



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

JENNIFER COHAN
SECRETARY

September 23, 2021

Ms. Dawn Riggi
Davis, Bowen & Friedel, Inc.
1 Park Avenue
Milford, DE 19963

Dear Ms. Riggi:

The enclosed Traffic Impact Study (TIS) review letter for the **Wickersham** (Tax Parcel 330-16.00-5.00) 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 (302) 760-2167.

Sincerely,

A handwritten signature in cursive script that reads "Troy Brestel".

Troy Brestel
Project Engineer

TEB:km

Enclosures

cc with enclosures: Mr. Cliff Mumford, Davis, Bowen & Friedel, Inc.
Mr. David Edgell, Office of State Planning Coordination
Mr. Jamie Whitehouse, Sussex County Planning and Zoning
Mr. Andrew Parker, McCormick Taylor, Inc.
DelDOT Distribution

DelDOT Distribution

Brad Eaby, Deputy Attorney General
Shanté Hastings, Director, Transportation Solutions (DOTS)
Pamela Steinebach, Director, Planning
Mark Luszczyk, Deputy Director, Traffic, DOTS
Peter Haag, Chief Traffic Engineer, Traffic, DOTS
Michael Simmons, Assistant Director, Project Development South, DOTS
Todd Sammons, Assistant Director, Development Coordination
T. William Brockenbrough, Jr., County Coordinator, Development Coordination
Chris Sylvester, Traffic Studies Manager, Traffic, DOTS
Alistair Probert, South District Engineer, South District
Matthew Schlitter, South District Public Works Engineer, South District
Jared Kauffman, Service Development Planner, Delaware Transit Corporation
Tremica Cherry, Service Development Planner, Delaware Transit Corporation
Anthony Aglio, Planning Supervisor, Statewide & Regional Planning
Wendy Polasko, Subdivision Engineer, Development Coordination
Richard McCabe, Sussex Review Coordinator, Development Coordination
Mark Galipo, Traffic Engineer, Traffic, DOTS
Derek Sapp, Subdivision Manager, Development Coordination
Claudy Joinville, Project Engineer, Development Coordination
Annamaria Furmato, Project Engineer, Development Coordination



September 23, 2021

Mr. Claudy Joinville
Project Engineer
DelDOT Division of Planning
P.O. Box 778
Dover, DE 19903

RE: Agreement No. 1946F
Traffic Impact Study Services
Task No. 2A Subtask 02A – Wickersham

Dear Mr. Joinville:

McCormick Taylor has completed its review of the Traffic Impact Study (TIS) for the Wickersham residential development prepared by Davis, Bowen & Friedel, Inc. dated February 2021. Davis, Bowen & Friedel prepared the report in a manner generally consistent with DelDOT's Development Coordination Manual.

The TIS evaluates the impacts of the proposed Wickersham residential development, proposed to be located on the southwest side of DE Route 1 (Coastal Highway / Sussex Road 14) and north of Johnson Road (Sussex Road 207), approximately 1,300 feet west of the intersection of DE Route 1 and Johnson Road in the City of Milford, Sussex County, Delaware. The proposed development would consist of 205 multi-family residential units. One full-access driveway is proposed on Johnson Road. Construction is expected to be complete by 2025.

The subject land is located on an approximately 40.69 acre parcel. The land is currently zoned R-3 (Garden Apartments / Townhomes), and the developer does not plan to rezone the land.

Currently, there are no DelDOT capital projects within the area of study, but there are two other initiatives that are relevant to discussion about this development.

The first initiative is DelDOT's Corridor Capacity Preservation Program (CCPP), a statewide program intended to sustain the through capacity of adopted highway corridors by various means such as limiting access points and using service roads for local vehicle trips. The general purpose of the program is to ensure that existing principal arterial roadways, including this section of Delaware Route 1, are able to efficiently carry regional traffic without impedance from the effects of local development. It is important to note that the current version of the CCPP for this section of Delaware Route 1 was developed in 2007, and some of the improvements contemplated in that version of the CCPP would no longer be feasible today. A revised version of the CCPP for this section of Delaware Route 1 is currently being developed by DelDOT.

In the 2007 version of the CCPP, DelDOT identified a possible modification at Delaware Route 1 and Johnson Road whereby the median crossover would be closed. An acceleration lane from Johnson Road onto southbound Delaware Route 1 could also be installed. Another possible

improvement considered was the construction of a service road along northbound Delaware Route 1 in this area. Due to how existing lanes of Delaware Route 1 would be used, that service road improvement could affect the portion of the Wickersham property closest to Delaware Route 1. It is also noted that improvements to be identified through the in-progress revisions to the CCPP may result in right of way impacts along the current Delaware Route 1 site frontage of the Wickersham property.

As for the second initiative, the proposed development is located within the boundary of the proposed Southeast Milford Transportation Improvement District (TID). A TID is a planning concept that seeks to proactively align transportation infrastructure spending and improvements with land use projections and future development within the designated district. The intersections in the study area of the proposed development are within the TID boundary. Johnson Road has been identified as a TID road segment, and the intersection of Delaware Route 1 and Johnson Road as a TID intersection. Compared to the CCPP, the Southeast Milford TID did not identify any new or different improvements to either the intersection of Delaware Route 1 and Johnson Road or to either roadway along the site frontages of the Wickersham property, but the TID does reference the aforementioned CCPP improvements as being recommended for the future. The Southeast Milford TID is still under development by DelDOT and the City of Milford. If and when DelDOT and the City establish the TID, DelDOT and the City will enter an agreement that will address contributions to the TID.

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

All existing intersections within the study area exhibit adequate level of service (LOS) in all scenarios, so physical roadway and/or traffic control improvements to address any such deficiencies are not necessary. However, a number of items are recommended to accommodate site entrances, to satisfy requirements of DelDOT's *Development Coordination Manual*, and to address bicycle and pedestrian needs.

Should the City of Milford choose to approve the proposed development, the following items should be incorporated into the site design and reflected on the record plan by note or illustration. 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.

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

2. The developer should construct the full-movement site access on Johnson Road. The proposed configuration is shown in the table below.

| Approach | Existing Configuration | Proposed Configuration |
|------------------------|-------------------------|--|
| Eastbound Johnson Road | One through lane | One left-turn lane and one through lane |
| Westbound Johnson Road | One through lane | One through lane and one right-turn lane |
| Southbound Site Access | Approach does not exist | One shared left/right-turn lane |

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

| Approach | Left-Turn Lane | Right-Turn Lane |
|------------------------|----------------|-----------------|
| Eastbound Johnson Road | 185 feet * | N/A |
| Westbound Johnson Road | N/A | 240 feet ** |
| Southbound Site Access | N/A | N/A |

* Length shown is the minimum required length of a dedicated left turn-lane for a 50 mph Local Road. For safety benefits, a dedicated eastbound left-turn lane should be installed at this location, especially given the sight distance limitations at the site access. Furthermore, DelDOT prefers a dedicated left-turn lane instead of a bypass lane whenever practical.

** Initial turn-lane length based on DelDOT’s *Auxiliary Lane Worksheet* and assuming an effective entrance radius of less than or equal to 50 feet as indicated on the plans provided in the TIS. The length of this turn lane may be affected by the close proximity of the adjacent property to the proposed site access driveway per the site plan provided in the TIS. Additional discussion is required during site plan review.

It is noted that potential sight distance limitations at the proposed site access location on Johnson Road have been identified. Adequacy of available sight distance must be confirmed during the site plan review process, and this may affect details of the site access location, design and/or required improvements along Johnson Road. Based on proposed site access location and potential constraints, DelDOT anticipates the need for one or more design deviations.

3. The following bicycle and pedestrian improvements should be included:
 - a. Per the DelDOT Development Coordination Manual section 5.2.9.2, bicycle lanes are required where right turn lanes are being installed.

- b. Appropriate bicycle symbols, directional arrows, pavement markings, and signing should be included along bicycle facilities and turn lanes within the project limits.
- c. Utility covers should be made flush with the pavement.
- d. If clubhouses or other community facilities are constructed within the site, bicycle parking should be provided near building entrances. Where building architecture provides for an awning, other overhang, or indoor parking, the bicycle parking should be covered.
- e. A minimum 15-foot wide permanent easement from the edge of the right-of-way should be dedicated to DelDOT within the site frontages along Johnson Road and Delaware Route 1.
- f. Within the easement along the Johnson Road site frontage, a minimum of a ten-foot wide shared-use path that meets current AASHTO and ADA standards should be constructed. The shared-use path should meet AASHTO and ADA standards and should have a minimum of a five-foot buffer from the roadway. At the eastern and western property boundaries, the shared-use path should connect to the adjacent property or to the shoulder in accordance with DelDOT's *Shared-Use Path and/or Sidewalk Termination Reference Guide* dated August 1, 2018. It is noted that the eastern property boundary is in close proximity to the proposed site access driveway, and there are wetlands located between the proposed site driveway and the western property boundary, so additional discussion regarding the shared-use path will be required. The developer shall coordinate with DelDOT's Development Coordination Section through the plan review process to determine the details of the shared-use path design and connections/terminations at or before both boundaries of the property.
- g. ADA compliant curb ramps and crosswalks should be provided at all pedestrian crossings, including all site entrances. Type 3 curb ramps are discouraged.
- h. Internal sidewalks for pedestrian safety and to promote walking as a viable transportation alternative should be constructed within the development. These sidewalks should each be a minimum of five-feet wide (with a minimum of a five-foot buffer from the roadway) and should meet current AASHTO and ADA standards. Internal sidewalks in the development should connect to the proposed shared-use path along Johnson Road.
- i. Where internal sidewalks are located alongside of parking spaces, a buffer should be added to prevent vehicular overhang onto the sidewalk.



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

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

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

Sincerely,

McCormick Taylor, Inc.

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

Andrew J. Parker, PE, PTOE
Project Manager

Enclosure

General Information

Report date: February 2021

Prepared by: Davis, Bowen & Friedel, Inc.

Prepared for: CCM-Koelig, LLC

Tax parcel: 330-16.00-5.00

Generally consistent with DelDOT's Development Coordination Manual: Yes

Project Description and Background

Description: The proposed Wickersham development consists of 205 low-rise multi-family residential units.

Location: The land is located on the southwest side of DE Route 1 (Coastal Highway / Sussex Road 14) and north of Johnson Road (Sussex Road 207), approximately 1,300 feet west of the intersection of DE Route 1 and Johnson Road in the City of Milford, Sussex County, Delaware. A site location map is included on page 7.

Amount of land to be developed: approximately 40.69 acre parcel

Land use approval(s) needed: Subdivision approval. The land is zoned R-3 (Garden Apartments / Townhomes), and the developer does not plan to rezone the land.

Proposed completion year: 2025

Proposed access locations: One full-access driveway is proposed on Johnson Road.

Daily Traffic Volumes (per DelDOT Traffic Summary 2019):

- 2019 Average Annual Daily Traffic on DE Route 1: 25,409 vehicles/day
- 2019 Average Annual Daily Traffic on Johnson Road: 2,107 vehicles/day



2020 Delaware Strategies for State Policies and Spending

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

The majority of the proposed Wickersham development is located within Investment Levels 1 and 2. A small portion of the property is located within Investment Level 3 area, but no homes or roads are proposed in that portion of the site.

Investment Level 1

Investment Level 1 Areas are often municipalities, towns, or urban/urbanizing places in counties. Density is generally higher than in the surrounding areas. There are a variety of transportation opportunities available. Buildings may have mixed uses, such as a business on the first floor and apartments above.

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, to promote well-designed and efficient new growth, and to facilitate redevelopment in Investment Level 1 Areas. These areas would be a prime location for designating "pre-permitted areas" to help steer development where the local government and citizens are most prepared to accept it.

Investment Level 2

This investment level has many diverse characteristics. 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. These areas have been shown to be the most active portion of Delaware's developed landscape. They serve as transition areas between Level 1 and the more open, less populated areas. They generally contain a limited variety of housing types, predominantly detached single-family dwellings.

In Investment Level 2, 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 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, and provides essential open spaces and recreational facilities, other public facilities, and services to promote a sense of community. Investment Level 2 areas are prime locations for designating "pre-permitted areas."

Proposed Development’s Compatibility with Strategies for State Policies and Spending:

The proposed Wickersham Residential Development project consists of 205 multi-family units developed in an Investment Level 1 and 2 area. Investment Levels 1 and 2 both support the development of residential growth with infrastructure and essential neighborhood services. Both Investment levels encourage a broad mix of housing options. As such, the proposed development appears to comply with the guidelines set forth in the 2020 “Strategies for State Policies and Spending”.

Comprehensive Plan

Sussex County Comprehensive Plan:

(Source: Sussex County Comprehensive Plan, March 2019)

The Sussex County Comprehensive Plan Future Land Use Map indicates that the proposed Wickersham development is in the City of Milford, a municipality. Sussex County strongly favors directing development to municipalities that desire it. The specific permitted uses and densities governing new construction within an incorporated municipality will continue to be governed by that municipality’s zoning ordinance, its public water and sewer capacities, and its comprehensive planning policies.

City of Milford Comprehensive Plan:

(Source: City of Milford Comprehensive Plan, 2018 Update, Certified May 2018)

The City of Milford’s Comprehensive Plan Future Land Use Map indicates that the proposed Wickersham site is planned for “Moderate Density Residential” land use. The Moderate Density Residential District represents typical single-family detached dwellings, attached single-family dwelling units, patio homes, duplexes, triplexes, quadplexes, townhomes/row houses, condominiums, apartments, and loft-style units. Availability of open space and walkable sidewalks are also key components.

Proposed Development’s Compatibility with Comprehensive Plan:

The proposed Wickersham residential development project includes 205 multi-family units on an approximately 40.69-acre sized lot. The land is currently zoned as R-3 (Garden Apartment & Townhouse) which corresponds to the “Moderate Density Residential” future land use designation per the 2018 update to the 2008 City of Milford Comprehensive Plan. The Moderate Density Residential District is described above. It would appear that the proposed Wickersham residential development fits within the intended land use for this location.

Relevant Projects in the DelDOT Capital Transportation Program

Currently, there are no DelDOT capital projects within the area of study, but there are two other initiatives that are relevant to discussion about this development.

The first initiative is DelDOT’s Corridor Capacity Preservation Program (CCPP), a statewide program intended to sustain the through capacity of adopted highway corridors by various means

such as limiting access points and using service roads for local vehicle trips. The general purpose of the program is to ensure that existing principal arterial roadways, including this section of Delaware Route 1, are able to efficiently carry regional traffic without impedance from the effects of local development. It is important to note that the current version of the CCPP for this section of Delaware Route 1 was developed in 2007, and some of the improvements contemplated in that version of the CCPP would no longer be feasible today. A revised version of the CCPP for this section of Delaware Route 1 is currently being developed by DelDOT.

In the 2007 version of the CCPP, DelDOT identified a possible modification at Delaware Route 1 and Johnson Road whereby the median crossover would be closed. An acceleration lane from Johnson Road onto southbound Delaware Route 1 could also be installed. Another possible improvement considered was the construction of a service road along northbound Delaware Route 1 in this area. Due to how existing lanes of Delaware Route 1 would be used, that service road improvement could affect the portion of the Wickersham property closest to Delaware Route 1. It is also noted that improvements to be identified through the in-progress revisions to the CCPP may result in right of way impacts along the current Delaware Route 1 site frontage of the Wickersham property.

As for the second initiative, the proposed development is located within the boundary of the proposed Southeast Milford Transportation Improvement District (TID). A TID is a planning concept that seeks to proactively align transportation infrastructure spending and improvements with land use projections and future development within the designated district. The intersections in the study area of the proposed development are within the TID boundary. Johnson Road has been identified as a TID road segment, and the intersection of Delaware Route 1 and Johnson Road as a TID intersection. Compared to the CCPP, the Southeast Milford TID did not identify any new or different improvements to either the intersection of Delaware Route 1 and Johnson Road or to either roadway along the site frontages of the Wickersham property, but the TID does reference the aforementioned CCPP improvements as being recommended for the future. The Southeast Milford TID is still under development by DelDOT and the City of Milford. If and when DelDOT and the City establish the TID, DelDOT and the City will enter an agreement that will address contributions to the TID.

Trip Generation

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

- 205 Multi-family Housing (Low-Rise) Units (ITE Land Use Code 220)

Table 1
WICKERSHAM PEAK HOUR TRIP GENERATION

| Land Use | Weekday AM Peak Hour | | | Weekday PM Peak Hour | | | Saturday Peak Hour | | |
|---------------------------|-------------------------|-----------|-----------|-------------------------|-----------|------------|-----------------------|-----------|------------|
| | In | Out | Total | In | Out | Total | In | Out | Total |
| 205 Multi-Family Low-Rise | 21 | 73 | 94 | 70 | 42 | 112 | 72 | 72 | 144 |
| TOTAL TRIPS | 21 | 73 | 94 | 70 | 42 | 112 | 72 | 72 | 144 |

Overview of TIS

Intersections examined:

- 1) Johnson Road & Site Entrance
- 2) Johnson Road & Eagle Crest Road (Cedar Creek Landing entrance)
- 3) Delaware Route 1 & Johnson Road

Conditions examined:

- 1) 2019 Existing (Case 1)
- 2) 2025 No-Build (Case 2)
- 3) 2025 Build (Case 3)

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

Committed developments considered:

- 1) Nemours Medical Office (85,000 square-foot medical office)
- 2) Hearthstone Manor I (total: 178 single-family detached houses, 952 condominiums; unbuilt: 94 single-family detached houses, 536 condominiums)
- 3) Hearthstone Manor II (1,015 condominiums, 118 single-family detached houses)
- 4) West Shores at New Milford (112 single-family detached houses)

Intersection Descriptions

1) Johnson Road & Site Entrance

Type of Control: minor stop-controlled T-intersection

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

Westbound Approach: (Johnson Road) existing one through lane; proposed one through lane and one right turn lane

Eastbound Approach: (Johnson Road) existing one through lane; proposed one shared through/left-turn lane and one bypass lane

2) Johnson Road & Eagle Crest Road

Type of Control: minor stop-controlled T-intersection

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

Westbound Approach: (Johnson Road) one shared through/left-turn lane

Eastbound Approach: (Johnson Road) one shared through/right-turn lane

3) DE Route 1 & Johnson Road

Type of Control: unsignalized T-intersection

Northbound Approach: (DE Route 1) yield controlled channelized left-turn only lane and two through lanes, all separated from southbound lanes by grass median

Southbound Approach: (DE Route 1) two through lanes and one right-turn lane

Eastbound Approach: (Johnson Road) one right-turn only lane, stop controlled

Safety Evaluation

Crash Data: Delaware Crash Analysis Reporting System (CARS) data was provided in Appendix A of the TIS for the three-year period from November 2017 through November 2020. The crashes data shows that along Delaware Route 1 at or near Johnson Road, there were ten crashes over those three years, with one resulting in an injury. Three of the crashes were rear-ends, two were angle crashes, and five were single-vehicle crashes (run-off-the-road or struck deer). Along Johnson Road at the horizontal curve to the west of the proposed site there were two crashes, both of which were single-vehicle run-off-the-road crashes with one of those resulting in a fatality.

Sight Distance: The proposed site access on Johnson Road is limited looking in either direction from the proposed southbound driveway approach due to trees and other obstructions on the adjacent property to the east and wetlands and a nearby horizontal curve within a heavily wooded area on Johnson Road to the west of the site access. As always adequacy of available sight distance must be confirmed during the site plan review process for all proposed movements at the site access.

Sight distance appears adequate at the existing intersections of Delaware Route 1 & Johnson Road and Johnson Road & Eagle Crest Road. In those locations, there are relatively flat roadways and few visual obstructions.

Transit, Pedestrian, and Bicycle Facilities

Existing transit service: Based on the current DART Bus Stop Map, the Delaware Transit Corporation (DTC) currently operates one bus route that travels through the study area (Intercounty Bus Route 307, which runs along Delaware Route 1). There is no existing bus service along this section of Johnson Road.

Planned transit service: Based on coordination with DTC representatives, there are no requests for transit-related improvements associated with the proposed development.

Existing bicycle and pedestrian facilities: There are no pedestrian paths or designated bicycle lanes at the intersections within the study area. The approximately 8' shoulders along Johnson Road are marked as bike lanes. No sections of roadways within the study area are identified as "Bicycling Routes" on the *Sussex County Bicycle Map* published by DelDOT.

Planned bicycle and pedestrian facilities: The proposed Wickersham Development is located within the Investment Level 1 area of the State Strategies and Spending Map. Due to its investment level, a 10' shared-use path is proposed along the site frontage of Johnson Road. Furthermore, a bike lane should be installed between the through lane and the proposed right-turn lane into the development.

Previous Comments

In a review letter dated November 25, 2020, the traffic counts used for the Wickersham development were accepted but the trip distribution and assignment at the intersection of Johnson Road and Eagle Crest Road needed to be revised. Those concerns appear to have been addressed and accepted per a review letter dated January 22, 2021.

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

General HCS Analysis Comments

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

- 1) Both Davis, Bowen & Friedel, Inc. and McCormick Taylor utilized Highway Capacity Software (HCS) version 7.8.5 to complete the traffic analyses.
- 2) For two-way stop control intersections, the TIS and McCormick Taylor applied heavy vehicle factors (HV) by movement using existing data. For signalized and all-way stop control intersections, the TIS and McCormick Taylor applied HV by lane group using existing data. The TIS and McCormick Taylor generally assumed future HV to be the same as existing HV at all intersections. Both the TIS and McCormick Taylor assumed 3% HV for future movements to and from the proposed site access points (as per DelDOT's Development Coordination Manual section 2.2.8.11.6.H).

- 3) For existing conditions, the TIS and McCormick Taylor determined overall intersection peak hour factors (PHF) for each intersection based on the turning movement counts that were available. Future PHFs were determined as per the DelDOT Development Coordination Manual section 2.2.8.11.6.F where applicable.
- 4) For analyses of all intersections, McCormick Taylor and the TIS assumed 2% grade for all movements.

Table 2
Peak Hour Levels of Service (LOS)
Based on Wickersham Traffic Impact Study – February 2021
Prepared by Davis, Bowen & Friedel, Inc.

| Unsignalized Intersection ¹ One-Way Stop (T-Intersection) | LOS per TIS | | | LOS per McCormick Taylor | | |
|---|---------------|---------------|--------------------|-----------------------------|---------------|--------------------|
| | Weekday AM | Weekday PM | Summer Saturday | Weekday AM | Weekday PM | Summer Saturday |
| Johnson Road & Site Access | | | | | | |
| 2025 Build Condition | | | | | | |
| Eastbound Johnson Road – Lefts | A (7.5) | A (7.6) | A (7.6) | A (7.5) | A (7.6) | A (7.6) |
| Southbound Site Access | A (10.0-) | B (10.0+) | B (10.1) | A (10.0-) | B (10.0+) | B (10.1) |

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

Table 3
Peak Hour Levels of Service (LOS)
Based on Wickersham Traffic Impact Study – February 2021
Prepared by Davis, Bowen & Friedel, Inc.

| Unsignalized Intersection ² One-Way Stop (T-Intersection) | LOS per TIS | | | LOS per McCormick Taylor | | |
|---|---------------|---------------|--------------------|-----------------------------|---------------|--------------------|
| | Weekday AM | Weekday PM | Summer Saturday | Weekday AM | Weekday PM | Summer Saturday |
| Johnson Road & Eagle Crest Road | | | | | | |
| 2019 Existing Condition (Case 1) | | | | | | |
| Westbound Johnson Road – Lefts | A (7.4) | A (7.4) | A (7.5) | A (7.4) | A (7.4) | A (7.5) |
| Northbound Eagle Crest Road | A (9.4) | A (9.5) | A (9.6) | A (9.4) | A (9.5) | A (9.6) |
| | | | | | | |
| 2025 No Build Condition (Case 2) | | | | | | |
| Westbound Johnson Road – Lefts | A (7.4) | A (7.4) | A (7.5) | A (7.4) | A (7.4) | A (7.5) |
| Northbound Eagle Crest Road | A (9.4) | A (9.5) | A (9.6) | A (9.4) | A (9.5) | A (9.6) |
| | | | | | | |
| 2025 Build Condition (Case 3) | | | | | | |
| Westbound Johnson Road – Lefts | A (7.5) | A (7.5) | A (7.6) | A (7.5) | A (7.5) | A (7.6) |
| Northbound Eagle Crest Road | A (9.8) | A (9.9) | B (10.2) | A (9.8) | A (9.9) | B (10.2) |

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

Table 4
Peak Hour Levels of Service (LOS)
Based on Wickersham Traffic Impact Study – February 2021
Prepared by Davis, Bowen & Friedel, Inc.

| Unsignalized Intersection ³ One-Way Stop (T-Intersection) | LOS per TIS | | | LOS per McCormick Taylor | | |
|---|---------------|---------------|--------------------|-----------------------------|---------------|--------------------|
| | Weekday AM | Weekday PM | Summer Saturday | Weekday AM | Weekday PM | Summer Saturday |
| DE Route 1 & Johnson Road | | | | | | |
| 2019 Existing Condition (Case 1) | | | | | | |
| Eastbound Johnson Road – Rights | C (15.3) | B (14.9) | C (23.3) | C (15.3) | B (14.9) | C (23.3) |
| Northbound DE Route 1 – Lefts | B (11.4) | B (13.2) | C (17.7) | B (11.3) | B (12.9) | C (17.5) |
| | | | | | | |
| 2025 No Build Condition (Case 2) | | | | | | |
| Eastbound Johnson Road – Rights | C (15.6) | C (16.1) | D (25.5) | C (15.6) | C (16.1) | D (25.5) |
| Northbound DE Route 1 – Lefts | B (11.6) | B (14.5) | C (19.9) | B (11.5) | B (14.1) | C (18.9) |
| | | | | | | |
| 2025 Build Condition (Case 3) | | | | | | |
| Eastbound Johnson Road – Rights | C (16.9) | C (17.0) | D (31.2) | C (17.1) | C (17.0) | D (31.2) |
| Northbound DE Route 1 – Lefts | B (11.7) | C (15.1) | C (20.4) | B (11.6) | B (14.5) | C (19.7) |

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