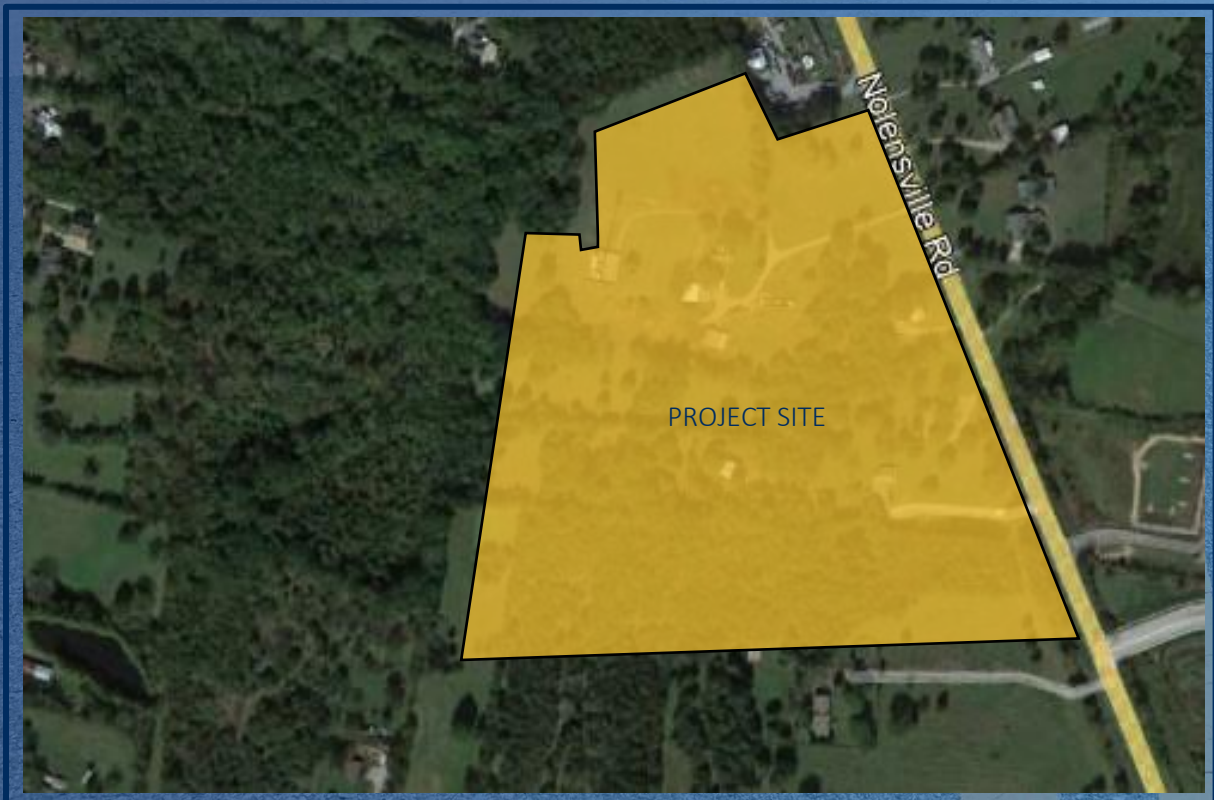
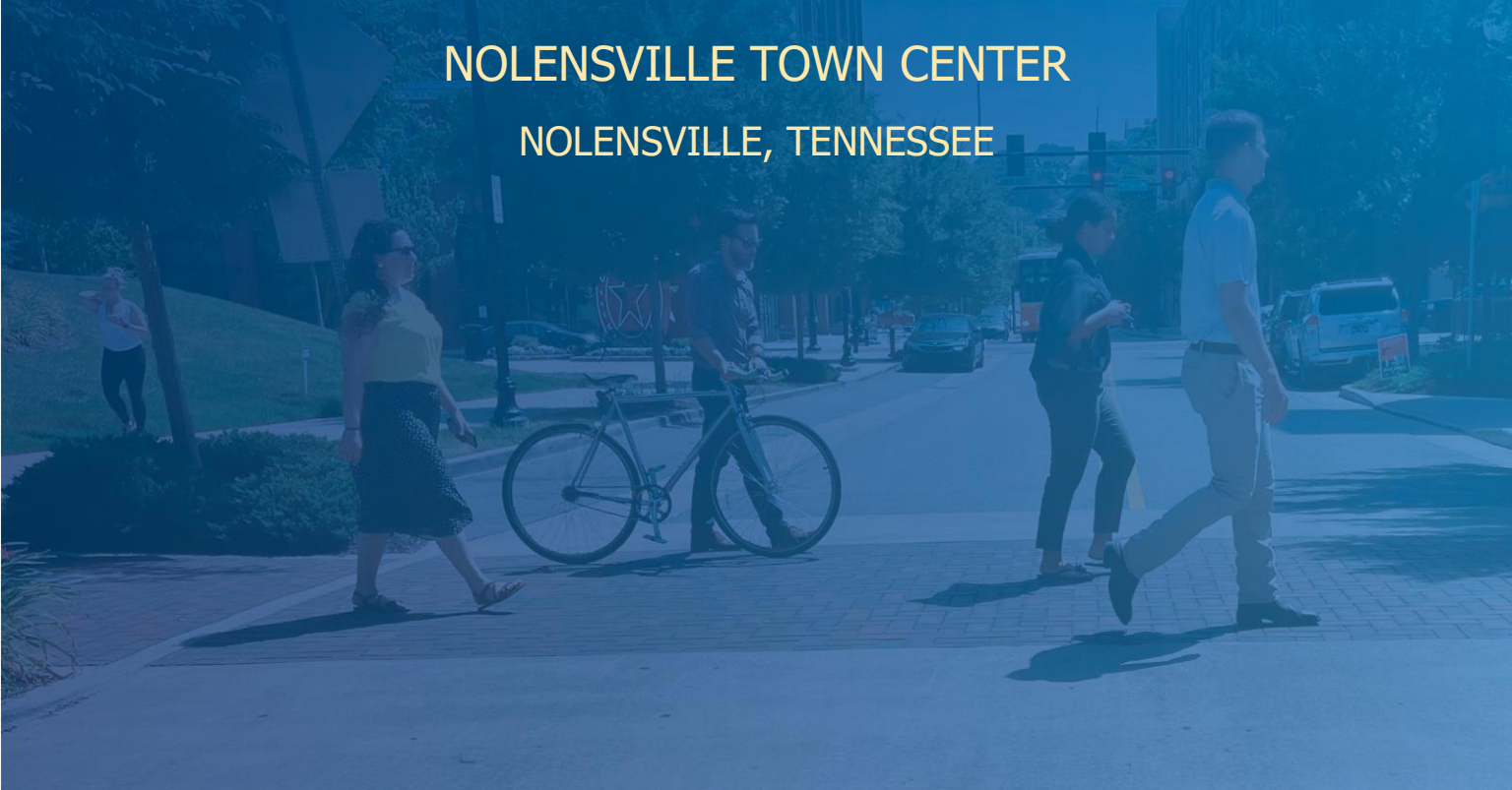


TRAFFIC IMPACT STUDY

NOLENSVILLE TOWN CENTER

NOLENSVILLE, TENNESSEE



NOLENSVILLE ROAD INVESTMENT PARTNERS // DECEMBER 2023

**TRAFFIC IMPACT STUDY
NOLENSVILLE TOWN CENTER
NOLENSVILLE, TENNESSEE**

PREPARED FOR:
NOLENSVILLE ROAD INVESTMENTS PARTNERS



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EXECUTIVE SUMMARY

Project Description

The proposed Nolensville Town Center development is located along Nolensville Road in Nolensville, Tennessee. According to the developer, the proposed development includes approximately 404 multi-family residential units and 80,000 square feet of commercial space. Access to the development is planned to be provided by one driveway on Nolensville Road. Additional access to the site is planned to be provided via a connection to the approved Darsey development along the southern boundary of the site. Through this connection, vehicles will have access to the project site via the intersection of Nolensville Road and Darsey's Site Access 1/Summerly Drive as well as a connection to Williams Avenue via Darsey's Site Access 3. It should be noted that there are also proposed future connections to properties along the western and northern boundaries of the site should those parcels redevelop. The purpose of this study is to analyze the access plan and the traffic impacts associated with this proposed development.

Data Collection

In order to provide data for the traffic impact analysis, manual traffic counts were conducted at the following intersections:

1. Nolensville Road and Clovercroft Road/Rocky Fork Road (signalized)
2. Nolensville Road and Summerlyn Drive (signalized)
3. Nolensville Road and Williams Road/York Road (signalized)
4. Clovercroft Road and Williams Road (unsignalized)

Specifically, KCI Technologies, Inc. conducted the traffic counts from 7:00 – 9:00 AM and 4:00 – 6:00 PM on a typical weekday in August and September 2023 while local schools were in session. From the counts, it was determined that the peak hours of traffic flow for the majority of the study intersections occurred from 7:00 – 8:00 AM and 4:30 – 5:30 PM.

Projection of Future Traffic Volumes

In order to account for the traffic growth prior to the completion of the proposed project, background traffic volumes were established. Then, the estimated total project-generated traffic volumes for the proposed development were added to the

background peak hour traffic volumes in order to obtain the total projected peak hour traffic volumes for the study area intersections.

Conclusions and Recommendations

The analyses presented in this study indicate that the impacts of the proposed project on the existing street network will be manageable by providing the recommendations below. These specific recommendations will provide safe and efficient traffic operations within the study area following the completion of the proposed project.

Nolensville Road and Driveway A

- Preliminary signal warrant analysis indicate that a traffic signal will be warranted at approximately 100% occupancy of Phase 2 of development. Therefore, the intersection should be evaluated for the need to provide a traffic signal at approximately 75% occupancy of Phase 2.
- Until a traffic signal is warranted, the eastbound approach of Driveway A should be stop-controlled, and a stop bar and R1-1 'Stop' sign should be installed on the egress approach.
- Driveway A should be designed to include sufficient width for one entering lane and two exiting lanes. The exiting approach should include one left-turn lane and one right-turn lane with a minimum of 75 feet of storage length.
- Provide a northbound left-turn lane on Nolensville Road with a minimum of 75 feet of storage length.
- Provide a southbound right-turn deceleration lane on Nolensville Road.

Signal Timing Optimization and Coordination

- Signal timings at all the signalized study intersections should be optimized upon completion of the development. Furthermore, after providing a traffic signal at the intersection of Nolensville Road and Driveway A, signal timing coordination should be conducted between the four intersections of Nolensville Road and Clovercroft Road/Rocky Fork Road, Nolensville Road and Driveway A, Nolensville Road and Summerlyn Drive, and Nolensville Road and Williams Road/York Road.

Travel Demand Management.

- Parking/storage options should be provided for bicycles on-site.
- Off-peak loading and deliveries for the retail development should be encouraged to minimize impacts to traffic operations.

Pedestrian, Bicycle, and Transit Infrastructure

- Provide pedestrian crosswalks, signals with push buttons, detectable warning mats, and curb ramps at the intersection of Nolensville Road and Driveway A.

Additional Recommendations

- Parking should be developed per code.
- As part of the construction of the project, all internal and external driveway connections should be designed such that the departure sight triangles, as specified by AASHTO, will be clear of all sight obstructions, including landscaping, existing vegetation, monument signs/walls, fences, etc.
- Final design of internal roadways and parking should meet all Town of Nolensville's standards and the latest version of "A Policy of Geometric Design of Highways and Streets" published by AASHTO. Any parking lots and streets associated with the development should ensure that passenger cars and emergency vehicles are capable of making all turning movements. Internal intersections should be two-way stop-controlled unless all-way stop control warrants are met.

In summary, based on the analyses conducted, no further recommendations are presented for the proposed Nolensville Town Center development.

1. INTRODUCTION AND PROJECT DESCRIPTION

The purpose of this study is to analyze the traffic impacts and access plan associated with the proposed Nolensville Town Center development located along Nolensville Road in Nolensville, Tennessee. According to the developer, the proposed development includes 404 multi-family residential units and 80,000 square feet of commercial space.

As shown by Figure 1, the property is located along Nolensville Road, north of the intersection of Nolensville Road and Williams Road. The property is currently zoned CD-4 with Main Street Village Overlay. The proposed development is within an area that is characterized by low-density land uses. The property is generally bounded on the north by residential use, on the east by Nolensville Road, on the south by Suburban Residential use, and on the west by Estate Residential use.

The current site plan for the Nolensville Town Center development is shown in Appendix A. Based on this site plan, proposed vehicular access for the development is planned to be provided by one driveway on Nolensville Road. Additional access to the site is planned to be provided via a connection to the approved Darsey development along the southern boundary of the site. Through this connection, vehicles will have access to the project site via the intersection of Nolensville Road and Darsey's Site Access 1/Summerly Drive as well as a connection to Williams Avenue via Darsey's Site Access 3. It should be noted that there are also proposed future connections to properties along the western and northern boundaries of the site should those parcels redevelop. Surface parking is planned to accommodate the proposed development.

In this study, the current operating characteristics of the adjacent roadways and intersections in the vicinity of the project site are evaluated. The expected trips generated by the proposed development are determined and distributed to the roadway network. The adjacent roadways and intersections are then reevaluated to determine the anticipated traffic impacts of the project. Finally, recommendations are presented, including roadway improvements and/or traffic control improvements that are needed to accommodate the expected traffic.

The scope of work for this study, as described above, was determined via scoping emails between KCI Technologies and the City of Nolensville in August 2023. The scoping notes are included in Appendix B.

FIGURE 1. LOCATION OF THE PROJECT SITE



Location of the Project Site
(Not to Scale)

Figure 1.

2. MULTIMODAL FACILITIES

2.1 Existing Pedestrian Infrastructure

A detailed inventory of the existing and planned pedestrian infrastructure within the study area was conducted to identify potential improvements. Table 1 details where curb ramps and detectable warning mats are currently provided for each of the study intersections.

TABLE 1. PEDESTRIAN INFRASTRUCTURE INVENTORY - CORNER

| INTERSECTION | INFRASTRUCTURE | North Leg East Side | North Leg West Side | South Leg East Side | South Leg West Side | East Leg North Side | East Leg South Side | West Leg North Side | West Leg South Side |
|--|------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| Nolensville Road and Clovercroft Road/Rocky Fork Road | Detectable Warning Mat | | | | | | | | |
| | Curb Ramp | ✓ | | | | ✓ | | | |
| Nolensville Road and Summerlyn Drive | Detectable Warning Mat | | | | | | | | |
| | Curb Ramp | | | | | | | | |
| Nolensville Road and Williams Road/York Road | Detectable Warning Mat | | | | | | | | |
| | Curb Ramp | | | | | | | | |
| Clovercroft Road and Williams Road | Detectable Warning Mat | | | | | | | | |
| | Curb Ramp | | | | | | | | |
| ✓ – Pedestrian Infrastructure Currently Available -- – Not Applicable | | | | | | | | | |

Figure 2 depicts the existing and planned sidewalk network as well as locations where crosswalks and pedestrian signals are currently or are planned to be provided.



Existing Pedestrian Facilities

(Not to Scale)

Figure 2.

2.2 Bicycle Facilities and Transit Services

There are currently no bicycle facilities or transit services within the study area.

2.3 Greenways Facilities

Figure 3 shows the existing and planned greenways in the study area. As shown in Figure 3, there is currently approximately 1.2 miles of greenway that connects Rocky Fork Road to York Road to the east of the project site.

Additionally, the development plans to provide a greenway through the project site that connects to the planned greenways on the properties to the north and south of the Nolensville Town Center development.



Existing and Planned Greenway Facilities

(Not to Scale)

Figure 3.

3. EXISTING CONDITIONS

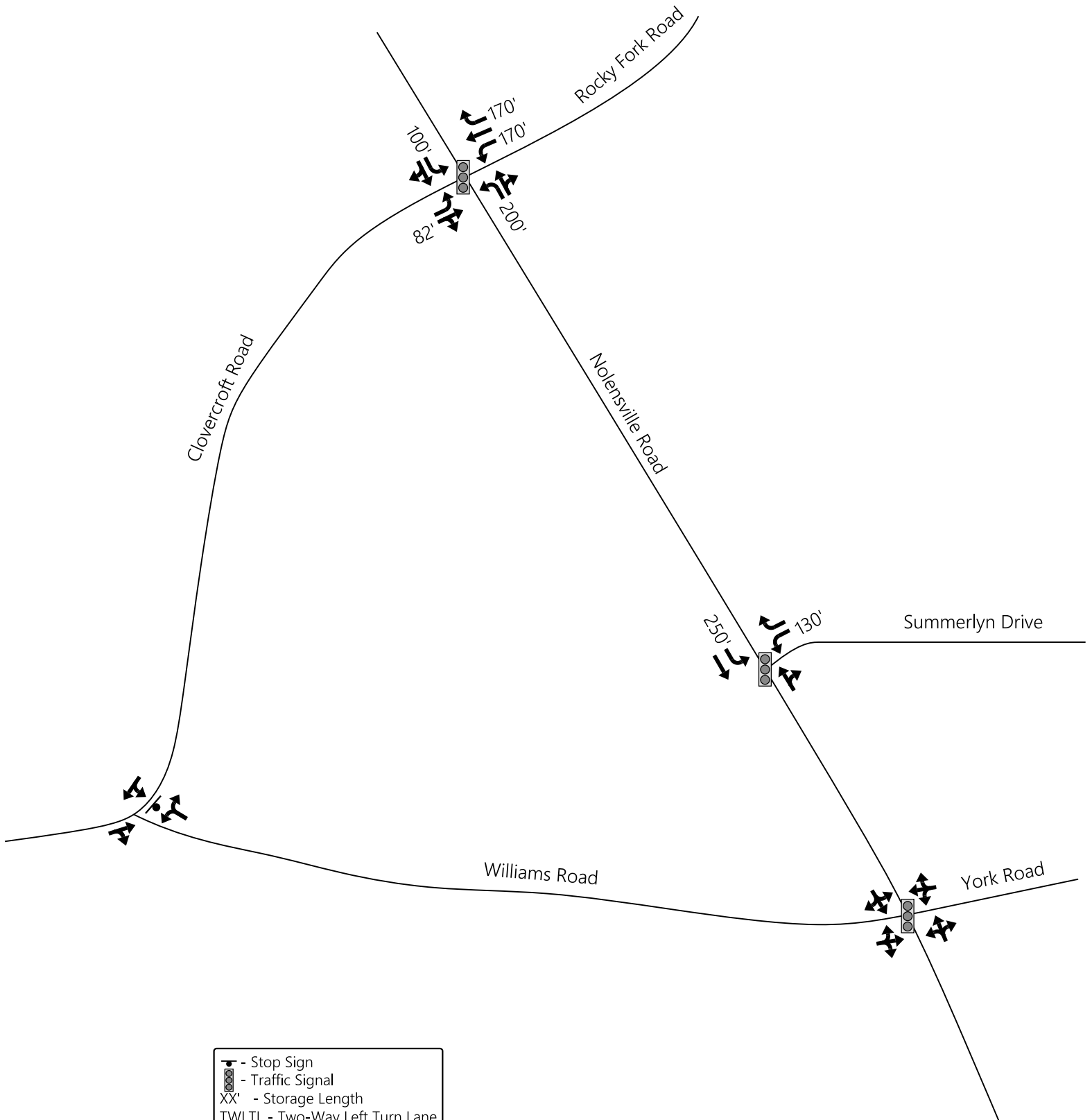
3.1 Existing Roadway Network

Local access to the site will be provided by Nolensville Road, Clovercroft Road, Rocky Fork Road, Summerlyn Drive, York Road, and Williams Road. A field inventory of the study network was conducted. The roadway classifications were obtained from the town of Nolensville Major Thoroughfare Plan. A description of these roadways within the project vicinity is presented in Table 2.

TABLE 2. DESCRIPTION OF STUDY ROADWAYS

| ROADWAY NAME | DIRECTION | NUMBER OF LANES | | | MCSP CLASSIFICATION | POSTED SPEED LIMIT (mph) |
|------------------|-------------|-----------------|-------|------|---------------------|--------------------------|
| | | EB/NB | WB/SB | TWLT | | |
| Nolensville Road | North-South | 1 | 1 | 0 | Major Arterial | 30/40 |
| Clovercroft Road | East-West | 1 | 1 | 0 | Minor Arterial | 30/40 |
| Rocky Fork Road | East-West | 1 | 1 | 0 | Minor Arterial | 35 |
| Summerlyn Drive | East-West | 1 | 1 | 0 | Local | 25 |
| York Road | East-West | 1 | 1 | 0 | Minor Arterial | 35 |
| Williams Road | East-West | 1 | 1 | 0 | Collector | 45 |

The study area includes four existing intersections. The existing laneage at the study intersections is illustrated in Figure 4.



- ⊥ - Stop Sign
- ⊞ - Traffic Signal
- XX' - Storage Length
- TWLTL - Two-Way Left Turn Lane



Existing Laneage
(Not to Scale)

Figure 4.

3.2 Existing Traffic Volumes

In order to provide data for the traffic impact analysis, traffic counts were conducted at the following intersections:

1. Nolensville Road and Clovercroft Road/Rocky Fork Road (signalized)
2. Nolensville Road and Summerlyn Drive (signalized)
3. Nolensville Road and Williams Road/York Road (signalized)
4. Clovercroft Road and Wiliams Road (unsignalized)

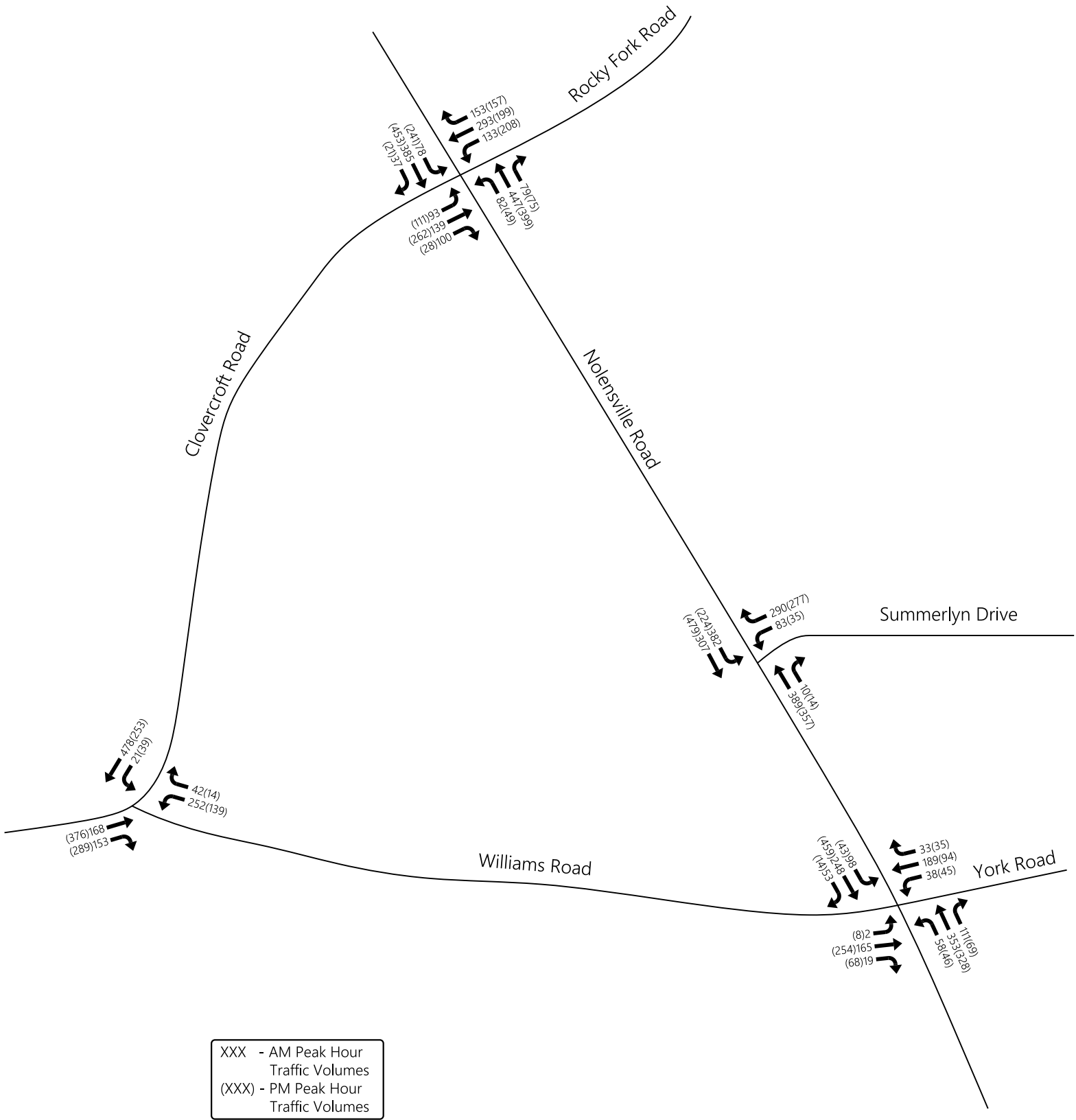
Specifically, KCI Technologies, Inc. conducted the traffic counts from 7:00 – 9:00 AM and 4:00 – 6:00 PM on a typical weekday in August 2023 and September 2023 while local schools were in session. From the counts, it was determined that the peak hours of traffic flow for the majority of the study intersections occurred from 7:00 – 8:00 AM and 4:30 – 5:30 PM.

The existing peak hour turning movement volumes are presented in Figure 5. A detailed summary of the traffic counts is included in Appendix C.

In addition to the above information, average daily traffic volumes were obtained from the Tennessee Department of Transportation (TDOT). There are two TDOT count stations located in the vicinity of the project site. The count station locations and annual average daily traffic (AADT) in 2022 are shown in Table 3. Additional TDOT Count Station data is included in Appendix D.

TABLE 3. TDOT COUNT STATION DATA

| ROADWAY | LOCATION | STATION NO. | 2022 AADT (vpd) |
|------------------|--|-------------|-----------------|
| Nolensville Road | North of Project Site Between Stonebrook Boulevard and Nolensville Park Road | 51 | 15,013 |
| Rocky Fork Road | Northeast of Project Site Between Sugar Mill Road and Petral Drive | 52 | 9,202 |



XXX - AM Peak Hour
Traffic Volumes
(XXX) - PM Peak Hour
Traffic Volumes



Existing Peak Hour Traffic Volumes

(Not to Scale)

Figure 5.

3.3 Existing Traffic Operations

To determine the current operation of the study intersections, capacity analyses were performed for the AM and PM peak hours. The capacity calculations were performed according to the methods outlined in the *Highway Capacity Manual*, 7th Edition. The capacity analyses result in the determination of a Level of Service (LOS) for an intersection. The LOS is a concept used to describe how well an intersection or roadway operates. LOS A is the best, while LOS F is the worst. LOS D is typically considered as the minimum acceptable LOS for an intersection in an urbanized area. For stop-controlled intersections, a LOS is presented for each critical turning movement. For signalized intersections, a LOS is presented for the overall intersection. Table 4 presents the descriptions of LOS for signalized and unsignalized intersections.

TABLE 4. DESCRIPTIONS OF LEVEL OF SERVICE

| LEVEL OF SERVICE | DESCRIPTION | UNSIGNALIZED CONTROL DELAY (sec/veh) | SIGNALIZED CONTROL DELAY (sec/veh) |
|------------------|-------------------------|--------------------------------------|------------------------------------|
| A | Little or no delay | ≤ 10.0 | ≤ 10.0 |
| B | Short traffic delay | >10 and ≤ 15 | >10 and ≤ 20 |
| C | Average traffic delay | >15 and ≤ 25 | >20 and ≤ 35 |
| D | Long traffic delay | >25 and ≤ 35 | >35 and ≤ 55 |
| E | Very long traffic delay | >35 and ≤ 50 | >55 and ≤ 80 |
| F | Extreme traffic delay | > 50.0 | > 80.0 |

Source: *Highway Capacity Manual*, 6th Edition

The signal timing and phasing plan for the signalized intersections in the study area were not available. Per scoping, standard signal timing values were utilized and cycle lengths and splits were optimized.

The results of the capacity analyses for the existing conditions at the study intersections are presented in Table 5. As shown, all intersections and critical movements operate at LOS D or better in the AM and PM peak hours with the following exceptions:

- Clovercroft Road and Williams Road
 - The westbound approach operates at LOS F in the AM peak hour.

Capacity analyses worksheets are included in Appendix F.

TABLE 5. EXISTING PEAK HOUR LEVELS OF SERVICE

| INTERSECTION | TURNING MOVEMENT | LEVEL OF SERVICE (Average Delay in sec/veh) | |
|---|----------------------|--|----------|
| | | AM PEAK | PM PEAK |
| Nolensville Road and Clovercroft Road/Rocky Fork Road | Overall Intersection | C (28.9) | D (37.1) |
| Nolensville Road and Summerlyn Drive | Overall Intersection | B (20.0) | B (17.9) |
| Nolensville Road and Williams Road/York Road | Overall Intersection | B (18.9) | C (20.6) |
| Clovercroft Road and Williams Road | Southbound Left-Turn | A (9.0) | A (9.1) |
| | Westbound Approach | F (58.2) | D (32.0) |

4. BACKGROUND TRAFFIC VOLUMES

4.1 Establishing Background Volumes

In order to account for the traffic growth prior to the completion of the proposed project, background traffic volumes were established. For the purposes of this traffic study, the proposed development was assumed to be completed by the year 2029, which is a 6-year horizon. Historical daily traffic volumes were obtained from the two TDOT count stations located in the vicinity of the project site. Since 2016, the combined traffic at these two TDOT count stations has increased by an average of 2.0% per year. The TDOT count station data is included in Appendix D.

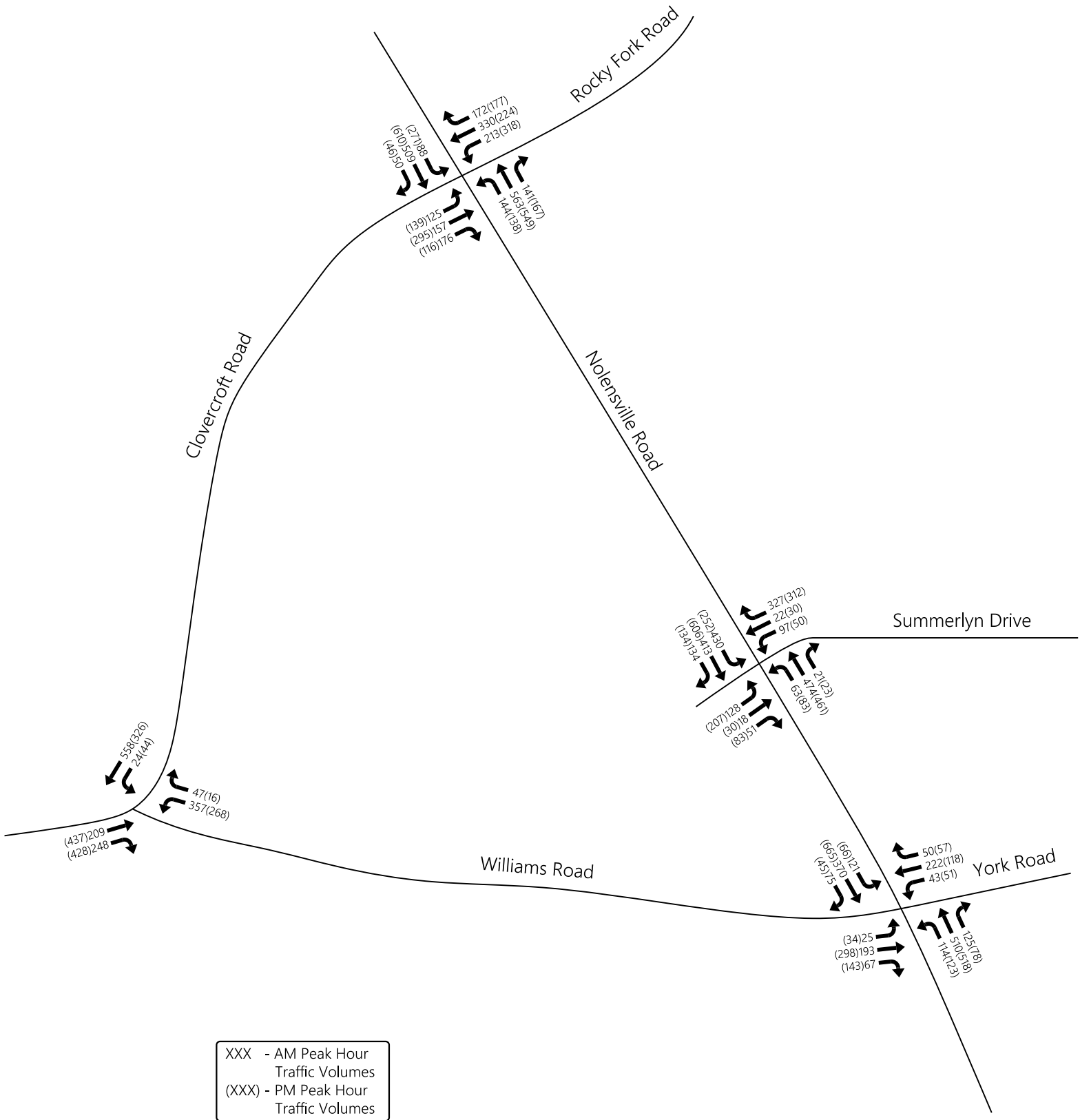
A growth factor was applied to the existing peak hour traffic volumes to account for background growth for the future conditions. The existing peak hour traffic volumes at the study intersections were increased by 2.0% per year for six years to account for anticipated background traffic growth within the study area.

Additionally, per scoping, the peak hour traffic volumes generated by the development presented in Table 6 were included as background traffic.

TABLE 6. BACKGROUND DEVELOPMENTS

| DEVELOPMENT NAME | DATE OF STUDY | LOCATION | LAND USES AND DENSITIES |
|------------------|---------------|---|---|
| Darsey | May 2021 | South of Project Site; Northwest and southwest corner of Nolensville Road and Summerlyn Drive | Supermarket – 78,000 s.f.; Gas Station – 18 pumps; Shopping Plaza – 5,000 s.f.; Drive-Thru Coffee Shop – 1,100 s.f.; High-Turnover Restaurant – 7,500 s.f.; Multifamily units – 196 d.u.; Office space – 5,000 s.f.; Medical Office – 20,000 s.f.; Daycare – 10,000 s.f.; Multifamily Townhomes – 20 d.u. |
| Four Springs | May 2023 | West of Project Site; Southside of Clovercroft Road, West of Williams Road | Single Family Detached Housing Units – 181 d.u.; Single Family Attached Housing Units – 107 du. |

Trip assignment for the background development is included in Appendix G. The background peak hour traffic volumes for horizon year 2029 are presented in Figure 6. These volumes represent the peak hour traffic that is expected to be on the roadway in 2029 even if the proposed Nolensville Town Center development is not completed.



XXX - AM Peak Hour Traffic Volumes
 (XXX) - PM Peak Hour Traffic Volumes



Total Background Peak Hour Traffic Volumes

(Not to Scale)

Figure 6.

4.2 Background Traffic Operations

To determine the operation of the study area intersections under background conditions, capacity analyses were performed for the AM and PM peak hours. The analyses for the background conditions were based on the same lane configurations and signal timings as the existing conditions with some exceptions. The following improvements were recommended by the Darsey traffic impact study and the Four Springs traffic impact study. The improvements were incorporated into the network of the background conditions.

- Nolensville Road and Summerlyn Drive/Darsey Site Driveway
 - Reconfigure the westbound approach of Summerlyn Drive to include split signal phasing, with a shared left-turn/thru lane with a minimum of 125 feet of storage and right-turn lane with overlap signal phasing.
 - Install the eastbound approach of the Ramsey development site access with split signal phasing and include a left turn lane and shared thru/right-turn lane.
 - Install southbound right-turn lane with a minimum of 150 feet of storage and a northbound left-turn lane with a minimum of 150 feet of storage.
 - Install pedestrian intersection with crosswalks, ramps with detectable warning mats, and pedestrian signals with pushbuttons.
 - Reconfigure and optimize signal timings at the intersection to accommodate the new configuration.
- Clovercroft Road and Williams Road
 - Install a signal at the intersection.

In addition to the improvements above, the Town of Nolensville is planning to make improvements to Nolensville Road within the study area. The following improvements are planned and were incorporated into the network configuration of the background conditions.

- Nolensville Road and Williams Road/York Road
 - Widen the northbound, southbound, and westbound approaches to include a left-turn lane and a shared through/right-turn lane.

As shown in Tables 7A and 7B, under background conditions, the capacity analyses indicate that the operational performances of the critical movements at the study intersections are generally expected to continue to operate at the same level of service as under existing conditions or continue to operate at LOS D or better in the AM and PM peak hours with the following exceptions:

- Nolensville Road and Clovercroft Road/Rocky Fork Road
 - The overall intersection is expected to deteriorate from LOS C to LOS E in the AM peak hour and from LOS D to LOS F in the PM peak hour.
- Nolensville Road and Summerlyn Drive
 - The overall Intersection is expected to deteriorate from LOS B to LOS E in the AM and PM peak hours.

It is important to note that some intersections have improved operations between existing and background conditions due to the incorporated background improvements.

Capacity analyses worksheets are included in Appendix F.

TABLE 7A. BACKGROUND AM PEAK HOUR LEVELS OF SERVICE

| INTERSECTION | TURNING MOVEMENT | LEVEL OF SERVICE (Average Delay in sec/veh) | |
|---|----------------------|--|------------|
| | | EXISTING | BACKGROUND |
| Nolensville Road and Clovercroft Road/Rocky Fork Road | Overall Intersection | C (28.9) | E (57.0) |
| Nolensville Road and Summerlyn Drive | Overall Intersection | B (20.0) | E (67.5) |
| Nolensville Road and Williams Road/York Road | Overall Intersection | B (18.9) | C (27.7) |
| Clovercroft Road and Williams Road | Southbound Left-Turn | A (9.0) | - |
| | Westbound Approach | F (58.2) | - |
| | Overall Intersection | - | C (21.0) |

TABLE 7B. BACKGROUND PM PEAK HOUR LEVELS OF SERVICE

| INTERSECTION | TURNING MOVEMENT | LEVEL OF SERVICE (Average Delay in sec/veh) | |
|---|----------------------|--|------------|
| | | EXISTING | BACKGROUND |
| Nolensville Road and Clovercroft Road/Rocky Fork Road | Overall Intersection | D (37.1) | F (98.4) |
| Nolensville Road and Summerlyn Drive | Overall Intersection | B (17.9) | E (62.4) |
| Nolensville Road and Williams Road/York Road | Overall Intersection | C (20.6) | D (44.1) |
| Clovercroft Road and Williams Road | Southbound Left-Turn | A (9.1) | - |
| | Westbound Approach | D (32.0) | - |
| | Overall Intersection | - | C (27.3) |

5. IMPACTS

5.1 Trip Generation

A traffic generation process was used to estimate the amount of traffic expected to be generated by the proposed Nolensville Town Center development. Factors for the trip generation were taken from ITE's *Trip Generation*, 11th Edition. According to the developer, the proposed development includes approximately 404 multi-family housing units and 80,000 square feet of commercial use.

Data presented in the ITE publication, *Trip Generation Handbook*, show that developments containing multiple land uses will commonly have internal trips. A process was used to estimate the number of internal trips that can be expected between land uses based on methodology presented in NCHRP Report 684, "Enhancing Internal Trip Capture Estimation for Mixed-Use Developments." The methodology contained in the NCHRP Report expands on ITE's methodology, including additional land uses and supporting data. The internal trip reduction process resulted in the following internal capture rate estimates:

- 13.0% internal capture rate for the daily trip generation,
- 1.6% internal capture rate for entering trips in the AM peak hour,
- 1.1% internal capture rate for exiting trips in the AM peak hour,
- 23.1% internal capture rate for entering trips in the PM peak hour,
- 26.4% internal capture rate for exiting trips in the PM peak hour, and

Table 8 presents the daily, AM and PM peak hour trip generation for the proposed development. As shown in Table 8, the proposed development can be expected to generate approximately 7,020 new vehicle trips per day. The AM and PM peak hour trip generations will equal approximately 296 and 459 new trips, respectively. These trips represent the new traffic that will be generated by the proposed Nolensville Town Center development. The calculations for trip generation are included in Appendix H.

TABLE 8. DEVELOPMENT TRIP GENERATION

| LAND USE | SIZE | DAILY TRAFFIC | GENERATED TRAFFIC | | | |
|---|-------------|---------------|-------------------|------------|------------|------------|
| | | | AM PEAK | | PM PEAK | |
| | | | Enter | Exit | Enter | Exit |
| Multi-Family Housing (Low-Rise) (LUC 220) | 404 units | 2,665 | 39 | 123 | 122 | 72 |
| Shopping Plaza – No Supermarket (LUC 821) | 80,000 s.f. | 5,402 | 86 | 52 | 203 | 212 |
| SUBTOTAL | | 8,067 | 125 | 175 | 325 | 284 |
| | | | 300 | | 609 | |
| <i>Internal Trips Reduction</i> | | <i>-1,047</i> | <i>-2</i> | <i>-2</i> | <i>-75</i> | <i>-75</i> |
| NEW TRIPS | | 7,020 | 123 | 173 | 250 | 209 |
| | | | 296 | | 459 | |

Source: *Trip Generation*, 11th Edition

5.2 Trip Distribution and Traffic Assignment

A directional distribution of traffic generated by the proposed project was established based on the proposed access, the existing roadway network, and the existing travel patterns developed from the existing peak hour traffic counts. As previously discussed, access to the development is planned to be provided by one driveway on Nolensville Road. Additional access to the site is planned to be provided via a connection to the approved Darsey development along the southern boundary of the site. Through this connect, vehicles will have access to the project site via the intersection of Nolensville Road and Darsey's Site Access 1/Summerly Drive as well as a connection to Williams Avenue via Darsey's Site Access 3. It should be noted that there are also proposed future connections to properties along the western and northern boundaries of the site should those parcels redevelop. Since no developments are currently approved to for the western and northern parcels, no trips were distributed through these accesses.

The project site was evaluated under two projected scenarios:

1. No connection to the Darsey development.
2. Connection to the Darsey development.

The overall directional distribution for Projected Scenario 1 of the proposed development is shown in Figure 6. As shown in the figure,

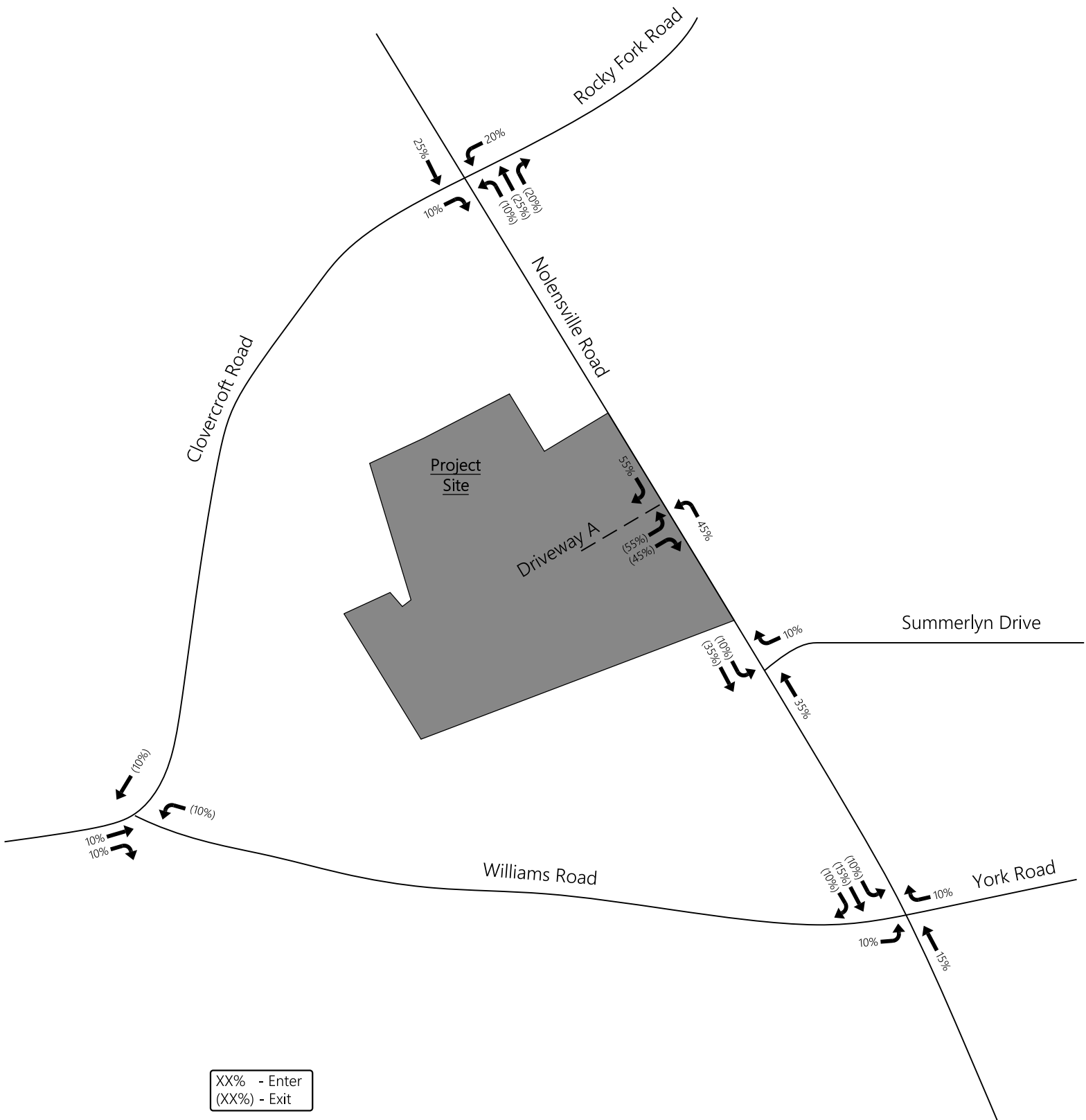
- approximately 25% of the traffic generated by the development will be oriented to the north on Nolensville Road,
- 20% to the east on Rocky Fork Road,
- 20% to the west on Clovercroft Road,
- 15% to the south on Nolensville Road,
- 10% to the east on Summerlyn Road, and
- 10% to the east on York Road.

The overall directional distribution for Projected Scenario 2 of the proposed development is shown in Figure 7. As shown in the figure,

- approximately 15% of the traffic generated by the development will be oriented to the north on to Nolensville Road,
- 15% to the Darsey development to the south,
- 15% to the east on Rocky Fork Road,
- 20% to the west on Clovercroft Road,
- 10% to the east on Summerlyn Drive,

- 10% to the east on York Road, and
- 15% to the south on Nolensville Road.

Based on the directional distribution, the project-generated traffic for the AM and PM peak hour was assigned to the roadway network. The traffic assignment for the proposed development is shown in Figure 8 and Figure 9 for Projected Scenario 1 and Projected Scenario 2, respectively.



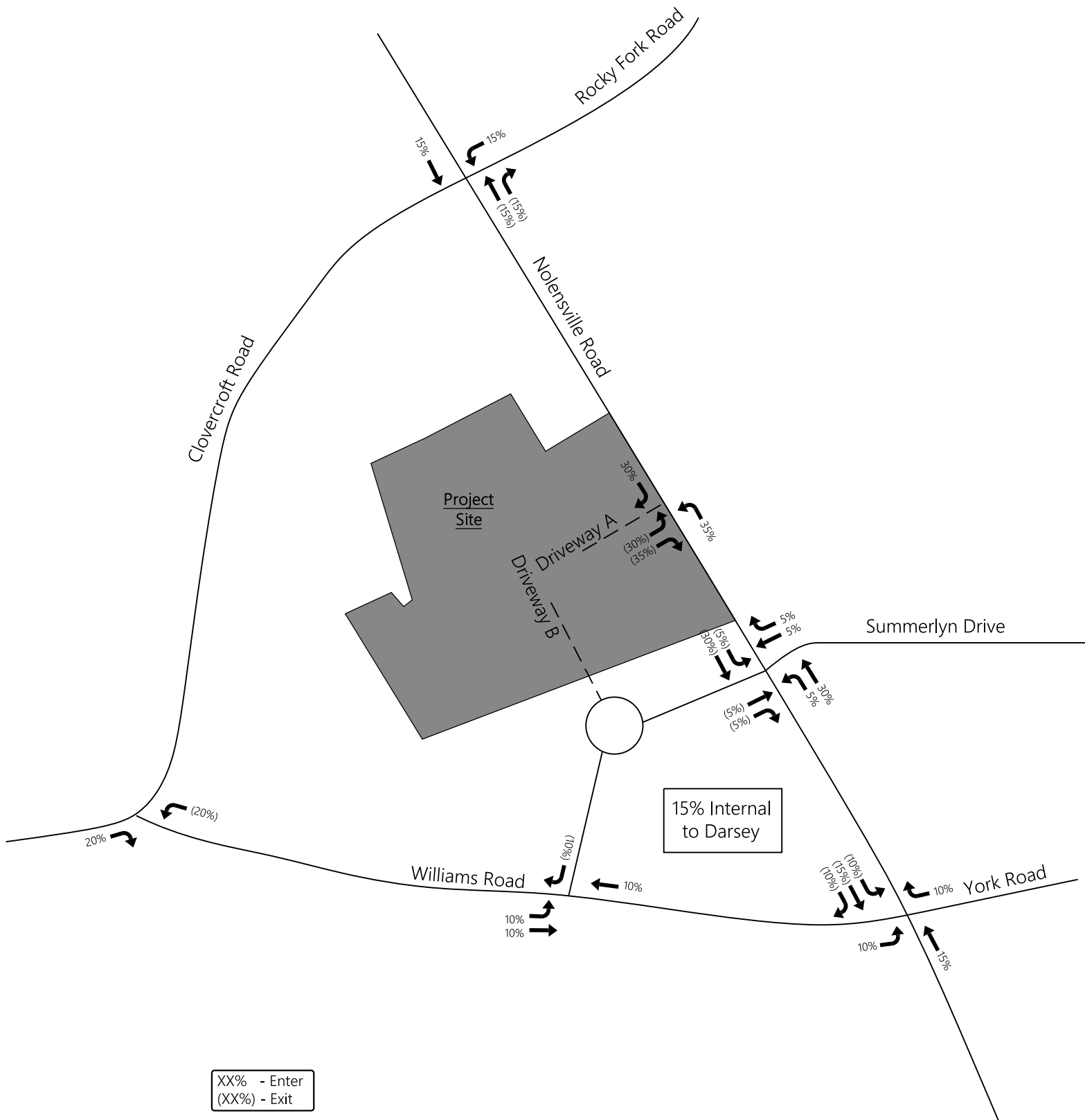
XX% - Enter
(XX%) - Exit

Distribution of Peak Hour Traffic Volumes - Scenario 1
Generated by the Project Site



(Not to Scale)

Figure 7.



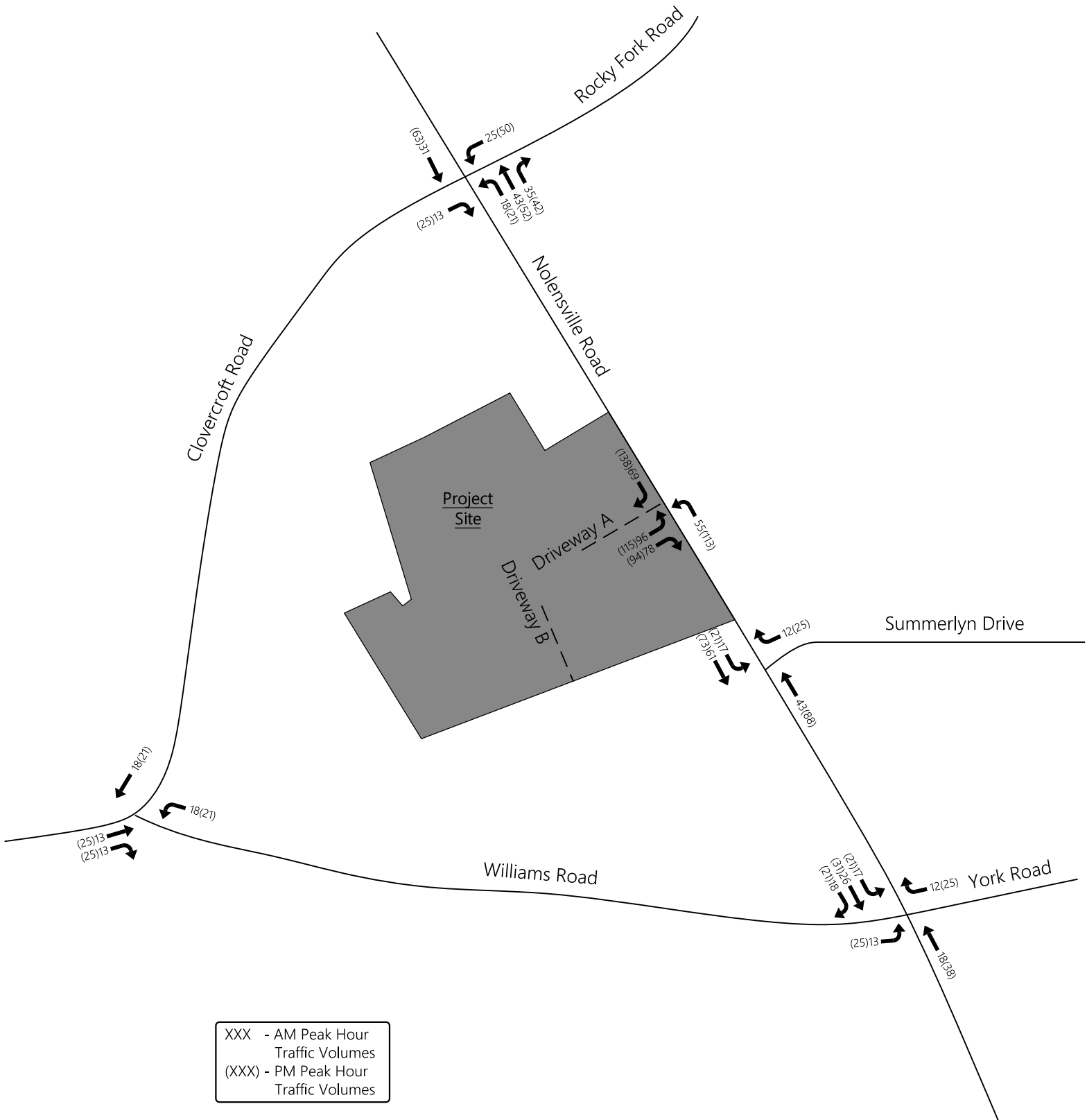
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 (XX%) - Exit

Distribution of Peak Hour Traffic Volumes - Scenario 2
 Generated by the Project Site



(Not to Scale)

Figure 8.



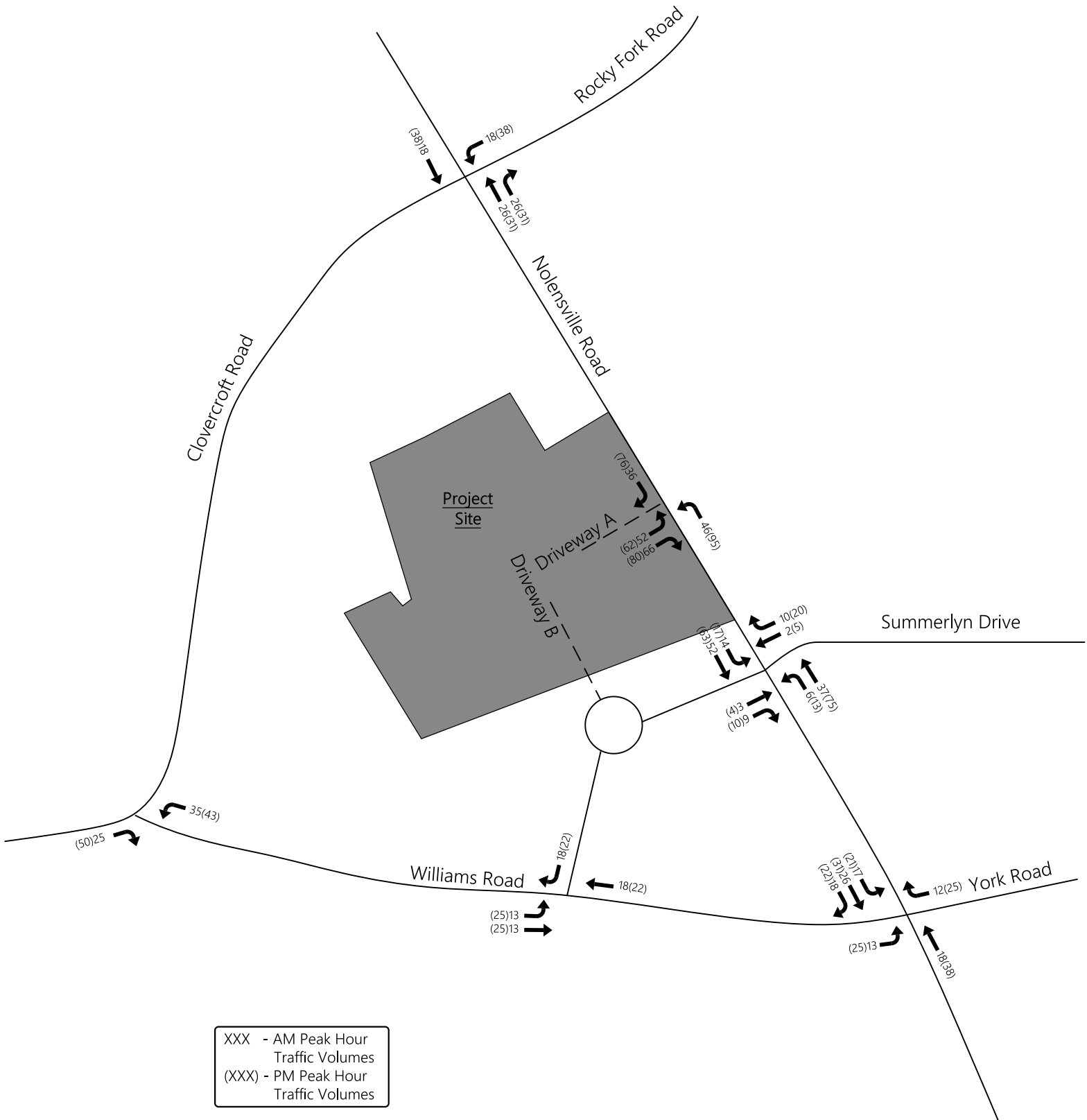
XXX - AM Peak Hour Traffic Volumes
 (XXX) - PM Peak Hour Traffic Volumes



Assignment of Peak Hour Traffic Volumes - Scenario 1
 Generated by the Project Site

(Not to Scale)

Figure 9.



Assignment of Peak Hour Traffic Volumes - Scenario2
 Generated by the Project Site

(Not to Scale)

Figure 10.



5.3 Capacity / Level of Service Analyses

The total site-generated traffic volumes were added to the background peak hour traffic volumes for the proposed development in order to obtain the total projected traffic volumes for the study intersections. Figure 10 and Figure 11 presents the total projected AM and PM peak hour traffic volumes expected at the completion of the proposed development under Scenario 1 and Scenario 2 conditions, respectively.

Capacity analyses were performed in order to determine the impact of the project on the study intersections. These capacity analyses were also used to evaluate the need for roadway and traffic control improvements at the intersections studied. The capacity calculations were performed according to the methods outlined in the *Highway Capacity Manual, 7th Edition*. The results of the capacity analyses for the projected conditions at the study area intersections are presented in Tables 9A and 9B. For the analyses, the intersection configurations and signal timings were the same as the existing and background conditions.

Based on preliminary lane warrant analysis, the proposed site accesses are expected to operate as follows:

- Driveway A
 - Stop-controlled with one entering lane and two exiting lanes. The exiting approach should include one left-turn lane and one right-turn lane.
 - A northbound left-turn lane should be provided on Nolensville Road.
 - A southbound left-turn lane should be provided on Nolensville Road.
- Driveway B
 - Free flow with one entering lane and one exiting lane.

As shown in Tables 9A and 9B, under projected conditions, the capacity analyses indicate that the operational performances of the critical movements at the study intersections are generally expected to continue to operate at the same level of service as under background conditions or continue to operate at LOS D or better in the AM and PM peak hours with the following exceptions:

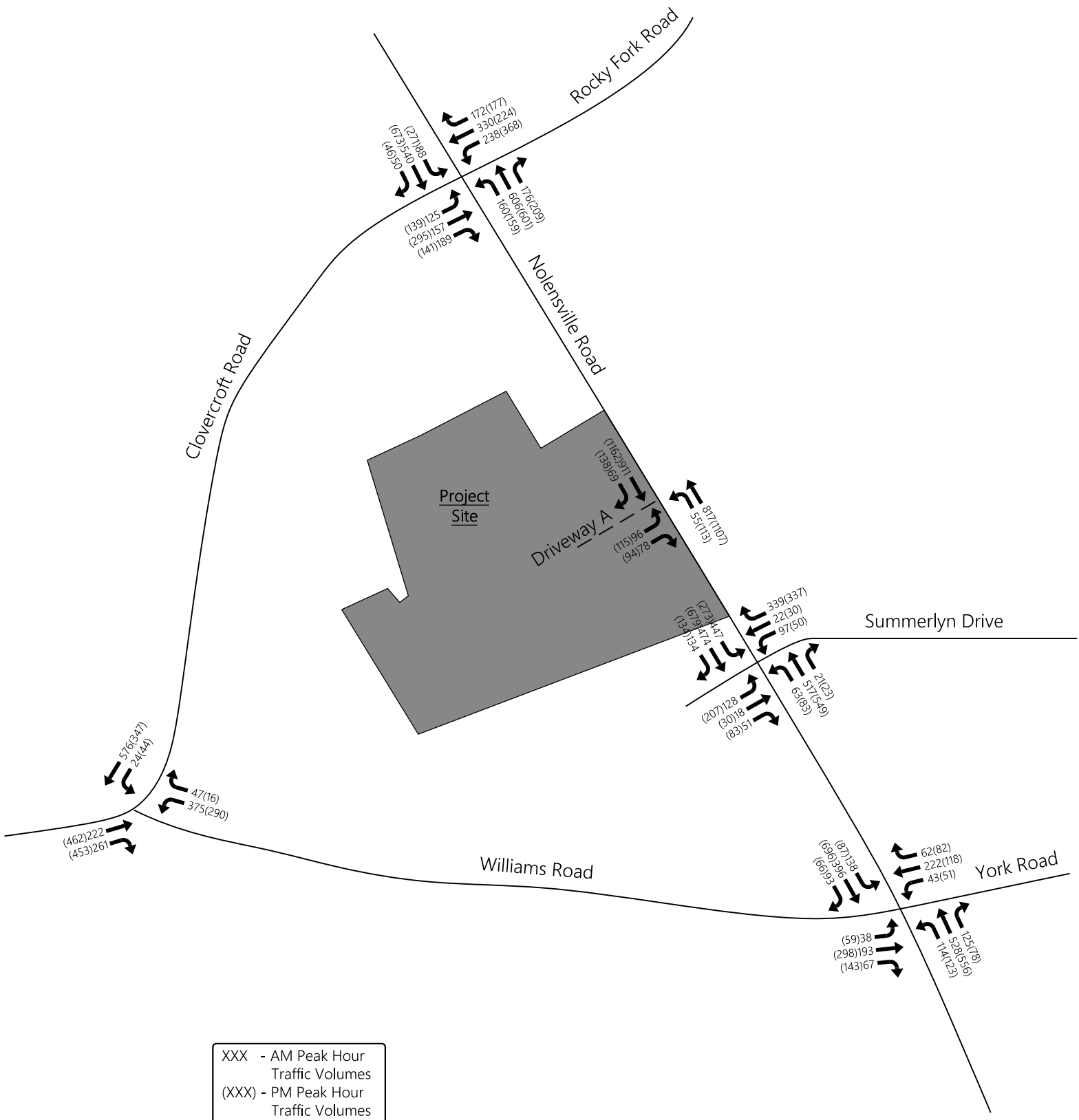
- Nolensville Road and Summerlyn Drive
 - The overall intersection is expected to deteriorate from LOS E to LOS F in the PM peak hour for both Scenario 1 and Scenario 2.
- Nolensville Road and Williams Road/York Road
 - The overall intersection is expected to deteriorate from LOS D to LOS E in the PM peak hours under both Scenario 1 and Scenario 2.

- Nolensville Road and Driveway A
 - The eastbound left-turn is expected to operate at LOS F in the AM and PM peak hours under both Scenario 1 and Scenario 2.
 - The eastbound right-turn is expected to operate at LOS E in the PM under Scenario 1 conditions.

Additional analyses were conducted under a “projected with improvements” scenario to evaluate the benefits of adding the following roadway improvements:

- Nolensville Road and Driveway A
 - Installing a traffic signal at the intersection.

Capacity analyses results for the “projected with improvements” scenario are presented in bold in Tables 9A and 9B. As shown in Tables 9A and 9B, these improvements generally reduce delay at the corresponding study intersections. Capacity analyses worksheets are included in Appendix F.

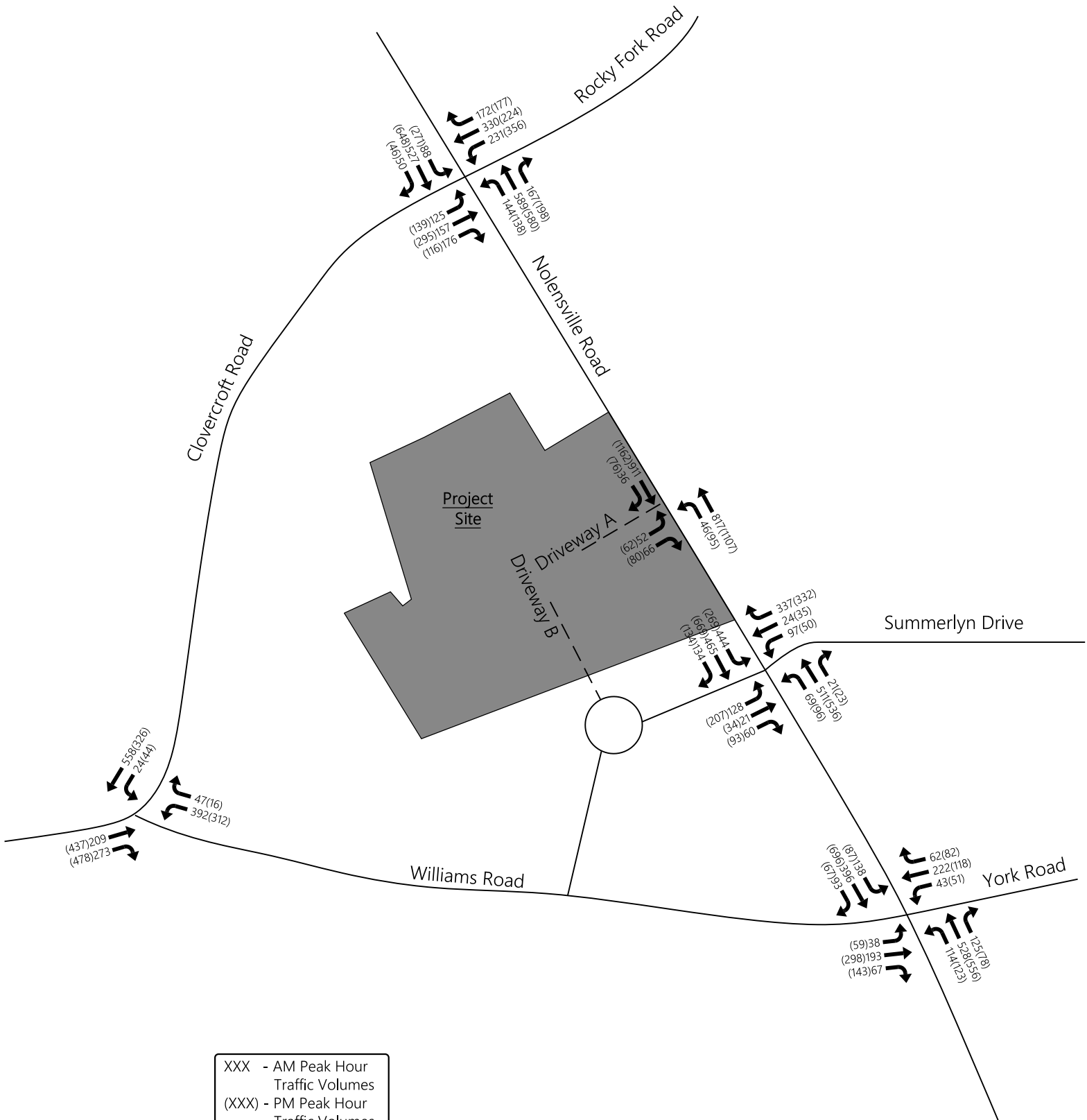


XXX - AM Peak Hour Traffic Volumes
 (XXX) - PM Peak Hour Traffic Volumes



Projected Peak Hour Traffic Volumes - Scenario 1
 (Not to Scale)

Figure 11.



XXX - AM Peak Hour
Traffic Volumes
(XXX) - PM Peak Hour
Traffic Volumes



Projected Peak Hour Traffic Volumes - Scenario 2
(Not to Scale)

Figure 12.

TABLE 9A. PROJECTED AM PEAK HOUR LEVELS OF SERVICE

| INTERSECTION | TURNING MOVEMENT | LEVEL OF SERVICE (Average Delay in sec/veh) | | | |
|---|-----------------------------|--|------------|-----------------|----------------|
| | | EXISTING | BACKGROUND | PROJECTED | |
| | | | | SCENARIO 1 | SCENARIO 2 |
| Nolensville Road and Clovercroft Road/Rocky Fork Road | Overall Intersection | C (28.9) | E (57.0) | E (72.6) | E (65.1) |
| Nolensville Road and Summerlyn Drive | Overall Intersection | B (20.0) | E (67.5) | E (80.4) | E (78.2) |
| Nolensville Road and Williams Road/York Road | Overall Intersection | B (18.9) | C (27.7) | C (32.8) | C (32.8) |
| Clovercroft Road and Williams Road | Overall Intersection | - | C (21.0) | C (22.1) | C (22.6) |
| Nolensville Road and Driveway A | Northbound Left-Turn | -- | -- | B (11.1) | B (10.8) |
| | Eastbound Left-Turn | -- | -- | F (>300) | F (195.4) |
| | Eastbound Right-Turn | -- | -- | C (21.8) | C (20.8) |
| | Overall Intersection | -- | -- | B (10.8) | A (8.9) |
| "Projected with Improvements" Scenario Results | | | | | |

TABLE 9B. PROJECTED PM PEAK HOUR LEVELS OF SERVICE

| INTERSECTION | TURNING MOVEMENT | LEVEL OF SERVICE (Average Delay in sec/veh) | | | |
|---|-----------------------------|--|------------|-----------------|-----------------|
| | | EXISTING | BACKGROUND | PROJECTED | |
| | | | | SCENARIO 1 | SCENARIO 2 |
| Nolensville Road and Clovercroft Road/Rocky Fork Road | Overall Intersection | D (37.1) | F (98.4) | F (134.2) | F (118.9) |
| Nolensville Road and Summerlyn Drive | Overall Intersection | B (17.9) | E (62.4) | F (101.6) | F (99.7) |
| Nolensville Road and Williams Road/York Road | Overall Intersection | C (20.6) | D (44.1) | E (71.8) | E (72.0) |
| Clovercroft Road and Williams Road | Overall Intersection | - | C (27.3) | D (39.5) | D (44.0) |
| Nolensville Road and Driveway A | Northbound Left-Turn | -- | -- | B (15.0) | B (13.8) |
| | Eastbound Left-Turn | -- | -- | F (>300) | F (>300) |
| | Eastbound Right-Turn | -- | -- | E (38.2) | D (34.4) |
| | Overall Intersection | -- | -- | C (22.9) | B (17.4) |
| "Projected with Improvements" Scenario Results | | | | | |

5.4 Queue Length Analysis

95th percentile queue lengths for the critical movements of the study intersections that are expected to be impacted by the proposed development were also analyzed and evaluated under the background and projected conditions. Table 10 indicates the results of the queue length analyses for the study intersection.

TABLE 10. STUDY INTERSECTIONS 95TH PERCENTILE QUEUE LENGTH

| INTERSECTION | TURNING MOVEMENT | AVAILABLE STORAGE (FEET) | 95 TH PERCENTILE QUEUE LENGTH (FEET) | | | | | |
|---|-----------------------|--------------------------|---|---------|------------|---------|------------|-----|
| | | | BACKGROUND | | PROJECTED | | | |
| | | | AM PEAK | PM PEAK | SCENARIO 1 | | SCENARIO 2 | |
| | | | | AM PEAK | PM PEAK | AM PEAK | PM PEAK | |
| Nolensville Road and Clovercroft Road/Rocky Fork Road | Northbound Left-Turn | 200 | 90 | 142 | 105 | 186 | 91 | 145 |
| | Southbound Left-Turn | 100 | 51 | 473 | 51 | 491 | 51 | 484 |
| | Eastbound Left-Turn | -- | 107 | 147 | 107 | 147 | 107 | 147 |
| | Westbound Left-Turn | 170 | 236 | 566 | 281 | 815 | 266 | 750 |
| | Westbound Right-Turn | 170 | 190 | 219 | 190 | 219 | 190 | 219 |
| Nolensville Road and Summerlyn Drive | Northbound Left-Turn | 150 | 37 | 85 | 37 | 87 | 41 | 102 |
| | Southbound Left-Turn | 250 | 544 | 320 | 624 | 565 | 611 | 585 |
| | Southbound Right-Turn | 150 | 99 | 145 | 99 | 149 | 100 | 151 |
| | Eastbound Left-Turn | 150 | 166 | 322 | 166 | 324 | 165 | 322 |
| | Westbound Right-Turn | -- | 514 | 484 | 567 | 529 | 559 | 515 |
| Nolensville Road and Williams Road/York Road | Northbound Left-Turn | 100 | 113 | 268 | 127 | 374 | 127 | 377 |
| | Southbound Left-Turn | 100 | 60 | 44 | 76 | 62 | 76 | 62 |
| | Westbound Left-Turn | 100 | 54 | 114 | 53 | 110 | 53 | 110 |

TABLE 10. STUDY INTERSECTIONS 95TH PERCENTILE QUEUE LENGTH CONT.

| INTERSECTION | TURNING MOVEMENT | AVAILABLE STORAGE (FEET) | 95 TH PERCENTILE QUEUE LENGTH (FEET) | | | | | |
|------------------------------------|----------------------|--------------------------|---|---------|------------|---------|------------|---------|
| | | | BACKGROUND | | PROJECTED | | | |
| | | | | | SCENARIO 1 | | SCENARIO 2 | |
| | | | AM PEAK | PM PEAK | AM PEAK | PM PEAK | AM PEAK | PM PEAK |
| Clovercroft Road and Williams Road | Northbound Approach | -- | 227 | 533 | 274 | 676 | 283 | 688 |
| | Southbound Approach | -- | 336 | 246 | 364 | 399 | 360 | 386 |
| | Westbound Approach | -- | 353 | 289 | 364 | 323 | 374 | 390 |
| Nolensville Road and Driveway A | Northbound Left-Turn | 75 | -- | -- | 8 | 25 | 6 | 19 |
| | Eastbound Left-Turn | -- | -- | -- | 239 | 409 | 107 | 220 |
| | Eastbound Right-Turn | 75 | -- | -- | 29 | 61 | 23 | 48 |

5.5 Signal Warrant Analysis

As noted in the capacity analysis, the intersection of Nolensville Road and Driveway A is expected to operate at poor LOS under unsignalized projected conditions in the AM and PM peak hours.

A traffic signal should normally be installed at an intersection only when specific warrants are satisfied. Therefore, traffic signal warrant analyses were performed with available data for the intersections based on the anticipated traffic conditions at completion of the development.

The *Manual on Uniform Traffic Control Devices* (MUTCD) sets forth nine different warrants that have been developed by the traffic engineering profession to facilitate the determination of whether a signal is warranted. These warrants include minimum conditions that normally indicate when a traffic signal is justified at a particular location. The MUTCD states “traffic control signals should not be installed unless one or more of the signal warrants in the manual are met.”

Although the MUTCD provides nine different warrants, only the eight-hour vehicle volume warrant was considered. This warrant, presented in the MUTCD, is as follows:

WARRANT 1, EIGHT-HOUR VEHICLE VOLUME

Under Warrant 1, the following three conditions are taken into consideration:

1. Warrant 1A, Minimum Vehicle Volumes
2. Warrant 1B, Continuous Traffic
3. Warrant 1C, Combination

According to the MUTCD, Warrant 1 is satisfied if any of the three conditions listed above are satisfied. It should be noted that Warrant 1C should only be taken into consideration at locations where Warrant 1A and Warrant 1B are **not** satisfied.

When the 85th percentile speed of the major street traffic exceeds 40 mph in either an urban or a rural area, or when the intersection lies within the built-up area of an isolated community having a population of less than 10,000, the conditions presented in Warrant 1 can be evaluated at 70 percent of the requirements. The speed limit on Nolensville Road is 40 mph; therefore, the intersection of Nolensville Road and Driveway A does not qualify for this reduction.

WARRANT 1A, MINIMUM VEHICULAR VOLUME

The Minimum Vehicular Volume warrant is intended for application where the volume of intersecting traffic is the principal reason for consideration of signal installation. The warrant is satisfied when, for each of any eight hours of an average day, the traffic volumes given below in Table 11 exist on the major street and on the higher volume minor street approach to the intersection.

TABLE 11. MINIMUM VEHICULAR VOLUMES FOR WARRANT 1A

| NUMBER OF LANES FOR MOVING TRAFFIC ON EACH APPROACH | | VEHICLES PER HOUR ON MAJOR APPROACH | VEHICLES PER HOUR ON HIGHER VOLUMES MINOR APPROACH |
|---|-----------------|-------------------------------------|--|
| Major Street | Minor Street | Total of Both Approaches | One Direction Only |
| 1 Lane | 1 Lane | 500 | 150 |
| 2 Lanes or more | 1 Lane | 600 | 150 |
| 2 Lanes or more | 2 Lanes or more | 600 | 200 |
| 1 Lane | 2 Lanes or more | 500 | 200 |

WARRANT 1B, INTERRUPTION OF CONTINUOUS TRAFFIC

The Interruption of Continuous Traffic warrant applies to operating conditions where the traffic volume on a major street is so heavy that traffic on a minor intersecting street suffers excessive delay or hazard when entering or crossing the major street. The warrant is satisfied when, for each of any eight hours of an average day, the traffic volumes given below in Table 12 exist on the major street and on the higher volume minor street approach to an intersection. In addition, the signal installation shall not seriously disrupt progressive traffic flow.

TABLE 12. MINIMUM VEHICULAR VOLUMES FOR WARRANT 1B

| NUMBER OF LANES FOR MOVING TRAFFIC ON EACH APPROACH | | VEHICLES PER HOUR ON MAJOR APPROACH | VEHICLES PER HOUR ON HIGHER VOLUMES MINOR APPROACH |
|---|-----------------|-------------------------------------|--|
| Major Street | Minor Street | Total of Both Approaches | One Direction Only |
| 1 Lane | 1 Lane | 750 | 75 |
| 2 Lanes or more | 1 Lane | 900 | 75 |
| 2 Lanes or more | 2 Lanes or more | 900 | 100 |
| 1 Lane | 2 Lanes or more | 750 | 100 |

WARRANT 1C, COMBINATION WARRANT

In exceptional cases, traffic signals occasionally may be justified where no single warrant is satisfied but where Warrants 1A and 1B are satisfied to the extent of 80 percent or more of the stated values. This warrant is referred to as Warrant 1C (Combination Warrant).

TRAFFIC SIGNAL WARRANT ANALYSIS RESULTS

Based on the geometry of the intersection, the analysis was performed based on one lane on the major street (Nolensville Road) and two lanes on the minor street (Driveway A). The results of the warrant analysis indicated that at the completion of the development, the projected traffic volumes at the intersection of Nolensville Road and Driveway A will warrant a traffic signal. Specifically, the intersection is expected to meet Warrant 1A, Warrant 1B, and Warrant 1C under Scenario 1, and Warrant 1B and Warrant 1C under Scenario 2. Results of the warrant analysis is shown in Table 13 for Scenario 1 and Table 14 for Scenario 2.

TABLE 13. TRAFFIC SIGNAL WARRANT ANALYSIS FOR NOLENSVILLE ROAD AND DRIVEWAY A – SCENARIO 1

| Hour | Traffic Volumes | | Full Warrants Met? | | |
|--------------------------|-----------------------------|-------------------------------|--------------------|------------|------------|
| | Main Street Both Directions | Minor Street Highest Approach | 1A | 1B | 1C |
| 6:00-7:00 | 1073 | 84 | -- | -- | -- |
| 7:00-8:00 | 1625 | 146 | -- | Yes | -- |
| 8:00-9:00 | 1702 | 148 | -- | Yes | -- |
| 9:00-10:00 | 1594 | 166 | -- | Yes | Yes |
| 10:00-11:00 | 1619 | 244 | Yes | Yes | Yes |
| 11:00-12:00 PM | 2068 | 320 | Yes | Yes | Yes |
| 12:00-1:00 | 2227 | 374 | Yes | Yes | Yes |
| 1:00-2:00 | 2149 | 380 | Yes | Yes | Yes |
| 2:00-3:00 | 2376 | 370 | Yes | Yes | Yes |
| 3:00-4:00 | 2377 | 372 | Yes | Yes | Yes |
| 4:00-5:00 | 2806 | 380 | Yes | Yes | Yes |
| 5:00-6:00 | 3036 | 406 | Yes | Yes | Yes |
| Total Hours Met | | | 8 | 11 | 9 |
| Full Warrant Met? | | | Yes | Yes | Yes |

Note: Warrants 1A, 1B and 1C must be satisfied for at least 8 hours of a typical day.

TABLE 14. TRAFFIC SIGNAL WARRANT ANALYSIS FOR NOLENSVILLE ROAD AND DRIVEWAY A – SCENARIO 2

| Hour | Traffic Volumes | | Full Warrants Met? | | |
|--------------------------|--------------------------------|----------------------------------|--------------------|------------|------------|
| | Main Street Both Directions | Minor Street Highest Approach | 1A | 1B | 1C |
| 6:00-7:00 | 1061 | 67 | -- | -- | -- |
| 7:00-8:00 | 1602 | 119 | -- | Yes | -- |
| 8:00-9:00 | 1668 | 121 | -- | Yes | -- |
| 9:00-10:00 | 1541 | 134 | -- | Yes | -- |
| 10:00-11:00 | 1547 | 199 | -- | Yes | Yes |
| 11:00-12:00 PM | 1978 | 260 | Yes | Yes | Yes |
| 12:00-1:00 | 2126 | 304 | Yes | Yes | Yes |
| 1:00-2:00 | 2058 | 310 | Yes | Yes | Yes |
| 2:00-3:00 | 2289 | 301 | Yes | Yes | Yes |
| 3:00-4:00 | 2285 | 301 | Yes | Yes | Yes |
| 4:00-5:00 | 2701 | 309 | Yes | Yes | Yes |
| 5:00-6:00 | 2927 | 330 | Yes | Yes | Yes |
| Total Hours Met | | | 7 | 11 | 8 |
| Full Warrant Met? | | | No | Yes | Yes |

Note: Warrants 1A, 1B and 1C must be satisfied for at least 8 hours of a typical day.

Sensitivity analysis was completed in order to determine when Driveway A should be reevaluated for the need to provide a traffic signal. According to the development team, the proposed Nolensville Town Center development will be completed in three phases as shown in Table 15.

TABLE 15. DEVELOPMENT PHASING

| PHASE | RESIDENTIAL UNITS | COMMERCIAL SQUARE FOOTAGE |
|-------|----------------------|------------------------------|
| 1 | 84 | 25,000 |
| 2 | 44 | 13,000 |
| 3 | 277 | 52,000 |

Based on the trip generation for each phase, a traffic signal for the intersection of Nolensville Road and Driveway A is warranted at approximately 100% occupancy of Phase 2. Therefore, the intersection of Nolensville Road and Driveway A should be evaluated for the need to provide a traffic signal at 75% occupancy of Phase 2.

6. ANALYSIS OF SITE PLAN

6.1 Site Access Review

According to the information provided by the developer, the proposed Nolensville Town Center development includes approximately 404 multi-family residential units and 80,000 square feet of commercial space.

Access to the development is planned to be provided via two driveways, one Nolensville Road and one on the south end connecting to another mixed-use development.

6.2 Sight Distance Analysis

Field investigation and sight distance measurements were conducted to determine if adequate sight distance is available for accessing the project site. For the 40 mph on Nolensville Road, the guidelines from *A Policy on Geometric Design of Highways and Streets*, by the American Association of State Highway and Transportation Officials (AASHTO), call for a minimum stopping sight distance of 305 feet. These are the distances required for motorist to detect an object in the roadway necessitating a stop and be able to stop before reaching the object.

AASHTO also provides minimum design values for intersection sight distance which, allows enough time gap for a motorist to turn from Driveway A onto Nolensville Road without requiring motorists on Nolensville Road to significantly reduce speed. For a speed of 40 mph, the design value for intersection sight distance for a motorist turning from a stop is 385 feet for right-turns and 445 feet for left-turns. The intersection sight distance results are presented in Table 15.

TABLE 15. INTERSECTION SIGHT DISTANCE ANALYSIS

| INTERSECTION | LEFT-TURNS FROM STOP (FEET) | | RIGHT-TURNS FROM STOP (FEET) | |
|---------------------------------|--------------------------------|-----------|---------------------------------|-----------|
| | DESIGN | AVAILABLE | DESIGN | AVAILABLE |
| Nolensville Road and Driveway A | 445 | >500 | 385 | >400 |

The field investigations indicate that the existing sight distance available at the proposed intersection of Nolensville Road and Driveway A will be adequate for right-turns and left-turns onto Nolensville Road.

6.3 Lane Warrant Analysis

Study intersections and site accesses were evaluated for the need to provide a right-turn lane based on the projected traffic volumes during the AM and PM peak hours. This analysis was based on the procedures outlined in *Evaluating Intersection Improvements* (NCHRP 457). The result of this analysis is presented in Table 16.

TABLE 16. RIGHT-TURN LANE ANALYSIS AT THE INTERSECTION

| INTERSECTION | APPROACH | AM PEAK | PM PEAK |
|---------------------------------|------------|---------|---------|
| Nolensville Road and Driveway A | Southbound | YES | YES |

Study intersections and site accesses were evaluated for the need to provide a left-turn lane based on the projected traffic volumes during the AM and PM peak hours. This analysis was based on the procedures outlined in M.D. Harmelink’s *Volume Warrants for Left-Turn Storage Lanes at Unsignalized Intersections*. The result of this analysis is presented in Table 17.

TABLE 17. LEFT-TURN LANE ANALYSIS

| INTERSECTION | APPROACH | AM PEAK | PM PEAK |
|---------------------------------|------------|---------|---------|
| Nolensville Road and Driveway A | Northbound | YES | YES |

Study intersections and site accesses were evaluated for the need to provide a two-lane approach based on the projected traffic volumes during the AM and PM peak hours. This analysis was based on the procedures outlined in *Evaluating Intersection Improvements: An Engineering Study Guide* (NCHRP 457) Figure 2-4. The result of this analysis is presented in Table 18.

TABLE 18. TWO-LANE MINOR APPROACH ANALYSIS

| INTERSECTION | APPROACH | AM PEAK | PM PEAK |
|---------------------------------|-----------|---------|---------|
| Nolensville Road and Driveway A | Eastbound | YES | YES |

All warrant analyses are included in Appendix I.

7. RECOMMENDATIONS

The analyses presented in this study indicate that the impacts of the proposed project on the existing street network will be manageable by providing the recommendations below. The recommendations are as follows:

Nolensville Road and Driveway A

- Preliminary signal warrant analysis indicate that a traffic signal will be warranted at approximately 100% occupancy of Phase 2 of development. Therefore, the intersection should be evaluated for the need to provide a traffic signal at approximately 75% occupancy of Phase 2.
- Until a traffic signal is warranted, the eastbound approach of Driveway A should be stop-controlled, and a stop bar and R1-1 'Stop' sign should be installed on the egress approach.
- Driveway A should be designed to include sufficient width for one entering lane and two exiting lanes. The exiting approach should include one left-turn lane and one right-turn lane with a minimum of 75 feet of storage length.
- Provide a northbound left-turn lane on Nolensville Road with a minimum of 75 feet of storage length.
- Provide a southbound right-turn deceleration lane on Nolensville Road.

Signal Timing Optimization and Coordination

- Signal timings at all the signalized study intersections should be optimized upon completion of the development. Furthermore, after providing a traffic signal at the intersection of Nolensville Road and Driveway A, signal timing coordination should be conducted between the four intersections of Nolensville Road and Clovercroft Road/Rocky Fork Road, Nolensville Road and Driveway A, Nolensville Road and Summerlyn Drive, and Nolensville Road and Williams Road/York Road.

Travel Demand Management

- Parking/storage options should be provided for bicycles on-site.
- Off-peak loading and deliveries for the retail development should be encouraged to minimize impacts to traffic operations.

Pedestrian, Bicycle, and Transit Infrastructure

- Provide pedestrian crosswalks, signals with push buttons, detectable warning mats, and curb ramps at the intersection of Nolensville Road and Driveway A.

Additional Recommendations

- Parking should be developed per code.
- As part of the construction of the project, all internal and external driveway connections should be designed such that the departure sight triangles, as specified by AASHTO, will be clear of all sight obstructions, including landscaping, existing vegetation, monument signs/walls, fences, etc.
- Final design of internal roadways and parking should meet all Town of Nolensville’s standards and the latest version of “A Policy of Geometric Design of Highways and Streets” published by AASHTO. Any parking lots and streets associated with the development should ensure that passenger cars and emergency vehicles are capable of making all turning movements. Internal intersections should be two-way stop-controlled unless all-way stop control warrants are met.

In summary, based on the analyses conducted, no further recommendations are presented for the proposed Nolensville Town Center development.

APPENDICES

APPENDIX A
PRELIMINARY SITE PLAN

APPENDIX B
SCOPING MEETING MINUTES

APPENDIX C
DETAILED TURNING MOVEMENT COUNTS

APPENDIX D
TDOT COUNT DATA

APPENDIX E
SIGNAL TIMING SHEETS

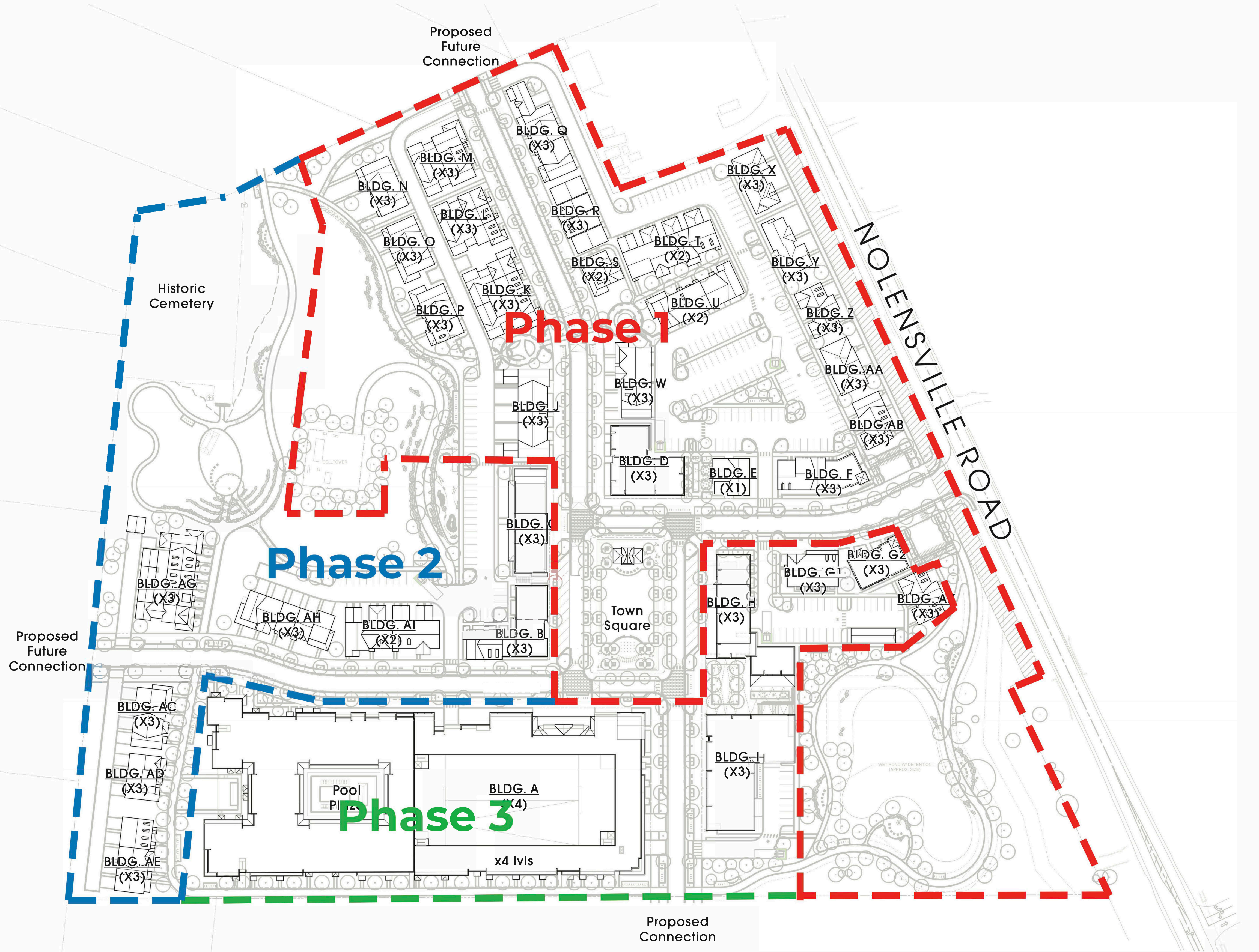
APPENDIX F
CAPACITY ANALYSES

APPENDIX G
BACKGROUND DEVELOPMENTS

APPENDIX H
TRIP GENERATION CALCULATIONS

APPENDIX I
WARRANT ANALYSIS

**APPENDIX A
PRELIMINARY SITE PLAN**



DEVELOPMENT SUMMARY

| NON-RESIDENTIAL TOTAL | | 78,721 GSF/- |
|------------------------------|------------|---------------------|
| Bldg. A | 8,655 GSF | |
| Bldg. C | 6,300 GSF | |
| Bldg. D | 9,630 GSF | |
| Bldg. E | 2,500 GSF | |
| Bldg. H | 11,111 GSF | |
| Bldg. I | 13,815 GSF | |
| Live - Work Park Under | 9,455 GSF | |
| Live - Work Surface Parked | 17,255 GSF | |

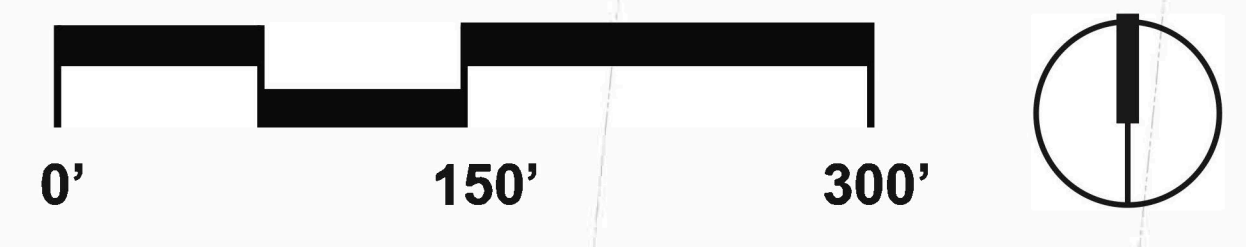
| RESIDENTIAL TOTAL | | 404 UNITS +/- |
|------------------------------------|-----------|----------------------|
| Bldg. A - Flats over Comm. | 243 Units | |
| Bldg. C - Townhome over Comm. | 7 Units | |
| Bldg. D - Townhome over Comm. | 5 Units | |
| Bldg. H - Townhome over Comm. | 7 Units | |
| Bldg. I - Flats over Comm. | 24 Units | |
| Live - Work Park Under | 9 Units | |
| Live - Work Surface Parked | 17 Units | |
| Manor House | 18 Units | |
| 3 Story Townhouse | 39 Units | |
| 2 Story Townhouse | 11 Units | |
| 2 Story Luxury Townhouse Courtyard | 8 Units | |
| Townhouse | 15 Units | |
| Liner Townhouse | 1 Units | |

| PARKING PROVIDED | | 1,024 SPACES +/- |
|-------------------------|---------|-------------------------|
| Podium - Bldg. A (x5) | 495 sp. | |
| Podium - Bldg. H (x1) | 21 sp. | |
| Podium - Bldg. I (x1) | 33 sp. | |
| Private Parking | 149 sp. | |
| On-Street | 124 sp. | |
| Off-Street | 202 sp. | |

| | |
|------------------------------------|---------|
| Commercial Sp. Prov. (2sp./ 1k sf) | 157 sp. |
| Residential Sp. Prov. | 867 sp. |

Residential Parking Ratio 2.15 Sp./Unit

| EXISTING SITE INFORMATION | |
|----------------------------------|-----------------|
| Acreage | 26.989 ac |
| Density | 15.0 units / ac |



APPENDIX B
SCOPING MEETING MINUTES

Layton Murphy

From: Don Swartz <dswartz@nolensvilletn.gov>
Sent: Tuesday, August 29, 2023 3:40 PM
To: Meghan Sigler
Cc: Layton Murphy
Subject: [External Email] RE: Scoping Request - Nolensville Town Center

Follow Up Flag: Follow up
Flag Status: Flagged

From IT@KCI.COM 410-316-7820 *** This is an External Email from outside of KCI.

Good afternoon Meghan,

This study scoping is acceptable.

Donald R. Swartz, P.E.

Town Engineer
Town of Nolensville
7218 Nolensville Road
Nolensville, TN 37135

615-776-3323



From: Meghan Sigler <Meghan.Sigler@kci.com>
Sent: Tuesday, August 29, 2023 8:41 AM
To: Don Swartz <dswartz@nolensvilletn.gov>
Cc: Layton Murphy <Layton.Murphy@kci.com>
Subject: Scoping Request - Nolensville Town Center

Don,

I wanted to reach out to you about our assumptions for the Nolensville Town Center TIS.

- Study Intersections
 - Nolensville Road and Clovercroft Road/Rocky Fork Road
 - Nolensville Road and Summerlyn Drive
 - Nolensville Road and Williams Road/York Road
 - Clovercroft Road and Williams Road

- In addition to the study intersections, we are planning to collect 12-hour tube counts at the location for the site driveway in order to run a signal warrant analysis.
- Background Growth
 - Build Year: 2029, 6-Year Horizon
 - Based on the attached TDOT AADT data, we are proposing a 2% per year background growth.
- Background Developments
 - We have the TIS for the development to the south. Are there any other background developments that need to be included?
- Trip Generation
 - 392 multi-family residential units
 - 70,000 square feet of commercial space
 - Internal Capture Reduction – Please see attached trip generation.

If you have any questions/comments, please let me know.

Best Wishes,
Meghan

Meghan Sigler, P.E.
Senior Project Engineer



KCI TECHNOLOGIES INC.

500 11th Avenue North, Suite 290, Nashville, TN 37203

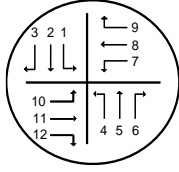
Main: 615.370.8410

meghan.sigler@kci.com

DL: 615.559.0174 | F: 615.370.8455

www.kci.com

APPENDIX C
DETAILED TURNING MOVEMENT COUNTS



INTERSECTION TRAFFIC VOLUME COUNTS

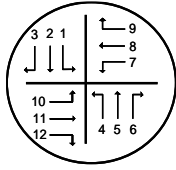
LOCATION: Nolensville Rd & Rocky Fork/Clovercroft
DATE: 8/16/2023
RECORDER: Natalie Flores
NOTES:

| LOCATION | Southbound | | | Northbound | | | Westbound | | | Eastbound | | |
|------------------|----------------|-------|-----|----------------|-------|-----|---------------|-----|-----|----------------|-----|-----|
| | Nolensville Rd | | | Nolensville Rd | | | Rocky Fork Rd | | | Clovercroft Rd | | |
| TIME | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 6:00-6:15 AM | | | | | | | | | | | | |
| 6:15-6:30 | | | | | | | | | | | | |
| 6:30-6:45 | | | | | | | | | | | | |
| 6:45-7:00 | | | | | | | | | | | | |
| 7:00-7:15 | 13 | 158 | 5 | 19 | 94 | 15 | 65 | 49 | 30 | 5 | 21 | 59 |
| 7:15-7:30 | 25 | 118 | 9 | 28 | 136 | 21 | 40 | 84 | 48 | 28 | 38 | 32 |
| 7:30-7:45 | 20 | 53 | 12 | 19 | 117 | 24 | 14 | 82 | 36 | 28 | 34 | 6 |
| 7:45-8:00 | 20 | 56 | 11 | 16 | 100 | 19 | 14 | 78 | 39 | 32 | 46 | 3 |
| 8:00-8:15 | 29 | 66 | 9 | 12 | 92 | 10 | 27 | 78 | 50 | 18 | 22 | 18 |
| 8:15-8:30 | 35 | 90 | 14 | 19 | 66 | 19 | 16 | 69 | 45 | 25 | 30 | 13 |
| 8:30-8:45 | 28 | 74 | 3 | 19 | 133 | 7 | 20 | 61 | 60 | 35 | 24 | 11 |
| 8:45-9:00 | 21 | 68 | 6 | 14 | 108 | 17 | 12 | 58 | 52 | 34 | 31 | 3 |
| 9:00-9:15 | | | | | | | | | | | | |
| 9:15-9:30 | | | | | | | | | | | | |
| 9:30-9:45 | | | | | | | | | | | | |
| 9:45-10:00 | | | | | | | | | | | | |
| 10:00-10:15 | | | | | | | | | | | | |
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| 10:30-10:45 | | | | | | | | | | | | |
| 10:45-11:00 | | | | | | | | | | | | |
| 11:00-11:15 | | | | | | | | | | | | |
| 11:15-11:30 | | | | | | | | | | | | |
| 11:30-11:45 | | | | | | | | | | | | |
| 11:45-12:00 PM | | | | | | | | | | | | |
| 12:00-12:15 | | | | | | | | | | | | |
| 12:15-12:30 | | | | | | | | | | | | |
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| 12:45-1:00 | | | | | | | | | | | | |
| 1:00-1:15 | | | | | | | | | | | | |
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| 1:30-1:45 | | | | | | | | | | | | |
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| 2:15-2:30 | | | | | | | | | | | | |
| 2:30-2:45 | | | | | | | | | | | | |
| 2:45-3:00 | | | | | | | | | | | | |
| 3:00-3:15 | | | | | | | | | | | | |
| 3:15-3:30 | | | | | | | | | | | | |
| 3:30-3:45 | | | | | | | | | | | | |
| 3:45-4:00 | | | | | | | | | | | | |
| 4:00-4:15 | 47 | 86 | 7 | 23 | 109 | 20 | 30 | 36 | 41 | 31 | 65 | 4 |
| 4:15-4:30 | 63 | 93 | 6 | 12 | 113 | 17 | 35 | 60 | 34 | 29 | 69 | 7 |
| 4:30-4:45 | 59 | 105 | 7 | 18 | 84 | 18 | 39 | 48 | 37 | 37 | 74 | 4 |
| 4:45-5:00 | 54 | 112 | 8 | 17 | 94 | 17 | 50 | 48 | 35 | 24 | 58 | 7 |
| 5:00-5:15 | 68 | 114 | 2 | 6 | 99 | 20 | 53 | 49 | 40 | 27 | 66 | 9 |
| 5:15-5:30 | 60 | 122 | 4 | 8 | 122 | 20 | 66 | 54 | 45 | 23 | 64 | 8 |
| 5:30-5:45 | 48 | 92 | 6 | 10 | 101 | 33 | 43 | 59 | 27 | 43 | 81 | 9 |
| 5:45-6:00 | 48 | 116 | 6 | 5 | 106 | 42 | 30 | 48 | 36 | 50 | 76 | 2 |
| 6:00-6:15 | | | | | | | | | | | | |
| 6:15-6:30 | | | | | | | | | | | | |
| 6:30-6:45 | | | | | | | | | | | | |
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| 9:30-9:45 | | | | | | | | | | | | |
| 9:45-10:00 PM | | | | | | | | | | | | |
| TOTAL | 638 | 1,523 | 115 | 245 | 1,674 | 319 | 554 | 961 | 655 | 469 | 799 | 195 |
| AM PK HR | 78 | 385 | 37 | 82 | 447 | 79 | 133 | 293 | 153 | 93 | 139 | 100 |
| MID PK HR | | | | | | | | | | | | |
| PM PK HR | 241 | 453 | 21 | 49 | 399 | 75 | 208 | 199 | 157 | 111 | 262 | 28 |

533
1,140
1,585
2,019
1,917
1,751
1,781
1,771
1,340
899
424

499
1,037
1,567
2,091
2,145
2,203
2,225
2,266
1,713
1,117
565

7:00 AM - 8:00 AM
4:30 PM - 5:30 PM



INTERSECTION TRAFFIC VOLUME COUNTS

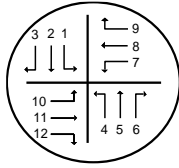
LOCATION: Nolensville Road and Summerlyn Drive
 DATE: 9/11/2023
 RECORDER: Layton Murphy
 NOTES:

| LOCATION TIME | Southbound Nolensville Rd | | | Northbound Nolensville Rd | | | Westbound Summerlyn Dr | | | Eastbound | | |
|------------------|------------------------------|-------|---|------------------------------|-------|----|---------------------------|---|-----|-----------|----|----|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 6:00-6:15 AM | | | | | | | | | | | | |
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| 6:30-6:45 | | | | | | | | | | | | |
| 6:45-7:00 | | | | | | | | | | | | |
| 7:00-7:15 | 185 | 74 | | | 85 | 3 | 13 | | 48 | | | |
| 7:15-7:30 | 159 | 98 | | | 101 | 4 | 29 | | 97 | | | |
| 7:30-7:45 | 22 | 76 | | | 97 | 2 | 37 | | 112 | | | |
| 7:45-8:00 | 16 | 59 | | | 106 | 1 | 4 | | 33 | | | |
| 8:00-8:15 | 27 | 47 | | | 71 | 2 | 5 | | 11 | | | |
| 8:15-8:30 | 50 | 67 | | | 84 | 8 | 7 | | 51 | | | |
| 8:30-8:45 | 16 | 104 | | | 88 | 1 | 13 | | 51 | | | |
| 8:45-9:00 | 10 | 83 | | | 113 | | 1 | | 20 | | | |
| 9:00-9:15 | | | | | | | | | | | | |
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| 11:45-12:00 PM | | | | | | | | | | | | |
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| 3:30-3:45 | | | | | | | | | | | | |
| 3:45-4:00 | | | | | | | | | | | | |
| 4:00-4:15 | 18 | 110 | | | 76 | 5 | 11 | | 71 | | | |
| 4:15-4:30 | 37 | 103 | | | 90 | 3 | 13 | | 67 | | | |
| 4:30-4:45 | 46 | 106 | | | 92 | 4 | 10 | | 63 | | | |
| 4:45-5:00 | 74 | 128 | | | 68 | 4 | 10 | | 72 | | | |
| 5:00-5:15 | 52 | 148 | | | 96 | 3 | 7 | | 76 | | | |
| 5:15-5:30 | 52 | 97 | | | 101 | 3 | 8 | | 66 | | | |
| 5:30-5:45 | 47 | 110 | | | 88 | 2 | 9 | | 61 | | | |
| 5:45-6:00 | 52 | 120 | | | 104 | 2 | 7 | | 51 | | | |
| 6:00-6:15 | | | | | | | | | | | | |
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| 9:15-9:30 | | | | | | | | | | | | |
| 9:30-9:45 | | | | | | | | | | | | |
| 9:45-10:00 PM | | | | | | | | | | | | |
| TOTAL | 863 | 1,530 | | | 1,460 | 47 | 184 | | 950 | | | |
| AM PK HR | 382 | 307 | | | 389 | 10 | 83 | | 290 | | | |
| MID PK HR | | | | | | | | | | | | |
| PM PK HR | 224 | 479 | | | 357 | 14 | 35 | | 277 | | | |

408
896
1,242
1,461
1,216
995
922
930
767
500
227

291
604
925
1,281
1,372
1,386
1,382
1,362
980
653
336

7:00 AM - 8:00 AM
4:30 PM - 5:30 PM



INTERSECTION TRAFFIC VOLUME COUNTS

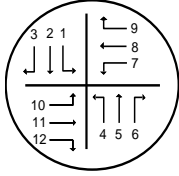
LOCATION: Nolensville Rd and Williams Rd/York Rd
 DATE: 9/11/2023
 RECORDER: Layton Murphy
 NOTES:

| LOCATION | Southbound | | | Northbound | | | Westbound | | | Eastbound | | |
|------------------|----------------|-------|-----|----------------|-------|-----|-----------|-----|-----|-------------|-----|-----|
| | Nolensville Rd | | | Nolensville Rd | | | York Rd | | | Williams Rd | | |
| TIME | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 6:00-6:15 AM | | | | | | | | | | | | |
| 6:15-6:30 | | | | | | | | | | | | |
| 6:30-6:45 | | | | | | | | | | | | |
| 6:45-7:00 | | | | | | | | | | | | |
| 7:00-7:15 | 45 | 38 | 7 | 6 | 87 | 39 | 3 | 46 | 6 | 1 | 86 | 6 |
| 7:15-7:30 | 39 | 64 | 18 | 13 | 95 | 48 | 8 | 40 | 9 | 1 | 61 | 5 |
| 7:30-7:45 | 9 | 86 | 25 | 17 | 85 | 14 | 18 | 65 | 12 | | 9 | 3 |
| 7:45-8:00 | 5 | 60 | 3 | 22 | 86 | 10 | 9 | 38 | 6 | | 9 | 5 |
| 8:00-8:15 | 10 | 39 | 5 | 9 | 73 | 21 | 8 | 31 | 3 | 1 | 24 | 18 |
| 8:15-8:30 | 8 | 70 | 4 | 7 | 82 | 24 | 13 | 33 | 14 | 1 | 40 | 9 |
| 8:30-8:45 | 16 | 85 | 5 | 9 | 77 | 16 | 22 | 45 | 12 | | 9 | 9 |
| 8:45-9:00 | 21 | 68 | | 5 | 89 | 20 | 7 | 15 | 23 | 2 | 14 | 8 |
| 9:00-9:15 | | | | | | | | | | | | |
| 9:15-9:30 | | | | | | | | | | | | |
| 9:30-9:45 | | | | | | | | | | | | |
| 9:45-10:00 | | | | | | | | | | | | |
| 10:00-10:15 | | | | | | | | | | | | |
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| 11:00-11:15 | | | | | | | | | | | | |
| 11:15-11:30 | | | | | | | | | | | | |
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| 11:45-12:00 PM | | | | | | | | | | | | |
| 12:00-12:15 | | | | | | | | | | | | |
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| 12:45-1:00 | | | | | | | | | | | | |
| 1:00-1:15 | | | | | | | | | | | | |
| 1:15-1:30 | | | | | | | | | | | | |
| 1:30-1:45 | | | | | | | | | | | | |
| 1:45-2:00 | | | | | | | | | | | | |
| 2:00-2:15 | | | | | | | | | | | | |
| 2:15-2:30 | | | | | | | | | | | | |
| 2:30-2:45 | | | | | | | | | | | | |
| 2:45-3:00 | | | | | | | | | | | | |
| 3:00-3:15 | | | | | | | | | | | | |
| 3:15-3:30 | | | | | | | | | | | | |
| 3:30-3:45 | | | | | | | | | | | | |
| 3:45-4:00 | | | | | | | | | | | | |
| 4:00-4:15 | 6 | 107 | 8 | 8 | 69 | 13 | 29 | 21 | 10 | 1 | 30 | 17 |
| 4:15-4:30 | 8 | 104 | 2 | 6 | 81 | 7 | 16 | 22 | 9 | 3 | 51 | 16 |
| 4:30-4:45 | 9 | 102 | 4 | 13 | 85 | 15 | 12 | 26 | 6 | 1 | 54 | 17 |
| 4:45-5:00 | 14 | 127 | 2 | 9 | 63 | 15 | 16 | 27 | 4 | 1 | 72 | 21 |
| 5:00-5:15 | 9 | 137 | 2 | 15 | 74 | 19 | 7 | 30 | 14 | 4 | 73 | 14 |
| 5:15-5:30 | 11 | 93 | 6 | 9 | 106 | 20 | 10 | 11 | 11 | 2 | 55 | 16 |
| 5:30-5:45 | 13 | 100 | 6 | 5 | 67 | 15 | 13 | 18 | 10 | 3 | 55 | 20 |
| 5:45-6:00 | 12 | 110 | 4 | 16 | 84 | 12 | 11 | 18 | 7 | 4 | 56 | 19 |
| 6:00-6:15 | | | | | | | | | | | | |
| 6:15-6:30 | | | | | | | | | | | | |
| 6:30-6:45 | | | | | | | | | | | | |
| 6:45-7:00 | | | | | | | | | | | | |
| 7:00-7:15 | | | | | | | | | | | | |
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| 7:30-7:45 | | | | | | | | | | | | |
| 7:45-8:00 | | | | | | | | | | | | |
| 8:00-8:15 | | | | | | | | | | | | |
| 8:15-8:30 | | | | | | | | | | | | |
| 8:30-8:45 | | | | | | | | | | | | |
| 8:45-9:00 | | | | | | | | | | | | |
| 9:00-9:15 | | | | | | | | | | | | |
| 9:15-9:30 | | | | | | | | | | | | |
| 9:30-9:45 | | | | | | | | | | | | |
| 9:45-10:00 PM | | | | | | | | | | | | |
| TOTAL | 235 | 1,390 | 101 | 169 | 1,303 | 308 | 202 | 486 | 156 | 25 | 698 | 203 |
| AM PK HR | 98 | 248 | 53 | 58 | 353 | 111 | 38 | 189 | 33 | 2 | 165 | 19 |
| MID PK HR | | | | | | | | | | | | |
| PM PK HR | 43 | 459 | 14 | 46 | 328 | 69 | 45 | 94 | 35 | 8 | 254 | 68 |

370
771
1,114
1,367
1,239
1,143
1,105
1,124
882
577
272

319
644
988
1,359
1,438
1,463
1,444
1,426
1,028
678
353

7:00 AM - 8:00 AM
4:30 PM - 5:30 PM



INTERSECTION TRAFFIC VOLUME COUNTS



LOCATION: Clovercroft Rd & Williams Rd
 DATE: 9/12/2023
 RECORDER: Layton Murphy
 NOTES:

| LOCATION | Southbound Clovercroft Rd | | | Northbound Clovercroft Rd | | | Westbound Williams Rd | | | Eastbound | | |
|------------------|------------------------------|-------|---|------------------------------|-------|-------|--------------------------|---|-----|-----------|----|----|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 6:00-6:15 AM | | 15 | | | 9 | 6 | 8 | | | | | |
| 6:15-6:30 | 1 | 60 | | | 22 | 7 | 20 | | 1 | | | |
| 6:30-6:45 | 2 | 64 | | | 26 | 11 | 34 | | | | | |
| 6:45-7:00 | 6 | 102 | | | 27 | 50 | 50 | | 2 | | | |
| 7:00-7:15 | 15 | 99 | | | 35 | 105 | 52 | | 5 | | | |
| 7:15-7:30 | 5 | 144 | | | 45 | 25 | 53 | | 9 | | | |
| 7:30-7:45 | 1 | 126 | | | 44 | 10 | 82 | | 17 | | | |
| 7:45-8:00 | | 109 | | | 44 | 13 | 65 | | 11 | | | |
| 8:00-8:15 | 4 | 100 | | | 38 | 36 | 39 | | 4 | | | |
| 8:15-8:30 | 5 | 78 | | | 35 | 47 | 43 | | 4 | | | |
| 8:30-8:45 | 2 | 65 | | | 35 | 14 | 50 | | 5 | | | |
| 8:45-9:00 | 1 | 61 | | | 45 | 22 | 24 | | 2 | | | |
| 9:00-9:15 | 2 | 66 | | | 37 | 22 | 23 | | 2 | | | |
| 9:15-9:30 | | 51 | | | 25 | 18 | 22 | | | | | |
| 9:30-9:45 | 1 | 55 | | | 32 | 10 | 15 | | | | | |
| 9:45-10:00 | 2 | 56 | | | 28 | 18 | 22 | | 1 | | | |
| 10:00-10:15 | | 54 | | | 35 | 15 | 14 | | 2 | | | |
| 10:15-10:30 | | 55 | | | 34 | 10 | 12 | | | | | |
| 10:30-10:45 | | 42 | | | 32 | 14 | 17 | | 1 | | | |
| 10:45-11:00 | | 37 | | | 43 | 20 | 17 | | 3 | | | |
| 11:00-11:15 | 1 | 49 | | | 42 | 23 | 9 | | | | | |
| 11:15-11:30 | 1 | 49 | | | 41 | 20 | 16 | | 2 | | | |
| 11:30-11:45 | | 47 | | | 43 | 14 | 14 | | | | | |
| 11:45-12:00 PM | 1 | 39 | | | 43 | 11 | 13 | | 1 | | | |
| 12:00-12:15 | | 42 | | | 43 | 9 | 11 | | | | | |
| 12:15-12:30 | 1 | 43 | | | 55 | 12 | 15 | | 1 | | | |
| 12:30-12:45 | | 46 | | | 46 | 20 | 13 | | | | | |
| 12:45-1:00 | 2 | 30 | | | 38 | 18 | 23 | | | | | |
| 1:00-1:15 | | 51 | | | 45 | 13 | 22 | | 2 | | | |
| 1:15-1:30 | 3 | 49 | | | 34 | 18 | 15 | | 1 | | | |
| 1:30-1:45 | | 41 | | | 45 | 18 | 10 | | | | | |
| 1:45-2:00 | 1 | 38 | | | 49 | 25 | 15 | | 2 | | | |
| 2:00-2:15 | 1 | 49 | | | 31 | 30 | 30 | | 2 | | | |
| 2:15-2:30 | 1 | 43 | | | 52 | 38 | 20 | | 1 | | | |
| 2:30-2:45 | 6 | 50 | | | 45 | 42 | 12 | | 2 | | | |
| 2:45-3:00 | 2 | 41 | | | 42 | 37 | 34 | | 11 | | | |
| 3:00-3:15 | 2 | 38 | | | 49 | 35 | 62 | | 26 | | | |
| 3:15-3:30 | 2 | 59 | | | 73 | 46 | 26 | | 5 | | | |
| 3:30-3:45 | 3 | 38 | | | 65 | 42 | 22 | | 4 | | | |
| 3:45-4:00 | 1 | 53 | | | 63 | 48 | 19 | | 4 | | | |
| 4:00-4:15 | 2 | 59 | | | 76 | 48 | 40 | | 7 | | | |
| 4:15-4:30 | 2 | 75 | | | 112 | 62 | 25 | | 2 | | | |
| 4:30-4:45 | 10 | 70 | | | 78 | 68 | 40 | | 6 | | | |
| 4:45-5:00 | 16 | 75 | | | 90 | 86 | 27 | | 2 | | | |
| 5:00-5:15 | 7 | 60 | | | 109 | 70 | 45 | | 6 | | | |
| 5:15-5:30 | 6 | 48 | | | 99 | 65 | 27 | | | | | |
| 5:30-5:45 | 9 | 70 | | | 90 | 88 | 25 | | 5 | | | |
| 5:45-6:00 | 10 | 54 | | | 90 | 76 | 30 | | 9 | | | |
| 6:00-6:15 | | | | | | | | | | | | |
| 6:15-6:30 | | | | | | | | | | | | |
| 6:30-6:45 | | | | | | | | | | | | |
| 6:45-7:00 | | | | | | | | | | | | |
| 7:00-7:15 | | | | | | | | | | | | |
| 7:15-7:30 | | | | | | | | | | | | |
| 7:30-7:45 | | | | | | | | | | | | |
| 7:45-8:00 | | | | | | | | | | | | |
| 8:00-8:15 | | | | | | | | | | | | |
| 8:15-8:30 | | | | | | | | | | | | |
| 8:30-8:45 | | | | | | | | | | | | |
| 8:45-9:00 | | | | | | | | | | | | |
| 9:00-9:15 | | | | | | | | | | | | |
| 9:15-9:30 | | | | | | | | | | | | |
| 9:30-9:45 | | | | | | | | | | | | |
| 9:45-10:00 PM | | | | | | | | | | | | |
| TOTAL | 137 | 2,845 | | | 2,359 | 1,555 | 1,322 | | 170 | | | |
| AM PK HR | 21 | 478 | | | 168 | 153 | 252 | | 42 | | | |
| MID PK HR | 9 | 180 | | | 177 | 135 | 77 | | 7 | | | |
| PM PK HR | 39 | 253 | | | 376 | 289 | 139 | | 14 | | | |

523
796
966
1,109
1,114
1,024
955
846
759
690
594
536
508
476
471
464
457
461
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491
479
460
458
465
468
496
489
478
497
507
542
585
622
691
747
764
785
805
872
970
1,078
1,143
1,110
1,125
1,098
801
556
269

7:00 AM - 8:00 AM
1:45 PM - 2:45 PM
4:30 PM - 5:30 PM

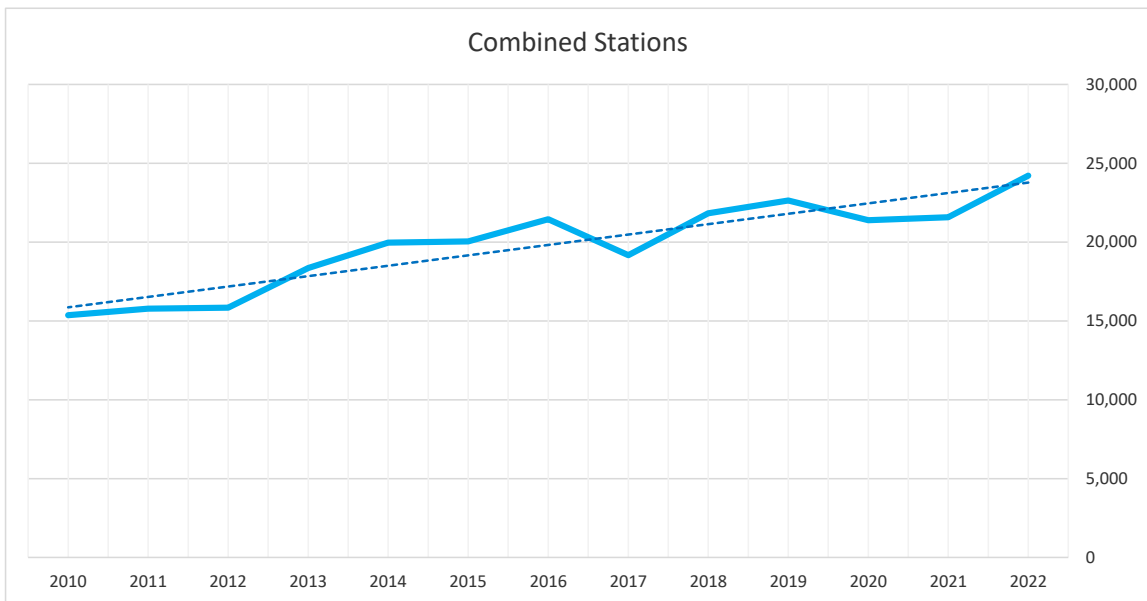
APPENDIX D
TDOT COUNT DATA

TDOT AADT DATA

| Station | 51 | 52 |
|----------|--|---|
| Route | | |
| Location | Nolensville Rd - N of Project - B/W Stonebrook Blvd and Nolensville Park Rd | Rocky Fork Rd - NE of Project - B/W Sugar Mill Dr and Petral Dr |
| County | Williamson | Williamson |
| 2022 | 15,013 | 9,202 |
| 2021 | 13,218 | 8,362 |
| 2020 | 13,824 | 7,558 |
| 2019 | 14,125 | 8,520 |
| 2018 | 13,619 | 8,215 |
| 2017 | 13,097 | 6,079 |
| 2016 | 13,872 | 7,580 |
| 2015 | 14,124 | 5,922 |
| 2014 | 14,239 | 5,735 |
| 2013 | 12,402 | 5,958 |
| 2012 | 10,487 | 5,361 |
| 2011 | 11,300 | 4,472 |
| 2010 | 10,495 | 4,870 |

TDOT AADT Background Growth Trend Analysis

| Year | Nolensville Rd - N of Project - B/W | | Rocky Fork Rd - NE of Project - B/W | | TOTAL | |
|-------------------|-------------------------------------|--------------|-------------------------------------|--------------|--------|--------------|
| | 51 | % Difference | 52 | % Difference | | % Difference |
| 2022 | 15,013 | 13.6% | 9,202 | 10.0% | 24,215 | 12.2% |
| 2021 | 13,218 | -4.4% | 8,362 | 10.6% | 21,580 | 0.9% |
| 2020 | 13,824 | -2.1% | 7,558 | -11.3% | 21,382 | -5.6% |
| 2019 | 14,125 | 3.7% | 8,520 | 3.7% | 22,645 | 3.7% |
| 2018 | 13,619 | 4.0% | 8,215 | 35.1% | 21,834 | 13.9% |
| 2017 | 13,097 | -5.6% | 6,079 | -19.8% | 19,176 | -10.6% |
| 2016 | 13,872 | -1.8% | 7,580 | 28.0% | 21,452 | 7.0% |
| 2015 | 14,124 | -0.8% | 5,922 | 3.3% | 20,046 | 0.4% |
| 2014 | 14,239 | 14.8% | 5,735 | -3.7% | 19,974 | 8.8% |
| 2013 | 12,402 | 18.3% | 5,958 | 11.1% | 18,360 | 15.9% |
| 2012 | 10,487 | -7.2% | 5,361 | 19.9% | 15,848 | 0.5% |
| 2011 | 11,300 | 7.7% | 4,472 | -8.2% | 15,772 | 2.6% |
| 2010 | 10,495 | -- | 4,870 | -- | 15,365 | -- |
| Exponential Rate | Since 2021 Annual | 13.58% | | 10.05% | | 12.21% |
| | Since 2020 Annual | 4.21% | | 10.34% | | 6.42% |
| | Since 2019 Annual | 2.05% | | 2.60% | | 2.26% |
| | Since 2018 Annual | 2.47% | | 2.88% | | 2.62% |
| | Since 2017 Annual | 2.77% | | 8.65% | | 4.78% |
| | Since 2016 Annual | 1.33% | | 3.28% | | 2.04% |
| | Since 2015 Annual | 0.88% | | 6.50% | | 2.74% |
| | Since 2014 Annual | 0.66% | | 6.09% | | 2.44% |
| Since 2013 Annual | 2.15% | | 4.95% | | 3.12% | |
| Since 2012 Annual | 3.65% | | 5.55% | | 4.33% | |



APPENDIX E
SIGNAL TIMING SHEETS

R.O.W. INDEX OF SHEETS

TITLE SHEET 1
 TYPICAL SECTIONS AND PAVEMENT SCHEDULE..... 2B, 2B1
 ENVIRONMENTAL NOTES..... 2E
 TABULATED QUANTITIES..... 2F
 RIGHT-OF-WAY NOTES, UTILITY NOTES AND UTILITY OWNERS, AND RIGHT-OF-WAY ACQUISITION TABLE(S)..... 3
 PROPERTY MAP(S)..... 3A - 3B
 PRESENT LAYOUT(S) 4 - 5
 RIGHT-OF-WAY DETAILS 4A - 5A
 PROPOSED LAYOUT(S) 4B - 5B
 PROPOSED PROFILE(S) 4C - 5C
 SIDE ROADS PROFILE(S) 6
 PRIVATE DRIVE, BUSINESS, AND FIELD ENTRANCE PROFILE(S) 7
 DRAINAGE MAP(S) 8A, 8B
 EROSION PREVENTION AND SEDIMENT CONTROL NOTES, LEGEND, AND TABULATION 9
 EROSION PREVENTION AND SEDIMENT CONTROL PLANS 9A - 9D
 ROADWAY CROSS SECTIONS 10 - 19
 SIDE ROAD CROSS SECTIONS 20 - 25
 SIGNAL PLANS SIG-1
 NO PROJECT COMMITMENTS SHEET INCLUDED IN THIS SET OF PLANS

STATE OF TENNESSEE
 DEPARTMENT OF TRANSPORTATION
 BUREAU OF ENGINEERING

| | | |
|--|-----|------|
| DOES THIS PROJECT QUALIFY FOR UTILITY CHAPTER 86 | YES | NO X |
| WORK ZONE SIGNIFICANCE DETERMINATION | | |
| SIGNIFICANT | YES | NO X |

| | | |
|--------------------|---------------|-----------|
| TENN. | YEAR | SHEET NO. |
| | 2022 | 1 |
| FED. AID PROJ. NO. | HSIP-11(111) | |
| STATE PROJ. NO. | 94007-2235-94 | |

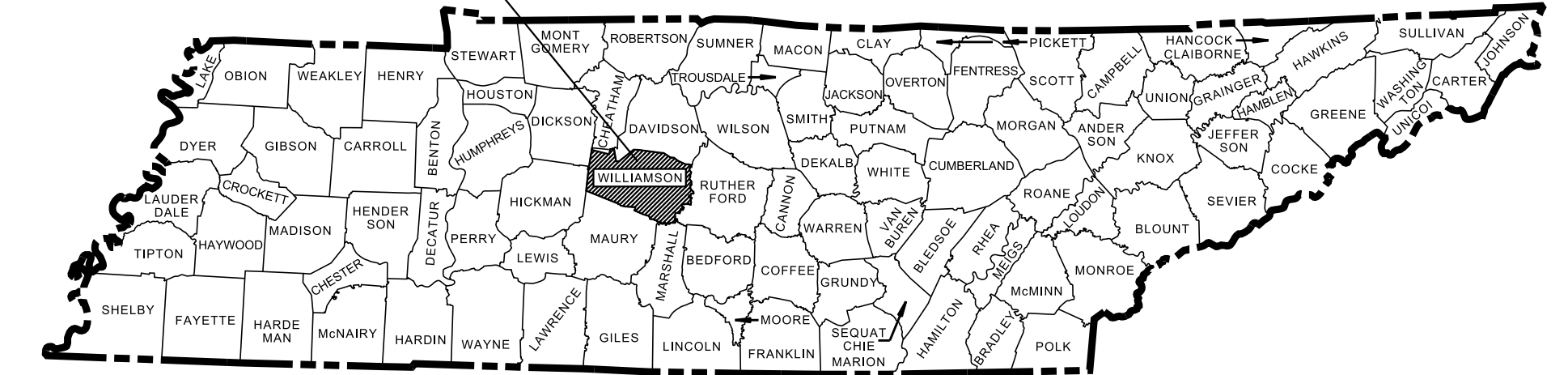
WILLIAMSON COUNTY

SR-11 (NOLENSVILLE ROAD),
 FROM SOUTH OF SANFORD ROAD TO SOUTH OF SUMMERLYN DRIVE
 LOG MILE 13.25 TO LOG MILE 13.60

**RIGHT-OF-WAY
 WIDENING, PAVE, DRAINAGE, SIGNALS**

STATE HIGHWAY NO. 11 U.S. ROUTE NO. 31A

PROJECT LOCATION



NO EXCLUSIONS

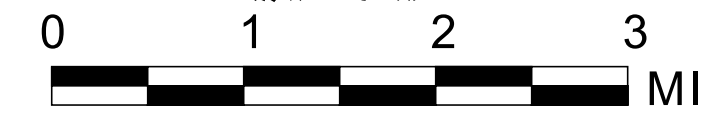
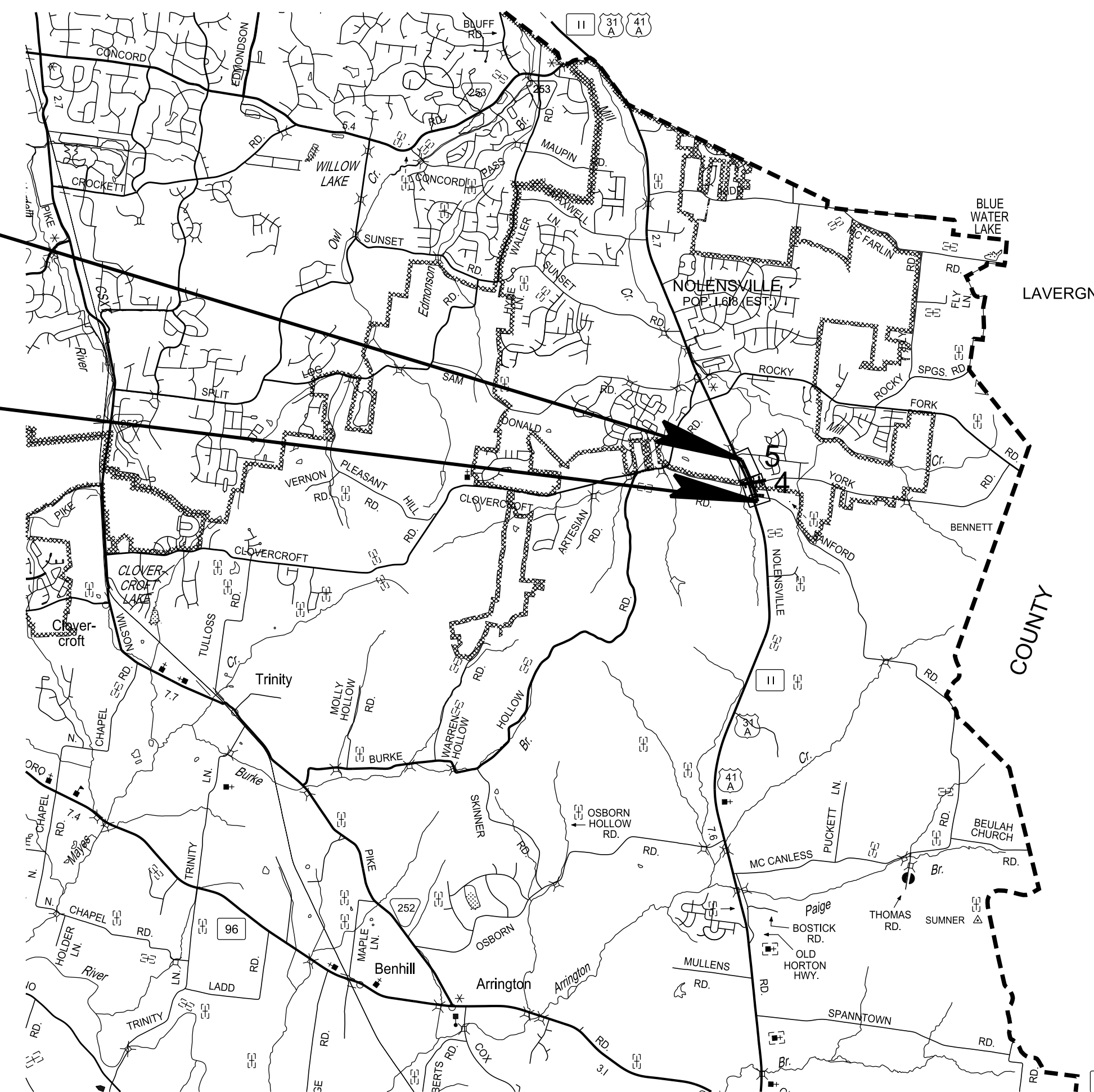
R.O.W.
 PLANS



APPROVED: *Paul D. Degges*
 PAUL D. DEGGES, CHIEF ENGINEER

DATE: _____

APPROVED: *Joseph Galbato, III*
 JOSEPH GALBATO, III, COMMISSIONER



SCALE: 1"= 1 MILE

94007-2235-94
 END PROJ. NO. HSIP-11(111) R.O.W.
 STA. 115+50.00
 N 585660.0093, E 1772569.3651

94007-2235-94
 BEGIN PROJ. NO. HSIP-11(111) R.O.W.
 STA. 102+00.00
 N 584399.1744, E 1773047.8995

SPECIAL NOTES

PROPOSALS MAY BE REJECTED BY THE COMMISSIONER IF ANY OF THE UNIT PRICES CONTAINED THEREIN ARE OBVIOUSLY UNBALANCED, EITHER EXCESSIVE OR BELOW THE REASONABLE COST ANALYSIS VALUE.

THIS PROJECT TO BE CONSTRUCTED UNDER THE STANDARD SPECIFICATIONS OF THE TENNESSEE DEPARTMENT OF TRANSPORTATION DATED JANUARY 1, 2021 AND ADDITIONAL SPECIFICATIONS AND SPECIAL PROVISIONS CONTAINED IN THE PLANS AND IN THE PROPOSAL CONTRACT.

TDOT C.E. MANAGER 1 STEVE K. BRYAN, P.E., P.T.O.E.

DESIGNED BY: KCI TECHNOLOGIES, INC.

DESIGNER: MATTHEW THERIOT, P.E. CHECKED BY BRANDON TAYLOR, P.E.

P.E. NO. 94007-1235-94 (DESIGN)

PIN NO. 129457.00

| | |
|-------------------|-------------|
| R.O.W. LENGTH | 0.255 MILES |
| ROADWAY LENGTH | 0.269 MILES |
| BRIDGE LENGTH | 0.000 MILES |
| BOX BRIDGE LENGTH | 0.000 MILES |
| PROJECT LENGTH | 0.269 MILES |

SR-11

| SURVEY | DATE | TRAFFIC DATA |
|----------|---------|-------------------|
| 05-14-21 | UPDATED | ADT (2023) 9,180 |
| 08-06-21 | UPDATED | ADT (2043) 16,520 |
| 10-19-21 | UPDATED | DHV (2043) 1.859 |
| 01-07-22 | UPDATED | D 55 - 45 |
| 01-18-22 | UPDATED | T (ADT) 8 % |
| | | T (DHV) 5 % |
| | | V 40 MPH |

COORDINATES ARE NAD 83(2011), ARE DATUM ADJUSTED BY THE FACTOR OF 1.00008 AND TIED TO THE TGRN. ALL ELEVATIONS ARE REFERENCED TO THE NAVD 1988 USING THE GEOID G2003U07 MODEL, OBTAINED ON 09-22-2020.

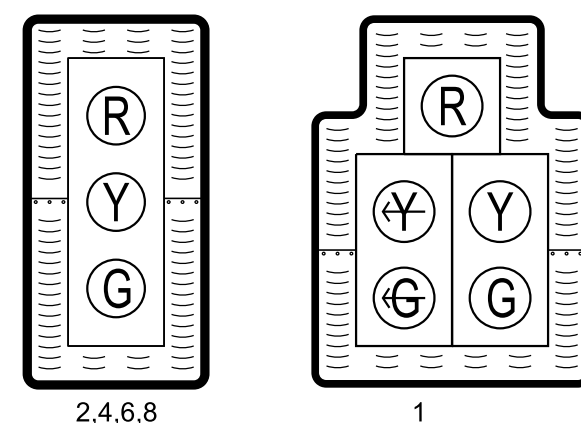
U.S. DEPARTMENT OF TRANSPORTATION
 FEDERAL HIGHWAY ADMINISTRATION

APPROVED: _____
 DIVISION ADMINISTRATOR DATE

9/15/2022 3:40:20 PM M:\2020\2002060-05 (TDOT SR-11 S. of Sanford Rd. SD)\Design\BasesDrawings\001.sht

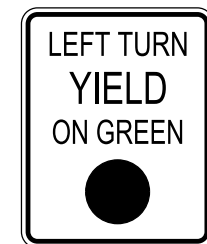
| TYPE | YEAR | PROJECT NO. | SHEET NO. |
|--------|------|---------------|-----------|
| R.O.W. | 2022 | 94007-2235-94 | SIG-1 |
| | | | |
| | | | |

PROPOSED SIGNAL HEADS



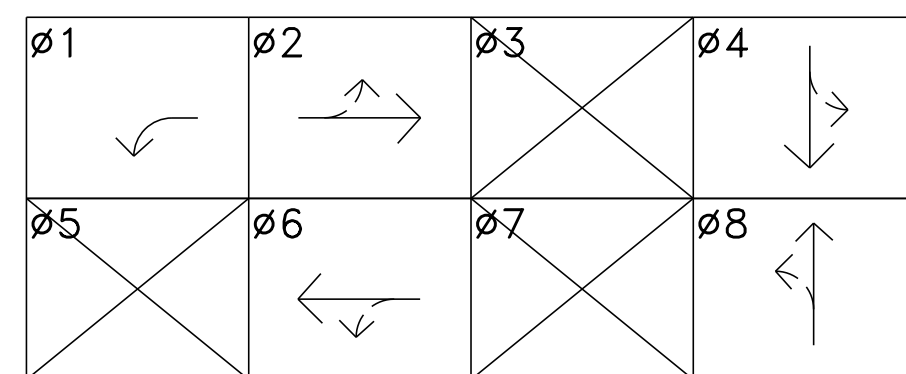
ALL SIGNAL HEAD BACKPLATES SHALL INCLUDE RETROREFLECTIVE BORDER (T-SG-9A)

PROPOSED OVERHEAD SIGNS



R10-12
30" x 36"
SIGN(S1)

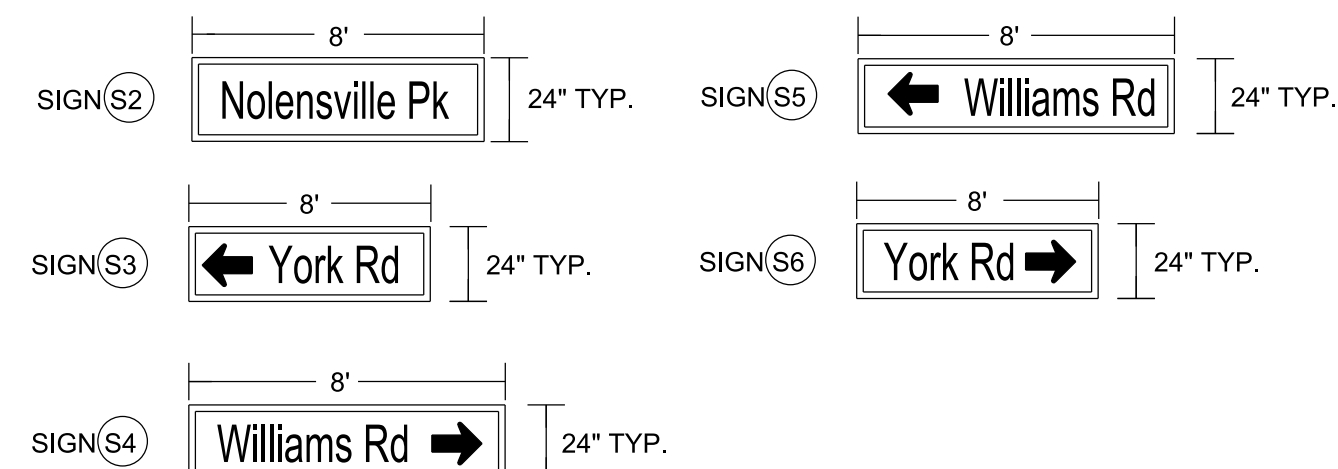
PHASING DIAGRAM



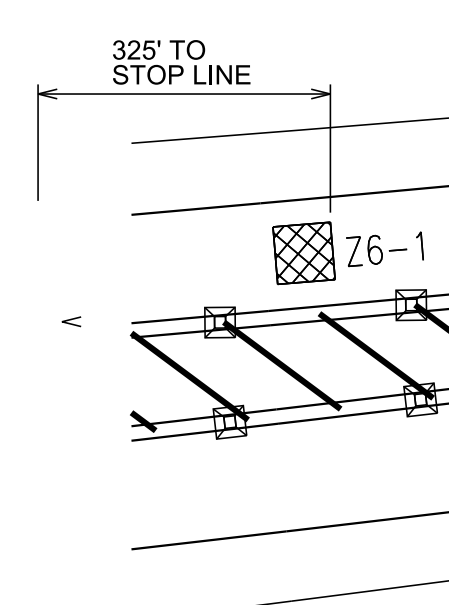
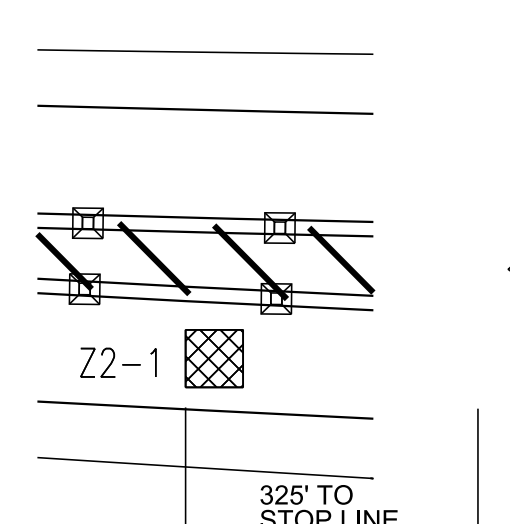
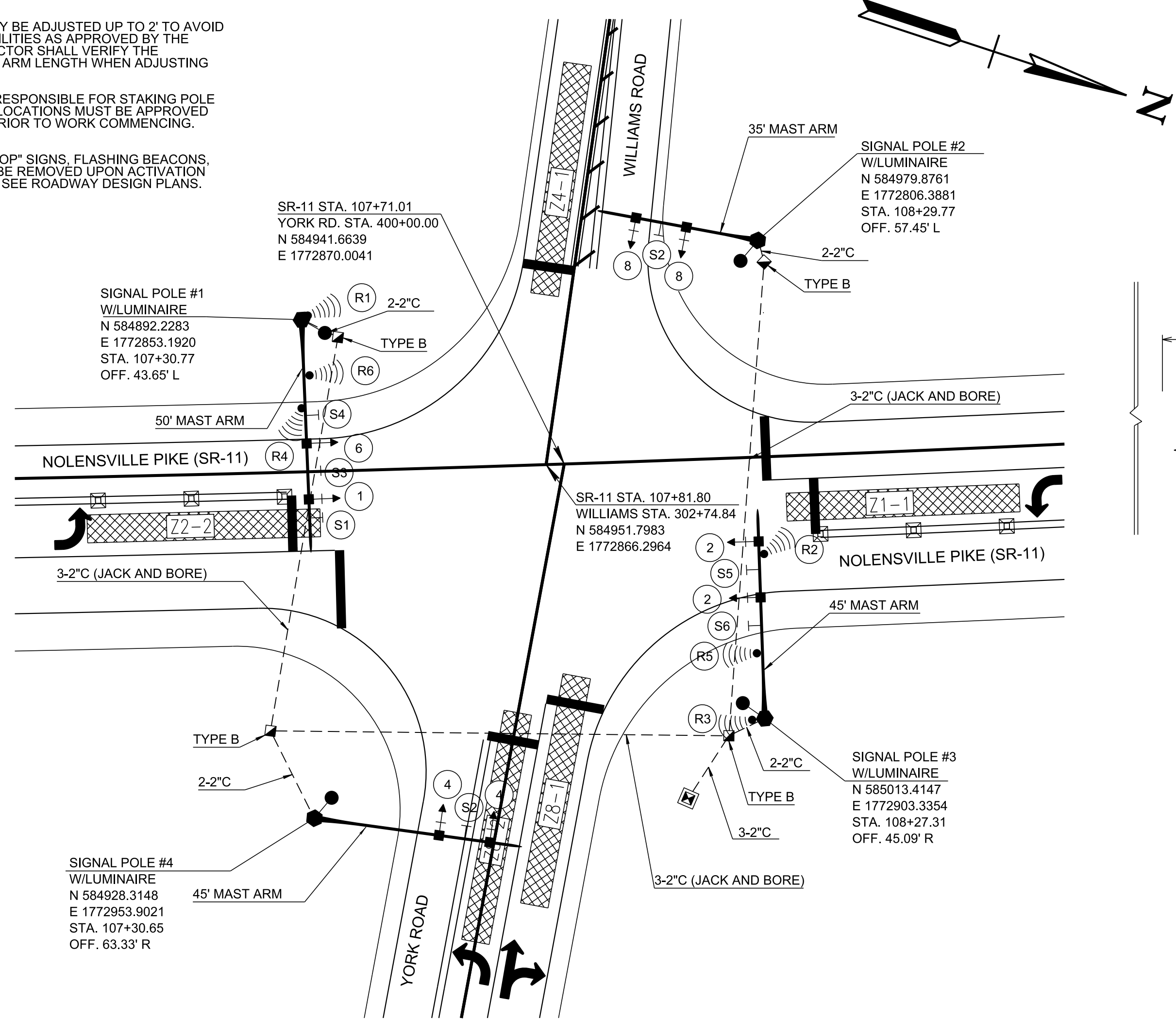
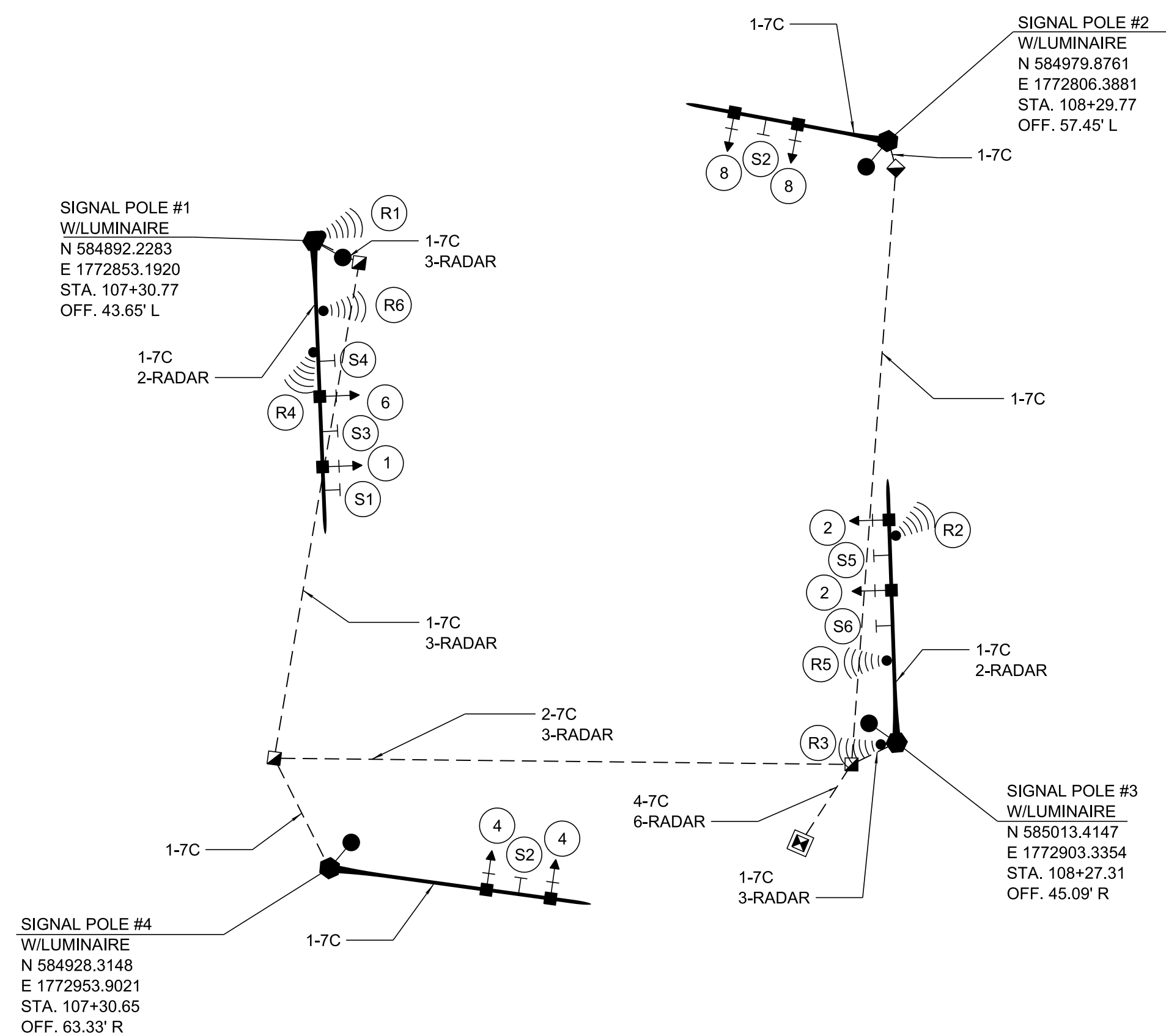
PERMITTED, BUT NOT PROTECTED
PROTECTED

- NOTES:
- 1) SIGNAL POLES MAY BE ADJUSTED UP TO 2' TO AVOID CONFLICTS WITH UTILITIES AS APPROVED BY THE ENGINEER. CONTRACTOR SHALL VERIFY THE APPROPRIATE MAST ARM LENGTH WHEN ADJUSTING SIGNAL POLES.
 - 2) CONTRACTOR IS RESPONSIBLE FOR STAKING POLE LOCATIONS. THESE LOCATIONS MUST BE APPROVED BY THE ENGINEER PRIOR TO WORK COMMENCING.
 - 3) EXISTING R1-1 "STOP" SIGNS, FLASHING BEACONS, AND SPAN WIRE TO BE REMOVED UPON ACTIVATION OF TRAFFIC SIGNAL. SEE ROADWAY DESIGN PLANS.

OVERHEAD STREET NAME SIGNS (SNS)



WIRING DIAGRAM

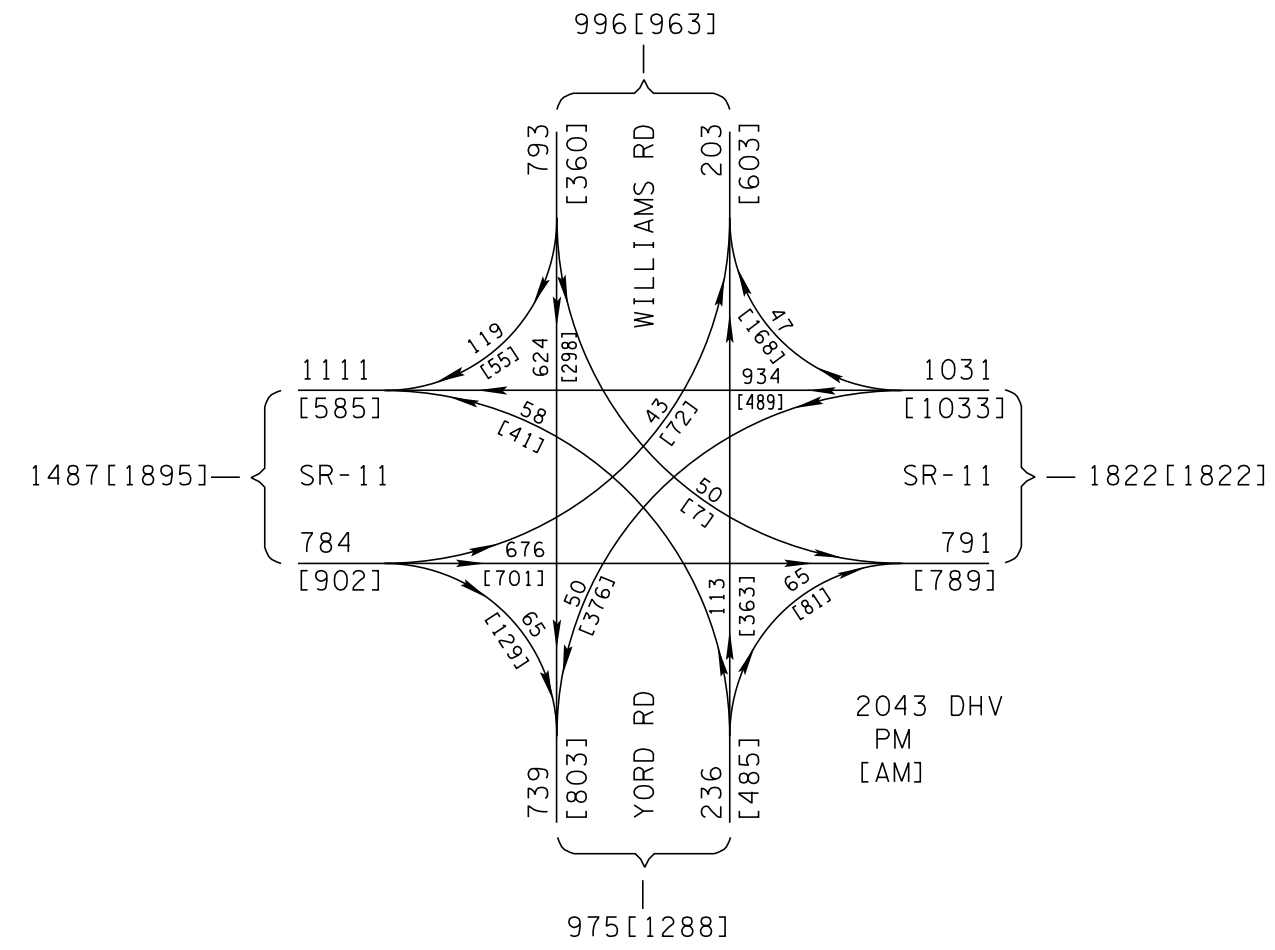


LEGEND



DETECTION ZONE ASSIGNMENT CHART

| ZONE ASSIGNMENT | SIZE | DETECTION UNIT | MODE | DISTANCE FROM STOP LINE |
|-----------------|--------|----------------|----------|-------------------------|
| Z1-1 | 6'X50' | (R2) | PRESENCE | -5' |
| Z2-1 | 6'X6' | (R5) | PULSE | 325' |
| Z2-2 | 6'X50' | (R4) | PRESENCE | -5' |
| Z4-1 | 6'X50' | (R1) | PRESENCE | -5' |
| Z6-1 | 6'X6' | (R6) | PULSE | 325' |
| Z8-1 | 6'X50' | (R3) | PRESENCE | -5' |
| Z8-2 | 6'X50' | (R3) | PRESENCE | -5' |



SIGNAL SUPPORT POLE DATA

| POLE NO. | STATION | OFFSET | NORTHING | EASTING | GRND ELEV AT POLE | ARM LENGTH | SH1 | SH2 | SNS1 | SNS2 | S1 | R1 | R2 | R3 |
|----------|-----------|----------|-------------|--------------|-------------------|------------|-------|-------|-------|-------|-------|------|-------|-------|
| 1 | 107+30.77 | 43.65' L | 584892.2283 | 1772853.1920 | 683.04 | 50' | 26.5' | 38.5' | 20.5' | 32.0' | 42.0' | 0.0' | 12.0' | 18.0' |
| 2 | 108+29.77 | 57.45' L | 584979.8761 | 1772806.3881 | 677.61 | 35' | 15.5' | 26.5' | 21.0' | - | - | - | - | - |
| 3 | 108+27.31 | 45.09' R | 585013.4147 | 1772903.3354 | 679.63 | 45' | 26.0' | 38.0' | 20.0' | 32.0' | - | 0.0' | 14.0' | 35.0' |
| 4 | 107+30.65 | 63.33' R | 584928.3148 | 1772953.9021 | 682.81 | 45' | 27.0' | 38.0' | 32.0' | - | - | - | - | - |

* CONTRACTOR SHALL VERIFY ALL POLE ATTACHMENT HEIGHTS AND OVERHEAD UTILITY CLEARANCES.

R.O.W. PLANS

SEALED BY

STATE OF TENNESSEE DEPARTMENT OF TRANSPORTATION

SIGNAL PLANS

STA. 104+00 TO STA. 110+00
SCALE: 1"= 20'

9/15/2022 2:33:38 PM M:\2020\2002060_05 (TDOT SR-11 S. of Sanford Rd. SD)\DesignBaseDrawings\SIG-1.sht

APPENDIX F
CAPACITY ANALYSES

EXISTING CONDITIONS
CAPACITY ANALYSES

Nolensville Town Center

Vistro File: M:\...\Nolensville Town Center - Draft 4.vistro

Scenario 1 Existing AM

Report File: M:\...\1. Existing - AM.pdf

11/27/2023

Intersection Analysis Summary

| ID | Intersection Name | Control Type | Method | Worst Mvmt | V/C | Delay (s/veh) | LOS |
|----|---|--------------|-----------------|------------|-------|---------------|-----|
| 1 | Nolensville Road and Clovercroft Road/Rocky Fork Road | Signalized | HCM 7th Edition | EB Thru | 0.615 | 28.9 | C |
| 2 | Nolensville Road and Summerlyn Drive | Signalized | HCM 7th Edition | WB Right | 0.614 | 19.9 | B |
| 3 | Nolensville Road and Williams Road/York Road | Signalized | HCM 7th Edition | WB Thru | 0.663 | 18.9 | B |
| 4 | Clovercroft Road and Williams Road | Two-way stop | HCM 7th Edition | WB Left | 0.830 | 59.1 | F |

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report

Intersection 1: Nolensville Road and Clovercroft Road/Rocky Fork Road

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Signalized | Delay (sec / veh): | 28.9 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.615 |

Intersection Setup

| Name | Nolensville Road | | | Nolensville Toad | | | Clovercroft Road | | | Rocky Fork Road | | |
|------------------------------|------------------|--------|--------|------------------|--------|--------|------------------|--------|-------|-----------------|--------|--------|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 |
| Entry Pocket Length [ft] | 200.00 | 100.00 | 100.00 | 175.00 | 100.00 | 100.00 | 100.00 | 100.00 | 85.00 | 175.00 | 100.00 | 185.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 35.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | No | | | No | | | No | | | No | | |

Volumes

| Name | Nolensville Road | | | Nolensville Toad | | | Clovercroft Road | | | Rocky Fork Road | | |
|---|------------------|--------|--------|------------------|--------|--------|------------------|--------|--------|-----------------|--------|--------|
| Base Volume Input [veh/h] | 82 | 447 | 79 | 78 | 385 | 37 | 93 | 139 | 100 | 133 | 293 | 153 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Proportion of CAVs [%] | 0.00 | | | | | | | | | | | |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 82 | 447 | 79 | 78 | 385 | 37 | 93 | 139 | 100 | 133 | 293 | 153 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 22 | 121 | 21 | 21 | 105 | 10 | 25 | 38 | 27 | 36 | 80 | 42 |
| Total Analysis Volume [veh/h] | 89 | 486 | 86 | 85 | 418 | 40 | 101 | 151 | 109 | 145 | 318 | 166 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

Intersection Settings

| | |
|---------------------------|---------------------------------|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 80 |
| Active Pattern | Pattern 1 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | Beginning of First Yellow |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

Phasing & Timing

| Control Type | ProtPer | Permiss | Permiss | ProtPer | Permiss | Permiss | ProtPer | Permiss | Permiss | ProtPer | Permiss | Permiss |
|------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Signal Group | 5 | 2 | 0 | 1 | 6 | 0 | 7 | 4 | 0 | 3 | 8 | 10 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 10 | 0 | 5 | 10 | 0 | 5 | 7 | 0 | 5 | 7 | 0 |
| Maximum Green [s] | 15 | 60 | 0 | 15 | 60 | 0 | 15 | 30 | 0 | 15 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Split [s] | 13 | 15 | 0 | 13 | 15 | 0 | 13 | 39 | 0 | 13 | 39 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Clearance [s] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Minimum Recall | No | Yes | | No | Yes | | No | No | | No | No | |
| Maximum Recall | No | No | | No | No | | No | No | | No | No | |
| Pedestrian Recall | No | No | | No | No | | No | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 50.0 | 0.0 | 0.0 | 50.0 | 0.0 | 0.0 | 50.0 | 50.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

Lane Group Calculations

| Lane Group | L | C | L | C | L | C | L | C | R |
|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| C, Cycle Length [s] | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 |
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 0.00 | 3.00 | 0.00 | 3.00 | 0.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 42 | 33 | 42 | 33 | 28 | 16 | 28 | 18 | 18 |
| g / C, Green / Cycle | 0.53 | 0.41 | 0.53 | 0.41 | 0.35 | 0.20 | 0.35 | 0.23 | 0.23 |
| (v / s)_i Volume / Saturation Flow Rate | 0.09 | 0.35 | 0.09 | 0.28 | 0.10 | 0.17 | 0.12 | 0.19 | 0.12 |
| s, saturation flow rate [veh/h] | 974 | 1639 | 903 | 1657 | 1043 | 1567 | 1217 | 1683 | 1431 |
| c, Capacity [veh/h] | 442 | 670 | 359 | 676 | 355 | 317 | 408 | 379 | 323 |
| d1, Uniform Delay [s] | 12.08 | 21.49 | 14.27 | 19.39 | 19.37 | 30.53 | 19.58 | 29.59 | 27.15 |
| k, delay calibration | 0.50 | 0.50 | 0.11 | 0.50 | 0.11 | 0.11 | 0.13 | 0.11 | 0.11 |
| l, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 1.02 | 13.10 | 0.34 | 5.40 | 0.44 | 5.29 | 0.64 | 4.97 | 1.27 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | | | | | | | |
|---------------------------------------|-------|--------|-------|--------|-------|--------|-------|--------|--------|
| X, volume / capacity | 0.20 | 0.85 | 0.24 | 0.68 | 0.28 | 0.82 | 0.36 | 0.84 | 0.51 |
| d, Delay for Lane Group [s/veh] | 13.10 | 34.58 | 14.61 | 24.79 | 19.80 | 35.82 | 20.22 | 34.56 | 28.42 |
| Lane Group LOS | B | C | B | C | B | D | C | C | C |
| Critical Lane Group | No | Yes | Yes | No | Yes | No | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | 0.85 | 11.44 | 0.72 | 7.51 | 1.29 | 5.10 | 1.88 | 6.05 | 2.76 |
| 50th-Percentile Queue Length [ft/ln] | 21.21 | 285.92 | 18.04 | 187.72 | 32.23 | 127.44 | 46.99 | 151.36 | 69.07 |
| 95th-Percentile Queue Length [veh/ln] | 1.53 | 16.98 | 1.30 | 12.00 | 2.32 | 8.80 | 3.38 | 10.09 | 4.97 |
| 95th-Percentile Queue Length [ft/ln] | 38.18 | 424.58 | 32.48 | 300.06 | 58.02 | 220.01 | 84.58 | 252.24 | 124.33 |

Movement, Approach, & Intersection Results

| | | | | | | | | | | | | |
|---------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| d_M, Delay for Movement [s/veh] | 13.10 | 34.58 | 34.58 | 14.61 | 24.79 | 24.79 | 19.80 | 35.82 | 35.82 | 20.22 | 34.56 | 28.42 |
| Movement LOS | B | C | C | B | C | C | B | D | D | C | C | C |
| d_A, Approach Delay [s/veh] | 31.69 | | | 23.19 | | | 31.34 | | | 29.63 | | |
| Approach LOS | C | | | C | | | C | | | C | | |
| d_I, Intersection Delay [s/veh] | 28.94 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.615 | | | | | | | | | | | |

Other Modes

| | | | | | | | | | | | | |
|--|-------|--|--|-------|--|--|-------|--|--|-------|--|--|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | | |
| M_corner, Corner Circulation Area [ft ² /ped] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| M_CW, Crosswalk Circulation Area [ft ² /ped] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| d_p, Pedestrian Delay [s] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| I_p,int, Pedestrian LOS Score for Intersectio | 0.000 | | | 0.000 | | | 0.000 | | | 0.000 | | |
| Crosswalk LOS | F | | | F | | | F | | | F | | |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | | | 2000 | | | 2000 | | | 2000 | | |
| c_b, Capacity of the bicycle lane [bicycles/h] | 250 | | | 250 | | | 850 | | | 850 | | |
| d_b, Bicycle Delay [s] | 30.63 | | | 30.63 | | | 13.23 | | | 13.23 | | |
| I_b,int, Bicycle LOS Score for Intersection | 2.650 | | | 2.456 | | | 2.155 | | | 2.597 | | |
| Bicycle LOS | B | | | B | | | B | | | B | | |

Sequence

| | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



Intersection Level Of Service Report
Intersection 2: Nolensville Road and Summerlyn Drive

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Signalized | Delay (sec / veh): | 19.9 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.614 |

Intersection Setup

| Name | Nolensville Road | | Nolensville Road | | Summerlyn Drive | |
|------------------------------|------------------|--------|------------------|--------|-----------------|--------|
| Approach | Northbound | | Southbound | | Westbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Thru | Right | Left | Thru | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 1 | 0 | 1 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 250.00 | 100.00 | 125.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 40.00 | | 40.00 | | 25.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Curb Present | No | | No | | No | |
| Crosswalk | No | | No | | No | |

Volumes

| Name | Nolensville Road | | Nolensville Road | | Summerlyn Drive | |
|---|------------------|--------|------------------|--------|-----------------|--------|
| | | | | | | |
| Base Volume Input [veh/h] | 389 | 10 | 382 | 307 | 83 | 290 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Proportion of CAVs [%] | 0.00 | | | | | |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 389 | 10 | 382 | 307 | 83 | 290 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 106 | 3 | 104 | 83 | 23 | 79 |
| Total Analysis Volume [veh/h] | 423 | 11 | 415 | 334 | 90 | 315 |
| Presence of On-Street Parking | No | No | No | No | No | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | 0 | | 0 | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | 0 | | 0 | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | 0 | | 0 | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | 0 | | 0 | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |
| Bicycle Volume [bicycles/h] | 0 | | 0 | | 0 | |

Intersection Settings

| | |
|---------------------------|---------------------------------|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 80 |
| Active Pattern | Pattern 1 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | Beginning of First Yellow |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

Phasing & Timing

| Control Type | Permissive | Permissive | ProtPerm | Permissive | Permissive | Permissive |
|------------------------------|------------|------------|----------|------------|------------|------------|
| Signal Group | 2 | 0 | 1 | 6 | 8 | 1 |
| Auxiliary Signal Groups | | | | | | |
| Lead / Lag | - | - | Lead | - | Lead | - |
| Minimum Green [s] | 10 | 0 | 5 | 10 | 7 | 5 |
| Maximum Green [s] | 60 | 0 | 15 | 60 | 30 | 15 |
| Amber [s] | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| All red [s] | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| Split [s] | 16 | 0 | 13 | 29 | 51 | 13 |
| Vehicle Extension [s] | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Walk [s] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Clearance [s] | 0 | 0 | 0 | 0 | 0 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | No | | | No | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| I2, Clearance Lost Time [s] | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Minimum Recall | Yes | | No | Yes | No | |
| Maximum Recall | No | | No | No | No | |
| Pedestrian Recall | No | | No | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 50.0 | 0.0 | 50.0 | 50.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

Lane Group Calculations

| Lane Group | C | L | C | L | R |
|---|-------|-------|------|-------|-------|
| C, Cycle Length [s] | 80 | 80 | 80 | 80 | 80 |
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 0.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 36 | 49 | 49 | 21 | 21 |
| g / C, Green / Cycle | 0.45 | 0.62 | 0.62 | 0.26 | 0.26 |
| (v / s)_i Volume / Saturation Flow Rate | 0.26 | 0.40 | 0.20 | 0.06 | 0.22 |
| s, saturation flow rate [veh/h] | 1675 | 1025 | 1683 | 1603 | 1431 |
| c, Capacity [veh/h] | 757 | 577 | 1034 | 418 | 373 |
| d1, Uniform Delay [s] | 16.21 | 11.53 | 7.42 | 23.18 | 28.05 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.11 | 0.11 |
| l, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 3.14 | 7.53 | 0.83 | 0.26 | 5.30 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | | | |
|---------------------------------------|--------|--------|--------|-------|--------|
| X, volume / capacity | 0.57 | 0.72 | 0.32 | 0.22 | 0.85 |
| d, Delay for Lane Group [s/veh] | 19.35 | 19.07 | 8.24 | 23.43 | 33.35 |
| Lane Group LOS | B | B | A | C | C |
| Critical Lane Group | Yes | Yes | No | No | Yes |
| 50th-Percentile Queue Length [veh/ln] | 5.82 | 4.12 | 2.41 | 1.35 | 6.12 |
| 50th-Percentile Queue Length [ft/ln] | 145.55 | 103.01 | 60.13 | 33.65 | 153.11 |
| 95th-Percentile Queue Length [veh/ln] | 9.78 | 7.42 | 4.33 | 2.42 | 10.18 |
| 95th-Percentile Queue Length [ft/ln] | 244.47 | 185.42 | 108.23 | 60.56 | 254.57 |

Movement, Approach, & Intersection Results

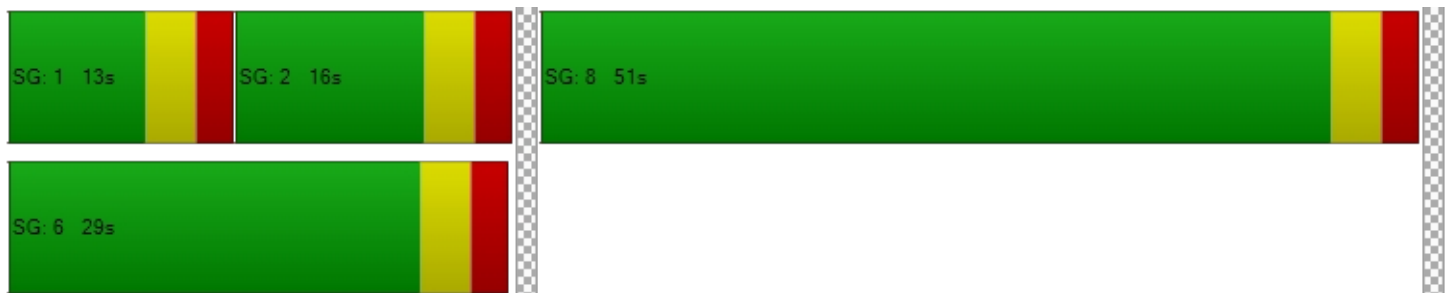
| | | | | | | |
|---------------------------------|-------|-------|-------|------|-------|-------|
| d_M, Delay for Movement [s/veh] | 19.35 | 19.35 | 19.07 | 8.24 | 23.43 | 33.35 |
| Movement LOS | B | B | B | A | C | C |
| d_A, Approach Delay [s/veh] | 19.35 | | 14.24 | | 31.15 | |
| Approach LOS | B | | B | | C | |
| d_I, Intersection Delay [s/veh] | 19.95 | | | | | |
| Intersection LOS | B | | | | | |
| Intersection V/C | 0.614 | | | | | |

Other Modes

| | | | |
|--|-------|-------|-------|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 0.00 | 0.00 |
| I_p,int, Pedestrian LOS Score for Intersectio | 0.000 | 0.000 | 0.000 |
| Crosswalk LOS | F | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 275 | 600 | 1150 |
| d_b, Bicycle Delay [s] | 29.76 | 19.60 | 7.23 |
| I_b,int, Bicycle LOS Score for Intersection | 2.276 | 2.795 | 1.560 |
| Bicycle LOS | B | C | A |

Sequence

| | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



Intersection Level Of Service Report

Intersection 3: Nolensville Road and Williams Road/York Road

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Signalized | Delay (sec / veh): | 18.9 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.663 |

Intersection Setup

| Name | Nolensville Road | | | Nolensville Road | | | Williams Road | | | York Road | | |
|------------------------------|------------------|--------|--------|------------------|--------|--------|---------------|--------|--------|-----------|--------|--------|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | + | | | + | | | + | | | + | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 40.00 | | | 40.00 | | | 45.00 | | | 35.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | No | | | No | | | No | | | No | | |

Volumes

| Name | Nolensville Road | | | Nolensville Road | | | Williams Road | | | York Road | | |
|---|------------------|--------|--------|------------------|--------|--------|---------------|--------|--------|-----------|--------|--------|
| Base Volume Input [veh/h] | 58 | 353 | 111 | 98 | 248 | 53 | 2 | 165 | 19 | 38 | 189 | 33 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Proportion of CAVs [%] | 0.00 | | | | | | | | | | | |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 58 | 353 | 111 | 98 | 248 | 53 | 2 | 165 | 19 | 38 | 189 | 33 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 16 | 96 | 30 | 27 | 67 | 14 | 1 | 45 | 5 | 10 | 51 | 9 |
| Total Analysis Volume [veh/h] | 63 | 384 | 121 | 107 | 270 | 58 | 2 | 179 | 21 | 41 | 205 | 36 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

Intersection Settings

| | |
|---------------------------|---------------------------------|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 80 |
| Active Pattern | Pattern 1 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | Beginning of First Yellow |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

Phasing & Timing

| Control Type | Permiss | Permiss | Permiss | ProtPer | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Signal Group | 0 | 2 | 0 | 1 | 6 | 0 | 0 | 4 | 0 | 0 | 8 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | Lead | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 0 | 10 | 0 | 5 | 10 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Maximum Green [s] | 0 | 60 | 0 | 10 | 60 | 0 | 0 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 32 | 0 | 13 | 45 | 0 | 0 | 35 | 0 | 0 | 35 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Clearance [s] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | Yes | | Yes | Yes | | | No | | | No | |
| Maximum Recall | | No | | No | No | | | No | | | No | |
| Pedestrian Recall | | No | | No | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 50.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

Lane Group Calculations

| Lane Group | C | C | C | C |
|---|-------|------|-------|-------|
| C, Cycle Length [s] | 80 | 80 | 80 | 80 |
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 2.00 | 2.00 |
| l2, Clearance Lost Time [s] | 3.00 | 0.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 44 | 54 | 16 | 16 |
| g / C, Green / Cycle | 0.54 | 0.67 | 0.21 | 0.21 |
| (v / s)_i Volume / Saturation Flow Rate | 0.37 | 0.33 | 0.12 | 0.18 |
| s, saturation flow rate [veh/h] | 1537 | 1313 | 1656 | 1584 |
| c, Capacity [veh/h] | 886 | 975 | 386 | 377 |
| d1, Uniform Delay [s] | 12.87 | 5.97 | 28.75 | 30.54 |
| k, delay calibration | 0.50 | 0.50 | 0.11 | 0.11 |
| l, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 3.55 | 1.48 | 1.10 | 2.97 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | | |
|---------------------------------------|--------|--------|--------|--------|
| X, volume / capacity | 0.64 | 0.45 | 0.52 | 0.75 |
| d, Delay for Lane Group [s/veh] | 16.42 | 7.45 | 29.85 | 33.51 |
| Lane Group LOS | B | A | C | C |
| Critical Lane Group | Yes | Yes | No | Yes |
| 50th-Percentile Queue Length [veh/ln] | 6.82 | 2.78 | 3.36 | 5.28 |
| 50th-Percentile Queue Length [ft/ln] | 170.41 | 69.62 | 83.97 | 131.96 |
| 95th-Percentile Queue Length [veh/ln] | 11.10 | 5.01 | 6.05 | 9.05 |
| 95th-Percentile Queue Length [ft/ln] | 277.45 | 125.32 | 151.14 | 226.16 |

Movement, Approach, & Intersection Results

| | | | | | | | | | | | | |
|---------------------------------|-------|-------|-------|------|------|------|-------|-------|-------|-------|-------|-------|
| d_M, Delay for Movement [s/veh] | 16.42 | 16.42 | 16.42 | 7.45 | 7.45 | 7.45 | 29.85 | 29.85 | 29.85 | 33.51 | 33.51 | 33.51 |
| Movement LOS | B | B | B | A | A | A | C | C | C | C | C | C |
| d_A, Approach Delay [s/veh] | 16.42 | | | 7.45 | | | 29.85 | | | 33.51 | | |
| Approach LOS | B | | | A | | | C | | | C | | |
| d_I, Intersection Delay [s/veh] | 18.86 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.663 | | | | | | | | | | | |

Other Modes

| | | | | |
|--|-------|-------|-------|-------|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 0.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 |
| I_p,int, Pedestrian LOS Score for Intersectio | 0.000 | 0.000 | 0.000 | 0.000 |
| Crosswalk LOS | F | F | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 675 | 1000 | 750 | 750 |
| d_b, Bicycle Delay [s] | 17.56 | 10.00 | 15.63 | 15.63 |
| I_b,int, Bicycle LOS Score for Intersection | 2.497 | 2.277 | 1.893 | 2.025 |
| Bicycle LOS | B | B | A | B |

Sequence

| | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



Intersection Level Of Service Report
Intersection 4: Clovercroft Road and Williams Road

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Two-way stop | Delay (sec / veh): | 59.1 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.830 |

Intersection Setup

| Name | Clovercroft Road | | Clovercroft Road | | Williams Road | |
|------------------------------|------------------|--------|------------------|--------|---------------|--------|
| Approach | Northbound | | Southbound | | Westbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Thru | Right | Left | Thru | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 40.00 | | 30.00 | | 45.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | No | | No | | No | |

Volumes

| Name | Clovercroft Road | | Clovercroft Road | | Williams Road | |
|---|------------------|--------|------------------|--------|---------------|--------|
| Base Volume Input [veh/h] | 168 | 153 | 21 | 478 | 252 | 42 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 168 | 153 | 21 | 478 | 252 | 42 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 46 | 42 | 6 | 130 | 68 | 11 |
| Total Analysis Volume [veh/h] | 183 | 166 | 23 | 520 | 274 | 46 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

Intersection Settings

| | | | |
|------------------------------------|------|------|------|
| Priority Scheme | Free | Free | Stop |
| Flared Lane | | | No |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | |
|---------------------------------------|-------|------|------|------|--------|--------|
| V/C, Movement V/C Ratio | 0.00 | 0.00 | 0.02 | 0.01 | 0.83 | 0.06 |
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 8.00 | 0.00 | 59.11 | 52.86 |
| Movement LOS | A | A | A | A | F | F |
| 95th-Percentile Queue Length [veh/ln] | 0.00 | 0.00 | 0.04 | 0.04 | 8.75 | 8.75 |
| 95th-Percentile Queue Length [ft/ln] | 0.00 | 0.00 | 0.97 | 0.97 | 218.87 | 218.87 |
| d_A, Approach Delay [s/veh] | 0.00 | | 0.34 | | 58.22 | |
| Approach LOS | A | | A | | F | |
| d_I, Intersection Delay [s/veh] | 15.52 | | | | | |
| Intersection LOS | F | | | | | |

Nolensville Town Center

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Scenario 1 Existing AM

Report File: M:\...\1. Existing - AM.pdf

11/27/2023

Turning Movement Volume: Summary

| ID | Intersection Name | Northbound | | | Southbound | | | Eastbound | | | Westbound | | | Total Volume |
|----|---|------------|------|-------|------------|------|-------|-----------|------|-------|-----------|------|-------|--------------|
| | | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | |
| 1 | Nolensville Road and Clovercroft Road/Rocky Fork Road | 82 | 447 | 79 | 78 | 385 | 37 | 93 | 139 | 100 | 133 | 293 | 153 | 2019 |

| ID | Intersection Name | Northbound | | Southbound | | Westbound | | Total Volume |
|----|--------------------------------------|------------|-------|------------|------|-----------|-------|--------------|
| | | Thru | Right | Left | Thru | Left | Right | |
| 2 | Nolensville Road and Summerlyn Drive | 389 | 10 | 382 | 307 | 83 | 290 | 1461 |

| ID | Intersection Name | Northbound | | | Southbound | | | Eastbound | | | Westbound | | | Total Volume |
|----|--|------------|------|-------|------------|------|-------|-----------|------|-------|-----------|------|-------|--------------|
| | | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | |
| 3 | Nolensville Road and Williams Road/York Road | 58 | 353 | 111 | 98 | 248 | 53 | 2 | 165 | 19 | 38 | 189 | 33 | 1367 |

| ID | Intersection Name | Northbound | | Southbound | | Westbound | | Total Volume |
|----|------------------------------------|------------|-------|------------|------|-----------|-------|--------------|
| | | Thru | Right | Left | Thru | Left | Right | |
| 4 | Clovercroft Road and Williams Road | 168 | 153 | 21 | 478 | 252 | 42 | 1114 |

Nolensville Town Center

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Scenario 2 Existing PM

Report File: M:\...\2. Existing - PM.pdf

11/27/2023

Intersection Analysis Summary

| ID | Intersection Name | Control Type | Method | Worst Mvmt | V/C | Delay (s/veh) | LOS |
|----|---|--------------|-----------------|------------|-------|---------------|-----|
| 1 | Nolensville Road and Clovercroft Road/Rocky Fork Road | Signalized | HCM 7th Edition | NB Thru | 0.721 | 37.1 | D |
| 2 | Nolensville Road and Summerlyn Drive | Signalized | HCM 7th Edition | WB Right | 0.523 | 17.9 | B |
| 3 | Nolensville Road and Williams Road/York Road | Signalized | HCM 7th Edition | EB Thru | 0.646 | 20.6 | C |
| 4 | Clovercroft Road and Williams Road | Two-way stop | HCM 7th Edition | WB Left | 0.536 | 32.5 | D |

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report

Intersection 1: Nolensville Road and Clovercroft Road/Rocky Fork Road

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Signalized | Delay (sec / veh): | 37.1 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.721 |

Intersection Setup

| Name | Nolensville Road | | | Nolensville Toad | | | Clovercroft Road | | | Rocky Fork Road | | |
|------------------------------|------------------|--------|--------|------------------|--------|--------|------------------|--------|-------|-----------------|--------|--------|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 |
| Entry Pocket Length [ft] | 200.00 | 100.00 | 100.00 | 175.00 | 100.00 | 100.00 | 100.00 | 100.00 | 85.00 | 175.00 | 100.00 | 185.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 35.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | No | | | No | | | No | | | No | | |

Volumes

| Name | Nolensville Road | | | Nolensville Toad | | | Clovercroft Road | | | Rocky Fork Road | | |
|---|------------------|--------|--------|------------------|--------|--------|------------------|--------|--------|-----------------|--------|--------|
| Base Volume Input [veh/h] | 49 | 399 | 75 | 241 | 453 | 21 | 111 | 262 | 28 | 208 | 199 | 157 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Proportion of CAVs [%] | 0.00 | | | | | | | | | | | |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 49 | 399 | 75 | 241 | 453 | 21 | 111 | 262 | 28 | 208 | 199 | 157 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 13 | 108 | 20 | 65 | 123 | 6 | 30 | 71 | 8 | 57 | 54 | 43 |
| Total Analysis Volume [veh/h] | 53 | 434 | 82 | 262 | 492 | 23 | 121 | 285 | 30 | 226 | 216 | 171 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

Intersection Settings

| | |
|---------------------------|---------------------------------|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 90 |
| Active Pattern | Pattern 1 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | Beginning of First Yellow |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

Phasing & Timing

| Control Type | ProtPer | Permiss | Permiss | ProtPer | Permiss | Permiss | ProtPer | Permiss | Permiss | ProtPer | Permiss | Permiss |
|------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Signal Group | 5 | 2 | 0 | 1 | 6 | 0 | 7 | 4 | 0 | 3 | 8 | 10 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 10 | 0 | 5 | 10 | 0 | 5 | 7 | 0 | 5 | 7 | 0 |
| Maximum Green [s] | 15 | 60 | 0 | 15 | 60 | 0 | 15 | 30 | 0 | 15 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Split [s] | 13 | 32 | 0 | 19 | 38 | 0 | 13 | 22 | 0 | 17 | 26 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Clearance [s] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Minimum Recall | No | Yes | | No | Yes | | No | No | | No | No | |
| Maximum Recall | No | No | | No | No | | No | No | | No | No | |
| Pedestrian Recall | No | No | | No | No | | No | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 50.0 | 0.0 | 0.0 | 50.0 | 0.0 | 0.0 | 50.0 | 0.0 | 0.0 | 50.0 | 50.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

Lane Group Calculations

| Lane Group | L | C | L | C | L | C | L | C | R |
|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| C, Cycle Length [s] | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 |
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 0.00 | 3.00 | 0.00 | 3.00 | 0.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 46 | 30 | 46 | 37 | 34 | 18 | 34 | 23 | 23 |
| g / C, Green / Cycle | 0.51 | 0.34 | 0.51 | 0.41 | 0.38 | 0.20 | 0.38 | 0.25 | 0.25 |
| (v / s)_i Volume / Saturation Flow Rate | 0.06 | 0.32 | 0.25 | 0.31 | 0.11 | 0.19 | 0.18 | 0.13 | 0.12 |
| s, saturation flow rate [veh/h] | 916 | 1637 | 1041 | 1670 | 1092 | 1655 | 1230 | 1683 | 1431 |
| c, Capacity [veh/h] | 372 | 549 | 403 | 692 | 425 | 324 | 396 | 421 | 358 |
| d1, Uniform Delay [s] | 14.49 | 29.06 | 18.20 | 22.30 | 19.59 | 35.97 | 22.36 | 29.03 | 28.74 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 | 0.12 | 0.44 | 0.11 | 0.11 |
| l, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.80 | 26.25 | 7.87 | 7.11 | 0.36 | 19.20 | 5.13 | 0.97 | 0.99 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | | | | | | | |
|---------------------------------------|-------|--------|--------|--------|-------|--------|--------|--------|--------|
| X, volume / capacity | 0.14 | 0.94 | 0.65 | 0.74 | 0.28 | 0.97 | 0.57 | 0.51 | 0.48 |
| d, Delay for Lane Group [s/veh] | 15.29 | 55.31 | 26.07 | 29.41 | 19.96 | 55.17 | 27.49 | 30.00 | 29.73 |
| Lane Group LOS | B | E | C | C | B | E | C | C | C |
| Critical Lane Group | No | Yes | Yes | No | No | Yes | Yes | No | No |
| 50th-Percentile Queue Length [veh/ln] | 0.59 | 14.35 | 3.80 | 10.11 | 1.70 | 8.42 | 3.84 | 3.98 | 3.13 |
| 50th-Percentile Queue Length [ft/ln] | 14.84 | 358.82 | 94.99 | 252.81 | 42.61 | 210.54 | 96.12 | 99.58 | 78.29 |
| 95th-Percentile Queue Length [veh/ln] | 1.07 | 20.57 | 6.84 | 15.33 | 3.07 | 13.18 | 6.92 | 7.17 | 5.64 |
| 95th-Percentile Queue Length [ft/ln] | 26.70 | 514.15 | 170.98 | 383.18 | 76.69 | 329.52 | 173.01 | 179.25 | 140.92 |

Movement, Approach, & Intersection Results

| | | | | | | | | | | | | |
|---------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| d_M, Delay for Movement [s/veh] | 15.29 | 55.31 | 55.31 | 26.07 | 29.41 | 29.41 | 19.96 | 55.17 | 55.17 | 27.49 | 30.00 | 29.73 |
| Movement LOS | B | E | E | C | C | C | B | E | E | C | C | C |
| d_A, Approach Delay [s/veh] | 51.58 | | | 28.28 | | | 45.39 | | | 29.00 | | |
| Approach LOS | D | | | C | | | D | | | C | | |
| d_I, Intersection Delay [s/veh] | 37.12 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |
| Intersection V/C | 0.721 | | | | | | | | | | | |

Other Modes

| | | | | | | | | | | | | |
|--|-------|--|--|-------|--|--|-------|--|--|-------|--|--|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | | |
| M_corner, Corner Circulation Area [ft ² /ped] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| M_CW, Crosswalk Circulation Area [ft ² /ped] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| d_p, Pedestrian Delay [s] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| I_p,int, Pedestrian LOS Score for Intersectio | 0.000 | | | 0.000 | | | 0.000 | | | 0.000 | | |
| Crosswalk LOS | F | | | F | | | F | | | F | | |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | | | 2000 | | | 2000 | | | 2000 | | |
| c_b, Capacity of the bicycle lane [bicycles/h] | 600 | | | 733 | | | 378 | | | 467 | | |
| d_b, Bicycle Delay [s] | 22.05 | | | 18.05 | | | 29.61 | | | 26.45 | | |
| I_b,int, Bicycle LOS Score for Intersection | 2.498 | | | 2.842 | | | 2.279 | | | 2.571 | | |
| Bicycle LOS | B | | | C | | | B | | | B | | |

Sequence

| | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



Intersection Level Of Service Report
Intersection 2: Nolensville Road and Summerlyn Drive

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Signalized | Delay (sec / veh): | 17.9 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.523 |

Intersection Setup

| Name | Nolensville Road | | Nolensville Road | | Summerlyn Drive | |
|------------------------------|------------------|--------|------------------|--------|-----------------|--------|
| Approach | Northbound | | Southbound | | Westbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Thru | Right | Left | Thru | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 1 | 0 | 1 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 250.00 | 100.00 | 125.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 40.00 | | 40.00 | | 25.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Curb Present | No | | No | | No | |
| Crosswalk | No | | No | | No | |

Volumes

| Name | Nolensville Road | | Nolensville Road | | Summerlyn Drive | |
|---|------------------|--------|------------------|--------|-----------------|--------|
| | | | | | | |
| Base Volume Input [veh/h] | 357 | 14 | 224 | 479 | 35 | 277 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Proportion of CAVs [%] | 0.00 | | | | | |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 357 | 14 | 224 | 479 | 35 | 277 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 97 | 4 | 61 | 130 | 10 | 75 |
| Total Analysis Volume [veh/h] | 388 | 15 | 243 | 521 | 38 | 301 |
| Presence of On-Street Parking | No | No | No | No | No | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | 0 | | 0 | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | 0 | | 0 | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | 0 | | 0 | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | 0 | | 0 | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |
| Bicycle Volume [bicycles/h] | 0 | | 0 | | 0 | |

Intersection Settings

| | |
|---------------------------|---------------------------------|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 90 |
| Active Pattern | Pattern 1 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | Beginning of First Yellow |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

Phasing & Timing

| Control Type | Permissive | Permissive | ProtPerm | Permissive | Permissive | Permissive |
|------------------------------|------------|------------|----------|------------|------------|------------|
| Signal Group | 2 | 0 | 1 | 6 | 8 | 1 |
| Auxiliary Signal Groups | | | | | | |
| Lead / Lag | - | - | Lead | - | Lead | - |
| Minimum Green [s] | 10 | 0 | 5 | 10 | 7 | 5 |
| Maximum Green [s] | 60 | 0 | 15 | 60 | 30 | 15 |
| Amber [s] | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| All red [s] | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| Split [s] | 15 | 0 | 13 | 28 | 62 | 13 |
| Vehicle Extension [s] | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Walk [s] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Clearance [s] | 0 | 0 | 0 | 0 | 0 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | No | | | No | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| I2, Clearance Lost Time [s] | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Minimum Recall | Yes | | No | Yes | No | |
| Maximum Recall | No | | No | No | No | |
| Pedestrian Recall | No | | No | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 50.0 | 0.0 | 50.0 | 50.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

Lane Group Calculations

| Lane Group | C | L | C | L | R |
|---|-------|------|------|-------|-------|
| C, Cycle Length [s] | 90 | 90 | 90 | 90 | 90 |
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 0.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 45 | 58 | 58 | 22 | 22 |
| g / C, Green / Cycle | 0.50 | 0.65 | 0.65 | 0.24 | 0.24 |
| (v / s)_i Volume / Saturation Flow Rate | 0.24 | 0.24 | 0.31 | 0.02 | 0.21 |
| s, saturation flow rate [veh/h] | 1672 | 1017 | 1683 | 1603 | 1431 |
| c, Capacity [veh/h] | 843 | 625 | 1087 | 390 | 348 |
| d1, Uniform Delay [s] | 14.59 | 8.38 | 8.18 | 26.41 | 32.65 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.11 | 0.11 |
| l, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 1.94 | 1.82 | 1.51 | 0.11 | 6.50 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | | | |
|---------------------------------------|--------|-------|--------|-------|--------|
| X, volume / capacity | 0.48 | 0.39 | 0.48 | 0.10 | 0.87 |
| d, Delay for Lane Group [s/veh] | 16.53 | 10.20 | 9.69 | 26.52 | 39.16 |
| Lane Group LOS | B | B | A | C | D |
| Critical Lane Group | Yes | Yes | No | No | Yes |
| 50th-Percentile Queue Length [veh/ln] | 5.26 | 1.89 | 4.62 | 0.64 | 6.83 |
| 50th-Percentile Queue Length [ft/ln] | 131.50 | 47.36 | 115.41 | 16.12 | 170.77 |
| 95th-Percentile Queue Length [veh/ln] | 9.02 | 3.41 | 8.14 | 1.16 | 11.12 |
| 95th-Percentile Queue Length [ft/ln] | 225.53 | 85.25 | 203.50 | 29.02 | 277.92 |

Movement, Approach, & Intersection Results

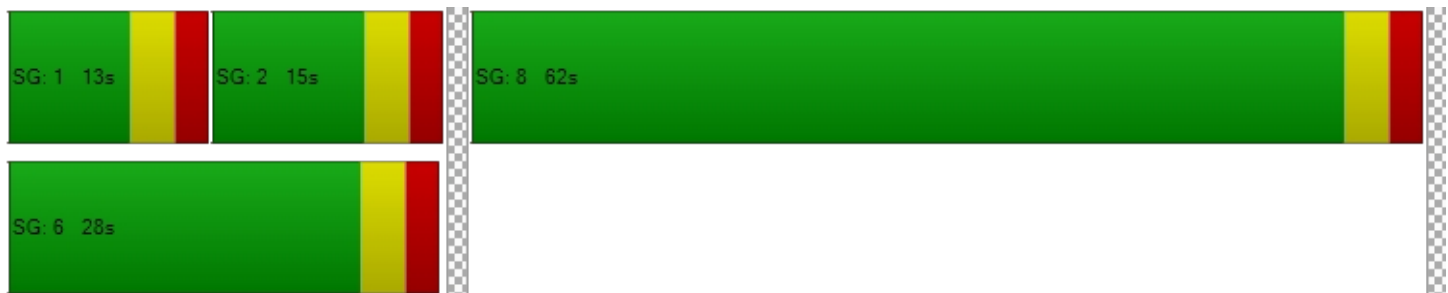
| | | | | | | |
|---------------------------------|-------|-------|-------|------|-------|-------|
| d_M, Delay for Movement [s/veh] | 16.53 | 16.53 | 10.20 | 9.69 | 26.52 | 39.16 |
| Movement LOS | B | B | B | A | C | D |
| d_A, Approach Delay [s/veh] | 16.53 | | 9.85 | | 37.74 | |
| Approach LOS | B | | A | | D | |
| d_I, Intersection Delay [s/veh] | 17.92 | | | | | |
| Intersection LOS | B | | | | | |
| Intersection V/C | 0.523 | | | | | |

Other Modes

| | | | |
|--|-------|-------|-------|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 0.00 | 0.00 |
| I_p,int, Pedestrian LOS Score for Intersectio | 0.000 | 0.000 | 0.000 |
| Crosswalk LOS | F | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 222 | 511 | 1267 |
| d_b, Bicycle Delay [s] | 35.56 | 24.94 | 6.05 |
| I_b,int, Bicycle LOS Score for Intersection | 2.225 | 2.820 | 1.560 |
| Bicycle LOS | B | C | A |

Sequence

| | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



Intersection Level Of Service Report

Intersection 3: Nolensville Road and Williams Road/York Road

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Signalized | Delay (sec / veh): | 20.6 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.646 |

Intersection Setup

| Name | Nolensville Road | | | Nolensville Road | | | Williams Road | | | York Road | | |
|------------------------------|------------------|--------|--------|------------------|--------|--------|---------------|--------|--------|-----------|--------|--------|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | + | | | + | | | + | | | + | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 40.00 | | | 40.00 | | | 45.00 | | | 35.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | No | | | No | | | No | | | No | | |

Volumes

| Name | Nolensville Road | | | Nolensville Road | | | Williams Road | | | York Road | | |
|---|------------------|--------|--------|------------------|--------|--------|---------------|--------|--------|-----------|--------|--------|
| Base Volume Input [veh/h] | 46 | 328 | 69 | 43 | 459 | 14 | 8 | 254 | 68 | 45 | 94 | 35 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Proportion of CAVs [%] | 0.00 | | | | | | | | | | | |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 46 | 328 | 69 | 43 | 459 | 14 | 8 | 254 | 68 | 45 | 94 | 35 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 13 | 89 | 19 | 12 | 125 | 4 | 2 | 69 | 18 | 12 | 26 | 10 |
| Total Analysis Volume [veh/h] | 50 | 357 | 75 | 47 | 499 | 15 | 9 | 276 | 74 | 49 | 102 | 38 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

Intersection Settings

| | |
|---------------------------|---------------------------------|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 90 |
| Active Pattern | Pattern 1 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | Beginning of First Yellow |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

Phasing & Timing

| Control Type | Permiss | Permiss | Permiss | ProtPer | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Signal Group | 0 | 2 | 0 | 1 | 6 | 0 | 0 | 4 | 0 | 0 | 8 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | Lead | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 0 | 10 | 0 | 5 | 10 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Maximum Green [s] | 0 | 60 | 0 | 10 | 60 | 0 | 0 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 22 | 0 | 13 | 35 | 0 | 0 | 55 | 0 | 0 | 55 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Clearance [s] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | Yes | | Yes | Yes | | | No | | | No | |
| Maximum Recall | | No | | No | No | | | No | | | No | |
| Pedestrian Recall | | No | | No | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 50.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

Lane Group Calculations

| Lane Group | C | C | C | C |
|---|-------|------|-------|-------|
| C, Cycle Length [s] | 90 | 90 | 90 | 90 |
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 2.00 | 2.00 |
| l2, Clearance Lost Time [s] | 3.00 | 0.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 48 | 58 | 22 | 22 |
| g / C, Green / Cycle | 0.53 | 0.64 | 0.25 | 0.25 |
| (v / s)_i Volume / Saturation Flow Rate | 0.31 | 0.35 | 0.22 | 0.16 |
| s, saturation flow rate [veh/h] | 1543 | 1612 | 1617 | 1168 |
| c, Capacity [veh/h] | 863 | 1115 | 440 | 339 |
| d1, Uniform Delay [s] | 14.05 | 8.67 | 32.79 | 29.32 |
| k, delay calibration | 0.50 | 0.50 | 0.11 | 0.11 |
| l, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 2.60 | 1.62 | 3.75 | 1.44 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | | |
|---------------------------------------|--------|--------|--------|--------|
| X, volume / capacity | 0.56 | 0.50 | 0.82 | 0.56 |
| d, Delay for Lane Group [s/veh] | 16.65 | 10.30 | 36.55 | 30.76 |
| Lane Group LOS | B | B | D | C |
| Critical Lane Group | Yes | Yes | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | 6.35 | 5.23 | 7.50 | 3.59 |
| 50th-Percentile Queue Length [ft/ln] | 158.72 | 130.85 | 187.55 | 89.67 |
| 95th-Percentile Queue Length [veh/ln] | 10.48 | 8.99 | 11.99 | 6.46 |
| 95th-Percentile Queue Length [ft/ln] | 262.03 | 224.65 | 299.84 | 161.40 |

Movement, Approach, & Intersection Results

| | | | | | | | | | | | | |
|---------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| d_M, Delay for Movement [s/veh] | 16.65 | 16.65 | 16.65 | 10.30 | 10.30 | 10.30 | 36.55 | 36.55 | 36.55 | 30.76 | 30.76 | 30.76 |
| Movement LOS | B | B | B | B | B | B | D | D | D | C | C | C |
| d_A, Approach Delay [s/veh] | 16.65 | | | 10.30 | | | 36.55 | | | 30.76 | | |
| Approach LOS | B | | | B | | | D | | | C | | |
| d_I, Intersection Delay [s/veh] | 20.58 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.646 | | | | | | | | | | | |

Other Modes

| | | | | |
|--|-------|-------|-------|-------|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 0.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 |
| I_p,int, Pedestrian LOS Score for Intersectio | 0.000 | 0.000 | 0.000 | 0.000 |
| Crosswalk LOS | F | F | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 378 | 667 | 1111 | 1111 |
| d_b, Bicycle Delay [s] | 29.61 | 20.00 | 8.89 | 8.89 |
| I_b,int, Bicycle LOS Score for Intersection | 2.355 | 2.485 | 2.152 | 1.871 |
| Bicycle LOS | B | B | B | A |

Sequence

| | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



Intersection Level Of Service Report
Intersection 4: Clovercroft Road and Williams Road

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Two-way stop | Delay (sec / veh): | 32.5 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.536 |

Intersection Setup

| Name | Clovercroft Road | | Clovercroft Road | | Williams Road | |
|------------------------------|------------------|--------|------------------|--------|---------------|--------|
| Approach | Northbound | | Southbound | | Westbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Thru | Right | Left | Thru | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 40.00 | | 30.00 | | 45.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | No | | No | | No | |

Volumes

| Name | Clovercroft Road | | Clovercroft Road | | Williams Road | |
|---|------------------|--------|------------------|--------|---------------|--------|
| Base Volume Input [veh/h] | 376 | 289 | 39 | 253 | 139 | 14 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 376 | 289 | 39 | 253 | 139 | 14 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 102 | 79 | 11 | 69 | 38 | 4 |
| Total Analysis Volume [veh/h] | 409 | 314 | 42 | 275 | 151 | 15 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

Intersection Settings

| | | | |
|------------------------------------|------|------|------|
| Priority Scheme | Free | Free | Stop |
| Flared Lane | | | No |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | |
|---------------------------------------|------|------|------|------|-------|-------|
| V/C, Movement V/C Ratio | 0.00 | 0.00 | 0.05 | 0.00 | 0.54 | 0.03 |
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 9.14 | 0.00 | 32.52 | 26.62 |
| Movement LOS | A | A | A | A | D | D |
| 95th-Percentile Queue Length [veh/ln] | 0.00 | 0.00 | 0.07 | 0.07 | 3.23 | 3.23 |
| 95th-Percentile Queue Length [ft/ln] | 0.00 | 0.00 | 1.79 | 1.79 | 80.85 | 80.85 |
| d_A, Approach Delay [s/veh] | 0.00 | | 1.21 | | 31.99 | |
| Approach LOS | A | | A | | D | |
| d_I, Intersection Delay [s/veh] | 4.72 | | | | | |
| Intersection LOS | D | | | | | |

Nolensville Town Center

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Scenario 2 Existing PM

Report File: M:\...\2. Existing - PM.pdf

11/27/2023

Turning Movement Volume: Summary

| ID | Intersection Name | Northbound | | | Southbound | | | Eastbound | | | Westbound | | | Total Volume |
|----|---|------------|------|-------|------------|------|-------|-----------|------|-------|-----------|------|-------|--------------|
| | | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | |
| 1 | Nolensville Road and Clovercroft Road/Rocky Fork Road | 49 | 399 | 75 | 241 | 453 | 21 | 111 | 262 | 28 | 208 | 199 | 157 | 2203 |

| ID | Intersection Name | Northbound | | Southbound | | Westbound | | Total Volume |
|----|--------------------------------------|------------|-------|------------|------|-----------|-------|--------------|
| | | Thru | Right | Left | Thru | Left | Right | |
| 2 | Nolensville Road and Summerlyn Drive | 357 | 14 | 224 | 479 | 35 | 277 | 1386 |

| ID | Intersection Name | Northbound | | | Southbound | | | Eastbound | | | Westbound | | | Total Volume |
|----|--|------------|------|-------|------------|------|-------|-----------|------|-------|-----------|------|-------|--------------|
| | | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | |
| 3 | Nolensville Road and Williams Road/York Road | 46 | 328 | 69 | 43 | 459 | 14 | 8 | 254 | 68 | 45 | 94 | 35 | 1463 |

| ID | Intersection Name | Northbound | | Southbound | | Westbound | | Total Volume |
|----|------------------------------------|------------|-------|------------|------|-----------|-------|--------------|
| | | Thru | Right | Left | Thru | Left | Right | |
| 4 | Clovercroft Road and Williams Road | 376 | 289 | 39 | 253 | 139 | 14 | 1110 |

BACKGROUND CONDITIONS
CAPACITY ANALYSES

Nolensville Town Center

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Scenario 3 Background AM

Report File: M:\...\3. Background - AM.pdf

11/27/2023

Intersection Analysis Summary

| ID | Intersection Name | Control Type | Method | Worst Mvmt | V/C | Delay (s/veh) | LOS |
|----|---|--------------|-----------------|------------|-------|---------------|-----|
| 1 | Nolensville Road and Clovercroft Road/Rocky Fork Road | Signalized | HCM 7th Edition | EB Right | 0.848 | 57.0 | E |
| 2 | Nolensville Road and Summerlyn Drive/Site Access | Signalized | HCM 7th Edition | SB Left | 0.852 | 67.5 | E |
| 3 | Nolensville Road and Williams Road/York Road | Signalized | HCM 7th Edition | EB Thru | 0.710 | 27.7 | C |
| 4 | Clovercroft Road and Williams Road | Signalized | HCM 7th Edition | WB Left | 0.669 | 21.0 | C |

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report

Intersection 1: Nolensville Road and Clovercroft Road/Rocky Fork Road

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Signalized | Delay (sec / veh): | 57.0 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | E |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.848 |

Intersection Setup

| Name | Nolensville Road | | | Nolensville Toad | | | Clovercroft Road | | | Rocky Fork Road | | |
|------------------------------|------------------|--------|--------|------------------|--------|--------|------------------|--------|-------|-----------------|--------|--------|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 |
| Entry Pocket Length [ft] | 200.00 | 100.00 | 100.00 | 175.00 | 100.00 | 100.00 | 100.00 | 100.00 | 85.00 | 175.00 | 100.00 | 185.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 35.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | No | | | No | | | No | | | No | | |

Volumes

| Name | Nolensville Road | | | Nolensville Toad | | | Clovercroft Road | | | Rocky Fork Road | | |
|---|------------------|--------|--------|------------------|--------|--------|------------------|--------|--------|-----------------|--------|--------|
| Base Volume Input [veh/h] | 82 | 447 | 79 | 78 | 385 | 37 | 93 | 139 | 100 | 133 | 293 | 153 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Proportion of CAVs [%] | 0.00 | | | | | | | | | | | |
| Growth Factor | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 |
| In-Process Volume [veh/h] | 52 | 60 | 52 | 0 | 75 | 8 | 20 | 0 | 63 | 63 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 144 | 563 | 141 | 88 | 509 | 50 | 125 | 157 | 176 | 213 | 330 | 172 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 39 | 153 | 38 | 24 | 138 | 14 | 34 | 43 | 48 | 58 | 90 | 47 |
| Total Analysis Volume [veh/h] | 157 | 612 | 153 | 96 | 553 | 54 | 136 | 171 | 191 | 232 | 359 | 187 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

Intersection Settings

| | |
|---------------------------|---------------------------------|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 100 |
| Active Pattern | Pattern 1 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | Beginning of First Yellow |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

Phasing & Timing

| Control Type | ProtPer | Permiss | Permiss | ProtPer | Permiss | Permiss | ProtPer | Permiss | Permiss | ProtPer | Permiss | Permiss |
|------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Signal Group | 5 | 2 | 0 | 1 | 6 | 0 | 7 | 4 | 0 | 3 | 8 | 10 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 10 | 0 | 5 | 10 | 0 | 5 | 7 | 0 | 5 | 7 | 0 |
| Maximum Green [s] | 15 | 60 | 0 | 15 | 60 | 0 | 15 | 30 | 0 | 15 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Split [s] | 13 | 48 | 0 | 13 | 48 | 0 | 13 | 26 | 0 | 13 | 26 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Clearance [s] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Minimum Recall | No | Yes | | No | Yes | | No | No | | No | No | |
| Maximum Recall | No | No | | No | No | | No | No | | No | No | |
| Pedestrian Recall | No | No | | No | No | | No | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 50.0 | 0.0 | 0.0 | 50.0 | 0.0 | 0.0 | 50.0 | 0.0 | 0.0 | 50.0 | 50.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

Lane Group Calculations

| Lane Group | L | C | L | C | L | C | L | C | R |
|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| C, Cycle Length [s] | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 0.00 | 3.00 | 0.00 | 3.00 | 0.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 56 | 46 | 56 | 44 | 34 | 21 | 34 | 21 | 21 |
| g / C, Green / Cycle | 0.56 | 0.46 | 0.56 | 0.44 | 0.34 | 0.21 | 0.34 | 0.21 | 0.21 |
| (v / s)_i Volume / Saturation Flow Rate | 0.18 | 0.47 | 0.13 | 0.37 | 0.13 | 0.24 | 0.20 | 0.21 | 0.13 |
| s, saturation flow rate [veh/h] | 884 | 1626 | 766 | 1657 | 1041 | 1540 | 1139 | 1683 | 1431 |
| c, Capacity [veh/h] | 362 | 752 | 244 | 733 | 295 | 323 | 300 | 355 | 301 |
| d1, Uniform Delay [s] | 17.41 | 26.88 | 21.75 | 24.56 | 26.35 | 39.50 | 28.25 | 39.47 | 35.84 |
| k, delay calibration | 0.50 | 0.50 | 0.26 | 0.50 | 0.11 | 0.27 | 0.50 | 0.22 | 0.11 |
| l, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 3.75 | 37.32 | 2.49 | 10.46 | 1.12 | 74.51 | 17.44 | 35.09 | 2.09 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | | | | | | | |
|---------------------------------------|-------|--------|-------|--------|--------|--------|--------|--------|--------|
| X, volume / capacity | 0.43 | 1.02 | 0.39 | 0.83 | 0.46 | 1.12 | 0.77 | 1.01 | 0.62 |
| d, Delay for Lane Group [s/veh] | 21.15 | 64.20 | 24.24 | 35.02 | 27.47 | 114.01 | 45.68 | 74.55 | 37.92 |
| Lane Group LOS | C | F | C | D | C | F | D | F | D |
| Critical Lane Group | No | Yes | Yes | No | No | Yes | Yes | No | No |
| 50th-Percentile Queue Length [veh/ln] | 2.00 | 24.62 | 1.12 | 14.21 | 2.39 | 14.49 | 5.58 | 11.91 | 4.22 |
| 50th-Percentile Queue Length [ft/ln] | 50.06 | 615.54 | 28.06 | 355.16 | 59.70 | 362.31 | 139.58 | 297.63 | 105.55 |
| 95th-Percentile Queue Length [veh/ln] | 3.60 | 33.21 | 2.02 | 20.39 | 4.30 | 21.98 | 9.46 | 17.68 | 7.59 |
| 95th-Percentile Queue Length [ft/ln] | 90.10 | 830.18 | 50.50 | 509.69 | 107.46 | 549.52 | 236.45 | 442.11 | 189.80 |

Movement, Approach, & Intersection Results

| | | | | | | | | | | | | |
|---------------------------------|-------|-------|-------|-------|-------|-------|-------|--------|--------|-------|-------|-------|
| d_M, Delay for Movement [s/veh] | 21.15 | 64.20 | 64.20 | 24.24 | 35.02 | 35.02 | 27.47 | 114.01 | 114.01 | 45.68 | 74.55 | 37.92 |
| Movement LOS | C | E | E | C | D | D | C | F | F | D | F | D |
| d_A, Approach Delay [s/veh] | 56.87 | | | 33.55 | | | 90.38 | | | 57.14 | | |
| Approach LOS | E | | | C | | | F | | | E | | |
| d_I, Intersection Delay [s/veh] | 57.04 | | | | | | | | | | | |
| Intersection LOS | E | | | | | | | | | | | |
| Intersection V/C | 0.848 | | | | | | | | | | | |

Other Modes

| | | | | | | | | | | | | |
|--|-------|--|--|-------|--|--|-------|--|--|-------|--|--|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | | |
| M_corner, Corner Circulation Area [ft ² /ped] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| M_CW, Crosswalk Circulation Area [ft ² /ped] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| d_p, Pedestrian Delay [s] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| I_p,int, Pedestrian LOS Score for Intersectio | 0.000 | | | 0.000 | | | 0.000 | | | 0.000 | | |
| Crosswalk LOS | F | | | F | | | F | | | F | | |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | | | 2000 | | | 2000 | | | 2000 | | |
| c_b, Capacity of the bicycle lane [bicycles/h] | 860 | | | 860 | | | 420 | | | 420 | | |
| d_b, Bicycle Delay [s] | 16.25 | | | 16.25 | | | 31.21 | | | 31.21 | | |
| I_b,int, Bicycle LOS Score for Intersection | 3.081 | | | 2.720 | | | 2.381 | | | 2.843 | | |
| Bicycle LOS | C | | | B | | | B | | | C | | |

Sequence

| | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



Intersection Level Of Service Report

Intersection 2: Nolensville Road and Summerlyn Drive/Site Access

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Signalized | Delay (sec / veh): | 67.5 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | E |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.852 |

Intersection Setup

| Name | Nolensville Road | | | Nolensville Road | | | Site Access | | | Summerlyn Drive | | |
|------------------------------|------------------|--------|--------|------------------|--------|--------|-------------|--------|--------|-----------------|--------|--------|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 150.00 | 100.00 | 100.00 | 250.00 | 100.00 | 150.00 | 125.00 | 100.00 | 100.00 | 125.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 40.00 | | | 40.00 | | | 30.00 | | | 25.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

Volumes

| Name | Nolensville Road | | | Nolensville Road | | | Site Access | | | Summerlyn Drive | | |
|---|------------------|--------|--------|------------------|--------|--------|-------------|--------|--------|-----------------|--------|--------|
| Base Volume Input [veh/h] | 0 | 389 | 10 | 382 | 307 | 0 | 0 | 0 | 0 | 83 | 0 | 290 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Proportion of CAVs [%] | 0.00 | | | | | | | | | | | |
| Growth Factor | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 |
| In-Process Volume [veh/h] | 63 | 36 | 10 | 0 | 67 | 134 | 128 | 18 | 51 | 4 | 22 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 63 | 474 | 21 | 430 | 413 | 134 | 128 | 18 | 51 | 97 | 22 | 327 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 17 | 129 | 6 | 117 | 112 | 36 | 35 | 5 | 14 | 26 | 6 | 89 |
| Total Analysis Volume [veh/h] | 68 | 515 | 23 | 467 | 449 | 146 | 139 | 20 | 55 | 105 | 24 | 355 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

Version 2023 (SP 0-5)

Intersection Settings

| | |
|---------------------------|---------------------------------|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 100 |
| Active Pattern | Pattern 1 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | Beginning of First Yellow |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

Phasing & Timing

| Control Type | ProtPer | Permiss | Permiss | ProtPer | Permiss | Permiss | Split | Split | Split | Split | Split | Split |
|------------------------------|---------|---------|---------|---------|---------|---------|-------|-------|-------|-------|-------|-------|
| Signal Group | 5 | 2 | 0 | 1 | 6 | 0 | 0 | 4 | 0 | 3 | 3 | 1 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | - | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 10 | 0 | 5 | 10 | 0 | 0 | 7 | 0 | 7 | 7 | 5 |
| Maximum Green [s] | 15 | 60 | 0 | 10 | 60 | 0 | 0 | 30 | 0 | 30 | 30 | 10 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 |
| All red [s] | 2.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 1.0 |
| Split [s] | 13 | 25 | 0 | 21 | 33 | 0 | 0 | 26 | 0 | 28 | 28 | 21 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 7 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 14 | 0 | 0 | 14 | 0 | 0 | 14 | 0 | 14 | 14 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 |
| I2, Clearance Lost Time [s] | 3.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 2.0 |
| Minimum Recall | No | Yes | | Yes | Yes | | | No | | | Yes | |
| Maximum Recall | No | No | | No | No | | | No | | | No | |
| Pedestrian Recall | No | No | | No | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 50.0 | 0.0 | 0.0 | 50.0 | 0.0 | 0.0 | 0.0 | 50.0 | 0.0 | 50.0 | 50.0 | 50.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

Lane Group Calculations

| Lane Group | L | C | L | C | R | L | C | C | R |
|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| C, Cycle Length [s] | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 0.00 | 2.00 | 0.00 | 2.00 | 2.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 52 | 31 | 52 | 43 | 43 | 11 | 11 | 23 | 23 |
| g / C, Green / Cycle | 0.52 | 0.31 | 0.52 | 0.43 | 0.43 | 0.11 | 0.11 | 0.23 | 0.23 |
| (v / s)_i Volume / Saturation Flow Rate | 0.08 | 0.32 | 0.43 | 0.27 | 0.10 | 0.09 | 0.05 | 0.08 | 0.25 |
| s, saturation flow rate [veh/h] | 861 | 1670 | 1081 | 1683 | 1431 | 1603 | 1490 | 1617 | 1431 |
| c, Capacity [veh/h] | 389 | 516 | 427 | 717 | 610 | 178 | 165 | 372 | 329 |
| d1, Uniform Delay [s] | 14.71 | 34.54 | 31.43 | 22.45 | 18.33 | 43.29 | 41.63 | 32.21 | 38.50 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 | 0.11 | 0.11 | 0.31 |
| l, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.98 | 50.86 | 71.14 | 4.10 | 0.93 | 7.34 | 1.95 | 0.55 | 61.80 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | | | | | | | |
|---------------------------------------|-------|--------|--------|--------|-------|--------|-------|--------|--------|
| X, volume / capacity | 0.17 | 1.04 | 1.09 | 0.63 | 0.24 | 0.78 | 0.45 | 0.35 | 1.08 |
| d, Delay for Lane Group [s/veh] | 15.68 | 85.40 | 102.56 | 26.55 | 19.26 | 50.63 | 43.58 | 32.77 | 100.30 |
| Lane Group LOS | B | F | F | C | B | D | D | C | F |
| Critical Lane Group | No | Yes | Yes | No | No | Yes | No | No | Yes |
| 50th-Percentile Queue Length [veh/ln] | 0.82 | 19.14 | 14.27 | 8.52 | 2.20 | 3.68 | 1.81 | 2.68 | 13.65 |
| 50th-Percentile Queue Length [ft/ln] | 20.40 | 478.45 | 356.65 | 213.02 | 55.06 | 92.11 | 45.33 | 67.07 | 341.29 |
| 95th-Percentile Queue Length [veh/ln] | 1.47 | 27.01 | 21.78 | 13.31 | 3.96 | 6.63 | 3.26 | 4.83 | 20.54 |
| 95th-Percentile Queue Length [ft/ln] | 36.72 | 675.36 | 544.57 | 332.70 | 99.11 | 165.80 | 81.59 | 120.73 | 513.52 |

Movement, Approach, & Intersection Results

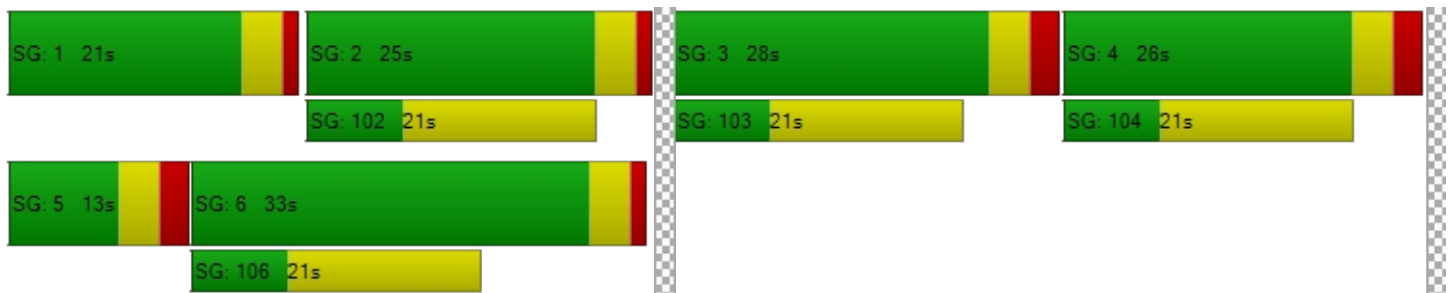
| | | | | | | | | | | | | |
|---------------------------------|-------|-------|-------|--------|-------|-------|-------|-------|-------|-------|-------|--------|
| d_M, Delay for Movement [s/veh] | 15.68 | 85.40 | 85.40 | 102.56 | 26.55 | 19.26 | 50.63 | 43.58 | 43.58 | 32.77 | 32.77 | 100.30 |
| Movement LOS | B | F | F | F | C | B | D | D | D | C | C | F |
| d_A, Approach Delay [s/veh] | 77.57 | | | 58.98 | | | 48.16 | | | 82.30 | | |
| Approach LOS | E | | | E | | | D | | | F | | |
| d_I, Intersection Delay [s/veh] | 67.53 | | | | | | | | | | | |
| Intersection LOS | E | | | | | | | | | | | |
| Intersection V/C | 0.852 | | | | | | | | | | | |

Other Modes

| | | | | |
|--|-------|-------|-------|-------|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 39.61 | 39.61 | 39.61 | 39.61 |
| I_p,int, Pedestrian LOS Score for Intersectio | 2.472 | 2.809 | 2.135 | 2.433 |
| Crosswalk LOS | B | C | B | B |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 420 | 580 | 420 | 460 |
| d_b, Bicycle Delay [s] | 31.21 | 25.21 | 31.21 | 29.65 |
| I_b,int, Bicycle LOS Score for Intersection | 2.560 | 3.312 | 1.913 | 2.358 |
| Bicycle LOS | B | C | A | B |

Sequence

| | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



Intersection Level Of Service Report

Intersection 3: Nolensville Road and Williams Road/York Road

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Signalized | Delay (sec / veh): | 27.7 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.710 |

Intersection Setup

| Name | Nolensville Road | | | Nolensville Road | | | Williams Road | | | York Road | | |
|------------------------------|------------------|--------|--------|------------------|--------|--------|---------------|--------|--------|-----------|--------|--------|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 40.00 | | | 40.00 | | | 45.00 | | | 35.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | No | | | No | | | No | | | No | | |

Volumes

| Name | Nolensville Road | | | Nolensville Road | | | Williams Road | | | York Road | | |
|---|------------------|--------|--------|------------------|--------|--------|---------------|--------|--------|-----------|--------|--------|
| Base Volume Input [veh/h] | 58 | 353 | 111 | 98 | 248 | 53 | 2 | 165 | 19 | 38 | 189 | 33 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Proportion of CAVs [%] | 0.00 | | | | | | | | | | | |
| Growth Factor | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 |
| In-Process Volume [veh/h] | 49 | 112 | 0 | 11 | 91 | 15 | 23 | 7 | 46 | 0 | 9 | 13 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 114 | 510 | 125 | 121 | 370 | 75 | 25 | 193 | 67 | 43 | 222 | 50 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 31 | 139 | 34 | 33 | 101 | 20 | 7 | 52 | 18 | 12 | 60 | 14 |
| Total Analysis Volume [veh/h] | 124 | 554 | 136 | 132 | 402 | 82 | 27 | 210 | 73 | 47 | 241 | 54 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

Version 2023 (SP 0-5)

Intersection Settings

| | |
|---------------------------|---------------------------------|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 100 |
| Active Pattern | Pattern 1 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | Beginning of First Yellow |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

Phasing & Timing

| Control Type | Permiss | Permiss | Permiss | ProtPer | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Signal Group | 0 | 2 | 0 | 1 | 6 | 0 | 0 | 4 | 0 | 0 | 8 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | Lead | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 0 | 10 | 0 | 5 | 10 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Maximum Green [s] | 0 | 60 | 0 | 10 | 60 | 0 | 0 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 52 | 0 | 13 | 65 | 0 | 0 | 35 | 0 | 0 | 35 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Clearance [s] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | Yes | | Yes | Yes | | | No | | | No | |
| Maximum Recall | | No | | No | No | | | No | | | No | |
| Pedestrian Recall | | No | | No | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

Lane Group Calculations

| Lane Group | L | C | L | C | C | L | C |
|---|-------|-------|-------|-------|-------|-------|-------|
| C, Cycle Length [s] | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 0.00 | 0.00 | 2.00 | 2.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 0.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 51 | 51 | 62 | 62 | 28 | 28 | 28 |
| g / C, Green / Cycle | 0.51 | 0.51 | 0.62 | 0.62 | 0.28 | 0.28 | 0.28 |
| (v / s)_i Volume / Saturation Flow Rate | 0.15 | 0.42 | 0.16 | 0.30 | 0.25 | 0.05 | 0.18 |
| s, saturation flow rate [veh/h] | 820 | 1626 | 803 | 1634 | 1251 | 986 | 1630 |
| c, Capacity [veh/h] | 342 | 835 | 354 | 1009 | 392 | 92 | 460 |
| d1, Uniform Delay [s] | 26.54 | 20.54 | 16.19 | 10.39 | 33.71 | 35.04 | 31.43 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.30 | 0.11 | 0.15 |
| l, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 2.97 | 9.15 | 3.00 | 1.63 | 9.54 | 4.29 | 2.01 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | | | | | |
|---------------------------------------|--------|--------|-------|--------|--------|-------|--------|
| X, volume / capacity | 0.36 | 0.83 | 0.37 | 0.48 | 0.79 | 0.51 | 0.64 |
| d, Delay for Lane Group [s/veh] | 29.51 | 29.69 | 19.19 | 12.02 | 43.26 | 39.33 | 33.44 |
| Lane Group LOS | C | C | B | B | D | D | C |
| Critical Lane Group | No | Yes | Yes | No | Yes | No | No |
| 50th-Percentile Queue Length [veh/ln] | 2.52 | 14.29 | 1.34 | 5.46 | 7.96 | 1.19 | 6.32 |
| 50th-Percentile Queue Length [ft/ln] | 62.88 | 357.14 | 33.51 | 136.40 | 199.09 | 29.68 | 158.05 |
| 95th-Percentile Queue Length [veh/ln] | 4.53 | 20.48 | 2.41 | 9.29 | 12.59 | 2.14 | 10.45 |
| 95th-Percentile Queue Length [ft/ln] | 113.18 | 512.10 | 60.31 | 232.16 | 314.79 | 53.43 | 261.13 |

Movement, Approach, & Intersection Results

| | | | | | | | | | | | | |
|---------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| d_M, Delay for Movement [s/veh] | 29.51 | 29.69 | 29.69 | 19.19 | 12.02 | 12.02 | 43.26 | 43.26 | 43.26 | 39.33 | 33.44 | 33.44 |
| Movement LOS | C | C | C | B | B | B | D | D | D | D | C | C |
| d_A, Approach Delay [s/veh] | 29.66 | | | 13.56 | | | 43.26 | | | 34.25 | | |
| Approach LOS | C | | | B | | | D | | | C | | |
| d_I, Intersection Delay [s/veh] | 27.68 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.710 | | | | | | | | | | | |

Other Modes

| | | | | |
|--|-------|-------|-------|-------|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 0.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 |
| I_p,int, Pedestrian LOS Score for Intersectio | 0.000 | 0.000 | 0.000 | 0.000 |
| Crosswalk LOS | F | F | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 940 | 1200 | 600 | 600 |
| d_b, Bicycle Delay [s] | 14.05 | 8.00 | 24.50 | 24.50 |
| I_b,int, Bicycle LOS Score for Intersection | 2.903 | 2.576 | 2.071 | 2.124 |
| Bicycle LOS | C | B | B | B |

Sequence

| | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



Intersection Level Of Service Report
Intersection 4: Clovercroft Road and Williams Road

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Signalized | Delay (sec / veh): | 21.0 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.669 |

Intersection Setup

| Name | Clovercroft Road | | Clovercroft Road | | Williams Road | |
|------------------------------|------------------|--------|------------------|--------|---------------|--------|
| Approach | Northbound | | Southbound | | Westbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Thru | Right | Left | Thru | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 40.00 | | 30.00 | | 45.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Curb Present | No | | No | | No | |
| Crosswalk | No | | No | | No | |

Volumes

| Name | Clovercroft Road | | Clovercroft Road | | Williams Road | |
|---|------------------|--------|------------------|--------|---------------|--------|
| | | | | | | |
| Base Volume Input [veh/h] | 168 | 153 | 21 | 478 | 252 | 42 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Proportion of CAVs [%] | 0.00 | | | | | |
| Growth Factor | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 |
| In-Process Volume [veh/h] | 20 | 76 | 0 | 20 | 73 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 209 | 248 | 24 | 558 | 357 | 47 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 57 | 67 | 7 | 152 | 97 | 13 |
| Total Analysis Volume [veh/h] | 227 | 270 | 26 | 607 | 388 | 51 |
| Presence of On-Street Parking | No | No | No | No | No | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | 0 | | 0 | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | 0 | | 0 | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | 0 | | 0 | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | 0 | | 0 | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |
| Bicycle Volume [bicycles/h] | 0 | | 0 | | 0 | |

Version 2023 (SP 0-5)

Intersection Settings

| | |
|---------------------------|---------------------------------|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 90 |
| Active Pattern | Pattern 1 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | Beginning of First Yellow |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

Phasing & Timing

| Control Type | Permissive | Permissive | Permissive | Permissive | Permissive | Permissive |
|------------------------------|------------|------------|------------|------------|------------|------------|
| Signal Group | 2 | 0 | 0 | 6 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | |
| Lead / Lag | - | - | - | - | Lead | - |
| Minimum Green [s] | 10 | 0 | 0 | 10 | 7 | 0 |
| Maximum Green [s] | 60 | 0 | 0 | 60 | 30 | 0 |
| Amber [s] | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Split [s] | 22 | 0 | 0 | 22 | 68 | 0 |
| Vehicle Extension [s] | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Clearance [s] | 0 | 0 | 0 | 0 | 0 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | No | | | No | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Minimum Recall | Yes | | | Yes | No | |
| Maximum Recall | No | | | No | No | |
| Pedestrian Recall | No | | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 50.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

Lane Group Calculations

| Lane Group | C | C | C |
|---|-------|-------|-------|
| C, Cycle Length [s] | 90 | 90 | 90 |
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 2.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 52 | 52 | 28 |
| g / C, Green / Cycle | 0.58 | 0.58 | 0.31 |
| (v / s)_i Volume / Saturation Flow Rate | 0.32 | 0.39 | 0.28 |
| s, saturation flow rate [veh/h] | 1536 | 1617 | 1581 |
| c, Capacity [veh/h] | 890 | 978 | 489 |
| d1, Uniform Delay [s] | 11.78 | 12.78 | 29.69 |
| k, delay calibration | 0.50 | 0.50 | 0.11 |
| l, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 2.53 | 3.31 | 6.11 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | |
|---------------------------------------|--------|--------|--------|
| X, volume / capacity | 0.56 | 0.65 | 0.90 |
| d, Delay for Lane Group [s/veh] | 14.31 | 16.08 | 35.80 |
| Lane Group LOS | B | B | D |
| Critical Lane Group | No | Yes | Yes |
| 50th-Percentile Queue Length [veh/ln] | 5.89 | 8.63 | 9.16 |
| 50th-Percentile Queue Length [ft/ln] | 147.20 | 215.64 | 229.12 |
| 95th-Percentile Queue Length [veh/ln] | 9.87 | 13.44 | 14.13 |
| 95th-Percentile Queue Length [ft/ln] | 246.69 | 336.06 | 353.24 |

Movement, Approach, & Intersection Results

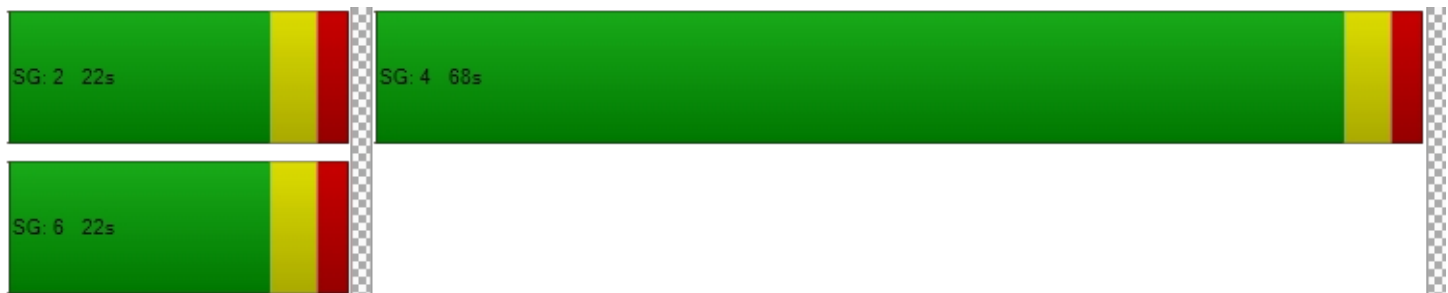
| | | | | | | |
|---------------------------------|-------|-------|-------|-------|-------|-------|
| d_M, Delay for Movement [s/veh] | 14.31 | 14.31 | 16.08 | 16.08 | 35.80 | 35.80 |
| Movement LOS | B | B | B | B | D | D |
| d_A, Approach Delay [s/veh] | 14.31 | | 16.08 | | 35.80 | |
| Approach LOS | B | | B | | D | |
| d_I, Intersection Delay [s/veh] | 21.04 | | | | | |
| Intersection LOS | C | | | | | |
| Intersection V/C | 0.669 | | | | | |

Other Modes

| | | | |
|--|-------|-------|-------|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 0.00 | 0.00 |
| I_p,int, Pedestrian LOS Score for Intersectio | 0.000 | 0.000 | 0.000 |
| Crosswalk LOS | F | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 378 | 378 | 1400 |
| d_b, Bicycle Delay [s] | 29.61 | 29.61 | 4.05 |
| I_b,int, Bicycle LOS Score for Intersection | 2.380 | 2.604 | 2.284 |
| Bicycle LOS | B | B | B |

Sequence

| | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



Nolensville Town Center

Vistro File: M:\...\Nolensville Town Center - Draft 4.vistro

Scenario 3 Background AM

Report File: M:\...\3. Background - AM.pdf

11/27/2023

Turning Movement Volume: Summary

| ID | Intersection Name | Northbound | | | Southbound | | | Eastbound | | | Westbound | | | Total Volume |
|----|---|------------|------|-------|------------|------|-------|-----------|------|-------|-----------|------|-------|--------------|
| | | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | |
| 1 | Nolensville Road and Clovercroft Road/Rocky Fork Road | 144 | 563 | 141 | 88 | 509 | 50 | 125 | 157 | 176 | 213 | 330 | 172 | 2668 |

| ID | Intersection Name | Northbound | | | Southbound | | | Eastbound | | | Westbound | | | Total Volume |
|----|--|------------|------|-------|------------|------|-------|-----------|------|-------|-----------|------|-------|--------------|
| | | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | |
| 2 | Nolensville Road and Summerlyn Drive/Site Access | 63 | 474 | 21 | 430 | 413 | 134 | 128 | 18 | 51 | 97 | 22 | 327 | 2178 |

| ID | Intersection Name | Northbound | | | Southbound | | | Eastbound | | | Westbound | | | Total Volume |
|----|--|------------|------|-------|------------|------|-------|-----------|------|-------|-----------|------|-------|--------------|
| | | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | |
| 3 | Nolensville Road and Williams Road/York Road | 114 | 510 | 125 | 121 | 370 | 75 | 25 | 193 | 67 | 43 | 222 | 50 | 1915 |

| ID | Intersection Name | Northbound | | Southbound | | Westbound | | Total Volume |
|----|------------------------------------|------------|-------|------------|------|-----------|-------|--------------|
| | | Thru | Right | Left | Thru | Left | Right | |
| 4 | Clovercroft Road and Williams Road | 209 | 248 | 24 | 558 | 357 | 47 | 1443 |

Nolensville Town Center

Vistro File: M:\...\Nolensville Town Center - Draft 4.vistro

Scenario 4 Background PM

Report File: M:\...\4. Background - PM.pdf

11/27/2023

Intersection Analysis Summary

| ID | Intersection Name | Control Type | Method | Worst Mvmt | V/C | Delay (s/veh) | LOS |
|----|---|--------------|-----------------|------------|-------|---------------|-----|
| 1 | Nolensville Road and Clovercroft Road/Rocky Fork Road | Signalized | HCM 7th Edition | SB Left | 1.012 | 98.4 | F |
| 2 | Nolensville Road and Summerlyn Drive/Site Access | Signalized | HCM 7th Edition | SB Thru | 0.802 | 62.4 | E |
| 3 | Nolensville Road and Williams Road/York Road | Signalized | HCM 7th Edition | NB Left | 0.798 | 44.1 | D |
| 4 | Clovercroft Road and Williams Road | Signalized | HCM 7th Edition | WB Left | 0.801 | 27.3 | C |

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report

Intersection 1: Nolensville Road and Clovercroft Road/Rocky Fork Road

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Signalized | Delay (sec / veh): | 98.4 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 1.012 |

Intersection Setup

| Name | Nolensville Road | | | Nolensville Toad | | | Clovercroft Road | | | Rocky Fork Road | | |
|------------------------------|------------------|--------|--------|------------------|--------|--------|------------------|--------|-------|-----------------|--------|--------|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 |
| Entry Pocket Length [ft] | 200.00 | 100.00 | 100.00 | 175.00 | 100.00 | 100.00 | 100.00 | 100.00 | 85.00 | 175.00 | 100.00 | 185.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 35.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | No | | | No | | | No | | | No | | |

Volumes

| Name | Nolensville Road | | | Nolensville Toad | | | Clovercroft Road | | | Rocky Fork Road | | |
|---|------------------|--------|--------|------------------|--------|--------|------------------|--------|--------|-----------------|--------|--------|
| Base Volume Input [veh/h] | 49 | 399 | 75 | 241 | 453 | 21 | 111 | 262 | 28 | 208 | 199 | 157 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Proportion of CAVs [%] | 0.00 | | | | | | | | | | | |
| Growth Factor | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 |
| In-Process Volume [veh/h] | 83 | 100 | 83 | 0 | 100 | 22 | 14 | 0 | 84 | 84 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 138 | 549 | 167 | 271 | 610 | 46 | 139 | 295 | 116 | 318 | 224 | 177 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 38 | 149 | 45 | 74 | 166 | 13 | 38 | 80 | 32 | 86 | 61 | 48 |
| Total Analysis Volume [veh/h] | 150 | 597 | 182 | 295 | 663 | 50 | 151 | 321 | 126 | 346 | 243 | 192 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

Intersection Settings

| | |
|---------------------------|---------------------------------|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 130 |
| Active Pattern | Pattern 1 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | Beginning of First Yellow |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

Phasing & Timing

| Control Type | ProtPer | Permiss | Permiss | ProtPer | Permiss | Permiss | ProtPer | Permiss | Permiss | ProtPer | Permiss | Permiss |
|------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Signal Group | 5 | 2 | 0 | 1 | 6 | 0 | 7 | 4 | 0 | 3 | 8 | 10 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 10 | 0 | 5 | 10 | 0 | 5 | 7 | 0 | 5 | 7 | 0 |
| Maximum Green [s] | 15 | 60 | 0 | 15 | 60 | 0 | 15 | 30 | 0 | 15 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Split [s] | 13 | 59 | 0 | 15 | 61 | 0 | 13 | 37 | 0 | 19 | 43 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Clearance [s] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Minimum Recall | No | Yes | | No | Yes | | No | No | | No | No | |
| Maximum Recall | No | No | | No | No | | No | No | | No | No | |
| Pedestrian Recall | No | No | | No | No | | No | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 50.0 | 0.0 | 0.0 | 50.0 | 0.0 | 0.0 | 50.0 | 0.0 | 0.0 | 50.0 | 50.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

Lane Group Calculations

| Lane Group | L | C | L | C | L | C | L | C | R |
|---|-------|-------|--------|-------|-------|-------|-------|-------|-------|
| C, Cycle Length [s] | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 |
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 0.00 | 3.00 | 0.00 | 3.00 | 0.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 69 | 54 | 69 | 56 | 51 | 32 | 51 | 38 | 38 |
| g / C, Green / Cycle | 0.53 | 0.42 | 0.53 | 0.43 | 0.39 | 0.25 | 0.39 | 0.29 | 0.29 |
| (v / s)_i Volume / Saturation Flow Rate | 0.18 | 0.48 | 0.37 | 0.43 | 0.15 | 0.28 | 0.31 | 0.14 | 0.13 |
| s, saturation flow rate [veh/h] | 813 | 1616 | 808 | 1662 | 1019 | 1603 | 1100 | 1683 | 1431 |
| c, Capacity [veh/h] | 233 | 671 | 256 | 716 | 377 | 395 | 308 | 492 | 418 |
| d1, Uniform Delay [s] | 28.54 | 38.00 | 45.67 | 36.88 | 27.63 | 49.00 | 46.42 | 38.05 | 37.60 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.15 | 0.50 | 0.50 | 0.11 | 0.11 |
| l, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 12.96 | 88.02 | 103.62 | 32.59 | 0.94 | 86.56 | 88.34 | 0.77 | 0.79 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | | | | | | | |
|---------------------------------------|--------|---------|--------|--------|--------|--------|--------|--------|--------|
| X, volume / capacity | 0.64 | 1.16 | 1.15 | 1.00 | 0.40 | 1.13 | 1.12 | 0.49 | 0.46 |
| d, Delay for Lane Group [s/veh] | 41.49 | 126.02 | 149.29 | 69.47 | 28.56 | 135.56 | 134.76 | 38.82 | 38.39 |
| Lane Group LOS | D | F | F | E | C | F | F | D | D |
| Critical Lane Group | No | Yes | Yes | No | No | Yes | Yes | No | No |
| 50th-Percentile Queue Length [veh/ln] | 3.16 | 37.35 | 11.65 | 28.55 | 3.28 | 22.23 | 14.76 | 6.48 | 5.07 |
| 50th-Percentile Queue Length [ft/ln] | 79.12 | 933.71 | 291.37 | 713.64 | 81.89 | 555.75 | 368.92 | 161.99 | 126.72 |
| 95th-Percentile Queue Length [veh/ln] | 5.70 | 52.55 | 18.93 | 37.31 | 5.90 | 32.17 | 22.64 | 10.65 | 8.76 |
| 95th-Percentile Queue Length [ft/ln] | 142.41 | 1313.73 | 473.23 | 932.70 | 147.41 | 804.16 | 566.09 | 266.35 | 219.03 |

Movement, Approach, & Intersection Results

| | | | | | | | | | | | | |
|---------------------------------|--------|--------|--------|--------|-------|-------|--------|--------|--------|--------|-------|-------|
| d_M, Delay for Movement [s/veh] | 41.49 | 126.02 | 126.02 | 149.29 | 69.47 | 69.47 | 28.56 | 135.56 | 135.56 | 134.76 | 38.82 | 38.39 |
| Movement LOS | D | F | F | F | E | E | C | F | F | F | D | D |
| d_A, Approach Delay [s/veh] | 112.37 | | | 92.83 | | | 108.54 | | | 81.22 | | |
| Approach LOS | F | | | F | | | F | | | F | | |
| d_I, Intersection Delay [s/veh] | 98.40 | | | | | | | | | | | |
| Intersection LOS | F | | | | | | | | | | | |
| Intersection V/C | 1.012 | | | | | | | | | | | |

Other Modes

| | | | | | | | | | | | | |
|--|-------|--|--|-------|--|--|-------|--|--|-------|--|--|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | | |
| M_corner, Corner Circulation Area [ft ² /ped] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| M_CW, Crosswalk Circulation Area [ft ² /ped] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| d_p, Pedestrian Delay [s] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| I_p,int, Pedestrian LOS Score for Intersectio | 0.000 | | | 0.000 | | | 0.000 | | | 0.000 | | |
| Crosswalk LOS | F | | | F | | | F | | | F | | |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | | | 2000 | | | 2000 | | | 2000 | | |
| c_b, Capacity of the bicycle lane [bicycles/h] | 831 | | | 862 | | | 492 | | | 585 | | |
| d_b, Bicycle Delay [s] | 22.22 | | | 21.06 | | | 36.94 | | | 32.55 | | |
| I_b,int, Bicycle LOS Score for Intersection | 3.092 | | | 3.223 | | | 2.546 | | | 2.848 | | |
| Bicycle LOS | C | | | C | | | B | | | C | | |

Sequence

| | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



Intersection Level Of Service Report

Intersection 2: Nolensville Road and Summerlyn Drive/Site Access

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Signalized | Delay (sec / veh): | 62.4 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | E |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.802 |

Intersection Setup

| Name | Nolensville Road | | | Nolensville Road | | | Site Access | | | Summerlyn Drive | | |
|------------------------------|------------------|--------|--------|------------------|--------|--------|-------------|--------|--------|-----------------|--------|--------|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 150.00 | 100.00 | 100.00 | 250.00 | 100.00 | 150.00 | 125.00 | 100.00 | 100.00 | 125.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 40.00 | | | 40.00 | | | 30.00 | | | 25.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

Volumes

| Name | Nolensville Road | | | Nolensville Road | | | Site Access | | | Summerlyn Drive | | |
|---|------------------|--------|--------|------------------|--------|--------|-------------|--------|--------|-----------------|--------|--------|
| Base Volume Input [veh/h] | 0 | 357 | 14 | 224 | 479 | 0 | 0 | 0 | 0 | 35 | 0 | 277 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Proportion of CAVs [%] | 0.00 | | | | | | | | | | | |
| Growth Factor | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 |
| In-Process Volume [veh/h] | 83 | 59 | 7 | 0 | 67 | 134 | 207 | 30 | 83 | 11 | 30 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 83 | 461 | 23 | 252 | 606 | 134 | 207 | 30 | 83 | 50 | 30 | 312 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 23 | 125 | 6 | 68 | 165 | 36 | 56 | 8 | 23 | 14 | 8 | 85 |
| Total Analysis Volume [veh/h] | 90 | 501 | 25 | 274 | 659 | 146 | 225 | 33 | 90 | 54 | 33 | 339 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

Version 2023 (SP 0-5)

Intersection Settings

| | |
|---------------------------|---------------------------------|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 130 |
| Active Pattern | Pattern 1 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | Beginning of First Yellow |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

Phasing & Timing

| Control Type | ProtPer | Permiss | Permiss | ProtPer | Permiss | Permiss | Split | Split | Split | Split | Split | Split |
|------------------------------|---------|---------|---------|---------|---------|---------|-------|-------|-------|-------|-------|-------|
| Signal Group | 5 | 2 | 0 | 1 | 6 | 0 | 0 | 4 | 0 | 3 | 3 | 1 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | - | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 10 | 0 | 5 | 10 | 0 | 0 | 7 | 0 | 7 | 7 | 5 |
| Maximum Green [s] | 15 | 60 | 0 | 10 | 60 | 0 | 0 | 30 | 0 | 30 | 30 | 10 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 |
| All red [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 |
| Split [s] | 13 | 49 | 0 | 14 | 50 | 0 | 0 | 26 | 0 | 41 | 41 | 14 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 7 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 14 | 0 | 0 | 14 | 0 | 0 | 14 | 0 | 14 | 14 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 |
| I2, Clearance Lost Time [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 |
| Minimum Recall | No | Yes | | Yes | Yes | | | No | | | Yes | |
| Maximum Recall | No | No | | No | No | | | No | | | No | |
| Pedestrian Recall | No | No | | No | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 50.0 | 0.0 | 0.0 | 50.0 | 0.0 | 0.0 | 0.0 | 50.0 | 0.0 | 50.0 | 50.0 | 50.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

Lane Group Calculations

| Lane Group | L | C | L | C | R | L | C | C | R |
|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| C, Cycle Length [s] | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 |
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 0.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 62 | 48 | 62 | 51 | 51 | 20 | 20 | 33 | 33 |
| g / C, Green / Cycle | 0.47 | 0.37 | 0.47 | 0.39 | 0.39 | 0.16 | 0.16 | 0.25 | 0.25 |
| (v / s)_i Volume / Saturation Flow Rate | 0.12 | 0.32 | 0.29 | 0.39 | 0.10 | 0.14 | 0.08 | 0.05 | 0.24 |
| s, saturation flow rate [veh/h] | 753 | 1669 | 947 | 1683 | 1431 | 1603 | 1491 | 1632 | 1431 |
| c, Capacity [veh/h] | 201 | 612 | 297 | 656 | 558 | 252 | 234 | 413 | 362 |
| d1, Uniform Delay [s] | 29.58 | 38.10 | 34.19 | 39.66 | 26.95 | 53.71 | 50.32 | 38.29 | 47.50 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.15 | 0.11 | 0.11 | 0.34 |
| l, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 7.04 | 14.68 | 35.52 | 36.20 | 1.14 | 13.83 | 1.82 | 0.25 | 25.68 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | | | | | | | |
|---------------------------------------|-------|--------|--------|--------|--------|--------|--------|--------|--------|
| X, volume / capacity | 0.45 | 0.86 | 0.92 | 1.00 | 0.26 | 0.89 | 0.52 | 0.21 | 0.94 |
| d, Delay for Lane Group [s/veh] | 36.62 | 52.78 | 69.71 | 75.85 | 28.09 | 67.53 | 52.14 | 38.54 | 73.18 |
| Lane Group LOS | D | D | E | F | C | E | D | D | E |
| Critical Lane Group | Yes | No | No | Yes | No | Yes | No | No | Yes |
| 50th-Percentile Queue Length [veh/ln] | 1.89 | 17.50 | 8.11 | 26.69 | 3.21 | 8.18 | 3.81 | 2.26 | 13.39 |
| 50th-Percentile Queue Length [ft/ln] | 47.15 | 437.52 | 202.64 | 667.21 | 80.35 | 204.45 | 95.28 | 56.57 | 334.63 |
| 95th-Percentile Queue Length [veh/ln] | 3.39 | 24.36 | 12.77 | 35.27 | 5.79 | 12.87 | 6.86 | 4.07 | 19.39 |
| 95th-Percentile Queue Length [ft/ln] | 84.86 | 609.04 | 319.37 | 881.87 | 144.64 | 321.70 | 171.51 | 101.83 | 484.64 |

Movement, Approach, & Intersection Results

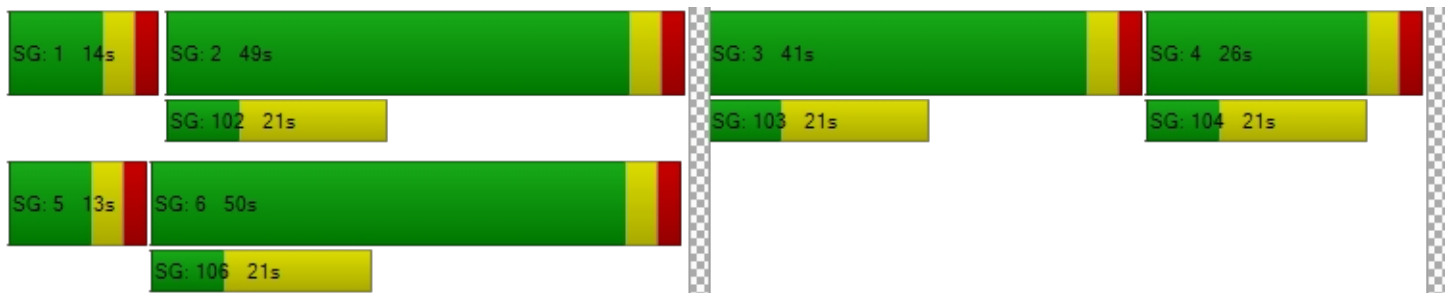
| | | | | | | | | | | | | |
|---------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| d_M, Delay for Movement [s/veh] | 36.62 | 52.78 | 52.78 | 69.71 | 75.85 | 28.09 | 67.53 | 52.14 | 52.14 | 38.54 | 38.54 | 73.18 |
| Movement LOS | D | D | D | E | F | C | E | D | D | D | D | E |
| d_A, Approach Delay [s/veh] | 50.42 | | | 67.83 | | | 62.09 | | | 66.11 | | |
| Approach LOS | D | | | E | | | E | | | E | | |
| d_I, Intersection Delay [s/veh] | 62.38 | | | | | | | | | | | |
| Intersection LOS | E | | | | | | | | | | | |
| Intersection V/C | 0.802 | | | | | | | | | | | |

Other Modes

| | | | | |
|--|-------|-------|-------|-------|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 54.47 | 54.47 | 54.47 | 54.47 |
| I_p,int, Pedestrian LOS Score for Intersectio | 2.573 | 2.845 | 2.210 | 2.312 |
| Crosswalk LOS | B | C | B | B |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 677 | 692 | 323 | 554 |
| d_b, Bicycle Delay [s] | 28.45 | 27.79 | 45.70 | 33.98 |
| I_b,int, Bicycle LOS Score for Intersection | 2.576 | 3.340 | 2.134 | 2.263 |
| Bicycle LOS | B | C | B | B |

Sequence

| | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



Intersection Level Of Service Report

Intersection 3: Nolensville Road and Williams Road/York Road

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Signalized | Delay (sec / veh): | 44.1 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.798 |

Intersection Setup

| Name | Nolensville Road | | | Nolensville Road | | | Williams Road | | | York Road | | |
|------------------------------|------------------|--------|--------|------------------|--------|--------|---------------|--------|--------|-----------|--------|--------|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 40.00 | | | 40.00 | | | 45.00 | | | 35.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | No | | | No | | | No | | | No | | |

Volumes

| Name | Nolensville Road | | | Nolensville Road | | | Williams Road | | | York Road | | |
|---|------------------|--------|--------|------------------|--------|--------|---------------|--------|--------|-----------|--------|--------|
| Base Volume Input [veh/h] | 46 | 328 | 69 | 43 | 459 | 14 | 8 | 254 | 68 | 45 | 94 | 35 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Proportion of CAVs [%] | 0.00 | | | | | | | | | | | |
| Growth Factor | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 |
| In-Process Volume [veh/h] | 71 | 149 | 0 | 18 | 148 | 29 | 25 | 12 | 66 | 0 | 12 | 18 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 123 | 518 | 78 | 66 | 665 | 45 | 34 | 298 | 143 | 51 | 118 | 57 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 33 | 141 | 21 | 18 | 181 | 12 | 9 | 81 | 39 | 14 | 32 | 15 |
| Total Analysis Volume [veh/h] | 134 | 563 | 85 | 72 | 723 | 49 | 37 | 324 | 155 | 55 | 128 | 62 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

Version 2023 (SP 0-5)

Intersection Settings

| | |
|---------------------------|---------------------------------|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 130 |
| Active Pattern | Pattern 1 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | Beginning of First Yellow |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

Phasing & Timing

| Control Type | Permiss | Permiss | Permiss | ProtPer | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Signal Group | 0 | 2 | 0 | 1 | 6 | 0 | 0 | 4 | 0 | 0 | 8 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | Lead | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 0 | 10 | 0 | 5 | 10 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Maximum Green [s] | 0 | 60 | 0 | 10 | 60 | 0 | 0 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 69 | 0 | 13 | 82 | 0 | 0 | 48 | 0 | 0 | 48 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Clearance [s] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | Yes | | Yes | Yes | | | No | | | No | |
| Maximum Recall | | No | | No | No | | | No | | | No | |
| Pedestrian Recall | | No | | No | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

Lane Group Calculations

| Lane Group | L | C | L | C | C | L | C |
|---|-------|-------|-------|-------|-------|-------|-------|
| C, Cycle Length [s] | 130 | 130 | 130 | 130 | 130 | 130 | 130 |
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 0.00 | 0.00 | 2.00 | 2.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 0.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 67 | 67 | 77 | 77 | 43 | 43 | 43 |
| g / C, Green / Cycle | 0.52 | 0.52 | 0.59 | 0.59 | 0.33 | 0.33 | 0.33 |
| (v / s)_i Volume / Saturation Flow Rate | 0.21 | 0.39 | 0.09 | 0.46 | 0.33 | 0.07 | 0.12 |
| s, saturation flow rate [veh/h] | 628 | 1645 | 795 | 1664 | 1543 | 824 | 1591 |
| c, Capacity [veh/h] | 148 | 851 | 327 | 986 | 540 | 57 | 526 |
| d1, Uniform Delay [s] | 58.33 | 24.98 | 18.59 | 20.15 | 43.63 | 51.97 | 33.06 |
| k, delay calibration | 0.50 | 0.50 | 0.43 | 0.50 | 0.46 | 0.11 | 0.11 |
| l, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 51.81 | 6.37 | 1.32 | 6.20 | 27.55 | 45.49 | 0.42 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | | | | | |
|---------------------------------------|--------|--------|-------|--------|--------|--------|--------|
| X, volume / capacity | 0.90 | 0.76 | 0.22 | 0.78 | 0.96 | 0.96 | 0.36 |
| d, Delay for Lane Group [s/veh] | 110.14 | 31.34 | 19.91 | 26.35 | 71.19 | 97.46 | 33.48 |
| Lane Group LOS | F | C | B | C | E | F | C |
| Critical Lane Group | No | No | No | Yes | Yes | No | No |
| 50th-Percentile Queue Length [veh/ln] | 6.53 | 16.55 | 0.98 | 18.09 | 20.10 | 2.54 | 4.60 |
| 50th-Percentile Queue Length [ft/ln] | 163.15 | 413.84 | 24.45 | 452.25 | 502.54 | 63.51 | 115.10 |
| 95th-Percentile Queue Length [veh/ln] | 10.72 | 23.23 | 1.76 | 25.07 | 27.45 | 4.57 | 8.12 |
| 95th-Percentile Queue Length [ft/ln] | 267.89 | 580.65 | 44.01 | 626.63 | 686.37 | 114.31 | 203.07 |

Movement, Approach, & Intersection Results

| | | | | | | | | | | | | |
|---------------------------------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| d_M, Delay for Movement [s/veh] | 110.14 | 31.34 | 31.34 | 19.91 | 26.35 | 26.35 | 71.19 | 71.19 | 71.19 | 97.46 | 33.48 | 33.48 |
| Movement LOS | F | C | C | B | C | C | E | E | E | F | C | C |
| d_A, Approach Delay [s/veh] | 44.85 | | | 25.80 | | | 71.19 | | | 47.84 | | |
| Approach LOS | D | | | C | | | E | | | D | | |
| d_I, Intersection Delay [s/veh] | 44.11 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |
| Intersection V/C | 0.798 | | | | | | | | | | | |

Other Modes

| | | | | | | | | | | | | |
|--|-------|--|--|-------|--|--|-------|--|--|-------|--|--|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | | |
| M_corner, Corner Circulation Area [ft ² /ped] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| M_CW, Crosswalk Circulation Area [ft ² /ped] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| d_p, Pedestrian Delay [s] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| I_p,int, Pedestrian LOS Score for Intersectio | 0.000 | | | 0.000 | | | 0.000 | | | 0.000 | | |
| Crosswalk LOS | F | | | F | | | F | | | F | | |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | | | 2000 | | | 2000 | | | 2000 | | |
| c_b, Capacity of the bicycle lane [bicycles/h] | 985 | | | 1185 | | | 662 | | | 662 | | |
| d_b, Bicycle Delay [s] | 16.75 | | | 10.80 | | | 29.11 | | | 29.11 | | |
| I_b,int, Bicycle LOS Score for Intersection | 2.850 | | | 2.952 | | | 2.411 | | | 1.964 | | |
| Bicycle LOS | C | | | C | | | B | | | A | | |

Sequence

| | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



Intersection Level Of Service Report
Intersection 4: Clovercroft Road and Williams Road

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Signalized | Delay (sec / veh): | 27.3 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.801 |

Intersection Setup

| Name | Clovercroft Road | | Clovercroft Road | | Williams Road | |
|------------------------------|------------------|--------|------------------|--------|---------------|--------|
| Approach | Northbound | | Southbound | | Westbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Thru | Right | Left | Thru | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 40.00 | | 30.00 | | 45.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Curb Present | No | | No | | No | |
| Crosswalk | No | | No | | No | |

Volumes

| Name | Clovercroft Road | | Clovercroft Road | | Williams Road | |
|---|------------------|--------|------------------|--------|---------------|--------|
| | | | | | | |
| Base Volume Input [veh/h] | 376 | 289 | 39 | 253 | 139 | 14 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Proportion of CAVs [%] | 0.00 | | | | | |
| Growth Factor | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 |
| In-Process Volume [veh/h] | 14 | 103 | 0 | 41 | 112 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 437 | 428 | 44 | 326 | 269 | 16 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 119 | 116 | 12 | 89 | 73 | 4 |
| Total Analysis Volume [veh/h] | 475 | 465 | 48 | 354 | 292 | 17 |
| Presence of On-Street Parking | No | No | No | No | No | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | 0 | | 0 | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | 0 | | 0 | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | 0 | | 0 | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | 0 | | 0 | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |
| Bicycle Volume [bicycles/h] | 0 | | 0 | | 0 | |

Version 2023 (SP 0-5)

Intersection Settings

| | |
|---------------------------|---------------------------------|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 90 |
| Active Pattern | Pattern 1 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | Beginning of First Yellow |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

Phasing & Timing

| Control Type | Permissive | Permissive | Permissive | Permissive | Permissive | Permissive |
|------------------------------|------------|------------|------------|------------|------------|------------|
| Signal Group | 2 | 0 | 0 | 6 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | |
| Lead / Lag | - | - | - | - | Lead | - |
| Minimum Green [s] | 10 | 0 | 0 | 10 | 7 | 0 |
| Maximum Green [s] | 60 | 0 | 0 | 60 | 30 | 0 |
| Amber [s] | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Split [s] | 65 | 0 | 0 | 65 | 25 | 0 |
| Vehicle Extension [s] | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Clearance [s] | 0 | 0 | 0 | 0 | 0 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | No | | | No | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Minimum Recall | Yes | | | Yes | No | |
| Maximum Recall | No | | | No | No | |
| Pedestrian Recall | No | | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 50.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

Lane Group Calculations

| Lane Group | C | C | C |
|---|-------|-------|-------|
| C, Cycle Length [s] | 90 | 90 | 90 |
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 2.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 61 | 61 | 19 |
| g / C, Green / Cycle | 0.68 | 0.68 | 0.21 |
| (v / s)_i Volume / Saturation Flow Rate | 0.61 | 0.52 | 0.19 |
| s, saturation flow rate [veh/h] | 1548 | 771 | 1592 |
| c, Capacity [veh/h] | 1044 | 565 | 341 |
| d1, Uniform Delay [s] | 12.14 | 13.15 | 34.46 |
| k, delay calibration | 0.50 | 0.50 | 0.13 |
| l, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 12.24 | 7.43 | 10.56 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | |
|---------------------------------------|--------|--------|--------|
| X, volume / capacity | 0.90 | 0.71 | 0.91 |
| d, Delay for Lane Group [s/veh] | 24.39 | 20.58 | 45.01 |
| Lane Group LOS | C | C | D |
| Critical Lane Group | Yes | No | Yes |
| 50th-Percentile Queue Length [veh/ln] | 14.99 | 5.87 | 7.17 |
| 50th-Percentile Queue Length [ft/ln] | 374.72 | 146.63 | 179.31 |
| 95th-Percentile Queue Length [veh/ln] | 21.34 | 9.84 | 11.56 |
| 95th-Percentile Queue Length [ft/ln] | 533.46 | 245.93 | 289.11 |

Movement, Approach, & Intersection Results

| | | | | | | |
|---------------------------------|-------|-------|-------|-------|-------|-------|
| d_M, Delay for Movement [s/veh] | 24.39 | 24.39 | 20.58 | 20.58 | 45.01 | 45.01 |
| Movement LOS | C | C | C | C | D | D |
| d_A, Approach Delay [s/veh] | 24.39 | | 20.58 | | 45.01 | |
| Approach LOS | C | | C | | D | |
| d_I, Intersection Delay [s/veh] | 27.32 | | | | | |
| Intersection LOS | C | | | | | |
| Intersection V/C | 0.801 | | | | | |

Other Modes

| | | | |
|--|-------|-------|-------|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 0.00 | 0.00 |
| I_p,int, Pedestrian LOS Score for Intersectio | 0.000 | 0.000 | 0.000 |
| Crosswalk LOS | F | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 1333 | 1333 | 444 |
| d_b, Bicycle Delay [s] | 5.00 | 5.00 | 27.22 |
| I_b,int, Bicycle LOS Score for Intersection | 3.111 | 2.223 | 2.069 |
| Bicycle LOS | C | B | B |

Sequence

| | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



Nolensville Town Center

Vistro File: M:\...\Nolensville Town Center - Draft 4.vistro

Scenario 4 Background PM

Report File: M:\...\4. Background - PM.pdf

11/27/2023

Turning Movement Volume: Summary

| ID | Intersection Name | Northbound | | | Southbound | | | Eastbound | | | Westbound | | | Total Volume |
|----|---|------------|------|-------|------------|------|-------|-----------|------|-------|-----------|------|-------|--------------|
| | | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | |
| 1 | Nolensville Road and Clovercroft Road/Rocky Fork Road | 138 | 549 | 167 | 271 | 610 | 46 | 139 | 295 | 116 | 318 | 224 | 177 | 3050 |

| ID | Intersection Name | Northbound | | | Southbound | | | Eastbound | | | Westbound | | | Total Volume |
|----|--|------------|------|-------|------------|------|-------|-----------|------|-------|-----------|------|-------|--------------|
| | | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | |
| 2 | Nolensville Road and Summerlyn Drive/Site Access | 83 | 461 | 23 | 252 | 606 | 134 | 207 | 30 | 83 | 50 | 30 | 312 | 2271 |

| ID | Intersection Name | Northbound | | | Southbound | | | Eastbound | | | Westbound | | | Total Volume |
|----|--|------------|------|-------|------------|------|-------|-----------|------|-------|-----------|------|-------|--------------|
| | | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | |
| 3 | Nolensville Road and Williams Road/York Road | 123 | 518 | 78 | 66 | 665 | 45 | 34 | 298 | 143 | 51 | 118 | 57 | 2196 |

| ID | Intersection Name | Northbound | | Southbound | | Westbound | | Total Volume |
|----|------------------------------------|------------|-------|------------|------|-----------|-------|--------------|
| | | Thru | Right | Left | Thru | Left | Right | |
| 4 | Clovercroft Road and Williams Road | 437 | 428 | 44 | 326 | 269 | 16 | 1520 |

PROJECTED CONDITIONS
CAPACITY ANALYSES

Nolensville Town Center

Vistro File: M:\...\Nolensville Town Center - Draft 4.vistro

Scenario 7 Projected AM - Scenario 1

Report File: M:\...\5. Projected - AM - Scenario 1.pdf

12/4/2023

Intersection Analysis Summary

| ID | Intersection Name | Control Type | Method | Worst Mvmt | V/C | Delay (s/veh) | LOS |
|----|---|--------------|-----------------|------------|-------|---------------|-----|
| 1 | Nolensville Road and Clovercroft Road/Rocky Fork Road | Signalized | HCM 7th Edition | EB Right | 0.925 | 72.6 | E |
| 2 | Nolensville Road and Summerlyn Drive/Site Access | Signalized | HCM 7th Edition | SB Left | 0.897 | 80.4 | F |
| 3 | Nolensville Road and Williams Road/York Road | Signalized | HCM 7th Edition | EB Thru | 0.777 | 32.8 | C |
| 4 | Clovercroft Road and Williams Road | Signalized | HCM 7th Edition | WB Left | 0.696 | 22.1 | C |
| 5 | Driveway A and Nolensville Rd | Two-way stop | HCM 7th Edition | EB Left | 1.735 | 503.0 | F |

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report

Intersection 1: Nolensville Road and Clovercroft Road/Rocky Fork Road

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Signalized | Delay (sec / veh): | 72.6 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | E |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.925 |

Intersection Setup

| Name | Nolensville Road | | | Nolensville Toad | | | Clovercroft Road | | | Rocky Fork Road | | |
|------------------------------|------------------|--------|--------|------------------|--------|--------|------------------|--------|-------|-----------------|--------|--------|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 |
| Entry Pocket Length [ft] | 200.00 | 100.00 | 100.00 | 175.00 | 100.00 | 100.00 | 100.00 | 100.00 | 85.00 | 175.00 | 100.00 | 185.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 35.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | No | | | No | | | No | | | No | | |

Volumes

| Name | Nolensville Road | | | Nolensville Toad | | | Clovercroft Road | | | Rocky Fork Road | | |
|---|------------------|--------|--------|------------------|--------|--------|------------------|--------|--------|-----------------|--------|--------|
| Base Volume Input [veh/h] | 82 | 447 | 79 | 78 | 385 | 37 | 93 | 139 | 100 | 133 | 293 | 153 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Proportion of CAVs [%] | 0.00 | | | | | | | | | | | |
| Growth Factor | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 |
| In-Process Volume [veh/h] | 50 | 60 | 52 | 0 | 75 | 8 | 20 | 0 | 63 | 63 | 0 | 0 |
| Site-Generated Trips [veh/h] | 18 | 43 | 35 | 0 | 31 | 0 | 0 | 0 | 13 | 25 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 160 | 606 | 176 | 88 | 540 | 50 | 125 | 157 | 189 | 238 | 330 | 172 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 43 | 165 | 48 | 24 | 147 | 14 | 34 | 43 | 51 | 65 | 90 | 47 |
| Total Analysis Volume [veh/h] | 174 | 659 | 191 | 96 | 587 | 54 | 136 | 171 | 205 | 259 | 359 | 187 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

Intersection Settings

| | |
|---------------------------|---------------------------------|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 100 |
| Active Pattern | Pattern 1 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | Beginning of First Yellow |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

Phasing & Timing

| Control Type | ProtPer | Permiss | Permiss | ProtPer | Permiss | Permiss | ProtPer | Permiss | Permiss | ProtPer | Permiss | Permiss |
|------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Signal Group | 5 | 2 | 0 | 1 | 6 | 0 | 7 | 4 | 0 | 3 | 8 | 10 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 10 | 0 | 5 | 10 | 0 | 5 | 7 | 0 | 5 | 7 | 0 |
| Maximum Green [s] | 15 | 60 | 0 | 15 | 60 | 0 | 15 | 30 | 0 | 15 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Split [s] | 13 | 48 | 0 | 13 | 48 | 0 | 13 | 26 | 0 | 13 | 26 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Clearance [s] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Minimum Recall | No | Yes | | No | Yes | | No | No | | No | No | |
| Maximum Recall | No | No | | No | No | | No | No | | No | No | |
| Pedestrian Recall | No | No | | No | No | | No | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 50.0 | 0.0 | 0.0 | 50.0 | 0.0 | 0.0 | 50.0 | 0.0 | 0.0 | 50.0 | 50.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

Lane Group Calculations

| Lane Group | L | C | L | C | L | C | L | C | R |
|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| C, Cycle Length [s] | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 0.00 | 3.00 | 0.00 | 3.00 | 0.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 56 | 46 | 56 | 44 | 34 | 21 | 34 | 21 | 21 |
| g / C, Green / Cycle | 0.56 | 0.46 | 0.56 | 0.44 | 0.34 | 0.21 | 0.34 | 0.21 | 0.21 |
| (v / s)_i Volume / Saturation Flow Rate | 0.20 | 0.53 | 0.13 | 0.39 | 0.13 | 0.24 | 0.23 | 0.21 | 0.13 |
| s, saturation flow rate [veh/h] | 875 | 1619 | 725 | 1658 | 1041 | 1535 | 1131 | 1683 | 1431 |
| c, Capacity [veh/h] | 342 | 749 | 242 | 724 | 295 | 322 | 300 | 355 | 301 |
| d1, Uniform Delay [s] | 19.20 | 26.88 | 21.77 | 25.89 | 26.35 | 39.50 | 30.52 | 39.47 | 35.84 |
| k, delay calibration | 0.50 | 0.50 | 0.29 | 0.50 | 0.11 | 0.30 | 0.50 | 0.22 | 0.11 |
| l, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 5.34 | 76.94 | 2.84 | 14.94 | 1.12 | 93.48 | 26.57 | 35.09 | 2.09 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | | | | | | | |
|---------------------------------------|--------|---------|-------|--------|--------|--------|--------|--------|--------|
| X, volume / capacity | 0.51 | 1.14 | 0.40 | 0.89 | 0.46 | 1.17 | 0.86 | 1.01 | 0.62 |
| d, Delay for Lane Group [s/veh] | 24.53 | 103.82 | 24.60 | 40.82 | 27.47 | 132.98 | 57.09 | 74.55 | 37.92 |
| Lane Group LOS | C | F | C | D | C | F | E | F | D |
| Critical Lane Group | No | Yes | Yes | No | No | Yes | Yes | No | No |
| 50th-Percentile Queue Length [veh/ln] | 2.33 | 32.76 | 1.14 | 16.34 | 2.39 | 16.15 | 6.92 | 11.91 | 4.22 |
| 50th-Percentile Queue Length [ft/ln] | 58.23 | 818.90 | 28.60 | 408.60 | 59.70 | 403.75 | 172.88 | 297.63 | 105.55 |
| 95th-Percentile Queue Length [veh/ln] | 4.19 | 46.22 | 2.06 | 22.97 | 4.30 | 24.58 | 11.23 | 17.68 | 7.59 |
| 95th-Percentile Queue Length [ft/ln] | 104.81 | 1155.41 | 51.49 | 574.35 | 107.46 | 614.62 | 280.70 | 442.11 | 189.80 |

Movement, Approach, & Intersection Results

| | | | | | | | | | | | | |
|---------------------------------|-------|--------|--------|-------|-------|-------|--------|--------|--------|-------|-------|-------|
| d_M, Delay for Movement [s/veh] | 24.53 | 103.82 | 103.82 | 24.60 | 40.82 | 40.82 | 27.47 | 132.98 | 132.98 | 57.09 | 74.55 | 37.92 |
| Movement LOS | C | F | F | C | D | D | C | F | F | E | F | D |
| d_A, Approach Delay [s/veh] | 90.35 | | | 38.71 | | | 104.95 | | | 60.43 | | |
| Approach LOS | F | | | D | | | F | | | E | | |
| d_I, Intersection Delay [s/veh] | 72.59 | | | | | | | | | | | |
| Intersection LOS | E | | | | | | | | | | | |
| Intersection V/C | 0.925 | | | | | | | | | | | |

Other Modes

| | | | | | | | | | | | | |
|--|-------|--|--|-------|--|--|-------|--|--|-------|--|--|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | | |
| M_corner, Corner Circulation Area [ft ² /ped] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| M_CW, Crosswalk Circulation Area [ft ² /ped] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| d_p, Pedestrian Delay [s] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| I_p,int, Pedestrian LOS Score for Intersectio | 0.000 | | | 0.000 | | | 0.000 | | | 0.000 | | |
| Crosswalk LOS | F | | | F | | | F | | | F | | |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | | | 2000 | | | 2000 | | | 2000 | | |
| c_b, Capacity of the bicycle lane [bicycles/h] | 860 | | | 860 | | | 420 | | | 420 | | |
| d_b, Bicycle Delay [s] | 16.25 | | | 16.25 | | | 31.21 | | | 31.21 | | |
| I_b,int, Bicycle LOS Score for Intersection | 3.249 | | | 2.776 | | | 2.404 | | | 2.888 | | |
| Bicycle LOS | C | | | C | | | B | | | C | | |

Sequence

| | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



Intersection Level Of Service Report

Intersection 2: Nolensville Road and Summerlyn Drive/Site Access

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Signalized | Delay (sec / veh): | 80.4 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.897 |

Intersection Setup

| Name | Nolensville Road | | | Nolensville Road | | | Site Access | | | Summerlyn Drive | | |
|------------------------------|------------------|--------|--------|------------------|--------|--------|-------------|--------|--------|-----------------|--------|--------|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 150.00 | 100.00 | 100.00 | 250.00 | 100.00 | 150.00 | 125.00 | 100.00 | 100.00 | 125.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 40.00 | | | 40.00 | | | 30.00 | | | 25.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

Volumes

| Name | Nolensville Road | | | Nolensville Road | | | Site Access | | | Summerlyn Drive | | |
|---|------------------|--------|--------|------------------|--------|--------|-------------|--------|--------|-----------------|--------|--------|
| Base Volume Input [veh/h] | 0 | 389 | 10 | 382 | 307 | 0 | 0 | 0 | 0 | 83 | 0 | 290 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Proportion of CAVs [%] | 0.00 | | | | | | | | | | | |
| Growth Factor | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 |
| In-Process Volume [veh/h] | 63 | 36 | 10 | 0 | 67 | 134 | 128 | 18 | 51 | 4 | 22 | 0 |
| Site-Generated Trips [veh/h] | 0 | 43 | 0 | 17 | 61 | 0 | 0 | 0 | 0 | 0 | 0 | 12 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 63 | 517 | 21 | 447 | 474 | 134 | 128 | 18 | 51 | 97 | 22 | 339 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 17 | 140 | 6 | 121 | 129 | 36 | 35 | 5 | 14 | 26 | 6 | 92 |
| Total Analysis Volume [veh/h] | 68 | 562 | 23 | 486 | 515 | 146 | 139 | 20 | 55 | 105 | 24 | 368 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

Intersection Settings

| | |
|---------------------------|---------------------------------|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 100 |
| Active Pattern | Pattern 1 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | Beginning of First Yellow |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

Phasing & Timing

| Control Type | ProtPer | Permiss | Permiss | ProtPer | Permiss | Permiss | Split | Split | Split | Split | Split | Split |
|------------------------------|---------|---------|---------|---------|---------|---------|-------|-------|-------|-------|-------|-------|
| Signal Group | 5 | 2 | 0 | 1 | 6 | 0 | 0 | 4 | 0 | 3 | 3 | 1 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | - | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 10 | 0 | 5 | 10 | 0 | 0 | 7 | 0 | 7 | 7 | 5 |
| Maximum Green [s] | 15 | 60 | 0 | 10 | 60 | 0 | 0 | 30 | 0 | 30 | 30 | 10 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 |
| All red [s] | 2.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 1.0 |
| Split [s] | 13 | 25 | 0 | 21 | 33 | 0 | 0 | 26 | 0 | 28 | 28 | 21 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 7 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 14 | 0 | 0 | 14 | 0 | 0 | 14 | 0 | 14 | 14 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 |
| I2, Clearance Lost Time [s] | 3.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 2.0 |
| Minimum Recall | No | Yes | | Yes | Yes | | | No | | | Yes | |
| Maximum Recall | No | No | | No | No | | | No | | | No | |
| Pedestrian Recall | No | No | | No | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 50.0 | 0.0 | 0.0 | 50.0 | 0.0 | 0.0 | 0.0 | 50.0 | 0.0 | 50.0 | 50.0 | 50.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

Lane Group Calculations

| Lane Group | L | C | L | C | R | L | C | C | R |
|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| C, Cycle Length [s] | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 0.00 | 2.00 | 0.00 | 2.00 | 2.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 52 | 31 | 52 | 43 | 43 | 11 | 11 | 23 | 23 |
| g / C, Green / Cycle | 0.52 | 0.31 | 0.52 | 0.43 | 0.43 | 0.11 | 0.11 | 0.23 | 0.23 |
| (v / s)_i Volume / Saturation Flow Rate | 0.08 | 0.35 | 0.46 | 0.31 | 0.10 | 0.09 | 0.05 | 0.08 | 0.26 |
| s, saturation flow rate [veh/h] | 824 | 1671 | 1060 | 1683 | 1431 | 1603 | 1490 | 1617 | 1431 |
| c, Capacity [veh/h] | 348 | 517 | 426 | 717 | 610 | 178 | 165 | 372 | 329 |
| d1, Uniform Delay [s] | 15.92 | 34.54 | 31.52 | 23.72 | 18.33 | 43.29 | 41.63 | 32.21 | 38.50 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 | 0.11 | 0.11 | 0.33 |
| l, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 1.25 | 81.22 | 87.66 | 6.10 | 0.93 | 7.34 | 1.95 | 0.55 | 76.78 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | | | | | | | |
|---------------------------------------|-------|--------|--------|--------|-------|--------|-------|--------|--------|
| X, volume / capacity | 0.20 | 1.13 | 1.14 | 0.72 | 0.24 | 0.78 | 0.45 | 0.35 | 1.12 |
| d, Delay for Lane Group [s/veh] | 17.17 | 115.76 | 119.18 | 29.82 | 19.26 | 50.63 | 43.58 | 32.77 | 115.28 |
| Lane Group LOS | B | F | F | C | B | D | D | C | F |
| Critical Lane Group | No | Yes | Yes | No | No | Yes | No | No | Yes |
| 50th-Percentile Queue Length [veh/ln] | 0.83 | 23.51 | 16.19 | 10.55 | 2.20 | 3.68 | 1.81 | 2.68 | 15.02 |
| 50th-Percentile Queue Length [ft/ln] | 20.78 | 587.72 | 404.82 | 263.76 | 55.06 | 92.11 | 45.33 | 67.07 | 375.51 |
| 95th-Percentile Queue Length [veh/ln] | 1.50 | 33.96 | 24.94 | 15.88 | 3.96 | 6.63 | 3.26 | 4.83 | 22.69 |
| 95th-Percentile Queue Length [ft/ln] | 37.41 | 849.07 | 623.59 | 396.93 | 99.11 | 165.80 | 81.59 | 120.73 | 567.37 |

Movement, Approach, & Intersection Results

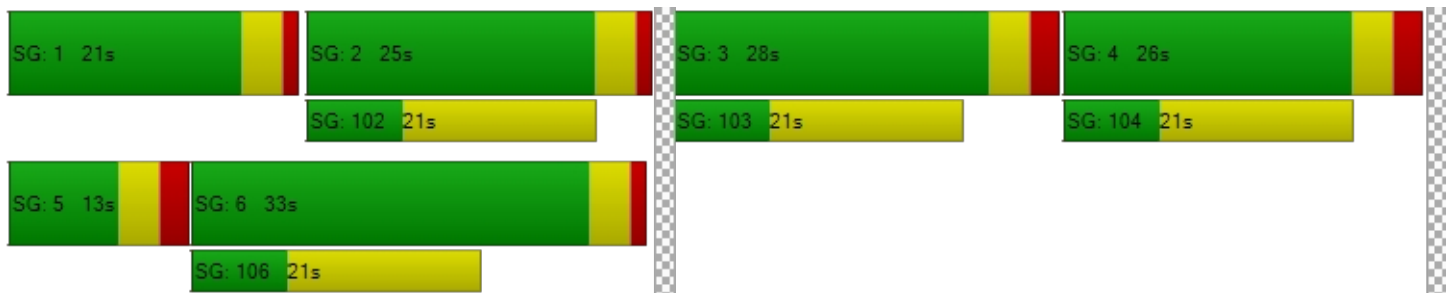
| | | | | | | | | | | | | |
|---------------------------------|--------|--------|--------|--------|-------|-------|-------|-------|-------|-------|-------|--------|
| d_M, Delay for Movement [s/veh] | 17.17 | 115.76 | 115.76 | 119.18 | 29.82 | 19.26 | 50.63 | 43.58 | 43.58 | 32.77 | 32.77 | 115.28 |
| Movement LOS | B | F | F | F | C | B | D | D | D | C | C | F |
| d_A, Approach Delay [s/veh] | 105.49 | | | 66.34 | | | 48.16 | | | 93.86 | | |
| Approach LOS | F | | | E | | | D | | | F | | |
| d_I, Intersection Delay [s/veh] | 80.42 | | | | | | | | | | | |
| Intersection LOS | F | | | | | | | | | | | |
| Intersection V/C | 0.897 | | | | | | | | | | | |

Other Modes

| | | | | |
|--|-------|-------|-------|-------|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 39.61 | 39.61 | 39.61 | 39.61 |
| I_p,int, Pedestrian LOS Score for Intersectio | 2.521 | 2.856 | 2.135 | 2.451 |
| Crosswalk LOS | B | C | B | B |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 420 | 580 | 420 | 460 |
| d_b, Bicycle Delay [s] | 31.21 | 25.21 | 31.21 | 29.65 |
| I_b,int, Bicycle LOS Score for Intersection | 2.637 | 3.452 | 1.913 | 2.380 |
| Bicycle LOS | B | C | A | B |

Sequence

| | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



Intersection Level Of Service Report

Intersection 3: Nolensville Road and Williams Road/York Road

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Signalized | Delay (sec / veh): | 32.8 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.777 |

Intersection Setup

| Name | Nolensville Road | | | Nolensville Road | | | Williams Road | | | York Road | | |
|------------------------------|------------------|--------|--------|------------------|--------|--------|---------------|--------|--------|-----------|--------|--------|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 40.00 | | | 40.00 | | | 45.00 | | | 35.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | No | | | No | | | No | | | No | | |

Volumes

| Name | Nolensville Road | | | Nolensville Road | | | Williams Road | | | York Road | | |
|---|------------------|--------|--------|------------------|--------|--------|---------------|--------|--------|-----------|--------|--------|
| Base Volume Input [veh/h] | 58 | 353 | 111 | 98 | 248 | 53 | 2 | 165 | 19 | 38 | 189 | 33 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Proportion of CAVs [%] | 0.00 | | | | | | | | | | | |
| Growth Factor | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 |
| In-Process Volume [veh/h] | 49 | 112 | 0 | 11 | 91 | 15 | 23 | 7 | 46 | 0 | 9 | 13 |
| Site-Generated Trips [veh/h] | 0 | 18 | 0 | 17 | 26 | 18 | 13 | 0 | 0 | 0 | 0 | 12 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 114 | 528 | 125 | 138 | 396 | 93 | 38 | 193 | 67 | 43 | 222 | 62 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 31 | 143 | 34 | 38 | 108 | 25 | 10 | 52 | 18 | 12 | 60 | 17 |
| Total Analysis Volume [veh/h] | 124 | 574 | 136 | 150 | 430 | 101 | 41 | 210 | 73 | 47 | 241 | 67 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

Intersection Settings

| | |
|---------------------------|---------------------------------|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 100 |
| Active Pattern | Pattern 1 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | Beginning of First Yellow |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

Phasing & Timing

| Control Type | Permiss | Permiss | Permiss | ProtPer | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Signal Group | 0 | 2 | 0 | 1 | 6 | 0 | 0 | 4 | 0 | 0 | 8 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | Lead | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 0 | 10 | 0 | 5 | 10 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Maximum Green [s] | 0 | 60 | 0 | 10 | 60 | 0 | 0 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 52 | 0 | 13 | 65 | 0 | 0 | 35 | 0 | 0 | 35 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Clearance [s] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | Yes | | Yes | Yes | | | No | | | No | |
| Maximum Recall | | No | | No | No | | | No | | | No | |
| Pedestrian Recall | | No | | No | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

Lane Group Calculations

| Lane Group | L | C | L | C | C | L | C |
|---|-------|-------|-------|-------|-------|-------|-------|
| C, Cycle Length [s] | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 0.00 | 0.00 | 2.00 | 2.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 0.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 49 | 49 | 60 | 60 | 30 | 30 | 30 |
| g / C, Green / Cycle | 0.49 | 0.49 | 0.60 | 0.60 | 0.30 | 0.30 | 0.30 |
| (v / s)_i Volume / Saturation Flow Rate | 0.16 | 0.44 | 0.19 | 0.33 | 0.30 | 0.05 | 0.19 |
| s, saturation flow rate [veh/h] | 785 | 1628 | 808 | 1628 | 1098 | 986 | 1621 |
| c, Capacity [veh/h] | 290 | 796 | 327 | 978 | 369 | 81 | 485 |
| d1, Uniform Delay [s] | 31.03 | 23.15 | 18.85 | 11.82 | 34.78 | 32.76 | 30.33 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.42 | 0.11 | 0.17 |
| l, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 4.57 | 14.38 | 4.57 | 2.16 | 21.16 | 6.50 | 2.14 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | | | | | |
|---------------------------------------|--------|--------|-------|--------|--------|-------|--------|
| X, volume / capacity | 0.43 | 0.89 | 0.46 | 0.54 | 0.88 | 0.58 | 0.64 |
| d, Delay for Lane Group [s/veh] | 35.60 | 37.52 | 23.42 | 13.98 | 55.93 | 39.26 | 32.46 |
| Lane Group LOS | D | D | C | B | E | D | C |
| Critical Lane Group | No | Yes | Yes | No | Yes | No | No |
| 50th-Percentile Queue Length [veh/ln] | 2.83 | 16.84 | 1.70 | 6.70 | 9.65 | 1.17 | 6.50 |
| 50th-Percentile Queue Length [ft/ln] | 70.83 | 421.11 | 42.49 | 167.56 | 241.28 | 29.26 | 162.60 |
| 95th-Percentile Queue Length [veh/ln] | 5.10 | 23.58 | 3.06 | 10.95 | 14.75 | 2.11 | 10.69 |
| 95th-Percentile Queue Length [ft/ln] | 127.49 | 589.38 | 76.49 | 273.71 | 368.65 | 52.66 | 267.16 |

Movement, Approach, & Intersection Results

| | | | | | | | | | | | | |
|---------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| d_M, Delay for Movement [s/veh] | 35.60 | 37.52 | 37.52 | 23.42 | 13.98 | 13.98 | 55.93 | 55.93 | 55.93 | 39.26 | 32.46 | 32.46 |
| Movement LOS | D | D | D | C | B | B | E | E | E | D | C | C |
| d_A, Approach Delay [s/veh] | 37.24 | | | 16.06 | | | 55.93 | | | 33.36 | | |
| Approach LOS | D | | | B | | | E | | | C | | |
| d_I, Intersection Delay [s/veh] | 32.80 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.777 | | | | | | | | | | | |

Other Modes

| | | | | |
|--|-------|-------|-------|-------|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 0.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 |
| I_p,int, Pedestrian LOS Score for Intersectio | 0.000 | 0.000 | 0.000 | 0.000 |
| Crosswalk LOS | F | F | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 940 | 1200 | 600 | 600 |
| d_b, Bicycle Delay [s] | 14.05 | 8.00 | 24.50 | 24.50 |
| I_b,int, Bicycle LOS Score for Intersection | 2.936 | 2.683 | 2.094 | 2.145 |
| Bicycle LOS | C | B | B | B |

Sequence

| | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



Intersection Level Of Service Report
Intersection 4: Clovercroft Road and Williams Road

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Signalized | Delay (sec / veh): | 22.1 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.696 |

Intersection Setup

| Name | Clovercroft Road | | Clovercroft Road | | Williams Road | |
|------------------------------|------------------|--------|------------------|--------|---------------|--------|
| Approach | Northbound | | Southbound | | Westbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Thru | Right | Left | Thru | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 40.00 | | 30.00 | | 45.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Curb Present | No | | No | | No | |
| Crosswalk | No | | No | | No | |

Volumes

| Name | Clovercroft Road | | Clovercroft Road | | Williams Road | |
|---|------------------|--------|------------------|--------|---------------|--------|
| Base Volume Input [veh/h] | 168 | 153 | 21 | 478 | 252 | 42 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Proportion of CAVs [%] | 0.00 | | | | | |
| Growth Factor | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 |
| In-Process Volume [veh/h] | 20 | 76 | 0 | 20 | 73 | 0 |
| Site-Generated Trips [veh/h] | 13 | 13 | 0 | 18 | 18 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 222 | 261 | 24 | 576 | 375 | 47 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 60 | 71 | 7 | 157 | 102 | 13 |
| Total Analysis Volume [veh/h] | 241 | 284 | 26 | 626 | 408 | 51 |
| Presence of On-Street Parking | No | No | No | No | No | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | 0 | | 0 | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | 0 | | 0 | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | 0 | | 0 | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | 0 | | 0 | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |
| Bicycle Volume [bicycles/h] | 0 | | 0 | | 0 | |

Intersection Settings

| | |
|---------------------------|---------------------------------|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 90 |
| Active Pattern | Pattern 1 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | Beginning of First Yellow |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

Phasing & Timing

| Control Type | Permissive | Permissive | Permissive | Permissive | Permissive | Permissive |
|------------------------------|------------|------------|------------|------------|------------|------------|
| Signal Group | 2 | 0 | 0 | 6 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | |
| Lead / Lag | - | - | - | - | Lead | - |
| Minimum Green [s] | 10 | 0 | 0 | 10 | 7 | 0 |
| Maximum Green [s] | 60 | 0 | 0 | 60 | 30 | 0 |
| Amber [s] | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Split [s] | 15 | 0 | 0 | 15 | 75 | 0 |
| Vehicle Extension [s] | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Clearance [s] | 0 | 0 | 0 | 0 | 0 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | No | | | No | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Minimum Recall | Yes | | | Yes | No | |
| Maximum Recall | No | | | No | No | |
| Pedestrian Recall | No | | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 50.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

Lane Group Calculations

| Lane Group | C | C | C |
|---|-------|-------|-------|
| C, Cycle Length [s] | 90 | 90 | 90 |
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 2.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 51 | 51 | 29 |
| g / C, Green / Cycle | 0.57 | 0.57 | 0.32 |
| (v / s)_i Volume / Saturation Flow Rate | 0.34 | 0.41 | 0.29 |
| s, saturation flow rate [veh/h] | 1536 | 1606 | 1582 |
| c, Capacity [veh/h] | 870 | 951 | 510 |
| d1, Uniform Delay [s] | 12.85 | 13.83 | 29.11 |
| k, delay calibration | 0.50 | 0.50 | 0.11 |
| l, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 3.09 | 4.01 | 6.05 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | |
|---------------------------------------|--------|--------|--------|
| X, volume / capacity | 0.60 | 0.69 | 0.90 |
| d, Delay for Lane Group [s/veh] | 15.94 | 17.84 | 35.16 |
| Lane Group LOS | B | B | D |
| Critical Lane Group | No | Yes | Yes |
| 50th-Percentile Queue Length [veh/ln] | 6.72 | 9.51 | 9.52 |
| 50th-Percentile Queue Length [ft/ln] | 167.88 | 237.64 | 237.93 |
| 95th-Percentile Queue Length [veh/ln] | 10.97 | 14.56 | 14.58 |
| 95th-Percentile Queue Length [ft/ln] | 274.13 | 364.05 | 364.42 |

Movement, Approach, & Intersection Results

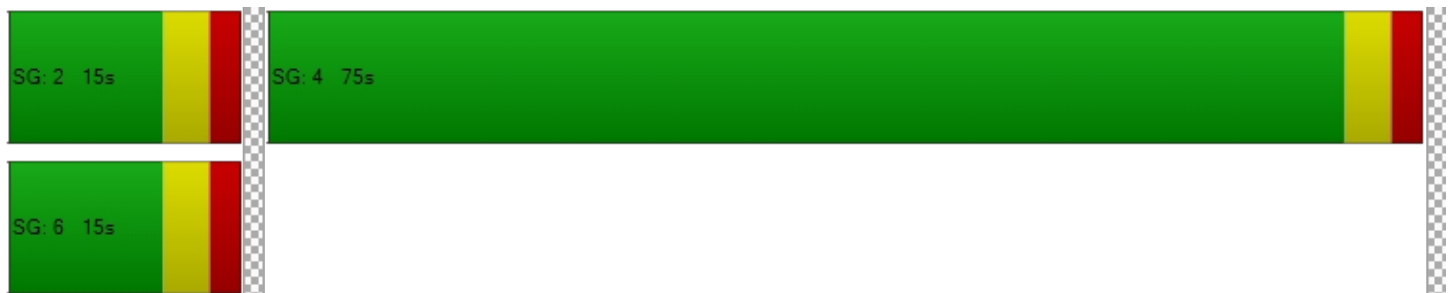
| | | | | | | |
|---------------------------------|-------|-------|-------|-------|-------|-------|
| d_M, Delay for Movement [s/veh] | 15.94 | 15.94 | 17.84 | 17.84 | 35.16 | 35.16 |
| Movement LOS | B | B | B | B | D | D |
| d_A, Approach Delay [s/veh] | 15.94 | | 17.84 | | 35.16 | |
| Approach LOS | B | | B | | D | |
| d_I, Intersection Delay [s/veh] | 22.09 | | | | | |
| Intersection LOS | C | | | | | |
| Intersection V/C | 0.696 | | | | | |

Other Modes

| | | | |
|--|-------|-------|-------|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 0.00 | 0.00 |
| I_p,int, Pedestrian LOS Score for Intersectio | 0.000 | 0.000 | 0.000 |
| Crosswalk LOS | F | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 222 | 222 | 1556 |
| d_b, Bicycle Delay [s] | 35.56 | 35.56 | 2.22 |
| I_b,int, Bicycle LOS Score for Intersection | 2.426 | 2.635 | 2.317 |
| Bicycle LOS | B | B | B |

Sequence

| | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



Intersection Level Of Service Report
Intersection 5: Driveway A and Nolensville Rd

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Two-way stop | Delay (sec / veh): | 503.0 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 1.735 |

Intersection Setup

| Name | Nolensville Road | | Nolensville Road | | Driveway A | |
|------------------------------|------------------|--------|------------------|--------|------------|--------|
| Approach | Northbound | | Southbound | | Eastbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Left | Thru | Thru | Right | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 1 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 40.00 | | 40.00 | | 25.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | No | | No | | No | |

Volumes

| Name | Nolensville Road | | Nolensville Road | | Driveway A | |
|---|------------------|--------|------------------|--------|------------|--------|
| Base Volume Input [veh/h] | 0 | 582 | 630 | 0 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 |
| In-Process Volume [veh/h] | 0 | 162 | 201 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 55 | 0 | 0 | 69 | 96 | 78 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 55 | 817 | 911 | 69 | 96 | 78 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 15 | 222 | 248 | 19 | 26 | 21 |
| Total Analysis Volume [veh/h] | 60 | 888 | 990 | 75 | 104 | 85 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

Intersection Settings

| | | | |
|------------------------------------|------|------|------|
| Priority Scheme | Free | Free | Stop |
| Flared Lane | | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | |
|---------------------------------------|-------|------|------|------|--------|-------|
| V/C, Movement V/C Ratio | 0.09 | 0.01 | 0.01 | 0.00 | 1.74 | 0.28 |
| d_M, Delay for Movement [s/veh] | 11.06 | 0.00 | 0.00 | 0.00 | 503.04 | 21.75 |
| Movement LOS | B | A | A | A | F | C |
| 95th-Percentile Queue Length [veh/ln] | 0.30 | 0.00 | 0.00 | 0.00 | 9.58 | 1.14 |
| 95th-Percentile Queue Length [ft/ln] | 7.54 | 0.00 | 0.00 | 0.00 | 239.49 | 28.56 |
| d_A, Approach Delay [s/veh] | 0.70 | | 0.00 | | 286.58 | |
| Approach LOS | A | | A | | F | |
| d_I, Intersection Delay [s/veh] | 24.90 | | | | | |
| Intersection LOS | F | | | | | |

Nolensville Town Center

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Scenario 7 Projected AM - Scenario 1

Report File: M:\...\5. Projected - AM - Scenario 1.pdf

12/4/2023

Turning Movement Volume: Summary

| ID | Intersection Name | Northbound | | | Southbound | | | Eastbound | | | Westbound | | | Total Volume |
|----|---|------------|------|-------|------------|------|-------|-----------|------|-------|-----------|------|-------|--------------|
| | | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | |
| 1 | Nolensville Road and Clovercroft Road/Rocky Fork Road | 160 | 606 | 176 | 88 | 540 | 50 | 125 | 157 | 189 | 238 | 330 | 172 | 2831 |

| ID | Intersection Name | Northbound | | | Southbound | | | Eastbound | | | Westbound | | | Total Volume |
|----|--|------------|------|-------|------------|------|-------|-----------|------|-------|-----------|------|-------|--------------|
| | | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | |
| 2 | Nolensville Road and Summerlyn Drive/Site Access | 63 | 517 | 21 | 447 | 474 | 134 | 128 | 18 | 51 | 97 | 22 | 339 | 2311 |

| ID | Intersection Name | Northbound | | | Southbound | | | Eastbound | | | Westbound | | | Total Volume |
|----|--|------------|------|-------|------------|------|-------|-----------|------|-------|-----------|------|-------|--------------|
| | | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | |
| 3 | Nolensville Road and Williams Road/York Road | 114 | 528 | 125 | 138 | 396 | 93 | 38 | 193 | 67 | 43 | 222 | 62 | 2019 |

| ID | Intersection Name | Northbound | | Southbound | | Westbound | | Total Volume |
|----|------------------------------------|------------|-------|------------|------|-----------|-------|--------------|
| | | Thru | Right | Left | Thru | Left | Right | |
| 4 | Clovercroft Road and Williams Road | 222 | 261 | 24 | 576 | 375 | 47 | 1505 |

| ID | Intersection Name | Northbound | | Southbound | | Eastbound | | Total Volume |
|----|-------------------------------|------------|------|------------|-------|-----------|-------|--------------|
| | | Left | Thru | Thru | Right | Left | Right | |
| 5 | Driveway A and Nolensville Rd | 55 | 817 | 911 | 69 | 96 | 78 | 2026 |

Nolensville Town Center

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Scenario 8 Projected PM - Scenario 1

Report File: M:\...\6. Projected - PM - Scenario 1.pdf

12/4/2023

Intersection Analysis Summary

| ID | Intersection Name | Control Type | Method | Worst Mvmt | V/C | Delay (s/veh) | LOS |
|----|---|--------------|-----------------|------------|-------|---------------|-----|
| 1 | Nolensville Road and Clovercroft Road/Rocky Fork Road | Signalized | HCM 7th Edition | WB Left | 1.095 | 134.2 | F |
| 2 | Nolensville Road and Summerlyn Drive/Site Access | Signalized | HCM 7th Edition | SB Left | 0.876 | 101.6 | F |
| 3 | Nolensville Road and Williams Road/York Road | Signalized | HCM 7th Edition | NB Left | 0.935 | 71.8 | E |
| 4 | Clovercroft Road and Williams Road | Signalized | HCM 7th Edition | WB Left | 0.877 | 39.5 | D |
| 5 | Driveway A and Nolensville Rd | Two-way stop | HCM 7th Edition | EB Left | 7.342 | 3,297.3 | F |

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report

Intersection 1: Nolensville Road and Clovercroft Road/Rocky Fork Road

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Signalized | Delay (sec / veh): | 134.2 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 1.095 |

Intersection Setup

| Name | Nolensville Road | | | Nolensville Toad | | | Clovercroft Road | | | Rocky Fork Road | | |
|------------------------------|------------------|--------|--------|------------------|--------|--------|------------------|--------|-------|-----------------|--------|--------|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 |
| Entry Pocket Length [ft] | 200.00 | 100.00 | 100.00 | 175.00 | 100.00 | 100.00 | 100.00 | 100.00 | 85.00 | 175.00 | 100.00 | 185.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 35.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | No | | | No | | | No | | | No | | |

Volumes

| Name | Nolensville Road | | | Nolensville Toad | | | Clovercroft Road | | | Rocky Fork Road | | |
|---|------------------|--------|--------|------------------|--------|--------|------------------|--------|--------|-----------------|--------|--------|
| Base Volume Input [veh/h] | 49 | 399 | 75 | 241 | 453 | 21 | 111 | 262 | 28 | 208 | 199 | 157 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Proportion of CAVs [%] | 0.00 | | | | | | | | | | | |
| Growth Factor | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 |
| In-Process Volume [veh/h] | 83 | 100 | 83 | 0 | 100 | 22 | 14 | 0 | 84 | 84 | 0 | 0 |
| Site-Generated Trips [veh/h] | 21 | 52 | 42 | 0 | 63 | 0 | 0 | 0 | 25 | 50 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 159 | 601 | 209 | 271 | 673 | 46 | 139 | 295 | 141 | 368 | 224 | 177 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 43 | 163 | 57 | 74 | 183 | 13 | 38 | 80 | 38 | 100 | 61 | 48 |
| Total Analysis Volume [veh/h] | 173 | 653 | 227 | 295 | 732 | 50 | 151 | 321 | 153 | 400 | 243 | 192 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

Intersection Settings

| | |
|---------------------------|---------------------------------|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 130 |
| Active Pattern | Pattern 1 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | Beginning of First Yellow |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

Phasing & Timing

| Control Type | ProtPer | Permiss | Permiss | ProtPer | Permiss | Permiss | ProtPer | Permiss | Permiss | ProtPer | Permiss | Permiss |
|------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Signal Group | 5 | 2 | 0 | 1 | 6 | 0 | 7 | 4 | 0 | 3 | 8 | 10 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 10 | 0 | 5 | 10 | 0 | 5 | 7 | 0 | 5 | 7 | 0 |
| Maximum Green [s] | 15 | 60 | 0 | 15 | 60 | 0 | 15 | 30 | 0 | 15 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Split [s] | 13 | 59 | 0 | 15 | 61 | 0 | 13 | 37 | 0 | 19 | 43 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Clearance [s] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Minimum Recall | No | Yes | | No | Yes | | No | No | | No | No | |
| Maximum Recall | No | No | | No | No | | No | No | | No | No | |
| Pedestrian Recall | No | No | | No | No | | No | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 50.0 | 0.0 | 0.0 | 50.0 | 0.0 | 0.0 | 50.0 | 0.0 | 0.0 | 50.0 | 50.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

Lane Group Calculations

| Lane Group | L | C | L | C | L | C | L | C | R |
|---|-------|--------|--------|-------|-------|--------|--------|-------|-------|
| C, Cycle Length [s] | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 |
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 0.00 | 3.00 | 0.00 | 3.00 | 0.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 69 | 54 | 69 | 56 | 51 | 32 | 51 | 38 | 38 |
| g / C, Green / Cycle | 0.53 | 0.42 | 0.53 | 0.43 | 0.39 | 0.25 | 0.39 | 0.29 | 0.29 |
| (v / s)_i Volume / Saturation Flow Rate | 0.22 | 0.55 | 0.39 | 0.47 | 0.15 | 0.30 | 0.37 | 0.14 | 0.13 |
| s, saturation flow rate [veh/h] | 778 | 1610 | 763 | 1664 | 1019 | 1592 | 1086 | 1683 | 1431 |
| c, Capacity [veh/h] | 223 | 669 | 251 | 717 | 377 | 392 | 308 | 492 | 418 |
| d1, Uniform Delay [s] | 34.53 | 38.00 | 46.79 | 37.00 | 27.63 | 49.00 | 46.39 | 38.05 | 37.60 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.15 | 0.50 | 0.50 | 0.11 | 0.11 |
| l, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 22.59 | 152.68 | 112.32 | 61.06 | 0.94 | 115.79 | 156.50 | 0.77 | 0.79 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | | | | | | | |
|---------------------------------------|--------|---------|--------|---------|--------|--------|--------|--------|--------|
| X, volume / capacity | 0.77 | 1.32 | 1.17 | 1.09 | 0.40 | 1.21 | 1.30 | 0.49 | 0.46 |
| d, Delay for Lane Group [s/veh] | 57.12 | 190.68 | 159.11 | 98.06 | 28.56 | 164.79 | 202.89 | 38.82 | 38.39 |
| Lane Group LOS | E | F | F | F | C | F | F | D | D |
| Critical Lane Group | No | Yes | Yes | No | No | Yes | Yes | No | No |
| 50th-Percentile Queue Length [veh/ln] | 4.13 | 49.21 | 12.02 | 34.41 | 3.28 | 25.26 | 20.56 | 6.48 | 5.07 |
| 50th-Percentile Queue Length [ft/ln] | 103.23 | 1230.13 | 300.57 | 860.35 | 81.89 | 631.52 | 514.02 | 161.99 | 126.72 |
| 95th-Percentile Queue Length [veh/ln] | 7.43 | 72.37 | 19.65 | 46.96 | 5.90 | 37.18 | 32.59 | 10.65 | 8.76 |
| 95th-Percentile Queue Length [ft/ln] | 185.81 | 1809.16 | 491.30 | 1174.00 | 147.41 | 929.49 | 814.78 | 266.35 | 219.03 |

Movement, Approach, & Intersection Results

| | | | | | | | | | | | | |
|---------------------------------|--------|--------|--------|--------|-------|-------|--------|--------|--------|--------|-------|-------|
| d_M, Delay for Movement [s/veh] | 57.12 | 190.68 | 190.68 | 159.11 | 98.06 | 98.06 | 28.56 | 164.79 | 164.79 | 202.89 | 38.82 | 38.39 |
| Movement LOS | E | F | F | F | F | F | C | F | F | F | D | D |
| d_A, Approach Delay [s/veh] | 168.74 | | | 114.78 | | | 131.88 | | | 117.32 | | |
| Approach LOS | F | | | F | | | F | | | F | | |
| d_I, Intersection Delay [s/veh] | 134.17 | | | | | | | | | | | |
| Intersection LOS | F | | | | | | | | | | | |
| Intersection V/C | 1.095 | | | | | | | | | | | |

Other Modes

| | | | | |
|--|-------|-------|-------|-------|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 0.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 |
| I_p,int, Pedestrian LOS Score for Intersectio | 0.000 | 0.000 | 0.000 | 0.000 |
| Crosswalk LOS | F | F | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 831 | 862 | 492 | 585 |
| d_b, Bicycle Delay [s] | 22.22 | 21.06 | 36.94 | 32.55 |
| I_b,int, Bicycle LOS Score for Intersection | 3.297 | 3.337 | 2.591 | 2.937 |
| Bicycle LOS | C | C | B | C |

Sequence

| | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



Intersection Level Of Service Report

Intersection 2: Nolensville Road and Summerlyn Drive/Site Access

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Signalized | Delay (sec / veh): | 101.6 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.876 |

Intersection Setup

| Name | Nolensville Road | | | Nolensville Road | | | Site Access | | | Summerlyn Drive | | |
|------------------------------|------------------|--------|--------|------------------|--------|--------|-------------|--------|--------|-----------------|--------|--------|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 150.00 | 100.00 | 100.00 | 250.00 | 100.00 | 150.00 | 125.00 | 100.00 | 100.00 | 125.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 40.00 | | | 40.00 | | | 30.00 | | | 25.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

Volumes

| Name | Nolensville Road | | | Nolensville Road | | | Site Access | | | Summerlyn Drive | | |
|---|------------------|--------|--------|------------------|--------|--------|-------------|--------|--------|-----------------|--------|--------|
| Base Volume Input [veh/h] | 0 | 357 | 14 | 224 | 479 | 0 | 0 | 0 | 0 | 35 | 0 | 277 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Proportion of CAVs [%] | 0.00 | | | | | | | | | | | |
| Growth Factor | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 |
| In-Process Volume [veh/h] | 83 | 59 | 7 | 0 | 67 | 134 | 207 | 30 | 83 | 11 | 30 | 0 |
| Site-Generated Trips [veh/h] | 0 | 88 | 0 | 21 | 73 | 0 | 0 | 0 | 0 | 0 | 0 | 25 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 83 | 549 | 23 | 273 | 679 | 134 | 207 | 30 | 83 | 50 | 30 | 337 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 23 | 149 | 6 | 74 | 185 | 36 | 56 | 8 | 23 | 14 | 8 | 92 |
| Total Analysis Volume [veh/h] | 90 | 597 | 25 | 297 | 738 | 146 | 225 | 33 | 90 | 54 | 33 | 366 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

Intersection Settings

| | |
|---------------------------|---------------------------------|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 130 |
| Active Pattern | Pattern 1 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | Beginning of First Yellow |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

Phasing & Timing

| Control Type | ProtPer | Permiss | Permiss | ProtPer | Permiss | Permiss | Split | Split | Split | Split | Split | Split |
|------------------------------|---------|---------|---------|---------|---------|---------|-------|-------|-------|-------|-------|-------|
| Signal Group | 5 | 2 | 0 | 1 | 6 | 0 | 0 | 4 | 0 | 3 | 3 | 1 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | - | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 10 | 0 | 5 | 10 | 0 | 0 | 7 | 0 | 7 | 7 | 5 |
| Maximum Green [s] | 15 | 60 | 0 | 10 | 60 | 0 | 0 | 30 | 0 | 30 | 30 | 10 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 |
| All red [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 |
| Split [s] | 13 | 49 | 0 | 14 | 50 | 0 | 0 | 26 | 0 | 41 | 41 | 14 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 7 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 14 | 0 | 0 | 14 | 0 | 0 | 14 | 0 | 14 | 14 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 |
| I2, Clearance Lost Time [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 |
| Minimum Recall | No | Yes | | Yes | Yes | | | No | | | Yes | |
| Maximum Recall | No | No | | No | No | | | No | | | No | |
| Pedestrian Recall | No | No | | No | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 50.0 | 0.0 | 0.0 | 50.0 | 0.0 | 0.0 | 0.0 | 50.0 | 0.0 | 50.0 | 50.0 | 50.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

Lane Group Calculations

| Lane Group | L | C | L | C | R | L | C | C | R |
|---|-------|-------|--------|-------|-------|-------|-------|-------|-------|
| C, Cycle Length [s] | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 |
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 0.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 60 | 46 | 60 | 49 | 49 | 20 | 20 | 35 | 35 |
| g / C, Green / Cycle | 0.46 | 0.35 | 0.46 | 0.37 | 0.37 | 0.16 | 0.16 | 0.27 | 0.27 |
| (v / s)_i Volume / Saturation Flow Rate | 0.12 | 0.37 | 0.33 | 0.44 | 0.10 | 0.14 | 0.08 | 0.05 | 0.26 |
| s, saturation flow rate [veh/h] | 724 | 1671 | 899 | 1683 | 1431 | 1603 | 1491 | 1632 | 1431 |
| c, Capacity [veh/h] | 203 | 588 | 239 | 630 | 535 | 250 | 232 | 440 | 385 |
| d1, Uniform Delay [s] | 29.84 | 42.13 | 45.13 | 40.68 | 28.36 | 53.90 | 50.50 | 36.66 | 46.64 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.15 | 0.11 | 0.11 | 0.38 |
| l, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 6.92 | 53.29 | 138.50 | 93.59 | 1.26 | 14.78 | 1.87 | 0.22 | 29.56 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | | | | | | | |
|---------------------------------------|-------|--------|--------|---------|--------|--------|--------|-------|--------|
| X, volume / capacity | 0.44 | 1.06 | 1.24 | 1.17 | 0.27 | 0.90 | 0.53 | 0.20 | 0.95 |
| d, Delay for Lane Group [s/veh] | 36.76 | 95.42 | 183.63 | 134.27 | 29.62 | 68.68 | 52.37 | 36.88 | 76.20 |
| Lane Group LOS | D | F | F | F | C | E | D | D | E |
| Critical Lane Group | No | Yes | Yes | No | No | Yes | No | No | Yes |
| 50th-Percentile Queue Length [veh/ln] | 1.93 | 26.91 | 13.76 | 35.72 | 3.32 | 8.25 | 3.82 | 2.21 | 14.84 |
| 50th-Percentile Queue Length [ft/ln] | 48.28 | 672.71 | 344.09 | 893.03 | 82.88 | 206.26 | 95.54 | 55.19 | 370.88 |
| 95th-Percentile Queue Length [veh/ln] | 3.48 | 36.82 | 22.59 | 50.61 | 5.97 | 12.96 | 6.88 | 3.97 | 21.15 |
| 95th-Percentile Queue Length [ft/ln] | 86.91 | 920.48 | 564.87 | 1265.22 | 149.18 | 324.02 | 171.96 | 99.34 | 528.80 |

Movement, Approach, & Intersection Results

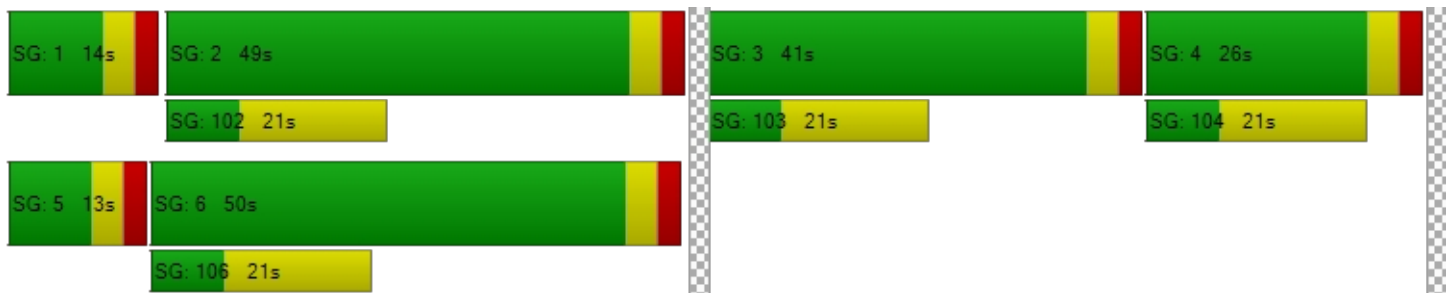
| | | | | | | | | | | | | |
|---------------------------------|--------|-------|-------|--------|--------|-------|-------|-------|-------|-------|-------|-------|
| d_M, Delay for Movement [s/veh] | 36.76 | 95.42 | 95.42 | 183.63 | 134.27 | 29.62 | 68.68 | 52.37 | 52.37 | 36.88 | 36.88 | 76.20 |
| Movement LOS | D | F | F | F | F | C | E | D | D | D | D | E |
| d_A, Approach Delay [s/veh] | 88.00 | | | 133.75 | | | 62.91 | | | 68.65 | | |
| Approach LOS | F | | | F | | | E | | | E | | |
| d_I, Intersection Delay [s/veh] | 101.56 | | | | | | | | | | | |
| Intersection LOS | F | | | | | | | | | | | |
| Intersection V/C | 0.876 | | | | | | | | | | | |

Other Modes

| | | | | |
|--|-------|-------|-------|-------|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 54.47 | 54.47 | 54.47 | 54.47 |
| I_p,int, Pedestrian LOS Score for Intersectio | 2.649 | 2.919 | 2.208 | 2.354 |
| Crosswalk LOS | B | C | B | B |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 677 | 692 | 323 | 554 |
| d_b, Bicycle Delay [s] | 28.45 | 27.79 | 45.70 | 33.98 |
| I_b,int, Bicycle LOS Score for Intersection | 2.734 | 3.508 | 2.134 | 2.307 |
| Bicycle LOS | B | D | B | B |

Sequence

| | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



Intersection Level Of Service Report

Intersection 3: Nolensville Road and Williams Road/York Road

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Signalized | Delay (sec / veh): | 71.8 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | E |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.935 |

Intersection Setup

| Name | Nolensville Road | | | Nolensville Road | | | Williams Road | | | York Road | | |
|------------------------------|------------------|--------|--------|------------------|--------|--------|---------------|--------|--------|-----------|--------|--------|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 40.00 | | | 40.00 | | | 45.00 | | | 35.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | No | | | No | | | No | | | No | | |

Volumes

| Name | Nolensville Road | | | Nolensville Road | | | Williams Road | | | York Road | | |
|---|------------------|--------|--------|------------------|--------|--------|---------------|--------|--------|-----------|--------|--------|
| Base Volume Input [veh/h] | 46 | 328 | 69 | 43 | 459 | 14 | 8 | 254 | 68 | 45 | 94 | 35 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Proportion of CAVs [%] | 0.00 | | | | | | | | | | | |
| Growth Factor | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 |
| In-Process Volume [veh/h] | 71 | 149 | 0 | 18 | 148 | 29 | 25 | 12 | 66 | 0 | 12 | 18 |
| Site-Generated Trips [veh/h] | 0 | 38 | 0 | 21 | 31 | 21 | 25 | 0 | 0 | 0 | 0 | 25 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 123 | 556 | 78 | 87 | 696 | 66 | 59 | 298 | 143 | 51 | 118 | 82 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 33 | 151 | 21 | 24 | 189 | 18 | 16 | 81 | 39 | 14 | 32 | 22 |
| Total Analysis Volume [veh/h] | 134 | 604 | 85 | 95 | 757 | 72 | 64 | 324 | 155 | 55 | 128 | 89 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

Intersection Settings

| | |
|---------------------------|---------------------------------|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 130 |
| Active Pattern | Pattern 1 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | Beginning of First Yellow |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

Phasing & Timing

| Control Type | Permiss | Permiss | Permiss | ProtPer | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Signal Group | 0 | 2 | 0 | 1 | 6 | 0 | 0 | 4 | 0 | 0 | 8 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | Lead | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 0 | 10 | 0 | 5 | 10 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Maximum Green [s] | 0 | 60 | 0 | 10 | 60 | 0 | 0 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 69 | 0 | 13 | 82 | 0 | 0 | 48 | 0 | 0 | 48 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Clearance [s] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | Yes | | Yes | Yes | | | No | | | No | |
| Maximum Recall | | No | | No | No | | | No | | | No | |
| Pedestrian Recall | | No | | No | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

Lane Group Calculations

| Lane Group | L | C | L | C | C | L | C |
|---|--------|-------|-------|-------|--------|-------|-------|
| C, Cycle Length [s] | 130 | 130 | 130 | 130 | 130 | 130 | 130 |
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 0.00 | 0.00 | 2.00 | 2.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 0.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 67 | 67 | 77 | 77 | 43 | 43 | 43 |
| g / C, Green / Cycle | 0.51 | 0.51 | 0.59 | 0.59 | 0.33 | 0.33 | 0.33 |
| (v / s)_i Volume / Saturation Flow Rate | 0.23 | 0.42 | 0.12 | 0.50 | 0.43 | 0.07 | 0.14 |
| s, saturation flow rate [veh/h] | 595 | 1647 | 779 | 1658 | 1250 | 824 | 1569 |
| c, Capacity [veh/h] | 108 | 844 | 301 | 982 | 444 | 59 | 519 |
| d1, Uniform Delay [s] | 62.18 | 26.56 | 20.99 | 21.61 | 46.68 | 48.71 | 33.78 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 | 0.11 |
| l, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 163.55 | 8.58 | 2.74 | 8.83 | 118.74 | 38.17 | 0.54 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | | | | | |
|---------------------------------------|--------|--------|-------|--------|---------|--------|--------|
| X, volume / capacity | 1.24 | 0.82 | 0.32 | 0.84 | 1.22 | 0.93 | 0.42 |
| d, Delay for Lane Group [s/veh] | 225.73 | 35.14 | 23.73 | 30.45 | 165.42 | 86.88 | 34.32 |
| Lane Group LOS | F | D | C | C | F | F | C |
| Critical Lane Group | No | No | No | Yes | Yes | No | No |
| 50th-Percentile Queue Length [veh/ln] | 8.47 | 18.88 | 1.38 | 21.29 | 28.92 | 2.44 | 5.38 |
| 50th-Percentile Queue Length [ft/ln] | 211.68 | 472.04 | 34.46 | 532.23 | 722.95 | 61.12 | 134.49 |
| 95th-Percentile Queue Length [veh/ln] | 14.98 | 26.01 | 2.48 | 28.86 | 42.60 | 4.40 | 9.18 |
| 95th-Percentile Queue Length [ft/ln] | 374.40 | 650.19 | 62.03 | 721.41 | 1065.05 | 110.01 | 229.59 |

Movement, Approach, & Intersection Results

| | | | | | | | | | | | | |
|---------------------------------|--------|-------|-------|-------|-------|-------|--------|--------|--------|-------|-------|-------|
| d_M, Delay for Movement [s/veh] | 225.73 | 35.14 | 35.14 | 23.73 | 30.45 | 30.45 | 165.42 | 165.42 | 165.42 | 86.88 | 34.32 | 34.32 |
| Movement LOS | F | D | D | C | C | C | F | F | F | F | C | C |
| d_A, Approach Delay [s/veh] | 66.17 | | | 29.76 | | | 165.42 | | | 44.95 | | |
| Approach LOS | E | | | C | | | F | | | D | | |
| d_I, Intersection Delay [s/veh] | 71.82 | | | | | | | | | | | |
| Intersection LOS | E | | | | | | | | | | | |
| Intersection V/C | 0.935 | | | | | | | | | | | |

Other Modes

| | | | | | | | | | | | | |
|--|-------|--|--|-------|--|--|-------|--|--|-------|--|--|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | | |
| M_corner, Corner Circulation Area [ft ² /ped] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| M_CW, Crosswalk Circulation Area [ft ² /ped] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| d_p, Pedestrian Delay [s] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| I_p,int, Pedestrian LOS Score for Intersectio | 0.000 | | | 0.000 | | | 0.000 | | | 0.000 | | |
| Crosswalk LOS | F | | | F | | | F | | | F | | |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | | | 2000 | | | 2000 | | | 2000 | | |
| c_b, Capacity of the bicycle lane [bicycles/h] | 985 | | | 1185 | | | 662 | | | 662 | | |
| d_b, Bicycle Delay [s] | 16.75 | | | 10.80 | | | 29.11 | | | 29.11 | | |
| I_b,int, Bicycle LOS Score for Intersection | 2.918 | | | 3.084 | | | 2.456 | | | 2.008 | | |
| Bicycle LOS | C | | | C | | | B | | | B | | |

Sequence

| | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



Intersection Level Of Service Report
Intersection 4: Clovercroft Road and Williams Road

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Signalized | Delay (sec / veh): | 39.5 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.877 |

Intersection Setup

| Name | Clovercroft Road | | Clovercroft Road | | Williams Road | |
|------------------------------|------------------|--------|------------------|--------|---------------|--------|
| Approach | Northbound | | Southbound | | Westbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Thru | Right | Left | Thru | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 40.00 | | 30.00 | | 45.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Curb Present | No | | No | | No | |
| Crosswalk | No | | No | | No | |

Volumes

| Name | Clovercroft Road | | Clovercroft Road | | Williams Road | |
|---|------------------|--------|------------------|--------|---------------|--------|
| | | | | | | |
| Base Volume Input [veh/h] | 376 | 289 | 39 | 253 | 139 | 14 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Proportion of CAVs [%] | 0.00 | | | | | |
| Growth Factor | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 |
| In-Process Volume [veh/h] | 14 | 103 | 0 | 41 | 112 | 0 |
| Site-Generated Trips [veh/h] | 25 | 25 | 0 | 21 | 21 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 462 | 453 | 44 | 347 | 290 | 16 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 126 | 123 | 12 | 94 | 79 | 4 |
| Total Analysis Volume [veh/h] | 502 | 492 | 48 | 377 | 315 | 17 |
| Presence of On-Street Parking | No | No | No | No | No | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | 0 | | 0 | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | 0 | | 0 | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | 0 | | 0 | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | 0 | | 0 | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |
| Bicycle Volume [bicycles/h] | 0 | | 0 | | 0 | |

Intersection Settings

| | |
|---------------------------|---------------------------------|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 90 |
| Active Pattern | Pattern 1 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | Beginning of First Yellow |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

Phasing & Timing

| Control Type | Permissive | Permissive | Permissive | Permissive | Permissive | Permissive |
|------------------------------|------------|------------|------------|------------|------------|------------|
| Signal Group | 2 | 0 | 0 | 6 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | |
| Lead / Lag | - | - | - | - | Lead | - |
| Minimum Green [s] | 10 | 0 | 0 | 10 | 7 | 0 |
| Maximum Green [s] | 60 | 0 | 0 | 60 | 30 | 0 |
| Amber [s] | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Split [s] | 65 | 0 | 0 | 65 | 25 | 0 |
| Vehicle Extension [s] | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Clearance [s] | 0 | 0 | 0 | 0 | 0 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | No | | | No | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Minimum Recall | Yes | | | Yes | No | |
| Maximum Recall | No | | | No | No | |
| Pedestrian Recall | No | | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 50.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

Lane Group Calculations

| | | | |
|---|-------|-------|-------|
| Lane Group | C | C | C |
| C, Cycle Length [s] | 90 | 90 | 90 |
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 2.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 60 | 60 | 20 |
| g / C, Green / Cycle | 0.67 | 0.67 | 0.22 |
| (v / s)_i Volume / Saturation Flow Rate | 0.64 | 0.67 | 0.21 |
| s, saturation flow rate [veh/h] | 1548 | 635 | 1593 |
| c, Capacity [veh/h] | 1032 | 468 | 354 |
| d1, Uniform Delay [s] | 13.97 | 19.08 | 34.39 |
| k, delay calibration | 0.50 | 0.50 | 0.16 |
| l, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 20.46 | 24.02 | 15.84 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | |
|---------------------------------------|--------|--------|--------|
| X, volume / capacity | 0.96 | 0.91 | 0.94 |
| d, Delay for Lane Group [s/veh] | 34.43 | 43.10 | 50.23 |
| Lane Group LOS | C | D | D |
| Critical Lane Group | No | Yes | Yes |
| 50th-Percentile Queue Length [veh/ln] | 19.74 | 10.63 | 8.22 |
| 50th-Percentile Queue Length [ft/ln] | 493.55 | 265.77 | 205.43 |
| 95th-Percentile Queue Length [veh/ln] | 27.03 | 15.98 | 12.92 |
| 95th-Percentile Queue Length [ft/ln] | 675.72 | 399.46 | 322.96 |

Movement, Approach, & Intersection Results

| | | | | | | |
|---------------------------------|-------|-------|-------|-------|-------|-------|
| d_M, Delay for Movement [s/veh] | 34.43 | 34.43 | 43.10 | 43.10 | 50.23 | 50.23 |
| Movement LOS | C | C | D | D | D | D |
| d_A, Approach Delay [s/veh] | 34.43 | | 43.10 | | 50.23 | |
| Approach LOS | C | | D | | D | |
| d_I, Intersection Delay [s/veh] | 39.53 | | | | | |
| Intersection LOS | D | | | | | |
| Intersection V/C | 0.877 | | | | | |

Other Modes

| | | | |
|--|-------|-------|-------|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 0.00 | 0.00 |
| I_p,int, Pedestrian LOS Score for Intersectio | 0.000 | 0.000 | 0.000 |
| Crosswalk LOS | F | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 1333 | 1333 | 444 |
| d_b, Bicycle Delay [s] | 5.00 | 5.00 | 27.22 |
| I_b,int, Bicycle LOS Score for Intersection | 3.200 | 2.261 | 2.107 |
| Bicycle LOS | C | B | B |

Sequence

| | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



Intersection Level Of Service Report
Intersection 5: Driveway A and Nolensville Rd

| | | | |
|------------------|-----------------|---------------------------|---------|
| Control Type: | Two-way stop | Delay (sec / veh): | 3,297.3 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 7.342 |

Intersection Setup

| Name | Nolensville Road | | Nolensville Road | | Driveway A | |
|------------------------------|------------------|--------|------------------|--------|------------|--------|
| Approach | Northbound | | Southbound | | Eastbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Left | Thru | Thru | Right | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 1 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 40.00 | | 40.00 | | 25.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | No | | No | | No | |

Volumes

| Name | Nolensville Road | | Nolensville Road | | Driveway A | |
|---|------------------|--------|------------------|--------|------------|--------|
| Base Volume Input [veh/h] | 0 | 747 | 853 | 0 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 |
| In-Process Volume [veh/h] | 0 | 266 | 201 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 113 | 0 | 0 | 138 | 115 | 94 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 113 | 1107 | 1162 | 138 | 115 | 94 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 31 | 301 | 316 | 38 | 31 | 26 |
| Total Analysis Volume [veh/h] | 123 | 1203 | 1263 | 150 | 125 | 102 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

Intersection Settings

| | | | |
|------------------------------------|------|------|------|
| Priority Scheme | Free | Free | Stop |
| Flared Lane | | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | |
|---------------------------------------|--------|------|------|------|---------|-------|
| V/C, Movement V/C Ratio | 0.25 | 0.01 | 0.01 | 0.00 | 7.34 | 0.49 |
| d_M, Delay for Movement [s/veh] | 15.00 | 0.00 | 0.00 | 0.00 | 3297.35 | 38.15 |
| Movement LOS | B | A | A | A | F | E |
| 95th-Percentile Queue Length [veh/ln] | 1.00 | 0.00 | 0.00 | 0.00 | 16.36 | 2.45 |
| 95th-Percentile Queue Length [ft/ln] | 25.10 | 0.00 | 0.00 | 0.00 | 409.05 | 61.32 |
| d_A, Approach Delay [s/veh] | 1.39 | | 0.00 | | 1832.86 | |
| Approach LOS | A | | A | | F | |
| d_I, Intersection Delay [s/veh] | 140.90 | | | | | |
| Intersection LOS | F | | | | | |

Nolensville Town Center

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Scenario 8 Projected PM - Scenario 1

Report File: M:\...\6. Projected - PM - Scenario 1.pdf

12/4/2023

Turning Movement Volume: Summary

| ID | Intersection Name | Northbound | | | Southbound | | | Eastbound | | | Westbound | | | Total Volume |
|----|---|------------|------|-------|------------|------|-------|-----------|------|-------|-----------|------|-------|--------------|
| | | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | |
| 1 | Nolensville Road and Clovercroft Road/Rocky Fork Road | 159 | 601 | 209 | 271 | 673 | 46 | 139 | 295 | 141 | 368 | 224 | 177 | 3303 |

| ID | Intersection Name | Northbound | | | Southbound | | | Eastbound | | | Westbound | | | Total Volume |
|----|--|------------|------|-------|------------|------|-------|-----------|------|-------|-----------|------|-------|--------------|
| | | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | |
| 2 | Nolensville Road and Summerlyn Drive/Site Access | 83 | 549 | 23 | 273 | 679 | 134 | 207 | 30 | 83 | 50 | 30 | 337 | 2478 |

| ID | Intersection Name | Northbound | | | Southbound | | | Eastbound | | | Westbound | | | Total Volume |
|----|--|------------|------|-------|------------|------|-------|-----------|------|-------|-----------|------|-------|--------------|
| | | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | |
| 3 | Nolensville Road and Williams Road/York Road | 123 | 556 | 78 | 87 | 696 | 66 | 59 | 298 | 143 | 51 | 118 | 82 | 2357 |

| ID | Intersection Name | Northbound | | Southbound | | Westbound | | Total Volume |
|----|------------------------------------|------------|-------|------------|------|-----------|-------|--------------|
| | | Thru | Right | Left | Thru | Left | Right | |
| 4 | Clovercroft Road and Williams Road | 462 | 453 | 44 | 347 | 290 | 16 | 1612 |

| ID | Intersection Name | Northbound | | Southbound | | Eastbound | | Total Volume |
|----|-------------------------------|------------|------|------------|-------|-----------|-------|--------------|
| | | Left | Thru | Thru | Right | Left | Right | |
| 5 | Driveway A and Nolensville Rd | 113 | 1107 | 1162 | 138 | 115 | 94 | 2729 |

Nolensville Town Center

Vistro File: M:\...\Nolensville Town Center - Draft 4.vistro

Scenario 5 Projected AM - Scenario 2

Report File: M:\...\7. Projected - AM - Scenario 2.pdf

12/4/2023

Intersection Analysis Summary

| ID | Intersection Name | Control Type | Method | Worst Mvmt | V/C | Delay (s/veh) | LOS |
|----|---|--------------|-----------------|------------|-------|---------------|-----|
| 1 | Nolensville Road and Clovercroft Road/Rocky Fork Road | Signalized | HCM 7th Edition | EB Right | 0.894 | 65.1 | E |
| 2 | Nolensville Road and Summerlyn Drive/Site Access | Signalized | HCM 7th Edition | SB Left | 0.891 | 78.2 | E |
| 3 | Nolensville Road and Williams Road/York Road | Signalized | HCM 7th Edition | EB Thru | 0.777 | 32.8 | C |
| 4 | Clovercroft Road and Williams Road | Signalized | HCM 7th Edition | WB Left | 0.697 | 22.6 | C |
| 5 | Driveway A and Nolensville Rd | Two-way stop | HCM 7th Edition | EB Left | 0.906 | 195.4 | F |

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report

Intersection 1: Nolensville Road and Clovercroft Road/Rocky Fork Road

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Signalized | Delay (sec / veh): | 65.1 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | E |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.894 |

Intersection Setup

| Name | Nolensville Road | | | Nolensville Toad | | | Clovercroft Road | | | Rocky Fork Road | | |
|------------------------------|------------------|--------|--------|------------------|--------|--------|------------------|--------|-------|-----------------|--------|--------|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 |
| Entry Pocket Length [ft] | 200.00 | 100.00 | 100.00 | 175.00 | 100.00 | 100.00 | 100.00 | 100.00 | 85.00 | 175.00 | 100.00 | 185.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 35.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | No | | | No | | | No | | | No | | |

Volumes

| Name | Nolensville Road | | | Nolensville Toad | | | Clovercroft Road | | | Rocky Fork Road | | |
|---|------------------|--------|--------|------------------|--------|--------|------------------|--------|--------|-----------------|--------|--------|
| Base Volume Input [veh/h] | 82 | 447 | 79 | 78 | 385 | 37 | 93 | 139 | 100 | 133 | 293 | 153 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Proportion of CAVs [%] | 0.00 | | | | | | | | | | | |
| Growth Factor | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 |
| In-Process Volume [veh/h] | 52 | 60 | 52 | 0 | 75 | 8 | 20 | 0 | 63 | 63 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 26 | 26 | 0 | 18 | 0 | 0 | 0 | 0 | 18 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 144 | 589 | 167 | 88 | 527 | 50 | 125 | 157 | 176 | 231 | 330 | 172 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 39 | 160 | 45 | 24 | 143 | 14 | 34 | 43 | 48 | 63 | 90 | 47 |
| Total Analysis Volume [veh/h] | 157 | 640 | 182 | 96 | 573 | 54 | 136 | 171 | 191 | 251 | 359 | 187 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

Intersection Settings

| | |
|---------------------------|---------------------------------|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 100 |
| Active Pattern | Pattern 1 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | Beginning of First Yellow |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

Phasing & Timing

| Control Type | ProtPer | Permiss | Permiss | ProtPer | Permiss | Permiss | ProtPer | Permiss | Permiss | ProtPer | Permiss | Permiss |
|------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Signal Group | 5 | 2 | 0 | 1 | 6 | 0 | 7 | 4 | 0 | 3 | 8 | 10 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 10 | 0 | 5 | 10 | 0 | 5 | 7 | 0 | 5 | 7 | 0 |
| Maximum Green [s] | 15 | 60 | 0 | 15 | 60 | 0 | 15 | 30 | 0 | 15 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Split [s] | 13 | 48 | 0 | 13 | 48 | 0 | 13 | 26 | 0 | 13 | 26 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Clearance [s] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Minimum Recall | No | Yes | | No | Yes | | No | No | | No | No | |
| Maximum Recall | No | No | | No | No | | No | No | | No | No | |
| Pedestrian Recall | No | No | | No | No | | No | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 50.0 | 0.0 | 0.0 | 50.0 | 0.0 | 0.0 | 50.0 | 0.0 | 0.0 | 50.0 | 50.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

Lane Group Calculations

| Lane Group | L | C | L | C | L | C | L | C | R |
|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| C, Cycle Length [s] | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 0.00 | 3.00 | 0.00 | 3.00 | 0.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 56 | 46 | 56 | 44 | 34 | 21 | 34 | 21 | 21 |
| g / C, Green / Cycle | 0.56 | 0.46 | 0.56 | 0.44 | 0.34 | 0.21 | 0.34 | 0.21 | 0.21 |
| (v / s)_i Volume / Saturation Flow Rate | 0.18 | 0.51 | 0.13 | 0.38 | 0.13 | 0.24 | 0.22 | 0.21 | 0.13 |
| s, saturation flow rate [veh/h] | 873 | 1620 | 738 | 1658 | 1041 | 1540 | 1139 | 1683 | 1431 |
| c, Capacity [veh/h] | 348 | 749 | 243 | 733 | 295 | 323 | 300 | 355 | 301 |
| d1, Uniform Delay [s] | 18.16 | 26.88 | 21.76 | 25.03 | 26.35 | 39.50 | 29.90 | 39.47 | 35.84 |
| k, delay calibration | 0.50 | 0.50 | 0.28 | 0.50 | 0.11 | 0.27 | 0.50 | 0.22 | 0.11 |
| l, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 4.17 | 62.77 | 2.72 | 12.24 | 1.12 | 74.51 | 23.27 | 35.09 | 2.09 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | | | | | | | |
|---------------------------------------|-------|---------|-------|--------|--------|--------|--------|--------|--------|
| X, volume / capacity | 0.45 | 1.10 | 0.40 | 0.86 | 0.46 | 1.12 | 0.84 | 1.01 | 0.62 |
| d, Delay for Lane Group [s/veh] | 22.33 | 89.65 | 24.48 | 37.27 | 27.47 | 114.01 | 53.17 | 74.55 | 37.92 |
| Lane Group LOS | C | F | C | D | C | F | D | F | D |
| Critical Lane Group | No | Yes | Yes | No | No | Yes | Yes | No | No |
| 50th-Percentile Queue Length [veh/ln] | 2.03 | 29.83 | 1.14 | 15.21 | 2.39 | 14.49 | 6.47 | 11.91 | 4.22 |
| 50th-Percentile Queue Length [ft/ln] | 50.72 | 745.66 | 28.42 | 380.13 | 59.70 | 362.31 | 161.76 | 297.63 | 105.55 |
| 95th-Percentile Queue Length [veh/ln] | 3.65 | 41.55 | 2.05 | 21.60 | 4.30 | 21.98 | 10.64 | 17.68 | 7.59 |
| 95th-Percentile Queue Length [ft/ln] | 91.30 | 1038.78 | 51.16 | 540.01 | 107.46 | 549.52 | 266.06 | 442.11 | 189.80 |

Movement, Approach, & Intersection Results

| | | | | | | | | | | | | |
|---------------------------------|-------|-------|-------|-------|-------|-------|-------|--------|--------|-------|-------|-------|
| d_M, Delay for Movement [s/veh] | 22.33 | 89.65 | 89.65 | 24.48 | 37.27 | 37.27 | 27.47 | 114.01 | 114.01 | 53.17 | 74.55 | 37.92 |
| Movement LOS | C | F | F | C | D | D | C | F | F | D | F | D |
| d_A, Approach Delay [s/veh] | 78.85 | | | 35.57 | | | 90.38 | | | 59.22 | | |
| Approach LOS | E | | | D | | | F | | | E | | |
| d_I, Intersection Delay [s/veh] | 65.11 | | | | | | | | | | | |
| Intersection LOS | E | | | | | | | | | | | |
| Intersection V/C | 0.894 | | | | | | | | | | | |

Other Modes

| | | | | | | | | | | | | |
|--|-------|--|--|-------|--|--|-------|--|--|-------|--|--|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | | |
| M_corner, Corner Circulation Area [ft ² /ped] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| M_CW, Crosswalk Circulation Area [ft ² /ped] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| d_p, Pedestrian Delay [s] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| I_p,int, Pedestrian LOS Score for Intersectio | 0.000 | | | 0.000 | | | 0.000 | | | 0.000 | | |
| Crosswalk LOS | F | | | F | | | F | | | F | | |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | | | 2000 | | | 2000 | | | 2000 | | |
| c_b, Capacity of the bicycle lane [bicycles/h] | 860 | | | 860 | | | 420 | | | 420 | | |
| d_b, Bicycle Delay [s] | 16.25 | | | 16.25 | | | 31.21 | | | 31.21 | | |
| I_b,int, Bicycle LOS Score for Intersection | 3.175 | | | 2.753 | | | 2.381 | | | 2.875 | | |
| Bicycle LOS | C | | | C | | | B | | | C | | |

Sequence

| | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



Intersection Level Of Service Report

Intersection 2: Nolensville Road and Summerlyn Drive/Site Access

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Signalized | Delay (sec / veh): | 78.2 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | E |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.891 |

Intersection Setup

| Name | Nolensville Road | | | Nolensville Road | | | Site Access | | | Summerlyn Drive | | |
|------------------------------|------------------|--------|--------|------------------|--------|--------|-------------|--------|--------|-----------------|--------|--------|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 150.00 | 100.00 | 100.00 | 250.00 | 100.00 | 150.00 | 125.00 | 100.00 | 100.00 | 125.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 40.00 | | | 40.00 | | | 30.00 | | | 25.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

Volumes

| Name | Nolensville Road | | | Nolensville Road | | | Site Access | | | Summerlyn Drive | | |
|---|------------------|--------|--------|------------------|--------|--------|-------------|--------|--------|-----------------|--------|--------|
| Base Volume Input [veh/h] | 0 | 389 | 10 | 382 | 307 | 0 | 0 | 0 | 0 | 83 | 0 | 290 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Proportion of CAVs [%] | 0.00 | | | | | | | | | | | |
| Growth Factor | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 |
| In-Process Volume [veh/h] | 63 | 36 | 10 | 0 | 67 | 134 | 128 | 18 | 51 | 4 | 22 | 0 |
| Site-Generated Trips [veh/h] | 6 | 37 | 0 | 14 | 52 | 0 | 0 | 3 | 9 | 0 | 2 | 10 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 69 | 511 | 21 | 444 | 465 | 134 | 128 | 21 | 60 | 97 | 24 | 337 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 19 | 139 | 6 | 121 | 126 | 36 | 35 | 6 | 16 | 26 | 7 | 92 |
| Total Analysis Volume [veh/h] | 75 | 555 | 23 | 483 | 505 | 146 | 139 | 23 | 65 | 105 | 26 | 366 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

Intersection Settings

| | |
|---------------------------|---------------------------------|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 100 |
| Active Pattern | Pattern 1 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | Beginning of First Yellow |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

Phasing & Timing

| Control Type | ProtPer | Permiss | Permiss | ProtPer | Permiss | Permiss | Split | Split | Split | Split | Split | Split |
|------------------------------|---------|---------|---------|---------|---------|---------|-------|-------|-------|-------|-------|-------|
| Signal Group | 5 | 2 | 0 | 1 | 6 | 0 | 0 | 4 | 0 | 3 | 3 | 1 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | - | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 10 | 0 | 5 | 10 | 0 | 0 | 7 | 0 | 7 | 7 | 5 |
| Maximum Green [s] | 15 | 60 | 0 | 10 | 60 | 0 | 0 | 30 | 0 | 30 | 30 | 10 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 |
| All red [s] | 2.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 1.0 |
| Split [s] | 13 | 25 | 0 | 21 | 33 | 0 | 0 | 26 | 0 | 28 | 28 | 21 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 7 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 14 | 0 | 0 | 14 | 0 | 0 | 14 | 0 | 14 | 14 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 |
| I2, Clearance Lost Time [s] | 3.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 2.0 |
| Minimum Recall | No | Yes | | Yes | Yes | | | No | | | Yes | |
| Maximum Recall | No | No | | No | No | | | No | | | No | |
| Pedestrian Recall | No | No | | No | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 50.0 | 0.0 | 0.0 | 50.0 | 0.0 | 0.0 | 0.0 | 50.0 | 0.0 | 50.0 | 50.0 | 50.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

Lane Group Calculations

| Lane Group | L | C | L | C | R | L | C | C | R |
|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| C, Cycle Length [s] | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 0.00 | 2.00 | 0.00 | 2.00 | 2.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 52 | 31 | 52 | 43 | 43 | 11 | 11 | 23 | 23 |
| g / C, Green / Cycle | 0.52 | 0.31 | 0.52 | 0.43 | 0.43 | 0.11 | 0.11 | 0.23 | 0.23 |
| (v / s)_i Volume / Saturation Flow Rate | 0.09 | 0.35 | 0.45 | 0.30 | 0.10 | 0.09 | 0.06 | 0.08 | 0.26 |
| s, saturation flow rate [veh/h] | 832 | 1671 | 1064 | 1683 | 1431 | 1603 | 1489 | 1618 | 1431 |
| c, Capacity [veh/h] | 355 | 516 | 426 | 714 | 607 | 178 | 166 | 372 | 329 |
| d1, Uniform Delay [s] | 15.85 | 34.56 | 31.49 | 23.67 | 18.45 | 43.24 | 41.97 | 32.26 | 38.50 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 | 0.11 | 0.11 | 0.32 |
| l, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 1.36 | 76.98 | 84.98 | 5.83 | 0.94 | 7.18 | 2.63 | 0.57 | 74.41 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | | | | | | | |
|---------------------------------------|-------|--------|--------|--------|-------|--------|-------|--------|--------|
| X, volume / capacity | 0.21 | 1.12 | 1.13 | 0.71 | 0.24 | 0.78 | 0.53 | 0.35 | 1.11 |
| d, Delay for Lane Group [s/veh] | 17.21 | 111.55 | 116.48 | 29.50 | 19.39 | 50.42 | 44.60 | 32.82 | 112.91 |
| Lane Group LOS | B | F | F | C | B | D | D | C | F |
| Critical Lane Group | No | Yes | Yes | No | No | Yes | No | No | Yes |
| 50th-Percentile Queue Length [veh/ln] | 0.92 | 22.86 | 15.89 | 10.27 | 2.21 | 3.68 | 2.16 | 2.73 | 14.80 |
| 50th-Percentile Queue Length [ft/ln] | 23.05 | 571.58 | 397.20 | 256.72 | 55.29 | 91.90 | 54.03 | 68.21 | 370.11 |
| 95th-Percentile Queue Length [veh/ln] | 1.66 | 32.95 | 24.44 | 15.52 | 3.98 | 6.62 | 3.89 | 4.91 | 22.35 |
| 95th-Percentile Queue Length [ft/ln] | 41.48 | 823.69 | 610.98 | 388.11 | 99.52 | 165.42 | 97.25 | 122.78 | 558.86 |

Movement, Approach, & Intersection Results

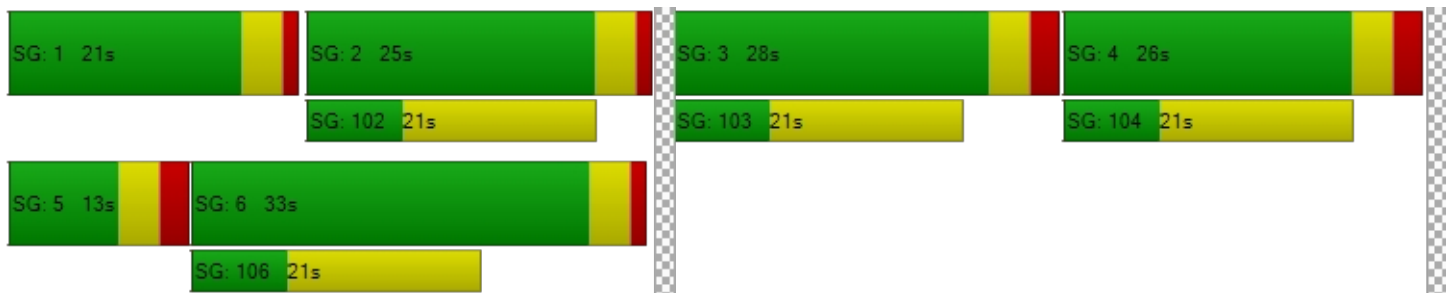
| | | | | | | | | | | | | |
|---------------------------------|--------|--------|--------|--------|-------|-------|-------|-------|-------|-------|-------|--------|
| d_M, Delay for Movement [s/veh] | 17.21 | 111.55 | 111.55 | 116.48 | 29.50 | 19.39 | 50.42 | 44.60 | 44.60 | 32.82 | 32.82 | 112.91 |
| Movement LOS | B | F | F | F | C | B | D | D | D | C | C | F |
| d_A, Approach Delay [s/veh] | 100.71 | | | 65.24 | | | 48.16 | | | 91.80 | | |
| Approach LOS | F | | | E | | | D | | | F | | |
| d_I, Intersection Delay [s/veh] | 78.18 | | | | | | | | | | | |
| Intersection LOS | E | | | | | | | | | | | |
| Intersection V/C | 0.891 | | | | | | | | | | | |

Other Modes

| | | | | |
|--|-------|-------|-------|-------|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 39.61 | 39.61 | 39.61 | 39.61 |
| I_p,int, Pedestrian LOS Score for Intersectio | 2.521 | 2.849 | 2.147 | 2.449 |
| Crosswalk LOS | B | C | B | B |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 420 | 580 | 420 | 460 |
| d_b, Bicycle Delay [s] | 31.21 | 25.21 | 31.21 | 29.65 |
| I_b,int, Bicycle LOS Score for Intersection | 2.637 | 3.431 | 1.934 | 2.380 |
| Bicycle LOS | B | C | A | B |

Sequence

| | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



Intersection Level Of Service Report

Intersection 3: Nolensville Road and Williams Road/York Road

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Signalized | Delay (sec / veh): | 32.8 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.777 |

Intersection Setup

| Name | Nolensville Road | | | Nolensville Road | | | Williams Road | | | York Road | | |
|------------------------------|------------------|--------|--------|------------------|--------|--------|---------------|--------|--------|-----------|--------|--------|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 40.00 | | | 40.00 | | | 45.00 | | | 35.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | No | | | No | | | No | | | No | | |

Volumes

| Name | Nolensville Road | | | Nolensville Road | | | Williams Road | | | York Road | | |
|---|------------------|--------|--------|------------------|--------|--------|---------------|--------|--------|-----------|--------|--------|
| Base Volume Input [veh/h] | 58 | 353 | 111 | 98 | 248 | 53 | 2 | 165 | 19 | 38 | 189 | 33 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Proportion of CAVs [%] | 0.00 | | | | | | | | | | | |
| Growth Factor | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 |
| In-Process Volume [veh/h] | 49 | 112 | 0 | 11 | 91 | 15 | 23 | 7 | 46 | 0 | 9 | 13 |
| Site-Generated Trips [veh/h] | 0 | 18 | 0 | 17 | 26 | 18 | 13 | 0 | 0 | 0 | 0 | 12 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 114 | 528 | 125 | 138 | 396 | 93 | 38 | 193 | 67 | 43 | 222 | 62 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 31 | 143 | 34 | 38 | 108 | 25 | 10 | 52 | 18 | 12 | 60 | 17 |
| Total Analysis Volume [veh/h] | 124 | 574 | 136 | 150 | 430 | 101 | 41 | 210 | 73 | 47 | 241 | 67 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

Intersection Settings

| | |
|---------------------------|---------------------------------|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 100 |
| Active Pattern | Pattern 1 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | Beginning of First Yellow |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

Phasing & Timing

| Control Type | Permiss | Permiss | Permiss | ProtPer | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Signal Group | 0 | 2 | 0 | 1 | 6 | 0 | 0 | 4 | 0 | 0 | 8 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | Lead | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 0 | 10 | 0 | 5 | 10 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Maximum Green [s] | 0 | 60 | 0 | 10 | 60 | 0 | 0 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 52 | 0 | 13 | 65 | 0 | 0 | 35 | 0 | 0 | 35 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Clearance [s] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | Yes | | Yes | Yes | | | No | | | No | |
| Maximum Recall | | No | | No | No | | | No | | | No | |
| Pedestrian Recall | | No | | No | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

Lane Group Calculations

| Lane Group | L | C | L | C | C | L | C |
|---|-------|-------|-------|-------|-------|-------|-------|
| C, Cycle Length [s] | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 0.00 | 0.00 | 2.00 | 2.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 0.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 49 | 49 | 60 | 60 | 30 | 30 | 30 |
| g / C, Green / Cycle | 0.49 | 0.49 | 0.60 | 0.60 | 0.30 | 0.30 | 0.30 |
| (v / s)_i Volume / Saturation Flow Rate | 0.16 | 0.44 | 0.19 | 0.33 | 0.30 | 0.05 | 0.19 |
| s, saturation flow rate [veh/h] | 785 | 1628 | 808 | 1628 | 1098 | 986 | 1621 |
| c, Capacity [veh/h] | 290 | 796 | 327 | 978 | 369 | 81 | 485 |
| d1, Uniform Delay [s] | 31.03 | 23.15 | 18.85 | 11.82 | 34.78 | 32.76 | 30.33 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.42 | 0.11 | 0.17 |
| l, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 4.57 | 14.38 | 4.57 | 2.16 | 21.16 | 6.50 | 2.14 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | | | | | |
|---------------------------------------|--------|--------|-------|--------|--------|-------|--------|
| X, volume / capacity | 0.43 | 0.89 | 0.46 | 0.54 | 0.88 | 0.58 | 0.64 |
| d, Delay for Lane Group [s/veh] | 35.60 | 37.52 | 23.42 | 13.98 | 55.93 | 39.26 | 32.46 |
| Lane Group LOS | D | D | C | B | E | D | C |
| Critical Lane Group | No | Yes | Yes | No | Yes | No | No |
| 50th-Percentile Queue Length [veh/ln] | 2.83 | 16.84 | 1.70 | 6.70 | 9.65 | 1.17 | 6.50 |
| 50th-Percentile Queue Length [ft/ln] | 70.83 | 421.11 | 42.49 | 167.56 | 241.28 | 29.26 | 162.60 |
| 95th-Percentile Queue Length [veh/ln] | 5.10 | 23.58 | 3.06 | 10.95 | 14.75 | 2.11 | 10.69 |
| 95th-Percentile Queue Length [ft/ln] | 127.49 | 589.38 | 76.49 | 273.71 | 368.65 | 52.66 | 267.16 |

Movement, Approach, & Intersection Results

| | | | | | | | | | | | | |
|---------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| d_M, Delay for Movement [s/veh] | 35.60 | 37.52 | 37.52 | 23.42 | 13.98 | 13.98 | 55.93 | 55.93 | 55.93 | 39.26 | 32.46 | 32.46 |
| Movement LOS | D | D | D | C | B | B | E | E | E | D | C | C |
| d_A, Approach Delay [s/veh] | 37.24 | | | 16.06 | | | 55.93 | | | 33.36 | | |
| Approach LOS | D | | | B | | | E | | | C | | |
| d_I, Intersection Delay [s/veh] | 32.80 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.777 | | | | | | | | | | | |

Other Modes

| | | | | |
|--|-------|-------|-------|-------|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 0.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 |
| I_p,int, Pedestrian LOS Score for Intersectio | 0.000 | 0.000 | 0.000 | 0.000 |
| Crosswalk LOS | F | F | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 940 | 1200 | 600 | 600 |
| d_b, Bicycle Delay [s] | 14.05 | 8.00 | 24.50 | 24.50 |
| I_b,int, Bicycle LOS Score for Intersection | 2.936 | 2.683 | 2.094 | 2.145 |
| Bicycle LOS | C | B | B | B |

Sequence

| | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



Intersection Level Of Service Report
Intersection 4: Clovercroft Road and Williams Road

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Signalized | Delay (sec / veh): | 22.6 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.697 |

Intersection Setup

| Name | Clovercroft Road | | Clovercroft Road | | Williams Road | |
|------------------------------|------------------|--------|------------------|--------|---------------|--------|
| Approach | Northbound | | Southbound | | Westbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Thru | Right | Left | Thru | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 40.00 | | 30.00 | | 45.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Curb Present | No | | No | | No | |
| Crosswalk | No | | No | | No | |

Volumes

| Name | Clovercroft Road | | Clovercroft Road | | Williams Road | |
|---|------------------|--------|------------------|--------|---------------|--------|
| Base Volume Input [veh/h] | 168 | 153 | 21 | 478 | 252 | 42 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Proportion of CAVs [%] | 0.00 | | | | | |
| Growth Factor | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 |
| In-Process Volume [veh/h] | 20 | 76 | 0 | 20 | 73 | 0 |
| Site-Generated Trips [veh/h] | 0 | 25 | 0 | 0 | 35 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 209 | 273 | 24 | 558 | 392 | 47 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 57 | 74 | 7 | 152 | 107 | 13 |
| Total Analysis Volume [veh/h] | 227 | 297 | 26 | 607 | 426 | 51 |
| Presence of On-Street Parking | No | No | No | No | No | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | 0 | | 0 | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | 0 | | 0 | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | 0 | | 0 | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | 0 | | 0 | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |
| Bicycle Volume [bicycles/h] | 0 | | 0 | | 0 | |

Intersection Settings

| | |
|---------------------------|---------------------------------|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 90 |
| Active Pattern | Pattern 1 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | Beginning of First Yellow |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

Phasing & Timing

| Control Type | Permissive | Permissive | Permissive | Permissive | Permissive | Permissive |
|------------------------------|------------|------------|------------|------------|------------|------------|
| Signal Group | 2 | 0 | 0 | 6 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | |
| Lead / Lag | - | - | - | - | Lead | - |
| Minimum Green [s] | 10 | 0 | 0 | 10 | 7 | 0 |
| Maximum Green [s] | 60 | 0 | 0 | 60 | 30 | 0 |
| Amber [s] | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Split [s] | 15 | 0 | 0 | 15 | 75 | 0 |
| Vehicle Extension [s] | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Clearance [s] | 0 | 0 | 0 | 0 | 0 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | No | | | No | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Minimum Recall | Yes | | | Yes | No | |
| Maximum Recall | No | | | No | No | |
| Pedestrian Recall | No | | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 50.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

Lane Group Calculations

| Lane Group | C | C | C |
|---|-------|-------|-------|
| C, Cycle Length [s] | 90 | 90 | 90 |
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 2.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 50 | 50 | 30 |
| g / C, Green / Cycle | 0.56 | 0.56 | 0.33 |
| (v / s)_i Volume / Saturation Flow Rate | 0.34 | 0.40 | 0.30 |
| s, saturation flow rate [veh/h] | 1530 | 1600 | 1582 |
| c, Capacity [veh/h] | 849 | 930 | 528 |
| d1, Uniform Delay [s] | 13.54 | 14.30 | 28.60 |
| k, delay calibration | 0.50 | 0.50 | 0.11 |
| l, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 3.35 | 4.01 | 6.04 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | |
|---------------------------------------|--------|--------|--------|
| X, volume / capacity | 0.62 | 0.68 | 0.90 |
| d, Delay for Lane Group [s/veh] | 16.89 | 18.31 | 34.64 |
| Lane Group LOS | B | B | C |
| Critical Lane Group | No | Yes | Yes |
| 50th-Percentile Queue Length [veh/ln] | 6.98 | 9.38 | 9.84 |
| 50th-Percentile Queue Length [ft/ln] | 174.51 | 234.44 | 245.90 |
| 95th-Percentile Queue Length [veh/ln] | 11.31 | 14.40 | 14.98 |
| 95th-Percentile Queue Length [ft/ln] | 282.83 | 359.99 | 374.49 |

Movement, Approach, & Intersection Results

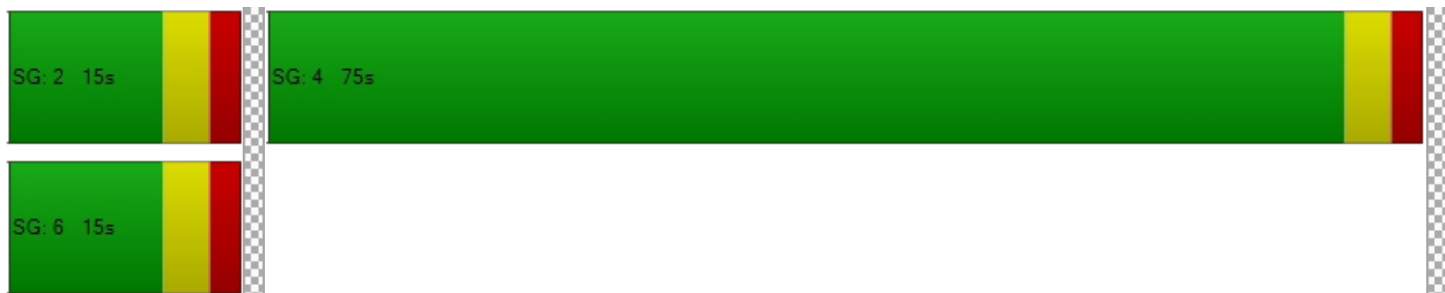
| | | | | | | |
|---------------------------------|-------|-------|-------|-------|-------|-------|
| d_M, Delay for Movement [s/veh] | 16.89 | 16.89 | 18.31 | 18.31 | 34.64 | 34.64 |
| Movement LOS | B | B | B | B | C | C |
| d_A, Approach Delay [s/veh] | 16.89 | | 18.31 | | 34.64 | |
| Approach LOS | B | | B | | C | |
| d_I, Intersection Delay [s/veh] | 22.62 | | | | | |
| Intersection LOS | C | | | | | |
| Intersection V/C | 0.697 | | | | | |

Other Modes

| | | | |
|--|-------|-------|-------|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 0.00 | 0.00 |
| I_p,int, Pedestrian LOS Score for Intersectio | 0.000 | 0.000 | 0.000 |
| Crosswalk LOS | F | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 222 | 222 | 1556 |
| d_b, Bicycle Delay [s] | 35.56 | 35.56 | 2.22 |
| I_b,int, Bicycle LOS Score for Intersection | 2.424 | 2.604 | 2.347 |
| Bicycle LOS | B | B | B |

Sequence

| | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



Intersection Level Of Service Report
Intersection 5: Driveway A and Nolensville Rd

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Two-way stop | Delay (sec / veh): | 195.4 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.906 |

Intersection Setup

| Name | Nolensville Road | | Nolensville Road | | Driveway A | |
|------------------------------|------------------|--------|------------------|--------|------------|--------|
| Approach | Northbound | | Southbound | | Eastbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Left | Thru | Thru | Right | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 1 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 40.00 | | 40.00 | | 25.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | No | | No | | No | |

Volumes

| Name | Nolensville Road | | Nolensville Road | | Driveway A | |
|---|------------------|--------|------------------|--------|------------|--------|
| Base Volume Input [veh/h] | 0 | 582 | 630 | 0 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 |
| In-Process Volume [veh/h] | 0 | 162 | 201 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 46 | 0 | 0 | 36 | 52 | 66 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 46 | 817 | 911 | 36 | 52 | 66 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 13 | 222 | 248 | 10 | 14 | 18 |
| Total Analysis Volume [veh/h] | 50 | 888 | 990 | 39 | 57 | 72 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

Intersection Settings

| | | | |
|------------------------------------|------|------|------|
| Priority Scheme | Free | Free | Stop |
| Flared Lane | | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | |
|---------------------------------------|-------|------|------|------|--------|-------|
| V/C, Movement V/C Ratio | 0.07 | 0.01 | 0.01 | 0.00 | 0.91 | 0.24 |
| d_M, Delay for Movement [s/veh] | 10.76 | 0.00 | 0.00 | 0.00 | 195.40 | 20.81 |
| Movement LOS | B | A | A | A | F | C |
| 95th-Percentile Queue Length [veh/ln] | 0.24 | 0.00 | 0.00 | 0.00 | 4.27 | 0.92 |
| 95th-Percentile Queue Length [ft/ln] | 5.98 | 0.00 | 0.00 | 0.00 | 106.74 | 23.04 |
| d_A, Approach Delay [s/veh] | 0.57 | | 0.00 | | 97.96 | |
| Approach LOS | A | | A | | F | |
| d_I, Intersection Delay [s/veh] | 6.29 | | | | | |
| Intersection LOS | F | | | | | |

Nolensville Town Center

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Scenario 5 Projected AM - Scenario 2

Report File: M:\...\7. Projected - AM - Scenario 2.pdf

12/4/2023

Turning Movement Volume: Summary

| ID | Intersection Name | Northbound | | | Southbound | | | Eastbound | | | Westbound | | | Total Volume |
|----|---|------------|------|-------|------------|------|-------|-----------|------|-------|-----------|------|-------|--------------|
| | | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | |
| 1 | Nolensville Road and Clovercroft Road/Rocky Fork Road | 144 | 589 | 167 | 88 | 527 | 50 | 125 | 157 | 176 | 231 | 330 | 172 | 2756 |

| ID | Intersection Name | Northbound | | | Southbound | | | Eastbound | | | Westbound | | | Total Volume |
|----|--|------------|------|-------|------------|------|-------|-----------|------|-------|-----------|------|-------|--------------|
| | | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | |
| 2 | Nolensville Road and Summerlyn Drive/Site Access | 69 | 511 | 21 | 444 | 465 | 134 | 128 | 21 | 60 | 97 | 24 | 337 | 2311 |

| ID | Intersection Name | Northbound | | | Southbound | | | Eastbound | | | Westbound | | | Total Volume |
|----|--|------------|------|-------|------------|------|-------|-----------|------|-------|-----------|------|-------|--------------|
| | | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | |
| 3 | Nolensville Road and Williams Road/York Road | 114 | 528 | 125 | 138 | 396 | 93 | 38 | 193 | 67 | 43 | 222 | 62 | 2019 |

| ID | Intersection Name | Northbound | | Southbound | | Westbound | | Total Volume |
|----|------------------------------------|------------|-------|------------|------|-----------|-------|--------------|
| | | Thru | Right | Left | Thru | Left | Right | |
| 4 | Clovercroft Road and Williams Road | 209 | 273 | 24 | 558 | 392 | 47 | 1503 |

| ID | Intersection Name | Northbound | | Southbound | | Eastbound | | Total Volume |
|----|-------------------------------|------------|------|------------|-------|-----------|-------|--------------|
| | | Left | Thru | Thru | Right | Left | Right | |
| 5 | Driveway A and Nolensville Rd | 46 | 817 | 911 | 36 | 52 | 66 | 1928 |

Nolensville Town Center

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Scenario 6 Projected PM - Scenario 2

Report File: M:\...\8. Projected - PM - Scenaro 2.pdf

12/4/2023

Intersection Analysis Summary

| ID | Intersection Name | Control Type | Method | Worst Mvmt | V/C | Delay (s/veh) | LOS |
|----|---|--------------|-----------------|------------|-------|---------------|-----|
| 1 | Nolensville Road and Clovercroft Road/Rocky Fork Road | Signalized | HCM 7th Edition | WB Left | 1.054 | 118.9 | F |
| 2 | Nolensville Road and Summerlyn Drive/Site Access | Signalized | HCM 7th Edition | SB Left | 0.865 | 99.7 | F |
| 3 | Nolensville Road and Williams Road/York Road | Signalized | HCM 7th Edition | NB Left | 0.935 | 72.0 | E |
| 4 | Clovercroft Road and Williams Road | Signalized | HCM 7th Edition | WB Left | 0.898 | 44.0 | D |
| 5 | Driveway A and Nolensville Rd | Two-way stop | HCM 7th Edition | EB Left | 3.447 | 1,509.1 | F |

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report

Intersection 1: Nolensville Road and Clovercroft Road/Rocky Fork Road

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Signalized | Delay (sec / veh): | 118.9 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 1.054 |

Intersection Setup

| Name | Nolensville Road | | | Nolensville Toad | | | Clovercroft Road | | | Rocky Fork Road | | |
|------------------------------|------------------|--------|--------|------------------|--------|--------|------------------|--------|-------|-----------------|--------|--------|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 |
| Entry Pocket Length [ft] | 200.00 | 100.00 | 100.00 | 175.00 | 100.00 | 100.00 | 100.00 | 100.00 | 85.00 | 175.00 | 100.00 | 185.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 35.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | No | | | No | | | No | | | No | | |

Volumes

| Name | Nolensville Road | | | Nolensville Toad | | | Clovercroft Road | | | Rocky Fork Road | | |
|---|------------------|--------|--------|------------------|--------|--------|------------------|--------|--------|-----------------|--------|--------|
| Base Volume Input [veh/h] | 49 | 399 | 75 | 241 | 453 | 21 | 111 | 262 | 28 | 208 | 199 | 157 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Proportion of CAVs [%] | 0.00 | | | | | | | | | | | |
| Growth Factor | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 |
| In-Process Volume [veh/h] | 83 | 100 | 83 | 0 | 100 | 22 | 14 | 0 | 84 | 84 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 31 | 31 | 0 | 38 | 0 | 0 | 0 | 0 | 38 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 138 | 580 | 198 | 271 | 648 | 46 | 139 | 295 | 116 | 356 | 224 | 177 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 38 | 158 | 54 | 74 | 176 | 13 | 38 | 80 | 32 | 97 | 61 | 48 |
| Total Analysis Volume [veh/h] | 150 | 630 | 215 | 295 | 704 | 50 | 151 | 321 | 126 | 387 | 243 | 192 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

Intersection Settings

| | |
|---------------------------|---------------------------------|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 130 |
| Active Pattern | Pattern 1 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | Beginning of First Yellow |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

Phasing & Timing

| Control Type | ProtPer | Permiss | Permiss | ProtPer | Permiss | Permiss | ProtPer | Permiss | Permiss | ProtPer | Permiss | Permiss |
|------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Signal Group | 5 | 2 | 0 | 1 | 6 | 0 | 7 | 4 | 0 | 3 | 8 | 10 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 10 | 0 | 5 | 10 | 0 | 5 | 7 | 0 | 5 | 7 | 0 |
| Maximum Green [s] | 15 | 60 | 0 | 15 | 60 | 0 | 15 | 30 | 0 | 15 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Split [s] | 13 | 59 | 0 | 15 | 61 | 0 | 13 | 37 | 0 | 19 | 43 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Clearance [s] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Minimum Recall | No | Yes | | No | Yes | | No | No | | No | No | |
| Maximum Recall | No | No | | No | No | | No | No | | No | No | |
| Pedestrian Recall | No | No | | No | No | | No | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 50.0 | 0.0 | 0.0 | 50.0 | 0.0 | 0.0 | 50.0 | 0.0 | 0.0 | 50.0 | 50.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

Lane Group Calculations

| Lane Group | L | C | L | C | L | C | L | C | R |
|---|-------|--------|--------|-------|-------|-------|--------|-------|-------|
| C, Cycle Length [s] | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 |
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 0.00 | 3.00 | 0.00 | 3.00 | 0.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 69 | 54 | 69 | 56 | 51 | 32 | 51 | 38 | 38 |
| g / C, Green / Cycle | 0.53 | 0.42 | 0.53 | 0.43 | 0.39 | 0.25 | 0.39 | 0.29 | 0.29 |
| (v / s)_i Volume / Saturation Flow Rate | 0.19 | 0.52 | 0.38 | 0.45 | 0.15 | 0.28 | 0.35 | 0.14 | 0.13 |
| s, saturation flow rate [veh/h] | 792 | 1611 | 778 | 1664 | 1019 | 1603 | 1100 | 1683 | 1431 |
| c, Capacity [veh/h] | 226 | 669 | 253 | 717 | 377 | 395 | 308 | 492 | 418 |
| d1, Uniform Delay [s] | 29.21 | 38.00 | 46.36 | 37.00 | 27.63 | 49.00 | 46.42 | 38.05 | 37.60 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.15 | 0.50 | 0.50 | 0.11 | 0.11 |
| l, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 14.36 | 130.10 | 108.91 | 48.18 | 0.94 | 86.56 | 138.60 | 0.77 | 0.79 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | | | | | | | |
|---------------------------------------|--------|---------|--------|---------|--------|--------|--------|--------|--------|
| X, volume / capacity | 0.66 | 1.26 | 1.17 | 1.05 | 0.40 | 1.13 | 1.26 | 0.49 | 0.46 |
| d, Delay for Lane Group [s/veh] | 43.57 | 168.10 | 155.27 | 85.18 | 28.56 | 135.56 | 185.02 | 38.82 | 38.39 |
| Lane Group LOS | D | F | F | F | C | F | F | D | D |
| Critical Lane Group | No | Yes | Yes | No | No | Yes | Yes | No | No |
| 50th-Percentile Queue Length [veh/ln] | 3.23 | 45.04 | 11.88 | 31.84 | 3.28 | 22.23 | 19.06 | 6.48 | 5.07 |
| 50th-Percentile Queue Length [ft/ln] | 80.71 | 1125.95 | 296.99 | 795.90 | 81.89 | 555.75 | 476.53 | 161.99 | 126.72 |
| 95th-Percentile Queue Length [veh/ln] | 5.81 | 65.36 | 19.37 | 42.70 | 5.90 | 32.17 | 30.00 | 10.65 | 8.76 |
| 95th-Percentile Queue Length [ft/ln] | 145.28 | 1633.95 | 484.26 | 1067.62 | 147.41 | 804.16 | 750.02 | 266.35 | 219.03 |

Movement, Approach, & Intersection Results

| | | | | | | | | | | | | |
|---------------------------------|--------|--------|--------|--------|-------|-------|--------|--------|--------|--------|-------|-------|
| d_M, Delay for Movement [s/veh] | 43.57 | 168.10 | 168.10 | 155.27 | 85.18 | 85.18 | 28.56 | 135.56 | 135.56 | 185.02 | 38.82 | 38.39 |
| Movement LOS | D | F | F | F | F | F | C | F | F | F | D | D |
| d_A, Approach Delay [s/veh] | 149.33 | | | 104.89 | | | 108.54 | | | 107.55 | | |
| Approach LOS | F | | | F | | | F | | | F | | |
| d_I, Intersection Delay [s/veh] | 118.92 | | | | | | | | | | | |
| Intersection LOS | F | | | | | | | | | | | |
| Intersection V/C | 1.054 | | | | | | | | | | | |

Other Modes

| | | | | |
|--|-------|-------|-------|-------|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 0.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 |
| I_p,int, Pedestrian LOS Score for Intersectio | 0.000 | 0.000 | 0.000 | 0.000 |
| Crosswalk LOS | F | F | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 831 | 862 | 492 | 585 |
| d_b, Bicycle Delay [s] | 22.22 | 21.06 | 36.94 | 32.55 |
| I_b,int, Bicycle LOS Score for Intersection | 3.201 | 3.290 | 2.546 | 2.916 |
| Bicycle LOS | C | C | B | C |

Sequence

| | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



Intersection Level Of Service Report

Intersection 2: Nolensville Road and Summerlyn Drive/Site Access

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Signalized | Delay (sec / veh): | 99.7 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.865 |

Intersection Setup

| Name | Nolensville Road | | | Nolensville Road | | | Site Access | | | Summerlyn Drive | | |
|------------------------------|------------------|--------|--------|------------------|--------|--------|-------------|--------|--------|-----------------|--------|--------|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 150.00 | 100.00 | 100.00 | 250.00 | 100.00 | 150.00 | 125.00 | 100.00 | 100.00 | 125.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 40.00 | | | 40.00 | | | 30.00 | | | 25.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

Volumes

| Name | Nolensville Road | | | Nolensville Road | | | Site Access | | | Summerlyn Drive | | |
|---|------------------|--------|--------|------------------|--------|--------|-------------|--------|--------|-----------------|--------|--------|
| Base Volume Input [veh/h] | 0 | 357 | 14 | 224 | 479 | 0 | 0 | 0 | 0 | 35 | 0 | 277 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Proportion of CAVs [%] | 0.00 | | | | | | | | | | | |
| Growth Factor | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 |
| In-Process Volume [veh/h] | 83 | 59 | 7 | 0 | 67 | 134 | 207 | 30 | 83 | 11 | 30 | 0 |
| Site-Generated Trips [veh/h] | 13 | 75 | 0 | 17 | 63 | 0 | 0 | 4 | 10 | 0 | 5 | 20 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 96 | 536 | 23 | 269 | 669 | 134 | 207 | 34 | 93 | 50 | 35 | 332 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 26 | 146 | 6 | 73 | 182 | 36 | 56 | 9 | 25 | 14 | 10 | 90 |
| Total Analysis Volume [veh/h] | 104 | 583 | 25 | 292 | 727 | 146 | 225 | 37 | 101 | 54 | 38 | 361 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

Intersection Settings

| | |
|---------------------------|---------------------------------|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 130 |
| Active Pattern | Pattern 1 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | Beginning of First Yellow |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

Phasing & Timing

| Control Type | ProtPer | Permiss | Permiss | ProtPer | Permiss | Permiss | Split | Split | Split | Split | Split | Split |
|------------------------------|---------|---------|---------|---------|---------|---------|-------|-------|-------|-------|-------|-------|
| Signal Group | 5 | 2 | 0 | 1 | 6 | 0 | 0 | 4 | 0 | 3 | 3 | 1 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | - | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 10 | 0 | 5 | 10 | 0 | 0 | 7 | 0 | 7 | 7 | 5 |
| Maximum Green [s] | 15 | 60 | 0 | 10 | 60 | 0 | 0 | 30 | 0 | 30 | 30 | 10 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 |
| All red [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 |
| Split [s] | 13 | 48 | 0 | 14 | 50 | 0 | 0 | 26 | 0 | 41 | 41 | 14 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 7 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 14 | 0 | 0 | 14 | 0 | 0 | 14 | 0 | 14 | 14 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 |
| I2, Clearance Lost Time [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 |
| Minimum Recall | No | Yes | | Yes | Yes | | | No | | | Yes | |
| Maximum Recall | No | No | | No | No | | | No | | | No | |
| Pedestrian Recall | No | No | | No | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 50.0 | 0.0 | 0.0 | 50.0 | 0.0 | 0.0 | 0.0 | 50.0 | 0.0 | 50.0 | 50.0 | 50.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

Lane Group Calculations

| Lane Group | L | C | L | C | R | L | C | C | R |
|---|-------|-------|--------|-------|-------|-------|-------|-------|-------|
| C, Cycle Length [s] | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 |
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 0.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 60 | 46 | 60 | 48 | 48 | 20 | 20 | 35 | 35 |
| g / C, Green / Cycle | 0.46 | 0.35 | 0.46 | 0.37 | 0.37 | 0.16 | 0.16 | 0.27 | 0.27 |
| (v / s)_i Volume / Saturation Flow Rate | 0.14 | 0.36 | 0.84 | 0.43 | 0.10 | 0.14 | 0.09 | 0.06 | 0.25 |
| s, saturation flow rate [veh/h] | 741 | 1671 | 348 | 1683 | 1431 | 1603 | 1490 | 1635 | 1431 |
| c, Capacity [veh/h] | 211 | 589 | 229 | 621 | 528 | 251 | 234 | 438 | 383 |
| d1, Uniform Delay [s] | 29.76 | 42.10 | 39.62 | 41.01 | 28.82 | 53.75 | 50.92 | 36.94 | 46.63 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.15 | 0.11 | 0.11 | 0.36 |
| l, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 8.00 | 45.74 | 154.33 | 93.16 | 1.30 | 14.04 | 2.36 | 0.24 | 27.11 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | | | | | | | |
|---------------------------------------|--------|--------|--------|---------|--------|--------|--------|--------|--------|
| X, volume / capacity | 0.49 | 1.03 | 1.28 | 1.17 | 0.28 | 0.89 | 0.59 | 0.21 | 0.94 |
| d, Delay for Lane Group [s/veh] | 37.76 | 87.84 | 193.94 | 134.17 | 30.12 | 67.79 | 53.28 | 37.18 | 73.73 |
| Lane Group LOS | D | F | F | F | C | E | D | D | E |
| Critical Lane Group | Yes | No | No | Yes | No | Yes | No | No | Yes |
| 50th-Percentile Queue Length [veh/ln] | 2.27 | 25.70 | 14.10 | 35.19 | 3.35 | 8.20 | 4.35 | 2.35 | 14.37 |
| 50th-Percentile Queue Length [ft/ln] | 56.64 | 642.62 | 352.57 | 879.87 | 83.74 | 204.88 | 108.63 | 58.70 | 359.27 |
| 95th-Percentile Queue Length [veh/ln] | 4.08 | 34.80 | 23.40 | 49.87 | 6.03 | 12.89 | 7.76 | 4.23 | 20.59 |
| 95th-Percentile Queue Length [ft/ln] | 101.95 | 869.94 | 585.12 | 1246.84 | 150.73 | 322.25 | 194.10 | 105.66 | 514.69 |

Movement, Approach, & Intersection Results

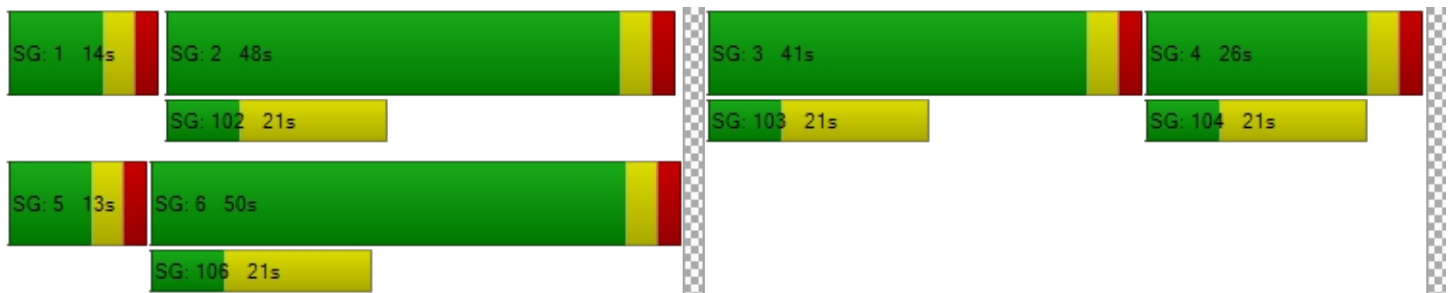
| | | | | | | | | | | | | |
|---------------------------------|-------|-------|-------|--------|--------|-------|-------|-------|-------|-------|-------|-------|
| d_M, Delay for Movement [s/veh] | 37.76 | 87.84 | 87.84 | 193.94 | 134.17 | 30.12 | 67.79 | 53.28 | 53.28 | 37.18 | 37.18 | 73.73 |
| Movement LOS | D | F | F | F | F | C | E | D | D | D | D | E |
| d_A, Approach Delay [s/veh] | 80.52 | | | 136.11 | | | 62.28 | | | 66.31 | | |
| Approach LOS | F | | | F | | | E | | | E | | |
| d_I, Intersection Delay [s/veh] | 99.72 | | | | | | | | | | | |
| Intersection LOS | F | | | | | | | | | | | |
| Intersection V/C | 0.865 | | | | | | | | | | | |

Other Modes

| | | | | |
|--|-------|-------|-------|-------|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 54.47 | 54.47 | 54.47 | 54.47 |
| I_p,int, Pedestrian LOS Score for Intersectio | 2.649 | 2.907 | 2.226 | 2.346 |
| Crosswalk LOS | B | C | B | B |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 662 | 692 | 323 | 554 |
| d_b, Bicycle Delay [s] | 29.11 | 27.79 | 45.70 | 33.98 |
| I_b,int, Bicycle LOS Score for Intersection | 2.734 | 3.482 | 2.159 | 2.307 |
| Bicycle LOS | B | C | B | B |

Sequence

| | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



Intersection Level Of Service Report

Intersection 3: Nolensville Road and Williams Road/York Road

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Signalized | Delay (sec / veh): | 72.0 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | E |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.935 |

Intersection Setup

| Name | Nolensville Road | | | Nolensville Road | | | Williams Road | | | York Road | | |
|------------------------------|------------------|--------|--------|------------------|--------|--------|---------------|--------|--------|-----------|--------|--------|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 40.00 | | | 40.00 | | | 45.00 | | | 35.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | No | | | No | | | No | | | No | | |

Volumes

| Name | Nolensville Road | | | Nolensville Road | | | Williams Road | | | York Road | | |
|---|------------------|--------|--------|------------------|--------|--------|---------------|--------|--------|-----------|--------|--------|
| Base Volume Input [veh/h] | 46 | 328 | 69 | 43 | 459 | 14 | 8 | 254 | 68 | 45 | 94 | 35 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Proportion of CAVs [%] | 0.00 | | | | | | | | | | | |
| Growth Factor | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 |
| In-Process Volume [veh/h] | 71 | 149 | 0 | 18 | 148 | 29 | 25 | 12 | 66 | 0 | 12 | 18 |
| Site-Generated Trips [veh/h] | 0 | 38 | 0 | 21 | 31 | 22 | 25 | 0 | 0 | 0 | 0 | 25 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 123 | 556 | 78 | 87 | 696 | 67 | 59 | 298 | 143 | 51 | 118 | 82 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 33 | 151 | 21 | 24 | 189 | 18 | 16 | 81 | 39 | 14 | 32 | 22 |
| Total Analysis Volume [veh/h] | 134 | 604 | 85 | 95 | 757 | 73 | 64 | 324 | 155 | 55 | 128 | 89 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

Intersection Settings

| | |
|---------------------------|---------------------------------|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 130 |
| Active Pattern | Pattern 1 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | Beginning of First Yellow |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

Phasing & Timing

| Control Type | Permiss | Permiss | Permiss | ProtPer | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Signal Group | 0 | 2 | 0 | 1 | 6 | 0 | 0 | 4 | 0 | 0 | 8 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | Lead | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 0 | 10 | 0 | 5 | 10 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Maximum Green [s] | 0 | 60 | 0 | 10 | 60 | 0 | 0 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 69 | 0 | 13 | 82 | 0 | 0 | 48 | 0 | 0 | 48 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Clearance [s] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | Yes | | Yes | Yes | | | No | | | No | |
| Maximum Recall | | No | | No | No | | | No | | | No | |
| Pedestrian Recall | | No | | No | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

Lane Group Calculations

| Lane Group | L | C | L | C | C | L | C |
|---|--------|-------|-------|-------|--------|-------|-------|
| C, Cycle Length [s] | 130 | 130 | 130 | 130 | 130 | 130 | 130 |
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 0.00 | 0.00 | 2.00 | 2.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 0.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 67 | 67 | 77 | 77 | 43 | 43 | 43 |
| g / C, Green / Cycle | 0.51 | 0.51 | 0.59 | 0.59 | 0.33 | 0.33 | 0.33 |
| (v / s)_i Volume / Saturation Flow Rate | 0.23 | 0.42 | 0.12 | 0.50 | 0.43 | 0.07 | 0.14 |
| s, saturation flow rate [veh/h] | 595 | 1647 | 779 | 1657 | 1250 | 824 | 1569 |
| c, Capacity [veh/h] | 108 | 844 | 301 | 982 | 444 | 59 | 519 |
| d1, Uniform Delay [s] | 62.23 | 26.56 | 20.99 | 21.64 | 46.68 | 48.71 | 33.78 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 | 0.11 |
| l, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 166.84 | 8.58 | 2.74 | 8.90 | 118.74 | 38.17 | 0.54 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | | | | | |
|---------------------------------------|--------|--------|-------|--------|---------|--------|--------|
| X, volume / capacity | 1.25 | 0.82 | 0.32 | 0.85 | 1.22 | 0.93 | 0.42 |
| d, Delay for Lane Group [s/veh] | 229.07 | 35.14 | 23.73 | 30.54 | 165.42 | 86.88 | 34.32 |
| Lane Group LOS | F | D | C | C | F | F | C |
| Critical Lane Group | No | No | No | Yes | Yes | No | No |
| 50th-Percentile Queue Length [veh/ln] | 8.51 | 18.88 | 1.38 | 21.36 | 28.92 | 2.44 | 5.38 |
| 50th-Percentile Queue Length [ft/ln] | 212.75 | 472.04 | 34.46 | 533.90 | 722.95 | 61.12 | 134.49 |
| 95th-Percentile Queue Length [veh/ln] | 15.09 | 26.01 | 2.48 | 28.94 | 42.60 | 4.40 | 9.18 |
| 95th-Percentile Queue Length [ft/ln] | 377.14 | 650.19 | 62.03 | 723.38 | 1065.05 | 110.01 | 229.59 |

Movement, Approach, & Intersection Results

| | | | | | | | | | | | | |
|---------------------------------|--------|-------|-------|-------|-------|-------|--------|--------|--------|-------|-------|-------|
| d_M, Delay for Movement [s/veh] | 229.07 | 35.14 | 35.14 | 23.73 | 30.54 | 30.54 | 165.42 | 165.42 | 165.42 | 86.88 | 34.32 | 34.32 |
| Movement LOS | F | D | D | C | C | C | F | F | F | F | C | C |
| d_A, Approach Delay [s/veh] | 66.71 | | | 29.84 | | | 165.42 | | | 44.95 | | |
| Approach LOS | E | | | C | | | F | | | D | | |
| d_I, Intersection Delay [s/veh] | 72.01 | | | | | | | | | | | |
| Intersection LOS | E | | | | | | | | | | | |
| Intersection V/C | 0.935 | | | | | | | | | | | |

Other Modes

| | | | | | | | | | | | | |
|--|-------|--|--|-------|--|--|-------|--|--|-------|--|--|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | | |
| M_corner, Corner Circulation Area [ft ² /ped] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| M_CW, Crosswalk Circulation Area [ft ² /ped] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| d_p, Pedestrian Delay [s] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| I_p,int, Pedestrian LOS Score for Intersectio | 0.000 | | | 0.000 | | | 0.000 | | | 0.000 | | |
| Crosswalk LOS | F | | | F | | | F | | | F | | |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | | | 2000 | | | 2000 | | | 2000 | | |
| c_b, Capacity of the bicycle lane [bicycles/h] | 985 | | | 1185 | | | 662 | | | 662 | | |
| d_b, Bicycle Delay [s] | 16.75 | | | 10.80 | | | 29.11 | | | 29.11 | | |
| I_b,int, Bicycle LOS Score for Intersection | 2.918 | | | 3.086 | | | 2.456 | | | 2.008 | | |
| Bicycle LOS | C | | | C | | | B | | | B | | |

Sequence

| | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



Intersection Level Of Service Report
Intersection 4: Clovercroft Road and Williams Road

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Signalized | Delay (sec / veh): | 44.0 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.898 |

Intersection Setup

| Name | Clovercroft Road | | Clovercroft Road | | Williams Road | |
|------------------------------|------------------|--------|------------------|--------|---------------|--------|
| Approach | Northbound | | Southbound | | Westbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Thru | Right | Left | Thru | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 40.00 | | 30.00 | | 45.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Curb Present | No | | No | | No | |
| Crosswalk | No | | No | | No | |

Volumes

| Name | Clovercroft Road | | Clovercroft Road | | Williams Road | |
|---|------------------|--------|------------------|--------|---------------|--------|
| | | | | | | |
| Base Volume Input [veh/h] | 376 | 289 | 39 | 253 | 139 | 14 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Proportion of CAVs [%] | 0.00 | | | | | |
| Growth Factor | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 |
| In-Process Volume [veh/h] | 14 | 103 | 0 | 41 | 112 | 0 |
| Site-Generated Trips [veh/h] | 0 | 50 | 0 | 0 | 43 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 437 | 478 | 44 | 326 | 312 | 16 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 119 | 130 | 12 | 89 | 85 | 4 |
| Total Analysis Volume [veh/h] | 475 | 520 | 48 | 354 | 339 | 17 |
| Presence of On-Street Parking | No | No | No | No | No | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | 0 | | 0 | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | 0 | | 0 | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | 0 | | 0 | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | 0 | | 0 | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |
| Bicycle Volume [bicycles/h] | 0 | | 0 | | 0 | |

Intersection Settings

| | |
|---------------------------|---------------------------------|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 90 |
| Active Pattern | Pattern 1 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | Beginning of First Yellow |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

Phasing & Timing

| Control Type | Permissive | Permissive | Permissive | Permissive | Permissive | Permissive |
|------------------------------|------------|------------|------------|------------|------------|------------|
| Signal Group | 2 | 0 | 0 | 6 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | |
| Lead / Lag | - | - | - | - | Lead | - |
| Minimum Green [s] | 10 | 0 | 0 | 10 | 7 | 0 |
| Maximum Green [s] | 60 | 0 | 0 | 60 | 30 | 0 |
| Amber [s] | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Split [s] | 65 | 0 | 0 | 65 | 25 | 0 |
| Vehicle Extension [s] | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Clearance [s] | 0 | 0 | 0 | 0 | 0 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | No | | | No | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Minimum Recall | Yes | | | Yes | No | |
| Maximum Recall | No | | | No | No | |
| Pedestrian Recall | No | | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 50.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

Lane Group Calculations

| Lane Group | C | C | C |
|---|-------|-------|-------|
| C, Cycle Length [s] | 90 | 90 | 90 |
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 2.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 60 | 60 | 20 |
| g / C, Green / Cycle | 0.67 | 0.67 | 0.22 |
| (v / s)_i Volume / Saturation Flow Rate | 0.65 | 0.68 | 0.22 |
| s, saturation flow rate [veh/h] | 1541 | 595 | 1594 |
| c, Capacity [veh/h] | 1027 | 442 | 354 |
| d1, Uniform Delay [s] | 14.11 | 19.91 | 35.00 |
| k, delay calibration | 0.50 | 0.50 | 0.19 |
| l, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 21.46 | 25.34 | 31.04 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | |
|---------------------------------------|--------|--------|--------|
| X, volume / capacity | 0.97 | 0.91 | 1.01 |
| d, Delay for Lane Group [s/veh] | 35.57 | 45.25 | 66.04 |
| Lane Group LOS | D | D | F |
| Critical Lane Group | No | Yes | Yes |
| 50th-Percentile Queue Length [veh/ln] | 20.15 | 10.20 | 10.28 |
| 50th-Percentile Queue Length [ft/ln] | 503.87 | 255.11 | 257.10 |
| 95th-Percentile Queue Length [veh/ln] | 27.52 | 15.44 | 15.59 |
| 95th-Percentile Queue Length [ft/ln] | 687.94 | 386.08 | 389.68 |

Movement, Approach, & Intersection Results

| | | | | | | |
|---------------------------------|-------|-------|-------|-------|-------|-------|
| d_M, Delay for Movement [s/veh] | 35.57 | 35.57 | 45.25 | 45.25 | 66.04 | 66.04 |
| Movement LOS | D | D | D | D | E | E |
| d_A, Approach Delay [s/veh] | 35.57 | | 45.25 | | 66.04 | |
| Approach LOS | D | | D | | E | |
| d_I, Intersection Delay [s/veh] | 43.98 | | | | | |
| Intersection LOS | D | | | | | |
| Intersection V/C | 0.898 | | | | | |

Other Modes

| | | | |
|--|-------|-------|-------|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 0.00 | 0.00 |
| I_p,int, Pedestrian LOS Score for Intersectio | 0.000 | 0.000 | 0.000 |
| Crosswalk LOS | F | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 1333 | 1333 | 444 |
| d_b, Bicycle Delay [s] | 5.00 | 5.00 | 27.22 |
| I_b,int, Bicycle LOS Score for Intersection | 3.201 | 2.223 | 2.147 |
| Bicycle LOS | C | B | B |

Sequence

| | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



Intersection Level Of Service Report
Intersection 5: Driveway A and Nolensville Rd

| | | | |
|------------------|-----------------|---------------------------|---------|
| Control Type: | Two-way stop | Delay (sec / veh): | 1,509.1 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 3.447 |

Intersection Setup

| Name | Nolensville Road | | Nolensville Road | | Driveway A | |
|------------------------------|------------------|--------|------------------|--------|------------|--------|
| Approach | Northbound | | Southbound | | Eastbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Left | Thru | Thru | Right | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 1 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 40.00 | | 40.00 | | 25.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | No | | No | | No | |

Volumes

| Name | Nolensville Road | | Nolensville Road | | Driveway A | |
|---|------------------|--------|------------------|--------|------------|--------|
| Base Volume Input [veh/h] | 0 | 747 | 853 | 0 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 |
| In-Process Volume [veh/h] | 0 | 266 | 201 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 95 | 0 | 0 | 76 | 62 | 80 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 95 | 1107 | 1162 | 76 | 62 | 80 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 26 | 301 | 316 | 21 | 17 | 22 |
| Total Analysis Volume [veh/h] | 103 | 1203 | 1263 | 83 | 67 | 87 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

Intersection Settings

| | | | |
|------------------------------------|------|------|------|
| Priority Scheme | Free | Free | Stop |
| Flared Lane | | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | |
|---------------------------------------|-------|------|------|------|---------|-------|
| V/C, Movement V/C Ratio | 0.20 | 0.01 | 0.01 | 0.00 | 3.45 | 0.42 |
| d_M, Delay for Movement [s/veh] | 13.80 | 0.00 | 0.00 | 0.00 | 1509.06 | 34.41 |
| Movement LOS | B | A | A | A | F | D |
| 95th-Percentile Queue Length [veh/ln] | 0.75 | 0.00 | 0.00 | 0.00 | 8.80 | 1.93 |
| 95th-Percentile Queue Length [ft/ln] | 18.63 | 0.00 | 0.00 | 0.00 | 220.01 | 48.14 |
| d_A, Approach Delay [s/veh] | 1.09 | | 0.00 | | 675.98 | |
| Approach LOS | A | | A | | F | |
| d_I, Intersection Delay [s/veh] | 37.61 | | | | | |
| Intersection LOS | F | | | | | |

Nolensville Town Center

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Scenario 6 Projected PM - Scenario 2

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12/4/2023

Turning Movement Volume: Summary

| ID | Intersection Name | Northbound | | | Southbound | | | Eastbound | | | Westbound | | | Total Volume |
|----|---|------------|------|-------|------------|------|-------|-----------|------|-------|-----------|------|-------|--------------|
| | | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | |
| 1 | Nolensville Road and Clovercroft Road/Rocky Fork Road | 138 | 580 | 198 | 271 | 648 | 46 | 139 | 295 | 116 | 356 | 224 | 177 | 3188 |

| ID | Intersection Name | Northbound | | | Southbound | | | Eastbound | | | Westbound | | | Total Volume |
|----|--|------------|------|-------|------------|------|-------|-----------|------|-------|-----------|------|-------|--------------|
| | | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | |
| 2 | Nolensville Road and Summerlyn Drive/Site Access | 96 | 536 | 23 | 269 | 669 | 134 | 207 | 34 | 93 | 50 | 35 | 332 | 2478 |

| ID | Intersection Name | Northbound | | | Southbound | | | Eastbound | | | Westbound | | | Total Volume |
|----|--|------------|------|-------|------------|------|-------|-----------|------|-------|-----------|------|-------|--------------|
| | | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | |
| 3 | Nolensville Road and Williams Road/York Road | 123 | 556 | 78 | 87 | 696 | 67 | 59 | 298 | 143 | 51 | 118 | 82 | 2358 |

| ID | Intersection Name | Northbound | | Southbound | | Westbound | | Total Volume |
|----|------------------------------------|------------|-------|------------|------|-----------|-------|--------------|
| | | Thru | Right | Left | Thru | Left | Right | |
| 4 | Clovercroft Road and Williams Road | 437 | 478 | 44 | 326 | 312 | 16 | 1613 |

| ID | Intersection Name | Northbound | | Southbound | | Eastbound | | Total Volume |
|----|-------------------------------|------------|------|------------|-------|-----------|-------|--------------|
| | | Left | Thru | Thru | Right | Left | Right | |
| 5 | Driveway A and Nolensville Rd | 95 | 1107 | 1162 | 76 | 62 | 80 | 2582 |

PROJECTED WITH IMPROVEMENTS CONDITIONS
CAPACITY ANALYSES

Nolensville Town Center

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Improvements.vistro

Scenario 7 Projected AM - Scenario 1

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Scenario 1.pdf

12/4/2023

Intersection Analysis Summary

| ID | Intersection Name | Control Type | Method | Worst Mvmt | V/C | Delay (s/veh) | LOS |
|-----------|-------------------------------|---------------------|-----------------|-------------------|------------|----------------------|------------|
| 5 | Driveway A and Nolensville Rd | Signalized | HCM 7th Edition | EB Left | 0.653 | 10.8 | B |

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 5: Driveway A and Nolensville Rd

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Signalized | Delay (sec / veh): | 10.8 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.653 |

Intersection Setup

| Name | Nolensville Road | | Nolensville Road | | Driveway A | |
|------------------------------|------------------|--------|------------------|--------|------------|--------|
| Approach | Northbound | | Southbound | | Eastbound | |
| Lane Configuration | ↵↑ | | ↑↵ | | ↵↵ | |
| Turning Movement | Left | Thru | Thru | Right | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 1 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 40.00 | | 40.00 | | 25.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Curb Present | No | | No | | No | |
| Crosswalk | No | | No | | No | |

Volumes

| Name | Nolensville Road | | Nolensville Road | | Driveway A | |
|---|------------------|--------|------------------|--------|------------|--------|
| Base Volume Input [veh/h] | 0 | 582 | 630 | 0 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Proportion of CAVs [%] | 0.00 | | | | | |
| Growth Factor | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 |
| In-Process Volume [veh/h] | 0 | 162 | 201 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 55 | 0 | 0 | 69 | 96 | 78 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 55 | 817 | 911 | 69 | 96 | 78 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 15 | 222 | 248 | 19 | 26 | 21 |
| Total Analysis Volume [veh/h] | 60 | 888 | 990 | 75 | 104 | 85 |
| Presence of On-Street Parking | No | No | No | No | No | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | 0 | | 0 | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | 0 | | 0 | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | 0 | | 0 | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | 0 | | 0 | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |
| Bicycle Volume [bicycles/h] | 0 | | 0 | | 0 | |

Intersection Settings

| | |
|---------------------------|---------------------------------|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 100 |
| Active Pattern | Pattern 1 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | Beginning of First Yellow |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

Phasing & Timing

| Control Type | Permissive | Permissive | Permissive | Permissive | Permissive | Permissive |
|------------------------------|------------|------------|------------|------------|------------|------------|
| Signal Group | 0 | 2 | 6 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | |
| Lead / Lag | - | - | - | - | Lead | - |
| Minimum Green [s] | 0 | 10 | 10 | 0 | 7 | 0 |
| Maximum Green [s] | 0 | 60 | 60 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 75 | 75 | 0 | 25 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Clearance [s] | 0 | 0 | 0 | 0 | 0 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | No | | No | |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | Yes | Yes | | Yes | |
| Maximum Recall | | No | No | | No | |
| Pedestrian Recall | | No | No | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 50.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

Lane Group Calculations

| Lane Group | L | C | C | R | L | R |
|---|-------|------|------|------|-------|-------|
| C, Cycle Length [s] | 100 | 100 | 100 | 100 | 100 | 100 |
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 81 | 81 | 81 | 81 | 9 | 9 |
| g / C, Green / Cycle | 0.81 | 0.81 | 0.81 | 0.81 | 0.09 | 0.09 |
| (v / s)_i Volume / Saturation Flow Rate | 0.13 | 0.53 | 0.59 | 0.05 | 0.06 | 0.06 |
| s, saturation flow rate [veh/h] | 477 | 1683 | 1683 | 1431 | 1603 | 1431 |
| c, Capacity [veh/h] | 311 | 1364 | 1364 | 1160 | 143 | 128 |
| d1, Uniform Delay [s] | 14.20 | 3.80 | 4.36 | 1.89 | 44.34 | 44.08 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 | 0.11 |
| l, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 1.38 | 2.42 | 3.40 | 0.11 | 6.81 | 5.81 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | | | | |
|---------------------------------------|-------|--------|--------|------|--------|--------|
| X, volume / capacity | 0.19 | 0.65 | 0.73 | 0.06 | 0.73 | 0.66 |
| d, Delay for Lane Group [s/veh] | 15.57 | 6.22 | 7.75 | 2.00 | 51.15 | 49.89 |
| Lane Group LOS | B | A | A | A | D | D |
| Critical Lane Group | No | No | Yes | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | 0.84 | 4.50 | 5.87 | 0.19 | 2.79 | 2.25 |
| 50th-Percentile Queue Length [ft/ln] | 20.96 | 112.53 | 146.75 | 4.64 | 69.76 | 56.34 |
| 95th-Percentile Queue Length [veh/ln] | 1.51 | 7.98 | 9.84 | 0.33 | 5.02 | 4.06 |
| 95th-Percentile Queue Length [ft/ln] | 37.74 | 199.52 | 246.08 | 8.34 | 125.57 | 101.41 |

Movement, Approach, & Intersection Results

| | | | | | | |
|---------------------------------|-------|------|------|------|-------|-------|
| d_M, Delay for Movement [s/veh] | 15.57 | 6.22 | 7.75 | 2.00 | 51.15 | 49.89 |
| Movement LOS | B | A | A | A | D | D |
| d_A, Approach Delay [s/veh] | 6.81 | | 7.35 | | 50.58 | |
| Approach LOS | A | | A | | D | |
| d_I, Intersection Delay [s/veh] | 10.83 | | | | | |
| Intersection LOS | B | | | | | |
| Intersection V/C | 0.653 | | | | | |

Other Modes

| | | | |
|--|-------|-------|-------|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 0.00 | 0.00 |
| I_p,int, Pedestrian LOS Score for Intersectio | 0.000 | 0.000 | 0.000 |
| Crosswalk LOS | F | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 1400 | 1400 | 400 |
| d_b, Bicycle Delay [s] | 4.50 | 4.50 | 32.00 |
| I_b,int, Bicycle LOS Score for Intersection | 3.124 | 3.317 | 1.560 |
| Bicycle LOS | C | C | A |

Sequence

| | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



Nolensville Town Center

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Scenario 7 Projected AM - Scenario 1

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12/4/2023

Turning Movement Volume: Summary

| ID | Intersection Name | Northbound | | Southbound | | Eastbound | | Total Volume |
|----|-------------------------------|------------|------|------------|-------|-----------|-------|--------------|
| | | Left | Thru | Thru | Right | Left | Right | |
| 5 | Driveway A and Nolensville Rd | 55 | 817 | 911 | 69 | 96 | 78 | 2026 |

Nolensville Town Center

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Improvements.vistro

Scenario 8 Projected PM - Scenario 1

Report File: M:\...\6.1 Projected with Improvements - PM -
Scenario 1.pdf

12/4/2023

Intersection Analysis Summary

| ID | Intersection Name | Control Type | Method | Worst Mvmt | V/C | Delay (s/veh) | LOS |
|-----------|-------------------------------|---------------------|-----------------|-------------------|------------|----------------------|------------|
| 5 | Driveway A and Nolensville Rd | Signalized | HCM 7th Edition | NB Left | 0.828 | 22.9 | C |

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 5: Driveway A and Nolensville Rd

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Signalized | Delay (sec / veh): | 22.9 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.828 |

Intersection Setup

| Name | Nolensville Road | | Nolensville Road | | Driveway A | |
|------------------------------|------------------|--------|------------------|--------|------------|--------|
| Approach | Northbound | | Southbound | | Eastbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Left | Thru | Thru | Right | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 1 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 40.00 | | 40.00 | | 25.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Curb Present | No | | No | | No | |
| Crosswalk | No | | No | | No | |

Volumes

| Name | Nolensville Road | | Nolensville Road | | Driveway A | |
|---|------------------|--------|------------------|--------|------------|--------|
| | | | | | | |
| Base Volume Input [veh/h] | 0 | 747 | 853 | 0 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Proportion of CAVs [%] | 0.00 | | | | | |
| Growth Factor | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 |
| In-Process Volume [veh/h] | 0 | 266 | 201 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 113 | 0 | 0 | 138 | 115 | 94 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 113 | 1107 | 1162 | 138 | 115 | 94 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 31 | 301 | 316 | 38 | 31 | 26 |
| Total Analysis Volume [veh/h] | 123 | 1203 | 1263 | 150 | 125 | 102 |
| Presence of On-Street Parking | No | No | No | No | No | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | 0 | | 0 | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | 0 | | 0 | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | 0 | | 0 | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | 0 | | 0 | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |
| Bicycle Volume [bicycles/h] | 0 | | 0 | | 0 | |

Intersection Settings

| | |
|---------------------------|---------------------------------|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 130 |
| Active Pattern | Pattern 1 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | Beginning of First Yellow |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

Phasing & Timing

| Control Type | Permissive | Permissive | Permissive | Permissive | Permissive | Permissive |
|------------------------------|------------|------------|------------|------------|------------|------------|
| Signal Group | 0 | 2 | 6 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | |
| Lead / Lag | - | - | - | - | Lead | - |
| Minimum Green [s] | 0 | 10 | 10 | 0 | 7 | 0 |
| Maximum Green [s] | 0 | 60 | 60 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 104 | 104 | 0 | 26 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Clearance [s] | 0 | 0 | 0 | 0 | 0 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | No | | No | |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | Yes | Yes | | No | |
| Maximum Recall | | No | No | | No | |
| Pedestrian Recall | | No | No | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 50.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

Lane Group Calculations

| Lane Group | L | C | C | R | L | R |
|---|-------|------|-------|------|-------|-------|
| C, Cycle Length [s] | 130 | 130 | 130 | 130 | 130 | 130 |
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 107 | 107 | 107 | 107 | 13 | 13 |
| g / C, Green / Cycle | 0.83 | 0.83 | 0.83 | 0.83 | 0.10 | 0.10 |
| (v / s)_i Volume / Saturation Flow Rate | 0.36 | 0.71 | 0.75 | 0.10 | 0.08 | 0.07 |
| s, saturation flow rate [veh/h] | 342 | 1683 | 1683 | 1431 | 1603 | 1431 |
| c, Capacity [veh/h] | 142 | 1389 | 1389 | 1181 | 157 | 140 |
| d1, Uniform Delay [s] | 53.50 | 6.95 | 7.94 | 2.21 | 57.40 | 56.99 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 | 0.11 |
| l, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 46.78 | 7.45 | 10.35 | 0.22 | 8.95 | 7.11 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | | | | |
|---------------------------------------|--------|--------|--------|-------|--------|--------|
| X, volume / capacity | 0.87 | 0.87 | 0.91 | 0.13 | 0.80 | 0.73 |
| d, Delay for Lane Group [s/veh] | 100.29 | 14.40 | 18.29 | 2.44 | 66.35 | 64.09 |
| Lane Group LOS | F | B | B | A | E | E |
| Critical Lane Group | No | No | Yes | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | 5.87 | 15.28 | 18.88 | 0.57 | 4.45 | 3.57 |
| 50th-Percentile Queue Length [ft/ln] | 146.81 | 382.07 | 472.03 | 14.14 | 111.25 | 89.14 |
| 95th-Percentile Queue Length [veh/ln] | 9.85 | 21.69 | 26.01 | 1.02 | 7.91 | 6.42 |
| 95th-Percentile Queue Length [ft/ln] | 246.16 | 542.36 | 650.18 | 25.45 | 197.74 | 160.45 |

Movement, Approach, & Intersection Results

| | | | | | | |
|---------------------------------|--------|-------|-------|------|-------|-------|
| d_M, Delay for Movement [s/veh] | 100.29 | 14.40 | 18.29 | 2.44 | 66.35 | 64.09 |
| Movement LOS | F | B | B | A | E | E |
| d_A, Approach Delay [s/veh] | 22.37 | | 16.61 | | 65.34 | |
| Approach LOS | C | | B | | E | |
| d_I, Intersection Delay [s/veh] | 22.91 | | | | | |
| Intersection LOS | C | | | | | |
| Intersection V/C | 0.828 | | | | | |

Other Modes

| | | | |
|--|-------|-------|-------|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 0.00 | 0.00 |
| I_p,int, Pedestrian LOS Score for Intersectio | 0.000 | 0.000 | 0.000 |
| Crosswalk LOS | F | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 1523 | 1523 | 323 |
| d_b, Bicycle Delay [s] | 3.70 | 3.70 | 45.70 |
| I_b,int, Bicycle LOS Score for Intersection | 3.748 | 3.891 | 1.560 |
| Bicycle LOS | D | D | A |

Sequence

| | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



Nolensville Town Center

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Improvements.vistro

Scenario 8 Projected PM - Scenario 1

Report File: M:\...\6.1 Projected with Improvements - PM -
Scenario 1.pdf

12/4/2023

Turning Movement Volume: Summary

| ID | Intersection Name | Northbound | | Southbound | | Eastbound | | Total Volume |
|----|-------------------------------|------------|------|------------|-------|-----------|-------|--------------|
| | | Left | Thru | Thru | Right | Left | Right | |
| 5 | Driveway A and Nolensville Rd | 113 | 1107 | 1162 | 138 | 115 | 94 | 2729 |

Nolensville Town Center

Vistro File: M:\...\Nolensville Town Center - Draft 4 -
Improvements.vistro

Scenario 5 Projected AM - Scenario 2

Report File: M:\...\7.1 Projected with Improvements - AM -
Scenario 2.pdf

12/4/2023

Intersection Analysis Summary

| ID | Intersection Name | Control Type | Method | Worst Mvmt | V/C | Delay (s/veh) | LOS |
|-----------|-------------------------------|---------------------|-----------------|-------------------|------------|----------------------|------------|
| 5 | Driveway A and Nolensville Rd | Signalized | HCM 7th Edition | EB Right | 0.639 | 8.9 | A |

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 5: Driveway A and Nolensville Rd

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Signalized | Delay (sec / veh): | 8.9 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | A |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.639 |

Intersection Setup

| Name | Nolensville Road | | Nolensville Road | | Driveway A | |
|------------------------------|------------------|--------|------------------|--------|------------|--------|
| Approach | Northbound | | Southbound | | Eastbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Left | Thru | Thru | Right | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 1 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 40.00 | | 40.00 | | 25.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Curb Present | No | | No | | No | |
| Crosswalk | No | | No | | No | |

Volumes

| Name | Nolensville Road | | Nolensville Road | | Driveway A | |
|---|------------------|--------|------------------|--------|------------|--------|
| Base Volume Input [veh/h] | 0 | 582 | 630 | 0 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Proportion of CAVs [%] | 0.00 | | | | | |
| Growth Factor | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 |
| In-Process Volume [veh/h] | 0 | 162 | 201 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 46 | 0 | 0 | 36 | 52 | 66 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 46 | 817 | 911 | 36 | 52 | 66 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 13 | 222 | 248 | 10 | 14 | 18 |
| Total Analysis Volume [veh/h] | 50 | 888 | 990 | 39 | 57 | 72 |
| Presence of On-Street Parking | No | No | No | No | No | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | 0 | | 0 | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | 0 | | 0 | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | 0 | | 0 | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | 0 | | 0 | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |
| Bicycle Volume [bicycles/h] | 0 | | 0 | | 0 | |

Intersection Settings

| | |
|---------------------------|---------------------------------|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 100 |
| Active Pattern | Pattern 1 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | Beginning of First Yellow |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

Phasing & Timing

| Control Type | Permissive | Permissive | Permissive | Permissive | Permissive | Permissive |
|------------------------------|------------|------------|------------|------------|------------|------------|
| Signal Group | 0 | 2 | 6 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | |
| Lead / Lag | - | - | - | - | Lead | - |
| Minimum Green [s] | 0 | 10 | 10 | 0 | 7 | 0 |
| Maximum Green [s] | 0 | 60 | 60 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 63 | 63 | 0 | 37 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Clearance [s] | 0 | 0 | 0 | 0 | 0 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | No | | No | |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | Yes | Yes | | Yes | |
| Maximum Recall | | No | No | | No | |
| Pedestrian Recall | | No | No | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 50.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

Lane Group Calculations

| Lane Group | L | C | C | R | L | R |
|---|-------|------|------|------|-------|-------|
| C, Cycle Length [s] | 100 | 100 | 100 | 100 | 100 | 100 |
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 83 | 83 | 83 | 83 | 7 | 7 |
| g / C, Green / Cycle | 0.83 | 0.83 | 0.83 | 0.83 | 0.07 | 0.07 |
| (v / s)_i Volume / Saturation Flow Rate | 0.10 | 0.53 | 0.59 | 0.03 | 0.04 | 0.05 |
| s, saturation flow rate [veh/h] | 493 | 1683 | 1683 | 1431 | 1603 | 1431 |
| c, Capacity [veh/h] | 336 | 1391 | 1391 | 1182 | 118 | 105 |
| d1, Uniform Delay [s] | 12.04 | 3.18 | 3.65 | 1.55 | 44.51 | 45.20 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 | 0.11 |
| l, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.94 | 2.25 | 3.12 | 0.05 | 3.06 | 7.66 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | | | | |
|---------------------------------------|-------|--------|--------|------|-------|-------|
| X, volume / capacity | 0.15 | 0.64 | 0.71 | 0.03 | 0.48 | 0.69 |
| d, Delay for Lane Group [s/veh] | 12.98 | 5.44 | 6.77 | 1.60 | 47.58 | 52.86 |
| Lane Group LOS | B | A | A | A | D | D |
| Critical Lane Group | No | No | Yes | No | No | Yes |
| 50th-Percentile Queue Length [veh/ln] | 0.62 | 3.61 | 4.71 | 0.08 | 1.47 | 1.97 |
| 50th-Percentile Queue Length [ft/ln] | 15.48 | 90.32 | 117.81 | 1.89 | 36.64 | 49.37 |
| 95th-Percentile Queue Length [veh/ln] | 1.11 | 6.50 | 8.27 | 0.14 | 2.64 | 3.55 |
| 95th-Percentile Queue Length [ft/ln] | 27.87 | 162.57 | 206.81 | 3.40 | 65.95 | 88.87 |

Movement, Approach, & Intersection Results

| | | | | | | |
|---------------------------------|-------|------|------|------|-------|-------|
| d_M, Delay for Movement [s/veh] | 12.98 | 5.44 | 6.77 | 1.60 | 47.58 | 52.86 |
| Movement LOS | B | A | A | A | D | D |
| d_A, Approach Delay [s/veh] | 5.84 | | 6.57 | | 50.53 | |
| Approach LOS | A | | A | | D | |
| d_I, Intersection Delay [s/veh] | 8.95 | | | | | |
| Intersection LOS | A | | | | | |
| Intersection V/C | 0.639 | | | | | |

Other Modes

| | | | |
|--|-------|-------|-------|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 0.00 | 0.00 |
| I_p,int, Pedestrian LOS Score for Intersectio | 0.000 | 0.000 | 0.000 |
| Crosswalk LOS | F | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 1160 | 1160 | 640 |
| d_b, Bicycle Delay [s] | 8.82 | 8.82 | 23.12 |
| I_b,int, Bicycle LOS Score for Intersection | 3.107 | 3.257 | 1.560 |
| Bicycle LOS | C | C | A |

Sequence

| | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



Nolensville Town Center

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 Improvements.vistro

Scenario 5 Projected AM - Scenario 2

Report File: M:\...7.1 Projected with Improvements - AM -
 Scenario 2.pdf

12/4/2023

Turning Movement Volume: Summary

| ID | Intersection Name | Northbound | | Southbound | | Eastbound | | Total Volume |
|----|-------------------------------|------------|------|------------|-------|-----------|-------|--------------|
| | | Left | Thru | Thru | Right | Left | Right | |
| 5 | Driveway A and Nolensville Rd | 46 | 817 | 911 | 36 | 52 | 66 | 1928 |

Nolensville Town Center

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Improvements.vistro

Scenario 6 Projected PM - Scenario 2

Report File: M:\...\8.1 Projected with Improvements - PM -
Scenario 2.pdf

12/4/2023

Intersection Analysis Summary

| ID | Intersection Name | Control Type | Method | Worst Mvmt | V/C | Delay (s/veh) | LOS |
|----|-------------------------------|--------------|-----------------|------------|-------|---------------|-----|
| 5 | Driveway A and Nolensville Rd | Signalized | HCM 7th Edition | EB Right | 0.811 | 17.4 | B |

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 5: Driveway A and Nolensville Rd

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Signalized | Delay (sec / veh): | 17.4 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.811 |

Intersection Setup

| Name | Nolensville Road | | Nolensville Road | | Driveway A | |
|------------------------------|------------------|--------|------------------|--------|------------|--------|
| Approach | Northbound | | Southbound | | Eastbound | |
| Lane Configuration | ↵↑ | | ↑↵ | | ↵↵ | |
| Turning Movement | Left | Thru | Thru | Right | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 1 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 40.00 | | 40.00 | | 25.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Curb Present | No | | No | | No | |
| Crosswalk | No | | No | | No | |

Volumes

| Name | Nolensville Road | | Nolensville Road | | Driveway A | |
|---|------------------|--------|------------------|--------|------------|--------|
| Base Volume Input [veh/h] | 0 | 747 | 853 | 0 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Proportion of CAVs [%] | 0.00 | | | | | |
| Growth Factor | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 | 1.1262 |
| In-Process Volume [veh/h] | 0 | 266 | 201 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 95 | 0 | 0 | 76 | 62 | 80 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 95 | 1107 | 1162 | 76 | 62 | 80 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 26 | 301 | 316 | 21 | 17 | 22 |
| Total Analysis Volume [veh/h] | 103 | 1203 | 1263 | 83 | 67 | 87 |
| Presence of On-Street Parking | No | No | No | No | No | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | 0 | | 0 | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | 0 | | 0 | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | 0 | | 0 | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | 0 | | 0 | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |
| Bicycle Volume [bicycles/h] | 0 | | 0 | | 0 | |

Intersection Settings

| | |
|---------------------------|---------------------------------|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 130 |
| Active Pattern | Pattern 1 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | Beginning of First Yellow |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

Phasing & Timing

| Control Type | Permissive | Permissive | Permissive | Permissive | Permissive | Permissive |
|------------------------------|------------|------------|------------|------------|------------|------------|
| Signal Group | 0 | 2 | 6 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | |
| Lead / Lag | - | - | - | - | Lead | - |
| Minimum Green [s] | 0 | 10 | 10 | 0 | 7 | 0 |
| Maximum Green [s] | 0 | 60 | 60 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 105 | 105 | 0 | 25 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Clearance [s] | 0 | 0 | 0 | 0 | 0 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | No | | No | |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | Yes | Yes | | Yes | |
| Maximum Recall | | No | No | | No | |
| Pedestrian Recall | | No | No | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 50.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

Lane Group Calculations

| Lane Group | L | C | C | R | L | R |
|---|-------|------|------|------|-------|-------|
| C, Cycle Length [s] | 130 | 130 | 130 | 130 | 130 | 130 |
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 110 | 110 | 110 | 110 | 10 | 10 |
| g / C, Green / Cycle | 0.84 | 0.84 | 0.84 | 0.84 | 0.08 | 0.08 |
| (v / s)_i Volume / Saturation Flow Rate | 0.28 | 0.71 | 0.75 | 0.06 | 0.04 | 0.06 |
| s, saturation flow rate [veh/h] | 365 | 1683 | 1683 | 1431 | 1603 | 1431 |
| c, Capacity [veh/h] | 179 | 1421 | 1421 | 1208 | 126 | 112 |
| d1, Uniform Delay [s] | 39.60 | 5.51 | 6.30 | 1.67 | 57.59 | 58.76 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 | 0.11 |
| l, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 12.77 | 6.39 | 8.62 | 0.11 | 3.45 | 10.71 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | | | | |
|---------------------------------------|--------|--------|--------|-------|--------|--------|
| X, volume / capacity | 0.58 | 0.85 | 0.89 | 0.07 | 0.53 | 0.77 |
| d, Delay for Lane Group [s/veh] | 52.37 | 11.90 | 14.92 | 1.78 | 61.04 | 69.47 |
| Lane Group LOS | D | B | B | A | E | E |
| Critical Lane Group | No | No | Yes | No | No | Yes |
| 50th-Percentile Queue Length [veh/ln] | 3.58 | 12.07 | 14.86 | 0.24 | 2.26 | 3.17 |
| 50th-Percentile Queue Length [ft/ln] | 89.52 | 301.65 | 371.38 | 5.91 | 56.56 | 79.30 |
| 95th-Percentile Queue Length [veh/ln] | 6.45 | 17.76 | 21.18 | 0.43 | 4.07 | 5.71 |
| 95th-Percentile Queue Length [ft/ln] | 161.13 | 444.07 | 529.40 | 10.63 | 101.81 | 142.74 |

Movement, Approach, & Intersection Results

| | | | | | | |
|---------------------------------|-------|-------|-------|------|-------|-------|
| d_M, Delay for Movement [s/veh] | 52.37 | 11.90 | 14.92 | 1.78 | 61.04 | 69.47 |
| Movement LOS | D | B | B | A | E | E |
| d_A, Approach Delay [s/veh] | 15.09 | | 14.11 | | 65.80 | |
| Approach LOS | B | | B | | E | |
| d_I, Intersection Delay [s/veh] | 17.41 | | | | | |
| Intersection LOS | B | | | | | |
| Intersection V/C | 0.811 | | | | | |

Other Modes

| | | | |
|--|-------|-------|-------|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft ² /ped] | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 0.00 | 0.00 |
| I_p,int, Pedestrian LOS Score for Intersectio | 0.000 | 0.000 | 0.000 |
| Crosswalk LOS | F | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 1538 | 1538 | 308 |
| d_b, Bicycle Delay [s] | 3.46 | 3.46 | 46.54 |
| I_b,int, Bicycle LOS Score for Intersection | 3.715 | 3.781 | 1.560 |
| Bicycle LOS | D | D | A |

Sequence

| | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



Nolensville Town Center

Vistro File: M:\...\Nolensville Town Center - Draft 4 - Improvements.vistro

Scenario 6 Projected PM - Scenario 2

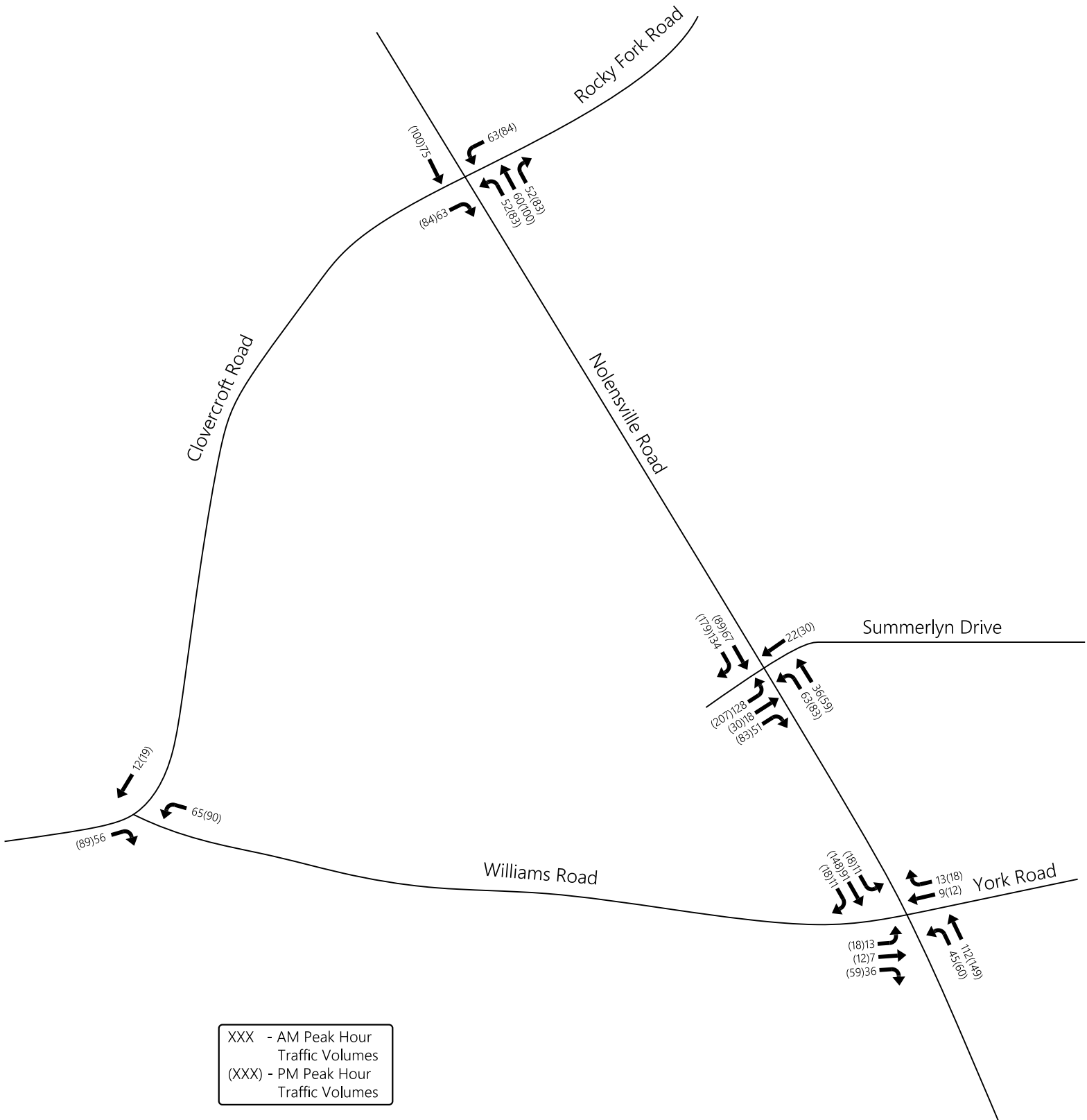
Report File: M:\...\8.1 Projected with Improvements - PM - Scenario 2.pdf

12/4/2023

Turning Movement Volume: Summary

| ID | Intersection Name | Northbound | | Southbound | | Eastbound | | Total Volume |
|----|-------------------------------|------------|------|------------|-------|-----------|-------|--------------|
| | | Left | Thru | Thru | Right | Left | Right | |
| 5 | Driveway A and Nolensville Rd | 95 | 1107 | 1162 | 76 | 62 | 80 | 2582 |

**APPENDIX G
BACKGROUND DEVELOPMENTS**



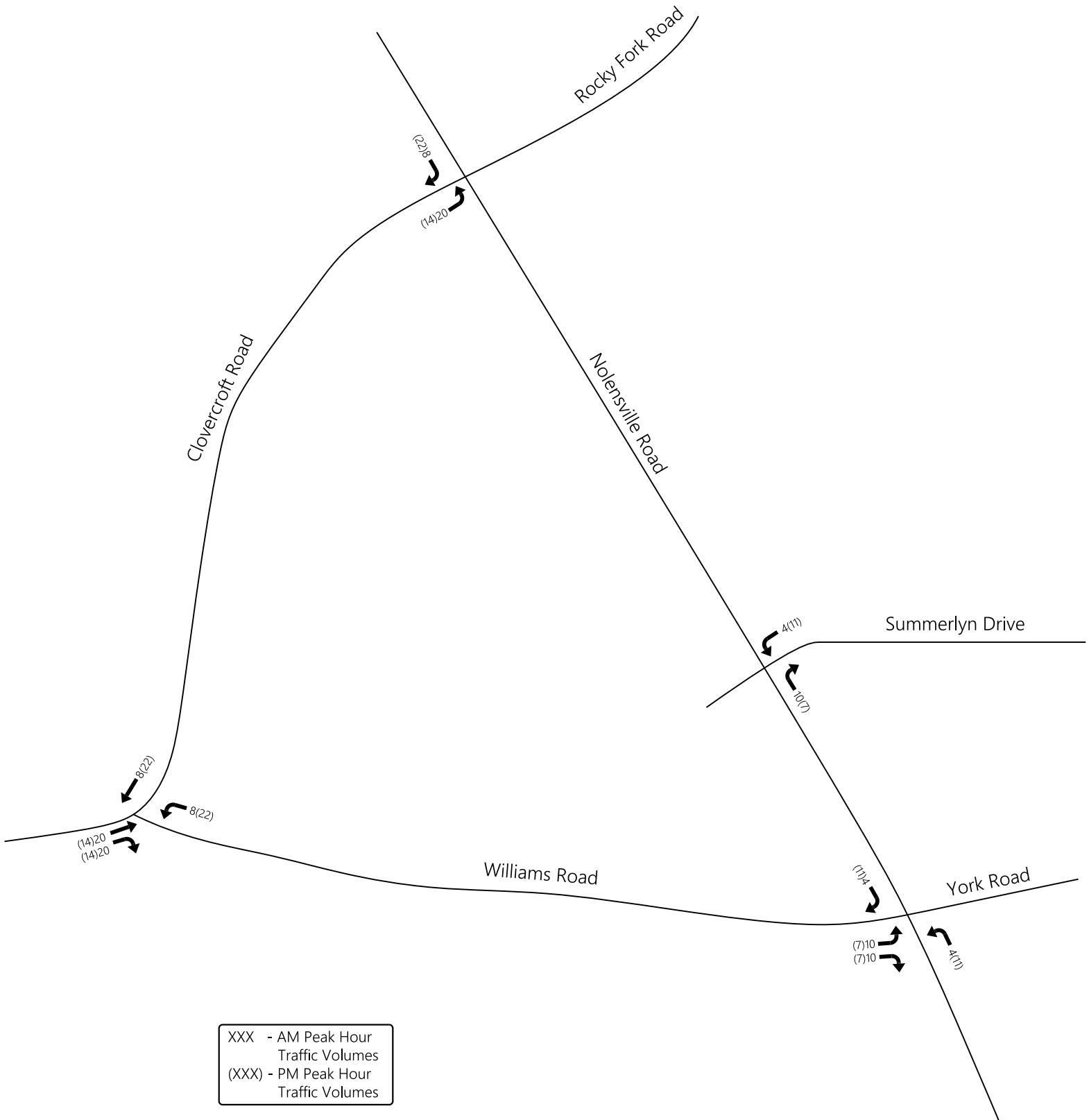
XXX - AM Peak Hour
Traffic Volumes
(XXX) - PM Peak Hour
Traffic Volumes

Background Peak Hour Traffic Volumes
Generated by Background Development (Darsey)



(Not to Scale)

Figure G1.



XXX - AM Peak Hour
Traffic Volumes
(XXX) - PM Peak Hour
Traffic Volumes

Background Peak Hour Traffic Volumes
Generated by Background Development (Four Springs)



(Not to Scale)

Figure G2.

APPENDIX H
TRIP GENERATION CALCULATIONS

TOTAL TRIP GENERATION

| ITE CODE | LAND USE | # UNITS | UNIT TYPE | ADT | AM | | | PM | | |
|----------|--|---------|--------------|------|-------|------|-------|-------|------|-------|
| | | | | | Enter | Exit | Total | Enter | Exit | Total |
| 220.1 | Multifamily Housing (Low-Rise) - Not Close to Rail Transit | 404 | dwelling Uni | 2665 | 39 | 123 | 162 | 122 | 72 | 194 |
| 821.2 | Shopping Plaza - No Supermarket | 80 | k.s.f. | 5402 | 86 | 52 | 138 | 203 | 212 | 415 |

| | | | | | | | |
|---------------------------------|--------------|-----------|-----------|------------|------------|------------|-------------|
| SUBTOTAL | 8067 | 125 | 175 | 300 | 325 | 284 | 609 |
| <i>Internal Trips Reduction</i> | <i>-1047</i> | <i>-2</i> | <i>-2</i> | <i>-4</i> | <i>-75</i> | <i>-75</i> | <i>-150</i> |

| | | | | | | | |
|------------------------|-------------|-----|-----|------------|-----|-----|------------|
| TOTAL NEW TRIPS | 7020 | 123 | 173 | 296 | 250 | 209 | 459 |
|------------------------|-------------|-----|-----|------------|-----|-----|------------|

TRIP GENERATION

Multifamily Housing (Low-Rise) - Not Close to Rail Transit

220.1 ITE Land Code

404 Dwelling Units

Average Daily Traffic:

$$T = 6.41 * (X) + 75.31$$

$$T = 6.41 * (404) + 75.31$$

$$T = 2665$$

A.M. Peak Hour:

$$T = 0.40 * (X)$$

$$T = 0.40 * (404)$$

$$T = 162$$

Enter = 39 24%

Exit = 123 76%

P.M. Peak Hour:

$$T = 0.43 * (X) + 20.55$$

$$T = 0.43 * (404) + 20.55$$

$$T = 194$$

Enter = 122 63%

Exit = 72 37%

TRIP GENERATION

Shopping Plaza - No Supermarket

821.2 ITE Land Code

80 k.s.f.

Average Daily Traffic:

$$T = 67.52 * (X)$$

$$T = 67.52 * (80)$$

$$T = 5402$$

A.M. Peak Hour:

$$T = 1.73 * (X)$$

$$T = 1.73 * (80)$$

$$T = 138$$

Enter = 86 62%

Exit = 52 38%

P.M. Peak Hour:

$$T = 5.19 * (X)$$

$$T = 5.19 * (80)$$

$$T = 415$$

Enter = 203 49%

Exit = 212 51%

| NCHRP 684 Internal Trip Capture Estimator - AM Peak Hour | | | |
|--|--------------------------|---------------|------------------------|
| Project Name: | Nolensville Towan Center | Organization: | KCI Technologies, Inc. |
| Project Number: | 892307369 | Performed By: | 0 |
| Project Location: | Nolensville, Tennessee | Date: | 1/0/1900 |
| Count Year: | 2323 | Checked By: | 0 |
| Design Year: | 2029 | Date: | 1/0/1900 |

Table 1-A: Base Vehicle-Trip Generation Estimates

| Land Use: | Development Data | | Estimated Vehicle Trips | | |
|----------------------|------------------|-----------|-------------------------|----------|---------|
| | Units | Unit Type | Total | Entering | Exiting |
| Office | 0 | ksf | 0 | 0 | 0 |
| Retail | 80 | ksf | 138 | 86 | 52 |
| Restaurant | 0 | ksf | 0 | 0 | 0 |
| Cinema/Entertainment | 0 | seats | 0 | 0 | 0 |
| Residential | 404 | units | 162 | 39 | 123 |
| Hotel | 0 | rooms | 0 | 0 | 0 |
| Industrial | 0 | ksf | 0 | 0 | 0 |
| Institutional | 0 | ksf | 0 | 0 | 0 |
| Medical | 0 | beds/ksf | 0 | 0 | 0 |
| TOTAL | | | 300 | 125 | 175 |

Table 2-A: Mode Split and Vehicle Occupancy Estimates

| Land Use | Entering Trips | | | Exiting Trips | | |
|----------------------|----------------|-----------|-----------------|---------------|-----------|-----------------|
| | Veh. Occ. | % Transit | % Non-Motorized | Veh. Occ. | % Transit | % Non-Motorized |
| Office | 1.00 | 0% | 0% | 1.00 | 0% | 0% |
| Retail | 1.00 | 0% | 0% | 1.00 | 0% | 0% |
| Restaurant | 1.00 | 0% | 0% | 1.00 | 0% | 0% |
| Cinema/Entertainment | 1.00 | 0% | 0% | 1.00 | 0% | 0% |
| Residential | 1.00 | 0% | 0% | 1.00 | 0% | 0% |
| Hotel | 1.00 | 0% | 0% | 1.00 | 0% | 0% |
| Industrial | 1.00 | 0% | 0% | 1.00 | 0% | 0% |
| Institutional | 1.00 | 0% | 0% | 1.00 | 0% | 0% |
| Medical | 1.00 | 0% | 0% | 1.00 | 0% | 0% |

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

| Origin (From) | Destination (To) | | | | | |
|----------------------|------------------|--------|------------|----------------------|-------------|-------|
| | Office | Retail | Restaurant | Cinema/Entertainment | Residential | Hotel |
| Office | 0 | 500 | 500 | 500 | 500 | 500 |
| Retail | 500 | 0 | 500 | 500 | 500 | 500 |
| Restaurant | 500 | 500 | 0 | 500 | 500 | 500 |
| Cinema/Entertainment | 500 | 500 | 500 | 0 | 500 | 500 |
| Residential | 500 | 500 | 500 | 500 | 0 | 500 |
| Hotel | 500 | 500 | 500 | 500 | 500 | 0 |

Table 4-A: Internal Person-Trip Origin-Destination Matrix

| Origin (From) | Destination (To) | | | | | |
|----------------------|------------------|--------|------------|----------------------|-------------|-------|
| | Office | Retail | Restaurant | Cinema/Entertainment | Residential | Hotel |
| Office | | 0 | 0 | 0 | 0 | 0 |
| Retail | 0 | | 0 | 0 | 1 | 0 |
| Restaurant | 0 | 0 | | 0 | 0 | 0 |
| Cinema/Entertainment | 0 | 0 | 0 | | 0 | 0 |
| Residential | 0 | 1 | 0 | 0 | | 0 |
| Hotel | 0 | 0 | 0 | 0 | 0 | |

Table 5-A: Computations Summary

| | Total | Entering | Exiting |
|-------------------------------------|-------|----------|---------|
| All Person-Trips | 300 | 125 | 175 |
| Internal Trips | 4 | 2 | 2 |
| Internal Capture Percentage | 1.3% | 1.6% | 1.1% |
| External Vehicle-Trips ³ | 296 | 123 | 173 |
| External Transit-Trips ⁴ | 0 | 0 | 0 |
| External Non-motorized Trips | 0 | 0 | 0 |

Table 6-A: Internal Trip Capture Percentages by Land Use

| Land Use | Entering Trips | Exiting Trips |
|----------------------|----------------|---------------|
| Office | #DIV/0! | #DIV/0! |
| Retail | 1.2% | 1.9% |
| Restaurant | #DIV/0! | #DIV/0! |
| Cinema/Entertainment | #DIV/0! | #DIV/0! |
| Residential | 2.6% | 0.8% |
| Hotel | #DIV/0! | #DIV/0! |

1 Land Use Codes (LUCs) from Trip Generation Informational Report, ITE.

2 Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator.

3 Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

4 Person-trips

| NCHRP 684 Internal Trip Capture Estimator - PM Peak Hour | | | |
|--|--------------------------|---------------|------------------------|
| Project Name: | Nolensville Towan Center | Organization: | KCI Technologies, Inc. |
| Project Number: | 892307369 | Performed By: | 0 |
| Project Location: | Nolensville, Tennessee | Date: | 1/0/1900 |
| Count Year: | 2323 | Checked By: | 0 |
| Design Year: | 2029 | Date: | 1/0/1900 |

Table 1-P: Base Vehicle-Trip Generation Estimates

| Land Use: | Development Data | | Estimated Vehicle Trips | | |
|----------------------|------------------|-----------|-------------------------|------------|------------|
| | Units | Unit Type | Total | Entering | Exiting |
| Office | 0 | ksf | 0 | 0 | 0 |
| Retail | 80 | ksf | 415 | 203 | 212 |
| Restaurant | 0 | ksf | 0 | 0 | 0 |
| Cinema/Entertainment | 0 | seats | 0 | 0 | 0 |
| Residential | 404 | du | 194 | 122 | 72 |
| Hotel | 0 | rooms | 0 | 0 | 0 |
| Industrial | 0 | ksf | 0 | 0 | 0 |
| Institutional | 0 | ksf | 0 | 0 | 0 |
| Medical | 0 | beds/ksf | 0 | 0 | 0 |
| TOTAL | | | 609 | 325 | 284 |

Table 2-P: Mode Split and Vehicle Occupancy Estimates

| Land Use | Entering Trips | | | Exiting Trips | | |
|----------------------|----------------|-----------|-----------------|---------------|-----------|-----------------|
| | Veh. Occ. | % Transit | % Non-Motorized | Veh. Occ. | % Transit | % Non-Motorized |
| Office | 1.00 | 0% | 0% | 1.00 | 0% | 0% |
| Retail | 1.00 | 0% | 0% | 1.00 | 0% | 0% |
| Restaurant | 1.00 | 0% | 0% | 1.00 | 0% | 0% |
| Cinema/Entertainment | 1.00 | 0% | 0% | 1.00 | 0% | 0% |
| Residential | 1.00 | 0% | 0% | 1.00 | 0% | 0% |
| Hotel | 1.00 | 0% | 0% | 1.00 | 0% | 0% |
| Industrial | 1.00 | 0% | 0% | 1.00 | 0% | 0% |
| Institutional | 1.00 | 0% | 0% | 1.00 | 0% | 0% |
| Medical | 1.00 | 0% | 0% | 1.00 | 0% | 0% |

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

| Origin (From) | Destination (To) | | | | | |
|----------------------|------------------|--------|------------|----------------------|-------------|-------|
| | Office | Retail | Restaurant | Cinema/Entertainment | Residential | Hotel |
| Office | 0 | 500 | 500 | 500 | 500 | 500 |
| Retail | 500 | 0 | 500 | 500 | 500 | 500 |
| Restaurant | 500 | 500 | 0 | 500 | 500 | 500 |
| Cinema/Entertainment | 500 | 500 | 500 | 0 | 500 | 500 |
| Residential | 500 | 500 | 500 | 500 | 0 | 500 |
| Hotel | 500 | 500 | 500 | 500 | 500 | 0 |

Table 4-A: Internal Person-Trip Origin-Destination Matrix

| Origin (From) | Destination (To) | | | | | |
|----------------------|------------------|--------|------------|----------------------|-------------|-------|
| | Office | Retail | Restaurant | Cinema/Entertainment | Residential | Hotel |
| Office | | 0 | 0 | 0 | 0 | 0 |
| Retail | 0 | | 0 | 0 | 55 | 0 |
| Restaurant | 0 | 0 | | 0 | 0 | 0 |
| Cinema/Entertainment | 0 | 0 | 0 | | 0 | 0 |
| Residential | 0 | 20 | 0 | 0 | | 0 |
| Hotel | 0 | 0 | 0 | 0 | 0 | |

Table 5-A: Computations Summary

| | Total | Entering | Exiting |
|-------------------------------------|--------------|--------------|--------------|
| All Person-Trips | 609 | 325 | 284 |
| Internal Trips | 150 | 75 | 75 |
| Internal Capture Percentage | 24.6% | 23.1% | 26.4% |
| External Vehicle-Trips ³ | 459 | 250 | 209 |
| External Transit-Trips ⁴ | 0 | 0 | 0 |
| External Non-motorized Trips | 0 | 0 | 0 |

Table 6-A: Internal Trip Capture Percentages by Land Use

| Land Use | Entering Trips | Exiting Trips |
|----------------------|----------------|---------------|
| Office | #DIV/0! | #DIV/0! |
| Retail | 9.9% | 25.9% |
| Restaurant | #DIV/0! | #DIV/0! |
| Cinema/Entertainment | #DIV/0! | #DIV/0! |
| Residential | 45.1% | 27.8% |
| Hotel | #DIV/0! | #DIV/0! |

1 Land Use Codes (LUCs) from Trip Generation Informational Report, ITE.

2 Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator.

3 Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

4 Person-trips

| NCHRP 684 Internal Trip Capture Estimator - AM Peak | | | |
|---|--------------------------|---------------|------------------------|
| Project Name: | Nolensville Towan Center | Organization: | KCI Technologies, Inc. |
| Project Number: | 892307369 | Performed By: | 0 |
| Project Location: | Nolensville, Tennessee | Date: | 1/0/1900 |
| Count Year: | 2323 | Checked By: | 0 |
| Design Year: | 2029 | Date: | 1/0/1900 |

| NCHRP 684 Internal Trip Capture Estimator - PM Peak | | | |
|---|--------------------------|---------------|------------------------|
| Project Name: | Nolensville Towan Center | Organization: | KCI Technologies, Inc. |
| Project Number: | 892307369 | Performed By: | 0 |
| Project Location: | Nolensville, Tennessee | Date: | 1/0/1900 |
| Count Year: | 2323 | Checked By: | 0 |
| Design Year: | 2029 | Date: | 1/0/1900 |

Table 7-A: Conversion of Vehicle-Trip Ends to Person Trip-Ends

| Land use | Table 7-A(O): Entering Trips | | | Table 7-A(O): Exiting Trips | | |
|----------------------|------------------------------|---------------|--------------|-----------------------------|---------------|--------------|
| | Veh. Occ. | Vehicle-Trips | Person-Trips | Veh. Occ. | Vehicle-Trips | Person-Trips |
| Office | 1.00 | 0 | 0 | 1.00 | 0 | 0 |
| Retail | 1.00 | 86 | 86 | 1.00 | 52 | 52 |
| Restaurant | 1.00 | 0 | 0 | 1.00 | 0 | 0 |
| Cinema/Entertainment | 1.00 | 0 | 0 | 1.00 | 0 | 0 |
| Residential | 1.00 | 39 | 39 | 1.00 | 123 | 123 |
| Hotel | 1.00 | 0 | 0 | 1.00 | 0 | 0 |
| Industrial | 1.00 | 0 | 0 | 1.00 | 0 | 0 |
| Institutional | 1.00 | 0 | 0 | 1.00 | 0 | 0 |
| Medical | 1.00 | 0 | 0 | 1.00 | 0 | 0 |

Table 7-P: Conversion of Vehicle-Trip Ends to Person Trip-Ends

| Land use | Table 7-P(D): Entering Trips | | | Table 7-P(O): Exiting Trips | | |
|----------------------|------------------------------|---------------|--------------|-----------------------------|---------------|--------------|
| | Veh. Occ. | Vehicle-Trips | Person-Trips | Veh. Occ. | Vehicle-Trips | Person-Trips |
| Office | 1.00 | 0 | 0 | 1.00 | 0 | 0 |
| Retail | 1.00 | 203 | 203 | 1.00 | 212 | 212 |
| Restaurant | 1.00 | 0 | 0 | 1.00 | 0 | 0 |
| Cinema/Entertainment | 1.00 | 0 | 0 | 1.00 | 0 | 0 |
| Residential | 1.00 | 122 | 122 | 1.00 | 72 | 72 |
| Hotel | 1.00 | 0 | 0 | 1.00 | 0 | 0 |
| Industrial | 1.00 | 0 | 0 | 1.00 | 0 | 0 |
| Institutional | 1.00 | 0 | 0 | 1.00 | 0 | 0 |
| Medical | 1.00 | 0 | 0 | 1.00 | 0 | 0 |

Table 8-A(O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

| Origin (From) | Destination (To) | | | | | |
|----------------------|--------------------|--------|------------|----------------------|-------------|-------|
| | Office | Retail | Restaurant | Cinema/Entertainment | Residential | Hotel |
| Office | | 0 | 0 | 0 | 0 | 0 |
| Retail | 15 | | 7 | 0 | 7 | 0 |
| Restaurant | 0 | 0 | | 0 | 0 | 0 |
| Cinema/Entertainment | 0 | 0 | 0 | | 0 | 0 |
| Residential | 2 | 1 | 25 | 0 | | 0 |
| Hotel | 0 | 0 | 0 | 0 | 0 | |
| Industrial | % Internal Capture | 0% | Entering | 0 | Exiting | 0 |
| Institutional | Rate | 0% | Entering | 0 | Exiting | 0 |
| Medical | Rate | 0% | Entering | 0 | Exiting | 0 |

Table 8-P(O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

| Origin (From) | Destination (To) | | | | | |
|----------------------|--------------------|--------|------------|----------------------|-------------|-------|
| | Office | Retail | Restaurant | Cinema/Entertainment | Residential | Hotel |
| Office | | 0 | 0 | 0 | 0 | 0 |
| Retail | 4 | | 61 | 8 | 55 | 11 |
| Restaurant | 0 | 0 | | 0 | 0 | 0 |
| Cinema/Entertainment | 0 | 0 | 0 | | 0 | 0 |
| Residential | 3 | 30 | 15 | 0 | | 2 |
| Hotel | 0 | 0 | 0 | 0 | 0 | |
| Industrial | % Internal Capture | 0% | Entering | 0 | Exiting | 0 |
| Institutional | Rate | 0% | Entering | 0 | Exiting | 0 |
| Medical | Rate | 0% | Entering | 0 | Exiting | 0 |

Table 8-A(D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

| Origin (From) | Destination (To) | | | | | |
|----------------------|------------------|--------|------------|----------------------|-------------|-------|
| | Office | Retail | Restaurant | Cinema/Entertainment | Residential | Hotel |
| Office | | 28 | 0 | 0 | 0 | 0 |
| Retail | 0 | | 0 | 0 | 1 | 0 |
| Restaurant | 0 | 7 | | 0 | 2 | 0 |
| Cinema/Entertainment | 0 | 0 | 0 | | 0 | 0 |
| Residential | 0 | 15 | 0 | 0 | | 0 |
| Hotel | 0 | 3 | 0 | 0 | 0 | |

Table 8-P(D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

| Origin (From) | Destination (To) | | | | | |
|----------------------|------------------|--------|------------|----------------------|-------------|-------|
| | Office | Retail | Restaurant | Cinema/Entertainment | Residential | Hotel |
| Office | | 16 | 0 | 0 | 5 | 0 |
| Retail | 0 | | 0 | 0 | 56 | 0 |
| Restaurant | 0 | 102 | | 0 | 20 | 0 |
| Cinema/Entertainment | 0 | 8 | 0 | | 5 | 0 |
| Residential | 0 | 20 | 0 | 0 | | 0 |
| Hotel | 0 | 4 | 0 | 0 | 0 | |

Table 9-A(D): Internal and External Trips Summary (Entering Trips)

| Origin Land Use | Person-Trip Estimates | | | External Trips by Mode | | |
|----------------------|-----------------------|----------|-------|------------------------|----------|----------------|
| | Internal | External | Total | Vehicles1 | Transit2 | Non-Motorized2 |
| | Office | 0 | 0 | 0 | 0 | 0 |
| Retail | 1 | 85 | 86 | 85 | 0 | 0 |
| Restaurant | 0 | 0 | 0 | 0 | 0 | 0 |
| Cinema/Entertainment | 0 | 0 | 0 | 0 | 0 | 0 |
| Residential | 1 | 38 | 39 | 38 | 0 | 0 |
| Hotel | 0 | 0 | 0 | 0 | 0 | 0 |
| Industrial | 0 | 0 | 0 | 0 | 0 | 0 |
| Institutional | 0 | 0 | 0 | 0 | 0 | 0 |
| Medical | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 2 | 123 | 125 | 123 | 0 | 0 |

Table 9-P(D): Internal and External Trips Summary (Entering Trips)

| Origin Land Use | Person-Trip Estimates | | | External Trips by Mode | | |
|----------------------|-----------------------|----------|-------|------------------------|----------|----------------|
| | Internal | External | Total | Vehicles1 | Transit2 | Non-Motorized2 |
| | Office | 0 | 0 | 0 | 0 | 0 |
| Retail | 20 | 183 | 203 | 183 | 0 | 0 |
| Restaurant | 0 | 0 | 0 | 0 | 0 | 0 |
| Cinema/Entertainment | 0 | 0 | 0 | 0 | 0 | 0 |
| Residential | 55 | 67 | 122 | 67 | 0 | 0 |
| Hotel | 0 | 0 | 0 | 0 | 0 | 0 |
| Industrial | 0 | 0 | 0 | 0 | 0 | 0 |
| Institutional | 0 | 0 | 0 | 0 | 0 | 0 |
| Medical | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 75 | 250 | 325 | 250 | 0 | 0 |

Table 9-A(O): Internal and External Trips Summary (Exiting Trips)

| Origin Land Use | Person-Trip Estimates | | | External Trips by Mode | | |
|----------------------|-----------------------|----------|-------|------------------------|----------|----------------|
| | Internal | External | Total | Vehicles1 | Transit2 | Non-Motorized2 |
| | Office | 0 | 0 | 0 | 0 | 0 |
| Retail | 1 | 51 | 52 | 51 | 0 | 0 |
| Restaurant | 0 | 0 | 0 | 0 | 0 | 0 |
| Cinema/Entertainment | 0 | 0 | 0 | 0 | 0 | 0 |
| Residential | 1 | 122 | 123 | 122 | 0 | 0 |
| Hotel | 0 | 0 | 0 | 0 | 0 | 0 |
| Industrial | 0 | 0 | 0 | 0 | 0 | 0 |
| Institutional | 0 | 0 | 0 | 0 | 0 | 0 |
| Medical | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 2 | 173 | 175 | 173 | 0 | 0 |

Table 9-P(O): Internal and External Trips Summary (Exiting Trips)

| Origin Land Use | Person-Trip Estimates | | | External Trips by Mode | | |
|----------------------|-----------------------|----------|-------|------------------------|----------|----------------|
| | Internal | External | Total | Vehicles1 | Transit2 | Non-Motorized2 |
| | Office | 0 | 0 | 0 | 0 | 0 |
| Retail | 55 | 157 | 212 | 157 | 0 | 0 |
| Restaurant | 0 | 0 | 0 | 0 | 0 | 0 |
| Cinema/Entertainment | 0 | 0 | 0 | 0 | 0 | 0 |
| Residential | 20 | 52 | 72 | 52 | 0 | 0 |
| Hotel | 0 | 0 | 0 | 0 | 0 | 0 |
| Industrial | 0 | 0 | 0 | 0 | 0 | 0 |
| Institutional | 0 | 0 | 0 | 0 | 0 | 0 |
| Medical | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 75 | 209 | 284 | 209 | 0 | 0 |

1 Vehicle-trips computed using the mode split and vehicles occupancy values provided in Table 2-A
 2 Person-trips
 3 Total estimate for all other land uses at mixed-use development site-not subject to internal capture computations.

1 Vehicle-trips computed using the mode split and vehicles occupancy values provided in Table 2-A
 2 Person-trips
 3 Total estimate for all other land uses at mixed-use development site-not subject to internal capture computations.

AM Distribution Internal Trip Destinations for Exiting Trips (Computed at Origin)

| Origin (From) | Destination (To) | | | | | |
|----------------------|------------------|--------|------------|----------------------|-------------|-------|
| | Office | Retail | Restaurant | Cinema/Entertainment | Residential | Hotel |
| Office | 0% | 28% | 63% | 0% | 1% | 0% |
| Retail | 29% | 0% | 13% | 0% | 14% | 0% |
| Restaurant | 31% | 14% | 0% | 0% | 4% | 3% |
| Cinema/Entertainment | 0% | 0% | 0% | 0% | 0% | 0% |
| Residential | 2% | 1% | 20% | 0% | 0% | 0% |
| Hotel | 75% | 14% | 9% | 0% | 0% | 0% |

PM Distribution Internal Trip Destinations for Exiting Trips (Computed at Origin)

| Origin (From) | Destination (To) | | | | | |
|----------------------|------------------|--------|------------|----------------------|-------------|-------|
| | Office | Retail | Restaurant | Cinema/Entertainment | Residential | Hotel |
| Office | 0% | 20% | 4% | 0% | 2% | 0% |
| Retail | 2% | 0% | 29% | 4% | 26% | 5% |
| Restaurant | 3% | 41% | 0% | 8% | 18% | 7% |
| Cinema/Entertainment | 2% | 21% | 31% | 0% | 8% | 2% |
| Residential | 4% | 42% | 21% | 0% | 0% | 3% |
| Hotel | 0% | 16% | 68% | 0% | 2% | 0% |

AM Distribution Internal Trip Destinations for Entering Trips (Computed at Destination)

| Origin (From) | Destination (To) | | | | | |
|----------------------|------------------|--------|------------|----------------------|-------------|-------|
| | Office | Retail | Restaurant | Cinema/Entertainment | Residential | Hotel |
| Office | 0% | 32% | 23% | 0% | 0% | 0% |
| Retail | 4% | 0% | 50% | 0% | 2% | 0% |
| Restaurant | 14% | 8% | 0% | 0% | 5% | 4% |
| Cinema/Entertainment | 0% | 0% | 0% | 0% | 0% | 0% |
| Residential | 3% | 17% | 20% | 0% | 0% | 0% |
| Hotel | 3% | 4% | 6% | 0% | 0% | 0% |

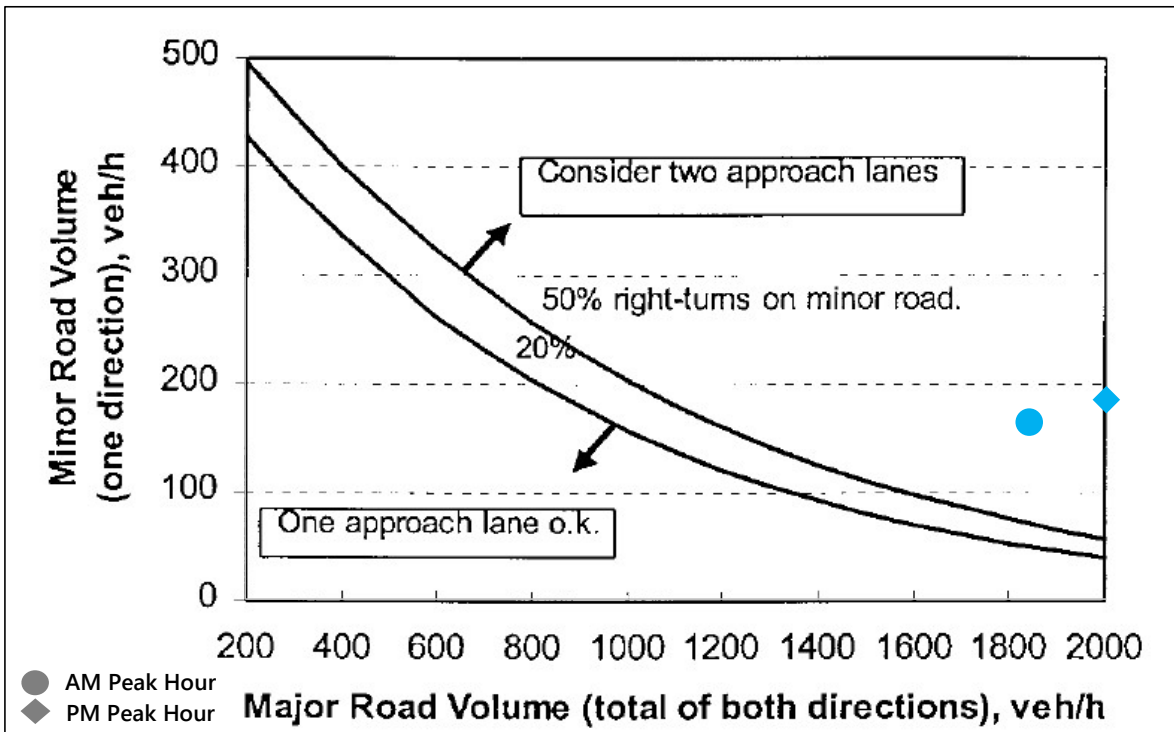
PM Distribution Internal Trip Destinations for Entering Trips (Computed at Destination)

| Origin (From) | Destination (To) | | | | | |
|----------------------|------------------|--------|------------|----------------------|-------------|-------|
| | Office | Retail | Restaurant | Cinema/Entertainment | Residential | Hotel |
| Office | 0% | 8% | 2% | 1% | 4% | 0% |
| Retail | 31% | 0% | 29% | 26% | 46% | 17% |
| Restaurant | 30% | 50% | 0% | 32% | 16% | 71% |
| Cinema/Entertainment | 6% | 4% | 3% | 0% | 4% | 1% |
| Residential | 57% | 10% | 14% | 0% | 0% | 12% |
| Hotel | 0% | 2% | 5% | 0% | 0% | 0% |

APPENDIX I
WARRANT ANALYSIS

Projected Conditions (Peak Hours)
MINOR APPROACH ANALYSES
(Based on Intersection Channelization Design Guide)

| Approach - Intersection | AM Peak Hour | | | PM Peak Hour | | |
|-------------------------------|-------------------|-------------------|------------------|-------------------|-------------------|------------------|
| | Minor Road Volume | Major Road Volume | 2-Lane Approach? | Minor Road Volume | Major Road Volume | 2-Lane Approach? |
| Driveway A and Nolensville Rd | 164 | 1839 | YES | 185 | 2500 | YES |

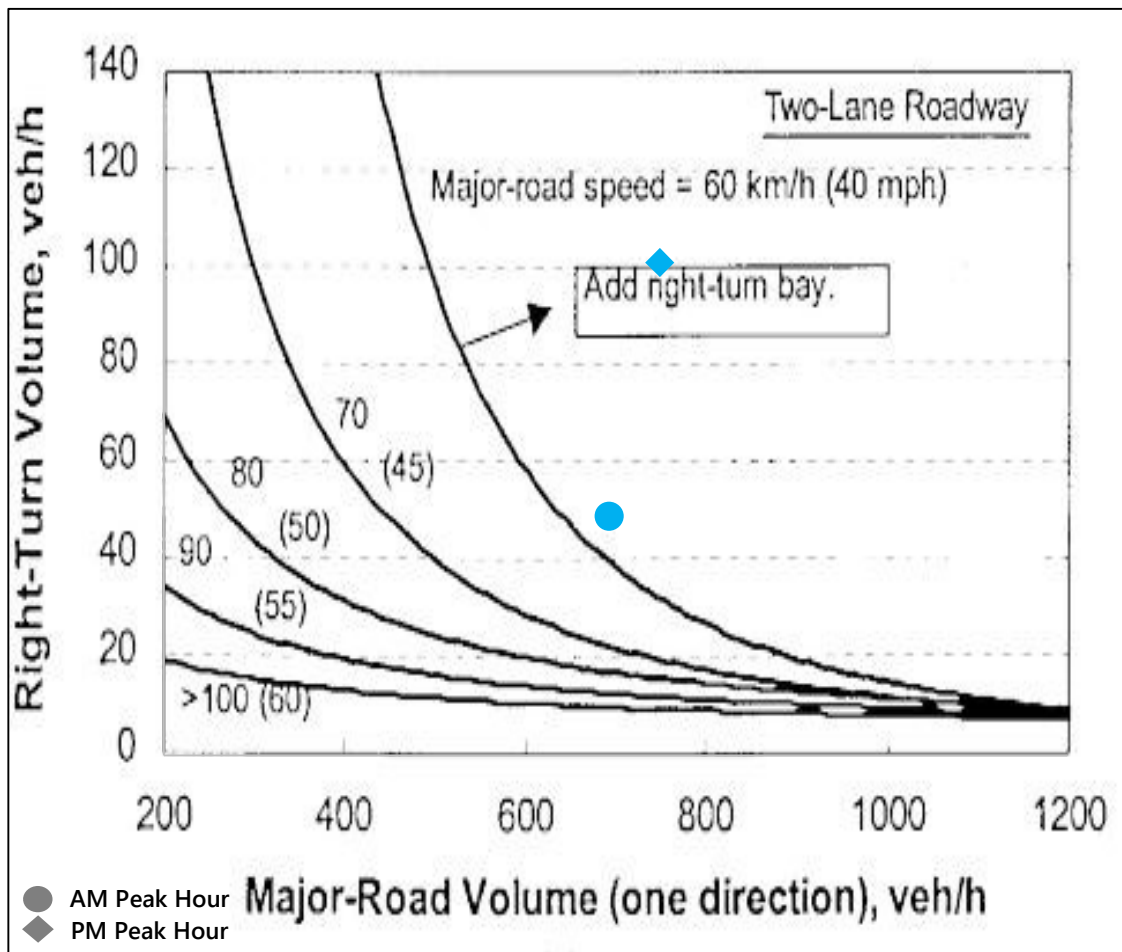


| Approach | No. | TOD | Speed Limit | % Left-Turns | Advancing Volume | Opposing Volumes | Results |
|-------------------------------|-----|-----|-------------|--------------|------------------|------------------|--------------------------------|
| Driveway A and Nolensville Rd | 1 | AM | 40 | 7% | 683 | 742 | Left-turn treatment warranted. |
| | 2 | PM | 40 | 15% | 568 | 749 | Left-turn treatment warranted. |

Projected Conditions (Peak Hours)
RIGHT-TURN LANE WARRANT ANALYSIS
(Based on NCHRP 457: Evaluating Intersection Improvements)

| Intersection Approach | Speed Limit | AM Peak Hour | | | PM Peak Hour | | |
|-------------------------------|-------------|--------------|---------|--------------|--------------|---------|--------------|
| | | V_R^* | V_A^* | Warrant Met? | V_R^* | V_A^* | Warrant Met? |
| Driveway A and Nolensville Rd | 40 | 49 | 693 | YES | 101 | 749 | YES |

V_R = Right Turn Volumes, V_A = Advancing Volumes



| Intersection Approach | Speed Limit | AM Peak Hour | | | PM Peak Hour | | |
|-------------------------------|-------------|--------------|---------|--------------|--------------|---------|--------------|
| | | V_R^* | V_A^* | Warrant Met? | V_R^* | V_A^* | Warrant Met? |
| Driveway A and Nolensville Rd | 40 | 49 | 693 | | 101 | 749 | |