

# Purser & BV Belk Property

## Traffic Impact Analysis UPDATE

Union County, North Carolina

Prepared for:

**Kolter Homes LLC**

December 2024

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**Kimley»Horn**

**Traffic Impact Analysis UPDATE for  
Purser & BV Belk Property  
Union County, North Carolina**

**Prepared for:**

**Kolter Homes LLC  
Charlotte, North Carolina**

**Prepared by:**

**Kimley-Horn and Associates, Inc.  
NC License #F - 0102  
200 South Tryon Street, Suite 200  
Charlotte, North Carolina 28202  
(704) 333-5131**

**December 2024  
014052003**



*Laura N. Reid*  
12/19/24

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## 1.0 Executive Summary

The purpose of this Traffic Impact Analysis (TIA) is to evaluate the vehicular traffic impacts on the surrounding transportation infrastructure as a result of the proposed Purser & BV Belk Property development. The primary objectives of the study are:

- To estimate trip generation and distribution for the proposed development.
- To perform intersection capacity analyses for the identified study area.
- To determine the potential traffic impacts of the proposed development.
- To identify improvements to mitigate the proposed development's traffic impacts.

The proposed Purser & BV Belk Property is located in the southwest quadrant of the Fairview Road (NC 218) and Mill Grove Road intersection in Union County, North Carolina. Based on the site plan, the proposed development is currently envisioned to consist of 730 age-restricted, single-family detached homes.

For the purposes of this TIA, a build-out year of 2033 was considered. Based on the site plan, the proposed development will be accessed via two external access points:

- Access 1 – an unsignalized, right-in/right-out (RIRO) connection to Fairview Road (NC 218) approximately 2,200 feet west of Mill Grove Road
- Access 2 – an unsignalized, full-movement connection to Mill Grove Road approximately 3,800 feet south of Fairview Road (NC 218)

The North Carolina Department of Transportation (NCDOT) TIA Scoping Checklist was prepared based on the provided site plan that documented all scoping parameters to be used for the TIA and was reviewed and agreed upon by NCDOT and Union County Staff. The approved TIA Scoping Checklist, along with NCDOT and County scoping comments, is included in the **Appendix**. The analysis in this TIA is based on the development plan described above. The development plan was revised after approval of the TIA Scoping Checklist to reduce density from 750 units to 730 units. Furthermore, per coordination with NCDOT and Union County Staff, the proposed Fairview Road (NC 218) access was analyzed as a RIRO connection rather than full-movement.

NCDOT and Union County TIA comments on the July 2024 TIA, along with the updated site plan, can be found in the **Appendix**.

The following AM and PM peak-hour scenarios were analyzed to determine the proposed development's transportation impacts on the surrounding network:

- 2024 Existing Conditions
- 2033 Background Conditions
- 2033 Build-out Conditions

Based on coordination with NCDOT and Union County, this TIA evaluated operations under each of the AM and PM peak-hour scenarios above for the following study area intersections:

1. Mill Grove Road and Fairview Road (NC 218)
2. Lawyers Road and Mill Grove Road
3. Fairview Road (NC 218) and Rock Hill Church Road/Ashe Meadow Drive
4. Fairview Road (NC 218) and Asheley Glen Drive
5. Fairview Road (NC 218) and Access 1
6. Mill Grove Road and Access 2

Kimley-Horn was retained to determine the potential traffic impacts of this development (in accordance with the traffic study guidelines in the [NCDOT Policy on Street and Driveway Access to North Carolina Highways](#) and set forth by the [Union County Development Ordinance – Section 60.160](#), and to identify transportation improvements that may be required to mitigate these impacts. This report presents trip generation, distribution, capacity analyses, crash analyses, and identified transportation improvements required to mitigate anticipated traffic demands produced by the subject development.

Based on the capacity analyses performed at each of the identified study intersections, along with review of the auxiliary turn-lane warrants and crash data contained herein, the following improvements have been identified to mitigate the impact of the proposed development on the adjacent street network:

**Lawyers Road and Mill Grove Road**

- Contribution of \$500,000 to Union County at the 400<sup>th</sup> home closing for future improvements to this intersection or in the vicinity of this property.

**Fairview Road (NC 218) and Access 1**

- Construction of the northbound approach of Access 1 under RIRO operations with one ingress lane, one egress lane, stop-control, and an internal protected stem (IPS) of 100 feet.
- Construction of an eastbound right-turn lane along Fairview Road (NC 218) with a minimum of 50 feet of storage and 200 feet of taper.

**Mill Grove Road and Access 2**

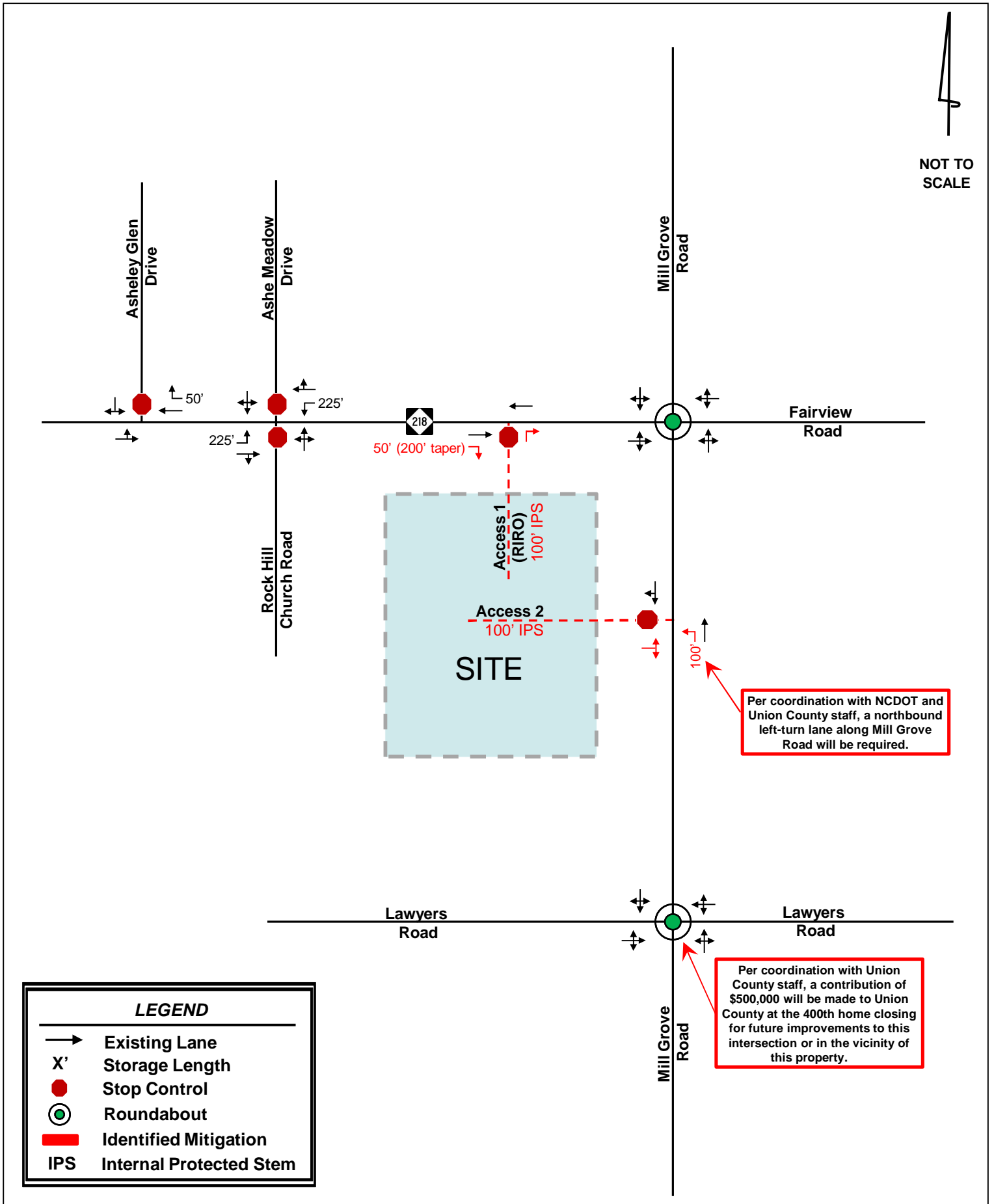
- Construction of the eastbound approach of Access 2 with one ingress lane, one egress lane, stop-control, and an IPS of 100 feet.

Based on coordination with NCDOT and Union County, the following additional lane will be required:

**Mill Grove Road and Access 2**

- Construction of a northbound left-turn lane along Mill Grove Road with 100 feet of storage.

The mitigation improvements identified within the study area are shown in **Figure 1.1**. The improvements shown on this figure are subject to approval by NCDOT and Union County. All additions and attachments to the State and County roadway system shall be properly permitted, designed, and constructed in conformance to standards maintained by the agencies.



## 2.0 Introduction

The proposed Purser and BV Belk Property is located in the southwest quadrant of the Fairview Road (NC 218) and Mill Grove Road intersection in Union County, North Carolina. Based on the site plan, the proposed development is currently envisioned to consist of 730 age-restricted, single-family detached homes.

For the purposes of this TIA, a build-out year of 2033 was considered. Based on the site plan, the proposed development will be accessed via two external access points:

- Access 1 – an unsignalized, RIRO connection to Fairview Road (NC 218) approximately 2,200 feet west of Mill Grove Road
- Access 2 – an unsignalized, full-movement connection to Mill Grove Road approximately 3,800 feet south of Fairview Road (NC 218)

The NCDOT TIA Scoping Checklist was prepared based on the provided site plan that documented all scoping parameters to be used for the TIA and was reviewed and agreed upon by NCDOT and Union County Staff. The approved TIA Scoping Checklist, along with NCDOT and County scoping comments, is included in the **Appendix**. The analysis in this TIA is based on the development plan described above. The development plan was revised after approval of the TIA Scoping Checklist to reduce density from 750 units to 730 units. Furthermore, per coordination with NCDOT and Union County Staff, the proposed Fairview Road (NC 218) access was analyzed as a RIRO connection rather than full-movement.

NCDOT and Union County TIA comments on the July 2024 TIA, along with the updated site plan, can be found in the **Appendix**.

Kimley-Horn was retained to determine the potential traffic impacts of this development (in accordance with the traffic study guidelines in the [NCDOT Policy on Street and Driveway Access to North Carolina Highways](#) and set forth by the [Union County Development Ordinance – Section 60.160](#), and to identify transportation improvements that may be required to mitigate these impacts. This report presents trip generation, distribution, capacity analyses, crash analyses, and identified transportation improvements required to mitigate anticipated traffic demands produced by the subject development.

### 3.0 Existing Traffic Conditions

Existing traffic conditions were coordinated with Union County and NCDOT staff and collected through field observations and turning-movement counts to establish the existing conditions baseline analysis.

#### 3.1 STUDY AREA

Based on coordination with Union County and NCDOT, the study area for this TIA includes the following existing intersections:

1. Mill Grove Road and Fairview Road (NC 218)
2. Lawyers Road and Mill Grove Road
3. Fairview Road (NC 218) and Rock Hill Church Road/Ashe Meadow Drive
4. Fairview Road (NC 218) and Asheley Glen Drive

**Figure 3.1** shows the study area intersections and the site location, **Figure 3.2** shows the proposed site plan for the development, and **Figure 3.3** shows the existing roadway geometry at the study intersections.

The primary roadways in the vicinity of the site are Fairview Road (NC 218), Mill Grove Road, and Lawyers Road.

Fairview Road (NC 218) is currently a two-lane, undivided minor arterial with a posted speed limit of 45 miles per hour (mph) west of Ashe Meadow Drive and 55 mph east of Ashe Meadow Drive. Fairview Road (NC 218) carries an annual average daily traffic (AADT) volume of 9,300 vehicles per day (vpd) east of Rock Hill Church Road and 9,700 vpd east of Mill Grove Road based on 2023 and 2024 NCDOT AADT data, respectively.

Mill Grove Road is a two-lane, undivided major collector with a posted speed limit of 45 mph south of Lawyers Road and 55 mph north of Lawyers Road. Mill Grove Road carries an AADT volume of 1,800 vpd north of Fairview Road (NC 218) based on 2024 NCDOT AADT data. It carries 1,500 vpd south of Fairview Road (NC 218) and 3,300 vpd south of Lawyers Road based on 2024 and 2023 NCDOT AADT data, respectively.

Lawyers Road is currently a two-lane, undivided major collector with a posted speed limit of 35 mph in the vicinity of the proposed development. Lawyers Road carries an AADT volume of 14,100 vpd west of Mill Grove Road and 11,100 vpd east of Mill Grove Road based on 2024 and 2023 NCDOT AADT data, respectively.

### 3.2 EXISTING TRAFFIC VOLUME DEVELOPMENT

AM (7:00-9:00 AM) and PM (4:00-6:00 PM) intersection turning-movement, heavy-vehicle, pedestrian, and bicycle counts were collected by Quality Counts on Wednesday, September 27<sup>th</sup>, 2023, at the following intersections:

- Mill Grove Road and Fairview Road (NC 218)
- Lawyers Road and Mill Grove Road

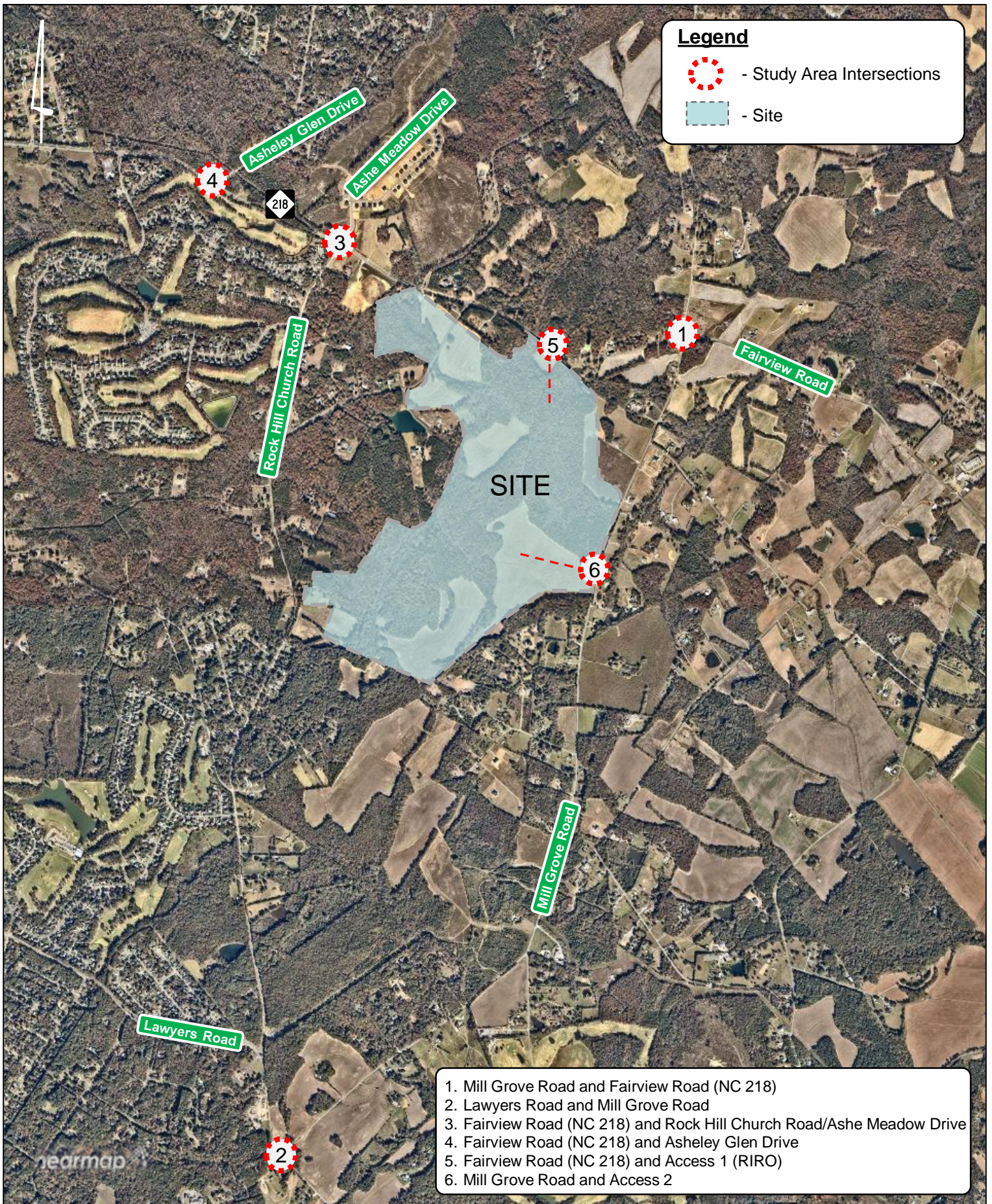
Additionally, AM (7:00-9:00 AM) and PM (4:00-6:00 PM) intersection turning-movement, heavy-vehicle, pedestrian, and bicycle counts were collected by Quality Counts on Wednesday, March 27<sup>th</sup>, 2024, at the following intersections:

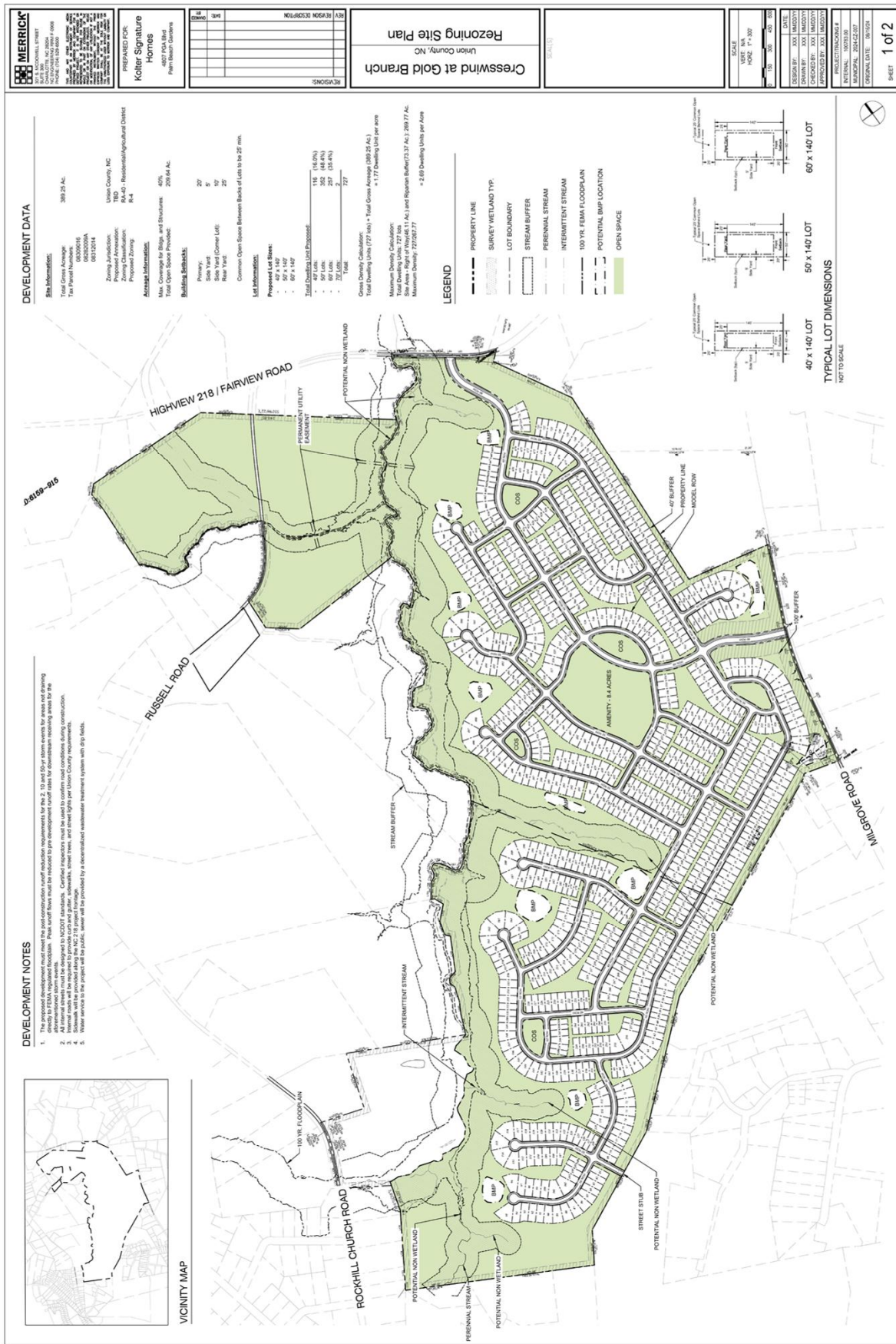
- Fairview Road (NC 218) and Rock Hill Church Road/Ashe Meadow Drive
- Fairview Road (NC 218) and Asheley Glen Drive

As documented in the approved NCDOT TIA Scoping Checklist, a growth rate of one percent (1%) was applied to the 2023 counts to reflect base 2024 traffic volumes.

Volume balancing was performed along Fairview Road (NC 218) between Rock Hill Church Road/Ashe Meadow Drive and Asheley Glen Drive. Volume balancing was not performed between the remaining study area intersections due to the spacing and presence of driveways between the intersections. Peak-hour intersection turning-movement count data is provided in the **Appendix**.

**Figure 3.4** illustrates the 2024 existing AM and PM peak-hour traffic volumes.





**MERRICK**  
 1000 W. HARRIS STREET  
 CHARLOTTE, NC 28204  
 PHONE: 704.366.1000  
 FAX: 704.366.1001

**PREPARED BY:**  
 Koller Signature  
 Horne  
 Park Branch Offices

NO.	REVISIONS

**Crosswind at Gold Branch**  
 Union County, NC  
**Rezoning Site Plan**

DATE	SCALE

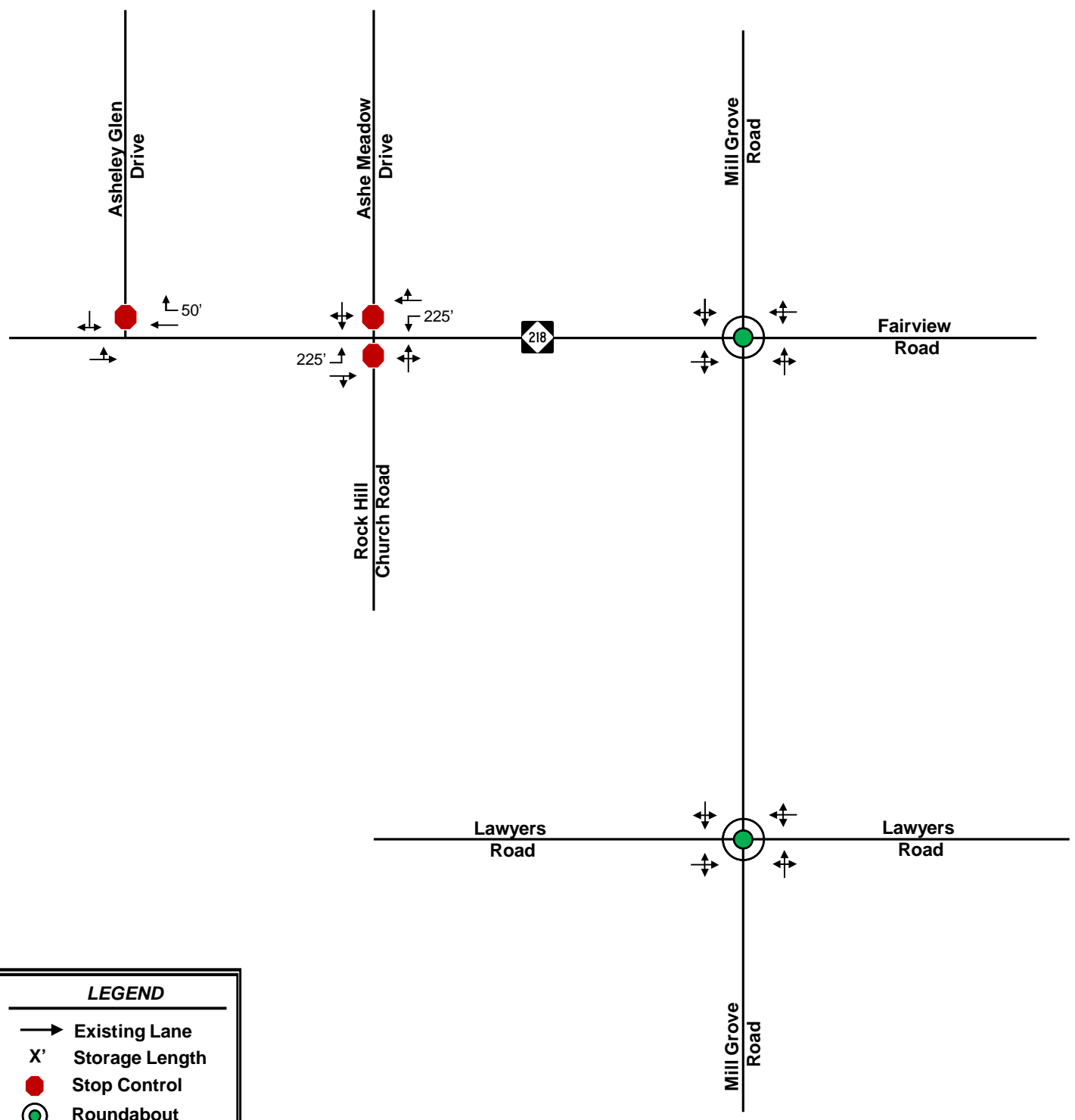
DESIGN BY: KCH / MERRICK  
 DRAWN BY: KCH / MERRICK  
 CHECKED BY: KCH / MERRICK  
 APPROVED BY: KCH / MERRICK

PROJECT NUMBER: 10020300  
 INTERNAL: 2024-02-07  
 MUNICIPAL: 2024-02-07  
 EXPIRES DATE: 09/10/24

SHEET **1 of 2**



NOT TO SCALE

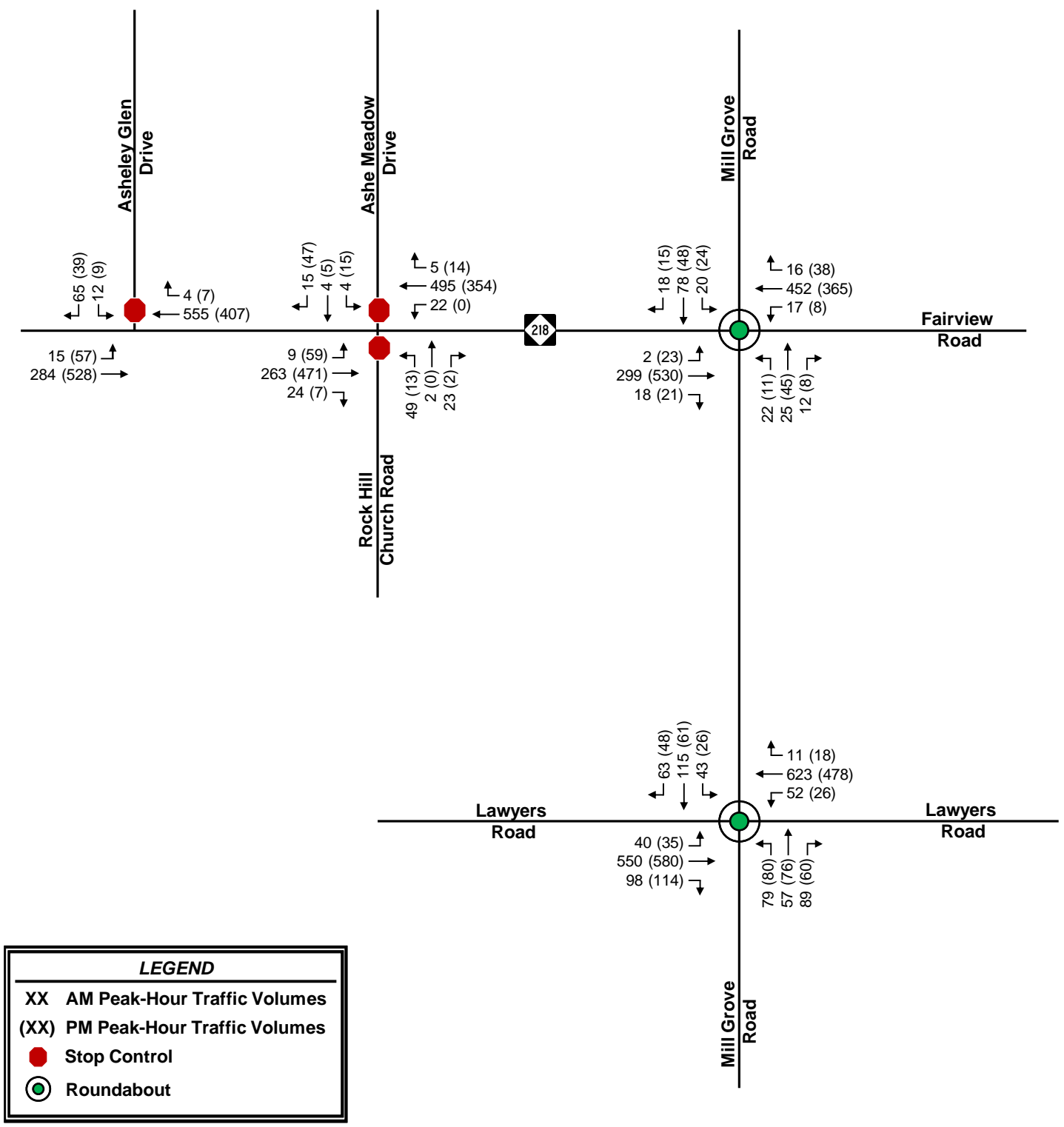


**LEGEND**

- Existing Lane
- X' Storage Length
- Stop Control
- Roundabout



NOT TO SCALE



## 4.0 Background Traffic Volume Development

Projected background (non-project) traffic is defined as the expected growth or change in traffic volumes on the surrounding roadway network between the year the existing counts were collected and the expected build-out year absent the construction and opening of the proposed project. This includes both non-specific general growth based on historical increase in local traffic volumes (historical background growth), along with specific growth and/or change in traffic volumes caused by either approved, but not yet fully-constructed, off-site developments and/or planned transportation projects specifically identified within the vicinity of the proposed development.

### 4.1 HISTORICAL BACKGROUND GROWTH TRAFFIC

Historical background growth is the increase in existing traffic volumes due to usage increases and non-specific growth throughout the area, and accounts for growth that is independent of specific off-site developments or planned transportation projects. Historical background growth traffic is calculated using an annual growth rate, which is applied to the existing traffic volumes up to the future horizon years. For this analysis, an annual growth rate of 1% was applied to the 2024 existing peak-hour traffic volumes to calculate base 2033 background traffic volumes. This methodology was determined based on coordination with Union County and NCDOT staff.

### 4.2 APPROVED DEVELOPMENTS

At the direction of Union County and NCDOT staff, no approved developments were identified for inclusion in this TIA at the time of the Scoping Process.

### 4.3 PLANNED TRANSPORTATION PROJECTS

Three future transportation projects have been identified outside the study area based on review of the following adopted transportation plans for the area:

- NCDOT [2024-2033 State Transportation Improvement Program](#) (STIP)
- CRTPO's [2050 Metropolitan Transportation Plan](#) (MTP)
- CRTPO's [Comprehensive Transportation Plan](#) (CTP)

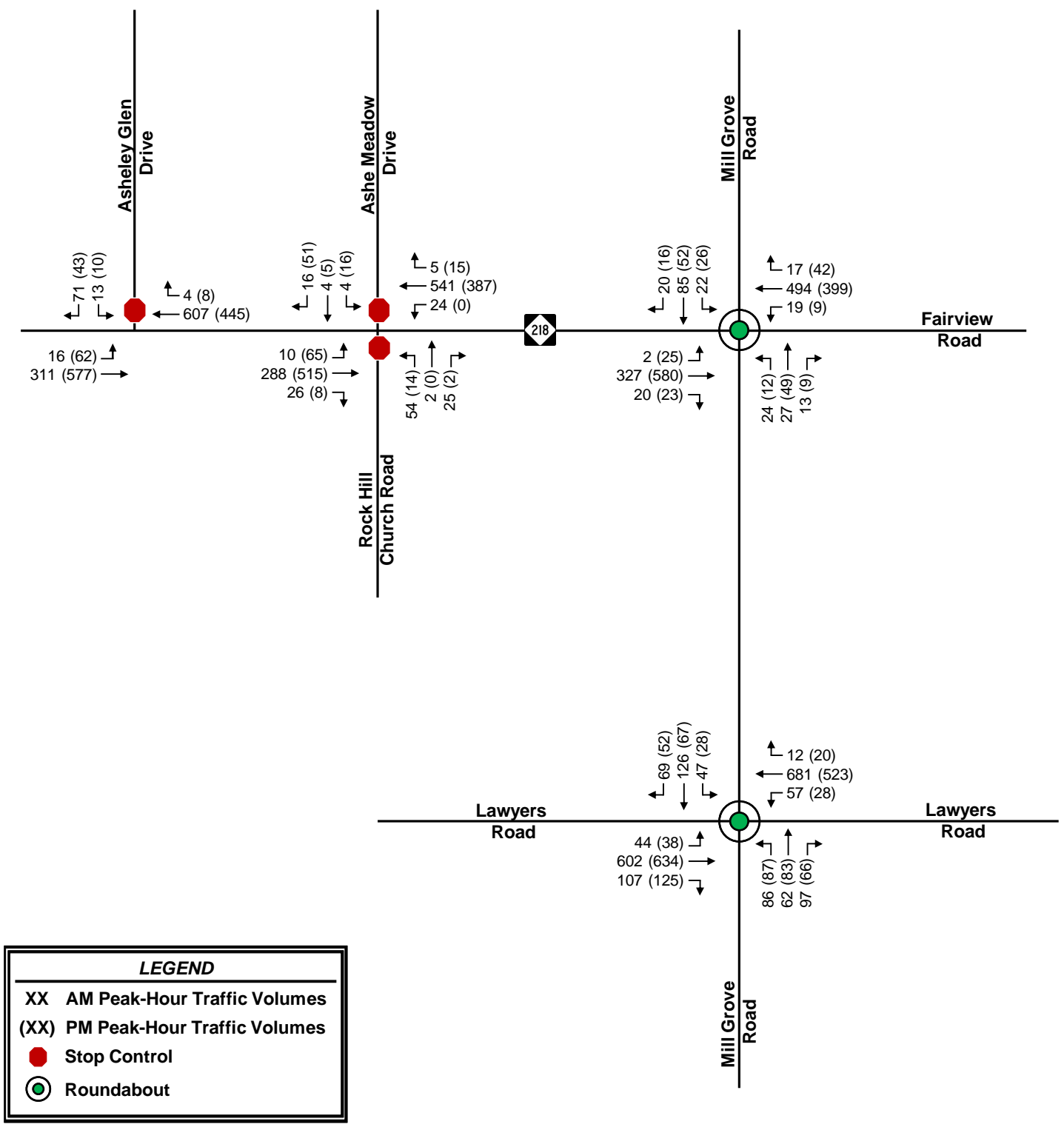
The three future transportation projects identified are:

1. **Lawyers Road Widening (U-6170)**
  - Widen to 4-lane section from I-485 to Stevens Mill Road
  - Funded for Utilities FY 2027-2028
  - Funded for ROW FY 2027-2031
  - Funded for Construction FY 2030-2033
2. **Pavement Rehabilitation (I-5828)**
  - Funded for Construction FY 2029-2030
3. **Fairview Road (NC 218) Rumble Strips (HS-2010C)**
  - Install Rumble Strip from I-485 to Mill Grove Road
  - Under construction

These projects are outside the study area and are not anticipated to impact the laneage at the intersections included in future year modeling. Background AM and PM peak-hour traffic volumes, that include the historical growth, are shown in **Figure 4.1**.



NOT TO SCALE



## 5.0 Site Traffic Volume Development

Site traffic developed for this TIA is defined as the vehicle trips expected to be generated and added to the study area by construction of the proposed development, and the distribution and assignment of that traffic throughout the surrounding network.

### 5.1 SITE ACCESS

For the purposes of this TIA, a build-out year of 2033 was considered. Based on the site plan, the proposed development will be accessed via two external access points:

- Access 1 – an unsignalized, RIRO connection to Fairview Road (NC 218) approximately 2,200 feet west of Mill Grove Road
- Access 2 – an unsignalized, full-movement connection to Mill Grove Road approximately 3,800 feet south of Fairview Road (NC 218)

### 5.2 TRAFFIC GENERATION

The traffic generation potential of the proposed development was determined using the trip generation rates published in *Trip Generation* (Institute of Transportation Engineers, Eleventh Edition, 2021). Based on the site plan, the proposed development is currently envisioned to consist of 730 age-restricted single-family detached homes:

**Table 5.1** summarizes the projected trip generation for the proposed development. During a typical weekday, it has the potential to generate 176 and 209 net new external trips during the AM and PM peak hours, respectively.

ITE LUC	Land Use	Intensity		Daily	AM Peak Hour			PM Peak Hour			Peak Hour Type/Data Source
					Total	In	Out	Total	In	Out	
251	Senior Adult Housing - Single-Family	730	DU	3,210	176	58	118	209	127	82	Adj Street/ITE Eqn
<b>Net New External Trips</b>					<b>176</b>	<b>58</b>	<b>118</b>	<b>209</b>	<b>127</b>	<b>82</b>	

### 5.3 SITE TRAFFIC DISTRIBUTION AND ASSIGNMENT

The proposed development's trips were assigned to the surrounding network based on existing peak-hour turning movements, surrounding land uses, locations of similar land use and population densities in the area. The following site traffic distribution was reviewed and approved as part of the TIA Scoping Checklist by Union County and NCDOT:

- 35% to/from the west along Fairview Road (NC 218)
- 35% to/from the west along Lawyers Road
- 10% to/from the east along Fairview Road (NC 218)
- 10% to/from the east along Lawyers Road
- 5% to/from the north along Mill Grove Road
- 5% to/from the south along Mill Grove Road

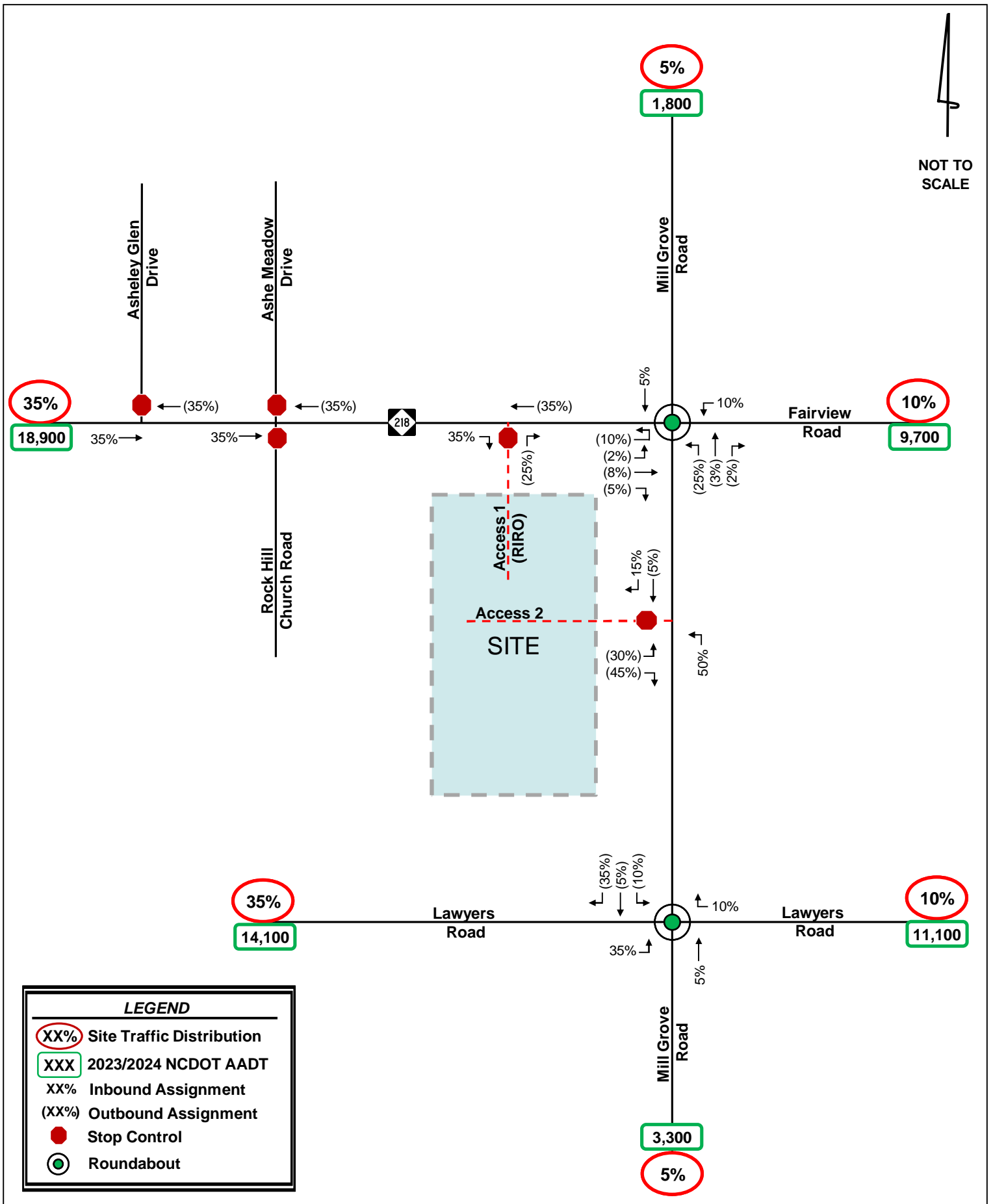
The overall site traffic distribution and assignment is shown in **Figure 5.1**.

### 5.4 BUILD-OUT TRAFFIC VOLUMES

The build-out traffic volumes include the assignment of the projected site traffic generation added to the appropriate background traffic volumes. Build-out traffic volumes are shown in the following figures:

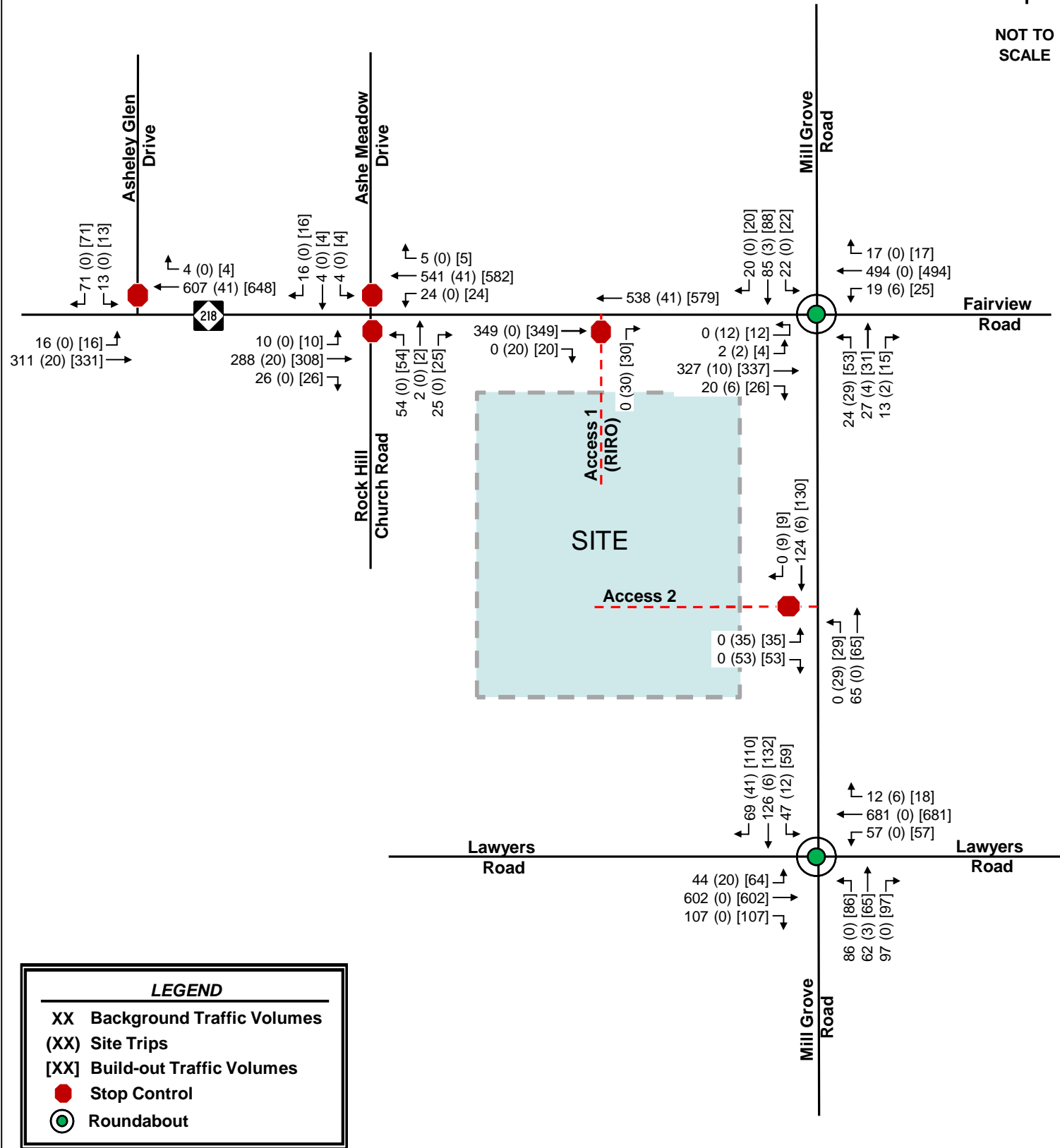
- **Figure 5.2** – 2033 Build-out AM Peak-Hour Traffic Volumes
- **Figure 5.3** – 2033 Build-out PM Peak-Hour Traffic Volumes

Intersection volume development worksheets for all intersections within the study network are provided in the **Appendix**.





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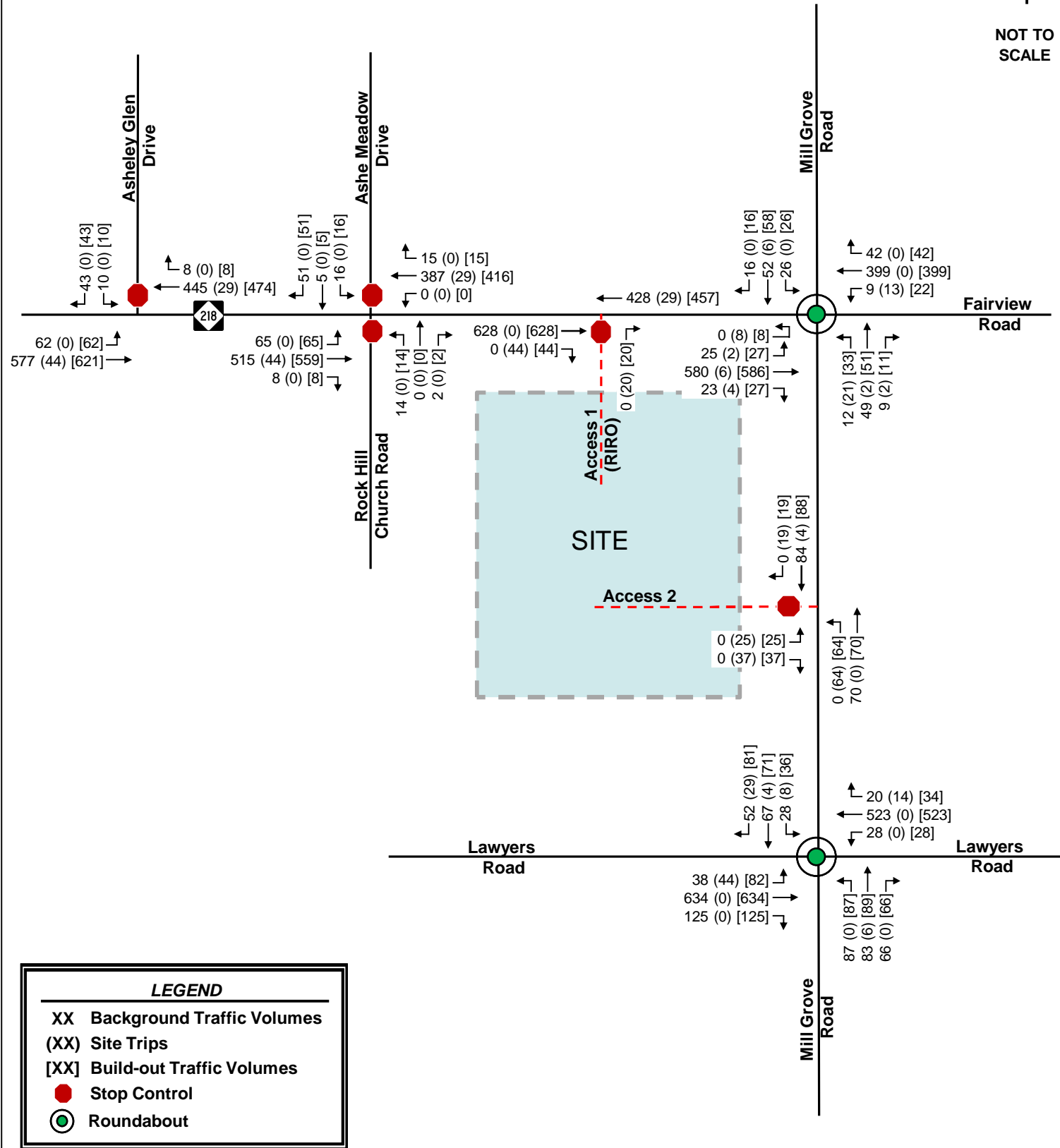


**LEGEND**

- XX Background Traffic Volumes
- (XX) Site Trips
- [XX] Build-out Traffic Volumes
- Stop Control
- Roundabout



NOT TO SCALE



**LEGEND**

- XX Background Traffic Volumes
- (XX) Site Trips
- [XX] Build-out Traffic Volumes
- Stop Control
- ⊙ Roundabout

## 6.0 Capacity Analysis

Based on the requirements set forth by the [\*Union County Development Ordinance – Section 60.160\*](#) and in accordance with the traffic study guidelines in the [\*NCDOT Policy on Street and Driveway Access to North Carolina Highways\*](#), capacity analyses were performed at the study area intersections for each of the following AM and PM peak-hour scenarios:

- 2024 Existing Conditions
- 2033 Background Conditions
- 2033 Build-out Conditions

Capacity analyses were performed for the AM and PM peak hours using Synchro Version 11 software to determine the operating characteristics at the study area intersections of the adjacent street network and to evaluate the impacts of the proposed development. Capacity is defined as the maximum number of vehicles that can pass over a particular road segment, or through a particular intersection, within a specified period of time under prevailing operational, geometric and controlling conditions within a set time duration. This software program uses methodologies contained in the *Highway Capacity Manual (HCM)* to determine the operating characteristics of an intersection.

The *Highway Capacity Manual (HCM)* defines LOS as a “quantitative stratification of a performance measure or measures representing quality of service” and is used to “translate complex numerical performance results into a simple A-F system representative of travelers’ perceptions of the quality of service provided by a facility or service”. The HCM defines six levels of service, LOS A through LOS F, with A having the best operating conditions from the traveler’s perspective and F having the worst. However, it must be understood that “the LOS letter result hides much of the complexity of facility performance”, and that “the appropriate LOS for a given system element in the community is a decision for local policy makers”. According to the HCM, “for cost, environmental impact, and other reasons, roadways are typically designed not to provide LOS A conditions during peak periods but instead to provide some lower LOS that balances individual travelers’ desires against society’s desires and financial resources. Nevertheless, during low-volume periods of the day, a system element may operate at LOS A.”

LOS for a two-way stop-controlled (TWSC) intersection is determined by the control delay at the side-street approaches, typically during the highest volume periods of the day, the AM and PM peak periods. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. With respect to field measurements, control delay is defined as the total elapsed time from the time a vehicle stops at the end of the queue to the time the vehicle departs from the stop line. It is typical for stop sign-controlled side streets and driveways intersecting major streets to experience long delays during peak hours, particularly for left-turn movements. The majority of the traffic moving through the intersection on the major street experiences little or no delay.

LOS for roundabout intersections is also reported for the intersection as a whole but uses the same control delay thresholds as the stop-controlled intersection. However, if the volume-to-capacity (V/C) ratio on an approach of the intersection is greater than 1.0, that approach or intersection is reported as LOS F regardless of the reported delay.

**Table 6.0** lists the LOS control delay thresholds published in the HCM for unsignalized (TWSC and roundabout) as well as the unsignalized operational descriptions assumed herein.

Table 6.0 Vehicular LOS Control Delay Thresholds for Unsignalized Intersections		
Level-of-Service	Average Control Delay per Vehicle [sec/veh]	
A	≤ 10	Short Delays
B	> 10 – 15	
C	> 15 – 25	
D	> 25 – 35	Moderate Delays
E	> 35 – 50	
F	> 50	Long Delays

The following modifications from the background data collected were applied to the capacity analyses to meet [NCDOT Congestion Management Capacity Analysis Guidelines](#):

- A minimum of 4 vehicles per hour were used for permissible movements, excluding movements into and out of the proposed site.

In the existing condition, the observed peak hour factor (PHF) was used in the analysis. A 0.9 PHF was used for all future conditions.

In the existing conditions, the observed heavy vehicle percentage was used in the analysis. A weighted heavy vehicle percentage was calculated for all future conditions for movements over ten percent, subject to a two percent (2%) minimum.

Capacity analysis reports generated by Synchro Version 11 software and queuing and blocking reports generated by the SimTraffic microsimulation model are included in the **Appendix**.

## 6.1 MILL GROVE ROAD AND FAIRVIEW ROAD (NC 218)

**Table 6.1** summarizes the LOS, control delay, 95<sup>th</sup> percentile queue lengths, and maximum V/C ratio at the roundabout intersection of Mill Grove Road and Fairview Road (NC 218).

Table 6.1 - Mill Grove Road and Fairview Road (NC 218)							
Condition	Measure	EB	WB	NB	SB	Intersection	
		EBULTR	WBLTR	NBLTR	SBLTR	LOS (Delay)	V/C
<b>AM Peak Hour</b>							
2024 Existing	LOS (Delay)	A (6.6)	A (8.7)	A (5.5)	A (7.6)	A (7.6)	0.49
	Synchro 95th Q	50'	75'	0'	25'		
2033 Background	LOS (Delay)	A (6.8)	A (8.7)	A (5.4)	A (8.0)	A (7.8)	0.51
	Synchro 95th Q	50'	75'	0'	25'		
2033 Build-out	LOS (Delay)	A (7.2)	A (9.7)	A (6.1)	A (8.6)	A (8.5)	0.54
	Synchro 95th Q	50'	75'	0'	25'		
<b>PM Peak Hour</b>							
2024 Existing	LOS (Delay)	A (9.6)	A (7.2)	A (6.9)	A (5.6)	A (8.2)	0.55
	Synchro 95th Q	100'	50'	0'	0'		
2033 Background	LOS (Delay)	B (10.3)	A (7.2)	A (7.1)	A (5.7)	A (8.7)	0.59
	Synchro 95th Q	100'	50'	0'	0'		
2033 Build-out	LOS (Delay)	B (11.2)	A (7.8)	A (7.9)	A (6.1)	A (9.4)	0.62
	Synchro 95th Q	125'	50'	25'	0'		

**Table 6.1** shows that the overall intersection is expected to operate at LOS A during both peak hours through 2033 background conditions.

When the proposed site traffic is added to the 2033 background volumes, this intersection is expected to continue to operate at LOS A during both peak hours with similar operations and minimal increases in delay and overall V/C ratio as compared to 2033 background conditions.

Since the proposed development is not expected to have a significant adverse impact on operations at this intersection, no mitigation improvements are identified for the proposed development.

## 6.2 LAWYERS ROAD AND MILL GROVE ROAD

**Table 6.2** summarizes the LOS, control delay, 95<sup>th</sup> percentile queue lengths, and maximum V/C ratio at the roundabout intersection of Lawyers Road and Mill Grove Road.

Table 6.2 - Lawyers Road and Mill Grove Road									
Condition	Measure	EB		WB	NB	SB		Intersection	
		EBLT	EBR	WBLTR	NBLTR	SBLT	SBR	LOS (Delay)	V/C
<b>AM Peak Hour</b>									
2024 Existing	LOS (Delay)	E (36.6)		C (23.5)	C (21.7)	D (26.5)		D (28.7)	
	Synchro 95th Q	375'	-	250'	125'	125'	-		
2033 Background	LOS (Delay)	C (24.0)		C (21.9)	B (14.4)	C (22.6)		C (21.9)	
	Synchro 95th Q	275'	-	250'	75'	100'	-		
2033 Build-out	LOS (Delay)	D (29.1)		D (25.2)	C (15.6)	D (30.9)		D (26.3)	
	Synchro 95th Q	300'	-	275'	75'	150'	-		
2033 Build-out IMP SBR	LOS (Delay)	D (29.1)		D (25.2)	C (15.6)	B (12.4)		C (23.6)	
	Synchro 95th Q	300'	-	275'	75'	50'	25'		
2033 Build-out IMP EBR	LOS (Delay)	C (16.5)		D (25.2)	C (15.6)	D (30.9)		C (21.7)	
	Synchro 95th Q	200'	0'	275'	75'	150'	-		
<b>PM Peak Hour</b>									
2024 Existing	LOS (Delay)	C (16.5)		B (12.1)	B (12.2)	A (9.0)		B (13.8)	
	Synchro 95th Q	200'	-	125'	50'	25'	-		
2033 Background	LOS (Delay)	C (16.9)		B (11.5)	B (13.1)	A (8.9)		B (14.0)	
	Synchro 95th Q	200'	-	100'	50'	25'	-		
2033 Build-out	LOS (Delay)	C (20.7)		B (13.6)	B (14.9)	B (10.2)		C (16.6)	
	Synchro 95th Q	250'	-	125'	75'	25'	-		
2033 Build-out IMP SBR	LOS (Delay)	C (20.7)		B (13.6)	B (14.9)	A (6.8)		C (16.3)	
	Synchro 95th Q	250'	-	125'	75'	25'	0'		
2033 Build-out IMP EBR	LOS (Delay)	B (12.7)		B (13.6)	B (14.9)	B (10.2)		B (13.0)	
	Synchro 95th Q	150'	0'	125'	75'	25'	-		

As shown in **Table 6.2**, under 2024 existing conditions, the overall intersection currently operates at LOS D during the AM peak hour and LOS B during the PM peak hour.

Under 2033 background conditions, the overall intersection is expected to operate at LOS C during the AM peak hour and LOS B during the PM peak hour. The decrease in delay on some approaches shown in **Table 6.2** between existing and background conditions reflects the change in PHFs to meet *NCDOT Congestion Management Capacity Analysis Guidelines* as discussed in **Section 6.0**. This is due to the existing PHF being less than 0.9 for multiple movements during each peak hour. An increase in PHF to 0.9 causes the traffic volume to be more evenly distributed throughout the 60-minute peak hour in the analysis model, which results in a reduction in the average delay.

When the proposed site traffic is added to the 2033 background volumes, this intersection is expected to drop to LOS D during the AM peak hour and LOS C during the PM peak hour. Given the LOS degradation, mitigation was considered at this intersection.

To mitigate the impact of site traffic, two mitigation scenarios were considered:

- Southbound right-turn lane
- Eastbound right-turn lane

A southbound right-turn lane along Mill Grove Road with a minimum of 150 feet of storage with an additional westbound receiving lane along Lawyers Road was considered to mitigate the drop in LOS. This storage length is based on SimTraffic Max queues.

**Table 6.2** shows that with this improvement in place, the overall intersection and southbound approach are expected to operate with similar LOS, delay, and V/C ratio as compared to 2033 background conditions. Due to minimal results and limited right-of-way along the southbound approach, this scenario is not identified as mitigation for the proposed development.

An eastbound right-lane along Lawyers Road with a minimum of 225 feet of storage was also considered to mitigate the drop in LOS. This storage is based on SimTraffic Max queues.

**Table 6.2** shows that with this improvement in place, the overall intersection and eastbound approach are expected to operate at LOS C during the AM peak hour and LOS B during the PM peak hour with less delay and overall V/C than existing conditions. This improvement may be limited by available right-of-way.

Since the overall intersection and its approaches are expected to operate at an acceptable LOS in the background and build-out conditions, neither of these alternatives are identified as mitigation for the proposed development.

Based on coordination with Union County, in lieu of these improvements a **contribution of \$500,000 will be made to Union County at the 400<sup>th</sup> home closing for future improvements to this intersection or in the vicinity of this property.**

### 6.3 FAIRVIEW ROAD (NC 218) AND ROCK HILL CHURCH ROAD/ASHE MEADOW DRIVE

**Table 6.3** summarizes the LOS, control delay and 95<sup>th</sup> percentile queue lengths at the unsignalized, stop-controlled intersection of Fairview Road (NC 218) and Rock Hill Church Road/Ashe Meadow Drive.

<b>Table 6.3 - Fairview Road (NC 218) and Rock Hill Church Road/Ashe Meadow Drive</b>							
Condition	Measure	EB		WB		NB	SB
		EBL*	EBTR	WBL*	WBTR	NBLTR	SBLTR
<b>AM Peak Hour</b>							
2024 Existing	LOS (Delay)	A (8.9)	A (0.0)	A (8.2)	A (0.0)	E (37.2)	C (21.1)
	Synchro 95th Q	3'	0'	3'	0'	68'	15'
2033 Background	LOS (Delay)	A (8.9)	A (0.0)	A (8.1)	A (0.0)	D (27.3)	C (16.5)
	Synchro 95th Q	0'	0'	3'	0'	40'	8'
2033 Build-out	LOS (Delay)	A (9.1)	A (0.0)	A (8.1)	A (0.0)	D (31.1)	C (17.5)
	Synchro 95th Q	0'	0'	3'	0'	45'	8'
<b>PM Peak Hour</b>							
2024 Existing	LOS (Delay)	A (8.4)	A (0.0)	A (8.5)	A (0.0)	C (23.6)	C (20.4)
	Synchro 95th Q	5'	0'	0'	0'	15'	28'
2033 Background	LOS (Delay)	A (8.5)	A (0.0)	A (8.6)	A (0.0)	D (30.6)	C (19.0)
	Synchro 95th Q	5'	0'	0'	0'	13'	23'
2033 Build-out	LOS (Delay)	A (8.6)	A (0.0)	A (8.8)	A (0.0)	D (34.6)	C (20.9)
	Synchro 95th Q	5'	0'	0'	0'	15'	25'
Background Storage		225'		225'			
*Conflicting left-turn movements are broken out per NCDOT guidelines under unsignalized conditions							

As shown in **Table 6.3**, under 2024 existing conditions, the stop-controlled northbound and southbound approaches currently operate with moderate to short delays during the AM peak hour, respectively. The stop-controlled northbound and southbound approaches currently operate with short delays during the PM peak hour.

Under 2033 background conditions, the stop-controlled northbound and southbound approaches are expected to operate with moderate to short delays during both peak hours. The decrease in delay shown in **Table 6.3** between existing and background conditions during the AM and PM peak hours reflects the change in PHFs to meet [NCDOT Congestion Management Capacity Analysis Guidelines](#) as discussed in **Section 6.0**.

When the proposed site traffic is added to the 2033 background volumes, the stop-controlled northbound and southbound approaches are expected to continue to operate with moderate to short delays during both peak hours. Since the proposed development is not expected to have a significant adverse impact on operations at this intersection, no mitigation improvements are identified for the proposed development.

## 6.4 FAIRVIEW ROAD (NC 218) AND ASHELEY GLEN DRIVE

**Table 6.4** summarizes the LOS, control delay and 95<sup>th</sup> percentile queue lengths at the unsignalized, stop-controlled tee-intersection of Fairview Road (NC 218) and Asheley Glen Drive.

Table 6.4 - Fairview Road (NC 218) and Asheley Glen Drive						
Condition	Measure	EB		WB		SB
		*EBL	EBT	WBT	WBR	SBLR
<b>AM Peak Hour</b>						
2024 Existing	LOS (Delay)	A (9.0)	A (0.0)	A (0.0)	A (0.0)	C (16.9)
	Synchro 95th Q	3'	0'	0'	0'	25'
2033 Background	LOS (Delay)	A (9.0)	A (0.0)	A (0.0)	A (0.0)	C (17.0)
	Synchro 95th Q	3'	0'	0'	0'	23'
2033 Build-out	LOS (Delay)	A (9.2)	A (0.0)	A (0.0)	A (0.0)	C (18.1)
	Synchro 95th Q	3'	0'	0'	0'	25'
<b>PM Peak Hour</b>						
2024 Existing	LOS (Delay)	A (8.7)	A (0.0)	A (0.0)	A (0.0)	C (17.0)
	Synchro 95th Q	5'	0'	0'	0'	23'
2033 Background	LOS (Delay)	A (8.6)	A (0.0)	A (0.0)	A (0.0)	C (15.8)
	Synchro 95th Q	5'	0'	0'	0'	13'
2033 Build-out	LOS (Delay)	A (8.7)	A (0.0)	A (0.0)	A (0.0)	C (16.8)
	Synchro 95th Q	5'	0'	0'	0'	15'
Background Storage					50'	
*Conflicting left-turn movements are broken out per NCDOT guidelines under unsignalized conditions						

As shown in **Table 6.4**, under 2024 existing conditions, the stop-controlled, southbound approach of Asheley Glen Drive currently operates with short delays during both peak hours.

Under 2033 background conditions, the stop-controlled southbound approach is expected to continue to operate with short delays during both peak hours. The decrease in delay shown in **Table 6.4** between existing and background conditions during the PM peak hour reflects the change in PHFs to meet [NCDOT Congestion Management Capacity Analysis Guidelines](#) as discussed in **Section 6.0**.

When the proposed site traffic is added to the 2033 background volumes, the stop-controlled southbound approach is expected to continue to operate with short delays during both peak hours. Since the proposed development is not expected to have a significant adverse impact on operations at this intersection, no mitigation improvements are identified for the proposed development.

## 6.5 FAIRVIEW ROAD (NC 218) AND ACCESS 1

**Table 6.5** summarizes the LOS, control delay and 95<sup>th</sup> percentile queue lengths at the proposed unsignalized, stop-controlled intersection of Fairview Road (NC 218) and Access 1 approximately 2,200 feet west of Mill Grove Road. This proposed intersection was assumed to operate as a RIRO connection with a single ingress lane and a single egress lane based on the current site plan.

Condition	Measure	EB	WB	NB
		EBTR	WBT	NBR
<b>AM Peak Hour</b>				
2033 Build-out	LOS (Delay)	A (0.0)	A (0.0)	B (10.8)
	Synchro 95th Q	0'	0'	5'
<b>PM Peak Hour</b>				
2033 Build-out	LOS (Delay)	A (0.0)	A (0.0)	B (13.9)
	Synchro 95th Q	0'	0'	5'

As shown in **Table 6.5**, the stop-controlled northbound approach of Access 1 is expected to operate with short delays during both peak hours under 2033 build-out conditions. Therefore, no additional improvements are identified for capacity purposes beyond construction of Access 1 with RIRO operations with a single egress and single ingress lane with a minimum internal protected stem (IPS) of 100 feet.

The recommended IPS length is based on review of SimTraffic maximum queues under 2033 build-out conditions along with NCDOT minimum requirements. The IPS is intended to protect the operational needs for this intersection and is defined as the length required to be protected along the driveway stem from Fairview Road (NC 218) before any crossing or left-turn conflicts are allowed, including any on-street parking maneuvers. Based on the site plan shown in **Figure 3.2**, an 800-foot IPS appears to be provided.

Based on coordination with NCDOT and Union County staff, an eastbound right-turn lane along Fairview Road (NC 218) with a minimum of 50 feet of storage and 200 feet of taper will be required as mitigation.

Review of auxiliary turn-lane warrants at this intersection are included in **Section 7.0**.

## 6.6 MILL GROVE ROAD AND ACCESS 2

**Table 6.6** summarizes the LOS, control delay and 95<sup>th</sup> percentile queue lengths at the proposed unsignalized, stop-controlled intersection of Mill Grove Road and Access 2 approximately 3,800 feet south of Fairview Road (NC 218). This proposed intersection was assumed to operate as a full-movement connection with a single ingress lane and a single egress lane based on the current site plan.

Table 6.6 - Mill Grove Road and Access 2					
Condition	Measure	EB	NB		SB
		EBLR	*NBL	NBT	SBTR
<b>AM Peak Hour</b>					
2033 Build-out	LOS (Delay)	B (10.1)	A (7.6)	A (0.0)	A (0.0)
	Synchro 95th Q	10'	3'	0'	0'
<b>PM Peak Hour</b>					
2033 Build-out	LOS (Delay)	B (10.0)	A (7.6)	A (0.0)	A (0.0)
	Synchro 95th Q	8'	5'	0'	0'
*Conflicting left-turn movements are broken out per NCDOT guidelines under unsignalized conditions					

As shown in **Table 6.6**, the stop-controlled eastbound approach of Access 2 is expected to operate with short delays during both peak hours under 2033 build-out conditions. Therefore, no additional improvements are identified for capacity purposes beyond construction of Access 2 with a single egress and single ingress lane with a minimum IPS of 100 feet.

The recommended IPS length is based on review of SimTraffic maximum queues under 2033 build-out conditions along with NCDOT minimum requirements. The IPS is intended to protect the operational needs for this intersection and is defined as the length required to be protected along the driveway stem from Mill Grove Road before any crossing or left-turn conflicts are allowed, including any on-street parking maneuvers. Based on the site plan shown in **Figure 3.2**, a 650-foot IPS appears to be provided.

Review of auxiliary turn-lane warrants at this intersection are included in **Section 7.0**.

## 7.0 Auxiliary Turn Lane Warrants

Warrants for additional turn-lane improvements for unsignalized intersection beyond those necessary for capacity were determined based on a review of the figure titled 'Warrant for Left and Right-Turn Lanes' found on page 80 in the [NCDOT Policy on Street and Driveway Access to North Carolina Highways](#). The results of the warrants for left and right-turn lanes under build-out conditions are summarized by intersection below and included in the **Appendix**.

### **Mill Grove Road and Access 2**

- Northbound left-turn lane along Mill Grove Road with a minimum storage length of 50 feet (PM peak-hour only)

Based on [NCDOT Congestion Management Capacity Analysis Guidelines](#), full storage for left-turn lanes should accommodate a minimum of 100 feet. Since the turn-lane is warranted in only one peak-hour and does not meet the 100-foot minimum, a northbound left-turn lane is not identified as mitigation for the proposed development.

However, based on NCDOT's review of the July 2024 version of this TIA, a northbound left turn-lane with 100 feet of storage will be required.

## 8.0 Crash Data Analysis

Crash data was obtained at study intersections for crashes that occurred between February 1, 2019, and January 31, 2024. Over this five-year period, 81 total crashes were reported at the existing study intersections. The breakdown of crashes at these intersections by severity, frequency, and accident type can be seen the tables below.

**Table 8.1 – Crash Severity Summary**

Crash Type	Number of Crashes
<b>Fatal Crashes</b>	0
<b>Class A</b>	2
<b>Class B</b>	2
<b>Class C</b>	14
<b>Property Damage Only</b>	63
<b>Total</b>	<b>81</b>

**Table 8.1** above shows the total number of crashes by severity type from most to least severe. As shown, 78% of the crashes over the past five years at the study intersections had no injury reported. The crash types are defined as follows:

- Class A - crashes where serious injury is suspected and can include significant loss of blood or broken bones.
- Class B - crashes where minor injury is suspected, such as bruises or minor cuts.
- Class C - crashes wherein possible injuries occur, which are injuries reported by the person or indicated by his/her behavior, but no wounds or injuries are physically present, such as limping or complaint of neck pain.
- Property Damage Only (PDO) – crashes where no injury is reported.

**Table 8.2 – Accident Frequency Summary**

Location	Crashes/100 MEV
<b>1. Mill Grove Road and Fairview Road (NC 218)</b>	190.20
<b>2. Lawyers Road and Mill Grove Road</b>	123.02
<b>3. Fairview Road (NC 218) and Rock Hill Church Road/Ashe Meadow Drive</b>	40.35
<b>4. Fairview Road (NC 218) and Asheley Glen Drive</b>	60.86
<b>Average</b>	<b>106.12</b>

**Table 8.2** shows that the crash rates at the study area intersections resulted in a weighted average crash rate of 106.12 crashes per 100 million entering vehicles (MEV), with the highest rates occurring at the intersections of Mill Grove Road and Fairview Road (NC 218) and Lawyers Road and Mill Grove Road. There have been 33 and 31 reported crashes over this five-year period at these two intersections, respectively, accounting for 79% of the total number of crashes reported within the study area.

**Table 8.3 – Accident Type Summary**

Crash Type	1. Mill Grove Road and Fairview Road (NC 218)	2. Lawyers Road and Mill Grove Road	3. Fairview Road (NC 218) and Rock Hill Church Road/Ashe Meadow Drive	4. Fairview Road (NC 218) and Asheley Glen Drive
Angle	4	11	1	0
Backing Up	0	1	0	0
Fixed Object	10	0	1	0
Left-Turn, Different Roadways	0	5	3	0
Left-Turn, Same Roadway	0	5	0	2
Overturn/Rollover	2	0	0	1
Parked Motor Vehicle	0	0	1	0
Ran off Road - Straight	1	0	0	0
Ran off Road - Right	0	0	0	1
Rear End, Slow or Stop	9	2	1	5
Rear End, Turn	0	1	0	0
Right-Turn, Different Roadways	1	2	0	0
Sideswipe, Same Direction	6	4	0	0
Sideswipe, Opposite Direction	0	0	0	1
<b>Total</b>	<b>33</b>	<b>31</b>	<b>7</b>	<b>10</b>

The most common crash type within the study area was rear-end collisions caused by slowing or stopping vehicles, making up 21% of the crashes. As shown in **Table 8.3**, rear-end collisions were most prevalent at the intersection of Mill Grove Road and Fairview Road (NC 218). Rear-end collisions are often associated with higher levels of congestion and lack of available turn-lane storage at signalized or unsignalized intersections.

The intersection of Lawyers Road and Mill Grove Road was converted into a roundabout from all-way stop control (AWSC) during the spring of 2023 per NCDOT. Lawyers Road and Mill Grove Road recorded a total of 25 crashes, with the angle crash type accounting for 40% of the crashes over the preceding four-year period, prior to the roundabout's construction. After construction, the intersection recorded a total of 6 crashes with the most prevalent crash type being same direction sideswipe, accounting for 67% of the crashes upon completion of the roundabout. Only one angle crash (17%) has occurred after construction of the roundabout.

The intersection of Mill Grove Road and Fairview Road (NC 218) was also converted into a roundabout from AWSC during the summer of 2019 per NCDOT. However, due to limited data prior to the roundabout conversion included in this five-year window, no patterns or changes in incident types were observed.

Crash data provided by NCDOT is included in the **Appendix**.

## 9.0 Identified Mitigation Improvements

Based on the capacity analyses performed at each of the identified study intersections, along with review of the auxiliary turn-lane warrants and crash data contained herein, the following improvements have been identified to mitigate the impact of the proposed development on the adjacent street network:

### Lawyers Road and Mill Grove Road

- Contribution of \$500,000 to Union County at the 400<sup>th</sup> home closing for future improvements to this intersection or in the vicinity of this property.

### Fairview Road (NC 218) and Access 1

- Construction of the northbound approach of Access 1 under RIRO operations with one ingress lane, one egress lane, stop-control, and an internal protected stem (IPS) of 100 feet.
- Construction of an eastbound right-turn lane along Fairview Road (NC 218) with a minimum of 50 feet of storage and 200 feet of taper.

### Mill Grove Road and Access 2

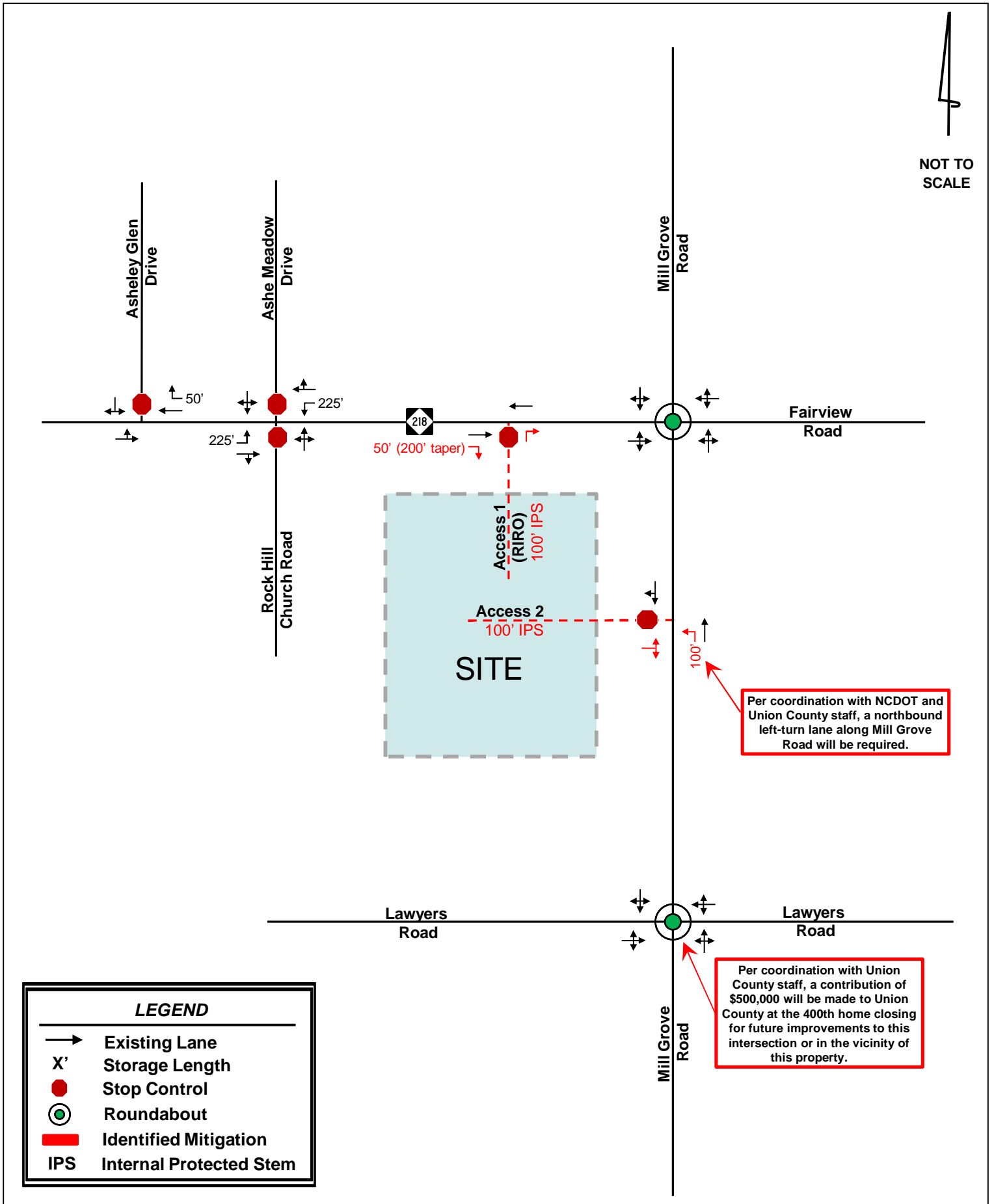
- Construction of the eastbound approach of Access 2 with one ingress lane, one egress lane, stop-control, and an IPS of 100 feet.

Based on coordination with NCDOT and Union County, the following additional lane will be required:

### Mill Grove Road and Access 2

- Construction of a northbound left-turn lane along Mill Grove Road with 100 feet of storage.

The mitigation improvements identified within the study area are shown in **Figure 9.1**. The improvements shown on this figure are subject to approval by NCDOT and Union County. All additions and attachments to the State and County roadway system shall be properly permitted, designed, and constructed in conformance to standards maintained by the agencies.





# Appendix



# NCDOT Scoping Checklist







# NCDOT Traffic Impact Analysis Need Screening / Scoping Request



**Site Plan/Vicinity Map Requirement for TIA Need Screening:** While the site plan may not be finalized during the TIA scoping stage, the graphic representation of the proposed development shall provide adequate details on the development scope and context. More specifically, the site plan/map shall clearly show the location and type of each access point, spacing to adjacent and opposing driveways or intersections, internal street network, proposed buildings/parcels with their anticipated uses and sizes at full build-out and, if applicable, any nearby interstate, US, NC or Secondary Roads (SR).

**Project Name:** Purser & BV Belk Property      **Project Reference Number:** \_\_\_\_\_

**A TIA is Required by the Local Government.** In addition, the study area is expected to include NCDOT maintained transportation facilities.

**A TIA is Required by NCDOT,** per the [Policy on Street and Driveway Access to North Carolina Highways](#).

If either or both of the boxes above are checked, the Applicant/TIA Consultant is hereby requested to fill out as much as possible of the following TIA scoping checklist, and return it along with the supporting documents to NCDOT prior to the scoping meeting.

**A TIA is NOT required.** This decision is based on the development information presented above.

Changes in the development plan will require re-evaluation of the TIA need, and may necessitate a TIA. The Applicant should inform the District Engineer of any significant changes in a timely fashion to avoid delays or rejections of the driveway permit / encroachment agreement applications.

**Additional Comments:**

The TIA need decision is made by the NCDOT Division \_\_\_\_\_ District \_\_\_\_\_ on \_\_\_\_\_.

\_\_\_\_\_  
 NCDOT District Representative's Signature  
 Email concurrence may be used in lieu of the signature.

\_\_\_\_\_  
 Print Name



# NCDOT TIA Scoping Checklist



**Project Name:** Purser & BV Belk Property

**TIA Scoping Date:** 3/13/24

**TIA Need Screening Forms are Attached.** Project Reference #: \_\_\_\_\_ Decision Date: \_\_\_\_\_

**Site Plan and Access**

Provide a site plan illustrating site access, internal and external roadways, buildings and land uses.  
Refer to NCDOT's [Policy on Street and Driveway Access to North Carolina Highways](#) pages 14 and 15 for site plan requirements.

Identify site access.

New Access	On Road	Access Type		Driveway Spacing		
	Road Name	Permitted Movements	Traffic Control	Distance (ft)	Direction	Nearest Intersection / Access
Access A	NC 218	Conventional Full-Mvmt	2-Way Stop	2200	West	Mill Grove Road
Access B	Mill Grove Road	Conventional Full-Mvmt	2-Way Stop	3800	South	NC 218
Access C						
Access D						
Access E						
Access F						
Access G						
Access H						

Existing Access	Existing Intersection of		Access Modification	Proposed Interconnectivity (If Applicable)		
	Road A	Road B		Connector #	Road Connected	Adjacent Development
Access 1				Connector 1		
Access 2				Connector 2		
Access 3				Connector 3		
Access 4				Connector 4		

Additional access clarifications and provisions (e.g., proposed control-of-access or median breaks, modifications of existing access, loading/unloading area access, bike/pedestrian accommodation).  
Sight distance at access points will need to be confirmed. Sight distance profiles will need to be developed as part of the site plan/driveway permit process

**Proposed K-12 School Site**

- NCDOT [MSTA School Traffic Calculator](#) for \_\_\_\_\_ shall be used.
- Peak Hour Factors (PHFs) shall be adjusted/weighted for new school trips (0.5 PHF by default).
- Internal school circulation analysis is required, and should be submitted in advance or concurrent with the TIA submittal.
- Clarify traffic operation plans (e.g. traffic circulation pattern, pedestrian access, drop-off/pick-up zone location and configuration, queue storage area and, if applicable, staggered start times).



# NCDOT TIA Scoping Checklist



## Trip Generation

The TIA Consultant shall prepare trip generation estimates following the current [NCDOT Congestion Management Capacity Analysis Guidelines](#), and submit the calculation sheets and supporting information to the District Engineer for approval prior to capacity analysis.

ITE LUC	Proposed Land Use	Size	Unit	Daily Trips	Peak Hour Type	AM Peak Hour Trips			PM Peak Hour Trips			Data Source
						Enter	Exit	Total	Enter	Exit	Total	
251	Senior Adult	750	DU	3285	Adj. Street	59	121	180	131	83	214	ITE Equation
Unadjusted Site Trips				3285		59	121	180	131	83	214	X
Internal Capture Trips (Attach Calculation Sheets)												
Internal Capture % of Unadjusted Site Trips				%		%			%			X
LUC	Proposed Land Use	Any Internal Trips?		Pass-By % of External Trips								
				%		%			%			
				%		%			%			
				%		%			%			
				%		%			%			
				%		%			%			
Pass-By Trips (Attach Calculation Sheets)												X
Adjacent Street Volumes												
Non-Pass-By Primary Trips				3285		59	121	180	131	83	214	X
Diverted Trips, if Applicable and Justifiable												

\*\*Explain local or other data sources, if used:

## Existing Site Trip Information for Redevelopment Projects (Attach separate sheets as needed)

ITE LUC	Existing Land Use	Size	Unit	Daily Trips	Peak Hour Type	AM Peak Hour Trips			PM Peak Hour Trips			Data Source
						Enter	Exit	Total	Enter	Exit	Total	
Total Existing Site Trips												X



# NCDOT TIA Scoping Checklist



## Trip Distribution

- Trip distribution diagrams are submitted concurrently with this document (attach separate sheets).
- Trip distribution diagrams will be submitted separately, along with supporting information, to the District Engineer for review and approval prior to capacity analysis. The trip distribution shall be based on the current and anticipated traffic patterns, as well as instructions noted below.

If required by the District Engineer, the following additional diagrams shall also be submitted:

- Mixed-Use Developments (separate diagrams for residential, commercial, and office trips)
- Inter-Development Trips (if 'internal' trips cross public streets)
- Pass-By Trips
- Diverted Trips
- Each Analysis Period

## Mode Split

- Provide Data Source and Justification

Mode Period	Auto		
AM Peak	%	%	%
PM Peak	%	%	%
Daily	%	%	%
	%	%	%

- Identify proper infrastructure and accommodation for other modes of travel.

## Analysis Peak Periods:

- Weekday AM Peak 7:00 - 9:00 AM
- Weekday PM Peak 4:00 - 6:00 PM
- Weekday Midday Peak \_\_\_\_\_
- Weekday PM School Peak \_\_\_\_\_
- Weekend \_\_\_\_\_ Peak \_\_\_\_\_
- Other \_\_\_\_\_



# NCDOT TIA Scoping Checklist



## Study Area Intersections and Data Collection

The study area shall include the site access intersections (both new and existing) identified under “Site Plan and Access” on page 1, as well as the following external and, if applicable, internal intersections.

External Intersection	Intersection of		Traffic Control	Intersection Turning Movement Counts			Notes
	Road A	Road B		New / Existing	Date of Counts	Growth Adjustment	
#1	NC 218	Mill Grove Road	Yield	Use Existing Counts	9/27/2023	1%	RAB
#2	Lawyers Road	Mill Grove Road	Yield	Use Existing Counts	9/27/2023	1%	RAB
#3	NC 218	Rock Hill Ch. Rd	2-Way Stop	Require New Counts			
#4	NC 218	Asheley Glen Dr	2-Way Stop	Require New Counts			
#5	NC 218	Access 1	2-Way Stop				
#6	Mill Grove Road	Access 2	2-Way Stop				
#7							
#8							
#9							
#10							
#11							
#12							

Internal Intersection	Intersection of		Access Type		Intersection Spacing		
	Road A	Road B	Traffic Control	Permitted Movements	Distance (ft)	Direction	Nearest Intersection
#101							
#102							
#103							
#104							
#105							

The following data will be collected:

- New traffic turning movement counts in  15-min intervals  5-min intervals (near schools)  
Unless otherwise noted above, new traffic counts shall be collected at the existing study intersections during the analysis periods. Weekday counts shall avoid Mondays, Fridays, holidays, school breaks, road closures, and major weather events.
- To account for the impact of existing and/or proposed school traffic, PHFs will be adjusted for:  
intersections numbered: \_\_\_\_\_  
and access points numbered: \_\_\_\_\_
- Traffic Forecast Data for TIP: \_\_\_\_\_
- Roadway/Intersection Configuration & Traffic Control
- Traffic Signal Phasing & Timing Data
- Crash Data: At existing study intersections Period: 5 years
- Other:

Since existing counts are from 2023, they will be grown by a growth factor of 1%.



# NCDOT TIA Scoping Checklist



**Future Year Conditions**

Project Build-Out Year: \_\_\_\_\_ 2033

Future Analysis Year(s): \_\_\_\_\_ 2033

Identify below any funded/committed future transportation improvements, as well as any approved but incomplete developments near the site.

Funded STIP / Local CIP Project	Project Description	Year Complete	
U-6170	Lawyers Rd Widening	2033	
I-5828	Pavement Rehabilitation	2030	
Nearby Approved Development	Location	Future Land Use (exclude any completed phases)	Committed Improvements
None			

Annual Growth Factor:   1   %

Justification/Data Source: NCDOT AADT data in vicinity of the site

**Local Comprehensive Transportation Plan Compliance**

Identify Applicable Local Transportation Planning Documents

Identify Applicable Roadways inside the Study Area

Road Name	Classification	Speed Limit	Proposed Cross-Section	Proposed Right-of-Way	Compliance Requirements	Affect Study Intersection #
NC 218	Minor Arterial	45				
Mill Grove Road	Major Collector	55				
Lawyers Road	Major Collector	35				



# NCDOT TIA Scoping Checklist



## Study Method

The traffic analysis shall follow the current [NCDOT Congestion Management Capacity Analysis Guidelines](#), [Policy on Street and Driveway Access to North Carolina Highways](#), and use the current approved version of analysis software (e.g. Synchro/SimTraffic, HCS, Sidra Intersection, TransModeler).

The study shall include the following analysis scenarios for each analysis period.

1. Existing Conditions
2. Future No-Build Conditions (existing + background growth + approved developments + committed or funded improvements)
3. Future Build Conditions (future no-build + site trips)
4. Future Build with Improvements Conditions (future build traffic with improvements to mitigate the proposed development's impacts) and, if applicable:
5. TIP Design Year Analysis \_\_\_\_\_
6. Alternative Access Scenario (without proposed control-of-access or median break / modification)

The following additional analysis/outputs should be provided as warranted:

- Signal Warrant Analysis for accesses/intersections \_\_\_\_\_
- Multi-Modal Level of Service Analysis
- School Loading Zone Traffic Simulation
- Phasing Analysis (scope separately as needed)
- Safety/Crash Analysis
- Control-of-Access Modification Justification
- Median Break / Modification Justification
- Other \_\_\_\_\_

## Submittals

In addition to the hardcopies required below, the TIA Consultant shall provide the District Engineer and, if required, the local government an electronic copy of the study documents, including the latest site plan, figures and appendices, in searchable PDF files and the original traffic analysis files (e.g., Synchro, HCS). To expedite review, the NCDOT electronic submittals shall also be delivered concurrently to:

- Div. Traffic Engr  Regional Traffic Engr  Congestion Management  Other \_\_\_\_\_

Submittals	NCDOT		Local Government	
	Electronic	Hardcopy	Electronic	Hardcopy
Trip Generation & Distribution	Required			
Draft TIA Report	Required			
Final Sealed TIA Report	Required			

- Additional Comments** (municipal TIA requirements, approved variations from NCDOT guidelines)



NCDOT ADT																				
	2022	2021	2019	2018	2017	2016	2015	2014	2013	2012	2010	2009	2008	2007	2006	2004	2002	Growth Rate (2016-2022)	Growth Rate (2012-2022)	Growth Rate (2002-2022)
MI Grove Road (north of NC 218)	1,466	1,371	1,463	1,410	1,309	1,241	1,212	1,154	1,099	1,100	1,200	-	1,100	-	1,000	1,000	1,100	2.8%	2.9%	1.4%
MI Grove Road (south of Lawyers Road)	3,102	3,062	3,931	4,000	3,713	3,416	3,336	3,391	3,228	4,200	-	4,600	-	-	-	-	-	-1.6%	-3.0%	-3.0%
NC 218 (east of Old Dutch Road)	8,592	7,797	14,202	13,830	12,614	11,447	8,473	8,361	-	7,100	-	7,300	-	-	-	-	-	-4.7%	1.9%	1.3%
NC 218 (west of MI Grove Road)	9,243	8,197	13,343	12,993	-	9,785	-	-	8,108	8,600	8,200	-	7,600	7,122	8,700	6,500	4,500	-2.8%	-0.4%	3.1%
MI Grove Road (north of Lawyers Road)	2,645	2,530	2,699	2,600	2,400	2,274	1,996	1,900	2,155	2,200	2,100	-	2,100	-	2,100	2,000	2,500	2.6%	1.9%	0.3%
Lawyers Road (east of MI Grove Road)	10,531	10,396	12,682	15,290	14,193	11,956	11,674	10,789	10,268	-	-	9,200	-	8,000	-	-	-	-2.1%	0.3%	1.8%
Lawyers Road (west of MI Grove Road)	11,785	14,383	15,348	14,785	14,443	13,663	11,218	10,678	10,161	10,000	11,000	-	9,400	-	8,800	8,000	7,800	-2.5%	1.6%	2.1%
<b>Average</b>																		<b>-1.2%</b>	<b>0.7%</b>	<b>1.0%</b>

**Kotler Signature Homes**  
1807 PGA Blvd.  
Palm Beach Gardens, FL

NO ENGINEERING FIRM #0908 PHONE: 704.529.6600  
CHARLOTTE, NC 28204  
301 S. MCCONNELL STREET, SUITE 300

**MERRICK**

REV	REVISION DESCRIPTION	DATE	BY

# KOL-STALLINGS

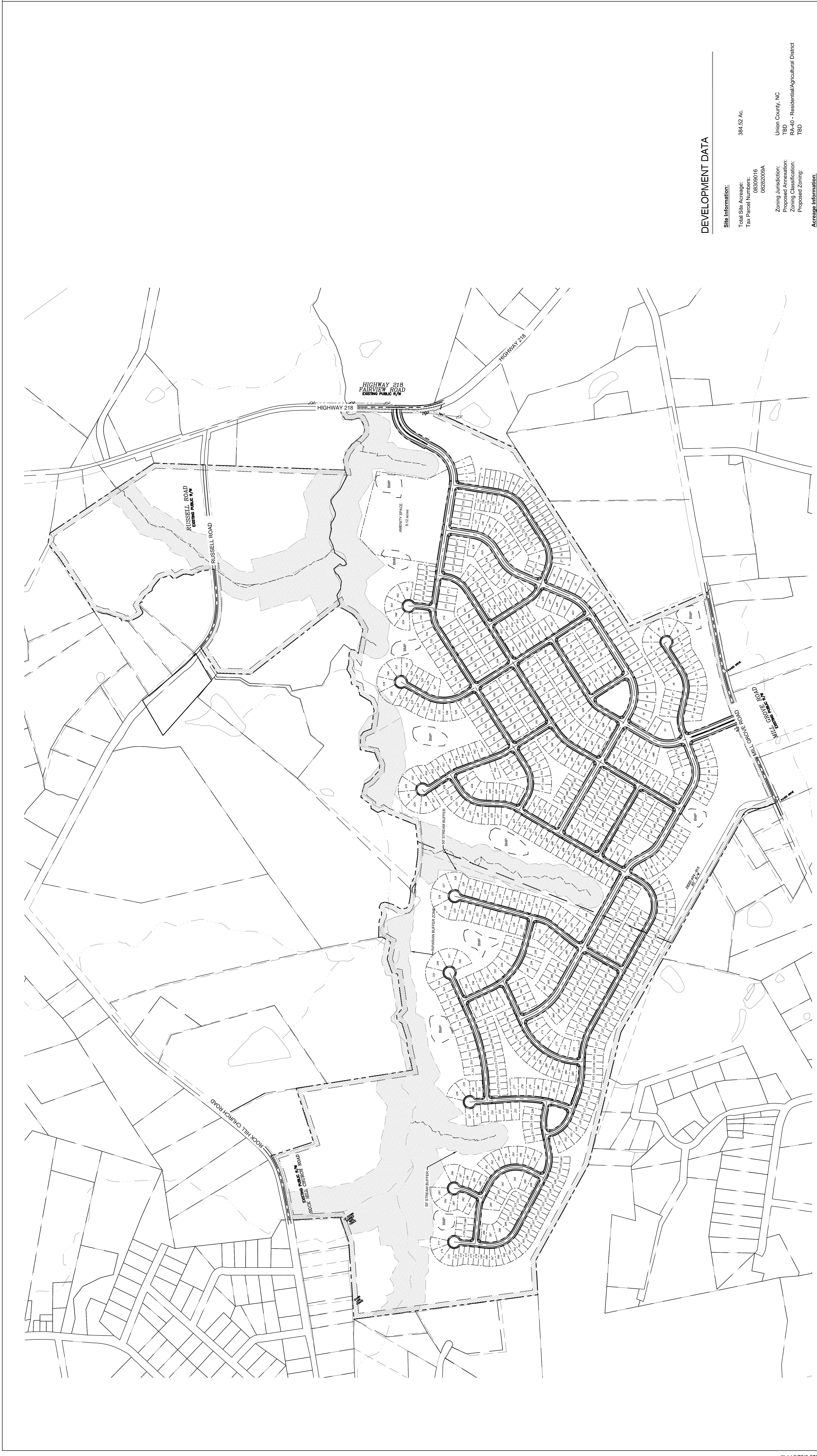
Union County, NC

## Concept Plan

SEAL(S)

DATE	DESIGN BY	DRAWN BY	CHECKED BY	APPROVED BY
MM/DD/YY				
MM/DD/YY				
MM/DD/YY				

PROJECT/TRACKING #  
INTERNAL: 100230.00  
MUNICIPAL: MonthNumber  
ORIGINAL DATE: 08/28/23



### DEVELOPMENT DATA

**Site Information:**  
Total Site Area: 384.52 Ac.  
Tax Parcel Numbers: 08309016, 0828209A

**Zoning Information:**  
Zoning Jurisdiction: Union County, NC  
Proposed Amendment: TBD  
Zoning Classification: RA-40 - Residential/Agricultural District  
Proposed Zoning: TBD

**Areaage Information:**  
Total Open Space Required: TBD  
Total Open Space Provided: TBD

### Building Setbacks:

Front Yard: 20'  
Side Yard: 5'  
Side Yard (Corner Lot): 10'  
Rear Yard: 10'

Common Open Space Between Blocks of Lots to be 20' min.

### Lot Information:

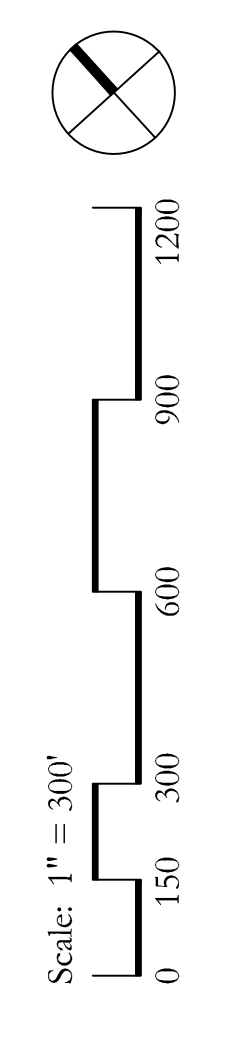
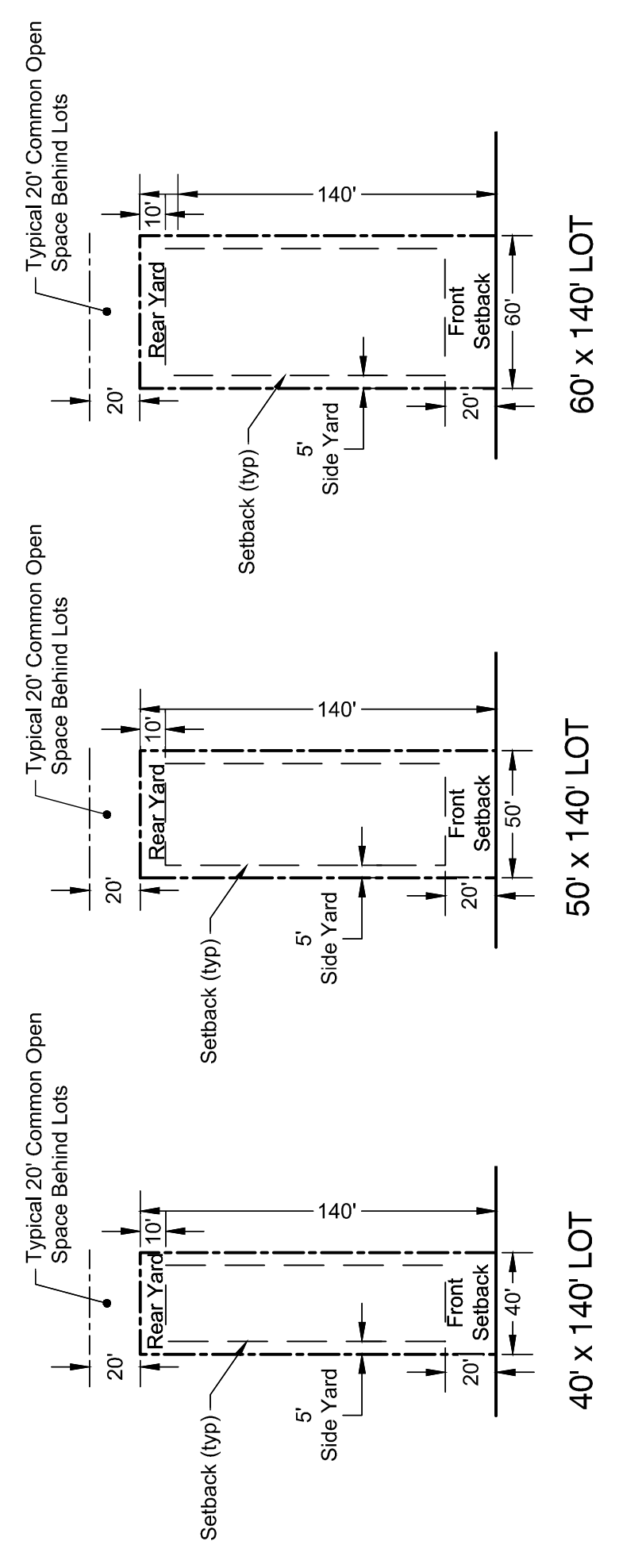
**Proposed Lot Sizes:**  
• 40' x 140'  
• 50' x 140'  
• 60' x 140'

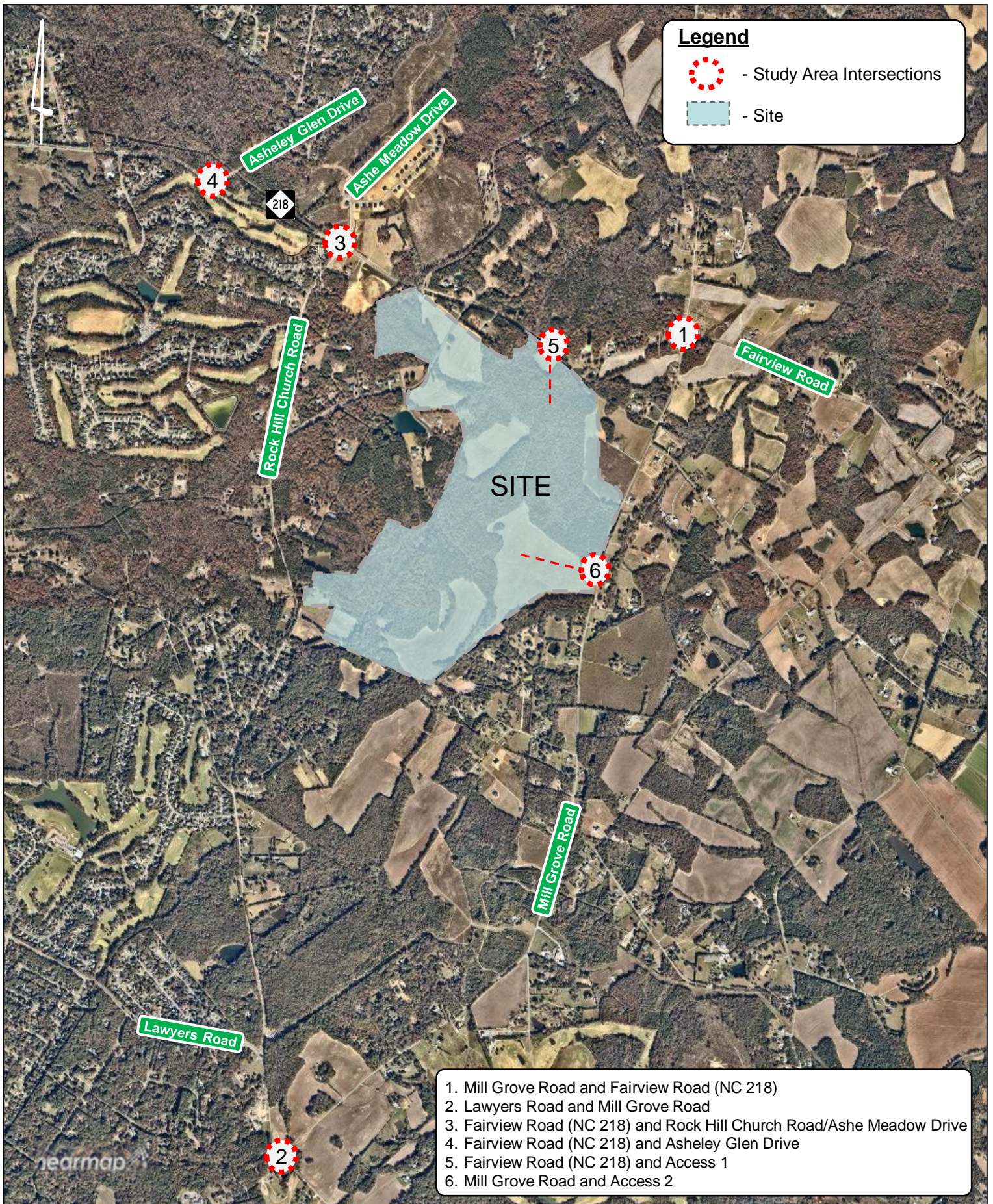
**Total Lots Proposed:**  
• 40' Lots: XX (XX,XX%)  
• 50' Lots: XX (XX,XX%)  
• 60' Lots: XX (XX,XX%)  
Total: 744

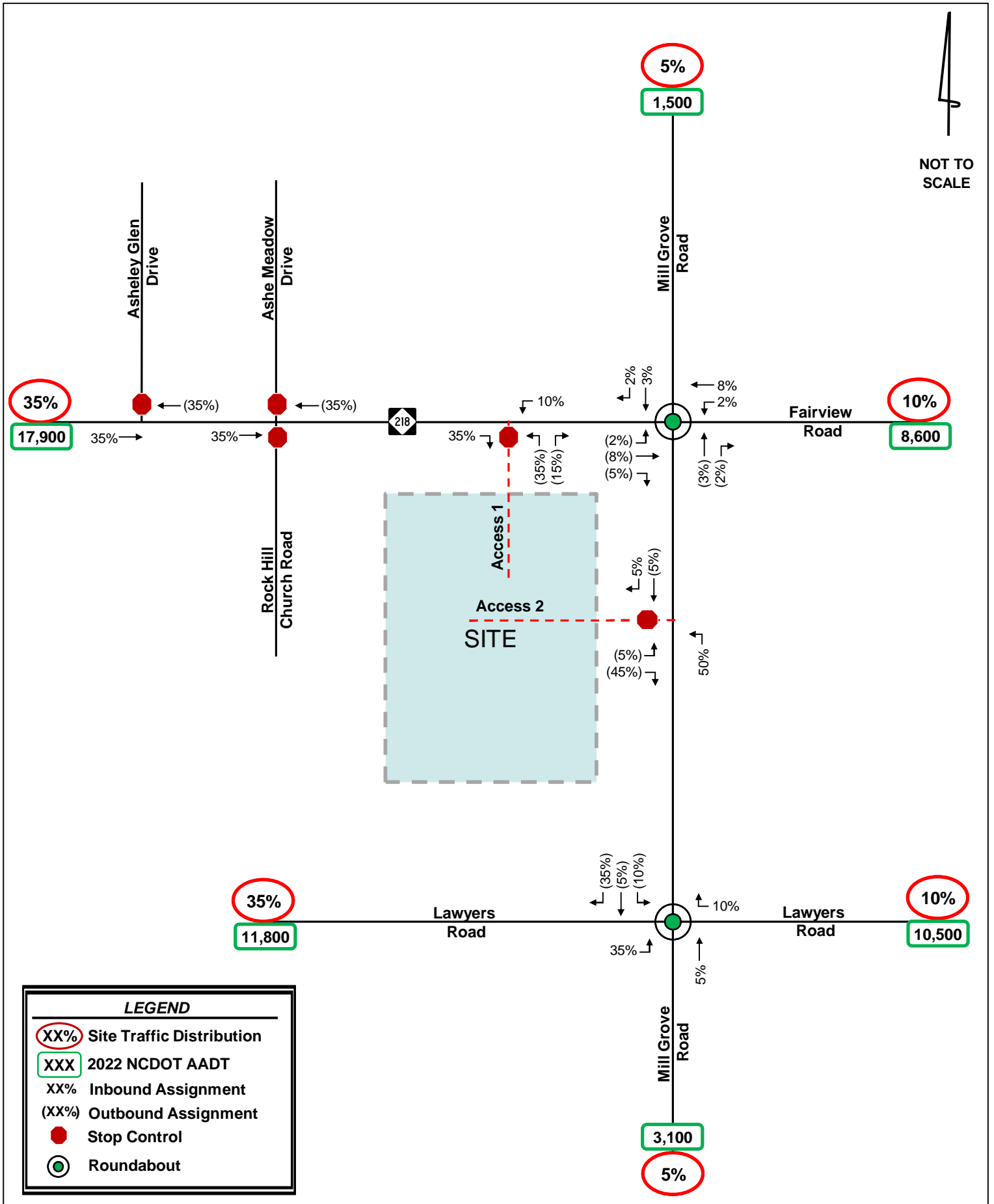
Proposed Density: 1.93 Units per Acre

**LEGEND**

- PROPERTY LINE
- 50/100' PERIMETER BUFFER
- COMMON OPEN SPACE
- PROPOSED BMP
- SURVEY WETLAND TYP.
- LOT BOUNDARY
- STREAM BUFFER
- 40' LOT
- 50' LOT
- 60' LOT







Ortiz-Hernandez, Julian

---

From: Helms, Amelia C <achelms@ncdot.gov>  
Sent: Thursday, April 4, 2024 4:15 PM  
To: Reid, Laura; Bjorn Hansen; Gardner, Zachary L  
Cc: Ortiz-Hernandez, Julian; Lowe, Jack; Emily Powell; Mark Sergent; Weltner, Robert C  
Subject: RE: [External] RE: Purser & BV Belk - TIA Scoping  
Attachments: 2024-03-13 Purser BV Belk Scope - APPROVED.pdf

Laura,

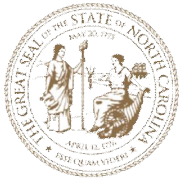
NCDOT has no further comments on the 3/13/24 scope. I am not aware of a project at NC 218 and Rock Hill Rd and do not see a TIP project at this intersection on our projects map, but I will confirm with our project development team.

Thank you,

**Amelia Helms, P.E.**  
District Engineer  
Division 10 - District 3  
North Carolina Department of Transportation

704 218 5100 office  
704 292 1800 fax  
[achelms@ncdot.gov](mailto:achelms@ncdot.gov)

130 South Sutherland Avenue  
Monroe, NC 28112



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---

From: Reid, Laura <laura.reid@kimley-horn.com>  
Sent: Tuesday, April 2, 2024 8:31 PM  
To: Bjorn Hansen <bjorn.hansen@unioncountync.gov>; Helms, Amelia C <achelms@ncdot.gov>; Gardner, Zachary L <zlgardner@ncdot.gov>  
Cc: Ortiz-Hernandez, Julian <Julian.Ortiz@kimley-horn.com>; Lowe, Jack <Jack.Lowe@kimley-horn.com>; Emily Powell <epowell@kolter.com>; Mark Sergent <msergent@kolter.com>; Weltner, Robert C <rcweltner@ncdot.gov>  
Subject: RE: [External] RE: Purser & BV Belk - TIA Scoping

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Amelia & Zach,

Following up to confirm no additional comments on this scope as our team starts moving forward with analysis. Can you confirm that NCDOT has no comments?

Also, the development team shared with us that in a discussion last fall, there was discussion around a potential roundabout at NC 218 & Rock Hill Church Road, but this was not a TIP project that came up in our scoping coordination. Are there still plans for this intersection improvement?

Thanks,

**Laura Reid, PE** (NC & SC)  
**Kimley-Horn** | 200 South Tryon Street, Suite 200, Charlotte, NC 28202  
Direct: 704 319 7696 | Mobile: 443 804 7984 | [www.kimley-horn.com](http://www.kimley-horn.com)  
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From: Reid, Laura  
Sent: Monday, March 25, 2024 12:03 PM  
To: Bjorn Hansen <[bjorn.hansen@unioncountync.gov](mailto:bjorn.hansen@unioncountync.gov)>; Helms, Amelia C <[achelms@ncdot.gov](mailto:achelms@ncdot.gov)>; Gardner, Zachary L <[zlgardner@ncdot.gov](mailto:zlgardner@ncdot.gov)>  
Cc: Ortiz-Hernandez, Julian <[Julian.Ortiz@kimley-horn.com](mailto:Julian.Ortiz@kimley-horn.com)>; Lowe, Jack <[Jack.Lowe@kimley-horn.com](mailto:Jack.Lowe@kimley-horn.com)>; Emily Powell <[epowell@kolter.com](mailto:epowell@kolter.com)>; Mark Sergent <[msergent@kolter.com](mailto:msergent@kolter.com)>; Weltner, Robert C <[rcweltner@ncdot.gov](mailto:rcweltner@ncdot.gov)>  
Subject: RE: [External] RE: Purser & BV Belk - TIA Scoping

Bjorn – Thanks for sending over your feedback last week.

Amelia & Zach – Do you have any additional comments from NCDOT?

Thanks,

**Laura Reid, PE** (NC & SC)  
**Kimley-Horn** | 200 South Tryon Street, Suite 200, Charlotte, NC 28202  
Direct: 704 319 7696 | Mobile: 443 804 7984 | [www.kimley-horn.com](http://www.kimley-horn.com)  
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From: Bjorn Hansen <[bjorn.hansen@unioncountync.gov](mailto:bjorn.hansen@unioncountync.gov)>  
Sent: Thursday, March 21, 2024 9:03 AM  
To: Reid, Laura <[laura.reid@kimley-horn.com](mailto:laura.reid@kimley-horn.com)>; Helms, Amelia C <[achelms@ncdot.gov](mailto:achelms@ncdot.gov)>; Gardner, Zachary L <[zlgardner@ncdot.gov](mailto:zlgardner@ncdot.gov)>  
Cc: Ortiz-Hernandez, Julian <[Julian.Ortiz@kimley-horn.com](mailto:Julian.Ortiz@kimley-horn.com)>; Lowe, Jack <[Jack.Lowe@kimley-horn.com](mailto:Jack.Lowe@kimley-horn.com)>; Emily Powell <[epowell@kolter.com](mailto:epowell@kolter.com)>; Mark Sergent <[msergent@kolter.com](mailto:msergent@kolter.com)>; Weltner, Robert C <[rcweltner@ncdot.gov](mailto:rcweltner@ncdot.gov)>  
Subject: RE: [External] RE: Purser & BV Belk - TIA Scoping

Laura, there is also a roundabout project at Emerald Lake and Lawyers. W-5710AA. Should be built in the next year. NCDOT folks – do you have more details on the schedule? Otherwise I don't have any other comments.

Sincerely,

Bjorn

**Bjorn E. Hansen, AICP CTP**

Senior Planner – Long Range Planning | Planning Department

T 704.283.3690

[bjorn.hansen@unioncountync.gov](mailto:bjorn.hansen@unioncountync.gov)  
[unioncountync.gov](http://unioncountync.gov)

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From: Reid, Laura <[laura.reid@kimley-horn.com](mailto:laura.reid@kimley-horn.com)>  
Sent: Wednesday, March 20, 2024 4:02 PM  
To: Bjorn Hansen <[bjorn.hansen@unioncountync.gov](mailto:bjorn.hansen@unioncountync.gov)>; Helms, Amelia C <[achelms@ncdot.gov](mailto:achelms@ncdot.gov)>; Gardner, Zachary L <[zlgardner@ncdot.gov](mailto:zlgardner@ncdot.gov)>  
Cc: Ortiz-Hernandez, Julian <[Julian.Ortiz@kimley-horn.com](mailto:Julian.Ortiz@kimley-horn.com)>; Lowe, Jack <[Jack.Lowe@kimley-horn.com](mailto:Jack.Lowe@kimley-horn.com)>; Emily Powell <[epowell@kolter.com](mailto:epowell@kolter.com)>; Mark Sergent <[msergent@kolter.com](mailto:msergent@kolter.com)>; Weltner, Robert C <[rcweltner@ncdot.gov](mailto:rcweltner@ncdot.gov)>  
Subject: RE: [External] RE: Purser & BV Belk - TIA Scoping

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Hi all,

Following up on the updated scope we sent over last week (reattached for reference). Please let us know if you have any additional comments before we considered this the final scope.

Thanks again,

**Laura Reid, PE** (NC & SC)  
**Kimley-Horn** | 200 South Tryon Street, Suite 200, Charlotte, NC 28202  
Direct: 704 319 7696 | Mobile: 443 804 7984 | [www.kimley-horn.com](http://www.kimley-horn.com)  
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From: Reid, Laura  
Sent: Wednesday, March 13, 2024 2:48 PM  
To: Bjorn Hansen <[bjorn.hansen@unioncountync.gov](mailto:bjorn.hansen@unioncountync.gov)>; Helms, Amelia C <[achelms@ncdot.gov](mailto:achelms@ncdot.gov)>; Gardner, Zachary L <[zlgardner@ncdot.gov](mailto:zlgardner@ncdot.gov)>  
Cc: Ortiz-Hernandez, Julian <[Julian.Ortiz@kimley-horn.com](mailto:Julian.Ortiz@kimley-horn.com)>; Lowe, Jack <[Jack.Lowe@kimley-horn.com](mailto:Jack.Lowe@kimley-horn.com)>; Emily Powell <[epowell@kolter.com](mailto:epowell@kolter.com)>; Mark Sergent <[msergent@kolter.com](mailto:msergent@kolter.com)>; Weltner, Robert C <[rcweltner@ncdot.gov](mailto:rcweltner@ncdot.gov)>  
Subject: RE: [External] RE: Purser & BV Belk - TIA Scoping

Hi all,

Please see attached for the updated scoping document for this site. Please let us know if you have any additional comments or if we can consider this scope approved.

Thanks!

**Laura Reid, PE** (NC & SC)

**Kimley-Horn** | 200 South Tryon Street, Suite 200, Charlotte, NC 28202

Direct: 704 319 7696 | Mobile: 443 804 7984 | [www.kimley-horn.com](http://www.kimley-horn.com)

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From: Bjorn Hansen <[bjorn.hansen@unioncountync.gov](mailto:bjorn.hansen@unioncountync.gov)>

Sent: Monday, March 4, 2024 4:56 PM

To: Helms, Amelia C <[achelms@ncdot.gov](mailto:achelms@ncdot.gov)>; Reid, Laura <[laura.reid@kimley-horn.com](mailto:laura.reid@kimley-horn.com)>; Gardner, Zachary L <[zlgardner@ncdot.gov](mailto:zlgardner@ncdot.gov)>

Cc: Ortiz-Hernandez, Julian <[Julian.Ortiz@kimley-horn.com](mailto:Julian.Ortiz@kimley-horn.com)>; Lowe, Jack <[Jack.Lowe@kimley-horn.com](mailto:Jack.Lowe@kimley-horn.com)>; Emily Powell <[epowell@kolter.com](mailto:epowell@kolter.com)>; Mark Sergent <[msergent@kolter.com](mailto:msergent@kolter.com)>; Weltner, Robert C <[rcweltner@ncdot.gov](mailto:rcweltner@ncdot.gov)>

Subject: RE: [External] RE: Purser & BV Belk - TIA Scoping

I do want to emphasize that Union County does not require a completed TIA before a rezoning is submitted. We would rather do both at the same time since comments from the site plan review process can impact layout, unit count, etc.

**Bjorn E. Hansen, AICP CTP**

Senior Planner – Long Range Planning | Planning Department

T 704.283.3690

[bjorn.hansen@unioncountync.gov](mailto:bjorn.hansen@unioncountync.gov)  
[unioncountync.gov](http://unioncountync.gov)

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From: Helms, Amelia C <[achelms@ncdot.gov](mailto:achelms@ncdot.gov)>

Sent: Monday, March 4, 2024 4:37 PM

To: Reid, Laura <[laura.reid@kimley-horn.com](mailto:laura.reid@kimley-horn.com)>; Bjorn Hansen <[bjorn.hansen@unioncountync.gov](mailto:bjorn.hansen@unioncountync.gov)>; Gardner, Zachary L <[zlgardner@ncdot.gov](mailto:zlgardner@ncdot.gov)>

Cc: Ortiz-Hernandez, Julian <[Julian.Ortiz@kimley-horn.com](mailto:Julian.Ortiz@kimley-horn.com)>; Lowe, Jack <[Jack.Lowe@kimley-horn.com](mailto:Jack.Lowe@kimley-horn.com)>; Emily Powell <[epowell@kolter.com](mailto:epowell@kolter.com)>; Mark Sergent <[msergent@kolter.com](mailto:msergent@kolter.com)>; Weltner, Robert C <[rcweltner@ncdot.gov](mailto:rcweltner@ncdot.gov)>

Subject: RE: [External] RE: Purser & BV Belk - TIA Scoping

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Laura,

NCDOT is in agreement with the proposed study areas.

Thank you,

**Amelia Helms, P.E.**

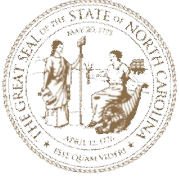
District Engineer

Division 10 - District 3

North Carolina Department of Transportation

704 218 5100 office  
704 292 1800 fax  
[achelms@ncdot.gov](mailto:achelms@ncdot.gov)

130 South Sutherland Avenue  
Monroe, NC 28112



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From: Reid, Laura <[laura.reid@kimley-horn.com](mailto:laura.reid@kimley-horn.com)>  
Sent: Thursday, February 29, 2024 8:15 AM  
To: Bjorn Hansen <[bjorn.hansen@unioncountync.gov](mailto:bjorn.hansen@unioncountync.gov)>; Helms, Amelia C <[achelms@ncdot.gov](mailto:achelms@ncdot.gov)>; Gardner, Zachary L <[zlgardner@ncdot.gov](mailto:zlgardner@ncdot.gov)>  
Cc: Ortiz-Hernandez, Julian <[Julian.Ortiz@kimley-horn.com](mailto:Julian.Ortiz@kimley-horn.com)>; Lowe, Jack <[Jack.Lowe@kimley-horn.com](mailto:Jack.Lowe@kimley-horn.com)>; Emily Powell <[epowell@kolter.com](mailto:epowell@kolter.com)>; Mark Sergent <[msergent@kolter.com](mailto:msergent@kolter.com)>  
Subject: RE: [External] RE: Purser & BV Belk - TIA Scoping

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Bjorn – Thank you for the feedback.

Amelia – Please let us know if NCDOT has any comments on the proposed study area.

**Laura Reid, PE** (NC & SC)  
**Kimley-Horn** | 200 South Tryon Street, Suite 200, Charlotte, NC 28202  
Direct: 704 319 7696 | Mobile: 443 804 7984 | [www.kimley-horn.com](http://www.kimley-horn.com)  
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From: Bjorn Hansen <[bjorn.hansen@unioncountync.gov](mailto:bjorn.hansen@unioncountync.gov)>  
Sent: Wednesday, February 28, 2024 1:58 PM  
To: Reid, Laura <[laura.reid@kimley-horn.com](mailto:laura.reid@kimley-horn.com)>; Helms, Amelia C <[achelms@ncdot.gov](mailto:achelms@ncdot.gov)>; Gardner, Zachary L <[zlgardner@ncdot.gov](mailto:zlgardner@ncdot.gov)>  
Cc: Ortiz-Hernandez, Julian <[Julian.Ortiz@kimley-horn.com](mailto:Julian.Ortiz@kimley-horn.com)>; Lowe, Jack <[Jack.Lowe@kimley-horn.com](mailto:Jack.Lowe@kimley-horn.com)>; Emily Powell <[epowell@kolter.com](mailto:epowell@kolter.com)>; Mark Sergent <[msergent@kolter.com](mailto:msergent@kolter.com)>  
Subject: RE: [External] RE: Purser & BV Belk - TIA Scoping

Laura,

I'm good with those locations if NCDOT agrees.

Bjorn

## Bjorn E. Hansen, AICP CTP

Senior Planner – Long Range Planning | Planning Department

T 704.283.3690

[bjorn.hansen@unioncountync.gov](mailto:bjorn.hansen@unioncountync.gov)  
[unioncountync.gov](http://unioncountync.gov)

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From: Reid, Laura <[laura.reid@kimley-horn.com](mailto:laura.reid@kimley-horn.com)>  
Sent: Wednesday, February 28, 2024 12:46 PM  
To: Bjorn Hansen <[bjorn.hansen@unioncountync.gov](mailto:bjorn.hansen@unioncountync.gov)>; Helms, Amelia C <[achelms@ncdot.gov](mailto:achelms@ncdot.gov)>; Gardner, Zachary L <[zlgardner@ncdot.gov](mailto:zlgardner@ncdot.gov)>  
Cc: Ortiz-Hernandez, Julian <[Julian.Ortiz@kimley-horn.com](mailto:Julian.Ortiz@kimley-horn.com)>; Lowe, Jack <[Jack.Lowe@kimley-horn.com](mailto:Jack.Lowe@kimley-horn.com)>; Emily Powell <[epowell@kolter.com](mailto:epowell@kolter.com)>; Mark Sergent <[msergent@kolter.com](mailto:msergent@kolter.com)>  
Subject: RE: [External] RE: Purser & BV Belk - TIA Scoping

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Hi all,

After circling up with the development team, we would propose the following study area for the TIA:

1. Mill Grove Road and Fairview Road (NC 218)
2. Lawyers Road and Mill Grove Road
3. Fairview Road (NC 218) and Rock Hill Church Road
4. Fairview Road (NC 218) and Asheley Glen Drive
5. Fairview Road (NC 218) and Access 1
6. Mill Grove Road and Access 2

With our trip generation and the other identified intersections being 2.5 to 4.7 miles from our site access, we would anticipate that the added intersections will reflect any added traffic or delays to other intersections along the corridor. Please let us know if this is acceptable and we'll go ahead and update the scoping document to reflect this and the other comments provided.

Thanks again,

**Laura Reid, PE** (NC & SC)  
**Kimley-Horn** | 200 South Tryon Street, Suite 200, Charlotte, NC 28202  
Direct: 704 319 7696 | Mobile: 443 804 7984 | [www.kimley-horn.com](http://www.kimley-horn.com)  
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---

From: Bjorn Hansen <[bjorn.hansen@unioncountync.gov](mailto:bjorn.hansen@unioncountync.gov)>  
Sent: Friday, January 26, 2024 8:34 AM  
To: Reid, Laura <[laura.reid@kimley-horn.com](mailto:laura.reid@kimley-horn.com)>; Helms, Amelia C <[achelms@ncdot.gov](mailto:achelms@ncdot.gov)>; Gardner, Zachary L <[zlgardner@ncdot.gov](mailto:zlgardner@ncdot.gov)>

Cc: Ortiz-Hernandez, Julian <[Julian.Ortiz@kimley-horn.com](mailto:Julian.Ortiz@kimley-horn.com)>; Lowe, Jack <[Jack.Lowe@kimley-horn.com](mailto:Jack.Lowe@kimley-horn.com)>  
Subject: RE: [External] RE: Purser & BV Belk - TIA Scoping

Mint Hill's comments are below. I too wish we had a local trip generation rate for age restricted facilities. I'd also love one for Chik-Fil-A, but that's another issue.

I put our counters out at one location in Marvin in 2019 out of curiosity. The development only had 55 homes, and no community amenities, so I don't think it is comparable to these more comprehensive communities. Still, it's trip gen was about 5.5 per weekday. I am fine with the ITE rate, and don't recommend using my 5.5 number in this instance, but 50+% trip reduction is a recurring point of skepticism among the decision makers for approving such rezonings.

- 1. The trip gen seems very low. I understand the Green Book allows for a "senior living" gen rate, but I believe there is not much data to back up the gen rate suggested of less than half of a normal detached single family neighborhood. There are some similar neighborhoods in the vicinity that could be studied (traffic counts) to get a more realistic count. One is Sonata (Mint Hill) located at Bartlett Road and NC218. It currently has only one way in, one way out as it finishes build-out. If counts were done now, the numbers would be nearly exclusively neighborhood-generated traffic—I believe there are only a handful of homes under final construction. The other is Cresswind (Charlotte) located at Cresswind Blvd. and NC24/27 Albemarle Road. The challenge is that it has 3 access points, 2 of which go through a "normal" SF neighborhood. I just have a very hard time believing only 3300 trips per day from a 750 unit development. A normal single family detached would be calculated at over 8,000 TPD. An actual trip count would find these subdivisions still produce an appreciable amount of traffic between package delivery, lawncare, and regular house traffic.*
- 2. I agree with Amelia's comments below about including all intersections on NC218 and Lawyers between I-485 and Mill Grove. Lawyers is already a congested area and we receive regular comments about safety along NC218 from the neighborhoods along that corridor.*
- 3. Also agree that trip distribution should be heavily weighted toward NC218 westward to 485 as the primary focus. Residents will tend to avoid the Lawyers Road path since it is such a congested area—NC218 will be the go-to route. There should also be some amount of traffic that bypasses 485 on 218 and Lawyers. Perhaps including NC218 and NC51, Lawyers and Bain School Road, and Lawyers and NC51 is warranted. Residents traveling from this site to Charlotte will use either 218 or Lawyers.*

**Bjorn E. Hansen, AICP CTP**

Senior Planner – Long Range Planning | Planning Department

T 704.283.3690

[bjorn.hansen@unioncountync.gov](mailto:bjorn.hansen@unioncountync.gov)  
[unioncountync.gov](http://unioncountync.gov)

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From: Reid, Laura <[laura.reid@kimley-horn.com](mailto:laura.reid@kimley-horn.com)>  
Sent: Wednesday, January 24, 2024 4:11 PM  
To: Helms, Amelia C <[achelms@ncdot.gov](mailto:achelms@ncdot.gov)>; Gardner, Zachary L <[zlgardner@ncdot.gov](mailto:zlgardner@ncdot.gov)>; Bjorn Hansen <[bjorn.hansen@unioncountync.gov](mailto:bjorn.hansen@unioncountync.gov)>  
Cc: Ortiz-Hernandez, Julian <[Julian.Ortiz@kimley-horn.com](mailto:Julian.Ortiz@kimley-horn.com)>; Lowe, Jack <[Jack.Lowe@kimley-horn.com](mailto:Jack.Lowe@kimley-horn.com)>  
Subject: RE: [External] RE: Purser & BV Belk - TIA Scoping

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Hi All,

Just spoke briefly with Amelia and have added a couple of comments below in red. Please let us know if we need to get on a call to discuss further, particularly around the study intersections.

Thanks!

**Laura Reid, PE** (NC & SC)

**Kimley-Horn** | 200 South Tryon Street, Suite 200, Charlotte, NC 28202

Direct: 704 319 7696 | Mobile: 443 804 7984 | [www.kimley-horn.com](http://www.kimley-horn.com)

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**Upcoming Vacation: 1/26 – 1/31**

---

From: Helms, Amelia C <[achelms@ncdot.gov](mailto:achelms@ncdot.gov)>

Sent: Tuesday, January 23, 2024 4:30 PM

To: Reid, Laura <[laura.reid@kimley-horn.com](mailto:laura.reid@kimley-horn.com)>; Gardner, Zachary L <[zlgardner@ncdot.gov](mailto:zlgardner@ncdot.gov)>; Bjorn Hansen <[bjorn.hansen@unioncountync.gov](mailto:bjorn.hansen@unioncountync.gov)>

Cc: Ortiz-Hernandez, Julian <[Julian.Ortiz@kimley-horn.com](mailto:Julian.Ortiz@kimley-horn.com)>

Subject: RE: [External] RE: Purser & BV Belk - TIA Scoping

You don't often get email from [achelms@ncdot.gov](mailto:achelms@ncdot.gov). [Learn why this is important](#)

Laura,

Please see NCDOT and the county's comments listed below for this scoping document.

- Access A: Concerns about the sight distance at this access. Please provide sight distance profiles so we can verify it meets minimum requirements. **Per conversation with NCDOT, we will note in the TIA that sight distance must be met at this access point in order for it to operate as full-movement. If sight distance can not be met, the TIA will need to be updated to reflect a different access configuration.**
- The county has asked for any comments from Mint Hill given that site traffic is going to flow to I-485 and Mecklenburg County. **Understood. Do y'all have an anticipated timeline on any comments from Mint Hill so we can make sure they get incorporated as we finalize this scope?**
- I would like to see the NC 218 intersections between Mill Grove and 485 (as well as 485 and NC 218) also evaluated. That would be Ashley Glen, Olde Sycamore, Rock Hill Church, and Allen Black. We require analysis for safety concerns as well, and most of that corridor is showing up in the HSIP map. **With the increase in distribution to the west to 35-40%, we would anticipate up to 72 AM and 86 PM peak hour trips utilizing this section of US 218. If we assume that the peak hours carry 10% of the daily traffic volumes on this roadway, the site traffic volumes are less than 10% of the current AADTs (9,600-18,000) and would be the equivalent of adding 1-1.5 cars per minute to this roadway. Additionally, most of these intersections are over a mile from the project site. Given this, can we remove these intersections from the study area?**
- Lawyers and Mill Grove should be evaluated for safety as well. **Understood. We will include a crash data evaluation at this intersection.**
- All major intersections between Mill Grove and 485 along Lawyers should also be evaluated, and there are two STIP projects along that section of road that should be referenced. **With the increase in distribution to the west**

to 35-40%, we would anticipate up to 72 AM and 86 PM peak hour trips utilizing this section of Lawyers Road. Similar to NC 218, we would also be adding less than 10% of the current AADT (12,000 – 18,500) on this roadway with the addition of our site traffic, would anticipate 1-1.5 cars per minute being added, and are located over a mile from most of these intersections. Given this, can we remove these intersections from the study area?

- The annual growth factor is quite unpredictable out there. NC 218 had a big surge in traffic before the expressway opened, and Mill Grove traffic is very low, so any percent change has a minor impact. 1% is pretty defensible. **Noted.**
- Traffic distribution: 20% of the traffic is not going to go east on NC 218 or Lawyers. Those should be dropped to 5 or 10%, with the traffic on Lawyers and Fairview increased. **Noted. We will make these adjustment.**

Please update and resubmit. If you have any questions, just let me know.

Thank you,

**Amelia Helms, P.E.**

District Engineer

Division 10 - District 3

North Carolina Department of Transportation

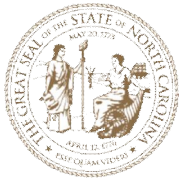
704 218 5100 office

704 292 1800 fax

[achelms@ncdot.gov](mailto:achelms@ncdot.gov)

130 South Sutherland Avenue

Monroe, NC 28112



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From: Reid, Laura <[laura.reid@kimley-horn.com](mailto:laura.reid@kimley-horn.com)>

Sent: Tuesday, January 23, 2024 1:19 PM

To: Helms, Amelia C <[achelms@ncdot.gov](mailto:achelms@ncdot.gov)>; Gardner, Zachary L <[zlgardner@ncdot.gov](mailto:zlgardner@ncdot.gov)>; Bjorn Hansen <[bjorn.hansen@unioncountync.gov](mailto:bjorn.hansen@unioncountync.gov)>

Cc: Ortiz-Hernandez, Julian <[Julian.Ortiz@kimley-horn.com](mailto:Julian.Ortiz@kimley-horn.com)>

Subject: [External] RE: Purser & BV Belk - TIA Scoping

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Hi all,

Hope your week has been off to a good start! Following up on this scoping document (reattached here) to see if you have any comments. Please let us know if so, or if there are any items we need to discuss.

Thanks,

**Laura Reid, PE** (NC & SC)

**Kimley-Horn** | 200 South Tryon Street, Suite 200, Charlotte, NC 28202

Direct: 704 319 7696 | Mobile: 443 804 7984 | [www.kimley-horn.com](http://www.kimley-horn.com)  
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**Upcoming Vacation: 1/26 – 1/31**

---

From: Reid, Laura  
Sent: Tuesday, January 9, 2024 8:27 AM  
To: Helms, Amelia C <[achelms@ncdot.gov](mailto:achelms@ncdot.gov)>; Gardner, Zachary L <[zlgardner@ncdot.gov](mailto:zlgardner@ncdot.gov)>; 'Bjorn Hansen' <[bjorn.hansen@unioncountync.gov](mailto:bjorn.hansen@unioncountync.gov)>  
Cc: Ortiz-Hernandez, Julian <[Julian.Ortiz@kimley-horn.com](mailto:Julian.Ortiz@kimley-horn.com)>  
Subject: Purser & BV Belk - TIA Scoping

Hi all,

Attached for your review is the TIA scoping document for the Purser & BV Belk Property in Union County. Please let us know if you have any questions as you review.

Thanks!

**Laura Reid, PE** (NC & SC)  
**Kimley-Horn** | 200 South Tryon Street, Suite 200, Charlotte, NC 28202  
Direct: 704 319 7696 | Mobile: 443 804 7984 | [www.kimley-horn.com](http://www.kimley-horn.com)  
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# NCDOT TIA Comments



## Ortiz-Hernandez, Julian

---

From: Weltner, Robert C <rcweltner@ncdot.gov>  
Sent: Thursday, August 15, 2024 4:06 PM  
To: Reid, Laura; Bjorn Hansen; Emily Powell  
Cc: Mark Sergent; Jason Galloway; Ortiz-Hernandez, Julian  
Subject: RE: [External] Gold Branch rezoning site plan

Bjorn, Laura,

The access on NC218 can only function as a RIRO. If the developer wishes to explore other locations for full access on NC218, Locations with a minimum 600' is required.

Thank You,  
Robert Weltner  
Engineer 1  
Division 10 - District 3  
North Carolina Dept of Transportation

704-218-5100 – Office  
704-292-1800 fax  
[rcweltner@ncdot.gov](mailto:rcweltner@ncdot.gov)

---

From: Reid, Laura <laura.reid@kimley-horn.com>  
Sent: Thursday, August 8, 2024 9:12 PM  
To: Bjorn Hansen <bjorn.hansen@unioncountync.gov>; Emily Powell <epowell@kolter.com>  
Cc: Weltner, Robert C <rcweltner@ncdot.gov>; Mark Sergent <msergent@kolter.com>; Jason Galloway <jgalloway@kolter.com>; Ortiz-Hernandez, Julian <Julian.Ortiz@kimley-horn.com>  
Subject: RE: [External] Gold Branch rezoning site plan

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Bjorn,

Understand and agree – the change in access would change the site trips at the NC 218/Mill Grove Road roundabout. Considering we've already submitted an iteration of the TIA with the original access configuration, is it more efficient to have the group discussion you referenced now to make sure we're all on the same page around access before we make any updates to the TIA? Or will you need to see the updated analysis before that discussion?

Thanks,

**Laura Reid, PE** (NC & SC)  
**Kimley-Horn** | 200 South Tryon Street, Suite 200, Charlotte, NC 28202  
Direct: 704 319 7696 | Mobile: 443 804 7984 | [www.kimley-horn.com](http://www.kimley-horn.com)  
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From: Bjorn Hansen <[bjorn.hansen@unioncountync.gov](mailto:bjorn.hansen@unioncountync.gov)>  
Sent: Monday, August 5, 2024 5:06 PM  
To: Reid, Laura <[laura.reid@kimley-horn.com](mailto:laura.reid@kimley-horn.com)>; Emily Powell <[epowell@kolter.com](mailto:epowell@kolter.com)>  
Cc: Weltner, Robert C <[rcweltner@ncdot.gov](mailto:rcweltner@ncdot.gov)>; Mark Sergent <[msergent@kolter.com](mailto:msergent@kolter.com)>; Jason Galloway <[jgalloway@kolter.com](mailto:jgalloway@kolter.com)>; Ortiz-Hernandez, Julian <[Julian.Ortiz@kimley-horn.com](mailto:Julian.Ortiz@kimley-horn.com)>  
Subject: RE: [External] Gold Branch rezoning site plan

Laura,

The traffic that would have turned left into/out of the site off NC 218 would now have to be accounted going through the RAB at Mill Grove and NC 218. If Bob/NCDOT is good with the entrance being RIRO and not looking to move it to another location where all movements could occur then that is ok with me.

I will say that even if the TIA doesn't say that any mitigation would be required, and none is committed to, we need to schedule a meeting with the NCDOT, developer, KM, and the County to confirm if any traffic improvements will be required.

Sincerely,

Bjorn

**Bjorn E. Hansen, AICP CTP**

Senior Planner – Long Range Planning | Planning Department

T 704.283.3690

[bjorn.hansen@unioncountync.gov](mailto:bjorn.hansen@unioncountync.gov)  
[unioncountync.gov](http://unioncountync.gov)

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From: Reid, Laura <[laura.reid@kimley-horn.com](mailto:laura.reid@kimley-horn.com)>  
Sent: Monday, August 5, 2024 9:31 AM  
To: Bjorn Hansen <[bjorn.hansen@unioncountync.gov](mailto:bjorn.hansen@unioncountync.gov)>; Emily Powell <[epowell@kolter.com](mailto:epowell@kolter.com)>  
Cc: Weltner, Robert C <[rcweltner@ncdot.gov](mailto:rcweltner@ncdot.gov)>; Mark Sergent <[msergent@kolter.com](mailto:msergent@kolter.com)>; Jason Galloway <[jgalloway@kolter.com](mailto:jgalloway@kolter.com)>; Ortiz-Hernandez, Julian <[Julian.Ortiz@kimley-horn.com](mailto:Julian.Ortiz@kimley-horn.com)>  
Subject: RE: [External] Gold Branch rezoning site plan

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Hi Bjorn,

Thanks for coordinating this with NCDOT. Based on our discussions with the development team, we are agreeable with this access change to right-in/right-out (the TIA considered full-movement). Will y'all need an updated TIA to continue your review of the TIA? Or will you be able to complete your review with the original access configuration and we can address the change along with any other comments?

Thanks again,

**Laura Reid, PE** (NC & SC)

**Kimley-Horn** | 200 South Tryon Street, Suite 200, Charlotte, NC 28202

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From: Bjorn Hansen <[bjorn.hansen@unioncountync.gov](mailto:bjorn.hansen@unioncountync.gov)>

Sent: Monday, July 22, 2024 11:13 AM

To: Reid, Laura <[laura.reid@kimley-horn.com](mailto:laura.reid@kimley-horn.com)>; Emily Powell <[epowell@kolter.com](mailto:epowell@kolter.com)>

Cc: Weltner, Robert C <[rcweltner@ncdot.gov](mailto:rcweltner@ncdot.gov)>

Subject: FW: [External] Gold Branch rezoning site plan

Good morning,

Union County has started the site plan review process for the Gold Branch rezoning. NCDOT has provided comments on the driveway access on NC 218. The remaining comments should be available in three weeks (hopefully sooner). I assume this comment will be important to work through so I wanted to get it to you ASAP.

Sincerely,

Bjorn

**Bjorn E. Hansen, AICP CTP**

Senior Planner – Long Range Planning | Planning Department

T 704.283.3690

[bjorn.hansen@unioncountync.gov](mailto:bjorn.hansen@unioncountync.gov)  
[unioncountync.gov](http://unioncountync.gov)

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---

From: Weltner, Robert C <[rcweltner@ncdot.gov](mailto:rcweltner@ncdot.gov)>

Sent: Monday, July 22, 2024 10:46 AM

To: Bjorn Hansen <[bjorn.hansen@unioncountync.gov](mailto:bjorn.hansen@unioncountync.gov)>

Subject: RE: [External] Gold Branch rezoning site plan

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Bjorn,

The NC218 access cannot be permitted as full access. Due to sight constraints, it must be a Right In/ Right Out access. It may be possible to have a left over in that location.

A left Turn lane shall be constructed at the Milgrove Rd access as well as all other mitigation identified in the TIA.

Thank You,  
Robert Weltner  
Engineer 1  
Division 10 - District 3  
North Carolina Dept of Transportation

704-218-5100 – Office  
704-292-1800 fax  
[rcweltner@ncdot.gov](mailto:rcweltner@ncdot.gov)

---

From: Bjorn Hansen <[bjorn.hansen@unioncountync.gov](mailto:bjorn.hansen@unioncountync.gov)>  
Sent: Wednesday, July 17, 2024 2:26 PM  
To: Weltner, Robert C <[rcweltner@ncdot.gov](mailto:rcweltner@ncdot.gov)>  
Subject: [External] Gold Branch rezoning site plan

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Bob,

The rezoning site plan on Mill Grove has come in. The development is proposed to be gated, with private streets, so we just need comments on the driveway locations.

Please let me know if you have any questions.

Sincerely,

Bjorn

**Bjorn E. Hansen, AICP CTP**

Senior Planner – Long Range Planning | Planning Department

T 704.283.3690

[bjorn.hansen@unioncountync.gov](mailto:bjorn.hansen@unioncountync.gov)  
[unioncountync.gov](http://unioncountync.gov)



Union County Government  
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Monroe, NC 28112

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Union County  
TIA Comments



Ortiz-Hernandez, Julian

---

From: Bjorn Hansen <bjorn.hansen@unioncountync.gov>  
Sent: Friday, August 9, 2024 9:28 AM  
To: Reid, Laura; Emily Powell  
Cc: Weltner, Robert C; Mark Sergent; Jason Galloway; Ortiz-Hernandez, Julian  
Subject: Re: [External] Gold Branch rezoning site plan

Honestly, those were the extent of my comments at this point, so Bob/NC DOT's comments could come at any time and then the TIA can be revised.

**Bjorn E. Hansen, AICP CTP**

Senior Planner – Long Range Planning | Planning Department

T 704.283.3690

[bjorn.hansen@unioncountync.gov](mailto:bjorn.hansen@unioncountync.gov)  
[unioncountync.gov](http://unioncountync.gov)

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Sent: Thursday, August 8, 2024 9:12 PM  
To: Bjorn Hansen <bjorn.hansen@unioncountync.gov>; Emily Powell <epowell@kolter.com>  
Cc: Weltner, Robert C <rcweltner@ncdot.gov>; Mark Sergent <msergent@kolter.com>; Jason Galloway <jgalloway@kolter.com>; Ortiz-Hernandez, Julian <Julian.Ortiz@kimley-horn.com>  
Subject: RE: [External] Gold Branch rezoning site plan

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Bjorn,

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**Laura Reid, PE** (NC & SC)  
**Kimley-Horn** | 200 South Tryon Street, Suite 200, Charlotte, NC 28202  
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From: Bjorn Hansen <bjorn.hansen@unioncountync.gov>  
Sent: Monday, August 5, 2024 5:06 PM  
To: Reid, Laura <laura.reid@kimley-horn.com>; Emily Powell <epowell@kolter.com>  
Cc: Weltner, Robert C <rcweltner@ncdot.gov>; Mark Sergent <msergent@kolter.com>; Jason Galloway <jgalloway@kolter.com>; Ortiz-Hernandez, Julian <Julian.Ortiz@kimley-horn.com>  
Subject: RE: [External] Gold Branch rezoning site plan

Laura,

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I will say that even if the TIA doesn't say that any mitigation would be required, and none is committed to, we need to schedule a meeting with the NCDOT, developer, KM, and the County to confirm if any traffic improvements will be required.

Sincerely,

Bjorn

**Bjorn E. Hansen, AICP CTP**

Senior Planner – Long Range Planning | Planning Department

T 704.283.3690

[bjorn.hansen@unioncountync.gov](mailto:bjorn.hansen@unioncountync.gov)  
[unioncountync.gov](http://unioncountync.gov)

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From: Reid, Laura <laura.reid@kimley-horn.com>  
Sent: Monday, August 5, 2024 9:31 AM  
To: Bjorn Hansen <bjorn.hansen@unioncountync.gov>; Emily Powell <epowell@kolter.com>  
Cc: Weltner, Robert C <rcweltner@ncdot.gov>; Mark Sergent <msergent@kolter.com>; Jason Galloway <jgalloway@kolter.com>; Ortiz-Hernandez, Julian <Julian.Ortiz@kimley-horn.com>  
Subject: RE: [External] Gold Branch rezoning site plan

**WARNING: This email originated from outside of Union County Government, be cautious when clicking on links or opening attachments.**

Hi Bjorn,

Thanks for coordinating this with NCDOT. Based on our discussions with the development team, we are agreeable with this access change to right-in/right-out (the TIA considered full-movement). Will y'all need an updated TIA to continue your review of the TIA? Or will you be able to complete your review with the original access configuration and we can address the change along with any other comments?

Thanks again,

**Laura Reid, PE** (NC & SC)

**Kimley-Horn** | 200 South Tryon Street, Suite 200, Charlotte, NC 28202

Direct: 704 319 7696 | Mobile: 443 804 7984 | [www.kimley-horn.com](http://www.kimley-horn.com)

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---

From: Bjorn Hansen <[bjorn.hansen@unioncountync.gov](mailto:bjorn.hansen@unioncountync.gov)>

Sent: Monday, July 22, 2024 11:13 AM

To: Reid, Laura <[laura.reid@kimley-horn.com](mailto:laura.reid@kimley-horn.com)>; Emily Powell <[epowell@kolter.com](mailto:epowell@kolter.com)>

Cc: Weltner, Robert C <[rcweltner@ncdot.gov](mailto:rcweltner@ncdot.gov)>

Subject: FW: [External] Gold Branch rezoning site plan

Good morning,

Union County has started the site plan review process for the Gold Branch rezoning. NCDOT has provided comments on the driveway access on NC 218. The remaining comments should be available in three weeks (hopefully sooner). I assume this comment will be important to work through so I wanted to get it to you ASAP.

Sincerely,

Bjorn

**Bjorn E. Hansen, AICP CTP**

Senior Planner – Long Range Planning | Planning Department

T 704.283.3690

[bjorn.hansen@unioncountync.gov](mailto:bjorn.hansen@unioncountync.gov)  
[unioncountync.gov](http://unioncountync.gov)

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---

From: Weltner, Robert C <[rcweltner@ncdot.gov](mailto:rcweltner@ncdot.gov)>

Sent: Monday, July 22, 2024 10:46 AM

To: Bjorn Hansen <[bjorn.hansen@unioncountync.gov](mailto:bjorn.hansen@unioncountync.gov)>

Subject: RE: [External] Gold Branch rezoning site plan

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Bjorn,

The NC218 access cannot be permitted as full access. Due to sight constraints, it must be a Right In/ Right Out access. It may be possible to have a left over in that location.

A left Turn lane shall be constructed at the Milgrove Rd access as well as all other mitigation identified in the TIA.

Thank You,  
Robert Weltner  
Engineer 1

Division 10 - District 3  
North Carolina Dept of Transportation

704-218-5100 – Office  
704-292-1800 fax  
[rcweltner@ncdot.gov](mailto:rcweltner@ncdot.gov)

---

From: Bjorn Hansen <[bjorn.hansen@unioncountync.gov](mailto:bjorn.hansen@unioncountync.gov)>  
Sent: Wednesday, July 17, 2024 2:26 PM  
To: Weltner, Robert C <[rcweltner@ncdot.gov](mailto:rcweltner@ncdot.gov)>  
Subject: [External] Gold Branch rezoning site plan

**CAUTION:** External email. Do not click links or open attachments unless verified. Report suspicious emails with the Report Message button located on your Outlook menu bar on the Home tab.

Bob,

The rezoning site plan on Mill Grove has come in. The development is proposed to be gated, with private streets, so we just need comments on the driveway locations.

Please let me know if you have any questions.

Sincerely,

Bjorn

**Bjorn E. Hansen, AICP CTP**

Senior Planner – Long Range Planning | Planning Department

T 704.283.3690

[bjorn.hansen@unioncountync.gov](mailto:bjorn.hansen@unioncountync.gov)  
[unioncountync.gov](http://unioncountync.gov)



Union County Government  
500 North Main Street, Suite 70  
Monroe, NC 28112

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# Updated Site Plan



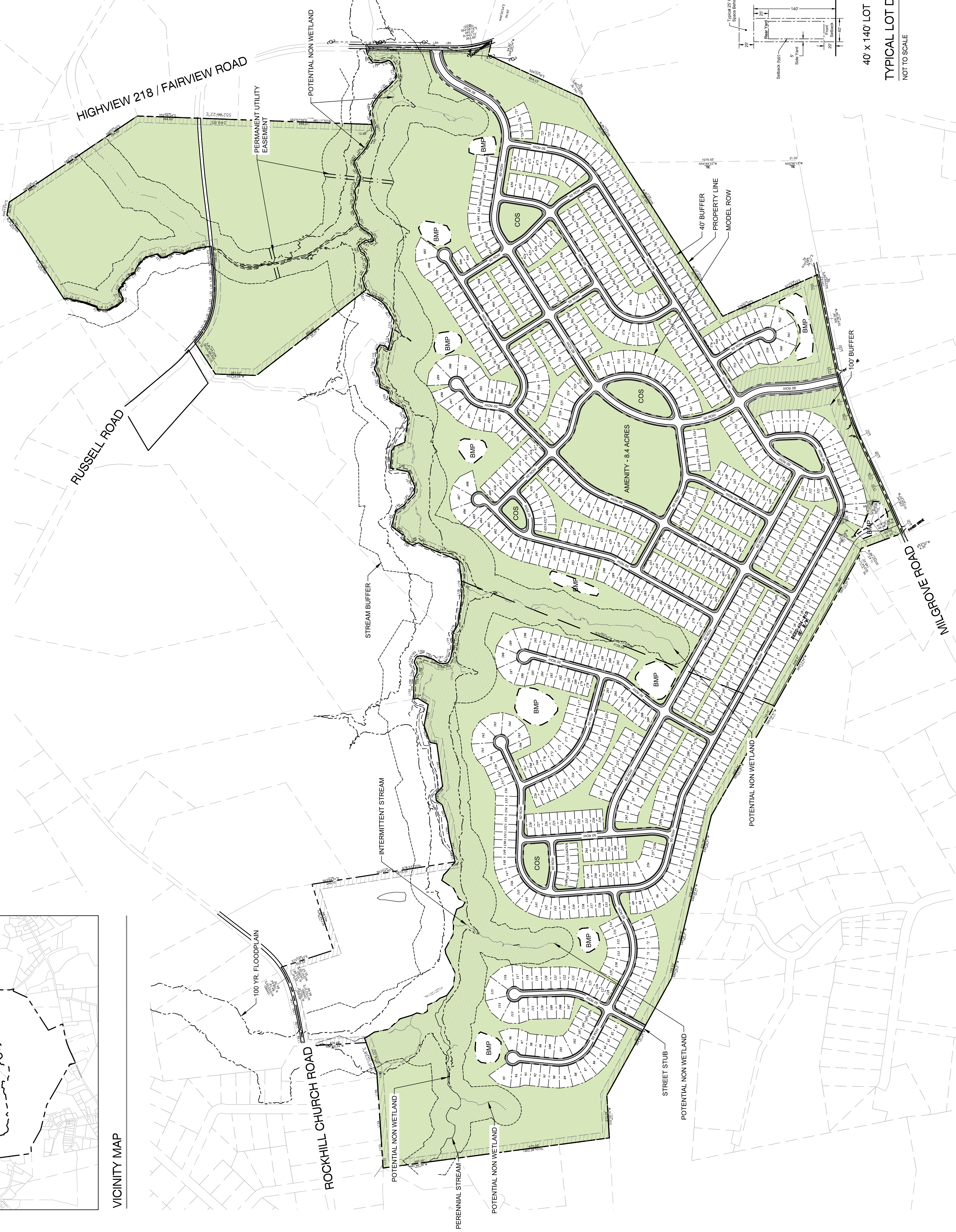


VICINITY MAP

**DEVELOPMENT NOTES**

1. The proposed development must meet the post-construction runoff reduction requirements for the 2, 10 and 50-yr storm events for areas not draining directly to FEMA regulated floodplain. Peak runoff flows must be reduced to pre development runoff rates for downstream receiving areas for the aforementioned storm events.
2. All internal streets must be designed to NCDOT standards. Certified inspectors must be used to confirm road conditions during construction.
3. Internal roads will be required to provide curb and gutter, sidewalks, street trees, and street lights per Union County requirements.
4. Sidewalk will be provided along the NC 218 project frontage.
5. Water service to the project will be public, sewer will be provided by a decentralized wastewater treatment system with drip fields.

D-8159-015



**DEVELOPMENT DATA**

**Site Information:**  
 Total Gross Acreage: 389.25 Ac.  
 Tax Parcel Numbers: 08309016, 08282009A, 08312014  
 Union County, NC  
 Zoning Jurisdiction: TBD  
 Proposed Annexation: RA-40 - Residential/Agricultural District  
 Zoning Classification: R-4  
 Proposed Zoning: R-4  
**Areaage Information:**  
 Max. Coverage for Bldgs. and Structures: 40%  
 Total Open Space Provided: 209.64 Ac.  
**Building Setbacks:**  
 Primary: 20'  
 Side Yard: 5'  
 Side Yard (Corner Lot): 10'  
 Rear Yard: 25'  
 Common Open Space Between Backs of Lots to be 25' min.

**Lot Information:**

**Proposed Lot Sizes:**

- 40' x 140'
- 50' x 140'
- 60' x 140'

**Total Dwelling Unit Proposed:**

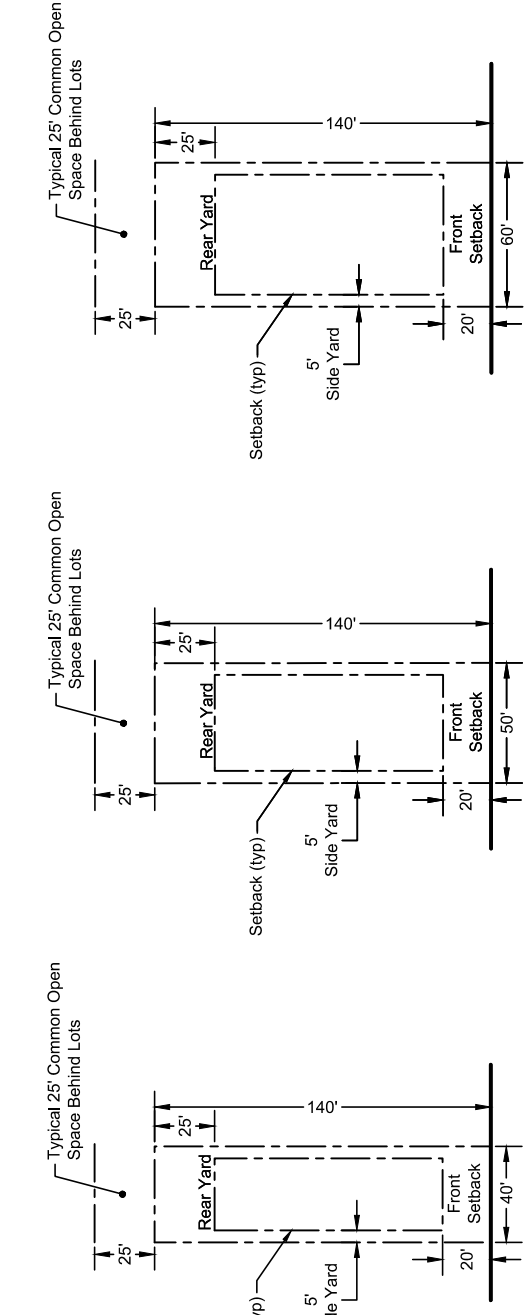
40' Lots:	116	(6.0%)
50' Lots:	352	(64.4%)
60' Lots:	297	(58.4%)
70' Lots:	2	
<b>Total:</b>	<b>727</b>	

**Gross Density Calculation:**  
 Total Dwelling Units (727 lots) + Total Gross Acreage (389.25 Ac.)  
 = 1.77 Dwelling Unit per acre

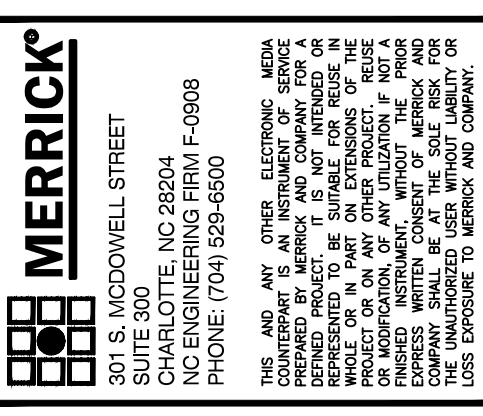
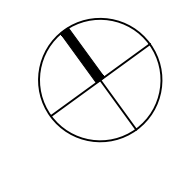
**Maximum Density Calculation:**  
 Total Dwelling Units: 727 lots  
 Site Area - Right of Way (46.11 Ac.) and Riparian Buffer (73.37 Ac.) 289.77 Ac.  
 Maximum Density: 727/289.77  
 = 2.69 Dwelling Units per Acre

**LEGEND**

- PROPERTY LINE
- SURVEY WETLAND TYP.
- LOT BOUNDARY
- STREAM BUFFER
- PERENNIAL STREAM
- INTERMITTENT STREAM
- 100 YR. FEMA FLOODPLAIN
- POTENTIAL BMP LOCATION
- OPEN SPACE



TYPICAL LOT DIMENSIONS  
 NOT TO SCALE



**PREPARED FOR:**  
**Kolter Signature Homes**  
 4807 PGA Blvd  
 Palm Beach Gardens

REV	REVISION DESCRIPTION	DATE	CHANGED BY

**Cresswind at Gold Branch**  
 Union County, NC  
**Rezoning Site Plan**

SCALE(S)

SCALE	VERT. N/A	HORZ. 1" = 300'
0	150	300
	450	600

DESIGN BY:	XXX	MM/DD/YY
DRAWN BY:	XXX	MM/DD/YY
CHECKED BY:	XXX	MM/DD/YY
APPROVED BY:	XXX	MM/DD/YY

PROJECT TRACKING #	INTERNAL: 100783.00
MUNICIPAL:	2024-CZ-007
ORIGINAL DATE:	08/16/24
SHEET	1 of 2

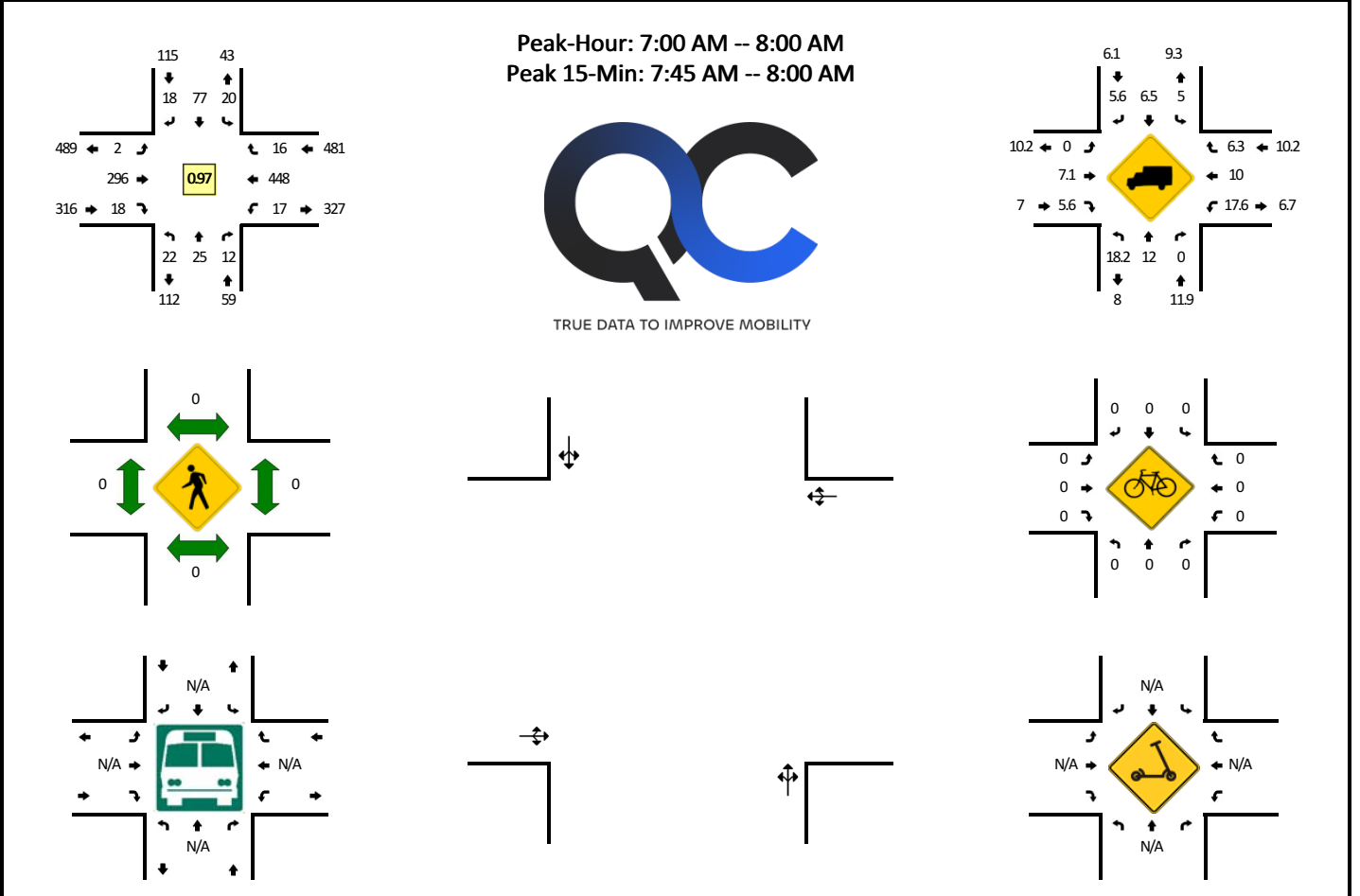


# Turning Movement Counts



**LOCATION:** 1.Mill Grove Rd -- Fairview Rd (NC 218)  
**CITY/STATE:** Fairview, NC

**QC JOB #:** 16348801  
**DATE:** Wed, Sep 27 2023

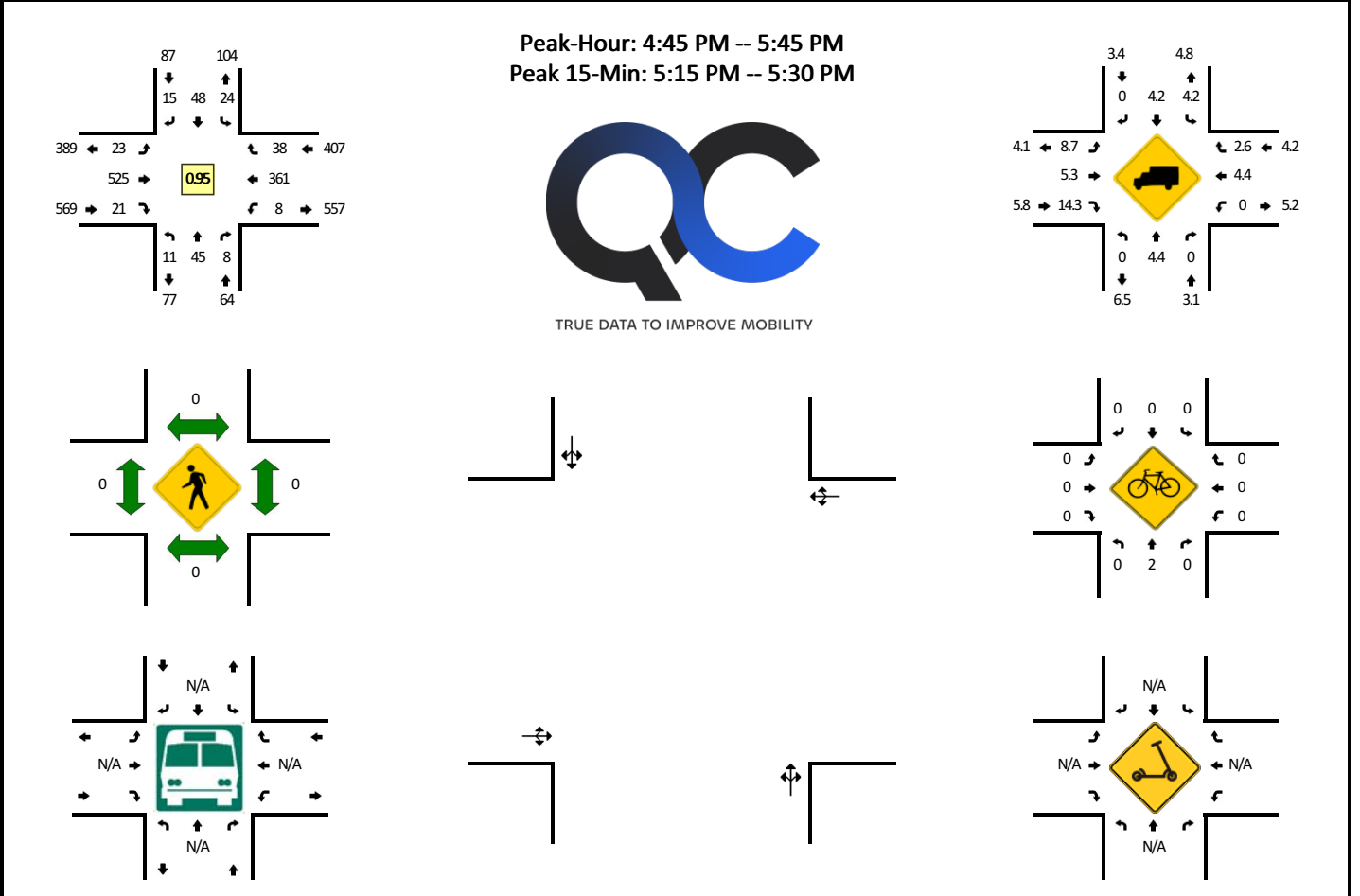


15-Min Count Period Beginning At	1.Mill Grove Rd (Northbound)				1.Mill Grove Rd (Southbound)				Fairview Rd (NC 218) (Eastbound)				Fairview Rd (NC 218) (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	3	1	0	0	3	5	4	0	0	23	1	0	0	88	0	0	128	
6:15 AM	1	2	0	0	6	5	3	0	0	40	2	0	0	68	1	0	128	
6:30 AM	1	1	0	0	1	9	1	0	1	54	3	0	1	112	0	1	185	
6:45 AM	0	2	2	0	8	8	2	0	1	52	0	0	0	102	2	0	179	620
7:00 AM	5	4	3	0	4	18	9	0	0	69	2	0	6	126	2	0	248	740
7:15 AM	4	6	3	0	6	20	2	0	0	67	7	0	3	113	7	0	238	850
7:30 AM	6	3	4	0	5	20	4	0	0	75	5	1	5	103	4	0	235	900
7:45 AM	7	12	2	0	4	19	3	1	1	85	4	0	3	106	3	0	250	971
8:00 AM	3	4	2	0	5	10	7	0	2	76	3	0	0	98	3	1	214	937
8:15 AM	4	12	4	0	3	7	3	0	3	64	4	0	0	119	4	0	227	926
8:30 AM	3	4	1	0	3	10	3	0	2	60	7	0	1	82	4	0	180	871
8:45 AM	0	15	2	0	1	8	2	0	4	36	3	0	6	87	9	1	174	795
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	28	48	8	0	16	76	12	4	4	340	16	0	12	424	12	0	1000	
Heavy Trucks	8	0	0		0	8	0		0	12	0		0	40	0		68	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles		0				0				0				0			0	
Scoters																	0	

*Comments:*

**LOCATION:** 1.Mill Grove Rd -- Fairview Rd (NC 218)  
**CITY/STATE:** Fairview, NC

**QC JOB #:** 16348802  
**DATE:** Wed, Sep 27 2023

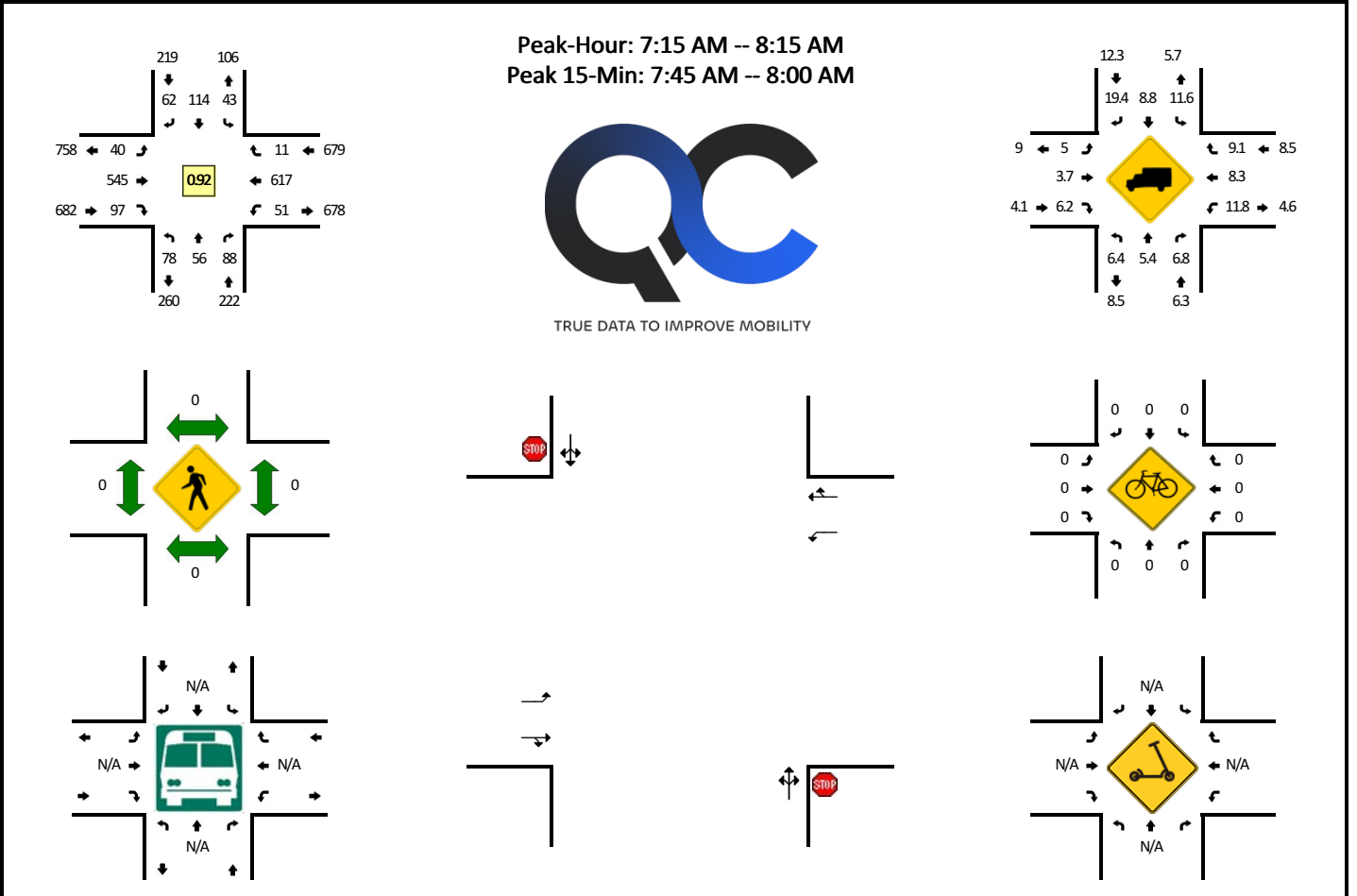


15-Min Count Period Beginning At	1.Mill Grove Rd (Northbound)				1.Mill Grove Rd (Southbound)				Fairview Rd (NC 218) (Eastbound)				Fairview Rd (NC 218) (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	6	6	0	0	4	5	1	0	6	100	9	0	3	84	12	0	236	
4:15 PM	2	10	1	0	5	8	1	0	4	97	7	0	2	74	5	0	216	
4:30 PM	7	7	6	0	7	11	5	1	6	99	6	0	5	92	8	0	260	
4:45 PM	0	10	2	0	7	8	3	0	1	118	9	0	2	85	6	0	251	963
5:00 PM	3	12	1	0	6	14	4	0	6	133	4	1	1	102	8	0	295	1022
5:15 PM	4	15	5	0	9	12	5	0	8	131	4	0	1	94	8	0	296	1102
5:30 PM	4	8	0	0	2	14	3	0	6	143	4	1	4	80	16	0	285	1127
5:45 PM	2	9	2	0	5	12	3	0	4	106	5	0	4	73	10	0	235	1111
6:00 PM	3	12	5	0	3	8	4	0	8	105	5	0	1	50	7	0	211	1027
6:15 PM	0	5	2	0	7	6	0	0	6	115	2	0	2	66	4	0	215	946
6:30 PM	4	3	4	0	4	3	5	0	2	90	7	0	0	73	4	1	200	861
6:45 PM	1	11	2	0	2	6	2	0	3	86	1	0	0	65	8	0	187	813
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	16	60	20	0	36	48	20	0	32	524	16	0	4	376	32	0	1184	
Heavy Trucks	0	0	0	0	0	0	0	0	0	16	4	0	0	16	0	0	36	
Buses																		
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bicycles	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	
Scoters																		

*Comments:*

**LOCATION:** 2. Mill Grove Rd -- Lawyers Rd  
**CITY/STATE:** Union, NC

**QC JOB #:** 16348803  
**DATE:** Wed, Sep 27 2023

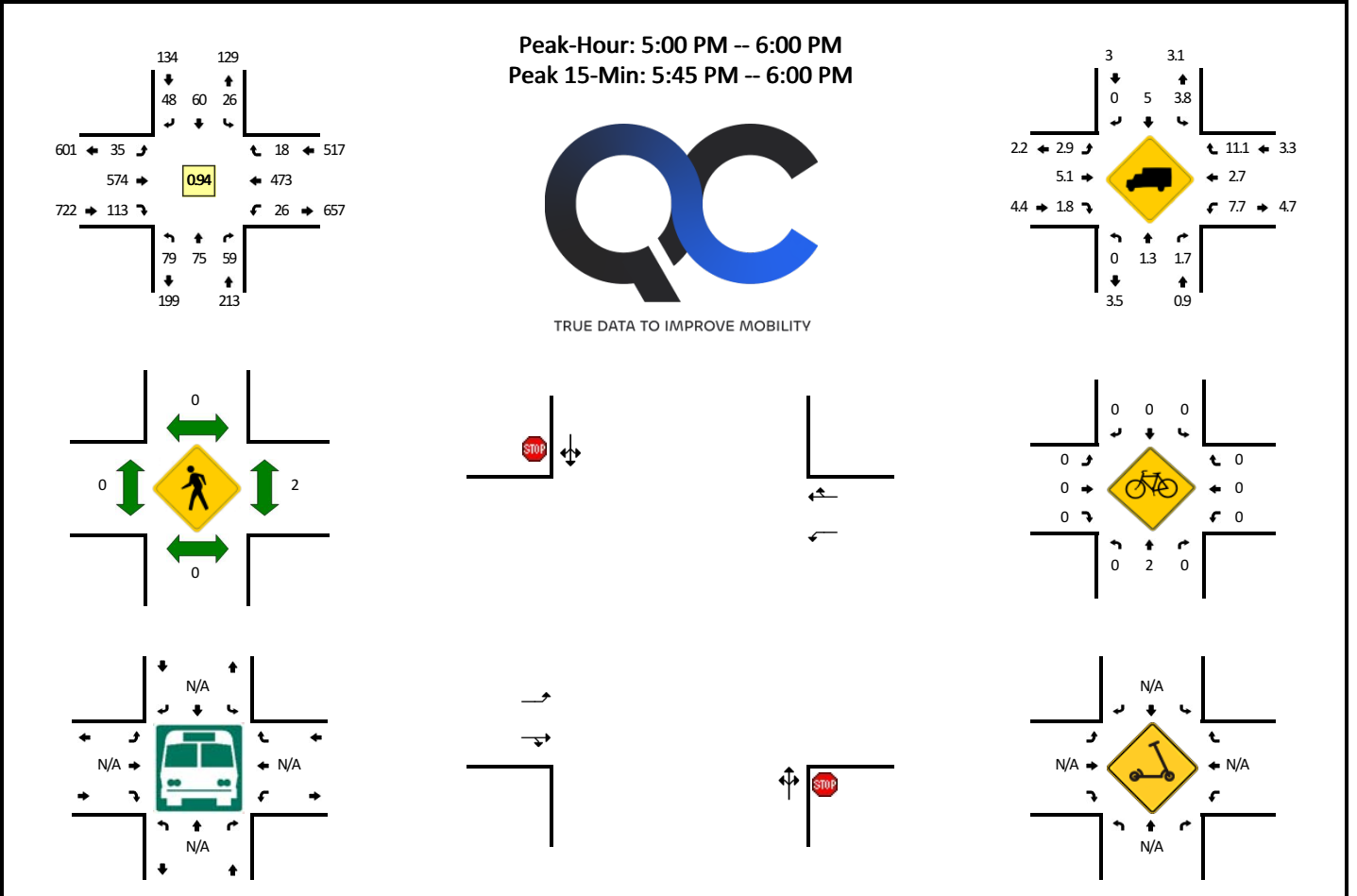


15-Min Count Period Beginning At	2. Mill Grove Rd (Northbound)				2. Mill Grove Rd (Southbound)				Lawyers Rd (Eastbound)				Lawyers Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	3	4	1	0	3	11	6	0	3	18	3	0	1	120	0	0	173	
6:15 AM	10	6	2	1	3	9	6	0	9	46	3	0	2	120	1	1	219	
6:30 AM	7	10	7	0	4	16	4	0	6	70	6	0	2	125	2	0	259	
6:45 AM	5	11	1	1	4	16	7	0	8	82	4	0	4	130	1	0	274	925
7:00 AM	11	17	9	0	8	19	16	0	5	82	13	1	3	123	5	0	312	1064
7:15 AM	13	10	16	0	14	27	26	0	7	123	23	0	7	179	3	0	448	1293
7:30 AM	12	12	24	0	12	33	17	0	7	141	30	0	9	158	2	1	458	1492
7:45 AM	25	16	38	0	10	23	12	0	14	181	27	0	13	129	3	0	491	1709
8:00 AM	28	18	10	0	7	31	7	0	11	100	17	1	20	151	3	1	405	1802
8:15 AM	24	19	13	0	8	13	11	0	6	108	25	0	13	131	5	2	378	1732
8:30 AM	28	9	18	0	3	9	11	0	10	108	19	1	8	97	3	0	324	1598
8:45 AM	20	16	6	0	5	18	9	0	9	72	19	0	23	84	2	0	283	1390
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	100	64	152	0	40	92	48	0	56	724	108	0	52	516	12	0	1964	
Heavy Trucks	4	8	4		8	12	4		4	16	8		4	52	0		124	
Buses																		
Pedestrians	0	0	0		0	0	0		0	0	0		0	0	0		0	
Bicycles					0	0	0		0	0	0		0	0	0		0	
Scoters																	0	

Comments:

**LOCATION:** 2. Mill Grove Rd -- Lawyers Rd  
**CITY/STATE:** Union, NC

**QC JOB #:** 16348804  
**DATE:** Wed, Sep 27 2023

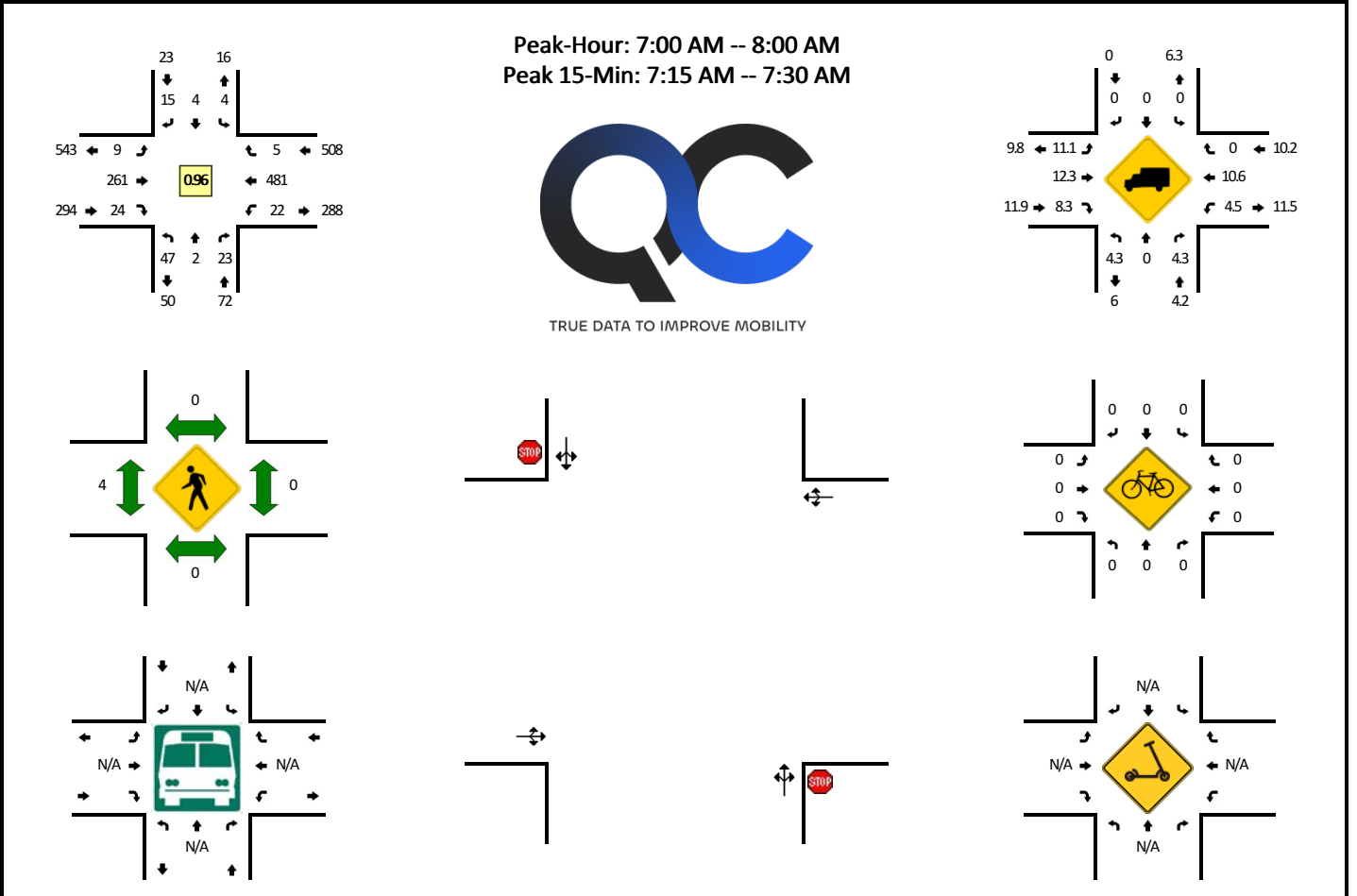


15-Min Count Period Beginning At	2. Mill Grove Rd (Northbound)				2. Mill Grove Rd (Southbound)				Lawyers Rd (Eastbound)				Lawyers Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	11	15	13	0	2	17	10	0	9	120	26	0	9	83	6	0	321	
4:15 PM	17	15	12	0	3	10	11	0	10	122	16	0	10	128	2	0	356	
4:30 PM	16	13	9	0	6	10	13	0	20	140	19	0	10	104	6	0	366	
4:45 PM	18	20	14	1	4	14	11	0	8	149	14	0	3	92	5	0	353	1396
5:00 PM	22	21	12	0	4	17	15	0	13	130	21	0	9	100	3	0	367	1442
5:15 PM	17	23	12	0	5	12	14	1	9	124	31	1	5	143	9	0	406	1492
5:30 PM	20	11	17	0	10	15	11	0	4	159	21	0	6	115	3	0	392	1518
5:45 PM	20	20	18	0	5	16	8	1	8	161	40	0	6	115	3	0	421	1586
6:00 PM	15	14	13	2	6	15	9	0	8	139	26	0	16	98	5	0	366	1585
6:15 PM	23	10	8	0	7	7	6	0	10	130	27	0	8	78	4	0	318	1497
6:30 PM	12	9	9	0	4	6	11	0	16	126	22	0	2	62	4	0	283	1388
6:45 PM	6	12	6	0	2	11	10	0	9	79	15	0	3	68	8	0	229	1196
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
All Vehicles	80	80	72	0	20	64	32	4	32	644	160	0	24	460	12	0	1684	
Heavy Trucks	0	0	0	0	0	4	0	0	4	24	0	0	4	0	4	0	40	
Buses																		
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Scoters																		

*Comments:*

**LOCATION:** 1. Rock Hill Church Rd -- Fairview Rd (NC 218)  
**CITY/STATE:** Union, NC

**QC JOB #:** 16542201  
**DATE:** Wed, Mar 27 2024

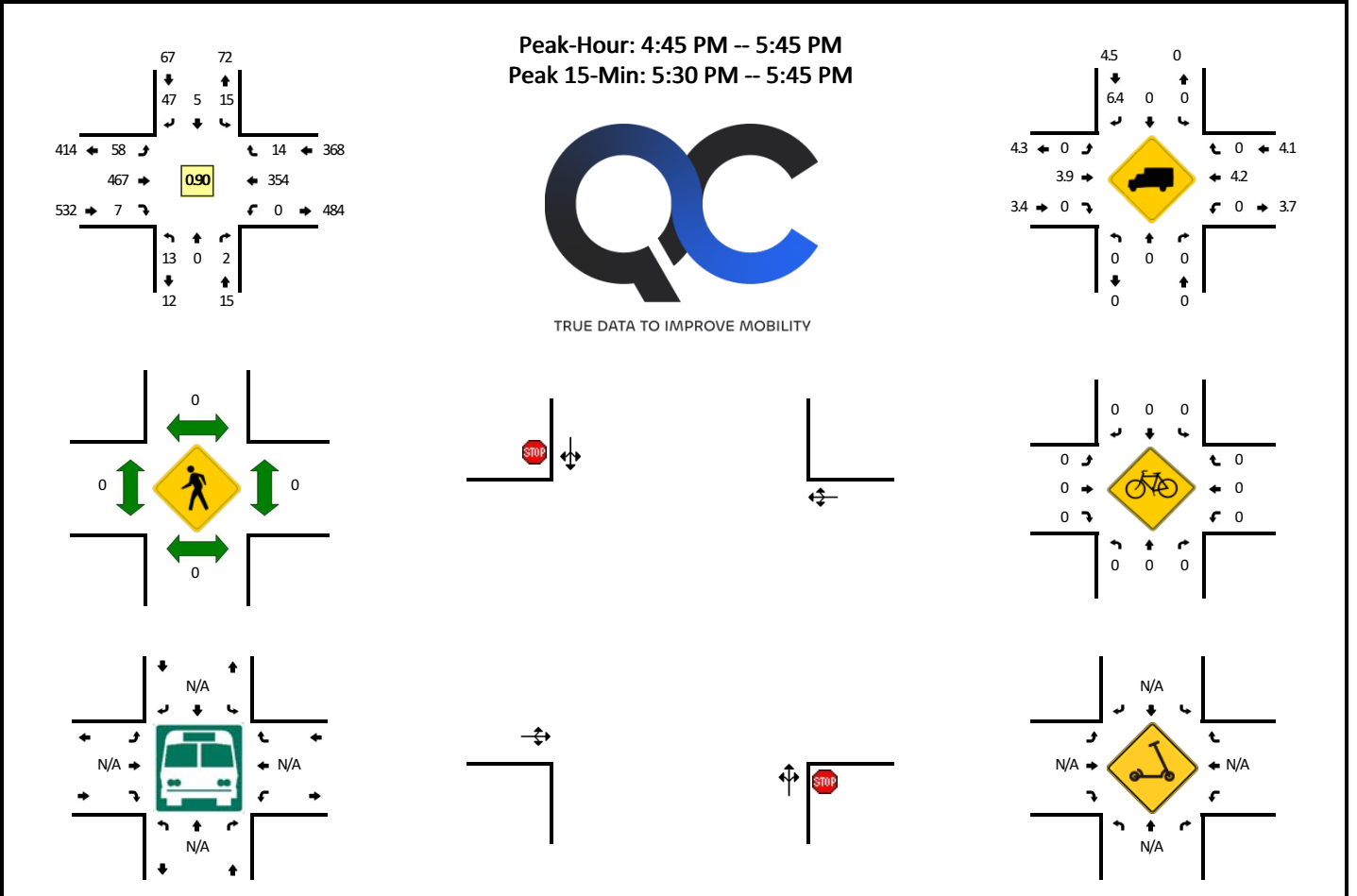


15-Min Count Period Beginning At	1. Rock Hill Church Rd (Northbound)				1. Rock Hill Church Rd (Southbound)				Fairview Rd (NC 218) (Eastbound)				Fairview Rd (NC 218) (Westbound)				Total	Hourly Totals	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U			
7:00 AM	7	0	5	0	0	2	5	0	0	48	6	0	2	139	2	0	216		
7:15 AM	19	1	7	0	4	0	4	0	0	62	9	0	9	118	0	0	233		
7:30 AM	11	1	6	0	0	2	2	0	5	67	5	0	6	125	3	0	233		
7:45 AM	10	0	5	0	0	0	4	0	4	84	4	0	5	99	0	0	215	897	
8:00 AM	13	0	13	0	1	2	1	0	2	57	8	0	2	115	1	0	215	896	
8:15 AM	9	0	2	0	0	0	2	0	0	51	6	0	4	101	0	0	175	838	
8:30 AM	7	1	1	0	0	0	5	0	0	70	4	0	2	99	0	0	189	794	
8:45 AM	8	0	1	0	0	1	4	0	5	50	4	0	0	101	0	0	174	753	
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total		
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U			
All Vehicles	76	4	28	0	16	0	16	0	0	248	36	0	36	472	0	0	932		
Heavy Trucks	8	0	0		0	0	0		0	32	4		4	48	0		96		
Buses																			
Pedestrians		0				0				16				0			16		
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0		
Scoters																			

Comments:

**LOCATION:** 1. Rock Hill Church Rd -- Fairview Rd (NC 218)  
**CITY/STATE:** Union, NC

**QC JOB #:** 16542202  
**DATE:** Wed, Mar 27 2024

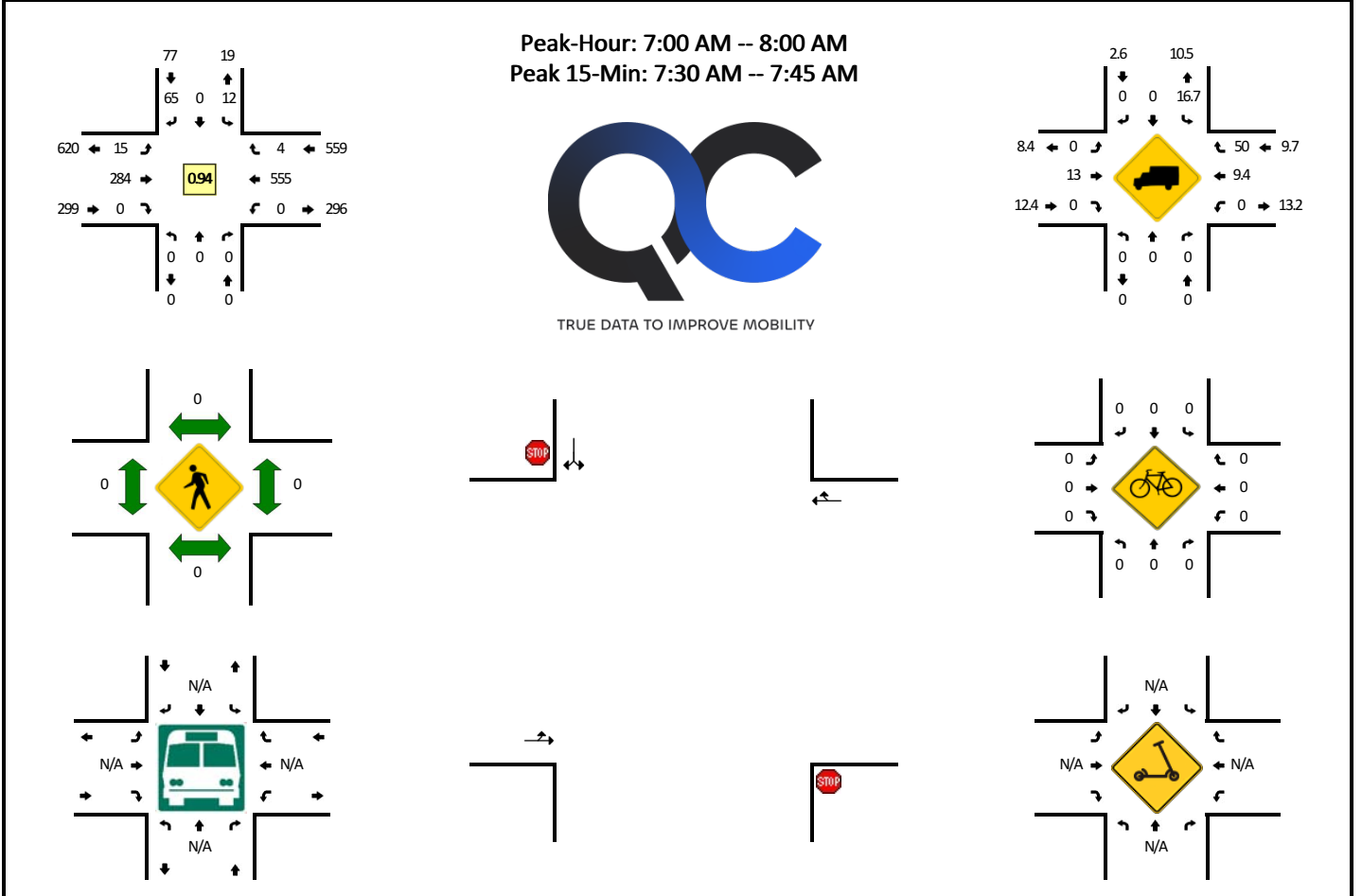


15-Min Count Period Beginning At	1. Rock Hill Church Rd (Northbound)				1. Rock Hill Church Rd (Southbound)				Fairview Rd (NC 218) (Eastbound)				Fairview Rd (NC 218) (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	4	0	1	0	6	0	4	0	9	93	3	0	0	64	11	0	195	
4:15 PM	2	0	0	0	2	2	7	0	11	101	3	0	0	85	2	0	215	
4:30 PM	5	2	0	0	3	0	3	0	11	114	3	0	0	67	3	0	211	
4:45 PM	3	0	0	0	5	2	13	0	16	100	2	0	0	93	4	0	238	859
5:00 PM	3	0	0	0	2	0	10	0	15	111	1	0	0	73	5	0	220	884
5:15 PM	4	0	2	0	6	2	14	0	11	128	1	0	0	80	3	0	251	920
5:30 PM	3	0	0	0	2	1	10	0	16	128	3	0	0	108	2	0	273	982
5:45 PM	2	0	0	0	1	0	8	0	10	104	7	0	2	90	4	0	228	972
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	12	0	0	0	8	4	40	0	64	512	12	0	0	432	8	0	1092	
Heavy Trucks	0	0	0	0	0	0	0	0	0	12	0	0	0	16	0	0	28	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scooters																		

Comments:

**LOCATION:** 2. Asheley Glen Dr -- Fairview Rd (NC 218)  
**CITY/STATE:** Mint Hill, NC

**QC JOB #:** 16542203  
**DATE:** Wed, Mar 27 2024

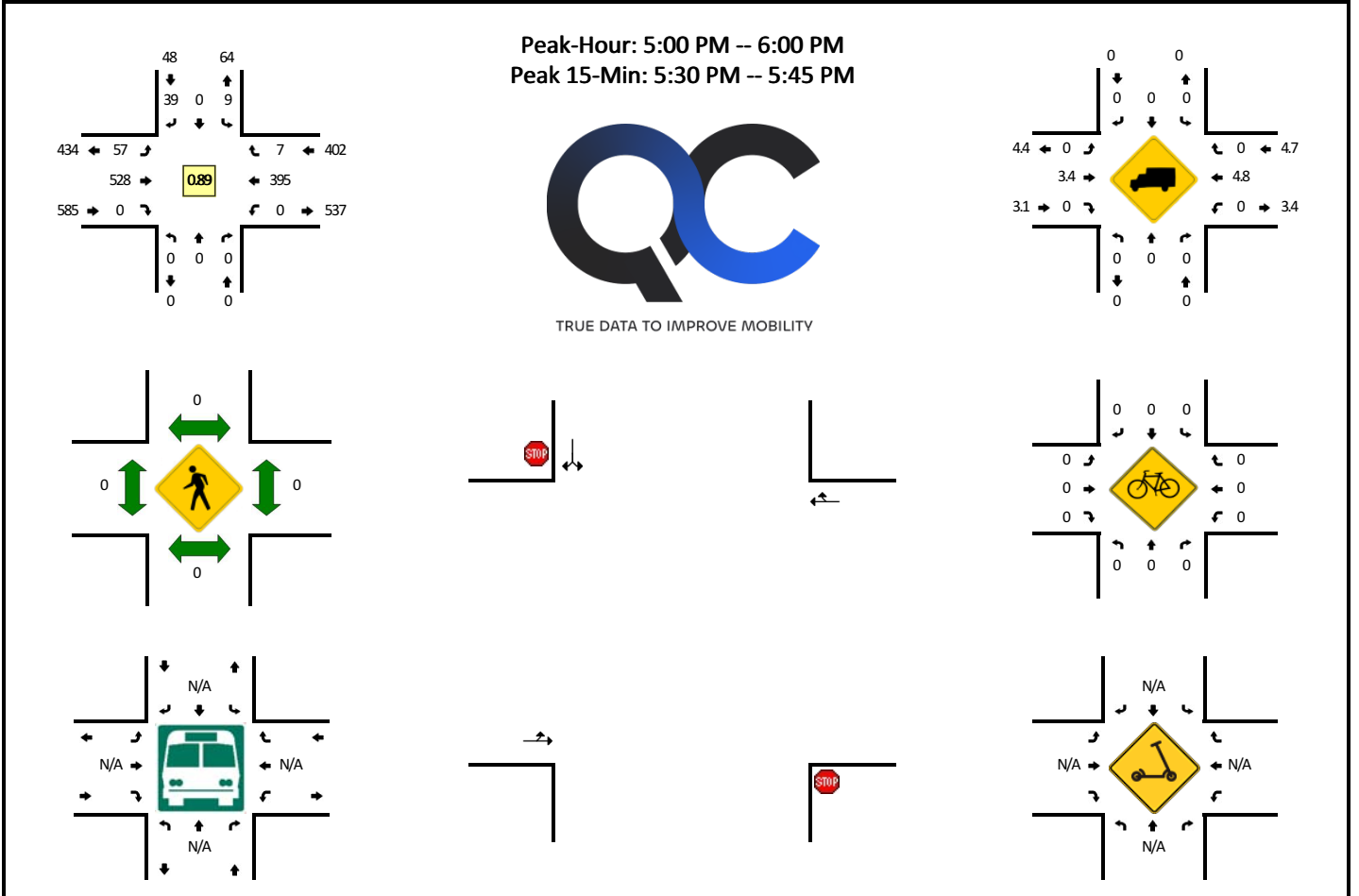


15-Min Count Period Beginning At	2. Asheley Glen Dr (Northbound)				2. Asheley Glen Dr (Southbound)				Fairview Rd (NC 218) (Eastbound)				Fairview Rd (NC 218) (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	2	0	11	0	1	56	0	0	0	159	0	0	229	
7:15 AM	0	0	0	0	3	0	22	0	7	63	0	0	0	147	2	0	244	
7:30 AM	0	0	0	0	4	0	23	0	3	77	0	0	0	141	0	0	248	
7:45 AM	0	0	0	0	3	0	9	0	4	88	0	0	0	108	2	0	214	935
8:00 AM	0	0	0	0	1	0	11	0	1	65	0	0	0	124	1	0	203	909
8:15 AM	0	0	0	0	0	0	11	0	5	52	0	0	0	105	3	0	176	841
8:30 AM	0	0	0	0	3	0	12	0	5	72	0	0	0	118	0	0	210	803
8:45 AM	0	0	0	0	1	0	15	0	10	55	0	0	0	106	1	0	188	777
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	0	0	0	16	0	92	0	12	308	0	0	0	564	0	0	992	
Heavy Trucks	0	0	0	0	0	0	0	0	0	60	0	0	0	76	0	0	136	
Buses																	0	
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																	0	

Comments:

**LOCATION:** 2. Asheley Glen Dr -- Fairview Rd (NC 218)  
**CITY/STATE:** Mint Hill, NC

**QC JOB #:** 16542204  
**DATE:** Wed, Mar 27 2024



15-Min Count Period Beginning At	2. Asheley Glen Dr (Northbound)				2. Asheley Glen Dr (Southbound)				Fairview Rd (NC 218) (Eastbound)				Fairview Rd (NC 218) (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	1	0	9	0	15	99	0	0	0	78	2	0	204	
4:15 PM	0	0	0	0	2	0	6	0	10	117	0	0	0	89	2	0	226	
4:30 PM	0	0	0	0	1	0	8	0	14	126	0	0	0	74	4	0	227	
4:45 PM	0	0	0	0	1	0	5	0	7	113	0	0	0	105	2	0	233	890
5:00 PM	0	0	0	0	3	0	17	0	13	131	0	0	0	86	0	0	250	936
5:15 PM	0	0	0	0	5	0	4	0	17	131	0	0	0	94	4	0	255	965
5:30 PM	0	0	0	0	1	0	10	0	17	142	0	0	0	120	1	0	291	1029
5:45 PM	0	0	0	0	0	0	8	0	10	124	0	0	0	95	2	0	239	1035
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	0	0	0	4	0	40	0	68	568	0	0	0	480	4	0	1164	
Heavy Trucks	0	0	0	0	0	0	0	0	0	12	0	0	0	16	0	0	28	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																		

Comments:

# Intersection Volume Development



**INTERSECTION VOLUME DEVELOPMENT**

**Mill Grove Road and Fairview Road (NC 218)  
AM PEAK HOUR**

Description	Mill Grove Road <u>Northbound</u>				Mill Grove Road <u>Southbound</u>				Fairview Road (NC 218) <u>Eastbound</u>				Fairview Road (NC 218) <u>Westbound</u>			
	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn
Observed Volumes	22	25	12	0	20	77	18	0	2	296	18	0	17	448	16	0
Growth Factor	1.010	1.010	1.010	1.010	1.010	1.010	1.010	1.010	1.010	1.010	1.010	1.010	1.010	1.010	1.010	1.010
2023 Existing + Growth Balanced Volumes	22	25	12	0	20	78	18	0	2	299	18	0	17	452	16	0
2024 Existing Traffic	22	25	12	0	20	78	18	0	2	299	18	0	17	452	16	0
2024 Existing PHF	0.79	0.52	0.75	0.90	0.83	0.96	0.50	0.90	0.50	0.87	0.64	0.90	0.71	0.89	0.57	0.90
Future PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
2024 Existing Heavy Vehicle %	18%	12%	2%	2%	10%	6%	6%	2%	2%	7%	6%	2%	18%	10%	6%	2%
2033 Background Heavy Vehicle %	18%	12%	2%	2%	10%	6%	6%	2%	2%	7%	6%	2%	18%	10%	6%	2%
2033 Build Heavy Vehicle %	18%	11%	2%	2%	10%	6%	6%	2%	2%	7%	6%	2%	14%	10%	6%	2%
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
2033 Background Traffic	24	27	13	0	22	85	20	0	2	327	20	0	19	494	17	0
Percent Inbound Assignment	0%	0%	0%	0%	0%	5%	0%	0%	0%	0%	0%	0%	10%	0%	0%	0%
Percent Outbound Assignment	25%	3%	2%	0%	0%	0%	0%	0%	2%	8%	5%	10%	0%	0%	0%	0%
Project Trips	30	4	2	0	0	3	0	0	2	9	6	12	6	0	0	0
Project Trips (Total)	29	4	2	0	0	3	0	0	2	10	6	12	6	0	0	0
<b>2033 Buildout Total</b>	53	31	15	0	22	88	20	0	4	337	26	12	25	494	17	0

**PM PEAK HOUR**

Description	Mill Grove Road <u>Northbound</u>				Mill Grove Road <u>Southbound</u>				Fairview Road (NC 218) <u>Eastbound</u>				Fairview Road (NC 218) <u>Westbound</u>			
	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn
Observed Volumes	11	45	8	0	24	48	15	0	23	525	21	0	8	361	38	0
Growth Factor	1.010	1.010	1.010	1.010	1.010	1.010	1.010	1.010	1.010	1.010	1.010	1.010	1.010	1.010	1.010	1.010
2023 Existing + Growth Balanced Volumes	11	45	8	0	24	48	15	0	23	530	21	0	8	365	38	0
2024 Existing Traffic	11	45	8	0	24	48	15	0	23	530	21	0	8	365	38	0
2024 Existing PHF	0.69	0.75	0.40	0.90	0.67	0.86	0.75	0.90	0.72	0.92	0.58	0.90	0.50	0.89	0.59	0.90
Future PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
2024 Existing Heavy Vehicle %	2%	4%	2%	2%	4%	4%	2%	2%	9%	5%	14%	2%	2%	4%	3%	2%
2033 Background Heavy Vehicle %	2%	4%	2%	2%	4%	4%	2%	2%	9%	5%	14%	2%	2%	4%	3%	2%
2033 Build Heavy Vehicle %	2%	4%	2%	2%	4%	4%	2%	2%	9%	5%	12%	2%	2%	4%	3%	2%
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
2033 Background Traffic	12	49	9	0	26	52	16	0	25	580	23	0	9	399	42	0
Percent Inbound Assignment	0%	0%	0%	0%	0%	5%	0%	0%	0%	0%	0%	0%	10%	0%	0%	0%
Percent Outbound Assignment	25%	3%	2%	0%	0%	0%	0%	0%	2%	8%	5%	10%	0%	0%	0%	0%
Project Trips	21	2	2	0	0	6	0	0	2	7	4	8	13	0	0	0
Project Trips (Total)	21	2	2	0	0	6	0	0	2	6	4	8	13	0	0	0
<b>2033 Buildout Total</b>	33	51	11	0	26	58	16	0	27	586	27	8	22	399	42	0

**INTERSECTION VOLUME DEVELOPMENT**

**Mill Grove Road and Lawyers Road  
AM PEAK HOUR**

Description	Mill Grove Road <u>Northbound</u>				Mill Grove Road <u>Southbound</u>				Lawyers Road <u>Eastbound</u>				Lawyers Road <u>Westbound</u>			
	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn
Observed Volumes	78	56	88	0	43	114	62	0	40	545	97	0	51	617	11	0
Growth Factor	1.010	1.010	1.010	1.010	1.010	1.010	1.010	1.010	1.010	1.010	1.010	1.010	1.010	1.010	1.010	1.010
2023 Existing + Growth Balanced Volumes	79	57	89	0	43	115	63	0	40	550	98	0	52	623	11	0
2024 Existing Traffic	79	57	89	0	43	115	63	0	40	550	98	0	52	623	11	0
2024 Existing PHF	0.70	0.78	0.58	0.90	0.77	0.86	0.60	0.90	0.71	0.75	0.81	0.90	0.61	0.86	0.92	0.90
Future PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
2024 Existing Heavy Vehicle %	6%	5%	7%	2%	12%	9%	19%	2%	8%	4%	6%	2%	12%	8%	9%	2%
2033 Background Heavy Vehicle %	6%	5%	7%	2%	12%	9%	19%	2%	8%	4%	6%	2%	12%	8%	9%	2%
2033 Build Heavy Vehicle %	6%	5%	7%	2%	10%	9%	13%	2%	8%	4%	6%	2%	12%	8%	9%	2%
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
2033 Background Traffic	86	62	97	0	47	126	69	0	44	602	107	0	57	681	12	0
Percent Inbound Assignment	0%	5%	0%	0%	0%	0%	0%	0%	35%	0%	0%	0%	0%	0%	10%	0%
Percent Outbound Assignment	0%	0%	0%	0%	10%	5%	35%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Project Trips	0	3	0	0	12	6	41	0	20	0	0	0	0	0	6	0
Project Trips (Total)	0	3	0	0	12	6	41	0	20	0	0	0	0	0	6	0
<b>2033 Buildout Total</b>	86	65	97	0	59	132	110	0	64	602	107	0	57	681	18	0

**PM PEAK HOUR**

Description	Mill Grove Road <u>Northbound</u>				Mill Grove Road <u>Southbound</u>				Lawyers Road <u>Eastbound</u>				Lawyers Road <u>Westbound</u>			
	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn
Observed Volumes	79	75	59	0	26	60	48	0	35	574	113	0	26	473	18	0
Growth Factor	1.010	1.010	1.010	1.010	1.010	1.010	1.010	1.010	1.010	1.010	1.010	1.010	1.010	1.010	1.010	1.010
2023 Existing + Growth Balanced Volumes	80	76	60	0	26	61	48	0	35	580	114	0	26	478	18	0
2024 Existing Traffic	80	76	60	0	26	61	48	0	35	580	114	0	26	478	18	0
2024 Existing PHF	0.90	0.82	0.82	0.90	0.65	0.88	0.80	0.90	0.67	0.89	0.71	0.90	0.72	0.83	0.50	0.90
Future PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
2024 Existing Heavy Vehicle %	2%	2%	2%	2%	4%	5%	2%	2%	3%	5%	2%	2%	8%	3%	11%	2%
2033 Background Heavy Vehicle %	2%	2%	2%	2%	4%	5%	2%	2%	3%	5%	2%	2%	8%	3%	11%	2%
2033 Build Heavy Vehicle %	2%	2%	2%	2%	4%	5%	2%	2%	3%	5%	2%	2%	8%	3%	7%	2%
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
2033 Background Traffic	87	83	66	0	28	67	52	0	38	634	125	0	28	523	20	0
Percent Inbound Assignment	0%	5%	0%	0%	0%	0%	0%	0%	35%	0%	0%	0%	0%	0%	10%	0%
Percent Outbound Assignment	0%	0%	0%	0%	10%	5%	35%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Project Trips	0	6	0	0	8	4	29	0	44	0	0	0	0	0	13	0
Project Trips (Total)	0	6	0	0	8	4	29	0	44	0	0	0	0	0	14	0
<b>2033 Buildout Total</b>	87	89	66	0	36	71	81	0	82	634	125	0	28	523	34	0

**INTERSECTION VOLUME DEVELOPMENT**

**Rock Hill Church Road/Ashe Meadow Drive and Fairview Road (NC 218)  
AM PEAK HOUR**

Description	Rock Hill Church Road				Ashe Meadow Drive				Fairview Road (NC 218)				Fairview Road (NC 218)			
	<b>Northbound</b>				<b>Southbound</b>				<b>Eastbound</b>				<b>Westbound</b>			
	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn
Observed Volumes	47	2	23	0	4	4	15	0	9	261	24	0	22	481	5	0
Balanced Volumes	2	0	0	0	0	0	0	0	0	2	0	0	0	14	0	0
2024 Existing Traffic	49	2	23	0	4	4	15	0	9	263	24	0	22	495	5	0
2024 Existing PHF	0.62	0.50	0.82	0.90	0.25	0.50	0.75	0.90	0.45	0.78	0.67	0.90	0.61	0.87	0.42	0.90
Future PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
2024 Existing Heavy Vehicle %	4%	2%	4%	2%	2%	2%	2%	2%	11%	12%	8%	2%	5%	11%	2%	2%
2033 Background Heavy Vehicle %	4%	2%	4%	2%	2%	2%	2%	2%	11%	12%	8%	2%	5%	11%	2%	2%
2033 Build Heavy Vehicle %	4%	2%	4%	2%	2%	2%	2%	2%	11%	11%	8%	2%	5%	10%	2%	2%
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
2033 Background Traffic	54	2	25	0	4	4	16	0	10	288	26	0	24	541	5	0
Percent Inbound Assignment	0%	0%	0%	0%	0%	0%	0%	0%	0%	35%	0%	0%	0%	0%	0%	0%
Percent Outbound Assignment	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	35%	0%	0%
Project Trips	0	0	0	0	0	0	0	0	0	20	0	0	0	41	0	0
Project Trips (Total)	0	0	0	0	0	0	0	0	0	20	0	0	0	41	0	0
<b>2033 Buildout Total</b>	54	2	25	0	4	4	16	0	10	308	26	0	24	582	5	0

**PM PEAK HOUR**

Description	Rock Hill Church Road				Ashe Meadow Drive				Fairview Road (NC 218)				Fairview Road (NC 218)			
	<b>Northbound</b>				<b>Southbound</b>				<b>Eastbound</b>				<b>Westbound</b>			
	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn
Observed Volumes	13	0	2	0	15	5	47	0	58	467	7	0	0	354	14	0
Balanced Volumes	0	0	0	0	0	0	0	0	1	4	0	0	0	0	0	0
2024 Existing Traffic	13	0	2	0	15	5	47	0	59	471	7	0	0	354	14	0
2024 Existing PHF	0.81	0.90	0.25	0.90	0.63	0.63	0.84	0.90	0.91	0.91	0.58	0.90	0.90	0.82	0.70	0.90
Future PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
2024 Existing Heavy Vehicle %	2%	2%	2%	2%	2%	2%	6%	2%	2%	4%	2%	2%	2%	4%	2%	2%
2033 Background Heavy Vehicle %	2%	2%	2%	2%	2%	2%	6%	2%	2%	4%	2%	2%	2%	4%	2%	2%
2033 Build Heavy Vehicle %	2%	2%	2%	2%	2%	2%	6%	2%	2%	4%	2%	2%	2%	4%	2%	2%
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
2033 Background Traffic	14	0	2	0	16	5	51	0	65	515	8	0	0	387	15	0
Percent Inbound Assignment	0%	0%	0%	0%	0%	0%	0%	0%	0%	35%	0%	0%	0%	0%	0%	0%
Percent Outbound Assignment	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	35%	0%	0%
Project Trips	0	0	0	0	0	0	0	0	0	44	0	0	0	29	0	0
Project Trips (Total)	0	0	0	0	0	0	0	0	0	44	0	0	0	29	0	0
<b>2033 Buildout Total</b>	14	0	2	0	16	5	51	0	65	559	8	0	0	416	15	0

**INTERSECTION VOLUME DEVELOPMENT**

**Asheley Glen Drive and Fairview Road (NC 218)  
AM PEAK HOUR**

Description	-				Asheley Glen Drive				Fairview Road (NC 218)				Fairview Road (NC 218)			
	Northbound		Southbound		Eastbound		Westbound		Left	Through	Right	U-turn	Left	Through	Right	U-turn
Observed Volumes	0	0	0	0	12	0	65	0	15	284	0	0	0	555	4	0
Balanced Volumes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024 Existing Traffic	0	0	0	0	12	0	65	0	15	284	0	0	0	555	4	0
2024 Existing PHF	0.90	0.90	0.90	0.90	0.75	0.90	0.71	0.90	0.54	0.81	0.90	0.90	0.90	0.87	0.50	0.90
Future PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
2024 Existing Heavy Vehicle %	2%	2%	2%	2%	17%	2%	2%	2%	2%	13%	2%	2%	2%	9%	50%	2%
2033 Background Heavy Vehicle %	2%	2%	2%	2%	17%	2%	2%	2%	2%	13%	2%	2%	2%	9%	50%	2%
2033 Build Heavy Vehicle %	2%	2%	2%	2%	17%	2%	2%	2%	2%	12%	2%	2%	2%	9%	50%	2%
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
2033 Background Traffic	0	0	0	0	13	0	71	0	16	311	0	0	0	607	4	0
Percent Inbound Assignment	0%	0%	0%	0%	0%	0%	0%	0%	0%	35%	0%	0%	0%	0%	0%	0%
Percent Outbound Assignment	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	35%	0%	0%
Project Trips	0	0	0	0	0	0	0	0	0	20	0	0	0	41	0	0
Project Trips (Total)	0	0	0	0	0	0	0	0	0	20	0	0	0	41	0	0
<b>2033 Buildout Total</b>	0	0	0	0	13	0	71	0	16	331	0	0	0	648	4	0

**PM PEAK HOUR**

Description	-				Asheley Glen Drive				Fairview Road (NC 218)				Fairview Road (NC 218)			
	Northbound		Southbound		Eastbound		Westbound		Left	Through	Right	U-turn	Left	Through	Right	U-turn
Observed Volumes	0	0	0	0	9	0	39	0	57	528	0	0	0	395	7	0
Balanced Volumes	0	0	0	0	0	0	0	0	0	0	0	0	0	12	0	0
2024 Existing Traffic	0	0	0	0	9	0	39	0	57	528	0	0	0	407	7	0
2024 Existing PHF	0.90	0.90	0.90	0.90	0.45	0.90	0.57	0.90	0.84	0.93	0.90	0.90	0.90	0.82	0.44	0.90
Future PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
2024 Existing Heavy Vehicle %	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%	2%	2%	5%	2%	2%
2033 Background Heavy Vehicle %	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%	2%	2%	5%	2%	2%
2033 Build Heavy Vehicle %	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%	2%	2%	5%	2%	2%
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
2033 Background Traffic	0	0	0	0	10	0	43	0	62	577	0	0	0	445	8	0
Percent Inbound Assignment	0%	0%	0%	0%	0%	0%	0%	0%	0%	35%	0%	0%	0%	0%	0%	0%
Percent Outbound Assignment	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	35%	0%	0%
Project Trips	0	0	0	0	0	0	0	0	0	44	0	0	0	29	0	0
Project Trips (Total)	0	0	0	0	0	0	0	0	0	44	0	0	0	29	0	0
<b>2033 Buildout Total</b>	0	0	0	0	10	0	43	0	62	621	0	0	0	474	8	0

**INTERSECTION VOLUME DEVELOPMENT**

**Access 1 and Fairview Road (NC 218)  
AM PEAK HOUR**

Description	Access 1 Northbound				- Southbound				Fairview Road (NC 218) Eastbound				Fairview Road (NC 218) Westbound			
	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn
2024 Existing Traffic	0	0	0	0	0	0	0	0	0	319	0	0	0	492	0	0
2024 Existing PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.85	0.90	0.90	0.90	0.87	0.90	0.90
Future PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
2024 Existing Heavy Vehicle %	2%	2%	2%	2%	2%	2%	2%	2%	2%	7%	2%	2%	2%	10%	2%	2%
2033 Background Heavy Vehicle %	2%	2%	2%	2%	2%	2%	2%	2%	2%	7%	2%	2%	2%	10%	2%	2%
2033 Build Heavy Vehicle %	2%	2%	2%	2%	2%	2%	2%	2%	2%	7%	2%	2%	2%	9%	2%	2%
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
2033 Background Traffic	0	0	0	0	0	0	0	0	0	349	0	0	0	538	0	0
Percent Inbound Assignment	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	35%	0%	0%	0%	0%	0%
Percent Outbound Assignment	0%	0%	25%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	35%	0%	0%
Project Trips	0	0	30	0	0	0	0	0	0	0	20	0	0	41	0	0
Project Trips (Total)	0	0	30	0	0	0	0	0	0	0	20	0	0	41	0	0
<b>2033 Buildout Total</b>	<b>0</b>	<b>0</b>	<b>30</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>349</b>	<b>20</b>	<b>0</b>	<b>0</b>	<b>579</b>	<b>0</b>	<b>0</b>

**PM PEAK HOUR**

Description	Access 1 Northbound				- Southbound				Fairview Road (NC 218) Eastbound				Fairview Road (NC 218) Westbound			
	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn
2024 Existing Traffic	0	0	0	0	0	0	0	0	0	574	0	0	0	391	0	0
2024 Existing PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.88	0.90	0.90
Future PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
2024 Existing Heavy Vehicle %	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	2%	2%	2%	4%	2%	2%
2033 Background Heavy Vehicle %	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	2%	2%	2%	4%	2%	2%
2033 Build Heavy Vehicle %	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	2%	2%	2%	4%	2%	2%
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
2033 Background Traffic	0	0	0	0	0	0	0	0	0	628	0	0	0	428	0	0
Percent Inbound Assignment	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	35%	0%	0%	0%	0%	0%
Percent Outbound Assignment	0%	0%	25%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	35%	0%	0%
Project Trips	0	0	21	0	0	0	0	0	0	0	44	0	0	29	0	0
Project Trips (Total)	0	0	20	0	0	0	0	0	0	0	44	0	0	29	0	0
<b>2033 Buildout Total</b>	<b>0</b>	<b>0</b>	<b>20</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>628</b>	<b>44</b>	<b>0</b>	<b>0</b>	<b>457</b>	<b>0</b>	<b>0</b>

**INTERSECTION VOLUME DEVELOPMENT**

**Mill Grove Road and Access 2  
AM PEAK HOUR**

Description	Mill Grove Road <b>Northbound</b>				Mill Grove Road <b>Southbound</b>				Access 2 <b>Eastbound</b>				- <b>Westbound</b>			
	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn
2024 Existing Traffic	0	59	0	0	0	113	0	0	0	0	0	0	0	0	0	0
2024 Existing PHF	0.90	0.67	0.90	0.90	0.90	0.87	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Future PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
2024 Existing Heavy Vehicle %	2%	12%	2%	2%	2%	8%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
2033 Background Heavy Vehicle %	2%	12%	2%	2%	2%	8%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
2033 Build Heavy Vehicle %	2%	12%	2%	2%	2%	8%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
2033 Background Traffic	0	65	0	0	0	124	0	0	0	0	0	0	0	0	0	0
Percent Inbound Assignment	50%	0%	0%	0%	0%	0%	15%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Percent Outbound Assignment	0%	0%	0%	0%	0%	5%	0%	0%	30%	0%	45%	0%	0%	0%	0%	0%
Project Trips	29	0	0	0	0	6	9	0	35	0	53	0	0	0	0	0
Project Trips (Total)	29	0	0	0	0	6	9	0	35	0	53	0	0	0	0	0
<b>2033 Buildout Total</b>	29	65	0	0	0	130	9	0	35	0	53	0	0	0	0	0

**PM PEAK HOUR**

Description	Mill Grove Road <b>Northbound</b>				Mill Grove Road <b>Southbound</b>				Access 2 <b>Eastbound</b>				- <b>Westbound</b>			
	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn
2024 Existing Traffic	0	64	0	0	0	77	0	0	0	0	0	0	0	0	0	0
2024 Existing PHF	0.90	0.70	0.90	0.90	0.90	0.75	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Future PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
2024 Existing Heavy Vehicle %	2%	3%	2%	2%	2%	7%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
2033 Background Heavy Vehicle %	2%	3%	2%	2%	2%	7%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
2033 Build Heavy Vehicle %	2%	3%	2%	2%	2%	7%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
2033 Background Traffic	0	70	0	0	0	84	0	0	0	0	0	0	0	0	0	0
Percent Inbound Assignment	50%	0%	0%	0%	0%	0%	15%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Percent Outbound Assignment	0%	0%	0%	0%	0%	5%	0%	0%	30%	0%	45%	0%	0%	0%	0%	0%
Project Trips	64	0	0	0	0	4	19	0	25	0	37	0	0	0	0	0
Project Trips (Total)	64	0	0	0	0	4	19	0	25	0	37	0	0	0	0	0
<b>2033 Buildout Total</b>	64	70	0	0	0	88	19	0	25	0	37	0	0	0	0	0

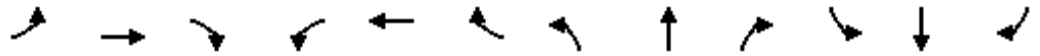
# Intersection Capacity Analysis



2024 Existing Conditions



Lanes, Volumes, Timings  
 1: Mill Grove Road & Fairview Road (NC 218)



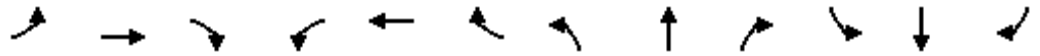
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	4	299	18	17	452	16	22	25	12	20	78	18
Future Volume (vph)	4	299	18	17	452	16	22	25	12	20	78	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.990			0.993			0.977			0.966	
Flt Protected		0.999			0.998			0.985			0.992	
Satd. Flow (prot)	0	1759	0	0	1710	0	0	1631	0	0	1707	0
Flt Permitted		0.999			0.998			0.985			0.992	
Satd. Flow (perm)	0	1759	0	0	1710	0	0	1631	0	0	1707	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		1044			1592			1049			1186	
Travel Time (s)		12.9			19.7			13.0			14.7	
Peak Hour Factor	0.50	0.87	0.64	0.71	0.89	0.57	0.79	0.52	0.75	0.83	0.96	0.50
Heavy Vehicles (%)	2%	7%	6%	18%	10%	6%	18%	12%	2%	10%	6%	6%
Adj. Flow (vph)	8	344	28	24	508	28	28	48	16	24	81	36
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	380	0	0	560	0	0	92	0	0	141	0
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary

Area Type:	Other
Control Type:	Roundabout
Intersection Capacity Utilization	48.5%
ICU Level of Service	A
Analysis Period (min)	15

Intersection				
Intersection Delay, s/veh	7.6			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	380	560	92	141
Demand Flow Rate, veh/h	406	617	103	150
Vehicles Circulating, veh/h	140	95	402	620
Vehicles Exiting, veh/h	630	410	144	92
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	6.6	8.7	5.5	7.6
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	406	617	103	150
Cap Entry Lane, veh/h	1196	1252	916	733
Entry HV Adj Factor	0.936	0.908	0.895	0.941
Flow Entry, veh/h	380	560	92	141
Cap Entry, veh/h	1119	1137	820	690
V/C Ratio	0.339	0.493	0.112	0.205
Control Delay, s/veh	6.6	8.7	5.5	7.6
LOS	A	A	A	A
95th %tile Queue, veh	2	3	0	1

Lanes, Volumes, Timings  
2: Mill Grove Road & Lawyers Road



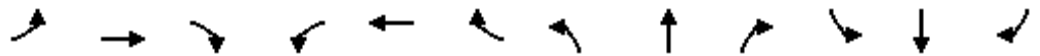
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	40	550	98	52	623	11	79	57	89	43	115	63
Future Volume (vph)	40	550	98	52	623	11	79	57	89	43	115	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. 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
Frt		0.982			0.998			0.939			0.952	
Flt Protected		0.997			0.995			0.984			0.991	
Satd. Flow (prot)	0	1780	0	0	1740	0	0	1653	0	0	1584	0
Flt Permitted		0.997			0.995			0.984			0.991	
Satd. Flow (perm)	0	1780	0	0	1740	0	0	1653	0	0	1584	0
Link Speed (mph)		35			35			45			55	
Link Distance (ft)		1095			1089			1051			3833	
Travel Time (s)		21.3			21.2			15.9			47.5	
Peak Hour Factor	0.71	0.75	0.81	0.61	0.86	0.92	0.70	0.78	0.58	0.77	0.86	0.60
Heavy Vehicles (%)	8%	4%	6%	12%	8%	9%	6%	5%	7%	12%	9%	19%
Adj. Flow (vph)	56	733	121	85	724	12	113	73	153	56	134	105
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	910	0	0	821	0	0	339	0	0	295	0
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary	
Area Type:	Other
Control Type:	Roundabout
Intersection Capacity Utilization	78.9% ICU Level of Service D
Analysis Period (min)	15

Intersection				
Intersection Delay, s/veh	28.7			
Intersection LOS	D			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	910	821	339	295
Demand Flow Rate, veh/h	950	890	361	334
Vehicles Circulating, veh/h	304	257	885	997
Vehicles Exiting, veh/h	1027	989	369	150
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	36.6	23.5	21.7	26.5
Approach LOS	E	C	C	D
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	950	890	361	334
Cap Entry Lane, veh/h	1012	1062	560	499
Entry HV Adj Factor	0.958	0.923	0.940	0.883
Flow Entry, veh/h	910	821	339	295
Cap Entry, veh/h	969	979	526	441
V/C Ratio	0.939	0.838	0.645	0.669
Control Delay, s/veh	36.6	23.5	21.7	26.5
LOS	E	C	C	D
95th %tile Queue, veh	15	10	5	5

Lanes, Volumes, Timings

3: Rock Hill Church Road/Ashe Meadow Drive & Fairview Road (NC 218)



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	263	24	22	495	5	49	4	23	4	4	15
Future Volume (vph)	9	263	24	22	495	5	49	4	23	4	4	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	225		0	225		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	100			100			25			25		
Lane Util. 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
Frt		0.986			0.997			0.967				0.939
Flt Protected	0.950			0.950				0.967				0.982
Satd. Flow (prot)	1626	1678	0	1719	1709	0	0	1711	0	0	1718	0
Flt Permitted	0.950			0.950				0.967				0.982
Satd. Flow (perm)	1626	1678	0	1719	1709	0	0	1711	0	0	1718	0
Link Speed (mph)		45			55			45				25
Link Distance (ft)		1210			2891			1081				1333
Travel Time (s)		18.3			35.8			16.4				36.4
Peak Hour Factor	0.45	0.78	0.67	0.61	0.87	0.42	0.62	0.50	0.82	0.25	0.50	0.75
Heavy Vehicles (%)	11%	12%	8%	5%	11%	2%	4%	2%	4%	2%	2%	2%
Adj. Flow (vph)	20	337	36	36	569	12	79	8	28	16	8	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	20	373	0	36	581	0	0	115	0	0	44	0
Sign Control		Free			Free			Stop				Stop

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	44.0%
Analysis Period (min)	15
	ICU Level of Service A

**Intersection**

Int Delay, s/veh 4.9

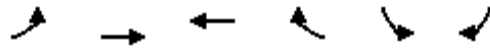
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗			↕			↕	
Traffic Vol, veh/h	9	263	24	22	495	5	49	4	23	4	4	15
Future Vol, veh/h	9	263	24	22	495	5	49	4	23	4	4	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	225	-	-	225	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	45	78	67	61	87	42	62	50	82	25	50	75
Heavy Vehicles, %	11	12	8	5	11	2	4	2	4	2	2	2
Mvmt Flow	20	337	36	36	569	12	79	8	28	16	8	20

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	581	0	0	373
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.21	-	-	4.15
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.299	-	-	2.245
Pot Cap-1 Maneuver	950	-	-	1169
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	950	-	-	1169
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0.5	37.2	21.1
HCM LOS			E	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	223	950	-	-	1169	-	-	267
HCM Lane V/C Ratio	0.516	0.021	-	-	0.031	-	-	0.165
HCM Control Delay (s)	37.2	8.9	-	-	8.2	-	-	21.1
HCM Lane LOS	E	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	2.7	0.1	-	-	0.1	-	-	0.6

Lanes, Volumes, Timings  
 4: Fairview Road (NC 218) & Asheley Glen Drive



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↑	↗	↘	
Traffic Volume (vph)	15	284	555	4	12	65
Future Volume (vph)	15	284	555	4	12	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0			50	0	0
Storage Lanes	0			1	1	0
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850	0.885	
Flt Protected		0.996			0.993	
Satd. Flow (prot)	0	1687	1743	1077	1602	0
Flt Permitted		0.996			0.993	
Satd. Flow (perm)	0	1687	1743	1077	1602	0
Link Speed (mph)		45	45		25	
Link Distance (ft)		1059	1130		1045	
Travel Time (s)		16.0	17.1		28.5	
Peak Hour Factor	0.54	0.81	0.87	0.50	0.75	0.71
Heavy Vehicles (%)	2%	13%	9%	50%	17%	2%
Adj. Flow (vph)	28	351	638	8	16	92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	379	638	8	108	0
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	40.6% ICU Level of Service A
Analysis Period (min)	15

HCM 6th TWSC  
 4: Fairview Road (NC 218) & Asheley Glen Drive

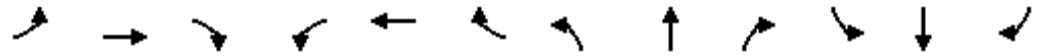
Intersection						
Int Delay, s/veh	1.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↑	↗	↘	
Traffic Vol, veh/h	15	284	555	4	12	65
Future Vol, veh/h	15	284	555	4	12	65
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	50	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	54	81	87	50	75	71
Heavy Vehicles, %	2	13	9	50	17	2
Mvmt Flow	28	351	638	8	16	92

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	646	0	0	1045	638
Stage 1	-	-	-	638	-
Stage 2	-	-	-	407	-
Critical Hdwy	4.12	-	-	6.57	6.22
Critical Hdwy Stg 1	-	-	-	5.57	-
Critical Hdwy Stg 2	-	-	-	5.57	-
Follow-up Hdwy	2.218	-	-	3.653	3.318
Pot Cap-1 Maneuver	939	-	-	237	477
Stage 1	-	-	-	499	-
Stage 2	-	-	-	641	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	939	-	-	228	477
Mov Cap-2 Maneuver	-	-	-	228	-
Stage 1	-	-	-	481	-
Stage 2	-	-	-	641	-

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	16.9
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	939	-	-	-	410
HCM Lane V/C Ratio	0.03	-	-	-	0.262
HCM Control Delay (s)	9	0	-	-	16.9
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	1

Lanes, Volumes, Timings  
 1: Mill Grove Road & Fairview Road (NC 218)

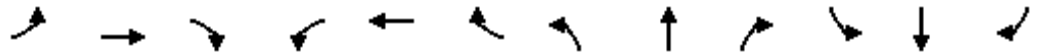


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	23	530	21	8	365	38	11	45	8	24	48	15
Future Volume (vph)	23	530	21	8	365	38	11	45	8	24	48	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992			0.982			0.972			0.976	
Flt Protected		0.998			0.998			0.992			0.984	
Satd. Flow (prot)	0	1780	0	0	1794	0	0	1774	0	0	1761	0
Flt Permitted		0.998			0.998			0.992			0.984	
Satd. Flow (perm)	0	1780	0	0	1794	0	0	1774	0	0	1761	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		1044			1592			1049			1186	
Travel Time (s)		12.9			19.7			13.0			14.7	
Peak Hour Factor	0.72	0.92	0.58	0.50	0.89	0.59	0.69	0.75	0.40	0.67	0.86	0.75
Heavy Vehicles (%)	9%	5%	14%	2%	4%	3%	2%	4%	2%	4%	4%	2%
Adj. Flow (vph)	32	576	36	16	410	64	16	60	20	36	56	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	644	0	0	490	0	0	96	0	0	112	0
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary	
Area Type:	Other
Control Type:	Roundabout
Intersection Capacity Utilization	55.6%
ICU Level of Service	B
Analysis Period (min)	15

Intersection				
Intersection Delay, s/veh	8.2			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	644	490	96	112
Demand Flow Rate, veh/h	681	508	98	115
Vehicles Circulating, veh/h	111	113	677	458
Vehicles Exiting, veh/h	462	662	115	163
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	9.6	7.2	6.9	5.6
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	681	508	98	115
Cap Entry Lane, veh/h	1232	1230	692	865
Entry HV Adj Factor	0.946	0.964	0.976	0.972
Flow Entry, veh/h	644	490	96	112
Cap Entry, veh/h	1166	1185	675	841
V/C Ratio	0.553	0.413	0.142	0.133
Control Delay, s/veh	9.6	7.2	6.9	5.6
LOS	A	A	A	A
95th %tile Queue, veh	4	2	0	0

Lanes, Volumes, Timings  
2: Mill Grove Road & Lawyers Road



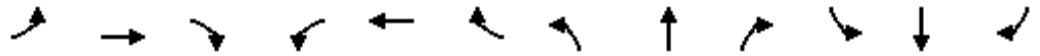
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	35	580	114	26	478	18	80	76	60	26	61	48
Future Volume (vph)	35	580	114	26	478	18	80	76	60	26	61	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. 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
Frt		0.975			0.992			0.961			0.952	
Flt Protected		0.997			0.997			0.983			0.988	
Satd. Flow (prot)	0	1770	0	0	1812	0	0	1760	0	0	1723	0
Flt Permitted		0.997			0.997			0.983			0.988	
Satd. Flow (perm)	0	1770	0	0	1812	0	0	1760	0	0	1723	0
Link Speed (mph)		35			35			45			55	
Link Distance (ft)		1095			1089			1051			3833	
Travel Time (s)		21.3			21.2			15.9			47.5	
Peak Hour Factor	0.67	0.89	0.71	0.72	0.83	0.50	0.90	0.82	0.82	0.65	0.88	0.80
Heavy Vehicles (%)	3%	5%	2%	8%	3%	11%	2%	2%	2%	4%	5%	2%
Adj. Flow (vph)	52	652	161	36	576	36	89	93	73	40	69	60
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	865	0	0	648	0	0	255	0	0	169	0
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary	
Area Type:	Other
Control Type:	Roundabout
Intersection Capacity Utilization	74.9% ICU Level of Service D
Analysis Period (min)	15

Intersection				
Intersection Delay, s/veh	13.8			
Intersection LOS	B			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	865	648	255	169
Demand Flow Rate, veh/h	903	672	260	175
Vehicles Circulating, veh/h	153	240	781	723
Vehicles Exiting, veh/h	745	801	275	189
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	16.5	12.1	12.2	9.0
Approach LOS	C	B	B	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	903	672	260	175
Cap Entry Lane, veh/h	1180	1080	622	660
Entry HV Adj Factor	0.958	0.964	0.981	0.963
Flow Entry, veh/h	865	648	255	169
Cap Entry, veh/h	1131	1041	611	636
V/C Ratio	0.765	0.622	0.418	0.265
Control Delay, s/veh	16.5	12.1	12.2	9.0
LOS	C	B	B	A
95th %tile Queue, veh	8	5	2	1

Lanes, Volumes, Timings

3: Rock Hill Church Road/Ashe Meadow Drive & Fairview Road (NC 218)



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	59	471	7	4	354	14	13	4	4	15	5	47
Future Volume (vph)	59	471	7	4	354	14	13	4	4	15	5	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	225		0	225		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	100			100			25			25		
Lane Util. 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
Frt		0.997			0.993			0.940				0.914
Flt Protected	0.950			0.950				0.978				0.987
Satd. Flow (prot)	1770	1822	0	1770	1816	0	0	1712	0	0	1640	0
Flt Permitted	0.950			0.950				0.978				0.987
Satd. Flow (perm)	1770	1822	0	1770	1816	0	0	1712	0	0	1640	0
Link Speed (mph)		45			55			45				25
Link Distance (ft)		1210			2891			1081				1333
Travel Time (s)		18.3			35.8			16.4				36.4
Peak Hour Factor	0.91	0.91	0.58	0.90	0.82	0.70	0.81	0.90	0.25	0.63	0.63	0.84
Heavy Vehicles (%)	2%	4%	2%	2%	4%	2%	2%	2%	2%	2%	2%	6%
Adj. Flow (vph)	65	518	12	4	432	20	16	4	16	24	8	56
Shared Lane Traffic (%)												
Lane Group Flow (vph)	65	530	0	4	452	0	0	36	0	0	88	0
Sign Control		Free			Free			Stop				Stop

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	42.5%
Analysis Period (min)	15
	ICU Level of Service A

**Intersection**

Int Delay, s/veh 2.8

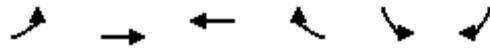
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗			↕			↕	
Traffic Vol, veh/h	59	471	7	4	354	14	13	4	4	15	5	47
Future Vol, veh/h	59	471	7	4	354	14	13	4	4	15	5	47
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	225	-	-	225	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	58	90	82	70	81	90	25	63	63	84
Heavy Vehicles, %	2	4	2	2	4	2	2	2	2	2	2	6
Mvmt Flow	65	518	12	4	432	20	16	4	16	24	8	56

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	452	0	0	530
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.12	-	-	4.12
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.218	-	-	2.218
Pot Cap-1 Maneuver	1109	-	-	1037
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	1109	-	-	1037
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.9	0.1	23.6	20.4
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	230	1109	-	-	1037	-	-	320
HCM Lane V/C Ratio	0.159	0.058	-	-	0.004	-	-	0.274
HCM Control Delay (s)	23.6	8.4	-	-	8.5	-	-	20.4
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.6	0.2	-	-	0	-	-	1.1

Lanes, Volumes, Timings  
 4: Fairview Road (NC 218) & Asheley Glen Drive



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕	↗	↘	↘
Traffic Volume (vph)	57	528	407	7	9	39
Future Volume (vph)	57	528	407	7	9	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0			50	0	0
Storage Lanes	0			1	1	0
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850	0.896	
Flt Protected		0.995			0.989	
Satd. Flow (prot)	0	1837	1810	1583	1651	0
Flt Permitted		0.995			0.989	
Satd. Flow (perm)	0	1837	1810	1583	1651	0
Link Speed (mph)		45	45		25	
Link Distance (ft)		1059	1130		1045	
Travel Time (s)		16.0	17.1		28.5	
Peak Hour Factor	0.84	0.93	0.82	0.44	0.45	0.57
Heavy Vehicles (%)	2%	3%	5%	2%	2%	2%
Adj. Flow (vph)	68	568	496	16	20	68
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	636	496	16	88	0
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	65.7% ICU Level of Service C
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	1.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↑	↗	↘	
Traffic Vol, veh/h	57	528	407	7	9	39
Future Vol, veh/h	57	528	407	7	9	39
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	50	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	93	82	44	45	57
Heavy Vehicles, %	2	3	5	2	2	2
Mvmt Flow	68	568	496	16	20	68

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	512	0	-	0	1200 496
Stage 1	-	-	-	-	496 -
Stage 2	-	-	-	-	704 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1053	-	-	-	204 574
Stage 1	-	-	-	-	612 -
Stage 2	-	-	-	-	490 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1053	-	-	-	185 574
Mov Cap-2 Maneuver	-	-	-	-	185 -
Stage 1	-	-	-	-	554 -
Stage 2	-	-	-	-	490 -

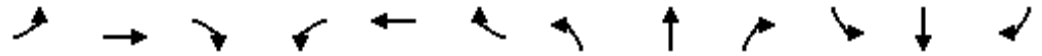
Approach	EB	WB	SB
HCM Control Delay, s	0.9	0	17
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1053	-	-	-	389
HCM Lane V/C Ratio	0.064	-	-	-	0.227
HCM Control Delay (s)	8.7	0	-	-	17
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	0.9

## 2033 Background Conditions



Lanes, Volumes, Timings  
 1: Mill Grove Road & Fairview Road (NC 218)

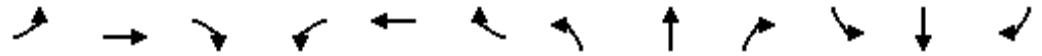


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	4	327	20	19	494	17	24	27	13	22	85	20
Future Volume (vph)	4	327	20	19	494	17	24	27	13	22	85	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992			0.996			0.973			0.979	
Flt Protected		0.999			0.998			0.981			0.992	
Satd. Flow (prot)	0	1762	0	0	1714	0	0	1615	0	0	1730	0
Flt Permitted		0.999			0.998			0.981			0.992	
Satd. Flow (perm)	0	1762	0	0	1714	0	0	1615	0	0	1730	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		1044			1592			1049			1186	
Travel Time (s)		12.9			19.7			13.0			14.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	7%	6%	18%	10%	6%	18%	12%	2%	10%	6%	6%
Adj. Flow (vph)	4	363	22	21	549	19	27	30	14	24	94	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	389	0	0	589	0	0	71	0	0	140	0
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary	
Area Type:	Other
Control Type:	Roundabout
Intersection Capacity Utilization	52.8%
ICU Level of Service	A
Analysis Period (min)	15

Intersection				
Intersection Delay, s/veh	7.8			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	389	589	71	140
Demand Flow Rate, veh/h	415	649	80	149
Vehicles Circulating, veh/h	151	70	418	661
Vehicles Exiting, veh/h	659	428	148	58
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	6.8	8.7	5.4	8.0
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	415	649	80	149
Cap Entry Lane, veh/h	1183	1285	901	703
Entry HV Adj Factor	0.936	0.908	0.892	0.942
Flow Entry, veh/h	389	589	71	140
Cap Entry, veh/h	1108	1166	804	662
V/C Ratio	0.351	0.505	0.089	0.212
Control Delay, s/veh	6.8	8.7	5.4	8.0
LOS	A	A	A	A
95th %tile Queue, veh	2	3	0	1

Lanes, Volumes, Timings  
2: Mill Grove Road & Lawyers Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	44	602	107	57	681	12	86	62	97	47	126	69
Future Volume (vph)	44	602	107	57	681	12	86	62	97	47	126	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. 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
Frt		0.981			0.998			0.947			0.961	
Flt Protected		0.997			0.996			0.983			0.990	
Satd. Flow (prot)	0	1778	0	0	1744	0	0	1666	0	0	1608	0
Flt Permitted		0.997			0.996			0.983			0.990	
Satd. Flow (perm)	0	1778	0	0	1744	0	0	1666	0	0	1608	0
Link Speed (mph)		35			35			45			55	
Link Distance (ft)		1095			1089			1051			3833	
Travel Time (s)		21.3			21.2			15.9			47.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	8%	4%	6%	12%	8%	9%	6%	5%	7%	12%	9%	19%
Adj. Flow (vph)	49	669	119	63	757	13	96	69	108	52	140	77
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	837	0	0	833	0	0	273	0	0	269	0
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary	
Area Type:	Other
Control Type:	Roundabout
Intersection Capacity Utilization	85.5%
ICU Level of Service	E
Analysis Period (min)	15

Intersection				
Intersection Delay, s/veh	21.9			
Intersection LOS	C			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	837	833	273	269
Demand Flow Rate, veh/h	875	903	290	303
Vehicles Circulating, veh/h	282	227	807	991
Vehicles Exiting, veh/h	1012	870	350	139
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	24.0	21.9	14.4	22.6
Approach LOS	C	C	B	C
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	875	903	290	303
Cap Entry Lane, veh/h	1035	1095	606	502
Entry HV Adj Factor	0.957	0.923	0.940	0.889
Flow Entry, veh/h	837	833	273	269
Cap Entry, veh/h	990	1010	569	446
V/C Ratio	0.845	0.825	0.479	0.603
Control Delay, s/veh	24.0	21.9	14.4	22.6
LOS	C	C	B	C
95th %tile Queue, veh	11	10	3	4

Lanes, Volumes, Timings

3: Rock Hill Church Road/Ashe Meadow Drive & Fairview Road (NC 218)



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	288	26	24	541	5	54	4	25	4	4	16
Future Volume (vph)	10	288	26	24	541	5	54	4	25	4	4	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	225		0	225		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	100			100			25			25		
Lane Util. 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
Frt		0.988			0.999			0.959				0.907
Flt Protected	0.950			0.950				0.968				0.992
Satd. Flow (prot)	1626	1681	0	1719	1711	0	0	1697	0	0	1676	0
Flt Permitted	0.950			0.950				0.968				0.992
Satd. Flow (perm)	1626	1681	0	1719	1711	0	0	1697	0	0	1676	0
Link Speed (mph)		45			55			45				25
Link Distance (ft)		1210			2891			1081				1333
Travel Time (s)		18.3			35.8			16.4				36.4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	11%	12%	8%	5%	11%	2%	4%	2%	4%	2%	2%	2%
Adj. Flow (vph)	11	320	29	27	601	6	60	4	28	4	4	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	11	349	0	27	607	0	0	92	0	0	26	0
Sign Control		Free			Free			Stop				Stop

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	46.8%
Analysis Period (min)	15
	ICU Level of Service A

**Intersection**

Int Delay, s/veh 2.9

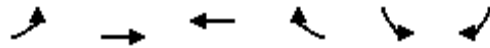
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗			↕			↕	
Traffic Vol, veh/h	10	288	26	24	541	5	54	4	25	4	4	16
Future Vol, veh/h	10	288	26	24	541	5	54	4	25	4	4	16
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	225	-	-	225	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	11	12	8	5	11	2	4	2	4	2	2	2
Mvmt Flow	11	320	29	27	601	6	60	4	28	4	4	18

Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	607	0	0	349	0	0	1026	1018	335	1031	1029	604
Stage 1	-	-	-	-	-	-	357	357	-	658	658	-
Stage 2	-	-	-	-	-	-	669	661	-	373	371	-
Critical Hdwy	4.21	-	-	4.15	-	-	7.14	6.52	6.24	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.14	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.14	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.299	-	-	2.245	-	-	3.536	4.018	3.336	3.518	4.018	3.318
Pot Cap-1 Maneuver	929	-	-	1193	-	-	211	237	702	211	234	498
Stage 1	-	-	-	-	-	-	657	628	-	453	461	-
Stage 2	-	-	-	-	-	-	444	460	-	648	620	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	929	-	-	1193	-	-	195	229	702	195	226	498
Mov Cap-2 Maneuver	-	-	-	-	-	-	195	229	-	195	226	-
Stage 1	-	-	-	-	-	-	649	620	-	448	450	-
Stage 2	-	-	-	-	-	-	414	449	-	611	613	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.3	27.3	16.5
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	252	929	-	-	1193	-	-	341
HCM Lane V/C Ratio	0.366	0.012	-	-	0.022	-	-	0.078
HCM Control Delay (s)	27.3	8.9	-	-	8.1	-	-	16.5
HCM Lane LOS	D	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	1.6	0	-	-	0.1	-	-	0.3

Lanes, Volumes, Timings  
 4: Fairview Road (NC 218) & Asheley Glen Drive



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↑	↗	↘	
Traffic Volume (vph)	16	311	607	4	13	71
Future Volume (vph)	16	311	607	4	13	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0			50	0	0
Storage Lanes	0			1	1	0
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850	0.885	
Flt Protected		0.998			0.993	
Satd. Flow (prot)	0	1686	1743	1077	1602	0
Flt Permitted		0.998			0.993	
Satd. Flow (perm)	0	1686	1743	1077	1602	0
Link Speed (mph)		45	45		25	
Link Distance (ft)		1059	1130		1045	
Travel Time (s)		16.0	17.1		28.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	13%	9%	50%	17%	2%
Adj. Flow (vph)	18	346	674	4	14	79
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	364	674	4	93	0
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	43.7% ICU Level of Service A
Analysis Period (min)	15

**Intersection**

Int Delay, s/veh 1.5

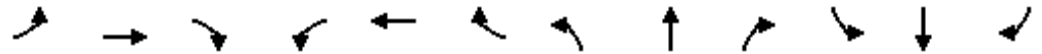
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↑	↗	↘	
Traffic Vol, veh/h	16	311	607	4	13	71
Future Vol, veh/h	16	311	607	4	13	71
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	50	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	13	9	50	17	2
Mvmt Flow	18	346	674	4	14	79

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	678	0	0 1056 674
Stage 1	-	-	- 674 -
Stage 2	-	-	- 382 -
Critical Hdwy	4.12	-	- 6.57 6.22
Critical Hdwy Stg 1	-	-	- 5.57 -
Critical Hdwy Stg 2	-	-	- 5.57 -
Follow-up Hdwy	2.218	-	- 3.653 3.318
Pot Cap-1 Maneuver	914	-	- 234 455
Stage 1	-	-	- 480 -
Stage 2	-	-	- 658 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	914	-	- 228 455
Mov Cap-2 Maneuver	-	-	- 228 -
Stage 1	-	-	- 468 -
Stage 2	-	-	- 658 -

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	17
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	914	-	-	-	394
HCM Lane V/C Ratio	0.019	-	-	-	0.237
HCM Control Delay (s)	9	0	-	-	17
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.9

Lanes, Volumes, Timings  
 1: Mill Grove Road & Fairview Road (NC 218)



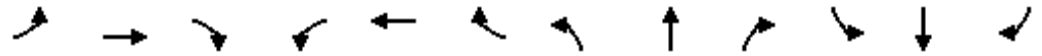
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	25	580	23	9	399	42	12	49	9	26	52	16
Future Volume (vph)	25	580	23	9	399	42	12	49	9	26	52	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.995			0.987			0.982			0.977	
Flt Protected		0.998			0.999			0.992			0.986	
Satd. Flow (prot)	0	1788	0	0	1804	0	0	1790	0	0	1766	0
Flt Permitted		0.998			0.999			0.992			0.986	
Satd. Flow (perm)	0	1788	0	0	1804	0	0	1790	0	0	1766	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		1044			1592			1049			1186	
Travel Time (s)		12.9			19.7			13.0			14.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	9%	5%	14%	2%	4%	3%	2%	4%	2%	4%	4%	2%
Adj. Flow (vph)	28	644	26	10	443	47	13	54	10	29	58	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	698	0	0	500	0	0	77	0	0	105	0
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary

Area Type:	Other
Control Type:	Roundabout
Intersection Capacity Utilization	59.9%
ICU Level of Service	B
Analysis Period (min)	15

Intersection				
Intersection Delay, s/veh	8.7			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	698	500	77	105
Demand Flow Rate, veh/h	737	519	79	108
Vehicles Circulating, veh/h	100	100	737	484
Vehicles Exiting, veh/h	492	716	100	135
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	10.3	7.2	7.1	5.7
Approach LOS	B	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	737	519	79	108
Cap Entry Lane, veh/h	1246	1246	651	842
Entry HV Adj Factor	0.947	0.964	0.973	0.969
Flow Entry, veh/h	698	500	77	105
Cap Entry, veh/h	1180	1201	633	816
V/C Ratio	0.591	0.417	0.121	0.128
Control Delay, s/veh	10.3	7.2	7.1	5.7
LOS	B	A	A	A
95th %tile Queue, veh	4	2	0	0

Lanes, Volumes, Timings  
2: Mill Grove Road & Lawyers Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	38	634	125	28	523	20	87	83	66	28	67	52
Future Volume (vph)	38	634	125	28	523	20	87	83	66	28	67	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. 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
Frt		0.979			0.995			0.962			0.952	
Flt Protected		0.998			0.998			0.982			0.991	
Satd. Flow (prot)	0	1778	0	0	1823	0	0	1760	0	0	1728	0
Flt Permitted		0.998			0.998			0.982			0.991	
Satd. Flow (perm)	0	1778	0	0	1823	0	0	1760	0	0	1728	0
Link Speed (mph)		35			35			45			55	
Link Distance (ft)		1095			1089			1051			3833	
Travel Time (s)		21.3			21.2			15.9			47.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	5%	2%	8%	3%	11%	2%	2%	2%	4%	5%	2%
Adj. Flow (vph)	42	704	139	31	581	22	97	92	73	31	74	58
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	885	0	0	634	0	0	262	0	0	163	0
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary

Area Type:	Other
Control Type:	Roundabout
Intersection Capacity Utilization	80.7%
ICU Level of Service	D
Analysis Period (min)	15

Intersection				
Intersection Delay, s/veh	14.0			
Intersection LOS	B			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	885	634	262	163
Demand Flow Rate, veh/h	924	655	267	169
Vehicles Circulating, veh/h	143	236	814	730
Vehicles Exiting, veh/h	756	845	253	161
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	16.9	11.5	13.1	8.9
Approach LOS	C	B	B	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	924	655	267	169
Cap Entry Lane, veh/h	1193	1085	602	655
Entry HV Adj Factor	0.958	0.967	0.982	0.966
Flow Entry, veh/h	885	634	262	163
Cap Entry, veh/h	1142	1049	591	633
V/C Ratio	0.775	0.604	0.444	0.258
Control Delay, s/veh	16.9	11.5	13.1	8.9
LOS	C	B	B	A
95th %tile Queue, veh	8	4	2	1



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	515	8	4	387	15	14	4	4	16	5	51
Future Volume (vph)	65	515	8	4	387	15	14	4	4	16	5	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	225		0	225		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	100			100			25			25		
Lane Util. 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
Frt		0.998			0.994			0.977			0.905	
Flt Protected	0.950			0.950				0.968			0.989	
Satd. Flow (prot)	1770	1824	0	1770	1817	0	0	1762	0	0	1622	0
Flt Permitted	0.950			0.950				0.968			0.989	
Satd. Flow (perm)	1770	1824	0	1770	1817	0	0	1762	0	0	1622	0
Link Speed (mph)		45			55			45			25	
Link Distance (ft)		1210			2891			1081			1333	
Travel Time (s)		18.3			35.8			16.4			36.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	4%	2%	2%	4%	2%	2%	2%	2%	2%	2%	6%
Adj. Flow (vph)	72	572	9	4	430	17	16	4	4	18	6	57
Shared Lane Traffic (%)												
Lane Group Flow (vph)	72	581	0	4	447	0	0	24	0	0	81	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	45.2%
Analysis Period (min)	15
	ICU Level of Service A

**Intersection**

Int Delay, s/veh 2.4

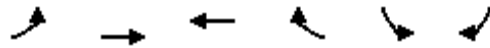
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗			↕			↕	
Traffic Vol, veh/h	65	515	8	4	387	15	14	4	4	16	5	51
Future Vol, veh/h	65	515	8	4	387	15	14	4	4	16	5	51
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	225	-	-	225	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	4	2	2	4	2	2	2	2	2	2	6
Mvmt Flow	72	572	9	4	430	17	16	4	4	18	6	57

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	447	0	0	581
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.12	-	-	4.12
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.218	-	-	2.218
Pot Cap-1 Maneuver	1113	-	-	993
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	1113	-	-	993
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.9	0.1	30.6	19
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	165	1113	-	-	993	-	-	336
HCM Lane V/C Ratio	0.148	0.065	-	-	0.004	-	-	0.238
HCM Control Delay (s)	30.6	8.5	-	-	8.6	-	-	19
HCM Lane LOS	D	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.5	0.2	-	-	0	-	-	0.9

Lanes, Volumes, Timings  
 4: Fairview Road (NC 218) & Asheley Glen Drive



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕	↗	↘	↘
Traffic Volume (vph)	62	577	445	8	10	43
Future Volume (vph)	62	577	445	8	10	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0			50	0	0
Storage Lanes	0			1	1	0
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850	0.890	
Flt Protected		0.995			0.991	
Satd. Flow (prot)	0	1837	1810	1583	1643	0
Flt Permitted		0.995			0.991	
Satd. Flow (perm)	0	1837	1810	1583	1643	0
Link Speed (mph)		45	45		25	
Link Distance (ft)		1059	1130		1045	
Travel Time (s)		16.0	17.1		28.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	3%	5%	2%	2%	2%
Adj. Flow (vph)	69	641	494	9	11	48
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	710	494	9	59	0
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	70.5% ICU Level of Service C
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	1.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↑	↗	↘	
Traffic Vol, veh/h	62	577	445	8	10	43
Future Vol, veh/h	62	577	445	8	10	43
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	50	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	3	5	2	2	2
Mvmt Flow	69	641	494	9	11	48

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	503	0	-	0	1273
Stage 1	-	-	-	-	494
Stage 2	-	-	-	-	779
Critical Hdwy	4.12	-	-	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	2.218	-	-	-	3.518
Pot Cap-1 Maneuver	1061	-	-	-	185
Stage 1	-	-	-	-	613
Stage 2	-	-	-	-	452
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1061	-	-	-	166
Mov Cap-2 Maneuver	-	-	-	-	166
Stage 1	-	-	-	-	551
Stage 2	-	-	-	-	452

Approach	EB	WB	SB
HCM Control Delay, s	0.8	0	15.8
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1061	-	-	-	393
HCM Lane V/C Ratio	0.065	-	-	-	0.15
HCM Control Delay (s)	8.6	0	-	-	15.8
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	0.5

## 2033 Build-out Conditions



Lanes, Volumes, Timings  
 1: Mill Grove Road & Fairview Road (NC 218)



Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	12	4	337	26	25	494	17	53	31	15	22	88
Future Volume (vph)	12	4	337	26	25	494	17	53	31	15	22	88
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. 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
Fr <sub>t</sub>			0.991			0.996			0.979			0.979
Fl <sub>t</sub> Protected			0.998			0.998			0.974			0.992
Satd. Flow (prot)	0	0	1761	0	0	1716	0	0	1598	0	0	1730
Fl <sub>t</sub> Permitted			0.998			0.998			0.974			0.992
Satd. Flow (perm)	0	0	1761	0	0	1716	0	0	1598	0	0	1730
Link Speed (mph)			55			55			55			55
Link Distance (ft)			1044			1592			1049			1186
Travel Time (s)			12.9			19.7			13.0			14.7
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	7%	6%	14%	10%	6%	18%	11%	2%	10%	6%
Adj. Flow (vph)	13	4	374	29	28	549	19	59	34	17	24	98
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	420	0	0	596	0	0	110	0	0	144
Sign Control			Yield			Yield			Yield			Yield

Intersection Summary

Area Type:	Other
Control Type:	Roundabout
Intersection Capacity Utilization	55.1%
ICU Level of Service	B
Analysis Period (min)	15



Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	20
Future Volume (vph)	20
Ideal Flow (vphpl)	1900
Lane Util. Factor	1.00
Fr <sub>t</sub>	
Fl <sub>t</sub> Protected	
Satd. Flow (prot)	0
Fl <sub>t</sub> Permitted	
Satd. Flow (perm)	0
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.90
Heavy Vehicles (%)	6%
Adj. Flow (vph)	22
Shared Lane Traffic (%)	
Lane Group Flow (vph)	0
Sign Control	

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Intersection Summary

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Intersection				
Intersection Delay, s/veh	8.5			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	420	596	110	144
Demand Flow Rate, veh/h	448	656	125	153
Vehicles Circulating, veh/h	162	125	443	719
Vehicles Exiting, veh/h	710	443	167	62
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	7.2	9.7	6.1	8.6
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	448	656	125	153
Cap Entry Lane, veh/h	1170	1215	878	663
Entry HV Adj Factor	0.937	0.909	0.882	0.942
Flow Entry, veh/h	420	596	110	144
Cap Entry, veh/h	1095	1104	774	624
V/C Ratio	0.383	0.540	0.142	0.231
Control Delay, s/veh	7.2	9.7	6.1	8.6
LOS	A	A	A	A
95th %tile Queue, veh	2	3	0	1

Lanes, Volumes, Timings  
2: Mill Grove Road & Lawyers Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	64	602	107	57	681	18	86	65	97	59	132	110
Future Volume (vph)	64	602	107	57	681	18	86	65	97	59	132	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. 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
Fr <sub>t</sub>		0.981			0.997			0.947			0.951	
Fl <sub>t</sub> Protected		0.996			0.996			0.983			0.990	
Satd. Flow (prot)	0	1775	0	0	1742	0	0	1667	0	0	1617	0
Fl <sub>t</sub> Permitted		0.996			0.996			0.983			0.990	
Satd. Flow (perm)	0	1775	0	0	1742	0	0	1667	0	0	1617	0
Link Speed (mph)		35			35			45			55	
Link Distance (ft)		1095			1089			1051			3833	
Travel Time (s)		21.3			21.2			15.9			47.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	8%	4%	6%	12%	8%	9%	6%	5%	7%	10%	9%	13%
Adj. Flow (vph)	71	669	119	63	757	20	96	72	108	66	147	122
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	859	0	0	840	0	0	276	0	0	335	0
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary

Area Type:	Other
Control Type:	Roundabout
Intersection Capacity Utilization	86.7%
ICU Level of Service	E
Analysis Period (min)	15

Intersection				
Intersection Delay, s/veh	26.3			
Intersection LOS	D			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	859	840	276	335
Demand Flow Rate, veh/h	899	911	294	371
Vehicles Circulating, veh/h	304	255	846	991
Vehicles Exiting, veh/h	1058	885	357	175
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	29.1	25.2	15.6	30.9
Approach LOS	D	D	C	D
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	899	911	294	371
Cap Entry Lane, veh/h	1012	1064	582	502
Entry HV Adj Factor	0.956	0.923	0.940	0.902
Flow Entry, veh/h	859	840	276	335
Cap Entry, veh/h	967	981	547	453
V/C Ratio	0.888	0.856	0.505	0.739
Control Delay, s/veh	29.1	25.2	15.6	30.9
LOS	D	D	C	D
95th %tile Queue, veh	12	11	3	6

Lanes, Volumes, Timings

3: Rock Hill Church Road/Ashe Meadow Drive & Fairview Road (NC 218)



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	308	26	24	582	5	54	4	25	4	4	16
Future Volume (vph)	10	308	26	24	582	5	54	4	25	4	4	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	225		0	225		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	100			100			25			25		
Lane Util. 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
Frt		0.988			0.999			0.959				0.907
Flt Protected	0.950			0.950				0.968				0.992
Satd. Flow (prot)	1626	1695	0	1719	1727	0	0	1697	0	0	1676	0
Flt Permitted	0.950			0.950				0.968				0.992
Satd. Flow (perm)	1626	1695	0	1719	1727	0	0	1697	0	0	1676	0
Link Speed (mph)		45			55			45				25
Link Distance (ft)		1210			2891			1081				1333
Travel Time (s)		18.3			35.8			16.4				36.4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	11%	11%	8%	5%	10%	2%	4%	2%	4%	2%	2%	2%
Adj. Flow (vph)	11	342	29	27	647	6	60	4	28	4	4	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	11	371	0	27	653	0	0	92	0	0	26	0
Sign Control		Free			Free			Stop				Stop

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	49.0%
Analysis Period (min)	15
	ICU Level of Service A

**Intersection**

Int Delay, s/veh 3.1

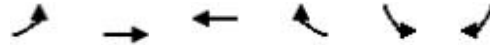
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗			↕			↕	
Traffic Vol, veh/h	10	308	26	24	582	5	54	4	25	4	4	16
Future Vol, veh/h	10	308	26	24	582	5	54	4	25	4	4	16
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	225	-	-	225	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	11	11	8	5	10	2	4	2	4	2	2	2
Mvmt Flow	11	342	29	27	647	6	60	4	28	4	4	18

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	653	0	0	371
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.21	-	-	4.15
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.299	-	-	2.245
Pot Cap-1 Maneuver	892	-	-	1171
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	892	-	-	1171
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0.3	0.3	31.1	17.5
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	228	892	-	-	1171	-	-	314
HCM Lane V/C Ratio	0.404	0.012	-	-	0.023	-	-	0.085
HCM Control Delay (s/veh)	31.1	9.1	-	-	8.1	-	-	17.5
HCM Lane LOS	D	A	-	-	A	-	-	C
HCM 95th %tile Q (veh)	1.8	0	-	-	0.1	-	-	0.3

Lanes, Volumes, Timings  
 4: Fairview Road (NC 218) & Asheley Glen Drive



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↓	↑	↑	↑	↑
Traffic Volume (vph)	16	331	648	4	13	71
Future Volume (vph)	16	331	648	4	13	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0			50	0	0
Storage Lanes	0			1	1	0
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850	0.885	
Flt Protected		0.998			0.993	
Satd. Flow (prot)	0	1700	1743	1077	1602	0
Flt Permitted		0.998			0.993	
Satd. Flow (perm)	0	1700	1743	1077	1602	0
Link Speed (mph)		45	45		25	
Link Distance (ft)		1059	1130		1045	
Travel Time (s)		16.0	17.1		28.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	12%	9%	50%	17%	2%
Adj. Flow (vph)	18	368	720	4	14	79
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	386	720	4	93	0
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	45.9% ICU Level of Service A
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	1.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		4	↑	↑	Y	
Traffic Vol, veh/h	16	331	648	4	13	71
Future Vol, veh/h	16	331	648	4	13	71
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	50	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	12	9	50	17	2
Mvmt Flow	18	368	720	4	14	79

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	724	0	-	0	1124 720
Stage 1	-	-	-	-	720 -
Stage 2	-	-	-	-	404 -
Critical Hdwy	4.12	-	-	-	6.57 6.22
Critical Hdwy Stg 1	-	-	-	-	5.57 -
Critical Hdwy Stg 2	-	-	-	-	5.57 -
Follow-up Hdwy	2.218	-	-	-	3.653 3.318
Pot Cap-1 Maneuver	879	-	-	-	212 428
Stage 1	-	-	-	-	456 -
Stage 2	-	-	-	-	643 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	879	-	-	-	206 428
Mov Cap-2 Maneuver	-	-	-	-	206 -
Stage 1	-	-	-	-	444 -
Stage 2	-	-	-	-	643 -

Approach	EB	WB	SB
HCM Control Delay, s/v	0.4	0	18.1
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	879	-	-	-	367
HCM Lane V/C Ratio	0.02	-	-	-	0.254
HCM Control Delay (s/veh)	9.2	0	-	-	18.1
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q (veh)	0.1	-	-	-	1

Lanes, Volumes, Timings  
 5: Access 1 & Fairview Road (NC 218)



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	349	20	0	579	0	30
Future Volume (vph)	349	20	0	579	0	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>	0.993			0.865		
Flt Protected						
Satd. Flow (prot)	1768	0	0	1743	0	1611
Flt Permitted						
Satd. Flow (perm)	1768	0	0	1743	0	1611
Link Speed (mph)	55			55	25	
Link Distance (ft)	1039			1259	1084	
Travel Time (s)	12.9			15.6	29.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	7%	2%	2%	9%	2%	2%
Adj. Flow (vph)	388	22	0	643	0	33
Shared Lane Traffic (%)						
Lane Group Flow (vph)	410	0	0	643	0	33
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	33.8%
ICU Level of Service	A
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	0.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	349	20	0	579	0	30
Future Vol, veh/h	349	20	0	579	0	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	7	2	2	9	2	2
Mvmt Flow	388	22	0	643	0	33

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	-	-	399
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	3.318
Pot Cap-1 Maneuver	-	0	-	0	651
Stage 1	-	0	-	0	-
Stage 2	-	0	-	0	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	651
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0	10.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	651	-	-	-
HCM Lane V/C Ratio	0.051	-	-	-
HCM Control Delay (s/veh)	10.8	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q (veh)	0.2	-	-	-

Lanes, Volumes, Timings  
6: Mill Grove Road & Access 2



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	35	53	29	65	130	9
Future Volume (vph)	35	53	29	65	130	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>	0.919				0.991	
Fl <sub>t</sub> Protected	0.980			0.985		
Satd. Flow (prot)	1678	0	0	1718	1750	0
Fl <sub>t</sub> Permitted	0.980			0.985		
Satd. Flow (perm)	1678	0	0	1718	1750	0
Link Speed (mph)	25			55	55	
Link Distance (ft)	1053			5102	3144	
Travel Time (s)	28.7			63.2	39.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	12%	8%	2%
Adj. Flow (vph)	39	59	32	72	144	10
Shared Lane Traffic (%)						
Lane Group Flow (vph)	98	0	0	104	154	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	27.6%
Analysis Period (min)	15
	ICU Level of Service A

Intersection						
Int Delay, s/veh	3.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T		T		T	
Traffic Vol, veh/h	35	53	29	65	130	9
Future Vol, veh/h	35	53	29	65	130	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	12	8	2
Mvmt Flow	39	59	32	72	144	10

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	285	149	154	0	-	0
Stage 1	149	-	-	-	-	-
Stage 2	136	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	705	898	1426	-	-	-
Stage 1	879	-	-	-	-	-
Stage 2	890	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	689	898	1426	-	-	-
Mov Cap-2 Maneuver	689	-	-	-	-	-
Stage 1	859	-	-	-	-	-
Stage 2	890	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	10.1	2.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1426	-	801	-	-
HCM Lane V/C Ratio	0.023	-	0.122	-	-
HCM Control Delay (s/veh)	7.6	0	10.1	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q (veh)	0.1	-	0.4	-	-

Lanes, Volumes, Timings  
 1: Mill Grove Road & Fairview Road (NC 218)



Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations			↕			↕			↕			↕
Traffic Volume (vph)	8	27	586	27	22	399	42	33	51	11	26	58
Future Volume (vph)	8	27	586	27	22	399	42	33	51	11	26	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. 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
Fr <sub>t</sub>			0.994			0.988			0.985			0.978
Fl <sub>t</sub> Protected			0.997			0.998			0.983			0.987
Satd. Flow (prot)	0	0	1786	0	0	1805	0	0	1785	0	0	1769
Fl <sub>t</sub> Permitted			0.997			0.998			0.983			0.987
Satd. Flow (perm)	0	0	1786	0	0	1805	0	0	1785	0	0	1769
Link Speed (mph)			55			55			55			55
Link Distance (ft)			1044			1592			1049			1186
Travel Time (s)			12.9			19.7			13.0			14.7
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	9%	5%	12%	2%	4%	3%	2%	4%	2%	4%	4%
Adj. Flow (vph)	9	30	651	30	24	443	47	37	57	12	29	64
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	720	0	0	514	0	0	106	0	0	111
Sign Control			Yield			Yield			Yield			Yield

Intersection Summary

Area Type:	Other
Control Type:	Roundabout
Intersection Capacity Utilization	59.2%
ICU Level of Service	B
Analysis Period (min)	15



Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	16
Future Volume (vph)	16
Ideal Flow (vphpl)	1900
Lane Util. Factor	1.00
Fr <sub>t</sub>	
Fl <sub>t</sub> Protected	
Satd. Flow (prot)	0
Fl <sub>t</sub> Permitted	
Satd. Flow (perm)	0
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.90
Heavy Vehicles (%)	2%
Adj. Flow (vph)	18
Shared Lane Traffic (%)	
Lane Group Flow (vph)	0
Sign Control	

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Intersection Summary

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Intersection				
Intersection Delay, s/veh	9.4			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	720	514	106	111
Demand Flow Rate, veh/h	760	533	109	115
Vehicles Circulating, veh/h	121	139	756	532
Vehicles Exiting, veh/h	526	726	125	140
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	11.2	7.8	7.9	6.1
Approach LOS	B	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	760	533	109	115
Cap Entry Lane, veh/h	1220	1197	638	802
Entry HV Adj Factor	0.948	0.965	0.970	0.969
Flow Entry, veh/h	720	514	106	111
Cap Entry, veh/h	1156	1155	619	777
V/C Ratio	0.623	0.445	0.171	0.143
Control Delay, s/veh	11.2	7.8	7.9	6.1
LOS	B	A	A	A
95th %tile Queue, veh	5	2	1	0

Lanes, Volumes, Timings  
2: Mill Grove Road & Lawyers Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	82	634	125	28	523	34	87	89	66	36	71	81
Future Volume (vph)	82	634	125	28	523	34	87	89	66	36	71	81
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. 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
Fr <sub>t</sub>		0.980			0.992			0.963			0.942	
Fl <sub>t</sub> Protected		0.995			0.998			0.982			0.991	
Satd. Flow (prot)	0	1775	0	0	1818	0	0	1762	0	0	1713	0
Fl <sub>t</sub> Permitted		0.995			0.998			0.982			0.991	
Satd. Flow (perm)	0	1775	0	0	1818	0	0	1762	0	0	1713	0
Link Speed (mph)		35			35			45			55	
Link Distance (ft)		1095			1089			1051			3833	
Travel Time (s)		21.3			21.2			15.9			47.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	5%	2%	8%	3%	7%	2%	2%	2%	4%	5%	2%
Adj. Flow (vph)	91	704	139	31	581	38	97	99	73	40	79	90
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	934	0	0	650	0	0	269	0	0	209	0
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary

Area Type:	Other
Control Type:	Roundabout
Intersection Capacity Utilization	102.0%
ICU Level of Service	G
Analysis Period (min)	15

Intersection				
Intersection Delay, s/veh	16.6			
Intersection LOS	C			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	934	650	269	209
Demand Flow Rate, veh/h	975	672	274	217
Vehicles Circulating, veh/h	158	294	875	730
Vehicles Exiting, veh/h	789	855	258	236
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	20.7	13.6	14.9	10.2
Approach LOS	C	B	B	B
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	975	672	274	217
Cap Entry Lane, veh/h	1174	1022	565	655
Entry HV Adj Factor	0.958	0.967	0.982	0.963
Flow Entry, veh/h	934	650	269	209
Cap Entry, veh/h	1125	988	555	631
V/C Ratio	0.830	0.657	0.485	0.331
Control Delay, s/veh	20.7	13.6	14.9	10.2
LOS	C	B	B	B
95th %tile Queue, veh	10	5	3	1

Lanes, Volumes, Timings

3: Rock Hill Church Road/Ashe Meadow Drive & Fairview Road (NC 218)



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	559	8	4	416	15	14	4	4	16	5	51
Future Volume (vph)	65	559	8	4	416	15	14	4	4	16	5	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	225		0	225		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	100			100			25			25		
Lane Util. 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
Frt		0.998			0.995			0.977			0.905	
Flt Protected	0.950			0.950				0.968			0.989	
Satd. Flow (prot)	1770	1824	0	1770	1819	0	0	1762	0	0	1622	0
Flt Permitted	0.950			0.950				0.968			0.989	
Satd. Flow (perm)	1770	1824	0	1770	1819	0	0	1762	0	0	1622	0
Link Speed (mph)		45			55			45			25	
Link Distance (ft)		1210			2891			1081			1333	
Travel Time (s)		18.3			35.8			16.4			36.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	4%	2%	2%	4%	2%	2%	2%	2%	2%	2%	6%
Adj. Flow (vph)	72	621	9	4	462	17	16	4	4	18	6	57
Shared Lane Traffic (%)												
Lane Group Flow (vph)	72	630	0	4	479	0	0	24	0	0	81	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	47.5%
Analysis Period (min)	15
	ICU Level of Service A

Intersection												
Int Delay, s/veh	2.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗			↕			↕	
Traffic Vol, veh/h	65	559	8	4	416	15	14	4	4	16	5	51
Future Vol, veh/h	65	559	8	4	416	15	14	4	4	16	5	51
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	225	-	-	225	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	4	2	2	4	2	2	2	2	2	2	6
Mvmt Flow	72	621	9	4	462	17	16	4	4	18	6	57

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	479	0	0	630	0	0	1280	1257	626	1253	1253	471
Stage 1	-	-	-	-	-	-	770	770	-	479	479	-
Stage 2	-	-	-	-	-	-	510	487	-	774	774	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.26
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.354
Pot Cap-1 Maneuver	1083	-	-	952	-	-	143	171	484	149	172	585
Stage 1	-	-	-	-	-	-	393	410	-	568	555	-
Stage 2	-	-	-	-	-	-	546	550	-	391	408	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1083	-	-	952	-	-	119	159	484	137	160	585
Mov Cap-2 Maneuver	-	-	-	-	-	-	119	159	-	137	160	-
Stage 1	-	-	-	-	-	-	367	383	-	531	553	-
Stage 2	-	-	-	-	-	-	486	548	-	357	381	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	0.9			0.1			34.6			20.9		
HCM LOS							D			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	146	1083	-	-	952	-	-	306
HCM Lane V/C Ratio	0.167	0.067	-	-	0.005	-	-	0.261
HCM Control Delay (s/veh)	34.6	8.6	-	-	8.8	-	-	20.9
HCM Lane LOS	D	A	-	-	A	-	-	C
HCM 95th %tile Q (veh)	0.6	0.2	-	-	0	-	-	1

Lanes, Volumes, Timings  
 4: Fairview Road (NC 218) & Asheley Glen Drive



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↓	↑	↑	↑	↑
Traffic Volume (vph)	62	621	474	8	10	43
Future Volume (vph)	62	621	474	8	10	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0			50	0	0
Storage Lanes	0			1	1	0
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850	0.890	
Flt Protected		0.995			0.991	
Satd. Flow (prot)	0	1837	1810	1583	1643	0
Flt Permitted		0.995			0.991	
Satd. Flow (perm)	0	1837	1810	1583	1643	0
Link Speed (mph)		45	45		25	
Link Distance (ft)		1059	1130		1045	
Travel Time (s)		16.0	17.1		28.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	3%	5%	2%	2%	2%
Adj. Flow (vph)	69	690	527	9	11	48
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	759	527	9	59	0
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	74.4%
Analysis Period (min)	15
	ICU Level of Service D

Intersection						
Int Delay, s/veh	1.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑	↑	↑	↑
Traffic Vol, veh/h	62	621	474	8	10	43
Future Vol, veh/h	62	621	474	8	10	43
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	50	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	3	5	2	2	2
Mvmt Flow	69	690	527	9	11	48

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	536	0	-	0	1355 527
Stage 1	-	-	-	-	527 -
Stage 2	-	-	-	-	828 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1032	-	-	-	165 551
Stage 1	-	-	-	-	592 -
Stage 2	-	-	-	-	429 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1032	-	-	-	147 551
Mov Cap-2 Maneuver	-	-	-	-	147 -
Stage 1	-	-	-	-	528 -
Stage 2	-	-	-	-	429 -

Approach	EB	WB	SB
HCM Control Delay, s/v	0.8	0	16.8
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1032	-	-	-	363
HCM Lane V/C Ratio	0.067	-	-	-	0.162
HCM Control Delay (s/veh)	8.7	0	-	-	16.8
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q (veh)	0.2	-	-	-	0.6

Lanes, Volumes, Timings  
 5: Access 1 & Fairview Road (NC 218)



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	628	44	0	457	0	20
Future Volume (vph)	628	44	0	457	0	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>	0.991			0.865		
Flt Protected						
Satd. Flow (prot)	1797	0	0	1827	0	1611
Flt Permitted						
Satd. Flow (perm)	1797	0	0	1827	0	1611
Link Speed (mph)	55			55	25	
Link Distance (ft)	1039			1259	1084	
Travel Time (s)	12.9			15.6	29.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	2%	2%	4%	2%	2%
Adj. Flow (vph)	698	49	0	508	0	22
Shared Lane Traffic (%)						
Lane Group Flow (vph)	747	0	0	508	0	22
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	45.7% ICU Level of Service A
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	0.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	628	44	0	457	0	20
Future Vol, veh/h	628	44	0	457	0	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	5	2	2	4	2	2
Mvmt Flow	698	49	0	508	0	22

Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	-	-	-	723
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	-	-	0	-	0	426
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	426
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0	13.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	426	-	-	-
HCM Lane V/C Ratio	0.052	-	-	-
HCM Control Delay (s/veh)	13.9	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q (veh)	0.2	-	-	-

Lanes, Volumes, Timings  
6: Mill Grove Road & Access 2



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	25	37	64	70	88	19
Future Volume (vph)	25	37	64	70	88	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.920				0.976	
Flt Protected	0.980			0.977		
Satd. Flow (prot)	1679	0	0	1811	1747	0
Flt Permitted	0.980			0.977		
Satd. Flow (perm)	1679	0	0	1811	1747	0
Link Speed (mph)	25			55	55	
Link Distance (ft)	1053			5102	3144	
Travel Time (s)	28.7			63.2	39.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	3%	7%	2%
Adj. Flow (vph)	28	41	71	78	98	21
Shared Lane Traffic (%)						
Lane Group Flow (vph)	69	0	0	149	119	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	24.2%
ICU Level of Service	A
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	3.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			W	W	
Traffic Vol, veh/h	25	37	64	70	88	19
Future Vol, veh/h	25	37	64	70	88	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	3	7	2
Mvmt Flow	28	41	71	78	98	21

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	329	109	119	0	0
Stage 1	109	-	-	-	-
Stage 2	220	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	665	945	1469	-	-
Stage 1	916	-	-	-	-
Stage 2	817	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	631	945	1469	-	-
Mov Cap-2 Maneuver	631	-	-	-	-
Stage 1	869	-	-	-	-
Stage 2	817	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	10	3.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1469	-	787	-	-
HCM Lane V/C Ratio	0.048	-	0.088	-	-
HCM Control Delay (s/veh)	7.6	0	10	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q (veh)	0.2	-	0.3	-	-

2033 Build-out Conditions  
Improved

Int 2 - SBR on Mill Grove Road



Lanes, Volumes, Timings  
2: Mill Grove Road & Lawyers Road




















Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	↕
Traffic Volume (vph)	64	602	107	57	681	18	86	65	97	59	132	110
Future Volume (vph)	64	602	107	57	681	18	86	65	97	59	132	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		0	0		150
Storage Lanes	0		0	0		0	0		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. 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
Frt		0.981			0.997			0.947				0.850
Flt Protected		0.996			0.996			0.983			0.985	
Satd. Flow (prot)	0	1775	0	0	1742	0	0	1667	0	0	1712	1429
Flt Permitted		0.996			0.996			0.983			0.985	
Satd. Flow (perm)	0	1775	0	0	1742	0	0	1667	0	0	1712	1429
Link Speed (mph)		35			35			45			55	
Link Distance (ft)		1149			1089			1051			3833	
Travel Time (s)		22.4			21.2			15.9			47.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	8%	4%	6%	12%	8%	9%	6%	5%	7%	10%	9%	13%
Adj. Flow (vph)	71	669	119	63	757	20	96	72	108	66	147	122
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	859	0	0	840	0	0	276	0	0	213	122
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary	
Area Type:	Other
Control Type:	Roundabout
Intersection Capacity Utilization	90.1%
Analysis Period (min)	15
	ICU Level of Service E

Intersection					
Intersection Delay, s/veh	23.6				
Intersection LOS	C				
Approach	EB	WB	NB	SB	
Entry Lanes	1	1	1	2	
Conflicting Circle Lanes	1	1	1	1	
Adj Approach Flow, veh/h	859	840	276	335	
Demand Flow Rate, veh/h	899	911	294	371	
Vehicles Circulating, veh/h	304	255	846	991	
Vehicles Exiting, veh/h	1058	885	357	175	
Ped Vol Crossing Leg, #/h	0	0	0	0	
Ped Cap Adj	1.000	1.000	1.000	1.000	
Approach Delay, s/veh	29.1	25.2	15.6	12.4	
Approach LOS	D	D	C	B	
Lane	Left	Left	Left	Left	Right
Designated Moves	LTR	LTR	LTR	LT	R
Assumed Moves	LTR	LTR	LTR	LT	R
RT Channelized					
Lane Util	1.000	1.000	1.000	0.628	0.372
Follow-Up Headway, s	2.609	2.609	2.609	2.535	2.535
Critical Headway, s	4.976	4.976	4.976	4.544	4.544
Entry Flow, veh/h	899	911	294	233	138
Cap Entry Lane, veh/h	1012	1064	582	576	576
Entry HV Adj Factor	0.956	0.923	0.940	0.913	0.884
Flow Entry, veh/h	859	840	276	213	122
Cap Entry, veh/h	967	981	547	526	509
V/C Ratio	0.888	0.856	0.505	0.404	0.239
Control Delay, s/veh	29.1	25.2	15.6	13.4	10.5
LOS	D	D	C	B	B
95th %tile Queue, veh	12	11	3	2	1

Lanes, Volumes, Timings  
2: Mill Grove Road & Lawyers Road

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	82	634	125	28	523	34	87	89	66	36	71	81
Future Volume (vph)	82	634	125	28	523	34	87	89	66	36	71	81
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		0	0		150
Storage Lanes	0		0	0		0	0		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. 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
Frt		0.980			0.992			0.963				0.850
Flt Protected		0.995			0.998			0.982			0.983	
Satd. Flow (prot)	0	1775	0	0	1818	0	0	1762	0	0	1784	1583
Flt Permitted		0.995			0.998			0.982			0.983	
Satd. Flow (perm)	0	1775	0	0	1818	0	0	1762	0	0	1784	1583
Link Speed (mph)		35			35			45			55	
Link Distance (ft)		1095			1089			1051			3833	
Travel Time (s)		21.3			21.2			15.9			47.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	5%	2%	8%	3%	7%	2%	2%	2%	4%	5%	2%
Adj. Flow (vph)	91	704	139	31	581	38	97	99	73	40	79	90
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	934	0	0	650	0	0	269	0	0	119	90
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary	
Area Type:	Other
Control Type:	Roundabout
Intersection Capacity Utilization	98.1% ICU Level of Service F
Analysis Period (min)	15


















Intersection					
Intersection Delay, s/veh	16.3				
Intersection LOS	C				
Approach	EB	WB	NB	SB	
Entry Lanes	1	1	1	2	
Conflicting Circle Lanes	1	1	1	1	
Adj Approach Flow, veh/h	934	650	269	209	
Demand Flow Rate, veh/h	975	672	274	217	
Vehicles Circulating, veh/h	158	294	875	730	
Vehicles Exiting, veh/h	789	855	258	236	
Ped Vol Crossing Leg, #/h	0	0	0	0	
Ped Cap Adj	1.000	1.000	1.000	1.000	
Approach Delay, s/veh	20.7	13.6	14.9	6.8	
Approach LOS	C	B	B	A	
Lane	Left	Left	Left	Left	Right
Designated Moves	LTR	LTR	LTR	LT	R
Assumed Moves	LTR	LTR	LTR	LT	R
RT Channelized					
Lane Util	1.000	1.000	1.000	0.576	0.424
Follow-Up Headway, s	2.609	2.609	2.609	2.535	2.535
Critical Headway, s	4.976	4.976	4.976	4.544	4.544
Entry Flow, veh/h	975	672	274	125	92
Cap Entry Lane, veh/h	1174	1022	565	731	731
Entry HV Adj Factor	0.958	0.967	0.982	0.952	0.978
Flow Entry, veh/h	934	650	269	119	90
Cap Entry, veh/h	1125	988	555	696	715
V/C Ratio	0.830	0.657	0.485	0.171	0.126
Control Delay, s/veh	20.7	13.6	14.9	7.1	6.4
LOS	C	B	B	A	A
95th %tile Queue, veh	10	5	3	1	0

2033 Build-out Conditions  
Improved

Int 2 - EBR on Lawyers Road




















Lanes, Volumes, Timings  
2: Mill Grove Road & Lawyers Road

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	64	602	107	57	681	18	86	65	97	59	132	110
Future Volume (vph)	64	602	107	57	681	18	86	65	97	59	132	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		225	0		0	0		0	0		0
Storage Lanes	0		1	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. 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
Frt			0.850		0.997			0.947			0.951	
Flt Protected		0.995			0.996			0.983			0.990	
Satd. Flow (prot)	0	1811	1524	0	1742	0	0	1667	0	0	1617	0
Flt Permitted		0.995			0.996			0.983			0.990	
Satd. Flow (perm)	0	1811	1524	0	1742	0	0	1667	0	0	1617	0
Link Speed (mph)		35			35			45			55	
Link Distance (ft)		1095			1089			1051			3833	
Travel Time (s)		21.3			21.2			15.9			47.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	8%	4%	6%	12%	8%	9%	6%	5%	7%	10%	9%	13%
Adj. Flow (vph)	71	669	119	63	757	20	96	72	108	66	147	122
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	740	119	0	840	0	0	276	0	0	335	0
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary	
Area Type:	Other
Control Type:	Roundabout
Intersection Capacity Utilization	109.6%
ICU Level of Service	H
Analysis Period (min)	15

Intersection					
Intersection Delay, s/veh	21.7				
Intersection LOS	C				
Approach	EB	WB	NB	SB	
Entry Lanes	1	1	1	1	
Conflicting Circle Lanes	1	1	1	1	
Adj Approach Flow, veh/h	859	840	276	335	
Demand Flow Rate, veh/h	899	911	294	371	
Vehicles Circulating, veh/h	304	255	846	991	
Vehicles Exiting, veh/h	1058	885	231	175	
Ped Vol Crossing Leg, #/h	0	0	0	0	
Ped Cap Adj	1.000	1.000	1.000	1.000	
Approach Delay, s/veh	16.5	25.2	15.6	30.9	
Approach LOS	C	D	C	D	
Lane	Left	Bypass	Left	Left	Left
Designated Moves	LT	R	LTR	LTR	LTR
Assumed Moves	LT		LTR	LTR	LTR
RT Channelized		Yield			
Lane Util	1.000		1.000	1.000	1.000
Follow-Up Headway, s	2.609		2.609	2.609	2.609
Critical Headway, s	4.976		4.976	4.976	4.976
Entry Flow, veh/h	773	126	911	294	371
Cap Entry Lane, veh/h	1012	1090	1064	582	502
Entry HV Adj Factor	0.958	0.943	0.923	0.940	0.902
Flow Entry, veh/h	740	119	840	276	335
Cap Entry, veh/h	969	1029	981	547	453
V/C Ratio	0.764	0.116	0.856	0.505	0.739
Control Delay, s/veh	18.4	4.5	25.2	15.6	30.9
LOS	C	A	D	C	D
95th %tile Queue, veh	8	0	11	3	6

Lanes, Volumes, Timings  
2: Mill Grove Road & Lawyers Road

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	82	634	125	28	523	34	87	89	66	36	71	81
Future Volume (vph)	82	634	125	28	523	34	87	89	66	36	71	81
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		225	0		0	0		0	0		0
Storage Lanes	0		1	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. 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
Fr <sub>t</sub>			0.850		0.992			0.963			0.942	
Fl <sub>t</sub> Protected		0.994			0.998			0.982			0.991	
Satd. Flow (prot)	0	1803	1583	0	1818	0	0	1762	0	0	1713	0
Fl <sub>t</sub> Permitted		0.994			0.998			0.982			0.991	
Satd. Flow (perm)	0	1803	1583	0	1818	0	0	1762	0	0	1713	0
Link Speed (mph)		35			35			45			55	
Link Distance (ft)		1095			1089			1051			3833	
Travel Time (s)		21.3			21.2			15.9			47.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	5%	2%	8%	3%	7%	2%	2%	2%	4%	5%	2%
Adj. Flow (vph)	91	704	139	31	581	38	97	99	73	40	79	90
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	795	139	0	650	0	0	269	0	0	209	0
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary

Area Type:	Other
Control Type:	Roundabout
Intersection Capacity Utilization	94.3%
Analysis Period (min)	15
	ICU Level of Service F

Intersection					
Intersection Delay, s/veh	13.0				
Intersection LOS	B				
Approach	EB	WB		NB	SB
Entry Lanes	1	1	1	1	1
Conflicting Circle Lanes	1	1	1	1	1
Adj Approach Flow, veh/h	934	650	269	209	
Demand Flow Rate, veh/h	975	672	274	217	
Vehicles Circulating, veh/h	158	294	875	730	
Vehicles Exiting, veh/h	789	855	116	236	
Ped Vol Crossing Leg, #/h	0	0	0	0	
Ped Cap Adj	1.000	1.000	1.000	1.000	
Approach Delay, s/veh	12.7	13.6	14.9	10.2	
Approach LOS	B	B	B	B	
Lane	Left	Bypass	Left	Left	Left
Designated Moves	LT	R	LTR	LTR	LTR
Assumed Moves	LT		LTR	LTR	LTR
RT Channelized		Yield			
Lane Util	1.000		1.000	1.000	1.000
Follow-Up Headway, s	2.609		2.609	2.609	2.609
Critical Headway, s	4.976		4.976	4.976	4.976
Entry Flow, veh/h	833	142	672	274	217
Cap Entry Lane, veh/h	1174	1226	1022	565	655
Entry HV Adj Factor	0.954	0.980	0.967	0.982	0.963
Flow Entry, veh/h	795	139	650	269	209
Cap Entry, veh/h	1121	1202	988	555	631
V/C Ratio	0.709	0.116	0.657	0.485	0.331
Control Delay, s/veh	14.2	4.0	13.6	14.9	10.2
LOS	B	A	B	B	B
95th %tile Queue, veh	6	0	5	3	1

# Queuing and Blocking Reports



# 2024 Existing Conditions



**Intersection: 1: Mill Grove Road & Fairview Road (NC 218)**

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	91	128	73	80
Average Queue (ft)	23	23	13	24
95th Queue (ft)	65	83	48	61
Link Distance (ft)	956	1532	962	1127
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

**Intersection: 2: Mill Grove Road & Lawyers Road**

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	1034	980	172	171
Average Queue (ft)	394	384	56	65
95th Queue (ft)	1070	1023	131	130
Link Distance (ft)	1036	1029	992	3746
Upstream Blk Time (%)	15	15		
Queuing Penalty (veh)	0	0		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

**Intersection: 3: Rock Hill Church Road/Ashe Meadow Drive & Fairview Road (NC 218)**

Movement	EB	WB	NB	SB
Directions Served	L	L	LTR	LTR
Maximum Queue (ft)	38	31	67	39
Average Queue (ft)	3	3	31	12
95th Queue (ft)	18	18	56	35
Link Distance (ft)			1047	1293
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	225	225		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 4: Fairview Road (NC 218) & Asheley Glen Drive

Movement	EB	WB	SB
Directions Served	LT	R	LR
Maximum Queue (ft)	66	8	77
Average Queue (ft)	7	0	28
95th Queue (ft)	37	0	58
Link Distance (ft)	1043		990
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		50	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 0

**Intersection: 1: Mill Grove Road & Fairview Road (NC 218)**

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	157	77	62	57
Average Queue (ft)	37	17	14	14
95th Queue (ft)	110	55	43	43
Link Distance (ft)	956	1532	962	1127
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

**Intersection: 2: Mill Grove Road & Lawyers Road**

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	522	178	97	99
Average Queue (ft)	148	54	38	30
95th Queue (ft)	488	126	75	71
Link Distance (ft)	1036	1029	992	3746
Upstream Blk Time (%)	1			
Queuing Penalty (veh)	0			
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

**Intersection: 3: Rock Hill Church Road/Ashe Meadow Drive & Fairview Road (NC 218)**

Movement	EB	WB	NB	SB
Directions Served	L	L	LTR	LTR
Maximum Queue (ft)	51	13	37	73
Average Queue (ft)	15	1	13	30
95th Queue (ft)	42	8	36	59
Link Distance (ft)			1047	1293
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	225	225		
Storage Blk Time (%)				
Queuing Penalty (veh)				

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Intersection: 4: Fairview Road (NC 218) & Asheley Glen Drive

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Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	103	71
Average Queue (ft)	22	20
95th Queue (ft)	73	48
Link Distance (ft)	1043	990
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

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Network Summary

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Network wide Queuing Penalty: 0

## 2033 Background Conditions



**Intersection: 1: Mill Grove Road & Fairview Road (NC 218)**

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	95	123	62	70
Average Queue (ft)	25	28	11	22
95th Queue (ft)	69	89	41	55
Link Distance (ft)	956	1532	962	1127
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

**Intersection: 2: Mill Grove Road & Lawyers Road**

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	910	1026	145	402
Average Queue (ft)	428	548	59	89
95th Queue (ft)	1001	1184	111	288
Link Distance (ft)	1036	1029	992	3746
Upstream Blk Time (%)	9	16		
Queuing Penalty (veh)	0	0		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

**Intersection: 3: Rock Hill Church Road/Ashe Meadow Drive & Fairview Road (NC 218)**

Movement	EB	WB	NB	SB
Directions Served	L	L	LTR	LTR
Maximum Queue (ft)	26	31	82	39
Average Queue (ft)	2	4	34	15
95th Queue (ft)	14	20	63	37
Link Distance (ft)			1047	1293
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	225	225		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 4: Fairview Road (NC 218) & Asheley Glen Drive

Movement	EB	WB	SB
Directions Served	LT	T	LR
Maximum Queue (ft)	60	2	80
Average Queue (ft)	7	0	31
95th Queue (ft)	35	2	64
Link Distance (ft)	1043	1054	990
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 0

**Intersection: 1: Mill Grove Road & Fairview Road (NC 218)**

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	171	76	51	59
Average Queue (ft)	42	19	16	15
95th Queue (ft)	113	55	44	43
Link Distance (ft)	956	1532	962	1127
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

**Intersection: 2: Mill Grove Road & Lawyers Road**

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	539	236	114	100
Average Queue (ft)	193	71	46	35
95th Queue (ft)	525	167	89	76
Link Distance (ft)	1036	1029	992	3746
Upstream Blk Time (%)	1			
Queuing Penalty (veh)	0			
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

**Intersection: 3: Rock Hill Church Road/Ashe Meadow Drive & Fairview Road (NC 218)**

Movement	EB	WB	NB	SB
Directions Served	L	L	LTR	LTR
Maximum Queue (ft)	50	12	44	78
Average Queue (ft)	13	1	15	32
95th Queue (ft)	38	6	40	60
Link Distance (ft)			1047	1293
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	225	225		
Storage Blk Time (%)				
Queuing Penalty (veh)				

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Intersection: 4: Fairview Road (NC 218) & Asheley Glen Drive

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Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	142	67
Average Queue (ft)	27	22
95th Queue (ft)	86	50
Link Distance (ft)	1043	990
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

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Network Summary

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Network wide Queuing Penalty: 0

## 2033 Build-out Conditions



**Intersection: 1: Mill Grove Road & Fairview Road (NC 218)**

Movement	EB	WB	NB	SB
Directions Served	ULTR	LTR	LTR	LTR
Maximum Queue (ft)	107	173	70	77
Average Queue (ft)	27	42	19	27
95th Queue (ft)	77	128	55	62
Link Distance (ft)	956	1532	962	1127
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

**Intersection: 2: Mill Grove Road & Lawyers Road**

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	888	1087	173	306
Average Queue (ft)	481	646	63	112
95th Queue (ft)	1051	1281	134	249
Link Distance (ft)	1036	1029	992	3746
Upstream Blk Time (%)	10	31		
Queuing Penalty (veh)	0	0		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

**Intersection: 3: Rock Hill Church Road/Ashe Meadow Drive & Fairview Road (NC 218)**

Movement	EB	EB	WB	NB	SB
Directions Served	L	TR	L	LTR	LTR
Maximum Queue (ft)	37	2	29	70	44
Average Queue (ft)	5	0	5	33	15
95th Queue (ft)	24	2	19	59	39
Link Distance (ft)		1154		1047	1293
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	225		225		
Storage Blk Time (%)					
Queuing Penalty (veh)					

**Intersection: 4: Fairview Road (NC 218) & Asheley Glen Drive**

Movement	EB	WB	SB
Directions Served	LT	T	LR
Maximum Queue (ft)	67	2	76
Average Queue (ft)	8	0	30
95th Queue (ft)	38	2	59
Link Distance (ft)	1043	1054	990
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

**Intersection: 5: Access 1 & Fairview Road (NC 218)**

Movement	NB
Directions Served	R
Maximum Queue (ft)	54
Average Queue (ft)	19
95th Queue (ft)	46
Link Distance (ft)	1045
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

**Intersection: 6: Mill Grove Road & Access 2**

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	68	30
Average Queue (ft)	34	3
95th Queue (ft)	57	16
Link Distance (ft)	1022	5049
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

**Network Summary**

Network wide Queuing Penalty: 0

**Intersection: 1: Mill Grove Road & Fairview Road (NC 218)**

Movement	EB	WB	NB	SB
Directions Served	ULTR	LTR	LTR	LTR
Maximum Queue (ft)	196	92	57	59
Average Queue (ft)	59	26	21	16
95th Queue (ft)	145	69	50	44
Link Distance (ft)	956	1532	962	1127
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

**Intersection: 2: Mill Grove Road & Lawyers Road**

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	909	304	118	110
Average Queue (ft)	398	102	50	42
95th Queue (ft)	943	272	93	84
Link Distance (ft)	1036	1029	992	3746
Upstream Blk Time (%)	10			
Queuing Penalty (veh)	0			
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

**Intersection: 3: Rock Hill Church Road/Ashe Meadow Drive & Fairview Road (NC 218)**

Movement	EB	WB	WB	NB	SB
Directions Served	L	L	TR	LTR	LTR
Maximum Queue (ft)	50	15	8	43	72
Average Queue (ft)	18	1	0	14	31
95th Queue (ft)	44	8	5	37	58
Link Distance (ft)			2828	1047	1293
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	225	225			
Storage Blk Time (%)					
Queuing Penalty (veh)					

**Intersection: 4: Fairview Road (NC 218) & Asheley Glen Drive**

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	102	54
Average Queue (ft)	25	22
95th Queue (ft)	76	44
Link Distance (ft)	1043	990
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

**Intersection: 5: Access 1 & Fairview Road (NC 218)**

Movement	NB
Directions Served	R
Maximum Queue (ft)	41
Average Queue (ft)	14
95th Queue (ft)	38
Link Distance (ft)	1045
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

**Intersection: 6: Mill Grove Road & Access 2**

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	63	36
Average Queue (ft)	29	5
95th Queue (ft)	54	25
Link Distance (ft)	1022	5049
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

**Network Summary**

Network wide Queuing Penalty: 0

2033 Build-out Conditions  
Improved

Int 2 - SBR on Mill Grove Road



Intersection: 2: Mill Grove Road & Lawyers Road

Movement	EB	B26	WB	NB	SB	SB
Directions Served	LTR	T	LTR	LTR	LT	R
Maximum Queue (ft)	1055	298	1021	176	184	138
Average Queue (ft)	521	51	570	61	64	38
95th Queue (ft)	1157	293	1226	126	133	94
Link Distance (ft)	1061	885	1029	992	3746	3746
Upstream Blk Time (%)	14	0	27			
Queuing Penalty (veh)	0	0	0			
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 2: Mill Grove Road & Lawyers Road

Movement	EB	B26	WB	NB	SB	SB
Directions Served	LTR	T	LTR	LTR	LT	R
Maximum Queue (ft)	844	102	253	138	72	62
Average Queue (ft)	337	18	84	51	27	17
95th Queue (ft)	845	157	190	100	58	43
Link Distance (ft)	1007	954	1029	992	3746	3746
Upstream Blk Time (%)	5					
Queuing Penalty (veh)	0					
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

2033 Build-out Conditions  
Improved

Int 2 - EBR on Lawyers Road



Intersection: 2: Mill Grove Road & Lawyers Road

Movement	EB	EB	WB	NB	SB
Directions Served	LT	R	LTR	LTR	LTR
Maximum Queue (ft)	520	212	1094	194	254
Average Queue (ft)	247	60	657	62	102
95th Queue (ft)	677	413	1288	142	215
Link Distance (ft)	1033		1034	982	3751
Upstream Blk Time (%)	4		34		
Queuing Penalty (veh)	0		0		
Storage Bay Dist (ft)		800			
Storage Blk Time (%)	6				
Queuing Penalty (veh)	7				

Intersection: 2: Mill Grove Road & Lawyers Road

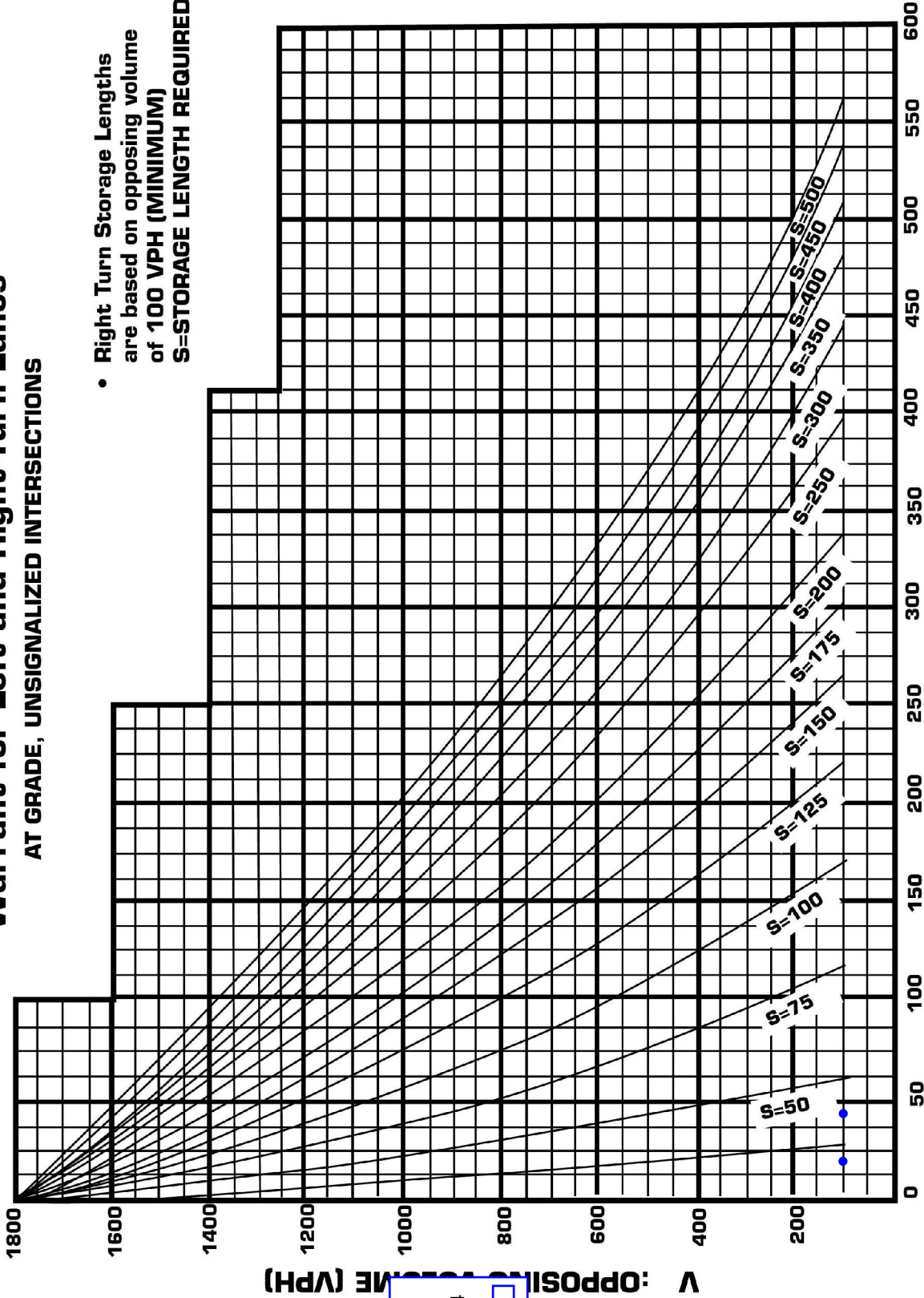
Movement	EB	EB	WB	NB	SB
Directions Served	LT	R	LTR	LTR	LTR
Maximum Queue (ft)	527	107	273	154	90
Average Queue (ft)	185	5	94	49	39
95th Queue (ft)	484	94	217	110	76
Link Distance (ft)	1033		1034	982	3751
Upstream Blk Time (%)	0				
Queuing Penalty (veh)	0				
Storage Bay Dist (ft)		800			
Storage Blk Time (%)	1				
Queuing Penalty (veh)	1				

# Auxiliary Turn-Lane Warrants



# Warrant for Left and Right-Turn Lanes AT GRADE, UNSIGNALIZED INTERSECTIONS

- Right Turn Storage Lengths are based on opposing volume of 100 VPH (MINIMUM)  
S=STORAGE LENGTH REQUIRED



2033 Build  
AM PM  
V<sub>EBR</sub> = 20 V<sub>EBR</sub> = 44  
V<sub>o</sub> = 100 V<sub>o</sub> = 100  
S = 0' S = 0'

Note: Where adjacent signalization may provide opportunities for gaps in the traffic stream a reduction in the above storage values can be considered on a case by case basis.

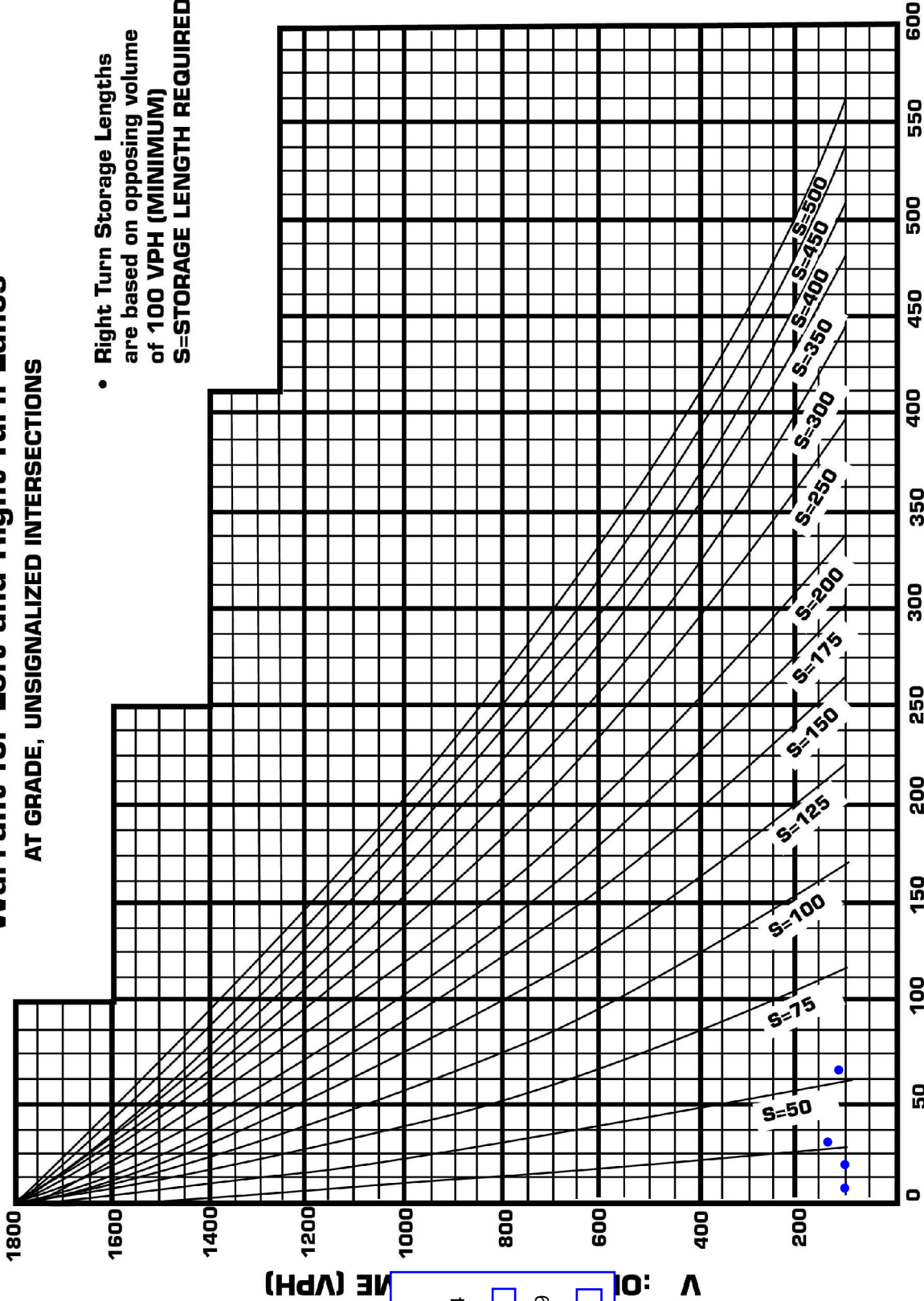
V<sub>o</sub>: LEFT TURNING VOLUME (VPH)  
V<sub>r</sub>: RIGHT TURNING VOLUME (VPH)

Int. # 6: Mill Grove Road and Access 2

# Warrant for Left and Right-Turn Lanes

## AT GRADE, UNSIGNALIZED INTERSECTIONS

- Right Turn Storage Lengths are based on opposing volume of 100 VPH (MINIMUM)  
S=STORAGE LENGTH REQUIRED



Note: Where adjacent signalization may provide opportunities for gaps in the traffic stream a reduction in the above storage values can be considered on a case by case basis.

$V_t$ : LEFT TURNING VOLUME (VPH)  
 $V_r$ : RIGHT TURNING VOLUME (VPH)

# Crash Data



**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Intersection Analysis Report**

Acc No	Crash ID	Date	Accident Type	Total Damage	Injuries				Condition			Road		Trfc Ctl	
					F	A	B	C	R	L	W	Ch	Ci	Dv	Op
9	106236733	05/28/2020 17:54	FIXED OBJECT	\$ 3150	0	0	0	0	1	1	1	5	0	2	1
Unit	1 : 1	Alchl/Drgs: 0	Speed: 35 MPH Dir: S	Veh Mnvr / Ped Actn: 15		Obj Strk: 37									
10	106254501	06/13/2020 20:20	OVERTURN/ROLLOVER	\$ 1000	0	0	0	0	1	2	1	1	0	2	1
Unit	1 : 2	Alchl/Drgs: 0	Speed: 8 MPH Dir: N	Veh Mnvr / Ped Actn: 7		Obj Strk:									
Unit	2 : 20	Alchl/Drgs: 0	Speed: 5 MPH Dir: N	Veh Mnvr / Ped Actn: 4		Obj Strk:									
11	106385499	10/27/2020 14:53	REAR END, SLOW OR STOP	\$ 1500	0	0	0	0	1	1	1	1	0	2	1
Unit	1 : 1	Alchl/Drgs: 0	Speed: 10 MPH Dir: S	Veh Mnvr / Ped Actn: 4		Obj Strk:									
Unit	2 : 2	Alchl/Drgs: 0	Speed: 5 MPH Dir: N	Veh Mnvr / Ped Actn: 11		Obj Strk:									
12	106462092	01/12/2021 16:45	SIDESWIPE, SAME DIRECTION	\$ 5000	0	0	0	0	1	1	1	1	0	2	1
Unit	1 : 1	Alchl/Drgs: 0	Speed: 10 MPH Dir: NW	Veh Mnvr / Ped Actn: 5		Obj Strk:									
Unit	2 : 5	Alchl/Drgs: 0	Speed: 15 MPH Dir: NW	Veh Mnvr / Ped Actn: 4		Obj Strk:									
13	106600486	06/11/2021 03:04	FIXED OBJECT	\$ 30500	0	0	0	1	1	5	1	1	0	2	1
Unit	1 : 4	Alchl/Drgs: 1	Speed: 80 MPH Dir: W	Veh Mnvr / Ped Actn: 4		Obj Strk: 38									
14	106636605	07/03/2021 07:00	SIDESWIPE, SAME DIRECTION	\$ 3500	0	0	0	0	1	1	1	1	0	2	1
Unit	1 : 1	Alchl/Drgs: 0	Speed: 45 MPH Dir: E	Veh Mnvr / Ped Actn: 4		Obj Strk:									
Unit	2 : 1	Alchl/Drgs: 0	Speed: 25 MPH Dir: S	Veh Mnvr / Ped Actn: 4		Obj Strk:									
15	106705914	09/20/2021 10:48	REAR END, SLOW OR STOP	\$ 4000	0	0	0	0	1	1	1	1	0	2	1
Unit	1 : 12	Alchl/Drgs: 0	Speed: 0 MPH Dir: E	Veh Mnvr / Ped Actn: 1		Obj Strk:									
Unit	2 : 3	Alchl/Drgs: 0	Speed: 15 MPH Dir: E	Veh Mnvr / Ped Actn: 4		Obj Strk:									
16	106776322	11/21/2021 00:46	FIXED OBJECT	\$ 5000	0	0	0	0	1	5	1	3	0	2	1
Unit	1 : 4	Alchl/Drgs: 1	Speed: 55 MPH Dir: S	Veh Mnvr / Ped Actn: 4		Obj Strk: 55									
17	106779723	11/24/2021 14:45	REAR END, SLOW OR STOP	\$ 4000	0	0	0	0	1	1	1	1	0	2	1
Unit	1 : 2	Alchl/Drgs: 7	Speed: 45 MPH Dir: E	Veh Mnvr / Ped Actn: 4		Obj Strk:									
Unit	2 : 1	Alchl/Drgs: 0	Speed: 25 MPH Dir: E	Veh Mnvr / Ped Actn: 11		Obj Strk:									
18	106823326	01/04/2022 07:27	ANGLE	\$ 4900	0	0	0	0	1	1	1	5	0	2	1
Unit	1 : 1	Alchl/Drgs: 0	Speed: 40 MPH Dir: S	Veh Mnvr / Ped Actn: 7		Obj Strk:									
Unit	2 : 1	Alchl/Drgs: 0	Speed: 30 MPH Dir: W	Veh Mnvr / Ped Actn: 4		Obj Strk:									

**North Carolina Department of Transportation  
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Acc No	Crash ID	Date	Accident Type	Total Damage	Injuries				Condition			Road		Trfc Ctl	
					F	A	B	C	R	L	W	Ch	Ci	Dv	Op
19	106907659	03/27/2022 15:20	RIGHT TURN, DIFFERENT ROADWAYS	\$ 3500	0	0	0	0	1	1	1	1	0	2	1
Unit	1 : 4	Alchl/Drgs: 0	Speed: 5 MPH Dir: E	Veh Mnvr / Ped Actn: 7					Obj Strk:						
Unit	2 : 4	Alchl/Drgs: 0	Speed: 10 MPH Dir: S	Veh Mnvr / Ped Actn: 4					Obj Strk:						
20	106928268	04/19/2022 07:24	ANGLE	\$ 6000	0	0	0	0	1	1	1	1	0	2	1
Unit	1 : 5	Alchl/Drgs: 0	Speed: 55 MPH Dir: E	Veh Mnvr / Ped Actn: 4					Obj Strk:						
Unit	2 : 2	Alchl/Drgs: 0	Speed: 45 MPH Dir: S	Veh Mnvr / Ped Actn: 4					Obj Strk:						
21	107193643	12/27/2022 15:00	SIDESWIPE, SAME DIRECTION	\$ 4000	0	0	0	0	1	1	1	1	0	2	1
Unit	1 : 2	Alchl/Drgs: 0	Speed: 10 MPH Dir: E	Veh Mnvr / Ped Actn: 5					Obj Strk:						
Unit	2 : 1	Alchl/Drgs: 0	Speed: 15 MPH Dir: SE	Veh Mnvr / Ped Actn: 4					Obj Strk:						
22	107232391	02/02/2023 18:21	FIXED OBJECT	\$ 5000	0	0	0	0	2	5	3	1	0	10	1
Unit	1 : 1	Alchl/Drgs: 0	Speed: 55 MPH Dir: W	Veh Mnvr / Ped Actn: 4					Obj Strk: 55						
23	107241479	02/03/2023 02:12	FIXED OBJECT	\$ 8500	0	0	0	0	1	5	1	1	0	0	
Unit	1 : 4	Alchl/Drgs: 0	Speed: 70 MPH Dir: W	Veh Mnvr / Ped Actn: 4					Obj Strk: 55						
24	107243155	02/12/2023 16:23	REAR END, SLOW OR STOP	\$ 1200	0	0	0	0	2	1	3	3	0	2	1
Unit	1 : 1	Alchl/Drgs: 7	Speed: 30 MPH Dir: W	Veh Mnvr / Ped Actn: 4					Obj Strk:						
Unit	2 : 4	Alchl/Drgs: 0	Speed: 10 MPH Dir: W	Veh Mnvr / Ped Actn: 1					Obj Strk:						
25	107260893	02/20/2023 15:35	REAR END, SLOW OR STOP	\$ 8000	0	0	0	0	1	1	1	1	0	2	1
Unit	1 : 11	Alchl/Drgs: 0	Speed: 10 MPH Dir: W	Veh Mnvr / Ped Actn: 4					Obj Strk:						
Unit	2 : 4	Alchl/Drgs: 0	Speed: 15 MPH Dir: W	Veh Mnvr / Ped Actn: 4					Obj Strk:						
26	107319619	04/10/2023 07:38	REAR END, SLOW OR STOP	\$ 2300	0	0	0	0	1	1	1	5	0	2	1
Unit	1 : 2	Alchl/Drgs: 0	Speed: 55 MPH Dir: E	Veh Mnvr / Ped Actn: 4					Obj Strk:						
Unit	2 : 2	Alchl/Drgs: 0	Speed: 550 MPH Dir: E	Veh Mnvr / Ped Actn: 1					Obj Strk:						
27	107319623	04/10/2023 14:09	SIDESWIPE, SAME DIRECTION	\$ 10000	0	0	0	0	1	1	1	5	0	2	1
Unit	1 : 5	Alchl/Drgs: 0	Speed: 55 MPH Dir: W	Veh Mnvr / Ped Actn: 5					Obj Strk:						
Unit	2 : 4	Alchl/Drgs: 0	Speed: 20 MPH Dir: N	Veh Mnvr / Ped Actn: 4					Obj Strk:						

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Acc No	Crash ID	Date	Accident Type	Total Damage	Injuries				Condition			Road		Trfc Ctl	
					F	A	B	C	R	L	W	Ch	Ci	Dv	Op
28	107323700	05/04/2023 07:30	SIDESWIPE, SAME DIRECTION	\$ 7000	0	0	0	0	1	1	1	5	0	2	1
Unit	1 : 1	Alchl/Drugs: 0	Speed: 15 MPH Dir: N	Veh Mnvr / Ped Actn: 5	Obj Strk:										
Unit	2 : 1	Alchl/Drugs: 0	Speed: 15 MPH Dir: E	Veh Mnvr / Ped Actn: 4	Obj Strk:										
-----															
29	107340936	05/19/2023 08:00	REAR END, SLOW OR STOP	\$ 7000	0	0	0	0	2	1	3	1	0	13	
Unit	1 : 1	Alchl/Drugs: 0	Speed: 55 MPH Dir: E	Veh Mnvr / Ped Actn: 4	Obj Strk:										
Unit	2 : 2	Alchl/Drugs: 0	Speed: 55 MPH Dir: E	Veh Mnvr / Ped Actn: 11	Obj Strk:										
Unit	3 : 4	Alchl/Drugs: 0	Speed: 55 MPH Dir: E	Veh Mnvr / Ped Actn: 11	Obj Strk:										
-----															
30	107390717	07/06/2023 07:16	FIXED OBJECT	\$ 15000	0	0	0	0	10	8	2	1	0	2	1
Unit	1 : 4	Alchl/Drugs: 1	Speed: 45 MPH Dir: W	Veh Mnvr / Ped Actn: 4	Obj Strk: 58										
-----															
31	107448356	09/02/2023 22:00	FIXED OBJECT	\$ 5000	0	1	0	0	1	5	1	1	0	2	1
Unit	1 : 20	Alchl/Drugs: 1	Speed: 40 MPH Dir: E	Veh Mnvr / Ped Actn: 4	Obj Strk: 55										
-----															
32	107584756	01/02/2024 09:50	ANGLE	\$ 9500	0	0	0	0	1	1	1	1	0	2	1
Unit	1 : 4	Alchl/Drugs: 0	Speed: 0 MPH Dir: E	Veh Mnvr / Ped Actn: 4	Obj Strk:										
Unit	2 : 1	Alchl/Drugs: 0	Speed: 10 MPH Dir: S	Veh Mnvr / Ped Actn: 4	Obj Strk:										
-----															
33	107595242	01/16/2024 10:00	SIDESWIPE, SAME DIRECTION	\$ 3000	0	0	0	0	2	1	1	1	0	2	1
Unit	1 : 1	Alchl/Drugs: 0	Speed: 15 MPH Dir: SW	Veh Mnvr / Ped Actn: 5	Obj Strk:										
Unit	2 : 2	Alchl/Drugs: 0	Speed: 15 MPH Dir: W	Veh Mnvr / Ped Actn: 4	Obj Strk:										

**Legend for Report Details:**

Acc No - Accident Number  
 Injuries: F - Fatal, A - Class A, B - Class B, C - Class C  
 Condition: R - Road Surface, L - Ambient Light, W - Weather  
 Rd Ch - Road Character  
 Rd Ci - Roadway Contributing Circumstances  
 Trfc Ctl - Traffic Control: Dv - Device, Op - Operating  
 Alchl/Drugs - Alcohol Drugs Suspected  
 Veh Mnvr/Ped Actn - Vehicle Maneuver/Pedestrian Action  
 Obj Strk - Object Struck

**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
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**Summary Statistics**

**High Level Crash Summary**

<b>Crash Type</b>	<b>Number of Crashes</b>	<b>Percent of Total</b>
Total Crashes	33	100.00
Fatal Crashes	0	0.00
Non-Fatal Injury Crashes	4	12.12
Total Injury Crashes	4	12.12
Property Damage Only Crashes	29	87.88
Night Crashes	6	18.18
Wet Crashes	5	15.15
Alcohol/Drugs Involvement Crashes	4	12.12

**Crash Severity Summary**

<b>Crash Type</b>	<b>Number of Crashes</b>	<b>Percent of Total</b>
Total Crashes	33	100.00
Fatal Crashes	0	0.00
Class A Crashes	1	3.03
Class B Crashes	0	0.00
Class C Crashes	3	9.09
Property Damage Only Crashes	29	87.88

**Vehicle Exposure Statistics**

**Annual ADT = 9500**

**Total Vehicle Exposure = 17.35 (MEV)**

<b>Crash Rate</b>	<b>Crashes Per 100 Million Vehicles Entered</b>
Total Crash Rate	190.23
Fatal Crash Rate	0.00
Non Fatal Crash Rate	23.06
Night Crash Rate	34.59
Wet Crash Rate	28.82
EPDO Rate	755.17

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**Miscellaneous Statistics**

Severity Index =	3.97
EPDO Crash Index =	131.00
Estimated Property Damage Total = \$	209900.00

**Accident Type Summary**

<b>Accident Type</b>	<b>Number of Crashes</b>	<b>Percent of Total</b>
ANGLE	4	12.12
FIXED OBJECT	10	30.30
OVERTURN/ROLLOVER	2	6.06
RAN OFF ROAD - STRAIGHT	1	3.03
REAR END, SLOW OR STOP	9	27.27
RIGHT TURN, DIFFERENT ROADWAYS	1	3.03
SIDESWIPE, SAME DIRECTION	6	18.18

**Injury Summary**

<b>Injury Type</b>	<b>Number of Injuries</b>	<b>Percent of Total</b>
Fatal Injuries	0	0.00
Class A Injuries	1	20.00
Class B Injuries	0	0.00
Class C Injuries	4	80.00
Total Non-Fatal Injuries	5	100.00
Total Injuries	5	100.00

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**Monthly Summary**

<b>Month</b>	<b>Number of Crashes</b>	<b>Percent of Total</b>
Jan	4	12.12
Feb	4	12.12
Mar	1	3.03
Apr	4	12.12
May	5	15.15
Jun	2	6.06
Jul	2	6.06
Aug	0	0.00
Sep	4	12.12
Oct	4	12.12
Nov	2	6.06
Dec	1	3.03

**Daily Summary**

<b>Day</b>	<b>Number of Crashes</b>	<b>Percent of Total</b>
Mon	5	15.15
Tue	7	21.21
Wed	3	9.09
Thu	6	18.18
Fri	4	12.12
Sat	3	9.09
Sun	5	15.15

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**Hourly Summary**

<b>Hour</b>	<b>Number of Crashes</b>	<b>Percent of Total</b>
0000-0059	1	3.03
0100-0159	0	0.00
0200-0259	1	3.03
0300-0359	1	3.03
0400-0459	0	0.00
0500-0559	0	0.00
0600-0659	1	3.03
0700-0759	10	30.30
0800-0859	1	3.03
0900-0959	1	3.03
1000-1059	3	9.09
1100-1159	0	0.00
1200-1259	0	0.00
1300-1359	0	0.00
1400-1459	3	9.09
1500-1559	3	9.09
1600-1659	2	6.06
1700-1759	2	6.06
1800-1859	2	6.06
1900-1959	0	0.00
2000-2059	1	3.03
2100-2159	0	0.00
2200-2259	1	3.03
2300-2359	0	0.00

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**Light and Road Conditions Summary**

<b>Condition</b>	<b>Dry</b>	<b>Wet</b>	<b>Other</b>	<b>Total</b>
Day	21	4	0	25
Dark	5	1	0	6
Other	1	0	1	2
<b>Total</b>	<b>27</b>	<b>5</b>	<b>1</b>	<b>33</b>

**Object Struck Summary**

<b>Object Type</b>	<b>Times Struck</b>	<b>Percent of Total</b>
DITCH	2	18.18
OFFICIAL HIGHWAY SIGN BREAKAWAY	2	18.18
OFFICIAL HIGHWAY SIGN NON-BREAKAWAY	1	9.09
TRAFFIC ISLAND CURB OR MEDIAN	6	54.55

**Vehicle Type Summary**

<b>Vehicle Type</b>	<b>Number Involved</b>	<b>Percent of Total</b>
LIGHT TRUCK (MINI-VAN, PANEL)	1	1.79
MOTORCYCLE	3	5.36
PASSENGER CAR	21	37.50
PICKUP	10	17.86
SINGLE UNIT TRUCK (3 OR MORE AXLES)	2	3.57
SPORT UTILITY	14	25.00
TRUCK/TRAILER	1	1.79
VAN	4	7.14

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**Yearly Totals Summary**

**Accident Totals**

<b>Year</b>	<b>Total Accidents</b>	<b>Fatal Accidents</b>	<b>Injury Accidents</b>	<b>Property Damage Only Accidents</b>
2019	6	0	2	4
2020	5	0	0	5
2021	6	0	1	5
2022	4	0	0	4
2023	10	0	1	9
2024	2	0	0	2
<b>Total</b>	<b>33</b>	<b>0</b>	<b>4</b>	<b>29</b>

**Injury Totals**

<b>Year</b>	<b>Fatal Injuries</b>	<b>Class A, B, or C Injuries</b>
2019	0	3
2020	0	0
2021	0	1
2022	0	0
2023	0	1
2024	0	0
<b>Total</b>	<b>0</b>	<b>5</b>

**Miscellaneous Totals**

<b>Year</b>	<b>Property Damage</b>	<b>EPDO Index</b>
2019	\$ 36850	20.80
2020	\$ 21150	5.00
2021	\$ 52000	13.40
2022	\$ 18400	4.00
2023	\$ 69000	85.80
2024	\$ 12500	2.00
<b>Total</b>	<b>\$ 209900</b>	<b>131.00</b>

**Type of Accident Totals**

<b>Year</b>	<b>Left Turn</b>	<b>Right Turn</b>	<b>Rear End</b>	<b>Run Off Road &amp;</b>				<b>Other</b>
				<b>Fixed Object</b>	<b>Angle</b>	<b>Side Swipe</b>		
2019	0	0	1	3	1	0	1	
2020	0	0	2	2	0	0	1	

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Year	Run Off Road &						Other
	Left Turn	Right Turn	Rear End	Fixed Object	Angle	Side Swipe	
2021	0	0	2	2	0	2	0
2022	0	1	0	0	2	1	0
2023	0	0	4	4	0	2	0
2024	0	0	0	0	1	1	0
Total	0	1	9	11	4	6	2

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**Study Criteria**

Study Name	Log No.	PH No.	TIP No.	K/A Cf.	B/C Cf.	ADT	ADT Route
41000073634				76.8	8.4	9500	

Request Date	Courier Service	Phone No.	Ext.	Fax No.
4/3/2024				

County			Municipality					
Name	Code	Div.	Name	Code	Y-Line Ft.	Begin Date	End Date	Years
UNION	90	10	All and Rural		150	2/1/2019	1/31/2024	5.00

Location Text	Requestor
NC 218 (Fairview Rd) at SR 1525 (Mill Grove Rd)	Kimley-Horn Lowe

Included Accidents
107241479
106236733

**Fiche Roads**

Name	Code
NC 218	30000218
FAIRVIEW	50010120
SR 1525	40001525
MILL GROVE	50037509

**Intersection Road Combinations**

Name	Code	Code	Name
NC 218	30000218	40001525	SR 1525
NC 218	30000218	50037509	MILL GROVE
FAIRVIEW	50010120	40001525	SR 1525
FAIRVIEW	50010120	50037509	MILL GROVE

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**Study Criteria Summary**

**County:** UNION **City:** All and Rural  
**Date:** 2/1/2019 to 1/31/2024 **Study:** 41000073635  
**Location:** SR 1004 (Lawyers Rd) at SR 1525 (Mill Grove Rd)

**Report Details**

Acc No	Crash ID	Date	Accident Type	Total Damage	Injuries				Condition			Road		Trfc Ctl	
					F	A	B	C	R	L	W	Ch	Ci	Dv	Op
1	105771691	02/12/2019 08:30	ANGLE	\$ 5500	0	0	0	0	2	1	3	1	0	1	1
Unit	1 : 2	Alchl/Drgs: 0	Speed: 10 MPH Dir: N	Veh Mnvr / Ped Actn: 4	Obj Strk:										
Unit	2 : 4	Alchl/Drgs: 0	Speed: 40 MPH Dir: W	Veh Mnvr / Ped Actn: 4	Obj Strk:										
2	105821364	04/03/2019 08:56	LEFT TURN, SAME ROADWAY	\$ 4000	0	0	0	1	1	1	1	1	0	1	1
Unit	1 : 2	Alchl/Drgs: 0	Speed: 20 MPH Dir: NW	Veh Mnvr / Ped Actn: 8	Obj Strk:										
Unit	2 : 1	Alchl/Drgs: 0	Speed: 10 MPH Dir: S	Veh Mnvr / Ped Actn: 4	Obj Strk:										
3	106064843	11/15/2019 18:38	RIGHT TURN, DIFFERENT ROADWAYS	\$ 2500	0	0	0	0	2	5	1	2	0	1	1
Unit	1 : 1	Alchl/Drgs: 0	Speed: 0 MPH Dir: W	Veh Mnvr / Ped Actn: 8	Obj Strk:										
Unit	2 : 1	Alchl/Drgs: 0	Speed: 45 MPH Dir: W	Veh Mnvr / Ped Actn: 7	Obj Strk:										
4	106269198	07/03/2020 16:31	ANGLE	\$ 10500	0	0	0	2	1	1	1	1	0	1	1
Unit	1 : 1	Alchl/Drgs: 0	Speed: 15 MPH Dir: N	Veh Mnvr / Ped Actn: 4	Obj Strk:										
Unit	2 : 2	Alchl/Drgs: 0	Speed: 45 MPH Dir: E	Veh Mnvr / Ped Actn: 4	Obj Strk:										
5	106374421	10/15/2020 14:55	ANGLE	\$ 1500	0	0	0	1	1	1	1	1	0	1	1
Unit	1 : 1	Alchl/Drgs: 0	Speed: 15 MPH Dir: S	Veh Mnvr / Ped Actn: 4	Obj Strk:										
Unit	2 : 20	Alchl/Drgs: 0	Speed: 15 MPH Dir: W	Veh Mnvr / Ped Actn: 8	Obj Strk:										
6	106396997	11/05/2020 17:53	REAR END, TURN	\$ 1500	0	0	0	0	1	5	1	1	0	13	1
Unit	1 : 5	Alchl/Drgs: 0	Speed: 5 MPH Dir: S	Veh Mnvr / Ped Actn: 4	Obj Strk:										
Unit	2 : 1	Alchl/Drgs: 0	Speed: 10 MPH Dir: W	Veh Mnvr / Ped Actn: 8	Obj Strk:										
7	106409504	11/18/2020 12:22	ANGLE	\$ 13000	0	0	0	1	1	1	1	6	0	1	1
Unit	1 : 1	Alchl/Drgs: 0	Speed: 15 MPH Dir: N	Veh Mnvr / Ped Actn: 4	Obj Strk:										
Unit	2 : 1	Alchl/Drgs: 0	Speed: 46 MPH Dir: E	Veh Mnvr / Ped Actn: 4	Obj Strk:										
8	106515356	03/15/2021 14:14	ANGLE	\$ 26000	0	0	1	3	1	1	2	2	0	1	1
Unit	1 : 1	Alchl/Drgs: 0	Speed: 10 MPH Dir: S	Veh Mnvr / Ped Actn: 4	Obj Strk:										

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Acc No	Crash ID	Date	Accident Type	Total Damage	Injuries				Condition			Road		Trfc Ctl	
					F	A	B	C	R	L	W	Ch	Ci	Dv	Op
Unit	2 : 1	Alchl/Drgs: 0	Speed: 45 MPH Dir: W	Veh Mnvr / Ped Actn:	4	Obj Strk:									
9	106528623	03/22/2021 17:34	LEFT TURN, SAME ROADWAY	\$ 4000	0	0	0	0	1	1	1	1	0	1	1
Unit	1 : 2	Alchl/Drgs: 0	Speed: 20 MPH Dir: E	Veh Mnvr / Ped Actn:	8	Obj Strk:									
Unit	2 : 1	Alchl/Drgs: 0	Speed: 30 MPH Dir: N	Veh Mnvr / Ped Actn:	4	Obj Strk:									
10	106526383	03/26/2021 06:46	ANGLE	\$ 3500	0	0	0	0	2	5	2	1	0	1	1
Unit	1 : 1	Alchl/Drgs: 0	Speed: 0 MPH Dir: W	Veh Mnvr / Ped Actn:	4	Obj Strk:									
Unit	2 : 1	Alchl/Drgs: 0	Speed: 35 MPH Dir: E	Veh Mnvr / Ped Actn:	4	Obj Strk:									
11	106532413	03/31/2021 20:10	LEFT TURN, SAME ROADWAY	\$ 21000	0	0	1	1	2	5	3	6	0	13	1
Unit	1 : 4	Alchl/Drgs: 0	Speed: 10 MPH Dir: NE	Veh Mnvr / Ped Actn:	8	Obj Strk:									
Unit	2 : 1	Alchl/Drgs: 0	Speed: 47 MPH Dir: W	Veh Mnvr / Ped Actn:	4	Obj Strk:									
12	106567228	05/07/2021 06:37	LEFT TURN, DIFFERENT ROADWAYS	\$ 3300	0	0	0	0	1	1	1	1	0	1	1
Unit	1 : 1	Alchl/Drgs: 0	Speed: 10 MPH Dir: S	Veh Mnvr / Ped Actn:	12	Obj Strk:									
Unit	2 : 1	Alchl/Drgs: 0	Speed: 5 MPH Dir: E	Veh Mnvr / Ped Actn:	8	Obj Strk:									
13	106584567	05/26/2021 13:15	LEFT TURN, DIFFERENT ROADWAYS	\$ 9000	0	0	0	0	1	1	1	1	0	1	1
Unit	1 : 1	Alchl/Drgs: 0	Speed: 15 MPH Dir: NW	Veh Mnvr / Ped Actn:	8	Obj Strk:									
Unit	2 : 10	Alchl/Drgs: 0	Speed: 35 MPH Dir: E	Veh Mnvr / Ped Actn:	4	Obj Strk:									
14	106620333	06/23/2021 12:21	ANGLE	\$ 11000	0	0	0	1	1	1	1	1	0	13	1
Unit	1 : 11	Alchl/Drgs: 0	Speed: 45 MPH Dir: E	Veh Mnvr / Ped Actn:	4	Obj Strk:									
Unit	2 : 1	Alchl/Drgs: 0	Speed: 15 MPH Dir: S	Veh Mnvr / Ped Actn:	4	Obj Strk:									
15	106784917	11/27/2021 20:03	ANGLE	\$ 4000	0	0	0	1	1	5	1	3	0	1	1
Unit	1 : 1	Alchl/Drgs: 0	Speed: 35 MPH Dir: S	Veh Mnvr / Ped Actn:	4	Obj Strk:									
Unit	2 : 4	Alchl/Drgs: 0	Speed: 45 MPH Dir: W	Veh Mnvr / Ped Actn:	4	Obj Strk:									
16	106813472	12/23/2021 09:53	BACKING UP	\$ 3000	0	0	0	0	1	1	1	1	0	1	1
Unit	1 : 2	Alchl/Drgs: 0	Speed: 0 MPH Dir: N	Veh Mnvr / Ped Actn:	10	Obj Strk:									
Unit	2 : 1	Alchl/Drgs: 0	Speed: 0 MPH Dir: N	Veh Mnvr / Ped Actn:	1	Obj Strk:									
17	106885754	03/10/2022 15:15	ANGLE	\$ 26000	0	0	0	0	1	1	2	1	0	1	1
Unit	1 : 1	Alchl/Drgs: 0	Speed: 15 MPH Dir: S	Veh Mnvr / Ped Actn:	4	Obj Strk:									
Unit	2 : 4	Alchl/Drgs: 0	Speed: 45 MPH Dir: E	Veh Mnvr / Ped Actn:	4	Obj Strk:									

**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Intersection Analysis Report**

Acc No	Crash ID	Date	Accident Type	Total Damage	Injuries				Condition			Road		Trfc Ctl	
					F	A	B	C	R	L	W	Ch	Ci	Dv	Op
18	106931376	04/23/2022 09:16	LEFT TURN, DIFFERENT ROADWAYS	\$ 10000	0	0	0	0	1	1	1	1	0	1	1
Unit	1 : 4	Alchl/Drgs: 0	Speed: 0 MPH Dir: S	Veh Mnvr / Ped Actn: 4				Obj Strk:							
Unit	2 : 1	Alchl/Drgs: 0	Speed: 35 MPH Dir: W	Veh Mnvr / Ped Actn: 8				Obj Strk:							
19	106940089	04/30/2022 21:35	LEFT TURN, DIFFERENT ROADWAYS	\$ 2000	0	1	1	0	1	5	1	1	0	13	1
Unit	1 : 1	Alchl/Drgs: 1	Speed: 5 MPH Dir: N	Veh Mnvr / Ped Actn: 8				Obj Strk:							
Unit	2 : 20	Alchl/Drgs: 0	Speed: 45 MPH Dir: E	Veh Mnvr / Ped Actn: 4				Obj Strk:							
20	107083924	08/12/2022 16:59	ANGLE	\$ 8000	0	0	0	2	1	1	1	1	0	1	1
Unit	1 : 2	Alchl/Drgs: 0	Speed: 5 MPH Dir: S	Veh Mnvr / Ped Actn: 4				Obj Strk:							
Unit	2 : 1	Alchl/Drgs: 0	Speed: 45 MPH Dir: W	Veh Mnvr / Ped Actn: 4				Obj Strk:							
21	107084572	09/19/2022 06:33	LEFT TURN, SAME ROADWAY	\$ 21000	0	0	0	0	1	3	1	3	0	1	1
Unit	1 : 1	Alchl/Drgs: 0	Speed: 20 MPH Dir: S	Veh Mnvr / Ped Actn: 4				Obj Strk:							
Unit	2 : 1	Alchl/Drgs: 0	Speed: 25 MPH Dir: NW	Veh Mnvr / Ped Actn: 8				Obj Strk:							
22	107129751	11/01/2022 07:45	REAR END, SLOW OR STOP	\$ 500	0	0	0	0	2	1	2	1	0	1	1
Unit	1 : 2	Alchl/Drgs: 0	Speed: 5 MPH Dir: N	Veh Mnvr / Ped Actn: 4				Obj Strk:							
Unit	2 : 4	Alchl/Drgs: 0	Speed: 0 MPH Dir: N	Veh Mnvr / Ped Actn: 1				Obj Strk:							
23	107129752	11/01/2022 08:12	LEFT TURN, SAME ROADWAY	\$ 15000	0	0	0	0	2	3	2	3	0	1	1
Unit	1 : 1	Alchl/Drgs: 0	Speed: 20 MPH Dir: SE	Veh Mnvr / Ped Actn: 8				Obj Strk:							
Unit	2 : 1	Alchl/Drgs: 0	Speed: 50 MPH Dir: W	Veh Mnvr / Ped Actn: 4				Obj Strk:							
24	107202938	01/05/2023 14:13	LEFT TURN, DIFFERENT ROADWAYS	\$ 3500	0	0	0	0	1	1	1	3	0	13	1
Unit	1 : 2	Alchl/Drgs: 0	Speed: 0 MPH Dir: NW	Veh Mnvr / Ped Actn: 1				Obj Strk:							
Unit	2 : 1	Alchl/Drgs: 0	Speed: 40 MPH Dir: E	Veh Mnvr / Ped Actn: 4				Obj Strk:							
25	107237381	02/07/2023 15:10	REAR END, SLOW OR STOP	\$ 2000	0	0	0	0	1	1	1	5	0	13	1
Unit	1 : 1	Alchl/Drgs: 0	Speed: 20 MPH Dir: W	Veh Mnvr / Ped Actn: 11				Obj Strk:							
Unit	2 : 2	Alchl/Drgs: 0	Speed: 15 MPH Dir: W	Veh Mnvr / Ped Actn: 11				Obj Strk:							
26	107451320	08/31/2023 07:53	SIDESWIPE, SAME DIRECTION	\$ 3000	0	0	0	0	1	1	1	1	0	2	1
Unit	1 : 4	Alchl/Drgs: 0	Speed: 45 MPH Dir: W	Veh Mnvr / Ped Actn: 4				Obj Strk:							
Unit	2 : 4	Alchl/Drgs: 0	Speed: 45 MPH Dir: W	Veh Mnvr / Ped Actn: 4				Obj Strk:							

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Acc No	Crash ID	Date	Accident Type	Total Damage	Injuries				Condition			Road		Trfc Ctl	
					F	A	B	C	R	L	W	Ch	Ci	Dv	Op
27	107510016	10/30/2023 06:56	SIDESWIPE, SAME DIRECTION	\$ 5000	0	0	0	0	1	5	1	1	0	2	1
Unit	1 : 2	Alchl/Drgs: 0	Speed: 10 MPH Dir: S	Veh Mnvr / Ped Actn: 4		Obj Strk:									
Unit	2 : 2	Alchl/Drgs: 0	Speed: 10 MPH Dir: W	Veh Mnvr / Ped Actn: 4		Obj Strk:									
-----															
28	107538141	11/03/2023 05:45	ANGLE	\$ 3500	0	0	0	0	1	1	1	1	0	2	1
Unit	1 : 2	Alchl/Drgs: 0	Speed: 10 MPH Dir: N	Veh Mnvr / Ped Actn: 4		Obj Strk:									
Unit	2 : 1	Alchl/Drgs: 0	Speed: 10 MPH Dir: S	Veh Mnvr / Ped Actn: 4		Obj Strk:									
-----															
29	107522105	11/07/2023 16:01	SIDESWIPE, SAME DIRECTION	\$ 4500	0	0	0	0	1	1	1	1	0	2	1
Unit	1 : 1	Alchl/Drgs: 0	Speed: 25 MPH Dir: W	Veh Mnvr / Ped Actn: 4		Obj Strk:									
Unit	2 : 1	Alchl/Drgs: 0	Speed: 10 MPH Dir: N	Veh Mnvr / Ped Actn: 4		Obj Strk:									
-----															
30	107540233	11/24/2023 16:06	RIGHT TURN, DIFFERENT ROADWAYS	\$ 4000	0	0	0	0	1	1	1	1	0	2	1
Unit	1 : 4	Alchl/Drgs: 0	Speed: 5 MPH Dir: S	Veh Mnvr / Ped Actn: 7		Obj Strk:									
Unit	2 : 2	Alchl/Drgs: 0	Speed: 20 MPH Dir: W	Veh Mnvr / Ped Actn: 4		Obj Strk:									
-----															
31	107569706	12/19/2023 06:13	SIDESWIPE, SAME DIRECTION	\$ 1500	0	0	0	0	1	5	1	1	0	2	1
Unit	1 : 4	Alchl/Drgs: 0	Speed: 10 MPH Dir: S	Veh Mnvr / Ped Actn: 4		Obj Strk:									
Unit	2 : 1	Alchl/Drgs: 0	Speed: 15 MPH Dir: W	Veh Mnvr / Ped Actn: 4		Obj Strk:									

**Legend for Report Details:**  
 Acc No - Accident Number  
 Injuries: F - Fatal, A - Class A, B - Class B, C - Class C  
 Condition: R - Road Surface, L - Ambient Light, W - Weather  
 Rd Ch - Road Character  
 Rd Ci - Roadway Contributing Circumstances  
 Trfc Ctl - Traffic Control: Dv - Device, Op - Operating  
 Alchl/Drgs - Alcohol Drugs Suspected  
 Veh Mnvr/Ped Actn - Vehicle Maneuver/Pedestrian Action  
 Obj Strk - Object Struck

**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Intersection Analysis Report**

**Summary Statistics**

**High Level Crash Summary**

<b>Crash Type</b>	<b>Number of Crashes</b>	<b>Percent of Total</b>
Total Crashes	31	100.00
Fatal Crashes	0	0.00
Non-Fatal Injury Crashes	10	32.26
Total Injury Crashes	10	32.26
Property Damage Only Crashes	21	67.74
Night Crashes	8	25.81
Wet Crashes	6	19.35
Alcohol/Drugs Involvement Crashes	1	3.23

**Crash Severity Summary**

<b>Crash Type</b>	<b>Number of Crashes</b>	<b>Percent of Total</b>
Total Crashes	31	100.00
Fatal Crashes	0	0.00
Class A Crashes	1	3.23
Class B Crashes	2	6.45
Class C Crashes	7	22.58
Property Damage Only Crashes	21	67.74

**Vehicle Exposure Statistics**

**Annual ADT = 13800**

**Total Vehicle Exposure = 25.2 (MEV)**

<b>Crash Rate</b>	<b>Crashes Per 100 Million Vehicles Entered</b>
Total Crash Rate	123.02
Fatal Crash Rate	0.00
Non Fatal Crash Rate	39.68
Night Crash Rate	31.75
Wet Crash Rate	23.81
EPDO Rate	688.13

**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Intersection Analysis Report**

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**Miscellaneous Statistics**

Severity Index =	5.59
EPDO Crash Index =	173.40
Estimated Property Damage Total = \$	232800.00

**Accident Type Summary**

<b>Accident Type</b>	<b>Number of Crashes</b>	<b>Percent of Total</b>
ANGLE	11	35.48
BACKING UP	1	3.23
LEFT TURN, DIFFERENT ROADWAYS	5	16.13
LEFT TURN, SAME ROADWAY	5	16.13
REAR END, SLOW OR STOP	2	6.45
REAR END, TURN	1	3.23
RIGHT TURN, DIFFERENT ROADWAYS	2	6.45
SIDESWIPE, SAME DIRECTION	4	12.90

**Injury Summary**

<b>Injury Type</b>	<b>Number of Injuries</b>	<b>Percent of Total</b>
Fatal Injuries	0	0.00
Class A Injuries	1	5.88
Class B Injuries	3	17.65
Class C Injuries	13	76.47
Total Non-Fatal Injuries	17	100.00
Total Injuries	17	100.00

**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Intersection Analysis Report**

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**Monthly Summary**

<b>Month</b>	<b>Number of Crashes</b>	<b>Percent of Total</b>
Jan	1	3.23
Feb	2	6.45
Mar	5	16.13
Apr	3	9.68
May	2	6.45
Jun	1	3.23
Jul	1	3.23
Aug	2	6.45
Sep	1	3.23
Oct	2	6.45
Nov	9	29.03
Dec	2	6.45

**Daily Summary**

<b>Day</b>	<b>Number of Crashes</b>	<b>Percent of Total</b>
Mon	4	12.90
Tue	6	19.35
Wed	5	16.13
Thu	6	19.35
Fri	7	22.58
Sat	3	9.68
Sun	0	0.00

**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Intersection Analysis Report**

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**Hourly Summary**

<b>Hour</b>	<b>Number of Crashes</b>	<b>Percent of Total</b>
0000-0059	0	0.00
0100-0159	0	0.00
0200-0259	0	0.00
0300-0359	0	0.00
0400-0459	0	0.00
0500-0559	1	3.23
0600-0659	5	16.13
0700-0759	2	6.45
0800-0859	3	9.68
0900-0959	2	6.45
1000-1059	0	0.00
1100-1159	0	0.00
1200-1259	2	6.45
1300-1359	1	3.23
1400-1459	3	9.68
1500-1559	2	6.45
1600-1659	4	12.90
1700-1759	2	6.45
1800-1859	1	3.23
1900-1959	0	0.00
2000-2059	2	6.45
2100-2159	1	3.23
2200-2259	0	0.00
2300-2359	0	0.00

**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Intersection Analysis Report**

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**Light and Road Conditions Summary**

<b>Condition</b>	<b>Dry</b>	<b>Wet</b>	<b>Other</b>	<b>Total</b>
Day	19	2	0	21
Dark	5	3	0	8
Other	1	1	0	2
Total	25	6	0	31

**Vehicle Type Summary**

<b>Vehicle Type</b>	<b>Number Involved</b>	<b>Percent of Total</b>
MOTORCYCLE	2	3.23
PASSENGER CAR	34	54.84
PICKUP	13	20.97
SINGLE UNIT TRUCK (2-AXLE, 6-TIRE)	1	1.61
SINGLE UNIT TRUCK (3 OR MORE AXLES)	1	1.61
SPORT UTILITY	10	16.13
VAN	1	1.61

**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Intersection Analysis Report**

**Yearly Totals Summary**

**Accident Totals**

<b>Year</b>	<b>Total Accidents</b>	<b>Fatal Accidents</b>	<b>Injury Accidents</b>	<b>Property Damage Only Accidents</b>
2019	3	0	1	2
2020	4	0	3	1
2021	9	0	4	5
2022	7	0	2	5
2023	8	0	0	8
2024	0	0	0	0
<b>Total</b>	<b>31</b>	<b>0</b>	<b>10</b>	<b>21</b>

**Injury Totals**

<b>Year</b>	<b>Fatal Injuries</b>	<b>Class A, B, or C Injuries</b>
2019	0	1
2020	0	4
2021	0	8
2022	0	4
2023	0	0
2024	0	0
<b>Total</b>	<b>0</b>	<b>17</b>

**Miscellaneous Totals**

<b>Year</b>	<b>Property Damage</b>	<b>EPDO Index</b>
2019	\$ 12000	10.40
2020	\$ 26500	26.20
2021	\$ 84800	38.60
2022	\$ 82500	90.20
2023	\$ 27000	8.00
2024	\$ 0	0.00
<b>Total</b>	<b>\$ 232800</b>	<b>173.40</b>

**Type of Accident Totals**

<b>Year</b>	<b>Left Turn</b>	<b>Right Turn</b>	<b>Rear End</b>	<b>Run Off Road &amp;</b>			
				<b>Fixed Object</b>	<b>Angle</b>	<b>Side Swipe</b>	<b>Other</b>
2019	1	1	0	0	1	0	0
2020	0	0	1	0	3	0	0

**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Intersection Analysis Report**

Year	Run Off Road &						Other
	Left Turn	Right Turn	Rear End	Fixed Object	Angle	Side Swipe	
2021	4	0	0	0	4	0	1
2022	4	0	1	0	2	0	0
2023	1	1	1	0	1	4	0
2024	0	0	0	0	0	0	0
<b>Total</b>	10	2	3	0	11	4	1

**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Intersection Analysis Report**

**Study Criteria**

Study Name	Log No.	PH No.	TIP No.	K/A Cf.	B/C Cf.	ADT	ADT Route
41000073635				76.8	8.4	13800	

Request Date	Courier Service	Phone No.	Ext.	Fax No.
4/3/2024				

County			Municipality			Y-Line Ft.	Begin Date	End Date	Years
Name	Code	Div.	Name	Code					
UNION	90	10	All and Rural		150	2/1/2019	1/31/2024	5.00	

Location Text	Requestor
SR 1004 (Lawyers Rd) at SR 1525 (Mill Grove Rd)	Kimley-Horn Lowe

Included Accidents
106784917
107129751
106813472
106940089
107202938

Excluded Accidents
105983845

**Fiche Roads**

Name	Code
SR 1004	40001004
SR 1525	40001525
LAWYERS	50017267
MILL GROVE	50037509

**Intersection Road Combinations**

Name	Code	Code	Name
SR 1004	40001004	40001525	SR 1525
SR 1004	40001004	50037509	MILL GROVE
LAWYERS	50017267	40001525	SR 1525
LAWYERS	50017267	50037509	MILL GROVE



**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Intersection Analysis Report**

Acc No	Crash ID	Date	Accident Type	Total Damage	Injuries				Condition			Road		Trfc Ctl	
					F	A	B	C	R	L	W	Ch	Ci	Dv	Op

**Legend for Report Details:**

- Acc No - Accident Number
- Injuries: F - Fatal, A - Class A, B - Class B, C - Class C
- Condition: R - Road Surface, L - Ambient Light, W - Weather
- Rd Ch - Road Character
- Rd Ci - Roadway Contributing Circumstances
- Trfc Ctl - Traffic Control: Dv - Device, Op - Operating
- Alch/Drugs - Alcohol Drugs Suspected
- Veh Mnvr/Ped Actn - Vehicle Maneuver/Pedestrian Action
- Obj Strk - Object Struck

**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Intersection Analysis Report**

**Summary Statistics**

**High Level Crash Summary**

<b>Crash Type</b>	<b>Number of Crashes</b>	<b>Percent of Total</b>
Total Crashes	7	100.00
Fatal Crashes	0	0.00
Non-Fatal Injury Crashes	1	14.29
Total Injury Crashes	1	14.29
Property Damage Only Crashes	6	85.71
Night Crashes	3	42.86
Wet Crashes	2	28.57
Alcohol/Drugs Involvement Crashes	1	14.29

**Crash Severity Summary**

<b>Crash Type</b>	<b>Number of Crashes</b>	<b>Percent of Total</b>
Total Crashes	7	100.00
Fatal Crashes	0	0.00
Class A Crashes	0	0.00
Class B Crashes	0	0.00
Class C Crashes	1	14.29
Property Damage Only Crashes	6	85.71

**Vehicle Exposure Statistics**

**Annual ADT = 9500**

**Total Vehicle Exposure = 17.35 (MEV)**

<b>Crash Rate</b>	<b>Crashes Per 100 Million Vehicles Entered</b>
Total Crash Rate	40.35
Fatal Crash Rate	0.00
Non Fatal Crash Rate	5.76
Night Crash Rate	17.29
Wet Crash Rate	11.53
EPDO Rate	83.01

**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Intersection Analysis Report**

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**Miscellaneous Statistics**

Severity Index =	2.06
EPDO Crash Index =	14.40
Estimated Property Damage Total = \$	135750.00

**Accident Type Summary**

Accident Type	Number of Crashes	Percent of Total
ANGLE	1	14.29
FIXED OBJECT	1	14.29
LEFT TURN, DIFFERENT ROADWAYS	3	42.86
PARKED MOTOR VEHICLE	1	14.29
REAR END, SLOW OR STOP	1	14.29

**Injury Summary**

Injury Type	Number of Injuries	Percent of Total
Fatal Injuries	0	0.00
Class A Injuries	0	0.00
Class B Injuries	0	0.00
Class C Injuries	1	100.00
Total Non-Fatal Injuries	1	100.00
Total Injuries	1	100.00

**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Intersection Analysis Report**

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**Monthly Summary**

<b>Month</b>	<b>Number of Crashes</b>	<b>Percent of Total</b>
Jan	2	28.57
Feb	0	0.00
Mar	0	0.00
Apr	0	0.00
May	0	0.00
Jun	1	14.29
Jul	0	0.00
Aug	0	0.00
Sep	1	14.29
Oct	1	14.29
Nov	2	28.57
Dec	0	0.00

**Daily Summary**

<b>Day</b>	<b>Number of Crashes</b>	<b>Percent of Total</b>
Mon	1	14.29
Tue	2	28.57
Wed	1	14.29
Thu	1	14.29
Fri	1	14.29
Sat	0	0.00
Sun	1	14.29

**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Intersection Analysis Report**

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**Hourly Summary**

<b>Hour</b>	<b>Number of Crashes</b>	<b>Percent of Total</b>
0000-0059	0	0.00
0100-0159	0	0.00
0200-0259	0	0.00
0300-0359	0	0.00
0400-0459	0	0.00
0500-0559	0	0.00
0600-0659	0	0.00
0700-0759	0	0.00
0800-0859	1	14.29
0900-0959	1	14.29
1000-1059	0	0.00
1100-1159	0	0.00
1200-1259	0	0.00
1300-1359	0	0.00
1400-1459	0	0.00
1500-1559	2	28.57
1600-1659	0	0.00
1700-1759	0	0.00
1800-1859	0	0.00
1900-1959	2	28.57
2000-2059	0	0.00
2100-2159	1	14.29
2200-2259	0	0.00
2300-2359	0	0.00

**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Intersection Analysis Report**

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**Light and Road Conditions Summary**

<b>Condition</b>	<b>Dry</b>	<b>Wet</b>	<b>Other</b>	<b>Total</b>
Day	2	2	0	4
Dark	3	0	0	3
Other	0	0	0	0
Total	5	2	0	7

**Object Struck Summary**

<b>Object Type</b>	<b>Times Struck</b>	<b>Percent of Total</b>
DITCH	1	33.33
PARKED MOTOR VEHICLE	2	66.67

**Vehicle Type Summary**

<b>Vehicle Type</b>	<b>Number Involved</b>	<b>Percent of Total</b>
PASSENGER CAR	3	23.08
PICKUP	3	23.08
SINGLE UNIT TRUCK (3 OR MORE AXLES)	1	7.69
SPORT UTILITY	5	38.46
VAN	1	7.69

**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Intersection Analysis Report**

**Yearly Totals Summary**

**Accident Totals**

<b>Year</b>	<b>Total Accidents</b>	<b>Fatal Accidents</b>	<b>Injury Accidents</b>	<b>Property Damage Only Accidents</b>
2019	1	0	0	1
2020	1	0	0	1
2021	2	0	0	2
2022	0	0	0	0
2023	3	0	1	2
2024	0	0	0	0
<b>Total</b>	<b>7</b>	<b>0</b>	<b>1</b>	<b>6</b>

**Injury Totals**

<b>Year</b>	<b>Fatal Injuries</b>	<b>Class A, B, or C Injuries</b>
2019	0	0
2020	0	0
2021	0	0
2022	0	0
2023	0	1
2024	0	0
<b>Total</b>	<b>0</b>	<b>1</b>

**Miscellaneous Totals**

<b>Year</b>	<b>Property Damage</b>	<b>EPDO Index</b>
2019	\$ 21000	1.00
2020	\$ 1500	1.00
2021	\$ 9000	2.00
2022	\$ 0	0.00
2023	\$ 104250	10.40
2024	\$ 0	0.00
<b>Total</b>	<b>\$ 135750</b>	<b>14.40</b>

**Type of Accident Totals**

<b>Year</b>	<b>Left Turn</b>	<b>Right Turn</b>	<b>Rear End</b>	<b>Run Off Road &amp;</b>			
				<b>Fixed Object</b>	<b>Angle</b>	<b>Side Swipe</b>	<b>Other</b>
2019	1	0	0	0	0	0	0
2020	0	0	0	0	0	0	1

**North Carolina Department of Transportation  
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Intersection Analysis Report**

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Year	Run Off Road &						
	Left Turn	Right Turn	Rear End	Fixed Object	Angle	Side Swipe	Other
2021	0	0	1	0	1	0	0
2022	0	0	0	0	0	0	0
2023	2	0	0	1	0	0	0
2024	0	0	0	0	0	0	0
Total	3	0	1	1	1	0	1

**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Intersection Analysis Report**

**Study Criteria**

Study Name	Log No.	PH No.	TIP No.	K/A Cf.	B/C Cf.	ADT	ADT Route
41000073636				76.8	8.4	9500	

Request Date	Courier Service	Phone No.	Ext.	Fax No.
4/3/2024				

County			Municipality			Y-Line Ft.	Begin Date	End Date	Years
Name	Code	Div.	Name	Code	Y-Line Ft.	Begin Date	End Date	Years	
UNION	90	10	All and Rural		150	2/1/2019	1/31/2024	5.00	

Location Text	Requestor
NC 218 (Fairview Rd) at SR 1539 (Rock Hill Church Rd)/Ashe Meadow Dr	Kimley-Horn Lowe

Included Accidents
106458125

**Fiche Roads**

Name	Code
NC 218	30000218
FAIRVIEW	50010120
SR 1539	40001539
ASHE MEADOW	50045702
ROCK HILL	50026219

**Intersection Road Combinations**

Name	Code	Code	Name
NC 218	30000218	40001539	SR 1539
NC 218	30000218	50026219	ROCK HILL
NC 218	30000218	50045702	ASHE MEADOW
FAIRVIEW	50010120	40001539	SR 1539
FAIRVIEW	50010120	50026219	ROCK HILL
FAIRVIEW	50010120	50045702	ASHE MEADOW
ASHE MEADOW	50045702	40001539	SR 1539
ASHE MEADOW	50045702	50026219	ROCK HILL



**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Intersection Analysis Report**

Acc No	Crash ID	Date	Accident Type	Total Damage	Injuries				Condition			Road		Trfc Ctl	
					F	A	B	C	R	L	W	Ch	Ci	Dv	Op
8	106865427	02/18/2022 16:31	REAR END, SLOW OR STOP	\$ 0	0	0	0	0	1	1	1	1	0	0	
Unit	1 : 1	Alchl/Drgs: 0	Speed: 45 MPH Dir: E	Veh Mnvr / Ped Actn: 4	Obj Strk:										
Unit	2 : 1	Alchl/Drgs: 0	Speed: 0 MPH Dir: E	Veh Mnvr / Ped Actn: 1	Obj Strk:										
-----															
9	107126445	10/29/2022 07:38	OVERTURN/ROLLOVER	\$ 42500	0	0	0	1	1	3	2	1	0	0	
Unit	1 : 11	Alchl/Drgs: 0	Speed: 45 MPH Dir: E	Veh Mnvr / Ped Actn: 8	Obj Strk: 64										
-----															
10	107251444	02/22/2023 12:40	LEFT TURN, SAME ROADWAY	\$ 6000	0	0	0	0	1	1	1	1	0	0	
Unit	1 : 4	Alchl/Drgs: 0	Speed: 10 MPH Dir: NE	Veh Mnvr / Ped Actn: 8	Obj Strk:										
Unit	2 : 1	Alchl/Drgs: 0	Speed: 45 MPH Dir: W	Veh Mnvr / Ped Actn: 4	Obj Strk:										
-----															

**Legend for Report Details:**  
 Acc No - Accident Number  
 Injuries: F - Fatal, A - Class A, B - Class B, C - Class C  
 Condition: R - Road Surface, L - Ambient Light, W - Weather  
 Rd Ch - Road Character  
 Rd Ci - Roadway Contributing Circumstances  
 Trfc Ctl - Traffic Control: Dv - Device, Op - Operating  
 Alchl/Drgs - Alcohol Drugs Suspected  
 Veh Mnvr/Ped Actn - Vehicle Maneuver/Pedestrian Action  
 Obj Strk - Object Struck

**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Intersection Analysis Report**

**Summary Statistics**

**High Level Crash Summary**

<b>Crash Type</b>	<b>Number of Crashes</b>	<b>Percent of Total</b>
Total Crashes	10	100.00
Fatal Crashes	0	0.00
Non-Fatal Injury Crashes	3	30.00
Total Injury Crashes	3	30.00
Property Damage Only Crashes	7	70.00
Night Crashes	0	0.00
Wet Crashes	1	10.00
Alcohol/Drugs Involvement Crashes	0	0.00

**Crash Severity Summary**

<b>Crash Type</b>	<b>Number of Crashes</b>	<b>Percent of Total</b>
Total Crashes	10	100.00
Fatal Crashes	0	0.00
Class A Crashes	0	0.00
Class B Crashes	0	0.00
Class C Crashes	3	30.00
Property Damage Only Crashes	7	70.00

**Vehicle Exposure Statistics**

**Annual ADT = 9000**

**Total Vehicle Exposure = 16.43 (MEV)**

<b>Crash Rate</b>	<b>Crashes Per 100 Million Vehicles Entered</b>
Total Crash Rate	60.85
Fatal Crash Rate	0.00
Non Fatal Crash Rate	18.25
Night Crash Rate	0.00
Wet Crash Rate	6.08
EPDO Rate	195.94

**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Intersection Analysis Report**

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**Miscellaneous Statistics**

Severity Index =	3.22
EPDO Crash Index =	32.20
Estimated Property Damage Total = \$	86600.00

**Accident Type Summary**

<b>Accident Type</b>	<b>Number of Crashes</b>	<b>Percent of Total</b>
LEFT TURN, SAME ROADWAY	2	20.00
OVERTURN/ROLLOVER	1	10.00
RAN OFF ROAD - RIGHT	1	10.00
REAR END, SLOW OR STOP	5	50.00
SIDESWIPE, OPPOSITE DIRECTION	1	10.00

**Injury Summary**

<b>Injury Type</b>	<b>Number of Injuries</b>	<b>Percent of Total</b>
Fatal Injuries	0	0.00
Class A Injuries	0	0.00
Class B Injuries	0	0.00
Class C Injuries	3	100.00
Total Non-Fatal Injuries	3	100.00
Total Injuries	3	100.00

**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Intersection Analysis Report**

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**Monthly Summary**

<b>Month</b>	<b>Number of Crashes</b>	<b>Percent of Total</b>
Jan	0	0.00
Feb	2	20.00
Mar	1	10.00
Apr	0	0.00
May	1	10.00
Jun	2	20.00
Jul	0	0.00
Aug	0	0.00
Sep	0	0.00
Oct	2	20.00
Nov	1	10.00
Dec	1	10.00

**Daily Summary**

<b>Day</b>	<b>Number of Crashes</b>	<b>Percent of Total</b>
Mon	1	10.00
Tue	1	10.00
Wed	3	30.00
Thu	1	10.00
Fri	2	20.00
Sat	1	10.00
Sun	1	10.00

**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Intersection Analysis Report**

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**Hourly Summary**

<b>Hour</b>	<b>Number of Crashes</b>	<b>Percent of Total</b>
0000-0059	0	0.00
0100-0159	0	0.00
0200-0259	0	0.00
0300-0359	0	0.00
0400-0459	0	0.00
0500-0559	0	0.00
0600-0659	0	0.00
0700-0759	2	20.00
0800-0859	0	0.00
0900-0959	0	0.00
1000-1059	0	0.00
1100-1159	0	0.00
1200-1259	2	20.00
1300-1359	1	10.00
1400-1459	0	0.00
1500-1559	2	20.00
1600-1659	2	20.00
1700-1759	0	0.00
1800-1859	1	10.00
1900-1959	0	0.00
2000-2059	0	0.00
2100-2159	0	0.00
2200-2259	0	0.00
2300-2359	0	0.00

**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Intersection Analysis Report**

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**Light and Road Conditions Summary**

<b>Condition</b>	<b>Dry</b>	<b>Wet</b>	<b>Other</b>	<b>Total</b>
Day	7	1	0	8
Dark	0	0	0	0
Other	2	0	0	2
<b>Total</b>	<b>9</b>	<b>1</b>	<b>0</b>	<b>10</b>

**Object Struck Summary**

<b>Object Type</b>	<b>Times Struck</b>	<b>Percent of Total</b>
OTHER FIXED OBJECT	3	100.00

**Vehicle Type Summary**

<b>Vehicle Type</b>	<b>Number Involved</b>	<b>Percent of Total</b>
PASSENGER CAR	10	47.62
PICKUP	4	19.05
SINGLE UNIT TRUCK (2-AXLE, 6-TIRE)	1	4.76
SINGLE UNIT TRUCK (3 OR MORE AXLES)	2	9.52
SPORT UTILITY	3	14.29
VAN	1	4.76

**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Intersection Analysis Report**

**Yearly Totals Summary**

**Accident Totals**

<b>Year</b>	<b>Total Accidents</b>	<b>Fatal Accidents</b>	<b>Injury Accidents</b>	<b>Property Damage Only Accidents</b>
2019	1	0	0	1
2020	1	0	0	1
2021	5	0	2	3
2022	2	0	1	1
2023	1	0	0	1
2024	0	0	0	0
<b>Total</b>	<b>10</b>	<b>0</b>	<b>3</b>	<b>7</b>

**Injury Totals**

<b>Year</b>	<b>Fatal Injuries</b>	<b>Class A, B, or C Injuries</b>
2019	0	0
2020	0	0
2021	0	2
2022	0	1
2023	0	0
2024	0	0
<b>Total</b>	<b>0</b>	<b>3</b>

**Miscellaneous Totals**

<b>Year</b>	<b>Property Damage</b>	<b>EPDO Index</b>
2019	\$ 1400	1.00
2020	\$ 1000	1.00
2021	\$ 35700	19.80
2022	\$ 42500	9.40
2023	\$ 6000	1.00
2024	\$ 0	0.00
<b>Total</b>	<b>\$ 86600</b>	<b>32.20</b>

**Type of Accident Totals**

<b>Year</b>	<b>Left Turn</b>	<b>Right Turn</b>	<b>Rear End</b>	<b>Run Off Road &amp;</b>			
				<b>Fixed Object</b>	<b>Angle</b>	<b>Side Swipe</b>	<b>Other</b>
2019	0	0	1	0	0	0	0
2020	0	0	0	1	0	0	0

**North Carolina Department of Transportation  
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Year	Run Off Road &						Other
	Left Turn	Right Turn	Rear End	Fixed Object	Angle	Side Swipe	
2021	1	0	3	0	0	1	0
2022	0	0	1	0	0	0	1
2023	1	0	0	0	0	0	0
2024	0	0	0	0	0	0	0
Total	2	0	5	1	0	1	1

**North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Intersection Analysis Report**

**Study Criteria**

Study Name	Log No.	PH No.	TIP No.	K/A Cf.	B/C Cf.	ADT	ADT Route
41000073637				76.8	8.4	9000	

Request Date	Courier Service	Phone No.	Ext.	Fax No.
4/3/2024				

County			Municipality			Y-Line Ft.	Begin Date	End Date	Years
Name	Code	Div.	Name	Code					
MECKLENBURG	60	10	All and Rural		150	2/1/2019	1/31/2024	5.00	

Location Text	Requestor
NC 218 (Fairview Rd) at Asheley Glen Dr	Kimley-Horn Lowe

Included Accidents
106425105
107251444

Excluded Accidents
106381061
105926196

**Fiche Roads**

Name	Code
NC 218	30000218
FAIRVIEW	50010120
ASHELEY GLEN	50001128

**Intersection Road Combinations**

Name	Code	Code	Name
NC 218	30000218	50001128	ASHELEY GLEN
FAIRVIEW	50010120	50001128	ASHELEY GLEN