Union County, NC

Land Use Board

Meeting Agenda

Tuesday, January 28, 2025 **6:00 PM** **Board Room, First Floor**

Call to Order

Pledge of Allegiance and Moment of Reflection

Establish Voting Members

Additions and/or Deletions to the Agenda

Approval of the Agenda

Approval of the Minutes

25-042 **November 19, 2024 Land Use Board Minutes**

Attachments: 2024.11.19 LUB Minutes

Agenda Item(s)

25-045 **Conditional Rezoning Case CZ-2024-007 Gold Branch**

DETERMINATION OF CONFLICTS
INFORMATION CONTACT:
Bjorn E. Hansen, Senior Planner-Long Range Planning, 704-283-3690
ACTION REQUESTED:
Recommend approval or denial of proposed rezoning to the Board of Commissioners
BACKGROUND:
This case is a rezoning request, petition CZ-2024-008, submitted by Kolter Group Acquisitions, LLC (the “Applicant”) for revision of the Union County Zoning Map by rezoning tax parcels appearing on the Union County tax map as parcels 08-309-016, 08-282-009A, and a 129.17 acre portion of tax parcel 08-312-014, in the Goose Creek Township from RA-40 to R-4 with Conditions. The rezoning will include the following

conditions:

1. Pursuant to Section 160D-108.1 of the North Carolina General Statutes and Section 80.020 of the Union County Unified Development Ordinance, the approval is vested for a period of five years.
2. Develop according to site plan dated November 5, 2024
3. Subdividing the approximately 20.93 acre portion of parcel 08-312-014 not included in the development
4. Meeting all requirements of the Union County Unified Development Ordinance.
5. Conceptual master plan. The development is subject to the conceptual master plan submitted as part of the Conditional Rezoning Application. Petitioner shall develop the site in a manner generally consistent with the conceptual master plan with the understanding that some minor modifications to the plans may be made as long as the ultimate design is consistent with the spirit and intent of the conceptual master plan.
6. General Design Guidelines:
    a. The principal buildings constructed on the site may use a variety of building materials. The building materials used for the building may be a combination of the following: glass, brick, stone, simulated stone, pre-cast stone, architectural precast concreate, synthetic stone, stucco, EIFS, cementitious siding (such as Hardi-Plank), or wood. Vinyl, as a building material, will only be allowed on widows, soffits, and trim features.
    b. Accessory structures constructed in the development shall match the architectural style and shall be of the same materials as the principal buildings.
7. Meeting all requirements of Traffic Impact Analysis:
    a. Petitioner will comply with any off-site improvements as required by NCDOT.
    b. Prior to the platting of the 400th home, the developer agrees to contribute $500,000 to Union County towards improvements at the Mill Grove Rd/Lawyers Road roundabout, or other road improvement in the vicinity of the project.
    c. NC218 and Access 1 - Construct east bound right turn lane along NC218 and northbound approach of Access 1 as a Right-In-Right-Out.
    d. Mill Grove Road and Access 2: Construct a northbound left turn lane into Access 2
8. The community will meet the Fair Housing Act requirements for an Age Restricted development under the “55 or older” exemption.

a. At least 80 percent of the units must have at least one occupant who is 55 years of age or older; and
b. The facility or community must publish and adhere to policies and procedures that demonstrate the intent to operate as "55 or older" housing; and
c. The facility or community must comply with HUD's regulatory requirements for age verification of residents.

9. The HOA Declarations will have leasing provisions that include a cap (5% of lots) and an 18 month lockout/residency requirement. The Declarations will also require that every lease include a reference to the 55+ age/occupancy requirements. The Declarations will also require prior Board review of any proposed lease to confirm that the age-related requirements are not going to be violated by any proposed tenant or occupant.
10. Future amendments to the rezoning plan may be applied for by the owner or owners of the applicable development area portion of the site affected by such amendment in accordance with the provisions herein and of Article 80 of the Ordinance. All conditions of the overall development will still apply.
11. If this rezoning petition is approved, all conditions applicable to the development of the site imposed under the rezoning plan will, unless amended in the manner provided herein and under the ordinance, be binding upon and inure to the benefit of the petitioner and subsequent owners of the site and development areas, as applicable, and their respective heirs, devisees, personal representatives, successors in interest or assigns.

A community meeting was held January 7, 2025. Approximately 55 residents attended the meeting and asked about the process for rezoning, traffic concerns, smell from septic fields, impact on taxes from additional development, units converted to rentals, and fire response. No changes were made based on feedback. Two residents have emailed comments, citing concerns over the abandoned well on site, traffic impacts,
and preserving rural character.

FINANCIAL IMPACT:

$500,000 contribution for future road improvements.

Attachments: 2024-CZ-007 Gold Branch Application
CZ-2024-007 Gold Branch staff report LUB
2024-CZ-007 Gold Branch Letter of Intent
2024-CZ-007 Gold Branch site plan no phasing 11-8-24
Public comments
Land Use Board Advisory Consistency and Reasonablenes Statements - CZ-2024-007 (Gold Branch)
Fairview Mill Grove comments 10-3-24
Stallings comments 10-16-24
2024-12-20__SS Purser & BV Belk TIA UPDATE_REPORT+APPENDIX

25-050 **Conditional Rezoning CZ-2024-006 New Salem**

DETERMINATION OF CONFLICTS
INFORMATION CONTACT:
Bjorn E. Hansen, Senior Planner- Long Range Planning, 704-283-3690
ACTION REQUESTED:
Recommend approval or denial of proposed rezoning to Board of Commissioners
BACKGROUND:
This case is a rezoning request, petition CZ-2024-006, submitted by Terry and Deborah Stevens requesting a revision of the Union County Zoning Map by rezoning two parcels totaling 2.5 acres appearing on the tax map as tax parcels 01-234-006 and 01-234-006A from RA-40 to Light Industrial (LI) with Conditions, including consolidating the aforementioned parcels; located in the New Salem Township. The rezoning will include the following conditions:
1. Pursuant to Section 160D-108.1 of the North Carolina General Statutes and Section 80.020 of the Union County Unified Development Ordinance, the approval is vested for a period of five years.
2. Development will meet all requirements of the Union County Unified Development Ordinance.
3. The approval is limited to the site plan dated December 9, 2024.
4. A six foot opaque fence will be installed parallel to the northern border of the property.

A community meeting was held January 14, 2025. Three residents attended the meeting and asked about previously permitted septic fields on adjacent parcels, ability to operate the business if sold, and lighting glare on adjacent parcels. No changes were made based on feedback. No additional comments have been received by staff.
FINANCIAL IMPACT:
None.

Attachments: 2024-CZ-006 New Salem Application
2024-CZ-006 New Salem Site Plan 12-9-24
2024-CZ-006 New Salem Letter of Intent
CZ-2024-006 New Salem staff report LUB
Land Use Board Advisory Consistency and Reasonablenes Statements - CZ-2024-006 (New Salem)

Planning Staff Report

Brief Comments

Adjournment

Union County Government
Center
500 North Main Street
Monroe, North Carolina
www.unioncountync.gov

File #: 25-042 **Agenda Date:** 1/28/2025

TITLE:

November 19, 2024 Land Use Board Minutes

Land Use Board
November 19, 2024
Meeting Minutes

The Union County Land Use Board met in regular session on November 19, 2024, at 6:00 p.m. in the Union County Government Center, 1st Floor Board Room, 500 N. Main Street.

Present: Vice Chair Rick Davis, Derrick Austin, Larry Britt, Dion Edwards, Doug McClew, Mark Tilley and alternate Charles Walkup, Jr.

Also Present: Planning Director Lee Jenson, Senior Planner Bjorn Hansen and Land Use Board Clerk Amy Griffin.

Call to Order: Vice Chair Rick Davis called the meeting to order.

(a) Pledge of Allegiance and Moment of Reflection: The Pledge of Allegiance was said and Mark Tilley gave the prayer.

Establish Voting Members: Vice Chair Rick Davis said with six regular members were in attendance for the meeting and that alternate Charles Walkup Jr would be a voting member.

Additions and/or Deletions to the Agenda: There were no changes made to the agenda. Doug McClew made a motion to approve the agenda, Larry Britt seconded, and it was approved 7 to 0.

Approval of the Minutes: Larry Britt made a motion for approval of the October 15, 2024 Land Use Board minutes, Dion Edwards agreed to seconded. It was approved 7 to 0.

Public Hearing:

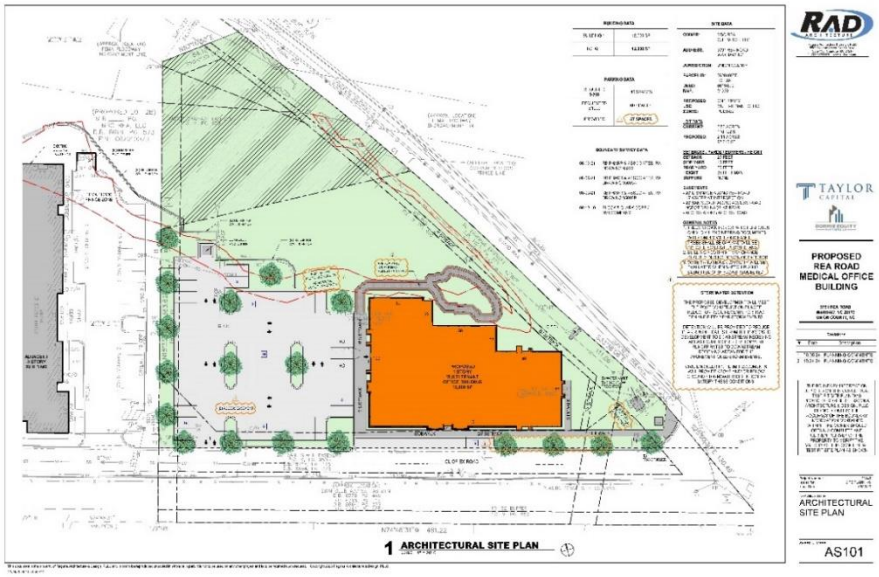
Planning Staff Report - Rezoning Case # CZ-2024-008
Staff Contact: Bjorn Hansen, Senior Planner

Summary of Request

This case is a rezoning request, petition CZ-2024-008, submitted by Dormie Equity Partners, LP (the "Applicant") for revision of the Union County Zoning Map by amending the approved Planned Unit Development district permit with associated conditions for a 2.53 acre parcel of land appearing on the tax map as tax parcel 06-201-007J in the Sandy Ridge Township under an existing legacy PUD6-B2 zoning district. The rezoning will include the following conditions:

1. Pursuant to Section 160D-108.1 of the North Carolina General Statutes and Section 80.020 of the Union County Unified Development Ordinance, the approval is vested for a period of five years.
2. Development will meet all requirements of the Union County Unified Development Ordinance.
3. The approval is limited to the site plan dated October 24, 2024.

4. The permitted uses on the site include all office uses, including medical office.
5. The site may include natural-surface pedestrian trails within areas that fall within a floodplain.
6. The site may include pedestrian-related improvements and plantings (including in the floodplain) as allowed under the Union County Unified Development Ordinance and other state, local, and federal regulations.



Owner/Applicant

Owners: MSC Rea Outparcel, LLC
725 Park Cedar Drive
Matthews, NC 28105

Applicant: Dormie Equity Partners, LP
1213 West Morehead Street, Fifth Floor
Charlotte, NC 28208

Property Information

Location: On the southwest side of the intersection of Rea and Tom Short Roads. Location more specifically described as tax parcel 06-201-007J.

Municipal Proximity: The site is immediately east of the Village of Marvin.

Existing Land Use and Development Status: The parcel is currently zoned PUD6-B2 and is undeveloped.

Environmental Features: There is a floodplain on the northern edge of the site and detention would be required as part of the site plan.

Utilities: Public water and sewer are available to the site.

Zoning and Land Use History: The site has been zoned as PUD6 since 2004, when it was rezoned as part of the overall site that now includes the Kohls, vacant land on the northeast corner of Tom Short and Rea Roads, and portions of Hunter Oaks. There were three unsuccessful and one successful rezoning from R-40 to R-20, which resulted in 246 acres of residential development in the immediate vicinity of the site. There also was an approved townhouse development on the county line north of this site approved in 2018. There have been two commercial rezonings proposed since 2018, including the approved shopping center north of the Lighthouse Child Care Facility and denied telecommunications tower behind Lighthouse. There have been five special use permits at this intersection, all relating to the implementing the PUD zoning of the overall development. All five were approved, and all have been implemented, with the exception of the large vacant parcel on the northeast corner of Rea and Tom Short.

Schools: Because this rezoning request is commercial in nature, UCPS was not consulted for comments.

Transportation: This site is off of Rea Road, which is a NCDOT-maintained facility. It has a 2022 daily traffic count of 22,000 vehicles per day. There are no funded road improvements in the vicinity of the project. This site is expected to generate approximately 400 trips per day, which did not meet Union County or NCDOT thresholds for a traffic impact analysis. No improvements to Rea Road are recommended as part of this rezoning or site plan. The site would use the existing driveway off of Rea Road.

Planning Documents

Union County Comprehensive Plan: The Union County 2050 comprehensive plan identifies this area part of a small commercial center. A Small community center typically serves a larger population and includes 125,000 square feet to 400,000 of square feet of leasable space. The typical trade area of a Community Center is three to six miles. Small community centers should be anchored by a commercial use such as a grocery store or retailer. The surrounding land use is for single-family residential at a density of approximately two units per acre.

Public and Municipal Comments

Public Comments: A community meeting was held October 8, 2024. Three residents attended the meeting and asked about the process for rezoning and parking requirements. No changes were made based on feedback. No additional comments have been received by staff.

Municipal Comments: Marvin is less than a quarter mile west of the site and were contacted for comments.

Staff Comments and Recommendation

This part of Union County is identified as a commercial node, as well as single-family residential land uses. This proposal for medical office uses is consistent with the PUD zoning for the site and the commercial node designation for the area. The proposal can meet Union County development standards and will have a low

impact on adjacent roads. **Because of these aspects of the development, staff recommend approval of this rezoning application.**

Bjorn Hansen came to the podium for his presentation. He explained this was a conditional rezoning for a 2 and a half acre parcel off of Rea Road near the Kohl's. This is part of the overall large PUD plan unit development zoning district that has been in existence for almost 20 years. This isn't technically a rezoning because it already has the right zoning assigned to it but the conditions for that overall zoning are such that any development implementation of it must come to the board for approval. PUD stands for planned unit development and there's sections within it. You could have a commercial and a residential component. PUD zoning was very complicated and anytime plans were updated you had to go back to the planning board to get an approval for those updated plans. PUD zoning was eliminated with the new ordinance because it was so complicated and nobody liked it. However, there are legacy districts out there that must be dealt with and it made sense to use the conditional rezoning process. When it shows up as a conditional rezoning it was to use the process but it's not really a rezoning. They're essentially just coming to you saying these are the updated plans. Planning Staff suggested that medical offices were probably the most intensive type of office use and so lesser uses were seen as appropriate and gave the applicant more flexibility. Rick Davis clarified that the rezoning was for medical because that is the stiffest and Bjorn agreed. Bjorn went over the area and the businesses located there. Bjorn noted that some parking was in the flood plain but Brian Hawkins, the stormwater had stated it would work.

Mark Tilley believed it appeared that the parking lot is a part of the floodplain and concerned given what had recently happened in Western North Carolina. There was some discussion about the stormwater detention under the parking lot.

Aaron Houck with Robinson Bradshaw and Chad Dameron were present to go over the project a little more and answer any questions from the Board.

Larry Britt thought the design looked good. Mark Tilley was concerned with the floodplain but he did acknowledge he was part of the original approval. He read the Consistency Statement to recommend approval of the rezoning and Doug McClew seconded. It was passed unanimously 7 to 0.

Public Hearing:

Planning Staff Report – TXT-2024-002 Text Amendment to Sections 5.030-B (Conventional Development) and 5.030-C (Cluster Development) of the Union County Development Ordinance

Staff Contact: Lee Jenson, Planning Director

Summary of Request

These proposed text amendments are based on recommendations outlined in the Union County 2050 Comprehensive Plan. The Comprehensive Plan outlines several strategies that will help implement the vision of the plan; one of which is helping to protect the rural character and open spaces of areas shown as "Rural Residential" in the Union County comprehensive plan. The Board of County Commissioners then established an implementation committee to make specific recommendations concerning all the strategies. One specific recommendation concerning protecting the rural character and open spaces of Union County is to require major subdivisions in the "Rural Residential" areas to provide 30% open space. This effectively

reduces the overall density of major subdivisions in the "Rural Residential" areas by 30%. These implementation strategies were approved by the Board of County Commissioners in January 2024.

Section 5.020 Allowed Uses

Principal uses are allowed in R districts in accordance with Section 25.010 (Table 25-1). Not more than one principal dwelling unit is allowed on a single lot (parcel) of land unless otherwise approved as a townhouse or multi-unit development (amended 5-18-2015).

Section 5.030 Lot and Building Regulations

5.030-A General

This section establishes lot and building regulations for all development in R districts. The standards vary based on zoning classification and sometimes by building and development type. These regulations are not to be interpreted as a guarantee that allowed densities and development yields can be achieved on every tract. Other factors, such as central water and central sewer service availability, health department requirements, other requirements of this ordinance or other factors may sometimes work to further limit development potential.

5.030-B Conventional Development *(amended 3-15-2021)*

"Conventional development" is any development that utilizes Table 5-2 to establish minimum lot sizes.

1. **Applicability**
   The conventional development standards established in this subsection apply to all conventional development new subdivisions in all RA and R districts.

2. **Lot and Building Regulations**
   The lot and building regulations of Table 5-2 apply to all conventional development in R districts. Conventional developments are also subject to the supplemental regulations of this subsection (5.030-B).

3. **Density Standards**
   1. For Major Subdivisions utilizing conventional development standards the following density standards apply:

      a. Density is not transferable across state roads. Existing and proposed street rights-of-way may not be counted as lot area for the purposes of calculating maximum site density.

      b. Areas within a special flood hazard area, as shown on the Flood Insurance Rate Maps (FIRM) for Union County, and areas designated as Riparian Buffers under Article 70 of this ordinance, shall not be used to calculate maximum site density.

      c. In areas identified as "Rural Residential" on the future land use map in the current comprehensive plan, in addition to the standard set forth above, an additional 30% of the acreage of the development site shall be set aside as common open space and shall not be used to calculate maximum site density. Common open space as required by this section shall follow the regulations set forth in Section 5.030-C(4)(b) and 5.030-C(4)(d)-(g).

Table 5-1: R District Lot and Building Regulations--Conventional Development (amended 8-6-2018)

Figure 5-1	Regulations	RA-200	R-40 RA-40	R-20 RA-20	R-15	R-10	R-8	R-6	R-4
	Minimum Lot Size								
L1	Area (square feet)	200,000	40,000	20,000	15,000	10,000	8,000	6,000	4,000
	Area per dwelling unit (sq. ft.)								
	Detached House	200,000	40,000	20,000	15,000	10,000	8,000	6,000	4,000
	Two-unit house	NA	30,000	15,000	11,250	7,500	6,000	4,500	3,000
	Townhouse	NA	NA	NA	NA	6,250	5,000	3,750	2,000
	Multi-unit building	NA	NA	NA	NA	6,250	5,000	3,750	2,000
L2	Width (feet) [1]	300	120	100	80	70	60	50	35
	Minimum Setbacks (feet)								
S1	Street/front [2]	40	40	40	30	30	30	25	20
S2	Side [3]	15	15	12	10	10	10	8	5
S3	Rear	40	40	40	30	30	30	25	25
S4	Corner Side	20	20	20	15	15	15	12.5	12.5
	Max. Building Height (feet)	35	35	35	35	35	50	50	50
	Max. Coverage for bldgs. & structures	40%	40%	40%	40%	40%	40%	40%	40%

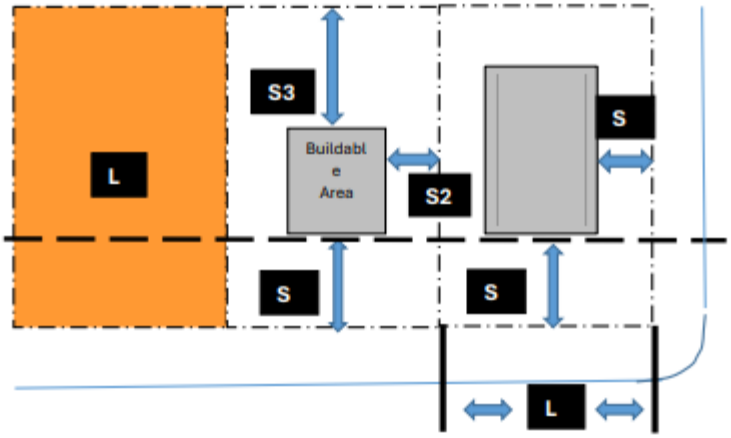
[1] Lot width does not apply to townhouses

[2] Corner lots – one street side yard shall be ½ of the required street/front setback

[3] For townhouses, side setbacks apply to end units only.

[4] Non-residential uses allowed in residential districts may exceed the 35 ft. height limitation, but shall not exceed 50 ft. in overall height.

Figure 5-1: Residential Lot and Building Regulations (Conventional Development) (amended 8-6-2018)



5.030-C Cluster Development

"Cluster development" refers to a subdivision of detached houses that allows for smaller lot sizes than conventional developments but that results in greater preservation of common open space and no overall increase in residential density. Cluster development regulations require that a specified portion of each subdivision be set aside and permanently preserved as open space. Cluster development designs allow more compact and less costly networks of streets and utilities. They can also help reduce stormwater runoff and non-point source pollutant loading rates and can be used to help preserve an area's semi-rural character. Cluster developments are intended to reduce stormwater runoff and flooding, preserve

natural resources, protect water quality and encourage the provision of needed open space and recreational amenities for residents.

1. **Applicability**
   The cluster development option established in this subsection is available for new subdivisions in RA-200, RA-40, RA-20, R-40, R-20 and R-15 districts.

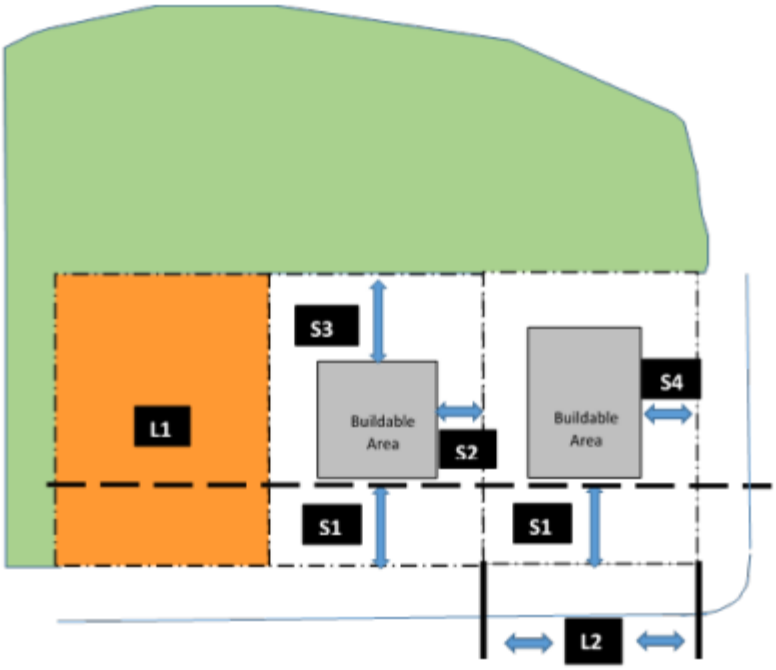
2. **Lot and Building Regulations**
   The lot and building regulations of

Table 5-3 apply to all cluster developments in R districts. Cluster developments are also subject to the supplemental regulations of this section (5.030-C).

Table 5-2: R District Lot and Building Regulations—Cluster Development (amended 8-6-2018)

Regulations	RA-200	R-40 RA-40	R-20 RA-20	R-15
Overall Site				
Minimum contiguous area (acres, gross)	100	25	25	25
Minimum open space (% site)	See §5.030-C4			
Minimum Lot Size				
Minimum Lot Area (sq. ft.)	87,120	20,000	15,000	10,000
Minimum Setbacks (feet)				
Street	25	25	25	25
Side	10	7.5	5	5
Rear	25	25	25	25
Corner Side	12.5	12.5	12.5	12.5
Max. Building Height (feet)	35	35	35	35

Figure 5-2: Residential Lot and Building Regulations (Cluster Development) (amended 8-6-2018)



3. Site Area and Density

   a. Lots split by state roads are considered separate lots and may not be combined to meet applicable minimum site area requirements.

   b. Density is not transferable across state roads. As required with conventional (non-cluster) subdivisions, existing and proposed street rights-of-way may not be counted as lot area for the purposes of calculating maximum site density.

   c. Areas within a special flood hazard area, as shown on the Flood Insurance Rate Maps (FIRM) for Union County, and areas designated as Riparian Buffers under Article 70 of this ordinance, shall not be used to calculate maximum site density. *(amended 3-15-2021)*

   d. In areas identified as "Rural Residential" on the future land use map in the current comprehensive plan, in addition the standards set forth above, an additional 30% of the acreage of the development site shall be set aside as common open space and shall not be used to calculate maximum site density.

4. Open Space

   a. Each cluster development must include permanently protected common open space equal to at least ~~10~~30% of the gross area of the subdivision or the difference

between the cumulative total lot area that would have been required under the conventional development minimum lot area requirements of §5.030-B and the actual cumulative total area provided within the cluster development, whichever results in a greater amount of open space.

b. Required open space must be directly accessible to residents of the development.

c. Street rights-of-way and waste water disposal fields may not be counted toward satisfying minimum common open space requirements, and no more than 50% of the required minimum open space area may consist of FEMA-regulated floodplain area.

d. At least 50% of the common open space required to be set aside must be usable open space, meaning an area that is capable of being used and enjoyed for passive recreation and that:
   (1) Is left in its natural or undisturbed state (as of the date development began), if wooded, expect for the cutting of trails for walking or jogging (see below), if not wooded at the time of development is property vegetated and landscaped with the objective of creating a wooded area or other are that is consistent with the objective of providing passive recreational opportunities: or
   (2) Consists of a pond, lake or other natural or human-made body of water.

e. Common open space must be protected in perpetuity by a binding legal instrument that is recorded with the deed. The legal instrument must be one of the following:

   (1) A permanent conservation easement in favor of either:
      (a) A land trust or similar conservation-oriented non-profit organization with legal authority to accept such easements. The organization must be bona fide and in perpetual existence and the conveyance instruments must contain an appropriate provision for transfer in the event the organization becomes unable to carry out its functions;

      (b) A governmental entity (if the entity accepting the easement is not the county, then a third right of enforcement favoring the county must be included in the easement);

   (2) An open space tract protected by a permanent restrictive covenant for conservation purposes in favor of a governmental entity; or

   (3) An equivalent legal tool that provides permanent protection, as approved by the county attorney.

f. The applicant must identify the owner of the open space. The designated owner and the owner's successors are responsible for maintaining the open space and any associated facilities. If a property owners association is the owner, membership in the association is mandatory and automatic for all property owners within the development and their successors.

g. The applicant must submit a management plan for the open space and all common areas. The management plan must:

(1) Allocate responsibility and guidelines for the maintenance and operation of the open space and any associated facilities, including provisions for ongoing maintenance and for long-term capital improvements;
(2) Estimate the costs and staffing requirements needed for maintenance, operation and insurance and outline the means by which necessary funding will be obtained or provided; and
(3) Describe means of enforcing the management plan.

5. **Subdivision Design Improvements**
Unless otherwise expressly stated, cluster developments are subject to the same infrastructure and public improvement requirements (e.g., streets, trails, street trees, street lights, etc.,) as conventional developments (subdivisions).

6. **Stormwater Management**
Post-development stormwater discharge rates at the property boundary may not exceed the pre-development rate for the 2- and 25-year storm events. This regulation does not apply if discharging directly into a FEMA-regulated floodplain.

7. **Central Water and Central Sewer**
Cluster developments must have water service from a central water source and sewer service from a central sewer service provider. *(amended 5-18-2015)*

8. **Streets**
All lots shall be served by newly created interior streets. *(amended 5-18-2015)*

9. **Recreational Facilities**
Cluster developments must have at least one recreational amenity including but not limited to neighborhood pool/club house, or other recreational facilities such as bike paths, ball fields, pocket parks, walking trails, or basketball courts. These facilities must be constructed before releasing more than 75% of the lots for final plat. *(amended 5-18-2015)*

Lee Jenson described to the Board the proposed change was to require 30% open space for subdivisions of more than eight lots. The purpose would reduce density in rural areas while preserving open spaces. After the Board discussed it for a period, Larry Britt read the consistency statement to recommend approval, Doug McClew seconded it and it was approved unanimously.

Public Hearing:

Planning Staff Report – TXT-2024-003 Text Amendment to Table 5-2 (R District Lot and Building Regulations - Conventional Development) and 60.070 (Lots and Access) of the Union County Development Ordinance

Staff Contact: Lee Jenson, Planning Director

Summary of Request

These proposed text amendments are intended to increase safety and decrease driveway access points along major corridors in Union County. The amendments would increase lot road frontage requirements along roadways in Union County that have a posted speed limit of 45 MPH or greater. In addition, along those same roadways, lot size requirements would be increased as well, thereby, decreasing overall density for lots taking direct access along higher speed corridors.

Section 5.030 Lot and Building Regulations

Table 5-2: R District Lot and Building Regulations--Conventional Development (amended 8-6-2018)

Figure 5-1	Regulations	RA-200	R-40 RA-40	R-20 RA-20	R-15	R-10	R-8	R-6	R-4
	Minimum Lot Size								
L1	Area (square feet)	200,000	40,000	20,000	15,000	10,000	8,000	6,000	4,000
	Area per dwelling unit (sq. ft.)								
	Detached House	200,000	40,000	20,000	15,000	10,000	8,000	6,000	4,000
	Two-unit house	NA	30,000	15,000	11,250	7,500	6,000	4,500	3,000
	Townhouse	NA	NA	NA	NA	6,250	5,000	3,750	2,000
	Multi-unit building	NA	NA	NA	NA	6,250	5,000	3,750	2,000
L2	Width (feet) [1]	300	120	100	80	70	60	50	35
	Minimum Setbacks (feet)								
S1	Street/front [2]	40	40	40	30	30	30	25	20
S2	Side [3]	15	15	12	10	10	10	8	5
S3	Rear	40	40	40	30	30	30	25	25
S4	Corner Side	20	20	20	15	15	15	12.5	12.5
	Max. Building Height (feet)	35	35	35	35	35	50	50	50
	Max. Coverage for bldgs. & structures	40%	40%	40%	40%	40%	40%	40%	40%

[1] Lot width does not apply to townhouses

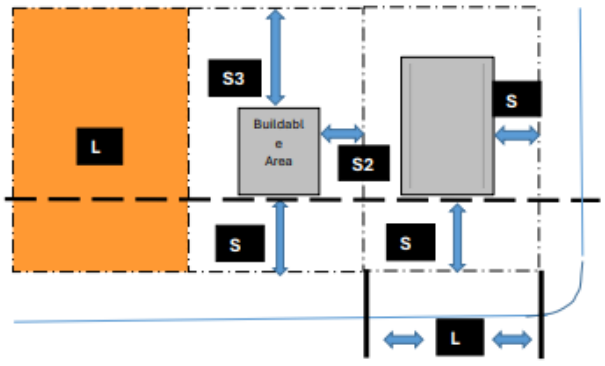
[2] Corner lots – one street side yard shall be ½ of the required street/front setback

[3] For townhouses, side setbacks apply to end units only.

[4] Non-residential uses allowed in residential districts may exceed the 35 ft. height limitation but shall not exceed 50 ft. in overall height.

[5] Lot sizes and width listed in this table apply only to properties which do not have public road frontage or which have frontage on public which have speed limits of less than 40 mph. For lots fronting on roads with a posted speed limit of 40mph or greater, please refer to section 60.070-A (3) for additional requirements.

Figure 5-1: Residential Lot and Building Regulations (Conventional Development) (amended 8-6-2018)



Section 60.070 Lots and Access

60.070-A Lots

1. The size, shape and orientation of lots must comply with applicable zoning district standards and be appropriate for the location, topography and physical features present and for the type of development and use contemplated.

2. Minimum lot dimensions, building setback lines and lot areas must conform to applicable zoning district requirements.

3. In all residential zoning districts except RA-200, for lots with frontage on public roads with a speed limit of 40 mph or greater, the following standards apply:

a. For lots with frontage on public roads with a speed limit between 40 mph and 54 mph, the minimum lot size shall be 60,000 square feet, with a minimum of 150 feet of road frontage.

b. For lots with frontage on public roads with a speed limit of 55 mph or higher, the minimum lot size shall be 80,000 square feet with a minimum 240 feet of road frontage (unless it meets the criteria of subsection (c) immediately below.

c. For lots with frontage on public roads with a speed limit of 55 mph or higher that are less than two miles in length, the minimum lot size shall be 60,000 square feet with a minimum of 150 feet of road frontage.

Lee Jenson explained to the Board the proposed increased lot size and road frontage requirements would be for parcels located on roads with speed limits of 40 mph or higher. Concerns raised during the presentation were the potential financial burden on individual property owners and families, especially the impact to rural residents wanting to divide land for family use. Members emphasized the need to balance safety with property owner rights. Mark Tilley read the consistency statement for denial of text amendment, Vice Chair Rick Davis seconded and it passed unanimously.

Planning Staff Report: Lee Jenson let the Board know the Stevens rezoning application was approved by the Board of Commissioners with conditions to address lot lines and landscaping.

Brief Comments: There were none.

Close: With no further discussions, Doug McClew a motion to adjourn and Larry Britt seconded. It passed unanimously. The meeting adjourned at 7:32 pm.

Union County Government
Center
500 North Main Street
Monroe, North Carolina
www.unioncountync.gov

File #: 25-045 **Agenda Date:** 1/28/2025

TITLE:

Conditional Rezoning Case CZ-2024-007 Gold Branch

DETERMINATION OF CONFLICTS

INFORMATION CONTACT:

Bjorn E. Hansen, Senior Planner-Long Range Planning, 704-283-3690

ACTION REQUESTED:

Recommend approval or denial of proposed rezoning to the Board of Commissioners

BACKGROUND:

This case is a rezoning request, petition CZ-2024-008, submitted by Kolter Group Acquisitions, LLC (the “Applicant”) for revision of the Union County Zoning Map by rezoning tax parcels appearing on the Union County tax map as parcels 08-309-016, 08-282-009A, and a 129.17 acre portion of tax parcel 08-312-014, in the Goose Creek Township from RA-40 to R-4 with Conditions. The rezoning will include the following conditions:

1. Pursuant to Section 160D-108.1 of the North Carolina General Statutes and Section 80.020 of the Union County Unified Development Ordinance, the approval is vested for a period of five years.
2. Develop according to site plan dated November 5, 2024
3. Subdividing the approximately 20.93 acre portion of parcel 08-312-014 not included in the development
4. Meeting all requirements of the Union County Unified Development Ordinance.
5. Conceptual master plan. The development is subject to the conceptual master plan submitted as part of the Conditional Rezoning Application. Petitioner shall develop the site in a manner generally consistent with the conceptual master plan with the understanding that some minor modifications to the plans may be made as long as the ultimate design is consistent with the spirit and intent of the conceptual master plan.
6. General Design Guidelines:
   a. The principal buildings constructed on the site may use a variety of building materials. The building materials used for the building may be a combination of the following: glass, brick, stone, simulated stone, pre-cast stone, architectural precast concreate, synthetic stone, stucco, EIFS, cementitious siding (such as Hardi-Plank), or wood. Vinyl, as a building material, will only be allowed on widows, soffits, and trim features.
   b. Accessory structures constructed in the development shall match the architectural style and shall be of the same materials as the principal buildings.
7. Meeting all requirements of Traffic Impact Analysis:

a. Petitioner will comply with any off-site improvements as required by NCDOT.
b. Prior to the platting of the 400th home, the developer agrees to contribute $500,000 to Union County towards improvements at the Mill Grove Rd/Lawyers Road roundabout, or other road improvement in the vicinity of the project.
c. NC218 and Access 1 - Construct east bound right turn lane along NC218 and northbound approach of Access 1 as a Right-In-Right-Out.
d. Mill Grove Road and Access 2: Construct a northbound left turn lane into Access 2

8. The community will meet the Fair Housing Act requirements for an Age Restricted development under the “55 or older” exemption.
   a. At least 80 percent of the units must have at least one occupant who is 55 years of age or older; and
   b. The facility or community must publish and adhere to policies and procedures that demonstrate the intent to operate as "55 or older" housing; and
   c. The facility or community must comply with HUD's regulatory requirements for age verification of residents.
9. The HOA Declarations will have leasing provisions that include a cap (5% of lots) and an 18 month lockout/residency requirement. The Declarations will also require that every lease include a reference to the 55+ age/occupancy requirements. The Declarations will also require prior Board review of any proposed lease to confirm that the age-related requirements are not going to be violated by any proposed tenant or occupant.
10. Future amendments to the rezoning plan may be applied for by the owner or owners of the applicable development area portion of the site affected by such amendment in accordance with the provisions herein and of Article 80 of the Ordinance. All conditions of the overall development will still apply.
11. If this rezoning petition is approved, all conditions applicable to the development of the site imposed under the rezoning plan will, unless amended in the manner provided herein and under the ordinance, be binding upon and inure to the benefit of the petitioner and subsequent owners of the site and development areas, as applicable, and their respective heirs, devisees, personal representatives, successors in interest or assigns.

A community meeting was held January 7, 2025. Approximately 55 residents attended the meeting and asked about the process for rezoning, traffic concerns, smell from septic fields, impact on taxes from additional development, units converted to rentals, and fire response. No changes were made based on feedback. Two residents have emailed comments, citing concerns over the abandoned well on site, traffic impacts,
and preserving rural character.

FINANCIAL IMPACT:

$500,000 contribution for future road improvements.

Application for Conditional Rezoning

Union County
Planning Department
500 N Main Street - Suite 70
Monroe, NC 28112
T 704.283.3565
E UCPlanning@unioncountync.gov

General Information

Project Address Fairview Rd, Mill Grove Rd City _____ State NC Zip 28079

Tax Parcel ID 08312014 08309016 08282009A Current Zoning Designation RA-40 Total Acres 410

Proposed Zoning Designation R-4 Date Submitted July 16, 2024

Contact Information

Applicant Name Kolter Group Acquisitions LLC

Address 4006 Cresswind Blvd City Monroe State NC Zip 28110

Phone (704) 575-9310 Fax _____ Email epowell@kolter.com

Property Owner Name Belk Agriculture & Forestry LLC

Address 204 C W Woodlawn Rd City Charlotte State NC Zip 28217

Phone (704) 562-6033 Fax _____ Email bv@bvbproperties.com

Applicant's Certification

Mike McLendon

Signature	Date	Printed Name/Title
Mike McLendon	7/16/2024	Authorized Signator Mike McLendon

Owner's Certification (include names and signatures of all owners)

Signature	Date	Printed Name/Title
B.V. Belk Jr.	7-15-24	B.V. BELK JR

Union County Office Use Only:

Case Number: 2024-CZ-007 Gold Branch Date Received: 7-16-24

Amount of Fee: $3,000 Fee Ok: BGH Received by: BGH

Contact Bjorn Hansen to begin the process. T. 704.283.2690 E. Bjorn.hansen@unioncountync.gov

UNIONCOUNTY north carolina

**This document is only valid from July 1, 2024 - June 30, 2025

Application for Conditional Rezoning

Union County
Planning Department
500 N Main Street - Suite 70
Monroe, NC 28112
T 704.283.3565
E UCPlanning@unioncountync.gov

General Information

Project Address: Fairview Rd, Mill Grove Rd City: _____ State: NC Zip: 28079

Tax Parcel ID: 08312014 08309016 08282009A Current Zoning Designation: RA-40 Total Acres: 410

Proposed Zoning Designation: R-4 Date Submitted: July , 2024

Contact Information

Applicant Name: Kolter Group Acquisitions LLC

Address: 4006 Cresswind Blvd City: Monroe State: NC Zip: 28110

Phone: (704) 575-9310 Fax: _____ Email: epowell@kolter.com

Property Owner Name: Purser William Norris ET AL

Address: 1216 Rock Hill Church Rd City: Matthews State: NC Zip: 28104

Phone: 704-614-3877 Fax: _____ Email: thepursers372@gmail.com

Applicant's Certification

Mike McLendon

Mike McLendon	7/16/2024	Authorized Signator
Signature	Date	Printed Name/Title

Owner's Certification (include names and signatures of all owners)

SEE ATTACHED SHEET		
Signature	Date	Printed Name/Title

Union County Office Use Only:

Case Number: _____ Date Received: _____

Amount of Fee: _____ Fee Ok: _____ Received by: _____

Contact Bjorn Hansen to begin the process. T. 704.283.2690 E. Bjorn.hansen@unioncountync.gov

UNIONCOUNTY north carolina

**This document is only valid from July 1, 2024 - June 30, 2025

Owner's Certification (include names and signatures of all owners)

William N. Purser	11 JULY 2024	WILLIAM N. PURSER
Signature	Date	Printed Name/Title
Carole S. Purser	7/11/2024	Carole S. Purser
Signature	Date	Printed Name/Title
Deloria P. Rowell	7-11-2024	Deloria P. Rowell
Signature	Date	Printed Name/Title
Thomas Howard Rowell	7-11-2024	Thomas Howard Rowell Not an Owner - Marital Interest Only
Signature	Date	Printed Name/Title

Planning Staff Report - Rezoning Case # CZ-2024-007
Staff Contact: Bjorn Hansen, Senior Planner

Summary of Request

This case is a rezoning request, petition CZ-2024-008, submitted by Kolter Group Acquisitions, LLC (the "Applicant") for revision of the Union County Zoning Map by rezoning tax parcels appearing on the Union County tax map as parcels 08-309-016, 08-282-009A, and a 129.17 acre portion of tax parcel 08-312-014, in the Goose Creek Township from RA-40 to R-4 with Conditions. The rezoning will include the following conditions:

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5. Conceptual master plan. The development is subject to the conceptual master plan submitted as part of the Conditional Rezoning Application. Petitioner shall develop the site in a manner generally consistent with the conceptual master plan with the understanding that some minor modifications to the plans may be made as long as the ultimate design is consistent with the spirit and intent of the conceptual master plan.
6. General Design Guidelines:
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    b. Accessory structures constructed in the development shall match the architectural style and shall be of the same materials as the principal buildings.
7. Meeting all requirements of Traffic Impact Analysis:
    a. Petitioner will comply with any off-site improvements as required by NCDOT.
    b. Prior to the platting of the 400th home, the developer agrees to contribute $500,000 to Union County towards improvements at the Mill Grove Rd/Lawyers Road roundabout, or other road improvement in the vicinity of the project.
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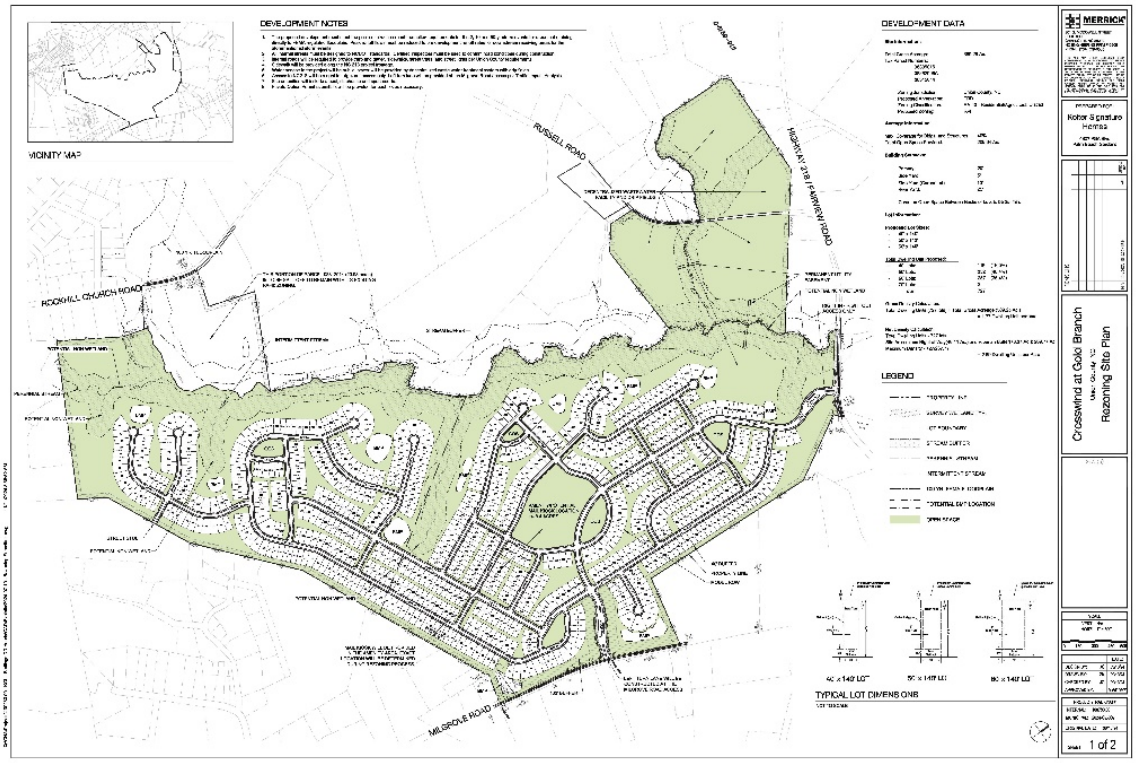
10. Future amendments to the rezoning plan may be applied for by the owner or owners of the applicable development area portion of the site affected by such amendment in accordance with the provisions herein and of Article 80 of the Ordinance. All conditions of the overall development will still apply.
11. If this rezoning petition is approved, all conditions applicable to the development of the site imposed under the rezoning plan will, unless amended in the manner provided herein and under the ordinance, be binding upon and inure to the benefit of the petitioner and subsequent owners of the site and development areas, as applicable, and their respective heirs, devisees, personal representatives, successors in interest or assigns.



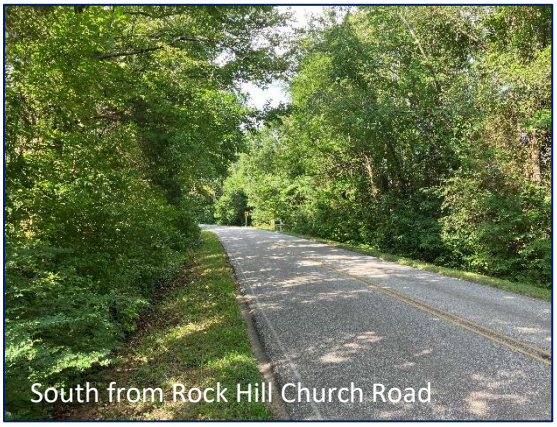
Owner/Applicant

Owners: Belk Agriculture & Forestry LLC
204 CW Woodlawn Road
Charlotte, NC 28217

Applicant: Kolter Group Acquisitions LLC
4006 Cresswind Blvd
Monroe, NC 28110

Property Information

Location: 410 acre assemblage of three parcels bordered by NC 218, Mill Grove, and Russell Roads. Location more specifically described as tax parcels 08-309-016, 08-282-009A, and a 129.17 acre portion of tax parcel 08-312-014.


South from Rock Hill Church Road


Site from Russell Road

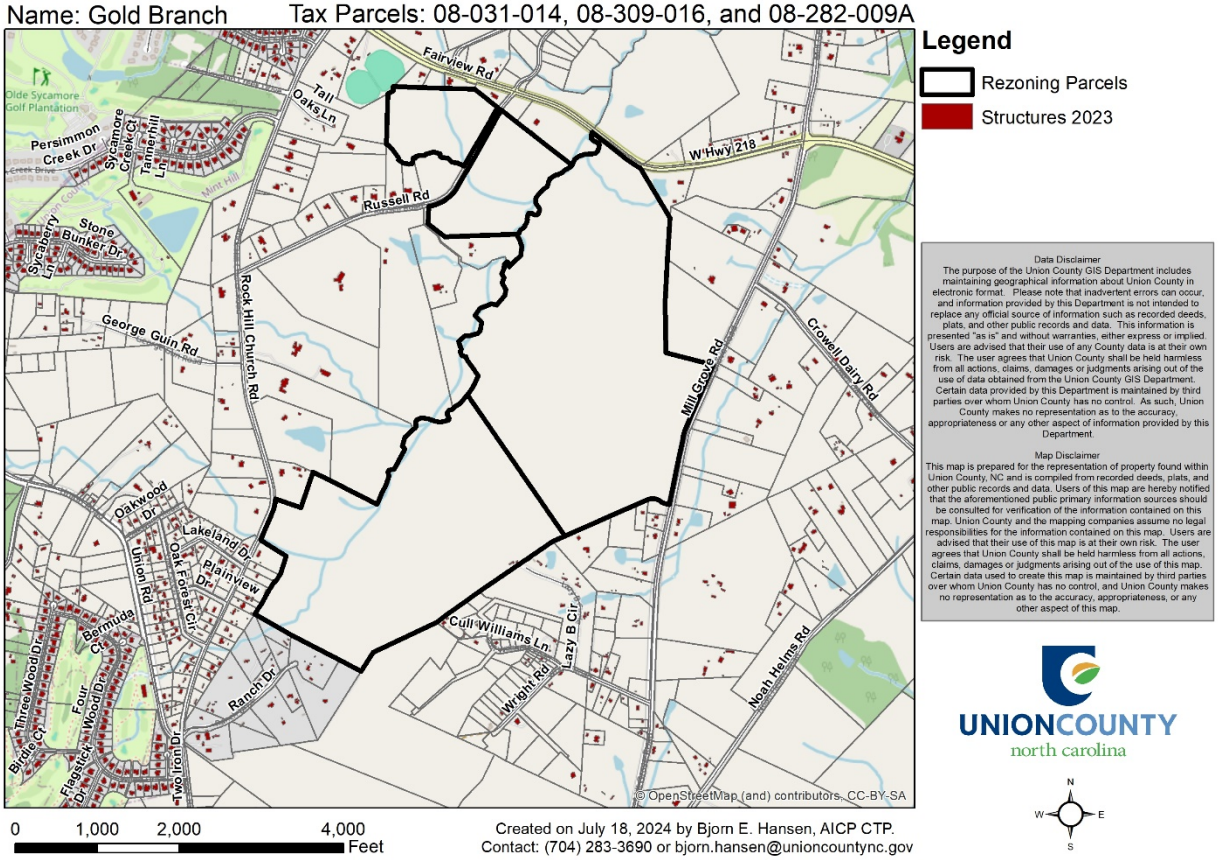
Municipal Proximity: The site is immediately west of Fairview and less than a half mile east of Stallings.

Existing Land Use and Development Status: The parcel is currently zoned RA-40 and is forested with some area cleared for agriculture.

Development Status

Petition: 2024-CZ-007 Size: 410 acres

Name: Gold Branch Tax Parcels: 08-031-014, 08-309-016, and 08-282-009A



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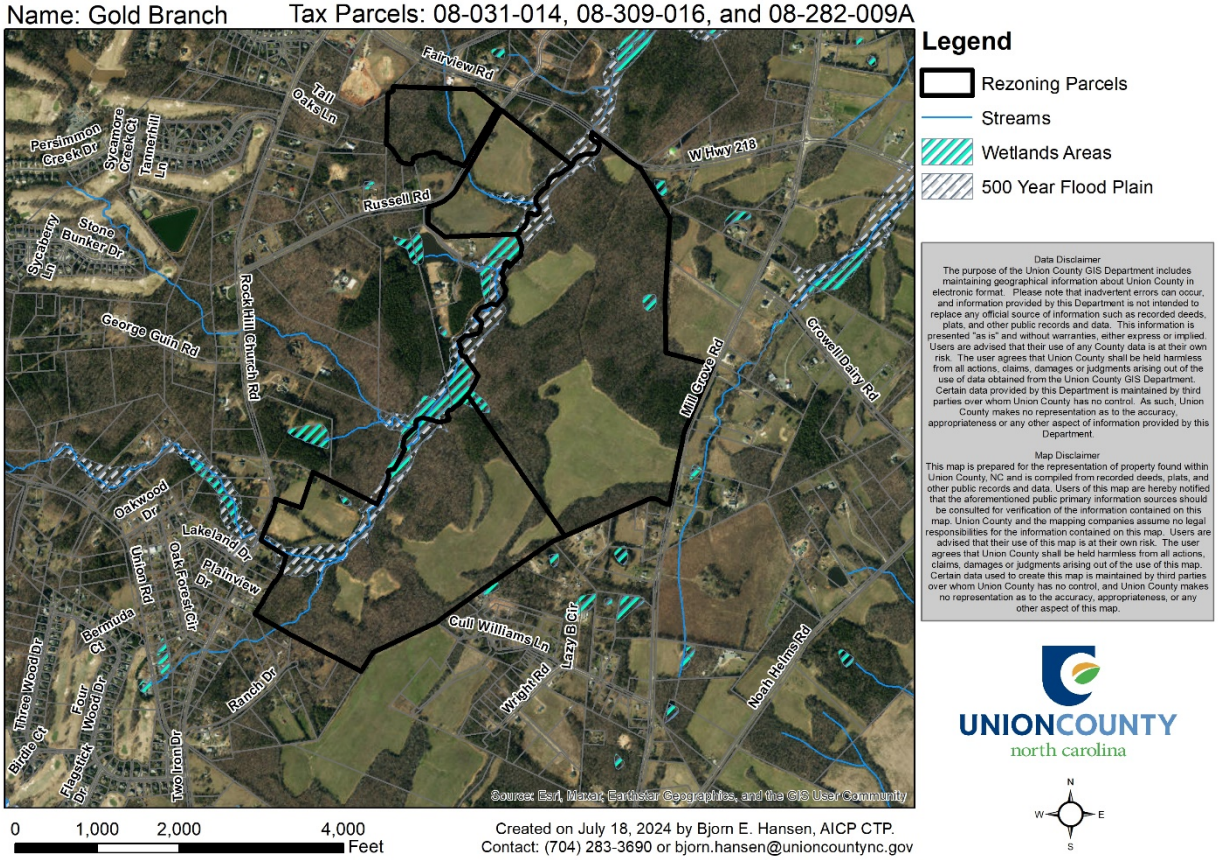
Created on July 18, 2024 by Bjorn E. Hansen, AICP CTP.
Contact: (704) 283-3690 or bjorn.hansen@unioncountync.gov

Environmental Features: There is a significant amount of floodplain on the western part of the site. The development site plan includes stormwater detention for the 2, 10, and 50 year storm events. These floodplain areas are kept in open space and not part of any individual home sites. The site will also include 100 foot stream buffers for all identified streams on site. A closed gold mine, called the Blue Shaft, is located in the southeaster part of the site. The site will have approximately 230 acres of open space, which include required stream buffers, fenced off septic drip fields, and community amenities. Approximately 180 acres would be undisturbed and accessible open space.

Environmental Features

Petition: 2024-CZ-007 Size: 410 acres

Name: Gold Branch Tax Parcels: 08-031-014, 08-309-016, and 08-282-009A



Legend

- Rezoning Parcels
- Streams
- Wetlands Areas
- 500 Year Flood Plain

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N W E S

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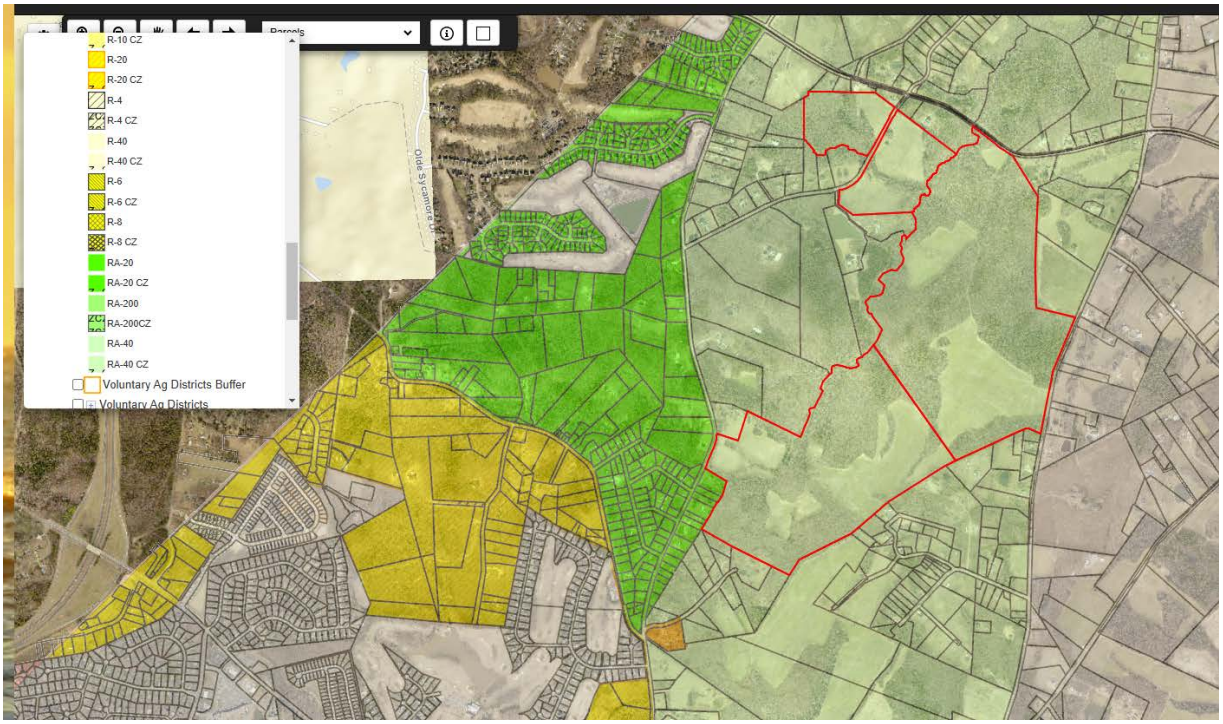
Contact: (704) 283-3690 or bjorn.hansen@unioncountync.gov

Utilities: Public water is available to the site. The applicant is electing to use a private permitting option for the septic service to the site, so Union County Environmental Health will not play a role in permitting septic facilities within this development. The septic primary and repair drain fields are located in the northeastern portion of the site, adjacent to Russell Road.

Zoning and Land Use History: The site has been zoned as RA-40 since zoning was instituted in Union County. A special use permit was approved on the site in 1994 for a quail hunting preserve and club house. There were several successful rezonings from R-40 to R-20 in the 1980s, although these were for one acre or less parcels. A commercial rezoning at Mill Grove and NC 218 was approved in 1990.



Schools: Because this rezoning request is for an age-restricted neighborhood, UCPS was not consulted for comments.

Transportation: This development would have access from NC 218 and Mill Grove Road, both of which are NCDOT-maintained facilities. Union County staff requested a road connection to Rock Hill Church Road, which was feasible in the initial site plan, but the plan was subsequently revised to remove the approximately 20 acres west of the stream to the road that would allow this connection.

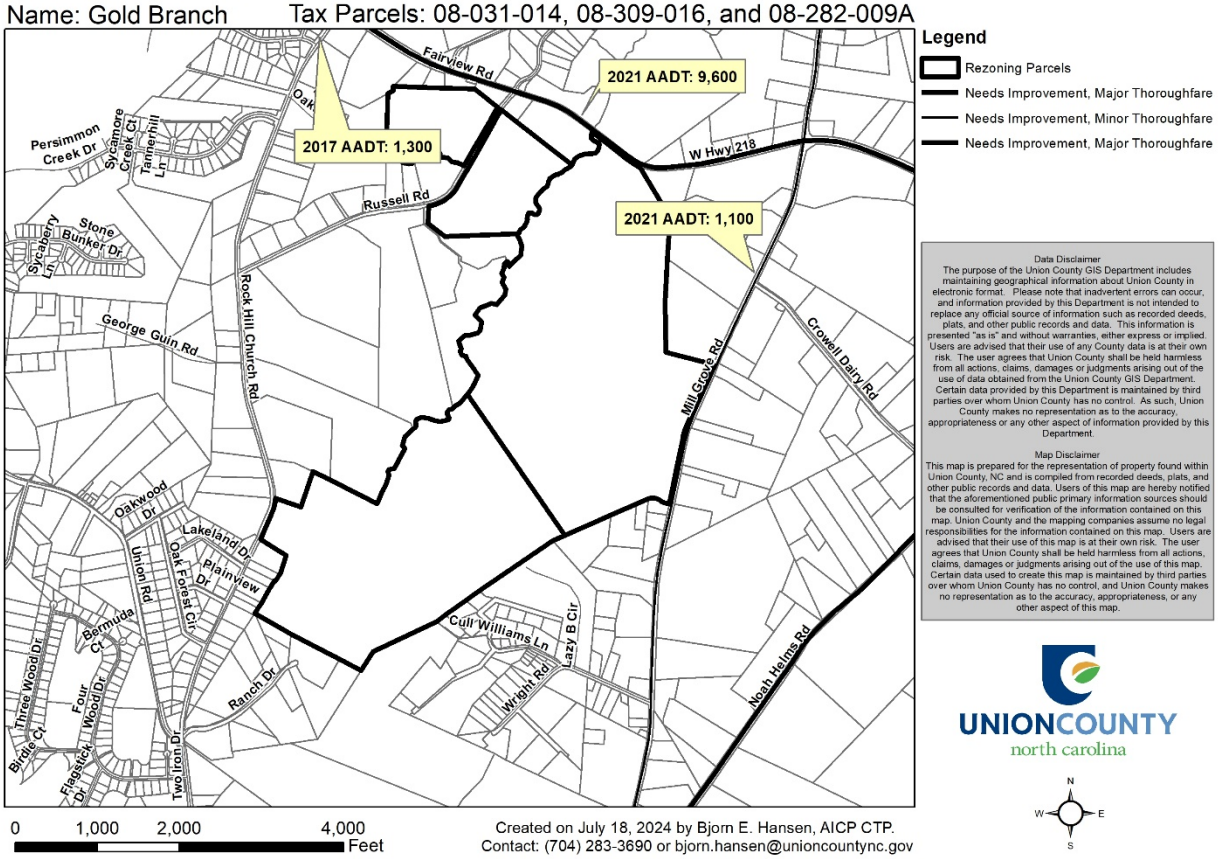
NC 218 carries approximately 9,600 vehicles per day, while Mill Grove carries approximately 1,100 vehicles per day. Both of these counts are from 2021. There are no funded road improvements in the vicinity of the project, although roundabouts were recently constructed at NC 28 and Mill Grove Road, and Mill Grove Road and Lawyers Road. Both were constructed to address safety concerns. This site is expected to generate approximately 3,200 trips per day, which is less than half what a traditional single-family development would generate.

A traffic impact analysis (TIA) was required by both the NCDOT and Union County and looked at traffic conditions now and in 2033, upon buildout of the site. Because of the recently completed roundabouts and traffic generation characteristics of the site, no specific intersection was sufficiently degraded to require mitigation, but the NCDOT, Union County, and developer agreed that there was impact throughout the study area that warranted future improvements, although the specific improvements would be addressed in the future. The following mitigations will be provided as conditions of the development:

- NC 218 entrance: right in-right out access only, with a concrete median, and a deceleration lane into the site. The right in-right out limitation is due to sight distance concerns along NC 218
- Rock Hill Church entrance: full movement access, with left turn lane into the site.
- Payment of $500,000 to Union County made after the recording of the 400th lot to be used at the intersection of Lawyers Road and Rock Hill Church Road, or another intersection nearby.

Transportation

Petition: 2024-CZ-007
Size: 410 acres
Name: Gold Branch
Tax Parcels: 08-031-014, 08-309-016, and 08-282-009A



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Contact: (704) 283-3690 or bjorn.hansen@unioncountync.gov

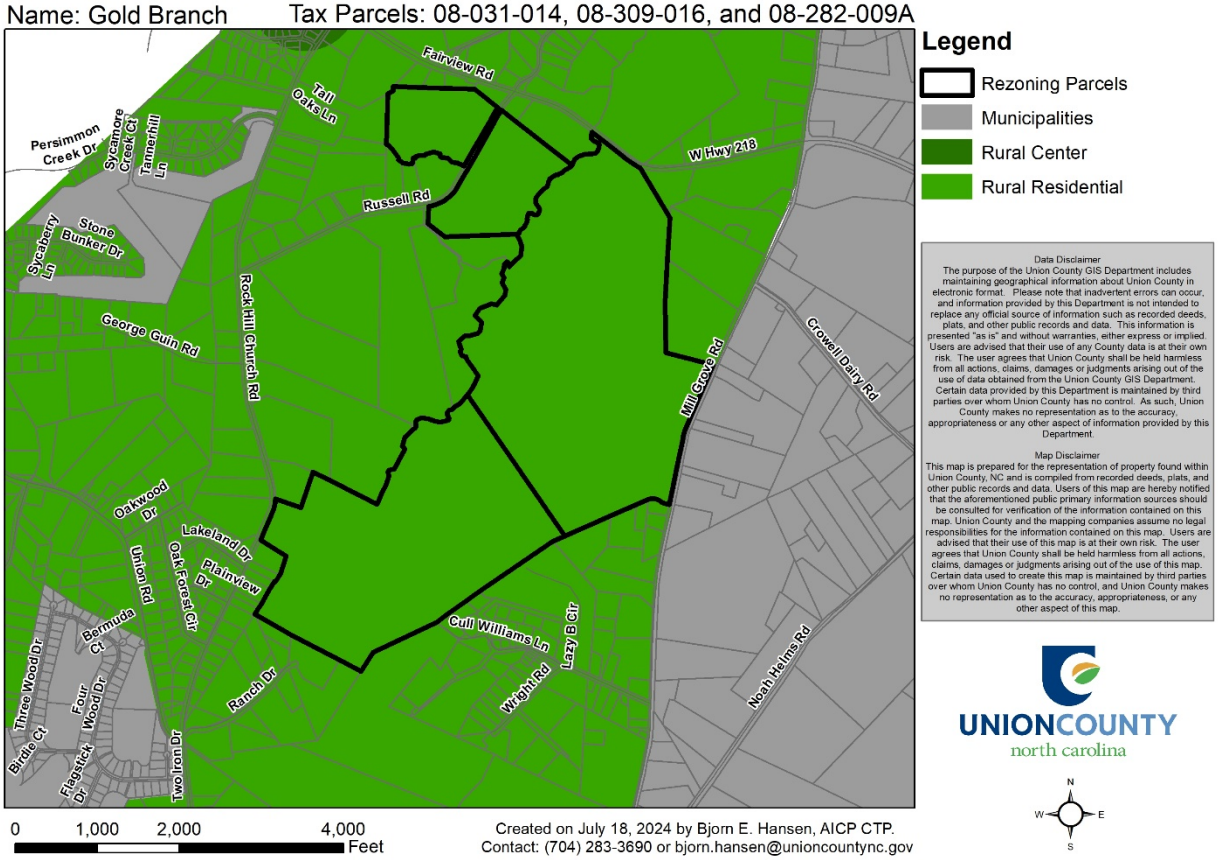
Planning Documents

Union County Comprehensive Plan: The Union County 2050 comprehensive plan identifies this area as Rural Residential, with an overall density of one unit per acre. Smaller lot sizes in exchange for increased open space is acceptable, provided overall density does not increase. Net density for the site is 2.69 dwelling units per acre and gross density is 1.77 dwelling units per acre, so the density is significantly higher than what is recommended in the comprehensive plan. This recommendation is due to a lack of utility service and consideration of land use planning preferences for Stallings and Fairview.

Land Use Map

Petition: 2024-CZ-007
Name: Gold Branch

Size: 410 acres
Tax Parcels: 08-031-014, 08-309-016, and 08-282-009A



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north carolina

Created on July 18, 2024 by Bjorn E. Hansen, AICP CTP.
Contact: (704) 283-3690 or bjorn.hansen@unioncountync.gov

Public and Municipal Comments

Public Comments: A community meeting was held January 7, 2025. Approximately 55 residents attended the meeting and asked about the process for rezoning, traffic concerns, smell from septic fields, impact on taxes from additional development, units converted to rentals, and fire response. No changes were made based on feedback. Two residents have emailed comments, citing concerns over the abandoned well on site, traffic impacts, and preserving rural character.

Municipal Comments: Stallings and Fairview provided comments opposing the development. Fairview noted transportation, private septic, and density concerns. Stallings would prefer to annex this property as future development occurs, and noted traffic, stormwater, and private sewer service concerns.

Land Use Board Recommendation

The Land Use Board is scheduled to review this proposal at its January 28, 2025, meeting.

Staff Comments and Recommendation

This part of Union County is identified in the comprehensive plan for a combination of rural residential and agricultural land uses. This site has a net density of significantly more than two units per acre. There is a significant amount of open space, but much of it is for required buffering along streams or fenced off as drain fields for the community septic system. The development would have no impact on nearby schools but would add more than 3,000 trips per day to the adjacent road network. The contribution of money to apply to a future intersection project will help mitigate the impacts, however. Although the development proposes mitigates school and traffic impacts, its high density is in conflict with the adopted comprehensive plan. **Staff therefore recommend denial of the proposed rezoning.**

KOLTER GROUP ACQUISITIONS LLC

July 17, 2024

Re: Rezoning Letter of Intent
Cresswind at Gold Branch

Dear Union County:

Kolter is pleased to present our Application for Conditional Rezoning and Site Plan for Parcels 08312014, 08309016, and 08282009A. Kolter is pursuing an Age-Restricted, Active-Adult, Cresswind branded and amenitized community. The community will be comprised of a range of single-family detached homes, on-site amenities (including clubhouse, gym, pool, court facilities, event lawn, lifestyle director), full yard maintenance included, municipal water, a decentralized wastewater system, and private streets.

KOLTER GROUP ACQUISITIONS LLC

By: Emily Powell 2024.07.17 09:56:22 -04'00'

Name: Emily Powell

Title: VP of Land Acquisition

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 decentralized waste water treatment system with drip fields.
6. Access to NC218 will be a right in - right out access only. Left turn lane will be provided at the Milgrove Road access per Traffic Impact Analysis.
7. Site amenities will include a pool, clubhouse and sport courts.
8. Private Option Permit submittals will be provided for each lot as necessary.

VICINITY MAP

DEVELOPMENT DATA

Site Information:

Total Gross Acreage:	389.25 Ac.
Tax Parcel Numbers:	
08309016	
08282009A	
08312014	
Zoning Jurisdiction:	Union County, NC
Proposed Annexation:	TBD
Zoning Classification:	RA-40 - Residential/Agricultural District
Proposed Zoning:	R-4

Acreage 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:

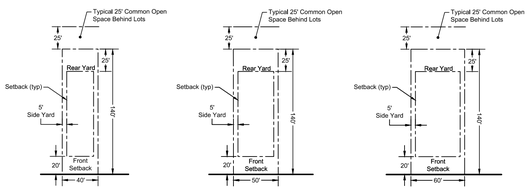
- 40' Lots:	116	(16.0%)
- 50' Lots:	352	(48.4%)
- 60' Lots:	257	(35.4%)
- 70' Lots:	2	
Total:	727	

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

Net Density Calculation:
Total Dwelling Units - 727 lots
Site Area minus Right of Way(46.11 Ac.) and Riparian Buffer(73.37 Ac.): 269.77 Ac.
Maximum Density - 727/267.77
= 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



40' x 140' LOT | 50' x 140' LOT | 60' x 140' LOT

TYPICAL LOT DIMENSIONS

NOT TO SCALE

MERRICK
301 S. MCDOWELL STREET
SUITE 300
CHARLOTTE, NC 28204
NC ENGINEERING FIRM F-0908
PHONE: (704) 529-6500

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

REVISIONS:	REV	REVISION DESCRIPTION	DATE:	CHANGED BY:

Cresswind at Gold Branch
Union County, NC
Rezoning Site Plan

SEAL(S)

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

		DATE:
DESIGN BY:	JC	09/13/24
DRAWN BY:	ZK	09/13/24
CHECKED BY:	JC	09/13/24
APPROVED BY:	-	MM/DD/YY

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

SHEET 1 of 2

Q:\CHA\Projects\100230.00 - KOL - Stallings DD Hourly\CAD\Exhibits\2024-07-10 - Rezoning Submittal-.dwg 11/11/2024 8:36:52 AM

From: Kendra Worthy
To: Bjorn Hansen
Subject: Concerns Regarding Proposed Development on Mill Grove Rd.
Date: Friday, January 3, 2025 7:50:27 AM

Hello-

I hope this email finds you well. I am writing to express my concerns about the proposed development of over 700 homes in our rural area, off of Mill Grove Road. While I am unable to attend the upcoming hearing due to a pregnancy class, I feel strongly about addressing this matter, as it significantly impacts the future of our community and the one I am preparing for my child.

I understand that growth in our area is inevitable, but what is being proposed is uncontrolled growth that could lead to long-term devastation in our rural community. Several issues need to be addressed before this development moves forward:

1. **Environmental Risks**:
    - The land's history of mining presents significant challenges. Known mineshafts beneath the property create risks of sinkholes, threatening homes, infrastructure, and the environment. My in-laws, who live nearby, have already experienced sinkholes in their backyard due to mining activity.
    - Additionally, the property may house the federally endangered Carolina Heel Splitter mussel, which has been found on nearby properties. Development without thorough environmental assessments could harm this sensitive species and disrupt the local ecosystem.
2. **Traffic Congestion and Safety Risks**:
    - Our rural area lacks adequate road infrastructure to support a development of this size. Highway 218, Lawyers Road, and Idlewild Road are the primary outlets and are already congested due to previous uncontrolled growth.
    - Increased traffic from 700+ homes will exacerbate these issues, causing longer commutes, delays, and unsafe driving conditions. Poor road conditions, such as potholes on Mill Grove Road, worsen the problem.
    - Congestion increases the likelihood of car accidents, particularly at intersections and on roads not designed for high traffic volumes. With limited road networks, emergency services may struggle to respond quickly, further endangering residents.
3. **Infrastructure Deficiencies**:
    - **Road Conditions**: NCDOT has neglected Mill Grove Road for years, and the area's roads are not equipped to handle the substantial increase in traffic.
    - **Emergency Services Access**: High-density neighborhoods often have narrow streets that hinder EMS and fire vehicle access. What measures are being taken to ensure emergency responders can navigate the area safely?

4. **Septic System Challenges**:
    - The developers' plan to install a community septic system raises concerns about long-term maintenance and potential failures. Contamination of local water sources due to leaks or overflows could impact residents' health and the environment.
5. **Unmet Market Demand and Overdevelopment**:
    - Developers across the area are struggling to sell homes in 55-and-over communities due to high costs. What is the plan if homes in this development remain unsold? If they expand to family housing, the strain on local schools, traffic, and resources will intensify.
6. **Impact on Fairview**:
    - Fairview, with a population of approximately 3,500, would experience a dramatic shift with a development adding nearly a third more residents. Such rapid growth would strain local resources, infrastructure, and the small-town character of our community.
7. **Uncontrolled Growth**:
    - Growth must be managed responsibly to avoid devastating consequences for our area. The proposed development represents uncontrolled growth in a rural area that lacks the infrastructure to support it. Responsible planning is essential to ensure sustainability and safety.

Before approving any development plans, the developers need to be held accountable and have a plan in store for each of these concerns:

- How will the developers address the potential risks posed by unstable mineshafts and ensure long-term land stability?
- What environmental assessments have been conducted, and how will the developers mitigate potential harm to endangered species and ecosystems?
- Beyond adding a turn lane, what infrastructure improvements are the developers committing to?
- How will the developers ensure road widths and designs allow emergency services to access the neighborhood safely?
- What measures are in place to maintain and monitor the septic system and manage failures or capacity issues?
- If homes in the development remain unsold, what is the contingency plan? Will they begin selling to family units?
- How will the developers address increased traffic and reduce the risk of car accidents caused by congestion?
- What resources will the developers provide to ensure Fairview can accommodate the significant population increase without compromising its character or quality of life?
- What specific commitments are the developers willing to make to ensure they remain accountable to the community if issues arise after the project is completed?

This development’s significant environmental, infrastructure, and safety concerns must be addressed before it moves forward. I urge the planning board and developers to reconsider the project’s scale and impact on the community.

I respectfully request that my concerns be included in the record for the hearing. Please let me know if there are additional ways to provide input remotely. Thank you for your time and attention to this critical issue.

Best regards,
Kendra Worthy

From:	Dottie Bedell
To:	Melissa Merrell
Cc:	Bjorn Hansen; Brian Helms; Clancy Baucom; Christina Helms; Gary Sides; Lee Jenson; James King; Keith O"Herrin; Janet Wolfe; Stacey Vargas; Michelle Marcano; Crystal Panico; Vicki Callicutt; John Shutak
Subject:	Mill Grove Road - Rezoning Petition Filed by Kolter Homes - Mill Grove Road Infrastructure Impact Issues
Date:	Tuesday, December 31, 2024 6:04:21 PM
Importance:	High

Hi Ms. Merrell,

My name is Dottie Bedell, 9607 Mill Grove Road (on the Brief Road side of Mill Grove).

I am writing to you about the Kolter Homes proposed dense 737 home, 55+ housing project that involves ~ 410 acres on Mill Grove Road and its subsequent rezoning from its current status of Agricultural zoning. This acreage is in the unincorporated area of Union County.

As you might reasonably expect, there are deep concerns about the strain of this proposed dense development on our first responder units, the county water system, the environment, the 218 corridor, and the impact on Mill Grove Road and Russell Road.

During the UCBoC December 2nd meeting (article here), you (Ms. Merrill) said, "We have a lot of heavy lifting ahead of us. We have some big asks coming up, so I beg that you stay involved and stand by us. Help us make these big decisions that are so important for Union County because we're going to need you beyond tonight."

Well, Ms. Merrell, I'm begging you and your BoC to take a moment to read and digest the impact. As you say, I am standing by you, but I need you to stand by us—the community of Mill Grove.

- In this same news article from the 12/2/24 UCBoC meeting from Union County Weekly, Gary Sides "… noted how the county provides hot or frozen meals to some 300 citizens five days a week, but there is a waiting list of more than 500 older adults. He requested staff bring back information on what it would take to reduce the waiting list and expand the services to seven meals a week." I highlight this because if the county is that remiss providing for our *current* older population, what impact do you think this 737 home 55+ development will have in years to come?"

- Here is a PowerPoint of the Locust, NC Kolter Homes "Cresswind at Rocky River." The presentation doesn't tackle issues like the 55+ resident regulation or how they will treat the *sewage, water, and road infrastructure*. Additionally, what else will Kolter Homes do for the Locust area? Look at this layout proposed for Locust. It's mind-boggling. It's Locust!! They are behind on infrastructure, too! This is what Mill Grove will look like. Do you think Kolter cares? Do you care?

- In this article, it's noted that the Potter Road, Cresswind Wesley Chapel, Kolter Homes project overcame several political hurdles, including an online petition to reject the rezoning – signed by over 1200 people, and a 4-3 recommendation by the Union County

Planning Board to deny the project! Our own county planning board members said the project was too dense and would add too much traffic to already overburdened roads. The county commissioners passed the rezoning anyway. Why is the county commission ignoring its citizens and own planning board?

For the Mill Grove area, no county sewer serves the proposed approximately 2.2+ homes per acre of this densely populated development. Why in the world would your team not require Kolter Homes to invest in bringing county sewer from the Mecklenburg County side?

Why would you allow Kolter Homes to build multiple sewage pump stations (they will have to build at least four pump stations!) and pump it *across Duck Creek* (and the unimaginable environmental changes that will cause to the protected Heel Splitters mussels) to a drain field on Russell Road? Not to mention what the silt and land stripping will do to Duck Creek's water table and banks. Why would Kolter Homes pay for pump stations and drain fields when providing county sewer is the right thing to do?

And yes, I know a "Neighborhood Input Meeting" is scheduled. How can we convince you to provide the proper growth aligned with Union County's values?

You and your team should already know some of the *right things*:

- The right thing to do is require Kolter Homes to invest in our infrastructure, e.g., sewer, rather than allow them to build sewage pump stations and make 25+ acres a sewer drain field in the back of the gigantic development and on a completely different road!
- The right thing to do is require Kolter Homes to pay for four-lane Highway 218 for 5 miles each way to accommodate the 55+ MPH 18-wheelers that consistently speed up and down the highway.
- The right thing to do is require Kolter Homes to invest in the Union County elderly meal program and other essential services for the next two decades ($50k per year is a good start!).
- The right thing to do is require Kolter Homes to disallow persons under 18 and 55 to live in the development for longer than 6 weeks.
- The right thing to do is disallow this density in rural areas with rural roads and no sewage accommodations. And in unincorporated Union County – what about trash service?
- I urge you to consider the long-term consequences of approving this rezoning without addressing these critical issues.

This development is not what Union County represents—what you represent. But I know it's also a very sparkly lure for you, a community that pays millions in taxes—at the expense and on the backs of our Mill Grove, 218, and Russell Road communities.
Ms. Merrill, represent your citizens and retain Union County's values. I don't think Kolter Homes is interested in our values. You *know* what interests them – it is <u>not</u> you, me, or our community.
Many thanks,
Dottie Bedell
9607 Mill Grove Road
704-617-3021

Land Use Board Advisory Consistency and Reasonableness Statement Concerning Proposed Amendment to the Union County Zoning Map

The Union County Land Use Board has reviewed the rezoning petition CZ-2024-007, submitted by Kolter Group Acquisitions, LLC (the "Applicant") for revision of the Union County Zoning Map by rezoning tax parcels on the Union County Tax map as parcels 08-309-016, 08-282-009A, and a 129.17 acre portion of tax parcel 08-312-014, in the Goose Creek Township from RA-40 to R-4 with Conditions.

TO RECOMMEND APPROVAL OF THE AMENDMENT (THE PROPOSAL IS INCONSISTENT WITH THE CURRENT PLAN)

Motion

(i) Recommend approval of rezoning petition CZ-2024-007; and (ii) adopt the advisory consistency and reasonableness statement for recommendation of approval.

Advisory Consistency and Reasonableness Statement

Pursuant to N.C.G.S. § 160D-604, the Union County Land Use Board does hereby recommend that the Union County Board of Commissioners adopt the proposed map amendment. The Union County Land Use Board finds that adoption of the proposed map amendment is inconsistent with the currently adopted Union County Comprehensive Plan (the "Plan"). The Union County Land Use Board recommends that the Union County Board of Commissioners deem the adoption of the proposed map amendment as an amendment to any future land use map in the Plan. Adoption of the proposed map amendment (i) takes into account the need to amend the zoning map to meet the needs of the community, and (ii) is reasonable and in the public interest because:

1. The proposed use of an age-restricted residential development will have a reduced traffic impact when compared with impacts from comparable non-age-restricted residential development. Traffic congestion is a noted concern in the Plan.
2. The proposed use of an age-restricted residential development will not add students to the local schools, lessening impact of this development on Union County services for the adequate provision of schools
3. The residential rezoning of this property is similar to the other uses surrounding the property in Union County's zoning jurisdiction, which are also zoned residential. Additionally, there are properties in the County's land use jurisdiction which are zoned for higher density than one-acre residential directly adjacent to one of the subject properties.
4. The benefits to the community at large, the neighbors, and the property owners of the proposed rezoning outweigh any detriments to the neighbors and others caused by the rezoning. The benefits of this rezoning include providing housing targeted at the older population, which have an increasing demographic presence in this county; and higher density development which may allow for more affordable housing that larger single-family tract development. The potential detriments of the use established by this rezoning, such as increased light exposure and increased traffic, are ameliorated by the

fact that the size of the rezoned properties combined is so large, approximately 390 acres, that the primary land use impacts from the development, other than traffic, will be within the development itself, not neighboring properties.

TO RECOMMEND DENIAL OF THE AMENDMENT (THE PROPOSAL IS INCONSISTENT WITH THE CURRENT PLAN)

Motion

(i) Recommend denial of rezoning petition CZ-2024-007, and (ii) adopt the advisory consistency and reasonableness statement for recommendation of denial.

Advisory Consistency and Reasonableness Statement

Pursuant to N.C.G.S. § 160D-604, the Union County Land Use Board does hereby recommend that the Union County Board of Commissioners deny the proposed map amendment, as denial is reasonable and the proposal is inconsistent with the currently adopted Union County Comprehensive Plan (the "Plan"). Denial of the proposed map amendment is reasonable and in the public interest because:

1. The Plan's Land Use Map identifies the area in which the subject property is located as rural residential. The Plan identifies rural residential areas as those recommended for low density residential and agricultural purposes. Low density for purposes of the Plan means lot sizes of at least one acre or a development density of no more than one unit per acre. The proposed use has a net density of approximately 2.7 units per acre, significantly higher than the one unit per acre recommended in the adopted Plan for rural residential areas.
2. The proposed use will add over 3,000 trips per day to area roads, with potential increasing delays and congestion at multiple area intersections near the proposed development. Traffic congestion is a noted concern in the Plan.

From:	Ed Humphries
To:	Bjorn Hansen; Max Hsiang; John Hoard (Mint Hill alt)
Cc:	Teresa Gregorius; David Link; Gary Wilfong; John Biggers; Kerry Price; Patricia Kindley; Bill thomas; Chrisie Black; DougBuchanan; fredrog@msn.com; Greg Morgan; Josh Pressley; Mike Medlin; Rodney (rstephensnde@gmail.com); Sharon
Subject:	RE: Mill Grove rezoning and upcoming community meeting
Date:	Thursday, October 3, 2024 10:12:03 AM
Attachments:	image002.png image003.png

Fairview concerns:

1. Main entrance on Milgrow. Road is not built for that much traffic. (too narrow) I would suggest widening the road from 218 to the entrance.
2. Concern of adding traffic to a crowed Highway 218. Entrance to development is bad location @ 55mph
3. The roundabout at 218 is not holding up—needs to be repaired and maybe larger
4. Does not meet the Comprehensive Plan for that area (one house per ac.)
5. The Public Works Department of Union County has told us that they will not come in and take over a septic system like the one presented that fails.
   Fairview has elected not to approve these systems because of that. Does the HOA have the expertise to operate a system(s) like proposed?.
   How many systems would be needed? Can I assume nine.? They would need some kind of holding pond(s) to irrigate.
6. Concern that the development does not have an addition entrance/exit with this many units. Parking with this many units will be a problem
7. Fire concern: too many units—to close together in two or three areas. Three Depts —Fairview , and Hemby Bridge and Mint Hill will service. May need to add some additional internal streets.

This is my first thoughts. I have asked my Mayor, Council and Planning Board to review and share their comments with me and will forward to you.
We do plan to come to the Community meeting. I think it would be a good idea to invite the people who live on Milgrove who would be impacted by the development
On the Fairview side.

Ed Humphries

Town of Fairview
Land Use Administrator

7516 Concord Highway
Monroe NC 28110
704.564.3412
ehumphries@fairviewnc.gov

From: Bjorn Hansen <bjorn.hansen@unioncountync.gov>
Sent: Wednesday, October 2, 2024 8:44 AM
To: Max Hsiang <mhsiang@stallingsnc.org>; Ed Humphries <ehumphries@fairviewnc.gov>; John Hoard (Mint Hill alt) <jhoard@admin.minthill.com>
Subject: Mill Grove rezoning and upcoming community meeting

Good morning,

We have a conditional rezoning that is finishing up the site plan review process and will likely go to a community meeting in the next month or so. I have attached the most recent site plan. It is a ~730 home age-restricted development and will utilize county water and a community septic system.

Please let me know if your community will submit a position about the rezoning so we can include it in our staff report when it goes to the Land Use Board and Board of Commissioners.

Thanks,

Bjorn

Bjorn E. Hansen, AICP CTP
Senior Planner – Long Range Planning | Planning Department

T 704.283.3690

bjorn.hansen@unioncountync.gov
unioncountync.gov

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

recipient of this e-mail, please contact the sender immediately.

MEMO

To:	Union County
From:	Max Hsiang, Planning & Zoning Director
Date:	10/16/2024
Re:	Response to Cresswind Development Proposal in Union County

Request:

Union County Planning has requested a formal position from the Town of Stallings regarding the Cresswind development proposal (Conditional Zoning for 727 single-family, 55+ detached homes on parcels 08312014, 08309016, and 08282009A) prior to scheduling a community meeting.

Stallings Town Council Position:

While the Town of Stallings does not have zoning or development authority over the property, we have identified potential community impacts, development planning considerations, and development concerns.

Based on our current understanding, the Stallings Town Council is not supportive of the proposed development. However, the Council emphasized that they do not have sufficient information to make an informed decision.

Additional Concerns and Suggestions:

The Council agrees with the list below of staff concerns and expressed the following during their Council Meeting on 10/15/2024:

1. **Community Impact**
   - **Annexation:** Stallings may seek to annex the northern unincorporated Union County properties into Stallings to increase the tax base and avoid future development limitations.
   - **Police Services:** Ensure adequate police services for the community.
   - **Traffic:** Address potential traffic increases on Lawyers Road.
   - **Community Involvement:** Invite Stallings residents to community meetings and public hearings, and notify HOAs on Lawyers Road and the Town Council.
2. **Development Planning**
   - **Site Access:** Consider the impact of no access from Rock Hill Church Road. Provide a street stub towards Rock Hill Church Road or additional access points in and out of the neighborhood.
   - **Stormwater Management:** Address concerns about floodplain proximity to homes and potential flooding.
   - **Parking:** Plan for adequate parking, including parallel parking on main roads or additional parking areas.
   - **Open Space:** Ensure sufficient usable open space for residents.
   - **Amenities:** Include secondary amenity areas and usable spaces.
   - **Walking Trails:** Consider a walking trail along the floodplain.

3. Development Concerns

- **Sewer Facility:** Address concerns about the long-term impacts of a private sewer facility.
- **Information and Transparency:** Request a detailed list of conditions from the conditional zoning and a formal analysis of the impact on services.
- **Gated Community:** Determine if the development is proposed as a gated community.

4. Additional Council Concerns

- **Building Standards:** Roads should be built to significant standards and width to ensure long-term durability.
- **Age Restriction:** The development should be age-marketed rather than age-restricted to allow for families to live there.
- **Sewer Plant:** The proposed private sewer plant raises concerns about odor and potential environmental impacts. Conduct a thorough environmental assessment and consider impacts for private wastewater treatment.
- **Environmental and Floodplain Issues:** There are significant uncertainties regarding the environmental and floodplain impacts of the development.

We request that Union County Planning provide additional information and address these concerns with this Development before proceeding with public meetings.

Sincerely,

Max Hsiang, AICP, CZO
Planning & Zoning Director | Town of Stallings
704-821-0315 | mhsiang@stallingsnc.org

Purser & BV Belk Property

Traffic Impact Analysis UPDATE

Union County, North Carolina

Prepared for:

Kolter Homes LLC

December 2024

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

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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 400th 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

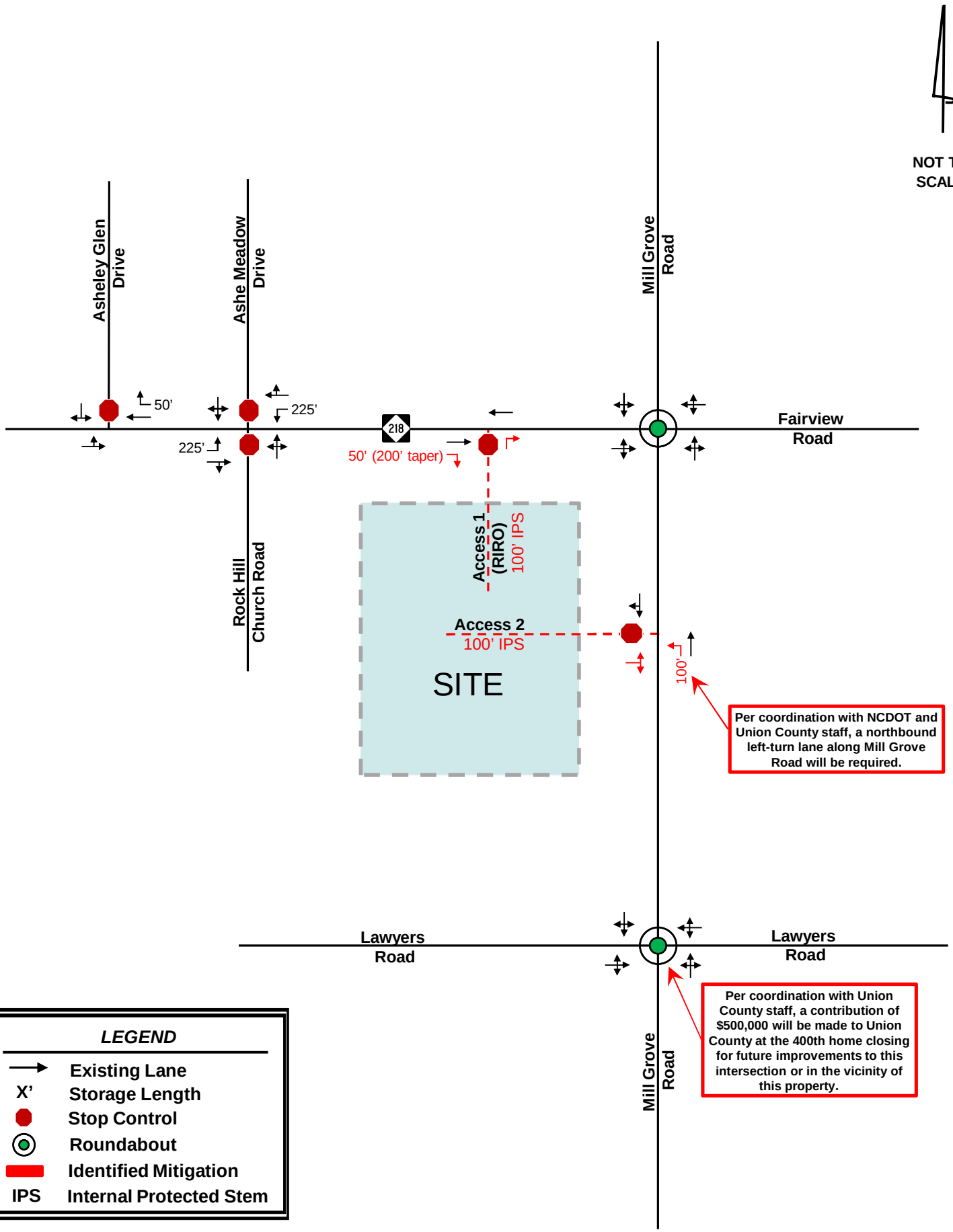
- Construction of the eastbound approach of Access 2 with one ingress lane, one egress lane, stop-control, and an IPS of 100 feet.

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.



Kimley»Horn	Purser & BV Belk Property Traffic Impact Analysis UPDATE	Identified Mitigation Improvements	Figure 1.1

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.

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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 27th, 2023, at the following intersections:

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

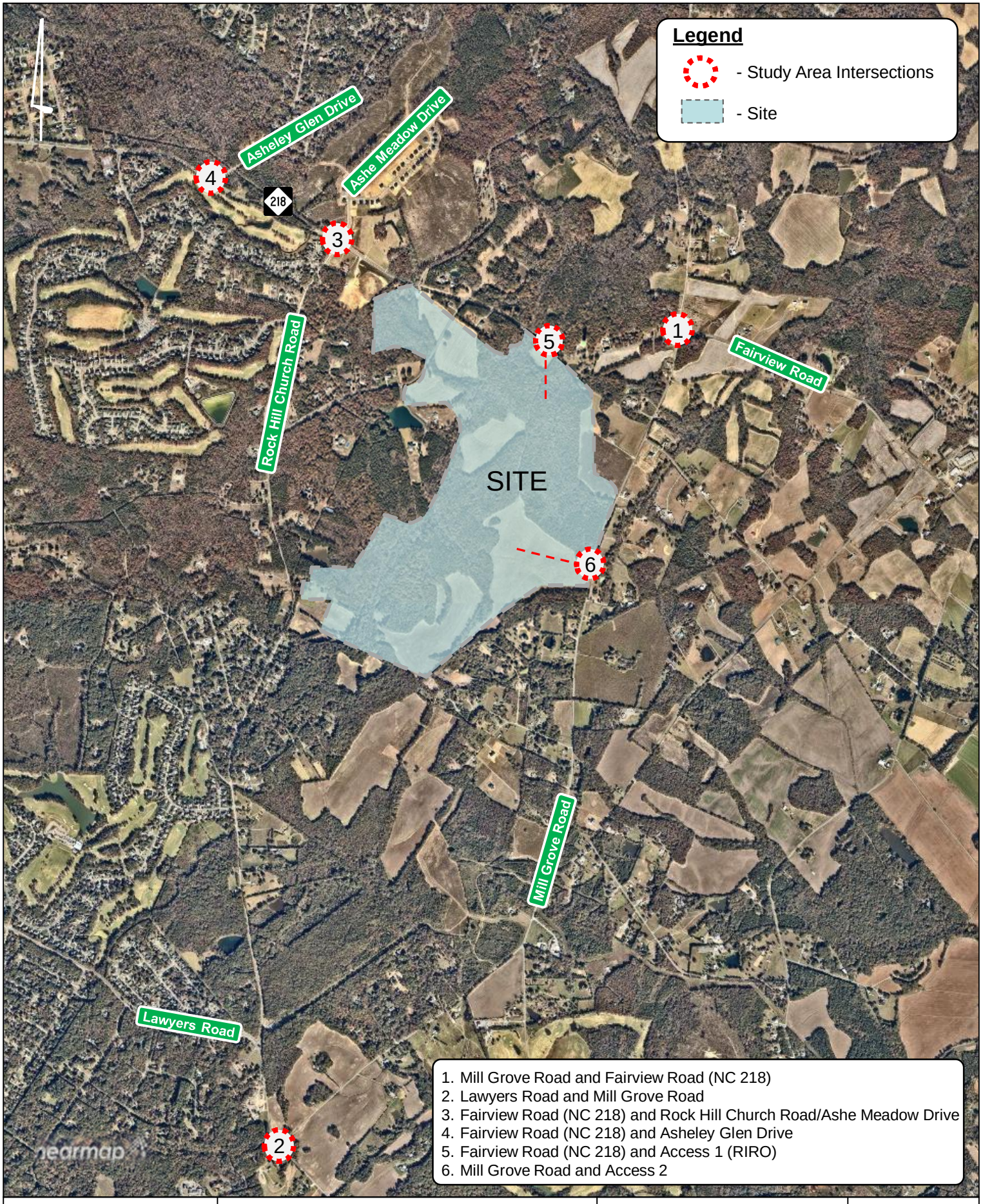
Additionally, AM (7:00-9:00 AM) and PM (4:00-6:00 PM) intersection turning-movement, heavy-vehicle, pedestrian, and bicycle counts were collected by Quality Counts on Wednesday, March 27th, 2024, at the following intersections:

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

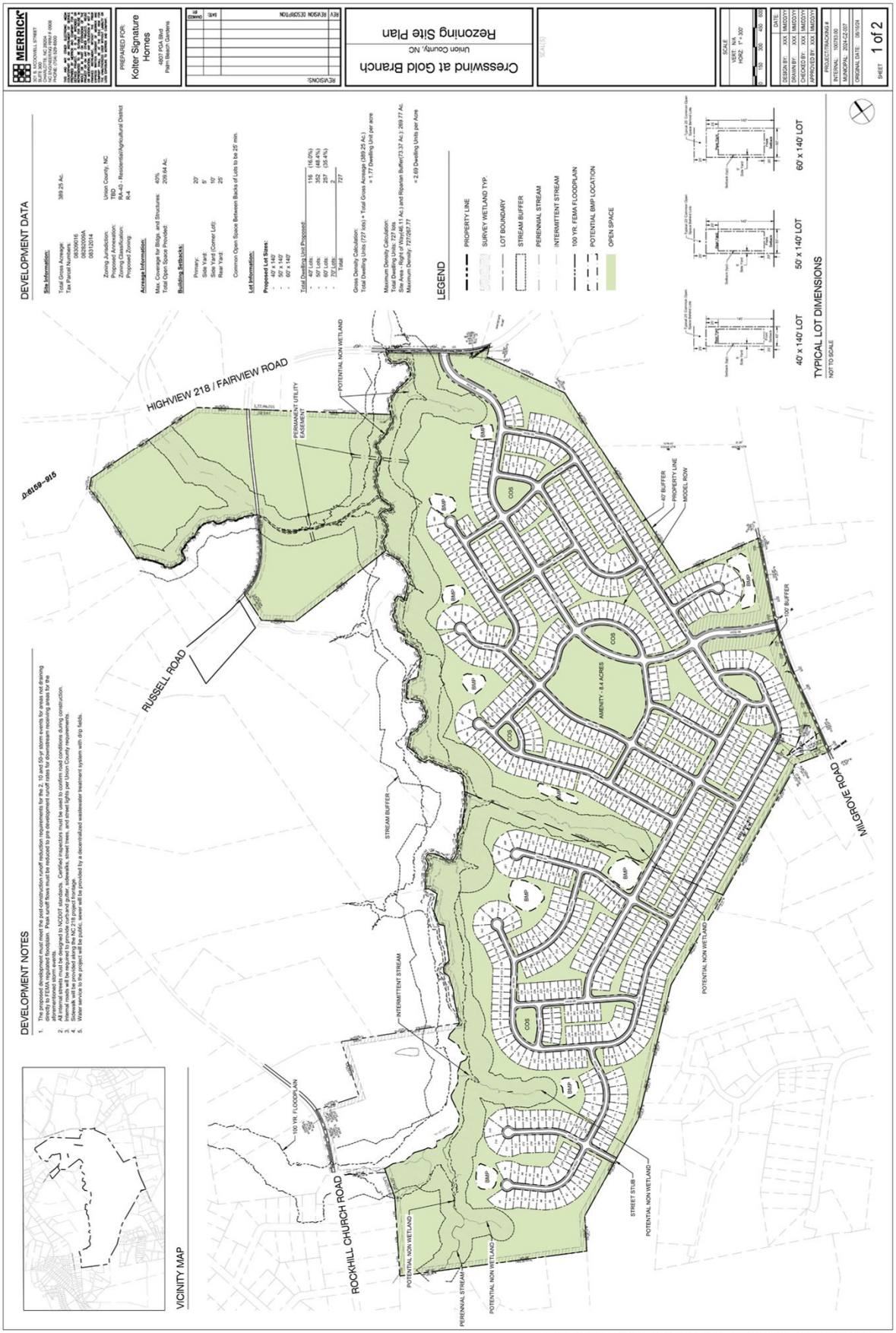
As documented in the approved NCDOT TIA Scoping Checklist, a growth rate of one percent (1%) was applied to the 2023 counts to reflect base 2024 traffic volumes.

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**.

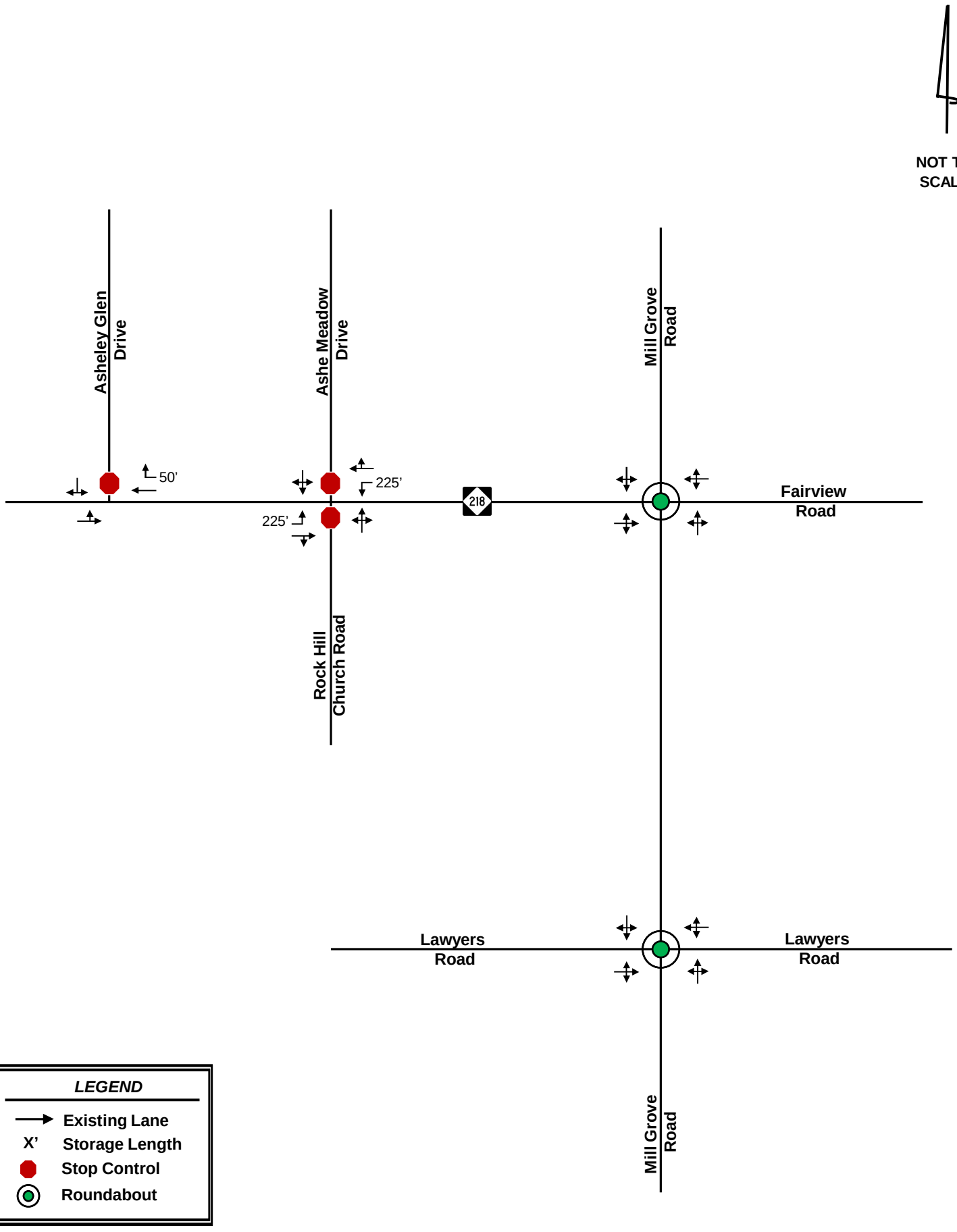
Figure 3.4 illustrates the 2024 existing AM and PM peak-hour traffic volumes.



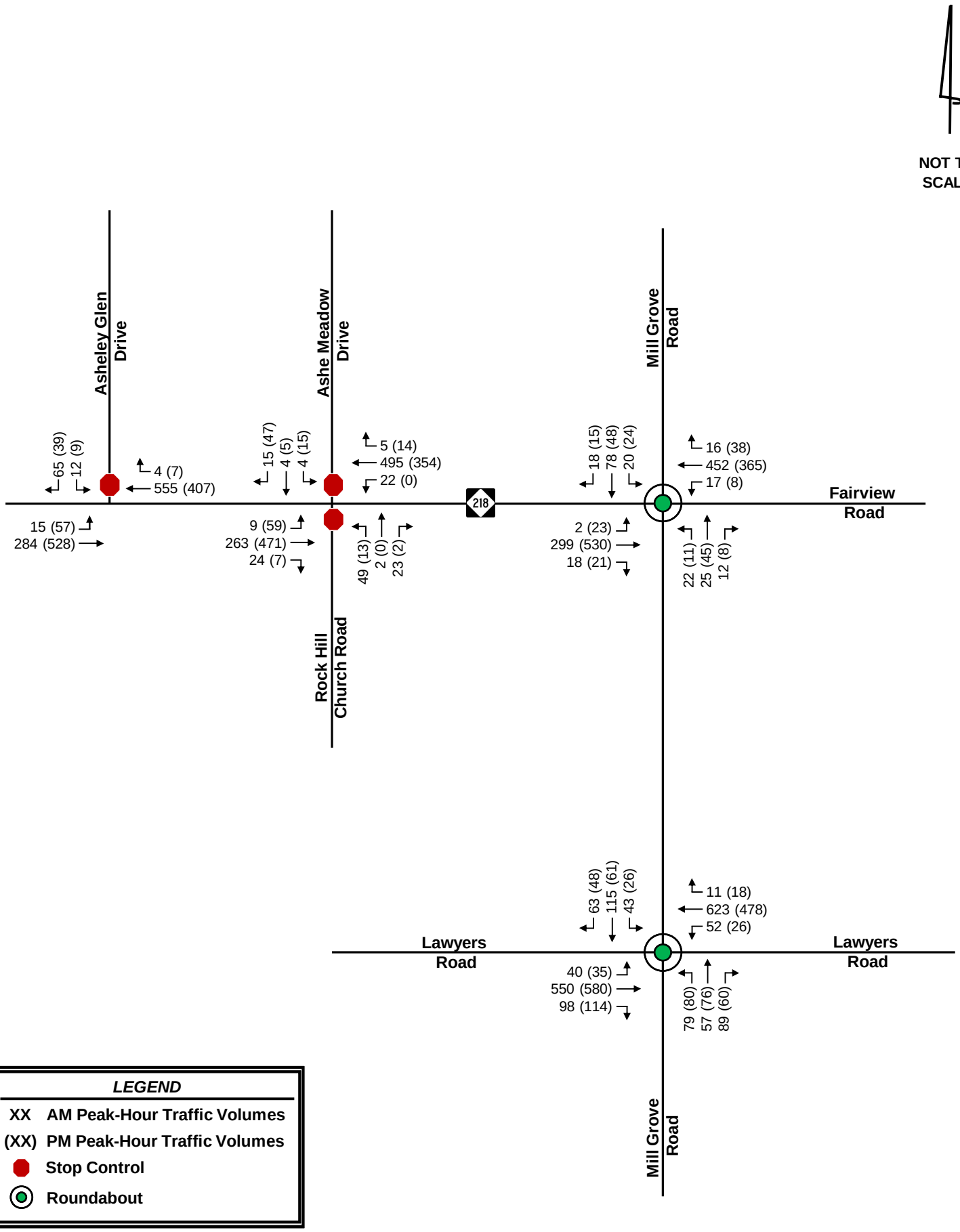
Kimley»Horn	Purser & BV Belk Property Traffic Impact Analysis UPDATE	Study Area/Site Location	Figure 3.1



Kimley»Horn	Purser & BV Belk Property Traffic Impact Analysis UPDATE	Proposed Site Plan	Figure 3.2



Kimley»Horn	Purser & BV Belk Property Traffic Impact Analysis UPDATE	Existing Roadway Laneage	Figure 3.3



Kimley»Horn	Purser & BV Belk Property Traffic Impact Analysis UPDATE	2024 Existing Traffic Volumes	Figure 3.4

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

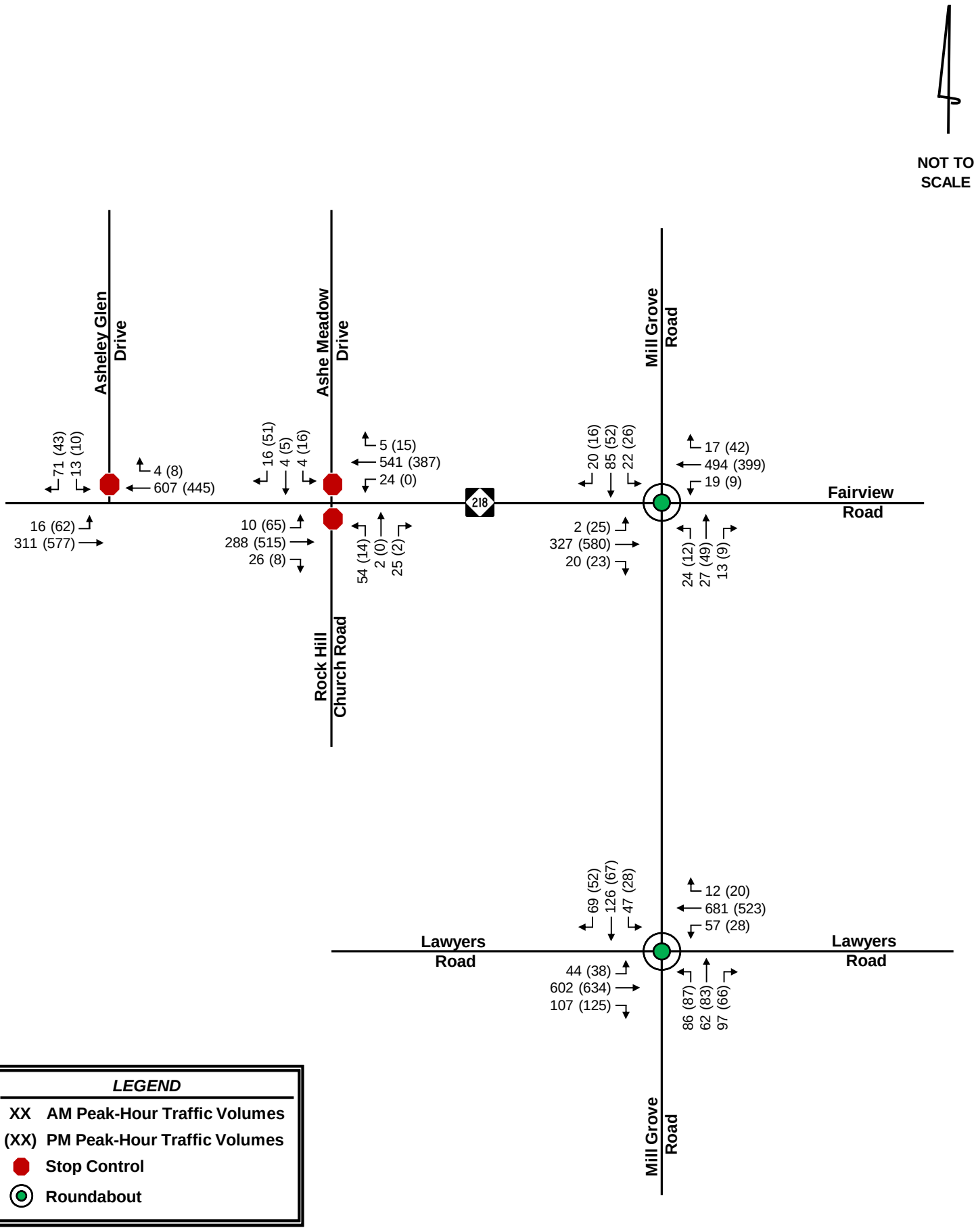
Three future transportation projects have been identified outside the study area based on review of the following adopted transportation plans for the area:

- 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**.



Kimley»Horn	Purser & BV Belk Property Traffic Impact Analysis UPDATE	2033 Background Traffic Volumes	Figure 4.1

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.

Table 5.1 - Trip Generation

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
Net New External Trips				**3,210**	**176**	**58**	**118**	**209**	**127**	**82**	

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

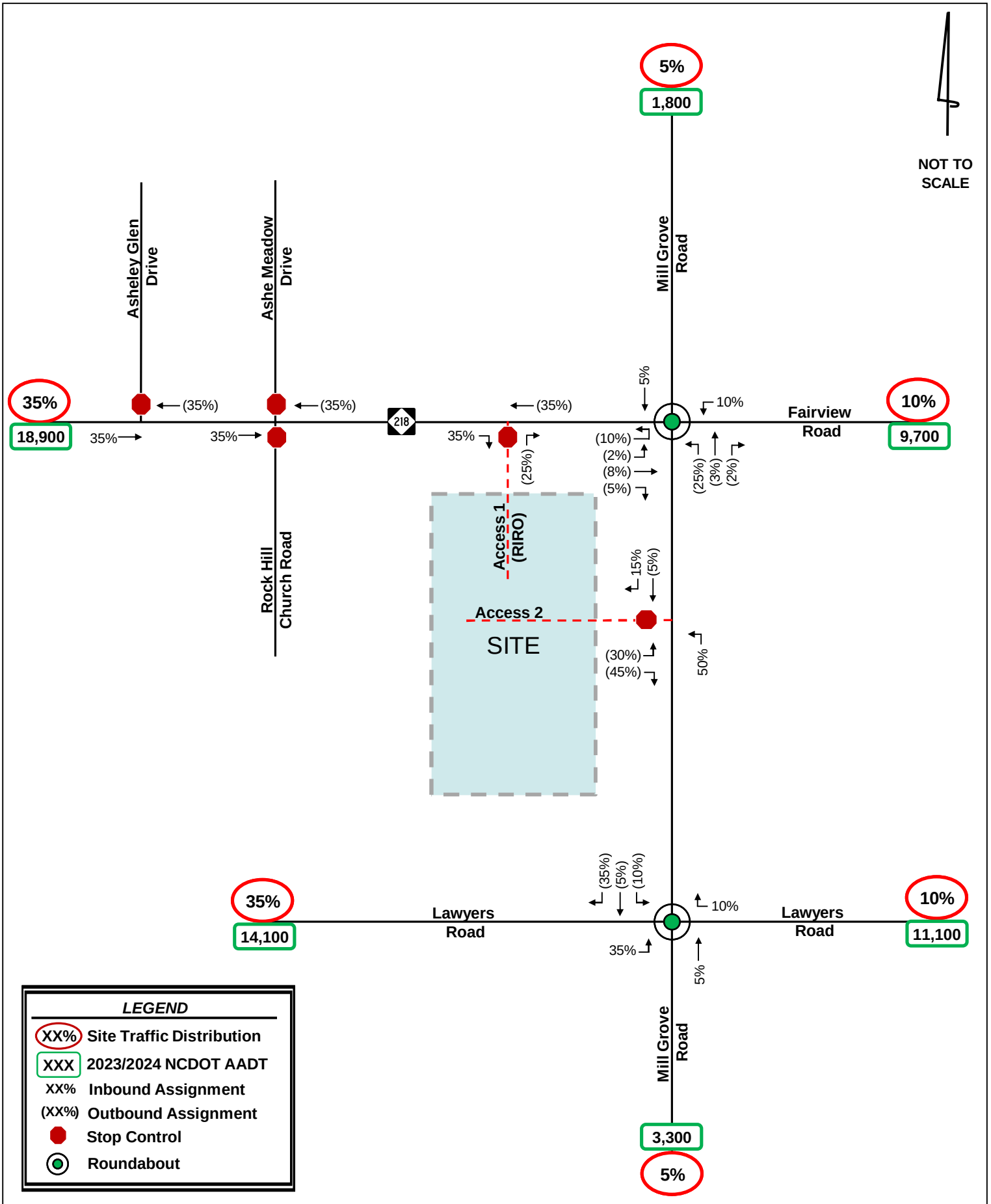
The overall site traffic distribution and assignment is shown in **Figure 5.1**.

5.4 BUILD-OUT TRAFFIC VOLUMES

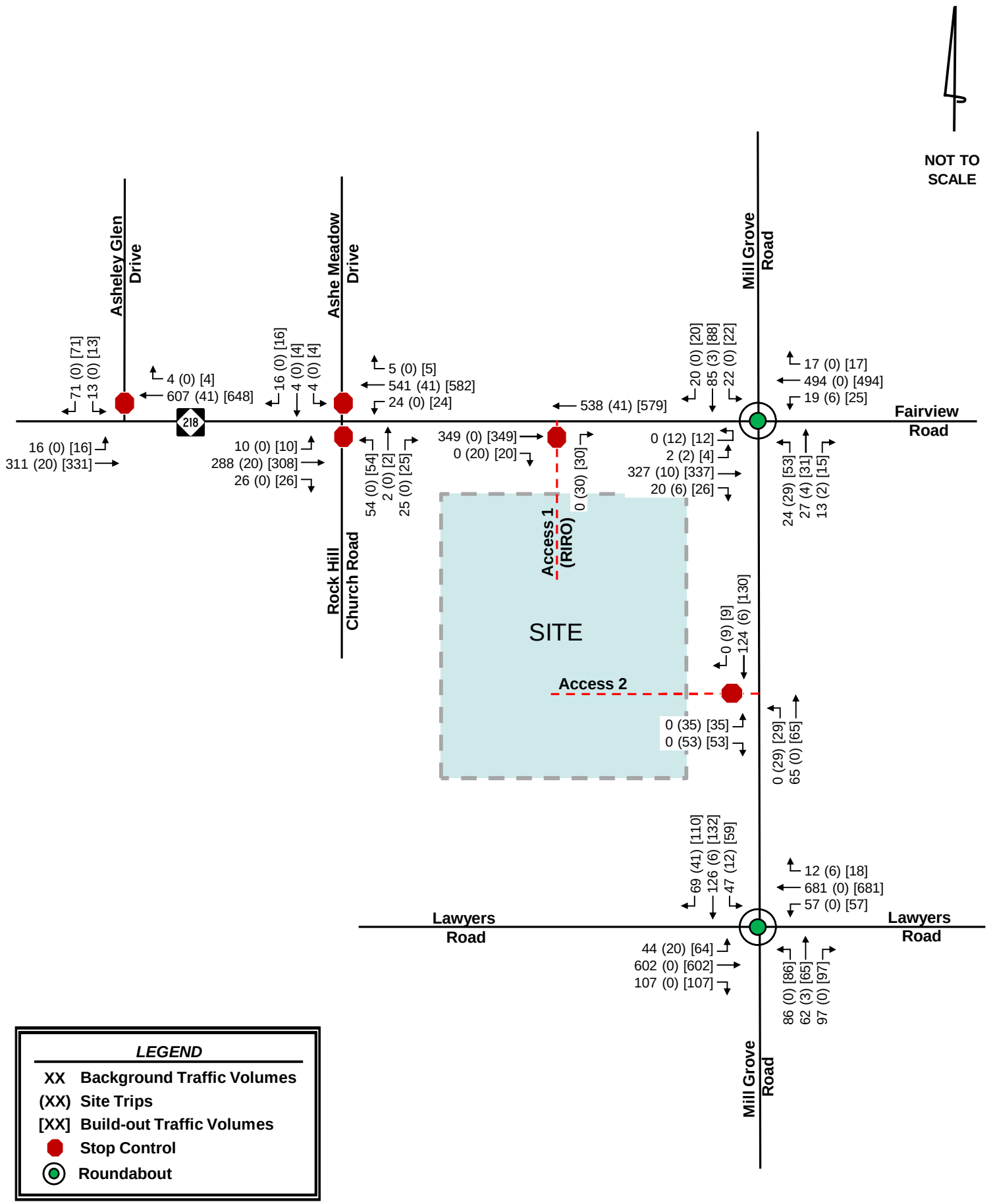
The build-out traffic volumes include the assignment of the projected site traffic generation added to the appropriate background traffic volumes. Build-out traffic volumes are shown in the following figures:

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

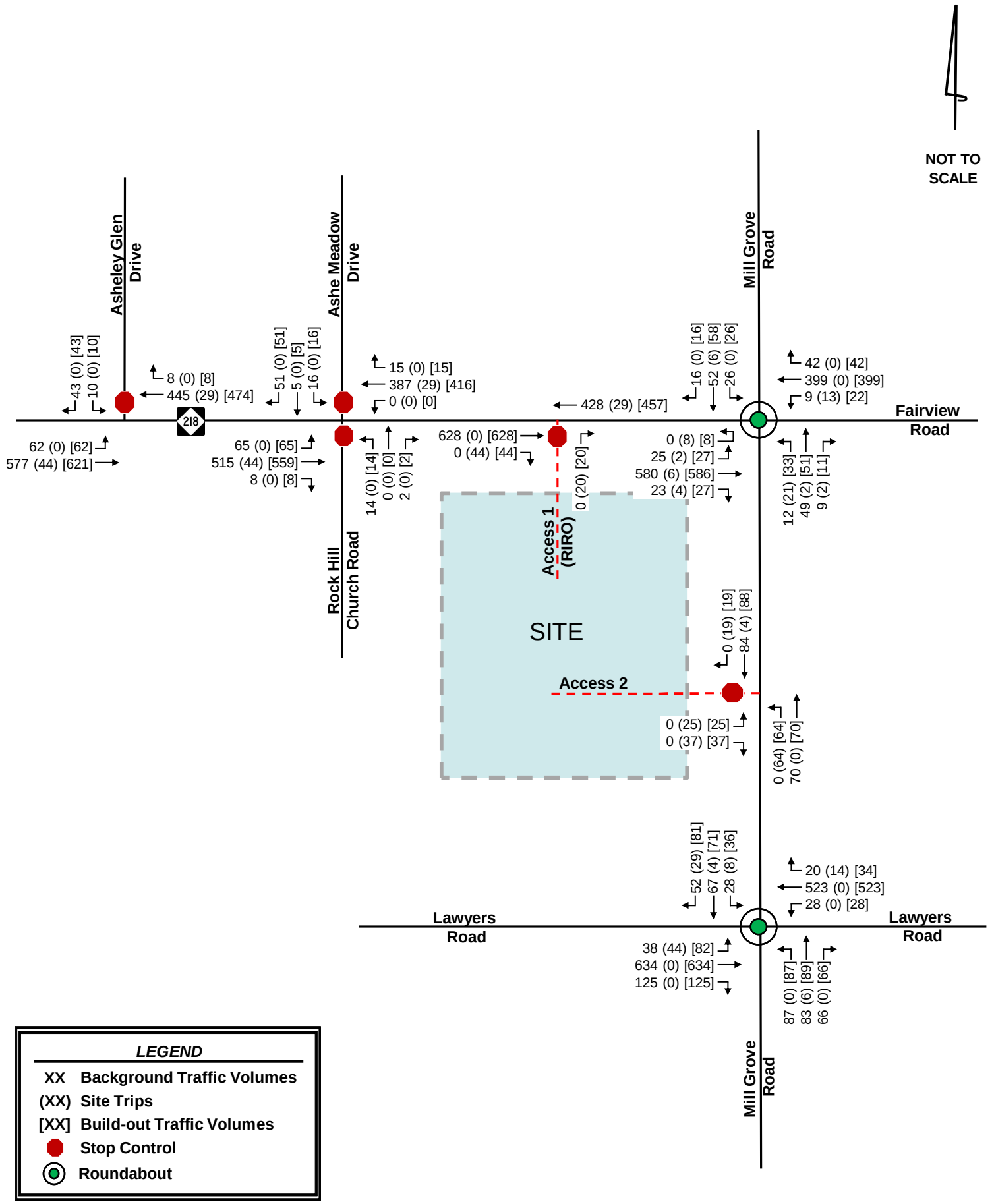
Intersection volume development worksheets for all intersections within the study network are provided in the **Appendix**.



Kimley»Horn	Purser & BV Belk Property Traffic Impact Analysis UPDATE	Site Traffic Distribution and Assignment	Figure 5.1



Kimley»Horn	Purser & BV Belk Property Traffic Impact Analysis UPDATE	2033 Build-out AM Peak-Hour Traffic Volumes	Figure 5.2



Kimley»Horn	Purser & BV Belk Property Traffic Impact Analysis UPDATE	2033 Build-out PM Peak-Hour Traffic Volumes	Figure 5.3

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 travers' 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, 95th 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
AM Peak Hour							
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'		
PM Peak Hour							
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, 95th 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
AM Peak Hour									
2024 Existing	LOS (Delay)	E (36.6)		C (23.5)	C (21.7)	D (26.5)		D (28.7)	0.94
	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)	0.85
	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)	0.89
	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)	0.89
	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)	0.86
	Synchro 95th Q	200'	0'	275'	75'	150'	-		
PM Peak Hour									
2024 Existing	LOS (Delay)	C (16.5)		B (12.1)	B (12.2)	A (9.0)		B (13.8)	0.77
	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)	0.78
	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)	0.83
	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)	0.83
	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)	0.71
	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 it's 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 400th 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 95th percentile queue lengths at the unsignalized, stop-controlled intersection of Fairview Road (NC 218) and Rock Hill Church Road/Ashe Meadow Drive.

Table 6.3 - Fairview Road (NC 218) and Rock Hill Church Road/Ashe Meadow Drive

Condition	Measure	EB		WB		NB	SB
		EBL*	EBTR	WBL*	WBTR	NBLTR	SBLTR
AM Peak Hour							
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'
PM Peak Hour							
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 95th 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
AM Peak Hour						
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'
PM Peak Hour						
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 95th 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.

Table 6.5 - Fairview Road (NC 218) and Access 1

Condition	Measure	EB	WB	NB
		EBTR	WBT	NBR
AM Peak Hour				
2033 Build-out	LOS (Delay)	A (0.0)	A (0.0)	B (10.8)
	Synchro 95th Q	0'	0'	5'
PM Peak Hour				
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 95th 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
AM Peak Hour					
2033 Build-out	LOS (Delay)	B (10.1)	A (7.6)	A (0.0)	A (0.0)
	Synchro 95th Q	10'	3'	0'	0'
PM Peak Hour					
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
Fatal Crashes	0
Class A	2
Class B	2
Class C	14
Property Damage Only	63
Total	***81***

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
1. Mill Grove Road and Fairview Road (NC 218)	190.20
2. Lawyers Road and Mill Grove Road	123.02
3. Fairview Road (NC 218) and Rock Hill Church Road/Ashe Meadow Drive	40.35
4. Fairview Road (NC 218) and Asheley Glen Drive	60.86
Average	***106.12***

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**
Total	***33***	***31***	***7***	***10***

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 400th 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

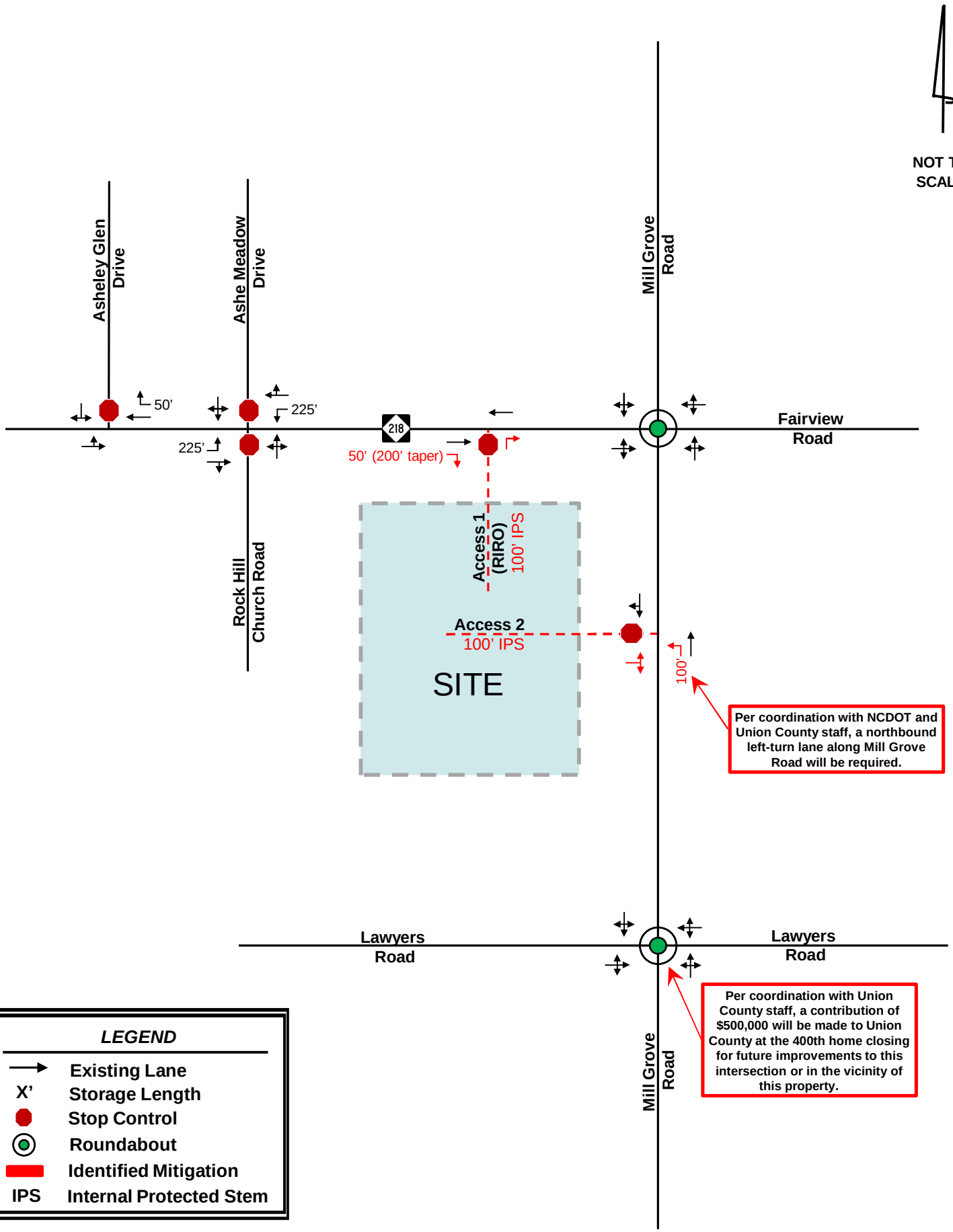
- Construction of the eastbound approach of Access 2 with one ingress lane, one egress lane, stop-control, and an IPS of 100 feet.

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.



Kimley»Horn	Purser & BV Belk Property Traffic Impact Analysis UPDATE	Identified Mitigation Improvements	Figure 9.1

Appendix

NCDOT Scoping Checklist

NCDOT Traffic Impact Analysis Need Screening / Scoping Request

TIA Need Screening → TIA Scoping → TIA Submittal

A Traffic Impact Analysis (TIA) may be required for developments based on the site trip generation estimates, site context, or at the discretion of the NCDOT District Engineer. The Applicant or the TIA Consultant shall submit this form along with the site plan to the District Engineer to determine the TIA need and, if a TIA is required, initiate the TIA scoping process. Without an approved scope, the TIA is incomplete and will be rejected until the study is revised to conform to NCDOT's TIA requirements.

Project Name: Purser & BV Belk Property Previous Name: If Applicable

Location: SW quadrant of NC 218 and Mill Grove Road County: Union Municipality:

Project Description: 750 age-restricted single-family homes

Project Contact:	Applicant	TIA Consultant
Company Name	Kolter Homes LLC	Kimley-Horn and Associates
Contact Person	Emily Powell	Laura Reid, PE
Phone Number	(704) 575-9310	(704) 319-7696
Email	epowell@kolter.com	laura.reid@kimley-horn.com
Mailing Address	8913 Silver Springs Court Charlotte, NC 28215	200 South Tryon Street, Suite 200 Charlotte, NC 28202

Site Plan Prepared By: Merrick Site Plan Date: 8/28/23

See site plan/vicinity map requirements on page 2.

Parcel Size: 384.52 Acre(s) Anticipated Build-Out Year: 2033

Weekday Site Trip Generation - Do NOT adjust for mode split, pass-by, internal capture, or diverted trips.

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
Total		750	DU	3285		59	121	180	131	83	214	

Refer to the current *NCDOT Congestion Management Capacity Analysis Guidelines* for acceptable trip calculation methods and data sources.

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

☒ The estimated site trips meet NCDOT's TIA trip threshold of 3,000 daily trips.

☒ The estimated site trips meet the municipal TIA trip threshold of > 100 lots and > 1000 daily and > 100 peak hour

☐ This project is located in a known STIP and/ or local CIP project #

☒ This project includes a rezoning request.

☐ The proposed site access is located within 1,000 feet of an interchange.

☐ The Applicant requests for a new or modified control-of-access break.

☐ The Applicant requests for a new or modified median break.

Applicant's Signature Print Name Date

NCDOT Traffic Impact Analysis Need Screening / Scoping Request

TIA Need Screening → TIA Scoping → TIA Submittal

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

TIA Need Screening → TIA Scoping → TIA Submittal

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).

☒ 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	
Internal Capture Trips (Attach Calculation Sheets)												
Internal Capture % of Unadjusted Site Trips				%			%			%		
LUC	Proposed Land Use	Any Internal Trips?		Pass-By % of External Trips								
				%			%			%		
				%			%			%		
				%			%			%		
				%			%			%		
				%			%			%		
Pass-By Trips (Attach Calculation Sheets)												
Adjacent Street Volumes												
Non-Pass-By Primary Trips				3285		59	121	180	131	83	214	
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												

☒ **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 _____

☒ 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%.

☒ **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				

☒ 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)

Agreement by All Parties

The undersigned agree to the contents and methodology described above for completing the required traffic impact analysis for the proposed development identified herein. Any changes to the above methodology contemplated by the Applicant or the TIA Consultant must be submitted to the District Engineer in writing. If approved by NCDOT, then such changes may be accepted for the TIA report. Subsequent revisions to the development plan (e.g. land use, density, site access, or schedule) may require additional scoping and analysis, and may modify the TIA requirements.

This agreement shall become effective on the date approved by NCDOT, and shall expire ____ months after the effective date or upon significant changes to the roadway network and/or development assumptions, whichever occurs first. Once expired, renewal or re-scoping will be required for subsequent TIA submittals.

APPLICANT

Signature	Print Name	Date

TIA CONSULTANT

Signature	Print Name	Date
	Laura Reid, PE	3/13/24

LOCAL GOVERNMENT REPRESENTATIVE (If Applicable)

Signature	Print Name	Date

Email concurrence may be used in lieu of the signature.

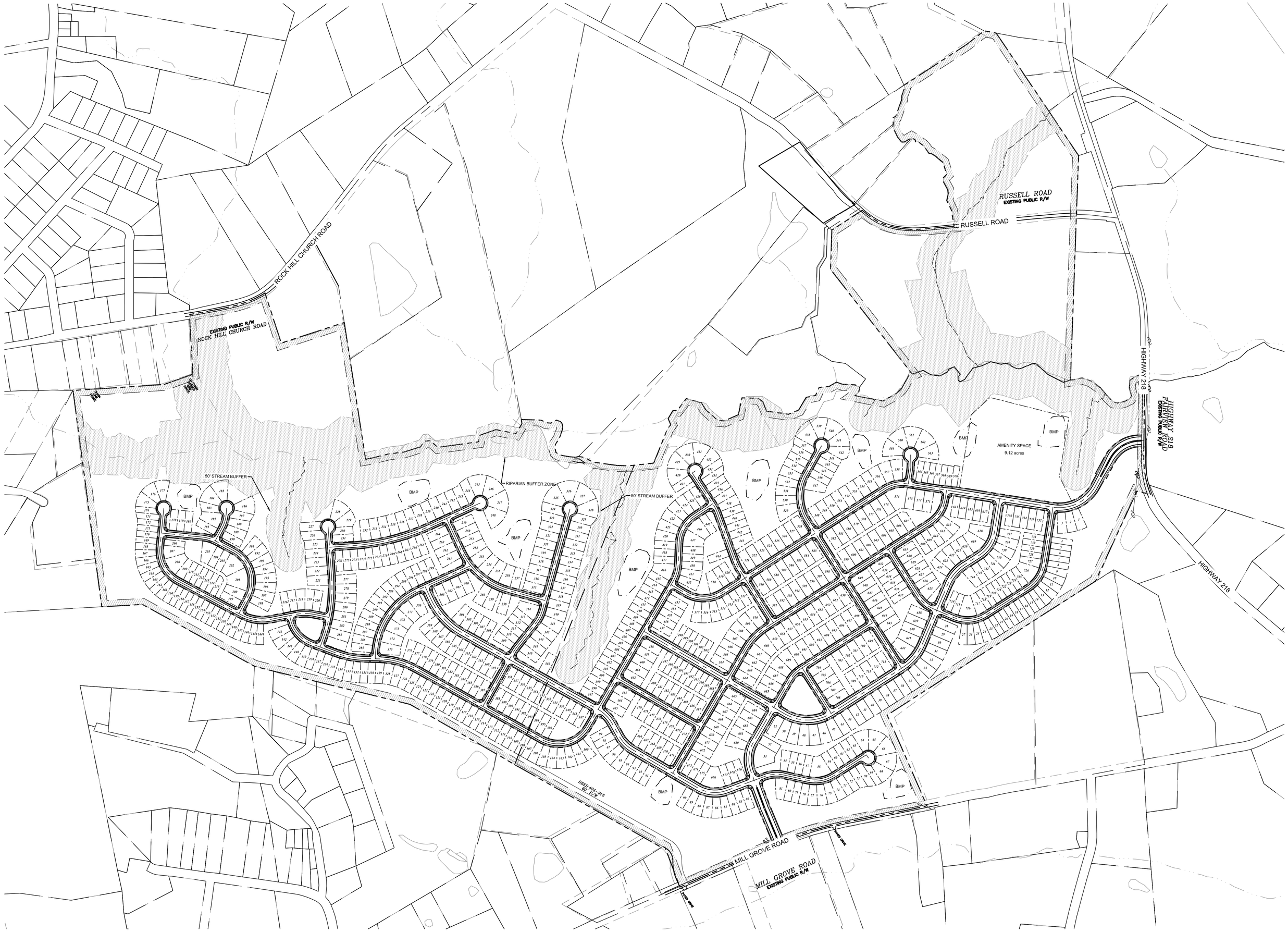
NCDOT DISTRICT REPRESENTATIVE

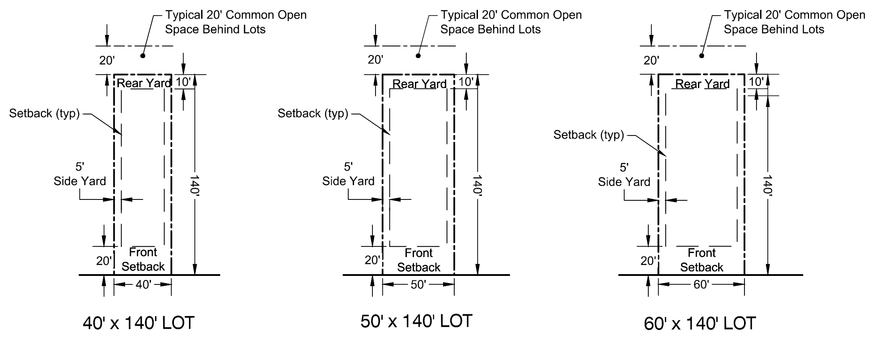
Reviewed and approved by the NCDOT Division ____ District ____ on _____.

Signature	Print Name

Email concurrence may be used in lieu of the signature.

NCDOT AADT																				
	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)
Mill 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%
Mill Grove Road (south of Lawyers Road)	3,102	3062	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 Mill Grove Road)	8,243	8,137	13,343	12,993	-	9,782	-	-	6,108	8,600	8,200	-	7,600	7,122	8,700	6,500	4,500	-2.8%	-0.4%	3.1%
Mill 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 Mill Grove Road)	10,531	10,396	12,682	15,290	14,193	11,955	11,674	10,789	10,268	-	-	9,200	-	8,000	-	-	-	-2.1%	0.3%	1.8%
Lawyers Road (west of Mill Grove Road)	11,765	14,383	15,348	14,785	14,443	13,683	11,218	10,676	10,161	10,000	11,000	-	9,400	-	8,800	8,000	7,800	-2.5%	1.6%	2.1%
Average																		***-1.2%***	***0.7%***	***1.0%***





TYPICAL LOT DIMENSIONS

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

DEVELOPMENT DATA

Site Information:

Total Site Acreage:	384.52 Ac.
Tax Parcel Numbers:	
08309016	
08282009A	
Zoning Jurisdiction:	Union County, NC
Proposed Annexation:	TBD
Zoning Classification:	RA-40 - Residential/Agricultural District
Proposed Zoning:	TBD

Acreage Information:

Total Open Space Required:	TBD
Total Open Space Provided:	

Building Setbacks:

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

Common Open Space Between Backs 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.X%)
- 50' Lots: XX (XX.X%)
- 60' Lots: XX (XX.X%)

Total: **744**

Proposed Density: 1.93 Units per Acre

Scale: 1" = 300'

0 150 300 600 900 1200

MERRICK
3501 N. MACDONALD STREET, SUITE 300
CHARLOTTE, NC 28205
NC ENGINEERING FIRM # P-0908 PHONE: 704.529.6500

Kolter Signature Homes

4807 PGA Blvd.
Palm Beach Gardens, FL

REVISIONS:

REV	REVISION DESCRIPTION	DATE	DRAWN BY

KOL-STALLINGS
Union County, NC

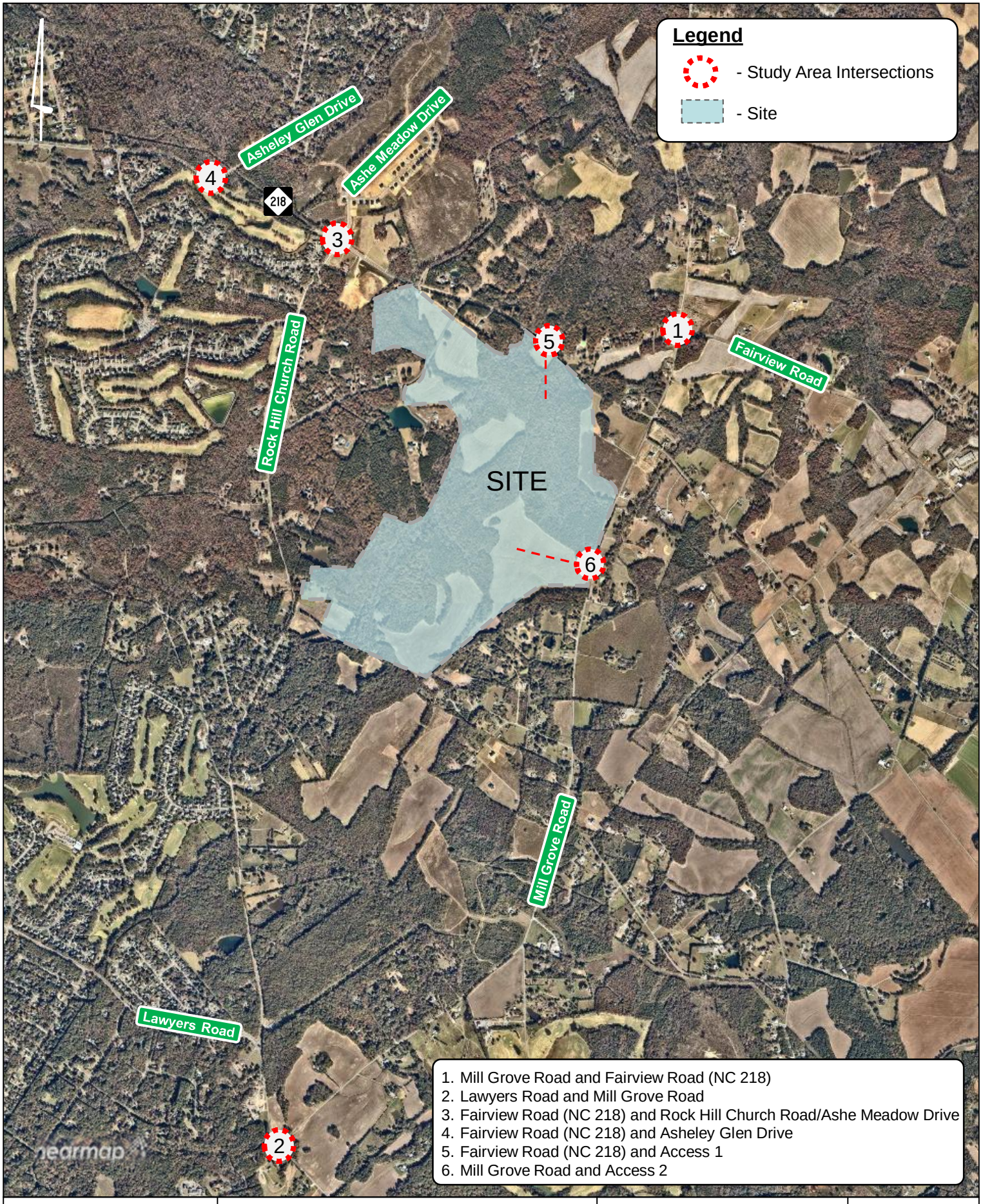
Concept Plan

SEAL(S)

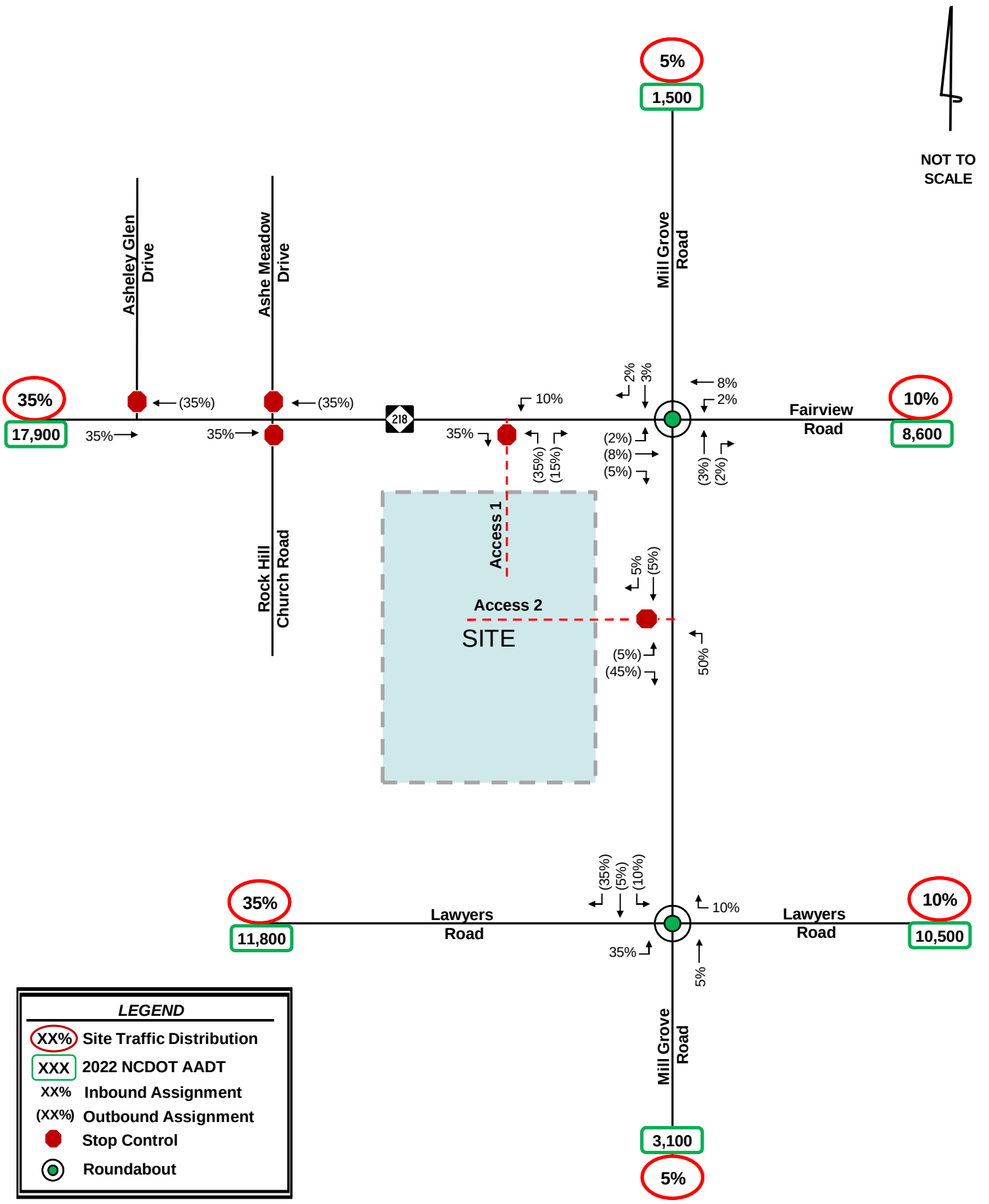
	DATE:
DESIGN BY: DesignXXX	MM/DD/YY
DRAWN BY: DrawnXXX	MM/DD/YY
CHECKED BY: CheckXXX	MM/DD/YY
APPROVED BY: AppXXX	MM/DD/YY

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

SHEET 1



Kimley»Horn	Purser & BV Belk Property Traffic Impact Analysis	Study Area/Site Location	Figure 1



Kimley»Horn	Purser & BV Belk Property Traffic Impact Analysis	Site Traffic Distribution and Assignment	Figure 2

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,

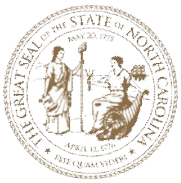
NCDOT has no further comments on the 3/13/24 scope. I am not aware of a project at NC 218 and Rock Hill Rd and do not see a TIP project at this intersection on our projects map, but I will confirm with our project development team.

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

130 South Sutherland Avenue
Monroe, NC 28112



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

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
Connect with us: Twitter | LinkedIn | Facebook | Instagram

From: Reid, Laura
Sent: Monday, March 25, 2024 12:03 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

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)
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From: Bjorn Hansen <bjorn.hansen@unioncountync.gov>
Sent: Thursday, March 21, 2024 9:03 AM
To: Reid, Laura <laura.reid@kimley-horn.com>; 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

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

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unioncountync.gov

From: Reid, Laura <laura.reid@kimley-horn.com>
Sent: Wednesday, March 20, 2024 4:02 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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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)
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Connect with us: Twitter | LinkedIn | Facebook | Instagram

From: Reid, Laura
Sent: Wednesday, March 13, 2024 2:48 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

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
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From: Bjorn Hansen <bjorn.hansen@unioncountync.gov>
Sent: Monday, March 4, 2024 4:56 PM
To: Helms, Amelia C <achelms@ncdot.gov>; Reid, Laura <laura.reid@kimley-horn.com>; 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

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

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bjorn.hansen@unioncountync.gov
unioncountync.gov

From: Helms, Amelia C <achelms@ncdot.gov>
Sent: Monday, March 4, 2024 4:37 PM
To: Reid, Laura <laura.reid@kimley-horn.com>; Bjorn Hansen <bjorn.hansen@unioncountync.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

Laura,

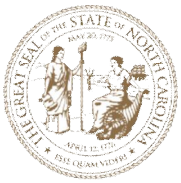
NCDOT is in agreement with the proposed study areas.

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

130 South Sutherland Avenue
Monroe, NC 28112



From: Reid, Laura <laura.reid@kimley-horn.com>
Sent: Thursday, February 29, 2024 8:15 AM
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>
Subject: RE: [External] RE: Purser & BV Belk - TIA Scoping

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)
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Direct: 704 319 7696 | Mobile: 443 804 7984 | www.kimley-horn.com
Connect with us: Twitter | LinkedIn | Facebook | Instagram

From: Bjorn Hansen <bjorn.hansen@unioncountync.gov>
Sent: Wednesday, February 28, 2024 1:58 PM
To: Reid, Laura <laura.reid@kimley-horn.com>; 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>
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

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unioncountync.gov

From: Reid, Laura <laura.reid@kimley-horn.com>
Sent: Wednesday, February 28, 2024 12:46 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>
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
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From: Bjorn Hansen <bjorn.hansen@unioncountync.gov>
Sent: Friday, January 26, 2024 8:34 AM
To: Reid, Laura <laura.reid@kimley-horn.com>; 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>
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
unioncountync.gov

From: Reid, Laura <laura.reid@kimley-horn.com>
Sent: Wednesday, January 24, 2024 4:11 PM
To: Helms, Amelia C <achelms@ncdot.gov>; Gardner, Zachary L <zlgardner@ncdot.gov>; Bjorn Hansen <bjorn.hansen@unioncountync.gov>
Cc: Ortiz-Hernandez, Julian <Julian.Ortiz@kimley-horn.com>; Lowe, Jack <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
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Celebrating 16 years as one of FORTUNE's 100 Best Companies to Work For

Upcoming Vacation: 1/26 – 1/31

From: Helms, Amelia C <achelms@ncdot.gov>
Sent: Tuesday, January 23, 2024 4:30 PM
To: Reid, Laura <laura.reid@kimley-horn.com>; Gardner, Zachary L <zlgardner@ncdot.gov>; Bjorn Hansen <bjorn.hansen@unioncountync.gov>
Cc: Ortiz-Hernandez, Julian <Julian.Ortiz@kimley-horn.com>
Subject: RE: [External] RE: Purser & BV Belk - TIA Scoping

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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

130 South Sutherland Avenue
Monroe, NC 28112

From: Reid, Laura <laura.reid@kimley-horn.com>
Sent: Tuesday, January 23, 2024 1:19 PM
To: Helms, Amelia C <achelms@ncdot.gov>; Gardner, Zachary L <zlgardner@ncdot.gov>; Bjorn Hansen <bjorn.hansen@unioncountync.gov>
Cc: Ortiz-Hernandez, Julian <Julian.Ortiz@kimley-horn.com>
Subject: [External] RE: Purser & BV Belk - TIA Scoping

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

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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>; Gardner, Zachary L <zlgardner@ncdot.gov>; 'Bjorn Hansen' <bjorn.hansen@unioncountync.gov>
Cc: Ortiz-Hernandez, Julian <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
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Upcoming Vacation: 1/26 – 1/31

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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

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>
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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
Connect with us: Twitter | LinkedIn | Facebook | Instagram

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To: Reid, Laura <laura.reid@kimley-horn.com>; Emily Powell <epowell@kolter.com>
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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
unioncountync.gov

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Sent: Monday, July 22, 2024 10:46 AM
To: Bjorn Hansen <bjorn.hansen@unioncountync.gov>
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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.

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Please let me know if you have any questions.

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bjorn.hansen@unioncountync.gov
unioncountync.gov

UNION COUNTY north carolina

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

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/NCDOT's comments could come at any time and then the TIA can be revised.

Bjorn E. Hansen, AICP CTP
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Union County Government
500 North Main Street, Suite 70
Monroe, NC 28112

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.

DEVELOPMENT DATA

Site Information:

Total Gross Acreage: 389.25 Ac.
Tax Parcel Numbers:
08309016
08282009A
08312014

Zoning Jurisdiction: Union County, NC
Proposed Annexation: TBD
Zoning Classification: RA-40 - Residential/Agricultural District
Proposed Zoning: R-4

Acreage 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:

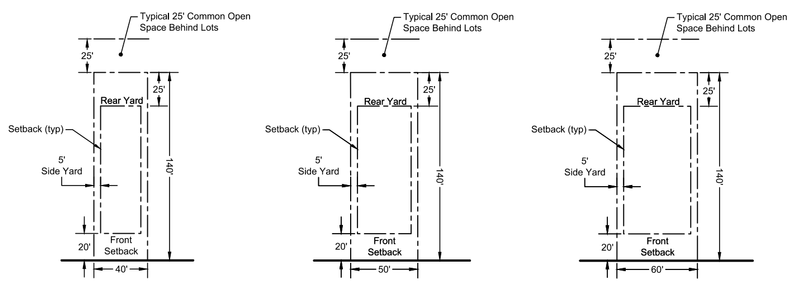
- 40' Lots:	116	(16.0%)
- 50' Lots:	352	(48.4%)
- 60' Lots:	257	(35.4%)
- 70' Lots:	2	
Total:	727	

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.): 269.77 Ac.
Maximum Density: 727/267.77
= 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

MERRICK
301 S. MCDOWELL STREET
SUITE 300
CHARLOTTE, NC 28204
NC ENGINEERING FIRM F-0908
PHONE: (704) 529-6500

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

REVISIONS:	REV	REVISION DESCRIPTION	DATE:	CHANGED BY:

Cresswind at Gold Branch
Union County, NC
Rezoning Site Plan

SEAL(S)

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

		DATE:
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

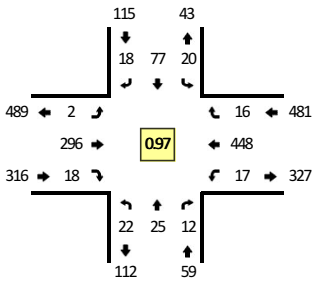
9/6/2024 10:16:59 AM
Q:\CHA\Projects\100230.00 - KOL - Stallings DD Hourly\CAD\Exhibits\2024-07-10 - Rezoning Submittal-.dwg

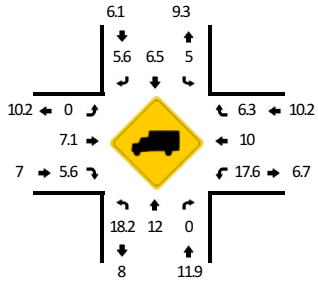
Turning Movement Counts

Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

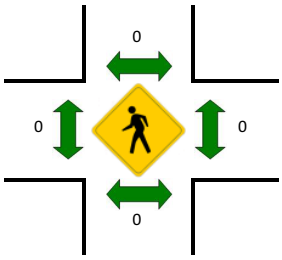
LOCATION: 1.Mill Grove Rd -- Fairview Rd (NC 218) | **QC JOB #:** 16348801
CITY/STATE: Fairview, NC | **DATE:** Wed, Sep 27 2023

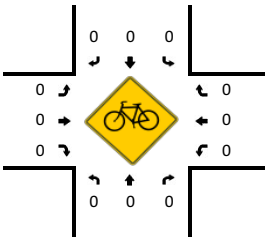
Peak-Hour: 7:00 AM -- 8:00 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

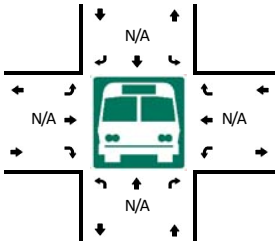


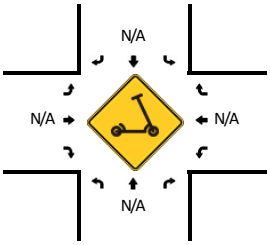


TRUE DATA TO IMPROVE MOBILITY









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	0		0	0	0		0	0	0		0
Scooters																	

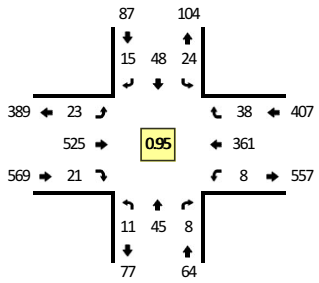
Comments:

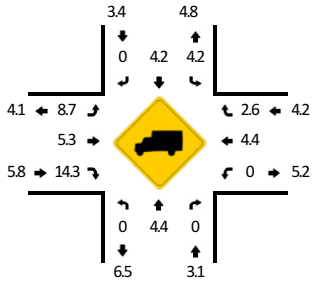
Report generated on 10/3/2023 9:37 AM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

LOCATION: 1.Mill Grove Rd -- Fairview Rd (NC 218) | **QC JOB #:** 16348802
CITY/STATE: Fairview, NC | **DATE:** Wed, Sep 27 2023

Peak-Hour: 4:45 PM -- 5:45 PM
Peak 15-Min: 5:15 PM -- 5:30 PM





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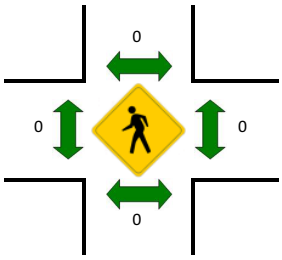

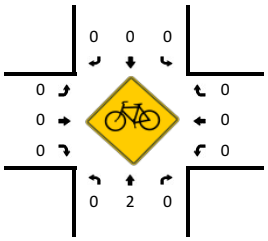

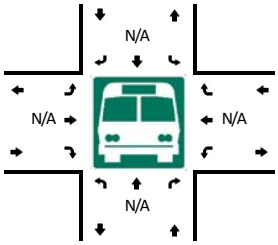

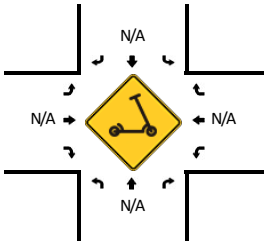

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4:30 PM	7	7	6	0	7	11	5	1	6	99	6	0	5	92	8	0	260	
4:45 PM	0	10	2	0	7	8	3	0	1	118	9	0	2	85	6	0	251	963
5:00 PM	3	12	1	0	6	14	4	0	6	133	4	1	1	102	8	0	295	1022
5:15 PM	4	15	5	0	9	12	5	0	8	131	4	0	1	94	8	0	296	1102
5:30 PM	4	8	0	0	2	14	3	0	6	143	4	1	4	80	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	16	4		0	16	0		36
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	8	0		0	0	0		0	0	0		0	0	0		8
Scooters																	

Comments:

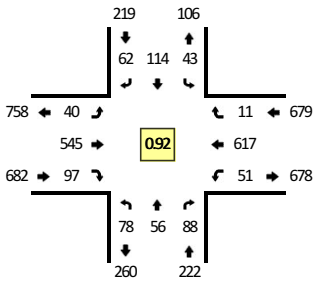
Report generated on 10/3/2023 9:37 AM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

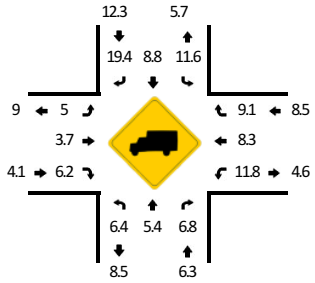
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

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

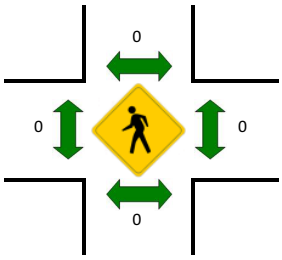
QC JOB #: 16348803
DATE: Wed, Sep 27 2023

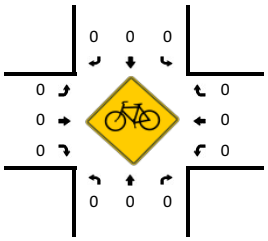
Peak-Hour: 7:15 AM -- 8:15 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

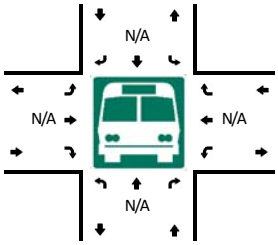


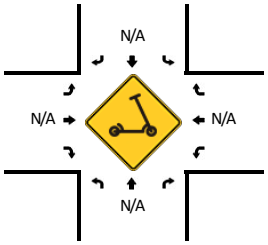


TRUE DATA TO IMPROVE MOBILITY









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
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 10/3/2023 9:37 AM

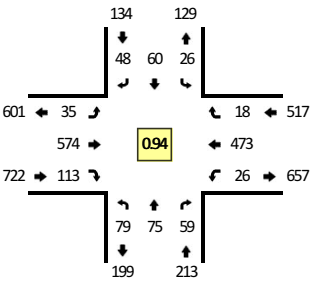
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

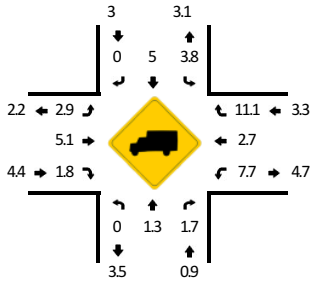
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

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

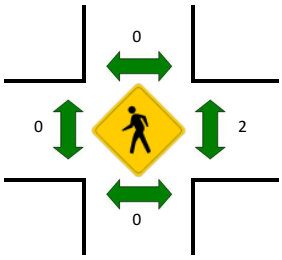
QC JOB #: 16348804
DATE: Wed, Sep 27 2023

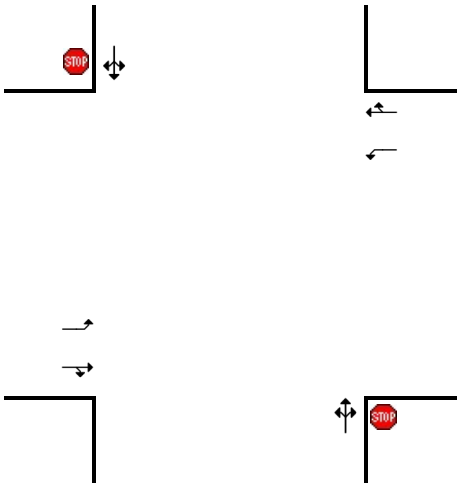
Peak-Hour: 5:00 PM -- 6:00 PM
Peak 15-Min: 5:45 PM -- 6:00 PM

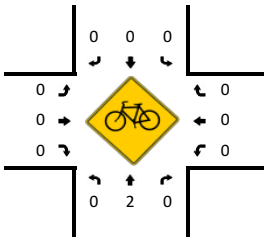


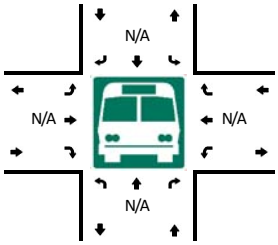


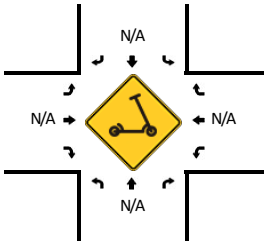
TRUE DATA TO IMPROVE MOBILITY











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
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
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	4	0		4	24	0		4	0	4		40
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

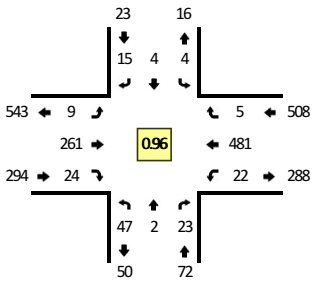
Report generated on 10/3/2023 9:37 AM

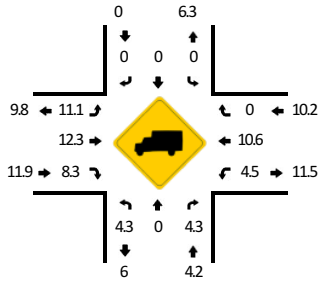
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

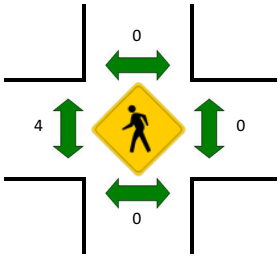
LOCATION: 1. Rock Hill Church Rd -- Fairview Rd (NC 218) | **QC JOB #:** 16542201
CITY/STATE: Union, NC | **DATE:** Wed, Mar 27 2024

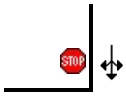
Peak-Hour: 7:00 AM -- 8:00 AM
Peak 15-Min: 7:15 AM -- 7:30 AM

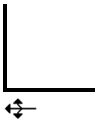


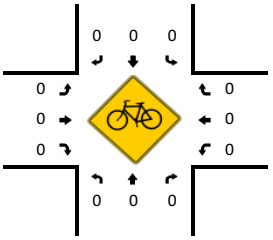


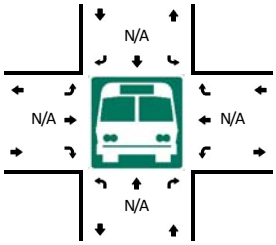
TRUE DATA TO IMPROVE MOBILITY

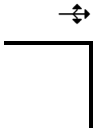


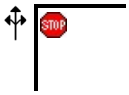


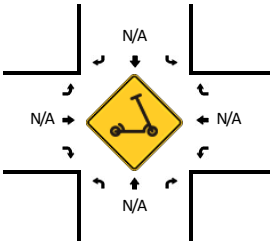












15-Min Count Period Beginning At	1. Rock Hill Church Rd (Northbound)				1. Rock Hill Church Rd (Southbound)				Fairview Rd (NC 218) (Eastbound)				Fairview Rd (NC 218) (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	7	0	5	0	0	2	5	0	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
Scooters																	

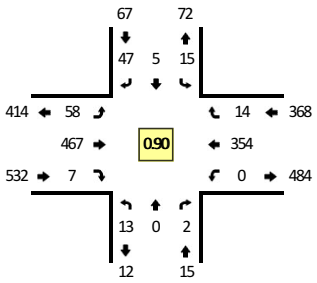
Comments:

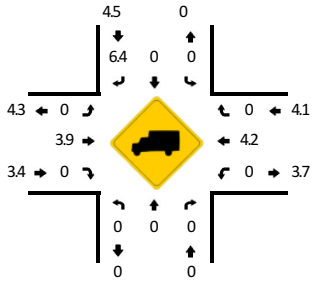
Report generated on 4/1/2024 10:52 AM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

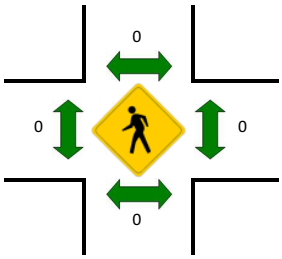
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

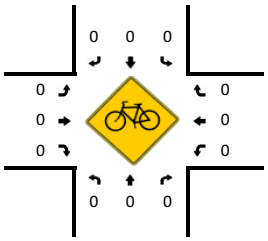
LOCATION: 1. Rock Hill Church Rd -- Fairview Rd (NC 218) | **QC JOB #:** 16542202
CITY/STATE: Union, NC | **DATE:** Wed, Mar 27 2024

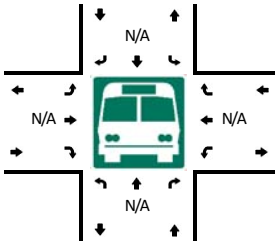
Peak-Hour: 4:45 PM -- 5:45 PM
Peak 15-Min: 5:30 PM -- 5:45 PM

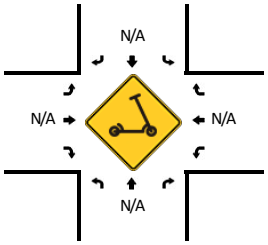












15-Min Count Period Beginning At	1. Rock Hill Church Rd (Northbound)				1. Rock Hill Church Rd (Southbound)				Fairview Rd (NC 218) (Eastbound)				Fairview Rd (NC 218) (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	4	0	1	0	6	0	4	0	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	12	0		0	16	0		28
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

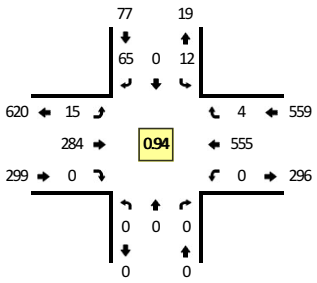
Comments:

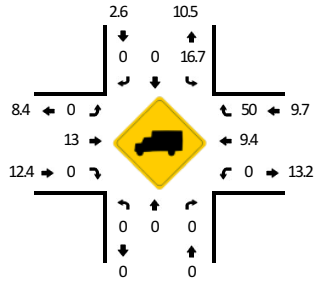
Report generated on 4/1/2024 10:52 AM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

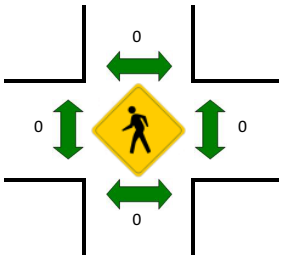
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

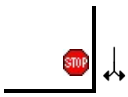
LOCATION: 2. Asheley Glen Dr -- Fairview Rd (NC 218) | **QC JOB #:** 16542203
CITY/STATE: Mint Hill, NC | **DATE:** Wed, Mar 27 2024

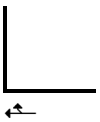
Peak-Hour: 7:00 AM -- 8:00 AM
Peak 15-Min: 7:30 AM -- 7:45 AM

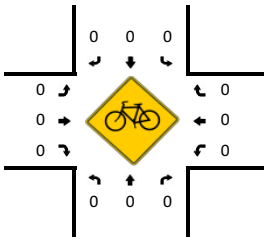


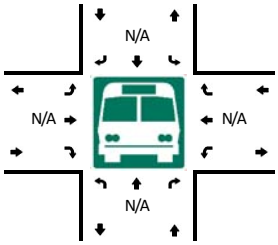


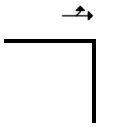


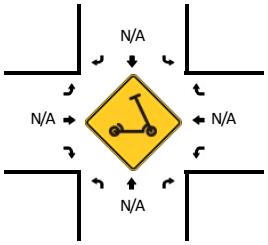












15-Min Count Period Beginning At	2. Asheley Glen Dr (Northbound)				2. Asheley Glen Dr (Southbound)				Fairview Rd (NC 218) (Eastbound)				Fairview Rd (NC 218) (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	2	0	11	0	1	56	0	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	60	0		0	76	0		136
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

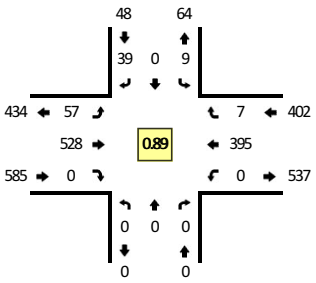
Comments:

Report generated on 4/1/2024 10:52 AM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

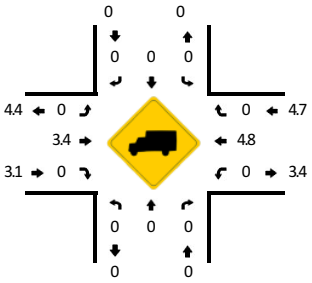
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

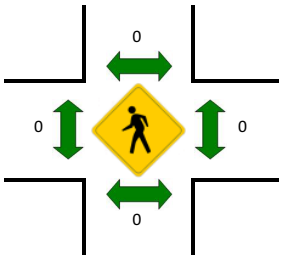
LOCATION: 2. Asheley Glen Dr -- Fairview Rd (NC 218) | **QC JOB #:** 16542204
CITY/STATE: Mint Hill, NC | **DATE:** Wed, Mar 27 2024

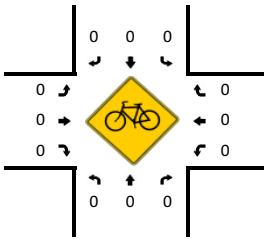
Peak-Hour: 5:00 PM -- 6:00 PM
Peak 15-Min: 5:30 PM -- 5:45 PM

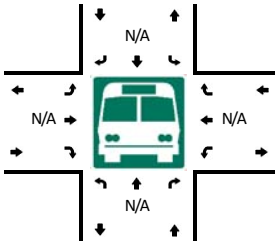


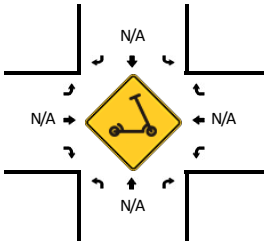
TRUE DATA TO IMPROVE MOBILITY











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	12	0		0	16	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:

Report generated on 4/1/2024 10:52 AM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Intersection Volume Development

INTERSECTION VOLUME DEVELOPMENT

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

	Mill Grove Road Northbound				Mill Grove Road Southbound				Fairview Road (NC 218) Eastbound				Fairview Road (NC 218) Westbound			
Description	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	22	25	12	0	20	78	18	0	2	299	18	0	17	452	16	0
Balanced Volumes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024 Existing Traffic	22	25	12	0	20	78	18	0	2	299	18	0	17	452	16	0
2024 Existng 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
2033 Buildout Total	53	31	15	0	22	88	20	0	4	337	26	12	25	494	17	0

PM PEAK HOUR

	Mill Grove Road Northbound				Mill Grove Road Southbound				Fairview Road (NC 218) Eastbound				Fairview Road (NC 218) Westbound			
Description	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	11	45	8	0	24	48	15	0	23	530	21	0	8	365	38	0
Balanced Volumes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024 Existing Traffic	11	45	8	0	24	48	15	0	23	530	21	0	8	365	38	0
2024 Existng 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
2033 Buildout Total	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 Northbound				Mill Grove Road Southbound				Lawyers Road Eastbound				Lawyers Road Westbound			
	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	79	57	89	0	43	115	63	0	40	550	98	0	52	623	11	0
Balanced Volumes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024 Existing Traffic	79	57	89	0	43	115	63	0	40	550	98	0	52	623	11	0
2024 Existng 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
2033 Buildout Total	86	65	97	0	59	132	110	0	64	602	107	0	57	681	18	0

PM PEAK HOUR

Description	Mill Grove Road Northbound				Mill Grove Road Southbound				Lawyers Road Eastbound				Lawyers Road Westbound			
	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	80	76	60	0	26	61	48	0	35	580	114	0	26	478	18	0
Balanced Volumes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024 Existing Traffic	80	76	60	0	26	61	48	0	35	580	114	0	26	478	18	0
2024 Existng 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
2033 Buildout Total	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

	Rock Hill Church Road				Ashe Meadow Drive				Fairview Road (NC 218)				Fairview Road (NC 218)			
	Northbound				**Southbound**				**Eastbound**				**Westbound**			
Description	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 Existng 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
2033 Buildout Total	54	2	25	0	4	4	16	0	10	308	26	0	24	582	5	0

PM PEAK HOUR

	Rock Hill Church Road				Ashe Meadow Drive				Fairview Road (NC 218)				Fairview Road (NC 218)			
	Northbound				**Southbound**				**Eastbound**				**Westbound**			
Description	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 Existng 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
2033 Buildout Total	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

	-				Asheley Glen Drive				Fairview Road (NC 218)				Fairview Road (NC 218)			
	Northbound				**Southbound**				**Eastbound**				**Westbound**			
Description	Left	Through	Right	U-turn	Left	Through	Right	U-turn	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 Existng 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
2033 Buildout Total	0	0	0	0	13	0	71	0	16	331	0	0	0	648	4	0

PM PEAK HOUR

	-				Asheley Glen Drive				Fairview Road (NC 218)				Fairview Road (NC 218)			
	Northbound				**Southbound**				**Eastbound**				**Westbound**			
Description	Left	Through	Right	U-turn	Left	Through	Right	U-turn	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 Existng 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
2033 Buildout Total	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 Existng 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
2033 Buildout Total	0	0	30	0	0	0	0	0	0	349	20	0	0	579	0	0

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 Existng 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
2033 Buildout Total	0	0	20	0	0	0	0	0	0	628	44	0	0	457	0	0

INTERSECTION VOLUME DEVELOPMENT

Mill Grove Road and Access 2
AM PEAK HOUR

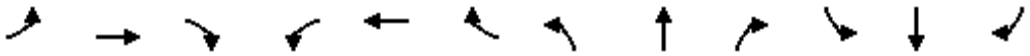
Description	Mill Grove Road Northbound				Mill Grove Road Southbound				Access 2 Eastbound				- Westbound			
	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn
2024 Existing Traffic	0	59	0	0	0	113	0	0	0	0	0	0	0	0	0	0
2024 Existng PHF	0.90	0.67	0.90	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
2033 Buildout Total	29	65	0	0	0	130	9	0	35	0	53	0	0	0	0	0

PM PEAK HOUR

Description	Mill Grove Road Northbound				Mill Grove Road Southbound				Access 2 Eastbound				- 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	64	0	0	0	77	0	0	0	0	0	0	0	0	0	0
2024 Existng 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
2033 Buildout Total	64	70	0	0	0	88	19	0	25	0	37	0	0	0	0	0

Intersection Capacity Analysis

2024 Existing Conditions



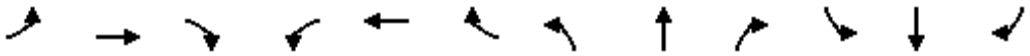
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	299	18	17	452	16	22	25	12	20	78	18
Future Volume (vph)	4	299	18	17	452	16	22	25	12	20	78	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	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



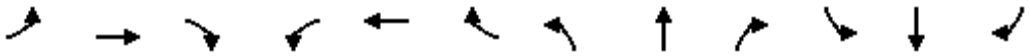
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	550	98	52	623	11	79	57	89	43	115	63
Future Volume (vph)	40	550	98	52	623	11	79	57	89	43	115	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	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



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%		ICU Level of Service A	
Analysis Period (min) 15			

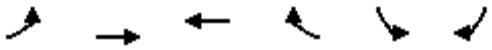
Intersection	
Int Delay, s/veh	4.9

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	0	0	1056	1048	355	1060	1060	575
Stage 1	-	-	-	-	-	-	395	395	-	647	647	-
Stage 2	-	-	-	-	-	-	661	653	-	413	413	-
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	950	-	-	1169	-	-	201	228	684	202	224	518
Stage 1	-	-	-	-	-	-	626	605	-	460	467	-
Stage 2	-	-	-	-	-	-	448	464	-	616	594	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	950	-	-	1169	-	-	180	216	684	181	213	518
Mov Cap-2 Maneuver	-	-	-	-	-	-	180	216	-	181	213	-
Stage 1	-	-	-	-	-	-	613	592	-	450	453	-
Stage 2	-	-	-	-	-	-	410	450	-	570	582	-

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



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			

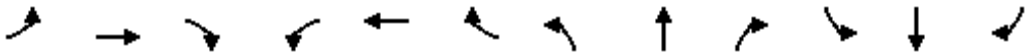
Intersection	
Int Delay, s/veh	1.8

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



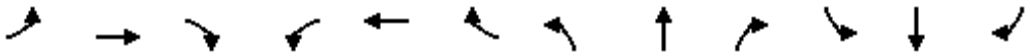
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	530	21	8	365	38	11	45	8	24	48	15
Future Volume (vph)	23	530	21	8	365	38	11	45	8	24	48	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	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



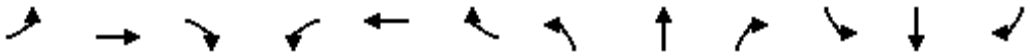
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	580	114	26	478	18	80	76	60	26	61	48
Future Volume (vph)	35	580	114	26	478	18	80	76	60	26	61	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	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



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%		ICU Level of Service A	
Analysis Period (min) 15			

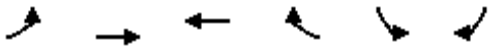
Intersection	
Int Delay, s/veh	2.8

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	0	0	1136	1114	524	1114	1110	442
Stage 1	-	-	-	-	-	-	654	654	-	450	450	-
Stage 2	-	-	-	-	-	-	482	460	-	664	660	-
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	1109	-	-	1037	-	-	179	208	553	185	209	607
Stage 1	-	-	-	-	-	-	456	463	-	589	572	-
Stage 2	-	-	-	-	-	-	565	566	-	450	460	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1109	-	-	1037	-	-	150	195	553	168	196	607
Mov Cap-2 Maneuver	-	-	-	-	-	-	150	195	-	168	196	-
Stage 1	-	-	-	-	-	-	429	436	-	554	570	-
Stage 2	-	-	-	-	-	-	504	564	-	407	433	-

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



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

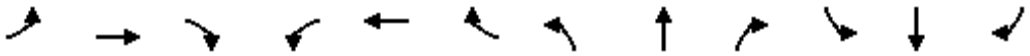
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	57	528	407	7	9	39
Future Vol, veh/h	57	528	407	7	9	39
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	50	0	-
Veh in Median Storage, #	-	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



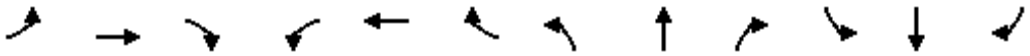
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	327	20	19	494	17	24	27	13	22	85	20
Future Volume (vph)	4	327	20	19	494	17	24	27	13	22	85	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	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



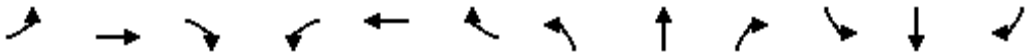
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	602	107	57	681	12	86	62	97	47	126	69
Future Volume (vph)	44	602	107	57	681	12	86	62	97	47	126	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. 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



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%		ICU Level of Service A	
Analysis Period (min) 15			

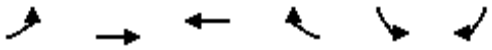
Intersection	
Int Delay, s/veh	2.9

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



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			

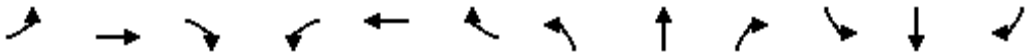
Intersection	
Int Delay, s/veh	1.5

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



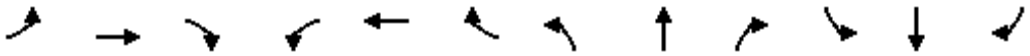
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	580	23	9	399	42	12	49	9	26	52	16
Future Volume (vph)	25	580	23	9	399	42	12	49	9	26	52	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	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



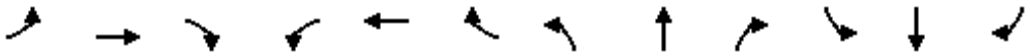
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	634	125	28	523	20	87	83	66	28	67	52
Future Volume (vph)	38	634	125	28	523	20	87	83	66	28	67	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	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%		ICU Level of Service A	
Analysis Period (min) 15			

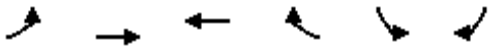
Intersection	
Int Delay, s/veh	2.4

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	0	0	1199	1176	577	1172	1172	439
Stage 1	-	-	-	-	-	-	721	721	-	447	447	-
Stage 2	-	-	-	-	-	-	478	455	-	725	725	-
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	1113	-	-	993	-	-	162	191	516	169	192	610
Stage 1	-	-	-	-	-	-	419	432	-	591	573	-
Stage 2	-	-	-	-	-	-	568	569	-	416	430	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1113	-	-	993	-	-	136	178	516	156	179	610
Mov Cap-2 Maneuver	-	-	-	-	-	-	136	178	-	156	179	-
Stage 1	-	-	-	-	-	-	392	404	-	553	571	-
Stage 2	-	-	-	-	-	-	508	567	-	381	402	-

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



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	494
Stage 1	-	-	-	-	494	-
Stage 2	-	-	-	-	779	-
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	1061	-	-	-	185	575
Stage 1	-	-	-	-	613	-
Stage 2	-	-	-	-	452	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1061	-	-	-	166	575
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

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
Frt			0.991			0.996			0.979			0.979
Flt Protected			0.998			0.998			0.974			0.992
Satd. Flow (prot)	0	0	1761	0	0	1716	0	0	1598	0	0	1730
Flt 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
Frt	
Flt Protected	
Satd. Flow (prot)	0
Flt 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	

Intersection Summary

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

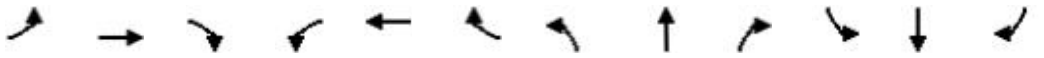
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	64	602	107	57	681	18	86	65	97	59	132	110
Future Volume (vph)	64	602	107	57	681	18	86	65	97	59	132	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. 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
Frt		0.981			0.997			0.947			0.951	
Flt Protected		0.996			0.996			0.983			0.990	
Satd. Flow (prot)	0	1775	0	0	1742	0	0	1667	0	0	1617	0
Flt 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



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%		ICU Level of Service A	
Analysis Period (min) 15			

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	0	0	1094	1086	357	1099	1097	650
Stage 1	-	-	-	-	-	-	379	379	-	704	704	-
Stage 2	-	-	-	-	-	-	715	707	-	395	393	-
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	892	-	-	1171	-	-	190	216	683	190	213	469
Stage 1	-	-	-	-	-	-	639	615	-	428	440	-
Stage 2	-	-	-	-	-	-	419	438	-	630	606	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	892	-	-	1171	-	-	175	208	683	174	206	469
Mov Cap-2 Maneuver	-	-	-	-	-	-	175	208	-	174	206	-
Stage 1	-	-	-	-	-	-	631	608	-	423	430	-
Stage 2	-	-	-	-	-	-	390	428	-	593	599	-

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

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						
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

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
Frt	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	-	-	-

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
Frt	0.919				0.991	
Flt Protected	0.980			0.985		
Satd. Flow (prot)	1678	0	0	1718	1750	0
Flt 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%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
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	-	-

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
Frt			0.994			0.988			0.985			0.978
Flt Protected			0.997			0.998			0.983			0.987
Satd. Flow (prot)	0	0	1786	0	0	1805	0	0	1785	0	0	1769
Flt 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			

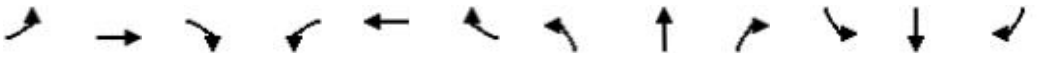
Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	16
Future Volume (vph)	16
Ideal Flow (vphpl)	1900
Lane Util. Factor	1.00
Frt	
Flt Protected	
Satd. Flow (prot)	0
Flt Permitted	
Satd. Flow (perm)	0
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.90
Heavy Vehicles (%)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

Intersection Summary

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



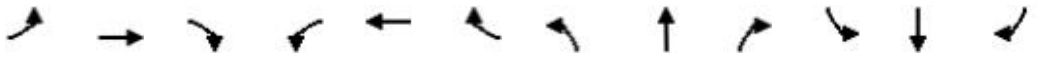
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	82	634	125	28	523	34	87	89	66	36	71	81
Future Volume (vph)	82	634	125	28	523	34	87	89	66	36	71	81
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.980			0.992			0.963			0.942	
Flt Protected		0.995			0.998			0.982			0.991	
Satd. Flow (prot)	0	1775	0	0	1818	0	0	1762	0	0	1713	0
Flt 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



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%		ICU Level of Service A	
Analysis Period (min) 15			

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

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%		ICU Level of Service D	
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	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

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
Frt	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	-	-	-

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						
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

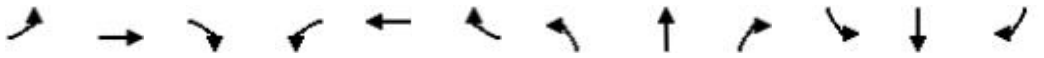
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	329	109	119	0	-	0
Stage 1	109	-	-	-	-	-
Stage 2	220	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	665	945	1469	-	-	-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



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%		ICU Level of Service E	
Analysis Period (min) 15			

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

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			

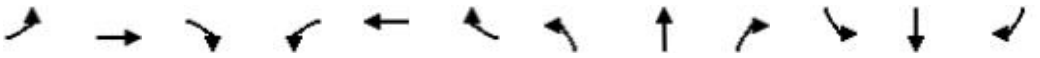
Intersection	
Intersection Delay, s/veh	16.3
Intersection LOS	C

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



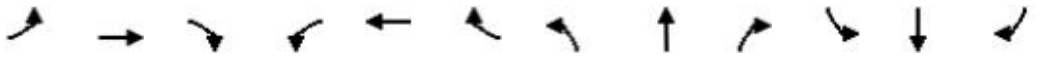
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	64	602	107	57	681	18	86	65	97	59	132	110
Future Volume (vph)	64	602	107	57	681	18	86	65	97	59	132	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage 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



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
Frt			0.850		0.992			0.963			0.942	
Flt Protected		0.994			0.998			0.982			0.991	
Satd. Flow (prot)	0	1803	1583	0	1818	0	0	1762	0	0	1713	0
Flt 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%	ICU Level of Service	F
Analysis Period (min)	15		

Intersection	
Intersection Delay, s/veh	13.0
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	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)				

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

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)		

Network Summary

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)				

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

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)		

Network Summary

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

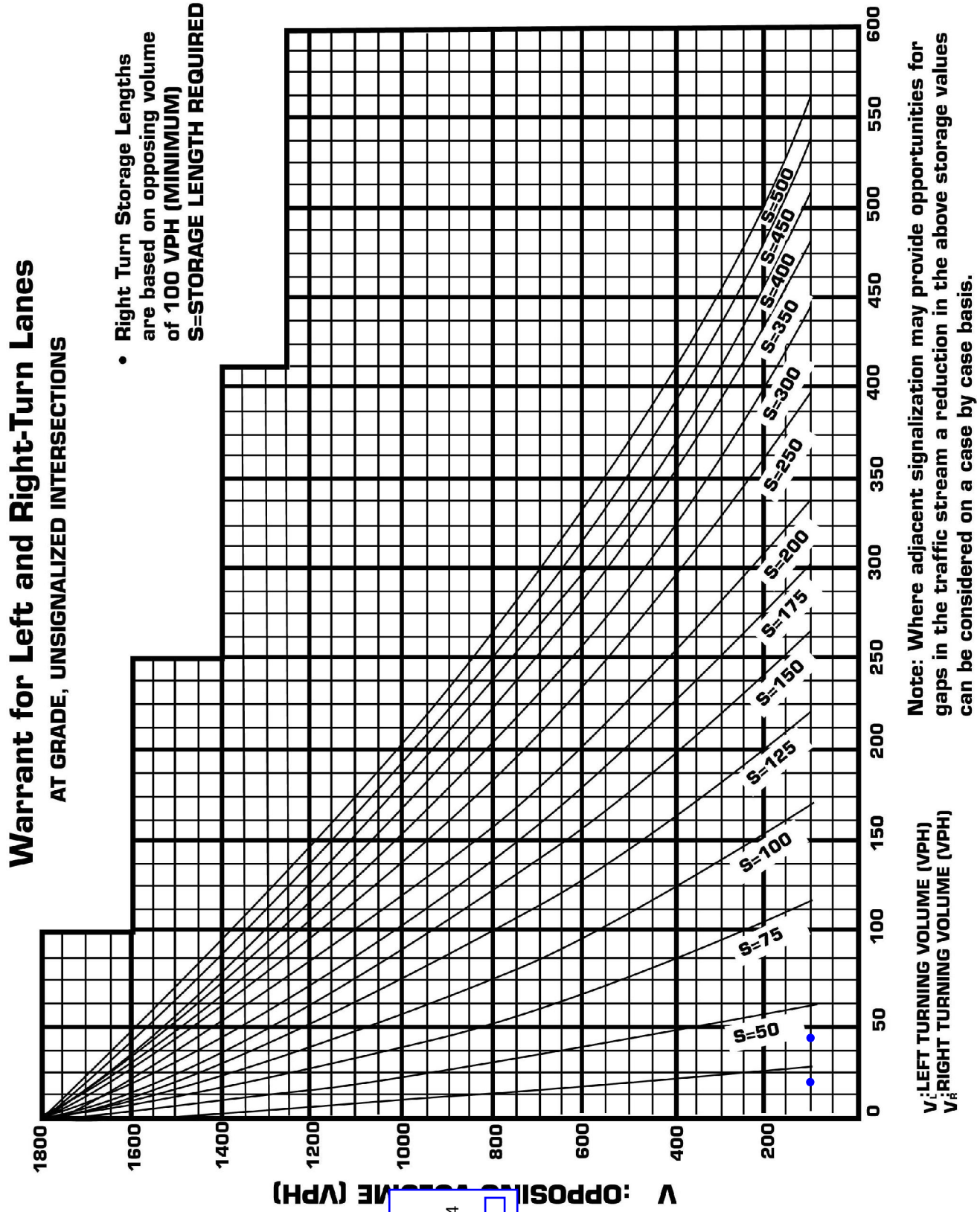
Movement	EB	EB	WB	NB	SB
Directions Served	LT	R	LTR	LTR	LTR
Maximum Queue (ft)	520	212	1094	194	254
Average Queue (ft)	247	60	657	62	102
95th Queue (ft)	677	413	1288	142	215
Link Distance (ft)	1033		1034	982	3751
Upstream Blk Time (%)	4		34		
Queuing Penalty (veh)	0		0		
Storage Bay Dist (ft)		800			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

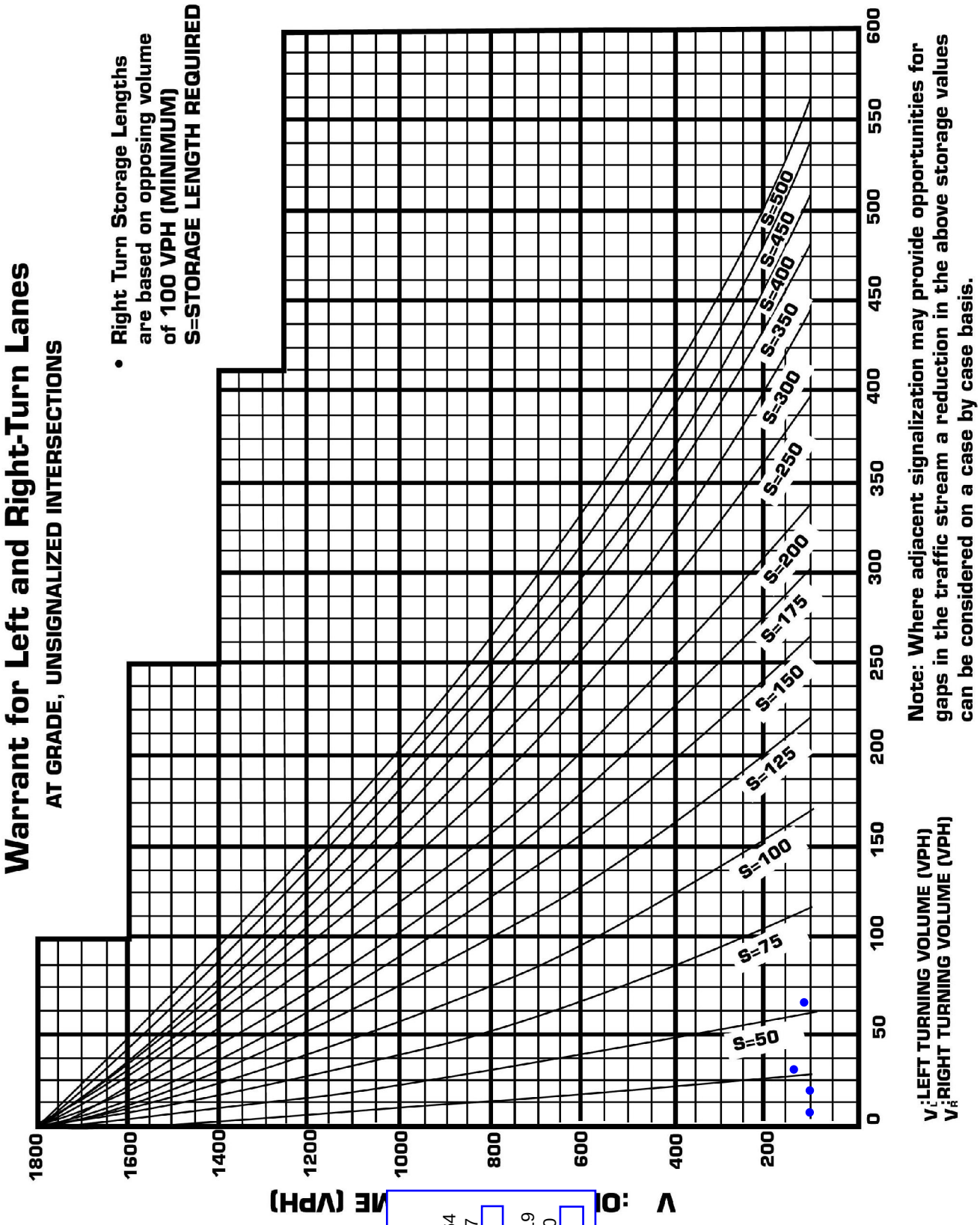
Int. # 5: Fairview Road (NC 218) and Access 1



2033 Build

AM	PM
V_{EBR} = 20	V_{EBR} = 44
V_o = 100	V_o = 100
S = 0'	S = 0'

Int. # 6: Mill Grove Road and Access 2



2033 Build

AM	PM
V_{NBL} = 29	V_{NBL} = 64
V_o = 139	V_o = 107
S = 0'	S = 50'
V_{SBR} = 9	V_{SBR} = 19
V_o = 100	V_o = 100
S = 0'	S = 0'

Crash Data

Study Criteria Summary

County: UNION **City:** All and Rural
Date: 2/1/2019 **to** 1/31/2024 **Study:** 41000073634
Location: NC 218 (Fairview Rd) at SR 1525 (Mill Grove Rd)

Report Details

Acc No	Crash ID	Date	Accident Type	Total Damage	Injuries F	A	B	C	Condition R	L	W	Road Ch	Ci	Trfc Ctl Dv	Op
1	**105860593**	05/12/2019 10:29	ANGLE	$ 20000	0	0	0	2	1	1	1	1	0	1	1
Unit	**1 :** 1	**Alchl/Drgs:** 0	**Speed:** 5 MPH	**Dir:** N	**Veh Mnvr / Ped Actn:** 12		**Obj Strk:**								
Unit	**2 :** 5	**Alchl/Drgs:** 0	**Speed:** 45 MPH	**Dir:** W	**Veh Mnvr / Ped Actn:** 4		**Obj Strk:**								
2	**105992608**	09/16/2019 18:04	OVERTURN/ROLLOVER	$ 750	0	0	0	1	1	1	1	1	0	2	1
Unit	**1 :** 4	**Alchl/Drgs:** 0	**Speed:** 10 MPH	**Dir:** N	**Veh Mnvr / Ped Actn:** 4		**Obj Strk:**								
Unit	**2 :** 20	**Alchl/Drgs:** 0	**Speed:** 35 MPH	**Dir:** W	**Veh Mnvr / Ped Actn:** 4		**Obj Strk:**								
3	**106000633**	09/22/2019 07:14	FIXED OBJECT	$ 1500	0	0	0	0	1	1	1	9	0	2	1
Unit	**1 :** 1	**Alchl/Drgs:** 7	**Speed:** 55 MPH	**Dir:** W	**Veh Mnvr / Ped Actn:** 4		**Obj Strk:** 55								
4	**106011753**	10/03/2019 07:17	FIXED OBJECT	$ 10000	0	0	0	0	1	1	1	1	0	2	1
Unit	**1 :** 4	**Alchl/Drgs:** 0	**Speed:** 35 MPH	**Dir:** W	**Veh Mnvr / Ped Actn:** 4		**Obj Strk:** 58								
5	**106042443**	10/23/2019 07:03	RAN OFF ROAD - STRAIGHT	$ 1600	0	0	0	0	1	1	1	1	0	2	1
Unit	**1 :** 1	**Alchl/Drgs:** 0	**Speed:** 50 MPH	**Dir:** E	**Veh Mnvr / Ped Actn:** 4		**Obj Strk:** 38								
6	**106038795**	10/24/2019 06:06	REAR END, SLOW OR STOP	$ 3000	0	0	0	0	1	5	1	1	0	2	1
Unit	**1 :** 1	**Alchl/Drgs:** 0	**Speed:** 45 MPH	**Dir:** W	**Veh Mnvr / Ped Actn:** 4		**Obj Strk:**								
Unit	**2 :** 2	**Alchl/Drgs:** 0	**Speed:** 45 MPH	**Dir:** W	**Veh Mnvr / Ped Actn:** 4		**Obj Strk:**								
7	**106204015**	04/17/2020 07:21	FIXED OBJECT	$ 4500	0	0	0	0	1	1	1	1	0	2	1
Unit	**1 :** 1	**Alchl/Drgs:** 0	**Speed:** 55 MPH	**Dir:** E	**Veh Mnvr / Ped Actn:** 4		**Obj Strk:** 55								
8	**106218858**	05/06/2020 17:00	REAR END, SLOW OR STOP	$ 11000	0	0	0	0	2	1	3	1	0	2	1
Unit	**1 :** 11	**Alchl/Drgs:** 0	**Speed:** 0 MPH	**Dir:** E	**Veh Mnvr / Ped Actn:** 1		**Obj Strk:**								
Unit	**2 :** 4	**Alchl/Drgs:** 0	**Speed:** 45 MPH	**Dir:** E	**Veh Mnvr / Ped Actn:** 4		**Obj Strk:**								

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

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

Acc No	Crash ID	Date	Accident Type	Total Damage	Injuries F	A	B	C	Condition R	L	W	Road Ch	Ci	Trfc Ctl 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/Drgs:** 0	**Speed:** 15 MPH	**Dir:** N	**Veh Mnvr / Ped Actn:** 5			**Obj Strk:**							
Unit	**2 :** 1	**Alchl/Drgs:** 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/Drgs:** 0	**Speed:** 55 MPH	**Dir:** E	**Veh Mnvr / Ped Actn:** 4			**Obj Strk:**							
Unit	**2 :** 2	**Alchl/Drgs:** 0	**Speed:** 55 MPH	**Dir:** E	**Veh Mnvr / Ped Actn:** 11			**Obj Strk:**							
Unit	**3 :** 4	**Alchl/Drgs:** 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/Drgs:** 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/Drgs:** 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/Drgs:** 0	**Speed:** 0 MPH	**Dir:** E	**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:**							
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/Drgs:** 0	**Speed:** 15 MPH	**Dir:** SW	**Veh Mnvr / Ped Actn:** 5			**Obj Strk:**							
Unit	**2 :** 2	**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

Summary Statistics

High Level Crash Summary

Crash Type	Number of Crashes	Percent of Total
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

Crash Type	Number of Crashes	Percent of Total
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)

Crash Rate	Crashes Per 100 Million Vehicles Entered
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

Miscellaneous Statistics

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

Accident Type Summary

Accident Type	Number of Crashes	Percent of Total
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

Injury Type	Number of Injuries	Percent of Total
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

Monthly Summary

Month	Number of Crashes	Percent of Total
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

Day	Number of Crashes	Percent of Total
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

Hourly Summary

Hour	Number of Crashes	Percent of Total
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

Light and Road Conditions Summary

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

Object Struck Summary

Object Type	Times Struck	Percent of Total
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

Vehicle Type	Number Involved	Percent of Total
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

Yearly Totals Summary

Accident Totals

Year	Total Accidents	Fatal Accidents	Injury Accidents	Property Damage Only Accidents
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
Total	33	0	4	29

Injury Totals

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

Miscellaneous Totals

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

Type of Accident Totals

Year	Left Turn	Right Turn	Rear End	Run Off Road & Fixed Object	Angle	Side Swipe	Other
2019	0	0	1	3	1	0	1
2020	0	0	2	2	0	0	1

Year	Left Turn	Right Turn	Rear End	Run Off Road & Fixed Object	Angle	Side Swipe	Other
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

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

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 F	A	B	C	Condition R	L	W	Road Ch	Ci	Trfc Ctl 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:**								

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

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

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

Summary Statistics

High Level Crash Summary

Crash Type	Number of Crashes	Percent of Total
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

Crash Type	Number of Crashes	Percent of Total
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)

Crash Rate	Crashes Per 100 Million Vehicles Entered
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

Miscellaneous Statistics

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

Accident Type Summary

Accident Type	Number of Crashes	Percent of Total
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

Injury Type	Number of Injuries	Percent of Total
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

Monthly Summary

Month	Number of Crashes	Percent of Total
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

Day	Number of Crashes	Percent of Total
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

Hourly Summary

Hour	Number of Crashes	Percent of Total
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

Light and Road Conditions Summary

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

Vehicle Type Summary

Vehicle Type	Number Involved	Percent of Total
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

Yearly Totals Summary

Accident Totals

Year	Total Accidents	Fatal Accidents	Injury Accidents	Property Damage Only Accidents
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
Total	31	0	10	21

Injury Totals

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

Miscellaneous Totals

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

Type of Accident Totals

Year	Left Turn	Right Turn	Rear End	Run Off Road & Fixed Object	Angle	Side Swipe	Other
2019	1	1	0	0	1	0	0
2020	0	0	1	0	3	0	0

Year	Left Turn	Right Turn	Rear End	Run Off Road & Fixed Object	Angle	Side Swipe	Other
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
Total	10	2	3	0	11	4	1

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					
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
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

Study Criteria Summary

County: UNION **City:** All and Rural
Date: 2/1/2019 **to** 1/31/2024 **Study:** 41000073636
Location: NC 218 (Fairview Rd) at SR 1539 (Rock Hill Church Rd)/Ashe Meadow Dr

Report Details

Acc No	Crash ID	Date	Accident Type	Total Damage	Injuries F	A	B	C	Condition R	L	W	Road Ch	Ci	Trfc Ctl Dv	Op
1	**106064669**	11/17/2019 09:24	LEFT TURN, DIFFERENT ROADWAYS	$ 21000	0	0	0	0	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:** 0 MPH	**Dir:** N	**Veh Mnvr / Ped Actn:** 8	**Obj Strk:**										
2	**106386661**	10/29/2020 08:39	PARKED MOTOR VEHICLE	$ 1500	0	0	0	0	2	1	2	1	0	13	1
Unit 1 : 4	**Alchl/Drgs:** 0	**Speed:** 15 MPH	**Dir:** SE	**Veh Mnvr / Ped Actn:** 10	**Obj Strk:** 20										
Unit 2 : 4	**Alchl/Drgs:** 7	**Speed:** 0 MPH	**Dir:** NW	**Veh Mnvr / Ped Actn:** 1	**Obj Strk:** 20										
3	**106458125**	01/08/2021 15:15	ANGLE	$ 2000	0	0	0	0	2	1	3	1	0	1	1
Unit 1 : 2	**Alchl/Drgs:** 0	**Speed:** 25 MPH	**Dir:** N	**Veh Mnvr / Ped Actn:** 11	**Obj Strk:**										
Unit 2 : 4	**Alchl/Drgs:** 0	**Speed:** 45 MPH	**Dir:** W	**Veh Mnvr / Ped Actn:** 4	**Obj Strk:**										
4	**106616513**	06/14/2021 15:58	REAR END, SLOW OR STOP	$ 7000	0	0	0	0	1	1	1	1	0	13	1
Unit 1 : 1	**Alchl/Drgs:** 0	**Speed:** 55 MPH	**Dir:** W	**Veh Mnvr / Ped Actn:** 4	**Obj Strk:**										
Unit 2 : 1	**Alchl/Drgs:** 0	**Speed:** 0 MPH	**Dir:** W	**Veh Mnvr / Ped Actn:** 1	**Obj Strk:**										
5	**107216965**	01/17/2023 19:38	FIXED OBJECT	$ 3000	0	0	0	1	1	5	1	1	0	1	1
Unit 1 : 4	**Alchl/Drgs:** 0	**Speed:** 45 MPH	**Dir:** N	**Veh Mnvr / Ped Actn:** 4	**Obj Strk:** 58										
6	**107471224**	09/26/2023 21:00	LEFT TURN, DIFFERENT ROADWAYS	$ 95000	0	0	0	0	1	5	1	1	0	1	1
Unit 1 : 2	**Alchl/Drgs:** 1	**Speed:** 0 MPH	**Dir:** N	**Veh Mnvr / Ped Actn:** 8	**Obj Strk:**										
Unit 2 : 5	**Alchl/Drgs:** 0	**Speed:** 55 MPH	**Dir:** E	**Veh Mnvr / Ped Actn:** 4	**Obj Strk:**										
7	**107513235**	11/01/2023 19:25	LEFT TURN, DIFFERENT ROADWAYS	$ 6250	0	0	0	0	1	5	1	1	0	3	
Unit 1 : 2	**Alchl/Drgs:** 0	**Speed:** 0 MPH	**Dir:** NW	**Veh Mnvr / Ped Actn:** 8	**Obj Strk:**										
Unit 2 : 4	**Alchl/Drgs:** 0	**Speed:** 0 MPH	**Dir:** NE	**Veh Mnvr / Ped Actn:** 1	**Obj Strk:**										

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
Alchl/Drgs - Alcohol Drugs Suspected
Veh Mnvr/Ped Actn - Vehicle Maneuver/Pedestrian Action
Obj Strk - Object Struck

Summary Statistics

High Level Crash Summary

Crash Type	Number of Crashes	Percent of Total
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

Crash Type	Number of Crashes	Percent of Total
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)

Crash Rate	Crashes Per 100 Million Vehicles Entered
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

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

Monthly Summary

Month	Number of Crashes	Percent of Total
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

Day	Number of Crashes	Percent of Total
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

Hourly Summary

Hour	Number of Crashes	Percent of Total
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

Light and Road Conditions Summary

Condition	Dry	Wet	Other	Total
Day	2	2	0	4
Dark	3	0	0	3
Other	0	0	0	0
Total	5	2	0	7

Object Struck Summary

Object Type	Times Struck	Percent of Total
DITCH	1	33.33
PARKED MOTOR VEHICLE	2	66.67

Vehicle Type Summary

Vehicle Type	Number Involved	Percent of Total
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

Yearly Totals Summary

Accident Totals

Year	Total Accidents	Fatal Accidents	Injury Accidents	Property Damage Only Accidents
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
Total	7	0	1	6

Injury Totals

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

Miscellaneous Totals

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

Type of Accident Totals

Year	Left Turn	Right Turn	Rear End	Run Off Road & Fixed Object	Angle	Side Swipe	Other
2019	1	0	0	0	0	0	0
2020	0	0	0	0	0	0	1

Year	Left Turn	Right Turn	Rear End	Run Off Road & 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

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					
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

Study Criteria Summary

County: MECKLENBURG **City:** All and Rural
Date: 2/1/2019 **to** 1/31/2024 **Study:** 41000073637
Location: NC 218 (Fairview Rd) at Asheley Glen Dr

Report Details

Acc No	Crash ID	Date	Accident Type	Total Damage	Injuries F	A	B	C	Condition R	L	W	Road Ch	Ci	Trfc Ctl Dv	Op
1	**105926190**	06/24/2019 15:55	REAR END, SLOW OR STOP	$ 1400	0	0	0	0	1	1	1	1	0	0	
Unit	**1 :** 4	**Alchl/Drgs:** 0	**Speed:** 10 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:**							
Unit	**3 :** 2	**Alchl/Drgs:** 0	**Speed:** 0 MPH	**Dir:** E	**Veh Mnvr / Ped Actn:** 1			**Obj Strk:**							
2	**106425105**	11/13/2020 12:54	RAN OFF ROAD - RIGHT	$ 1000	0	0	0	0	1	1	1	1	0	0	
Unit	**1 :** 1	**Alchl/Drgs:** 7	**Speed:** 0 MPH	**Dir:** N	**Veh Mnvr / Ped Actn:** 8			**Obj Strk:** 64							
3	**106543165**	03/03/2021 15:56	REAR END, SLOW OR STOP	$ 11200	0	0	0	1	1	1	1		0		
Unit	**1 :** 1	**Alchl/Drgs:** 0	**Speed:** 0 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:**							
Unit	**3 :** 1	**Alchl/Drgs:** 0	**Speed:** 0 MPH	**Dir:** E	**Veh Mnvr / Ped Actn:** 1			**Obj Strk:**							
Unit	**4 :** 2	**Alchl/Drgs:** 0	**Speed:** 0 MPH	**Dir:** E	**Veh Mnvr / Ped Actn:** 4			**Obj Strk:** 64							
4	**106566070**	05/06/2021 16:43	SIDESWIPE, OPPOSITE DIRECTION	$ 17500	0	0	0	0	1	1	1	1	0	0	
Unit	**1 :** 11	**Alchl/Drgs:** 0	**Speed:** 45 MPH	**Dir:** E	**Veh Mnvr / Ped Actn:** 11			**Obj Strk:**							
Unit	**2 :** 5	**Alchl/Drgs:** 0	**Speed:** 35 MPH	**Dir:** W	**Veh Mnvr / Ped Actn:** 4			**Obj Strk:**							
5	**106594809**	06/06/2021 18:40	REAR END, SLOW OR STOP	$ 2000	0	0	0	1	2	1	3	1	0	0	
Unit	**1 :** 4	**Alchl/Drgs:** 0	**Speed:** 50 MPH	**Dir:** E	**Veh Mnvr / Ped Actn:** 4			**Obj Strk:**							
Unit	**2 :** 2	**Alchl/Drgs:** 0	**Speed:** 0 MPH	**Dir:** E	**Veh Mnvr / Ped Actn:** 1			**Obj Strk:**							
6	**106727717**	10/12/2021 07:18	REAR END, SLOW OR STOP	$ 500	0	0	0	0	1	3	1	1	0	0	
Unit	**1 :** 1	**Alchl/Drgs:** 0	**Speed:** 45 MPH	**Dir:** E	**Veh Mnvr / Ped Actn:** 4			**Obj Strk:**							
Unit	**2 :** 2	**Alchl/Drgs:** 0	**Speed:** 0 MPH	**Dir:** E	**Veh Mnvr / Ped Actn:** 1			**Obj Strk:**							
7	**106803520**	12/15/2021 13:00	LEFT TURN, SAME ROADWAY	$ 4500	0	0	0	0	1	1	1	1	0	13	1
Unit	**1 :** 10	**Alchl/Drgs:** 0	**Speed:** 45 MPH	**Dir:** E	**Veh Mnvr / Ped Actn:** 6			**Obj Strk:**							
Unit	**2 :** 1	**Alchl/Drgs:** 0	**Speed:** 15 MPH	**Dir:** NE	**Veh Mnvr / Ped Actn:** 8			**Obj Strk:**							

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

Summary Statistics

High Level Crash Summary

Crash Type	Number of Crashes	Percent of Total
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

Crash Type	Number of Crashes	Percent of Total
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)

Crash Rate	Crashes Per 100 Million Vehicles Entered
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

Miscellaneous Statistics

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

Accident Type Summary

Accident Type	Number of Crashes	Percent of Total
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

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	3	100.00
Total Non-Fatal Injuries	3	100.00
Total Injuries	3	100.00

Monthly Summary

Month	Number of Crashes	Percent of Total
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

Day	Number of Crashes	Percent of Total
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

Hourly Summary

Hour	Number of Crashes	Percent of Total
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

Light and Road Conditions Summary

Condition	Dry	Wet	Other	Total
Day	7	1	0	8
Dark	0	0	0	0
Other	2	0	0	2
Total	9	1	0	10

Object Struck Summary

Object Type	Times Struck	Percent of Total
OTHER FIXED OBJECT	3	100.00

Vehicle Type Summary

Vehicle Type	Number Involved	Percent of Total
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

Yearly Totals Summary

Accident Totals

Year	Total Accidents	Fatal Accidents	Injury Accidents	Property Damage Only Accidents
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
Total	10	0	3	7

Injury Totals

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

Miscellaneous Totals

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

Type of Accident Totals

Year	Left Turn	Right Turn	Rear End	Run Off Road & Fixed Object	Angle	Side Swipe	Other
2019	0	0	1	0	0	0	0
2020	0	0	0	1	0	0	0

Year	Left Turn	Right Turn	Rear End	Run Off Road & Fixed Object	Angle	Side Swipe	Other
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

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					
Name	Code	Div.	Name	Code	Y-Line Ft.	Begin Date	End Date	Years
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

Union County Government
Center
500 North Main Street
Monroe, North Carolina
www.unioncountync.gov

File #: 25-050 **Agenda Date:** 1/28/2025

TITLE:

Conditional Rezoning CZ-2024-006 New Salem

DETERMINATION OF CONFLICTS

INFORMATION CONTACT:

Bjorn E. Hansen, Senior Planner- Long Range Planning, 704-283-3690

ACTION REQUESTED:

Recommend approval or denial of proposed rezoning to Board of Commissioners

BACKGROUND:

This case is a rezoning request, petition CZ-2024-006, submitted by Terry and Deborah Stevens requesting a revision of the Union County Zoning Map by rezoning two parcels totaling 2.5 acres appearing on the tax map as tax parcels 01-234-006 and 01-234-006A from RA-40 to Light Industrial (LI) with Conditions, including consolidating the aforementioned parcels; located in the New Salem Township. The rezoning will include the following conditions:
1. Pursuant to Section 160D-108.1 of the North Carolina General Statutes and Section 80.020 of the Union County Unified Development Ordinance, the approval is vested for a period of five years.
2. Development will meet all requirements of the Union County Unified Development Ordinance.
3. The approval is limited to the site plan dated December 9, 2024.
4. A six foot opaque fence will be installed parallel to the northern border of the property.

A community meeting was held January 14, 2025. Three residents attended the meeting and asked about previously permitted septic fields on adjacent parcels, ability to operate the business if sold, and lighting glare on adjacent parcels. No changes were made based on feedback. No additional comments have been received by staff.

FINANCIAL IMPACT:

None.

Application for Conditional Rezoning

Union County Planning Department
500 N Main Street - Suite 70
Monroe, NC 28112
T 704.283.3565
E UCPlanning@unioncountync.gov

General Information

Project Address New Salem Rd City Marshville State NC Zip 28103

Tax Parcel ID 01234006 01234006A Current Zoning Designation RA-40 Total Acres 2.95

Proposed Zoning Designation LI Light Industrial Date Submitted 7-9-24

Contact Information

Applicant Name Terry Lee Stevens and Deborah K Stevens

Address 3317 New Salem Rd City Monroe State NC Zip 28110

Phone 704-289-7637 Cell Fax 704-226-2605 Email stevenstruckin@aol.com

Property Owner Name Terry Lee Stevens and Deborah K Stevens

Address Same above City Same State NC Zip 28110

Phone 704-289-7637 Cell Fax 704-226-2605 Email stevenstruckin@aol.com

Applicant's Certification

Signature 7-10-24 Date Terry Stevens Owner Printed Name/Title

Deborah K Stevens 7-10-24 Deborah K Stevens - Owner

Owner's Certification (include names and signatures of all owners)

Signature 7-10-24 Date Terry Stevens Owner Printed Name/Title

Deborah K Stevens 7-10-24 Deborah K Stevens - Owner

Union County Office Use Only:

Case Number: 2024-CZ-006 New Salem Date Received: 7-9-24

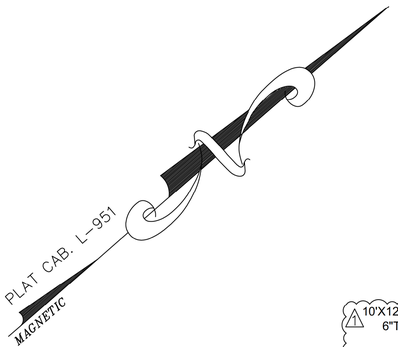
Amount of Fee: $1000 Fee Ok: BCH Received by: BCH

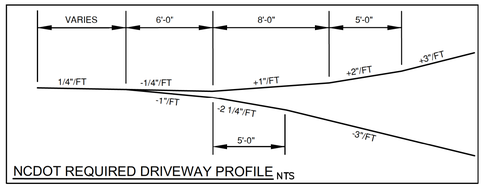
Contact Bjorn Hansen to begin the process. T. 704.283.2690 E. Bjorn.hansen@unioncountync.gov

UNIONCOUNTY north carolina

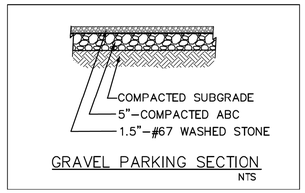
**This document is only valid from July 1, 2024 - June 30, 2025

THIS DRAWING IS A PRELIMINARY SKETCH PLAN FOR DEVELOPMENT PLAN REVIEW ONLY AND NOT FOR RECORDATION, CONVEYANCES OR SALES. PLAT TO BE PROVIDED BY OTHERS.

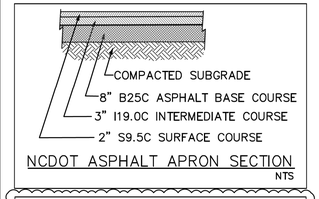




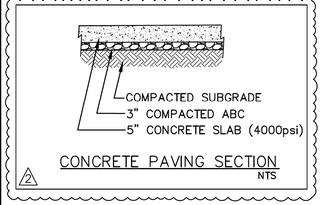
NCDOT REQUIRED DRIVEWAY PROFILE NTS



GRAVEL PARKING SECTION NTS



NCDOT ASPHALT APRON SECTION NTS



2 CONCRETE PAVING SECTION NTS

S2 SCREENING REQUIRED (REAR LINE) EXISTING TREES TO BE UTILIZED FOR SCREENING. ADDITIONAL TREES AND/OR SHRUBS TO BE ADDED AS NEEDED TO MEET UDO REQUIREMENTS

1 10'X12' DUMPSTER PAD 6"THICK CONCRETE 6x6xW2.9 WWF WITH 6' OPAQUE WOOD FENCE SCREEN

2 S2 SCREENING REQUIRED (SIDE LINE) EXISTING TREES TO BE UTILIZED FOR SCREENING. ADDITIONAL TREES AND/OR SHRUBS TO BE ADDED AS NEEDED TO MEET UDO REQUIREMENTS

4574-695
ZONED RA-40

2 GRASSED SWALE & BERM DIRECTING FLOW TO INLET & SCM

2 VAN ACCESSIBLE SPACE ON 16X20 CONCRETE AREA 2 GRAVEL PARKING SPACES

2 DRAINAGE INLET

SINGLE UNIT (SU) TURNING RADIUS (TYPICAL)

R/W

EOP

R/W

NEW SALEM RD
60' PUBLIC R/W

1 NCDOT REQUIRED ASPHALT APRON

N 34°35'33" E 460.36'

15' M.B.L.

15' M.B.L.

DRAINFIELD TYPICAL

LOT 3
BRIAR BRANCH SUB.
1.309 AC.
ZONED RA-40

40' M.B.L.

100.00'

15' TREE PRESERVATION BUFFER

15' M.B.L.

FOUND REBAR

S40°53'40"W 451.30'

FOUND REBAR

TYPE 2 SELF SERVICE STORAGE UNIT (TYPICAL)

TREE PRESERVATION BUFFER 50' REAR SETBACK

TREE PRESERVATION BUFFER 50' REAR SETBACK

20' SIDE SETBACK TREE PRESERVATION BUFFER

N53°25'33"E 69.03'

20' x 320'
(6200 SF STORAGE)

20' x 300'
(6000 SF STORAGE)

50' STREET SB

TREE PRESERVATION BUFFER

Gravel Pvmt

30' OVERHEAU POWER ESMT.

PROPOSED SAND FILTER SCM

50' STREET SETBACK TREE PRESERVATION BUFFER

40'

S42°12'21"W 138.19'

S42°43'59"W 146.40'

S43°51'32"W 80.38'

L1	54.64	S40°17'28"E
L2	29.52	S44°59'34"W

2 60' R/W (30' FROM CENTERLINE) TO BE DEDICATED AS PUBLIC RIGHT-OF-WAY THROUGH RECORDED PLAT ACROSS PROPERTY LIMITS. ACREAGE TO BE VERIFIED BY FIELD SURVEY

PROP. S2 SCREENING (STREET FRONTAGE) TREES SPACED 40' O.C. WITH SHRUBS 6 FT TALL AT MATURITY TREES SHALL BE OF OAK VARIETY

60' R/W

CARL POLK ROAD
60' PUBLIC R/W
(SR 1642)

R/W

EOP

DITCH

EOP

R/W

SUGAR (SR 1649) AND WINE ROAD

EOP

DITCH

EOP

S72°30'E 62.44'

S72°30'E 62.44'

PP

OE

PROP. S2 SCREENING (STREET FRONTAGE) TREES SPACED 40' O.C. WITH SHRUBS 6 FT TALL AT MATURITY TREES SHALL BE OF OAK VARIETY

2 S2 SCREENING PROP.(STREET FRONTAGE) EXISTING TREES TO BE UTILIZED FOR SCREENING. ADDITIONAL TREES AND/OR SHRUBS TO BE ADDED AS NEEDED TO MEET UDO REQUIREMENTS

GRASSED SWALE & BERM DIRECTING FLOW TO SCM

2 60' R/W (30' FROM CENTERLINE) TO BE DEDICATED AS PUBLIC RIGHT-OF-WAY THROUGH RECORDED PLAT ACROSS PROPERTY LIMITS. ACREAGE TO BE VERIFIED BY FIELD SURVEY

L2

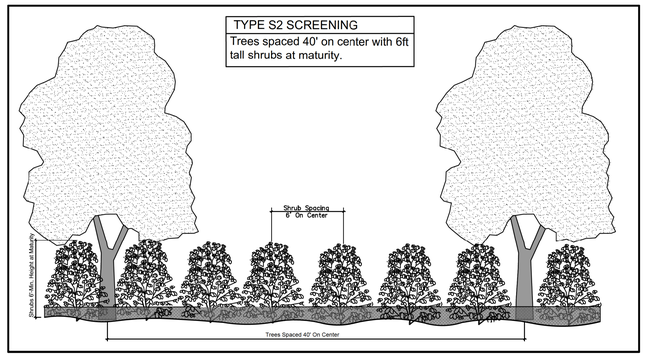
TARLTON MILL RD

EOP

EOP

EOP

SMALL MATURING TREE (CREPE MYRTLE OR REDBUD) TO BE USED AS MITIGATION OF TREES ALONG R/W BY PREVIOUS OWNER. 2



ENVIRONMENTAL HEALTH NOTE:
SITE IS TO BE USED FOR MINI-WAREHOUSE STORAGE ONLY. NO OFFICES, WELLS, OR SEPTIC SYSTEMS PROPOSED. NO EXISTING STRUCTURES, WELLS, OR SEPTIC SYSTEMS WITHIN PROPOSED PROPERTY LIMITS.

2 ADDITIONAL NOTES
A. Upon approval of rezoning, existing two (2) parcels shall be recombined into one parcel.
B. Site to be used for indoor storage only. No outdoor storage allowed.
C. Oak trees to be utilized along street frontage. Soil amendment may be required prior to planting.
D. No pinestraw to be utilized for mulch.

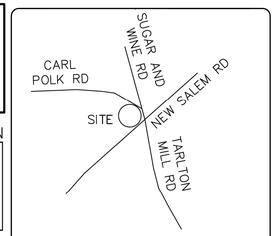
NOTE:
PROPERTY BOUNDARY AND FIELD TOPO DATA PROVIDED BY CARROLL L. RUSHING & COMPANY, 1212 CURTIS ST., MONROE, NC 28112 (704) 289-5747

GRAPHIC SCALE
0 40' 80'
(IN FEET)
1 inch = 40 ft.

811 Know what's below. Call before you dig.

OWNER / DEVELOPER INFORMATION
Terry Stevens
3317 New Salem Rd
Monroe, NC 28110

704-289-7637
stevenstruckin@aol.com



VICINITY MAP (Not to Scale)

SITE INFORMATION:
PROPERTY IDENTIFICATION NUMBERS: 01234006 & 01234006A
DEED REF: 8858-0631 (Ref PC-Q, File 970)

PROPERTY OWNER: TERRY & DEBORAH STEVENS
3317 NEW SALEM RD
MONROE, NC 28110

EXIST. ZONING: RA-40
SITE AREA: 2.499 ac

PROPOSED PROJECT
PROPOSED LAND DISTURBANCE: 2.0 AC
PROPOSED IMPERVIOUS AREA (GRAVEL/BLDG'S) = 1.150 AC (46.02%) 2
SPECIAL USE REZONING TO LIGHT INDUSTRIAL (LI) FOR SELF STORAGE FACILITY (Type 2)
PROPOSED AREA UTILIZED FOR STORAGE = 12,200 sf 1

PROPOSED SETBACKS (LI)
STREET 50 FEET
SIDE 20 FEET
REAR 50 FEET

SITE PARKING
NO OFFICES OR PERMANENT EMPLOYEES ON SITE. SITE TO BE REQUIRED PARKING 1 SPACE PER 5000sf OF STORAGE
12,200/5,000=2.44 (Less Than 5 Spaces-Gravel Paving Allowed)

STANDARD 9'x20' PARKING SPACES: 2 (Gravel Paving)
H/C VAN ACCESSIBLE SPACES: 1 (Concrete Paving)
TOTAL SPACES PROVIDED: 3 2

SCREENING
SCREENING SHALL BE IN ACCORDANCE WITH UNION COUNTY UNIFIED DEVELOPMENT ORDINANCE MODIFIED AS SHOWN FOR 2 CONDITIONAL USE PERMIT APPROVAL. INTERNAL SHADING NOT PROVIDED DUE TO GRAVEL PAVING WITHIN STORAGE AREA.

SITE PLAN SHALL COMPLY WITH ALL REQUIREMENTS OF THE UNIFIED DEVELOPMENT ORDINANCE

OUTDOOR LIGHTING
LIGHTING SHALL NOT BE DIRECTED TOWARD OR SHINE UPON ANY RESIDENTIAL AREAS OR ENDANGER MOTORISTS TRAVELING ON ANY STREET. EXTERIOR LIGHTING SHALL COMPLY WITH UNION COUNTY UDO.

2 SITE LIGHTING ANTICIPATED TO BE LIMITED TO BUILDING WALL PACKS.

1 PERIMETER FENCING AND ENTRANCE GATE
OWNER IS CURRENTLY NOT PROPOSING TO UTILIZE PERIMETER FENCING AND ENTRANCE GATE. AT SUCH TIME AN ENTRANCE GATE IS INSTALLED A MINIMUM 50 FEET OF VEHICULAR STORAGE BETWEEN NCDOT RIGHT OF WAY AND GATE WILL BE REQUIRED.

WATER & SEWER SERVICE
PROPOSED DEVELOPMENT TO BE STORAGE ONLY AND WILL NOT REQUIRE NEW WATER & SEWER TAPS.

STORMWATER MANAGEMENT
PROPOSED PROJECT IS LOCATED OUTSIDE OF THE LAKE TWITTY WS-III WATERSHED IAREA. PROJECT IS SUBJECT TO NCDEQ POST-CONSTRUCTION STORMWATER REQUIREMENTS. SCM SAND FILTER PROPOSED TO PROVIDE REQUIRED STORMWATER TREATMENT.

3 IN ADDITION TO NCDEQ REQUIREMENTS, PROJECT SHALL MEET THE POST-CONSTRUCTION REQUIREMENTS FOR THE 2, 10, & 50-YR STORM EVENTS AS REQUIRED BY UNION COUNTY.

NORTH CAROLINA PROFESSIONAL SEAL 038731 ENGINEER KEVIN E HERRING
12/9/24

Kevin E. Herring
ENGINEERING
16101 Silver Road
Oakboro, NC 28129
980-621-0835
kevin@kevinherringengineering.com

DATE: 05/14/2024
HORIZ. SCALE = 1" = 40'
VERT. SCALE = N/A
DRAWN BY: keh

NO.	DATE	REVISION:
1	10/17/24	Rev per Union Co. Review Cmnts
2	11/24/24	Rev per Union Co. Review Cmnts
3	12/09/24	Rev per Union Co. Review Cmnts

STEVENS MINI-WAREHOUSE PROJECT
NEW SALEM ROAD
UNION COUNTY, NC

REZONING PLAN

SH. 1 OF 1

Terry Stevens
Terry Enterprises Inc
3317 New Salem Road
Monroe NC 28110

LETTER OF INTENT

July 9, 2024

RE: Terry Stevens
Tax Parcel ID: 01234006 and 01234006A

I am proposing to build Mini Storage Buildings at Tax Parcel ID: 01234006 and 01234006A on New Salem Rd in Union County for the propose of storing.

Mini Storage Buildings 7-10-24

Thank You,

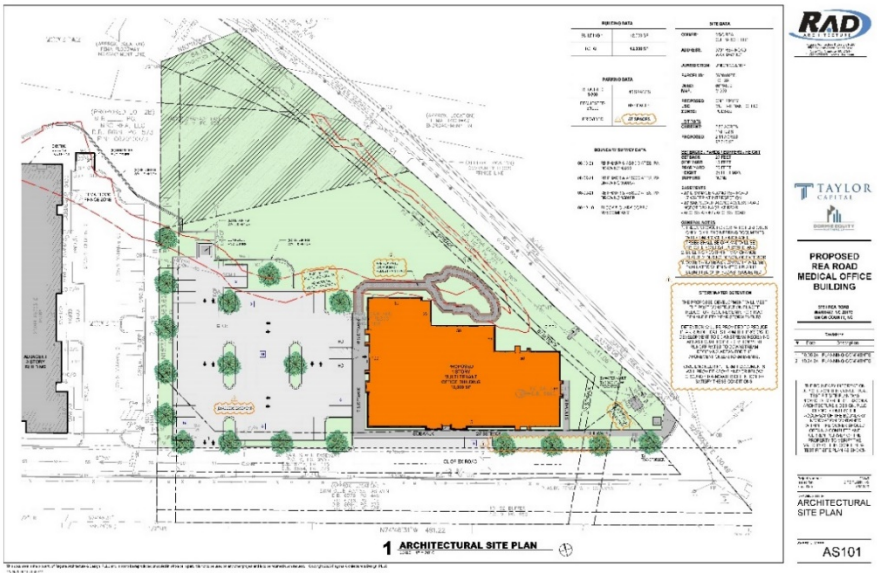
Terry L Stevens

Planning Staff Report - Rezoning Case # CZ-2024-006
Staff Contact: Bjorn Hansen, Senior Planner

Summary of Request

This case is a rezoning request, petition CZ-2024-006, submitted by Terry and Deborah Stevens requesting a revision of the Union County Zoning Map by rezoning two parcels totaling 2.5 acres appearing on the tax map as tax parcels 01-234-006 and 01-234-006A from RA-40 to Light Industrial (LI) with Conditions, including consolidating the aforementioned parcels; located in the New Salem Township. The rezoning will include the following conditions:

1. Pursuant to Section 160D-108.1 of the North Carolina General Statutes and Section 80.020 of the Union County Unified Development Ordinance, the approval is vested for a period of five years.
2. Development will meet all requirements of the Union County Unified Development Ordinance.
3. The approval is limited to the site plan dated December 9, 2024.
4. A six foot opaque fence will be installed parallel to the northern border of the property.



Owner/Applicant

Owners: Terry and Deborah Stevens
3317 New Salem Road
Monroe, NC 28110

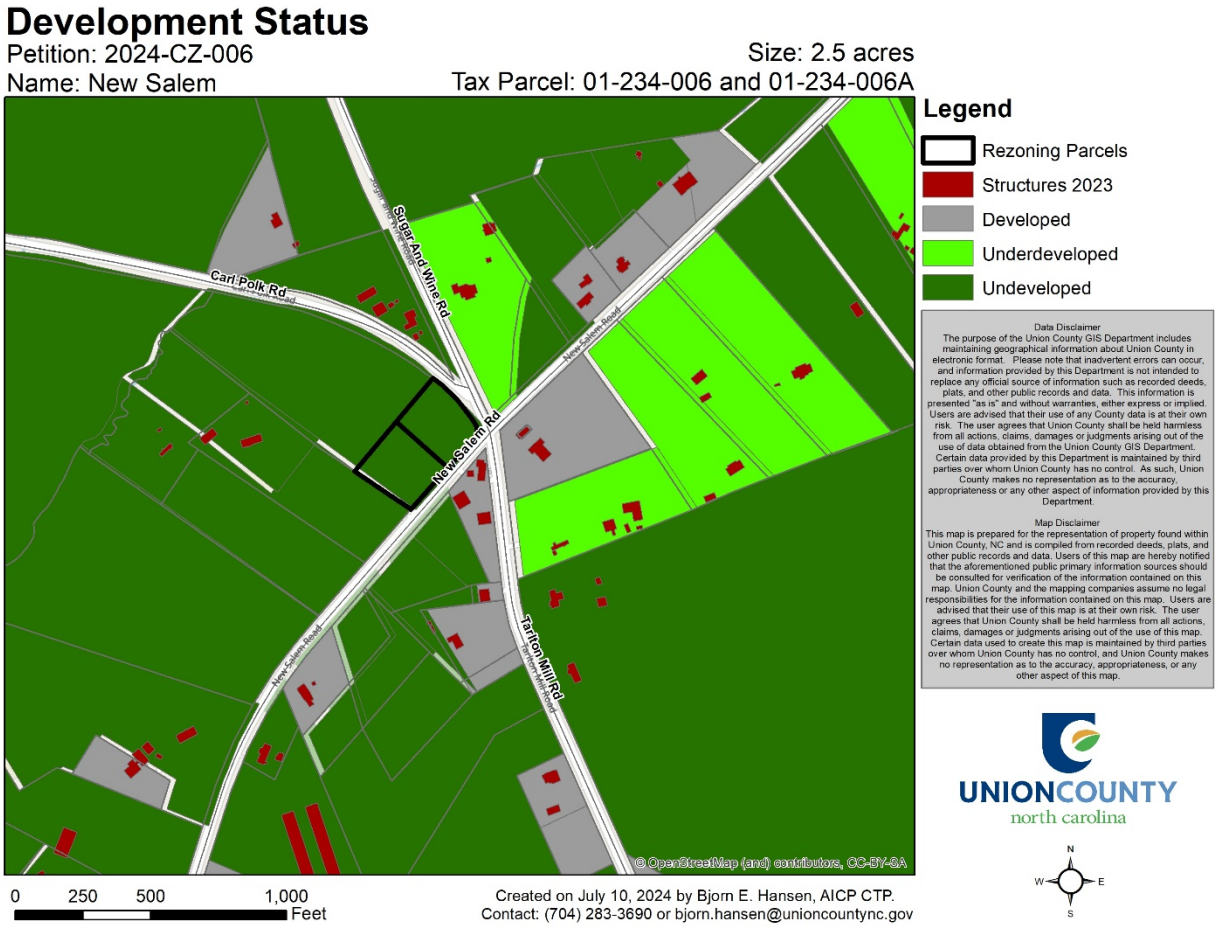
Applicant: Terry and Deborah Stevens
3317 New Salem Road
Monroe, NC 28110

Property Information

Location: On the northeast corner of the intersection of New Salem and Sugar and Wine Roads. Location more specifically described as tax parcels 01-234-006 and 01-234-006A.

Municipal Proximity: The site is two miles east of Unionville.

Existing Land Use and Development Status: The parcels are currently zoned RA-40 and are undeveloped.

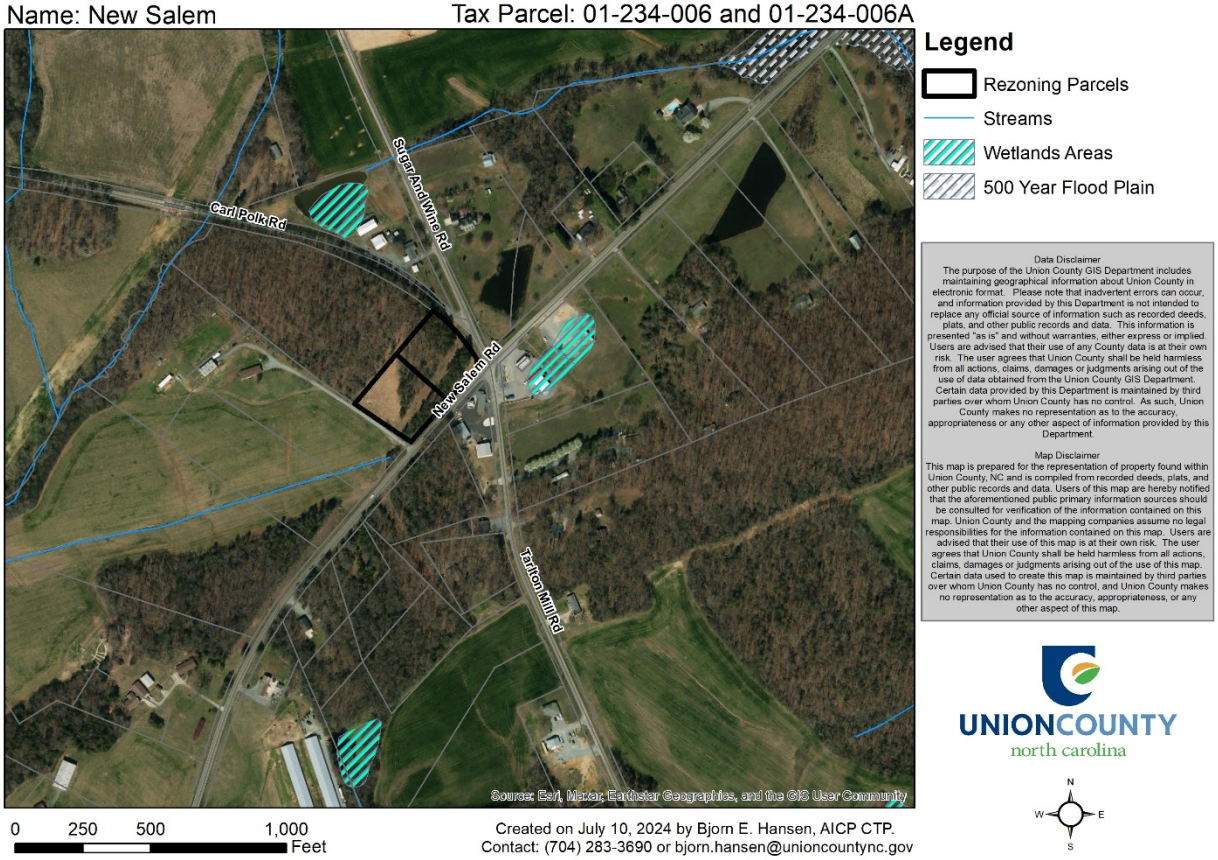


Environmental Features: The site is partially forested, with the portion on the eastern edge cleared in the last two years. The site plan includes enhanced tree protection and buffering to mitigate the tree loss. There are no streams or floodplains on the site.

Environmental Features

Petition: 2024-CZ-006
Name: New Salem

Size: 2.5 acres
Tax Parcel: 01-234-006 and 01-234-006A



Created on July 10, 2024 by Bjorn E. Hansen, AICP CTP.
Contact: (704) 283-3690 or bjorn.hansen@unioncountync.gov

Utilities: Public water is available to the site. The site will not require septic service.

Zoning and Land Use History: The site has been zoned RA-40 since zoning was implemented in Union County. The business on the eastern corner of Tarlton Mill and New Salem was rezoned to B-4 in 1979. A special use permit was approved by the Board of Adjustment in 2004 to allow for a convenience store and gas pumps. There have been no other rezonings or special use permits in the vicinity of this site.

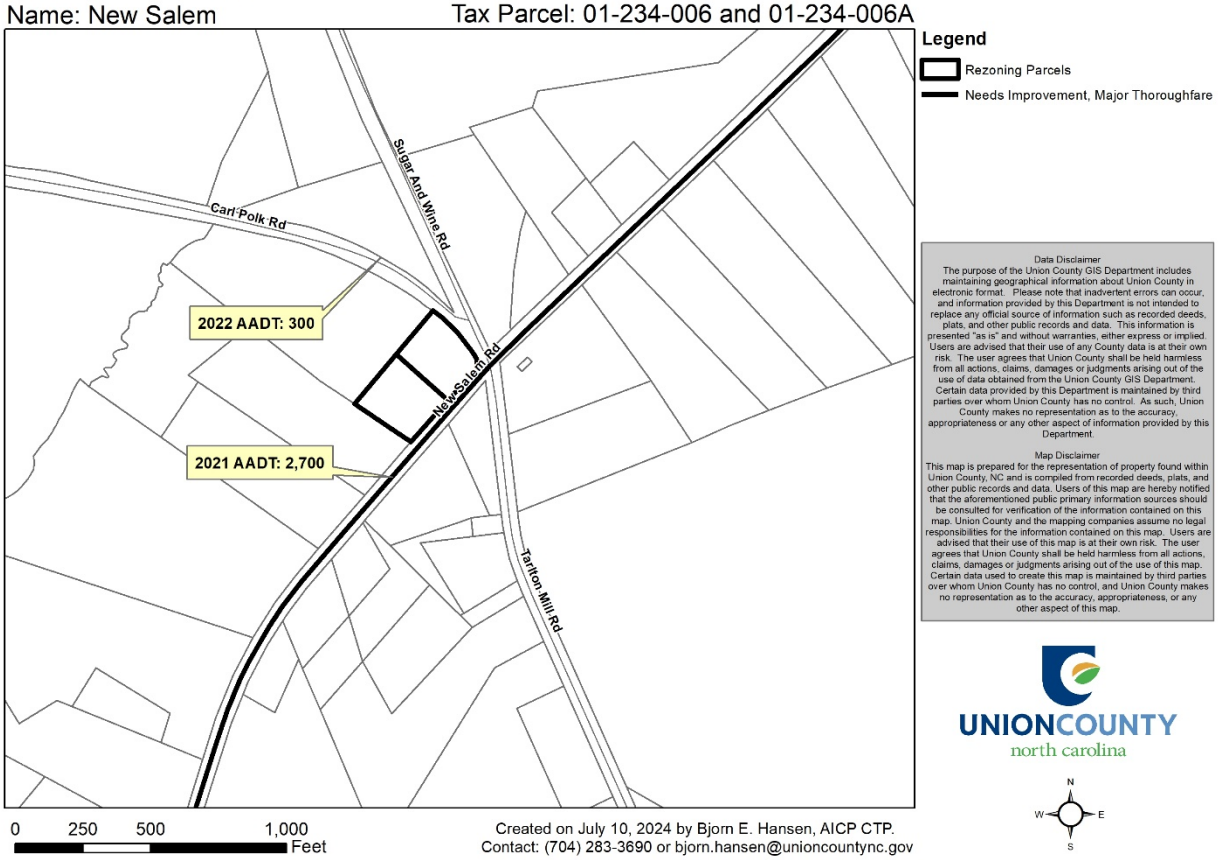
Schools: Because this rezoning request is commercial in nature, UCPS was not consulted for comments.

Transportation: This site will have access from New Salem Road, which is a NCDOT-maintained facility. It has a 2022 daily traffic count of 2,700 vehicles per day. There are no funded road improvements in the vicinity of the project. This site is expected to generate less than 100 trips per day, which did not meet Union County or NCDOT thresholds for a traffic impact analysis. No improvements to New Salem Road are recommended as part of this rezoning or site plan.

Transportation

Petition: 2024-CZ-006
Name: New Salem

Size: 2.5 acres
Tax Parcel: 01-234-006 and 01-234-006A



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Contact: (704) 283-3690 or bjorn.hansen@unioncountync.gov

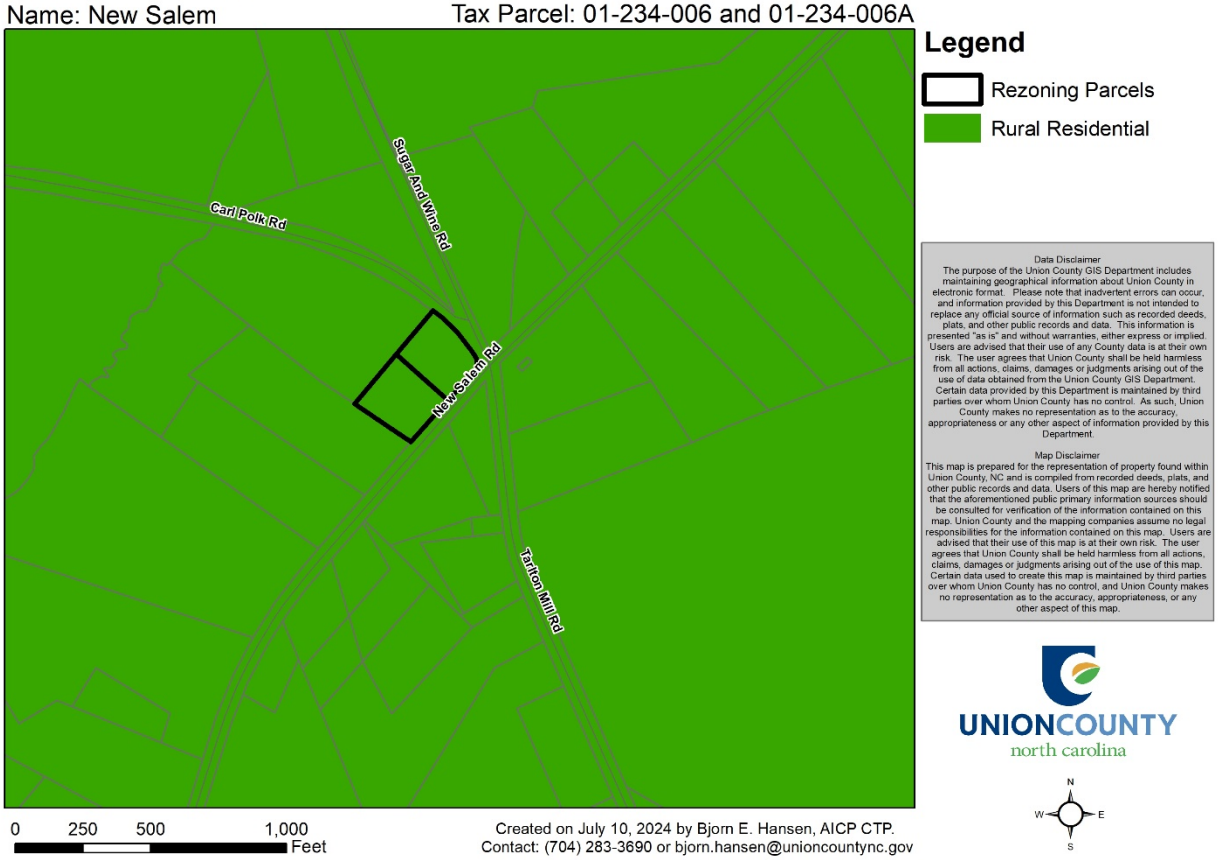
Planning Documents

Union County Comprehensive Plan: The Union County 2050 comprehensive plan identifies this area as Rural Residential, with an overall density of approximately one unit per acre. The closest light industrial district recommended in the plan is along US 74 and US 601.

Land Use Map

Petition: 2024-CZ-006
Name: New Salem

Size: 2.5 acres
Tax Parcel: 01-234-006 and 01-234-006A



Created on July 10, 2024 by Bjorn E. Hansen, AICP CTP.
Contact: (704) 283-3690 or bjorn.hansen@unioncountync.gov

Public and Municipal Comments

Public Comments: A community meeting was held January 14, 2025. Three residents attended the meeting and asked about previously permitted septic fields on adjacent parcels, ability to operate the business if sold, and lighting glare on adjacent parcels. No changes were made based on feedback. No additional comments have been received by staff.

Municipal Comments: Because Unionville is two miles from the site, they were not asked for comments.

Land Use Board Recommendation

The Land Use Board is scheduled to review this proposal at its January 28, 2025, meeting.

Staff Comments and Recommendation

This part of Union County is identified in the comprehensive plan as rural residential and agricultural uses. This proposal for outdoor storage is therefore not consistent with the plan. The two parcels have a power line crossing through the site, as well as having frontage on two roads, which limit the appropriateness as residential. In addition, there are two commercial properties across the street, meaning potential impact on residential properties is further reduced. The proposal can meet Union County development standards and will have a low impact on adjacent roads. **Because of these aspects of the development, staff recommend approval of this rezoning application.**

Land Use Board Advisory Consistency and Reasonableness Statement Concerning Proposed Amendment to the Union County Zoning Map

The Union County Land Use Board has reviewed the rezoning petition (CZ-2024-006) submitted by Terry and Deborah Stevens requesting a revision of the Union County Zoning Map by rezoning two parcels totaling 2.5 acres appearing on the tax map as tax parcel 01-234-006 and 01-234-006A from RA-40 to Light Industrial (LI) with Conditions, including consolidating the aforementioned parcels; located in the New Salem Township.

TO RECOMMEND APPROVAL OF THE AMENDMENT (THE PROPOSAL IS INCONSISTENT WITH THE CURRENT PLAN)

Motion

(i) Recommend approval of rezoning petition CZ-2024-006; and (ii) adopt the advisory consistency and reasonableness statement for recommendation of approval.

Advisory Consistency and Reasonableness Statement

Pursuant to N.C.G.S. § 160D-604, the Union County Land Use Board does hereby recommend that the Union County Board of Commissioners adopt the proposed map amendment. The Union County Land Use Board finds that adoption of the proposed map amendment is inconsistent with the currently adopted Union County Comprehensive Plan (the "Plan"). The Union County Land Use Board recommends that the Union County Board of Commissioners deem the adoption of the proposed map amendment as an amendment to any future land use map in the Plan. Adoption of the proposed map amendment (i) takes into account the need to amend the zoning map to meet the needs of the community, and (ii) is reasonable and in the public interest because:

1. There are two existing businesses on two separate properties at the same intersection where this property is located. These properties are both zoned for non-residential, business commercial uses. The proposed light industrial with conditions use, which is limited under this conditional rezoning to mini-storage use, is consistent with the nearby existing uses that are commercial uses as well. Additionally, these previous commercial uses have established this intersection as a commercial center for the nearby community.
2. The benefits to the community at large, the neighbors, and the property owner of the proposed rezoning outweigh any detriments to the neighbors and others caused by the rezoning. The benefits of this rezoning include the diversification of land use by allowing a commercial use on the property; the continued establishment of a commercial node at this intersection; and the ability for the community and neighbors to have ready access to the proposed services to be established on the property. The potential detriments of the use established by this rezoning, such as increased light exposure and increased traffic, are ameliorated by the fact that the limited proposed use of a mini-storage facility would likely have less traffic than some other types of uses.
3. The proposed use would not create a significant traffic impact.
4. The use set forth under the conditions would meet Union County development standards.

TO RECOMMEND DENIAL OF THE AMENDMENT (THE PROPOSAL IS INCONSISTENT WITH THE CURRENT PLAN)

Motion

(i) Recommend denial of rezoning petition CZ-2024-006; and (ii) adopt the advisory consistency and reasonableness statement for recommendation of denial.

Advisory Consistency and Reasonableness Statement

Pursuant to N.C.G.S. § 160D-604, the Union County Land Use Board does hereby recommend that the Union County Board of Commissioners deny the proposed map amendment, as denial is reasonable and the proposal is inconsistent with the currently adopted Union County Comprehensive Plan (the "Plan"). Denial of the proposed map amendment is reasonable and in the public interest because:

1. The Plan's Land Use Map identifies this area as Rural Residential. The proposed light industrial designation is not consistent with residential or agricultural uses for which rural residential areas are intended.
2. The proposed rezoning will facilitate ongoing and potential future industrial uses in close proximity to existing residential uses in manners inconsistent with the Plan.
.