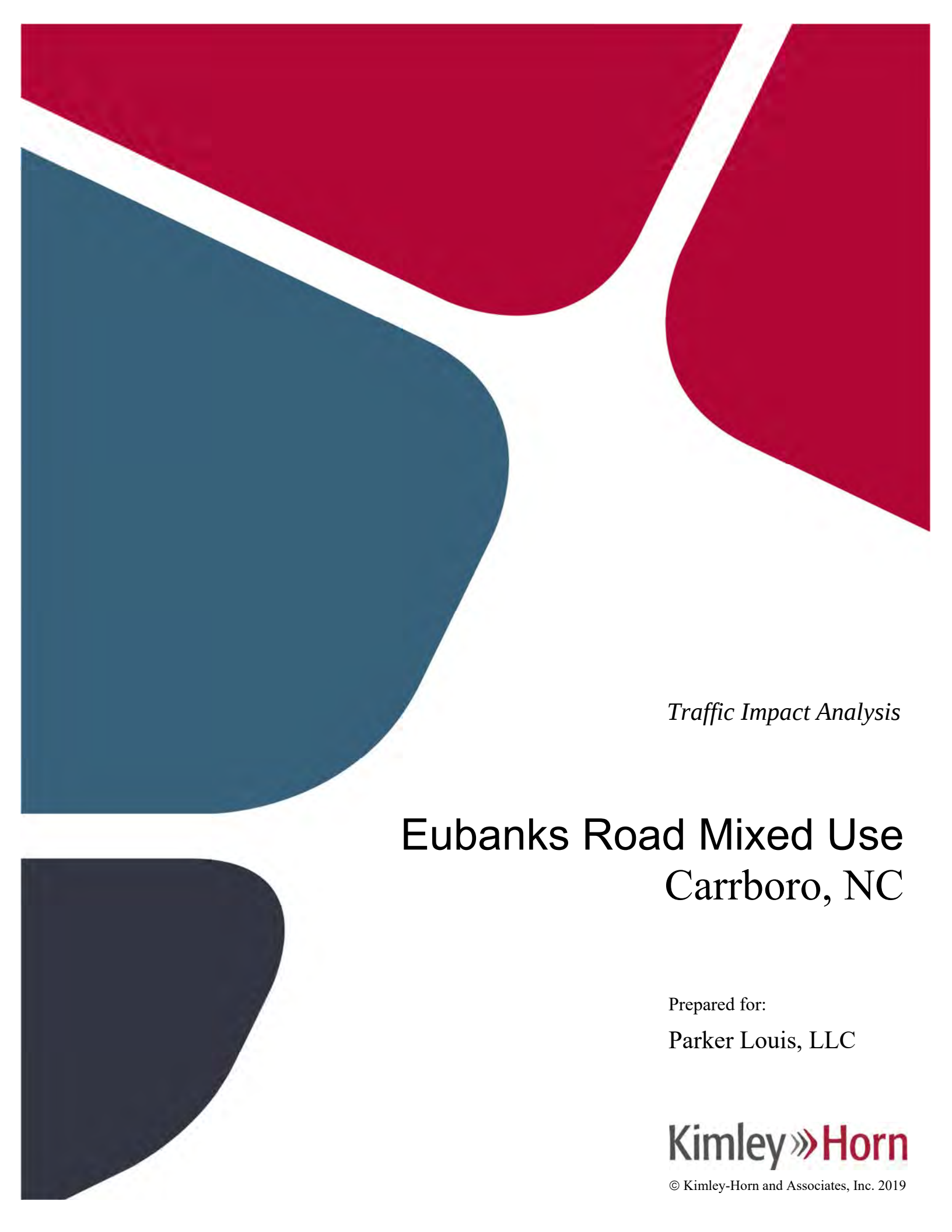




Traffic Impact Analysis

Eubanks Road Mixed Use Carrboro, NC

Prepared for:
Parker Louis, LLC

Kimley»Horn

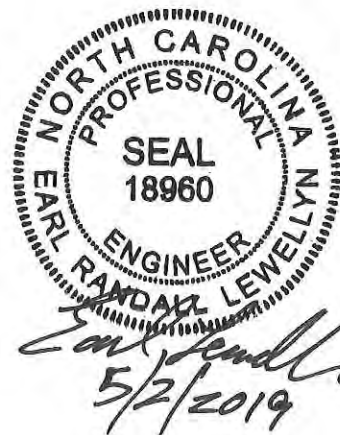
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**Traffic Impact Analysis
for
Eubanks Road Mixed Use
Carrboro, North Carolina**

**Prepared for:
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Chapel Hill, NC**

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**May 2019
013998000**



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Executive Summary

Kimley-Horn and Associates, Inc. has performed a Traffic Impact Analysis for the proposed Eubanks Road Mixed Use project located generally in the northeast quadrant of the Eubanks Road – Hillsborough Road (Old NC 86) intersection in Carrboro, North Carolina. As currently envisioned the site is assumed to consist of approximately: 50 single family homes, 175 multifamily units, a 75-bed assisted Living facility, a 10,000 SF daycare, 60,000 SF of general office, and 17,000 SF of general retail. Project build-out is anticipated in 2025. The project will be accessed via three proposed access points: one aligning with existing Dromoland Road, one aligning with Morris Grove Elementary School access and one to service the retail area on the south side of Eubanks Road west of Dromoland Road.

This report presents trip generation, distribution, traffic analyses, and recommendations for transportation improvements required to meet anticipated traffic demands in conjunction with the development. The traffic conditions studied include the existing (2019) traffic condition as well as the projected (2025) background and build-out traffic conditions. The Eubanks Road – Morris Grove School access roundabout was also analyzed in the 2039 horizon year.

As shown in Table ES-1, the proposed development has the potential to generate 366 new trips in the AM peak hour (203 entering and 163 exiting) and 397 new trips in the PM peak hour (183 entering and 214 exiting) on a typical weekday.

Table ES-1 Eubanks Road Mixed Use ITE Traffic Generation (Vehicles)							
Land Use Code	Land Use	Intensity		AM Peak Hour		PM Peak Hour	
				In	Out	In	Out
210	Single Family Detached	50	Units	10	30	33	19
221	Multifamily (Mid-Rise)	175	Units	15	44	46	30
254	Assisted Living Facility	75	Beds	9	5	8	12
565	Day Care Center	10,000	SF	58	52	52	59
710	General Office	60,000	SF	71	12	11	59
820	Shopping Center	17,000	SF	55	33	70	76
Subtotal				218	176	220	255
Internal Capture				0	0	0	0
Pass-by Capture				15	13	37	41
Net New External Trips				203	163	183	214

Capacity analyses were performed using Synchro Version 10 software for all intersection, except for the roundabout intersection, which was analyzed using Sidra software. Table ES-2 summarizes the operation of the study intersections for the AM and PM peak hour traffic conditions.

Table ES-2 Level-of-Service Summary		
Condition	AM Peak Hour LOS (Delay)	PM Peak Hour LOS (Delay)
Eubanks Road – Old NC 86 (Unsignalized)*		
Existing (2019) Traffic	WB – C (21.7) SBL – A (9.6)	WB – D (32.3) SBL – A (8.6)
Background (2025) Traffic	WB – E (37.4) SBL – B (10.4)	WB – F (94.2) SBL – A (9.0)
Build-out (2025) Traffic	WB – F (73.4) SBL – B (10.9)	WB – F (181.2) SBL – A (9.2)
Build-out (2025) Traffic (Signalized)	A (8.1)	B (11.8)
Eubanks Road – Dromoland Road/Central Site Drive (Unsignalized)*		
Existing (2019) Traffic	NB – B (12.7) WBL – A (8.4)	NB – B (10.8) WBL – A (7.6)
Background (2025) Traffic	NB – B (13.9) WBL – A (8.8)	NB – B (11.5) WBL – A (7.7)
Build-out (2025) Traffic	NB – C (20.1) SB – D (31.0) EBL – A (8.1) WBL – A (8.9)	NB – C (17.3) SB – D (26.3) EBL – A (8.7) WBL – A (7.8)
Eubanks Road – Morris Grove Elem School / East Site Drive (Roundabout)**		
Existing (2019) Traffic	A (7.0)	A (4.9)
Background (2025) Traffic	A (8.5)	A (5.4)
Build-out (2025) Traffic	A (9.3)	A (6.8)
Build-out (2039) Traffic – <i>Future Horizon Year</i>	B (13.8)	A (7.4)
Eubanks Road – Rogers Road (Unsignalized)*		
Existing (2019) Traffic	NB – C (17.0) WBL – A (8.5)	NB – B (13.1) WBL – A (7.9)
Background (2025) Traffic	NB – C (23.8) WBL – A (8.9)	NB – C (15.7) WBL – A (8.1)
Build-out (2025) Traffic	NB – F (55.8) WBL – A (9.3)	NB – D (31.3) WBL – A (8.6)
Eubanks Road – West Site Drive (Unsignalized)*		
Build-out (2025) Traffic	NB – C (15.9) WBL – A (9.1)	NB – B (13.9) WBL – A (7.9)

* Note: HCM methodology does not report an overall level of service for unsignalized intersections. The level of service and delay for the worst approach are reported above for unsignalized intersections.

** Analysis results per Sidra Intersection 8.

Recommended Improvements

The analysis indicates that site-generated traffic will have only minor impact on study area intersections, with the exception of the Eubanks Road – Hillsborough Road (Old NC 86) intersection. In order to accommodate potential site traffic impact, installation of a traffic signal is recommended at the Eubanks Road – Hillsborough Road (Old NC 86) intersection subject to satisfying MUTCD Traffic Signal Warrants and approval by NCDOT.

The recommended improvements are shown on **Figure ES-1**.



RECOMMENDED ROADWAY LANEAGE

FIGURE
ES-1

THIS DOCUMENT, TOGETHER WITH THE CONCEPTS AND DESIGNS PRESENTED HEREIN, AS AN INSTRUMENT OF SERVICE, IS INTENDED ONLY FOR THE SPECIFIC PURPOSE AND CLIENT FOR WHICH IT WAS PREPARED. REUSE OF IMPROPER RELIANCE ON THIS DOCUMENT WITHOUT WRITTEN AUTHORIZATION AND ADAPTATION BY KIMLEY-HORN AND ASSOCIATES, INC. SHALL BE WITHOUT LIABILITY TO KIMLEY-HORN AND ASSOCIATES, INC.

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1.0 Introduction

Kimley-Horn and Associates, Inc. has performed a Traffic Impact Analysis for the proposed Eubanks Road Mixed Use project located generally in the northeast quadrant of the Eubanks Road – Hillsborough Road (Old NC 86) intersection in Carrboro, North Carolina. As currently envisioned the site is assumed to consist of approximately: 50 single family homes, 175 multifamily units, a 75-bed assisted Living facility, a 10,000 SF daycare, 60,000 SF of general office, and 17,000 SF of general retail. Project build-out is anticipated in 2025. The project will be accessed via three proposed access points: one aligning with existing Dromoland Road, one aligning with Morris Grove Elementary School access and one to service the retail area on the south side of Eubanks Road west of Dromoland Road.

This report presents trip generation, distribution, traffic analyses, and recommendations for transportation improvements required to meet anticipated traffic demands in conjunction with the development. The traffic conditions studied include the existing (2019) traffic condition as well as the projected (2025) background and build-out traffic conditions. The Eubanks Road – Morris Grove School access roundabout was also analyzed in the 2039 horizon year.

North Carolina Department of Transportation (NCDOT) and Town of Carrboro staff provided background data and was consulted regarding the elements to be covered in this analysis.

2.0 Inventory

2.1 Study Area

The study area for this development includes the following intersections:

- Eubanks Road – Hillsborough Road
- Eubanks Road – Dromoland Road / Center Site Drive
- Eubanks Road – Morris Grove Elem School / East Site Drive
- Eubanks Road – Rogers Road
- Eubanks Road – West Site Drive

Figure 1 shows the site location.

2.2 Existing Conditions

The proposed Eubanks Road Mixed Use project is located predominately in the northeast corner of the Eubanks Road – Hillsborough Road intersection in Carrboro, North Carolina. Significant roadways in the study area include Hillsborough Road (Old NC 86), Eubanks Road and Rogers Road. The existing roadway laneage is shown in **Figure 2**.

Hillsborough Road is generally a two-lane, two-way rural road with a posted speed limit of 45 mph in the vicinity of the site. The 2017 NCDOT reported average daily traffic (ADT) volume is approximately 5,900 vehicles per day (vpd) north of Eubanks Road.

Eubanks Road is generally a two-lane undivided east-west roadway with an exclusive left turn lane at the intersection with Hillsborough Road. The posted speed limit is 35 mph west of Morris Grove Elementary School and 45 mph east of the school. The 2017 NCDOT ADT volume is approximately 4,300 vpd immediately east of Hillsborough Road.

Rogers Road is a two-lane undivided roadway connecting Eubanks Road and Homestead, the posted speed limit is 35 mph in the vicinity of the site. The estimated current ADT is approximately 3,000 vehicles per day.



LEGEND



EXISTING LANE



EXISTING STOP SIGN



EXISTING ROUNDABOUT



EXISTING TRAFFIC SIGNAL

XX'

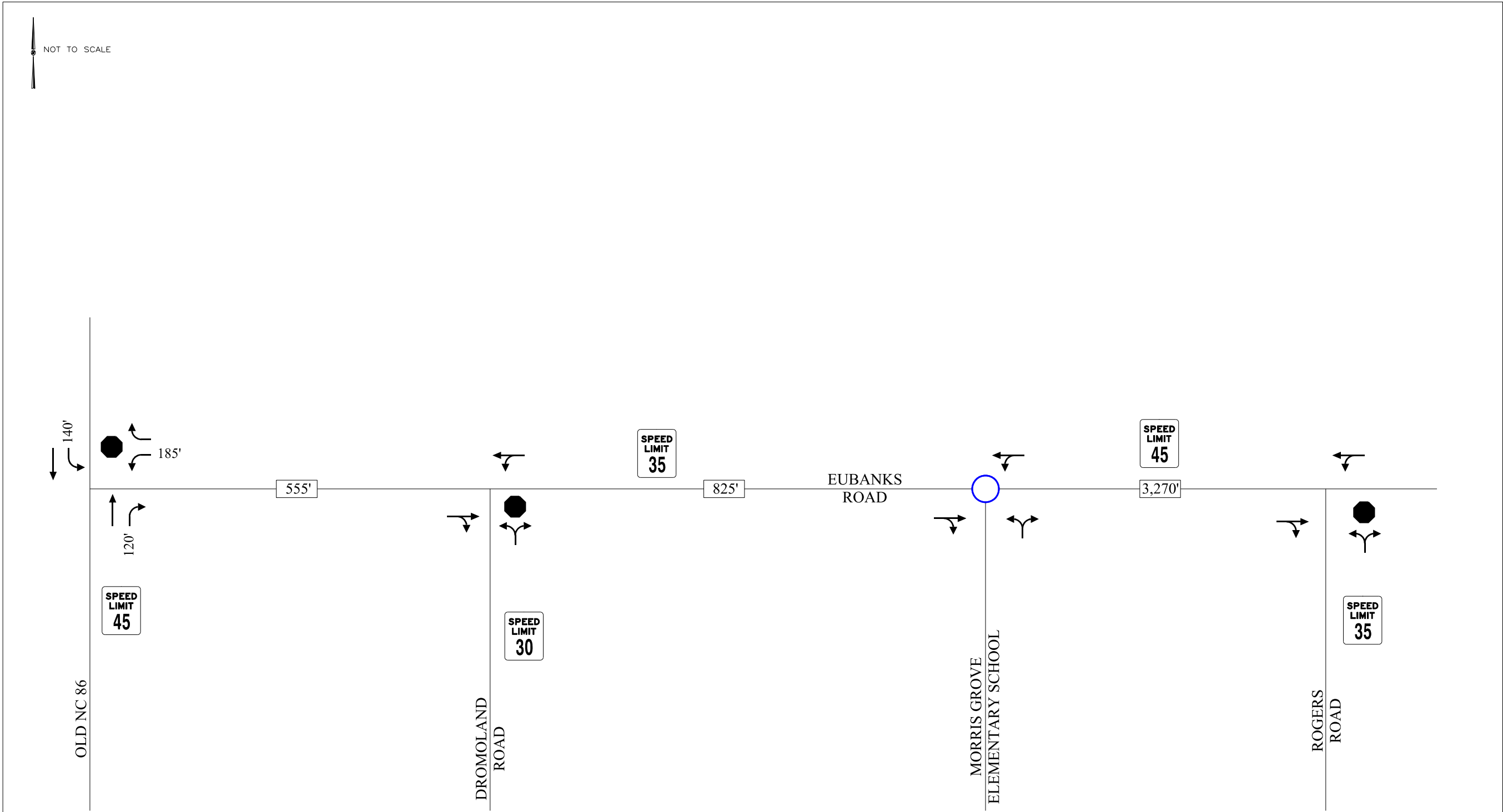
STORAGE LENGTH



POSTED SPEED LIMIT

XX'

DISTANCE BETWEEN INTERSECTIONS



EUBANKS ROAD MIXED USE
CARRBORO, NC
TRAFFIC CAPACITY ANALYSIS

EXISTING LANEAGE

3.0 Traffic Generation

The traffic generation potential of the proposed development was determined using the traffic generation rates published in *Trip Generation* (Institute of Transportation Engineers, Tenth Edition, 2017). As currently envisioned the site is assumed to consist of approximately: 50 single family homes, 175 multifamily units, a 75-bed assisted living facility, a 10,000 SF daycare, 60,000 SF of general office, and 17,000 SF of general retail. [Table 3.0](#) summarizes the estimated traffic generation for the proposed development.

Table 3.0 Eubanks Road Mixed Use ITE Traffic Generation (Vehicles)							
Land Use Code	Land Use	Intensity		AM Peak Hour		PM Peak Hour	
				In	Out	In	Out
210	Single Family Detached	50	Units	10	30	33	19
221	Multifamily (Mid-Rise)	175	Units	15	44	46	30
254	Assisted Living Facility	75	Beds	9	5	8	12
565	Day Care Center	10,000	SF	58	52	52	59
710	General Office	60,000	SF	71	12	11	59
820	Shopping Center	17,000	SF	55	33	70	76
Subtotal				218	176	220	255
Internal Capture				0	0	0	0
Pass-by Capture				15	13	37	41
Net New External Trips				203	163	183	214

As shown in Table 3.0, the proposed development has the potential to generate 366 new trips in the AM peak hour (203 entering and 163 exiting) and 397 new trips in the PM peak hour (183 entering and 214 exiting) on a typical weekday.

While ITE methodology suggests a potential mixed use internal capture rate of 5% and 16% in the AM and PM peak hours, respectively, no such internal capture was assumed in this analysis to be conservative. While the ITE Trip Generation Manual does not provide passby trip rates for a Daycare facility, an ITE Journal article summarized a study that determined Daycare facilities to have an average passby rate of 44%. While such a passby rate is reasonable given the proximity of this site to the Morris Grove Elementary school, passby capture rates for the proposed Daycare were limited to 25% in order to be conservative.

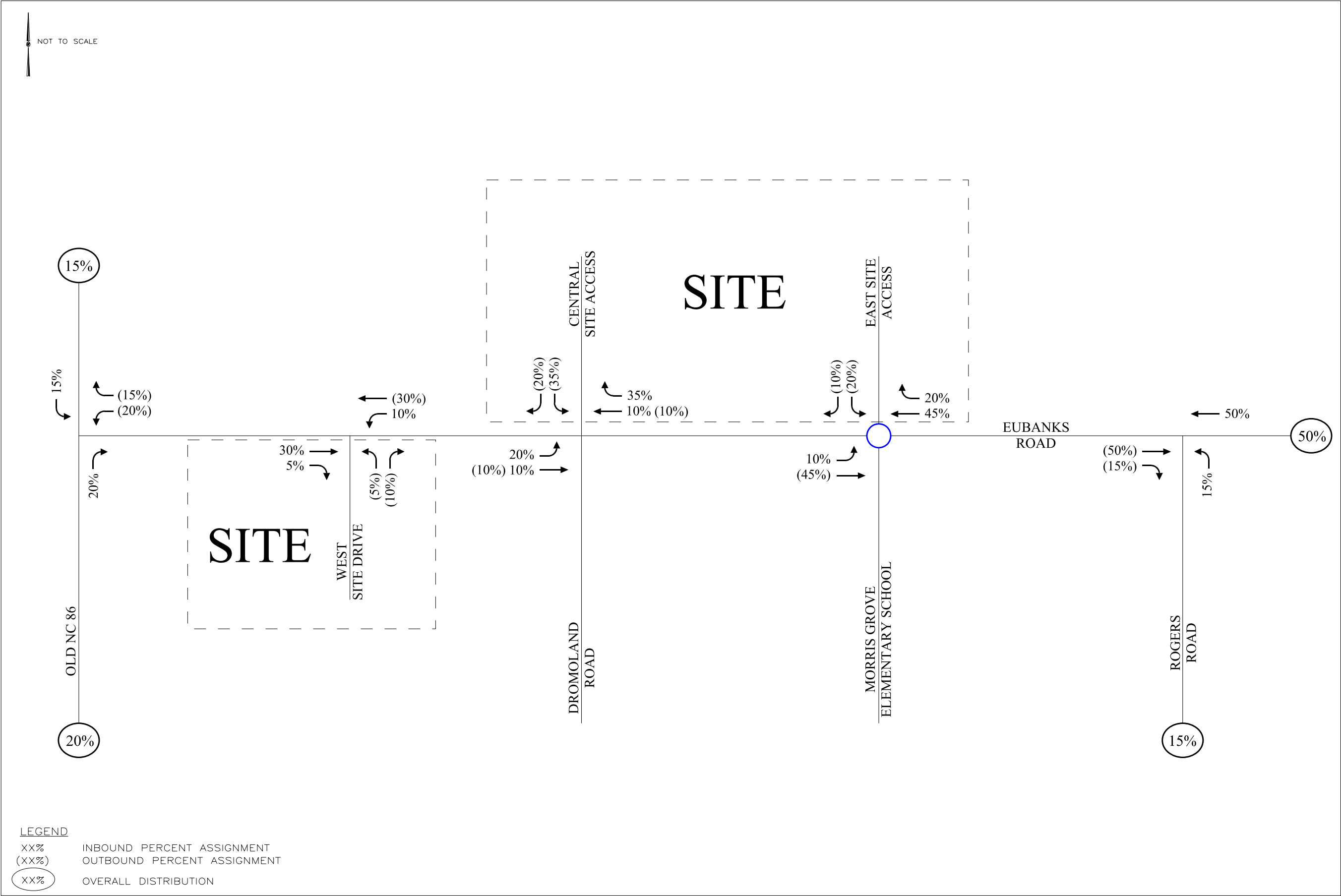
Detailed trip generation calculations are included in the Appendix of this report.

4.0 Site Traffic Distribution

The proposed generated trips were assigned to the surrounding roadway network. The directional distribution and assignment are based on land uses in the area and existing travel patterns and a review of area origins and destinations. Site trips were assigned to the network based on the following distribution:

- 15% to/from the north on Hillsborough Road
- 20% to/from the south on Hillsborough Road
- 50% to/from the east on Eubanks Road
- 15% to/from the south on Rogers Road

The site traffic distribution and percent assignment for the development are shown on **Figure 3**.



5.0 Projected Traffic Volumes

5.1 Existing Traffic

AM peak hour (7:00 to 9:00 AM) and PM peak hour (4:00 to 6:00 PM) turning movement counts were performed at the following intersections on April 16, 2019:

- Eubanks Road – Hillsborough Road
- Eubanks Road – Dromoland Road
- Eubanks Road – Morris Grove Elem School Access
- Eubanks Road – Rogers Road

The existing AM and PM peak hour traffic volumes are shown on **Figures 4 and 5**, and the traffic count data are included in the Appendix.

5.2 Historic Growth Traffic

Historic growth traffic is the increase in traffic due to non-specific growth throughout the area. Per previous discussions with the Town and NCDOT an annual growth rate of 3.0% was applied to existing volumes in the study area. This was assumed to include impact of pending nearby projects as well. Background growth calculations are detailed on intersection spreadsheets in the Appendix of this report.

5.3 Background Traffic

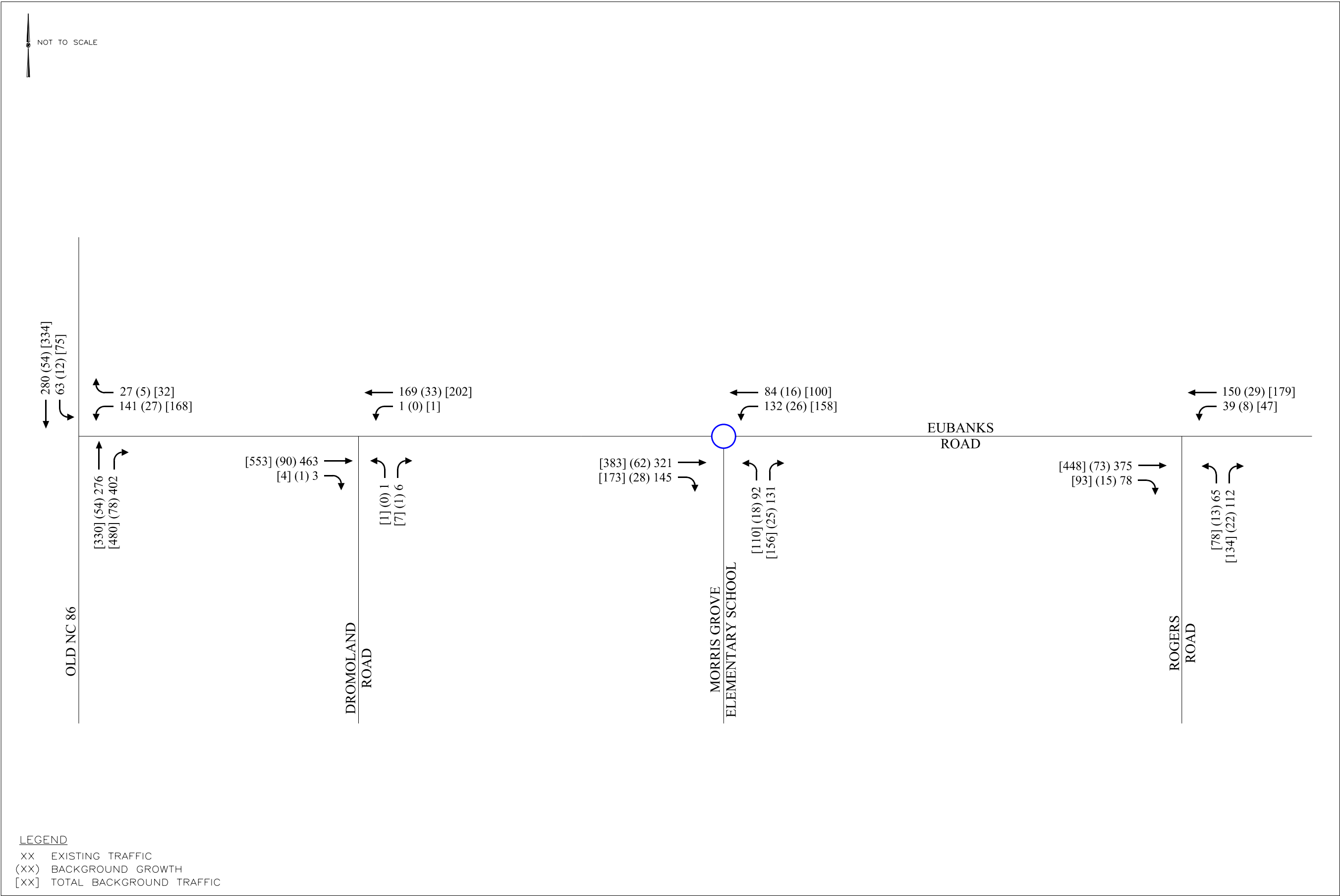
Background traffic volumes, which include existing and historic growth traffic, are shown on **Figures 4 and 5** for the AM and PM peak hours, respectively.

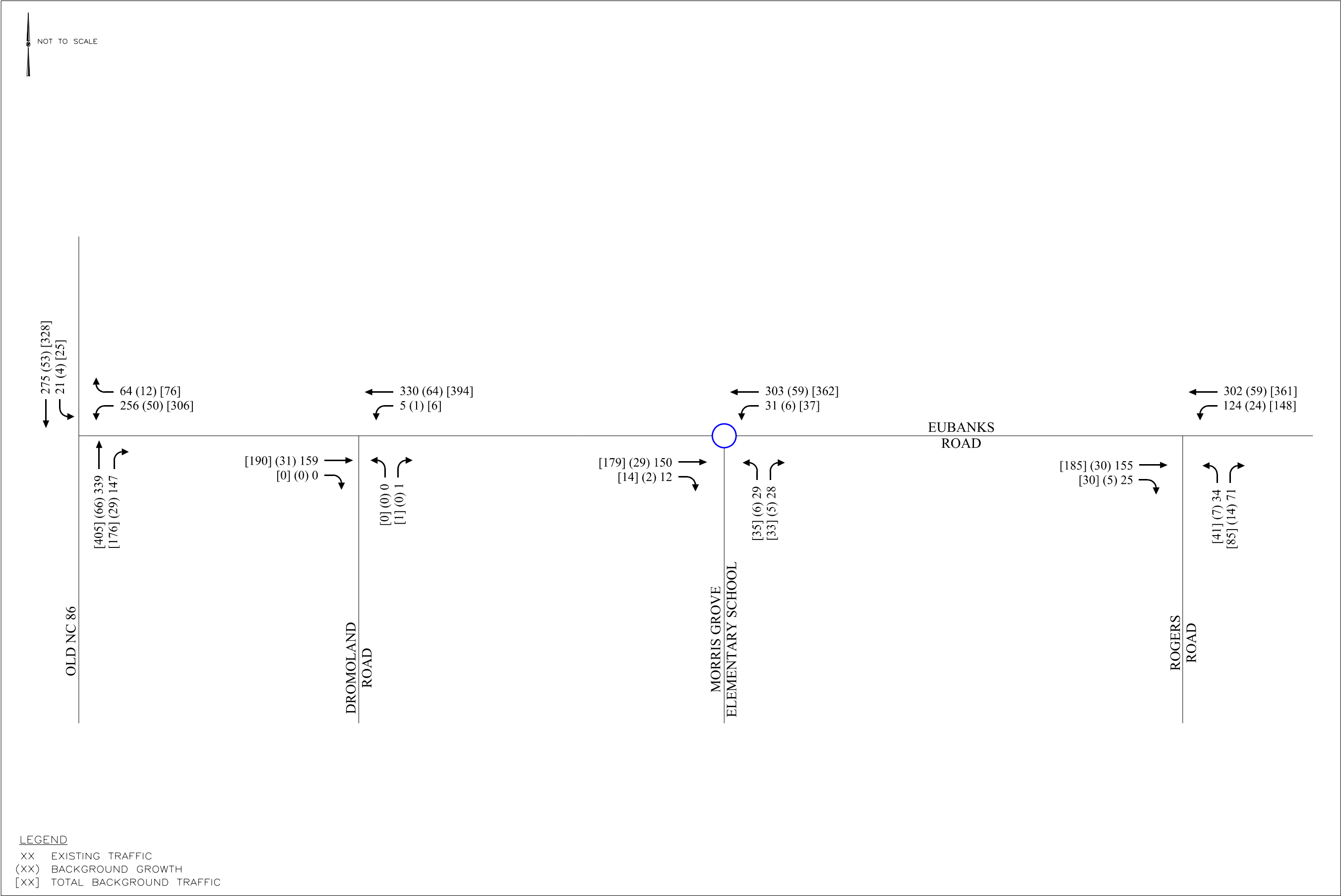
5.4 Site Traffic

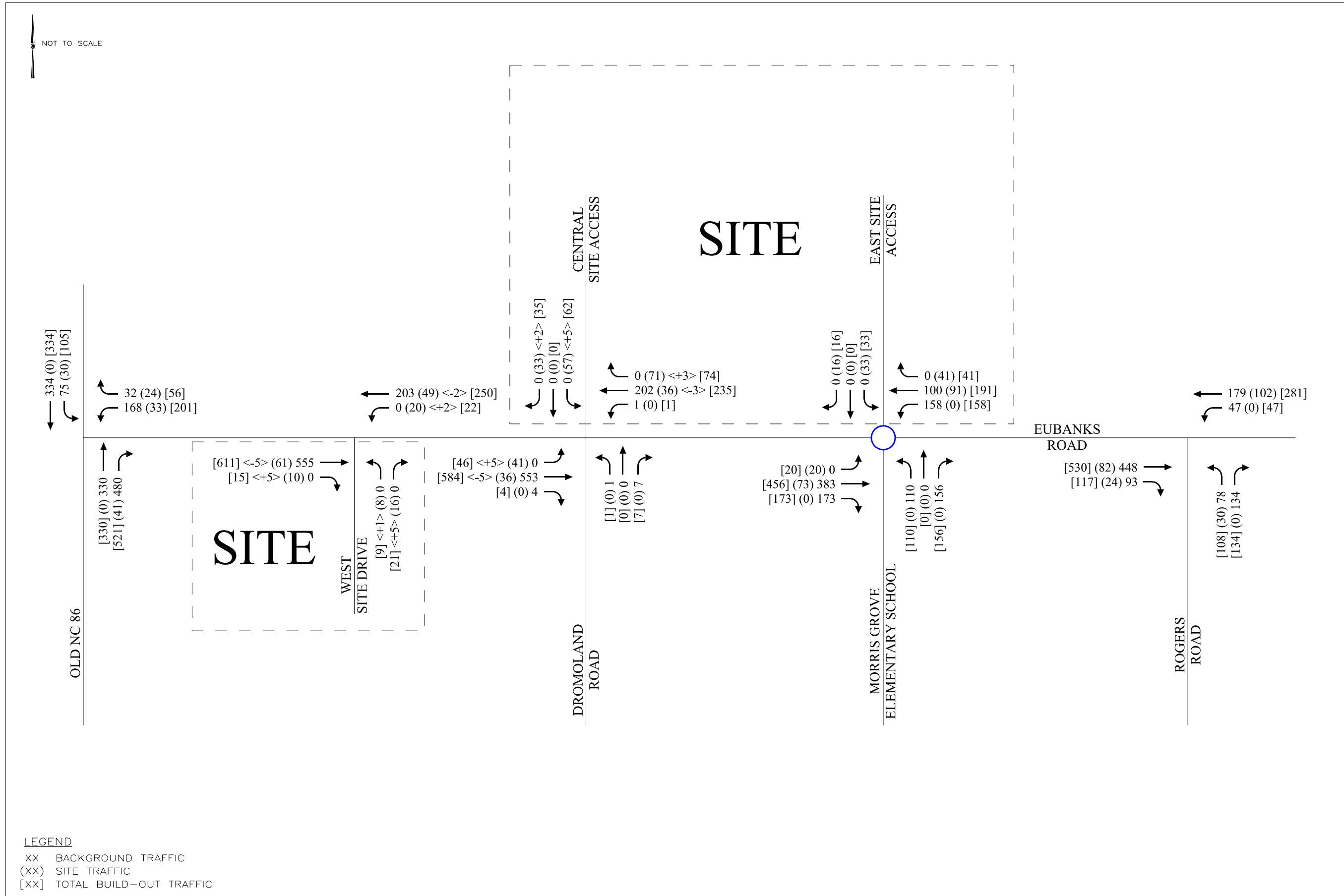
The proposed site traffic was generated and assigned to the adjacent roadway network according to the distribution discussed previously in Section 4.0. The site traffic volumes for the AM and PM peak hours are shown in **Figures 6 and 7**, respectively.

5.5 Build-Out Traffic

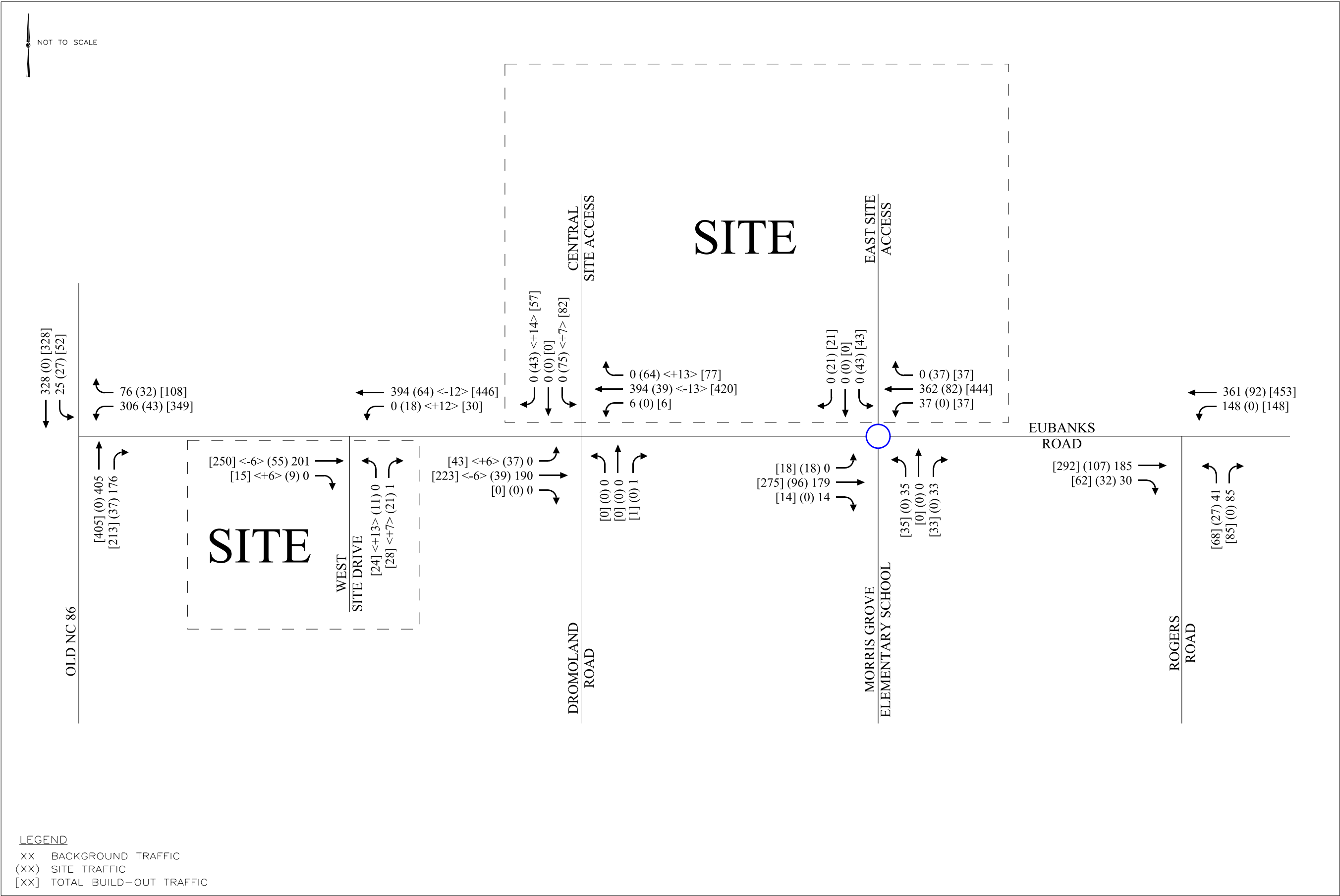
To obtain the projected (2025) build-out traffic volumes, the projected site traffic was added to the projected (2025) background traffic. Traffic volume calculations are detailed in intersection spreadsheets in the Appendix of this report. **Figures 6 and 7** show the projected (2025) AM and PM peak hour build-out traffic volumes, respectively. Year 2039 volume projects for the Eubanks Road – Morris Grove Elementary access intersection are included intersection spreadsheets in Appendix D.







EUBANKS ROAD MIXED USE
CARRBORO, NC
TRAFFIC CAPACITY ANALYSIS



6.0 Capacity Analysis

Capacity analyses (see Appendix) were performed for the AM and PM peak hours for the existing (2019) traffic condition and the projected (2025) background and build-out traffic conditions using Synchro Version 10 software (Sidra Intersection 8 for the roundabout) to determine the operating characteristics of the adjacent road network and the impacts of the proposed project.

Capacity is defined as the maximum number of vehicles that can pass over a particular road segment or through a particular intersection within a set time duration. Capacity is combined with Level-of-Service (LOS) to describe the operating characteristics of a road segment or intersection. LOS is a qualitative measure that describes operational conditions and motorist perceptions within a traffic stream. The *Highway Capacity Manual* defines six levels of service, LOS A through LOS F, with A representing the shortest average delays and F representing the longest average delays. LOS D is the typically accepted standard for signalized intersections in urbanized areas. For signalized intersections, LOS is defined for the overall intersection operation.

For unsignalized intersections, only the movements that must yield right-of-way experience control delay. Therefore, LOS criteria for the overall intersection is not reported by Synchro/SimTraffic Version 9.2 or computable using methodology published in the *Highway Capacity Manual*. It is typical for stop sign controlled side streets and driveways intersecting major streets to experience long delays during peak hours, while the majority of the traffic moving through the intersection on the major street experiences little or no delay. Table 6.0-A lists the LOS control delay thresholds published in the *Highway Capacity Manual* for signalized and unsignalized intersections.

Table 6.0-A		
Level-of-Service Control Delay Thresholds		
Level-of-Service	Signalized Intersections – Control Delay Per Vehicle [sec/veh]	Unsignalized Intersections – Average Control Delay [sec/veh]
A	≤ 10	≤ 10
B	> 10 – 20	> 10 – 15
C	> 20 – 35	> 15 – 25
D	> 35 – 55	> 25 – 35
E	> 55 – 80	> 35 – 50
F	> 80	> 50

Existing peak hour factors (PHF's) were used where current conditions exceed the default value of 0.90, which was also used at new intersections. Where count or projected volumes are less than 4, a minimum volume of 4 was used in the Synchro analysis to be conservative.

Capacity analyses were performed for the existing (2019) traffic condition and the projected (2025) background and build-out traffic conditions for the following intersections:

- Eubanks Road – Hillsborough Road
- Eubanks Road – Dromoland Road / Central Site Drive
- Eubanks Road – Morris Grove Elem School Access / West Site Drive
- Eubanks Road – Rogers Road
- Eubanks Road – West Site Drive

Table 6.0-B summarizes the LOS and delay (seconds per vehicle) for all of the study intersections for the existing (2019) traffic condition and the projected (2025) background and build-out traffic conditions. All capacity analyses are included in the Appendix and are briefly summarized in the following sub-sections.

Table 6.0-B Level-of-Service Summary		
Condition	AM Peak Hour LOS (Delay)	PM Peak Hour LOS (Delay)
Eubanks Road – Old NC 86 (Unsignalized)*		
Existing (2019) Traffic	WB – C (21.7) SBL – A (9.6)	WB – D (32.3) SBL – A (8.6)
Background (2025) Traffic	WB – E (37.4) SBL – B (10.4)	WB – F (94.2) SBL – A (9.0)
Build-out (2025) Traffic	WB – F (73.4) SBL – B (10.9)	WB – F (181.2) SBL – A (9.2)
Build-out (2025) Traffic (Signalized)	A (8.1)	B (11.8)
Eubanks Road – Dromoland Road/Central Site Drive (Unsignalized)*		
Existing (2019) Traffic	NB – B (12.7) WBL – A (8.4)	NB – B (10.8) WBL – A (7.6)
Background (2025) Traffic	NB – B (13.9) WBL – A (8.8)	NB – B (11.5) WBL – A (7.7)
Build-out (2025) Traffic	NB – C (20.1) SB – D (31.0) EBL – A (8.1) WBL – A (8.9)	NB – C (17.3) SB – D (26.3) EBL – A (8.7) WBL – A (7.8)
Eubanks Road – Morris Grove Elem School / East Site Drive (Roundabout)**		
Existing (2019) Traffic	A (6.7)	A (4.7)
Background (2025) Traffic	A (8.2)	A (5.2)
Build-out (2025) Traffic	A (9.0)	A (6.5)
Build-out (2039) Traffic – <i>Future Horizon Year</i>	B (13.8)	A (7.4)

Eubanks Road – Rogers Road (Unsignalized)*		
Existing (2019) Traffic	NB – C (17.0) WBL – A (8.5)	NB – B (13.1) WBL – A (7.9)
Background (2025) Traffic	NB – C (23.8) WBL – A (8.9)	NB – C (15.7) WBL – A (8.1)
Build-out (2025) Traffic	NB – F (55.8) WBL – A (9.3)	NB – D (31.3) WBL – A (8.6)
Eubanks Road – West Site Drive (Unsignalized)*		
Build-out (2025) Traffic	NB – C (15.9) WBL – A (9.1)	NB – B (13.9) WBL – A (7.9)

* Note: HCM methodology does not report an overall level of service for unsignalized intersections. The level of service and delay for the worst approach are reported above for unsignalized intersections.

** Analysis results per Sidra Intersection 8.

6.1 Eubanks Road – Hillsborough Road (Old NC 86)

Analysis indicates that the unsignalized Eubanks Road – Hillsborough Road intersection currently operates with short to moderate side street delays in existing conditions. With the addition of background and site traffic impact, long delays and extensive queues are predicted, particularly in the PM peak hour.

With installation of a traffic signal at this intersection LOS A and LOS B are expected in the AM and PM peak hours, respectively, with queues that are contained within the existing storages. Installation of a traffic signal is recommended subject to satisfying a signal warrant analysis. No additional improvements are recommended to accommodate site traffic.

Table 6.1 summarizes the operation of the intersection for the existing (2019) and projected (2025) background and build-out traffic conditions.

Table 6.1 Level-of-Service Eubanks Road – Hillsborough Road (Old NC 86) (Unsignalized)		
Condition	AM Peak Hour LOS (Delay)	PM Peak Hour LOS (Delay)
Existing (2019) Traffic	WB – C (21.7) SBL – A (9.6)	WB – D (32.3) SBL – A (8.6)
Background (2025) Traffic	WB – E (37.4) SBL – B (10.4)	WB – F (94.2) SBL – A (9.0)
Build-out (2025) Traffic	WB – F (73.4) SBL – B (10.9)	WB – F (181.2) SBL – A (9.2)
Build-out (2025) Traffic (Signalized)	A (8.1)	B (11.8)

** Note: HCM methodology does not report an overall level of service for unsignalized intersections. The level of service and delay for the worst approach are reported above for unsignalized intersections.*

6.2 Eubanks Road – Dromoland Road / Central Site Drive

Analysis indicates that the unsignalized Eubanks Road – Dromoland Road intersection currently operates with short side street delays. With the addition of background and site generated traffic, only moderate delays are expected.

Consideration was given to the potential need for an exclusive left turn lane on Eubanks Road at the Central Site Drive. However, given the low volume of left turns and infrequency of resulting queue, such an improvement appears unwarranted based on the analysis.

No improvements are recommended at this intersection to accommodate anticipated traffic demands.

Table 6.2 summarizes the operation of the intersection for the existing (2019) and projected (2025) background and build-out traffic conditions.

Table 6.2 Level-of-Service Eubanks Road – Dromoland Road / Central Site Drive (Unsignalized)*		
Condition	AM Peak Hour LOS (Delay)	PM Peak Hour LOS (Delay)
Existing (2019) Traffic	NB – B (12.7) WBL – A (8.4)	NB – B (10.8) WBL – A (7.6)
Background (2025) Traffic	NB – B (13.9) WBL – A (8.8)	NB – B (11.5) WBL – A (7.7)
Build-out (2025) Traffic	NB – C (20.1) SB – D (31.0) EBL – A (8.1) WBL – A (8.9)	NB – C (17.3) SB – D (26.3) EBL – A (8.7) WBL – A (7.8)

* Note: HCM methodology does not report an overall level of service for unsignalized intersections. The level of service and delay for the worst approach are reported above for unsignalized intersections.

6.3 Eubanks Road – Morris Grove Elementary School Access

Analysis indicates that this roundabout-controlled intersection of Eubanks Road with Morris Grove Elementary School Access currently operates at an overall LOS A, and would continue to operate at that LOS with full project buildout.

The 2039 Buildout analysis of this roundabout intersection determined that overall LOS B would result. No approach experienced a degree of saturation that would suggest failure. However, the analysis model predicts westbound queues (although likely “rolling queues”) of approximately 450 feet. It should be noted that such queues are not related to the proposed development and are instead based on assumed background growth. It is also important to note that this analysis assumed growth of Morris Grove Elementary School traffic at the same rate as growth on Eubanks Road, representing a conservative analysis.

No improvements are necessary to accommodate anticipated traffic demands.

Table 6.3 summarizes the operation of the intersection for the existing (2019), projected (2025) background and build-out traffic conditions and 2039 horizon year conditions.

Table 6.3 Level-of-Service Eubanks Road – Morris Grove Elementary School Access / West Site Access (Roundabout)**		
Condition	AM Peak Hour LOS (Delay)	PM Peak Hour LOS (Delay)
Existing (2019) Traffic	A (6.7)	A (4.7)
Background (2025) Traffic	A (8.2)	A (5.2)
Build-out (2025) Traffic	A (9.0)	A (6.5)
Build-out (2039) Traffic – <i>Future Horizon Year</i>	B (13.8)	A (7.4)

** Note: Analysis results are based Sidra Intersection 8.

6.4 Eubanks Road – Rogers Road

Analysis indicates that the unsignalized Eubanks Road – Rogers Road intersection currently operates with short delays. With the addition of background traffic and site generated traffic, long delays are expected for northbound left turns during the PM peak hour. However, it is typical for the stop-controlled approach with a major street to experience long delays while the major street experiences little or no delay. Calculated side street queue are expected to be manageable and volumes do not appear to be sufficient to warrant signal installation.

No improvements are necessary to accommodate anticipated traffic demands

Table 6.4 summarizes the operation of the intersection for the existing (2019) and projected (2025) background and build-out traffic conditions.

Table 6.4 Level-of-Service Eubanks Road – Rogers Road (Unsignalized)		
Condition	AM Peak Hour LOS (Delay)	PM Peak Hour LOS (Delay)
Existing (2019) Traffic	NB – C (17.0) WBL – A (8.5)	NB – B (13.1) WBL – A (7.9)
Background (2025) Traffic	NB – C (23.8) WBL – A (8.9)	NB – C (15.7) WBL – A (8.1)
Build-out (2025) Traffic	NB – F (55.8) WBL – A (9.3)	NB – D (31.3) WBL – A (8.6)

* Note: HCM methodology does not report an overall level of service for unsignalized intersections. The level of service and delay for the worst approach are reported above for unsignalized intersections.

6.5 Eubanks Road - West Site Access

A full movement site driveway is proposed approximately 330 feet east of Hillsborough Road (Old NC 86). Analysis indicates that this proposed site driveway will operate with only short side street delays. No improvements are necessary.

Table 6.5 summarizes the operation of the intersection for the existing (2019) and projected (2023) background and build-out traffic conditions.

Table 6.5 Level-of-Service Eubanks Road – West Site Access		
Condition	AM Peak Hour LOS (Delay)	PM Peak Hour LOS (Delay)
Build-out (2025) Traffic	NB – C (15.9) WBL – A (9.1)	NB – B (13.9) WBL – A (7.9)

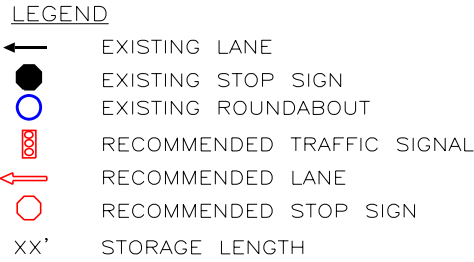
* Note: HCM methodology does not report an overall level of service for unsignalized intersections. The level of service and delay for the worst approach are reported above for unsignalized intersections.

7.0 Discussion and Recommendations

A 5-year crash history report for the Eubanks Road – Hillsborough Road intersection was provided by Town staff. During this 5-year period there were only eight reported crashes at this intersection. Only two of those crashes involved injuries, none of which were deemed serious. The remaining six crashes involved property damage only. Crash types are consistent with intersections of similar traffic control and orientation, and do not suggest any inherent safety concerns. The severity index and crash rate are well below the averages rates for similar rural, secondary roads in North Carolina.

The analysis indicates that site-generated traffic will have only minor impact on study area intersections, with the exception of the Eubanks Road – Hillsborough Road (Old NC 86) intersection. In order to accommodate potential site traffic impact, installation of a traffic signal is recommended at the Eubanks Road – Hillsborough Road (Old NC 86) intersection, subject to satisfying MUTCD Traffic Signal Warrants and approval by NCDOT.

The recommended roadway laneage is shown on **Figure 8**.

EUBANKS ROAD MIXED USE
CARRBORO, NC
TRAFFIC CAPACITY ANALYSIS

RECOMMENDED ROADWAY LANES

FIGURE 8

Appendix

Appendix A:
Assumptions Memorandum



MEMORANDUM

To: Tina Moon Town of Carrboro
Zachary Hallock, Town of Carrboro
Chuck Edwards, PE, NCDOT

From: Earl Lewellyn, P.E.
Kimley-Horn and Associates, Inc.

Date: April 12, 2019

Subject: Eubanks Road Mixed Use Rezoning – Traffic Impact Analysis

A rezoning application will soon be submitted for the subject project, located generally in the northeast quadrant of the Eubanks Road – Old NC 86 intersection in Carrboro, NC. While the specific type and intensity of non-residential land uses is somewhat unknown at this point, for purposes of trip generation of establishing a trip generation budget, the proposed land uses are assumed to include:

- 50 Single Family Units
- 215 Apartment Units
- 17,000 SF General Retail
- 60,000 SF General Office
- 10,000 SF Daycare

Project Buildout is anticipated in 2025

STUDY AREA

Based on preliminary discussions with NCDOT and Town staff, the study area is assumed to include the following intersections.

- Eubanks Road – Old NC 86
- Eubanks Road – Dromoland Road (Proposed Central Site Access)
- Eubanks Road – Morris Grove Elem. School Access (Proposed West Site Access)
- Eubanks Road – Rogers Road
- Eubanks Road – West Site Drive

Actual peak hour factors will be used at intersections where current conditions exceed the default 0.90 value.

ANALYSIS SCENARIOS

We will analyze the weekday AM peak hour (7:00 to 9:00 AM) and PM peak hour (4:00 PM to 6:00 PM) for the following traffic conditions:

- Existing Conditions
- Background (2025) Conditions
- Projected (2025) Build-out Conditions

In addition, per NCDOT request, we will perform analysis of the Eubanks Road – Morris Grove Elementary School / Site Drive intersection in a 2039 horizon year.

BACKGROUND GROWTH

The Town noted that the impacts of the pending Carraway project would need to be accounted for in this study. Having reviewed that traffic analysis, we find that the traffic impact on the subject study area is very minor. However, to account for that traffic and possible future background growth, we recommend use of a 3% background growth rate within the study area.

TRIP GENERATION

Trip generation for the proposed rezoning will be determined using the rates and regression equations presented in the *ITE Trip Generation Manual, 10th Edition*. Note that, due to the high y-intercept value of the AM peak hour equation for shopping centers (ITE LU Code 820) trip generation for that component will be determined using an average of the rate and equation; a practice that has been agreed to by the NCDOT Congestion Management Unit in several recent analyses of similar intensity. Gross trip generation for full buildout is summarized in Table 1 below.

Table 1 Traffic Generation – Eubanks Road Mixed Use Project ITE Traffic Generation (Vehicles)							
Land Use Code	Land Use	Intensity		AM Peak Hour		PM Peak Hour	
				In	Out	In	Out
210	Single Family Units	50	units	10	30	33	19
220	Apartment Units	215	units	19	53	56	36
565	Daycare	10,000	SF	58	52	52	59
710	General Office	60,000	SF	71	12	11	59
820	Shopping Center	17,000	SF	55	33	70	76
Total Gross Trip Generation				213	180	222	249

Gross trip generation referenced above will be adjusted for Passby Trips and Internal Capture using ITE Internal Capture Methodology and average passby capture rates. While the ITE Trip Generation Manual does not provide passby trip rates for a Daycare facility, an ITE

Journal article summarized a study that determined Daycare facilities to have an average passyb rate of 44%. While such a passby rate is reasonable given the proximity of this site to the Morris Grove Elementary school, we proposed to assume a passyby rate of only 25% in order to be conservative.

TRIP DISTRIBUTION

Site generated trips will be distributed onto the network based on a review of current traffic counts, and area origins and destinations. Preliminarily, we anticipate the following distribution

15% to/from the north on Old NC 86
20% to/from the south on Old NC 86
15% to/from the south on Rogers Road
50% to/from the east on Eubanks Road

ANALYSIS SOFTWARE

Capacity analyses will be conducted using Synchro Version 10, with the exception of the roundabout which will use Sidra software. The 2039 roundabout analysis will use a 1.5% annual background growth rate.

Appendix B:

Trip Generation

Eubanks Road Mixed-Use

Table 1 - Trip Generation

Land Use	Intensity		Daily			AM Peak Hour			PM Peak Hour		
			Total	In	Out	Total	In	Out	Total	In	Out
210 Single Family Detached Housing	50	d.u.	550	275	275	40	10	30	52	33	19
221 Multifamily Housing (Mid-Rise)	175	d.u.	952	476	476	59	15	44	76	46	30
254 Assisted Living	75	beds	196	98	98	14	9	5	20	8	12
565 Day Care Center	10,000	s.f.	476	238	238	110	58	52	111	52	59
710 General Office Building	60,000	s.f.	646	323	323	83	71	12	70	11	59
820 Shopping Center	17,000	s.f.	1,802	901	901	88	55	33	146	70	76
Subtotal			4,622	2,311	2,311	394	218	176	475	220	255
<i>Pass-By Traffic (ITE)</i>	<u>AM</u>	<u>PM</u>									
565 Daycare	25%	25%				28	15	13	28	13	15
820 Shopping Center	0%	34%	464	232	232	0	0	0	50	24	26
Pass-By Total:	16.42%		464	232	232	28	15	13	78	37	41
Total Net New External Trips			4,158	2,079	2,079	366	203	163	397	183	214

Appendix C:

Traffic Count Data

Your Company Name Here

Eubanks Rd. @ Hillsborough Rd.
Carrboro, NC
Counter: JF
Weather: Clear

File Name : eubankshillsborough
Site Code : 00019121
Start Date : 4/16/2019
Page No : 1

Groups Printed- Vehicles

	Eastbound	Eubanks Rd. Westbound					Hillsborough Rd. Northbound					Hillsborough Rd. Southbound							
Start Time	App. Total	Left	Thru	Right	Sch. Bus	App. Total	Left	Thru	Right	Sch. Bus	App. Total	Left	Thru	Right	Sch. Bus	App. Total	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	13	0	3	1	16	0	38	58	0	96	7	53	0	0	60	1	172	173
07:15 AM	0	15	0	4	2	19	0	53	111	3	164	23	62	0	0	85	5	268	273
07:30 AM	0	64	0	7	2	71	0	76	129	1	205	10	62	0	1	72	4	348	352
07:45 AM	0	44	0	8	0	52	0	87	76	1	163	15	74	0	1	89	2	304	306
Total	0	136	0	22	5	158	0	254	374	5	628	55	251	0	2	306	12	1092	1104
08:00 AM	0	18	0	8	0	26	0	60	86	1	146	15	82	0	1	97	2	269	271
08:15 AM	0	17	0	4	0	21	0	54	72	0	126	13	72	0	0	85	0	232	232
08:30 AM	0	20	0	3	0	23	0	67	77	0	144	12	63	0	0	75	0	242	242
08:45 AM	0	29	0	6	0	35	0	45	41	0	86	8	54	0	0	62	0	183	183
Total	0	84	0	21	0	105	0	226	276	1	502	48	271	0	1	319	2	926	928

*** BREAK ***

04:00 PM	0	47	0	8	0	55	0	69	36	3	105	7	64	0	1	71	4	231	235
04:15 PM	0	44	0	8	0	52	0	100	41	1	141	3	65	0	1	68	2	261	263
04:30 PM	0	47	0	10	0	57	0	71	27	0	98	4	65	0	0	69	0	224	224
04:45 PM	0	52	0	15	0	67	0	73	30	0	103	8	52	0	0	60	0	230	230
Total	0	190	0	41	0	231	0	313	134	4	447	22	246	0	2	268	6	946	952
05:00 PM	0	62	0	14	1	76	0	88	29	0	117	4	69	0	0	73	1	266	267
05:15 PM	0	64	0	22	0	86	0	100	51	0	151	5	82	0	0	87	0	324	324
05:30 PM	0	78	1	13	0	92	0	78	37	0	115	4	72	0	0	76	0	283	283
05:45 PM	0	58	0	15	0	73	0	75	26	1	101	5	45	0	0	50	1	224	225
Total	0	262	1	64	1	327	0	341	143	1	484	18	268	0	0	286	2	1097	1099
Grand Total	0	672	1	148	6	821	0	1134	927	11	2061	143	1036	0	5	1179	22	4061	4083
Apprch %		81.9	0.1	18			0	55	45			12.1	87.9	0					
Total %	0	16.5	0	3.6		20.2	0	27.9	22.8		50.8	3.5	25.5	0		29	0.5	99.5	

	Eastbound	Eubanks Rd. Westbound					Hillsborough Rd. Northbound					Hillsborough Rd. Southbound					
Start Time	App. Total	Left	Thru	Right	App. Total		Left	Thru	Right	App. Total		Left	Thru	Right	App. Total		Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	15	0	4	19		0	53	111	164		23	62	0	85		268
07:30 AM	0	64	0	7	71		0	76	129	205		10	62	0	72		348
07:45 AM	0	44	0	8	52		0	87	76	163		15	74	0	89		304
08:00 AM	0	18	0	8	26		0	60	86	146		15	82	0	97		269
Total Volume	0	141	0	27	168		0	276	402	678		63	280	0	343		1189
% App. Total		83.9	0	16.1			0	40.7	59.3			18.4	81.6	0			
PHF	.000	.551	.000	.844	.592		.000	.793	.779	.827		.685	.854	.000	.884		.854

Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:45 PM

04:45 PM	0	52	0	15	67		0	73	30	103		8	52	0	60		230
05:00 PM	0	62	0	14	76		0	88	29	117		4	69	0	73		266
05:15 PM	0	64	0	22	86		0	100	51	151		5	82	0	87		324
05:30 PM	0	78	1	13	92		0	78	37	115		4	72	0	76		283
Total Volume	0	256	1	64	321		0	339	147	486		21	275	0	296		1103
% App. Total		79.8	0.3	19.9			0	69.8	30.2			7.1	92.9	0			
PHF	.000	.821	.250	.727	.872		.000	.848	.721	.805		.656	.838	.000	.851		.851

Your Company Name Here

Eubanks Rd. @ Dromoland Rd.
Carrboro, NC
Counter: LV
Weather: Clear

File Name : eubanksdromoland
Site Code : 00019122
Start Date : 4/16/2019
Page No : 1

Groups Printed- Vehicles

	Eubanks Rd. Eastbound					Eubanks Rd. Westbound					Dromoland Rd. Northbound					Southbound			
Start Time	Left	Thru	Right	Sch. Bus	App. Total	Left	Thru	Right	Sch. Bus	App. Total	Left	Thru	Right	Sch. Bus	App. Total	App. Total	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	66	0	0	66	0	16	0	0	16	1	0	0	1	1	0	1	83	84
07:15 AM	0	132	1	3	133	0	23	0	3	23	0	0	0	0	0	0	6	156	162
07:30 AM	0	139	1	2	140	0	70	0	1	70	0	0	2	0	2	0	3	212	215
07:45 AM	0	92	0	0	92	1	51	0	1	52	0	0	3	0	3	0	1	147	148
Total	0	429	2	5	431	1	160	0	5	161	1	0	5	1	6	0	11	598	609
08:00 AM	0	100	1	0	101	0	25	0	0	25	1	0	1	1	2	0	1	128	129
08:15 AM	0	85	0	0	85	0	21	0	0	21	0	0	2	0	2	0	0	108	108
08:30 AM	0	84	0	0	84	0	24	0	0	24	1	0	1	0	2	0	0	110	110
08:45 AM	0	49	0	0	49	0	35	0	0	35	0	0	0	0	0	0	0	84	84
Total	0	318	1	0	319	0	105	0	0	105	2	0	4	1	6	0	1	430	431

*** BREAK ***

04:00 PM	0	45	0	1	45	1	52	0	1	53	0	0	0	0	0	0	2	98	100
04:15 PM	0	42	0	0	42	0	57	0	0	57	0	0	2	0	2	0	0	101	101
04:30 PM	0	33	1	0	34	1	54	0	0	55	0	0	0	0	0	0	0	89	89
04:45 PM	0	37	0	0	37	2	69	0	0	71	1	0	1	0	2	0	0	110	110
Total	0	157	1	1	158	4	232	0	1	236	1	0	3	0	4	0	2	398	400
05:00 PM	0	31	0	0	31	0	79	0	1	79	0	0	0	0	0	0	1	110	111
05:15 PM	0	56	0	0	56	0	84	0	0	84	0	0	0	0	0	0	0	140	140
05:30 PM	0	39	0	0	39	3	92	0	0	95	0	0	0	0	0	0	0	134	134
05:45 PM	0	33	0	0	33	2	75	0	0	77	0	0	1	0	1	0	0	111	111
Total	0	159	0	0	159	5	330	0	1	335	0	0	1	0	1	0	1	495	496
Grand Total	0	1063	4	6	1067	10	827	0	7	837	4	0	13	2	17	0	15	1921	1936
Apprch %	0	99.6	0.4			1.2	98.8	0			23.5	0	76.5						
Total %	0	55.3	0.2		55.5	0.5	43.1	0		43.6	0.2	0	0.7		0.9	0	0.8	99.2	

	Eubanks Rd. Eastbound				Eubanks Rd. Westbound				Dromoland Rd. Northbound				Southbo und	
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1														
Peak Hour for Entire Intersection Begins at 07:15 AM														
07:15 AM	0	132	1	133	0	23	0	23	0	0	0	0	0	156
07:30 AM	0	139	1	140	0	70	0	70	0	0	2	2	0	212
07:45 AM	0	92	0	92	1	51	0	52	0	0	3	3	0	147
08:00 AM	0	100	1	101	0	25	0	25	1	0	1	2	0	128
Total Volume	0	463	3	466	1	169	0	170	1	0	6	7	0	643
% App. Total	0	99.4	0.6		0.6	99.4	0		14.3	0	85.7			
PHF	.000	.833	.750	.832	.250	.604	.000	.607	.250	.000	.500	.583	.000	.758

Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 05:00 PM

05:00 PM	0	31	0	31	0	79	0	79	0	0	0	0	0	110
05:15 PM	0	56	0	56	0	84	0	84	0	0	0	0	0	140
05:30 PM	0	39	0	39	3	92	0	95	0	0	0	0	0	134
05:45 PM	0	33	0	33	2	75	0	77	0	0	1	1	0	111
Total Volume	0	159	0	159	5	330	0	335	0	0	1	1	0	495
% App. Total	0	100	0		1.5	98.5	0		0	0	100			
PHF	.000	.710	.000	.710	.417	.897	.000	.882	.000	.000	.250	.250	.000	.884

Your Company Name Here

Eubanks Rd. @ Round-a-Bout
Carrboro, NC
Counter: JG
Weather: Clear

File Name : eubanksroundabout
Site Code : 00019123
Start Date : 4/16/2019
Page No : 1

Groups Printed- Vehicles

	Eubanks Rd. Eastbound					Eubanks Rd. Westbound					School Entrance Northbound					South bound			
Start Time	Left	Thru	Right	Sch. Bus	App. Total	Left	Thru	Right	Sch. Bus	App. Total	Left	Thru	Right	Sch. Bus	App. Total	App. Total	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	47	17	0	64	13	15	0	0	28	1	0	0	0	1	0	0	93	93
07:15 AM	0	71	57	5	128	51	13	0	4	64	13	0	25	9	38	0	18	230	248
07:30 AM	0	66	75	2	141	60	18	0	0	78	56	0	69	1	125	0	3	344	347
07:45 AM	0	87	7	0	94	12	30	0	1	42	20	0	29	0	49	0	1	185	186
Total	0	271	156	7	427	136	76	0	5	212	90	0	123	10	213	0	22	852	874
08:00 AM	0	97	6	1	103	9	23	0	0	32	3	0	8	0	11	0	1	146	147
08:15 AM	0	85	2	0	87	1	19	0	0	20	2	0	6	0	8	0	0	115	115
08:30 AM	0	86	0	0	86	3	19	0	0	22	2	0	1	0	3	0	0	111	111
08:45 AM	0	47	3	0	50	2	35	0	0	37	1	0	3	0	4	0	0	91	91
Total	0	315	11	1	326	15	96	0	0	111	8	0	18	0	26	0	1	463	464
*** BREAK ***																			
04:00 PM	0	36	5	1	41	6	47	0	1	53	6	0	5	0	11	0	2	105	107
04:15 PM	0	40	3	0	43	2	51	0	0	53	4	0	6	0	10	0	0	106	106
04:30 PM	0	30	2	0	32	2	49	0	0	51	4	0	6	0	10	0	0	93	93
04:45 PM	0	30	3	0	33	9	62	0	0	71	8	0	6	0	14	0	0	118	118
Total	0	136	13	1	149	19	209	0	1	228	22	0	23	0	45	0	2	422	424
05:00 PM	0	31	2	0	33	9	75	0	1	84	4	0	7	0	11	0	1	128	129
05:15 PM	0	49	5	0	54	5	79	0	0	84	7	0	7	0	14	0	0	152	152
05:30 PM	0	40	2	0	42	8	87	0	0	95	10	0	8	0	18	0	0	155	155
05:45 PM	0	33	2	0	35	2	71	0	0	73	0	0	3	0	3	0	0	111	111
Total	0	153	11	0	164	24	312	0	1	336	21	0	25	0	46	0	1	546	547
Grand Total	0	875	191	9	1066	194	693	0	7	887	141	0	189	10	330	0	26	2283	2309
Apprch %	0	82.1	17.9			21.9	78.1	0			42.7	0	57.3						
Total %	0	38.3	8.4		46.7	8.5	30.4	0		38.9	6.2	0	8.3		14.5	0	1.1	98.9	

	Eubanks Rd. Eastbound				Eubanks Rd. Westbound				School Entrance Northbound				Southbo und	
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1														
Peak Hour for Entire Intersection Begins at 07:15 AM														
07:15 AM	0	71	57	128	51	13	0	64	13	0	25	38	0	230
07:30 AM	0	66	75	141	60	18	0	78	56	0	69	125	0	344
07:45 AM	0	87	7	94	12	30		42	20	0	29	49	0	185
08:00 AM	0	97	6	103	9	23	0	32	3	0	8	11	0	146
Total Volume	0	321	145	466	132	84	0	216	92	0	131	223	0	905
% App. Total	0	68.9	31.1		61.1	38.9	0		41.3	0	58.7			
PHF	.000	.827	.483	.826	.550	.700	.000	.692	.411	.000	.475	.446	.000	.658

Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:45 PM

04:45 PM	0	30	3	33	9	62	0	71	8	0	6	14	0	118
05:00 PM	0	31	2	33	9	75	0	84	4	0	7	11	0	128
05:15 PM	0	49	5	54	5	79	0	84	7	0	7	14	0	152
05:30 PM	0	40	2	42	8	87	0	95	10	0	8	18	0	155
Total Volume	0	150	12	162	31	303	0	334	29	0	28	57	0	553
% App. Total	0	92.6	7.4		9.3	90.7	0		50.9	0	49.1			
PHF	.000	.765	.600	.750	.861	.871	.000	.879	.725	.000	.875	.792	.000	.892

Your Company Name Here

Eubanks Rd. @ Rogers Rd.
Carrboro, NC
Counter: JCG
Weather: Clear

File Name : eubanksgrogers
Site Code : 00019124
Start Date : 4/16/2019
Page No : 1

Groups Printed- Vehicles

	Eubanks Rd. Eastbound					Eubanks Rd. Westbound					Rogers Rd. Northbound					South bound			
Start Time	Left	Thru	Right	Sch. Bus	App. Total	Left	Thru	Right	Sch. Bus	App. Total	Left	Thru	Right	Sch. Bus	App. Total	App. Total	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	39	5	0	44	5	23	0	0	28	6	0	18	1	24	0	1	96	97
07:15 AM	0	83	14	2	97	7	51	0	2	58	16	0	26	2	42	0	6	197	203
07:30 AM	0	108	26	3	134	4	50	0	0	54	25	0	25	0	50	0	3	238	241
07:45 AM	0	97	21	0	118	13	28	0	0	41	14	0	34	1	48	0	1	207	208
Total	0	327	66	5	393	29	152	0	2	181	61	0	103	4	164	0	11	738	749
08:00 AM	0	87	17	1	104	15	21	0	1	36	10	0	27	0	37	0	2	177	179
08:15 AM	0	73	20	0	93	22	15	0	0	37	3	0	25	0	28	0	0	158	158
08:30 AM	0	71	16	0	87	8	22	0	0	30	1	0	14	0	15	0	0	132	132
08:45 AM	0	49	3	0	52	9	34	0	0	43	3	0	25	0	28	0	0	123	123
Total	0	280	56	1	336	54	92	0	1	146	17	0	91	0	108	0	2	590	592

*** BREAK ***

04:00 PM	0	38	4	1	42	11	52	0	0	63	6	0	16	1	22	0	2	127	129
04:15 PM	0	46	2	0	48	22	49	0	0	71	5	0	16	0	21	0	0	140	140
04:30 PM	0	37	4	0	41	18	52	0	0	70	7	0	15	0	22	0	0	133	133
04:45 PM	0	31	4	1	35	31	68	0	0	99	5	0	19	1	24	0	2	158	160
Total	0	152	14	2	166	82	221	0	0	303	23	0	66	2	89	0	4	558	562
05:00 PM	0	31	6	0	37	32	67	0	0	99	12	0	19	1	31	0	1	167	168
05:15 PM	0	50	5	0	55	27	81	0	0	108	9	0	22	0	31	0	0	194	194
05:30 PM	0	42	8	0	50	30	86	0	0	116	7	0	17	0	24	0	0	190	190
05:45 PM	0	32	6	0	38	35	68	0	0	103	6	0	13	0	19	0	0	160	160
Total	0	155	25	0	180	124	302	0	0	426	34	0	71	1	105	0	1	711	712
Grand Total	0	914	161	8	1075	289	767	0	3	1056	135	0	331	7	466	0	18	2597	2615
Apprch %	0	85	15			27.4	72.6	0			29	0	71						
Total %	0	35.2	6.2		41.4	11.1	29.5	0		40.7	5.2	0	12.7		17.9	0	0.7	99.3	

	Eubanks Rd. Eastbound				Eubanks Rd. Westbound				Rogers Rd. Northbound				Southbound	
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1														
Peak Hour for Entire Intersection Begins at 07:15 AM														
07:15 AM	0	83	14	97	7	51	0	58	16	0	26	42	0	197
07:30 AM	0	108	26	134	4	50	0	54	25	0	25	50	0	238
07:45 AM	0	97	21	118	13	28	0	41	14	0	34	48	0	207
08:00 AM	0	87	17	104	15	21	0	36	10	0	27	37	0	177
Total Volume	0	375	78	453	39	150	0	189	65	0	112	177	0	819
% App. Total	0	82.8	17.2		20.6	79.4	0		36.7	0	63.3			
PHF	.000	.868	.750	.845	.650	.735	.000	.815	.650	.000	.824	.885	.000	.860

Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 05:00 PM

05:00 PM	0	31	6	37	32	67	0	99	12	0	19	31	0	167
05:15 PM	0	50	5	55	27	81	0	108	9	0	22	31	0	194
05:30 PM	0	42	8	50	30	86	0	116	7	0	17	24	0	190
05:45 PM	0	32	6	38	35	68	0	103	6	0	13	19	0	160
Total Volume	0	155	25	180	124	302	0	426	34	0	71	105	0	711
% App. Total	0	86.1	13.9		29.1	70.9	0		32.4	0	67.6			
PHF	.000	.775	.781	.818	.886	.878	.000	.918	.708	.000	.807	.847	.000	.916

Appendix D:

Intersection Spreadsheets

INTERSECTION ANALYSIS SHEET

Project: **Eubanks Road Mixed-Use**
 Location: **Carrboro, NC**
 Scenario: **2025 Build-out Year**
 Ct. Date: **4/16/2019**
 N/S Street: **Old NC 86**
 E/W Street: **Eubanks Road**

	AM In	AM Out	PM In	PM Out
Net New Trips:	203	163	183	214
Pass-By Trips:	15	13	37	41

Annual Growth Rate:	3.0%	Existing Year:	2019
Growth Factor:	0.194052	Buildout Year:	2025

AM PEAK HOUR
 AM PHF = 0.85

Description	Eubanks Road Eastbound			Eubanks Road Westbound			Old NC 86 Northbound			Old NC 86 Southbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2019 Traffic Count	0	0	0	141	0	27	0	276	402	63	280	0
Count Balancing	0	0	0	0	0	0	0	0	0	0	0	0
2019 Existing Traffic	0	0	0	141	0	27	0	276	402	63	280	0
Growth Factor (0.03 per year)	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
2025 Background Growth	0	0	0	27	0	5	0	54	78	12	54	0
Committed Projects												
Approved Development	0	0	0	0	0	0	0	0	0	0	0	0
Total Committed Traffic	0	0	0	0	0	0	0	0	0	0	0	0
2025 Background Traffic	0	0	0	168	0	32	0	330	480	75	334	0
Project Traffic												
Percent Assignment Inbound	0%	0%	0%	0%	0%	0%	0%	0%	20%	15%	0%	0%
Inbound Project Traffic	0	0	0	0	0	0	0	0	41	30	0	0
Percent Assignment Outbound	0%	0%	0%	20%	0%	15%	0%	0%	0%	0%	0%	0%
Outbound Project Traffic	0	0	0	33	0	24	0	0	0	0	0	0
Total External Site Traffic	0	0	0	33	0	24	0	0	41	30	0	0
Pass-By Capture Reduction	0	0	0	0	0	0	0	0	0	0	0	0
Pass-By Capture Assignment	0	0	0	0	0	0	0	0	0	0	0	0
Total Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Internal Capture Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Total Project Traffic	0	0	0	33	0	24	0	0	41	30	0	0
2025 Buildout Total	0	0	0	201	0	56	0	330	521	105	334	0
Percent Impact (Approach)	-	-	-	22.2%	-	-	4.8%	-	-	6.8%	-	-

Overall Percent Impact 8.3%

PM PEAK HOUR
 PM PHF = 0.85

Description	Eubanks Road Eastbound			Eubanks Road Westbound			Old NC 86 Northbound			Old NC 86 Southbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2019 Traffic Count	0	0	0	256	0	64	0	339	147	21	275	0
Count Balancing	0	0	0	0	0	0	0	0	0	0	0	0
2019 Existing Traffic	0	0	0	256	0	64	0	339	147	21	275	0
Growth Factor (0.03 per year)	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
2025 Background Growth	0	0	0	50	0	12	0	66	29	4	53	0
Committed Projects												
Approved Development	0	0	0	0	0	0	0	0	0	0	0	0
Total Committed Traffic	0	0	0	0	0	0	0	0	0	0	0	0
2025 Background Traffic	0	0	0	306	0	76	0	405	176	25	328	0
Project Traffic												
Percent Assignment Inbound	0%	0%	0%	0%	0%	0%	0%	0%	20%	15%	0%	0%
Inbound Project Traffic	0	0	0	0	0	0	0	0	37	27	0	0
Percent Assignment Outbound	0%	0%	0%	20%	0%	15%	0%	0%	0%	0%	0%	0%
Outbound Project Traffic	0	0	0	43	0	32	0	0	0	0	0	0
Total External Site Traffic	0	0	0	43	0	32	0	0	37	27	0	0
Pass-By Capture Reduction	0	0	0	0	0	0	0	0	0	0	0	0
Pass-By Capture Assignment	0	0	0	0	0	0	0	0	0	0	0	0
Total Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Internal Capture Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Total Project Traffic	0	0	0	43	0	32	0	0	37	27	0	0
2025 Buildout Total	0	0	0	349	0	108	0	405	213	52	328	0
Percent Impact (Approach)	-	-	-	16.4%	-	-	6.0%	-	-	7.1%	-	-

Overall Percent Impact 9.6%

INTERSECTION ANALYSIS SHEET

Project: **Eubanks Road Mixed-Use**
 Location: **Carrboro, NC**
 Scenario: **2025 Build-out Year**
 Ct. Date: **4/16/2019**
 N/S Street: **Dromoland Road/Central Site Drive**
 E/W Street: **Eubanks Road**

	AM In	AM Out	PM In	PM Out
Net New Trips:	203	163	183	214
Pass-By Trips:	15	13	37	41

Annual Growth Rate:	3.0%	Existing Year:	2019
Growth Factor:	0.194052	Buildout Year:	2025

AM PEAK HOUR
 AM PHF = 0.76

Description	Eubanks Road Eastbound			Eubanks Road Westbound			Dromoland Road Northbound			Central Site Drive Southbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2019 Traffic Count	0	463	3	1	169	0	1	0	6	0	0	0
Count Balancing	0	0	0	0	0	0	0	0	0	0	0	0
2019 Existing Traffic	0	463	3	1	169	0	1	0	6	0	0	0
Growth Factor (0.03 per year)	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
2025 Background Growth	0	90	1	0	33	0	0	0	1	0	0	0
Committed Projects												
Approved Development	0	0	0	0	0	0	0	0	0	0	0	0
Total Committed Traffic	0	0	0	0	0	0	0	0	0	0	0	0
2025 Background Traffic	0	553	4	1	202	0	1	0	7	0	0	0
Project Traffic												
Percent Assignment Inbound	20%	10%	0%	0%	10%	35%	0%	0%	0%	0%	0%	0%
Inbound Project Traffic	41	20	0	0	20	71	0	0	0	0	0	0
Percent Assignment Outbound	0%	10%	0%	0%	10%	0%	0%	0%	0%	35%	0%	20%
Outbound Project Traffic	0	16	0	0	16	0	0	0	0	57	0	33
Total External Site Traffic	41	36	0	0	36	71	0	0	0	57	0	33
Pass-By Capture Reduction	0	-5	0	0	-2	0	0	0	0	0	0	0
Pass-By Capture Assignment	5	0	0	0	0	2	0	0	0	5	0	2
Total Pass-By Traffic	5	-5	0	0	-3	3	0	0	0	5	0	2
Internal Capture Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Total Project Traffic	46	31	0	0	33	74	0	0	0	62	0	35
2025 Buildout Total	46	584	4	1	235	74	1	0	7	62	0	35
Percent Impact (Approach)		12.1%			34.5%			0.0%			100.0%	

Overall Percent Impact 26.8%

PM PEAK HOUR
 PM PHF = 0.88

Description	Eubanks Road Eastbound			Eubanks Road Westbound			Dromoland Road Northbound			Central Site Drive Southbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2019 Traffic Count	0	159	0	5	330	0	0	0	1	0	0	0
Count Balancing	0	0	0	0	0	0	0	0	0	0	0	0
2019 Existing Traffic	0	159	0	5	330	0	0	0	1	0	0	0
Growth Factor (0.03 per year)	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
2025 Background Growth	0	31	0	1	64	0	0	0	0	0	0	0
Committed Projects												
Approved Development	0	0	0	0	0	0	0	0	0	0	0	0
Total Committed Traffic	0	0	0	0	0	0	0	0	0	0	0	0
2025 Background Traffic	0	190	0	6	394	0	0	0	1	0	0	0
Project Traffic												
Percent Assignment Inbound	20%	10%	0%	0%	10%	35%	0%	0%	0%	0%	0%	0%
Inbound Project Traffic	37	18	0	0	18	64	0	0	0	0	0	0
Percent Assignment Outbound	0%	10%	0%	0%	10%	0%	0%	0%	0%	35%	0%	20%
Outbound Project Traffic	0	21	0	0	21	0	0	0	0	75	0	43
Total External Site Traffic	37	39	0	0	39	64	0	0	0	75	0	43
Pass-By Capture Reduction	0	-6	0	0	-13	0	0	0	0	0	0	0
Pass-By Capture Assignment	6	0	0	0	0	13	0	0	0	7	0	14
Total Pass-By Traffic	6	-6	0	0	-13	13	0	0	0	7	0	14
Internal Capture Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Total Project Traffic	43	33	0	0	26	77	0	0	0	82	0	57
2025 Buildout Total	43	223	0	6	420	77	0	0	1	82	0	57
Percent Impact (Approach)		28.6%			20.5%			0.0%			100.0%	

Overall Percent Impact 35.0%

INTERSECTION ANALYSIS SHEET

Project: **Eubanks Road Mixed-Use**
 Location: **Carrboro, NC**
 Scenario: **2025 Build-out Year**
 Ct. Date: **4/16/2019**
 N/S Street: **Morris Grove Elementary School/East Site Drive**
 E/W Street: **Eubanks Road**

	AM In	AM Out	PM In	PM Out
Net New Trips:	203	163	183	214
Pass-By Trips:	15	13	37	41

Annual Growth Rate:	3.0%	Existing Year:	2019
Growth Factor:	0.194052	Buildout Year:	2025

AM PEAK HOUR
 AM PHF = 0.66

Description	Eubanks Road Eastbound			Eubanks Road Westbound			Morris Grove Elementary School Northbound			East Site Drive Southbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2019 Traffic Count	0	321	145	132	84	0	92	0	131	0	0	0
Count Balancing	0	0	0	0	0	0	0	0	0	0	0	0
2019 Existing Traffic	0	321	145	132	84	0	92	0	131	0	0	0
Growth Factor (0.03 per year)	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
2025 Background Growth	0	62	28	26	16	0	18	0	25	0	0	0
Committed Projects												
Approved Development	0	0	0	0	0	0	0	0	0	0	0	0
Total Committed Traffic	0	0	0	0	0	0	0	0	0	0	0	0
2025 Background Traffic	0	383	173	158	100	0	110	0	156	0	0	0
Project Traffic												
Percent Assignment Inbound	10%	0%	0%	0%	45%	20%	0%	0%	0%	0%	0%	0%
Inbound Project Traffic	20	0	0	0	91	41	0	0	0	0	0	0
Percent Assignment Outbound	0%	45%	0%	0%	0%	0%	0%	0%	0%	20%	0%	10%
Outbound Project Traffic	0	73	0	0	0	0	0	0	0	33	0	16
Total External Site Traffic	20	73	0	0	91	41	0	0	0	33	0	16
Pass-By Capture Reduction	0	0	0	0	0	0	0	0	0	0	0	0
Pass-By Capture Assignment	0	0	0	0	0	0	0	0	0	0	0	0
Total Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Internal Capture Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Total Project Traffic	20	73	0	0	91	41	0	0	0	33	0	16
2025 Buildout Total	20	456	173	158	191	41	110	0	156	33	0	16
Percent Impact (Approach)		14.3%			33.8%			0.0%			100.0%	

Overall Percent Impact 20.2%

PM PEAK HOUR
 PM PHF = 0.89

Description	Eubanks Road Eastbound			Eubanks Road Westbound			Morris Grove Elementary School Northbound			East Site Drive Southbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2019 Traffic Count	0	150	12	31	303	0	29	0	28	0	0	0
Count Balancing	0	0	0	0	0	0	0	0	0	0	0	0
2019 Existing Traffic	0	150	12	31	303	0	29	0	28	0	0	0
Growth Factor (0.03 per year)	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
2025 Background Growth	0	29	2	6	59	0	6	0	5	0	0	0
Committed Projects												
Approved Development	0	0	0	0	0	0	0	0	0	0	0	0
Total Committed Traffic	0	0	0	0	0	0	0	0	0	0	0	0
2025 Background Traffic	0	179	14	37	362	0	35	0	33	0	0	0
Project Traffic												
Percent Assignment Inbound	10%	0%	0%	0%	45%	20%	0%	0%	0%	0%	0%	0%
Inbound Project Traffic	18	0	0	0	82	37	0	0	0	0	0	0
Percent Assignment Outbound	0%	45%	0%	0%	0%	0%	0%	0%	0%	20%	0%	10%
Outbound Project Traffic	0	96	0	0	0	0	0	0	0	43	0	21
Total External Site Traffic	18	96	0	0	82	37	0	0	0	43	0	21
Pass-By Capture Reduction	0	0	0	0	0	0	0	0	0	0	0	0
Pass-By Capture Assignment	0	0	0	0	0	0	0	0	0	0	0	0
Total Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Internal Capture Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Total Project Traffic	18	96	0	0	82	37	0	0	0	43	0	21
2025 Buildout Total	18	275	14	37	444	37	35	0	33	43	0	21
Percent Impact (Approach)		37.1%			23.0%			0.0%			100.0%	

Overall Percent Impact 31.0%

INTERSECTION ANALYSIS SHEET

Project:	Eubanks Road Mixed-Use
Location:	Carrboro, NC
Scenario:	2025 Build-out Year
Ct. Date	4/16/2019
N/S Street:	Rogers Road
E/W Street:	Eubanks Road

	AM In	AM Out	PM In	PM Out
Net New Trips:	203	163	183	214
Pass-By Trips:	15	13	37	41

Annual Growth Rate:	3.0%	Existing Year:	2019
Growth Factor:	0.194052	Buildout Year:	2025

AM PEAK HOUR
AM PHF = 0.86

Description	Eubanks Road Eastbound			Eubanks Road Westbound			Rogers Road Northbound			Southbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2019 Traffic Count	0	375	78	39	150	0	65	0	112	0	0	0
Count Balancing	0	0	0	0	0	0	0	0	0	0	0	0
2019 Existing Traffic	0	375	78	39	150	0	65	0	112	0	0	0
Growth Factor (0.03 per year)	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
2025 Background Growth	0	73	15	8	29	0	13	0	22	0	0	0
Committed Projects												
Approved Development	0	0	0	0	0	0	0	0	0	0	0	0
Total Committed Traffic	0	0	0	0	0	0	0	0	0	0	0	0
2025 Background Traffic	0	448	93	47	179	0	78	0	134	0	0	0
Project Traffic												
Percent Assignment Inbound	0%	0%	0%	0%	50%	0%	15%	0%	0%	0%	0%	0%
Inbound Project Traffic	0	0	0	0	102	0	30	0	0	0	0	0
Percent Assignment Outbound	0%	50%	15%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Outbound Project Traffic	0	82	24	0	0	0	0	0	0	0	0	0
Total External Site Traffic	0	82	24	0	102	0	30	0	0	0	0	0
Pass-By Capture Reduction	0	0	0	0	0	0	0	0	0	0	0	0
Pass-By Capture Assignment	0	0	0	0	0	0	0	0	0	0	0	0
Total Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Internal Capture Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Total Project Traffic	0	82	24	0	102	0	30	0	0	0	0	0
2025 Buildout Total	0	530	117	47	281	0	108	0	134	0	0	0
Percent Impact (Approach)		16.4%			31.1%			12.4%			-	

Overall Percent Impact 19.6%

PM PEAK HOUR
PM PHF = 0.92

Description	Eubanks Road Eastbound			Eubanks Road Westbound			Rogers Road Northbound			Southbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2019 Traffic Count	0	155	25	124	302	0	34	0	71	0	0	0
Count Balancing	0	0	0	0	0	0	0	0	0	0	0	0
2019 Existing Traffic	0	155	25	124	302	0	34	0	71	0	0	0
Growth Factor (0.03 per year)	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
2025 Background Growth	0	30	5	24	59	0	7	0	14	0	0	0
Committed Projects												
Approved Development	0	0	0	0	0	0	0	0	0	0	0	0
Total Committed Traffic	0	0	0	0	0	0	0	0	0	0	0	0
2025 Background Traffic	0	185	30	148	361	0	41	0	85	0	0	0
Project Traffic												
Percent Assignment Inbound	0%	0%	0%	0%	50%	0%	15%	0%	0%	0%	0%	0%
Inbound Project Traffic	0	0	0	0	92	0	27	0	0	0	0	0
Percent Assignment Outbound	0%	50%	15%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Outbound Project Traffic	0	107	32	0	0	0	0	0	0	0	0	0
Total External Site Traffic	0	107	32	0	92	0	27	0	0	0	0	0
Pass-By Capture Reduction	0	0	0	0	0	0	0	0	0	0	0	0
Pass-By Capture Assignment	0	0	0	0	0	0	0	0	0	0	0	0
Total Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Internal Capture Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Total Project Traffic	0	107	32	0	92	0	27	0	0	0	0	0
2025 Buildout Total	0	292	62	148	453	0	68	0	85	0	0	0
Percent Impact (Approach)		39.3%			15.3%			17.6%			-	

Overall Percent Impact 23.3%

INTERSECTION ANALYSIS SHEET

Project:	Eubanks Road Mixed-Use
Location:	Carrboro, NC
Scenario:	2025 Build-out Year
Ct. Date	Balanced with Adjacent Intersections
N/S Street:	West Site Drive
E/W Street:	Eubanks Road

	AM In	AM Out	PM In	PM Out
Net New Trips:	203	163	183	214
Pass-By Trips:	15	13	37	41

Annual Growth Rate:	3.0%	Existing Year:	2019
Growth Factor:	0.194052	Buildout Year:	2025

AM PEAK HOUR

AM PHF =

Description	Eubanks Road Eastbound			Eubanks Road Westbound			West Site Drive Northbound			Southbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2019 Traffic Count	0	0	0	0	0	0	0	0	0	0	0	0
Count Balancing	0	465	0	0	170	0	0	0	0	0	0	0
2019 Existing Traffic	0	465	0	0	170	0	0	0	0	0	0	0
Growth Factor (0.03 per year)	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
2025 Background Growth	0	90	0	0	33	0	0	0	0	0	0	0
Committed Projects												
Approved Development	0	0	0	0	0	0	0	0	0	0	0	0
Total Committed Traffic	0	0	0	0	0	0	0	0	0	0	0	0
2025 Background Traffic	0	555	0	0	203	0	0	0	0	0	0	0
Project Traffic												
Percent Assignment Inbound	0%	30%	5%	10%	0%	0%	0%	0%	0%	0%	0%	0%
Inbound Project Traffic	0	61	10	20	0	0	0	0	0	0	0	0
Percent Assignment Outbound	0%	0%	0%	0%	30%	0%	5%	0%	10%	0%	0%	0%
Outbound Project Traffic	0	0	0	0	49	0	8	0	16	0	0	0
Total External Site Traffic	0	61	10	20	49	0	8	0	16	0	0	0
Pass-By Capture Reduction	0	-5	0	0	-2	0	0	0	0	0	0	0
Pass-By Capture Assignment	0	0	5	2	0	0	2	0	5	0	0	0
Total Pass-By Traffic	0	-5	5	2	-2	0	1	0	5	0	0	0
Internal Capture Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Total Project Traffic	0	56	15	22	47	0	9	0	21	0	0	0
2025 Buildout Total	0	611	15	22	250	0	9	0	21	0	0	0
Percent Impact (Approach)		11.3%			25.4%			100.0%			-	

Overall Percent Impact 18.3%

PM PEAK HOUR

PM PHF =

Description	Eubanks Road Eastbound			Eubanks Road Westbound			West Site Drive Northbound			Southbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2019 Traffic Count	0	0	0	0	0	0	0	0	0	0	0	0
Count Balancing	0	168	0	0	330	0	0	0	0	0	0	0
2019 Existing Traffic	0	168	0	0	330	0	0	0	0	0	0	0
Growth Factor (0.03 per year)	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
2025 Background Growth	0	33	0	0	64	0	0	0	0	0	0	0
Committed Projects												
Approved Development	0	0	0	0	0	0	0	0	0	0	0	0
Total Committed Traffic	0	0	0	0	0	0	0	0	0	0	0	0
2025 Background Traffic	0	201	0	0	394	0	0	0	0	0	0	0
Project Traffic												
Percent Assignment Inbound	0%	30%	5%	10%	0%	0%	0%	0%	0%	0%	0%	0%
Inbound Project Traffic	0	55	9	18	0	0	0	0	0	0	0	0
Percent Assignment Outbound	0%	0%	0%	0%	30%	0%	5%	0%	10%	0%	0%	0%
Outbound Project Traffic	0	0	0	0	64	0	11	0	21	0	0	0
Total External Site Traffic	0	55	9	18	64	0	11	0	21	0	0	0
Pass-By Capture Reduction	0	-6	0	0	-12	0	0	0	0	0	0	0
Pass-By Capture Assignment	0	0	6	12	0	0	14	0	7	0	0	0
Total Pass-By Traffic	0	-6	6	12	-12	0	13	0	7	0	0	0
Internal Capture Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Total Project Traffic	0	49	15	30	52	0	24	0	28	0	0	0
2025 Buildout Total	0	250	15	30	446	0	24	0	28	0	0	0
Percent Impact (Approach)		24.2%			17.2%			100.0%			-	

Overall Percent Impact 25.0%

INTERSECTION ANALYSIS SHEET

Project: **Eubanks Road Mixed-Use**
 Location: **Carrboro, NC**
 Scenario: **2039 Buildout**
 Ct. Date: **4/16/2019**
 N/S Street: **Morris Grove Elementary School/East Site Drive**
 E/W Street: **Eubanks Road**

	AM In	AM Out	PM In	PM Out
Net New Trips:	203	163	183	214
Pass-By Trips:	15	13	37	41

Annual Growth Rate:	1.5%	Existing Year:	2019
Growth Factor:	0.346855	Buildout Year:	2039

AM PEAK HOUR
 AM PHF = 0.66

Description	Eubanks Road Eastbound			Eubanks Road Westbound			Morris Grove Elementary School Northbound			East Site Drive Southbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2019 Traffic Count	0	321	145	132	84	0	92	0	131	0	0	0
Count Balancing	0	0	0	0	0	0	0	0	0	0	0	0
2019 Existing Traffic	0	321	145	132	84	0	92	0	131	0	0	0
Growth Factor (0.015 per year)	0.347	0.347	0.347	0.347	0.347	0.347	0.347	0.347	0.347	0.347	0.347	0.347
2039 Background Growth	0	111	50	46	29	0	32	0	45	0	0	0
Committed Projects												
Approved Development	0	0	0	0	0	0	0	0	0	0	0	0
Total Committed Traffic	0	0	0	0	0	0	0	0	0	0	0	0
2039 Background Traffic	0	432	195	178	113	0	124	0	176	0	0	0
Project Traffic												
Percent Assignment Inbound	10%	0%	0%	0%	45%	20%	0%	0%	0%	0%	0%	0%
Inbound Project Traffic	20	0	0	0	91	41	0	0	0	0	0	0
Percent Assignment Outbound	0%	45%	0%	0%	0%	0%	0%	0%	0%	20%	0%	10%
Outbound Project Traffic	0	73	0	0	0	0	0	0	0	33	0	16
Total External Site Traffic	20	73	0	0	91	41	0	0	0	33	0	16
Pass-By Capture Reduction	0	0	0	0	0	0	0	0	0	0	0	0
Pass-By Capture Assignment	0	0	0	0	0	0	0	0	0	0	0	0
Total Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Internal Capture Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Total Project Traffic	20	73	0	0	91	41	0	0	0	33	0	16
2039 Buildout Total	20	505	195	178	204	41	124	0	176	33	0	16
Percent Impact (Approach)		12.9%			31.2%			0.0%			100.0%	

Overall Percent Impact 18.4%

PM PEAK HOUR
 PM PHF = 0.89

Description	Eubanks Road Eastbound			Eubanks Road Westbound			Morris Grove Elementary School Northbound			East Site Drive Southbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2019 Traffic Count	0	150	12	31	303	0	29	0	28	0	0	0
Count Balancing	0	0	0	0	0	0	0	0	0	0	0	0
2019 Existing Traffic	0	150	12	31	303	0	29	0	28	0	0	0
Growth Factor (0.015 per year)	0.347	0.347	0.347	0.347	0.347	0.347	0.347	0.347	0.347	0.347	0.347	0.347
2039 Background Growth	0	52	4	11	105	0	10	0	10	0	0	0
Committed Projects												
Approved Development	0	0	0	0	0	0	0	0	0	0	0	0
Total Committed Traffic	0	0	0	0	0	0	0	0	0	0	0	0
2039 Background Traffic	0	202	16	42	408	0	39	0	38	0	0	0
Project Traffic												
Percent Assignment Inbound	10%	0%	0%	0%	45%	20%	0%	0%	0%	0%	0%	0%
Inbound Project Traffic	18	0	0	0	82	37	0	0	0	0	0	0
Percent Assignment Outbound	0%	45%	0%	0%	0%	0%	0%	0%	0%	20%	0%	10%
Outbound Project Traffic	0	96	0	0	0	0	0	0	0	43	0	21
Total External Site Traffic	18	96	0	0	82	37	0	0	0	43	0	21
Pass-By Capture Reduction	0	0	0	0	0	0	0	0	0	0	0	0
Pass-By Capture Assignment	0	0	0	0	0	0	0	0	0	0	0	0
Total Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Internal Capture Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Total Project Traffic	18	96	0	0	82	37	0	0	0	43	0	21
2039 Buildout Total	18	298	16	42	490	37	39	0	38	43	0	21
Percent Impact (Approach)		34.3%			20.9%			0.0%			100.0%	

Overall Percent Impact 28.5%

Appendix E:
Synchro Output:
Existing (2019)

Eubanks Road Mixed Use
1: Old NC 86 & Eubanks Road

Existing AM
04/26/2019

Intersection							
Int Delay, s/veh	3.6						
Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations							
Traffic Vol, veh/h	141	27	276	402	63	280	
Future Vol, veh/h	141	27	276	402	63	280	
Conflicting Peds, #/hr	0	0	0	0	0	0	
Sign Control	Stop	Stop	Free	Free	Free	Free	
RT Channelized	-	None	-	None	-	None	
Storage Length	185	0	-	120	140	-	
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	2	2	2	
Mvmt Flow	157	30	307	447	70	311	
Major/Minor	Minor1	Major1		Major2			
Conflicting Flow All	758	307	0	0	754	0	
Stage 1	307	-	-	-	-	-	
Stage 2	451	-	-	-	-	-	
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	375	733	-	-	856	-	
Stage 1	746	-	-	-	-	-	
Stage 2	642	-	-	-	-	-	
Platoon blocked, %			-	-		-	
Mov Cap-1 Maneuver	344	733	-	-	856	-	
Mov Cap-2 Maneuver	344	-	-	-	-	-	
Stage 1	685	-	-	-	-	-	
Stage 2	642	-	-	-	-	-	
Approach	WB	NB		SB			
HCM Control Delay, s	21.7	0		1.8			
HCM LOS	C						
Minor Lane/Major Mvmt		NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)		-	-	344	733	856	-
HCM Lane V/C Ratio		-	-	0.455	0.041	0.082	-
HCM Control Delay (s)		-	-	23.9	10.1	9.6	-
HCM Lane LOS		-	-	C	B	A	-
HCM 95th %tile Q(veh)		-	-	2.3	0.1	0.3	-

Eubanks Road Mixed Use
2: Dromoland Road & Eubanks Road

Existing AM
04/26/2019

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	463	4	4	169	4	6
Future Volume (vph)	463	4	4	169	4	6
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	0.999				0.914	
Flt Protected				0.999	0.982	
Satd. Flow (prot)	1861	0	0	1861	1672	0
Flt Permitted				0.999	0.982	
Satd. Flow (perm)	1861	0	0	1861	1672	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	688			828	355	
Travel Time (s)	13.4			16.1	9.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	514	4	4	188	4	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	518	0	0	192	11	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type: Unsignalized						
Intersection Capacity Utilization 34.6%						
ICU Level of Service A						
Analysis Period (min) 15						

MOVEMENT SUMMARY



Site: 3 [Eubanks Road at Morris Grove Elementary School]

Existing AM
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Morris Grove Elementary School												
3	L2	102	2.0	0.265	6.6	LOS A	1.6	41.3	0.59	0.46	0.59	32.8
18	R2	146	2.0	0.265	6.6	LOS A	1.6	41.3	0.59	0.46	0.59	32.0
Approach		248	2.0	0.265	6.6	LOS A	1.6	41.3	0.59	0.46	0.59	32.3
East: Eubanks Road												
1	L2	147	2.0	0.205	4.9	LOS A	1.3	31.9	0.33	0.17	0.33	33.2
6	T1	93	2.0	0.205	4.9	LOS A	1.3	31.9	0.33	0.17	0.33	33.2
Approach		240	2.0	0.205	4.9	LOS A	1.3	31.9	0.33	0.17	0.33	33.2
West: Eubanks Road												
2	T1	357	2.0	0.457	8.1	LOS A	3.4	86.7	0.47	0.30	0.47	33.1
12	R2	161	2.0	0.457	8.1	LOS A	3.4	86.7	0.47	0.30	0.47	32.3
Approach		518	2.0	0.457	8.1	LOS A	3.4	86.7	0.47	0.30	0.47	32.8
All Vehicles		1006	2.0	0.457	7.0	LOS A	3.4	86.7	0.47	0.30	0.47	32.8

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: SIDRA Standard.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Organisation: KIMLEY-HORN & ASSOCIATES INC | Processed: Friday, April 26, 2019 10:40:15 AM

Project: K:\DUR_LDEV\Eubanks Road Mixed Use\T4 - Analysis\SIDRA\Existing AM.sip8

Eubanks Road Mixed Use
4: Rogers Road & Eubanks Road

Existing AM
04/26/2019

Intersection						
Int Delay, s/veh	4.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	375	78	39	150	65	112
Future Vol, veh/h	375	78	39	150	65	112
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, %	2	2	2	2	2	2
Mvmt Flow	417	87	43	167	72	124
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	504	0	714	461
Stage 1	-	-	-	-	461	-
Stage 2	-	-	-	-	253	-
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	-	398	600
Stage 1	-	-	-	-	635	-
Stage 2	-	-	-	-	789	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1061	-	380	600
Mov Cap-2 Maneuver	-	-	-	-	380	-
Stage 1	-	-	-	-	606	-
Stage 2	-	-	-	-	789	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		1.8		17	
HCM LOS					C	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	495	-	-	1061	-	
HCM Lane V/C Ratio	0.397	-	-	0.041	-	
HCM Control Delay (s)	17	-	-	8.5	0	
HCM Lane LOS	C	-	-	A	A	
HCM 95th %tile Q(veh)	1.9	-	-	0.1	-	

Eubanks Road Mixed Use
1: Old NC 86 & Eubanks Road

Existing PM
04/26/2019

Intersection						
Int Delay, s/veh	9.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	256	64	339	147	21	275
Future Vol, veh/h	256	64	339	147	21	275
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	185	0	-	120	140	-
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	2	2	2
Mvmt Flow	284	71	377	163	23	306
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	729	377	0	0	540	0
Stage 1	377	-	-	-	-	-
Stage 2	352	-	-	-	-	-
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	390	670	-	-	1028	-
Stage 1	694	-	-	-	-	-
Stage 2	712	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	381	670	-	-	1028	-
Mov Cap-2 Maneuver	381	-	-	-	-	-
Stage 1	679	-	-	-	-	-
Stage 2	712	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	32.3	0		0.6		
HCM LOS	D					
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	381	670	1028	-
HCM Lane V/C Ratio	-	-	0.747	0.106	0.023	-
HCM Control Delay (s)	-	-	37.6	11	8.6	-
HCM Lane LOS	-	-	E	B	A	-
HCM 95th %tile Q(veh)	-	-	5.9	0.4	0.1	-

Eubanks Road Mixed Use
2: Dromoland Road & Eubanks Road

Existing PM
04/26/2019

Intersection						
Int Delay, s/veh	0.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	159	4	5	330	4	4
Future Vol, veh/h	159	4	5	330	4	4
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, %	2	2	2	2	2	2
Mvmt Flow	177	4	6	367	4	4
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	181	0	558	179
Stage 1	-	-	-	-	179	-
Stage 2	-	-	-	-	379	-
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	-	-	1394	-	491	864
Stage 1	-	-	-	-	852	-
Stage 2	-	-	-	-	692	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1394	-	489	864
Mov Cap-2 Maneuver	-	-	-	-	489	-
Stage 1	-	-	-	-	848	-
Stage 2	-	-	-	-	692	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	0.1		10.8		
HCM LOS	B					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	625	-	-	1394	-	
HCM Lane V/C Ratio	0.014	-	-	0.004	-	
HCM Control Delay (s)	10.8	-	-	7.6	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	0	-	-	0	-	

MOVEMENT SUMMARY



Site: 3 [Eubanks Road at Morris Grove Elementary School]

Existing PM
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Morris Grove Elementary School												
3	L2	32	2.0	0.056	3.7	LOS A	0.3	7.0	0.33	0.18	0.33	34.0
18	R2	31	2.0	0.056	3.7	LOS A	0.3	7.0	0.33	0.18	0.33	33.2
Approach		63	2.0	0.056	3.7	LOS A	0.3	7.0	0.33	0.18	0.33	33.6
East: Eubanks Road												
1	L2	34	2.0	0.293	5.5	LOS A	1.9	48.4	0.18	0.06	0.18	34.2
6	T1	337	2.0	0.293	5.5	LOS A	1.9	48.4	0.18	0.06	0.18	34.2
Approach		371	2.0	0.293	5.5	LOS A	1.9	48.4	0.18	0.06	0.18	34.2
West: Eubanks Road												
2	T1	167	2.0	0.142	4.0	LOS A	0.8	19.1	0.15	0.05	0.15	35.2
12	R2	13	2.0	0.142	4.0	LOS A	0.8	19.1	0.15	0.05	0.15	34.3
Approach		180	2.0	0.142	4.0	LOS A	0.8	19.1	0.15	0.05	0.15	35.1
All Vehicles		614	2.0	0.293	4.9	LOS A	1.9	48.4	0.19	0.07	0.19	34.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: SIDRA Standard.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Organisation: KIMLEY-HORN & ASSOCIATES INC | Processed: Friday, April 26, 2019 10:41:39 AM

Project: K:\DUR_LDEV\Eubanks Road Mixed Use\T4 - Analysis\SIDRA\Existing PM.sip8

Eubanks Road Mixed Use
4: Rogers Road & Eubanks Road

Existing PM
04/26/2019

Intersection						
Int Delay, s/veh	3.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	155	25	124	302	34	71
Future Vol, veh/h	155	25	124	302	34	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	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	168	27	135	328	37	77
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	195	0	780	182
Stage 1	-	-	-	-	182	-
Stage 2	-	-	-	-	598	-
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	-	-	1378	-	364	861
Stage 1	-	-	-	-	849	-
Stage 2	-	-	-	-	549	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1378	-	320	861
Mov Cap-2 Maneuver	-	-	-	-	320	-
Stage 1	-	-	-	-	747	-
Stage 2	-	-	-	-	549	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	2.3		13.1		
HCM LOS	B					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	556	-	-	1378	-	
HCM Lane V/C Ratio	0.205	-	-	0.098	-	
HCM Control Delay (s)	13.1	-	-	7.9	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	0.8	-	-	0.3	-	

Appendix F:
Synchro Output:
Background (2025)

Eubanks Road Mixed Use
1: Old NC 86 & Eubanks Road

Background AM

04/26/2019

Intersection						
Int Delay, s/veh	5.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	168	32	330	480	75	334
Future Vol, veh/h	168	32	330	480	75	334
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	185	0	-	120	140	-
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	2	2	2
Mvmt Flow	187	36	367	533	83	371
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	904	367	0	0	900	0
Stage 1	367	-	-	-	-	-
Stage 2	537	-	-	-	-	-
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	307	678	-	-	755	-
Stage 1	701	-	-	-	-	-
Stage 2	586	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	273	678	-	-	755	-
Mov Cap-2 Maneuver	273	-	-	-	-	-
Stage 1	624	-	-	-	-	-
Stage 2	586	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	37.4	0		1.9		
HCM LOS	E					
Minor Lane/Major Mvmt	NBT	NBRWBLn1WBLn2		SBL	SBT	
Capacity (veh/h)	-	-	273	678	755	-
HCM Lane V/C Ratio	-	-	0.684	0.052	0.11	-
HCM Control Delay (s)	-	-	42.5	10.6	10.4	-
HCM Lane LOS	-	-	E	B	B	-
HCM 95th %tile Q(veh)	-	-	4.6	0.2	0.4	-

Eubanks Road Mixed Use
2: Dromoland Road & Eubanks Road

Background AM

04/26/2019

Intersection						
Int Delay, s/veh	0.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	553	4	4	202	4	7
Future Vol, veh/h	553	4	4	202	4	7
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, %	2	2	2	2	2	2
Mvmt Flow	614	4	4	224	4	8
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	618	0	848	616
Stage 1	-	-	-	-	616	-
Stage 2	-	-	-	-	232	-
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	-	-	962	-	332	491
Stage 1	-	-	-	-	539	-
Stage 2	-	-	-	-	807	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	962	-	330	491
Mov Cap-2 Maneuver	-	-	-	-	330	-
Stage 1	-	-	-	-	536	-
Stage 2	-	-	-	-	807	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.2		13.9	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	417	-	-	962	-	
HCM Lane V/C Ratio	0.029	-	-	0.005	-	
HCM Control Delay (s)	13.9	-	-	8.8	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	0.1	-	-	0	-	

MOVEMENT SUMMARY



Site: 3 [Eubanks Road at Morris Grove Elementary School]

Background AM

Site Category: (None)

Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Morris Grove Elementary School												
3	L2	122	2.0	0.340	8.0	LOS A	2.3	57.2	0.68	0.57	0.68	32.1
18	R2	173	2.0	0.340	8.0	LOS A	2.3	57.2	0.68	0.57	0.68	31.4
Approach		296	2.0	0.340	8.0	LOS A	2.3	57.2	0.68	0.57	0.68	31.7
East: Eubanks Road												
1	L2	176	2.0	0.250	5.4	LOS A	1.6	41.3	0.38	0.21	0.38	32.9
6	T1	111	2.0	0.250	5.4	LOS A	1.6	41.3	0.38	0.21	0.38	32.9
Approach		287	2.0	0.250	5.4	LOS A	1.6	41.3	0.38	0.21	0.38	32.9
West: Eubanks Road												
2	T1	426	2.0	0.561	10.2	LOS B	4.7	120.6	0.58	0.40	0.58	32.1
12	R2	192	2.0	0.561	10.2	LOS B	4.7	120.6	0.58	0.40	0.58	31.3
Approach		618	2.0	0.561	10.2	LOS B	4.7	120.6	0.58	0.40	0.58	31.9
All Vehicles		1200	2.0	0.561	8.5	LOS A	4.7	120.6	0.56	0.39	0.56	32.1

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: SIDRA Standard.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Organisation: KIMLEY-HORN & ASSOCIATES INC | Processed: Friday, April 26, 2019 10:43:24 AM

Project: K:\DUR_LDEV\Eubanks Road Mixed Use\T4 - Analysis\SIDRA\Background AM.sip8

Eubanks Road Mixed Use
4: Rogers Road & Eubanks Road

Background AM
04/26/2019

Intersection						
Int Delay, s/veh	5.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	448	93	47	179	78	134
Future Vol, veh/h	448	93	47	179	78	134
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, %	2	2	2	2	2	2
Mvmt Flow	498	103	52	199	87	149
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	601	0	853	550
Stage 1	-	-	-	-	550	-
Stage 2	-	-	-	-	303	-
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	-	-	976	-	330	535
Stage 1	-	-	-	-	578	-
Stage 2	-	-	-	-	749	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	976	-	310	535
Mov Cap-2 Maneuver	-	-	-	-	310	-
Stage 1	-	-	-	-	543	-
Stage 2	-	-	-	-	749	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		1.9		23.8	
HCM LOS					C	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	422	-	-	976	-	
HCM Lane V/C Ratio	0.558	-	-	0.054	-	
HCM Control Delay (s)	23.8	-	-	8.9	0	
HCM Lane LOS	C	-	-	A	A	
HCM 95th %tile Q(veh)	3.3	-	-	0.2	-	

Eubanks Road Mixed Use
1: Old NC 86 & Eubanks Road

Background PM
04/26/2019

Intersection						
Int Delay, s/veh	27.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	306	76	405	176	25	328
Future Vol, veh/h	306	76	405	176	25	328
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	185	0	-	120	140	-
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	2	2	2
Mvmt Flow	340	84	450	196	28	364
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	870	450	0	0	646	0
Stage 1	450	-	-	-	-	-
Stage 2	420	-	-	-	-	-
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	~ 322	609	-	-	939	-
Stage 1	642	-	-	-	-	-
Stage 2	663	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 312	609	-	-	939	-
Mov Cap-2 Maneuver	~ 312	-	-	-	-	-
Stage 1	623	-	-	-	-	-
Stage 2	663	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	94.2	0		0.6		
HCM LOS	F					
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	312	609	939	-
HCM Lane V/C Ratio	-	-	1.09	0.139	0.03	-
HCM Control Delay (s)	-	-	114.6	11.9	9	-
HCM Lane LOS	-	-	F	B	A	-
HCM 95th %tile Q(veh)	-	-	13.2	0.5	0.1	-
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

Eubanks Road Mixed Use
2: Dromoland Road & Eubanks Road

Background PM

04/26/2019

Intersection						
Int Delay, s/veh	0.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	190	4	6	394	4	4
Future Vol, veh/h	190	4	6	394	4	4
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, %	2	2	2	2	2	2
Mvmt Flow	211	4	7	438	4	4
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	215	0	665	213
Stage 1	-	-	-	-	213	-
Stage 2	-	-	-	-	452	-
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	-	-	1355	-	425	827
Stage 1	-	-	-	-	823	-
Stage 2	-	-	-	-	641	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1355	-	422	827
Mov Cap-2 Maneuver	-	-	-	-	422	-
Stage 1	-	-	-	-	817	-
Stage 2	-	-	-	-	641	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	0.1		11.5		
HCM LOS	B					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	559	-	-	1355	-	
HCM Lane V/C Ratio	0.016	-	-	0.005	-	
HCM Control Delay (s)	11.5	-	-	7.7	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	0	-	-	0	-	

MOVEMENT SUMMARY



Site: 3 [Eubanks Road at Morris Grove Elementary School]

Background PM

Site Category: (None)

Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Morris Grove Elementary School												
3	L2	39	2.0	0.069	3.9	LOS A	0.3	8.7	0.37	0.21	0.37	33.9
18	R2	37	2.0	0.069	3.9	LOS A	0.3	8.7	0.37	0.21	0.37	33.1
Approach		76	2.0	0.069	3.9	LOS A	0.3	8.7	0.37	0.21	0.37	33.5
East: Eubanks Road												
1	L2	41	2.0	0.352	6.2	LOS A	2.5	63.1	0.22	0.08	0.22	33.8
6	T1	402	2.0	0.352	6.2	LOS A	2.5	63.1	0.22	0.08	0.22	33.8
Approach		443	2.0	0.352	6.2	LOS A	2.5	63.1	0.22	0.08	0.22	33.8
West: Eubanks Road												
2	T1	199	2.0	0.170	4.3	LOS A	0.9	23.7	0.18	0.06	0.18	35.1
12	R2	16	2.0	0.170	4.3	LOS A	0.9	23.7	0.18	0.06	0.18	34.2
Approach		214	2.0	0.170	4.3	LOS A	0.9	23.7	0.18	0.06	0.18	35.0
All Vehicles		733	2.0	0.352	5.4	LOS A	2.5	63.1	0.22	0.09	0.22	34.1

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: SIDRA Standard.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Project: K:\DUR_LDEV\Eubanks Road Mixed Use\T4 - Analysis\SIDRA\Background PM.sip8

Eubanks Road Mixed Use
4: Rogers Road & Eubanks Road

Background PM

04/26/2019

Intersection						
Int Delay, s/veh	3.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	185	30	148	361	41	85
Future Vol, veh/h	185	30	148	361	41	85
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	201	33	161	392	45	92
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	234	0	932	218
Stage 1	-	-	-	-	218	-
Stage 2	-	-	-	-	714	-
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	-	-	1333	-	296	822
Stage 1	-	-	-	-	818	-
Stage 2	-	-	-	-	485	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1333	-	250	822
Mov Cap-2 Maneuver	-	-	-	-	250	-
Stage 1	-	-	-	-	692	-
Stage 2	-	-	-	-	485	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		2.3		15.7	
HCM LOS					C	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	471	-	-	1333	-	
HCM Lane V/C Ratio	0.291	-	-	0.121	-	
HCM Control Delay (s)	15.7	-	-	8.1	0	
HCM Lane LOS	C	-	-	A	A	
HCM 95th %tile Q(veh)	1.2	-	-	0.4	-	

Appendix G:
Synchro Output:
Build-out (2025)

Eubanks Road Mixed Use
1: Old NC 86 & Eubanks Road

Build AM
04/26/2019

Intersection						
Int Delay, s/veh	12.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	201	56	330	521	105	334
Future Vol, veh/h	201	56	330	521	105	334
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	185	0	-	120	140	-
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	2	2	2
Mvmt Flow	223	62	367	579	117	371
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	972	367	0	0	946	0
Stage 1	367	-	-	-	-	-
Stage 2	605	-	-	-	-	-
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	280	678	-	-	725	-
Stage 1	701	-	-	-	-	-
Stage 2	545	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	235	678	-	-	725	-
Mov Cap-2 Maneuver	235	-	-	-	-	-
Stage 1	588	-	-	-	-	-
Stage 2	545	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	73.4	0		2.6		
HCM LOS	F					
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	235	678	725	-
HCM Lane V/C Ratio	-	-	0.95	0.092	0.161	-
HCM Control Delay (s)	-	-	90.9	10.8	10.9	-
HCM Lane LOS	-	-	F	B	B	-
HCM 95th %tile Q(veh)	-	-	8.5	0.3	0.6	-

Eubanks Road Mixed Use
2: Dromoland Road/Central Site Drive & Eubanks Road

Build AM
04/26/2019

Intersection												
Int Delay, s/veh	3.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	46	584	4	4	235	74	4	4	7	62	4	35
Future Vol, veh/h	46	584	4	4	235	74	4	4	7	62	4	35
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	-	-	-	-	-	-	-	-	-	-	-	-
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	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	51	649	4	4	261	82	4	4	8	69	4	39
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	343	0	0	653	0	0	1085	1104	651	1069	1065	302
Stage 1	-	-	-	-	-	-	753	753	-	310	310	-
Stage 2	-	-	-	-	-	-	332	351	-	759	755	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	3.318
Pot Cap-1 Maneuver	1216	-	-	934	-	-	194	211	469	199	223	738
Stage 1	-	-	-	-	-	-	402	417	-	700	659	-
Stage 2	-	-	-	-	-	-	681	632	-	399	417	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1216	-	-	934	-	-	171	196	469	182	207	738
Mov Cap-2 Maneuver	-	-	-	-	-	-	171	196	-	182	207	-
Stage 1	-	-	-	-	-	-	375	389	-	654	656	-
Stage 2	-	-	-	-	-	-	638	629	-	362	389	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.6			0.1			20.1			31		
HCM LOS							C			D		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	255	1216	-	-	934	-	-	248				
HCM Lane V/C Ratio	0.065	0.042	-	-	0.005	-	-	0.453				
HCM Control Delay (s)	20.1	8.1	0	-	8.9	0	-	31				
HCM Lane LOS	C	A	A	-	A	A	-	D				
HCM 95th %tile O(veh)	0.2	0.1	-	-	0	-	-	2.2				

MOVEMENT SUMMARY



Site: 3 [Eubanks Road at Morris Grove Elementary School/East Site Drive]

Build AM
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Morris Grove Elementary School												
3	L2	122	2.0	0.398	9.9	LOS A	2.8	69.9	0.78	0.71	0.78	31.3
8	T1	4	2.0	0.398	9.9	LOS A	2.8	69.9	0.78	0.71	0.78	31.3
18	R2	173	2.0	0.398	9.9	LOS A	2.8	69.9	0.78	0.71	0.78	30.6
Approach		300	2.0	0.398	9.9	LOS A	2.8	69.9	0.78	0.71	0.78	30.9
East: Eubanks Road												
1	L2	176	2.0	0.389	7.2	LOS A	2.9	72.9	0.47	0.29	0.47	32.5
6	T1	212	2.0	0.389	7.2	LOS A	2.9	72.9	0.47	0.29	0.47	32.6
16	R2	46	2.0	0.389	7.2	LOS A	2.9	72.9	0.47	0.29	0.47	31.8
Approach		433	2.0	0.389	7.2	LOS A	2.9	72.9	0.47	0.29	0.47	32.5
North: East Site Drive												
7	L2	37	2.0	0.071	5.1	LOS A	0.4	9.8	0.60	0.45	0.60	33.0
4	T1	4	2.0	0.071	5.1	LOS A	0.4	9.8	0.60	0.45	0.60	33.1
14	R2	18	2.0	0.071	5.1	LOS A	0.4	9.8	0.60	0.45	0.60	32.3
Approach		59	2.0	0.071	5.1	LOS A	0.4	9.8	0.60	0.45	0.60	32.8
West: Eubanks Road												
5	L2	22	2.0	0.576	10.8	LOS B	4.8	122.4	0.64	0.46	0.64	31.7
2	T1	507	2.0	0.576	10.8	LOS B	4.8	122.4	0.64	0.46	0.64	31.8
12	R2	81	2.0	0.576	10.8	LOS B	4.8	122.4	0.64	0.46	0.64	31.0
Approach		610	2.0	0.576	10.8	LOS B	4.8	122.4	0.64	0.46	0.64	31.7
All Vehicles		1402	2.0	0.576	9.3	LOS A	4.8	122.4	0.62	0.46	0.62	31.8

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: SIDRA Standard.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Eubanks Road Mixed Use
4: Rogers Road & Eubanks Road

Build AM
04/26/2019

Intersection						
Int Delay, s/veh	11.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	530	117	47	281	108	134
Future Vol, veh/h	530	117	47	281	108	134
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, %	2	2	2	2	2	2
Mvmt Flow	589	130	52	312	120	149
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	719	0	1070	654
Stage 1	-	-	-	-	654	-
Stage 2	-	-	-	-	416	-
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	-	-	882	-	245	467
Stage 1	-	-	-	-	517	-
Stage 2	-	-	-	-	666	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	882	-	228	467
Mov Cap-2 Maneuver	-	-	-	-	228	-
Stage 1	-	-	-	-	480	-
Stage 2	-	-	-	-	666	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		1.3		55.8	
HCM LOS					F	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	318	-	-	882	-	
HCM Lane V/C Ratio	0.846	-	-	0.059	-	
HCM Control Delay (s)	55.8	-	-	9.3	0	
HCM Lane LOS	F	-	-	A	A	
HCM 95th %tile Q(veh)	7.4	-	-	0.2	-	

Eubanks Road Mixed Use
5: West Site Drive & Eubanks Road

Build AM
04/26/2019

Intersection						
Int Delay, s/veh	0.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	611	15	22	250	9	21
Future Vol, veh/h	611	15	22	250	9	21
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, %	2	2	2	2	2	2
Mvmt Flow	679	17	24	278	10	23
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	696	0	1014	688
Stage 1	-	-	-	-	688	-
Stage 2	-	-	-	-	326	-
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	-	-	900	-	264	446
Stage 1	-	-	-	-	499	-
Stage 2	-	-	-	-	731	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	900	-	256	446
Mov Cap-2 Maneuver	-	-	-	-	256	-
Stage 1	-	-	-	-	483	-
Stage 2	-	-	-	-	731	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	0.7		15.9		
HCM LOS	C					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	365	-	-	900	-	
HCM Lane V/C Ratio	0.091	-	-	0.027	-	
HCM Control Delay (s)	15.9	-	-	9.1	0	
HCM Lane LOS	C	-	-	A	A	
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-	

Eubanks Road Mixed Use
1: Old NC 86 & Eubanks Road

Build AM (with Eubanks Road - Old NC 86 Signal)

04/30/2019

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	201	56	330	521	105	334
Future Volume (vph)	201	56	330	521	105	334
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	185	0		120	140	
Storage Lanes	1	1		1	1	
Taper Length (ft)	100				100	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frnt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1583	1863	1583	1770	1863
Flt Permitted	0.950				0.524	
Satd. Flow (perm)	1770	1583	1863	1583	976	1863
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		62		579		
Link Speed (mph)	45		45			45
Link Distance (ft)	312		605			582
Travel Time (s)	4.7		9.2			8.8
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	223	62	367	579	117	371
Shared Lane Traffic (%)						
Lane Group Flow (vph)	223	62	367	579	117	371
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1	1	1	0	1	1
Detector Template	Left	Right			Left	
Leading Detector (ft)	40	40	106	0	40	106
Trailing Detector (ft)	0	0	100	0	0	100
Detector 1 Position(ft)	0	0	100	0	0	100
Detector 1 Size(ft)	40	40	6	20	40	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	7.0	7.0	12.0	12.0	12.0	12.0
Minimum Split (s)	15.0	15.0	20.0	20.0	20.0	20.0
Total Split (s)	20.0	20.0	40.0	40.0	40.0	40.0

Eubanks Road Mixed Use
1: Old NC 86 & Eubanks Road

Build AM (with Eubanks Road - Old NC 86 Signal)

04/30/2019

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Total Split (%)	33.3%	33.3%	66.7%	66.7%	66.7%	66.7%
Maximum Green (s)	13.0	13.0	33.0	33.0	33.0	33.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	Min	Min	Min	Min
Act Effect Green (s)	12.0	12.0	18.2	18.2	18.2	18.2
Actuated g/C Ratio	0.30	0.30	0.45	0.45	0.45	0.45
v/c Ratio	0.42	0.12	0.44	0.56	0.27	0.44
Control Delay	13.7	4.4	10.1	3.4	9.7	10.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.7	4.4	10.1	3.4	9.7	10.2
LOS	B	A	B	A	A	B
Approach Delay	11.7		6.0			10.1
Approach LOS	B		A			B

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 40.4

Natural Cycle: 40

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.56

Intersection Signal Delay: 8.1

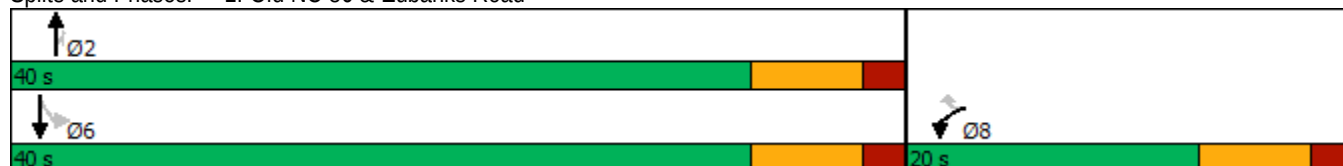
Intersection LOS: A

Intersection Capacity Utilization 51.0%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: Old NC 86 & Eubanks Road



Eubanks Road Mixed Use
1: Old NC 86 & Eubanks Road

Build PM
04/26/2019

Intersection						
Int Delay, s/veh	57.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	349	108	405	213	52	328
Future Vol, veh/h	349	108	405	213	52	328
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	185	0	-	120	140	-
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	2	2	2
Mvmt Flow	388	120	450	237	58	364
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	930	450	0	0	687	0
Stage 1	450	-	-	-	-	-
Stage 2	480	-	-	-	-	-
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	~ 297	609	-	-	907	-
Stage 1	642	-	-	-	-	-
Stage 2	622	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 278	609	-	-	907	-
Mov Cap-2 Maneuver	~ 278	-	-	-	-	-
Stage 1	601	-	-	-	-	-
Stage 2	622	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	181.2	0		1.3		
HCM LOS	F					
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	278	609	907	-
HCM Lane V/C Ratio	-	-	1.395	0.197	0.064	-
HCM Control Delay (s)	-	-	233.4	12.4	9.2	-
HCM Lane LOS	-	-	F	B	A	-
HCM 95th %tile Q(veh)	-	-	20.7	0.7	0.2	-
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

Eubanks Road Mixed Use
2: Dromoland Road/Central Site Drive & Eubanks Road

Build PM
04/26/2019

Intersection												
Int Delay, s/veh	4.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	43	223	4	6	420	77	4	4	4	82	4	57
Future Vol, veh/h	43	223	4	6	420	77	4	4	4	82	4	57
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	-	-	-	-	-	-	-	-	-	-	-	-
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	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	48	248	4	7	467	86	4	4	4	91	4	63
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	553	0	0	252	0	0	904	913	250	874	872	510
Stage 1	-	-	-	-	-	-	346	346	-	524	524	-
Stage 2	-	-	-	-	-	-	558	567	-	350	348	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	3.318
Pot Cap-1 Maneuver	1017	-	-	1313	-	-	258	273	789	270	289	563
Stage 1	-	-	-	-	-	-	670	635	-	537	530	-
Stage 2	-	-	-	-	-	-	514	507	-	666	634	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1017	-	-	1313	-	-	215	256	789	252	271	563
Mov Cap-2 Maneuver	-	-	-	-	-	-	215	256	-	252	271	-
Stage 1	-	-	-	-	-	-	633	600	-	507	526	-
Stage 2	-	-	-	-	-	-	449	503	-	621	599	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.4			0.1			17.3			26.3		
HCM LOS							C			D		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	305	1017	-	-	1313	-	-	324				
HCM Lane V/C Ratio	0.044	0.047	-	-	0.005	-	-	0.49				
HCM Control Delay (s)	17.3	8.7	0	-	7.8	0	-	26.3				
HCM Lane LOS	C	A	A	-	A	A	-	D				
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	2.6				

MOVEMENT SUMMARY



Site: 3 [Eubanks Road at Morris Grove Elementary School/East Site Drive]

Build PM
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Morris Grove Elementary School												
3	L2	39	2.0	0.086	4.6	LOS A	0.4	11.3	0.51	0.36	0.51	33.6
8	T1	4	2.0	0.086	4.6	LOS A	0.4	11.3	0.51	0.36	0.51	33.6
18	R2	37	2.0	0.086	4.6	LOS A	0.4	11.3	0.51	0.36	0.51	32.8
Approach		80	2.0	0.086	4.6	LOS A	0.4	11.3	0.51	0.36	0.51	33.2
East: Eubanks Road												
1	L2	41	2.0	0.469	7.9	LOS A	3.8	96.6	0.33	0.15	0.33	33.0
6	T1	493	2.0	0.469	7.9	LOS A	3.8	96.6	0.33	0.15	0.33	33.0
16	R2	41	2.0	0.469	7.9	LOS A	3.8	96.6	0.33	0.15	0.33	32.2
Approach		576	2.0	0.469	7.9	LOS A	3.8	96.6	0.33	0.15	0.33	33.0
North: East Site Drive												
7	L2	48	2.0	0.096	5.6	LOS A	0.5	13.5	0.64	0.50	0.64	32.8
4	T1	4	2.0	0.096	5.6	LOS A	0.5	13.5	0.64	0.50	0.64	32.8
14	R2	23	2.0	0.096	5.6	LOS A	0.5	13.5	0.64	0.50	0.64	32.0
Approach		76	2.0	0.096	5.6	LOS A	0.5	13.5	0.64	0.50	0.64	32.5
West: Eubanks Road												
5	L2	20	2.0	0.287	5.7	LOS A	1.8	46.2	0.32	0.16	0.32	34.1
2	T1	306	2.0	0.287	5.7	LOS A	1.8	46.2	0.32	0.16	0.32	34.2
12	R2	16	2.0	0.287	5.7	LOS A	1.8	46.2	0.32	0.16	0.32	33.3
Approach		341	2.0	0.287	5.7	LOS A	1.8	46.2	0.32	0.16	0.32	34.1
All Vehicles		1072	2.0	0.469	6.8	LOS A	3.8	96.6	0.36	0.20	0.36	33.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: SIDRA Standard.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Eubanks Road Mixed Use
4: Rogers Road & Eubanks Road

Build PM
04/26/2019

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	292	62	148	453	68	85
Future Volume (vph)	292	62	148	453	68	85
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	0.976				0.925	
Flt Protected				0.988	0.978	
Satd. Flow (prot)	1818	0	0	1840	1685	0
Flt Permitted				0.988	0.978	
Satd. Flow (perm)	1818	0	0	1840	1685	0
Link Speed (mph)	45			45	35	
Link Distance (ft)	3253			876	421	
Travel Time (s)	49.3			13.3	8.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	317	67	161	492	74	92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	384	0	0	653	166	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type: Unsignalized						
Intersection Capacity Utilization 70.1%				ICU Level of Service C		
Analysis Period (min) 15						

Eubanks Road Mixed Use
5: West Site Drive & Eubanks Road

Build PM
04/26/2019

Intersection						
Int Delay, s/veh	1.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	250	15	30	446	24	28
Future Vol, veh/h	250	15	30	446	24	28
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, %	2	2	2	2	2	2
Mvmt Flow	278	17	33	496	27	31
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	295	0	849	287
Stage 1	-	-	-	-	287	-
Stage 2	-	-	-	-	562	-
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	-	-	1266	-	331	752
Stage 1	-	-	-	-	762	-
Stage 2	-	-	-	-	571	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1266	-	319	752
Mov Cap-2 Maneuver	-	-	-	-	319	-
Stage 1	-	-	-	-	735	-
Stage 2	-	-	-	-	571	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	0.5		13.9		
HCM LOS	B					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	462	-	-	1266	-	
HCM Lane V/C Ratio	0.125	-	-	0.026	-	
HCM Control Delay (s)	13.9	-	-	7.9	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	0.4	-	-	0.1	-	

Eubanks Road Mixed Use
1: Old NC 86 & Eubanks Road

Build PM (with Eubanks Road - Old NC 86 Signal)

04/30/2019

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	349	108	405	213	52	328
Future Volume (vph)	349	108	405	213	52	328
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	185	0		120	140	
Storage Lanes	1	1		1	1	
Taper Length (ft)	100				100	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1583	1863	1583	1770	1863
Flt Permitted	0.950				0.407	
Satd. Flow (perm)	1770	1583	1863	1583	758	1863
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		120		237		
Link Speed (mph)	45		45			45
Link Distance (ft)	312		605			582
Travel Time (s)	4.7		9.2			8.8
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	388	120	450	237	58	364
Shared Lane Traffic (%)						
Lane Group Flow (vph)	388	120	450	237	58	364
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1	1	1	0	1	1
Detector Template	Left	Right			Left	
Leading Detector (ft)	40	40	106	0	40	106
Trailing Detector (ft)	0	0	100	0	0	100
Detector 1 Position(ft)	0	0	100	0	0	100
Detector 1 Size(ft)	40	40	6	20	40	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	7.0	7.0	12.0	12.0	12.0	12.0
Minimum Split (s)	15.0	15.0	20.0	20.0	20.0	20.0
Total Split (s)	20.0	20.0	40.0	40.0	40.0	40.0

Eubanks Road Mixed Use
1: Old NC 86 & Eubanks Road

Build PM (with Eubanks Road - Old NC 86 Signal)

04/30/2019

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Total Split (%)	33.3%	33.3%	66.7%	66.7%	66.7%	66.7%
Maximum Green (s)	13.0	13.0	33.0	33.0	33.0	33.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	Min	Min	Min	Min
Act Effect Green (s)	14.7	14.7	16.9	16.9	16.9	16.9
Actuated g/C Ratio	0.35	0.35	0.41	0.41	0.41	0.41
v/c Ratio	0.62	0.19	0.60	0.30	0.19	0.48
Control Delay	18.5	4.0	13.4	2.6	9.5	11.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.5	4.0	13.4	2.6	9.5	11.5
LOS	B	A	B	A	A	B
Approach Delay	15.1		9.6			11.2
Approach LOS	B		A			B

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 41.7

Natural Cycle: 45

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.62

Intersection Signal Delay: 11.8

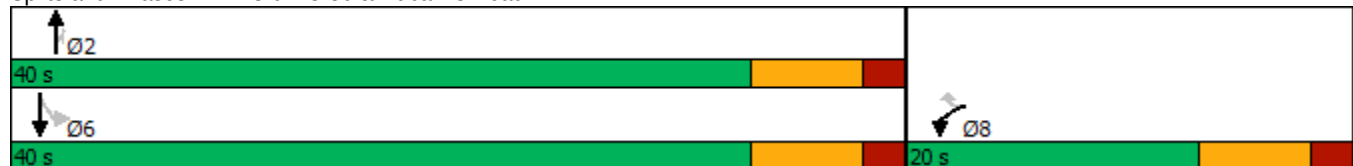
Intersection LOS: B

Intersection Capacity Utilization 63.2%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: Old NC 86 & Eubanks Road



Appendix H:
Sidra Output:
Build-out (2039)

MOVEMENT SUMMARY



Site: 3 [Eubanks Road at Morris Grove Elementary School/East Site Drive]

Build AM - 2039 Horizon Year

Site Category: (None)

Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Morris Grove Elementary School												
3	L2	138	2.0	0.500	13.1	LOS B	4.5	113.7	0.88	0.91	1.08	30.0
8	T1	4	2.0	0.500	13.1	LOS B	4.5	113.7	0.88	0.91	1.08	30.0
18	R2	196	2.0	0.500	13.1	LOS B	4.5	113.7	0.88	0.91	1.08	29.3
Approach		338	2.0	0.500	13.1	LOS B	4.5	113.7	0.88	0.91	1.08	29.6
East: Eubanks Road												
1	L2	198	2.0	0.431	7.9	LOS A	3.4	85.2	0.52	0.34	0.52	32.2
6	T1	227	2.0	0.431	7.9	LOS A	3.4	85.2	0.52	0.34	0.52	32.2
16	R2	46	2.0	0.431	7.9	LOS A	3.4	85.2	0.52	0.34	0.52	31.4
Approach		470	2.0	0.431	7.9	LOS A	3.4	85.2	0.52	0.34	0.52	32.1
North: East Site Drive												
7	L2	37	2.0	0.075	5.4	LOS A	0.4	10.6	0.64	0.49	0.64	32.9
4	T1	4	2.0	0.075	5.4	LOS A	0.4	10.6	0.64	0.49	0.64	32.9
14	R2	18	2.0	0.075	5.4	LOS A	0.4	10.6	0.64	0.49	0.64	32.1
Approach		59	2.0	0.075	5.4	LOS A	0.4	10.6	0.64	0.49	0.64	32.6
West: Eubanks Road												
5	L2	22	2.0	0.773	18.1	LOS C	16.8	427.6	0.87	0.92	1.36	28.8
2	T1	561	2.0	0.773	18.1	LOS C	16.8	427.6	0.87	0.92	1.36	28.8
12	R2	217	2.0	0.773	18.1	LOS C	16.8	427.6	0.87	0.92	1.36	28.2
Approach		800	2.0	0.773	18.1	LOS C	16.8	427.6	0.87	0.92	1.36	28.6
All Vehicles		1667	2.0	0.773	13.8	LOS B	16.8	427.6	0.77	0.74	1.04	29.9

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: SIDRA Standard.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY



Site: 3 [Eubanks Road at Morris Grove Elementary School/East Site Drive]

Build PM - 2039 Horizon Year
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Morris Grove Elementary School												
3	L2	43	2.0	0.098	4.9	LOS A	0.5	13.3	0.54	0.39	0.54	33.5
8	T1	4	2.0	0.098	4.9	LOS A	0.5	13.3	0.54	0.39	0.54	33.5
18	R2	42	2.0	0.098	4.9	LOS A	0.5	13.3	0.54	0.39	0.54	32.7
Approach		90	2.0	0.098	4.9	LOS A	0.5	13.3	0.54	0.39	0.54	33.1
East: Eubanks Road												
1	L2	47	2.0	0.518	8.7	LOS A	4.5	115.0	0.37	0.18	0.37	32.6
6	T1	544	2.0	0.518	8.7	LOS A	4.5	115.0	0.37	0.18	0.37	32.7
16	R2	41	2.0	0.518	8.7	LOS A	4.5	115.0	0.37	0.18	0.37	31.9
Approach		632	2.0	0.518	8.7	LOS A	4.5	115.0	0.37	0.18	0.37	32.6
North: East Site Drive												
7	L2	48	2.0	0.102	6.0	LOS A	0.6	14.8	0.67	0.55	0.67	32.6
4	T1	4	2.0	0.102	6.0	LOS A	0.6	14.8	0.67	0.55	0.67	32.6
14	R2	23	2.0	0.102	6.0	LOS A	0.6	14.8	0.67	0.55	0.67	31.8
Approach		76	2.0	0.102	6.0	LOS A	0.6	14.8	0.67	0.55	0.67	32.3
West: Eubanks Road												
5	L2	20	2.0	0.312	6.0	LOS A	2.0	51.5	0.34	0.18	0.34	34.0
2	T1	331	2.0	0.312	6.0	LOS A	2.0	51.5	0.34	0.18	0.34	34.0
12	R2	18	2.0	0.312	6.0	LOS A	2.0	51.5	0.34	0.18	0.34	33.2
Approach		369	2.0	0.312	6.0	LOS A	2.0	51.5	0.34	0.18	0.34	34.0
All Vehicles		1167	2.0	0.518	7.4	LOS A	4.5	115.0	0.39	0.22	0.39	33.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: SIDRA Standard.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Appendix I:

Crash Data

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

Traffic was placed on
the new Eubanks
alignment in
November 2013

Study Criteria Summary

County: ORANGE **City:** All and Rural
Date: 04/01/2014 to 03/31/2019 **Study:** 41000056950
Location: SR 1009 (Old NC 86) at SR 1727 (Eubanks Rd.)

Report Details

Acc No	Crash ID	Date	Accident Type	Total Damage	Injuries				Condition			Road		Trfc Ctl	
					F	A	B	C	R	L	W	Ch	Ci	Dv	Op
1	104323948	03/17/2015 16:38	LEFT TURN, DIFFERENT ROADWAYS	\$ 4000	0	0	0	0	1	1	1	1	0	1	1
Unit	1 : 1	Alchl/Drgs: 0	Speed: 35 MPH Dir: W	Veh Mnvr / Ped Actn: 8		Obj Strk:									
Unit	2 : 4	Alchl/Drgs: 0	Speed: 45 MPH Dir: N	Veh Mnvr / Ped Actn: 4		Obj Strk:									
2	104889952	10/12/2016 17:02	ANGLE	\$ 12500	0	0	0	2	1	1	1	1	0	1	1
Unit	1 : 1	Alchl/Drgs: 0	Speed: 0 MPH Dir: SW	Veh Mnvr / Ped Actn: 8		Obj Strk:									
Unit	2 : 1	Alchl/Drgs: 0	Speed: 45 MPH Dir: N	Veh Mnvr / Ped Actn: 4		Obj Strk:									
3	105013181	02/18/2017 06:43	FIXED OBJECT	\$ 1500	0	0	0	0	1	1	1	1	0	13	1
Unit	1 : 1	Alchl/Drgs: 3	Speed: 20 MPH Dir: E	Veh Mnvr / Ped Actn: 7		Obj Strk: 58		Ditch							
4	105067978	04/13/2017 14:39	SIDESWIPE, SAME DIRECTION	\$ 2500	0	0	0	0	1	1	1	5	0	1	1
Unit	1 : 4	Alchl/Drgs: 0	Speed: 10 MPH Dir: W	Veh Mnvr / Ped Actn: 5		Obj Strk:									
Unit	2 : 4	Alchl/Drgs: 0	Speed: 20 MPH Dir: W	Veh Mnvr / Ped Actn: 4		Obj Strk:									
5	105177351	07/31/2017 12:22	LEFT TURN, DIFFERENT ROADWAYS	\$ 2200	0	0	0	0	1	1	1	1	0	1	1
Unit	1 : 2	Alchl/Drgs: 0	Speed: 5 MPH Dir: W	Veh Mnvr / Ped Actn: 8		Obj Strk:									
Unit	2 : 1	Alchl/Drgs: 0	Speed: 45 MPH Dir: N	Veh Mnvr / Ped Actn: 4		Obj Strk:									
6	105569699	08/10/2018 13:50	RIGHT TURN, SAME ROADWAY	\$ 20000	0	0	0	0	1	1	1	1	0	1	1
Unit	1 : 1	Alchl/Drgs: 0	Speed: 0 MPH Dir: W	Veh Mnvr / Ped Actn: 7		Obj Strk:									
Unit	2 : 1	Alchl/Drgs: 0	Speed: 45 MPH Dir: N	Veh Mnvr / Ped Actn: 4		Obj Strk:									
7	105711380	12/14/2018 17:28	LEFT TURN, DIFFERENT ROADWAYS	\$ 5000	0	0	0	0	2	5	3	2	0	1	1
Unit	1 : 4	Alchl/Drgs: 0	Speed: 20 MPH Dir: S	Veh Mnvr / Ped Actn: 8		Obj Strk:									
Unit	2 : 4	Alchl/Drgs: 0	Speed: 45 MPH Dir: S	Veh Mnvr / Ped Actn: 4		Obj Strk:									
8	105790846	03/01/2019 17:03	LEFT TURN, DIFFERENT ROADWAYS	\$ 32000	0	0	0	2	2	1	3	1	0	1	1
Unit	1 : 1	Alchl/Drgs: 0	Speed: 45 MPH Dir: W	Veh Mnvr / Ped Actn: 8		Obj Strk:									
Unit	2 : 5	van Alchl/Drgs: 0	Speed: 45 MPH Dir: N	Veh Mnvr / Ped Actn: 4		Obj Strk: 64		Other Fixed Object							
Unit	3 : 4	Alchl/Drgs: 0	Speed: 45 MPH Dir: S	Veh Mnvr / Ped Actn: 4		Obj Strk:									

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

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

Legend for

Report Details:

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

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

Summary Statistics

High Level Crash Summary

Crash Type	Number of Crashes	Percent of Total
Total Crashes	8	100.00
Fatal Crashes	0	0.00
Non-Fatal Injury Crashes	2	25.00
Total Injury Crashes	2	25.00
Property Damage Only Crashes	6	75.00
Night Crashes	1	12.50
Wet Crashes	2	25.00
Alcohol/Drugs Involvement Crashes	0	0.00

Crash Severity Summary

Crash Type	Number of Crashes	Percent of Total
Total Crashes	8	100.00
Fatal Crashes	0	0.00
Class A Crashes	0	0.00
Class B Crashes	0	0.00
Class C Crashes	2	25.00
Property Damage Only Crashes	6	75.00

No Serious Injuries

Vehicle Exposure Statistics

Annual ADT = 8800

Total Vehicle Exposure = 16.07 (MEV)

Crash Rate	Crashes Per 100 Million Vehicles Entered
Total Crash Rate	49.79
Fatal Crash Rate	0.00
Non Fatal Crash Rate	12.45
Night Crash Rate	6.22
Wet Crash Rate	12.45
EPDO Rate	141.89

Well below State Average for Rural Secondday Roads

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

Miscellaneous Statistics

Severity Index = 2.85
EPDO Crash Index = 22.80
Estimated Property Damage Total = \$ 79700.00

Low Severity Index



Accident Type Summary

Accident Type	Number of Crashes	Percent of Total
ANGLE	1	12.50
FIXED OBJECT	1	12.50
LEFT TURN, DIFFERENT ROADWAYS	4	50.00
RIGHT TURN, SAME ROADWAY	1	12.50
SIDESWIPE, SAME DIRECTION	1	12.50

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	4	100.00
Total Non-Fatal Injuries	4	100.00
Total Injuries	4	100.00

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

Monthly Summary

Month	Number of Crashes	Percent of Total
Jan	0	0.00
Feb	1	12.50
Mar	2	25.00
Apr	1	12.50
May	0	0.00
Jun	0	0.00
Jul	1	12.50
Aug	1	12.50
Sep	0	0.00
Oct	1	12.50
Nov	0	0.00
Dec	1	12.50

Daily Summary

Day	Number of Crashes	Percent of Total
Mon	1	12.50
Tue	1	12.50
Wed	1	12.50
Thu	1	12.50
Fri	3	37.50
Sat	1	12.50
Sun	0	0.00

North Carolina Department of Transportation
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Intersection Analysis Report

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	1	12.50
0700-0759	0	0.00
0800-0859	0	0.00
0900-0959	0	0.00
1000-1059	0	0.00
1100-1159	0	0.00
1200-1259	1	12.50
1300-1359	1	12.50
1400-1459	1	12.50
1500-1559	0	0.00
1600-1659	1	12.50
1700-1759	3	37.50
1800-1859	0	0.00
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

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Intersection Analysis Report

Light and Road Conditions Summary

Condition	Dry	Wet	Other	Total
Day	6	1	0	7
Dark	0	1	0	1
Other	0	0	0	0
Total	6	2	0	8

Object Struck Summary

Object Type	Times Struck	Percent of Total
DITCH	1	50.00
OTHER FIXED OBJECT	1	50.00

Vehicle Type Summary

Vehicle Type	Number Involved	Percent of Total
PASSENGER CAR	8	50.00
PICKUP	1	6.25
SPORT UTILITY	6	37.50
VAN	1	6.25

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

Yearly Totals Summary

Accident Totals

Year	Total Accidents	Fatal Accidents	Injury Accidents	Property Damage Only Accidents
2014	0	0	0	0
2015	1	0	0	1
2016	1	0	1	0
2017	3	0	0	3
2018	2	0	0	2
2019	1	0	1	0
Total	8	0	2	6

Injury Totals

Year	Fatal Injuries	Class A, B, or C Injuries
2014	0	0
2015	0	0
2016	0	2
2017	0	0
2018	0	0
2019	0	2
Total	0	4

Miscellaneous Totals

Year	Property Damage	EPDO Index
2014	\$ 0	0.00
2015	\$ 4000	1.00
2016	\$ 12500	8.40
2017	\$ 6200	3.00
2018	\$ 25000	2.00
2019	\$ 32000	8.40
Total	\$ 79700	22.80

Type of Accident Totals

Year	Left Turn	Right Turn	Rear End	Run Off Road &				Other
				Fixed Object	Angle	Side Swipe		
2014	0	0	0	0	0	0		0
2015	1	0	0	0	0	0		0
2016	0	0	0	0	1	0		0

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

Year	Run Off Road &						
	Left Turn	Right Turn	Rear End	Fixed Object	Angle	Side Swipe	Other
2017	1	0	0	1	0	1	0
2018	1	1	0	0	0	0	0
2019	1	0	0	0	0	0	0
Total	4	1	0	1	1	1	0