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

NICOLE MAJESKI
SECRETARY

August 5, 2024

Mr. D.J. Hughes, II, P.E.
Davis, Bowen & Friedel, Inc.
1 Park Avenue
Milford, DE 19963

Dear Mr. Hughes,

The enclosed Traffic Impact Study (TIS) review letter for the **DHCI – New Hospital** (Tax Parcels: (Tax Parcel: 1-17-01906-01-0500-00001) mixed use development has been completed under the responsible charge of a registered professional engineer whose firm is authorized to work in the State of Delaware. They have found the TIS to conform to DelDOT's Development Coordination Manual and other accepted practices and procedures for such studies. DelDOT accepts this letter and concurs with the recommendations. If you have any questions concerning this letter or the enclosed review letter, please contact me at Annamaria.Furmato@delaware.gov.

Sincerely,

Annamaria Furmato
TIS Group Project Engineer

AF:km
Enclosures
cc with enclosures: Edwin Robles, Division of Facilities Management
Ring Lardner, Davis, Bowen & Friedel, Inc.
Jeremy Rothwell, Town oof Smyrna
Kris Connelly, Kent County Planning and Zoning
Joanne M. Arellano, Johnson, Mirmiran, & Thompson, Inc.
Mir Wahed, Johnson, Mirmiran, & Thompson, Inc.
DelDOT Distribution

DelDOT

DelDOT Distribution

Brad Eaby, Deputy Attorney General
Shanté Hastings, Deputy Secretary / Director, Transportation Solutions (DOTS)
Mark Luszcz, Deputy Director, DelDOT Traffic, DOTS
Michael Simmons, Assistant Director, Project Development South, DOTS
Peter Haag, Chief Traffic Engineer, Traffic, DOTS
Wendy Carpenter, Traffic Calming & Subdivision Relations Manager, DelDOT Traffic, DOTS
Sean Humphrey, Traffic Engineer, DelDOT Traffic, DOTS
Matthew Lichtenstein, Central District Engineer, Central District
Steve McCabe, Central District Public Works Manager, Central District
Jared Kaufman, Service Development Planner, Delaware Transit Corporation
Tremica Cherry, Service Development Planner, Delaware Transit Corporation
Pamela Steinebach, Director, Planning
Todd Sammons, Assistant Director, Development Coordination
Wendy Polasko, Subdivision Engineer, Development Coordination
Susanne Laws, Expedited Review Coordinator, Development Coordination
Ryan Schroder, Expedited Subdivision Reviewer, Development Coordination
Anthony Aglio, Planning Supervisor, Statewide & Regional Planning
Sireen Muhtaseb, TIS Group Manager, Development Coordination
Philip Lindsey, TIS Group Engineer, Development Coordination
Ben Fisher, TIS Group Engineer, Development Coordination
Steve Bayer, Regional Transportation Planner, Statewide & Regional Planning

August 2, 2024

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

RE: Agreement No. 1945F
Project Number T202369005
Traffic Impact Study Services
Task 17-8 DHCI – New Hospital TIS

Dear Ms. Furmato:

Johnson, Mirmiran, and Thompson (JMT) has completed a review of the Traffic Impact Study (TIS) for the DHCI – New Hospital development which was prepared by Davis, Bowen & Friedel, Inc. dated May 2024. This review was assigned as Task Number 17-8. The report is prepared in a manner generally consistent with DelDOT's *Development Coordination Manual* and other Department standards.

The TIS evaluates the impacts of a proposed redevelopment of a campus operated by Delaware Facilities Management (DFM) in the Town of Smyrna in Kent County, Delaware. Per the TIS, the existing site is comprised of a 144 bed assisted-living facility, 29,817 square feet of general office, and 288,424 square feet of medical office space. The proposed redevelopment would be comprised of a 144 bed assisted-living facility, 100,816 square feet of general office space (which includes a 30,000 square foot DNREC Lab), and 352,596 square feet of medical office space. The result is a net increase of 70,999 square feet of general office space and 64,172 square feet of medical office space.

The site is located on the northwest side of Sunnyside Road (Kent Road 90and Kent Road 90A) The proposed site is on an approximately 58.04-acre parcel (Tax Parcel: 1-17-01906-01-0500-00001) which is currently zoned as I and R (Institutional and Recreational). The developer does not plan to rezone the land.

Three site access points exist for the existing development and a total of four access points are proposed along Sunnyside Road (as shown on Page 8): one full access opposite Friends Street (new), one rights-in/rights-out/lefts-in access opposite Belmont Avenue (existing), one gated emergency access (existing) between the two entrances located across from Friends Street and Belmont Avenue, and one rights-in/rights-out access near US Route 13 (existing). There is also an existing cemetery access at the west side of the parcel that was not analyzed as part of the TIS. Construction is anticipated to be complete by 2033.

As part of the TIS, two build scenarios were evaluated:

- Case 3a – 2033 with 30,000 square foot DNREC Lab only
- Case 3 – 2033 with full development

The trip generation for the proposed development was developed based on rates calculated from traffic counts at the existing development and using ITE Land Use Code 710 (General Office) for the proposed additional 40,999 square feet of public health lab space (based on serving 110 employees of 190 total) plus a 30,000 square foot DNREC Lab. The following table summarizes the trip generation utilized in the TIS.

Trip Generation for the DHCI-New Hospital

	Weekday	AM Peak Hour			PM Peak Hour		
		Enter	Exit	Total	Enter	Exit	Total
Existing Site Traffic	2,060	178	28	206	6	169	175
Proposed Redevelopment	3,334	321	51	372	38	297	335
Projected Increase	**1,274**	**143**	**23**	**166**	**32**	**128**	**160**

DelDOT has one relevant project within or surrounding the study area: including the 2019 Hazard Elimination Program (HEP) – Task 1 Site J: Smyrna Toll Plaza Road study. HEP Site J includes Smyrna Toll Plaza Road from US Route 13 to 0.26 miles east of US Route 13 and includes one study intersection: US Route 13 and Smyrna Toll Plaza Road. The HEP Site J evaluation included a crash summary and field observations. The evaluation also included preliminary recommendations including striping improvements. The intersection was also recommended as a candidate for the 2020 ERLSP (Electronic Red Light Safety Program) site selection due to a southbound red light running crash cluster.

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

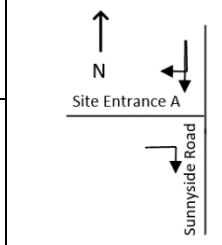
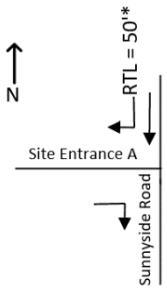
None of the study intersections exhibit level of service (LOS) deficiencies with or without the proposed development.

Although the Sunnyside Road intersection with Site Entrance B/East Belmont Avenue does not exhibit LOS deficiencies under existing or future conditions (with or without the proposed development), the TIS proposed to convert the existing two-way stop-controlled intersection to an all-way stop control. With all-way stop-control, the intersection would operate at acceptable levels of service. As a result of the intersection results, DelDOT is amenable to consider all-way stop control contingent on if the Town of Smyrna is in agreement with the installation. As such, the developer should obtain a resolution from the Town of Smyrna indicating their concurrence to convert the intersection to all-way-stop control.

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

1. The developer shall improve the State-maintained Roads on which they front (Sunnyside Road), within the limits of their frontage. The improvements shall include both directions of travel, regardless of whether the developer's lands are on one or both sides of the road. "Frontage" means the length along the state right-of-way of a single property tract where an entrance is proposed or required. If a single property tract has frontage along multiple roadways, any segment of roadway including an entrance shall be improved to meet DelDOT's Functional Classification criteria as found in Section 1.1 of the Development Coordination Manual and elsewhere therein, and/or improvements established in the Traffic Operational Analysis and/or Traffic Impact Study. "Secondary Frontage" means the length along the state right-of-way of a single property tract where no entrance is proposed or required. The segment of roadway may be upgraded by improving the pavement condition of the existing roadway width. The Pavement Management Section and Subdivision Section will determine the requirements to improve the pavement condition.

2. The developer should install a westbound right turn lane at the existing unsignalized Site Entrance A rights-in/rights-out only access for the proposed DHCI – New Hospital development along Sunnyside Road, approximately 250 feet west of US Route 13. The intersection should be consistent with the lane configurations shown in the table below.

Approach	Current Configuration		Approach	Proposed Configuration	
Westbound Sunnyside Road	One shared through/right turn lane		Westbound Sunnyside Road	One through lane and one right turn lane*	
Southbound DHCI – New Hospital Entrance A	One right turn lane		Southbound DHCI – New Hospital Entrance A	No change	

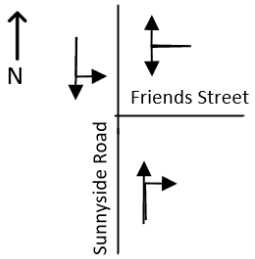
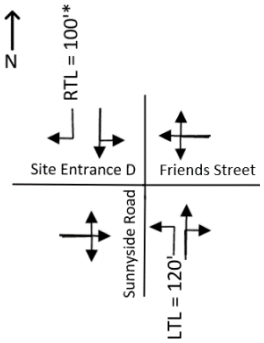
*A right turn lane is not warranted for a radius greater than 50 feet.

Based on DelDOT's *Development Coordination Manual*, the recommended minimum storage length (excluding taper) of the westbound right turn lane is 50 feet (for a radius less than 50 feet). The projected queues from the HCS analysis can be accommodated within the recommended storage lengths. The developer should design the turn treatment based on the required storage and taper lengths determined by the Development Coordination Section during the Entrance Plan review.

3. The developer should coordinate with the Town of Smyrna and DelDOT Traffic on the implementation of converting the existing unsignalized Site Entrance B access along Sunnyside Road, across from East Belmont Avenue, to an all-way stop-control (AWSC). The existing lane configurations at the intersection would be maintained.

4. The developer should maintain the existing unsignalized Site Entrance C access for the proposed DHCI – New Hospital development along Sunnyside Road and restrict the entrance to be emergency access only. The developer should physically restrict the entrance to be emergency access only based on the treatment determined by the Development Coordination Section during the Entrance Plan review.

5. The developer should construct an unsignalized Site Entrance D access for the proposed DHCI – New Hospital development along Sunnyside Road, across from Friends Street. The intersection should be consistent with the lane configurations shown in the table below.

Approach	Current Configuration		Approach	Proposed Configuration	
Eastbound Sunnyside Road	One shared through/right turn lane		Eastbound Sunnyside Road	One left turn lane and one shared through/right turn lane.	
Westbound Sunnyside Road	One shared left turn/through lane		Westbound Sunnyside Road	One shared left turn/through lane and one right turn lane	
Northbound Friends Street	One shared left turn/right turn lane		Northbound Friends Street	One shared left turn/through/ right turn lane	
Southbound Site Entrance D	Approach does not exist		Southbound Site Entrance D	One shared left turn/through/ right turn lane	

*A right turn lane is not warranted for a radius greater than 50 feet.

Based on DelDOT's *Development Coordination Manual*, the recommended minimum storage length (excluding taper) of the westbound Sunnyside Road right turn lane is 100 feet (based on a radius less than 50 feet) and the eastbound Sunnyside Road left turn lane is 120 feet. The projected queues from the HCS analysis can be accommodated within the recommended storage lengths. The recommended storage lengths were determined using a

25 miles per hour posted speed limit north of Friends Street (for the westbound right turn lane) and a 40 miles per hour posted speed limit south of Friends Street (for the eastbound left turn lane). The developer should design the turn lanes based on the required storage and taper lengths determined by the Development Coordination Section during the Entrance Plan review.

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

    a. An internal connection from the existing sidewalks into the site should be provided.

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

    c. Minimum five-foot wide bicycle lanes should be incorporated in the right turn lane and shoulder along the Sunnyside Road approaches to the site entrances.

    d. Utility covers should be moved outside of any designated bicycle lanes and any proposed sidewalks or should be flush with the pavement.

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

Improvements in this TIS may be considered "significant" under DelDOT's Work Zone Safety and Mobility Procedures and Guidelines. These guidelines are available on DelDOT's website at https://www.deldot.gov/Publications/manuals/de_mutcd/index.shtml.

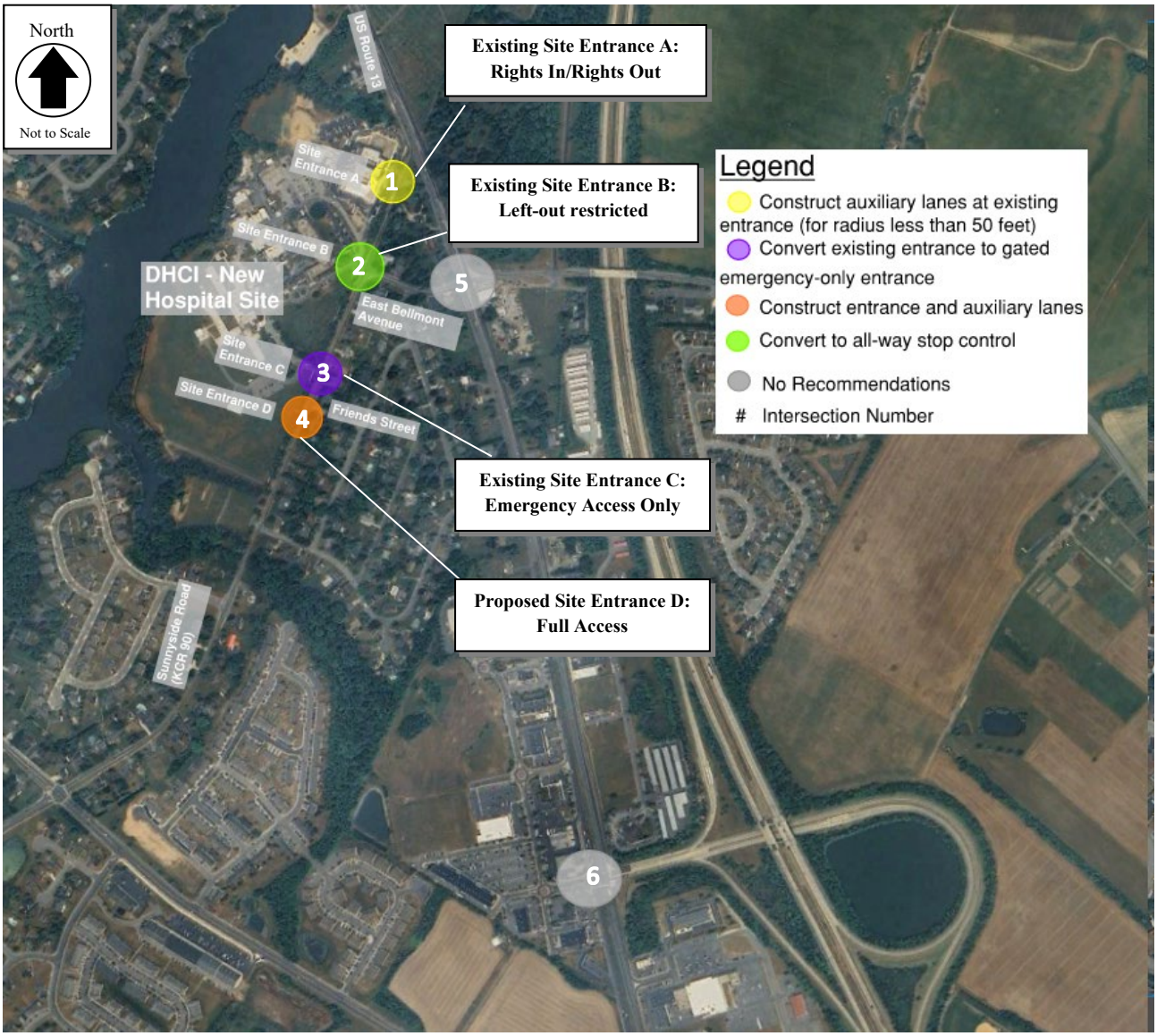
Additional details on our review of the TIS are attached. Please contact me at (302) 266-9600 if you have any questions concerning this review.

Sincerely,
Johnson, Mirmiran, and Thompson, Inc.

Joanne M. Arellano, P.E., PTOE

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

Recommendations Map



General Information
Report date: May 2024
Prepared by: Davis, Bowen & Friedel, Inc.
Prepared for: Division of Facilities Management
Tax Parcels: 1-17-01906-01-0500-00001
Generally consistent with DelDOT's Development Coordination Manual (DCM): Yes

Project Description and Background

Description: Per the TIS, the existing site is comprised of a 144 bed assisted-living facility, 29,817 square feet of general office, and 288,424 square feet of medical office. The proposed redevelopment would be comprised of a 144 bed assisted-living facility, 100,816 square feet of general office space (which includes a 30,000 square feet DNREC Lab), and 352,596 square feet of medical office space. The result is a net increase of 70,999 square feet of general office space and 64,172 square feet of medical office space.
Location: The site is located on the northwest side of Sunnyside Road in the Town of Smyrna, Delaware.
Amount of Land to be developed: An approximately 58.04-acre portion assemblage of parcels.
Land Use approval(s) needed: Entrance Plan.
Proposed completion date: 2033
Proposed access locations:

- A rights-in/rights-out along the southbound only segment of Sunnyside Road [existing];
- A rights-in/rights-out/lefts-in opposite Belmont Avenue [existing];
- A gated emergency access [existing full access for hospital];
- A new full access opposite Friends Street; and
- A gated access connecting to the cemetery gated access.

Daily Traffic Volumes:

- 2023 Average Annual Daily Traffic on Sunnyside Road: 4,721 vehicles per day

*AADT is calculated from daily volume data contained within the TIS report from June 7, 2023 to June 13, 2023.

Site Map

**Graphic is an approximation based on the DHCI Site Plan – Overview prepared by Davis, Bowel & Friedel, Inc. dated January 2023.*

Relevant and On-going Projects

DelDOT has one relevant project within or surrounding the study area: including the 2019 Hazard Elimination Program (HEP) – Task 1 Site J: Smyrna Toll Plaza Road study. HEP Site J includes Smyrna Toll Plaza Road from US Route 13 to 0.26 miles east of US Route 13 and includes one study intersection: US Route 13 and Smyrna Toll Plaza Road. The HEP Site J evaluation included a crash summary and field observations. The evaluation also included preliminary recommendations including striping improvements. The intersection was also recommended as a candidate for the 2020 ERLSP (Electronic Red Light Safety Program) site selection due to a southbound red light running crash cluster.

Livable Delaware

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

Location with respect to the Strategies for State Policies and Spending Map of Delaware:
The proposed development is located within Investment Level 1.

Investment Level 1

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

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

Proposed Development's Compatibility with Livable Delaware:
The proposed site is located within Investment 1. In Investment Level 1, efforts will be focused on creating a healthy lifestyle by contributing to infrastructure to support individuals who are aging or disabled. Therefore, the proposed development is consistent with the 2020 update of Livable Delaware Strategies for State Policies and Spending.

Comprehensive Plan

(Source: 2020 Smyrna Comprehensive Plan)

Smyrna Comprehensive Plan:
Per the Existing Zoning, the development is zoned Institutional/Community Use. Per the Future Land Use map, the developed is zoned Institutional.

Proposed Development's Compatibility with Smyrna Comprehensive Plan:
The development exists on the property zoned as Institutional/Community and the Future Land Use map indicates the property to be maintained as Institutional. As such, the proposed development is generally consistent with the comprehensive plan.

Trip Generation

The trip generation for the proposed development was developed based on rates calculated from traffic counts at the existing development for the proposed 64,172 square feet of additional medical office space and using ITE Land Use Code 710 (General Office) for the proposed additional 40,999 square feet of public health lab space (based on serving 110 employees of 190 total) plus a 30,000 square feet DNREC Lab. The following table summarizes the trip generation utilized in the TIS.

Table 1

Trip Generation for the DHCI-New Hospital

	Weekday	AM Peak Hour			PM Peak Hour		
		Enter	Exit	Total	Enter	Exit	Total
Existing Site Traffic	2,060	178	28	206	6	169	175
Proposed Redevelopment	3,334	321	51	372	38	297	335
Projected Increase	**1,274**	**143**	**23**	**166**	**32**	**128**	**160**

Trip generation was reviewed by DelDOT as part of the Preliminary TIS (PTIS) and Final TIS submissions.

Overview of TIS

Intersections examined:

1. Sunnyside Road (K090A) / Site Entrance A (RIRO)
2. Sunnyside Road (K090) / Site Entrance B / East Belmont Avenue (K090)
3. Sunnyside Road (K090) / Site Entrance C (Emergency Access)
4. Sunnyside Road (K090) / Site Entrance D / Friends Street
5. US Route 13 / Smyrna Leipsic Road (K012)
6. US Route 13 / Smyrna Toll Plaza Road to DE Route 1 (K150B)

Conditions Examined:

1. Case 1 – 2023 existing
2. Case 2 – 2033 without development
3. Case 3 – 2033 with development
4. Case 3A – 2033 DNREC Lab Only

Committed Developments Considered:

1. Worthington – 40 single-family detached houses, 206 duplex units (60 occupied), 303 townhouses (123 occupied) [Smyrna]
2. Willow Wood – 498 single-family detached houses, completed, [Kent County] - completed
3. Big Oak – 49 single family detached houses (20 occupied) [Kent County]
4. Centerville and Graceville – 309 single family houses, 826 multifamily mid-rise units, and 500 student elementary school. [Smyrna]
5. Simons Corner Apartments – 270 low-rise apartments [Smyrna]

The committed development information contained within the TIS report supersede the May 15, 2023 scoping meeting.

Peak Hours Evaluated: Weekday AM and PM.

Intersection Descriptions

1. **Sunnyside Road (K090A) / Site Entrance A**

Type of Control: Existing rights-in/rights-out.
Southbound Approach: (Site Entrance A) Existing one right turn lane.
Westbound Approach: (Sunnyside Road) Existing one shared through/right-turn lane.

2. **Sunnyside Road (K090) / Site Entrance B / East Belmont Avenue (K090)**

Type of Control: Existing two way stop control with left out restricted from Site Entrance B. Sunnyside Road is one-way westbound, east of the intersection.
Southbound Approach: (Site Entrance B) Existing one shared through/right turn lane.
Northbound Approach: (East Belmont Avenue) Existing one shared left turn/through lane.
Eastbound Approach: (Sunnyside Road) Existing one left turn lane and one right turn lane.
Westbound Approach: (Sunnyside Road) Existing one shared through/right turn lane.

3. **Sunnyside Road (K090) / Site Entrance C**

Type of Control: Existing two way stop control.
Southbound Approach: (Site Entrance C) Existing one shared left-turn/right-turn lane.
Eastbound Approach: (Sunnyside Road) Existing one shared left-turn/through lane.
Westbound Approach: (Sunnyside Road) Existing one shared right turn/through lane.

4. **Sunnyside Road (K090) / Site Entrance D / Friends Street**

Type of Control: Existing two way stop control
Southbound Approach: (Site Entrance D) Proposed one shared left turn/through/right-turn lane.
Northbound Approach: (Friends Street) Existing one shared left turn/right turn lane; Proposed one shared left turn/through/right turn lane.

Eastbound Approach: (Sunnyside Road) Existing one shared through/right turn lane; Proposed one shared left turn/through/right turn lane.
Westbound Approach: (Sunnyside Road) Existing one shared left turn/through lane; Proposed one shared left turn/through/right turn lane.

5. **US Route 13 / Smyrna Leipsic Road (K012)**

Type of Control: Existing signalized intersection
Eastbound Approach: (Smyrna Leipsic Road) Existing one shared left-turn/thru and one right-turn lane.
Westbound Approach: (Smyrna Leipsic Road) Existing one shared left-turn/thru and one right-turn lane.
Northbound Approach: (US Route 13) Existing one left turn lane, two through lanes, and one right turn lane
Southbound Approach: (US Route 13) Existing one left turn lane, two through lanes, and one right turn lane

6. **US Route 13 / Smyrna Toll Plaza Road to DE Route 1 (K150B)**

Type of Control: Existing signalized intersection
Eastbound Approach: (Simon's Corner) Existing one left turn lane, one shared left turn/through lane, and one right turn lane.
Westbound Approach: (Smyrna Toll Plaza Road) Existing one left turn lane, one shared left turn/through lane, and one right turn lane
Northbound Approach: (US Route 13) Existing one left turn lane, two through lanes, and one right turn lane
Southbound Approach: (US Route 13) Existing one left turn lane, two through lanes, and one right turn lane

Transit, Pedestrian, and Bicycle Facilities

Existing transit service: Per DelDOT Gateway, DART does not provide transit along Sunnyside Road. DART operates Routes 120 and 302 along US 13.

Planned transit service: Per email correspondence on February 8, 2024, William Williamson, a planer from DART/Delaware Transit Corporation did not have any comments for the site.

Existing bicycle and pedestrian facilities: A 5-feet wide sidewalk exists along the site frontage.

Planned bicycle and pedestrian facilities: Per email correspondence on February 8, 2024 from Anthony Aglio, DelDOT's Bicycle Coordinator, there are no comments for the proposed site.

Bicycle Level of Traffic Stress in Delaware: Researchers with the Mineta Transportation Institute developed a framework to measure low-stress connectivity, which can be used to evaluate and guide bicycle network planning. Bicycle LTS analysis uses factors such as the speed of traffic, volume of traffic, and the number of lanes to rate each roadway segment on a scale of 1 to 4, where

1 is a low-stress place to ride and 4 is a high-stress place to ride. It analyzes the total connectivity of a network to evaluate how many destinations can be accessed using low-stress routes. Developed by planners at the Delaware Department of Transportation (DelDOT), the bicycle Level of Traffic Stress (LTS) model will be applied to bicycle system planning and evaluation throughout the state. The Bicycle LTS for the roadways under existing conditions along the site frontage are summarized below. The Bicycle LTS was determined utilizing the DelDOT Gateway.

- Sunnyside Road: 2, 3, and 4

Crash Evaluation

Per the crash data included in the TIS from August 16, 2020 to August 16, 2023, provided by the Delaware Department of Transportation (DelDOT), a total of 104 crashes were reported within the study area. Of the 104 crashes, 66 were at the US Route 13 intersection with the Toll Plaza, 30 were at the US Route 13 intersection with East Belmont Avenue, and eight crashes were reported along the Sunnyside Road site frontage. Of the reported crashes, 46 were front to rear crashes. There were no fatalities reported.

All-Way Stop-Control Warrant Evaluation

An all-way stop-control warrant evaluation was conducted based on the DEMUTCD for the Sunnyside Road intersection with Site Entrance B/East Belmont Avenue. The Criteria A and Criteria B warrants were not met. The volumes at the intersection reached the Criteria C warrant for minimum volumes during Case 3; however, the projected minor-street average delay (27.8 seconds per vehicle) did not meet the required minimum of 30 seconds per vehicle during the highest hour. Based on this evaluation, an all-way stop-control is not warranted at the intersection.

Previous Comments

All comments from the December 21, 2023 Preliminary TIS Review Letter were addressed in the Final TIS.

Sight Distance Evaluation

No sight distance constraints were noted at the proposed site entrance locations per a field visit conducted on February 2, 2024.

General HCS Analysis Comments

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

1) Both the TIS and JMT used HCS 2023 to complete the analysis.

2) Per DelDOT's *Development Coordination Manual*, JMT utilized the future intersection PHF of 0.80 for roadways with less than 500 vph, 0.88 for roadways between 500 and 1,000 vph, and 0.92 for roadways with more than 1,000 vph, or used the existing PHF if higher, whereas the TIS utilized various PHF.

3) JMT utilized the existing heavy vehicle percentage for each movement greater than 100 vph in the Case 1 existing scenario while the TIS utilized the existing heavy vehicle percentage for each movement.

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

5) Per DelDOT's *Development Coordination Manual*, JMT used a heavy vehicle percentage of 3% for each movement greater than 100 vph in Case 2 and Case 3 future scenario analysis, unless the existing heavy vehicle percentage was greater than 3% and there was no significant increase of vehicles along that movement, in which case the existing heavy vehicle percentage was used for the analysis of future scenarios, whereas the TIS used different values.

6) Both JMT and the TIS utilized existing signal timings for existing conditions (Case 1).

7) The TIS modeled the two signals as uncoordinated on the same corridor with offsets, while JMT modeled the two signals on separate coordination systems.

8) As part of the TIS, two build scenarios were evaluated:
    - Case 3a – 2033 with 30,000 square foot DNREC Lab only
    - Case 3 – 2033 with development

Table 2
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for DHCI - New Hospital
Report Dated: January 2024
Prepared by: Davis, Bowen & Friedel, Inc.

Unsignalized Intersection Two-Way Stop Control[1]	**LOS per TIS**		**LOS per JMT**	
Site Entrance A (RI/RO) and Sunnyside Road (Kent County Road 90A)	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Case 1 - Existing 2023				
Southbound Site Entrance A Approach	A (9.1)	B (10.7)	A (9.1)	B (10.7)
Case 2 - 2033 without Development				
Southbound Site Entrance A Approach	A (9.4)	B (11.4)	A (9.4)	B (10.7)
Case 3A - 2033 DNREC Lab Only[2]				
Southbound Site Entrance A Approach	A (9.5)	B (11.9)	A (9.5)	B (11.1)
Case 3 – 2033 with Development[2]				
Southbound Site Entrance A Approach	A (9.6)	B (12.1)	A (9.5)	B (11.2)

[1] For signalized and unsignalized analysis, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds.
[2] JMT modeled the southbound approach of the intersection as one through lane and one right turn lane, whereas the TIS modeled the southbound approach as one shared through/right turn lane.

Table 3
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for DHCI - New Hospital
Report Dated: January 2024
Prepared by: Davis, Bowen & Friedel, Inc.

Unsignalized Intersection Two-Way Stop Control[1]	**LOS per TIS**		**LOS per JMT**	
Site Entrance B / East Belmont Avenue (Kent County Road 90) and Sunnyside Road (Kent County Road 90A)[3]	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Case 1 - Existing 2023[4]				
Eastbound Sunnyside Road Left Turn	A (7.7)	A (7.8)	A (7.7)	A (7.8)
Westbound Sunnyside Road Left Turn	A (9.2)	A (9.4)	A (8.2)	A (8.3)
Northbound East Belmont Avenue Approach	B (12.2)	C (19.9)	B (12.2)	C (17.4)
Southbound Site Entrance B Approach	B (11.7)	C (19.1)	B (10.2)	B (13.9)
Case 2 - 2033 without Development				
Eastbound Sunnyside Road Left Turn	A (7.7)	A (7.9)	A (7.7)	A (7.9)
Westbound Sunnyside Road Left Turn	A (9.3)	A (9.2)	A (8.2)	A (8.3)
Northbound East Belmont Avenue Approach	B (12.0)	C (17.5)	B (12.2)	C (17.0)
Southbound Site Entrance B Approach	B (12.0)	C (17.1)	B (10.3)	B (13.8)
Case 3A - 2033 DNREC Lab Only				
Eastbound Sunnyside Road Left Turn	A (7.8)	A (7.9)	A (7.8)	A (8.0)
Westbound Sunnyside Road Left Turn	A (9.3)	A (9.3)	A (8.2)	A (8.4)
Northbound East Belmont Avenue Approach	B (14.3)	D (30.0)	B (14.8)	C (24.3)
Southbound Site Entrance B Approach	B (12.6)	D (25.3)	B (10.8)	C (17.4)

[3] The TIS modeled the northbound right movement as non-channelized, whereas JMT modeled the northbound right movement as channelized.
[4] The TIS utilized the PM northbound right volume from Case 2 instead of the PM northbound right volume for Case 1, while JMT utilized the Case 1 PM northbound right volume.

Table 3 (Continued)
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for DHCI - New Hospital
Report Dated: January 2024
Prepared by: Davis, Bowen & Friedel, Inc.

Unsignalized Intersection Two-Way Stop Control[1]	**LOS per TIS**		**LOS per JMT**	
Site Entrance B / East Belmont Avenue (Kent County Road 90) and Sunnyside Road (Kent County Road 90A)	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Case 3A - 2033 DNREC Lab Only *with auxiliary lanes*				
Eastbound Sunnyside Road Left Turn	-	-	A (7.8)	A (8.0)
Westbound Sunnyside Road Left Turn	-	-	A (8.2)	A (8.4)
Northbound East Belmont Avenue Approach	-	-	B (14.8)	C (23.8)
Southbound Site Entrance B Approach	-	-	B (10.6)	C (17.1)
Case 3 – 2033 with Development				
Eastbound Sunnyside Road Left Turn	A (7.8)	A (7.9)	A (7.8)	A (8.0)
Westbound Sunnyside Road Left Turn	A (9.4)	A (9.4)	A (8.2)	A (8.4)
Northbound East Belmont Avenue Approach	C (15.3)	D (32.7)	C (16.0)	D (27.8)
Southbound Site Entrance B Approach	B (13.1)	D (27.0)	B (11.0)	C (19.0)
Case 3 – 2033 with Development *with auxiliary lanes*				
Eastbound Sunnyside Road Left Turn	-	-	A (7.8)	A (8.0)
Westbound Sunnyside Road Left Turn	-	-	A (8.2)	A (8.4)
Northbound East Belmont Avenue Approach	-	-	C (16.0)	D (27.0)
Southbound Site Entrance B Approach	-	-	B (10.8)	C (18.5)

Table 3 (Continued)
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for DHCI - New Hospital
Report Dated: January 2024
Prepared by: Davis, Bowen & Friedel, Inc.

Unsignalized Intersection All-Way Stop Control[1]	**LOS per TIS**		**LOS per JMT**	
Site Entrance B / East Belmont Avenue (Kent County Road 90) and Sunnyside Road (Kent County Road 90A)	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Case 2 – 2033 without Development				
Eastbound Sunnyside Road Approach	-	-	A (9.6)	A (9.6)
Westbound Sunnyside Road Approach	-	-	A (9.3)	B (12.6)
Northbound East Belmont Avenue Approach	-	-	A (9.3)	A (9.7)
Southbound Site Entrance B Approach	-	-	A (8.3)	A (9.7)
Overall	-	-	A (9.4)	B (11.0)
Case 3A – 2033 DNREC Building				
Eastbound Sunnyside Road Approach	-	-	B (10.3)	B (10.6)
Westbound Sunnyside Road Approach	-	-	B (10.0)	C (15.4)
Northbound East Belmont Avenue Approach	-	-	B (10.4)	B (10.3)
Southbound Site Entrance B Approach	-	-	A (8.7)	B (11.2)
Overall	-	-	B (10.2)	B (12.7)
Case 3 – 2033 with Development				
Eastbound Sunnyside Road Approach	B (10.3)	B (10.5)	B (10.7)	B (10.9)
Westbound Sunnyside Road Approach	B (10.1)	C (15.2)	B (10.3)	C (16.5)
Northbound East Belmont Avenue Approach	B (10.7)	B (10.3)	B (10.9)	B (10.6)
Southbound Site Entrance B Approach	A (8.7)	B (11.3)	A (8.9)	B (11.8)
Overall	B (10.3)	B (12.7)	B (10.6)	B (13.4)

Table 4
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for DHCI - New Hospital
Report Dated: January 2024
Prepared by: Davis, Bowen & Friedel, Inc.

Unsignalized Intersection Two-Way Stop Control[1]	**LOS per TIS**		**LOS per JMT**	
Site Entrance C (Emergency Access and Sunnyside Road (Kent County Road 90A)[5]	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Case 1 - Existing 2023				
Eastbound Sunnyside Road Left Turn	A (7.6)	A (8.1)	A (7.6)	A (8.0)
Southbound Site Entrance C Approach	B (11.3)	B (11.5)	B (11.0)	B (11.1)
Case 2 - 2033 without Development				
Eastbound Sunnyside Road Left Turn	A (7.6)	A (8.1)	A (7.7)	A (8.1)
Southbound Site Entrance C Approach	B (11.9)	B (11.8)	B (12.1)	B (11.7)
Case 3A - 2033 DNREC Lab Only				
Eastbound Sunnyside Road Left Turn	-	-	-	-
Southbound Site Entrance C Approach	-	-	-	-
Case 3 – 2033 with Development				
Eastbound Sunnyside Road Left Turn	-	-	-	-
Southbound Site Entrance C Approach	-	-	-	-

[5] The existing southbound Site Entrance C would be converted to a gated emergency only entrance in Cases 3 and 3A. Consequently, Case 3 and Case 3A LOS results were not reported by both the TIS and JMT.

Table 5
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for DHCI - New Hospital
Report Dated: January 2024
Prepared by: Davis, Bowen & Friedel, Inc.

Unsignalized Intersection Two-Way Stop Control[1]	**LOS per TIS**		**LOS per JMT**	
Site Entrance D / Friends Street and Sunnyside Road (Kent County Road 90A)	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Case 1 - Existing 2023				
Eastbound Sunnyside Road Left Turn	-	-	-	-
Westbound Sunnyside Road Left Turn	A (7.8)	A (7.6)	A (7.8)	A (7.6)
Northbound Friends Street Approach	B (11.2)	B (12.2)	B (11.1)	B (12.2)
Southbound Site Entrance D Approach	-	-	-	-
Case 2 - 2033 without Development				
Eastbound Sunnyside Road Left Turn	-	-	-	-
Westbound Sunnyside Road Left Turn	A (8.0)	A (7.7)	A (8.0)	A (7.7)
Northbound Friends Street Approach	B (12.2)	B (13.3)	B (12.2)	B (13.3)
Southbound Site Entrance D Approach	-	-	-	-
Case 3A - 2033 DNREC Lab Only[6]				
Eastbound Sunnyside Road Left Turn	A (7.7)	A (8.2)	A (7.7)	A (8.2)
Westbound Sunnyside Road Left Turn	A (8.0)	A (7.7)	A (8.0)	A (7.7)
Northbound Friends Street Approach	B (14.1)	B (15.3)	B (14.0)	C (15.3)
Southbound Site Entrance D Approach	B (13.3)	B (12.7)	B (13.3)	B (12.7)

[6] JMT modeled the eastbound approach as one left turn lane and one shared through/right turn lane and the westbound approach as one shared left turn/through lane and one right turn lane, whereas the TIS modeled the eastbound approach as one left turn lane and one shared through/right turn lane and the westbound approach as one left turn lane, one through lane, and one right turn lane.

Table 5 (Continued)
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for DHCI - New Hospital
Report Dated: January 2024
Prepared by: Davis, Bowen & Friedel, Inc.

Unsignalized Intersection Two-Way Stop Control[1]	**LOS per TIS**		**LOS per JMT**	
Site Entrance D / Friends Street and Sunnyside Road (Kent County Road 90A)	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Case 3 – 2033 with Development[6]				
Eastbound Sunnyside Road Left Turn	A (7.7)	A (8.2)	A (7.7)	A (8.2)
Westbound Sunnyside Road Left Turn	A (8.0)	A (7.7)	A (8.0)	A (7.7)
Northbound Friends Street Approach	B (14.4)	C (15.6)	B (14.3)	B (12.9)
Southbound Site Entrance D Approach	B (13.6)	B (12.9)	B (13.6)	C (15.5)

Table 6
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for DHCI - New Hospital
Report Dated: January 2024
Prepared by: Davis, Bowen & Friedel, Inc.

Signalized Intersection[1]	**LOS per TIS**		**LOS per JMT**	
East Belmont Avenue / Smyrna Leipsic Road (KCR 12) and US Route 13[7]	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Case 1 - Existing 2023[8]	B (16.2)	B (19.3)	B (19.4)	B (19.9)
Case 1 - Existing 2023 *with optimization*[9]	-	-	B (18.6)	B (17.6)
Case 2 – 2033 without Development *with optimization*[9]	B (19.6)	B (17.7)	C (22.1)	C (20.6)
Case 3A – 2033 DNREC Lab Only *with optimization*[9]	B (19.5)	B (17.8)	C (33.9)	C (22.1)
Case 3 – 2033 with Development *with optimization*[9]	B (19.5)	B (17.9)	C (35.7)	C (22.5)

[7] The TIS utilized overlapping right turn phasing to account for channelized right turns and set each right turn movement as an unsignalized movement with 0.0 seconds of delay, while JMT calculated the number of right turns on red using the percentages from the existing traffic count data.
[8] Both JMT and the TIS utilized the timing pattern of 231 for the AM Peak hour, but JMT utilized the timing pattern of 221 while the TIS used timing pattern 211 for the PM peak hour.
[9] JMT optimized the timing for both AM and PM Peak hours for Case 2, 3, and 3A while the TIS only optimized the PM Peak hour for Cases 2, 3A, and 3. The AM LOS reported per the TIS represents the non-optimized result.

Table 7
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for DHCI - New Hospital
Report Dated: January 2024
Prepared by: Davis, Bowen & Friedel, Inc.

Signalized Intersection[1]	**LOS per TIS**		**LOS per JMT**	
Smyrna Toll Plaza Road to DE Route 1 (KCR 150B) / US Route 13[7, 10,11]	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Case 1 - Existing 2023[12]	C (32.4)	D (50.7)	D (35.4)	F (87.5)
Case 1 – Existing 2023 *with optimization*	-	D (39.7)	C (30.0)	D (44.1)
Case 2 - 2033 without Development *with optimization*	D (39.4)	D (49.1)	D (35.2)	D (51.3)
Case 3A - 2033 DNREC Lab Only *with optimization*	D (39.6)	D (47.3)	D (35.7)	D (53.0)
Case 3 - 2033 with Development *with optimization*	D (40.3)	D (48.5)	D (35.9)	D (54.4)

[10] JMT utilized field observations to determine the percent of vehicles making the left turning movement from the shared lanes, specifically 20% in shared lane for the eastbound left and 40% for the westbound left. The TIS utilized a shared left turning movement percentage of 41% for the westbound left.
[11] The TIS modeled the arrival types for all approaches as type 3, while JMT modeled the arrival type for the northbound approach as type 4 and all other approaches as type 3.
[12] Both JMT and the TIS utilized the timing pattern of 231 for the AM Peak hour, but JMT utilized the timing pattern of 221 while the TIS used timing pattern 231 for the PM peak hour.