



**PINEVILLE TOWN COUNCIL WORK SESSION AGENDA
PINEVILLE POLICE TRAINING ROOM
TUESDAY, NOVEMBER 27, 2018
6:00 P.M.**

1) Call Meeting To Order:

2) Discussion Items:

- A. Presentation of Proposed Distribution Warehouse** (*Travis Morgan*) – Discuss plans for a proposed warehouse on Downs Rd. as presented at last month’s Work Session. Applicant is scheduled to be in attendance. (*INFORMATIONAL ITEM*).
- B. Presentation of Proposed Property Development at Lynwood Ln./Lakeview Dr.** (*Travis Morgan*) – Discussion of plans for possible development with applicants, Mr. Miller and Mr. Smith. (*INFORMATIONAL ITEM*).
- C. Discussion with CI/Harris Radio regarding Police Radio Issues** (*Ryan Spitzer/Chief Merchant*) (*INFORMATIONAL/ACTION ITEM*).
- D. Presentation of Salary Study Results** (*Dornessa Froneberger/Susan Manning*) HR Consultant, Susan Manning, will be in attendance to present her Salary Survey Findings (*INFORMATIONAL ITEM*).
- E. Staff Update:**
 - 1. *Manager’s Report*

3) Adjourn:

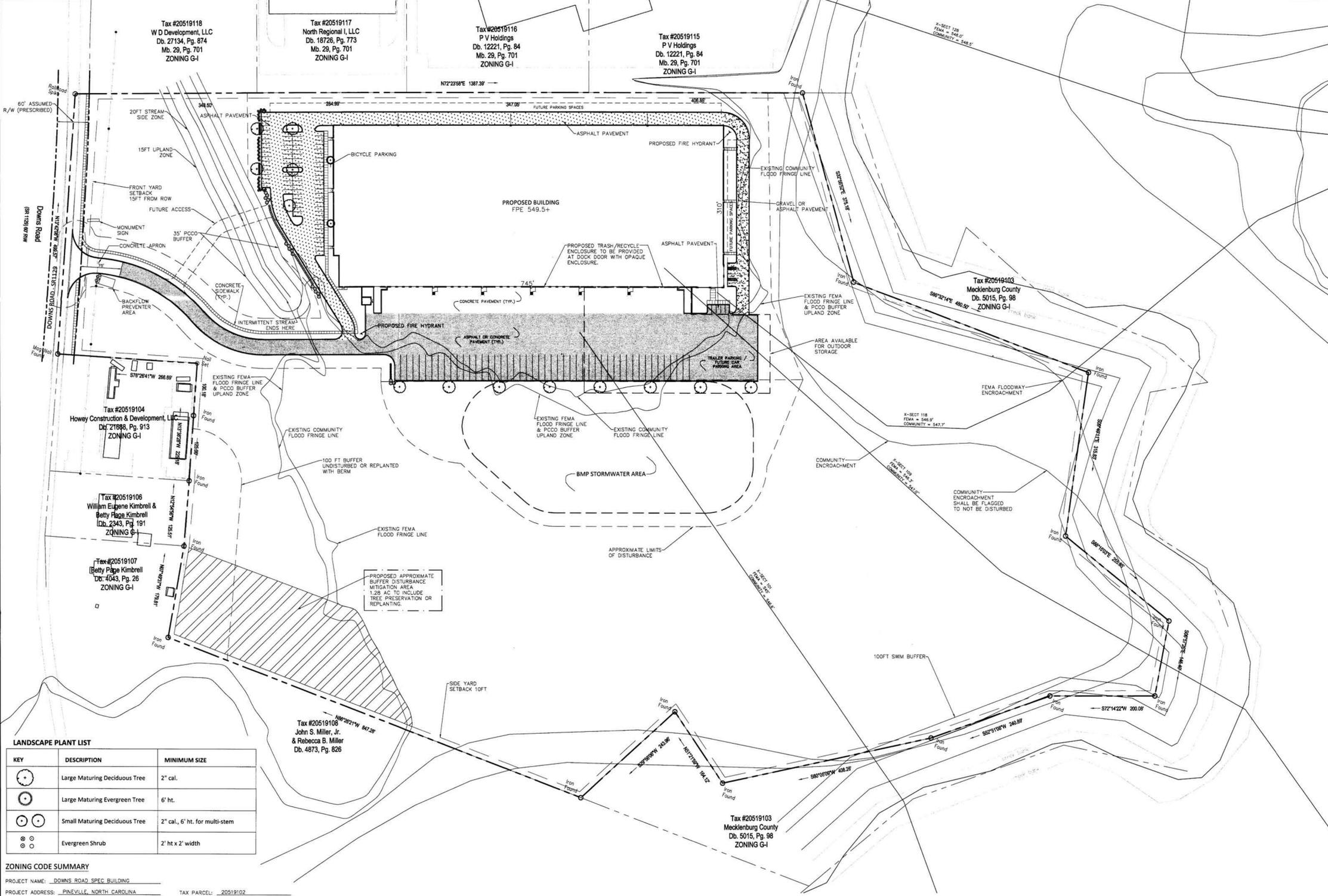
If you require any type of reasonable accommodation as a result of physical, sensory, or mental disability in order to participate in this meeting, please contact Barbara Monticello, Clerk of Council, at 704-889-2291 or bmonticello@pinevillenc.gov. Three days’ notice is required.

PCCO SUMMARY	
ORIGINAL PARCEL ID NUMBER	20519102
DEVELOPMENT TYPE	INDUSTRIAL
SUBJECT TO PCCO? Y/N	YES
WATERSHED:	PINEVILLE PC DISTRICT
DISTURBED AREA (AC):	16.79 AC
SITE AREA (AC):	43.74 AC
EXISTING BUILT-UPON-AREA (SF):	0 SF
EXISTING BUA TO BE REMOVED (SF):	0 SF
EXISTING BUA TO REMAIN (SF):	0 SF
PROPOSED NEW BUA (SF):	446,082 SF
PROPOSED % BUA	324%
DENSITY (HIGH/LOW)	HIGH
TOTAL POST-PROJECT BUA FOR SITE:	446,082 SF
DEVELOPMENT OR REDEVELOPMENT?	DEVELOPMENT
NATURAL AREA REQUIRED (AC):	7.65 AC
NATURAL AREA PROVIDED (AC):	25.6 AC
TOTAL STREAM BUFFER PROTECTED	-
ON-SITE (AC)	-
TRANSIT STATION AREA? Y/N	NO
DISTRESSED BUSINESS DISTRICT? Y/N	NO
MITIGATION TYPE (IF APPLICABLE)	N/A
NATURAL AREA MITIGATION? Y/N	NO
BUFFER MITIGATION? Y/N	YES
TOTAL PHOSPHOROUS MITIGATION? Y/N	NO

BUFFER DISTURBANCE SUMMARY	
TOTAL BUFFER DISTURBANCE	5.00 AC
EXEMPT DISTURBANCE AREA	3.72 AC
MITIGATED DISTURBANCE AREA	1.28 AC (SEE PLAN)

SITE DEVELOPMENT DATA:
 --ACREAGE: ± 48.77 ACRES
 --TAX PARCEL #: 20519102
 --EXISTING ZONING: G-1
 --EXISTING USE: VACANT
 --PROPOSED USES: INDUSTRIAL
 --PROPOSED FLOOR AREA RATIO: AS ALLOWED IN THE G-1 ZONING DISTRICT.
 --PARKING: AS ALLOWED BY THE OPTIONAL PROVISIONS BELOW WILL BE PROVIDED.

1) GENERAL PROVISIONS:
 a. UNLESS DEVELOPED FOR A BY-RIGHT USE ALLOWED IN G-1, LESS THAN 100,000 SF, ALL CONDITIONS AND REQUIREMENTS IN THIS PLAN SHALL APPLY FOR DEVELOPMENT OF THE SITE.
 b. ZONING DISTRICTS/ORDINANCE, DEVELOPMENT OF THE SITE WILL BE GOVERNED BY THE CONCEPT SITE PLAN AS WELL AS THE APPLICABLE PROVISIONS OF THE TOWN OF PINEVILLE ZONING ORDINANCE (THE ORDINANCE) DATED MARCH 13, 2016.
 c. GRAPHICS AND ALTERATIONS, THE SCHEMATIC DEPICTIONS OF THE USES, PARKING AREAS, SIDEWALKS, STRUCTURES AND BUILDINGS, DRIVEWAYS, STREETS AND OTHER DEVELOPMENT MATTERS AND SITE ELEMENTS (COLLECTIVELY THE DEVELOPMENT/SITE ELEMENTS) SET FORTH ON THE CONCEPT SITE PLAN SHOULD BE REVIEWED IN CONJUNCTION WITH THE PROVISIONS OF THESE DEVELOPMENT STANDARDS, THE LAYOUT, LOCATIONS, SIZES AND FORMULATIONS OF THE DEVELOPMENT/SITE ELEMENTS DEPICTED ON THE CONCEPT SITE PLAN ARE GRAPHIC REPRESENTATIONS OF THE DEVELOPMENT/SITE ELEMENTS PROPOSED. CHANGES TO THE CONCEPT SITE PLAN NOT ANTICIPATED BY THE CONCEPT SITE PLAN WILL BE REVIEWED AND APPROVED.
 d. SINCE THE PROJECT HAS NOT UNDERGONE THE DESIGN DEVELOPMENT AND CONSTRUCTION PHASES, IT IS INTENDED THAT THIS CONCEPT SITE PLAN PROVIDE FOR FLEXIBILITY IN ALLOWING SOME ALTERATIONS OR MODIFICATIONS FROM THE GRAPHIC REPRESENTATIONS OF THE DEVELOPMENT/SITE ELEMENTS. THEREFORE, THERE MAY BE INSTANCES WHERE MINOR MODIFICATIONS WILL BE ALLOWED WITHOUT REQUIRING THE ADMINISTRATIVE AMENDMENT PROCESS.
 e. THE PLANNING DIRECTOR WILL DETERMINE IF SUCH MINOR MODIFICATIONS ARE ALLOWED PER THIS AMENDED PROCESS, AND IF IT IS ALTERATION DOES NOT MEET THE CRITERIA DESCRIBED ABOVE, THE PETITIONER SHALL THEN FOLLOW THE ADMINISTRATIVE AMENDMENT PROCESS.
 f. NUMBER OF BUILDINGS PRINCIPAL AND ACCESSORY, THE TOTAL NUMBER OF PRINCIPAL BUILDINGS TO BE DEVELOPED ON THE SITE SHALL NOT EXCEED 1. ACCESSORY BUILDINGS AND STRUCTURES LOCATED ON THE SITE SHALL NOT BE CONSIDERED IN ANY LIMITATION ON THE NUMBER OF BUILDINGS ON THE SITE. ACCESSORY BUILDINGS AND STRUCTURES WILL BE CONSTRUCTED UTILIZING SIMILAR BUILDING MATERIALS, COLORS, ARCHITECTURAL ELEMENTS AND DESIGNS AS THE PRINCIPAL BUILDING LOCATED ON THE SITE. ACCESSORY STRUCTURES AND BUILDINGS INCLUDE STRUCTURES AND BUILDINGS SUCH AS BUT NOT LIMITED TO: EQUIPMENT ENCLOSURES, DUMPSTER ENCLOSURES, GAZEBOS, TRELLISES, STORAGE BUILDINGS AND DOES NOT INCLUDE EXTERIOR EQUIPMENT.
 2) PERMITTED USES & DEVELOPMENT AREA LIMITATION:
 a. ALL USES ALLOWED BY RIGHT IN THE G-1 ZONING DISTRICT EXCEPT THOSE DEFINED AS CLASS 2 MANUFACTURED GOODS.
 b. OUTDOOR STORAGE IS PERMITTED IN THE IDENTIFIED AREA ON THE CONCEPT SITE PLAN FOR THE STORAGE OF: PIPE, RACKING SYSTEMS AND EQUIPMENT, SCAFFOLDING SYSTEMS, STORAGE CONTAINERS, METAL BUILDING PRODUCTS, SPOOLS OF WIRE, SIDING, LUMBER, MASONRY PRODUCTS, ROOFING MATERIALS, FENCING MATERIALS, GEOTEXTILE FABRICS, MECHANICAL EQUIPMENT, AND PALLETS.
 3) ACCESS AND TRANSPORTATION:
 a. ACCESS TO THE SITE WILL BE FROM DOWNS ROAD IN THE MANNER GENERALLY DEPICTED ON THE CONCEPT SITE PLAN.
 b. THE PETITIONER WILL PROVIDE A FIVE (5) FOOT SIDEWALK ALONG DOWNS ROAD AS GENERALLY DEPICTED ON THE CONCEPT SITE PLAN.
 c. THE PLACEMENT AND CONFIGURATION OF THE VEHICULAR ACCESS POINT IS SUBJECT TO ANY MODIFICATIONS REQUIRED TO ACCOMMODATE FINAL SITE DEVELOPMENT AND CONSTRUCTION PLANS AND TO ANY ADJUSTMENTS REQUIRED FOR APPROVAL, BY NOTOT IN ACCORDANCE WITH APPLICABLE PUBLISHED STANDARDS.
 d. THE ALIGNMENT OF THE INTERNAL VEHICULAR CIRCULATION AND DRIVEWAYS MAY BE MODIFIED BY THE PETITIONER TO ACCOMMODATE CHANGES IN TRAFFIC PATTERNS.
 e. THE ROADWAY IMPROVEMENTS REQUIRED BY THE DEVELOPMENT OF THE SITE MUST BE SUBSTANTIALLY COMPLETED PRIOR TO THE ISSUANCE OF THE FIRST CERTIFICATE OF OCCUPANCY FOR THE FIRST BUILDING ON THE SITE, SUBJECT TO THE ABILITY OF THE PETITIONER TO POST A LETTER OF CREDIT OR A BOND FOR ANY IMPROVEMENTS NOT IN PLACE AT THE TIME THE FIRST CERTIFICATE OF OCCUPANCY IS ISSUED.
 4) ENVIRONMENTAL FEATURES:
 a. THE PETITIONER SHALL COMPLY WITH THE TOWN OF PINEVILLE APPROVED AND ADOPTED POST CONSTRUCTION CONTROLS ORDINANCE.
 b. THE LOCATION, SIZE AND TYPE OF STORM WATER MANAGEMENT SYSTEMS DEPICTED ON THE CONCEPT SITE PLAN ARE SUBJECT TO REVIEW AND APPROVAL AS PART OF THE FULL DEVELOPMENT PLAN SUBMITTAL AND ARE NOT IMPLICITLY APPROVED WITH THIS REZONING. ADJUSTMENTS MAY BE NECESSARY IN ORDER TO ACCOMMODATE ACTUAL STORM WATER TREATMENT REQUIREMENTS AND NATURAL SITE DISCHARGE POINTS. THE STORM WATER DETENTION, WATER QUALITY AREA WILL BE SCREENED/BUFFERED FROM THE PROPOSED UNITS BY A COMBINATION OF TREES AND SHRUBS AS GENERALLY DEPICTED ON THE CONCEPT SITE PLAN. THE FINAL ARRANGEMENT OF TREES AND SHRUBS TO BE DETERMINED DURING THE LAND DEVELOPMENT APPROVAL PROCESS.
 5) SIGNAGE:
 a. AS ALLOWED BY THE G-1 ZONING DISTRICTS.
 6) AMENDMENTS TO THE CONCEPT SITE PLAN:
 a. FUTURE AMENDMENTS TO THE CONCEPT SITE PLAN (WHICH INCLUDES THESE DEVELOPMENT STANDARDS) MAY BE APPLIED FOR BY THE THEN OWNER OR OWNERS OF THE APPLICABLE DEVELOPMENT AREA PORTION OF THE SITE AFFECTED BY SUCH AMENDMENT.
 7) BINDING EFFECT OF THE CONCEPT SITE PLAN:
 a. IF THIS CONCEPT SITE PLAN IS APPROVED, ALL CONDITIONS APPLICABLE TO THE DEVELOPMENT OF THE SITE IMPOSED UNDER THE CONCEPT SITE PLAN WILL, UNLESS AMENDED IN THE MANNER PROVIDED UNDER THE ORDINANCE, BE BINDING UPON AND INURE TO THE BENEFIT OF THE PETITIONER AND SUBSEQUENT OWNERS OF THE SITE AND THEIR RESPECTIVE HEIRS, DEVISEES, PERSONAL REPRESENTATIVES, SUCCESSORS IN INTEREST OR ASSIGNS.

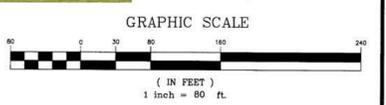
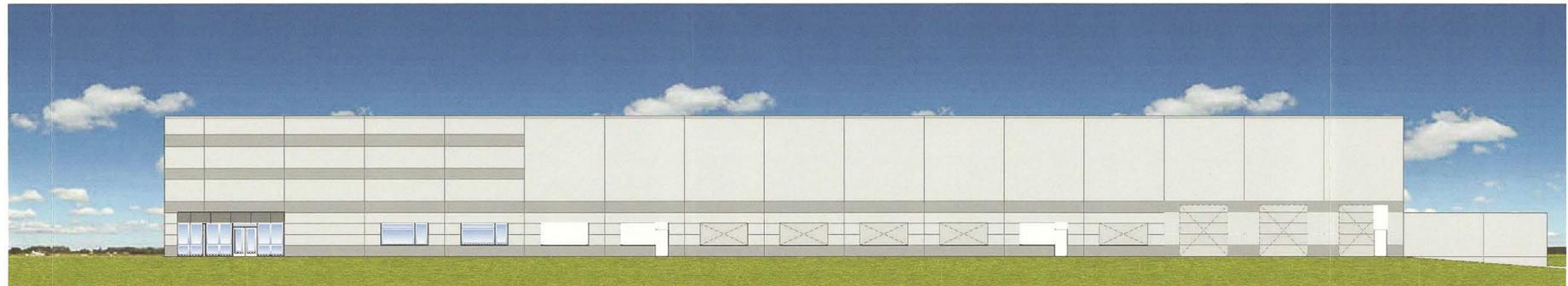


LANDSCAPE PLANT LIST

KEY	DESCRIPTION	MINIMUM SIZE
⊙	Large Maturing Deciduous Tree	2" cal.
⊙	Large Maturing Evergreen Tree	6' ht.
⊙	Small Maturing Deciduous Tree	2" cal., 6' ht. for multi-stem
⊙	Evergreen Shrub	2' ht x 2' width

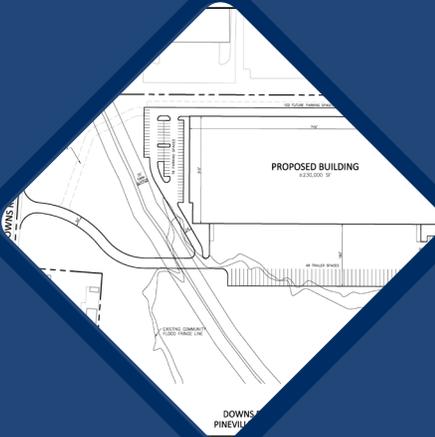
ZONING CODE SUMMARY

PROJECT NAME: DOWNS ROAD SPEC BUILDING
 PROJECT ADDRESS: PINEVILLE, NORTH CAROLINA
 OWNER: BIN-WECK LLC
 OWNER ADDRESS: 500 E. MOREHEAD ST., SUITE 200, CHARLOTTE, NC 28202
 PLANS PREPARED BY: ORSBORN ENGINEERING GROUP
 ZONING: G-1
 PROPOSED USE: WAREHOUSE
 AVERAGE BUILDING HEIGHT: 50 FEET STORIES: 1
 BUILDING COVERAGE: 250,000 SQ. FT. GROSS FLOOR AREA: 250,000 SQ. FT. RATIO: 0.121
 LOT SIZE: 43.74 SQ. FT./ACRES NUMBER OF BUILDINGS: 1
 YARD REQUIREMENTS:
 SETBACK (FRONT): 15 FT. FROM R/W
 SIDE YARD: 10 FT.
 REAR YARD: 10 FT.
 IMPERVIOUS COVERAGE: 446,082 SQ. FT./ACRES
 INTERIOR LANDSCAPING:
 REQUIRED: 44,606 SQ. FT.
 PROVIDED: 44,606 SQ. FT.
 PARKING DATA:
 AUTOMOBILE:
 1 PER 1,000 SF WAREHOUSE REQUIRED
 250,000 SF / SPACE PER 1000 SF = 250 PARKING SPACES REQUIRED
 85 PARKING SPACES PROVIDED + 130 +/- FUTURE SPACES
 BICYCLE:
 SHORT TERM: 1 PER 50 PARKING SPACES = 2 REQUIRED
 LONG TERM: NONE REQUIRED
 LOADING:
 3 +/- 1 PER BOX ABOVE 65K = 5 REQUIRED (12'x35', EVERY 3RD BERTH MUST BE 12'x65') OR PROVIDED
 SOLID WASTE: PROVIDED IN ENCLOSURE WITH SOLID WALLS OR FENCE AND GATES.
 SITE LIGHTING: PER ORDINANCE REQUIREMENTS



November 07, 2018 - 11:09am By: jmb
 C:\Users\jmb\OneDrive\Documents\Projects\Downs Road Spec Building\Concept\Submittal\CP2.0_Concept.dwg

Traffic Impact Study Downs Road Development Pineville, North Carolina



TRAFFIC IMPACT STUDY

FOR THE

Downs Road Development

LOCATED
IN
PINEVILLE, NORTH CAROLINA

Prepared For:
Beacon Partners
500 East Morehead Street, Suite 200
Charlotte, NC 28202

Prepared By:
Ramey Kemp & Associates, Inc.
8307 University Executive Park Drive, Suite 260
Charlotte, NC 28262
License #C-0910

November 2018
RKA Project #18348



TABLE OF CONTENTS

1. EXECUTIVE SUMMARY 1

2. INTRODUCTION..... 2

 2.1. Purpose of Report..... 2

 2.2. Study Objectives 2

3. AREA CONDITIONS 2

 3.1. Transportation Network Study Area 2

 3.1.1. Area Roadway System 2

 3.1.1.1. Existing Roadway Conditions 3

 3.1.1.2. Future Roadway Conditions 3

 3.1.2. Study Area and Existing Traffic Volumes 3

 3.2. Study Area – Adjacent Land Use..... 3

 3.2.1. Existing Land Uses..... 3

 3.2.2. Anticipated or Approved Future Development 3

4. PROJECTED TRAFFIC..... 4

 4.1. Site Traffic 4

 4.1.1. Trip Generation 4

 4.1.2. Trip Distribution and Assignment..... 4

5. TRAFFIC ANALYSIS..... 5

 5.1. Traffic Analysis Scenario..... 5

 5.2. Traffic Analysis Procedure..... 5

 5.3. Capacity and Level of Service at Study Intersection 7

 5.3.1. Downs Road and Site Access A..... 7

6. CONCLUSIONS 8

 6.1. Summary of Recommended Improvements..... 8

LIST OF TABLES

Table 1 Study Area Roads.....2
Table 2 Proposed Site Trip Generation4
Table 3 Highway Capacity Manual - Levels of Service and Delay6
Table 4 Analysis Summary of Downs Road and Site Access A8

LIST OF FIGURES

Figure 1 Site Location Map..... Appendix A
Figure 2 Preliminary Site Plan..... Appendix A
Figure 3 2018 Existing Lane Configurations..... Appendix A
Figure 4 2018 Existing Peak Hour Traffic Volumes Appendix A
Figure 5 2019 Projected Peak Hour Traffic Volumes Appendix A
Figure 6 Proposed Site Primary Trip Distribution Percentages..... Appendix A
Figure 7 Proposed Site Primary Trip Assignment Appendix A
Figure 8 2019 Build Peak Hour Traffic Volumes..... Appendix A
Figure 9 Recommended Lane Configurations Appendix A

TECHNICAL APPENDIX

Appendix A Figures
Appendix B Traffic Count Data
Appendix C Downs Road and Site Access A Synchro Reports and Turn Lane Warrants
Appendix D Downs Road and Site Access A SimTraffic Reports

TABLE OF CONTENTS

1. EXECUTIVE SUMMARY 1

2. INTRODUCTION..... 2

 2.1. Purpose of Report..... 2

 2.2. Study Objectives 2

3. AREA CONDITIONS 2

 3.1. Transportation Network Study Area 2

 3.1.1. Area Roadway System 2

 3.1.1.1. Existing Roadway Conditions 3

 3.1.1.2. Future Roadway Conditions 3

 3.1.2. Study Area and Existing Traffic Volumes 3

 3.2. Study Area – Adjacent Land Use..... 3

 3.2.1. Existing Land Uses..... 3

 3.2.2. Anticipated or Approved Future Development 3

4. PROJECTED TRAFFIC..... 4

 4.1. Site Traffic 4

 4.1.1. Trip Generation 4

 4.1.2. Trip Distribution and Assignment..... 4

5. TRAFFIC ANALYSIS..... 5

 5.1. Traffic Analysis Scenario..... 5

 5.2. Traffic Analysis Procedure..... 5

 5.3. Capacity and Level of Service at Study Intersection 7

 5.3.1. Downs Road and Site Access A..... 7

6. CONCLUSIONS 8

 6.1. Summary of Recommended Improvements..... 8

LIST OF TABLES

Table 1 Study Area Roads.....2
Table 2 Proposed Site Trip Generation4
Table 3 Highway Capacity Manual - Levels of Service and Delay6
Table 4 Analysis Summary of Downs Road and Site Access A8

LIST OF FIGURES

Figure 1 Site Location Map. Appendix A
Figure 2 Preliminary Site Plan..... Appendix A
Figure 3 2018 Existing Lane Configurations..... Appendix A
Figure 4 2018 Existing Peak Hour Traffic Volumes Appendix A
Figure 5 2019 Projected Peak Hour Traffic Volumes Appendix A
Figure 6 Proposed Site Primary Trip Distribution Percentages..... Appendix A
Figure 7 Proposed Site Primary Trip Assignment Appendix A
Figure 8 2019 Build Peak Hour Traffic Volumes..... Appendix A
Figure 9 Recommended Lane Configurations Appendix A

TECHNICAL APPENDIX

Appendix A Figures
Appendix B Traffic Count Data
Appendix C Downs Road and Site Access A Synchro Reports and Turn Lane Warrants
Appendix D Downs Road and Site Access A SimTraffic Reports

TRAFFIC IMPACT STUDY

DOWNNS ROAD DEVELOPMENT PINEVILLE, NORTH CAROLINA

1. EXECUTIVE SUMMARY

This report summarizes the findings of the Traffic Impact Study (TIS) that was performed for the proposed warehouse / light industrial development to be located east of Downs Road in Pineville, North Carolina. The purpose of this study is to determine the potential impact to the surrounding transportation system caused by the traffic generated by the development.

The site is proposed to consist of 250,000 square feet of warehouse / light industrial. One full access driveway is proposed on Downs Road. The build out year of the site is 2019.

The study area for the TIS was determined through coordination with the Town of Pineville. The unsignalized intersection of Downs Road and Site Access A was analyzed with a full access.

Based on coordination with Town of Pineville, no offsite developments were determined to have an impact on the project study area.

One scenario was analyzed using traffic analysis software. Traffic operations during the weekday AM and PM peak hours were modeled for the 2019 Build scenario. A preliminary site visit indicated no sight distance issues at Site Access A. The expected longest queue on Site Access A is 77 feet while the longest queue on Downs Road is 76 feet. All approaches of the Site Access A intersection are expected to operate at LOS B or better. No turn lanes are warranted due to the low volumes.

The site traffic expected to travel through the NC 51 and Downs Road intersection is minimal and no impacts are expected. The proposed site would add no more than approximately 4 vehicles to a single turn movement during each cycle of the signal.

The following recommendations and improvements should be made by the developer:

Downs Road and Site Access A

- Construct Site Access A with one ingress lane and one shared left/right egress lane.

2. INTRODUCTION

2.1. Purpose of Report

This report summarizes the findings of the Traffic Impact Study (TIS) that was performed for the proposed warehouse / light industrial development to be located east of Downs Road in Pineville, North Carolina. The purpose of this study is to determine the potential impact to the surrounding transportation system caused by the traffic generated by the development.

2.2. Study Objectives

The site is proposed to consist of 250,000 square feet of warehouse / light industrial. One full access driveway is proposed on Downs Road. The site is expected to be fully built by the year 2019.

Refer to Figure 1 in Appendix A for an illustration of the site location. Refer to Figure 2 for the preliminary site plan. The objective of this report is to determine what geometric improvements are necessary to mitigate traffic conditions on the transportation network surrounding the site with the proposed development fully built out.

3. AREA CONDITIONS

3.1. Transportation Network Study Area

3.1.1. Area Roadway System

The project study area for this TIS was determined through coordination with the Town of Pineville. Table 1 summarizes the characteristics of the roadways within the study area. The NCDOT Functional Class map was used to determine the classification of each road. Traffic Volume maps from NCDOT were used to find the average daily traffic (ADT) volumes in vehicles per day (vpd) for the roadways. A field visit was conducted to verify the existing cross-sections and speed limits in mph.

**TABLE 1
STUDY AREA ROADS**

ROADWAY	CLASSIFICATION	CROSS-SECTION	ADT (vpd)	SPEED LIMIT (mph)
Downs Road	Local Road	Two-Lane	5,400	45

3.1.1.1. Existing Roadway Conditions

Existing lane configurations, storage capacities, and other intersection and roadway information within the study area was collected through field reconnaissance by Ramey Kemp and Associates, Inc. (RKA). Refer to Figure 3 for the existing lane configurations and traffic control at the study intersection.

3.1.1.2. Future Roadway Conditions

No roadway projects are expected to be constructed prior to the buildout of the proposed development that would have an impact on the project study area.

3.1.2. Study Area and Existing Traffic Volumes

The study area for the TIS was determined through coordination with the Town of Pineville and consists of the following intersection:

1. Downs Road and Site Access A (unsignalized – full access)

Tube counts were conducted near the proposed site driveway. The AM and PM peak hour through volumes were obtained from the tube count. Figure 4 shows the AM and PM peak hour volumes from the tube count. A growth rate was developed from historical data obtained from NCDOT count stations. The through volumes were then grown to the year 2019 by a rate of 2% per year. Refer to Figure 5 for an illustration of the 2019 projected peak hour traffic volumes based on the tube count. Existing traffic count data can be found in Appendix B.

3.2. Study Area – Adjacent Land Use

3.2.1. Existing Land Uses

The existing site is undeveloped. The surrounding land is primarily industrial.

3.2.2. Anticipated or Approved Future Development

Based on coordination with the Town of Pineville, no offsite developments were determined to have an impact on the project study area.

4. PROJECTED TRAFFIC

4.1. Site Traffic

In order to determine the future traffic conditions after the proposed development is completed, an estimate of traffic projected to travel to/from the proposed development is required. The average weekday daily, AM peak hour, and PM peak hour site trips for this study were calculated based on the ITE *Trip Generation Manual, 10th Edition*.

4.1.1. Trip Generation

The site is proposed to consist of a 250,000 square feet of warehouse / light industrial. Table 2 presents a summary of the trip generation calculations for the proposed development.

**TABLE 2
PROPOSED SITE TRIP GENERATION**

LAND USE	SIZE	DAILY TRIPS (VPD)	PEAK HOUR TRIPS (VPH)			
			AM		PM	
			ENTER	EXIT	ENTER	EXIT
General Light Industrial (LUC 150)	250 KSF	1,005	77	11	9	60

4.1.2. Trip Distribution and Assignment

Downs Road and Site Access A is shown in the Build scenario as a full movement unsignalized intersection. One egress and one ingress lane are provided at the site driveway.

Trip distribution percentages for the proposed site were determined based on existing traffic patterns, nearby land uses, location of employment centers, and engineering judgment. Figure 6 illustrates the trip distribution percentages for the site. These trip distribution percentages were applied to the peak hour trips in Table 2 to determine the trip assignment. Refer to Figure 7 for the site trip assignment. The site trip assignment was then added to the 2019 projected peak hour traffic volumes (Figure 5) to determine the 2019 Build peak hour traffic volumes illustrated in Figure 8.

5. TRAFFIC ANALYSIS

5.1. Traffic Analysis Scenario

One scenario was analyzed using traffic analysis software, Synchro 9.1. Traffic operations during the AM and PM peak hours were modeled. The results of the scenario were analyzed to determine impacts from the proposed development. The following scenario was modeled:

- 2019 Build

The 2019 Build scenario was analyzed to determine the expected impacts caused by the proposed site. Refer to Figure 8 for the 2019 Build peak hour traffic volumes. The site drive was modeled with one shared lane on each approach.

5.2. Traffic Analysis Procedure

The study intersection was analyzed using the methodology outlined in the Highway Capacity Manual (HCM) published by the Transportation Research Board. A computer software package, Synchro and SimTraffic (Version 9.1), was used to complete the analyses for the study area intersection. Synchro was developed by Trafficware Corporation and allows the user to input data into the Synchro software and calculate the output based on methodologies in the HCM. SimTraffic creates a traffic simulation model from the Synchro inputs. SimTraffic was used in this study to determine expected queue lengths.

The capacity analysis for an unsignalized intersection does not provide an overall LOS for the intersection, rather a LOS for movements and/or approaches that have a conflicting movement.

The HCM defines capacity as “the maximum hourly rate at which persons or vehicles can reasonably be expected to traverse a point or uniform section of a lane or roadway during a given time period under prevailing roadway, traffic, and control conditions”. LOS is a term used to represent different driving conditions, and is defined as a “qualitative measure describing operational conditions within a traffic stream, and their perception by motorists and/or passengers”. LOS varies from Level “A” representing free flow, to Level “F” where greater vehicle delays are evident.

Refer to Table 3 for HCM levels of service and related average control delay per vehicle for the unsignalized intersection. Control delay as defined by the HCM includes “initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay”. As shown in Table 3, an average control delay of 40 seconds at a unsignalized intersection results in a LOS E.

**TABLE 3
HIGHWAY CAPACITY MANUAL –
LEVELS OF SERVICE AND DELAY**

UNSIGNALIZED INTERSECTION	
LEVEL OF SERVICE	AVERAGE CONTROL DELAY PER VEHICLE (SECONDS)
A	0-10
B	10-15
C	15-25
D	25-35
E	35-50
F	>50

5.3 Capacity and Level of Service at Study Intersection

5.3.1 Downs Road and Site Access A

The site access intersection was analyzed as a three-leg unsignalized intersection. A field visit was done at the assumed location of the site drive. The speed limit on Downs Road is 45 miles per hour; resulting in a required sight distance of 500 feet. A preliminary review indicated both horizontal and vertical sight distances are sufficient. The capacity analysis and queueing results for the site access intersection are illustrated in Table 4. Refer to Appendix C for the Synchro reports and turn lane warrants at the site access intersection. All SimTraffic reports can be found in Appendix D.

NCDOT warrants for left and right turn lanes were analyzed. The warrants indicated no turn lanes on Downs Road would be needed. No turn lanes are recommended.

Under 2019 Build conditions, all approaches of the Downs Road and Site Access A intersection are expected to operate at LOS B or better. The expected longest queue on Site Access A is 77 feet during the PM Peak Hour. No queueing on the northbound Downs Road approach is expected. The maximum queue expected on the southbound Downs Road approach is 76 feet. It is recommended the developer construct Site Access A with one ingress lane and one shared left/right egress lane.

The site traffic expected to travel through the NC 51 and Downs Road intersection is minimal. No more than 27 vehicles per hour are expected to be added to a single turn movement by the development. Assuming the cycle length of the signal is 120 seconds, the proposed site would add approximately no more than 4 vehicles to a single turn movement during each cycle of the signal. Based on the low trip generation, no impacts are expected at the NC 51 and Downs Road intersection.

**TABLE 4
ANALYSIS SUMMARY OF
DOWNS ROAD AND SITE ACCESS A**

ANALYSIS SCENARIO	A P P R O A C H	LANE CONFIGURATIONS	AM PEAK HOUR			PM PEAK HOUR		
			Approach LOS (Delay)	Overall LOS (Delay)	Queue Length (ft)	Approach LOS (Delay)	Overall LOS (Delay)	Queue Length (ft)
2019 Build	WB ²	1 LT- RT	B (13.1)	N/A ³	35'	B (12.9)	N/A ³	77'
	NB	1 TH-RT	-		-	-		-
	SB ¹	1 LT-TH	A (1.8)		76'	A (0.1)		15'

1. Major street left-turn movement for unsignalized intersection.

2. Stop controlled approach for unsignalized intersection.

3. Overall intersection LOS is not provided for unsignalized intersections

6. CONCLUSIONS

This report summarizes the findings of the Traffic Impact Study (TIS) that was performed for the proposed warehouse / light industrial to be located east of Downs Road in Pineville, North Carolina. The purpose of this study is to determine the potential impact to the surrounding transportation system caused by the traffic generated by the development.

The site is proposed to consist of 250,000 square feet of warehouse / light industrial. One full access driveway is proposed on Downs Road. The build out year of the site is 2019.

6.1 Summary of Recommended Improvements

Based on the analysis results, no impacts are expected by the proposed development. Figure 9 illustrates the improvements recommended to be completed by the developer. The following improvements are recommended to be done by the developer:

Downs Road and Site Access A

- Construct Site Access A with one ingress lane and one shared left/right egress lane.

TECHNICAL APPENDIX

APPENDIX A

FIGURES



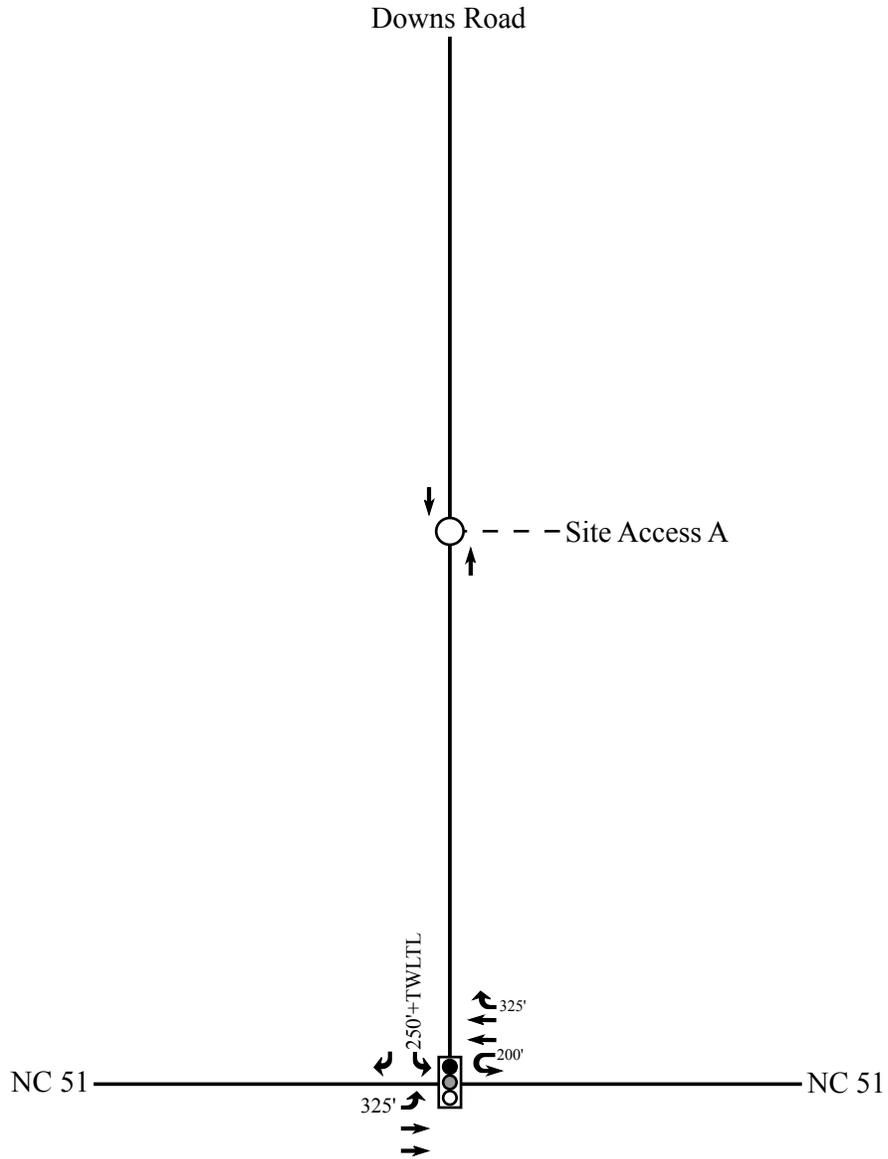
LEGEND

-  Proposed Site Location
-  TIA Study Intersection



**Downs Road
Development**
Pineville, NC

Site Location Map	
Scale: Not to Scale	Figure 1



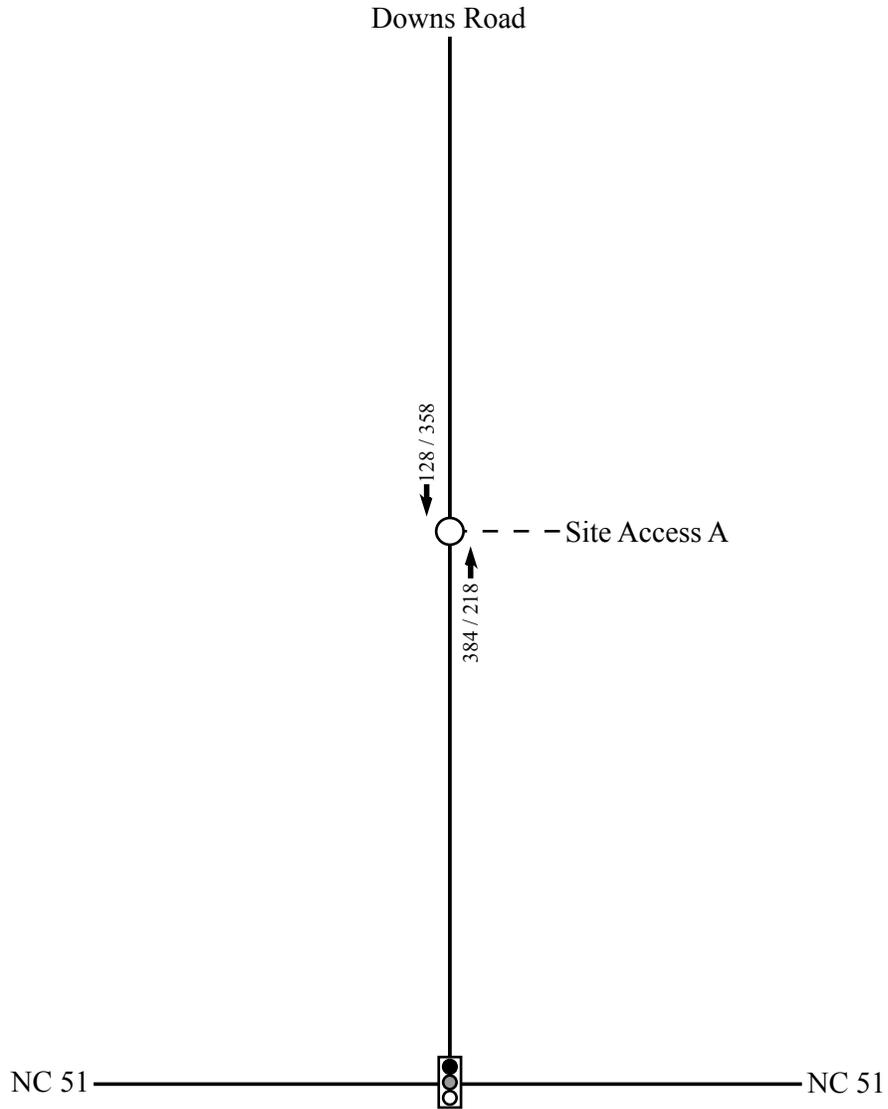
LEGEND

-  Unsignalized Intersection
-  Signalized Intersection
-  Existing Lane
- X' Storage (In Feet)



Downs Road
Development
Pineville, NC

2018 Existing Lane Configurations	
Scale: Not to Scale	Figure 3



LEGEND

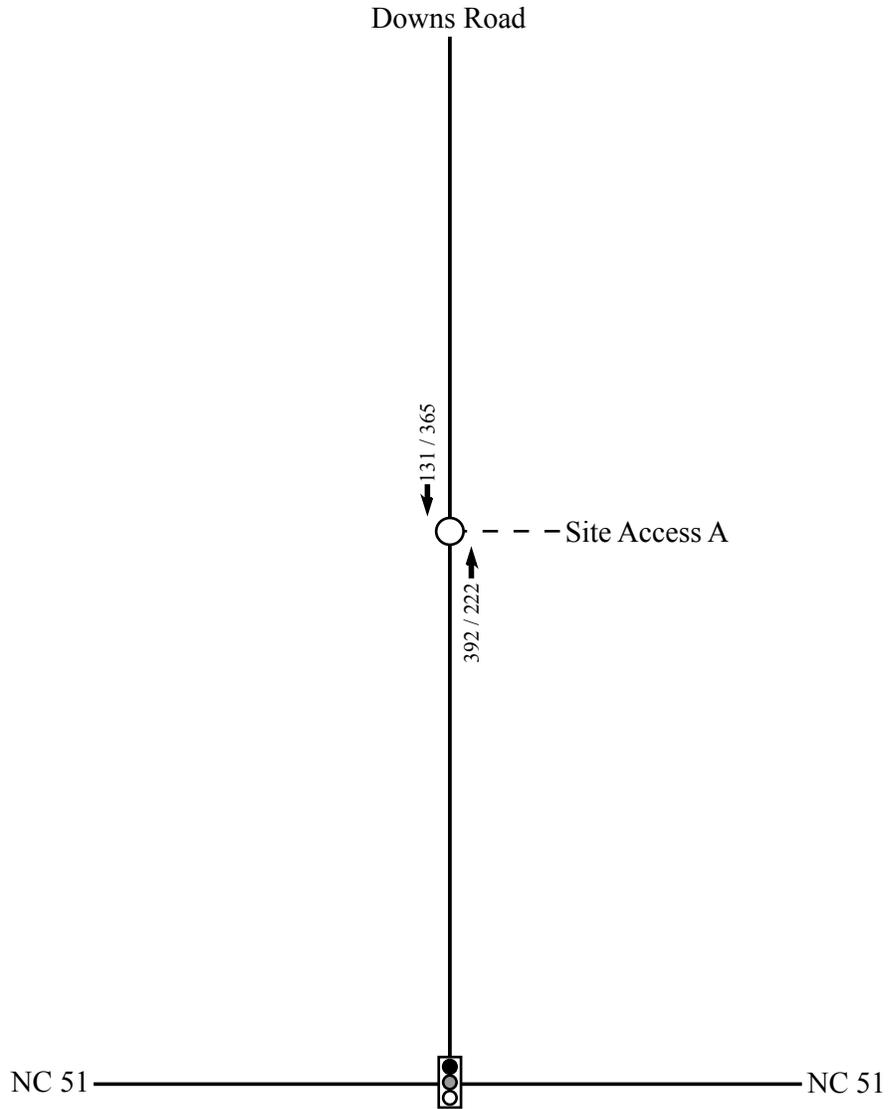
○ Unsignalized Intersection

● Signalized Intersection

X / Y → AM / PM Peak Hour Traffic Volume



	<h2 style="margin: 0;">Downs Road Development</h2> <p style="margin: 0;">Pineville, NC</p>	<p>2018 Existing Peak Hour Traffic Volumes</p>	
		<p>Scale: Not to Scale</p>	<p>Figure 4</p>



LEGEND

○ Unsignalized Intersection

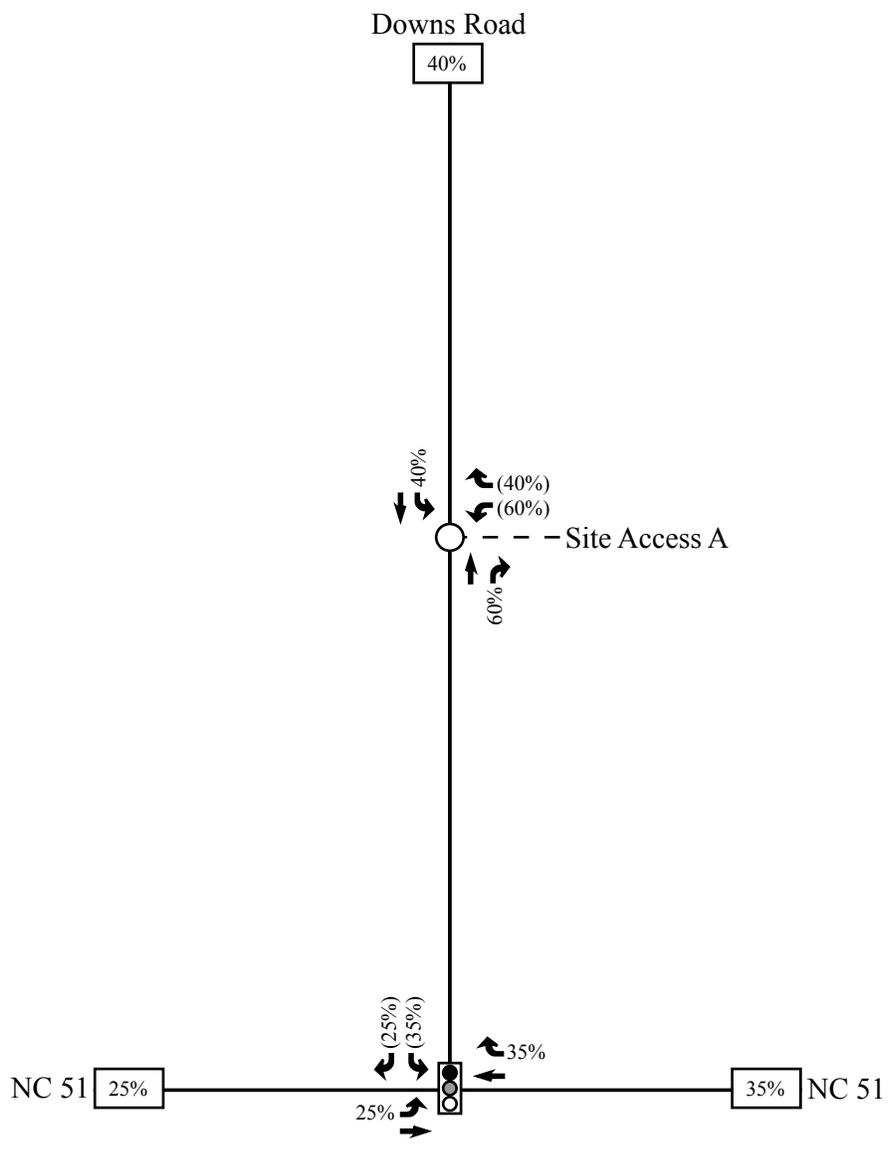
⊞ Signalized Intersection

X / Y → AM / PM Peak Hour Traffic Volume



Downs Road
Development
Pineville, NC

2019 Projected Peak Hour Traffic Volumes	
Scale: Not to Scale	Figure 5



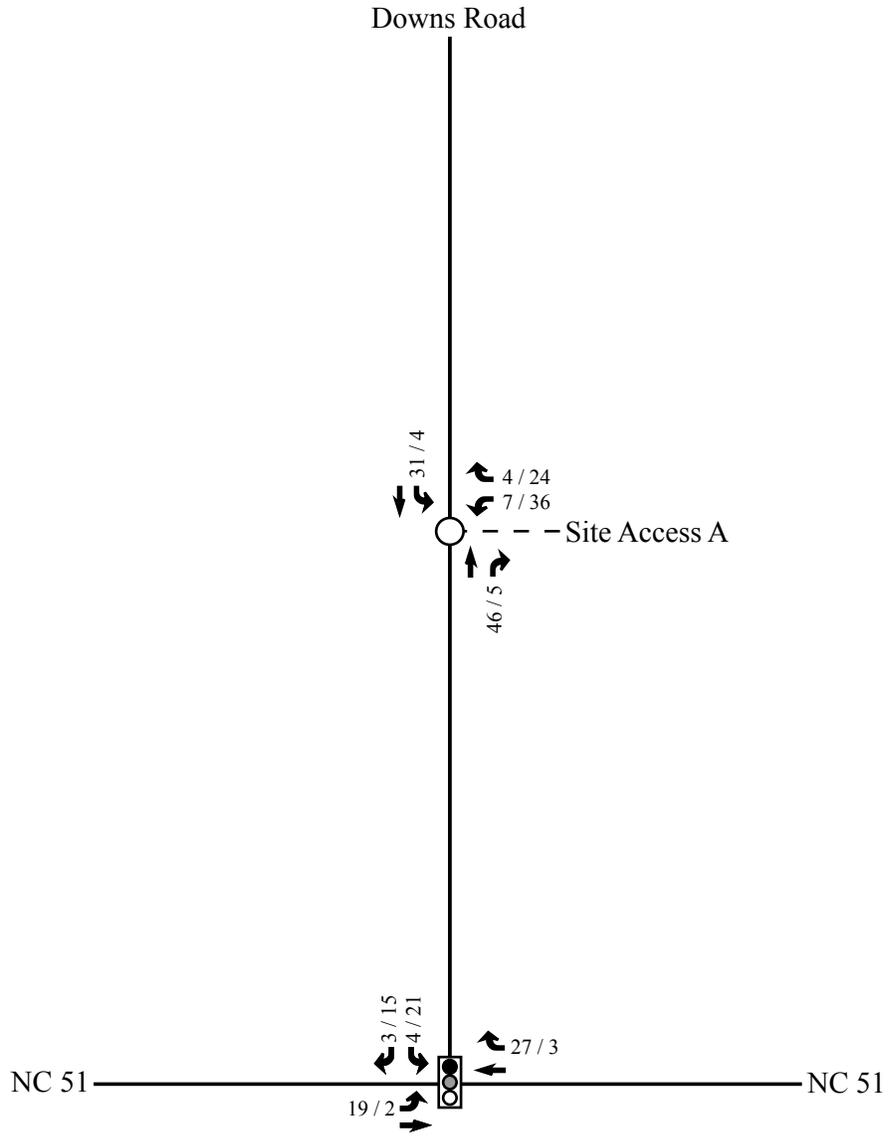
LEGEND

-  Unsignalized Intersection
-  Signalized Intersection
- x% → Entering Trip Distributions
- (y%) → Exiting Trip Distributions
- XX% Regional Trip Distribution



Downs Road
Development
Pineville, NC

Proposed Site Primary Trip Distribution Percentages	
Scale: Not to Scale	Figure 6

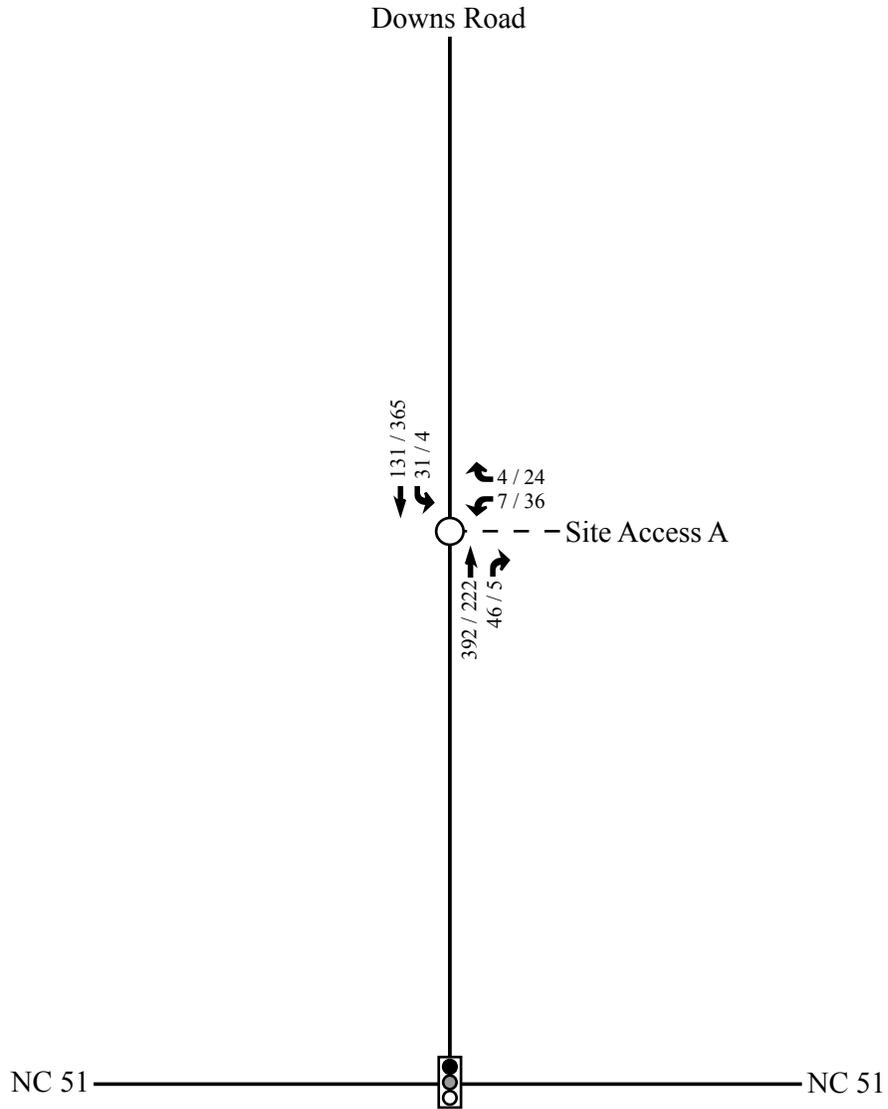


LEGEND

-  Unsignalized Intersection
-  Signalized Intersection
- X / Y → AM / PM Peak Hour Traffic Volume



	<h2 style="margin: 0;">Downs Road Development</h2> <p style="margin: 0;">Pineville, NC</p>	<p style="margin: 0;">Proposed Site Primary Trip Assignment</p>	
			<p style="margin: 0;">Scale: Not to Scale</p>



LEGEND

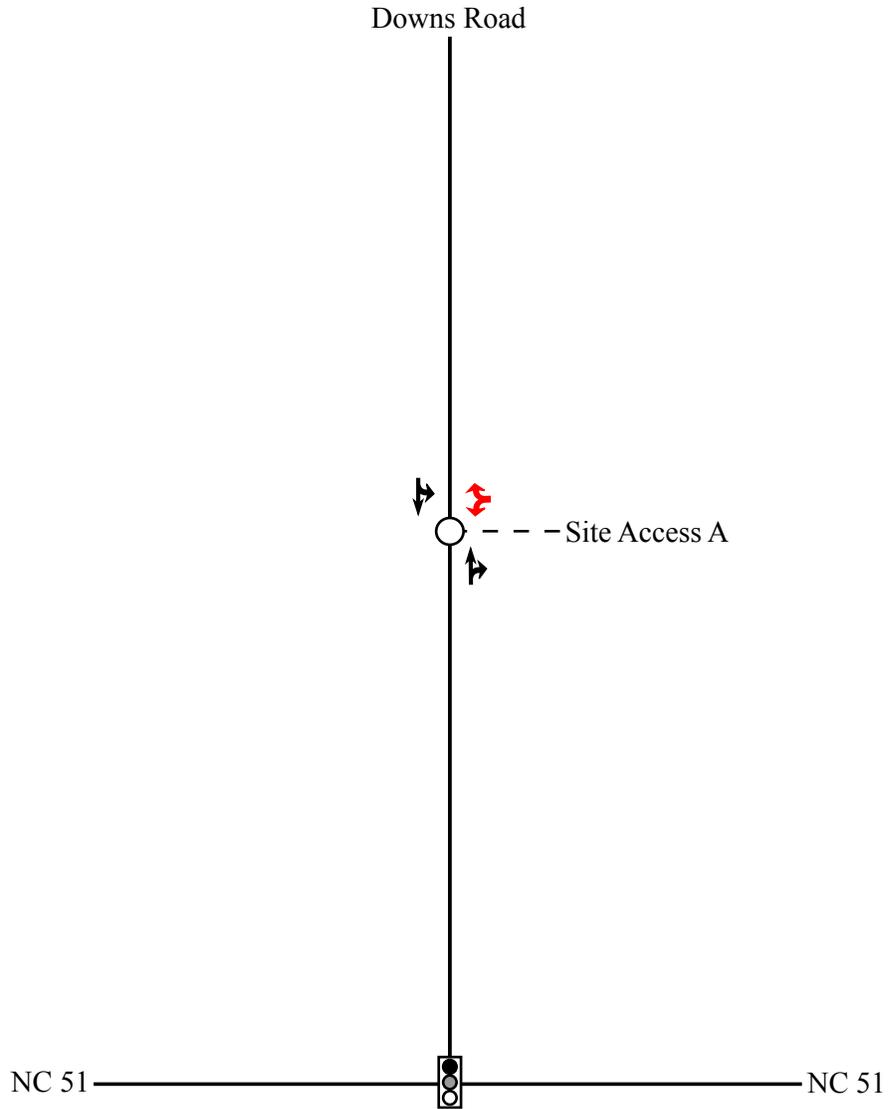
○ Unsignalized Intersection

● Signalized Intersection

X / Y → AM / PM Peak Hour Traffic Volume



	<h2 style="margin: 0;">Downs Road Development</h2> <p style="margin: 0;">Pineville, NC</p>	<p>2019 Build Peak Hour Traffic Volumes</p>
	<p>Scale: Not to Scale</p>	<p>Figure 8</p>



LEGEND

-  Unsignalized Intersection
-  Signalized Intersection
-  Existing Lane
-  Improvement By Developer
-  Storage (In Feet)



Downs Road
Development
Pineville, NC

Recommended Lane Configurations	
Scale: Not to Scale	Figure 9

APPENDIX B

TRAFFIC COUNT DATA

Daily Vehicle Volume Report

Study Date: Wednesday, 10/17/2018

Unit ID: Downs Road

Location: Downs Road

	Southbound Volume	Northbound Volume	Total Volume
00:00 - 00:59	6	7	13
01:00 - 01:59	3	3	6
02:00 - 02:59	3	3	6
03:00 - 03:59	5	8	13
04:00 - 04:59	2	18	20
05:00 - 05:59	42	89	131
06:00 - 06:59	135	190	325
07:00 - 07:59	128	384	512
08:00 - 08:59	191	266	457
09:00 - 09:59	171	208	379
10:00 - 10:59	134	122	256
11:00 - 11:59	168	126	294
12:00 - 12:59	178	193	371
13:00 - 13:59	225	215	440
14:00 - 14:59	177	145	322
15:00 - 15:59	222	151	373
16:00 - 16:59	340	188	528
17:00 - 17:59	358	218	576
18:00 - 18:59	230	177	407
19:00 - 19:59	92	69	161
20:00 - 20:59	54	43	97
21:00 - 21:59	51	16	67
22:00 - 22:59	29	13	42
23:00 - 23:59	18	7	25
Totals	2962	2859	5821
AM Peak Time	07:59 - 08:58	07:08 - 08:07	07:02 - 08:01
AM Peak Volume	194	391	523
PM Peak Time	16:23 - 17:22	16:26 - 17:25	16:26 - 17:25
PM Peak Volume	391	235	619

Daily Southbound Speeds (MPH)

Study Date: Wednesday, 10/17/2018

Unit ID: Downs Road

Location: Downs Road

Posted Speed: 45

	5-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-100	Total
00:00 - 00:59	0	0	0	0	2	2	1	0	1	0	0	0	0	0	6
01:00 - 01:59	0	0	0	0	0	1	2	0	0	0	0	0	0	0	3
02:00 - 02:59	0	0	0	0	1	1	0	1	0	0	0	0	0	0	3
03:00 - 03:59	0	0	0	0	1	0	2	2	0	0	0	0	0	0	5
04:00 - 04:59	0	0	0	0	1	0	1	0	0	0	0	0	0	0	2
05:00 - 05:59	0	0	1	3	9	17	9	3	0	0	0	0	0	0	42
06:00 - 06:59	0	0	2	3	18	59	38	12	1	2	0	0	0	0	135
07:00 - 07:59	0	0	0	0	13	53	45	14	2	1	0	0	0	0	128
08:00 - 08:59	0	1	0	2	37	86	55	8	1	0	0	0	0	1	191
09:00 - 09:59	0	0	0	0	15	68	66	19	3	0	0	0	0	0	171
10:00 - 10:59	0	0	0	3	16	52	47	16	0	0	0	0	0	0	134
11:00 - 11:59	0	0	0	5	8	68	70	14	2	1	0	0	0	0	168
12:00 - 12:59	0	0	0	0	14	67	74	17	2	2	0	1	0	0	177
13:00 - 13:59	0	0	1	7	35	96	77	7	1	1	0	0	0	0	225
14:00 - 14:59	0	0	0	3	26	84	47	17	0	0	0	0	0	0	177
15:00 - 15:59	2	1	2	6	27	84	83	16	1	0	0	0	0	0	222
16:00 - 16:59	1	0	0	2	38	130	131	32	5	0	0	0	0	0	339
17:00 - 17:59	0	3	5	5	32	127	152	28	5	0	0	1	0	0	358
18:00 - 18:59	0	0	0	2	12	89	94	29	4	0	0	0	0	0	230
19:00 - 19:59	0	0	0	1	9	35	36	10	0	1	0	0	0	0	92
20:00 - 20:59	0	0	0	0	7	19	20	7	1	0	0	0	0	0	54
21:00 - 21:59	0	0	1	1	8	15	17	7	2	0	0	0	0	0	51
22:00 - 22:59	0	0	0	0	5	11	8	3	2	0	0	0	0	0	29
23:00 - 23:59	0	0	0	0	3	7	5	2	1	0	0	0	0	0	18
Totals	3	5	12	43	337	1171	1080	264	34	8	0	2	0	1	2960
Percent of Total	0.1	0.2	0.4	1.5	11.4	39.6	36.5	8.9	1.1	0.3	0.0	0.1	0.0	0.0	100
Percent of AM	0.0	0.1	0.3	1.6	12.2	41.2	34.0	9.0	1.0	0.4	0.0	0.0	0.0	0.1	100
Percent of PM	0.2	0.2	0.5	1.4	11.0	38.7	37.7	8.9	1.2	0.2	0.0	0.1	0.0	0.0	100

Standard Deviation:	5.2 MPH	Ten Mile Pace:	35 to 44 MPH	85th Percentile:	44.4 MPH
Mean Speed:	39.6 MPH	Percent in Ten Mile Pace:	76.0%	15th Percentile:	35.2 MPH
Median Speed:	39.6 MPH			90th Percentile:	45.2 MPH
Modal Speed:	37.5 MPH			95th Percentile:	48.0 MPH

Daily Northbound Speeds (MPH)

Study Date: Wednesday, 10/17/2018

Unit ID: Downs Road

Location: Downs Road

Posted Speed: 45

	5-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-100	Total
00:00 - 00:59	0	0	0	0	0	0	1	3	2	0	0	1	0	0	7
01:00 - 01:59	0	0	0	1	0	1	1	0	0	0	0	0	0	0	3
02:00 - 02:59	0	0	0	0	0	0	1	1	1	0	0	0	0	0	3
03:00 - 03:59	0	0	0	0	0	1	2	0	3	0	2	0	0	0	8
04:00 - 04:59	0	0	0	0	0	1	5	5	4	3	0	0	0	0	18
05:00 - 05:59	0	0	0	0	3	8	18	32	14	11	3	0	0	0	89
06:00 - 06:59	0	0	0	3	3	9	52	68	45	7	3	0	0	0	190
07:00 - 07:59	0	0	1	13	12	44	135	107	50	18	4	0	0	0	384
08:00 - 08:59	1	0	0	0	6	39	75	80	44	16	3	1	1	0	266
09:00 - 09:59	0	0	0	0	4	31	62	64	34	11	1	1	0	0	208
10:00 - 10:59	0	0	0	0	2	22	31	33	24	8	2	0	0	0	122
11:00 - 11:59	0	0	0	0	6	9	36	44	26	3	1	0	1	0	126
12:00 - 12:59	0	0	0	0	5	25	50	58	37	16	0	1	0	1	193
13:00 - 13:59	0	0	0	5	7	35	89	54	17	6	2	0	0	0	215
14:00 - 14:59	0	0	0	1	6	27	59	31	16	4	1	0	0	0	145
15:00 - 15:59	0	0	0	1	4	21	46	51	17	10	0	0	1	0	151
16:00 - 16:59	1	0	0	2	2	30	59	56	29	9	0	0	0	0	188
17:00 - 17:59	0	0	0	1	1	43	50	76	32	12	1	1	0	0	217
18:00 - 18:59	0	0	0	2	4	20	47	58	33	11	1	1	0	0	177
19:00 - 19:59	0	0	0	0	1	15	15	16	15	4	1	2	0	0	69
20:00 - 20:59	0	0	0	1	0	3	6	20	7	4	2	0	0	0	43
21:00 - 21:59	0	0	0	1	1	1	3	3	4	2	1	0	0	0	16
22:00 - 22:59	0	0	0	0	0	1	2	3	5	1	0	0	1	0	13
23:00 - 23:59	0	0	0	0	0	0	0	4	2	0	0	1	0	0	7
Totals	2	0	1	31	67	386	845	867	461	156	28	9	4	1	2858
Percent of Total	0.1	0.0	0.0	1.1	2.3	13.5	29.6	30.3	16.1	5.5	1.0	0.3	0.1	0.0	100
Percent of AM	0.1	0.0	0.1	1.2	2.5	11.6	29.4	30.7	17.3	5.4	1.3	0.2	0.1	0.0	100
Percent of PM	0.1	0.0	0.0	1.0	2.2	15.4	29.7	30.0	14.9	5.5	0.6	0.4	0.1	0.1	100

Standard Deviation:	6.7 MPH	Ten Mile Pace:	40 to 49 MPH	85th Percentile:	52.5 MPH
Mean Speed:	45.7 MPH	Percent in Ten Mile Pace:	59.9%	15th Percentile:	39.2 MPH
Median Speed:	45.6 MPH			90th Percentile:	54.0 MPH
Modal Speed:	47.5 MPH			95th Percentile:	56.8 MPH

Daily Total Speeds (MPH)

Study Date: Wednesday, 10/17/2018

Unit ID: Downs Road

Location: Downs Road

Posted Speed: 45

	5-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-100	Total
00:00 - 00:59	0	0	0	0	2	2	2	3	3	0	0	1	0	0	13
01:00 - 01:59	0	0	0	1	0	2	3	0	0	0	0	0	0	0	6
02:00 - 02:59	0	0	0	0	1	1	1	2	1	0	0	0	0	0	6
03:00 - 03:59	0	0	0	0	1	1	4	2	3	0	2	0	0	0	13
04:00 - 04:59	0	0	0	0	1	1	6	5	4	3	0	0	0	0	20
05:00 - 05:59	0	0	1	3	12	25	27	35	14	11	3	0	0	0	131
06:00 - 06:59	0	0	2	6	21	68	90	80	46	9	3	0	0	0	325
07:00 - 07:59	0	0	1	13	25	97	180	121	52	19	4	0	0	0	512
08:00 - 08:59	1	1	0	2	43	125	130	88	45	16	3	1	1	1	457
09:00 - 09:59	0	0	0	0	19	99	128	83	37	11	1	1	0	0	379
10:00 - 10:59	0	0	0	3	18	74	78	49	24	8	2	0	0	0	256
11:00 - 11:59	0	0	0	5	14	77	106	58	28	4	1	0	1	0	294
12:00 - 12:59	0	0	0	0	19	92	124	75	39	18	0	2	0	1	370
13:00 - 13:59	0	0	1	12	42	131	166	61	18	7	2	0	0	0	440
14:00 - 14:59	0	0	0	4	32	111	106	48	16	4	1	0	0	0	322
15:00 - 15:59	2	1	2	7	31	105	129	67	18	10	0	0	1	0	373
16:00 - 16:59	2	0	0	4	40	160	190	88	34	9	0	0	0	0	527
17:00 - 17:59	0	3	5	6	33	170	202	104	37	12	1	2	0	0	575
18:00 - 18:59	0	0	0	4	16	109	141	87	37	11	1	1	0	0	407
19:00 - 19:59	0	0	0	1	10	50	51	26	15	5	1	2	0	0	161
20:00 - 20:59	0	0	0	1	7	22	26	27	8	4	2	0	0	0	97
21:00 - 21:59	0	0	1	2	9	16	20	10	6	2	1	0	0	0	67
22:00 - 22:59	0	0	0	0	5	12	10	6	7	1	0	0	1	0	42
23:00 - 23:59	0	0	0	0	3	7	5	6	3	0	0	1	0	0	25
Totals	5	5	13	74	404	1557	1925	1131	495	164	28	11	4	2	5818
Percent of Total	0.1	0.1	0.2	1.3	6.9	26.8	33.1	19.4	8.5	2.8	0.5	0.2	0.1	0.0	100
Percent of AM	0.0	0.0	0.2	1.4	6.5	23.7	31.3	21.8	10.7	3.4	0.8	0.1	0.1	0.0	100
Percent of PM	0.1	0.1	0.3	1.2	7.3	28.9	34.4	17.8	7.0	2.4	0.3	0.2	0.1	0.0	100

Standard Deviation:	6.7 MPH	Ten Mile Pace:	35 to 44 MPH	85th Percentile:	49.3 MPH
Mean Speed:	42.6 MPH	Percent in Ten Mile Pace:	59.8%	15th Percentile:	36.2 MPH
Median Speed:	42.2 MPH			90th Percentile:	51.2 MPH
Modal Speed:	42.5 MPH			95th Percentile:	54.2 MPH

APPENDIX C

DOWNS ROAD AND SITE ACCESS A

SYNCHRO REPORTS AND TURN LANE WARRANTS

Downs Road
1: Downs Road & Site Access A

2019 Build
Timing Plan: AM Peak Hour



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	7	4	392	46	31	131
Future Volume (Veh/h)	7	4	392	46	31	131
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	8	4	436	51	34	146
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None	None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	676	462			487	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	676	462			487	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	99			97	
cM capacity (veh/h)	406	600			1076	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	12	487	180			
Volume Left	8	0	34			
Volume Right	4	51	0			
cSH	455	1700	1076			
Volume to Capacity	0.03	0.29	0.03			
Queue Length 95th (ft)	2	0	2			
Control Delay (s)	13.1	0.0	1.8			
Lane LOS	B		A			
Approach Delay (s)	13.1	0.0	1.8			
Approach LOS	B					
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization			43.6%	ICU Level of Service		A
Analysis Period (min)			15			

Downs Road
1: Downs Road & Site Access A

2019 Build
Timing Plan: PM Peak Hour



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	36	24	222	5	4	365
Future Volume (Veh/h)	36	24	222	5	4	365
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	40	27	247	6	4	406
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	664	250			253	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	664	250			253	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	91	97			100	
cM capacity (veh/h)	424	789			1312	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	67	253	410			
Volume Left	40	0	4			
Volume Right	27	6	0			
cSH	521	1700	1312			
Volume to Capacity	0.13	0.15	0.00			
Queue Length 95th (ft)	11	0	0			
Control Delay (s)	12.9	0.0	0.1			
Lane LOS	B		A			
Approach Delay (s)	12.9	0.0	0.1			
Approach LOS	B					
Intersection Summary						
Average Delay			1.2			
Intersection Capacity Utilization			32.5%		ICU Level of Service	A
Analysis Period (min)			15			

Downs Road and Site Access A
2019 Build

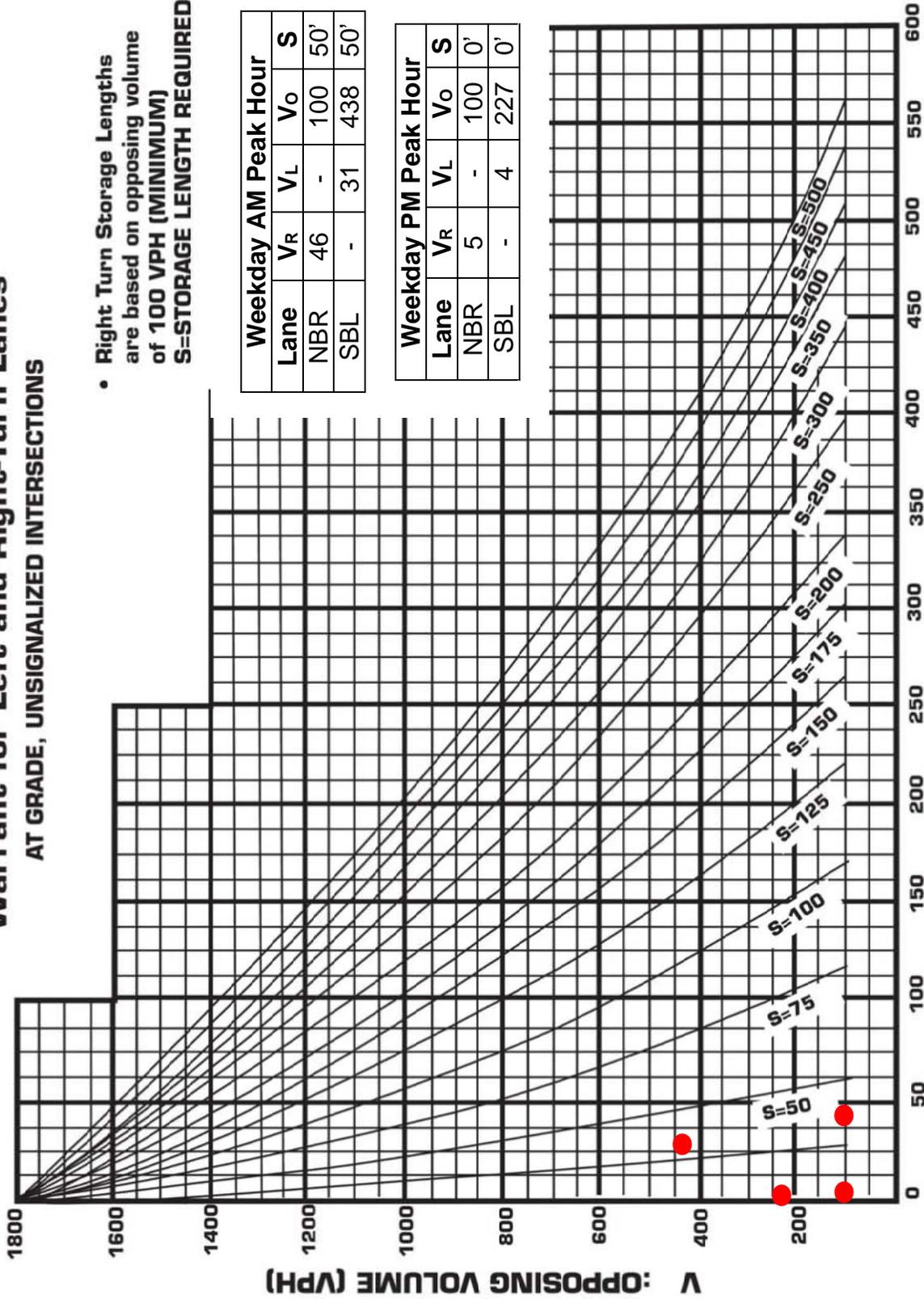
Warrant for Left and Right-Turn Lanes

AT GRADE, UNSIGNALIZED INTERSECTIONS

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

Weekday AM Peak Hour				
Lane	V _R	V _L	V _O	S
NBR	46	-	100	50'
SBL	-	31	438	50'

Weekday PM Peak Hour				
Lane	V _R	V _L	V _O	S
NBR	5	-	100	0'
SBL	-	4	227	0'



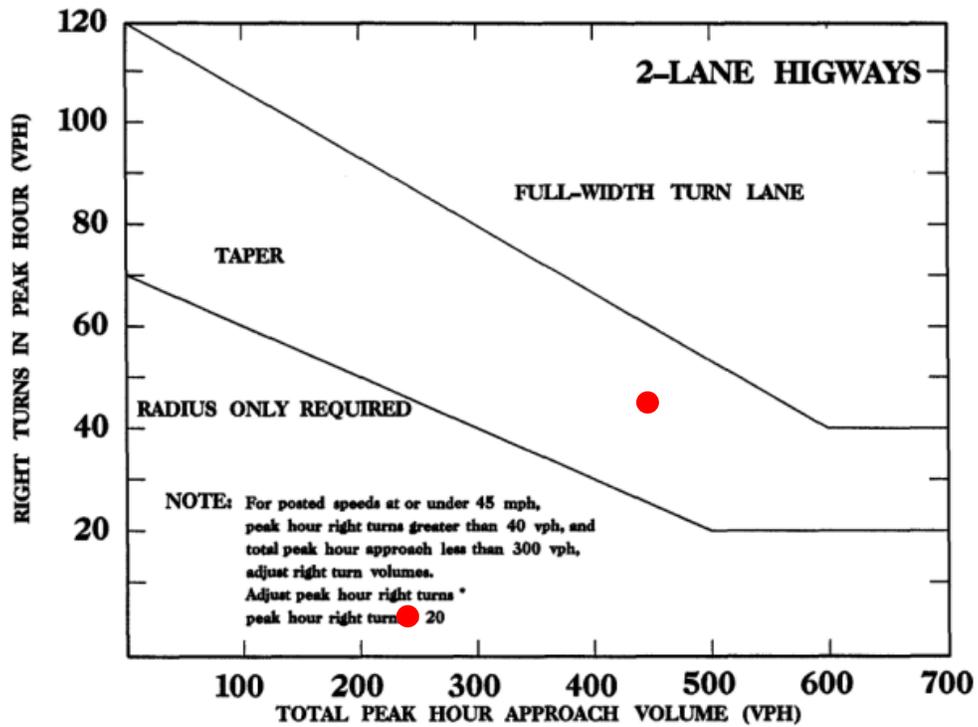
Note: Where adjacent signalization may provide opportunities for gaps in the traffic stream a reduction in the above storage values can be considered on a case by case basis.

V_L: LEFT TURNING VOLUME (VPH)
V_R: RIGHT TURNING VOLUME (VPH)

Downs Road and Site Access A

2019 Build				
Peak Hour	Approach	Right Turn Volume	Approach Volume	Warranted?
Weekday AM	Northbound	46	438	No
Weekday PM	Northbound	5	227	No

RIGHT TURN LANE WARRANTS



APPENDIX D

DOWNS ROAD AND SITE ACCESS A

SIMTRAFFIC REPORTS

Intersection: 1: Downs Road & Site Access A

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	35	76
Average Queue (ft)	11	16
95th Queue (ft)	35	51
Link Distance (ft)	621	2041
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 0

Intersection: 1: Downs Road & Site Access A

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	77	15
Average Queue (ft)	31	0
95th Queue (ft)	59	8
Link Distance (ft)	621	2041
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 0



Charleston, SC - Charlotte, NC - Columbia, SC - Raleigh, NC - Richmond, VA - Winston-Salem, NC