



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

NICOLE MAJESKI
SECRETARY

June 2, 2021

Mr. D.J. Hughes, 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 proposed **Meding Property** (Tax Parcels 5.00-151.00-01-13.00, 14.00, 15.00, 20.00 and 20.01) 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.

DelDOT's standard practice is to issue the final TIS review letter after the developer has agreed to the recommendations in the draft TIS review letter. DelDOT shared a draft of this letter with the developer in June 2020 and has discussed it with them since then. Per guidance from the Department's counsel, DelDOT is issuing the final TIS review letter now. If you have any questions concerning this letter or the enclosed review letter, please contact me at (302) 760-2124.

Sincerely,

A handwritten signature in cursive script that reads "Claudy Joinville".

Claudy Joinville
Project Engineer

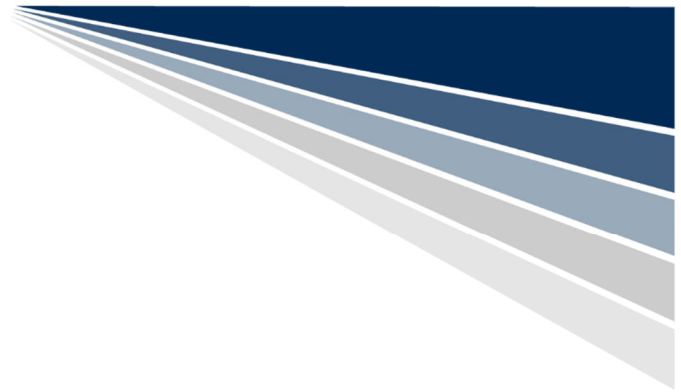
CJ:km

Enclosures

cc with enclosures: Mr. Zac Crouch, Davis, Bowen & Friedel, Inc.
Mr. David Edgell, Office of State Planning Coordination
Mr. Jason Berry, Kent County Department of Planning Services
Mr. Kris Connelly, Kent County Department of Planning Services
Mr. Mir Wahed, Johnson, Mirmiran & Thompson, Inc.
Ms. Joanne Arellano, Johnson, Mirmiran & Thompson, Inc.
DelDOT Distribution

DelDOT Distribution

Brad Eaby, Deputy Attorney General
J. Marc Coté, Director, Planning
Shanté Hastings, Deputy Secretary
Mark Luszcz, Deputy Director, Traffic, DOTS
Michael Simmons, Assistant Director, Project Development South, DOTS
Todd Sammons, Assistant Director, Development Coordination
T. William Brockenbrough, Jr., County Coordinator, Development Coordination
Peter Haag, Chief Traffic Engineer, Traffic, DOTS
Matthew Lichtenstein, Central District Engineer, Central District
Erin Osborne, Central District Public Works Manager, Central District
Jared Kauffman, Service Development Planner, Delaware Transit Corporation
Tremica Cherry, Service Development Planner, Delaware Transit Corporation
Anthony Aglio, Planning Supervisor, Statewide & Regional Planning
Wendy Polasko, Subdivision Engineer, Development Coordination
Olayiwola Okesola, Kent County Review Coordinator, Development Coordination
Joshua Schwartz, Kent County Subdivision Manager, Development Coordination
Mark Galipo, Traffic Engineer, Traffic, DOTS
Troy Brestel, Project Engineer, Development Coordination
Annamaria Fumato, Project Engineer, Development Coordination



May 27, 2021

Mr. Troy Brestel
Project Engineer
Development Coordination
DelDOT Division of Planning
800 Bay Road
P O Box 778
Dover, DE 19903

RE: Agreement No. 1945F
Project Number T202069012
Traffic Impact Study Services
Task 11A-Meding Property TIS

Dear Mr. Brestel:

Johnson, Mirmiran and Thompson (JMT) has completed the review of the Traffic Impact Study (TIS) for Meding Property, prepared by Davis, Bowen & Friedel, Inc. dated February 2020. This task was assigned as Task Number 11A. The report is prepared in a manner generally consistent with DelDOT's *Development Coordination Manual*.

The TIS evaluates the impacts of a proposed mixed-use development in Kent County, Delaware. The development would be comprised of a 96-room hotel, 410,000 square feet of retail space, and a 5,500 square-foot convenience store with gas pumps. Construction is anticipated to be complete in 2029.

The site is located on the west side of Delaware Route 1, southeast of the intersection of Tub Mill Pond Road (Kent Road 119) and Kaydedid Lane. The subject property is on an approximately 37.60-acre parcel that is zoned as BG (General Business) and the developer does not plan to rezone the land. Two access points are proposed: a full site access along Tub Mill Pond Road south of Kaydedid Lane and a full site access along a future service road that will be connected to southbound Delaware Route 1. It is noted that the June 12, 2019 DelDOT Scoping Meeting Memorandum references a full site access along Kaydedid Lane, however the TIS proposes this site access along Tub Mill Pond Road.

Per the June 12, 2019 DelDOT Scoping Meeting Memorandum, DelDOT requested the evaluation of two scenarios for the future with the proposed development: Case 3a (with a rights-in only access on Delaware Route 1) and Case 3b (with a rights-in/rights-out access on Delaware Route 1).

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



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

Delaware Route 1 is one of the highways included in the CCPP. More information regarding the CCPP can be found at: https://deldot.gov/Publications/manuals/corr_cap/index.shtml

DelDOT has recently constructed a grade-separated interchange at the intersections of Delaware Route 1 with Frederica Road, Tub Mill Pond Road and Milford Neck Road (DelDOT Contract No. T200812202). The intersection of Delaware Route 1 and Frederica Road was identified as a potential grade separated intersection location through the CCPP. This DelDOT project included the construction of a new overpass, which now connects the intersection of Frederica Road/Tub Mill Pond Road with Milford Neck Road. The existing at-grade intersection at Milford Neck Road and Tub Mill Pond Road was removed and access to Delaware Route 1 was provided via ramps. Frederica Road and Tub Mill Pond Road was realigned to create a new service road on the west side of Delaware Route 1. The interchange was opened to traffic in July 2018. More information regarding the *SR 1, South Frederica Grade Separated Intersection* project can be found at: https://deldot.gov/information/projects/sr1/sr1_frederica/

The *2018 Comprehensive Plan* for Kent County recommended that master plans be developed for larger scale commercial areas such as the area south of Frederica, which includes the proposed Meding Property site location, to generally illustrate the planned land use pattern and associated roadway infrastructure. In October 2019, a formal agreement was established between DelDOT and Kent County on the development of the South Frederica Master Plan. Workshops were held that Fall 2019 to give an update on the master plan and obtain feedback from the public. Once the master plans are finalized, they will be required to be formally amended into the *2018 Comprehensive Plan*. More information regarding the South Frederica Master Plan can be found at: <https://www.co.kent.de.us/planning-dept/planning/comprehensive-plan.aspx>

Section 5.3.k.2 of the Kent County Adequate Public Facilities Ordinance (APFO) states: "The specific traffic mitigation measures shall be chosen based on their ability to reduce the impact of traffic generated by the proposed subdivision or land development, in order to achieve and maintain the Level of Service standards for a minimum of two (2) years for roadway segments and intersections within the area of influence." Based on an April 14, 2008, meeting between DelDOT and Kent County Planning regarding the interpretation of the APFO, JMT has been instructed to perform the future two-year Level of Service maintenance analysis, for a date two years from when construction of the development is anticipated to be complete. The two-year Level of Service maintenance analysis results (referred to as Cases 4a and 4b) are contained in this TIS review letter.



Based on our review of the TIS, 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.

Intersection	LOS Deficiencies Occur			Year	Case
	AM	PM	Saturday		
Site Entrance A/Delaware Route 1			X	2019	1
			X	2029	2
Tub Mill Pond Road (Kent Road 119)/Kaydedid Lane (Kent Road 119B)		X	X	2029	3a
		X	X	2029	3b
		X	X	2031	4a
		X	X	2031	4b
Frederica Road (Kent Road 10)/Tub Mill Pond Road (Kent Road 119)/Milford Neck Road Overpass		X	X	2029	3a
		X	X	2029	3b
		X	X	2031	4a
		X	X	2031	4b
Milford Neck Road/Northbound Delaware Route 1 Ramp			X	2029	3
			X	2031	4
Frederica Road/Southbound Delaware Route 1 Ramp			X	2019	1
			X	2029	2
		X	X	2029	3a
		X	X	2029	3b
		X	X	2031	4a
		X	X	2031	4b

The existing unsignalized Site Entrance A intersection with Delaware Route 1 is a rights-in/rights-out access which exhibits LOS deficiencies during the Summer Saturday peak hour under existing and future conditions without the proposed development. These deficiencies occur along the eastbound Site Entrance A approach with delays of 56.4 seconds per vehicle and a 95th percentile queue of approximately 20 feet projected during the Summer Saturday peak hour under Case 2 conditions.

As part of the June 12, 2019 DelDOT Scoping Meeting Memorandum, DelDOT requested the evaluation of two scenarios for the future with the proposed development: Case 3a (with a rights-in only access on Delaware Route 1) and Case 3b (with a rights-in/rights-out access on Delaware Route 1). Per the TIS report, as part of a future DelDOT project, the existing rights-in/rights-out access that currently serves Meding’s Seafood is proposed to be reconstructed as a Delaware Route 1 service road with on and off ramps. The service road will not provide any direct access to the Meding Property site but will connect to a proposed service road that will run parallel to Delaware



Route 1. It is assumed that the reconstructed rights-in/rights-out as part of the Delaware Route 1 service road would be designed with appropriate merge and diverge lengths, providing an adequate acceleration length for exiting vehicles to access southbound Delaware Route 1. Therefore, under the future conditions with the development (Cases 3b and 4b), the merge from the rights-in/rights-out onto southbound Delaware Route 1 would operate at acceptable LOS D or better during each peak period. However, constructing an adequate acceleration length may not be feasible due to the existing single-family homes that have frontage along southbound Delaware Route 1 immediately south of Meding Property.

Eliminating the entrances at the existing single-family homes south of Meding Property and having each property access Delaware Route 1 via a roadway behind their properties to the west may allow an adequate acceleration length to be provided for a rights-out movement. However, it may not be feasible to eliminate those entrances as a majority of the garages to the homes face southbound Delaware Route 1.

In addition, the southbound Delaware Route 1 on-ramp from Frederica Road, that was constructed as part of the *SR 1, South Frederica Grade Separated Intersection* project (DelDOT Contract No. T200812202) exists approximately 2,260 feet north of the existing Meding's Seafood rights-in/rights-out entrance. Vehicles exiting the proposed Meding Property site could utilize this on-ramp instead of the proposed service road access to southbound Delaware Route 1. Furthermore, removing the rights-out at the existing Meding's Seafood entrance would reduce the number of access points along southbound Delaware Route 1. As such, we recommend the developer construct a rights-in only access along Delaware Route 1 that will connect to the Delaware Route 1 future service road.

The unsignalized Kaydedid Lane intersection with Tub Mill Pond Road exhibits LOS deficiencies during the weekday PM and Summer Saturday peak hours under future conditions with the proposed development, with or without the rights-out access along Delaware Route 1. The deficiencies occur along the westbound Kaydedid Lane approach with delays of up to 435.2 and 436.6 seconds per vehicle during the Summer Saturday peak hour under future conditions with the proposed development and without the rights-out access along Delaware Route 1 (Cases 3a and 4a, respectively). Additionally, during the Summer Saturday peak hour under future conditions with the proposed development and the rights-out access along Delaware Route 1 (Cases 3b and 4b), delays of up to 190.6 and 191.7 seconds per vehicle are projected along the westbound Kaydedid Lane approach, respectively.

With the installation of a traffic signal and separate right turn and left turn lanes along westbound Kaydedid Lane, the intersection would improve to operate at LOS D (39.0 and 39.1 seconds of delay per vehicle) during the Summer Saturday peak hour under Case 3a and 4a conditions, respectively. With the installation of a roundabout, the intersection would improve to operate at LOS C (23.8 and 23.9 seconds of delay per vehicle) during the Summer Saturday peak hour under Cases 3a and 4a conditions. However, with the installation of a roundabout, the westbound Kaydedid Lane approach would operate at LOS E (40.7 and 40.9 seconds of delay per vehicle) during the Summer Saturday peak hour under Cases 3a and 4a conditions. Therefore, we



recommend that the developer enter into a traffic signal agreement for the installation of a traffic signal at the intersection of Kaydedid Lane and Tub Mill Pond Road and widen the westbound Kaydedid Lane approach to provide one left turn lane and one right turn lane. Note the westbound Kaydedid Lane right turn lane is calculated to have a 95th percentile queue length of approximately 770 feet during the Summer Saturday peak hour under Cases 3a and 4a conditions with the installation of a traffic signal. As such, it is also recommended that the right turn lane be channelized with the provision of a 200 feet minimum length acceleration lane to reduce the queue lengths along Kaydedid Lane and minimize impacts to the on-site uses.

The unsignalized Milford Neck Road Overpass intersection with Frederica Road/Tub Mill Pond Road exhibits LOS deficiencies during the weekday PM and Summer Saturday peak hours under future conditions with the proposed development, with or without the rights-out access along Delaware Route 1. The deficiencies occur along the westbound Milford Neck Road Overpass approach, with delays of up to 398.6 and 404.1 seconds per vehicle during the Summer Saturday peak hour under future conditions with the proposed development and without the rights-out access along Delaware Route 1 (Cases 3a and 4a, respectively). Additionally, during the Summer Saturday peak hour under future conditions with the proposed development and the rights-out access along Delaware Route 1 (Cases 3b and 4b), delays of up to 97.3 and 99.7 seconds per vehicle are projected along the westbound Milford Neck Road overpass approach, respectively. These deficiencies can be mitigated by the installation of a traffic signal or a roundabout. However, the installation of a roundabout at this intersection may not be feasible due to the proximity to the overpass, as well as the grading along the Milford Neck Road Overpass approach. With the installation of a traffic signal, the intersection would improve to operate at LOS C (30.5 and 30.6 seconds of delay per vehicle) during the Summer Saturday peak hour under Cases 3a and 4a conditions, respectively. Therefore, we recommend that the developer enter into a traffic signal agreement for the installation of a traffic signal at the intersection of the Milford Neck Road Overpass and Frederica Road/Tub Mill Pond Road.

The unsignalized Milford Neck Road Overpass intersection with the Northbound Delaware Route 1 Ramps exhibits LOS deficiencies during the Summer Saturday peak hour under future conditions with the proposed development. The deficiencies occur along the eastbound Milford Neck Road Overpass approach, with delays of up to 64.6 and 64.7 seconds per vehicle during the Summer Saturday peak hour under future conditions (Cases 3 and 4, respectively). These deficiencies can be mitigated by the installation of a traffic signal or a roundabout. However, the installation of a roundabout may not be feasible at this intersection due to the proximity to the overpass and the grading along the Milford Neck Road overpass approach. With the installation of a traffic signal, the intersection would improve to operate at LOS B (13.2 seconds of delay per vehicle) during the Summer Saturday peak hour under Cases 3 and 4 conditions. Therefore, we recommend that the developer enter into a traffic signal agreement for the installation of a traffic signal at the intersection of the Milford Neck Road Overpass and the Northbound Delaware Route 1 Ramps.

The unsignalized Southbound Delaware Route 1 Ramps intersection with Frederica Road exhibits LOS deficiencies during the Summer Saturday peak hour under existing conditions and future conditions without the proposed development, and during the weekday PM and Summer Saturday



peak hours under future conditions with the proposed development, with or without the rights-out access along Delaware Route 1. The deficiencies occur along the westbound Delaware Route 1 Ramp approach, with delays of up to 935.8 and 957.1 seconds per vehicle during the Summer Saturday peak hour under future conditions with the proposed development and without the rights-out access along Delaware Route 1 (Cases 3a and 4a, respectively). Additionally, during the Summer Saturday peak hour under future conditions with the proposed development and the rights-out access along Delaware Route 1 (Cases 3b and 4b), delays of up to 450.5 and 458.8 seconds per vehicle are projected along the westbound Delaware Route 1 Ramp approach, respectively. These deficiencies can be mitigated by the installation of a traffic signal. With the installation of a traffic signal, the intersection would improve to operate at LOS B (13.3 and 13.2 seconds of delay per vehicle) during the Summer Saturday peak hour under Cases 3a and 4a conditions, respectively. Therefore, we recommend that the developer enter into a traffic signal agreement for the installation of a traffic signal at the intersection of the Southbound Delaware Route 1 Ramp and Frederica Road.

With the full build out of the site, some of the study intersections would experience capacity constraints which would require significant improvements. Constructing the Meding Property site in multiple phases may minimize the impacts of the site traffic on the study intersections and allow capacity constraints to be alleviated by potential future DelDOT projects in the area. In this case, an additional traffic study could be conducted to identify the traffic impacts with each phase of the site constructed.

Should Kent County approve the proposed development, the following items should be incorporated into the site design and reflected on the record plan. 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 provide a bituminous concrete overlay to the existing travel lanes along the Tub Mill Pond Road site frontage in the area affected by entrance plan construction at proposed Site Entrance B, including any auxiliary lanes, at DelDOT’s discretion. DelDOT should analyze the existing lanes’ pavement section and recommend an overlay thickness to the developer’s engineer, if necessary.
2. The developer should construct a rights-in only off-ramp service road entrance along Delaware Route 1 in the area of the existing Meding’s Seafood access to be consistent with the lane configurations shown in the table below:

Approach	Current Configuration	Proposed Configuration
Southbound Delaware Route 1	Two through lanes and one right turn lane	Two through lanes and one off ramp



The off ramp should be designed per freeway standards for the radii and deceleration lengths. The developer should coordinate with DelDOT on the location and the design of the off-ramp service road entrance.

- The developer should construct a full access site entrance (Site Entrance B) for the proposed Meding Property development on Tub Mill Pond Road, south of Kaydedid Lane to be consistent with the lane configurations shown in the table below:

Approach	Current Configuration	Proposed Configuration
Westbound Site Entrance B	Approach does not exist	One shared left turn/right turn lane
Northbound Tub Mill Pond Road	One through lane	One through lane and one right turn lane
Southbound Tub Mill Pond Road	One through lane	One left turn lane and one through lane

Based on DelDOT’s *Development Coordination Manual*, the recommended minimum storage length is 290 feet (excluding taper) for the northbound Tub Mill Pond Road right turn lane and 210 feet (excluding taper) for the southbound Tub Mill Pond Road left turn lane. The calculated queue lengths from the HCS analysis can be accommodated within the recommended storage lengths. The developer should submit a plan to DelDOT’s Development Coordination section depicting the design along the site frontage. The final design of the site entrance should be determined during the Entrance Plan review process.

- The developer should construct a portion of the future service road that would allow connections to the proposed on-site uses. The developer should coordinate with DelDOT on the location and the design of the service road. Proper right-of-way should also be dedicated to DelDOT as it is assumed the service road would be maintained by DelDOT.
- The developer should enter into a traffic signal agreement with DelDOT for the intersection of Tub Mill Pond Road and Kaydedid Lane for the installation of a traffic signal. Additionally, the developer should widen the westbound Kaydedid Lane approach to the intersection. The intersection should be consistent with the lane configurations shown in the table below:



Approach	Current Configuration	Proposed Configuration
Westbound Kaydedid Lane	One shared left turn/right turn lane	One left turn lane and one right turn lane
Northbound Tub Mill Pond Road	One through lane and one right turn lane	No change
Southbound Tub Mill Pond Road	One left turn lane and one through lane	No change

The traffic signal agreement should include pedestrian signals, crosswalks, interconnection, and ITS equipment such as CCTV cameras at DelDOT's discretion. At DelDOT's discretion, the developer may contribute to the Traffic Signal Revolving Fund in lieu of a traffic signal agreement.

Based on the HCS results, the recommended minimum storage length is 75 feet (excluding taper) for the westbound Kaydedid Lane left turn lane. The calculated queue lengths from the HCS analysis can be accommodated within the recommended storage length. Channelization as well the provision of a minimum 200 feet acceleration lane should be installed along the westbound Kaydedid Lane right turn lane. The developer should submit a plan to DelDOT's Development Coordination section depicting the design of the intersection.

- The developer should enter into a traffic signal agreement with DelDOT for the intersection of Frederica Road/Tub Mill Pond Road and the Milford Neck Road Overpass for the installation of a traffic signal. The intersection should be consistent with the lane configurations shown in the table below:

Approach	Current Configuration	Proposed Configuration
Westbound Milford Neck Road Overpass	One left turn lane and one right turn lane	No change
Northbound Tub Mill Pond Road	One through lane and one right turn lane	No change
Southbound Frederica Road	One left turn lane and one through lane	No change

The calculated queue lengths from the HCS analysis can be accommodated within the existing storage lengths. The traffic signal agreement should include pedestrian signals, crosswalks, interconnection, and ITS equipment such as CCTV cameras at DelDOT's discretion. At DelDOT's discretion, the developer may contribute to the Traffic Signal Revolving Fund in lieu of a traffic signal agreement.



7. The developer should enter into a traffic signal agreement with DelDOT for the intersection of the Milford Neck Road Overpass and the Northbound Delaware Route 1 Ramp for the installation of a traffic signal. The intersection should be consistent with the lane configurations shown in the table below:

Approach	Current Configuration	Proposed Configuration
Eastbound Milford Neck Road Overpass	One left turn lane and one right turn lane	No change
Northbound Milford Neck Road	One left turn lane and one through lane	No change
Southbound Delaware Route 1 Ramp	One through lane and one right turn lane	No change

The calculated queue lengths from the HCS analysis can be accommodated within the existing storage lengths. The traffic signal agreement should include pedestrian signals, crosswalks, interconnection, and ITS equipment such as CCTV cameras at DelDOT's discretion. At DelDOT's discretion, the developer may contribute to the Traffic Signal Revolving Fund in lieu of a traffic signal agreement.

8. The developer should enter into a traffic signal agreement with DelDOT for the intersection of Frederica Road and the Southbound Delaware Route 1 Ramp for the installation of a traffic signal. The intersection should be consistent with the lane configurations shown in the table below:

Approach	Current Configuration	Proposed Configuration
Westbound Delaware Route 1 Ramp	One left turn lane and one right turn lane	No change
Northbound Frederica Road	One through lane and one right turn lane	No change
Southbound Frederica Road	One left turn lane and one through lane	No change

The calculated queue lengths from the HCS analysis can be accommodated within the existing storage lengths. The traffic signal agreement should include pedestrian signals, crosswalks, interconnection, and ITS equipment such as CCTV cameras at DelDOT's discretion. At DelDOT's discretion, the developer may contribute to the Traffic Signal Revolving Fund in lieu of a traffic signal agreement.



9. The following bicycle, pedestrian, and transit improvements should be included:
 - a. A minimum fifteen-foot wide permanent easement from the edge of the right-of-way should be dedicated to DelDOT along Tub Mill Pond Road and the service road site frontages. Within the easement, the developer should construct a ten-foot wide shared-use path (SUP). If a ten-foot wide SUP cannot be installed, a five-foot wide sidewalk should be installed. The SUP/sidewalk should be designed to meet current AASHTO and ADA standards. A minimum five-foot setback should be maintained from the edge of the pavement to the SUP/sidewalk. If feasible, the SUP/sidewalk should be placed behind utility poles and street trees should be provided within the buffer area. The developer should coordinate with DelDOT's Development Coordination section during the plan review process to identify the exact location of the SUP/sidewalk.
 - b. Easements for future pedestrian connections to the existing single-family homes that have frontage along southbound Delaware Route 1, south of the Meding Property, should be provided. The developer should coordinate with DelDOT's Development Coordination section during the plan review process to identify the exact location of the easements.
 - c. Where internal sidewalks are located alongside of parking spaces, a buffer, physical barrier or signage should be added to eliminate vehicular overhang onto the sidewalk.
 - d. Internal bicycle racks should be provided at each site.
 - e. ADA compliant curb ramps and marked crosswalks should be provided along the Site B approach to Tub Mill Pond Road. The use of diagonal curb ramps is discouraged.
 - f. Minimum five-foot wide bicycle lanes should be incorporated in the right turn lane and shoulder along the Tub Mill Pond Road approaches to Site Entrance B.
 - g. Utility covers should be moved outside of any designated bicycle lanes and any proposed sidewalks/shared-use paths or should be flush with the pavement

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 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. For any additional information regarding the work zone impact and mitigation procedures during construction please



contact Mr. Don Weber, Assistant Director for Traffic Operations and Management. Mr. Weber can be reached at (302) 659-4651 or by email at Don.Weber@delaware.gov.

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

Sincerely,
Johnson, Mirmiran, and Thompson, Inc.

A handwritten signature in black ink, appearing to read 'Joanne M. Arellano', is written in a cursive style.

Joanne M. Arellano, P.E., PTOE

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

General Information

Report date: February 2020

Prepared by: Davis, Bowen & Friedel, Inc.

Prepared for: Martin-Frederica, LLC & Kay-De-Did, LLC

Tax Parcels: 5.00-151.00-01-13.00, 14.00, 15.00, 20.00 and 20.01

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

Project Description and Background

Description: Martin-Frederica, LCC seeks to develop a 5,500 square foot convenience market with gas pumps (20 fueling stations), and Kay-De-Did, LLC seeks to develop 410,000 square feet of retail space and a 96-room hotel.

Location: The subject site is located on the west side of Delaware Route 1 and southeast of the intersection of Tub Mill Pond Road (Kent Road 119) and Kaydedid Lane (Kent Road 119B), in Kent County.

Amount of Land to be developed: An approximately 37.60-acre assemblage of parcels.

Land Use approval(s) needed: Entrance Plan.

Proposed completion date: 2029.

Proposed access location: One full access is proposed along Tub Mill Pond Road, south of Kaydedid Lane. Access would also be provided via a future service road. This service road would be accessed via the existing rights-in/rights out that serves Meding's Seafood and Tub Mill Pond Road.*

*Per the scoping letter from June 12, 2019, Site Entrance B was proposed along Kaydedid Lane. However, per the TIS, Site Entrance B will be proposed along Tub Mill Pond Road.

Daily Traffic Volumes:

- 2019 Average Annual Daily Traffic on Delaware Route 1: 44,511 vehicles per day (non-Summer)*
- 2019 Average Annual Daily Traffic on Tub Mill Pond Road: 550 vehicles per day (non-Summer)*

*AADT values obtained from Delaware's 2019 Vehicle Volume Summary.

Site Map



**Graphic is an approximation based on the Conceptual Site Plan prepared by Davis, Bowen & Friedel, Inc. dated May 24, 2019.*

Relevant and On-going Projects

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

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

- Preserve the ability to make future improvements
- Sort local and through traffic

Delaware Route 1 is one of the highways included in the CCPP. More information regarding the CCPP can be found at: https://deldot.gov/Publications/manuals/corr_cap/index.shtml

DelDOT has recently constructed a grade-separated interchange at the intersections of Delaware Route 1 with Frederica Road, Tub Mill Pond Road and Milford Neck Road (DelDOT Contract No. T200812202). The intersection of Delaware Route 1 and Frederica Road was identified as a potential grade separated intersection location through the CCPP. This DelDOT project included the construction of a new overpass, which now connects the intersection of Frederica Road/Tub Mill Pond Road with Milford Neck Road. The existing at-grade intersection at Milford Neck Road and Tub Mill Pond Road was removed and access to Delaware Route 1 was provided via ramps. Frederica Road and Tub Mill Pond Road was realigned to create a new service road on the west side of Delaware Route 1. The interchange was opened to traffic in July 2018. More information regarding the *SR 1, South Frederica Grade Separated Intersection* project can be found at: https://deldot.gov/information/projects/sr1/sr1_frederica/

The *2018 Comprehensive Plan* for Kent County recommended that master plans be developed for larger scale commercial areas such as the area south of Frederica, which includes the proposed Meding Property site location, to generally illustrate the planned land use pattern and associated roadway infrastructure. In October 2019, a formal agreement was established between DelDOT and Kent County on the development of the South Frederica Master Plan. Workshops were held that Fall 2019 to give an update on the master plan and obtain feedback from the public. Once the master plans are finalized, they will be required to be formally amended into the *2018 Comprehensive Plan*. More information regarding the South Frederica Master Plan can be found at: <https://www.co.kent.de.us/planning-dept/planning/comprehensive-plan.aspx>

Livable Delaware

(Source: *Delaware Strategies for State Policies and Spending, 2015*)

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

The proposed development is located within the Investment Level 3 area.

Investment Level 3

Investment Level 3 Areas generally fall into two categories. The first category covers lands that are in the long-term growth plans of counties or municipalities where development is not necessary to accommodate expected population growth during a five-year planning period (or longer). The second category includes lands that are adjacent to or intermingled with fast-growing areas within counties or municipalities that are otherwise categorized as Investment Levels 1 or 2. Investment Level 3 is further characterized by areas with new development separated from existing development by a substantial amount of vacant land that is not contiguous with existing infrastructure, areas that are experiencing some development pressure, areas with existing but disconnected development, and possible lack of adequate infrastructure.

The state will consider investing in infrastructure within Investment Level 3 Areas once the Investment Level 1 and 2 Areas are substantially built out, or when the infrastructure or facilities are logical extensions of existing systems and deemed appropriate to serve a particular area. The priorities in the Level 3 Areas are for DelDOT to focus on regional movements between towns and other population centers. Local roadway improvements will be made by developers and property owners as development occurs. Lower priority is given to transportation system–capacity improvements and transit-system enhancements.

Proposed Development’s Compatibility with Livable Delaware:

The proposed development is within the Investment Level 3 area. According to Livable Delaware, Investment Level 3 Areas generally include lands that are adjacent to or intermingled with fast-growing areas within counties or municipalities that are categorized as Investment Levels 1 or 2. In these instances, development and growth may be appropriate in the near term but the resources in the surrounding area such as infrastructure issues should be considered. The subject site is adjacent to both Frederica and Milford which contain Investment Level 1 areas and the *SR 1, South Frederica Grade Separated Intersection* project was recently completed. Therefore, the proposed development is generally consistent with the 2015 update of the Livable Delaware “Strategies for State Policies and Spending.”

Comprehensive Plans

(Source: Kent County September 2018 Comprehensive Plan)

Kent County Comprehensive Plan:

Per the *Kent County Comprehensive Plan Future Land Use Map*, the proposed development is in an area designated as Highway Commercial.

Proposed Development’s Compatibility with the Kent County Comprehensive Plan:

Per the *Kent County Comprehensive Plan*, Highway Commercial areas are generally located in and around areas of existing larger scale commercial development and along major roadways. The proposed mixed-use development will be adjacent to Delaware Route 1, which is considered a major roadway traversing through Kent County. Therefore, the proposed development is generally consistent with the *Kent County September 2018 Comprehensive Plan*.

Trip Generation

The trip generation for the proposed development was determined by using the comparable land use and rates/equations contained in the *Trip Generation, 10th Edition: An ITE Informational Report*, published by the Institute of Transportation Engineers (ITE) for ITE Land Use Code 960 (Super Convenience Market/Gas Station), Land Use Code 820 (Shopping Center), and Land Use Code 312 (Business Hotel). The trip generation was approved by DelDOT during the PTIS review.

Table 1
Meding Property Trip Generation

Land Use	ADT	AM Peak Hour			PM Peak Hour			SAT Peak Hour		
		In	Out	Total	In	Out	Total	In	Out	Total
5,500 SF Super Convenience Market w/ Gas Station (ITE Code 960)	4,607	245	246	491	190	191	381	186	186	372
410,000 SF Shopping Center (ITE Code 820)	15,693	221	136	357	741	803	1,544	981	906	1,887
96-room Hotel (ITE Code 312)	488	29	25	54	24	19	43	42	42	84
Total Trips	20,788	495	407	902	955	1,013	1,968	1,209	1,134	2,343
Internal Capture*	-865	-8	-19	-27	-15	-16	-31	-27	-23	-50
External Trips	19,923	487	388	875	940	997	1,937	1,182	1,111	2,293
Pass-By Trips	-5,336	-182	-182	-364	-403	-403	-806	-381	-381	-762
Net New Trips	14,587	305	206	511	537	594	1,131	801	730	1,531

*Internal capture takes into account the existing Meding's Seafood restaurant which is proposed to remain with the development of the Meding Property site.

Overview of TIS

Intersections examined:

1. Site Entrance A / Delaware Route 1
2. Site Entrance B / Kaydedid Lane (Kent Road 119B)*
3. Tub Mill Pond Road (Kent Road 119) / Kaydedid Lane
4. Frederica Road (Kent Road 10) / Delaware Route 1 Grade Separated Interchange / Milford Neck Road (Kent Road 120)
 - a. Frederica Road / Tub Mill Pond Road / Overpass
 - b. Milford Neck Road / Northbound Delaware Route 1 Ramps
 - c. Merge of Milford Neck Road onto Northbound Delaware Route 1
 - d. Frederica Road / Southbound Delaware Route 1 Ramps
 - e. Merge of Frederica Road onto Southbound Delaware Route 1
5. Frederica Road / Market Street (Kent Road 389)

6. Milford Neck Road / Sports Complex Entrance / Future Park & Ride Entrance
7. Milford Neck Road/ Pritchett Road (Kent Road 422)
8. Tub Mill Pond Road / Fork Landing Road (Kent Road 390)
9. Tub Mill Pond Road / Old Cemetery Road (Kent Road 402)
10. Fork Landing Road / Rothermel Road (Kent Road 391)

*Per the scoping letter from June 12, 2019, Site Entrance B was proposed along Kaydedid Lane. However, per the TIS, Site Entrance B will be proposed along Tub Mill Pond Road.

Conditions examined:

1. Case 1 – Existing (2019)
2. Case 2 – 2029 without development
3. Case 3a – 2029 with development and with full access on Tub Mill Pond Road and rights-in only on Delaware Route 1
Case 3b – 2029 with development and with full access on Tub Mill Pond Road and rights-in/rights-out on Delaware Route 1

Committed Developments considered:

1. Sophia’s Landing (169 single-family detached homes and 166 multi-family (low-rise) units)
2. Ashbury Square (98 room hotel, 42,500 square foot shopping center, 12,800 square feet of a high-turnover sit-down restaurant, and a 4,768 square foot super convenience market/gas station)
3. Frederica Park-and-Ride (160 parking space park and ride and 9,980 square foot clinic)

Note: The June 12, 2019 Scope of Work memorandum by DelDOT for this project contains additional committed developments. However, per correspondence contained in the December 16, 2019 email from DelDOT to DBF, three of the committed developments (Murphy Property, Lands of Kay-De-Did, and the Ching Property) were approved to be omitted from the TIS.

Peak hours evaluated: Weekday morning, Weekday evening, and Summer Saturday midday peak hours.

Intersection Descriptions

1. Site Entrance A / Delaware Route 1*

Type of Control: Existing rights-in/rights-out only access driveway

Eastbound Approach: (Site Entrance A) Existing one rights-out-only lane

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

*This intersection is the existing Meding’s Seafood rights-in/rights-out access.

2. Site Entrance B / Tub Mill Pond Road (Kent Road 119)*

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

Westbound Approach: (Proposed Site Entrance) Proposed one left-turn lane and one right-turn lane, stop controlled

Northbound Approach: (Tub Mill Pond Road) Existing one through lane and proposed one right-turn lane

Southbound Approach: (Tub Mill Pond Road) Proposed one left-turn lane and existing one through lane

*Per the scoping letter from June 12, 2019, Site Entrance B was proposed along Kaydedid Lane. However, per the TIS, Site Entrance B will be proposed along Tub Mill Pond Road.

3. Tub Mill Pond Road / Kaydedid Lane

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

Westbound Approach: (Kaydedid Lane) Existing one shared left-turn/right-turn lane, stop-controlled

Northbound Approach: (Tub Mill Pond Road) Existing one through lane and one right-turn lane

Southbound Approach: (Tub Mill Pond Road) Existing one left-turn lane and one through lane

4. Frederica Road (Kent Road 10) / Delaware Route 1 Grade-Separated Interchange / Milford Neck Road (Kent Road 120)

a. Frederica Road / Tub Mill Pond Road / Overpass

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

Westbound Approach: (Overpass) Existing one left-turn and one channelized right-turn lane, stop-controlled

Northbound Approach: (Tub Mill Pond Road) Existing one through lane and one right-turn lane

Southbound Approach: (Frederica Road) Existing one left-turn lane and one through lane

b. Milford Neck Road / Northbound Delaware Route 1 Ramps

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

Eastbound Approach: (Overpass) Existing one left-turn lane and one channelized right-turn lane, stop-controlled

Northbound Approach: (Milford Neck Road) Existing one left-turn lane and one through lane

Southbound Approach: (Northbound Delaware Route 1 Ramps) Existing one through lane and one channelized right-turn lane

c. Merge of Milford Neck Road onto Northbound Delaware Route 1

Type of Control: Existing ramp merge

Ramp Approach: (Milford Neck Road) Existing one merge lane

Northbound Approach: (Delaware Route 1) Existing two through lanes

d. Frederica Road / Southbound Delaware Route 1 Ramps

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

Westbound Approach: (Delaware Route 1 Southbound Ramps) Existing one left-turn lane and one channelized right-turn lane, stop-controlled

Northbound Approach: (Frederica Road) Existing one through lane and one right-turn lane

Southbound Approach: (Frederica Road) Existing one left-turn lane and one through lane

e. Merge of Frederica Road onto Southbound Delaware Route 1

Type of Control: Existing ramp merge

Ramp Approach: (Frederica Road) Existing one merge lane

Southbound Approach: (Delaware Route 1) Existing two through lanes

5. Frederica Road / Market Street (Kent Road 389)

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

Eastbound Approach: (Market Street) Existing one shared left-turn/right-turn lane, stop-controlled

Northbound Approach: (Frederica Road) Existing one shared left-turn/through lane

Southbound Approach: (Frederica Road) Existing one shared through/right-turn lane

6. Milford Neck Road / Sports Complex Entrance / Future Park & Ride Entrance

Type of Control: Existing two-way stop-controlled intersection (four-legged intersection)

Eastbound Approach: (Future Park & Ride Entrance) Existing one shared left-turn/through lane and one right-turn lane, stop-controlled

Westbound Approach: (Sports Complex Entrance) Existing one shared left-turn/through lane and one right-turn lane, stop-controlled

Northbound Approach: (Milford Neck Road) Existing one through lane and one right-turn lane

Southbound Approach: (Milford Neck Road) Existing one through lane and one right-turn lane

7. Milford Neck Road / Pritchett Road (Kent Road 422)

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

Westbound Approach: (Milford Neck Road) Existing one shared left-turn/through lane

Northbound Approach: (Pritchett Road) Existing one shared through/right-turn lane, stop-controlled

Southbound Approach: (Milford Neck Road) Existing one shared left-turn/through lane

8. Tub Mill Pond Road / Fork Landing Road (Kent Road 390)

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

Eastbound Approach: (Fork Landing Road) Existing one shared left-turn/right-turn lane, stop-controlled

Northbound Approach: (Tub Mill Pond Road) Existing one shared left-turn/through lane

Southbound Approach: (Tub Mill Pond Road) Existing one shared through/right turn lane

9. Tub Mill Pond Road / Old Cemetery Road (Kent Road 402)

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

Westbound Approach: (Old Cemetery Road) Existing one shared left-turn/right-turn lane, stop-controlled

Northbound Approach: (Tub Mill Pond Road) Existing one shared through/right-turn lane

Southbound Approach: (Tub Mill Pond Road) Existing one shared left-turn/through lane

10. Fork Landing Road / Rothermel Road (Kent Road 391)

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

Eastbound Approach: (Fork Landing Road) Existing one shared through/right-turn lane

Westbound Approach: (Fork Landing Road) Existing one shared left-turn/through lane

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

Transit, Pedestrian, and Bicycle Facilities

Existing transit service: Per the DelDOT Gateway, the South Frederica Park & Ride facility exists along Milford Neck Road (with access at the study intersection of Milford Neck Road and the Sports Complex Entrance) and DART Routes 305 and 307 stop at the facility. DART Route 307 provides five round trips on weekdays from 5:27 a.m. to 9:44 p.m. DART Route 305 is the Beach Bus Connection (Magenta Line) and starts at the Wilmington Train Station and ends at the Rehoboth Park & Ride lot on Shuttle Road, with stops in between at several Park & Ride facilities including the South Frederica Park & Ride. The bus schedule for Route 305 is not available at this time.

Planned transit service: Per email correspondence on May 14, 2020 with Tremica Cherry-Wall, Planner at the DTC, there are no transit improvements recommended for this study, due to the new Park & Ride facility along Milford Neck Road.

Existing bicycle and pedestrian facilities: According to DelDOT's *Kent County Bicycle Map*, one Connector Bicycle Route and one Statewide Bicycle Route exist within the study area. The Statewide Bicycle Route travels along Fork Landing Road before continuing south along Tub Mill Pond Road. The Statewide Bicycle Route traverses through three study intersections (Fork Landing Road/Rothermel Road, Fork Landing Road/Tub Mill Pond Road and Tub Mill Pond Road/Old Cemetery Road). The Connector Bicycle Route exists along Tub Mill Pond Road and Milford Neck Road. As the bike map has not been updated since the completion of the grade separated intersection at Delaware Route 1 and Frederica Road, it is assumed that the connector route would continue along the overpass from Tub Mill Pond Road to access Milford Neck Road. The Connector Bicycle Route traverses through five study intersections (Tub Mill Pond Road/Kaydedid Lane, Frederica Road/Tub Mill Pond Road/Overpass, Milford Neck Road/Northbound Delaware Route 1 Ramp, Milford Neck Road/Sports Complex Entrance/Future Park & Ride Entrance, and Milford Neck Road/Pritchett Road) before continuing northeast along Milford Neck Road. There are no pedestrian facilities within the study area.

Planned bicycle and pedestrian facilities: Per email correspondence on May 14, 2020 from Mr. John Fiori, DelDOT's Bicycle Coordinator, the following improvements were recommended:

- Since the site generates more than 2000-trips, a non-motorized facility shall be required along the property frontage of the service road and Delaware Route 1, preferably a 10' shared-use-path (SUP).
 - If the 10' SUP cannot be installed, 5' wide sidewalk is an acceptable alternative.

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 map on the DelDOT Gateway.

- Delaware Route 1 – LTS: 3 and 4
- Kaydedid Lane – LTS: 1
- Tub Mill Pond Road – LTS: 4

Crash Evaluation

Per the crash data included in the TIS from October 31, 2016 to October 31, 2019 and provided by the Delaware Crash Analysis Reporting System, a total of 27 crashes were reported within the study area. Of the 27 crashes reported:

- 4 crashes occurred within the vicinity of the southbound Delaware Route 1 and the rights-in/rights-out site entrance for Meding's Seafood
 - Of the 4 crashes at this location, there were no safety concerns or a trend in the contributing factor that can be identified from the crash data.
- 7 injuries reported within the study area.
- No fatalities were reported within the study area during the 3-year study period.

Previous Comments

Comments provided by DelDOT during the Preliminary TIS review have been addressed in the Final TIS.

General HCS Analysis Comments

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

1. Per DelDOT's *Development Coordination Manual*, JMT and the TIS used a heavy vehicle percentage of 3% for each movement greater than 100 vph in the Case 2, 3 and 4 future scenario analyses, 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 analysis of future scenarios.
2. Per DelDOT's *Development Coordination Manual* and coordination with DelDOT Planning, JMT and the TIS used a heavy vehicle percentage of 5% for each movement less than 100 vph along roadways.
3. Per DelDOT's *Development Coordination Manual*, JMT and TIS utilized the existing PHF for the Case 1 scenario and a future PHF for Cases 2, 3, and 4 scenarios 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 the existing PHF, whichever was higher.
4. The TIS utilized an approach grade of 2% for various approaches to study intersections, whereas JMT maintained the default value of 0%.
5. Per Section 5.3.k.2 of the Kent County Adequate Public Facilities Ordinance (APFO), JMT conducted an additional analysis for two years post build year (Case 4a and 4b).

Table 2
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Meding Property
Report Dated: February 2020
Prepared by Davis, Bowen & Friedel, Inc.

Unsignalized Intersection Two-Way Stop Control (T-intersection) ¹	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
Site Entrance A/Delaware Route 1						
2019 Existing (Case 1)						
Eastbound Site Entrance A Approach	C (17.3)	C (21.4)	E (48.9)	C (17.1)	C (20.5)	E (44.7)
2029 without development (Case 2)						
Eastbound Site Entrance A Approach	C (19.3)	C (24.2)	F (62.6)	C (19.0)	C (23.1)	F (56.4)

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

Table 2 (continued)
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Meding Property
Report Dated: February 2020
Prepared by Davis, Bowen & Friedel, Inc.

Unsignalized Intersection Merge ²	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
Site Entrance A/Delaware Route 1 ^{3, 4, 5}						
2029 with development (Case 3b)	B (19.4)	C (21.0)	D (29.8)	B (19.6)	C (21.7)	D (30.8)
2031 with development (Case 4b)	-	-	-	B (19.8)	C (21.9)	D (31.1)

² For merge analysis, the numbers in parentheses following levels of service are density, measured in passenger cars per mile per lane.

³ Both JMT and the TIS assumed a merge length of 500 feet.

⁴ The TIS set Driver Population setting to Mostly Familiar for the ramp, whereas JMT maintained the default setting of All Familiar.

⁵ JMT utilized different PHFs for the freeway and ramp whereas the TIS utilized overall intersection PHF for both.

Table 3
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Meding Property
Report Dated: February 2020
Prepared by Davis, Bowen & Friedel, Inc.

Unsignalized Intersection Two-Way Stop Control (T-intersection) ¹	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
Site Entrance B/Tub Mill Pond Road (Kent Road 119) ⁶						
2029 with development (Case 3)						
Westbound Site Entrance Approach B	A (9.8)	B (12.3)	C (17.9)	A (9.7)	B (12.1)	C (16.9)
Southbound Tub Mill Pond Road Left Turn	A (7.6)	A (7.8)	A (8.3)	A (7.6)	A (7.8)	A (8.3)
2031 with development (Case 4)						
Westbound Site Entrance Approach B	-	-	-	A (9.7)	B (12.1)	C (16.9)
Southbound Tub Mill Pond Road Left Turn	-	-	-	A (7.6)	A (7.8)	A (8.3)

⁶ JMT and the TIS configured the northbound Tub Mill Pond Road approach as one through lane and one right turn lane, the southbound Tub Mill Pond Road approach as one left turn lane and one through lane, and the westbound Site Entrance B approach as one shared left turn/right turn lane.

Table 4
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Meding Property
Report Dated: February 2020
Prepared by Davis, Bowen & Friedel, Inc.

Unsignalized Intersection Two-Way Stop Control (T-intersection) ¹	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
Tub Mill Pond Road (Kent Road 119)/Kaydedid Lane (Kent Road 119B)						
2019 Existing (Case 1)						
Westbound Kaydedid Lane Approach	-	A (8.7)	A (9.1)	-	A (8.7)	A (9.1)
Southbound Tub Mill Pond Road Left Turn	A (7.3)	A (7.4)	A (7.5)	A (7.3)	A (7.4)	A (7.5)
2029 without development (Case 2)						
Westbound Kaydedid Lane Approach	-	A (8.8)	A (9.2)	-	A (8.8)	A (9.2)
Southbound Tub Mill Pond Road Left Turn	A (7.4)	A (7.4)	A (7.5)	A (7.4)	A (7.4)	A (7.5)
2029 with development (Case 3a)						
Westbound Kaydedid Lane Approach	B (12.6)	F (204.9)	F (500.6)	B (12.4)	F (178.7)	F (435.2)
Southbound Tub Mill Pond Road Left Turn	A (8.0)	A (9.2)	B (10.4)	A (8.0)	A (9.2)	B (10.4)
2029 with development (Case 3a) <i>with improvements</i> ⁷						
Westbound Kaydedid Lane Approach	-	F (53.8)	F (138.6)	B (11.4)	F (50.1)	F (127.2)
Southbound Tub Mill Pond Road Left Turn	-	A (9.2)	B (10.4)	A (8.0)	A (9.2)	B (10.4)

⁷ Improvement scenario includes a separate left turn and right turn lane along the westbound Kaydedid Lane approach.

Table 4 (continued)
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Meding Property
Report Dated: February 2020
Prepared by Davis, Bowen & Friedel, Inc.

Unsignalized Intersection Two-Way Stop Control (T-intersection) ¹	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
Tub Mill Pond Road (Kent Road 119)/Kaydedid Lane (Kent Road 119B)						
2029 with development (Case 3b)						
Westbound Kaydedid Lane Approach	B (11.3)	E (49.8)	F (248.7)	B (11.1)	E (39.7)	F (190.6)
Southbound Tub Mill Pond Road Left Turn	A (8.0)	A (9.2)	B (10.4)	A (8.0)	A (9.2)	B (10.4)
2029 with development (Case 3b) <i>with improvements</i> ⁷						
Westbound Kaydedid Lane Approach	-	C (18.4)	D (34.8)	B (10.4)	C (17.3)	D (29.5)
Southbound Tub Mill Pond Road Left Turn	-	A (9.2)	B (10.4)	A (8.0)	A (9.2)	B (10.4)
2031 with development (Case 4a)						
Westbound Kaydedid Lane Approach	-	-	-	B (12.4)	F (178.7)	F (436.6)
Southbound Tub Mill Pond Road Left Turn	-	-	-	A (8.0)	A (9.2)	B (10.4)
2031 with development (Case 4a) <i>with improvements</i> ⁷						
Westbound Kaydedid Lane Approach	-	-	-	B (11.4)	F (50.1)	F (127.9)
Southbound Tub Mill Pond Road Left Turn	-	-	-	A (8.0)	A (9.2)	B (10.4)

Table 4 (continued)
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Meding Property
Report Dated: February 2020
Prepared by Davis, Bowen & Friedel, Inc.

Unsignalized Intersection Two-Way Stop Control (T-intersection) ¹	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
Tub Mill Pond Road (Kent Road 119)/Kaydedid Lane (Kent Road 119B)						
2031 with development (Case 4b)						
Westbound Kaydedid Lane Approach	-	-	-	B (11.1)	E (39.7)	F (191.7)
Southbound Tub Mill Pond Road Left Turn	-	-	-	A (8.0)	A (9.2)	B (10.4)
2031 with development (Case 4b) <i>with improvements</i> ⁷						
Westbound Kaydedid Lane Approach	-	-	-	B (10.4)	C (17.3)	D (29.6)
Southbound Tub Mill Pond Road Left Turn	-	-	-	A (8.0)	A (9.2)	B (10.4)

Table 4 (continued)
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Meding Property
Report Dated: February 2020
Prepared by Davis, Bowen & Friedel, Inc.

Signalized Intersection ¹	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
Tub Mill Pond Road (Kent Road 119)/Kaydedid Lane (Kent Road 119B) ^{8, 9, 10}						
2029 with development (Case 3a)	-	C (26.1)	C (30.0)	B (18.5)	C (26.9)	D (39.0)
2031 with development (Case 4a)	-	-	-	B (18.5)	C (26.9)	D (39.1)

⁸ Both the TIS and JMT modeled the intersection as an uncoordinated signalized intersection with protected and permissive left turn phasing along the southbound Tub Mill Pond Road and a right turn overlap phase along the westbound Kaydedid Lane approach. The TIS utilized various signal cycle lengths, whereas JMT utilized a signal cycle length of 90 seconds.

⁹ Both the TIS and JMT modeled the intersection with one left turn lane and one right turn lane along the westbound Kaydedid Lane approach.

¹⁰ JMT utilized a saturation flow rate of 1,750 pc/h/ln for all peak hours, whereas the TIS utilized a saturation flow rate of 1,750 pc/h/ln for the AM and PM peak hours and 1,900 pc/h/ln for the Saturday peak hour.

Table 4 (continued)
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Meding Property
Report Dated: February 2020
Prepared by Davis, Bowen & Friedel, Inc.

Roundabout ¹	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
Tub Mill Pond Road (Kent Road 119)/Kaydedid Lane (Kent Road 119B) ¹¹						
2029 with development (Case 3a)						
Westbound Kaydedid Lane Approach	-	-	-	A (6.0)	C (19.2)	E (40.7)
Northbound Tub Mill Pond Road Approach	-	-	-	A (4.7)	A (7.9)	B (11.3)
Southbound Tub Mill Pond Road Approach	-	-	-	A (4.9)	A (7.4)	A (9.2)
Overall	-	-	-	A (5.3)	B (13.3)	C (23.8)
2031 with development (Case 4a)						
Westbound Kaydedid Lane Approach	-	-	-	A (6.0)	C (19.2)	E (40.9)
Northbound Tub Mill Pond Road Approach	-	-	-	A (4.7)	A (7.9)	B (11.3)
Southbound Tub Mill Pond Road Approach	-	-	-	A (4.9)	A (7.4)	A (9.2)
Overall	-	-	-	A (5.3)	B (13.3)	C (23.9)

¹¹ JMT performed an additional analysis configuring the intersection as a single lane roundabout.

Table 5a
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Meding Property
Report Dated: February 2020
Prepared by Davis, Bowen & Friedel, Inc.

Unsignalized Intersection Two-Way Stop Control (T-intersection) ¹	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
Federica Road (Kent Road 10)/Tub Mill Pond Road (Kent Road 119)/Milford Neck Road Overpass						
2019 Existing (Case 1)						
Westbound Milford Neck Road Overpass Approach	A (8.8)	A (9.4)	A (9.3)	A (8.8)	A (9.4)	A (9.2)
Southbound Federica Road Left Turn	A (7.4)	A (7.5)	A (7.6)	A (7.4)	A (7.5)	A (7.6)
2029 without development (Case 2)						
Westbound Milford Neck Road Overpass Approach	A (9.9)	B (10.9)	B (10.5)	A (9.9)	B (10.9)	B (10.5)
Southbound Federica Road Left Turn	A (7.5)	A (7.6)	A (7.6)	A (7.5)	A (7.6)	A (7.7)
2029 with development (Case 3a)						
Westbound Milford Neck Road Overpass Approach	B (14.5)	F (280.2)	F (470.0)	B (13.9)	F (233.4)	F (398.6)
Southbound Federica Road Left Turn	A (8.4)	B (11.5)	B (12.1)	A (8.5)	B (11.6)	B (12.3)
2029 with development (Case 3b)						
Westbound Milford Neck Road Overpass Approach	B (12.1)	F (57.8)	F (116.6)	B (11.5)	F (47.3)	F (97.3)
Southbound Federica Road Left Turn	A (8.0)	A (9.4)	A (9.7)	A (8.0)	A (9.4)	A (9.8)

Table 5a (continued)
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Meding Property
Report Dated: February 2020
Prepared by Davis, Bowen & Friedel, Inc.

Unsignalized Intersection Two-Way Stop Control (T-intersection) ¹	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
Federica Road (Kent Road 10)/Tub Mill Pond Road (Kent Road 119)/Milford Neck Road Overpass						
2031 with development (Case 4a)						
Westbound Milford Neck Road Overpass Approach	-	-	-	B (13.9)	F (233.2)	F (404.1)
Southbound Federica Road Left Turn	-	-	-	A (8.5)	B (11.6)	B (12.4)
2031 with development (Case 4b)						
Westbound Milford Neck Road Overpass Approach	-	-	-	B (11.5)	F (47.2)	F (99.7)
Southbound Federica Road Left Turn	-	-	-	A (8.0)	A (9.4)	A (9.8)

Table 5a (continued)
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Meding Property
Report Dated: February 2020
Prepared by Davis, Bowen & Friedel, Inc.

Signalized Intersection ¹	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
Federica Road (Kent Road 10)/Tub Mill Pond Road (Kent Road 119)/Milford Neck Road Overpass ^{10, 12}						
2029 with development (Case 3a)	-	C (21.5)	C (22.0)	B (15.7)	C (22.6)	C (30.5)
2029 with development (Case 3b)	-	B (14.8)	B (14.7)	B (13.6)	B (15.5)	B (15.5)
2031 with development (Case 4a)	-	-	-	B (15.7)	C (23.7)	C (30.6)
2031 with development (Case 4b)	-	--	-	B (13.6)	B (15.5)	B (15.5)

¹² Both the TIS and JMT modeled the intersection as an uncoordinated signalized intersection with right turn overlap phases along the westbound Overpass approach and northbound Tub Mill Pond Road approach. JMT modeled the intersection with protected and permissive left turn phasing along the southbound Frederica Road approach, whereas the TIS modeled the intersection with protected only left turn phasing along the southbound Frederica Road approach. The TIS utilized various signal cycle lengths, whereas JMT utilized a signal cycle length of 90 seconds.

Table 5a (continued)
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Meding Property
Report Dated: February 2020
Prepared by Davis, Bowen & Friedel, Inc.

Roundabout ¹	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
Federica Road (Kent Road 10)/Tub Mill Pond Road (Kent Road 119)/Milford Neck Road Overpass ¹³						
2029 with development (Case 3a)						
Westbound Milford Neck Road Overpass Approach	-	-	-	A (2.5)	A (7.5)	B (14.4)
Northbound Tub Mill Pond Road Approach	-	-	-	A (2.3)	A (3.9)	A (4.3)
Southbound Federica Road Approach	-	-	-	A (4.9)	A (7.8)	A (9.0)
Overall	-	-	-	A (2.8)	A (5.8)	A (8.6)
2031 with development (Case 3b)						
Westbound Milford Neck Road Overpass Approach	-	-	-	A (2.1)	A (3.8)	A (5.6)
Northbound Tub Mill Pond Road Approach	-	-	-	A (0.9)	A (0.9)	A (1.1)
Southbound Federica Road Approach	-	-	-	A (4.9)	A (7.8)	A (9.0)
Overall	-	-	-	A (2.2)	A (3.3)	A (4.2)
2031 with development (Case 4a)						
Westbound Milford Neck Road Overpass Approach	-	-	-	A (2.5)	A (7.5)	B (14.5)
Northbound Tub Mill Pond Road Approach	-	-	-	A (2.3)	A (3.9)	A (4.3)
Southbound Federica Road Approach	-	-	-	A (4.9)	A (7.8)	A (9.1)
Overall	-	-	-	A (2.8)	A (5.8)	A (8.7)

¹³ JMT conducted an additional analysis modeling the intersection as a single lane roundabout with right turn bypass lanes along the northbound and westbound approaches.

Table 5a (continued)
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Meding Property
Report Dated: February 2020
Prepared by Davis, Bowen & Friedel, Inc.

Roundabout ¹	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
Federica Road (Kent Road 10)/Tub Mill Pond Road (Kent Road 119)/Milford Neck Road Overpass ¹³						
2031 with development (Case 4b)						
Westbound Milford Neck Road Overpass Approach	-	-	-	A (2.1)	A (3.8)	A (5.6)
Northbound Tub Mill Pond Road Approach	-	-	-	A (0.9)	A (0.9)	A (1.1)
Southbound Federica Road Approach	-	-	-	A (4.9)	A (7.8)	A (9.1)
Overall	-	-	-	A (2.2)	A (3.3)	A (4.3)

Table 5b
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Meding Property
Report Dated: February 2020
Prepared by Davis, Bowen & Friedel, Inc.

Unsignalized Intersection Two-Way Stop Control (T-intersection) ¹	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
Milford Neck Road/Northbound Delaware Route 1 Ramp						
2019 Existing (Case 1)						
Eastbound Milford Neck Road Approach	A (8.8)	A (9.1)	A (9.3)	A (8.8)	A (9.1)	A (9.2)
Northbound Milford Neck Road Left Turn	A (7.3)	A (7.4)	A (7.5)	A (7.3)	A (7.4)	A (7.5)
2029 without development (Case 2)						
Eastbound Milford Neck Road Approach	A (9.1)	A (9.3)	A (9.6)	A (9.0)	A (9.3)	A (9.5)
Northbound Milford Neck Road Left Turn	A (7.4)	A (7.4)	A (7.5)	A (7.4)	A (7.5)	A (7.5)
2029 with development (Case 3)						
Eastbound Milford Neck Road Approach	B (11.4)	D (30.0)	F (79.9)	B (11.2)	C (22.7)	F (64.6)
Northbound Milford Neck Road Left Turn	A (7.4)	A (7.5)	A (7.6)	A (7.4)	A (7.5)	A (7.6)
2031 with development (Case 4)						
Eastbound Milford Neck Road Approach	-	-	-	B (11.2)	C (22.7)	F (64.7)
Northbound Milford Neck Road Left Turn	-	-	-	A (7.4)	A (7.5)	A (7.6)

Table 5b (continued)
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Meding Property
Report Dated: February 2020
Prepared by Davis, Bowen & Friedel, Inc.

Signalized Intersection ¹	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
Milford Neck Road/Northbound Delaware Route 1 Ramp ^{13, 14}						
2029 with development (Case 3)	-	-	B (14.6)	B (11.0)	B (12.8)	B (13.2)
2031 with development (Case 4)	-	-	-	B (11.0)	B (12.8)	B (13.2)

¹³ Both the TIS and JMT modeled the intersection as an uncoordinated signalized intersection with protected and permissive left turn phasing and right turn overlap phases along the eastbound and northbound Milford Neck Road approaches. JMT utilized a signal cycle length of 90 seconds.

¹⁴ JMT utilized a saturation flow rate of 1,900 pc/h/ln for all peak hours, whereas the TIS utilized a saturation flow rate of 1,750 pc/h/ln for the AM and PM peak hours and 1,900 pc/h/ln for the Saturday peak hour.

Table 5b (continued)
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Meding Property
Report Dated: February 2020
Prepared by Davis, Bowen & Friedel, Inc.

Roundabout ¹	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
Milford Neck Road/Northbound Delaware Route 1 Ramp ¹¹						
2029 with development (Case 3)						
Eastbound Milford Neck Road Approach	-	-	-	A (4.7)	A (7.9)	A (8.1)
Northbound Milford Neck Road Approach	-	-	-	A (4.5)	A (6.5)	A (8.3)
Southbound Delaware Route 1 Ramp Approach	-	-	-	A (6.5)	B (12.1)	B (12.4)
Overall	-	-	-	A (5.6)	A (9.8)	A (10.0)
2031 with development (Case 4)						
Eastbound Milford Neck Road Approach	-	-	-	A (4.7)	A (7.9)	A (8.0)
Northbound Milford Neck Road Approach	-	-	-	A (4.5)	A (6.5)	A (8.4)
Southbound Delaware Route 1 Ramp Approach	-	-	-	A (6.5)	B (12.1)	B (12.3)
Overall	-	-	-	A (5.6)	A (9.8)	A (10.0)

Table 5c
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Meding Property
Report Dated: February 2020
Prepared by Davis, Bowen & Friedel, Inc.

Unsignalized Intersection Merge ²	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
Merge of Milford Neck Road onto Northbound Delaware Route 1 ¹⁵						
2019 Existing (Case 1)	B (16.3)	B (15.3)	C (23.4)	B (17.2)	B (16.1)	C (24.4)
2029 without development (Case 2) ¹⁶	B (14.9)	B (15.7)	C (24.3)	B (15.8)	B (16.6)	C (25.5)
2029 with development (Case 3) ¹⁷	B (15.4)	B (17.1)	C (26.0)	B (16.3)	B (18.0)	C (27.5)
2031 with development (Case 4) ¹⁷	-	-	-	B (16.5)	B (18.2)	C (27.8)

¹⁵ The TIS set Driver Population setting to Mostly Familiar for the ramp, whereas JMT maintained the default setting of All Familiar.

¹⁶ JMT utilized different PHFs for the freeway and ramp whereas the TIS utilized overall intersection PHF for both. Additionally, JMT For future Cases 2, 3, and 4, JMT increased ramp PHF using a weighted method whereas the TIS increased PHF to 0.92.

Table 5d
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Meding Property
Report Dated: February 2020
Prepared by Davis, Bowen & Friedel, Inc.

Unsignalized Intersection Two-Way Stop Control (T-intersection) ¹	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
Federica Road/Southbound Delaware Route 1 Ramp						
2019 Existing (Case 1)						
Westbound Delaware Route 1 Ramp Approach	A (12.3)	B (12.8)	F (54.8)	B (12.3)	B (12.8)	E (45.1)
Southbound Federica Road Left Turn	A (7.8)	A (7.9)	A (8.3)	A (7.8)	A (7.9)	A (8.3)
2029 without development (Case 2)						
Westbound Delaware Route 1 Ramp Approach	C (22.0)	E (35.3)	F (310.3)	C (20.3)	D (29.8)	F (222.3)
Southbound Federica Road Left Turn	A (9.0)	A (9.3)	B (10.3)	A (9.1)	A (9.3)	B (10.4)
2029 with development (Case 3a)						
Westbound Delaware Route 1 Ramp Approach	D (26.6)	F (84.6)	F (1220.9)	C (21.8)	F (62.8)	F (935.8)
Southbound Federica Road Left Turn	B (10.1)	B (12.7)	C (19.9)	A (9.9)	B (12.6)	C (20.1)
2029 with development (Case 3b)						
Westbound Delaware Route 1 Ramp Approach	D (25.2)	F (61.5)	F (618.4)	C (20.9)	E (47.0)	F (450.5)
Southbound Federica Road Left Turn	A (9.2)	A (9.8)	B (11.4)	A (9.1)	A (9.8)	B (11.5)

Table 5d (continued)
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Meding Property
Report Dated: February 2020
Prepared by Davis, Bowen & Friedel, Inc.

Unsignalized Intersection Two-Way Stop Control (T-intersection) ¹	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
Federica Road/Southbound Delaware Route 1 Ramp						
2031 with development (Case 4a)						
Westbound Delaware Route 1 Ramp Approach	-	-	-	C (22.1)	F (64.7)	F (957.1)
Southbound Federica Road Left Turn	-	-	-	A (9.9)	B (12.6)	C (20.3)
2031 with development (Case 4b)						
Westbound Delaware Route 1 Ramp Approach	-	-	-	C (21.2)	E (48.1)	F (458.8)
Southbound Federica Road Left Turn	-	-	-	A (9.1)	A (9.8)	B (11.5)

Table 5d (continued)
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Meding Property
Report Dated: February 2020
Prepared by Davis, Bowen & Friedel, Inc.

Signalized Intersection ¹	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
Federica Road/Southbound Delaware Route 1 Ramp ^{15,17}						
2029 without development (Case 2)	-	B (17.5)	B (14.8)	A (9.0)	B (11.5)	B (11.0)
2029 with development (Case 3a)	-	B (16.6)	B (18.3)	A (8.2)	B (10.4)	B (13.3)
2029 with development (Case 3b)	-	B (17.7)	B (16.2)	A (8.7)	B (11.4)	B (14.7)
2031 with development (Case 4a)	-	-	-	A (8.2)	B (10.4)	B (13.2)
2031 with development (Case 4b)	-	-	-	A (8.7)	B (11.4)	B (14.6)

¹⁷ Both the TIS and JMT modeled the intersection as an uncoordinated signalized intersection with protected and permissive left turn phasing along the southbound Federica Road approach and right turn overlap phases along the westbound Delaware Route 1 Ramps and northbound Federica Road approaches. JMT utilized a signal cycle length of 60 seconds, whereas the TIS utilized various signal cycle lengths.

Table 5d (continued)
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Meding Property
Report Dated: February 2020
Prepared by Davis, Bowen & Friedel, Inc.

Roundabout ¹	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
Federica Road/Southbound Delaware Route 1 Ramp ¹¹						
2029 without development (Case 2)						
Westbound Delaware Route 1 Ramp Approach	-	-	-	A (4.6)	A (6.2)	A (4.5)
Northbound Federica Road Approach	-	-	-	A (7.5)	A (8.6)	B (10.6)
Southbound Federica Road Approach	-	-	-	A (6.0)	A (5.6)	C (17.4)
Overall	-	-	-	A (6.4)	A (7.1)	C (15.1)
2029 with development (Case 3a)						
Westbound Delaware Route 1 Ramp Approach	-	-	-	A (4.7)	A (7.0)	A (5.1)
Northbound Federica Road Approach	-	-	-	B (10.3)	D (31.3)	F (96.1)
Southbound Federica Road Approach	-	-	-	A (6.2)	A (6.4)	D (26.5)
Overall	-	-	-	A (8.1)	C (21.7)	F (53.3)
2029 with development (Case 3b)						
Westbound Delaware Route 1 Ramp Approach	-	-	-	A (4.7)	A (7.0)	A (5.1)
Northbound Federica Road Approach	-	-	-	A (7.6)	B (10.3)	B (14.5)
Southbound Federica Road Approach	-	-	-	A (6.2)	A (6.4)	D (26.5)
Overall	-	-	-	A (6.6)	A (8.4)	C (22.3)

Table 5d (continued)
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Meding Property
Report Dated: February 2020
Prepared by Davis, Bowen & Friedel, Inc.

Roundabout ¹	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
Federica Road/Southbound Delaware Route 1 Ramp ¹¹						
2031 with development (Case 4a)						
Westbound Delaware Route 1 Ramp Approach	-	-	-	A (4.7)	A (7.0)	A (5.1)
Northbound Federica Road Approach	-	-	-	B (10.4)	D (31.5)	F (97.0)
Southbound Federica Road Approach	-	-	-	A (6.2)	A (6.4)	D (26.9)
Overall	-	-	-	A (8.1)	C (21.8)	F (53.8)
2031 with development (Case 4b)						
Westbound Delaware Route 1 Ramp Approach	-	-	-	A (4.7)	A (7.0)	A (5.1)
Northbound Federica Road Approach	-	-	-	A (7.7)	B (10.3)	B (14.6)
Southbound Federica Road Approach	-	-	-	A (6.2)	A (6.4)	D (26.9)
Overall	-	-	-	A (6.6)	A (8.4)	C (22.6)

Table 5e
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Meding Property
Report Dated: February 2020
Prepared by Davis, Bowen & Friedel, Inc.

Unsignalized Intersection Merge ²	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
Merge of Federica Road onto Southbound Delaware Route 1 ^{16,17}						
2019 Existing (Case 1)	B (13.5)	B (12.7)	C (23.4)	B (16.2)	B (15.2)	C (26.1)
2029 without development (Case 2)	B (14.6)	B (14.0)	C (24.7)	B (17.0)	B (16.5)	C (27.5)
2029 with development (Case 3a)	B (16.6)	B (18.1)	D (30.0)	B (19.1)	C (20.8)	D (32.9)
2029 with development (Case 3b)	B (15.5)	B (15.4)	C (26.9)	B (17.9)	B (17.9)	D (29.7)
2031 with development (Case 4a)	-	-	-	B (19.2)	C (20.9)	D (33.1)
2031 with development (Case 4b)	-	-	-	B (18.1)	B (18.0)	D (30.0)

Table 6
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Meding Property
Report Dated: February 2020
Prepared by Davis, Bowen & Friedel, Inc.

Unsignalized Intersection Two-Way Stop Control (T-intersection) ¹	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
Federica Road (Kent Road 10)/Market Street (Kent Road 389)						
2019 Existing (Case 1) ¹⁸						
Eastbound Market Street Approach	A (9.0)	A (9.2)	C (15.7)	A (8.9)	A (9.1)	C (15.2)
Northbound Federica Road Left Turn	A (7.5)	A (7.5)	A (9.5)	A (7.5)	A (7.5)	A (9.5)
2029 without development (Case 2)						
Eastbound Market Street Approach	B (10.2)	B (10.2)	C (21.2)	B (10.1)	B (10.1)	C (20.3)
Northbound Federica Road Left Turn	A (7.8)	A (7.9)	B (10.4)	A (7.8)	A (7.9)	B (10.5)
2029 with development (Cases 3a & 3b)						
Eastbound Market Street Approach	B (10.6)	B (10.9)	D (27.8)	B (10.5)	B (10.8)	D (25.9)
Northbound Federica Road Left Turn	A (8.0)	A (8.2)	B (11.3)	A (8.0)	A (8.2)	B (11.4)
2031 with development (Case 4a & 4b)						
Eastbound Market Street Approach	-	-	-	B (10.5)	B (10.8)	D (26.1)
Northbound Federica Road Left Turn	-	-	-	A (8.0)	A (8.2)	B (11.4)

¹⁸ The TIS reduced Saturation Flow Rate to 1,750 whereas JMT utilized default value of 1,800.

Table 7
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Meding Property
Report Dated: February 2020
Prepared by Davis, Bowen & Friedel, Inc.

Unsignalized Intersection Two-Way Stop Control ¹	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
Milford Neck Road/Sports Complex Entrance/Future Park & Ride Entrance						
2019 Existing (Case 1)						
Eastbound Future Park & Ride Entrance Approach	A (8.4)	A (8.5)	A (8.6)	A (8.4)	A (8.5)	A (8.5)
Westbound Sports Complex Entrance Approach	A (8.6)	A (8.4)	A (9.4)	A (8.6)	A (8.4)	A (9.4)
Northbound Milford Neck Road Left Turn	A (7.3)	A (7.3)	A (7.3)	A (7.2)	A (7.3)	A (7.3)
Southbound Milford Neck Road Left Turn	A (7.4)	A (7.3)	A (7.3)	A (7.4)	A (7.3)	A (7.3)
2029 without development (Case 2)						
Eastbound Future Park & Ride Entrance Approach	A (9.5)	A (9.3)	B (11.0)	A (9.5)	A (9.3)	B (10.9)
Westbound Sports Complex Entrance Approach	A (8.7)	A (8.5)	A (9.5)	A (8.7)	A (8.5)	A (9.5)
Northbound Milford Neck Road Left Turn	A (7.5)	A (7.4)	A (7.4)	A (7.5)	A (7.4)	A (7.4)
Southbound Milford Neck Road Left Turn	A (7.4)	A (7.3)	A (7.4)	A (7.4)	A (7.3)	A (7.4)
2029 with development (Cases 3a & 3b)						
Eastbound Future Park & Ride Entrance Approach	A (9.8)	B (10.0)	B (12.2)	A (9.7)	A (10.0)	B (11.9)
Westbound Sports Complex Entrance Approach	A (8.9)	A (8.8)	A (10.0)	A (8.9)	A (8.7)	A (10.0)
Northbound Milford Neck Road Left Turn	A (7.5)	A (7.5)	A (7.6)	A (7.6)	A (7.6)	A (7.6)
Southbound Milford Neck Road Left Turn	A (7.5)	A (7.4)	A (7.5)	A (7.5)	A (7.4)	A (7.5)

Table 7 (continued)
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Meding Property
Report Dated: February 2020
Prepared by Davis, Bowen & Friedel, Inc.

Unsignalized Intersection Two-Way Stop Control ¹	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
Milford Neck Road/Sports Complex Entrance/Future Park & Ride Entrance						
2031 with development (Case 4a & 4b)						
Eastbound Future Park & Ride Entrance Approach	-	-	-	A (9.7)	A (10.0)	B (11.9)
Westbound Sports Complex Entrance Approach	-	-	-	A (8.9)	A (8.7)	A (10.0)
Northbound Milford Neck Road Left Turn	-	-	-	A (7.6)	A (7.6)	A (7.6)
Southbound Milford Neck Road Left Turn	-	-	-	A (7.5)	A (7.4)	A (7.5)

Table 8
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Meding Property
Report Dated: February 2020
Prepared by Davis, Bowen & Friedel, Inc.

Unsignalized Intersection Two-Way Stop Control (T-intersection) ¹	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
Milford Neck Road (Kent Road 120)/Pritchett Road (Kent Road 422)						
2019 Existing (Case 1)						
Milford Neck Road Westbound Left Turn	A (7.3)	A (7.3)	A (7.3)	A (7.3)	A (7.3)	A (7.3)
Northbound Pritchett Road Approach	A (8.8)	A (8.8)	A (8.9)	A (8.8)	A (8.7)	A (8.8)
2029 without development (Case 2)						
Milford Neck Road Westbound Left Turn	A (7.3)	A (7.4)	A (7.4)	A (7.3)	A (7.4)	A (7.4)
Northbound Pritchett Road Approach	A (9.2)	A (9.2)	A (9.2)	A (9.2)	A (9.2)	A (9.2)
2029 with development (Cases 3a & 3b)						
Milford Neck Road Westbound Left Turn	A (7.3)	A (7.6)	A (7.6)	A (7.3)	A (7.6)	A (7.5)
Northbound Pritchett Road Approach	A (9.4)	A (9.7)	B (10.1)	A (9.4)	A (9.7)	B (10.1)
2031 with development (Case 4a & 4b)						
Milford Neck Road Westbound Left Turn	-	-	-	A (7.3)	A (7.6)	A (7.5)
Northbound Pritchett Road Approach	-	-	-	A (9.4)	A (9.7)	B (10.1)

Table 9
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Meding Property
Report Dated: February 2020
Prepared by Davis, Bowen & Friedel, Inc.

Unsignalized Intersection Two-Way Stop Control (T-intersection) ¹	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
Tub Mill Pond Road (Kent Road 119)/Fork Landing Road (Kent Road 290)						
2019 Existing (Case 1)						
Eastbound Fork Landing Road Approach	A (8.7)	A (8.8)	A (8.9)	A (8.7)	A (8.7)	A (8.9)
Northbound Tub Mill Pond Road Left Turn	A (7.3)	A (7.3)	A (7.3)	A (7.3)	A (7.3)	A (7.3)
2029 without development (Case 2)						
Eastbound Fork Landing Road Approach	A (9.0)	A (9.2)	A (9.2)	A (9.0)	A (9.1)	A (9.2)
Northbound Tub Mill Pond Road Left Turn	A (7.3)	A (7.4)	A (7.4)	A (7.3)	A (7.4)	A (7.4)
2029 with development (Cases 3a & 3b)						
Eastbound Fork Landing Road Approach	A (9.6)	B (10.7)	B (11.7)	A (9.5)	B (10.5)	B (11.5)
Northbound Tub Mill Pond Road Left Turn	A (7.4)	A (7.6)	A (7.7)	A (7.4)	A (7.6)	A (7.7)
2031 with development (Case 4a & 4b)						
Eastbound Fork Landing Road Approach	-	-	-	A (9.5)	B (10.5)	B (11.5)
Northbound Tub Mill Pond Road Left Turn	-	-	-	A (7.4)	A (7.6)	A (7.7)

Table 10
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Meding Property
Report Dated: February 2020
Prepared by Davis, Bowen & Friedel, Inc.

Unsignalized Intersection Two-Way Stop Control (T-intersection) ¹	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
Tub Mill Pond Road (Kent Road 119)/Old Cemetery Road (Kent Road 402)						
2019 Existing (Case 1)						
Westbound Old Cemetery Road Approach	A (8.7)	A (8.5)	A (0.0)	A (8.6)	A (8.5)	A (0.0)
Southbound Tub Mill Pond Road Left turn	A (7.3)	A (7.3)	A (7.3)	A (7.3)	A (7.3)	A (7.3)
2029 without development (Case 2)						
Westbound Old Cemetery Road Approach	A (8.7)	A (8.6)	A (0.0)	A (8.7)	A (8.6)	A (0.0)
Southbound Tub Mill Pond Road Left turn	A (7.3)	A (7.3)	A (7.3)	A (7.3)	A (7.3)	A (7.3)
2029 with development (Cases 3a & 3b)						
Westbound Old Cemetery Road Approach	A (8.9)	A (8.8)	A (0.0)	A (8.9)	A (8.8)	A (0.0)
Southbound Tub Mill Pond Road Left turn	A (7.4)	A (7.4)	A (7.5)	A (7.4)	A (7.4)	A (7.5)
2031 with development (Case 4a & 4b)						
Westbound Old Cemetery Road Approach	-	-	-	A (8.9)	A (8.8)	A (0.0)
Southbound Tub Mill Pond Road Left turn	-	-	-	A (7.4)	A (7.4)	A (7.5)

Table 11
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Meding Property
Report Dated: February 2020
Prepared by Davis, Bowen & Friedel, Inc.

Unsignalized Intersection Two-Way Stop Control (T-intersection) ¹	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
Fork Landing Road (Kent Road 290)/ Rothermel Road (Kent Road 391)						
2019 Existing (Case 1)						
Westbound Fork Landing Road Left Turn	A (7.3)	A (7.3)	A (7.3)	A (7.3)	A (7.3)	A (7.3)
Northbound Rothermel Road Approach	A (8.5)	A (8.5)	A (8.6)	A (8.5)	A (8.5)	A (8.6)
2029 without development (Case 2)						
Westbound Fork Landing Road Left Turn	A (7.3)	A (7.3)	A (7.3)	A (7.3)	A (7.3)	A (7.3)
Northbound Rothermel Road Approach	A (8.6)	A (8.6)	A (8.7)	A (8.6)	A (8.6)	A (8.7)
2029 with development (Cases 3a & 3b)						
Westbound Fork Landing Road Left Turn	A (7.3)	A (7.4)	A (7.5)	A (7.4)	A (7.4)	A (7.5)
Northbound Rothermel Road Approach	A (8.9)	A (8.9)	A (9.2)	A (8.8)	A (8.9)	A (9.2)
2031 with development (Case 4a & 4b)						
Westbound Fork Landing Road Left Turn	-	-	-	A (7.4)	A (7.4)	A (7.5)
Northbound Rothermel Road Approach	-	-	-	A (8.8)	A (8.9)	A (9.2)