



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

NICOLE MAJESKI  
SECRETARY

April 30, 2024

Ms. Nicole Kline, P.E., PTOE  
McMahon, a Bowman Company  
835 Springdale Drive, Suite 200  
Exton, PA 19341

Dear Ms. Nicole Kline:

The enclosed Traffic Impact Study (TIS) review letter for the **Levels View Farm** (Tax Parcels: (Tax Parcel: 2305000124) residential 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](mailto:Annamaria.Furmato@delaware.gov).

Sincerely,

Annamaria Furmato  
TIS Group Project Engineer

AF:km

Enclosures

cc with enclosures: Michael Brown, Lennar Corporation  
Charles Barnett, Morris & Ritchie Assoc., Inc.  
Braden Garrison, McMahon, a Bowman Company  
David L. Edgell, Office of State Planning Coordination  
Antoni Sekowski, New Castle County Department of Land Use  
Bradford Shockley, New Castle County Department of Land Use  
Owen C. Robatino, New Castle County Department of Land Use  
Andrew J. Parker, McCormick Taylor, Inc.  
Tucker Smith, McCormick Taylor, Inc.  
DelDOT Distribution

## DelDOT Distribution

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Philip Lindsey, TIS Group Project Engineer, Development Coordination, Planning  
Anthony Aglio, Planning Supervisor, Statewide & Regional Planning  
Steve Bayer, Regional Transportation Planner, Statewide & Regional Planning



April 4, 2024

Ms. Annamaria Furrato  
Project Engineer  
DelDOT Division of Planning  
P.O. Box 778  
Dover, DE 19903

RE: Agreement No. 1946F  
Traffic Impact Study Services  
**Task No. 5A Subtask 04A – Levels View Farm**

Dear Ms. Furrato:

McCormick Taylor has completed its review of the Traffic Impact Study (TIS) for the Levels View Farm development prepared by Bowman Consulting Group, Ltd., dated January 10, 2024. Bowman prepared the report in a manner generally consistent with DelDOT's Development Coordination Manual.

The TIS evaluates the impacts of the proposed Levels View Farm development to be located on the east side of Levels Road (NC-10), across from Strawberry Lane (NC-445), in the Town of Middletown, New Castle County, Delaware. The proposed development would consist of 268 single family detached houses and 432 single family attached houses. Site access is proposed via a full-movement site entrance on Levels Road, opposite Strawberry Lane, and a second along Levels Road, north of Strawberry Lane. Construction is anticipated to be complete in 2031.

The subject land is located on an approximately 171.89-acre parcel. The land is currently zoned as R-3 (Multi-Family Residential) and the developer does not plan to rezone the land.

Currently, there is one DelDOT initiative within the area of study.

The *Westtown Transportation Improvement District (TID)*. A TID was established as a voluntary program in Middletown, Delaware as part of the Westtown Master Plan, through a series of agreements with the affected landowners. Because the town, developers, and DelDOT worked together, separate Traffic Impact Studies could be consolidated into a more efficient process that avoided piece-meal roadway improvements. Under the voluntary agreement, the town oversees general planning coordination, and DelDOT oversees the traffic analysis, construction, and funding for roadway improvements. Several intersections in the Levels View Farm TIS study area are within the TID boundary and are proposed to be improved as part of the TID using contributions from participating developers. However, the Levels View Farm site is not within the TID boundary and is not part of the TID agreement. As such, Levels View Farm is not responsible for contributing to offsite improvements at TID intersections unless the forecasted site trips will cause an increase in Level of Service (LOS) above LOS E. More information regarding the TID can be found at the following website: <https://www.deldot.gov/Programs/transportation-improvement-districts/index.shtml?dc=tidsunderoperation>.



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

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

<i>Intersection</i>	<i>Existing Traffic Control</i>	<i>Situations for which deficiencies occur</i>
1 - Middletown-Warwick Road and Levels Road / DE 299	Signal	2031 without development AM (Case 2) 2031 with development AM & PM (Case 3)
7 - Levels Road and Wallasey Drive / St. Anne's Church Road	Roundabout	2031 with development AM (Case 3)
13 - St. Anne's Church Road and Summit Bridge Road	Unsignalized	2031 without development AM (Case 2)

Middletown-Warwick Road and Levels Road / DE 299 (Table 2, Page 18)

This signalized intersection experiences LOS deficiencies during the AM peak hour in Case 2 and the AM and PM peak hours in Case 3. Both Case 2 and Case 3 are modeled with improvements recommended in the *2023 Westown TID CTP Cost Development Update Report* which includes restriping of the inside westbound Middletown Warwick Road through lane as an additional left-turn lane and providing an additional eastbound Middletown-Warwick Road left-turn lane. In Case 3 during the AM peak hour, the intersection is expected to operate at LOS E with 58.5 seconds of delay and queues approximately 458 feet long on the northbound approach. These queues are accommodated by existing intersection geometry. As this intersection is in the Westown TID, LOS E is acceptable and therefore does not require mitigation beyond what is already proposed by the TID Report.

Levels Road and Wallasey Drive / St. Anne's Church Road (Table 8, Page 24)

This roundabout intersection experiences LOS deficiencies during the AM peak hour in Case 3. Both Case 2 and Case 3 are modeled with improvements recommended in the *2023 Westown TID CTP Cost Development Update Report* which includes an additional westbound St. Anne's Church Road through lane and an eastbound Levels Road right-turn bypass lane. In Case 3 during the AM peak hour, the overall intersection is expected to operate at LOS C. However, the northbound approach is expected to operate at LOS E with 37.1 seconds of delay and queues approximately 125 feet long. As this intersection is in the Westown TID, LOS E is acceptable and therefore does not require mitigation beyond what is already proposed by the TID Report.

St. Anne's Church Road and Summit Bridge Road (Table 14, Page 30)

This unsignalized intersection experiences LOS deficiencies during the PM peak hour in Case 1. In Case 1 during the PM peak hour the Eastbound St Anne's Church Road approach is expected to operate at LOS F with 76.0 seconds of delay and queues approximately 208 feet long. Both Case 2 and Case 3 are modeled with improvements recommended in the *2023 Westown TID CTP*

*Cost Development Update Report* which includes an interim traffic signal and ultimately a roundabout at this intersection. With a traffic signal, the intersection is expected to operate at LOS B. As such, we recommend that the developer make no improvements at this intersection.

Should the Town of Middletown choose to approve the proposed development, the following items should be incorporated into the site design and reflected on the record plan by note or illustration, 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 and Design Deviations approved 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 (Levels Road and Grears Corner 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.

- The developer should construct the full-movement Site Entrance A on Levels Road, opposite Strawberry Lane. The proposed configuration is shown in the table below.

Approach	Current Configuration	Approach	Proposed Configuration
Eastbound Strawberry Lane	One shared left / right turn lane. Stop Control.	Eastbound Strawberry Lane	One shared left / through / right turn lane. Stop Control.
Westbound	Approach does not exist.	Westbound Site Entrance A	One shared left / through / right turn lane. Stop Control.
Northbound Levels Road	One shared left turn / through lane.	Northbound Levels Road	One left turn lane, one through lane, one right turn lane.
Southbound Levels Road	One shared through / right turn lane.	Southbound Levels Road	One left turn lane, one through lane, one right turn lane.

At the proposed Site Entrance A intersection, separate left-turn and right-turn lanes are warranted on the Levels Road approaches based on DelDOT’s Auxiliary Lane Worksheet. Initial recommended minimum turn lane lengths (excluding tapers) include a 210-foot left-turn lane on southbound Levels Road and a 240-foot right-turn lane on northbound Levels Road. The developer also recommends a 145-foot dedicated right-turn lane on southbound Levels Road and a 210-foot dedicated left-turn lane on northbound Levels Road. The developer should coordinate with DelDOT’s Development Coordination Section to determine final turn lane lengths and other design details during the site plan review.

3. The developer should construct the full-movement Site Entrance B on Levels Road. The proposed configuration is shown in the table below.

Approach	Current Configuration	Approach	Proposed Configuration
Eastbound	Approach does not exist.	Eastbound	Approach does not exist.
Westbound	Approach does not exist.	Westbound Site Entrance B	One shared left / right turn lane. Stop Control.
Northbound Levels Road	One through lane.	Northbound Levels Road	One through lane, one right turn lane.
Southbound Levels Road	One through lane.	Southbound Levels Road	One left turn lane, one through lane.

At the proposed Site Entrance B intersection, separate left-turn and right-turn lanes are warranted on the Levels Road approaches based on DelDOT’s Auxiliary Lane Worksheet. Initial recommended minimum turn lane lengths (excluding tapers) include a 235-foot left-turn lane on southbound Levels Road and a 190-foot right-turn lane on northbound Levels Road. The developer should coordinate with DelDOT’s Development Coordination Section to determine final turn lane lengths and other design details during the site plan review.

4. The following bicycle and pedestrian improvements should be included:
  - a. Per the DelDOT Development Coordination Manual section 5.2.9.2, bicycle lanes are required where right-turn lanes are being installed.
  - b. Appropriate bicycle symbols, directional arrows, pavement markings, and signing should be included along bicycle facilities and turn lanes within the project limits.
  - c. Utility covers should be made flush with the pavement.
  - d. A minimum 15-foot-wide permanent easement from the edge of the right-of-way should be dedicated to DelDOT within the site frontages along Levels Road. Within the easement, a minimum of a 10-foot wide shared-use path should be constructed. The shared-use path should meet AASHTO and ADA standards and should have a minimum of a five-foot buffer from the roadway. At the property boundaries, the shared-use path should connect to the adjacent property or to the shoulder in



accordance with DelDOT's Shared-Use Path and/or Sidewalk Termination Reference Guide dated August 1, 2018. The developer shall coordinate with DelDOT's Development Coordination Section through the plan review process to determine the details of the shared-use path design and connections/terminations at or before both boundaries of the property.

- e. ADA compliant curb ramps and crosswalks should be provided at all pedestrian crossings, including all site entrances. Type 3 curb ramps are discouraged.
- f. Internal sidewalks for pedestrian safety and to promote walking as a viable transportation alternative should be constructed within the development. These sidewalks should each be a minimum of five-feet wide (with a minimum of a five-foot buffer from the roadway) and should meet current AASHTO and ADA standards. Internal sidewalks in the development should connect to the proposed shared-use path along the site frontages.

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 [http://deldot.gov/Publications/manuals/de\\_mutcd/index.shtml](http://deldot.gov/Publications/manuals/de_mutcd/index.shtml).

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

Additional details on our review of this TIS are attached. Please contact me at (610) 640-3500 or through e-mail at [ajparker@mccormicktaylor.com](mailto:ajparker@mccormicktaylor.com) if you have any questions concerning this review.

Sincerely,

**McCormick Taylor, Inc.**

A handwritten signature in black ink, appearing to read "Andrew J. Parker".




Andrew J. Parker, PE, PTOE  
Project Manager

Enclosure





**Scope of Improvements Figure**  
**Levels View Farm TIS**

-  Proposed Site Entrance - Frontage improvements and turn lanes as described in the review letter.
-  Study Intersection - Recommended Improvements
-  Study Intersection - No Improvements

## **General Information**

**Report date:** January 10, 2024

**Prepared by:** Bowman Consulting Group, Ltd.

**Prepared for:** Lennar Corporation

**Tax parcels:** 23-050.00-124.

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

## **Project Description and Background**

**Description:** Levels View Farm consists of 268 single family detached houses and 432 single family attached houses.

**Location:** to be located on the east side of Levels Road north of Grears Corner Road in the Town of Middletown, New Castle County, Delaware. A site location map is included on page 9.

**Amount of land to be developed:** an approximately 171.89-acre parcel.

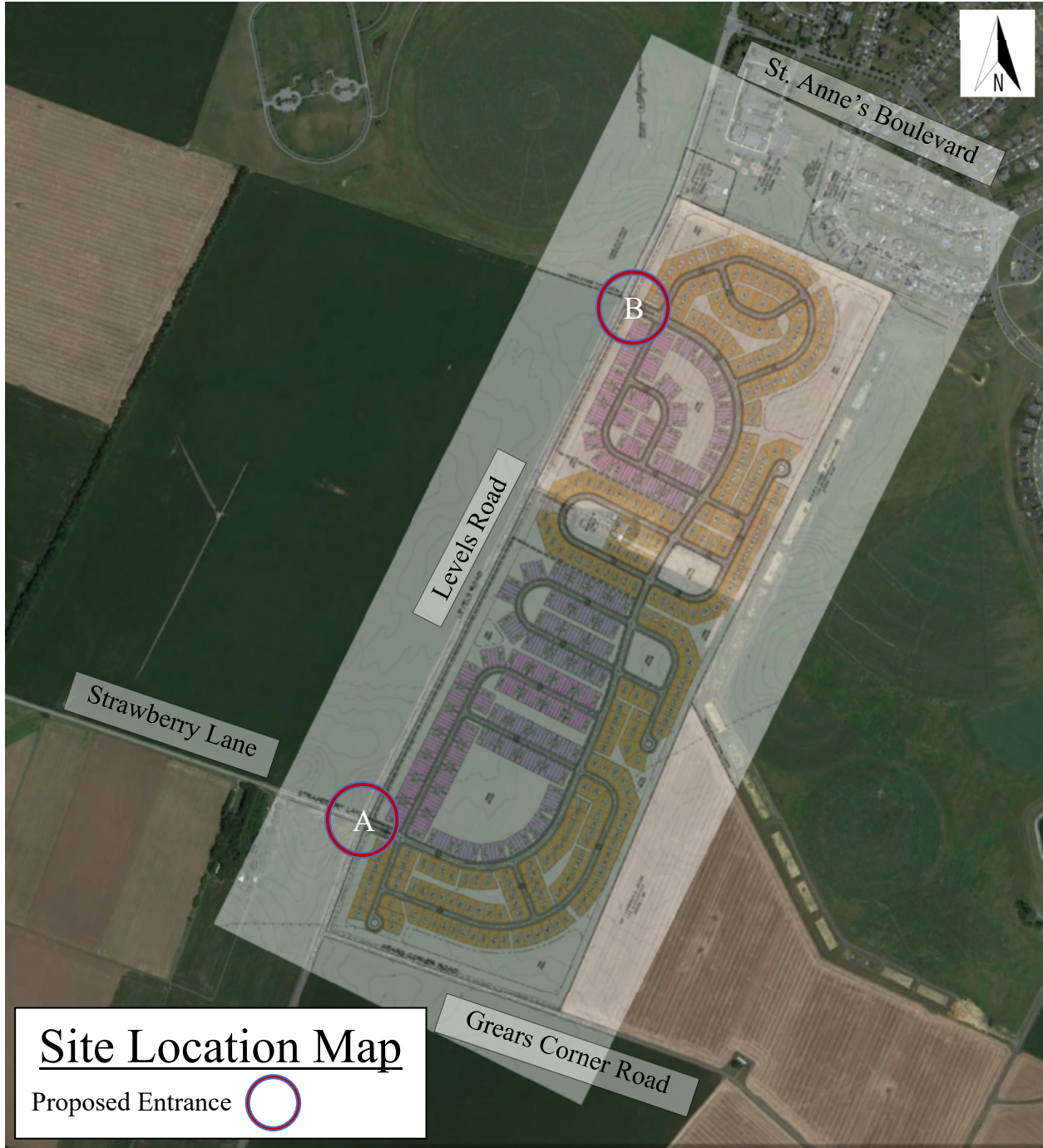
**Land use approval(s) needed:** The land is currently zoned as R-3 (Multi-family Residential), and the developer does not plan to rezone the land.

**Proposed completion year:** 2031

**Proposed access locations:** Site access is proposed to be provided via two full-movement accesses to Levels Road, with one access being provided opposite Strawberry Lane.

**Average Daily Traffic Volumes (per DelDOT Traffic Summary 2022):**

- Levels Road: 2,779 vehicles/day



## **2020 Delaware Strategies for State Policies and Spending**

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

The proposed Levels View Farm residential development is located within Investment Level 4.

#### *Investment Level 4*

Investment Level 4 areas are predominantly rural or agricultural and contain much of Delaware's open space and natural areas. These areas are home to agribusiness activities, farm complexes, and small settlements/unincorporated communities that are often found at historic crossroads. Investment Level 4 areas may also have scattered single-family detached residential homes. Existing transportation facilities and services will be maintained by the state while they continue to manage the transportation system in a manner that will support the preservation of the natural environment and agricultural business. Construction of new homes is discouraged; housing policies will focus on maintenance and rehabilitation of existing homes and communities. In addition, the Department of Education does not support the construction of new educational facilities in Investment Level 4 areas. The educational needs of Investment Level 4 areas would likely need to be met through facilities located in Investment Level 1-3 areas.

In general, the state will limit its investments in public infrastructure systems; investments should address existing public health, safety, or environmental risks, preserve rural character and natural resources, and discourage further development that is unrelated to the area's needs.

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

The proposed Levels View Farm development falls within Investment Level 4, and is to be developed with 268 single family detached houses and 432 single family attached houses. Investment Level 4 should emphasize only development that is compatible with and enhances agriculture, agribusiness, appropriate visitor activities, and similar economic activities. New housing developments are generally discouraged in such areas. Based on the 2020 Delaware Strategies for State Policies and Spending document, the proposed development does not appear to be compatible with Investment Level 4. As such, additional discussion is required.

## **Comprehensive Plan**

### **New Castle County Comprehensive Plan:**

*(Source: New Castle County Comprehensive Plan 2050, July 2022)*

The New Castle County Comprehensive Plan's Future Land Use Map 2022, indicates that the proposed development is located within a Resource Preservation area. The Comprehensive Plan also indicates that the land for the proposed development is currently zoned for Suburban Reserve. An additional review of the New Castle County Parcel Search reveals that this land is zoned as R-3 (Multi-Family Residential) and that it is incorporated in the Middletown Property Tax Area.

**Proposed Development's Compatibility with Comprehensive Plan:** The proposed Levels View Farm development includes 268 single family detached houses and 432 single family attached houses on an approximately 171.89-acre parcel. The land is currently zoned for R-3 (Multi-Family

Residential) in the Town of Middletown. As such, the proposed development appears to comply with New Castle County's Comprehensive Plan 2050 and current zoning.

**Town of Middletown Comprehensive Plan:**

(Source: 2022 Comprehensive Plan, Town of Middletown, October 2022.)

The comprehensive plan for the Town of Middletown includes a map showing proposed annexations. The entire area of the proposed Levels View Farm is shown as "2022 Proposed Annexation" with Residential Land Use.

**Proposed Development's Compatibility with Comprehensive Plan:** The proposed Levels View Farm residential development appears to align with the Town's expected growth to the south and aligns with and complements the adjacent single family and multi family residential zoning. As such, the proposed development appears to comply with The Town of Middletown's 2022 Comprehensive Plan.

**Relevant Projects in the DelDOT Capital Transportation Program**

Currently, there is one DelDOT initiative within the area of study.

The *Westtown Transportation Improvement District (TID)*. A TID was established as a voluntary program in Middletown, Delaware as part of the Westtown Master Plan, through a series of agreements with the affected landowners. Because the town, developers, and DelDOT worked together, separate Traffic Impact Studies could be consolidated into a more efficient process that avoided piece-meal roadway improvements. Under the voluntary agreement, the town oversees general planning coordination, and DelDOT oversees the traffic analysis, construction, and funding for roadway improvements. Several intersections in the Levels View Farm TIS study area are within the TID boundary and are proposed to be improved as part of the TID using contributions from participating developers. However, the Levels View Farm site is not within the TID boundary and is not part of the TID agreement. As such, Levels View Farm is not responsible for contributing to offsite improvements at TID intersections unless the forecasted site trips will cause an increase in Level of Service (LOS) above LOS E. More information regarding the TID can be found at the following website: <https://www.deldot.gov/Programs/transportation-improvement-districts/index.shtml?dc=tidsunderoperation>.

**Trip Generation**

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

- Single-Family Detached Housing (Land Use Code 210)
- Single-Family Attached Housing (Land Use Code 215)

**Levels Farm View Development Peak Hour Trip Generation**

Land Use	Size	Daily	Weekday AM Peak Hour			Weekday PM Peak Hour		
			In	Out	Total	In	Out	Total
LUC 210	268 units	2,499	46	137	183	158	93	251
LUC 215	432 units	3,241	55	164	219	151	104	255
<b>Total Trips</b>	<b>700 units</b>	<b>5,740</b>	<b>101</b>	<b>301</b>	<b>402</b>	<b>309</b>	<b>197</b>	<b>506</b>

**Overview of TIS**

**Intersections examined:**

- 1) Middletown-Warwick Road and Levels Road / DE 299
- 2) Middletown-Warwick Road and Merrimac Avenue
- 3) Middletown-Warwick Road and Diamond State Boulevard / S. Ridge Avenue
- 4) Middletown-Warwick Road and W. Main Street / Bunker Hill Road
- 5) DE 299 and US 301 Southbound Ramps
- 6) DE 299 and US 301 Northbound Ramps
- 7) Levels Road and Wallasey Drive / St. Anne’s Church Road
- 8) Levels Road and St. Anne’s Boulevard
- 9) Levels Road and Site Entrance
- 10) Levels Road and Site Entrance / Strawberry Lane
- 11) Levels Road and Grears Corner Road
- 12) St. Anne’s Church Road and Wiggins Mill Road / Tywyn Drive
- 13) St. Anne’s Church Road and Summit Bridge Road

**Conditions examined:**

- 1) 2023 Existing (Case 1)
- 2) 2031 without development and with TID (Case 2)
- 3) 2031 with development and with TID (Case 3)

**Peak hours evaluated:** Weekday morning and weekday evening hours.

**Committed developments considered:**

- 1) STA Middletown Campus: 2,184,879 square feet of pharmaceutical / manufacturing. Per direction from DelDOT, only Phase 1 of this development, totaling 459,088 square feet was included as background traffic in this traffic impact study.
- 2) 929 Warwick Road: 567,000 square foot industrial park.
- 3) Poole Property: 110-room hotel, 9,400 square foot high-turnover sit-down restaurant, 5,000 square foot fast-food restaurant with drive-through, and 37,300 of general retail space.
- 4) Chapel Creek (R Acres – West) – 216 single-family detached homes and 190 single-family attached homes.
- 5) Abbey Creek (R Acres – East) 254 senior adult single-family detached homes and 150 senior single-family attached homes.

**Intersection Descriptions**

**1) Middletown-Warwick Road and Levels Road / DE 299**

**Type of Control:** signalized intersection

**Eastbound Approach:** (Middletown-Warwick Rd) one left-turn lane, two through lanes, and one right-turn lane.

**Westbound Approach:** (Middletown-Warwick Rd) one left-turn lane, two through lanes, and one right-turn lane.

**Northbound Approach:** (Levels Rd) one left-turn lane, one through lane, and one right-turn lane.

**Southbound Approach:** (Warwick Rd) two left-turn lanes, one through lane, and one right-turn lane.

**2) Middletown-Warwick Road and Merrimac Avenue**

**Type of Control:** signalized intersection

**Eastbound Approach:** (Middletown-Warwick Rd) two left-turn lanes, two through lanes, and one right-turn lane.

**Westbound Approach:** (Middletown-Warwick Rd) two left-turn lanes, two through lanes, and one right-turn lane.

**Northbound Approach:** (Merrimac Ave) two left-turn lanes, two through lanes, and one right-turn lane.

**Southbound Approach:** (Merrimac Ave) two left-turn lanes, two through lanes, and one right-turn lane.

**3) Middletown-Warwick Road and Diamond State Boulevard / S. Ridge Avenue**

**Type of Control:** signalized intersection

**Eastbound Approach:** (Middletown-Warwick Rd) two left-turn lanes, two through lanes, and one right-turn lane.

**Westbound Approach:** (Middletown-Warwick Rd) two left-turn lanes, two through lanes, and one right-turn lane.

**Northbound Approach:** (Diamond State Blvd) two left-turn lanes, one through lane, and one right-turn lane.

**Southbound Approach:** (S. Ridge Ave) two left-turn lanes, one through lane, and one right-turn lane.

- 4) **Middletown-Warwick Road and W. Main Street / Bunker Hill Road**  
**Type of Control:** signalized intersection  
**Eastbound Approach:** (Middletown-Warwick Rd) one left-turn lane, two through lanes, and one right-turn lane.  
**Westbound Approach:** (Middletown-Warwick Rd) one left-turn lane, two through lanes, and one right-turn lane.  
**Northbound Approach:** (Merrimac Ave) two left-turn lanes, two through lanes, and one right-turn lane.  
**Southbound Approach:** (Merrimac Ave) two left-turn lanes, two through lanes, and one right-turn lane.
  
- 5) **DE 299 and US 301 Southbound Ramps**  
**Type of Control:** signalized intersection  
**Westbound Approach:** (US 301 Southbound Ramps) one left-turn lane, shared left-turn/through lane, and one right-turn lane.  
**Northbound Approach:** (DE 299) one left-turn lane and one through lane.  
**Southbound Approach:** (DE 299) one through lane and one right-turn lane.
  
- 6) **DE 299 and US 301 Northbound Ramps**  
**Type of Control:** two-way stop control  
**Eastbound Approach:** (US 301 Northbound Ramp) one shared left-turn / through lane and one right-turn lane. Stop controlled.  
**Northbound Approach:** (DE 299) one through lane and one right-turn lane.  
**Southbound Approach:** (DE 299) one left-turn lane and two through lanes.
  
- 7) **Levels Road and Wallasey Drive / St. Anne's Church Road**  
**Type of Control:** roundabout  
**Eastbound Approach:** (Levels Rd) one shared left/ through / right-turn lane.  
**Westbound Approach:** (St. Annes Church Rd) one shared left / through / right-turn lane.  
**Northbound Approach:** (Levels Rd) one shared left / through / right-turn lane.  
**Southbound Approach:** (Wallasey Dr) one shared left / through / right-turn lane.
  
- 8) **Levels Road and St. Anne's Boulevard**  
**Type of Control:** one-way stop (T-intersection)  
**Westbound Approach:** (St. Annes Blvd) one shared left /right-turn lane.  
**Northbound Approach:** (Levels Rd) one through lane and one right-turn lane.  
**Southbound Approach:** (Levels Rd) one shared left / U-turn lane and one through lane.
  
- 9) **Levels Road and Site Entrance B**  
**Type of Control:** proposed one-way stop (T-intersection)  
**Westbound Approach:** (Site Entrance) one shared left /right-turn lane.  
**Northbound Approach:** (Levels Rd) one through lane and one right-turn lane.  
**Southbound Approach:** (Levels Rd) one left-turn lane and one through lane.



**10) Levels Road and Site Entrance A / Strawberry Lane**

**Type of Control:** two-way stop control

**Eastbound Approach:** (Strawberry Ln) one shared left-turn / through (proposed) / right-turn lane. Stop controlled.

**Westbound Approach:** (Site Entrance A) one shared left-turn / through / right-turn lane. Stop controlled.

**Northbound Approach:** (Levels Rd) one left-turn lane (proposed), one through lane, and one right-turn lane (proposed).

**Southbound Approach:** (Levels Rd) one left-turn lane (proposed), one through lane, and one right-turn lane (proposed).

**11) Levels Road and Grears Corner Rd**

**Type of Control:** one-way stop (T-intersection)

**Westbound Approach:** (Gears Corner Rd) one shared left / right-turn lane.

**Northbound Approach:** (Levels Rd) one shared through / right-turn lane.

**Southbound Approach:** (Levels Rd) one shared left-turn / through lane.

**12) St. Anne's Church Road and Wiggins Mill Road / Tywyn Drive**

**Type of Control:** roundabout

**Eastbound Approach:** (St. Annes Church Rd) one shared left / through / right-turn lane.

**Westbound Approach:** (St. Annes Church Rd) one shared left / through / right-turn lane.

**Northbound Approach:** (Wiggins Mill Rd) one shared left / through / right-turn lane.

**Southbound Approach:** (Tywyn Dr) one shared left / through / right-turn lane.

**13) St. Anne's Church Road and Summit Bridge Road**

**Type of Control:** one-way stop (T-intersection)

**Eastbound Approach:** (St. Annes Church Rd) one shared left / right-turn lane.

**Northbound Approach:** (Summit Bridge Rd) one shared left-turn / through lane and one bypass lane.

**Southbound Approach:** (Summit Bridge Rd) one through lane and one right-turn lane.

**Safety Evaluation**

**Crash Data:** Delaware Crash Analysis Reporting System (CARS) data was provided in the TIS for the three-year period from October 27, 2020, to October 27, 2023. A total of 326 crashes occurred within the study area during the three-year period. There were 15 crashes that occurred in parking lots or areas outside of the public right-of-way and these were removed from the study. Of the remaining 311 collisions, 8 resulted in personal injury. The most common type of collision was front to rear (54 percent). A fatal crash occurred at the intersection of Middletown-Warwick Road and Levels Road / DE 299 on 4/24/2023.

**Sight Distance:** The study area generally consists of relatively flat roadways and there are few visual obstructions. Sight distance appears adequate throughout the study area. No problematic sight distance issues have been reported or indicated by crash data. As always, the adequacy of available sight distance should be confirmed during the site plan review process for all proposed movements at the site accesses.

### **Transit, Pedestrian, and Bicycle Facilities**

**Existing transit service:** Based on the current DART First State Bus Stop Map, the Delaware Transit Corporation (DTC) currently operates a fixed-route transit bus service in Middletown, along DE Route 299, Levels Road, and St. Annes Church Road. However, there is no bus service near the proposed development.

**Planned transit service:** Based on coordination with DTC representatives, there are no additional transit amenities proposed near the Levels View Farm development at this time.

**Existing bicycle and pedestrian facilities:** On the west side of Levels Road, north of St. Anne's Boulevard, there is a shared use path that connects the St. Anne's community and MOT Charter School to the Charles E. Price Memorial Park via a mid-block pedestrian crossing at the intersection of Levels Road and St Anne' Boulevard. There are no existing bicycle or pedestrian facilities along Levels Road at the proposed development. According to DelDOT's New Castle County Bicycle Map, Levels Road is a Connector Bicycle Route without Bikeway.

**Planned bicycle and pedestrian facilities:** A 5-foot-wide bicycle lane along Levels Road at the site accesses and a 10-foot shared-use path is proposed along the Levels Road property frontage.

## **Previous Comments**

The initial scoping memorandum between the developer and DelDOT was dated July 21, 2023.

In a review letter dated October 9, 2023, DelDOT commented on the traffic counts and seasonally adjusted traffic volumes. The developer was asked to make corrections and resubmit the traffic counts.

In a second review dated October 23, 2023, DelDOT provided growth factors and directed the developer to proceed with the Preliminary TIS.

In a third review letter dated December 7, 2023, DelDOT commented on the Preliminary TIS and requested revisions to the Other Development Trip Generation and traffic volume figures and directed the developer to resubmit the Preliminary TIS.

In a fourth review letter dated December 26, 2023, DelDOT requested updates to several volume figures. DelDOT requested that the developer address these comments and proceed with the Final TIS.

It appears that all substantive comments from DelDOT's TIS Scoping Memorandum, Traffic Count Review, Preliminary TIS Review, and other correspondence were addressed in the Final TIS submission.

## **General HCS Analysis Comments**

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

- 1) The TIS used Synchro software version 12 to complete the traffic analyses. McCormick Taylor used version 11.
- 2) The TIS and McCormick Taylor generally used heavy vehicle percentages (HV%) from turning movement counts for existing and future conditions (as per DelDOT's Development Coordination Manual section 2.2.8.11.6.H). McCormick Taylor and the TIS assumed 3% HV at proposed site entrances in future conditions.
- 3) The TIS and McCormick Taylor determined overall intersection peak hour factors (PHF) for each intersection based on the turning movement counts. Future PHFs were determined as per the DelDOT Development Coordination Manual section 2.2.8.11.6.F where applicable.
- 4) For analyses of all intersections, McCormick Taylor and the TIS assumed 0% grade for all movements.

Table 2  
Peak Hour Levels of Service (LOS)  
Based on Levels View Farm  
Traffic Impact Study – January 10, 2024  
Prepared by Bowman Consulting Group, Ltd.

Signalized Intersection <sup>1,2</sup>	LOS per TIS		LOS per McCormick Taylor	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
<b>1 - Middletown-Warwick Road and Levels Road / DE 299</b>				
2023 Existing Condition (Case 1)				
Overall	D (37.2)	D (37.0)	D (37.2)	D (37.0)
2031 No Build with TID (Case 2)				
Overall	E (56.8)	D (53.8)	E (56.2)	D (53.8)
2031 Build with TID (Case 3)				
Overall	E (60.7)	E (56.8)	E (58.5) <sup>3</sup>	E (57.3) <sup>4</sup>

<sup>1</sup> For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.

<sup>2</sup> Westtown TID Recommendation (LOS E): Restripe the inside westbound Middletown Warwick Road through lane as an additional left-turn lane and provide an additional eastbound Middletown-Warwick Road left-turn lane.

<sup>3</sup> 95<sup>th</sup> percentile queue length for the Levels Road northbound through movement is anticipated to be approximately 18.3 vehicles (458 feet) long.

<sup>4</sup> 95<sup>th</sup> percentile queue length for the Levels Road southbound through movement is anticipated to be approximately 16.7 vehicles (418 feet) long.

Table 3  
Peak Hour Levels of Service (LOS)  
Based on Levels View Farm  
Traffic Impact Study – January 10, 2024  
Prepared by Bowman Consulting Group, Ltd.

Signalized Intersection <sup>5</sup>	LOS per TIS		LOS per McCormick Taylor	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
<b>2 - Middletown-Warwick Road and Merrimac Avenue</b>				
2023 Existing Condition (Case 1)				
Overall	C (28.1)	D (37.4)	C (28.0)	D (36.8)
2031 No Build (Case 2)				
Overall	C (31.3)	D (38.5)	C (31.2)	D (38.5)
2031 Build (Case 3)				
Overall	C (30.5)	D (38.3)	C (30.5)	D (38.3)

<sup>5</sup> For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.

Table 4  
Peak Hour Levels of Service (LOS)  
Based on Levels View Farm  
Traffic Impact Study – January 10, 2024  
Prepared by Bowman Consulting Group, Ltd.

Signalized Intersection <sup>6</sup>	LOS per TIS		LOS per McCormick Taylor	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
<b>3 -Middletown-Warwick Road and Diamond State Blvd / S. Ridge Avenue</b>				
2023 Existing Condition (Case 1)				
Overall	B (17.9)	C (30.0)	B (17.9)	C (30.0)
2031 No Build (Case 2)				
Overall	B (15.9)	C (25.4)	B (15.9)	C (25.4)
2031 Build (Case 3)				
Overall	B (15.6)	C (25.1)	B (15.6)	C (25.1)

<sup>6</sup> For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.

Table 5  
Peak Hour Levels of Service (LOS)  
Based on Levels View Farm  
Traffic Impact Study – January 10, 2024  
Prepared by Bowman Consulting Group, Ltd.

Signalized Intersection <sup>7,8</sup>	LOS per TIS		LOS per McCormick Taylor	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
<b>4 -Middletown-Warwick Road and W. Main Street / Bunker Hill Road</b>				
2023 Existing Condition (Case 1)				
Overall	D (45.4)	D (46.8)	D (45.4)	D (46.8)
2031 No Build with TID (Case 2)				
Overall	D (44.3)	E (56.7)	D (42.9)	D (47.7)
2031 Build with TID (Case 3)				
Overall	D (45.3)	E (56.8)	D (43.8)	D (48.5)

<sup>7</sup> For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.

<sup>8</sup> Westtown TID Recommendation (LOS E): Provide an additional eastbound Middletown-Warwick Road left-turn lane.

Table 6  
Peak Hour Levels of Service (LOS)  
Based on Levels View Farm  
Traffic Impact Study – January 10, 2024  
Prepared by Bowman Consulting Group, Ltd.

Signalized Intersection <sup>9</sup>	LOS per TIS		LOS per McCormick Taylor	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
<b>5 - DE 299 and US 301 Southbound Ramps</b>				
2023 Existing Condition (Case 1)				
Overall	B (18.4)	B (18.1)	B (18.4)	B (18.1)
2031 No Build (Case 2)				
Overall	B (19.5)	C (21.0)	B (19.5)	C (21.0)
2031 Build (Case 3)				
Overall	B (19.6)	C (21.8)	B (19.6)	C (21.8)

<sup>9</sup> For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.



Table 7  
Peak Hour Levels of Service (LOS)  
Based on Levels View Farm  
Traffic Impact Study – January 10, 2024  
Prepared by Bowman Consulting Group, Ltd.

Unsignalized Intersection <sup>10</sup> Two-Way Stop-Controlled	LOS per TIS		LOS per McCormick Taylor	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
<b>6 - DE 299 and US 301 Northbound Ramps</b>				
2023 Existing Condition (Case 1)				
Eastbound US 301 NB Ramps – Left	A (0.0)	A (0.0)	A (0.0)	A (0.0)
Southbound DE 299 – Left	A (7.6)	A (7.9)	A (7.6)	A (7.9)
2031 No Build (Case 2)				
Eastbound US 301 NB Ramps – Left	C (16.8)	C (23.2)	C (16.8)	C (23.2)
Southbound DE 299 – Left	A (7.9)	A (8.2)	A (7.9)	A (8.2)
2031 Build (Case 3)				
Eastbound US 301 NB Ramps – Left	C (17.4)	C (24.4)	C (17.4)	C (24.4)
Southbound DE 299 – Left	A (8.0)	A (8.3)	A (8.0)	A (8.3)

<sup>10</sup> For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.

Table 8  
Peak Hour Levels of Service (LOS)  
Based on Levels View Farm  
Traffic Impact Study – January 10, 2024  
Prepared by Bowman Consulting Group, Ltd.

Unsignalized Intersection <sup>11, 12</sup> Roundabout	LOS per TIS		LOS per McCormick Taylor	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
<b>7 - Levels Road and Wallasey Drive / St. Anne's Church Road</b>				
2023 Existing Condition (Case 1)				
Eastbound Levels Rd	A (6.8)	A (9.3)	A (6.8)	A (9.3)
Westbound St Anne's Church Rd	B (13.3)	A (8.8)	B (12.9)	A (8.8)
Northbound Levels Rd	A (9.4)	A (8.1)	A (9.4)	A (8.1)
Southbound Wallasey Dr	B (10.4)	A (6.2)	B (10.4)	A (6.2)
Overall	A (10.0)	A (8.8)	A (9.9)	A (8.8)
2031 No Build with TID (Case 2)				
Eastbound Levels Rd	A (5.4)	A (7.3)	A (5.7)	A (8.4)
Westbound St Anne's Church Rd	B (10.9)	A (6.7)	B (10.9)	A (6.7)
Northbound Levels Rd	B (13.1)	B (10.8)	B (13.1)	B (10.8)
Southbound Wallasey Dr	B (12.8)	A (6.4)	B (12.8)	A (6.4)
Overall	B (10.2)	A (7.7)	B (10.9)	A (8.2)
2031 Build with TID (Case 3)				
Eastbound Levels Rd	A (5.9)	A (8.6)	A (5.8)	A (9.2)
Westbound St Anne's Church Rd	C (16.9)	A (8.3)	C (16.9)	A (8.3)
Northbound Levels Rd	E (37.1)	C (17.5)	E (37.1) <sup>13</sup>	C (17.5)
Southbound Wallasey Dr	C (18.0)	A (7.8)	C (18.0)	A (7.8)
Overall	C (21.9)	B (10.3)	C (24.2)	B (11.1)

<sup>11</sup> For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.

<sup>12</sup> Westown TID Recommendation (LOS E): Provide an additional westbound St. Anne's Church Road through lane and an eastbound Levels Road right-turn bypass lane.

<sup>13</sup> 95<sup>th</sup> percentile queue length is anticipated to be approximately 5 vehicles (125 feet) long.

Table 9  
Peak Hour Levels of Service (LOS)  
Based on Levels View Farm  
Traffic Impact Study – January 10, 2024  
Prepared by Bowman Consulting Group, Ltd.

Unsignalized Intersection <sup>14</sup> One-Way Stop (T-intersection)	LOS per TIS		LOS per McCormick Taylor	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
<b>8 - Levels Road and St. Anne's Boulevard</b>				
2023 Existing Condition (Case 1)				
Westbound St Anne's Blvd	C (16.4)	B (13.4)	B (12.3)	A (9.9)
Southbound Levels Rd – Left	A (8.4)	A (7.7)	A (8.4)	A (7.7)
2031 No Build (Case 2)				
Westbound St Anne's Blvd	C (20.8)	C (15.9)	C (15.2)	B (10.5)
Southbound Levels Rd – Left	A (8.9)	A (7.9)	A (8.9)	A (7.9)
2031 Build (Case 3)				
Westbound St Anne's Blvd	E (38.3)	D (25.5)	D (34.0)	B (12.6)
Southbound Levels Rd – Left	B (10.8)	A (8.4)	B (10.8)	A (8.4)

<sup>14</sup> For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.

Table 10  
Peak Hour Levels of Service (LOS)  
Based on Levels View Farm  
Traffic Impact Study – January 10, 2024  
Prepared by Bowman Consulting Group, Ltd.

Unsignalized Intersection <sup>15</sup> One-Way Stop (T-intersection)	LOS per TIS		LOS per McCormick Taylor	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
2031 Build (Case 3)				
Westbound Site Entrance	B (14.4)	B (12.4)	B (14.3)	B (12.4)
Southbound Levels Rd – Left	A (8.4)	A (8.3)	A (8.4)	A (8.3)

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

Table 11  
Peak Hour Levels of Service (LOS)  
Based on Levels View Farm  
Traffic Impact Study – January 10, 2024  
Prepared by Bowman Consulting Group, Ltd.

Unsignalized Intersection <sup>16</sup> One-Way Stop (T-intersection)	LOS per TIS		LOS per McCormick Taylor	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
<b>10 - Levels Road and Site Entrance A / Strawberry Lane</b>				
2023 Existing (Case 1)				
Eastbound Strawberry Ln	A (9.8)	B (10.1)	A (9.8)	B (10.1)
Westbound Site Entrance	--	--	--	--
Northbound Levels Rd – Left	A (7.4)	A (7.7)	A (7.4)	A (7.7)
Southbound Levels Rd – Left	--	--	--	--
2031 Build (Case 3)				
Eastbound Strawberry Ln	B (12.2)	B (12.4)	B (12.5)	B (12.4)
Westbound Site Entrance	B (13.5)	C (15.4)	B (13.6)	C (16.0)
Northbound Levels Rd – Left	A (7.6)	A (8.1)	A (7.6)	A (8.1)
Southbound Levels Rd – Left	A (8.0)	A (7.9)	A (8.0)	A (7.9)

<sup>16</sup> For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.

Table 12  
Peak Hour Levels of Service (LOS)  
Based on Levels View Farm  
Traffic Impact Study – January 10, 2024  
Prepared by Bowman Consulting Group, Ltd.

Unsignalized Intersection <sup>17</sup> One-Way Stop (T-intersection)	LOS per TIS		LOS per McCormick Taylor	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
<b>11 - Levels Road and Grears Corner Road</b>				
2023 Existing (Case 1)				
Westbound Grears Corner Rd	A (9.7)	A (9.2)	A (9.7)	A (9.2)
Southbound Levels Rd – Left	A (7.5)	A (7.6)	A (7.5)	A (7.6)
2031 Build (Case 3)				
Westbound Grears Corner Rd	B (11.1)	B (10.6)	B (11.1)	B (10.6)
Southbound Levels Rd – Left	A (7.8)	A (8.0)	A (7.8)	A (8.0)

<sup>17</sup> For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.

Table 13  
Peak Hour Levels of Service (LOS)  
Based on Levels View Farm  
Traffic Impact Study – January 10, 2024  
Prepared by Bowman Consulting Group, Ltd.

Unsignalized Intersection <sup>18</sup> Roundabout	LOS per TIS		LOS per McCormick Taylor	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
<b>12 - St. Anne's Church Road and Wiggins Mill Road / Tywyn Drive</b>				
2023 Existing Condition (Case 1)				
Eastbound St Anne's Church Rd	A (4.2)	A (6.6)	A (4.2)	A (6.6)
Westbound St Anne's Church Rd	A (5.7)	A (6.1)	A (5.7)	A (6.1)
Northbound Wiggins Mill Rd	A (5.7)	A (6.2)	A (5.7)	A (6.2)
Southbound Tywyn Dr	A (5.4)	A (5.2)	A (5.4)	A (5.2)
Overall	A (5.3)	A (6.3)	A (5.3)	A (6.3)
2031 No Build (Case 2)				
Eastbound St Anne's Church Rd	A (4.9)	A (9.7)	A (4.9)	A (9.7)
Westbound St Anne's Church Rd	A (8.5)	A (7.9)	A (8.5)	A (7.9)
Northbound Wiggins Mill Rd	A (7.3)	A (8.7)	A (7.3)	A (8.7)
Southbound Tywyn Dr	A (7.1)	A (6.2)	A (7.1)	A (6.2)
Overall	A (7.1)	A (8.9)	A (7.1)	A (8.9)
2031 Build (Case 3)				
Eastbound St Anne's Church Rd	A (5.5)	B (10.4)	A (5.5)	B (10.4)
Westbound St Anne's Church Rd	A (8.9)	A (9.0)	A (8.9)	A (9.0)
Northbound Wiggins Mill Rd	A (8.1)	A (9.3)	A (8.1)	A (9.3)
Southbound Tywyn Dr	A (7.3)	A (6.6)	A (7.3)	A (6.6)
Overall	A (7.5)	A (9.6)	A (7.5)	A (9.6)

<sup>18</sup> For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.

Table 14  
Peak Hour Levels of Service (LOS)  
Based on Levels View Farm  
Traffic Impact Study – January 10, 2024  
Prepared by Bowman Consulting Group, Ltd.

Unsignalized Intersection <sup>19, 20</sup> One-Way Stop (T-intersection)	LOS per TIS		LOS per McCormick Taylor	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
<b>13 - St. Anne's Church Road and Summit Bridge Road</b>				
2023 Existing Condition (Case 1)				
Eastbound St Anne's Church Rd	C (18.0)	F (75.4)	C (18.0)	F (76.0) <sup>21</sup>
Southbound Summit Bridge Rd – Left	A (8.5)	A (9.6)	A (8.5)	A (9.6)
2031 No Build with TID (Case 2) – With Signal				
Eastbound St Anne's Church Rd	B (16.4)	C (21.6)	B (16.4)	C (21.6)
Southbound Summit Bridge Rd – Left	A (9.2)	B (14.4)	A (9.2)	B (14.4)
Overall	B (11.4)	B (16.5)	B (11.4)	B (16.5)
2031 Build with TID (Case 3) – With Signal				
Eastbound St Anne's Church Rd	B (17.4)	C (22.5)	B (17.4)	C (22.5)
Southbound Summit Bridge Rd – Left	A (9.3)	B (14.6)	A (9.3)	B (14.6)
Overall	--	--	B (11.7)	B (16.6)

<sup>19</sup> For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.

<sup>20</sup> It is recommended to install a traffic signal and provide a dedicated St. Anne's Bridge Road right-turn lane by the Westown Transportation Improvement District (TID).

<sup>21</sup> 95<sup>th</sup> percentile queue length is anticipated to be approximately 8.3 vehicles (208 feet) long.