepared for:** Ocean Atlantic Communities

**Tax parcel:** 230-19.00-112.00

**Generally consistent with DelDOT's Development Coordination Manual:** Yes

## **Project Description and Background**

**Description:** The proposed Forest Landing development would consist of 199 single-family detached houses and 112 units of low-rise multi-family housing.

**Location:** The land is located on the east side of N. Old State Road (Sussex Road 213) just over one mile north of Delaware Route 16 in Sussex County, Delaware. A site location map is included on page 8.

**Amount of land to be developed:** approximately 82.6-acre parcel

**Land use approval(s) needed:** Subdivision approval. The land was recently annexed into the Town of Ellendale with R-3 (Residential) zoning.

**Proposed completion year:** 2028

**Proposed access locations:** One access point is proposed as a full-movement unsignalized access on N. Old State Road. There are also two proposed cross-access easements with the neighboring development to the south, Ingram Village.

**Daily Traffic Volumes (per DelDOT Vehicle Volume Summary 2021):**

- 2021 Average Annual Daily Traffic on N. Old State Road: 1,395 vehicles/day



## **2020 Delaware Strategies for State Policies and Spending**

### **Location with respect to the Strategies for State Policies and Spending Map of Delaware:**

The proposed Forest Landing development is located within Investment Level 3.

#### *Investment Level 3*

Investment Level 3 generally falls into two categories. The first category covers lands that are in the long-term growth plans of counties or municipalities, but where development is not necessary to accommodate expected short-term population growth. The second category includes lands that are adjacent to fast-growing Investment Level 1 and 2 areas but are often impacted by environmentally sensitive features, agricultural-preservation issues, or other infrastructure issues. In these instances, development and growth may be appropriate in the near term, but the resources on the site and in the surrounding area should be carefully considered and accommodated by state agencies and local governments with land-use authority.

Generally, Investment Level 3 areas should not be developed until surrounding Investment Level 1 and 2 areas are substantially built out. From a housing perspective, Investment Level 3 areas are characterized by low density and rural homes. New housing developments in the short term would, in most cases, represent leap-frog development, which is undesirable. Higher density housing in Investment Level 3 areas is more appropriate once Level 2 areas are built out and utilities are available.

### **Proposed Development's Compatibility with Strategies for State Policies and Spending:**

The proposed Forest Landing residential development is situated entirely within Investment Level 3. The proposed development is located along N. Old State Road, and was recently annexed into the Town of Ellendale. The development will have a mix of home densities, is located near existing transportation facilities and will be served by public water and sewer systems. The site plan also depicts space for a clubhouse and walking trails. While these are desirable qualities, given that the property is in an Investment Level 3 area where high-density residential development is generally not encouraged further discussion may be required to determine if the proposed development complies with the Strategies.

## **Comprehensive Plan**

### **Sussex County Comprehensive Plan:**

*(Source: Sussex County Comprehensive Plan, March 2019)*

The Sussex County Comprehensive Plan Future Land Use Map indicates that the proposed Forest Landing development is proposed on land designated as a "Developing Area" per the Future Land Use Map. The Developing Areas are newer, emerging growth areas that demonstrate the characteristics of developmental pressures. Most of the proposed Developing Areas are adjacent to municipalities, within or adjacent to potential future annexation areas of a municipality, or adjacent to Town Centers. A range of housing types are appropriate in Developing Areas, including single family homes, townhouses, and multi-family units. In selected areas and at appropriate intersections, commercial uses should be allowed.

### **Proposed Development's Compatibility with Comprehensive Plan:**

The proposed Forest Landing residential development project includes 199 single-family detached houses and 112 units of low-rise multi-family housing on an approximately 82.6-acre parcel. The land was recently annexed into the Town of Ellendale with R-3 (Residential) zoning. If the density and other aspects of the proposed development satisfy Ellendale's R-3 zoning requirements, it would appear that the proposed Forest Landing residential development fits within the intended land use for this location.

### **Relevant Projects in the DelDOT Capital Transportation Program**

Currently, there are three DelDOT projects within the area of study. The first initiative is DelDOT's *Corridor Capacity Preservation Program (CCPP)*, a statewide program intended to sustain the through capacity of adopted highway corridors by various means such as limiting access points and using service roads for local vehicle trips. The general purpose of the program is to ensure that existing principal arterial roadways, including this section of US Route 113, are able to efficiently carry regional traffic without impedance from the effects of local development.

The second project in the study area is DelDOT's *US Route 113 at Delaware Route 16 (Ellendale) Grade Separated Intersection Project (T201212701)*. The project will replace the existing signal with a grade separated intersection to improve safety, operations, and reduce congestion. The proposed improvements were recommended as part of the Ellendale Area portion of the overall US Route 113 North/South Study. The most recent project updates indicate that conceptual design is underway, and construction is anticipated to begin no earlier than 2029.

Finally, DelDOT's *Coastal Corridors Study* aims to study the east-west travel patterns in Sussex County including, but not limited to, Delaware Route 404 and Delaware Route 16, including the section nearest the proposed development. Initial efforts will identify the east-west routes/corridors in northwestern Sussex County that are currently congested or are at risk for congestion based on anticipated growth in the area. The study will focus on a number of factors including longer trips from the Chesapeake Bay Bridge to the Delaware beaches and Ocean City, Maryland, regional traffic between Maryland's Eastern Shore and Sussex County, and local east-west traffic within the northwestern part of Sussex County. The latest updates indicate that the study is in the data collection / public outreach phase.

**Trip Generation**

Trip generation for the proposed development was computed using comparable land uses and equations contained in Trip Generation, Tenth Edition, published by the Institute of Transportation Engineers (ITE). The following land use was utilized to estimate the amount of new traffic generated for this development:

- 199 single-family detached houses (ITE Land Use Code 210)
- 112 multifamily housing low-rise (ITE Land Use Code 220)

Table 1  
FOREST LANDING PEAK HOUR TRIP GENERATION

Land Use	Weekday AM Peak Hour			Weekday PM Peak Hour			Saturday Peak Hour		
	In	Out	Total	In	Out	Total	In	Out	Total
Single Family Detached House (199 units)	36	110	146	124	73	197	100	85	185
Multifamily Housing, Low-Rise (112 units)	12	41	53	41	24	65	47	41	88
<b>TOTAL TRIPS</b>	<b>48</b>	<b>151</b>	<b>199</b>	<b>165</b>	<b>97</b>	<b>262</b>	<b>147</b>	<b>126</b>	<b>273</b>

**Overview of TIS**

**Intersections examined:**

- 1) Site Access and N. Old State Road
- 2) N. Old State Road and Fleatown Road (Sussex Road 224)
- 3) US Route 113 and Fleatown Road / Staytonville Road (Sussex Road 224)
- 4) US Route 113 and E. Hudson Pond Road / W. Hudson Pond Road (Sussex Road 663)
- 5) N. Old State Road and Gladys Street
- 6) Delaware Route 16 and N. Old State Road
- 7) Delaware Route 16 and Sharons Road (Sussex Road 641)
- 8) US Route 113 and Delaware Route 16
- 9) Delaware Route 16 and Ponder Road (Sussex Road 232)
- 10) Delaware Route 16 and Hummingbird Road (Sussex Road 227)

**Conditions examined:**

- 1) 2021 Existing (Case 1)
- 2) 2028 No-Build (Case 2)
- 3) 2028 Build (Case 3)

**Peak hours evaluated:** Weekday morning and evening and Saturday mid-day peak hours

**Committed developments considered:**

- 1) Ingram Village (255 single family detached homes (196 unbuilt) and 125 town homes (all unbuilt))
- 2) Newdale Acres – f.k.a. Walker Property (224 single-family detached homes and 72 townhomes) (all unbuilt)
- 3) Captains Way (301-unit mobile-home residential community (259 unbuilt))

**Intersection Descriptions**

**1) Site Access and N. Old State Road**

**Type of Control:** proposed one-way stop (T-intersection)

**Westbound Approach:** (Site Access) one shared left/right-turn lane, stop controlled

**Northbound Approach:** (N. Old State Road) one through lane and one right-turn lane

**Southbound Approach:** (N. Old State Road) one left-turn lane and one through lane

**2) N. Old State Road and Fleatown Road**

**Type of Control:** two-way stop controlled

**Eastbound Approach:** (Fleatown Road) one shared left/through/right-turn lane, stop controlled

**Westbound Approach:** (Fleatown Road) one shared left/through/right-turn lane (flared right), stop controlled

**Northbound Approach:** (N. Old State Road) one shared left/through/right-turn lane

**Southbound Approach:** (N. Old State Road) one shared left/through/right-turn lane

**3) US Route 113 and Fleatown Road / Staytonville Road**

**Type of Control:** two-way stop controlled

**Eastbound Approach:** (Staytonville Road) one right-turn only lane, yield controlled

**Westbound Approach:** (Fleatown Road) one shared left/right-turn lane (flared right), stop controlled

**Northbound Approach:** (US Route 113) two through lanes and one right-turn lane

**Southbound Approach:** (US Route 113) one left-turn lane, two through lanes and one right-turn lane

**4) US Route 113 and E. Hudson Pond Road / W. Hudson Pond Road**

**Type of Control:** two-way stop controlled

**Eastbound Approach:** (W. Hudson Pond Road) one shared left/through/right-turn lane (flared right), stop controlled

**Westbound Approach:** (E. Hudson Pond Road) one shared left/through/right-turn lane (flared right), stop controlled

**Northbound Approach:** (US Route 113) one left-turn lane, two through lanes and one right-turn lane

**Southbound Approach:** (US Route 113) one left-turn lane, two through lanes, and one right-turn lane

**5) N. Old State Road and Gladys Street**

**Type of Control:** one-way stop (T-intersection)

**Westbound Approach:** (Gladys Street) one shared left/right-turn lane, stop controlled

**Northbound Approach:** (N. Old State Road) one shared through/right-turn lane

**Southbound Approach:** (N. Old State Road) one shared through/left-turn lane

**6) Delaware Route 16 and N. Old State Road**

**Type of Control:** two-way stop controlled

**Eastbound Approach:** (Delaware Route 16) one shared left/through/right-turn lane

**Westbound Approach:** (Delaware Route 16) one shared left/through/right-turn lane

**Northbound Approach:** (S. Old State Road) one shared left/through/right-turn lane, stop controlled

**Southbound Approach:** (N. Old State Road) one shared left/through/right-turn lane, stop controlled

**7) Delaware Route 16 and Sharons Road**

**Type of Control:** one-way stop (T-intersection)

**Eastbound Approach:** (Delaware Route 16) one shared through/right-turn lane

**Westbound Approach:** (Delaware Route 16) one shared through/left-turn lane

**Northbound Approach:** (Sharons Road) one shared left/right-turn lane, stop controlled

**8) US Route 113 and Delaware Route 16**

**Type of Control:** existing signalized intersection

**Eastbound Approach:** (Delaware Route 16) one left-turn lane, one through lane, and one right-turn lane

**Westbound Approach:** (Delaware Route 16) one left-turn lane, one through lane, and one right-turn lane

**Northbound Approach:** (US Route 113) one left-turn lane, two through lanes, and one right-turn lane

**Southbound Approach:** (US Route 113) one left-turn lane, two through lanes, and one right-turn lane

**9) Delaware Route 16 and Ponder Road**

**Type of Control:** two-way stop controlled

**Eastbound Approach:** (Delaware Route 16) one shared left/through/right-turn lane

**Westbound Approach:** (Delaware Route 16) one shared left/through/right-turn lane

**Northbound Approach:** (Ponder Road) one shared left/through/right-turn lane, stop controlled

**Southbound Approach:** (Ponder Road) one shared left/through/right-turn lane, stop controlled

### **10) Delaware Route 16 and Hummingbird Road**

**Type of Control:** one-way stop (T-intersection)

**Eastbound Approach:** (Delaware Route 16) one shared through/left-turn lane

**Westbound Approach:** (Delaware Route 16) one shared through/right-turn lane

**Southbound Approach:** (Hummingbird Road) one left-turn lane and one right-turn lane, stop controlled

### **Safety Evaluation**

**Crash Data:** Delaware Crash Analysis Reporting System (CARS) data was provided in Appendix A of the TIS for the three-year period from April 19, 2019, through April 19, 2022. The crash data indicates that 136 crashes occurred within the study area over that timeframe, with 84 of those crashes occurring at the intersection of US Route 113 and Delaware Route 16. There were no fatalities within the crash data.

**US Route 113 and Delaware Route 16:** 84 crashes occurred at this intersection. Of those, 33 (39%) crashes were front to rear, 33 (39%) were angle, 8 (10%) were sideswipe same direction, 4 (5%) were front to front, 3 (4%) were single-vehicle crashes, and 2 (2%) were sideswipe opposite direction. Twenty-one (25%) of the crashes involved personal injury and none involved a fatality.

**N. Old State Road and Fleatown Road:** 14 crashes occurred at this intersection. Of those, 7 (50%) crashes were angle, 6 (43%) were single-vehicle crashes, and 1 (%) was front to rear. Six (43%) of the crashes involved personal injury and none involved a fatality.

**Delaware Route 16 and N. Old State Road:** 8 crashes occurred at this intersection. Of those, 3 (38%) crashes were angle, 2 (25%) were front to rear, 1 (13%) was front to front, 1 (13%) was a single-vehicle crash, and 1 (13%) was unknown type. One (13%) of the crashes involved personal injury and none involved a fatality.

**US Route 113 and E. Hudson Pond Road / W. Hudson Pond Road:** 8 crashes occurred at this intersection. Of those, 3 (38%) crashes were angle, 3 (38%) were sideswipe same direction, 1 (13%) was front to front, and 1 (13%) was a single-vehicle crash. Three (38%) of the crashes involved personal injury and none involved a fatality.

All other intersections in the study area had fewer than 8 crashes over the three-year period.

**Sight Distance:** The proposed site access on N. Old State Road was observed to have an unobstructed view looking from the proposed driveway approach with no apparent visual obstructions in either direction. As always adequacy of available sight distance must be confirmed during the site plan review process for all proposed movements at the site access.

### **Transit, Pedestrian, and Bicycle Facilities**

**Existing transit service:** Based on the current DART Bus Stop Map, the Delaware Transit Corporation (DTC) currently operates one fixed-route transit bus service in the area of the proposed Forest Landing development. Route 303 runs along US Route 113 and Delaware Route



16, providing service between Dover and Georgetown with approximately eight trips in each direction on weekdays only. The nearest stops to the proposed Forest Landing development are on Delaware Route 16 at Ellegood Avenue just east of N. Old State Road, with stops on both sides of Delaware Route 16. There are no routes or stops on N. Old State Road.

**Planned transit service:** Based on coordination with DTC representative Jared Kaufmann, DTC is evaluating the need for potential future service on N. Old State Road. To accommodate that, Mr. Kaufmann requested the developer provide a shared-use path along N. Old State Road, pedestrian pathways into the site, and a crosswalk on N. Old State Road to provide access to companion bus stops on the opposite side of the road. The recommendation for a crosswalk on N. Old State Road was reconsidered and is no longer requested.

**Existing bicycle and pedestrian facilities:** The following study area roadways are identified as “Bicycling Routes” on the *Sussex County Bicycle Map* published by DelDOT:

- Delaware Route 16
  - Regional Bicycle Route with Bikeway
  - Over 5,000 vehicles daily
- N. Old State Road
  - Statewide Bicycle Route without Bikeway

Delaware Route 16 has shoulders in both directions throughout the area as well as marked bike lanes adjacent to right-turn lanes for business driveways near US Route 113. US Route 113 has shoulders in both directions. No other roadways in the study area have shoulders. There are limited sections of sidewalk throughout the area, including on both sides of Delaware Route 16 east of N. Old State Road, but none in the immediate vicinity of the proposed development.

**Planned bicycle and pedestrian facilities:** Based on coordination with Mr. John Fiori, of DelDOT’s Statewide and Regional Planning Section, it is recommended to install a 10’ wide shared-use path along the site frontage on N. Old State Road. A bicycle lane is also recommended to be included between the through lane and right-turn lane into the site.

### **Previous Comments**

In a review letter dated June 22, 2022, DelDOT indicated that the Preliminary TIS was acceptable with one minor change.

It appears that all substantive comments from DelDOT’s TIS Scoping Memorandum, Traffic Count Review, Preliminary TIS Review, and other correspondence were addressed in the Final TIS submission.

**General HCS Analysis Comments**

*(see table footnotes on the following pages for specific comments)*

- 1) Both the TIS and McCormick Taylor utilized Highway Capacity Software (HCS) version 7.9.5 to complete the traffic analyses.
- 2) For two-way stop control intersections, the TIS and McCormick Taylor applied heavy vehicle factors (HV) by movement using existing data, and by assuming 5% HV for movements with less than 100 vehicles per hour. For signalized intersections, the TIS and McCormick Taylor applied HV by lane group using existing data. The TIS also sometimes adjusted the future HV by assuming 3% HV in the added volume, with detailed adjustments documented in the TIS, and McCormick Taylor typically agreed with that approach.
- 3) For existing conditions, the TIS and McCormick Taylor determined overall intersection peak hour factors (PHF) for each intersection based on the turning movement counts that were available. Future PHFs were determined as per the DelDOT Development Coordination Manual section 2.2.8.11.6.F where applicable.
- 4) The TIS and McCormick Taylor used different signal timings when analyzing the signalized intersections in some cases.

Table 2  
Peak Hour Levels of Service (LOS)  
Based on Forest Landing Traffic Impact Study – August 2022  
Prepared by Davis, Bowen & Friedel, Inc.

Unsignalized Intersection <sup>1</sup> One-Way Stop (T-intersection)	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Summer Saturday	Weekday AM	Weekday PM	Summer Saturday
<b>Site Access &amp; N. Old State Road</b>						
2028 Build Condition (Case 3)						
Westbound Site Access	B (10.7)	B (12.0)	B (11.8)	B (10.7)	B (11.8)	B (11.7)
Southbound N. Old State Road – Left	A (7.6)	A (7.9)	A (7.8)	A (7.6)	A (7.9)	A (7.8)

<sup>1</sup> For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.

Table 3  
Peak Hour Levels of Service (LOS)  
Based on Forest Landing Traffic Impact Study – August 2022  
Prepared by Davis, Bowen & Friedel, Inc.

Unsignalized Intersection <sup>2</sup> Two-Way Stop	LOS per TIS		LOS per McCormick Taylor	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
<b>N. Old State Road &amp; Fleatown Road</b>				
2021 Existing (Case 1)				
Eastbound Fleatown Road	B (10.1)	B (10.9)	B (10.1)	B (10.8)
Westbound Fleatown Road	B (10.6)	A (9.8)	B (10.5)	A (9.7)
Northbound N. Old State Road – Left	A (7.4)	A (7.3)	A (7.4)	A (7.3)
Southbound N. Old State Road – Left	A (7.3)	A (7.4)	A (7.3)	A (7.4)
2028 No-Build Condition (Case 2)				
Eastbound Fleatown Road	B (11.5)	B (12.2)	B (11.4)	B (12.1)
Westbound Fleatown Road	B (13.0)	B (11.7)	B (12.8)	B (11.5)
Northbound N. Old State Road – Left	A (7.5)	A (7.5)	A (7.5)	A (7.5)
Southbound N. Old State Road – Left	A (7.4)	A (7.4)	A (7.4)	A (7.4)
2028 Build Condition (Case 3)				
Eastbound Fleatown Road	B (12.9)	B (13.5)	B (12.7)	B (13.4)
Westbound Fleatown Road	C (16.7)	B (14.7)	C (16.3)	B (14.4)
Northbound N. Old State Road – Left	A (7.6)	A (7.5)	A (7.6)	A (7.5)
Southbound N. Old State Road – Left	A (7.4)	A (7.5)	A (7.4)	A (7.5)

<sup>2</sup> For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.

Table 4  
Peak Hour Levels of Service (LOS)  
Based on Forest Landing Traffic Impact Study – August 2022  
Prepared by Davis, Bowen & Friedel, Inc.

Unsignalized Intersection <sup>3</sup> Two-Way Stop	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Summer Saturday	Weekday AM	Weekday PM	Summer Saturday
<b>US Route 113 &amp; Fleatown Road / Staytonville Road</b>						
2021 Existing (Case 1)						
Eastbound Staytonville Road – Right	B (13.2)	B (11.6)	C (15.6)	B (13.0)	B (11.5)	C (15.4)
Westbound Fleatown Road	C (21.6)	C (15.4)	E (42.7)	C (20.4)	B (14.7)	E (38.0)
Southbound US Route 113 – Left	A (9.9)	B (10.8)	B (14.9)	A (9.9)	B (11.1)	B (14.9)
2028 No-Build Condition (Case 2)						
Eastbound Staytonville Road – Right	B (13.7)	B (12.4)	C (17.6)	B (13.5)	B (12.3)	C (17.0)
Westbound Fleatown Road	C (23.4)	B (14.3)	E (48.9)	C (21.7)	B (13.6)	E (41.5)
Southbound US Route 113 – Left	B (10.6)	B (12.2)	C (17.8)	B (10.6)	B (12.3)	C (17.9)
2028 Build Condition (Case 3)						
Eastbound Staytonville Road – Right	B (13.7)	B (12.4)	C (17.6)	B (13.5)	B (12.4)	C (17.0)
Westbound Fleatown Road	D (28.8)	B (14.3)	F (76.4)	D (26.3)	B (13.6)	F (61.8)
Southbound US Route 113 – Left	B (10.7)	B (12.7)	C (19.6)	B (10.7)	B (13.1)	C (19.9)

<sup>3</sup> For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.

Table 5  
Peak Hour Levels of Service (LOS)  
Based on Forest Landing Traffic Impact Study – August 2022  
Prepared by Davis, Bowen & Friedel, Inc.

Unsignalized Intersection <sup>4</sup> Two-Way Stop	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Summer Saturday	Weekday AM	Weekday PM	Summer Saturday
<b>US Route 113 &amp; E. Hudson Pond Road / W. Hudson Pond Road</b>						
2021 Existing (Case 1)						
Eastbound W. Hudson Pond Road	D (28.9)	N/A	E (43.7)	C (23.7)	N/A	E (40.5)
Westbound E. Hudson Pond Road	C (16.5)	C (16.9)	C (21.5)	C (16.0)	C (16.2)	C (20.1)
Northbound US Route 113 – Left	C (18.7)	A (9.9)	C (21.1)	C (18.7)	A (9.9)	C (21.1)
Southbound US Route 113 – Left	A (9.6)	B (12.8)	C (17.4)	A (9.6)	B (12.8)	C (17.4)
2028 No-Build Condition (Case 2)						
Eastbound W. Hudson Pond Road	D (32.6)	N/A	F (61.4)	D (26.5)	N/A	F (55.5)
Westbound E. Hudson Pond Road	C (19.3)	C (20.3)	D (27.6)	C (18.4)	C (19.3)	D (25.4)
Northbound US Route 113 – Left	C (20.4)	B (10.9)	D (27.2)	C (20.4)	B (10.9)	D (27.2)
Southbound US Route 113 – Left	B (10.3)	B (13.9)	C (20.3)	B (10.3)	B (11.2)	B (14.6)
2028 Build Condition (Case 3)						
Eastbound W. Hudson Pond Road	D (33.5)	N/A	F (65.0)	D (27.1)	N/A	F (58.6)
Westbound E. Hudson Pond Road	C (20.0)	C (21.0)	D (28.8)	C (19.1)	C (19.9)	D (26.4)
Northbound US Route 113 – Left	C (20.7)	B (11.1)	D (28.5)	C (20.7)	B (11.1)	D (28.4)
Southbound US Route 113 – Left	B (10.5)	B (14.1)	C (21.0)	B (10.5)	B (11.3)	B (14.9)

<sup>4</sup> For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.

Table 6  
Peak Hour Levels of Service (LOS)  
Based on Forest Landing Traffic Impact Study – August 2022  
Prepared by Davis, Bowen & Friedel, Inc.

Unsignalized Intersection <sup>5</sup> One-Way Stop (T-intersection)	LOS per TIS		LOS per McCormick Taylor	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
<b>N. Old State Road &amp; Gladys Street</b>				
2021 Existing (Case 1)				
Westbound Gladys Street	A (8.8)	A (9.0)	A (8.8)	A (9.0)
Southbound N. Old State Road – Left	A (7.3)	A (7.4)	A (7.3)	A (7.4)
2028 No-Build Condition (Case 2)				
Westbound Gladys Street	A (9.6)	B (10.1)	A (9.6)	B (10.1)
Southbound N. Old State Road – Left	A (7.4)	A (7.6)	A (7.4)	A (7.6)
2028 Build Condition (Case 3)				
Westbound Gladys Street	B (10.4)	B (11.2)	B (10.3)	B (11.1)
Southbound N. Old State Road – Left	A (7.5)	A (7.9)	A (7.5)	A (7.9)

<sup>5</sup> For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.

Table 7  
Peak Hour Levels of Service (LOS)  
Based on Forest Landing Traffic Impact Study – August 2022  
Prepared by Davis, Bowen & Friedel, Inc.

Unsignalized Intersection <sup>6</sup> Two-Way Stop	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Summer Saturday	Weekday AM	Weekday PM	Summer Saturday
<b>Delaware Route 16 &amp; N. Old State Road</b>						
2021 Existing (Case 1)						
Eastbound Delaware Route 16 – Left	A (8.0)	A (8.2)	A (8.4)	A (8.0)	A (8.2)	A (8.4)
Westbound Delaware Route 16 – Left	A (8.2)	A (8.2)	A (8.6)	A (8.2)	A (8.2)	A (8.6)
Northbound N. Old State Road	C (18.8)	C (22.4)	D (33.2)	C (18.2)	C (21.3)	D (30.8)
Southbound N. Old State Road	C (16.3)	C (19.6)	D (25.5)	C (15.8)	C (18.8)	C (24.1)
2028 No-Build Condition (Case 2)						
Eastbound Delaware Route 16 – Left	A (8.3)	A (8.7)	A (8.9)	A (8.3)	A (8.7)	A (8.9)
Westbound Delaware Route 16 – Left	A (8.4)	A (8.6)	A (9.1)	A (8.4)	A (8.6)	A (9.1)
Northbound N. Old State Road	D (32.9)	F (92.6)	F (194.5)	D (30.5)	F (77.5)	F (155.6)
Southbound N. Old State Road	C (22.2)	F (62.1)	F (112.3)	C (21.1)	F (53.8)	F (91.8)
2028 Build Condition (Case 3)						
Eastbound Delaware Route 16 – Left	A (8.4)	A (9.0)	A (9.3)	A (8.4)	A (9.0)	A (9.3)
Westbound Delaware Route 16 – Left	A (8.4)	A (8.6)	A (9.1)	A (8.4)	A (8.6)	A (9.1)
Northbound N. Old State Road	E (44.6)	F (256.2)	F (532.6)	E (40.4)	F (207.5)	F (425.1)
Southbound N. Old State Road	E (39.7)	F (252.9)	F (527.8)	E (35.9)	F (208.8)	F (439.5)
2028 Build Condition (Case 3) <i>With Added Southbound Right-Turn Lane</i>						
Eastbound Delaware Route 16 – Left	N/A	N/A	N/A	A (8.4)	A (9.0)	A (9.3)
Westbound Delaware Route 16 – Left	N/A	N/A	N/A	A (8.4)	A (8.6)	A (9.1)
Northbound N. Old State Road	N/A	N/A	N/A	E (40.4)	F (207.5)	F (425.1)
Southbound N. Old State Road	N/A	N/A	N/A	C (24.4)	F (113.3)	F (215.5)

Signalized Intersection <sup>6</sup>	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Summer Saturday	Weekday AM	Weekday PM	Summer Saturday
<b>Delaware Route 16 &amp; N. Old State Road</b>						
2028 No-Build Condition (Case 2)						
2028 Build Condition (Case 3)	A (9.4)	A (9.9)	B (11.0)	B (11.6)	A (10.0-)	B (12.0)

<sup>6</sup> For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.



Table 8  
Peak Hour Levels of Service (LOS)  
Based on Forest Landing Traffic Impact Study – August 2022  
Prepared by Davis, Bowen & Friedel, Inc.

Unsignalized Intersection <sup>7</sup> One-Way Stop (T-intersection)	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Summer Saturday	Weekday AM	Weekday PM	Summer Saturday
<b>Delaware Route 16 &amp; Sharons Road</b>						
2021 Existing (Case 1)						
Westbound Delaware Route 16 – Left	A (8.2)	A (8.2)	A (8.5)	A (8.2)	A (8.2)	A (8.5)
Northbound Sharons Road	B (12.8)	B (13.6)	C (16.0)	B (12.6)	B (13.3)	C (15.5)
2028 No-Build Condition (Case 2)						
Westbound Delaware Route 16 – Left	A (8.4)	A (8.7)	A (9.0)	A (8.4)	A (8.7)	A (9.0)
Northbound Sharons Road	B (13.4)	C (15.7)	C (16.9)	B (13.1)	C (15.2)	C (16.4)
2028 Build Condition (Case 3)						
Westbound Delaware Route 16 – Left	A (8.4)	A (8.9)	A (9.2)	A (8.4)	A (8.9)	A (9.2)
Northbound Sharons Road	B (13.8)	C (16.8)	C (18.2)	B (13.5)	C (16.3)	C (17.6)

<sup>7</sup> For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.

Table 9  
Peak Hour Levels of Service (LOS)  
Based on Forest Landing Traffic Impact Study – August 2022  
Prepared by Davis, Bowen & Friedel, Inc.

Signalized Intersection <sup>8</sup>	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Summer Saturday	Weekday AM	Weekday PM	Summer Saturday
<b>US Route 113 &amp; Delaware Route 16</b>						
2021 Existing (Case 1)	D (38.9)	D (35.1)	D (48.8)	D (36.7)	C (32.5)	D (47.2)
2028 No-Build Condition (Case 2)	D (44.6)	D (40.5)	E (65.7)	D (46.3)	D (40.0)	E (67.2)
2028 Build Condition (Case 3)	D (46.4)	D (41.8)	E (69.3)	D (49.9)	D (41.7)	E (72.8)

<sup>8</sup> For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.

Table 10  
Peak Hour Levels of Service (LOS)  
Based on Forest Landing Traffic Impact Study – August 2022  
Prepared by Davis, Bowen & Friedel, Inc.

Unsignalized Intersection <sup>9</sup> Two-Way Stop	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Summer Saturday	Weekday AM	Weekday PM	Summer Saturday
<b>Delaware Route 16 &amp; Ponder Road</b>						
2021 Existing (Case 1)						
Eastbound Delaware Route 16 – Left	A (7.8)	A (8.2)	A (8.4)	A (7.8)	A (8.2)	A (8.4)
Westbound Delaware Route 16 – Left	A (8.2)	A (7.9)	A (8.7)	A (8.2)	A (7.9)	A (8.7)
Northbound Ponder Road	B (12.2)	B (12.8)	B (12.3)	B (12.0)	B (12.5)	B (12.2)
Southbound Ponder Road	B (10.5)	B (12.6)	B (14.3)	B (10.4)	B (12.4)	B (14.0)
2028 No-Build Condition (Case 2)						
Eastbound Delaware Route 16 – Left	A (8.1)	A (8.6)	A (8.8)	A (8.1)	A (8.6)	A (8.8)
Westbound Delaware Route 16 – Left	A (8.5)	A (8.3)	A (9.1)	A (8.5)	A (8.3)	A (9.1)
Northbound Ponder Road	B (14.1)	C (15.8)	B (13.7)	B (13.8)	C (15.4)	B (13.5)
Southbound Ponder Road	B (11.5)	C (15.3)	C (17.4)	B (11.4)	B (14.9)	C (16.8)
2028 Build Condition (Case 3)						
Eastbound Delaware Route 16 – Left	A (8.1)	A (8.8)	A (8.9)	A (8.1)	A (8.8)	A (8.9)
Westbound Delaware Route 16 – Left	A (8.6)	A (8.3)	A (9.2)	A (8.6)	A (8.3)	A (9.2)
Northbound Ponder Road	B (14.6)	C (16.7)	B (14.0)	B (14.3)	C (16.1)	B (13.8)
Southbound Ponder Road	B (11.7)	C (16.0)	C (18.4)	B (11.6)	C (15.6)	C (17.7)

<sup>9</sup> For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.

Table 11  
Peak Hour Levels of Service (LOS)  
Based on Forest Landing Traffic Impact Study – August 2022  
Prepared by Davis, Bowen & Friedel, Inc.

Unsignalized Intersection <sup>10</sup> One-Way Stop (T-intersection)	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Summer Saturday	Weekday AM	Weekday PM	Summer Saturday
<b>Delaware Route 16 &amp; Hummingbird Road</b>						
2021 Existing (Case 1)						
Eastbound Delaware Route 16 – Left	A (7.8)	A (8.1)	A (8.4)	A (7.8)	A (8.1)	A (8.4)
Southbound Hummingbird Road	B (13.5)	B (13.8)	C (19.5)	B (13.6)	B (14.6)	C (18.7)
2028 No-Build Condition (Case 2)						
Eastbound Delaware Route 16 – Left	A (8.1)	A (8.5)	A (8.7)	A (8.1)	A (8.5)	A (8.7)
Southbound Hummingbird Road	C (16.3)	C (17.6)	D (25.7)	C (16.5)	C (18.9)	C (24.3)
2028 Build Condition (Case 3)						
Eastbound Delaware Route 16 – Left	A (8.1)	A (8.6)	A (8.8)	A (8.1)	A (8.7)	A (8.8)
Southbound Hummingbird Road	C (17.0)	C (18.7)	D (27.7)	C (17.2)	C (20.1)	D (26.0)

<sup>10</sup> For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.