December 16, 2025

Ms. Sireen Muhtaseb, P.E.
TIS Group Manager
Delaware Department of Transportation
Economic Development Coordination
800 Bay Road
P.O. Box 778
Dover, DE 19903

RE: Agreement No: 2138S
TIS Support Services – T202369005
Task Name: Task 1-8 Dash In - 5810 Kirkwood Hwy
JMT No.: 24-01365-108

Dear Ms. Muhtaseb:

Johnson, Mirmiran, and Thompson (JMT) has completed a review of the Traffic Impact Study (TIS) for the Dash In - 5810 Kirkwood Highway development, which was prepared by Bowman Consulting Group, Ltd. dated July 25, 2025. This review was assigned as Task Number 1-8. The report is prepared in a manner generally consistent with DelDOT's *Development Coordination Manual* and other Department standards.

The TIS evaluates the impacts of a proposed redevelopment located on the southwest corner of the intersection of Kirkwood Highway (SR 2/New Castle Road 11) and Delaware Park Drive (New Castle Road 11A) in New Castle County, Delaware. The redevelopment proposes to replace approximately 21,000 square feet of retail space, of which 8,000 square feet have been operating at a normal capacity within the past 3 years, with a 4,800 square foot convenience store with gas station (12 vehicle fueling positions) on approximately 2.05 acres (Tax Parcel 08-049.40-024).

Access is proposed via the existing rights-in / rights-out entrance along Kirkwood Highway and the existing full movement entrance along Delaware Park Drive. Construction is anticipated to be complete in 2028.

Relevant and On-Going Projects and Studies

The *Pavement & Rehabilitation, New Castle 5A (Kirkwood Highway)* (DelDOT Contract No. T202506101) pavement and rehabilitation project is nearby to the study area. The project is along Kirkwood Highway between Delaware Route 273 and Milltown Road (New Castle Road 318) and includes the Dash In – 5810 Kirkwood Highway site frontage. Construction is anticipated to start Spring of 2026.

The subject property is adjacent to an area being considered for the Churchman's Crossing TID, a future Transportation Improvement District (TID), that will be adopted by DelDOT and New

Castle County in accordance with Section 2.4 of the Development Coordination Manual. The intent of the TID is to plan comprehensively and thereby to enable both land development and the transportation improvements needed to support it. The Churchman's Crossing TID is under development and more information regarding TIDs can be found on the following website: https://deldot.gov/Programs/transportation-improvement-districts/index.shtml.

The *Kirkwood Highway Land Use and Transportation Plan* is a collaborative project led by WILMAPCO, in partnership with the New Castle County Department of Land Use (NCCDLU), DelDOT, and the Delaware Transit Corporation (DTC). The purpose of the project is to create a cohesive plan for the Delaware SR 2, Kirkwood Highway corridor that includes both short- and long-term recommendations and is informed by community input to achieve a shared vision of the corridor. The plan outlines significant intersection and roadway design changes to better manage congestion and improve safety, including targeted improvements at high-crash locations. At the nearby intersection of Kirkwood Highway and Delaware Park Drive, intersection reconfigurations are recommended to accommodate changes in traffic patterns with the completion of the Churchman's Road Extended. Churchman's Road Extended is a new roadway recommended through the *Churchman's Crossing Plan Update* that would extend from the intersection of Churchman's Road at SR 4 through Delaware Park to SR 2 at Delaware Park Drive. The June 2025 Kirkwood Highway Land Use and Transportation Plan is available at the following link: https://wilmapco.sharefile.com/share/view/sf0fd753632ae4c459755610676624d40 and Mr. Austin Gray, DelDOT Assistant Director of Statewide & Regional Planning, can be contacted at austin.gray@delaware.gov for more information.

The *Churchman's Crossing Plan Update*, adopted by WILMAPCO's Council in 2022, represents a comprehensive update of the 1997 Churchman's Crossing Study. Developed in collaboration with DelDOT, DTC and New Castle County's Department of Land Use, in support of and coordination with the Churchman's Crossing Monitoring Committee (CCMC). The plan introduces targeted transportation upgrades, including intersection enhancements and the expansion of transit service, alongside pedestrian and bike-friendly infrastructure, such as dedicated bicycle lanes, shared use paths, and improved walkways linking existing neighborhoods to safer, lower-traffic corridors. The proposed Dash In – 5810 Kirkwood Highway development is within the Churchman's Crossing plan area. In the vicinity of the proposed site, the Churchman's Road Extended is a recommended project from the plan that would be a four-lane boulevard type roadway connecting the intersection of SR 4 and SR 58 with SR 2 at Delaware Park Boulevard. More details of the plan are available at the following link: https://www.wilmapco.org/Churchmans/.

Summary of Analysis Results

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

There are no intersections that exhibit level of service (LOS) deficiencies without the implementation of physical roadway and/or traffic control improvements.

At DelDOT's request, an additional scenario was analyzed with restricting the eastbound Site Entrance B and westbound Ball Road left turns at the Site Entrance B and Delaware Park Drive

intersection. With or without restricting the eastbound Site Entrance B and westbound Ball Road left turns, the Site Entrance B and Delaware Park Drive intersection would operate at acceptable levels of service with calculated 95th percentile queue lengths of less than 50 feet at both site entrance intersections (Site Entrances A & B) for the future build condition. Additionally, based on a field visit conducted on August 6, 2025, there are no sight distance constraints at the Site Entrance B and Delaware Park Drive intersection.

Furthermore, JMT analyzed an additional scenario which took into account the newly operational approximately 3,400 square-foot Kirkwood Early Learning Center, which has access along westbound Ball Road at the Site Entrance B and Delaware Park Drive intersection. The daycare was operational starting approximately in late June 2025, about a month after the traffic manual turning counts were collected for the TIS report. The daycare was confirmed to be operational through a site visit by JMT on August 6, 2025. Even with the additional traffic from the newly operational daycare, with or without the eastbound Site Entrance B and westbound Ball Road left turn restrictions at the Site Entrance B and Delaware Park Drive intersection, would result in acceptable levels of service and adequate 95th percentile queue lengths at both site entrance intersections (Site Entrances A & B) for the future build condition. As such, DelDOT does not recommend restricting the eastbound Site Entrance B and westbound Ball Road left turns at the Site Entrance B and Delaware Park Drive intersection.

Concerning the Site Entrance B and Delaware Park Drive intersection, the current WILMAPCO *Churchman's Crossing Plan* recommends providing a new roadway (Churchman's Road Extended) from the intersection of Churchman's Road at SR 4, through Delaware Park, to SR 2 at Delaware Park Drive. This new roadway would improve regional circulation patterns through the Churchman's Crossing. When completed, the Churchman's Road Extended would change traffic patterns at the closely spaced intersections of Delaware Park Drive and Milltown Road. As such, DelDOT may evaluate in the future turning restrictions along Delaware Park Drive if Churchman's Road Extended is constructed and there are safety concerns.

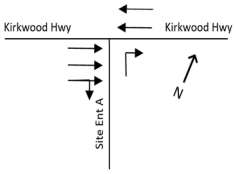
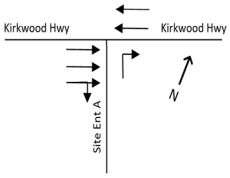
Development Improvements

Should New Castle County 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 (Kirkwood Highway and Delaware Park Drive) 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.

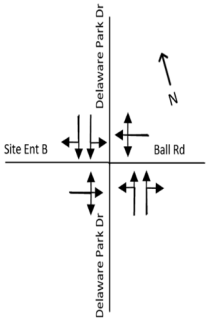
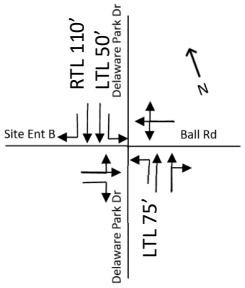
2. The developer should maintain the existing unsignalized Site Entrance A rights-in/rights-out only access for the proposed Dash In – 5810 Kirkwood Highway along Kirkwood Highway, approximately 340 feet west of the intersection with Delaware Park Drive. The intersection should be consistent with the lane configurations shown in the table below:

Approach	Current Configuration		Approach	Proposed Configuration	
Eastbound Kirkwood Highway	Two through lanes and one shared through/right turn lane*		Eastbound Kirkwood Highway	No Change	
Westbound Kirkwood Highway	Two through lanes		Westbound Kirkwood Highway	No Change	
Northbound Site Entrance A	One right turn lane		Northbound Site Entrance A	No Change	

**The through movement transitions into a right turn lane at the Delaware Park Drive intersection.*

Based on DelDOT's *Development Coordination Manual*, the recommended minimum storage length (excluding taper) of the eastbound Kirkwood Highway right turn lane is 290 feet. However, it may not be feasible to install the right turn lane due to the space between Site Entrance A and the adjacent driveway to the west (20 feet). The final design of the entrance should be determined during the Entrance Plan review.

3. The developer should improve the existing unsignalized Site Entrance B full movement access for the proposed Dash In – 5810 Kirkwood Highway development along Delaware Park Drive, approximately 300 feet south of the intersection with Kirkwood Highway to provide auxiliary turn lanes. The intersection should be consistent with the lane configurations shown in the table below:

Approach	Current Configuration		Approach	Proposed Configuration	
Eastbound Site Entrance B	One shared left turn/through/ right turn lane		Eastbound Site Entrance B	One shared left turn/through lane and one right turn lane	
Westbound Ball Road	One shared left turn/through/ right lane		Westbound Ball Road	No Change	
Northbound Delaware Park Drive	One shared left turn/through and one shared through/right turn lane		Northbound Delaware Park Drive	One left turn lane, one through lane, and one shared through/right turn lane	
Southbound Delaware Park Drive	One shared left turn/through and one shared through/right turn lane		Southbound Delaware Park Drive	One left turn lane, two through lanes, and one right turn lane	

Based on DelDOT's *Development Coordination Manual*, the recommended minimum storage length (excluding taper) of the northbound left turn lane is 75 feet, the southbound left turn lane is 50 feet, and the southbound right turn lane is 110 feet. The projected queues from the traffic analysis can be accommodated within the recommended storage lengths.

Pavement markings within the median area of the intersection should be added to delineate the separate eastbound and westbound lanes.

4. The developer should enter into a traffic signal agreement with DelDOT for the intersection of Kirkwood Highway and Delaware Park Drive. The developer should coordinate with DelDOT Development Coordination Section to execute the traffic signal agreement.

5. 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 Kirkwood Highway and Delaware Park Drive frontages. Along the frontages, the developer should maintain or construct a minimum five-foot-wide sidewalk. The sidewalk should be designed to meet current AASHTO and ADA standards. A minimum five-foot setback should be maintained from the edge of the pavement to the sidewalk. The developer should coordinate with DelDOT's Development Coordination Section during the plan review process to identify the exact location of the sidewalks.

b. Internal connections from the frontage sidewalks into the site should be provided.

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

d. Minimum five-foot wide bicycle lanes should be incorporated in the right turn lane and shoulder along the Kirkwood Highway and Delaware Park Drive site frontages.

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
Tanner Chiamprasert, EIT
Enclosure

Recommendations Map

General Information

Report date: July 25, 2025
Prepared by: Bowman Consulting Group, Ltd.
Prepared for: SMO, Inc.
Tax parcel: 08-049.40-024
Generally consistent with DelDOT's Development Coordination Manual (DCM): Yes

Project Description and Background

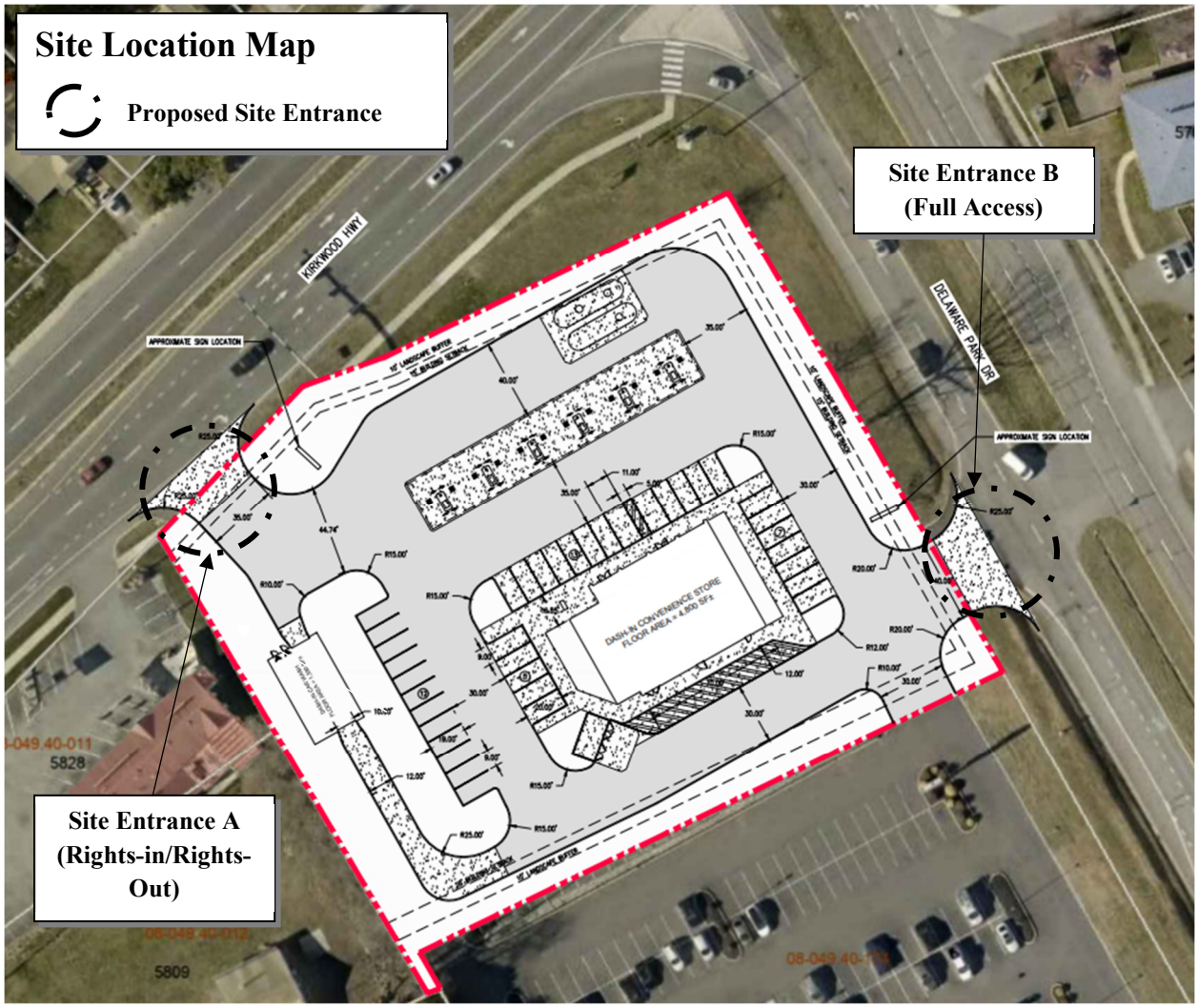
Description: The proposed development seeks to replace approximately 21,000 square feet of retail space, of which approximately 8,000 square feet have been in operation at a normal capacity for the past three (3) years, with an approximately 4,800 square-foot convenience store with a gas station (12 Vehicle Fueling Positions).
Location: The site is located on the southwest corner of the intersection of Kirkwood Highway (SR 2/New Castle Road 11) and Delaware Park Drive (New Castle Road 11A) in New Castle County, Delaware.
Amount of land to be developed: An approximately 2.05-acre parcel.
Land use approval(s) needed: Entrance Plan.
Proposed completion date: 2028.
Proposed access locations: One existing rights-in/rights-out access point along Kirkwood Highway and one existing full movement access point along Delaware Park Drive.

Daily traffic volumes:

- 2024 Average Annual Daily Traffic (AADT)
    - Kirkwood Highway (SR 2/New Castle Road 11): 34,684 vehicles per day
    - Delaware Park Drive (New Castle Road 11A): 7,397 vehicles per day

*AADT is sourced from DelDOT Gateway due to inconsistencies observed in the ATR data provided in the report.

Site Map



**Graphic is an approximation based on a Conceptual Site Plan last revised February 7, 2024, Dash In – 5810 Kirkwood Hwy Traffic Impact Study prepared by Development Services Group.*

Relevant and On-going Projects

The *Pavement & Rehabilitation, New Castle 5A (Kirkwood Highway)* (DelDOT Contract No. T202506101) pavement and rehabilitation project is nearby to the study area. The project is along Kirkwood Highway between Delaware Route 273 and Milltown Road (New Castle Road 318) and includes the Dash In – 5810 Kirkwood Highway site frontage. Construction is anticipated to start Spring of 2026.

The subject property is adjacent to an area being considered for the Churchman's Crossing TID, a future Transportation Improvement District (TID), that will be adopted by DelDOT and New Castle County in accordance with Section 2.4 of the Development Coordination Manual. The intent of the TID is to plan comprehensively and thereby to enable both land development and the

transportation improvements needed to support it. The Churchman's Crossing TID is under development and more information regarding TIDs can be found on the following website: https://deldot.gov/Programs/transportation-improvement-districts/index.shtml.

The *Kirkwood Highway Land Use and Transportation Plan* is a collaborative project led by WILMAPCO, in partnership with the New Castle County Department of Land Use (NCCDLU), DelDOT, and the Delaware Transit Corporation (DTC). The purpose of the project is to create a cohesive plan for the Delaware SR 2, Kirkwood Highway corridor that includes both short- and long-term recommendations and is informed by community input to achieve a shared vision of the corridor. The plan outlines significant intersection and roadway design changes to better manage congestion and improve safety, including targeted improvements at high-crash locations. At the nearby intersection of Kirkwood Highway and Delaware Park Drive, intersection reconfigurations are recommended to accommodate changes in traffic patterns with the completion of the Churchman's Road Extended. Churchman's Road Extended is a new roadway recommended through the *Churchman's Crossing Plan Update* that would extend from the intersection of Churchman's Road at SR 4 through Delaware Park to SR 2 at Delaware Park Drive. The June 2025 Kirkwood Highway Land Use and Transportation Plan is available at the following link: https://wilmapco.sharefile.com/share/view/sf0fd753632ae4c459755610676624d40 and Mr. Austin Gray, DelDOT Assistant Director of Statewide & Regional Planning, can be contacted at austin.gray@delaware.gov for more information.

The *Churchman's Crossing Plan Update*, adopted by WILMAPCO's Council in 2022, represents a comprehensive update of the 1997 Churchman's Crossing Study. Developed in collaboration with DelDOT, DTC and New Castle County's Department of Land Use, in support of and coordination with the Churchman's Crossing Monitoring Committee (CCMC). The plan introduces targeted transportation upgrades, including intersection enhancements and the expansion of transit service, alongside pedestrian and bike-friendly infrastructure, such as dedicated bicycle lanes, shared use paths, and improved walkways linking existing neighborhoods to safer, lower-traffic corridors. The proposed Dash In – 5810 Kirkwood Highway development is within the Churchman's Crossing plan area. In the vicinity of the proposed site, the Churchman's Road Extended is a recommended project from the plan that would be a four-lane boulevard type roadway connecting the intersection of SR 4 and SR 58 with SR 2 at Delaware Park Boulevard. More details of the plan are available at the following link: https://www.wilmapco.org/Churchmans/.

Livable Delaware

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

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

Investment Level 1

These areas are often municipalities, towns, or urban/urbanizing places in counties where density is generally higher than in surrounding areas. In Investment Level 1 Areas, state investments and

policies should support and encourage a wide range of uses and densities, promote a variety of transportation options, foster efficient use of existing public and private investments, and enhance community identity and integrity. Overall, it is the state's intent to use its spending and management tools to maintain and enhance community character, and to promote well-designed and efficient new growth in Investment Level 1 Areas.

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

Proposed development's compatibility with Livable Delaware:
The proposed development is located within Investment Level 1, an area focused on job creation, new facilities that serve the public, and favor new public facilities, development, and redevelopment activities. The proposed development consisting of a 4,800 square foot convenience store with 12 Vehicle Fueling Positions (VFP) seeks to replace the existing 8,000 square foot strip retail plaza which is a part of 21,000 square feet of retail space. The redevelopment of the existing development will create new jobs and serve the public. Therefore, the proposed development is consistent with the 2020 update of *Livable Delaware Strategies for State Policies and Spending.*

Comprehensive Plan

(Source: New Castle County Comprehensive Plan, 2022)

New Castle County Comprehensive Plan:
Per the New Castle County Comprehensive Plan Existing Land Use Map, the proposed development is currently zoned as Commercial Neighborhood (CN), and the developer does not plan to rezone the land. Per the New Castle County 2022 Future Land Use Map, the proposed development is in areas designated as Type 1 – Commercial Corridor Development.

Proposed development's compatibility with the New Castle County Comprehensive Plan:
The *New Castle County Comprehensive Plan* states that Type 1 Commercial Corridor Development includes Commercial Neighborhood. The developer intends to maintain the current zoning of the development as Commercial Neighborhood. Therefore, the proposed development is consistent with the *New Castle County Comprehensive Plan.*

Trip Generation

The trip generation for the proposed development was determined by using the comparable land use and rates/equations contained in the *Trip Generation, 11th Edition: An ITE Informational*

Report, published by the Institute of Transportation Engineers (ITE) for ITE Land Use Code 822 (Strip Retail Plaza, <40k) and Land Use Code 945 (Convenience Store/Gas Station).

Table 1
Dash In – 5810 Kirkwood Hwy Trip Generation

Land Use	ADT	Weekday AM Peak Hour			Weekday PM Peak Hour		
		Enter	Exit	Total	Enter	Exit	Total
4,800 SF Convenience Store with 12 Vehicle Fueling Positions (ITE LUC 945)	3,362	136	135	271	131	131	262
Existing 8,000 SF Strip Retail Plaza, <40k (ITE LUC 822)	-436	-11	-8	-19	-33	-33	-66
Internal Trips	-57	-3	-2	-5	-19	-33	-52
Net External Trips	2,869	122	125	247	79	65	144
Pass-By Trips	-297	-93	-95	-188	-60	-49	-109
Total New Trips	2,572	29	30	59	19	16	35

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

Overview of TIS

Intersections examined:

1. Site Entrance A / Kirkwood Highway (SR 2/New Castle Road 11)
2. Site Entrance B / Ball Road / Delaware Park Drive (New Castle Road 11A)

Conditions examined:

1) Case 1 – 2025 existing
2) Case 2 – 2028 without development
3) Case 3 – 2028 with development

Committed developments considered:

1. **2701 Capitol Trail:** 179 units of multi-family low-rise apartments and 21,500 square feet of retail space.
2. **Astro Plaza:** 40,350 square feet of retail space, 3,400 square feet fast-food restaurant with drive-through, 5,619 square feet convenience store with gas station (16 VFP). 40,350 square feet of retail space is built.
3. **YMCA Kirkwood Highway:** Unbuilt additions totaling 26,887 square feet (existing 54,912 square feet health/fitness club).
4. **Milltown Square:** 42,000 square feet medical building.

5. **Raising Canes-Kirkwood Highway:** 3,374 square feet fast-food restaurant with drive-through.
6. **3906 Kirkwood:** 4,850 square feet single-tunnel automatic car wash, 2,500 square feet fast-food restaurant with drive-through.

The committed development information contained within the TIS report supersedes the April 16, 2025, Scoping Meeting Memorandum.

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

Intersection Descriptions

1. **Site Entrance A / Kirkwood Highway (SR 2/New Castle Road 11)**
   Type of Control: Existing two-way stop-controlled rights-in/rights-out intersection (T-intersection).
   Eastbound Approach: (Kirkwood Highway) Existing two though lanes and one shared through/right turn lane.*
   Westbound Approach: (Kirkwood Highway) Existing two through lanes.
   Northbound Approach: (Site Entrance A) Existing one right turn lane.
   **The through movement transitions into a right turn lane at the Delaware Park Drive intersection.*

2. **Site Entrance B / Ball Road / Delaware Park Drive (New Castle Road 011A)**
   Type of Control: Existing two-way stop-controlled unsignalized intersection.
   Eastbound Approach: (Site Entrance B) Existing one shared left turn/through/right turn lane.
   Westbound Approach: (Ball Road) Existing one shared left turn/through/right turn lane.
   Northbound Approach: (Delaware Park Drive) Existing one shared left turn/through lane and one shared through/right turn lane.
   Southbound Approach: (Delaware Park Drive) Existing one shared left turn/through lane and one shared through/right turn lane.

Transit, Pedestrian, and Bicycle Facilities

Existing transit service: Per DelDOT Gateway, DART Routes 6 exist with two bus stops to the east of the intersection of Delaware Park Drive and Kirkwood Highway.

Planned transit service: Per email correspondence from Bill Williamson, DART Planner, on August 06, 2025, DART does not have any comments.

Existing bicycle and pedestrian facilities: Per DelDOT's New Castle County Bicycle Map, the site frontage Kirkwood Highway is considered a high traffic regional bicycle route with bikeway.

There are existing shared use paths along northbound Delaware Park Drive as well as along Kirkwood Highway. There are no pedestrian crossing facilities present at the study intersections.

Planned bicycle and pedestrian facilities: DelDOT sent an email to Mr. Anthony Aglio on July 29, 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 frontages are summarized below. The Bicycle LTS was determined utilizing DelDOT's Gateway.

- Kirkwood Highway: 3
- Delaware Park Drive: 2, 3 & 4

Crash Evaluation

Per the crash data included in the TIS From June 23, 2022, to June 23, 2025, provided by the Delaware Department of Transportation (DelDOT), a total of six crashes were reported within the site frontage area. None of these crashes resulted in personal injury.

Two crashes were reported at the intersection of Kirkwood Highway and Site Entrance A, including one rear-end crash and one sideswipe in the same direction. None of these crashes resulted in personal injury.

Three crashes were reported at the intersection of Delaware Park Drive and Site Entrance B, including one angle crash, one sideswipe in the same direction, and one not a collision between two vehicles. None of these crashes resulted in personal injury.

Previous Comments

All comments from the PTIS have been addressed in the Final TIS.

Sight Distance Evaluation

No sight distance constraints were noted at the existing locations of the site entrances per the field visit conducted on August 6, 2025.

General Synchro Analysis Comments
(See table footnotes on the following pages for specific comments)

1) JMT and the TIS used HCM 7th edition within HCS 2025 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, whereas the TIS utilized the existing PHF.

3) JMT and the TIS utilized the existing heavy vehicle percentage for each movement greater than 100 vph in Case 1 - Existing analysis.

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

5) JMT assumed a heavy vehicle percentage of 3% for the proposed site traffic, whereas the TIS utilized the existing heavy vehicle percentage for Site Entrance A and Site Entrance B.

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

7) JMT and the TIS utilized the same PHF for every movement.

8) JMT utilized pedestrian volumes in the HCS analysis, whereas the TIS did not.

Table 2
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for Dash In - 5810 Kirkwood Hwy
Report Dated: July 25, 2025
Prepared by: Bowman Consulting Group, Ltd.

Unsignalized Intersection Two-Way Stop Control (T-intersection)[1]	**LOS per TIS**		**LOS per JMT**	
1 - Site Entrance A / Kirkwood Highway (SR 2/New Castle Road 11)[2]	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Case 1 – 2025 Existing				
Northbound Site Entrance A Approach	C (18.0)	C (15.8)	C (18.3)	C (16.1)
Case 2 – 2028 without Development				
Northbound Site Entrance A Approach	C (19.8)	C (17.4)	C (19.6)	C (17.6)
Case 3 – 2028 with Development				
Northbound Site Entrance A Approach	C (24.9)	C (18.6)	C (24.2)	C (18.6)
95th Percentile Queue Length	25’	8’	23’	8’
Case 3 – 2028 with Development *with restricted left-outs at Site Entrance B*[3]				
Northbound Site Entrance A Approach	-	-	D (27.6)	C (20.2)
95th Percentile Queue Length			41’	15’

[1] The numbers in parentheses following levels of service are average delay per vehicle, measured in seconds.
[2] JMT and the TIS both modeled the intersection with two through lanes and one shared through/right turn lane along the eastbound approach and one right turn lane along the northbound approach.
[3] JMT modeled the Site Entrance B intersection as one shared through/right turn lane along the eastbound and westbound approach restricting the left turn lanes for these approaches for the future Case 3 scenario; as such, the eastbound left turning vehicles from the Site Entrance B approach were redistributed between the eastbound right turn at Site Entrance B and northbound right turn at Site Entrance A.

Table 3
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for Dash In - 5810 Kirkwood Hwy
Report Dated: July 25, 2025
Prepared by: Bowman Consulting Group, Ltd.

Unsignalized Intersection Two-Way Stop Control (T-intersection)[1]	**LOS per TIS**		**LOS per JMT**	
1 - Site Entrance B / Delaware Park Drive (New Castle Road 11A)	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Case 1 – 2025 Existing[4,5]				
Eastbound Site Entrance B Approach	A (10.0)	B (11.8)	A (9.5)	B (12.2)
Westbound Ball Road Approach	-	-	A (9.0)	A (9.3)
Northbound Delaware Park Drive Left Turn	A (8.6)	A (8.0)	A (8.0)	A (8.1)
Southbound Delaware Park Drive Left Turn	A (7.7)	A (7.9)	A (7.7)	A (8.0)
Case 2 – 2028 without Development[4,5]				
Eastbound Site Entrance B Approach	B (10.2)	B (13.5)	A (9.6)	B (12.5)
Westbound Ball Road Approach	-	-	A (9.0)	A (9.3)
Northbound Delaware Park Drive Left Turn	A (8.6)	A (8.0)	A (8.0)	A (8.1)
Southbound Delaware Park Drive Left Turn	A (7.7)	A (7.9)	A (7.8)	A (8.0)
Case 2 – 2028 without Development *with Daycare Center Traffic*[5,6]				
Eastbound Site Entrance B Approach	-	-	A (9.7)	B (12.9)
Westbound Ball Road Approach	-	-	A (9.9)	B (10.6)
Northbound Delaware Park Drive Left Turn	-	-	A (8.0)	A (8.1)
Southbound Delaware Park Drive Left Turn	-	-	A (7.8)	A (8.1)

[4] For approaches or lanes where there was no volume present in the traffic data, JMT assumed a volume of 1 vehicle to allow for a LOS calculation, whereas the TIS did not.

[5] JMT and the TIS both modeled the Delaware Park Drive with one shared left turn/through/right turn lane along the eastbound and westbound approaches and one shared left turn/through lane and one shared through/right turn lane along the northbound and southbound approaches.

[6] As the approximately 3,400 square-foot Kirkwood Early Learning Center, located at the westbound Ball Road approach, was not operational during the date traffic manual counts were collected, JMT conducted additional analysis by assuming daycare traffic per ITE Trip Generation Manual 11th Edition entering and exiting via the westbound Ball Road approach, whereas the TIS did not.

Table 3 (Continued)
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1 - Site Entrance B / Delaware Park Drive (New Castle Road 11A)	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Case 3 – 2028 with Development *with Auxiliary Lanes*[4,7]				
Eastbound Site Entrance B Approach	B (13.4)	C (15.5)	B (12.1)	B (13.4)
95th Percentile Queue Length	15’	20’	13’	15’
Westbound Ball Road Approach	-	-	A (9.0)	A (9.3)
95th Percentile Queue Length	-	-	0’	0’
Northbound Delaware Park Drive Left Turn	A (8.9)	A (8.2)	A (8.1)	A (8.2)
95th Percentile Queue Length	3’	3’	0’	3’
Southbound Delaware Park Drive Left Turn	A (8.6)	A (9.1)	A (8.6)	A (9.1)
95th Percentile Queue Length	0’	0’	0’	0’
Case 3 – 2028 with Development *with restricted left with Auxiliary Lanes*[3,4]				
Eastbound Site Entrance B Approach	-	-	A (9.5)	A (9.6)
95th Percentile Queue Length			5’	5’
Westbound Ball Road Approach	-	-	A (9.1)	A (9.4)
95th Percentile Queue Length			0’	0’
Northbound Delaware Park Drive Left Turn	-	-	A (8.1)	A (8.2)
95th Percentile Queue Length			0’	3’
Southbound Delaware Park Drive Left Turn	-	-	A (8.8)	A (9.4)
95th Percentile Queue Length			0’	0’
Case 3 – 2028 with Development *with Daycare Center Traffic with Auxiliary Lanes*[6]				
Eastbound Site Entrance B Approach	-	-	B (12.6)	B (13.9)
95th Percentile Queue Length			15’	18’
Westbound Ball Road Approach	-	-	B (10.1)	B (10.7)
95th Percentile Queue Length			3’	3’
Northbound Delaware Park Drive Left Turn	-	-	A (8.1)	A (8.2)
95th Percentile Queue Length			0’	3’
Southbound Delaware Park Drive Left Turn	-	-	A (8.1)	A (8.7)
95th Percentile Queue Length			3’	3’

[7] Both JMT and the TIS conducted the case 3 analysis incorporating one left turn lane, one through lane, and one shared through/right turn lane along the northbound approach and one left turn lane, two through lanes, and one right turn lane along the southbound approach.

Table 3 (Continued)
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1 - Site Entrance B / Delaware Park Drive (New Castle Road 11A)	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Case 3 – 2028 with Development *with Daycare Center Traffic with restricted lefts with Auxiliary Lanes*[3,6]				
Eastbound Site Entrance B Approach	-	-	A (9.5)	A (9.6)
95th Percentile Queue Length			5’	5’
Westbound Ball Road Approach	-	-	A (9.2)	A (9.6)
95th Percentile Queue Length			3’	3’
Northbound Delaware Park Drive Left Turn	-	-	A (8.1)	A (8.2)
95th Percentile Queue Length			0’	3’
Southbound Delaware Park Drive Left Turn	-	-	A (8.2)	A (8.9)
95th Percentile Queue Length			3’	3’