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

SHANTÉ A. HASTINGS
SECRETARY

June 10, 2025

Ms. Nicole R. Kline-Elsier, PE, PTOE
Bowman Consulting Group, Ltd.
835 Springdale Drive, suite 200
Exton, PA 19341

Dear Ms. Kline-Elsier,

The enclosed Traffic Impact Study (TIS) review letter for the **301 Business Park - South** (Tax Parcel: 3-068.00-002) industrial 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 Review Engineer

AF:km
Enclosures
cc with enclosures: Randy Mitchell, Mitchell Investment Co., LLC
Scott Lobdell, First State Engineering
Shawn Tucker, Barnes and Thornburg LLP
David L. Edgell, Office of State Planning Coordination
Morris Deputy, Town of Middletown
Antoni Sekowski, New Castle County Department of Land Use
Dawn Thompson, New Castle County Department of Land Use
Owen C. Robatino, New Castle County Department of Land Use
Mir Wahed, Johnson, Mirmiran, & Thompson, Inc.
Joanne M. Arellano, Johnson, Mirmiran, & Thompson, Inc.
DelDOT Distribution

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Todd Sammons, Assistant Director, Development Coordination
Wendy Polasko, Subdivision Engineer, Development Coordination
Randhir Sharma, New Castle Review Coordinator, Development Coordination
Michael White, New Castle Review Engineer, Development Coordination
Sireen Muhtaseb, TIS Engineer, Development Coordination
Ben Fisher, TIS Review Engineer, Development Coordination
Tijah Jones, TIS Review Engineer, Development Coordination

June 10, 2025

Ms. Sireen Muhtaseb, P.E.
TIS Group Manager
Delaware Department of Transportation
Development Coordination
800 Bay Road
Dover, DE 19901

RE: Agreement No. 2138S
TIS Support Services – T202369005
Task Name: Task 1-6 301 Business Park - South TIS Addendum
JMT No.: 24-01365-106

Dear Ms. Muhtaseb:

Johnson, Mirmiran, and Thompson (JMT) has completed a review of the Traffic Impact Study (TIS) Addendum for the 301 Business Park - South development which was prepared by Bowman Consulting Group, Ltd. dated March 18, 2025. This review was assigned as Task Number 1-6. The report is prepared in a manner generally consistent with DelDOT's *Development Coordination Manual* and other Department standards.

The TIS Addendum evaluates the impacts of a proposed 4,500 employee manufacturing development in the Town of Middletown, New Castle County, Delaware. The proposed site is on an approximately 116.92-acre parcel (Tax Parcel: 23-068.00-002) located on the southwest corner of the intersection of Middle Neck Road (New Castle Road 444) and Warwick Road (New Castle Road 299A). The land is currently zoned as MI (Manufacturing Industrial) and the developer does not plan to rezone the land.

The TIS Addendum is based on the information contained within the 301 Business Park – North Traffic Impact Study prepared by Rossi Group dated May 9, 2024. The May 9, 2024 TIS evaluated the impacts of the 301 Business Park – North with a 2,440 employee manufacturing development and 301 Business Park – South with a 500 employee manufacturing development. Since the completion of the TIS, 301 Business Park – South has been modified to be comprised of a 4,500 employee manufacturing development. The TIS Addendum revises the May 9, 2024 TIS to take into consideration the updated 301 Business Park – South development.

The TIS Addendum evaluates two future cases that take into account an additional proposed nearby development: 1) Case 3A: 2031 with development without Freestone Village at Middletown; and 2) Case 3B: 2031 with development with Freestone Village at Middletown. The TIS Addendum does not include an evaluation of existing or future build without development scenarios as those results would be taken from the 301 Business Park – North TIS

Access is proposed via two access points along Middle Neck Road with one providing access to the proposed 301 Business Park –North development. Construction is anticipated to be complete in 2031.

Relevant and On-Going Projects and Studies

DelDOT has relevant and ongoing projects within or surrounding the study area including the 2021 Hazard Elimination Program (HEP) – Task 1 Site D: SR 299 (Middletown Warwick Road) study. HEP Site D includes Middletown Warwick Road from 0.18 miles west of Levels Road to 0.12 miles east of Sandhill Drive and includes one study intersection: Levels Road and Middletown Warwick Road. The HEP Site D evaluation included a crash summary, field observations, a lighting warrant evaluation, and peak hour traffic volumes. The evaluation also included preliminary recommendations including striping improvements for the north leg crosswalk at Levels Road and Middletown Warwick Road. The corridor was also recommended to be retimed to reduce likelihood of rear end crashes and an additional study was recommended to consider transitioning one northbound through lane to an acceleration lane for the westbound right turn.

The proposed site is adjacent to the Westown Transportation Improvement District (TID) which was established as part of the Westown Master Plan. The Westown TID is bordered by Bunker Hill Road in the north, Green Giant Road in the south, Middle Neck Road in the west, and the Norfolk Southern railroad in the east. The *Westown TID CTP Cost Development Update Report* dated June 2023 is the latest traffic analysis conducted for the Westown TID. The report includes a recommendation to improve one study intersection: Middletown Warwick Road and Levels Road. To meet the Level of Service (LOS) standard for Westown TID, which is LOS E, the intersection is recommended to be improved to provide dual left turn lanes along three of the approaches. These improvements, and the other improvements identified in the report, are part of the TID-CTP. The TID is operational and DelDOT continues to collect fees and monitor traffic to prioritize improvements recommended as part of the Westown TID.

Summary of Analysis Results

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. The table below does not include any signalized intersections that exhibit LOS deficiencies that can be mitigated with signal timing optimization as optimization would not be the responsibility of the developer. Additionally, the table below does not include Westown TID intersections which operate at LOS E, as LOS E is the acceptable level of service for the TID.

Intersection	LOS Deficiencies Occur		Case
	AM	PM	
Site Entrance A / Middle Neck Road (New Castle Road 444)	X	X	Case 3A & Case 3B - 2031 with Development
Middle Neck Road / Warwick Road (New Castle Road 443A)	X	X	Case 3A & Case 3B - 2031 with Development

Levels Road (New Castle Road 10)/ US Route 301 Northbound Ramps	X	X	Case 3A & Case 3B - 2031 with Development
Middletown Warwick Road / Levels Road	X	X	Case 3A & Case 3B - 2031 with Development

Site Entrance A / Middle Neck Road (New Castle Road 444) (See Table 2a page 20, Development Improvement #2)

The 301 Business Park – South Site Entrance A approach to Middle Neck Road is proposed across from the proposed 301 Business Park – North site entrance. As an unsignalized two-way stop-controlled intersection, LOS deficiencies would occur along the southbound 301 Business Park – North Site Entrance approach under Cases 3A & 3B conditions during both the AM and PM peak hours. During the AM peak hour, the southbound 301 Business Park – North Site Entrance approach would operate at LOS F (approximately 215 seconds of delay per vehicle) with a projected 95th percentile queue of approximately 63 feet. During the PM peak hour, the southbound 301 Business Park – North Site Entrance approach would operate at LOS F (approximately 76 seconds of delay per vehicle) with a projected 95th percentile queue of approximately 63 feet.

With the provision of a single lane roundabout, the intersection would operate at LOS B (approximately 11 seconds of delay per vehicle) during the AM peak hour and LOS A (approximately 8 seconds of delay per vehicle) during the PM peak hour. As such, it is recommended that the developer construct the Site Entrance A / Middle Neck Road intersection as a single-lane roundabout.

Middle Neck Road / Warwick Road (New Castle Road 443A) (See Table 3, Page 22, Development Improvement #4)

The unsignalized Middle Neck Road / Warwick Road (New Castle Road 443A) intersection would exhibit LOS deficiencies along the eastbound Middle Neck Road approach under future conditions with the proposed development during the AM and PM peak hours. Under Cases 3A and 3B conditions during the AM peak hour, the eastbound Middle Neck Road approach would operate at LOS F (approximately 535 seconds of delay per vehicle) with a projected 95th percentile queue length of approximately 928 feet. Under Cases 3A and 3B conditions during the PM peak hour, the eastbound Middle Neck Road approach would operate at LOS F (approximately 863 seconds of delay per vehicle) with a projected 95th percentile queue length of approximately 2,023 feet.

The deficiencies could be mitigated by the provision of a single lane roundabout with a southbound Warwick Road right-turn bypass lane or a traffic signal. With the provision of a single lane roundabout, the intersection would operate at LOS C (approximately 20 seconds of delay per vehicle) during the AM peak hour and LOS C (approximately 21 seconds of delay per vehicle) during the PM peak hour.

JMT performed a Traffic Signal Justification Study at the study intersection. Based on a review of the traffic signal warrants from the 2018 Edition of the Delaware Manual on Uniform Traffic Control Devices (DEMUTCD), the volume warrants are met under Cases 3A and 3B conditions.

However, the crash warrant based on crash data from the last 3 years is not met. DelDOT completed a study in 2022 to evaluate crash trends at new signal locations across Delaware. The data contained within the 2022 study depicted a decrease in angle crashes but other types of crashes including injury crashes and total crashes increased. As such, it is recommended that the developer construct a roundabout at the Middle Neck Road intersection with Warwick Road.

Levels Road (New Castle Road 10) / US Route 301 Northbound Ramps (See Table 4b, Page 24, Development Improvement #5)

The unsignalized Levels Road (New Castle Road 10) / US Route 301 Northbound Ramps intersection would exhibit LOS deficiencies along the northbound US Route 301 Ramps approach under future conditions with the proposed development during the AM and PM peak hours under both Cases 3A and 3B. During the AM peak hour under Case 3A condition, the northbound US Route 301 Ramps approach would operate at LOS F with a delay of approximately 301 seconds per vehicle and a projected 95th percentile queue length of approximately 180 feet. During the AM peak hour under Case 3B condition, the northbound US Route 301 Ramps approach would operate at LOS F with a delay of approximately 311 seconds per vehicle and a projected 95th percentile queue length of approximately 185 feet. The intersection is located within the Westown TID. However, the *Westown TID CTP Cost Development Update Report* dated June 2023, did not identify capacity constraints at the Levels Road / US Route 301 Northbound Ramps as the volumes utilized in the TID do not incorporate the 301 Business Park – North and South developments which add volumes to the intersection resulting in a significant increase in delay.

The deficiencies could be mitigated by the provision of a traffic signal or a multi-lane roundabout. JMT performed a Traffic Signal Justification Study at the study intersection and a traffic signal does not meet any traffic signal warrants under future conditions with the proposed development. With the provision of a multi-lane roundabout including one through/left turn lane and one through lane along the eastbound Levels Road approach, one through lane and one through/right turn lane along the westbound Levels Road approach, and one shared left turn/through lane and one right turn lane along the northbound US Route 301 Ramps approach, the approach would improve to operate at acceptable LOS A (approximately 9 seconds of delay per vehicle) under Case 3A conditions and LOS A (approximately 10 seconds of delay per vehicle) under Case 3B conditions during the AM peak hour. As such, it is recommended that the developer convert the intersection to a multi-lane roundabout.

Middletown Warwick Road / Levels Road (See Table 5, Page 25, Development Improvement #6)

The signalized Middletown Warwick Road / Levels Road intersection would exhibit LOS deficiencies during the AM and PM peak hours under future conditions with the proposed development. With the existing geometry during the PM peak hour, the intersection would operate at LOS F (approximately 131 seconds of delay per vehicle) under Case 3A conditions and would operate at LOS F (approximately 173 seconds of delay per vehicle) under Case 3B conditions.

The intersection is located within the Westown TID. The *Westown TID CTP Cost Development Update Report* contained a "LOS D" improvement scenario which included the provision of two left turn lanes, two through lanes, and one right turn lane along all approaches. Additionally, the

scenario provided an acceleration lane for the westbound Levels Road right turn lane onto northbound Middletown Warwick Road. The *Westown TID CTP Cost Development Update Report* also contained a "LOS E" improvement scenario which included the provision of an additional left turn lane along the northbound Middletown Warwick Road approach, and to modify one of the southbound Middletown Warwick Road through lanes to be a second left turn lane.

However, as the "LOS D" improvement scenario is not being considered for the Westown TID, an additional interim improvement scenario was considered to evaluate the improvements required to achieve acceptable LOS E for the Middletown Warwick Road / Levels Road intersection. The interim improvement scenario considered adding one additional through lane along the eastbound and westbound Levels Road approaches.

With these improvements during the Case 3A conditions, the intersection would improve to operate at acceptable LOS D (approximately 51 seconds of delay per vehicle) during the AM peak hour and LOS E (approximately 71 seconds of delay per vehicle) during the PM peak hour. During the Case 3B conditions, the intersection would improve to operate at acceptable LOS D (approximately 53 seconds of delay per vehicle) during the AM peak hour and LOS E (approximately 79 seconds of delay per vehicle) during the PM peak hour.

As the developer would only be responsible for constructing the improvements beyond what are proposed as part of the TID, it is recommended that the developer enter into an agreement with DelDOT to construct the following improvements at the Middletown Warwick Road / Levels Road intersection:

- Eastbound Levels Road: one additional through lane*
- Westbound Levels Road: one additional through lane**

* As part of this improvement, the eastern leg of the intersection would be modified to provide two receiving lanes along eastbound Levels Road.
**As part of these improvements, the southbound Middletown Warwick Road right turn acceleration lane along westbound Levels Road would be eliminated.

As the developer would only be responsible for constructing these additional improvements, the proposed auxiliary lane storage lengths as part of the Westown TID may need to be revised to account for the proposed development.

On-Site Operations

Additionally, the developer should ensure the truck operations on-site would not impact adjacent roadways. Specifically, on-site truck circulation and truck parking accommodations should be provided to minimize truck spillback onto Middle Neck Road. Overnight parking should be provided for trucks that may arrive prior to the facility's operational hours.

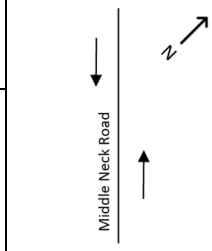
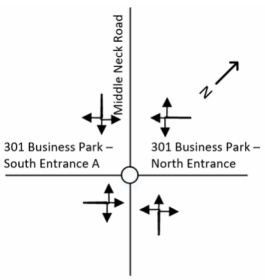
Development Improvements

Should the Town of Middletown approve the proposed development, the following items should be incorporated into the site design and reflected on the record plan, entrance plans, or construction plans by note or illustration unless a Design Deviation is requested and approved by the Department. All applicable agreements (i.e., letter agreements for off-site improvements and traffic signal agreements) should be executed prior to entrance plan approval for the proposed

development. The following items should be implemented at the same time as site construction once all agency approvals and permits are secured and completed in accordance with DelDOT's Standards and Specifications.

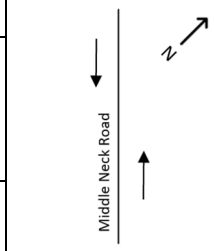
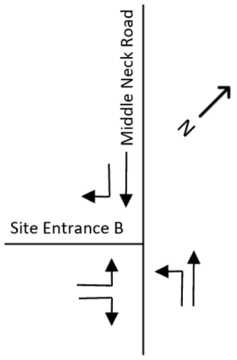
1. The developer shall improve the State-maintained Roads on which they front (Middle Neck Road and Warwick Road), within the limits of their frontage. The improvements shall include both directions of travel, regardless of whether the developer's lands are on one or both sides of the road. "Frontage" 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 construct the Site Entrance A full access for the proposed 301 Business Park – South development as a single-lane roundabout along Middle Neck Road across from the proposed 301 Business Park – North site access. The developer should coordinate with DelDOT's Development Coordination Section to determine details regarding design, schedule, and construction of the roundabout. The intersection should be consistent with the lane configurations shown in the table below.

Approach	Current Configuration		Approach	Proposed Configuration	
Eastbound Middle Neck Road	One through lane		Eastbound Middle Neck Road	One shared left turn/through/right turn lane	
Westbound Middle Neck Road	One through lane		Westbound Middle Neck Road	One shared left turn/through/right turn lane	
Northbound 301 Business Park – South Entrance	Approach does not exist		Northbound 301 Business Park – South Entrance	One shared left turn/through/right turn lane	
Southbound 301 Business Park – North Entrance	Approach does not exist		Southbound 301 Business Park – North Entrance	One shared left turn/through/right turn lane	

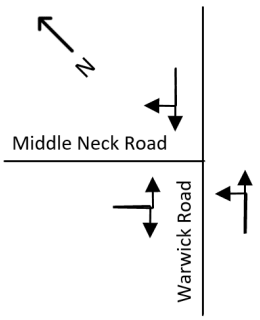
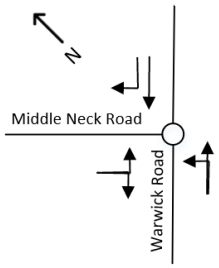
The developer should coordinate with the developer of 301 Business Park – North regarding the construction and equitable cost sharing of the proposed improvements.

3. The developer should construct an unsignalized Site Entrance B full access for the proposed 301 Business Park – South development along Middle Neck Road, approximately 950 feet west of the intersection with Site Entrance A. The intersection should be consistent with the lane configurations shown in the table below.

Approach	Current Configuration		Approach	Proposed Configuration	
Eastbound Middle Neck Road	One through lane		Eastbound Middle Neck Road	One through lane and one right turn lane	
Westbound Middle Neck Road	One through lane		Westbound Middle Neck Road	One left turn lane and one through lane	
Northbound 301 Business Park – South Entrance B	Approach does not exist		Northbound 301 Business Park – South Entrance B	One left turn lane and one right turn lane	

Based on DelDOT's *Development Coordination Manual*, the recommended minimum storage length (excluding taper) of the westbound Middle Neck Road left turn lane is 210 feet and the eastbound Middle Neck Road right turn lane is 145 feet. The projected queues from the traffic analysis can be accommodated within the recommended storage lengths. The auxiliary lane lengths are based on the current projected traffic for each development. A channelizing island should be provided along the northbound 301 Business Park – South approach to separate the left turn and right turn lane. The right turn lane along the northbound 301 Business Park- South approach should be yield controlled.

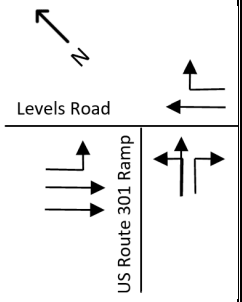
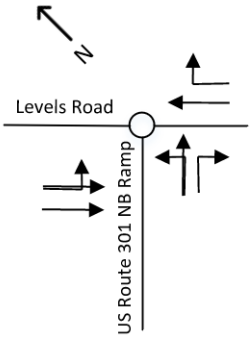
4. The developer should construct a single-lane roundabout at the Middle Neck Road and Warwick Road (New Castle Road 443A) intersection and provide a right turn bypass lane along the southbound Warwick Road approach. The developer should coordinate with DelDOT's Development Coordination Section to determine details regarding design, schedule, and construction of the roundabout. The intersection should be consistent with the lane configurations shown in the table below.

Approach	Current Configuration		Approach	Proposed Configuration	
Eastbound Middle Neck Road	One shared left turn/right turn lane		Eastbound Middle Neck Road	No change	
Northbound Warwick Road	One shared left turn/ through lane		Northbound Warwick Road	No change	
Southbound Warwick Road	One shared through/right turn lane		Southbound Warwick Road	One through lane and one right turn lane*	

*A right turn bypass lane that is yield controlled should be provided along the southbound Warwick Road approach

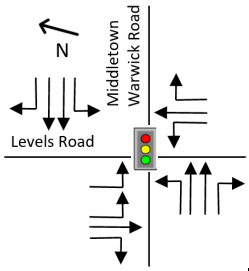
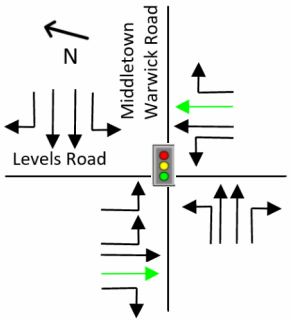
The developer should coordinate with the developer of 301 Business Park – North regarding the construction and equitable cost sharing of the proposed improvements. If 301 Business Park – North does not proceed towards development, 301 Business Park - South would be responsible for the installation of these improvements.

5. The developer should construct a multi-lane roundabout at the unsignalized intersection of Levels Road (New Castle Road 10) / US Route 301 Northbound Ramps. The developer should coordinate with DelDOT's Development Coordination Section to determine details regarding design, schedule, and construction of the roundabout. The intersection should be consistent with the lane configurations shown in the table below.

Approach	Current Configuration		Approach	Proposed Configuration	
Eastbound Levels Road	One left turn lane and two through lanes		Eastbound Levels Road	One shared left turn/through lane and one through lane	
Westbound Levels Road	One through lane and one right turn lane		Westbound Levels Road	One through lane and one right turn lane	
Northbound US Route 301 Ramps	One shared left turn/ through lane and one right turn lane		Northbound US Route 301 Ramps	One shared left turn/through lane and one right turn lane	

The developer should coordinate with the developer of 301 Business Park – North regarding the construction and equitable cost sharing of the proposed improvements. If 301 Business Park – North does not proceed towards development, 301 Business Park - South would be responsible for the installation of these improvements.

6. The developer should modify the Middletown Warwick Road / Levels Road intersection to include one additional through lane along both Levels Road approaches. The intersection should be consistent with the lane configurations shown in the table below.

Approach	Current Configuration		Approach	Proposed Configuration	
Eastbound Levels Road	Two left turn lanes, one through lane, and one right turn lane		Eastbound Levels Road	Two left turn lanes, two through lanes, and one right turn lane	
Westbound Levels Road	One left turn lane, one through lane, and one right turn lane		Westbound Levels Road	One left turn lane, two through lanes, and one right turn lane	
Northbound Middletown Warwick Road	One left turn lane, two through lanes, and one right turn lane		Northbound Middletown Warwick Road	No Change	
Southbound Middletown Warwick Road	One left turn lane, two through lanes, and one right turn lane		Southbound Middletown Warwick Road	No Change	

*The green arrow indicates the improvement to be constructed by the developer

The existing storage lengths should be maintained. The developer should coordinate with the developer of 301 Business Park – North regarding the construction and equitable cost sharing of the proposed improvements. If 301 Business Park – North does not proceed towards development, 301 Business Park - South would be responsible for the installation of these improvements.

7. The developer should enter into a traffic signal agreement with DelDOT for the intersection of Middletown Warwick Road and Levels Road. The developer should coordinate with the DelDOT Development Coordination Section to execute the traffic signal agreement.

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

    a. A minimum fifteen-foot-wide permanent easement from the edge of the right-of-way should be dedicated to DelDOT along the Middle Neck Road (New Castle Road 444) and Warwick Road (New Castle Road 299A) site frontages. Along the site frontage, the developer should construct a ten-foot-wide shared use path (SUP). The SUP should be designed to meet current AASHTO and ADA

standards. A minimum five-foot setback should be maintained from the edge of the pavement to the SUP. The developer should coordinate with DelDOT's Development Coordination Section during the plan review process to identify the exact location of the SUP.

b. Internal connections from the frontage SUP into the site is required.

c. A bicycle and pedestrian crossing should be provided at the Middle Neck Road/Warwick Road intersection.

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

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

f. 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.

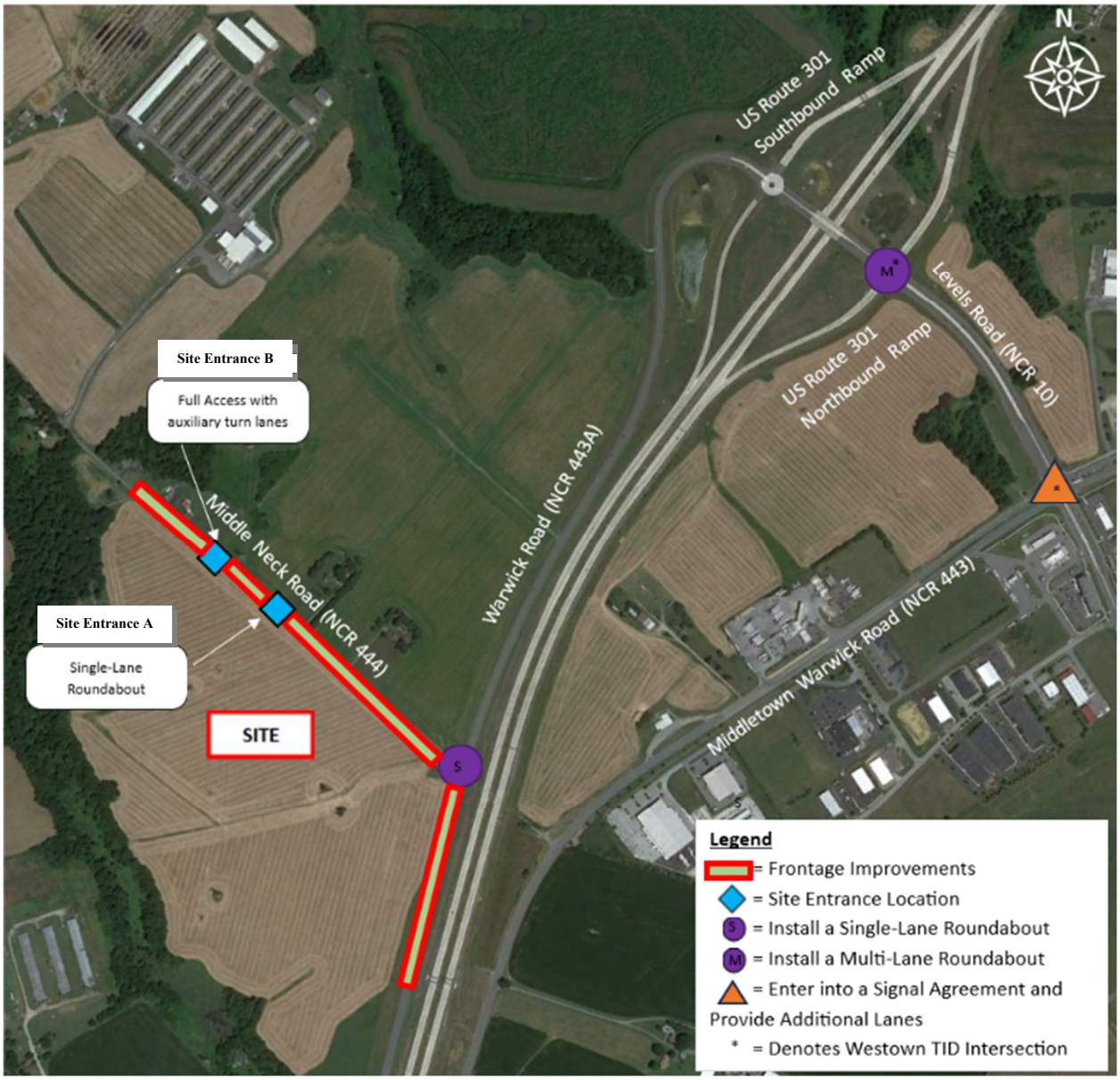
Additional details on our review of the TIS are attached. Please contact me at (302) 266-9600 if you have any questions concerning this review.

Sincerely,
Johnson, Mirmiran, and Thompson, Inc.

Joanne M. Arellano, P.E., PTOE

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

Recommendations Map



General Information
Report date: March 18, 2025
Prepared by: Bowman Consulting Group, Ltd.
Prepared for: Mitchell Investments Co., LLC
Tax Parcel: 23-068.00-002
Generally consistent with DelDOT's Development Coordination Manual (DCM): Yes

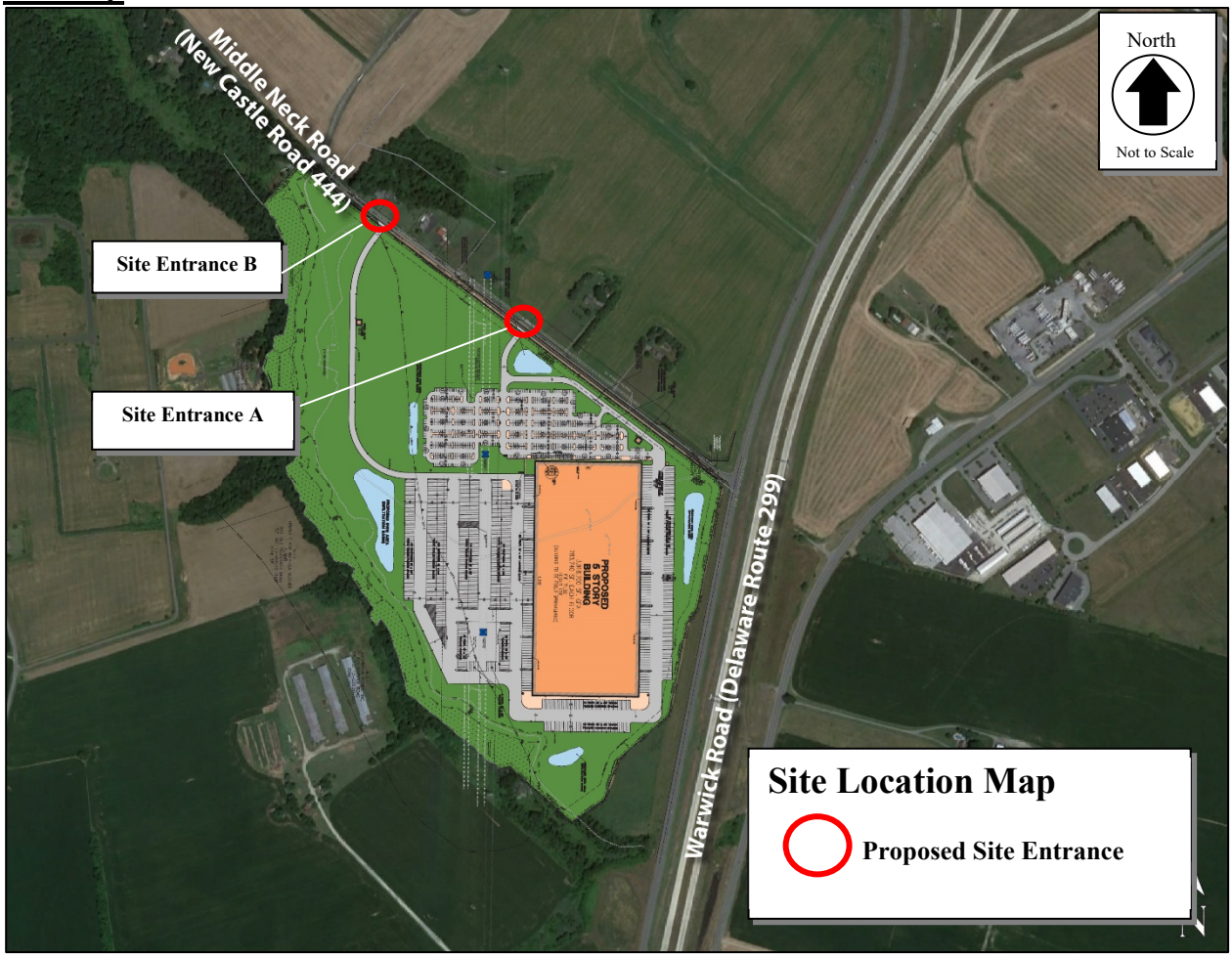
Project Description and Background

Description: The proposed development consists of manufacturing space with 4,500 employees.
Location: The site is located on the southwest corner of the intersection of Middle Neck Road (New Castle Road 444) and Warwick Road (New Castle Road 299A) in the town of Middletown, Delaware.
Amount of Land to be developed: An approximately 116.92-acre.
Land Use approval(s) needed: Entrance Plan.
Proposed completion date: 2031
Proposed access locations: Two full access points are proposed on Middle Neck Road.
Daily Traffic Volumes:

- 2023 Average Annual Daily Traffic on Middle Neck Road: 1,156 vehicles per day
- 2023 Average Annual Daily Traffic on Warwick Road (south of Middle Neck Road): 5,125 vehicles per day.

*AADT is sourced from DelDOT Gateway.

Site Map



**Graphic is an approximation based on the Major Land Development Plan dated March 26, 2025 prepared by McBride & Ziegler, Inc.*

Relevant and On-going Projects

DelDOT has relevant and ongoing projects within or surrounding the study area including the 2021 Hazard Elimination Program (HEP) – Task 1 Site D: SR 299 (Middletown Warwick Road) study. HEP Site D includes Middletown Warwick Road from 0.18 miles west of Levels Road to 0.12 miles east of Sandhill Drive and includes one study intersection: Levels Road and Middletown Warwick Road. The HEP Site D evaluation included a crash summary, field observations, a lighting warrant evaluation, and peak hour traffic volumes. The evaluation also included preliminary recommendations including striping improvements for the north leg crosswalk at Levels Road and Middletown Warwick Road. The corridor was also recommended to be retimed to reduce likelihood of rear end crashes, and an additional study was recommended to consider transitioning one northbound through lane to an acceleration lane for the westbound right turn.

The proposed site is located within the Westown Transportation Improvement District (TID) which was established as part of the Westown Master Plan. The Westown TID is bordered by Bunker Hill Road in the north, Green Giant Road in the south, Middle Neck Road in the west, and

the Norfolk Southern railroad in the east. The Westown TID CTP Cost Development Update Report dated June 2023 is the latest traffic analysis conducted for the Westown TID. The report includes a recommendation to improve one study intersection: Middletown Warwick Road and Levels Road. To meet the Level of Service (LOS) standard for Westown TID which is LOS E, the intersection is recommended to be improved to provide dual left turn lanes along three of the approaches. These improvements, and the other improvements identified in the report, are part of the TID-CTP. The TID is operational and DelDOT continues to collect fees and monitor traffic to prioritize improvements recommended as part of the Westown TID.

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 2.

Investment Level 2

These areas can be composed of less developed areas within municipalities, rapidly growing areas in the counties that have or will have public water and wastewater services and utilities, areas that are generally adjacent to or near Investment Level 1 Areas, smaller towns and rural villages that should grow consistently with their historic character, and suburban areas with public water, wastewater, and utility services. They serve as transition areas between Level 1 and the state's more open, less populated areas. They generally contain a limited variety of housing types, predominantly detached single-family dwellings.

In Investment Level 2 Areas, like Investment Level 1 Areas, state investments and policies should support and encourage a wide range of uses and densities, promote other transportation options, foster efficient use of existing public and private investments, and enhance community identity and integrity. Investments should encourage departure from the typical single-family-dwelling developments and promote a broader mix of housing types and commercial sites encouraging compact, mixed-use development where applicable. Overall, the State's intent is to use its spending and management tools to promote well-designed development in these areas. Such development provides for a variety of housing types, user-friendly transportation systems, essential open spaces and recreational facilities, other public facilities, and services to promote a sense of community.

Level 2 Areas share similar priorities as with the Level 1 Areas where the aim remains to: make context sensitive transportation system capacity enhancements, preserve existing facilities, make safety enhancements, make transportation system capacity improvements, create transit system enhancements, ensure ADA accessibility, and close gaps in the pedestrian system, including the Safe Routes to School projects. Investment Level 2 Areas are ideal locations for Transportation Improvement Districts and Complete Community Enterprise Districts. Other priorities for Level 2 Areas include: Corridor Capacity Preservation, off-alignment multi-use paths, interconnectivity of neighborhoods and public facilities, and signal-system enhancements.
Investment Level 3

Proposed Development's Compatibility with Livable Delaware:
The proposed site is located within Investment Level 2. In Investment Level 2, the priority is for job creation and retention. The proposed manufacturing development would create jobs and would be consistent with the 2020 update of Livable Delaware Strategies for State Policies and Spending.

Comprehensive Plan

(Source: 2022 Middletown Comprehensive Plan)

Middletown Comprehensive Plan:
Per the Future Land Use map, the portion of the development located within Middletown is within an area designated for industrial development.

Proposed Development's Compatibility with Middletown Comprehensive Plan:
The proposed development is for manufacturing and is therefore consistent with the Middletown Comprehensive Plan Update.

Trip Generation

The trip generation for the proposed development was determined by using the comparable land use and rates/equations contained in the 11th Edition of the ITE *Trip Generation Manual*, published by the Institute of Transportation Engineers (ITE) for ITE Land Use Code 140 (Manufacturing).

Table 1
301 Business Park – South Trip Generation

Land Use	ADT	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
LUC 140; 4,500 Employees	9,571	810	299	1,109	362	616	978

Overview of TIS

Intersections examined:

1. Site Entrances / Middle Neck Road (New Castle Road 444) – Full Access
    a. Site Entrance A / Middle Neck Road
    b. Site Entrance B / Middle Neck Road
2. Middle Neck Road / Warwick Road (New Castle Road 299A)
3. US Route 301 / Warwick Road – Grade Separated Intersection
    a. Warwick Road / US Route 301 Southbound Ramps
    b. Levels Road (New Castle Road 10) / US Route 301 Northbound Ramps
4. Middletown Warwick Road (New Castle Road 443) / Levels Road

Conditions Examined:

1. Case 3A - 2031 with development without Freestone Village at Middletown
2. Case 3B – 2031 with development with Freestone Village at Middletown

Committed Developments Considered:

1. 301 Business Park – North
2. Chapel Creek (R Acres – West)
3. Abbey Creek (R Acres – East)
4. STA Middletown Campus
5. 929 Warwick Road
6. Poole Property
7. Freestone Village at Middletown (Case 3B)

The list of committed developments is based on the developments included within the 301 Business Park – North Traffic Impact Study prepared by Rossi Group dated May 9, 2024.

Peak Hours Evaluated: Weekday AM and PM.

Intersection Descriptions

1a. Site Entrance A / Middle Neck Road (New Castle Road 444)

Type of Control: Proposed two-way stop-controlled intersection.

Eastbound Approach: (Middle Neck Road) Existing one through lane and proposed one shared through/ right turn lane.

Westbound Approach: (Middle Neck Road) Existing one through lane and proposed one shared left turn / through lane.

Northbound Approach: (Entrance for 301 Business Park - South) Proposed one shared left turn/ through/ right turn lane.

Southbound Approach: (Entrance for 301 Business Park - North) Proposed one shared left turn/ through/ right turn lane.

1b. Site Entrance B / Middle Neck Road

Type of Control: Proposed two-way stop-controlled intersection.

Eastbound Approach: (Middle Neck Road) Existing one through lane and proposed one through lane and one right turn lane.

Westbound Approach: (Middle Neck Road) Existing one through lane and proposed one left turn lane and one through lane.

Eastbound Approach: (Site Entrance B) Proposed one left turn lane and one right turn lane.

2. Middle Neck Road / Warwick Road (New Castle Road 299)

Type of Control: Existing two-stop controlled intersection.

Eastbound Approach: (Middle Neck Road) Existing one shared left turn/right turn lane.

Northbound Approach: (Warwick Road) Existing one shared left turn/through lane.

Southbound Approach: (Warwick Road) Existing one shared through/ right turn lane.

3a. Warwick Road / US Route 301 Southbound Ramps

Type of Control: Existing signalized intersection.

Eastbound Approach: (Warwick Road) Existing one through lane and one right turn lane.

Westbound Approach: (Warwick Road) Existing one left turn lane and one through lane.

Southbound Approach: (US Route 301 Southbound Ramps) Existing one left turn lane, one shared left turn / through lane, and one right turn lane.

3b. Levels Road (New Castle Road 10) / US Route 301 Northbound Ramps

Type of Control: Existing two-way stop-controlled intersection.

Eastbound Approach: (Levels Road) Existing one through lane and one right turn lane.

Westbound Approach: (Levels Road) Existing one left turn lane and one through lane.

Northbound Approach: (US Route 301 Northbound Ramps) Existing one shared left turn / through lane and one right turn lane.

4. Middletown Warwick Road (New Castle Road 443) / Levels Road

Type of Control: Existing signalized intersection.

Eastbound Approach: (Levels Road) Existing two left turn lanes, one through lane, and one right turn lane.

Westbound Approach: (Levels Road) Existing one left turn lane, one through lane and one right turn lane.

Northbound Approach: (Middletown Warwick Road) Existing one left turn lane, two through lanes, and one right turn lane.

Southbound Approach: (Middletown Warwick Road) 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 Bus Route 302 traverses through the Middletown Warwick Road intersection with Levels Road. There are no bus stops at any of the study intersections.

Planned transit service: Per email correspondence from Jared Kauffman, DART Fixed-Route Planner, on April 8, 2025, DART does not have any comments.

Existing bicycle and pedestrian facilities: According to DelDOT's New Castle County Bicycle Map, there is a connector bicycle route that runs along Warwick Road and Levels Road.

Planned bicycle and pedestrian facilities: DelDOT sent an email to Mr. Anthony Aglio on March 31, 2025. A response has not yet been received.

Bicycle Level of Traffic Stress in Delaware: Researchers with the Mineta Transportation Institute developed a framework to measure low-stress connectivity, which can be used to evaluate and guide bicycle network planning. Bicycle LTS analysis uses factors such as the speed of traffic, volume of traffic, and the number of lanes to rate each roadway segment on a scale of 1 to 4, where 1 is a low-stress place to ride and 4 is a high-stress place to ride. It analyzes the total connectivity of a network to evaluate how many destinations can be accessed using low-stress routes. Developed by planners at the Delaware Department of Transportation (DelDOT), the bicycle Level of Traffic Stress (LTS) model will be applied to bicycle system planning and evaluation throughout the state. The Bicycle LTS for the roadways under existing conditions along the site frontage are summarized below. The Bicycle LTS was determined utilizing the DelDOT Gateway.

- Middle Neck Road: 4
- Warwick Road: 3

Crash Evaluation

Per the crash data included in the TIS from September 15, 2019 to September 15, 2022, provided by the Delaware Department of Transportation (DelDOT), a total of 58 crashes were reported within the Middletown Warwick Road and Warwick Road / Levels Road intersection. Of the reported crashes, 40 were front to rear crashes, 12 were angle crashes, three were sideswipe crashes, and three were classified as not a collision between two vehicles type crashes. There were no fatalities reported.

Previous Comments

No comments.

Sight Distance Evaluation

No sight distance constraints were noted at the proposed site entrance locations.

General Traffic Analysis Comments

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

1) JMT and the TIS used HCM 7th Edition Methodology within Synchro 12 traffic analysis software to complete the analysis.

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

3) 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.

4) Per DelDOT's *Development Coordination Manual*, JMT used a heavy vehicle percentage of 3% for each movement greater than 100 vph in 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, while the TIS used various values.

5) Both JMT and the TIS utilized a heavy vehicle percentage of 5% for each movement entering and exiting the proposed site in Case 3A and Case 3B future scenarios analysis.

Table 2a
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for 301 Business Park - South
Report Dated: March 18, 2025
Prepared by: Bowman Consulting Group, Ltd.

Unsignalized Intersection Two-Way Stop Control[1]	**LOS per TIS**		**LOS per JMT**	
Site Entrance A / Middle Neck Road (New Castle Road 444)	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Case 3A & Case 3B - 2031 with Development[2]				
Eastbound Site Entrance A Approach	-	-	D (26.3)	C (16.0)
Westbound 301 Business Park North Site Entrance Approach	-	-	F (215.0)	F (76.8)
Northbound Middle Neck Road Left Turn	-	-	A (8.0)	A (8.4)
Southbound Middle Neck Road Left Turn	-	-	A (2.3)	A (7.7)
Roundabout				
Case 3A & Case 3B - 2031 with Development[3]				
Eastbound Site Entrance A Approach	A (5.6)	A (9.7)	A (5.6)	A (9.7)
Westbound 301 Business Park North Site Entrance Approach	A (7.4)	A (5.3)	A (7.4)	A (5.3)
Northbound Middle Neck Road Approach	B (12.7)	A (6.4)	B (12.7)	A (6.4)
Southbound Middle Neck Road Approach	A (10.0)	A (6.4)	B (10.1)	A (6.5)
Overall	B (10.9)	A (7.6)	B (10.9)	A (7.7)

[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 intersection as a two-way stop-controlled intersection with one shared left turn/through lane and one right turn lane along the 301 Business Park South eastbound approach, one shared left turn/through lane and one right turn lane along the 301 Business Park North westbound approach, one left turn lane, one through lane, and one right turn lane along the Middle Neck Road northbound approach, and one shared left turn/through lane and one right turn lane along the Middle Neck Road southbound approach.

[3] Both JMT and the TIS modeled the intersection as a single-lane roundabout.

Table 2b
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for 301 Business Park - South
Report Dated: March 18, 2025
Prepared by: Bowman Consulting Group, Ltd.

Unsignalized Intersection Two-Way Stop Control (T-Intersection)[1]	**LOS per TIS**		**LOS per JMT**	
Site Entrance B / Middle Neck Road (New Castle Road 444)	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Case 3A & Case 3B - 2031 with Development[4]				
Eastbound Site Entrance B Left Turn	B (10.8)	B (10.0)	B (10.4)	B (10.1)
Northbound Middle Neck Road Left Turn	A (8.4)	A (7.7)	A (8.2)	A (7.7)

[4] Both JMT and the TIS modeled the intersection with one left turn lane and one right turn lane along the Site Entrance B eastbound approach, one left turn lane and one through lane along the Middle Neck Road northbound approach, and one through lane and one right turn lane along the Middle Neck Road southbound approach.

Table 3
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for 301 Business Park - South
Report Dated: March 18, 2025
Prepared by: Bowman Consulting Group, Ltd.

Unsignalized Intersection Two-Way Stop Control (T-Intersection)[1]	**LOS per TIS**		**LOS per JMT**	
Middle Neck Road / Warwick Road (New Castle Road 443A)	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Case 3A & Case 3B - 2031 with Development				
Eastbound Warwick Road Left Turn	B (13.4)	A (9.6)	B (12.7)	A (9.7)
Southbound Middle Neck Road Approach	F (574.5)	F (845.6)	F (534.6)	F (862.6)
Roundabout				
Case 3A & Case 3B - 2031 with Development[5]				
Eastbound Warwick Road Approach	A (8.4)	B (14.8)	A (7.8)	C (15.8)
Westbound Warwick Road Approach	D (27.6)	A (5.6)	D (26.4)	A (6.1)
Southbound Middle Neck Road Approach	A (8.3)	D (29.7)	A (7.5)	E (35.5)
Overall	C (20.6)	C (18.0)	C (19.6)	C (21.1)

[5] Both JMT and the TIS modeled the intersection as a single-lane roundabout with one shared left run/through lane along the Warwick Road eastbound approach, one through lane and one yield-controlled bypass right turn lane along the Warwick Road westbound approach, and one shared left turn/right turn lane along the Middle Neck Road southbound approach.

Table 4a
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for 301 Business Park - South
Report Dated: March 18, 2025
Prepared by: Bowman Consulting Group, Ltd.

Signalized Intersection[1]	**LOS per TIS**		**LOS per JMT**	
Warwick Road / US Route 301 Southbound Ramps	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Case 3A - 2031 with Development[6, 7]	C (22.6)	F (139.2)	B (19.0)	C (29.1)
Case 3A - 2031 with Development *with signal optimization*[7, 8]	C (22.6)	D (41.9)	B (18.1)	C (26.2)
Case 3B - 2031 with Development[9]	-	-	B (19.2)	C (31.2)
Case 3B - 2031 with Development *with signal optimization*[7, 8]	C (23.6)	D (45.8)	B (18.4)	C (28.9)

[6] JMT modeled the intersection as a signalized intersection with a 105 second cycle length, while the TIS modeled the intersection with a 90 second cycle length.
[7] JMT modeled the intersection with a PHF of 0.92 during the PM peak hour, while the TIS utilized a PHF of 0.90.
[8] Signal optimization scenario includes optimizing green split times. JMT utilized the optimization cycle length of 105.0 seconds, while the TIS used the optimization cycle length of 90 seconds for the AM peak hour and 130.0 seconds for the PM peak hour.
[9] JMT modeled the intersection as a signalized intersection with a 105 second cycle length, while the TIS did not model this case.

Table 4b
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for 301 Business Park - South
Report Dated: March 18, 2025
Prepared by: Bowman Consulting Group, Ltd.

Unsignalized Intersection Two-Way Stop Control[1]	**LOS per TIS**		**LOS per JMT**	
Levels Road (New Castle Road 10) / US Route 301 Northbound Ramps	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Case 3A - 2031 with Development				
Eastbound Levels Road Left Turn	B (11.4)	B (11.1)	B (11.7)	B (10.7)
Northbound US Route 301 Northbound Ramps Approach	F (279.2)	F (189.3)	F (301.4)	F (183.9)
Case 3B - 2031 with Development				
Eastbound Levels Road Left Turn	-	-	B (11.6)	B (10.9)
Northbound US Route 301 Northbound Ramps Approach	-	-	F (310.7)	F (167.0)
Roundabout				
Case 3A - 2031 with Development[10]				
Eastbound Levels Road Approach	A (6.0)	A (8.5)	A (5.9)	A (8.3)
Westbound Levels Road Approach	C (20.0)	B (12.1)	C (20.9)	B (12.1)
Northbound US Route 301 Northbound Ramps Approach	A (8.6)	C (15.4)	A (8.1)	B (12.7)
Overall	B (13.7)	B (10.2)	B (14.1)	B (10.1)
Case 3B - 2031 with Development[10]				
Eastbound Levels Road Approach	A (6.0)	A (8.6)	A (6.0)	A (8.5)
Westbound Levels Road Approach	C (22.0)	B (12.5)	C (23.1)	B (12.6)
Northbound US Route 301 Northbound Ramps Approach	A (8.8)	C (17.8)	A (8.2)	B (14.0)
Overall	B (14.9)	B (10.7)	C (15.4)	B (10.5)

[10] Both the TIS and JMT modelled the intersection as a multi-lane roundabout with one shared left turn/through lane and one through lane along the Levels Road eastbound approach, one through lane and one right turn lane along the Levels Road westbound approach, and one shared left turn/through lane and one right turn lane along the US Route 301 Northbound Ramp approach.

Table 5
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for 301 Business Park - South
Report Dated: March 18, 2025
Prepared by: Bowman Consulting Group, Ltd.

Signalized Intersection[1]	**LOS per TIS**		**LOS per JMT**	
Middletown Warwick Road (New Castle Road 443) / Levels Road	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Case 3A - 2031 with Development	F (185.5)	F (126.3)	F (127.3)	F (131.4)
Case 3A - 2031 with Development with *signal optimization*[11]	-	-	E (69.2)	F (110.2)
Case 3A - 2031 with Development *with Westown TID LOS E improvements*[12]	E (57.0)	E (58.4)	D (50.9)	E (71.0)
Case 3B - 2031 with Development	-	-	F (144.8)	F (173.4)
Case 3B - 2031 with Development with *signal optimization*[11]	-	-	E (77.5)	F (153.4)
Case 3B - 2031 with Development *with Westown TID LOS E improvements*[12]	E (63.7)	E (74.4)	D (52.7)	E (79.4)

[11] Signal optimization scenario includes optimizing green split times.

[12] By considering the improvements proposed within Westown TID LOS E scenario, both JMT and the TIS modelled the intersection by improvements beyond what are proposed as part of the TID. As such, both JMT and the TIS modelled the intersection with two left turn lanes, two through lanes, and one yield-controlled channelized right turn lane along the Levels Road eastbound approach, one left turn lane, two through lanes, and one yield-controlled channelized right turn lane along the Levels Road westbound approach, and one left turn lane, two through lanes, and one right turn lane along the Middletown Warwick Road northbound and southbound approaches.