



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

NICOLE MAJESKI  
SECRETARY

July 3, 2023

Mr. Marc Coté, P.E., AICP  
Rossi Group  
8 W. Lockerman Street, Suite 201  
Dover, DE 19903

Dear Mr. Coté,

The enclosed Traffic Operational Analysis (TOA) review letter for the proposed **Centerville and Graceville** (Tax Parcels: (Tax Parcel: 1-17-02801-05-0100-00001) 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 TOA to conform to DelDOT's Development Coordination Manual and other accepted practices and procedures for such studies. DelDOT accepts this letter and concurs with the recommendations. If you have any questions concerning this letter or the enclosed review letter, please contact me at [Annamaria.Furmato@delaware.gov](mailto:Annamaria.Furmato@delaware.gov).

Sincerely,

A handwritten signature in cursive script, appearing to read "Annamaria Furmato".

Annamaria Furmato  
TIS Group Project Engineer

AF:km

Enclosures

cc with enclosures: Tracy Sparks, Liborio 3, LLC  
Scott Lobdell, First State Engineering  
Andrew J. Parker, McCormick Taylor, Inc.  
Tucker Smith, McCormick Taylor, Inc.  
DelDOT Distribution

## DelDOT Distribution

Brad Eaby, Deputy Attorney General

Shanté Hastings, Deputy Secretary / Director, Transportation Solutions (DOTS)

Mark Luszcz, Deputy Director, DelDOT Traffic, DOTS

Michael Simmons, Assistant Director, Project Development South, DOTS

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Wendy Carpenter, Traffic Calming & Subdivision Relations Manager, DelDOT Traffic, DOTS

Sean Humphrey, Traffic Engineer, DelDOT Traffic, DOTS

Matthew Lichtenstein, Central District Engineer, Central District

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Jared Kauffman, Service Development Planner, Delaware Transit Corporation

Tremica Cherry, Service Development Planner, Delaware Transit Corporation

Pamela Steinebach, Director, Planning

Todd Sammons, Assistant Director, Development Coordination

Wendy Polasko, Subdivision Engineer, Development Coordination

Will Mobley, Acting Kent County Review Coordinator, Development Coordination

Michael Vandevander, Subdivision Manager, Development Coordination

Anthony Aglio, Planning Supervisor, Statewide & Regional Planning

Sireen Muhtaseb, TIS Group Manager, Development Coordination

Philip Lindsey, TIS Group Project Engineer, Development Coordination, Planning



June 21, 2023

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

RE: Agreement No. 1946F  
Traffic Impact Study Services  
**Task No. 4A Subtask 07A – Centerville & Graceville (f.k.a. Meadows of Smyrna)**

Dear Ms. Furrato:

McCormick Taylor has completed its review of the Traffic Operational Analysis (TOA) for the Centerville & Graceville (f.k.a. Meadows of Smyrna) development prepared by Rossi Group, dated November 15, 2022. Rossi Group prepared the report in a manner generally consistent with DelDOT's Development Coordination Manual.

The TOA evaluates the impacts of the proposed Centerville & Graceville development, proposed to be located on both sides of Rabbit Chase Lane (Kent Road 145), between Sunnyside Road (Kent Road 90) and Brenford Road (Kent Road 42), in the Town of Smyrna, Kent County, Delaware. The proposed development would consist of 426 units of mid-rise multi-family housing (duplex units), 309 single family detached houses, 400 units of mid-rise multi-family housing (townhouses), and a 50,000 square-foot elementary school. Five access points are proposed on Rabbit Chase Lane: One access is proposed opposite the existing Sunnyside Elementary School entrance creating a four-legged intersection, and the other four access points will create two four-legged intersections. Construction is expected to be complete by 2032.

The subject land is located on an approximately 220-acre assemblage of parcels. The land is currently zoned as R-2A (Residential), and the developer is not proposing to rezone the land.

Currently, there is one active DelDOT project within the study area: HEP KC, US 13 and Brenford/Big Oak Road Intersection Improvements. This project seeks to add turn lanes on the Brenford Road and Big Oak Road approaches to US Route 13, and pedestrian facilities to include signalized pedestrian crossings and a new shared use path along the south side of Brenford Road and the north side of Big Oak Road. This project, which is currently in the design stages, was identified in the DelDOT Hazard Elimination Program (HEP) and is expected to be completed in 2024.

In addition to the study intersections included in the TOA and reviewed in this letter, the developer is asked to contribute to improvements at the adjacent intersections of Rabbit Chase Lane / Brenford Road and Rabbit Chase Lane / South Doe Road (Site Entrance B1/B2). Details of the specific contributions are included below in this review letter.



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

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

<i>Intersection</i>	<i>Existing Traffic Control</i>	<i>Situations for which deficiencies occur</i>
Rabbit Chase Lane and School Entrance A1 / Site Entrance A2	Unsignalized	2032 with development AM (Case 3)
Sunnyside Road and Rabbit Chase Lane / Halliwell Drive	Unsignalized	2032 with development AM and PM (Case 3)

Rabbit Chase Lane and School Entrance A1 / Site Entrance A2

This existing unsignalized intersection is expected to experience LOS deficiencies during the weekday AM peak hour in Case 3. The stop controlled eastbound approach is expected to operate at LOS F with 308.5 seconds of delay and queues longer than 412 feet. The addition of turn lanes, all-way stop control, and traffic signal were considered in this situation, however these alternatives are either not warranted or will not significantly improve operations. A Traffic Signal Justification Study (TSJS) was not conducted at this intersection. Therefore, for a signal to be considered as mitigating improvements, a full TSJS would need to be completed at this intersection. However, this intersection experienced lower vehicular volumes and fewer reported crashes during the same period, as evaluated in the TSJS at the adjacent intersection with Sunnyside Road, which found that a signal was not warranted there. The TOA did not provide any recommendations for improvements at this intersection. To mitigate the Case 3 operational deficiencies, the developer should design and construct a roundabout at this location.

Sunnyside Road and Rabbit Chase Lane / Halliwell Drive

This existing unsignalized intersection is expected to experience LOS deficiencies during the weekday AM and PM peak hours in Case 3. In the AM peak hour, the northbound Rabbit Chase Lane stop-controlled approach is expected to operate at LOS F with 421.7 seconds of delay and queues over 1,000 feet long; the southbound Halliwell Drive stop-controlled approach is expected to operate at LOS F with 86.3 seconds of delay and queues over 77 feet long. In the PM peak hour, the northbound approach is expected to operate at LOS F with 248.4 seconds of delay and queues over 597 feet long. The addition of turn lanes, all-way stop control, and traffic signal were considered for this location, however these alternatives are either not warranted or will not significantly improve operations. The TOA included a Traffic Signal Justification Study (TSJS) at this intersection and reported that zero of the nine warrants for signalization were met. Additionally, the TOA recommended that a roundabout study be conducted at this intersection. To mitigate the Case 3 operational deficiencies, the developer should design and construct a roundabout at this location.

Rabbit Chase Lane and Site Entrances B and C

These two site access intersections are not necessarily deficient, but they were not evaluated in the TOA. As such, the developer should present to DeIDOT additional design details including but not necessarily limited to auxiliary lane worksheets for the two proposed site access intersections along Rabbit Chase Lane south of the Sunnyside Elementary School driveway. The developer should coordinate design details and informational needs for these site accesses with DeIDOT's Development Coordination Section during the site plan review.

Should the Town of Smyrna choose to approve the proposed development, the following items should be incorporated into the site design and reflected on the record plan by note or illustration. 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.

1. The developer shall improve the State-maintained road(s) on which they front (Rabbit Chase Lane), within the limits of their frontage, to meet DeIDOT's standards for their Functional Classification as found in Section 1.1 of the Development Coordination Manual and elsewhere therein. 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 is defined in Section 1 of the Development Coordination Manual, which states "This length includes the length of roadway perpendicular to lines created by the projection of the outside parcel corners to the roadway." Questions on or appeals of this requirement should be directed to the DeIDOT Subdivision Review Coordinator in whose area the development is located.
2. The developer should enter into an agreement with DeIDOT to design and construct a single-lane roundabout at the intersection of Rabbit Chase Lane and the School Entrance A1 / proposed Site Entrance A2. The developer should coordinate with DeIDOT's Development Coordination Section to determine details regarding design, schedule, and construction of the roundabout.
3. The developer should enter into an agreement with DeIDOT to design and construct a single-lane roundabout at the intersection of Sunnyside Road and Rabbit Chase Lane / Halliwell Drive. The developer should coordinate with DeIDOT's Development Coordination Section to determine details regarding design, schedule, and construction of the roundabout.
4. The developer should enter into an agreement with DeIDOT to fund an equitable portion of the improvements proposed as part of the *HEP KC, US 13 and Brenford/Big Oak Road Intersection Improvements* project. The cost contribution is \$44,254.69. The developer should coordinate with the DeIDOT Subdivision Section on the equitable cost payment terms.

5. The developer should enter into an agreement with DelDOT to contribute to the Traffic Signal Revolving Fund (TSRF) for a future traffic signal at the intersection of Rabbit Chase Lane and Brenford Road. The TSRF contribution is \$115,744.00.
6. The developer should enter into a traffic signal agreement with DelDOT for the intersection of Rabbit Chase Lane and South Doe Road (Site Entrance B1/B2). The developer should coordinate with DelDOT's Development Subdivision Section to execute the traffic signal agreement.
7. The following bicycle and pedestrian improvements should be included:
  - a. Per the DelDOT Development Coordination Manual section 5.2.9.2, bicycle lanes are required where right turn lanes are being installed.
  - b. Appropriate bicycle symbols, directional arrows, pavement markings, and signing should be included along bicycle facilities and turn lanes within the project limits.
  - c. Utility covers should be made flush with the pavement.
  - d. If clubhouses or other community facilities are constructed within the site, bicycle parking should be provided near building entrances. Where building architecture provides for an awning, other overhang, or indoor parking, the bicycle parking should be covered.
  - e. A minimum 15-foot wide permanent easement from the edge of the right-of-way should be dedicated to DelDOT within the site frontages along Rabbit Chase Lane. Within the easement, a minimum of a 10-foot wide shared-use path that meets current AASHTO and ADA standards should be constructed. The shared-use paths should meet AASHTO and ADA standards and should have a minimum of a five-foot buffer from the roadway. At the property boundaries, the shared-use paths should connect to the adjacent property or to the shoulder in accordance with DelDOT's Shared-Use Path and/or Sidewalk Termination Reference Guide dated August 1, 2018. The developer shall coordinate with DelDOT's Development Coordination Section through the plan review process to determine the details of the shared-use path design and connections/terminations at or before both boundaries of the property.
  - f. Crosswalks should be installed across Rabbit Chase Lane at multiple locations, with one of them near the intersection of Rabbit Chase Lane and School Entrance A1 / Site Entrance A2. The location of the crossings should be determined through coordination with DelDOT's Development Coordination Section and Traffic Section. In doing so, if requested by DelDOT, the developer will need to conduct an analysis to determine what type of crossing treatment would be appropriate and should assume that the minimum pedestrian crossing volume threshold is met. The analysis must be based on guidance and worksheets found in NCHRP Report 562.



- g. ADA compliant curb ramps and crosswalks should be provided at all pedestrian crossings, including all site entrances. Type 3 curb ramps are discouraged.
- h. Internal sidewalks for pedestrian safety and to promote walking as a viable transportation alternative should be constructed within the development. These sidewalks should each be a minimum of five-feet wide (with a minimum of a five-foot buffer from the roadway) and should meet current AASHTO and ADA standards. Internal sidewalks in the development should connect to the proposed shared-use path along Rabbit Chase Lane.
- i. Where internal sidewalks are located alongside of parking spaces, a buffer should be added to prevent vehicular overhang onto the sidewalk.

Improvements in this TOA may be considered “significant” under DelDOT’s *Work Zone Safety and Mobility Procedures and Guidelines*. These guidelines are available on DelDOT’s website at [http://deldot.gov/Publications/manuals/de\\_mutcd/index.shtml](http://deldot.gov/Publications/manuals/de_mutcd/index.shtml).

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

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

Sincerely,

**McCormick Taylor, Inc.**

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

Andrew J. Parker, PE, PTOE  
Project Manager

Enclosure





## **General Information**

**Report date:** November 15, 2022

**Prepared by:** Rossi Group

**Prepared for:** Ramunno & Scerba, PA, 903 N. French Steet, Wilmington, DE 19801

**Tax parcels:** 1-17-02800-01-0200-00001

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

## **Project Description and Background**

**Description:** The proposed development would consist of 426 units of mid-rise multi-family housing (duplex units), 309 single family detached houses, 400 units of mid-rise multi-family housing (townhouses), and a 50,000 square-foot elementary school. The development is proposed on both sides of Rabbit Chase Lane (Kent Road 145), between Sunnyside Road (Kent Road 90) and Brenford Road (Kent Road 42), in the Town of Smyrna, Kent County, Delaware. A site location map is included on page 8.

**Amount of land to be developed:** An approximately 220-acre assemblage of parcels.

**Land use approval(s) needed:** Subdivision approval. The land is currently zoned as R-2A (Residential), and the developer is not proposing to rezone the land.

**Proposed completion year:** 2032

**Proposed access locations:** Five access points are proposed on Rabbit Chase Lane: One access it proposed opposite the existing Sunnyside Elementary School entrance creating a four-legged intersection, and the other four access points will create two four-legged intersections.

**Average Daily Traffic Volumes (per DelDOT Traffic Summary 2021):**

- Rabbit Chase Lane: 1,024 vehicles/day
- Sunnyside Road: 2,180 vehicles/day
- Brenford Road: 1,730 vehicles/day



Note: Intersections B1/B2 and C1/C2 were not included in the scope of this TOA.

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

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

*Investment Level 1*

Investment Level 1 areas are often municipalities, towns, or urban/urbanizing places in counties. Density is generally higher than in the surrounding areas. There are a variety of transportation opportunities available. Buildings may have mixed uses, such as a business on the first floor and apartments above.

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, to promote well-designed and efficient new growth, and to facilitate redevelopment in Investment Level 1 areas. These areas would be a prime location for designating "pre-permitted areas" to help steer development where the local government and citizens are most prepared to accept it.

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

The proposed Centerville and Graceville development consists of 1,135 residential units and an existing 50,000 square foot elementary school in an Investment Level 1 area. Investment Level 1 supports growth and economic development, including housing types that are transit oriented, accessible, well-designed, and affordable. The proposed development includes a variety of housing types at varying price points. As such, the proposed development appears to comply with the guidelines set forth in the 2020 "Strategies for State Policies and Spending".

**Comprehensive Plan**

**Kent County Comprehensive Plan:**

*(Source: Kent County Comprehensive Plan, September 2018)*

The Kent County Comprehensive Plan Future Land Use Map indicates that the proposed Webber Farm site is within the designated "Growth Zone Overlay" and is within the Smyrna municipal boundary.

**Town of Smyrna Comprehensive Plan**

*(Source: Town of Smyrna, Delaware, 2020 Comprehensive Plan, July 2021)*

The Town of Smyrna Future Land Use Map indicates that the site is planned for neighborhood residential land use. Additionally, the map shows the proposed roadway network within the Centerville & Graceville developments.

**Proposed Development's Compatibility with Comprehensive Plan:**

The proposed development would consist of 426 units of mid-rise multi-family housing (duplex units), 309 single family detached houses, 400 units of mid-rise multi-family housing (townhouses), and a 50,000 square-foot elementary school on a 220-acre assemblage of parcels the land is currently zoned as R-2A (Residential), and the developer is not proposing to rezone the land. The proposed development appears to comply with the characteristics of Smyrna's future land use plan and current zoning designation.

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

Currently, there is one active DelDOT project within the study area: HEP KC, US 13 and Brenford/Big Oak Road Intersection Improvements. This project seeks to add turn lanes on the Brenford Road and Big Oak Road approaches, and pedestrian facilities to include signalized pedestrian crossings and a new shared use path along the south side of Brenford Road and the north side of Big Oak Road. This project, which is currently in the design stages, was identified in the DelDOT Hazard Elimination Program (HEP) and is expected to be completed in 2024.

**Trip Generation**

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

- 309 Single-Family Detached Housing Units (ITE Land Use Code 210)
- 426 Multifamily Mid-Rise (Duplex) Housing Units (ITE Land Use Code 221)
- 400 Multifamily Mid-Rise (Townhouses) Housing Units (ITE Land Use Code 221)
- 50,000-square foot Elementary School (ITE Land Use Code 520)

Table 1  
CENTERVILLE AND GRACEVILLE TRIP GENERATION

Land Use	Weekday AM Peak Hour			Weekday PM Peak Hour			ADT		
	In	Out	Total	In	Out	Total	In	Out	Total
LUC 210: 309 Single Family Detached Housing	56	168	224	189	111	300	3718	3718	7436
LUC 221: 426 Multifamily Mid-Rise Housing (Duplex Units)	70	201	271	205	131	336			
LUC 221: 400 Multifamily Mid-Rise Housing (Townhouse Units)									
LUC 520: 50,000-square foot Elementary School	192	157	349	31	38	69	488	488	976
<b>TOTAL TRIPS</b>	<b>318</b>	<b>526</b>	<b>844</b>	<b>425</b>	<b>280</b>	<b>705</b>	<b>4206</b>	<b>4206</b>	<b>8412</b>

**Overview of TOA**

**Intersections examined:**

- 1) Rabbit Chase Lane (Kent Road 145) and Site Entrance A1 (Sunnyside Elementary School) / Site Entrance A2 (Easy Street)
- 2) Sunnyside Road (Kent Road 90) and Rabbit Chase Lane / Halliwell Drive

**Conditions examined:**

- 1) 2022 Existing (Case 1)
- 2) 2032 No-Build (Case 2)
- 3) 2032 Build (Case 3)

**Peak hours evaluated:** Weekday morning and evening peak hours

**Committed developments considered:**

- 1) Worthington – 40 single-family detached houses, 206 multifamily mid-rise housing (duplex units), and 303 multifamily mid-rise housing (townhouse units) – 40 single-family detached houses, 146 duplex units, and 180 townhouse units remain to be built).
- 2) Willow Wood – 497 single-family detached houses (all units built).

According to the TOA, the Willow Wood development is fully built out and therefore, the combined trip assignment for the committed developments only includes the Worthington development.

**Intersection Descriptions**

**1) Rabbit Chase Lane (Kent Road 145) and Site Entrance A1 (Sunnyside Elementary School) / Site Entrance A2 (Easy Street)**

**Type of Control:** minor stop-controlled intersection

**Northbound Approach:** (Rabbit Chase Lane) one shared through/right-turn lane

**Southbound Approach:** (Rabbit Chase Lane) one shared left-turn/through lane

**Eastbound Approach:** (Proposed Site Entrance A2 (Easy Street)) proposed one shared left/right-turn lane, stop-controlled

**Westbound Approach:** (Site Entrance A1 (Sunnyside Elementary School)) one shared left/right-turn lane, stop-controlled

**2) Sunnyside Road and Rabbit Chase Lane / Halliwell Drive**

**Type of Control:** minor stop-controlled intersection

**Northbound Approach:** (Rabbit Chase Lane) one shared left/through/right-turn lane, stop-controlled

**Southbound Approach:** (Halliwell Drive) one shared left/through/right-turn lane, stop-controlled

**Eastbound Approach:** (Sunnyside Road) one shared left/through/right-turn lane

**Westbound Approach:** (Sunnyside Road) one shared left-turn/through lane and one right-turn lane

**Safety Evaluation**

**Crash Data:** Delaware Crash Analysis Reporting System (CARS) data was provided in Appendix D of the TOA for the period from April 14, 2019, through April 14, 2022. During this period, one crash occurred at the intersection of Rabbit Chase Lane and Site Entrance A1 (Sunnyside Elementary School), and three crashes occurred at the intersection of Sunnyside Road and Rabbit Chase Lane / Halliwell Drive. At the intersection of Sunnyside Road and Rabbit Chase Lane / Halliwell Drive, all three crashes were classified as property damage only and two were not a collision between two vehicles.

**Sight Distance:** The proposed site entrances on Rabbit Chase Lane have unobstructed views looking north and south. As always adequacy of available sight distance must be confirmed during the site plan review process for all proposed movements at the site access.

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

**Existing transit service:** Based on the current DART Bus Stop Map, the Delaware Transit Corporation (DTC) does not operate any bus routes that travel through the study area. The nearest routes travel along the US Route 13 and DE Route 1 corridors.

**Planned transit service:** DTC representatives have not indicated plans for transit-related improvements or facilities associated with the proposed development.

**Existing bicycle and pedestrian facilities:** On the westbound shoulder of Sunnyside Road there is a 5-foot shoulder that is striped as a bicycle lane at adjacent intersections. The shoulder ends, approximately 300 feet west of Rabbit Chase Lane. The Wicksfield subdivision, north of Sunnyside drive, has sidewalks that extend south along both sides of Halliwell Drive. The sidewalks terminate at a striped crosswalk north of Sunnyside Drive. Along the north side of the Sunnyside Elementary School Driveway there is a sidewalk that extends from the school, east towards Rabbit Chase Lane. There are no curb ramps present at the intersection of Rabbit Chase Lane and the school driveway. Brenford Road, south of the proposed development, is designated as a suggested bicycle route without bikeway on the *Kent County Bicycle Map* published by DelDOT.

**Planned bicycle and pedestrian facilities:** A multi-use path is recommended along the property frontage with a bicycle lane to be included between the through lane and right-turn lanes into the site entrances.

### **Previous Comments**

In a review letter dated August 9, 2022, DelDOT requested revisions to trip distribution and trip generation credits for constructed units.

It appears that all substantive comments from DelDOT's TOA Scoping Memorandum and other correspondence were addressed in the Final TOA submission.

**General HCS Analysis Comments**

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

- 1) The TOA used Highway Capacity Software (HCS) version 7.9.5 to complete the traffic analyses. McCormick Taylor used HCS 2022.
- 2) The TOA and McCormick Taylor used heavy vehicle percentages (HV%) from turning movement counts for existing and future conditions (as per DelDOT's Development Coordination Manual section 2.2.8.11.6.H). McCormick Taylor assumed 3% HV at proposed site entrances in future conditions.
- 3) The TOA and McCormick Taylor determined overall intersection peak hour factors (PHF) for each intersection based on the turning movement counts. Future PHFs were determined as per the DelDOT Development Coordination Manual section 2.2.8.11.6.F where applicable.
- 4) The TOA used 1.0-hour analysis periods in the HCS models, whereas McCormick Taylor used 0.25-hour analysis periods as is typically done in capacity analysis following the Highway Capacity Manual (HCM).
- 5) For analyses of all intersections, McCormick Taylor and the TOA assumed 0% grade for all movements.

Table 2  
Peak Hour Levels of Service (LOS)  
Based on Centerville & Graceville Traffic Operational Analysis – November 2022  
Prepared by Rossi Group, Inc.

Unsignalized Intersection <sup>1</sup> Minor Stop-Controlled (TWSC)	LOS per TOA		LOS per McCormick Taylor	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
<b>1 – Rabbit Chase Lane and Site Entrance A1 (School) / A2 (Easy Street)</b>				
2022 Existing Condition (Case 1)				
Eastbound Site Entrance A2 (Easy Street)	--	--	--	--
Westbound Site Entrance A1 (School)	C (15.7)	A (9.5)	C (15.7)	A (9.5)
Northbound Rabbit Chase Lane - Lefts	--	--	--	--
Southbound Rabbit Chase Lane - Lefts	A (8.3)	A (7.4)	A (8.3)	A (7.4)
2032 No Build Condition (Case 2)				
Eastbound Site Entrance A2 (Easy Street)	--	--	--	--
Westbound Site Entrance A1 (School)	C (20.6)	B (10.1)	C (20.4)	B (10.1)
Northbound Rabbit Chase Lane - Lefts	--	--	--	--
Southbound Rabbit Chase Lane - Lefts	A (8.7)	A (7.5)	A (8.7)	A (7.5)
2032 Build Condition (Case 3)				
Eastbound Site Entrance A2 (Easy Street)	F (6270.7)	C (17.4)	F (308.5)	C (18.0)
Westbound Site Entrance A1 (School)	F (1021.9)	B (14.5)	D (34.9)	B (14.7)
Northbound Rabbit Chase Lane - Lefts	A (8.5)	A (8.3)	A (8.1)	A (8.4)
Southbound Rabbit Chase Lane - Lefts	A (9.5)	A (7.7)	A (8.7)	A (7.8)
2032 Build Condition (Case 3) w/ Improvements (Roundabout)				
Eastbound Site Entrance A2 (Easy Street)	--	--	A (6.9)	A (5.2)
Westbound Site Entrance A1 (School)	--	--	A (8.1)	A (4.1)
Northbound Rabbit Chase Lane	--	--	B (10.6)	A (5.0)
Southbound Rabbit Chase Lane	--	--	A (7.3)	A (6.3)

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



Table 3  
Peak Hour Levels of Service (LOS)  
Based on Centerville & Graceville Traffic Operational Analysis – November 2022  
Prepared by Rossi Group, Inc.

Unsignalized Intersection <sup>2</sup> Minor Stop Controlled (TWSC)	LOS per TOA		LOS per McCormick Taylor	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
<b>2 – Sunnyside Road and Rabbit Chase Lane / Halliwell Drive</b>				
2022 Existing Condition (Case 1)				
Eastbound Sunnyside Road - Lefts	A (7.4)	A (7.8)	A (7.4)	A (7.8)
Westbound Sunnyside Road - Lefts	A (8.2)	A (7.8)	A (8.2)	A (7.8)
Northbound Rabbit Chase Lane	C (16.0)	C (15.8)	C (16.2)	C (15.8)
Southbound Rabbit Chase Lane	C (19.9)	C (16.4)	C (18.2)	C (15.8)
2032 No Build Condition (Case 2)				
Eastbound Sunnyside Road - Lefts	A (7.4)	A (7.8)	A (7.4)	A (7.8)
Westbound Sunnyside Road - Lefts	A (8.4)	A (7.9)	A (8.4)	A (7.9)
Northbound Rabbit Chase Lane	C (22.5)	C (22.5)	C (22.6)	C (22.4)
Southbound Halliwell Drive	D (25.1)	C (20.9)	C (21.8)	C (19.7)
2032 Build Condition (Case 3)				
Eastbound Sunnyside Road - Lefts	A (7.4)	A (7.8)	A (7.4)	A (7.8)
Westbound Sunnyside Road - Lefts	A (9.1)	A (8.6)	A (9.1)	A (8.6)
Northbound Rabbit Chase Lane	F (1450.5)	F (769.3)	F (421.7)	F (248.4)
Southbound Halliwell Drive	F (225.1)	F (53.5)	F (86.3)	E (44.5)
2032 Build Condition (Case 3) w/ Improvements (Roundabout)				
Eastbound Sunnyside Road	--	--	A (8.8)	A (7.2)
Westbound Sunnyside Road	--	--	A (7.3)	A (9.0)
Northbound Rabbit Chase Lane	--	--	B (12.2)	A (7.3)
Southbound Halliwell Drive	--	--	A (6.0)	A (6.7)

<sup>2</sup> For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.