

# **TECHNICAL APPENDIX**

# **APPENDIX A**

## **WMPO APPROVED SCOPE**



305 Chestnut Street  
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March 27, 2019

**Mr. Rynal Stephenson, PE**

Ramey Kemp & Associates  
5808 Faringdon Place, Suite 100  
Raleigh, NC 27609

RE: Scope for the revision of the approved Traffic Impact Analysis (TIA) associated with the proposed **Whiskey Branch Development** (TIA sealed March 16, 2017, and approval dated August 25, 2017)  
New Hanover County, NC

Dear Mr. Stephenson:

Based on the information provided, and conversations held to date, it is our understanding that the proposed development will consist of:

**Phase 1A**

- 88 Single Family Detached Homes (LUC 210)
- 82 Multi-family Housing (Low-Rise) (LUC 220)  
*(Note: Approved phase and under construction. Not to be studied in this TIA. Trips to be counted as existing trips.)*

**Phase 1B**

- 324 Multi-family Housing (Mid-Rise) (LUC 221)  
Build year - 2021

**Full Build** (includes Phase 1A and 1B)

- 150,000 square feet of Shopping Center (LUC 820)
- 50,000 square feet of General Office Building (LUC 710)  
Build year - 2024

The project is located on the east side of South College Road and is bounded on the north by Fox Run Farms and on the south by Tanglewood subdivisions in New Hanover County, North Carolina.

Wilmington Urban Area Metropolitan Planning Organization

City of Wilmington • Town of Carolina Beach • Town of Kure Beach • Town of Wrightsville Beach  
County of New Hanover • Town of Belville • Town of Leland • Town of Navassa • County of Brunswick  
County of Pender • Cape Fear Public Transportation Authority • North Carolina Department of Transportation

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The attached site plans (Access Alternative 1 and Access Alternative 4) proposes access at the following points and for the noted phases:

**Access Alternative 1** (approved TIA 8/25/17)

- NC 132 (South College Road) and Site Drive 3 (RIRO) – Phase 1B and Full Build access
- NC 132 (South College Road) and Site Drive 4 (RIRO/Left-over) – Full Build access
- NC 132 (South College Road) and proposed SB to NB U-turn (north of Site Drive 4)
- NC 132 (South College Road) and proposed NB to SB U-turn (north of Weybridge Lane)

**Access Alternative 4**

- NC 132 (South College Road) and Site Drive 3 (RIRO) – Phase 1B and Full Build access
- NC 132 (South College Road) and Site Drive 4 (RI only / Left-over) (at existing SB to NB U-turn, north of proposed Site Drive 3) – Phase 1B and Full Build access
- NC 132 (South College Road) and Site Drive 5 (RIRO/Left-over) – Full Build access
- NC 132 (South College Road) and proposed NB to SB U-turn (north of Weybridge Lane).

Below please find the scope to be used for the Traffic Impact Analysis:

**1. Data Collection - Analysis Parameters:**

a. Study Intersections

- i. For existing intersections, provide turning movement counts for weekday PM (4:00 PM – 6:00 PM) and Saturday peak periods, Signal Timing (if applicable) and Lane Geometry: *(Note: In the Future Build Conditions, demonstrate that intersections were checked to determine the need for potential signalization.)*
  - NC 132 (South College Road) and SR 1565 (Mohican Trail)
  - NC 132 (South College Road) and both the NB to SB U-turn and the SB to NB U-turn movements (north of SR 1565 (Mohican Trail)
  - Landsdowne Road and Navaho Trail
  - NC 132 (South College Road) and Site Drive 3
  - NC 132 (South College Road) and Site Drive 4
  - NC 132 (South College Road) and Site Drive 5
  - NC 132 (South College Road) and proposed SB to NB U-turn (north of Site Drive 4).
  - NC 132 (South College Road) and proposed NB to SB U-turn (north of Weybridge Lane).
  - NC 132 (South College Road) and Pinecliff Drive
- ii. Signal plans may be acquired by sending an email request to NCDOT Traffic Services: Ross Kimbro, rkimbro@ncdot.gov or by calling (910) 341-2200
- iii. Within the Wilmington signal system, traffic signal coordinated timings and controller sequences/settings can be obtained by contacting Denys Vielkanowitz,

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[denys.vielkanowitz@wilmingtonnc.gov](mailto:denys.vielkanowitz@wilmingtonnc.gov), or by calling 910-341-4676. All signals within the Wilmington system shall use C-Max as the coordinated phase recall position.

- b. Site Trip Generation, Site Trip Distribution and Background Traffic Assumptions
  - i. Site Trip Generation Estimate
    - See attached with comments (provided by Ramey Kemp and Associates)
  - ii. Site Trip Distribution
    - Distributions that were received with the scoping documents will be reviewed and a separate approval will be provided.
  - iii. Adjacent Development (approved (but as of yet to be built)) development including but limited to;
    - NA
  - iv. Planned Roadway Improvements
    - N/A
  - v. Background Traffic Assumptions
    - Phase 1B – 2021
    - Full Build - 2024
    - Growth rate – 1% per year

**2. Capacity Analysis: Weekday PM and Saturday Peak Hour (as listed and for locations per 1.a.i)**

- a. The following technical analysis shall be run for each scenario and shall be labeled according to the Access Alternatives on page 2 of this scope.
  - a. 2019 Existing
  - b. 2021 Future No-Build Conditions  
[Existing +1% background growth + approved development trips]
  - c. 2021 Phase 1B Future Build Conditions  
[Existing +1% background growth + approved development trips + site trips]
  - d. 2021 Phase 1B Future Build Conditions + improvements
  - e. 2024 Future No Build Conditions
  - f. 2024 Full Build-out Future Build Conditions  
[Existing +1% background growth + approved development trips + site trips]
  - g. 2024 Full Build-out Future Build Conditions + Improvements

**3. Final Report Submittal:**

- a. Completed TIA Application

- 
- b. Signed and sealed by a Professional Engineer
  - c. Four bound copies
  - d. Two Electronic copies to include PDF of TIA and Synchro files and Synchro analysis files in digital format

**4. Notes:**

- a. This scope shall remain valid for three months from the date of this letter.
- b. Please note that if any changes occur (including but not limited to; land use, intensity, phasing, and/or site access) additional analysis may be required.

Please contact me at 910-772-4170 with any questions regarding this scope.

Sincerely,



Fred Royal, PE  
Project Manager  
Wilmington Metropolitan Planning Organization

Attachments: Trip Generation Summary (provided by Ramey Kemp & Associates)  
Site Map (provided by Ramey Kemp & Associates)  
Traffic Impact Analysis Supplemental Guidelines

cc: Ben Hughes, PE, District Engineer  
Jessi Leonard, PE, Division Traffic Engineer  
Kirsten Spirakis, PE, Senior Assistant Traffic Engineer, NCDOT  
Alex Stewart, PE, Deputy District Engineer, NCDOT  
John Roan, Assistant District Engineer  
Don Bennett, PE, City Traffic Engineer, City of Wilmington  
Bill McDow, Transportation Planner, WMPO  
Mike Kozlosky, Executive Director, WMPO  
Denys Vielkanowitz, PE, Signal System Management Engineer, City of Wilmington  
Amy Kimes, PE, Senior Project Engineer, WMPO  
Madi Lee, EI, Development Review Engineer, NCDOT  
Brad Schuler, Senior Planner, New Hanover County

# Future No Build Synchro Review

TIA Name and date: Whiskey Navaho 4/22/19

Reviewer: MBL

Date Reviewed: 4/23/19

Check parameters of study against the approved TIA Scope and Congestion Management guidelines. Use Blue ink for items that check off and Red ink for items that potentially need correction/revision or determine the TIA to be invalid and a resubmittal necessary.

## Intersections

1. S College Rd and Pine Cliff Dr/Cape Fear Academy:

### **Lane Settings**

- Is the model showing the correct lane configuration at each approach?
  - Yes
- If entered, is the grade correct for each approach?
  - Yes
- Are the correct number of storage lanes entered and are they the correct lengths?
  - Yes
- Is the right turn set to channelized where necessary?
  - No channelization
- Is Right Turn on Red (RTOR) used?

Eliminate all RTOR phasing (existing and future). *Congestion Management guidelines state "do not analyze right turn on red at any proposed intersection approaches to ensure that adequate storage is provided."*

  - No RTOR

### **Timing Settings**

- Are the turn types correct and associated with the correct phases?

Eliminate all PT+PM left-turn phasing in future conditions. *Congestion Management guidelines state that analysis of Protected-only phasing in future conditions will identify required storage in the event that Protected-only phasing is necessary.*

Existing Permissive left-turn phasing should remain Permissive in future conditions, except where Protected-only phasing is being analyzed as an improvement to the intersection in Future + Improvement condition.

  - No pm+pt used
- Is the lost time greater than or equal to 5 seconds?
  - Yes
- Check for Recall Mode on Signalized Intersection.

If simulating 'free run' operation (actuated-uncoordinated), use Min Recall on main street phase.  
If simulating 'Coordinated Mode' (Actuated-Coordinate), use C-Max."

  - C-Max is used

### **Phasing Settings**

- Is the control type correct?
  - ☞ Yes, Actuated Coordinated
- Is the cycle length correct?
  - ☞ Yes
- Is the offset correct?
  - ☞ Yes
- Check "Referenced to" and "Reference Phase."
  - ☞ Correct
- Check the times for minimum initial, maximum split, yellow time, all-red time, vehicle extension, minimum gap, time before reduce, time to reduce, walk time, and flash don't walk.  
*Yellow times should either match the signal plans or be entered as a default of Y=5 s.*  
*All-Red times should either match the signal plans or be entered as a default of R=2 s.*
  - ☞ Max split correct
  - ☞ Min initial correct
  - ☞ Yellow time correct
  - ☞ All red time correct
  - ☞ Extension correct
  - ☞ Time before reduce correct
  - ☞ Time to reduce correct
  - ☞ No walk/don't walk times
- Are the correct phases marked as pedestrian phases?
  - ☞ No ped phases

## 2. S College Rd and Mohican Trail/Jasmine Cove Way:

### Lane Settings

- Is the model showing the correct lane configuration at each approach?
  - ☞ Yes
- If entered, is the grade correct for each approach?
  - ☞ Yes
- Are the correct number of storage lanes entered and are they the correct lengths?
  - ☞ Yes
- Is the right turn set to channelized where necessary?
  - ☞ No channelization
- Is Right Turn on Red (RTOR) used?  
 Eliminate all RTOR phasing (existing and future). *Congestion Management guidelines state "do not analyze right turn on red at any proposed intersection approaches to ensure that adequate storage is provided."*
  - ☞ No RTOR

### Timing Settings

- Are the turn types correct and associated with the correct phases?  
 Eliminate all PT+PM left-turn phasing in future conditions. *Congestion Management guidelines state that analysis of Protected-only phasing in future conditions will identify required storage in the event that Protected-only phasing is necessary.*

Existing Permissive left-turn phasing should remain Permissive in future conditions, except where Protected-only phasing is being analyzed as an improvement to the intersection in Future + Improvement condition.

- No pm+pt used
- Is the lost time greater than or equal to 5 seconds?
  - Yes
- Check for Recall Mode on Signalized Intersection.  
If simulating 'free run' operation (actuated-uncoordinated), use Min Recall on main street phase.  
If simulating 'Coordinated Mode' (Actuated-Coordinate), use C-Max."
  - Min – operating as free run in PM

### Phasing Settings

- Is the control type correct?
  - Yes
- Is the cycle length correct?
  - Yes
- Is the offset correct?
  - None
- Check "Referenced to" and "Reference Phase."
  - None
- Check the times for minimum initial, maximum split, yellow time, all-red time, vehicle extension, minimum gap, time before reduce, time to reduce, walk time, and flash don't walk.  
*Yellow times should either match the signal plans or be entered as a default of Y=5 s.*  
*All-Red times should either match the signal plans or be entered as a default of R=2 s.*
  - Max split correct
  - Min initial correct
  - Yellow time correct
  - All red time correct
  - Extension correct
  - Time before reduce correct
  - Time to reduce correct
  - No walk/don't walk times
- Are the correct phases marked as pedestrian phases?
  - No ped phases

### Detector Settings

- Do the size and distance from the stop bar match the included signal plans?
  - Yes
- Are the leading and trailing detectors correct?
  - Yes
- Is the detector type correct?
  - Yes
- Are the detector delays correct?
  - Yes

3. S College Rd and existing U-turns north of Mohican Trail:

**Lane Settings**

- Is the model showing the correct lane configuration at each approach?
  - Yes
- If entered, is the grade correct for each approach?
  - Yes
- Are the correct number of storage lanes entered and are they the correct lengths?
  - Yes
- Is the right turn set to channelized where necessary?
  - No channelization
- Is Right Turn on Red (RTOR) used?  
Eliminate all RTOR phasing (existing and future). *Congestion Management guidelines state "do not analyze right turn on red at any proposed intersection approaches to ensure that adequate storage is provided."*
  - Not a signalized intersection

**Timing, Phasing, and Detector Settings**

- Not a signalized intersection

4. Navaho Trail and Landsdowne Road/ Nicholas Creek Circle:

**Lane Settings**

- Is the model showing the correct lane configuration at each approach?
  - Yes
- If entered, is the grade correct for each approach?
  - Yes
- Are the correct number of storage lanes entered and are they the correct lengths?
  - Yes
- Is the right turn set to channelized where necessary?
  - No channelization
- Is Right Turn on Red (RTOR) used?  
Eliminate all RTOR phasing (existing and future). *Congestion Management guidelines state "do not analyze right turn on red at any proposed intersection approaches to ensure that adequate storage is provided."*
  - Not a signalized intersection

**Timing, Phasing, and Detector Settings**

- Not a signalized intersection

## **Roads**

### 1. South College Road:

- Is the speed limit correct?
  - Yes
- Is this link at least 1000 feet to ensure proper queueing analysis?
  - Not a Y-line

### 2. Mohican Trail:

- Is the speed limit correct?
  - Yes
- Is this link at least 1000 feet to ensure proper queueing analysis?
  - Yes

### 3. Landsdowne Road/Nicholas Creek Circle:

- Is the speed limit correct?
  - Yes
- Is this link at least 1000 feet to ensure proper queueing analysis?
  - Yes

### 4. Navaho Trail:

- Is the speed limit correct?
  - Yes
- Is this link at least 1000 feet to ensure proper queueing analysis?
  - Yes

### 5. Pine Cliff Drive:

- Is the speed limit correct?
  - Yes
- Is this link at least 1000 feet to ensure proper queueing analysis?
  - Yes

**Table 1: Phase 1A Trip Generation Summary (To be included with existing traffic)**

Land Use (ITE Code)	Intensity	Weekday Daily Traffic (vpd)	PM Peak Hour Trips (vph)		Saturday Peak Hour Trips (vph)	
			Enter	Exit	Enter	Exit
Single Family Detached Housing <sup>1</sup> (210)	88 units	920	57	33	50	42
Townhomes Use Multi-Family (Low-Rise) <sup>1</sup> (220)	82 units	580	32	18	28*	27*
<b>Total Site Trips</b>		<b>1,500</b>	<b>89</b>	<b>51</b>	<b>78</b>	<b>69</b>

1) No Adjacent Street data was given for Saturday, Generator calculations were used instead.

\* No Saturday directional distribution was given so 50%/50% split was assumed

**Table 2: Phase 1B Trip Generation Summary**

Land Use (ITE Code)	Intensity	Weekday Daily Traffic (vpd)	PM Peak Hour Trips (vph)		Saturday Peak Hour Trips (vph)	
			Enter	Exit	Enter	Exit
Multi-Family Housing (Mid- Rise) <sup>1</sup> (221)	325 units	1,770	84	53	70	73

1) No Adjacent Street data was given for Saturday, Generator calculations were used instead.

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**Table 3: Phase 2 Trip Generation**

Land Use (ITE Code)	Intensity	Weekday Daily Traffic (vpd)	PM Peak Hour Trips (vph)		Saturday Peak Hour Trips (vph)	
			Enter	Exit	Enter	Exit
Multi-Family Housing (Mid-Rise) <sup>1</sup> (221)	325 units	1,770	84	53	70	73
General Office Building <sup>2</sup> (710)	50,000 sq. ft.	540	22	98	15	12
Shopping Center <sup>1</sup> (820)	150,000 sq. ft.	7,920	352	382	444	409
<b>Total Site Trips</b>		<b>10,230</b>	<b>458</b>	<b>533</b>	<b>529</b>	<b>494</b>
<i>Internal Capture (17 % PM Entering and 14% PM Exiting)<sup>3</sup></i>			-78	-75	-0	-0
<b>Total External Trips</b>			<b>380</b>	<b>458</b>	<b>529</b>	<b>494</b>
<i>Pass-By Trips: Shopping Center (34% PM, 26% Saturday)</i>			-106	-106	-111	-111
<b>Total Primary Trips</b>			<b>274</b>	<b>352</b>	<b>418</b>	<b>383</b>

- 1) No Adjacent Street data was given for Saturday, Generator calculations were used instead.
- 2) No Adjacent Street data was given for Saturday, Generator calculations were used instead. No equation provided for Saturday, rates were used instead.
- 3) Internal capture was calculated according to methodology contained in the NCHRP 684 Report. 2,000 feet spacing between retail / office and residential land uses and 0 feet of spacing between office and retail land uses were assumed. Phase 1A was omitted from these calculations as it will be included in the existing traffic calculations

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NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	Whiskey Branch	Organization:	RKA
Project Location:	S College Road	Performed By:	NAB
Scenario Description:	Phase 2 - Weekday PM	Date:	
Analysis Year:	2024	Checked By:	
Analysis Period:	PM Street Peak Hour	Date:	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)						
Land Use	Development Data (For Information Only)			Estimated Vehicle-Trips		
	ITE LUCs <sup>1</sup>	Quantity	Units	Total	Entering	Exiting
Office				120	22	98
Retail				734	352	382
Restaurant				0		
Cinema/Entertainment				0		
Residential				137	94	53
Hotel				0		
All Other Land Uses <sup>2</sup>				0		
<b>Total</b>				<b>991</b>	<b>458</b>	<b>533</b>

Table 2-P: Mode Split and Vehicle Occupancy Estimates						
Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses <sup>2</sup>						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0			2000	
Retail					2000	
Restaurant					0	
Cinema/Entertainment					0	
Residential		2000	0			
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		20	0	0	1	0
Retail	7		0	0	39	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	2	7	0	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary			
	Total	Entering	Exiting
All Person-Trips	991	458	533
Internal Capture Percentage	15%	17%	14%
External Vehicle-Trips <sup>3</sup>	839	382	457
External Transit-Trips <sup>4</sup>	0	0	0
External Non-Motorized Trips <sup>4</sup>	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use		
Land Use	Entering Trips	Exiting Trips
Office	41%	21%
Retail	8%	12%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	48%	17%
Hotel	N/A	N/A

<sup>1</sup>Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

<sup>2</sup>Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

<sup>3</sup>Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

<sup>4</sup>Person-Trips

<sup>5</sup>Indicates computation that has been rounded to the nearest whole number

*Estimation Tool Developed by the Texas Transportation Institute*

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<b>Project Name:</b>	Whiskey Branch
<b>Analysis Period:</b>	PM Street Peak Hour

<b>Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends</b>						
Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	22	22	1.00	98	98
Retail	1.00	352	352	1.00	382	382
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	84	84	1.00	53	53
Hotel	1.00	0	0	1.00	0	0

<b>Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)</b>						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		20	4	0	1	0
Retail	8		111	15	63	19
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	2	7	11	0		2
Hotel	0	0	0	0	0	

<b>Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)</b>						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		28	0	0	3	0
Retail	7		0	0	39	0
Restaurant	7	176		0	13	0
Cinema/Entertainment	1	14	0		3	0
Residential	13	11	0	0		0
Hotel	0	7	0	0	0	

<b>Table 9-P (D): Internal and External Trips Summary (Entering Trips)</b>						
Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles <sup>1</sup>	Transit <sup>2</sup>	Non-Motorized <sup>2</sup>
Office	9	13	22	13	0	0
Retail	27	325	352	325	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	40	44	84	44	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses <sup>3</sup>	0	0	0	0	0	0

<b>Table 9-P (O): Internal and External Trips Summary (Exiting Trips)</b>						
Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles <sup>1</sup>	Transit <sup>2</sup>	Non-Motorized <sup>2</sup>
Office	21	77	98	77	0	0
Retail	46	336	382	336	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	9	44	53	44	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses <sup>3</sup>	0	0	0	0	0	0

<sup>1</sup> Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P
<sup>2</sup> Person-Trips
<sup>3</sup> Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator
*Indicates computation that has been rounded to the nearest whole number.

## Nate Bouquin

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**From:** Fredric Royal <Fredric.Royal@wilmingtonnc.gov>  
**Sent:** Thursday, April 25, 2019 3:41 PM  
**To:** Nate Bouquin  
**Subject:** FW: Whiskey Branch Figures  
**Attachments:** 190425 Distribution Comments.pdf

Nate,

Please see the comments in the Figures.

Fred

**From:** Lee, Madison B [mailto:mblee@ncdot.gov]  
**Sent:** Thursday, April 25, 2019 2:20 PM  
**To:** Amy Kimes <Amy.Kimes@wilmingtonnc.gov>; Fredric Royal <Fredric.Royal@wilmingtonnc.gov>; Hughes, Benjamin T <bthughes@ncdot.gov>; Leonard, Jessi L <jleonard6@ncdot.gov>; Roan, Jon <jroan@ncdot.gov>; Spirakis, Kirsten L <klspirakis@ncdot.gov>; Stewart, Alex D <adstewart2@ncdot.gov>  
**Subject:** Whiskey Branch Figures

All,

Most of the submitted distributions are the same as those in the original TIA, with the exception of the pass-by figures. The original TIA had most pass-by trips coming from the south and the new submission has most coming from the north. Not all of the accesses on the figures seem to match the scope – I've attached comments.

The existing volumes figure looks good compared to the raw counts.

**Madi Lee, EI**  
Development Review Engineer  
Division 3 | District 3  
North Carolina Department of Transportation

910 398 9100  
[mblee@ncdot.gov](mailto:mblee@ncdot.gov)

300 Division Drive  
Wilmington, NC 28411

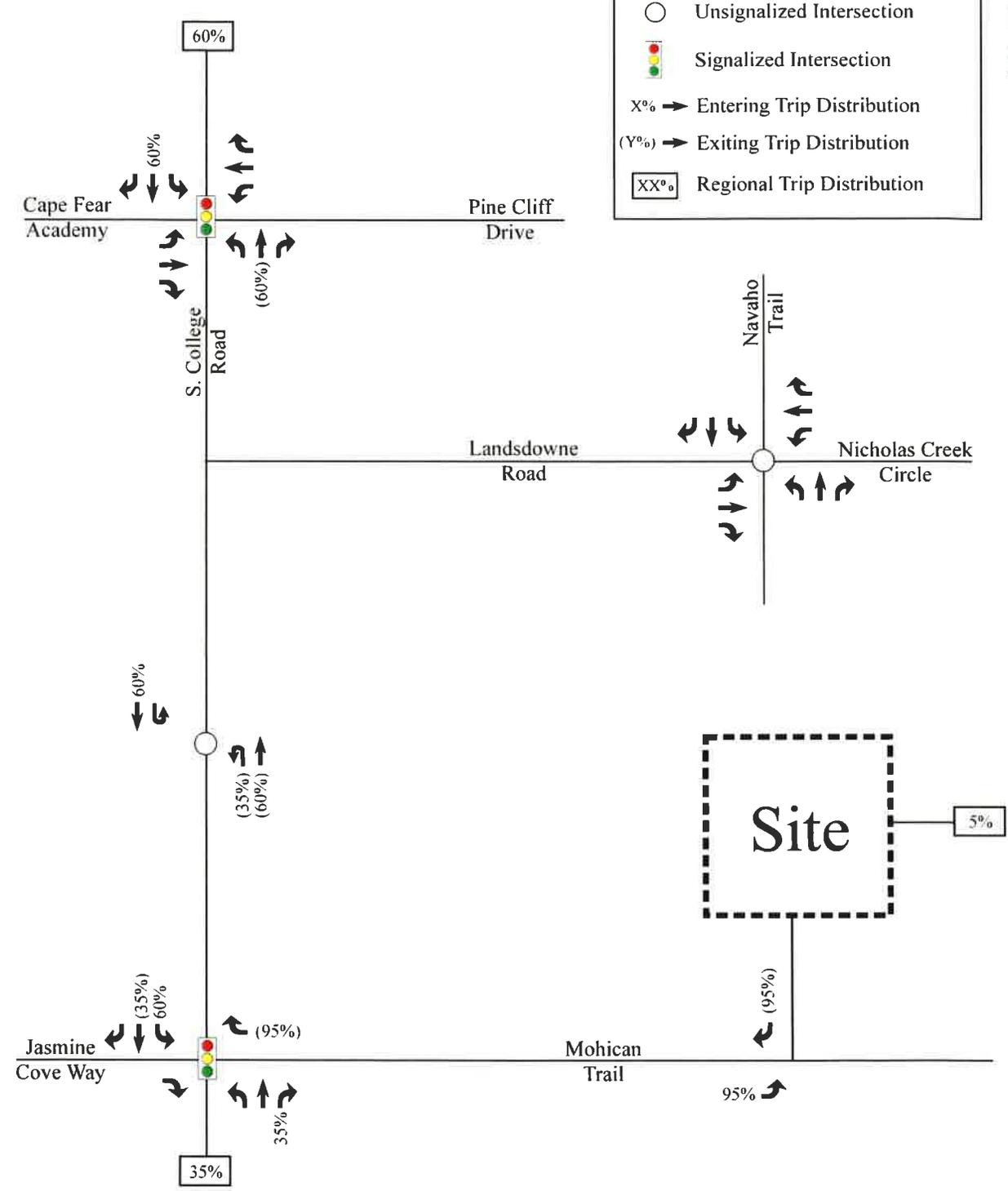


*Email correspondence to and from this address is subject to the North Carolina Public Records Law and may be disclosed to third parties.*



**LEGEND**

- Unsignalized Intersection
- 🚦 Signalized Intersection
- X% → Entering Trip Distribution
- (Y%) → Exiting Trip Distribution
- ☐XX% Regional Trip Distribution



Whiskey Branch Development  
Wilmington, NC

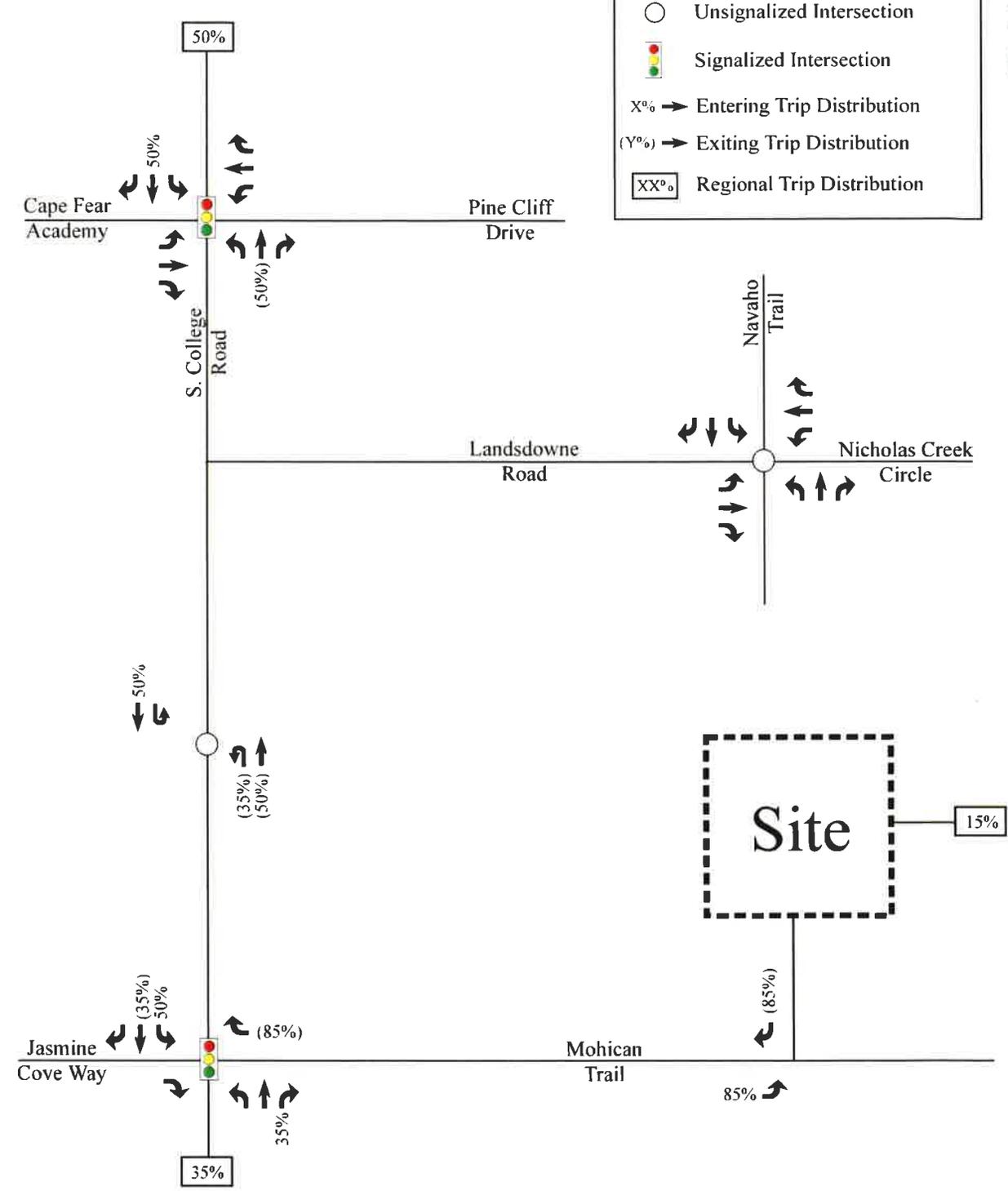
Weekday PM Site Trip Distribution - Phase 1A

Scale: Not to Scale	Figure 5A
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**LEGEND**

- Unsignalized Intersection
- 🚦 Signalized Intersection
- X% → Entering Trip Distribution
- (Y%) → Exiting Trip Distribution
- XX% Regional Trip Distribution



**RAMEY KEMP & ASSOCIATES**  
TRANSPORTATION ENGINEERS

Whiskey Branch Development  
Wilmington, NC

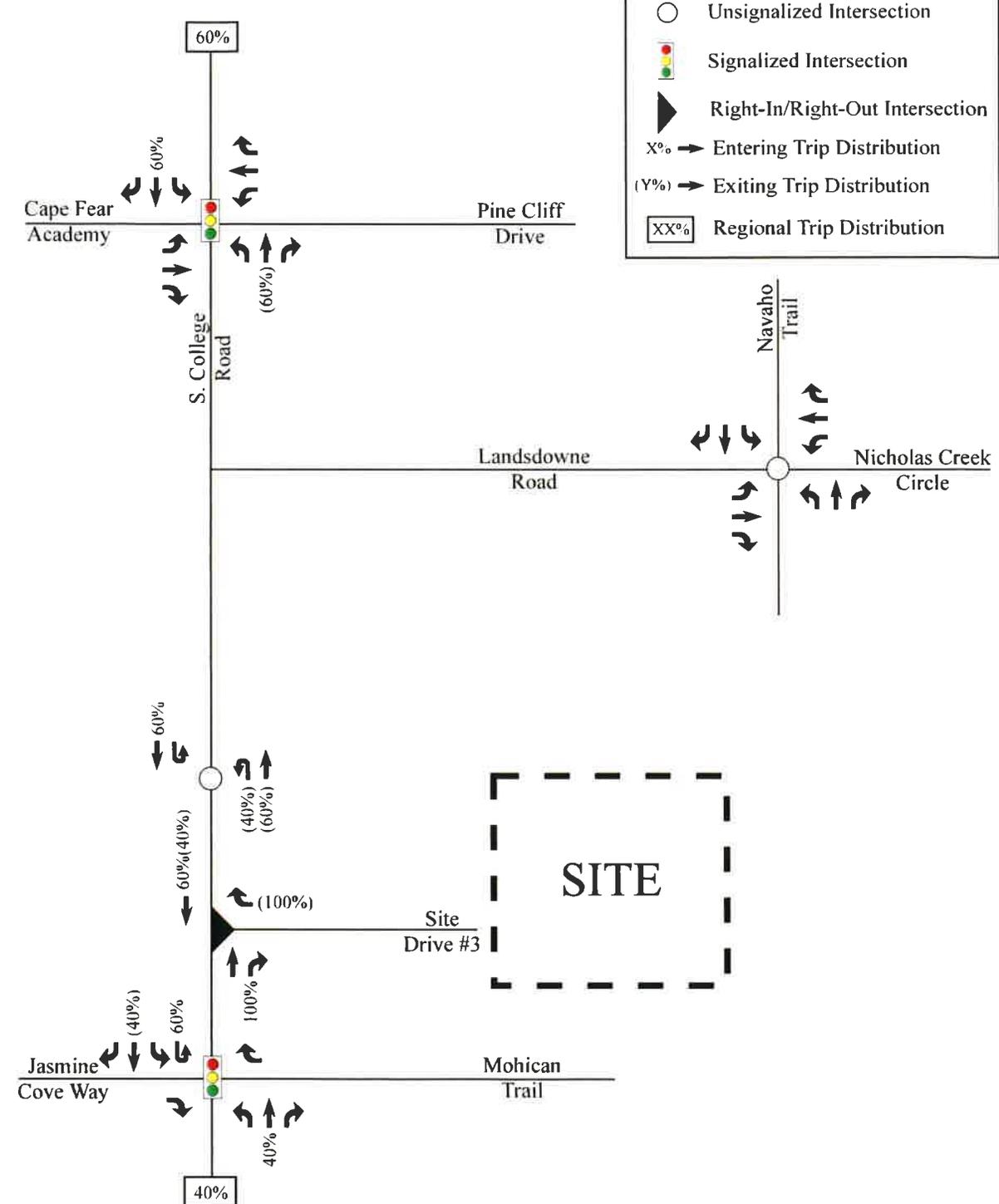
Saturday Site Trip Distribution - Phase 1A

Scale: Not to Scale	Figure 5B
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**LEGEND**

- Unsignalized Intersection
- 🚦 Signalized Intersection
- ▶ Right-In/Right-Out Intersection
- X% → Entering Trip Distribution
- (Y%) → Exiting Trip Distribution
- XX% Regional Trip Distribution



Whiskey Branch  
Development  
Wilmington, NC

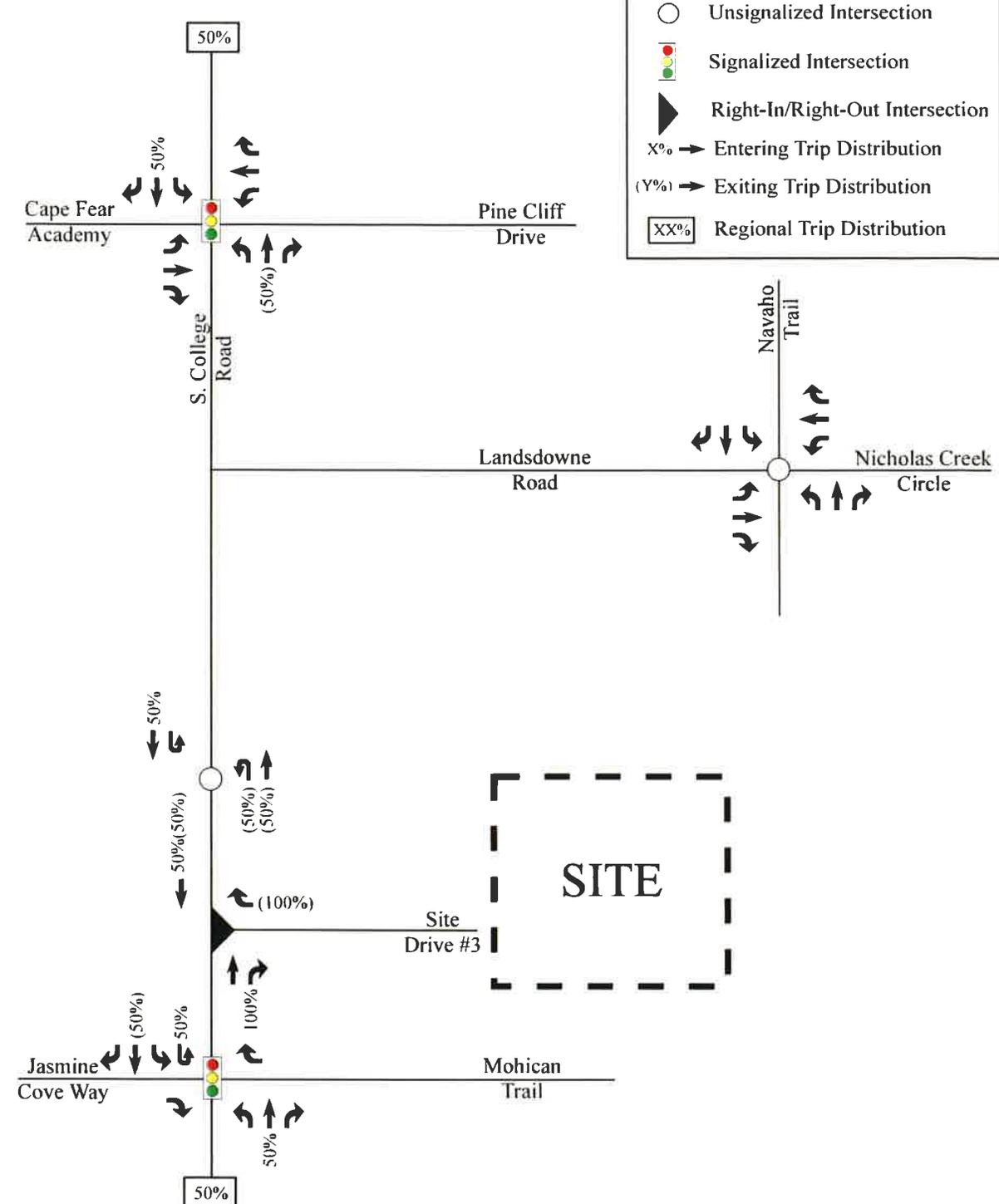
Weekday PM Site Trip  
Distribution - Phase 1B,  
Alternative 1

Scale: Not to Scale | Figure 10A



**LEGEND**

- Unsignalized Intersection
- 🚦 Signalized Intersection
- ▶ Right-In/Right-Out Intersection
- X% → Entering Trip Distribution
- (Y%) → Exiting Trip Distribution
- XX% Regional Trip Distribution



**RAMEY KEMP & ASSOCIATES**  
TRANSPORTATION ENGINEERS

Whiskey Branch Development  
Wilmington, NC

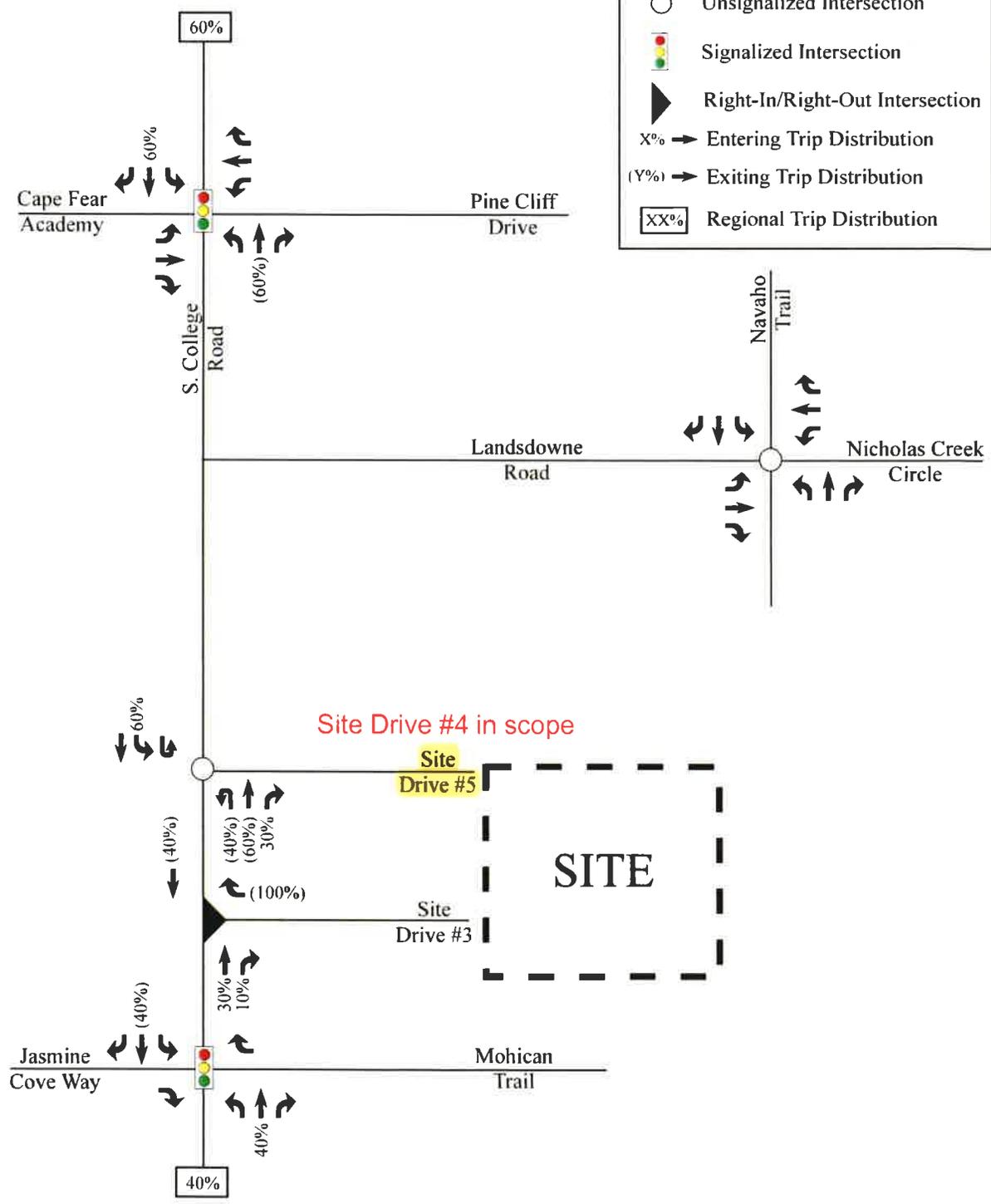
Saturday Site Trip Distribution - Phase 1B, Alternative 1

Scale: Not to Scale	Figure 10B
---------------------	------------



**LEGEND**

- Unsignalized Intersection
- 🚦 Signalized Intersection
- ▶ Right-In/Right-Out Intersection
- X% → Entering Trip Distribution
- (Y%) → Exiting Trip Distribution
- XX% Regional Trip Distribution



Whiskey Branch Development  
Wilmington, NC

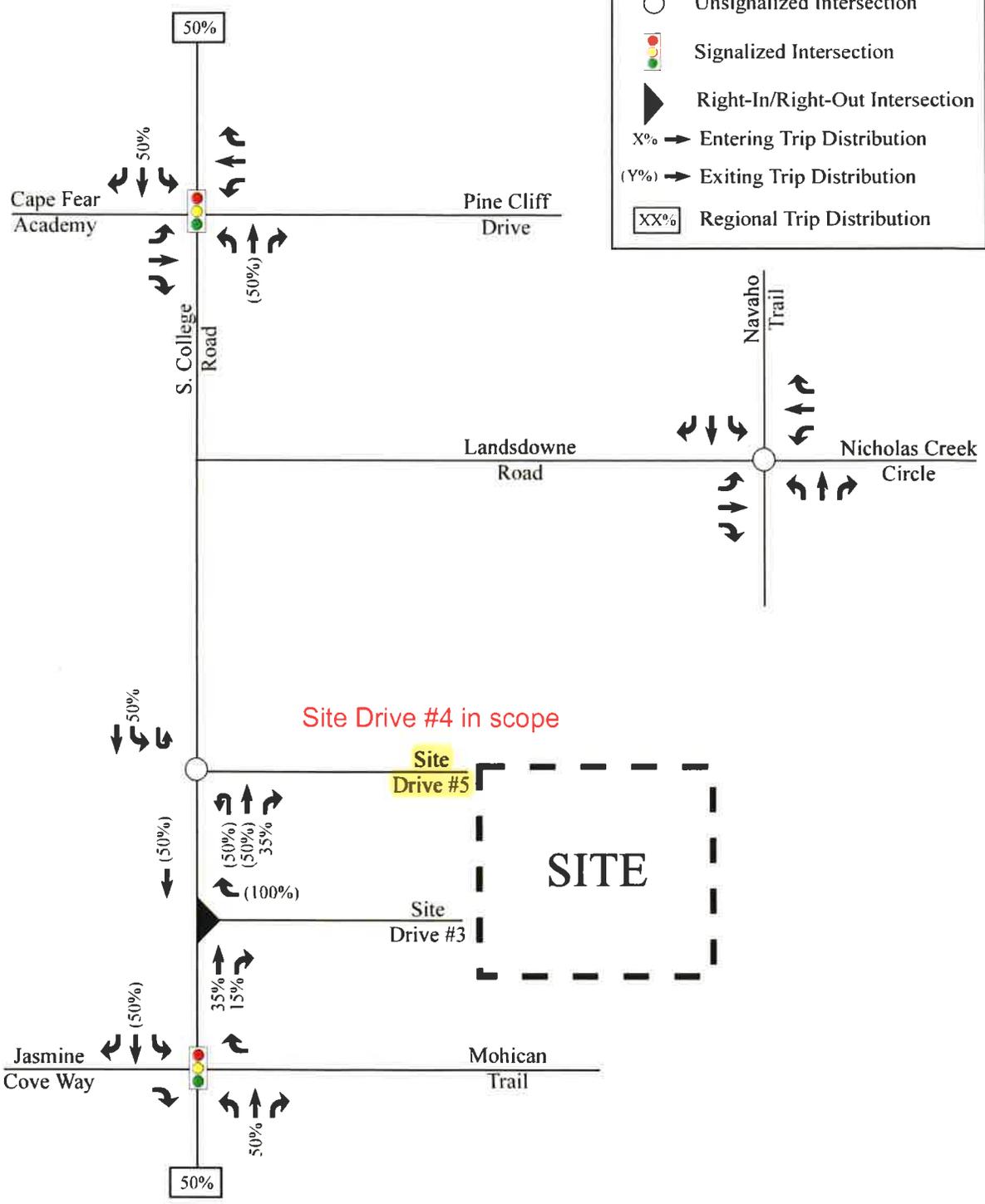
Weekday PM Site Trip Distribution - Phase 1B, Alternative 4

Scale: Not to Scale | Figure 10C



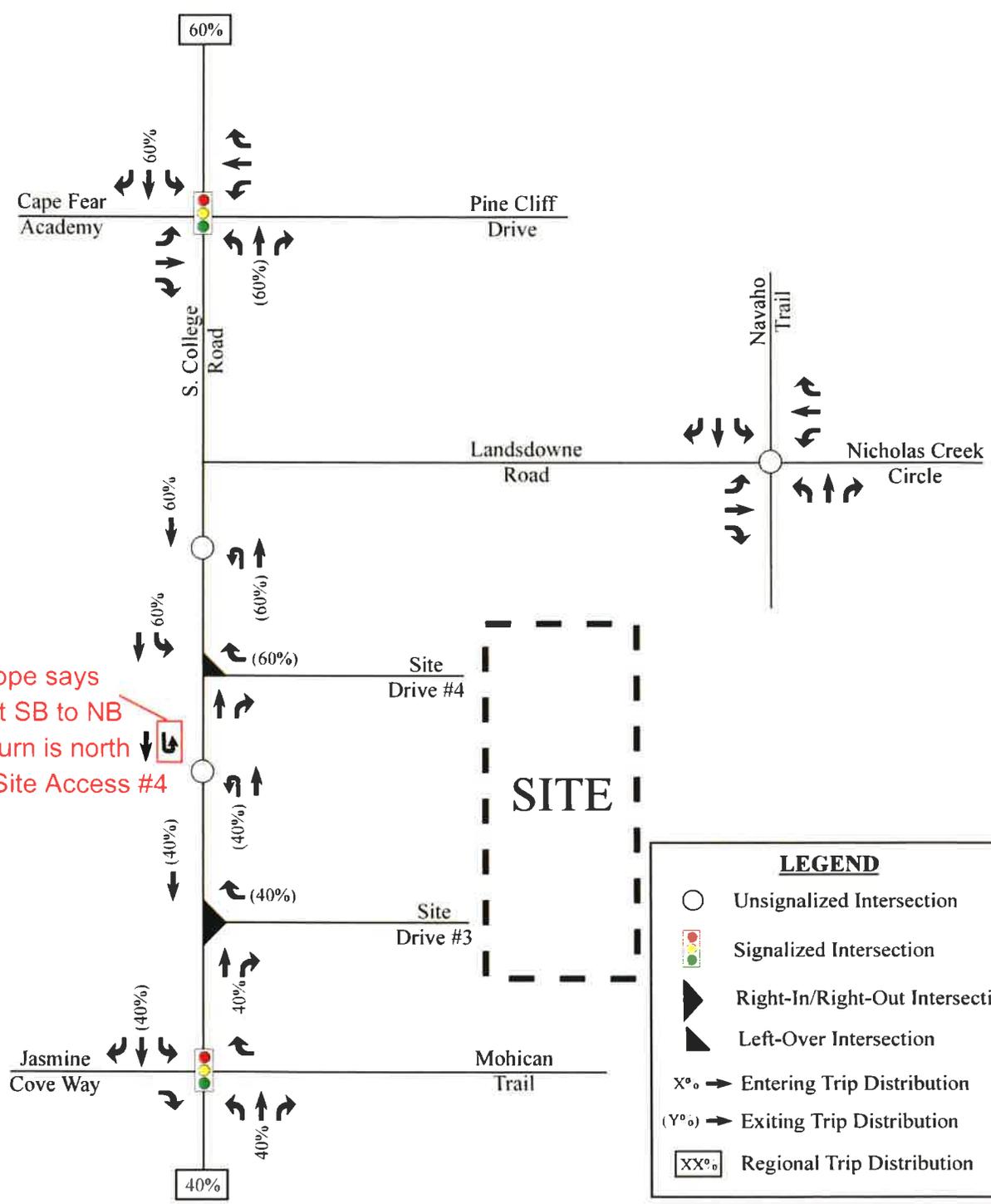
**LEGEND**

- Unsignalized Intersection
- ◻ Signalized Intersection
- ▶ Right-In/Right-Out Intersection
- X% → Entering Trip Distribution
- (Y%) → Exiting Trip Distribution
- ◻ XX% Regional Trip Distribution



Whiskey Branch Development  
Wilmington, NC

Saturday Site Trip Distribution - Phase 1B, Alternative 4  
Scale: Not to Scale | Figure 10D

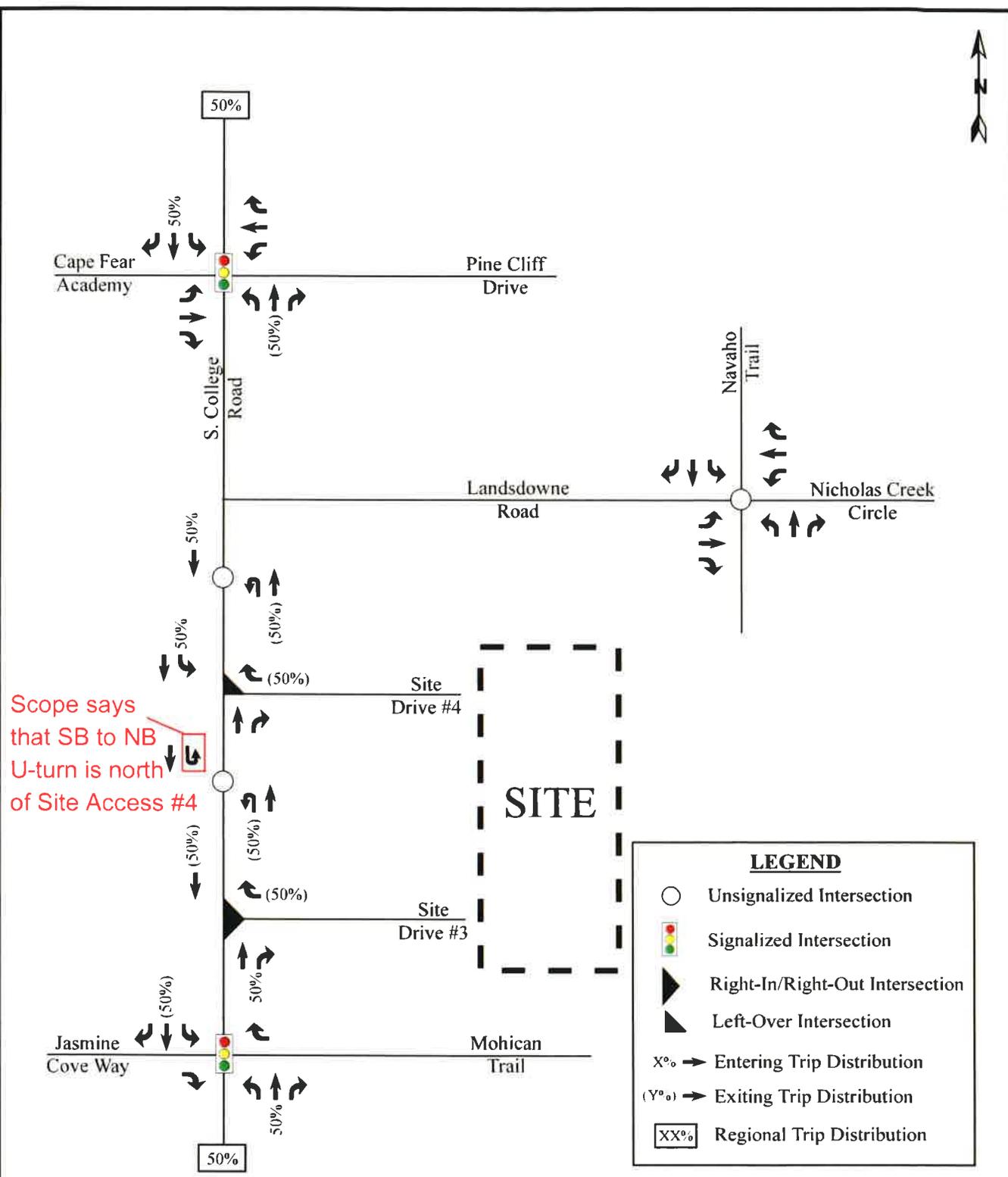


Scope says that SB to NB U-turn is north of Site Access #4



Whiskey Branch Development  
Wilmington, NC

Weekday PM Residential  
Site Trip Distribution  
- Phase 2, Alternative 1  
Scale: Not to Scale | Figure 11A



Scope says that SB to NB U-turn is north of Site Access #4

**LEGEND**

- Unsignalized Intersection
- 🚦 Signalized Intersection
- ▶ Right-In/Right-Out Intersection
- ◀ Left-Over Intersection
- X% → Entering Trip Distribution
- (Y%) → Exiting Trip Distribution
- XX% Regional Trip Distribution

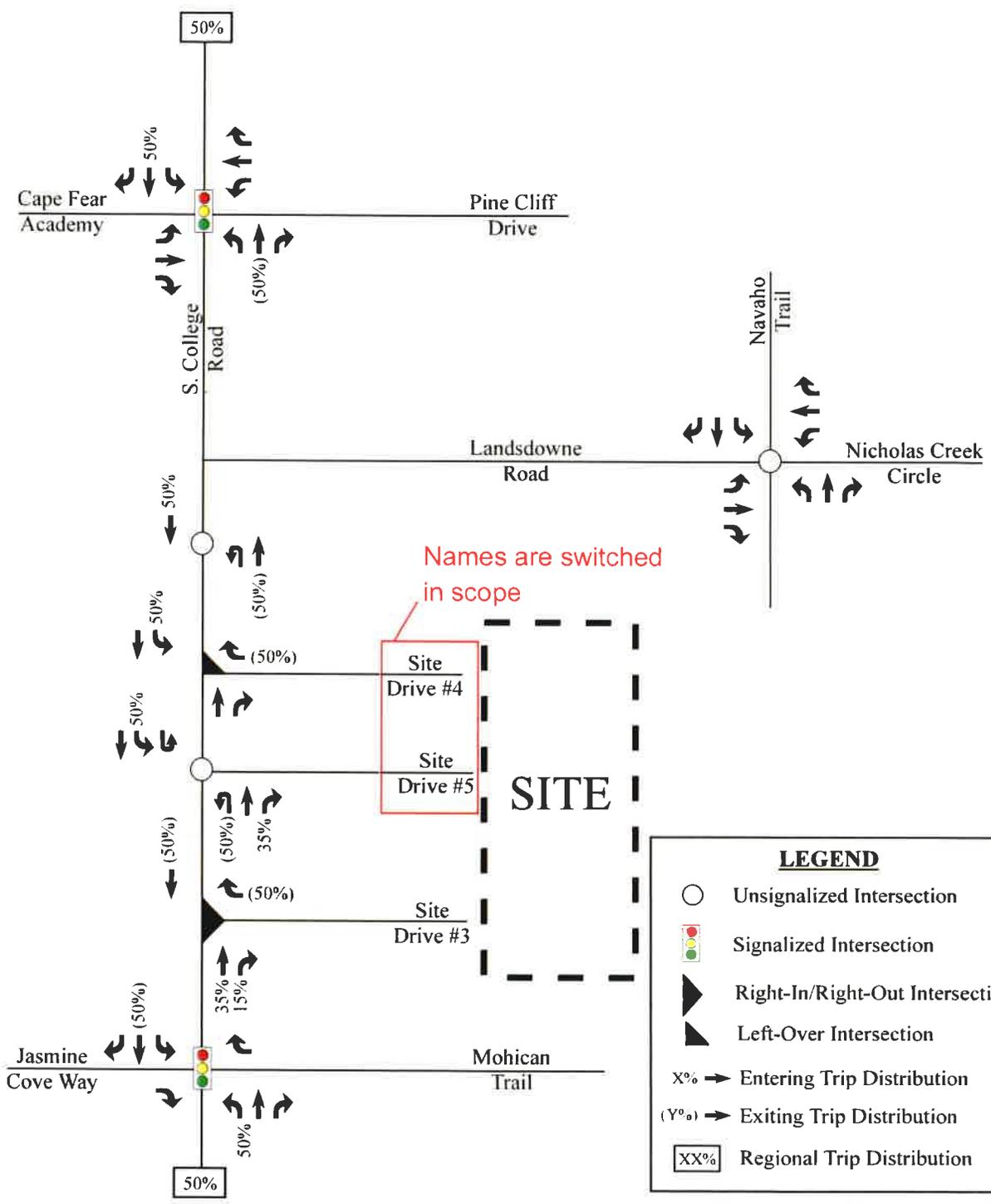


Whiskey Branch Development  
Wilmington, NC

Saturday Residential Site  
Trip Distribution  
- Phase 2, Alternative 1

Scale: Not to Scale    Figure 11B

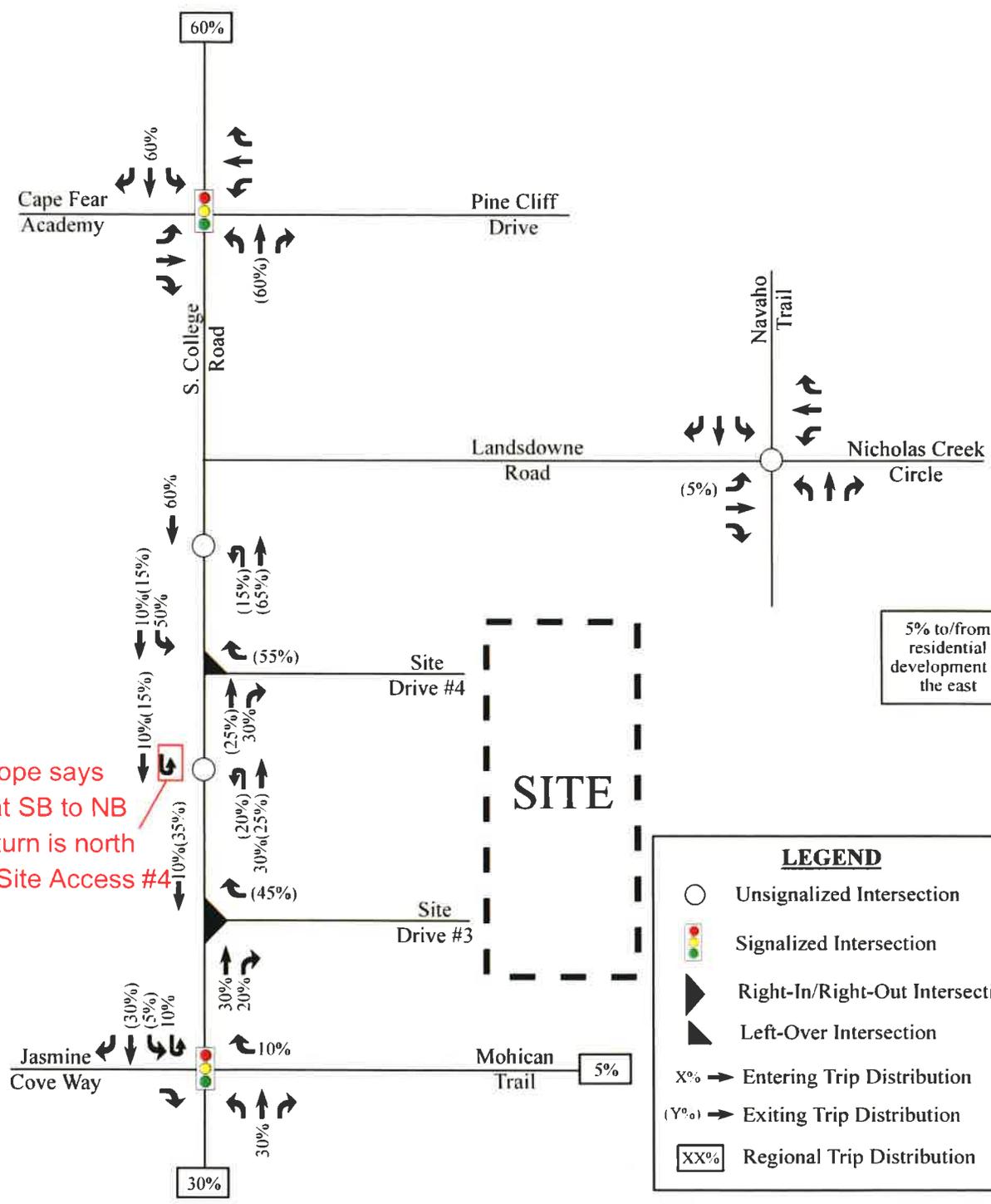




Whiskey Branch Development  
Wilmington, NC

Saturday Residential Site  
Trip Distribution  
- Phase 2, Alternative 4

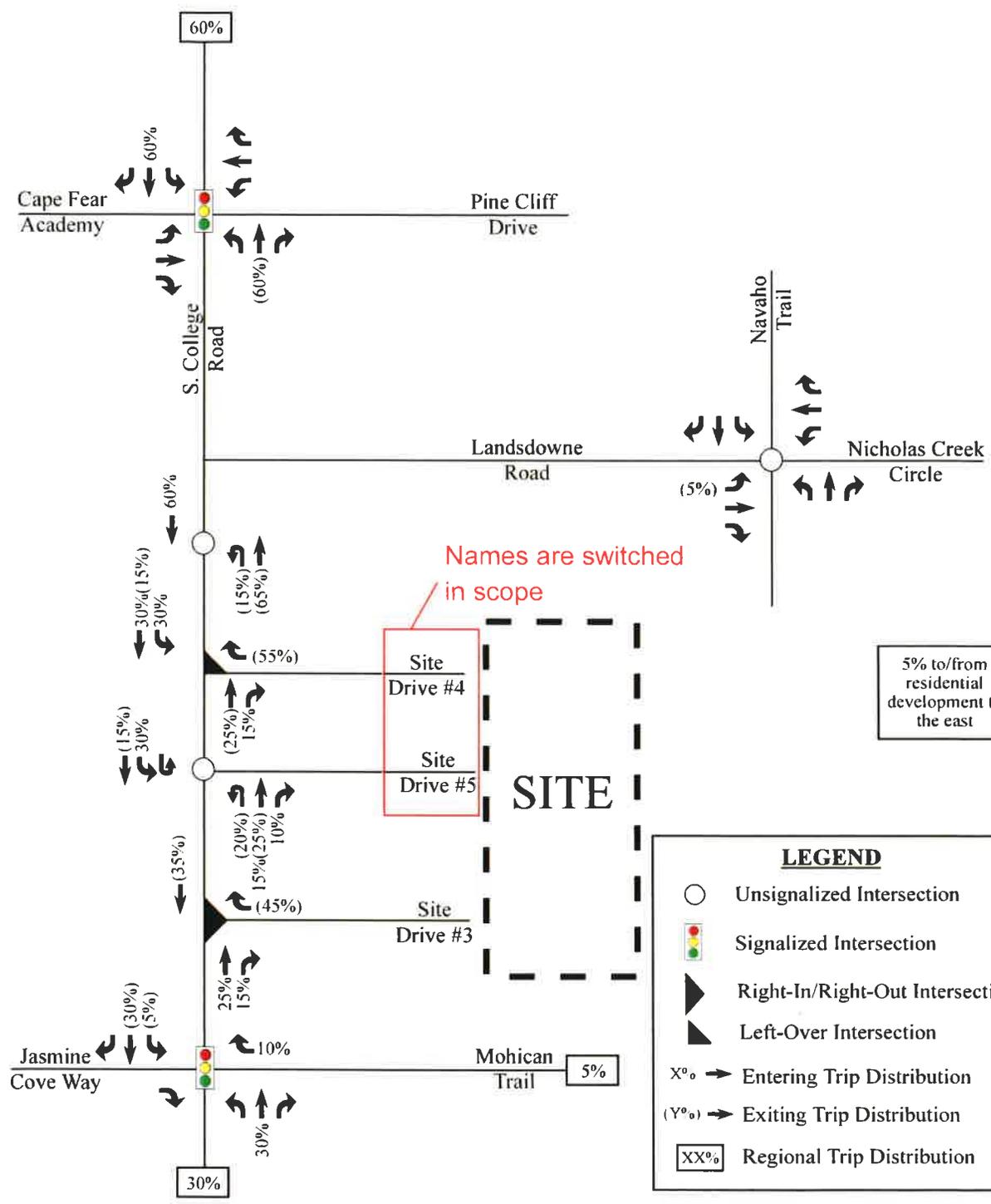
Scale: Not to Scale | Figure 11D



Whiskey Branch Development  
Wilmington, NC

PM + Saturday Commercial  
Site Trip Distribution -  
Phase 2, Alternative 1

Scale: Not to Scale | Figure 12A



Names are switched in scope

5% to/from residential development to the east



Whiskey Branch Development  
Wilmington, NC

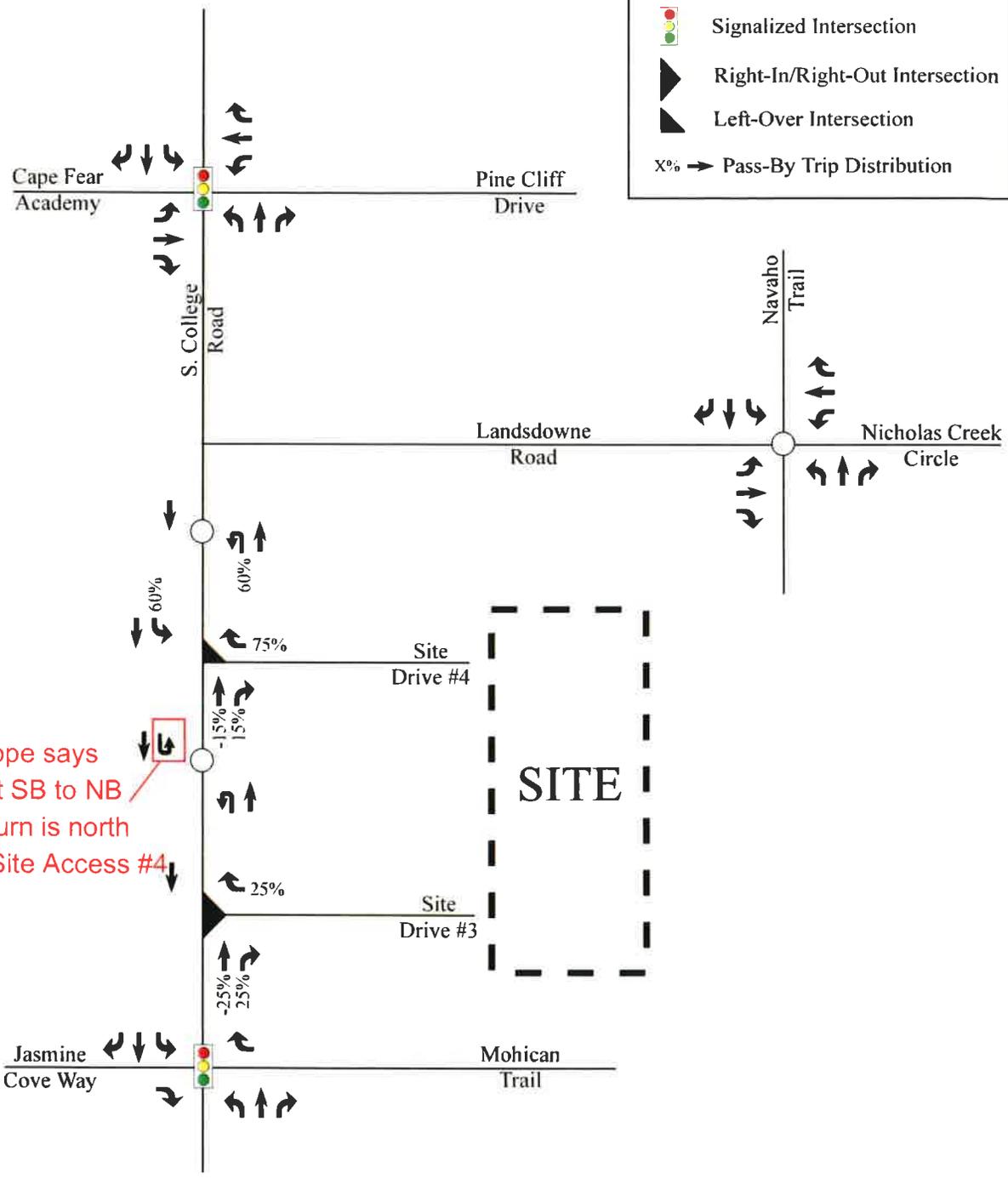
PM + Saturday Commercial  
Site Trip Distribution -  
Phase 2, Alternative 4

Scale: Not to Scale | Figure 12B



**LEGEND**

- Unsignalized Intersection
- ◫ Signalized Intersection
- ◫ Right-In/Right-Out Intersection
- ◫ Left-Over Intersection
- X% → Pass-By Trip Distribution



Scope says that SB to NB U-turn is north of Site Access #4

**RAMEY KEMP & ASSOCIATES**  
TRANSPORTATION ENGINEERS

Whiskey Branch Development  
Wilmington, NC

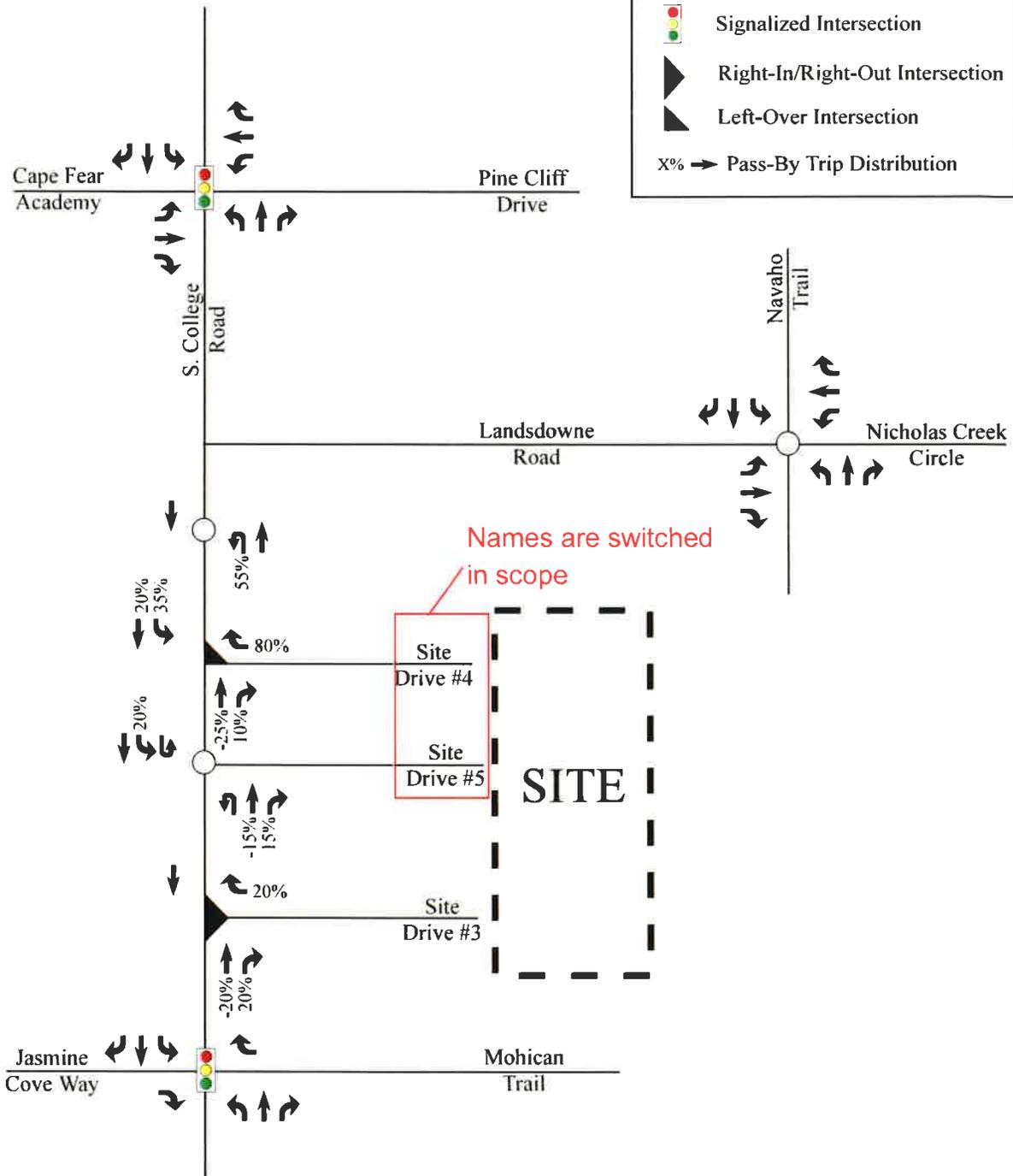
Weekday PM + Saturday  
Pass-By Distribution  
- Phase 2, Alternative 1

Scale: Not to Scale    Figure 13A



**LEGEND**

- Unsignalized Intersection
- ◫ Signalized Intersection
- ◫ Right-In/Right-Out Intersection
- ◫ Left-Over Intersection
- x% → Pass-By Trip Distribution



Whiskey Branch Development  
Wilmington, NC

Weekday PM + Saturday  
Pass-By Distribution  
- Phase 2, Alternative 4

Scale: Not to Scale | Figure 13B

# **APPENDIX B**

## **COUNT DATA**

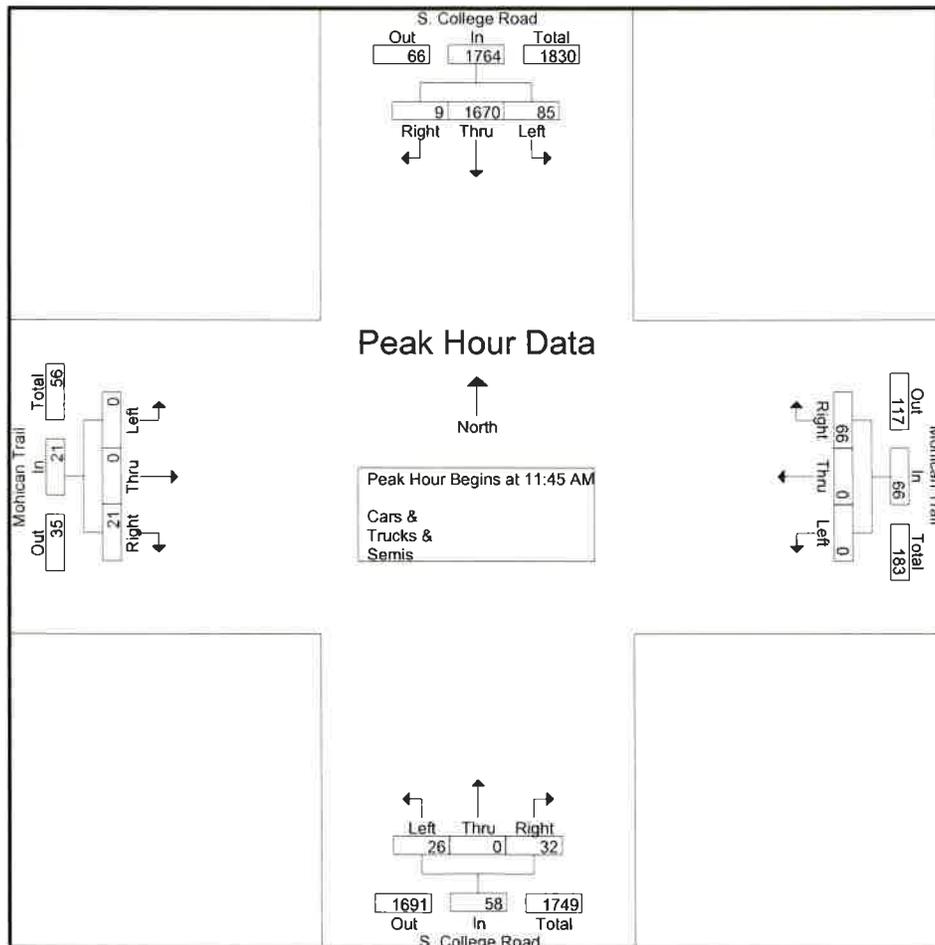




5808 Faringdon Place, Suite 100  
 Raleigh, NC 27609  
 PH: 919 872-5115

File Name : 01 - S. Collge Road and Mohican Trail - Saturday  
 Site Code : 00000001  
 Start Date : 3/30/2019  
 Page No : 2

Start Time	S. College Road From North				Mohican Trail From East			S. College Road From South				Mohican Trail From West				Int. Total	
	Right	Thru	Left	App Total	Right	Thru	Left	App Total	Right	Thru	Left	App Total	Right	Thru	Left		App Total
Peak Hour Analysis From 11:00 AM to 12:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 11:45 AM																	
11:45 AM	2	433	22	457	14	0	0	14	6	0	6	12	8	0	0	8	491
12:00 PM	3	411	22	436	16	0	0	16	10	0	7	17	1	0	0	1	470
12:15 PM	1	426	20	447	14	0	0	14	11	0	9	20	3	0	0	3	484
12:30 PM	3	400	21	424	22	0	0	22	5	0	4	9	9	0	0	9	464
Total Volume	9	1670	85	1764	66	0	0	66	32	0	26	58	21	0	0	21	1909
% App. Total	0.5	94.7	4.8		100	0	0		55.2	0	44.8		100	0	0		
PHF	.750	.964	.966	.965	.750	.000	.000	.750	.727	.000	.722	.725	.583	.000	.000	.583	.972



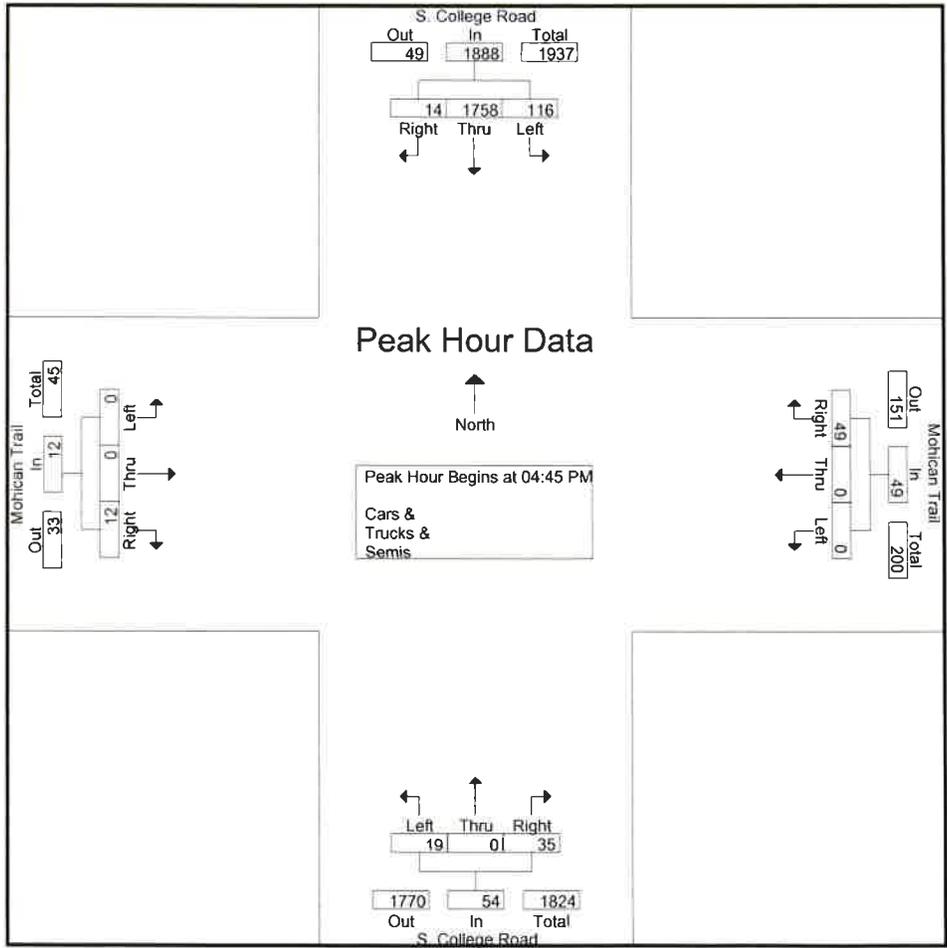




5808 Faringdon Place, Suite 100  
 Raleigh, NC 27609  
 PH: 919 872-5115

File Name : 01 - S. Collge Road and Mohican Trail - Weekday PM  
 Site Code : 00000001  
 Start Date : 4/2/2019  
 Page No : 2

Start Time	S. College Road From North				Mohican Trail From East				S. College Road From South				Mohican Trail From West				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	1	446	32	479	11	0	0	11	10	0	3	13	2	0	0	2	505
05:00 PM	1	458	21	480	12	0	0	12	4	0	5	9	3	0	0	3	504
05:15 PM	4	437	30	471	16	0	0	16	11	0	5	16	3	0	0	3	506
05:30 PM	8	417	33	458	10	0	0	10	10	0	6	16	4	0	0	4	488
Total Volume	14	1758	116	1888	49	0	0	49	35	0	19	54	12	0	0	12	2003
% App. Total	0.7	93.1	6.1		100	0	0		64.8	0	35.2		100	0	0		
PHF	.438	.960	.879	.983	.766	.000	.000	.766	.795	.000	.792	.844	.750	.000	.000	.750	.990



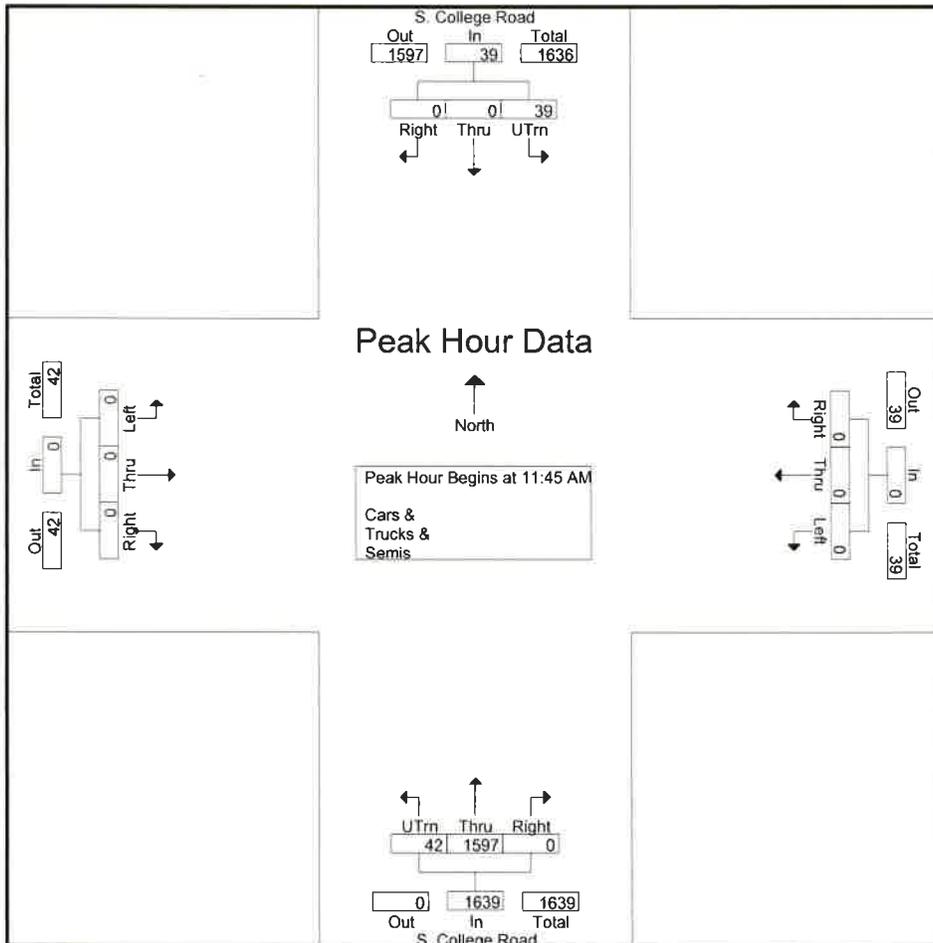




5808 Faringdon Place, Suite 100  
 Raleigh, NC 27609  
 PH: 919 872-5115

File Name : 02 - S. College Road and UTrn Location north of Mohican - Saturday  
 Site Code : 00000002  
 Start Date : 3/30/2019  
 Page No : 2

Start Time	S. College Road From North				From East				S. College Road From South				From West				Int. Total
	Right	Thru	UTrn	App Total	Right	Thru	Left	App Total	Right	Thru	UTrn	App Total	Right	Thru	Left	App Total	
Peak Hour Analysis From 11:45 AM to 12:30 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 11:45 AM																	
11:45 AM	0	0	13	13	0	0	0	0	0	366	10	376	0	0	0	0	389
12:00 PM	0	0	11	11	0	0	0	0	0	394	8	402	0	0	0	0	413
12:15 PM	0	0	7	7	0	0	0	0	0	416	13	429	0	0	0	0	436
12:30 PM	0	0	8	8	0	0	0	0	0	421	11	432	0	0	0	0	440
Total Volume	0	0	39	39	0	0	0	0	0	1597	42	1639	0	0	0	0	1678
% App. Total	0	0	100		0	0	0		0	97.4	2.6		0	0	0		
PHF	.000	.000	.750	.750	.000	.000	.000	.000	.000	.948	.808	.948	.000	.000	.000	.000	.953





5808 Faringdon Place, Suite 100  
 Raleigh, NC 27609  
 PH: 919 872-5115

File Name : 02 - S. College Road and UTrn Location north of Mohican - Weekday PM  
 Site Code : 00000002  
 Start Date : 4/2/2019  
 Page No : 1

Groups Printed- Cars & - Trucks & - Semis

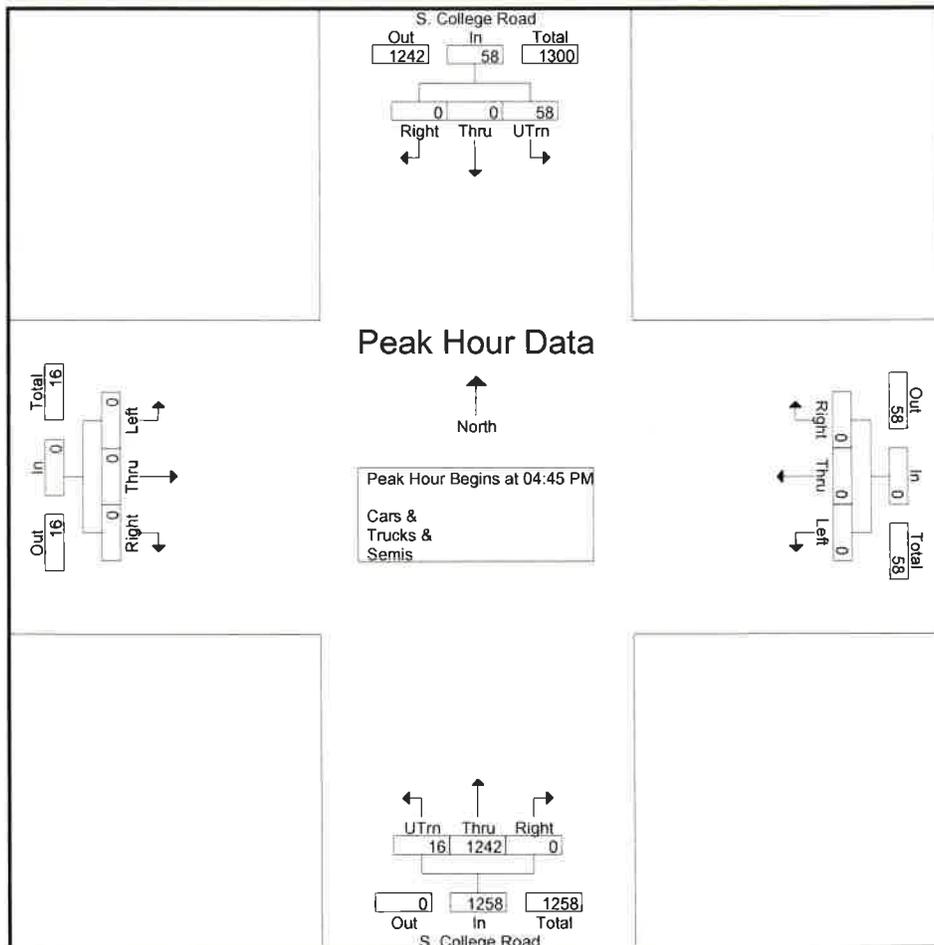
Start Time	S. College Road From North				From East				S. College Road From South				From West				Int. Total
	Right	Thru	UTrn	App Total	Right	Thru	Left	App Total	Right	Thru	UTrn	App Total	Right	Thru	Left	App Total	
04:00 PM	0	0	12	12	0	0	0	0	0	286	10	296	0	0	0	0	308
04:15 PM	0	0	11	11	0	0	0	0	0	307	8	315	0	0	0	0	326
04:30 PM	0	0	18	18	0	0	0	0	0	309	10	319	0	0	0	0	337
04:45 PM	0	0	12	12	0	0	0	0	0	295	2	297	0	0	0	0	309
Total	0	0	53	53	0	0	0	0	0	1197	30	1227	0	0	0	0	1280
05:00 PM	0	0	14	14	0	0	0	0	0	330	3	333	0	0	0	0	347
05:15 PM	0	0	16	16	0	0	0	0	0	316	8	324	0	0	0	0	340
05:30 PM	0	0	16	16	0	0	0	0	0	301	3	304	0	0	0	0	320
05:45 PM	0	0	8	8	0	0	0	0	0	272	18	290	0	0	0	0	298
Total	0	0	54	54	0	0	0	0	0	1219	32	1251	0	0	0	0	1305
Grand Total	0	0	107	107	0	0	0	0	0	2416	62	2478	0	0	0	0	2585
Apprch %	0	0	100		0	0	0		0	97.5	2.5		0	0	0		
Total %	0	0	4.1	4.1	0	0	0	0	0	93.5	2.4	95.9	0	0	0	0	
Cars &	0	0	107	107	0	0	0	0	0	2391	59	2450	0	0	0	0	2557
% Cars &	0	0	100	100	0	0	0	0	0	99	95.2	98.9	0	0	0	0	98.9
Trucks &	0	0	0	0	0	0	0	0	0	21	3	24	0	0	0	0	24
% Trucks &	0	0	0	0	0	0	0	0	0	0.9	4.8	1	0	0	0	0	0.9
Semis	0	0	0	0	0	0	0	0	0	4	0	4	0	0	0	0	4
% Semis	0	0	0	0	0	0	0	0	0	0.2	0	0.2	0	0	0	0	0.2



5808 Faringdon Place, Suite 100  
 Raleigh, NC 27609  
 PH: 919 872-5115

File Name : 02 - S. College Road and UTrn Location north of Mohican - Weekday PM  
 Site Code : 00000002  
 Start Date : 4/2/2019  
 Page No : 2

Start Time	S. College Road From North				From East				S. College Road From South				From West				Int. Total
	Right	Thru	UTrn	App. Total	Right	Thru	Left	App. Total	Right	Thru	UTrn	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	0	12	12	0	0	0	0	0	295	2	297	0	0	0	0	309
05:00 PM	0	0	14	14	0	0	0	0	0	330	3	333	0	0	0	0	347
05:15 PM	0	0	16	16	0	0	0	0	0	316	8	324	0	0	0	0	340
05:30 PM	0	0	16	16	0	0	0	0	0	301	3	304	0	0	0	0	320
Total Volume	0	0	58	58	0	0	0	0	0	1242	16	1258	0	0	0	0	1316
% App. Total	0	0	100		0	0	0		0	98.7	1.3		0	0	0		
PHF	.000	.000	.906	.906	.000	.000	.000	.000	.000	.941	.500	.944	.000	.000	.000	.000	.948



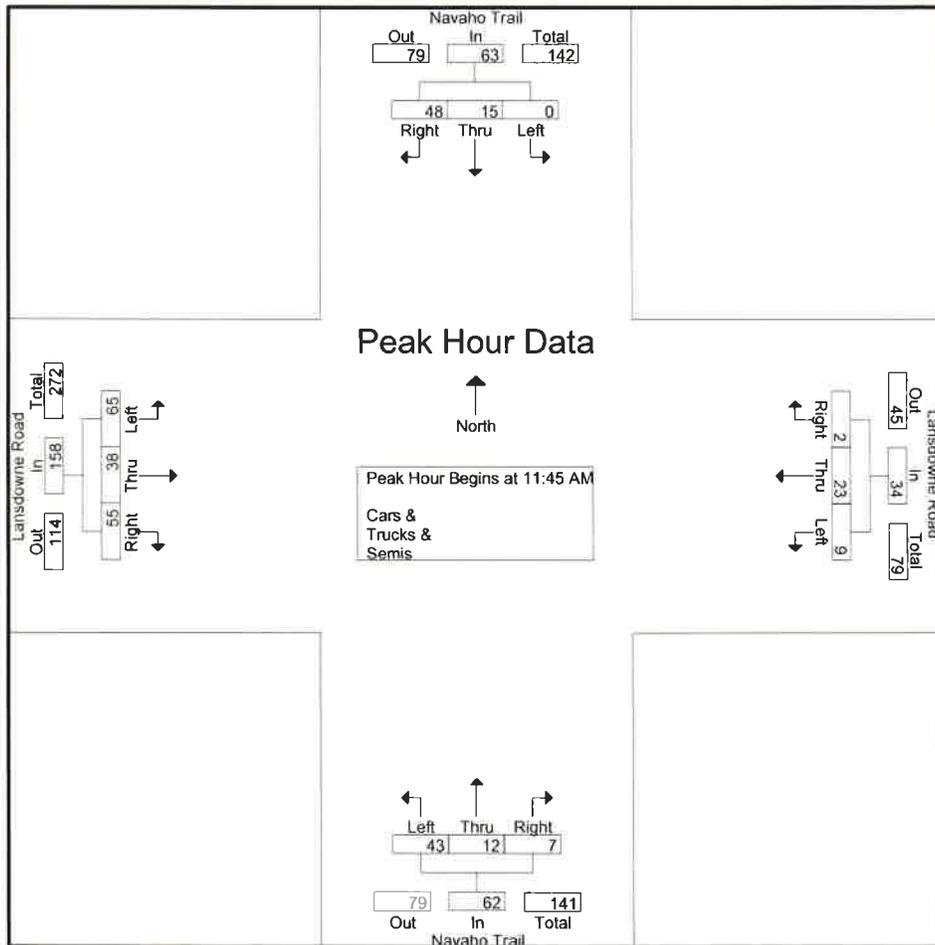




5808 Faringdon Place, Suite 100  
 Raleigh, NC 27609  
 PH: 919 872-5115

File Name : 03 - Navaho Trail and Lansdowne Road - Saturday  
 Site Code : 00000003  
 Start Date : 3/30/2019  
 Page No : 2

Start Time	Navaho Trail From North				Lansdowne Road From East				Navaho Trail From South				Lansdowne Road From West				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 11:45 AM to 12:30 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 11:45 AM																	
11:45 AM	17	5	0	22	1	3	0	4	2	5	13	20	13	8	14	35	81
12:00 PM	14	3	0	17	1	6	1	8	2	3	10	15	8	9	15	32	72
12:15 PM	6	1	0	7	0	7	6	13	2	1	8	11	14	10	15	39	70
12:30 PM	11	6	0	17	0	7	2	9	1	3	12	16	20	11	21	52	94
Total Volume	48	15	0	63	2	23	9	34	7	12	43	62	55	38	65	158	317
% App. Total	76.2	23.8	0		5.9	67.6	26.5		11.3	19.4	69.4		34.8	24.1	41.1		
PHF	.706	.625	.000	.716	.500	.821	.375	.654	.875	.600	.827	.775	.688	.864	.774	.760	.843





5808 Faringdon Place, Suite 100  
 Raleigh, NC 27609  
 PH: 919 872-5115

File Name : 03 - Navaho Trail and Lansdowne Road - Weekday PM  
 Site Code : 00000003  
 Start Date : 4/2/2019  
 Page No : 1

Groups Printed- Cars & - Trucks & - Semis

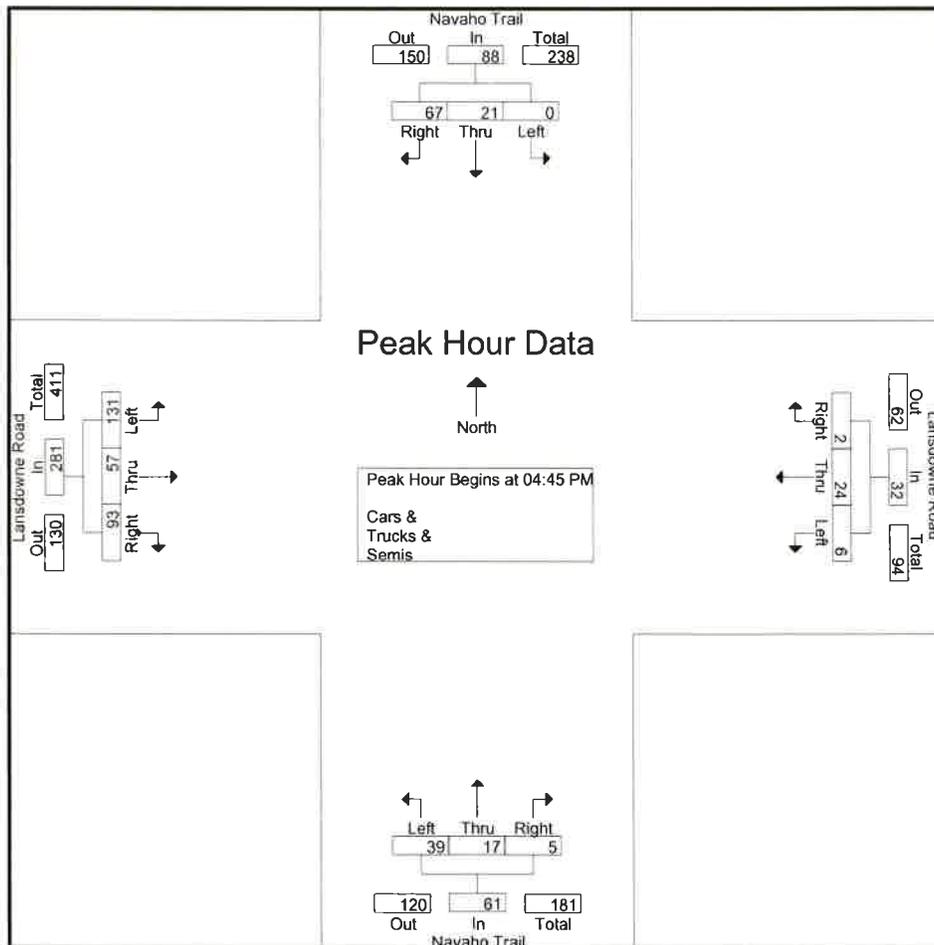
Start Time	Navaho Trail From North				Lansdowne Road From East				Navaho Trail From South				Lansdowne Road From West				Int. Total
	Right	Thru	Left	App Total	Right	Thru	Left	App Total	Right	Thru	Left	App Total	Right	Thru	Left	App Total	
04:00 PM	14	3	0	17	1	6	1	8	1	3	7	11	22	17	19	58	94
04:15 PM	10	1	1	12	0	10	1	11	1	1	13	15	16	11	19	46	84
04:30 PM	12	2	0	14	0	4	1	5	1	4	11	16	22	7	19	48	83
04:45 PM	14	5	0	19	1	8	1	10	1	0	12	13	24	8	33	65	107
<b>Total</b>	<b>50</b>	<b>11</b>	<b>1</b>	<b>62</b>	<b>2</b>	<b>28</b>	<b>4</b>	<b>34</b>	<b>4</b>	<b>8</b>	<b>43</b>	<b>55</b>	<b>84</b>	<b>43</b>	<b>90</b>	<b>217</b>	<b>368</b>
05:00 PM	19	6	0	25	1	6	1	8	2	6	7	15	22	14	29	65	113
05:15 PM	18	6	0	24	0	5	2	7	0	6	10	16	22	18	36	76	123
05:30 PM	16	4	0	20	0	5	2	7	2	5	10	17	25	17	33	75	119
05:45 PM	17	7	0	24	1	6	3	10	2	6	14	22	28	21	39	88	144
<b>Total</b>	<b>70</b>	<b>23</b>	<b>0</b>	<b>93</b>	<b>2</b>	<b>22</b>	<b>8</b>	<b>32</b>	<b>6</b>	<b>23</b>	<b>41</b>	<b>70</b>	<b>97</b>	<b>70</b>	<b>137</b>	<b>304</b>	<b>499</b>
<b>Grand Total</b>	<b>120</b>	<b>34</b>	<b>1</b>	<b>155</b>	<b>4</b>	<b>50</b>	<b>12</b>	<b>66</b>	<b>10</b>	<b>31</b>	<b>84</b>	<b>125</b>	<b>181</b>	<b>113</b>	<b>227</b>	<b>521</b>	<b>867</b>
Apprch %	77.4	21.9	0.6		6.1	75.8	18.2		8	24.8	67.2		34.7	21.7	43.6		
Total %	13.8	3.9	0.1	17.9	0.5	5.8	1.4	7.6	1.2	3.6	9.7	14.4	20.9	13	26.2	60.1	
Cars &	118	33	1	152	2	49	12	63	9	31	82	122	179	111	224	514	851
% Cars &	98.3	97.1	100	98.1	50	98	100	95.5	90	100	97.6	97.6	98.9	98.2	98.7	98.7	98.2
Trucks &	2	1	0	3	2	1	0	3	1	0	2	3	1	2	3	6	15
% Trucks &	1.7	2.9	0	1.9	50	2	0	4.5	10	0	2.4	2.4	0.6	1.8	1.3	1.2	1.7
Semis	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
% Semis	0	0	0	0	0	0	0	0	0	0	0	0	0.6	0	0	0.2	0.1



5808 Faringdon Place, Suite 100  
 Raleigh, NC 27609  
 PH: 919 872-5115

File Name : 03 - Navaho Trail and Lansdowne Road - Weekday PM  
 Site Code : 00000003  
 Start Date : 4/2/2019  
 Page No : 2

Start Time	Navaho Trail From North				Lansdowne Road From East				Navaho Trail From South				Lansdowne Road From West				Int. Total
	Right	Thru	Left	App Total	Right	Thru	Left	App Total	Right	Thru	Left	App Total	Right	Thru	Left	App Total	
Peak Hour Analysis From 04:00 PM to 05:30 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	14	5	0	19	1	8	1	10	1	0	12	13	24	8	33	65	107
05:00 PM	19	6	0	25	1	6	1	8	2	6	7	15	22	14	29	65	113
05:15 PM	18	6	0	24	0	5	2	7	0	6	10	16	22	18	36	76	123
05:30 PM	16	4	0	20	0	5	2	7	2	5	10	17	25	17	33	75	119
<b>Total Volume</b>	<b>67</b>	<b>21</b>	<b>0</b>	<b>88</b>	<b>2</b>	<b>24</b>	<b>6</b>	<b>32</b>	<b>5</b>	<b>17</b>	<b>39</b>	<b>61</b>	<b>93</b>	<b>57</b>	<b>131</b>	<b>281</b>	<b>462</b>
<b>% App. Total</b>	<b>76.1</b>	<b>23.9</b>	<b>0</b>		<b>6.2</b>	<b>75</b>	<b>18.8</b>		<b>8.2</b>	<b>27.9</b>	<b>63.9</b>		<b>33.1</b>	<b>20.3</b>	<b>46.6</b>		
PHF	.882	.875	.000	.880	.500	.750	.750	.800	.625	.708	.813	.897	.930	.792	.910	.924	.939



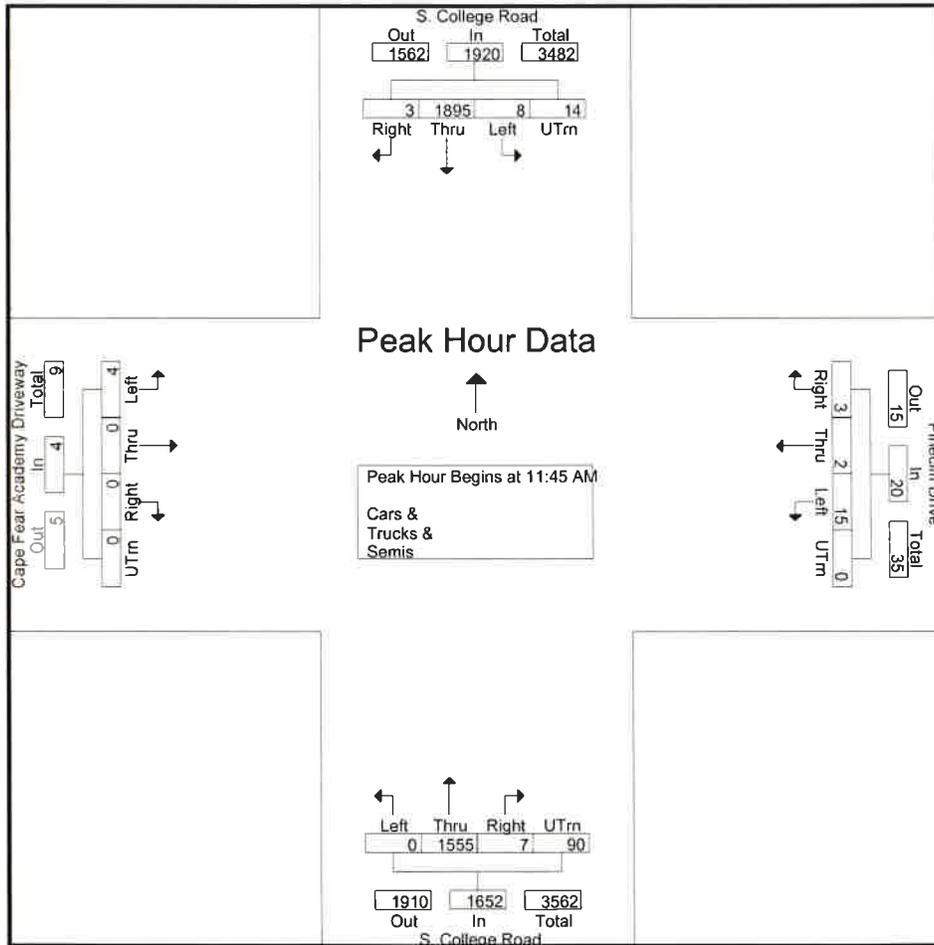




5808 Faringdon Place, Suite 100  
 Raleigh, NC 27609  
 PH: 919 872-5115

File Name : 04 - S. College Road and Pinecliff Drive - Saturday  
 Site Code : 00000004  
 Start Date : 3/30/2019  
 Page No : 2

Start Time	S. College Road From North					Pinecliff Drive From East					S. College Road From South					Cape Fear Academy Driveway From West					Int. Total
	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	
Peak Hour Analysis From 11:00 AM to 12:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:45 AM																					
11:45 AM	0	487	3	5	495	0	2	6	0	8	6	358	0	22	386	0	0	1	0	1	890
12:00 PM	0	464	3	3	470	0	0	5	0	5	0	394	0	27	421	0	0	0	0	0	896
12:15 PM	1	485	2	5	493	2	0	4	0	6	1	397	0	22	420	0	0	1	0	1	920
12:30 PM	2	459	0	1	462	1	0	0	0	1	0	406	0	19	425	0	0	2	0	2	890
Total Volume	3	1895	8	14	1920	3	2	15	0	20	7	1555	0	90	1652	0	0	4	0	4	3596
% App. Total	0.2	98.7	0.4	0.7		15	10	75	0		0.4	94.1	0	5.4		0	0	100	0		
PHF	.375	.973	.667	.700	.970	.375	.250	.625	.000	.625	.292	.958	.000	.833	.972	.000	.000	.500	.000	.500	.977





5808 Faringdon Place, Suite 100  
 Raleigh, NC 27609  
 PH: 919 872-5115

File Name : 04 - S. College Road and Pinecliff Drive - Weekday PM  
 Site Code : 00000004  
 Start Date : 4/2/2019  
 Page No : 1

Groups Printed- Cars & - Trucks & - Semis

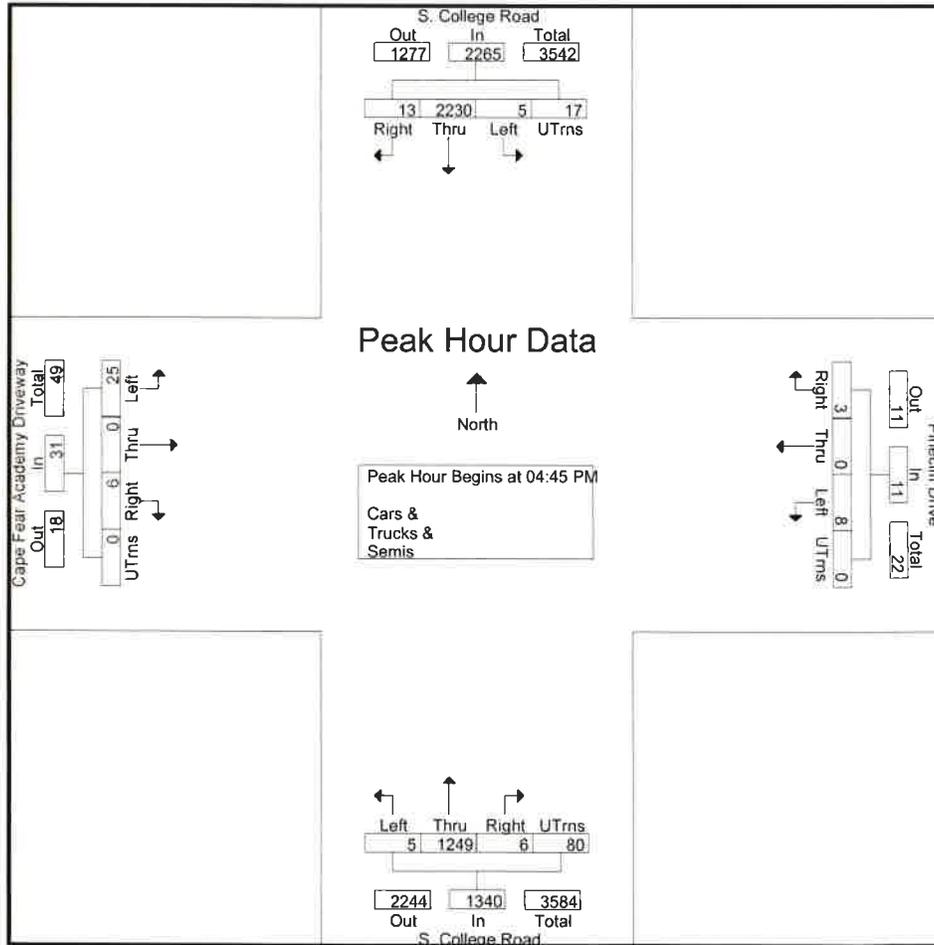
Start Time	S. College Road From North					Pinecliff Drive From East					S. College Road From South					Cape Fear Academy Driveway From West					Int. Total
	Right	Thru	Left	UTms	App. Total	Right	Thru	Left	UTms	App. Total	Right	Thru	Left	UTms	App. Total	Right	Thru	Left	UTms	App. Total	
04:00 PM	5	458	0	9	472	2	0	3	0	5	4	309	0	9	322	0	3	16	0	19	818
04:15 PM	11	453	3	7	474	0	0	1	0	1	1	325	3	20	349	1	0	18	0	19	843
04:30 PM	6	514	0	3	523	2	0	1	0	3	1	340	1	9	351	0	0	13	0	13	890
04:45 PM	2	535	2	6	545	2	0	5	0	7	1	296	1	27	325	1	0	6	0	7	884
Total	24	1960	5	25	2014	6	0	10	0	16	7	1270	5	65	1347	2	3	53	0	58	3435
05:00 PM	4	549	1	6	560	1	0	0	0	1	0	329	0	19	348	1	0	7	0	8	917
05:15 PM	5	569	0	4	578	0	0	3	0	3	1	336	1	16	354	0	0	6	0	6	941
05:30 PM	2	577	2	1	582	0	0	0	0	0	4	288	3	18	313	4	0	6	0	10	905
05:45 PM	7	555	0	2	564	0	0	0	0	0	0	0	0	0	0	1	0	3	0	4	568
Total	18	2250	3	13	2284	1	0	3	0	4	5	953	4	53	1015	6	0	22	0	28	3331
Grand Total	42	4210	8	38	4298	7	0	13	0	20	12	2223	9	118	2362	8	3	75	0	86	6766
Apprch %	1	98	0.2	0.9		35	0	65	0		0.5	94.1	0.4	5		9.3	3.5	87.2	0		
Total %	0.6	62.2	0.1	0.6	63.5	0.1	0	0.2	0	0.3	0.2	32.9	0.1	1.7	34.9	0.1	0	1.1	0	1.3	
Cars &	42	4161	8	37	4248	7	0	13	0	20	12	2187	9	118	2326	8	3	75	0	86	6680
% Cars &	100	98.8	100	97.4	98.8	100	0	100	0	100	100	98.4	100	100	98.5	100	100	100	0	100	98.7
Trucks &	0	42	0	1	43	0	0	0	0	0	0	27	0	0	27	0	0	0	0	0	70
% Trucks &	0	1	0	2.6	1	0	0	0	0	0	0	1.2	0	0	1.1	0	0	0	0	0	1
Semis	0	7	0	0	7	0	0	0	0	0	0	9	0	0	9	0	0	0	0	0	16
% Semis	0	0.2	0	0	0.2	0	0	0	0	0	0	0.4	0	0	0.4	0	0	0	0	0	0.2



5808 Faringdon Place, Suite 100  
 Raleigh, NC 27609  
 PH: 919 872-5115

File Name : 04 - S. College Road and Pinecliff Drive - Weekday PM  
 Site Code : 00000004  
 Start Date : 4/2/2019  
 Page No : 2

Start Time	S. College Road From North					Pinecliff Drive From East					S. College Road From South					Cape Fear Academy Driveway From West					Int. Total
	Right	Thru	Left	UTrns	App. Total	Right	Thru	Left	UTrns	App. Total	Right	Thru	Left	UTrns	App. Total	Right	Thru	Left	UTrns	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	2	535	2	6	545	2	0	5	0	7	1	296	1	27	325	1	0	6	0	7	884
05:00 PM	4	549	1	6	560	1	0	0	0	1	0	329	0	19	348	1	0	7	0	8	917
05:15 PM	5	569	0	4	578	0	0	3	0	3	1	336	1	16	354	0	0	6	0	6	941
05:30 PM	2	577	2	1	582	0	0	0	0	0	4	288	3	18	313	4	0	6	0	10	905
Total Volume	13	2230	5	17	2265	3	0	8	0	11	6	1249	5	80	1340	6	0	25	0	31	3647
% App. Total	0.6	98.5	0.2	0.8		27.3	0	72.7	0		0.4	93.2	0.4	6		19.4	0	80.6	0		
PHF	.650	.966	.625	.708	.973	.375	.000	.400	.000	.393	.375	.929	.417	.741	.946	.375	.000	.893	.000	.775	.969



# **APPENDIX C**

## **SIGNAL INFORMATION**



**PHASING DIAGRAM**



02

97

**PHASING DIAGRAM DETECTION LEGEND**

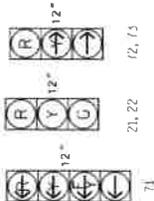
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

**TABLE OF OPERATION**

SIGNAL FACE	PHASE	
	0	F
21, 22	GRY	SH
71	Y	→
72, 73	Y	←

**SIGNAL FACE I. D.**

All Heads L-E-D.



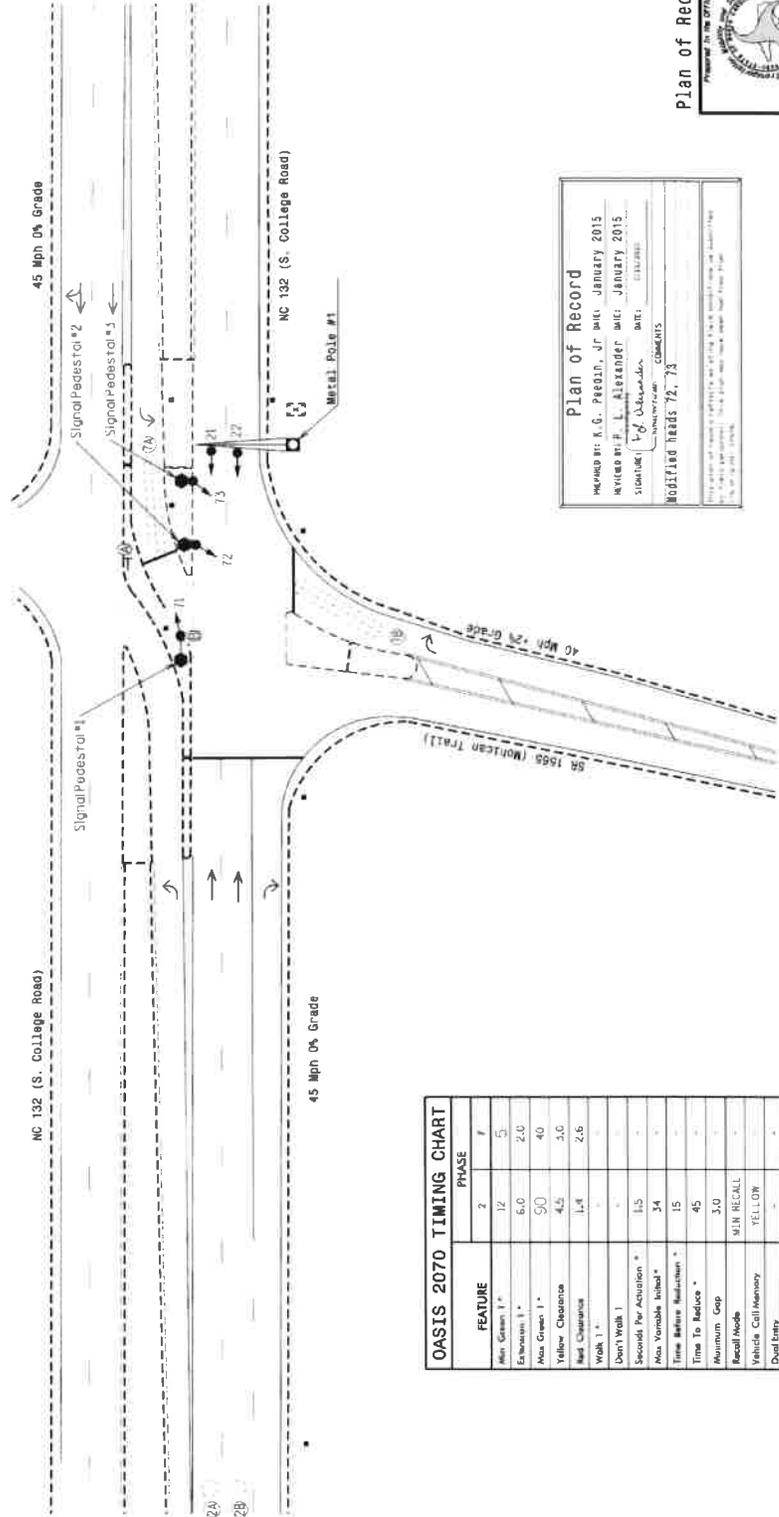
**OASIS 2070 LOOP & DETECTOR INSTALLATION CHART**

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	DETECTOR PROGRAMMING		
			PHASE	EXTENSION	FLIGHT TIME DELAY
2A	6X6	300	4	Z	Y
2B	6X6	300	4	Z	Y
7A	6X40	0	2-4-2	7	Y
7B	6X40	0	2-4-2	7	Y

**2 Phase Fully Actuated Wilmington Signal System**

**NOTES**

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012. Do not program signal for night flashing operation unless otherwise directed by the Engineer.
2. Set all detector units to presence mode.
3. Pavement markings are as shown in chart for free-run operation only. Coordinate signal system timing value supersede these values.
4. Signal system data: Controller Asset #0337.



- LEGEND**
- Traffic Signal Head
  - Modified Signal Head
  - 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
  - Right of Way
  - Directional Arrow
  - Metal Pole with Mastarm
  - \*STOP HERE ON RED\* Sign (R10-6)
  - \*U-TURN YIELD TO RIGHT TURN\* Sign (R10-16)

**Plan of Record**

REVISION BY: N.G. FREEDIN, JR DATE: JANUARY 2013  
 REVIEWED BY: P.L. ALEXANDER DATE: JANUARY 2013  
 SIGNATURE: [Signature] DATE: [Date]  
 COMMENTS: [Comments]

MODIFIED HEADS 72, 73

**Plan of Record**

Prepared in the Office of:  
  
 DIVISION 3 NEW RESERVE COURTESY  
 PLAN DATE: JULY 2015  
 DESIGNED BY: J. G. WELLS/CLB REVIEWED BY: [Name]  
 SCALE: 0 30 1"=30'  
 SR 1565 (Molican Trail)  
 NC 132 (S. College Road)  
 at

**OASIS 2070 TIMING CHART**

FEATURE	PHASE	
	2	7
Min Green 1 *	12	5
Extension 1 *	6.0	2.0
Max Green 1 *	90	40
Yellow Clearance	4.5	3.0
Red Clearance	1.4	2.6
Walk 1 *	-	-
Don't Walk 1	-	-
Seconds Per Actuation *	11.5	-
Max Variable Interval *	34	-
Time Before Red-Out *	15	-
Time To Red-Out *	45	-
Minimum Gap	3.0	-
Recall Mode	MIN RECALL	-
Vehicle Call Memory	YELLOW	-
Dual Entry	-	-
Simultaneous Gap	ON	ON

\* These values may be field adjusted. Do not reduce 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.



**Coordination Plan # 32**

Cycle length (0-999 sec)	152
Min Transition Cycle (0-999 sec)	0
Max Transition Cycle (0-999 sec)	180

**Offset # or Ring:**

Offsets (0-999 sec)	1	2	3	4
Act Coord Phase Min Green (0-255)	0	0	97	0

**Splits (0-255 sec)**

Phase	1	2	3	4	5	6	7	8
Split	0	122	0	0	0	0	30	0
Phase	9	10	11	12	13	14	15	16
Split	0	0	0	0	0	0	0	0

Verify Plan Data

**Phase/Function Settings:**

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Coordinated Phase		2														
Float Force Offs																
Hold to Force Off																
Hi Priority Ped																
Dynamic/Backup																

**Options:**

Split/Timing in percent?	(Y/N)
*Permissive Mode (0-4)	N
Enable Transition Permissive Mode?	1
Adjust Non-Coordinated Splits?	N
Cycle Once per Cycle Length?	Y
	Y

\*0 = Auto  
 1 = Open  
 2 = Manual  
 3 = Window  
 4 = Walk

**Active Pages:**

Phase Sequence Page (1-12)	1
Phase Timing Page (1-4)	1
Phase Control Page (1-4)	1
OverLap Control Page (1-4)	1
Input Page (1-4)	1
Output Page (1-4)	1

**Global Manual Permissive windows:**

*Applies when "Window" permissive is selected	
Manual Perm 1 End Point (0-255 sec)	0
Manual Perm 2 Start Point (0-255 sec)	0
Manual Perm 2 End Point (0-255 sec)	0

**Manual Permissives by Phase:**

\*Applies when "Manual" permissive is selected

(0-255 sec)	Vehicle		Pedestrian	
	Start	Stop	Start	Stop
Phase 1	0	0	0	0
Phase 2	0	0	0	0
Phase 3	0	0	0	0
Phase 4	0	0	0	0
Phase 5	0	0	0	0
Phase 6	0	0	0	0
Phase 7	0	0	0	0
Phase 8	0	0	0	0
Phase 9	0	0	0	0
Phase 10	0	0	0	0
Phase 11	0	0	0	0
Phase 12	0	0	0	0
Phase 13	0	0	0	0
Phase 14	0	0	0	0
Phase 15	0	0	0	0
Phase 16	0	0	0	0





**Coordination Plan # 13**

Cycle length (0-999 sec)	152
Min Transition Cycle (0-999 sec)	0
Max Transition Cycle (0-999 sec)	999

**Offset # or Ring:**

Offsets (0-999 sec)	1	2	3	4
Act Coord Phase Min Green (0-255)	0	50	0	0
	0	0	0	0

**Splits (0-255 sec)**

Phase	1	2	3	4	5	6	7	8
Split	15	109	14	14	19	105	0	0
Phase	9	10	11	12	13	14	15	16
Split	0	0	0	0	0	0	0	0

Verify Plan Data

**Phase/Function Settings:**

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Coordinated Phase						2										
Float Force Offs																
Hold to Force Off																
Hi Priority Ped																
Dynamic/Backup																

**Options:**

Split/Timing in percent?	(Y/N)	N
*Permissive Mode (0-4)		0 = Auto
Enable Transition Permissive Mode?		1 = Open
Adjust Non-Coordinated Splits?		Y
Cycle Once per Cycle Length?		Y

**Active Pages:**

Phase Sequence Page (1-12)	2
Phase Timing Page (1-4)	1
Phase Control Page (1-4)	1
Overlap Control Page (1-4)	1
Input Page (1-4)	1
Output Page (1-4)	1

**Global Manual Permissive windows:**

*Applies when "Window" permissive is selected	
Manual Perm 1 End Point (0-255 sec)	0
Manual Perm 2 Start Point (0-255 sec)	0
Manual Perm 2 End Point (0-255 sec)	0

**Manual Permissives by Phase:**

\*Applies when "Manual" permissive is selected

(0-255 sec)	Vehicle		Pedestrian	
	Start	Stop	Start	Stop
Phase 1	0	0	0	0
Phase 2	0	0	0	0
Phase 3	0	0	0	0
Phase 4	0	0	0	0
Phase 5	0	0	0	0
Phase 6	0	0	0	0
Phase 7	0	0	0	0
Phase 8	0	0	0	0
Phase 9	0	0	0	0
Phase 10	0	0	0	0
Phase 11	0	0	0	0
Phase 12	0	0	0	0
Phase 13	0	0	0	0
Phase 14	0	0	0	0
Phase 15	0	0	0	0
Phase 16	0	0	0	0

LAG  $\phi$ 1

Rings	Barrier 1		Barrier 2		Barrier 3		Barrier 4	
1	0	2	3	4	0	0	0	0
2	5	6	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0

Rings	Barrier 5		Barrier 6		Barrier 7		Barrier 8	
1	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0

Phase Directions

1	<input type="text"/>	5	<input type="text"/>	9	<input type="text"/>	13	<input type="text"/>
2	<input type="text"/>	6	<input type="text"/>	10	<input type="text"/>	14	<input type="text"/>
3	<input type="text"/>	7	<input type="text"/>	11	<input type="text"/>	15	<input type="text"/>
4	<input type="text"/>	8	<input type="text"/>	12	<input type="text"/>	16	<input type="text"/>

**Coordination Plan # 32**

Cycle length (0-999 sec)	152
Min Transition Cycle (0-999 sec)	0
Max Transition Cycle (0-999 sec)	180

**Offset # or Ring:**

Offsets (0-999 sec)	1	2	3	4
Act Coord Phase Min Green (0-255)	0	0	84	0
	0	0	0	0

**Splits (0-255 sec)**

Phase	1	2	3	4	5	6	7	8
Split	15	97	15	25	25	87	0	0
Phase	9	10	11	12	13	14	15	16
Split	0	0	0	0	0	0	0	0

Verify Plan Data

**Phase/Function Settings:**

Coordinated Phase	2
Float Force Offs	6
Hold to Force Off	
Hi Priority Ped	
Dynamic/Backup	

**Options:**

Split/Timing in percent?	(Y/N)	N
*Permissive Mode (0-4)		0 = Auto
Enable Transition Permissive Mode?		1 = Open
Adjust Non-Coordinated Splits?		2 = Manual
Cycle Once per Cycle Length?		3 = Window
		4 = Walk

**Active Pages:**

Phase Sequence Page (1-12)	2
Phase Timing Page (1-4)	1
Phase Control Page (1-4)	1
OverLap Control Page (1-4)	1
Input Page (1-4)	1
Output Page (1-4)	1

**Global Manual Permissive windows:**

*Applies when "Window" permissive is selected	
Manual Perm 1 End Point (0-255 sec)	0
Manual Perm 2 Start Point (0-255 sec)	0
Manual Perm 2 End Point (0-255 sec)	0

**Manual Permissives by Phase:**

*Applies when "Manual" permissive is selected								
(0-255 sec)								
Phase 1	Start	Stop	Vehicle	Start	Stop	Pedestrian	Start	Stop
Phase 2	0	0	0	0	0	0	0	0
Phase 3	0	0	0	0	0	0	0	0
Phase 4	0	0	0	0	0	0	0	0
Phase 5	0	0	0	0	0	0	0	0
Phase 6	0	0	0	0	0	0	0	0
Phase 7	0	0	0	0	0	0	0	0
Phase 8	0	0	0	0	0	0	0	0
Phase 9	0	0	0	0	0	0	0	0
Phase 10	0	0	0	0	0	0	0	0
Phase 11	0	0	0	0	0	0	0	0
Phase 12	0	0	0	0	0	0	0	0
Phase 13	0	0	0	0	0	0	0	0
Phase 14	0	0	0	0	0	0	0	0
Phase 15	0	0	0	0	0	0	0	0
Phase 16	0	0	0	0	0	0	0	0

## Nate Bouquin

---

**From:** Denys Vielkanowitz <Denys.Vielkanowitz@wilmingtonnc.gov>  
**Sent:** Friday, April 12, 2019 4:39 PM  
**To:** Nate Bouquin; rkimbrow@ncdot.gov  
**Subject:** RE: Signal Plan + Timing Request  
**Attachments:** 030397-20150211g-por2.tif; 030726-20111121g-por2.jpg; 0397 coord.pdf; 0726 coord.pdf

Attached

For clarification, Mohican does run Free Run in the PM Peak.

Denys Vielkanowitz, P.E.  
Signal Systems Management Engineer  
City of Wilmington  
910-341-4676 (w)  
910-342-2748 (f)  
wilmingtonnc.gov

Mailing Address:  
P.O. Box 1810  
Wilmington, NC 28402

Shipping Address:  
265 Operation Center Dr  
Wilmington, NC 28412

**From:** Nate Bouquin [mailto:nbouquin@rameykemp.com]  
**Sent:** Friday, April 12, 2019 4:00 PM  
**To:** Denys Vielkanowitz <Denys.Vielkanowitz@wilmingtonnc.gov>; rkimbrow@ncdot.gov  
**Subject:** Signal Plan + Timing Request

Good Afternoon,

Could you provide the signal plans and timings for the following intersections in Wilmington for us to include in the Whiskey Branch TIA? We are interested in the weekday PM (4 – 6 PM) and Saturday (11 AM - 1 PM) peak hours.

- S. College Boulevard and Mohican Trail (03-0397)
- S. College Boulevard and Pinecliff Drive (03-0726)

Thanks for your help. Have a great weekend!

Nate Bouquin, EI  
Transportation Associate



# **APPENDIX D**

**CAPACITY ANALYSIS CALCULATIONS**

**S. COLLEGE STREET**

**&**

**CAPE FEAR ACADEMY / PINECLIFF DRIVE**

Lanes, Volumes, Timings

Existing (2019) PM

1: South College Road & Cape Fear Academy/Pine Cliff Drive

04/26/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Traffic Volume (vph)	25	4	6	8	4	3	80	5	1280	6	17	5
Future Volume (vph)	25	4	6	8	4	3	80	5	1280	6	17	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			1%				0%			
Storage Length (ft)	100		0	0		0		475		225		200
Storage Lanes	1		1	0		0		1		1		1
Taper Length (ft)	100			100				100				100
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Frt			0.850		0.975					0.850		
Flt Protected	0.950	0.964			0.973			0.950				0.950
Satd. Flow (prot)	1690	1714	1591	0	1758	0	0	1770	3539	1583	0	1770
Flt Permitted	0.950	0.964			0.973			0.950				0.950
Satd. Flow (perm)	1690	1714	1591	0	1758	0	0	1770	3539	1583	0	1770
Right Turn on Red			No			No				No		
Satd. Flow (RTOR)												
Link Speed (mph)		25			25				45			
Link Distance (ft)		243			1197				2801			
Travel Time (s)		6.6			32.6				42.4			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	28	4	7	9	4	3	89	6	1422	7	19	6
Shared Lane Traffic (%)	43%											
Lane Group Flow (vph)	16	16	7	0	16	0	0	95	1422	7	0	25
Turn Type	Split	NA	pm+ov	Split	NA		Prot	Prot	NA	pm+ov	Prot	Prot
Protected Phases	4	4	5!	3	3		5!	5	2	3	1	1
Permitted Phases			4							2		
Detector Phase	4	4	5	3	3		5	5	2	3	1	1
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	12.0	5.0	5.0	5.0
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0		12.0	12.0	19.0	12.0	12.0	12.0
Total Split (s)	14.0	14.0	19.0	14.0	14.0		19.0	19.0	109.0	14.0	15.0	15.0
Total Split (%)	9.2%	9.2%	12.5%	9.2%	9.2%		12.5%	12.5%	71.7%	9.2%	9.9%	9.9%
Maximum Green (s)	7.6	7.6	13.1	7.7	7.7		13.1	13.1	103.1	7.7	9.2	9.2
Yellow Time (s)	3.2	3.2	3.0	3.1	3.1		3.0	3.0	4.5	3.1	3.0	3.0
All-Red Time (s)	3.2	3.2	2.9	3.2	3.2		2.9	2.9	1.4	3.2	2.8	2.8
Lost Time Adjust (s)	-1.4	-1.4	-0.9		-1.3				-0.9	-0.9	-1.3	-0.8
Total Lost Time (s)	5.0	5.0	5.0		5.0				5.0	5.0		5.0
Lead/Lag	Lag	Lag	Lead	Lead	Lead		Lead	Lead	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	6.0	2.0	2.0	2.0
Minimum Gap (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	3.0	2.0	2.0	2.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	15.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	45.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	None		None	None	C-Max	None	None	None
Act Effct Green (s)	7.5	7.5	20.4		7.3				12.5	124.3	129.1	8.4
Actuated g/C Ratio	0.05	0.05	0.13		0.05				0.08	0.82	0.85	0.06
v/c Ratio	0.19	0.19	0.03		0.19				0.66	0.49	0.01	0.26
Control Delay	74.3	74.1	51.5		74.1				88.3	8.7	2.5	74.5
Queue Delay	0.0	0.0	0.0		0.0				0.0	0.0	0.0	0.0

Lanes, Volumes, Timings

Existing (2019) PM

1: South College Road & Cape Fear Academy/Pine Cliff Drive

04/26/2019

	↓	↙
Lane Group	SBT	SBR
Lane Configurations	↑↑	↗
Traffic Volume (vph)	2283	13
Future Volume (vph)	2283	13
Ideal Flow (vphpl)	1900	1900
Grade (%)	0%	
Storage Length (ft)		400
Storage Lanes		1
Taper Length (ft)		
Lane Util. Factor	0.95	1.00
Frt		0.850
Flt Protected		
Satd. Flow (prot)	3539	1583
Flt Permitted		
Satd. Flow (perm)	3539	1583
Right Turn on Red		No
Satd. Flow (RTOR)		
Link Speed (mph)	45	
Link Distance (ft)	1993	
Travel Time (s)	30.2	
Peak Hour Factor	0.90	0.90
Adj. Flow (vph)	2537	14
Shared Lane Traffic (%)		
Lane Group Flow (vph)	2537	14
Turn Type	NA	pm+ov
Protected Phases	6	4
Permitted Phases		6
Detector Phase	6	4
Switch Phase		
Minimum Initial (s)	12.0	5.0
Minimum Split (s)	19.0	12.0
Total Split (s)	105.0	14.0
Total Split (%)	69.1%	9.2%
Maximum Green (s)	99.1	7.6
Yellow Time (s)	4.5	3.2
All-Red Time (s)	1.4	3.2
Lost Time Adjust (s)	-0.9	-1.4
Total Lost Time (s)	5.0	5.0
Lead/Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes
Vehicle Extension (s)	6.0	2.0
Minimum Gap (s)	3.0	2.0
Time Before Reduce (s)	15.0	0.0
Time To Reduce (s)	45.0	0.0
Recall Mode	C-Max	None
Act Effct Green (s)	113.8	123.3
Actuated g/C Ratio	0.75	0.81
v/c Ratio	0.96	0.01
Control Delay	30.1	3.0
Queue Delay	0.0	0.0

Lanes, Volumes, Timings

Existing (2019) PM

1: South College Road & Cape Fear Academy/Pine Cliff Drive

04/26/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Total Delay	74.3	74.1	51.5		74.1			88.3	8.7	2.5		74.5
LOS	E	E	D		E			F	A	A		E
Approach Delay		70.1			74.1				13.6			
Approach LOS		E			E				B			
Queue Length 50th (ft)	16	16	6		16			92	334	1		24
Queue Length 95th (ft)	44	44	21		42			157	424	2		58
Internal Link Dist (ft)		163			1117				2721			
Turn Bay Length (ft)	100							475		225		200
Base Capacity (vph)	100	101	232		104			166	2893	1350		116
Starvation Cap Reductn	0	0	0		0			0	0	0		0
Spillback Cap Reductn	0	0	0		0			0	0	0		0
Storage Cap Reductn	0	0	0		0			0	0	0		0
Reduced v/c Ratio	0.16	0.16	0.03		0.15			0.57	0.49	0.01		0.22

Intersection Summary

Area Type: Other  
 Cycle Length: 152  
 Actuated Cycle Length: 152  
 Offset: 50 (33%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 140  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.96  
 Intersection Signal Delay: 24.8  
 Intersection Capacity Utilization 91.5%  
 Analysis Period (min) 15  
 ~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 ! Phase conflict between lane groups.

Splits and Phases: 1: South College Road & Cape Fear Academy/Pine Cliff Drive



	↓	↙
Lane Group	SBT	SBR
Total Delay	30.1	3.0
LOS	C	A
Approach Delay	30.4	
Approach LOS	C	
Queue Length 50th (ft)	~1432	2
Queue Length 95th (ft)	#1603	5
Internal Link Dist (ft)	1913	
Turn Bay Length (ft)		400
Base Capacity (vph)	2649	1299
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.96	0.01
Intersection Summary		

Lanes, Volumes, Timings

Existing (2019) Saturday

1: South College Road & Cape Fear Academy/Pine Cliff Drive

04/26/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Traffic Volume (vph)	4	4	4	15	2	3	90	4	1590	7	14	8
Future Volume (vph)	4	4	4	15	2	3	90	4	1590	7	14	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			1%				0%			
Storage Length (ft)	100		0	0		0		475		225		200
Storage Lanes	1		1	0		0		1		1		1
Taper Length (ft)	100			100				100				100
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Frt			0.850		0.982					0.850		
Flt Protected	0.950				0.963			0.950				0.950
Satd. Flow (prot)	1681	1770	1583	0	1753	0	0	1770	3539	1583	0	1770
Flt Permitted	0.950				0.963			0.950				0.950
Satd. Flow (perm)	1681	1770	1583	0	1753	0	0	1770	3539	1583	0	1770
Right Turn on Red			No			No				No		
Satd. Flow (RTOR)												
Link Speed (mph)		25			25				45			
Link Distance (ft)		243			1197				2801			
Travel Time (s)		6.6			32.6				42.4			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	4	4	4	17	2	3	100	4	1767	8	16	9
Shared Lane Traffic (%)	10%											
Lane Group Flow (vph)	4	4	4	0	22	0	0	104	1767	8	0	25
Turn Type	Split	NA	pm+ov	Split	NA		Prot	Prot	NA	pm+ov	Prot	Prot
Protected Phases	4	4	5!	3	3		5!	5	2	3	1	1
Permitted Phases			4							2		
Detector Phase	4	4	5	3	3		5	5	2	3	1	1
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	12.0	5.0	5.0	5.0
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0		12.0	12.0	19.0	12.0	12.0	12.0
Total Split (s)	25.0	25.0	25.0	15.0	15.0		25.0	25.0	97.0	15.0	15.0	15.0
Total Split (%)	16.4%	16.4%	16.4%	9.9%	9.9%		16.4%	16.4%	63.8%	9.9%	9.9%	9.9%
Maximum Green (s)	18.6	18.6	19.1	8.7	8.7		19.1	19.1	91.1	8.7	9.2	9.2
Yellow Time (s)	3.2	3.2	3.0	3.1	3.1		3.0	3.0	4.5	3.1	3.0	3.0
All-Red Time (s)	3.2	3.2	2.9	3.2	3.2		2.9	2.9	1.4	3.2	2.8	2.8
Lost Time Adjust (s)	-1.4	-1.4	-0.9		-1.3			-0.9	-0.9	-1.3		-0.8
Total Lost Time (s)	5.0	5.0	5.0		5.0			5.0	5.0	5.0		5.0
Lead/Lag	Lag	Lag	Lead	Lead	Lead		Lead	Lead	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	6.0	2.0	2.0	2.0
Minimum Gap (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	3.0	2.0	2.0	2.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	15.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	45.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	None		None	None	C-Max	None	None	None
Act Effct Green (s)	6.6	6.6	19.0		7.8			14.2	126.9	133.2		8.4
Actuated g/C Ratio	0.04	0.04	0.12		0.05			0.09	0.83	0.88		0.06
v/c Ratio	0.05	0.05	0.02		0.24			0.63	0.60	0.01		0.26
Control Delay	71.0	71.0	51.0		75.2			72.9	11.3	2.0		74.5
Queue Delay	0.0	0.0	0.0		0.0			0.0	0.0	0.0		0.0

Lanes, Volumes, Timings

Existing (2019) Saturday

1: South College Road & Cape Fear Academy/Pine Cliff Drive

04/26/2019

	↓	↙
Lane Group	SBT	SBR
Lane Configurations	↑↑	↑
Traffic Volume (vph)	1934	3
Future Volume (vph)	1934	3
Ideal Flow (vphpl)	1900	1900
Grade (%)	0%	
Storage Length (ft)		400
Storage Lanes		1
Taper Length (ft)		
Lane Util. Factor	0.95	1.00
Frt		0.850
Flt Protected		
Satd. Flow (prot)	3539	1583
Flt Permitted		
Satd. Flow (perm)	3539	1583
Right Turn on Red		No
Satd. Flow (RTOR)		
Link Speed (mph)	45	
Link Distance (ft)	1993	
Travel Time (s)	30.2	
Peak Hour Factor	0.90	0.90
Adj. Flow (vph)	2149	3
Shared Lane Traffic (%)		
Lane Group Flow (vph)	2149	3
Turn Type	NA	pm+ov
Protected Phases	6	4
Permitted Phases		6
Detector Phase	6	4
Switch Phase		
Minimum Initial (s)	12.0	5.0
Minimum Split (s)	19.0	12.0
Total Split (s)	87.0	25.0
Total Split (%)	57.2%	16.4%
Maximum Green (s)	81.1	18.6
Yellow Time (s)	4.5	3.2
All-Red Time (s)	1.4	3.2
Lost Time Adjust (s)	-0.9	-1.4
Total Lost Time (s)	5.0	5.0
Lead/Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes
Vehicle Extension (s)	6.0	2.0
Minimum Gap (s)	3.0	2.0
Time Before Reduce (s)	15.0	0.0
Time To Reduce (s)	45.0	0.0
Recall Mode	C-Max	None
Act Effct Green (s)	114.8	123.4
Actuated g/C Ratio	0.76	0.81
v/c Ratio	0.80	0.00
Control Delay	18.4	3.7
Queue Delay	0.0	0.0

Lanes, Volumes, Timings

Existing (2019) Saturday

1: South College Road & Cape Fear Academy/Pine Cliff Drive

04/26/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Total Delay	71.0	71.0	51.0		75.2			72.9	11.3	2.0		74.5
LOS	E	E	D		E			E	B	A		E
Approach Delay		64.3			75.2				14.7			
Approach LOS		E			E				B			
Queue Length 50th (ft)	4	4	4		21			98	491	1		24
Queue Length 95th (ft)	18	18	14		53			153	789	m2		58
Internal Link Dist (ft)		163			1117				2721			
Turn Bay Length (ft)	100							475		225		200
Base Capacity (vph)	221	232	258		115			232	2955	1384		116
Starvation Cap Reductn	0	0	0		0			0	0	0		0
Spillback Cap Reductn	0	0	0		0			0	0	0		0
Storage Cap Reductn	0	0	0		0			0	0	0		0
Reduced v/c Ratio	0.02	0.02	0.02		0.19			0.45	0.60	0.01		0.22

Intersection Summary

Area Type: Other

Cycle Length: 152

Actuated Cycle Length: 152

Offset: 84 (55%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 17.5

Intersection LOS: B

Intersection Capacity Utilization 83.7%

ICU Level of Service E

Analysis Period (min) 15

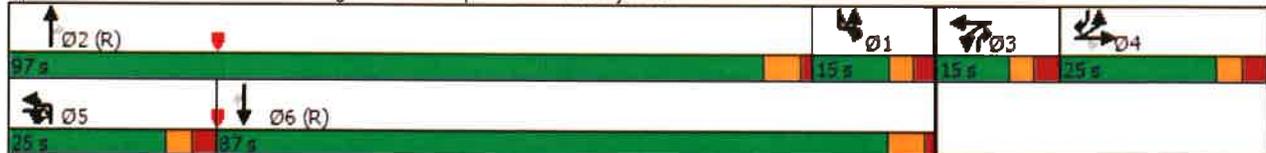
# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

! Phase conflict between lane groups.

Splits and Phases: 1: South College Road & Cape Fear Academy/Pine Cliff Drive



Lanes, Volumes, Timings  
 1: South College Road & Cape Fear Academy/Pine Cliff Drive

Existing (2019) Saturday  
 04/26/2019

	↓	↙
Lane Group	SBT	SBR
Total Delay	18.4	3.7
LOS	B	A
Approach Delay	19.0	
Approach LOS	B	
Queue Length 50th (ft)	616	0
Queue Length 95th (ft)	#1256	3
Internal Link Dist (ft)	1913	
Turn Bay Length (ft)		400
Base Capacity (vph)	2671	1403
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.80	0.00
Intersection Summary		

Lanes, Volumes, Timings

Background (2021) PM

1: South College Road & Cape Fear Academy/Pine Cliff Drive

04/26/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Traffic Volume (vph)	26	4	6	8	4	3	82	5	1305	6	17	5
Future Volume (vph)	26	4	6	8	4	3	82	5	1305	6	17	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			1%				0%			
Storage Length (ft)	100		0	0		0		475		225		200
Storage Lanes	1		1	0		0		1		1		1
Taper Length (ft)	100			100				100				100
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Frt			0.850		0.975					0.850		
Flt Protected	0.950	0.964			0.973			0.950				0.950
Satd. Flow (prot)	1690	1714	1591	0	1758	0	0	1770	3539	1583	0	1770
Flt Permitted	0.950	0.964			0.973			0.950				0.950
Satd. Flow (perm)	1690	1714	1591	0	1758	0	0	1770	3539	1583	0	1770
Right Turn on Red			No			No				No		
Satd. Flow (RTOR)												
Link Speed (mph)		25			25				45			
Link Distance (ft)		243			1197				2801			
Travel Time (s)		6.6			32.6				42.4			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	29	4	7	9	4	3	91	6	1450	7	19	6
Shared Lane Traffic (%)	43%											
Lane Group Flow (vph)	17	16	7	0	16	0	0	97	1450	7	0	25
Turn Type	Split	NA	pm+ov	Split	NA		Prot	Prot	NA	pm+ov	Prot	Prot
Protected Phases	4	4	5!	3	3		5!	5	2	3	1	1
Permitted Phases			4							2		
Detector Phase	4	4	5	3	3		5	5	2	3	1	1
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	12.0	5.0	5.0	5.0
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0		12.0	12.0	19.0	12.0	12.0	12.0
Total Split (s)	14.0	14.0	19.0	14.0	14.0		19.0	19.0	109.0	14.0	15.0	15.0
Total Split (%)	9.2%	9.2%	12.5%	9.2%	9.2%		12.5%	12.5%	71.7%	9.2%	9.9%	9.9%
Maximum Green (s)	7.6	7.6	13.1	7.7	7.7		13.1	13.1	103.1	7.7	9.2	9.2
Yellow Time (s)	3.2	3.2	3.0	3.1	3.1		3.0	3.0	4.5	3.1	3.0	3.0
All-Red Time (s)	3.2	3.2	2.9	3.2	3.2		2.9	2.9	1.4	3.2	2.8	2.8
Lost Time Adjust (s)	-1.4	-1.4	-0.9		-1.3			-0.9	-0.9	-1.3		-0.8
Total Lost Time (s)	5.0	5.0	5.0		5.0			5.0	5.0	5.0		5.0
Lead/Lag	Lag	Lag	Lead	Lead	Lead		Lead	Lead	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	6.0	2.0	2.0	2.0
Minimum Gap (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	3.0	2.0	2.0	2.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	15.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	45.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	None		None	None	C-Max	None	None	None
Act Effct Green (s)	7.5	7.5	20.6		7.3			12.6	124.2	129.1		8.4
Actuated g/C Ratio	0.05	0.05	0.14		0.05			0.08	0.82	0.85		0.06
v/c Ratio	0.20	0.19	0.03		0.19			0.66	0.50	0.01		0.26
Control Delay	74.7	74.0	51.3		74.1			88.5	8.9	2.5		74.5
Queue Delay	0.0	0.0	0.0		0.0			0.0	0.0	0.0		0.0

Lanes, Volumes, Timings

Background (2021) PM

1: South College Road & Cape Fear Academy/Pine Cliff Drive

04/26/2019

	↓	↙
Lane Group	SBT	SBR
Lane Configurations	↑↑	↗
Traffic Volume (vph)	2328	13
Future Volume (vph)	2328	13
Ideal Flow (vphpl)	1900	1900
Grade (%)	0%	
Storage Length (ft)		400
Storage Lanes		1
Taper Length (ft)		
Lane Util. Factor	0.95	1.00
Frt		0.850
Flt Protected		
Satd. Flow (prot)	3539	1583
Flt Permitted		
Satd. Flow (perm)	3539	1583
Right Turn on Red		No
Satd. Flow (RTOR)		
Link Speed (mph)	45	
Link Distance (ft)	1993	
Travel Time (s)	30.2	
Peak Hour Factor	0.90	0.90
Adj. Flow (vph)	2587	14
Shared Lane Traffic (%)		
Lane Group Flow (vph)	2587	14
Turn Type	NA	pm+ov
Protected Phases	6	4
Permitted Phases		6
Detector Phase	6	4
Switch Phase		
Minimum Initial (s)	12.0	5.0
Minimum Split (s)	19.0	12.0
Total Split (s)	105.0	14.0
Total Split (%)	69.1%	9.2%
Maximum Green (s)	99.1	7.6
Yellow Time (s)	4.5	3.2
All-Red Time (s)	1.4	3.2
Lost Time Adjust (s)	-0.9	-1.4
Total Lost Time (s)	5.0	5.0
Lead/Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes
Vehicle Extension (s)	6.0	2.0
Minimum Gap (s)	3.0	2.0
Time Before Reduce (s)	15.0	0.0
Time To Reduce (s)	45.0	0.0
Recall Mode	C-Max	None
Act Effct Green (s)	113.6	123.1
Actuated g/C Ratio	0.75	0.81
v/c Ratio	0.98	0.01
Control Delay	33.7	3.0
Queue Delay	0.0	0.0

Lanes, Volumes, Timings

Background (2021) PM

1: South College Road & Cape Fear Academy/Pine Cliff Drive

04/26/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Total Delay	74.7	74.0	51.3		74.1			88.5	8.9	2.5		74.5
LOS	E	E	D		E			F	A	A		E
Approach Delay		70.3			74.1				13.8			
Approach LOS		E			E				B			
Queue Length 50th (ft)	17	16	6		16			94	345	1		24
Queue Length 95th (ft)	46	44	21		42			159	438	2		58
Internal Link Dist (ft)		163			1117				2721			
Turn Bay Length (ft)	100							475		225		200
Base Capacity (vph)	100	101	233		104			167	2892	1350		116
Starvation Cap Reductn	0	0	0		0			0	0	0		0
Spillback Cap Reductn	0	0	0		0			0	0	0		0
Storage Cap Reductn	0	0	0		0			0	0	0		0
Reduced v/c Ratio	0.17	0.16	0.03		0.15			0.58	0.50	0.01		0.22

Intersection Summary

Area Type: Other

Cycle Length: 152

Actuated Cycle Length: 152

Offset: 50 (33%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.98

Intersection Signal Delay: 27.0

Intersection LOS: C

Intersection Capacity Utilization 93.1%

ICU Level of Service F

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

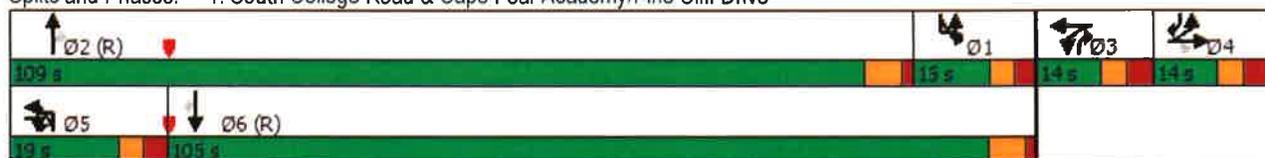
Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

! Phase conflict between lane groups.

Splits and Phases: 1: South College Road & Cape Fear Academy/Pine Cliff Drive



Lanes, Volumes, Timings  
 1: South College Road & Cape Fear Academy/Pine Cliff Drive

Background (2021) PM  
 04/26/2019

	↓	↙
Lane Group	SBT	SBR
Total Delay	33.7	3.0
LOS	C	A
Approach Delay	33.9	
Approach LOS	C	
Queue Length 50th (ft)	~1490	2
Queue Length 95th (ft)	#1656	5
Internal Link Dist (ft)	1913	
Turn Bay Length (ft)		400
Base Capacity (vph)	2645	1297
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.98	0.01
Intersection Summary		

Lanes, Volumes, Timings

Background (2021) Saturday

1: South College Road & Cape Fear Academy/Pine Cliff Drive

04/26/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Traffic Volume (vph)	4	4	4	15	2	3	92	4	1621	7	14	8
Future Volume (vph)	4	4	4	15	2	3	92	4	1621	7	14	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			1%				0%			
Storage Length (ft)	100		0	0		0		475		225		200
Storage Lanes	1		1	0		0		1		1		1
Taper Length (ft)	100			100				100				100
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Flt Protected	0.950				0.963			0.950				0.950
Satd. Flow (prot)	1681	1770	1583	0	1753	0	0	1770	3539	1583	0	1770
Flt Permitted	0.950				0.963			0.950				0.950
Satd. Flow (perm)	1681	1770	1583	0	1753	0	0	1770	3539	1583	0	1770
Right Turn on Red			No			No				No		
Satd. Flow (RTOR)												
Link Speed (mph)		25			25				45			
Link Distance (ft)		243			1197				2801			
Travel Time (s)		6.6			32.6				42.4			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	4	4	4	17	2	3	102	4	1801	8	16	9
Shared Lane Traffic (%)	10%											
Lane Group Flow (vph)	4	4	4	0	22	0	0	106	1801	8	0	25
Turn Type	Split	NA	pm+ov	Split	NA		Prot	Prot	NA	pm+ov	Prot	Prot
Protected Phases	4	4	5!	3	3		5!	5	2	3	1	1
Permitted Phases			4							2		
Detector Phase	4	4	5	3	3		5	5	2	3	1	1
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	12.0	5.0	5.0	5.0
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0		12.0	12.0	19.0	12.0	12.0	12.0
Total Split (s)	25.0	25.0	25.0	15.0	15.0		25.0	25.0	97.0	15.0	15.0	15.0
Total Split (%)	16.4%	16.4%	16.4%	9.9%	9.9%		16.4%	16.4%	63.8%	9.9%	9.9%	9.9%
Maximum Green (s)	18.6	18.6	19.1	8.7	8.7		19.1	19.1	91.1	8.7	9.2	9.2
Yellow Time (s)	3.2	3.2	3.0	3.1	3.1		3.0	3.0	4.5	3.1	3.0	3.0
All-Red Time (s)	3.2	3.2	2.9	3.2	3.2		2.9	2.9	1.4	3.2	2.8	2.8
Lost Time Adjust (s)	-1.4	-1.4	-0.9		-1.3				-0.9	-0.9	-1.3	-0.8
Total Lost Time (s)	5.0	5.0	5.0		5.0				5.0	5.0		5.0
Lead/Lag	Lag	Lag	Lead	Lead	Lead		Lead	Lead	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	6.0	2.0	2.0	2.0
Minimum Gap (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	3.0	2.0	2.0	2.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	15.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	45.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	None		None	None	C-Max	None	None	None
Act Effct Green (s)	6.6	6.6	19.2		7.8			14.4	126.9	133.2		8.4
Actuated g/C Ratio	0.04	0.04	0.13		0.05			0.09	0.83	0.88		0.06
v/c Ratio	0.05	0.05	0.02		0.24			0.63	0.61	0.01		0.26
Control Delay	71.0	71.0	51.0		75.2			73.4	11.7	2.1		74.5
Queue Delay	0.0	0.0	0.0		0.0			0.0	0.0	0.0		0.0

Lanes, Volumes, Timings  
 1: South College Road & Cape Fear Academy/Pine Cliff Drive

Background (2021) Saturday  
 04/26/2019

	↓	↙
Lane Group	SBT	SBR
Lane Configurations	↑↑	↑
Traffic Volume (vph)	1972	3
Future Volume (vph)	1972	3
Ideal Flow (vphpl)	1900	1900
Grade (%)	0%	
Storage Length (ft)		400
Storage Lanes		1
Taper Length (ft)		
Lane Util. Factor	0.95	1.00
Frnt		0.850
Flt Protected		
Satd. Flow (prot)	3539	1583
Flt Permitted		
Satd. Flow (perm)	3539	1583
Right Turn on Red		No
Satd. Flow (RTOR)		
Link Speed (mph)	45	
Link Distance (ft)	1993	
Travel Time (s)	30.2	
Peak Hour Factor	0.90	0.90
Adj. Flow (vph)	2191	3
Shared Lane Traffic (%)		
Lane Group Flow (vph)	2191	3
Turn Type	NA	pm+ov
Protected Phases	6	4
Permitted Phases		6
Detector Phase	6	4
Switch Phase		
Minimum Initial (s)	12.0	5.0
Minimum Split (s)	19.0	12.0
Total Split (s)	87.0	25.0
Total Split (%)	57.2%	16.4%
Maximum Green (s)	81.1	18.6
Yellow Time (s)	4.5	3.2
All-Red Time (s)	1.4	3.2
Lost Time Adjust (s)	-0.9	-1.4
Total Lost Time (s)	5.0	5.0
Lead/Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes
Vehicle Extension (s)	6.0	2.0
Minimum Gap (s)	3.0	2.0
Time Before Reduce (s)	15.0	0.0
Time To Reduce (s)	45.0	0.0
Recall Mode	C-Max	None
Act Effct Green (s)	114.6	123.2
Actuated g/C Ratio	0.75	0.81
v/c Ratio	0.82	0.00
Control Delay	19.2	3.7
Queue Delay	0.0	0.0

Lanes, Volumes, Timings

Background (2021) Saturday

1: South College Road & Cape Fear Academy/Pine Cliff Drive

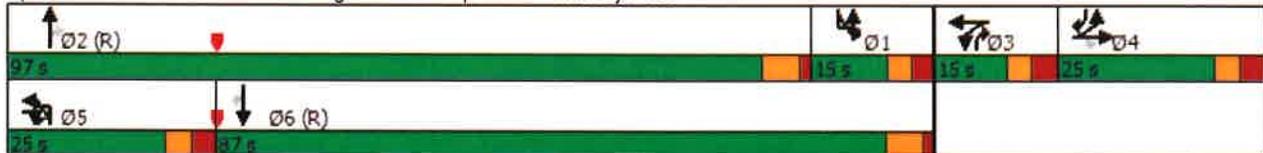
04/26/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Total Delay	71.0	71.0	51.0		75.2			73.4	11.7	2.1		74.5
LOS	E	E	D		E			E	B	A		E
Approach Delay		64.3			75.2				15.0			
Approach LOS		E			E				B			
Queue Length 50th (ft)	4	4	4		21			96	542	0		24
Queue Length 95th (ft)	18	18	14		53			m147	822	m2		58
Internal Link Dist (ft)		163			1117				2721			
Turn Bay Length (ft)	100							475		225		200
Base Capacity (vph)	221	232	258		115			232	2955	1384		116
Starvation Cap Reductn	0	0	0		0			0	0	0		0
Spillback Cap Reductn	0	0	0		0			0	0	0		0
Storage Cap Reductn	0	0	0		0			0	0	0		0
Reduced v/c Ratio	0.02	0.02	0.02		0.19			0.46	0.61	0.01		0.22

Intersection Summary

Area Type: Other  
 Cycle Length: 152  
 Actuated Cycle Length: 152  
 Offset: 84 (55%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 100  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.82  
 Intersection Signal Delay: 18.0  
 Intersection Capacity Utilization 84.8%  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.  
 ! Phase conflict between lane groups.

Splits and Phases: 1: South College Road & Cape Fear Academy/Pine Cliff Drive



	↓	↙
Lane Group	SBT	SBR
Total Delay	19.2	3.7
LOS	B	A
Approach Delay	19.8	
Approach LOS	B	
Queue Length 50th (ft)	652	0
Queue Length 95th (ft)	#1303	3
Internal Link Dist (ft)	1913	
Turn Bay Length (ft)		400
Base Capacity (vph)	2667	1402
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.82	0.00
Intersection Summary		

Lanes, Volumes, Timings

Combined (2021) PM - Phase 1B Alt 1

1: South College Road & Cape Fear Academy/Pine Cliff Drive

04/26/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Traffic Volume (vph)	26	4	6	8	4	3	82	5	1337	6	17	5
Future Volume (vph)	26	4	6	8	4	3	82	5	1337	6	17	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			1%				0%			
Storage Length (ft)	100		0	0		0		475		225		200
Storage Lanes	1		1	0		0		1		1		1
Taper Length (ft)	100			100				100				100
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Frts			0.850		0.975					0.850		
Flt Protected	0.950	0.964			0.973			0.950				0.950
Satd. Flow (prot)	1690	1714	1591	0	1758	0	0	1770	3539	1583	0	1770
Flt Permitted	0.950	0.964			0.973			0.950				0.950
Satd. Flow (perm)	1690	1714	1591	0	1758	0	0	1770	3539	1583	0	1770
Right Turn on Red			No			No				No		
Satd. Flow (RTOR)												
Link Speed (mph)		25			25				45			
Link Distance (ft)		243			1197				2801			
Travel Time (s)		6.6			32.6				42.4			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	29	4	7	9	4	3	91	6	1486	7	19	6
Shared Lane Traffic (%)	43%											
Lane Group Flow (vph)	17	16	7	0	16	0	0	97	1486	7	0	25
Turn Type	Split	NA	pm+ov	Split	NA		Prot	Prot	NA	pm+ov	Prot	Prot
Protected Phases	4	4	5!	3	3		5!	5	2	3	1	1
Permitted Phases			4							2		
Detector Phase	4	4	5	3	3		5	5	2	3	1	1
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	12.0	5.0	5.0	5.0
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0		12.0	12.0	19.0	12.0	12.0	12.0
Total Split (s)	14.0	14.0	19.0	14.0	14.0		19.0	19.0	109.0	14.0	15.0	15.0
Total Split (%)	9.2%	9.2%	12.5%	9.2%	9.2%		12.5%	12.5%	71.7%	9.2%	9.9%	9.9%
Maximum Green (s)	7.6	7.6	13.1	7.7	7.7		13.1	13.1	103.1	7.7	9.2	9.2
Yellow Time (s)	3.2	3.2	3.0	3.1	3.1		3.0	3.0	4.5	3.1	3.0	3.0
All-Red Time (s)	3.2	3.2	2.9	3.2	3.2		2.9	2.9	1.4	3.2	2.8	2.8
Lost Time Adjust (s)	-1.4	-1.4	-0.9		-1.3			-0.9	-0.9	-1.3		-0.8
Total Lost Time (s)	5.0	5.0	5.0		5.0			5.0	5.0	5.0		5.0
Lead/Lag	Lag	Lag	Lead	Lead	Lead		Lead	Lead	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	6.0	2.0	2.0	2.0
Minimum Gap (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	3.0	2.0	2.0	2.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	15.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	45.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	None		None	None	C-Max	None	None	None
Act Effct Green (s)	7.5	7.5	20.6		7.3			12.6	124.2	129.1		8.4
Actuated g/C Ratio	0.05	0.05	0.14		0.05			0.08	0.82	0.85		0.06
v/c Ratio	0.20	0.19	0.03		0.19			0.66	0.51	0.01		0.26
Control Delay	74.7	74.0	51.3		74.1			88.5	9.1	2.5		74.5
Queue Delay	0.0	0.0	0.0		0.0			0.0	0.0	0.0		0.0

Lanes, Volumes, Timings

Combined (2021) PM - Phase 1B Alt 1

1: South College Road & Cape Fear Academy/Pine Cliff Drive

04/26/2019

	↓	↙
Lane Group	SBT	SBR
Lane Configurations	↑↑	↑
Traffic Volume (vph)	2378	13
Future Volume (vph)	2378	13
Ideal Flow (vphpl)	1900	1900
Grade (%)	0%	
Storage Length (ft)		400
Storage Lanes		1
Taper Length (ft)		
Lane Util. Factor	0.95	1.00
Frt		0.850
Flt Protected		
Satd. Flow (prot)	3539	1583
Flt Permitted		
Satd. Flow (perm)	3539	1583
Right Turn on Red		No
Satd. Flow (RTOR)		
Link Speed (mph)	45	
Link Distance (ft)	1993	
Travel Time (s)	30.2	
Peak Hour Factor	0.90	0.90
Adj. Flow (vph)	2642	14
Shared Lane Traffic (%)		
Lane Group Flow (vph)	2642	14
Turn Type	NA	pm+ov
Protected Phases	6	4
Permitted Phases		6
Detector Phase	6	4
Switch Phase		
Minimum Initial (s)	12.0	5.0
Minimum Split (s)	19.0	12.0
Total Split (s)	105.0	14.0
Total Split (%)	69.1%	9.2%
Maximum Green (s)	99.1	7.6
Yellow Time (s)	4.5	3.2
All-Red Time (s)	1.4	3.2
Lost Time Adjust (s)	-0.9	-1.4
Total Lost Time (s)	5.0	5.0
Lead/Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes
Vehicle Extension (s)	6.0	2.0
Minimum Gap (s)	3.0	2.0
Time Before Reduce (s)	15.0	0.0
Time To Reduce (s)	45.0	0.0
Recall Mode	C-Max	None
Act Effct Green (s)	113.6	123.1
Actuated g/C Ratio	0.75	0.81
v/c Ratio	1.00	0.01
Control Delay	38.3	3.0
Queue Delay	0.0	0.0

Lanes, Volumes, Timings

Combined (2021) PM - Phase 1B Alt 1

1: South College Road & Cape Fear Academy/Pine Cliff Drive

04/26/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Total Delay	74.7	74.0	51.3		74.1			88.5	9.1	2.5		74.5
LOS	E	E	D		E			F	A	A		E
Approach Delay		70.3			74.1				13.9			
Approach LOS		E			E				B			
Queue Length 50th (ft)	17	16	6		16			94	361	1		24
Queue Length 95th (ft)	46	44	21		42			159	456	2		58
Internal Link Dist (ft)		163			1117				2721			
Turn Bay Length (ft)	100							475		225		200
Base Capacity (vph)	100	101	233		104			167	2892	1350		116
Starvation Cap Reductn	0	0	0		0			0	0	0		0
Spillback Cap Reductn	0	0	0		0			0	0	0		0
Storage Cap Reductn	0	0	0		0			0	0	0		0
Reduced v/c Ratio	0.17	0.16	0.03		0.15			0.58	0.51	0.01		0.22

Intersection Summary

Area Type: Other

Cycle Length: 152

Actuated Cycle Length: 152

Offset: 50 (33%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.00

Intersection Signal Delay: 29.9

Intersection LOS: C

Intersection Capacity Utilization 93.1%

ICU Level of Service F

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

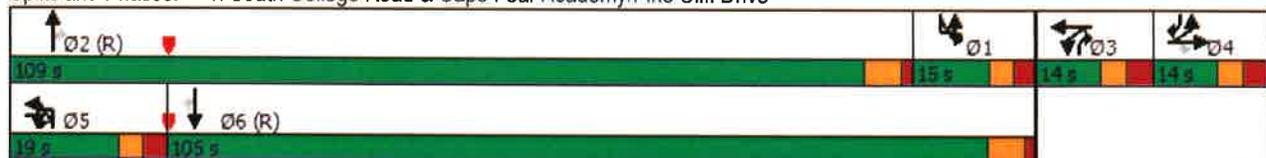
Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

! Phase conflict between lane groups.

Splits and Phases: 1: South College Road & Cape Fear Academy/Pine Cliff Drive



	↓	↙
Lane Group	SBT	SBR
Total Delay	38.3	3.0
LOS	D	A
Approach Delay	38.5	
Approach LOS	D	
Queue Length 50th (ft)	~1550	2
Queue Length 95th (ft)	#1714	5
Internal Link Dist (ft)	1913	
Turn Bay Length (ft)		400
Base Capacity (vph)	2645	1297
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	1.00	0.01
Intersection Summary		

Lanes, Volumes, Timings

Combined (2021) Saturday - Phase 1B Alt 1

1: South College Road & Cape Fear Academy/Pine Cliff Drive

04/26/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Traffic Volume (vph)	4	4	4	15	2	3	92	4	1657	7	14	8
Future Volume (vph)	4	4	4	15	2	3	92	4	1657	7	14	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			1%				0%			
Storage Length (ft)	100		0	0		0		475		225		200
Storage Lanes	1		1	0		0		1		1		1
Taper Length (ft)	100			100				100				100
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Fr			0.850		0.982					0.850		
Flt Protected	0.950				0.963			0.950				0.950
Satd. Flow (prot)	1681	1770	1583	0	1753	0	0	1770	3539	1583	0	1770
Flt Permitted	0.950				0.963			0.950				0.950
Satd. Flow (perm)	1681	1770	1583	0	1753	0	0	1770	3539	1583	0	1770
Right Turn on Red			No			No				No		
Satd. Flow (RTOR)												
Link Speed (mph)		25			25				45			
Link Distance (ft)		243			1197				2801			
Travel Time (s)		6.6			32.6				42.4			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	4	4	4	17	2	3	102	4	1841	8	16	9
Shared Lane Traffic (%)	10%											
Lane Group Flow (vph)	4	4	4	0	22	0	0	106	1841	8	0	25
Turn Type	Split	NA	pm+ov	Split	NA		Prot	Prot	NA	pm+ov	Prot	Prot
Protected Phases	4	4	5!	3	3		5!	5	2	3	1	1
Permitted Phases			4							2		
Detector Phase	4	4	5	3	3		5	5	2	3	1	1
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	12.0	5.0	5.0	5.0
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0		12.0	12.0	19.0	12.0	12.0	12.0
Total Split (s)	25.0	25.0	25.0	15.0	15.0		25.0	25.0	97.0	15.0	15.0	15.0
Total Split (%)	16.4%	16.4%	16.4%	9.9%	9.9%		16.4%	16.4%	63.8%	9.9%	9.9%	9.9%
Maximum Green (s)	18.6	18.6	19.1	8.7	8.7		19.1	19.1	91.1	8.7	9.2	9.2
Yellow Time (s)	3.2	3.2	3.0	3.1	3.1		3.0	3.0	4.5	3.1	3.0	3.0
All-Red Time (s)	3.2	3.2	2.9	3.2	3.2		2.9	2.9	1.4	3.2	2.8	2.8
Lost Time Adjust (s)	-1.4	-1.4	-0.9		-1.3			-0.9	-0.9	-1.3		-0.8
Total Lost Time (s)	5.0	5.0	5.0		5.0			5.0	5.0	5.0		5.0
Lead/Lag	Lag	Lag	Lead	Lead	Lead		Lead	Lead	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	6.0	2.0	2.0	2.0
Minimum Gap (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	3.0	2.0	2.0	2.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	15.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	45.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	None		None	None	C-Max	None	None	None
Act Effct Green (s)	6.6	6.6	19.2		7.8			14.4	126.9	133.2		8.4
Actuated g/C Ratio	0.04	0.04	0.13		0.05			0.09	0.83	0.88		0.06
v/c Ratio	0.05	0.05	0.02		0.24			0.63	0.62	0.01		0.26
Control Delay	71.0	71.0	51.0		75.2			75.4	11.6	2.1		74.5
Queue Delay	0.0	0.0	0.0		0.0			0.0	0.0	0.0		0.0

Lanes, Volumes, Timings

Combined (2021) Saturday - Phase 1B Alt 1

1: South College Road & Cape Fear Academy/Pine Cliff Drive

04/26/2019

	↓	↙
Lane Group	SBT	SBR
Lane Configurations	↑↑	↗
Traffic Volume (vph)	2007	3
Future Volume (vph)	2007	3
Ideal Flow (vphpl)	1900	1900
Grade (%)	0%	
Storage Length (ft)		400
Storage Lanes		1
Taper Length (ft)		
Lane Util. Factor	0.95	1.00
Frt		0.850
Flt Protected		
Satd. Flow (prot)	3539	1583
Flt Permitted		
Satd. Flow (perm)	3539	1583
Right Turn on Red		No
Satd. Flow (RTOR)		
Link Speed (mph)	45	
Link Distance (ft)	1993	
Travel Time (s)	30.2	
Peak Hour Factor	0.90	0.90
Adj. Flow (vph)	2230	3
Shared Lane Traffic (%)		
Lane Group Flow (vph)	2230	3
Turn Type	NA	pm+ov
Protected Phases	6	4
Permitted Phases		6
Detector Phase	6	4
Switch Phase		
Minimum Initial (s)	12.0	5.0
Minimum Split (s)	19.0	12.0
Total Split (s)	87.0	25.0
Total Split (%)	57.2%	16.4%
Maximum Green (s)	81.1	18.6
Yellow Time (s)	4.5	3.2
All-Red Time (s)	1.4	3.2
Lost Time Adjust (s)	-0.9	-1.4
Total Lost Time (s)	5.0	5.0
Lead/Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes
Vehicle Extension (s)	6.0	2.0
Minimum Gap (s)	3.0	2.0
Time Before Reduce (s)	15.0	0.0
Time To Reduce (s)	45.0	0.0
Recall Mode	C-Max	None
Act Effct Green (s)	114.6	123.2
Actuated g/C Ratio	0.75	0.81
v/c Ratio	0.84	0.00
Control Delay	19.8	3.7
Queue Delay	0.0	0.0

Lanes, Volumes, Timings

Combined (2021) Saturday - Phase 1B Alt 1

1: South College Road & Cape Fear Academy/Pine Cliff Drive

04/26/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Total Delay	71.0	71.0	51.0		75.2			75.4	11.6	2.1		74.5
LOS	E	E	D		E			E	B	A		E
Approach Delay		64.3			75.2				15.1			
Approach LOS		E			E				B			
Queue Length 50th (ft)	4	4	4		21			96	551	0		24
Queue Length 95th (ft)	18	18	14		53			m146	840	m2		58
Internal Link Dist (ft)		163			1117				2721			
Turn Bay Length (ft)	100							475		225		200
Base Capacity (vph)	221	232	258		115			232	2955	1384		116
Starvation Cap Reductn	0	0	0		0			0	0	0		0
Spillback Cap Reductn	0	0	0		0			0	0	0		0
Storage Cap Reductn	0	0	0		0			0	0	0		0
Reduced v/c Ratio	0.02	0.02	0.02		0.19			0.46	0.62	0.01		0.22

Intersection Summary

Area Type: Other

Cycle Length: 152

Actuated Cycle Length: 152

Offset: 84 (55%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 18.4

Intersection LOS: B

Intersection Capacity Utilization 85.8%

ICU Level of Service E

Analysis Period (min) 15

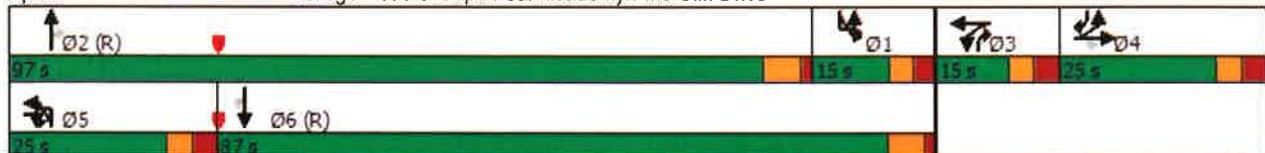
# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

! Phase conflict between lane groups.

Splits and Phases: 1: South College Road & Cape Fear Academy/Pine Cliff Drive



	↓	↙
Lane Group	SBT	SBR
Total Delay	19.8	3.7
LOS	B	A
Approach Delay	20.4	
Approach LOS	C	
Queue Length 50th (ft)	684	0
Queue Length 95th (ft)	#1344	3
Internal Link Dist (ft)	1913	
Turn Bay Length (ft)		400
Base Capacity (vph)	2667	1402
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.84	0.00
Intersection Summary		

Lanes, Volumes, Timings

Combined (2021) PM - Phase 1B Alt 4

1: South College Road & Cape Fear Academy/Pine Cliff Drive

04/26/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Traffic Volume (vph)	26	4	6	8	4	3	82	5	1337	6	17	5
Future Volume (vph)	26	4	6	8	4	3	82	5	1337	6	17	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			1%				0%			
Storage Length (ft)	100		0	0		0		475		225		200
Storage Lanes	1		1	0		0		1		1		1
Taper Length (ft)	100			100				100				100
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Frts			0.850		0.975					0.850		
Fit Protected	0.950	0.964			0.973			0.950				0.950
Satd. Flow (prot)	1690	1714	1591	0	1758	0	0	1770	3539	1583	0	1770
Fit Permitted	0.950	0.964			0.973			0.950				0.950
Satd. Flow (perm)	1690	1714	1591	0	1758	0	0	1770	3539	1583	0	1770
Right Turn on Red			No			No				No		
Satd. Flow (RTOR)												
Link Speed (mph)		25			25				45			
Link Distance (ft)		243			1197				2801			
Travel Time (s)		6.6			32.6				42.4			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	29	4	7	9	4	3	91	6	1486	7	19	6
Shared Lane Traffic (%)	43%											
Lane Group Flow (vph)	17	16	7	0	16	0	0	97	1486	7	0	25
Turn Type	Split	NA	pm+ov	Split	NA		Prot	Prot	NA	pm+ov	Prot	Prot
Protected Phases	4	4	5!	3	3		5!	5	2	3	1	1
Permitted Phases			4							2		
Detector Phase	4	4	5	3	3		5	5	2	3	1	1
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	12.0	5.0	5.0	5.0
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0		12.0	12.0	19.0	12.0	12.0	12.0
Total Split (s)	14.0	14.0	19.0	14.0	14.0		19.0	19.0	109.0	14.0	15.0	15.0
Total Split (%)	9.2%	9.2%	12.5%	9.2%	9.2%		12.5%	12.5%	71.7%	9.2%	9.9%	9.9%
Maximum Green (s)	7.6	7.6	13.1	7.7	7.7		13.1	13.1	103.1	7.7	9.2	9.2
Yellow Time (s)	3.2	3.2	3.0	3.1	3.1		3.0	3.0	4.5	3.1	3.0	3.0
All-Red Time (s)	3.2	3.2	2.9	3.2	3.2		2.9	2.9	1.4	3.2	2.8	2.8
Lost Time Adjust (s)	-1.4	-1.4	-0.9		-1.3			-0.9	-0.9	-1.3		-0.8
Total Lost Time (s)	5.0	5.0	5.0		5.0			5.0	5.0	5.0		5.0
Lead/Lag	Lag	Lag	Lead	Lead	Lead		Lead	Lead	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	6.0	2.0	2.0	2.0
Minimum Gap (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	3.0	2.0	2.0	2.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	15.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	45.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	None		None	None	C-Max	None	None	None
Act Effct Green (s)	7.5	7.5	20.6		7.3			12.6	124.2	129.1		8.4
Actuated g/C Ratio	0.05	0.05	0.14		0.05			0.08	0.82	0.85		0.06
v/c Ratio	0.20	0.19	0.03		0.19			0.66	0.51	0.01		0.26
Control Delay	74.7	74.0	51.3		74.1			88.5	9.1	2.5		74.5
Queue Delay	0.0	0.0	0.0		0.0			0.0	0.0	0.0		0.0

Lanes, Volumes, Timings

Combined (2021) PM - Phase 1B Alt 4

1: South College Road & Cape Fear Academy/Pine Cliff Drive

04/26/2019

	↓	↙
Lane Group	SBT	SBR
Lane Configurations	↑↑	↗
Traffic Volume (vph)	2378	13
Future Volume (vph)	2378	13
Ideal Flow (vphpl)	1900	1900
Grade (%)	0%	
Storage Length (ft)		400
Storage Lanes		1
Taper Length (ft)		
Lane Util. Factor	0.95	1.00
Frt		0.850
Flt Protected		
Satd. Flow (prot)	3539	1583
Flt Permitted		
Satd. Flow (perm)	3539	1583
Right Turn on Red		No
Satd. Flow (RTOR)		
Link Speed (mph)	45	
Link Distance (ft)	1993	
Travel Time (s)	30.2	
Peak Hour Factor	0.90	0.90
Adj. Flow (vph)	2642	14
Shared Lane Traffic (%)		
Lane Group Flow (vph)	2642	14
Turn Type	NA	pm+ov
Protected Phases	6	4
Permitted Phases		6
Detector Phase	6	4
Switch Phase		
Minimum Initial (s)	12.0	5.0
Minimum Split (s)	19.0	12.0
Total Split (s)	105.0	14.0
Total Split (%)	69.1%	9.2%
Maximum Green (s)	99.1	7.6
Yellow Time (s)	4.5	3.2
All-Red Time (s)	1.4	3.2
Lost Time Adjust (s)	-0.9	-1.4
Total Lost Time (s)	5.0	5.0
Lead/Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes
Vehicle Extension (s)	6.0	2.0
Minimum Gap (s)	3.0	2.0
Time Before Reduce (s)	15.0	0.0
Time To Reduce (s)	45.0	0.0
Recall Mode	C-Max	None
Act Effct Green (s)	113.6	123.1
Actuated g/C Ratio	0.75	0.81
v/c Ratio	1.00	0.01
Control Delay	38.3	3.0
Queue Delay	0.0	0.0

Lanes, Volumes, Timings

Combined (2021) PM - Phase 1B Alt 4

1: South College Road & Cape Fear Academy/Pine Cliff Drive

04/26/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Total Delay	74.7	74.0	51.3		74.1			88.5	9.1	2.5		74.5
LOS	E	E	D		E			F	A	A		E
Approach Delay		70.3			74.1				13.9			
Approach LOS		E			E				B			
Queue Length 50th (ft)	17	16	6		16			94	361	1		24
Queue Length 95th (ft)	46	44	21		42			159	456	2		58
Internal Link Dist (ft)		163			1117				2721			
Turn Bay Length (ft)	100							475		225		200
Base Capacity (vph)	100	101	233		104			167	2892	1350		116
Starvation Cap Reductn	0	0	0		0			0	0	0		0
Spillback Cap Reductn	0	0	0		0			0	0	0		0
Storage Cap Reductn	0	0	0		0			0	0	0		0
Reduced v/c Ratio	0.17	0.16	0.03		0.15			0.58	0.51	0.01		0.22

Intersection Summary

Area Type: Other

Cycle Length: 152

Actuated Cycle Length: 152

Offset: 50 (33%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.00

Intersection Signal Delay: 29.9

Intersection LOS: C

Intersection Capacity Utilization 93.1%

ICU Level of Service F

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

! Phase conflict between lane groups.

Splits and Phases: 1: South College Road & Cape Fear Academy/Pine Cliff Drive



	↓	↙
Lane Group	SBT	SBR
Total Delay	38.3	3.0
LOS	D	A
Approach Delay	38.5	
Approach LOS	D	
Queue Length 50th (ft)	~1550	2
Queue Length 95th (ft)	#1714	5
Internal Link Dist (ft)	1913	
Turn Bay Length (ft)		400
Base Capacity (vph)	2645	1297
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	1.00	0.01
Intersection Summary		

Lanes, Volumes, Timings

Combined (2021) Saturday - Phase 1B Alt 4

1: South College Road & Cape Fear Academy/Pine Cliff Drive

04/26/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Traffic Volume (vph)	4	4	4	15	2	3	92	4	1657	7	14	8
Future Volume (vph)	4	4	4	15	2	3	92	4	1657	7	14	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			1%				0%			
Storage Length (ft)	100		0	0		0		475		225		200
Storage Lanes	1		1	0		0		1		1		1
Taper Length (ft)	100			100				100				100
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Frt			0.850		0.982					0.850		
Flt Protected	0.950				0.963			0.950				0.950
Satd. Flow (prot)	1681	1770	1583	0	1753	0	0	1770	3539	1583	0	1770
Flt Permitted	0.950				0.963			0.950				0.950
Satd. Flow (perm)	1681	1770	1583	0	1753	0	0	1770	3539	1583	0	1770
Right Turn on Red			No			No				No		
Satd. Flow (RTOR)												
Link Speed (mph)		25			25				45			
Link Distance (ft)		243			1197				2801			
Travel Time (s)		6.6			32.6				42.4			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	4	4	4	17	2	3	102	4	1841	8	16	9
Shared Lane Traffic (%)	10%											
Lane Group Flow (vph)	4	4	4	0	22	0	0	106	1841	8	0	25
Turn Type	Split	NA	pm+ov	Split	NA		Prot	Prot	NA	pm+ov	Prot	Prot
Protected Phases	4	4	5!	3	3		5!	5	2	3	1	1
Permitted Phases			4							2		
Detector Phase	4	4	5	3	3		5	5	2	3	1	1
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	12.0	5.0	5.0	5.0
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0		12.0	12.0	19.0	12.0	12.0	12.0
Total Split (s)	25.0	25.0	25.0	15.0	15.0		25.0	25.0	97.0	15.0	15.0	15.0
Total Split (%)	16.4%	16.4%	16.4%	9.9%	9.9%		16.4%	16.4%	63.8%	9.9%	9.9%	9.9%
Maximum Green (s)	18.6	18.6	19.1	8.7	8.7		19.1	19.1	91.1	8.7	9.2	9.2
Yellow Time (s)	3.2	3.2	3.0	3.1	3.1		3.0	3.0	4.5	3.1	3.0	3.0
All-Red Time (s)	3.2	3.2	2.9	3.2	3.2		2.9	2.9	1.4	3.2	2.8	2.8
Lost Time Adjust (s)	-1.4	-1.4	-0.9		-1.3				-0.9	-0.9	-1.3	-0.8
Total Lost Time (s)	5.0	5.0	5.0		5.0				5.0	5.0		5.0
Lead/Lag	Lag	Lag	Lead	Lead	Lead		Lead	Lead	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	6.0	2.0	2.0	2.0
Minimum Gap (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	3.0	2.0	2.0	2.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	15.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	45.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	None		None	None	C-Max	None	None	None
Act Effct Green (s)	6.6	6.6	19.2		7.8			14.4	126.9	133.2		8.4
Actuated g/C Ratio	0.04	0.04	0.13		0.05			0.09	0.83	0.88		0.06
v/c Ratio	0.05	0.05	0.02		0.24			0.63	0.62	0.01		0.26
Control Delay	71.0	71.0	51.0		75.2			74.5	11.8	2.0		74.5
Queue Delay	0.0	0.0	0.0		0.0			0.0	0.0	0.0		0.0

Lanes, Volumes, Timings

Combined (2021) Saturday - Phase 1B Alt 4

1: South College Road & Cape Fear Academy/Pine Cliff Drive

04/26/2019

	↓	↙
Lane Group	SBT	SBR
Lane Configurations	↑↑	↗
Traffic Volume (vph)	2007	3
Future Volume (vph)	2007	3
Ideal Flow (vphpl)	1900	1900
Grade (%)	0%	
Storage Length (ft)		400
Storage Lanes		1
Taper Length (ft)		
Lane Util. Factor	0.95	1.00
Frt		0.850
Flt Protected		
Satd. Flow (prot)	3539	1583
Flt Permitted		
Satd. Flow (perm)	3539	1583
Right Turn on Red		No
Satd. Flow (RTOR)		
Link Speed (mph)	45	
Link Distance (ft)	1993	
Travel Time (s)	30.2	
Peak Hour Factor	0.90	0.90
Adj. Flow (vph)	2230	3
Shared Lane Traffic (%)		
Lane Group Flow (vph)	2230	3
Turn Type	NA	pm+ov
Protected Phases	6	4
Permitted Phases		6
Detector Phase	6	4
Switch Phase		
Minimum Initial (s)	12.0	5.0
Minimum Split (s)	19.0	12.0
Total Split (s)	87.0	25.0
Total Split (%)	57.2%	16.4%
Maximum Green (s)	81.1	18.6
Yellow Time (s)	4.5	3.2
All-Red Time (s)	1.4	3.2
Lost Time Adjust (s)	-0.9	-1.4
Total Lost Time (s)	5.0	5.0
Lead/Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes
Vehicle Extension (s)	6.0	2.0
Minimum Gap (s)	3.0	2.0
Time Before Reduce (s)	15.0	0.0
Time To Reduce (s)	45.0	0.0
Recall Mode	C-Max	None
Act Effct Green (s)	114.6	123.2
Actuated g/C Ratio	0.75	0.81
v/c Ratio	0.84	0.00
Control Delay	19.8	3.7
Queue Delay	0.0	0.0

Lanes, Volumes, Timings

Combined (2021) Saturday - Phase 1B Alt 4

1: South College Road & Cape Fear Academy/Pine Cliff Drive

04/26/2019

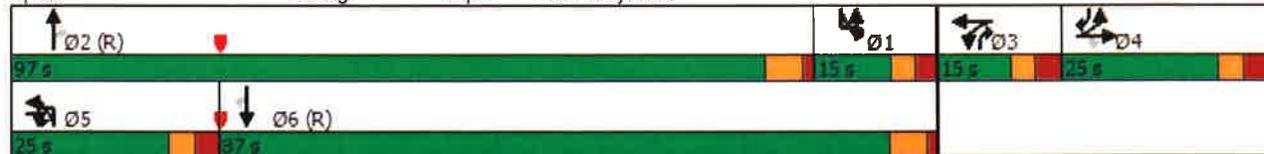
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Total Delay	71.0	71.0	51.0		75.2			74.5	11.8	2.0		74.5
LOS	E	E	D		E			E	B	A		E
Approach Delay		64.3			75.2				15.2			
Approach LOS		E			E				B			
Queue Length 50th (ft)	4	4	4		21			96	558	0		24
Queue Length 95th (ft)	18	18	14		53			m145	847	m2		58
Internal Link Dist (ft)		163			1117				2721			
Turn Bay Length (ft)	100							475		225		200
Base Capacity (vph)	221	232	258		115			232	2955	1384		116
Starvation Cap Reductn	0	0	0		0			0	0	0		0
Spillback Cap Reductn	0	0	0		0			0	0	0		0
Storage Cap Reductn	0	0	0		0			0	0	0		0
Reduced v/c Ratio	0.02	0.02	0.02		0.19			0.46	0.62	0.01		0.22

Intersection Summary

Area Type: Other  
 Cycle Length: 152  
 Actuated Cycle Length: 152  
 Offset: 84 (55%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 100  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.84  
 Intersection Signal Delay: 18.4  
 Intersection Capacity Utilization 85.8%  
 Analysis Period (min) 15  
 Intersection LOS: B  
 ICU Level of Service E

# 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.  
 ! Phase conflict between lane groups.

Splits and Phases: 1: South College Road & Cape Fear Academy/Pine Cliff Drive



	↓	↙
Lane Group	SBT	SBR
Total Delay	19.8	3.7
LOS	B	A
Approach Delay	20.4	
Approach LOS	C	
Queue Length 50th (ft)	684	0
Queue Length 95th (ft)	#1344	3
Internal Link Dist (ft)	1913	
Turn Bay Length (ft)		400
Base Capacity (vph)	2667	1402
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.84	0.00
<u>Intersection Summary</u>		

Lanes, Volumes, Timings

Background (2024) PM

1: South College Road & Cape Fear Academy/Pine Cliff Drive

04/26/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Traffic Volume (vph)	26	4	6	8	4	3	84	5	1344	6	18	5
Future Volume (vph)	26	4	6	8	4	3	84	5	1344	6	18	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			1%				0%			
Storage Length (ft)	100		0	0		0		475		225		200
Storage Lanes	1		1	0		0		1		1		1
Taper Length (ft)	100			100				100				100
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Frt			0.850		0.975					0.850		
Flt Protected	0.950	0.964			0.973			0.950				0.950
Satd. Flow (prot)	1690	1714	1591	0	1758	0	0	1770	3539	1583	0	1770
Flt Permitted	0.950	0.964			0.973			0.950				0.950
Satd. Flow (perm)	1690	1714	1591	0	1758	0	0	1770	3539	1583	0	1770
Right Turn on Red			No			No				No		
Satd. Flow (RTOR)												
Link Speed (mph)		25			25				45			
Link Distance (ft)		243			1197				2801			
Travel Time (s)		6.6			32.6				42.4			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	29	4	7	9	4	3	93	6	1493	7	20	6
Shared Lane Traffic (%)	43%											
Lane Group Flow (vph)	17	16	7	0	16	0	0	99	1493	7	0	26
Turn Type	Split	NA	pm+ov	Split	NA		Prot	Prot	NA	pm+ov	Prot	Prot
Protected Phases	4	4	5!	3	3		5!	5	2	3	1	1
Permitted Phases			4							2		
Detector Phase	4	4	5	3	3		5	5	2	3	1	1
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	12.0	5.0	5.0	5.0
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0		12.0	12.0	19.0	12.0	12.0	12.0
Total Split (s)	14.0	14.0	19.0	14.0	14.0		19.0	19.0	109.0	14.0	15.0	15.0
Total Split (%)	9.2%	9.2%	12.5%	9.2%	9.2%		12.5%	12.5%	71.7%	9.2%	9.9%	9.9%
Maximum Green (s)	7.6	7.6	13.1	7.7	7.7		13.1	13.1	103.1	7.7	9.2	9.2
Yellow Time (s)	3.2	3.2	3.0	3.1	3.1		3.0	3.0	4.5	3.1	3.0	3.0
All-Red Time (s)	3.2	3.2	2.9	3.2	3.2		2.9	2.9	1.4	3.2	2.8	2.8
Lost Time Adjust (s)	-1.4	-1.4	-0.9		-1.3				-0.9	-0.9	-1.3	-0.8
Total Lost Time (s)	5.0	5.0	5.0		5.0				5.0	5.0		5.0
Lead/Lag	Lag	Lag	Lead	Lead	Lead		Lead	Lead	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	6.0	2.0	2.0	2.0
Minimum Gap (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	3.0	2.0	2.0	2.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	15.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	45.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	None		None	None	C-Max	None	None	None
Act Effct Green (s)	7.5	7.5	22.9		7.3				12.7	121.0	128.0	8.4
Actuated g/C Ratio	0.05	0.05	0.15		0.05				0.08	0.80	0.84	0.06
v/c Ratio	0.20	0.19	0.03		0.19				0.67	0.53	0.01	0.27
Control Delay	74.7	74.0	51.3		74.1				89.2	9.4	2.5	74.8
Queue Delay	0.0	0.0	0.0		0.0				0.0	0.0	0.0	0.0

Lanes, Volumes, Timings  
 1: South College Road & Cape Fear Academy/Pine Cliff Drive

Background (2024) PM  
 04/26/2019

	↓	↙
Lane Group	SBT	SBR
Lane Configurations	↑↑	↗
Traffic Volume (vph)	2397	14
Future Volume (vph)	2397	14
Ideal Flow (vphpl)	1900	1900
Grade (%)	0%	
Storage Length (ft)		400
Storage Lanes		1
Taper Length (ft)		
Lane Util. Factor	0.95	1.00
Frt		0.850
Flt Protected		
Satd. Flow (prot)	3539	1583
Flt Permitted		
Satd. Flow (perm)	3539	1583
Right Turn on Red		No
Satd. Flow (RTOR)		
Link Speed (mph)	45	
Link Distance (ft)	1993	
Travel Time (s)	30.2	
Peak Hour Factor	0.90	0.90
Adj. Flow (vph)	2663	16
Shared Lane Traffic (%)		
Lane Group Flow (vph)	2663	16
Turn Type	NA	pm+ov
Protected Phases	6	4
Permitted Phases		6
Detector Phase	6	4
Switch Phase		
Minimum Initial (s)	12.0	5.0
Minimum Split (s)	19.0	12.0
Total Split (s)	105.0	14.0
Total Split (%)	69.1%	9.2%
Maximum Green (s)	99.1	7.6
Yellow Time (s)	4.5	3.2
All-Red Time (s)	1.4	3.2
Lost Time Adjust (s)	-0.9	-1.4
Total Lost Time (s)	5.0	5.0
Lead/Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes
Vehicle Extension (s)	6.0	2.0
Minimum Gap (s)	3.0	2.0
Time Before Reduce (s)	15.0	0.0
Time To Reduce (s)	45.0	0.0
Recall Mode	C-Max	None
Act Effct Green (s)	111.3	120.8
Actuated g/C Ratio	0.73	0.79
v/c Ratio	1.03	0.01
Control Delay	47.3	3.1
Queue Delay	0.0	0.0

Lanes, Volumes, Timings

Background (2024) PM

1: South College Road & Cape Fear Academy/Pine Cliff Drive

04/26/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Total Delay	74.7	74.0	51.3		74.1			89.2	9.4	2.5		74.8
LOS	E	E	D		E			F	A	A		E
Approach Delay		70.3			74.1				14.3			
Approach LOS		E			E				B			
Queue Length 50th (ft)	17	16	6		16			96	363	1		25
Queue Length 95th (ft)	46	44	21		42			162	460	2		59
Internal Link Dist (ft)		163			1117				2721			
Turn Bay Length (ft)	100							475		225		200
Base Capacity (vph)	100	101	257		104			167	2816	1345		116
Starvation Cap Reductn	0	0	0		0			0	0	0		0
Spillback Cap Reductn	0	0	0		0			0	0	0		0
Storage Cap Reductn	0	0	0		0			0	0	0		0
Reduced v/c Ratio	0.17	0.16	0.03		0.15			0.59	0.53	0.01		0.22

Intersection Summary

Area Type: Other

Cycle Length: 152

Actuated Cycle Length: 152

Offset: 50 (33%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.03

Intersection Signal Delay: 35.6

Intersection LOS: D

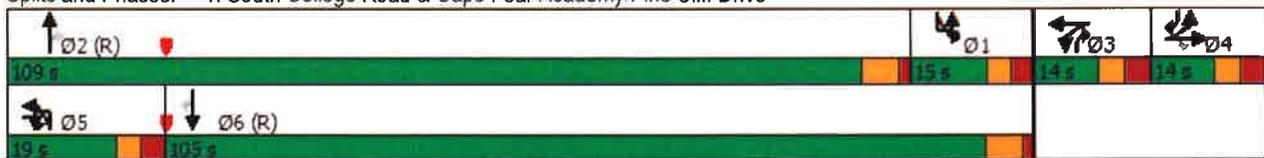
Intersection Capacity Utilization 94.8%

ICU Level of Service F

Analysis Period (min) 15

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- ! Phase conflict between lane groups.

Splits and Phases: 1: South College Road & Cape Fear Academy/Pine Cliff Drive



Lanes, Volumes, Timings  
 1: South College Road & Cape Fear Academy/Pine Cliff Drive

Background (2024) PM  
 04/26/2019

	↓	↙
Lane Group	SBT	SBR
Total Delay	47.3	3.1
LOS	D	A
Approach Delay	47.3	
Approach LOS	D	
Queue Length 50th (ft)	~1574	2
Queue Length 95th (ft)	#1735	6
Internal Link Dist (ft)	1913	
Turn Bay Length (ft)		400
Base Capacity (vph)	2590	1273
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	1.03	0.01
Intersection Summary		

Lanes, Volumes, Timings

Background (2024) Saturday

1: South College Road & Cape Fear Academy/Pine Cliff Drive

04/26/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Traffic Volume (vph)	4	4	4	16	2	3	95	4	1669	7	15	8
Future Volume (vph)	4	4	4	16	2	3	95	4	1669	7	15	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			1%				0%			
Storage Length (ft)	100		0	0		0		475		225		200
Storage Lanes	1		1	0		0		1		1		1
Taper Length (ft)	100			100				100				100
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Frt			0.850		0.982					0.850		
Flt Protected	0.950				0.962			0.950				0.950
Satd. Flow (prot)	1681	1770	1583	0	1751	0	0	1770	3539	1583	0	1770
Flt Permitted	0.950				0.962			0.950				0.950
Satd. Flow (perm)	1681	1770	1583	0	1751	0	0	1770	3539	1583	0	1770
Right Turn on Red			No			No				No		
Satd. Flow (RTOR)												
Link Speed (mph)		25			25				45			
Link Distance (ft)		243			1197				2801			
Travel Time (s)		6.6			32.6				42.4			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	4	4	4	18	2	3	106	4	1854	8	17	9
Shared Lane Traffic (%)	10%											
Lane Group Flow (vph)	4	4	4	0	23	0	0	110	1854	8	0	26
Turn Type	Split	NA	pm+ov	Split	NA		Prot	Prot	NA	pm+ov	Prot	Prot
Protected Phases	4	4	5!	3	3		5!	5	2	3	1	1
Permitted Phases			4							2		
Detector Phase	4	4	5	3	3		5	5	2	3	1	1
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	12.0	5.0	5.0	5.0
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0		12.0	12.0	19.0	12.0	12.0	12.0
Total Split (s)	25.0	25.0	25.0	15.0	15.0		25.0	25.0	97.0	15.0	15.0	15.0
Total Split (%)	16.4%	16.4%	16.4%	9.9%	9.9%		16.4%	16.4%	63.8%	9.9%	9.9%	9.9%
Maximum Green (s)	18.6	18.6	19.1	8.7	8.7		19.1	19.1	91.1	8.7	9.2	9.2
Yellow Time (s)	3.2	3.2	3.0	3.1	3.1		3.0	3.0	4.5	3.1	3.0	3.0
All-Red Time (s)	3.2	3.2	2.9	3.2	3.2		2.9	2.9	1.4	3.2	2.8	2.8
Lost Time Adjust (s)	-1.4	-1.4	-0.9		-1.3			-0.9	-0.9	-1.3		-0.8
Total Lost Time (s)	5.0	5.0	5.0		5.0			5.0	5.0	5.0		5.0
Lead/Lag	Lag	Lag	Lead	Lead	Lead		Lead	Lead	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	6.0	2.0	2.0	2.0
Minimum Gap (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	3.0	2.0	2.0	2.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	15.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	45.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	None		None	None	C-Max	None	None	None
Act Effct Green (s)	6.6	6.6	19.5		7.9			14.7	126.9	133.2		8.4
Actuated g/C Ratio	0.04	0.04	0.13		0.05			0.10	0.83	0.88		0.06
v/c Ratio	0.05	0.05	0.02		0.25			0.64	0.63	0.01		0.27
Control Delay	71.0	71.0	50.5		75.5			73.9	12.0	2.1		74.8
Queue Delay	0.0	0.0	0.0		0.0			0.0	0.0	0.0		0.0

Lanes, Volumes, Timings  
 1: South College Road & Cape Fear Academy/Pine Cliff Drive

Background (2024) Saturday  
 04/26/2019

	↓	↙
Lane Group	SBT	SBR
Lane Configurations	↑↑	↗
Traffic Volume (vph)	2031	3
Future Volume (vph)	2031	3
Ideal Flow (vphpl)	1900	1900
Grade (%)	0%	
Storage Length (ft)		400
Storage Lanes		1
Taper Length (ft)		
Lane Util. Factor	0.95	1.00
Frt		0.850
Flt Protected		
Satd. Flow (prot)	3539	1583
Flt Permitted		
Satd. Flow (perm)	3539	1583
Right Turn on Red		No
Satd. Flow (RTOR)		
Link Speed (mph)	45	
Link Distance (ft)	1993	
Travel Time (s)	30.2	
Peak Hour Factor	0.90	0.90
Adj. Flow (vph)	2257	3
Shared Lane Traffic (%)		
Lane Group Flow (vph)	2257	3
Turn Type	NA	pm+ov
Protected Phases	6	4
Permitted Phases		6
Detector Phase	6	4
Switch Phase		
Minimum Initial (s)	12.0	5.0
Minimum Split (s)	19.0	12.0
Total Split (s)	87.0	25.0
Total Split (%)	57.2%	16.4%
Maximum Green (s)	81.1	18.6
Yellow Time (s)	4.5	3.2
All-Red Time (s)	1.4	3.2
Lost Time Adjust (s)	-0.9	-1.4
Total Lost Time (s)	5.0	5.0
Lead/Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes
Vehicle Extension (s)	6.0	2.0
Minimum Gap (s)	3.0	2.0
Time Before Reduce (s)	15.0	0.0
Time To Reduce (s)	45.0	0.0
Recall Mode	C-Max	None
Act Effct Green (s)	114.2	122.8
Actuated g/C Ratio	0.75	0.81
v/c Ratio	0.85	0.00
Control Delay	20.6	3.7
Queue Delay	0.0	0.0

Lanes, Volumes, Timings

Background (2024) Saturday

1: South College Road & Cape Fear Academy/Pine Cliff Drive

04/26/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Total Delay	71.0	71.0	50.5		75.5			73.9	12.0	2.1		74.8
LOS	E	E	D		E			E	B	A		E
Approach Delay		64.2			75.5				15.4			
Approach LOS		E			E				B			
Queue Length 50th (ft)	4	4	4		22			100	574	0		25
Queue Length 95th (ft)	18	18	14		54			m148	866	m2		59
Internal Link Dist (ft)		163			1117				2721			
Turn Bay Length (ft)	100							475		225		200
Base Capacity (vph)	221	232	258		115			233	2954	1384		116
Starvation Cap Reductn	0	0	0		0			0	0	0		0
Spillback Cap Reductn	0	0	0		0			0	0	0		0
Storage Cap Reductn	0	0	0		0			0	0	0		0
Reduced v/c Ratio	0.02	0.02	0.02		0.20			0.47	0.63	0.01		0.22

Intersection Summary

Area Type: Other

Cycle Length: 152

Actuated Cycle Length: 152

Offset: 84 (55%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 19.0

Intersection LOS: B

Intersection Capacity Utilization 86.6%

ICU Level of Service E

Analysis Period (min) 15

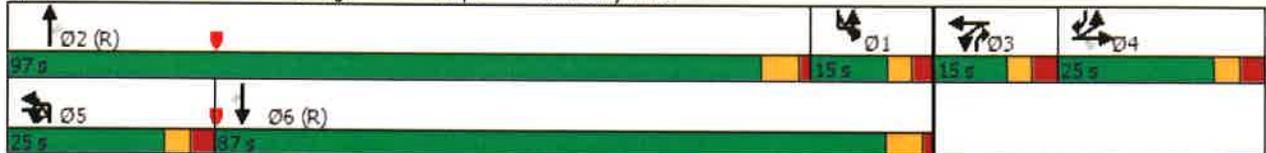
# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

! Phase conflict between lane groups.

Splits and Phases: 1: South College Road & Cape Fear Academy/Pine Cliff Drive



	↓	↙
Lane Group	SBT	SBR
Total Delay	20.6	3.7
LOS	C	A
Approach Delay	21.2	
Approach LOS	C	
Queue Length 50th (ft)	715	0
Queue Length 95th (ft)	#1377	3
Internal Link Dist (ft)	1913	
Turn Bay Length (ft)		400
Base Capacity (vph)	2658	1400
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.85	0.00
Intersection Summary		

Lanes, Volumes, Timings

Combined (2024) PM - Phase 2 Alt 1

1: South College Road & Cape Fear Academy/Pine Cliff Drive

04/27/2019

Lane Group												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Traffic Volume (vph)	26	4	6	8	4	3	84	5	1556	6	18	5
Future Volume (vph)	26	4	6	8	4	3	84	5	1556	6	18	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			1%				0%			
Storage Length (ft)	100		0	0		0		475		225		200
Storage Lanes	1		1	0		0		1		1		1
Taper Length (ft)	100			100				100				100
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Frts			0.850		0.975					0.850		
Flt Protected	0.950	0.964			0.973			0.950				0.950
Satd. Flow (prot)	1690	1714	1591	0	1758	0	0	1770	3539	1583	0	1770
Flt Permitted	0.950	0.964			0.973			0.950				0.950
Satd. Flow (perm)	1690	1714	1591	0	1758	0	0	1770	3539	1583	0	1770
Right Turn on Red			No			No				No		
Satd. Flow (RTOR)												
Link Speed (mph)		25			25				45			
Link Distance (ft)		243			1197				688			
Travel Time (s)		6.6			32.6				10.4			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	29	4	7	9	4	3	93	6	1729	7	20	6
Shared Lane Traffic (%)	43%											
Lane Group Flow (vph)	17	16	7	0	16	0	0	99	1729	7	0	26
Enter Blocked Intersection	No	No	No	No	No	No						
Lane Alignment	Left	Left	Right	Left	Left	Right	R NA	Left	Left	Right	R NA	Left
Median Width(ft)		12			0				24			
Link Offset(ft)		0			12				0			
Crosswalk Width(ft)		16			16				16			
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	1.01	1.01	1.01	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	9	15		9	9	15
Number of Detectors	1	1	1	1	1		1	1	1	0	1	1
Detector Template				Left			Left				Left	
Leading Detector (ft)	40	40	40	20	40		20	40	306	0	20	40
Trailing Detector (ft)	0	0	0	0	0		0	0	300	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	300	0	0	0
Detector 1 Size(ft)	40	40	40	20	40		20	40	6	20	20	40
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	3.0	0.0	15.0	0.0	5.0		0.0	10.0	0.0	0.0	0.0	10.0
Turn Type	Split	NA	pm+ov	Split	NA		Prot	Prot	NA	pm+ov	Prot	Prot
Protected Phases	4	4	5!	3	3		5!	5	2	3	1	1
Permitted Phases			4							2		
Detector Phase	4	4	5	3	3		5	5	2	3	1	1
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	12.0	5.0	5.0	5.0
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0		12.0	12.0	19.0	12.0	12.0	12.0

Lanes, Volumes, Timings

Combined (2024) PM - Phase 2 Alt 1

1: South College Road & Cape Fear Academy/Pine Cliff Drive

04/27/2019

	↓	↙
Lane Group	SBT	SBR
Lane Configurations	↑↑	↗
Traffic Volume (vph)	2561	14
Future Volume (vph)	2561	14
Ideal Flow (vphpl)	1900	1900
Grade (%)	0%	
Storage Length (ft)		400
Storage Lanes		1
Taper Length (ft)		
Lane Util. Factor	0.95	1.00
Frt		0.850
Flt Protected		
Satd. Flow (prot)	3539	1583
Flt Permitted		
Satd. Flow (perm)	3539	1583
Right Turn on Red		No
Satd. Flow (RTOR)		
Link Speed (mph)	45	
Link Distance (ft)	1993	
Travel Time (s)	30.2	
Peak Hour Factor	0.90	0.90
Adj. Flow (vph)	2846	16
Shared Lane Traffic (%)		
Lane Group Flow (vph)	2846	16
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	24	
Link Offset(ft)	0	
Crosswalk Width(ft)	16	
Two way Left Turn Lane		
Headway Factor	1.00	1.00
Turning Speed (mph)		9
Number of Detectors	1	0
Detector Template		
Leading Detector (ft)	306	0
Trailing Detector (ft)	300	0
Detector 1 Position(ft)	300	0
Detector 1 Size(ft)	6	0
Detector 1 Type	Cl+Ex	Cl+Ex
Detector 1 Channel		
Detector 1 Extend (s)	0.0	0.0
Detector 1 Queue (s)	0.0	0.0
Detector 1 Delay (s)	0.0	0.0
Turn Type	NA	pm+ov
Protected Phases	6	4
Permitted Phases		6
Detector Phase	6	4
Switch Phase		
Minimum Initial (s)	12.0	5.0
Minimum Split (s)	19.0	12.0

Lanes, Volumes, Timings

Combined (2024) PM - Phase 2 Alt 1

1: South College Road & Cape Fear Academy/Pine Cliff Drive

04/27/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Total Split (s)	14.0	14.0	19.0	14.0	14.0		19.0	19.0	109.0	14.0	15.0	15.0
Total Split (%)	9.2%	9.2%	12.5%	9.2%	9.2%		12.5%	12.5%	71.7%	9.2%	9.9%	9.9%
Maximum Green (s)	7.6	7.6	13.1	7.7	7.7		13.1	13.1	103.1	7.7	9.2	9.2
Yellow Time (s)	3.2	3.2	3.0	3.1	3.1		3.0	3.0	4.5	3.1	3.0	3.0
All-Red Time (s)	3.2	3.2	2.9	3.2	3.2		2.9	2.9	1.4	3.2	2.8	2.8
Lost Time Adjust (s)	-1.4	-1.4	-0.9		-1.3				-0.9	-0.9	-1.3	
Total Lost Time (s)	5.0	5.0	5.0		5.0				5.0	5.0		5.0
Lead/Lag	Lag	Lag	Lead	Lead	Lead		Lead	Lead	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	6.0	2.0	2.0	2.0
Minimum Gap (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	3.0	2.0	2.0	2.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	15.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	45.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	None		None	None	C-Max	None	None	None
Act Effct Green (s)	7.5	7.5	22.9		7.3				12.7	121.0	128.0	8.4
Actuated g/C Ratio	0.05	0.05	0.15		0.05				0.08	0.80	0.84	0.06
v/c Ratio	0.20	0.19	0.03		0.19				0.67	0.61	0.01	0.27
Control Delay	74.7	74.0	51.3		74.1				90.2	6.6	1.8	74.8
Queue Delay	0.0	0.0	0.0		0.0				0.0	0.0	0.0	0.0
Total Delay	74.7	74.0	51.3		74.1				90.2	6.6	1.8	74.8
LOS	E	E	D		E				F	A	A	E
Approach Delay		70.3			74.1				11.1			
Approach LOS		E			E				B			
Queue Length 50th (ft)	17	16	6		16			98	304	1		25
Queue Length 95th (ft)	46	44	21		42		m156	305	m1			59
Internal Link Dist (ft)		163			1117			608				
Turn Bay Length (ft)	100						475			225		200
Base Capacity (vph)	100	101	257		104		167	2816	1345			116
Starvation Cap Reductn	0	0	0		0		0	0	0	0		0
Spillback Cap Reductn	0	0	0		0		0	0	0	0		0
Storage Cap Reductn	0	0	0		0		0	0	0	0		0
Reduced v/c Ratio	0.17	0.16	0.03		0.15		0.59	0.61	0.01			0.22

Intersection Summary

Area Type: Other

Cycle Length: 152

Actuated Cycle Length: 152

Offset: 50 (33%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.10

Intersection Signal Delay: 49.2

Intersection LOS: D

Intersection Capacity Utilization 94.8%

ICU Level of Service F

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

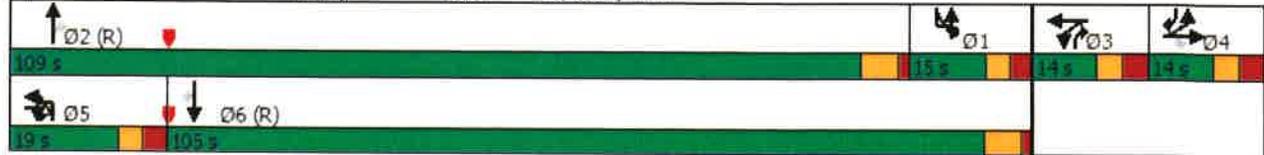
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

	↓	↙
Lane Group	SBT	SBR
Total Split (s)	105.0	14.0
Total Split (%)	69.1%	9.2%
Maximum Green (s)	99.1	7.6
Yellow Time (s)	4.5	3.2
All-Red Time (s)	1.4	3.2
Lost Time Adjust (s)	-0.9	-1.4
Total Lost Time (s)	5.0	5.0
Lead/Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes
Vehicle Extension (s)	6.0	2.0
Minimum Gap (s)	3.0	2.0
Time Before Reduce (s)	15.0	0.0
Time To Reduce (s)	45.0	0.0
Recall Mode	C-Max	None
Act Effct Green (s)	111.3	120.8
Actuated g/C Ratio	0.73	0.79
v/c Ratio	1.10	0.01
Control Delay	73.3	3.1
Queue Delay	0.0	0.0
Total Delay	73.3	3.1
LOS	E	A
Approach Delay	73.0	
Approach LOS	E	
Queue Length 50th (ft)	~1772	2
Queue Length 95th (ft)	#1928	6
Internal Link Dist (ft)	1913	
Turn Bay Length (ft)		400
Base Capacity (vph)	2590	1273
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	1.10	0.01
<b>Intersection Summary</b>		

! Phase conflict between lane groups.

Splits and Phases: 1: South College Road & Cape Fear Academy/Pine Cliff Drive



Lanes, Volumes, Timings

Combined (2024) Saturday - Phase 2 Alt 1

1: South College Road & Cape Fear Academy/Pine Cliff Drive

04/27/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Traffic Volume (vph)	4	4	4	16	2	3	95	4	1891	7	15	8
Future Volume (vph)	4	4	4	16	2	3	95	4	1891	7	15	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			1%				0%			
Storage Length (ft)	100		0	0		0		475		225		200
Storage Lanes	1		1	0		0		1		1		1
Taper Length (ft)	100			100				100				100
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Flt			0.850		0.982					0.850		
Flt Protected	0.950				0.962			0.950				0.950
Satd. Flow (prot)	1681	1770	1583	0	1751	0	0	1770	3539	1583	0	1770
Flt Permitted	0.950				0.962			0.950				0.950
Satd. Flow (perm)	1681	1770	1583	0	1751	0	0	1770	3539	1583	0	1770
Right Turn on Red			No			No				No		
Satd. Flow (RTOR)												
Link Speed (mph)		25			25				45			
Link Distance (ft)		243			1197				657			
Travel Time (s)		6.6			32.6				10.0			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	4	4	4	18	2	3	106	4	2101	8	17	9
Shared Lane Traffic (%)	10%											
Lane Group Flow (vph)	4	4	4	0	23	0	0	110	2101	8	0	26
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right	Left	Left	Right	R NA	Left	Left	Right	R NA	Left
Median Width(ft)		12			0				24			
Link Offset(ft)		0			12				0			
Crosswalk Width(ft)		16			16				16			
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.01	1.01	1.01	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	9	15		9	9	15
Number of Detectors	1	1	1	1	1		1	1	1	0	1	1
Detector Template				Left			Left				Left	
Leading Detector (ft)	40	40	40	20	40		20	40	306	0	20	40
Trailing Detector (ft)	0	0	0	0	0		0	0	300	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	300	0	0	0
Detector 1 Size(ft)	40	40	40	20	40		20	40	6	20	20	40
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	3.0	0.0	15.0	0.0	5.0		0.0	10.0	0.0	0.0	0.0	10.0
Turn Type	Split	NA	pm+ov	Split	NA		Prot	Prot	NA	pm+ov	Prot	Prot
Protected Phases	4	4	5!	3	3		5!	5	2	3	1	1
Permitted Phases			4							2		
Detector Phase	4	4	5	3	3		5	5	2	3	1	1
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	12.0	5.0	5.0	5.0
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0		12.0	12.0	19.0	12.0	12.0	12.0

Lanes, Volumes, Timings

Combined (2024) Saturday - Phase 2 Alt 1

1: South College Road & Cape Fear Academy/Pine Cliff Drive

04/27/2019

	↓	↙
Lane Group	SBT	SBR
Lane Configurations	↑↑	↑
Traffic Volume (vph)	2275	3
Future Volume (vph)	2275	3
Ideal Flow (vphpl)	1900	1900
Grade (%)	0%	
Storage Length (ft)		400
Storage Lanes		1
Taper Length (ft)		
Lane Util. Factor	0.95	1.00
Frt		0.850
Flt Protected		
Satd. Flow (prot)	3539	1583
Flt Permitted		
Satd. Flow (perm)	3539	1583
Right Turn on Red		No
Satd. Flow (RTOR)		
Link Speed (mph)	45	
Link Distance (ft)	1993	
Travel Time (s)	30.2	
Peak Hour Factor	0.90	0.90
Adj. Flow (vph)	2528	3
Shared Lane Traffic (%)		
Lane Group Flow (vph)	2528	3
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	24	
Link Offset(ft)	0	
Crosswalk Width(ft)	16	
Two way Left Turn Lane		
Headway Factor	1.00	1.00
Turning Speed (mph)		9
Number of Detectors	1	0
Detector Template		
Leading Detector (ft)	306	0
Trailing Detector (ft)	300	0
Detector 1 Position(ft)	300	0
Detector 1 Size(ft)	6	0
Detector 1 Type	CI+Ex	CI+Ex
Detector 1 Channel		
Detector 1 Extend (s)	0.0	0.0
Detector 1 Queue (s)	0.0	0.0
Detector 1 Delay (s)	0.0	0.0
Turn Type	NA	pm+ov
Protected Phases	6	4
Permitted Phases		6
Detector Phase	6	4
Switch Phase		
Minimum Initial (s)	12.0	5.0
Minimum Split (s)	19.0	12.0

Lanes, Volumes, Timings

Combined (2024) Saturday - Phase 2 Alt 1

1: South College Road & Cape Fear Academy/Pine Cliff Drive

04/27/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Total Split (s)	25.0	25.0	25.0	15.0	15.0		25.0	25.0	97.0	15.0	15.0	15.0
Total Split (%)	16.4%	16.4%	16.4%	9.9%	9.9%		16.4%	16.4%	63.8%	9.9%	9.9%	9.9%
Maximum Green (s)	18.6	18.6	19.1	8.7	8.7		19.1	19.1	91.1	8.7	9.2	9.2
Yellow Time (s)	3.2	3.2	3.0	3.1	3.1		3.0	3.0	4.5	3.1	3.0	3.0
All-Red Time (s)	3.2	3.2	2.9	3.2	3.2		2.9	2.9	1.4	3.2	2.8	2.8
Lost Time Adjust (s)	-1.4	-1.4	-0.9		-1.3				-0.9	-0.9	-1.3	-0.8
Total Lost Time (s)	5.0	5.0	5.0		5.0				5.0	5.0		5.0
Lead/Lag	Lag	Lag	Lead	Lead	Lead		Lead	Lead	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	6.0	2.0	2.0	2.0
Minimum Gap (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	3.0	2.0	2.0	2.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	15.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	45.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	None		None	None	C-Max	None	None	None
Act Effct Green (s)	6.6	6.6	19.5		7.9				14.7	126.9	133.2	8.4
Actuated g/C Ratio	0.04	0.04	0.13		0.05				0.10	0.83	0.88	0.06
v/c Ratio	0.05	0.05	0.02		0.25				0.64	0.71	0.01	0.27
Control Delay	71.0	71.0	50.5		75.5				68.1	13.4	2.9	74.8
Queue Delay	0.0	0.0	0.0		0.0				0.0	0.0	0.0	0.0
Total Delay	71.0	71.0	50.5		75.5				68.1	13.4	2.9	74.8
LOS	E	E	D		E				E	B	A	E
Approach Delay		64.2			75.5				16.1			
Approach LOS		E			E				B			
Queue Length 50th (ft)	4	4	4		22			104	550	1		25
Queue Length 95th (ft)	18	18	14		54		m129	825	m1			59
Internal Link Dist (ft)		163			1117			577				
Turn Bay Length (ft)	100						475			225		200
Base Capacity (vph)	221	232	258		115		233	2954	1384			116
Starvation Cap Reductn	0	0	0		0		0	0	0	0		0
Spillback Cap Reductn	0	0	0		0		0	0	0	0		0
Storage Cap Reductn	0	0	0		0		0	0	0	0		0
Reduced v/c Ratio	0.02	0.02	0.02		0.20		0.47	0.71	0.01			0.22

Intersection Summary

Area Type: Other

Cycle Length: 152

Actuated Cycle Length: 152

Offset: 84 (55%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 140

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.95

Intersection Signal Delay: 23.3

Intersection LOS: C

Intersection Capacity Utilization 93.4%

ICU Level of Service F

Analysis Period (min) 15

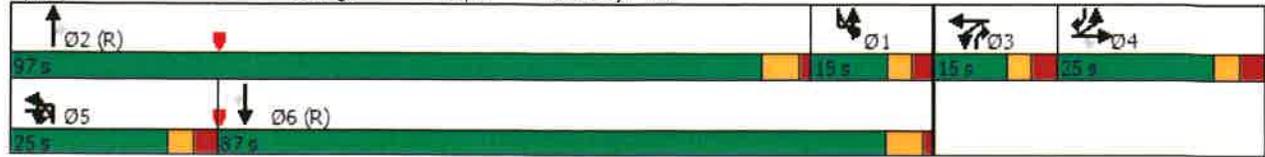
# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

! Phase conflict between lane groups.

Splits and Phases: 1: South College Road & Cape Fear Academy/Pine Cliff Drive



	↓	↙
Lane Group	SBT	SBR
Total Split (s)	87.0	25.0
Total Split (%)	57.2%	16.4%
Maximum Green (s)	81.1	18.6
Yellow Time (s)	4.5	3.2
All-Red Time (s)	1.4	3.2
Lost Time Adjust (s)	-0.9	-1.4
Total Lost Time (s)	5.0	5.0
Lead/Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes
Vehicle Extension (s)	6.0	2.0
Minimum Gap (s)	3.0	2.0
Time Before Reduce (s)	15.0	0.0
Time To Reduce (s)	45.0	0.0
Recall Mode	C-Max	None
Act Effct Green (s)	114.2	122.8
Actuated g/C Ratio	0.75	0.81
v/c Ratio	0.95	0.00
Control Delay	28.5	3.7
Queue Delay	0.0	0.0
Total Delay	28.5	3.7
LOS	C	A
Approach Delay	28.9	
Approach LOS	C	
Queue Length 50th (ft)	1016	0
Queue Length 95th (ft)	#1664	3
Internal Link Dist (ft)	1913	
Turn Bay Length (ft)		400
Base Capacity (vph)	2658	1400
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.95	0.00
Intersection Summary		

Lanes, Volumes, Timings

Combined (2024) PM - Phase 2 Alt 4

1: South College Road & Cape Fear Academy/Pine Cliff Drive

04/27/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Traffic Volume (vph)	26	4	6	8	4	3	84	5	1556	6	18	5
Future Volume (vph)	26	4	6	8	4	3	84	5	1556	6	18	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			1%				0%			
Storage Length (ft)	100		0	0		0		475		225		200
Storage Lanes	1		1	0		0		1		1		1
Taper Length (ft)	100			100				100				100
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Fr <sub>t</sub>			0.850		0.975					0.850		
Fl <sub>t</sub> Protected	0.950	0.964			0.973			0.950				0.950
Satd. Flow (prot)	1690	1714	1591	0	1758	0	0	1770	3539	1583	0	1770
Fl <sub>t</sub> Permitted	0.950	0.964			0.973			0.950				0.950
Satd. Flow (perm)	1690	1714	1591	0	1758	0	0	1770	3539	1583	0	1770
Right Turn on Red			No			No				No		
Satd. Flow (RTOR)												
Link Speed (mph)		25			25				45			
Link Distance (ft)		243			1197				651			
Travel Time (s)		6.6			32.6				9.9			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	29	4	7	9	4	3	93	6	1729	7	20	6
Shared Lane Traffic (%)	43%											
Lane Group Flow (vph)	17	16	7	0	16	0	0	99	1729	7	0	26
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right	Left	Left	Right	R NA	Left	Left	Right	R NA	Left
Median Width(ft)		12			0				24			
Link Offset(ft)		0			12				0			
Crosswalk Width(ft)		16			16				16			
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	1.01	1.01	1.01	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	9	15		9	9	15
Number of Detectors	1	1	1	1	1		1	1	1	0	1	1
Detector Template				Left			Left				Left	
Leading Detector (ft)	40	40	40	20	40		20	40	306	0	20	40
Trailing Detector (ft)	0	0	0	0	0		0	0	300	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	300	0	0	0
Detector 1 Size(ft)	40	40	40	20	40		20	40	6	20	20	40
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	3.0	0.0	15.0	0.0	5.0		0.0	10.0	0.0	0.0	0.0	10.0
Turn Type	Split	NA	pm+ov	Split	NA		Prot	Prot	NA	pm+ov	Prot	Prot
Protected Phases	4	4	5!	3	3		5!	5	2	3	1	1
Permitted Phases			4							2		
Detector Phase	4	4	5	3	3		5	5	2	3	1	1
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	12.0	5.0	5.0	5.0
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0		12.0	12.0	19.0	12.0	12.0	12.0

Lanes, Volumes, Timings

Combined (2024) PM - Phase 2 Alt 4

1: South College Road & Cape Fear Academy/Pine Cliff Drive

04/27/2019

	↓	↙
Lane Group	SBT	SBR
Lane Configurations	↑↑	↗
Traffic Volume (vph)	2561	14
Future Volume (vph)	2561	14
Ideal Flow (vphpl)	1900	1900
Grade (%)	0%	
Storage Length (ft)		400
Storage Lanes		1
Taper Length (ft)		
Lane Util. Factor	0.95	1.00
Frt		0.850
Flt Protected		
Satd. Flow (prot)	3539	1583
Flt Permitted		
Satd. Flow (perm)	3539	1583
Right Turn on Red		No
Satd. Flow (RTOR)		
Link Speed (mph)	45	
Link Distance (ft)	1993	
Travel Time (s)	30.2	
Peak Hour Factor	0.90	0.90
Adj. Flow (vph)	2846	16
Shared Lane Traffic (%)		
Lane Group Flow (vph)	2846	16
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	24	
Link Offset(ft)	0	
Crosswalk Width(ft)	16	
Two way Left Turn Lane		
Headway Factor	1.00	1.00
Turning Speed (mph)		9
Number of Detectors	1	0
Detector Template		
Leading Detector (ft)	306	0
Trailing Detector (ft)	300	0
Detector 1 Position(ft)	300	0
Detector 1 Size(ft)	6	0
Detector 1 Type	Cl+Ex	Cl+Ex
Detector 1 Channel		
Detector 1 Extend (s)	0.0	0.0
Detector 1 Queue (s)	0.0	0.0
Detector 1 Delay (s)	0.0	0.0
Turn Type	NA	pm+ov
Protected Phases	6	4
Permitted Phases		6
Detector Phase	6	4
Switch Phase		
Minimum Initial (s)	12.0	5.0
Minimum Split (s)	19.0	12.0

Lanes, Volumes, Timings

Combined (2024) PM - Phase 2 Alt 4

1: South College Road & Cape Fear Academy/Pine Cliff Drive

04/27/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Total Split (s)	14.0	14.0	19.0	14.0	14.0		19.0	19.0	109.0	14.0	15.0	15.0
Total Split (%)	9.2%	9.2%	12.5%	9.2%	9.2%		12.5%	12.5%	71.7%	9.2%	9.9%	9.9%
Maximum Green (s)	7.6	7.6	13.1	7.7	7.7		13.1	13.1	103.1	7.7	9.2	9.2
Yellow Time (s)	3.2	3.2	3.0	3.1	3.1		3.0	3.0	4.5	3.1	3.0	3.0
All-Red Time (s)	3.2	3.2	2.9	3.2	3.2		2.9	2.9	1.4	3.2	2.8	2.8
Lost Time Adjust (s)	-1.4	-1.4	-0.9		-1.3				-0.9	-0.9	-1.3	-0.8
Total Lost Time (s)	5.0	5.0	5.0		5.0				5.0	5.0		5.0
Lead/Lag	Lag	Lag	Lead	Lead	Lead		Lead	Lead	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	6.0	2.0	2.0	2.0
Minimum Gap (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	3.0	2.0	2.0	2.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	15.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	45.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	None		None	None	C-Max	None	None	None
Act Effct Green (s)	7.5	7.5	22.9		7.3				12.7	121.0	128.0	8.4
Actuated g/C Ratio	0.05	0.05	0.15		0.05				0.08	0.80	0.84	0.06
v/c Ratio	0.20	0.19	0.03		0.19				0.67	0.61	0.01	0.27
Control Delay	74.7	74.0	51.3		74.1				98.1	5.5	1.8	74.8
Queue Delay	0.0	0.0	0.0		0.0				0.0	0.0	0.0	0.0
Total Delay	74.7	74.0	51.3		74.1				98.1	5.5	1.8	74.8
LOS	E	E	D		E				F	A	A	E
Approach Delay		70.3			74.1				10.4			
Approach LOS		E			E				B			
Queue Length 50th (ft)	17	16	6		16			103	235	1		25
Queue Length 95th (ft)	46	44	21		42			m160	247	m1		59
Internal Link Dist (ft)		163			1117				571			
Turn Bay Length (ft)	100							475		225		200
Base Capacity (vph)	100	101	257		104			167	2816	1345		116
Starvation Cap Reductn	0	0	0		0			0	0	0		0
Spillback Cap Reductn	0	0	0		0			0	0	0		0
Storage Cap Reductn	0	0	0		0			0	0	0		0
Reduced v/c Ratio	0.17	0.16	0.03		0.15			0.59	0.61	0.01		0.22

Intersection Summary

Area Type: Other  
 Cycle Length: 152  
 Actuated Cycle Length: 152  
 Offset: 50 (33%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 150  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.10  
 Intersection Signal Delay: 48.9  
 Intersection Capacity Utilization 94.8%  
 Analysis Period (min) 15  
 ~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.

	↓	↙
Lane Group	SBT	SBR
Total Split (s)	105.0	14.0
Total Split (%)	69.1%	9.2%
Maximum Green (s)	99.1	7.6
Yellow Time (s)	4.5	3.2
All-Red Time (s)	1.4	3.2
Lost Time Adjust (s)	-0.9	-1.4
Total Lost Time (s)	5.0	5.0
Lead/Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes
Vehicle Extension (s)	6.0	2.0
Minimum Gap (s)	3.0	2.0
Time Before Reduce (s)	15.0	0.0
Time To Reduce (s)	45.0	0.0
Recall Mode	C-Max	None
Act Effct Green (s)	111.3	120.8
Actuated g/C Ratio	0.73	0.79
v/c Ratio	1.10	0.01
Control Delay	73.3	3.1
Queue Delay	0.0	0.0
Total Delay	73.3	3.1
LOS	E	A
Approach Delay	73.0	
Approach LOS	E	
Queue Length 50th (ft)	~1772	2
Queue Length 95th (ft)	#1928	6
Internal Link Dist (ft)	1913	
Turn Bay Length (ft)		400
Base Capacity (vph)	2590	1273
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	1.10	0.01
Intersection Summary		

! Phase conflict between lane groups.

Splits and Phases: 1: South College Road & Cape Fear Academy/Pine Cliff Drive

 Ø2 (R) 	 Ø1	 Ø3	 Ø4
103 s	15 s	14 s	14 s
 Ø5	 Ø6 (R)		
19 s	105 s		

Lanes, Volumes, Timings

Combined (2024) Saturday - Phase 2 Alt 4

1: South College Road & Cape Fear Academy/Pine Cliff Drive

04/27/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Traffic Volume (vph)	4	4	4	16	2	3	95	4	1891	7	15	8
Future Volume (vph)	4	4	4	16	2	3	95	4	1891	7	15	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			1%				0%			
Storage Length (ft)	100		0	0		0		475		225		200
Storage Lanes	1		1	0		0		1		1		1
Taper Length (ft)	100			100				100				100
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Flt Protected	0.950				0.962			0.950				0.950
Satd. Flow (prot)	1681	1770	1583	0	1751	0	0	1770	3539	1583	0	1770
Flt Permitted	0.950				0.962			0.950				0.950
Satd. Flow (perm)	1681	1770	1583	0	1751	0	0	1770	3539	1583	0	1770
Right Turn on Red			No			No				No		
Satd. Flow (RTOR)												
Link Speed (mph)		25			25				45			
Link Distance (ft)		243			1197				663			
Travel Time (s)		6.6			32.6				10.0			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	4	4	4	18	2	3	106	4	2101	8	17	9
Shared Lane Traffic (%)	10%											
Lane Group Flow (vph)	4	4	4	0	23	0	0	110	2101	8	0	26
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right	Left	Left	Right	R NA	Left	Left	Right	R NA	Left
Median Width(ft)		12			0				24			
Link Offset(ft)		0			12				0			
Crosswalk Width(ft)		16			16				16			
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.01	1.01	1.01	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	9	15		9	9	15
Number of Detectors	1	1	1	1	1		1	1	1	0	1	1
Detector Template				Left			Left				Left	
Leading Detector (ft)	40	40	40	20	40		20	40	306	0	20	40
Trailing Detector (ft)	0	0	0	0	0		0	0	300	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	300	0	0	0
Detector 1 Size(ft)	40	40	40	20	40		20	40	6	20	20	40
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	3.0	0.0	15.0	0.0	5.0		0.0	10.0	0.0	0.0	0.0	10.0
Turn Type	Split	NA	pm+ov	Split	NA		Prot	Prot	NA	pm+ov	Prot	Prot
Protected Phases	4	4	5!	3	3		5!	5	2	3	1	1
Permitted Phases			4							2		
Detector Phase	4	4	5	3	3		5	5	2	3	1	1
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	12.0	5.0	5.0	5.0
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0		12.0	12.0	19.0	12.0	12.0	12.0

Lanes, Volumes, Timings

Combined (2024) Saturday - Phase 2 Alt 4

1: South College Road & Cape Fear Academy/Pine Cliff Drive

04/27/2019

	↓	↙
Lane Group	SBT	SBR
Lane Configurations	↑↑	↗
Traffic Volume (vph)	2275	3
Future Volume (vph)	2275	3
Ideal Flow (vphpl)	1900	1900
Grade (%)	0%	
Storage Length (ft)		400
Storage Lanes		1
Taper Length (ft)		
Lane Util. Factor	0.95	1.00
Frt		0.850
Flt Protected		
Satd. Flow (prot)	3539	1583
Flt Permitted		
Satd. Flow (perm)	3539	1583
Right Turn on Red		No
Satd. Flow (RTOR)		
Link Speed (mph)	45	
Link Distance (ft)	1993	
Travel Time (s)	30.2	
Peak Hour Factor	0.90	0.90
Adj. Flow (vph)	2528	3
Shared Lane Traffic (%)		
Lane Group Flow (vph)	2528	3
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	24	
Link Offset(ft)	0	
Crosswalk Width(ft)	16	
Two way Left Turn Lane		
Headway Factor	1.00	1.00
Turning Speed (mph)		9
Number of Detectors	1	0
Detector Template		
Leading Detector (ft)	306	0
Trailing Detector (ft)	300	0
Detector 1 Position(ft)	300	0
Detector 1 Size(ft)	6	0
Detector 1 Type	CI+Ex	CI+Ex
Detector 1 Channel		
Detector 1 Extend (s)	0.0	0.0
Detector 1 Queue (s)	0.0	0.0
Detector 1 Delay (s)	0.0	0.0
Turn Type	NA	pm+ov
Protected Phases	6	4
Permitted Phases		6
Detector Phase	6	4
Switch Phase		
Minimum Initial (s)	12.0	5.0
Minimum Split (s)	19.0	12.0

Lanes, Volumes, Timings

Combined (2024) Saturday - Phase 2 Alt 4

1: South College Road & Cape Fear Academy/Pine Cliff Drive

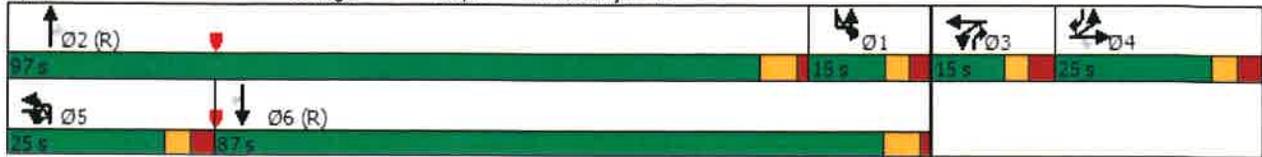
04/27/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Total Split (s)	25.0	25.0	25.0	15.0	15.0		25.0	25.0	97.0	15.0	15.0	15.0
Total Split (%)	16.4%	16.4%	16.4%	9.9%	9.9%		16.4%	16.4%	63.8%	9.9%	9.9%	9.9%
Maximum Green (s)	18.6	18.6	19.1	8.7	8.7		19.1	19.1	91.1	8.7	9.2	9.2
Yellow Time (s)	3.2	3.2	3.0	3.1	3.1		3.0	3.0	4.5	3.1	3.0	3.0
All-Red Time (s)	3.2	3.2	2.9	3.2	3.2		2.9	2.9	1.4	3.2	2.8	2.8
Lost Time Adjust (s)	-1.4	-1.4	-0.9		-1.3				-0.9	-0.9	-1.3	-0.8
Total Lost Time (s)	5.0	5.0	5.0		5.0				5.0	5.0		5.0
Lead/Lag	Lag	Lag	Lead	Lead	Lead		Lead	Lead	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	6.0	2.0	2.0	2.0
Minimum Gap (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	3.0	2.0	2.0	2.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	15.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	45.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	None		None	None	C-Max	None	None	None
Act Effct Green (s)	6.6	6.6	19.5		7.9				14.7	126.9	133.2	8.4
Actuated g/C Ratio	0.04	0.04	0.13		0.05				0.10	0.83	0.88	0.06
v/c Ratio	0.05	0.05	0.02		0.25				0.64	0.71	0.01	0.27
Control Delay	71.0	71.0	50.5		75.5				87.0	8.7	1.1	74.8
Queue Delay	0.0	0.0	0.0		0.0				0.0	0.0	0.0	0.0
Total Delay	71.0	71.0	50.5		75.5				87.0	8.7	1.1	74.8
LOS	E	E	D		E				F	A	A	E
Approach Delay		64.2			75.5				12.5			
Approach LOS		E			E				B			
Queue Length 50th (ft)	4	4	4		22			102	264	1		25
Queue Length 95th (ft)	18	18	14		54			m124	986	m1		59
Internal Link Dist (ft)		163			1117				583			
Turn Bay Length (ft)	100							475		225		200
Base Capacity (vph)	221	232	258		115			233	2954	1384		116
Starvation Cap Reductn	0	0	0		0			0	0	0		0
Spillback Cap Reductn	0	0	0		0			0	0	0		0
Storage Cap Reductn	0	0	0		0			0	0	0		0
Reduced v/c Ratio	0.02	0.02	0.02		0.20			0.47	0.71	0.01		0.22

Intersection Summary

Area Type: Other  
 Cycle Length: 152  
 Actuated Cycle Length: 152  
 Offset: 84 (55%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 140  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.95  
 Intersection Signal Delay: 21.7  
 Intersection Capacity Utilization 93.4%  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.  
 ! Phase conflict between lane groups.

Splits and Phases: 1: South College Road & Cape Fear Academy/Pine Cliff Drive



	↓	↙
Lane Group	SBT	SBR
Total Split (s)	87.0	25.0
Total Split (%)	57.2%	16.4%
Maximum Green (s)	81.1	18.6
Yellow Time (s)	4.5	3.2
All-Red Time (s)	1.4	3.2
Lost Time Adjust (s)	-0.9	-1.4
Total Lost Time (s)	5.0	5.0
Lead/Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes
Vehicle Extension (s)	6.0	2.0
Minimum Gap (s)	3.0	2.0
Time Before Reduce (s)	15.0	0.0
Time To Reduce (s)	45.0	0.0
Recall Mode	C-Max	None
Act Effct Green (s)	114.2	122.8
Actuated g/C Ratio	0.75	0.81
v/c Ratio	0.95	0.00
Control Delay	28.5	3.7
Queue Delay	0.0	0.0
Total Delay	28.5	3.7
LOS	C	A
Approach Delay	28.9	
Approach LOS	C	
Queue Length 50th (ft)	1016	0
Queue Length 95th (ft)	#1664	3
Internal Link Dist (ft)	1913	
Turn Bay Length (ft)		400
Base Capacity (vph)	2658	1400
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.95	0.00
Intersection Summary		

# **APPENDIX E**

**CAPACITY ANALYSIS CALCULATIONS**

**S. COLLEGE ROAD**

**&**

**MOHICAN TRAIL**

Lanes, Volumes, Timings  
 2: South College Road & S. College Road/Mohican Trail

Existing (2019) PM  
 04/26/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	169	0	0	0	98	0	1209	66	0	0	0
Future Volume (vph)	4	169	0	0	0	98	0	1209	66	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			2%			0%			0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Frnt						0.865			0.850			
Flt Protected		0.999										
Satd. Flow (prot)	0	1861	0	0	0	1595	0	3539	1583	0	0	0
Flt Permitted		0.999										
Satd. Flow (perm)	0	1861	0	0	0	1595	0	3539	1583	0	0	0
Right Turn on Red	No		No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			40			45			45	
Link Distance (ft)		350			1444			300			835	
Travel Time (s)		5.3			24.6			4.5			12.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	4	188	0	0	0	109	0	1343	73	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	192	0	0	0	109	0	1343	73	0	0	0
Turn Type	custom	NA				Prot		NA	Perm			
Protected Phases		7				7		2!				
Permitted Phases	7 2!	2!							2			
Detector Phase	7 2	7				7		2	2			
Switch Phase												
Minimum Initial (s)		5.0				5.0		12.0	12.0			
Minimum Split (s)		10.6				10.6		17.9	17.9			
Total Split (s)		40.0				40.0		90.0	90.0			
Total Split (%)		30.8%				30.8%		69.2%	69.2%			
Maximum Green (s)		34.4				34.4		84.1	84.1			
Yellow Time (s)		3.0				3.0		4.5	4.5			
All-Red Time (s)		2.6				2.6		1.4	1.4			
Lost Time Adjust (s)		-0.6				-0.6		-0.9	-0.9			
Total Lost Time (s)		5.0				5.0		5.0	5.0			
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		2.0				2.0		6.0	6.0			
Minimum Gap (s)		2.0				2.0		3.0	3.0			
Time Before Reduce (s)		0.0				0.0		15.0	15.0			
Time To Reduce (s)		0.0				0.0		45.0	45.0			
Recall Mode		None				None		Min	Min			
Act Effct Green (s)		50.7				8.9		31.5	31.5			
Actuated g/C Ratio		1.00				0.18		0.62	0.62			
v/c Ratio		0.10				0.39		0.61	0.07			
Control Delay		0.1				24.3		7.4	4.3			
Queue Delay		0.0				0.0		0.0	0.0			
Total Delay		0.1				24.3		7.4	4.3			
LOS		A				C		A	A			
Approach Delay		0.1			24.3			7.3				

Lanes, Volumes, Timings  
 2: South College Road & S. College Road/Mohican Trail

Existing (2019) PM  
 04/26/2019

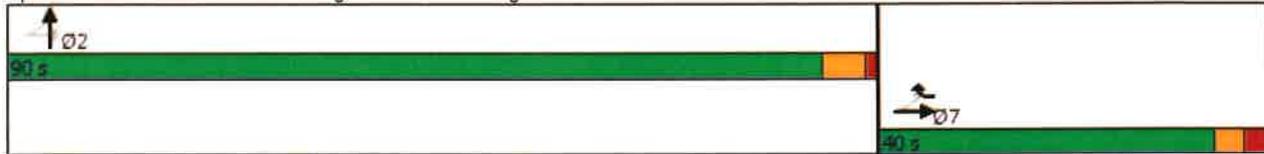
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		A			C			A				
Queue Length 50th (ft)		0				30		101	7			
Queue Length 95th (ft)		0				72		185	21			
Internal Link Dist (ft)		270			1364			220			755	
Turn Bay Length (ft)												
Base Capacity (vph)		1829				1127		3539	1583			
Starvation Cap Reductn		0				0		0	0			
Spillback Cap Reductn		0				0		0	0			
Storage Cap Reductn		0				0		0	0			
Reduced v/c Ratio		0.10				0.10		0.38	0.05			

Intersection Summary

Area Type: Other  
 Cycle Length: 130  
 Actuated Cycle Length: 50.7  
 Natural Cycle: 40  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.61  
 Intersection Signal Delay: 7.6  
 Intersection Capacity Utilization 61.1%  
 Analysis Period (min) 15  
 ! Phase conflict between lane groups.

Intersection LOS: A  
 ICU Level of Service B

Splits and Phases: 2: South College Road & S. College Road/Mohican Trail



Lanes, Volumes, Timings

Existing (2019) Saturday

2: South College Road & S. College Road/Mohican Trail

04/26/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	124	0	0	0	125	0	1573	59	0	0	0
Future Volume (vph)	4	124	0	0	0	125	0	1573	59	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			2%			0%			0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Frnt						0.865			0.850			
Fit Protected		0.999										
Satd. Flow (prot)	0	1861	0	0	0	1595	0	3539	1583	0	0	0
Fit Permitted		0.999										
Satd. Flow (perm)	0	1861	0	0	0	1595	0	3539	1583	0	0	0
Right Turn on Red	No		No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			40			45			45	
Link Distance (ft)		350			1632			300			835	
Travel Time (s)		5.3			27.8			4.5			12.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	4	138	0	0	0	139	0	1748	66	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	142	0	0	0	139	0	1748	66	0	0	0
Turn Type	custom	NA				Prot		NA	Perm			
Protected Phases		7				7		2!				
Permitted Phases	7 2!	2!							2			
Detector Phase	7 2	7				7		2	2			
Switch Phase												
Minimum Initial (s)		5.0				5.0		12.0	12.0			
Minimum Split (s)		10.6				10.6		17.9	17.9			
Total Split (s)		30.0				30.0		122.0	122.0			
Total Split (%)		19.7%				19.7%		80.3%	80.3%			
Maximum Green (s)		24.4				24.4		116.1	116.1			
Yellow Time (s)		3.0				3.0		4.5	4.5			
All-Red Time (s)		2.6				2.6		1.4	1.4			
Lost Time Adjust (s)		-0.6				-0.6		-0.9	-0.9			
Total Lost Time (s)		5.0				5.0		5.0	5.0			
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		2.0				2.0		6.0	6.0			
Minimum Gap (s)		2.0				2.0		3.0	3.0			
Time Before Reduce (s)		0.0				0.0		15.0	15.0			
Time To Reduce (s)		0.0				0.0		45.0	45.0			
Recall Mode		None				None		C-Max	C-Max			
Act Effct Green (s)		152.0				18.2		123.8	123.8			
Actuated g/C Ratio		1.00				0.12		0.81	0.81			
v/c Ratio		0.08				0.73		0.61	0.05			
Control Delay		0.1				85.6		6.7	3.4			
Queue Delay		0.0				0.0		0.0	0.0			
Total Delay		0.1				85.6		6.7	3.4			
LOS		A				F		A	A			
Approach Delay		0.1			85.6			6.6				

Lanes, Volumes, Timings

Existing (2019) Saturday

2: South College Road & S. College Road/Mohican Trail

04/26/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		A			F			A				
Queue Length 50th (ft)		0				135		281	11			
Queue Length 95th (ft)		m0				203		423	26			
Internal Link Dist (ft)		270			1552			220			755	
Turn Bay Length (ft)												
Base Capacity (vph)		1858				262		2883	1289			
Starvation Cap Reductn		0				0		0	0			
Spillback Cap Reductn		0				0		0	0			
Storage Cap Reductn		0				0		0	0			
Reduced v/c Ratio		0.08				0.53		0.61	0.05			

Intersection Summary

Area Type: Other  
 Cycle Length: 152  
 Actuated Cycle Length: 152  
 Offset: 97 (64%), Referenced to phase 2:NBEB, Start of Green  
 Natural Cycle: 55  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.73  
 Intersection Signal Delay: 11.4  
 Intersection Capacity Utilization 70.5%  
 Analysis Period (min) 15  
 m Volume for 95th percentile queue is metered by upstream signal.  
 ! Phase conflict between lane groups.

Splits and Phases: 2: South College Road & S. College Road/Mohican Trail



Lanes, Volumes, Timings

Background (2021) PM

2: South College Road & S. College Road/Mohican Trail

04/26/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	171	0	0	0	149	0	1233	98	0	0	0
Future Volume (vph)	4	171	0	0	0	149	0	1233	98	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			2%			0%			0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Frt						0.865			0.850			
Flt Protected		0.999										
Satd. Flow (prot)	0	1861	0	0	0	1595	0	3539	1583	0	0	0
Flt Permitted		0.999										
Satd. Flow (perm)	0	1861	0	0	0	1595	0	3539	1583	0	0	0
Right Turn on Red	No		No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			40			45			45	
Link Distance (ft)		350			1444			300			835	
Travel Time (s)		5.3			24.6			4.5			12.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	4	190	0	0	0	166	0	1370	109	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	194	0	0	0	166	0	1370	109	0	0	0
Turn Type	custom	NA				Prot		NA	Perm			
Protected Phases		7				7		2!				
Permitted Phases	7 2!	2!							2			
Detector Phase	7 2	7				7		2	2			
Switch Phase												
Minimum Initial (s)		5.0				5.0		12.0	12.0			
Minimum Split (s)		10.6				10.6		17.9	17.9			
Total Split (s)		40.0				40.0		90.0	90.0			
Total Split (%)		30.8%				30.8%		69.2%	69.2%			
Maximum Green (s)		34.4				34.4		84.1	84.1			
Yellow Time (s)		3.0				3.0		4.5	4.5			
All-Red Time (s)		2.6				2.6		1.4	1.4			
Lost Time Adjust (s)		-0.6				-0.6		-0.9	-0.9			
Total Lost Time (s)		5.0				5.0		5.0	5.0			
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		2.0				2.0		6.0	6.0			
Minimum Gap (s)		2.0				2.0		3.0	3.0			
Time Before Reduce (s)		0.0				0.0		15.0	15.0			
Time To Reduce (s)		0.0				0.0		45.0	45.0			
Recall Mode		None				None		Min	Min			
Act Effct Green (s)		54.9				11.3		33.3	33.3			
Actuated g/C Ratio		1.00				0.21		0.61	0.61			
v/c Ratio		0.10				0.51		0.64	0.11			
Control Delay		0.1				26.3		8.9	5.4			
Queue Delay		0.0				0.0		0.0	0.0			
Total Delay		0.1				26.3		8.9	5.4			
LOS		A				C		A	A			
Approach Delay		0.1			26.3			8.6				

Lanes, Volumes, Timings

Background (2021) PM

2: South College Road & S. College Road/Mohican Trail

04/26/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		A			C			A				
Queue Length 50th (ft)		0				50		123	12			
Queue Length 95th (ft)		0				108		232	36			
Internal Link Dist (ft)		270			1364			220			755	
Turn Bay Length (ft)												
Base Capacity (vph)		1861				1042		3539	1583			
Starvation Cap Reductn		0				0		0	0			
Spillback Cap Reductn		0				0		0	0			
Storage Cap Reductn		0				0		0	0			
Reduced v/c Ratio		0.10				0.16		0.39	0.07			

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 54.9

Natural Cycle: 40

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.64

Intersection Signal Delay: 9.3

Intersection LOS: A

Intersection Capacity Utilization 65.0%

ICU Level of Service C

Analysis Period (min) 15

! Phase conflict between lane groups.

Splits and Phases: 2: South College Road & S. College Road/Mohican Trail



Lanes, Volumes, Timings

Background (2021) Saturday

2: South College Road & S. College Road/Mohican Trail

04/26/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	126	0	0	0	187	0	1605	87	0	0	0
Future Volume (vph)	4	126	0	0	0	187	0	1605	87	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			2%			0%			0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Frnt						0.865			0.850			
Flt Protected		0.999										
Satd. Flow (prot)	0	1861	0	0	0	1595	0	3539	1583	0	0	0
Flt Permitted		0.999										
Satd. Flow (perm)	0	1861	0	0	0	1595	0	3539	1583	0	0	0
Right Turn on Red	No		No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			40			45			45	
Link Distance (ft)		350			1632			300			835	
Travel Time (s)		5.3			27.8			4.5			12.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	4	140	0	0	0	208	0	1783	97	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	144	0	0	0	208	0	1783	97	0	0	0
Turn Type	custom	NA				Prot		NA	Perm			
Protected Phases		7				7		2!				
Permitted Phases	7 2!	2!							2			
Detector Phase	7 2	7				7		2	2			
Switch Phase												
Minimum Initial (s)		5.0				5.0		12.0	12.0			
Minimum Split (s)		10.6				10.6		17.9	17.9			
Total Split (s)		30.0				30.0		122.0	122.0			
Total Split (%)		19.7%				19.7%		80.3%	80.3%			
Maximum Green (s)		24.4				24.4		116.1	116.1			
Yellow Time (s)		3.0				3.0		4.5	4.5			
All-Red Time (s)		2.6				2.6		1.4	1.4			
Lost Time Adjust (s)		-0.6				-0.6		-0.9	-0.9			
Total Lost Time (s)		5.0				5.0		5.0	5.0			
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		2.0				2.0		6.0	6.0			
Minimum Gap (s)		2.0				2.0		3.0	3.0			
Time Before Reduce (s)		0.0				0.0		15.0	15.0			
Time To Reduce (s)		0.0				0.0		45.0	45.0			
Recall Mode		None				None		C-Max	C-Max			
Act Effct Green (s)		152.0				22.8		119.2	119.2			
Actuated g/C Ratio		1.00				0.15		0.78	0.78			
v/c Ratio		0.08				0.87		0.64	0.08			
Control Delay		0.1				95.1		8.7	4.2			
Queue Delay		0.0				0.0		0.0	0.0			
Total Delay		0.1				95.1		8.7	4.2			
LOS		A				F		A	A			
Approach Delay		0.1			95.1			8.5				

Lanes, Volumes, Timings

Background (2021) Saturday

2: South College Road & S. College Road/Mohican Trail

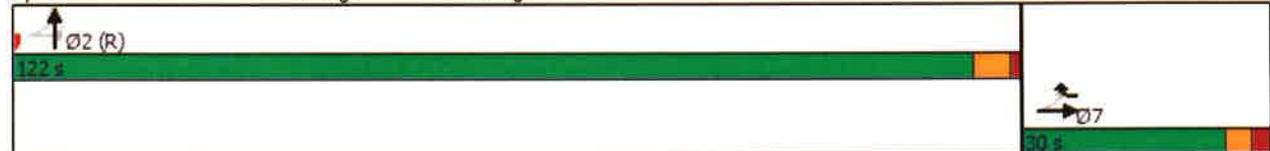
04/26/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		A			F			A				
Queue Length 50th (ft)		0				201		381	21			
Queue Length 95th (ft)		m0				#329		440	35			
Internal Link Dist (ft)		270			1552			220			755	
Turn Bay Length (ft)												
Base Capacity (vph)		1856				262		2775	1241			
Starvation Cap Reductn		0				0		0	0			
Spillback Cap Reductn		0				0		0	0			
Storage Cap Reductn		0				0		0	0			
Reduced v/c Ratio		0.08				0.79		0.64	0.08			

Intersection Summary

Area Type: Other  
 Cycle Length: 152  
 Actuated Cycle Length: 152  
 Offset: 97 (64%), Referenced to phase 2:NBEB, Start of Green  
 Natural Cycle: 60  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.87  
 Intersection Signal Delay: 16.0  
 Intersection Capacity Utilization 75.3%  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.  
 ! Phase conflict between lane groups.

Splits and Phases: 2: South College Road & S. College Road/Mohican Trail



Lanes, Volumes, Timings

Combined (2021) PM - Phase 1B Alt 1

2: South College Road & S. College Road/Mohican Trail

04/26/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	171	0	0	0	149	0	1267	98	0	0	0
Future Volume (vph)	50	171	0	0	0	149	0	1267	98	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			2%			0%			0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Fr						0.865			0.850			
Flt Protected		0.989										
Satd. Flow (prot)	0	1842	0	0	0	1595	0	3539	1583	0	0	0
Flt Permitted		0.989										
Satd. Flow (perm)	0	1842	0	0	0	1595	0	3539	1583	0	0	0
Right Turn on Red	No		No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			40			45			45	
Link Distance (ft)		350			1444			300			463	
Travel Time (s)		5.3			24.6			4.5			7.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	56	190	0	0	0	166	0	1408	109	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	246	0	0	0	166	0	1408	109	0	0	0
Turn Type	custom	NA				Prot		NA	Perm			
Protected Phases		7				7		2!				
Permitted Phases	7 2!	2!							2			
Detector Phase	7 2	7				7		2	2			
Switch Phase												
Minimum Initial (s)		5.0				5.0		12.0	12.0			
Minimum Split (s)		10.6				10.6		17.9	17.9			
Total Split (s)		40.0				40.0		90.0	90.0			
Total Split (%)		30.8%				30.8%		69.2%	69.2%			
Maximum Green (s)		34.4				34.4		84.1	84.1			
Yellow Time (s)		3.0				3.0		4.5	4.5			
All-Red Time (s)		2.6				2.6		1.4	1.4			
Lost Time Adjust (s)		-0.6				-0.6		-0.9	-0.9			
Total Lost Time (s)		5.0				5.0		5.0	5.0			
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		2.0				2.0		6.0	6.0			
Minimum Gap (s)		2.0				2.0		3.0	3.0			
Time Before Reduce (s)		0.0				0.0		15.0	15.0			
Time To Reduce (s)		0.0				0.0		45.0	45.0			
Recall Mode		None				None		Min	Min			
Act Effct Green (s)		56.6				11.5		34.8	34.8			
Actuated g/C Ratio		1.00				0.20		0.61	0.61			
v/c Ratio		0.13				0.51		0.65	0.11			
Control Delay		0.1				27.2		9.0	5.4			
Queue Delay		0.0				0.0		0.0	0.0			
Total Delay		0.1				27.2		9.0	5.4			
LOS		A				C		A	A			
Approach Delay		0.1			27.2			8.8				

Lanes, Volumes, Timings

Combined (2021) PM - Phase 1B Alt 1

2: South College Road & S. College Road/Mohican Trail

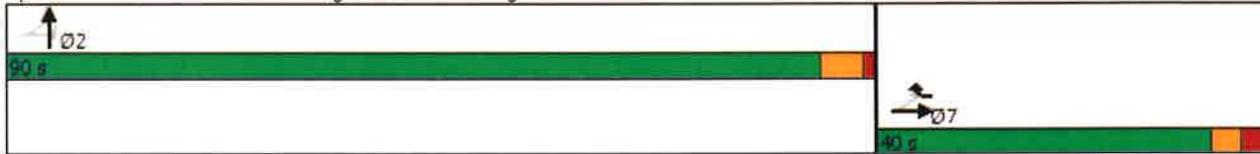
04/26/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		A			C			A				
Queue Length 50th (ft)		0				51		130	12			
Queue Length 95th (ft)		0				113		247	36			
Internal Link Dist (ft)		270			1364			220			383	
Turn Bay Length (ft)												
Base Capacity (vph)		1842				1010		3539	1583			
Starvation Cap Reductn		0				0		0	0			
Spillback Cap Reductn		0				0		0	0			
Storage Cap Reductn		0				0		0	0			
Reduced v/c Ratio		0.13				0.16		0.40	0.07			

Intersection Summary

Area Type: Other  
 Cycle Length: 130  
 Actuated Cycle Length: 56.6  
 Natural Cycle: 40  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.65  
 Intersection Signal Delay: 9.2  
 Intersection Capacity Utilization 68.5%  
 Analysis Period (min) 15  
 ! Phase conflict between lane groups.

Splits and Phases: 2: South College Road & S. College Road/Mohican Trail



Lanes, Volumes, Timings

Combined (2021) Saturday - Phase 1B Alt 1

2: South College Road & S. College Road/Mohican Trail

04/26/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	126	0	0	0	187	0	1640	87	0	0	0
Future Volume (vph)	35	126	0	0	0	187	0	1640	87	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			2%			0%			0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Frts						0.865			0.850			
Flt Protected		0.989										
Satd. Flow (prot)	0	1842	0	0	0	1595	0	3539	1583	0	0	0
Flt Permitted		0.989										
Satd. Flow (perm)	0	1842	0	0	0	1595	0	3539	1583	0	0	0
Right Turn on Red	No		No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			40			45			45	
Link Distance (ft)		350			1632			300			447	
Travel Time (s)		5.3			27.8			4.5			6.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	39	140	0	0	0	208	0	1822	97	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	179	0	0	0	208	0	1822	97	0	0	0
Turn Type	custom	NA				Prot		NA	Perm			
Protected Phases		7				7		2!				
Permitted Phases	7 2!	2!							2			
Detector Phase	7 2	7				7		2	2			
Switch Phase												
Minimum Initial (s)		5.0				5.0		12.0	12.0			
Minimum Split (s)		10.6				10.6		17.9	17.9			
Total Split (s)		30.0				30.0		122.0	122.0			
Total Split (%)		19.7%				19.7%		80.3%	80.3%			
Maximum Green (s)		24.4				24.4		116.1	116.1			
Yellow Time (s)		3.0				3.0		4.5	4.5			
All-Red Time (s)		2.6				2.6		1.4	1.4			
Lost Time Adjust (s)		-0.6				-0.6		-0.9	-0.9			
Total Lost Time (s)		5.0				5.0		5.0	5.0			
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		2.0				2.0		6.0	6.0			
Minimum Gap (s)		2.0				2.0		3.0	3.0			
Time Before Reduce (s)		0.0				0.0		15.0	15.0			
Time To Reduce (s)		0.0				0.0		45.0	45.0			
Recall Mode		None				None		C-Max	C-Max			
Act Effct Green (s)		152.0				22.8		119.2	119.2			
Actuated g/C Ratio		1.00				0.15		0.78	0.78			
v/c Ratio		0.10				0.87		0.66	0.08			
Control Delay		0.1				95.1		9.0	4.2			
Queue Delay		0.0				0.0		0.0	0.0			
Total Delay		0.1				95.1		9.0	4.2			
LOS		A				F		A	A			
Approach Delay		0.1			95.1			8.7				

Lanes, Volumes, Timings

Combined (2021) Saturday - Phase 1B Alt 1

2: South College Road & S. College Road/Mohican Trail

04/26/2019

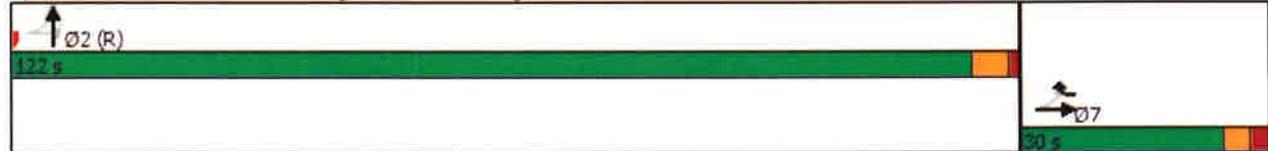
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		A			F			A				
Queue Length 50th (ft)		0				201		398	21			
Queue Length 95th (ft)		m0				#329		459	35			
Internal Link Dist (ft)		270			1552			220			367	
Turn Bay Length (ft)												
Base Capacity (vph)		1837				262		2775	1241			
Starvation Cap Reductn		0				0		0	0			
Spillback Cap Reductn		0				0		0	0			
Storage Cap Reductn		0				0		0	0			
Reduced v/c Ratio		0.10				0.79		0.66	0.08			

Intersection Summary

Area Type: Other  
 Cycle Length: 152  
 Actuated Cycle Length: 152  
 Offset: 97 (64%), Referenced to phase 2:NBEB, Start of Green  
 Natural Cycle: 60  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.87  
 Intersection Signal Delay: 15.9  
 Intersection Capacity Utilization 78.0%  
 Analysis Period (min) 15  
 Intersection LOS: B  
 ICU Level of Service D

# 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.  
 ! Phase conflict between lane groups.

Splits and Phases: 2: South College Road & S. College Road/Mohican Trail



Lanes, Volumes, Timings

Combined (2021) PM - Phase 1B Alt 4

2: South College Road & S. College Road/Mohican Trail

04/26/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	171	0	0	0	149	0	1267	98	0	0	0
Future Volume (vph)	4	171	0	0	0	149	0	1267	98	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			2%			0%			0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Frnt						0.865			0.850			
Flt Protected		0.999										
Satd. Flow (prot)	0	1861	0	0	0	1595	0	3539	1583	0	0	0
Flt Permitted		0.999										
Satd. Flow (perm)	0	1861	0	0	0	1595	0	3539	1583	0	0	0
Right Turn on Red	No		No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			40			45			45	
Link Distance (ft)		350			1444			300			463	
Travel Time (s)		5.3			24.6			4.5			7.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	4	190	0	0	0	166	0	1408	109	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	194	0	0	0	166	0	1408	109	0	0	0
Turn Type	custom	NA				Prot		NA	Perm			
Protected Phases		7				7		2!				
Permitted Phases	7 2!	2!							2			
Detector Phase	7 2	7				7		2	2			
Switch Phase												
Minimum Initial (s)		5.0				5.0		12.0	12.0			
Minimum Split (s)		10.6				10.6		17.9	17.9			
Total Split (s)		40.0				40.0		90.0	90.0			
Total Split (%)		30.8%				30.8%		69.2%	69.2%			
Maximum Green (s)		34.4				34.4		84.1	84.1			
Yellow Time (s)		3.0				3.0		4.5	4.5			
All-Red Time (s)		2.6				2.6		1.4	1.4			
Lost Time Adjust (s)		-0.6				-0.6		-0.9	-0.9			
Total Lost Time (s)		5.0				5.0		5.0	5.0			
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		2.0				2.0		6.0	6.0			
Minimum Gap (s)		2.0				2.0		3.0	3.0			
Time Before Reduce (s)		0.0				0.0		15.0	15.0			
Time To Reduce (s)		0.0				0.0		45.0	45.0			
Recall Mode		None				None		Min	Min			
Act Effct Green (s)		56.6				11.5		34.8	34.8			
Actuated g/C Ratio		1.00				0.20		0.61	0.61			
v/c Ratio		0.10				0.51		0.65	0.11			
Control Delay		0.1				27.2		9.0	5.4			
Queue Delay		0.0				0.0		0.0	0.0			
Total Delay		0.1				27.2		9.0	5.4			
LOS		A				C		A	A			
Approach Delay		0.1			27.2			8.8				

Lanes, Volumes, Timings

Combined (2021) PM - Phase 1B Alt 4

2: South College Road & S. College Road/Mohican Trail

04/26/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		A			C			A				
Queue Length 50th (ft)		0				51		130	12			
Queue Length 95th (ft)		0				113		247	36			
Internal Link Dist (ft)		270			1364			220			383	
Turn Bay Length (ft)												
Base Capacity (vph)		1861				1010		3539	1583			
Starvation Cap Reductn		0				0		0	0			
Spillback Cap Reductn		0				0		0	0			
Storage Cap Reductn		0				0		0	0			
Reduced v/c Ratio		0.10				0.16		0.40	0.07			

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 56.6

Natural Cycle: 40

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.65

Intersection Signal Delay: 9.5

Intersection LOS: A

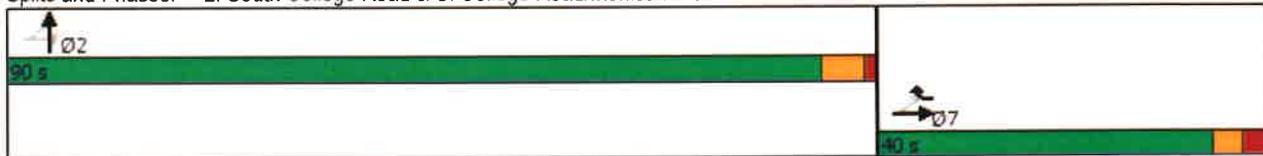
Intersection Capacity Utilization 66.0%

ICU Level of Service C

Analysis Period (min) 15

! Phase conflict between lane groups.

Splits and Phases: 2: South College Road & S. College Road/Mohican Trail



Lanes, Volumes, Timings

Combined (2021) Saturday - Phase 1B Alt 4

2: South College Road & S. College Road/Mohican Trail

04/26/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	126	0	0	0	187	0	1640	87	0	0	0
Future Volume (vph)	4	126	0	0	0	187	0	1640	87	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			2%			0%			0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Frts						0.865			0.850			
Flt Protected		0.999										
Satd. Flow (prot)	0	1861	0	0	0	1595	0	3539	1583	0	0	0
Flt Permitted		0.999										
Satd. Flow (perm)	0	1861	0	0	0	1595	0	3539	1583	0	0	0
Right Turn on Red	No		No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			40			45			45	
Link Distance (ft)		350			1632			300			447	
Travel Time (s)		5.3			27.8			4.5			6.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	4	140	0	0	0	208	0	1822	97	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	144	0	0	0	208	0	1822	97	0	0	0
Turn Type	custom	NA				Prot		NA	Perm			
Protected Phases		7				7		2!				
Permitted Phases	7 2!	2!							2			
Detector Phase	7 2	7				7		2	2			
Switch Phase												
Minimum Initial (s)		5.0				5.0		12.0	12.0			
Minimum Split (s)		10.6				10.6		17.9	17.9			
Total Split (s)		30.0				30.0		122.0	122.0			
Total Split (%)		19.7%				19.7%		80.3%	80.3%			
Maximum Green (s)		24.4				24.4		116.1	116.1			
Yellow Time (s)		3.0				3.0		4.5	4.5			
All-Red Time (s)		2.6				2.6		1.4	1.4			
Lost Time Adjust (s)		-0.6				-0.6		-0.9	-0.9			
Total Lost Time (s)		5.0				5.0		5.0	5.0			
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		2.0				2.0		6.0	6.0			
Minimum Gap (s)		2.0				2.0		3.0	3.0			
Time Before Reduce (s)		0.0				0.0		15.0	15.0			
Time To Reduce (s)		0.0				0.0		45.0	45.0			
Recall Mode		None				None		C-Max	C-Max			
Act Effct Green (s)		152.0				22.8		119.2	119.2			
Actuated g/C Ratio		1.00				0.15		0.78	0.78			
v/c Ratio		0.08				0.87		0.66	0.08			
Control Delay		0.1				95.1		9.0	4.2			
Queue Delay		0.0				0.0		0.0	0.0			
Total Delay		0.1				95.1		9.0	4.2			
LOS		A				F		A	A			
Approach Delay		0.1			95.1			8.7				

Lanes, Volumes, Timings

Combined (2021) Saturday - Phase 1B Alt 4

2: South College Road & S. College Road/Mohican Trail

04/26/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		A			F			A				
Queue Length 50th (ft)		0				201		398	21			
Queue Length 95th (ft)		m0				#329		459	35			
Internal Link Dist (ft)		270			1552			220			367	
Turn Bay Length (ft)												
Base Capacity (vph)		1856				262		2775	1241			
Starvation Cap Reductn		0				0		0	0			
Spillback Cap Reductn		0				0		0	0			
Storage Cap Reductn		0				0		0	0			
Reduced v/c Ratio		0.08				0.79		0.66	0.08			

Intersection Summary

Area Type: Other  
 Cycle Length: 152  
 Actuated Cycle Length: 152  
 Offset: 97 (64%), Referenced to phase 2:NBEB, Start of Green  
 Natural Cycle: 60  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.87  
 Intersection Signal Delay: 16.1  
 Intersection Capacity Utilization 76.3%  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.  
 ! Phase conflict between lane groups.

Splits and Phases: 2: South College Road & S. College Road/Mohican Trail



Lanes, Volumes, Timings

Background (2024) PM

2: South College Road & S. College Road/Mohican Trail

04/26/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	175	0	0	0	152	0	1271	100	0	0	0
Future Volume (vph)	4	175	0	0	0	152	0	1271	100	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			2%			0%			0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Frnt						0.865			0.850			
Flt Protected		0.999										
Satd. Flow (prot)	0	1861	0	0	0	1595	0	3539	1583	0	0	0
Flt Permitted		0.999										
Satd. Flow (perm)	0	1861	0	0	0	1595	0	3539	1583	0	0	0
Right Turn on Red	No		No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			40			45			45	
Link Distance (ft)		350			1444			300			835	
Travel Time (s)		5.3			24.6			4.5			12.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	4	194	0	0	0	169	0	1412	111	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	198	0	0	0	169	0	1412	111	0	0	0
Turn Type	custom	NA				Prot		NA	Perm			
Protected Phases		7				7		2!				
Permitted Phases	7 2!	2!							2			
Detector Phase	7 2	7				7		2	2			
Switch Phase												
Minimum Initial (s)		5.0				5.0		12.0	12.0			
Minimum Split (s)		10.6				10.6		17.9	17.9			
Total Split (s)		40.0				40.0		90.0	90.0			
Total Split (%)		30.8%				30.8%		69.2%	69.2%			
Maximum Green (s)		34.4				34.4		84.1	84.1			
Yellow Time (s)		3.0				3.0		4.5	4.5			
All-Red Time (s)		2.6				2.6		1.4	1.4			
Lost Time Adjust (s)		-0.6				-0.6		-0.9	-0.9			
Total Lost Time (s)		5.0				5.0		5.0	5.0			
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		2.0				2.0		6.0	6.0			
Minimum Gap (s)		2.0				2.0		3.0	3.0			
Time Before Reduce (s)		0.0				0.0		15.0	15.0			
Time To Reduce (s)		0.0				0.0		45.0	45.0			
Recall Mode		None				None		Min	Min			
Act Effct Green (s)		56.8				11.7		34.9	34.9			
Actuated g/C Ratio		1.00				0.21		0.61	0.61			
v/c Ratio		0.11				0.52		0.65	0.11			
Control Delay		0.1				27.3		9.1	5.5			
Queue Delay		0.0				0.0		0.0	0.0			
Total Delay		0.1				27.3		9.1	5.5			
LOS		A				C		A	A			
Approach Delay		0.1			27.3			8.9				

Lanes, Volumes, Timings

Background (2024) PM

2: South College Road & S. College Road/Mohican Trail

04/26/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		A			C			A				
Queue Length 50th (ft)		0				52		132	13			
Queue Length 95th (ft)		0				116		251	37			
Internal Link Dist (ft)		270			1364			220			755	
Turn Bay Length (ft)												
Base Capacity (vph)		1861				1006		3539	1583			
Starvation Cap Reductn		0				0		0	0			
Spillback Cap Reductn		0				0		0	0			
Storage Cap Reductn		0				0		0	0			
Reduced v/c Ratio		0.11				0.17		0.40	0.07			

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 56.8

Natural Cycle: 40

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.65

Intersection Signal Delay: 9.6

Intersection LOS: A

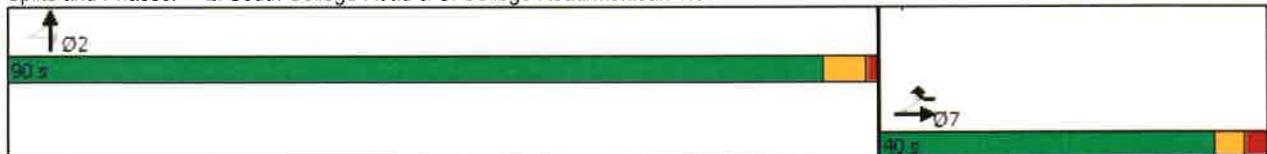
Intersection Capacity Utilization 66.5%

ICU Level of Service C

Analysis Period (min) 15

! Phase conflict between lane groups.

Splits and Phases: 2: South College Road & S. College Road/Mohican Trail



Lanes, Volumes, Timings

Background (2024) Saturday

2: South College Road & S. College Road/Mohican Trail

04/26/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	128	0	0	0	190	0	1653	89	0	0	0
Future Volume (vph)	4	128	0	0	0	190	0	1653	89	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			2%			0%			0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Frnt						0.865			0.850			
Flt Protected		0.999										
Satd. Flow (prot)	0	1861	0	0	0	1595	0	3539	1583	0	0	0
Flt Permitted		0.999										
Satd. Flow (perm)	0	1861	0	0	0	1595	0	3539	1583	0	0	0
Right Turn on Red	No		No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			40			45			45	
Link Distance (ft)		350			1632			300			835	
Travel Time (s)		5.3			27.8			4.5			12.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	4	142	0	0	0	211	0	1837	99	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	146	0	0	0	211	0	1837	99	0	0	0
Turn Type	custom	NA				Prot		NA	Perm			
Protected Phases		7				7		2!				
Permitted Phases	7 2!	2!							2			
Detector Phase	7 2	7				7		2	2			
Switch Phase												
Minimum Initial (s)		5.0				5.0		12.0	12.0			
Minimum Split (s)		10.6				10.6		17.9	17.9			
Total Split (s)		30.0				30.0		122.0	122.0			
Total Split (%)		19.7%				19.7%		80.3%	80.3%			
Maximum Green (s)		24.4				24.4		116.1	116.1			
Yellow Time (s)		3.0				3.0		4.5	4.5			
All-Red Time (s)		2.6				2.6		1.4	1.4			
Lost Time Adjust (s)		-0.6				-0.6		-0.9	-0.9			
Total Lost Time (s)		5.0				5.0		5.0	5.0			
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		2.0				2.0		6.0	6.0			
Minimum Gap (s)		2.0				2.0		3.0	3.0			
Time Before Reduce (s)		0.0				0.0		15.0	15.0			
Time To Reduce (s)		0.0				0.0		45.0	45.0			
Recall Mode		None				None		C-Max	C-Max			
Act Effct Green (s)		152.0				22.9		119.1	119.1			
Actuated g/C Ratio		1.00				0.15		0.78	0.78			
v/c Ratio		0.08				0.88		0.66	0.08			
Control Delay		0.1				96.0		9.1	4.3			
Queue Delay		0.0				0.0		0.0	0.0			
Total Delay		0.1				96.0		9.1	4.3			
LOS		A				F		A	A			
Approach Delay		0.1			96.0			8.9				

Lanes, Volumes, Timings

Background (2024) Saturday

2: South College Road & S. College Road/Mohican Trail

04/26/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		A			F			A				
Queue Length 50th (ft)		0				204		405	21			
Queue Length 95th (ft)		m0				#335		467	36			
Internal Link Dist (ft)		270			1552			220			755	
Turn Bay Length (ft)												
Base Capacity (vph)		1855				262		2772	1239			
Starvation Cap Reductn		0				0		0	0			
Spillback Cap Reductn		0				0		0	0			
Storage Cap Reductn		0				0		0	0			
Reduced v/c Ratio		0.08				0.81		0.66	0.08			

Intersection Summary

Area Type: Other  
 Cycle Length: 152  
 Actuated Cycle Length: 152  
 Offset: 97 (64%), Referenced to phase 2:NBEB, Start of Green  
 Natural Cycle: 60  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.88  
 Intersection Signal Delay: 16.3  
 Intersection Capacity Utilization 76.9%  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.  
 ! Phase conflict between lane groups.

Splits and Phases: 2: South College Road & S. College Road/Mohican Trail



Lanes, Volumes, Timings

Combined (2024) PM - Phase 2 Alt 1

2: South College Road & S. College Road/Mohican Trail

04/27/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	190	0	0	0	173	0	1360	100	0	0	0
Future Volume (vph)	20	190	0	0	0	173	0	1360	100	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			2%			0%			0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Frnt						0.865			0.850			
Flt Protected		0.995										
Satd. Flow (prot)	0	1853	0	0	0	1595	0	3539	1583	0	0	0
Flt Permitted		0.995										
Satd. Flow (perm)	0	1853	0	0	0	1595	0	3539	1583	0	0	0
Right Turn on Red	No		No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			40			45			45	
Link Distance (ft)		350			1444			300			463	
Travel Time (s)		5.3			24.6			4.5			7.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	22	211	0	0	0	192	0	1511	111	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	233	0	0	0	192	0	1511	111	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No						
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.01	1.01	1.01	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1				1		1	0			
Detector Template	Left											
Leading Detector (ft)	20	40				40		306	0			
Trailing Detector (ft)	0	0				0		300	0			
Detector 1 Position(ft)	0	0				0		300	0			
Detector 1 Size(ft)	20	40				40		6	20			
Detector 1 Type	Cl+Ex	Cl+Ex				Cl+Ex		Cl+Ex	Cl+Ex			
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0				0.0		0.0	0.0			
Detector 1 Queue (s)	0.0	0.0				0.0		0.0	0.0			
Detector 1 Delay (s)	0.0	10.0				15.0		0.0	0.0			
Turn Type	custom	NA				Prot		NA	Perm			
Protected Phases		7				7		2!				
Permitted Phases	7 2!	2!							2			
Detector Phase	7 2	7				7		2	2			
Switch Phase												
Minimum Initial (s)		5.0				5.0		12.0	12.0			
Minimum Split (s)		10.6				10.6		17.9	17.9			
Total Split (s)		40.0				40.0		90.0	90.0			
Total Split (%)		30.8%				30.8%		69.2%	69.2%			
Maximum Green (s)		34.4				34.4		84.1	84.1			

Lanes, Volumes, Timings

Combined (2024) PM - Phase 2 Alt 1

2: South College Road & S. College Road/Mohican Trail

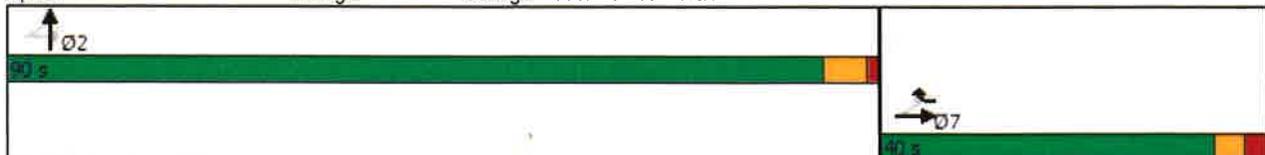
04/27/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Yellow Time (s)		3.0				3.0		4.5	4.5			
All-Red Time (s)		2.6				2.6		1.4	1.4			
Lost Time Adjust (s)		-0.6				-0.6		-0.9	-0.9			
Total Lost Time (s)		5.0				5.0		5.0	5.0			
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		2.0				2.0		6.0	6.0			
Minimum Gap (s)		2.0				2.0		3.0	3.0			
Time Before Reduce (s)		0.0				0.0		15.0	15.0			
Time To Reduce (s)		0.0				0.0		45.0	45.0			
Recall Mode		None				None		Min	Min			
Act Effct Green (s)		61.4				13.3		37.8	37.8			
Actuated g/C Ratio		1.00				0.22		0.62	0.62			
v/c Ratio		0.13				0.56		0.69	0.11			
Control Delay		0.1				29.3		10.4	5.9			
Queue Delay		0.0				0.0		0.0	0.0			
Total Delay		0.1				29.3		10.4	5.9			
LOS		A				C		B	A			
Approach Delay		0.1			29.3			10.1				
Approach LOS		A			C			B				
Queue Length 50th (ft)		0				62		164	14			
Queue Length 95th (ft)		0				144		309	40			
Internal Link Dist (ft)		270			1364			220			383	
Turn Bay Length (ft)												
Base Capacity (vph)		1853				936		3539	1583			
Starvation Cap Reductn		0				0		0	0			
Spillback Cap Reductn		0				0		0	0			
Storage Cap Reductn		0				0		0	0			
Reduced v/c Ratio		0.13				0.21		0.43	0.07			

Intersection Summary

Area Type: Other  
 Cycle Length: 130  
 Actuated Cycle Length: 61.4  
 Natural Cycle: 45  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.69  
 Intersection Signal Delay: 10.8  
 Intersection Capacity Utilization 71.9%  
 Analysis Period (min) 15  
 ! Phase conflict between lane groups.

Splits and Phases: 2: South College Road & S. College Road/Mohican Trail



Lanes, Volumes, Timings

Combined (2024) Saturday - Phase 2 Alt 1

2: South College Road & S. College Road/Mohican Trail

04/27/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	144	0	0	0	225	0	1792	89	0	0	0
Future Volume (vph)	35	144	0	0	0	225	0	1792	89	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			2%			0%			0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Frt						0.865			0.850			
Flt Protected		0.990										
Satd. Flow (prot)	0	1844	0	0	0	1595	0	3539	1583	0	0	0
Flt Permitted		0.990										
Satd. Flow (perm)	0	1844	0	0	0	1595	0	3539	1583	0	0	0
Right Turn on Red	No		No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			40			45			45	
Link Distance (ft)		350			1632			300			447	
Travel Time (s)		5.3			27.8			4.5			6.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	39	160	0	0	0	250	0	1991	99	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	199	0	0	0	250	0	1991	99	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.01	1.01	1.01	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1				1		1	0			
Detector Template	Left											
Leading Detector (ft)	20	40				40		306	0			
Trailing Detector (ft)	0	0				0		300	0			
Detector 1 Position(ft)	0	0				0		300	0			
Detector 1 Size(ft)	20	40				40		6	20			
Detector 1 Type	Cl+Ex	Cl+Ex				Cl+Ex		Cl+Ex	Cl+Ex			
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0				0.0		0.0	0.0			
Detector 1 Queue (s)	0.0	0.0				0.0		0.0	0.0			
Detector 1 Delay (s)	0.0	10.0				15.0		0.0	0.0			
Turn Type	custom	NA				Prot		NA	Perm			
Protected Phases		7				7		2!				
Permitted Phases	7 2!	2!							2			
Detector Phase	7 2	7				7		2	2			
Switch Phase												
Minimum Initial (s)		5.0				5.0		12.0	12.0			
Minimum Split (s)		10.6				10.6		17.9	17.9			
Total Split (s)		30.0				30.0		122.0	122.0			
Total Split (%)		19.7%				19.7%		80.3%	80.3%			
Maximum Green (s)		24.4				24.4		116.1	116.1			

Lanes, Volumes, Timings

Combined (2024) Saturday - Phase 2 Alt 1

2: South College Road & S. College Road/Mohican Trail

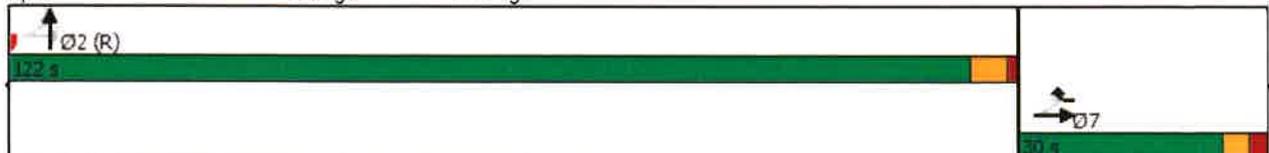
04/27/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Yellow Time (s)		3.0				3.0		4.5	4.5			
All-Red Time (s)		2.6				2.6		1.4	1.4			
Lost Time Adjust (s)		-0.6				-0.6		-0.9	-0.9			
Total Lost Time (s)		5.0				5.0		5.0	5.0			
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		2.0				2.0		6.0	6.0			
Minimum Gap (s)		2.0				2.0		3.0	3.0			
Time Before Reduce (s)		0.0				0.0		15.0	15.0			
Time To Reduce (s)		0.0				0.0		45.0	45.0			
Recall Mode		None				None		C-Max	C-Max			
Act Effct Green (s)		152.0				24.8		117.2	117.2			
Actuated g/C Ratio		1.00				0.16		0.77	0.77			
v/c Ratio		0.11				0.96		0.73	0.08			
Control Delay		0.1				108.7		11.2	4.5			
Queue Delay		0.0				0.0		0.0	0.0			
Total Delay		0.1				108.7		11.2	4.5			
LOS		A				F		B	A			
Approach Delay		0.1			108.7			10.8				
Approach LOS		A			F			B				
Queue Length 50th (ft)		0				249		483	21			
Queue Length 95th (ft)		m0				#427		556	36			
Internal Link Dist (ft)		270			1552			220			367	
Turn Bay Length (ft)												
Base Capacity (vph)		1834				262		2728	1220			
Starvation Cap Reductn		0				0		0	0			
Spillback Cap Reductn		0				0		0	0			
Storage Cap Reductn		0				0		0	0			
Reduced v/c Ratio		0.11				0.95		0.73	0.08			

Intersection Summary

Area Type: Other  
 Cycle Length: 152  
 Actuated Cycle Length: 152  
 Offset: 97 (64%), Referenced to phase 2:NBEB, Start of Green  
 Natural Cycle: 60  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.96  
 Intersection Signal Delay: 19.6  
 Intersection Capacity Utilization 85.5%  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.  
 ! Phase conflict between lane groups.

Splits and Phases: 2: South College Road & S. College Road/Mohican Trail



Lanes, Volumes, Timings

Combined (2024) PM - Phase 2 Alt 4

2: South College Road & S. College Road/Mohican Trail

04/27/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	190	0	0	0	173	0	1360	100	0	0	0
Future Volume (vph)	4	190	0	0	0	173	0	1360	100	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			2%			0%			0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Frt						0.865			0.850			
Flt Protected		0.999										
Satd. Flow (prot)	0	1861	0	0	0	1595	0	3539	1583	0	0	0
Flt Permitted		0.999										
Satd. Flow (perm)	0	1861	0	0	0	1595	0	3539	1583	0	0	0
Right Turn on Red	No		No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			40			45			45	
Link Distance (ft)		350			1444			300			463	
Travel Time (s)		5.3			24.6			4.5			7.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	4	211	0	0	0	192	0	1511	111	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	215	0	0	0	192	0	1511	111	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.01	1.01	1.01	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1				1		1	0			
Detector Template	Left											
Leading Detector (ft)	20	40				40		306	0			
Trailing Detector (ft)	0	0				0		300	0			
Detector 1 Position(ft)	0	0				0		300	0			
Detector 1 Size(ft)	20	40				40		6	20			
Detector 1 Type	Cl+Ex	Cl+Ex				Cl+Ex		Cl+Ex	Cl+Ex			
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0				0.0		0.0	0.0			
Detector 1 Queue (s)	0.0	0.0				0.0		0.0	0.0			
Detector 1 Delay (s)	0.0	10.0				15.0		0.0	0.0			
Turn Type	custom	NA				Prot		NA	Perm			
Protected Phases		7				7		2!				
Permitted Phases	7 2!	2!							2			
Detector Phase	7 2	7				7		2	2			
Switch Phase												
Minimum Initial (s)		5.0				5.0		12.0	12.0			
Minimum Split (s)		10.6				10.6		17.9	17.9			
Total Split (s)		40.0				40.0		90.0	90.0			
Total Split (%)		30.8%				30.8%		69.2%	69.2%			
Maximum Green (s)		34.4				34.4		84.1	84.1			

Lanes, Volumes, Timings

Combined (2024) PM - Phase 2 Alt 4

2: South College Road & S. College Road/Mohican Trail

04/27/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Yellow Time (s)		3.0				3.0		4.5	4.5			
All-Red Time (s)		2.6				2.6		1.4	1.4			
Lost Time Adjust (s)		-0.6				-0.6		-0.9	-0.9			
Total Lost Time (s)		5.0				5.0		5.0	5.0			
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		2.0				2.0		6.0	6.0			
Minimum Gap (s)		2.0				2.0		3.0	3.0			
Time Before Reduce (s)		0.0				0.0		15.0	15.0			
Time To Reduce (s)		0.0				0.0		45.0	45.0			
Recall Mode		None				None		Min	Min			
Act Effct Green (s)		61.4				13.3		37.8	37.8			
Actuated g/C Ratio		1.00				0.22		0.62	0.62			
v/c Ratio		0.12				0.56		0.69	0.11			
Control Delay		0.1				29.3		10.4	5.9			
Queue Delay		0.0				0.0		0.0	0.0			
Total Delay		0.1				29.3		10.4	5.9			
LOS		A				C		B	A			
Approach Delay		0.1			29.3			10.1				
Approach LOS		A			C			B				
Queue Length 50th (ft)		0				62		164	14			
Queue Length 95th (ft)		0				144		309	40			
Internal Link Dist (ft)		270			1364			220			383	
Turn Bay Length (ft)												
Base Capacity (vph)		1861				936		3539	1583			
Starvation Cap Reductn		0				0		0	0			
Spillback Cap Reductn		0				0		0	0			
Storage Cap Reductn		0				0		0	0			
Reduced v/c Ratio		0.12				0.21		0.43	0.07			

Intersection Summary

Area Type: Other  
 Cycle Length: 130  
 Actuated Cycle Length: 61.4  
 Natural Cycle: 45  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.69  
 Intersection Signal Delay: 10.9  
 Intersection Capacity Utilization 71.0%  
 Analysis Period (min) 15  
 ! Phase conflict between lane groups.

Splits and Phases: 2: South College Road & S. College Road/Mohican Trail



Lanes, Volumes, Timings

Combined (2024) Saturday - Phase 2 Alt 4

2: South College Road & S. College Road/Mohican Trail

04/27/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	144	0	0	0	225	0	1792	89	0	0	0
Future Volume (vph)	4	144	0	0	0	225	0	1792	89	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			2%			0%			0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Frt						0.865			0.850			
Flt Protected		0.999										
Satd. Flow (prot)	0	1861	0	0	0	1595	0	3539	1583	0	0	0
Flt Permitted		0.999										
Satd. Flow (perm)	0	1861	0	0	0	1595	0	3539	1583	0	0	0
Right Turn on Red	No		No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			40			45			45	
Link Distance (ft)		350			1632			300			447	
Travel Time (s)		5.3			27.8			4.5			6.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	4	160	0	0	0	250	0	1991	99	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	164	0	0	0	250	0	1991	99	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.01	1.01	1.01	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1				1		1	0			
Detector Template	Left											
Leading Detector (ft)	20	40				40		306	0			
Trailing Detector (ft)	0	0				0		300	0			
Detector 1 Position(ft)	0	0				0		300	0			
Detector 1 Size(ft)	20	40				40		6	20			
Detector 1 Type	Cl+Ex	Cl+Ex				Cl+Ex		Cl+Ex	Cl+Ex			
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0				0.0		0.0	0.0			
Detector 1 Queue (s)	0.0	0.0				0.0		0.0	0.0			
Detector 1 Delay (s)	0.0	10.0				15.0		0.0	0.0			
Turn Type	custom	NA				Prot		NA	Perm			
Protected Phases		7				7		2!				
Permitted Phases	7 2!	2!							2			
Detector Phase	7 2	7				7		2	2			
Switch Phase												
Minimum Initial (s)		5.0				5.0		12.0	12.0			
Minimum Split (s)		10.6				10.6		17.9	17.9			
Total Split (s)		30.0				30.0		122.0	122.0			
Total Split (%)		19.7%				19.7%		80.3%	80.3%			
Maximum Green (s)		24.4				24.4		116.1	116.1			

Lanes, Volumes, Timings

Combined (2024) Saturday - Phase 2 Alt 4

2: South College Road & S. College Road/Mohican Trail

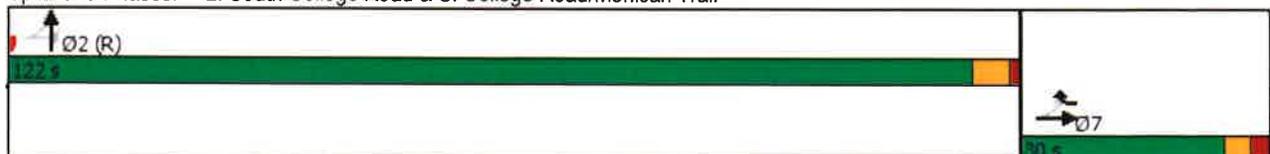
04/27/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Yellow Time (s)		3.0				3.0		4.5	4.5			
All-Red Time (s)		2.6				2.6		1.4	1.4			
Lost Time Adjust (s)		-0.6				-0.6		-0.9	-0.9			
Total Lost Time (s)		5.0				5.0		5.0	5.0			
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		2.0				2.0		6.0	6.0			
Minimum Gap (s)		2.0				2.0		3.0	3.0			
Time Before Reduce (s)		0.0				0.0		15.0	15.0			
Time To Reduce (s)		0.0				0.0		45.0	45.0			
Recall Mode		None				None		C-Max	C-Max			
Act Effct Green (s)		152.0				24.8		117.2	117.2			
Actuated g/C Ratio		1.00				0.16		0.77	0.77			
v/c Ratio		0.09				0.96		0.73	0.08			
Control Delay		0.1				108.7		11.2	4.5			
Queue Delay		0.0				0.0		0.0	0.0			
Total Delay		0.1				108.7		11.2	4.5			
LOS		A				F		B	A			
Approach Delay		0.1			108.7			10.8				
Approach LOS		A			F			B				
Queue Length 50th (ft)		0				249		483	21			
Queue Length 95th (ft)		m0				#427		556	36			
Internal Link Dist (ft)		270			1552			220			367	
Turn Bay Length (ft)												
Base Capacity (vph)		1851				262		2728	1220			
Starvation Cap Reductn		0				0		0	0			
Spillback Cap Reductn		0				0		0	0			
Storage Cap Reductn		0				0		0	0			
Reduced v/c Ratio		0.09				0.95		0.73	0.08			

Intersection Summary

Area Type: Other  
 Cycle Length: 152  
 Actuated Cycle Length: 152  
 Offset: 97 (64%), Referenced to phase 2:NBEB, Start of Green  
 Natural Cycle: 60  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.96  
 Intersection Signal Delay: 19.9  
 Intersection Capacity Utilization 83.8%  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.  
 ! Phase conflict between lane groups.

Splits and Phases: 2: South College Road & S. College Road/Mohican Trail



# **APPENDIX F**

**CAPACITY ANALYSIS CALCULATIONS**

**S. COLLEGE ROAD**

**&**

**JASMINE COVE WAY**

HCM 6th TWSC  
 3: Jasmine Cove Way & S. College Road

Existing (2019) PM  
 04/26/2019

Intersection

Int Delay, s/veh	0.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↖		↗						↖↗	
Traffic Vol, veh/h	0	0	12	4	19	0	0	0	0	0	1776	14
Future Vol, veh/h	0	0	12	4	19	0	0	0	0	0	1776	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Yield	Yield	Yield	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	16974	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	13	4	21	0	0	0	0	0	1973	16

Major/Minor	Minor2			Major2		
Conflicting Flow All	-	-	995	-	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	6.94	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.32	-	-	-
Pot Cap-1 Maneuver	0	0	243	0	-	-
Stage 1	0	0	-	0	-	-
Stage 2	0	0	-	0	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	0	243	-	-	-
Mov Cap-2 Maneuver	-	0	-	-	-	-
Stage 1	-	0	-	-	-	-
Stage 2	-	0	-	-	-	-

Approach	EB	SB
HCM Control Delay, s	20.7	0
HCM LOS	C	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	243	-	-
HCM Lane V/C Ratio	0.055	-	-
HCM Control Delay (s)	20.7	-	-
HCM Lane LOS	C	-	-
HCM 95th %tile Q(veh)	0.2	-	-

HCM 6th TWSC  
 3: Jasmine Cove Way & S. College Road

Existing (2019) Saturday  
 04/26/2019

Intersection

Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↖		↗						↖↗	
Traffic Vol, veh/h	0	0	21	4	26	0	0	0	0	0	1694	9
Future Vol, veh/h	0	0	21	4	26	0	0	0	0	0	1694	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Yield	Yield	Yield	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	16974	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	23	4	29	0	0	0	0	0	1882	10

Major/Minor	Minor2			Major2		
Conflicting Flow All	-	-	946	-	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	6.94	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.32	-	-	-
Pot Cap-1 Maneuver	0	0	262	0	-	-
Stage 1	0	0	-	0	-	-
Stage 2	0	0	-	0	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	0	262	-	-	-
Mov Cap-2 Maneuver	-	0	-	-	-	-
Stage 1	-	0	-	-	-	-
Stage 2	-	0	-	-	-	-

Approach	EB	SB
HCM Control Delay, s	20.1	0
HCM LOS	C	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	262	-	-
HCM Lane V/C Ratio	0.089	-	-
HCM Control Delay (s)	20.1	-	-
HCM Lane LOS	C	-	-
HCM 95th %tile Q(veh)	0.3	-	-

HCM 6th TWSC  
3: Jasmine Cove Way & S. College Road

Background (2021) PM  
04/26/2019

Intersection

Int Delay, s/veh	0.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↖		↗						↖	↗
Traffic Vol, veh/h	0	0	12	4	19	0	0	0	0	0	1830	14
Future Vol, veh/h	0	0	12	4	19	0	0	0	0	0	1830	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Yield	Yield	Yield	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	16974	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	13	4	21	0	0	0	0	0	2033	16

Major/Minor	Minor2			Major2		
Conflicting Flow All	-	-	1025	-	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	6.94	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.32	-	-	-
Pot Cap-1 Maneuver	0	0	232	-	0	-
Stage 1	0	0	-	-	0	-
Stage 2	0	0	-	-	0	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	0	232	-	-	-
Mov Cap-2 Maneuver	-	0	-	-	-	-
Stage 1	-	0	-	-	-	-
Stage 2	-	0	-	-	-	-

Approach	EB	SB
HCM Control Delay, s	21.5	0
HCM LOS	C	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	232	-	-
HCM Lane V/C Ratio	0.057	-	-
HCM Control Delay (s)	21.5	-	-
HCM Lane LOS	C	-	-
HCM 95th %tile Q(veh)	0.2	-	-

HCM 6th TWSC  
3: Jasmine Cove Way & S. College Road

Background (2021) Saturday  
04/26/2019

Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗		↖						↕	↕
Traffic Vol, veh/h	0	0	21	4	27	0	0	0	0	0	1752	9
Future Vol, veh/h	0	0	21	4	27	0	0	0	0	0	1752	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Yield	Yield	Yield	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	16974	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	23	4	30	0	0	0	0	0	1947	10

Major/Minor	Minor2			Major2		
Conflicting Flow All	-	-	979	-	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	6.94	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.32	-	-	-
Pot Cap-1 Maneuver	0	0	249	0	-	-
Stage 1	0	0	-	0	-	-
Stage 2	0	0	-	0	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	0	249	-	-	-
Mov Cap-2 Maneuver	-	0	-	-	-	-
Stage 1	-	0	-	-	-	-
Stage 2	-	0	-	-	-	-

Approach	EB	SB
HCM Control Delay, s	20.9	0
HCM LOS	C	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	249	-	-
HCM Lane V/C Ratio	0.094	-	-
HCM Control Delay (s)	20.9	-	-
HCM Lane LOS	C	-	-
HCM 95th %tile Q(veh)	0.3	-	-

HCM 6th TWSC  
3: Jasmine Cove Way & S. College Road

Combined (2021) PM - Phase 1B Alt 1  
04/26/2019

Intersection

Int Delay, s/veh	0.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↖		↗						↖↗	
Traffic Vol, veh/h	0	0	12	4	19	0	0	0	0	0	1851	14
Future Vol, veh/h	0	0	12	4	19	0	0	0	0	0	1851	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Yield	Yield	Yield	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	16974	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	13	4	21	0	0	0	0	0	2057	16

Major/Minor	Minor2		Major2			
Conflicting Flow All	-	-	1037	-	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	6.94	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.32	-	-	-
Pot Cap-1 Maneuver	0	0	228	0	-	-
Stage 1	0	0	-	0	-	-
Stage 2	0	0	-	0	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	0	228	-	-	-
Mov Cap-2 Maneuver	-	0	-	-	-	-
Stage 1	-	0	-	-	-	-
Stage 2	-	0	-	-	-	-

Approach	EB	SB
HCM Control Delay, s	21.8	0
HCM LOS	C	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	228	-	-
HCM Lane V/C Ratio	0.058	-	-
HCM Control Delay (s)	21.8	-	-
HCM Lane LOS	C	-	-
HCM 95th %tile Q(veh)	0.2	-	-

HCM 6th TWSC  
 3: Jasmine Cove Way & S. College Road

Combined (2021) Saturday - Phase 1B Alt 1  
 04/26/2019

Intersection

Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↑		↑						↑↑	
Traffic Vol, veh/h	0	0	21	4	27	0	0	0	0	0	1789	9
Future Vol, veh/h	0	0	21	4	27	0	0	0	0	0	1789	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Yield	Yield	Yield	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	16974	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	23	4	30	0	0	0	0	0	1988	10

Major/Minor	Minor2			Major2		
Conflicting Flow All	-	-	999	-	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	6.94	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.32	-	-	-
Pot Cap-1 Maneuver	0	0	242	0	-	-
Stage 1	0	0	-	0	-	-
Stage 2	0	0	-	0	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	0	242	-	-	-
Mov Cap-2 Maneuver	-	0	-	-	-	-
Stage 1	-	0	-	-	-	-
Stage 2	-	0	-	-	-	-

Approach	EB	SB
HCM Control Delay, s	21.5	0
HCM LOS	C	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	242	-	-
HCM Lane V/C Ratio	0.096	-	-
HCM Control Delay (s)	21.5	-	-
HCM Lane LOS	C	-	-
HCM 95th %tile Q(veh)	0.3	-	-

HCM 6th TWSC  
 3: Jasmine Cove Way & S. College Road

Combined (2021) PM - Phase 1B Alt 4  
 04/26/2019

Intersection

Int Delay, s/veh	0.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↖		↗						↖	↗
Traffic Vol, veh/h	0	0	12	4	19	0	0	0	0	0	1851	14
Future Vol, veh/h	0	0	12	4	19	0	0	0	0	0	1851	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Yield	Yield	Yield	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	16974	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	13	4	21	0	0	0	0	0	2057	16

Major/Minor	Minor2			Major2		
Conflicting Flow All	-	-	1037	-	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	6.94	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.32	-	-	-
Pot Cap-1 Maneuver	0	0	228	0	-	-
Stage 1	0	0	-	0	-	-
Stage 2	0	0	-	0	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	0	228	-	-	-
Mov Cap-2 Maneuver	-	0	-	-	-	-
Stage 1	-	0	-	-	-	-
Stage 2	-	0	-	-	-	-

Approach	EB	SB
HCM Control Delay, s	21.8	0
HCM LOS	C	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	228	-	-
HCM Lane V/C Ratio	0.058	-	-
HCM Control Delay (s)	21.8	-	-
HCM Lane LOS	C	-	-
HCM 95th %tile Q(veh)	0.2	-	-

HCM 6th TWSC  
3: Jasmine Cove Way & S. College Road

Combined (2021) Saturday - Phase 1B Alt 4  
04/26/2019

Intersection

Int Delay, s/veh	0.2												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations			↖		↗						↖	↗	
Traffic Vol, veh/h	0	0	21	4	27	0	0	0	0	0	1789	9	
Future Vol, veh/h	0	0	21	4	27	0	0	0	0	0	1789	9	
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	
Sign Control	Stop	Stop	Stop	Yield	Yield	Yield	Free	Free	Free	Free	Free	Free	
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None	
Storage Length	-	-	0	-	-	-	-	-	-	-	-	-	
Veh in Median Storage, #	-	0	-	-	16974	-	-	16974	-	-	0	-	
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-	
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90	
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	
Mvmt Flow	0	0	23	4	30	0	0	0	0	0	1988	10	

Major/Minor	Minor2			Major2		
Conflicting Flow All	-	-	999	-	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	6.94	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.32	-	-	-
Pot Cap-1 Maneuver	0	0	242	0	-	-
Stage 1	0	0	-	0	-	-
Stage 2	0	0	-	0	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	0	242	-	-	-
Mov Cap-2 Maneuver	-	0	-	-	-	-
Stage 1	-	0	-	-	-	-
Stage 2	-	0	-	-	-	-

Approach	EB	SB
HCM Control Delay, s	21.5	0
HCM LOS	C	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	242	-	-
HCM Lane V/C Ratio	0.096	-	-
HCM Control Delay (s)	21.5	-	-
HCM Lane LOS	C	-	-
HCM 95th %tile Q(veh)	0.3	-	-

HCM 6th TWSC  
 3: Jasmine Cove Way & S. College Road

Background (2024) PM  
 04/26/2019

Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↖		↗						↖↗	
Traffic Vol, veh/h	0	0	13	4	20	0	0	0	0	0	1885	15
Future Vol, veh/h	0	0	13	4	20	0	0	0	0	0	1885	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Yield	Yield	Yield	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	16974	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	14	4	22	0	0	0	0	0	2094	17

Major/Minor	Minor2			Major2		
Conflicting Flow All	-	-	1056	-	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	6.94	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.32	-	-	-
Pot Cap-1 Maneuver	0	0	222	0	-	-
Stage 1	0	0	-	0	-	-
Stage 2	0	0	-	0	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	0	222	-	-	-
Mov Cap-2 Maneuver	-	0	-	-	-	-
Stage 1	-	0	-	-	-	-
Stage 2	-	0	-	-	-	-

Approach	EB	SB
HCM Control Delay, s	22.3	0
HCM LOS	C	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	222	-	-
HCM Lane V/C Ratio	0.065	-	-
HCM Control Delay (s)	22.3	-	-
HCM Lane LOS	C	-	-
HCM 95th %tile Q(veh)	0.2	-	-

HCM 6th TWSC  
 3: Jasmine Cove Way & S. College Road

Background (2024) Saturday  
 04/26/2019

Intersection												
Int Delay, s/veh	0.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↖		↗						↕	↕
Traffic Vol, veh/h	0	0	22	4	27	0	0	0	0	0	1804	9
Future Vol, veh/h	0	0	22	4	27	0	0	0	0	0	1804	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Yield	Yield	Yield	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	16974	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	24	4	30	0	0	0	0	0	2004	10

Major/Minor	Minor2		Major2	
Conflicting Flow All	-	-	1007	0
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	-	6.94	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	3.32	-
Pot Cap-1 Maneuver	0	0	239	0
Stage 1	0	0	-	-
Stage 2	0	0	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	-	0	239	-
Mov Cap-2 Maneuver	-	0	-	-
Stage 1	-	0	-	-
Stage 2	-	0	-	-

Approach	EB	SB
HCM Control Delay, s	21.8	0
HCM LOS	C	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	239	-	-
HCM Lane V/C Ratio	0.102	-	-
HCM Control Delay (s)	21.8	-	-
HCM Lane LOS	C	-	-
HCM 95th %tile Q(veh)	0.3	-	-

HCM 6th TWSC  
3: Jasmine Cove Way & S. College Road

Combined (2024) PM - Phase 2 Alt 1  
04/26/2019

Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↖		↗						↕	↕
Traffic Vol, veh/h	0	0	13	4	20	0	0	0	0	0	1995	15
Future Vol, veh/h	0	0	13	4	20	0	0	0	0	0	1995	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Yield	Yield	Yield	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	16974	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	14	4	22	0	0	0	0	0	2217	17

Major/Minor	Minor2			Major2		
Conflicting Flow All	-	-	1117	-	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	6.94	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.32	-	-	-
Pot Cap-1 Maneuver	0	0	202	0	-	-
Stage 1	0	0	-	0	-	-
Stage 2	0	0	-	0	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	0	202	-	-	-
Mov Cap-2 Maneuver	-	0	-	-	-	-
Stage 1	-	0	-	-	-	-
Stage 2	-	0	-	-	-	-

Approach	EB	SB
HCM Control Delay, s	24.2	0
HCM LOS	C	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	202	-	-
HCM Lane V/C Ratio	0.072	-	-
HCM Control Delay (s)	24.2	-	-
HCM Lane LOS	C	-	-
HCM 95th %tile Q(veh)	0.2	-	-

HCM 6th TWSC  
 3: Jasmine Cove Way & S. College Road

Combined (2024) Saturday - Phase 2 Alt 1  
 04/26/2019

Intersection

Int Delay, s/veh	0.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↖		↗						↕	↕
Traffic Vol, veh/h	0	0	22	4	27	0	0	0	0	0	1933	9
Future Vol, veh/h	0	0	22	4	27	0	0	0	0	0	1933	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Yield	Yield	Yield	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	16974	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	24	4	30	0	0	0	0	0	2148	10

Major/Minor	Minor2						Major2					
Conflicting Flow All	-	-	1079	-	-	-	-	-	-	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.94	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.32	-	-	-	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	214	-	-	-	-	-	0	-	-	-
Stage 1	0	0	-	-	-	-	-	-	0	-	-	-
Stage 2	0	0	-	-	-	-	-	-	0	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	0	214	-	-	-	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	0	-	-	-	-	-	-	-	-	-	-
Stage 1	-	0	-	-	-	-	-	-	-	-	-	-
Stage 2	-	0	-	-	-	-	-	-	-	-	-	-

Approach	EB	SB
HCM Control Delay, s	24	0
HCM LOS	C	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	214	-	-
HCM Lane V/C Ratio	0.114	-	-
HCM Control Delay (s)	24	-	-
HCM Lane LOS	C	-	-
HCM 95th %tile Q(veh)	0.4	-	-

HCM 6th TWSC  
3: Jasmine Cove Way & S. College Road

Combined (2024) PM - Phase 2 Alt 4  
04/26/2019

Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↖		↗						↖↗	
Traffic Vol, veh/h	0	0	13	4	20	0	0	0	0	0	1995	15
Future Vol, veh/h	0	0	13	4	20	0	0	0	0	0	1995	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Yield	Yield	Yield	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	16974	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	14	4	22	0	0	0	0	0	2217	17

Major/Minor	Minor2			Major2		
Conflicting Flow All	-	-	1117	-	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	6.94	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.32	-	-	-
Pot Cap-1 Maneuver	0	0	202	0	-	-
Stage 1	0	0	-	0	-	-
Stage 2	0	0	-	0	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	0	202	-	-	-
Mov Cap-2 Maneuver	-	0	-	-	-	-
Stage 1	-	0	-	-	-	-
Stage 2	-	0	-	-	-	-

Approach	EB	SB
HCM Control Delay, s	24.2	0
HCM LOS	C	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	202	-	-
HCM Lane V/C Ratio	0.072	-	-
HCM Control Delay (s)	24.2	-	-
HCM Lane LOS	C	-	-
HCM 95th %tile Q(veh)	0.2	-	-

HCM 6th TWSC  
3: Jasmine Cove Way & S. College Road

Combined (2024) Saturday - Phase 2 Alt 4  
04/26/2019

Intersection

Int Delay, s/veh 0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↖		↗						↕	↕
Traffic Vol, veh/h	0	0	22	4	27	0	0	0	0	0	1933	9
Future Vol, veh/h	0	0	22	4	27	0	0	0	0	0	1933	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Yield	Yield	Yield	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	16974	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	24	4	30	0	0	0	0	0	2148	10

Major/Minor	Minor2	Major2
Conflicting Flow All	- - 1079	- - 0
Stage 1	- - -	- - -
Stage 2	- - -	- - -
Critical Hdwy	- - 6.94	- - -
Critical Hdwy Stg 1	- - -	- - -
Critical Hdwy Stg 2	- - -	- - -
Follow-up Hdwy	- - 3.32	- - -
Pot Cap-1 Maneuver	0 0 214	0 - -
Stage 1	0 0 -	0 - -
Stage 2	0 0 -	0 - -
Platoon blocked, %	- - -	- - -
Mov Cap-1 Maneuver	- 0 214	- - -
Mov Cap-2 Maneuver	- 0 -	- - -
Stage 1	- 0 -	- - -
Stage 2	- 0 -	- - -

Approach	EB	SB
HCM Control Delay, s	24	0
HCM LOS	C	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	214	-	-
HCM Lane V/C Ratio	0.114	-	-
HCM Control Delay (s)	24	-	-
HCM Lane LOS	C	-	-
HCM 95th %tile Q(veh)	0.4	-	-

# **APPENDIX G**

**CAPACITY ANALYSIS CALCULATIONS**

**S. COLLEGE ROAD**

**&**

**U-TURN LOCATION / SITE DRIVE #4**

HCM 6th TWSC  
5: South College Road & SB U-Turn

Existing (2019) PM  
04/26/2019

Intersection

Int Delay, s/veh	0.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔			↑↑		
Traffic Vol, veh/h	58	0	0	1273	0	0
Future Vol, veh/h	58	0	0	1273	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	16979	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	64	0	0	1414	0	0

Major/Minor	Minor2	Major1		
Conflicting Flow All	707	-	-	0
Stage 1	0	-	-	-
Stage 2	707	-	-	-
Critical Hdwy	6.84	-	-	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-
Follow-up Hdwy	3.52	-	-	-
Pot Cap-1 Maneuver	370	0	0	-
Stage 1	-	0	0	-
Stage 2	450	0	0	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	370	-	-	-
Mov Cap-2 Maneuver	370	-	-	-
Stage 1	-	-	-	-
Stage 2	450	-	-	-

Approach	EB	NB
HCM Control Delay, s	16.8	0
HCM LOS	C	

Minor Lane/Major Mvmt	NBT EBLn1	
Capacity (veh/h)	-	370
HCM Lane V/C Ratio	-	0.174
HCM Control Delay (s)	-	16.8
HCM Lane LOS	-	C
HCM 95th %tile Q(veh)	-	0.6

HCM 6th TWSC  
4: NB U-Turn & S. College Road

Existing (2019) PM  
04/26/2019

Intersection

Int Delay, s/veh	0.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘					↑↑
Traffic Vol, veh/h	34	0	0	0	0	1925
Future Vol, veh/h	34	0	0	0	0	1925
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	16974	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	38	0	0	0	0	2139

Major/Minor	Minor1	Major2	
Conflicting Flow All	1070	-	-
Stage 1	0	-	-
Stage 2	1070	-	-
Critical Hdwy	6.84	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	5.84	-	-
Follow-up Hdwy	3.52	-	-
Pot Cap-1 Maneuver	216	0	0
Stage 1	-	0	-
Stage 2	291	0	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	216	-	-
Mov Cap-2 Maneuver	216	-	-
Stage 1	-	-	-
Stage 2	291	-	-

Approach	WB	SB
HCM Control Delay, s	25.2	0
HCM LOS	D	

Minor Lane/Major Mvmt	WBLn1	SBT
Capacity (veh/h)	216	-
HCM Lane V/C Ratio	0.175	-
HCM Control Delay (s)	25.2	-
HCM Lane LOS	D	-
HCM 95th %tile Q(veh)	0.6	-

HCM 6th TWSC  
 5: South College Road & SB U-Turn

Existing (2019) Saturday  
 04/26/2019

Intersection

Int Delay, s/veh	0.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↘			↑↑		
Traffic Vol, veh/h	39	0	0	1632	0	0
Future Vol, veh/h	39	0	0	1632	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	16979	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	43	0	0	1813	0	0

Major/Minor	Minor2	Major1		
Conflicting Flow All	907	-	-	0
Stage 1	0	-	-	-
Stage 2	907	-	-	-
Critical Hdwy	6.84	-	-	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-
Follow-up Hdwy	3.52	-	-	-
Pot Cap-1 Maneuver	275	0	0	-
Stage 1	-	0	0	-
Stage 2	354	0	0	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	275	-	-	-
Mov Cap-2 Maneuver	275	-	-	-
Stage 1	-	-	-	-
Stage 2	354	-	-	-

Approach	EB	NB
HCM Control Delay, s	20.5	0
HCM LOS	C	

Minor Lane/Major Mvmt	NBT	EBLn1
Capacity (veh/h)	-	275
HCM Lane V/C Ratio	-	0.158
HCM Control Delay (s)	-	20.5
HCM Lane LOS	-	C
HCM 95th %tile Q(veh)	-	0.6

HCM 6th TWSC  
4: NB U-Turn & S. College Road

Existing (2019) Saturday  
04/26/2019

Intersection

Int Delay, s/veh	0.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘					↑↑
Traffic Vol, veh/h	66	0	0	0	0	1761
Future Vol, veh/h	66	0	0	0	0	1761
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	16974	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	73	0	0	0	0	1957

Major/Minor	Minor1	Major2	
Conflicting Flow All	979	-	-
Stage 1	0	-	-
Stage 2	979	-	-
Critical Hdwy	6.84	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	5.84	-	-
Follow-up Hdwy	3.52	-	-
Pot Cap-1 Maneuver	247	0	0
Stage 1	-	0	0
Stage 2	325	0	0
Platoon blocked, %			
Mov Cap-1 Maneuver	247	-	-
Mov Cap-2 Maneuver	247	-	-
Stage 1	-	-	-
Stage 2	325	-	-

Approach	WB	SB
HCM Control Delay, s	25.6	0
HCM LOS	D	

Minor Lane/Major Mvmt	WBLn1	SBT
Capacity (veh/h)	247	-
HCM Lane V/C Ratio	0.297	-
HCM Control Delay (s)	25.6	-
HCM Lane LOS	D	-
HCM 95th %tile Q(veh)	1.2	-

HCM 6th TWSC  
 5: South College Road & SB U-Turn

Background (2021) PM  
 04/26/2019

Intersection

Int Delay, s/veh	0.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖			↑↑		
Traffic Vol, veh/h	59	0	0	1330	0	0
Future Vol, veh/h	59	0	0	1330	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	16979	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	66	0	0	1478	0	0

Major/Minor	Minor2	Major1	
Conflicting Flow All	739	-	0
Stage 1	0	-	-
Stage 2	739	-	-
Critical Hdwy	6.84	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	5.84	-	-
Follow-up Hdwy	3.52	-	-
Pot Cap-1 Maneuver	353	0	-
Stage 1	-	0	-
Stage 2	433	0	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	353	-	-
Mov Cap-2 Maneuver	353	-	-
Stage 1	-	-	-
Stage 2	433	-	-

Approach	EB	NB
HCM Control Delay, s	17.5	0
HCM LOS	C	

Minor Lane/Major Mvmt	NBT EBLn1	
Capacity (veh/h)	-	353
HCM Lane V/C Ratio	-	0.186
HCM Control Delay (s)	-	17.5
HCM Lane LOS	-	C
HCM 95th %tile Q(veh)	-	0.7

Intersection

Int Delay, s/veh	0.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘					↑↑
Traffic Vol, veh/h	53	0	0	0	0	1963
Future Vol, veh/h	53	0	0	0	0	1963
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	16974	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	59	0	0	0	0	2181

Major/Minor	Minor1	Major2	
Conflicting Flow All	1091	-	-
Stage 1	0	-	-
Stage 2	1091	-	-
Critical Hdwy	6.84	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	5.84	-	-
Follow-up Hdwy	3.52	-	-
Pot Cap-1 Maneuver	209	0	0
Stage 1	-	0	-
Stage 2	283	0	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	209	-	-
Mov Cap-2 Maneuver	209	-	-
Stage 1	-	-	-
Stage 2	283	-	-

Approach	WB	SB
HCM Control Delay, s	28.8	0
HCM LOS	D	

Minor Lane/Major Mvmt	WBLn1	SBT
Capacity (veh/h)	209	-
HCM Lane V/C Ratio	0.282	-
HCM Control Delay (s)	28.8	-
HCM Lane LOS	D	-
HCM 95th %tile Q(veh)	1.1	-

HCM 6th TWSC  
5: South College Road & SB U-Turn

Background (2021) Saturday  
04/26/2019

Intersection

Int Delay, s/veh	0.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↘			↑↑		
Traffic Vol, veh/h	40	0	0	1700	0	0
Future Vol, veh/h	40	0	0	1700	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	16979	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	44	0	0	1889	0	0

Major/Minor	Minor2	Major1		
Conflicting Flow All	945	-	-	0
Stage 1	0	-	-	-
Stage 2	945	-	-	-
Critical Hdwy	6.84	-	-	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-
Follow-up Hdwy	3.52	-	-	-
Pot Cap-1 Maneuver	260	0	0	-
Stage 1	-	0	0	-
Stage 2	338	0	0	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	260	-	-	-
Mov Cap-2 Maneuver	260	-	-	-
Stage 1	-	-	-	-
Stage 2	338	-	-	-

Approach	EB	NB
HCM Control Delay, s	21.7	0
HCM LOS	C	

Minor Lane/Major Mvmt	NBT EBLn1
Capacity (veh/h)	- 260
HCM Lane V/C Ratio	- 0.171
HCM Control Delay (s)	- 21.7
HCM Lane LOS	- C
HCM 95th %tile Q(veh)	- 0.6

HCM 6th TWSC  
4: NB U-Turn & S. College Road

Background (2021) Saturday  
04/26/2019

Intersection

Int Delay, s/veh	1.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘					↑↑
Traffic Vol, veh/h	91	0	0	0	0	1796
Future Vol, veh/h	91	0	0	0	0	1796
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	16974	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	101	0	0	0	0	1996

Major/Minor	Minor1	Major2
Conflicting Flow All	998	-
Stage 1	0	-
Stage 2	998	-
Critical Hdwy	6.84	-
Critical Hdwy Stg 1	-	-
Critical Hdwy Stg 2	5.84	-
Follow-up Hdwy	3.52	-
Pot Cap-1 Maneuver	240	0
Stage 1	-	0
Stage 2	317	0
Platoon blocked, %		-
Mov Cap-1 Maneuver	240	-
Mov Cap-2 Maneuver	240	-
Stage 1	-	-
Stage 2	317	-

Approach	WB	SB
HCM Control Delay, s	30.5	0
HCM LOS	D	

Minor Lane/Major Mvmt	WBLn1	SBT
Capacity (veh/h)	240	-
HCM Lane V/C Ratio	0.421	-
HCM Control Delay (s)	30.5	-
HCM Lane LOS	D	-
HCM 95th %tile Q(veh)	2	-

HCM 6th TWSC  
 5: South College Road & SB U-Turn

Combined (2021) PM - Phase 1B Alt 1  
 04/26/2019

Intersection

Int Delay, s/veh	0.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↘			↑↑		
Traffic Vol, veh/h	59	0	0	1362	0	0
Future Vol, veh/h	59	0	0	1362	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	16979	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	66	0	0	1513	0	0

Major/Minor	Minor2	Major1		
Conflicting Flow All	757	-	-	0
Stage 1	0	-	-	-
Stage 2	757	-	-	-
Critical Hdwy	6.84	-	-	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-
Follow-up Hdwy	3.52	-	-	-
Pot Cap-1 Maneuver	344	0	0	-
Stage 1	-	0	0	-
Stage 2	424	0	0	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	344	-	-	-
Mov Cap-2 Maneuver	344	-	-	-
Stage 1	-	-	-	-
Stage 2	424	-	-	-

Approach	EB	NB
HCM Control Delay, s	17.9	0
HCM LOS	C	

Minor Lane/Major Mvmt	NBT EBLn1	
Capacity (veh/h)	-	344
HCM Lane V/C Ratio	-	0.191
HCM Control Delay (s)	-	17.9
HCM Lane LOS	-	C
HCM 95th %tile Q(veh)	-	0.7

HCM 6th TWSC  
4: NB U-Turn & S. College Road

Combined (2021) PM - Phase 1B Alt 1  
04/26/2019

Intersection

Int Delay, s/veh	1.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘					↑↑
Traffic Vol, veh/h	74	0	0	0	0	2013
Future Vol, veh/h	74	0	0	0	0	2013
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	16974	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	82	0	0	0	0	2237

Major/Minor	Minor1	Major2	
Conflicting Flow All	1119	-	-
Stage 1	0	-	-
Stage 2	1119	-	-
Critical Hdwy	6.84	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	5.84	-	-
Follow-up Hdwy	3.52	-	-
Pot Cap-1 Maneuver	201	0	0
Stage 1	-	0	-
Stage 2	274	0	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	201	-	-
Mov Cap-2 Maneuver	201	-	-
Stage 1	-	-	-
Stage 2	274	-	-

Approach	WB	SB
HCM Control Delay, s	34.8	0
HCM LOS	D	

Minor Lane/Major Mvmt	WBLn1	SBT
Capacity (veh/h)	201	-
HCM Lane V/C Ratio	0.409	-
HCM Control Delay (s)	34.8	-
HCM Lane LOS	D	-
HCM 95th %tile Q(veh)	1.8	-

HCM 6th TWSC  
 5: South College Road & SB U-Turn

Combined (2021) Saturday - Phase 1B Alt 1  
 04/26/2019

Intersection

Int Delay, s/veh	0.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↘			↑↑		
Traffic Vol, veh/h	40	0	0	1736	0	0
Future Vol, veh/h	40	0	0	1736	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	16979	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	44	0	0	1929	0	0

Major/Minor	Minor2	Major1	
Conflicting Flow All	965	-	0
Stage 1	0	-	-
Stage 2	965	-	-
Critical Hdwy	6.84	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	5.84	-	-
Follow-up Hdwy	3.52	-	-
Pot Cap-1 Maneuver	253	0	-
Stage 1	-	0	-
Stage 2	330	0	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	253	-	-
Mov Cap-2 Maneuver	253	-	-
Stage 1	-	-	-
Stage 2	330	-	-

Approach	EB	NB
HCM Control Delay, s	22.2	0
HCM LOS	C	

Minor Lane/Major Mvmt	NBT	EBLn1
Capacity (veh/h)	-	253
HCM Lane V/C Ratio	-	0.176
HCM Control Delay (s)	-	22.2
HCM Lane LOS	-	C
HCM 95th %tile Q(veh)	-	0.6

HCM 6th TWSC  
4: NB U-Turn & S. College Road

Combined (2021) Saturday - Phase 1B Alt 1  
04/26/2019

Intersection

Int Delay, s/veh	2.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖					↑↑
Traffic Vol, veh/h	128	0	0	0	0	1831
Future Vol, veh/h	128	0	0	0	0	1831
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	16974	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	142	0	0	0	0	2034

Major/Minor	Minor1	Major2
Conflicting Flow All	1017	-
Stage 1	0	-
Stage 2	1017	-
Critical Hdwy	6.84	-
Critical Hdwy Stg 1	-	-
Critical Hdwy Stg 2	5.84	-
Follow-up Hdwy	3.52	-
Pot Cap-1 Maneuver	234	0
Stage 1	-	0
Stage 2	310	0
Platoon blocked, %		-
Mov Cap-1 Maneuver	234	-
Mov Cap-2 Maneuver	234	-
Stage 1	-	-
Stage 2	310	-

Approach	WB	SB
HCM Control Delay, s	41.7	0
HCM LOS	E	

Minor Lane/Major Mvmt	WBLn1	SBT
Capacity (veh/h)	234	-
HCM Lane V/C Ratio	0.608	-
HCM Control Delay (s)	41.7	-
HCM Lane LOS	E	-
HCM 95th %tile Q(veh)	3.5	-

HCM 6th TWSC  
 5: South College Road & SB U-Turn/Site Drive #4

Combined (2021) PM - Phase 1B Alt 4  
 04/26/2019

Intersection													
Int Delay, s/veh	1.5												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↕						↑↑	↗				
Traffic Vol, veh/h	59	50	0	0	0	0	0	1362	25	0	0	0	
Future Vol, veh/h	59	50	0	0	0	0	0	1362	25	0	0	0	
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None	
Storage Length	-	-	-	-	-	-	-	-	100	-	-	-	
Veh in Median Storage, #	-	0	-	-	16979	-	-	0	-	-	16979	-	
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-	
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90	
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	
Mvmt Flow	66	56	0	0	0	0	0	1513	28	0	0	0	

Major/Minor	Minor2			Major1		
Conflicting Flow All	757	1541	-	-	0	0
Stage 1	0	0	-	-	-	-
Stage 2	757	1541	-	-	-	-
Critical Hdwy	6.84	6.54	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	5.84	5.54	-	-	-	-
Follow-up Hdwy	3.52	4.02	-	-	-	-
Pot Cap-1 Maneuver	344	114	0	0	-	-
Stage 1	-	-	0	0	-	-
Stage 2	424	175	0	0	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	344	0	-	-	-	-
Mov Cap-2 Maneuver	344	0	-	-	-	-
Stage 1	-	0	-	-	-	-
Stage 2	424	0	-	-	-	-

Approach	EB	NB
HCM Control Delay, s	21	0
HCM LOS	C	

Minor Lane/Major Mvmt	NBT	NBR	EBLn1
Capacity (veh/h)	-	-	344
HCM Lane V/C Ratio	-	-	0.352
HCM Control Delay (s)	-	-	21
HCM Lane LOS	-	-	C
HCM 95th %tile Q(veh)	-	-	1.5

HCM 6th TWSC  
4: NB U-Turn & S. College Road

Combined (2021) PM - Phase 1B Alt 4  
04/26/2019

Intersection

Int Delay, s/veh	1.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘					↑↑
Traffic Vol, veh/h	74	0	0	0	0	1963
Future Vol, veh/h	74	0	0	0	0	1963
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	16974	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	82	0	0	0	0	2181

Major/Minor	Minor1	Major2	
Conflicting Flow All	1091	-	-
Stage 1	0	-	-
Stage 2	1091	-	-
Critical Hdwy	6.84	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	5.84	-	-
Follow-up Hdwy	3.52	-	-
Pot Cap-1 Maneuver	209	0	0
Stage 1	-	0	-
Stage 2	283	0	0
Platoon blocked, %			-
Mov Cap-1 Maneuver	209	-	-
Mov Cap-2 Maneuver	209	-	-
Stage 1	-	-	-
Stage 2	283	-	-

Approach	WB	SB
HCM Control Delay, s	33	0
HCM LOS	D	

Minor Lane/Major Mvmt	WBLn1	SBT
Capacity (veh/h)	209	-
HCM Lane V/C Ratio	0.393	-
HCM Control Delay (s)	33	-
HCM Lane LOS	D	-
HCM 95th %tile Q(veh)	1.8	-

HCM 6th TWSC  
5: South College Road & SB U-Turn/Site Drive #4

Combined (2021) Saturday - Phase 1B Alt 4  
04/26/2019

Intersection												
Int Delay, s/veh	1.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕						↕↕	↕			
Traffic Vol, veh/h	40	35	0	0	0	0	0	1736	25	0	0	0
Future Vol, veh/h	40	35	0	0	0	0	0	1736	25	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	100	-	-	-
Veh in Median Storage, #	-	0	-	-	16979	-	-	0	-	-	16979	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	44	39	0	0	0	0	0	1929	28	0	0	0

Major/Minor	Minor2		Major1			
Conflicting Flow All	965	1957	-	-	0	0
Stage 1	0	0	-	-	-	-
Stage 2	965	1957	-	-	-	-
Critical Hdwy	6.84	6.54	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	5.84	5.54	-	-	-	-
Follow-up Hdwy	3.52	4.02	-	-	-	-
Pot Cap-1 Maneuver	253	63	0	-	-	-
Stage 1	-	-	0	-	-	-
Stage 2	330	109	0	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	253	0	-	-	-	-
Mov Cap-2 Maneuver	253	0	-	-	-	-
Stage 1	-	0	-	-	-	-
Stage 2	330	0	-	-	-	-

Approach	EB	NB
HCM Control Delay, s	26.1	0
HCM LOS	D	

Minor Lane/Major Mvmt	NBT	NBR	EBLn1
Capacity (veh/h)	-	-	253
HCM Lane V/C Ratio	-	-	0.329
HCM Control Delay (s)	-	-	26.1
HCM Lane LOS	-	-	D
HCM 95th %tile Q(veh)	-	-	1.4

HCM 6th TWSC  
4: NB U-Turn & S. College Road

Combined (2021) Saturday - Phase 1B Alt 4  
04/26/2019

Intersection

Int Delay, s/veh	2.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↵					↑↑
Traffic Vol, veh/h	128	0	0	0	0	1796
Future Vol, veh/h	128	0	0	0	0	1796
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	16974	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	142	0	0	0	0	1996

Major/Minor	Minor1	Major2
Conflicting Flow All	998	-
Stage 1	0	-
Stage 2	998	-
Critical Hdwy	6.84	-
Critical Hdwy Stg 1	-	-
Critical Hdwy Stg 2	5.84	-
Follow-up Hdwy	3.52	-
Pot Cap-1 Maneuver	240	0
Stage 1	-	0
Stage 2	317	0
Platoon blocked, %		-
Mov Cap-1 Maneuver	240	-
Mov Cap-2 Maneuver	240	-
Stage 1	-	-
Stage 2	317	-

Approach	WB	SB
HCM Control Delay, s	39.7	0
HCM LOS	E	

Minor Lane/Major Mvmt	WBLn1	SBT
Capacity (veh/h)	240	-
HCM Lane V/C Ratio	0.593	-
HCM Control Delay (s)	39.7	-
HCM Lane LOS	E	-
HCM 95th %tile Q(veh)	3.4	-

Intersection

Int Delay, s/veh	0.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↘			↑↑		
Traffic Vol, veh/h	61	0	0	1369	0	0
Future Vol, veh/h	61	0	0	1369	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	16979	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	68	0	0	1521	0	0

Major/Minor	Minor2	Major1		
Conflicting Flow All	761	-	-	0
Stage 1	0	-	-	-
Stage 2	761	-	-	-
Critical Hdwy	6.84	-	-	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-
Follow-up Hdwy	3.52	-	-	-
Pot Cap-1 Maneuver	342	0	0	-
Stage 1	-	0	0	-
Stage 2	422	0	0	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	342	-	-	-
Mov Cap-2 Maneuver	342	-	-	-
Stage 1	-	-	-	-
Stage 2	422	-	-	-

Approach	EB	NB
HCM Control Delay, s	18.1	0
HCM LOS	C	

Minor Lane/Major Mvmt	NBT	EBLn1
Capacity (veh/h)	-	342
HCM Lane V/C Ratio	-	0.198
HCM Control Delay (s)	-	18.1
HCM Lane LOS	-	C
HCM 95th %tile Q(veh)	-	0.7

HCM 6th TWSC  
4: NB U-Turn & S. College Road

Background (2024) PM  
04/26/2019

Intersection

Int Delay, s/veh	0.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘					↑↑
Traffic Vol, veh/h	54	0	0	0	0	2020
Future Vol, veh/h	54	0	0	0	0	2020
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	16974	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	60	0	0	0	0	2244

Major/Minor	Minor1	Major2
Conflicting Flow All	1122	-
Stage 1	0	-
Stage 2	1122	-
Critical Hdwy	6.84	-
Critical Hdwy Stg 1	-	-
Critical Hdwy Stg 2	5.84	-
Follow-up Hdwy	3.52	-
Pot Cap-1 Maneuver	200	0
Stage 1	-	0
Stage 2	273	0
Platoon blocked, %		-
Mov Cap-1 Maneuver	200	-
Mov Cap-2 Maneuver	200	-
Stage 1	-	-
Stage 2	273	-

Approach	WB	SB
HCM Control Delay, s	30.5	0
HCM LOS	D	

Minor Lane/Major Mvmt	WBLn1	SBT
Capacity (veh/h)	200	-
HCM Lane V/C Ratio	0.3	-
HCM Control Delay (s)	30.5	-
HCM Lane LOS	D	-
HCM 95th %tile Q(veh)	1.2	-

HCM 6th TWSC  
5: South College Road & SB U-Turn

Background (2024) Saturday  
04/26/2019

Intersection

Int Delay, s/veh	0.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↘			↑↑		
Traffic Vol, veh/h	41	0	0	1750	0	0
Future Vol, veh/h	41	0	0	1750	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	16979	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	46	0	0	1944	0	0

Major/Minor	Minor2	Major1		
Conflicting Flow All	972	-	-	0
Stage 1	0	-	-	-
Stage 2	972	-	-	-
Critical Hdwy	6.84	-	-	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-
Follow-up Hdwy	3.52	-	-	-
Pot Cap-1 Maneuver	250	0	0	-
Stage 1	-	0	0	-
Stage 2	327	0	0	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	250	-	-	-
Mov Cap-2 Maneuver	250	-	-	-
Stage 1	-	-	-	-
Stage 2	327	-	-	-

Approach	EB	NB
HCM Control Delay, s	22.6	0
HCM LOS	C	

Minor Lane/Major Mvmt	NBT	EBLn1
Capacity (veh/h)	-	250
HCM Lane V/C Ratio	-	0.182
HCM Control Delay (s)	-	22.6
HCM Lane LOS	-	C
HCM 95th %tile Q(veh)	-	0.7

HCM 6th TWSC  
4: NB U-Turn & S. College Road

Background (2024) Saturday  
04/26/2019

Intersection

Int Delay, s/veh	1.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘					↑↑
Traffic Vol, veh/h	93	0	0	0	0	1849
Future Vol, veh/h	93	0	0	0	0	1849
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	16974	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	103	0	0	0	0	2054

Major/Minor	Minor1	Major2
Conflicting Flow All	1027	-
Stage 1	0	-
Stage 2	1027	-
Critical Hdwy	6.84	-
Critical Hdwy Stg 1	-	-
Critical Hdwy Stg 2	5.84	-
Follow-up Hdwy	3.52	-
Pot Cap-1 Maneuver	230	0
Stage 1	-	0
Stage 2	306	0
Platoon blocked, %		
Mov Cap-1 Maneuver	230	-
Mov Cap-2 Maneuver	230	-
Stage 1	-	-
Stage 2	306	-

Approach	WB	SB
HCM Control Delay, s	32.8	0
HCM LOS	D	

Minor Lane/Major Mvmt	WBLn1	SBT
Capacity (veh/h)	230	-
HCM Lane V/C Ratio	0.449	-
HCM Control Delay (s)	32.8	-
HCM Lane LOS	D	-
HCM 95th %tile Q(veh)	2.2	-

HCM 6th TWSC  
5: South College Road & SB U-Turn

Combined (2024) PM - Phase 2 Alt 1

04/26/2019

Intersection

Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↘			↑↑		
Traffic Vol, veh/h	30	0	0	1507	0	0
Future Vol, veh/h	30	0	0	1507	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	16979	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	33	0	0	1674	0	0

Major/Minor	Minor2	Major1		
Conflicting Flow All	837	-	-	0
Stage 1	0	-	-	-
Stage 2	837	-	-	-
Critical Hdwy	6.84	-	-	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-
Follow-up Hdwy	3.52	-	-	-
Pot Cap-1 Maneuver	305	0	0	-
Stage 1	-	0	0	-
Stage 2	385	0	0	-
Platoon blocked, %		-	-	-
Mov Cap-1 Maneuver	305	-	-	-
Mov Cap-2 Maneuver	305	-	-	-
Stage 1	-	-	-	-
Stage 2	385	-	-	-

Approach	EB	NB
HCM Control Delay, s	18.2	0
HCM LOS	C	

Minor Lane/Major Mvmt	NBT	EBLn1
Capacity (veh/h)	-	305
HCM Lane V/C Ratio	-	0.109
HCM Control Delay (s)	-	18.2
HCM Lane LOS	-	C
HCM 95th %tile Q(veh)	-	0.4

Lanes, Volumes, Timings  
4: NB U-Turn & S. College Road

Combined (2024) PM - Phase 2 Alt 1  
04/27/2019

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						 
Traffic Volume (vph)	133	0	0	0	0	2086
Future Volume (vph)	133	0	0	0	0	2086
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.95
Frt						
Flt Protected	0.950					
Satd. Flow (prot)	1770	0	0	0	0	3539
Flt Permitted	0.950					
Satd. Flow (perm)	1770	0	0	0	0	3539
Right Turn on Red	No	No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	45		45			45
Link Distance (ft)	150		508			157
Travel Time (s)	2.3		7.7			2.4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	148	0	0	0	0	2318
Shared Lane Traffic (%)						
Lane Group Flow (vph)	148	0	0	0	0	2318
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1					2
Detector Template	Left					Thru
Leading Detector (ft)	20					100
Trailing Detector (ft)	0					0
Detector 1 Position(ft)	0					0
Detector 1 Size(ft)	20					6
Detector 1 Type	Cl+Ex					Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0					0.0
Detector 1 Queue (s)	0.0					0.0
Detector 1 Delay (s)	0.0					0.0
Detector 2 Position(ft)						94
Detector 2 Size(ft)						6
Detector 2 Type						Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)						0.0
Turn Type	Prot					NA
Protected Phases	8					6
Permitted Phases						
Detector Phase	8					6
Switch Phase						
Minimum Initial (s)	7.0					12.0

Lanes, Volumes, Timings  
 4: NB U-Turn & S. College Road

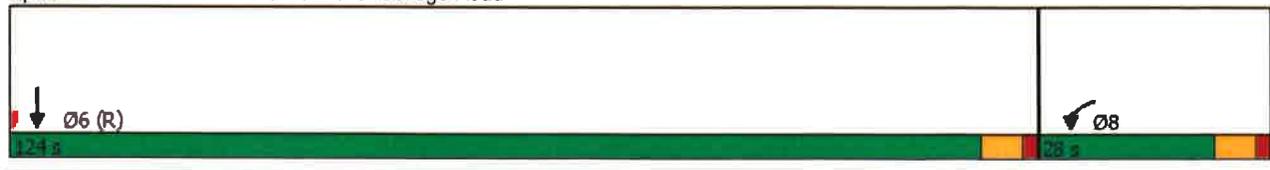
Combined (2024) PM - Phase 2 Alt 1  
 04/27/2019

	↙	↘	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Split (s)	14.0					19.0
Total Split (s)	28.0					124.0
Total Split (%)	18.4%					81.6%
Maximum Green (s)	21.0					117.0
Yellow Time (s)	5.0					5.0
All-Red Time (s)	2.0					2.0
Lost Time Adjust (s)	-2.0					-2.0
Total Lost Time (s)	5.0					5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0					3.0
Recall Mode	None					C-Max
Act Effct Green (s)	19.2					122.8
Actuated g/C Ratio	0.13					0.81
v/c Ratio	0.66					0.81
Control Delay	77.2					2.8
Queue Delay	0.0					0.0
Total Delay	77.2					2.8
LOS	E					A
Approach Delay	77.2					2.8
Approach LOS	E					A
Queue Length 50th (ft)	142					60
Queue Length 95th (ft)	216					173
Internal Link Dist (ft)	70		428			77
Turn Bay Length (ft)						
Base Capacity (vph)	267					2858
Starvation Cap Reductn	0					0
Spillback Cap Reductn	0					0
Storage Cap Reductn	0					0
Reduced v/c Ratio	0.55					0.81

Intersection Summary

Area Type: Other  
 Cycle Length: 152  
 Actuated Cycle Length: 152  
 Offset: 102 (67%), Referenced to phase 2: and 6:SBT, Start of Green  
 Natural Cycle: 60  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.81  
 Intersection Signal Delay: 7.3  
 Intersection Capacity Utilization 106.8%  
 Analysis Period (min) 15  
 Intersection LOS: A  
 ICU Level of Service G

Splits and Phases: 4: NB U-Turn & S. College Road



HCM 6th TWSC  
5: South College Road & SB U-Turn

Combined (2024) Saturday - Phase 2 Alt 1  
04/26/2019

Intersection

Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↘			↑↑		
Traffic Vol, veh/h	20	0	0	1932	0	0
Future Vol, veh/h	20	0	0	1932	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	16979	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	0	0	2147	0	0

Major/Minor	Minor2	Major1	
Conflicting Flow All	1074	-	0
Stage 1	0	-	-
Stage 2	1074	-	-
Critical Hdwy	6.84	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	5.84	-	-
Follow-up Hdwy	3.52	-	-
Pot Cap-1 Maneuver	215	0	0
Stage 1	-	0	0
Stage 2	289	0	0
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	215	-	-
Mov Cap-2 Maneuver	215	-	-
Stage 1	-	-	-
Stage 2	289	-	-

Approach	EB	NB
HCM Control Delay, s	23.7	0
HCM LOS	C	

Minor Lane/Major Mvmt	NBT EBLn1
Capacity (veh/h)	- 215
HCM Lane V/C Ratio	- 0.103
HCM Control Delay (s)	- 23.7
HCM Lane LOS	- C
HCM 95th %tile Q(veh)	- 0.3

Lanes, Volumes, Timings  
4: NB U-Turn & S. College Road

Combined (2024) Saturday - Phase 2 Alt 1

04/27/2019

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						 
Traffic Volume (vph)	192	0	0	0	0	1930
Future Volume (vph)	192	0	0	0	0	1930
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.95
Fr t						
Flt Protected	0.950					
Satd. Flow (prot)	1770	0	0	0	0	3539
Flt Permitted	0.950					
Satd. Flow (perm)	1770	0	0	0	0	3539
Right Turn on Red	No	No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	45		45			45
Link Distance (ft)	150		508			157
Travel Time (s)	2.3		7.7			2.4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	213	0	0	0	0	2144
Shared Lane Traffic (%)						
Lane Group Flow (vph)	213	0	0	0	0	2144
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1					2
Detector Template	Left					Thru
Leading Detector (ft)	20					100
Trailing Detector (ft)	0					0
Detector 1 Position(ft)	0					0
Detector 1 Size(ft)	20					6
Detector 1 Type	Cl+Ex					Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0					0.0
Detector 1 Queue (s)	0.0					0.0
Detector 1 Delay (s)	0.0					0.0
Detector 2 Position(ft)						94
Detector 2 Size(ft)						6
Detector 2 Type						Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)						0.0
Turn Type	Prot					NA
Protected Phases	8					6
Permitted Phases						
Detector Phase	8					6
Switch Phase						
Minimum Initial (s)	7.0					12.0

Lanes, Volumes, Timings  
 4: NB U-Turn & S. College Road

Combined (2024) Saturday - Phase 2 Alt 1  
 04/27/2019

	↙	↖	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Split (s)	14.0					19.0
Total Split (s)	36.0					116.0
Total Split (%)	23.7%					76.3%
Maximum Green (s)	29.0					109.0
Yellow Time (s)	5.0					5.0
All-Red Time (s)	2.0					2.0
Lost Time Adjust (s)	-2.0					-2.0
Total Lost Time (s)	5.0					5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0					3.0
Recall Mode	None					C-Max
Act Effct Green (s)	25.1					116.9
Actuated g/C Ratio	0.17					0.77
v/c Ratio	0.73					0.79
Control Delay	81.3					4.6
Queue Delay	0.0					0.0
Total Delay	81.3					4.6
LOS	F					A
Approach Delay	81.3					4.6
Approach LOS	F					A
Queue Length 50th (ft)	211					60
Queue Length 95th (ft)	m290					265
Internal Link Dist (ft)	70		428			77
Turn Bay Length (ft)						
Base Capacity (vph)	360					2722
Starvation Cap Reductn	0					0
Spillback Cap Reductn	0					0
Storage Cap Reductn	0					0
Reduced v/c Ratio	0.59					0.79

Intersection Summary

Area Type: Other  
 Cycle Length: 152  
 Actuated Cycle Length: 152  
 Offset: 117 (77%), Referenced to phase 2: and 6:SBT, Start of Green  
 Natural Cycle: 60  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.79  
 Intersection Signal Delay: 11.6  
 Intersection Capacity Utilization 114.3%  
 Analysis Period (min) 15  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: NB U-Turn & S. College Road



Lanes, Volumes, Timings  
 5: South College Road & SB U-Turn/Site Drive #4

Combined (2024) PM - Phase 2 Alt 4

04/27/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	124	0	0	0	0	0	1461	57	0	0	0
Future Volume (vph)	30	124	0	0	0	0	0	1461	57	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		100	0		0
Storage Lanes	0		0	0		0	0		1	0		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Flt									0.850			
Flt Protected		0.990										
Satd. Flow (prot)	0	1844	0	0	0	0	0	3539	1583	0	0	0
Flt Permitted		0.990										
Satd. Flow (perm)	0	1844	0	0	0	0	0	3539	1583	0	0	0
Right Turn on Red	No		No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			25			45			45	
Link Distance (ft)		150			731			151			526	
Travel Time (s)		2.3			19.9			2.3			8.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	33	138	0	0	0	0	0	1623	63	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	171	0	0	0	0	0	1623	63	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1						1	0			
Detector Template	Left											
Leading Detector (ft)	20	40						306	0			
Trailing Detector (ft)	0	0						300	0			
Detector 1 Position(ft)	0	0						300	0			
Detector 1 Size(ft)	20	40						6	20			
Detector 1 Type	Cl+Ex	Cl+Ex						Cl+Ex	Cl+Ex			
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0						0.0	0.0			
Detector 1 Queue (s)	0.0	0.0						0.0	0.0			
Detector 1 Delay (s)	0.0	0.0						0.0	0.0			
Turn Type	Perm	NA						NA	Perm			
Protected Phases		4						2				
Permitted Phases	4								2			
Detector Phase	4	4						2	2			
Switch Phase												
Minimum Initial (s)	7.0	7.0						12.0	12.0			
Minimum Split (s)	14.0	14.0						19.0	19.0			
Total Split (s)	36.0	36.0						116.0	116.0			

Lanes, Volumes, Timings  
5: South College Road & SB U-Turn/Site Drive #4

Combined (2024) PM - Phase 2 Alt 4

04/27/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (%)	23.7%	23.7%						76.3%	76.3%			
Maximum Green (s)	29.0	29.0						109.0	109.0			
Yellow Time (s)	5.0	5.0						5.0	5.0			
All-Red Time (s)	2.0	2.0						2.0	2.0			
Lost Time Adjust (s)		-2.0						-2.0	-2.0			
Total Lost Time (s)		5.0						5.0	5.0			
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0						3.0	3.0			
Recall Mode	None	None						C-Max	C-Max			
Act Effct Green (s)		21.4						120.6	120.6			
Actuated g/C Ratio		0.14						0.79	0.79			
v/c Ratio		0.66						0.58	0.05			
Control Delay		73.0						7.4	4.1			
Queue Delay		0.0						0.1	0.0			
Total Delay		73.0						7.5	4.1			
LOS		E						A	A			
Approach Delay		73.0						7.4				
Approach LOS		E						A				
Queue Length 50th (ft)		156						278	12			
Queue Length 95th (ft)		m181						406	27			
Internal Link Dist (ft)		70			651			71			446	
Turn Bay Length (ft)									100			
Base Capacity (vph)		376						2808	1256			
Starvation Cap Reductn		0						0	0			
Spillback Cap Reductn		0						195	0			
Storage Cap Reductn		0						0	0			
Reduced v/c Ratio		0.45						0.62	0.05			

Intersection Summary

Area Type: Other  
 Cycle Length: 152  
 Actuated Cycle Length: 152  
 Offset: 149 (98%), Referenced to phase 2:NBT, Start of Green  
 Natural Cycle: 45  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.66  
 Intersection Signal Delay: 13.4  
 Intersection Capacity Utilization 56.9%  
 Analysis Period (min) 15  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: South College Road & SB U-Turn/Site Drive #4



Lanes, Volumes, Timings  
4: NB U-Turn & S. College Road

Combined (2024) PM - Phase 2 Alt 4  
04/27/2019

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						 
Traffic Volume (vph)	133	0	0	0	0	2066
Future Volume (vph)	133	0	0	0	0	2066
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.95
Frt						
Fit Protected	0.950					
Satd. Flow (prot)	1770	0	0	0	0	3539
Fit Permitted	0.950					
Satd. Flow (perm)	1770	0	0	0	0	3539
Right Turn on Red	No	No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	45		45			45
Link Distance (ft)	150		508			157
Travel Time (s)	2.3		7.7			2.4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	148	0	0	0	0	2296
Shared Lane Traffic (%)						
Lane Group Flow (vph)	148	0	0	0	0	2296
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1					2
Detector Template	Left					Thru
Leading Detector (ft)	20					100
Trailing Detector (ft)	0					0
Detector 1 Position(ft)	0					0
Detector 1 Size(ft)	20					6
Detector 1 Type	CI+Ex					CI+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0					0.0
Detector 1 Queue (s)	0.0					0.0
Detector 1 Delay (s)	0.0					0.0
Detector 2 Position(ft)						94
Detector 2 Size(ft)						6
Detector 2 Type						CI+Ex
Detector 2 Channel						
Detector 2 Extend (s)						0.0
Turn Type	Prot					NA
Protected Phases	8					6
Permitted Phases						
Detector Phase	8					6
Switch Phase						
Minimum Initial (s)	7.0					12.0

Lanes, Volumes, Timings  
4: NB U-Turn & S. College Road

Combined (2024) PM - Phase 2 Alt 4  
04/27/2019

	↙	↘	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Split (s)	14.0					19.0
Total Split (s)	28.0					124.0
Total Split (%)	18.4%					81.6%
Maximum Green (s)	21.0					117.0
Yellow Time (s)	5.0					5.0
All-Red Time (s)	2.0					2.0
Lost Time Adjust (s)	-2.0					-2.0
Total Lost Time (s)	5.0					5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0					3.0
Recall Mode	None					C-Max
Act Effct Green (s)	19.2					122.8
Actuated g/C Ratio	0.13					0.81
v/c Ratio	0.66					0.80
Control Delay	77.2					4.2
Queue Delay	0.0					0.0
Total Delay	77.2					4.2
LOS	E					A
Approach Delay	77.2					4.2
Approach LOS	E					A
Queue Length 50th (ft)	142					56
Queue Length 95th (ft)	216					162
Internal Link Dist (ft)	70		428			77
Turn Bay Length (ft)						
Base Capacity (vph)	267					2858
Starvation Cap Reductn	0					0
Spillback Cap Reductn	0					0
Storage Cap Reductn	0					0
Reduced v/c Ratio	0.55					0.80

Intersection Summary

Area Type: Other  
 Cycle Length: 152  
 Actuated Cycle Length: 152  
 Offset: 99 (65%), Referenced to phase 2: and 6:SBT, Start of Green  
 Natural Cycle: 60  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.80  
 Intersection Signal Delay: 8.6  
 Intersection Capacity Utilization 106.6%  
 Analysis Period (min) 15

Intersection LOS: A  
ICU Level of Service G

Splits and Phases: 4: NB U-Turn & S. College Road



Lanes, Volumes, Timings

Combined (2024) Saturday - Phase 2 Alt 4

5: South College Road & SB U-Turn/Site Drive #4

04/27/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	162	0	0	0	0	0	1863	77	0	0	0
Future Volume (vph)	20	162	0	0	0	0	0	1863	77	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		100	0		0
Storage Lanes	0		0	0		0	0		1	0		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Flt									0.850			
Flt Protected		0.995										
Satd. Flow (prot)	0	1853	0	0	0	0	0	3539	1583	0	0	0
Flt Permitted		0.995										
Satd. Flow (perm)	0	1853	0	0	0	0	0	3539	1583	0	0	0
Right Turn on Red	No		No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			25			45			45	
Link Distance (ft)		150			762			151			525	
Travel Time (s)		2.3			20.8			2.3			8.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	22	180	0	0	0	0	0	2070	86	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	202	0	0	0	0	0	2070	86	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1						1	0			
Detector Template	Left											
Leading Detector (ft)	20	40						306	0			
Trailing Detector (ft)	0	0						300	0			
Detector 1 Position(ft)	0	0						300	0			
Detector 1 Size(ft)	20	40						6	20			
Detector 1 Type	Cl+Ex	Cl+Ex						Cl+Ex	Cl+Ex			
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0						0.0	0.0			
Detector 1 Queue (s)	0.0	0.0						0.0	0.0			
Detector 1 Delay (s)	0.0	0.0						0.0	0.0			
Turn Type	Perm	NA						NA	Perm			
Protected Phases		4						2				
Permitted Phases	4								2			
Detector Phase	4	4						2	2			
Switch Phase												
Minimum Initial (s)	7.0	7.0						12.0	12.0			
Minimum Split (s)	14.0	14.0						19.0	19.0			
Total Split (s)	33.0	33.0						119.0	119.0			

Lanes, Volumes, Timings

Combined (2024) Saturday - Phase 2 Alt 4

5: South College Road & SB U-Turn/Site Drive #4

04/27/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (%)	21.7%	21.7%						78.3%	78.3%			
Maximum Green (s)	26.0	26.0						112.0	112.0			
Yellow Time (s)	5.0	5.0						5.0	5.0			
All-Red Time (s)	2.0	2.0						2.0	2.0			
Lost Time Adjust (s)		-2.0						-2.0	-2.0			
Total Lost Time (s)		5.0						5.0	5.0			
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0						3.0	3.0			
Recall Mode	None	None						C-Max	C-Max			
Act Effct Green (s)		23.2						118.8	118.8			
Actuated g/C Ratio		0.15						0.78	0.78			
v/c Ratio		0.72						0.75	0.07			
Control Delay		80.5						13.1	3.4			
Queue Delay		0.0						0.2	0.0			
Total Delay		80.5						13.3	3.4			
LOS		F						B	A			
Approach Delay		80.5						12.9				
Approach LOS		F						B				
Queue Length 50th (ft)		191						734	15			
Queue Length 95th (ft)		m238						m903	m25			
Internal Link Dist (ft)		70			682			71			445	
Turn Bay Length (ft)									100			
Base Capacity (vph)		341						2766	1237			
Starvation Cap Reductn		0						0	0			
Spillback Cap Reductn		0						132	0			
Storage Cap Reductn		0						0	0			
Reduced v/c Ratio		0.59						0.79	0.07			

Intersection Summary

Area Type: Other  
 Cycle Length: 152  
 Actuated Cycle Length: 152  
 Offset: 130 (86%), Referenced to phase 2:NBT, Start of Green  
 Natural Cycle: 60  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.75  
 Intersection Signal Delay: 18.7  
 Intersection Capacity Utilization 69.5%  
 Analysis Period (min) 15  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: South College Road & SB U-Turn/Site Drive #4



Lanes, Volumes, Timings  
4: NB U-Turn & S. College Road

Combined (2024) Saturday - Phase 2 Alt 4

04/27/2019

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						 
Traffic Volume (vph)	192	0	0	0	0	1895
Future Volume (vph)	192	0	0	0	0	1895
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.95
Frt						
Flt Protected	0.950					
Satd. Flow (prot)	1770	0	0	0	0	3539
Flt Permitted	0.950					
Satd. Flow (perm)	1770	0	0	0	0	3539
Right Turn on Red	No	No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	45		45			45
Link Distance (ft)	150		508			157
Travel Time (s)	2.3		7.7			2.4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	213	0	0	0	0	2106
Shared Lane Traffic (%)						
Lane Group Flow (vph)	213	0	0	0	0	2106
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1					2
Detector Template	Left					Thru
Leading Detector (ft)	20					100
Trailing Detector (ft)	0					0
Detector 1 Position(ft)	0					0
Detector 1 Size(ft)	20					6
Detector 1 Type	CI+Ex					CI+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0					0.0
Detector 1 Queue (s)	0.0					0.0
Detector 1 Delay (s)	0.0					0.0
Detector 2 Position(ft)						94
Detector 2 Size(ft)						6
Detector 2 Type						CI+Ex
Detector 2 Channel						
Detector 2 Extend (s)						0.0
Turn Type	Prot					NA
Protected Phases	8					6
Permitted Phases						
Detector Phase	8					6
Switch Phase						
Minimum Initial (s)	7.0					12.0

Lanes, Volumes, Timings  
 4: NB U-Turn & S. College Road

Combined (2024) Saturday - Phase 2 Alt 4  
 04/27/2019

	↙	↘	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Split (s)	14.0					19.0
Total Split (s)	36.0					116.0
Total Split (%)	23.7%					76.3%
Maximum Green (s)	29.0					109.0
Yellow Time (s)	5.0					5.0
All-Red Time (s)	2.0					2.0
Lost Time Adjust (s)	-2.0					-2.0
Total Lost Time (s)	5.0					5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0					3.0
Recall Mode	None					C-Max
Act Effct Green (s)	25.1					116.9
Actuated g/C Ratio	0.17					0.77
v/c Ratio	0.73					0.77
Control Delay	81.9					4.6
Queue Delay	0.0					0.0
Total Delay	81.9					4.6
LOS	F					A
Approach Delay	81.9					4.6
Approach LOS	F					A
Queue Length 50th (ft)	211					152
Queue Length 95th (ft)	m288					246
Internal Link Dist (ft)	70		428			77
Turn Bay Length (ft)						
Base Capacity (vph)	360					2722
Starvation Cap Reductn	0					0
Spillback Cap Reductn	0					0
Storage Cap Reductn	0					0
Reduced v/c Ratio	0.59					0.77

Intersection Summary

Area Type: Other  
 Cycle Length: 152  
 Actuated Cycle Length: 152  
 Offset: 118 (78%), Referenced to phase 2: and 6:SBT, Start of Green  
 Natural Cycle: 60  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.77  
 Intersection Signal Delay: 11.7  
 Intersection Capacity Utilization 113.5%  
 Analysis Period (min) 15  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: NB U-Turn & S. College Road



# **APPENDIX H**

**CAPACITY ANALYSIS CALCULATIONS**

**NAVAHO TRAIL**

**&**

**LANSLOWNE ROAD / NICHOLAS CREEK**

**CIRCLE**

Intersection												
Int Delay, s/veh	9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	131	57	93	6	24	2	39	17	5	4	21	67
Future Vol, veh/h	131	57	93	6	24	2	39	17	5	4	21	67
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	146	63	103	7	27	2	43	19	6	4	23	74

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	191	179	60	259	213	22	97	0	0	25	0	0
Stage 1	68	68	-	108	108	-	-	-	-	-	-	-
Stage 2	123	111	-	151	105	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	769	715	1005	694	684	1055	1496	-	-	1589	-	-
Stage 1	942	838	-	897	806	-	-	-	-	-	-	-
Stage 2	881	804	-	851	808	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	726	692	1005	565	662	1055	1496	-	-	1589	-	-
Mov Cap-2 Maneuver	726	692	-	565	662	-	-	-	-	-	-	-
Stage 1	915	835	-	871	783	-	-	-	-	-	-	-
Stage 2	825	781	-	703	806	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.5	10.8	4.8	0.3
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1496	-	-	791	656	1589	-	-
HCM Lane V/C Ratio	0.029	-	-	0.395	0.054	0.003	-	-
HCM Control Delay (s)	7.5	0	-	12.5	10.8	7.3	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	1.9	0.2	0	-	-

HCM 6th TWSC  
6: Navaho Trail & Landsdowne Road/Nicholas Creek Circle

Existing (2019) Saturday  
04/26/2019

Intersection												
Int Delay, s/veh	7.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	65	38	55	9	23	2	43	12	7	4	15	48
Future Vol, veh/h	65	38	55	9	23	2	43	12	7	4	15	48
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	72	42	61	10	26	2	48	13	8	4	17	53

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	179	169	44	216	191	17	70	0	0	21	0	0
Stage 1	52	52	-	113	113	-	-	-	-	-	-	-
Stage 2	127	117	-	103	78	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	783	724	1026	740	704	1062	1531	-	-	1595	-	-
Stage 1	961	852	-	892	802	-	-	-	-	-	-	-
Stage 2	877	799	-	903	830	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	739	699	1026	646	679	1062	1531	-	-	1595	-	-
Mov Cap-2 Maneuver	739	699	-	646	679	-	-	-	-	-	-	-
Stage 1	930	849	-	863	776	-	-	-	-	-	-	-
Stage 2	819	773	-	805	828	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	10.7		10.6		5.2		0.4	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1531	-	-	806	684	1595	-	-
HCM Lane V/C Ratio	0.031	-	-	0.218	0.055	0.003	-	-
HCM Control Delay (s)	7.4	0	-	10.7	10.6	7.3	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.8	0.2	0	-	-

HCM 6th TWSC  
 6: Navaho Trail & Landsdowne Road/Nicholas Creek Circle

Background (2021) PM  
 04/26/2019

Intersection

Int Delay, s/veh	9.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	134	58	95	6	24	2	40	17	5	4	21	68
Future Vol, veh/h	134	58	95	6	24	2	40	17	5	4	21	68
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	149	64	106	7	27	2	44	19	6	4	23	76

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	194	182	61	264	217	22	99	0	0	25	0	0
Stage 1	69	69	-	110	110	-	-	-	-	-	-	-
Stage 2	125	113	-	154	107	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	765	712	1004	689	681	1055	1494	-	-	1589	-	-
Stage 1	941	837	-	895	804	-	-	-	-	-	-	-
Stage 2	879	802	-	848	807	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	721	689	1004	558	659	1055	1494	-	-	1589	-	-
Mov Cap-2 Maneuver	721	689	-	558	659	-	-	-	-	-	-	-
Stage 1	913	834	-	868	780	-	-	-	-	-	-	-
Stage 2	822	778	-	698	805	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	12.7		10.8		4.8		0.3	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1494	-	-	787	652	1589	-	-
HCM Lane V/C Ratio	0.03	-	-	0.405	0.055	0.003	-	-
HCM Control Delay (s)	7.5	0	-	12.7	10.8	7.3	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	2	0.2	0	-	-

Intersection

Int Delay, s/veh 7.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	66	39	56	9	23	2	44	12	7	4	15	49
Future Vol, veh/h	66	39	56	9	23	2	44	12	7	4	15	49
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	73	43	62	10	26	2	49	13	8	4	17	54

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	181	171	44	220	194	17	71	0	0	21	0	0
Stage 1	52	52	-	115	115	-	-	-	-	-	-	-
Stage 2	129	119	-	105	79	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	781	722	1026	736	701	1062	1529	-	-	1595	-	-
Stage 1	961	852	-	890	800	-	-	-	-	-	-	-
Stage 2	875	797	-	901	829	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	736	697	1026	641	676	1062	1529	-	-	1595	-	-
Mov Cap-2 Maneuver	736	697	-	641	676	-	-	-	-	-	-	-
Stage 1	930	849	-	862	774	-	-	-	-	-	-	-
Stage 2	817	771	-	801	827	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	10.8		10.6		5.2		0.4	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1529	-	-	804	681	1595	-	-
HCM Lane V/C Ratio	0.032	-	-	0.222	0.055	0.003	-	-
HCM Control Delay (s)	7.4	0	-	10.8	10.6	7.3	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.8	0.2	0	-	-

Intersection

Int Delay, s/veh 9.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	134	58	95	6	24	2	40	17	5	4	21	68
Future Vol, veh/h	134	58	95	6	24	2	40	17	5	4	21	68
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	149	64	106	7	27	2	44	19	6	4	23	76

Major/Minor	Minor2	Minor1	Major1	Major2
Conflicting Flow All	194	182	61	264
Stage 1	69	69	-	110
Stage 2	125	113	-	154
Critical Hdwy	7.12	6.52	6.22	7.12
Critical Hdwy Stg 1	6.12	5.52	-	6.12
Critical Hdwy Stg 2	6.12	5.52	-	6.12
Follow-up Hdwy	3.518	4.018	3.318	3.518
Pot Cap-1 Maneuver	765	712	1004	689
Stage 1	941	837	-	895
Stage 2	879	802	-	848
Platoon blocked, %				
Mov Cap-1 Maneuver	721	689	1004	558
Mov Cap-2 Maneuver	721	689	-	558
Stage 1	913	834	-	868
Stage 2	822	778	-	698

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.7	10.8	4.8	0.3
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1494	-	-	787	652	1589	-	-
HCM Lane V/C Ratio	0.03	-	-	0.405	0.055	0.003	-	-
HCM Control Delay (s)	7.5	0	-	12.7	10.8	7.3	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	2	0.2	0	-	-

Intersection												
Int Delay, s/veh	7.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	66	39	56	9	23	2	44	12	7	4	15	49
Future Vol, veh/h	66	39	56	9	23	2	44	12	7	4	15	49
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	73	43	62	10	26	2	49	13	8	4	17	54

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	181	171	44	220	194	17	71	0	0	21	0	0
Stage 1	52	52	-	115	115	-	-	-	-	-	-	-
Stage 2	129	119	-	105	79	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	781	722	1026	736	701	1062	1529	-	-	1595	-	-
Stage 1	961	852	-	890	800	-	-	-	-	-	-	-
Stage 2	875	797	-	901	829	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	736	697	1026	641	676	1062	1529	-	-	1595	-	-
Mov Cap-2 Maneuver	736	697	-	641	676	-	-	-	-	-	-	-
Stage 1	930	849	-	862	774	-	-	-	-	-	-	-
Stage 2	817	771	-	801	827	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.8	10.6	5.2	0.4
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1529	-	-	804	681	1595	-	-
HCM Lane V/C Ratio	0.032	-	-	0.222	0.055	0.003	-	-
HCM Control Delay (s)	7.4	0	-	10.8	10.6	7.3	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.8	0.2	0	-	-

Intersection												
Int Delay, s/veh	9.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	134	58	95	6	24	2	40	17	5	4	21	68
Future Vol, veh/h	134	58	95	6	24	2	40	17	5	4	21	68
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	149	64	106	7	27	2	44	19	6	4	23	76

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	194	182	61	264	217	22	99	0	0	25	0	0
Stage 1	69	69	-	110	110	-	-	-	-	-	-	-
Stage 2	125	113	-	154	107	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	765	712	1004	689	681	1055	1494	-	-	1589	-	-
Stage 1	941	837	-	895	804	-	-	-	-	-	-	-
Stage 2	879	802	-	848	807	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	721	689	1004	558	659	1055	1494	-	-	1589	-	-
Mov Cap-2 Maneuver	721	689	-	558	659	-	-	-	-	-	-	-
Stage 1	913	834	-	868	780	-	-	-	-	-	-	-
Stage 2	822	778	-	698	805	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.7	10.8	4.8	0.3
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1494	-	-	787	652	1589	-	-
HCM Lane V/C Ratio	0.03	-	-	0.405	0.055	0.003	-	-
HCM Control Delay (s)	7.5	0	-	12.7	10.8	7.3	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	2	0.2	0	-	-

Intersection

Int Delay, s/veh 7.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	66	39	56	9	23	2	44	12	7	4	15	49
Future Vol, veh/h	66	39	56	9	23	2	44	12	7	4	15	49
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	73	43	62	10	26	2	49	13	8	4	17	54

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	181	171	44	220	194	17	71	0	0	21	0	0
Stage 1	52	52	-	115	115	-	-	-	-	-	-	-
Stage 2	129	119	-	105	79	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	781	722	1026	736	701	1062	1529	-	-	1595	-	-
Stage 1	961	852	-	890	800	-	-	-	-	-	-	-
Stage 2	875	797	-	901	829	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	736	697	1026	641	676	1062	1529	-	-	1595	-	-
Mov Cap-2 Maneuver	736	697	-	641	676	-	-	-	-	-	-	-
Stage 1	930	849	-	862	774	-	-	-	-	-	-	-
Stage 2	817	771	-	801	827	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.8	10.6	5.2	0.4
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1529	-	-	804	681	1595	-	-
HCM Lane V/C Ratio	0.032	-	-	0.222	0.055	0.003	-	-
HCM Control Delay (s)	7.4	0	-	10.8	10.6	7.3	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.8	0.2	0	-	-

Intersection

Int Delay, s/veh	9.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	138	60	98	6	25	2	41	18	5	4	22	70
Future Vol, veh/h	138	60	98	6	25	2	41	18	5	4	22	70
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	153	67	109	7	28	2	46	20	6	4	24	78

Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	201	189	63	274	225	23	102	0	0	26	0	0
Stage 1	71	71	-	115	115	-	-	-	-	-	-	-
Stage 2	130	118	-	159	110	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	757	706	1002	678	674	1054	1490	-	-	1588	-	-
Stage 1	939	836	-	890	800	-	-	-	-	-	-	-
Stage 2	874	798	-	843	804	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	712	682	1002	545	651	1054	1490	-	-	1588	-	-
Mov Cap-2 Maneuver	712	682	-	545	651	-	-	-	-	-	-	-
Stage 1	910	833	-	862	775	-	-	-	-	-	-	-
Stage 2	815	773	-	689	802	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.9	10.9	4.8	0.3
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1490	-	-	780	643	1588	-	-
HCM Lane V/C Ratio	0.031	-	-	0.422	0.057	0.003	-	-
HCM Control Delay (s)	7.5	0	-	12.9	10.9	7.3	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	2.1	0.2	0	-	-

HCM 6th TWSC  
6: Navaho Trail & Landsdowne Road/Nicholas Creek Circle

Background (2024) Saturday  
04/26/2019

Intersection

Int Delay, s/veh	7.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↔			↔			↔		
Traffic Vol, veh/h	68	40	58	9	24	2	45	13	7	4	16	50
Future Vol, veh/h	68	40	58	9	24	2	45	13	7	4	16	50
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	76	44	64	10	27	2	50	14	8	4	18	56

Major/Minor	Minor2		Minor1			Major1		Major2				
Conflicting Flow All	187	176	46	226	200	18	74	0	0	22	0	0
Stage 1	54	54	-	118	118	-	-	-	-	-	-	-
Stage 2	133	122	-	108	82	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	774	717	1023	729	696	1061	1526	-	-	1593	-	-
Stage 1	958	850	-	887	798	-	-	-	-	-	-	-
Stage 2	870	795	-	897	827	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	728	691	1023	632	671	1061	1526	-	-	1593	-	-
Mov Cap-2 Maneuver	728	691	-	632	671	-	-	-	-	-	-	-
Stage 1	926	847	-	858	772	-	-	-	-	-	-	-
Stage 2	811	769	-	794	825	-	-	-	-	-	-	-

Approach	EB		WB			NB		SB			
HCM Control Delay, s	10.9		10.7			5.2		0.4			
HCM LOS	B		B								

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1526	-	-	798	674	1593	-	-
HCM Lane V/C Ratio	0.033	-	-	0.231	0.058	0.003	-	-
HCM Control Delay (s)	7.4	0	-	10.9	10.7	7.3	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.9	0.2	0	-	-

Intersection

Int Delay, s/veh	9.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	153	60	98	6	25	2	41	18	5	4	22	70
Future Vol, veh/h	153	60	98	6	25	2	41	18	5	4	22	70
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	170	67	109	7	28	2	46	20	6	4	24	78

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	201	189	63	274	225	23	102	0	0	26	0	0
Stage 1	71	71	-	115	115	-	-	-	-	-	-	-
Stage 2	130	118	-	159	110	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	757	706	1002	678	674	1054	1490	-	-	1588	-	-
Stage 1	939	836	-	890	800	-	-	-	-	-	-	-
Stage 2	874	798	-	843	804	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	712	682	1002	545	651	1054	1490	-	-	1588	-	-
Mov Cap-2 Maneuver	712	682	-	545	651	-	-	-	-	-	-	-
Stage 1	910	833	-	862	775	-	-	-	-	-	-	-
Stage 2	815	773	-	689	802	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	13.3		10.9		4.8		0.3	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1490	-	-	776	643	1588	-	-
HCM Lane V/C Ratio	0.031	-	-	0.445	0.057	0.003	-	-
HCM Control Delay (s)	7.5	0	-	13.3	10.9	7.3	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	2.3	0.2	0	-	-

Intersection

Int Delay, s/veh	7.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	84	40	58	9	24	2	45	13	7	4	16	50
Future Vol, veh/h	84	40	58	9	24	2	45	13	7	4	16	50
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	93	44	64	10	27	2	50	14	8	4	18	56

Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	187	176	46	226	200	18	74	0	0	22	0	0
Stage 1	54	54	-	118	118	-	-	-	-	-	-	-
Stage 2	133	122	-	108	82	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	774	717	1023	729	696	1061	1526	-	-	1593	-	-
Stage 1	958	850	-	887	798	-	-	-	-	-	-	-
Stage 2	870	795	-	897	827	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	728	691	1023	632	671	1061	1526	-	-	1593	-	-
Mov Cap-2 Maneuver	728	691	-	632	671	-	-	-	-	-	-	-
Stage 1	926	847	-	858	772	-	-	-	-	-	-	-
Stage 2	811	769	-	794	825	-	-	-	-	-	-	-

Approach	EB		WB			NB			SB		
HCM Control Delay, s	11.1		10.7			5.2			0.4		
HCM LOS	B		B								

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1526	-	-	791	674	1593	-	-
HCM Lane V/C Ratio	0.033	-	-	0.256	0.058	0.003	-	-
HCM Control Delay (s)	7.4	0	-	11.1	10.7	7.3	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	1	0.2	0	-	-

Intersection

Int Delay, s/veh	9.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	153	60	98	6	25	2	41	18	5	4	22	70
Future Vol, veh/h	153	60	98	6	25	2	41	18	5	4	22	70
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	170	67	109	7	28	2	46	20	6	4	24	78

Major/Minor	Minor2		Minor1			Major1		Major2				
Conflicting Flow All	201	189	63	274	225	23	102	0	0	26	0	0
Stage 1	71	71	-	115	115	-	-	-	-	-	-	-
Stage 2	130	118	-	159	110	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	757	706	1002	678	674	1054	1490	-	-	1588	-	-
Stage 1	939	836	-	890	800	-	-	-	-	-	-	-
Stage 2	874	798	-	843	804	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	712	682	1002	545	651	1054	1490	-	-	1588	-	-
Mov Cap-2 Maneuver	712	682	-	545	651	-	-	-	-	-	-	-
Stage 1	910	833	-	862	775	-	-	-	-	-	-	-
Stage 2	815	773	-	689	802	-	-	-	-	-	-	-

Approach	EB		WB			NB		SB			
HCM Control Delay, s	13.3		10.9			4.8		0.3			
HCM LOS	B		B								

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1490	-	-	776	643	1588	-	-
HCM Lane V/C Ratio	0.031	-	-	0.445	0.057	0.003	-	-
HCM Control Delay (s)	7.5	0	-	13.3	10.9	7.3	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	2.3	0.2	0	-	-

Intersection

Int Delay, s/veh	7.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	84	40	58	9	24	2	45	13	7	4	16	50
Future Vol, veh/h	84	40	58	9	24	2	45	13	7	4	16	50
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	93	44	64	10	27	2	50	14	8	4	18	56

Major/Minor	Minor2		Minor1			Major1		Major2				
Conflicting Flow All	187	176	46	226	200	18	74	0	0	22	0	0
Stage 1	54	54	-	118	118	-	-	-	-	-	-	-
Stage 2	133	122	-	108	82	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	774	717	1023	729	696	1061	1526	-	-	1593	-	-
Stage 1	958	850	-	887	798	-	-	-	-	-	-	-
Stage 2	870	795	-	897	827	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	728	691	1023	632	671	1061	1526	-	-	1593	-	-
Mov Cap-2 Maneuver	728	691	-	632	671	-	-	-	-	-	-	-
Stage 1	926	847	-	858	772	-	-	-	-	-	-	-
Stage 2	811	769	-	794	825	-	-	-	-	-	-	-

Approach	EB		WB			NB		SB		
HCM Control Delay, s	11.1		10.7			5.2		0.4		
HCM LOS	B		B							

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1526	-	-	791	674	1593	-	-
HCM Lane V/C Ratio	0.033	-	-	0.256	0.058	0.003	-	-
HCM Control Delay (s)	7.4	0	-	11.1	10.7	7.3	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	1	0.2	0	-	-

# **APPENDIX I**

**CAPACITY ANALYSIS CALCULATIONS**

**S. COLLEGE ROAD**

**&**

**SITE DRIVE #3**

Intersection

Int Delay, s/veh	0.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↕	↗		
Traffic Vol, veh/h	0	53	1383	84	0	0
Future Vol, veh/h	0	53	1383	84	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	100	-	-
Veh in Median Storage, #	0	-	0	-	-	16979
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	59	1537	93	0	0

Major/Minor	Minor1	Major1	
Conflicting Flow All	-	769	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	6.94	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	3.32	-
Pot Cap-1 Maneuver	0	344	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	344	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	WB	NB
HCM Control Delay, s	17.6	0
HCM LOS	C	

Minor Lane/Major Mvmt	NBT	NBRWBLn1
Capacity (veh/h)	-	344
HCM Lane V/C Ratio	-	0.171
HCM Control Delay (s)	-	17.6
HCM Lane LOS	-	C
HCM 95th %tile Q(veh)	-	0.6

HCM 6th TWSC  
8: South College Road & Site Drive #3

Combined (2021) Saturday - Phase 1B Alt 1  
04/26/2019

Intersection

Int Delay, s/veh	1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↕	↗		
Traffic Vol, veh/h	0	73	1791	70	0	0
Future Vol, veh/h	0	73	1791	70	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	100	-	-
Veh in Median Storage, #	0	-	0	-	-	16979
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	81	1990	78	0	0

Major/Minor	Minor1	Major1	
Conflicting Flow All	-	995	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	6.94	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	3.32	-
Pot Cap-1 Maneuver	0	243	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	-	243	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	WB	NB
HCM Control Delay, s	27.1	0
HCM LOS	D	

Minor Lane/Major Mvmt	NBT	NBRWBLn1
Capacity (veh/h)	-	243
HCM Lane V/C Ratio	-	0.334
HCM Control Delay (s)	-	27.1
HCM Lane LOS	-	D
HCM 95th %tile Q(veh)	-	1.4

HCM 6th TWSC  
 8: South College Road & Site Drive #3

Combined (2021) PM - Phase 1B Alt 4  
 04/26/2019

Intersection

Int Delay, s/veh	0.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↕↕	↗		
Traffic Vol, veh/h	0	53	1408	9	0	0
Future Vol, veh/h	0	53	1408	9	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	100	-	-
Veh in Median Storage, #	0	-	0	-	-	16979
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	59	1564	10	0	0

Major/Minor	Minor1	Major1	
Conflicting Flow All	-	782	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	6.94	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	3.32	-
Pot Cap-1 Maneuver	0	337	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	337	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	WB	NB
HCM Control Delay, s	17.9	0
HCM LOS	C	

Minor Lane/Major Mvmt	NBT	NBRWBLn1
Capacity (veh/h)	-	337
HCM Lane V/C Ratio	-	0.175
HCM Control Delay (s)	-	17.9
HCM Lane LOS	-	C
HCM 95th %tile Q(veh)	-	0.6

HCM 6th TWSC  
 8: South College Road & Site Drive #3

Combined (2021) Saturday - Phase 1B Alt 4  
 04/26/2019

Intersection

Int Delay, s/veh	1.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↕	↗		
Traffic Vol, veh/h	0	73	1816	10	0	0
Future Vol, veh/h	0	73	1816	10	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	100	-	-
Veh in Median Storage, #	0	-	0	-	-	16979
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	81	2018	11	0	0

Major/Minor	Minor1	Major1		
Conflicting Flow All	-	1009	0	0
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	6.94	-	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	3.32	-	-
Pot Cap-1 Maneuver	0	238	-	-
Stage 1	0	-	-	-
Stage 2	0	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	-	238	-	-
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	WB	NB
HCM Control Delay, s	27.8	0
HCM LOS	D	

Minor Lane/Major Mvmt	NBT	NBRWBLn1
Capacity (veh/h)	-	238
HCM Lane V/C Ratio	-	0.341
HCM Control Delay (s)	-	27.8
HCM Lane LOS	-	D
HCM 95th %tile Q(veh)	-	1.4

HCM 6th TWSC  
8: South College Road & Site Drive #3

Combined (2024) PM - Phase 2 Alt 1  
04/26/2019

Intersection

Int Delay, s/veh	3.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↕	↗		
Traffic Vol, veh/h	0	182	1458	95	0	0
Future Vol, veh/h	0	182	1458	95	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	100	-	-
Veh in Median Storage, #	0	-	0	-	-	16979
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	202	1620	106	0	0

Major/Minor	Minor1	Major1		
Conflicting Flow All	-	810	0	0
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	6.94	-	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	3.32	-	-
Pot Cap-1 Maneuver	0	323	-	-
Stage 1	0	-	-	-
Stage 2	0	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	-	323	-	-
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	WB	NB
HCM Control Delay, s	33.1	0
HCM LOS	D	

Minor Lane/Major Mvmt	NBT	NBRWBLn1
Capacity (veh/h)	-	323
HCM Lane V/C Ratio	-	0.626
HCM Control Delay (s)	-	33.1
HCM Lane LOS	-	D
HCM 95th %tile Q(veh)	-	4

HCM 6th TWSC  
8: South College Road & Site Drive #3

Combined (2024) Saturday - Phase 2 Alt 1  
04/26/2019

Intersection

Int Delay, s/veh	10.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↕	↗		
Traffic Vol, veh/h	0	205	1919	133	0	0
Future Vol, veh/h	0	205	1919	133	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	100	-	-
Veh in Median Storage, #	0	-	0	-	-	16979
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	228	2132	148	0	0

Major/Minor	Minor1	Major1		
Conflicting Flow All	-	1066	0	0
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	6.94	-	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	3.32	-	-
Pot Cap-1 Maneuver	0	~ 218	-	-
Stage 1	0	-	-	-
Stage 2	0	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	-	~ 218	-	-
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	WB	NB
HCM Control Delay, s	120.3	0
HCM LOS	F	

Minor Lane/Major Mvmt	NBT	NBRWBLn1
Capacity (veh/h)	-	218
HCM Lane V/C Ratio	-	1.045
HCM Control Delay (s)	-	120.3
HCM Lane LOS	-	F
HCM 95th %tile Q(veh)	-	9.9

Notes

-: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon

HCM 6th TWSC  
8: South College Road & Site Drive #3

Combined (2024) PM - Phase 2 Alt 4  
04/26/2019

Intersection

Int Delay, s/veh	3.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↕	↖		
Traffic Vol, veh/h	0	177	1474	59	0	0
Future Vol, veh/h	0	177	1474	59	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	100	-	-
Veh in Median Storage, #	0	-	0	-	-	16979
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	197	1638	66	0	0

Major/Minor	Minor1	Major1		
Conflicting Flow All	-	819	0	0
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	6.94	-	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	3.32	-	-
Pot Cap-1 Maneuver	0	319	-	-
Stage 1	0	-	-	-
Stage 2	0	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	-	319	-	-
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	WB	NB
HCM Control Delay, s	32.8	0
HCM LOS	D	

Minor Lane/Major Mvmt	NBT	NBRWBLn1
Capacity (veh/h)	-	319
HCM Lane V/C Ratio	-	0.617
HCM Control Delay (s)	-	32.8
HCM Lane LOS	-	D
HCM 95th %tile Q(veh)	-	3.9

HCM 6th TWSC  
 8: South College Road & Site Drive #3

Combined (2024) Saturday - Phase 2 Alt 4  
 04/26/2019

Intersection

Int Delay, s/veh 10.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↑↑	↖		
Traffic Vol, veh/h	0	199	1933	84	0	0
Future Vol, veh/h	0	199	1933	84	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	100	-	-
Veh in Median Storage, #	0	-	0	-	-	16979
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	221	2148	93	0	0

Major/Minor	Minor1	Major1
Conflicting Flow All	- 1074	0 0
Stage 1	-	-
Stage 2	-	-
Critical Hdwy	- 6.94	-
Critical Hdwy Stg 1	-	-
Critical Hdwy Stg 2	-	-
Follow-up Hdwy	- 3.32	-
Pot Cap-1 Maneuver	0 ~ 216	-
Stage 1	0	-
Stage 2	0	-
Platoon blocked, %	-	-
Mov Cap-1 Maneuver	- ~ 216	-
Mov Cap-2 Maneuver	-	-
Stage 1	-	-
Stage 2	-	-

Approach	WB	NB
HCM Control Delay, s	114.8	0
HCM LOS	F	

Minor Lane/Major Mvmt	NBT	NBRWBLn1
Capacity (veh/h)	-	- 216
HCM Lane V/C Ratio	-	- 1.024
HCM Control Delay (s)	-	- 114.8
HCM Lane LOS	-	- F
HCM 95th %tile Q(veh)	-	- 9.4

Notes

~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon

# **APPENDIX J**

**CAPACITY ANALYSIS CALCULATIONS**

**S. COLLEGE ROAD**

**&**

**SITE DRIVE #5**

Lanes, Volumes, Timings  
 9: South College Road & Site Drive #5

Combined (2024) PM - Phase 2 Alt 1  
 04/27/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑				↗		↑↑	↗			
Traffic Volume (vph)	0	208	0	0	0	276	0	1460	77	0	0	0
Future Volume (vph)	0	208	0	0	0	276	0	1460	77	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		100	0		0
Storage Lanes	0		0	0		1	0		1	0		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Frnt						0.865			0.850			
Flt Protected												
Satd. Flow (prot)	0	1863	0	0	0	1611	0	3539	1583	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	1863	0	0	0	1611	0	3539	1583	0	0	0
Right Turn on Red	No		No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			25			45			45	
Link Distance (ft)		151			578			528			761	
Travel Time (s)		2.3			15.8			8.0			11.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	231	0	0	0	307	0	1622	86	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	231	0	0	0	307	0	1622	86	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No						
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		1				1		1	0			
Detector Template												
Leading Detector (ft)		40				40		306	0			
Trailing Detector (ft)		0				0		300	0			
Detector 1 Position(ft)		0				0		300	0			
Detector 1 Size(ft)		40				40		6	20			
Detector 1 Type		CI+Ex				CI+Ex		CI+Ex	CI+Ex			
Detector 1 Channel												
Detector 1 Extend (s)		0.0				0.0		0.0	0.0			
Detector 1 Queue (s)		0.0				0.0		0.0	0.0			
Detector 1 Delay (s)		0.0				0.0		0.0	0.0			
Turn Type		NA				Perm		NA	Perm			
Protected Phases		4						2				
Permitted Phases						8			2			
Detector Phase		4				8		2	2			
Switch Phase												
Minimum Initial (s)		7.0				7.0		12.0	12.0			
Minimum Split (s)		14.0				14.0		19.0	19.0			
Total Split (s)		52.0				52.0		100.0	100.0			

Lanes, Volumes, Timings  
 9: South College Road & Site Drive #5

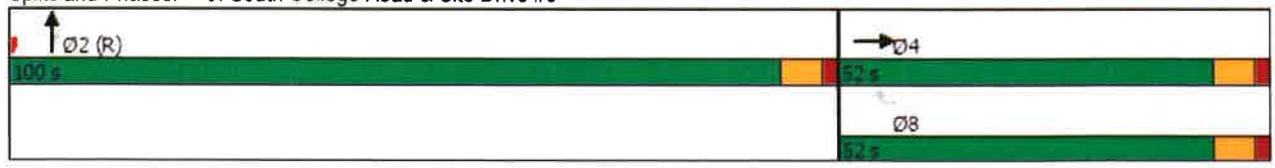
Combined (2024) PM - Phase 2 Alt 1  
 04/27/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (%)		34.2%				34.2%		65.8%	65.8%			
Maximum Green (s)		45.0				45.0		93.0	93.0			
Yellow Time (s)		5.0				5.0		5.0	5.0			
All-Red Time (s)		2.0				2.0		2.0	2.0			
Lost Time Adjust (s)		-2.0				-2.0		-2.0	-2.0			
Total Lost Time (s)		5.0				5.0		5.0	5.0			
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0				3.0		3.0	3.0			
Recall Mode		None				None		C-Max	C-Max			
Act Effct Green (s)		36.3				36.3		105.7	105.7			
Actuated g/C Ratio		0.24				0.24		0.70	0.70			
v/c Ratio		0.52				0.80		0.66	0.08			
Control Delay		48.1				69.3		15.7	8.9			
Queue Delay		0.0				0.0		0.0	0.0			
Total Delay		48.1				69.3		15.7	8.9			
LOS		D				E		B	A			
Approach Delay		48.1			69.3			15.4				
Approach LOS		D			E			B				
Queue Length 50th (ft)		183				288		443	26			
Queue Length 95th (ft)		m207				372		634	55			
Internal Link Dist (ft)		71			498			448			681	
Turn Bay Length (ft)									100			
Base Capacity (vph)		576				498		2460	1100			
Starvation Cap Reductn		0				0		0	0			
Spillback Cap Reductn		0				0		0	0			
Storage Cap Reductn		0				0		0	0			
Reduced v/c Ratio		0.40				0.62		0.66	0.08			

Intersection Summary

Area Type: Other  
 Cycle Length: 152  
 Actuated Cycle Length: 152  
 Offset: 22 (14%), Referenced to phase 2:NBT, Start of Green  
 Natural Cycle: 60  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.80  
 Intersection Signal Delay: 26.1  
 Intersection Capacity Utilization 123.8%  
 Analysis Period (min) 15  
 Intersection LOS: C  
 ICU Level of Service H  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 9: South College Road & Site Drive #5



Lanes, Volumes, Timings  
 9: South College Road & Site Drive #5

Combined (2024) Saturday - Phase 2 Alt 1

04/27/2019

													
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑				↗		↑↑	↗				
Traffic Volume (vph)	0	276	0	0	0	289	0	1832	120	0	0	0	
Future Volume (vph)	0	276	0	0	0	289	0	1832	120	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	0		0	0		0	0		100	0		0	
Storage Lanes	0		0	0		1	0		1	0		0	
Taper Length (ft)	100			100			100			100			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00	
Frt						0.865			0.850				
Flt Protected													
Satd. Flow (prot)	0	1863	0	0	0	1611	0	3539	1583	0	0	0	
Flt Permitted													
Satd. Flow (perm)	0	1863	0	0	0	1611	0	3539	1583	0	0	0	
Right Turn on Red	No		No			No			No			No	
Satd. Flow (RTOR)													
Link Speed (mph)		45			25			45			45		
Link Distance (ft)		151			659			516			772		
Travel Time (s)		2.3			18.0			7.8			11.7		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
Adj. Flow (vph)	0	307	0	0	0	321	0	2036	133	0	0	0	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	307	0	0	0	321	0	2036	133	0	0	0	
Enter Blocked Intersection	No	No	No	No	No	No							
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right	
Median Width(ft)		0			0			0			0		
Link Offset(ft)		0			0			0			0		
Crosswalk Width(ft)		16			16			16			16		
Two way Left Turn Lane													
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (mph)	15		9	15		9	15		9	15		9	
Number of Detectors		1				1		1	0				
Detector Template													
Leading Detector (ft)		40				40		306	0				
Trailing Detector (ft)		0				0		300	0				
Detector 1 Position(ft)		0				0		300	0				
Detector 1 Size(ft)		40				40		6	20				
Detector 1 Type		Cl+Ex				Cl+Ex		Cl+Ex	Cl+Ex				
Detector 1 Channel													
Detector 1 Extend (s)		0.0				0.0		0.0	0.0				
Detector 1 Queue (s)		0.0				0.0		0.0	0.0				
Detector 1 Delay (s)		0.0				0.0		0.0	0.0				
Turn Type		NA				Perm		NA	Perm				
Protected Phases		4						2					
Permitted Phases						8			2				
Detector Phase		4				8		2	2				
Switch Phase													
Minimum Initial (s)		7.0				7.0		12.0	12.0				
Minimum Split (s)		14.0				14.0		19.0	19.0				
Total Split (s)		46.0				46.0		106.0	106.0				

Lanes, Volumes, Timings  
 9: South College Road & Site Drive #5

Combined (2024) Saturday - Phase 2 Alt 1  
 04/27/2019

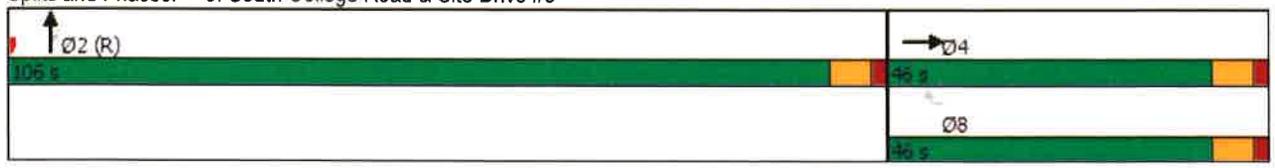
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (%)		30.3%				30.3%		69.7%	69.7%			
Maximum Green (s)		39.0				39.0		99.0	99.0			
Yellow Time (s)		5.0				5.0		5.0	5.0			
All-Red Time (s)		2.0				2.0		2.0	2.0			
Lost Time Adjust (s)		-2.0				-2.0		-2.0	-2.0			
Total Lost Time (s)		5.0				5.0		5.0	5.0			
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0				3.0		3.0	3.0			
Recall Mode		None				None		C-Max	C-Max			
Act Effct Green (s)		35.9				35.9		106.1	106.1			
Actuated g/C Ratio		0.24				0.24		0.70	0.70			
v/c Ratio		0.70				0.84		0.82	0.12			
Control Delay		48.3				74.9		17.4	8.8			
Queue Delay		0.0				0.0		0.0	0.0			
Total Delay		48.3				74.9		17.4	8.8			
LOS		D				E		B	A			
Approach Delay		48.3			74.9			16.8				
Approach LOS		D			E			B				
Queue Length 50th (ft)		270				302		511	37			
Queue Length 95th (ft)		m327				411		m707	m68			
Internal Link Dist (ft)		71			579			436			692	
Turn Bay Length (ft)									100			
Base Capacity (vph)		502				434		2469	1104			
Starvation Cap Reductn		0				0		0	0			
Spillback Cap Reductn		0				0		0	0			
Storage Cap Reductn		0				0		0	0			
Reduced v/c Ratio		0.61				0.74		0.82	0.12			

Intersection Summary

Area Type: Other  
 Cycle Length: 152  
 Actuated Cycle Length: 152  
 Offset: 64 (42%), Referenced to phase 2:NBT, Start of Green  
 Natural Cycle: 70  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.84  
 Intersection Signal Delay: 26.9  
 Intersection Capacity Utilization 130.3%  
 Analysis Period (min) 15  
 m Volume for 95th percentile queue is metered by upstream signal.

Intersection LOS: C  
 ICU Level of Service H

Splits and Phases: 9: South College Road & Site Drive #5



Lanes, Volumes, Timings  
 9: South College Road & Site Drive #5

Combined (2024) PM - Phase 2 Alt 4

04/27/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑				↗		↑↑	↗			
Traffic Volume (vph)	0	98	0	0	0	281	0	1449	42	0	0	0
Future Volume (vph)	0	98	0	0	0	281	0	1449	42	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		100	0		0
Storage Lanes	0		0	0		1	0		1	0		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Frts						0.865			0.850			
Flt Protected												
Satd. Flow (prot)	0	1863	0	0	0	1611	0	3539	1583	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	1863	0	0	0	1611	0	3539	1583	0	0	0
Right Turn on Red	No		No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			25			45			45	
Link Distance (ft)		149			549			526			763	
Travel Time (s)		2.3			15.0			8.0			11.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	109	0	0	0	312	0	1610	47	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	109	0	0	0	312	0	1610	47	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No						
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2				1		2	1			
Detector Template		Thru				Right		Thru	Right			
Leading Detector (ft)		100				20		100	20			
Trailing Detector (ft)		0				0		0	0			
Detector 1 Position(ft)		0				0		0	0			
Detector 1 Size(ft)		6				20		6	20			
Detector 1 Type		CI+Ex				CI+Ex		CI+Ex	CI+Ex			
Detector 1 Channel												
Detector 1 Extend (s)		0.0				0.0		0.0	0.0			
Detector 1 Queue (s)		0.0				0.0		0.0	0.0			
Detector 1 Delay (s)		0.0				0.0		0.0	0.0			
Detector 2 Position(ft)		94						94				
Detector 2 Size(ft)		6						6				
Detector 2 Type		CI+Ex						CI+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0				
Turn Type		NA				Perm		NA	Perm			
Protected Phases		4						2				
Permitted Phases						8			2			

Lanes, Volumes, Timings  
 9: South College Road & Site Drive #5

Combined (2024) PM - Phase 2 Alt 4  
 04/27/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		4				8		2	2			
Switch Phase												
Minimum Initial (s)		7.0				7.0		12.0	12.0			
Minimum Split (s)		14.0				14.0		19.0	19.0			
Total Split (s)		54.0				54.0		98.0	98.0			
Total Split (%)		35.5%				35.5%		64.5%	64.5%			
Maximum Green (s)		47.0				47.0		91.0	91.0			
Yellow Time (s)		5.0				5.0		5.0	5.0			
All-Red Time (s)		2.0				2.0		2.0	2.0			
Lost Time Adjust (s)		-2.0				-2.0		-2.0	-2.0			
Total Lost Time (s)		5.0				5.0		5.0	5.0			
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0				3.0		3.0	3.0			
Recall Mode		None				None		C-Max	C-Max			
Act Effct Green (s)		36.9				36.9		105.1	105.1			
Actuated g/C Ratio		0.24				0.24		0.69	0.69			
v/c Ratio		0.24				0.80		0.66	0.04			
Control Delay		47.6				68.9		10.0	5.3			
Queue Delay		0.0				0.0		0.0	0.0			
Total Delay		47.6				68.9		10.0	5.3			
LOS		D				E		A	A			
Approach Delay		47.6			68.9			9.9				
Approach LOS		D			E			A				
Queue Length 50th (ft)		77				293		459	6			
Queue Length 95th (ft)		m88				376		647	m11			
Internal Link Dist (ft)		69			469			446			683	
Turn Bay Length (ft)									100			
Base Capacity (vph)		600				519		2447	1094			
Starvation Cap Reductn		0				0		43	0			
Spillback Cap Reductn		0				0		0	0			
Storage Cap Reductn		0				0		0	0			
Reduced v/c Ratio		0.18				0.60		0.67	0.04			

Intersection Summary

Area Type: Other  
 Cycle Length: 152  
 Actuated Cycle Length: 152  
 Offset: 6 (4%), Referenced to phase 2:NBT and 6:, Start of Green  
 Natural Cycle: 55  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.80  
 Intersection Signal Delay: 20.7  
 Intersection Capacity Utilization 126.7%  
 Analysis Period (min) 15  
 Intersection LOS: C  
 ICU Level of Service H  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 9: South College Road & Site Drive #5



Lanes, Volumes, Timings  
 9: South College Road & Site Drive #5

Combined (2024) Saturday - Phase 2 Alt 4  
 04/27/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑				↗		↑↑	↗			
Traffic Volume (vph)	0	143	0	0	0	295	0	1820	63	0	0	0
Future Volume (vph)	0	143	0	0	0	295	0	1820	63	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		100	0		0
Storage Lanes	0		0	0		1	0		1	0		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Fr <sub>t</sub>						0.865			0.850			
Flt Protected												
Satd. Flow (prot)	0	1863	0	0	0	1611	0	3539	1583	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	1863	0	0	0	1611	0	3539	1583	0	0	0
Right Turn on Red	No		No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			25			45			45	
Link Distance (ft)		151			530			525			774	
Travel Time (s)		2.3			14.5			8.0			11.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	159	0	0	0	328	0	2022	70	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	159	0	0	0	328	0	2022	70	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No						
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2				1		2	1			
Detector Template		Thru				Right		Thru	Right			
Leading Detector (ft)		100				20		100	20			
Trailing Detector (ft)		0				0		0	0			
Detector 1 Position(ft)		0				0		0	0			
Detector 1 Size(ft)		6				20		6	20			
Detector 1 Type		CI+Ex				CI+Ex		CI+Ex	CI+Ex			
Detector 1 Channel												
Detector 1 Extend (s)		0.0				0.0		0.0	0.0			
Detector 1 Queue (s)		0.0				0.0		0.0	0.0			
Detector 1 Delay (s)		0.0				0.0		0.0	0.0			
Detector 2 Position(ft)		94						94				
Detector 2 Size(ft)		6						6				
Detector 2 Type		CI+Ex						CI+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0				
Turn Type		NA				Perm		NA	Perm			
Protected Phases		4						2				
Permitted Phases						8			2			

Lanes, Volumes, Timings  
 9: South College Road & Site Drive #5

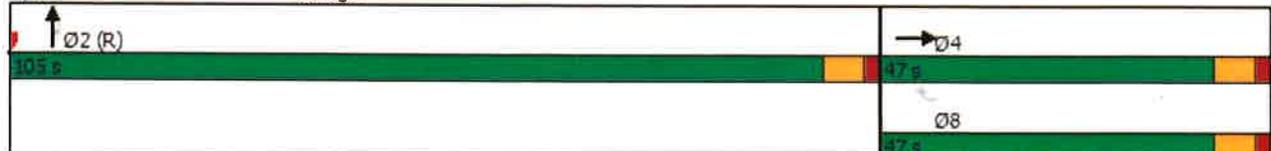
Combined (2024) Saturday - Phase 2 Alt 4  
 04/27/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		4				8		2	2			
Switch Phase												
Minimum Initial (s)		7.0				7.0		12.0	12.0			
Minimum Split (s)		14.0				14.0		19.0	19.0			
Total Split (s)		47.0				47.0		105.0	105.0			
Total Split (%)		30.9%				30.9%		69.1%	69.1%			
Maximum Green (s)		40.0				40.0		98.0	98.0			
Yellow Time (s)		5.0				5.0		5.0	5.0			
All-Red Time (s)		2.0				2.0		2.0	2.0			
Lost Time Adjust (s)		-2.0				-2.0		-2.0	-2.0			
Total Lost Time (s)		5.0				5.0		5.0	5.0			
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0				3.0		3.0	3.0			
Recall Mode		None				None		C-Max	C-Max			
Act Effct Green (s)		36.7				36.7		105.3	105.3			
Actuated g/C Ratio		0.24				0.24		0.69	0.69			
v/c Ratio		0.35				0.84		0.83	0.06			
Control Delay		57.2				74.0		8.7	2.5			
Queue Delay		0.0				0.0		0.2	0.0			
Total Delay		57.2				74.0		8.9	2.5			
LOS		E				E		A	A			
Approach Delay		57.2			74.0			8.6				
Approach LOS		E			E			A				
Queue Length 50th (ft)		125				309		314	4			
Queue Length 95th (ft)		m170				419		125	m6			
Internal Link Dist (ft)		71			450			445			694	
Turn Bay Length (ft)									100			
Base Capacity (vph)		514				445		2450	1096			
Starvation Cap Reductn		0				0		52	0			
Spillback Cap Reductn		0				0		0	0			
Storage Cap Reductn		0				0		0	0			
Reduced v/c Ratio		0.31				0.74		0.84	0.06			

Intersection Summary

Area Type: Other  
 Cycle Length: 152  
 Actuated Cycle Length: 152  
 Offset: 139 (91%), Referenced to phase 2:NBT and 6:, Start of Green  
 Natural Cycle: 65  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.84  
 Intersection Signal Delay: 19.9  
 Intersection Capacity Utilization 133.8%  
 Analysis Period (min) 15  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 9: South College Road & Site Drive #5



# **APPENDIX K**

**CAPACITY ANALYSIS CALCULATIONS**

**S. COLLEGE ROAD**

**&**

**PROPOSED U-TURN NORTH OF WEYBRIDGE**

**LANE**

Lanes, Volumes, Timings  
7: New NB U-Turn & South College Road

Combined (2024) PM - Phase 2 Alt 1  
04/27/2019

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						 
Traffic Volume (vph)	110	0	0	0	0	2245
Future Volume (vph)	110	0	0	0	0	2245
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.95
Frt						
Flt Protected	0.950					
Satd. Flow (prot)	1770	0	0	0	0	3539
Flt Permitted	0.950					
Satd. Flow (perm)	1770	0	0	0	0	3539
Right Turn on Red	No	No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	45		45			45
Link Distance (ft)	150		1328			572
Travel Time (s)	2.3		20.1			8.7
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	122	0	0	0	0	2494
Shared Lane Traffic (%)						
Lane Group Flow (vph)	122	0	0	0	0	2494
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1					2
Detector Template	Left					Thru
Leading Detector (ft)	20					100
Trailing Detector (ft)	0					0
Detector 1 Position(ft)	0					0
Detector 1 Size(ft)	20					6
Detector 1 Type	Cl+Ex					Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0					0.0
Detector 1 Queue (s)	0.0					0.0
Detector 1 Delay (s)	0.0					0.0
Detector 2 Position(ft)						94
Detector 2 Size(ft)						6
Detector 2 Type						Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)						0.0
Turn Type	Prot					NA
Protected Phases	8					6
Permitted Phases						
Detector Phase	8					6
Switch Phase						
Minimum Initial (s)	7.0					12.0

Lanes, Volumes, Timings  
 7: New NB U-Turn & South College Road

Combined (2024) PM - Phase 2 Alt 1  
 04/27/2019

	↙	↘	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Split (s)	14.0					19.0
Total Split (s)	23.0					129.0
Total Split (%)	15.1%					84.9%
Maximum Green (s)	16.0					122.0
Yellow Time (s)	5.0					5.0
All-Red Time (s)	2.0					2.0
Lost Time Adjust (s)	-2.0					-2.0
Total Lost Time (s)	5.0					5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0					3.0
Recall Mode	None					C-Max
Act Effct Green (s)	16.2					125.8
Actuated g/C Ratio	0.11					0.83
v/c Ratio	0.65					0.85
Control Delay	90.8					5.6
Queue Delay	0.0					0.0
Total Delay	90.8					5.6
LOS	F					A
Approach Delay	90.8					5.6
Approach LOS	F					A
Queue Length 50th (ft)	111					44
Queue Length 95th (ft)	m192					m23
Internal Link Dist (ft)	70		1248			492
Turn Bay Length (ft)						
Base Capacity (vph)	209					2929
Starvation Cap Reductn	0					0
Spillback Cap Reductn	0					0
Storage Cap Reductn	0					0
Reduced v/c Ratio	0.58					0.85

Intersection Summary

Area Type: Other  
 Cycle Length: 152  
 Actuated Cycle Length: 152  
 Offset: 62 (41%), Referenced to phase 2: and 6:SBT, Start of Green  
 Natural Cycle: 75  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.85  
 Intersection Signal Delay: 9.5  
 Intersection Capacity Utilization 115.4%  
 Analysis Period (min) 15  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: New NB U-Turn & South College Road



Lanes, Volumes, Timings  
7: New NB U-Turn & South College Road

Combined (2024) Saturday - Phase 2 Alt 1  
04/27/2019

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						 
Traffic Volume (vph)	113	0	0	0	0	2134
Future Volume (vph)	113	0	0	0	0	2134
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.95
Frt						
Flt Protected	0.950					
Satd. Flow (prot)	1770	0	0	0	0	3539
Flt Permitted	0.950					
Satd. Flow (perm)	1770	0	0	0	0	3539
Right Turn on Red	No	No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	45		45			45
Link Distance (ft)	151		1334			598
Travel Time (s)	2.3		20.2			9.1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	126	0	0	0	0	2371
Shared Lane Traffic (%)						
Lane Group Flow (vph)	126	0	0	0	0	2371
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1					2
Detector Template	Left					Thru
Leading Detector (ft)	20					100
Trailing Detector (ft)	0					0
Detector 1 Position(ft)	0					0
Detector 1 Size(ft)	20					6
Detector 1 Type	CI+Ex					CI+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0					0.0
Detector 1 Queue (s)	0.0					0.0
Detector 1 Delay (s)	0.0					0.0
Detector 2 Position(ft)						94
Detector 2 Size(ft)						6
Detector 2 Type						CI+Ex
Detector 2 Channel						
Detector 2 Extend (s)						0.0
Turn Type	Prot					NA
Protected Phases	8					6
Permitted Phases						
Detector Phase	8					6
Switch Phase						
Minimum Initial (s)	7.0					12.0

Lanes, Volumes, Timings  
7: New NB U-Turn & South College Road

Combined (2024) Saturday - Phase 2 Alt 1  
04/27/2019

	↙	↖	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Split (s)	14.0					19.0
Total Split (s)	25.0					127.0
Total Split (%)	16.4%					83.6%
Maximum Green (s)	18.0					120.0
Yellow Time (s)	5.0					5.0
All-Red Time (s)	2.0					2.0
Lost Time Adjust (s)	-2.0					-2.0
Total Lost Time (s)	5.0					5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0					3.0
Recall Mode	None					C-Max
Act Effct Green (s)	17.2					124.8
Actuated g/C Ratio	0.11					0.82
v/c Ratio	0.63					0.82
Control Delay	70.6					5.6
Queue Delay	0.0					0.0
Total Delay	70.6					5.6
LOS	E					A
Approach Delay	70.6					5.6
Approach LOS	E					A
Queue Length 50th (ft)	125					54
Queue Length 95th (ft)	m158					100
Internal Link Dist (ft)	71		1254			518
Turn Bay Length (ft)						
Base Capacity (vph)	232					2906
Starvation Cap Reductn	0					0
Spillback Cap Reductn	0					0
Storage Cap Reductn	0					0
Reduced v/c Ratio	0.54					0.82

Intersection Summary

Area Type: Other  
 Cycle Length: 152  
 Actuated Cycle Length: 152  
 Offset: 71 (47%), Referenced to phase 2: and 6:SBT, Start of Green  
 Natural Cycle: 65  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.82  
 Intersection Signal Delay: 8.9  
 Intersection Capacity Utilization 122.6%  
 Analysis Period (min) 15  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: New NB U-Turn & South College Road



Lanes, Volumes, Timings  
7: New NB U-Turn & South College Road

Combined (2024) PM - Phase 2 Alt 4  
04/27/2019

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						 
Traffic Volume (vph)	104	0	0	0	0	2245
Future Volume (vph)	104	0	0	0	0	2245
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.95
Frt						
Flt Protected	0.950					
Satd. Flow (prot)	1770	0	0	0	0	3539
Flt Permitted	0.950					
Satd. Flow (perm)	1770	0	0	0	0	3539
Right Turn on Red	No	No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	45		45			45
Link Distance (ft)	151		1346			591
Travel Time (s)	2.3		20.4			9.0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	116	0	0	0	0	2494
Shared Lane Traffic (%)						
Lane Group Flow (vph)	116	0	0	0	0	2494
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1					2
Detector Template	Left					Thru
Leading Detector (ft)	20					100
Trailing Detector (ft)	0					0
Detector 1 Position(ft)	0					0
Detector 1 Size(ft)	20					6
Detector 1 Type	CI+Ex					CI+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0					0.0
Detector 1 Queue (s)	0.0					0.0
Detector 1 Delay (s)	0.0					0.0
Detector 2 Position(ft)						94
Detector 2 Size(ft)						6
Detector 2 Type						CI+Ex
Detector 2 Channel						
Detector 2 Extend (s)						0.0
Turn Type	Prot					NA
Protected Phases	8					6
Permitted Phases						
Detector Phase	8					6
Switch Phase						
Minimum Initial (s)	7.0					12.0

Lanes, Volumes, Timings  
 7: New NB U-Turn & South College Road

Combined (2024) PM - Phase 2 Alt 4  
 04/27/2019

	↙	↘	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Split (s)	14.0					19.0
Total Split (s)	23.0					129.0
Total Split (%)	15.1%					84.9%
Maximum Green (s)	16.0					122.0
Yellow Time (s)	5.0					5.0
All-Red Time (s)	2.0					2.0
Lost Time Adjust (s)	-2.0					-2.0
Total Lost Time (s)	5.0					5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0					3.0
Recall Mode	None					C-Min
Act Effct Green (s)	15.9					126.1
Actuated g/C Ratio	0.10					0.83
v/c Ratio	0.63					0.85
Control Delay	83.4					4.1
Queue Delay	0.0					0.0
Total Delay	83.4					4.1
LOS	F					A
Approach Delay	83.4					4.1
Approach LOS	F					A
Queue Length 50th (ft)	101					26
Queue Length 95th (ft)	m166					m35
Internal Link Dist (ft)	71		1266			511
Turn Bay Length (ft)						
Base Capacity (vph)	209					2935
Starvation Cap Reductn	0					0
Spillback Cap Reductn	0					0
Storage Cap Reductn	0					0
Reduced v/c Ratio	0.56					0.85

Intersection Summary

Area Type: Other  
 Cycle Length: 152  
 Actuated Cycle Length: 152  
 Offset: 65 (43%), Referenced to phase 2: and 6:SBT, Start of Green  
 Natural Cycle: 75  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.85  
 Intersection Signal Delay: 7.7  
 Intersection Capacity Utilization 115.4%  
 Analysis Period (min) 15  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: New NB U-Turn & South College Road



Lanes, Volumes, Timings  
7: New NB U-Turn & South College Road

Combined (2024) Saturday - Phase 2 Alt 4

04/27/2019

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						 
Traffic Volume (vph)	107	0	0	0	0	2134
Future Volume (vph)	107	0	0	0	0	2134
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.95
Frt						
Flt Protected	0.950					
Satd. Flow (prot)	1770	0	0	0	0	3539
Flt Permitted	0.950					
Satd. Flow (perm)	1770	0	0	0	0	3539
Right Turn on Red	No	No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	45		45			45
Link Distance (ft)	151		1332			584
Travel Time (s)	2.3		20.2			8.8
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	119	0	0	0	0	2371
Shared Lane Traffic (%)						
Lane Group Flow (vph)	119	0	0	0	0	2371
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1					2
Detector Template	Left					Thru
Leading Detector (ft)	20					100
Trailing Detector (ft)	0					0
Detector 1 Position(ft)	0					0
Detector 1 Size(ft)	20					6
Detector 1 Type	Cl+Ex					Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0					0.0
Detector 1 Queue (s)	0.0					0.0
Detector 1 Delay (s)	0.0					0.0
Detector 2 Position(ft)						94
Detector 2 Size(ft)						6
Detector 2 Type						Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)						0.0
Turn Type	Prot					NA
Protected Phases	8					6
Permitted Phases						
Detector Phase	8					6
Switch Phase						
Minimum Initial (s)	7.0					12.0

Lanes, Volumes, Timings  
7: New NB U-Turn & South College Road

Combined (2024) Saturday - Phase 2 Alt 4  
04/27/2019

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Split (s)	14.0					19.0
Total Split (s)	23.0					129.0
Total Split (%)	15.1%					84.9%
Maximum Green (s)	16.0					122.0
Yellow Time (s)	5.0					5.0
All-Red Time (s)	2.0					2.0
Lost Time Adjust (s)	-2.0					-2.0
Total Lost Time (s)	5.0					5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0					3.0
Recall Mode	None					C-Max
Act Effct Green (s)	16.1					125.9
Actuated g/C Ratio	0.11					0.83
v/c Ratio	0.64					0.81
Control Delay	72.6					5.4
Queue Delay	0.0					0.0
Total Delay	72.6					5.4
LOS	E					A
Approach Delay	72.6					5.4
Approach LOS	E					A
Queue Length 50th (ft)	107					54
Queue Length 95th (ft)	m138					100
Internal Link Dist (ft)	71		1252			504
Turn Bay Length (ft)						
Base Capacity (vph)	209					2932
Starvation Cap Reductn	0					0
Spillback Cap Reductn	0					0
Storage Cap Reductn	0					0
Reduced v/c Ratio	0.57					0.81

Intersection Summary

Area Type: Other  
 Cycle Length: 152  
 Actuated Cycle Length: 152  
 Offset: 68 (45%), Referenced to phase 2: and 6:SBT, Start of Green  
 Natural Cycle: 65  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.81  
 Intersection Signal Delay: 8.6  
 Intersection Capacity Utilization 122.6%  
 Analysis Period (min) 15  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: New NB U-Turn & South College Road



# **APPENDIX L**

**CAPACITY ANALYSIS CALCULATIONS**

**S. COLLEGE ROAD**

**&**

**PROPOSED U-TURN NORTH OF SITE DRIVE #5**

Intersection

Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↘			↑↑		
Traffic Vol, veh/h	31	0	0	1736	0	0
Future Vol, veh/h	31	0	0	1736	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	16979	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	34	0	0	1929	0	0

Major/Minor	Minor2	Major1	
Conflicting Flow All	965	-	0
Stage 1	0	-	-
Stage 2	965	-	-
Critical Hdwy	6.84	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	5.84	-	-
Follow-up Hdwy	3.52	-	-
Pot Cap-1 Maneuver	253	0	0
Stage 1	-	0	0
Stage 2	330	0	0
Platoon blocked, %			
Mov Cap-1 Maneuver	253	-	-
Mov Cap-2 Maneuver	253	-	-
Stage 1	-	-	-
Stage 2	330	-	-

Approach	EB	NB
HCM Control Delay, s	21.5	0
HCM LOS	C	

Minor Lane/Major Mvmt	NBT EBLn1
Capacity (veh/h)	- 253
HCM Lane V/C Ratio	- 0.136
HCM Control Delay (s)	- 21.5
HCM Lane LOS	- C
HCM 95th %tile Q(veh)	- 0.5

Intersection

Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↘			↑↑		
Traffic Vol, veh/h	21	0	0	2121	0	0
Future Vol, veh/h	21	0	0	2121	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	16979	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	23	0	0	2357	0	0

Major/Minor	Minor2	Major1		
Conflicting Flow All	1179	-	-	0
Stage 1	0	-	-	-
Stage 2	1179	-	-	-
Critical Hdwy	6.84	-	-	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-
Follow-up Hdwy	3.52	-	-	-
Pot Cap-1 Maneuver	183	0	0	-
Stage 1	-	0	0	-
Stage 2	254	0	0	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	183	-	-	-
Mov Cap-2 Maneuver	183	-	-	-
Stage 1	-	-	-	-
Stage 2	254	-	-	-

Approach	EB	NB
HCM Control Delay, s	27.5	0
HCM LOS	D	

Minor Lane/Major Mvmt	NBT EBLn1
Capacity (veh/h)	- 183
HCM Lane V/C Ratio	- 0.128
HCM Control Delay (s)	- 27.5
HCM Lane LOS	- D
HCM 95th %tile Q(veh)	- 0.4

HCM 6th TWSC  
 10: South College Road & New SB U-Turn

Combined (2024) PM - Phase 2 Alt 4  
 04/26/2019

Intersection

Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↘			↑↑		
Traffic Vol, veh/h	31	0	0	1730	0	0
Future Vol, veh/h	31	0	0	1730	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	16979	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	34	0	0	1922	0	0

Major/Minor	Minor2	Major1		
Conflicting Flow All	961	-	-	0
Stage 1	0	-	-	-
Stage 2	961	-	-	-
Critical Hdwy	6.84	-	-	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-
Follow-up Hdwy	3.52	-	-	-
Pot Cap-1 Maneuver	254	0	0	-
Stage 1	-	0	0	-
Stage 2	332	0	0	-
Platoon blocked, %		-	-	-
Mov Cap-1 Maneuver	254	-	-	-
Mov Cap-2 Maneuver	254	-	-	-
Stage 1	-	-	-	-
Stage 2	332	-	-	-

Approach	EB	NB
HCM Control Delay, s	21.4	0
HCM LOS	C	

Minor Lane/Major Mvmt	NBT EBLn1	
Capacity (veh/h)	-	254
HCM Lane V/C Ratio	-	0.136
HCM Control Delay (s)	-	21.4
HCM Lane LOS	-	C
HCM 95th %tile Q(veh)	-	0.5

Intersection

Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↘			↑↑		
Traffic Vol, veh/h	21	0	0	2115	0	0
Future Vol, veh/h	21	0	0	2115	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	16979	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	23	0	0	2350	0	0

Major/Minor	Minor2	Major1	
Conflicting Flow All	1175	-	0
Stage 1	0	-	-
Stage 2	1175	-	-
Critical Hdwy	6.84	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	5.84	-	-
Follow-up Hdwy	3.52	-	-
Pot Cap-1 Maneuver	185	0	0
Stage 1	-	0	0
Stage 2	256	0	0
Platoon blocked, %			
Mov Cap-1 Maneuver	185	-	-
Mov Cap-2 Maneuver	185	-	-
Stage 1	-	-	-
Stage 2	256	-	-

Approach	EB	NB
HCM Control Delay, s	27.2	0
HCM LOS	D	

Minor Lane/Major Mvmt	NBT	EBLn1
Capacity (veh/h)	-	185
HCM Lane V/C Ratio	-	0.126
HCM Control Delay (s)	-	27.2
HCM Lane LOS	-	D
HCM 95th %tile Q(veh)	-	0.4

# **APPENDIX M**

## **SIMTRAFFIC QUEUEING REPORTS**

Queuing and Blocking Report  
Existing (2019) PM

04/26/2019

Intersection: 1: South College Road & Cape Fear Academy/Pine Cliff Drive

Movement	EB	EB	EB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	LT	R	LTR	UL	T	T	UL	T	T	R
Maximum Queue (ft)	89	103	21	65	156	146	164	299	986	1016	47
Average Queue (ft)	7	30	3	17	67	46	42	34	390	396	5
95th Queue (ft)	37	74	14	45	122	110	106	159	762	783	22
Link Distance (ft)		139	139	1131		2725	2725		1925	1925	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	100				475			200			400
Storage Blk Time (%)	0	1							16	8	
Queuing Penalty (veh)	0	0							4	1	

Intersection: 2: South College Road & S. College Road/Mohican Trail

Movement	EB	WB	NB	NB	NB
Directions Served	LT	R	T	T	R
Maximum Queue (ft)	140	112	140	117	98
Average Queue (ft)	74	41	83	54	19
95th Queue (ft)	127	84	132	100	59
Link Distance (ft)	286	1380	228	228	228
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 3: Jasmine Cove Way & S. College Road

Movement	EB	WB
Directions Served	R	LT
Maximum Queue (ft)	73	53
Average Queue (ft)	19	22
95th Queue (ft)	57	50
Link Distance (ft)	732	290
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Queuing and Blocking Report  
Existing (2019) PM

04/26/2019

Intersection: 4: NB U-Turn & S. College Road

Movement	WB
Directions Served	L
Maximum Queue (ft)	72
Average Queue (ft)	25
95th Queue (ft)	55
Link Distance (ft)	109
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: South College Road & SB U-Turn

Movement	EB
Directions Served	L
Maximum Queue (ft)	73
Average Queue (ft)	25
95th Queue (ft)	54
Link Distance (ft)	107
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 6: Navaho Trail & Landsdowne Road/Nicholas Creek Circle

Movement	EB	WB	NB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	96	31	22
Average Queue (ft)	48	16	2
95th Queue (ft)	74	41	13
Link Distance (ft)	1962	1190	838
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

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Intersection: 24: Cape Fear Academy

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Movement

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Directions Served  
Maximum Queue (ft)  
Average Queue (ft)  
95th Queue (ft)  
Link Distance (ft)  
Upstream Blk Time (%)  
Queuing Penalty (veh)  
Storage Bay Dist (ft)  
Storage Blk Time (%)  
Queuing Penalty (veh)

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Intersection: 27: S. College Road

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Movement

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Directions Served  
Maximum Queue (ft)  
Average Queue (ft)  
95th Queue (ft)  
Link Distance (ft)  
Upstream Blk Time (%)  
Queuing Penalty (veh)  
Storage Bay Dist (ft)  
Storage Blk Time (%)  
Queuing Penalty (veh)

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Intersection: 33: South College Road & S. College Road

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Movement

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Directions Served  
Maximum Queue (ft)  
Average Queue (ft)  
95th Queue (ft)  
Link Distance (ft)  
Upstream Blk Time (%)  
Queuing Penalty (veh)  
Storage Bay Dist (ft)  
Storage Blk Time (%)  
Queuing Penalty (veh)

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Intersection: 40: South College Road

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Movement

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Directions Served  
Maximum Queue (ft)  
Average Queue (ft)  
95th Queue (ft)  
Link Distance (ft)  
Upstream Blk Time (%)  
Queuing Penalty (veh)  
Storage Bay Dist (ft)  
Storage Blk Time (%)  
Queuing Penalty (veh)

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Intersection: 41: S. College Road & SB U-Turn

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Movement

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Directions Served  
Maximum Queue (ft)  
Average Queue (ft)  
95th Queue (ft)  
Link Distance (ft)  
Upstream Blk Time (%)  
Queuing Penalty (veh)  
Storage Bay Dist (ft)  
Storage Blk Time (%)  
Queuing Penalty (veh)

---

Intersection: 43: South College Road & NB U-Turn

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Movement

---

Directions Served  
Maximum Queue (ft)  
Average Queue (ft)  
95th Queue (ft)  
Link Distance (ft)  
Upstream Blk Time (%)  
Queuing Penalty (veh)  
Storage Bay Dist (ft)  
Storage Blk Time (%)  
Queuing Penalty (veh)

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Network Summary

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Network wide Queuing Penalty: 5

Queuing and Blocking Report  
Existing (2019) Saturday

04/26/2019

Intersection: 1: South College Road & Cape Fear Academy/Pine Cliff Drive

Movement	EB	EB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	LTR	UL	T	T	R	UL	T	T
Maximum Queue (ft)	24	44	83	574	1326	1323	2	90	412	429
Average Queue (ft)	5	9	19	107	232	258	0	24	157	167
95th Queue (ft)	21	31	56	333	880	947	1	61	330	334
Link Distance (ft)	139	139	1131		2725	2725			1925	1925
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)				475			225	200		
Storage Blk Time (%)					7	9			4	0
Queuing Penalty (veh)					7	1			1	0

Intersection: 2: South College Road & S. College Road/Mohican Trail

Movement	EB	WB	NB	NB	NB
Directions Served	LT	R	T	T	R
Maximum Queue (ft)	314	176	302	254	87
Average Queue (ft)	110	107	150	106	8
95th Queue (ft)	205	159	293	229	30
Link Distance (ft)	286	1568	228	228	228
Upstream Blk Time (%)	1		2	0	
Queuing Penalty (veh)	1		10	1	
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 3: Jasmine Cove Way & S. College Road

Movement	EB	WB
Directions Served	R	LT
Maximum Queue (ft)	54	74
Average Queue (ft)	18	24
95th Queue (ft)	47	62
Link Distance (ft)	733	290
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Queuing and Blocking Report  
Existing (2019) Saturday

04/26/2019

Intersection: 4: NB U-Turn & S. College Road

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Movement	WB
Directions Served	L
Maximum Queue (ft)	77
Average Queue (ft)	35
95th Queue (ft)	56
Link Distance (ft)	109
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: South College Road & SB U-Turn

---

Movement	EB
Directions Served	L
Maximum Queue (ft)	74
Average Queue (ft)	29
95th Queue (ft)	65
Link Distance (ft)	107
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 6: Navaho Trail & Landsdowne Road/Nicholas Creek Circle

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Movement	EB	WB	NB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	98	30	22
Average Queue (ft)	41	19	2
95th Queue (ft)	74	42	13
Link Distance (ft)	1962	1358	838
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

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Intersection: 24: Cape Fear Academy

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Movement

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Directions Served  
Maximum Queue (ft)  
Average Queue (ft)  
95th Queue (ft)  
Link Distance (ft)  
Upstream Blk Time (%)  
Queuing Penalty (veh)  
Storage Bay Dist (ft)  
Storage Blk Time (%)  
Queuing Penalty (veh)

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Intersection: 27: S. College Road

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Movement

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Directions Served  
Maximum Queue (ft)  
Average Queue (ft)  
95th Queue (ft)  
Link Distance (ft)  
Upstream Blk Time (%)  
Queuing Penalty (veh)  
Storage Bay Dist (ft)  
Storage Blk Time (%)  
Queuing Penalty (veh)

---

Intersection: 33: South College Road & S. College Road

---

Movement	NB
Directions Served	T
Maximum Queue (ft)	17
Average Queue (ft)	1
95th Queue (ft)	6
Link Distance (ft)	383
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

---

Intersection: 40: South College Road

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Movement

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Directions Served  
Maximum Queue (ft)  
Average Queue (ft)  
95th Queue (ft)  
Link Distance (ft)  
Upstream Blk Time (%)  
Queuing Penalty (veh)  
Storage Bay Dist (ft)  
Storage Blk Time (%)  
Queuing Penalty (veh)

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Intersection: 41: S. College Road & SB U-Turn

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Movement

---

Directions Served  
Maximum Queue (ft)  
Average Queue (ft)  
95th Queue (ft)  
Link Distance (ft)  
Upstream Blk Time (%)  
Queuing Penalty (veh)  
Storage Bay Dist (ft)  
Storage Blk Time (%)  
Queuing Penalty (veh)

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Intersection: 43: South College Road & NB U-Turn

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Movement

---

Directions Served  
Maximum Queue (ft)  
Average Queue (ft)  
95th Queue (ft)  
Link Distance (ft)  
Upstream Blk Time (%)  
Queuing Penalty (veh)  
Storage Bay Dist (ft)  
Storage Blk Time (%)  
Queuing Penalty (veh)

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Network Summary

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Network wide Queuing Penalty: 20

Queuing and Blocking Report  
Background (2021) PM

04/26/2019

Intersection: 1: South College Road & Cape Fear Academy/Pine Cliff Drive

Movement	EB	EB	EB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	LT	R	LTR	UL	T	T	UL	T	T	R
Maximum Queue (ft)	27	90	22	44	145	309	202	300	747	769	490
Average Queue (ft)	1	30	8	10	66	54	56	53	311	308	18
95th Queue (ft)	9	72	24	32	122	165	158	178	574	580	168
Link Distance (ft)		139	139	1131		2725	2725		1925	1925	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	100				475			200			400
Storage Blk Time (%)		0							13	4	
Queuing Penalty (veh)		0							3	1	

Intersection: 2: South College Road & S. College Road/Mohican Trail

Movement	EB	WB	NB	NB	NB
Directions Served	LT	R	T	T	R
Maximum Queue (ft)	160	114	267	183	76
Average Queue (ft)	76	56	107	74	30
95th Queue (ft)	130	96	177	147	69
Link Distance (ft)	286	1380	228	228	228
Upstream Blk Time (%)			0		
Queuing Penalty (veh)			2		
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 3: Jasmine Cove Way & S. College Road

Movement	EB	WB	SB
Directions Served	R	LT	TR
Maximum Queue (ft)	51	31	22
Average Queue (ft)	15	18	1
95th Queue (ft)	43	41	8
Link Distance (ft)	732	290	221
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Queuing and Blocking Report  
Background (2021) PM

04/26/2019

Intersection: 4: NB U-Turn & S. College Road

Movement	WB
Directions Served	L
Maximum Queue (ft)	96
Average Queue (ft)	41
95th Queue (ft)	74
Link Distance (ft)	109
Upstream Blk Time (%)	0
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: South College Road & SB U-Turn

Movement	EB
Directions Served	L
Maximum Queue (ft)	74
Average Queue (ft)	28
95th Queue (ft)	62
Link Distance (ft)	107
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 6: Navaho Trail & Landsdowne Road/Nicholas Creek Circle

Movement	EB	WB	NB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	134	54	26
Average Queue (ft)	60	19	2
95th Queue (ft)	103	45	14
Link Distance (ft)	1962	1190	838
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

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Intersection: 24: Cape Fear Academy

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Movement

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Directions Served  
Maximum Queue (ft)  
Average Queue (ft)  
95th Queue (ft)  
Link Distance (ft)  
Upstream Blk Time (%)  
Queuing Penalty (veh)  
Storage Bay Dist (ft)  
Storage Blk Time (%)  
Queuing Penalty (veh)

---

Intersection: 27: S. College Road

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Movement

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Directions Served  
Maximum Queue (ft)  
Average Queue (ft)  
95th Queue (ft)  
Link Distance (ft)  
Upstream Blk Time (%)  
Queuing Penalty (veh)  
Storage Bay Dist (ft)  
Storage Blk Time (%)  
Queuing Penalty (veh)

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Intersection: 33: South College Road & S. College Road

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Movement

---

Directions Served  
Maximum Queue (ft)  
Average Queue (ft)  
95th Queue (ft)  
Link Distance (ft)  
Upstream Blk Time (%)  
Queuing Penalty (veh)  
Storage Bay Dist (ft)  
Storage Blk Time (%)  
Queuing Penalty (veh)

---

Intersection: 40: South College Road

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Movement

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Directions Served  
Maximum Queue (ft)  
Average Queue (ft)  
95th Queue (ft)  
Link Distance (ft)  
Upstream Blk Time (%)  
Queuing Penalty (veh)  
Storage Bay Dist (ft)  
Storage Blk Time (%)  
Queuing Penalty (veh)

---

Intersection: 41: S. College Road & SB U-Turn

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Movement

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Directions Served  
Maximum Queue (ft)  
Average Queue (ft)  
95th Queue (ft)  
Link Distance (ft)  
Upstream Blk Time (%)  
Queuing Penalty (veh)  
Storage Bay Dist (ft)  
Storage Blk Time (%)  
Queuing Penalty (veh)

---

Intersection: 43: South College Road & NB U-Turn

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Movement

---

Directions Served  
Maximum Queue (ft)  
Average Queue (ft)  
95th Queue (ft)  
Link Distance (ft)  
Upstream Blk Time (%)  
Queuing Penalty (veh)  
Storage Bay Dist (ft)  
Storage Blk Time (%)  
Queuing Penalty (veh)

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Network Summary

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Network wide Queuing Penalty: 5

Queuing and Blocking Report  
Background (2021) Saturday

04/26/2019

Intersection: 1: South College Road & Cape Fear Academy/Pine Cliff Drive

Movement	EB	EB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	LT	R	LTR	UL	T	T	R	UL	T	T	R
Maximum Queue (ft)	25	22	44	187	1570	1522	325	298	830	770	20
Average Queue (ft)	8	3	16	85	147	155	12	32	217	223	1
95th Queue (ft)	25	14	46	157	744	748	111	123	527	511	8
Link Distance (ft)	139	139	1131		2725	2725			1925	1925	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)				475			225	200			400
Storage Blk Time (%)					4	5			8	3	
Queuing Penalty (veh)					4	0			2	0	

Intersection: 2: South College Road & S. College Road/Mohican Trail

Movement	EB	WB	NB	NB	NB
Directions Served	LT	R	T	T	R
Maximum Queue (ft)	226	304	305	284	52
Average Queue (ft)	106	170	190	136	15
95th Queue (ft)	192	268	307	256	45
Link Distance (ft)	286	1568	228	228	228
Upstream Blk Time (%)			3	1	
Queuing Penalty (veh)			18	5	
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 3: Jasmine Cove Way & S. College Road

Movement	EB	WB
Directions Served	R	LT
Maximum Queue (ft)	69	140
Average Queue (ft)	26	45
95th Queue (ft)	51	107
Link Distance (ft)	733	290
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Queuing and Blocking Report  
Background (2021) Saturday

04/26/2019

Intersection: 4: NB U-Turn & S. College Road

Movement	WB
Directions Served	L
Maximum Queue (ft)	161
Average Queue (ft)	60
95th Queue (ft)	122
Link Distance (ft)	109
Upstream Blk Time (%)	5
Queuing Penalty (veh)	5
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: South College Road & SB U-Turn

Movement	EB
Directions Served	L
Maximum Queue (ft)	52
Average Queue (ft)	23
95th Queue (ft)	46
Link Distance (ft)	107
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 6: Navaho Trail & Landsdowne Road/Nicholas Creek Circle

Movement	EB	WB	NB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	54	54	23
Average Queue (ft)	35	23	2
95th Queue (ft)	51	48	11
Link Distance (ft)	1962	1358	838
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

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Intersection: 24: Cape Fear Academy

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Movement

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Directions Served  
Maximum Queue (ft)  
Average Queue (ft)  
95th Queue (ft)  
Link Distance (ft)  
Upstream Blk Time (%)  
Queuing Penalty (veh)  
Storage Bay Dist (ft)  
Storage Blk Time (%)  
Queuing Penalty (veh)

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Intersection: 27: S. College Road

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Movement

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Directions Served  
Maximum Queue (ft)  
Average Queue (ft)  
95th Queue (ft)  
Link Distance (ft)  
Upstream Blk Time (%)  
Queuing Penalty (veh)  
Storage Bay Dist (ft)  
Storage Blk Time (%)  
Queuing Penalty (veh)

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Intersection: 33: South College Road & S. College Road

---

Movement	NB
Directions Served	T
Maximum Queue (ft)	38
Average Queue (ft)	1
95th Queue (ft)	13
Link Distance (ft)	383
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	0
Queuing Penalty (veh)	0

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Intersection: 40: South College Road

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Movement

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Directions Served  
Maximum Queue (ft)  
Average Queue (ft)  
95th Queue (ft)  
Link Distance (ft)  
Upstream Blk Time (%)  
Queuing Penalty (veh)  
Storage Bay Dist (ft)  
Storage Blk Time (%)  
Queuing Penalty (veh)

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Intersection: 41: S. College Road & SB U-Turn

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Movement

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Directions Served  
Maximum Queue (ft)  
Average Queue (ft)  
95th Queue (ft)  
Link Distance (ft)  
Upstream Blk Time (%)  
Queuing Penalty (veh)  
Storage Bay Dist (ft)  
Storage Blk Time (%)  
Queuing Penalty (veh)

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Intersection: 43: South College Road & NB U-Turn

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Movement	NB
Directions Served	L
Maximum Queue (ft)	16
Average Queue (ft)	1
95th Queue (ft)	5
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	250
Storage Blk Time (%)	
Queuing Penalty (veh)	

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Network Summary

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Network wide Queuing Penalty: 34

Queuing and Blocking Report  
 Combined (2021) PM - Phase 1B Alt 1

04/26/2019

Intersection: 1: South College Road & Cape Fear Academy/Pine Cliff Drive

Movement	EB	EB	EB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	LT	R	LTR	UL	T	T	UL	T	T	R
Maximum Queue (ft)	76	112	22	53	145	265	259	299	1284	1346	500
Average Queue (ft)	5	40	6	12	64	90	87	50	561	573	19
95th Queue (ft)	30	88	20	37	127	202	208	169	1102	1133	172
Link Distance (ft)		139	139	1131		2725	2725		1925	1925	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	100				475			200			400
Storage Blk Time (%)		0					0		20	15	
Queuing Penalty (veh)		0					0		4	2	

Intersection: 2: South College Road & S. College Road/Mohican Trail

Movement	EB	WB	NB	NB	NB
Directions Served	LT	R	T	T	R
Maximum Queue (ft)	198	186	197	160	76
Average Queue (ft)	93	65	115	83	27
95th Queue (ft)	167	123	170	142	70
Link Distance (ft)	286	1386	227	227	227
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 3: Jasmine Cove Way & S. College Road

Movement	EB	WB	SB
Directions Served	R	LT	TR
Maximum Queue (ft)	50	74	22
Average Queue (ft)	9	24	1
95th Queue (ft)	32	59	10
Link Distance (ft)	732	289	221
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Queuing and Blocking Report  
 Combined (2021) PM - Phase 1B Alt 1

04/26/2019

Intersection: 4: NB U-Turn & S. College Road

Movement	WB
Directions Served	L
Maximum Queue (ft)	137
Average Queue (ft)	42
95th Queue (ft)	84
Link Distance (ft)	109
Upstream Blk Time (%)	2
Queuing Penalty (veh)	1
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: South College Road & SB U-Turn

Movement	EB
Directions Served	L
Maximum Queue (ft)	116
Average Queue (ft)	33
95th Queue (ft)	67
Link Distance (ft)	107
Upstream Blk Time (%)	1
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 6: Navaho Trail & Landsdowne Road/Nicholas Creek Circle

Movement	EB	WB	NB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	111	73	22
Average Queue (ft)	50	21	4
95th Queue (ft)	82	49	18
Link Distance (ft)	1962	1190	838
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

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Intersection: 8: South College Road & Site Drive #3

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Movement	WB
Directions Served	R
Maximum Queue (ft)	67
Average Queue (ft)	31
95th Queue (ft)	55
Link Distance (ft)	733
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

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Intersection: 24: Cape Fear Academy

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Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

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Intersection: 27: S. College Road

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Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

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Intersection: 33: South College Road & S. College Road

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Movement

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Directions Served  
Maximum Queue (ft)  
Average Queue (ft)  
95th Queue (ft)  
Link Distance (ft)  
Upstream Blk Time (%)  
Queuing Penalty (veh)  
Storage Bay Dist (ft)  
Storage Blk Time (%)  
Queuing Penalty (veh)

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Intersection: 40: South College Road

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Movement

---

Directions Served  
Maximum Queue (ft)  
Average Queue (ft)  
95th Queue (ft)  
Link Distance (ft)  
Upstream Blk Time (%)  
Queuing Penalty (veh)  
Storage Bay Dist (ft)  
Storage Blk Time (%)  
Queuing Penalty (veh)

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Intersection: 41: S. College Road & SB U-Turn

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Movement

---

Directions Served  
Maximum Queue (ft)  
Average Queue (ft)  
95th Queue (ft)  
Link Distance (ft)  
Upstream Blk Time (%)  
Queuing Penalty (veh)  
Storage Bay Dist (ft)  
Storage Blk Time (%)  
Queuing Penalty (veh)

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Intersection: 43: South College Road & NB U-Turn

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Movement

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- Directions Served
- Maximum Queue (ft)
- Average Queue (ft)
- 95th Queue (ft)
- Link Distance (ft)
- Upstream Blk Time (%)
- Queuing Penalty (veh)
- Storage Bay Dist (ft)
- Storage Blk Time (%)
- Queuing Penalty (veh)

Network Summary

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Network wide Queuing Penalty: 8

Queuing and Blocking Report  
 Combined (2021) Saturday - Phase 1B Alt 1

04/26/2019

Intersection: 1: South College Road & Cape Fear Academy/Pine Cliff Drive

Movement	EB	EB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	LT	R	LTR	UL	T	T	UL	T	T	R
Maximum Queue (ft)	46	22	63	574	1342	1326	299	422	412	21
Average Queue (ft)	5	4	22	82	233	246	17	182	190	2
95th Queue (ft)	24	17	49	251	906	918	44	329	355	12
Link Distance (ft)	139	139	1131		2725	2725		1925	1925	
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)				475			200			400
Storage Blk Time (%)					7	10		7	0	
Queuing Penalty (veh)					7	1		2	0	

Intersection: 2: South College Road & S. College Road/Mohican Trail

Movement	EB	WB	NB	NB	NB
Directions Served	LT	R	T	T	R
Maximum Queue (ft)	354	372	306	243	53
Average Queue (ft)	170	206	188	154	12
95th Queue (ft)	287	346	301	273	38
Link Distance (ft)	286	1574	227	227	227
Upstream Blk Time (%)	3		3	1	
Queuing Penalty (veh)	4		16	5	
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 3: Jasmine Cove Way & S. College Road

Movement	EB	WB
Directions Served	R	LT
Maximum Queue (ft)	90	74
Average Queue (ft)	21	34
95th Queue (ft)	61	72
Link Distance (ft)	733	288
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Queuing and Blocking Report  
 Combined (2021) Saturday - Phase 1B Alt 1

04/26/2019

Intersection: 4: NB U-Turn & S. College Road

Movement	WB
Directions Served	L
Maximum Queue (ft)	180
Average Queue (ft)	93
95th Queue (ft)	176
Link Distance (ft)	109
Upstream Blk Time (%)	18
Queuing Penalty (veh)	24
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: South College Road & SB U-Turn

Movement	EB
Directions Served	L
Maximum Queue (ft)	74
Average Queue (ft)	27
95th Queue (ft)	59
Link Distance (ft)	107
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 6: Navaho Trail & Landsdowne Road/Nicholas Creek Circle

Movement	EB	WB	NB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	71	53	20
Average Queue (ft)	41	18	1
95th Queue (ft)	64	44	7
Link Distance (ft)	1962	1358	838
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

---

Intersection: 8: South College Road & Site Drive #3

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Movement	WB
Directions Served	R
Maximum Queue (ft)	130
Average Queue (ft)	35
95th Queue (ft)	74
Link Distance (ft)	768
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

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Intersection: 24: Cape Fear Academy

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Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

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Intersection: 27: S. College Road

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Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Queuing and Blocking Report  
Combined (2021) Saturday - Phase 1B Alt 1

04/26/2019

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Intersection: 33: South College Road & S. College Road

---

Movement	NB
Directions Served	T
Maximum Queue (ft)	70
Average Queue (ft)	5
95th Queue (ft)	33
Link Distance (ft)	383
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	1
Queuing Penalty (veh)	0

---

Intersection: 40: South College Road

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Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

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Intersection: 41: S. College Road & SB U-Turn

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Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

---

Intersection: 43: South College Road & NB U-Turn

---

Movement	NB
Directions Served	L
Maximum Queue (ft)	138
Average Queue (ft)	21
95th Queue (ft)	94
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	250
Storage Blk Time (%)	
Queuing Penalty (veh)	

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Network Summary

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Network wide Queuing Penalty: 59

Queuing and Blocking Report  
 Combined (2021) PM - Phase 1B Alt 4

04/26/2019

Intersection: 1: South College Road & Cape Fear Academy/Pine Cliff Drive

Movement	EB	EB	EB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	LT	R	LTR	UL	T	T	R	UL	T	T	R
Maximum Queue (ft)	72	89	22	42	146	309	303	1	93	927	895	20
Average Queue (ft)	3	34	6	10	70	84	82	0	22	434	441	1
95th Queue (ft)	25	78	21	29	124	204	209	0	60	828	810	9
Link Distance (ft)		139	139	1131		2725	2725			1925	1925	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	100				475			225	200			400
Storage Blk Time (%)		0					1			17	11	
Queuing Penalty (veh)		0					0			4	1	

Intersection: 2: South College Road & S. College Road/Mohican Trail

Movement	EB	WB	NB	NB	NB
Directions Served	LT	R	T	T	R
Maximum Queue (ft)	223	199	224	213	73
Average Queue (ft)	73	65	105	59	21
95th Queue (ft)	130	123	182	125	50
Link Distance (ft)	286	1386	227	227	227
Upstream Blk Time (%)			0	0	
Queuing Penalty (veh)			0	0	
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 3: Jasmine Cove Way & S. College Road

Movement	EB	WB
Directions Served	R	LT
Maximum Queue (ft)	49	53
Average Queue (ft)	6	21
95th Queue (ft)	27	51
Link Distance (ft)	732	289
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Queuing and Blocking Report  
 Combined (2021) PM - Phase 1B Alt 4

04/26/2019

Intersection: 4: NB U-Turn & S. College Road

Movement	WB
Directions Served	L
Maximum Queue (ft)	97
Average Queue (ft)	52
95th Queue (ft)	87
Link Distance (ft)	109
Upstream Blk Time (%)	0
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: South College Road & SB U-Turn/Site Drive #4

Movement	EB
Directions Served	LT
Maximum Queue (ft)	113
Average Queue (ft)	55
95th Queue (ft)	97
Link Distance (ft)	108
Upstream Blk Time (%)	1
Queuing Penalty (veh)	1
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 6: Navaho Trail & Landsdowne Road/Nicholas Creek Circle

Movement	EB	WB	NB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	76	54	22
Average Queue (ft)	50	25	2
95th Queue (ft)	72	50	13
Link Distance (ft)	1962	1190	838
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

---

Intersection: 8: South College Road & Site Drive #3

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Movement	WB
Directions Served	R
Maximum Queue (ft)	71
Average Queue (ft)	28
95th Queue (ft)	58
Link Distance (ft)	715
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

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Intersection: 24: Cape Fear Academy

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Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

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Intersection: 27: S. College Road

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Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

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Intersection: 33: South College Road & S. College Road

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Movement

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Directions Served  
Maximum Queue (ft)  
Average Queue (ft)  
95th Queue (ft)  
Link Distance (ft)  
Upstream Blk Time (%)  
Queuing Penalty (veh)  
Storage Bay Dist (ft)  
Storage Blk Time (%)  
Queuing Penalty (veh)

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Intersection: 40: South College Road

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Movement

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Directions Served  
Maximum Queue (ft)  
Average Queue (ft)  
95th Queue (ft)  
Link Distance (ft)  
Upstream Blk Time (%)  
Queuing Penalty (veh)  
Storage Bay Dist (ft)  
Storage Blk Time (%)  
Queuing Penalty (veh)

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Intersection: 41: S. College Road & SB U-Turn

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Movement

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Directions Served  
Maximum Queue (ft)  
Average Queue (ft)  
95th Queue (ft)  
Link Distance (ft)  
Upstream Blk Time (%)  
Queuing Penalty (veh)  
Storage Bay Dist (ft)  
Storage Blk Time (%)  
Queuing Penalty (veh)

---

Intersection: 43: South College Road & NB U-Turn

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Movement

---

Directions Served  
Maximum Queue (ft)  
Average Queue (ft)  
95th Queue (ft)  
Link Distance (ft)  
Upstream Blk Time (%)  
Queuing Penalty (veh)  
Storage Bay Dist (ft)  
Storage Blk Time (%)  
Queuing Penalty (veh)

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Network Summary

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Network wide Queuing Penalty: 6

Queuing and Blocking Report  
 Combined (2021) Saturday - Phase 1B Alt 4

04/26/2019

Intersection: 1: South College Road & Cape Fear Academy/Pine Cliff Drive

Movement	EB	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	LTR	UL	T	T	UL	T	T
Maximum Queue (ft)	24	22	44	574	866	868	70	423	462
Average Queue (ft)	6	3	15	98	108	113	24	193	203
95th Queue (ft)	22	14	37	261	478	488	58	384	388
Link Distance (ft)	139	139	1131		2725	2725		1925	1925
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)				475			200		
Storage Blk Time (%)					3	4		6	1
Queuing Penalty (veh)					3	0		1	0

Intersection: 2: South College Road & S. College Road/Mohican Trail

Movement	EB	WB	NB	NB	NB
Directions Served	LT	R	T	T	R
Maximum Queue (ft)	222	275	305	256	95
Average Queue (ft)	123	174	172	122	18
95th Queue (ft)	195	233	293	258	57
Link Distance (ft)	286	1574	227	227	227
Upstream Blk Time (%)			2	1	
Queuing Penalty (veh)			11	4	
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 3: Jasmine Cove Way & S. College Road

Movement	EB	WB	SB
Directions Served	R	LT	TR
Maximum Queue (ft)	49	74	22
Average Queue (ft)	18	22	1
95th Queue (ft)	41	55	8
Link Distance (ft)	733	288	221
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Queuing and Blocking Report  
 Combined (2021) Saturday - Phase 1B Alt 4

04/26/2019

Intersection: 4: NB U-Turn & S. College Road

Movement	WB
Directions Served	L
Maximum Queue (ft)	161
Average Queue (ft)	81
95th Queue (ft)	149
Link Distance (ft)	109
Upstream Blk Time (%)	9
Queuing Penalty (veh)	12
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: South College Road & SB U-Turn/Site Drive #4

Movement	EB	NB
Directions Served	LT	T
Maximum Queue (ft)	95	21
Average Queue (ft)	38	1
95th Queue (ft)	76	7
Link Distance (ft)	108	94
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 6: Navaho Trail & Landsdowne Road/Nicholas Creek Circle

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	55	53	46	17
Average Queue (ft)	42	16	3	1
95th Queue (ft)	64	42	19	6
Link Distance (ft)	1962	1358	838	1307
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

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Intersection: 8: South College Road & Site Drive #3

---

Movement	WB
Directions Served	R
Maximum Queue (ft)	108
Average Queue (ft)	38
95th Queue (ft)	87
Link Distance (ft)	736
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

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Intersection: 24: Cape Fear Academy

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Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

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Intersection: 27: S. College Road

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Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

---

Intersection: 33: South College Road & S. College Road

---

Movement	NB
Directions Served	T
Maximum Queue (ft)	21
Average Queue (ft)	1
95th Queue (ft)	7
Link Distance (ft)	383
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

---

Intersection: 40: South College Road

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Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

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Intersection: 41: S. College Road & SB U-Turn

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Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

---

Intersection: 43: South College Road & NB U-Turn

---

Movement	NB
Directions Served	L
Maximum Queue (ft)	61
Average Queue (ft)	3
95th Queue (ft)	24
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	250
Storage Blk Time (%)	
Queuing Penalty (veh)	

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Network Summary

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Network wide Queuing Penalty: 31

Queuing and Blocking Report  
Background (2024) PM

04/26/2019

Intersection: 1: South College Road & Cape Fear Academy/Pine Cliff Drive

Movement	EB	EB	EB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	LT	R	LTR	UL	T	T	UL	T	T	R
Maximum Queue (ft)	70	84	22	66	164	614	603	299	1621	1679	500
Average Queue (ft)	5	28	4	19	77	82	72	51	803	825	19
95th Queue (ft)	32	64	16	50	143	268	247	197	1619	1646	172
Link Distance (ft)		139	139	1131		2725	2725		1925	1925	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	100				475			200			400
Storage Blk Time (%)		0				1	3		21	20	
Queuing Penalty (veh)		0				1	0		5	3	

Intersection: 2: South College Road & S. College Road/Mohican Trail

Movement	EB	WB	NB	NB	NB
Directions Served	LT	R	T	T	R
Maximum Queue (ft)	139	177	204	196	96
Average Queue (ft)	70	66	109	77	27
95th Queue (ft)	105	124	175	150	58
Link Distance (ft)	286	1380	228	228	228
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 3: Jasmine Cove Way & S. College Road

Movement	EB	WB
Directions Served	R	LT
Maximum Queue (ft)	28	74
Average Queue (ft)	12	17
95th Queue (ft)	33	58
Link Distance (ft)	732	290
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Queuing and Blocking Report  
 Background (2024) PM

04/26/2019

Intersection: 4: NB U-Turn & S. College Road

Movement	WB
Directions Served	L
Maximum Queue (ft)	113
Average Queue (ft)	36
95th Queue (ft)	76
Link Distance (ft)	109
Upstream Blk Time (%)	0
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: South College Road & SB U-Turn

Movement	EB
Directions Served	L
Maximum Queue (ft)	93
Average Queue (ft)	36
95th Queue (ft)	68
Link Distance (ft)	107
Upstream Blk Time (%)	0
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 6: Navaho Trail & Landsdowne Road/Nicholas Creek Circle

Movement	EB	WB	NB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	115	54	26
Average Queue (ft)	53	26	5
95th Queue (ft)	83	47	20
Link Distance (ft)	1962	1190	838
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

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Intersection: 24: Cape Fear Academy

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Movement

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Directions Served  
Maximum Queue (ft)  
Average Queue (ft)  
95th Queue (ft)  
Link Distance (ft)  
Upstream Blk Time (%)  
Queuing Penalty (veh)  
Storage Bay Dist (ft)  
Storage Blk Time (%)  
Queuing Penalty (veh)

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Intersection: 27: S. College Road

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Movement

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Directions Served  
Maximum Queue (ft)  
Average Queue (ft)  
95th Queue (ft)  
Link Distance (ft)  
Upstream Blk Time (%)  
Queuing Penalty (veh)  
Storage Bay Dist (ft)  
Storage Blk Time (%)  
Queuing Penalty (veh)

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Intersection: 33: South College Road & S. College Road

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Movement

---

Directions Served  
Maximum Queue (ft)  
Average Queue (ft)  
95th Queue (ft)  
Link Distance (ft)  
Upstream Blk Time (%)  
Queuing Penalty (veh)  
Storage Bay Dist (ft)  
Storage Blk Time (%)  
Queuing Penalty (veh)

---

Intersection: 40: South College Road

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Movement	SB
Directions Served	R
Maximum Queue (ft)	2708
Average Queue (ft)	97
95th Queue (ft)	926
Link Distance (ft)	2725
Upstream Blk Time (%)	0
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

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Intersection: 41: S. College Road & SB U-Turn

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Movement	
Directions Served	
Maximum Queue (ft)	
Average Queue (ft)	
95th Queue (ft)	
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

---

Intersection: 43: South College Road & NB U-Turn

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Movement	
Directions Served	
Maximum Queue (ft)	
Average Queue (ft)	
95th Queue (ft)	
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

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Network Summary

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Network wide Queuing Penalty: 9

Queuing and Blocking Report  
Background (2024) Saturday

04/26/2019

Intersection: 1: South College Road & Cape Fear Academy/Pine Cliff Drive

Movement	EB	EB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	LTR	UL	T	T	R	UL	T	T
Maximum Queue (ft)	46	22	42	230	226	267	1	68	568	564
Average Queue (ft)	6	5	9	99	25	34	0	29	185	204
95th Queue (ft)	25	19	25	187	80	98	0	57	389	416
Link Distance (ft)	139	139	1131		2725	2725			1925	1925
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)				475			225	200		
Storage Blk Time (%)						0			7	2
Queuing Penalty (veh)						0			2	0

Intersection: 2: South College Road & S. College Road/Mohican Trail

Movement	EB	WB	NB	NB	NB
Directions Served	LT	R	T	T	R
Maximum Queue (ft)	195	344	305	237	53
Average Queue (ft)	109	194	166	125	12
95th Queue (ft)	185	285	282	231	38
Link Distance (ft)	286	1568	228	228	228
Upstream Blk Time (%)			2	0	
Queuing Penalty (veh)			10	1	
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 3: Jasmine Cove Way & S. College Road

Movement	EB	WB
Directions Served	R	LT
Maximum Queue (ft)	89	70
Average Queue (ft)	22	36
95th Queue (ft)	59	70
Link Distance (ft)	733	290
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Queuing and Blocking Report  
Background (2024) Saturday

04/26/2019

Intersection: 4: NB U-Turn & S. College Road

Movement	WB
Directions Served	L
Maximum Queue (ft)	140
Average Queue (ft)	76
95th Queue (ft)	132
Link Distance (ft)	109
Upstream Blk Time (%)	7
Queuing Penalty (veh)	6
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: South College Road & SB U-Turn

Movement	EB
Directions Served	L
Maximum Queue (ft)	73
Average Queue (ft)	30
95th Queue (ft)	65
Link Distance (ft)	107
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 6: Navaho Trail & Landsdowne Road/Nicholas Creek Circle

Movement	EB	WB	NB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	70	30	26
Average Queue (ft)	36	17	3
95th Queue (ft)	57	40	15
Link Distance (ft)	1962	1358	838
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

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Intersection: 24: Cape Fear Academy

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Movement

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Directions Served  
Maximum Queue (ft)  
Average Queue (ft)  
95th Queue (ft)  
Link Distance (ft)  
Upstream Blk Time (%)  
Queuing Penalty (veh)  
Storage Bay Dist (ft)  
Storage Blk Time (%)  
Queuing Penalty (veh)

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Intersection: 27: S. College Road

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Movement

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Directions Served  
Maximum Queue (ft)  
Average Queue (ft)  
95th Queue (ft)  
Link Distance (ft)  
Upstream Blk Time (%)  
Queuing Penalty (veh)  
Storage Bay Dist (ft)  
Storage Blk Time (%)  
Queuing Penalty (veh)

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Intersection: 33: South College Road & S. College Road

---

Movement	NB
Directions Served	T
Maximum Queue (ft)	75
Average Queue (ft)	4
95th Queue (ft)	28
Link Distance (ft)	383
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	0
Queuing Penalty (veh)	0

Queuing and Blocking Report  
Background (2024) Saturday

04/26/2019

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Intersection: 40: South College Road

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Movement

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Directions Served  
Maximum Queue (ft)  
Average Queue (ft)  
95th Queue (ft)  
Link Distance (ft)  
Upstream Blk Time (%)  
Queuing Penalty (veh)  
Storage Bay Dist (ft)  
Storage Blk Time (%)  
Queuing Penalty (veh)

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Intersection: 41: S. College Road & SB U-Turn

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Movement

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Directions Served  
Maximum Queue (ft)  
Average Queue (ft)  
95th Queue (ft)  
Link Distance (ft)  
Upstream Blk Time (%)  
Queuing Penalty (veh)  
Storage Bay Dist (ft)  
Storage Blk Time (%)  
Queuing Penalty (veh)

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Intersection: 43: South College Road & NB U-Turn

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Movement

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Directions Served  
Maximum Queue (ft)  
Average Queue (ft)  
95th Queue (ft)  
Link Distance (ft)  
Upstream Blk Time (%)  
Queuing Penalty (veh)  
Storage Bay Dist (ft)  
Storage Blk Time (%)  
Queuing Penalty (veh)

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Network Summary

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Network wide Queuing Penalty: 20

Queuing and Blocking Report  
 Combined (2024) PM - Phase 2 Alt 1

04/27/2019

Intersection: 1: South College Road & Cape Fear Academy/Pine Cliff Drive

Movement	EB	EB	EB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	LT	R	LTR	UL	T	T	UL	T	T	R
Maximum Queue (ft)	27	86	21	46	165	226	225	299	1853	1789	500
Average Queue (ft)	2	26	2	14	71	75	76	33	835	839	38
95th Queue (ft)	14	62	13	37	134	175	191	124	1773	1747	249
Link Distance (ft)		139	139	1131		611	611		1925	1925	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	100				475			200			400
Storage Blk Time (%)		0					0		21	17	
Queuing Penalty (veh)		0					0		5	2	

Intersection: 2: South College Road & S. College Road/Mohican Trail

Movement	EB	WB	NB	NB	NB
Directions Served	LT	R	T	T	R
Maximum Queue (ft)	149	134	234	183	96
Average Queue (ft)	71	81	119	75	28
95th Queue (ft)	120	127	179	132	66
Link Distance (ft)	286	1386	227	227	227
Upstream Blk Time (%)			0		
Queuing Penalty (veh)			1		
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 3: Jasmine Cove Way & S. College Road

Movement	EB	WB	SB
Directions Served	R	LT	TR
Maximum Queue (ft)	49	53	53
Average Queue (ft)	16	14	2
95th Queue (ft)	42	44	18
Link Distance (ft)	732	289	221
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Queuing and Blocking Report  
 Combined (2024) PM - Phase 2 Alt 1

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Intersection: 4: NB U-Turn & S. College Road

Movement	WB	SB	SB
Directions Served	L	T	T
Maximum Queue (ft)	162	166	165
Average Queue (ft)	111	61	67
95th Queue (ft)	172	137	146
Link Distance (ft)	109	106	106
Upstream Blk Time (%)	17	3	3
Queuing Penalty (veh)	23	28	27
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 5: South College Road & SB U-Turn

Movement	EB
Directions Served	L
Maximum Queue (ft)	53
Average Queue (ft)	28
95th Queue (ft)	56
Link Distance (ft)	110
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 6: Navaho Trail & Landsdowne Road/Nicholas Creek Circle

Movement	EB	WB	NB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	76	54	22
Average Queue (ft)	52	21	2
95th Queue (ft)	74	47	12
Link Distance (ft)	1962	1190	838
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 7: New NB U-Turn & South College Road

Movement	WB	SB	SB
Directions Served	L	T	T
Maximum Queue (ft)	162	175	154
Average Queue (ft)	79	32	34
95th Queue (ft)	146	109	96
Link Distance (ft)	109	532	532
Upstream Blk Time (%)	11		
Queuing Penalty (veh)	11		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 8: South College Road & Site Drive #3

Movement	WB
Directions Served	R
Maximum Queue (ft)	111
Average Queue (ft)	55
95th Queue (ft)	100
Link Distance (ft)	733
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 9: South College Road & Site Drive #5

Movement	EB	WB	NB	NB	NB
Directions Served	T	R	T	T	R
Maximum Queue (ft)	162	440	310	353	200
Average Queue (ft)	121	225	194	200	32
95th Queue (ft)	176	354	315	341	113
Link Distance (ft)	111	524	478	478	
Upstream Blk Time (%)	19				
Queuing Penalty (veh)	41				
Storage Bay Dist (ft)					100
Storage Blk Time (%)				16	
Queuing Penalty (veh)				12	

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Intersection: 10: South College Road & New SB U-Turn

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Movement	EB
Directions Served	L
Maximum Queue (ft)	73
Average Queue (ft)	22
95th Queue (ft)	50
Link Distance (ft)	109
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

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Intersection: 24: Cape Fear Academy

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Movement	
Directions Served	
Maximum Queue (ft)	
Average Queue (ft)	
95th Queue (ft)	
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

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Intersection: 25: South College Road & New NB U-Turn

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Movement	NB
Directions Served	L
Maximum Queue (ft)	80
Average Queue (ft)	3
95th Queue (ft)	27
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	400
Storage Blk Time (%)	
Queuing Penalty (veh)	

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Intersection: 27: S. College Road

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Movement

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Directions Served  
Maximum Queue (ft)  
Average Queue (ft)  
95th Queue (ft)  
Link Distance (ft)  
Upstream Blk Time (%)  
Queuing Penalty (veh)  
Storage Bay Dist (ft)  
Storage Blk Time (%)  
Queuing Penalty (veh)

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Intersection: 33: South College Road & S. College Road

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Movement

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Directions Served  
Maximum Queue (ft)  
Average Queue (ft)  
95th Queue (ft)  
Link Distance (ft)  
Upstream Blk Time (%)  
Queuing Penalty (veh)  
Storage Bay Dist (ft)  
Storage Blk Time (%)  
Queuing Penalty (veh)

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Intersection: 40: South College Road

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Movement

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Directions Served  
Maximum Queue (ft)  
Average Queue (ft)  
95th Queue (ft)  
Link Distance (ft)  
Upstream Blk Time (%)  
Queuing Penalty (veh)  
Storage Bay Dist (ft)  
Storage Blk Time (%)  
Queuing Penalty (veh)

Queuing and Blocking Report  
 Combined (2024) PM - Phase 2 Alt 1

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Intersection: 41: S. College Road & SB U-Turn

Movement	SB	SB
Directions Served	T	T
Maximum Queue (ft)	57	52
Average Queue (ft)	2	2
95th Queue (ft)	19	18
Link Distance (ft)	474	474
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 43: South College Road & NB U-Turn

Movement	NB
Directions Served	L
Maximum Queue (ft)	60
Average Queue (ft)	11
95th Queue (ft)	43
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	250
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 44:

Movement	SB
Directions Served	L
Maximum Queue (ft)	101
Average Queue (ft)	12
95th Queue (ft)	55
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	400
Storage Blk Time (%)	
Queuing Penalty (veh)	

Queuing and Blocking Report  
Combined (2024) PM - Phase 2 Alt 1

04/27/2019

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Intersection: 45: New SB U-Turn

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Movement	SB
Directions Served	L
Maximum Queue (ft)	50
Average Queue (ft)	2
95th Queue (ft)	17
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	200
Storage Blk Time (%)	
Queuing Penalty (veh)	

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Network Summary

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Network wide Queuing Penalty: 150

Queuing and Blocking Report  
 Combined (2024) Saturday - Phase 2 Alt 1

04/27/2019

Intersection: 1: South College Road & Cape Fear Academy/Pine Cliff Drive

Movement	EB	EB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	LT	R	LTR	UL	T	T	R	UL	T	T	R
Maximum Queue (ft)	32	41	86	574	639	638	2	299	914	983	18
Average Queue (ft)	6	4	19	117	161	160	0	29	309	333	1
95th Queue (ft)	23	19	56	332	424	423	1	119	684	722	6
Link Distance (ft)	139	139	1131		581	581			1925	1925	
Upstream Blk Time (%)				0	2	3					
Queuing Penalty (veh)				0	20	25					
Storage Bay Dist (ft)				475			225	200			400
Storage Blk Time (%)					3	6			9	6	
Queuing Penalty (veh)					2	0			2	0	

Intersection: 2: South College Road & S. College Road/Mohican Trail

Movement	EB	WB	NB	NB	NB
Directions Served	LT	R	T	T	R
Maximum Queue (ft)	255	382	306	253	52
Average Queue (ft)	157	217	195	153	16
95th Queue (ft)	239	360	310	266	45
Link Distance (ft)	286	1574	227	227	227
Upstream Blk Time (%)			3	1	
Queuing Penalty (veh)			16	4	
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 3: Jasmine Cove Way & S. College Road

Movement	EB	WB	SB
Directions Served	R	LT	TR
Maximum Queue (ft)	50	74	53
Average Queue (ft)	13	35	2
95th Queue (ft)	39	72	18
Link Distance (ft)	733	288	221
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Queuing and Blocking Report  
 Combined (2024) Saturday - Phase 2 Alt 1

04/27/2019

Intersection: 4: NB U-Turn & S. College Road

Movement	WB	SB	SB
Directions Served	L	T	T
Maximum Queue (ft)	162	166	165
Average Queue (ft)	147	97	102
95th Queue (ft)	184	184	185
Link Distance (ft)	109	106	106
Upstream Blk Time (%)	38	6	6
Queuing Penalty (veh)	73	61	62
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 5: South College Road & SB U-Turn

Movement	EB	NB	NB
Directions Served	L	T	T
Maximum Queue (ft)	72	105	100
Average Queue (ft)	22	5	6
95th Queue (ft)	52	38	42
Link Distance (ft)	110	101	101
Upstream Blk Time (%)		0	0
Queuing Penalty (veh)		1	1
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 6: Navaho Trail & Landsdowne Road/Nicholas Creek Circle

Movement	EB	WB	NB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	76	52	26
Average Queue (ft)	39	23	4
95th Queue (ft)	60	50	18
Link Distance (ft)	1962	1358	838
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 7: New NB U-Turn & South College Road

Movement	WB	SB	SB
Directions Served	L	T	T
Maximum Queue (ft)	159	145	118
Average Queue (ft)	96	38	43
95th Queue (ft)	163	101	104
Link Distance (ft)	109	561	561
Upstream Blk Time (%)	10		
Queuing Penalty (veh)	11		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 8: South College Road & Site Drive #3

Movement	WB
Directions Served	R
Maximum Queue (ft)	532
Average Queue (ft)	252
95th Queue (ft)	542
Link Distance (ft)	768
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 9: South College Road & Site Drive #5

Movement	EB	WB	NB	NB	NB
Directions Served	T	R	T	T	R
Maximum Queue (ft)	162	349	466	487	200
Average Queue (ft)	153	212	288	308	91
95th Queue (ft)	178	334	448	475	227
Link Distance (ft)	111	605	466	466	
Upstream Blk Time (%)	31		0	0	
Queuing Penalty (veh)	86		2	5	
Storage Bay Dist (ft)					100
Storage Blk Time (%)				22	0
Queuing Penalty (veh)				27	3

Queuing and Blocking Report  
Combined (2024) Saturday - Phase 2 Alt 1

04/27/2019

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Intersection: 10: South College Road & New SB U-Turn

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Movement	EB
Directions Served	L
Maximum Queue (ft)	50
Average Queue (ft)	15
95th Queue (ft)	43
Link Distance (ft)	108
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

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Intersection: 23: South College Road & New NB U-Turn

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Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

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Intersection: 24: Cape Fear Academy

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Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 27: S. College Road

Movement

Directions Served  
 Maximum Queue (ft)  
 Average Queue (ft)  
 95th Queue (ft)  
 Link Distance (ft)  
 Upstream Blk Time (%)  
 Queuing Penalty (veh)  
 Storage Bay Dist (ft)  
 Storage Blk Time (%)  
 Queuing Penalty (veh)

Intersection: 33: South College Road & S. College Road

Movement

	NB	NB
Directions Served	T	T
Maximum Queue (ft)	85	44
Average Queue (ft)	7	2
95th Queue (ft)	42	15
Link Distance (ft)	383	383
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)	1	
Queuing Penalty (veh)	0	

Intersection: 40: South College Road

Movement

	NB	NB
Directions Served	T	T
Maximum Queue (ft)	567	594
Average Queue (ft)	33	34
95th Queue (ft)	235	244
Link Distance (ft)	549	549
Upstream Blk Time (%)	0	1
Queuing Penalty (veh)	3	13
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Queuing and Blocking Report  
 Combined (2024) Saturday - Phase 2 Alt 1

04/27/2019

Intersection: 41: S. College Road & SB U-Turn

Movement	SB	SB
Directions Served	T	T
Maximum Queue (ft)	79	67
Average Queue (ft)	5	6
95th Queue (ft)	34	33
Link Distance (ft)	462	462
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 43: South College Road & NB U-Turn

Movement	NB
Directions Served	L
Maximum Queue (ft)	175
Average Queue (ft)	44
95th Queue (ft)	131
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	250
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 44:

Movement	SB
Directions Served	L
Maximum Queue (ft)	234
Average Queue (ft)	55
95th Queue (ft)	160
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	400
Storage Blk Time (%)	
Queuing Penalty (veh)	

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Intersection: 45: New SB U-Turn

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Movement

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Directions Served  
Maximum Queue (ft)  
Average Queue (ft)  
95th Queue (ft)  
Link Distance (ft)  
Upstream Blk Time (%)  
Queuing Penalty (veh)  
Storage Bay Dist (ft)  
Storage Blk Time (%)  
Queuing Penalty (veh)

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Network Summary

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Network wide Queuing Penalty: 420

Queuing and Blocking Report  
 Combined (2024) PM - Phase 2 Alt 4

04/27/2019

Intersection: 1: South College Road & Cape Fear Academy/Pine Cliff Drive

Movement	EB	EB	EB	WB	NB	NB	NB	SB	SB	SB	SB	B21
Directions Served	L	LT	R	LTR	UL	T	T	UL	T	T	R	T
Maximum Queue (ft)	72	88	44	44	252	162	210	287	2044	2020	500	1597
Average Queue (ft)	7	25	7	14	75	60	57	28	953	965	55	342
95th Queue (ft)	36	63	25	36	159	141	143	114	2230	2243	308	1303
Link Distance (ft)		139	139	1131		574	574		1925	1925		1563
Upstream Blk Time (%)									14	15		5
Queuing Penalty (veh)									0	0		0
Storage Bay Dist (ft)	100				475			200			400	
Storage Blk Time (%)		0					0		20	16		
Queuing Penalty (veh)		0					0		5	2		

Intersection: 1: South College Road & Cape Fear Academy/Pine Cliff Drive

Movement	B21
Directions Served	T
Maximum Queue (ft)	1578
Average Queue (ft)	336
95th Queue (ft)	1289
Link Distance (ft)	1563
Upstream Blk Time (%)	5
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 2: South College Road & S. College Road/Mohican Trail

Movement	EB	WB	NB	NB	NB
Directions Served	LT	R	T	T	R
Maximum Queue (ft)	158	133	256	197	72
Average Queue (ft)	81	81	107	79	25
95th Queue (ft)	136	133	195	160	58
Link Distance (ft)	286	1386	227	227	227
Upstream Blk Time (%)			0		
Queuing Penalty (veh)			2		
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Queuing and Blocking Report  
 Combined (2024) PM - Phase 2 Alt 4

04/27/2019

Intersection: 3: Jasmine Cove Way & S. College Road

Movement	EB	WB	SB
Directions Served	R	LT	TR
Maximum Queue (ft)	49	72	20
Average Queue (ft)	16	23	1
95th Queue (ft)	41	54	7
Link Distance (ft)	732	289	221
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 4: NB U-Turn & S. College Road

Movement	WB	SB	SB
Directions Served	L	T	T
Maximum Queue (ft)	162	166	165
Average Queue (ft)	116	88	106
95th Queue (ft)	173	158	174
Link Distance (ft)	109	106	106
Upstream Blk Time (%)	23	4	5
Queuing Penalty (veh)	30	39	55
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 5: South College Road & SB U-Turn/Site Drive #4

Movement	EB	NB	NB	NB
Directions Served	LT	T	T	R
Maximum Queue (ft)	161	155	156	94
Average Queue (ft)	124	92	101	10
95th Queue (ft)	193	185	182	55
Link Distance (ft)	109	94	94	
Upstream Blk Time (%)	30	7	7	0
Queuing Penalty (veh)	47	54	52	0
Storage Bay Dist (ft)				100
Storage Blk Time (%)			7	0
Queuing Penalty (veh)			4	0

Queuing and Blocking Report  
Combined (2024) PM - Phase 2 Alt 4

04/27/2019

Intersection: 6: Navaho Trail & Landsdowne Road/Nicholas Creek Circle

Movement	EB	WB	NB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	108	54	26
Average Queue (ft)	56	21	5
95th Queue (ft)	89	50	21
Link Distance (ft)	1962	1190	838
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 7: New NB U-Turn & South College Road

Movement	WB	SB	SB
Directions Served	L	T	T
Maximum Queue (ft)	162	147	128
Average Queue (ft)	108	24	33
95th Queue (ft)	181	76	76
Link Distance (ft)	109	551	551
Upstream Blk Time (%)	19		
Queuing Penalty (veh)	19		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 8: South College Road & Site Drive #3

Movement	WB
Directions Served	R
Maximum Queue (ft)	151
Average Queue (ft)	61
95th Queue (ft)	108
Link Distance (ft)	715
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Queuing and Blocking Report  
 Combined (2024) PM - Phase 2 Alt 4

04/27/2019

Intersection: 9: South College Road & Site Drive #5

Movement	EB	WB	NB	NB	NB
Directions Served	T	R	T	T	R
Maximum Queue (ft)	116	385	272	290	198
Average Queue (ft)	72	236	116	111	16
95th Queue (ft)	112	334	200	214	77
Link Distance (ft)	109	496	481	481	
Upstream Blk Time (%)	2				
Queuing Penalty (veh)	3				
Storage Bay Dist (ft)					100
Storage Blk Time (%)				12	
Queuing Penalty (veh)				5	

Intersection: 10: South College Road & New SB U-Turn

Movement	EB
Directions Served	L
Maximum Queue (ft)	79
Average Queue (ft)	31
95th Queue (ft)	66
Link Distance (ft)	109
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 24: Cape Fear Academy

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

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Intersection: 25: South College Road & New NB U-Turn

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Movement	NB
Directions Served	L
Maximum Queue (ft)	29
Average Queue (ft)	1
95th Queue (ft)	10
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	400
Storage Blk Time (%)	
Queuing Penalty (veh)	

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Intersection: 27: S. College Road

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Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

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Intersection: 33: South College Road & S. College Road

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Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 40: South College Road

Movement

Directions Served  
 Maximum Queue (ft)  
 Average Queue (ft)  
 95th Queue (ft)  
 Link Distance (ft)  
 Upstream Blk Time (%)  
 Queuing Penalty (veh)  
 Storage Bay Dist (ft)  
 Storage Blk Time (%)  
 Queuing Penalty (veh)

Intersection: 41: S. College Road & SB U-Turn

Movement	SB	SB	SB
Directions Served	L	T	T
Maximum Queue (ft)	79	65	62
Average Queue (ft)	18	4	3
95th Queue (ft)	64	26	23
Link Distance (ft)		473	473
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	250		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 43: South College Road & NB U-Turn

Movement	NB	NB	NB
Directions Served	L	T	T
Maximum Queue (ft)	140	141	177
Average Queue (ft)	14	24	26
95th Queue (ft)	67	94	104
Link Distance (ft)		326	326
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	250		
Storage Blk Time (%)			
Queuing Penalty (veh)			

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Intersection: 44:

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Movement

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Directions Served  
Maximum Queue (ft)  
Average Queue (ft)  
95th Queue (ft)  
Link Distance (ft)  
Upstream Blk Time (%)  
Queuing Penalty (veh)  
Storage Bay Dist (ft)  
Storage Blk Time (%)  
Queuing Penalty (veh)

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Intersection: 45: New SB U-Turn

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Movement

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Directions Served  
Maximum Queue (ft)  
Average Queue (ft)  
95th Queue (ft)  
Link Distance (ft)  
Upstream Blk Time (%)  
Queuing Penalty (veh)  
Storage Bay Dist (ft)  
Storage Blk Time (%)  
Queuing Penalty (veh)

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Network Summary

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Network wide Queuing Penalty: 316

Queuing and Blocking Report  
 Combined (2024) Saturday - Phase 2 Alt 4

04/27/2019

Intersection: 1: South College Road & Cape Fear Academy/Pine Cliff Drive

Movement	EB	EB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	LT	R	LTR	UL	T	T	UL	T	T	R
Maximum Queue (ft)	47	43	105	574	644	642	88	581	551	20
Average Queue (ft)	8	6	20	93	69	77	21	258	273	2
95th Queue (ft)	28	26	65	258	338	344	58	510	527	11
Link Distance (ft)	139	139	1131		587	587		1925	1925	
Upstream Blk Time (%)				0	3	4				
Queuing Penalty (veh)				0	31	35				
Storage Bay Dist (ft)				475			200			400
Storage Blk Time (%)					3	4		9	3	
Queuing Penalty (veh)					3	0		2	0	

Intersection: 2: South College Road & S. College Road/Mohican Trail

Movement	EB	WB	NB	NB	NB
Directions Served	LT	R	T	T	R
Maximum Queue (ft)	229	368	286	246	90
Average Queue (ft)	108	215	193	148	16
95th Queue (ft)	184	352	299	260	54
Link Distance (ft)	286	1574	227	227	227
Upstream Blk Time (%)			3	1	
Queuing Penalty (veh)			16	5	
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 3: Jasmine Cove Way & S. College Road

Movement	EB	WB	SB
Directions Served	R	LT	TR
Maximum Queue (ft)	28	74	22
Average Queue (ft)	11	27	1
95th Queue (ft)	32	62	7
Link Distance (ft)	733	288	221
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Queuing and Blocking Report  
 Combined (2024) Saturday - Phase 2 Alt 4

04/27/2019

Intersection: 4: NB U-Turn & S. College Road

Movement	WB	SB	SB
Directions Served	L	T	T
Maximum Queue (ft)	180	177	165
Average Queue (ft)	147	105	108
95th Queue (ft)	184	185	184
Link Distance (ft)	109	106	106
Upstream Blk Time (%)	37	7	7
Queuing Penalty (veh)	72	65	71
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 5: South College Road & SB U-Turn/Site Drive #4

Movement	EB	NB	NB	NB
Directions Served	LT	T	T	R
Maximum Queue (ft)	161	155	156	94
Average Queue (ft)	152	105	119	16
95th Queue (ft)	184	181	187	65
Link Distance (ft)	109	94	94	
Upstream Blk Time (%)	42	6	8	0
Queuing Penalty (veh)	76	55	79	0
Storage Bay Dist (ft)				100
Storage Blk Time (%)			8	0
Queuing Penalty (veh)			6	1

Intersection: 6: Navaho Trail & Landsdowne Road/Nicholas Creek Circle

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	76	49	22	18
Average Queue (ft)	42	17	2	1
95th Queue (ft)	64	43	11	6
Link Distance (ft)	1962	1358	838	1307
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Queuing and Blocking Report  
 Combined (2024) Saturday - Phase 2 Alt 4

04/27/2019

Intersection: 7: New NB U-Turn & South College Road

Movement	WB	SB	SB
Directions Served	L	T	T
Maximum Queue (ft)	163	160	149
Average Queue (ft)	84	40	47
95th Queue (ft)	156	105	115
Link Distance (ft)	110	544	544
Upstream Blk Time (%)	7		
Queuing Penalty (veh)	7		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 8: South College Road & Site Drive #3

Movement	WB
Directions Served	R
Maximum Queue (ft)	487
Average Queue (ft)	211
95th Queue (ft)	393
Link Distance (ft)	736
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 9: South College Road & Site Drive #5

Movement	EB	WB	NB	NB	NB
Directions Served	T	R	T	T	R
Maximum Queue (ft)	162	353	288	308	31
Average Queue (ft)	112	233	98	81	5
95th Queue (ft)	173	340	207	203	22
Link Distance (ft)	110	476	480	480	
Upstream Blk Time (%)	17				
Queuing Penalty (veh)	24				
Storage Bay Dist (ft)					100
Storage Blk Time (%)				3	
Queuing Penalty (veh)				2	

Queuing and Blocking Report  
 Combined (2024) Saturday - Phase 2 Alt 4

04/27/2019

Intersection: 10: South College Road & New SB U-Turn

Movement	EB
Directions Served	L
Maximum Queue (ft)	70
Average Queue (ft)	19
95th Queue (ft)	52
Link Distance (ft)	109
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 24: Cape Fear Academy

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 25: South College Road & New NB U-Turn

Movement	NB	NB	NB
Directions Served	L	T	T
Maximum Queue (ft)	34	80	206
Average Queue (ft)	0	6	14
95th Queue (ft)	0	39	94
Link Distance (ft)		1288	1288
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	400		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 27: S. College Road

Movement

Directions Served  
 Maximum Queue (ft)  
 Average Queue (ft)  
 95th Queue (ft)  
 Link Distance (ft)  
 Upstream Blk Time (%)  
 Queuing Penalty (veh)  
 Storage Bay Dist (ft)  
 Storage Blk Time (%)  
 Queuing Penalty (veh)

Intersection: 33: South College Road & S. College Road

Movement

NB

Directions Served T  
 Maximum Queue (ft) 46  
 Average Queue (ft) 2  
 95th Queue (ft) 16  
 Link Distance (ft) 383  
 Upstream Blk Time (%)  
 Queuing Penalty (veh)  
 Storage Bay Dist (ft)  
 Storage Blk Time (%)  
 Queuing Penalty (veh)

Intersection: 40: South College Road

Movement

NB NB

Directions Served T T  
 Maximum Queue (ft) 601 621  
 Average Queue (ft) 49 49  
 95th Queue (ft) 306 311  
 Link Distance (ft) 539 539  
 Upstream Blk Time (%) 1 2  
 Queuing Penalty (veh) 13 20  
 Storage Bay Dist (ft)  
 Storage Blk Time (%)  
 Queuing Penalty (veh)

Queuing and Blocking Report  
 Combined (2024) Saturday - Phase 2 Alt 4

04/27/2019

Intersection: 41: S. College Road & SB U-Turn

Movement	SB	SB	SB
Directions Served	L	T	T
Maximum Queue (ft)	180	71	67
Average Queue (ft)	43	9	11
95th Queue (ft)	101	43	44
Link Distance (ft)		469	469
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	250		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 43: South College Road & NB U-Turn

Movement	NB	NB	NB
Directions Served	L	T	T
Maximum Queue (ft)	121	85	129
Average Queue (ft)	32	15	26
95th Queue (ft)	103	59	89
Link Distance (ft)		342	342
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	250		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 44:

Movement	SB
Directions Served	L
Maximum Queue (ft)	54
Average Queue (ft)	5
95th Queue (ft)	23
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	400
Storage Blk Time (%)	
Queuing Penalty (veh)	

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Intersection: 45: New SB U-Turn

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Movement

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Directions Served  
Maximum Queue (ft)  
Average Queue (ft)  
95th Queue (ft)  
Link Distance (ft)  
Upstream Blk Time (%)  
Queuing Penalty (veh)  
Storage Bay Dist (ft)  
Storage Blk Time (%)  
Queuing Penalty (veh)

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Network Summary

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Network wide Queuing Penalty: 585