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

SHANTÉ A. HASTINGS
SECRETARY

September 22, 2025
Revised: May 15, 2026

Mr. Alex Meitzler
Traffic Planning and Design, Inc.
131 Continental Drive, Suite 103
Newark, DE 19713

Dear Mr. Meitzler,

The enclosed Traffic Impact Study (TIS) review letter for the Revised **School Bell Road Subdivision** (Tax Parcel: 1003400001) 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. The revisions for this letter include updates to the analysis results that begin on Page 20. 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: James Oeste, Allied Properties Inc
Eric Kramer, Traffic Planning and Design, Inc.
Stephen Rosenfeld, VanDemark and Lynch, Inc
Christopher O'Keefe, VanDemark and Lynch, Inc
David L. Edgell, Office of State Planning Coordination
Antoni Sekowski, New Castle County Department of Land Use
Cooper Bowers, New Castle County Department of Land Use
Chris Jackson, New Castle County Department of Land Use
Owen C. Robatino, New Castle County Department of Land Use
Mir Wahed, Johnson, Mirmiran, & Thompson, Inc.
Joanne M. Arellano, Johnson, Mirmiran, & Thompson, Inc.
DelDOT Distribution

DelDOT

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Mark Luszcz, Chief Engineer, Transportation Solutions (DOTS)
Brad Eaby, Deputy Attorney General, DOTS
Matthew Vincent, Chief Project Development North, DOTS
Peter Haag, Chief Traffic Engineer, DOTS
Wendy Carpenter, Traffic Calming & Subdivision Relations Manager, Traffic, DOTS
Sean Humphrey, Traffic Engineer, Traffic, DOTS
Brian Schilling, Canal District Engineer, M&O
Jared Kauffman, Service Development Planner, DTC
Anthony Aglio, Planning Supervisor, Active Transportation & Community Connections, Planning
Austin Gray, Assistant Director, Statewide & Regional Planning, Planning
Anson Gock, Planner, Statewide & Regional Planning, Planning
Jeff Van Horn, Director, Economic Development Coordination (EDC)
Nathan Draper, Canal District Public Works Engineer, EDC
Wendy Polasko, Assistant Director, Development Coordination, EDC
Brian Yates, Process and Quality Control Engineer, Development Coordination, EDC
Randhir Sharma, New Castle Review Coordinator Development Coordination, EDC
Ali Akbar, New Castle Review Engineer, Development Coordination, EDC
Sireen Muhtaseb, TIS Engineer, Development Coordination, EDC
Ben Fisher, TIS Review Engineer, Development Coordination, EDC

Revised May 14, 2026
September 22, 2025

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

RE: Agreement No: 1945F
TIS Support Services – T202369005
Task Name: Task 17-17 School Bell Road Subdivision
JMT No.: 19-01340-717

Dear Ms. Muhtaseb:

Johnson, Mirmiran, and Thompson (JMT) has completed a review of the Traffic Impact Study (TIS) for the School Bell Road Subdivision development which was prepared by The Traffic Planning and Design, Inc. dated August 7, 2024. This review was assigned as Task Number 17-17. The report is prepared in a manner generally consistent with DelDOT's *Development Coordination Manual* and other Department standards. The revisions for this letter include updates to the analysis results that begin on Page 20 to identify the analysis scenario on which the recommendations are based.

The TIS evaluates the impacts of a proposed residential development in New Castle County, Delaware. The proposed development would be comprised of 64 single family detached houses and 14 single family attached houses on a 55.78-acre parcel (Tax Parcel: 10-034.00-001). The land is located on the east side of School Bell Road (New Castle Road 344), approximately 890 feet north of the intersection of US Route 40 and School Bell Road. The land is currently zoned as S (Suburban), and the developer does not plan to rezone the land.

One full access point is proposed on School Bell Road, across from Fir Avenue. Construction is anticipated to be complete in 2027.

JMT conducted an additional scenario considering the impacts of the improvements as part of the Royal Farms #369 Bear development. Specifically, as part of the Royal Farms #369 Bear development, a narrow concrete median would be provided between the westbound US Route 40 leftmost through lane and the westbound US Route 40 U-turn/left turn lane at the US Route 40/Fir Avenue intersection to minimize weaving movements from the Royal Farms #369 Bear site access. This restriction would eliminate left turn/through movements along the northbound Private Driveway and southbound Fir Avenue approaches at the US Route 40/Fir Avenue intersection.

Relevant and On-Going Projects and Studies

DelDOT has relevant and on-going improvement projects in the vicinity of the study area. The *SR 1 Widening, Road A to US 40* (DelDOT Contract No. T202011001) project, which was originally part of the *SR1 Widening, SR273 to the Roth Bridge* project (DelDOT Contract No. T200511001), proposes to identify and prioritize cost-effective short, mid, and long-term transportation infrastructure improvements to reduce congestion, reduce travel times, and improve safety, all while minimizing environmental impacts. This project is currently in the design and planning phase, with several public workshops already being held. The improvements as part of the project do not include the proposed site frontage and are for locations west of the TIS study area. The December 2023 concept plan depicts a single point urban interchange (SPUI) at the Delaware Route 1 and Delaware Route 273 interchange. Construction dates have not yet been determined at this stage. More information regarding the project can be found at the following website: https://deldot.gov/projects/index.shtml?dc=details&projectNumber=T202011001.

The *Route 40 Corridor Improvements* project was initiated by the Delaware Department of Transportation (DelDOT) in partnership with New Castle County and WILMAPCO in September 1998. This partnership created the community-supported 20-year transportation plan previously known as the *Route 40 Corridor 20-Year Transportation Plan.* The Plan addresses the conditions that are expected to result from projected growth in housing, employment, and traffic over 20 years. The Plan contains projects that address projected transportation problems. An annual Corridor Monitoring and Triggering Report is generated by DelDOT, WILMAPCO, New Castle County, and DART to determine the need for further evaluation of transportation, safety, and transit improvements based on land development, traffic, corridor preservation, highway safety, transit service, and projects in the area. The Plan proposed shared use paths along US Route 40 in the study area, however, no capital projects are proposed to implement the recommendations at this time. More information regarding the project and study can be found at the following website: https://deldot.gov/projects/index.shtml?dc=corridor&name=us-40

The *US 13, US 40 to Memorial Drive Pedestrian Improvements* project (DelDOT Contract No. T201601102) aims to improve pedestrian facilities and safety along the US Route 13 and US Route 40 corridors, with improvements identified in the US 13/40 Pedestrian Audit studies. The studies identified improvements along the site frontage on US Route 40. However, the improvements as part of the *US 13, US 40 to Memorial Drive Pedestrian Improvements* project do not include the proposed site frontage and are for locations east of the TIS study area. The project began in 2020 and is anticipated to be completed in 2028. More information regarding the project and study can be found at the following websites:
https://deldot.gov/projects/index.shtml?dc=details&projectNumber=T201601102
https://deldot.gov/Programs/DSHSP/index.shtml?dc=project-pedestrian-safety-audit

The *Hazard Elimination Program (HEP),* formally known as the *Highway Safety Improvement Program (HSIP)*, identifies high crash locations and makes operational improvements to address safety concerns. Within the project area, the segment of Appleby Road 0.05 miles south of Old Forge Road to 0.08 miles north of Wilton Boulevard/Estates Drive is included in the 2022 HEP as Site B. Preliminary recommendations to this segment include trimming trees to increase sight distance; conducting a photometric analysis; determining the need for a Rectangular Rapid

Flashing Beacon (RRFB) at Old Forge Road; conducting an all-way stop control analysis at Old Forge Road; and conducting a roundabout analysis at Wilton Boulevard/Estates Drive. More general information regarding HEP/HSIP projects can be found in the following State DOT document:https://highways.dot.gov/sites/fhwa.dot.gov/files/2024-04/HSIP%28Delaware%29%202023%20Report.pdf

Summary of Analysis Results

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

The New Castle County Level of Service (LOS) Standards as stated in Section 40.11.210 of the Unified Development Code (UDC) apply to all signalized, all-way-stop, and roundabout intersections. Based on an evaluation of the signalized intersections, none of them will require the implementation of physical roadway and/or traffic control improvements.

Additionally, separate from the UDC but based on the LOS evaluation criteria as stated in DelDOT's Development Coordination Manual, four of the stop-controlled study intersections exhibit LOS deficiencies.

Intersection	LOS Deficiencies Occur		Case
	AM	PM	
2 - US Route 40/Fir Avenue	-	X	Case 1 – 2023 Existing
	-	X	Case 2 – 2027 without Development
	-	X	Case 3 – 2027 with development
3 - US Route 40/ First Crossover West of Fir Avenue	-	X	Case 1 – 2023 Existing
	-	X	Case 2 – 2027 without Development
	-	X	Case 3 – 2027 with development
7- US Route 40/Appleby Road (New Castle Road 343)	-	X	Case 1 – 2023 Existing
	-	X	Case 2 – 2027 without Development
	-	X	Case 3 – 2027 with development
8- US Route 40/US Route 40 First Crossover East of Appleby Road	-	X	Case 1 – 2023 Existing
	-	X	Case 2 – 2027 without Development
	-	X	Case 3 – 2027 with development

2 - US Route 40 / Fir Avenue / Private Driveway (See Table 3, Page 23)

The US Route 40 intersection with Fir Avenue exhibits LOS deficiencies during the PM peak hour under existing and future conditions, with or without the proposed development. The deficiencies occur along the eastbound US Route 40 left turn, the northbound Private Driveway approach and the southbound Fir Avenue approach in the PM peak hour. Under Case 3 conditions, the eastbound US Route 40 left turn would operate at LOS E with approximately 40 seconds of delay per vehicle, and the northbound Private Driveway approach and the southbound Fir Avenue approach would operate at LOS F with delays of approximately 230 and 195 seconds per vehicle, respectively. The projected 95th percentile queue lengths of the eastbound US Route 40 left turn lane, the northbound

Private Driveway approach, and the southbound Fir Avenue approach would be approximately 60, 95, and 155 feet, respectively, under Case 3 conditions.

JMT conducted an additional scenario considering the impacts of the improvements as part of the Royal Farms #369 Bear development. Specifically, as part of the Royal Farms #369 Bear development, a narrow concrete median would be provided between the westbound US Route 40 leftmost through lane and the westbound US Route 40 U-turn/left turn lane at the US Route 40/Fir Avenue intersection to minimize weaving movements from the Royal Farm #369 Bear site access. This restriction would eliminate left turn/through movements along the northbound Private Driveway and southbound Fir Avenue approaches at the US Route 40/Fir Avenue intersection.

Under the turn restriction scenario, deficiencies would occur along the eastbound US Route 40 left turn in the PM peak hour under Case 3 conditions. Specifically, the eastbound US Route 40 left turn would operate at LOS E with approximately 40 seconds of delay per vehicle with a projected 95th percentile queue length of approximately 55 feet.

The deficiencies at the US Route 40 intersection with Fir Avenue could be mitigated by the provision of a traffic signal. However, the intersection is located approximately 800 feet west of the US Route 40 signalized intersection with School Bell Road. Additionally, a larger study (including a signal warrant evaluation) outside the scope of this TIS should be conducted to determine the impacts of a new signalized intersection to the US Route 40 corridor. As such, we do not recommend the developer implement capacity improvements at this intersection.

<u>3 - US Route 40 / First Crossover West of Fir Avenue (See Table 4, Page 27)</u>

The US Route 40 Crossover 700 feet west of Fir Avenue exhibits LOS deficiencies along the eastbound approach during the PM peak hour under future conditions with and without the proposed developments as well as along the southbound approach during the PM peak hour under existing and future conditions with and without the proposed development. Specifically, under Case 3 conditions, the eastbound US Route 40 left turn would operate at LOS E with approximately 40 seconds of delay per vehicle and the southbound Private Driveway approach would operate at LOS F with approximately 68 seconds of delay per vehicle. The eastbound US Route 40 left turn and the southbound Private Driveway calculated 95th percentile queue lengths are approximately 15 and 30 feet, respectively under Case 3 conditions.

The deficiencies could be mitigated by the provision of a traffic signal. However, a larger study (including a signal warrant evaluation) outside the scope of this TIS should be conducted to determine the impacts of a new signalized intersection to the US Route 40 corridor. As such, we do not recommend the developer implement capacity improvements at this intersection.

<u>7 - US Route 40 / Appleby Road (See Table 8, Page 31)</u>

The US Route 40 intersection with Appleby Road exhibits LOS deficiencies during the PM peak hour under existing and future conditions with or without the development. Specifically, under Case 3 conditions, the southbound Appleby Road right turn would operate at LOS F with a delay

of approximately 160 seconds per vehicle and a calculated 95th percentile queue length of approximately 365 feet.

The deficiencies at the US Route 40 and Appleby Road intersection could be mitigated by the provision of a traffic signal. However, the intersection is located approximately 800 feet east of the US Route 40 signalized intersection with School Bell Road. Additionally, a larger study (including a signal warrant evaluation) outside the scope of this TIS should be conducted to determine the impacts of a new signalized intersection to the US Route 40 corridor. Moreover, another potential mitigation could be to close the right turn lane from Appleby Road onto US Route 40, however that evaluation should be conducted outside the scope of this TIS as that mitigation would impact intersections beyond the TIS study area. As such, we do not recommend the developer implement capacity improvements at this intersection.

8 - US Route 40/US Route 40 First Crossover East of Appleby Road (See Table 9, Page 32)

The US Route 40 Crossover approximately 1,170 feet east of Appleby Road exhibits LOS deficiencies along the eastbound left turn/U-turn during the PM peak hour under existing and future conditions. The eastbound US Route 40 left turn would operate at LOS F with approximately 560 seconds of delay per vehicle and a projected 95th percentile queue length of approximately 440 feet during the PM peak hour under Case 3 conditions. Additionally, the intersection exhibits LOS deficiencies along the southbound driveway approach during the PM peak hour under existing and future conditions with the proposed development. The southbound approach would operate at LOS F with over 1,000 seconds of delay per vehicle during the PM peak hour under Case 3 conditions.

The deficiencies could be mitigated by the provision of a traffic signal. However, a larger study (including a signal warrant evaluation) outside the scope of this TIS should be conducted to determine the impacts of a new signalized intersection to the US Route 40 corridor. Moreover, another potential mitigation could be to close the crossover along US Route 40, however that evaluation should be conducted outside the scope of this TIS as it would impact intersections beyond the TIS study area. As such, we do not recommend the developer implement capacity improvements at this intersection.

1 - Site Entrance A / School Bell Road/ Fir Avenue (See Table 2, Page 21)

The unsignalized Site Entrance A intersection with School Bell Road and Fir Avenue does not exhibit LOS deficiencies under existing or future conditions with or without the proposed expansion and with or without the restrictions at the US Route 40/Fir Avenue intersection proposed as part of the Royal Farms #369 Bear project. However, DelDOT has received speed related concerns along School Bell Road. In addition, per the crash data included in the TIS from June 15, 2020, to June 15, 2023, and provided by the Delaware Department of Transportation (DelDOT), one angle crash was reported at the intersection of Fir Avenue and School Bell Road.

DelDOT evaluated the intersection with a single lane roundabout as that would discourage speeding and minimize the potential for angle crashes. However, it may not be feasible to install the roundabout due to the impacts to the properties adjacent to the Fir Avenue intersection.

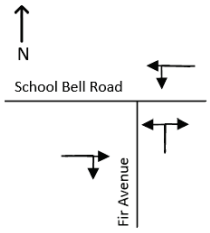
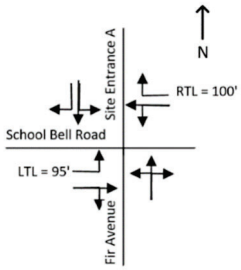
Additionally, DelDOT evaluated the intersection as two-way stop controlled with auxiliary turn lanes. The developer is proposing to install separate right turn and left turn lanes along School Bell Road. With two-way stop control, the provision of a raised concrete island crossing treatment would provide traffic calming and discourage speeding. Therefore, it is recommended to have the Site Entrance A intersection be two-way stop controlled with turn lanes and a raised concrete island. Pedestrian crossings along School Bell Road should be evaluated per NCHRP Report 562 methodology, and the proper treatment should be installed.

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, 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 (School Bell Road), within the limits of their frontage. The improvements shall include both directions of travel, regardless of whether the developer's lands are on one or both sides of the road. "Frontage" means the length along the state right-of-way of a single property tract where an entrance is proposed or required. If a single property tract has frontage along multiple roadways, any segment of roadway including an entrance shall be improved to meet DelDOT's Functional Classification criteria as found in Section 1.1 of the Development Coordination Manual and elsewhere therein, and/or improvements established in the Traffic Operational Analysis and/or Traffic Impact Study. "Secondary Frontage" means the length along the state right-of-way of a single property tract where no entrance is proposed or required. The segment of roadway may be upgraded by improving the pavement condition of the existing roadway width. The Pavement Management Section and Subdivision Section will determine the requirements to improve the pavement condition.

2. The developer should construct an unsignalized Site Entrance A full access for the School Bell Road Subdivision along School Bell Road, across from Fir Avenue. The intersection should be designed with a raised concrete island along School Bell Road and be consistent with the lane configurations indicated in the table below:

Approach	Current Configuration		Approach	Proposed Configuration	
Eastbound School Bell Road	One shared right turn/through lane		Eastbound School Bell Road	One left turn lane and one shared through/right turn lane	
Westbound School Bell Road	One shared left turn/through lane		Westbound School Bell Road	One shared left turn/through lane and one right turn lane	
Northbound Fir Avenue	One shared left turn/right turn lane		Northbound Fir Avenue	One shared left turn/through/ right turn lane	
Southbound Site Entrance A	Approach does not exist		Southbound Site Entrance A	One shared left turn/through lane and one right turn lane	

Based on DelDOT's *Development Coordination Manual*, the recommended minimum storage length (excluding taper) of the westbound right turn lane is 100 feet and the eastbound left turn lane is 95 feet. The projected queues from the traffic analysis can be accommodated within the recommended storage lengths.

3. The developer should obtain a cross access easement to the adjacent property to the east (Tax Parcel: 10-034.00-010).

4. 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 School Bell Road frontage. Along the 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 are required.

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

d. Minimum five-foot wide bicycle lanes should be incorporated along the School Bell Road site frontage.

e. At the Site Entrance and School Bell Road intersection, a two-stage pedestrian crossing that includes a raised concrete island to minimize pedestrian delay and exposure while crossing School Bell Road should be provided. A NCHRP 562 analysis should be completed to determine the type of treatment and the pedestrian volume should be assumed to be met (i.e. 20 peds/hr).

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.

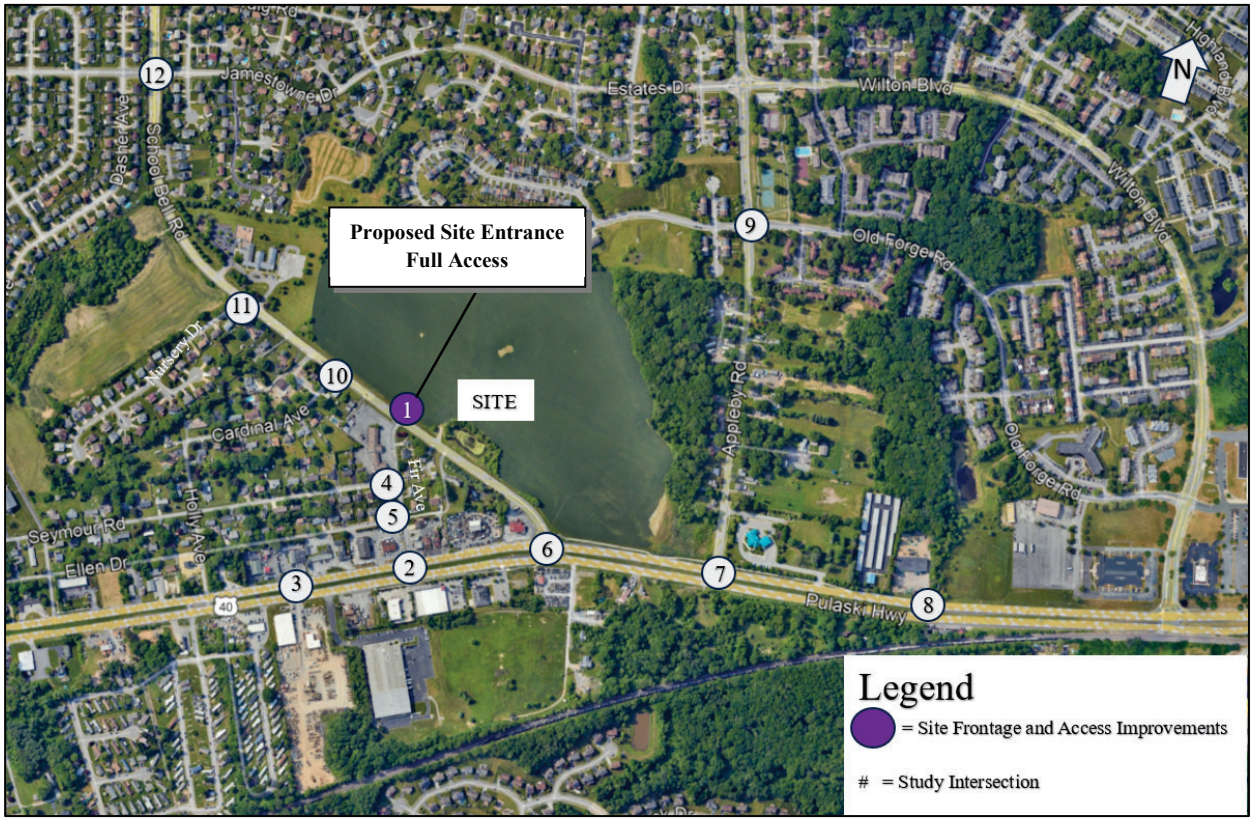
Additional details on our review of the TIS are attached. Please contact me at (302) 266-9600 if you have any questions concerning this review.

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: August 7, 2024
Prepared by: Traffic Planning and Design, Inc.
Prepared for: School Bell Enterprises, LLC
Tax parcel: 10-034.00-001
Generally consistent with DelDOT's Development Coordination Manual (DCM): Yes

Project Description and Background

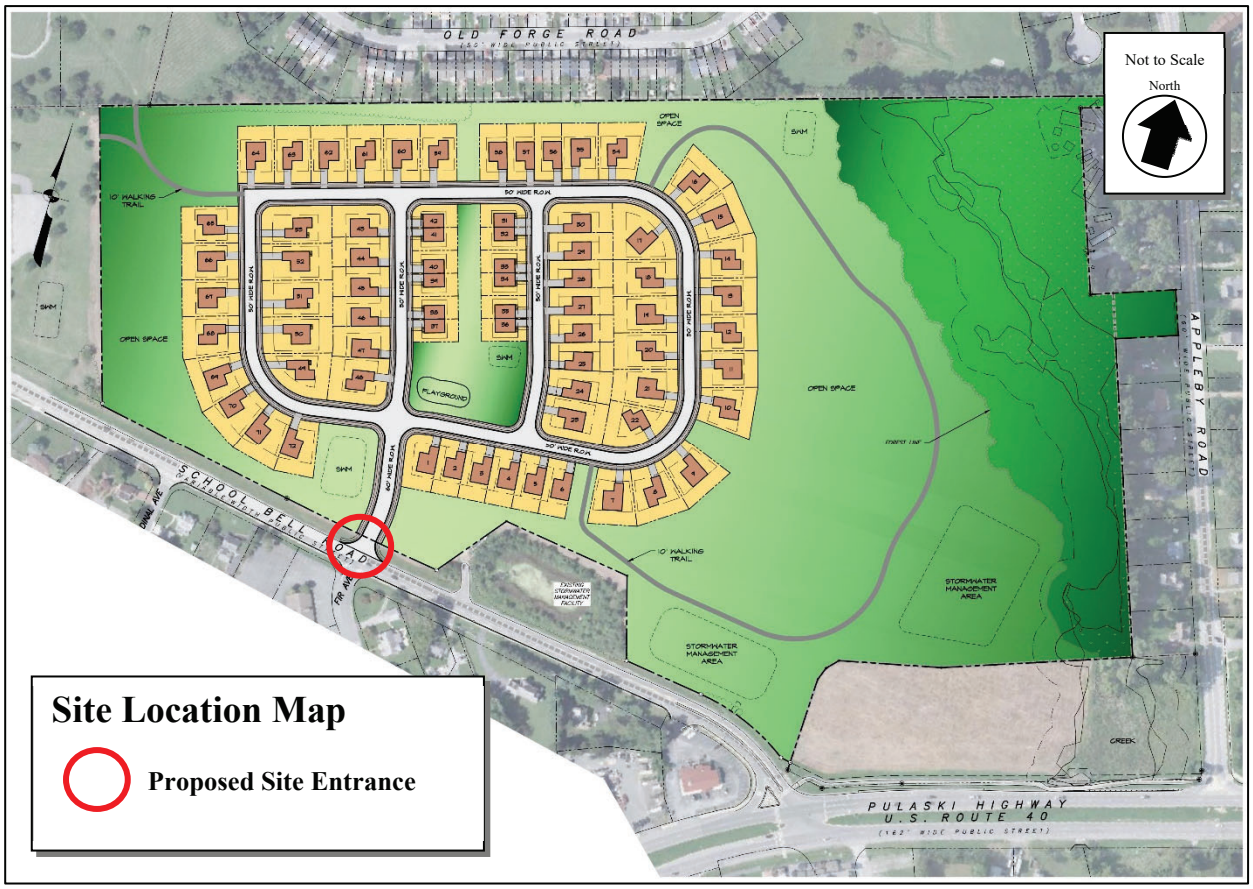
Description: The proposed development consists of 64 single-family detached houses and 14 single-family attached houses.
Location: The site is located on the east side of School Bell Road (New Castle Road 344), approximately 890 feet north of the US Route 40 and School Bell Road intersection, in New Castle County, Delaware.
Amount of land to be developed: An approximately 55.78-acre parcel.
Land use approval(s) needed: Entrance Plan.
Proposed completion date: 2027.
Proposed access locations: One full access point is proposed on School Bell Road across from Fir Avenue.

Daily traffic volumes:

- 2023 Average Annual Daily Traffic on School Bell Road (New Castle Road 344): 4,850 vehicles per day.

*AADT is sourced from data provided by ATR data provided by the TIS report. The data is taken from six full days starting on May 31, 2023.

Site Map



**Graphic is an approximation based on the School Bell Road Subdivision Schematic Site Plan prepared by Vandemark & Lynch, Inc. dated February 14, 2023.*

Relevant and On-going Projects

DelDOT has relevant and on-going improvement projects in the vicinity of the study area. The *SR 1 Widening, Road A to US 40* (DelDOT Contract No. T202011001) project, which was originally part of the *SR1 Widening, SR273 to the Roth Bridge* project (DelDOT Contract No. T200511001), proposes to identify and prioritize cost-effective short, mid, and long-term transportation infrastructure improvements to reduce congestion, reduce travel times, and improve safety, all while minimizing environmental impacts. This project is currently in the design and planning phase, with several public workshops already being held. The improvements as part of the project do not include the proposed site frontage and are for locations west of the TIS study area. The December 2023 concept plan depicts a single point urban interchange (SPUI) at the Delaware Route 1 and Delaware Route 273 interchange. Construction dates have not yet been determined at this stage. More information regarding the project can be found at the following website: https://deldot.gov/projects/index.shtml?dc=details&projectNumber=T202011001.

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1998. This partnership created the community-supported 20-year transportation plan previously known as the *Route 40 Corridor 20-Year Transportation Plan.* The Plan addresses the conditions that are expected to result from projected growth in housing, employment, and traffic over 20 years. The Plan contains projects that address projected transportation problems. An annual Corridor Monitoring and Triggering Report is generated by DelDOT, WILMAPCO, New Castle County, and DART to determine the need for further evaluation of transportation, safety, and transit improvements based on land development, traffic, corridor preservation, highway safety, transit service, and projects in the area. The Plan proposed shared use paths along US Route 40 in the study area, however, no capital projects are proposed to implement the recommendations at this time. More information regarding the project and study can be found at the following website: https://deldot.gov/projects/index.shtml?dc=corridor&name=us-40

The *US 13, US 40 to Memorial Drive Pedestrian Improvements* project (DelDOT Contract No. T201601102) aims to improve pedestrian facilities and safety along the US Route 13 and US Route 40 corridors, with improvements identified in the US 13/40 Pedestrian Audit studies. The studies identified improvements along the site frontage on US Route 40. However, the improvements as part of the *US 13, US 40 to Memorial Drive Pedestrian Improvements* project do not include the proposed site frontage and are for locations east of the TIS study area. The project began in 2020 and is anticipated to be completed in 2028. More information regarding the project and study can be found at the following websites:
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https://deldot.gov/Programs/DSHSP/index.shtml?dc=project-pedestrian-safety-audit

The *Hazard Elimination Program (HEP),* formally known as the *Highway Safety Improvement Program (HSIP)*, identifies high crash locations and makes operational improvements to address safety concerns. Within the project area, the segment of Appleby Road 0.05 miles south of Old Forge Road to 0.08 miles north of Wilton Boulevard/Estates Drive is included in the 2022 HEP as Site B. Preliminary recommendations to this segment include trimming trees to increase sight distance; conducting a photometric analysis; determining the need for a Rectangular Rapid Flashing Beacon (RRFB) at Old Forge Road; conducting an all-way stop control analysis at Old Forge Road; and conducting a roundabout analysis at Wilton Boulevard/Estates Drive. More general information regarding HEP/HSIP projects can be found in the following State DOT document:https://highways.dot.gov/sites/fhwa.dot.gov/files/2024-04/HSIP%28Delaware%29%202023%20Report.pdf

Livable Delaware

(Source: Delaware Strategies for State Policies and Spending, 2025)

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. Level 1 areas contain a variety of housing types. The proposed development consists of 64 single family detached houses and 14 single family attached houses. Therefore, the proposed development is consistent with the 2025 update of *Livable Delaware Strategies for State Policies and Spending.*

Comprehensive Plan

(Source: New Castle County Comprehensive Plan, 2050)

New Castle County Comprehensive Plan:
Per the Current Zoning Map, the development is zoned as Suburban. Per the Future Land Use Map, the developed is zoned as Type 1 Commercial Corridor Development.

Proposed development's compatibility with New Castle County Comprehensive Plan:
The Comprehensive Plan states that if land within Type 1 Commercial Corridor Development is currently zoned as Suburban then that land may continue to be used and developed for residential purposes. The developer plans to keep the land zoned as Suburban, therefore the 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 210 (Single-Family Detached Houses) and ITE Land Use Code 215 (Single-Family Attached Houses).

Table 1
School Bell Road Subdivision Trip Generation

Land Use	ADT	Weekday AM Peak Hour			Weekday PM Peak Hour		
		Enter	Exit	Total	Enter	Exit	Total
64 Single-Family Detached Houses (ITE LUC 210)	669	12	38	50	41	24	65
14 Single-Family Attached Houses (ITE LUC 215)	56	0	2	2	3	1	4
Total Trips	**725**	**12**	**40**	**52**	**44**	**25**	**69**

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

Overview of TIS

Intersections examined:

1. Site Entrance / School Bell Road (New Castle Road 344) / Fir Avenue
2. US Route 40 / Fir Avenue / Private Driveway
3. US Route 40 / West Crossover / Private Driveway
4. Fir Avenue / Seymour Road
5. Fir Avenue / Ellen Drive
6. US Route 40 / School Bell Road
7. US Route 40 / Appleby Road (New Castle Road 343)
8. US Route 40 / East Crossover / Private Driveway
9. Appleby Road / Old Forge Road
10. School Bell Road / Cardinal Avenue
11. School Bell Road / Nursery Drive
12. School Bell Road / Dasher Avenue / Jamestowne Drive

Consistent with DelDOT correspondence, the intersections examined list in the TIS supersedes the list included in the May 18, 2023 DelDOT Scoping Meeting Memorandum.

Conditions examined:

1. Case 1 – 2023 existing
2. Case 2 – 2027 without development
3. Case 3 – 2027 with development

Committed developments considered:

1. School Bell Crossing Shopping Center: 5,600 SF convenience store with gas station (16 fueling positions), and 119,549 SF warehouse.
2. School Bell Center Phase 1: 19,998 SF retail building.
3. Dasher Farm: 48 single-family detached houses.

4. Dover Federal Credit Union: 24,000 SF shopping center.
5. Soneji Property: 20 multi-family (low-rise) apartments.
6. 504 (498) Pulaski Highway (Prices Toyota): 19,600 SF used car sales and auto repair building.
7. Delaware Auto Court: 71-room hotel, and 19,125 SF shopping center.
8. Garret Woods: 40 single-family detached houses, and 126 single family attached houses.
9. Lincoln Center: 181,470 SF retail space, 10,000 SF restaurant space, 499,863 SF office space, 80,004 SF hotel, 10,000 SF daycare, 326 apartments (mid-rise), and 182 townhomes (mid-rise).
10. Governors Square Commercial: 96,936 SF retail building.
11. Newtown Square: 8,960 SF shopping center, and 4,000 SF office building.
12. 650 Churchmans Road: 890,348 SF warehouse.
13. Blue Diamond Park: 911,954 SF warehouse.

The committed development information contained within the TIS report supersedes the May 18, 2023, Scoping Meeting Memorandum.

Peak hours evaluated: Weekday AM and weekday PM.

Intersection Descriptions

1. **Site Entrance / School Bell Road (New Castle Road 344) / Fir Avenue**
   Type of Control: Proposed two-way stop-controlled intersection (T-intersection).
   Eastbound Approach: (Fir Avenue) Existing one shared left turn/right turn lane, stop-controlled. Proposed one shared left turn/through/right turn lane, stop-controlled.
   Westbound Approach: (Site Entrance) Proposed one shared left turn/through/right turn lane, stop-controlled.
   Northbound Approach: (School Bell Road) Existing one shared left turn/through lane. Proposed one shared left turn/through lane and one right turn lane.
   Southbound Approach: (School Bell Road) Existing one shared through/right turn lane. Proposed one left turn lane and one shared through/right turn lane.

2. **US Route 40 / Fir Avenue / Private Driveway**
   Type of Control: Existing two-way stop-controlled intersection.
   Eastbound Approach: (US Route 40) Existing one left turn lane, two through lanes and one right turn lane.
   Westbound Approach: (US Route 40) Existing one left turn lane, two through lanes and one right turn lane.
   Northbound Approach: (Private Driveway) Existing one shared left turn/through/right turn lane, stop-controlled.
   Southbound Approach: (Fir Avenue) Existing one shared left turn/through/right turn lane, stop-controlled.

3. **US Route 40 / West Crossover / Private Driveway**
   Type of Control: Existing two-way stop-controlled intersection.

Eastbound Approach: (US Route 40) Existing one left turn lane and two through lanes.
Westbound Approach: (US Route 40) Existing one left turn lane and two through lanes.
Northbound Approach: (Private Driveway) Existing one shared left turn/through/right turn lane, stop-controlled.
Southbound Approach: (Private Driveway) Existing one shared left turn/through/right turn lane, stop-controlled.

4. **Fir Avenue / Seymour Road**
   Type of Control: Existing two-way stop-controlled intersection (T-intersection).
   Eastbound Approach: (Seymour Road) Existing one shared left turn/right turn lane, stop-controlled.
   Northbound Approach: (Fir Avenue) Existing one shared left turn/through lane.
   Southbound Approach: (Fir Avenue) Existing one shared through/right turn lane.

5. **Fir Avenue / Ellen Drive**
   Type of Control: Existing two-way stop-controlled intersection (T-intersection).
   Eastbound Approach: (Ellen Drive) Existing one shared left turn/right turn lane, stop-controlled.
   Northbound Approach: (Fir Avenue) Existing one shared left turn/through lane.
   Southbound Approach: (Fir Avenue) Existing one shared through/right turn lane.

6. **US Route 40 / School Bell Road**
   Type of Control: Existing signalized intersection (T-intersection).
   Eastbound Approach: (US Route 40) Existing one left turn lane and two through lanes.
   Westbound Approach: (US Route 40) Existing one left turn lane, two through lanes and one right turn lane.
   Southbound Approach: (School Bell Road) Existing one left turn lane and one channelized right turn lane.

7. **US Route 40 / Appleby Road (New Castle Road 343)**
   Type of Control: Existing rights-in/rights-out.
   Westbound Approach: (US Route 40) Existing two through lanes and one right turn lane.
   Southbound Approach: (Appleby Road) Existing one channelized right turn lane, stop-controlled.

8. **US Route 40 / East Crossover / Private Driveway**
   Type of Control: Existing two-way stop-controlled intersection (T-intersection).
   Eastbound Approach: (US Route 40) Existing one left turn lane and two through lanes.
   Westbound Approach: (US Route 40) Existing one left turn lane and two through lanes.
   Southbound Approach: (Private Driveway) Existing one shared left turn/right turn lane, stop-controlled.

9. **Appleby Road / Old Forge Road**
   Type of Control: Existing two-way stop-controlled intersection.
   Eastbound Approach: (Old Forge Road) Existing one shared left turn/through lane and one channelized right turn lane, stop-controlled.
   Westbound Approach: (Old Forge Road) Existing one shared left turn/through lane and one channelized right turn lane, stop-controlled.
   Northbound Approach: (Appleby Road) Existing one left turn lane, one through lane and one right turn lane.
   Southbound Approach: (Appleby Road) Existing one shared left turn/through lane and one right turn lane.

10. **School Bell Road / Cardinal Avenue**
    Type of Control: Existing two-way stop-controlled intersection (T-intersection).
    Eastbound Approach: (Cardinal Avenue) Existing one shared left turn/right turn lane, stop-controlled.
    Northbound Approach: (School Bell Road) Existing one shared left turn/through lane.
    Southbound Approach: (School Bell Road) Existing one shared through/right turn lane.

11. **School Bell Road / Nursery Drive**
    Type of Control: Existing two-way stop-controlled intersection (T-intersection).
    Eastbound Approach: (Nursery Drive) Existing one shared left turn/right turn lane, stop-controlled.
    Northbound Approach: (School Bell Road) Existing one shared left turn/through lane.
    Southbound Approach: (School Bell Road) Existing one shared through/right turn lane.

12. **School Bell Road / Dasher Avenue / Jamestowne Drive**
    Type of Control: Existing two-way stop-controlled intersection.
    Eastbound Approach: (Dasher Avenue) Existing one shared left turn/through/right turn lane, stop-controlled.
    Westbound Approach: (Jamestowne Drive) Existing one shared left turn/through/right turn lane, stop-controlled.
    Northbound Approach: (School Bell Road) Existing one left turn lane, one through lane and one right turn lane.
    Southbound Approach: (School Bell Road) Existing one left turn lane, one through lane and one right turn lane.

Transit, Pedestrian, and Bicycle Facilities

Existing transit service: Per DelDOT Gateway, DART Routes 13, 40, 54 and 64 run through the project area along US Route 40, Appleby Road and Old Forge Road, with a total of six bus stops.

Planned transit service: Per email correspondence from Jared Kauffman, DART Fixed-Route Planner, on September 4, 2024, DART has no comments regarding this site.

Existing bicycle and pedestrian facilities: Per DelDOT's New Castle County Bicycle, several study roadways are considered bicycle routes. US Route 40, School Bell Road and Appleby Road are considered connector bicycle routes. Bicycle lanes exist on eastbound and westbound US Route 40. Pedestrian crosswalks and a Shared-Use-Path exist along eastbound US Route 40 from the Fir Avenue to School Bell Road and westbound US Route 40 from the East Crossover to School Bell Road. Pedestrian crosswalks exist along southbound School Bell Road and crosswalks exist with the intersecting Fir Avenue, Dasher Avenue/Jamestowne Drive, Cardinal Avenue, Nursery Drive and the Union United Methodist Church Driveway. Pedestrian crosswalks also exist at the westbound leg of the Appleby Road and Old Forge Road intersection.

Planned bicycle and pedestrian facilities: Per email correspondence from John Fiori, DelDOT's Bicycle Coordinator, on September 3, 2024, DelDOT has the following recommendations:

- Referring to the State Strategies and Spending Map this site is within Level 1 and 2. A 10' wide shared-use path (SUP) shall be required along the property frontage. The SUP shall extend to the north and connect to the existing sidewalk at the entrance to the Union United Methodist Church. At the south end of the site, the SUP shall connect to the existing SUP and curb ramp at the intersection of US Route 40.
- Provide internal pedestrian connections from the SUP.
- The site shall dedicate right-of-way per the roadway classification and establish a 15' wide permanent easement along the property roadway frontages.
- All entrance, roadway and/or intersection improvements required shall incorporate bicycle and pedestrian facilities. Per the DCM, if the right turn lane is warranted, then a separate bike lane shall be incorporated along the right turn lane; if a left turn lane is required any roadway improvements shall include a shoulder matching the roadway functional classification or existing conditions (minimum 5-feet).
- There could be additional and/or revised comments once project is discussed at a pre-submittal meeting and/or plans are submitted for LONO/ENT review/approval.

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 DelDOT's Gateway.

- School Bell Road LTS: 3 and 4

Crash Evaluation

Per the crash data included in the TIS from June 15, 2020, to June 15, 2023, provided by the Delaware Department of Transportation (DelDOT), a total of 50 crashes were reported within the

study area. One fatal crash occurred at the US Route 40, West Crossover and Private Driveway intersection. The fatality was alcohol related between a vehicle and a pedestrian in dark conditions.

23 Crashes were reported at the US Route 40 and School Bell Road intersection, including 15 rear-end, one head-on, two angle, one other, and four not a collision between two vehicles.

17 Crashes were reported at the US Route 40 and Appleby Road intersection, including ten rear-end, one head-on, two angle, and four not a collision between two vehicles.

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 proposed site entrance location per the field visit conducted on August 14, 2024.

General Synchro Analysis Comments

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

1) Both JMT and the TIS used HCM 6th edition to complete the analysis. However, JMT used Synchro software version 12 and the TIS used Synchro software version 11.

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

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

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

5) JMT assumed a heavy vehicle percentage of 3% for site traffic, while the TIS assumed a heavy vehicle percentage of 2%.

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 existing heavy vehicle percentages.

7) Both JMT and the TIS utilized a Saturation Flow Rate of 1,900 vehicles per hour per lane for signalized analysis.

8) JMT utilized the same PHF for every movement while the TIS used varying PHF.

9) Results highlighted in gray identify the analysis scenario on which the JMT recommendations are based.

Table 2
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for School Bell Road Subdivision
Report Dated: August 7, 2024
Prepared by: The Traffic Group, Inc.

Unsignalized Intersection Two-Way Stop Control[1]	**LOS per TIS**		**LOS per JMT**	
1 - Site Entrance A / School Bell Road (New Castle Road 344)/ Fir Avenue	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Case 1 – 2023 Existing				
Westbound School Bell Road Left Turn	A (7.7)	A (8.1)	A (7.7)	A (7.8)
Northbound Fir Avenue Approach	B (10.9)	B (11.9)	B (10.8)	B (11.9)
Case 2 – 2027 without Development				
Westbound School Bell Road Left Turn	A (7.8)	A (8.4)	A (7.9)	A (7.9)
Northbound Fir Avenue Approach	B (11.7)	B (13.6)	B (11.6)	B (13.7)
Case 3 – 2027 with Development[2]				
Eastbound School Bell Road Left Turn	A (7.5)	A (7.9)	A (7.5)	A (7.9)
Westbound School Bell Road Left Turn	A (7.8)	A (8.4)	A (7.9)	A (8.0)
Northbound Fir Avenue Approach	B (12.9)	C (16.5)	B (12.4)	C (15.7)
Southbound Site Entrance A Approach	B (11.3)	B (13.1)	B (11.3)	B (13.0)
Case 3 – 2027 with Development [3] *and Turns Restriction Scenario*[4]				
Eastbound School Bell Road Left Turn	-	-	A (7.5)	A (7.9)
Westbound School Bell Road Left Turn	-	-	A (7.9)	A (8.0)
Northbound Fir Avenue Approach	-	-	B (12.6)	C (15.7)
Southbound Site Entrance A Approach	-	-	B (11.4)	B (12.9)
Case 3 – 2027 with Development[5] *with auxiliary lanes*				
Eastbound School Bell Road Left Turn	-	-	A (7.5)	A (7.9)
Westbound School Bell Road Left Turn	-	-	A (7.9)	A (8.0)
Northbound Fir Avenue Left Turn/Through Lane	-	-	B (12.7)	C (16.2)
Southbound Site Entrance A Left Turn/Through Lane	-	-	B (12.5)	B (14.8)

[1] For signalized and unsignalized analysis, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds.
[2] JMT ran the analysis including the turn lanes required by the auxiliary lane worksheet, while the TIS did not include the EB right turn lane onto Fir Avenue.
[3] JMT ran the analysis including the turn lanes required by the auxiliary lane worksheet, while the TIS did not include the EB right turn lane onto Fir Avenue.
[4] The Turns Restriction Scenario is consistent with the Royal Farms #369 entrance plan which considers the impact of turning movements restriction in the intersection of US Route 40/Fir Avenue/Private Driveway.
[5] JMT analyzed the intersection as a two-way stop controlled with a separate left turn lane, through lane, and right turn lane along the School Bell Road eastbound and westbound approaches, and a shared left turn/through lane and a right turn lane along Fir Avenue and Site Entrance approaches.

Table 2 (Continued)
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for School Bell Road Subdivision
Report Dated: August 7, 2024
Prepared by: The Traffic Group, Inc.

Roundabout[6]	**LOS per TIS**		**LOS per JMT**	
1 - Site Entrance A / School Bell Road (New Castle Road 344)/ Fir Avenue	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Case 3 – 2027 with Development				
Eastbound School Bell Road Approach	-	-	A (4.7)	A (5.1)
Westbound School Bell Road Approach	-	-	A (3.9)	A (5.2)
Northbound Fir Avenue Approach	-	-	B (4.0)	A (4.5)
Southbound Site Entrance A Approach	-	-	B (3.7)	A (4.1)
Overall	-	-	A (4.3)	A (5.0)

[6] JMT ran a supplemental analysis by analyzing the intersection as a roundabout. The analysis was conducted using HCS 2023.

Table 3
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for School Bell Road Subdivision
Report Dated: August 7, 2024
Prepared by: The Traffic Group, Inc.

Unsignalized Intersection	**LOS per TIS**		**LOS per JMT**	
2 - US Route 40 / Fir Avenue / Private Driveway[7]	Weekday	Weekday	Weekday	Weekday
Case 1 – 2023 Existing				
Eastbound US Route 40 Left Turn	A (9.5)	C (21.2)	A (9.2)	C (21.9)
Westbound US Route 40 Left Turn	B (13.7)	B (11.1)	B (14.1)	B (11.4)
Northbound Private Driveway Approach	D (25.7)	E (37.9)	C (23.9)	E (40.2)
Northbound Private Driveway Approach 95th Percentile Queue Length	-	28’	-	30’
Southbound Fir Avenue Approach	C (17.0)	E (45.7)	C (17.3)	E (47.5)
Southbound Fir Avenue Approach 95th Percentile Queue Length	-	63’	-	65’
Case 2 – 2027 without Development				
Eastbound US Route 40 Left Turn	B (10.8)	E (36.9)	B (10.4)	E (39.1)
Westbound US Route 40 Left Turn	C (16.6)	B (14.1)	C (17.2)	B (14.5)
Northbound Private Driveway Approach	E (35.1)	F (122.1)	D (31.9)	F (152.6)
Northbound Private Driveway Approach 95th Percentile Queue Length	8’	68’	-	78’
Southbound Fir Avenue Approach	C (21.7)	F (155.5)	C (22.1)	F (171.0)
Southbound Fir Avenue Approach 95th Percentile Queue Length	-	138’	-	145’
Case 2 – 2027 without Development *with separate lanes*[8]				
Eastbound US Route 40 Left Turn	-	-	B (10.4)	E (39.1)
Eastbound US Route 40 Left Turn 95th Percentile Queue Length	-	-	-	58’
Westbound US Route 40 Left Turn	-	-	C (17.2)	B (14.5)
Northbound Private Driveway Approach	-	-	D (31.9)	F (152.6)
Northbound Private Driveway Approach 95th Percentile Queue Length	-	-	-	78’
Southbound Fir Avenue Approach	-	-	C (19.8)	F (84.3)
Southbound Fir Avenue Approach 95th Percentile Queue Length	-	-	-	63’

[7] Both JMT and the TIS analyzed the intersection with a median storage of one vehicle.

[8] Separate lanes scenario includes the Fir Avenue and Private Driveway approaches with one shared left turn/through lane and one right turn lane.

Table 3 (Continued)
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for School Bell Road Subdivision
Report Dated: August 7, 2024
Prepared by: The Traffic Group, Inc.

Unsignalized Intersection Two-Way Stop Control[1]	**LOS per TIS**		**LOS per JMT**	
2 - US Route 40 / Fir Avenue / Private Driveway[5]	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Case 3 – 2027 with Development				
Eastbound US Route 40 Left Turn	B (10.8)	E (38.2)	B (10.4)	E (40.5)
Eastbound US Route 40 Left Turn 95th Percentile Queue Length	-	55’	-	58’
Westbound US Route 40 Left Turn	C (16.6)	B (14.2)	C (17.2)	B (14.6)
Northbound Private Driveway Approach	E (35.6)	F (167.6)	D (32.4)	F (229.3)
Northbound Private Driveway Approach 95th Percentile Queue Length	8’	80’	-	93’
Southbound Fir Avenue Approach	C (21.3)	F (173.1)	C (21.4)	F (195.0)
Southbound Fir Avenue Approach 95th Percentile Queue Length	-	155’	-	155’
Case 3 – 2027 with Development *and Turn Restriction Scenario[4]*				
Eastbound US Route 40 Left Turn	-	-	B (10.4)	E (38.5)
Eastbound US Route 40 Left Turn 95th Percentile Queue Length	-	-	-	55’
Westbound US Route 40 Left Turn	-	-	C (16.2)	B (14.7)
Northbound Private Driveway Approach	-	-	B (13.9)	B (13.6)
Northbound Private Driveway Approach 95th Percentile Queue Length	-	-	-	8’
Southbound Fir Avenue Approach	-	-	B (11.9)	C (22.0)
Southbound Fir Avenue Approach 95th Percentile Queue Length	-	-	-	25’
Case 3 – 2027 with Development *with separate lanes[8]*				
Eastbound US Route 40 Left Turn	-	-	B (10.4)	E (40.5)
Eastbound US Route 40 Left Turn 95th Percentile Queue Length	-	-	-	58’
Westbound US Route 40 Left Turn	-	-	C (17.2)	B (14.6)
Northbound Private Driveway Approach	-	-	D (32.4)	F (229.3)
Northbound Private Driveway Approach 95th Percentile Queue Length	-	-	-	93’
Southbound Fir Avenue Approach	-	-	C (19.0)	F (86.80)
Southbound Fir Avenue Approach 95th Percentile Queue Length	-	-	-	65’

Table 3 (Continued)
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for School Bell Road Subdivision
Report Dated: August 7, 2024
Prepared by: The Traffic Group, Inc

Signalized Intersection[1]	**LOS per TIS**		**LOS per JMT**	
2 - US Route 40 / Fir Avenue / Private Driveway[9]	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Case 2 – 2027 without Development *with signal optimization*	-	-	A (7.9)	A (5.5)
Case 2 – 2027 without Development *with signal optimization with separate turn lanes*	-	-	B (12.8)	A (9.6)
Case 3 – 2027 with Development *with signal optimization*	-	-	A (7.5)	A (5.7)
Case 3 – 2027 without Development *with signal optimization with separate turn lanes*	-		B (12.2)	A (9.4)

[9] JMT modeled the signal using a cycle length of 150 seconds in the AM peak hour and 120 seconds in the PM peak hour with US Route 40 left turns and U-turns controlled by a protected permissive phase. Signalized pedestrian crossings were assumed along every approach. The signal is along a coordinated corridor.

Table 4
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for School Bell Road Subdivision
Report Dated: August 7, 2024
Prepared by: Bowman Consulting Group, Ltd.

Unsignalized Intersection Two-Way Stop Control[1]	**LOS per TIS**		**LOS per JMT**	
3 - US Route 40/ First Crossover West of Fir Avenue[10]	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Case 1 – 2023 Existing				
Eastbound US Route 40 Left Turn	B (11.0)	C (24.7)	B (11.2)	D (25.9)
Westbound US Route 40 Left Turn	B (13.3)	B (12.4)	B (13.0)	B (12.5)
Northbound Private Driveway Approach	D (25.8)	D (32.8)	C (16.1)	C (17.4)
Southbound Private Driveway Approach	-	F (107.4)	-	E (36.8)
Southbound Private Driveway Approach 95th Percentile Queue Length	-	43’	-	18’
Case 2 – 2027 without Development				
Eastbound US Route 40 Left Turn	B (13.6)	E (38.7)	B (14.0)	E (41.0)
Eastbound US Route 40 Left Turn 95th Percentile Queue Length	-	13’	-	13’
Westbound US Route 40 Left Turn	C (15.8)	C (16.4)	C (15.5)	C (16.7)
Northbound Private Driveway Approach	E (42.0)	F (75.8)	C (19.4)	C (23.7)
Northbound Private Driveway Approach 95th Percentile Queue Length	10’	13’	-	-
Southbound Private Driveway Approach	-	F (445.5)	-	F (65.1)
Southbound Private Driveway Approach 95th Percentile Queue Length	-	83’	-	28’
Case 3 – 2027 with Development				
Eastbound US Route 40 Left Turn	B (13.8)	E (39.1)	B (14.1)	E (41.5)
Eastbound US Route 40 Left Turn 95th Percentile Queue Length	-	13’	-	13’
Westbound US Route 40 Left Turn	C (15.8)	C (16.7)	C (15.6)	C (16.9)
Northbound Private Driveway Approach	E (42.0)	F (75.8)	C (19.5)	C (24.0)
Northbound Private Driveway Approach 95th Percentile Queue Length	10’	13’	-	-
Southbound Private Driveway Approach	-	F (445.5)	-	F (67.1)
Southbound Private Driveway Approach 95th Percentile Queue Length	-	83’	-	30’

[10] JMT modeled the intersection with a median vehicle storage of one while the TIS did not.

Table 4 (Continued)
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for School Bell Road Subdivision
Report Dated: August 7, 2024
Prepared by: The Traffic Group, Inc

Signalized Intersection[1]	**LOS per TIS**		**LOS per JMT**	
3 - US Route 40/ First Crossover West of Fir Avenue[7]	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Case 2 – 2027 with Development *with signal optimization*	-	-	A (3.8)	A (3.8)
Case 2 – 2027 without Development *with signal optimization with separate turn lanes*	-	-	A (3.8)	A (4.1)
Case 3 – 2027 with Development *with signal optimization*	-	-	A (3.8)	A (3.4)
Case 3 – 2027 without Development *with signal optimization with separate turn lanes*	-	-	A (3.9)	A (3.7)

Table 5
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for School Bell Road Subdivision
Report Dated: August 7, 2024
Prepared by: The Traffic Group, Inc.

Unsignalized Intersection Two-Way Stop Control[1]	**LOS per TIS**		**LOS per JMT**	
4 - Fir Ave/ Seymour Road	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Case 1 – 2023 Existing				
Eastbound Seymour Road Approach	A (8.9)	A (9.1)	A (8.8)	A (9.2)
Northbound Fir Avenue Left Turn	A (7.5)	A (7.4)	A (7.4)	A (7.4)
Case 2 – 2027 without Development				
Eastbound Seymour Road Approach	A (9.0)	A (9.2)	A (8.9)	A (9.2)
Northbound Fir Avenue Left Turn	A (7.5)	A (7.4)	A (7.4)	A (7.5)
Case 3 – 2027 with Development				
Eastbound Seymour Road Approach	A (9.0)	A (9.2)	A (8.9)	A (9.3)
Northbound Fir Avenue Left Turn	A (7.6)	A (7.4)	A (7.4)	A (7.5)
Case 3 – 2027 with Development *and Turn Restriction Scenario*[4]				
Eastbound Seymour Road Approach	-	-	A (9.0)	A (9.3)
Northbound Fir Avenue Left Turn	-	-	A (7.4)	A (7.4)

Table 6
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for School Bell Road Subdivision
Report Dated: August 7, 2024
Prepared by: The Traffic Group, Inc.

Unsignalized Intersection Two-Way Stop Control[1]	**LOS per TIS**		**LOS per JMT**	
5 - Fir Ave/ Ellen Drive	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Case 1 – 2023 Existing				
Eastbound Ellen Drive Approach	A (8.8)	A (9.4)	A (8.8)	A (9.3)
Northbound Fir Avenue Left Turn	-	A (7.4)	-	A (7.4)
Case 2 – 2027 without Development				
Eastbound Ellen Drive Approach	A (8.8)	A (9.4)	A (8.9)	A (9.4)
Northbound Fir Avenue Left Turn	-	A (7.4)	-	A (7.4)
Case 3 – 2027 with Development				
Eastbound Ellen Drive Approach	A (8.9)	A (9.5)	A (8.9)	A (9.5)
Northbound Fir Avenue Left Turn	-	A (7.4)	-	A (7.5)
Case 3 – 2027 with Development *and Turn Restriction Scenario*[4]				
Eastbound Ellen Drive Approach	-	-	A (8.9)	A (9.4)
Northbound Fir Avenue Left Turn	-	-	-	A (7.4)

Table 7
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for School Bell Road Subdivision
Report Dated: August 7, 2024
Prepared by: The Traffic Group, Inc.

Signalized Intersection[1]	**LOS per TIS**		**LOS per JMT**	
6 - US Route 40/School Bell Road	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Case 1 – 2023 Existing	B (11.3)	B (11.9)	B (14.0)	B (14.0)
Case 1 – 2023 Existing *with signal optimization*[11]	-	-	B (13.5)	B (14.0)
Case 2 – 2027 without Development *with signal optimization*[9]	C (34.7)	D (39.2)	D (39.7)	D (46.9)
Case 3 – 2027 with Development *with signal optimization and pedestrian activation*[9]	D (35.6)	D (40.6)	D (38.2)	D (49.6)
Case 3 – 2027 with Development *with signal optimization and no pedestrian activation*[9]	-	-	D (38.2)	D (44.5)
Case 3 – 2027 with Development *with signal optimization and Turns Restriction Scenario*[12] *and pedestrian activation*	-	-	D (41.1)	E (57.7)
Case 3 – 2027 with Development *with signal optimization and Turns Restriction Scenario*[12] *and no pedestrian activation*	-	-	D (41.0)	D (48.9)

[9] Signal optimization scenario includes optimizing green split times while maintaining the existing cycle length.
[12] With Turns Restriction Scenario, JMT analyzed the intersection as a signalized intersection with protected left turn and U-turn phasing along US Route 40 approaches. The Turns Restriction Scenario is consistent with the Royal Farms #369 entrance plan which considers the impact of turning movement restrictions in the intersection of US Route 40/Fir Avenue/Private Driveway.

Table 8
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for School Bell Road Subdivision
Report Dated: August 7, 2024
Prepared by: The Traffic Group, Inc.

Unsignalized Intersection	**LOS per TIS**		**LOS per JMT**	
7 - US Route 40 / Appleby Road (New Castle Road 343) / Private Driveway[8]	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Case 1 – 2023 Existing				
Southbound Appleby Road Approach	B (11.2)	E (35.9)	B (11.4)	E (39.8)
Southbound Appleby Road Approach	-	138’	-	150’
Case 2 – 2027 without Development				
Northbound Private Driveway Approach	C (15.8)	C	C (16.0)	C (16.5)
Southbound Appleby Road Approach	B (13.7)	F (128.0)	B (14.0)	F (154.3)
Southbound Appleby Road Approach	-	325’	-	355’
Case 3 – 2027 with Development				
Northbound Private Driveway Approach	C (15.9)	C (16.5)	C (16.1)	C (16.5)
Southbound Appleby Road Approach	B (13.7)	F (135.2)	B (14.0)	F (162.8)
Southbound Appleby Road	-	335’	-	365’
Signalized Intersection[1]				
Case 2 – 2027 without Development *with signal optimization[13]*	-	-	A (0.5)	A (0.1)
Case 3 – 2027 with Development *with signal optimization[10]*	-	-	A (0.3)	A (0.2)

[13] JMT modeled the signal using a cycle length of 150 seconds in the AM peak hour and 120 seconds in the PM peak hour. Signalized pedestrian crossings were assumed along every approach. The signal is along a coordinated corridor.

Table 9
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for School Bell Road Subdivision
Report Dated: August 7, 2024
Prepared by: The Traffic Group, Inc.

Unsignalized Intersection Two-Way Stop Control[1]	**LOS per TIS**		**LOS per JMT**	
8 - US Route 40/US Route 40 First Crossover East of Appleby Road[8]	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Case 1 – 2023 Existing				
Eastbound US Route 40 Left Turn	B (11.5)	E (45.7)	B (11.3)	E (49.9)
Eastbound US Route 40 Left Turn 95th Percentile Queue Length	-	70’	-	75’
Westbound US Route 40 Left Turn	C (19.2)	C (16.3)	C (19.9)	C (16.8)
Southbound Private Driveway Approach	C (21.5)	F (78.9)	C (15.6)	E (39.7)
Southbound Private Driveway Approach 95th Percentile Queue Length	-	5’	-	3’
Case 2 – 2027 without Development				
Eastbound US Route 40 Left Turn	C (16.6)	F (514.6)	C (16.4)	F (540.0)
Eastbound US Route 40 Left Turn 95th Percentile Queue Length	-	430’	-	433’
Westbound US Route 40 Left Turn	D (25.0)	D (25.0)	D (26.1)	D (25.0)
Southbound Private Driveway Approach	E (42.7)	C (17.3)	C (22.7)	C (17.3)
Southbound Private Driveway Approach 95th Percentile Queue Length	10’	-	-	-
Case 3 – 2027 with Development				
Eastbound US Route 40 Left Turn	C (16.8)	F (540.4)	C (16.5)	F (558.2)
Eastbound US Route 40 Left Turn 95th Percentile Queue Length	-	438’	-	438’
Westbound US Route 40 Left Turn	D (25.4)	D (25.4)	D (26.5)	D (25.9)
Southbound Private Driveway Approach	E (43.5)	C (17.5)	C (22.9)	F (*)
Southbound Private Driveway Approach 95th Percentile Queue Length	10’	-	-	-

*Delay exceeds 1,000 seconds.

Table 9 (Continued)
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for School Bell Road Subdivision
Report Dated: August 7, 2024
Prepared by: The Traffic Group, Inc.

Signalized Intersection[1]	**LOS per TIS**		**LOS per JMT**	
8 - US Route 40/US Route 40 First Crossover East of Appleby Road[10]	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Case 2 – 2027 without Development *with signal optimization*	-	-	A (2.4)	A (6.5)
Case 2 – 2027 without Development *with signal optimization with separate turn lanes*	-	-	A (2.4)	A (6.5)
Case 3 – 2027 with Development *with signal optimization*	-	-	A (2.5)	A (6.6)
Case 3 – 2027 without Development *with signal optimization with separate turn lanes*	-	-	A (2.5)	A (6.6)

Table 10
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for School Bell Road Subdivision
Report Dated: August 7, 2024
Prepared by: The Traffic Group, Inc.

Unsignalized Intersection Two-Way Stop Control[1]	**LOS per TIS**		**LOS per JMT**	
9 - Appleby Road / Old Forge Road	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Case 1 – 2023 Existing				
Eastbound Old Forge Road Approach	B (10.9)	B (13.6)	B (10.9)	B (13.6)
Westbound Old Forge Road Approach	A (9.4)	B (10.7)	A (9.3)	B (10.4)
Northbound Appleby Road Left Turn	A (7.6)	A (7.8)	A (7.5)	A (7.8)
Southbound Appleby Road Left Turn	A (7.6)	A (7.6)	A (7.4)	A (7.6)
Case 2 – 2027 without Development				
Eastbound Old Forge Road Approach	B (11.5)	C (15.3)	B (11.5)	C (15.3)
Westbound Old Forge Road Approach	A (9.7)	B (11.4)	A (9.6)	B (11.1)
Northbound Appleby Road Left Turn	A (7.7)	A (7.9)	A (7.6)	A (8.0)
Southbound Appleby Road Left Turn	A (7.7)	A (7.7)	A (7.5)	A (7.7)
Case 3 – 2027 with Development				
Eastbound Old Forge Road Approach	B (11.5)	C (15.4)	B (11.5)	C (15.4)
Westbound Old Forge Road Approach	A (9.7)	B (11.4)	A (9.6)	B (11.1)
Northbound Appleby Road Left Turn	A (7.7)	A (7.9)	A (7.6)	A (8.0)
Southbound Appleby Road Left Turn	A (7.7)	A (7.7)	A (7.5)	A (7.7)

Table 11
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for School Bell Road Subdivision
Report Dated: August 7, 2024
Prepared by: The Traffic Group, Inc.

Unsignalized Intersection Two-Way Stop Control[1]	**LOS per TIS**		**LOS per JMT**	
10 - School Bell Road / Cardinal Drive	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Case 1 – 2023 Existing				
Westbound School Bell Road Left Turn	A (7.6)	A (7.8)	A (7.7)	A (7.8)
Northbound Cardinal Drive Approach	B (10.7)	B (12.0)	B (10.8)	B (12.1)
Case 2 – 2027 without Development				
Westbound School Bell Road Left Turn	A (7.8)	A (8.0)	A (7.9)	A (8.0)
Northbound Cardinal Drive Approach	B (11.5)	B (13.5)	B (11.6)	B (13.6)
Case 3 – 2027 with Development				
Westbound School Bell Road Left Turn	A (7.8)	A (8.0)	A (7.9)	A (8.1)
Northbound Cardinal Drive Approach	B (11.7)	B (13.9)	B (11.8)	B (14.0)

Table 12
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for School Bell Road Subdivision
Report Dated: August 7, 2024
Prepared by: The Traffic Group, Inc.

Unsignalized Intersection Two-Way Stop Control[1]	**LOS per TIS**		**LOS per JMT**	
11 - School Bell Road / Nursery Drive	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Case 1 – 2023 Existing				
Westbound School Bell Road Left Turn	A (8.2)	A (7.8)	A (7.7)	A (7.9)
Northbound Nursery Drive Approach	B (10.3)	B (11.0)	B (10.4)	B (11.0)
Case 2 – 2027 without Development				
Westbound School Bell Road Left Turn	A (8.4)	A (8.0)	A (7.9)	A (8.1)
Northbound Nursery Drive Approach	B (11.0)	B (12.0)	B (11.1)	B (12.1)
Case 3 – 2027 with Development				
Westbound School Bell Road Left Turn	A (8.5)	A (8.1)	A (7.9)	A (8.1)
Northbound Nursery Drive Approach	B (11.1)	B (12.2)	B (11.2)	B (12.3)

Table 13
Peak Hour Levels of Service (LOS)
Based on Traffic Impact Study for School Bell Road Subdivision
Report Dated: August 7, 2024
Prepared by: The Traffic Group, Inc.

Unsignalized Intersection Two-Way Stop Control[1]	**LOS per TIS**		**LOS per JMT**	
12 - School Bell Road/Dasher Avenue/Jamestowne Drive[14]	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Case 1 – 2023 Existing				
Eastbound Dasher Avenue Approach	B (12.2)	B (13.5)	B (12.6)	B (13.9)
Westbound Jamestowne Drive Approach	B (10.9)	B (12.1)	B (11.0)	B (12.2)
Northbound School Bell Road Left Turn	A (7.7)	A (7.8)	A (7.7)	A (7.9)
Southbound School Bell Road Left Turn	A (7.7)	A (7.7)	A (7.7)	A (7.8)
Case 2 – 2027 without Development				
Eastbound Dasher Avenue Approach	B (13.5)	C (15.8)	B (14.0)	C (16.2)
Westbound Jamestowne Drive Approach	B (11.6)	B (13.5)	B (11.7)	B (13.6)
Northbound School Bell Road Left Turn	A (7.9)	A (8.0)	A (7.9)	A (8.1)
Southbound School Bell Road Left Turn	A (7.8)	A (7.9)	A (7.7)	A (7.9)
Case 3 – 2027 with Development				
Eastbound Dasher Avenue Approach	B (13.8)	C (16.3)	B (14.3)	C (16.7)
Westbound Jamestowne Drive Approach	B (11.8)	B (13.8)	B (11.9)	B (13.9)
Northbound School Bell Road Left Turn	A (7.9)	A (8.0)	A (7.9)	A (8.1)
Southbound School Bell Road Left Turn	A (7.8)	A (7.9)	A (7.8)	A (7.9)

[14] JMT modeled the intersection with EB and WB having one shared left turn/through/right turn lane while the TIS modeled the intersection with both EB and WB having a separate left turn/through lane and one right turn lane.