Traffic Impact Analysis

Zebulon Sheetz Development
Zebulon, NC

Prepared for:

Sheetz, Inc.

Kimley»Horn

Traffic Impact Analysis for

Zebulon Sheetz Development

Zebulon, North Carolina

Prepared for:

Sheetz, Inc.

Prepared by:

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Executive Summary

Kimley-Horn and Associates, Inc. has performed a Traffic Impact Analysis for the Zebulon Sheetz redevelopment, located east of NC 96 and north of Pearces Road in Zebulon, NC. The existing Sheetz on the property consists of a 5,000 square foot (s.f.) convenience store/gas station with 12 vehicle fueling positions (vfp). The development is proposing to demolish the existing store and build a new store with a 6,150 s.f. convenience store/gas station with 14 vfp. The site can currently be accessed via a right-in/right-out only driveway along NC 96 and a full movement driveway along Pearces Road. No changes to site access are proposed as part of this redevelopment. Build-out of the development is anticipated by 2026.

This report presents trip generation, distribution, traffic analyses, and recommendations for transportation improvements required to meet anticipated traffic demands in conjunction with the development.

Per the Town of Zebulon (Town) Unified Development Ordinance (UDO), the future traffic conditions were analyzed for the build-out year plus one year into the future after the development is completed (2027). Therefore, the traffic conditions studied include the following:

- Existing (2025)
- Background (2027)
- Build-out (2027)

Trip Generation

The traffic generation potential of the proposed development was determined using the trip generation data published in *Trip Generation* (Institute of Transportation Engineers, Eleventh Edition, 2021). As shown in Table ES-1 located on the following page, compared to the existing Sheetz store on the site, the proposed store is projected to generate approximately 196 additional new daily trips, 16 new AM peak hour trips, and 16 new PM peak hour trips.

Table ES-1
ITE Traffic Generation (Vehicles)

Land Use		Intensity		Daily			AM Peak Hour			PM Peak Hour		
				Total	In	Out	Total	In	Out	Total	In	Out
945	Convenience Store/Gas Station: 9-15 vfp - Existing	5,000	s.f.	3,502	1,751	1,751	283	142	141	273	137	136
945	Convenience Store/Gas Station: 9-15 vfp - Proposed	6,150	s.f.	4,308	2,154	2,154	348	174	174	335	168	167
Pass-By Reductions - Existing				*2,644*	*1,322*	*,322*	*215*	*108*	*107*	*205*	*103*	*102*
Pass-By Reductions - Proposed				*3,254*	*1,627*	*1,627*	*264*	*132*	*132*	*251*	*126*	*125*
Difference in Pass-By Reductions				***610***	***305***	***305***	***49***	***24***	***25***	***46***	***23***	***23***
Total Net New External Trips - Existing				**858**	**429**	**429**	**68**	**34**	**34**	**68**	**34**	**34**
Total Net New External Trips - Proposed				**1,054**	**527**	**527**	**84**	**42**	**42**	**84**	**42**	**42**
Difference in Total Net New External Trips				**196**	**98**	**98**	**16**	**8**	**8**	**16**	**8**	**8**

Capacity Analysis

Capacity analyses were performed using Synchro Version 12 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							
Intersection and Approach/Movement	**Traffic Control**	**Existing (2025) Traffic**		**Background (2027) Traffic**		**Build-out (2027) Traffic**	
		AM	**PM**	**AM**	**PM**	**AM**	**PM**
NC 96 at Pearces Road	**Signalized**	**C (21.8)**	**B (15.1)**	**C (26.4)**	**B (17.5)**	**C (26.9)**	**B (17.9)**
Eastbound		B (16.6)	B (11.6)	C (21.9)	B (15.3)	C (22.2)	B (15.6)
Westbound		B (15.3)	A (7.5)	B (19.9)	A (9.8)	C (20.3)	B (10.0)
Southbound		D (42.3)	D (50.4)	D (43.8)	D (48.4)	D (44.4)	D (48.7)
NC 96 at Site Driveway 1	**Unsignalized**	**- (-)**	**- (-)**	**- (-)**	**- (-)**	**- (-)**	**- (-)**
Southbound		B (14.4)	C (15.6)	C (15.8)	C (18.2)	C (15.9)	C (18.5)
Pearces Road at Site Driveway 2	**Unsignalized**	**- (-)**	**- (-)**	**- (-)**	**- (-)**	**- (-)**	**- (-)**
Eastbound		B (13.9)	C (17.2)	C (16.4)	C (22.9)	C (17.9)	D (26.8)
Northbound Left		A (8.5)	A (8.2)	A (8.9)	A (8.5)	A (9.0)	A (8.6)

Conclusions

NCDOT TIP project U-5118 FB proposes to construct an additional southbound through lane along NC 96 beginning approximately 830 feet north of the intersection of NC 96 at Pearces Road and ending at US 64-264 WB Ramps/Dogwood Drive. At the intersection of NC 96 at Pearces Road the westbound right lane is expected to be restriped to a shared left/right lane and the existing traffic signal is expected to be modified to accommodate these laneage improvements. While this project was considered for inclusion during scoping discussions with the Town, it was ultimately excluded in order to provide a conservative analysis of the intersection of NC 96 at Pearces Road.

All study intersections are expected to operate with acceptable levels-of service and, based on SimTraffic observations, maximum queues are expected to increase minimally with the redevelopment of the Sheetz. Therefore, no improvements are recommended with the proposed expansion.

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1.0 Introduction

Kimley-Horn and Associates, Inc. has performed a Traffic Impact Analysis for the Zebulon Sheetz redevelopment, located east of NC 96 and north of Pearces Road in Zebulon, NC. The existing Sheetz on the property consists of a 5,000 square foot (s.f.) convenience store/gas station with 12 vehicle fueling positions (vfp). The development is proposing to demolish the existing store and build a new store with a 6,150 s.f. convenience store/gas station with 14 vfp. The site can currently be accessed via a right-in/right-out only driveway along NC 96 and a full movement driveway along Pearces Road. No changes to site access are proposed as part of this redevelopment. Build-out of the development is anticipated by 2026.

This report presents trip generation, distribution, traffic analyses, and recommendations for transportation improvements required to meet anticipated traffic demands in conjunction with the development.

Per the Town of Zebulon (Town) Unified Development Ordinance (UDO), the future traffic conditions were analyzed for the build-out year plus one year into the future after the development is completed (2027). Therefore, the traffic conditions studied include the following:

- Existing (2025)
- Background (2027)
- Build-out (2027)

Town planning staff provided background data and were consulted regarding the elements to be covered in this analysis. The approved assumptions memorandum is included in the Appendix of this report.

2.0 Inventory

2.1 Study Area

The study area for this development includes the following intersections:

- NC 96 at Pearces Road
- NC 96 at Site Driveway 1
- Pearces Road at Site Driveway 2

Figure 2.1 shows the site location and driveway connections. The conceptual site plan is shown on **Figure 2.2**.

2.2 Existing Conditions

The Zebulon Sheetz development is located east of NC 96 and north of Pearces Road in Zebulon, NC. Roadways in the study area include NC 96 and Pearces Road. Roadway network elements (speed limit, estimated average daily traffic volume, and existing configuration) of study area roadways are summarized in Table 2.1. The existing roadway laneage is shown in **Figure 2.3**.

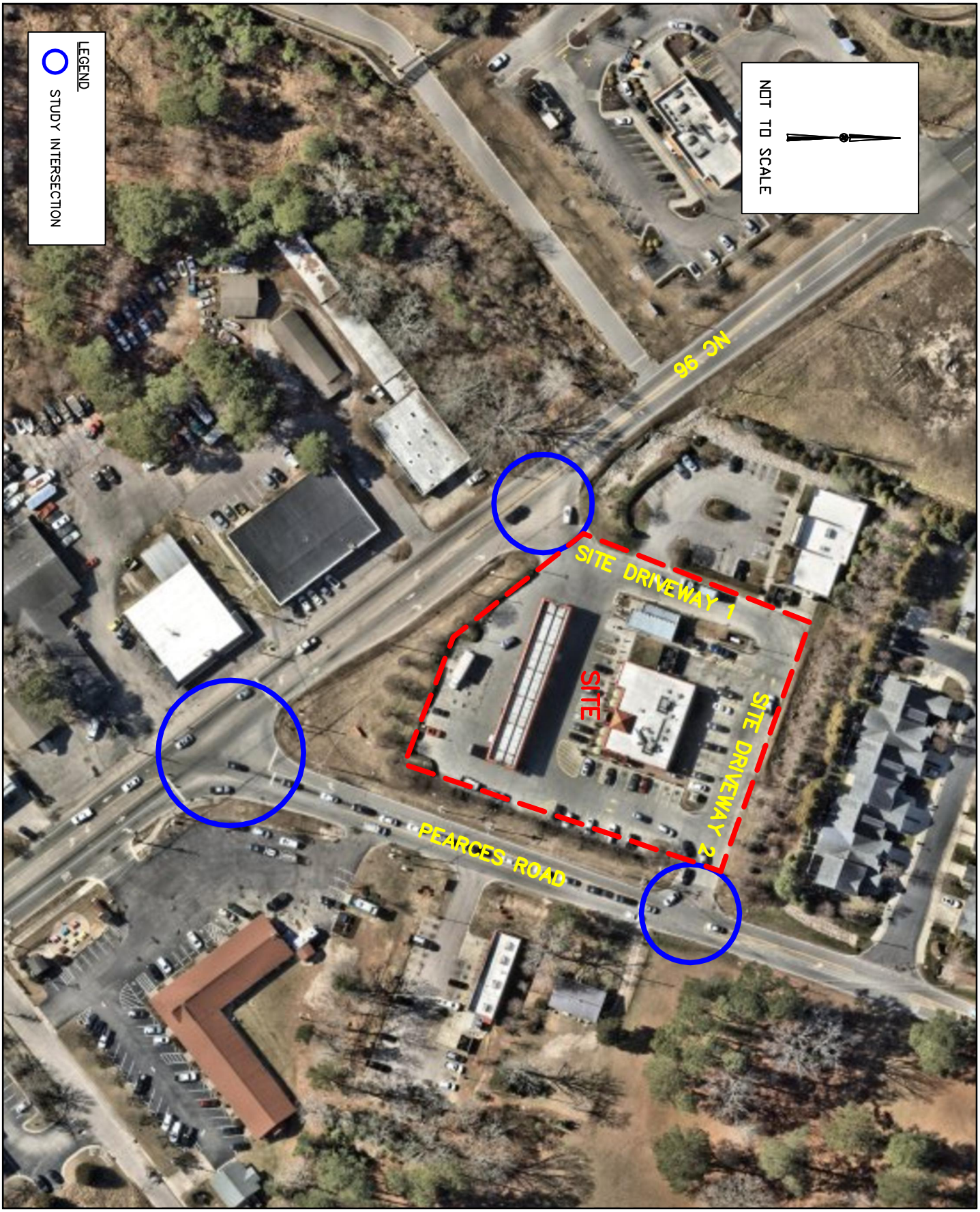
Table 2.1
Roadway Network Summary

Roadway	Speed Limit	Estimated AADT Volume	Typical Existing Configuration
NC 96	35 mph	12,500 vpd west of Pearces Road*; 24,000 vpd east of Pearces Road**	2-Lane Undivided/ 4-Lane Undivided
Pearces Road	35 mph	7,500 vpd north of NC 96***	2-Lane Undivided

*2021 AADT from NCDOT.
**2023 AADT from NCDOT
***ADT was calculated for this roadway using existing AM and PM traffic volumes, assuming the total of those peak hours is 20% of the daily traffic volumes.

2.3 Future Roadway Improvements

NCDOT TIP project U-5118 FB proposes to construct an additional southbound through lane along NC 96 beginning approximately 830 feet north of the intersection of NC 96 at Pearces Road and ending at US 64-264 WB Ramps/Dogwood Drive. At the intersection of NC 96 at Pearces Road the westbound right lane is expected to be restriped to a shared left/right lane and the existing traffic signal is expected to be modified to accommodate these laneage improvements. While this project was considered for inclusion during scoping discussions with the Town, it was ultimately excluded in order to provide a conservative analysis of the intersection of NC 96 at Pearces Road.



Kimley»Horn	ZEBULON SHEETZ ZEBULON, NC TRAFFIC IMPACT ANALYSIS	SITE LOCATION	FIGURE 2.1

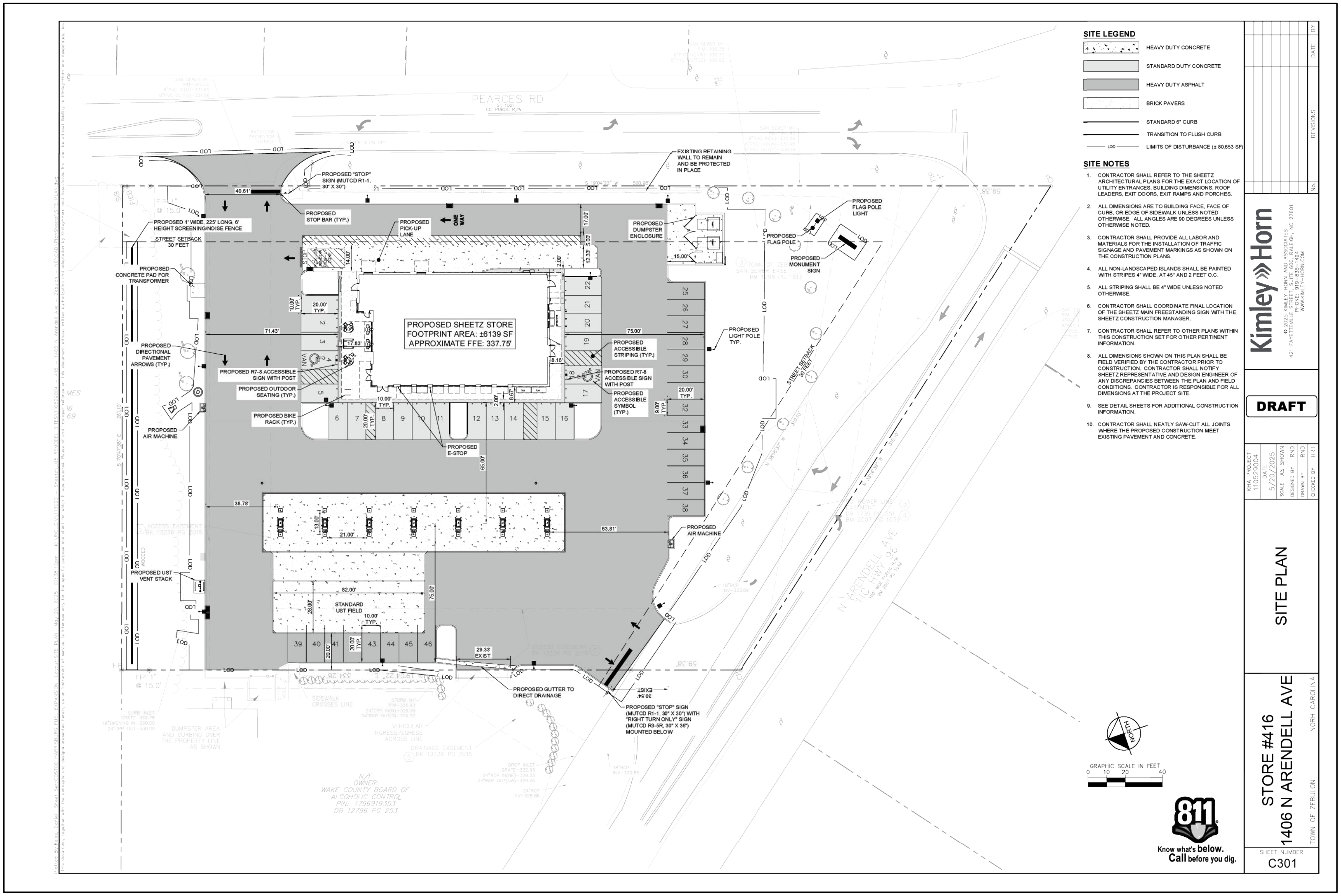


FIGURE 2.2

CONCEPTUAL SITE PLAN

ZEBULON SHEETZ
ZEBULON, NC
TRAFFIC IMPACT ANALYSIS

Kimley-Horn

FIGURE 2.3

EXISTING ROADWAY LANEAGE

ZEBULON SHEETZ
ZEBULON, NC
TRAFFIC IMPACT ANALYSIS

Kimley»Horn

3.0 Traffic Generation

The traffic generation potential of the proposed development was determined using the traffic generation data published in *Trip Generation* (Institute of Transportation Engineers, Eleventh Edition, 2021). As currently envisioned, the proposed redevelopment is planned to consist of 6,150 s.f. convenience store/gas station with 14 vfp. Table 3.0 summarizes the estimated traffic generation for the proposed development.

Table 3.0
ITE Traffic Generation (Vehicles)

Land Use		Intensity		Daily			AM Peak Hour			PM Peak Hour		
				Total	In	Out	Total	In	Out	Total	In	Out
945	Convenience Store/Gas Station: 9-15 vfp - Existing	5,000	s.f.	3,502	1,751	1,751	283	142	141	273	137	136
945	Convenience Store/Gas Station: 9-15 vfp - Proposed	6,150	s.f.	4,308	2,154	2,154	348	174	174	335	168	167
Pass-By Reductions - Existing				*2,644*	*1,322*	*,322*	*215*	*108*	*107*	*205*	*103*	*102*
Pass-By Reductions - Proposed				*3,254*	*1,627*	*1,627*	*264*	*132*	*132*	*251*	*126*	*125*
Difference in Pass-By Reductions				***610***	***305***	***305***	***49***	***24***	***25***	***46***	***23***	***23***
Total Net New External Trips - Existing				**858**	**429**	**429**	**68**	**34**	**34**	**68**	**34**	**34**
Total Net New External Trips - Proposed				**1,054**	**527**	**527**	**84**	**42**	**42**	**84**	**42**	**42**
Difference in Total Net New External Trips				**196**	**98**	**98**	**16**	**8**	**8**	**16**	**8**	**8**

Table 3.0 shows that the proposed development has the potential to generate 6,894 new daily trips in a typical weekday with 196 new daily trips, 16 new AM peak hour trips, and 16 new PM peak hour trips.

4.0 Site Traffic Distribution

The proposed site generated trips were assigned to the surrounding roadway network. The directional distribution and assignment are based on existing travel patterns.

- 50% to/from the east via NC 96
- 30% to/from the west via NC 96
- 20% to/from the north via Peaces Road

The site traffic distribution and assignment are shown in **Figure 4.1**. The AM and PM pass-by trip distribution and assignments are shown in **Figure 4.2** and **Figure 4.3**, respectively.

FIGURE 4.1

SITE TRAFFIC DISTRIBUTION AND PERCENT ASSIGNMENT

ZEBULON SHEETZ
ZEBULON, NC
TRAFFIC IMPACT ANALYSIS

Kimley»Horn

FIGURE 4.2

AM PEAK HOUR
PASS–BY ASSIGNMENT

ZEBULON SHEETZ
ZEBULON, NC
TRAFFIC IMPACT ANALYSIS

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FIGURE 4.3

PM PEAK HOUR
PASS–BY ASSIGNMENT

ZEBULON SHEETZ
ZEBULON, NC
TRAFFIC IMPACT ANALYSIS

Kimley»Horn

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 study intersection on January 28, 2025 while area schools were in session:

- NC 96 at Pearces Road

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 each of the following study intersections on March 26, 2025, while area schools were in session:

- NC 96 at Site Driveway 1
- Pearces Road at Site Driveway 2

The existing AM and PM peak hour traffic volumes are shown on **Figure 5.1** and **Figure 5.2**, respectively, and the traffic count data are included in the Appendix.

5.2 Approved Development Traffic

Approved development traffic is generated by approved but not yet constructed projects in the vicinity of the proposed project. Based on discussions with the Town and NCDOT, there were four (4) approved developments in the study area that were identified for inclusion as background traffic. These approved developments include 7-Eleven Convenience Store, Clifton Grove (formerly Pearces Road Residential), Domino's, and Weaver's Ridge.

7-Eleven Convenience Store

- Location: East of NC 96 and north of US 64-264
- Land Uses: 4,714 s.f. convenience store with 16 vehicle fueling pumps and 3 truck fueling pumps
- Data Source: *Zebulon 7-Eleven Convenience Store TIA* (Impact Designs, Inc., March 2023)

Clifton Grove (formerly Pearces Road Residential)

- Location: West of Pearces Road and south of Pippin Road
- Land Uses: 232 single family detached units
- Data Source: *Pearces Road Residential Development TIA* (Timmons Group, October 2020)

Zebulon Domino's

- Location: North of Dogwood Drive and east of NC 96
- Land Uses: 1,632 s.f. Domino's Restaurant
- Data Source: *Zebulon Domino's TIA* (DRMP, Inc., November 2024)

Weaver's Ridge

- Location: East of NC 96 across from Glory Road
- Land Uses: 124 townhomes and 58 single-family homes

- Data Source: *Weaver's Ridge Traffic Study* (Ramey Kemp & Associates, Inc., July 2019)

Approved development traffic volumes for the future year scenarios are shown on **Figure 5.1** and **Figure 5.2** for the AM and PM peak hours, respectively.

5.3 Historic Growth Traffic

Historic growth traffic is the increase in traffic due to usage increases and non-specific growth throughout the area. In addition to the approved development traffic and per Town requirements, study intersections were grown to the 2027 build-out year using an annual growth rate of 2.5%.

Projected future year (2027) background AM and PM peak hour traffic volumes are shown on **Figure 5.1** and **Figure 5.2**, respectively. Background growth calculations are detailed on intersection spreadsheets in the Appendix of this report.

5.4 Site Traffic

The proposed site traffic was generated and assigned to the adjacent roadway network according to the distributions discussed previously in *Section 4.0.* The primary AM and PM peak hour site traffic volumes are shown on **Figure 5.3** and **Figure 5.4**, respectively. The pass-by AM and PM peak hour site traffic volumes are shown on **Figure 5.3** and **Figure 5.4**, respectively.

5.5 Build-Out Traffic

To obtain the projected (2027) build-out traffic volumes, the projected site traffic volumes were added to the projected (2027) background traffic. Traffic volume calculations are detailed in intersection spreadsheets in the Appendix of this report. **Figure 5.3** and **Figure 5.4** show the projected (2027) AM and PM peak hour build-out traffic volumes, respectively.

FIGURE 5.1

EXISTING (2025) AND PROJECTED (2027) AM HOUR TRAFFIC VOLUMES

ZEBULON SHEETZ
ZEBULON, NC
TRAFFIC IMPACT ANALYSIS

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FIGURE 5.2

EXISTING (2025) AND PROJECTED (2027) PM HOUR TRAFFIC VOLUMES

ZEBULON SHEETZ
ZEBULON, NC
TRAFFIC IMPACT ANALYSIS

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FIGURE 5.3

PROJECTED (2027) BUILD-OUT AM PEAK HOUR TRAFFIC VOLUMES

ZEBULON SHEETZ
ZEBULON, NC
TRAFFIC IMPACT ANALYSIS

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FIGURE 5.4

PROJECTED (2027) BUILD-OUT PM PEAK HOUR TRAFFIC VOLUMES

ZEBULON SHEETZ
ZEBULON, NC
TRAFFIC IMPACT ANALYSIS

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6.0 Capacity Analysis

Capacity analyses (see Appendix) were performed for the AM and PM peak hours for the existing traffic condition (2025) and the projected (2027) background and build-out traffic conditions using Synchro/SimTraffic Version 12 software 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 12 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 lists the LOS control delay thresholds published in the *Highway Capacity Manual* for signalized and unsignalized intersections.

Table 6.0
Level-of-Service Control Delay Thresholds

Level-of-Service	Signalized Intersections – Control Delay Per Vehicle [sec/veh]	Unsignalized Intersections – Average Control Delay [sec/veh] & Qualitative Operational Description	
A	≤ 10	≤ 10	Short Delays
B	> 10 – 20	> 10 – 15	
C	> 20 – 35	> 15 – 25	
D	> 35 – 55	> 25 – 35	Moderate Delays
E	> 55 – 80	> 35 – 50	
F	> 80	> 50	Long Delays

Existing peak hour factors were used for existing (2025) traffic conditions. A peak hour factor of 0.9 was used for all future scenarios. To provide a conservative analysis, existing coordinated signal timings were used in all future traffic conditions at the intersection of NC 96 at Pearces Road.

All capacity analyses are included in the Appendix and are briefly summarized in the following sub-sections.

6.1 NC 96 at Pearces Road

Analyses indicate that the signalized intersection of NC 96 at Pearces Road currently operates at LOS C in the AM peak hour and LOS B in the PM peak hour. The signalized intersection is expected to continue to operate at LOS C in the AM peak hour and LOS B in the PM peak hour, with or without the proposed redevelopment in place. With the increase in site traffic as part of the Sheetz redevelopment, minimal increases in vehicular queues are expected from background to build-out traffic conditions.

As site traffic is expected to have minimal impact on the operation of this intersection, no improvements are recommended to accommodate projected site traffic.

Table 6.1 summarizes the operation of the intersection of NC 96 at Pearces Road for existing (2025), background (2027), and build-out (2027) traffic conditions.

Table 6.1
NC 96 at Pearces Road (Signalized)

Condition	AM Peak Hour LOS (Delay)	PM Peak Hour LOS (Delay)
Existing (2025) Traffic	Overall - C (21.8) EB - B (16.6) WB - B (15.3) SB - D (42.3)	Overall - B (15.1) EB - B (11.6) WB - A (7.5) SB - D (50.4)
Background (2027) Traffic	Overall - C (26.4) EB - C (21.9) WB - B (19.9) SB - D (43.8)	Overall - B (17.5) EB - B (15.3) WB - A (9.8) SB - D (48.4)
Build-out (2027) Traffic	Overall - C (26.9) EB - C (22.2) WB - C (20.3) SB - D (44.4)	Overall - B (17.9) EB - B (15.6) WB - B (10.0) SB - D (48.7)

6.2 NC 96 at Site Driveway 1

Analyses indicate that the unsignalized intersection of NC 96 at Site Driveway 1 currently operates with short delays in both peak hours for the minor-street approach (Site Driveway 1). The minor-street approach of this intersection is expected to continue to operate with short delays in both peak hours, with or without the proposed redevelopment in place. With the increase in site traffic as part of the Sheetz redevelopment, minimal increases in vehicular queues are expected from background to build-out traffic conditions.

As site traffic is expected to have minimal impact on the operation of this intersection, no improvements are recommended to accommodate projected site traffic.

Table 6.2 summarizes the operation of the intersection of NC 96 at Site Driveway 1 for existing (2025), background (2027), and build-out (2027) traffic conditions.

Table 6.2
NC 96 at Site Driveway 1 (Unsignalized)

Condition	AM Peak Hour LOS (Delay)	PM Peak Hour LOS (Delay)
Existing (2025) Traffic	SB - B (14.4)	SB - C (15.6)
Background (2027) Traffic	SB - C (15.8)	SB - C (18.2)
Build-out (2027) Traffic	SB - C (15.9)	SB - C (18.5)

6.3 Pearces Road at Site Driveway 2

Analyses indicate that the unsignalized intersection of Pearces Road at Site Driveway 2 currently operates with short delays in both peak hours for the minor-street approach (Site Driveway 2). The minor-street approach of this intersection is expected to continue to operate with short delays in both peak hours under background (2027) traffic conditions. With the proposed redevelopment in place, the minor-street approach is expected to operate with short delays in the AM peak hour and moderate delays in the PM peak hour. With the increase in site traffic as part of the Sheetz redevelopment, minimal increases in vehicular queues are expected from background to build-out traffic conditions.

As site traffic is expected to have minimal impact on the operation of this intersection, no improvements are recommended to accommodate projected site traffic.

Table 6.3 summarizes the operation of the intersection of Pearces Road at Site Driveway 2 for existing (2025), background (2027), and build-out (2027) traffic conditions.

Table 6.3
Pearces Road at Site Driveway 2 (Unsignalized)

Condition	AM Peak Hour LOS (Delay)	PM Peak Hour LOS (Delay)
Existing (2025) Traffic	EB - B (13.9) NBL - A (8.5)	EB - C (17.2) NBL - A (8.2)
Background (2027) Traffic	EB - C (16.4) NBL - A (8.9)	EB - C (22.9) NBL - A (8.5)
Build-out (2027) Traffic	EB - C (17.9) NBL - A (9.0)	EB - D (26.8) NBL - A (8.6)

7.0 Conclusions

NCDOT TIP project U-5118 FB proposes to construct an additional southbound through lane along NC 96 beginning approximately 830 feet north of the intersection of NC 96 at Pearces Road and ending at US 64-264 WB Ramps/Dogwood Drive. At the intersection of NC 96 at Pearces Road the westbound right lane is expected to be restriped to a shared left/right lane and the existing traffic signal is expected to be modified to accommodate these laneage improvements. While this project was considered for inclusion during scoping discussions with the Town, it was ultimately excluded in order to provide a conservative analysis of the intersection of NC 96 at Pearces Road.

All study intersections are expected to operate with acceptable levels-of service and, based on SimTraffic observations, maximum queues are expected to increase minimally with the redevelopment of the Sheetz. Therefore, no improvements are recommended with the proposed expansion.

Appendix

Appendix A:

Approved Assumptions Memorandum

Preliminary Assumptions – Zebulon Sheetz - UPDATED
Traffic Impact Analysis
Zebulon, North Carolina

KHA will perform analyses for the Zebulon Sheetz development, a proposed commercial project located along east of NC 96 and north of Pearces Road in Zebulon, North Carolina. The following assumptions will be used in the analysis of the site:

Study Intersections

The study area will consist of the following intersections:

- NC 96 at Pearces Road
- NC 96 at Site Driveway 1 *(right-in/right-out access)*
- Pearces Road at Site Driveway 2 *(full movement access)*

Analysis Scenarios

Weekday AM and PM peak hour analyses will be performed for the following traffic conditions:

- Existing (2025)
- Background (2026 +1)*
- Build-out (2026 +1)*
- Build-out (2026 +1)* - with Improvements

**Per the Town of Zebulon Unified Development Ordinance (UDO), the future traffic conditions will be analyzed for the build-out year plus one year into the future after the development is completed (2027).*

Background Traffic Growth

Based on historical AADT data from NCDOT and nearby developments and Town of Zebulon ordinances, an annual growth rate of 2.5% will be used to grow the existing traffic counts to the build-out year.

Approved Developments

Additionally, based on the Town of Zebulon Development Activity Map, the following approved developments were identified for inclusion in this analysis as background traffic:

- 7-Eleven
- Zebulon Domino's
- Clifton Grove (Pearces Road Residential)
- Weavers Ridge

Traffic for these approved developments will be obtained or developed from either site plans or traffic studies attained from the Town of Zebulon.

Roadway Improvements by Others

State Transportation Improvement Program (TIP) project U-5118 FB proposes to construct access management improvements north of Pearces Road to Dogwood Drive along NC 96. This project is expected to begin construction in 2025. While this project was considered for inclusion during scoping discussions with the Town, it will ultimately be excluded in order to provide a conservative analysis of the intersection of NC 96 at Pearces Road.

Trip Distribution

The following overall distribution will be used for Zebulon Sheetz Development entering and exiting traffic:

- 50% to/from the east on NC 96
- 30% to/from the west on NC 96

- 20% to/from the north on Pearces Road

Trip Generation

The property is currently consists of a 5,000 square foot (SF) convenience store/gas station with 12 vehicle fueling positions (vfp). The development is proposing to expand the store to 6,150 SF with 14 vfp. See attached for the existing and proposed trip generation of the Zebulon Sheetz development.

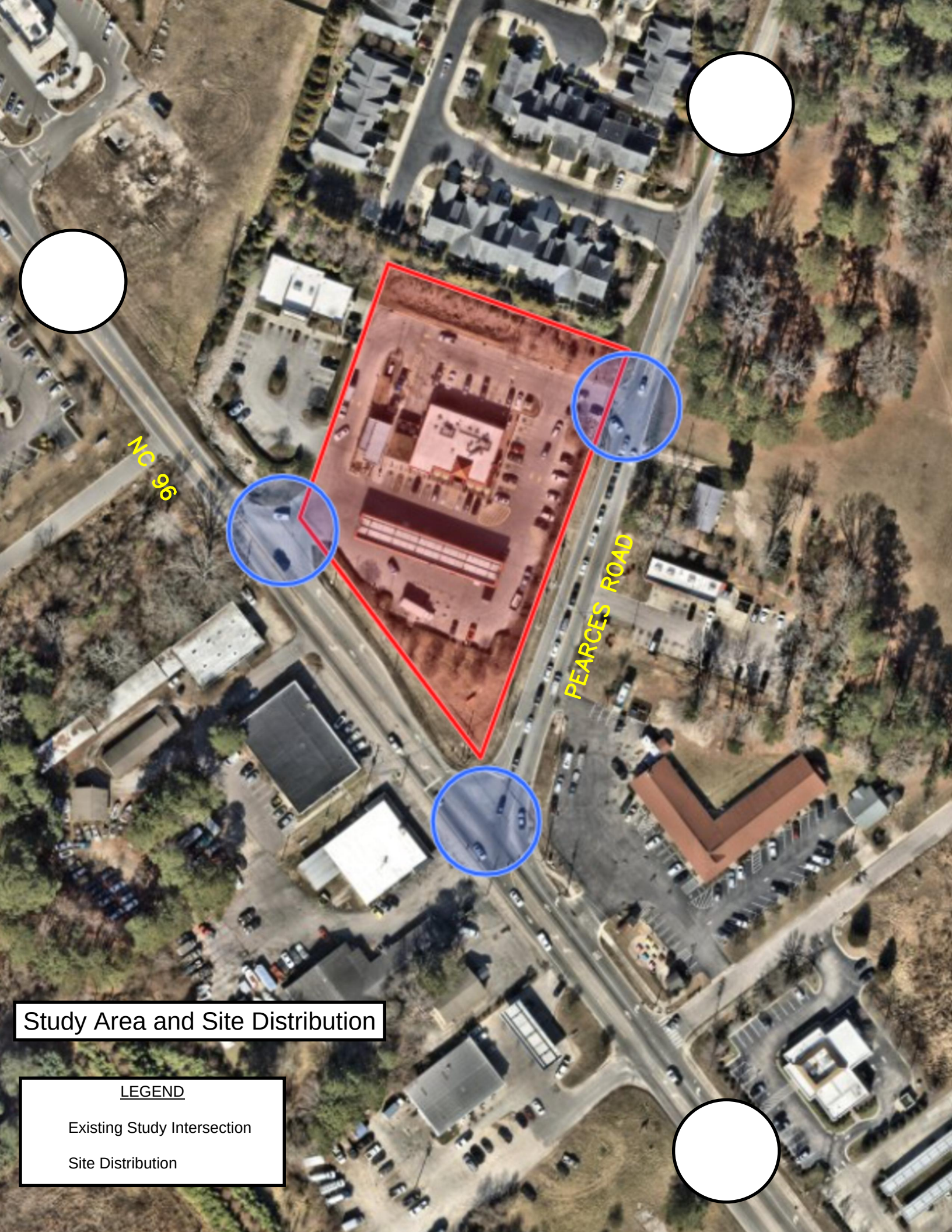
Other Study Assumptions

Existing peak hour factors (PHF) will be used in each traffic condition where those exceed the default PHF of 0.90. For future traffic signals, inputs (right-turns on red, permitted + protected phasing) will be obtained from the signal plans, and optimized signal timings will be used in each of the traffic conditions.

Sheetz Zebulon

Table 1 - Trip Generation (11th Edition): 6150SF Store, 14 vfp

Land Use	Intensity		Daily			AM Peak Hour			PM Peak Hour		
			Total	In	Out	Total	In	Out	Total	In	Out
945 Convenience Store/Gas Station: 9-15 vfp. - Existing	5,000	s.f.	3,502	1,751	1,751	283	142	141	273	137	136
945 Convenience Store/Gas Station: 9-15 vfp. - Proposed	6,150	s.f.	4,308	2,154	2,154	348	174	174	335	168	167
Pass-By Capture	AM	PM									
945 Convenience Store/Gas Station - Existing	76%	75%	2,644	1322	1,322	215	108	107	205	103	102
945 Convenience Store/Gas Station - Proposed	76%	75%	3,254	1627	1,627	264	132	132	251	126	125
Difference in Pass-By Trips			**610**	**305**	**305**	**49**	**24**	**25**	**46**	**23**	**23**
Total Net New External Trips: Proposed Site			**1,054**	**527**	**527**	**84**	**42**	**42**	**84**	**42**	**42**
Total Net New External Trips: Existing Site			**858**	**429**	**429**	**68**	**34**	**34**	**68**	**34**	**34**
Difference in Total Net New External Trips			**196**	**98**	**98**	**16**	**8**	**8**	**16**	**8**	**8**



Study Area and Site Distribution

LEGEND

Existing Study Intersection

Site Distribution

Appendix B:
Trip Generation

Sheetz Zebulon

Table 1 - Trip Generation (11th Edition): 6150SF Store, 14 vfp

Land Use	Intensity		Daily			AM Peak Hour			PM Peak Hour		
			Total	In	Out	Total	In	Out	Total	In	Out
945 Convenience Store/Gas Station: 9-15 vfp. - Existing	5,000	s.f.	3,502	1,751	1,751	283	142	141	273	137	136
945 Convenience Store/Gas Station: 9-15 vfp. - Proposed	6,150	s.f.	4,308	2,154	2,154	348	174	174	335	168	167
Pass-By Capture	AM	PM									
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Total Net New External Trips: Proposed Site			**1,054**	**527**	**527**	**84**	**42**	**42**	**84**	**42**	**42**
Total Net New External Trips: Existing Site			**858**	**429**	**429**	**68**	**34**	**34**	**68**	**34**	**34**
Difference in Total Net New External Trips			**196**	**98**	**98**	**16**	**8**	**8**	**16**	**8**	**8**

Appendix C:
Traffic Count Data

Prepared by National Data & Surveying Services

SR 96 / N Arendell Ave & Pearces Rd / Five County Spay and Neuter Clinic Dwy

Peak Hour Turning Movement Count

ID: 25-160002-005
City: Zebulon

Day: Tuesday
Date: 1/28/2025

PEAK HOURS	COUNT PERIODS
07:45 AM - 08:45 AM	7:00 AM - 09:00 AM
NONE	NONE
05:00 PM - 06:00 PM	4:00 PM - 06:00 PM

SOUTHBOUND (SR 96/N Arendell Ave)

AM	7	589	45	0	739	AM
NOON	0	0	0	0	0	NOON
PM	1	683	54	0	720	PM
	0	1	1	0		

EASTBOUND (Pearces Rd/Five County Spay and Neuter Clinic Dwy)

AM	NOON	PM	
18	0	1	
0	0	0	0
3	0	3	0
0	0	2	1
9	0	5	0
AM	NOON	PM	

WESTBOUND (Pearces Rd/Five County Spay and Neuter Clinic Dwy)

PM	NOON	AM	
30	0	46	1
0	0	2	0
278	0	413	1
0	0	0	0
471	0	273	
PM	NOON	AM	

CONTROL

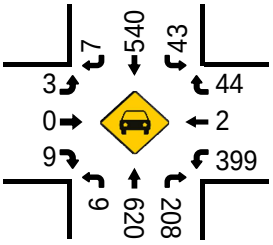
Signalized

TEV	2041 AM	0 NOON	2158 PM
PHF	0.96		0.98

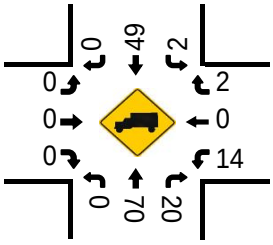
NORTHBOUND (SR 96/N Arendell Ave)

PM	966	0	0	687	415	PM
NOON	0	0	0	0	0	NOON
AM	1011	0	9	690	228	AM
		0	0	1	1	

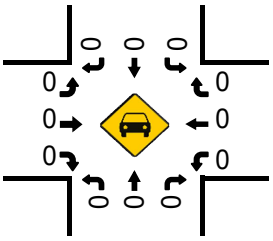
Cars (AM)



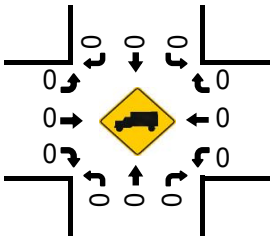
HT (AM)



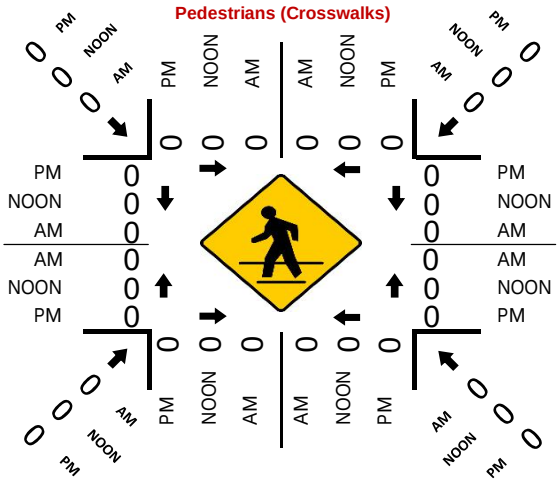
Cars (NOON)



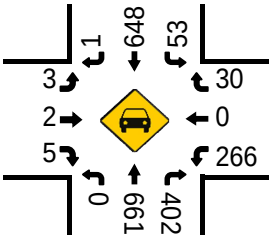
HT (NOON)



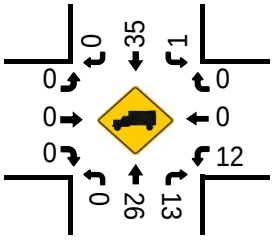
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

Sheetz Gasoline Station Dwy & N Arendell Ave / SR 96

Peak Hour Turning Movement Count

ID: 25-160015-002
City: Zebulon

Day: Wednesday
Date: 3/26/2025

PEAK HOURS	COUNT PERIODS
07:15 AM - 08:15 AM	7:00 AM - 09:00 AM
NONE	NONE
04:30 PM - 05:30 PM	4:00 PM - 06:00 PM

SOUTHBOUND — Sheetz Gasoline Station Dwy

	Left	Thru	Right	U-Turn	
AM	57	0	0	0	27 AM
NOON	0	0	0	0	0 NOON
PM	92	0	2	2	66 PM
	0	1	0	0	

EASTBOUND — N Arendell Ave/SR 96

AM	NOON	PM	
699	0	753	
0	0	0	0
2	0	4	0
647	0	668	1
0	0	0	0
AM	NOON	PM	

WESTBOUND — N Arendell Ave/SR 96

PM	NOON	AM	
60	0	25	1
661	0	642	1
0	0	0	0
0	0	0	0
670	0	647	
PM	NOON	AM	

CONTROL

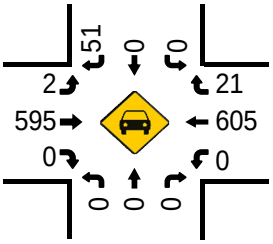
No Control

TEV	1373 AM	0 NOON	1489 PM
PHF	0.96		0.94

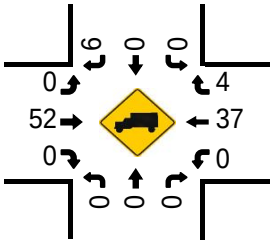
NORTHBOUND — Sheetz Gasoline Station Dwy

	Left	Thru	Right	U-Turn	
PM	0	0	0	0	0 PM
NOON	0	0	0	0	0 NOON
AM	0	0	0	0	0 AM
	0	0	0	0	

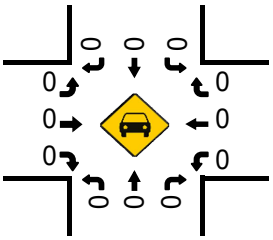
Cars (AM)



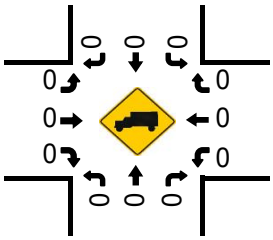
HT (AM)



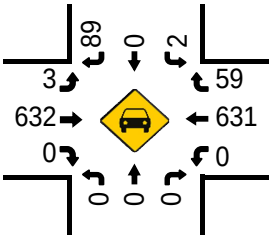
Cars (NOON)



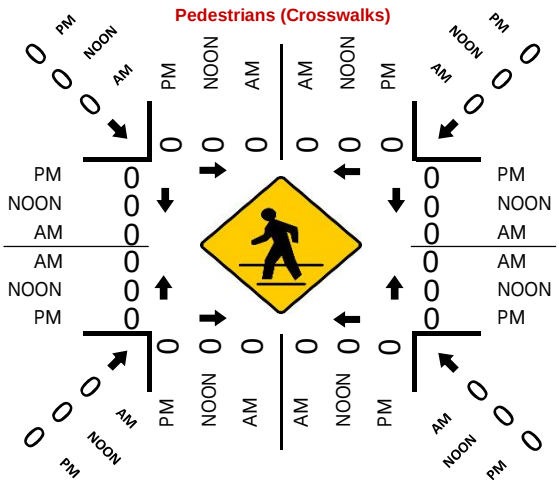
HT (NOON)



Cars (PM)



Pedestrians (Crosswalks)



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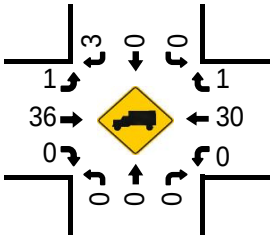


Prepared by National Data & Surveying Services

Pearces Rd / CR 1001 & Sheetz Gasoline Station Dwy

Peak Hour Turning Movement Count

ID: 25-160015-001
City: Zebulon

Day: Wednesday
Date: 3/26/2025

PEAK HOURS	COUNT PERIODS
07:30 AM - 08:30 AM	7:00 AM - 09:00 AM
NONE	NONE
05:00 PM - 06:00 PM	4:00 PM - 06:00 PM

Pearces Rd/CR 1001

SOUTHBOUND

AM	66	345	0	0	225	AM
NOON	0	0	0	0	0	NOON
PM	74	230	0	0	403	PM

EASTBOUND (Sheetz Gasoline Station Dwy)

AM	NOON	PM	
142	0	202	
0	0	0	0
25	0	61	0
0	0	0	1
86	0	117	0
AM	NOON	PM	

WESTBOUND (Sheetz Gasoline Station Dwy)

PM	NOON	AM	
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	
PM	NOON	AM	

CONTROL: No Control

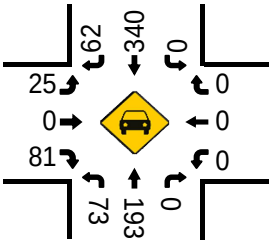
TEV	798 AM	0 NOON	952 PM
PHF	0.92		0.97

NORTHBOUND

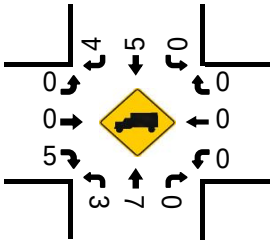
PM	347	0	128	342	0	PM
NOON	0	0	0	0	0	NOON
AM	431	0	76	200	0	AM

Pearces Rd/CR 1001

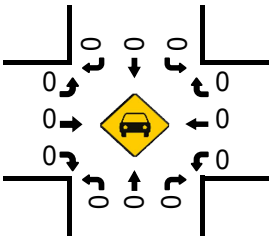
Cars (AM)



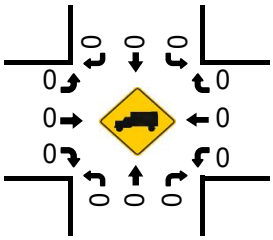
HT (AM)



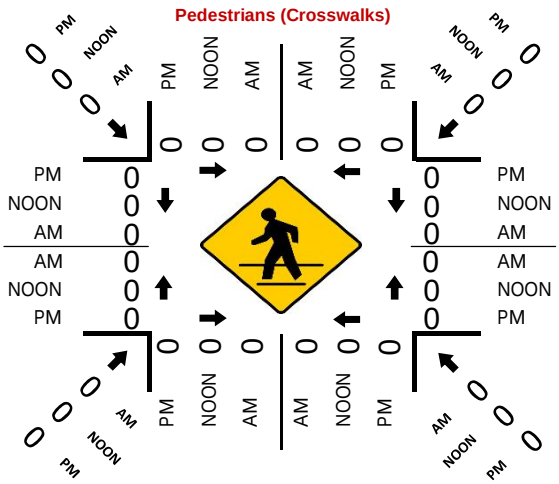
Cars (NOON)



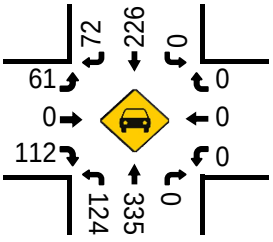
HT (NOON)



Pedestrians (Crosswalks)



Cars (PM)



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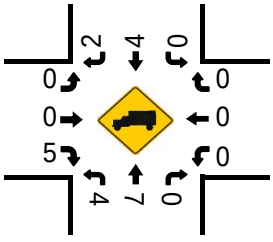


Appendix D:

Approved Development Information

TRAFFIC IMPACT ANALYSIS

Zebulon 7-Eleven Convenience Store

ZEBULON, NORTH CAROLINA

Nicholas E. Burns 3/1/23

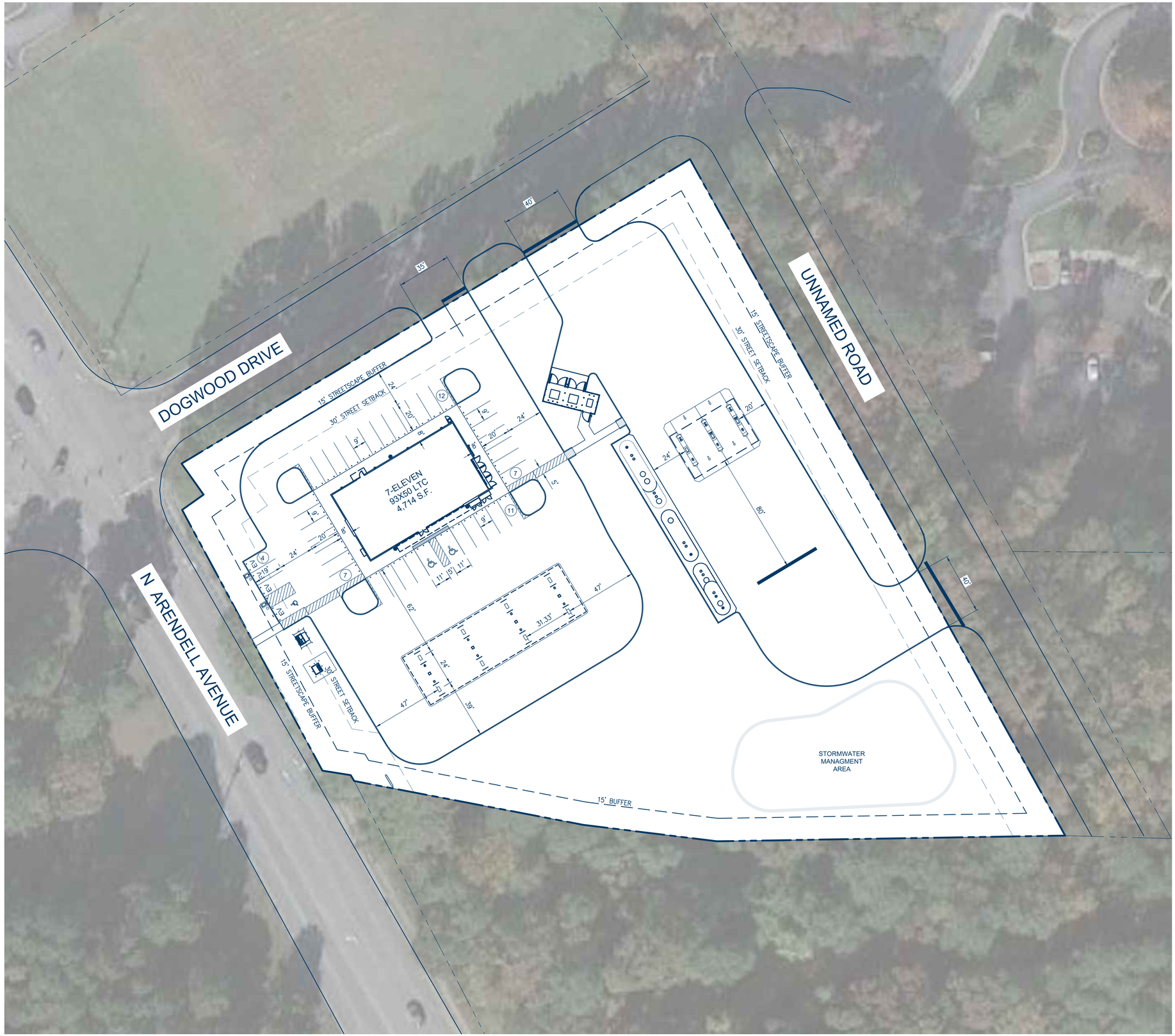
REPORT PREPARED FOR:
C4 CStore Holdings II, LLC
121 West Trade Street, Suite 2550
Charlotte, NC 28202

REPORT PREPARED BY
Impact Designs, Inc.
PO Box 3728
Mooresville, NC 28117
nick@impactdesignsinc.com

QUALIFICATIONS

1. THIS SITE PLAN WAS PRODUCED WITH THE BEST INFORMATION AVAILABLE AT DATE OF PRODUCTION.
2. NO ALTA/TOPO SURVEY, NO TITLE REPORT, NO EASEMENT RESEARCH WAS AVAILABLE.
3. TRANSPORTATION, UTILITY, ARCHEOLOGICAL, HISTORICAL RESEARCH WAS NOT PERFORMED.
4. NO ZONING REQUIREMENTS, SETBACKS, BUFFERS WERE SUPPLIED AT THE DATE OF THIS PLAN. PROPOSED LAYOUT MAY NEED TO BE ADJUSTED PENDING ADDITIONAL INFORMATION.
5. WATER QUALITY/QUANTITY TREATMENT LOCATION AND SIZE SUBJECT TO ENGINEERING CALCULATIONS AND AGENCY REVIEW.
6. FOR ILLUSTRATIVE PURPOSES ONLY: NOT FOR LEASING DIMENSIONS OR CONSTRUCTION. ALL DIMENSIONS AND LAYOUT SUBJECT TO CHANGE.
7. SITE PLAN WILL REQUIRE 7-ELEVEN AND CITY APPROVAL.

SITE SUMMARY	
AREA	152,875 S.F.±
PARKING SPACES	41



GRAPHIC SCALE
20 0 10 20
1 INCH = 20 FEET

THE DIMENSION GROUP
ARCHITECTURE · CIVIL ENGINEERING · MEP ENGINEERING
TX7705 SANDHILL ROAD, DALLAS, TEXAS 75238
TEL: 214.343.5040 www.thedimensiongroup.com

#	DATE	REVISION DESCRIPTION	BY

drawn by
designed by
approved by

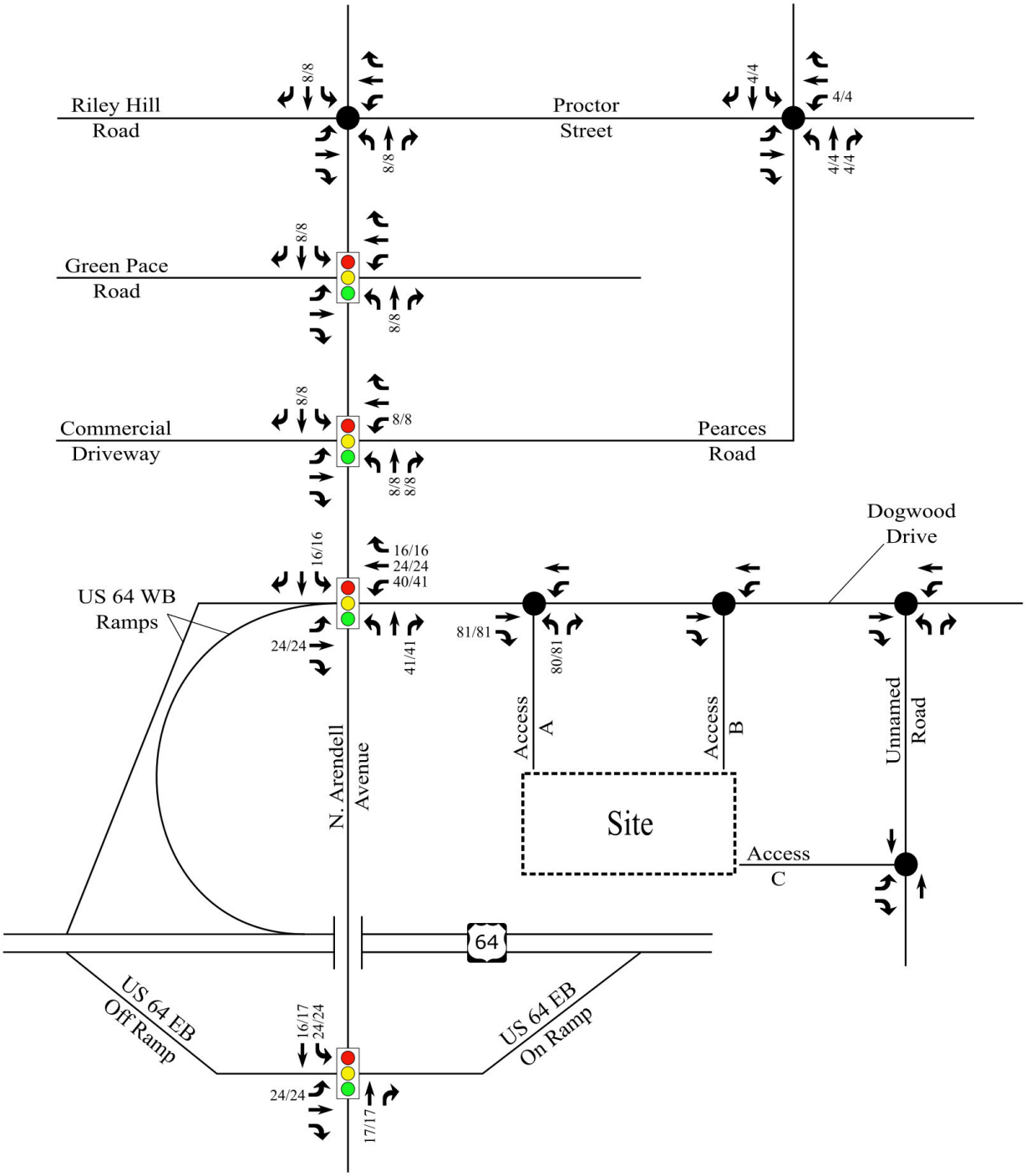
project no. C22-144
date 10/28/2022 – 11:28 am
dwg. C22144 – N Arendell & Dogwood – CSP1.dwg

CONCEPTUAL SITE PLAN

N ARENDELL AVE & DOGWOOD DR
ZEBULON, NC

SHEET
CSP1

Drawing name: L:\7-Eleven\2022\C22-144 & C22-145 – 1055397 – Zebulon, NC (N Arendell Ave & Dogwood Dr)\01 Preliminary\Site Sketch\C22144 – N Arendell & Dogwood – CSP1.dwg Oct 28, 2022 – 11:28am



LEGEND

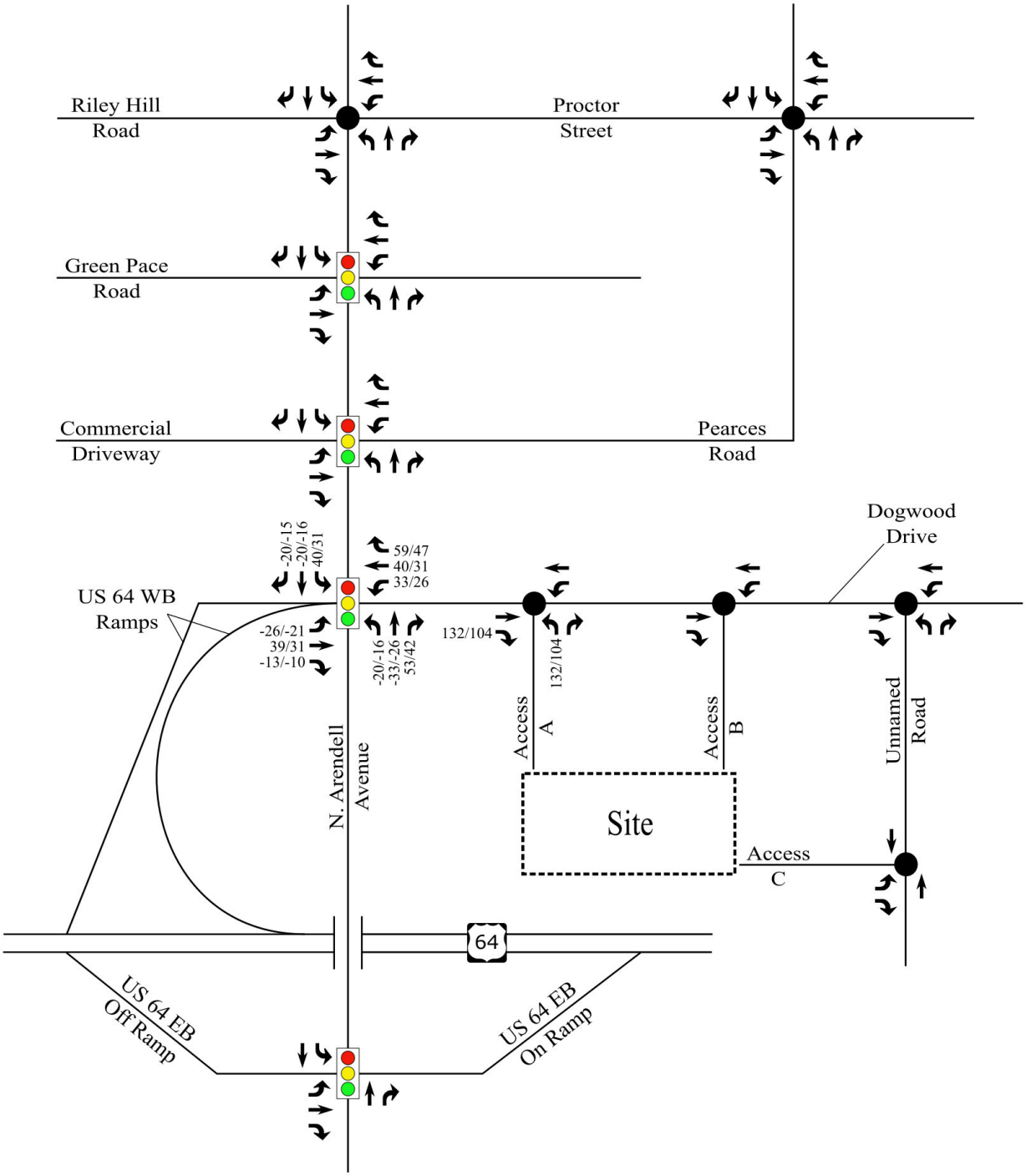
- Signalized Intersection
- Unsignalized Intersection
- X / Y → AM / PM Passenger Vehicle Site Trips

IMPACT
Designs, Inc.

Zebulon 7-Eleven
Zebulon, NC

Primary Trip Assignments - Passenger Vehicles

Scale: Not to Scale	Figure	8



LEGEND

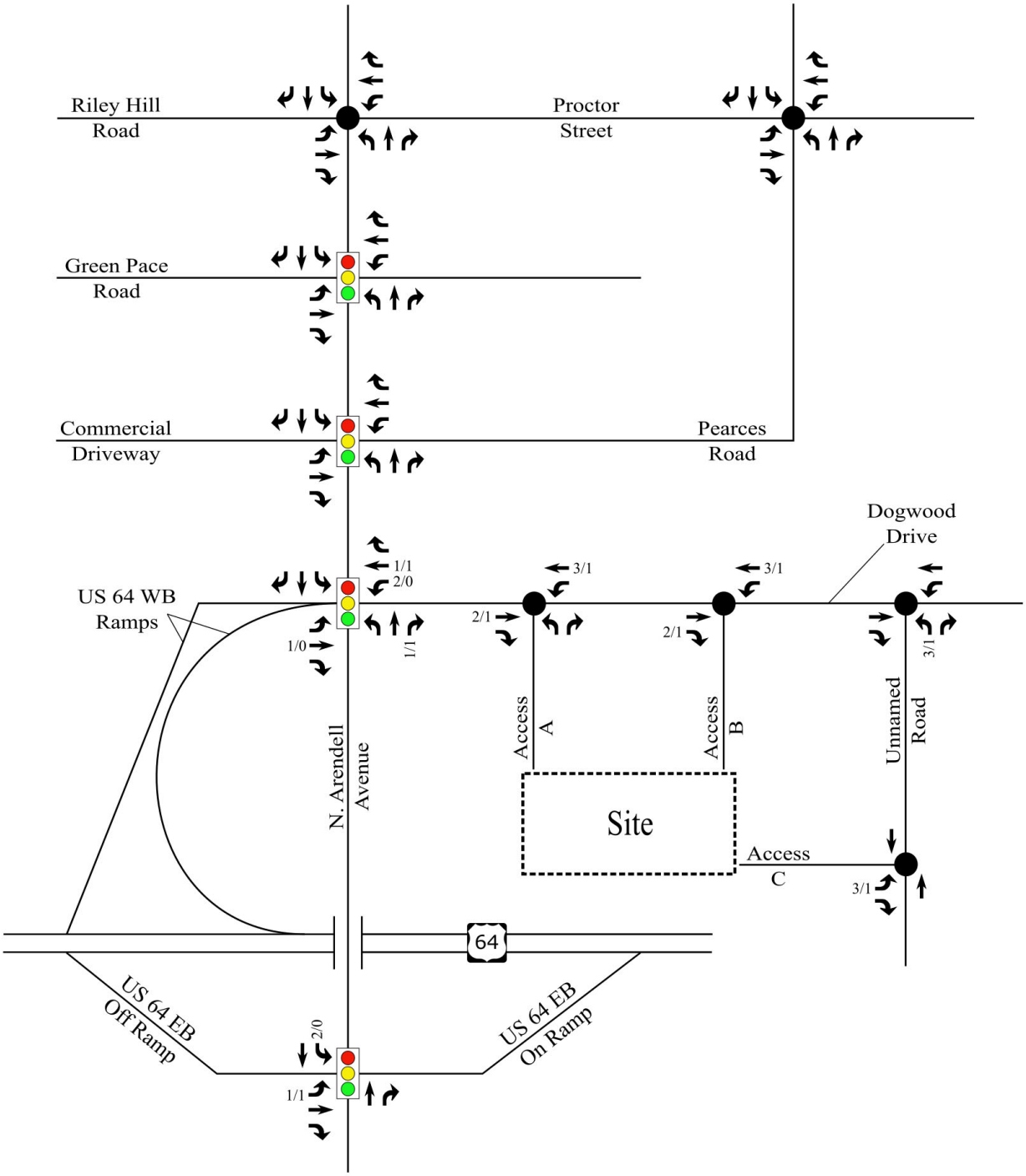
- Signalized Intersection
- Unsignalized Intersection
- X / Y → AM / PM Pass-By Trips

IMPACT
Designs, Inc.

Zebulon 7-Eleven
Zebulon, NC

Pass-By Trip Assignments

Scale: Not to Scale	Figure	10



LEGEND

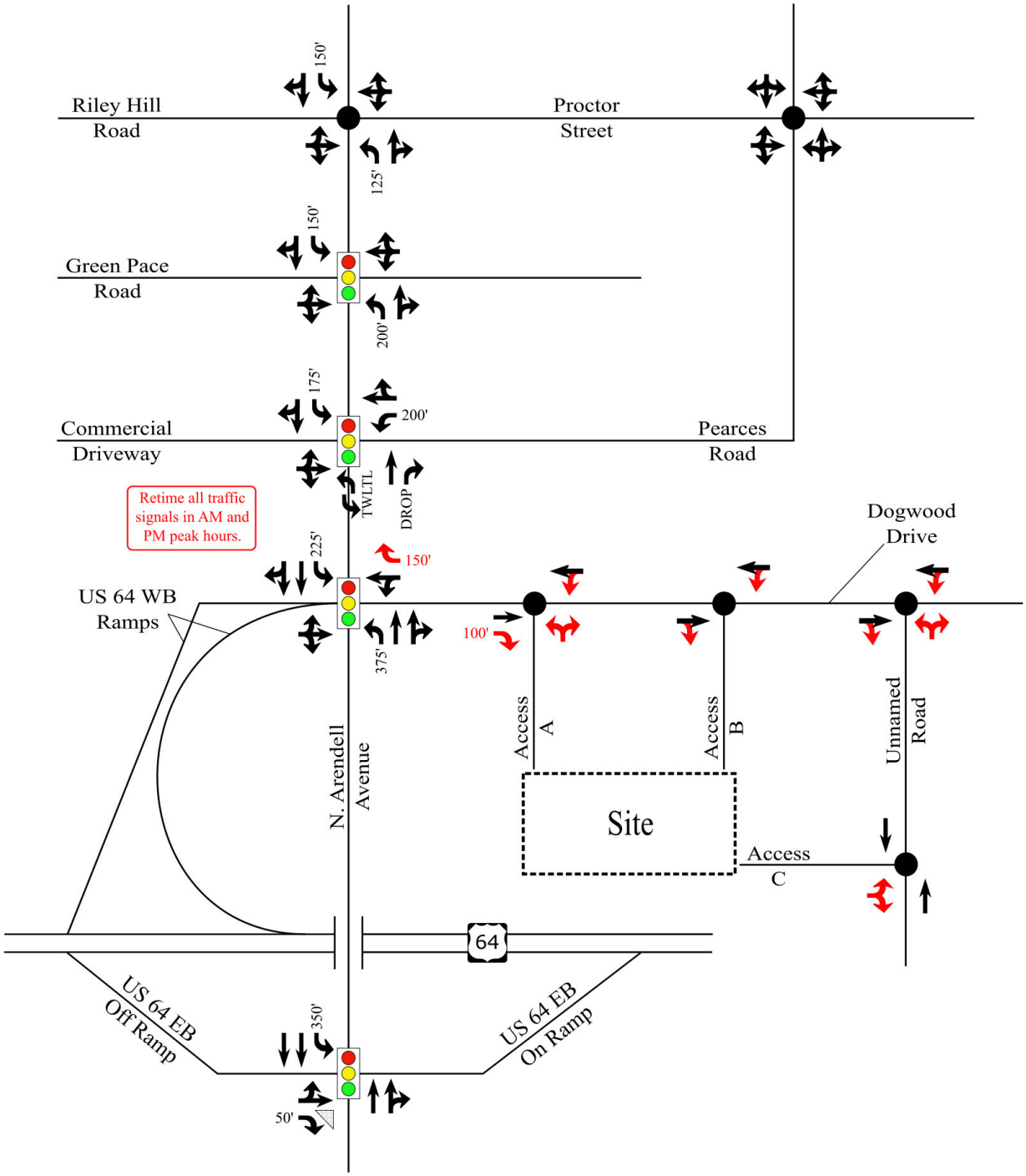
- Signalized Intersection
- Unsignalized Intersection
- X / Y → AM / PM Truck Site Trips

IMPACT
Designs, Inc.

Zebulon 7-Eleven
Zebulon, NC

Primary Trip Assignments - Trucks

Scale: Not to Scale	Figure	12



LEGEND

- Signalized Intersection
- Unsignalized Intersection
- Existing Lane
- Channelized Movement
- Recommended Improvement
- X' Storage (In Feet)

IMPACT
Designs, Inc.

Zebulon 7-Eleven
Zebulon, NC

Proposed Lane Configurations and Traffic Control

Scale: Not to Scale	Figure	14

Pearces Road Residential Development

Traffic Impact Analysis

Zebulon, North Carolina

October 2020

Prepared for:

DR Horton

TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

Contact: Jeff Hochanadel, PE, PTOE

5410 Trinity Road, Suite 102 • Raleigh, NC 27607
(919) 866-4951 phone • (919) 859-5663 fax
www.timmons.com

SITE DATA

SITE ADDRESSES:	1015 Pearces Road 0 Pippin Road 921 Pearces Road
Total Acreage:	±117.47 Ac.
Conservation Area (Incudes Rec. Area)	61.24 Ac. (52.13%)
Development Area	56.23 Ac.
Total No. Lots:	232
Gross Density:	1.98 DU/AC
Watershed:	Moccasin Creek

Wm. G. Daniel & Assoc.
Engineering Planning
Site Design
1160-BE WAYNARD ROAD
SUITE 260
CARY, NC 27511
Ph:919-467-9705 Fx:919-460-7585
C-0329
FED ID# 56-1275586

Revisions

Project
D.R. Horton Property
Zebulon, NC

Conservation Subdivision
Development Areas Map

Date
July 2, 2020

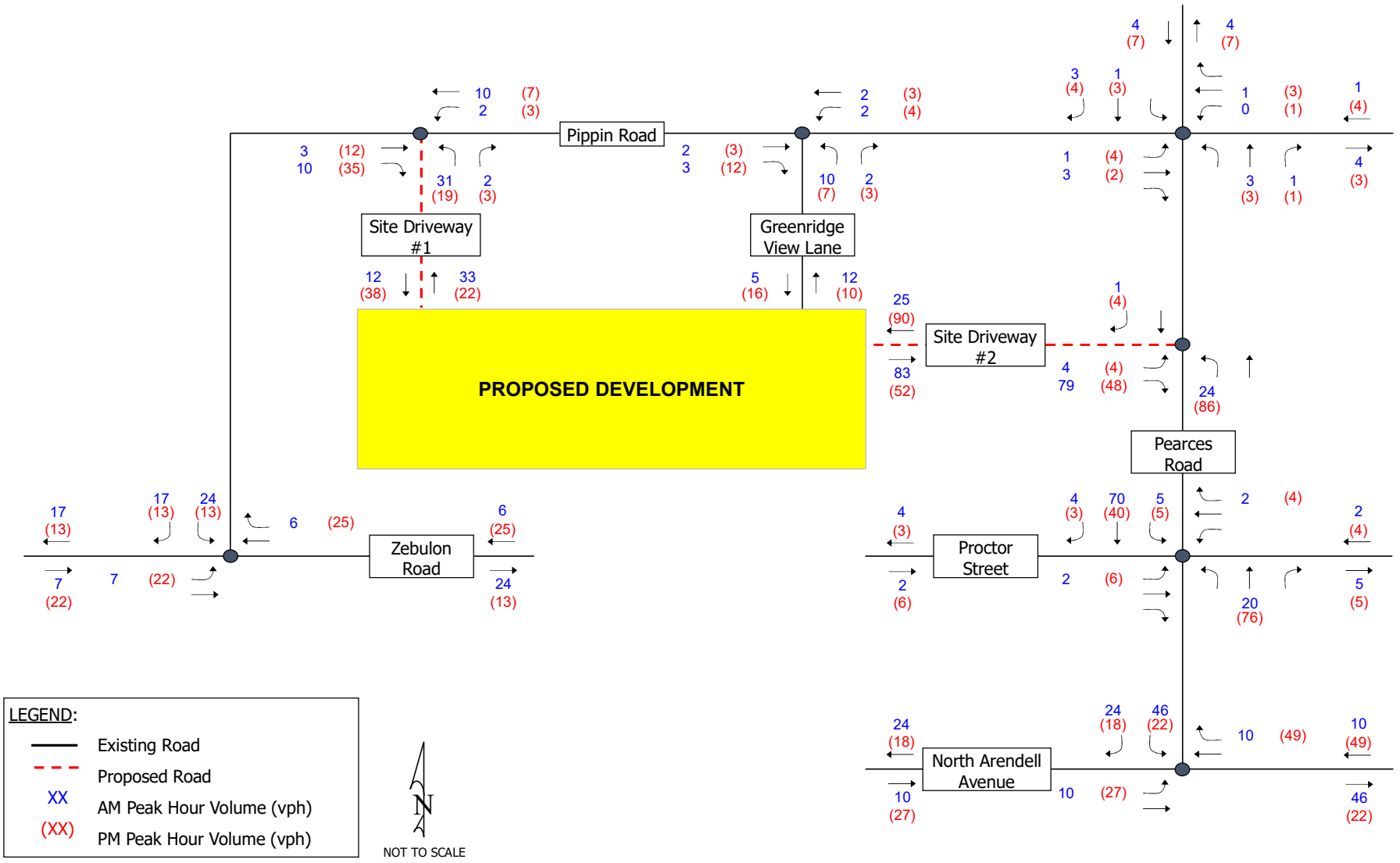
Scale
1" = 200'

Sheet
1 of 1

TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

Pearces Road Residential
Traffic Impact Analysis
Site Plan

Figure 2-1

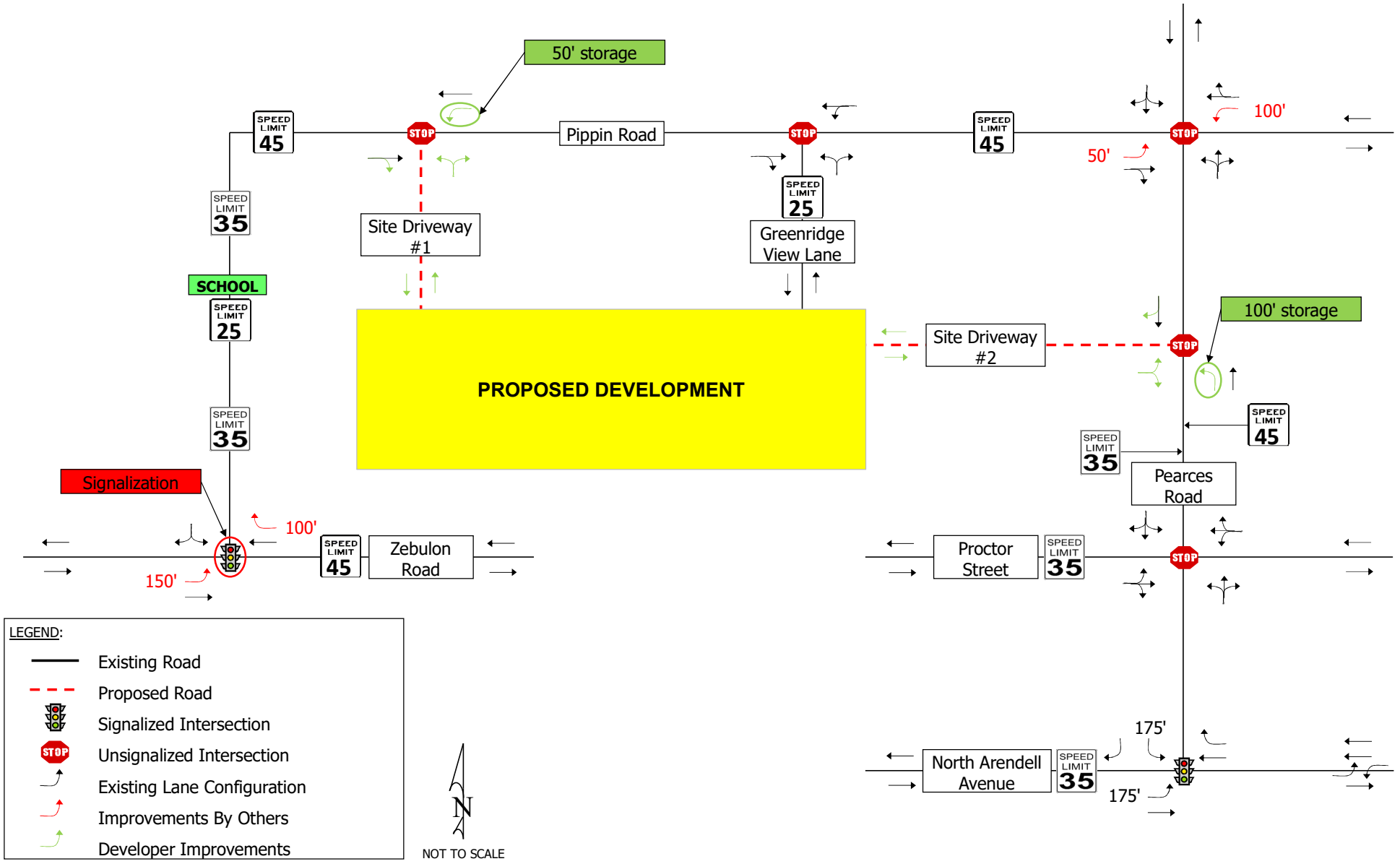


TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

Pearces Road Residential Traffic Impact Analysis

2024 Trip Distribution Volumes

Figure 4-2



TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

Pearces Road Residential Traffic Impact Analysis

2024 Proposed Lane Configuration

Figure 6-1

DRMP

TRAFFIC IMPACT ANALYSIS

FOR

ZEBULON DOMINO'S

LOCATED IN

ZEBULON, NORTH CAROLINA

Prepared For:

Rivers & Associates, Inc.

353 E Six Forks Road

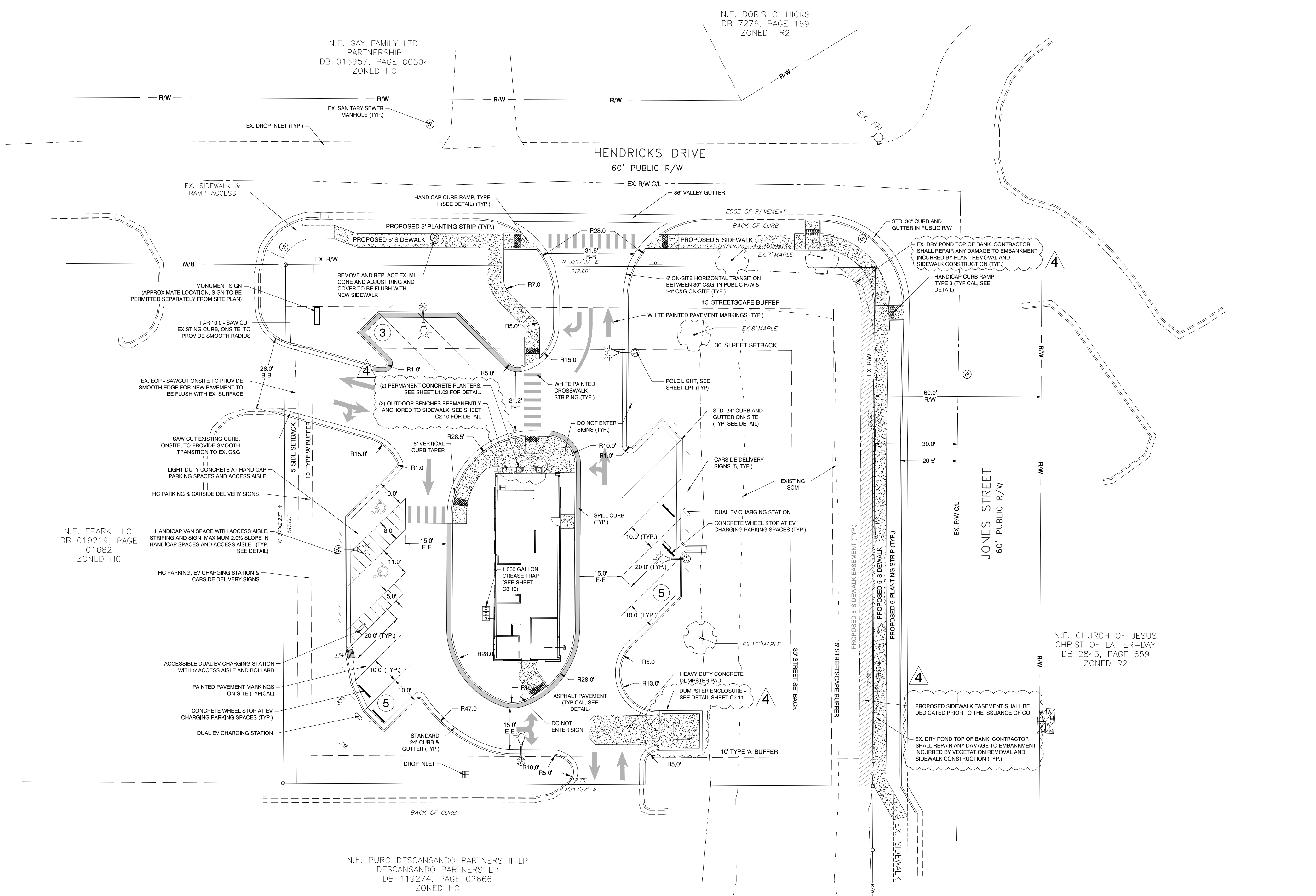
Suite 230

Raleigh, NC

Prepared By:

DRMP, Inc.

License #F-1524



SITE DATA TABLE

PROPERTY INFORMATION / SITE ADDRESSES -	NC PIN - 27-0600-6772		
	ADDRESS - 1000 HENDRICKS DR		
	ZEBULON, WAKE COUNTY, NORTH CAROLINA 27597		
TOWNSHIP -	LITTLE RIVER (PER IMAPS)		
OWNER/ DEVELOPER -	JTSJ INC.		
	9107 S TRYON ST STE. F, CHARLOTTE, NC 28273		
SITE AREA -	0.913 AC (PER SURVEY)		
LAND USE -	EXISTING - VACANT / STORMWATER CONTROL MEASURE		
	PROPOSED - RESTAURANT, WALK-UP ONLY (4)		
ZONING -	HC- HEAVY COMMERCIAL		
SETBACKS -	STREET -	30'	
	SIDE -	0'; 5' IF PROVIDED	
	REAR -	0'	
BUFFERS -	15' STREETSCAPE BUFFER ALONG HENDRICKS DR & JONES ST		
	10' TYPE 'A' PERIMETER BUFFER ALONG ADJACENT PROPERTIES		
BUILDING DATA -	PROPOSED BUILDING FOOTPRINT = +/- 1,632 SF		
PARKING - (4)	REQUIRED -	1 SPACE / EMPLOYEE ON LARGEST SHIFT	
		1 SPACE / OUTDOOR SEATING LOCATION	
		11 EMPLOYEES + 2 OUTDOOR SEATING LOCATIONS	
		= 13 PARKING SPACES REQUIRED	
	PROVIDED -	13 PARKING SPACES, INCL. 2 VAN ACCESSIBLE HANDICAP SPACES.	
		MINIMUM DIMENSIONS: 10' X 20'	
BICYCLE PARKING -	REQUIRED -	1 SPACE / 20 OFF-STREET AUTO PARKING SPACES <20 SPACES ON SITE, NO BICYCLE PARKING REQUIRED	
IMPERVIOUS SURFACE -	EXISTING -	N/A	
AREA	PROPOSED -	ASPHALT PAVEMENT - (INCLUDES C+G)	+/-12,848 SF
		CONCRETE -	+/- 2,231 SF
		BUILDING -	+/- 1,632 SF
		TOTAL -	+/- 16,771 SF (+/- 0.385 AC)
	PROPOSED IMPERVIOUS PERCENTAGE -		+/- 42.17%

GENERAL NOTES:

1. ALL SITE WORK SHALL BE DONE IN ACCORDANCE WITH THE PLANS PREPARED BY RIVERS AND ASSOCIATES, INC., THE CURRENT REQUIREMENTS OF THE TOWN OF ZEBULON, THE APPLICABLE SECTIONS OF THE NCDOT STANDARD SPECIFICATIONS FOR ROADWAY CONSTRUCTION, AND ALL OTHER PERTINENT FEDERAL, STATE AND LOCAL LAWS.
2. THE CONTRACTOR SHALL COMPLY AT ALL TIMES WITH APPLICABLE FEDERAL, STATE AND LOCAL LAWS, PROVISIONS, AND POLICIES GOVERNING SAFETY AND HEALTH, INCLUDING THE FEDERAL CONSTRUCTION SAFETY ACT (PUBLIC LAW 91-54), FEDERAL REGISTER, CHAPTER XVII, PART 1926 OF TITLE 29 REGULATIONS, OCCUPATIONAL SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION, AND SUBSEQUENT PUBLICATIONS UPDATING THESE REGULATIONS.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR EXAMINING THE AREAS AND CONDITIONS UNDER WHICH THE PROJECT IS TO BE CONSTRUCTED PRIOR TO THE SUBMISSION OF A BID. SUBMISSION OF A BID SHALL BE CONSTRUED TO MEAN THE CONTRACTOR HAS REVIEWED THE SITE AND IS FAMILIAR WITH CONDITIONS AND CONSTRAINTS OF THE SITE.
4. BEFORE EXCAVATION, ALL UNDERGROUND UTILITIES SHALL BE LOCATED IN THE FIELD BY THE PROPER AUTHORITIES. THE CONTRACTOR SHALL NOTIFY N.C. ONE CALL AT 1-800-632-4949. THE LOCATION OF ALL UTILITIES AND UNDERGROUND STRUCTURES ARE APPROXIMATE AND MAY NOT ALL BE SHOWN. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE THE EXISTENCE AND EXACT LOCATION OF ALL UTILITIES AND UNDERGROUND STRUCTURES.
5. CONTRACTOR SHALL REFER TO THE GEOTECHNICAL REPORT PRIOR TO INITIATION OF ANY EARTHWORK ACTIVITY.
6. CONTRACTOR SHALL NOTIFY PUBLIC WORKS STREET MAINTENANCE DIVISION 48 HOURS PRIOR TO MAKING CONNECTIONS TO EXISTING STORM DRAINS LOCATED WITHIN PUBLIC STORM DRAINAGE EASEMENTS OR R/W.
7. REFER TO C1.02 FOR SURVEY CONTROL INFORMATION.
8. CONTRACTOR SHALL REFER TO OTHER PLANS WITHIN THIS CONSTRUCTION SET FOR OTHER PERTINENT INFORMATION.
9. PER FEMA FIRM MAP 3720466000L DATED 7/7/14, THIS PROJECT IS IN ZONE X AND THEREFORE THERE IS NO REGULATORY FLOODPLAIN LOCATED ON THIS PROPERTY.
10. BUILDINGS, STRUCTURES OR OTHER IMPROVEMENTS, MATERIALS AND SURFACES, INCLUDING BUT NOT LIMITED TO PRINCIPLE AND ACCESSORY STRUCTURES AND ADDITIONS AND APPURTENANCES THERETO, SIGNAGE, FENCES, WALLS, MECHANICAL EQUIPMENT, CANOPIES, ANNTENNAS, MASTS, DEBRIS, SOLID WASTE COLLECTION CONTAINERS, MAIL RECEPTACLES, AND IMPERVIOUS SURFACES SHALL NOT ENCROACH WITHIN ANY DEDICATED EASEMENT WITHOUT PRIOR APPROVAL OF TOWN OF ZEBULON & THE CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT.
11. SOIL EROSION AND SEDIMENTATION CONTROL PLAN IS NOT APPLICABLE, THE SITE DISTURBANCE IS LESS THAN ONE ACRE.
12. WETLANDS ARE VALUABLE NATURAL RESOURCES THAT PROVIDE IMPORTANT ECOLOGICAL FUNCTIONS. BE ADVISED THAT ACTIVITIES IN WETLANDS ARE REGULATED BY THE FEDERAL GOVERNMENT UNDER SECTION 404 OF THE CLEAN WATER ACT. JURISDICTIONAL WETLANDS MAY INCLUDE THE PINE-SHRUB POCOSINS THAT ARE COMMON IN THIS REGION. IF ANY PRIVATE LAND OWNER, DEVELOPER, CORPORATION, OR OTHER PERSON PROPOSES TO UNDERTAKE CONSTRUCTION/FILLING ACTIVITIES IN OR NEAR A LAKE, STREAM, CREEK TRIBUTARY OR ANY UNNAMED BODY OF WATER INCLUDING ITS ADJACENT WETLANDS, FEDERAL PERMIT AUTHORIZATION MAY BE REQUIRED FROM THE U.S. ARMY CORPS OF ENGINEERS PRIOR TO COMMENCEMENT OF SUCH LAND-DISTURBING ACTIVITIES. PLEASE CONTACT MS. TRACY WHEELER, TELEPHONE (252) 975-1616 FOR A WETLAND DETERMINATION AND INFORMATION REGARDING SPECIFIC PERMIT REQUIREMENTS. WETLANDS DETERMINATION PENDING, BY OTHERS.
13. APPROVAL OF SITE PLAN DOES NOT CONSTITUTE APPROVAL OF SIGNS. SEPARATE SIGN PERMITS ARE REQUIRED.
14. ALL SLOPES SHALL BE 3:1 (HORIZONTAL:VERTICAL) MAXIMUM UNLESS NOTED OTHERWISE.
15. ALL AREAS NOT PAVED SHALL BE TOPSOILED, SEEDED, MULCHED OR LANDSCAPED/SODDED UNLESS OTHERWISE NOTED IN THE CONSTRUCTION DRAWINGS, SITE SPECIFICATIONS OR INSTRUCTED BY THE OWNER.
16. ALL REQUIRED IMPROVEMENTS SHALL COMPLY WITH THE TOWN OF ZEBULON ZONING ORDINANCE
17. REFUSE COLLECTION SHALL BE PROVIDED BY PRIVATE CONTRACTOR.
18. CONSTRUCTION OF ROADWAY EXTENSION BY OTHERS

STORMWATER MANAGEMENT NOTES:

1. EXISTING STORMWATER MANAGEMENT DETENTION BASIN
   - A. ON-SITE ALLOWABLE IMPERVIOUS SURFACE AREA = 1.89 AC = 82,328 SF
   - B. SONIC IMPERVIOUS SURFACE AREA = 0.84 AC = 36,590 SF
   - C. CAPITAL BANK IMPERVIOUS SURFACE AREA = 0.56 AC = 24,394 SF
2. ALLOWABLE IMPERVIOUS SURFACE AREA FOR SITE = 0.48 AC = 21,344 SF
3. PROPOSED IMPERVIOUS SURFACE AREA FOR SITE = 0.45 AC = 16,771 SF
4. ALLOWABLE FUTURE IMPERVIOUS AREA = 21,344 SF - 16,771 SF = 4,573 SF

NOTE:

1. PAVEMENT MARKINGS WITHIN SITE CAN BE PAINTED. PAVEMENT MARKINGS WITHIN RIGHT OF WAY SHALL BE THERMOPLASTIC AND SHALL BE INSTALLED IN ACCORDANCE WITH NCDOT STANDARDS AND SPECIFICATIONS.

2. EXISTING ON-SITE FIBER OPTIC LINES TO BE REROUTED BY CONTRACTOR.

HC RAMPS:

1. ALL HC RAMPS TO BE FIELD ADJUSTED WITH INPUT FROM THE TOWN OF ZEBULON FIELD INSPECTOR PRIOR TO INSTALLATION.

2. POWER POLES WHICH CONFLICT WITH FIELD LOCATED HC RAMPS ARE TO BE RELOCATED BY APPROPRIATE UTILITY COMPANY.

CALL BEFORE YOU DIG!
WWW.NC811.ORG
N.C. ONE-CALL CENTER
IT'S THE LAW!

ALL CONSTRUCTION TO BE IN ACCORDANCE WITH TOWN OF ZEBULON, CITY OF RALEIGH PUBLIC UTILITIES DEPT., WAKE COUNTY, NCDOT & NCDEQ STANDARDS, SPECIFICATIONS AND DETAILS.

NC License: F-0334
Rivers & ASSOCIATES, INC. Since 1918
Engineers
Planners
Surveyors
Landscape Architects
riversandassociates.com
Six Forks Place III Ste. 230
353 E. Six Forks Road
Raleigh, NC 27609
919.594.1626

6/27/24

REVISIONS:

NO.	DESCRIPTION	DATE	BY
4	CONSTRUCTION DRAWING SUBMITTAL #5	06/28/24	
3	CONSTRUCTION DRAWINGS SUBMITTAL #4	05/22/24	
2	CONSTRUCTION DRAWINGS SUBMITTAL #3	01/19/24	
1	CONSTRUCTION DRAWINGS SUBMITTAL #2	12/07/23	
	TRC REVIEW PLAN	11/07/23	
	CONSTRUCTION DRAWINGS SUBMITTAL #1	06/01/23	

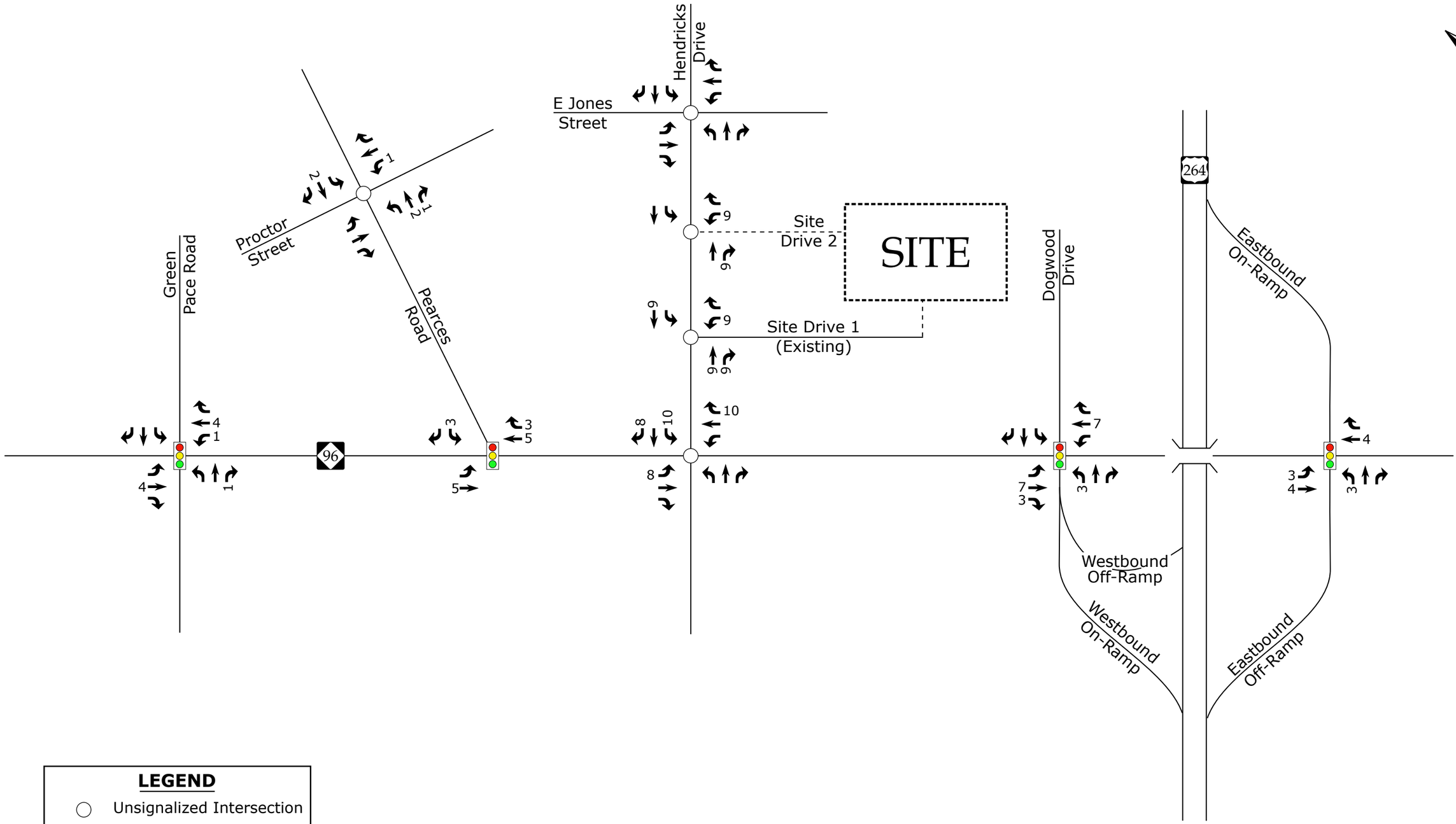
CONSTRUCTION DRAWINGS

DOMINO'S ZEBULON

TOWN OF ZEBULON ~ WAKE COUNTY ~ NORTH CAROLINA

SITE PLAN

DATE:	
DESIGNED BY:	SF/MS
DRAWN BY:	SF/MS
CHECKED BY:	JSJ/PRM
PROJECT No.	2023018
DRAWING No.	W-4081
SCALE:	AS SHOWN
SHEET No.	C2.01



LEGEND

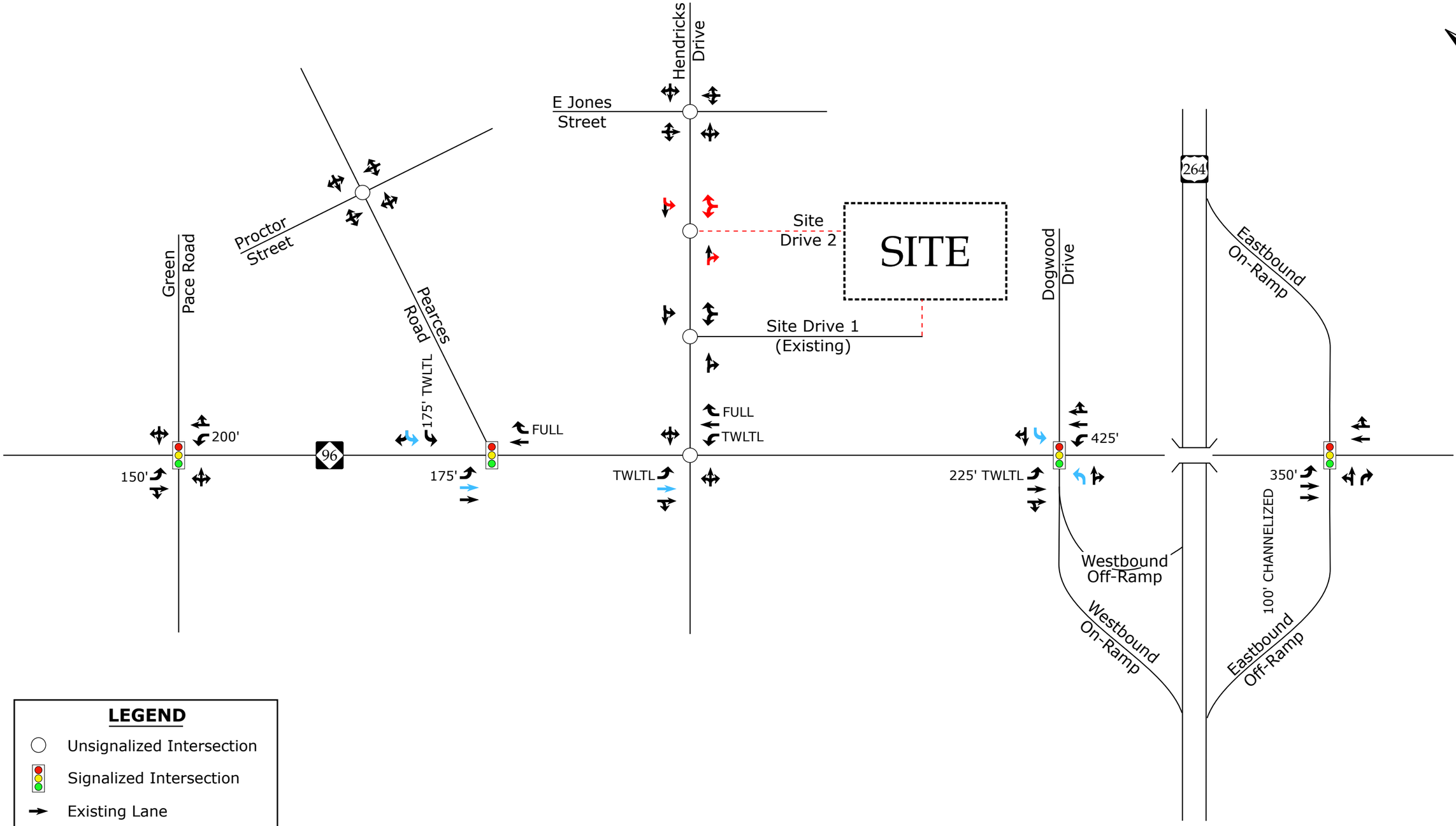
- Unsignalized Intersection
- Signalized Intersection
- X → Weekday PM Peak Hour Site Trips

DRMP

Zebulon Domino's
Zebulon, NC

Site Trip Assignment

Scale: Not to Scale | Figure 7



LEGEND

- Unsignalized Intersection
- Signalized Intersection
- Existing Lane
- Improvement by Developer
- NCDOT Improvement
- X' Storage (In Feet)

DRMP

Zebulon Domino's
Zebulon, NC

Recommended Lane Configurations

Scale: Not to Scale | Figure 11

RAMEY KEMP & ASSOCIATES
TRANSPORTATION ENGINEERS

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Raleigh, NC 27609
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July 25, 2019

Mr. Meade Bradshaw
Assistant Planning Director
Town of Zebulon
1003 N. Arendell Avenue
Zebulon, NC 27597
Phone: (919) 269-7455
Email: mbradshaw@townofzebulon.org

Subject: Traffic Study
Weaver's Ridge – Zebulon, North Carolina

Dear Mr. Bradshaw:

This letter provides the findings of the traffic study prepared by Ramey Kemp & Associates, Inc. (RKA) for the proposed Weaver's Ridge development located east of Zebulon Road (NC 96) across from Glory Road in Zebulon, North Carolina. The purpose of the study is to determine how traffic generated by the proposed development is expected to impact surrounding roadways and intersections.

The proposed residential development is assumed to consist of 124 townhomes and 58 single-family homes. Refer to Figure 1 for the site location map. Site access will be provided via one (1) full movement site driveway along Zebulon Road (NC 96) across from Glory Road and a connection to the Weaver's Pond Development via Golden Plum Lane.

Refer to Figure 2 for the preliminary site plan of the proposed development and Figure 3 for an illustration of the existing lane configurations within the study area.

The study analyzes traffic conditions for the study intersections during the weekday AM and PM peak hours for the following scenarios:

- Existing (2019) Traffic Conditions
- Background (2024 +1) Traffic Conditions
- Combined (2024 +1) Traffic Conditions
- Combined (2024 +1) Traffic Conditions with Improvements

Existing (2019) Peak Hour Conditions

Through coordination with the Town of Zebulon (Town) and the North Carolina Department of Transportation (NCDOT), existing peak hour traffic volumes were determined based on previous and current traffic studies conducted within the study area. The counts from the Weaver's Pond Development were conducted by Ramey Kemp & Associates, Inc. in August of 2017 and projected to the year 2019 for the existing (2019) volumes for the following intersections:

- Zebulon Road (NC 96) and Pippin Road
- Pippin Road and Pearces Road

Existing peak hour traffic volumes were determined based on traffic counts conducted at the study intersections listed below, in April of 2019 by Ramey Kemp & Associates, Inc. during a typical weekday AM (7:00 AM – 9:00 AM) and PM (4:00 PM – 6:00 PM) peak periods:

- Zebulon Road (NC 96) and Glory Road

The volumes conducted in 2017 were grown to the year 2019 using an annual 3% growth rate and then the volumes were balanced along Zebulon Road (NC 96) to account for any variance associated with the different count dates. Volumes were not balanced along Pippin Road due to the reasonable imbalance in comparison to the land uses between the intersections along Pippin Road. Refer to Figure 4 for existing weekday AM and PM peak hour traffic volumes. A copy of the count data is attached to this report. Through coordination with the Town and the NCDOT, it was determined that an annual growth rate of 3% would be used to generate projected traffic volumes. Refer to Figure 5 for projected (2025) traffic. It should be noted that the balanced existing (2019) traffic is not re-balanced after the growth rate is applied for the projected (2025) traffic volumes, which can result in minor (1 vehicle) imbalances due to rounding.

Adjacent Developments

Through coordination with the Town, the following residential developments were identified to be included as an adjacent development in this study:

- Weaver's Pond
- Taryn Lake & Taryn Creek

Adjacent development trips are shown in Figure 6. Refer to the appendix in the attachments for the adjacent development information.

Background (2025) Peak Hour Conditions

Background traffic is comprised of existing traffic growth within the study area and additional traffic created as a result of adjacent approved developments. The background (2025) traffic volumes were determined by projecting the existing (2019) peak hour traffic to the year 2025 and adding the adjacent development trips. Refer to Figure 7 for background (2025) peak hour traffic.

Future Roadway Improvements

The Weaver's Pond development has committed to improvements at the intersection of Zebulon Road (NC 96) and Pippin Road. The improvements are expected to consist of a northbound right-turn lane with at least 100 feet of storage and appropriate decel and taper, a southbound left-turn lane with at least 150 feet of storage and appropriate decel and taper, and signalization of the intersection.

Trip Generation

The proposed development is assumed to consist of 124 townhomes and 58 single-family homes. Average weekday daily, AM peak hour, and PM peak hour trips for the proposed development were estimated using methodology contained within the ITE *Trip Generation Manual*, 10th Edition. Refer to Table 1 for a detailed breakdown of the proposed site trip generation.

Table 1: Trip Generation Summary

Land Use (ITE Code)	Intensity	Daily Traffic (vpd)	AM Peak Hour Trips (vph)		PM Peak Hour Trips (vph)	
			Enter	Exit	Enter	Exit
Single-Family Detached Housing (210)	58 units	630	11	35	38	22
Multifamily Housing (Low-Rise) (Townhomes) (220)	124 units	900	14	45	45	27
Total Trips		**1,530**	**25**	**80**	**83**	**49**

It is estimated that the proposed development will generate approximately 1,530 total site trips on the roadway network during a typical 24-hour weekday period. Of the daily traffic volume, it is anticipated that 105 trips (25 entering and 80 exiting) will occur during the weekday AM peak hour and 132 trips (83 entering and 49 exiting) will occur during the weekday PM peak hour.

Site Trip Distribution and Assignment

Trip distribution percentages used in assigning site traffic for this development were estimated based on a combination of existing traffic patterns, population centers adjacent to the study area, and engineering judgment. All trip distributions were approved by the Town and NCDOT during the scoping process. It is estimated that trips will be regionally distributed as follows:

- 20% to/from the north via Pearces Road
- 5% to/from the south via Pearces Road
- 50% to/from the south via Zebulon Road (NC 96)
- 25% to/from the north via Zebulon Road (NC 96)

It should be noted that based on engineering judgement it was determined that 100% of site trips will exit the site using the full movement site driveway located along Zebulon Road (NC 96). The site trip distribution is shown in Figure 8. Refer to Figure 9 for the site trip assignment.

It is not expected that the traffic from the proposed development will utilize the Weaver's Pond access; however, it is expected that a portion of the Weaver's Pond development will utilize the new site drive along Zebulon Road (NC 96). Based on coordination with the NCDOT and Town, Phases 3A and 5 of the Weaver's Pond Master Plan are proposed to be rerouted from the Weaver's Pond access on Pippin Road to the new Zebulon Road (NC 96) site drive aligned with Glory Road. Phases 3A and 5 include 137 homes combined, or approximately 19% of the total homes in the Weaver's Pond development. 19% of the Weaver's Pond site trips were rerouted from Pippin Road to the proposed site drive. Figure 10 illustrates the anticipated rerouted Weaver's Pond development site trips through the proposed Weaver's Ridge site.

Combined (2025) Peak Hour Conditions

To estimate traffic conditions with the site fully built-out, the total site trips were added to the background (2025) traffic volumes to determine the combined (2025) traffic volumes. Refer to Figure 11 for an illustration of the combined (2025) peak hour traffic volumes with the proposed site fully developed.

Capacity Analysis

The existing (2019), background (2025), and combined (2025) weekday AM and PM peak hour traffic volumes were analyzed to determine the current levels of service at the study intersections under existing roadway conditions. The results of the analysis are presented in the following section of this report.

Zebulon Road (NC 96) and Pippin Road

The existing intersection of Zebulon Road (NC 96) and Pippin Road was analyzed under existing (2019), background (2025), and combined (2025) traffic conditions with the lane configurations and traffic control shown in Table 2. It should be noted that this intersection was analyzed as a signalized intersection for the background (2025) and combined (2025) scenarios. Refer to Table 2 for a summary of the analysis results. The Synchro capacity analysis reports are included in the attached appendix.

Table 2: Analysis Summary of Zebulon Road (NC 96) and Pippin Road

ANALYSIS SCENARIO	APPROACH	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach	Overall (seconds)	Approach	Overall (seconds)
Existing (2019) Conditions	WB NB SB	1 LT-RT 1 TH-RT 1 LT-TH	C[2] -- A[1]	N/A	D[2] -- A[1]	N/A
Background (2025) Conditions - **Signalized**	WB NB SB	1 LT-RT 1 TH, 1 RT 1 LT, 1TH	C C B	C (22)	D C C	C (23)
Combined (2025) Conditions - **Signalized**	WB NB SB	1 LT-RT 1 TH, 1 RT 1 LT, 1TH	C C B	C (21)	D C C	C (26)

Improvements by Weaver's Pond shown underlined.

1. Level of service for major-street left-turn movement.
2. Level of service for minor-street approach.

Capacity analysis of existing (2019) traffic conditions indicates the minor-street approach at Zebulon Road (NC 96) and Pippin Road operates at LOS C during the weekday AM peak hour and LOS D during the weekday PM peak hour. The Weaver's Pond development is committed to constructing a northbound right-turn lane, a southbound left-turn lane and installing a signal at this intersection. These improvements were analyzed under future (2025) traffic conditions. Because signal plans and timings have not yet been finalized, the signal timings were optimized under background (2025) traffic conditions and the same timings were used to analyze combined (2025) traffic conditions. Under background (2025) and combined (2025) traffic conditions, the intersection is expected to operate at an overall LOS C or better.

It is anticipated that the improvements associated with the Weaver's Pond development will accommodate the proposed site traffic at this intersection.

Pippin Road and Pearces Road

The existing unsignalized intersection of Pippin Road and Pearces Road was analyzed under existing (2019), background (2025), and combined (2025) traffic conditions with the lane configurations and traffic control shown in Table 3. Refer to Table 3 for a summary of the analysis results. The Synchro capacity analysis reports are included in the attached appendix.

Table 3: Analysis Summary of Pippin Road and Pearces Road

ANALYSIS SCENARIO	APPROACH	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach	Overall (seconds)	Approach	Overall (seconds)
Existing (2019) Conditions	EB WB NB SB	1 LT-TH-RT 1 LT-TH-RT 1 LT-TH-RT 1 LT-TH-RT	B[2] B[2] A[1] A[1]	N/A	B[2] B[2] A[1] A[1]	N/A
Background (2025) Conditions	EB WB NB SB	1 LT-TH-RT 1 LT-TH-RT 1 LT-TH-RT 1 LT-TH-RT	C[2] C[2] A[1] A[1]	N/A	C[2] C[2] A[1] A[1]	N/A
Combined (2025) Conditions	EB WB NB SB	1 LT-TH-RT 1 LT-TH-RT 1 LT-TH-RT 1 LT-TH-RT	C[2] C[2] A[1] A[1]	N/A	C[2] C[2] A[1] A[1]	N/A

1. Level of service for major-street left-turn movement.
2. Level of service for minor-street approach.

Capacity analysis of existing (2019), background (2025), and combined (2025) traffic conditions indicates the minor-street approaches and major-street left-turn movements at Pippin Road and Pearces Road are expected to operate at LOS C or better during both the weekday AM and PM peak hours.

Zebulon Road (NC 96) and Glory Road/Site Drive

The existing unsignalized intersection of Zebulon Road and Glory Road/Site Drive was analyzed under existing (2019), background (2025), and combined (2025) traffic conditions with the lane configurations and traffic control shown in Table 4. Refer to Table 4 for a summary of the analysis results. The Synchro capacity analysis reports are included in the attached appendix.

Table 4: Analysis Summary of Zebulon Road (NC 96) and Glory Road/Site Drive

ANALYSIS SCENARIO	APPROACH	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach	Overall (seconds)	Approach	Overall (seconds)
Existing (2019) Conditions	EB NB SB	1 LT-RT 1 LT-TH 1 TH-RT	C[2] A[1] --	N/A	B[2] A[1] --	N/A
Background (2025) Conditions	EB NB SB	1 LT-RT 1 LT-TH 1 TH-RT	C[2] A[1] --	N/A	C[2] A[1] --	N/A
Combined (2025) Conditions	EB **WB** NB SB	1 LT-**TH**-RT **1 LT, 1 TH-RT** 1 LT-TH, **1 RT** 1 **LT**-TH-RT	D[2] F[2] A[1] A[1]	N/A	E[2] F[2] A[1] A[1]	N/A
Combined (2025) Conditions – **Signalized to meet UDO**	EB **WB** NB SB	1 LT-**TH**-RT **1 LT, 1 TH-RT** 1 LT-TH, **1 RT** 1 **LT**, 1 TH-RT	D D B B	B (17)	D D A B	B (11)

Improvements by Developer shown in **bold**.

1. Level of service for major-street left-turn movement.
2. Level of service for minor-street approach.

Capacity analysis of existing (2019) and background (2025) traffic conditions indicates the minor-street approach and major-street left-turn movement at Pippin Road and Glory Road are expected to operate at LOS C or better during both the weekday AM and PM peak hours. Under combined (2025) traffic conditions, the proposed development is expected to add a 4th leg to the intersection. With the addition of the 4th leg, the eastbound minor-street approach is expected to operate at LOS D during the weekday AM peak hour and LOS E during the weekday PM peak hour, and the new westbound approach is expected to operate at LOS F during both the weekday AM and PM peak hours.

Right and left-turn lanes were analyzed and recommended per the NCDOT *Policy on Street and Driveway Access to North Carolina Highways* (Driveway Manual). A southbound left-turn lane with 50 feet of storage and appropriate decel and taper is recommended, as well as a northbound right-turn lane with 100 feet of storage and appropriate decel and taper.

Per the Town's UDO, if a site access operates at LOS D or worse, additional site access points may need to be considered. It should be noted that the proposed Weaver's Ridge development is expected to have connectivity to the Weaver's Pond development, which has two site access points along Pippin Road. Drivers will likely use an alternative site access if they experience significant delay at the more convenient site access.

In order to meet the Town's UDO, improvements must be identified to improve the intersection to an acceptable level-of-service. Signalization and/or additional capacity along Zebulon Road (NC 96) would be necessary for significant improvement at the intersection. A traffic signal was considered at this intersection, and combined (2025) traffic volumes were analyzed utilizing the criteria contained in the *Manual on Uniform Traffic Control Devices* (MUTCD). A traffic signal was warranted during both weekday peak hours under combined (2025) traffic conditions; however, due to the high volume of residential development, which typically generates trips during two peak hours each day, it is anticipated that a 4- or 8-hour signal warrant would not be met.

A traffic signal was analyzed at the intersection to meet the Town's UDO requirements. With a signal, the intersection is expected to operate at LOS B with all approaches operating at LOS D or better.

Conclusions

This traffic study was conducted to determine the potential traffic impacts for the proposed Weaver's Ridge residential development located east of Zebulon Road (NC 96) across from Glory Road in Zebulon, North Carolina.

The proposed residential development is assumed to consist of 124 townhomes and 58 single-family homes. The study analyzes traffic conditions during the weekday AM and PM peak hours for the following scenarios:

- Existing (2019) Traffic Conditions
- Background (2025) Traffic Conditions
- Combined (2025) Traffic Conditions
- Combined (2025) Traffic Conditions with Improvements

It is estimated that the proposed development will generate approximately 1,530 total site trips on the roadway network during a typical 24-hour weekday period. Of the daily traffic volume, it is anticipated that 105 trips (25 entering and 80 exiting) will occur during the weekday AM peak hour and 132 trips (83 entering and 49 exiting) will occur during the weekday PM peak hour.

Recommendations

Based on the findings of this study, specific geometric improvements have been identified and are recommended to accommodate future traffic conditions. See a more detailed description of the recommended improvements below. Refer to Figure 12 for an illustration of the recommended lane configuration for the proposed development.

Committed Improvements by Weaver's Pond

Zebulon Road (NC 96) and Pippin Road

- Provide designated northbound right-turn lane with at least 100 feet of storage and appropriate decel and taper.
- Provide designated southbound left-turn lane with at least 150 feet of storage and appropriate decel and taper.
- Install traffic signal at intersection when warranted.

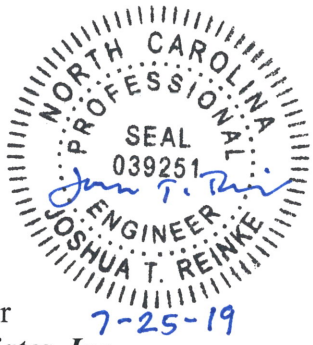
Recommended Improvements by Developer

Zebulon Road (NC 96) and Glory Road / Site Drive 1

- Provide site access via westbound approach with one ingress lane and two egress lanes striped as one left-turn lane and one shared through/right-turn lane.
- Provide designated northbound right-turn lane with at least 100 feet of storage and appropriate decel and taper.
- Provide designated southbound left-turn lane with at least 50 feet of storage and appropriate decel and taper.
- Monitor intersection for signalization.

If you should have any questions, please feel free to contact me at (919) 872-5115.

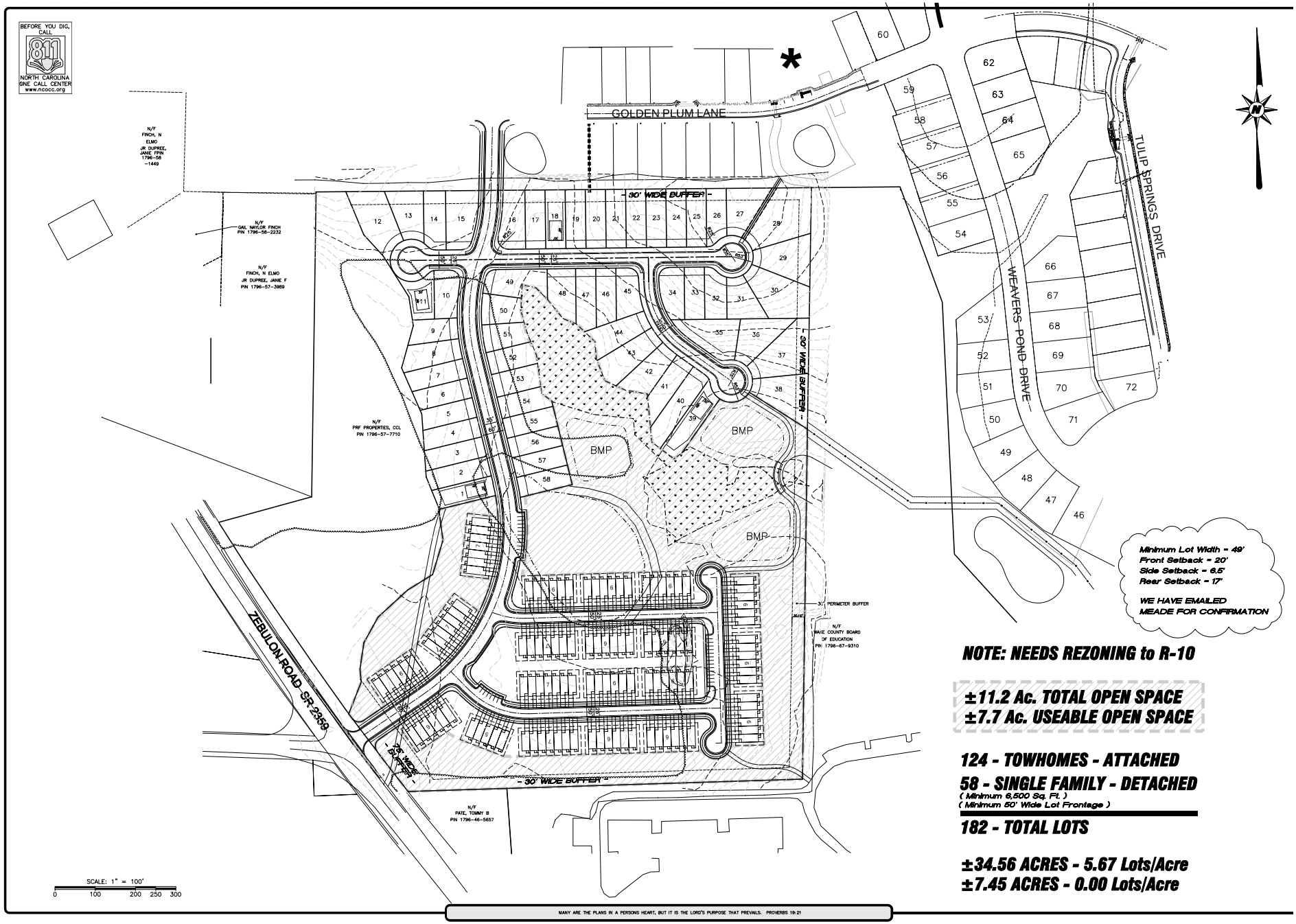
Sincerely,



Joshua Reinke, P.E.
Transportation Engineer
Ramey Kemp & Associates, Inc.

NC Corporate License # C-0910

Attachments: Appendix



Minimum Lot Width = 49'
Front Setback = 20'
Side Setback = 6.5'
Rear Setback = 17'

WE HAVE EMAILED MEADE FOR CONFIRMATION

NOTE: NEEDS REZONING to R-10

±11.2 Ac. TOTAL OPEN SPACE
±7.7 Ac. USEABLE OPEN SPACE

124 - TOWHOMES - ATTACHED

58 - SINGLE FAMILY - DETACHED
(Minimum 6,500 Sq. Ft.)
(Minimum 50' Wide Lot Frontage)

182 - TOTAL LOTS

±34.56 ACRES - 5.67 Lots/Acre
±7.45 ACRES - 0.00 Lots/Acre

MANY ARE THE PLANS IN A PERSONS HEART, BUT IT IS THE LORD'S PURPOSE THAT PREVAILS. PROVERBS 19:21

STOCKS ENGINEERING
801 EAST WASHINGTON STREET
NASHVILLE, N.C. 27856
PHONE: (252) 459-8196
P.O. BOX 1108
WWW.STOCKSENGINEERING.COM

BLN-C-1874

WEAVER'S RIDGE - PRELIMIARY TOPO
ZEBULON, WAKE COUNTY, NORTH CAROLINA

NORTH CAROLINA PROFESSIONAL SEAL 19843 ENGINEER MICHAEL STOCKS
3/19/19

MASTER MATRIX LAYOUT

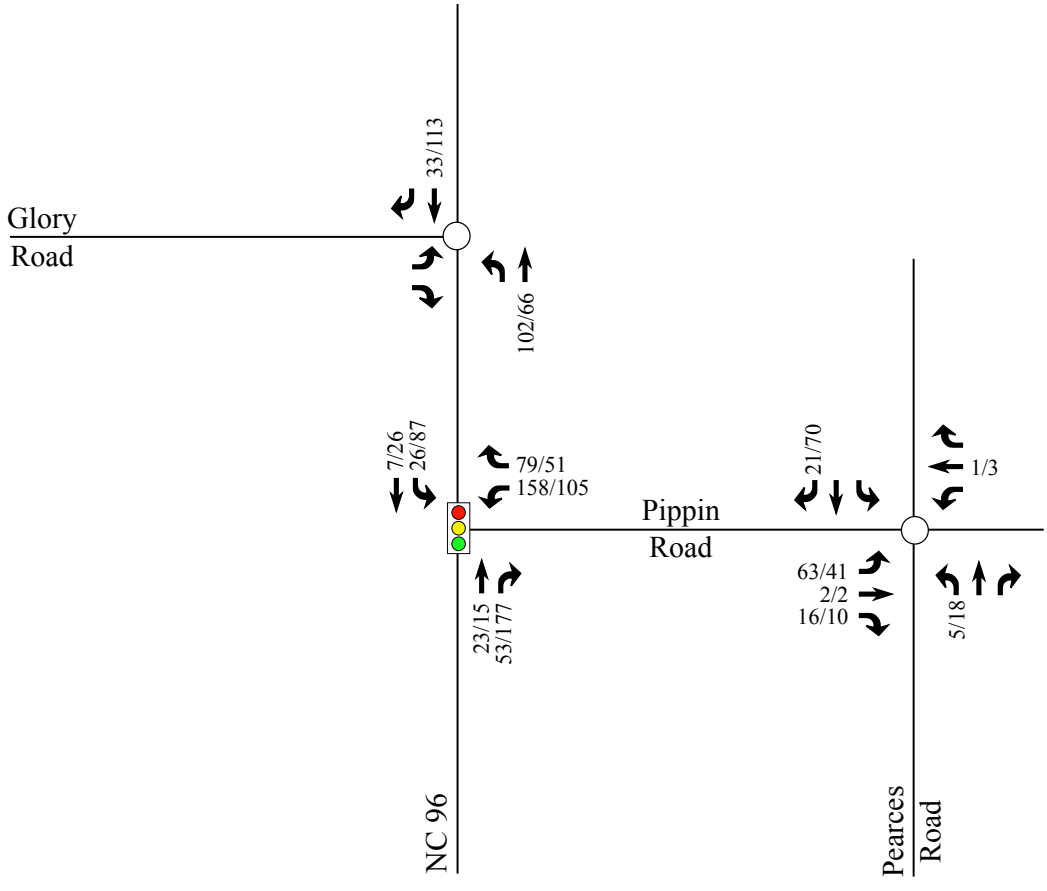
REVISIONS

FILE NO.	2019-006
HORZ. SCALE:	1"=100'
VERT. SCALE:	NONE

TOPO

LEGEND

- Unsignalized Intersection
- Signalized Intersection
- X / Y → Weekday AM / PM Peak Hour Adjacent Development Trips



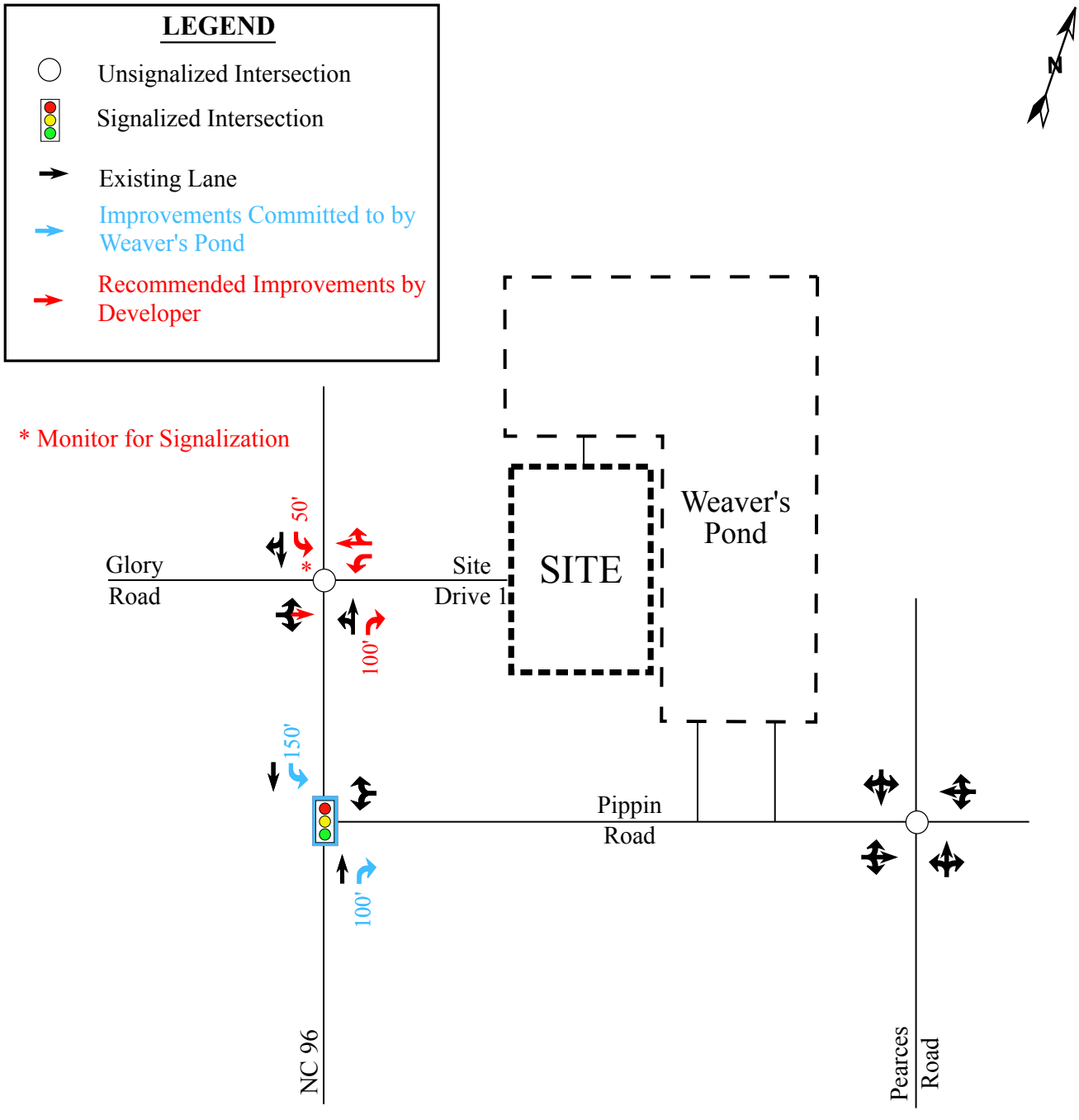
RAMEY KEMP & ASSOCIATES
TRANSPORTATION ENGINEERS

Weaver's Ridge
Zebulon, NC

Peak Hour Adjacent Development Trips

Scale: Not to Scale

Figure 6



RAMEY KEMP & ASSOCIATES
TRANSPORTATION ENGINEERS

Weaver's Ridge
Zebulon, NC

Recommended Lane Configuration

Scale: Not to Scale

Figure 12

Appendix E:
Intersection Spreadsheets

INTERSECTION VOLUME DEVELOPMENT

INTERSECTION #1

NC 96 at -/Pearces Road

AM PEAK HOUR

	- Northbound				Pearces Road Southbound				NC 96 Eastbound				NC 96 Westbound			
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right
Observed 2025 Traffic Volumes	0	0	0	0	0	413	0	46	0	45	589	0	0	0	690	228
Count Balancing																
Pedestrians	0				0				0				0			
Conflicting Pedestrians		0		0		0		0		0		0		0		0
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Conflicting Bicycles				0				0				0				0
Heavy Vehicles	0	0	0	0	0	14	0	2	0	2	49	0	0	0	70	20
Heavy Vehicle %	2%	2%	2%	2%	2%	3%	2%	4%	2%	4%	8%	2%	2%	2%	10%	9%
Peak Hour Factor	0.96				0.96				0.96				0.96			
Adjustment Factor	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Adjusted 2025 Volumes	0	0	0	0	0	413	0	46	0	45	589	0	0	0	690	228
Annual Growth Rate	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
Growth Factor	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
Background Growth	0	0	0	0	0	21	0	2	0	2	30	0	0	0	35	12
New Road Adjustment																
7-Eleven	0	0	0	0	0	8	0	0	0	0	8	0	0	0	8	8
Clifton Grove (Pearces Road Residential)	0	0	0	0	0	46	0	24	0	10	0	0	0	0	0	10
Zebulon Domino's	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Weaver's Ridge	0	0	0	0	0	4	0	0	0	0	40	0	0	0	13	1
Total Approved Development Trips	0	0	0	0	0	58	0	24	0	10	48	0	0	0	21	19
2027 No-Build Traffic	0	0	0	0	0	492	0	72	0	57	667	0	0	0	746	259
2027 No-Build Pedestrians	0				0				0				0			
2027 No-Build Conflicting Pedestrians		0		0		0		0		0		0		0		0
2027 No-Build Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2027 No-Build Conflicting Bicycles				0				0				0				0
Trip Distribution IN										30%					20%	30%
Trip Distribution OUT						(50%)										
Balancing Adjustment																
Retail Trips	0	0	0	0	0	4	0	0	0	2	0	0	0	0	2	2
Total Primary Site Trips	0	0	0	0	0	4	0	0	0	2	0	0	0	0	2	2
Pass-By Distribution REDUCTION											-30%				-10%	
Pass-By Distribution IN										30%						10%
Pass-By Distribution OUT						(30%)										
Balancing Adjustment						-1										
Pass-By Trips	0	0	0	0	0	7	0	0	0	7	-7	0	0	0	-2	2
Total Vehicular Project Trips	0	0	0	0	0	11	0	0	0	9	-7	0	0	0	0	4
2027 Build Traffic	0	0	0	0	0	503	0	72	0	66	660	0	0	0	746	263
2027 Build Heavy Vehicle %	2%	2%	2%	2%	2%	3%	2%	3%	2%	3%	8%	2%	2%	2%	10%	8%
2027 Build Pedestrians	0				0				0				0			
2027 Build Conflicting Pedestrians		0		0		0		0		0		0		0		0
2027 Build Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2027 Build Conflicting Bicycles				0				0				0				0

INTERSECTION VOLUME DEVELOPMENT

INTERSECTION #1

NC 96 at -/Pearces Road

PM PEAK HOUR

	- Northbound				Pearces Road Southbound				NC 96 Eastbound				NC 96 Westbound			
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right
Observed 2025 Traffic Volumes	0	0	0	0	0	278	0	30	0	54	683	0	0	0	687	415
Count Balancing																
Pedestrians		0								0				0		
Conflicting Pedestrians		0		0		0		0				0		0		
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Conflicting Bicycles				0				0				0				0
Heavy Vehicles	0	0	0	0	0	12	0	0	0	1	35	0	0	0	26	13
Heavy Vehicle %	2%	2%	2%	2%	2%	4%	2%	2%	2%	2%	5%	2%	2%	2%	4%	3%
Peak Hour Factor		0.98				0.98				0.98				0.98		
Adjustment Factor	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Adjusted 2025 Volumes	0	0	0	0	0	278	0	30	0	54	683	0	0	0	687	415
Annual Growth Rate	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
Growth Factor	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
Background Growth	0	0	0	0	0	14	0	2	0	3	35	0	0	0	35	21
New Road Adjustment																
7-Eleven	0	0	0	0	0	8	0	0	0	0	8	0	0	0	8	8
Clifton Grove (Pearces Road Residential)	0	0	0	0	0	22	0	18	0	27	0	0	0	0	0	49
Zebulon Domino's	0	0	0	0	0	3	0	0	0	0	5	0	0	0	5	3
Weaver's Ridge	0	0	0	0	0	2	0	0	0	0	25	0	0	0	41	4
Total Approved Development Trips	0	0	0	0	0	35	0	18	0	27	38	0	0	0	54	64
2027 No-Build Traffic	0	0	0	0	0	327	0	50	0	84	756	0	0	0	776	500
2027 No-Build Pedestrians		0				0				0				0		
2027 No-Build Conflicting Pedestrians		0		0		0		0		0		0		0		0
2027 No-Build Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2027 No-Build Conflicting Bicycles				0				0				0				0
Trip Distribution IN										30%					20%	30%
Trip Distribution OUT						(50%)										
Balancing Adjustment																
Retail Trips	0	0	0	0	0	4	0	0	0	2	0	0	0	0	2	2
Total Primary Site Trips	0	0	0	0	0	4	0	0	0	2	0	0	0	0	2	2
Pass-By Distribution REDUCTION											-30%				-10%	
Pass-By Distribution IN										30%						10%
Pass-By Distribution OUT						(30%)										
Balancing Adjustment																
Pass-By Trips	0	0	0	0	0	7	0	0	0	7	-7	0	0	0	-2	2
Total Vehicular Project Trips	0	0	0	0	0	11	0	0	0	9	-7	0	0	0	0	4
2027 Build Traffic	0	0	0	0	0	338	0	50	0	93	749	0	0	0	776	504
2027 Build Heavy Vehicle %	2%	2%	2%	2%	2%	4%	2%	2%	2%	2%	5%	2%	2%	2%	4%	3%
2027 Build Pedestrians		0				0				0				0		
2027 Build Conflicting Pedestrians		0		0		0		0		0		0		0		0
2027 Build Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2027 Build Conflicting Bicycles				0				0				0				0

INTERSECTION VOLUME DEVELOPMENT

INTERSECTION #2

NC 96 at -/Site Driveway 1

AM PEAK HOUR

	- Northbound				Site Driveway 1 Southbound				NC 96 Eastbound				NC 96 Westbound			
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right
Observed 2025 Traffic Volumes	0	0	0	0	0	0	0	57	0	0	647	0	0	0	642	25
Count Balancing																
Pedestrians		0				0				0				0		
Conflicting Pedestrians		0		0		0		0		0		0		0		0
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Conflicting Bicycles				0				0				0				0
Heavy Vehicles	0	0	0	0	0	0	0	6	0	0	52	0	0	0	37	4
Heavy Vehicle %	2%	2%	2%	2%	2%	2%	2%	11%	2%	2%	8%	2%	2%	2%	6%	16%
Peak Hour Factor		0.96				0.96				0.96				0.96		
Adjustment Factor	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Adjusted 2025 Volumes	0	0	0	0	0	0	0	57	0	0	647	0	0	0	642	25
Annual Growth Rate	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
Growth Factor	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
Background Growth	0	0	0	0	0	0	0	3	0	0	33	0	0	0	33	1
New Road Adjustment																
7-Eleven	0	0	0	0	0	0	0	0	0	0	8	0	0	0	8	0
Clifton Grove (Pearces Road Residential)	0	0	0	0	0	0	0	0	0	0	10	0	0	0	24	0
Zebulon Domino's	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Weaver's Ridge	0	0	0	0	0	0	0	0	0	0	40	0	0	0	13	0
Total Approved Development Trips	0	0	0	0	0	0	0	0	0	0	58	0	0	0	45	0
2027 No-Build Traffic	0	0	0	0	0	0	0	60	0	0	738	0	0	0	720	26
2027 No-Build Pedestrians		0				0				0				0		
2027 No-Build Conflicting Pedestrians		0		0		0		0		0		0		0		0
2027 No-Build Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2027 No-Build Conflicting Bicycles				0				0				0				0
Trip Distribution IN											30%					20%
Trip Distribution OUT								(30%)								
Balancing Adjustment																
Retail Trips	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	2
Total Primary Site Trips	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	2
Pass-By Distribution REDUCTION															-35%	
Pass-By Distribution IN																25%
Pass-By Distribution OUT								(35%)								
Balancing Adjustment																
Pass-By Trips	0	0	0	0	0	0	0	9	0	0	0	0	0	0	-8	6
Total Vehicular Project Trips	0	0	0	0	0	0	0	11	0	0	2	0	0	0	-8	8
2027 Build Traffic	0	0	0	0	0	0	0	71	0	0	740	0	0	0	712	34
2027 Build Heavy Vehicle %	2%	2%	2%	2%	2%	2%	2%	9%	2%	2%	7%	2%	2%	2%	5%	12%
2027 Build Pedestrians		0				0				0				0		
2027 Build Conflicting Pedestrians		0		0		0		0		0		0		0		0
2027 Build Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2027 Build Conflicting Bicycles				0				0				0				0

INTERSECTION VOLUME DEVELOPMENT

INTERSECTION #2

NC 96 at -/Site Driveway 1

PM PEAK HOUR

	- Northbound				Site Driveway 1 Southbound				NC 96 Eastbound				NC 96 Westbound			
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right
Observed 2025 Traffic Volumes	0	0	0	0	0	0	0	92	0	0	668	0	0	0	661	60
Count Balancing																
Pedestrians			0				0				0				0	
Conflicting Pedestrians		0		0		0		0		0		0		0		0
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Conflicting Bicycles				0				0				0				0
Heavy Vehicles	0	0	0	0	0	0	0	3	0	0	36	0	0	0	30	1
Heavy Vehicle %	2%	2%	2%	2%	2%	2%	2%	3%	2%	2%	5%	2%	2%	2%	5%	2%
Peak Hour Factor			0.94				0.94				0.94				0.94	
Adjustment Factor	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Adjusted 2025 Volumes	0	0	0	0	0	0	0	92	0	0	668	0	0	0	661	60
Annual Growth Rate	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
Growth Factor	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
Background Growth	0	0	0	0	0	0	0	5	0	0	34	0	0	0	33	3
New Road Adjustment																
7-Eleven	0	0	0	0	0	0	0	0	0	0	8	0	0	0	8	0
Clifton Grove (Pearces Road Residential)	0	0	0	0	0	0	0	0	0	0	27	0	0	0	18	0
Zebulon Domino's	0	0	0	0	0	0	0	0	0	0	5	0	0	0	5	0
Weaver's Ridge	0	0	0	0	0	0	0	0	0	0	25	0	0	0	41	0
Total Approved Development Trips	0	0	0	0	0	0	0	0	0	0	65	0	0	0	72	0
2027 No-Build Traffic	0	0	0	0	0	0	0	97	0	0	767	0	0	0	766	63
2027 No-Build Pedestrians			0				0				0				0	
2027 No-Build Conflicting Pedestrians		0		0		0		0		0		0		0		0
2027 No-Build Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2027 No-Build Conflicting Bicycles				0				0				0				0
Trip Distribution IN											30%					20%
Trip Distribution OUT								(30%)								
Balancing Adjustment																
Retail Trips	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	2
Total Primary Site Trips	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	2
Pass-By Distribution REDUCTION															-35%	
Pass-By Distribution IN																25%
Pass-By Distribution OUT								(35%)								
Balancing Adjustment																
Pass-By Trips	0	0	0	0	0	0	0	8	0	0	0	0	0	0	-8	6
Total Vehicular Project Trips	0	0	0	0	0	0	0	10	0	0	2	0	0	0	-8	8
2027 Build Traffic	0	0	0	0	0	0	0	107	0	0	769	0	0	0	758	71
2027 Build Heavy Vehicle %	2%	2%	2%	2%	2%	2%	2%	3%	2%	2%	5%	2%	2%	2%	4%	2%
2027 Build Pedestrians			0				0				0				0	
2027 Build Conflicting Pedestrians		0		0		0		0		0		0		0		0
2027 Build Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2027 Build Conflicting Bicycles				0				0				0				0

INTERSECTION VOLUME DEVELOPMENT

INTERSECTION #3

Pearces Road at Site Driveway 2/-

AM PEAK HOUR

	Pearces Road Northbound				Pearces Road Southbound				Site Driveway 2 Eastbound				- Westbound			
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right
Observed 2025 Traffic Volumes	0	76	200	0	0	0	345	66	0	25	0	86	0	0	0	0
Count Balancing																
Pedestrians			0				0				0				0	
Conflicting Pedestrians		0		0		0		0		0		0		0		0
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Conflicting Bicycles				0				0				0				0
Heavy Vehicles	0	3	7	0	0	0	5	4	0	0	0	5	0	0	0	0
Heavy Vehicle %	2%	4%	4%	2%	2%	2%	2%	6%	2%	2%	2%	6%	2%	2%	2%	2%
Peak Hour Factor			0.92				0.92				0.92				0.92	
Adjustment Factor	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Adjusted 2025 Volumes	0	76	200	0	0	0	345	66	0	25	0	86	0	0	0	0
Annual Growth Rate	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
Growth Factor	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
Background Growth	0	4	10	0	0	0	17	3	0	1	0	4	0	0	0	0
New Road Adjustment																
7-Eleven	0	0	8	0	0	0	8	0	0	0	0	0	0	0	0	0
Clifton Grove (Pearces Road Residential)	0	0	20	0	0	0	70	0	0	0	0	0	0	0	0	0
Zebulon Domino's	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Weaver's Ridge	0	0	1	0	0	0	4	0	0	0	0	0	0	0	0	0
Total Approved Development Trips	0	0	29	0	0	0	82	0	0	0	0	0	0	0	0	0
2027 No-Build Traffic	0	80	239	0	0	0	444	69	0	26	0	90	0	0	0	0
2027 No-Build Pedestrians			0				0				0				0	
2027 No-Build Conflicting Pedestrians		0		0		0		0		0		0		0		0
2027 No-Build Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2027 No-Build Conflicting Bicycles				0				0				0				0
Trip Distribution IN		60%						20%								
Trip Distribution OUT										(20%)		(50%)				
Balancing Adjustment		-1														
Retail Trips	0	4	0	0	0	0	0	2	0	2	0	4	0	0	0	0
Total Primary Site Trips	0	4	0	0	0	0	0	2	0	2	0	4	0	0	0	0
Pass-By Distribution REDUCTION			-15%				-20%									
Pass-By Distribution IN		55%						20%								
Pass-By Distribution OUT										(15%)		(50%)				
Balancing Adjustment												-1				
Pass-By Trips	0	13	-4	0	0	0	-5	5	0	4	0	12	0	0	0	0
Total Vehicular Project Trips	0	17	-4	0	0	0	-5	7	0	6	0	16	0	0	0	0
2027 Build Traffic	0	97	235	0	0	0	439	76	0	32	0	106	0	0	0	0
2027 Build Heavy Vehicle %	2%	3%	3%	2%	2%	2%	2%	6%	2%	2%	2%	5%	2%	2%	2%	2%
2027 Build Pedestrians			0				0				0				0	
2027 Build Conflicting Pedestrians		0		0		0		0		0		0		0		0
2027 Build Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2027 Build Conflicting Bicycles				0				0				0				0

INTERSECTION VOLUME DEVELOPMENT

INTERSECTION #3

Pearces Road at Site Driveway 2/-

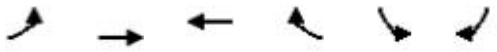
PM PEAK HOUR

	Pearces Road Northbound				Pearces Road Southbound				Site Driveway 2 Eastbound				- Westbound			
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right
Observed 2025 Traffic Volumes	0	128	342	0	0	0	230	74	0	61	0	117	0	0	0	0
Count Balancing																
Pedestrians		0				0				0				0		
Conflicting Pedestrians		0		0		0		0		0		0		0		0
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Conflicting Bicycles				0				0				0				0
Heavy Vehicles	0	4	7	0	0	0	4	2	0	0	0	5	0	0	0	0
Heavy Vehicle %	2%	3%	2%	2%	2%	2%	2%	3%	2%	2%	2%	4%	2%	2%	2%	2%
Peak Hour Factor		0.97				0.97				0.97				0.97		
Adjustment Factor	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Adjusted 2025 Volumes	0	128	342	0	0	0	230	74	0	61	0	117	0	0	0	0
Annual Growth Rate	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
Growth Factor	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
Background Growth	0	6	17	0	0	0	12	4	0	3	0	6	0	0	0	0
New Road Adjustment																
7-Eleven	0	0	8	0	0	0	8	0	0	0	0	0	0	0	0	0
Clifton Grove (Pearces Road Residential)	0	0	76	0	0	0	40	0	0	0	0	0	0	0	0	0
Zebulon Domino's	0	0	3	0	0	0	3	0	0	0	0	0	0	0	0	0
Weaver's Ridge	0	0	4	0	0	0	2	0	0	0	0	0	0	0	0	0
Total Approved Development Trips	0	0	91	0	0	0	53	0	0	0	0	0	0	0	0	0
2027 No-Build Traffic	0	134	450	0	0	0	295	78	0	64	0	123	0	0	0	0
2027 No-Build Pedestrians		0				0				0				0		
2027 No-Build Conflicting Pedestrians		0		0		0		0		0		0		0		0
2027 No-Build Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2027 No-Build Conflicting Bicycles				0				0				0				0
Trip Distribution IN		60%						20%								
Trip Distribution OUT										(20%)		(50%)				
Balancing Adjustment		-1														
Retail Trips	0	4	0	0	0	0	0	2	0	2	0	4	0	0	0	0
Total Primary Site Trips	0	4	0	0	0	0	0	2	0	2	0	4	0	0	0	0
Pass-By Distribution REDUCTION			-20%				-15%									
Pass-By Distribution IN		60%						15%								
Pass-By Distribution OUT										(20%)		(40%)				
Balancing Adjustment												1				
Pass-By Trips	0	14	-5	0	0	0	-3	3	0	5	0	10	0	0	0	0
Total Vehicular Project Trips	0	18	-5	0	0	0	-3	5	0	7	0	14	0	0	0	0
2027 Build Traffic	0	152	445	0	0	0	292	83	0	71	0	137	0	0	0	0
2027 Build Heavy Vehicle %	2%	3%	2%	2%	2%	2%	2%	3%	2%	2%	2%	4%	2%	2%	2%	2%
2027 Build Pedestrians		0				0				0				0		
2027 Build Conflicting Pedestrians		0		0		0		0		0		0		0		0
2027 Build Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2027 Build Conflicting Bicycles				0				0				0				0

Appendix F:

Synchro Output: Existing (2025)

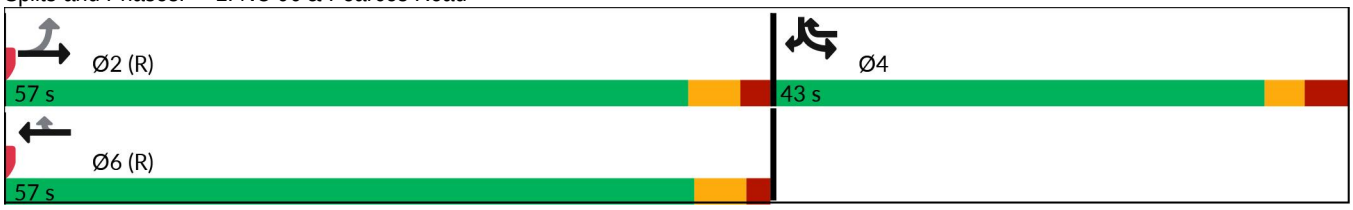
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	45	589	690	228	413	46
Future Volume (vph)	45	589	690	228	413	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		1%	0%		1%	
Storage Length (ft)	185			0	100	0
Storage Lanes	1			1	1	1
Taper Length (ft)	50				100	
Satd. Flow (prot)	1727	1750	1727	1482	1744	1545
Flt Permitted	0.249				0.950	
Satd. Flow (perm)	453	1750	1727	1482	1744	1545
Right Turn on Red				No		No
Satd. Flow (RTOR)						
Link Speed (mph)		35	35		35	
Link Distance (ft)		340	452		446	
Travel Time (s)		6.6	8.8		8.7	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	8%	10%	9%	3%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	47	614	719	238	430	48
Turn Type	Perm	NA	NA	pm+ov	Prot	Prot
Protected Phases		2	6	4	4	4
Permitted Phases	2			6		
Detector Phase	2	2	6	4	4	4
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	7.0	7.0	7.0
Minimum Split (s)	18.0	18.0	17.0	15.0	15.0	15.0
Total Split (s)	57.0	57.0	57.0	43.0	43.0	43.0
Total Split (%)	57.0%	57.0%	57.0%	43.0%	43.0%	43.0%
Yellow Time (s)	3.8	3.8	3.8	3.0	3.0	3.0
All-Red Time (s)	2.3	2.3	1.8	3.3	3.3	3.3
Lost Time Adjust (s)	-1.1	-1.1	-0.6	-1.3	-1.3	-1.3
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max	C-Max	C-Max	None	None	None
Act Effct Green (s)	59.7	59.7	59.7	100.0	30.3	30.3
Actuated g/C Ratio	0.60	0.60	0.60	1.00	0.30	0.30
v/c Ratio	0.17	0.59	0.70	0.16	0.81	0.10
Control Delay (s/veh)	13.4	16.9	20.2	0.2	44.4	23.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	13.4	16.9	20.2	0.2	44.4	23.1

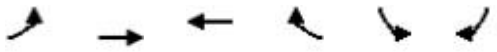


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
LOS	B	B	C	A	D	C
Approach Delay (s/veh)		16.6	15.3		42.3	
Approach LOS		B	B		D	
Queue Length 50th (ft)	13	229	298	0	251	22
Queue Length 95th (ft)	39	404	531	0	331	43
Internal Link Dist (ft)		260	372		366	
Turn Bay Length (ft)	185				100	
Base Capacity (vph)	270	1044	1030	1478	662	587
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.59	0.70	0.16	0.65	0.08

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 74 (74%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay (s/veh): 21.8		Intersection LOS: C	
Intersection Capacity Utilization 68.6%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: NC 96 & Pearces Road





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	647	642	25	0	57
Future Volume (vph)	0	647	642	25	0	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		1%	2%		0%	
Storage Length (ft)	0			125	0	0
Storage Lanes	0			1	0	1
Taper Length (ft)	25				25	
Satd. Flow (prot)	0	1750	1775	1378	0	1481
Flt Permitted						
Satd. Flow (perm)	0	1750	1775	1378	0	1481
Link Speed (mph)		35	35		15	
Link Distance (ft)		421	340		208	
Travel Time (s)		8.2	6.6		9.5	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	8%	6%	16%	2%	11%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	674	669	26	0	59
Sign Control		Free	Free		Stop	

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

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑	↱		↱
Traffic Vol, veh/h	0	647	642	25	0	57
Future Vol, veh/h	0	647	642	25	0	57
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	125	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	1	2	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	8	6	16	2	11
Mvmt Flow	0	674	669	26	0	59

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	669
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.31
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.399
Pot Cap-1 Maneuver	0	-	-	-	0	442
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	442
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	14.4
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	442
HCM Lane V/C Ratio	-	-	-	0.134
HCM Control Delay (s/veh)	-	-	-	14.4
HCM Lane LOS	-	-	-	B
HCM 95th %tile Q (veh)	-	-	-	0.5

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	25	86	76	200	345	66
Future Volume (vph)	25	86	76	200	345	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	1%	
Storage Length (ft)	0	0	50			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		100			
Satd. Flow (prot)	1600	0	1736	1827	1801	0
Flt Permitted	0.989		0.950			
Satd. Flow (perm)	1600	0	1736	1827	1801	0
Link Speed (mph)	15			35	35	
Link Distance (ft)	230			446	197	
Travel Time (s)	10.5			8.7	3.8	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	6%	4%	4%	2%	6%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	120	0	83	217	447	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 43.1%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	25	86	76	200	345	66
Future Vol, veh/h	25	86	76	200	345	66
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	1	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	6	4	4	2	6
Mvmt Flow	27	93	83	217	375	72

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	794	411	447	0	-	0
Stage 1	411	-	-	-	-	-
Stage 2	383	-	-	-	-	-
Critical Hdwy	6.42	6.26	4.14	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.354	2.236	-	-	-
Pot Cap-1 Maneuver	357	632	1103	-	-	-
Stage 1	669	-	-	-	-	-
Stage 2	689	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	330	632	1103	-	-	-
Mov Cap-2 Maneuver	330	-	-	-	-	-
Stage 1	619	-	-	-	-	-
Stage 2	689	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	13.9	2.3	0
HCM LOS	B		

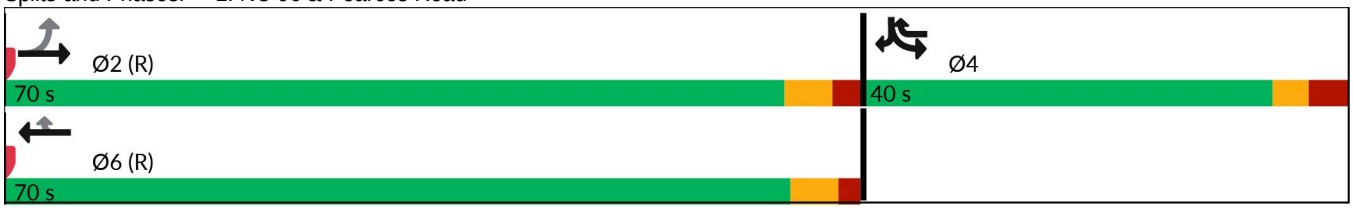
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1103	-	524	-	-
HCM Lane V/C Ratio	0.075	-	0.23	-	-
HCM Control Delay (s/veh)	8.5	-	13.9	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q (veh)	0.2	-	0.9	-	-

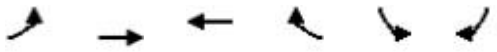
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	54	683	687	415	278	30
Future Volume (vph)	54	683	687	415	278	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		1%	0%		1%	
Storage Length (ft)	185			0	100	0
Storage Lanes	1			1	1	1
Taper Length (ft)	50				100	
Satd. Flow (prot)	1761	1800	1827	1568	1727	1575
Flt Permitted	0.311				0.950	
Satd. Flow (perm)	576	1800	1827	1568	1727	1575
Right Turn on Red				No		No
Satd. Flow (RTOR)						
Link Speed (mph)		35	35		35	
Link Distance (ft)		366	439		465	
Travel Time (s)		7.1	8.6		9.1	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	5%	4%	3%	4%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	55	697	701	423	284	31
Turn Type	Perm	NA	NA	pm+ov	Prot	Prot
Protected Phases		2	6	4	4	4
Permitted Phases	2			6		
Detector Phase	2	2	6	4	4	4
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	7.0	7.0	7.0
Minimum Split (s)	18.0	18.0	17.0	15.0	15.0	15.0
Total Split (s)	70.0	70.0	70.0	40.0	40.0	40.0
Total Split (%)	63.6%	63.6%	63.6%	36.4%	36.4%	36.4%
Yellow Time (s)	3.8	3.8	3.8	3.0	3.0	3.0
All-Red Time (s)	2.3	2.3	1.8	3.3	3.3	3.3
Lost Time Adjust (s)	-1.1	-1.1	-0.6	-1.3	-1.3	-1.3
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max	C-Max	C-Max	None	None	None
Act Effct Green (s)	76.0	76.0	76.0	110.0	24.0	24.0
Actuated g/C Ratio	0.69	0.69	0.69	1.00	0.22	0.22
v/c Ratio	0.14	0.56	0.56	0.27	0.75	0.09
Control Delay (s/veh)	8.4	11.9	11.8	0.4	52.4	32.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	8.4	11.9	11.8	0.4	52.4	32.0

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
LOS	A	B	B	A	D	C
Approach Delay (s/veh)		11.6	7.5		50.4	
Approach LOS		B	A		D	
Queue Length 50th (ft)	12	221	221	0	189	18
Queue Length 95th (ft)	35	407	405	0	258	39
Internal Link Dist (ft)		286	359		385	
Turn Bay Length (ft)	185				100	
Base Capacity (vph)	397	1242	1261	1561	549	501
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.56	0.56	0.27	0.52	0.06

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 50 (45%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 55			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay (s/veh): 15.1		Intersection LOS: B	
Intersection Capacity Utilization 68.6%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: NC 96 & Pearces Road





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	668	661	60	0	92
Future Volume (vph)	0	668	661	60	0	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		1%	2%		0%	
Storage Length (ft)	0			125	0	0
Storage Lanes	0			1	0	1
Taper Length (ft)	25				25	
Satd. Flow (prot)	0	1800	1791	1568	0	1596
Flt Permitted						
Satd. Flow (perm)	0	1800	1791	1568	0	1596
Link Speed (mph)		35	35		15	
Link Distance (ft)		592	366		225	
Travel Time (s)		11.5	7.1		10.2	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	5%	5%	2%	2%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	711	703	64	0	98
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 47.2%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑	↱		↱
Traffic Vol, veh/h	0	668	661	60	0	92
Future Vol, veh/h	0	668	661	60	0	92
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	125	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	1	2	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	5	5	2	2	3
Mvmt Flow	0	711	703	64	0	98

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	703
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.327
Pot Cap-1 Maneuver	0	-	-	-	0	436
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	436
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	15.6
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	436
HCM Lane V/C Ratio	-	-	-	0.224
HCM Control Delay (s/veh)	-	-	-	15.6
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q (veh)	-	-	-	0.9

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	61	117	128	342	230	74
Future Volume (vph)	61	117	128	342	230	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	1%	
Storage Length (ft)	0	0	50			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		100			
Satd. Flow (prot)	1647	0	1752	1863	1788	0
Flt Permitted	0.983		0.950			
Satd. Flow (perm)	1647	0	1752	1863	1788	0
Link Speed (mph)	15			35	35	
Link Distance (ft)	239			465	197	
Travel Time (s)	10.9			9.1	3.8	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	4%	3%	2%	2%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	184	0	132	353	313	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 44.3%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	4.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	61	117	128	342	230	74
Future Vol, veh/h	61	117	128	342	230	74
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	1	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	4	3	2	2	3
Mvmt Flow	63	121	132	353	237	76

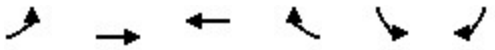
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	892	275	313	0	-	0
Stage 1	275	-	-	-	-	-
Stage 2	617	-	-	-	-	-
Critical Hdwy	6.42	6.24	4.13	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.336	2.227	-	-	-
Pot Cap-1 Maneuver	312	759	1242	-	-	-
Stage 1	771	-	-	-	-	-
Stage 2	538	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	279	759	1242	-	-	-
Mov Cap-2 Maneuver	279	-	-	-	-	-
Stage 1	689	-	-	-	-	-
Stage 2	538	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	17.2	2.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1242	-	477	-	-
HCM Lane V/C Ratio	0.106	-	0.385	-	-
HCM Control Delay (s/veh)	8.2	-	17.2	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q (veh)	0.4	-	1.8	-	-

Appendix G:

Synchro Output: Background (2027)

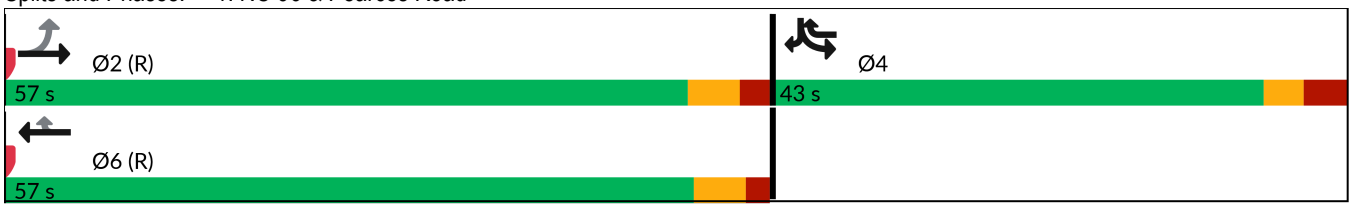


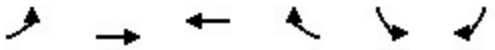
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	57	667	746	259	492	72
Future Volume (vph)	57	667	746	259	492	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		1%	0%		1%	
Storage Length (ft)	185			0	100	0
Storage Lanes	1			1	1	1
Taper Length (ft)	50				100	
Satd. Flow (prot)	1727	1750	1727	1482	1744	1545
Flt Permitted	0.185				0.950	
Satd. Flow (perm)	336	1750	1727	1482	1744	1545
Right Turn on Red				No		No
Satd. Flow (RTOR)						
Link Speed (mph)		35	35		35	
Link Distance (ft)		340	452		446	
Travel Time (s)		6.6	8.8		8.7	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	8%	10%	9%	3%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	59	695	777	270	513	75
Turn Type	Perm	NA	NA	pm+ov	Prot	Prot
Protected Phases		2	6	4	4	4
Permitted Phases	2			6		
Detector Phase	2	2	6	4	4	4
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	7.0	7.0	7.0
Minimum Split (s)	18.0	18.0	17.0	15.0	15.0	15.0
Total Split (s)	57.0	57.0	57.0	43.0	43.0	43.0
Total Split (%)	57.0%	57.0%	57.0%	43.0%	43.0%	43.0%
Yellow Time (s)	3.8	3.8	3.8	3.0	3.0	3.0
All-Red Time (s)	2.3	2.3	1.8	3.3	3.3	3.3
Lost Time Adjust (s)	-1.1	-1.1	-0.6	-1.3	-1.3	-1.3
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max	C-Max	C-Max	None	None	None
Act Effct Green (s)	56.2	56.2	56.2	100.0	33.8	33.8
Actuated g/C Ratio	0.56	0.56	0.56	1.00	0.34	0.34
v/c Ratio	0.31	0.71	0.80	0.18	0.87	0.14
Control Delay (s/veh)	19.4	22.1	26.8	0.3	47.0	22.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	19.4	22.1	26.8	0.3	47.0	22.2

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
LOS	B	C	C	A	D	C
Approach Delay (s/veh)		21.9	19.9		43.8	
Approach LOS		C	B		D	
Queue Length 50th (ft)	20	316	388	0	295	32
Queue Length 95th (ft)	56	494	#664	0	#417	62
Internal Link Dist (ft)		260	372		366	
Turn Bay Length (ft)	185				100	
Base Capacity (vph)	188	982	970	1474	662	587
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.71	0.80	0.18	0.77	0.13

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 74 (74%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay (s/veh): 26.4		Intersection LOS: C	
Intersection Capacity Utilization 83.0%		ICU Level of Service E	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 1: NC 96 & Pearces Road





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	738	720	26	0	60
Future Volume (vph)	0	738	720	26	0	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		1%	2%		0%	
Storage Length (ft)	0			125	0	0
Storage Lanes	0			1	0	1
Taper Length (ft)	25				25	
Satd. Flow (prot)	0	1750	1775	1378	0	1481
Flt Permitted						
Satd. Flow (perm)	0	1750	1775	1378	0	1481
Link Speed (mph)		35	35		15	
Link Distance (ft)		421	340		208	
Travel Time (s)		8.2	6.6		9.5	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	8%	6%	16%	2%	11%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	769	750	27	0	63
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 48.3%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑	↱		↱
Traffic Vol, veh/h	0	738	720	26	0	60
Future Vol, veh/h	0	738	720	26	0	60
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	125	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	1	2	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	8	6	16	2	11
Mvmt Flow	0	769	750	27	0	63

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	750
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.31
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.399
Pot Cap-1 Maneuver	0	-	-	-	0	397
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	397
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	397
HCM Lane V/C Ratio	-	-	-	0.157
HCM Control Delay (s/veh)	-	-	-	15.8
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q (veh)	-	-	-	0.6

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	26	90	80	239	444	69
Future Volume (vph)	26	90	80	239	444	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	1%	
Storage Length (ft)	0	0	50			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		100			
Satd. Flow (prot)	1600	0	1736	1827	1811	0
Flt Permitted	0.989		0.950			
Satd. Flow (perm)	1600	0	1736	1827	1811	0
Link Speed (mph)	15			35	35	
Link Distance (ft)	230			446	197	
Travel Time (s)	10.5			8.7	3.8	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	6%	4%	4%	2%	6%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	126	0	87	260	558	0
Sign Control	Stop			Free	Free	

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

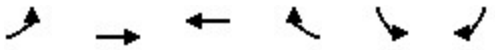
Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	26	90	80	239	444	69
Future Vol, veh/h	26	90	80	239	444	69
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	1	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	6	4	4	2	6
Mvmt Flow	28	98	87	260	483	75

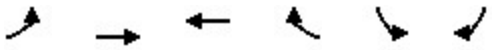
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	955	521	558	0	-	0
Stage 1	521	-	-	-	-	-
Stage 2	434	-	-	-	-	-
Critical Hdwy	6.42	6.26	4.14	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.354	2.236	-	-	-
Pot Cap-1 Maneuver	287	548	1003	-	-	-
Stage 1	596	-	-	-	-	-
Stage 2	653	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	262	548	1003	-	-	-
Mov Cap-2 Maneuver	262	-	-	-	-	-
Stage 1	544	-	-	-	-	-
Stage 2	653	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	16.4	2.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1003	-	440	-	-
HCM Lane V/C Ratio	0.087	-	0.287	-	-
HCM Control Delay (s/veh)	8.9	-	16.4	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q (veh)	0.3	-	1.2	-	-



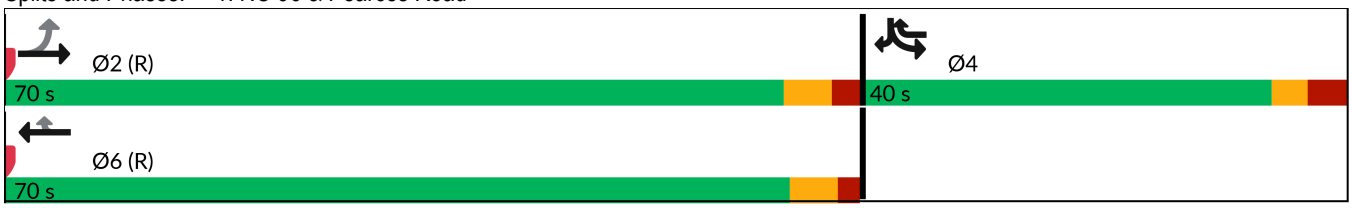
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	84	756	776	500	327	50
Future Volume (vph)	84	756	776	500	327	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		1%	0%		1%	
Storage Length (ft)	185			0	100	0
Storage Lanes	1			1	1	1
Taper Length (ft)	50				100	
Satd. Flow (prot)	1761	1800	1827	1568	1727	1575
Flt Permitted	0.244				0.950	
Satd. Flow (perm)	452	1800	1827	1568	1727	1575
Right Turn on Red				No		No
Satd. Flow (RTOR)						
Link Speed (mph)		35	35		35	
Link Distance (ft)		366	439		465	
Travel Time (s)		7.1	8.6		9.1	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	5%	4%	3%	4%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	86	771	792	510	334	51
Turn Type	Perm	NA	NA	pm+ov	Prot	Prot
Protected Phases		2	6	4	4	4
Permitted Phases	2			6		
Detector Phase	2	2	6	4	4	4
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	7.0	7.0	7.0
Minimum Split (s)	18.0	18.0	17.0	15.0	15.0	15.0
Total Split (s)	70.0	70.0	70.0	40.0	40.0	40.0
Total Split (%)	63.6%	63.6%	63.6%	36.4%	36.4%	36.4%
Yellow Time (s)	3.8	3.8	3.8	3.0	3.0	3.0
All-Red Time (s)	2.3	2.3	1.8	3.3	3.3	3.3
Lost Time Adjust (s)	-1.1	-1.1	-0.6	-1.3	-1.3	-1.3
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max	C-Max	C-Max	None	None	None
Act Effct Green (s)	72.8	72.8	72.8	110.0	27.2	27.2
Actuated g/C Ratio	0.66	0.66	0.66	1.00	0.25	0.25
v/c Ratio	0.29	0.65	0.66	0.33	0.78	0.13
Control Delay (s/veh)	12.7	15.6	15.8	0.6	51.1	30.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	12.7	15.6	15.8	0.6	51.1	30.4

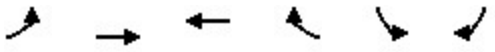


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
LOS	B	B	B	A	D	C
Approach Delay (s/veh)		15.3	9.8		48.4	
Approach LOS		B	A		D	
Queue Length 50th (ft)	24	299	311	0	219	28
Queue Length 95th (ft)	65	520	537	0	296	55
Internal Link Dist (ft)		286	359		385	
Turn Bay Length (ft)	185				100	
Base Capacity (vph)	298	1190	1208	1564	549	501
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.65	0.66	0.33	0.61	0.10

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 50 (45%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 55			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay (s/veh): 17.5		Intersection LOS: B	
Intersection Capacity Utilization 79.8%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 1: NC 96 & Pearces Road





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑	↱		↱
Traffic Volume (vph)	0	767	766	63	0	97
Future Volume (vph)	0	767	766	63	0	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		1%	2%		0%	
Storage Length (ft)	0			125	0	0
Storage Lanes	0			1	0	1
Taper Length (ft)	25				25	
Satd. Flow (prot)	0	1800	1791	1568	0	1596
Flt Permitted						
Satd. Flow (perm)	0	1800	1791	1568	0	1596
Link Speed (mph)		35	35		15	
Link Distance (ft)		592	366		225	
Travel Time (s)		11.5	7.1		10.2	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	5%	5%	2%	2%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	816	815	67	0	103
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 53.0%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑	↱		↱
Traffic Vol, veh/h	0	767	766	63	0	97
Future Vol, veh/h	0	767	766	63	0	97
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	125	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	1	2	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	5	5	2	2	3
Mvmt Flow	0	816	815	67	0	103

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	815
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.327
Pot Cap-1 Maneuver	0	-	-	-	0	376
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	376
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	18.2
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	376
HCM Lane V/C Ratio	-	-	-	0.274
HCM Control Delay (s/veh)	-	-	-	18.2
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q (veh)	-	-	-	1.1

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	64	123	134	450	295	78
Future Volume (vph)	64	123	134	450	295	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	1%	
Storage Length (ft)	0	0	50			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		100			
Satd. Flow (prot)	1647	0	1752	1863	1798	0
Flt Permitted	0.983		0.950			
Satd. Flow (perm)	1647	0	1752	1863	1798	0
Link Speed (mph)	15			35	35	
Link Distance (ft)	239			465	197	
Travel Time (s)	10.9			9.1	3.8	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	4%	3%	2%	2%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	193	0	138	464	384	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 48.8%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	4.7

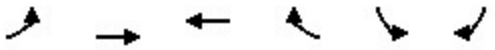
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	64	123	134	450	295	78
Future Vol, veh/h	64	123	134	450	295	78
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	1	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	4	3	2	2	3
Mvmt Flow	66	127	138	464	304	80

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1084	344	384	0	-	0
Stage 1	344	-	-	-	-	-
Stage 2	740	-	-	-	-	-
Critical Hdwy	6.42	6.24	4.13	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.336	2.227	-	-	-
Pot Cap-1 Maneuver	240	694	1169	-	-	-
Stage 1	718	-	-	-	-	-
Stage 2	472	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	212	694	1169	-	-	-
Mov Cap-2 Maneuver	212	-	-	-	-	-
Stage 1	633	-	-	-	-	-
Stage 2	472	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	22.9	1.9	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1169	-	390	-	-
HCM Lane V/C Ratio	0.118	-	0.494	-	-
HCM Control Delay (s/veh)	8.5	-	22.9	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q (veh)	0.4	-	2.6	-	-

Appendix H:
Synchro Output: Build-Out (2027)



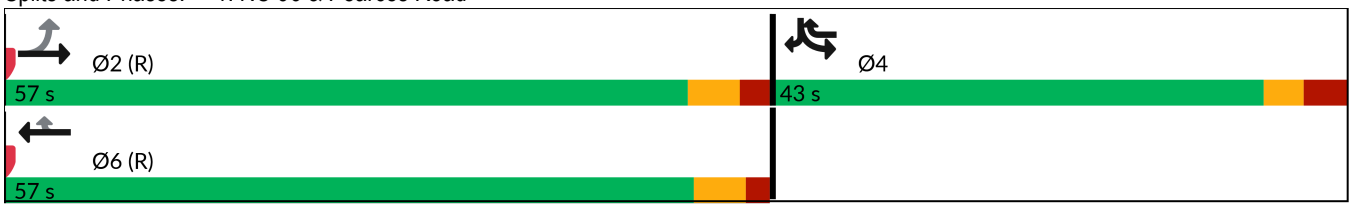
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	66	660	746	263	503	72
Future Volume (vph)	66	660	746	263	503	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		1%	0%		1%	
Storage Length (ft)	185			0	100	0
Storage Lanes	1			1	1	1
Taper Length (ft)	50				100	
Satd. Flow (prot)	1744	1750	1727	1495	1744	1560
Flt Permitted	0.180				0.950	
Satd. Flow (perm)	330	1750	1727	1495	1744	1560
Right Turn on Red				No		No
Satd. Flow (RTOR)						
Link Speed (mph)		35	35		35	
Link Distance (ft)		340	452		446	
Travel Time (s)		6.6	8.8		8.7	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	8%	10%	8%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	69	688	777	274	524	75
Turn Type	Perm	NA	NA	pm+ov	Prot	Prot
Protected Phases		2	6	4	4	4
Permitted Phases	2			6		
Detector Phase	2	2	6	4	4	4
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	7.0	7.0	7.0
Minimum Split (s)	18.0	18.0	17.0	15.0	15.0	15.0
Total Split (s)	57.0	57.0	57.0	43.0	43.0	43.0
Total Split (%)	57.0%	57.0%	57.0%	43.0%	43.0%	43.0%
Yellow Time (s)	3.8	3.8	3.8	3.0	3.0	3.0
All-Red Time (s)	2.3	2.3	1.8	3.3	3.3	3.3
Lost Time Adjust (s)	-1.1	-1.1	-0.6	-1.3	-1.3	-1.3
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max	C-Max	C-Max	None	None	None
Act Effct Green (s)	55.7	55.7	55.7	100.0	34.3	34.3
Actuated g/C Ratio	0.56	0.56	0.56	1.00	0.34	0.34
v/c Ratio	0.38	0.71	0.81	0.18	0.88	0.14
Control Delay (s/veh)	21.8	22.2	27.3	0.3	47.6	22.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	21.8	22.2	27.3	0.3	47.6	22.0

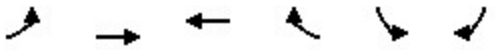
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
LOS	C	C	C	A	D	C
Approach Delay (s/veh)		22.2	20.3		44.4	
Approach LOS		C	C		D	
Queue Length 50th (ft)	24	317	394	0	301	32
Queue Length 95th (ft)	68	485	#664	0	#442	62
Internal Link Dist (ft)		260	372		366	
Turn Bay Length (ft)	185				100	
Base Capacity (vph)	183	975	962	1485	662	592
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.71	0.81	0.18	0.79	0.13

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 74 (74%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay (s/veh): 26.9		Intersection LOS: C	
Intersection Capacity Utilization 88.0%		ICU Level of Service E	
Analysis Period (min) 15			

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: NC 96 & Pearces Road





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑	↱		↱
Traffic Volume (vph)	0	740	712	34	0	71
Future Volume (vph)	0	740	712	34	0	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		1%	2%		0%	
Storage Length (ft)	0			125	0	0
Storage Lanes	0			1	0	1
Taper Length (ft)	25				25	
Satd. Flow (prot)	0	1767	1791	1428	0	1508
Flt Permitted						
Satd. Flow (perm)	0	1767	1791	1428	0	1508
Link Speed (mph)		35	35		15	
Link Distance (ft)		421	340		208	
Travel Time (s)		8.2	6.6		9.5	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	7%	5%	12%	2%	9%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	771	742	35	0	74
Sign Control		Free	Free		Stop	

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

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑	↱		↱
Traffic Vol, veh/h	0	740	712	34	0	71
Future Vol, veh/h	0	740	712	34	0	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	-	-	-	125	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	1	2	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	7	5	12	2	9
Mvmt Flow	0	771	742	35	0	74

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	742
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.29
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.381
Pot Cap-1 Maneuver	0	-	-	-	0	404
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	404
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	15.9
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	404
HCM Lane V/C Ratio	-	-	-	0.183
HCM Control Delay (s/veh)	-	-	-	15.9
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q (veh)	-	-	-	0.7

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	32	106	97	235	439	76
Future Volume (vph)	32	106	97	235	439	76
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	1%	
Storage Length (ft)	0	0	50			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		100			
Satd. Flow (prot)	1613	0	1752	1845	1806	0
Flt Permitted	0.988		0.950			
Satd. Flow (perm)	1613	0	1752	1845	1806	0
Link Speed (mph)	15			35	35	
Link Distance (ft)	230			446	197	
Travel Time (s)	10.5			8.7	3.8	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	5%	3%	3%	2%	6%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	150	0	105	255	560	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 51.4%		ICU Level of Service A	
Analysis Period (min) 15			

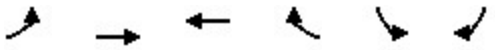
Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	32	106	97	235	439	76
Future Vol, veh/h	32	106	97	235	439	76
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	1	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	5	3	3	2	6
Mvmt Flow	35	115	105	255	477	83

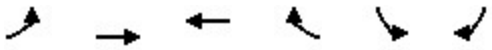
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	984	519	560	0	-	0
Stage 1	519	-	-	-	-	-
Stage 2	465	-	-	-	-	-
Critical Hdwy	6.42	6.25	4.13	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.345	2.227	-	-	-
Pot Cap-1 Maneuver	275	551	1006	-	-	-
Stage 1	597	-	-	-	-	-
Stage 2	632	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	246	551	1006	-	-	-
Mov Cap-2 Maneuver	246	-	-	-	-	-
Stage 1	535	-	-	-	-	-
Stage 2	632	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	17.9	2.6	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1006	-	428	-	-
HCM Lane V/C Ratio	0.105	-	0.35	-	-
HCM Control Delay (s/veh)	9	-	17.9	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q (veh)	0.4	-	1.6	-	-



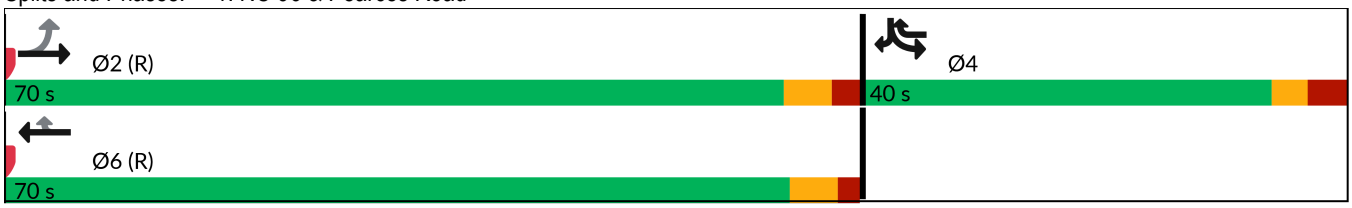
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	93	749	776	504	338	50
Future Volume (vph)	93	749	776	504	338	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		1%	0%		1%	
Storage Length (ft)	185			0	100	0
Storage Lanes	1			1	1	1
Taper Length (ft)	50				100	
Satd. Flow (prot)	1761	1800	1827	1568	1727	1575
Flt Permitted	0.241				0.950	
Satd. Flow (perm)	447	1800	1827	1568	1727	1575
Right Turn on Red				No		No
Satd. Flow (RTOR)						
Link Speed (mph)		35	35		35	
Link Distance (ft)		366	439		465	
Travel Time (s)		7.1	8.6		9.1	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	5%	4%	3%	4%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	95	764	792	514	345	51
Turn Type	Perm	NA	NA	pm+ov	Prot	Prot
Protected Phases		2	6	4	4	4
Permitted Phases	2			6		
Detector Phase	2	2	6	4	4	4
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	7.0	7.0	7.0
Minimum Split (s)	18.0	18.0	17.0	15.0	15.0	15.0
Total Split (s)	70.0	70.0	70.0	40.0	40.0	40.0
Total Split (%)	63.6%	63.6%	63.6%	36.4%	36.4%	36.4%
Yellow Time (s)	3.8	3.8	3.8	3.0	3.0	3.0
All-Red Time (s)	2.3	2.3	1.8	3.3	3.3	3.3
Lost Time Adjust (s)	-1.1	-1.1	-0.6	-1.3	-1.3	-1.3
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max	C-Max	C-Max	None	None	None
Act Effct Green (s)	72.2	72.2	72.2	110.0	27.8	27.8
Actuated g/C Ratio	0.66	0.66	0.66	1.00	0.25	0.25
v/c Ratio	0.32	0.65	0.66	0.33	0.79	0.13
Control Delay (s/veh)	13.7	15.8	16.2	0.6	51.4	30.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	13.7	15.8	16.2	0.6	51.4	30.0

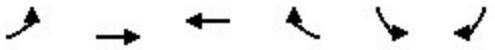


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
LOS	B	B	B	A	D	C
Approach Delay (s/veh)		15.6	10.0		48.7	
Approach LOS		B	B		D	
Queue Length 50th (ft)	27	301	317	0	226	28
Queue Length 95th (ft)	73	513	537	0	308	55
Internal Link Dist (ft)		286	359		385	
Turn Bay Length (ft)	185				100	
Base Capacity (vph)	293	1181	1199	1562	549	501
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.65	0.66	0.33	0.63	0.10

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 50 (45%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay (s/veh): 17.9		Intersection LOS: B	
Intersection Capacity Utilization 80.4%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 1: NC 96 & Pearces Road





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑	↱		↱
Traffic Volume (vph)	0	769	758	71	0	107
Future Volume (vph)	0	769	758	71	0	107
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		1%	2%		0%	
Storage Length (ft)	0			125	0	0
Storage Lanes	0			1	0	1
Taper Length (ft)	25				25	
Satd. Flow (prot)	0	1800	1809	1568	0	1596
Flt Permitted						
Satd. Flow (perm)	0	1800	1809	1568	0	1596
Link Speed (mph)		35	35		15	
Link Distance (ft)		592	366		225	
Travel Time (s)		11.5	7.1		10.2	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	5%	4%	2%	2%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	818	806	76	0	114
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 53.2%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑	↱		↱
Traffic Vol, veh/h	0	769	758	71	0	107
Future Vol, veh/h	0	769	758	71	0	107
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	125	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	1	2	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	5	4	2	2	3
Mvmt Flow	0	818	806	76	0	114

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	806
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.327
Pot Cap-1 Maneuver	0	-	-	-	0	380
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	380
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	18.5
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	380
HCM Lane V/C Ratio	-	-	-	0.3
HCM Control Delay (s/veh)	-	-	-	18.5
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q (veh)	-	-	-	1.2

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	71	137	152	445	292	83
Future Volume (vph)	71	137	152	445	292	83
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	1%	
Storage Length (ft)	0	0	50			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		100			
Satd. Flow (prot)	1647	0	1752	1863	1794	0
Flt Permitted	0.983		0.950			
Satd. Flow (perm)	1647	0	1752	1863	1794	0
Link Speed (mph)	15			35	35	
Link Distance (ft)	239			465	197	
Travel Time (s)	10.9			9.1	3.8	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	4%	3%	2%	2%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	214	0	157	459	387	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 51.2%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	5.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	71	137	152	445	292	83
Future Vol, veh/h	71	137	152	445	292	83
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	1	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	4	3	2	2	3
Mvmt Flow	73	141	157	459	301	86

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1117	344	387	0	-	0
Stage 1	344	-	-	-	-	-
Stage 2	773	-	-	-	-	-
Critical Hdwy	6.42	6.24	4.13	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.336	2.227	-	-	-
Pot Cap-1 Maneuver	229	694	1166	-	-	-
Stage 1	718	-	-	-	-	-
Stage 2	455	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	198	694	1166	-	-	-
Mov Cap-2 Maneuver	198	-	-	-	-	-
Stage 1	621	-	-	-	-	-
Stage 2	455	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	26.8	2.2	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1166	-	374	-	-
HCM Lane V/C Ratio	0.134	-	0.573	-	-
HCM Control Delay (s/veh)	8.6	-	26.8	-	-
HCM Lane LOS	A	-	D	-	-
HCM 95th %tile Q (veh)	0.5	-	3.4	-	-

Appendix I:
SimTraffic Reports

Intersection: 1: NC 96 & Pearces Road

Movement	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	R	L	R
Maximum Queue (ft)	175	273	441	350	200	363
Average Queue (ft)	41	170	222	32	176	144
95th Queue (ft)	102	281	375	159	227	355
Link Distance (ft)		266	435	435		364
Upstream Blk Time (%)		1	1	0		0
Queuing Penalty (veh)		7	0	0		2
Storage Bay Dist (ft)	185				100	
Storage Blk Time (%)		6			37	1
Queuing Penalty (veh)		3			17	2

Intersection: 2: NC 96 & Site Driveway 1

Movement	EB	SB
Directions Served	T	R
Maximum Queue (ft)	150	83
Average Queue (ft)	13	32
95th Queue (ft)	78	66
Link Distance (ft)	371	154
Upstream Blk Time (%)		0
Queuing Penalty (veh)		0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: Pearces Road & Site Driveway 2

Movement	EB	NB	SB
Directions Served	LR	L	TR
Maximum Queue (ft)	116	58	52
Average Queue (ft)	47	19	3
95th Queue (ft)	87	48	27
Link Distance (ft)	196		163
Upstream Blk Time (%)	0		0
Queuing Penalty (veh)	0		0
Storage Bay Dist (ft)		50	
Storage Blk Time (%)		0	
Queuing Penalty (veh)		1	

Network Summary

Network wide Queuing Penalty: 32

Intersection: 1: NC 96 & Pearces Road

Movement	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	R	L	R
Maximum Queue (ft)	164	294	397	182	199	301
Average Queue (ft)	46	162	172	32	142	64
95th Queue (ft)	106	281	328	112	210	208
Link Distance (ft)		290	421	421		381
Upstream Blk Time (%)		1	0			
Queuing Penalty (veh)		3	0			
Storage Bay Dist (ft)	185				100	
Storage Blk Time (%)		5			31	0
Queuing Penalty (veh)		3			9	0

Intersection: 2: NC 96 & Site Driveway 1

Movement	EB	SB
Directions Served	T	R
Maximum Queue (ft)	110	104
Average Queue (ft)	7	44
95th Queue (ft)	49	81
Link Distance (ft)	543	171
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: Pearces Road & Site Driveway 2

Movement	EB	NB	SB
Directions Served	LR	L	TR
Maximum Queue (ft)	121	68	2
Average Queue (ft)	56	26	0
95th Queue (ft)	93	57	3
Link Distance (ft)	205		163
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		50	
Storage Blk Time (%)		1	
Queuing Penalty (veh)		3	

Network Summary

Network wide Queuing Penalty: 19

Intersection: 1: NC 96 & Pearces Road

Movement	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	R	L	R
Maximum Queue (ft)	227	282	468	417	200	374
Average Queue (ft)	79	216	277	68	188	235
95th Queue (ft)	182	320	461	271	224	438
Link Distance (ft)		266	435	435		364
Upstream Blk Time (%)		6	3	1		3
Queuing Penalty (veh)		42	0	0		18
Storage Bay Dist (ft)	185				100	
Storage Blk Time (%)	3	16			46	1
Queuing Penalty (veh)	17	9			33	7

Intersection: 2: NC 96 & Site Driveway 1

Movement	EB	SB
Directions Served	T	R
Maximum Queue (ft)	318	93
Average Queue (ft)	57	36
95th Queue (ft)	216	73
Link Distance (ft)	371	154
Upstream Blk Time (%)	2	0
Queuing Penalty (veh)	0	0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: Pearces Road & Site Driveway 2

Movement	EB	NB	NB	SB
Directions Served	LR	L	T	TR
Maximum Queue (ft)	127	73	15	147
Average Queue (ft)	54	27	1	19
95th Queue (ft)	107	59	11	93
Link Distance (ft)	196		364	163
Upstream Blk Time (%)	1			1
Queuing Penalty (veh)	0			0
Storage Bay Dist (ft)		50		
Storage Blk Time (%)		1	0	
Queuing Penalty (veh)		3	0	

Network Summary

Network wide Queuing Penalty: 129

Intersection: 1: NC 96 & Pearces Road

Movement	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	R	L	R
Maximum Queue (ft)	234	311	430	387	199	359
Average Queue (ft)	125	219	230	62	160	110
95th Queue (ft)	239	344	401	225	219	295
Link Distance (ft)		290	421	421		381
Upstream Blk Time (%)		7	1	0		0
Queuing Penalty (veh)		53	0	0		1
Storage Bay Dist (ft)	185				100	
Storage Blk Time (%)	12	15			37	1
Queuing Penalty (veh)	89	13			18	2

Intersection: 2: NC 96 & Site Driveway 1

Movement	EB	SB
Directions Served	T	R
Maximum Queue (ft)	434	104
Average Queue (ft)	82	45
95th Queue (ft)	339	84
Link Distance (ft)	543	171
Upstream Blk Time (%)	3	0
Queuing Penalty (veh)	0	0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: Pearces Road & Site Driveway 2

Movement	EB	NB	SB
Directions Served	LR	L	TR
Maximum Queue (ft)	138	74	36
Average Queue (ft)	59	28	2
95th Queue (ft)	101	59	18
Link Distance (ft)	205		163
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		50	
Storage Blk Time (%)		1	
Queuing Penalty (veh)		4	

Network Summary

Network wide Queuing Penalty: 180

Intersection: 1: NC 96 & Pearces Road

Movement	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	R	L	R
Maximum Queue (ft)	231	290	468	411	200	376
Average Queue (ft)	106	214	295	81	186	237
95th Queue (ft)	218	312	480	305	225	442
Link Distance (ft)		266	435	435		364
Upstream Blk Time (%)		5	5	2		4
Queuing Penalty (veh)		39	0	0		23
Storage Bay Dist (ft)	185				100	
Storage Blk Time (%)	8	14			47	1
Queuing Penalty (veh)	50	9			34	4

Intersection: 2: NC 96 & Site Driveway 1

Movement	EB	SB
Directions Served	T	R
Maximum Queue (ft)	282	89
Average Queue (ft)	52	40
95th Queue (ft)	212	74
Link Distance (ft)	371	154
Upstream Blk Time (%)	1	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: Pearces Road & Site Driveway 2

Movement	EB	NB	NB	SB
Directions Served	LR	L	T	TR
Maximum Queue (ft)	155	65	9	151
Average Queue (ft)	61	27	0	22
95th Queue (ft)	120	59	9	108
Link Distance (ft)	196		364	163
Upstream Blk Time (%)	1			2
Queuing Penalty (veh)	0			0
Storage Bay Dist (ft)		50		
Storage Blk Time (%)		1		
Queuing Penalty (veh)		3		

Network Summary

Network wide Queuing Penalty: 162

Intersection: 1: NC 96 & Pearces Road

Movement	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	R	L	R
Maximum Queue (ft)	235	330	432	393	199	372
Average Queue (ft)	154	246	232	79	160	118
95th Queue (ft)	270	365	409	274	220	308
Link Distance (ft)		290	421	421		381
Upstream Blk Time (%)		19	2	1		1
Queuing Penalty (veh)		145	0	0		2
Storage Bay Dist (ft)	185				100	
Storage Blk Time (%)	27	22			36	1
Queuing Penalty (veh)	201	20			18	2

Intersection: 2: NC 96 & Site Driveway 1

Movement	EB	SB
Directions Served	T	R
Maximum Queue (ft)	530	126
Average Queue (ft)	235	52
95th Queue (ft)	655	96
Link Distance (ft)	543	171
Upstream Blk Time (%)	20	0
Queuing Penalty (veh)	0	0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: Pearces Road & Site Driveway 2

Movement	EB	NB	NB	SB
Directions Served	LR	L	T	TR
Maximum Queue (ft)	156	68	6	56
Average Queue (ft)	71	32	0	3
95th Queue (ft)	126	60	6	31
Link Distance (ft)	205		381	163
Upstream Blk Time (%)	1			0
Queuing Penalty (veh)	0			0
Storage Bay Dist (ft)		50		
Storage Blk Time (%)		1	0	
Queuing Penalty (veh)		7	0	

Network Summary

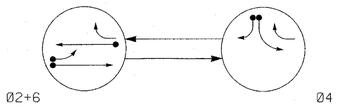
Network wide Queuing Penalty: 395

Appendix J:
Signal Plans

PROJECT REFERENCE NO.	SHEET NO.
U-5118 FA	Sig. 1

2 Phase
Fully Actuated
(NC 96 - Arendell Ave. Closed Loop System)

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

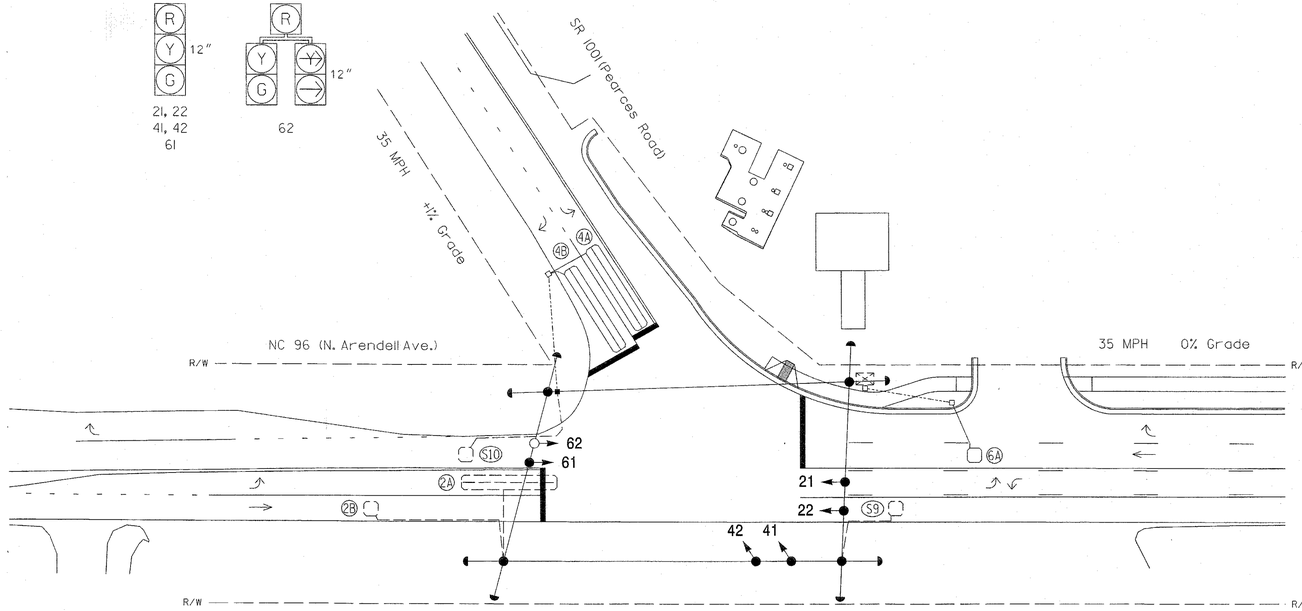
SIGNAL FACE	PHASE Ø2+6	PHASE Ø4	PHASE FLASH
21, 22	G	R	Y
41, 42	R	G	R
61	G	R	Y
62	G	R	Y

SIGNAL FACE I.D.

All Heads L.E.D.

OASIS 2070L LOOP & DETECTOR INSTALLATION CHART

INDUCTIVE LOOPS						DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A	6X40	+5	2-4-2	-	2	Y	Y	-	-	-	-	-
2B	6X6	70	3	-	2	Y	Y	-	-	-	-	-
4A	6X40	0	2-4-2	Y	4	Y	Y	-	-	3	-	-
4B	6X40	0	2-4-2	Y	4	Y	Y	-	-	15	-	-
6A	6X6	70	4	Y	6	Y	Y	-	-	-	-	-
S9	6X6	+150	3	-	-	-	-	-	-	-	Y	-
S10	6X6	+135	3	-	-	-	-	-	-	-	Y	-



NOTES

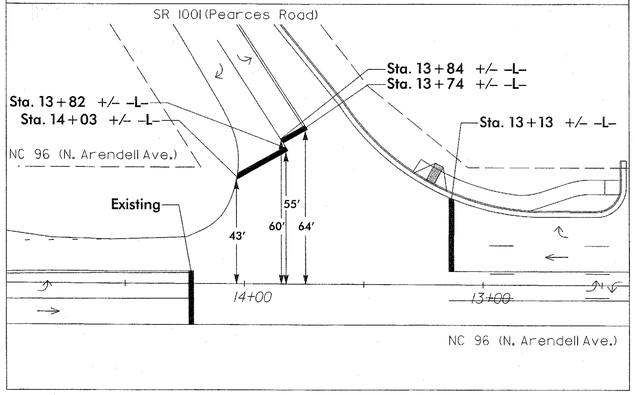
1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Set all detector units to presence mode.
4. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
5. Closed loop system data: Controller Asset #1700.

OASIS 2070L TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 6
Min Green 1 *	10	7	10
Extension 1 *	3.0	2.0	3.0
Max Green 1 *	45	20	45
Yellow Clearance	3.8	3.0	3.8
Red Clearance	2.3	3.3	1.8
Walk 1 *	-	-	-
Don't Walk 1	-	-	-
Seconds Per Actuation *	-	-	-
Max Variable Initial *	-	-	-
Time Before Reduction *	-	-	-
Time To Reduce *	-	-	-
Minimum Gap	-	-	-
Recall Mode	MIN RECALL	-	MIN RECALL
Vehicle Call Memory	YELLOW	-	YELLOW
Dual Entry	-	-	-
Simultaneous Gap	ON	ON	ON

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

INSET – STOP BAR LOCATIONS



LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	Pedestrian Signal Head With Push Button & Sign	
	Signal Pole with Guy	
	Signal Pole with Sidewalk Guy	
	Inductive Loop Detector	
	Controller & Cabinet	
	Junction Box	
	2-in Underground Conduit	
N/A	Right of Way	
	Directional Arrow	

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
FINAL DRAWING Date: 2/21/12
Traffic Engineering Branch

Signal Upgrade

SEPI ENGINEERING & CONSTRUCTION
1025 Wade Avenue
Raleigh, NC 27605
Tel:919-789-9977
Fax:919-789-9591
License #: C-2197

Prepared in the Offices of:
Transportation Mobility and Safety Division, State of North Carolina, Department of Transportation, Signal Design Section
750 N.Greenfield Pkwy,Garner,NC 27529

SCALE 0 30 1"=30'

NC 96 (N. Arendell Avenue) at SR 1001 (Pearces Road)
Division 5 Zebulon Wake County

PLAN DATE:	August 2011	REVIEWED BY:	J Hochanadel
PREPARED BY:	A Nau	REVIEWED BY:	

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 28430 ENGINEER JEFFREY P. HOCHANADEL

SIGNATURE 8/8/11 DATE

SIG. INVENTORY NO. 05-1700

$$$$SYSTIME$$$$
$$$$DESIGNNAME$$$$

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