



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

JENNIFER COHAN
SECRETARY

February 5, 2019

Mr. Christopher Duke
Becker Morgan Group, Inc.
250 South Main Street
Suite 109
Newark, Delaware 19711

Dear Mr. Duke:

The enclosed Traffic Operational Analysis (TOA) review letter for the proposed **Nemours – Milford** (Tax Parcel 330-15.00-58.00) 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 TOA to conform to DelDOT's Development Coordination Manual and other accepted practices and procedures for such studies. DelDOT accepts this review 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,

Troy Brestel
Project Engineer

TEB:km

Enclosures

cc with enclosures: Mr. Steven Fortunato, Becker Morgan Group, Inc.
Ms. Constance C. Holland, Office of State Planning Coordination
Mr. Eric Norenberg, City Manager, City of Milford
Mr. Andrew Parker, McCormick Taylor, Inc.
DelDOT Distribution

DelDOT Distribution

Brad Eaby, Deputy Attorney General

Robert McCleary, Director, Transportation Solutions (DOTS)

Drew Boyce, Director, Planning

Mark Luszczyk, Chief Traffic Engineer, Traffic, DOTS

Michael Simmons, Assistant Director, Project Development South, DOTS

J. Marc Coté, Assistant Director, Development Coordination

T. William Brockenbrough, Jr., County Coordinator, Development Coordination

Peter Haag, Traffic Studies Manager, Traffic, DOTS

Alastair Probert, South District Engineer, South District

Gomez Norwood, South District Public Works Manager, South District

Susanne Laws, Sussex Subdivision Review Coordinator, Development Coordination

David Dooley, Service Development Planner, Delaware Transit Corporation

Mark Galipo, Traffic Engineer, Traffic, DOTS

Anthony Aglio, Planning Supervisor, Statewide & Regional Planning

Derek Sapp, Sussex County Subdivision Reviewer, Development Coordination

Claudy Joinville, Project Engineer, Development Coordination



February 5, 2019

Mr. Troy E. Brestel
Project Engineer
DelDOT Division of Planning
P.O. Box 778
Dover, DE 19903

RE: Agreement No. 1773
Traffic Impact Study Services
Task No. 1 Subtask 9A – Nemours Medical Office Building

Dear Mr. Brestel:

McCormick Taylor has completed its review of the Traffic Operational Analysis (TOA) for the Nemours Medical Office Building prepared by Becker Morgan Group, Inc., dated February 2018. Becker Morgan prepared the report in a manner generally consistent with DelDOT's *Development Coordination Manual*.

The TOA evaluates the impacts of the proposed Nemours Medical Office Building, which is part of the Bayhealth Milford Medical Complex located on the southwest corner of Cedar Creek Road (Delaware Route 30 / Sussex Road 212) and Wilkins Road (Sussex Road 206) in the City of Milford, Sussex County, Delaware. The Medical Office Building in particular is located on the southwest corner of the southbound Delaware Route 1 ramp intersection with Cedar Creek Road. The proposed Nemours Medical Office Building would consist of 85,000 sf of medical office space. Bayhealth Hospital (previously approved 350,000 sf hospital) is currently under construction on the same property.

Subsequent to the original TOA submitted in February 2018 and our initial review of that TOA, at DelDOT's request Becker Morgan Group submitted a TOA supplement in May 2018 that evaluated a build-out scenario that includes an additional 200,000 sf of future medical office space on the property. We also reviewed the TOA supplement and made recommendations in this letter for intersection improvements that would accommodate this full build-out scenario, unless otherwise noted.

Three full-access site driveways are proposed at the following existing intersections: Cedar Creek Road and the southbound Delaware Route 1 Ramps, Wilkins Road and Gregory Boulevard, and Wilkins Road and Homestead Boulevard. These driveway locations are consistent with those previously approved for the Bayhealth Hospital. Construction of the 85,000 sf building is anticipated to be complete by 2019.



The land to be developed is currently zoned IS (Institutional Service) within the City of Milford, and the developer does not intend to modify the existing zoning.

Currently, there are no DeIDOT capital projects within the area of study.

Regarding speed limits on the site frontage roadways, when this TOA was scoped and prepared, the speed limit on Wilkins Road was 50 mph at the two proposed site access locations, and the speed limit on Cedar Creek Road was 40 mph north of the proposed site access and 50 mph south of the proposed access. The developer and the City of Milford desired to reduce the posted speed limits on the roads near the Bayhealth Hospital / Sussex Medical Campus to protect the health, safety and welfare of the traveling public near the hospital. As such, Becker Morgan Group, on behalf of the developer, prepared a speed study and the City of Milford requested the speed limit changes from DeIDOT. Based on the provided information and additional coordination, DeIDOT authorized a speed restriction resolution (SSC 8-19) dated January 18, 2019 that declared a speed limit of 40 mph on Wilkins Road/Cedar Neck Road from Elks Lodge Road (Sussex Road 211) to the City of Milford municipal limits (approximately 0.95 miles east of Cedar Creek Road). At the intersection of Cedar Creek Road and the southbound Delaware Route 1 Ramps / proposed site access, DeIDOT will install additional speed limit signage to clarify that the posted speed limit on Cedar Creek Road is 40 mph in both directions.

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

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

<i>Intersection</i>	<i>Existing Traffic Control</i>	<i>Situations for which deficiencies occur</i>
Cedar Creek Road and Southbound Delaware Route 1 Ramps / Site Entrance	Unsignalized	2019 without development PM (Case 2); 2019 with development AM & PM (Case 3 & Case 4)
Wilkins Road and Gregory Boulevard / Eastern Site Entrance	Unsignalized	2019 with development +200 ksf MOB PM (Case 4)
Wilkins Road and Homestead Boulevard / Western Site Entrance	Unsignalized	2019 with development PM (Case 3); 2019 with development +200 ksf MOB AM & PM (Case 4)

Cedar Creek Road and Southbound Delaware Route 1 Ramps / Site Entrance

This unsignalized intersection experiences LOS deficiencies in the 2019 weekday peak hours, both without and with the Nemours Medical Office Building. While unsignalized improvements proposed in the TOA would eliminate AM peak hour deficiencies (without the additional 200,000 sf of future medical office space), the PM peak hour would continue to experience LOS deficiencies. Based on DeIDOT's previous review of the Bayhealth Hospital development, improvements are scheduled to be constructed as part of the hospital development such that all four approaches of this intersection will have separate left-turn, through, and channelized right-

turn lanes. However, the left-turn lanes on the eastbound site driveway and the westbound Delaware Route 1 ramps would be temporarily striped (hatched-out with pavement markings) such that those approaches would operate with shared left-turn/through lanes until their use is warranted, at which time a signal will be installed. The previous Hospital TOA review also recommended that the developer should enter into a traffic signal agreement whereby they would participate in funding a traffic signal when DelDOT determines it is warranted.

Upon construction of the 85,000 sf Nemours Medical Office Building, to address LOS deficiencies the developer proposes to keep the intersection as unsignalized and open the left-turn lanes on the eastbound site driveway and the westbound Delaware Route 1 ramps to traffic so they will operate as separate left-turn lanes. Even with these changes, the westbound Delaware Route 1 approach is still anticipated to operate at LOS F during the PM peak hour, with a 95th percentile queue length of approximately nine vehicles (225 feet). For the same scenario, the eastbound site driveway approach is anticipated to operate at LOS E during the PM peak hour, with a 95th percentile queue length of approximately four vehicles (100 feet). Furthermore, analysis of the scenario with the additional 200,000 sf of future medical office space indicates that signalization is required to mitigate LOS deficiencies, which it does for both the AM and PM peak hour.

Given the anticipated LOS deficiencies for the unsignalized condition, a Signal Justification Study was prepared as part of the Nemours Medical Office Building TOA, and it was evaluated as part of this review. This study examined whether a signal should be installed to address the remaining anticipated deficiencies. The signal warrant analysis (for the 85,000 sf Medical Office Building) that was included in the study (and in a subsequent updated Signal Justification Study) had inconclusive results. The study found that there is the potential for signal warrants to be marginally satisfied, but that potential is based on broad assumptions for various aspects including how site traffic will ultimately be distributed throughout the day. The signal warrants would be satisfied for the scenario with the additional 200,000 sf of future medical office space.

Based on the Signal Justification Study and coordination with DelDOT, at this time it is recommended that the intersection remain unsignalized for the opening day condition of the Nemours Medical Office Building, and no further improvements are recommended at this intersection for the opening day condition beyond those identified in Item No. 2 below. These recommendations are subject to change during site plan review. Given that a signal will need to be installed here at some point, it was recommended that the developer enter into a traffic signal agreement, which was recently executed as described in Item No. 3 below. We do not recommend opening the eastbound and westbound left-turn lanes to traffic without installing a signal, as this could lead to compliance issues relative to the stop-control.

Wilkins Road and Gregory Boulevard / Eastern Site Entrance

This unsignalized intersection experiences LOS deficiencies in the 2019 weekday PM peak hour with development of the Nemours Medical Office Building combined with 200,000 sf of future medical office space. In that scenario, the northbound site driveway left-turn/through movement operates at LOS E, with a 95th percentile queue of approximately three vehicles (75 feet). Because the LOS deficiency is limited to the site driveway, the associated queue length is minimal, and

separating the left-turn lane from the through lane would not help due to negligible anticipated volume for the through movement, no further improvements are recommended at this intersection beyond those identified in Item No. 4 below.

Wilkins Road and Homestead Boulevard / Western Site Entrance

This unsignalized intersection experiences LOS deficiencies in the 2019 weekday PM peak hour with development of the Nemours Medical Office Building, and in the AM and PM peak hours with the additional 200,000 sf of future medical office space. Without the additional 200,000 sf of future medical office space, the northbound site driveway left-turn/through movement operates at LOS E, with a 95th percentile queue of approximately two vehicles (50 feet). Because the LOS deficiency is constrained to the site driveway, the associated queue length is minimal, and separating the left-turn lane from the through lane would not help due to negligible anticipated volume for the through movement, at this time no further improvements are recommended at this intersection beyond those identified in Item No. 5 below.

It is noted that if the intersection of Wilkins Road and Homestead Boulevard / Site Entrance remains unsignalized when the additional 200,000 sf of future medical office space is added, the minor street approaches will operate at LOS F with significant delays and queues. These deficiencies may be addressed by the installation of a traffic signal, but a signal should only be installed after DelDOT determines that one is warranted. The determination for if and when a signal should be installed may largely depend on a future Signal Justification Study that would likely be conducted as part of a future application to develop the additional medical office space. The potential installation of a traffic signal at this intersection will be discussed further during site plan review. At this time, the recommendations for this intersection (as shown in Item No. 5 below) reflect the additional turn lanes that would be needed as part of the additional 200,000 sf full build-out scenario, but no obligation to enter into a traffic signal agreement. Furthermore, initial turn lane lengths identified in Item No. 5 reflect lengths needed *without* the additional 200,000 sf. Required lengths of turn lanes associated with a future traffic signal will need to be determined as part of the analysis to be completed for the future Signal Justification Study.

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 should improve Wilkins Road along the site frontage in order to meet DelDOT's minor collector road standards. These standards include, but are not limited to, twelve-foot travel lanes and eight-foot shoulders. The developer should provide a bituminous concrete overlay to the existing travel lanes, at DelDOT's discretion. DelDOT should analyze the existing lane's pavement section and recommend an overlay thickness to the developer's engineer if necessary. It is understood that these improvements may be completed as part of the Bayhealth Hospital development.

2. The developer should construct the full site access on Cedar Creek Road at the Southbound Delaware Route 1 Ramps. The proposed configuration is shown in the table below. The proposed configuration is scheduled to be constructed as part of the Bayhealth Hospital development, although some recommended turn lane lengths are different than previously approved. The eastbound and westbound left-turn lanes listed below should be temporarily striped (hatched-out with pavement markings) such that those approaches would operate with shared left-turn/through lanes until a signal is installed when DelDOT determines it is warranted. This is consistent with the access approved for the Bayhealth Hospital.

Approach	Existing Configuration	Proposed Configuration
Eastbound Site Entrance	Approach does not exist	One left-turn lane, one through lane, and one channelized right-turn lane
Westbound Delaware Route 1 Ramps	One left-turn lane and one channelized right-turn lane	One left-turn lane, one through lane, and one channelized right-turn lane
Northbound Cedar Creek Road	One through lane and one channelized right-turn lane	One left-turn lane, one through lane, and one channelized right-turn lane
Southbound Cedar Creek Road	One left-turn lane and one through lane	One left-turn lane, one through lane, and one channelized 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 during the site plan review.

Approach	Left-Turn Lane	Right-Turn Lane
Eastbound Site Entrance	100 feet *	50 feet **
Westbound Delaware Route 1 Ramps	225 feet ***	50 feet ***
Northbound Cedar Creek Road	95 feet ****	85 feet *****
Southbound Cedar Creek Road	120 feet *****	190 feet ****

- * turn-lane length based on storage length per queuing analysis, with 50-foot minimum
- ** turn-lane length based on storage length per queuing analysis, with 50-foot minimum. It is noted that submitted plans show this eastbound right-turn lane extending back to the first internal driveway approximately 400 feet from Cedar Creek Road.
- *** turn-lane length based on storage length per queuing analysis, with 50-foot minimum. Submitted plans show that a longer length is proposed, which is preferred. DelDOT will determine final turn lane length during the site plan review.
- **** turn-lane length based on DelDOT’s *Auxiliary Lane Worksheet*
- ***** turn-lane length based on DelDOT’s *Auxiliary Lane Worksheet* . Existing turn lane length is longer, which is acceptable.

3. The developer has recently entered into a traffic signal agreement with DelDOT to fund an equitable portion of a signal at the intersection of Cedar Creek Road and Southbound Delaware Route 1 Ramps / Site Entrance when DelDOT determines that it is warranted. One or more other developers may enter into a traffic signal agreement for this intersection. The potential installation of a traffic signal at this intersection will be discussed further during site plan review.
4. The developer should construct the eastern full site access on Wilkins Road at Gregory Boulevard. The proposed configuration is shown in the table below. The proposed configuration is scheduled to be constructed as part of the Bayhealth Hospital development, although some recommended turn lane lengths may be different than previously approved.

Approach	Existing Configuration	Proposed Configuration
Eastbound Wilkins Road	One shared left-turn/through lane	One left-turn lane, one through lane, and one right-turn lane
Westbound Wilkins Road	One shared through/right-turn lane	One left-turn lane and one shared through/right-turn lane
Northbound Site Entrance	Approach does not exist	One shared left-turn/through lane and one right-turn lane
Southbound Gregory Boulevard	One shared left-turn / through / right-turn lane	One shared left-turn / through / 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 during the site plan review.

Approach	Left-Turn Lane	Right-Turn Lane
Eastbound Wilkins Road	50 feet *	100 feet **
Westbound Wilkins Road	120 feet ***	N/A
Northbound Site Entrance	N/A	75 feet ****
Southbound Gregory Boulevard	N/A	N/A

* based on coordination with DelDOT’s Development Coordination Section, the eastbound left-turn lane will have a 50’ storage length and a 100’ taper length

** turn-lane length based on DelDOT’s *Auxiliary Lane Worksheet*, assuming a 35 mph design speed and entrance radius > 50’

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

**** turn-lane length based on storage length per queuing analysis

5. The developer should construct the western full site access on Wilkins Road at Homestead Boulevard. The proposed configuration is shown in the table below. Portions of the configuration and some recommended turn lane lengths are different than previously approved as part of the Bayhealth Hospital development.

Approach	Existing Configuration	Proposed Configuration
Eastbound Wilkins Road	One shared left-turn/through lane	One left-turn lane, one through lane and one right-turn lane
Westbound Wilkins Road	One through lane and one right-turn lane	One left-turn lane, one through lane and one right-turn lane
Northbound Site Entrance	Approach does not exist	One shared left-turn/through lane and one right-turn lane
Southbound Homestead Boulevard	One left-turn lane and one right-turn lane	One shared left-turn/through lane and one 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 during the site plan review.

Approach	Left-Turn Lane	Right-Turn Lane
Eastbound Wilkins Road	50 feet *	145 feet **
Westbound Wilkins Road	120 feet ***	140 feet ****
Northbound Site Entrance	N/A	50 feet *****
Southbound Homestead Boulevard	N/A	80 feet *****

- * based on coordination with DelDOT's Development Coordination Section, the eastbound left-turn lane will have a 50' storage length and a 100' taper length
- ** turn-lane length based on DelDOT's *Auxiliary Lane Worksheet*, assuming a 35 mph design speed and entrance radius > 50'
- *** turn-lane length based on DelDOT's *Auxiliary Lane Worksheet*
- **** based on coordination with DelDOT's Development Coordination Section, the developer need only mill and overlay the existing westbound right-turn lane (not required to extend the length)
- ***** turn-lane length based on storage length per queuing analysis, with 50-foot minimum

6. The following bicycle, pedestrian, and transit improvements should be included:
- a. Where right-turn lanes are added (at all three proposed site entrances), a minimum of a five-foot bicycle lane should be dedicated and striped with appropriate markings for bicyclists through the turn lane in order to facilitate safe and unimpeded bicycle travel. A right-turn yield to bikes sign (R4-4) should be added at the start of each right-turn lane.

- 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. Bicycle parking should be provided near the building entrance. Where the building architecture provides for an awning, other overhang, or indoor parking, the bicycle parking should be covered.
- e. The developer should consider providing indoor showers and lockers to encourage bicycle commuting. The developer should contact the City of Milford to determine if bicycle racks can be provided through an existing program to install bicycle racks within the City of Milford.
- f. 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 Cedar Creek Road and Wilkins Road, although it appears this has already occurred in conjunction with the Hospital development.
- g. Within the easement along Cedar Creek Road, the proposed ten-foot wide shared-use path (SUP) associated with Bayhealth Hospital should be extended along the entire site frontage if possible. The SUP should meet current AASHTO and ADA standards. The SUP should have a minimum of a five-foot buffer from the roadway. The SUP should connect to pedestrian facilities in the development and to the shoulder of both Wilkins Road and Cedar Creek Road in accordance with DelDOT's *Shared Use Path and/or Sidewalk Termination Policy* dated June 19, 2014. The developer should coordinate with DelDOT's Development Coordination Section to discuss extending the proposed SUP further to the south along the Cedar Creek Road frontage and to determine exact locations and details of the SUP connections at the property boundaries and/or other logical termini.
- h. ADA compliant curb ramps and crosswalks should be provided at all pedestrian crossings, including all site entrances. Type 3 curb ramps are discouraged.
- i. 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 paths along Cedar Creek Road and Wilkins Road.
- j. Where internal sidewalks are located alongside of parking spaces, a buffer should be added to prevent vehicular overhang onto the sidewalk.
- k. The developer should coordinate with DART to provide bus stops to be located near the site entrance on Cedar Creek Road and near the eastern entrance on Wilkins Road. Internal roads should be able to support transit buses for easy access and turnaround maneuvers on-site.

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 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 TOA 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, P.E., PTOE
Project Manager

Enclosure

General Information

Report date: original TOA dated February 2018; with TOA supplement dated May 2018 for additional 200,000 sf of medical office space

Prepared by: Becker Morgan Group, Inc.

Prepared for: Bayhealth Medical Center, Inc.

Tax parcel: 330-15.00-58.00

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

Project Description and Background

Description: The proposed Nemours Medical Office Building consists of 85,000 SF of medical office space on a portion of the Bayhealth Milford Medical Complex. Bayhealth Hospital (previously approved) is currently under construction on the same property. At DelDOT's request Becker Morgan Group submitted a TOA supplement in May 2018 that evaluated an additional 200,000 sf of future medical office space on the property.

Location: The Bayhealth Milford Medical Complex is located on the southwest corner of Cedar Creek Road (DE Route 30 / Sussex Road 212) and Wilkins Road (Sussex Road 206) in the City of Milford, Sussex County, Delaware. The Medical Office Building in particular is located on the southwest corner of Cedar Creek Road and Southbound Delaware Route 1 Ramps. A site location map is included on page 11.

Amount of land to be developed: Approximately 8.2 acres of land for the Medical Office Building, with the overall medical campus size of approximately 117 acres

Land use approval(s) needed: Subdivision approval. The land is currently zoned IS (Institutional Service) within the City of Milford. The developer does not plan to rezone the land.

Proposed completion date: 2019

Proposed access locations: Three full-access driveways are proposed at the following locations: Cedar Creek Road and Southbound Delaware Route 1 Ramps, Wilkins Road and Gregory Boulevard, and Wilkins Road and Homestead Boulevard. These driveway locations are consistent with those approved for the Bayhealth Hospital.

Daily Traffic Volumes (per DelDOT Traffic Summary 2016):

- 2016 Average Annual Daily Traffic on Cedar Creek Road: 6,124 vehicles/day
- 2016 Average Annual Daily Traffic on Wilkins Road: 2,623 vehicles/day



2015 Delaware Strategies for State Policies and Spending

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

The proposed Nemours Medical Office Building is located within an Investment Level 2 area.

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

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

The proposed Nemours Medical Office Building is located within an Investment Level 2 area. The project includes 85,000 SF of medical office space that will be an addition to the Bayhealth Milford Medical Complex. The adjacent Bayhealth Hospital (350,000 SF hospital) will be opening in 2019. Level 2 areas are priority locations for new and expanded public facilities, such as health-care buildings. These uses should be located to foster community identity and vitality. Level 2 areas are also priority locations for the retention and expansion of large, high-quality employers. These uses should be located near existing infrastructure and residents. The proposed development is located near Delaware Route 1 and existing/expanding residential developments, thus making efficient use of existing public investments. As such, the proposed development generally appears to comply with the guidelines of Investment Level 2 areas as described in the 2015 "Strategies for State Policies and Spending."

Comprehensive Plan

Sussex County Comprehensive Plan:

(Source: Sussex County Comprehensive Plan Update, June 2008)

The Sussex County Comprehensive Plan Future Land Use Map indicates that the proposed Nemours Medical Office Building 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, Adopted by City Council January 22, 2018)

The City of Milford's Comprehensive Plan Future Land Use Map indicates that the proposed Medical Office Building site is planned for "Employment" land uses. The Plan describes these areas as "...intended to serve as a primary location for a large employer to bring jobs and economic development to the City. Potential uses include schools and health-care related uses..."

Inspection of the City of Milford zoning map shows that the proposed developments will be located on lands currently zoned IS (Institutional Service). Based on the City of Milford Code of Ordinances §230-19.2, hospitals, and outpatient health-care centers are permitted uses within IS zoning.

Proposed Development's Compatibility with Comprehensive Plan:

The proposed development appears to comply with the City of Milford's Comprehensive Plan. The Nemours Medical Office Building is proposed on land that is planned for employment use, and the land is currently zoned IS (Institutional Service). The proposed healthcare facility generally aligns with both the Future Land Use Map and the existing zoning. The use is also complimentary to the Bayhealth Hospital, which was previously approved for construction on the same tax parcel.

Relevant Projects in the DelDOT Capital Transportation Program

Currently, there are no DelDOT capital projects within the area of study.

Trip Generation

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

- Nemours Medical Office Building
 - 85,000 SF Medical Office Building (ITE Land Use Code 720)

Table 1
MEDICAL OFFICE BUILDING PEAK HOUR TRIP GENERATION – ORIGINAL TOA

Land Use	Weekday AM Peak Hour			Weekday PM Peak Hour		
	In	Out	Total	In	Out	Total
85,000 SF Medical Office Building	160	43	203	71	181	252
TOTAL TRIPS	160	43	203	71	181	252

Table 2
MEDICAL OFFICE BUILDING DAILY TRIP GENERATION – ORIGINAL TOA

Land Use	Weekday Daily		
	In	Out	Total
85,000 SF Medical Office Building	1631	1631	3262
TOTAL TRIPS	1631	1631	3262

For the TOA supplement with the additional 200,000 sf of medical office space, the TOA computed trip generation using the Tenth Edition of ITE Trip Generation, which was the current standard at the time the supplement was submitted. For this specific type and size of land use (200,000 sf of medical office building – Land Use Code 720), using the Tenth Edition results in a larger number of projected trips compared to the Ninth Edition, so the trip generation volumes utilized in the TOA supplement may be considered conservative. Becker Morgan did not update the previous trip generation calculations for the 85,000 sf of medical office building as calculated using the Ninth Edition for the original TOA.

Table 3
MEDICAL OFFICE BUILDING PEAK HOUR TRIP GENERATION – TOA SUPPLEMENT

Land Use	Weekday AM Peak Hour			Weekday PM Peak Hour		
	In	Out	Total	In	Out	Total
200,000 SF Medical Office Building	438	268	706	331	518	849
+85,000 SF MOB from Original TOA	160	43	203	71	181	252
TOTAL TRIPS	598	311	909	402	699	1101

Overview of TOA

Intersections examined:

- 1) Cedar Creek Road & Southbound Delaware Route 1 Ramps / Site Entrance
- 2) Wilkins Road & Gregory Boulevard / Site Entrance
- 3) Wilkins Road & Homestead Boulevard / Site Entrance
- 4) Cedar Creek Road & Wilkins Road

Conditions examined:

- 1) 2017 Existing (Case 1)
- 2) 2019 without Nemours Medical Office Building (Case 2)
- 3) 2019 with 85,000 sf Nemours Medical Office Building (Case 3)
- 4) 2020 with additional 200,000 sf medical office space (Case 4)

Peak hours evaluated: Weekday morning and evening peak hours

Committed developments considered:

- 1) Bayhealth Hospital (350k sf hospital and ambulatory care facility)
- 2) Hearthstone Manor I (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)
- 5) Cabbage Pond Estates (97 single-family detached houses)
- 6) Cypress Creek Estates (78 single-family detached houses)
- 7) Mission Estates (25 single-family detached houses)
- 8) Wickersham (200 townhouses)

Intersection Descriptions

1) Cedar Creek Road & Southbound Delaware Route 1 Ramps / Site Entrance

Type of Control: existing two-way stop controlled (T-intersection); proposed two-way stop controlled (four-leg intersection)

Eastbound approach: (Proposed Site Driveway) proposed one left-turn lane, one through lane and one channelized right-turn lane, stop controlled

Westbound approach: (DE Route 1 SB Ramps) existing one left-turn lane and one channelized right-turn lane, stop controlled; proposed one left-turn lane, one through lane and one channelized right-turn lane, stop controlled

Northbound approach: (Cedar Creek Road) existing one through lane and one channelized right-turn lane; proposed one left-turn lane, one through lane and one channelized right-turn lane

Southbound approach: (Cedar Creek Road) existing one left-turn lane and one through lane; proposed one left-turn lane, one through lane and one channelized right-turn lane

2) Wilkins Road & Gregory Boulevard / Site Entrance

Type of Control: existing two-way stop controlled (T-intersection); proposed two-way stop controlled (four-leg intersection)

Eastbound Approach: (Wilkins Road) existing one shared through/left-turn lane; proposed one left-turn lane, one through lane and one right-turn lane

Westbound Approach: (Wilkins Road) existing one shared through/right-turn lane; proposed one left-turn lane and one shared through/right-turn lane

Northbound Approach: (Proposed Site Driveway) proposed one shared through/left-turn lane and one right-turn lane, stop controlled

Southbound Approach: (Gregory Boulevard) existing one shared left/right-turn lane, stop controlled; proposed one shared left/through/right-turn lane, stop controlled

3) Wilkins Road & Homestead Boulevard / Site Entrance

Type of Control: existing two-way stop controlled (T-intersection); proposed two-way stop controlled (four-leg intersection)

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

Westbound Approach: (Wilkins Road) existing one through lane and one right-turn lane; proposed one shared through/left-turn lane and one right-turn lane

Northbound Approach: (Proposed Site Driveway) proposed one shared through/left-turn lane and one right-turn lane, stop controlled

Southbound Approach: (Homestead Boulevard) existing one left-turn lane and one right-turn lane, stop controlled; proposed one shared through/left-turn lane and one right-turn lane, stop controlled

4) Cedar Creek Road & Wilkins Road

Type of Control: signalized

Eastbound Approach: (Wilkins Road) one left-turn lane, one through lane, and one channelized right-turn lane

Westbound Approach: (Wilkins Road) one left-turn lane, one through lane, and one channelized right-turn lane

Northbound Approach: (Cedar Creek Road) one left-turn lane, one through lane, and one right-turn lane

Southbound Approach: (Cedar Creek Road) one left-turn lane, one through lane, and one right-turn lane

Safety Evaluation

Crash Data: The Delaware Crash Analysis Reporting System (CARS) data in the TOA covers December 19, 2014 – December 19, 2017. The data includes crashes within a 0.10-mile radius of each study intersection.

During the study period, there were no fatal crashes reported. There were also no crashes involving a pedestrian, pedalcyclist, or alcohol use. There does not appear to be any patterns of correctable crashes at the study intersections. A breakdown of all crashes by intersection is provided below.

Cedar Creek Road & DE Route 1 SB Ramps

Within the three-year study period, this intersection saw two crashes.

Both crashes occurred during daylight hours, however one of the crashes occurred under slushy conditions with blowing snow. According to the report narrative for this crash, the driver lost control on the slick roadway and subsequently hit a tree and a pole. The crash resulted in property damage only.

In the other crash at this intersection, the driver stated that he was on his way to pick up a friend from construction at the new hospital and was struck while attempting a northbound left turn into the temporary hospital driveway. It was determined the crash was the result of the driver failing to yield right-of-way to oncoming traffic. This crash resulted in personal injuries.

Wilkins Road & Gregory Boulevard

Within the three-year study period, one crash occurred near this intersection. According to the crash report, this was a crash involving one vehicle colliding with a fixed object. According to the narrative provided with the crash report, this crash was due to driver inattention. The driver of the vehicle was startled by a spider on the dashboard and subsequently drove off the roadway and hit a sign. This crash occurred under clear and dry weather conditions. This crash resulted in property damage only.

Wilkins Road & Homestead Boulevard

At the intersection of Wilkins Road and Homestead Boulevard, there were no crashes reported during the three-year study period.

Cedar Creek Road & Wilkins Road

The intersection of Cedar Creek Road & Wilkins saw seven crashes within the three-year study period. Three crashes resulted in personal injury, and four resulted in property damage only.

Of the seven crashes that occurred within this intersection, three occurred under rainy and wet surface conditions. The other four crashes occurred under dry, clear conditions. The primary contributing circumstances were failure to yield right of way (three crashes), following too close (one crash) and driving in a reckless manner (one crash). The other two crashes were categorized as “other.”

The manners of impact for this study area vary. There were three rear-end crashes, two angle crashes, one head-on crash, and one sideswipe (same direction) crash.

Based on the crash report narratives, one crash was caused by a medical condition. Additionally, three crashes occurred within the 0.10-mile study radius but were not directly related to the signalized intersection. There does not appear to be a pattern of correctable crashes at this intersection.

Sight Distance: No significant sight distance issues have been reported or indicated by crash data. The study area generally consists of straight and flat roadways and, and there are few potential sight distance obstructions. No significant issues were noted during field observations.

Transit, Pedestrian, and Bicycle Facilities

Existing transit service: There is no existing Delaware Transit Corporation (DTC) transit service in the immediate area of the Bayhealth Milford Medical Complex. The closest transit stop is located at the intersection of North Old State Road & Johnson Road (approximately 2.5 miles from the proposed development). This stop is served by DART bus route 303. The route runs between Dover and Georgetown and operates Monday-Friday from approximately 5am-9pm. Route 303 makes 11 trips in each direction daily, with service times focused on the morning, afternoon, and evening peak periods. The existing stops near North Old State Road & Johnson Road are marked with signage only and do not have other amenities (e.g. bus pad, bench, shelter). The route also has stops further north along North Old State Road and continuing onto South Walnut Street into Milford.

Planned transit service: Becker Morgan and McCormick Taylor contacted a representative of the Delaware Transit Corporation (DTC) for input on planned transit service and facilities within the project area. It appears that neither consultant received comments back from DTC. However, based on DelDOT's previous review of the Bayhealth Hospital, the developer should coordinate with DART to provide bus stops to be located near the site entrance on Cedar Creek Road and near the eastern entrance on Wilkins Road. Internal roads should be able to support transit buses for easy access and turnaround maneuvers on-site.

Existing bicycle and pedestrian facilities: According to the *Sussex County Bicycle Map* published by DelDOT, Cedar Creek Road (from Wilkins Road to Johnson Road) is classified as a Connector Bicycle Route with Bikeway. This section of roadway has variable width shoulders for bicycle use. The intersection of Cedar Creek Road & Wilkins Road has bicycle lanes marked between the through lane and right-turn lanes on all approaches. At the intersection of Cedar Creek Road & Southbound Delaware Route 1 Ramps, a bicycle lane is marked between the northbound through and right-turn lanes; this bicycle lane is also marked along the northbound departure of the intersection.

Wilkins Road (from Johnson Road to Cedar Creek Road) is identified as a Connector Bicycle Route without Bikeway. The only existing marked bicycle facility along Wilkins Road is the bicycle lane between the eastbound through and right-turn lanes at Cedar Creek Road.

Although outside the study area, it is noted that Delaware Bicycle Route 1 runs along Johnson Road and Cedar Creek Road just over ½ mile south of the proposed development. Currently the only numbered Statewide Bicycle Route, Delaware Bicycle Route 1 connects Centreville, New Castle County to Fenwick Island, Sussex County.

There are no existing pedestrian facilities within the study area. Walking is likely discouraged by several factors, including the lack of pedestrian infrastructure and surrounding automobile-oriented development patterns.

Planned bicycle and pedestrian facilities: Based on coordination with DelDOT, the proposed development may generate bicycle trips. It is recommended that indoor and outdoor bicycle facilities be installed on site. Examples include, but are not limited to, bicycle

racks/lockers/shelters, indoor showers/changing areas, and personal lockers. It is also recommended that the developer contact the City of Milford and Life Cycle bicycle shop to determine if bicycle racks can be provided through an existing program to install racks within the City of Milford. Additionally, all entrance and roadway improvements shall incorporate bicycle and pedestrian facilities. If a right turn lane is warranted, a five-foot bicycle lane shall be incorporated along the right turn lane; if a left turn lane is required, any roadway improvements shall include a shoulder matching the roadway classification.

Based on the site plan for the Bayhealth Hospital, a shared-use path (SUP) will be constructed along the site frontages on Cedar Creek Road and Wilkins Road. Internal sidewalk connections will be provided to the SUP along the driveways to Cedar Creek Road and the Wilkins Road & Gregory Boulevard intersection. Based on coordination with DelDOT, the proposed SUP should be extended further to the south along the Cedar Creek Road frontage.

Previous Comments

All substantive comments from DelDOT's Scoping Letter, Traffic Count Review, Preliminary TOA (PTOA) Review and other correspondence appear to have been addressed in the Final TOA submission. Subsequent to the TOA submission, DelDOT contacted Becker Morgan to request an update of the Signal Justification Study to include additional analyses, which they provided.

General HCS Analysis Comments

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

- 1) The original TOA utilized HCS 2010 (version 6.90) for all analyses. While the use of HCS 2010 was approved in the study's scope, McCormick Taylor utilized the most up to date HCS software available at the time of the review. This was HCS 7 (version 7.5). As of February 2018, DelDOT has mandated use of HCS 7 for all new projects. The TOA supplement utilized HCS 7.
- 2) For unsignalized intersections, the TOA and McCormick Taylor applied percent heavy vehicles (HV) by movement using existing data. For signalized intersections, the TOA and McCormick Taylor applied HV by lane group using existing data. The TOA and McCormick Taylor generally assumed the future HV to be the same as existing at all intersections or 3%, whichever was higher.
- 3) It appears that the TOA did not include buses in the determination of HV, while McCormick Taylor did include buses.
- 4) For existing conditions, the TOA and McCormick Taylor determined, for each intersection, overall intersection peak hour factors (PHF). For future conditions, the TOA and McCormick Taylor generally assumed the existing PHF.
- 5) For analyses of all intersections, the TOA and McCormick Taylor used a base saturation flow rate of 1,750 pc/hr/ln per DelDOT's Development Coordination Manual.
- 6) The HCS analyses included in the TOA did not always reflect the lane widths and grades measured in the field by McCormick Taylor. McCormick Taylor's HCS analyses incorporated our field-measured values.
- 7) At the existing signalized intersection, it appears that the TOA assumed right turn on red (RTOR) volumes to increase along with increases in overall right turn volumes. McCormick Taylor assumed the existing number of RTOR in future years for a more conservative analysis.

Table 4
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Operational Analysis for Nemours Medical Office Building
Report dated February 2018; Supplement dated May 2018
Prepared by Becker Morgan Group, Inc.

Unsignalized Intersection ¹ Two-Way Stop Control	LOS per TOA		LOS per McCormick Taylor	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
1) Cedar Creek Road & Southbound Delaware Route 1 Ramps / Site Entrance				
2017 Existing (Case 1) ²				
Westbound DE Route 1 Ramp	B (14.7)	C (17.0)	C (15.2)	C (17.9)
Southbound Cedar Creek Road - Left	A (8.0)	A (8.0)	A (8.1)	A (8.0)
2019 without Nemours Medical Office Building (Case 2) ³				
Eastbound Site Driveway	C (19.3)	C (21.9)	C (19.1)	C (24.0)
Westbound DE Route 1 Ramp	D (26.3)	D (27.2)	D (28.8) ⁴	E (37.8) ⁵
Northbound Cedar Creek Road – Left	A (7.6)	A (7.7)	A (7.6)	A (7.8)
Southbound Cedar Creek Road - Left	A (8.4)	A (8.2)	A (8.4)	A (8.3)
2019 with Nemours Medical Office Building (Case 3) ⁶				
Eastbound Site Driveway	C (24.3)	F (50.2)	C (24.6)	F (68.5) ⁷
Westbound DE Route 1 Ramp	E (41.5)	E (44.8) ⁸	F (52.2) ⁵	F (83.3) ⁹
Northbound Cedar Creek Road – Left	A (7.6)	A (7.8)	A (7.6)	A (7.8)
Southbound Cedar Creek Road - Left	A (8.4)	A (8.2)	A (8.4)	A (8.3)

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.

² The geometry coded for Case 1 PM in the TOA does not match existing conditions.

³ In the TOA, the Case 2 and Case 3 PM peak hour factor (PHF) was set to 0.92. The count data indicates a PHF of 0.88. McCormick Taylor assumed the existing PHF in Case 2 and Case 3.

⁴ The 95th percentile queue length is approximately three vehicles (75').

⁵ The 95th percentile queue length is approximately six vehicles (150').

⁶ Without opening the exclusive left-turn lanes on the eastbound and westbound approaches that will be temporarily striped (hatched out) as part of the Bayhealth Hospital development.

⁷ The 95th percentile queue length is approximately seven vehicles (175').

⁸ The TOA coded percent heavy vehicles for the WB left-turn movement as 3% while the Case 1 and Case 2 PM analyses used 9%. It is unclear why the percent heavy vehicle was lowered. It is also noted that based on the count data, the percent heavy vehicles should be 12% (buses and trucks).

⁹ The 95th percentile queue length is approximately ten vehicles (250').

Table 4 (continued)
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Operational Analysis for Nemours Medical Office Building
Report dated February 2018; Supplement dated May 2018
Prepared by Becker Morgan Group, Inc.

Unsignalized Intersection ¹⁰ Two-Way Stop Control	LOS per TOA		LOS per McCormick Taylor	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
1) Cedar Creek Road & Southbound Delaware Route 1 Ramps / Site Entrance				
2019 with Nemours Medical Office Building (Case 3) <i>with additional improvements</i> ¹¹				
Eastbound Site Driveway	C (22.1)	D (32.1)	C (22.4)	E (39.4) ¹³
Westbound DE Route 1 Ramp	D (27.4)	E (35.1) ¹²	D (32.4) ¹³	F (61.9) ¹⁴
Northbound Cedar Creek Road – Left	A (7.6)	A (7.8)	A (7.6)	A (7.8)
Southbound Cedar Creek Road - Left	A (8.4)	A (8.2)	A (8.4)	A (8.3)

Signalized Intersection ¹⁰	LOS per TOA		LOS per McCormick Taylor	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
1) Cedar Creek Road & Southbound Delaware Route 1 Ramps / Site Entrance				
2019 with Nemours Medical Office Building (Case 3)	-	-	B (11.3)	B (14.0)

¹⁰ 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.

¹¹ Analysis reflects opening the exclusive left-turn lanes on the eastbound and westbound approaches that will be temporarily striped (hatched out) as part of the Bayhealth Hospital development.

¹² The TOA coded percent heavy vehicles for the WB left-turn movement as 3% while the Case 1 and Case 2 PM analyses used 9%. It is unclear why the percent heavy vehicle was lowered. It is also noted that based on the count data, the percent heavy vehicles should be 12% (buses and trucks).

¹³ The 95th percentile queue length is approximately four vehicles (100').

¹⁴ The 95th percentile queue length is approximately nine vehicles (225').

Table 4 (continued)
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Operational Analysis for Nemours Medical Office Building
Report dated February 2018; Supplement dated May 2018
Prepared by Becker Morgan Group, Inc.

Signalized Intersection ¹⁵	LOS per TOA		LOS per McCormick Taylor	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
1) Cedar Creek Road & Southbound Delaware Route 1 Ramps / Site Entrance				
2020 with additional 200 ksf Medical Office (Case 4)	B (18.4)	C (22.2)	B (14.2)	B (17.5)

¹⁵ For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.

Table 5
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Operational Analysis for Nemours Medical Office Building
Report dated February 2018; Supplement dated May 2018
Prepared by Becker Morgan Group, Inc.

Unsignalized Intersection ¹⁶ Two-Way Stop Control	LOS per TOA		LOS per McCormick Taylor	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
2) Wilkins Road & Gregory Boulevard / Site Entrance ^{17,18}				
2019 without Nemours Medical Office Building (Case 2)				
Eastbound Wilkins Road – Left	A (7.7)	A (8.7)	A (7.7)	A (8.7)
Westbound Wilkins Road – Left	A (8.7)	A (8.0)	A (8.7)	A (8.0)
Northbound Site Driveway	C (17.5)	D (27.3)	C (17.6)	D (27.3)
Southbound Gregory Boulevard	B (14.7)	C (18.5)	C (15.7)	C (19.6)
2019 with Nemours Medical Office Building (Case 3)				
Eastbound Wilkins Road – Left	A (7.7)	A (8.7)	A (7.7)	A (8.7)
Westbound Wilkins Road – Left	A (8.7)	A (8.0)	A (8.7)	A (8.0)
Northbound Site Driveway	C (17.5)	D (27.3)	C (17.6)	D (27.3)
Southbound Gregory Boulevard	B (14.7)	C (18.5)	C (15.7)	C (19.6)
2020 with additional 200 ksf Medical Office (Case 4)				
Eastbound Wilkins Road – Left	A (7.9)	A (9.0)	A (7.9)	A (9.0)
Westbound Wilkins Road – Left	A (8.9)	A (8.3)	A (8.9)	A (8.3)
Northbound Site Driveway	C (21.7)	E (42.3)	C (21.7)	E (42.4) ¹⁹
Southbound Gregory Boulevard	C (18.6)	C (23.9)	C (19.4)	D (25.2)

¹⁶ 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.

¹⁷ At the time of the traffic counts, both side-street approaches were not active. Therefore, no existing analyses were completed.

¹⁸ In Cases 2-4, the TOA coded the eastbound approach with separate left-turn, through, and right-turn lanes. This is consistent with the site plan included in Appendix I of the TOA, but inconsistent with DelDOT's review of the Bayhealth Milford Medical Complex TOA (memorandum dated January 14, 2016). The previous TOA review states that the eastbound approach should be constructed with a shared left-turn/through lane and a right-turn lane. McCormick Taylor utilized the geometry with the eastbound separate left-turn lane as coded in the current Medical Office Building TOA and shown on the site plan.

¹⁹ The 95th percentile queue length is approximately three vehicles (75').

Table 6
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Operational Analysis for Nemours Medical Office Building
Report dated February 2018; Supplement dated May 2018
Prepared by Becker Morgan Group, Inc.

Unsignalized Intersection ²⁰ Two-Way Stop Control	LOS per TOA		LOS per McCormick Taylor	
	Weekday AM	Weekday PM ²¹	Weekday AM	Weekday PM ²¹
3) Wilkins Road & Homestead Boulevard / Site Entrance				
2017 Existing (Case 1) ²²				
Eastbound Wilkins Road – Left	A (7.6)	A (7.6)	A (7.6)	A (7.6)
Southbound Homestead Boulevard	A (9.7)	A (9.0)	B (10.1)	A (9.8)
2019 without Nemours Medical Office Building (Case 2)				
Eastbound Wilkins Road – Left	A (8.0)	A (9.2)	A (8.0)	A (9.3)
Westbound Wilkins Road – Left	A (8.1)	A (7.8)	A (8.1)	A (7.8)
Northbound Site Driveway	C (15.1)	C (19.8)	C (15.4)	C (22.2)
Southbound Homestead Boulevard	C (20.7)	C (24.8)	C (19.3)	C (23.9)
2019 with Nemours Medical Office Building (Case 3) ²³				
Eastbound Wilkins Road – Left	A (8.0)	A (9.2)	A (8.0)	A (9.3)
Westbound Wilkins Road – Left	A (8.2)	A (7.9)	A (8.2)	A (7.9)
Northbound Site Driveway	C (18.0)	D (32.1)	C (18.3)	E (41.1) ²⁴
Southbound Homestead Boulevard	C (20.5)	C (24.8)	C (20.2)	C (24.4)
2020 with additional 200 ksf Medical Office (Case 4) ²⁵				
Eastbound Wilkins Road – Left	A (8.0)	A (9.2)	A (8.0)	A (9.3)
Westbound Wilkins Road – Left	A (8.8)	A (8.2)	A (8.9)	A (8.3)
Northbound Site Driveway	C (24.7)	F (175.4)	D (26.9)	F (202.4) ²⁶
Southbound Homestead Boulevard	F (63.6)	F (59.5)	F (69.0) ²⁷	F (58.6)

²⁰ 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.

²¹ The TOA coded the PM peak hour factor (PHF) as 0.92. Based on the count data, McCormick Taylor coded the PM PHF as 0.90.

²² The TOA coded the existing geometry of the southbound Homestead Boulevard approach as a shared left-turn/right-turn lane. However, the existing geometry includes separate left-turn and right-turn lanes. McCormick Taylor coded the existing geometry to reflect the separate turn lanes.

²³ Analysis reflects the proposed eastbound right-turn lane.

²⁴ The 95th percentile queue length is approximately two vehicles (50').

²⁵ Analysis reflects the proposed eastbound right-turn lane, the proposed eastbound left-turn lane, and the proposed westbound left-turn lane.

²⁶ The 95th percentile queue length is approximately thirteen (13) vehicles (325').

²⁷ The 95th percentile queue length is approximately eight vehicles (200').

Table 7
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Operational Analysis for Nemours Medical Office Building
Report dated February 2018; Supplement dated May 2018
Prepared by Becker Morgan Group, Inc.

Signalized Intersection ²⁸	LOS per TOA		LOS per McCormick Taylor	
	Weekday AM	Weekday PM ²⁹	Weekday AM	Weekday PM ²⁹
4) Cedar Creek Road & Wilkins Road				
2017 Existing (Case 1)	B (14.4)	B (14.6)	B (13.8)	B (14.1)
2019 without Nemours Medical Office Building (Case 2)	B (16.6)	B (18.3)	B (17.4)	B (18.8)
2019 with Nemours Medical Office Building (Case 3)	B (17.2)	B (18.6)	B (17.9)	B (19.1)
2020 with additional 200 ksf Medical Office (Case 4)	B (19.6)	C (21.3)	B (20.0-)	C (22.4)

²⁸ 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.

²⁹ The TOA coded the PM peak hour factor (PHF) as 0.95. Based on the count data, McCormick Taylor coded the PM PHF as 0.88.