



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

NICOLE MAJESKI  
SECRETARY

November 16, 2023

Ms. Betty Tustin, P.E., PTOE  
The Traffic Group, Inc.  
104 Kenwood Court  
Berlin, Maryland 21811

Dear Ms. Betty Tustin:

The enclosed Traffic Impact Study (TIS) review letter for the proposed **Whitetail Run** (Tax Parcel: 532-21.00-3.00) 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:km

Enclosures

cc with enclosures: Bobby Horsey, Double H Development, LLC  
Jason Palkewicz, Solutions IPER  
David L. Edgell, Office of State Planning Coordination  
Jamie Whitehouse, Sussex County Planning & Zoning  
Joanne M. Arellano, Johnson, Mirmiran, & Thompson, Inc.  
Mir Wahed, Johnson, Mirmiran, & Thompson, 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  
Jose Quixtan, Sussex County Subdivision Reviewer, Development Coordination, Planning  
Sireen Muhtaseb, TIS Group Manager, Development Coordination, Planning  
Anthony Aglio, Planning Supervisor, Statewide & Regional Planning, Planning  
Steve Bayer, Acting Sussex Transportation Planner, Statewide & Regional Planning



November 16, 2023

Ms. Annamaria Furmato  
Project Engineer  
Delaware Department of Transportation  
Development Coordination, Division of Planning  
800 Bay Road  
Dover, DE 19901

RE: Agreement No. 1945F  
Project Number T202069012/PO#611882  
Traffic Impact Study Services  
Task 11-13A – Whitetail Run TIS

Dear Ms. Furmato:

Johnson, Mirmiran, and Thompson (JMT) has completed a review of the Traffic Impact Study (TIS) for the Whitetail Run development, which was prepared by The Traffic Group, Inc. dated February 14, 2023. This review was assigned as Task Number 11-13A. The report is prepared in a manner generally consistent with DelDOT's *Development Coordination Manual*.

The TIS evaluates the impacts of a proposed residential development in the Town of Delmar, Sussex County, Delaware. The proposed development would consist of 225 single-family detached houses on an approximately 68.00-acre parcel. The land is currently zoned as R-4 (Residential), and the developer does not plan to rezone the land.

The development is located on the southeast side of Old Stage Road (Sussex Road 68), approximately 3,340 feet south of the intersection with Iron Hill Road (Sussex Road 454A). One full access point is proposed on Old Stage Road. Construction is expected to be complete in 2029.

DelDOT has relevant and ongoing improvement projects within the study area including the *Corridor Capacity Preservation Program (CCPP)*, which aims to maintain the regional importance and preserve the intended function and capacity of existing designated transportation routes within the Program. The main objectives of the program are listed below:

- Prevent the need to build an entirely new road
- Minimize the transportation impacts of increased economic growth
- Maintain an existing road's ability to handle traffic efficiently and safely
- Preserve the ability to make future improvements
- Sort local and through traffic

US Route 13 is one of the highways included in the CCPP. It should be noted that the service road and local roadway connections depicted between US Route 13 and Old Stage Road on the November 2001 DelDOT Delmar Plan for the US 13 Corridor Capacity Preservation Program have been implemented. More information regarding the CCPP can be found at [https://deldot.gov/Programs/corr\\_cap/index.shtml](https://deldot.gov/Programs/corr_cap/index.shtml).



The DelDOT HEP (Hazard Elimination Program) program is a component of the HSIP (Highway Safety Improvement Program), which aims to achieve a significant reduction in traffic fatalities and injuries through the implementation of infrastructure-related highway safety improvements on state-maintained roads. The Old Stage Road and Whitesville Road (Sussex Road 64) intersection was identified in the 2018 HEP as site U-2. The intersection was converted from a two-way stop-controlled intersection to an all-way stop-controlled intersection. The agreed upon recommendations at the HEP 2018 Task I Meeting was to replace damaged speed limit signs along Old Stage Road, install speed limit signs along Whitesville Road, and to continue monitoring crash data following the implementation of the all-way stop control. Based on a field visit, the speed limit signage recommendations have been implemented. Additionally, the crash monitoring history revealed that there have been no intersection crashes from September 2018 to December 2020 since the implementation of all-way stop control.

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

The following intersection exhibits level of service (LOS) deficiencies without the implementation of physical roadway and/or traffic control improvements.

Intersection	LOS Deficiencies Occur		Case
	AM	PM	
Delaware Route 54/Old Stage Road		X	Case 2 – 2029 without Development
		X	Case 3 – 2029 with Development

The unsignalized Delaware Route 54 intersection with Old Stage Road would exhibit LOS deficiencies during the PM peak hour under future conditions with or without the proposed development (Cases 2 and 3). The failures would exist along the northbound Stage Road approach under Case 3 conditions, and along the southbound Old Stage Road approach under Case 2 and Case 3 conditions. Specifically, during the PM peak hour under future conditions with the proposed development (Case 3), the intersection would exhibit LOS deficiencies along the northbound Stage Road approach with a delay of 37.6 seconds per vehicle and a 95<sup>th</sup> percentile queue of approximately 45 feet. Additionally, the intersection would exhibit LOS deficiencies along the southbound Old Stage Road approach with a delay of 93.6 seconds per vehicle and a 95<sup>th</sup> percentile queue of approximately 195 feet.

The deficiencies at the intersection could be mitigated by converting the intersection to be all-way-stop-control, a single lane roundabout, or installing a traffic signal; however, the feasibility of those mitigation measures should be evaluated as part of a larger study, outside the scope of this TIS. A larger study outside the scope of this TIS may be conducted to determine appropriate improvements for the intersection. As such, we do not recommend the developer implement improvements at this intersection. However, it is recommended that the developer enter into a signal agreement for the intersection or contribute to the Traffic Signal Revolving Fund (TSRF) in lieu of a traffic signal agreement.



Should the Town of Delmar approve the proposed development, the following items should be incorporated into the site design and reflected on the record plan, 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 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 Old Stage 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.” The developer should coordinate with DelDOT’s Development Coordination Section during the site plan review to determine the improvements.
2. The developer should construct an unsignalized full access for the proposed Whitetail Run development along Old Stage Road, approximately 250 feet north of the intersection with Marsha Street. The intersection should be consistent with the lane configurations shown in the table below.

Approach	Current Configuration	Approach	Proposed Configuration
Westbound Site Entrance	Approach does not exist	Westbound Site Entrance	One shared left turn/right turn lane
Northbound Old Stage Road	One through lane	Northbound Old Stage Road	One through lane and one right turn lane
Southbound Old Stage Road	One through lane	Southbound Old Stage Road	One left turn lane and one through lane

Based on DelDOT’s *Development Coordination Manual*, the recommended minimum storage length (excluding taper) of the northbound right turn lane is 240 feet and the southbound left turn lane is 185 feet. The projected queues from the HCS analysis can be accommodated within the recommended storage lengths.

3. The developer should enter into a traffic signal agreement with DelDOT for the intersection of Delaware Route 54 with Old Stage Road or the developer may contribute to the Traffic Signal Revolving Fund (TSRF) in lieu of a traffic signal agreement. The amount of the TSRF contribution is \$20,059. The developer should coordinate with DelDOT Subdivision Section to execute the traffic signal agreement or the TSRF agreement and pay the TSRF amount.



4. The following bicycle, pedestrian, and transit improvements should be included:
  - a. A minimum of fifteen-foot wide permanent easement from the edge of the right-of-way should be dedicated to DelDOT along the Old Stage Road site frontage. Within the easement, the developer should construct a ten-foot wide shared-use path (SUP). The SUP should be designed to meet current AASHTO and ADA standards. A minimum five-foot setback should be maintained from the edge of the pavement to the SUP. If feasible, the SUP should be placed behind utility poles and street trees should be provided within the buffer area. The developer should coordinate with DelDOT's Development Coordination Section during the plan review process to identify the exact location of the SUP.
  - b. At least one internal connection of a sidewalk or SUP in the vicinity of the site entrance from the SUP along Old Stage Road should be provided.
  - c. ADA compliant curb ramps and marked crosswalks should be provided along the site entrance.
  - d. Minimum five-foot wide bicycle lanes should be incorporated in the right turn lane and shoulder along the Old Stage Road approaches to the site entrance.
  - e. Utility covers should be moved outside of any designated bicycle lanes and any proposed sidewalks/SUP or should be flush with the pavement.

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

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 [https://www.deldot.gov/Publications/manuals/de\\_mutcd/index.shtml](https://www.deldot.gov/Publications/manuals/de_mutcd/index.shtml).

Additional details on our review of the TIS are attached. Please contact me at (302) 266-9600 if you have any questions concerning this review.

Sincerely,  
Johnson, Mirmiran, and Thompson, Inc.

A handwritten signature in black ink, appearing to read 'Joanne M. Arellano', is written over a light blue horizontal line.

Joanne M. Arellano, P.E., PTOE

cc: Mir Wahed, P.E., PTOE  
Janna Brown, P.E.

Enclosure

## **General Information**

**Report date:** February 14, 2023

**Prepared by:** The Traffic Group, Inc.

**Prepared for:** Double H Development, LLC

**Tax Parcels:** 532-21.00-3.00

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

## **Project Description and Background**

**Description:** The proposed residential development consists of 225 single-family detached houses.

**Location:** The site is located on the southeast side of Old Stage Road (Sussex Road 68), approximately 3,340 feet south of the intersection with Iron Hill Road (Sussex Road 454A), in the Town of Delmar, in Sussex County, Delaware.

**Amount of Land to be developed:** An approximately 68.00-acre parcel.

**Land Use approval(s) needed:** Entrance Plan.

**Proposed completion date:** 2029.

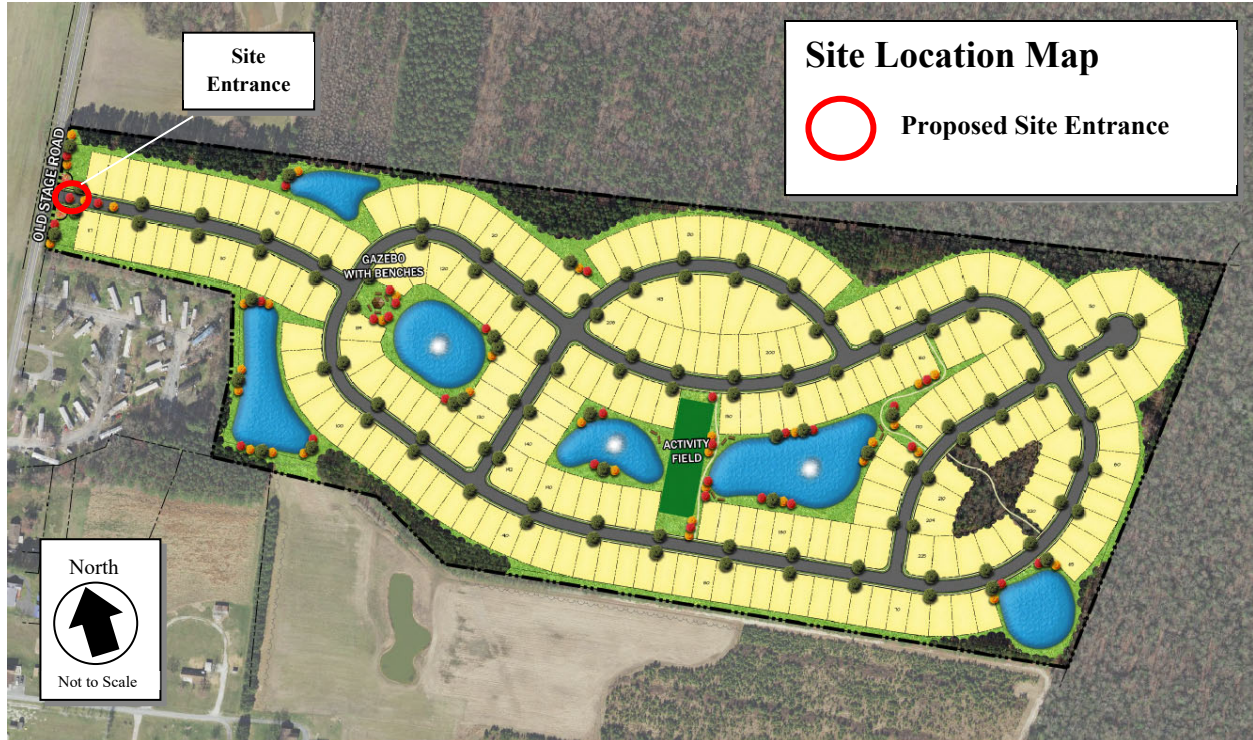
**Proposed access locations:** One full access point is proposed on Old Stage Road.

### **Daily Traffic Volumes:**

- 2022 Average Annual Daily Traffic on Old Stage Road: 2,259 vehicles per day

\*AADT is sourced from ATR data provided by the TIS report. Data taken from six full days starting July 21, 2022.

## Site Map



\*Graphic is from a layout prepared for Whitetail Run by MRA.

## Relevant and On-going Projects

DelDOT has relevant and ongoing improvement projects within the study area including the *Corridor Capacity Preservation Program (CCPP)*, which aims to maintain the regional importance and preserve the intended function and capacity of existing designated transportation routes within the Program. The main objectives of the program are listed below:

- Prevent the need to build an entirely new road
- Minimize the transportation impacts of increased economic growth
- Maintain an existing road's ability to handle traffic efficiently and safely
- Preserve the ability to make future improvements
- Sort local and through traffic

US Route 13 is one of the highways included in the CCPP. It should be noted that the service road and local roadway connections depicted between US Route 13 and Old Stage Road on the November 2001 DelDOT Delmar Plan for the US 13 Corridor Capacity Preservation Program have been implemented. More information regarding the CCPP can be found at [https://deldot.gov/Programs/corr\\_cap/index.shtml](https://deldot.gov/Programs/corr_cap/index.shtml).

The DelDOT HEP (Hazard Elimination Program) program is a component of the HSIP (Highway Safety Improvement Program), which aims to achieve a significant reduction in traffic fatalities and injuries through the implementation of infrastructure-related highway safety improvements on



state-maintained roads. The Old Stage Road and Whitesville Road (Sussex Road 64) intersection was identified in the 2018 HEP as site U-2. The intersection was converted from a two-way stop-controlled intersection to an all-way stop-controlled intersection. The agreed upon recommendations at the HEP 2018 Task I Meeting was to replace damaged speed limit signs along Old Stage Road, install speed limit signs along Whitesville Road, and to continue monitoring crash data following the implementation of the all-way stop control. Based on a field visit, the speed limit signage recommendations have been implemented. Additionally, the crash monitoring history revealed that there have been no intersection crashes from September 2018 to December 2020 since the implementation of all-way stop control.

### **Livable Delaware**

*(Source: Delaware Strategies for State Policies and Spending, 2020)*

Location with respect to the Strategies for State Policies and Spending Map of Delaware:  
The proposed development is located within Investment Level 2.

#### *Investment Level 2*

These areas can be composed of less developed areas within municipalities, rapidly growing areas in the counties that have or will have public water and wastewater services and utilities, areas that are generally adjacent to or near Investment Level 1 Areas, smaller towns and rural villages that should grow consistently with their historic character, and suburban areas with public water, wastewater, and utility services. They serve as transition areas between Level 1 and the state's more open, less populated areas. They generally contain a limited variety of housing types, predominantly detached single-family dwellings.

In Investment Level 2 Areas, like Investment Level 1 Areas, state investments and policies should support and encourage a wide range of uses and densities, promote other transportation options, foster efficient use of existing public and private investments, and enhance community identity and integrity. Investments should encourage departure from the typical single-family-dwelling developments and promote a broader mix of housing types and commercial sites encouraging compact, mixed-use development where applicable. Overall, the State's intent is to use its spending and management tools to promote well-designed development in these areas. Such development provides for a variety of housing types, user-friendly transportation systems, essential open spaces and recreational facilities, other public facilities, and services to promote a sense of community.

Level 2 Areas share similar priorities as with the Level 1 Areas where the aim remains to: make context sensitive transportation system capacity enhancements, preserve existing facilities, make safety enhancements, make transportation system capacity improvements, create transit system enhancements, ensure ADA accessibility, and close gaps in the pedestrian system, including the Safe Routes to School projects. Investment Level 2 Areas are ideal locations for Transportation Improvement Districts and Complete Community Enterprise Districts. Other priorities for Level 2 Areas include: Corridor Capacity Preservation, off-alignment multi-use paths, interconnectivity of neighborhoods and public facilities, and signal-system enhancements.

**Proposed Development’s Compatibility with Livable Delaware:**

The proposed site is located within Investment Level 2. In Investment Level 2, the priority is for creating and sustaining a variety of housing types. Therefore, the proposed development is consistent with the 2020 update of the Livable Delaware “Strategies for State Policies and Spending.”

**Comprehensive Plan**

*(Source: Town of Delmar Comprehensive Plan, 2020)*

**Town of Delmar Comprehensive Plan:**

Per the Town of Delmar Comprehensive Plan Existing Land Use Map, the proposed development is currently zoned as Wetlands/Woodlands. Per the Town of Delmar Comprehensive Plan Future Land Use Map, the proposed development is in an area designated as Complete Neighborhoods.

**Proposed Development’s Compatibility with the Town of Delmar Comprehensive Plan:**

The Town of Delmar Comprehensive Plan states that Complete Neighborhoods allow for a variety of housing types with open spaces. Therefore, the proposed development is generally consistent with the Town of Delmar Comprehensive Plan.

**Trip Generation**

The trip generation for the proposed development was determined by using the comparable land use and rates/equations contained in the 11th Edition of the ITE Trip Generation Manual, published by the Institute of Transportation Engineers (ITE) for ITE Land Use Code 210 (Single-Family Detached Houses). Trip generation was reviewed by DelDOT as part of the Preliminary TIS (PTIS) submission.

Table 1  
Whitetail Run Trip Generation

Land Use	ADT	Weekday AM Peak Hour			Weekday PM Peak Hour		
		In	Out	Total	In	Out	Total
225 Units Single-Family Detached Houses (ITE – 210)	2,128	41	115	156	134	97	213

**Overview of TIS**

**Intersections examined:**

1. Site Entrance / Old Stage Road (Sussex Road 68)
2. Old Stage Road / E. Snake Road / Cardinal Road (Sussex Road 452)
3. Old Stage Road / Whitesville Road (Sussex Road 64)

4. Whitesville Road / S. Scottsdale Circle
5. US Route 13 / Whitesville Road
6. Old Stage Road / Sleepy Hollow Drive
7. Delaware Route 54 / Old Stage Road
8. US Route 13 / Delaware Route 54

**Conditions examined:**

1. Case 1 – 2022 existing
2. Case 2 – 2029 without development
3. Case 3 – 2029 with development

**Committed Developments considered:**

1. Stillwater – 172 single-family detached houses

**Peak hours evaluated:** Weekday AM, and weekday PM.

**Intersection Descriptions**

**1. Site Entrance / Old Stage Road (Sussex Road 68)**

**Type of Control:** Proposed two-way stop-controlled intersection (T-intersection).

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

**Northbound Approach:** (Old Stage Road) Existing one through lane; proposed one through lane and one right turn lane.

**Southbound Approach:** (Old Stage Road) Existing one through lane; proposed one left turn lane and one through lane.

**2. Old Stage Road / E. Snake Road / Cardinal Road (Sussex Road 452)**

**Type of Control:** Existing two-way stop-controlled intersection (Four-legged).

**Eastbound Approach:** (E. Snake Road) Existing one shared left turn/through/right turn lane, stop-controlled.

**Westbound Approach:** (Cardinal Road) Existing one shared left turn/through/right turn lane, stop-controlled.

**Northbound Approach:** (Old Stage Road) Existing one shared left turn/through/right turn lane.

**Southbound Approach:** (Old Stage Road) Existing one shared left turn/through/right turn lane.

**3. Old Stage Road / Whitesville Road (Sussex Road 64)**

**Type of Control:** Existing all-way stop-controlled intersection (Four-legged).

**Eastbound Approach:** (Whitesville Road) Existing one shared left turn/through/right turn lane.

**Westbound Approach:** (Whitesville Road) Existing one shared left turn/through/right turn lane.

**Northbound Approach:** (Old Stage Road) Existing one shared left turn/through/right turn lane.

**Southbound Approach:** (Old Stage Road) Existing one shared left turn/through/right turn lane.

#### 4. Whitesville Road / S. Scottsdale Circle

**Type of Control:** Existing two-way stop-controlled intersection (T-intersection).

**Eastbound Approach:** (Whitesville Road) Existing one shared through/right turn lane.

**Westbound Approach:** (Whitesville Road) Existing one shared left turn/through lane.

**Northbound Approach:** (S. Scottsdale Circle) Existing one shared left turn/right turn lane, stop-controlled.

#### 5. US Route 13 / Whitesville Road

**Type of Control:** Existing two-way stop-controlled intersection (Four-legged).

**Eastbound Approach:** (Whitesville Road) Existing one right turn only lane, stop-controlled.

**Westbound Approach:** (Whitesville Road) Existing one right turn only lane, stop-controlled.

**Northbound Approach:** (US Route 13) Existing one channelized left turn lane, two through lanes and one right turn lane.

**Southbound Approach:** (US Route 13) Existing one channelized left turn lane, two through lanes and one right turn lane.

\*The northbound and southbound channelized left turn lanes are stop-controlled.

#### 6. Old Stage Road / Sleepy Hollow Drive

**Type of Control:** Existing two-way stop-controlled intersection (T-intersection).

**Westbound Approach:** (Sleepy Hollow Drive) Existing one left turn lane and one right turn lane, stop-controlled.

**Northbound Approach:** (Old Stage Road) Existing one through lane and one right turn lane.

**Southbound Approach:** (Old Stage Road) Existing one shared left turn/through lane and one bypass lane.

#### 7. Delaware Route 54 / Old Stage Road

**Type of Control:** Existing two-way stop-controlled intersection (Four-legged).

**Eastbound Approach:** (Delaware Route 54) Existing one left turn lane and one shared through/right turn lane.

**Westbound Approach:** (Delaware Route 54) Existing one shared left turn/through/right turn lane.

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

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

#### 8. US Route 13 / Delaware Route 54

**Type of Control:** Existing signalized intersection (Four-legged).

**Eastbound Approach:** (Delaware Route 54) Existing one left turn lane, one shared left turn/through lane and one channelized right turn lane.

**Westbound Approach:** (Delaware Route 54) Existing one left turn lane, one through lane and one channelized right turn lane.

**Northbound Approach:** (US Route 13) Existing one left turn lane, two through lanes and one channelized right turn lane.

**Southbound Approach:** (US Route 13) Existing one left turn lane, two through lanes and one channelized right turn lane.

#### Transit, Pedestrian, and Bicycle Facilities

**Existing transit service:** Per DelDOT Gateway, DART Route 212 operates along US Route 13 and has two stops within the study area. Route 212 provides 12 round trips from 5:13 AM to 11:29 PM on weekdays, and seven round trips from 10:10 AM to 10:55 PM on Saturdays.

**Planned transit service:** Per email correspondence on February 24, 2023, with Mr. Jared Kauffman, Fixed-Route Planner for DART, the Delaware Transit Corporation does not have any transit specific comments for this project.

**Existing bicycle and pedestrian facilities:** According to DelDOT's Sussex County Bicycle Map, several study roadways are considered bicycle routes. Old Stage Road, US Route 13, and Delaware Route 54 are considered connector bicycle routes. Whitesville Road is considered a regional bicycle route. A bike lane exists near the Old Stage Road and Sleepy Hollow Drive intersection, and on Delaware Route 54 between the US Route 13 and Old Stage Road intersections.

**Planned bicycle and pedestrian facilities:** Per email correspondence contained within the TIS report dated February 13, 2023 with Mr. Anthony Aglio, DelDOT Bicycle Coordinator, a frontage path is recommended.

**Bicycle Level of Traffic Stress in Delaware:** Researchers with the Mineta Transportation Institute developed a framework to measure low-stress connectivity, which can be used to evaluate and guide bicycle network planning. Bicycle LTS analysis uses factors such as the speed of traffic, volume of traffic, and the number of lanes to rate each roadway segment on a scale of 1 to 4, where 1 is a low-stress place to ride and 4 is a high-stress place to ride. It analyzes the total connectivity of a network to evaluate how many destinations can be accessed using low-stress routes.

Developed by planners at the Delaware Department of Transportation (DelDOT), the bicycle Level of Traffic Stress (LTS) model will be applied to bicycle system planning and evaluation throughout the state. The Bicycle LTS for the roadways under existing conditions along the site frontage are summarized below. The Bicycle LTS was determined utilizing DelDOT Gateway.

- Old Stage Road LTS: 4

### **Crash Evaluation**

Per the crash data included in the TIS from December 15, 2019, to December 15, 2022, provided by the Delaware Department of Transportation (DelDOT), a total of 56 crashes were reported within the study area. Of the 56 crashes reported, no fatalities occurred.

The US Route 13 and Delaware Route 54 intersection had 24 crashes reported including six rear-end, one head-on, four angle, seven sideswipe, two other, and four not a collision between two vehicles.

The US Route 13 and Whitesville Road intersection had 12 crashes reported including six rear-end, one angle, two sideswipe, and three not a collision between two vehicles.

The Delaware Route 54 and Old Stage Road intersection had 10 crashes reported including two head-on, four angle, one sideswipe, one other, and two not a collision between two vehicles.

The remaining intersections each reported less than five incidents within the three-year study period.

### **Previous Comments**

All comments from the PTIS have been addressed in the Final TIS.

### **Sight Distance Evaluation**

No sight distance constraints were noted at the proposed site entrance location per a field visit conducted on March 9, 2023.

**General HCS Analysis Comments**

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

- 1) The TIS used HCS Version 2023, whereas JMT used version 7.9.6 of HCS7 to complete the analysis.
- 2) Per DelDOT's Development Coordination Manual, JMT and the TIS utilized the future intersection PHF of 0.80 for roadways with less than 500 vph, 0.88 for roadways between 500 and 1,000 vph, and 0.92 for roadways with more than 1,000 vph, or used the existing PHF if higher.
- 3) JMT utilized the existing heavy vehicle percentage for each movement greater than 100 vph in the Case 1 existing scenario while the TIS utilized the existing heavy vehicle percentage for each movement.
- 4) Per DelDOT's Development Coordination Manual, JMT used a heavy vehicle percentage of 3% for each movement greater than 100 vph in the Case 2 and Case 3 future scenario analysis, unless the existing heavy vehicle percentage was greater than 3% and there was no significant increase of vehicles along that movement, in which case the existing heavy vehicle percentage was used for the analysis of future scenarios, whereas the TIS used different values.
- 5) Per DelDOT's Development Coordination Manual and coordination with DelDOT Planning, JMT used a heavy vehicle percentage of 5% for each movement less than 100 vph along roadways in the analyses whereas the TIS utilizing the existing heavy vehicle percentage.
- 6) JMT included pedestrians counted during the traffic data collection in the analysis whereas the TIS did not.

Table 2  
Peak Hour Levels Of Service (LOS)  
Based on Final Traffic Impact Study for Whitetail Run  
Report Dated: February 14, 2023  
Prepared by: The Traffic Group, Inc.

Unsignalized Intersection Two-Way Stop Control <sup>1</sup> (T-Intersection)	LOS per TIS		LOS per JMT	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Site Entrance / Old Stage Road (Sussex Road 68)				
2029 with Development (Case 3)				
Westbound Site Entrance Approach	B (10.5)	B (11.8)	B (10.5)	B (11.8)
Southbound Old Stage Road Left Turn	A (7.5)	A (7.9)	A (7.5)	A (7.9)

<sup>1</sup> For signalized and unsignalized analysis, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds.



Table 3  
Peak Hour Levels Of Service (LOS)  
Based on Final Traffic Impact Study for Whitetail Run  
Report Dated: February 14, 2023  
Prepared by: The Traffic Group, Inc.

Unsignalized Intersection Two-Way Stop Control <sup>1</sup>	LOS per TIS		LOS per JMT	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
<b>Old Stage Road / E. Snake Road / Cardinal Road (Sussex Road 452)</b>				
2022 Existing (Case 1)				
Eastbound E. Snake Road Approach	A (9.3)	A (9.8)	A (9.4)	A (9.9)
Westbound Cardinal Road Approach	A (9.4)	B (10.1)	A (9.4)	B (10.2)
Northbound Old Stage Road Left Turn	A (7.6)	A (7.3)	A (7.4)	A (7.4)
Southbound Old Stage Road Left Turn	A (8.2)	A (7.4)	A (7.3)	A (7.5)
2029 without Development (Case 2)				
Eastbound E. Snake Road Approach	A (9.3)	A (9.9)	A (9.4)	A (9.9)
Westbound Cardinal Road Approach	A (9.4)	B (10.2)	A (9.5)	B (10.2)
Northbound Old Stage Road Left Turn	A (7.6)	A (7.3)	A (7.5)	A (7.4)
Southbound Old Stage Road Left Turn	A (8.2)	A (7.4)	A (7.3)	A (7.5)
2029 with Development (Case 3)				
Eastbound E. Snake Road Approach	A (9.3)	A (9.9)	A (9.4)	A (10.0)
Westbound Cardinal Road Approach	A (9.6)	B (10.8)	A (9.7)	B (10.9)
Northbound Old Stage Road Left Turn	A (7.6)	A (7.5)	A (7.5)	A (7.5)
Southbound Old Stage Road Left Turn	A (8.3)	A (7.5)	A (7.4)	A (7.5)

Table 4  
Peak Hour Levels Of Service (LOS)  
Based on Final Traffic Impact Study for Whitetail Run  
Report Dated: February 14, 2023  
Prepared by: The Traffic Group, Inc.

Unsignalized Intersection All-Way Stop Control <sup>1</sup>	LOS per TIS		LOS per JMT	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
<b>Old Stage Road / Whitesville Road (Sussex Road 64)</b>				
2022 Existing (Case 1)				
Eastbound Whitesville Road Approach	A (7.6)	A (7.7)	A (7.4)	A (7.7)
Westbound Whitesville Road Approach	A (7.9)	A (7.8)	A (7.7)	A (7.8)
Northbound Old Stage Road Approach	A (7.3)	A (7.4)	A (7.3)	A (7.5)
Southbound Old Stage Road Approach	A (7.6)	A (7.6)	A (7.6)	A (7.7)
Overall	A (7.7)	A (7.6)	A (7.5)	A (7.6)
2029 without Development (Case 2)				
Eastbound Whitesville Road Approach	A (7.6)	A (7.8)	A (7.4)	A (7.7)
Westbound Whitesville Road Approach	A (7.9)	A (7.8)	A (7.7)	A (7.8)
Northbound Old Stage Road Approach	A (7.3)	A (7.5)	A (7.3)	A (7.5)
Southbound Old Stage Road Approach	A (7.6)	A (7.7)	A (7.6)	A (7.7)
Overall	A (7.7)	A (7.6)	A (7.6)	A (7.7)
2029 with Development (Case 3)				
Eastbound Whitesville Road Approach	A (7.6)	A (7.8)	A (7.4)	A (7.8)
Westbound Whitesville Road Approach	A (8.0)	A (8.1)	A (7.9)	A (8.1)
Northbound Old Stage Road Approach	A (7.3)	A (7.7)	A (7.4)	A (7.8)
Southbound Old Stage Road Approach	A (7.7)	A (7.9)	A (7.6)	A (7.9)
Overall	A (7.7)	A (7.9)	A (7.6)	A (7.9)

Table 5  
Peak Hour Levels Of Service (LOS)  
Based on Final Traffic Impact Study for Whitetail Run  
Report Dated: February 14, 2023  
Prepared by: The Traffic Group, Inc.

Unsignalized Intersection Two-Way Stop Control <sup>1</sup> (T-Intersection)	LOS per TIS		LOS per JMT	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
<b>Whitesville Road / S. Scottsdale Circle</b>				
2022 Existing (Case 1)				
Westbound Whitesville Road Left Turn	A (7.3)	A (7.4)	A (7.3)	A (7.4)
Northbound S. Scottsdale Circle Approach	A (8.8)	A (9.0)	A (8.8)	A (9.1)
2029 without Development (Case 2)				
Westbound Whitesville Road Left Turn	A (7.3)	A (7.4)	A (7.3)	A (7.4)
Northbound S. Scottsdale Circle Approach	A (8.8)	A (9.0)	A (8.8)	A (9.1)
2029 with Development (Case 3)				
Westbound Whitesville Road Left Turn	A (7.3)	A (7.4)	A (7.3)	A (7.5)
Northbound S. Scottsdale Circle Approach	A (8.8)	A (9.3)	A (8.8)	A (9.3)

Table 6  
Peak Hour Levels Of Service (LOS)  
Based on Final Traffic Impact Study for Whitetail Run  
Report Dated: February 14, 2023  
Prepared by: The Traffic Group, Inc.

Unsignalized Intersection Two-Way Stop Control <sup>1</sup>	LOS per TIS		LOS per JMT	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
<b>US Route 13 / Westville Road</b>				
2022 Existing (Case 1)				
Eastbound Whitesville Road Approach	B (12.6)	B (11.9)	B (12.5)	B (12.1)
Westbound Whitesville Road Approach	B (11.5)	B (13.1)	B (11.1)	B (13.0)
Northbound US 13 Left Turn	B (10.1)	B (10.4)	A (9.8)	B (10.6)
Southbound US 13 Left Turn	A (10.0)	B (11.2)	A (9.3)	B (11.1)
2027 without Development (Case 2)				
Eastbound Whitesville Road Approach	B (13.1)	B (12.6)	B (13.0)	B (12.8)
Westbound Whitesville Road Approach	B (12.0)	B (13.9)	B (11.6)	B (13.7)
Northbound US 13 Left Turn	B (10.5)	B (11.0)	B (10.2)	B (11.3)
Southbound US 13 Left Turn	B (10.5)	B (11.8)	A (9.6)	B (11.8)
2027 with Development (Case 3)				
Eastbound Whitesville Road Approach	B (13.1)	B (12.6)	B (13.1)	B (12.9)
Westbound Whitesville Road Approach	B (12.3)	B (14.1)	B (11.8)	B (13.9)
Northbound US 13 Left Turn	B (10.5)	B (11.1)	B (10.2)	B (11.3)
Southbound US 13 Left Turn	B (10.9)	B (12.6)	A (9.9)	B (12.5)

Table 7  
Peak Hour Levels Of Service (LOS)  
Based on Final Traffic Impact Study for Whitetail Run  
Report Dated: February 14, 2023  
Prepared by: The Traffic Group, Inc.

Unsignalized Intersection Two-Way Stop Control <sup>1</sup>	LOS per TIS		LOS per JMT	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
<b>Old Stage Road / Sleepy Hollow Drive</b>				
2022 Existing (Case 1)				
Westbound Sleepy Hollow Drive Approach	A (9.9)	B (10.5)	B (10.1)	B (10.6)
Southbound Old Stage Road Left Turn	A (7.4)	A (7.6)	A (7.5)	A (7.7)
2029 without Development (Case 2)				
Westbound Sleepy Hollow Drive Approach	A (10.0)	B (10.5)	B (10.1)	B (10.6)
Southbound Old Stage Road Left Turn	A (7.4)	A (7.7)	A (7.5)	A (7.7)
2029 with Development (Case 3)				
Westbound Sleepy Hollow Drive Approach	B (10.7)	B (11.6)	B (10.8)	B (11.8)
Southbound Old Stage Road Left Turn	A (7.5)	A (7.8)	A (7.6)	A (7.9)

Table 8  
Peak Hour Levels Of Service (LOS)  
Based on Final Traffic Impact Study for Whitetail Run TIS  
Report Dated: February 14, 2023  
Prepared by: The Traffic Group, Inc.

Unsignalized Intersection Two-Way Stop Control <sup>1</sup>	LOS per TIS		LOS per JMT	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
<b>Delaware Route 54 / Old Stage Road</b>				
2022 Existing (Case 1)				
Eastbound Delaware Route 54 Left Turn	A (8.5)	A (8.3)	A (8.4)	A (8.3)
Westbound Delaware Route 54 Left Turn	A (7.8)	A (7.9)	A (7.8)	A (8.0)
Northbound Stage Road Approach	C (23.5)	C (21.5)	C (21.2)	C (21.4)
Southbound Old Stage Road Approach	C (24.9)	D (29.5)	C (22.5)	D (28.4)
2029 without Development (Case 2)				
Eastbound Delaware Route 54 Left Turn	A (8.7)	A (8.5)	A (8.7)	A (8.6)
Westbound Delaware Route 54 Left Turn	A (7.9)	A (8.2)	A (7.9)	A (8.2)
Northbound Stage Road Approach	D (27.7)	D (30.4)	D (25.2)	D (30.0)
Southbound Old Stage Road Approach	D (31.5)	F (66.3)	D (28.7)	F (61.4)
2029 without Development (Case 2) <i>with additional turn lanes<sup>2</sup></i>				
Eastbound Delaware Route 54 Left Turn	-	-	A (8.7)	A (8.6)
Westbound Delaware Route 54 Left Turn	-	-	A (7.9)	A (8.2)
Northbound Stage Road Approach	-	-	C (23.6)	D (27.6)
Southbound Old Stage Road Approach	-	-	D (28.1)	F (58.0)

Table 8  
Peak Hour Levels Of Service (LOS)  
Based on Final Traffic Impact Study for Whitetail Run TIS  
Report Dated: February 14, 2023  
Prepared by: The Traffic Group, Inc.

Unsignalized Intersection Two-Way Stop Control <sup>1</sup>	LOS per TIS		LOS per JMT	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
<b>Delaware Route 54 / Old Stage Road</b>				
2029 with Development (Case 3)				
Eastbound Delaware Route 54 Left Turn	A (8.8)	A (8.7)	A (8.7)	A (8.8)
Westbound Delaware Route 54 Left Turn	A (7.9)	A (8.2)	A (7.9)	A (8.2)
Northbound Stage Road Approach	D (33.2)	E (38.4)	D (29.7)	E (37.6)
Southbound Old Stage Road Approach	E (36.4)	F (102.8)	D (32.6)	F (93.6)
2029 with Development (Case 3) <i>with additional turn lanes<sup>3</sup></i>				
Eastbound Delaware Route 54 Left Turn	-	-	A (8.7)	A (8.8)
Westbound Delaware Route 54 Left Turn	-	-	A (7.9)	A (8.2)
Northbound Stage Road Approach	-	-	D (27.5)	D (33.9)
Southbound Old Stage Road Approach	-	-	D (31.7)	F (86.0)

<sup>3</sup> Intersection geometry has been modified to include a separate westbound right turn lane and a northbound right turn lane.

Table 8 (continued)  
Peak Hour Levels Of Service (LOS)  
Based on Final Traffic Impact Study for Whitetail Run TIS  
Report Dated: February 14, 2023  
Prepared by: The Traffic Group, Inc.

Unsignalized Intersection All-Way Stop Control <sup>1,4</sup>	LOS per TIS		LOS per JMT	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
<b>Delaware Route 54 / Old Stage Road</b>				
2029 without Development (Case 2)				
Eastbound Delaware Route 54 Approach	-	-	C (17.7)	D (34.5)
Westbound Delaware Route 54 Approach	-	-	D (27.4)	C (24.5)
Northbound Stage Road Approach	-	-	B (11.0)	B (11.8)
Southbound Old Stage Road Approach	-	-	B (12.0)	B (12.5)
Overall	-	-	C (20.2)	D (25.8)
2029 with Development (Case 3)				
Eastbound Delaware Route 54 Approach	-	-	C (20.4)	F (50.9)
Westbound Delaware Route 54 Approach	-	-	D (33.1)	D (30.1)
Northbound Stage Road Approach	-	-	B (11.5)	B (12.4)
Southbound Old Stage Road Approach	-	-	B (13.2)	B (13.4)
Overall	-	-	C (23.2)	D (34.4)

<sup>4</sup> Intersection geometry has been modified to include an eastbound shared left/through/right turn lane.



Table 8 (continued)  
Peak Hour Levels Of Service (LOS)  
Based on Final Traffic Impact Study for Whitetail Run TIS  
Report Dated: February 14, 2023  
Prepared by: The Traffic Group, Inc.

Roundabout	LOS per TIS		LOS per JMT	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
<b>Delaware Route 54 / Old Stage Road</b>				
2029 without Development (Case 2) <sup>5</sup>				
Eastbound Delaware Route 54 Approach	-	-	A (6.9)	A (8.4)
Westbound Delaware Route 54 Approach	-	-	A (7.9)	A (7.5)
Northbound Stage Road Approach	-	-	A (5.2)	A (6.3)
Southbound Old Stage Road Approach	-	-	A (9.1)	A (7.4)
Overall			A (7.7)	A (7.8)
2029 with Development (Case 3) <sup>5</sup>				
Eastbound Delaware Route 54 Approach	-	-	A (7.2)	A (9.1)
Westbound Delaware Route 54 Approach	-	-	A (8.1)	A (8.1)
Northbound Stage Road Approach	-	-	A (5.3)	A (6.7)
Southbound Old Stage Road Approach	-	-	B (10.4)	A (8.0)
Overall			A (8.3)	A (8.4)

<sup>5</sup> A single-lane roundabout was analyzed.

Table 8 (continued)  
Peak Hour Levels Of Service (LOS)  
Based on Final Traffic Impact Study for Whitetail Run TIS  
Report Dated: February 14, 2023  
Prepared by: The Traffic Group, Inc.

Signalized Intersection <sup>1</sup>	LOS per TIS		LOS per JMT	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
<b>Delaware Route 54 / Old Stage Road<sup>6</sup></b>				
2029 without Development (Case 2)	-	-	C (22.4)	C (20.0)
2029 with Development (Case 3)	-	-	C (24.2)	C (21.1)

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<sup>6</sup> JMT conducted an additional analysis of the intersection as an uncoordinated signalized intersection with a 90 second cycle length. The intersection was modeled with one left turn lane and one shared through/right turn lane along all approaches with protected-permissive left turn phasing.

Table 9  
Peak Hour Levels Of Service (LOS)  
Based on Final Traffic Impact Study for Whitetail Run  
Report Dated: February 14, 2023  
Prepared by: The Traffic Group, Inc.

Signalized Intersection <sup>1</sup>	LOS per TIS		LOS per JMT	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
<b>Delaware Route 54 / US Route 13<sup>9,10</sup></b>				
2022 Existing (Case 1) <sup>11</sup>	D (42.8)	D (41.3)	D (41.5)	D (45.4)
2029 without Development (Case 2) <sup>12</sup>	D (46.4)	D (50.5)	D (44.2)	D (52.5)
2029 with Development (Case 3) <sup>13</sup>	D (50.4)	D (53.9)	D (45.6)	D (54.6)

<sup>9</sup> Based on the geometry of the intersection, JMT modeled the southbound and eastbound right-turn-on-red (RTOR) as unsignalized movements. Also, based on the saturated right turn on red from a supplemental analysis conducted by JMT utilizing Synchro software, the westbound RTOR was modeled as unsignalized. The TIS did not include any right turn volumes in their analysis. The TIS also modeled the northbound left and southbound left as a protected-permissive movement for all cases, while JMT modeled the northbound left and southbound left as a protected-only movement based on field conditions.

<sup>10</sup> JMT modeled the saturation flow rate of the intersection at 1,900 pc/h/ln due to the intersection being located north of Salisbury, Maryland and having a higher ADT along US 13. The TIS used 1,750 pc/h/ln. JMT also modeled the eastbound shared left turn/through lane as having 30% of turns in the shared lane, while the TIS modeled the eastbound shared left turn/through lane as having 0% of turns in the shared lane.

<sup>11</sup> JMT utilized a cycle length of 120 seconds, while the TIS utilized a cycle length of 130.9 seconds for the AM peak and 131.1 seconds for the PM peak.

<sup>12</sup> JMT utilized a cycle length of 120 seconds, while the TIS utilized a cycle length of 135.4 seconds for the AM peak and 146.8 seconds for the PM peak.

<sup>13</sup> JMT utilized a cycle length of 120 seconds, while the TIS utilized a cycle length of 136.4 seconds for the AM peak and 150.7 seconds for the PM peak.