

September 29, 2025



TRANSPORTATION IMPACT ANALYSIS

Embassy Suites Hotel

Carolina Beach, NC

Project # 232024

Prepared For: Embassy Suites by Hilton Wilmington
Riverfront



Transportation Impact Analysis

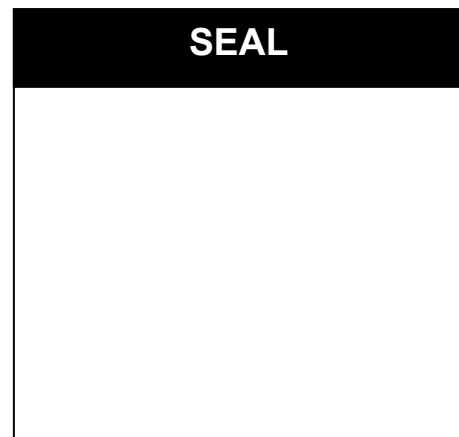
Embassy Suites Hotel Carolina Beach, NC

Prepared for
Embassy Suites By Hilton Wilmington Riverfront

September 25, 2025

Analysis and Graphics by: Sheheryar Shafique, EI

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EXECUTIVE SUMMARY

The Embassy Suites Hotel commercial development is located in the southwest and southeast quadrants of the intersection of Carolina Beach Avenue and Pelican Lane in the Town of Carolina Beach, NC. Originally, the proposed development consisted of a hotel with up to 177 guest rooms. A Transportation Impact Analysis (TIA) was prepared and submitted dated December 13th, 2024. Since then, the site plan has been revised, and the Town of Carolina Beach has requested a supplement to the TIA reflecting the updated site plan. The updated site plan includes a hotel on the west side, with up to 140 guest rooms, and an event center on the east side of Carolina Beach Avenue. The development will retain the originally proposed connection with Carolina Beach Avenue using two (2) one-way driveways, one ingress and one egress. The expected build-out year for this development is 2026. Information regarding the property was provided by Embassy Suites by Hilton Wilmington Riverfront.

DAVENPORT was retained to determine the potential traffic impact of this development and to identify transportation improvements that may be required to accommodate the new development traffic.

The supplemental Transportation Impact Analysis (TIA) was performed based on the scope agreed upon with Town of Carolina Beach, NCDOT and the WMPO. The original trip generation potential of this site (based on 177 guest rooms), 1,495 daily trips with 103 trips in the Friday PM peak hour and 128 trips in the Saturday mid-day peak hour, was retained for this analysis. It should be noted that since the original trip generation retained for this analysis is based on 177 hotel guest rooms where no reduction to site trips was considered, therefore the impact results of the study are inherently conservative.

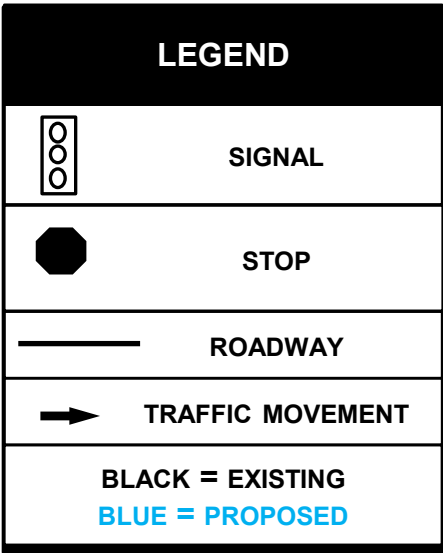
In conclusion, this study has determined the potential traffic impact of this development and has recommended measures to mitigate the impact of future site traffic. Improvements include:

- 1) Restripe the eastbound approach to provide full length storage left turn lane and a thru-right turn lane with 100 feet of storage plus appropriate deceleration and taper.
- 2) Revise the signal plan to accommodate the dominant traffic pattern.

The analysis indicates that with the recommended improvements in place, the proposed site is not expected to have a detrimental effect on transportation capacity and mobility within the study area. The recommendations summarized in Figure A and in Table A should be constructed to comply with applicable local standards.

Table A – Recommended Improvements

INTERSECTION	RECOMMENDATIONS
US 421 (N Lake Park Blvd) and Carl Winner Drive	• No improvements are recommended.
Carl Winner Drive and Canal Drive	• Restripe the eastbound approach to provide full length storage left turn lane and a thru-right turn lane with 100 feet of storage plus appropriate deceleration and taper. • Revise the signal plan to accommodate the dominant traffic pattern.
Canal Drive and Pelican Lane	• No improvements are recommended
Pelican Lane and Carolina Beach Avenue	• No improvements are recommended.
Pelican Lane and Carolina Beach Avenue	• No improvements are recommended.
Carolina Beach Avenue and Site Access 1	• Design site driveway according to applicable local standards.
Carolina Beach Avenue and Site Access 2	• Design site driveway according to the applicable local standards.



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1.0 Introduction

The Embassy Suites Hotel commercial development is located in the southwest and southeast quadrants of the intersection of Carolina Beach Avenue and Pelican Lane in the Town of Carolina Beach, NC. Originally, the proposed development consisted of a hotel with up to 177 guest rooms. A Transportation Impact Analysis (TIA) was prepared and submitted dated December 13th, 2024. Since then, the site plan has been revised, and the Town of Carolina Beach has requested a supplement to the TIA reflecting the updated site plan. The updated site plan includes a hotel on the west side, with up to 140 guest rooms, and an event center on the east side of Carolina Beach Avenue. The development will retain the originally proposed connection with Carolina Beach Avenue using two (2) one-way driveways, one ingress and one egress. The expected build-out year for this development is 2026. Information regarding the property was provided by Embassy Suites by Hilton Wilmington Riverfront.

The conceptual site plans for the hotel and event center are shown in Figure 1A and 1B respectively. A site location map and a vicinity map are provided in Figures 2A and 2B, respectively.

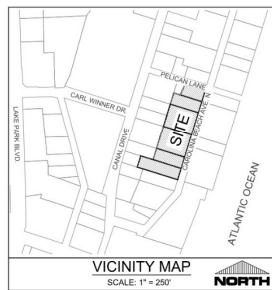
DAVENPORT was retained to determine the potential traffic impact of this development and to identify transportation improvements that may be required to accommodate the new development traffic. The following intersections are included in the study:

1. US 421 (Lake Park Boulevard) at Carl Winner Drive (signalized)
2. Carl Winner Drive at Canal Drive (signalized)
3. Canal Drive at Pelican Lane
4. Pelican Lane and Carolina Beach Avenue
5. Carolina Beach Avenue at Canal Drive
6. Carolina Beach Avenue and Site Access Driveway(s)

These intersections were analyzed during the Friday PM peak hour and Saturday mid-day peaks for the following conditions:

- 2024 Existing Conditions
- 2026 Future No Build Conditions
- 2026 Future Build Conditions
- 2026 Future Build Conditions + Improvements

This supplemental Transportation Impact Analysis (TIA) was performed based on the scope agreed upon with the Town of Carolina Beach, Wilmington Urban Area Metropolitan Planning Organization (WMPO) and North Carolina Department of Transportation (NCDOT). It was conducted according to the standards and best practices of the transportation engineering profession.



SITE DATA
PROJECT NAME: HARMONY HOTEL AND PAVILION AT CAROLINA BEACH
SITE ADDRESS: 223, 225, 227, 235, 237 & 239 NORTH CAROLINA BEACH AVENUE CAROLINA BEACH, NC 28546
APPLICANT: HARMONY HOSPITALITY, INC. 1300 DIAMOND SPRINGS RD., STE 204 VIRGINIA BEACH, VA 23455
OWNER(S): CAROLINA BEACH WEST, LLC 1300 DIAMOND SPRINGS RD., STE 204 VIRGINIA BEACH, VA 23455
JOHNSON PAGE S II, AMY A 1300 DIAMOND SPRINGS RD., STE 204 VIRGINIA BEACH, VA 23455

PARCEL ID	PARCEL ADDRESS	PARCEL SIZE
R08818-019-002-000	239	0.11 ACRES
R08818-019-001-000	237	0.14 ACRES
R09006-005-020-000	235	0.29 ACRES
R09006-005-019-000	227	0.29 ACRES
R09006-005-016-000	225	0.14 ACRES
R09006-005-015-000	223	0.21 ACRES
TOTAL SITE AREA:		1.18 ACRES (41-51,400)

EXISTING ZONING: CBD (CENTRAL BUSINESS DISTRICT)
PROPOSED ZONING: CBD-C2
JURISDICTION: CAROLINA BEACH
PROPOSED USE: HOTEL AND ASSOCIATED ON- (SEE SITE PARKING CALCULATION)
NUMBER OF STORIES: GROUND LEVEL PLUS 4 STORIES
NUMBER OF ROOMS: 140
GROSS FLOOR AREA: 122,700 GFA
BUILDING LOT COVERAGE: GROUND (PARKING LEVEL): 3,170 SF BUILDING FOOTPRINT (6.16%)
FIRST FLOOR (OVER PARKING): 40,819 (79.41%)
IMPERVIOUS LOT COVER: TOTAL SITE - LANDSCAPE AREAS: 51,400 SF - 2,138 SF = 49,262 (95.84%)

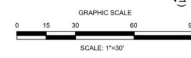
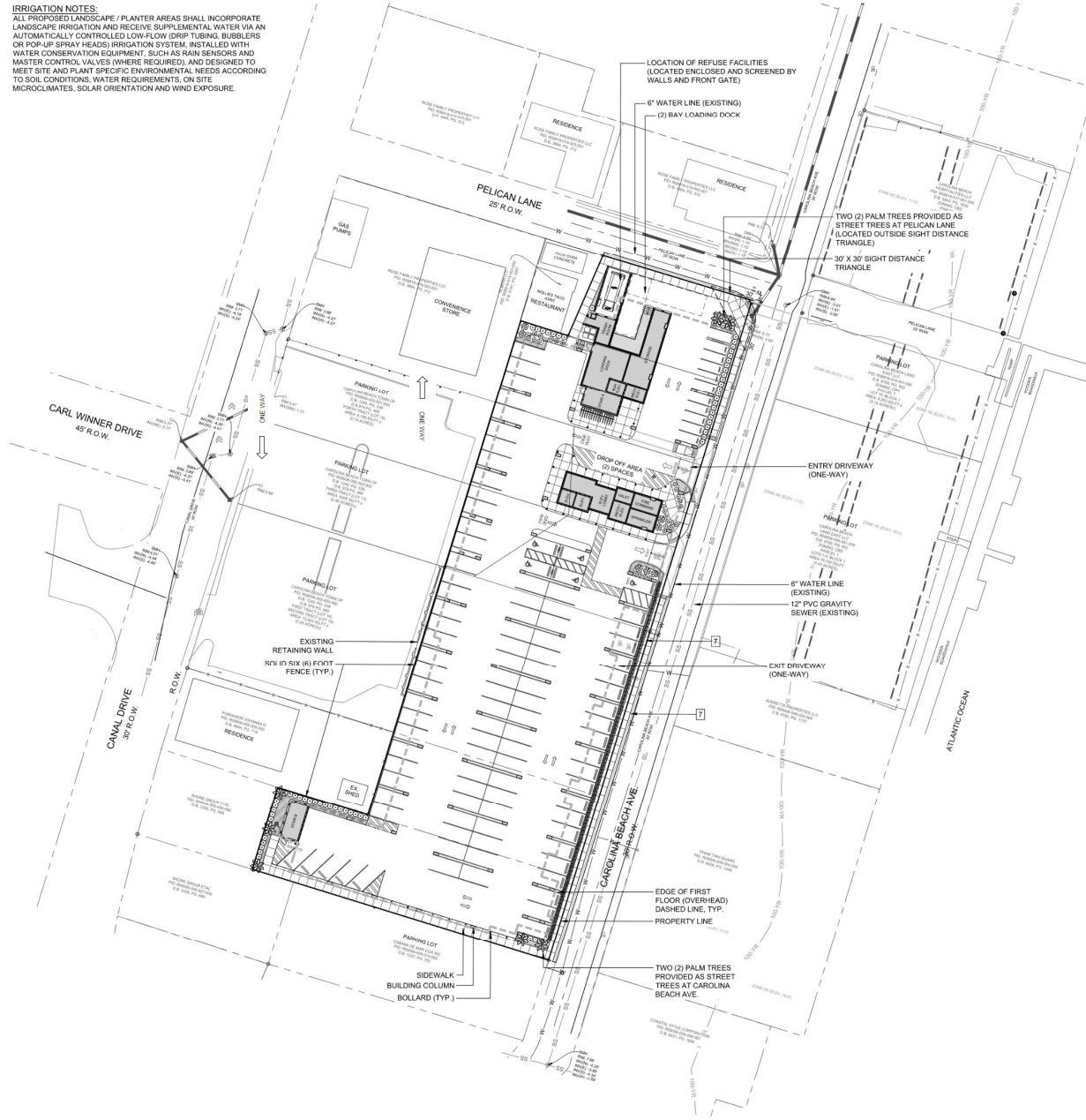
PELICAN LANE

SYMBOLS LEGEND:
CONCRETE PAVING

LANDSCAPE BUFFER REQUIREMENTS:

- ANY SIDE OR REAR YARD THAT ABUTS A RESIDENTIAL USE OR RESIDENTIAL DISTRICT SHALL PROVIDE FOR A SIX (6) FOOT FENCE WITH 80% OPACITY
- CENTRAL BUSINESS DISTRICT (CBD), NEW CONSTRUCTION ONLY, TYPE D BUFFER AND STREET YARD REQUIRED. PER SECTION 3.27, TABLE 3.9, TYPE D BUFFER IS ZERO FEET (0) WIDE
- TYPE D, FOR EVERY 50 LINEAR FEET OF FRONTAGE, OR FRACTION THEREOF, THE STREET YARD SHALL CONTAIN ONE (1) UNDERSTORY TREE WITH SIDEWALKS OR PLANTERS BUILT WITHIN THE SIDEWALK. STREET YARDS LOCATED WITHIN THE CBD SHALL INCLUDE SIDEWALKS WITH PLANTING AREAS EITHER ADJACENT TO THE CURB OR PLANTERS LOCATED WITHIN THE SIDEWALK. PARKING IS LOCATED WITHIN A PARKING STRUCTURE, NO LANDSCAPE ISLANDS OR TREES REQUIRED.

IRRIGATION NOTES:
ALL PROPOSED LANDSCAPE / PLANTER AREAS SHALL INCORPORATE LANDSCAPE IRRIGATION AND RECEIVE SUPPLEMENTAL WATER VIA AN AUTOMATICALLY CONTROLLED LOW-FLOW (DRIP TUBING, BUBBLERS OR POP-UP SPRAY HEADS) IRRIGATION SYSTEM, INSTALLED WITH WATER CONSERVATION EQUIPMENT, SUCH AS RAIN SENSORS AND MASTER CONTROL VALVES (WHERE REQUIRED), AND DESIGNED TO MEET SITE AND PLANT SPECIFIC ENVIRONMENTAL NEEDS ACCORDING TO SOIL CONDITIONS, WATER REQUIREMENTS, ON-SITE MICROCLIMATES, SOLAR ORIENTATION AND WIND EXPOSURE.



PLANT SCHEDULE			
SYMBOL	QTY	COMMON / BOTANICAL NAME	SIZE
PALM TREES			
	7	SABAL PALMETTO	10' H
SHRUBS			
	5	CAST IRON PLANT ASPIDISTRA ELATOR	7 GAL
	7	JAPANESE ARALIA FATIMA JAPONICA	7 GAL - 18" H
	21	MOJOBI JAPANESE PITTOSPORIUM PITTOSPORIUM TOBIIRA 'CHI THREE'	24"X24" MIN.
	73	SHRUBBY YEW PODOCARPUS PODOCARPUS M. MAKI	24" H. AT INSTALL
ORNAMENTAL GRASSES			
	89	PINK MUHLY MUHLBERGIA CAPILLARIS	3 GAL / 12" HT
GROUND COVERS			
	194	ASIATIC JASMINE TRACHELOSPERMUM A. 'ASIATIC'	1 GAL
	80	DAYLILY HEMEROCALLIS X 'HAPPY RETURNS'	1 GAL

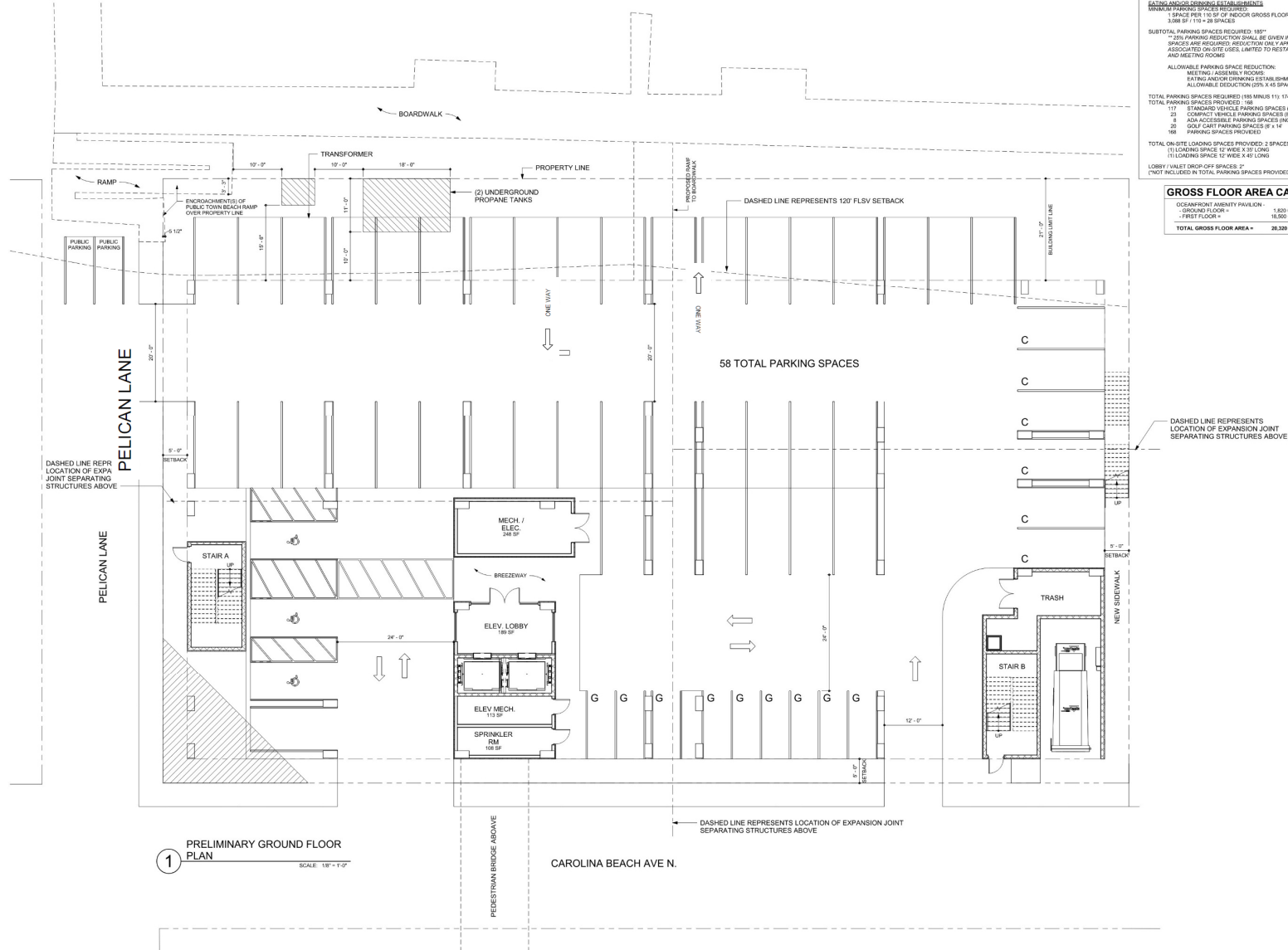
PRELIMINARY DESIGN - NOT RELEASED FOR CONSTRUCTION

REVISIONS: <table border="1"> <tr> <th>NO.</th> <th>DESCRIPTION</th> </tr> <tr> <td> </td> <td> </td> </tr> </table>	NO.	DESCRIPTION			CLIENT INFORMATION: HARMONY HOSPITALITY, INC. 1300 DIAMOND SPRINGS RD., STE. 204 VIRGINIA BEACH, VA 23455
NO.	DESCRIPTION				
PARAMOUNT ENGINEERING 122 Coopers Drive Wilmington, North Carolina 28403 (910) 791-6707 (F) (910) 791-6700 (P) NC License # C-2846	LANDSCAPE PLAN HARMONY HOTEL AND PAVILION AT CAROLINA BEACH CAROLINA BEACH AVE. CAROLINA BEACH, NC				
PROJECT STATUS: CONCEPTUAL DESIGN PRELIMINARY DESIGN FINAL DESIGN FOR CONSTRUCTION DRAWING INFORMATION: DATE: 07/27/2024 DRAWN BY: J. L. BROWN CHECKED BY: J. L. BROWN	SEAL L-2.0 PEI JOB#: 00000.PE				



FIGURE 1A
HOTEL CONCEPTUAL SITE PLAN

EMBASSY SUITES CAROLINA BEACH
DAVENPORT PROJECT 232024



SITE PARKING

HOTEL (HOTEL NOT CONSIDERED)
 MINIMUM PARKING SPACES REQUIRED:
 1 SPACE PER SUITE ROOM
 NUMBER OF HOTEL ROOMS: 102 = 102 SPACES REQUIRED

MEETING / ASSEMBLY ROOMS
 MINIMUM PARKING SPACES REQUIRED:
 1 SPACE PER 100 SF MEETING / ASSEMBLY ROOM
 6,000 SF / 100 = 60 SPACES

EATING AND/OR DRINKING ESTABLISHMENTS
 MINIMUM PARKING SPACES REQUIRED:
 1 SPACE PER 150 SF OF INDOOR GROSS FLOOR AREA
 1,500 SF / 150 = 10 SPACES

SUBTOTAL PARKING SPACES REQUIRED: 182
 *30% PARKING REDUCTION SHALL BE GIVEN IF 60 OR GREATER SPACES ARE REQUIRED. REDUCTION ONLY APPLIES TO ASSOCIATED ON-SITE USES. LIMITED TO RESTAURANTS, BARS AND MEETING ROOMS.

ALLOWABLE PARKING SPACE REDUCTION:
 MEETING / ASSEMBLY ROOMS 17 SPACES
 EATING AND/OR DRINKING ESTABLISHMENTS 28 SPACES
 ALLOWABLE REDUCTION (20% x 45 SPACES) 11 SPACES

TOTAL PARKING SPACES REQUIRED: (182 MINUS 11) 171 SPACES

PROVIDED PARKING SPACES:
 171 - STANDARD VEHICLE PARKING SPACES (9' x 19')
 241 - COMPACT VEHICLE PARKING SPACES (8'6" x 16')
 8 ADA ACCESSIBLE PARKING SPACES (INCLUDES 1 VAN SPACE)
 20 - GOLF CART PARKING SPACES (8' x 14')
 198 - PARKING SPACES PROVIDED

TOTAL ON-SITE LOADING SPACES PROVIDED: 2 SPACES
 (1) LOADING SPACE 12' WIDE x 30' LONG
 (1) LOADING SPACE 12' WIDE x 40' LONG

LOBBY VALET DROP-OFF SPACES: 0*
 (*NOT INCLUDED IN TOTAL PARKING SPACES PROVIDED)

GROSS FLOOR AREA CALCULATIONS

OCEANFRONT AMENITY PAVILION:
 - GROUND FLOOR = 1,800 GFA
 - FIRST FLOOR = 16,500 GFA

TOTAL GROSS FLOOR AREA = 20,300 GFA

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 ENGINEERING
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 SHELBY, MD 21151
 NORTH CAROLINA
 1113 JENSEN DRIVE, SUITE 120
 WILMINGTON, NC 28403
 910.341.7600
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PROJECT TITLE
 OCEANFRONT AMENITY PAVILION

**LOTS 7-10, BLOCK 1
 CAROLINA BEACH AVE. N.
 CAROLINA BEACH, NC 28428**

PRELIMINARY
 DESIGN CONCEPT ONLY. SUBJECT
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 CONSTRUCTION OR FOR
 PERMITS.
 ISSUED: 08/12/2024

PRELIMINARY GROUND FLOOR PLAN

SCALE: 1/8" = 1'-0"

NO.	REV.	DESCRIPTION

PROJECT NO: 2023042.02
DATE: 08.12.24
SCALE: As Indicated
DRAWN BY: DJB **PROJ MGR:** DJB

A101



2.0 Existing Conditions

2.1 Inventory

Table 2.1 presents a summary of the study area roadway conditions. Figure 3 shows the existing lane geometry.

Table 2.1 - Street Inventory						
Facility Name	Route #	2023 AADT (vpd)	Typical Cross Section	Lane Width	Speed Limit (MPH)	Maintained By
North Lake Park Boulevard	US 421	18,000	4-lane undivided	12 feet	25	NCDOT
Carolina Beach Avenue	N/A	1,200 ¹	2-lane undivided	12 feet	25	Town of Carolina Beach
Carl Winner Drive	N/A	Not reported	2-lane undivided	12 feet	25	Town of Carolina Beach
Canal Drive	N/A	3,800 ¹	2-lane undivided	12 feet	25	Town of Carolina Beach
Pelican Lane	N/A	Not reported	2-lane undivided	12 feet	25	Town of Carolina Beach

¹ Based on NCDOT traffic counts taken in 2023

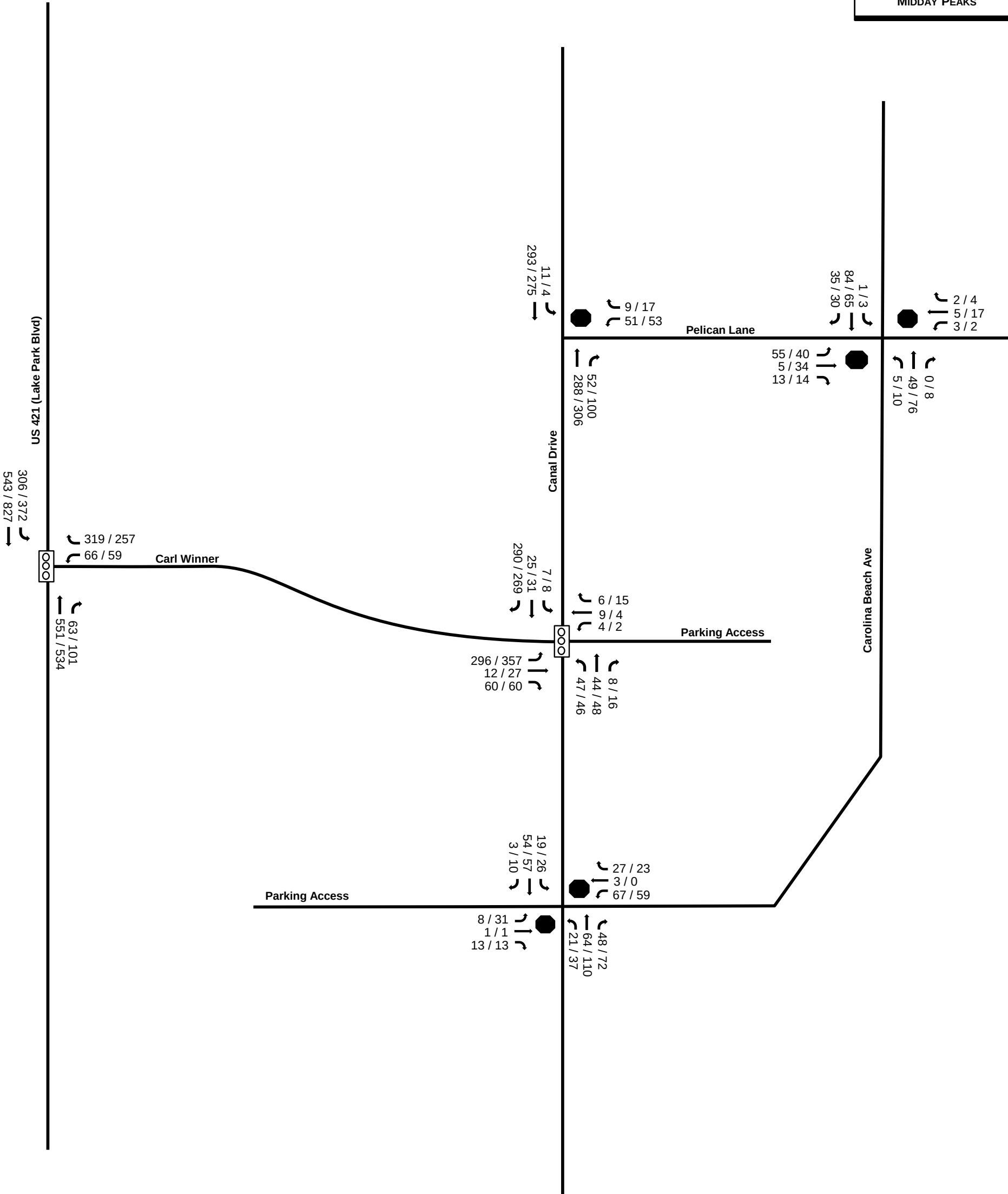
2.2 Existing Traffic Volumes

The original turning movement counts collected for the original TIA were retained for this supplemental analysis. These counts were collected by Burns Service, Incorporated on a weekend, to reflect summer traffic volumes. Table 2.2 contains the location, dates, and times these counts were conducted. The traffic volumes were not balanced between the study intersections since the existing driveways and land uses account for the imbalance. The existing peak hour volumes are shown in Figures 4. Traffic count data are provided in the Appendix.

Table 2.2 - Traffic Volume Data		
Count Location	Date Taken	Hours
US 421(Lake Park Boulevard) and Carl Winner Drive (signalized)	Friday, June 7, 2024	3:00PM – 5:00PM
	Saturday, June 8, 2024	11:00AM – 1:00PM
Carl Winner Drive and Canal Drive (signalized)	Friday, June 7, 2024	3:00PM – 5:00PM
	Saturday, June 8, 2024	11:00AM – 1:00PM
Canal Drive and Pelican Lane (unsignalized)	Friday, June 7, 2024	3:00PM – 5:00PM
	Saturday, June 8, 2024	11:00AM – 1:00PM
Carolina Beach Avenue N and Pelican Lane (unsignalized)	Friday, June 7, 2024	3:00PM – 5:00PM
	Saturday, June 8, 2024	11:00AM – 1:00PM
Carolina Beach Avenue N and Canal Drive (unsignalized)	Friday, June 7, 2024	3:00PM – 5:00PM
	Saturday, June 8, 2024	11:00AM – 1:00PM



LEGEND	
	SIGNAL
	STOP
	ROADWAY
	TRAFFIC MOVEMENT
BLACK = EXISTING	
FRIDAY PM / SATURDAY MIDDAY PEAKS	



*** NOT TO SCALE ***

** A minimum of 4 vehicles per hour is analyzed for each movement per NCDOT Congestion Management Guidelines.

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**FIGURE 4
2024 EXISTING
TRAFFIC VOLUMES**

EMBASSY SUITES
CAROLINA BEACH, NC

PROJECT NUMBER 232024



3.0 Approved Development and Committed Improvements

3.1 *Approved Developments*

Approved developments are projects that have been authorized in the area but are not yet constructed. Per the approved scoping document, one nearby development was identified and included in the traffic volumes for the future build conditions.

Proximity Mixed Use Carolina Beach is planned to consist of 266 multi-family residential units, with the following additional commercial uses:

- Fitness Club
- Office Building
- Shopping Center
- Restaurant

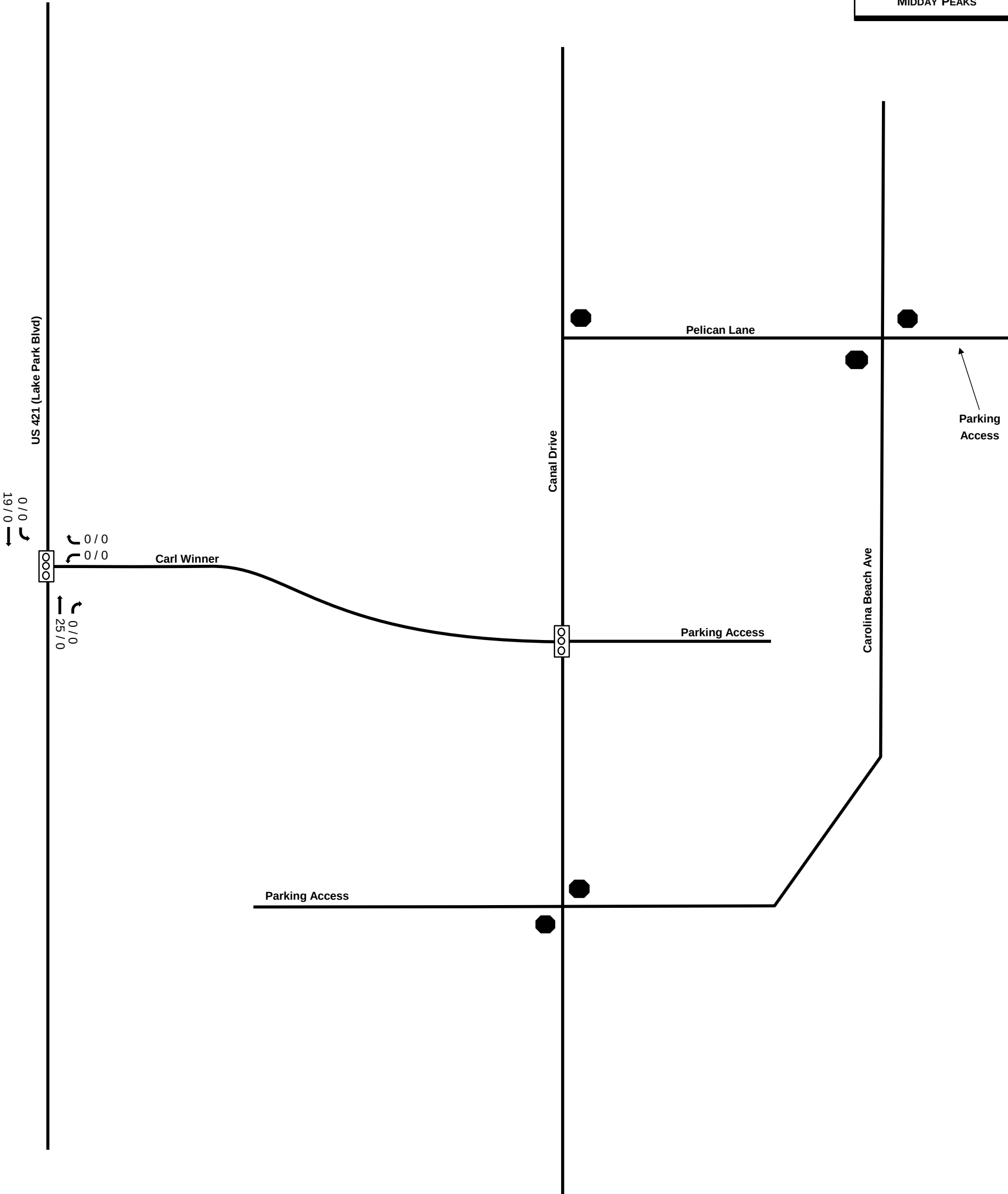
A TIA was prepared by Kimley Horn Associates on November 2, 2021, and approved by NCDOT on February 11, 2022. According to the findings of the approved TIA, additional thru movement volumes were added to the study intersection of US 421 (Lake Park Boulevard) and Carl Winner Avenue. Approved development volumes are shown in Figure 5.

3.2 *Committed Improvements*

Committed improvements are projects planned by NCDOT, the Town of Carolina Beach or associated with a prior approved development(s) in the area but are not yet constructed. Per the approved scoping document, there are no committed improvements to be included in this study.



LEGEND	
	SIGNAL
	STOP
	ROADWAY
	TRAFFIC MOVEMENT
BLACK = EXISTING	
FRIDAY PM / SATURDAY MIDDAY PEAKS	



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FIGURE 5
APPROVED
DEVELOPMENT TRIPS

EMBASSY SUITES
CAROLINA BEACH, NC

PROJECT NUMBER 232024



4.0 Methodology

4.1 Baseline Assumptions and Standards

In general, the analysis for this project was conducted utilizing commonly accepted NCDOT standards. Table 4.1 contains a summary of the baseline assumptions.

Table 4.1 - Assumptions	
Annual Growth Rate	1%
Analysis Software	Synchro/SimTraffic
Lane Widths	12 feet
Peak Hour Factor	0.90
Truck Percentage	2%

4.2 Future No Build Volumes

The 2026 future no build traffic volumes were retained from the original TIA for this analysis. The 2026 future no build traffic volumes were computed by applying a one percent (1%) compounded annual growth rate to the 2024 existing traffic volumes and adding approved development trips. Figure 6 shows 2026 future no build traffic volumes.

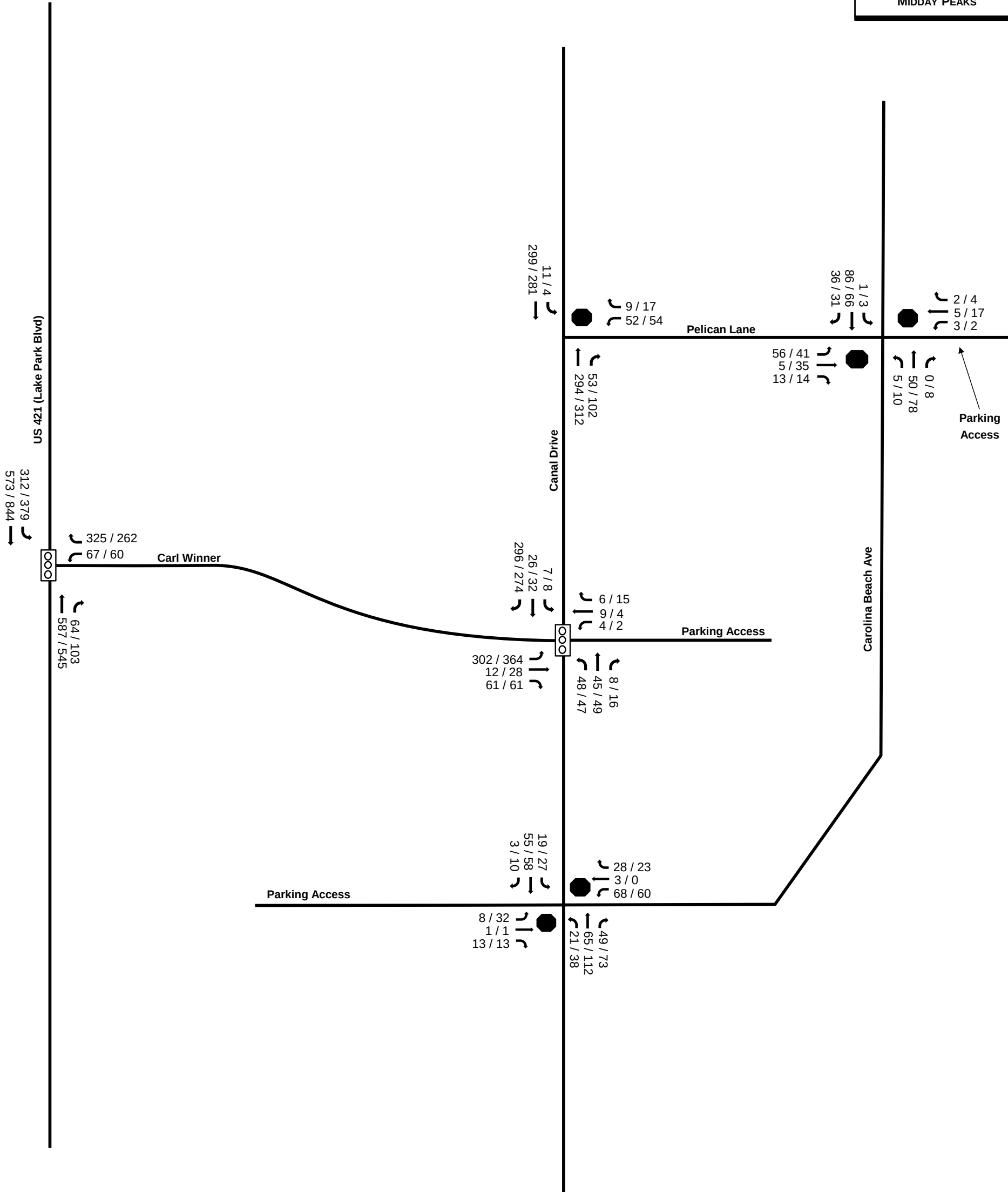
4.3 Site Access, Site Trips and Traffic Pattern

Per the conceptual site plan, the proposed hotel will connect to Carolina Beach Avenue via two (2) one-way driveways: one designated for ingress and one for egress. Similarly, the event center located on the east side will provide two (2) one-way driveways, with ingress from Carolina Beach Avenue and egress to Pelican Lane. Based on coordination with WMPO, the Town of Carolina Beach, and NCDOT, the following assumptions were established to define the scope of this study:

- a) Although the proposed hotel will relocate the existing Sea Witch Restaurant and Tiki Bar, traffic volumes associated with the Fisherman Lot will remain unchanged. This approach ensures consistency with the original analysis, facilitates performance comparison, and provides a conservative basis for evaluation.
- b) According to the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 11th Edition*, Land Use Code (LUC) 310 for hotels accounts for sleeping accommodations and supporting facilities such as full-service restaurants, cocktail lounges, meeting rooms, banquet rooms, and convention facilities. Based on the updated site plan, the proposed event center includes a ballroom, the relocated Sea Witch Restaurant and Tiki Bar, and an outdoor dining area. A separate trip generation estimate for the event center was not prepared, as the trip generation under ITE LUC 310 encompasses these uses.
- c) Although the proposed event center will remove approximately 67 parking spaces from the existing Carolina Beach parking supply, no trip reductions were applied in the future analysis scenarios to maintain consistency with the original TIA scope. Furthermore, it is anticipated that some event attendees will be hotel guests accessing the event center primarily on foot via the proposed pedestrian skybridge connecting the two facilities. Based on engineering judgment, vehicular trips exclusively associated with the event center are expected to be minimal, with negligible operational impacts. Therefore, the trip distribution assumptions from the original TIA were retained, and the two (2) one-way driveways serving the event center were not analyzed in this study.



LEGEND	
	SIGNAL
	STOP
	ROADWAY
	TRAFFIC MOVEMENT
BLACK = EXISTING	
FRIDAY PM / SATURDAY MIDDAY PEAKS	



*** NOT TO SCALE ***

** A minimum of 4 vehicles per hour is analyzed for each movement per NCDOT Congestion Management Guidelines.

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**FIGURE 6
2026 FUTURE NO
BUILD VOLUMES**

EMBASSY SUITES
CAROLINA BEACH, NC

PROJECT NUMBER 232024



4.4 Trip Generation

Per the updated site plan, the proposed hotel will include up to 140 guest rooms versus the 177 guest rooms proposed and analyzed in the original TIA. However, for the purpose of consistency and performance comparison, the original trip generation based on 177 guest rooms was retained for this analysis.

The original trip generation potential of this development, projected based on the Institute of Transportation Engineers (ITE) 11th Edition, *Trip Generation Manual* and guidance from NCDOT Congestion Management on the selection of appropriate variables, is presented in Table 4.2 for reference. It should be noted that since the original trip generation retained for this analysis is based on 177 hotel guest rooms, the results are expected to be inherently conservative.

Table 4.2 - ITE 11th Edition Trip Generation										
Average Weekday Driveway Volumes				Daily	PM Peak Hour			Saturday Midday Peak Hour		
ITE Land Use and Code	Size		Data Source	Total	Enter	Exit	Total	Enter	Exit	Total
Hotel, 310	177	Rooms	Adjacent-Equation	1,495	53	50	103	72	56	128
Total Site Trips				1,495	53	50	103	72	56	128

4.5 Trip Distribution and Assignment

Site trip distribution for this proposed development, retained from the original TIA, was based on the existing traffic patterns and engineering judgment. The trip distribution model is shown in Figure 7. The directional distribution for site trips is:

- 95% to and from the north on US 421 (Lake Park Boulevard)
- 5% to and from the south on US 421 (Lake Park Boulevard)

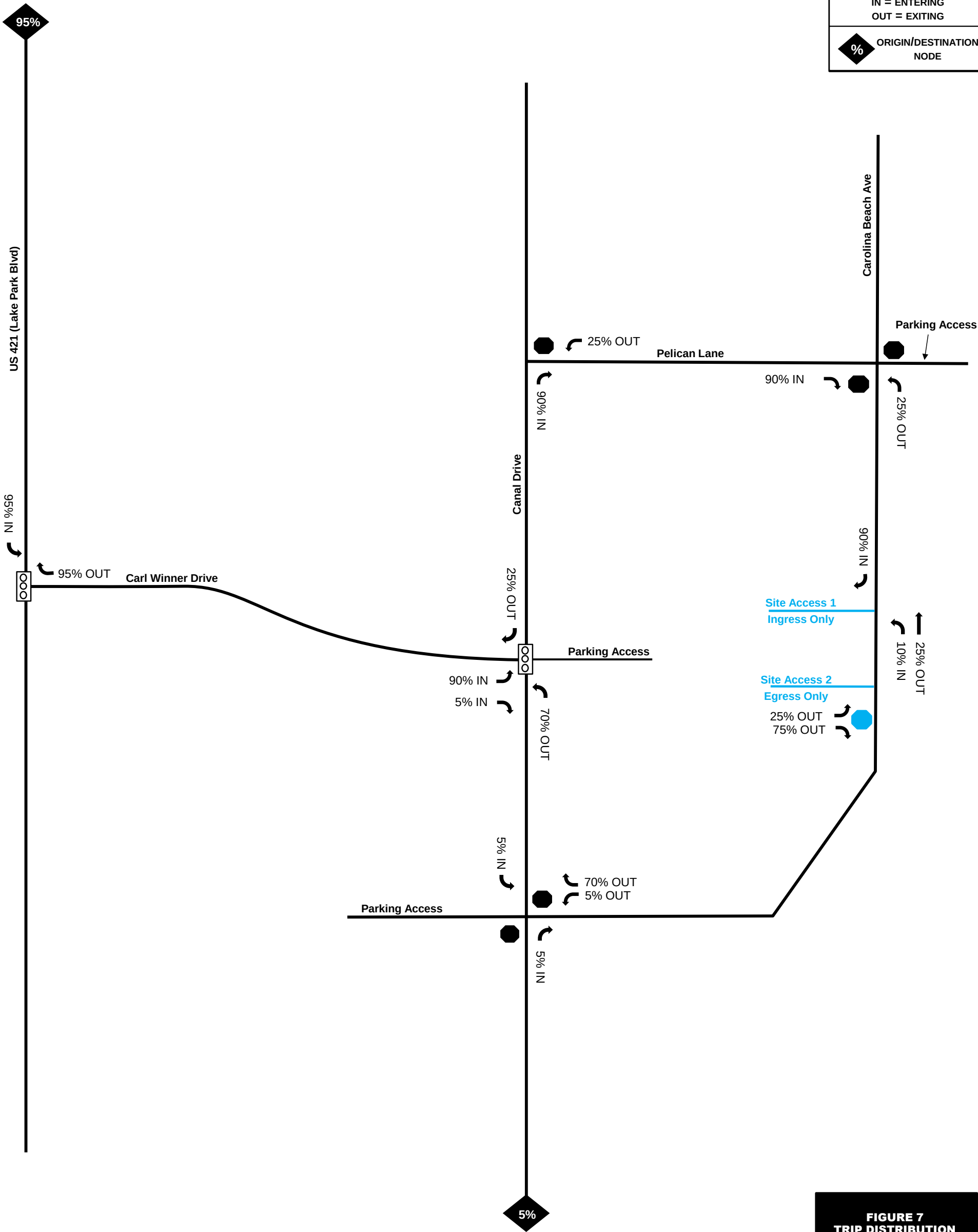
The daily distribution percentages do not have equal origins and destinations due to one-way driveway operations, and existing and future travel patterns.

4.6 Future Build Volumes

Since the updated site plan does not displace the Fisherman Lot located at the intersection of Carl Winner and Canal Drive, the 2026 future no-build trips were retained to determine the 2026 future build volumes. Site trips were added to the future no build volumes to compute the 2026 Future Build volumes. Additionally, a minimum of four vehicles per hour were assigned to all movements, per NCDOT Congestion Management standards. Site trips are shown in Figures 8, and future build volumes are shown in Figure 9.



LEGEND	
	SIGNAL
	STOP
	ROADWAY
	TRAFFIC MOVEMENT
BLACK = EXISTING BLUE = PROPOSED	
IN = ENTERING OUT = EXITING	
	ORIGIN/DESTINATION NODE



**FIGURE 7
TRIP DISTRIBUTION**

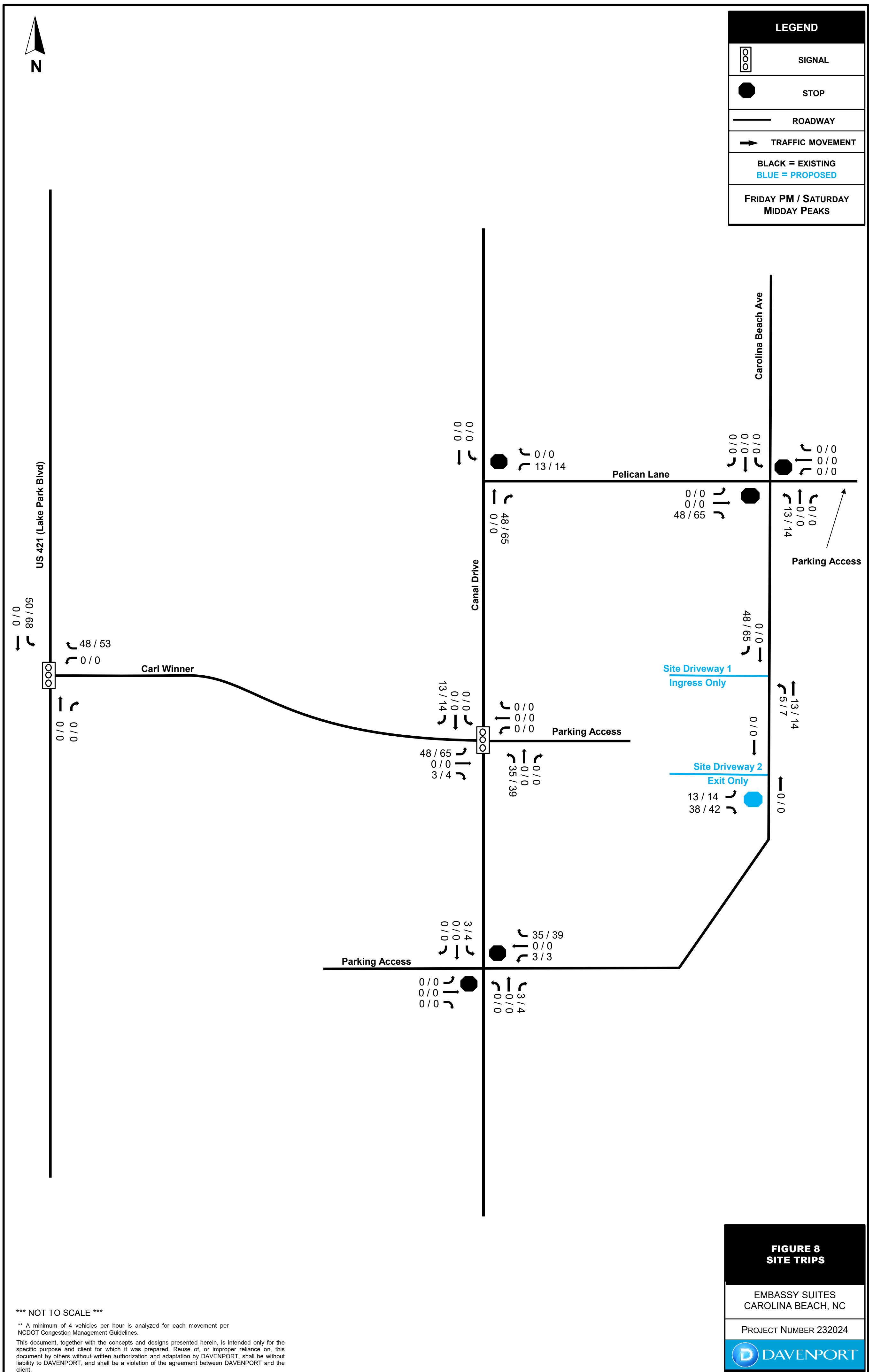
EMBASSY SUITES
CAROLINA BEACH, NC

PROJECT NUMBER 232024

DAVENPORT

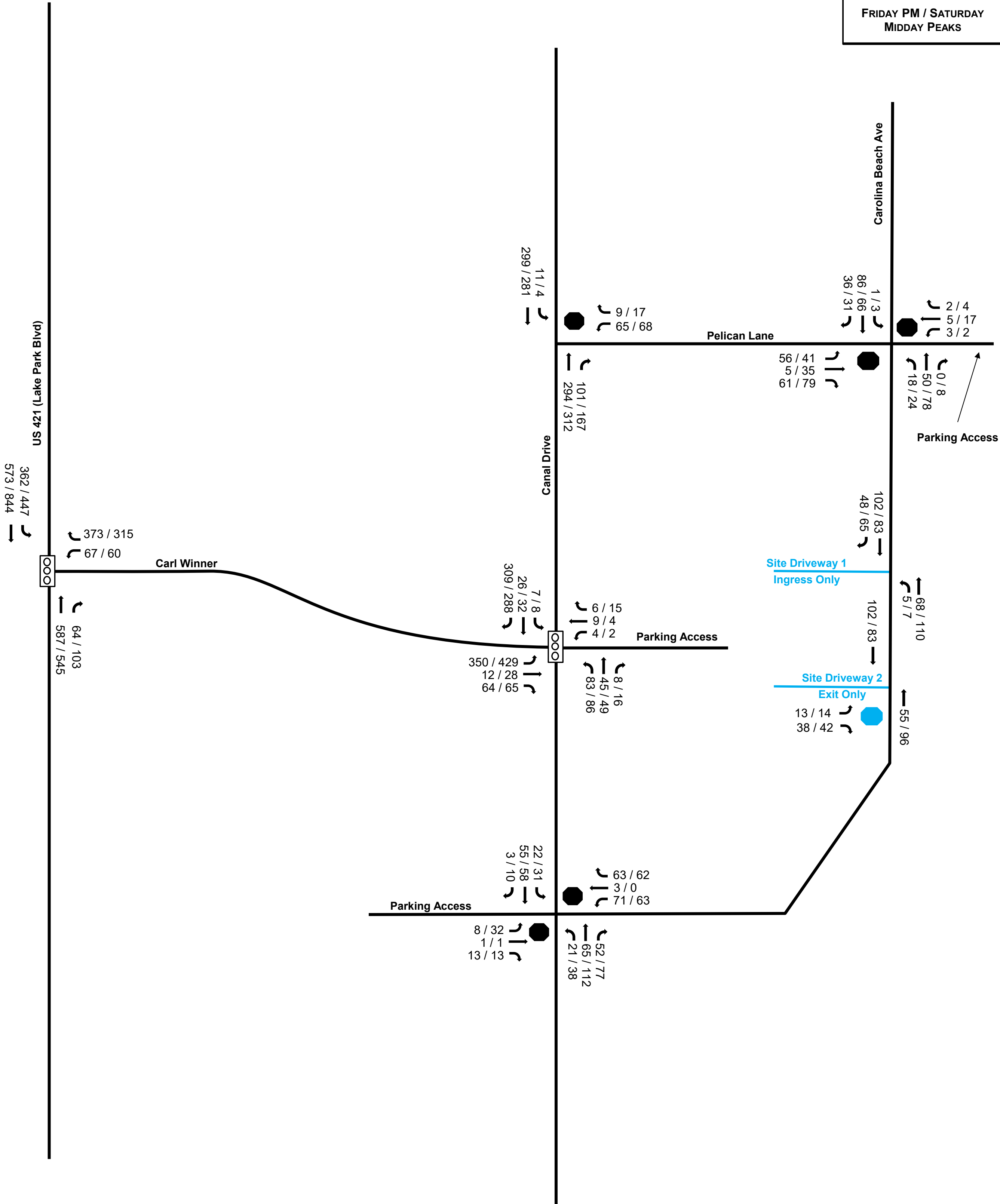
*** NOT TO SCALE ***

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LEGEND	
	SIGNAL
	STOP
	ROADWAY
	TRAFFIC MOVEMENT
BLACK = EXISTING BLUE = PROPOSED	
FRIDAY PM / SATURDAY MIDDAY PEAKS	



*** NOT TO SCALE ***

** A minimum of 4 vehicles per hour is analyzed for each movement per NCDOT Congestion Management Guidelines.

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FIGURE 9
2026 FUTURE BUILD
VOLUMES

EMBASSY SUITES
CAROLINA BEACH, NC

PROJECT NUMBER 232024



5.0 Capacity Analysis

5.1 Level of Service Evaluation Criteria

The Transportation Research Board's *Highway Capacity Manual* (HCM) utilizes the term "level of service" (LOS) to measure how traffic operates in intersections and on roadway segments. There are six levels of service ranging from A to F as shown in Table 5.1. Level of service "A" represents low-volume traffic operations and level of service "F" represents high-volume, oversaturated traffic operations. Synchro traffic modeling software is used to determine the LOS and delay for study intersections. Synchro analysis worksheet reports are provided in the Appendix.

Table 5.1 – Highway Capacity Manual			
Levels of Service and Control Delay Criteria			
Signalized Intersection		Unsignalized Intersection	
Level of Service	Control Delay Per vehicle (seconds)	Level of Service	Delay Range (seconds)
A	≤ 10	A	≤ 10
B	> 10 and ≤ 20	B	> 10 and ≤ 15
C	> 20 and ≤ 35	C	> 15 and ≤ 25
D	> 35 and ≤ 55	D	> 25 and ≤ 35
E	> 55 and ≤ 80	E	> 35 and ≤ 50
F	> 80	F	> 50

5.2 Queueing Evaluation

A queueing analysis was performed using Synchro and SimTraffic simulation, based on a minimum 10-minute seeding, a 60-minute recording period, and 10 runs. The maximum SimTraffic queues and 95th-percentile Synchro queues are provided, along with the turn lane lengths. Synchro and SimTraffic queue reports are provided in the Appendix.

5.3 Level of Service and Queueing Results

The results of the capacity and queue analyses are discussed by intersection in the following paragraphs. The LOS, delay, and queue results are summarized in Tables 5.2 to 5.8.

US 421 (N Lake Park Blvd) at Carl Winner Drive (signalized)

This signalized intersection has a very heavy southbound left turning movement (> 300 vehicles) on US 421 (Lake Park Boulevard) during Friday PM peak and Saturday Midday peak hours. The southbound left turns are presently served by a left-thru shared lane and operate with a protected plus permitted phase during signal operation. Although the *NCDOT Capacity Analysis Guidelines Standards* require that the analysis of future conditions for a signalized intersection should use either protected only or permitted only phasing for left turns, the existing permitted plus protected phasing for southbound left turns was maintained in analysis of future no build/build conditions. This was done since modelling the southbound left turns with protected only phasing in Synchro produced unrealistic results indicating an overall LOS F and more than 1,300 seconds of average delay per vehicle even in the existing conditions. This deviation from the guidelines was communicated to and approved by NCDOT during the Step 1A review.

Under existing conditions, the overall intersection operates at LOS C during the Friday PM peak hour and at LOS B during the Saturday midday peak hour under existing conditions. In future no build and build conditions, the overall intersection is expected to operate at LOS C during the Friday PM and Saturday Midday peak hours.

The results of the queueing analysis indicate that queues are contained within the available storage during existing, future no build and future build conditions. While the overall intersection operates at an acceptable LOS, the westbound approach consistently operates at LOS E during the studied peak hours during existing and future no-build/build conditions. However, the right-of-way constraints along all the approaches of this intersection do not permit any geometric improvements. Therefore, no improvements are recommended.

Table 5.2 - LOS and Queueing US 421 (Lake Park Blvd) and Carl Winner Drive (signalized)					
Scenario	Overall LOS	Level of Service per Movement & by Approach			
		Westbound		Northbound	Southbound
Friday PM Peak Hour					
2024 Existing	C (20.3)	LR*	R	TR	LT
		E (69.6)		A (4.9)	A (9.1)
		E (65.6)	E (73.7)	A (4.9)	A (9.1)
	Available Storage (ft)	Full	225	Full	Full
	95th% Queue (ft)	#246	#261	90	197
	Max Queue (ft)	217	200	118	338
2026 Future No Build	C (20.5)	LR*	R	TR	LT
		E (70.2)		A (5.1)	A (9.9)
		E (66.1)	E (74.6)	A (5.1)	A (9.9)
	Available Storage (ft)	Full	225	Full	Full
	95th% Queue (ft)	#251	#267	97	220
	Max Queue (ft)	206	205	148	315
2026 Future Build	C (24.2)	LR*	R	TR	LT
		E (78.8)		A (5.3)	B (11.7)
		E (73.1)	F (84.7)	A (5.3)	B (11.7)
	Available Storage (ft)	Full	225	Full	Full
	95th% Queue (ft)	#294	#313	97	253
	Max Queue (ft)	238	226	140	400
Saturday Midday Peak Hour					
2024 Existing	B (19.7)	LR*	R	TR	LT
		E (62.6)		A (4.6)	B (16.4)
		E (59.6)	E (65.6)	A (4.6)	B (16.4)
	Available Storage (ft)	Full	225	Full	Full
	95th% Queue (ft)	180	#196	94	#463
	Max Queue (ft)	181	179	138	442
2026 Future No Build	C (20.7)	LR*	R	TR	LT
		E (63.0)		A (4.7)	B (18.1)
		E (59.9)	E (66.2)	A (4.7)	B (18.1)
	Available Storage (ft)	Full	225	Full	Full
	95th% Queue (ft)	183	#202	97	#562
	Max Queue (ft)	168	161	140	571
2026 Future Build	C (28.5)	LR*	R	TR	LT
		E (68.0)		A (5.0)	C (28.7)
		E (63.6)	E (72.9)	A (5.0)	C (28.7)
	Available Storage (ft)	Full	225	Full	Full
	95th% Queue (ft)	#235	#255	97	#626
	Max Queue (ft)	188	184	147	867

Notes:

95th percentile volume exceeds capacity; queue may be longer.

*While the westbound left turn lane storage is shown as full length, there is approximately 450 feet to the next intersection.

While the SimTraffic results indicate queues > storage length, observation of the SimTraffic simulation does not indicate excess queues.

The increase in delay is greater than 25% compared to future no build conditions.

Carl Winner Drive at Canal Drive (signalized)

The overall intersection operates at LOS B in existing and future no build conditions in both Friday PM and Saturday mid-day peak hours. With the proposed development in place, the overall intersection is expected to continue operating at LOS B during the Friday PM peak and Saturday midday peak hours under future build conditions.

The results of the queuing analysis indicate that available storage is sufficient to contain queues except eastbound and northbound left turn lanes where queues exceed storage during Friday PM and Saturday Midday peak hours under existing and future no-build/build conditions.

It is recommended to revise the traffic signal phasing and detector layout to allow the signal to rest in the eastbound left-turn and southbound right-turn phase, accommodating the prevailing traffic patterns. Additionally, removal of pedestrian phase 6 movement is recommended to minimize potential conflicts. For the eastbound approach, it is further recommended to restripe the approach to provide a full-length left-turn storage lane and a thru-right shared lane with 100 feet of storage, along with the appropriate deceleration length and taper.

With the recommended improvements in place, the overall intersection is expected to operate at LOS B or better during Friday PM and Saturday Midday peak hours. The results of the queuing analysis indicate that the queues are expected to be contained within available storage except the eastbound thru-right lane and northbound left turn lane where the queues exceed available storage by less than two (2) car lengths. The excess queues are expected to be accommodated by their respective adjacent full length storage lanes during short-lived peak hour conditions. In addition, the right-of-way constraints along the northbound and eastbound approaches do not permit any geometric improvements. Therefore, no other improvements are recommended.

Table 5.3 - LOS and Queueing Carl Winner Drive and Canal Drive (signalized)

Scenario	Overall LOS	Level of Service per Movement & by Approach (delay in seconds/vehicle)						
		Eastbound		Westbound	Northbound		Southbound	
Friday PM Peak Hour								
2024 Existing	B (14.5)	L	TR*	LTR	L	TR	LT	R
		B (15.0)		A (8.7)	B (10.4)		B (15.4)	
		B (16.4)	A (9.2)	A (8.7)	B (10.6)	B (10.2)	B (10.1)	B (16.0)
	Available Storage (ft)	100	Full	Full	50	Full	Full	175
	95th% Queue (ft)	148	37	14	28	30	21	143
	Max Queue (ft)	162	121	37	63	57	47	161
2026 Future No Build	B (14.9)	L	TR*	LTR	L	TR	LT	R
		B (15.6)		A (9.4)	B (10.6)		B (15.7)	
		B (17.0)	A (9.8)	A (9.4)	B (10.7)	B (10.4)	B (10.2)	B (16.3)
	Available Storage (ft)	100	Full	Full	50	Full	Full	175
	95th% Queue (ft)	161	39	15	28	30	21	146
	Max Queue (ft)	159	140	46	73	73	69	165
2026 Future Build	B (16.4)	L	TR*	LTR	L	TR	LT	R
		B (17.3)		A (9.4)	B (11.6)		B (17.5)	
		B (18.9)	A (9.8)	A (9.4)	B (12.0)	B (10.9)	B (10.7)	B (18.2)
	Available Storage (ft)	100	Full	Full	50	Full	Full	175
	95th% Queue (ft)	#199	40	15	44	30	21	153
	Max Queue (ft)	149	221	38	92	96	72	175
2026 Future Build with Improvements	A (9.0)	L*	TR	LTR	L	TR	LT	R
		B (10.2)		C (21.8)	B (17.9)		A (3.1)	
		B (11.1)	A (6.1)	C (21.8)	B (18.5)	B (17.0)	B (17.1)	A (1.6)
	Available Storage (ft)	Full	100	Full	50	Full	Full	175
	95th% Queue (ft)	201	27	28	74	50	36	72
	Max Queue (ft)	215	137	48	92	95	69	112
Saturday Midday Peak Hour								
2024 Existing	B (15.5)	L	TR*	LTR	L	TR	LT	R
		B (17.4)		A (8.2)	B (11.2)		B (15.4)	
		B (17.9)	A (8.6)	A (8.1)	B (11.5)	B (11.2)	B (10.9)	B (17.7)
	Available Storage (ft)	100	Full	Full	50	Full	Full	175
	95th% Queue (ft)	180	40	15	28	36	25	133
	Max Queue (ft)	160	92	37	71	68	94	163
2026 Future No Build	B (15.8)	L	TR*	LTR	L	TR	LT	R
		B (16.3)		A (8.6)	B (11.7)		B (17.2)	
		B (18.1)	A (9.1)	A (8.6)	B (11.8)	B (11.6)	B (11.2)	B (18.1)
	Available Storage (ft)	100	Full	Full	50	Full	Full	175
	95th% Queue (ft)	#202	43	16	28	36	25	134
	Max Queue (ft)	145	152	38	62	72	173	186
2026 Future Build	B (18.4)	L	TR*	LTR	L	TR	LT	R
		C (20.3)		A (8.9)	B (12.6)		B (18.7)	
		C (22.6)	A (9.3)	A (8.9)	B (13.2)	B (11.9)	B (11.5)	B (19.8)
	Available Storage (ft)	100	Full	Full	50	Full	Full	175
	95th% Queue (ft)	#295	46	16	46	35	25	142
	Max Queue (ft)	148	176	44	80	80	225	198
2026 Future Build with Improvements	B (12.7)	L*	TR	LTR	L	TR	LT	R
		B (14.0)		C (27.4)	C (23.1)		A (4.9)	
		B (15.8)	A (5.5)	C (27.4)	C (24.0)	C (22.0)	C (21.9)	A (2.5)
	Available Storage (ft)	Full	100	Full	50	Full	Full	175
	95th% Queue (ft)	265	33	34	86	66	46	67
	Max Queue (ft)	240	149	52	93	129	65	117

Notes:

95th percentile volume exceeds capacity; queue may be longer.

**While the turn lane storage is shown as full length, there is approximately 450 feet to the next intersection.*

While the SimTraffic results indicate queues > storage length, observation of the SimTraffic simulation does not indicate excess queues.

Queues exceed available storage.

Canal Drive at Pelican Lane (unsignalized)

Under existing conditions, the minor-street approach is expected to operate at LOS C during the Friday PM peak and LOS B during the Saturday Midday peak hours. Under future no-build and build conditions, the minor-street approach is expected to operate at LOS C during both peak hours. No improvements are recommended.

Table 5.4 - LOS and Queueing Canal Drive and Pelican Lane (unsignalized)						
Scenario	*LOS of the Worst Approach	Level of Service per Movement & by Approach (delay in seconds/vehicle)				
		Westbound	Northbound		Southbound	
Friday PM Peak Hour						
2024 Existing	C (15.0) WB Approach	LR	T	R	L	T
		C (15.0)	A (0.0)		A (0.3)	
		C (15.0)	A (0.0)	A (0.0)	A (8.1)	A (0.0)
	Available Storage (ft)	Full	Full	Full	Full	Full
	95th% Queue (ft)	13	0	0	0	0
	Max Queue (ft)	64	2	2	50	50
2026 Future No Build	C (15.2) WB Approach	LR	T	R	L	T
		C (15.2)	A (0.0)		A (0.3)	
		C (15.2)	A (0.0)	A (0.0)	A (8.1)	A (0.0)
	Available Storage (ft)	Full	Full	Full	Full	Full
	95th% Queue (ft)	15	0	0	0	0
	Max Queue (ft)	66	2	2	53	53
2026 Future Build	C (16.3) WB Approach	LR	T	R	L	T
		C (16.3)	A (0.0)		A (0.3)	
		C (16.3)	A (0.0)	A (0.0)	A (8.2)	A (0.0)
	Available Storage (ft)	Full	Full	Full	Full	Full
	95th% Queue (ft)	20	0	0	0	0
	Max Queue (ft)	78	2	2	74	74
Saturday Midday Peak Hour						
2024 Existing	B (14.9) WB Approach	LR	T	R	L	T
		B (14.9)	A (0.0)		A (0.1)	
		B (14.9)	A (0.0)	A (0.0)	A (8.3)	A (0.0)
	Available Storage (ft)	Full	Full	Full	Full	Full
	95th% Queue (ft)	15	0	0	0	0
	Max Queue (ft)	64	0	0	44	44
2026 Future No Build	C (15.2) WB Approach	LR	T	R	L	T
		C (15.2)	A (0.0)		A (0.1)	
		C (15.2)	A (0.0)	A (0.0)	A (8.3)	A (0.0)
	Available Storage (ft)	Full	Full	Full	Full	Full
	95th% Queue (ft)	18	0	0	0	0
	Max Queue (ft)	67	2	2	45	45
2026 Future Build	C (16.6) WB Approach	LR	T	R	L	T
		C (16.6)	A (0.0)		A (0.1)	
		C (16.6)	A (0.0)	A (0.0)	A (8.5)	A (0.0)
	Available Storage (ft)	Full	Full	Full	Full	Full
	95th% Queue (ft)	23	0	0	0	0
	Max Queue (ft)	88	0	0	62	62

*Represents the LOS and delay for the worst unsignalized approach.

HCM 95th-percentile queue converted from vehicles to feet; assumes 1 vehicle = 25 feet.

Pelican Lane and Carolina Beach Avenue (unsignalized)

Under existing, future no build, and future build conditions, the minor-street approach is expected to operate at LOS B in the Friday PM and Saturday Midday peak hours. No improvements are recommended.

Table 5.5 - LOS and Queueing Carolina Beach Avenue and Pelican Lane (Unsignalized)									
Scenario	*LOS of the Worst Approach	Level of Service per Movement & by Approach (delay in seconds/vehicle)							
		Eastbound	Westbound	Northbound			Southbound		
Friday PM Peak Hour									
2024 Existing	B (10.2) EB Approach	LTR	LTR	L	T	R	L	T	R
		B (10.2)	A (9.7)	A (0.6)			A (0.2)		
		B (10.2)	A (9.7)	A (7.5)	A (0.0)	A (0.0)	A (7.3)	A (0.0)	A (0.0)
	Available Storage (ft)	Full	Full	Full	Full	Full	Full	Full	Full
	95th% Queue (ft)	8	3	0	0	0	0	0	0
	Max Queue (ft)	59	37	12	12	12	6	6	6
2026 Future No Build	B (10.2) EB Approach	LTR	LTR	L	T	R	L	T	R
		B (10.2)	A (9.7)	A (0.6)			A (0.2)		
		B (10.2)	A (9.7)	A (7.5)	A (0.0)	A (0.0)	A (7.3)	A (0.0)	A (0.0)
	Available Storage (ft)	Full	Full	Full	Full	Full	Full	Full	Full
	95th% Queue (ft)	10	3	0	0	0	0	0	0
	Max Queue (ft)	66	34	12	12	12	6	6	6
2026 Future Build	B (10.4) EB Approach	LTR	LTR	L	T	R	L	T	R
		B (10.4)	B (10.1)	A (1.9)			A (0.2)		
		B (10.4)	B (10.1)	A (7.5)	A (0.0)	A (0.0)	A (7.3)	A (0.0)	A (0.0)
	Available Storage (ft)	Full	Full	Full	Full	Full	Full	Full	Full
	95th% Queue (ft)	15	3	0	0	0	0	0	0
	Max Queue (ft)	67	38	31	31	31	5	5	5
Saturday Midday Peak Hour									
2024 Existing	B (10.7) EB Approach	LTR	LTR	L	T	R	L	T	R
		B (10.7)	B (10.3)	A (0.8)			A (0.3)		
		B (10.7)	B (10.3)	A (7.4)	A (0.0)	A (0.0)	A (7.4)	A (0.0)	A (0.0)
	Available Storage (ft)	Full	Full	Full	Full	Full	Full	Full	Full
	95th% Queue (ft)	13	3	0	0	0	0	0	0
	Max Queue (ft)	69	40	15	15	15	8	8	8
2026 Future No Build	B (10.7) EB Approach	LTR	LTR	L	T	R	L	T	R
		B (10.7)	B (10.4)	A (0.8)			A (0.3)		
		B (10.7)	B (10.4)	A (7.4)	A (0.0)	A (0.0)	A (7.4)	A (0.0)	A (0.0)
	Available Storage (ft)	Full	Full	Full	Full	Full	Full	Full	Full
	95th% Queue (ft)	13	3	0	0	0	0	0	0
	Max Queue (ft)	59	38	20	20	20	14	14	14
2026 Future Build	B (10.9) EB Approach	LTR	LTR	L	T	R	L	T	R
		B (10.9)	B (10.8)	A (1.6)			A (0.3)		
		B (10.9)	B (10.8)	A (7.5)	A (0.0)	A (0.0)	A (7.4)	A (0.0)	A (0.0)
	Available Storage (ft)	Full	Full	Full	Full	Full	Full	Full	Full
	95th% Queue (ft)	20	3	3	0	0	0	0	0
	Max Queue (ft)	77	40	28	28	28	3	3	3

*Represents the LOS and delay for the worst unsignalized approach.

HCM 95th-percentile queue converted from vehicles to feet; assumes 1 vehicle = 25 feet.

Canal Drive at Carolina Beach Avenue (unsignalized)

Under existing, future no build and future build conditions, the minor-street approach is expected to operate at LOS B in the Friday PM and Saturday Mid-day peak hours. No improvements are recommended.

Table 5.6- LOS and Queueing Canal Drive & Carolina Beach Ave (unsignalized)										
Scenario	*LOS of Worst Approach	Level of Service per Movement & by Approach (delay in seconds/vehicle)								
		Eastbound	Westbound		Northbound			Southbound		
Friday PM Peak Hour										
2024 Existing	B (10.2) WB Approach	LTR	L	TR	L	T	R	L	T	R
		A (9.8)	B (10.2)		A (1.2)			A (1.8)		
		A (9.8)	B (10.8)	A (9.0)	A (7.4)	A (0.0)	A (0.0)	A (7.5)	A (0.0)	A (0.0)
	Available Storage (ft)	Full	100	Full	Full	Full	125	Full	Full	Full
	95th% Queue (ft)	3	10	3	0	0	0	0	0	0
	Max Queue (ft)	35	59	50	24	24	4	32	32	32
2026 Future No Build	B (10.2) WB Approach	LTR	L	TR	L	T	R	L	T	R
		A (9.8)	B (10.2)		A (1.1)			A (1.8)		
		A (9.8)	B (10.8)	A (9.0)	A (7.4)	A (0.0)	A (0.0)	A (7.5)	A (0.0)	A (0.0)
	Available Storage (ft)	Full	100	Full	Full	Full	125	Full	Full	Full
	95th% Queue (ft)	3	10	3	0	0	0	0	0	0
	Max Queue (ft)	38	50	41	21	21	2	29	29	29
2026 Future Build	B (10.0) WB Approach	LTR	L	TR	L	T	R	L	T	R
		B (10.0)	B (10.0)		A (1.1)			A (2.0)		
		B (10.0)	B (10.9)	A (9.1)	A (7.4)	A (0.0)	A (0.0)	A (7.5)	A (0.0)	A (0.0)
	Available Storage (ft)	Full	100	Full	Full	Full	125	Full	Full	Full
	95th% Queue (ft)	3	10	8	0	0	0	3	0	0
	Max Queue (ft)	38	47	48	19	19	6	35	35	35
Saturday Midday Peak Hour										
2024 Existing	B (11.5) EB Approach	LTR	L	TR	L	T	R	L	T	R
		B (11.5)	B (11.2)		A (1.3)			A (2.1)		
		B (11.5)	B (12.0)	A (9.4)	A (7.4)	A (0.0)	A (0.0)	A (7.7)	A (0.0)	A (0.0)
	Available Storage (ft)	Full	100	Full	Full	Full	125	Full	Full	Full
	95th% Queue (ft)	8	10	3	3	0	0	3	0	0
	Max Queue (ft)	61	57	40	29	29	4	38	38	38
2026 Future No Build	B (11.6) EB Approach	LTR	L	TR	L	T	R	L	T	R
		B (11.6)	B (11.3)		A (1.3)			A (2.2)		
		B (11.6)	B (12.2)	A (9.4)	A (7.4)	A (0.0)	A (0.0)	A (7.7)	A (0.0)	A (0.0)
	Available Storage (ft)	Full	100	Full	Full	Full	125	Full	Full	Full
	95th% Queue (ft)	8	10	3	3	0	0	3	0	0
	Max Queue (ft)	59	47	33	36	36	8	38	38	38
2026 Future Build	B () EB Approach	LTR	L	TR	L	T	R	L	T	R
		B (12.2)	B (10.8)		A (1.2)			A (2.4)		
		B (12.2)	B (12.3)	A (9.4)	A (7.4)	A (0.0)	A (0.0)	A (7.7)	A (0.0)	A (0.0)
	Available Storage (ft)	Full	100	Full	Full	Full	125	Full	Full	Full
	95th% Queue (ft)	8	10	8	3	0	0	3	0	0
	Max Queue (ft)	66	49	40	37	37	2	50	50	50

*Represents the LOS and delay for the worst unsignalized approach.

HCM 95th-percentile queue converted from vehicles to feet; assumes 1 vehicle = 25 feet.

Carolina Beach Avenue and Site Access 1 (Ingress Only) (unsignalized)

Site Access 1 is proposed to be designed as an ingress only driveway on Carolina Beach Avenue located approximately 120 feet south of Pelican lane. The northbound approach is expected to operate at LOS A during Friday PM and Saturday Midday peak hours.

This intersection was analyzed using the Division 3 methodology for the turn lane warrant nomograph from the NCDOT *Policy on Street and Driveway Access to North Carolina Highways*. The southbound right turn plotted above the curve for storage or taper for the Friday PM and Saturday Mid-day peaks. Turn warrant nomograph figures are included in the Appendix.

Although the turn lane warrant results for southbound right turns plotted above the curve, due to low speeds (posted speed limit less than 25 mph), less than 4,000 AADT and right of way constraints along Carolina Beach Avenue, a southbound right turn lane is not recommended.

It is recommended to design the site driveway according to applicable local standards. No additional improvements are recommended.

Table 5.7 - LOS and Queueing Carolina Beach Avenue and Site Access 1 (Unsignalized)			
Scenario	*LOS of the Worst Approach	Level of Service per Movement & by Approach (delay in seconds/vehicle)	
		Northbound	Southbound
Friday PM Peak Hour			
2026 Future Build	A (0.6) NB Approach	LT	TR
		A (0.6)	A (0.0)
		A (0.6)	A (0.0)
	Available Storage (ft)	Full	Full
	95th% Queue (ft)	0	0
	Max Queue (ft)	22	0
Saturday Midday Peak Hour			
2026 Future Build	A (0.5) NB Approach	LT	TR
		A (0.5)	A (0.0)
		A (0.5)	A (0.0)
	Available Storage (ft)	Full	Full
	95th% Queue (ft)	0	0
	Max Queue (ft)	12	0

**Represents the LOS and delay for the worst unsignalized approach.*

Due to the limitation of HCM 6th Edition methodology, HCM 2000 results were reported for this intersection. HCM 95th-percentile queue converted from vehicles to feet; assumes 1 vehicle = 25 feet.

Carolina Beach Avenue and Site Access 2 (Egress Only) (unsignalized)

Site Access 1 is proposed to be designed as an egress only driveway on Carolina Beach Avenue located approximately 175 feet south of Pelican lane. The eastbound site access approach is expected to operate at LOS A during Friday PM and Saturday Middy peak hours.

It is recommended to design site access according to the applicable local standards. No additional improvements are recommended.

Table 5.8 - LOS and Queueing Carolina Beach Avenue and Site Access 2 (Unsignalized)				
Scenario	*LOS of the Worst Approach	Level of Service per Movement & by Approach (delay in seconds/vehicle)		
		Eastbound	Northbound	Southbound
Friday PM Peak Hour				
2026 Future Build	A (9.2) EB Approach	LR	T	T
		A (9.2)	A (0.0)	A (0.0)
		A (9.2)	A (0.0)	A (0.0)
	Available Storage (ft)	Full	Full	Full
	95th% Queue (ft)	5	0	0
	Max Queue (ft)	54	0	0
Saturday Middy Peak Hour				
2026 Future Build	A (9.2) EB Approach	LT		TR
		A (9.2)	A (0.0)	A (0.0)
		A (9.2)	A (0.0)	A (0.0)
	Available Storage (ft)	Full	Full	Full
	95th% Queue (ft)	5	0	0
	Max Queue (ft)	59	0	0

**Represents the LOS and delay for the worst unsignalized approach.*

HCM 95th-percentile queue converted from vehicles to feet; assumes 1 vehicle = 25 feet.

6.0 Summary and Conclusion

The Embassy Suites Hotel commercial development is located in the southwest and southeast quadrants of the intersection of Carolina Beach Avenue and Pelican Lane in the Town of Carolina Beach, NC. Originally, the proposed development consisted of a hotel with up to 177 guest rooms. A Transportation Impact Analysis (TIA) was prepared and submitted dated December 13th, 2024. Since then, the site plan has been revised, and the Town of Carolina Beach has requested a supplement to the TIA reflecting the updated site plan. The updated site plan includes a hotel on the west side, with up to 140 guest rooms, and an event center on the east side of Carolina Beach Avenue. The development will retain the originally proposed connection with Carolina Beach Avenue using two (2) one-way driveways, one ingress and one egress. The expected build-out year for this development is 2026. Information regarding the property was provided by Embassy Suites by Hilton Wilmington Riverfront.

The supplemental Transportation Impact Analysis (TIA) was performed based on the scope agreed upon with Town of Carolina Beach, NCDOT and the WMPO. The original trip generation potential of this site (based on 177 guest rooms), 1,495 daily trips with 103 trips in the Friday PM peak hour and 128 trips in the Saturday mid-day peak hour, was retained for this analysis. It should be noted that since the original trip generation retained for this analysis is based on 177 hotel guest rooms where no reduction to site trips was considered, therefore the impact results of the study are inherently conservative.

In conclusion, this study has determined the potential traffic impact of this development and revisions to the existing signal operations are recommended. Table 6.1 summarizes the recommended improvements, which are also reflected in Figure 10. With the recommended improvements in place, the anticipated transportation impact of the proposed development will be addressed.

Table 6.1 – Recommended Improvements	
INTERSECTION	RECOMMENDATIONS
US 421 (N Lake Park Blvd) and Carl Winner Drive	No improvements are recommended.
Carl Winner Drive and Canal Drive	- Restripe the eastbound approach to provide full length storage left turn lane and a thru-right turn lane with 100 feet of storage plus appropriate deceleration and taper. - Revise the signal plan to accommodate the dominant traffic pattern.
Canal Drive and Pelican Lane	No improvements are recommended
Pelican Lane and Carolina Beach Avenue	No improvements are recommended.
Pelican Lane and Carolina Beach Avenue	No improvements are recommended.
Carolina Beach Avenue and Site Access 1	Design site driveway according to applicable local standards.
Carolina Beach Avenue and Site Access 2	Design site driveway according to the applicable local standards.



LEGEND	
	SIGNAL
	STOP
	ROADWAY
	TRAFFIC MOVEMENT
BLACK = EXISTING	
BLUE = PROPOSED	

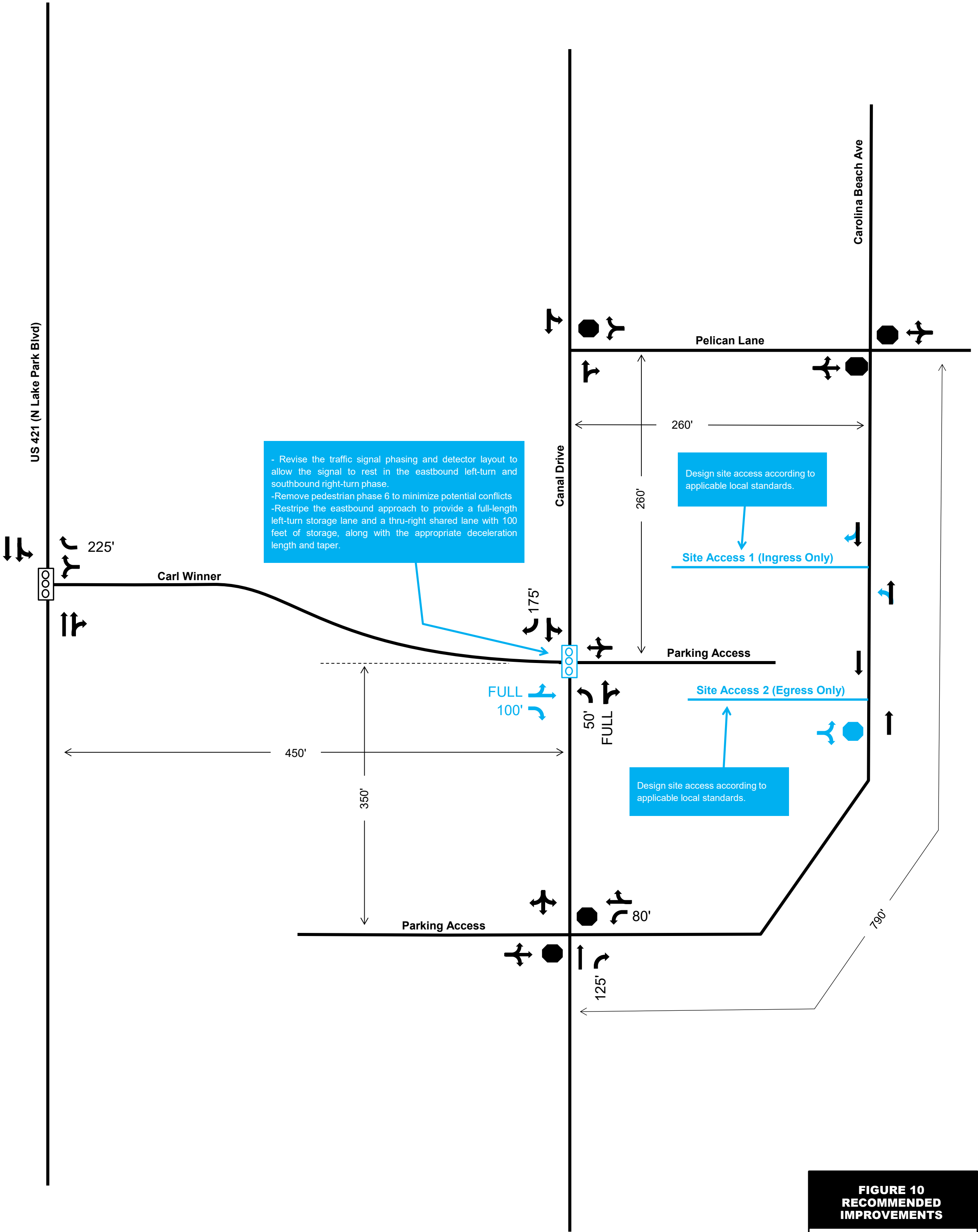


FIGURE 10
RECOMMENDED
IMPROVEMENTS

EMBASSY SUITES
CAROLINA BEACH, NC

PROJECT NUMBER 232024



*** NOT TO SCALE ***

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Appendix

Approved Scoping Documents

Sherry Shafique

From: Caitlin Cerza <Caitlin.Cerza@wilmingtonnc.gov>
Sent: Thursday, August 28, 2025 9:13 AM
To: Don Bennett; Abby Lorenzo
Cc: Erin Govea; Sherry Shafique; Ben Hughes; Bryce Cox; Stoney Mathis; Jeremy Hardison
Subject: RE: Carolina Beach Embassy - request for consensus and time on schedule. DAVENPORT project 232024

Good morning, Don,

As discussed yesterday at the development review meeting, we agree with proceeding with the proposed scope and assumptions below from your email sent to us on 8/14/25. Please let me know if you have any additional questions.

Thank you,

Caitlin M. Cerza

Transportation Planning Engineer

Wilmington Urban Area Metropolitan Planning Organization

 910-473-5130
 Caitlin.Cerza@WilmingtonNC.gov
 <https://www.wmpo.org/>
 525 N. 4th St., Wilmington, NC 28401



From: Caitlin Cerza
Sent: Monday, August 18, 2025 11:18 AM
To: Don Bennett <DBennett@davenportworld.com>; Abby Lorenzo <Abigail.Lorenzo@wilmingtonnc.gov>
Cc: Erin Govea <EGovea@davenportworld.com>; Sherry Shafique <sshafique@davenportworld.com>; Ben Hughes <bthughes@ncdot.gov>; Bryce Cox <bacox2@ncdot.gov>; Stoney Mathis <sdmathis@ncdot.gov>; Jeremy Hardison <jeremy.hardison@carolinabeach.org>
Subject: RE: Carolina Beach Embassy - request for consensus and time on schedule. DAVENPORT project 232024

I will have this as the first agenda item for next week (8/27) at 9:05am. I will send the invite shortly.

Thank you,

Caitlin M. Cerza

Transportation Planning Engineer

Wilmington Urban Area Metropolitan Planning Organization

 910-473-5130
 Caitlin.Cerza@WilmingtonNC.gov
 <https://www.wmpo.org/>
 525 N. 4th St., Wilmington, NC 28401



From: Don Bennett <DBennett@davenportworld.com>

Sent: Monday, August 18, 2025 8:50 AM

To: Caitlin Cerza <Caitlin.Cerza@wilmingtonnc.gov>; Abby Lorenzo <Abigail.Lorenzo@wilmingtonnc.gov>

Cc: Erin Govea <EGovea@davenportworld.com>; Sherry Shafique <sshafique@davenportworld.com>; Ben Hughes <bthughes@ncdot.gov>; Bryce Cox <bacox2@ncdot.gov>; Stoney Mathis <sdmathis@ncdot.gov>; Jeremy Hardison <jeremy.hardison@carolinabeach.org>

Subject: RE: Carolina Beach Embassy - request for consensus and time on schedule. DAVENPORT project 232024

Thank you, Caitlin. Please advise which time slot we will have on this.



Don Bennett, PE | Senior Transportation Engineer
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From: Caitlin Cerza <Caitlin.Cerza@wilmingtonnc.gov>

Sent: Monday, August 18, 2025 8:31 AM

To: Don Bennett <DBennett@davenportworld.com>; Abby Lorenzo <Abigail.Lorenzo@wilmingtonnc.gov>

Cc: Erin Govea <EGovea@davenportworld.com>; Sherry Shafique <sshafique@davenportworld.com>; Ben Hughes <bthughes@ncdot.gov>; Bryce Cox <bacox2@ncdot.gov>; Stoney Mathis <sdmathis@ncdot.gov>; Jeremy Hardison <jeremy.hardison@carolinabeach.org>

Subject: RE: Carolina Beach Embassy - request for consensus and time on schedule. DAVENPORT project 232024

Hi Don,

Can we have you on our call next Wednesday, 8/27 just so NCDOT, ToCB, and the WMPO has time to review the information below? We have a full agenda for this upcoming Wednesday and it may be better to approach this one first thing at the next meeting. If we have any questions before the call, I'll reach out to you.

Thank you,

Caitlin M. Cerza

Transportation Planning Engineer

Wilmington Urban Area Metropolitan Planning Organization



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From: Don Bennett <DBennett@davenportworld.com>

Sent: Thursday, August 14, 2025 11:12 AM

To: Caitlin Cerza <Caitlin.Cerza@wilmingtonnc.gov>; Abby Lorenzo <Abigail.Lorenzo@wilmingtonnc.gov>

Cc: Erin Govea <EGovea@davenportworld.com>; Sherry Shafique <sshafique@davenportworld.com>; Ben Hughes <bthughes@ncdot.gov>; Bryce Cox <bacox2@ncdot.gov>; Stoney Mathis <sdmathis@ncdot.gov>; Jeremy Hardison <jeremy.hardison@carolinabeach.org>

Subject: Carolina Beach Embassy - request for consensus and time on schedule. DAVENPORT project 232024

Caitlin,

I just received a call from the client indicating that additional study has been requested as a supplement to the preliminarily approved TIA. May I please request time on the 8/19 or 8/26 meeting as appropriate and confirm the assumptions below?

For purposed of outlining a proposed supplement to the TIA may I request the following for discussion in the meeting:

- Provide a supplement to the preliminarily approved signed and sealed TIA reflecting an access scenario 3 with full build analysis and reporting table compared to prior no-build results.
- Utilize the prior data collection to keep the comparison for this revised site plan as consistent with the prior effort.
- Retain 2026 build year for consistent comparison to the original evaluations.
- Updated site plan, but retain original hotel room trip generation for consistency with prior study. We understand that the Sea Witch and Sea Witch Tiki Bar will be relocated to the event center on the beach side of Carolina Beach Ave. for no net increase in trips related to that use.
- Distributions will be retained as shown in Figure 7 where trips are routed to and from the proposed site driveways to the west side of Carolina Beach Ave.
- Counts from the existing surface lot at Canal/Carl Winner will be reinserted into the build analysis at locations where they were adjusted via Figure 8A of the sealed TIA.

We're providing an addendum to the client for the additional analysis and reporting to address the Town's concerns and need to understand the scope of the product needed to get the prior study updated to reflect the third access scenario. I included Abby as she signed the original approved scope.



Don Bennett, PE | Senior Transportation Engineer

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Capacity Analysis Synchro Worksheets

Existing Conditions

Lanes, Volumes, Timings

100: US 421 (N Lake Park Blvd) & Carl Winner Drive

11/28/2024



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	66	319	551	63	306	543
Future Volume (vph)	66	319	551	63	306	543
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11
Storage Length (ft)	0	225		0	0	
Storage Lanes	1	1		0	0	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	0.95	0.95	0.95	0.95	0.95
Frt	0.900	0.850	0.985			
Flt Protected	0.984					0.982
Satd. Flow (prot)	1595	1454	3370	0	0	3360
Flt Permitted	0.984					0.602
Satd. Flow (perm)	1595	1454	3370	0	0	2060
Right Turn on Red		No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	25		25			25
Link Distance (ft)	511		1122			1204
Travel Time (s)	13.9		30.6			32.8
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	73	354	612	70	340	603
Shared Lane Traffic (%)		41%				
Lane Group Flow (vph)	218	209	682	0	0	943
Turn Type	Perm	Perm	NA		pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	4	4			6	
Detector Phase	4	4	2		1	6
Switch Phase						
Minimum Initial (s)	7.0	7.0	10.0		7.0	10.0
Minimum Split (s)	22.9	22.9	19.9		12.3	15.3
Total Split (s)	23.0	23.0	42.0		35.0	77.0
Total Split (%)	23.0%	23.0%	42.0%		35.0%	77.0%
Maximum Green (s)	18.1	18.1	37.1		29.7	71.7
Yellow Time (s)	3.0	3.0	3.2		3.0	3.2
All-Red Time (s)	1.9	1.9	1.7		2.3	2.1
Lost Time Adjust (s)	0.1	0.1	0.1			-0.3
Total Lost Time (s)	5.0	5.0	5.0			5.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	2.0	2.0	3.0		3.0	3.0
Recall Mode	None	None	C-Max		None	C-Max
Walk Time (s)	7.0	7.0	7.0			
Flash Dont Walk (s)	11.0	11.0	8.0			
Pedestrian Calls (#/hr)	0	0	0			
Act Effect Green (s)	16.6	16.6	73.4			73.4
Actuated g/C Ratio	0.17	0.17	0.73			0.73
v/c Ratio	0.83	0.87	0.28			0.62
Control Delay	65.6	73.7	4.9			9.1
Queue Delay	0.0	0.0	0.0			0.0

Lanes, Volumes, Timings

100: US 421 (N Lake Park Blvd) & Carl Winner Drive

11/28/2024



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Total Delay	65.6	73.7	4.9			9.1
LOS	E	E	A			A
Approach Delay	69.6		4.9			9.1
Approach LOS	E		A			A
Queue Length 50th (ft)	133	135	68			140
Queue Length 95th (ft)	#246	#261	90			197
Internal Link Dist (ft)	431		1042			1124
Turn Bay Length (ft)		225				
Base Capacity (vph)	287	261	2474			1513
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	0.76	0.80	0.28			0.62

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 10 (10%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 20.3

Intersection LOS: C

Intersection Capacity Utilization 63.8%

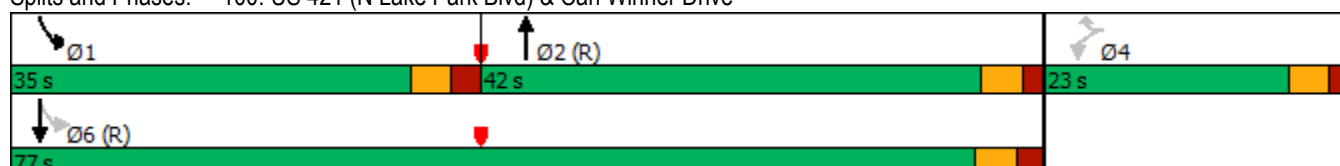
ICU Level of Service B

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 100: US 421 (N Lake Park Blvd) & Carl Winner Drive



Lanes, Volumes, Timings
200: Canal Drive & Carolina Beach Ave

11/28/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	4	13	67	4	27	21	64	48	19	54	4
Future Volume (vph)	8	4	13	67	4	27	21	64	48	19	54	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	100		0	0		125	0		0
Storage Lanes	0		0	1		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.930			0.868				0.850		0.994	
Flt Protected		0.984		0.950				0.988			0.988	
Satd. Flow (prot)	0	1705	0	1770	1617	0	0	1840	1583	0	1829	0
Flt Permitted		0.984		0.950				0.988			0.988	
Satd. Flow (perm)	0	1705	0	1770	1617	0	0	1840	1583	0	1829	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1075			857			1197			380	
Travel Time (s)		29.3			23.4			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)	9	4	14	74	4	30	23	71	53	21	60	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	27	0	74	34	0	0	94	53	0	85	0
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	27.1%						ICU Level of Service A					
Analysis Period (min)	15											

HCM 6th TWSC
200: Canal Drive & Carolina Beach Ave

11/28/2024

Intersection												
Int Delay, s/veh	4.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	4	13	67	4	27	21	64	48	19	54	4
Future Vol, veh/h	8	4	13	67	4	27	21	64	48	19	54	4
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	-	-	-	-	125	-	-	-
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	9	4	14	74	4	30	23	71	53	21	60	4
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	265	274	62	230	223	71	64	0	0	124	0	0
Stage 1	104	104	-	117	117	-	-	-	-	-	-	-
Stage 2	161	170	-	113	106	-	-	-	-	-	-	-
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	688	633	1003	725	676	991	1538	-	-	1463	-	-
Stage 1	902	809	-	888	799	-	-	-	-	-	-	-
Stage 2	841	758	-	892	807	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	648	613	1003	694	655	991	1538	-	-	1463	-	-
Mov Cap-2 Maneuver	648	613	-	694	655	-	-	-	-	-	-	-
Stage 1	888	797	-	874	786	-	-	-	-	-	-	-
Stage 2	798	746	-	861	795	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	9.8		10.2		1.2		1.8					
HCM LOS	A		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR					
Capacity (veh/h)	1538	-	-	785 694 929	1463	-	-					
HCM Lane V/C Ratio	0.015	-	-	0.035 0.107 0.037	0.014	-	-					
HCM Control Delay (s)	7.4	0	-	9.8 10.8 9	7.5	0	-					
HCM Lane LOS	A	A	-	A B A	A	A	-					
HCM 95th %tile Q(veh)	0	-	-	0.1 0.4 0.1	0	-	-					

Lanes, Volumes, Timings
300: Canal Drive & Carl Winner Drive

11/28/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	296	12	60	4	9	6	47	44	8	7	25	290
Future Volume (vph)	296	12	60	4	9	6	47	44	8	7	25	290
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	50		0	0		175
Storage Lanes	1		0	0		0	1		0	0		1
Taper Length (ft)	50			25			50			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.874			0.955			0.977				0.850
Flt Protected	0.950				0.991		0.950				0.989	
Satd. Flow (prot)	1770	1628	0	0	1763	0	1770	1820	0	0	1842	1583
Flt Permitted	0.744				0.957		0.734				0.947	
Satd. Flow (perm)	1386	1628	0	0	1702	0	1367	1820	0	0	1764	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		511			1264			380			292	
Travel Time (s)		13.9			34.5			10.4			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)	329	13	67	4	10	7	52	49	9	8	28	322
Shared Lane Traffic (%)												
Lane Group Flow (vph)	329	80	0	0	21	0	52	58	0	0	36	322
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Detector Phase	4	4		8	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	28.0	28.0		28.0	28.0		28.0	28.0		28.0	28.0	28.0
Total Split (s)	29.0	29.0		29.0	29.0		29.0	29.0		29.0	29.0	29.0
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	50.0%
Maximum Green (s)	23.0	23.0		23.0	23.0		23.0	23.0		23.0	23.0	23.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0			-1.0		-1.0	-1.0			-1.0	-1.0
Total Lost Time (s)	5.0	5.0			5.0		5.0	5.0			5.0	5.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0		15.0	15.0		15.0	15.0	15.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		45.0	45.0		45.0	45.0	45.0
Recall Mode	None	None		None	None		Min	Min		Min	Min	Min
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	15.0	15.0		15.0	15.0		15.0	15.0		15.0	15.0	15.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	0
Act Effect Green (s)	15.7	15.7			15.7		14.6	14.6			14.6	14.6
Actuated g/C Ratio	0.38	0.38			0.38		0.36	0.36			0.36	0.36
v/c Ratio	0.62	0.13			0.03		0.11	0.09			0.06	0.57

Lanes, Volumes, Timings

300: Canal Drive & Carl Winner Drive

11/28/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	16.4	9.2			8.7		10.6	10.2			10.1	16.0
Queue Delay	0.0	0.0			0.0		0.0	0.0			0.0	0.0
Total Delay	16.4	9.2			8.7		10.6	10.2			10.1	16.0
LOS	B	A			A		B	B			B	B
Approach Delay		15.0			8.7			10.4			15.4	
Approach LOS		B			A			B			B	
Queue Length 50th (ft)	51	10			3		7	8			5	54
Queue Length 95th (ft)	148	37			14		28	30			21	143
Internal Link Dist (ft)		431			1184			300			212	
Turn Bay Length (ft)	100						50					175
Base Capacity (vph)	854	1003			1049		842	1122			1087	975
Starvation Cap Reductn	0	0			0		0	0			0	0
Spillback Cap Reductn	0	0			0		0	0			0	0
Storage Cap Reductn	0	0			0		0	0			0	0
Reduced v/c Ratio	0.39	0.08			0.02		0.06	0.05			0.03	0.33

Intersection Summary

Area Type: Other

Cycle Length: 58

Actuated Cycle Length: 40.8

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.62

Intersection Signal Delay: 14.5

Intersection LOS: B

Intersection Capacity Utilization 40.7%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 300: Canal Drive & Carl Winner Drive

 Ø2	 Ø4
29 s	29 s
 Ø6	 Ø8
29 s	29 s

Lanes, Volumes, Timings
400: Canal Drive & Pelican Lane

11/28/2024

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	51	9	288	52	11	293
Future Volume (vph)	51	9	288	52	11	293
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.980		0.979			
Flt Protected	0.959					0.998
Satd. Flow (prot)	1751	0	1824	0	0	1859
Flt Permitted	0.959					0.998
Satd. Flow (perm)	1751	0	1824	0	0	1859
Link Speed (mph)	25		25			25
Link Distance (ft)	287		292			1065
Travel Time (s)	7.8		8.0			29.0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	57	10	320	58	12	326
Shared Lane Traffic (%)						
Lane Group Flow (vph)	67	0	378	0	0	338
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	34.4%			ICU Level of Service A		
Analysis Period (min)	15					

HCM 6th TWSC
400: Canal Drive & Pelican Lane

11/28/2024

Intersection

Int Delay, s/veh 1.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	51	9	288	52	11	293
Future Vol, veh/h	51	9	288	52	11	293
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	57	10	320	58	12	326

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	699	349	0
Stage 1	349	-	-
Stage 2	350	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	406	694	-
Stage 1	714	-	-
Stage 2	713	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	401	694	-
Mov Cap-2 Maneuver	401	-	-
Stage 1	714	-	-
Stage 2	704	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15	0	0.3
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	428	1180
HCM Lane V/C Ratio	-	-	0.156	0.01
HCM Control Delay (s)	-	-	15	8.1
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	0.5	0

Lanes, Volumes, Timings
500: Carolina Beach Ave & Pelican Lane

11/28/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	5	13	4	5	4	5	49	4	4	84	35
Future Volume (vph)	55	5	13	4	5	4	5	49	4	4	84	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.977			0.961			0.992			0.961	
Flt Protected		0.964			0.986			0.995			0.999	
Satd. Flow (prot)	0	1754	0	0	1765	0	0	1839	0	0	1788	0
Flt Permitted		0.964			0.986			0.995			0.999	
Satd. Flow (perm)	0	1754	0	0	1765	0	0	1839	0	0	1788	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		287			1208			857			1123	
Travel Time (s)		7.8			32.9			23.4			30.6	
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)	61	6	14	4	6	4	6	54	4	4	93	39
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	81	0	0	14	0	0	64	0	0	136	0
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	23.1%						ICU Level of Service A					
Analysis Period (min)	15											

HCM 6th TWSC
500: Carolina Beach Ave & Pelican Lane

11/28/2024

Intersection												
Int Delay, s/veh	3.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	55	5	13	4	5	4	5	49	4	4	84	35
Future Vol, veh/h	55	5	13	4	5	4	5	49	4	4	84	35
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	-	-	-	-	-	-	-	-	-	-	-	-
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	61	6	14	4	6	4	6	54	4	4	93	39

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	194	191	113	199	208	56	132	0	0	58	0	0
Stage 1	121	121	-	68	68	-	-	-	-	-	-	-
Stage 2	73	70	-	131	140	-	-	-	-	-	-	-
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	704	940	760	689	1011	1453	-	-	1546	-	-
Stage 1	883	796	-	942	838	-	-	-	-	-	-	-
Stage 2	937	837	-	873	781	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	753	699	940	739	684	1011	1453	-	-	1546	-	-
Mov Cap-2 Maneuver	753	699	-	739	684	-	-	-	-	-	-	-
Stage 1	879	794	-	938	835	-	-	-	-	-	-	-
Stage 2	923	834	-	851	779	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	10.2		9.7		0.6		0.2	
HCM LOS	B		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1453	-	-	776	779	1546	-
HCM Lane V/C Ratio	0.004	-	-	0.105	0.019	0.003	-
HCM Control Delay (s)	7.5	0	-	10.2	9.7	7.3	0
HCM Lane LOS	A	A	-	B	A	A	A
HCM 95th %tile Q(veh)	0	-	-	0.3	0.1	0	-

Lanes, Volumes, Timings

100: US 421 (N Lake Park Blvd) & Carl Winner Drive

12/02/2024

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	59	257	534	101	372	827
Future Volume (vph)	59	257	534	101	372	827
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11
Storage Length (ft)	0	225		0	0	
Storage Lanes	1	1		0	0	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	0.95	0.95	0.95	0.95	0.95
Frt	0.905	0.850	0.976			
Flt Protected	0.982					0.985
Satd. Flow (prot)	1600	1454	3339	0	0	3370
Flt Permitted	0.982					0.613
Satd. Flow (perm)	1600	1454	3339	0	0	2097
Right Turn on Red		No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	25		25			25
Link Distance (ft)	511		1122			1120
Travel Time (s)	13.9		30.6			30.5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	66	286	593	112	413	919
Shared Lane Traffic (%)		40%				
Lane Group Flow (vph)	180	172	705	0	0	1332
Turn Type	Perm	Perm	NA		pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	4	4			6	
Detector Phase	4	4	2		1	6
Switch Phase						
Minimum Initial (s)	7.0	7.0	10.0		7.0	10.0
Minimum Split (s)	22.9	22.9	19.9		12.3	15.3
Total Split (s)	23.0	23.0	52.0		25.0	77.0
Total Split (%)	23.0%	23.0%	52.0%		25.0%	77.0%
Maximum Green (s)	18.1	18.1	47.1		19.7	71.7
Yellow Time (s)	3.0	3.0	3.2		3.0	3.2
All-Red Time (s)	1.9	1.9	1.7		2.3	2.1
Lost Time Adjust (s)	0.1	0.1	0.1			-0.3
Total Lost Time (s)	5.0	5.0	5.0			5.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?						
Vehicle Extension (s)	2.0	2.0	3.0		3.0	3.0
Recall Mode	None	None	C-Max		None	C-Max
Walk Time (s)	7.0	7.0	7.0			
Flash Dont Walk (s)	11.0	11.0	8.0			
Pedestrian Calls (#/hr)	0	0	0			
Act Effect Green (s)	15.0	15.0	75.0			75.0
Actuated g/C Ratio	0.15	0.15	0.75			0.75
v/c Ratio	0.75	0.79	0.28			0.85
Control Delay	59.6	65.6	4.6			16.4
Queue Delay	0.0	0.0	0.0			0.0

Lanes, Volumes, Timings

100: US 421 (N Lake Park Blvd) & Carl Winner Drive

12/02/2024



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Total Delay	59.6	65.6	4.6			16.4
LOS	E	E	A			B
Approach Delay	62.6		4.6			16.4
Approach LOS	E		A			B
Queue Length 50th (ft)	110	110	66			270
Queue Length 95th (ft)	180	#196	94			#463
Internal Link Dist (ft)	431		1042			1040
Turn Bay Length (ft)		225				
Base Capacity (vph)	288	261	2504			1572
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	0.63	0.66	0.28			0.85

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 85 (85%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 19.7

Intersection LOS: B

Intersection Capacity Utilization 72.7%

ICU Level of Service C

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 100: US 421 (N Lake Park Blvd) & Carl Winner Drive



Lanes, Volumes, Timings
200: Canal Drive & Carolina Beach Ave

12/02/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↗	↖			↗	↖		↕	
Traffic Volume (vph)	31	4	13	59	4	23	37	110	72	26	57	10
Future Volume (vph)	31	4	13	59	4	23	37	110	72	26	57	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	100		0	0		125	0		0
Storage Lanes	0		0	1		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.964			0.870				0.850		0.986	
Flt Protected		0.968		0.950				0.988			0.986	
Satd. Flow (prot)	0	1738	0	1770	1621	0	0	1840	1583	0	1811	0
Flt Permitted		0.968		0.950				0.988			0.986	
Satd. Flow (perm)	0	1738	0	1770	1621	0	0	1840	1583	0	1811	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1221			862			1191			380	
Travel Time (s)		33.3			23.5			32.5			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)	34	4	14	66	4	26	41	122	80	29	63	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	52	0	66	30	0	0	163	80	0	103	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 27.8% ICU Level of Service A

Analysis Period (min) 15

HCM 6th TWSC
200: Canal Drive & Carolina Beach Ave

12/02/2024

Intersection												
Int Delay, s/veh	4.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	31	4	13	59	4	23	37	110	72	26	57	10
Future Vol, veh/h	31	4	13	59	4	23	37	110	72	26	57	10
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	-	-	-	-	125	-	-	-
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	34	4	14	66	4	26	41	122	80	29	63	11
Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	386	411	69	340	336	122	74	0	0	202	0	0
Stage 1	127	127	-	204	204	-	-	-	-	-	-	-
Stage 2	259	284	-	136	132	-	-	-	-	-	-	-
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	573	531	994	614	585	929	1526	-	-	1370	-	-
Stage 1	877	791	-	798	733	-	-	-	-	-	-	-
Stage 2	746	676	-	867	787	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	532	503	994	577	555	929	1526	-	-	1370	-	-
Mov Cap-2 Maneuver	532	503	-	577	555	-	-	-	-	-	-	-
Stage 1	850	774	-	773	710	-	-	-	-	-	-	-
Stage 2	699	655	-	831	770	-	-	-	-	-	-	-
Approach	EB		WB		NB			SB				
HCM Control Delay, s	11.5		11.2		1.3			2.1				
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR					
Capacity (veh/h)	1526	-	-	605	577	845	1370	-	-			
HCM Lane V/C Ratio	0.027	-	-	0.088	0.114	0.036	0.021	-	-			
HCM Control Delay (s)	7.4	0	-	11.5	12	9.4	7.7	0	-			
HCM Lane LOS	A	A	-	B	B	A	A	A	-			
HCM 95th %tile Q(veh)	0.1	-	-	0.3	0.4	0.1	0.1	-	-			

Lanes, Volumes, Timings
300: Canal Drive & Carl Winner Drive

12/02/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	357	27	60	4	4	15	46	48	16	8	31	269
Future Volume (vph)	357	27	60	4	4	15	46	48	16	8	31	269
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	50		0	0		175
Storage Lanes	1		0	0		0	1		0	0		1
Taper Length (ft)	75			25			50			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.896			0.908			0.962				0.850
Flt Protected	0.950				0.992		0.950				0.990	
Satd. Flow (prot)	1770	1669	0	0	1678	0	1770	1792	0	0	1844	1583
Flt Permitted	0.741				0.964		0.729				0.942	
Satd. Flow (perm)	1380	1669	0	0	1630	0	1358	1792	0	0	1755	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		511			1126			380			292	
Travel Time (s)		13.9			30.7			10.4			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)	397	30	67	4	4	17	51	53	18	9	34	299
Shared Lane Traffic (%)												
Lane Group Flow (vph)	397	97	0	0	25	0	51	71	0	0	43	299
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Detector Phase	4	4		8	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	28.0	28.0		28.0	28.0		28.0	28.0		28.0	28.0	28.0
Total Split (s)	29.0	29.0		29.0	29.0		29.0	29.0		29.0	29.0	29.0
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	50.0%
Maximum Green (s)	23.0	23.0		23.0	23.0		23.0	23.0		23.0	23.0	23.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0			-1.0		-1.0	-1.0			-1.0	-1.0
Total Lost Time (s)	5.0	5.0			5.0		5.0	5.0			5.0	5.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	2.0	2.0		2.0	2.0		3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0		15.0	15.0		15.0	15.0	15.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		45.0	45.0		45.0	45.0	45.0
Recall Mode	None	None		None	None		Min	Min		Min	Min	Min
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	15.0	15.0		15.0	15.0		15.0	15.0		15.0	15.0	15.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	0
Act Effect Green (s)	16.6	16.6			16.6		12.8	12.8			12.8	12.8
Actuated g/C Ratio	0.41	0.41			0.41		0.32	0.32			0.32	0.32
v/c Ratio	0.70	0.14			0.04		0.12	0.12			0.08	0.59

Lanes, Volumes, Timings

300: Canal Drive & Carl Winner Drive

12/02/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	17.9	8.6			8.1		11.5	11.2			10.9	17.7
Queue Delay	0.0	0.0			0.0		0.0	0.0			0.0	0.0
Total Delay	17.9	8.6			8.1		11.5	11.2			10.9	17.7
LOS	B	A			A		B	B			B	B
Approach Delay		16.1			8.1			11.3			16.8	
Approach LOS		B			A			B			B	
Queue Length 50th (ft)	64	12			3		8	11			6	53
Queue Length 95th (ft)	180	40			15		28	36			25	133
Internal Link Dist (ft)		431			1046			300			212	
Turn Bay Length (ft)	100						50					175
Base Capacity (vph)	881	1065			1040		867	1144			1120	1010
Starvation Cap Reductn	0	0			0		0	0			0	0
Spillback Cap Reductn	0	0			0		0	0			0	0
Storage Cap Reductn	0	0			0		0	0			0	0
Reduced v/c Ratio	0.45	0.09			0.02		0.06	0.06			0.04	0.30

Intersection Summary

Area Type: Other

Cycle Length: 58

Actuated Cycle Length: 40.1

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.70

Intersection Signal Delay: 15.5

Intersection LOS: B

Intersection Capacity Utilization 44.0%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 300: Canal Drive & Carl Winner Drive

 Ø2	 Ø4
29 s	29 s
 Ø6	 Ø8
29 s	29 s

Lanes, Volumes, Timings
400: Canal Drive & Pelican Lane

12/02/2024

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	53	17	306	100	4	275
Future Volume (vph)	53	17	306	100	4	275
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.967		0.967			
Flt Protected	0.964					0.999
Satd. Flow (prot)	1736	0	1801	0	0	1861
Flt Permitted	0.964					0.999
Satd. Flow (perm)	1736	0	1801	0	0	1861
Link Speed (mph)	25		25			25
Link Distance (ft)	287		292			1396
Travel Time (s)	7.8		8.0			38.1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	59	19	340	111	4	306
Shared Lane Traffic (%)						
Lane Group Flow (vph)	78	0	451	0	0	310
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 32.8%			ICU Level of Service A			
Analysis Period (min) 15						

HCM 6th TWSC
400: Canal Drive & Pelican Lane

12/02/2024

Intersection

Int Delay, s/veh 1.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	53	17	306	100	4	275
Future Vol, veh/h	53	17	306	100	4	275
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	59	19	340	111	4	306

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	710	396	0
Stage 1	396	-	-
Stage 2	314	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	400	653	-
Stage 1	680	-	-
Stage 2	741	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	398	653	-
Mov Cap-2 Maneuver	398	-	-
Stage 1	680	-	-
Stage 2	738	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.9	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	440	1109
HCM Lane V/C Ratio	-	-	0.177	0.004
HCM Control Delay (s)	-	-	14.9	8.3
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.6	0

Lanes, Volumes, Timings
500: Carolina Beach Ave & Pelican Lane

12/02/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	34	14	4	17	4	10	76	8	4	65	30
Future Volume (vph)	40	34	14	4	17	4	10	76	8	4	65	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.978			0.980			0.988			0.959	
Flt Protected		0.978			0.993			0.995			0.998	
Satd. Flow (prot)	0	1782	0	0	1813	0	0	1831	0	0	1783	0
Flt Permitted		0.978			0.993			0.995			0.998	
Satd. Flow (perm)	0	1782	0	0	1813	0	0	1831	0	0	1783	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		287			1266			862			1270	
Travel Time (s)		7.8			34.5			23.5			34.6	
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)	44	38	16	4	19	4	11	84	9	4	72	33
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	98	0	0	27	0	0	104	0	0	109	0
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization 26.3%												
ICU Level of Service A												
Analysis Period (min) 15												

HCM 6th TWSC
500: Carolina Beach Ave & Pelican Lane

12/02/2024

Intersection												
Int Delay, s/veh	4.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	40	34	14	4	17	4	10	76	8	4	65	30
Future Vol, veh/h	40	34	14	4	17	4	10	76	8	4	65	30
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	-	-	-	-	-	-	-	-	-	-	-	-
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	44	38	16	4	19	4	11	84	9	4	72	33
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	219	212	89	235	224	89	105	0	0	93	0	0
Stage 1	97	97	-	111	111	-	-	-	-	-	-	-
Stage 2	122	115	-	124	113	-	-	-	-	-	-	-
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	737	685	969	720	675	969	1486	-	-	1501	-	-
Stage 1	910	815	-	894	804	-	-	-	-	-	-	-
Stage 2	882	800	-	880	802	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	712	677	969	672	668	969	1486	-	-	1501	-	-
Mov Cap-2 Maneuver	712	677	-	672	668	-	-	-	-	-	-	-
Stage 1	903	813	-	887	798	-	-	-	-	-	-	-
Stage 2	850	794	-	823	800	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	10.7		10.3			0.8			0.3			
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1486	-	-	728	704	1501	-	-				
HCM Lane V/C Ratio	0.007	-	-	0.134	0.039	0.003	-	-				
HCM Control Delay (s)	7.4	0	-	10.7	10.3	7.4	0	-				
HCM Lane LOS	A	A	-	B	B	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.5	0.1	0	-	-				

Future No Build Conditions

Lanes, Volumes, Timings

100: US 421 (N Lake Park Blvd) & Carl Winner Drive

11/29/2024

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	67	325	587	64	312	573
Future Volume (vph)	67	325	587	64	312	573
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11
Storage Length (ft)	0	225		0	0	
Storage Lanes	1	1		0	0	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	0.95	0.95	0.95	0.95	0.95
Frt	0.900	0.850	0.985			
Flt Protected	0.984					0.983
Satd. Flow (prot)	1595	1454	3370	0	0	3363
Flt Permitted	0.984					0.594
Satd. Flow (perm)	1595	1454	3370	0	0	2032
Right Turn on Red		No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	25		25			25
Link Distance (ft)	511		1122			1204
Travel Time (s)	13.9		30.6			32.8
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	74	361	652	71	347	637
Shared Lane Traffic (%)		41%				
Lane Group Flow (vph)	222	213	723	0	0	984
Turn Type	Perm	Perm	NA		pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	4	4			6	
Detector Phase	4	4	2		1	6
Switch Phase						
Minimum Initial (s)	7.0	7.0	10.0		7.0	10.0
Minimum Split (s)	22.9	22.9	19.9		12.3	15.3
Total Split (s)	23.0	23.0	42.0		35.0	77.0
Total Split (%)	23.0%	23.0%	42.0%		35.0%	77.0%
Maximum Green (s)	18.1	18.1	37.1		29.7	71.7
Yellow Time (s)	3.0	3.0	3.2		3.0	3.2
All-Red Time (s)	1.9	1.9	1.7		2.3	2.1
Lost Time Adjust (s)	0.1	0.1	0.1			-0.3
Total Lost Time (s)	5.0	5.0	5.0			5.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	2.0	2.0	3.0		3.0	3.0
Recall Mode	None	None	C-Max		None	C-Max
Walk Time (s)	7.0	7.0	7.0			
Flash Dont Walk (s)	11.0	11.0	8.0			
Pedestrian Calls (#/hr)	0	0	0			
Act Effect Green (s)	16.7	16.7	73.3			73.3
Actuated g/C Ratio	0.17	0.17	0.73			0.73
v/c Ratio	0.83	0.88	0.29			0.66
Control Delay	66.1	74.6	5.1			9.9
Queue Delay	0.0	0.0	0.0			0.0

Lanes, Volumes, Timings

100: US 421 (N Lake Park Blvd) & Carl Winner Drive

11/29/2024



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Total Delay	66.1	74.6	5.1			9.9
LOS	E	E	A			A
Approach Delay	70.2		5.1			9.9
Approach LOS	E		A			A
Queue Length 50th (ft)	136	138	74			153
Queue Length 95th (ft)	#251	#267	97			220
Internal Link Dist (ft)	431		1042			1124
Turn Bay Length (ft)		225				
Base Capacity (vph)	287	261	2468			1488
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	0.77	0.82	0.29			0.66

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 10 (10%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 20.5

Intersection LOS: C

Intersection Capacity Utilization 66.0%

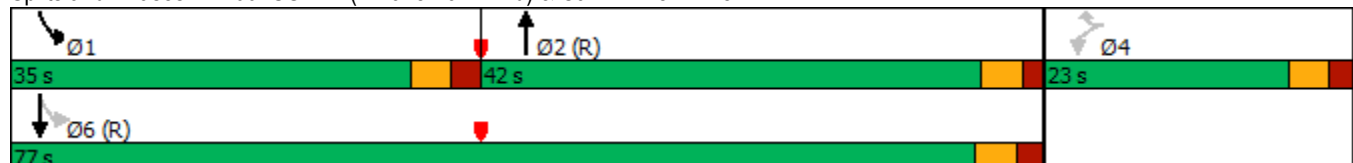
ICU Level of Service C

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 100: US 421 (N Lake Park Blvd) & Carl Winner Drive



Lanes, Volumes, Timings
200: Canal Drive & Carolina Beach Ave

11/29/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	4	13	68	4	28	21	65	49	19	55	4
Future Volume (vph)	8	4	13	68	4	28	21	65	49	19	55	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	100		0	0		125	0		0
Storage Lanes	0		0	1		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.930			0.867				0.850		0.994	
Flt Protected		0.984		0.950				0.988			0.988	
Satd. Flow (prot)	0	1705	0	1770	1615	0	0	1840	1583	0	1829	0
Flt Permitted		0.984		0.950				0.988			0.988	
Satd. Flow (perm)	0	1705	0	1770	1615	0	0	1840	1583	0	1829	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1488			869			1179			380	
Travel Time (s)		40.6			23.7			32.2			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)	9	4	14	76	4	31	23	72	54	21	61	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	27	0	76	35	0	0	95	54	0	86	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 27.3% ICU Level of Service A

Analysis Period (min) 15

HCM 6th TWSC
200: Canal Drive & Carolina Beach Ave

11/29/2024

Intersection												
Int Delay, s/veh	4.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	4	13	68	4	28	21	65	49	19	55	4
Future Vol, veh/h	8	4	13	68	4	28	21	65	49	19	55	4
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	-	-	-	-	125	-	-	-
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	9	4	14	76	4	31	23	72	54	21	61	4
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	268	277	63	232	225	72	65	0	0	126	0	0
Stage 1	105	105	-	118	118	-	-	-	-	-	-	-
Stage 2	163	172	-	114	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	685	631	1002	723	674	990	1537	-	-	1460	-	-
Stage 1	901	808	-	887	798	-	-	-	-	-	-	-
Stage 2	839	756	-	891	807	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	645	611	1002	692	653	990	1537	-	-	1460	-	-
Mov Cap-2 Maneuver	645	611	-	692	653	-	-	-	-	-	-	-
Stage 1	887	796	-	873	785	-	-	-	-	-	-	-
Stage 2	795	744	-	860	795	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	9.8		10.2		1.1		1.8					
HCM LOS	A		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR					
Capacity (veh/h)	1537	-	-	783 692 930	1460	-	-					
HCM Lane V/C Ratio	0.015	-	-	0.035 0.109 0.038	0.014	-	-					
HCM Control Delay (s)	7.4	0	-	9.8 10.8 9	7.5	0	-					
HCM Lane LOS	A	A	-	A B A	A	A	-					
HCM 95th %tile Q(veh)	0	-	-	0.1 0.4 0.1	0	-	-					

Lanes, Volumes, Timings
300: Canal Drive & Carl Winner Drive

11/29/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	302	12	61	4	9	6	48	45	8	7	26	296
Future Volume (vph)	302	12	61	4	9	6	48	45	8	7	26	296
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	50		0	0		175
Storage Lanes	1		0	0		0	1		0	0		1
Taper Length (ft)	50			25			50			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.874			0.955			0.977				0.850
Flt Protected	0.950				0.991		0.950				0.989	
Satd. Flow (prot)	1770	1628	0	0	1763	0	1770	1820	0	0	1842	1583
Flt Permitted	0.744				0.955		0.733				0.946	
Satd. Flow (perm)	1386	1628	0	0	1699	0	1365	1820	0	0	1762	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		511			1759			380			292	
Travel Time (s)		13.9			48.0			10.4			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)	336	13	68	4	10	7	53	50	9	8	29	329
Shared Lane Traffic (%)												
Lane Group Flow (vph)	336	81	0	0	21	0	53	59	0	0	37	329
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Detector Phase	4	4		8	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	29.0	29.0		29.0	29.0		29.0	29.0		29.0	29.0	29.0
Total Split (s)	29.0	29.0		29.0	29.0		29.0	29.0		29.0	29.0	29.0
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	50.0%
Maximum Green (s)	22.0	22.0		22.0	22.0		22.0	22.0		22.0	22.0	22.0
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0			-2.0		-2.0	-2.0			-2.0	-2.0
Total Lost Time (s)	5.0	5.0			5.0		5.0	5.0			5.0	5.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0		15.0	15.0		15.0	15.0	15.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		45.0	45.0		45.0	45.0	45.0
Recall Mode	None	None		None	None		Min	Min		Min	Min	Min
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	15.0	15.0		15.0	15.0		15.0	15.0		15.0	15.0	15.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	0
Act Effect Green (s)	17.2	17.2			17.2		16.0	16.0			16.0	16.0
Actuated g/C Ratio	0.39	0.39			0.39		0.37	0.37			0.37	0.37
v/c Ratio	0.62	0.13			0.03		0.11	0.09			0.06	0.57

Lanes, Volumes, Timings
300: Canal Drive & Carl Winner Drive

11/29/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	17.0	9.8			9.4		10.7	10.4			10.2	16.3
Queue Delay	0.0	0.0			0.0		0.0	0.0			0.0	0.0
Total Delay	17.0	9.8			9.4		10.7	10.4			10.2	16.3
LOS	B	A			A		B	B			B	B
Approach Delay		15.6			9.4			10.6			15.7	
Approach LOS		B			A			B			B	
Queue Length 50th (ft)	58	11			3		8	9			6	61
Queue Length 95th (ft)	161	39			15		28	30			21	146
Internal Link Dist (ft)		431			1679			300			212	
Turn Bay Length (ft)	100						50					175
Base Capacity (vph)	795	934			975		783	1044			1011	908
Starvation Cap Reductn	0	0			0		0	0			0	0
Spillback Cap Reductn	0	0			0		0	0			0	0
Storage Cap Reductn	0	0			0		0	0			0	0
Reduced v/c Ratio	0.42	0.09			0.02		0.07	0.06			0.04	0.36

Intersection Summary

Area Type: Other

Cycle Length: 58

Actuated Cycle Length: 43.7

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.62

Intersection Signal Delay: 14.9

Intersection LOS: B

Intersection Capacity Utilization 41.1%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 300: Canal Drive & Carl Winner Drive

 Ø2	 Ø4
29 s	29 s
 Ø6	 Ø8
29 s	29 s

Lanes, Volumes, Timings
400: Canal Drive & Pelican Lane

11/29/2024

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	52	9	294	53	11	299
Future Volume (vph)	52	9	294	53	11	299
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.980		0.979			
Flt Protected	0.959					0.998
Satd. Flow (prot)	1751	0	1824	0	0	1859
Flt Permitted	0.959					0.998
Satd. Flow (perm)	1751	0	1824	0	0	1859
Link Speed (mph)	25		25			25
Link Distance (ft)	287		292			1002
Travel Time (s)	7.8		8.0			27.3
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	58	10	327	59	12	332
Shared Lane Traffic (%)						
Lane Group Flow (vph)	68	0	386	0	0	344
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	34.7%			ICU Level of Service A		
Analysis Period (min)	15					

HCM 6th TWSC
400: Canal Drive & Pelican Lane

11/29/2024

Intersection

Int Delay, s/veh 1.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	52	9	294	53	11	299
Future Vol, veh/h	52	9	294	53	11	299
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	58	10	327	59	12	332

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	713	357	0
Stage 1	357	-	-
Stage 2	356	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	398	687	-
Stage 1	708	-	-
Stage 2	709	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	393	687	-
Mov Cap-2 Maneuver	393	-	-
Stage 1	708	-	-
Stage 2	700	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.2	0	0.3
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	419	1172
HCM Lane V/C Ratio	-	-	0.162	0.01
HCM Control Delay (s)	-	-	15.2	8.1
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	0.6	0

Lanes, Volumes, Timings
500: Carolina Beach Ave & Pelican Lane

11/29/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	5	13	4	5	4	5	50	4	4	86	36
Future Volume (vph)	56	5	13	4	5	4	5	50	4	4	86	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.977			0.961			0.992			0.961	
Flt Protected		0.964			0.986			0.995			0.999	
Satd. Flow (prot)	0	1754	0	0	1765	0	0	1839	0	0	1788	0
Flt Permitted		0.964			0.986			0.995			0.999	
Satd. Flow (perm)	0	1754	0	0	1765	0	0	1839	0	0	1788	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		287			1387			869			1077	
Travel Time (s)		7.8			37.8			23.7			29.4	
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)	62	6	14	4	6	4	6	56	4	4	96	40
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	82	0	0	14	0	0	66	0	0	140	0
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization 23.4%												
ICU Level of Service A												
Analysis Period (min) 15												

HCM 6th TWSC
500: Carolina Beach Ave & Pelican Lane

11/29/2024

Intersection												
Int Delay, s/veh	3.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	56	5	13	4	5	4	5	50	4	4	86	36
Future Vol, veh/h	56	5	13	4	5	4	5	50	4	4	86	36
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	-	-	-	-	-	-	-	-	-	-	-	-
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	62	6	14	4	6	4	6	56	4	4	96	40
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	199	196	116	204	214	58	136	0	0	60	0	0
Stage 1	124	124	-	70	70	-	-	-	-	-	-	-
Stage 2	75	72	-	134	144	-	-	-	-	-	-	-
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	760	699	936	754	684	1008	1448	-	-	1544	-	-
Stage 1	880	793	-	940	837	-	-	-	-	-	-	-
Stage 2	934	835	-	869	778	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	748	694	936	734	679	1008	1448	-	-	1544	-	-
Mov Cap-2 Maneuver	748	694	-	734	679	-	-	-	-	-	-	-
Stage 1	876	791	-	936	834	-	-	-	-	-	-	-
Stage 2	920	832	-	847	776	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	10.2		9.7		0.6		0.2					
HCM LOS	B		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1448	-	-	771	775	1544	-	-				
HCM Lane V/C Ratio	0.004	-	-	0.107	0.019	0.003	-	-				
HCM Control Delay (s)	7.5	0	-	10.2	9.7	7.3	0	-				
HCM Lane LOS	A	A	-	B	A	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.4	0.1	0	-	-				

Lanes, Volumes, Timings

100: US 421 (N Lake Park Blvd) & Carl Winner Drive

12/02/2024

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	60	262	545	103	379	844
Future Volume (vph)	60	262	545	103	379	844
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11
Storage Length (ft)	0	225		0	0	
Storage Lanes	1	1		0	0	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	0.95	0.95	0.95	0.95	0.95
Frt	0.905	0.850	0.976			
Flt Protected	0.982					0.985
Satd. Flow (prot)	1600	1454	3339	0	0	3370
Flt Permitted	0.982					0.609
Satd. Flow (perm)	1600	1454	3339	0	0	2084
Right Turn on Red		No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	25		25			25
Link Distance (ft)	511		1122			1120
Travel Time (s)	13.9		30.6			30.5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	67	291	606	114	421	938
Shared Lane Traffic (%)		40%				
Lane Group Flow (vph)	183	175	720	0	0	1359
Turn Type	Perm	Perm	NA		pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	4	4			6	
Detector Phase	4	4	2		1	6
Switch Phase						
Minimum Initial (s)	7.0	7.0	10.0		7.0	10.0
Minimum Split (s)	22.9	22.9	19.9		12.3	15.3
Total Split (s)	23.0	23.0	52.0		25.0	77.0
Total Split (%)	23.0%	23.0%	52.0%		25.0%	77.0%
Maximum Green (s)	18.1	18.1	47.1		19.7	71.7
Yellow Time (s)	3.0	3.0	3.2		3.0	3.2
All-Red Time (s)	1.9	1.9	1.7		2.3	2.1
Lost Time Adjust (s)	0.1	0.1	0.1			-0.3
Total Lost Time (s)	5.0	5.0	5.0			5.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?						
Vehicle Extension (s)	2.0	2.0	3.0		3.0	3.0
Recall Mode	None	None	C-Max		None	C-Max
Walk Time (s)	7.0	7.0	7.0			
Flash Dont Walk (s)	11.0	11.0	8.0			
Pedestrian Calls (#/hr)	0	0	0			
Act Effct Green (s)	15.1	15.1	74.9			74.9
Actuated g/C Ratio	0.15	0.15	0.75			0.75
v/c Ratio	0.76	0.80	0.29			0.87
Control Delay	59.9	66.2	4.7			18.1
Queue Delay	0.0	0.0	0.0			0.0

Lanes, Volumes, Timings

100: US 421 (N Lake Park Blvd) & Carl Winner Drive

12/02/2024



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Total Delay	59.9	66.2	4.7			18.1
LOS	E	E	A			B
Approach Delay	63.0		4.7			18.1
Approach LOS	E		A			B
Queue Length 50th (ft)	111	112	68			293
Queue Length 95th (ft)	183	#202	97			#562
Internal Link Dist (ft)	431		1042			1040
Turn Bay Length (ft)		225				
Base Capacity (vph)	288	261	2499			1560
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	0.64	0.67	0.29			0.87

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 85 (85%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 20.7

Intersection LOS: C

Intersection Capacity Utilization 73.9%

ICU Level of Service D

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 100: US 421 (N Lake Park Blvd) & Carl Winner Drive



Lanes, Volumes, Timings
200: Canal Drive & Carolina Beach Ave

12/02/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	4	13	60	4	23	38	112	73	27	58	10
Future Volume (vph)	32	4	13	60	4	23	38	112	73	27	58	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	100		0	0		125	0		0
Storage Lanes	0		0	1		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.965			0.870				0.850		0.986	
Flt Protected		0.968		0.950				0.988			0.986	
Satd. Flow (prot)	0	1740	0	1770	1621	0	0	1840	1583	0	1811	0
Flt Permitted		0.968		0.950				0.988			0.986	
Satd. Flow (perm)	0	1740	0	1770	1621	0	0	1840	1583	0	1811	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1387			872			1044			380	
Travel Time (s)		37.8			23.8			28.5			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)	36	4	14	67	4	26	42	124	81	30	64	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	54	0	67	30	0	0	166	81	0	105	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 27.9%

ICU Level of Service A

Analysis Period (min) 15

HCM 6th TWSC
200: Canal Drive & Carolina Beach Ave

12/02/2024

Intersection												
Int Delay, s/veh	4.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	32	4	13	60	4	23	38	112	73	27	58	10
Future Vol, veh/h	32	4	13	60	4	23	38	112	73	27	58	10
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	-	-	-	-	125	-	-	-
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	36	4	14	67	4	26	42	124	81	30	64	11
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	394	419	70	347	343	124	75	0	0	205	0	0
Stage 1	130	130	-	208	208	-	-	-	-	-	-	-
Stage 2	264	289	-	139	135	-	-	-	-	-	-	-
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	566	525	993	607	579	927	1524	-	-	1366	-	-
Stage 1	874	789	-	794	730	-	-	-	-	-	-	-
Stage 2	741	673	-	864	785	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	525	497	993	570	548	927	1524	-	-	1366	-	-
Mov Cap-2 Maneuver	525	497	-	570	548	-	-	-	-	-	-	-
Stage 1	847	771	-	769	707	-	-	-	-	-	-	-
Stage 2	694	652	-	827	767	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	11.6		11.3		1.3		2.2					
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR					
Capacity (veh/h)	1524	-	-	597 570 841	1366	-	-					
HCM Lane V/C Ratio	0.028	-	-	0.091 0.117 0.036	0.022	-	-					
HCM Control Delay (s)	7.4	0	-	11.6 12.2 9.4	7.7	0	-					
HCM Lane LOS	A	A	-	B B A	A	A	-					
HCM 95th %tile Q(veh)	0.1	-	-	0.3 0.4 0.1	0.1	-	-					

Lanes, Volumes, Timings
300: Canal Drive & Carl Winner Drive

12/02/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	364	28	61	4	4	15	47	49	16	8	32	274
Future Volume (vph)	364	28	61	4	4	15	47	49	16	8	32	274
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	50		0	0		175
Storage Lanes	1		0	0		0	1		0	0		1
Taper Length (ft)	50			25			50			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.897			0.908			0.962				0.850
Flt Protected	0.950				0.992		0.950				0.990	
Satd. Flow (prot)	1770	1671	0	0	1678	0	1770	1792	0	0	1844	1583
Flt Permitted	0.741				0.963		0.728				0.942	
Satd. Flow (perm)	1380	1671	0	0	1629	0	1356	1792	0	0	1755	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		511			1669			380			292	
Travel Time (s)		13.9			45.5			10.4			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)	404	31	68	4	4	17	52	54	18	9	36	304
Shared Lane Traffic (%)												
Lane Group Flow (vph)	404	99	0	0	25	0	52	72	0	0	45	304
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Detector Phase	4	4		8	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	29.0	29.0		29.0	29.0		29.0	29.0		29.0	29.0	29.0
Total Split (s)	29.0	29.0		29.0	29.0		29.0	29.0		29.0	29.0	29.0
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	50.0%
Maximum Green (s)	22.0	22.0		22.0	22.0		22.0	22.0		22.0	22.0	22.0
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0			-2.0		-2.0	-2.0			-2.0	-2.0
Total Lost Time (s)	5.0	5.0			5.0		5.0	5.0			5.0	5.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0		15.0	15.0		15.0	15.0	15.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		45.0	45.0		45.0	45.0	45.0
Recall Mode	None	None		None	None		Min	Min		Min	Min	Min
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	15.0	15.0		15.0	15.0		15.0	15.0		15.0	15.0	15.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	0
Act Effect Green (s)	19.1	19.1			19.1		14.4	14.4			14.4	14.4
Actuated g/C Ratio	0.43	0.43			0.43		0.33	0.33			0.33	0.33
v/c Ratio	0.68	0.14			0.04		0.12	0.12			0.08	0.59

Lanes, Volumes, Timings
300: Canal Drive & Carl Winner Drive

12/02/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	18.1	9.1			8.6		11.8	11.6			11.2	18.1
Queue Delay	0.0	0.0			0.0		0.0	0.0			0.0	0.0
Total Delay	18.1	9.1			8.6		11.8	11.6			11.2	18.1
LOS	B	A			A		B	B			B	B
Approach Delay		16.3			8.6			11.7			17.2	
Approach LOS		B			A			B			B	
Queue Length 50th (ft)	74	14			3		9	13			8	63
Queue Length 95th (ft)	#202	43			16		28	36			25	134
Internal Link Dist (ft)		431			1589			300			212	
Turn Bay Length (ft)	100						50					175
Base Capacity (vph)	792	959			935		778	1028			1007	908
Starvation Cap Reductn	0	0			0		0	0			0	0
Spillback Cap Reductn	0	0			0		0	0			0	0
Storage Cap Reductn	0	0			0		0	0			0	0
Reduced v/c Ratio	0.51	0.10			0.03		0.07	0.07			0.04	0.33

Intersection Summary

Area Type: Other

Cycle Length: 58

Actuated Cycle Length: 44

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.68

Intersection Signal Delay: 15.8

Intersection LOS: B

Intersection Capacity Utilization 44.4%

ICU Level of Service A

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 300: Canal Drive & Carl Winner Drive

 Ø2	 Ø4
29 s	29 s
 Ø6	 Ø8
29 s	29 s

Lanes, Volumes, Timings
400: Canal Drive & Pelican Lane

12/02/2024

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	54	17	312	102	4	281
Future Volume (vph)	54	17	312	102	4	281
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.968		0.967			
Flt Protected	0.963					0.999
Satd. Flow (prot)	1736	0	1801	0	0	1861
Flt Permitted	0.963					0.999
Satd. Flow (perm)	1736	0	1801	0	0	1861
Link Speed (mph)	25		25			25
Link Distance (ft)	287		292			1323
Travel Time (s)	7.8		8.0			36.1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	60	19	347	113	4	312
Shared Lane Traffic (%)						
Lane Group Flow (vph)	79	0	460	0	0	316
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	33.3%			ICU Level of Service A		
Analysis Period (min)	15					

HCM 6th TWSC
400: Canal Drive & Pelican Lane

12/02/2024

Intersection						
Int Delay, s/veh	1.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	54	17	312	102	4	281
Future Vol, veh/h	54	17	312	102	4	281
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	60	19	347	113	4	312
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	724	404	0	0	460	0
Stage 1	404	-	-	-	-	-
Stage 2	320	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	393	647	-	-	1101	-
Stage 1	674	-	-	-	-	-
Stage 2	736	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	391	647	-	-	1101	-
Mov Cap-2 Maneuver	391	-	-	-	-	-
Stage 1	674	-	-	-	-	-
Stage 2	733	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	15.2	0		0.1		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	432	1101	-	
HCM Lane V/C Ratio	-	-	0.183	0.004	-	
HCM Control Delay (s)	-	-	15.2	8.3	0	
HCM Lane LOS	-	-	C	A	A	
HCM 95th %tile Q(veh)	-	-	0.7	0	-	

Lanes, Volumes, Timings
500: Carolina Beach Ave & Pelican Lane

12/02/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	41	35	17	4	17	4	10	78	8	4	66	31
Future Volume (vph)	41	35	17	4	17	4	10	78	8	4	66	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.975			0.980			0.989			0.959	
Flt Protected		0.978			0.993			0.995			0.998	
Satd. Flow (prot)	0	1776	0	0	1813	0	0	1833	0	0	1783	0
Flt Permitted		0.978			0.993			0.995			0.998	
Satd. Flow (perm)	0	1776	0	0	1813	0	0	1833	0	0	1783	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		287			1305			872			1377	
Travel Time (s)		7.8			35.6			23.8			37.6	
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)	46	39	19	4	19	4	11	87	9	4	73	34
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	104	0	0	27	0	0	107	0	0	111	0
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	26.9%											
Analysis Period (min)	15											
ICU Level of Service A												

HCM 6th TWSC
500: Carolina Beach Ave & Pelican Lane

12/02/2024

Intersection												
Int Delay, s/veh	4.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	41	35	17	4	17	4	10	78	8	4	66	31
Future Vol, veh/h	41	35	17	4	17	4	10	78	8	4	66	31
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	-	-	-	-	-	-	-	-	-	-	-	-
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	46	39	19	4	19	4	11	87	9	4	73	34
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	223	216	90	241	229	92	107	0	0	96	0	0
Stage 1	98	98	-	114	114	-	-	-	-	-	-	-
Stage 2	125	118	-	127	115	-	-	-	-	-	-	-
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	733	682	968	713	671	965	1484	-	-	1498	-	-
Stage 1	908	814	-	891	801	-	-	-	-	-	-	-
Stage 2	879	798	-	877	800	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	708	674	968	662	664	965	1484	-	-	1498	-	-
Mov Cap-2 Maneuver	708	674	-	662	664	-	-	-	-	-	-	-
Stage 1	901	812	-	884	795	-	-	-	-	-	-	-
Stage 2	847	792	-	816	798	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	10.7		10.4		0.8		0.3					
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1484	-	-	730	699	1498	-	-				
HCM Lane V/C Ratio	0.007	-	-	0.142	0.04	0.003	-	-				
HCM Control Delay (s)	7.4	0	-	10.7	10.4	7.4	0	-				
HCM Lane LOS	A	A	-	B	B	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.5	0.1	0	-	-				

Future Build Conditions

Lanes, Volumes, Timings

100: US 421 (N Lake Park Blvd) & Carl Winner Drive

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	67	373	587	64	362	573
Future Volume (vph)	67	373	587	64	362	573
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11
Storage Length (ft)	0	225		0	0	
Storage Lanes	1	1		0	0	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	0.95	0.95	0.95	0.95	0.95
Frt	0.895	0.850	0.985			
Flt Protected	0.985					0.981
Satd. Flow (prot)	1587	1454	3370	0	0	3356
Flt Permitted	0.985					0.584
Satd. Flow (perm)	1587	1454	3370	0	0	1998
Right Turn on Red		No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	25		25			25
Link Distance (ft)	511		1122			1204
Travel Time (s)	13.9		30.6			32.8
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	74	414	652	71	402	637
Shared Lane Traffic (%)		42%				
Lane Group Flow (vph)	248	240	723	0	0	1039
Turn Type	Perm	Perm	NA		pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	4	4			6	
Detector Phase	4	4	2		1	6
Switch Phase						
Minimum Initial (s)	7.0	7.0	10.0		7.0	10.0
Minimum Split (s)	22.9	22.9	19.9		12.3	15.3
Total Split (s)	23.0	23.0	42.0		35.0	77.0
Total Split (%)	23.0%	23.0%	42.0%		35.0%	77.0%
Maximum Green (s)	18.1	18.1	37.1		29.7	71.7
Yellow Time (s)	3.0	3.0	3.2		3.0	3.2
All-Red Time (s)	1.9	1.9	1.7		2.3	2.1
Lost Time Adjust (s)	0.1	0.1	0.1			-0.3
Total Lost Time (s)	5.0	5.0	5.0			5.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	2.0	2.0	3.0		3.0	3.0
Recall Mode	None	None	C-Max		None	C-Max
Walk Time (s)	7.0	7.0	7.0			
Flash Dont Walk (s)	11.0	11.0	8.0			
Pedestrian Calls (#/hr)	0	0	0			
Act Effect Green (s)	17.6	17.6	72.4			72.4
Actuated g/C Ratio	0.18	0.18	0.72			0.72
v/c Ratio	0.89	0.94	0.30			0.72
Control Delay	73.1	84.7	5.3			11.7
Queue Delay	0.0	0.0	0.0			0.0

Lanes, Volumes, Timings

100: US 421 (N Lake Park Blvd) & Carl Winner Drive

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Total Delay	73.1	84.7	5.3			11.7
LOS	E	F	A			B
Approach Delay	78.8		5.3			11.7
Approach LOS	E		A			B
Queue Length 50th (ft)	155	160	74			174
Queue Length 95th (ft)	#294	#313	97			253
Internal Link Dist (ft)	431		1042			1124
Turn Bay Length (ft)		225				
Base Capacity (vph)	285	261	2439			1446
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	0.87	0.92	0.30			0.72

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 10 (10%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.94

Intersection Signal Delay: 24.2

Intersection LOS: C

Intersection Capacity Utilization 68.5%

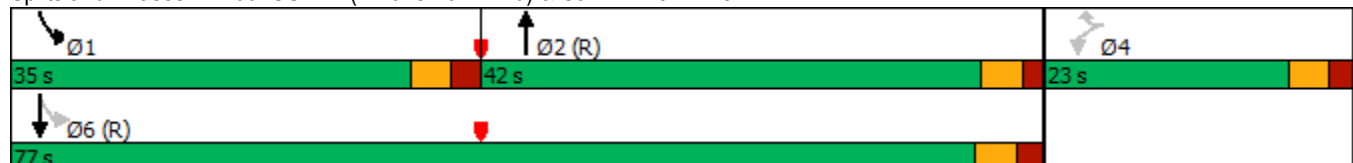
ICU Level of Service C

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 100: US 421 (N Lake Park Blvd) & Carl Winner Drive



Lanes, Volumes, Timings
200: Canal Drive & Carolina Beach Ave

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	4	13	71	4	63	21	65	52	22	55	4
Future Volume (vph)	8	4	13	71	4	63	21	65	52	22	55	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	100		0	0		125	0		0
Storage Lanes	0		0	1		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.930			0.858				0.850		0.994	
Flt Protected		0.984		0.950				0.988			0.987	
Satd. Flow (prot)	0	1705	0	1770	1598	0	0	1840	1583	0	1827	0
Flt Permitted		0.984		0.950				0.988			0.987	
Satd. Flow (perm)	0	1705	0	1770	1598	0	0	1840	1583	0	1827	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1283			487			1492			380	
Travel Time (s)		35.0			13.3			40.7			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)	9	4	14	79	4	70	23	72	58	24	61	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	27	0	79	74	0	0	95	58	0	89	0
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	27.9%						ICU Level of Service A					
Analysis Period (min)	15											

HCM 6th TWSC
200: Canal Drive & Carolina Beach Ave

Intersection												
Int Delay, s/veh	5.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	4	13	71	4	63	21	65	52	22	55	4
Future Vol, veh/h	8	4	13	71	4	63	21	65	52	22	55	4
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	-	-	-	-	125	-	-	-
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	9	4	14	79	4	70	23	72	58	24	61	4
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	295	287	63	238	231	72	65	0	0	130	0	0
Stage 1	111	111	-	118	118	-	-	-	-	-	-	-
Stage 2	184	176	-	120	113	-	-	-	-	-	-	-
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	657	623	1002	716	669	990	1537	-	-	1455	-	-
Stage 1	894	804	-	887	798	-	-	-	-	-	-	-
Stage 2	818	753	-	884	802	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	592	602	1002	684	647	990	1537	-	-	1455	-	-
Mov Cap-2 Maneuver	592	602	-	684	647	-	-	-	-	-	-	-
Stage 1	880	790	-	873	785	-	-	-	-	-	-	-
Stage 2	744	741	-	852	788	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	10		10		1.1		2					
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR					
Capacity (veh/h)	1537	-	-	755 684 960	1455	-	-					
HCM Lane V/C Ratio	0.015	-	-	0.037 0.115 0.078	0.017	-	-					
HCM Control Delay (s)	7.4	0	-	10 10.9 9.1	7.5	0	-					
HCM Lane LOS	A	A	-	B B A	A	A	-					
HCM 95th %tile Q(veh)	0	-	-	0.1 0.4 0.3	0.1	-	-					

Lanes, Volumes, Timings

300: Canal Drive & Carl Winner Drive/Parking Access

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	350	12	64	4	9	6	83	45	8	7	26	309
Future Volume (vph)	350	12	64	4	9	6	83	45	8	7	26	309
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	50		0	0		175
Storage Lanes	1		0	0		0	1		0	0		1
Taper Length (ft)	50			25			50			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.873			0.955			0.977				0.850
Flt Protected	0.950				0.991		0.950				0.989	
Satd. Flow (prot)	1770	1626	0	0	1763	0	1770	1820	0	0	1842	1583
Flt Permitted	0.744				0.958		0.733				0.945	
Satd. Flow (perm)	1386	1626	0	0	1704	0	1365	1820	0	0	1760	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		511			1348			380			292	
Travel Time (s)		13.9			36.8			10.4			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)	389	13	71	4	10	7	92	50	9	8	29	343
Shared Lane Traffic (%)												
Lane Group Flow (vph)	389	84	0	0	21	0	92	59	0	0	37	343
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Detector Phase	4	4		8	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	29.0	29.0		29.0	29.0		29.0	29.0		29.0	29.0	29.0
Total Split (s)	29.0	29.0		29.0	29.0		29.0	29.0		29.0	29.0	29.0
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	50.0%
Maximum Green (s)	22.0	22.0		22.0	22.0		22.0	22.0		22.0	22.0	22.0
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0			-2.0		-2.0	-2.0			-2.0	-2.0
Total Lost Time (s)	5.0	5.0			5.0		5.0	5.0			5.0	5.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0		15.0	15.0		15.0	15.0	15.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		45.0	45.0		45.0	45.0	45.0
Recall Mode	None	None		None	None		Min	Min		Min	Min	Min
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	15.0	15.0		15.0	15.0		15.0	15.0		15.0	15.0	15.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	0
Act Effect Green (s)	18.8	18.8			18.8		15.9	15.9			15.9	15.9
Actuated g/C Ratio	0.42	0.42			0.42		0.35	0.35			0.35	0.35
v/c Ratio	0.68	0.12			0.03		0.19	0.09			0.06	0.62

Lanes, Volumes, Timings

300: Canal Drive & Carl Winner Drive/Parking Access

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	18.9	9.8			9.4		12.0	10.9			10.7	18.2
Queue Delay	0.0	0.0			0.0		0.0	0.0			0.0	0.0
Total Delay	18.9	9.8			9.4		12.0	10.9			10.7	18.2
LOS	B	A			A		B	B			B	B
Approach Delay		17.3			9.4			11.6			17.5	
Approach LOS		B			A			B			B	
Queue Length 50th (ft)	76	12			3		16	10			6	73
Queue Length 95th (ft)	#199	40			15		44	30			21	153
Internal Link Dist (ft)		431			1268			300			212	
Turn Bay Length (ft)	100						50					175
Base Capacity (vph)	776	911			955		764	1019			986	887
Starvation Cap Reductn	0	0			0		0	0			0	0
Spillback Cap Reductn	0	0			0		0	0			0	0
Storage Cap Reductn	0	0			0		0	0			0	0
Reduced v/c Ratio	0.50	0.09			0.02		0.12	0.06			0.04	0.39

Intersection Summary

Area Type: Other

Cycle Length: 58

Actuated Cycle Length: 45.2

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.68

Intersection Signal Delay: 16.4

Intersection LOS: B

Intersection Capacity Utilization 45.7%

ICU Level of Service A

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 300: Canal Drive & Carl Winner Drive/Parking Access

 Ø2	 Ø4
29 s	29 s
 Ø6	 Ø8
29 s	29 s

Lanes, Volumes, Timings 400: Canal Drive & Pelican Lane

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	65	9	294	101	11	299
Future Volume (vph)	65	9	294	101	11	299
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.984		0.966			
Flt Protected	0.958					0.998
Satd. Flow (prot)	1756	0	1799	0	0	1859
Flt Permitted	0.958					0.998
Satd. Flow (perm)	1756	0	1799	0	0	1859
Link Speed (mph)	25		25			25
Link Distance (ft)	287		292			524
Travel Time (s)	7.8		8.0			14.3
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	72	10	327	112	12	332
Shared Lane Traffic (%)						
Lane Group Flow (vph)	82	0	439	0	0	344
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	35.5%			ICU Level of Service A		
Analysis Period (min)	15					

HCM 6th TWSC
400: Canal Drive & Pelican Lane

Intersection

Int Delay, s/veh 1.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	65	9	294	101	11	299
Future Vol, veh/h	65	9	294	101	11	299
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	72	10	327	112	12	332

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	739	383	0
Stage 1	383	-	-
Stage 2	356	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	385	664	-
Stage 1	689	-	-
Stage 2	709	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	380	664	-
Mov Cap-2 Maneuver	380	-	-
Stage 1	689	-	-
Stage 2	700	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.3	0	0.3
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	401	1121
HCM Lane V/C Ratio	-	-	0.205	0.011
HCM Control Delay (s)	-	-	16.3	8.2
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	0.8	0

Lanes, Volumes, Timings
500: Carolina Beach Ave & Pelican Lane

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	5	61	4	5	4	18	50	4	4	86	36
Future Volume (vph)	56	5	61	4	5	4	18	50	4	4	86	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.932			0.961			0.993			0.961	
Flt Protected		0.978			0.986			0.988			0.999	
Satd. Flow (prot)	0	1698	0	0	1765	0	0	1828	0	0	1788	0
Flt Permitted		0.978			0.986			0.988			0.999	
Satd. Flow (perm)	0	1698	0	0	1765	0	0	1828	0	0	1788	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		287			1810			231			462	
Travel Time (s)		7.8			49.4			6.3			12.6	
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)	62	6	68	4	6	4	20	56	4	4	96	40
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	136	0	0	14	0	0	80	0	0	140	0
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization 29.7%												
ICU Level of Service A												
Analysis Period (min) 15												

HCM 6th TWSC
500: Carolina Beach Ave & Pelican Lane

Intersection												
Int Delay, s/veh	4.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	56	5	61	4	5	4	18	50	4	4	86	36
Future Vol, veh/h	56	5	61	4	5	4	18	50	4	4	86	36
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	-	-	-	-	-	-	-	-	-	-	-	-
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	62	6	68	4	6	4	20	56	4	4	96	40
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	227	224	116	259	242	58	136	0	0	60	0	0
Stage 1	124	124	-	98	98	-	-	-	-	-	-	-
Stage 2	103	100	-	161	144	-	-	-	-	-	-	-
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	728	675	936	694	660	1008	1448	-	-	1544	-	-
Stage 1	880	793	-	908	814	-	-	-	-	-	-	-
Stage 2	903	812	-	841	778	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	711	664	936	632	649	1008	1448	-	-	1544	-	-
Mov Cap-2 Maneuver	711	664	-	632	649	-	-	-	-	-	-	-
Stage 1	868	791	-	895	803	-	-	-	-	-	-	-
Stage 2	880	801	-	772	776	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	10.4		10.1		1.9		0.2					
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1448	-	-	805	722	1544	-	-				
HCM Lane V/C Ratio	0.014	-	-	0.168	0.02	0.003	-	-				
HCM Control Delay (s)	7.5	0	-	10.4	10.1	7.3	0	-				
HCM Lane LOS	A	A	-	B	B	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.6	0.1	0	-	-				

Lanes, Volumes, Timings
600: Carolina Beach Ave & Site Access 1

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	5	68	102	48
Future Volume (vph)	0	0	5	68	102	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.957					
Flt Protected	0.996					
Satd. Flow (prot)	0	0	0	1855	1783	0
Flt Permitted	0.996					
Satd. Flow (perm)	0	0	0	1855	1783	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	1185			163	231	
Travel Time (s)	32.3			4.4	6.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	6	76	113	53
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	82	166	0
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	11.6%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis

600: Carolina Beach Ave & Site Access 1

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	5	68	102	48
Future Volume (Veh/h)	0	0	5	68	102	48
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	0	6	76	113	53
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	228	140	166			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	228	140	166			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	757	909	1412			
Direction, Lane #	NB 1	SB 1				
Volume Total	82	166				
Volume Left	6	0				
Volume Right	0	53				
cSH	1412	1700				
Volume to Capacity	0.00	0.10				
Queue Length 95th (ft)	0	0				
Control Delay (s)	0.6	0.0				
Lane LOS	A					
Approach Delay (s)	0.6	0.0				
Approach LOS						
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			11.6%	ICU Level of Service		A
Analysis Period (min)			15			

Lanes, Volumes, Timings 700: Carolina Beach Ave & Site Access 2

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	13	38	0	55	102	0
Future Volume (vph)	13	38	0	55	102	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.899					
Flt Protected	0.988					
Satd. Flow (prot)	1655	0	0	1863	1863	0
Flt Permitted	0.988					
Satd. Flow (perm)	1655	0	0	1863	1863	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	1207			487	163	
Travel Time (s)	32.9			13.3	4.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	14	42	0	61	113	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	56	0	0	61	113	0
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	15.4%			ICU Level of Service A		
Analysis Period (min)	15					

HCM 6th TWSC
700: Carolina Beach Ave & Site Access 2

Intersection

Int Delay, s/veh 2.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	13	38	0	55	102	0
Future Vol, veh/h	13	38	0	55	102	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	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	42	0	61	113	0

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	174	113	- 0 - 0
Stage 1	113	-	- - -
Stage 2	61	-	- - -
Critical Hdwy	6.42	6.22	- - -
Critical Hdwy Stg 1	5.42	-	- - -
Critical Hdwy Stg 2	5.42	-	- - -
Follow-up Hdwy	3.518	3.318	- - -
Pot Cap-1 Maneuver	816	940	0 - - 0
Stage 1	912	-	0 - - 0
Stage 2	962	-	0 - - 0
Platoon blocked, %			- -
Mov Cap-1 Maneuver	816	940	- - - -
Mov Cap-2 Maneuver	816	-	- - - -
Stage 1	912	-	- - - -
Stage 2	962	-	- - - -

Approach	EB	NB	SB
HCM Control Delay, s	9.2	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT EBLn1	SBT
Capacity (veh/h)	- 905	-
HCM Lane V/C Ratio	- 0.063	-
HCM Control Delay (s)	- 9.2	-
HCM Lane LOS	- A	-
HCM 95th %tile Q(veh)	- 0.2	-

Lanes, Volumes, Timings

100: US 421 (N Lake Park Blvd) & Carl Winner Drive

09/23/2025



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	60	315	545	103	447	844
Future Volume (vph)	60	315	545	103	447	844
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11
Storage Length (ft)	0	225		0	0	
Storage Lanes	1	1		0	0	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	0.95	0.95	0.95	0.95	0.95
Frt	0.898	0.850	0.976			
Flt Protected	0.984					0.983
Satd. Flow (prot)	1591	1454	3339	0	0	3363
Flt Permitted	0.984					0.597
Satd. Flow (perm)	1591	1454	3339	0	0	2042
Right Turn on Red		No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	25		25			25
Link Distance (ft)	511		1122			1120
Travel Time (s)	13.9		30.6			30.5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	67	350	606	114	497	938
Shared Lane Traffic (%)		41%				
Lane Group Flow (vph)	211	206	720	0	0	1435
Turn Type	Perm	Perm	NA		pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	4	4			6	
Detector Phase	4	4	2		1	6
Switch Phase						
Minimum Initial (s)	7.0	7.0	10.0		7.0	10.0
Minimum Split (s)	22.9	22.9	19.9		12.3	15.3
Total Split (s)	23.0	23.0	42.0		35.0	77.0
Total Split (%)	23.0%	23.0%	42.0%		35.0%	77.0%
Maximum Green (s)	18.1	18.1	37.1		29.7	71.7
Yellow Time (s)	3.0	3.0	3.2		3.0	3.2
All-Red Time (s)	1.9	1.9	1.7		2.3	2.1
Lost Time Adjust (s)	0.1	0.1	0.1			-0.3
Total Lost Time (s)	5.0	5.0	5.0			5.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?						
Vehicle Extension (s)	2.0	2.0	3.0		3.0	3.0
Recall Mode	None	None	C-Max		None	C-Max
Walk Time (s)	7.0	7.0	7.0			
Flash Dont Walk (s)	11.0	11.0	8.0			
Pedestrian Calls (#/hr)	0	0	0			
Act Effct Green (s)	16.4	16.4	73.6			73.6
Actuated g/C Ratio	0.16	0.16	0.74			0.74
v/c Ratio	0.81	0.86	0.29			1.02dl
Control Delay	63.6	72.9	5.0			28.7
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	63.6	72.9	5.0			28.7
LOS	E	E	A			C
Approach Delay	68.2		5.0			28.7
Approach LOS	E		A			C

Lanes, Volumes, Timings

100: US 421 (N Lake Park Blvd) & Carl Winner Drive

09/23/2025



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Queue Length 50th (ft)	128	133	73			388
Queue Length 95th (ft)	#235	#255	97			#626
Internal Link Dist (ft)	431		1042			1040
Turn Bay Length (ft)		225				
Base Capacity (vph)	286	261	2456			1502
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	0.74	0.79	0.29			0.96

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 85 (85%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.96

Intersection Signal Delay: 28.5

Intersection LOS: C

Intersection Capacity Utilization 76.9%

ICU Level of Service D

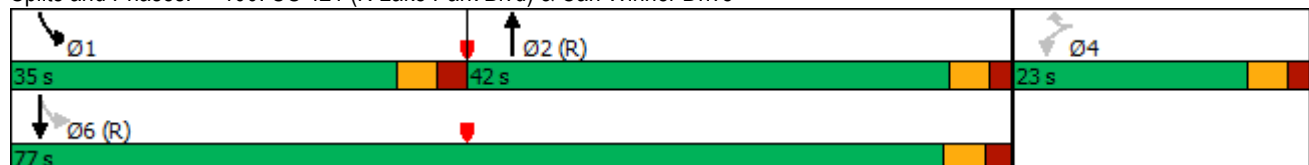
Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Splits and Phases: 100: US 421 (N Lake Park Blvd) & Carl Winner Drive



Lanes, Volumes, Timings
200: Canal Drive & Carolina Beach Ave

09/23/2025

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	4	13	63	4	62	38	112	77	31	58	10
Future Volume (vph)	32	4	13	63	4	62	38	112	77	31	58	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	100		0	0		125	0		0
Storage Lanes	0		0	1		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.965			0.858				0.850		0.986	
Flt Protected		0.968		0.950				0.988			0.985	
Satd. Flow (prot)	0	1740	0	1770	1598	0	0	1840	1583	0	1809	0
Flt Permitted		0.968		0.950				0.988			0.985	
Satd. Flow (perm)	0	1740	0	1770	1598	0	0	1840	1583	0	1809	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1670			470			1455			380	
Travel Time (s)		45.5			12.8			39.7			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)	36	4	14	70	4	69	42	124	86	34	64	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	54	0	70	73	0	0	166	86	0	109	0
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	28.2%				ICU Level of Service A							
Analysis Period (min)	15											

HCM 6th TWSC
200: Canal Drive & Carolina Beach Ave

09/23/2025

Intersection												
Int Delay, s/veh	5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	32	4	13	63	4	62	38	112	77	31	58	10
Future Vol, veh/h	32	4	13	63	4	62	38	112	77	31	58	10
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	-	-	-	-	125	-	-	-
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	36	4	14	70	4	69	42	124	86	34	64	11
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	426	432	70	355	351	124	75	0	0	210	0	0
Stage 1	138	138	-	208	208	-	-	-	-	-	-	-
Stage 2	288	294	-	147	143	-	-	-	-	-	-	-
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	539	516	993	600	573	927	1524	-	-	1361	-	-
Stage 1	865	782	-	794	730	-	-	-	-	-	-	-
Stage 2	720	670	-	856	779	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	474	487	993	562	540	927	1524	-	-	1361	-	-
Mov Cap-2 Maneuver	474	487	-	562	540	-	-	-	-	-	-	-
Stage 1	837	762	-	769	707	-	-	-	-	-	-	-
Stage 2	641	649	-	817	759	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	12.2		10.8		1.2		2.4					
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBRE	N1WBLn1	WBLn2	SBL	SBT	SBR				
Capacity (veh/h)	1524	-	-	552	562	888	1361	-	-			
HCM Lane V/C Ratio	0.028	-	-	0.099	0.125	0.083	0.025	-	-			
HCM Control Delay (s)	7.4	0	-	12.2	12.3	9.4	7.7	0	-			
HCM Lane LOS	A	A	-	B	B	A	A	A	-			
HCM 95th %tile Q(veh)	0.1	-	-	0.3	0.4	0.3	0.1	-	-			

Lanes, Volumes, Timings

300: Canal Drive & Carl Winner Drive/Parking Access

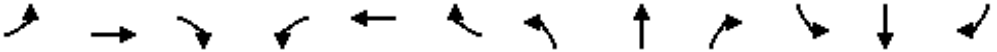
09/23/2025

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	429	28	65	4	4	15	86	49	16	8	32	288
Future Volume (vph)	429	28	65	4	4	15	86	49	16	8	32	288
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	50		0	0		175
Storage Lanes	1		0	0		0	1		0	0		1
Taper Length (ft)	50			25			50			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.895			0.908			0.962				0.850
Flt Protected	0.950				0.992		0.950				0.990	
Satd. Flow (prot)	1770	1667	0	0	1678	0	1770	1792	0	0	1844	1583
Flt Permitted	0.741				0.965		0.728				0.944	
Satd. Flow (perm)	1380	1667	0	0	1632	0	1356	1792	0	0	1758	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		511			1445			380			292	
Travel Time (s)		13.9			39.4			10.4			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)	477	31	72	4	4	17	96	54	18	9	36	320
Shared Lane Traffic (%)												
Lane Group Flow (vph)	477	103	0	0	25	0	96	72	0	0	45	320
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Detector Phase	4	4		8	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	29.0	29.0		29.0	29.0		29.0	29.0		29.0	29.0	29.0
Total Split (s)	29.0	29.0		29.0	29.0		29.0	29.0		29.0	29.0	29.0
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	50.0%
Maximum Green (s)	22.0	22.0		22.0	22.0		22.0	22.0		22.0	22.0	22.0
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0			-2.0		-2.0	-2.0			-2.0	-2.0
Total Lost Time (s)	5.0	5.0			5.0		5.0	5.0			5.0	5.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0		15.0	15.0		15.0	15.0	15.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		45.0	45.0		45.0	45.0	45.0
Recall Mode	None	None		None	None		Min	Min		Min	Min	Min
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	15.0	15.0		15.0	15.0		15.0	15.0		15.0	15.0	15.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	0
Act Effct Green (s)	21.5	21.5			21.5		15.3	15.3			15.3	15.3
Actuated g/C Ratio	0.46	0.46			0.46		0.32	0.32			0.32	0.32
v/c Ratio	0.76	0.14			0.03		0.22	0.12			0.08	0.62
Control Delay	22.6	9.3			8.9		13.2	11.9			11.5	19.8
Queue Delay	0.0	0.0			0.0		0.0	0.0			0.0	0.0
Total Delay	22.6	9.3			8.9		13.2	11.9			11.5	19.8
LOS	C	A			A		B	B			B	B

Lanes, Volumes, Timings

300: Canal Drive & Carl Winner Drive/Parking Access

09/23/2025

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		20.3			8.9			12.6			18.7	
Approach LOS		C			A			B			B	
Queue Length 50th (ft)	98	15			3		20	15			9	78
Queue Length 95th (ft)	#295	46			16		46	35			25	142
Internal Link Dist (ft)		431			1365			300			212	
Turn Bay Length (ft)	100						50					175
Base Capacity (vph)	727	878			859		714	944			926	833
Starvation Cap Reductn	0	0			0		0	0			0	0
Spillback Cap Reductn	0	0			0		0	0			0	0
Storage Cap Reductn	0	0			0		0	0			0	0
Reduced v/c Ratio	0.66	0.12			0.03		0.13	0.08			0.05	0.38

Intersection Summary

Area Type: Other

Cycle Length: 58

Actuated Cycle Length: 47.1

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.76

Intersection Signal Delay: 18.4

Intersection LOS: B

Intersection Capacity Utilization 50.2%

ICU Level of Service A

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 300: Canal Drive & Carl Winner Drive/Parking Access

 29 s	 29 s
 29 s	 29 s

Lanes, Volumes, Timings
400: Canal Drive & Pelican Lane

09/23/2025

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	68	17	312	167	4	281
Future Volume (vph)	68	17	312	167	4	281
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.973		0.953			
Flt Protected	0.962					0.999
Satd. Flow (prot)	1744	0	1775	0	0	1861
Flt Permitted	0.962					0.999
Satd. Flow (perm)	1744	0	1775	0	0	1861
Link Speed (mph)	25		25			25
Link Distance (ft)	287		292			1211
Travel Time (s)	7.8		8.0			33.0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	76	19	347	186	4	312
Shared Lane Traffic (%)						
Lane Group Flow (vph)	95	0	533	0	0	316
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	38.1%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection

Int Delay, s/veh 1.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	68	17	312	167	4	281
Future Vol, veh/h	68	17	312	167	4	281
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	76	19	347	186	4	312

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	760	440	0
Stage 1	440	-	-
Stage 2	320	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	374	617	-
Stage 1	649	-	-
Stage 2	736	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	372	617	-
Mov Cap-2 Maneuver	372	-	-
Stage 1	649	-	-
Stage 2	732	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.6	0	0.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	404	1035
HCM Lane V/C Ratio	-	-	0.234	0.004
HCM Control Delay (s)	-	-	16.6	8.5
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	0.9	0

Lanes, Volumes, Timings

500: Carolina Beach Ave & Pelican Lane

09/23/2025

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	41	35	79	4	17	4	24	78	8	4	66	31
Future Volume (vph)	41	35	79	4	17	4	24	78	8	4	66	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.931			0.980			0.990			0.959	
Flt Protected		0.987			0.993			0.989			0.998	
Satd. Flow (prot)	0	1712	0	0	1813	0	0	1824	0	0	1783	0
Flt Permitted		0.987			0.993			0.989			0.998	
Satd. Flow (perm)	0	1712	0	0	1813	0	0	1824	0	0	1783	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		287			1996			231			1344	
Travel Time (s)		7.8			54.4			6.3			36.7	
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)	46	39	88	4	19	4	27	87	9	4	73	34
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	173	0	0	27	0	0	123	0	0	111	0
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type: Unsignalized												
Intersection Capacity Utilization 33.9%												
ICU Level of Service A												
Analysis Period (min) 15												

HCM 6th TWSC
500: Carolina Beach Ave & Pelican Lane

09/23/2025

Intersection

Int Delay, s/veh 5.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	41	35	79	4	17	4	24	78	8	4	66	31
Future Vol, veh/h	41	35	79	4	17	4	24	78	8	4	66	31
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	-	-	-	-	-	-	-	-	-	-	-	-
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	46	39	88	4	19	4	27	87	9	4	73	34

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	255	248	90	308	261	92	107	0	0	96	0	0
Stage 1	98	98	-	146	146	-	-	-	-	-	-	-
Stage 2	157	150	-	162	115	-	-	-	-	-	-	-
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	698	655	968	644	644	965	1484	-	-	1498	-	-
Stage 1	908	814	-	857	776	-	-	-	-	-	-	-
Stage 2	845	773	-	840	800	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	667	641	968	549	630	965	1484	-	-	1498	-	-
Mov Cap-2 Maneuver	667	641	-	549	630	-	-	-	-	-	-	-
Stage 1	891	812	-	841	761	-	-	-	-	-	-	-
Stage 2	805	758	-	725	798	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.9	10.8	1.6	0.3
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBREBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1484	-	-	784	651	1498
HCM Lane V/C Ratio	0.018	-	-	0.22	0.043	0.003
HCM Control Delay (s)	7.5	0	-	10.9	10.8	7.4
HCM Lane LOS	A	A	-	B	B	A
HCM 95th %tile Q(veh)	0.1	-	-	0.8	0.1	0

Lanes, Volumes, Timings

600: Carolina Beach Ave & Site Access 1

09/23/2025



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				↕	↕	
Traffic Volume (vph)	0	0	7	110	83	65
Future Volume (vph)	0	0	7	110	83	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.941	
Flt Protected				0.997		
Satd. Flow (prot)	0	0	0	1857	1753	0
Flt Permitted				0.997		
Satd. Flow (perm)	0	0	0	1857	1753	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	1504			163	231	
Travel Time (s)	41.0			4.4	6.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	8	122	92	72
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	130	164	0
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 14.9%				ICU Level of Service A		
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis

600: Carolina Beach Ave & Site Access 1

09/23/2025



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				↕	↕	
Traffic Volume (veh/h)	0	0	7	110	83	65
Future Volume (Veh/h)	0	0	7	110	83	65
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	0	8	122	92	72
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	266	128	164			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	266	128	164			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	99			
cM capacity (veh/h)	719	922	1414			
Direction, Lane #	NB 1	SB 1				
Volume Total	130	164				
Volume Left	8	0				
Volume Right	0	72				
cSH	1414	1700				
Volume to Capacity	0.01	0.10				
Queue Length 95th (ft)	0	0				
Control Delay (s)	0.5	0.0				
Lane LOS	A					
Approach Delay (s)	0.5	0.0				
Approach LOS						
Intersection Summary						
Average Delay		0.2				
Intersection Capacity Utilization		14.9%		ICU Level of Service		A
Analysis Period (min)		15				

Lanes, Volumes, Timings

700: Carolina Beach Ave & Site Access 2

09/23/2025



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	14	42	0	96	83	0
Future Volume (vph)	14	42	0	96	83	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.899					
Flt Protected	0.987					
Satd. Flow (prot)	1653	0	0	1863	1863	0
Flt Permitted	0.987					
Satd. Flow (perm)	1653	0	0	1863	1863	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	1553			470	163	
Travel Time (s)	42.4			12.8	4.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	16	47	0	107	92	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	63	0	0	107	92	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 15.1% ICU Level of Service A

Analysis Period (min) 15

Intersection

Int Delay, s/veh 2.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	14	42	0	96	83	0
Future Vol, veh/h	14	42	0	96	83	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	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	47	0	107	92	0

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	199	92	0
Stage 1	92	-	-
Stage 2	107	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	790	965	0
Stage 1	932	-	0
Stage 2	917	-	0
Platoon blocked, %			-
Mov Cap-1 Maneuver	790	965	-
Mov Cap-2 Maneuver	790	-	-
Stage 1	932	-	-
Stage 2	917	-	-

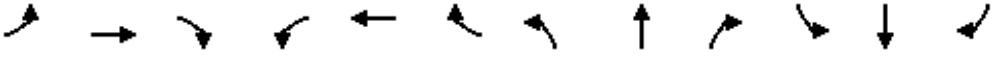
Approach	EB	NB	SB
HCM Control Delay, s	9.2	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBTEBLn1	SBT
Capacity (veh/h)	- 914	-
HCM Lane V/C Ratio	- 0.068	-
HCM Control Delay (s)	- 9.2	-
HCM Lane LOS	- A	-
HCM 95th %tile Q(veh)	- 0.2	-

Future Build Conditions with Improvements

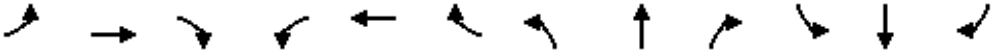
Lanes, Volumes, Timings

300: Canal Drive & Carl Winner Drive/Parking Access

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	350	12	64	4	9	6	83	45	8	7	26	309
Future Volume (vph)	350	12	64	4	9	6	83	45	8	7	26	309
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		100	0		0	50		0	0		175
Storage Lanes	1		1	0		0	1		0	0		1
Taper Length (ft)	50			25			50			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.873			0.955			0.977				0.850
Flt Protected	0.950				0.991		0.950				0.989	
Satd. Flow (prot)	1770	1626	0	0	1763	0	1770	1820	0	0	1842	1583
Flt Permitted	0.950				0.912		0.733				0.925	
Satd. Flow (perm)	1770	1626	0	0	1622	0	1365	1820	0	0	1723	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		511			1348			380			292	
Travel Time (s)		13.9			36.8			10.4			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)	389	13	71	4	10	7	92	50	9	8	29	343
Shared Lane Traffic (%)												
Lane Group Flow (vph)	389	84	0	0	21	0	92	59	0	0	37	343
Turn Type	Prot	NA		Perm	NA		Perm	NA		Perm	NA	pm+ov
Protected Phases	7	4			8			2			6	7
Permitted Phases				8			2			6		6
Detector Phase	7	4		8	8		2	2		6	6	7
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	7.0
Minimum Split (s)	14.0	21.0		21.0	21.0		21.0	21.0		17.0	17.0	14.0
Total Split (s)	43.0	64.0		21.0	21.0		26.0	26.0		26.0	26.0	43.0
Total Split (%)	47.8%	71.1%		23.3%	23.3%		28.9%	28.9%		28.9%	28.9%	47.8%
Maximum Green (s)	36.0	57.0		14.0	14.0		19.0	19.0		19.0	19.0	36.0
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0			-2.0		-2.0	-2.0			-2.0	-2.0
Total Lost Time (s)	5.0	5.0			5.0		5.0	5.0			5.0	5.0
Lead/Lag	Lead			Lag	Lag							Lead
Lead-Lag Optimize?	Yes			Yes	Yes							Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0		15.0	15.0		15.0	15.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		45.0	45.0		45.0	45.0	0.0
Recall Mode	Min	Min		None	None		None	None		None	None	Min
Walk Time (s)		7.0		7.0	7.0		7.0	7.0				
Flash Dont Walk (s)		7.0		7.0	7.0		7.0	7.0				
Pedestrian Calls (#/hr)		0		0	0		0	0				
Act Effct Green (s)	26.2	28.1			10.0		14.0	14.0			14.0	43.6
Actuated g/C Ratio	0.57	0.61			0.22		0.30	0.30			0.30	0.95
v/c Ratio	0.39	0.08			0.06		0.22	0.11			0.07	0.23
Control Delay	11.1	6.1			21.8		18.5	17.0			17.1	1.6
Queue Delay	0.0	0.0			0.0		0.0	0.0			0.0	0.0
Total Delay	11.1	6.1			21.8		18.5	17.0			17.1	1.6
LOS	B	A			C		B	B			B	A

Lanes, Volumes, Timings

300: Canal Drive & Carl Winner Drive/Parking Access

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		10.2			21.8			17.9			3.1	
Approach LOS		B			C			B			A	
Queue Length 50th (ft)	56	10			3		14	9			5	0
Queue Length 95th (ft)	201	27			28		74	50			36	72
Internal Link Dist (ft)		431			1268			300			212	
Turn Bay Length (ft)							50					175
Base Capacity (vph)	1491	1561			617		682	909			861	1491
Starvation Cap Reductn	0	0			0		0	0			0	0
Spillback Cap Reductn	0	0			0		0	0			0	0
Storage Cap Reductn	0	0			0		0	0			0	0
Reduced v/c Ratio	0.26	0.05			0.03		0.13	0.06			0.04	0.23

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 46.1

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.39

Intersection Signal Delay: 9.0

Intersection LOS: A

Intersection Capacity Utilization 45.8%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 300: Canal Drive & Carl Winner Drive/Parking Access

 Ø2	 Ø4
26 s	64 s
 Ø6	 Ø7
26 s	43 s
	 Ø8
	21 s

Lanes, Volumes, Timings

300: Canal Drive & Carl Winner Drive/Parking Access

09/24/2025

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	429	28	65	4	4	15	86	49	16	8	32	288
Future Volume (vph)	429	28	65	4	4	15	86	49	16	8	32	288
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		100	0		0	50		0	0		175
Storage Lanes	1		1	0		0	1		0	0		1
Taper Length (ft)	50			25			50			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.895			0.908			0.962				0.850
Flt Protected	0.950				0.992		0.950				0.990	
Satd. Flow (prot)	1770	1667	0	0	1678	0	1770	1792	0	0	1844	1583
Flt Permitted	0.950				0.921		0.728				0.933	
Satd. Flow (perm)	1770	1667	0	0	1558	0	1356	1792	0	0	1738	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		511			1445			380			292	
Travel Time (s)		13.9			39.4			10.4			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)	477	31	72	4	4	17	96	54	18	9	36	320
Shared Lane Traffic (%)												
Lane Group Flow (vph)	477	103	0	0	25	0	96	72	0	0	45	320
Turn Type	Prot	NA		Perm	NA		Perm	NA		Perm	NA	pm+ov
Protected Phases	7	4			8			2			6	7
Permitted Phases				8			2			6		6
Detector Phase	7	4		8	8		2	2		6	6	7
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	12.0	21.0		21.0	21.0		21.0	21.0		12.0	12.0	12.0
Total Split (s)	45.0	66.0		21.0	21.0		24.0	24.0		24.0	24.0	45.0
Total Split (%)	50.0%	73.3%		23.3%	23.3%		26.7%	26.7%		26.7%	26.7%	50.0%
Maximum Green (s)	38.0	59.0		14.0	14.0		17.0	17.0		17.0	17.0	38.0
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0			-2.0		-2.0	-2.0			-2.0	-2.0
Total Lost Time (s)	5.0	5.0			5.0		5.0	5.0			5.0	5.0
Lead/Lag	Lead			Lag	Lag							Lead
Lead-Lag Optimize?	Yes			Yes	Yes							Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0		15.0	15.0		15.0	15.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		45.0	45.0		45.0	45.0	0.0
Recall Mode	None	None		None	None		Min	Min		Min	Min	None
Walk Time (s)		7.0		7.0	7.0		7.0	7.0				
Flash Dont Walk (s)		7.0		7.0	7.0		7.0	7.0				
Pedestrian Calls (#/hr)		0		0	0		0	0				
Act Effct Green (s)	22.9	27.0			9.6		12.5	12.5			12.5	45.6
Actuated g/C Ratio	0.45	0.53			0.19		0.24	0.24			0.24	0.89
v/c Ratio	0.60	0.12			0.09		0.29	0.16			0.11	0.23
Control Delay	15.8	5.5			27.4		24.0	22.0			21.9	2.5
Queue Delay	0.0	0.0			0.0		0.0	0.0			0.0	0.0
Total Delay	15.8	5.5			27.4		24.0	22.0			21.9	2.5
LOS	B	A			C		C	C			C	A

Lanes, Volumes, Timings

300: Canal Drive & Carl Winner Drive/Parking Access

09/24/2025

	           											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		14.0			27.4			23.1			4.9	
Approach LOS		B			C			C			A	
Queue Length 50th (ft)	67	11			4		16	12			7	0
Queue Length 95th (ft)	265	33			34		86	66			46	67
Internal Link Dist (ft)		431			1365			300			212	
Turn Bay Length (ft)							50					175
Base Capacity (vph)	1441	1545			567		586	774			751	1466
Starvation Cap Reductn	20	0			0		0	0			0	0
Spillback Cap Reductn	0	0			0		0	0			0	0
Storage Cap Reductn	0	0			0		0	0			0	0
Reduced v/c Ratio	0.34	0.07			0.04		0.16	0.09			0.06	0.22

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 51.1

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.60

Intersection Signal Delay: 12.7

Intersection LOS: B

Intersection Capacity Utilization 50.2%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 300: Canal Drive & Carl Winner Drive/Parking Access

 Ø2	 Ø4
24 s	66 s
 Ø6	 Ø7
24 s	45 s
	 Ø8
	21 s

Queueing Analysis SimTraffic Worksheets

Queuing and Blocking Report
Existing Friday PM Peak

11/26/2024

Intersection: 100: US 421 (N Lake Park Blvd) & Carl Winner Drive

Movement	WB	WB	NB	NB	SB	SB
Directions Served	LR	R	T	TR	LT	T
Maximum Queue (ft)	217	200	118	113	338	320
Average Queue (ft)	120	117	65	46	171	112
95th Queue (ft)	183	177	110	96	274	242
Link Distance (ft)	421		1090	1090	1169	1169
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		225				
Storage Blk Time (%)	0	0				
Queuing Penalty (veh)	0	0				

Intersection: 200: Canal Drive & Carolina Beach Ave

Movement	EB	WB	WB	NB	NB	SB
Directions Served	LTR	L	TR	LT	R	LTR
Maximum Queue (ft)	35	59	50	24	4	32
Average Queue (ft)	17	27	18	1	0	2
95th Queue (ft)	42	46	42	11	4	15
Link Distance (ft)	1046		790	1158		314
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		100			125	
Storage Blk Time (%)		0				
Queuing Penalty (veh)		0				

Intersection: 300: Canal Drive & Carl Winner Drive

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	L	TR	LTR	L	TR	LT	R
Maximum Queue (ft)	162	121	37	63	57	47	161
Average Queue (ft)	83	24	10	25	20	15	86
95th Queue (ft)	137	72	33	55	50	41	138
Link Distance (ft)		421	1229		314	224	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	100			50			175
Storage Blk Time (%)	3	0		3	1		0
Queuing Penalty (veh)	2	0		2	1		0

Queuing and Blocking Report

Existing Friday PM Peak

11/26/2024

Intersection: 400: Canal Drive & Pelican Lane

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (ft)	64	2	50
Average Queue (ft)	30	0	4
95th Queue (ft)	57	2	26
Link Distance (ft)	230	224	1043
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 500: Carolina Beach Ave & Pelican Lane

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	59	37	12	6
Average Queue (ft)	30	11	1	0
95th Queue (ft)	50	35	7	4
Link Distance (ft)	230	1178	790	1095
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 5

Queuing and Blocking Report
Existing Saturday Midday Peak

12/02/2024

Intersection: 100: US 421 (N Lake Park Blvd) & Carl Winner Drive

Movement	WB	WB	NB	NB	SB	SB
Directions Served	LR	R	T	TR	LT	T
Maximum Queue (ft)	181	179	125	138	442	381
Average Queue (ft)	101	103	65	52	251	195
95th Queue (ft)	156	155	116	109	398	349
Link Distance (ft)	428		1090	1090	1086	1086
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		225				
Storage Blk Time (%)	0	0				
Queuing Penalty (veh)	0	0				

Intersection: 200: Canal Drive & Carolina Beach Ave

Movement	EB	WB	WB	NB	NB	SB
Directions Served	LTR	L	TR	LT	R	LTR
Maximum Queue (ft)	61	57	40	29	4	38
Average Queue (ft)	25	24	13	3	0	5
95th Queue (ft)	52	46	31	17	3	23
Link Distance (ft)	1192		798	1155		313
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		100			125	
Storage Blk Time (%)		0				
Queuing Penalty (veh)		0				

Intersection: 300: Canal Drive & Carl Winner Drive

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	L	TR	LTR	L	TR	LT	R
Maximum Queue (ft)	160	92	37	71	68	94	163
Average Queue (ft)	89	26	11	28	23	20	85
95th Queue (ft)	140	63	32	59	52	61	140
Link Distance (ft)		428	1091		313	224	
Upstream Blk Time (%)						0	
Queuing Penalty (veh)						0	
Storage Bay Dist (ft)	100			50			175
Storage Blk Time (%)	3	0		5	1		0
Queuing Penalty (veh)	2	0		3	1		0

Queuing and Blocking Report
Existing Saturday Midday Peak

12/02/2024

Intersection: 400: Canal Drive & Pelican Lane

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	64	44
Average Queue (ft)	33	2
95th Queue (ft)	56	19
Link Distance (ft)	231	1374
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 500: Carolina Beach Ave & Pelican Lane

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	69	40	15	8
Average Queue (ft)	34	17	1	0
95th Queue (ft)	57	42	8	6
Link Distance (ft)	231	1236	798	1242
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 7

Queuing and Blocking Report
Future No Build Friday PM Peak

11/26/2024

Intersection: 100: US 421 (N Lake Park Blvd) & Carl Winner Drive

Movement	WB	WB	NB	NB	SB	SB
Directions Served	LR	R	T	TR	LT	T
Maximum Queue (ft)	206	205	148	132	315	260
Average Queue (ft)	126	123	73	52	181	126
95th Queue (ft)	187	187	126	108	276	243
Link Distance (ft)	421		1090	1090	1169	1169
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		225				
Storage Blk Time (%)	0	0				
Queuing Penalty (veh)	0	0				

Intersection: 200: Canal Drive & Carolina Beach Ave

Movement	EB	WB	WB	NB	NB	SB
Directions Served	LTR	L	TR	LT	R	LTR
Maximum Queue (ft)	38	50	41	21	2	29
Average Queue (ft)	20	24	13	1	0	3
95th Queue (ft)	45	44	32	12	2	17
Link Distance (ft)	1460		806	1142		313
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		100			125	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 300: Canal Drive & Carl Winner Drive

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	L	TR	LTR	L	TR	LT	R
Maximum Queue (ft)	159	140	46	73	73	69	165
Average Queue (ft)	90	28	11	29	22	15	92
95th Queue (ft)	146	83	37	61	55	48	151
Link Distance (ft)		421	1725		313	224	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	100			50			175
Storage Blk Time (%)	5	0		4	1	0	0
Queuing Penalty (veh)	3	0		2	1	0	0

Queuing and Blocking Report
Future No Build Friday PM Peak

11/26/2024

Intersection: 400: Canal Drive & Pelican Lane

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (ft)	66	2	53
Average Queue (ft)	32	0	5
95th Queue (ft)	57	2	30
Link Distance (ft)	230	224	980
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 500: Carolina Beach Ave & Pelican Lane

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	66	34	12	6
Average Queue (ft)	32	11	0	0
95th Queue (ft)	54	36	7	4
Link Distance (ft)	230	1359	806	1049
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 7

Queuing and Blocking Report
Future No Build Saturday Midday Peak

12/02/2024

Intersection: 100: US 421 (N Lake Park Blvd) & Carl Winner Drive

Movement	WB	WB	NB	NB	SB	SB
Directions Served	LR	R	T	TR	LT	T
Maximum Queue (ft)	168	161	140	129	571	547
Average Queue (ft)	103	104	67	52	284	239
95th Queue (ft)	157	155	117	108	512	471
Link Distance (ft)	428		1090	1090	1086	1086
Upstream Blk Time (%)					0	0
Queuing Penalty (veh)					0	0
Storage Bay Dist (ft)		225				
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 200: Canal Drive & Carolina Beach Ave

Movement	EB	WB	WB	NB	NB	SB
Directions Served	LTR	L	TR	LT	R	LTR
Maximum Queue (ft)	59	47	33	36	8	38
Average Queue (ft)	27	23	11	3	0	4
95th Queue (ft)	54	42	27	19	5	22
Link Distance (ft)	1358		806	1005		313
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		100			125	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 300: Canal Drive & Carl Winner Drive

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	L	TR	LTR	L	TR	LT	R
Maximum Queue (ft)	145	152	38	62	72	173	186
Average Queue (ft)	88	30	9	28	25	27	103
95th Queue (ft)	138	82	31	56	57	104	175
Link Distance (ft)		428	1634		313	224	
Upstream Blk Time (%)						0	
Queuing Penalty (veh)						1	
Storage Bay Dist (ft)	100			50			175
Storage Blk Time (%)	3	0		4	2	0	2
Queuing Penalty (veh)	3	0		2	1	0	1

Queuing and Blocking Report
Future No Build Saturday Midday Peak

12/02/2024

Intersection: 400: Canal Drive & Pelican Lane

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (ft)	67	2	45
Average Queue (ft)	33	0	3
95th Queue (ft)	58	2	20
Link Distance (ft)	231	224	1301
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 500: Carolina Beach Ave & Pelican Lane

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	59	38	20	14
Average Queue (ft)	33	15	1	1
95th Queue (ft)	52	40	10	8
Link Distance (ft)	231	1274	806	1349
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 9

Queuing and Blocking Report

Future Buid Friday PM Peak

Intersection: 100: US 421 (N Lake Park Blvd) & Carl Winner Drive

Movement	WB	WB	NB	NB	SB	SB
Directions Served	LR	R	T	TR	LT	T
Maximum Queue (ft)	238	226	140	130	400	349
Average Queue (ft)	138	130	72	56	218	163
95th Queue (ft)	210	200	124	110	355	312
Link Distance (ft)	427		1090	1090	1169	1169
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		225				
Storage Blk Time (%)	1	0				
Queuing Penalty (veh)	1	1				

Intersection: 200: Canal Drive & Carolina Beach Ave

Movement	EB	WB	WB	NB	NB	SB
Directions Served	LTR	L	TR	LT	R	LTR
Maximum Queue (ft)	38	47	48	19	6	35
Average Queue (ft)	19	27	23	1	0	3
95th Queue (ft)	44	44	42	9	4	18
Link Distance (ft)	1254		434	1452		314
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		100			125	
Storage Blk Time (%)			0			
Queuing Penalty (veh)			0			

Intersection: 300: Canal Drive & Carl Winner Drive/Parking Access

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	L	TR	LTR	L	TR	LT	R
Maximum Queue (ft)	149	221	38	92	96	72	175
Average Queue (ft)	105	45	9	41	26	18	97
95th Queue (ft)	156	140	32	75	66	53	157
Link Distance (ft)		427	1314		314	224	
Upstream Blk Time (%)							0
Queuing Penalty (veh)							0
Storage Bay Dist (ft)	100			50			175
Storage Blk Time (%)	8	0		10	1		0
Queuing Penalty (veh)	6	0		5	1		0

Queuing and Blocking Report

Future Buid Friday PM Peak

Intersection: 400: Canal Drive & Pelican Lane

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (ft)	78	2	74
Average Queue (ft)	34	0	8
95th Queue (ft)	61	3	41
Link Distance (ft)	230	224	502
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 500: Carolina Beach Ave & Pelican Lane

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	67	38	31	5
Average Queue (ft)	37	11	3	0
95th Queue (ft)	57	36	18	5
Link Distance (ft)	230	1782	175	433
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 600: Carolina Beach Ave & Site Access 1

Movement	NB
Directions Served	LT
Maximum Queue (ft)	22
Average Queue (ft)	1
95th Queue (ft)	8
Link Distance (ft)	118
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Queuing and Blocking Report

Future Buid Friday PM Peak

Intersection: 700: Carolina Beach Ave & Site Access 2

Movement	EB
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Directions Served	LR
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Maximum Queue (ft)	54
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Average Queue (ft)	27
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95th Queue (ft)	50
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Link Distance (ft)	1173
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Upstream Blk Time (%)	
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Queuing Penalty (veh)	
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Storage Bay Dist (ft)	
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Storage Blk Time (%)	
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Queuing Penalty (veh)	
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Network Summary

Network wide Queuing Penalty: 14

Queuing and Blocking Report

Future Build Saturday Midday Peak

Intersection: 100: US 421 (N Lake Park Blvd) & Carl Winner Drive

Movement	WB	WB	NB	NB	SB	SB
Directions Served	LR	R	T	TR	LT	T
Maximum Queue (ft)	188	184	143	147	867	808
Average Queue (ft)	115	117	70	57	445	397
95th Queue (ft)	169	168	122	111	860	828
Link Distance (ft)	428		1090	1090	1086	1086
Upstream Blk Time (%)					4	5
Queuing Penalty (veh)					0	0
Storage Bay Dist (ft)		225				
Storage Blk Time (%)	0	0				
Queuing Penalty (veh)	0	0				

Intersection: 200: Canal Drive & Carolina Beach Ave

Movement	EB	WB	WB	NB	NB	SB
Directions Served	LTR	L	TR	LT	R	LTR
Maximum Queue (ft)	66	49	40	37	2	50
Average Queue (ft)	28	23	19	3	0	6
95th Queue (ft)	54	41	33	17	2	28
Link Distance (ft)	1642		420	1420		312
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		100			125	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 300: Canal Drive & Carl Winner Drive/Parking Access

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	L	TR	LTR	L	TR	LT	R
Maximum Queue (ft)	148	176	44	80	80	225	198
Average Queue (ft)	101	33	9	43	33	45	119
95th Queue (ft)	149	103	31	74	69	162	196
Link Distance (ft)		428	1410		312	224	
Upstream Blk Time (%)						2	
Queuing Penalty (veh)						6	
Storage Bay Dist (ft)	100			50			175
Storage Blk Time (%)	6	0		13	3	0	6
Queuing Penalty (veh)	5	0		8	3	1	2

Queuing and Blocking Report
Future Build Saturday Midday Peak

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Intersection: 400: Canal Drive & Pelican Lane

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	88	62
Average Queue (ft)	38	5
95th Queue (ft)	68	37
Link Distance (ft)	230	1189
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 500: Carolina Beach Ave & Pelican Lane

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	77	40	28	3
Average Queue (ft)	42	18	1	0
95th Queue (ft)	65	43	13	3
Link Distance (ft)	230	1967	172	1316
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 600: Carolina Beach Ave & Site Access 1

Movement	NB
Directions Served	LT
Maximum Queue (ft)	12
Average Queue (ft)	1
95th Queue (ft)	8
Link Distance (ft)	118
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Queuing and Blocking Report

Future Build Saturday Midday Peak

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Intersection: 700: Carolina Beach Ave & Site Access 2

Movement	EB
Directions Served	LR
Maximum Queue (ft)	59
Average Queue (ft)	29
95th Queue (ft)	53
Link Distance (ft)	1518
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 26

Queuing and Blocking Report
Future Buid W Imp Friday PM Peak

Intersection: 300: Canal Drive & Carl Winner Drive/Parking Access

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	L	TR	LTR	L	TR	LT	R
Maximum Queue (ft)	215	137	48	92	95	69	112
Average Queue (ft)	102	24	16	45	31	21	44
95th Queue (ft)	179	77	41	80	73	52	85
Link Distance (ft)	427		1314		314	224	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)		100		50			175
Storage Blk Time (%)	6	0		11	4		
Queuing Penalty (veh)	5	0		6	3		

Queuing and Blocking Report
FBWI Saturday Midday Peak

Intersection: 300: Canal Drive & Carl Winner Drive/Parking Access

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	L	TR	LTR	L	TR	LT	R
Maximum Queue (ft)	240	149	52	93	129	65	117
Average Queue (ft)	119	35	16	46	40	24	47
95th Queue (ft)	199	105	42	81	88	56	90
Link Distance (ft)	428		1410		312	224	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)		100		50			175
Storage Blk Time (%)	9	0		12	6		
Queuing Penalty (veh)	8	0		8	5		

Turning Movement Counts



TRAFFIC DATA COLLECTION

File Name : CarolinaBeach(Canal and Carl)
 Site Code :
 Start Date : 6/7/2024
 Page No : 1

Groups Printed- Cars + - Trucks

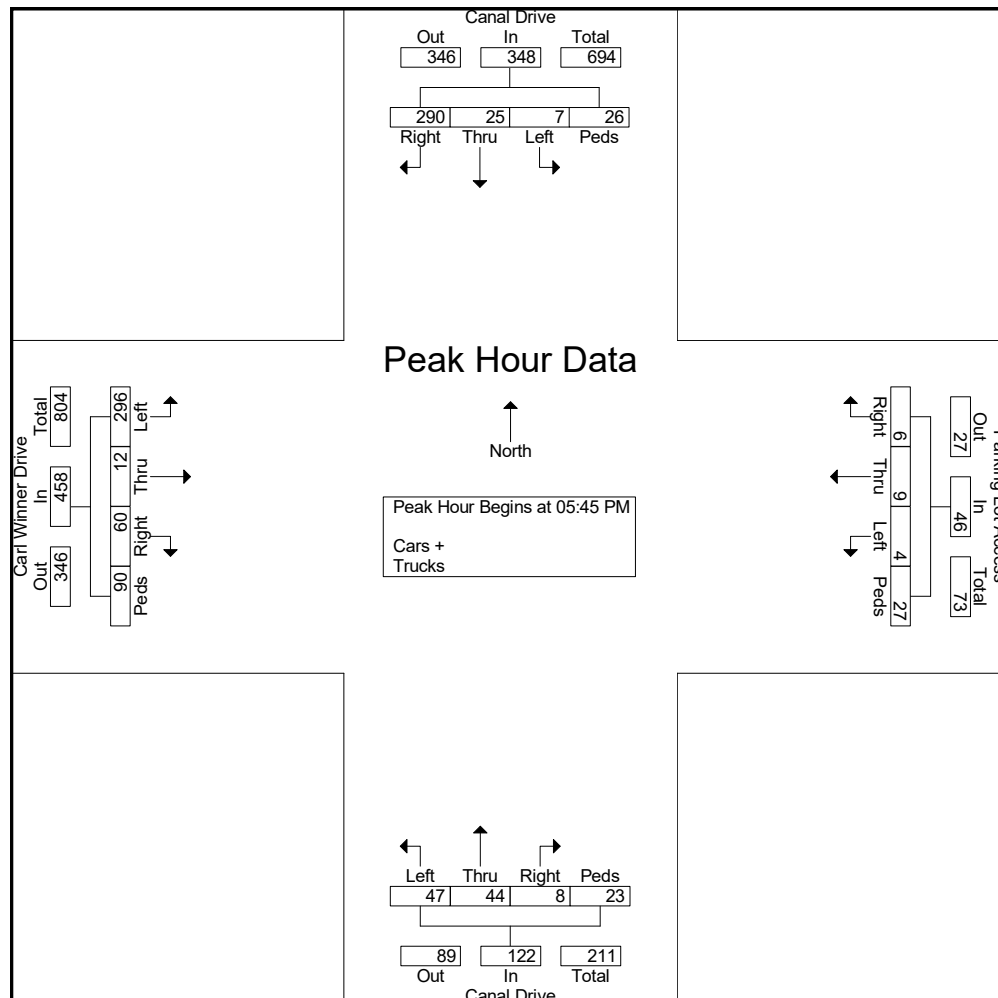
	Canal Drive Southbound					Parking Lot Access Westbound					Canal Drive Northbound					Carl Winner Drive Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
03:00 PM	0	9	66	2	77	0	0	2	3	5	14	10	1	0	25	68	3	17	6	94	201
03:15 PM	0	8	66	0	74	0	1	2	1	4	12	14	1	1	28	72	2	14	4	92	198
03:30 PM	1	6	64	0	71	0	0	0	3	3	18	7	1	3	29	63	1	13	2	79	182
03:45 PM	1	7	72	4	84	1	2	5	1	9	14	8	3	5	30	57	0	14	5	76	199
Total	2	30	268	6	306	1	3	9	8	21	58	39	6	9	112	260	6	58	17	341	780
04:00 PM	1	7	73	1	82	1	3	3	1	8	14	8	0	2	24	82	1	15	2	100	214
04:15 PM	0	4	55	0	59	0	1	1	5	7	13	8	2	4	27	63	2	13	0	78	171
04:30 PM	0	5	82	4	91	0	1	4	4	9	9	5	1	3	18	70	4	10	3	87	205
04:45 PM	1	6	68	0	75	0	2	2	1	5	11	8	4	0	23	78	1	12	11	102	205
Total	2	22	278	5	307	1	7	10	11	29	47	29	7	9	92	293	8	50	16	367	795
05:00 PM	1	2	56	2	61	2	1	3	2	8	17	10	3	2	32	72	3	13	0	88	189
05:15 PM	0	3	83	7	93	0	0	1	4	5	18	16	0	4	38	66	0	15	8	89	225
05:30 PM	0	11	76	2	89	0	2	3	0	5	11	12	2	7	32	79	2	10	4	95	221
05:45 PM	0	5	84	2	91	2	2	0	8	12	11	7	2	0	20	66	6	12	25	109	232
Total	1	21	299	13	334	4	5	7	14	30	57	45	7	13	122	283	11	50	37	381	867
06:00 PM	4	6	73	0	83	1	2	2	4	9	10	12	2	11	35	72	2	28	14	116	243
06:15 PM	2	5	80	12	99	0	2	4	4	10	17	13	4	2	36	80	3	9	22	114	259
06:30 PM	1	9	53	12	75	1	3	0	11	15	9	12	0	10	31	78	1	11	29	119	240
06:45 PM	1	11	65	5	82	1	1	1	2	5	16	11	1	2	30	52	3	7	9	71	188
Total	8	31	271	29	339	3	8	7	21	39	52	48	7	25	132	282	9	55	74	420	930
Grand Total	13	104	1116	53	1286	9	23	33	54	119	214	161	27	56	458	1118	34	213	144	1509	3372
Apprch %	1	8.1	86.8	4.1		7.6	19.3	27.7	45.4		46.7	35.2	5.9	12.2		74.1	2.3	14.1	9.5		
Total %	0.4	3.1	33.1	1.6	38.1	0.3	0.7	1	1.6	3.5	6.3	4.8	0.8	1.7	13.6	33.2	1	6.3	4.3	44.8	
Cars +	13	104	1111	51	1279	9	23	33	50	115	213	160	27	56	456	1114	34	212	136	1496	3346
% Cars +	100	100	99.6	96.2	99.5	100	100	100	92.6	96.6	99.5	99.4	100	100	99.6	99.6	100	99.5	94.4	99.1	99.2
Trucks	0	0	5	2	7	0	0	0	4	4	1	1	0	0	2	4	0	1	8	13	26
% Trucks	0	0	0.4	3.8	0.5	0	0	0	7.4	3.4	0.5	0.6	0	0	0.4	0.4	0	0.5	5.6	0.9	0.8



TRAFFIC DATA COLLECTION

File Name : CarolinaBeach(Canal and Carl)
 Site Code :
 Start Date : 6/7/2024
 Page No : 2

	Canal Drive Southbound					Parking Lot Access Westbound					Canal Drive Northbound					Carl Winner Drive Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 06:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:45 PM																					
05:45 PM	0	5	84	2	91	2	2	0	8	12	11	7	2	0	20	66	6	12	25	109	232
06:00 PM	4	6	73	0	83	1	2	2	4	9	10	12	2	11	35	72	2	28	14	116	243
06:15 PM	2	5	80	12	99	0	2	4	4	10	17	13	4	2	36	80	3	9	22	114	259
06:30 PM	1	9	53	12	75	1	3	0	11	15	9	12	0	10	31	78	1	11	29	119	240
Total Volume	7	25	290	26	348	4	9	6	27	46	47	44	8	23	122	296	12	60	90	458	974
% App. Total	2	7.2	83.3	7.5		8.7	19.6	13	58.7		38.5	36.1	6.6	18.9		64.6	2.6	13.1	19.7		
PHF	.438	.694	.863	.542	.879	.500	.750	.375	.614	.767	.691	.846	.500	.523	.847	.925	.500	.536	.776	.962	.940





TRAFFIC DATA COLLECTION

File Name : CarolinaBeach(Canal and Carolina Beach)
 Site Code :
 Start Date : 6/7/2024
 Page No : 1

Groups Printed- Cars + - Trucks

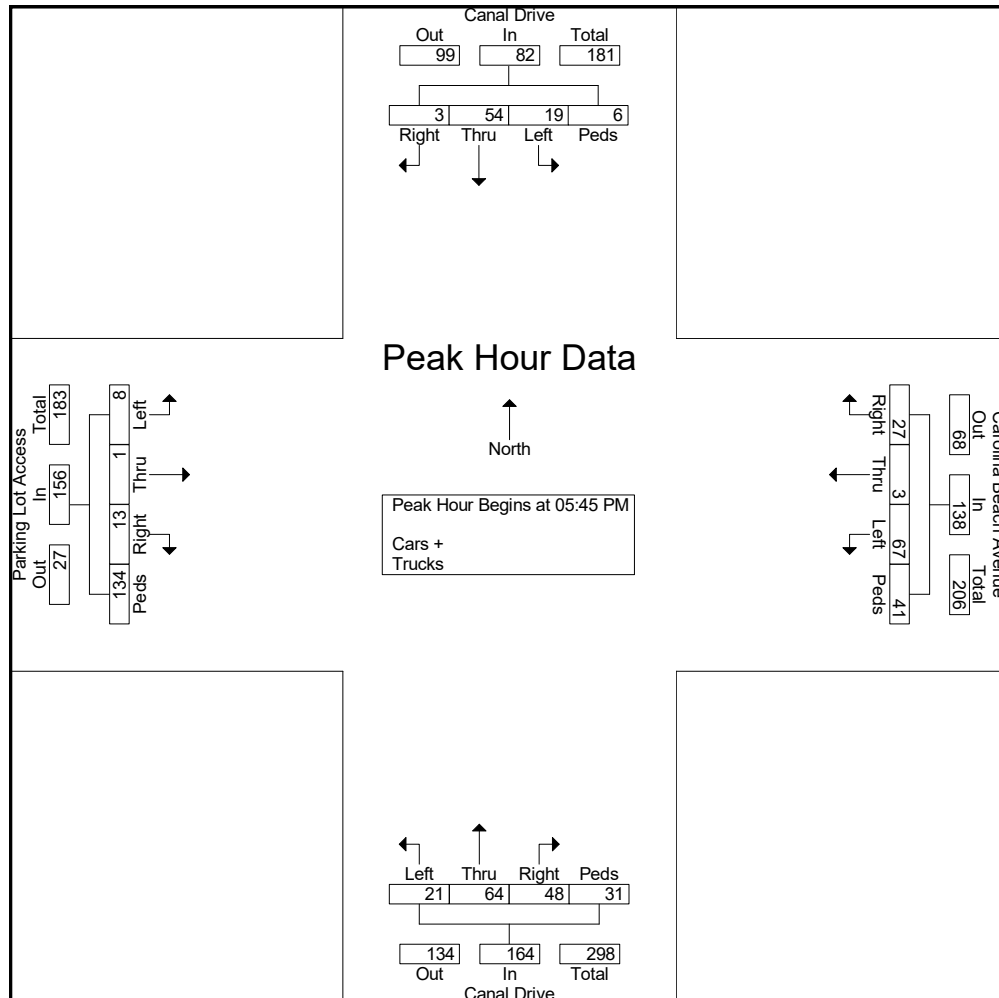
	Canal Drive Southbound					Carolina Beach Avenue Westbound					Canal Drive Northbound					Parking Lot Access Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
03:00 PM	7	19	1	4	31	14	0	5	2	21	4	12	11	1	28	4	0	1	31	36	116
03:15 PM	3	14	2	0	19	12	0	4	2	18	4	19	15	7	45	5	0	1	37	43	125
03:30 PM	4	13	1	0	18	17	0	7	1	25	4	13	19	5	41	3	0	1	22	26	110
03:45 PM	7	13	0	5	25	15	1	3	6	25	4	22	16	9	51	5	0	3	38	46	147
Total	21	59	4	9	93	58	1	19	11	89	16	66	61	22	165	17	0	6	128	151	498
04:00 PM	4	17	0	3	24	16	0	5	3	24	1	11	9	0	21	4	0	2	14	20	89
04:15 PM	6	9	2	0	17	14	0	6	3	23	3	13	16	2	34	2	0	1	8	11	85
04:30 PM	6	9	2	1	18	15	0	6	6	27	6	9	13	6	34	1	0	3	12	16	95
04:45 PM	2	13	1	2	18	12	0	4	5	21	8	19	12	13	52	2	0	5	32	39	130
Total	18	48	5	6	77	57	0	21	17	95	18	52	50	21	141	9	0	11	66	86	399
05:00 PM	7	10	3	4	24	12	0	11	9	32	2	18	11	3	34	1	0	2	22	25	115
05:15 PM	5	12	1	0	18	12	1	6	0	19	1	21	14	4	40	5	1	2	25	33	110
05:30 PM	1	18	3	0	22	12	0	4	0	16	4	17	5	6	32	1	2	1	15	19	89
05:45 PM	5	12	1	3	21	14	0	3	17	34	3	13	8	6	30	3	0	3	58	64	149
Total	18	52	8	7	85	50	1	24	26	101	10	69	38	19	136	10	3	8	120	141	463
06:00 PM	5	16	0	0	21	15	0	10	12	37	6	16	14	2	38	1	0	2	28	31	127
06:15 PM	5	11	1	0	17	19	3	7	1	30	5	23	14	12	54	3	0	5	27	35	136
06:30 PM	4	15	1	3	23	19	0	7	11	37	7	12	12	11	42	1	1	3	21	26	128
06:45 PM	2	16	4	1	23	13	0	11	13	37	2	20	8	0	30	2	0	4	10	16	106
Total	16	58	6	4	84	66	3	35	37	141	20	71	48	25	164	7	1	14	86	108	497
Grand Total	73	217	23	26	339	231	5	99	91	426	64	258	197	87	606	43	4	39	400	486	1857
Apprch %	21.5	64	6.8	7.7		54.2	1.2	23.2	21.4		10.6	42.6	32.5	14.4		8.8	0.8	8	82.3		
Total %	3.9	11.7	1.2	1.4	18.3	12.4	0.3	5.3	4.9	22.9	3.4	13.9	10.6	4.7	32.6	2.3	0.2	2.1	21.5	26.2	
Cars +	73	217	23	26	339	231	5	98	89	423	64	257	196	87	604	43	4	39	388	474	1840
% Cars +	100	100	100	100	100	100	100	99	97.8	99.3	100	99.6	99.5	100	99.7	100	100	100	97	97.5	99.1
Trucks	0	0	0	0	0	0	0	1	2	3	0	1	1	0	2	0	0	0	12	12	17
% Trucks	0	0	0	0	0	0	0	1	2.2	0.7	0	0.4	0.5	0	0.3	0	0	0	3	2.5	0.9



TRAFFIC DATA COLLECTION

File Name : CarolinaBeach(Canal and Carolina Beach)
 Site Code :
 Start Date : 6/7/2024
 Page No : 2

	Canal Drive Southbound					Carolina Beach Avenue Westbound					Canal Drive Northbound					Parking Lot Access Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 06:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:45 PM																					
05:45 PM	5	12	1	3	21	14	0	3	17	34	3	13	8	6	30	3	0	3	58	64	149
06:00 PM	5	16	0	0	21	15	0	10	12	37	6	16	14	2	38	1	0	2	28	31	127
06:15 PM	5	11	1	0	17	19	3	7	1	30	5	23	14	12	54	3	0	5	27	35	136
06:30 PM	4	15	1	3	23	19	0	7	11	37	7	12	12	11	42	1	1	3	21	26	128
Total Volume	19	54	3	6	82	67	3	27	41	138	21	64	48	31	164	8	1	13	134	156	540
% App. Total	23.2	65.9	3.7	7.3		48.6	2.2	19.6	29.7		12.8	39	29.3	18.9		5.1	0.6	8.3	85.9		
PHF	.950	.844	.750	.500	.891	.882	.250	.675	.603	.932	.750	.696	.857	.646	.759	.667	.250	.650	.578	.609	.906





TRAFFIC DATA COLLECTION

File Name : CarolinaBeach(Canal and Pelican)
 Site Code :
 Start Date : 6/7/2024
 Page No : 1

Groups Printed- Cars + - Trucks

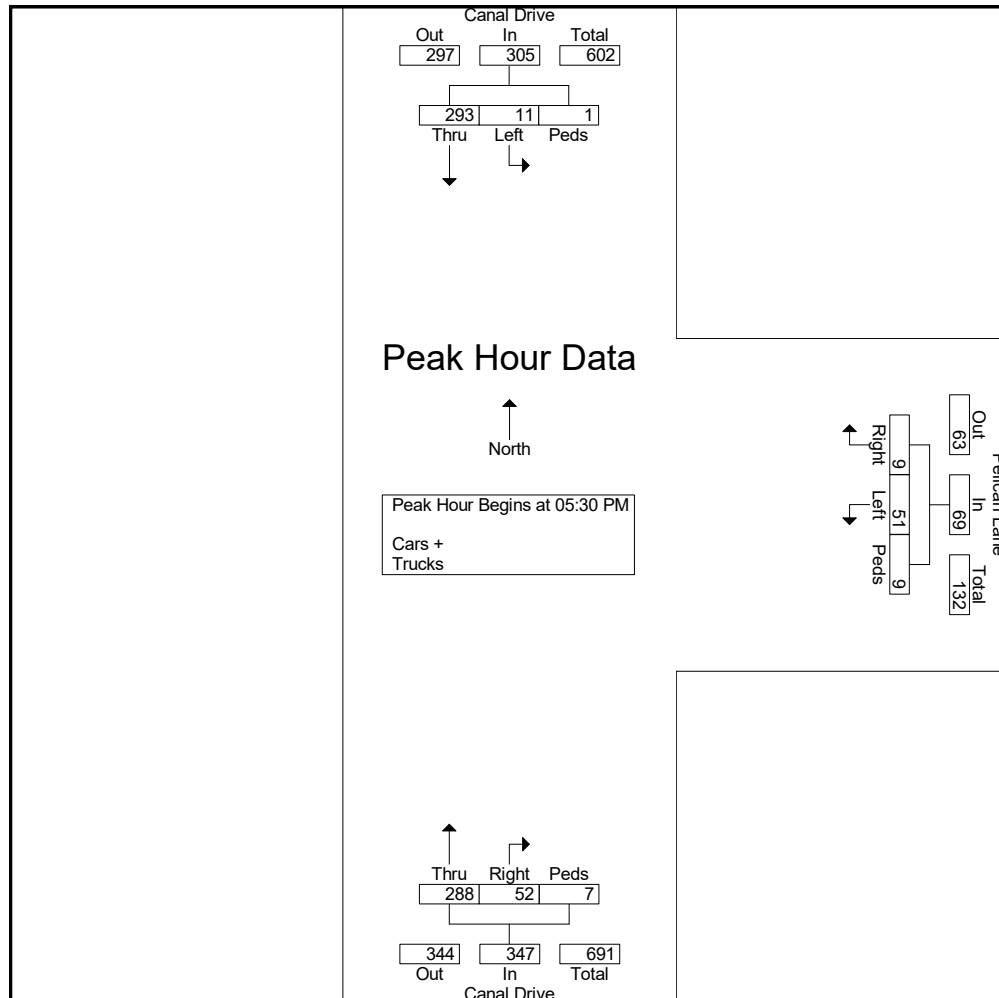
	Canal Drive Southbound				Pelican Lane Westbound				Canal Drive Northbound				
Start Time	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Int. Total
03:00 PM	3	60	0	63	15	2	0	17	63	11	0	74	154
03:15 PM	0	52	0	52	19	1	0	20	72	14	0	86	158
03:30 PM	1	58	0	59	14	2	0	16	54	10	0	64	139
03:45 PM	0	67	0	67	12	2	0	14	59	12	0	71	152
Total	4	237	0	241	60	7	0	67	248	47	0	295	603
04:00 PM	2	63	1	66	13	2	1	16	71	17	0	88	170
04:15 PM	2	49	0	51	10	4	0	14	57	15	0	72	137
04:30 PM	0	72	0	72	13	4	2	19	61	13	2	76	167
04:45 PM	0	63	0	63	14	2	0	16	76	10	0	86	165
Total	4	247	1	252	50	12	3	65	265	55	2	322	639
05:00 PM	0	45	0	45	11	2	0	13	71	11	0	82	140
05:15 PM	3	70	0	73	17	5	1	23	65	9	0	74	170
05:30 PM	1	77	0	78	11	3	0	14	75	15	1	91	183
05:45 PM	2	72	1	75	15	2	6	23	69	7	4	80	178
Total	6	264	1	271	54	12	7	73	280	42	5	327	671
06:00 PM	3	70	0	73	12	1	3	16	65	17	2	84	173
06:15 PM	5	74	0	79	13	3	0	16	79	13	0	92	187
06:30 PM	1	51	0	52	12	3	0	15	69	15	4	88	155
06:45 PM	0	68	0	68	8	4	4	16	49	13	0	62	146
Total	9	263	0	272	45	11	7	63	262	58	6	326	661
Grand Total	23	1011	2	1036	209	42	17	268	1055	202	13	1270	2574
Apprch %	2.2	97.6	0.2		78	15.7	6.3		83.1	15.9	1		
Total %	0.9	39.3	0.1	40.2	8.1	1.6	0.7	10.4	41	7.8	0.5	49.3	
Cars +	23	1007	2	1032	208	42	17	267	1053	199	13	1265	2564
% Cars +	100	99.6	100	99.6	99.5	100	100	99.6	99.8	98.5	100	99.6	99.6
Trucks	0	4	0	4	1	0	0	1	2	3	0	5	10
% Trucks	0	0.4	0	0.4	0.5	0	0	0.4	0.2	1.5	0	0.4	0.4



TRAFFIC DATA COLLECTION

File Name : CarolinaBeach(Canal and Pelican)
 Site Code :
 Start Date : 6/7/2024
 Page No : 2

	Canal Drive Southbound				Pelican Lane Westbound				Canal Drive Northbound				
Start Time	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 06:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 05:30 PM													
05:30 PM	1	77	0	78	11	3	0	14	75	15	1	91	183
05:45 PM	2	72	1	75	15	2	6	23	69	7	4	80	178
06:00 PM	3	70	0	73	12	1	3	16	65	17	2	84	173
06:15 PM	5	74	0	79	13	3	0	16	79	13	0	92	187
Total Volume	11	293	1	305	51	9	9	69	288	52	7	347	721
% App. Total	3.6	96.1	0.3		73.9	13	13		83	15	2		
PHF	.550	.951	.250	.965	.850	.750	.375	.750	.911	.765	.438	.943	.964





TRAFFIC DATA COLLECTION

File Name : CarolinaBeach(Carolina Beach and Pelican)
 Site Code :
 Start Date : 6/7/2024
 Page No : 1

Groups Printed- Cars + - Trucks

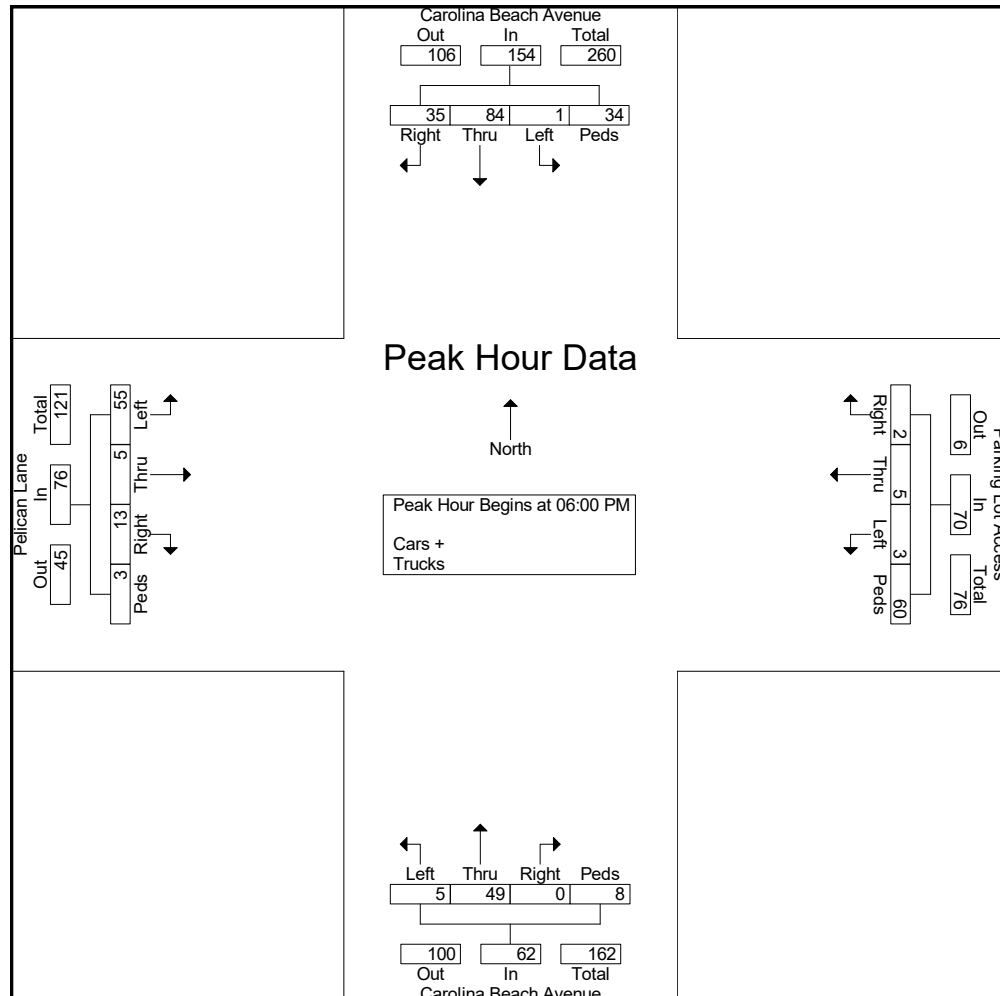
	Carolina Beach Avenue Southbound					Parking Lot Access Westbound					Carolina Beach Avenue Northbound					Pelican Lane Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
03:00 PM	1	12	11	3	27	1	5	2	1	9	0	11	1	0	12	10	3	2	0	15	63
03:15 PM	0	19	13	8	40	0	4	1	0	5	4	15	0	0	19	12	0	1	0	13	77
03:30 PM	0	14	7	5	26	0	1	0	0	1	0	16	1	4	21	10	4	0	0	14	62
03:45 PM	1	16	9	3	29	1	5	1	0	7	0	15	0	2	17	8	1	2	3	14	67
Total	2	61	40	19	122	2	15	4	1	22	4	57	2	6	69	40	8	5	3	56	269
04:00 PM	1	16	6	6	29	1	4	0	9	14	0	9	4	1	14	12	3	6	0	21	78
04:15 PM	0	14	7	2	23	1	7	1	5	14	1	12	0	6	19	12	3	1	5	21	77
04:30 PM	1	21	7	11	40	2	4	1	5	12	2	13	0	0	15	11	0	3	0	14	81
04:45 PM	1	21	8	7	37	0	4	1	4	9	1	10	0	2	13	9	0	0	0	9	68
Total	3	72	28	26	129	4	19	3	23	49	4	44	4	9	61	44	6	10	5	65	304
05:00 PM	1	15	6	8	30	2	1	0	4	7	5	9	1	3	18	6	3	3	0	12	67
05:15 PM	1	14	13	7	35	3	5	0	10	18	1	18	1	2	22	7	0	2	0	9	84
05:30 PM	0	16	9	10	35	1	1	0	25	27	2	7	0	4	13	16	0	3	2	21	96
05:45 PM	0	19	8	0	27	0	2	0	14	16	1	6	0	5	12	8	1	1	1	11	66
Total	2	64	36	25	127	6	9	0	53	68	9	40	2	14	65	37	4	9	3	53	313
06:00 PM	0	18	11	8	37	2	1	0	9	12	1	15	0	2	18	21	1	2	1	25	92
06:15 PM	0	25	7	6	38	0	2	0	11	13	1	12	0	0	13	11	1	5	0	17	81
06:30 PM	0	22	8	10	40	1	2	2	20	25	3	14	0	1	18	12	2	3	0	17	100
06:45 PM	1	19	9	10	39	0	0	0	20	20	0	8	0	5	13	11	1	3	2	17	89
Total	1	84	35	34	154	3	5	2	60	70	5	49	0	8	62	55	5	13	3	76	362
Grand Total	8	281	139	104	532	15	48	9	137	209	22	190	8	37	257	176	23	37	14	250	1248
Apprch %	1.5	52.8	26.1	19.5		7.2	23	4.3	65.6		8.6	73.9	3.1	14.4		70.4	9.2	14.8	5.6		
Total %	0.6	22.5	11.1	8.3	42.6	1.2	3.8	0.7	11	16.7	1.8	15.2	0.6	3	20.6	14.1	1.8	3	1.1	20	
Cars +	8	281	139	104	532	15	47	9	135	206	22	189	8	37	256	175	22	36	14	247	1241
% Cars +	100	100	100	100	100	100	97.9	100	98.5	98.6	100	99.5	100	100	99.6	99.4	95.7	97.3	100	98.8	99.4
Trucks	0	0	0	0	0	0	1	0	2	3	0	1	0	0	1	1	1	1	0	3	7
% Trucks	0	0	0	0	0	0	2.1	0	1.5	1.4	0	0.5	0	0	0.4	0.6	4.3	2.7	0	1.2	0.6



TRAFFIC DATA COLLECTION

File Name : CarolinaBeach(Carolina Beach and Pelican)
 Site Code :
 Start Date : 6/7/2024
 Page No : 2

	Carolina Beach Avenue Southbound					Parking Lot Access Westbound					Carolina Beach Avenue Northbound					Pelican Lane Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 06:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 06:00 PM																					
06:00 PM	0	18	11	8	37	2	1	0	9	12	1	15	0	2	18	21	1	2	1	25	92
06:15 PM	0	25	7	6	38	0	2	0	11	13	1	12	0	0	13	11	1	5	0	17	81
06:30 PM	0	22	8	10	40	1	2	2	20	25	3	14	0	1	18	12	2	3	0	17	100
06:45 PM	1	19	9	10	39	0	0	0	20	20	0	8	0	5	13	11	1	3	2	17	89
Total Volume	1	84	35	34	154	3	5	2	60	70	5	49	0	8	62	55	5	13	3	76	362
% App. Total	0.6	54.5	22.7	22.1		4.3	7.1	2.9	85.7		8.1	79	0	12.9		72.4	6.6	17.1	3.9		
PHF	.250	.840	.795	.850	.963	.375	.625	.250	.750	.700	.417	.817	.000	.400	.861	.655	.625	.650	.375	.760	.905





TRAFFIC DATA COLLECTION

File Name : CarolinaBeach(US 421 and Carl)
 Site Code :
 Start Date : 6/7/2024
 Page No : 1

Groups Printed- Cars + - Trucks

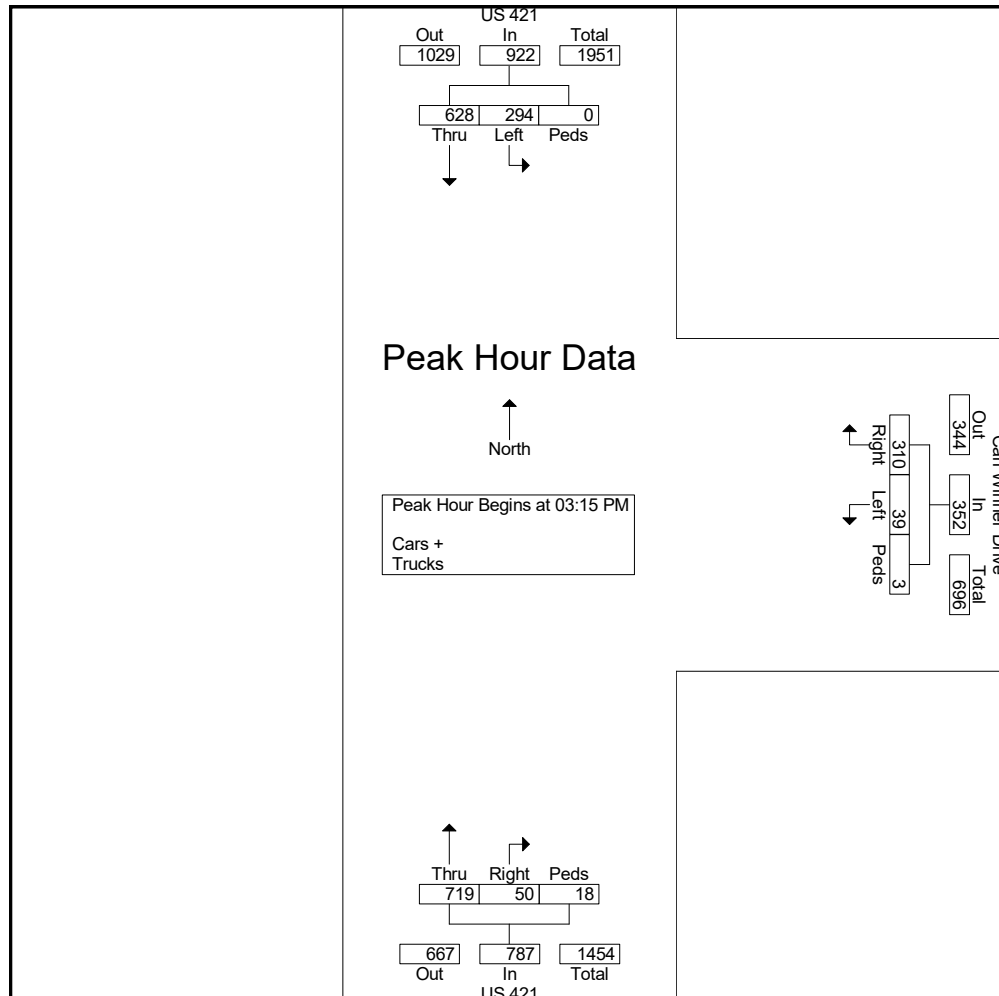
	US 421 Southbound				Carl Winner Drive Westbound				US 421 Northbound				
Start Time	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Int. Total
03:00 PM	76	143	0	219	9	77	8	94	174	13	1	188	501
03:15 PM	65	149	0	214	9	70	2	81	187	15	7	209	504
03:30 PM	69	159	0	228	13	72	0	85	173	18	6	197	510
03:45 PM	68	183	0	251	10	81	0	91	162	5	5	172	514
Total	278	634	0	912	41	300	10	351	696	51	19	766	2029
04:00 PM	92	137	0	229	7	87	1	95	197	12	0	209	533
04:15 PM	73	138	0	211	6	66	1	73	165	14	1	180	464
04:30 PM	67	150	0	217	16	80	3	99	136	14	6	156	472
04:45 PM	78	137	0	215	12	75	4	91	156	19	1	176	482
Total	310	562	0	872	41	308	9	358	654	59	8	721	1951
05:00 PM	79	140	0	219	17	61	1	79	155	15	2	172	470
05:15 PM	71	142	3	216	16	78	0	94	142	15	4	161	471
05:30 PM	76	140	0	216	8	81	5	94	161	17	13	191	501
05:45 PM	75	116	0	191	23	83	3	109	143	13	9	165	465
Total	301	538	3	842	64	303	9	376	601	60	28	689	1907
06:00 PM	79	159	0	238	6	74	2	82	113	15	0	128	448
06:15 PM	76	128	0	204	29	81	4	114	134	18	8	160	478
06:30 PM	73	137	0	210	15	51	8	74	120	17	12	149	433
06:45 PM	49	119	0	168	15	54	4	73	111	14	2	127	368
Total	277	543	0	820	65	260	18	343	478	64	22	564	1727
Grand Total	1166	2277	3	3446	211	1171	46	1428	2429	234	77	2740	7614
Apprch %	33.8	66.1	0.1		14.8	82	3.2		88.6	8.5	2.8		
Total %	15.3	29.9	0	45.3	2.8	15.4	0.6	18.8	31.9	3.1	1	36	
Cars +	1165	2268	3	3436	211	1166	37	1414	2415	233	74	2722	7572
% Cars +	99.9	99.6	100	99.7	100	99.6	80.4	99	99.4	99.6	96.1	99.3	99.4
Trucks	1	9	0	10	0	5	9	14	14	1	3	18	42
% Trucks	0.1	0.4	0	0.3	0	0.4	19.6	1	0.6	0.4	3.9	0.7	0.6



TRAFFIC DATA COLLECTION

File Name : CarolinaBeach(US 421 and Carl)
 Site Code :
 Start Date : 6/7/2024
 Page No : 2

	US 421 Southbound				Carl Winner Drive Westbound				US 421 Northbound				
Start Time	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 06:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 03:15 PM													
03:15 PM	65	149	0	214	9	70	2	81	187	15	7	209	504
03:30 PM	69	159	0	228	13	72	0	85	173	18	6	197	510
03:45 PM	68	183	0	251	10	81	0	91	162	5	5	172	514
04:00 PM	92	137	0	229	7	87	1	95	197	12	0	209	533
Total Volume	294	628	0	922	39	310	3	352	719	50	18	787	2061
% App. Total	31.9	68.1	0		11.1	88.1	0.9		91.4	6.4	2.3		
PHF	.799	.858	.000	.918	.750	.891	.375	.926	.912	.694	.643	.941	.967





TRAFFIC DATA COLLECTION

File Name : CarolinaBeach(Canal and Carl) Saturday
 Site Code :
 Start Date : 6/8/2024
 Page No : 1

Groups Printed- Cars + - Trucks

	Canal Drive Southbound					Parking Lot Access Westbound					Canal Drive Northbound					Carl Winner Drive Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
11:00 AM	2	9	62	8	81	0	0	4	12	16	13	16	5	5	39	95	5	12	7	119	255
11:15 AM	1	8	62	1	72	0	0	5	3	8	9	8	2	6	25	90	10	17	0	117	222
11:30 AM	1	9	72	1	83	1	1	3	10	15	10	12	5	8	35	86	3	12	4	105	238
11:45 AM	4	5	73	0	82	1	3	3	19	26	14	12	4	11	41	86	9	19	6	120	269
Total	8	31	269	10	318	2	4	15	44	65	46	48	16	30	140	357	27	60	17	461	984
12:00 PM	0	9	60	2	71	2	1	3	17	23	11	11	2	14	38	79	5	15	2	101	233
12:15 PM	2	7	58	4	71	3	0	1	8	12	13	18	4	8	43	67	6	18	10	101	227
12:30 PM	2	3	64	1	70	1	3	9	17	30	6	11	4	10	31	75	6	11	2	94	225
12:45 PM	1	6	65	4	76	0	5	7	10	22	19	12	8	5	44	80	5	21	9	115	257
Total	5	25	247	11	288	6	9	20	52	87	49	52	18	37	156	301	22	65	23	411	942
Grand Total	13	56	516	21	606	8	13	35	96	152	95	100	34	67	296	658	49	125	40	872	1926
Apprch %	2.1	9.2	85.1	3.5		5.3	8.6	23	63.2		32.1	33.8	11.5	22.6		75.5	5.6	14.3	4.6		
Total %	0.7	2.9	26.8	1.1	31.5	0.4	0.7	1.8	5	7.9	4.9	5.2	1.8	3.5	15.4	34.2	2.5	6.5	2.1	45.3	
Cars +	13	56	514	20	603	8	13	35	95	151	94	100	34	67	295	657	49	125	38	869	1918
% Cars +	100	100	99.6	95.2	99.5	100	100	100	99	99.3	98.9	100	100	100	99.7	99.8	100	100	95	99.7	99.6
Trucks	0	0	2	1	3	0	0	0	1	1	1	0	0	0	1	1	0	0	2	3	8
% Trucks	0	0	0.4	4.8	0.5	0	0	0	1	0.7	1.1	0	0	0	0.3	0.2	0	0	5	0.3	0.4



TRAFFIC DATA COLLECTION

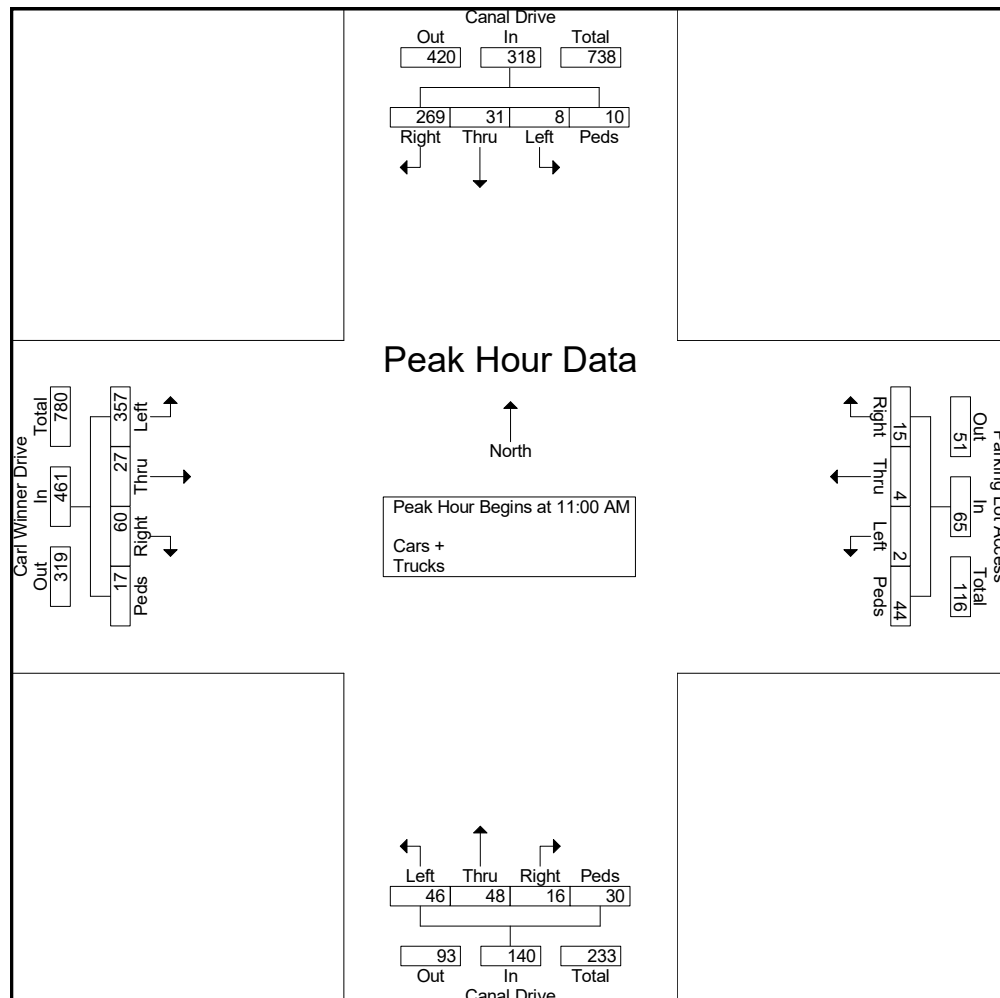
File Name : CarolinaBeach(Canal and Carl) Saturday

Site Code :

Start Date : 6/8/2024

Page No : 2

	Canal Drive Southbound					Parking Lot Access Westbound					Canal Drive Northbound					Carl Winner Drive Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 12:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:00 AM																					
11:00 AM	2	9	62	8	81	0	0	4	12	16	13	16	5	5	39	95	5	12	7	119	255
11:15 AM	1	8	62	1	72	0	0	5	3	8	9	8	2	6	25	90	10	17	0	117	222
11:30 AM	1	9	72	1	83	1	1	3	10	15	10	12	5	8	35	86	3	12	4	105	238
11:45 AM	4	5	73	0	82	1	3	3	19	26	14	12	4	11	41	86	9	19	6	120	269
Total Volume	8	31	269	10	318	2	4	15	44	65	46	48	16	30	140	357	27	60	17	461	984
% App. Total	2.5	9.7	84.6	3.1		3.1	6.2	23.1	67.7		32.9	34.3	11.4	21.4		77.4	5.9	13	3.7		
PHF	.500	.861	.921	.313	.958	.500	.333	.750	.579	.625	.821	.750	.800	.682	.854	.939	.675	.789	.607	.960	.914





TRAFFIC DATA COLLECTION

File Name : CarolinaBeach(Canal and Carolina Beach) Saturday
 Site Code :
 Start Date : 6/8/2024
 Page No : 1

Groups Printed- Cars + - Trucks

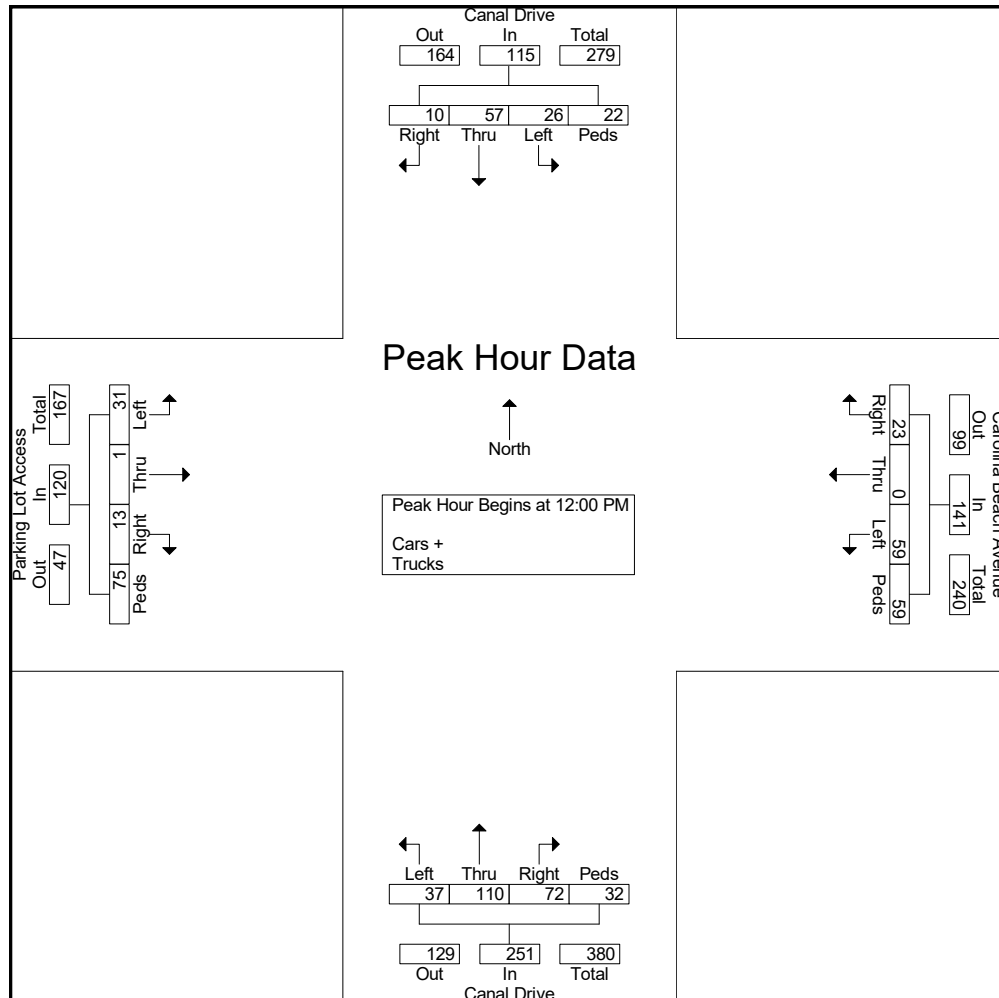
	Canal Drive Southbound					Carolina Beach Avenue Westbound					Canal Drive Northbound					Parking Lot Access Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
11:00 AM	2	14	2	2	20	16	0	6	16	38	7	27	22	2	58	5	0	2	26	33	149
11:15 AM	4	16	4	0	24	17	0	6	3	26	7	21	22	0	50	5	0	6	12	23	123
11:30 AM	3	17	1	0	21	15	1	3	14	33	1	21	13	2	37	3	0	1	23	27	118
11:45 AM	3	18	1	0	22	11	1	8	14	34	8	21	23	4	56	6	0	3	20	29	141
Total	12	65	8	2	87	59	2	23	47	131	23	90	80	8	201	19	0	12	81	112	531
12:00 PM	8	16	4	4	32	12	0	5	11	28	11	22	13	12	58	12	0	2	13	27	145
12:15 PM	12	16	1	9	38	15	0	6	10	31	7	28	18	10	63	8	1	2	8	19	151
12:30 PM	5	10	3	5	23	18	0	4	24	46	9	26	23	4	62	4	0	6	16	26	157
12:45 PM	1	15	2	4	22	14	0	8	14	36	10	34	18	6	68	7	0	3	38	48	174
Total	26	57	10	22	115	59	0	23	59	141	37	110	72	32	251	31	1	13	75	120	627
Grand Total	38	122	18	24	202	118	2	46	106	272	60	200	152	40	452	50	1	25	156	232	1158
Apprch %	18.8	60.4	8.9	11.9		43.4	0.7	16.9	39		13.3	44.2	33.6	8.8		21.6	0.4	10.8	67.2		
Total %	3.3	10.5	1.6	2.1	17.4	10.2	0.2	4	9.2	23.5	5.2	17.3	13.1	3.5	39	4.3	0.1	2.2	13.5	20	
Cars +	38	122	18	24	202	118	2	45	99	264	60	200	151	40	451	50	1	25	151	227	1144
% Cars +	100	100	100	100	100	100	100	97.8	93.4	97.1	100	100	99.3	100	99.8	100	100	100	96.8	97.8	98.8
Trucks	0	0	0	0	0	0	0	1	7	8	0	0	1	0	1	0	0	0	5	5	14
% Trucks	0	0	0	0	0	0	0	2.2	6.6	2.9	0	0	0.7	0	0.2	0	0	0	3.2	2.2	1.2



TRAFFIC DATA COLLECTION

File Name : CarolinaBeach(Canal and Carolina Beach) Saturday
 Site Code :
 Start Date : 6/8/2024
 Page No : 2

	Canal Drive Southbound					Carolina Beach Avenue Westbound					Canal Drive Northbound					Parking Lot Access Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 12:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:00 PM																					
12:00 PM	8	16	4	4	32	12	0	5	11	28	11	22	13	12	58	12	0	2	13	27	145
12:15 PM	12	16	1	9	38	15	0	6	10	31	7	28	18	10	63	8	1	2	8	19	151
12:30 PM	5	10	3	5	23	18	0	4	24	46	9	26	23	4	62	4	0	6	16	26	157
12:45 PM	1	15	2	4	22	14	0	8	14	36	10	34	18	6	68	7	0	3	38	48	174
Total Volume	26	57	10	22	115	59	0	23	59	141	37	110	72	32	251	31	1	13	75	120	627
% App. Total	22.6	49.6	8.7	19.1		41.8	0	16.3	41.8		14.7	43.8	28.7	12.7		25.8	0.8	10.8	62.5		
PHF	.542	.891	.625	.611	.757	.819	.000	.719	.615	.766	.841	.809	.783	.667	.923	.646	.250	.542	.493	.625	.901





TRAFFIC DATA COLLECTION

File Name : CarolinaBeach(Canal and Pelican) Saturday
 Site Code :
 Start Date : 6/8/2024
 Page No : 1

Groups Printed- Cars + - Trucks

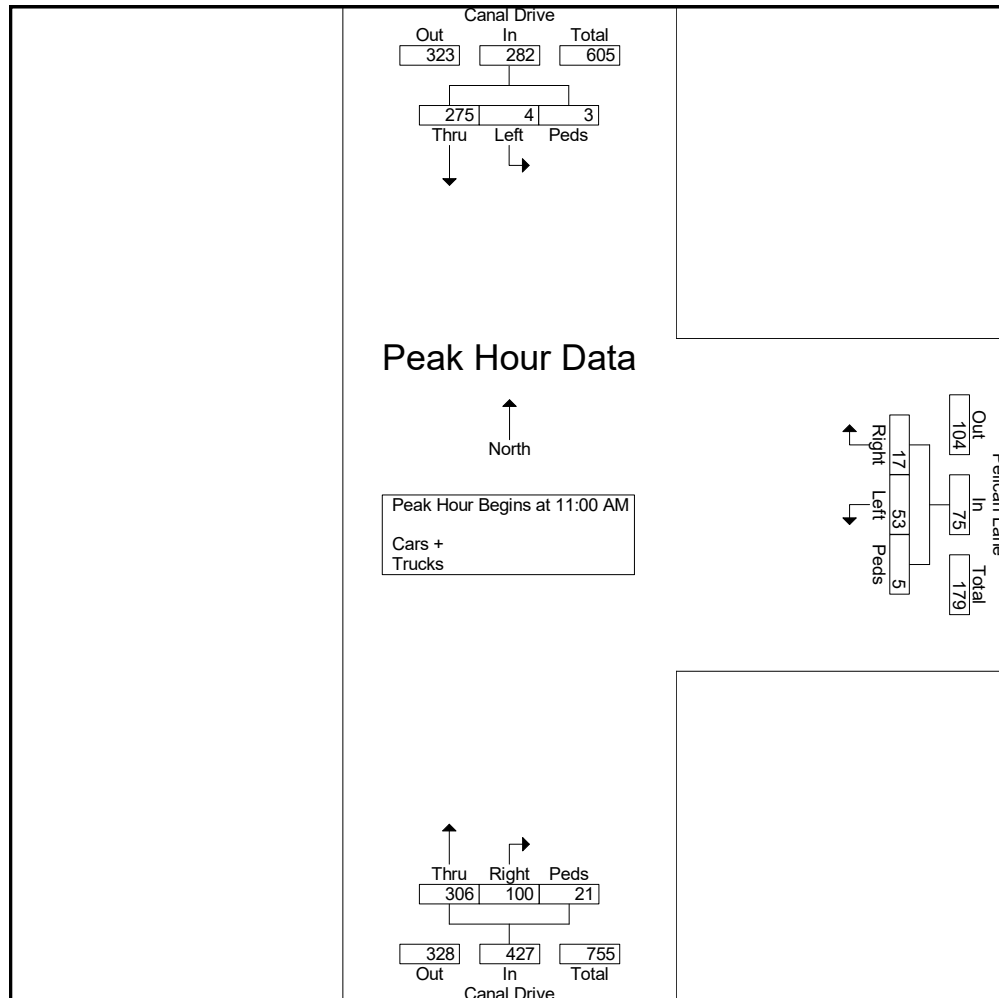
	Canal Drive Southbound				Pelican Lane Westbound				Canal Drive Northbound				
Start Time	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Int. Total
11:00 AM	1	70	2	73	11	7	0	18	87	25	4	116	207
11:15 AM	1	65	0	66	12	4	1	17	79	23	5	107	190
11:30 AM	2	71	1	74	14	4	4	22	71	27	8	106	202
11:45 AM	0	69	0	69	16	2	0	18	69	25	4	98	185
Total	4	275	3	282	53	17	5	75	306	100	21	427	784
12:00 PM	2	57	3	62	14	3	5	22	72	20	1	93	177
12:15 PM	2	63	3	68	8	4	5	17	70	17	2	89	174
12:30 PM	0	54	0	54	15	4	3	22	66	17	11	94	170
12:45 PM	2	49	0	51	22	5	2	29	75	18	1	94	174
Total	6	223	6	235	59	16	15	90	283	72	15	370	695
Grand Total	10	498	9	517	112	33	20	165	589	172	36	797	1479
Apprch %	1.9	96.3	1.7		67.9	20	12.1		73.9	21.6	4.5		
Total %	0.7	33.7	0.6	35	7.6	2.2	1.4	11.2	39.8	11.6	2.4	53.9	
Cars +	10	495	8	513	112	32	14	158	588	172	36	796	1467
% Cars +	100	99.4	88.9	99.2	100	97	70	95.8	99.8	100	100	99.9	99.2
Trucks	0	3	1	4	0	1	6	7	1	0	0	1	12
% Trucks	0	0.6	11.1	0.8	0	3	30	4.2	0.2	0	0	0.1	0.8



TRAFFIC DATA COLLECTION

File Name : CarolinaBeach(Canal and Pelican) Saturday
 Site Code :
 Start Date : 6/8/2024
 Page No : 2

	Canal Drive Southbound				Pelican Lane Westbound				Canal Drive Northbound				
Start Time	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 12:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 11:00 AM													
11:00 AM	1	70	2	73	11	7	0	18	87	25	4	116	207
11:15 AM	1	65	0	66	12	4	1	17	79	23	5	107	190
11:30 AM	2	71	1	74	14	4	4	22	71	27	8	106	202
11:45 AM	0	69	0	69	16	2	0	18	69	25	4	98	185
Total Volume	4	275	3	282	53	17	5	75	306	100	21	427	784
% App. Total	1.4	97.5	1.1		70.7	22.7	6.7		71.7	23.4	4.9		
PHF	.500	.968	.375	.953	.828	.607	.313	.852	.879	.926	.656	.920	.947





TRAFFIC DATA COLLECTION

File Name : CarolinaBeach(Carolina Beach and Pelican) Saturday
 Site Code :
 Start Date : 6/8/2024
 Page No : 1

Groups Printed- Cars + - Trucks

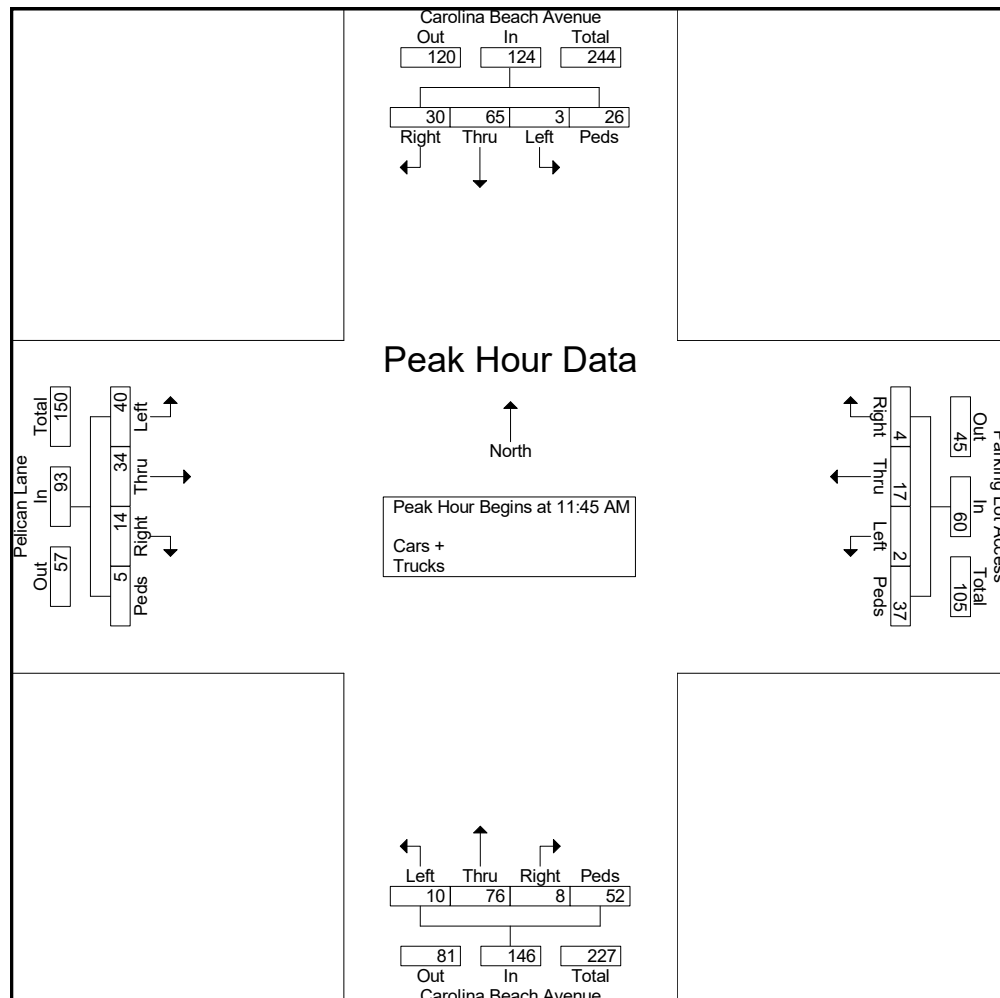
	Carolina Beach Avenue Southbound					Parking Lot Access Westbound					Carolina Beach Avenue Northbound					Pelican Lane Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
11:00 AM	2	16	5	12	35	0	3	2	8	13	1	18	4	5	28	16	13	1	6	36	112
11:15 AM	1	17	10	1	29	1	1	0	7	9	1	19	2	0	22	18	6	3	1	28	88
11:30 AM	0	17	8	11	36	0	4	0	8	12	0	13	0	0	13	17	7	4	0	28	89
11:45 AM	2	16	9	3	30	1	4	0	8	13	1	23	3	9	36	14	11	3	0	28	107
Total	5	66	32	27	130	2	12	2	31	47	3	73	9	14	99	65	37	11	7	120	396
12:00 PM	0	16	7	6	29	1	7	1	2	11	4	11	1	17	33	7	7	9	1	24	97
12:15 PM	1	13	4	10	28	0	2	2	12	16	2	18	3	7	30	12	8	1	1	22	96
12:30 PM	0	20	10	7	37	0	4	1	15	20	3	24	1	19	47	7	8	1	3	19	123
12:45 PM	1	19	9	10	39	1	9	0	3	13	0	16	0	12	28	13	5	4	3	25	105
Total	2	68	30	33	133	2	22	4	32	60	9	69	5	55	138	39	28	15	8	90	421
Grand Total	7	134	62	60	263	4	34	6	63	107	12	142	14	69	237	104	65	26	15	210	817
Apprch %	2.7	51	23.6	22.8		3.7	31.8	5.6	58.9		5.1	59.9	5.9	29.1		49.5	31	12.4	7.1		
Total %	0.9	16.4	7.6	7.3	32.2	0.5	4.2	0.7	7.7	13.1	1.5	17.4	1.7	8.4	29	12.7	8	3.2	1.8	25.7	
Cars +	7	133	62	60	262	4	34	6	63	107	12	140	14	69	235	104	65	26	15	210	814
% Cars +	100	99.3	100	100	99.6	100	100	100	100	100	100	98.6	100	100	99.2	100	100	100	100	100	99.6
Trucks	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3
% Trucks	0	0.7	0	0	0.4	0	0	0	0	0	0	1.4	0	0	0.8	0	0	0	0	0	0.4



TRAFFIC DATA COLLECTION

File Name : CarolinaBeach(Carolina Beach and Pelican) Saturday
 Site Code :
 Start Date : 6/8/2024
 Page No : 2

	Carolina Beach Avenue Southbound					Parking Lot Access Westbound					Carolina Beach Avenue Northbound					Pelican Lane Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. 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	16	9	3	30	1	4	0	8	13	1	23	3	9	36	14	11	3	0	28	107
12:00 PM	0	16	7	6	29	1	7	1	2	11	4	11	1	17	33	7	7	9	1	24	97
12:15 PM	1	13	4	10	28	0	2	2	12	16	2	18	3	7	30	12	8	1	1	22	96
12:30 PM	0	20	10	7	37	0	4	1	15	20	3	24	1	19	47	7	8	1	3	19	123
Total Volume	3	65	30	26	124	2	17	4	37	60	10	76	8	52	146	40	34	14	5	93	423
% App. Total	2.4	52.4	24.2	21		3.3	28.3	6.7	61.7		6.8	52.1	5.5	35.6		43	36.6	15.1	5.4		
PHF	.375	.813	.750	.650	.838	.500	.607	.500	.617	.750	.625	.792	.667	.684	.777	.714	.773	.389	.417	.830	.860





TRAFFIC DATA COLLECTION

File Name : CarolinaBeach(US 421 and Carl) Saturday
 Site Code :
 Start Date : 6/8/2024
 Page No : 1

Groups Printed- Cars + - Trucks

	US 421 Southbound				Carl Winner Drive Westbound				US 421 Northbound				
Start Time	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Int. Total
11:00 AM	98	195	0	293	12	56	21	89	130	21	24	175	557
11:15 AM	97	203	0	300	14	56	3	73	135	31	10	176	549
11:30 AM	85	223	0	308	19	64	2	85	130	24	4	158	551
11:45 AM	92	206	0	298	14	81	3	98	139	25	5	169	565
Total	372	827	0	1199	59	257	29	345	534	101	43	678	2222
12:00 PM	99	204	0	303	9	62	3	74	145	13	10	168	545
12:15 PM	86	216	0	302	17	45	14	76	118	19	8	145	523
12:30 PM	91	186	0	277	16	62	8	86	148	23	8	179	542
12:45 PM	82	182	1	265	20	67	5	92	133	21	9	163	520
Total	358	788	1	1147	62	236	30	328	544	76	35	655	2130
Grand Total	730	1615	1	2346	121	493	59	673	1078	177	78	1333	4352
Apprch %	31.1	68.8	0		18	73.3	8.8		80.9	13.3	5.9		
Total %	16.8	37.1	0	53.9	2.8	11.3	1.4	15.5	24.8	4.1	1.8	30.6	
Cars +	728	1613	1	2342	120	491	52	663	1074	177	75	1326	4331
% Cars +	99.7	99.9	100	99.8	99.2	99.6	88.1	98.5	99.6	100	96.2	99.5	99.5
Trucks	2	2	0	4	1	2	7	10	4	0	3	7	21
% Trucks	0.3	0.1	0	0.2	0.8	0.4	11.9	1.5	0.4	0	3.8	0.5	0.5



TRAFFIC DATA COLLECTION

File Name : CarolinaBeach(US 421 and Carl) Saturday
 Site Code :
 Start Date : 6/8/2024
 Page No : 2

	US 421 Southbound				Carl Winner Drive Westbound				US 421 Northbound				
Start Time	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 12:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 11:00 AM													
11:00 AM	98	195	0	293	12	56	21	89	130	21	24	175	557
11:15 AM	97	203	0	300	14	56	3	73	135	31	10	176	549
11:30 AM	85	223	0	308	19	64	2	85	130	24	4	158	551
11:45 AM	92	206	0	298	14	81	3	98	139	25	5	169	565
Total Volume	372	827	0	1199	59	257	29	345	534	101	43	678	2222
% App. Total	31	69	0		17.1	74.5	8.4		78.8	14.9	6.3		
PHF	.949	.927	.000	.973	.776	.793	.345	.880	.960	.815	.448	.963	.983

