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

SHANTÉ A. HASTINGS
SECRETARY

December 15, 2025

AnnMarie Vigilante
Langan Engineering & Environmental Services
2700 Kelly Road, Suite 200
Warrington, PA 18976-3653

Dear Ms. Vigilante,

The enclosed Traffic Impact Study (TIS) review letter for the **301 Business Park - North** (Tax Parcel: 2307300001) 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 performed 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: Ryan Kelly, Bluewater Property Group
Briana Pampuch, Langan Engineering & Environmental Services
David L. Edgell, Office of State Planning Coordination
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.
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Mark Luszcz, Chief Engineer, Transportation Solutions (DOTS)
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Matthew Vincent, Chief Project Development North, DOTS
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Sean Humphrey, Traffic Engineer, Traffic, DOTS
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Randhir Sharma, New Castle Review Coordinator, Economic Development Coordination
Michael White, New Castle Review Engineer, Economic Development Coordination
Sireen Muhtaseb, TIS Engineer, Economic Development Coordination
Ben Fisher, TIS Review Engineer, Economic Development Coordination
Tijah Jones, TIS Review Engineer, Economic Development Coordination

December 15, 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 – T202569004
Task Name: Task 2-2 301 Business Park North TIS
JMT No.: 24-01365-202

Dear Ms. Muhtaseb:

Johnson, Mirmiran, and Thompson (JMT) has completed the Traffic Impact Study (TIS) for the 301 Business Park North development. The TIS was assigned as Task Number 2-2. The report is prepared in a manner generally consistent with DelDOT's *Development Coordination Manual* and other Department standards.

The TIS evaluates the impacts of a proposed 3,232,740 square feet of industrial space on an approximately 135.05-acre tax parcel (Tax Parcel 23-073.00-001). The land is located on the northwest corner of the intersection of Middle Neck Road (New Castle Road 444) and Warwick Road (New Castle Road 443A) in the Town of Middletown, New Castle County, Delaware. The land is currently zoned as MI (Manufacturing Industrial), and the developer does not plan to rezone the land.

The TIS was completed considering the 301 Business Park South development on the approximately 116.92-acre parcel across from the site frontage (Tax Parcel 23-068.00-002). The development would be comprised of manufacturing space with 4,500 employees.

There are two full-movement access points proposed on Middle Neck Road, one full movement access (aligned with the 301 Business Park South access) farther from Warwick Road to serve as a primary car entrance, and one full movement access along Middle Neck Road closer to Warwick Road to serve as a primary truck entrance. Construction is anticipated to be completed in 2028.

Two previous Traffic Impact Study (TIS) Reports for 301 Business Park North were submitted to DelDOT on October 9, 2023, and May 9, 2024, with DelDOT issuing a Final TIS Review Letter dated July 10, 2024. Per section 2.2.1.5 of the Development Coordination Manual (DCM), "If a TIS is prepared for a proposed development and DelDOT finds that existing or projected future conditions in the study area have changed significantly after the completion of the TIS, DelDOT may require a new, revised, or updated TIS or a TIS at its sole discretion before issuing a Letter of No Objection to Recordation." As such, DelDOT required a new TIS for the site.

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	
1a - Site Entrance A / Middle Neck Road	X	X	Case 3 - 2028 with Development
1b - Site Entrance B / Middle Neck Road	X	X	Case 3 – 2028 with Development
2 - Middle Neck Road / Warwick Road	X	X	Case 2 – 2028 without Development Case 3 - 2028 with Development

3b - US Route 301 Northbound Ramps / Levels Road	X	X	Case 3 - 2028 with Development
4 - Middletown Warwick Road / Levels Road		X	Case 2 – 2028 without Development
		X	Case 3 – 2028 with Development

1a - Site Entrance A / Middle Neck Road (See Table 2a page 22, Development Improvement #3)

The 301 Business Park North Site Entrance A approach to Middle Neck Road (New Castle Road 444) is proposed across from the proposed 301 Business Park South 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 Case 3 conditions during both the AM and PM peak hours. During the PM peak hour, the southbound 301 Business Park North Site Entrance approach would operate at LOS F with delays of over 1,000 seconds per vehicle and projected 95th percentile queue lengths of over 1,000 feet.

With the provision of a single lane roundabout, the intersection would operate at LOS F (approximately 75 seconds of delay per vehicle) during the AM peak hour. With the provision of a multi-lane roundabout with two lanes along the Middle Neck Road approaches, the intersection would improve to operate at LOS A (approximately 9 seconds of delay per vehicle) during the AM peak hour and LOS C (approximately 19 seconds of delay per vehicle) during the PM peak hour. The calculated 95th percentile queue lengths during the PM peak hour along the northbound 301 Business Park South Site Entrance and the southbound 301 Business Park North Site Entrance A would be approximately 250 feet and 200 feet, respectively. The projected queue lengths would impact onsite operations but would not impact operations along Middle Neck Road. Therefore, it is recommended that the Site Entrance A intersection with Middle Neck Road be a multi-lane roundabout with two lanes along the Middle Neck Road approaches and one shared lane along the northbound and southbound entrance approaches.

1b - Site Entrance B / Middle Neck Road (See Table 2b page 25, Development Improvement #4)

As an unsignalized two-way stop-controlled intersection, LOS deficiencies would occur along the southbound 301 Business Park North Site Entrance approach under Case 3 conditions during both the AM and PM peak hours. During the PM peak hour, the southbound 301 Business Park North Site Entrance approach would operate at LOS F with delays of approximately 178 seconds per vehicle and projected 95th percentile queue lengths of approximately 35 feet.

With the provision of a single lane roundabout, the intersection would continue to operate with capacity constraints. Specifically, the intersection would operate at LOS E (approximately 37 seconds of delay per vehicle) during the AM peak hour.

As the proposed Site Entrance B would be located approximately 450 feet west of the Middle Neck Road / Warwick Road intersection, a signal is not recommended to be considered as queue lengths along the westbound Middle Neck Road approach at Site Entrance B may spillback onto Warwick Road and impact operations.

A multi-lane roundabout would mitigate the LOS deficiencies. However, due to the proximity to the Middle Neck Road / Warwick Road intersection, the installation of a multi-lane roundabout may not be feasible.

Although the southbound Site Entrance B approach would operate at LOS F, it is recommended that the Site Entrance B intersection with Middle Neck Road be two-way stop-controlled with one left turn lane and two through lanes along eastbound Middle Neck Road, one through lane and one shared through/right turn lane along westbound Middle Neck Road, and one shared left turn/right turn lane along the southbound Site Entrance B approach. With this configuration, the southbound Site Entrance B approach calculated 95th percentile queue length would be approximately 25 feet which could be accommodated onsite and not impact operations along Middle Neck Road.

2 - Middle Neck Road / Warwick Road (See Table 3, Page 28, Development Improvement #5)

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 or without the proposed development during the AM and PM peak hours. Specifically, under Case 3 conditions during the PM peak hour, the eastbound Middle Neck Road approach would operate at LOS F (over 1,000 seconds of delay per vehicle) with a projected 95th percentile queue length of approximately 2,900 feet.

The deficiencies could be mitigated by the provision of a multi-lane roundabout or a traffic signal. With the provision of a multi-lane roundabout, the intersection would operate at LOS A during the AM and PM peak hours (approximately less than 10 seconds of delay per vehicle). A traffic signal would improve the intersection to operate at LOS C during the AM and PM peak hours (approximately 25 seconds of delay per vehicle).

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 3 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 multi-lane roundabout at the Middle Neck Road intersection with Warwick Road.

3b - US Route 301 Northbound Ramps / Levels Road (See Table 3b, Page 32, Development Improvement #6)

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. Specifically, during the PM peak hour under Case 3 conditions, the northbound US Route 301 Ramps approach would operate at LOS F with a delay of approximately 755 seconds per vehicle and a projected 95th percentile queue length of approximately 190 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 right turn yield-controlled bypass lane along the westbound Levels Road approach, and one shared left turn/through lane and one right turn yield-controlled bypass lane along the northbound US Route 301 Ramps approach, the intersection would improve to operate at acceptable LOS B during both the AM and PM peak hours. Specifically, during the PM peak hour, the intersection would operate at LOS B (approximately 15 seconds of delay per vehicle) and the northbound US Route 301 Ramps calculated 95th percentile queue length would reduce to approximately 50 feet. As such, it is recommended that the developer convert the intersection to a multi-lane roundabout.

<u>4 - Middletown Warwick Road / Levels Road (See Table 5, Page 34, Development Improvement #7)</u>

The signalized Middletown Warwick Road (New Castle Road 443) / Levels Road intersection would exhibit LOS deficiencies during the AM and PM peak hours under future conditions with or without the proposed development. With the existing geometry during the PM peak hour, the intersection would operate at LOS F (approximately 121 seconds of delay per vehicle) under Case 3 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 3 conditions, the intersection would improve to operate at acceptable LOS E (approximately 56 seconds of delay per vehicle during the AM peak hour and approximately 57 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

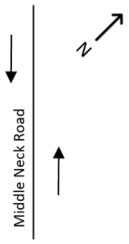
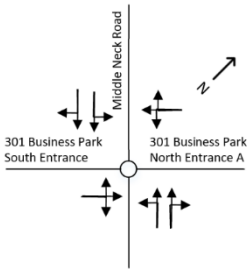
Should the Town of Middletown approve the proposed development, the following items should be incorporated into the site design and reflected on the record plan, entrance plans, or construction plans by note or illustration unless a Design Deviation is requested and approved by the Department. All applicable 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.

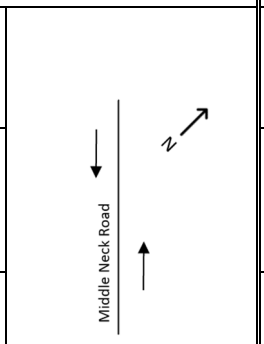
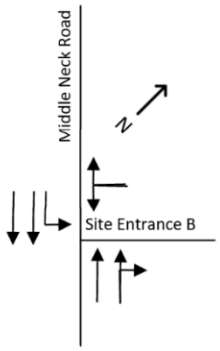
2. The developer should widen eastbound and westbound Middle Neck Road from Site Entrance A to Warwick Road to provide two through lanes in each direction of travel. The widening should be designed to accommodate the recommended intersection improvements at Site Entrance A, Site Entrance B, and Warwick Road. The developer should coordinate with DelDOT's Development Coordination Section to determine details regarding design, schedule, and construction of the widening.

3. The developer should construct the Site Entrance A full access for the proposed 301 Business Park North development as a multi-lane roundabout along Middle Neck Road across from the proposed 301 Business Park South 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 lane and one shared through/right turn lane	
Westbound Middle Neck Road	One through lane		Westbound Middle Neck Road	One shared left turn/through lane and one shared 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	

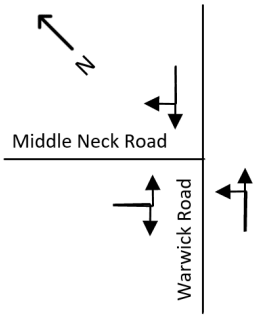
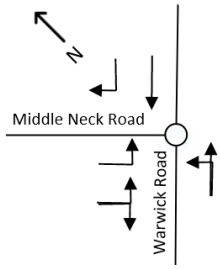
The developer should coordinate with the developer of 301 Business Park South regarding the construction and equitable cost sharing of the proposed improvements.

4. The developer should construct an unsignalized Site Entrance B full access for the proposed 301 Business Park North development along Middle Neck Road, approximately 450 feet west of the intersection with Warwick Road. 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 left turn lane and two through lanes	
Westbound Middle Neck Road	One through lane		Westbound Middle Neck Road	One through lane and one shared through/right turn lane	
Southbound 301 Business Park North Entrance B	Approach does not exist		Southbound 301 Business Park North Entrance B	One shared left turn/right turn lane	

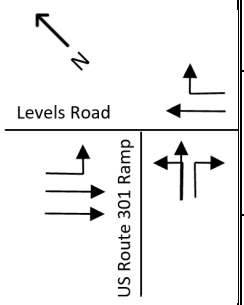
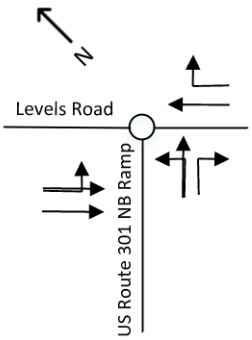
Based on DelDOT's *Development Coordination Manual*, the recommended minimum storage length (excluding taper) of the eastbound Middle Neck Road left turn lane is 235 feet. The projected queues from the traffic analysis can be accommodated within the recommended storage length.

5. The developer should construct a multi-lane roundabout at the Middle Neck Road and Warwick Road intersection. 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	One left turn lane and one shared left turn/right turn lane	
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 free-flow bypass lane	

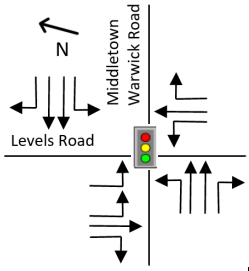
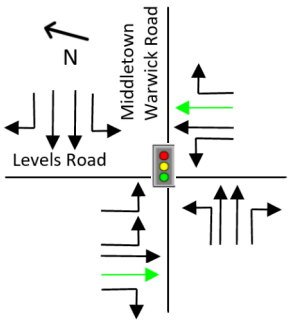
The developer should coordinate with the developer of 301 Business Park South regarding the construction and equitable cost sharing of the proposed improvements. If 301 Business Park South does not proceed towards development, 301 Business Park North would be responsible for the installation of these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

6. The developer should construct a multi-lane roundabout at the unsignalized intersection of Levels Road / 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	No Change	
Northbound US Route 301 Ramps	One shared left turn/ through lane and one right turn lane		Northbound US Route 301 Ramps	No Change	

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

7. 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 South regarding the construction and equitable cost sharing of the proposed improvements. If 301 Business Park South does not proceed towards development, 301 Business Park North would be responsible for the installation of these improvements.

8. 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.

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 the Middle Neck Road and Warwick Road 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. Rectangular rapid flashing beacons (RRFB) should be installed along the multilane approaches of the roundabouts.

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

f. 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.

g. 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.

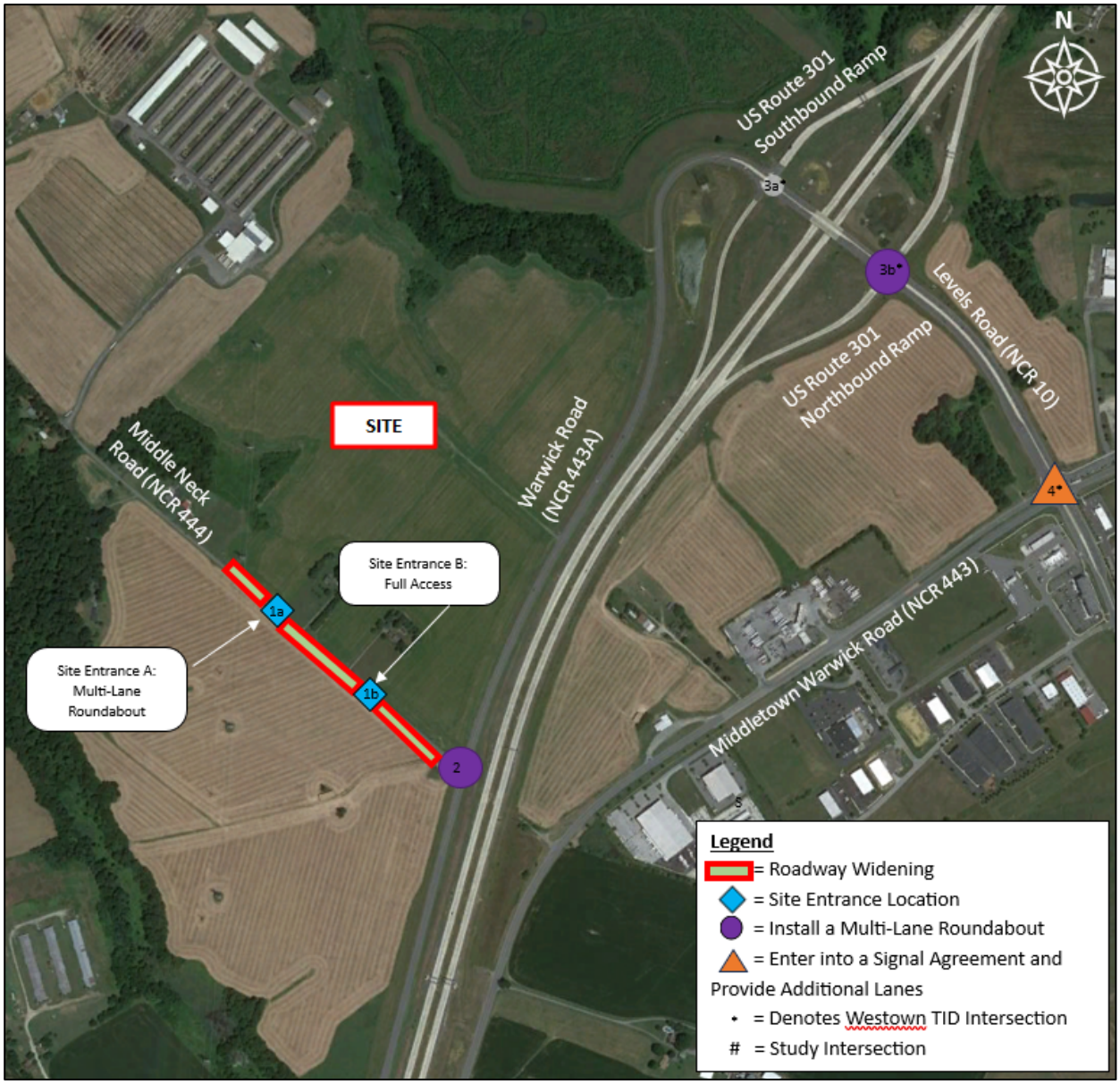
Additional details on our review of the TIS are attached. Please contact me at (302) 266-9600 if you have any questions concerning this review.

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: July 2025
Prepared by: Johnson, Mirmiran, & Thompson (JMT)
Prepared for: Bluewater Property Group
Tax Parcel: 23-073.00-001
Generally consistent with DelDOT's Development Coordination Manual (DCM): Yes

Project Description and Background

Description: The proposed development consists of 3,232,740 square feet of industrial space. The land is located on the northwest corner of the intersection of Middle Neck Road (New Castle Road 444) and Warwick Road (New Castle Road 443A) in the Town of Middletown, New Castle County, Delaware.
Amount of Land to be developed: An approximately 135.05-acre parcel.
Land Use approval(s) needed: Entrance Plan.
Proposed completion date: 2028
Proposed access locations: Two full-movement access points proposed on Middle Neck Road, one full movement access (aligned with the 301 Business Park South access) at the entrance farther from Warwick Road to serve as a primary car entrance, and one full movement access along Middle Neck Road at the entrance closer to Warwick Road to serve as a primary truck entrance.
Daily Traffic Volumes:

- 2025 Average Daily Traffic on Middle Neck Road: 643 vehicles per day

*AADT is based on ATR count data from 5/28/2025 to 6/3/2025.

Site Map

**Graphic is an approximation based on the Major Land Development Plan last revised February 12, 2025 prepared by Langan Engineering and Environmental Services, LLC.*

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 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.

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.

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 industrial 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 provided by the developer.

Table 1
301 Business Park North Trip Generation

	AM Peak Hour			**PM Peak Hour**		
	In	Out	Total	In	Out	Total
Cars	612	69	681	501	591	1,092
Trucks	9	7	16	10	13	23
Total	621	76	697	511	604	1,115
AADT	4,777					

Overview of TIS

Intersections examined:

1. Site Entrances / Middle Neck Road (New Castle Road 444)
    a. Site Entrance A / Middle Neck Road (farther from Warwick Road)
    b. Site Entrance B / Middle Neck Road (closer to Warwick Road)
2. Middle Neck Road / Warwick Road (New Castle Road 443A)
3. US Route 301 / Warwick Road / Levels Road (New Castle Road 10)
    a. US Route 301 Southbound Ramps / Warwick Road / Levels Road
    b. US Route 301 Northbound Ramps / Levels Road
4. Middletown Warwick Road (New Castle Road 443) / Levels Road

Conditions Examined:

1. Case 1 – Existing 2025
2. Case 2 – 2028 without development
3. Case 3 – 2028 with development

Committed Developments Considered:

1. **301 Business Park South** – 4,500 employee manufacturing space
2. **Freestone Village at Middletown (f.k.a. Levels View Farm)** – 274 single-family detached houses and 431 single-family attached houses
3. **Poole Property** – 110 room hotel, 5,000 square feet fast food restaurant with drive-through, 48,200 square feet retail
4. **Poole East** – 160,425 square feet mini-warehousing space, 56,125 square feet retail without supermarket, 5,000 square feet fast-food restaurant with drive-through
5. **STA Middletown Campus** – 2,184,879 square foot pharmaceutical / manufacturing
6. **929 Warwick Road** – 567,000 square foot industrial park
7. **St. Johns Properties Middletown Site** – 445 single-family attached (townhouses) and 215,520 square foot business park
8. **Walmart Middletown Fuel Service #3802** – 16 vehicle fueling position gas station addition to the existing Walmart site

Peak Hours Evaluated: Weekday AM and PM.

Intersection Descriptions

1a. Site Entrance A / Middle Neck Road (farther from Warwick Road)

Type of Control: Proposed multi-lane roundabout.

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

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

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

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

2. Middle Neck Road / Warwick Road

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. US Route 301 Southbound Ramps / Warwick Road / Levels Road

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. US Route 301 Northbound Ramps / Levels Road

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

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

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

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

4. Middletown Warwick Road / 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 May 27, 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 May 21, 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 June 2022 to June 2025, provided by the Delaware Department of Transportation (DelDOT), a total of 99 crashes were reported within the study area. Of the 99 crashes reported, 81 crashes involved property damage only, 16 crashes involved personal injury, and two (2) crashes resulted in fatalities.

One (1) front to rear crash resulting in personal injury was reported at the intersection of Middle Neck Road and Warwick Road.

Three (3) total crashes were reported at the intersection of US Route 301 Southbound Ramps and Warwick Road, including one (1) front to rear crash, one (1) angle crash, and one sideswipe crash in the same direction. All these crashes involved property damage only.

Four (4) total crashes were reported at the US Route 301 Northbound Ramps and Warwick Road intersection, including three (3) front to rear crashes, and one (1) angle crash. Two (2) of these crashes involved personal injury and one front to rear crash involved a crash between a car and a bike, which resulted in a fatality.

A total of 91 total crashes were reported at the Middletown Warwick Road and Levels Road intersection, including 69 front to rear crashes, 14 angle crashes, two (2) crashes not involving a collision between two vehicles, and six (6) sideswipe crashes in the same direction. 14 crashes involved personal injury, and one (1) crash involved a bike related fatality.

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 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.

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.

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.

5) At Site Entrance A, JMT utilized a heavy vehicle percentage of 5% for each movement entering and exiting the proposed site in Case 3 future scenarios analysis.

6) At Site Entrance B, JMT utilized a heavy vehicle percentage of 100% for each movement entering and exiting the proposed site in Case 3 future scenarios analysis.

7) Results highlighted in gray indicate JMT recommendations.

Table 2a
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for 301 Business Park North
Report Dated: July 2025
Prepared by: JMT

Unsignalized Intersection Two-Way Stop Control[1]	**LOS**	
1a - Site Entrance A / Middle Neck Road	Weekday AM	Weekday PM
Case 2 - 2028 without Development[2]		
Northbound 301 Business Park South Site Entrance Approach	C (22.9)	C (22.2)
Eastbound Middle Neck Road Left Turn	A (9.4)	A (8.3)
Case 3 - 2028 with Development[3]		
Northbound 301 Business Park South Site Entrance Approach	D (28.7)	C (16.4)
Northbound 301 Business Park South Site Entrance Left Turn Queue Length	58’	35’
Southbound Site Entrance A Approach	F (646.2)	F (*)
Southbound Site Entrance A Left Turn Queue Length	188’	1,605’
Eastbound Middle Neck Road Left Turn	B (10.0)	A (9.1)
Westbound Middle Neck Road Left Turn	A (9.4)	A (8.3)

*Indicates delay more than 1000 seconds per vehicle

[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/right turn lane along the 301 Business Park South northbound approach, one left turn lane and one through lane along the Middle Neck Road westbound approach, and one through lane and one right turn lane along the Middle Neck Road eastbound approach.

[3] 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 and North northbound and southbound approaches, respectively, one left turn lane, one through lane, and one right turn lane along the Middle Neck Road westbound approach, and one shared left turn/through lane and one right turn lane along the Middle Neck Road eastbound approach.

Table 2a (continued)
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for 301 Business Park North
Report Dated: July 2025
Prepared by: JMT

Roundabout[1]	**LOS**	
1a - Site Entrance A / Middle Neck Road	Weekday AM	Weekday PM
Case 3 - 2028 with Development *with single lane roundabout*[4]		
Northbound Business Park South Site Entrance Approach	A (5.7)	E (41.8)
Northbound Business Park South Site Entrance Approach Queue Length	25’	250’
Southbound Site Entrance A Approach	A (8.2)	C (22.3)
Southbound Site Entrance A Approach Queue Length	0’	200’
Westbound Middle Neck Road Approach	F (101.8)	C (15.3)
Westbound Middle Neck Road Queue Length	975’	175’
Eastbound Middle Neck Road Approach	B (10.4)	C (15.9)
Overall	F (75.0)	C (23.0)
Case 3 - 2028 with Development *with multi-lane roundabout and one shared lane along NB and SB*[5]		
Northbound Business Park South Site Entrance Approach	A (5.7)	E (41.8)
Northbound Business Park South Site Entrance Approach Queue Length	25’	250’
Southbound Site Entrance A Approach	A (8.2)	C (22.3)
Southbound Site Entrance A Approach Queue Length	0’	200’
Westbound Middle Neck Road Approach	A (9.4)	A (6.4)
Westbound Middle Neck Road Approach Queue Length	75’	50’
Eastbound Middle Neck Road Approach	A (6.7)	B (8.6)
Overall	A (8.6)	C (18.7)

[4] JMT modeled the intersection as a single-lane roundabout.

[5] JMT modeled the intersection as a multi-lane roundabout with one shared left turn/through lane/right turn lane along the 301 Business Park South northbound and 301 Business Park North southbound approaches and one shared left turn/through lane and one shared through/right turn lane along the Middle Neck Road westbound and eastbound approaches.

Table 2a (continued)
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for 301 Business Park North
Report Dated: July 2025
Prepared by: JMT

Roundabout[1]	**LOS**	
1a - Site Entrance A / Middle Neck Road	Weekday AM	Weekday PM
Case 3 - 2028 with Development *with multi-lane roundabout and two lanes along NB and SB*[6]		
Northbound Business Park South Site Entrance Approach	A (4.5)	C (17.4)
Northbound Business Park South Site Entrance Left Turn/Through Lane Queue Length	25’	125’
Southbound Site Entrance A Approach	A (6.5)	A (8.4)
Southbound Site Entrance A Left Turn/Through Queue Length	0’	50’
Westbound Middle Neck Road Approach	A (9.8)	A (6.6)
Westbound Middle Neck Road Approach Queue Length	100’	50’
Eastbound Middle Neck Road Approach	A (6.7)	A (8.6)
Overall	A (8.6)	A (9.7)

[6] JMT modeled the intersection as a multi-lane roundabout with one shared left turn/through lane and one right turn bypass lane along the 301 Business Park South northbound approach, one shared left turn/through/right turn lane and one left turn lane along the 301 Business Park North southbound approach, and one shared left turn/through lane and one shared through/right turn lane along the Middle Neck Road westbound and eastbound approaches.

Table 2b
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for 301 Business Park North
Report Dated: July 2025
Prepared by: JMT

Unsignalized Intersection Two-Way Stop Control (T-Intersection)[1]	**LOS**	
1b - Site Entrance B / Middle Neck Road	Weekday AM	Weekday PM
Case 3 - 2028 with Development[7]		
Southbound Site Entrance B Approach	F (80.5)	F (178.5)
Southbound Site Entrance B Approach Queue Length	10’	35’
Eastbound Middle Neck Road Left Turn	C (18.2)	B (12.6)
Case 3 - 2028 with Development *with auxiliary lanes along Middle Neck Road and one shared SB lane*[8]		
Southbound Site Entrance B Approach	F (79.8)	F (175.3)
Southbound Site Entrance B Approach Queue Length	10’	35’
Eastbound Middle Neck Road Left Turn	C (18.2)	B (12.6)
Case 3 - 2028 with Development *with auxiliary lanes along Middle Neck Road and two SB lanes*[9]		
Southbound Site Entrance B Approach	F (78.3)	F (173.0)
Southbound Site Entrance B Approach Queue Length	10’	33’
Eastbound Middle Neck Road Left Turn	C (18.2)	B (12.6)

[7] JMT modeled the intersection with one shared left turn and right turn lane along the Site Entrance B southbound approach, one shared through/right turn lane along the Middle Neck Road westbound approach, and one shared left turn/through lane along the Middle Neck Road eastbound approach.
[8] JMT modeled the intersection with one shared left turn and right turn lane along the Site Entrance B southbound approach, one through lane and one right turn lane along the Middle Neck Road westbound approach, and one left turn lane and one through lane along the Middle Neck Road eastbound approach.
[9] JMT modeled the intersection with one left turn lane and one right turn lane along the Site Entrance B southbound approach, one through lane and one right turn lane along the Middle Neck Road westbound approach, and one left turn lane and one through lane along the Middle Neck Road eastbound approach.

Table 2b (Continued)
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for 301 Business Park North
Report Dated: July 2025
Prepared by: JMT

Unsignalized Intersection Two-Way Stop Control (T-Intersection)[1]	**LOS**	
1b - Site Entrance B / Middle Neck Road	Weekday AM	Weekday PM
Case 3 - 2028 with Development *with additional lanes along Middle Neck Road*[10]		
Southbound Site Entrance B Approach	F (107.1)	F (103.1)
Southbound Site Entrance B Left Turn Queue Length	15’	25’
Eastbound Middle Neck Road Left Turn	C (24.9)	B (15.0)
Case 3 - 2028 with Development *with additional lanes along Middle Neck Road and one shared SB lane*[11]		
Southbound Site Entrance B Approach	F (108.1)	F (103.7)
Southbound Site Entrance B Approach Queue Length	15’	25’
Eastbound Middle Neck Road Left Turn	C (24.9)	B (15.0)
Eastbound Middle Neck Road Left Turn Lane Queue Length	0’	0’
All-Way Stop Control[1]		
Case 3 - 2028 with Development[12]		
Southbound Site Entrance B Approach	B (12.9)	B (14.0)
Eastbound Middle Neck Road Approach	C (23.9)	F (542.5)
Westbound Middle Neck Road Approach	F (366.9)	F (116.3)
Overall	F (292.6)	F (359.0)

[10] JMT modeled the intersection with one shared left turn/through lane and one through lane along the eastbound Middle Neck Road approach, one through lane and one shared through/right turn lane along the westbound Middle Neck Road approach, and one left turn lane and one right turn lane along the southbound Site Entrance B approach.
[11] JMT modeled the intersection with one left turn lane and two through lanes along the eastbound Middle Neck Road approach, one through lane and one shared through/right turn lane along the westbound Middle Neck Road approach, and one shared left turn and right turn lane along the southbound Site Entrance B approach.
[12] JMT modeled the intersection as an all-way stop control.

Table 2b (continued)
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for 301 Business Park North
Report Dated: July 2025
Prepared by: JMT

Roundabout[1]	**LOS**	
1b - Site Entrance B / Middle Neck Road	Weekday AM	Weekday PM
Case 3 - 2028 with Development *with single lane roundabout*[13]		
Southbound Site Entrance B Approach	C (24.1)	B (14.1)
Eastbound Middle Neck Road Approach	A (5.3)	D (27.9)
Westbound Middle Neck Road Approach	F (59.0)	B (11.4)
Overall	E (47.6)	C (20.8)
Case 3 - 2028 with Development *with multi-lane roundabout* [14]		
Southbound Site Entrance B Approach	C (24.1)	B (14.1)
Eastbound Middle Neck Road Approach	A (3.8)	A (7.1)
Westbound Middle Neck Road Approach	A (8.0)	A (5.6)
Overall	A (7.2)	A (6.5)

[13] JMT modeled the intersection as a single-lane roundabout.

[14] JMT modeled the intersection as a multi lane roundabout with one shared left turn/through lane and one through lane along the eastbound approach, one through lane and one shared through/right turn lane along the westbound approach, and one shared left turn/right turn lane along the southbound approach.

Table 3
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for 301 Business Park North
Report Dated: July 2025
Prepared by: JMT

Unsignalized Intersection Two-Way Stop Control (T-Intersection)[1]	**LOS**	
2 - Middle Neck Road / Warwick Road	Weekday AM	Weekday PM
Case 1 – 2025 Existing		
Northbound Warwick Road Left Turn	A (7.5)	A (7.8)
Eastbound Middle Neck Road Approach	B (10.1)	B (11.0)
Case 2 - 2028 without Development		
Northbound Warwick Road Left Turn	B (10.1)	A (8.7)
Eastbound Middle Neck Road Approach	F (53.0)	F (175.7)
Eastbound Middle Neck Road Approach Queue Length	203’	675’
Case 3 - 2028 with Development		
Northbound Warwick Road Left Turn	B (14.5)	B (10.9)
Eastbound Middle Neck Road Approach	F (468.7)	F (*)
Eastbound Middle Neck Road Approach Queue Length	708’	2908’
Case 3 - 2028 with Development *with intersection reconfiguration*[15]		
Northbound Warwick Road Approach	F (561.6)	F (*)
Eastbound Middle Neck Road Left Turn	A (8.5)	B (14.5)
Case 3 - 2028 with Development *with auxiliary lanes*[16]		
Northbound Warwick Road Left Turn	B (14.5)	B (10.9)
Eastbound Middle Neck Road Approach	D (31.1)	F (555.0)
Eastbound Middle Neck Road Approach Queue Length	5’	2183’
All-Way Stop Control (T-Intersection)[1]		
Case 3 – 2028 with Development[17]		
Northbound Warwick Road Approach	C (15.7)	C (20.3)
Southbound Warwick Road Approach	F (514.4)	F (332.4)
Southbound Warwick Road Approach Queue Length	2,505’	1,840’
Eastbound Middle Neck Road Approach	D (28.2)	F (549.2)
Overall	F (370.8)	F (417.2)

*Indicates delay more than 1000 seconds per vehicle

[15] JMT modeled the intersection as a two-way stop control reconfigured with the Warwick Road northbound approach as stop-controlled and the eastbound Middle Neck Road approach as a free movement. This analysis was conducted with HCS software based on HCM methodology due to limitations in Synchro software.
[16] JMT modeled the intersection as a two-way stop control with auxiliary lanes along Warwick Road.
[17] JMT modeled the intersection as an all-way stop control.

Table 3 (continued)
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for 301 Business Park North
Report Dated: July 2025
Prepared by: JMT

Roundabout[1]	**LOS**	
2 - Middle Neck Road / Warwick Road	Weekday AM	Weekday PM
Case 3 - 2028 with Development *with single lane roundabout*[18]		
Northbound Warwick Road Approach	A (6.6)	C (18.7)
Southbound Warwick Road Approach	F (106.2)	C (17.8)
Southbound Warwick Road Approach Queue Length	1050’	250’
Eastbound Middle Neck Road Approach	A (6.3)	F (82.5)
Eastbound Middle Neck Road Approach Queue Length	25’	775’
Overall	F (77.0)	E (50.1)
Case 3 - 2028 with Development *with single lane roundabout and a SB right turn bypass lane*[19]		
Northbound Warwick Road Approach	A (6.6)	C (18.7)
Southbound Warwick Road Approach	F (60.0)	B (10.0)
Southbound Warwick Road Right Turn Queue Length	700’	125’
Eastbound Middle Neck Road Approach	A (6.3)	F (82.5)
Eastbound Middle Neck Road Approach Queue Length	25’	775’
Overall	E (44.4)	E (46.8)

[18] JMT modeled the intersection as a single lane roundabout.

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

Table 3 (continued)
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for 301 Business Park North
Report Dated: July 2025
Prepared by: JMT

Roundabout[1]	**LOS**	
2 - Middle Neck Road / Warwick Road	Weekday AM	Weekday PM
Case 3 - 2028 with Development *with multi-lane roundabout*[20]		
Northbound Warwick Road Approach	A (5.8)	B (13.0)
Southbound Warwick Road Approach	A (0.3)	A (0.7)
Southbound Warwick Road Right Turn Queue Length	175’	50’
Eastbound Middle Neck Road Approach	A (4.5)	A (9.8)
Eastbound Middle Neck Road Approach Queue Length	25’	100’
Overall	A (1.7)	A (6.2)

Signalized Intersection[1]	**LOS**	
2 - Middle Neck Road / Warwick Road	Weekday AM	Weekday PM
Case 3 - 2028 with Development[21]	C (22.7)	C (24.7)

[20] JMT modeled the intersection as a multi-lane roundabout with one shared left turn/through lane along the Warwick Road northbound approach, one through lane and one right turn free-flow bypass lane along the Warwick Road southbound approach, and one left turn lane and one shared left turn/right turn lane along the Middle Neck Road eastbound approach.

[21] JMT modeled the intersection as signalized with one left turn lane and through lane along the Warwick Road northbound approach, one through lane and right turn lane along Warwick Road southbound approach, and one left turn lane and one right turn lane along the Middle Neck Road eastbound approach.

Table 4a
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for 301 Business Park North
Report Dated: July 2025
Prepared by: JMT

Signalized Intersection[1]	**LOS**	
3a - US Route 301 Southbound Ramps / Warwick Road / Levels Road	Weekday AM	Weekday PM
Case 1 - 2025 Existing	B (11.5)	B (12.7)
Case 2 - 2028 without Development	B (13.1)	B (18.4)
Case 3 - 2028 with Development	B (14.6)	E (58.1)
Case 3 - 2028 with Development *with signal optimization*[22]	B (15.2)	D (43.8)

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

Table 4b
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for 301 Business Park North
Report Dated: July 2025
Prepared by: JMT

Unsignalized Intersection Two-Way Stop Control[1]	**LOS**	
3b - US Route 301 Northbound Ramps / Levels Road	Weekday AM	Weekday PM
Case 1 - 2025 Existing		
Eastbound Levels Road Left Turn	A (7.6)	A (7.7)
Northbound US Route 301 Northbound Ramps Approach	A (9.1)	B (10.2)
Case 2 - 2028 without Development		
Eastbound Levels Road Left Turn	A (9.5)	A (9.1)
Northbound US Route 301 Northbound Ramps Approach	D (25.0)	C (24.2)
Case 3 - 2028 with Development		
Eastbound Levels Road Left Turn	B (11.7)	B (12.8)
Northbound US Route 301 Northbound Ramps Approach	F (176.4)	F (755.0)
Northbound US Route 301 Northbound Ramps Left Turn/Through	F (365.0)	F (*)
Northbound US Route 301 Northbound Ramps Right Turn	B (16.1)	C (55.3)
Roundabout[1]		
Case 3 - 2028 with Development[23]		
Eastbound Levels Road Approach	A (5.1)	B (10.0)
Westbound Levels Road Approach	C (20.4)	C (19.0)
Westbound Levels Road Through Lane Queue Length	325’	250’
Northbound US Route 301 Northbound Ramps Approach	A (6.2)	C (17.6)
Overall	B (14.5)	B (13.8)

[23] 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 yield-controlled bypass lane along the Levels Road westbound approach, and one shared left turn/through lane and one right turn yield-controlled bypass lane along the US Route 301 Northbound Ramp approach.

Table 4b (continued)
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for 301 Business Park North
Report Dated: July 2025
Prepared by: JMT

Signalized Intersection[1]	**LOS**	
3b - US Route 301 Northbound Ramps / Levels Road[24]	Weekday AM	Weekday PM
Case 3 - 2028 with Development	B (10.5)	A (8.0)

[24] JMT modeled the intersection as a coordinated signalized intersection with the existing lane configurations. JMT utilized the optimization cycle length of 90 seconds with protective-permissive phasing along the Levels Road eastbound approach.

Table 5
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for 301 Business Park North
Report Dated: July 2025
Prepared by: JMT

Signalized Intersection[1]	**LOS**	
4 - Middletown Warwick Road / Levels Road	Weekday AM	Weekday PM
Case 1 - 2025 Existing	D (53.0)	E (64.4)
Case 2 - 2028 without Development	F (99.8)	F (151.0)
Case 2 - 2028 without Development *signal optimization*	E (57.7)	F (93.3)
Case 2 - 2028 without Development *with Westown TID LOS E improvements*[25]	D (54.0)	E (55.8)
Case 3 - 2028 with Development	F (173.6)	F (201.7)
Case 3 - 2028 with Development with *signal optimization*[26]	E (68.4)	F (121.5)
Case 3A - 2028 with Development *with Westown TID LOS E improvements*[25]	E (55.6)	E (57.1)

[25] The Westown TID LOS E scenario include improvements that are proposed as part of the TID and an additional through lane in each direction along Levels Road. The additional through lane in each direction along Levels Road would be constructed by the developer. Specifically, the intersection was modeled with the final configuration of 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, two left turn lanes, two through lanes, and one right turn lane along the Middletown Warwick Road northbound approach, and two left turn lanes, one through lane, and one channelized right turn lane along the Middletown Warwick Road southbound approach.
[26] Signal optimization scenario includes optimizing green split times.