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

SHANTÉ A. HASTINGS
SECRETARY

December 23, 2025

Ms. Teresa Scrocca
Pennoni Associates, Inc.
121 Continental Drive, Suite 207
Newark, Delaware 19713

Dear Ms. Scrocca,

The enclosed Traffic Operational Analysis (TOA) review letter for the **Briarstone** (Tax Parcel: 530-10.00-45.00) 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 TOA 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.

Sincerely,

Annamaria Furmato
TIS Review Engineer

AF:lw
Enclosures
cc with enclosures: Gus Croll, Greenwood Developers, LLC
Alan Decktor, Pennoni Associates, Inc.
David L. Edgell, Office of State Planning Coordination
Janet Todd, Town of Greenwood
Jamie Whitehouse, Sussex County Planning & Zoning
Mir Wahed, Johnson, Mirmiran, & Thompson, Inc.
Joanne M. Arellano, Johnson, Mirmiran, & Thompson, Inc.
DelDOT Distribution

DelDOT

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Mark Luszcz, Chief Engineer, Transportation Solutions (DOTS)
Brad Eaby, Deputy Attorney General, DOTS
Michael Simmons, Chief Project Development South, DOTS
Peter Haag, Chief Traffic Engineer, DOTS
Wendy Carpenter, Traffic Calming & Subdivision Relations Manager, Traffic, DOTS
Sean Humphrey, Traffic Engineer, Traffic, DOTS
Alistair Probert, South District Engineer, M&O
Matt Schlitter, South District Public Works Engineer, M&O
Jared Kauffman, Service Development Planner, DTC
Tremica Cherry, Service Development Planner, DTC
Anthony Aglio, Planning Supervisor, Active Transportation & Community Connections, Planning
Austin Gray, Assistant Director, Statewide & Regional Planning, Planning
Anson Gock, Planner, Statewide & Regional Planning, Planning
Jeff Van Horn, Director, Economic Development Coordination
Todd Sammons, Assistant Director, Economic Development Coordination
Brian Yates, Process and Quality Control Engineer, Economic Development Coordination
Wendy Polasko, Subdivision Engineer, Economic Development Coordination
John Pietrobono, Acting Sussex Coordinator, Economic Development Coordination
Derek Sapp, Sussex Review Engineer, Economic Development Coordination
Sireen Muhtaseb, TIS Engineer, Economic Development Coordination
Ben Fisher, TIS Review Engineer, Economic Development Coordination
Tijah Jones, TIS Review Engineer, Economic Development Coordination

December 22, 2025

Ms. Sireen Muhtaseb, P.E.
TIS Group Manager
Delaware Department of Transportation
Economic Development Coordination
800 Bay Road
P.O. Box 778
Dover, DE 19903

RE: Agreement No: 2138S
TIS Support Services – T202369005
Task Name: Task 1-13 Briarstone
JMT No.: 24-01365-113

Dear Ms. Muhtaseb:

Johnson, Mirmiran, and Thompson (JMT) has completed a review of the Traffic Operational Analysis (TOA) for the Briarstone development (a.k.a. Greenwood Residential Development), which was prepared by Pennoni Associates, Inc. dated October 16, 2025. This review was assigned as Task Number 1-13. The report is prepared in a manner generally consistent with DelDOT's *Development Coordination Manual* and other Department standards.

The TOA evaluates the impacts of a proposed residential development in the Town of Greenwood, Sussex County, Delaware. The development proposes 136 units of multi-family low-rise housing and 90 units of single-family attached housing on an approximately 39.58 acre parcel (Tax Parcel 530-10.00-45.00) and would be located on the east side of US Route 13, approximately 1,600 feet north of the intersection with Delaware Route 16 (Market Street). The land is currently zoned as HC (Highway Commercial), and the developer proposes to rezone approximately 32.58 acres of HC to R3 (High Density Residential) for the proposed multi-family low-rise housing use. The remaining approximately 7 acres would be used for a future commercial area. The traffic impacts associated with the future commercial area would be evaluated under a separate submission.

Two entrances are proposed on US Route 13. One northern rights-in/rights-out access and one southern full movement access. Construction is anticipated to be complete in 2032.

Relevant and On-Going Projects and Studies

In the vicinity of the study area DelDOT has 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:

- Maintain an existing road's ability to handle traffic efficiently and safely
- Minimize the transportation impacts of increased economic growth

- Preserve the ability to make future improvements
- Prevent the need to build an entirely new road
- Sort local and through traffic

US Route 13, from Route 10 in Camden south to the Maryland State Line, is one of the highways included in the CCPP. A corridor plan was developed for the Town of Greenwood to add a service road running parallel to US Route 13. According to the Office of State Planning Coordination's Strategies for State Policies and Spending document, the property is located within Investment Levels 1, 2, and 3 areas. The CCPP considers Levels 1 and 2 areas "Communities and Developing Areas" where redevelopment reinvestment is encouraged. If the property has reasonable alternative access to a secondary road, no direct access to US Route 13 will be permitted. Direct access to US Route 13 may be permitted if reasonable alternative access (either to an existing secondary road or through an adjacent property) is not available, or if alternative access would degrade the operation or safety of an adjacent intersection (as determined by a traffic engineering study). Additional guidance is provided in the CCPP manual. More information regarding the CCPP can be found at https://deldot.gov/Programs/corr_cap/index.shtml.

Summary of Analysis Results

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

There are no intersections that exhibit level of service (LOS) deficiencies without the implementation of physical roadway and/or traffic control improvements.

Site Access Evaluation

1 – Site Entrance A / US Route 13 / Cart Branch Circle (See Table 2, Page 18, Development Improvement #2)

The following access scenarios were evaluated as part of the TOA:

- Case 3a - Rights-in/rights-out at the northern entrance and full movement at the southern entrance.
- Case 3b – Rights-in/rights-out at the northern entrance and rights-in/rights-out/lefts-in access at the southern entrance.

Under both scenarios, Site Entrance A (southern entrance) would operate at acceptable LOS C (approximately 19 seconds of delay per vehicle) or better during the AM and PM peak hours with minimal projected queue lengths (calculated 95th percentile queue length of approximately 10 feet). With a left turn out restriction at the proposed Site Entrance A, right-out vehicles at Site Entrance A would have an approximately 515 foot weaving section across two northbound US Route 13 through travel lanes between Site Entrance A and the US Route 13 crossover adjacent to Emma's Family Restaurant.

While the weaving movement between Site Entrance A and the US Route 13 crossover adjacent to Emma's Family Restaurant would operate at LOS A during both the AM and PM peak hours (density of approximately 5 passenger cars per mile per lane in the PM peak), drivers may be hesitant to perform the weave due to the high speeds (a measured 85th percentile speed of approximately 58 miles per hour on the US Route 13 northbound segment) and the short weaving distance of approximately 515 feet. The short weaving distance could lead to same direction side-swipe incidents as well as unsafe lane changing driving behaviors. Therefore, it is recommended that Site Entrance A have full access to minimize the occurrence of vehicles executing the short weaving distance maneuver. Additionally, full access at Site Entrance A would match the existing Cart Branch Circle eastbound approach configuration. Furthermore, if Site Entrance A had a lefts-out restriction an increase in delay would be expected at the US Route 13 and Delmarva Auto Repair Driveway intersection as exiting site traffic seeking to travel south along US Route 13 would U-turn at the crossover adjacent to the Delmarva Auto Repair Driveway.

3 & 4 – US Route 13 / Emma's Family Restaurant Driveway & US Route 13 / Delmarva Auto Repair Driveway (See Tables 4, 5, and 6, Page 22, Development Improvements #4 & #5)

JMT conducted two further scenarios per DelDOT's request:

- Scenario 1- Closure of the southbound US Route 13 left turn/U-turn lane at the crossover adjacent to the Emma's Family Restaurant driveway (Intersection 3) and the closure of the northbound US Route 13 left turn/U-turn lane at the crossover adjacent to the Delmarva Auto Repair driveway (Intersection 4) approximately 640 feet north of the proposed Site Entrance B.
- Scenario 2 – Full closure of the US Route 13 crossover adjacent to Emma's Family Restaurant driveway (Intersection 3) approximately 640 feet north of the intersection with Cart Branch Circle.

The Scenario 1 closures (closure of the southbound US Route 13 left turn/U-turn lane at the crossover adjacent to Emma's Family Restaurant driveway and the closure of the northbound US Route 13 left turn/U-turn lane at the crossover adjacent to the Delmarva Auto Repair driveway approximately 640 feet north of the proposed Site Entrance B) would not impact the access configurations at the existing US Route 13 businesses located in the study area. The partial closures at the crossovers adjacent to Emma's Family Restaurant and the Delmarva Auto Repair would eliminate some conflicting movements along US Route 13 and the study intersections would operate at LOS C or better during the AM and PM peak hours.

Scenario 2 takes into account a full closure of the crossover adjacent to Emma's Family Restaurant driveway. With this closure, lefts in and lefts out movements would be restricted at the existing full access at Emma's Family Restaurant driveway and the weaving distance between Site Entrance A and Delmarva Auto Repair Driveway would be longer (from approximately 515 feet to approximately 1,600 feet). Additionally, there would be one less crossover on a CCPP roadway. However, there would be an increase in delay at the US Route 13 and Delmarva Auto Repair

Driveway intersection (from LOS B (approximately 14 seconds of delay per vehicle) to LOS C (approximately 15 seconds of delay per vehicle).

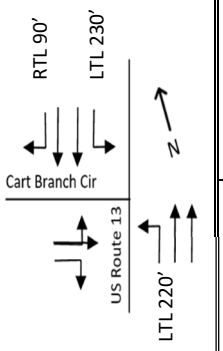
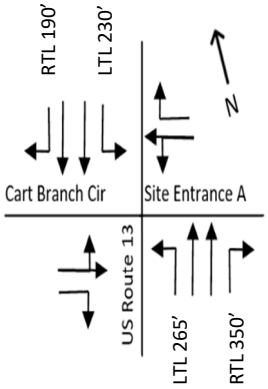
It is recommended that the developer implement the Scenario 1 closures (closure of the southbound US Route 13 left turn/U-turn lane at the crossover adjacent to Emma's Family Restaurant driveway and the closure of the northbound US Route 13 left turn/U-turn lane at the crossover adjacent to Delmarva Auto Repair driveway approximately 640 feet north of the proposed Site Entrance B). With these closures, some conflicting movements along US Route 13 would be eliminated while still maintaining the access configurations at the existing uses within the study area.

Development Improvements

Should the Town of Greenwood approve the proposed development, the following items should be incorporated into the site design and reflected on the record plan, entrance plans, or construction plans 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 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 roads on which they front (US Route 13) within the limits of their frontage. 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" means the length along the state right-of-way of a single property tract where an entrance is proposed or required. If a single property tract has frontage along multiple roadways, any segment of roadway including an entrance shall be improved to meet DelDOT's Functional Classification criteria as found in Section 1.1 of the Development Coordination Manual and elsewhere therein, and/or improvements established in the Traffic Operational Analysis and/or Traffic Impact Study. "Secondary Frontage" means the length along the state right-of-way of a single property tract where no entrance is proposed or required. The segment of roadway may be upgraded by improving the pavement condition of the existing roadway width. The Pavement Management Section and Subdivision Section will determine the requirements to improve the pavement condition.

2. The developer should construct an unsignalized Site Entrance A full access for the proposed Briarstone development along US Route 13 at the intersection with Cart Branch Circle. The intersection should be consistent with the lane configurations shown in the table below:

Approach	Current Configuration		Approach	Proposed Configuration	
Eastbound Cart Branch Circle	One shared left turn/through lane and one right turn lane		Eastbound Cart Branch Circle	No Change	
Westbound Site Entrance A	Approach does not exist		Westbound Site Entrance A	One shared left turn/through lane and one right turn lane	
Northbound US Route 13	One left turn lane and two through lanes		Northbound US Route 13	One left turn lane, two through lanes, and one right turn lane	
Southbound US Route 13	One u-turn lane, two through lanes, and one right turn lane		Southbound US Route 13	One left turn lane, two through lanes, and one right turn lane	

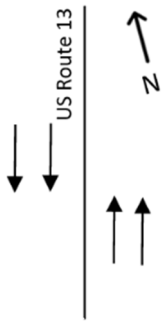
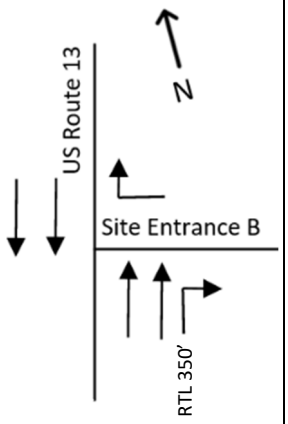
Based on DelDOT's *Development Coordination Manual* and the existing storage lengths at the intersection, the recommended minimum storage lengths (excluding taper) which can accommodate the projected queue lengths from the traffic analysis are shown in the table below:

Approach	Left Turn Lane	Right Turn Lane
Northbound US Route 13	265 feet	350 feet
Southbound US Route 13	230 feet*	190 feet

*Maintain existing storage length

The developer should install a concrete island at the westbound Site Entrance A channelized right turn. The developer should submit a plan to DelDOT's Development Coordination Section depicting the design. The final design should be determined during the Entrance Plan review process.

3. The developer should construct an unsignalized Site Entrance B rights-in/rights-out access for the proposed Briarstone development along US Route 13, approximately 1,100 feet north of the intersection with Cart Branch Circle. The intersection should be consistent with the lane configurations shown in the table below:

Approach	Current Configuration		Approach	Proposed Configuration	
Eastbound Site Entrance B	Approach does not exist		Eastbound Site Entrance B	One right turn lane	
Northbound US Route 13	Two through lanes		Northbound US Route 13	Two through lanes and one right turn lane	
Southbound US Route 13	Two through lanes		Southbound US Route 13	No Change	

Based on DelDOT's *Development Coordination Manual*, the recommended minimum storage length (excluding taper) of the northbound US Route 13 right turn lane is 350 feet. The projected queues from the traffic analysis can be accommodated within the recommended storage lengths.

The developer should install a concrete island at the westbound Site Entrance B channelized right turn. The developer should submit a plan to DelDOT's Development Coordination Section depicting the design. The final design should be determined during the Entrance Plan review process.

4. The developer should close the southbound US Route 13 left turn/U-turn lane at the US Route 13 crossover approximately 640 feet north of the intersection with Cart Branch Circle adjacent to Emma's Family Restaurant driveway. Prior to Entrance Plan approval, the developer should submit a plan to DelDOT's Development Coordination Section to confirm the design of the intersection.

5. The developer should close the northbound US Route 13 left turn/U-turn lane at the US Route 13 crossover approximately 640 feet north of the proposed Site Entrance B adjacent to the Delmarva Auto Repair Driveway. Prior to Entrance Plan approval, the developer should submit a plan to DelDOT's Development Coordination Section to confirm the design of the intersection.

6. The developer should establish a cross access easement to the adjacent property to the south (Tax Parcel: 530-10.00-55.00) for potential creation of a future service road per the Corridor Capacity Preservation Program (CCPP) plan.

7. The developer should construct to the southern property line an interconnection to the adjacent property to the south (Tax Parcel: 530-10.00-55.00). The developer should

coordinate with DelDOT's Development Coordination Section during the plan review process to identify the exact location of the interconnection.

8. The following bicycle, pedestrian, and transit improvements should be included:

    a. A minimum fifteen-foot-wide permanent easement from the edge of the right-of-way should be dedicated to DelDOT along the US Route 13 frontage. Along the frontage, 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. The developer should coordinate with DelDOT's Economic Development Coordination Section during the plan review process to identify the exact location of the SUP.

    b. Internal connections from the frontage SUP into the site should be provided.

    c. ADA-compliant curb ramps and marked crosswalks should be provided along the site entrances.

    d. Minimum five-foot wide bicycle lanes should be incorporated in the right turn lane and shoulder along the US Route 13 site frontage.

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 TOA 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.

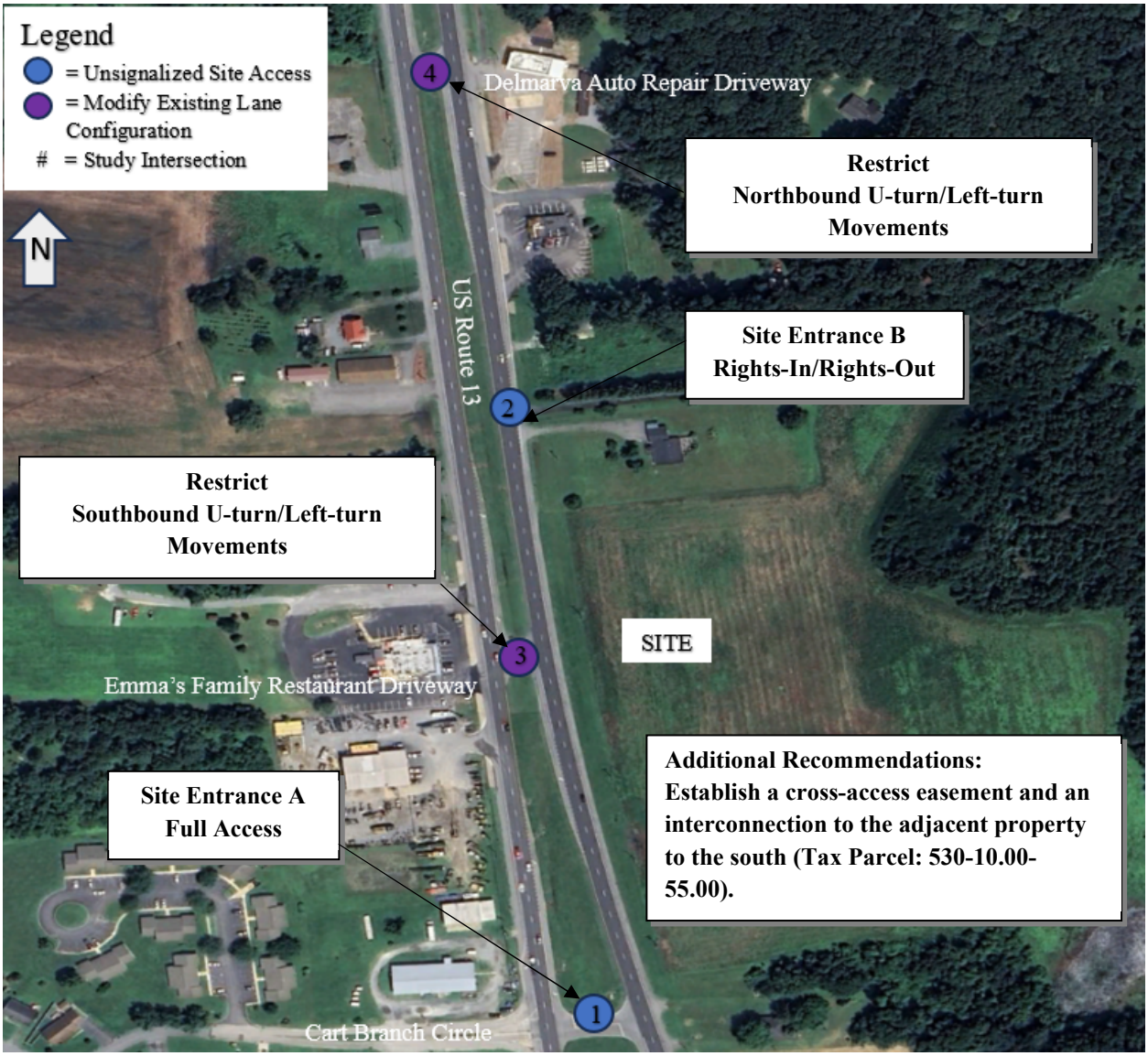
Additional details on our review of the TOA are attached. Please contact me at (302) 266-9600 if you have any questions concerning this review.

Sincerely,
Johnson, Mirmiran, and Thompson, Inc.

Joanne M. Arellano, P.E., PTOE

cc: Annamaria Furmato, EIT
Mir Wahed, P.E., PTOE
Tanner Chiamprasert, EIT
Enclosure

Recommendations Map



General Information

Report date: October 16, 2025
Prepared by: Pennoni Associates, Inc.
Prepared for: Greenwood Developers, LLC
Tax parcel: 530-10.00-45.00
Generally consistent with DelDOT's Development Coordination Manual (DCM): Yes

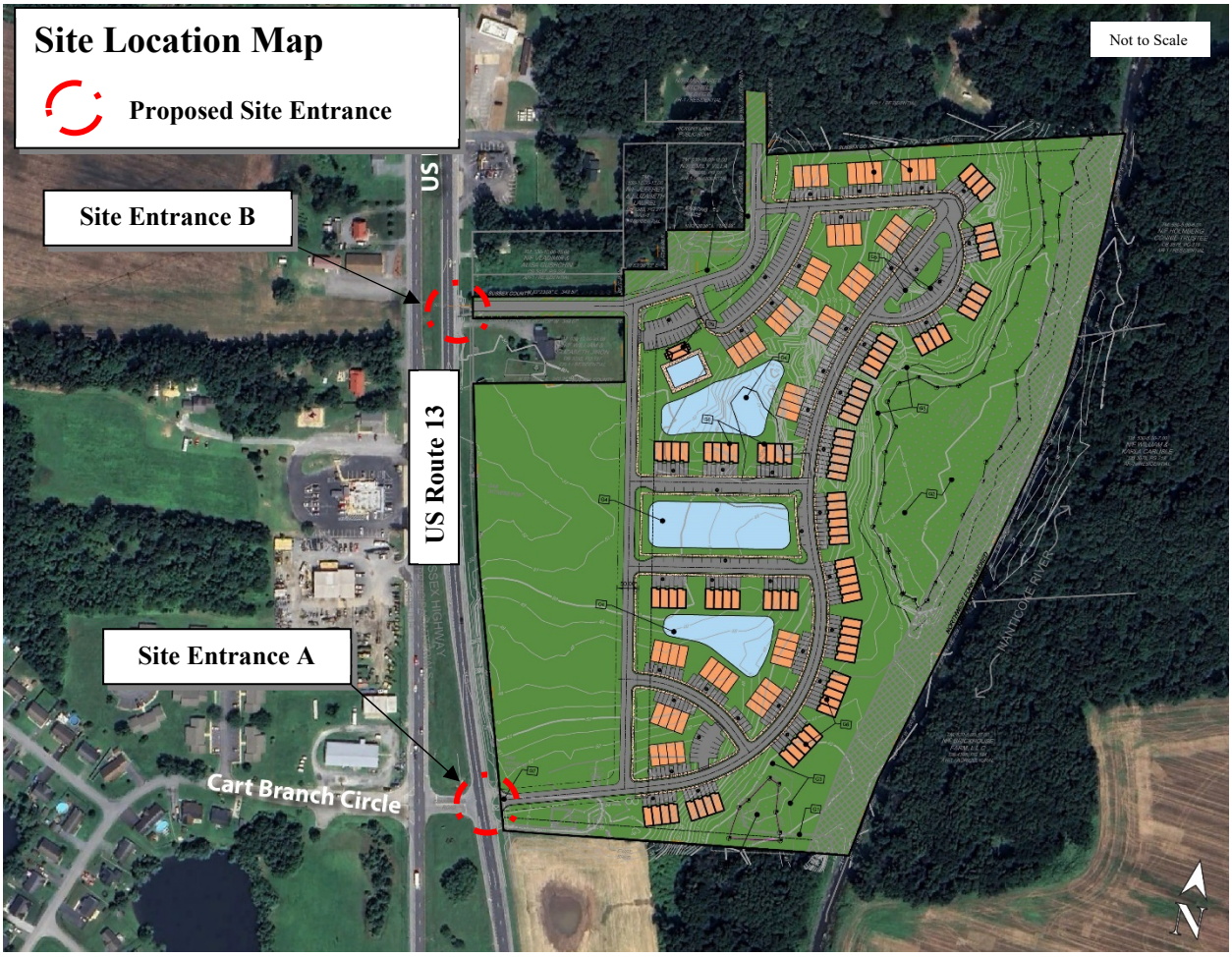
Project Description and Background

Description: The proposed development consists of 136 dwelling units of multi-family low-rise housing and 90 dwelling units of single-family attached housing.
Location: The land is located on the east side of US Route 13, approximately 1,600 feet north of the intersection with Delaware Route 16 (Market Street), in the Town of Greenwood, Sussex County, Delaware.
Amount of land to be developed: An approximately 39.58-acre parcel.
Land use approval(s) needed: Rezoning and Entrance Plan.
Proposed completion date: 2032.
Proposed access locations: One northern rights-in/rights-out access and one southern full movement access.
Daily traffic volumes:

- 2025 Average Daily Traffic (ADT)
    - US Route 13 SB: 10,221 vehicles per day
    - US Route 13 NB: 10,431 vehicles per day

*ADT is sourced from ATR count data from August 12, 2025 to August 18, 2025.

Site Map



**Graphic is an approximation based on the Concept Plan for Greenwood Subdivision dated May 28,2025 and prepared by Pennoni Associates, Inc.*

Relevant and On-going Projects

In the vicinity of the study area DelDOT has 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:

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

US Route 13, from Route 10 in Camden south to the Maryland State Line, is one of the highways included in the CCPP. A corridor plan was developed for the Town of Greenwood to add a service

road running parallel to US Route 13. According to the Office of State Planning Coordination's Strategies for State Policies and Spending document, the property is located within Investment Levels 1, 2, and 3 areas. The CCPP considers Levels 1 and 2 areas "Communities and Developing Areas" where redevelopment reinvestment is encouraged. If the property has reasonable alternative access to a secondary road, no direct access to US Route 13 will be permitted. Direct access to US Route 13 may be permitted if reasonable alternative access (either to an existing secondary road or through an adjacent property) is not available, or if alternative access would degrade the operation or safety of an adjacent intersection (as determined by a traffic engineering study). Additional guidance is provided in the CCPP manual. More information regarding the CCPP can be found at https://deldot.gov/Programs/corr_cap/index.shtml.

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 Levels 1, 2 and 3.

Investment Level 1

These areas are often municipalities, towns, or urban/urbanizing places in counties where density is generally higher than in surrounding areas. In Investment Level 1 Areas, state investments and policies should support and encourage a wide range of uses and densities, promote a variety of transportation options, foster efficient use of existing public and private investments, and enhance community identity and integrity. Overall, it is the state's intent to use its spending and management tools to maintain and enhance community character, and to promote well-designed and efficient new growth in Investment Level 1 Areas.

In Level 1 Areas the state's first priority will be for preserving existing facilities and making safety improvements. Level 1 areas will also be the highest priority for context sensitive transportation system capacity enhancements, transit-system enhancements, ADA accessibility, and for closing gaps in the pedestrian system, including the Safe Routes to School projects. Investment Level 1 Areas are ideal locations for Transportation Improvement Districts as well as Complete Community Enterprise Districts. Further, Level 1 areas are the first priority for planning projects and studies, bicycle facilities, signal-system enhancements, and the promotion of interconnectivity of neighborhoods and public facilities.

Investment Level 2

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. Like the Level 1 Areas, Level 2 Areas would be a prime location for designating "pre-permitted areas."

Investment Level 3

Investment Level 3 Areas generally fall into two categories. The first category covers lands that are in the long-term growth plans of counties or municipalities where development is not necessary to accommodate expected population growth during this five-year planning period (or longer). In these instances, development in Investment Level 3 may be least appropriate for new growth and development in the near term.

The second category includes lands that are adjacent to or intermingled with fast-growing areas within counties or municipalities that are otherwise categorized as Investment Levels 1 or 2. Environmentally sensitive features, agricultural-preservation issues, or other infrastructure issues most often impact these lands. 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.

Proposed development's compatibility with Livable Delaware:
The proposed development is located within Investment Levels 1, 2 and 3. As the site is within the Town of Greenwood and adjacent to areas with Investment Levels 1, 2 and 3, the proposed development would be beneficial to nearby communities. Adding multi-family low rise dwelling units and single-family attached units will allow for a higher density residential area. The commercial uses in the surrounding area would benefit from the increase in residential population in the area. Therefore, the proposed development is consistent with the 2020 update of *Livable Delaware Strategies for State Policies and Spending.*

<u>Comprehensive Plan</u>

(Source: Town of Greenwood Comprehensive Plan, 2019)

Town of Greenwood Comprehensive Plan:
Per Google Earth, the proposed development is currently listed as vacant land. The developer plans to rezone the existing zoning of Highway Commercial to R-3 High Density Residential once the site is developed. The Future Land Use map has the site zoned as Highway Commercial.

Proposed development's compatibility with the Town of Greenwood Comprehensive Plan:
The Town of Greenwood Comprehensive Plan states that there is a goal to encourage development of residences and supplemental uses such as food and retail along with pharmacies and restaurants. Along US Route 13 the pursuit of commercial development opportunities is highly encouraged. Therefore, the proposed site is not consistent with the Town of Greenwood Comprehensive Plan

due to the development proposing a residential use and the need to be rezoned from commercial to residential.

Trip Generation

The trip generation for the proposed development was determined by using the comparable land use and rates/equations contained in the *Trip Generation, 11th Edition: An ITE Informational Report*, published by the Institute of Transportation Engineers (ITE) for ITE Land Use Code 220 (Multi-family low-rise housing) and Land Use Code 215 (single family attached housing).

Table 1
Briarstone Trip Generation

Land Use	ADT	Weekday AM Peak Hour			Weekday PM Peak Hour		
		Enter	Exit	Total	Enter	Exit	Total
136 dwelling units of multi-family low-rise housing (ITE LUC 220)	947	16	49	65	50	29	79
90 dwelling units of single family attached housing (ITE LUC 215)	635	10	31	41	30	20	50
Total Trips	1,582	26	80	106	80	49	129

Trip generation was reviewed by DelDOT as part of the Preliminary TOA (PTOA) submission.

Overview of TIS

Intersections examined:

1) Site Entrance A / US Route 13 (Southern)
2) Site Entrance B / US Route 13 (Northern rights-in/rights-out)
3) US Route 13 U-turn (approximately 640 feet north of Cart Branch Circle and southern entrance)
4) US Route 13 U-turn (approximately 640 feet north of the northern site entrance)

Conditions examined:

1. Case 1 – 2025 existing
2. Case 2 – 2032 without development
3. Case 3 – 2032 with development
    a. RI/RO northern entrance and a full movement southern entrance
    b. RI/RO northern entrance and a RI/RO/LI at the southern entrance

Committed developments considered:

1. **Convenience Store with Gas – Greenwood:** 5,915 square foot convenience store with 16 vehicle fueling pumps

2. **DEStorage.com Greenwood:** 874 storage unit self-storage facility

Committed developments listed above were utilized in the TOA.

Peak hours evaluated: Weekday morning and weekday evening peak hours.

Intersection Descriptions

1. **Site Entrance A / US Route 13**
   Type of Control: Existing two-way stop-controlled full movement intersection (T-intersection). Proposed two way stop-controlled full movement intersection (four-legged intersection)
   Eastbound Approach: (Cart Branch Circle) Existing one left turn lane and one channelized right turn lane, stop controlled. Proposed one shared left turn/through lane and one channelized right turn lane.
   Westbound Approach: (Site Entrance A) Proposed one shared left turn/through/right turn lane, stop-controlled.
   Northbound Approach: (US Route 13) Existing one shared u-turn/left turn lane, and two through lanes. Proposed u-turn/left turn lane, two through lanes and one right turn lane.
   Southbound Approach: (US Route 13) Existing one shared u-turn/left turn lane, two through lanes and one channelized right turn lane.

2. **Site Entrance B / US Route 13**
   Type of Control: Proposed two-way stop-controlled rights-in/rights out intersection (T-intersection).
   Westbound Approach: (Site Entrance B) Proposed one right turn lane, stop-controlled.
   Northbound Approach: (US Route 13) Existing two through lanes. Proposed two through lanes and one right turn lane.
   Southbound Approach: (US Route 13) Existing two through lanes.

3. **US Route 13 U-turn (approximately 640 feet north of the intersection with Cart Branch Circle and the southern entrance)**
   Type of Control: Existing two-way stop-controlled intersection (T-intersection).
   Eastbound Approach: (Emma's Family Restaurant Driveway) Existing one shared left turn/right turn lane, stop-controlled.
   Northbound Approach: (US Route 13) Existing one shared U-turn/left turn lane and two through lanes.
   Southbound Approach: (US Route 13) Existing U-turn lane, one through lane and one shared through/right turn lane.

4. **US Route 13 U-turn (approximately 640 north of the northern entrance)**
   Type of Control: Existing two-way stop-controlled intersection (T-intersection).
   Westbound Approach: (Delmarva Auto Repair Driveway) Existing one shared left turn/right turn lane, stop-controlled.
   Northbound Approach: (US Route 13) Existing U-turn lane, one through lane and one shared through/right turn lane.
   Southbound Approach: (US Route 13) Existing one shared U-turn/left turn lane and two through lanes.

Transit, Pedestrian, and Bicycle Facilities

Existing transit service: Per DelDOT Gateway, there are no DART Routes or bus stops within the study area.

Planned transit service: Per email correspondence from Jared Kauffman, DART Fixed-Route Planner, on November 14, 2025, there were no comments for the study area.

Existing bicycle and pedestrian facilities: Per DelDOT's Sussex County Bicycle Map, US Route 13 is considered a high traffic connector bicycle route with a bikeway present. There are no pedestrian crossings present at any study intersections.

Planned bicycle and pedestrian facilities: DelDOT sent an email to Mr. Anthony Aglio on October 28, 2025. A response has not yet been received.

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 frontages are summarized below. The Bicycle LTS was determined utilizing DelDOT's Gateway.

- US Route 13 LTS: 3 and 4
- Cart Branch Circle LTS: 1

Crash Evaluation

Per the crash data included in the TIS From July 28, 2022, to July 28, 2025 provided by the Delaware Department of Transportation (DelDOT), a total of 8 crashes were reported on the corridor between the intersection of US Route 13 and Cart Branch Circle and the intersection of US Route 13 and the Delmarva Auto Repair driveway. Of the reported incidents one crash involved personal injury and six crashes were property damage only.

One angle crash occurred at the intersection of US Route 13 and Cart Branch Circle. It was the personal injury crash.

One opposite direction sideswipe crash occurred at the intersection of US Route 13 and Delmarva Auto Repair Driveway.

One angle crash occurred at the intersection of US Route 13 and Emma's Family Restaurant Driveway.

The other five crashes occurred in the roadway segments between the intersections. Of the five, three were collisions with animals, one was a same direction sideswipe, and one was a collision with a fixed object.

Previous Comments

All comments from the PTOA review letter dated September 30, 2025 were addressed in the Final TOA.

Sight Distance Evaluation

No sight distance constraints were noted at the proposed locations of the site entrances per the field visit conducted on November 6, 2025.

General Synchro Analysis Comments
(See table footnotes on the following pages for specific comments)

1) JMT and the TOA used HCM 7th edition within Synchro 12 traffic analysis software to complete the analysis.

2) Per DelDOT's *Development Coordination Manual*, JMT 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, whereas the TOA utilized the existing PHF.

3) JMT and the TOA utilized the existing heavy vehicle percentage for each movement greater than 100 vph in the Case 1 - Existing analysis.

4) Per DelDOT's *Development Coordination Manual* and coordination with DelDOT, JMT used a heavy vehicle percentage of 5% for each movement less than 100 vph along roadways in the analyses, whereas the TOA utilized the existing heavy vehicle percentages.

5) Per DelDOT's *Development Coordination Manual*, JMT used a heavy vehicle percentage of 3% for each movement greater than 100 vph in 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 TOA utilized the existing heavy vehicle percentages in all cases.

6) JMT and the TOA utilized the same PHF for every movement.

7) JMT analyzed each intersection as a single intersection with median widths, whereas the TOA analyzed each intersection as two separate intersections with stop control at each eastbound and westbound leg.

8) JMT utilized a heavy vehicle percentage of 3% for all movements turning into and out of the Site Entrances.

9) The following access scenarios were evaluated as part of the TOA:

    - Case 3a - Rights-in/rights at the northern entrance and full movement at the southern entrance.
    - Case 3b – Rights-in/rights-out at the northern entrance and rights-in/rights-out/lefts-in access at the southern entrance.

10) JMT recommendations are highlighted in gray.

Table 2
Peak Hour Levels of Service (LOS)
Based on Traffic Operational Analysis for Briarstone
Report Dated: October 16, 2025
Prepared by: Pennoni Associates, Inc.

Unsignalized Intersection Two-Way Stop Control[1]	**LOS per TOA**		**LOS per JMT**	
1 – US Route 13 / Cart Branch Circle / Site Entrance A	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Case 1 – 2025 Existing with Development				
Eastbound Cart Branch Circle Left Turn[2]	B (13.6)	B (14.7)	B (13.2)	B (14.5)
Eastbound Cart Branch Circle Right Turn	B (10.4)	B (10.7)	B (10.2)	B (10.6)
Northbound US Route 13 Left Turn[3]	B (13.3)	B (14.9)	A (8.7)	A (9.1)
Southbound US Route 13 Left Turn	A (0.0)	A (0.0)	A (0.0)	A (0.0)
Case 2 – 2032 without Development				
Eastbound Cart Branch Circle Left Turn[2]	B (14.2)	C (15.5)	B (13.6)	C (15.2)
Eastbound Cart Branch Circle Right Turn	B (10.6)	B (11.0)	B (10.3)	B (10.9)
Northbound US Route 13 Left Turn[3]	B (13.9)	C (15.8)	A (8.8)	A (9.3)
Southbound US Route 13 Left Turn	A (0.0)	A (0.0)	A (0.0)	A (0.0)
Case 3A – 2032 with Development				
Eastbound Cart Branch Circle Left Turn/Through[2]	B (14.7)	C (16.4)	C (15.3)	C (18.3)
Eastbound Cart Branch Circle Right Turn	B (10.7)	B (11.1)	B (10.4)	B (11.0)
Westbound Site Entrance A Approach	C (15.7)	C (17.5)	C (15.9)	C (18.7)
Northbound US Route 13 Left Turn[3]	B (12.1)	B (14.9)	A (8.9)	A (9.4)
Southbound US Route 13 Left Turn[4]	B (13.6)	C (16.8)	B (10.4)	B (11.3)
Case 3A – 2032 with Development *with separate turn lanes* [5]				
Eastbound Cart Branch Circle Left Turn/Through	-	-	C (15.3)	C (18.3)
Eastbound Cart Branch Circle Right Turn	-	-	B (10.4)	B (11.0)
Westbound Site Entrance A Left Turn/Through	-	-	C (16.8)	C (20.1)
Westbound Site Entrance A Right Turn	-	-	B (10.7)	B (11.3)
Northbound US Route 13 Left Turn	-	-	A (8.9)	A (9.4)
Southbound US Route 13 Left Turn	-	-	B (10.4)	B (11.3)

[1] The numbers in parentheses following levels of service are average delay per vehicle, measured in seconds.
[2] Due to the TOA analyzing all existing intersections as two separate stop-controlled intersections, this movement was recorded as the eastbound Cart Branch Circle through movement of the eastern intersection.
[3] Due to the TOA analyzing all existing intersections as two separate stop-controlled intersections, this movement was recorded as the westbound median crossing left turn/through lane movement of the western intersection.
[4] Due to the TOA analyzing all existing intersections as two separate stop-controlled intersections, this movement was recorded as the eastbound median crossing left turn/through lane movement of the eastern intersection.
[5] JMT analyzed the intersection with the westbound Site Entrance A approach having one shared left turn/through lane and one channelized right turn lane.

Table 2 (Continued)
Peak Hour Levels of Service (LOS)
Based on Traffic Operational Analysis for Briarstone
Report Dated: October 16, 2025
Prepared by: Pennoni Associates, Inc.

Unsignalized Intersection Two-Way Stop Control[1]	**LOS per TOA**		**LOS per JMT**	
1 – US Route 13 / Cart Branch Circle / Site Entrance A	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Case 3A – 2032 with Development *with median closures Scenario 1* [5, 6]				
Eastbound Cart Branch Circle Left Turn/Through	-	-	C (15.1)	C (18.3)
Eastbound Cart Branch Circle Right Turn	-	-	B (10.3)	B (10.9)
Westbound Site Entrance A Left Turn/Through	-	-	C (17.6)	C (20.9)
Westbound Site Entrance A Right Turn	-	-	B (10.7)	B (11.3)
Northbound US Route 13 Left Turn	-	-	A (8.8)	A (9.3)
Southbound US Route 13 Left Turn	-	-	B (10.6)	B (11.7)
Case 3A – 2032 with Development *with median closures Scenario 2* [5, 7]				
Eastbound Cart Branch Circle Left Turn/Through	-	-	C (15.4)	C (18.7)
Eastbound Cart Branch Circle Right Turn	-	-	B (10.4)	B (11.0)
Westbound Site Entrance A Left Turn/Through	-	-	C (16.8)	C (20.2)
Westbound Site Entrance A Right Turn	-	-	B (10.7)	B (11.3)
Northbound US Route 13 Left Turn	-	-	A (8.9)	A (9.4)
Southbound US Route 13 Left Turn	-	-	B (10.8)	B (11.9)
Case 3B – 2032 with Development				
Eastbound Cart Branch Circle Left Turn/Through[2]	C (15.2)	C (16.8)	C (16.1)	C (18.9)
Eastbound Cart Branch Circle Right Turn	B (10.9)	B (11.2)	B (10.6)	B (11.1)
Westbound Site Entrance A Approach	B (11.1)	B (11.5)	B (11.1)	B (11.6)
Northbound US Route 13 Left Turn[3]	B (14.9)	C (17.2)	A (9.0)	A (9.5)
Southbound US Route 13 Left Turn[4]	B (13.0)	C (16.5)	B (10.5)	B (11.5)

[6] Scenario 1 - JMT analyzed the intersection taking into consideration the closure of the southbound US Route 13 U-turn lane at Intersection 3 as well as the closure of the northbound US Route 13 U-turn lane at Intersection 4 per DelDOT's request.
[7] Scenario 2 - JMT analyzed the intersection taking into consideration the closure of the existing crossover at Intersection 3 per DelDOT's request.

Table 2 (Continued)
Peak Hour Levels of Service (LOS)
Based on Traffic Operational Analysis for Briarstone
Report Dated: October 16, 2025
Prepared by: Pennoni Associates, Inc.

Unsignalized Intersection Two-Way Stop Control[1]	**LOS per TOA**		**LOS per JMT**	
1 – US Route 13 / Cart Branch Circle / Site Entrance A	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Case 3B – 2032 with Development *with median closure Scenario 1* [5, 6]				
Eastbound Cart Branch Circle Left Turn/Through	-	-	C (16.3)	C (19.2)
Eastbound Cart Branch Circle Right Turn	-	-	B (10.6)	B (11.1)
Westbound Site Entrance A Approach	-	-	B (11.3)	B (11.4)
Northbound US Route 13 Left Turn	-	-	A (9.0)	A (9.5)
Southbound US Route 13 Left Turn	-	-	B (10.9)	B (12.0)
Case 3B – 2032 with Development *with median closure Scenario 2* [5, 7]				
Eastbound Cart Branch Circle Left Turn/Through	-	-	C (16.2)	C (19.3)
Eastbound Cart Branch Circle Right Turn	-	-	B (10.6)	B (11.1)
Westbound Site Entrance A Approach	-	-	B (11.1)	B (11.6)
Northbound US Route 13 Left Turn	-	-	A (9.0)	A (9.5)
Southbound US Route 13 Left Turn	-	-	B (11.0)	B (12.1)

Table 3
Peak Hour Levels of Service (LOS)
Based on Traffic Operational Analysis for Briarstone
Report Dated: October 16, 2025
Prepared by: Pennoni Associates, Inc.

Unsignalized Intersection Two-Way Stop Control[1]	**LOS per TOA**		**LOS per JMT**	
2 – US Route 13 / Site Entrance B	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Case 3A – 2032 with Development				
Westbound Site Entrance B Approach	B (11.0)	B (11.5)	B (11.0)	B (11.6)
Case 3A – 2032 with Development *with median closure Scenario 1*[6]				
Westbound Site Entrance B Approach	-	-	B (10.8)	B (11.4)
Case 3A – 2032 with Development *with median closure Scenario 2*[7]				
Westbound Site Entrance B Approach	-	-	B (11.0)	B (11.6)
Case 3B – 2032 with Development				
Westbound Site Entrance B Approach	B (11.0)	B (11.5)	B (11.0)	B (11.6)
Case 3B – 2032 with Development *with median closure Scenario 1*[6]				
Westbound Site Entrance B Approach	-	-	B (10.8)	B (11.4)
Case 3B – 2032 with Development *with median closure Scenario 2*[7]				
Westbound Site Entrance B Approach	-	-	B (11.2)	B (11.7)

Table 4
Peak Hour Levels of Service (LOS)
Based on Traffic Operational Analysis for Briarstone
Report Dated: October 16, 2025
Prepared by: Pennoni Associates, Inc.

Unsignalized Intersection Two-Way Stop Control[1]	**LOS per TOA**		**LOS per JMT**	
3 – US Route 13 / Emma's Family Restaurant Driveway	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Case 1 – 2025 Existing with Development				
Eastbound Emma's Family Restaurant Driveway Approach[8]	B (13.2)	C (15.5)	B (13.0)	B (13.2)
Northbound US Route 13 Left Turn[3]	B (14.0)	B (14.1)	A (8.7)	A (9.9)
Southbound US Route 13 Left Turn[9]	B (10.7)	B (12.6)	B (11.6)	B (12.9)
Case 2 – 2032 without Development				
Eastbound Emma's Family Restaurant Driveway Approach[8]	B (13.8)	C (16.5)	B (13.5)	B (13.8)
Northbound US Route 13 Left Turn[3]	B (14.7)	B (14.8)	A (8.8)	B (10.2)
Southbound US Route 13 Left Turn[9]	B (10.9)	B (13.1)	B (12.2)	B (13.7)
Case 3A – 2032 with Development				
Eastbound Emma's Family Restaurant Driveway Approach[8]	B (14.2)	C (17.1)	B (13.8)	B (14.2)
Northbound US Route 13 Left Turn[3]	C (15.1)	C (15.2)	A (8.9)	B (10.4)
Southbound US Route 13 Left Turn[9]	B (11.0)	B (13.4)	B (12.4)	B (14.3)
Case 3A – 2032 with Development *with median closure Scenario 1*[10]				
Eastbound Emma's Family Restaurant Driveway Approach	-	-	B (13.6)	B (14.0)
Northbound US Route 13 Left Turn	-	-	A (8.8)	B (10.4)
Case 3A – 2032 with Development *with median closure Scenario 2*[7]				
Eastbound Emma's Family Restaurant Driveway Approach	-	-	B (10.4)	B (11.1)
Case 3B – 2032 with Development				
Eastbound Emma's Family Restaurant Driveway Approach[8]	B (14.2)	C (17.1)	B (14.6)	B (14.7)
Northbound US Route 13 Left Turn[3]	B (12.0)	B (12.7)	B (11.7)	B (13.3)
Southbound US Route 13 Left Turn[9]	B (11.7)	B (14.1)	B (12.4)	B (14.3)

[8] Due to the TOA analyzing all existing intersections as two separate stop-controlled intersections, this movement was recorded as the eastbound Emma's Family Restaurant through movement of the eastern intersection.
[9] Due to the TOA analyzing all existing intersections as two separate stop-controlled intersections, this movement was recorded as the eastbound median crossing left turn lane movement of the eastern intersection.
[10] JMT analyzed the intersection taking into consideration the closure of the southbound US Route 13 U-turn lane per DelDOT's request.

Table 4 (Continued)
Peak Hour Levels of Service (LOS)
Based on Traffic Operational Analysis for Briarstone
Report Dated: October 16, 2025
Prepared by: Pennoni Associates, Inc.

Unsignalized Intersection Two-Way Stop Control[1]	**LOS per TOA**		**LOS per JMT**	
3 – US Route 13 / Emma's Family Restaurant Driveway	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Case 3B – 2032 with Development *with median closure Scenario 1*[10]				
Eastbound Emma's Family Restaurant Driveway Approach	-	-	B (14.9)	B (14.7)
Northbound US Route 13 Left Turn	-	-	B (11.8)	B (13.5)
Case 3B – 2032 with Development *with median closure Scenario 2*[7]				
Eastbound Emma's Family Restaurant Driveway Approach	-	-	B (10.6)	B (11.2)

Table 5
Weaving Analysis Levels of Service (LOS)
Based on Traffic Operational Analysis for Briarstone
Report Dated: October 16, 2025
Prepared by: Pennoni Associates, Inc.

Weaving Analysis[11]	**LOS per JMT**	
Northbound US Route 13 Segment[12]	Weekday AM	Weekday PM
Case 3B – 2032 with Development - Between Cart Branch Circle/Site Entrance and Emma's Family Restaurant Driveway	A (4.9)	A (5.3)
Average Weaving Speed	58.5 MPH	59.3 MPH
Average Non-Weaving Speed	62.6 MPH	62.9 MPH

[11] The numbers in parentheses following levels of service are measured in passenger cars per mile per lane.
[12] JMT utilized the field measured free flow speed in the weaving analysis; this free flow speed was taken from the ATR speed data along US Route 13 provided in the TOA report.

Table 6
Peak Hour Levels of Service (LOS)
Based on Traffic Operational Analysis for Briarstone
Report Dated: October 16, 2025
Prepared by: Pennoni Associates, Inc.

Unsignalized Intersection Two-Way Stop Control[1]	**LOS per TOA**		**LOS per JMT**	
4 – US Route 13 / Delmarva Auto Repair Driveway	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Case 1 – 2025 Existing with Development				
Westbound Delmarva Auto Repair Driveway Approach[13]	A (0.0)	B (14.1)	A (0.0)	B (13.6)
Northbound US Route 13 Left Turn[14]	B (10.3)	B (10.9)	B (10.8)	B (12.2)
Southbound US Route 13 Left Turn[4]	B (13.4)	B (14.0)	A (9.8)	B (11.3)
Case 2 – 2032 without Development				
Westbound Delmarva Auto Repair Driveway Approach[13]	A (0.0)	B (14.8)	A (0.0)	B (14.3)
Northbound US Route 13 Left Turn[14]	B (10.5)	B (11.2)	B (11.3)	B (12.9)
Southbound US Route 13 Left Turn[4]	B (14.1)	B (14.7)	B (10.1)	B (11.8)
Case 3A – 2032 with Development				
Westbound Delmarva Auto Repair Driveway Approach[13]	A (0.0)	C (15.3)	A (0.0)	B (14.9)
Northbound US Route 13 Left Turn[14]	B (10.7)	B (11.4)	B (11.6)	B (13.4)
Southbound US Route 13 Left Turn[4]	B (14.9)	C (15.3)	B (10.2)	B (11.9)
Case 3A – 2032 with Development *with median closure Scenario 1* [15]				
Westbound Delmarva Auto Repair Driveway Approach	-	-	A (0.0)	B (14.3)
Southbound US Route 13 Left Turn	-	-	B (10.3)	B (12.0)
Case 3A – 2032 with Development *with median closure Scenario 2* [7]				
Westbound Delmarva Auto Repair Driveway Approach	-	-	A (0.0)	C (15.1)
Northbound US Route 13 Left Turn	-	-	B (11.7)	B (13.5)
Southbound US Route 13 Left Turn	-	-	B (10.2)	B (11.9)
Case 3B – 2032 with Development				
Westbound Delmarva Auto Repair Driveway Approach[13]	A (0.0)	C (15.3)	A (0.0)	B (14.9)
Northbound US Route 13 Left Turn[14]	B (10.7)	B (11.4)	B (11.6)	B (13.4)
Southbound US Route 13 Left Turn[4]	B (14.9)	C (15.3)	B (10.2)	B (11.9)

[13] Due to the TOA analyzing all existing intersections as two separate stop-controlled intersections, this movement was recorded as the westbound Delmarva Auto Repair Driveway through movement of the eastern intersection.
[14] Due to the TOA analyzing all existing intersections as two separate stop-controlled intersections, this movement was recorded as the westbound median crossing left turn lane movement of the western intersection.
[15] JMT analyzed the intersection taking into consideration the closure of the northbound US Route 13 U-turn lane.

Table 6 (Continued)
Peak Hour Levels of Service (LOS)
Based on Traffic Operational Analysis for Briarstone
Report Dated: October 16, 2025
Prepared by: Pennoni Associates, Inc.

Unsignalized Intersection Two-Way Stop Control[1]	**LOS per TOA**		**LOS per JMT**	
4 – US Route 13 / Delmarva Auto Repair Driveway	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Case 3B – 2032 with Development *with median closure Scenario 1* [15]				
Westbound Delmarva Auto Repair Driveway Approach	-	-	A (0.0)	B (14.3)
Southbound US Route 13 Left Turn	-	-	B (10.3)	B (12.0)
Case 3B – 2032 with Development *with median closure Scenario 2*[7]				
Westbound Delmarva Auto Repair Driveway Approach	-	-	A (0.0)	C (16.0)
Northbound US Route 13 Left Turn	-	-	B (12.2)	B (14.0)
Southbound US Route 13 Left Turn	-	-	B (10.2)	B (11.9)